

## FCC Test Report (WLAN)

**Report No.:** RF170816E06G-1

**FCC ID:** TK4WLT674

**Test Model:** WLT674

**Received Date:** Feb. 09, 2015

**Test Date:** Feb. 09, 2015 & Oct. 01 to 05, 2015

**Issued Date:** Oct. 04, 2018

**Applicant:** Compex Systems Pte. Ltd.

**Address:** No. 9 Harrison Road, #05-01 Singapore 369651

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.

**Test Location (1):** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.

**Test Location (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin  
Chu Hsien 307, Taiwan R.O.C.



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### Release Control Record

Issue No.	Description	Date Issued
RF170816E06G-1	Original release.	Oct. 04, 2018

## 1 Certificate of Conformity

**Product:** Wireless M.2 Type A/E with BLE Module

**Brand:** Compex

**Test Model:** WLT674

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Compex Systems Pte. Ltd.

**Test Date:** Feb. 09, 2015 & Oct. 01 to 05, 2015

**Standard:** 47 CFR FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Mary Ko , **Date:** Oct. 04, 2018  
Mary Ko / Specialist

**Approved by :** May Chen , **Date:** Oct. 04, 2018  
May Chen / Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -2.2dB at 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is SMA RP plug not a standard connector.

**NOTE:** 1. For WLAN: The EUT was operating in 2.4 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz. For the 2.4 ~ 2.4835GHz RF parameters was recorded in another test report.

2. Only radiated emissions / Max Average Transmit Power were presented in this test report.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ( $\pm$ )
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.37 dB
	6GHz ~ 18GHz	3.65 dB
	18GHz ~ 40GHz	3.88 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT (WLAN)

Product	Wireless M.2 Type A/E with BLE Module
Brand	Compex
Test Model	WLT674
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc form host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.72GHz, 5.745 ~ 5.825GHz For 15.247 2.412 ~ 2.472GHz
Number of Channel	For 15.407 25 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 12 for 802.11n (HT40), 802.11ac (VHT40) 6 for 802.11ac (VHT80) For 15.247 13 for 802.11b/g, 802.11n (HT20), VHT20 9 for 802.11n (HT40), VHT40
Output Power	For 15.407 802.11a: 133.52mW 802.11ac (VHT20): 128.708mW 802.11ac (VHT40): 153.522mW 802.11ac (VHT80): 86.754mW For 15.247 802.11b: 306.647mW 802.11g: 508.783mW VHT20: 508.304mW VHT40: 432.554mW
Antenna Type	See item 3.2
Antenna Connector	See item 3.2
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This is a duplicate report according to Qualcomm Atheros, Inc. authority letter.( FCC ID : PPD-QCNFA364AH )
2. The difference compared with the Report No.: RF170816E06G-A-1 & RF170816E06G-A-4 design is as the following:

◆ Add new antennas (Antenna Set 2) as following table:

Original									
Antenna Set 1									
Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		
Newly									
Antenna Set 2									
Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	INPAQ	DAM-I6-H-DB-800-10-17	Dipole	1.13	Band 1&2: 1.33	NA	NA	SMA RP Plug	900
					Band 3: -0.63				
					Band 4: -0.97				
Chain (1)	INPAQ	DAM-I6-H-DB-800-10-17	Dipole	1.29	Band 1&2: 1.94	NA	NA	SMA RP Plug	900
					Band 3: -0.49				
					Band 4: -0.93				

3. According to above conditions, only radiated emissions / Conducted power need to be performed. And all data was verified to meet the requirements.
4. In the original test report, the spurious emissions item was tested by the conducted method; only partial channels were tested by radiated method. So for new antenna source, only spurious emissions for radiated method need to be performed. And all data was verified to meet the requirements.

5. There are Bluetooth technology and WLAN technology used for the EUT.

6. The EUT incorporates a 2T2R function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
VHT40	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.3.1)

7. In original report, the EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
<b>Mode B</b>	<b>800ns GI</b>

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

8. WLAN/BT coexistence mode:

◆ 2x2 WLAN + BT:

➤ 5GHz 802.11a/an (or 11ac) transmit concurrent with BT.

➤ 2.4GHz: timely shared coexistence.

9. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Antenna

The antenna gain was declared by client; please refer to the following table:

Antenna Set 1									
Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5GHz Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		
Antenna Set 2									
Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5GHz Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	INPAQ	DAM-I6-H-DB-800-10-17	Dipole	1.13	Band 1&2: 1.33	NA	NA	SMA RP Plug	900
					Band 3: -0.63				
					Band 4: -0.97				
Chain (1)	INPAQ	DAM-I6-H-DB-800-10-17	Dipole	1.29	Band 1&2: 1.94	NA	NA	SMA RP Plug	900
					Band 3: -0.49				
					Band 4: -0.93				

### 3.3 Description of Test Modes

#### FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

#### FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

**FOR 5500 ~ 5720MHz**

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610 MHz		

Note: The listed channels in the DFS band (5250~5350MHz and 5470~5725MHz) are passive scan only.

**FOR 5745 ~ 5825MHz:**

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 MHz

### 3.3.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	RE≥1G	APCM	
-	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement

#### **Radiated Emission Test (Above 1GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11ac (VHT40)	5500-5720	102 to 142	102	OFDM	13.5
802.11ac (VHT80)		106 to 138	106	OFDM	29.3
802.11ac (VHT40)	5745-5825	151 to 159	151, 159	OFDM	13.5
802.11ac (VHT80)		155	155	OFDM	29.3

#### **Antenna Port Conducted Measurement:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5
802.11ac (VHT80)		42	42	OFDM	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
802.11ac (VHT80)		58	58	OFDM	29.3
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	6.5
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5
802.11ac (VHT80)		155	155	OFDM	29.3



**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 71%RH	120Vac, 60Hz	Alex Ku
APCM	25deg. C, 60%RH	120Vac, 60Hz	Andy Ho

### 3.4 Duty Cycle of Test Signal

**802.11a:** Duty cycle = 21.425 ms/21.562 ms = 0.994

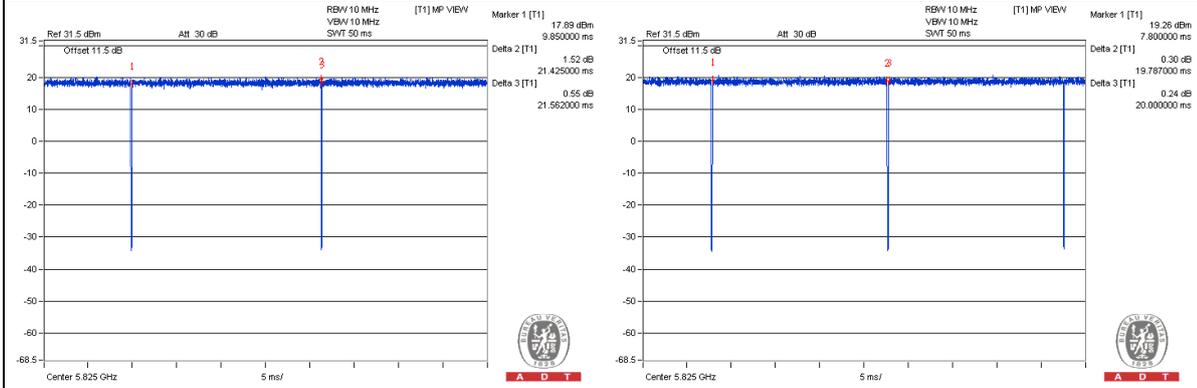
**802.11ac (VHT20):** Duty cycle = 19.787 ms/20 ms = 0.989

**802.11ac (VHT40):** Duty cycle = 9.54 ms/9.645 ms = 0.989

**802.11ac (VHT80):** Duty cycle = 4.425 ms/4.54 ms = 0.975, Duty factor =  $10 * \log(1/0.975) = 0.11$

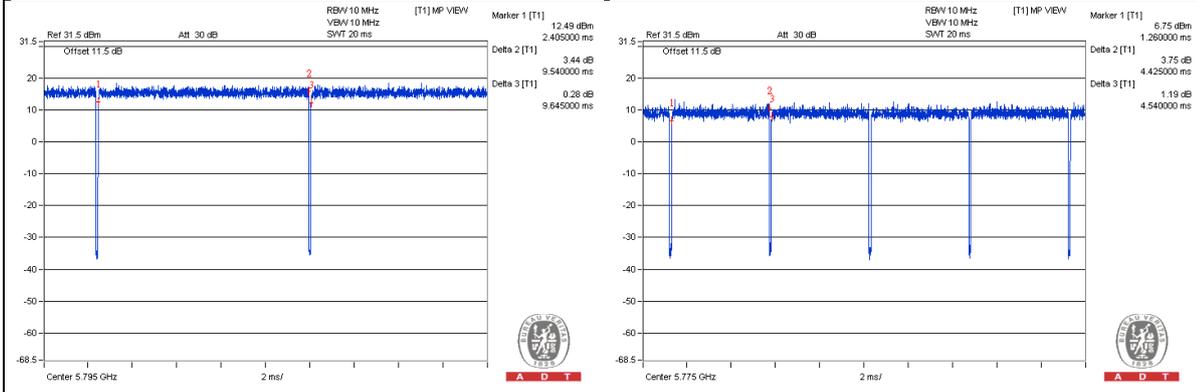
**802.11a**

**802.11ac (VHT20)**



**802.11ac (VHT40)**

**802.11ac (VHT80)**



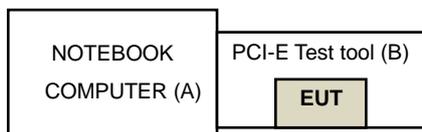
### 3.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B	PCI-E Test tool	Qualcomm Atheros	NA	NA	NA	Supplied by Client

**NOTE:** All power cords of the above support units are non-shielded (1.8 m).

#### 3.5.1 Configuration of System under Test



### 3.6 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**  
**789033 D02 General UNII Test Procedure New Rules v01**  
**662911 D01 Multiple Transmitter Output v02r01**  
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Transmit Power Measurement

#### 4.1.1 Limits of Transmit Power Measurement

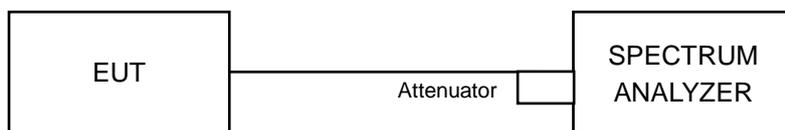
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3		√	1 Watt (30 dBm)

Note: \*B is the 26 dB emission bandwidth in megahertz

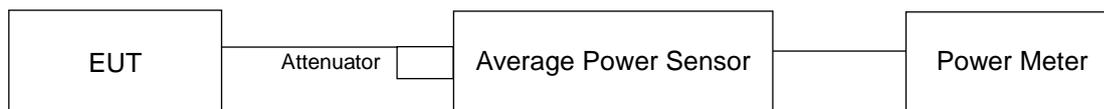
#### 4.1.2 Test Setup

##### FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:



For other channels:



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.1.3 Test Instruments

#### FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100060	May 08, 2015	May 07, 2016

- NOTE:**
1. The test was performed in Oven room 2.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  3. Tested Date: Oct. 05, 2015

For other channels:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

- NOTE:**
1. The test was performed in Oven room 2.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  3. Tested Date: Oct. 05, 2015

#### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

#### 4.1.4 Test Procedures

##### FOR AVERAGE POWER MEASUREMENT

##### For channel straddling 5725MHz:

##### 802.11ac (VHT80)

###### Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

###### Other Modulation mode

###### Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle  $\geq 98$  percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

##### For other channels:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

##### FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.1.5 Deviation from Test Standard

No deviation.

#### 4.1.6 EUT Operating Conditions

The software (QRCT Version3.0.33.0) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.1.7 Test Results

#### 802.11a

#### POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.35	16.98	104.213	20.18	24	Pass
40	5200	17.34	16.98	104.088	20.17	24	Pass
48	5240	17.38	16.80	102.565	20.11	24	Pass
52	5260	17.05	16.88	99.452	19.98	24	Pass
60	5300	16.89	16.87	97.506	19.89	24	Pass
64	5320	15.66	15.15	69.547	18.42	23.90	Pass
100	5500	14.98	14.84	61.956	17.92	23.84	Pass
120	5600	16.81	16.67	94.425	19.75	23.92	Pass
140	5700	14.60	14.39	56.319	17.51	23.88	Pass
*144 (UNII-2c Band)	5720	12.92	12.54	37.535	15.74	23.02	Pass
*144 (UNII-3 Band)	5720	5.22	5.31	6.723	8.28	30	Pass
149	5745	14.85	15.05	62.538	17.96	30	Pass
157	5785	18.21	18.28	133.52	21.26	30	Pass
165	5825	17.68	18.32	126.534	21.02	30	Pass

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  2. 5250~5350MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  3. 5470~5725MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.45\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  4. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.06\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*144	5720	44.258	16.46

Note: The total power was calculated through formula and record the value for reference only.

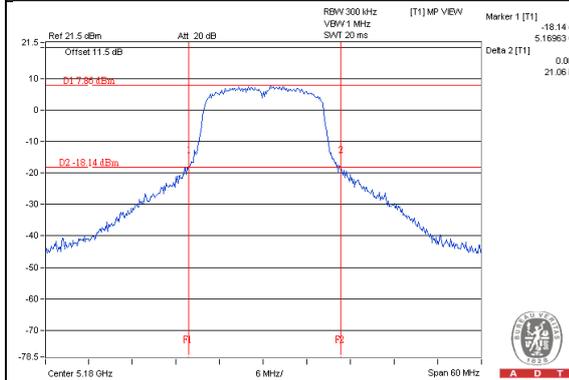
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.06	20.13
40	5200	21.85	20.11
48	5240	20.63	20.64
52	5260	20.27	20.71
60	5300	20.46	20.96
64	5320	19.85	19.52
100	5500	20.05	19.25
120	5600	21.33	19.60
140	5700	19.69	19.43
144 (UNII-2c Band)	5720	16.49	15.93

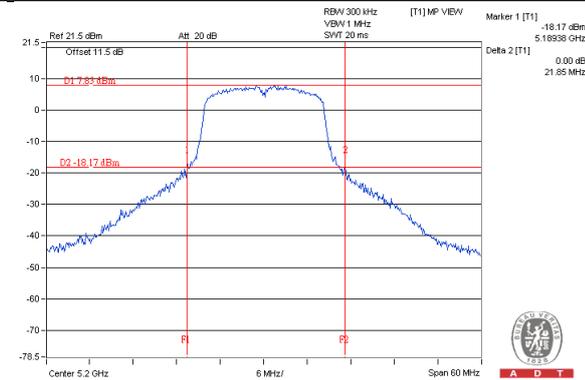
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.27	24.06 > 24
60	5300	20.46	24.1 > 24
64	5320	19.52	23.9 < 24
100	5500	19.25	23.84 < 24
120	5600	19.60	23.92 < 24
140	5700	19.43	23.88 < 24
144 (UNII-2c Band)	5720	15.93	23.02 < 24

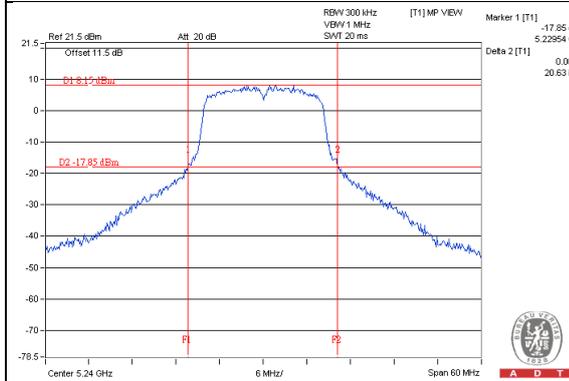
### Chain 0 / CH36



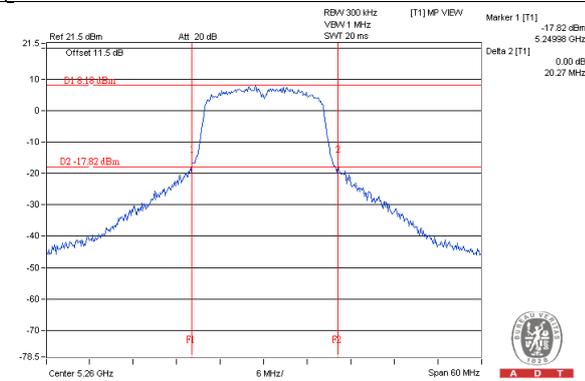
### Chain 0 / CH40



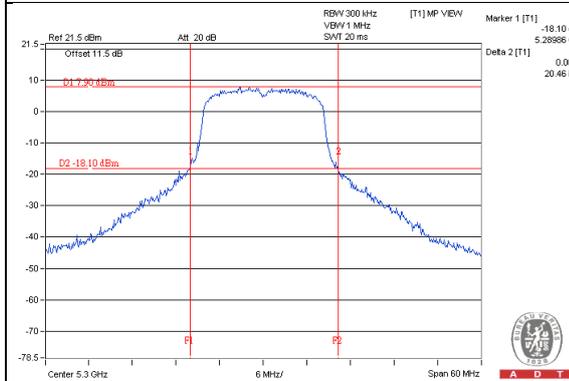
### Chain 0 / CH48



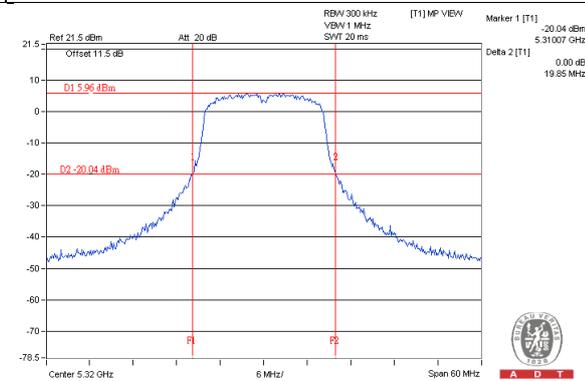
### Chain 0 / CH52



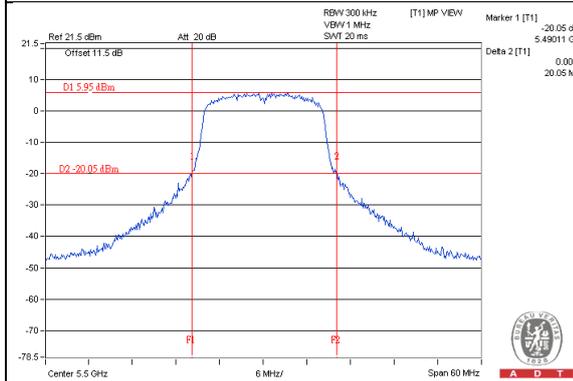
### Chain 0 / CH60



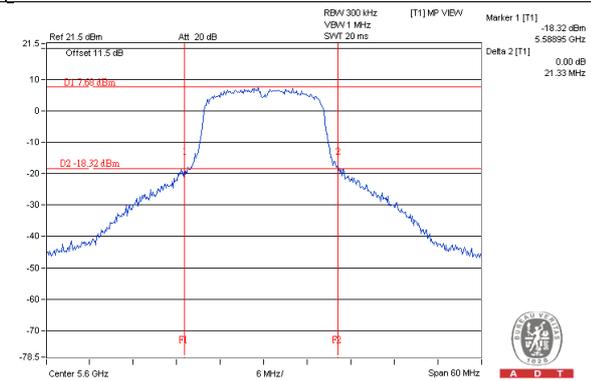
### Chain 0 / CH64



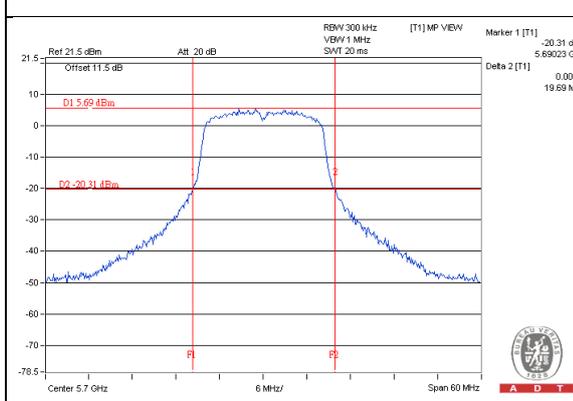
**Chain 0 / CH100**



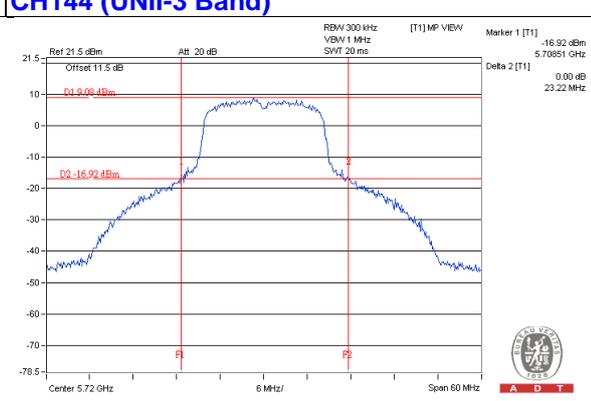
**Chain 0 / CH120**



**Chain 0 / CH140**



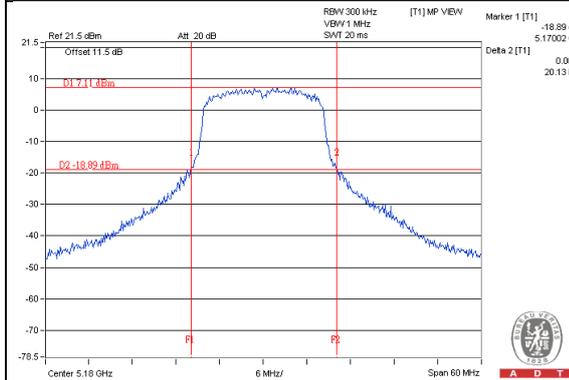
**Chain 0 / CH144 (UNII-2c Band) / Chain 0 / CH144 (UNII-3 Band)**



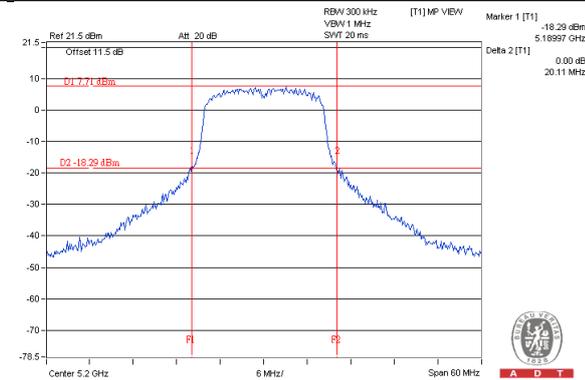
**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1

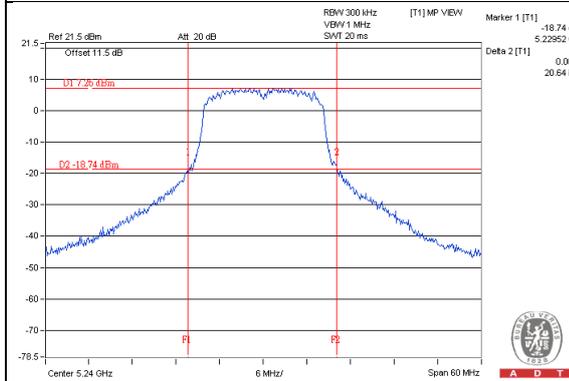
### Chain 1 / CH36



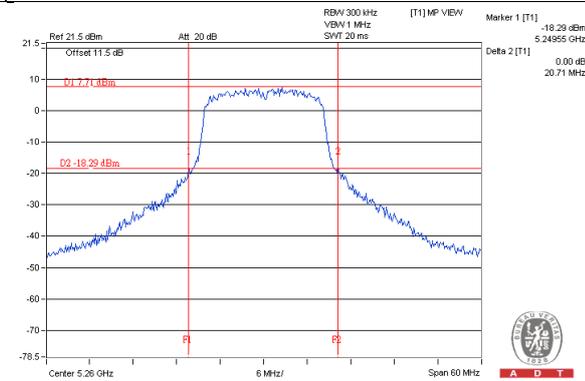
### Chain 1 / CH40



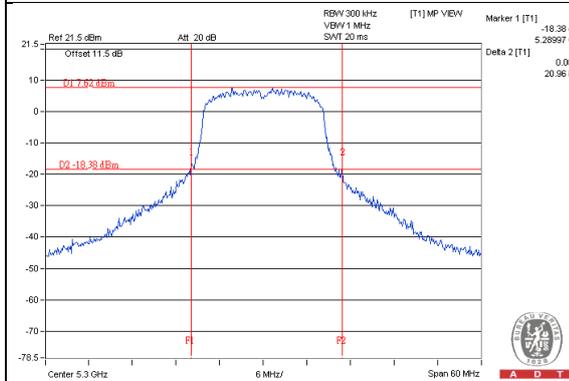
### Chain 1 / CH48



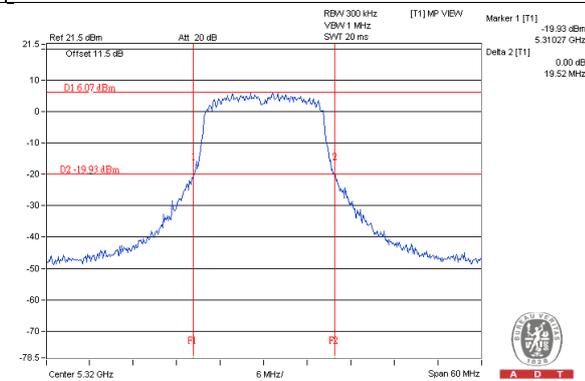
### Chain 1 / CH52



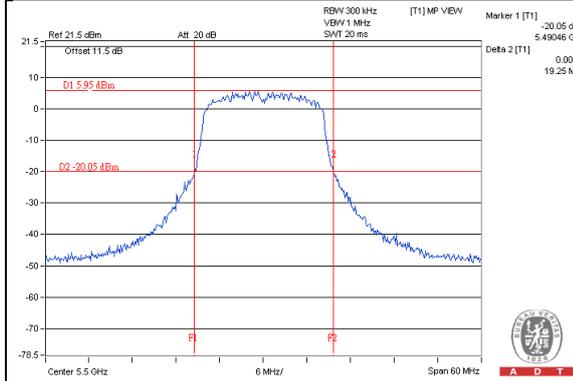
### Chain 1 / CH60



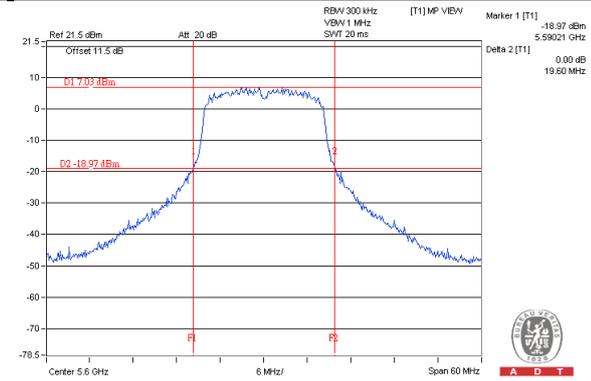
### Chain 1 / CH64



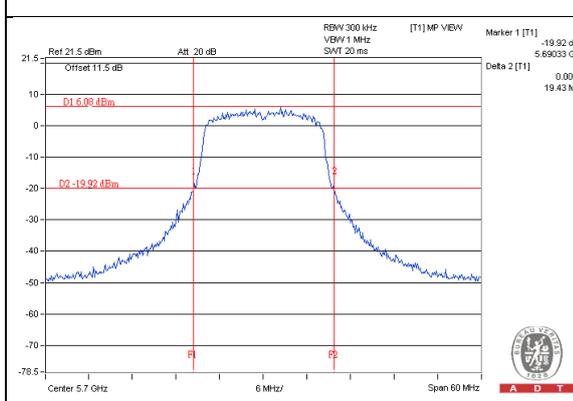
### Chain 1 / CH100



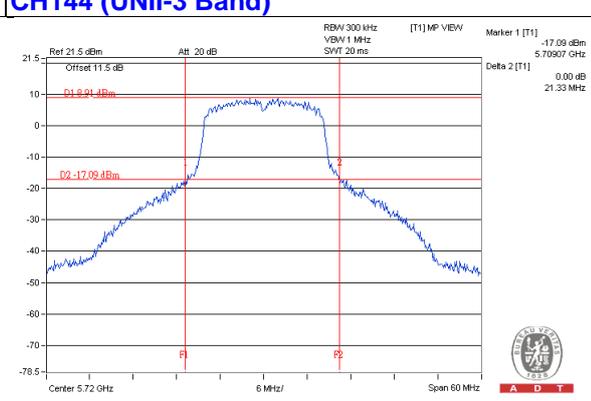
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)



**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.90	17.70	120.544	20.81

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT20)**

**POWER OUTPUT**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.38	16.98	104.59	20.19	24	Pass
40	5200	17.60	16.91	106.635	20.28	24	Pass
48	5240	17.66	17.29	111.925	20.49	24	Pass
52	5260	17.68	17.18	110.854	20.45	24	Pass
60	5300	17.41	17.52	111.575	20.48	24	Pass
64	5320	15.60	14.90	67.211	18.27	24	Pass
100	5500	15.42	15.45	69.909	18.45	24	Pass
120	5600	17.20	17.10	103.767	20.16	24	Pass
140	5700	14.96	13.85	55.599	17.45	24	Pass
*144 (UNII-2c Band)	5720	12.50	12.30	34.765	15.41	23.01	Pass
*144 (UNII-3 Band)	5720	5.63	5.40	7.123	8.53	30	Pass
149	5745	15.48	15.49	70.718	18.50	30	Pass
157	5785	17.64	18.49	128.708	21.10	30	Pass
165	5825	16.81	17.96	110.49	20.43	30	Pass

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  2. 5250~5350MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  3. 5470~5725MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.45\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  4. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.06\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*144	5720	41.888	16.22

Note: The total power was calculated through formula and record the value for reference only.

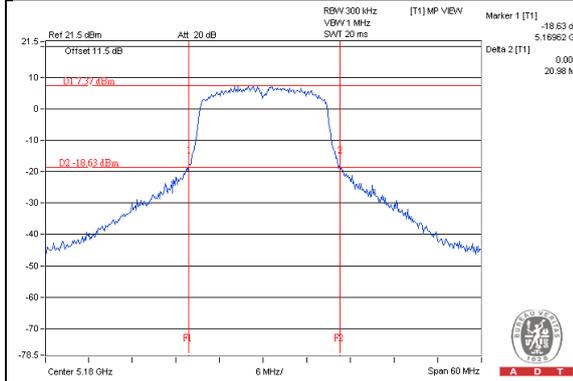
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	20.98	20.92
40	5200	21.77	22.04
48	5240	21.90	21.74
52	5260	22.72	21.34
60	5300	22.08	21.41
64	5320	20.51	20.20
100	5500	21.34	20.30
120	5600	23.58	20.85
140	5700	20.61	20.71
144 (UNII-2c Band)	5720	17.73	15.90

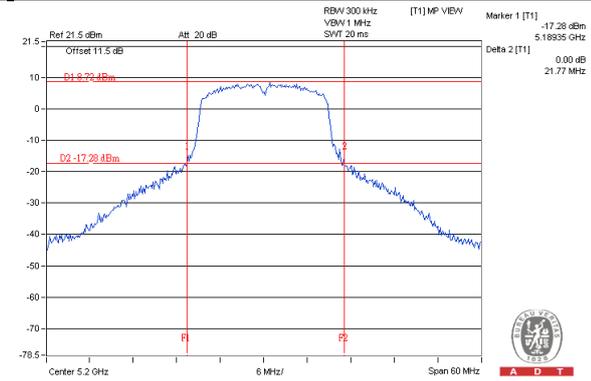
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.34	24.29 > 24
60	5300	21.41	24.3 > 24
64	5320	20.20	24.05 > 24
100	5500	20.30	24.07 > 24
120	5600	20.85	24.19 > 24
140	5700	20.61	24.14 > 24
144 (UNII-2c Band)	5720	15.90	23.01 < 24

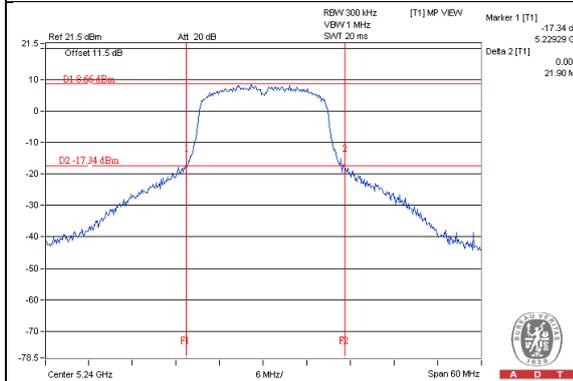
### Chain 0 / CH36



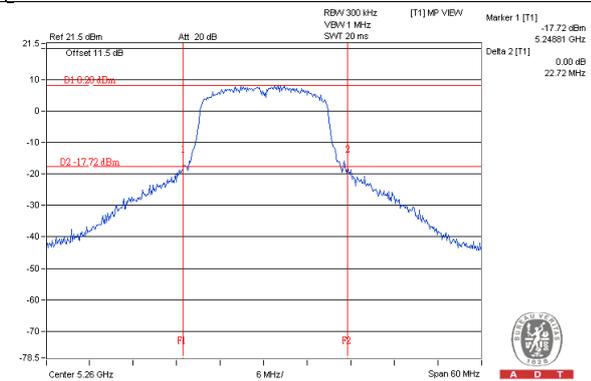
### Chain 0 / CH40



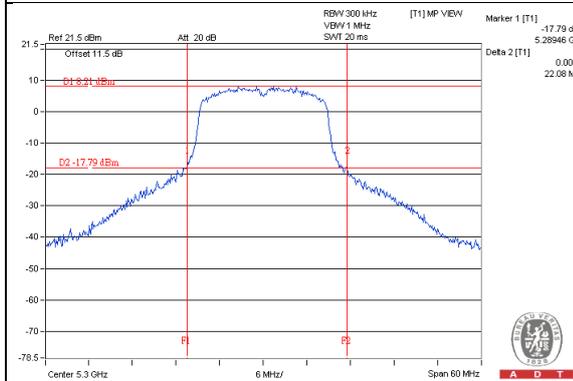
### Chain 0 / CH48



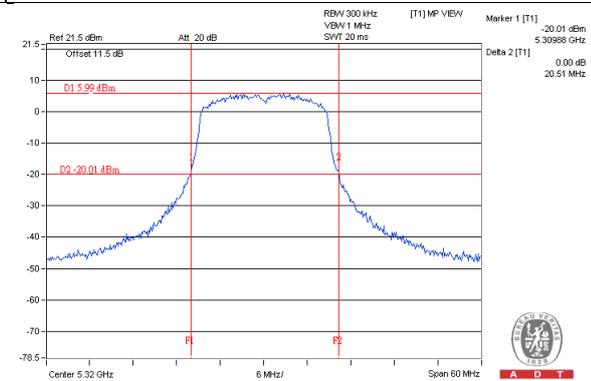
### Chain 0 / CH52



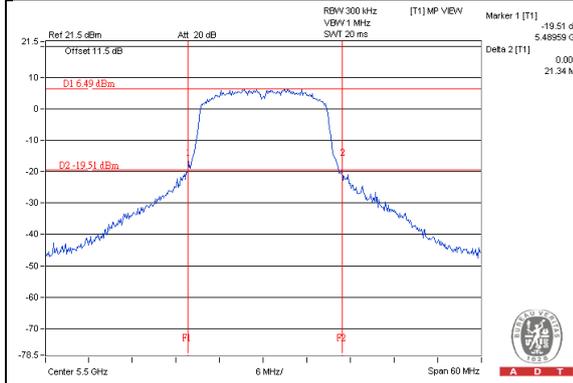
### Chain 0 / CH60



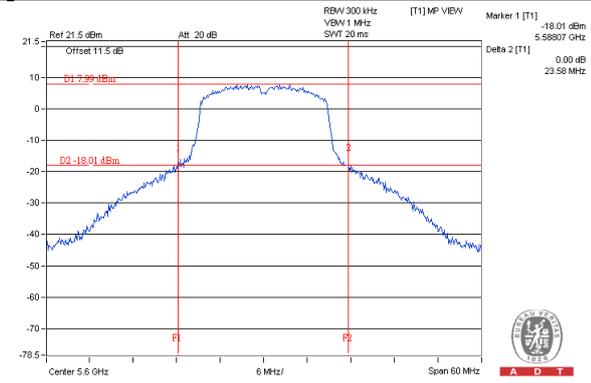
### Chain 0 / CH64



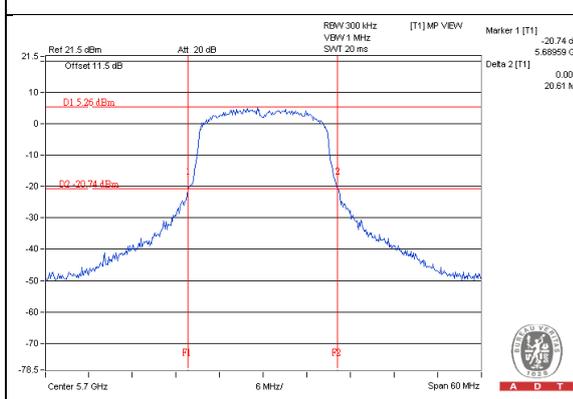
### Chain 0 / CH100



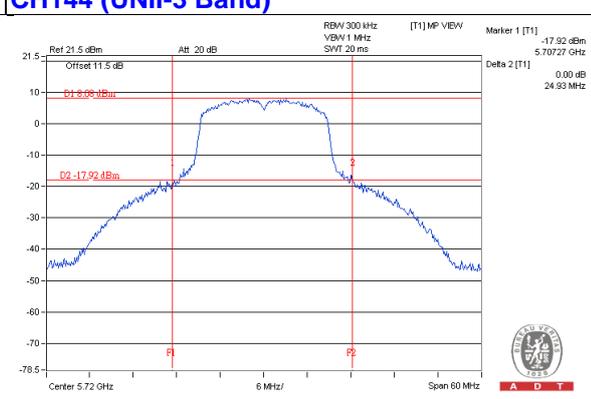
### Chain 0 / CH120



### Chain 0 / CH140



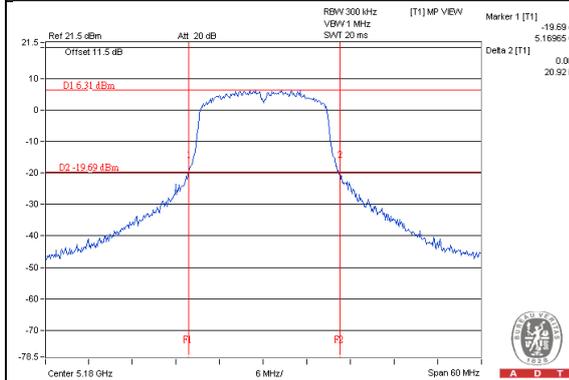
### Chain 0 / CH144 (UNII-2c Band) / Chain 0 / CH144 (UNII-3 Band)



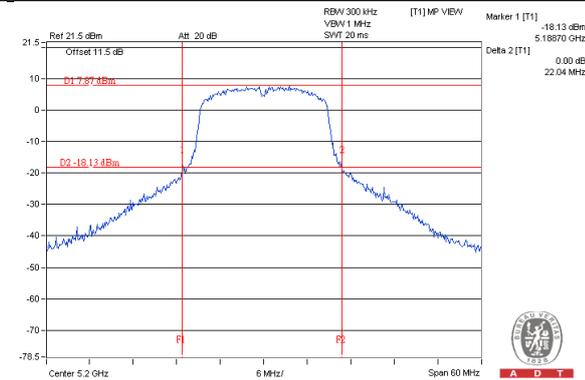
**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1

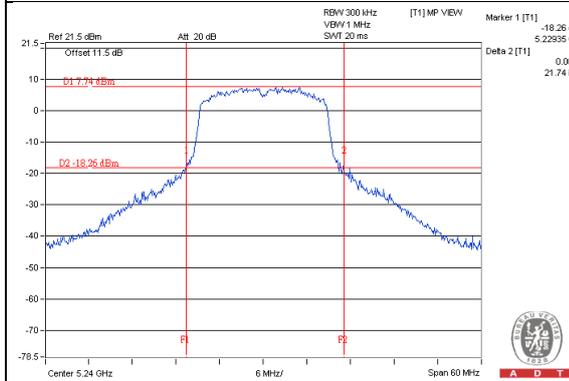
### Chain 1 / CH36



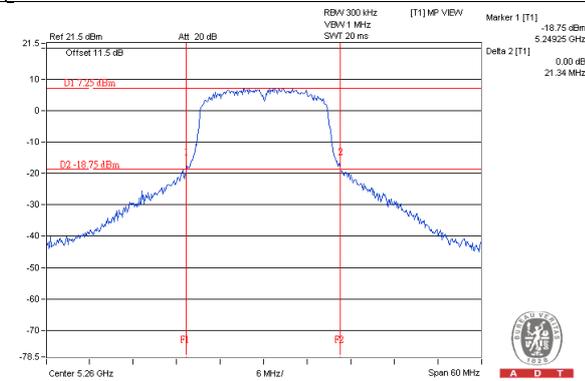
### Chain 1 / CH40



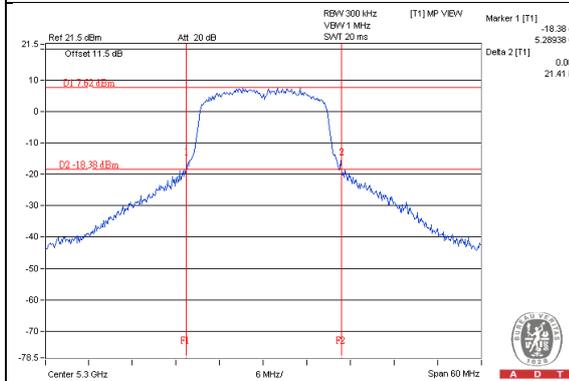
### Chain 1 / CH48



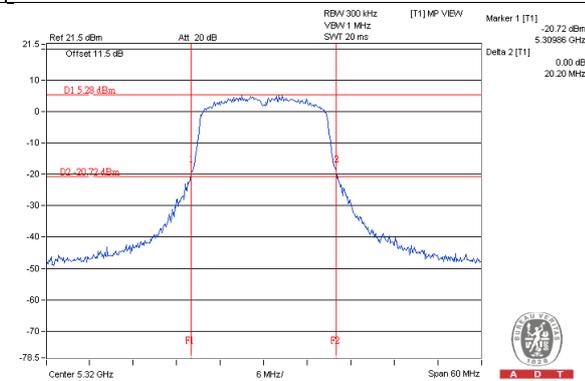
### Chain 1 / CH52



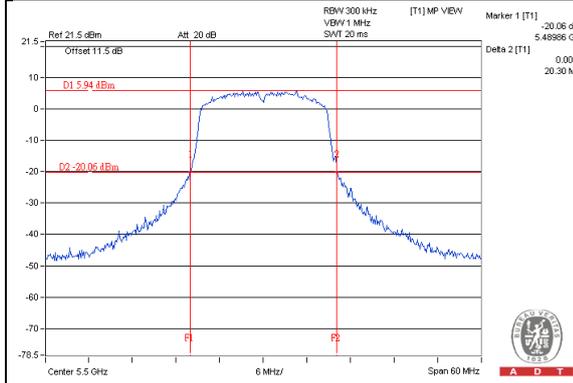
### Chain 1 / CH60



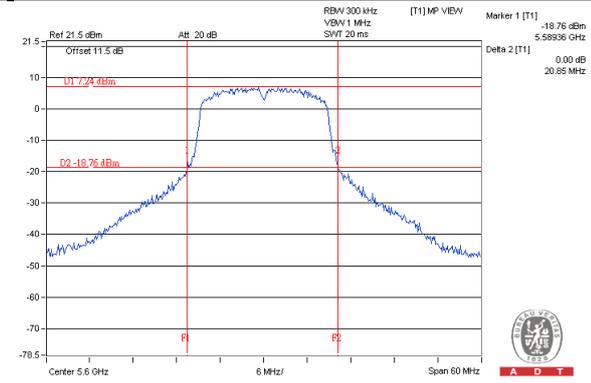
### Chain 1 / CH64



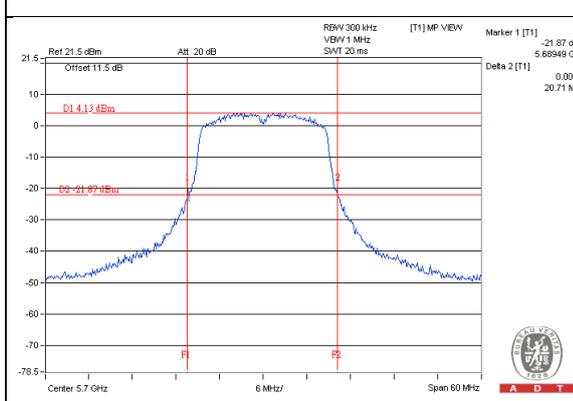
### Chain 1 / CH100



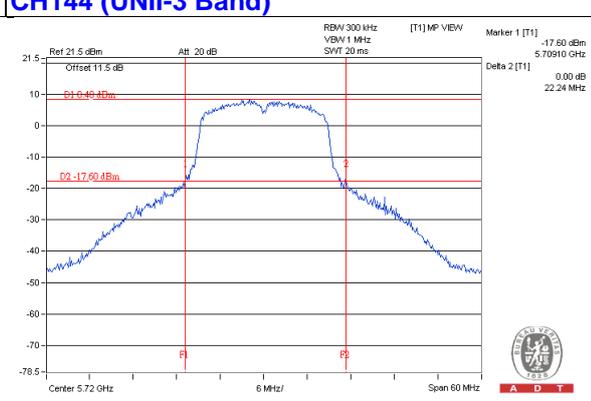
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)



**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.69	17.58	116.029	20.65

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT40)**
**POWER OUTPUT**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	13.96	12.98	44.75	16.51	24	Pass
46	5230	17.19	16.54	97.442	19.89	24	Pass
54	5270	17.08	16.84	99.356	19.97	24	Pass
62	5310	15.20	14.84	63.592	18.03	24	Pass
102	5510	14.84	15.48	65.797	18.18	24	Pass
118	5590	17.25	17.15	104.968	20.21	24	Pass
134	5670	17.32	16.98	103.839	20.16	24	Pass
*142 (UNII-2c Band)	5710	13.00	12.83	39.14	15.93	24	Pass
*142 (UNII-3 Band)	5710	1.24	-0.10	2.3077	3.63	30	Pass
151	5755	12.38	12.40	34.676	15.40	30	Pass
159	5795	18.74	18.96	153.522	21.86	30	Pass

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  2. 5250~5350MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  3. 5470~5725MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.45\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  4. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.06\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*142	5710	41.4477	16.18

Note: The total power was calculated through formula and record the value for reference only.

### 26dB OCCUPIED BANDWIDTH

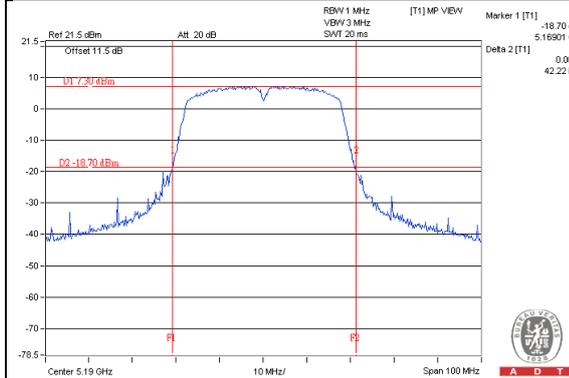
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	42.22	42.05
46	5230	43.06	42.01
54	5270	43.34	42.44
62	5310	42.02	41.70
102	5510	42.20	41.64
118	5590	48.56	42.60
134	5670	42.99	42.37
142 (UNII-2c Band)	5710	40.20	36.74

**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

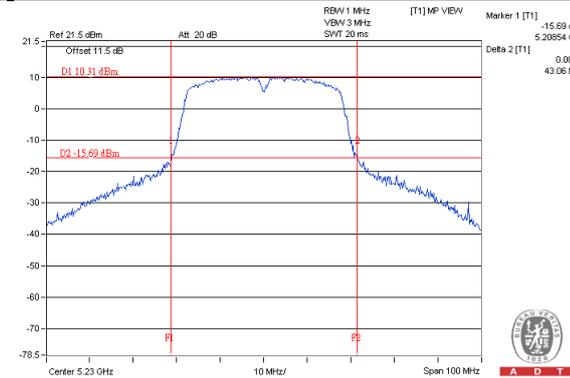
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	42.44	27.27 > 24
62	5310	41.70	27.2 > 24
102	5510	41.64	27.19 > 24
110	5550	42.60	27.29 > 24
134	5670	42.37	27.27 > 24
142 (UNII-2c Band)	5710	36.74	26.65 > 24



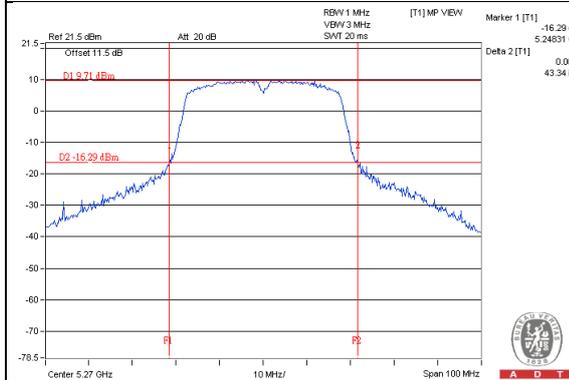
### Chain 0 / CH38



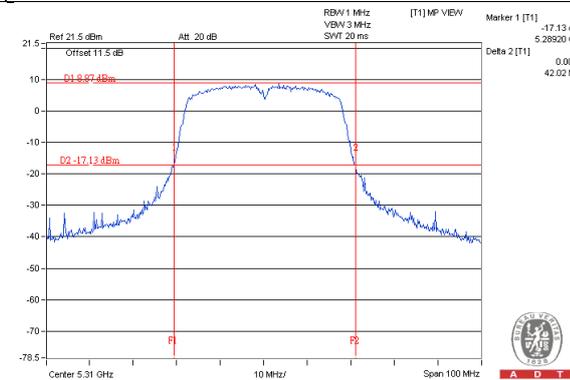
### Chain 0 / CH46



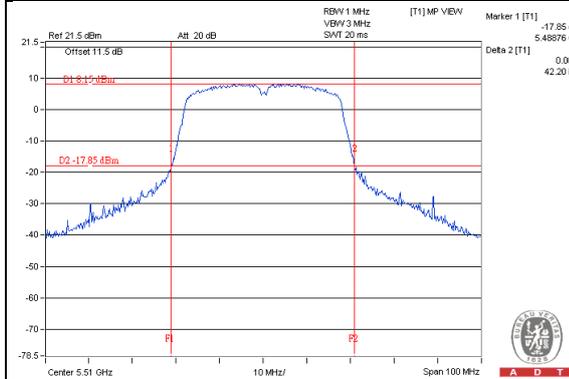
### Chain 0 / CH54



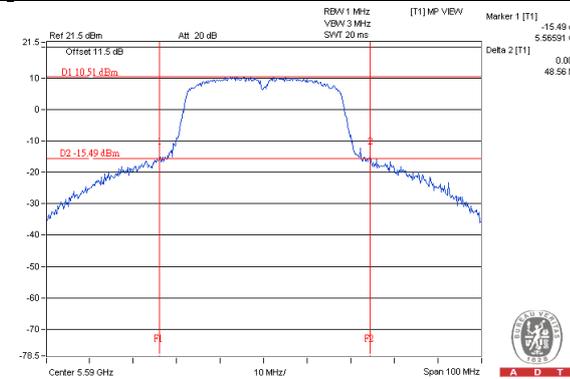
### Chain 0 / CH62



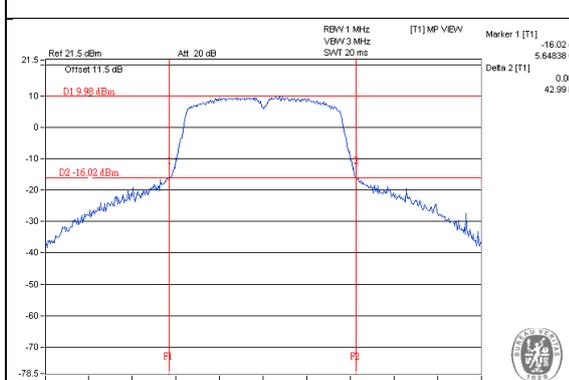
### Chain 0 / CH102



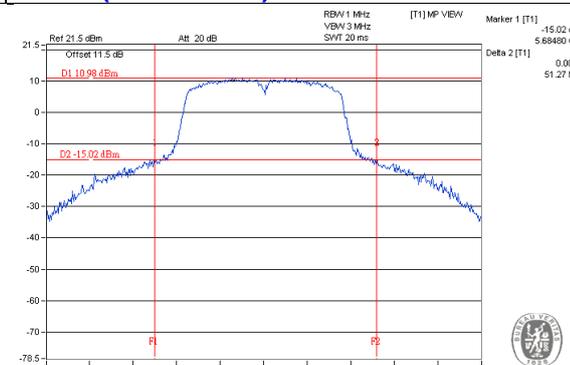
### Chain 0 / CH118



### Chain 0 / CH134



### Chain 0 / CH142 (UNII-2c Band) / Chain 0 / CH142 (UNII-3 Band)

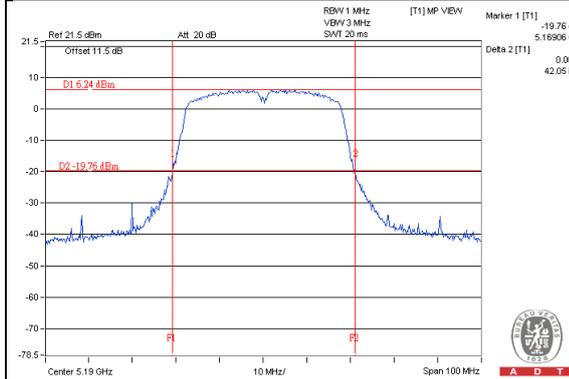


#### NOTE:

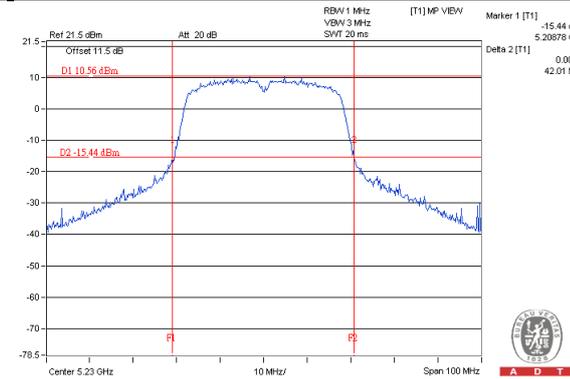
For CH142 (UNII-2c Band) = 5725MHz - Marker 1



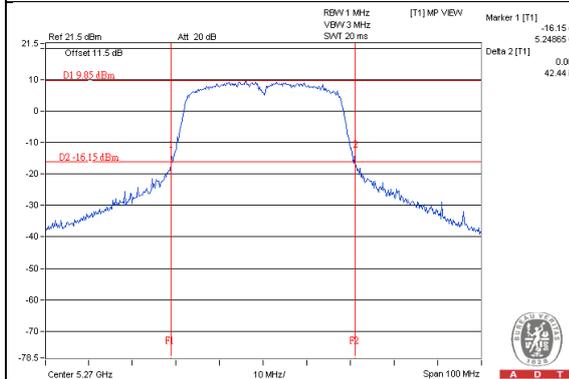
### Chain 1 / CH38



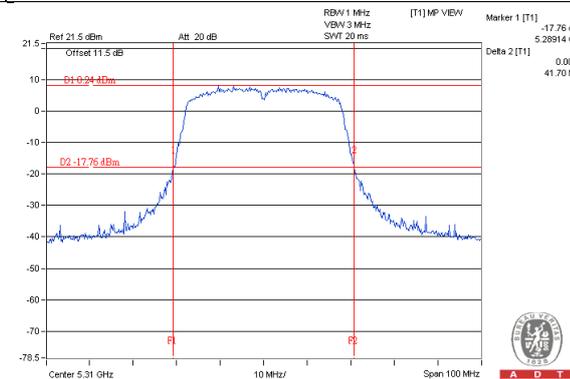
### Chain 1 / CH46



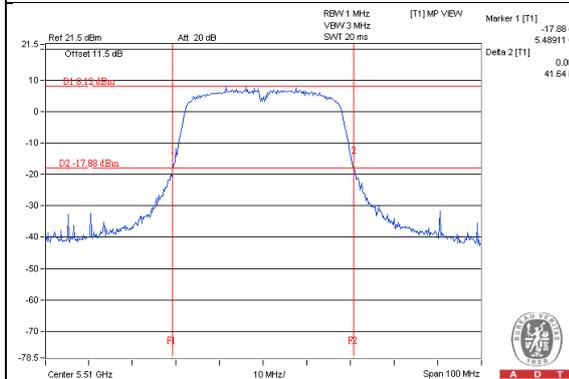
### Chain 1 / CH54



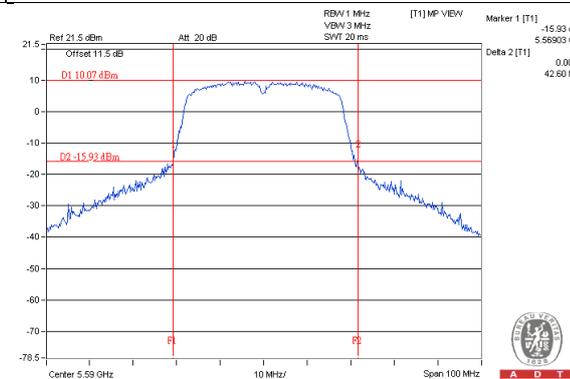
### Chain 1 / CH62



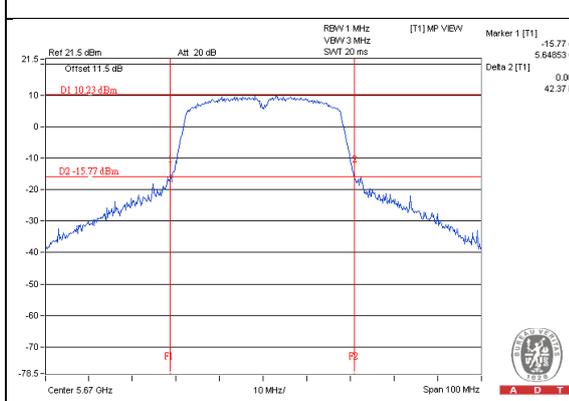
### Chain 1 / CH102



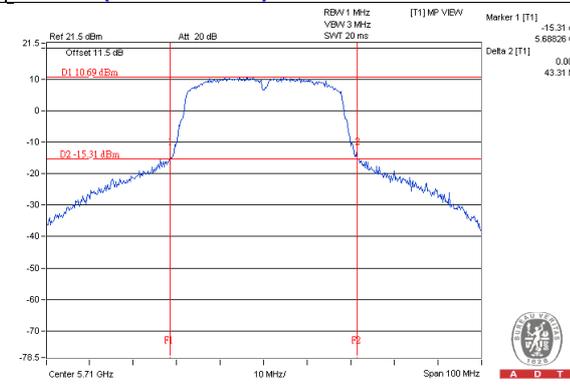
### Chain 1 / CH118



### Chain 1 / CH134



### Chain 1 / CH142 (UNII-2c Band) / Chain 1 / CH142 (UNII-3 Band)



#### NOTE:

For CH142 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	17.89	17.51	117.882	20.71

Note: The total power was calculated through formula and record the value for reference only.

## 802.11ac (VHT80)

### POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.82	12.83	43.286	16.36	24	Pass
58	5290	12.38	11.81	32.469	15.11	24	Pass
106	5530	12.60	12.31	35.219	15.47	24	Pass
122	5610	16.52	16.22	86.754	19.38	24	Pass
*138 (UNII-2c Band)	5690	11.23	10.43	24.938	13.97	24	Pass
*138 (UNII-3 Band)	5690	-5.51	-6.14	0.5378	-2.69	30	Pass
155	5775	12.08	11.90	31.632	15.00	30	Pass

- NOTE:**
1. 5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  2. 5250~5350MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.65\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  3. 5470~5725MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.45\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
  4. 5725~5850MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 2.06\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.
- \* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*138	5690	25.4758	14.06

Note: The total power was calculated through formula and record the value for reference only.

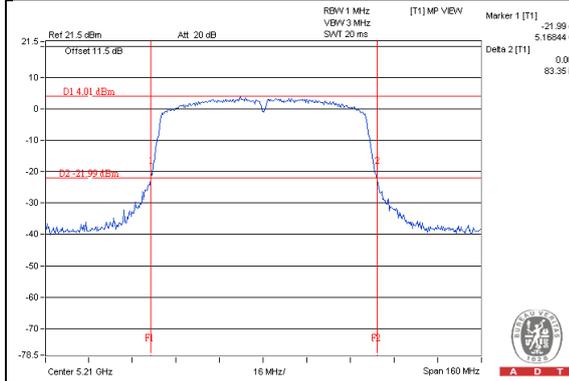
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.35	82.53
58	5290	83.22	83.86
106	5530	83.39	82.55
122	5610	92.36	83.58
138 (UNII-2c Band)	5690	77.98	76.93

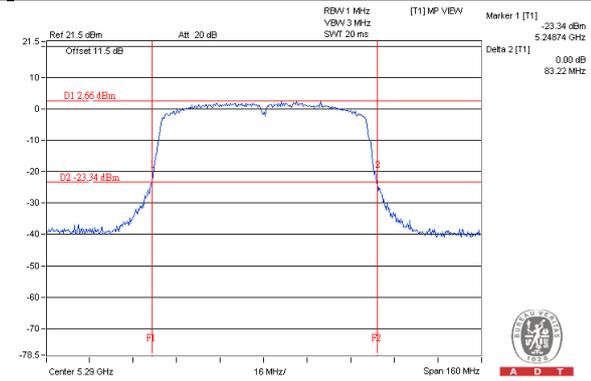
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.22	30.2 > 24
106	5530	82.55	30.16 > 24
122	5610	83.58	30.22 > 24
138 (UNII-2c Band)	5690	76.93	29.86 > 24

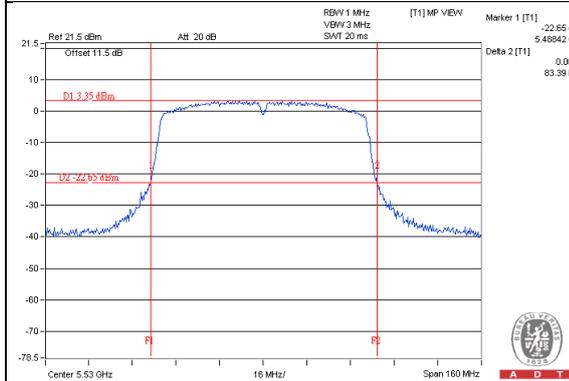
### Chain 0 / CH42



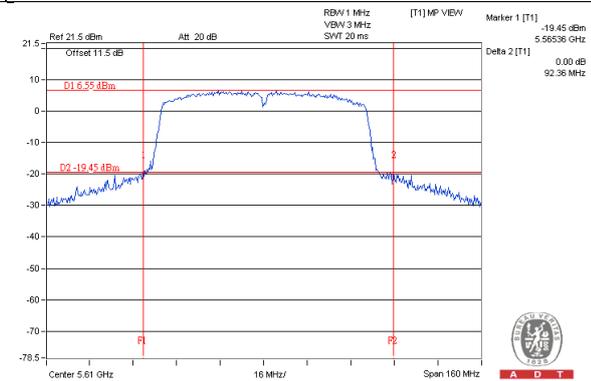
### Chain 0 / CH58



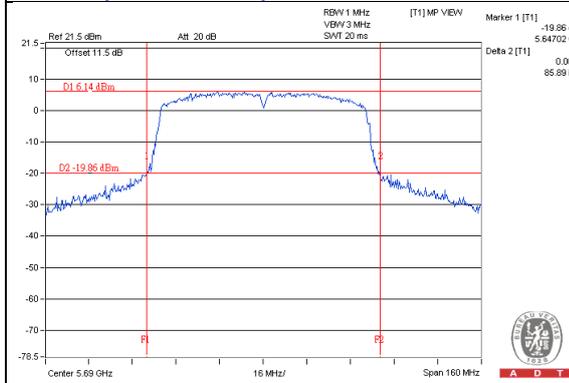
### Chain 0 / CH106



### Chain 0 / CH122



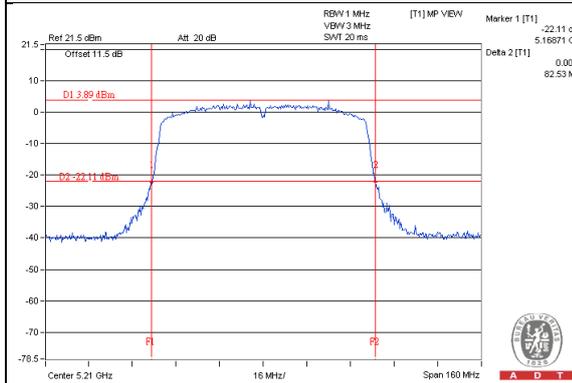
### Chain 0 / CH138 (UNII-2c Band) / Chain 0 / CH138 (UNII-3 Band)



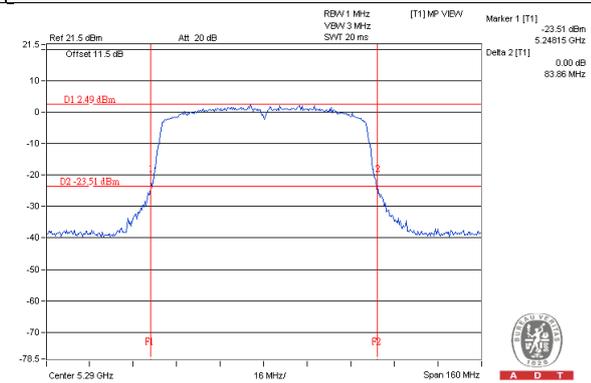
**NOTE:**

For CH138 (UNII-2c Band) = 5725MHz - Marker 1

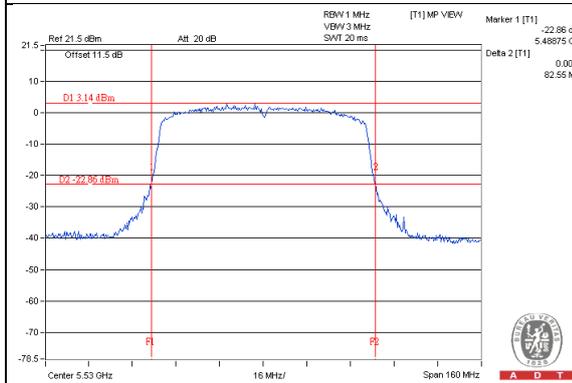
### Chain 1 / CH42



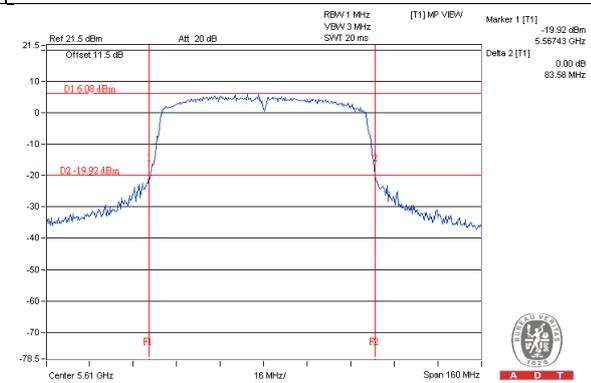
### Chain 1 / CH58



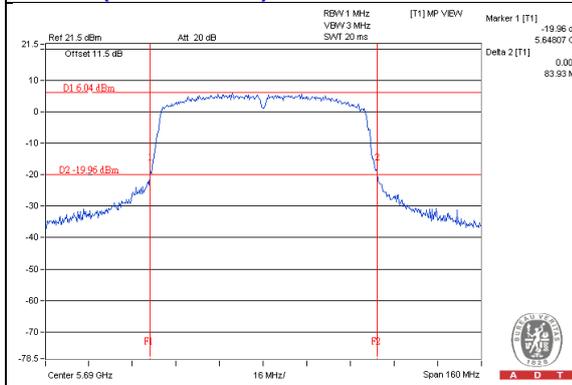
### Chain 1 / CH106



### Chain 1 / CH122



### Chain 1 / CH138 (UNII-2c Band) / Chain 1 / CH138 (UNII-3 Band)



**NOTE:**

For CH138 (UNII-2c Band) = 5725MHz - Marker 1

### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	16.22	15.81	79.986	19.03

Note: The total power was calculated through formula and record the value for reference only.

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## 6 Appendix A – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety Lab**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

## 7 Appendix B – Radiated Emission Measurement

### 7.1.1 Limits of Radiated Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

7.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Horn_Antenna AISI	AIH.8018	0000320091110	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiat ed_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Oct. 05, 2015

### 7.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

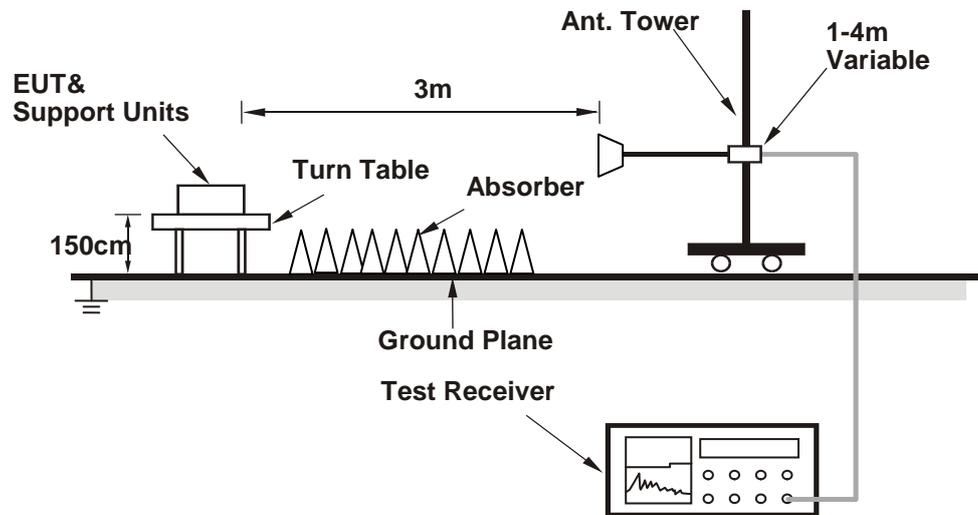
#### NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

### 7.1.4 Deviation from Test Standard

No deviation

### 7.1.5 Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

### 7.1.6 EUT Operating Conditions

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QRCT Version3.0.33.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

7.1.7 Test Results

802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 102	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	61.3 PK	74.0	-12.7	1.13 H	81	52.80	8.50
2	#5470.00	46.7 AV	54.0	-7.3	1.13 H	81	38.20	8.50

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	65.7 PK	74.0	-8.3	1.70 V	191	57.20	8.50
2	#5470.00	51.5 AV	54.0	-2.5	1.70 V	191	43.00	8.50

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5708.00	59.4 PK	68.2	-8.8	1.34 H	88	50.30	9.10

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5708.00	65.9 PK	68.2	-2.3	1.64 V	360	56.80	9.10

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 159	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5860.00	57.6 PK	74.0	-16.4	1.01 H	73	48.30	9.30
2	#5860.00	45.1 AV	54.0	-8.9	1.01 H	73	35.80	9.30

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5860.00	65.7 PK	74.0	-8.3	1.02 V	88	56.40	9.30
2	#5860.00	50.5 AV	54.0	-3.5	1.02 V	88	41.20	9.30

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 106	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.1 PK	74.0	-14.9	1.07 H	100	50.60	8.50
2	#5470.00	46.8 AV	54.0	-7.2	1.07 H	100	38.30	8.50

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	65.1 PK	74.0	-8.9	1.02 V	102	56.60	8.50
2	#5470.00	51.8 AV	54.0	-2.2	1.02 V	102	43.30	8.50

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 155	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5702.00	58.7 PK	68.2	-9.5	1.03 H	134	49.60	9.10

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5702.00	65.7 PK	68.2	-2.5	1.16 V	106	56.60	9.10

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

--- END ---

**8 Appendix C – Original Report No.: RF170816E06G-A-1 & RF170816E06G-A-4**

## FCC Test Report (WLAN)

**Report No.:** RF170816E06G-A-1

**FCC ID:** TK4WLT674

**Test Model:** WLT674

**Received Date:** Jan. 26, 2015

**Test Date:** Feb. 06 to 11, 2015

**Issued Date:** Aug. 30, 2018

**Applicant:** Compex Systems Pte. Ltd.

**Address:** No. 9 Harrison Road, #05-01 Singapore 369651

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.



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### Release Control Record

Issue No.	Description	Date Issued
RF170816E06G-A-1	Original release.	Aug. 30, 2018

## 1 Certificate of Conformity

**Product:** Wireless M.2 Type A/E with BLE Module

**Brand:** Compex

**Test Model:** WLT674

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Compex Systems Pte. Ltd.

**Test Date:** Feb. 06 to 11, 2015

**Standards:** 47 CFR FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.10:2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Mary Ko , **Date:** Aug. 30, 2018  
Mary Ko / Specialist

**Approved by :** May Chen , **Date:** Aug. 30, 2018  
May Chen / Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -15.40dB at 0.39547MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -4.8dB at 499.53MHz.
15.407(a)(1/2 /3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2 /3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

- NOTE:** 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz, 5.47~5.725GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in another test report.
2. The DFS report was recorded in another test report.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz for Chamber G	3.65 dB
	1GHz ~ 6GHz for Chamber H	3.72 dB
	6GHz ~ 18GHz for Chamber G	3.88 dB
	6GHz ~ 18GHz for Chamber H	4.00 dB
	18GHz ~ 40GHz	4.11 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT (WLAN)

Product	Wireless M.2 Type A/E with BLE Module
Brand	Compex
Test Model	WLT674
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc form host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.72GHz
	For 15.247 2.412 ~ 2.472GHz, 5.745 ~ 5.825GHz
Number of Channel	For 15.407 20 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 10 for 802.11n (HT40), 802.11ac (VHT40) 5 for 802.11ac (VHT80)
	For 15.247 (2.4GHz) 13 for 802.11b/g, 802.11n (HT20), VHT20 9 for 802.11n (HT40), VHT40 For 15.247 (5GHz) 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	For 15.407 802.11a: 106.283 mW 802.11ac (VHT20): 114.377mW 802.11ac (VHT40): 102.472mW 802.11ac (VHT80): 86.25mW For 15.247 (2.4GHz) 802.11b: 273.536mW 802.11g: 509.97mW VHT20: 503.893mW VHT40: 422.516mW For 15.247 (5GHz) 802.11a: 356.491mW 802.11ac (VHT20): 371.14mW 802.11ac (VHT40): 400.946mW 802.11ac (VHT80): 568.929mW
Antenna Type	See item 3.2
Antenna Connector	See item 3.2
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This is a duplicate report according to Qualcomm Atheros, Inc. authority letter.( FCC ID : PPD-QCNFA364AH )
2. There are Bluetooth technology and WLAN technology used for the EUT.
3. The EUT incorporates a 2T2R function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
VHT40	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.3.1)

4. The EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
<b>Mode B</b>	<b>800ns GI</b>

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

5. WLAN/BT coexistence mode:

- ◆ 2x2 WLAN + BT:
  - 5GHz 802.11a/an (or 11ac) transmit concurrent with BT.
  - 2.4GHz: timely shared coexistence.

6. The emission (conducted & radiated emission) of the simultaneous operation (WiFi <5GHz> & Bluetooth) have been evaluated and no non-compliance found. The detail combinations of transmitters / frequencies / modes as below table

Mode	Available Channel	Tested Channel	Modulation Technology
5 GHz (802.11ac (VHT40))	38 to 159	159	OFDM
+ Bluetooth (LE)	0 to 39	0	GFSK

7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Antenna

The antenna gain was declared by client; please refer to the following table:

Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		

Note: 1. Above antenna gains of antenna are Total (H+V).

### 3.3 Description of Test Modes

#### FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11ac (VHT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11ac (VHT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

#### FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11ac (VHT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11ac (VHT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

**FOR 5500 ~ 5720MHz**

12 channels are provided for 802.11a, 802.11ac (VHT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11ac (VHT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610 MHz		

Note : The listed channels in the DFS band (5250~5350MHz and 5470~5725MHz) are passive scan only.

### 3.3.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	UE $\geq$ 1G	UE<1G	PLC	APCM	
-	√	√	√	√	-

Where **UE $\geq$ 1G**: Unwanted Emission above 1GHz      **UE<1G**: Unwanted Emission below 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

#### Unwanted Emission Test (Above 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5
802.11ac (VHT80)		42	42	OFDM	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
802.11ac (VHT80)		58	58	OFDM	29.3
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	6.5
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

#### Unwanted Emission Test (Below 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	60	OFDM	6.5

**Power Line Conducted Emission Test:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	60	OFDM	6.5

**Antenna Port Conducted Measurement:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5
802.11ac (VHT80)		42	42	OFDM	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
802.11ac (VHT80)		58	58	OFDM	29.3
802.11a	5500-5720	100 to 144	100, 120, 140, 144	OFDM	6
802.11ac (VHT20)		100 to 144	100, 120, 140, 144	OFDM	6.5
802.11ac (VHT40)		102 to 142	102, 118, 134, 142	OFDM	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5
802.11ac (VHT80)		155	155	OFDM	29.3

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
<b>UE≥1G</b>	22deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
	24deg. C, 67%RH	120Vac, 60Hz	Gary Cheng
<b>UE&lt;1G</b>	24deg. C, 68%RH	120Vac, 60Hz	Tim Ho
<b>PLC</b>	20deg. C, 60%RH	120Vac, 60Hz	Barry Lee
<b>APCM</b>	15deg. C, 57%RH	120Vac, 60Hz	Anderson Chen

### 3.4 Duty Cycle of Test Signal

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

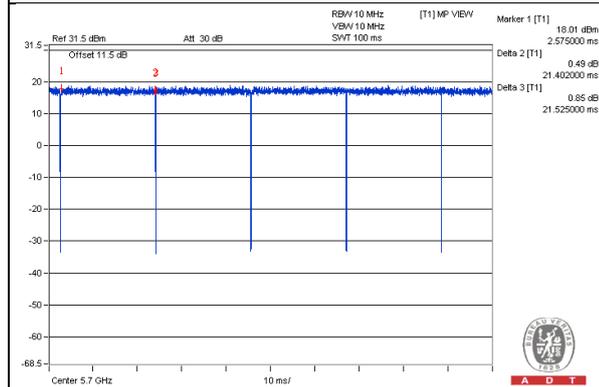
**802.11a:** Duty cycle = 21.402 ms/21.525 ms = 0.994

**802.11ac (VHT20):** Duty cycle = 19.80 ms/20.025 ms = 0.989

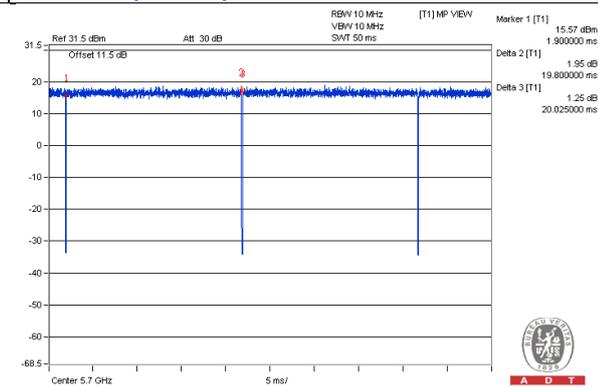
**802.11ac (VHT40):** Duty cycle = 9.535 ms/9.65 ms = 0.988

**802.11ac (VHT80):** Duty cycle = 4.450 ms/4.565 ms = 0.975, Duty factor =  $10 * \log(1/0.975) = 0.11$

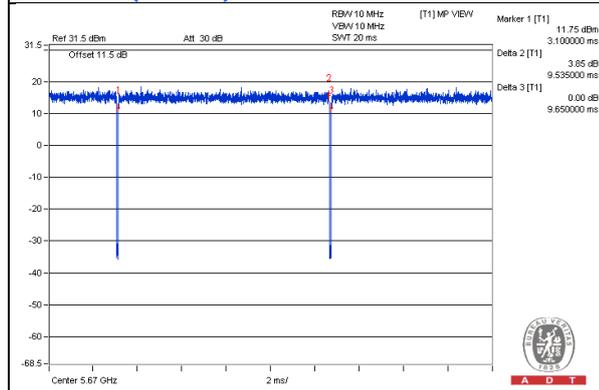
**802.11a**



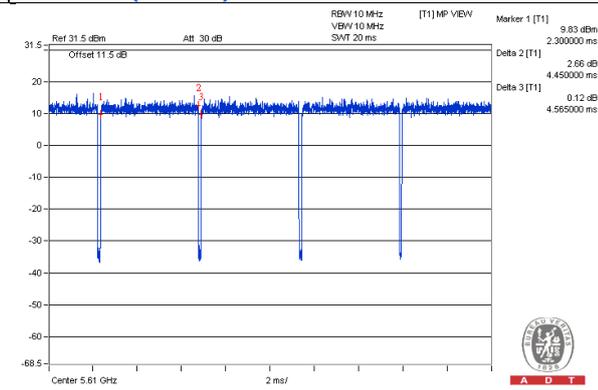
**802.11ac (VHT20)**



**802.11ac (VHT40)**



**802.11ac (VHT80)**



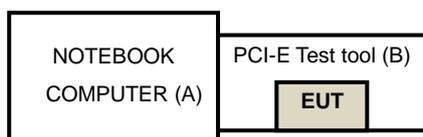
### 3.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B	PCI-E Test tool	Qualcomm Atheros	NA	NA	NA	Supplied by Client

**NOTE:** All power cords of the above support units are non-shielded (1.8 m).

#### 3.5.1 Configuration of System under Test



### 3.6 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**

**789033 D02 General UNII Test Procedures New Rules v01**

**662911 D01 Multiple Transmitter Output v02r01**

**644545 D03 Guidance for IEEE 802.11ac v01**

ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Transmit Power Measurement

#### 4.1.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3			1 Watt (30 dBm)

Note: \*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

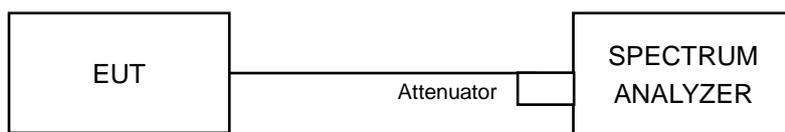
Array Gain =  $5 \log(N_{ANT}/N_{SS})$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $N_{ANT} \geq 5$ .

For power measurements on all other devices: Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB.

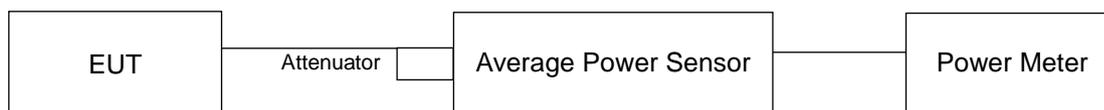
#### 4.1.2 Test Setup

##### FOR POWER OUTPUT MEASUREMENT

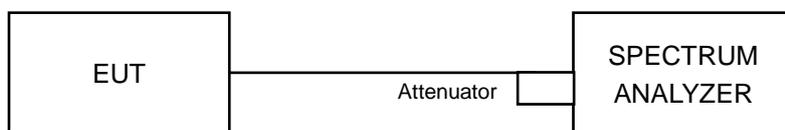
For channel straddling 5725MHz:



For other channels:



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.1.3 Test Instruments

##### FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

For other channels:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Feb. 09, 2015

##### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

#### 4.1.4 Test Procedures

##### FOR AVERAGE POWER MEASUREMENT

##### For channel straddling 5725MHz:

Follow FCC KDB 789033 UNII test procedure:

##### 802.11ac (VHT80)

Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

##### Other Modulation mode

Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle  $\geq 98$  percent) ; Set video trigger (duty cycle < 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

##### For other channels:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

##### FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.1.5 Deviation from Test Standard

No deviation.

#### 4.1.6 EUT Operating Conditions

The software (QCART Version: 3.0.33.0) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.1.7 Test Results

##### 802.11a

##### POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.53	16.51	101.395	20.06	23.91	Pass
40	5200	17.51	16.59	101.968	20.08	23.91	Pass
48	5240	17.69	16.77	106.283	20.26	23.91	Pass
52	5260	17.28	16.61	99.27	19.97	23.91	Pass
60	5300	17.35	16.49	98.891	19.95	23.91	Pass
64	5320	15.72	14.66	66.567	18.23	23.81	Pass
100	5500	15.40	14.16	60.736	17.83	22.07	Pass
120	5600	17.22	16.23	94.699	19.76	22.15	Pass
140	5700	14.63	14.05	54.45	17.36	22.11	Pass
*144 (UNII-2c Band)	5720	12.95	12.51	37.548	15.75	21.25	Pass
*144 (UNII-3 Band)	5720	5.79	5.22	7.12	8.52	28.23	Pass

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*144	5720	44.668	16.50

Note: The total power was calculated through formula and record the value for reference only.

Note:

- 5150~5250MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to  $24-(6.09-6)$ .
- 5250~5350MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(6.09-6)".
- 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

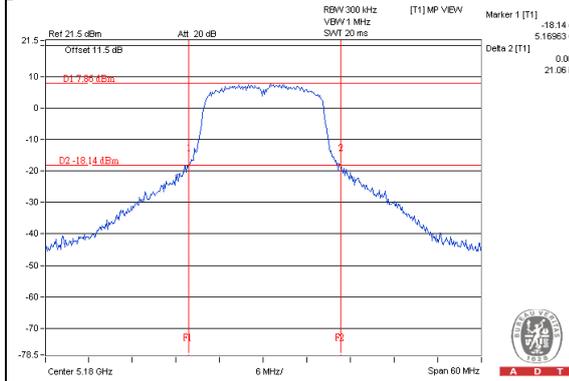
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.06	20.13
40	5200	21.85	20.11
48	5240	20.63	20.64
52	5260	20.27	20.71
60	5300	20.46	20.96
64	5320	19.85	19.52
100	5500	20.05	19.25
120	5600	21.33	19.60
140	5700	19.69	19.43
144 (UNII-2c Band)	5720	16.49	15.93

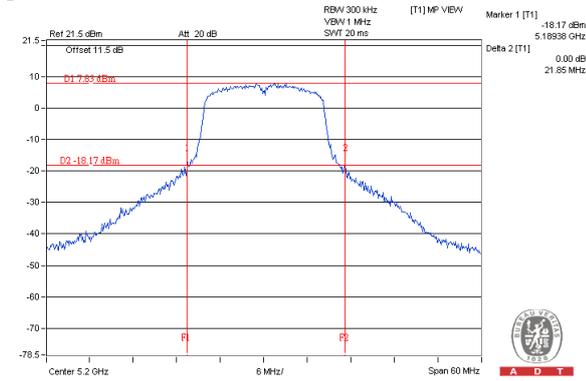
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.27	24.06 > 24
60	5300	20.46	24.1 > 24
64	5320	19.52	23.9 < 24
100	5500	19.25	23.84 < 24
120	5600	19.60	23.92 < 24
140	5700	19.43	23.88 < 24
144 (UNII-2c Band)	5720	15.93	23.02 < 24

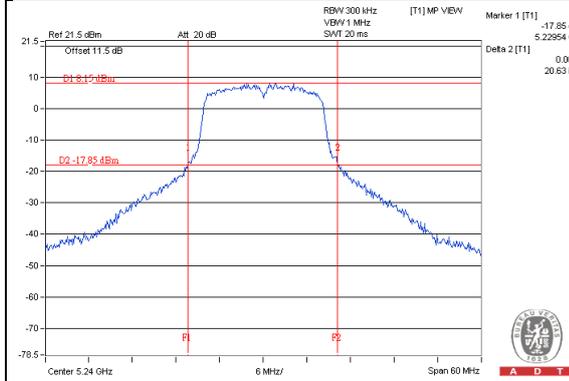
### Chain 0 / CH36



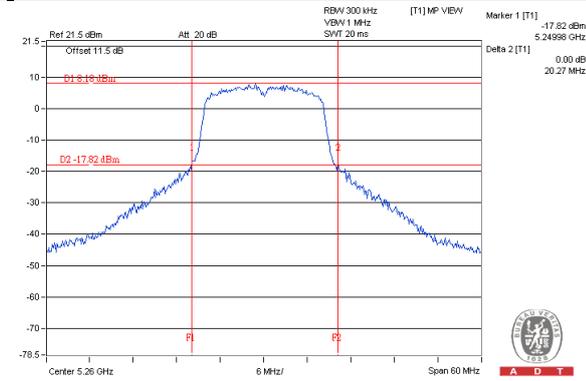
### Chain 0 / CH40



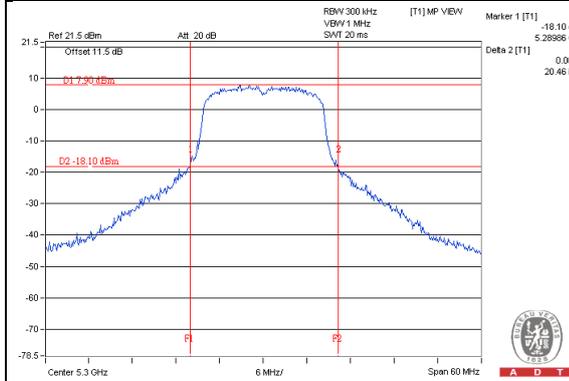
### Chain 0 / CH48



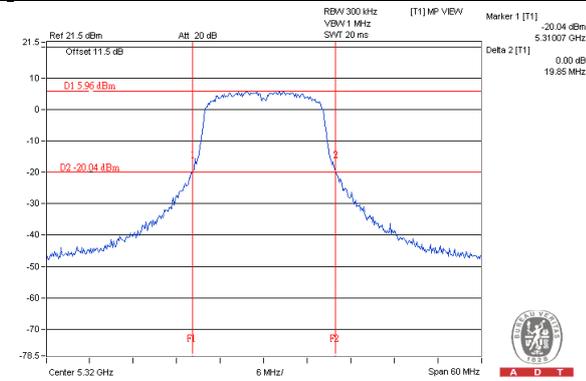
### Chain 0 / CH52



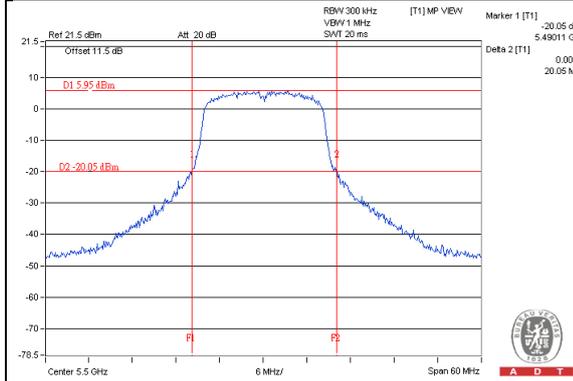
### Chain 0 / CH60



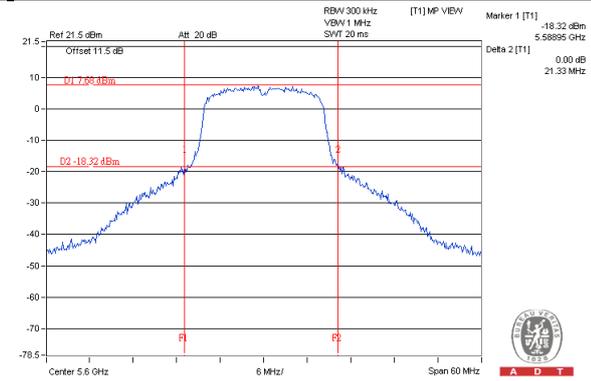
### Chain 0 / CH64



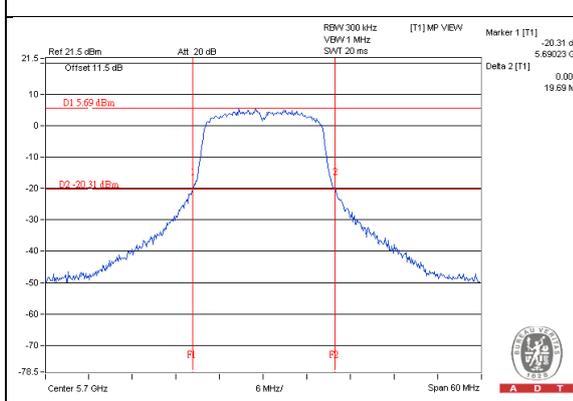
### Chain 0 / CH100



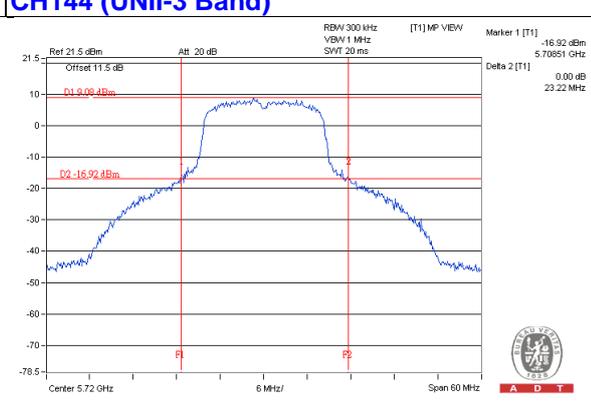
### Chain 0 / CH120



### Chain 0 / CH140



### Chain 0 / CH144 (UNII-2c Band) / Chain 0 / CH144 (UNII-3 Band)

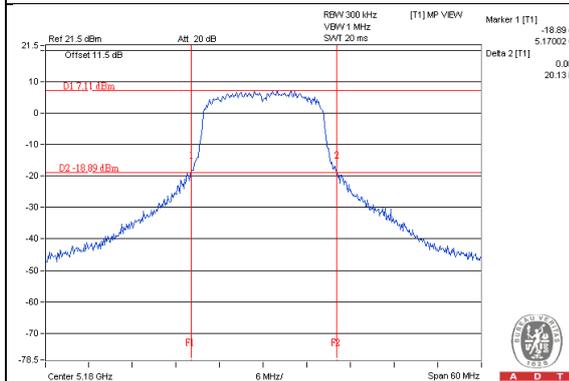


**NOTE:**

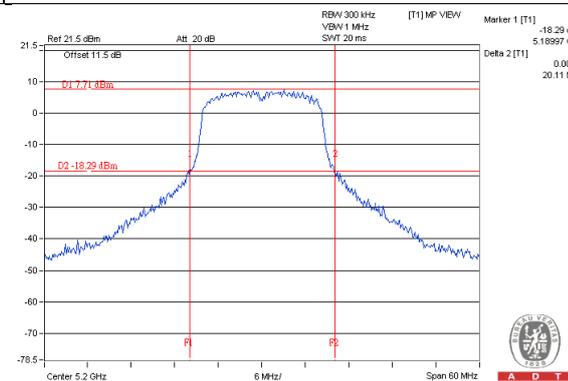
For CH144 (UNII-2c Band) = 5725MHz - Marker 1



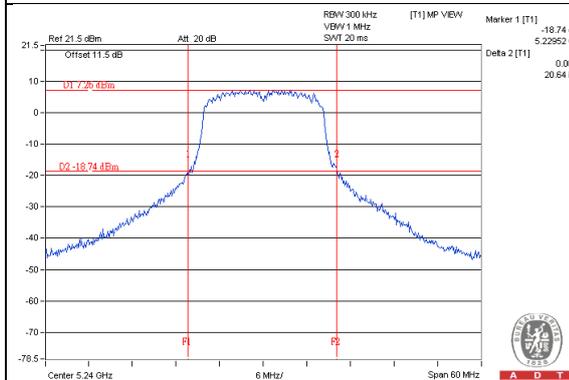
### Chain 1 / CH36



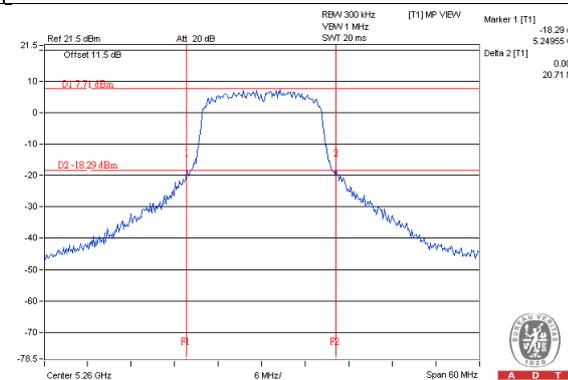
### Chain 1 / CH40



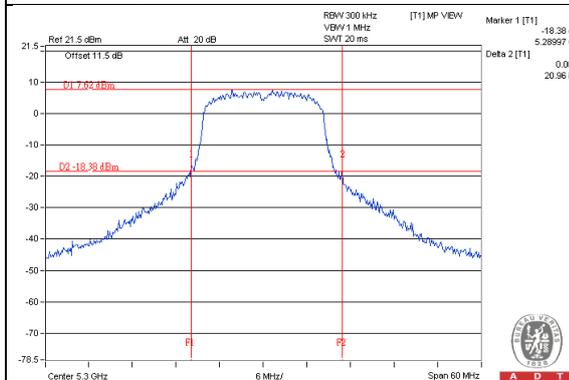
### Chain 1 / CH48



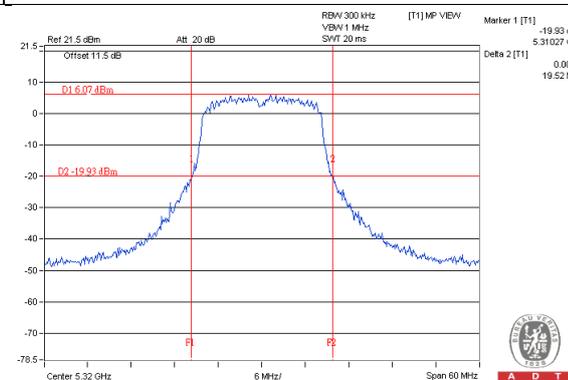
### Chain 1 / CH52



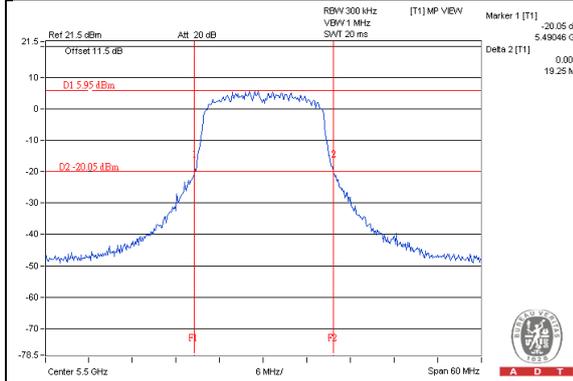
### Chain 1 / CH60



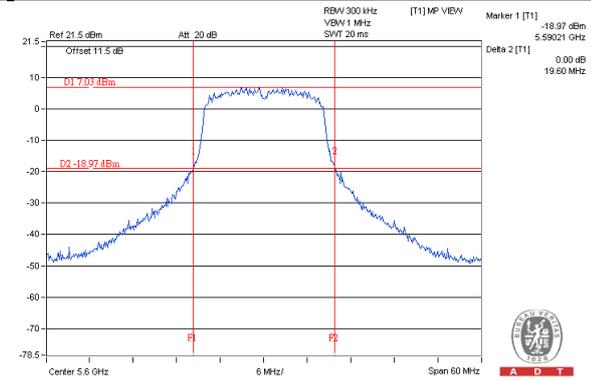
### Chain 1 / CH64



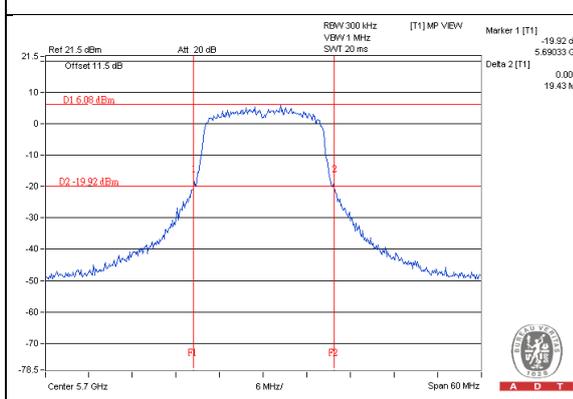
### Chain 1 / CH100



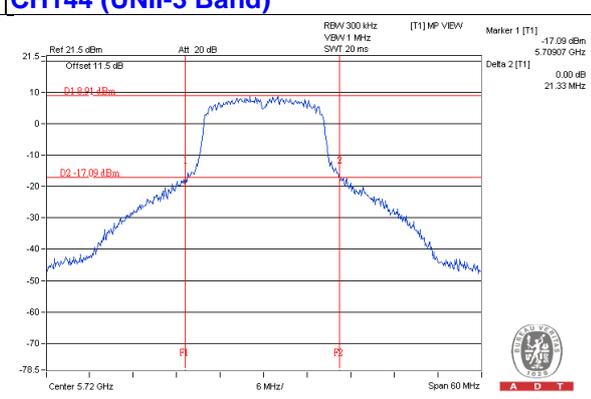
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)



**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1



### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.89	17.40	116.472	20.66

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT20)**

**POWER OUTPUT**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.14	17.02	102.111	20.09	23.91	Pass
40	5200	17.85	17.11	112.358	20.51	23.91	Pass
48	5240	17.83	17.30	114.377	20.58	23.91	Pass
52	5260	17.77	17.16	111.841	20.49	23.91	Pass
60	5300	17.88	17.14	113.137	20.54	23.91	Pass
64	5320	15.33	14.42	61.788	17.91	23.91	Pass
100	5500	15.89	14.95	70.076	18.46	22.23	Pass
120	5600	17.62	16.61	103.624	20.15	22.23	Pass
140	5700	14.47	13.91	52.594	17.21	22.23	Pass
*144 (UNII-2c Band)	5720	12.72	12.37	35.965	15.56	21.24	Pass
*144 (UNII-3 Band)	5720	5.93	5.44	7.416	8.70	28.23	Pass

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*144	5720	43.381	16.37

Note: The total power was calculated through formula and record the value for reference only.

Note:

- 5150~5250MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to  $24-(6.09-6)$ .
- 5250~5350MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(6.09-6)".
- 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

### 26dB OCCUPIED BANDWIDTH

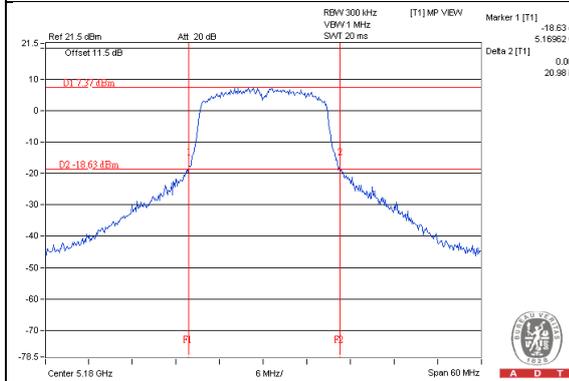
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	20.98	20.92
40	5200	21.77	22.04
48	5240	21.90	21.74
52	5260	22.72	21.34
60	5300	22.08	21.41
64	5320	20.51	20.20
100	5500	21.34	20.30
120	5600	23.58	20.85
140	5700	20.61	20.71
144 (UNII-2c Band)	5720	17.73	15.90

**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

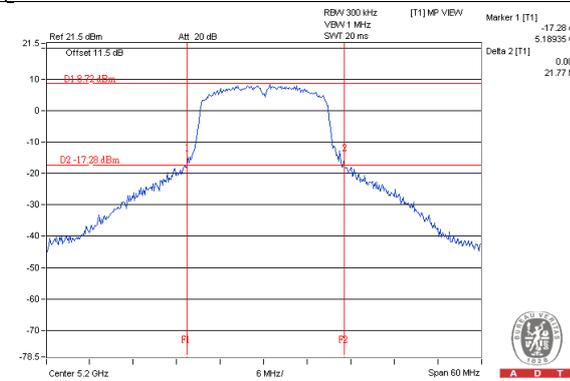
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.34	24.29 > 24
60	5300	21.41	24.3 > 24
64	5320	20.20	24.05 > 24
100	5500	20.30	24.07 > 24
120	5600	20.85	24.19 > 24
140	5700	20.61	24.14 > 24
144 (UNII-2c Band)	5720	15.90	23.01 < 24



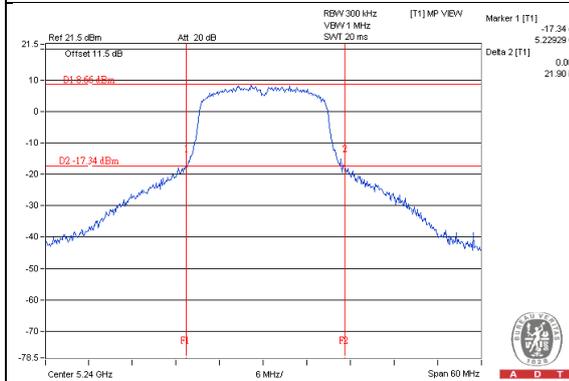
### Chain 0 / CH36



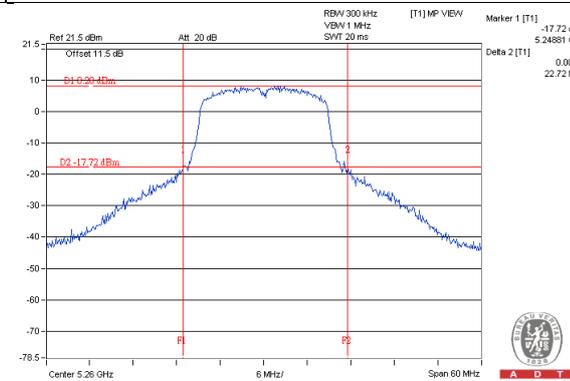
### Chain 0 / CH40



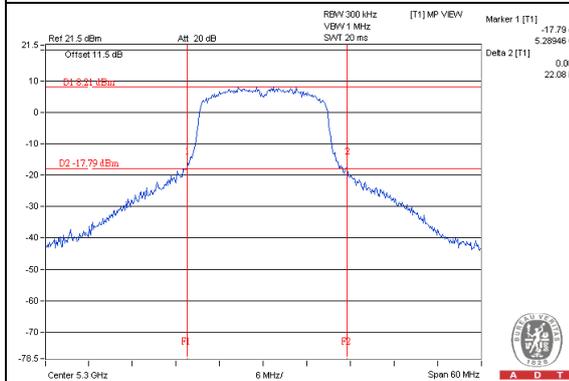
### Chain 0 / CH48



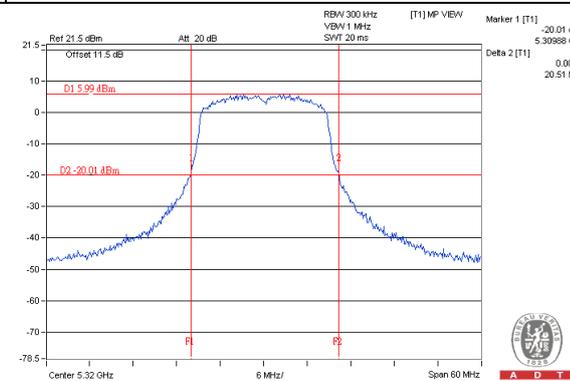
### Chain 0 / CH52



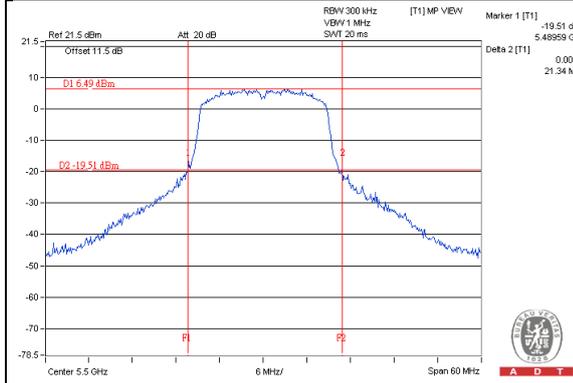
### Chain 0 / CH60



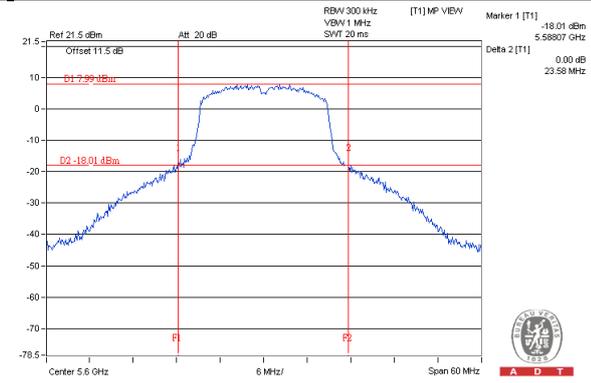
### Chain 0 / CH64



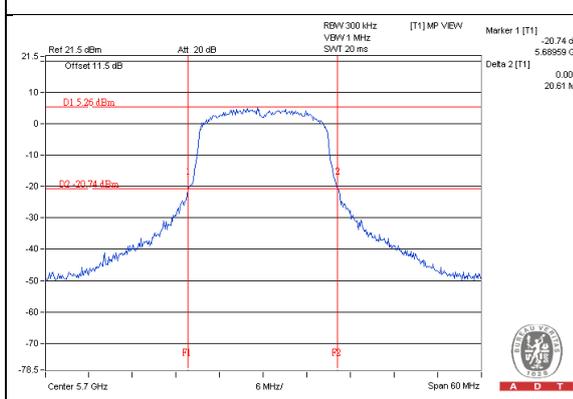
### Chain 0 / CH100



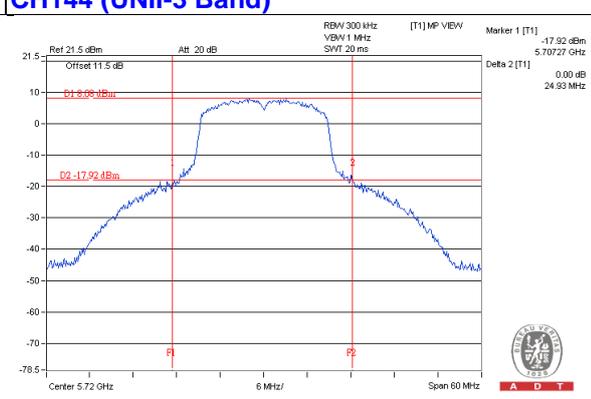
### Chain 0 / CH120



### Chain 0 / CH140



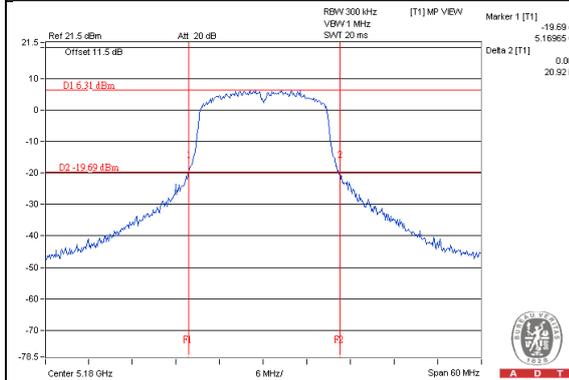
### Chain 0 / CH144 (UNII-2c Band) / Chain 0 / CH144 (UNII-3 Band)



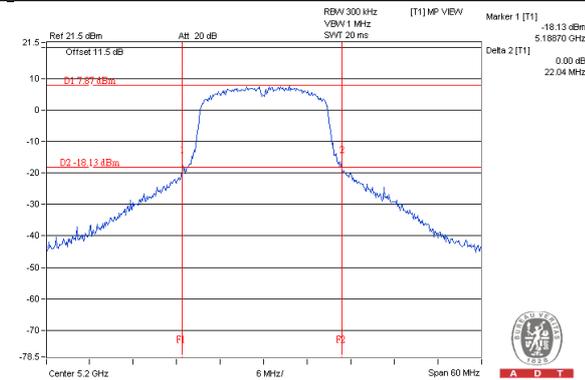
**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1

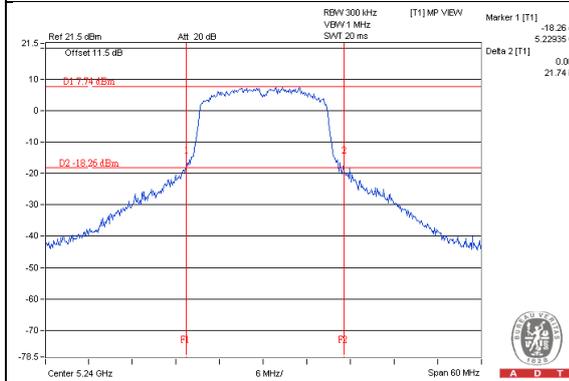
### Chain 1 / CH36



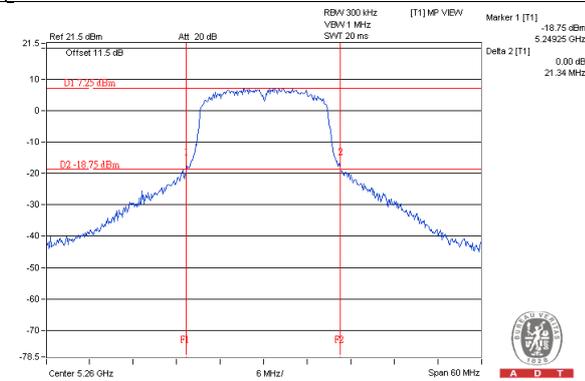
### Chain 1 / CH40



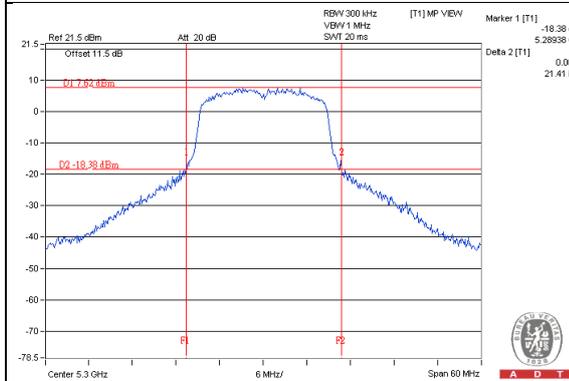
### Chain 1 / CH48



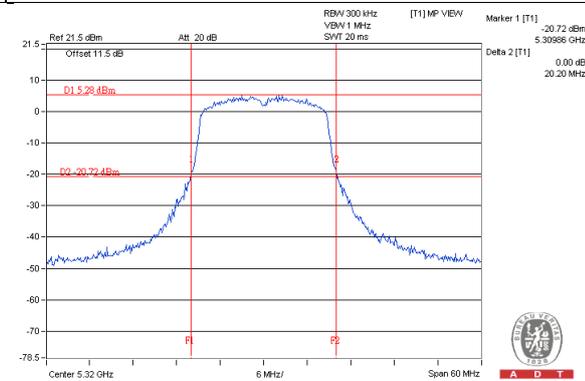
### Chain 1 / CH52



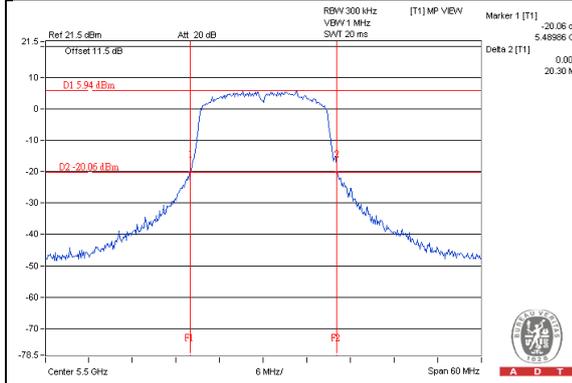
### Chain 1 / CH60



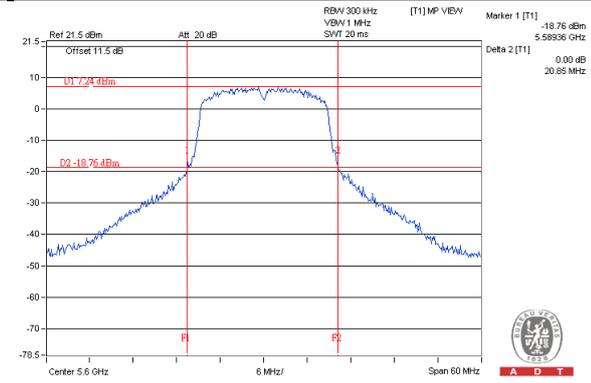
### Chain 1 / CH64



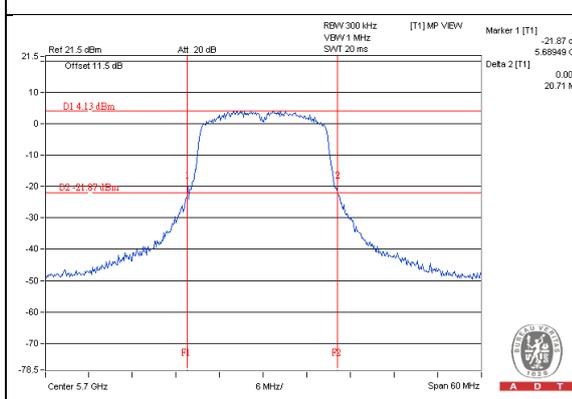
### Chain 1 / CH100



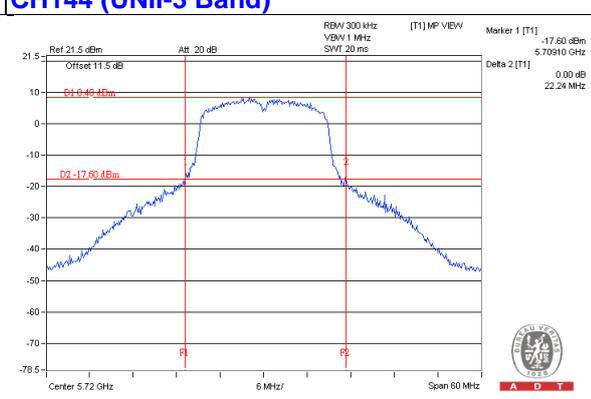
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)



**NOTE:**

For CH144 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.98	17.28	116.262	20.65

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT40)**
**POWER OUTPUT**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.35	13.25	48.362	16.85	23.91	Pass
46	5230	17.21	16.34	95.655	19.81	23.91	Pass
54	5270	17.24	16.38	96.417	19.84	23.91	Pass
62	5310	15.21	14.37	60.542	17.82	23.91	Pass
102	5510	15.15	14.99	64.284	18.08	22.23	Pass
118	5590	17.50	16.65	102.472	20.11	22.23	Pass
134	5670	17.10	16.75	98.601	19.94	22.23	Pass
*142 (UNII-2c Band)	5710	12.88	12.78	38.376	15.84	22.23	Pass
*142 (UNII-3 Band)	5710	0.93	0.07	2.255	3.53	28.23	Pass

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*142	5710	40.631	16.09

Note: The total power was calculated through formula and record the value for reference only.

Note:

5150~5250MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power limit shall be reduced to 24-(6.09-6).

5250~5350MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power limit shall be reduced to "Determined Conducted Limit-(6.09-6)".

5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dBi , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

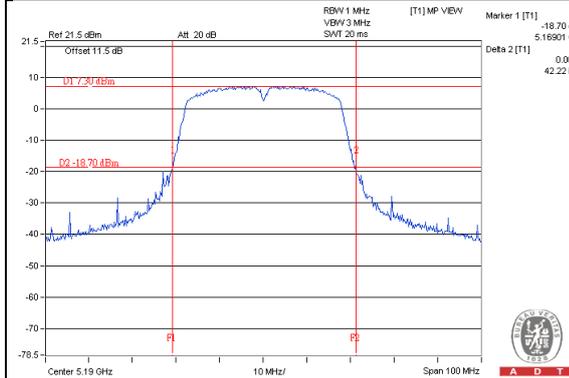
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	42.22	42.05
46	5230	43.06	42.01
54	5270	43.34	42.44
62	5310	42.02	41.70
102	5510	42.20	41.64
118	5590	48.56	42.60
134	5670	42.99	42.37
142 (UNII-2c Band)	5710	40.20	36.74

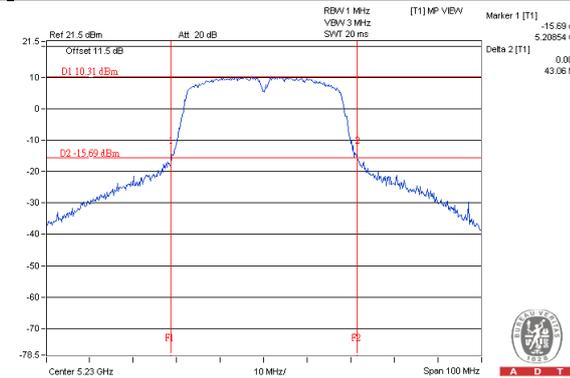
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	42.44	27.27 > 24
62	5310	41.70	27.2 > 24
102	5510	41.64	27.19 > 24
110	5550	42.60	27.29 > 24
134	5670	42.37	27.27 > 24
142 (UNII-2c Band)	5710	36.74	26.65 > 24

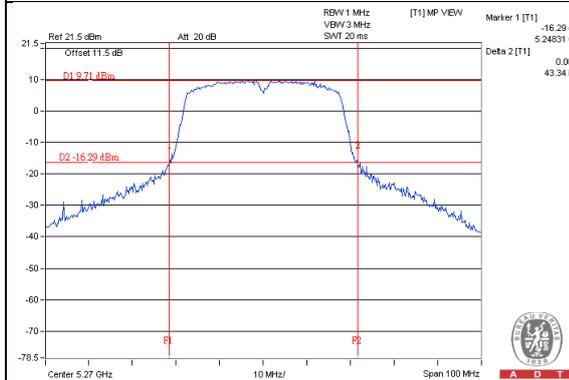
**Chain 0 / CH38**



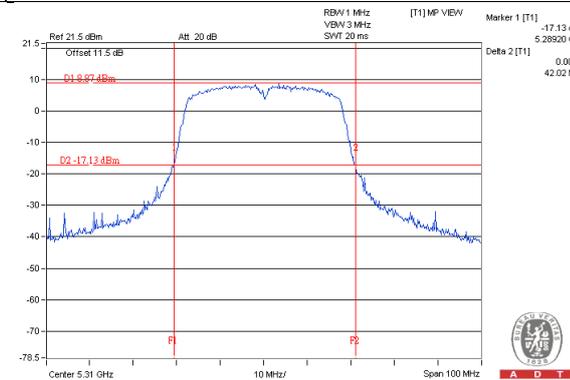
**Chain 0 / CH46**



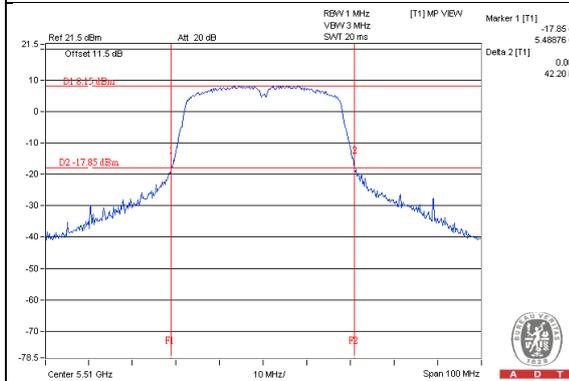
**Chain 0 / CH54**



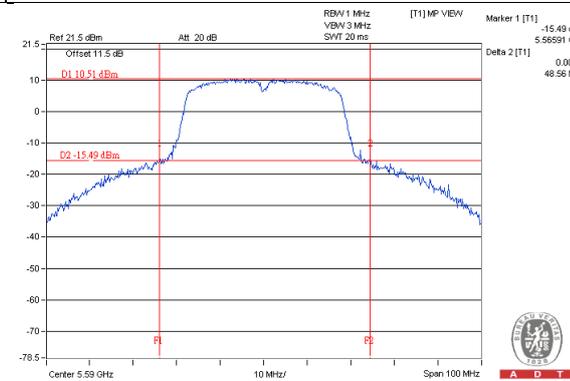
**Chain 0 / CH62**



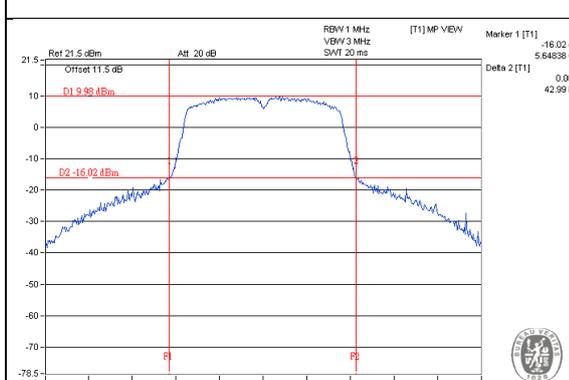
**Chain 0 / CH102**



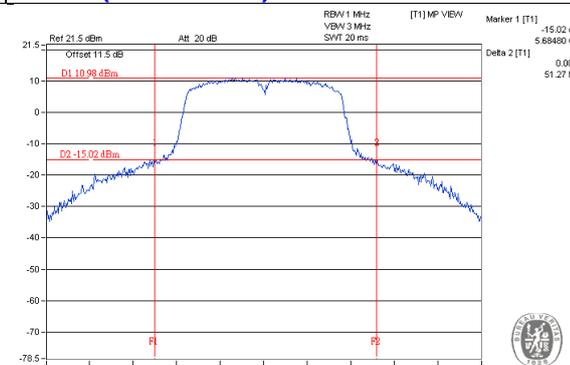
**Chain 0 / CH118**



**Chain 0 / CH134**



**Chain 0 / CH142 (UNII-2c Band) / Chain 0 / CH142 (UNII-3 Band)**

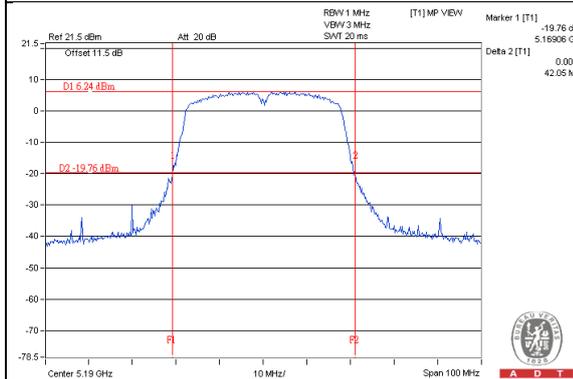


**NOTE:**

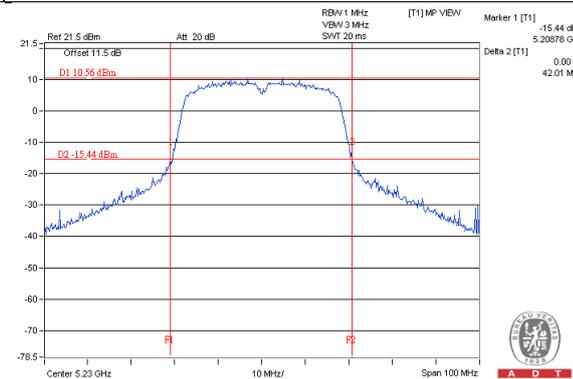
For CH142 (UNII-2c Band) = 5725MHz - Marker 1



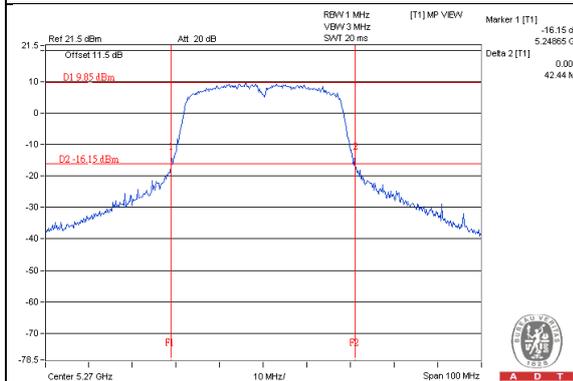
### Chain 1 / CH38



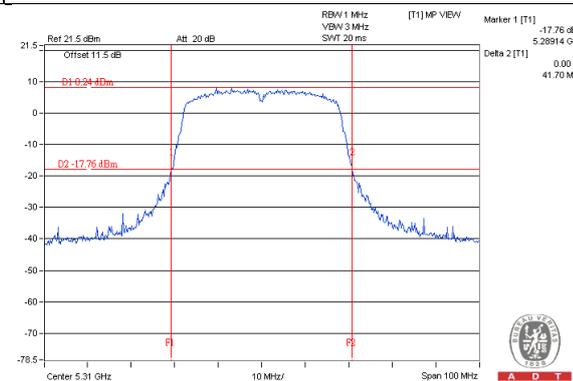
### Chain 1 / CH46



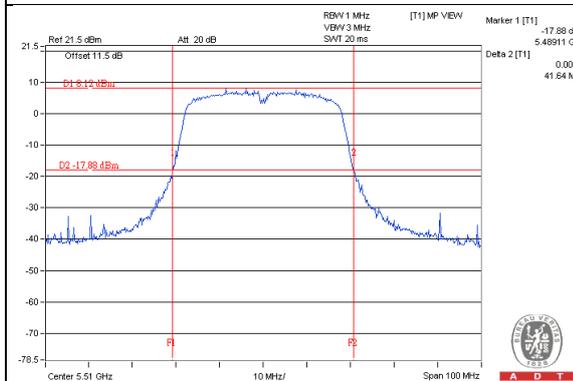
### Chain 1 / CH54



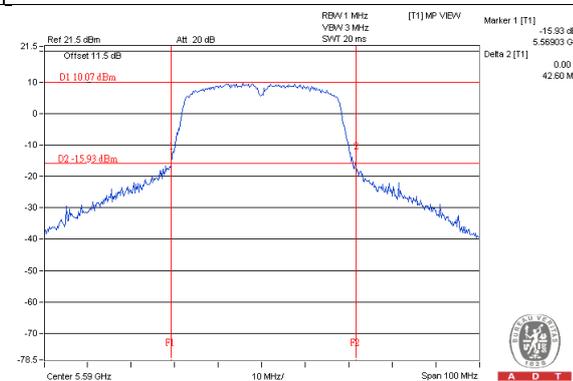
### Chain 1 / CH62



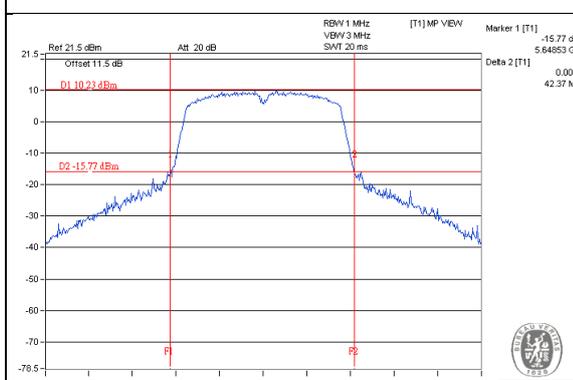
### Chain 1 / CH102



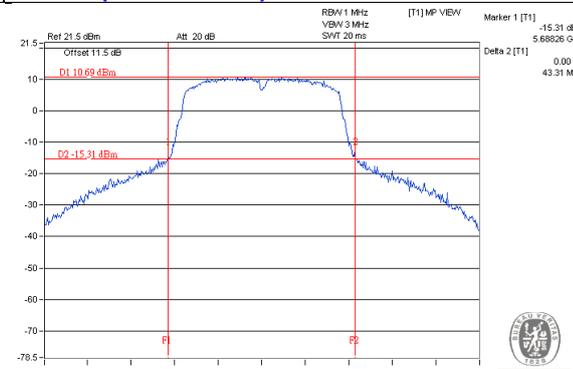
### Chain 1 / CH118



### Chain 1 / CH134



### Chain 1 / CH142 (UNII-2c Band) / Chain 1 / CH142 (UNII-3 Band)



#### NOTE:

For CH142 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	17.88	17.23	114.221	20.58

Note: The total power was calculated through formula and record the value for reference only.

## 802.11ac (VHT80)

### POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.71	12.52	41.361	16.17	23.91	Pass
58	5290	12.16	11.60	30.898	14.90	23.91	Pass
106	5530	12.53	12.06	33.975	15.31	22.23	Pass
122	5610	16.88	15.74	86.25	19.36	22.23	Pass
*138 (UNII-2c Band)	5690	11.16	10.78	25.671	14.09	22.23	Pass
*138 (UNII-3 Band)	5690	-4.53	-5.79	0.632	-1.99	28.23	Pass

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	26.303	14.20

Note: The total power was calculated through formula and record the value for reference only.

Note:

5150~5250MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to  $24-(6.09-6)$ .

5250~5350MHz: Directional gain =  $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(6.09-6)".

5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

For CH138: Total power (dBm)= Average power <Chain 0 +1>(dBm) + Duty Factor (0.11dB)

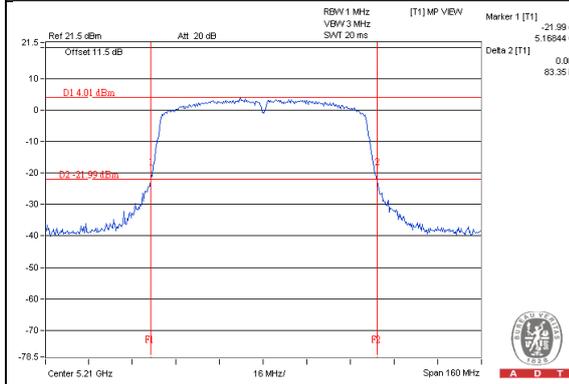
### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.35	82.53
58	5290	83.22	83.86
106	5530	83.39	82.55
122	5610	92.36	83.58
138 (UNII-2c Band)	5690	77.98	76.93

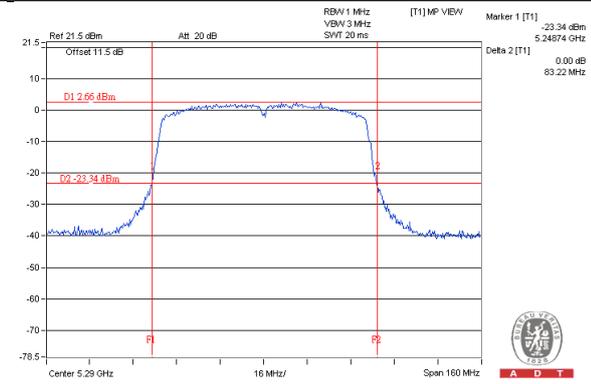
**Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth**

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.22	30.2 > 24
106	5530	82.55	30.16 > 24
122	5610	83.58	30.22 > 24
138 (UNII-2c Band)	5690	76.93	29.86 > 24

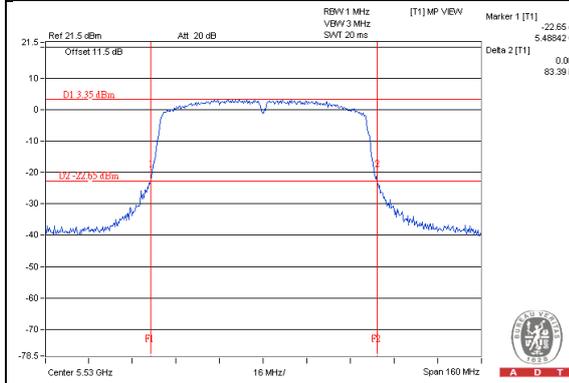
### Chain 0 / CH42



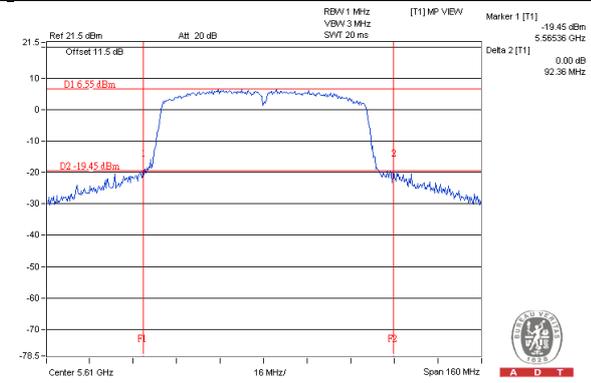
### Chain 0 / CH58



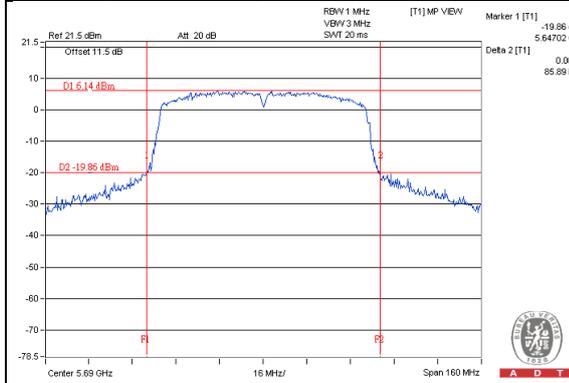
### Chain 0 / CH106



### Chain 0 / CH122



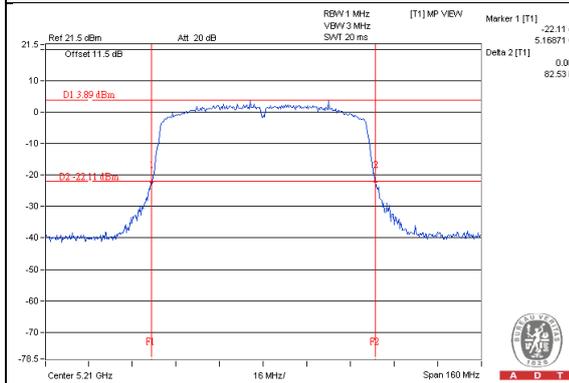
### Chain 0 / CH138 (UNII-2c Band) / Chain 0 / CH138 (UNII-3 Band)



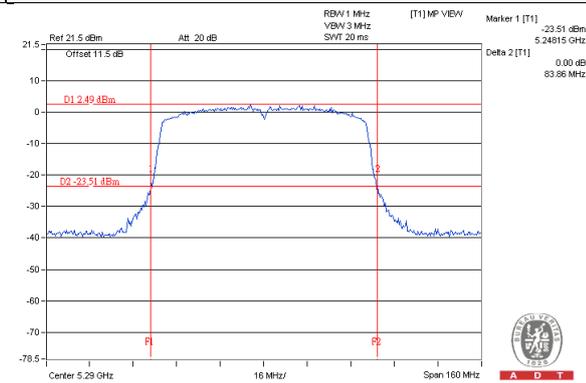
**NOTE:**

For CH138 (UNII-2c Band) = 5725MHz - Marker 1

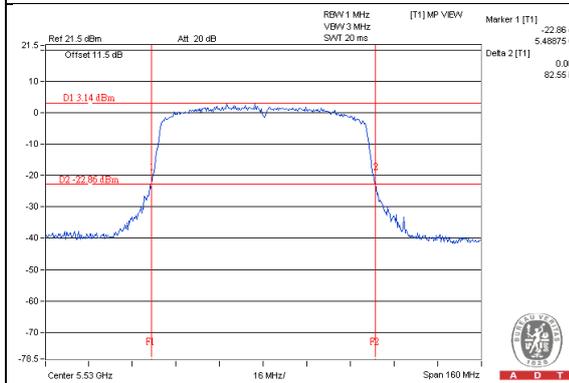
### Chain 1 / CH42



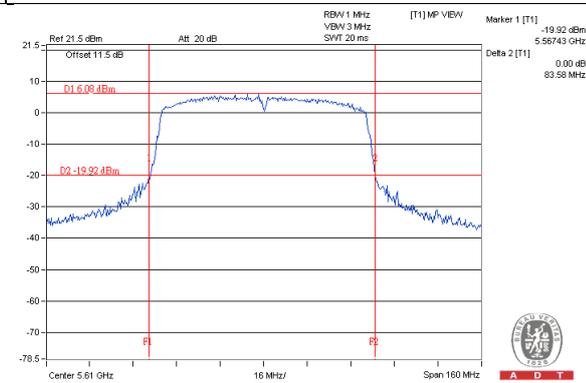
### Chain 1 / CH58



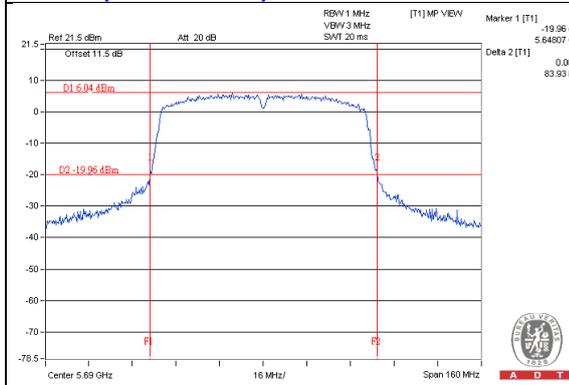
### Chain 1 / CH106



### Chain 1 / CH122



### Chain 1 / CH138 (UNII-2c Band) / Chain 1 / CH138 (UNII-3 Band)



**NOTE:**

For CH138 (UNII-2c Band) = 5725MHz - Marker 1



**For Reference only – Power meter value**

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	16.37	15.93	82.525	19.17

Note: The total power was calculated through formula and record the value for reference only.

## 4.2 Peak Power Spectral Density Measurement

### 4.2.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A		√	11dBm/ MHz
U-NII-2C		√	11dBm/ MHz
U-NII-3			30dBm/ 500kHz

### 4.2.2 Test Setup



### 4.2.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

#### 4.2.4 Test Procedures

##### For U-NII-1, U-NII-2A & U-NII-2C:

- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
- c. Sweep time = auto, trigger set to "free run".
- d. Trace average at least 100 traces in power averaging mode.
- e. Record the max value and for duty cycle of test signal is  $<$  98% add 10 log (1/duty cycle)
- f. Record the max value

##### For U-NII-3:

- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 300 kHz, Set VBW  $\geq$  1 MHz, Detector = RMS
- c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
- e. Sweep time = auto, trigger set to "free run".
- f. Trace average at least 100 traces in power averaging mode.
- g. Record the max value and for duty cycle of test signal is  $<$  98% add 10 log (1/duty cycle)

#### 4.2.5 Deviation from Test Standard

No deviation.

#### 4.2.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.2.7 Test Results

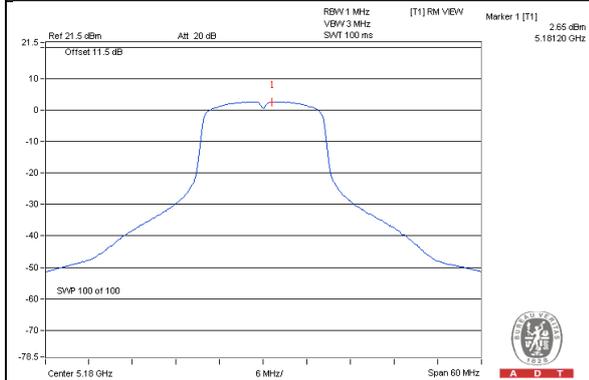
For U-NII-1, U-NII-2A & U-NII-2C:

##### 802.11a

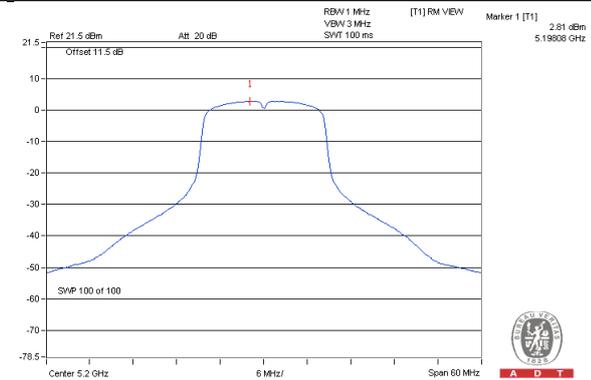
Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
36	5180	2.62	1.69	5.19	10.91	Pass
40	5200	2.80	1.85	5.36	10.91	Pass
48	5240	2.65	1.80	5.26	10.91	Pass
52	5260	2.39	1.65	5.05	10.91	Pass
60	5300	2.49	1.70	5.12	10.91	Pass
64	5320	0.95	0.05	3.53	10.91	Pass
100	5500	0.83	-0.46	3.24	9.23	Pass
120	5600	2.24	0.99	4.67	9.23	Pass
140	5700	-0.01	-0.73	2.66	9.23	Pass
144 (UNII-2c Band)	5720	3.30	2.99	6.16	9.23	Pass

- NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5150~5250MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
3. 5250~5350MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi, so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
4. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.

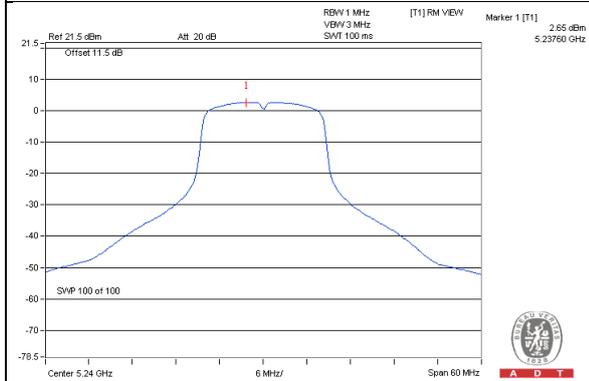
**Chain 0 / CH36**



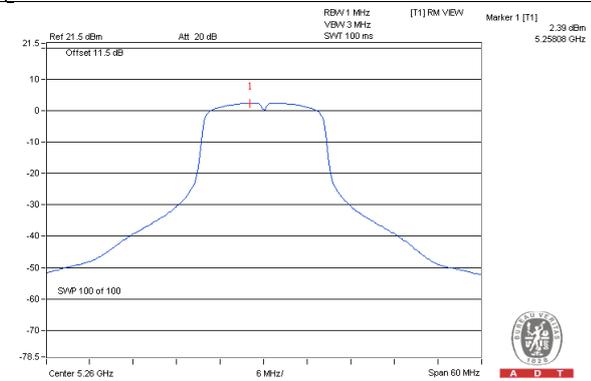
**Chain 0 / CH40**



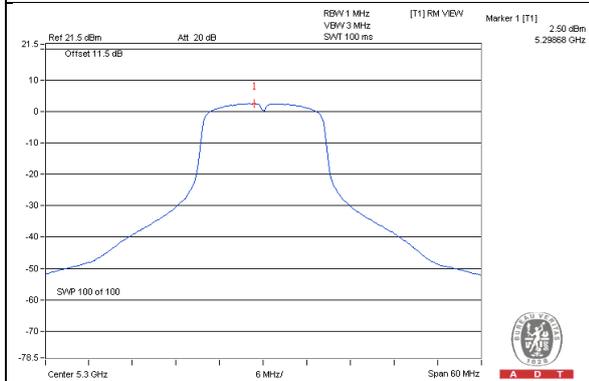
**Chain 0 / CH48**



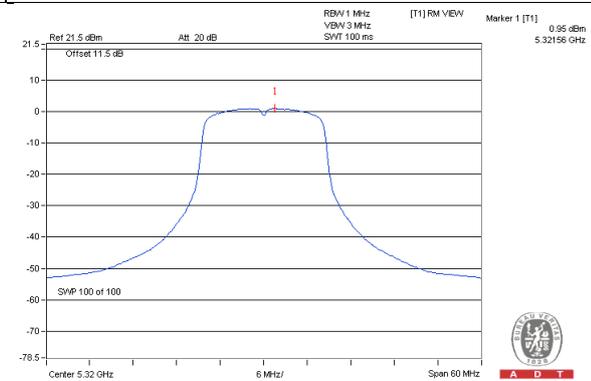
**Chain 0 / CH52**



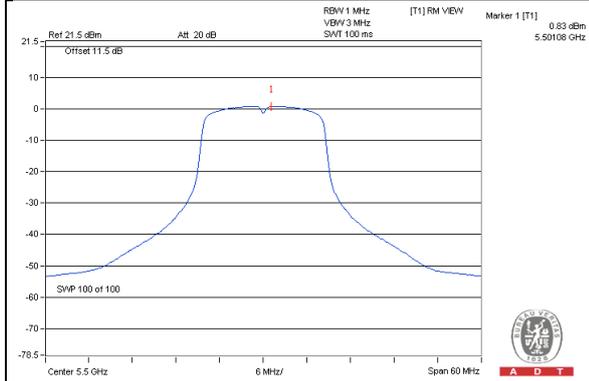
**Chain 0 / CH60**



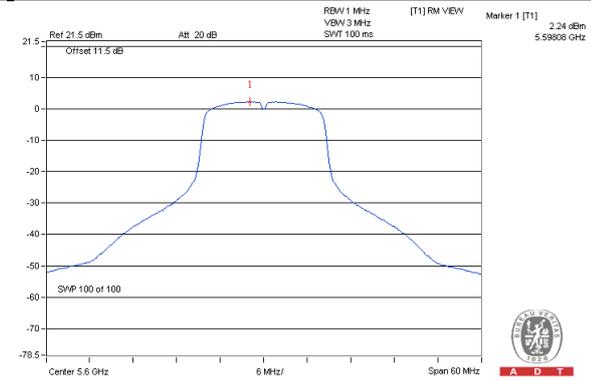
**Chain 0 / CH64**



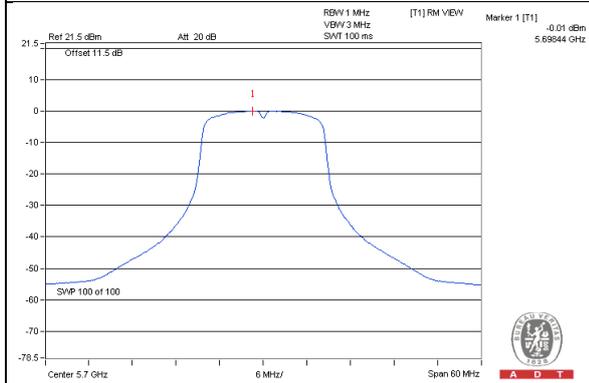
### Chain 0 / CH100



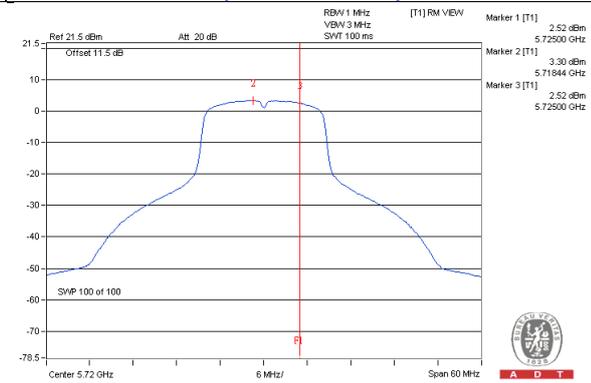
### Chain 0 / CH120



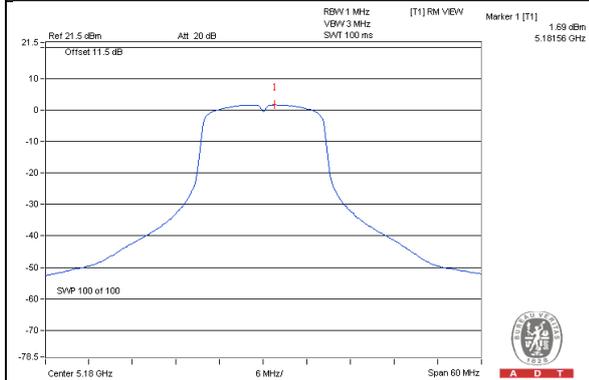
### Chain 0 / CH140



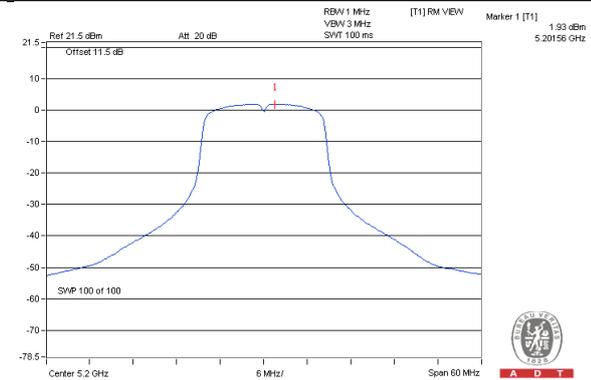
### Chain 0 / CH144 (UNII-2c Band)



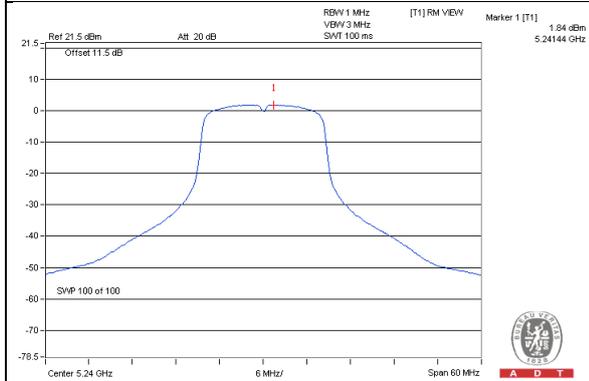
**Chain 1 / CH36**



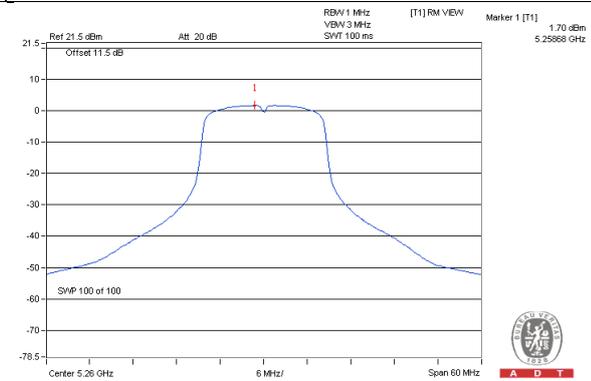
**Chain 1 / CH40**



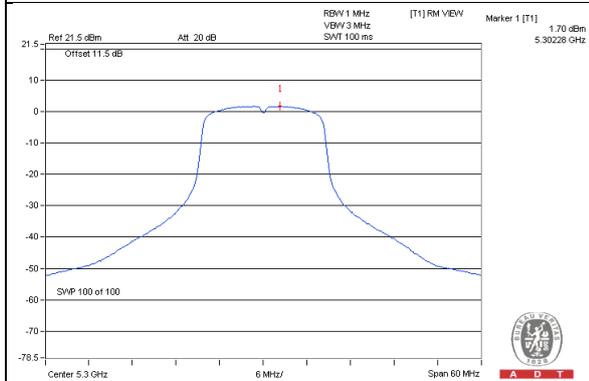
**Chain 1 / CH48**



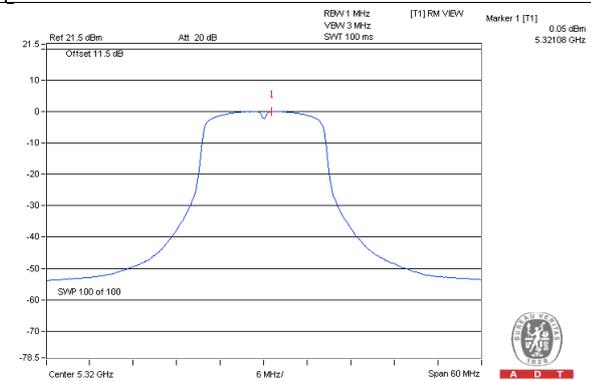
**Chain 1 / CH52**



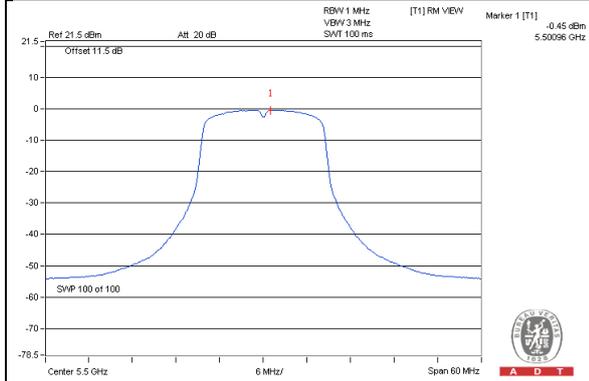
**Chain 1 / CH60**



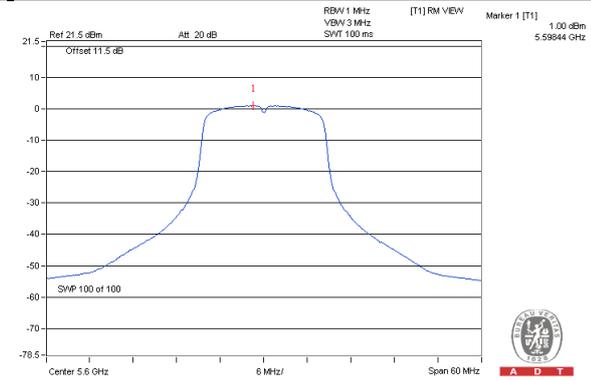
**Chain 1 / CH64**



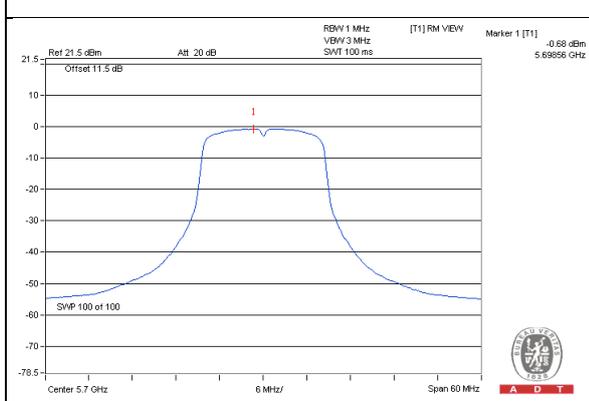
### Chain 1 / CH100



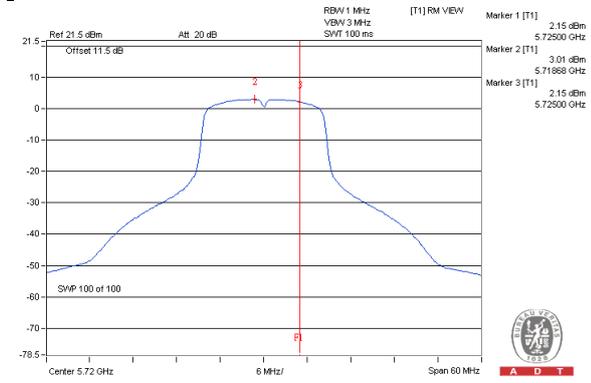
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)

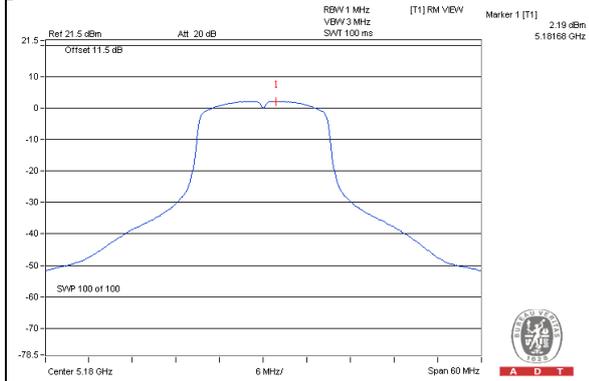


**802.11ac (VHT20)**

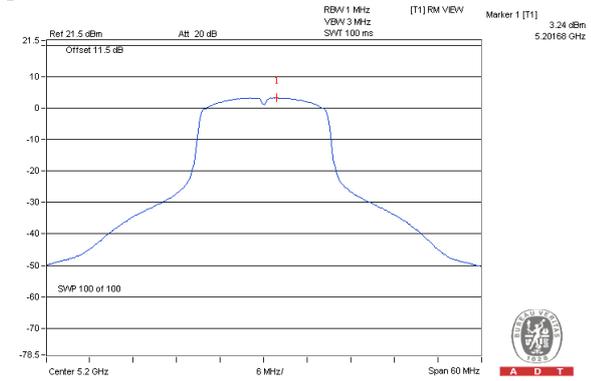
Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
36	5180	2.19	1.23	4.75	10.91	Pass
40	5200	3.23	2.35	5.82	10.91	Pass
48	5240	3.21	2.30	5.79	10.91	Pass
52	5260	2.89	2.15	5.55	10.91	Pass
60	5300	2.93	2.23	5.60	10.91	Pass
64	5320	0.53	-0.34	3.13	10.91	Pass
100	5500	1.30	0.38	3.87	9.23	Pass
120	5600	2.62	1.59	5.15	9.23	Pass
140	5700	-0.37	-1.02	2.33	9.23	Pass
144 (UNII-2c Band)	5720	2.94	2.72	5.84	9.23	Pass

- NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5150~5250MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
3. 5250~5350MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi, so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
4. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.

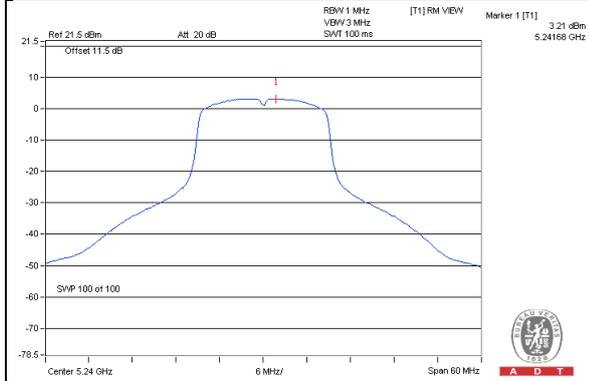
### Chain 0 / CH36



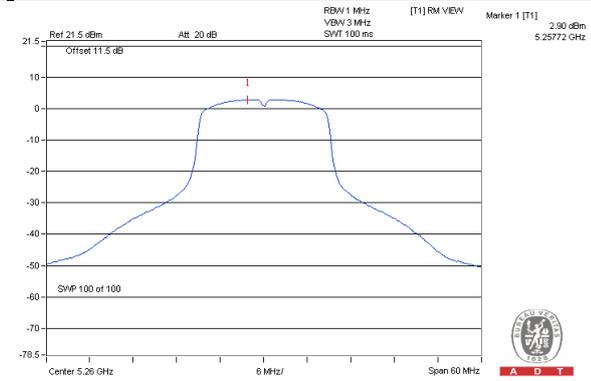
### Chain 0 / CH40



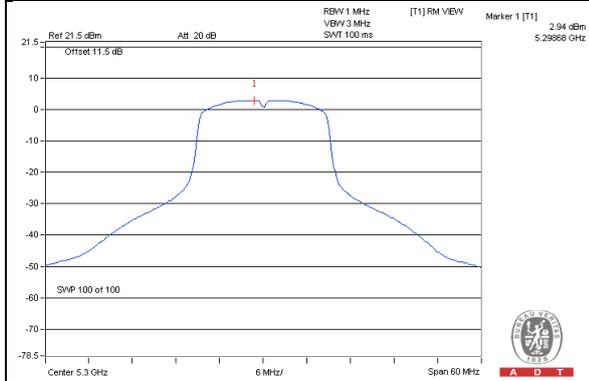
### Chain 0 / CH48



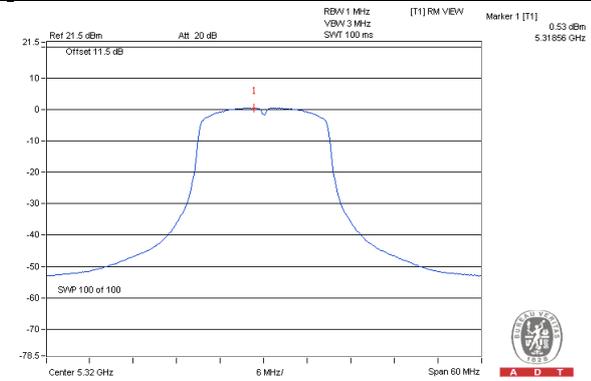
### Chain 0 / CH52



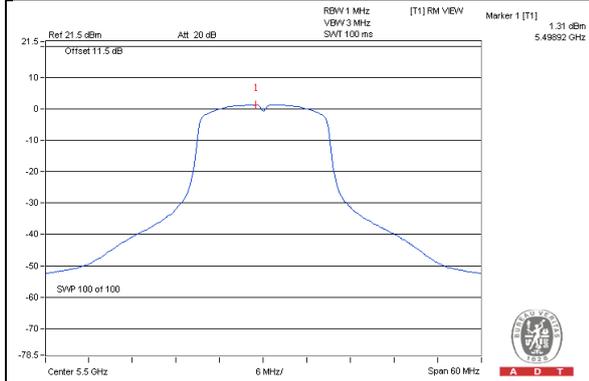
### Chain 0 / CH60



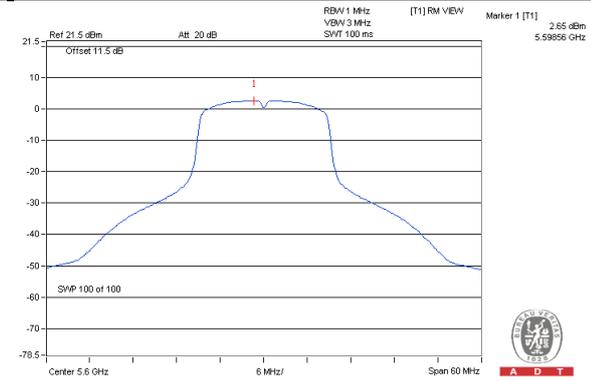
### Chain 0 / CH64



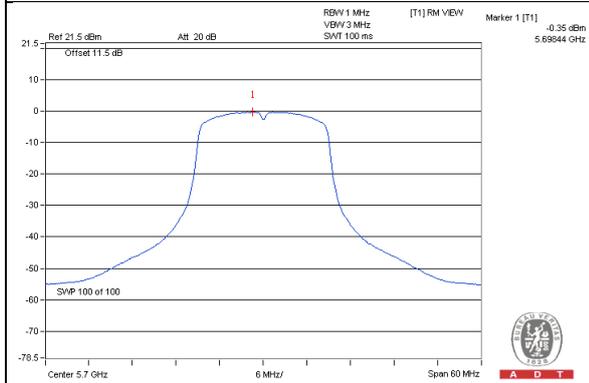
### Chain 0 / CH100



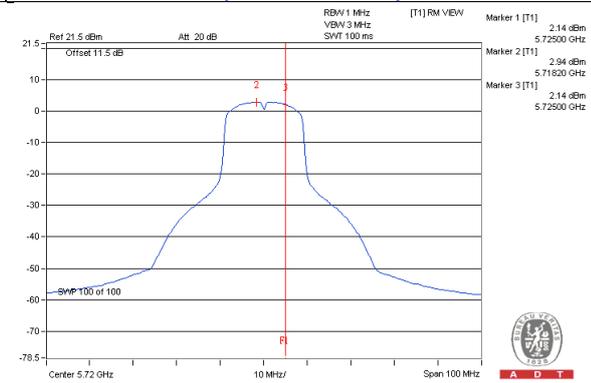
### Chain 0 / CH120



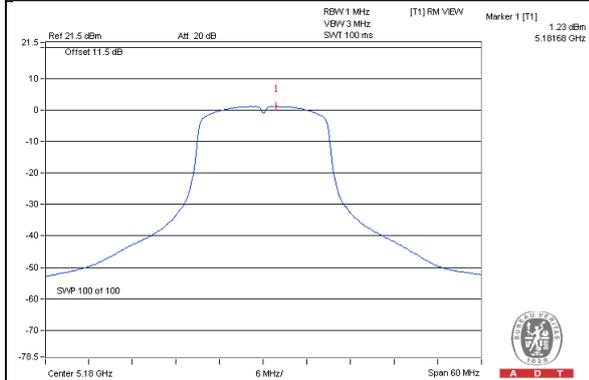
### Chain 0 / CH140



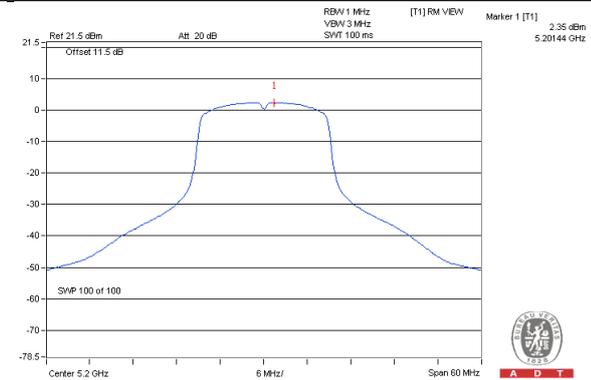
### Chain 0 / CH144 (UNII-2c Band)



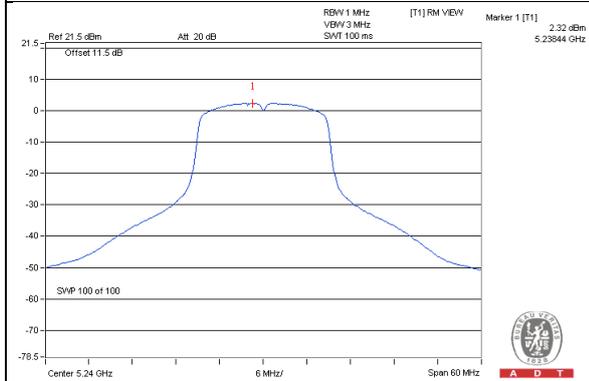
**Chain 1 / CH36**



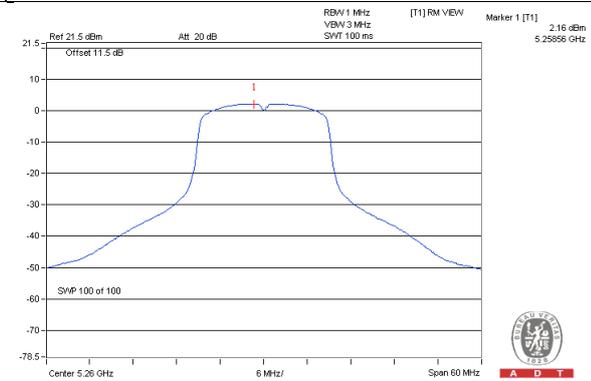
**Chain 1 / CH40**



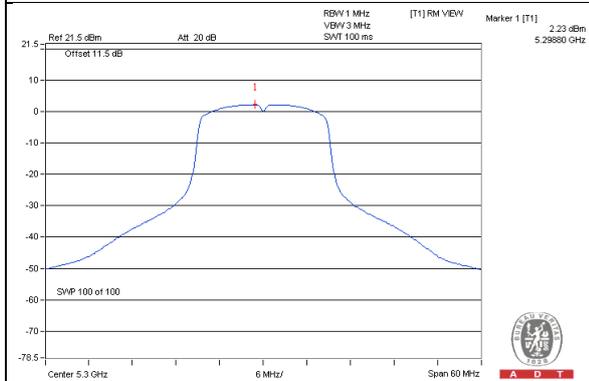
**Chain 1 / CH48**



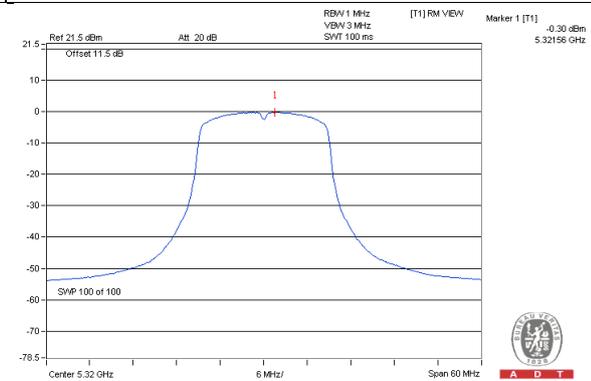
**Chain 1 / CH52**



**Chain 1 / CH60**

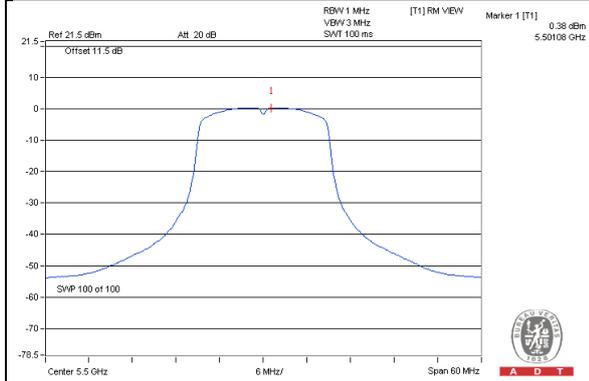


**Chain 1 / CH64**

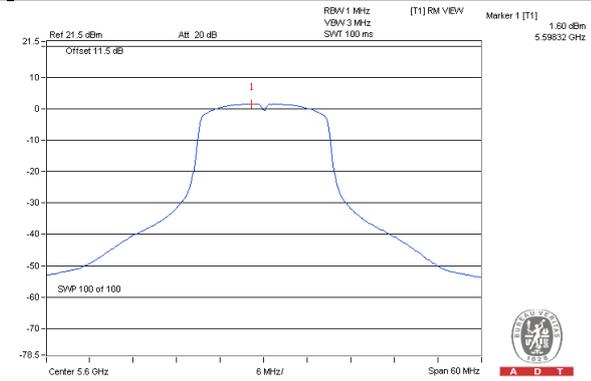




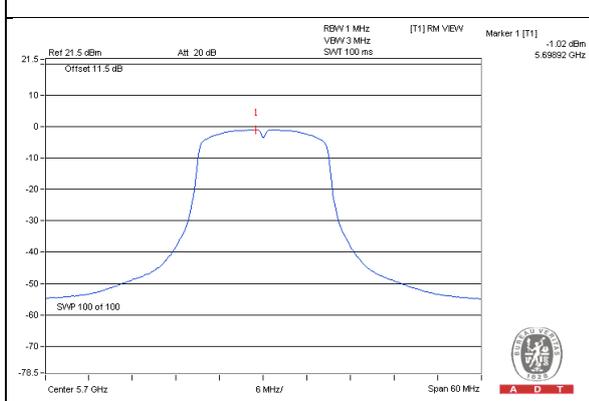
### Chain 1 / CH100



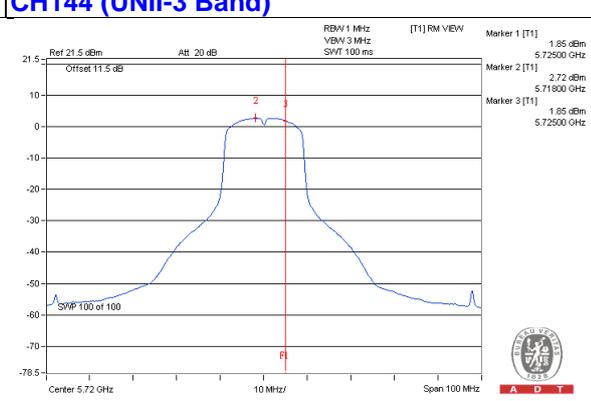
### Chain 1 / CH120



### Chain 1 / CH140



### Chain 1 / CH144 (UNII-2c Band) / Chain 1 / CH144 (UNII-3 Band)

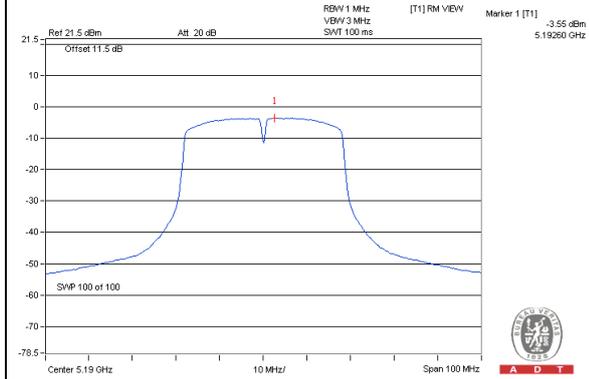


**802.11ac (VHT40)**

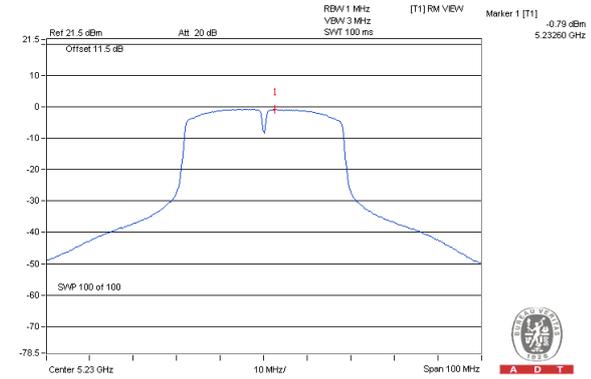
Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
38	5190	-3.59	-4.86	-1.17	10.91	Pass
46	5230	-0.80	-1.74	1.77	10.91	Pass
54	5270	-1.13	-1.87	1.53	10.91	Pass
62	5310	-2.83	-3.81	-0.28	10.91	Pass
102	5510	-2.72	-3.82	-0.22	9.23	Pass
118	5590	-0.56	-1.47	2.02	9.23	Pass
134	5670	-1.21	-1.61	1.60	9.23	Pass
142 (UNII-2c Band)	5710	-0.23	-0.59	2.60	9.23	Pass

- NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5150~5250MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
3. 5250~5350MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi, so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
4. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.

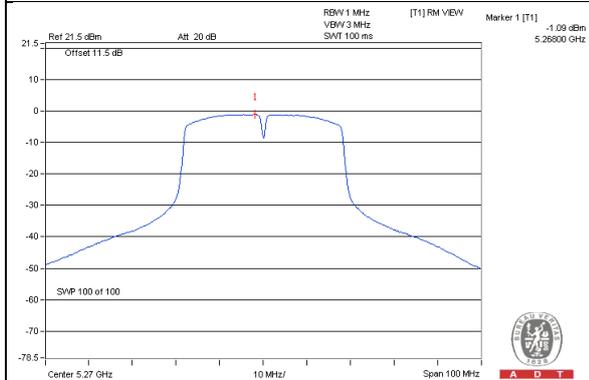
### Chain 0 / CH38



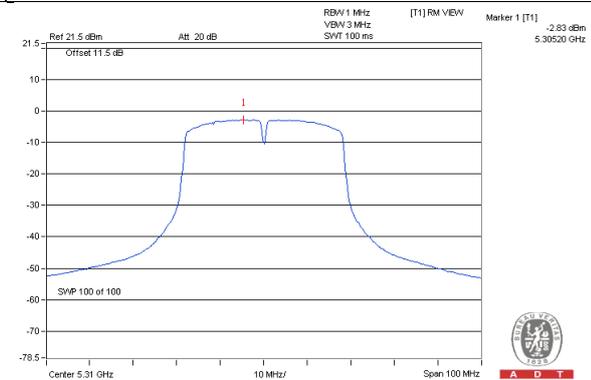
### Chain 0 / CH46



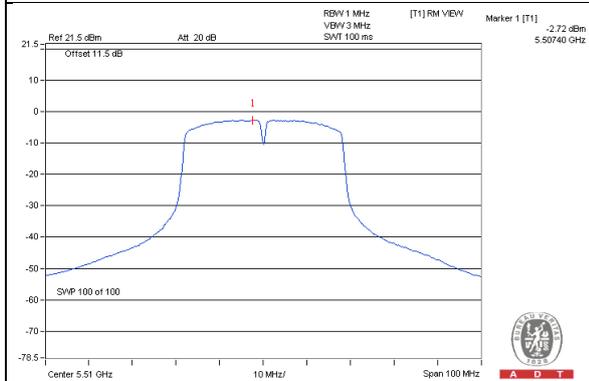
### Chain 0 / CH54



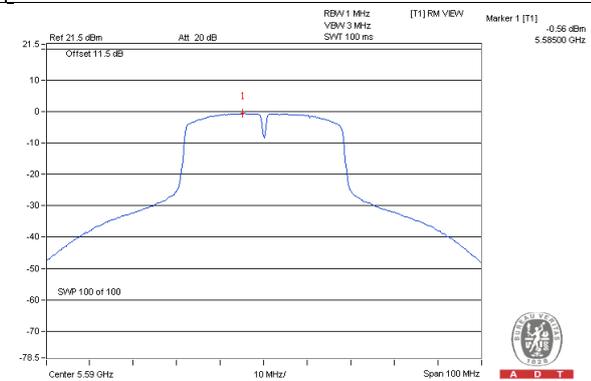
### Chain 0 / CH62



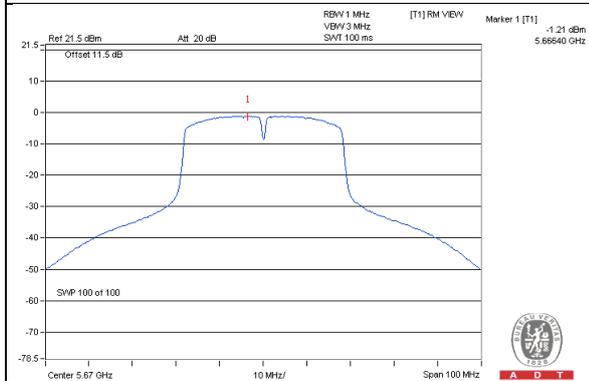
### Chain 0 / CH102



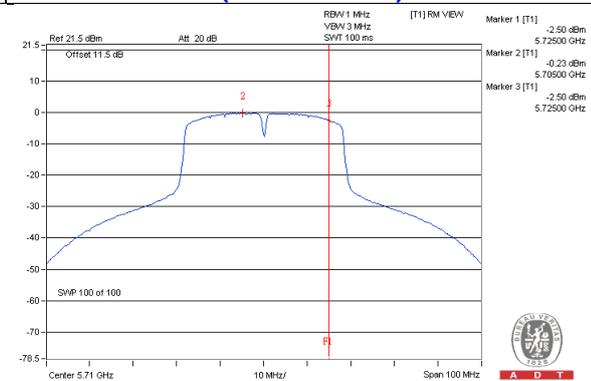
### Chain 0 / CH118



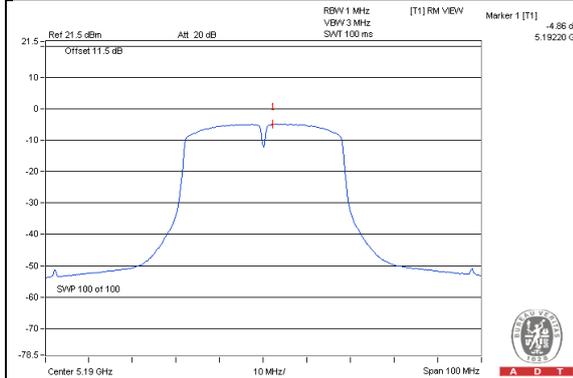
### Chain 0 / CH134



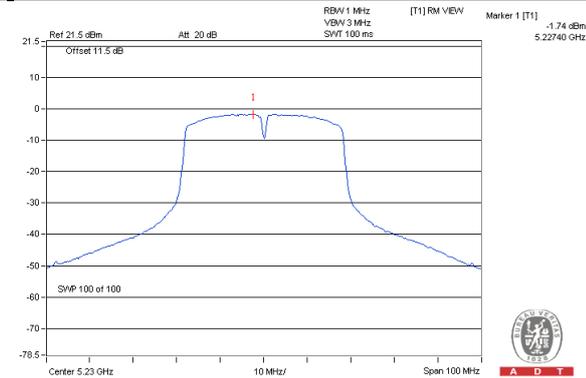
### Chain 0 / CH142 (UNII-2c Band)



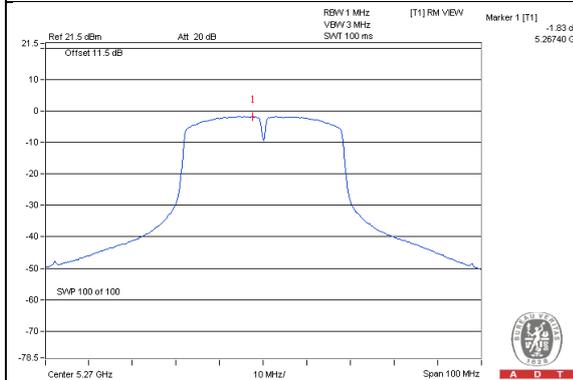
**Chain 1 / CH38**



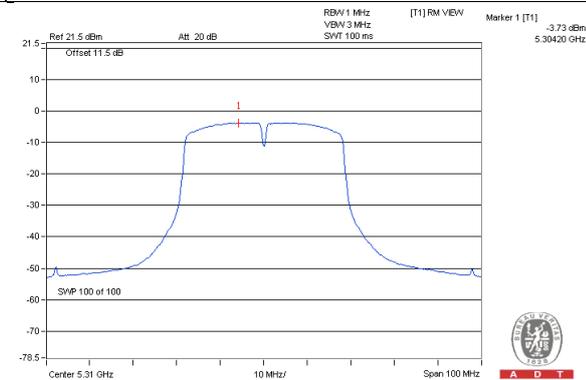
**Chain 1 / CH46**



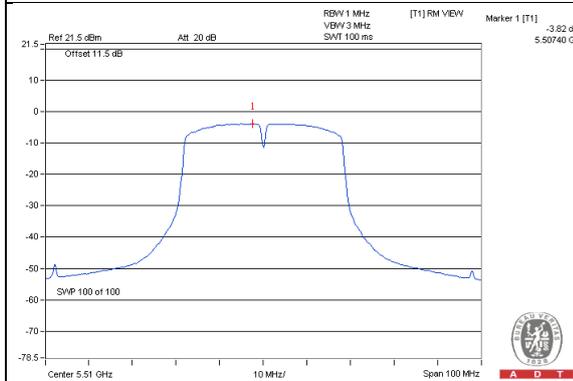
**Chain 1 / CH54**



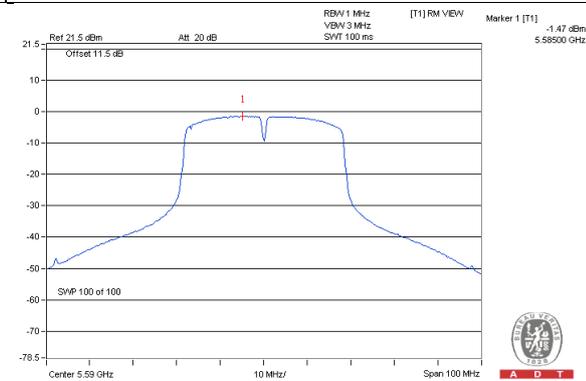
**Chain 1 / CH62**



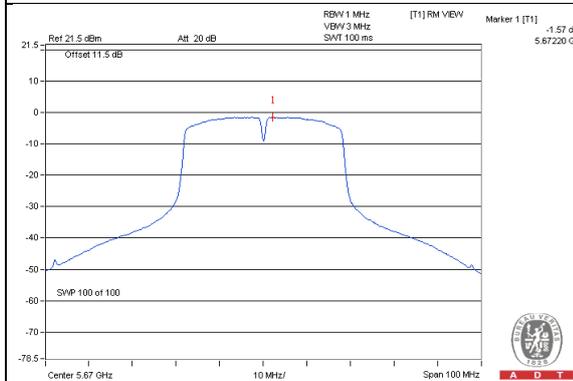
**Chain 1 / CH102**



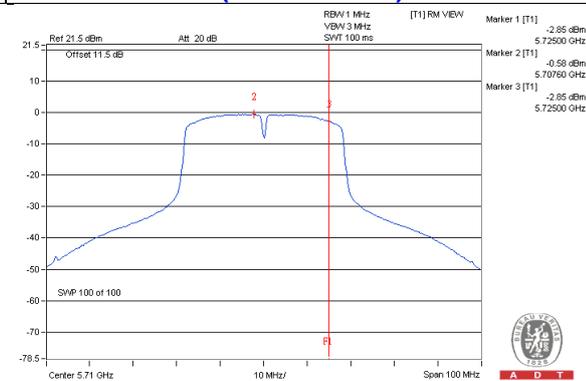
**Chain 1 / CH118**



**Chain 1 / CH134**



**Chain 1 / CH142 (UNII-2c Band)**

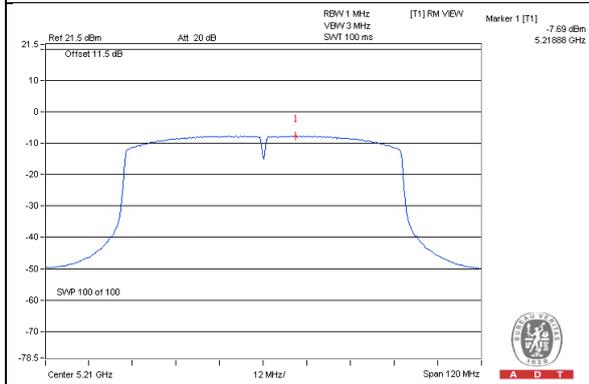


**802.11ac (VHT80):**

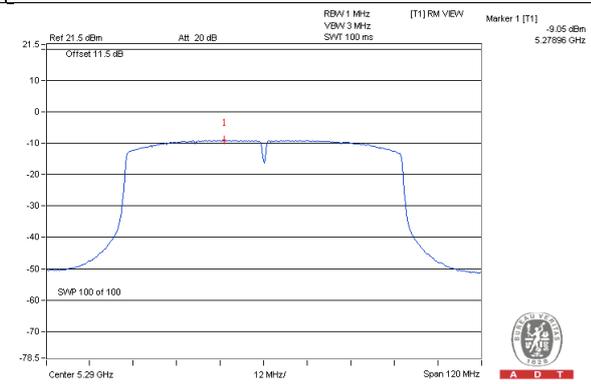
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-7.72	-8.71	0.11	-5.07	10.91	Pass
58	5290	-9.05	-9.98	0.11	-6.37	10.91	Pass
106	5530	-8.15	-9.11	0.11	-5.48	9.23	Pass
122	5610	-4.60	-5.81	0.11	-2.04	9.23	Pass
138 (UNII-2c Band)	5690	-5.16	-5.73	0.11	-2.32	9.23	Pass

- NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5150~5250MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi , so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
3. 5250~5350MHz: Directional gain = 3.08dBi + 10log(2) = 6.09dBi > 6dBi, so the power density limit shall be reduced to 11-(6.09-6) = 10.91dBm.
4. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.
5. Refer to section 3.4 for duty cycle spectrum plot.

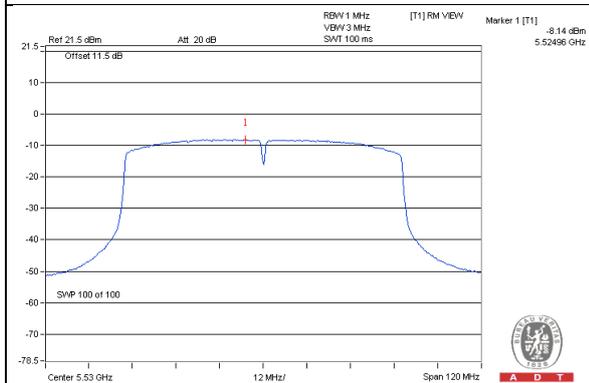
### Chain 0 / CH42



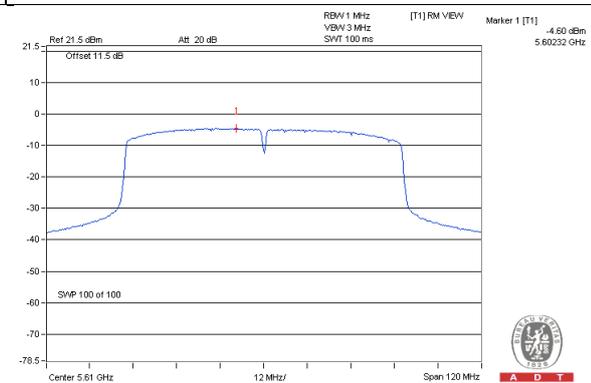
### Chain 0 / CH58



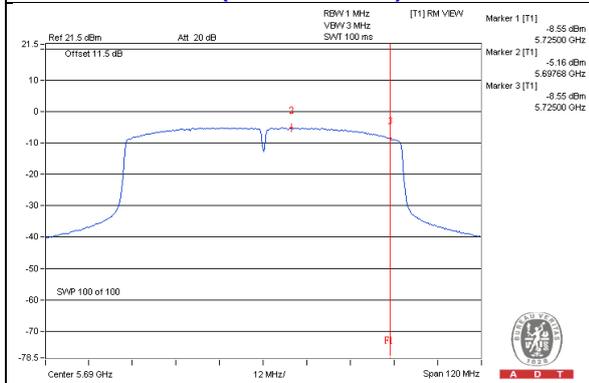
### Chain 0 / CH106



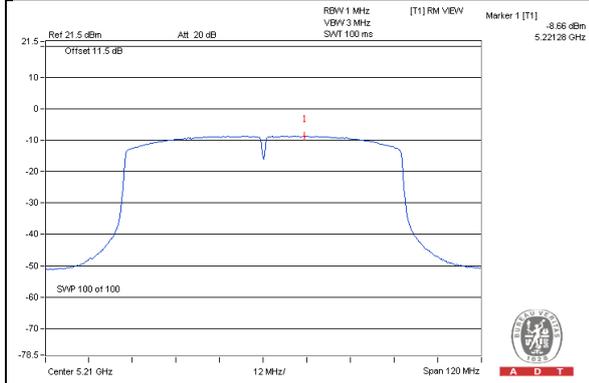
### Chain 0 / CH122



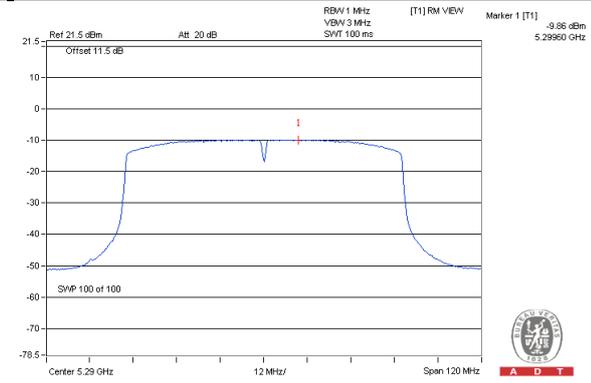
### Chain 0 / CH138 (UNII-2c Band)



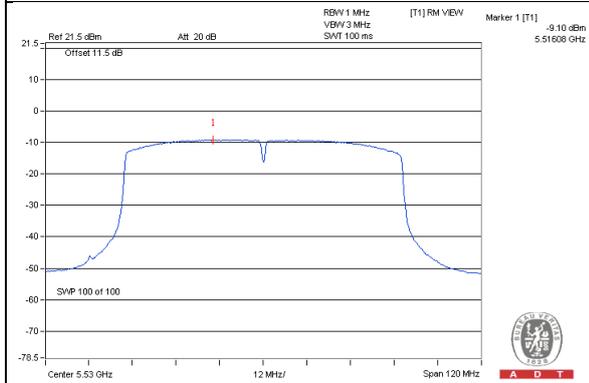
### Chain 1 / CH42



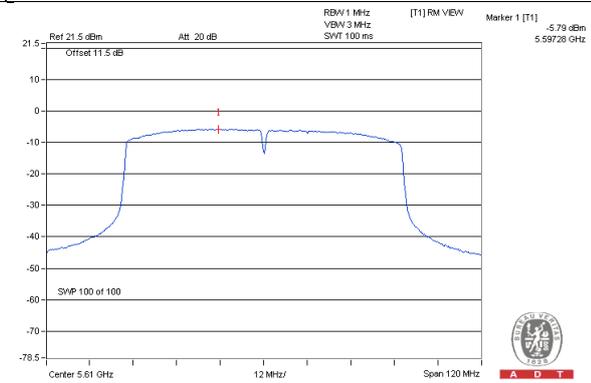
### Chain 1 / CH58



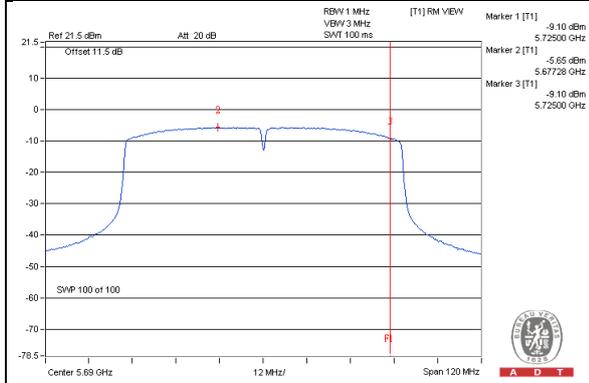
### Chain 1 / CH106



### Chain 1 / CH122



### Chain 1 / CH138 (UNII-2c Band)



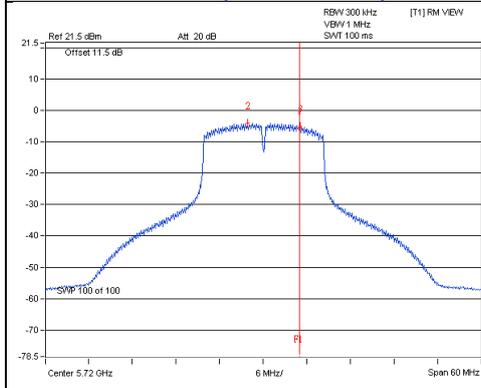
**For U-NII-3:**

**802.11a**

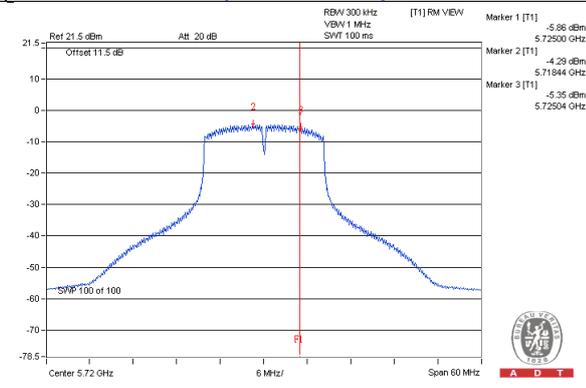
TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	144 (UNII-3 Band)	5720	-5.50	-3.28	3.01	-0.27	28.23	Pass
1	144 (UNII-3 Band)	5720	-5.86	-3.64	3.01	-0.63	28.23	Pass

**NOTE:** 1. 5725–5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

**Chain 0 / CH144 (UNII-3 Band)**



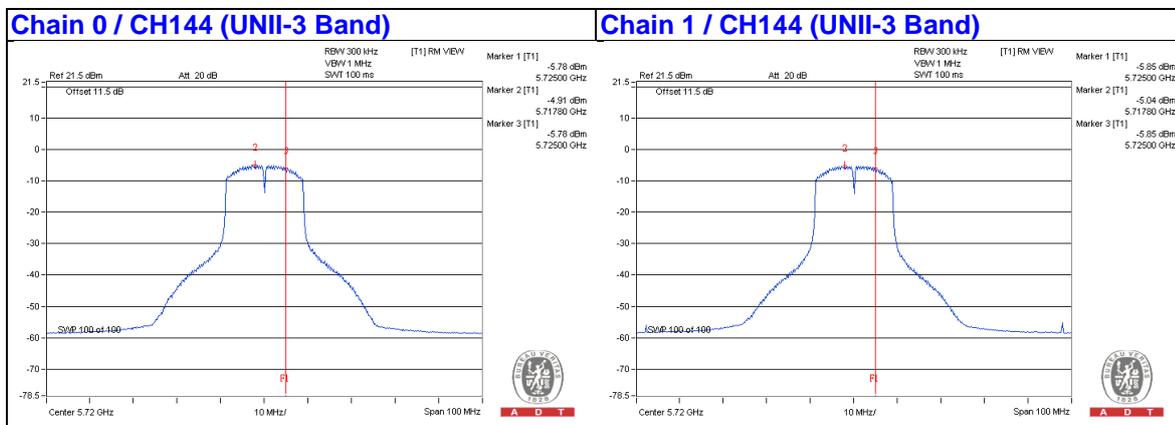
**Chain 1 / CH144 (UNII-3 Band)**



### 802.11ac (VHT20)

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	144 (UNII-3 Band)	5720	-5.78	-3.56	3.01	-0.55	28.23	Pass
1	144 (UNII-3 Band)	5720	-5.85	-3.63	3.01	-0.62	28.23	Pass

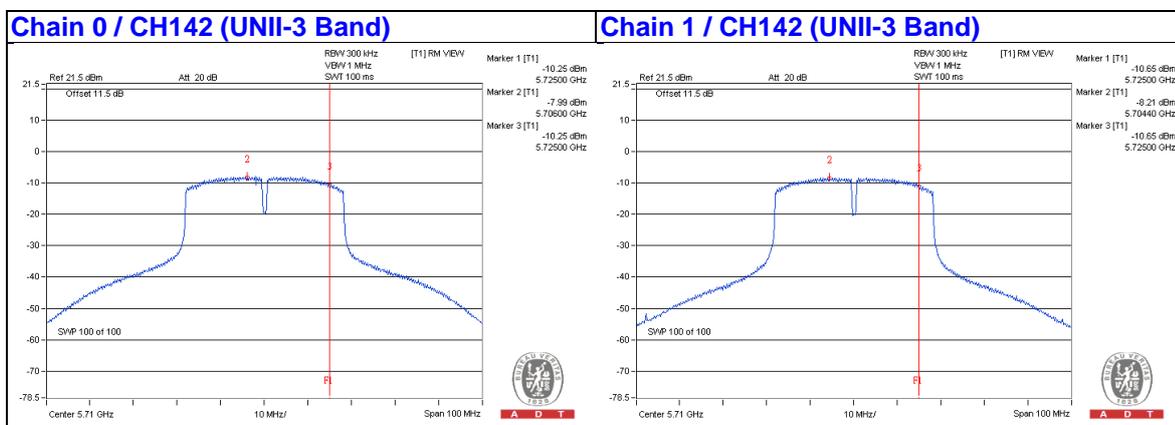
**NOTE:** 1. 5725–5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.



### 802.11ac (VHT40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	142 (UNII-3 Band)	5710	-10.25	-8.03	3.01	-5.02	28.23	Pass
1	142 (UNII-3 Band)	5710	-10.65	-8.43	3.01	-5.42	28.23	Pass

**NOTE:** 1. 5725–5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

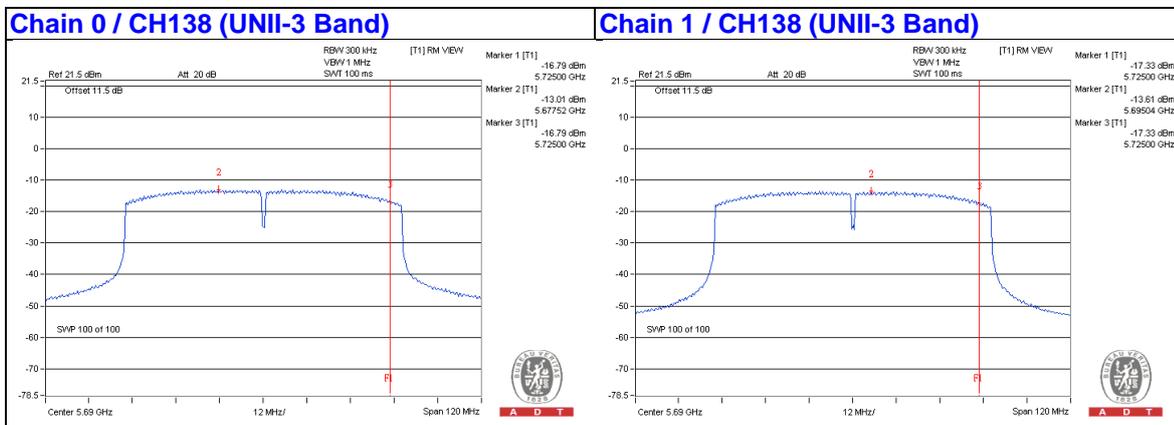


### 802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138 (UNII-3 Band)	5690	-16.79	-14.57	3.01	0.11	-11.45	28.23	Pass
1	138 (UNII-3 Band)	5690	-17.33	-15.11	3.01	0.11	-11.99	28.23	Pass

**NOTE:** 1. 5725–5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

2. Refer to section 3.4 for duty cycle spectrum plot.

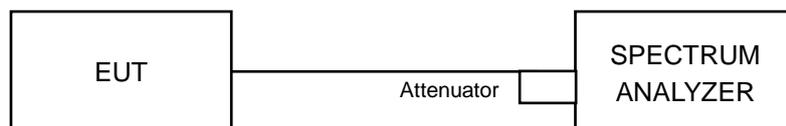


### 4.3 6dB Bandwidth Measurement

#### 4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

#### 4.3.4 Test Procedures

##### MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

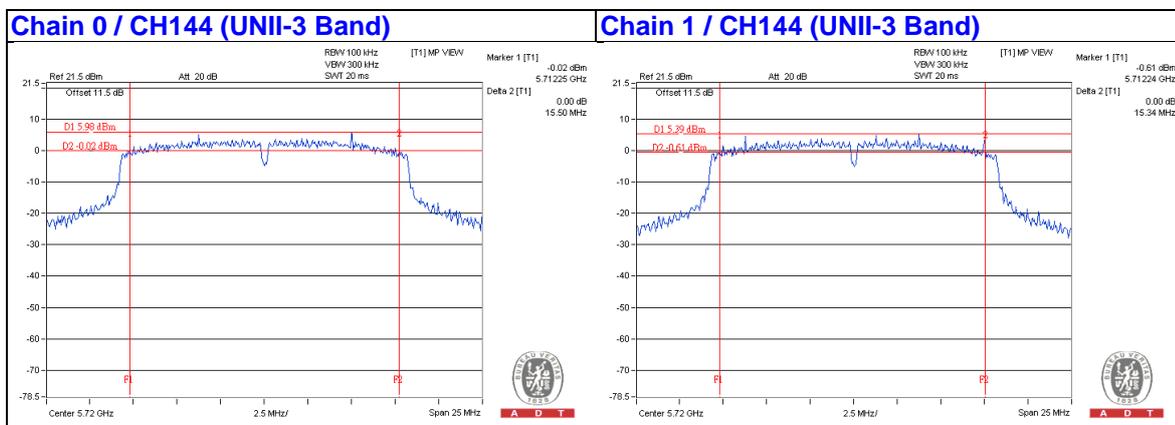
### 4.3.7 Test Results

#### 802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (UNII-3 Band)	5720	2.75	2.58	0.5	Pass

**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz



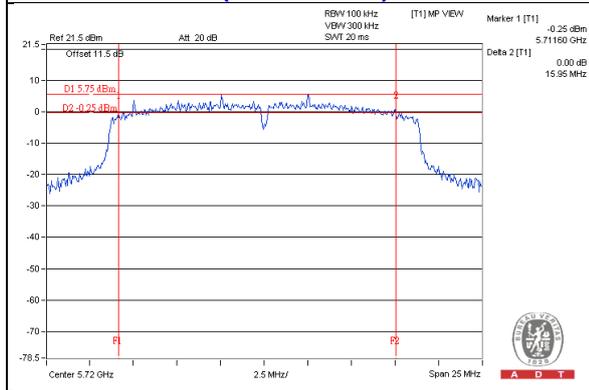
### 802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (UNII-3 Band)	5720	2.55	2.56	0.5	Pass

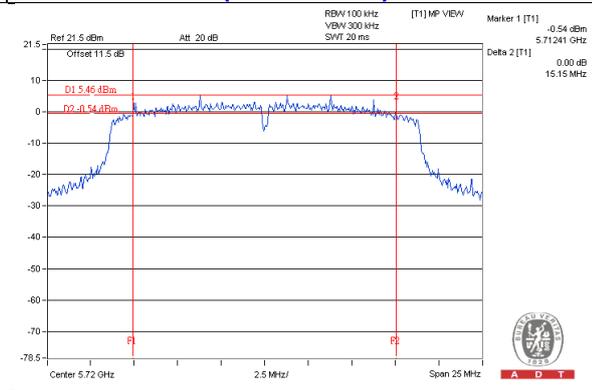
**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

**Chain 0 / CH144 (UNII-3 Band)**



**Chain 1 / CH144 (UNII-3 Band)**

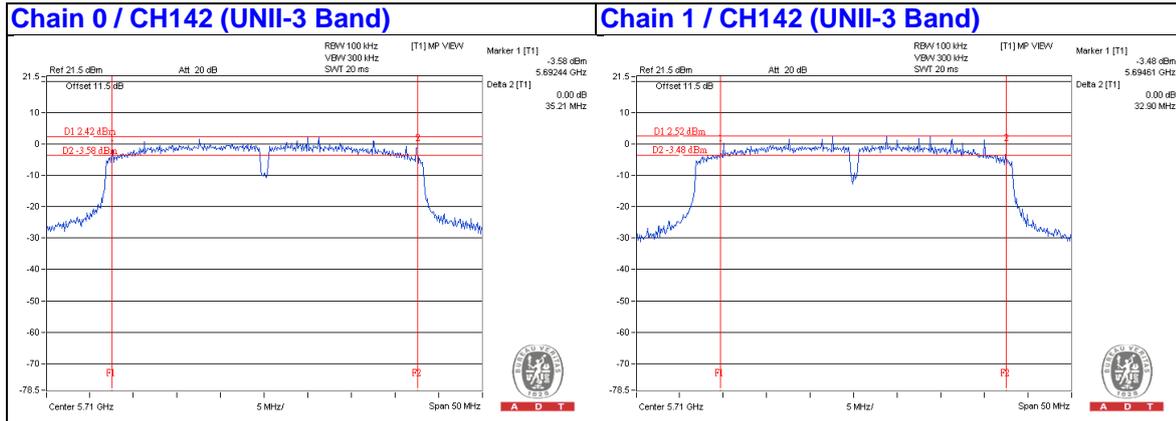


### 802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142 (UNII-3 Band)	5710	2.65	2.51	0.5	Pass

**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

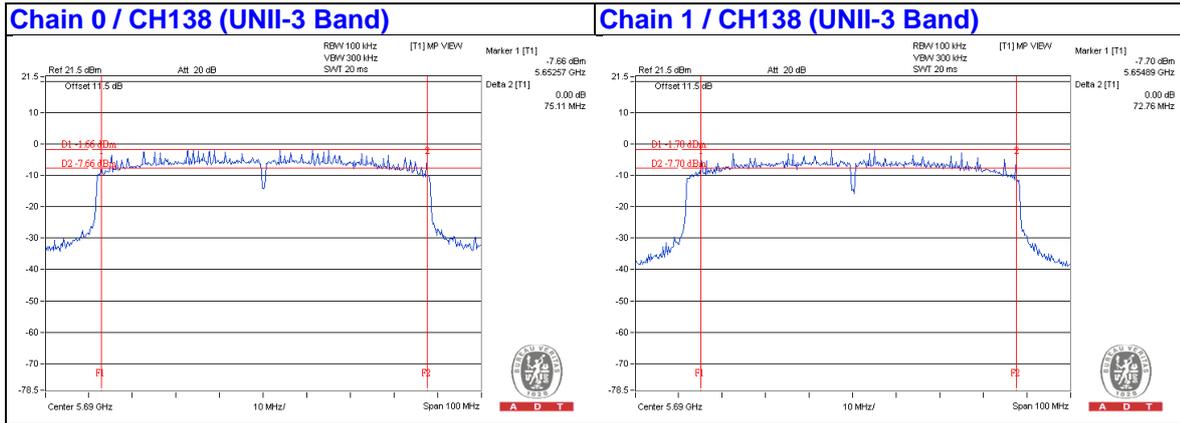


802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138 (UNII-3 Band)	5690	2.68	2.65	0.5	Pass

**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz



#### 4.4 Unwanted Emission (Radiated Versus Conducted)

##### 4.4.1 Limits of Unwanted Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of Unwanted Emission out of the Restricted Bands

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) <sup>*1</sup> PK:-17 (dBm/MHz) <sup>*2</sup>	PK: 68.2(dBμV/m) <sup>*1</sup> PK:78.2 (dBμV/m) <sup>*2</sup>

**NOTE:** <sup>\*1</sup> beyond 10MHz of the band edge <sup>\*2</sup> within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).$$

#### 4.4.2 Test Instruments

##### For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

##### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Feb. 06 to 11, 2015

**For Below 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Feb. 09, 2015

#### 4.4.3 Test Procedures

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test
  - e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
  - e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
  - e-3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
  - e-4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
  - e-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
  - e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### NOTE:

1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

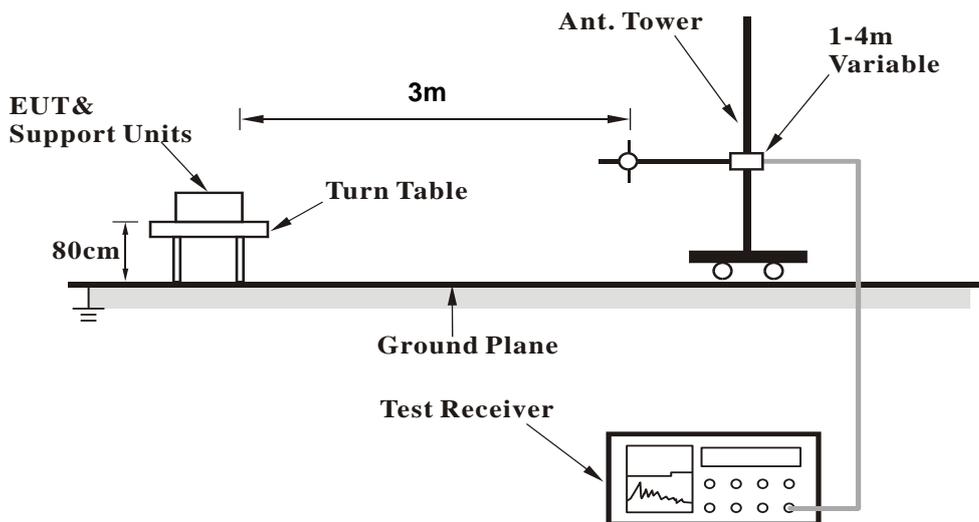
#### 4.4.4 Deviation from Test Standard

C63.10:2009 requires a 0.8m EUT height above 1GHz, but in accordance with the FCC December 2014 TCB Conference call, a 1.5m EUT height is allowed.

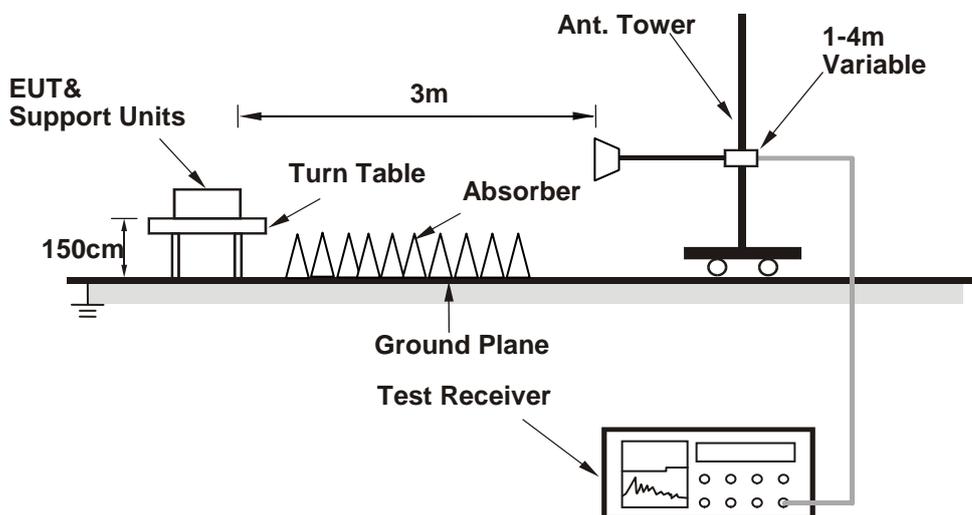
#### 4.4.5 Test Setup

For radiated configuration:

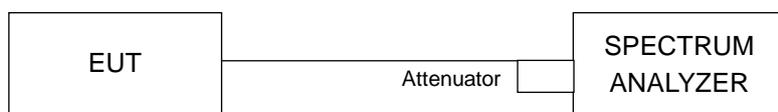
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.4.6 EUT Operating Conditions

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program "QCART Version: 3.0.33.0" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

#### 4.4.7 Test Results (Radiated Measurement)

Radiated versus Conducted Measurement	
<input type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement
<p><u>For Radiated measurement:</u>            The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)</p> <p><u>For Conducted measurement:</u>            The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).</p>	

Radiated test was done with 50ohm terminator on antenna port

Above 1GHz Data :

802.11a

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10360.00	56.7 PK	74.0	-17.3	1.00 H	215	43.59	13.11
2	#10360.00	42.7 AV	54.0	-11.3	1.00 H	215	29.59	13.11
3	15540.00	60.8 PK	74.0	-13.2	1.00 H	65	42.11	18.69
4	15540.00	47.8 AV	54.0	-6.2	1.00 H	65	29.11	18.69

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10360.00	55.8 PK	74.0	-18.2	1.00 V	98	42.69	13.11
2	#10360.00	42.5 AV	54.0	-11.5	1.00 V	98	29.39	13.11
3	15540.00	61.2 PK	74.0	-12.8	1.00 V	100	42.51	18.69
4	15540.00	47.8 AV	54.0	-6.2	1.00 V	100	29.11	18.69

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 40	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10400.00	57.1 PK	74.0	-16.9	1.00 H	206	43.88	13.22
2	#10400.00	42.8 AV	54.0	-11.2	1.00 H	206	29.58	13.22
3	15600.00	60.3 PK	74.0	-13.7	1.02 H	55	41.60	18.70
4	15600.00	47.5 AV	54.0	-6.5	1.02 H	55	28.80	18.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10400.00	56.0 PK	74.0	-18.0	1.00 V	87	42.78	13.22
2	#10400.00	42.6 AV	54.0	-11.4	1.00 V	87	29.38	13.22
3	15600.00	61.1 PK	74.0	-12.9	1.00 V	87	42.40	18.70
4	15600.00	47.6 AV	54.0	-6.4	1.00 V	87	28.90	18.70

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10480.00	56.3 PK	74.0	-17.7	1.00 H	213	43.14	13.16
2	#10480.00	42.5 AV	54.0	-11.5	1.00 H	213	29.34	13.16
3	15720.00	60.8 PK	74.0	-13.2	1.00 H	50	42.40	18.40
4	15720.00	47.5 AV	54.0	-6.5	1.00 H	50	29.10	18.40

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10480.00	55.7 PK	74.0	-18.3	1.05 V	111	42.54	13.16
2	#10480.00	42.7 AV	54.0	-11.3	1.05 V	111	29.54	13.16
3	15720.00	61.3 PK	74.0	-12.7	1.04 V	99	42.90	18.40
4	15720.00	48.2 AV	54.0	-5.8	1.04 V	99	29.80	18.40

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 52	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10520.00	56.3 PK	74.0	-17.7	1.04 H	228	43.08	13.22
2	#10520.00	42.3 AV	54.0	-11.7	1.04 H	228	29.08	13.22
3	15780.00	60.7 PK	74.0	-13.3	1.02 H	56	42.19	18.51
4	15780.00	47.9 AV	54.0	-6.1	1.02 H	56	29.39	18.51

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10520.00	56.1 PK	74.0	-17.9	1.05 V	95	42.88	13.22
2	#10520.00	42.9 AV	54.0	-11.1	1.05 V	95	29.68	13.22
3	15780.00	61.6 PK	74.0	-12.4	1.04 V	97	43.09	18.51
4	15780.00	48.3 AV	54.0	-5.7	1.04 V	97	29.79	18.51

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 60	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10600.00	56.4 PK	74.0	-17.6	1.00 H	221	42.87	13.53
2	10600.00	42.4 AV	54.0	-11.6	1.00 H	221	28.87	13.53
3	15900.00	61.0 PK	74.0	-13.0	1.03 H	51	42.35	18.65
4	15900.00	48.3 AV	54.0	-5.7	1.03 H	51	29.65	18.65

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10600.00	55.6 PK	74.0	-18.4	1.00 V	110	42.07	13.53
2	10600.00	42.3 AV	54.0	-11.7	1.00 V	110	28.77	13.53
3	15900.00	61.6 PK	74.0	-12.4	1.00 V	109	42.95	18.65
4	15900.00	48.2 AV	54.0	-5.8	1.00 V	109	29.55	18.65

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 64	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10640.00	56.7 PK	74.0	-17.3	1.01 H	219	43.07	13.63
2	10640.00	42.8 AV	54.0	-11.2	1.01 H	219	29.17	13.63
3	15960.00	60.8 PK	74.0	-13.2	1.04 H	80	42.19	18.61
4	15960.00	47.7 AV	54.0	-6.3	1.04 H	80	29.09	18.61

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10640.00	56.3 PK	74.0	-17.7	1.00 V	91	42.67	13.63
2	10640.00	42.9 AV	54.0	-11.1	1.00 V	91	29.27	13.63
3	15960.00	61.2 PK	74.0	-12.8	1.00 V	91	42.59	18.61
4	15960.00	47.7 AV	54.0	-6.3	1.00 V	91	29.09	18.61

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 100	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11000.00	56.1 PK	74.0	-17.9	1.00 H	217	41.68	14.42
2	11000.00	42.3 AV	54.0	-11.7	1.00 H	217	27.88	14.42
3	#16500.00	60.2 PK	74.0	-13.8	1.00 H	75	39.26	20.94
4	#16500.00	47.3 AV	54.0	-6.7	1.00 H	75	26.36	20.94

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11000.00	55.8 PK	74.0	-18.2	1.05 V	100	41.38	14.42
2	11000.00	42.2 AV	54.0	-11.8	1.05 V	100	27.78	14.42
3	#16500.00	60.6 PK	74.0	-13.4	1.00 V	105	39.66	20.94
4	#16500.00	47.3 AV	54.0	-6.7	1.00 V	105	26.36	20.94

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 120	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11200.00	57.2 PK	74.0	-16.8	1.02 H	218	42.94	14.26
2	11200.00	43.0 AV	54.0	-11.0	1.02 H	218	28.74	14.26
3	#16800.00	61.0 PK	74.0	-13.0	1.00 H	61	39.70	21.30
4	#16800.00	48.1 AV	54.0	-5.9	1.00 H	61	26.80	21.30

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11200.00	55.8 PK	74.0	-18.2	1.05 V	101	41.54	14.26
2	11200.00	42.8 AV	54.0	-11.2	1.05 V	101	28.54	14.26
3	#16800.00	61.4 PK	74.0	-12.6	1.00 V	115	40.10	21.30
4	#16800.00	47.9 AV	54.0	-6.1	1.00 V	115	26.60	21.30

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 140	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11400.00	56.8 PK	74.0	-17.2	1.00 H	228	42.38	14.42
2	11400.00	42.7 AV	54.0	-11.3	1.00 H	228	28.28	14.42
3	#17100.00	60.5 PK	74.0	-13.5	1.05 H	78	38.73	21.77
4	#17100.00	47.7 AV	54.0	-6.3	1.05 H	78	25.93	21.77

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11400.00	55.8 PK	74.0	-18.2	1.03 V	97	41.38	14.42
2	11400.00	42.8 AV	54.0	-11.2	1.03 V	97	28.38	14.42
3	#17100.00	61.7 PK	74.0	-12.3	1.00 V	114	39.93	21.77
4	#17100.00	48.1 AV	54.0	-5.9	1.00 V	114	26.33	21.77

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 144	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.3 PK	74.0	-17.7	1.00 H	207	41.91	14.39
2	11440.00	42.4 AV	54.0	-11.6	1.00 H	207	28.01	14.39
3	#17160.00	60.7 PK	74.0	-13.3	1.00 H	56	38.69	22.01
4	#17160.00	47.9 AV	54.0	-6.1	1.00 H	56	25.89	22.01

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.1 PK	74.0	-17.9	1.04 V	83	41.71	14.39
2	11440.00	42.5 AV	54.0	-11.5	1.04 V	83	28.11	14.39
3	#17160.00	61.1 PK	74.0	-12.9	1.00 V	98	39.09	22.01
4	#17160.00	47.5 AV	54.0	-6.5	1.00 V	98	25.49	22.01

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10360.00	56.9 PK	74.0	-17.1	1.05 H	225	43.79	13.11
2	#10360.00	43.1 AV	54.0	-10.9	1.05 H	225	29.99	13.11
3	15540.00	61.3 PK	74.0	-12.7	1.00 H	67	42.61	18.69
4	15540.00	48.1 AV	54.0	-5.9	1.00 H	67	29.41	18.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10360.00	55.9 PK	74.0	-18.1	1.00 V	107	42.79	13.11
2	#10360.00	42.5 AV	54.0	-11.5	1.00 V	107	29.39	13.11
3	15540.00	61.1 PK	74.0	-12.9	1.02 V	91	42.41	18.69
4	15540.00	47.8 AV	54.0	-6.2	1.02 V	91	29.11	18.69

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 40	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10400.00	56.8 PK	74.0	-17.2	1.06 H	226	43.58	13.22
2	#10400.00	42.7 AV	54.0	-11.3	1.06 H	226	29.48	13.22
3	15600.00	61.2 PK	74.0	-12.8	1.00 H	61	42.50	18.70
4	15600.00	48.1 AV	54.0	-5.9	1.00 H	61	29.40	18.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10400.00	56.3 PK	74.0	-17.7	1.00 V	98	43.08	13.22
2	#10400.00	42.8 AV	54.0	-11.2	1.00 V	98	29.58	13.22
3	15600.00	61.0 PK	74.0	-13.0	1.01 V	116	42.30	18.70
4	15600.00	47.5 AV	54.0	-6.5	1.01 V	116	28.80	18.70

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10480.00	56.7 PK	74.0	-17.3	1.01 H	212	43.54	13.16
2	#10480.00	42.8 AV	54.0	-11.2	1.01 H	212	29.64	13.16
3	15720.00	60.7 PK	74.0	-13.3	1.00 H	72	42.30	18.40
4	15720.00	47.7 AV	54.0	-6.3	1.00 H	72	29.30	18.40

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10480.00	56.0 PK	74.0	-18.0	1.00 V	90	42.84	13.16
2	#10480.00	42.6 AV	54.0	-11.4	1.00 V	90	29.44	13.16
3	15720.00	61.1 PK	74.0	-12.9	1.01 V	102	42.70	18.40
4	15720.00	47.6 AV	54.0	-6.4	1.01 V	102	29.20	18.40

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 52	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10520.00	56.8 PK	74.0	-17.2	1.00 H	221	43.58	13.22
2	#10520.00	42.8 AV	54.0	-11.2	1.00 H	221	29.58	13.22
3	15780.00	60.8 PK	74.0	-13.2	1.00 H	65	42.29	18.51
4	15780.00	47.7 AV	54.0	-6.3	1.00 H	65	29.19	18.51

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10520.00	55.9 PK	74.0	-18.1	1.01 V	108	42.68	13.22
2	#10520.00	42.7 AV	54.0	-11.3	1.01 V	108	29.48	13.22
3	15780.00	61.8 PK	74.0	-12.2	1.00 V	93	43.29	18.51
4	15780.00	48.2 AV	54.0	-5.8	1.00 V	93	29.69	18.51

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 60	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10600.00	56.1 PK	74.0	-17.9	1.00 H	223	42.57	13.53
2	10600.00	42.2 AV	54.0	-11.8	1.00 H	223	28.67	13.53
3	15900.00	61.1 PK	74.0	-12.9	1.02 H	80	42.45	18.65
4	15900.00	48.1 AV	54.0	-5.9	1.02 H	80	29.45	18.65

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10600.00	56.1 PK	74.0	-17.9	1.05 V	121	42.57	13.53
2	10600.00	43.2 AV	54.0	-10.8	1.05 V	121	29.67	13.53
3	15900.00	61.9 PK	74.0	-12.1	1.00 V	107	43.25	18.65
4	15900.00	48.6 AV	54.0	-5.4	1.00 V	107	29.95	18.65

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 64	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10640.00	56.7 PK	74.0	-17.3	1.00 H	214	43.07	13.63
2	10640.00	42.6 AV	54.0	-11.4	1.00 H	214	28.97	13.63
3	15960.00	60.6 PK	74.0	-13.4	1.00 H	67	41.99	18.61
4	15960.00	47.4 AV	54.0	-6.6	1.00 H	67	28.79	18.61

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10640.00	55.2 PK	74.0	-18.8	1.01 V	108	41.57	13.63
2	10640.00	42.2 AV	54.0	-11.8	1.01 V	108	28.57	13.63
3	15960.00	61.9 PK	74.0	-12.1	1.00 V	85	43.29	18.61
4	15960.00	48.3 AV	54.0	-5.7	1.00 V	85	29.69	18.61

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 100	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11000.00	56.1 PK	74.0	-17.9	1.02 H	230	41.68	14.42
2	11000.00	42.4 AV	54.0	-11.6	1.02 H	230	27.98	14.42
3	#16500.00	60.9 PK	74.0	-13.1	1.00 H	73	39.96	20.94
4	#16500.00	47.8 AV	54.0	-6.2	1.00 H	73	26.86	20.94

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11000.00	56.4 PK	74.0	-17.6	1.01 V	98	41.98	14.42
2	11000.00	43.1 AV	54.0	-10.9	1.01 V	98	28.68	14.42
3	#16500.00	61.7 PK	74.0	-12.3	1.00 V	96	40.76	20.94
4	#16500.00	48.0 AV	54.0	-6.0	1.00 V	96	27.06	20.94

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 120	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11200.00	56.6 PK	74.0	-17.4	1.05 H	204	42.34	14.26
2	11200.00	42.6 AV	54.0	-11.4	1.05 H	204	28.34	14.26
3	#16800.00	60.8 PK	74.0	-13.2	1.00 H	69	39.50	21.30
4	#16800.00	47.6 AV	54.0	-6.4	1.00 H	69	26.30	21.30

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11200.00	56.3 PK	74.0	-17.7	1.06 V	106	42.04	14.26
2	11200.00	42.9 AV	54.0	-11.1	1.06 V	106	28.64	14.26
3	#16800.00	62.0 PK	74.0	-12.0	1.00 V	85	40.70	21.30
4	#16800.00	48.3 AV	54.0	-5.7	1.00 V	85	27.00	21.30

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 140	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11400.00	56.4 PK	74.0	-17.6	1.02 H	201	41.98	14.42
2	11400.00	42.4 AV	54.0	-11.6	1.02 H	201	27.98	14.42
3	#17100.00	61.4 PK	74.0	-12.6	1.04 H	59	39.63	21.77
4	#17100.00	48.3 AV	54.0	-5.7	1.04 H	59	26.53	21.77

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11400.00	56.0 PK	74.0	-18.0	1.06 V	109	41.58	14.42
2	11400.00	42.9 AV	54.0	-11.1	1.06 V	109	28.48	14.42
3	#17100.00	62.0 PK	74.0	-12.0	1.00 V	92	40.23	21.77
4	#17100.00	48.4 AV	54.0	-5.6	1.00 V	92	26.63	21.77

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 144	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.9 PK	74.0	-17.1	1.00 H	201	42.51	14.39
2	11440.00	42.8 AV	54.0	-11.2	1.00 H	201	28.41	14.39
3	#17160.00	60.5 PK	74.0	-13.5	1.04 H	54	38.49	22.01
4	#17160.00	47.6 AV	54.0	-6.4	1.04 H	54	25.59	22.01

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.5 PK	74.0	-17.5	1.03 V	123	42.11	14.39
2	11440.00	43.2 AV	54.0	-10.8	1.03 V	123	28.81	14.39
3	#17160.00	61.7 PK	74.0	-12.3	1.00 V	98	39.69	22.01
4	#17160.00	47.8 AV	54.0	-6.2	1.00 V	98	25.79	22.01

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

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<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10380.00	56.6 PK	74.0	-17.4	1.00 H	223	43.43	13.17
2	#10380.00	42.8 AV	54.0	-11.2	1.00 H	223	29.63	13.17
3	15570.00	61.1 PK	74.0	-12.9	1.00 H	49	42.41	18.69
4	15570.00	48.0 AV	54.0	-6.0	1.00 H	49	29.31	18.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10380.00	56.1 PK	74.0	-17.9	1.00 V	95	42.93	13.17
2	#10380.00	43.0 AV	54.0	-11.0	1.00 V	95	29.83	13.17
3	15570.00	61.6 PK	74.0	-12.4	1.00 V	98	42.91	18.69
4	15570.00	48.3 AV	54.0	-5.7	1.00 V	98	29.61	18.69

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10460.00	56.5 PK	74.0	-17.5	1.06 H	219	43.32	13.18
2	#10460.00	42.6 AV	54.0	-11.4	1.06 H	219	29.42	13.18
3	15690.00	60.9 PK	74.0	-13.1	1.00 H	64	42.52	18.38
4	15690.00	48.0 AV	54.0	-6.0	1.00 H	64	29.62	18.38

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10460.00	55.6 PK	74.0	-18.4	1.04 V	108	42.42	13.18
2	#10460.00	42.5 AV	54.0	-11.5	1.04 V	108	29.32	13.18
3	15690.00	62.1 PK	74.0	-11.9	1.00 V	84	43.72	18.38
4	15690.00	48.5 AV	54.0	-5.5	1.00 V	84	30.12	18.38

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 54	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10540.00	57.0 PK	74.0	-17.0	1.00 H	202	43.71	13.29
2	#10540.00	42.7 AV	54.0	-11.3	1.00 H	202	29.41	13.29
3	15810.00	61.1 PK	74.0	-12.9	1.00 H	64	42.53	18.57
4	15810.00	47.9 AV	54.0	-6.1	1.00 H	64	29.33	18.57

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10540.00	56.5 PK	74.0	-17.5	1.01 V	123	43.21	13.29
2	#10540.00	43.1 AV	54.0	-10.9	1.01 V	123	29.81	13.29
3	15810.00	61.9 PK	74.0	-12.1	1.00 V	82	43.33	18.57
4	15810.00	48.2 AV	54.0	-5.8	1.00 V	82	29.63	18.57

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 62	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10620.00	56.7 PK	74.0	-17.3	1.06 H	201	43.11	13.59
2	10620.00	42.5 AV	54.0	-11.5	1.06 H	201	28.91	13.59
3	15930.00	60.9 PK	74.0	-13.1	1.00 H	71	42.26	18.64
4	15930.00	48.0 AV	54.0	-6.0	1.00 H	71	29.36	18.64

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	10620.00	56.2 PK	74.0	-17.8	1.04 V	108	42.61	13.59
2	10620.00	43.1 AV	54.0	-10.9	1.04 V	108	29.51	13.59
3	15930.00	61.2 PK	74.0	-12.8	1.02 V	106	42.56	18.64
4	15930.00	47.8 AV	54.0	-6.2	1.02 V	106	29.16	18.64

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 102	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11020.00	57.3 PK	74.0	-16.7	1.01 H	200	42.93	14.37
2	11020.00	43.1 AV	54.0	-10.9	1.01 H	200	28.73	14.37
3	#16530.00	60.2 PK	74.0	-13.8	1.05 H	57	39.28	20.92
4	#16530.00	47.5 AV	54.0	-6.5	1.05 H	57	26.58	20.92

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11020.00	55.7 PK	74.0	-18.3	1.00 V	112	41.33	14.37
2	11020.00	42.6 AV	54.0	-11.4	1.00 V	112	28.23	14.37
3	#16530.00	61.7 PK	74.0	-12.3	1.00 V	99	40.78	20.92
4	#16530.00	48.3 AV	54.0	-5.7	1.00 V	99	27.38	20.92

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 118	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11180.00	56.6 PK	74.0	-17.4	1.03 H	213	42.35	14.25
2	11180.00	42.4 AV	54.0	-11.6	1.03 H	213	28.15	14.25
3	#16770.00	61.3 PK	74.0	-12.7	1.01 H	58	40.09	21.21
4	#16770.00	48.3 AV	54.0	-5.7	1.01 H	58	27.09	21.21

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11180.00	56.2 PK	74.0	-17.8	1.03 V	101	41.95	14.25
2	11180.00	43.1 AV	54.0	-10.9	1.03 V	101	28.85	14.25
3	#16770.00	62.2 PK	74.0	-11.8	1.02 V	107	40.99	21.21
4	#16770.00	48.6 AV	54.0	-5.4	1.02 V	107	27.39	21.21

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 134	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11340.00	56.3 PK	74.0	-17.7	1.00 H	218	41.98	14.32
2	11340.00	42.3 AV	54.0	-11.7	1.00 H	218	27.98	14.32
3	#17010.00	61.3 PK	74.0	-12.7	1.05 H	54	39.77	21.53
4	#17010.00	48.2 AV	54.0	-5.8	1.05 H	54	26.67	21.53

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11340.00	55.2 PK	74.0	-18.8	1.01 V	102	40.88	14.32
2	11340.00	42.3 AV	54.0	-11.7	1.01 V	102	27.98	14.32
3	#17010.00	61.6 PK	74.0	-12.4	1.00 V	86	40.07	21.53
4	#17010.00	48.2 AV	54.0	-5.8	1.00 V	86	26.67	21.53

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 142	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11420.00	56.6 PK	74.0	-17.4	1.03 H	209	42.19	14.41
2	11420.00	42.6 AV	54.0	-11.4	1.03 H	209	28.19	14.41
3	#17130.00	61.1 PK	74.0	-12.9	1.01 H	78	39.21	21.89
4	#17130.00	48.0 AV	54.0	-6.0	1.01 H	78	26.11	21.89

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11420.00	56.0 PK	74.0	-18.0	1.00 V	96	41.59	14.41
2	11420.00	43.1 AV	54.0	-10.9	1.00 V	96	28.69	14.41
3	#17130.00	61.4 PK	74.0	-12.6	1.00 V	78	39.51	21.89
4	#17130.00	47.7 AV	54.0	-6.3	1.00 V	78	25.81	21.89

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

**802.11ac (VHT80)**

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10420.00	56.8 PK	74.0	-17.2	1.00 H	204	43.60	13.20
2	#10420.00	42.9 AV	54.0	-11.1	1.00 H	204	29.70	13.20
3	15630.00	61.2 PK	74.0	-12.8	1.01 H	83	42.60	18.60
4	15630.00	47.9 AV	54.0	-6.1	1.01 H	83	29.30	18.60

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10420.00	56.3 PK	74.0	-17.7	1.00 V	109	43.10	13.20
2	#10420.00	43.1 AV	54.0	-10.9	1.00 V	109	29.90	13.20
3	15630.00	61.4 PK	74.0	-12.6	1.00 V	94	42.80	18.60
4	15630.00	48.0 AV	54.0	-6.0	1.00 V	94	29.40	18.60

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 58	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10580.00	56.7 PK	74.0	-17.3	1.01 H	216	43.25	13.45
2	#10580.00	42.9 AV	54.0	-11.1	1.01 H	216	29.45	13.45
3	15870.00	60.8 PK	74.0	-13.2	1.02 H	79	42.18	18.62
4	15870.00	48.0 AV	54.0	-6.0	1.02 H	79	29.38	18.62

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#10580.00	56.4 PK	74.0	-17.6	1.05 V	123	42.95	13.45
2	#10580.00	43.0 AV	54.0	-11.0	1.05 V	123	29.55	13.45
3	15870.00	61.9 PK	74.0	-12.1	1.00 V	106	43.28	18.62
4	15870.00	48.2 AV	54.0	-5.8	1.00 V	106	29.58	18.62

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 106	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11060.00	57.3 PK	74.0	-16.7	1.00 H	207	43.00	14.30
2	11060.00	43.0 AV	54.0	-11.0	1.00 H	207	28.70	14.30
3	#16590.00	60.8 PK	74.0	-13.2	1.00 H	72	39.90	20.90
4	#16590.00	47.6 AV	54.0	-6.4	1.00 H	72	26.70	20.90

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11060.00	55.5 PK	74.0	-18.5	1.05 V	107	41.20	14.30
2	11060.00	42.5 AV	54.0	-11.5	1.05 V	107	28.20	14.30
3	#16590.00	61.7 PK	74.0	-12.3	1.00 V	92	40.80	20.90
4	#16590.00	48.0 AV	54.0	-6.0	1.00 V	92	27.10	20.90

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 122	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11220.00	56.9 PK	74.0	-17.1	1.01 H	219	42.64	14.26
2	11220.00	42.8 AV	54.0	-11.2	1.01 H	219	28.54	14.26
3	#16830.00	60.2 PK	74.0	-13.8	1.03 H	88	38.85	21.35
4	#16830.00	47.3 AV	54.0	-6.7	1.03 H	88	25.95	21.35

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11220.00	55.7 PK	74.0	-18.3	1.01 V	123	41.44	14.26
2	11220.00	42.6 AV	54.0	-11.4	1.01 V	123	28.34	14.26
3	#16830.00	62.1 PK	74.0	-11.9	1.00 V	86	40.75	21.35
4	#16830.00	48.5 AV	54.0	-5.5	1.00 V	86	27.15	21.35

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 138	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11380.00	57.1 PK	74.0	-16.9	1.00 H	194	42.71	14.39
2	11380.00	42.6 AV	54.0	-11.4	1.00 H	194	28.21	14.39
3	#17070.00	60.8 PK	74.0	-13.2	1.00 H	58	39.11	21.69
4	#17070.00	47.4 AV	54.0	-6.6	1.00 H	58	25.71	21.69

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11380.00	55.3 PK	74.0	-18.7	1.01 V	116	40.91	14.39
2	11380.00	42.3 AV	54.0	-11.7	1.01 V	116	27.91	14.39
3	#17070.00	61.7 PK	74.0	-12.3	1.00 V	107	40.01	21.69
4	#17070.00	47.8 AV	54.0	-6.2	1.00 V	107	26.11	21.69

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

### Below 1GHz Data

#### 802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 60	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	166.29	38.4 QP	43.5	-5.1	1.00 H	219	51.63	-13.23
2	199.51	34.1 QP	43.5	-9.4	1.00 H	221	50.22	-16.13
3	336.04	39.2 QP	46.0	-6.8	1.50 H	211	50.33	-11.17
4	432.02	37.2 QP	46.0	-8.8	1.50 H	248	45.73	-8.50
5	798.19	40.1 QP	46.0	-5.9	1.00 H	238	41.57	-1.43
6	896.21	36.1 QP	46.0	-9.9	1.50 H	186	36.01	0.08

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	122.78	38.1 QP	43.5	-5.4	1.50 V	258	52.87	-14.73
2	299.76	35.0 QP	46.0	-11.0	1.00 V	277	47.12	-12.09
<b>3</b>	<b>499.53</b>	<b>41.2 QP</b>	<b>46.0</b>	<b>-4.8</b>	<b>1.50 V</b>	<b>160</b>	<b>48.39</b>	<b>-7.20</b>
4	599.44	35.5 QP	46.0	-10.5	2.00 V	260	40.20	-4.72
5	697.07	35.2 QP	46.0	-10.8	1.50 V	274	38.58	-3.36
6	902.66	39.8 QP	46.0	-6.2	1.00 V	312	39.57	0.22

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

#### 4.4.8 Test Results (Conducted Measurement)

Radiated versus Conducted Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement
<p><u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)</p> <p><u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).</p>	

Conducted Measurement Factor
<p>a. The composite gain will be used when signal support the correlated signal. (Composite gain = 3.08dBi + 10log(2) = 6.09dBi Composite gain = 4.76dBi + 10log(2) = 7.77dBi)</p> <p>b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.</p> <p>c. For the band edge the gain for the specific band may have been used.</p> <p>d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For f = 30 – 1000 MHz, add 4.7 dB.</p> <p>Note: The conducted emission test was considered some factor to compute test result.</p>

**Above 1GHz Data**  
**802.11a - Channel 36**

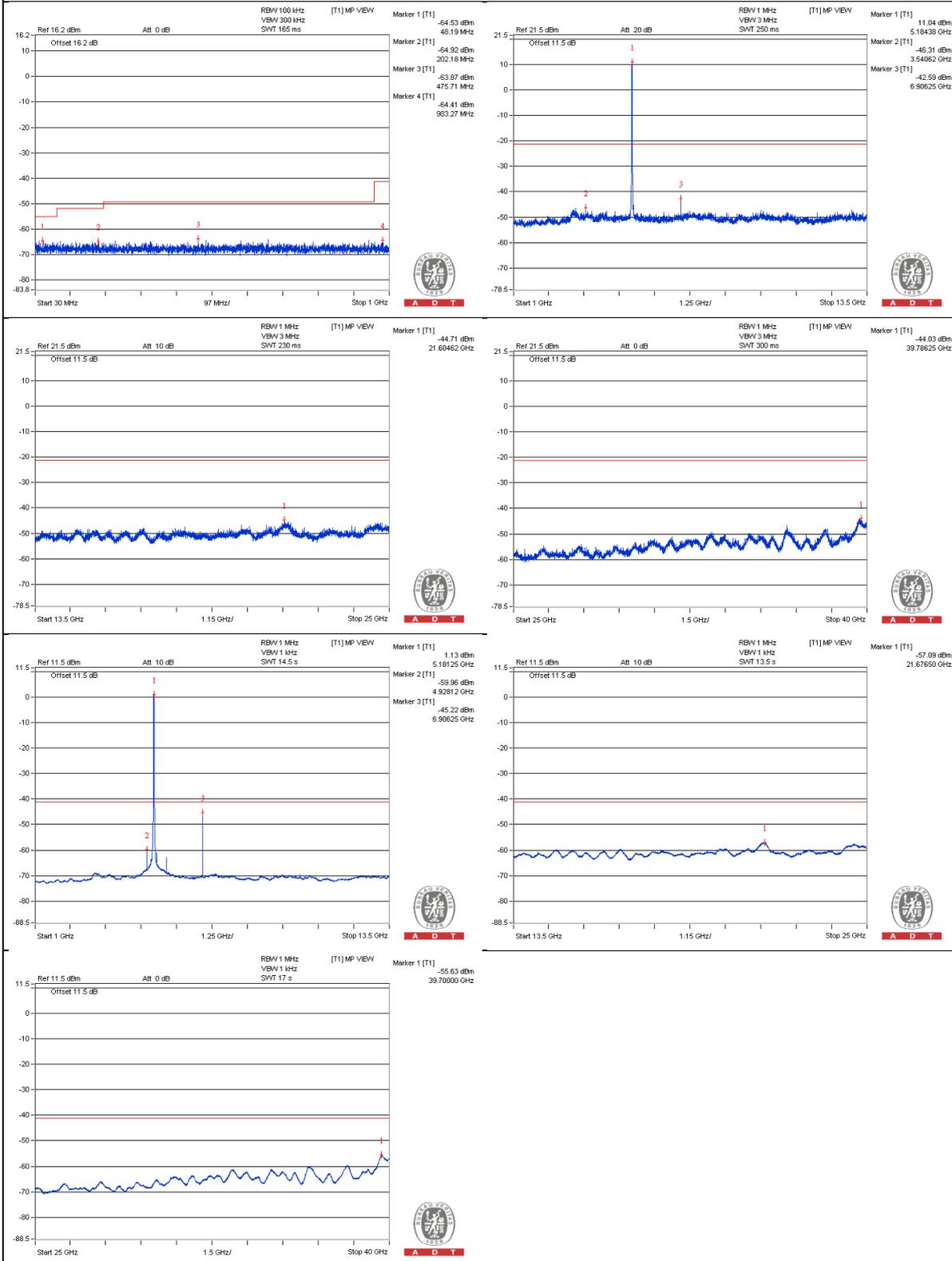
**Conducted spurious emission table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3468.75 PK	55.06	74	-18.94	-48.43	-50.38	6.09	-40.2
2	3434.375 AV	33.74	54	-20.26	-70.58	-70.66	6.09	-61.52
3	6906.25 PK	61.07	68.2	-7.13	-42.59	-44.12	6.09	-34.19
4	10362.5 PK	54.81	74	-19.19	-49.67	-49.44	6.09	-40.45
5	10362.5 AV	34.42	54	-19.58	-69.6	-70.31	6.09	-60.84
6	15532.625 PK	54.69	74	-19.31	-49.31	-50.06	6.09	-40.57
7	15521.125 AV	43.17	54	-10.83	-61.16	-61.23	6.09	-52.09

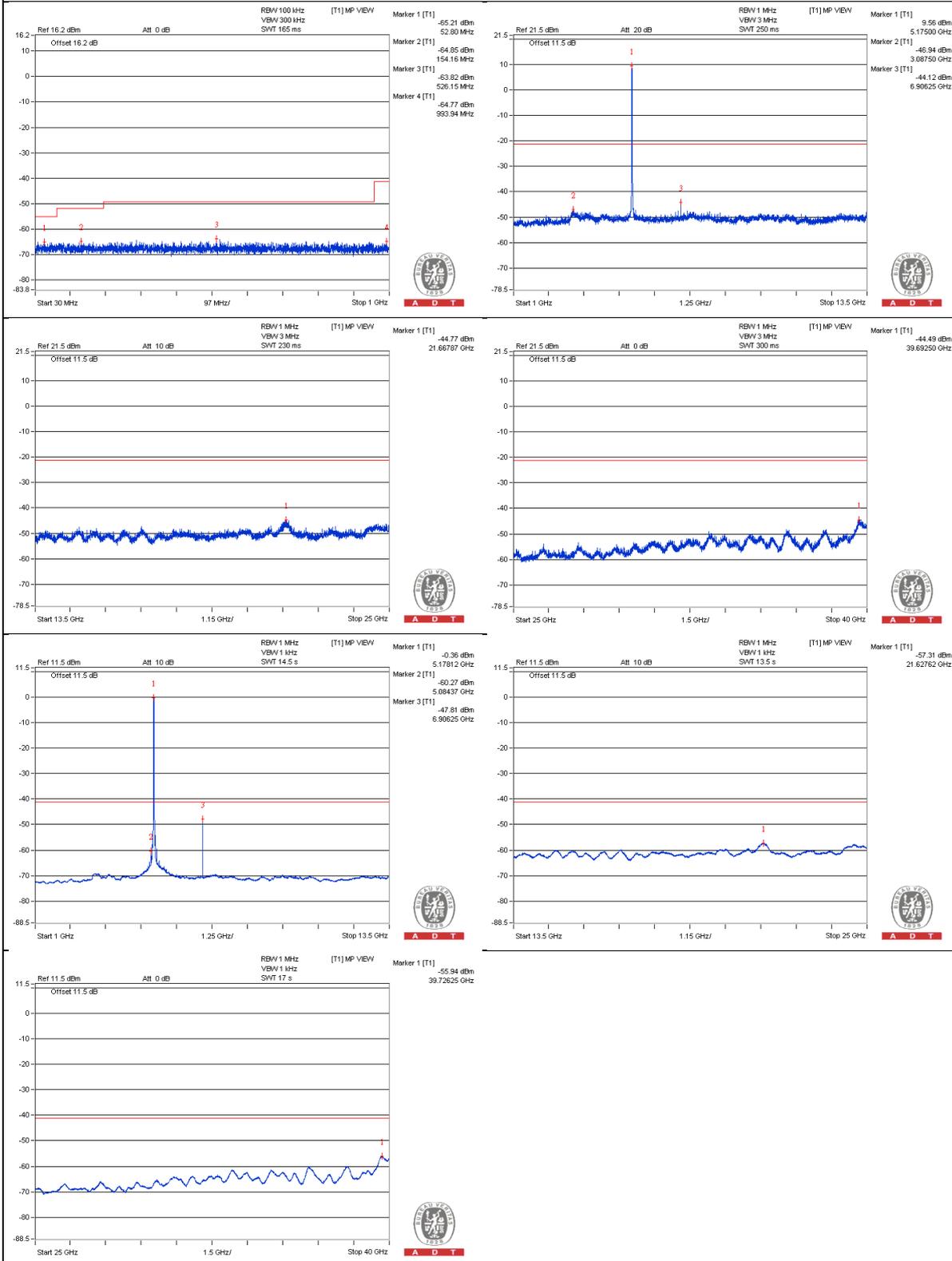
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

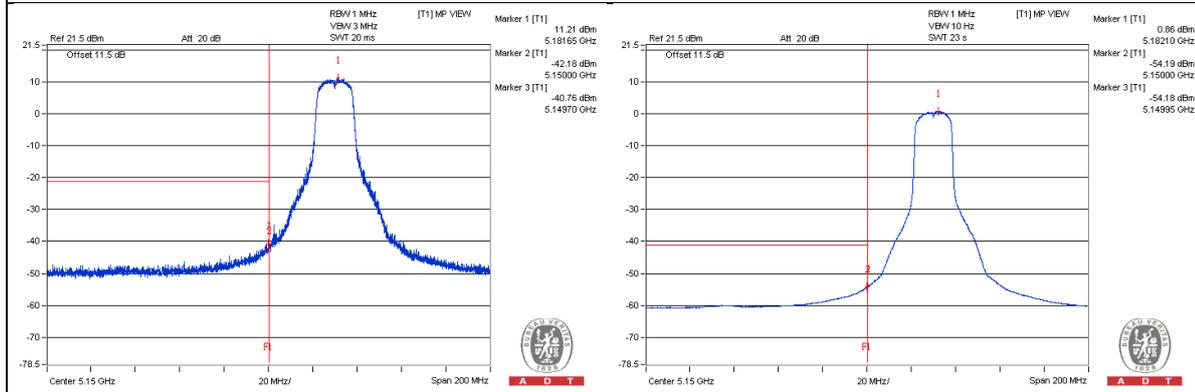


### Bandedge table

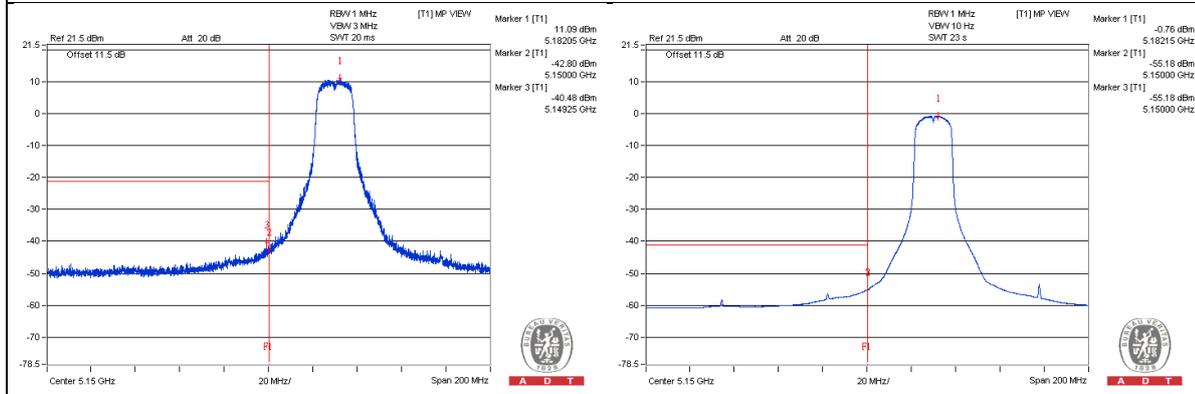
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5149.25 PK	63.63	74	-10.37	-41	-40.48	6.09	-31.63
2	5149.95 AV	49.7	54	-4.3	-54.18	-55.19	6.09	-45.56

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 40

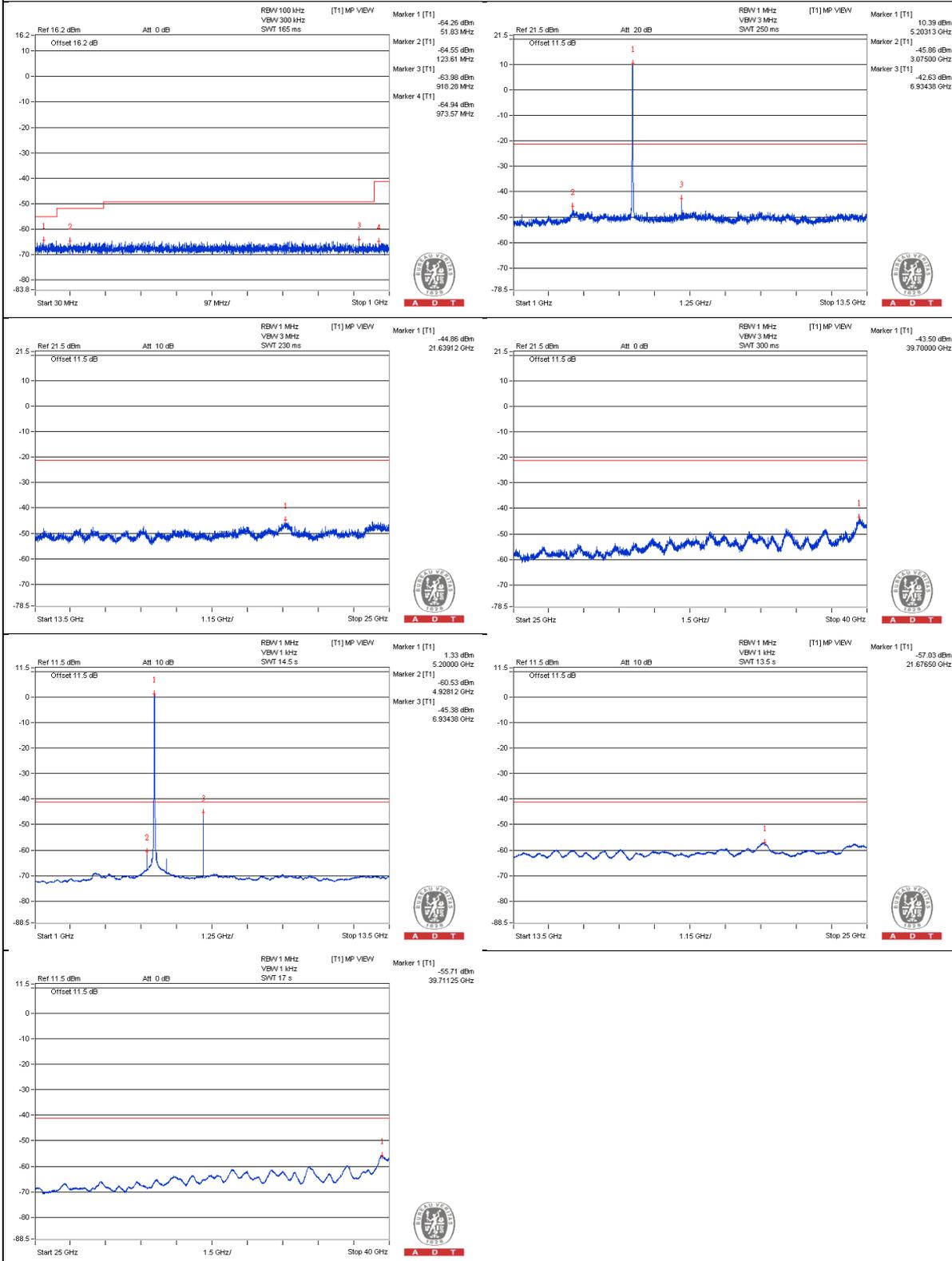
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3446.875 PK	54.9	74	-19.1	-48.31	-51.04	6.09	-40.36
2	3450 AV	33.68	54	-20.32	-70.62	-70.74	6.09	-61.58
3	6934.375 PK	60.71	68.2	-7.49	-42.63	-44.99	6.09	-34.55
4	10387.5 PK	54.26	74	-19.74	-49.2	-51.24	6.09	-41
5	10400 AV	34.06	54	-19.94	-70.17	-70.44	6.09	-61.2
6	15610.25 PK	53.92	74	-20.08	-50.73	-50.16	6.09	-41.34
7	15581.5 AV	42.28	54	-11.72	-62.19	-61.98	6.09	-52.98

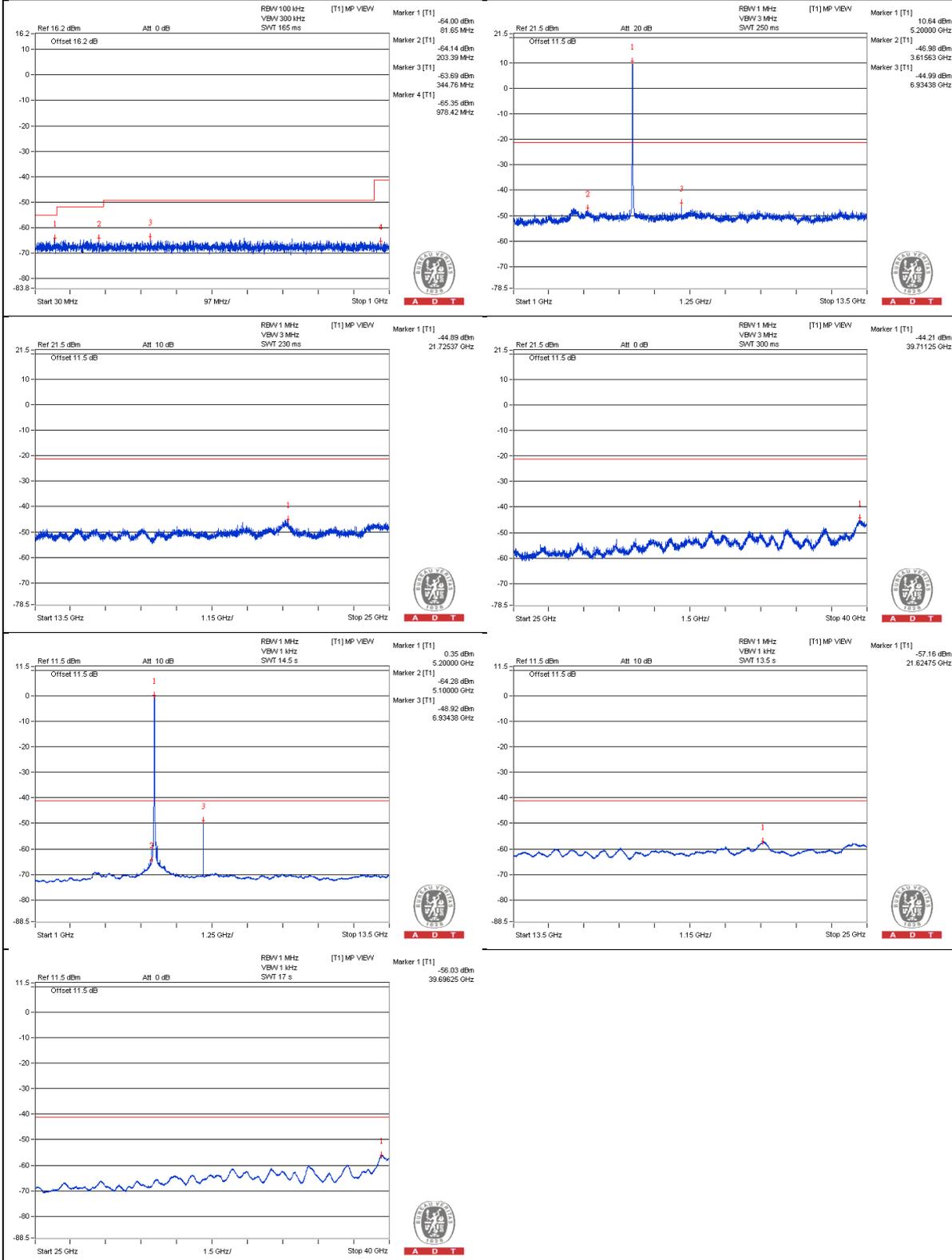
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



802.11a - Channel 48

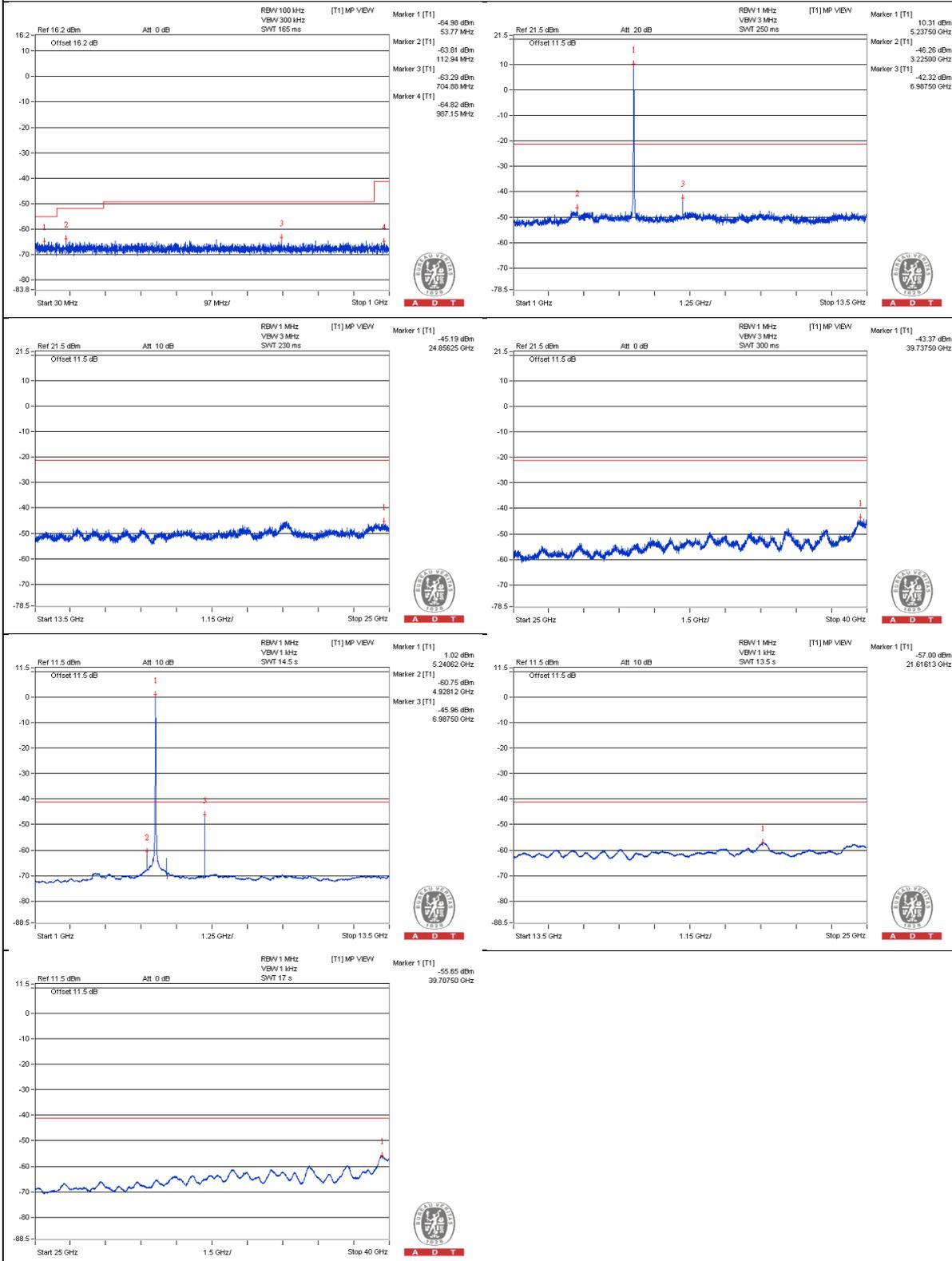
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3484.375 PK	55.13	74	-18.87	-48.06	-50.83	6.09	-40.13
2	3512.5 AV	33.92	54	-20.08	-70.21	-70.68	6.09	-61.34
3	6987.5 PK	60.66	68.2	-7.54	-42.32	-45.72	6.09	-34.6
4	10490.625 PK	53.7	74	-20.3	-50.3	-51.06	6.09	-41.56
5	10481.25 AV	33.72	54	-20.28	-70.67	-70.61	6.09	-61.54
6	15731 PK	53.5	74	-20.5	-50.36	-51.43	6.09	-41.76
7	15731 AV	42.24	54	-11.76	-62.3	-61.95	6.09	-53.02

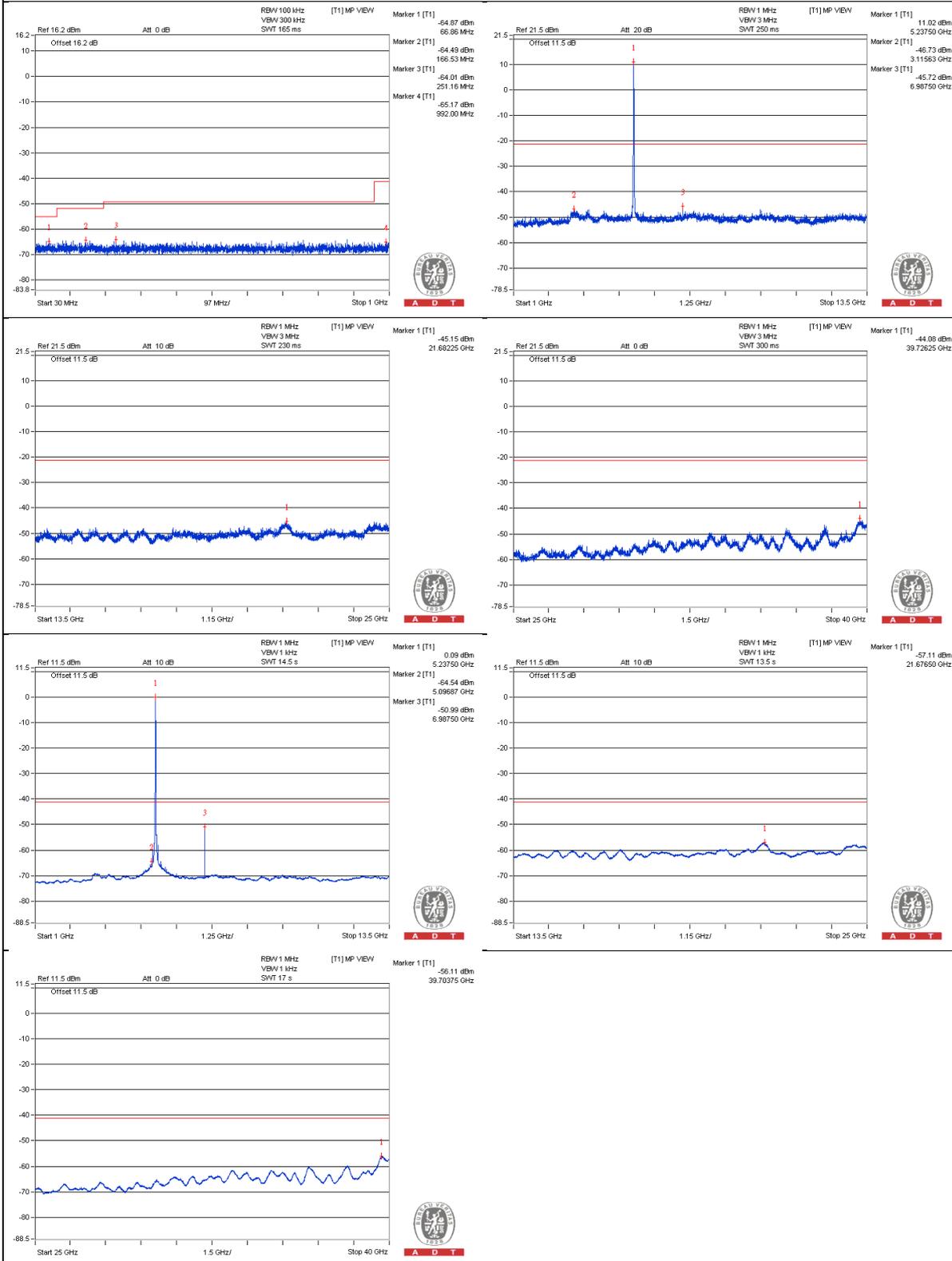
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



## 802.11a - Channel 52

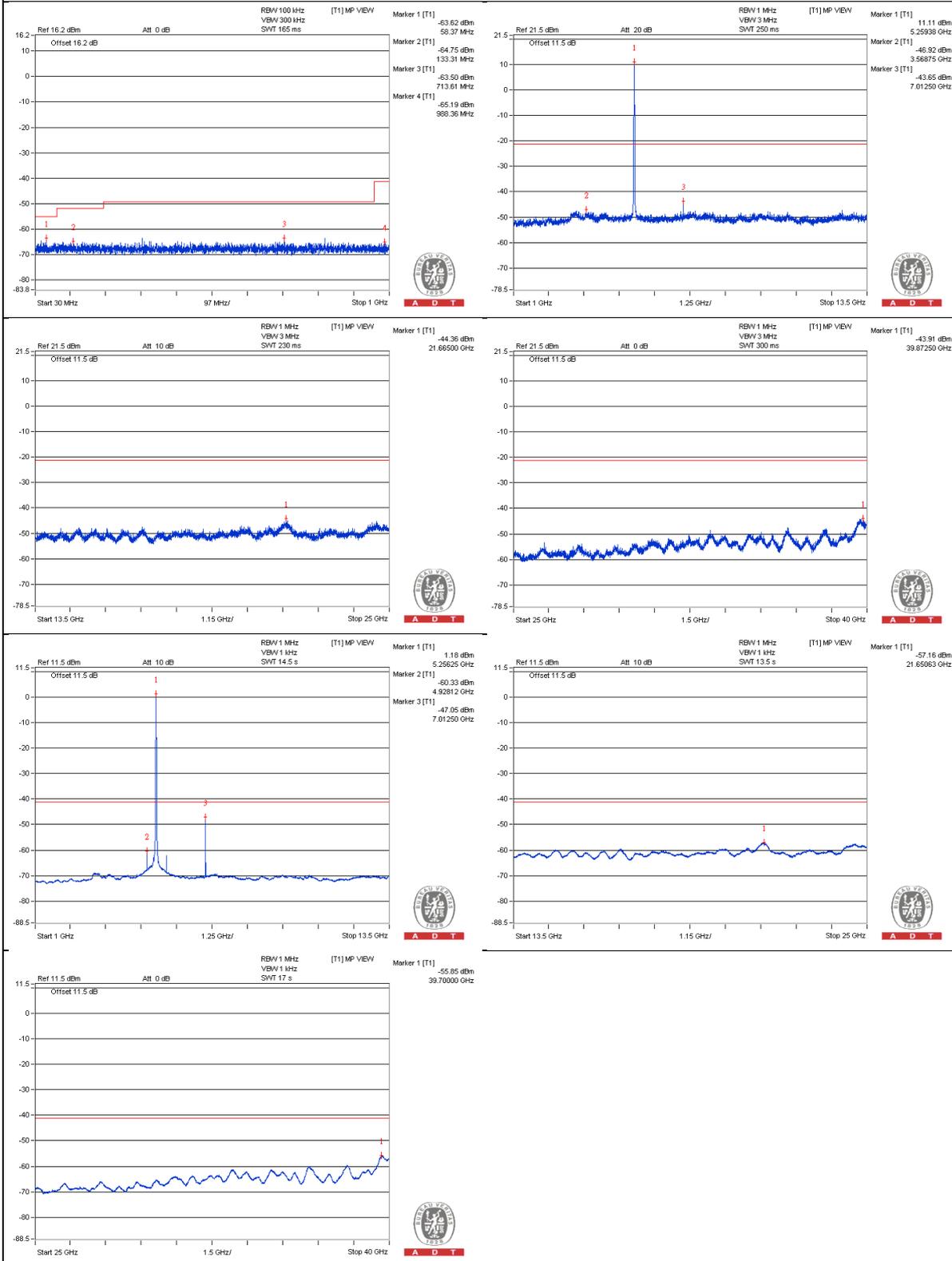
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3515.625 PK	55.39	74	-18.61	-49	-48.95	6.09	-39.87
2	3521.875 AV	34.22	54	-19.78	-70.11	-70.18	6.09	-61.04
3	7012.5 PK	59.75	68.2	-8.45	-43.65	-45.84	6.09	-35.51
4	10531.25 PK	54.58	74	-19.42	-49.34	-50.27	6.09	-40.68
5	10525 AV	33.96	54	-20.04	-70.1	-70.72	6.09	-61.3
6	15788.5 PK	54.17	74	-19.83	-49.73	-50.7	6.09	-41.09
7	15791.375 AV	42.99	54	-11.01	-61.34	-61.41	6.09	-52.27

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**802.11a - Channel 60**

**Conducted spurious emission table**

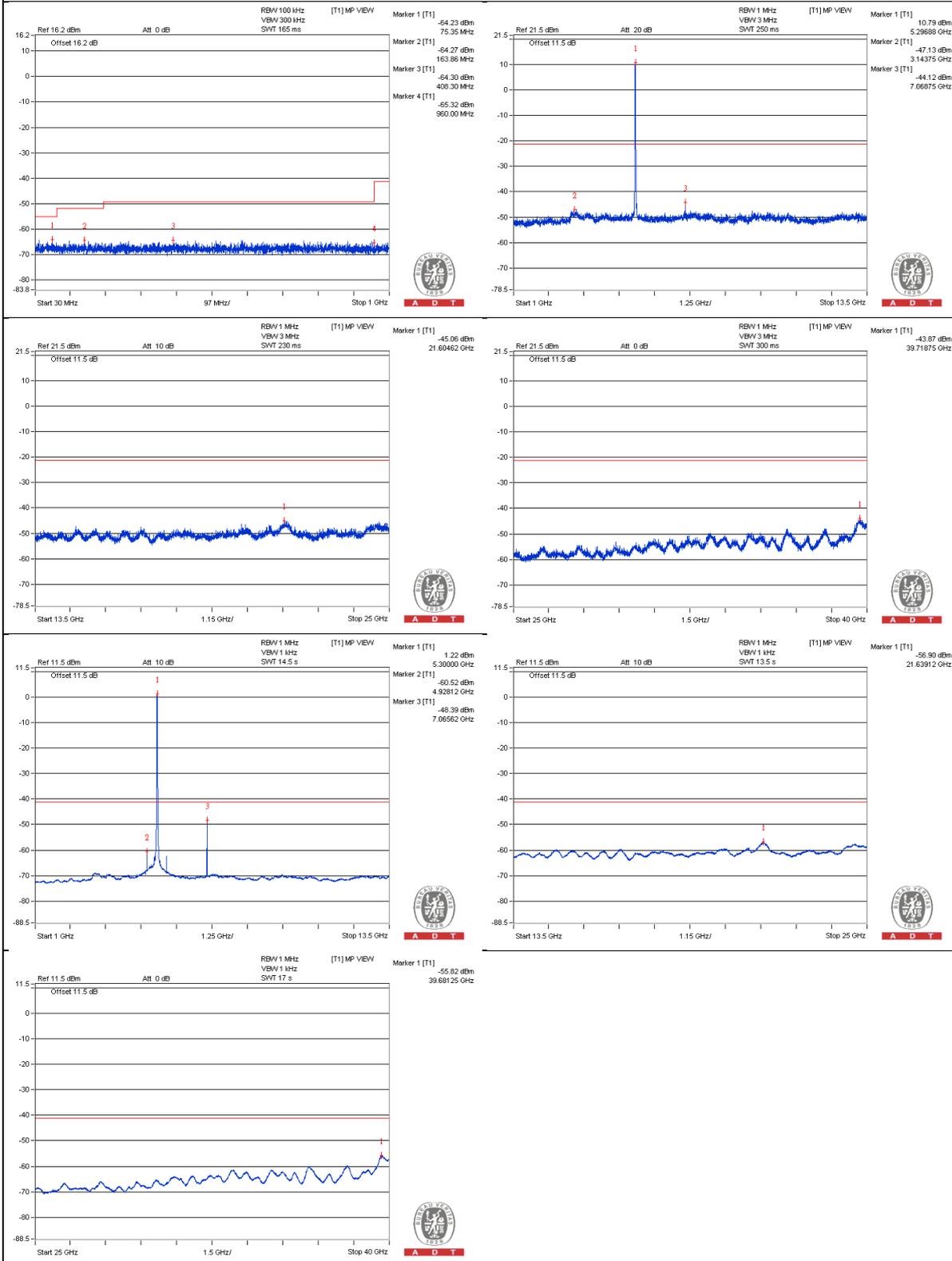
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3550 PK	55.57	74	-18.43	-49.21	-48.4	6.09	-39.69
2	3550 AV	34.38	54	-19.62	-69.96	-70.01	6.09	-60.88
3	7068.75 PK	58.99	68.2	-9.21	-44.12	-47.14	6.09	-36.27
4	10584.375 PK	54.63	74	-19.37	-49.22	-50.31	6.09	-40.63
5	10600 AV	33.73	54	-20.27	-70.45	-70.81	6.09	-61.53
6	15892 PK	54.58	74	-19.42	-49.27	-50.37	6.09	-40.68
7	15897.75 AV	43.1	54	-10.9	-61.23	-61.29	6.09	-52.16

Note :

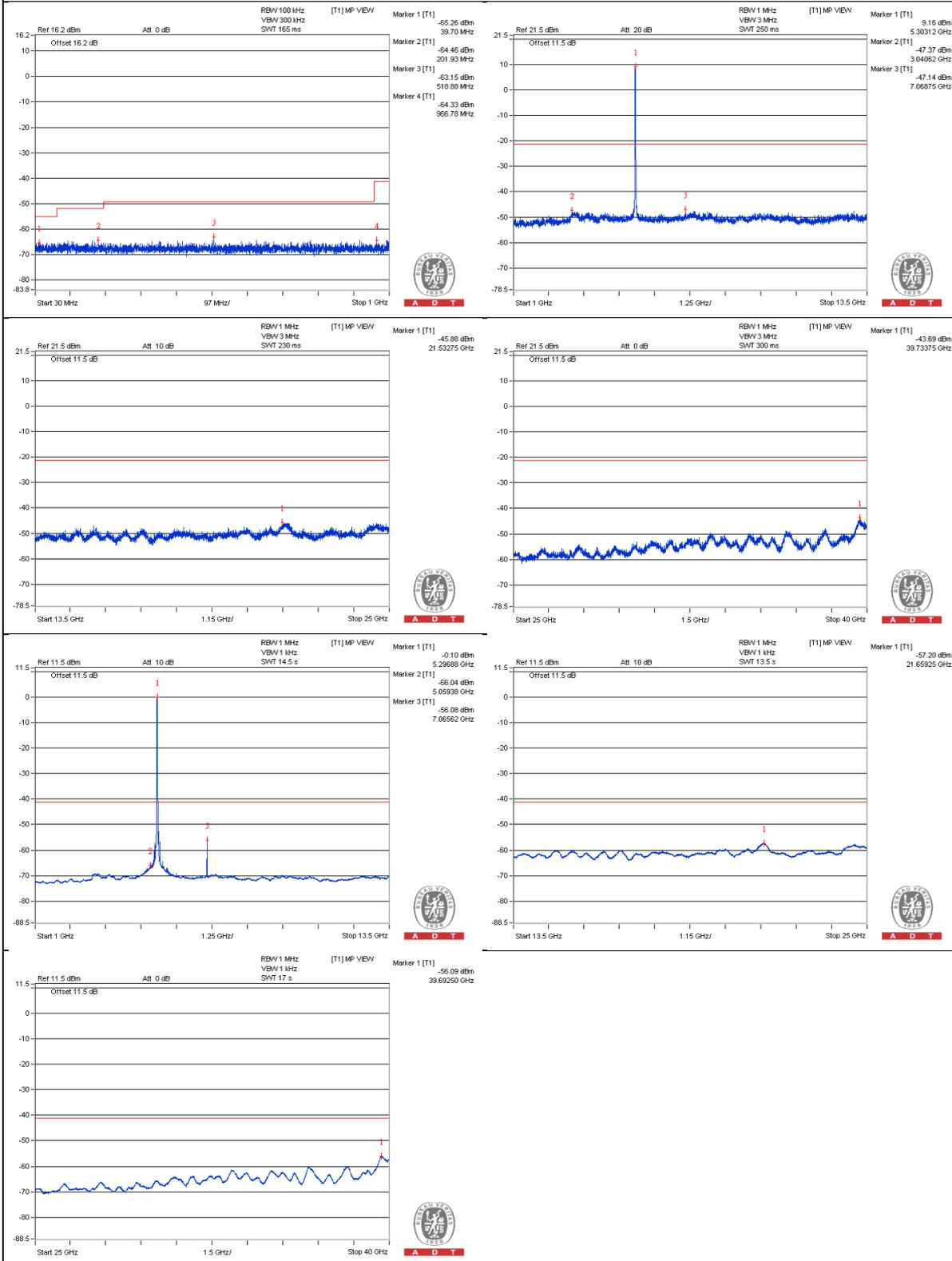
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



802.11a - Channel 64

Conducted spurious emission table

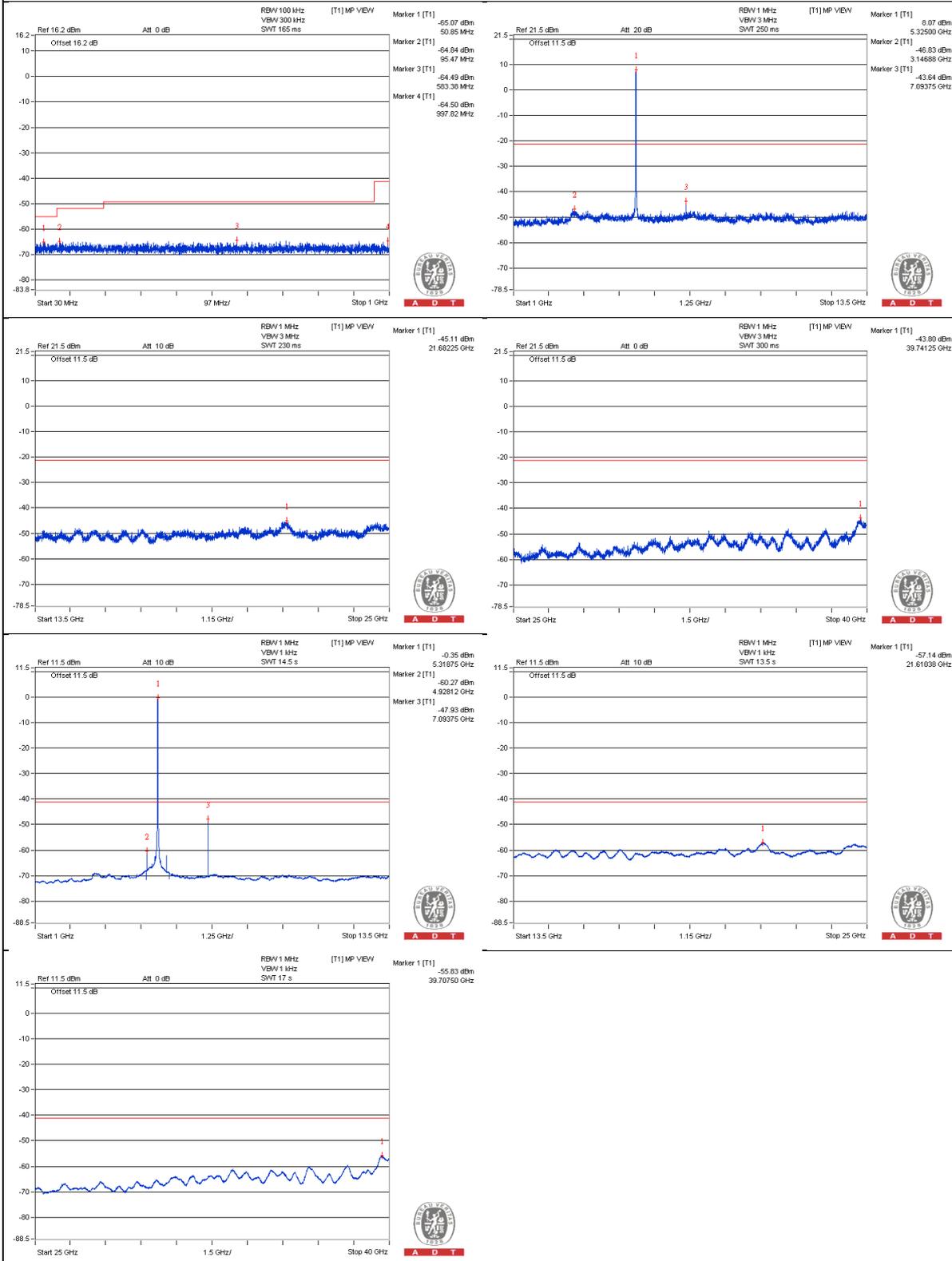
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3553.125 PK	55.58	74	-18.42	-47.91	-49.86	6.09	-39.68
2	3546.875 AV	34.62	54	-19.38	-69.73	-69.75	6.09	-60.64
3	7093.75 PK	58.85	68.2	-9.35	-43.64	-48.85	6.09	-36.41
4	10631.25 PK	54.56	74	-19.44	-48.34	-52	6.09	-40.7
5	10628.125 AV	33.7	54	-20.3	-70.69	-70.64	6.09	-61.56
6	15963.875 PK	53.3	74	-20.7	-50.73	-51.42	6.09	-41.96
7	15940.875 AV	42.37	54	-11.63	-61.98	-62.01	6.09	-52.89

Note :

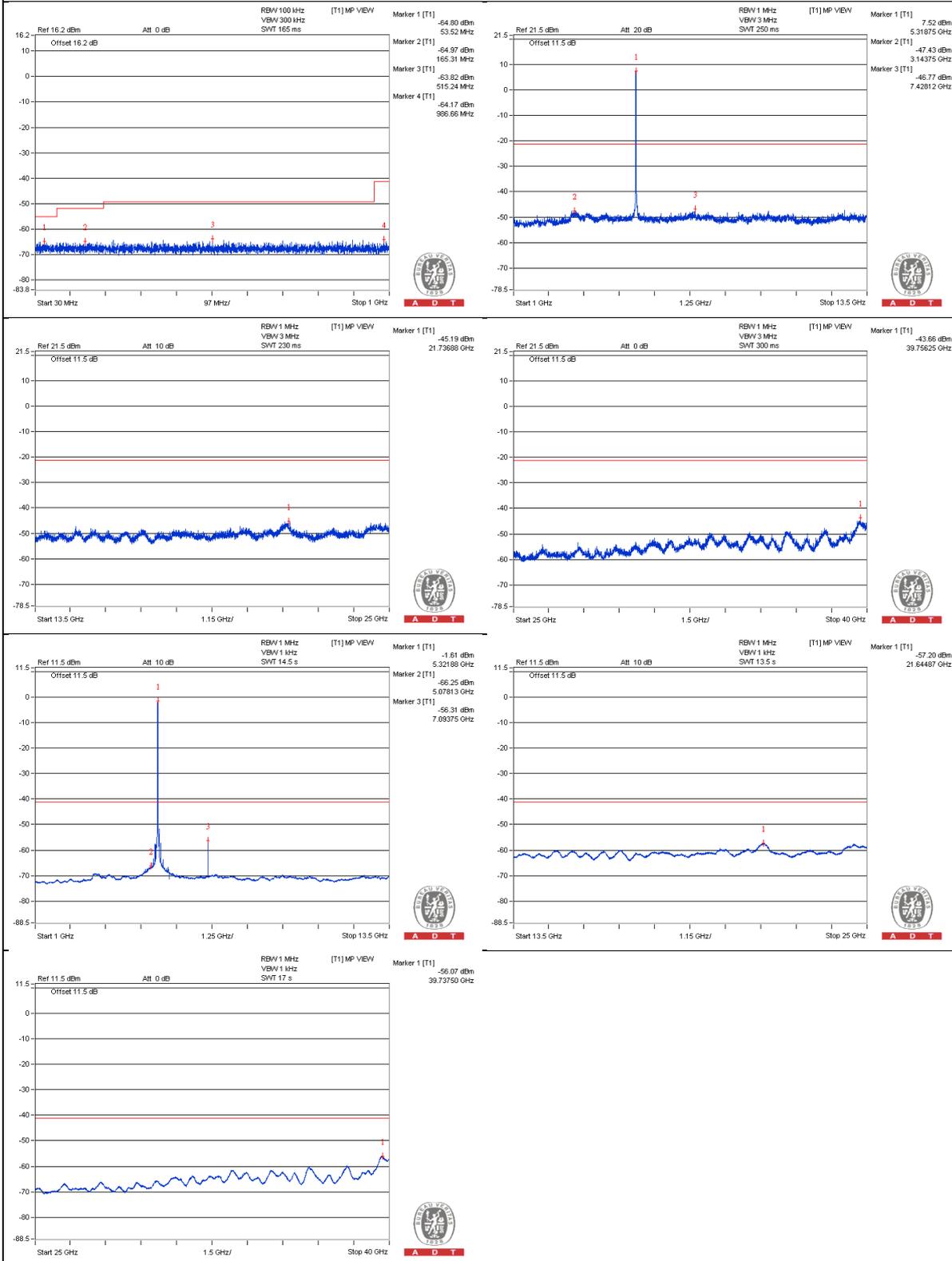
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1

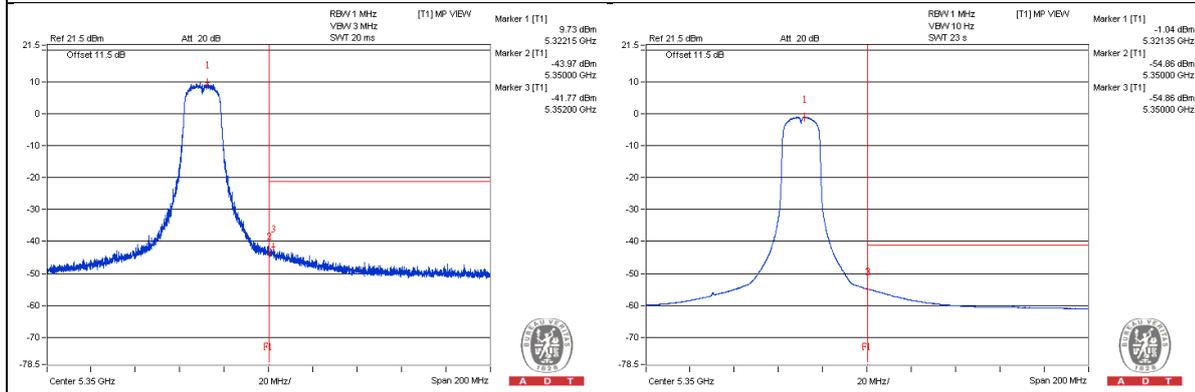


### Bandedge table

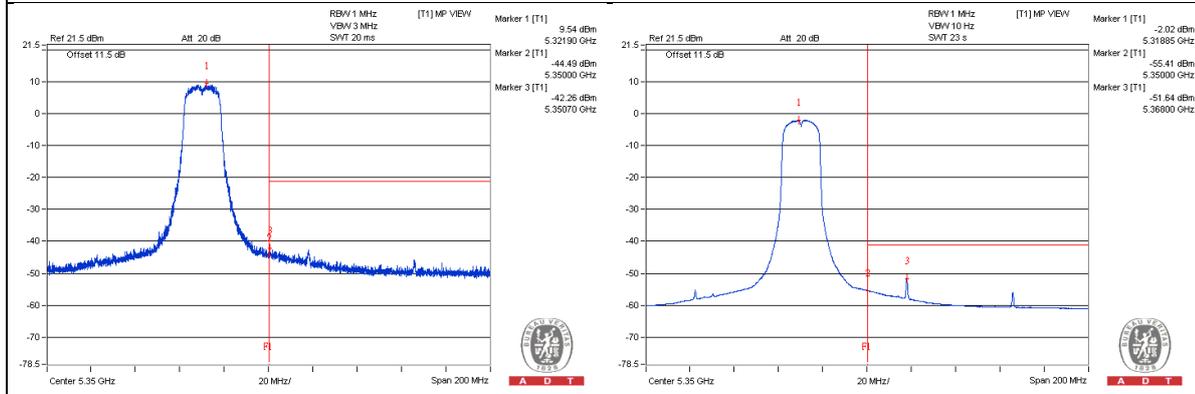
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5350.15 PK	61.5	74	-12.5	-42.39	-43.39	6.09	-33.76
2	5368 AV	50.6	54	-3.4	-58.06	-51.64	6.09	-44.66

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 100

### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3662.5 PK	56.81	74	-17.19	-49.27	-49.19	7.77	-38.45
2	3650 AV	36.02	54	-17.98	-69.91	-70.14	7.77	-59.24
3	7334.375 PK	58.29	74	-15.71	-46.62	-49.28	7.77	-36.97
4	7334.375 AV	49.55	54	-4.45	-53.77	-65.36	7.77	-45.71
5	10990.625 PK	55.08	74	-18.92	-50.5	-51.47	7.77	-40.18
6	10984.375 AV	34.44	54	-19.56	-71.43	-71.78	7.77	-60.82
7	16504.375 PK	56.46	74	-17.54	-50	-49.19	7.77	-38.8
8	16481.375 AV	45.16	54	-8.84	-60.8	-60.97	7.77	-50.1

Note :

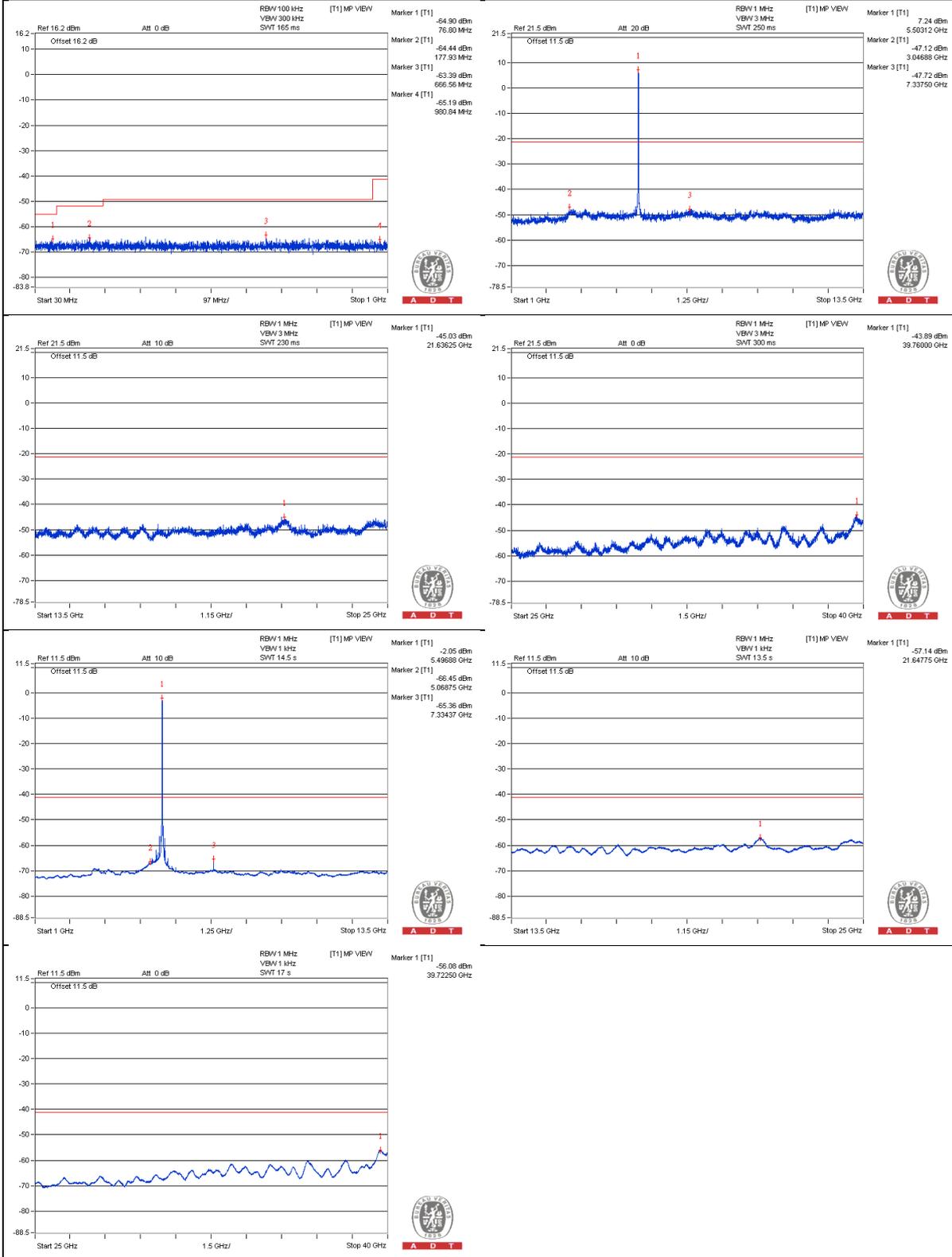
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

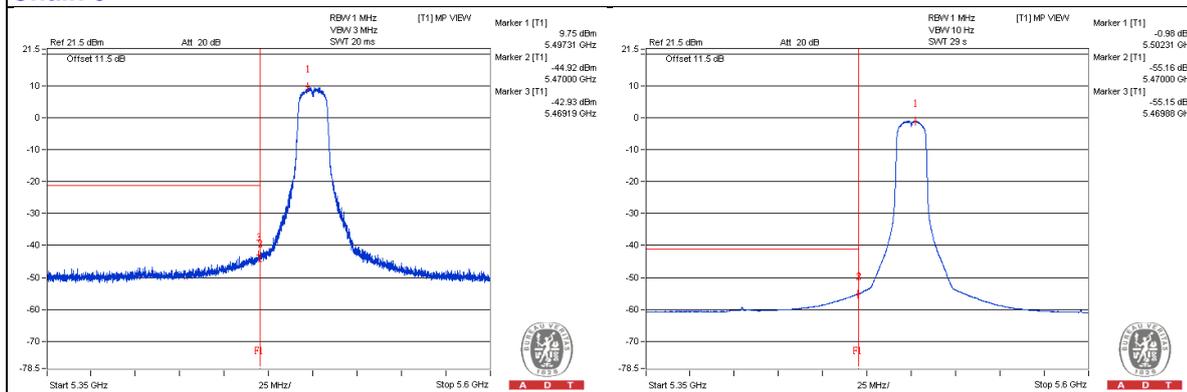
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5469.375 PK	62.2	74	-11.8	-43.52	-44.18	7.77	-33.06
2	5470 AV	50.48	54	-3.52	-55.16	-56.01	7.77	-44.78

Note :

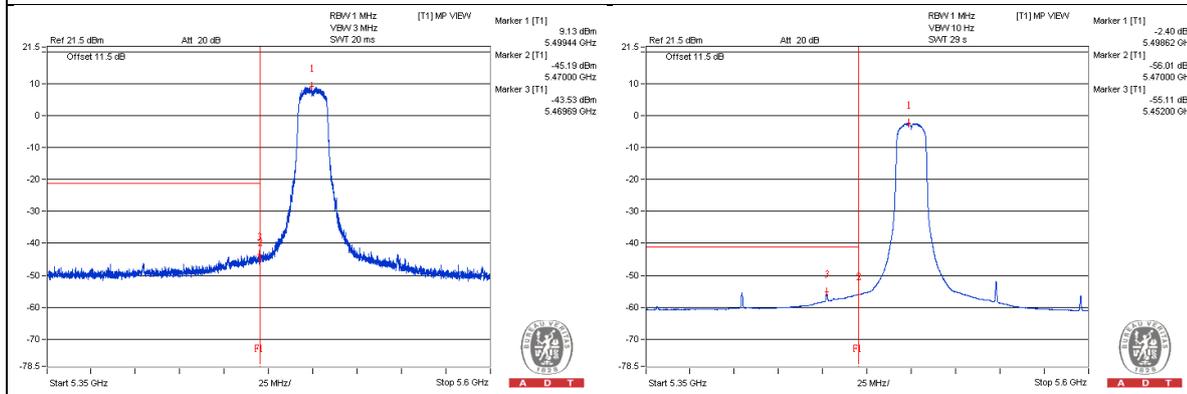
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 120

### Conducted spurious emission table

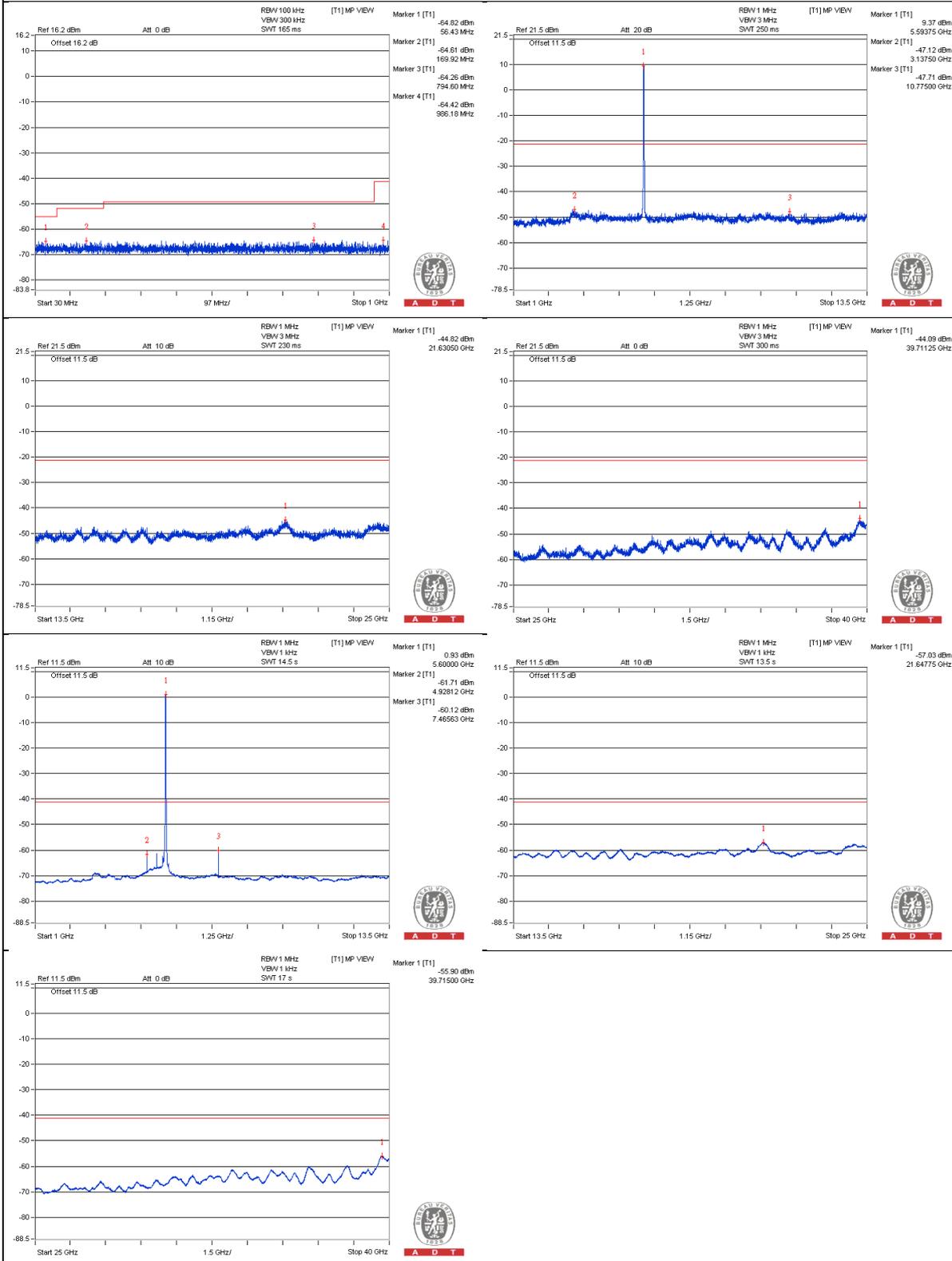
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3753.125 PK	56.82	74	-17.18	-49.7	-48.79	7.77	-38.44
2	3734.375 AV	35.75	54	-18.25	-70.16	-70.42	7.77	-59.51
3	7462.5 PK	56.98	74	-17.02	-49.76	-48.45	7.77	-38.28
4	7465.625 AV	43.33	54	-10.67	-60.12	-70.05	7.77	-51.93
5	11190.625 PK	56.09	74	-17.91	-49.44	-50.53	7.77	-39.17
6	11200 AV	34.87	54	-19.13	-71.15	-71.2	7.77	-60.39
7	16794.75 PK	55.79	74	-18.21	-48.98	-52.04	7.77	-39.47
8	16817.75 AV	44.37	54	-9.63	-61.53	-61.81	7.77	-50.89

Note :

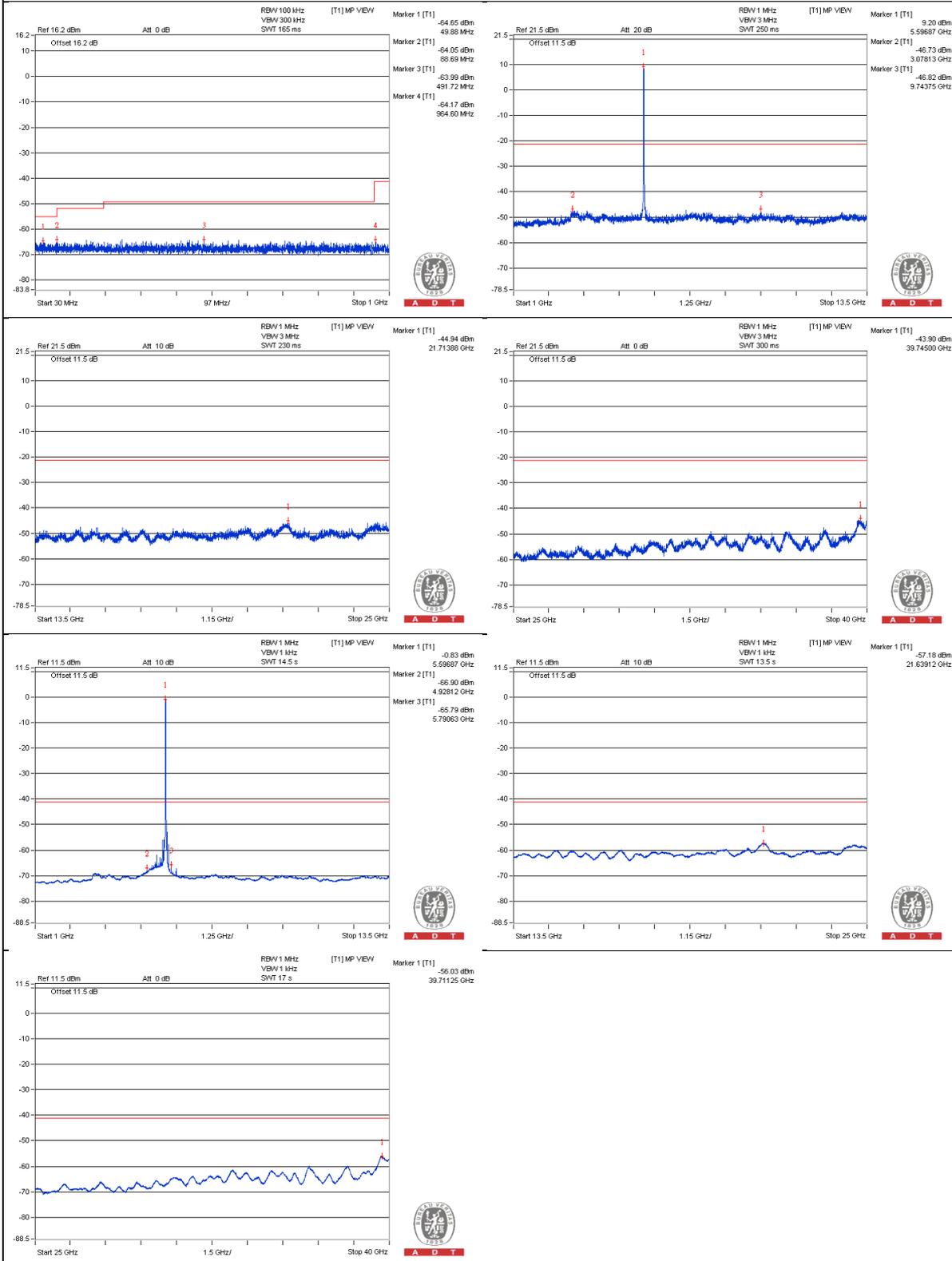
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 140

### Conducted spurious emission table

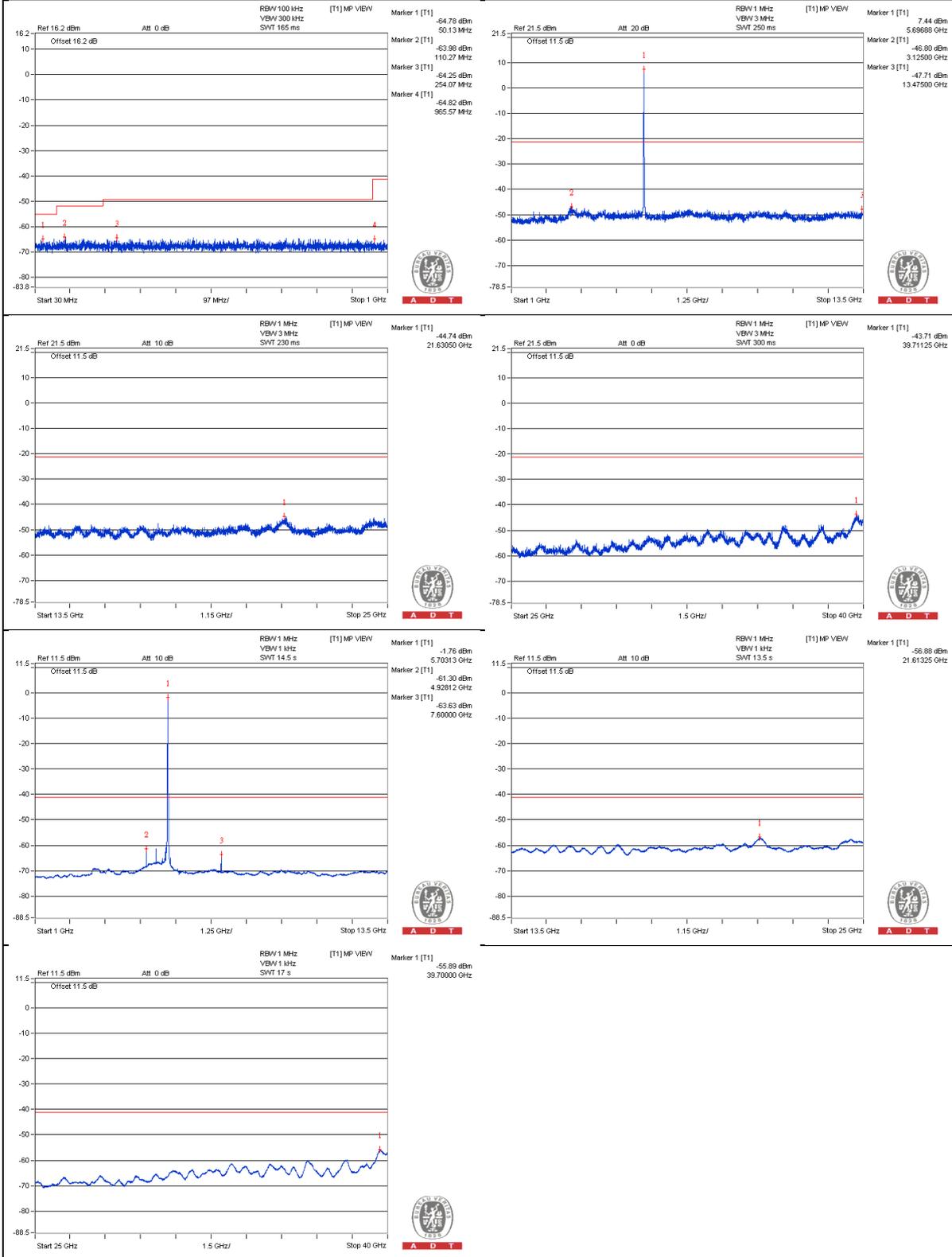
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3809.375 PK	55.92	74	-18.08	-49.57	-50.75	7.77	-39.34
2	3781.25 AV	35.33	54	-18.67	-70.56	-70.86	7.77	-59.93
3	7590.625 PK	56.55	74	-17.45	-49.17	-49.83	7.77	-38.71
4	7600 AV	40.16	54	-13.84	-63.63	-70.81	7.77	-55.1
5	11396.875 PK	56.05	74	-17.95	-50.22	-49.77	7.77	-39.21
6	11390.625 AV	34.49	54	-19.51	-71.6	-71.5	7.77	-60.77
7	17085.125 PK	56.7	74	-17.3	-49.95	-48.8	7.77	-38.56
8	17096.625 AV	44.72	54	-9.28	-61.08	-61.58	7.77	-50.54

Note :

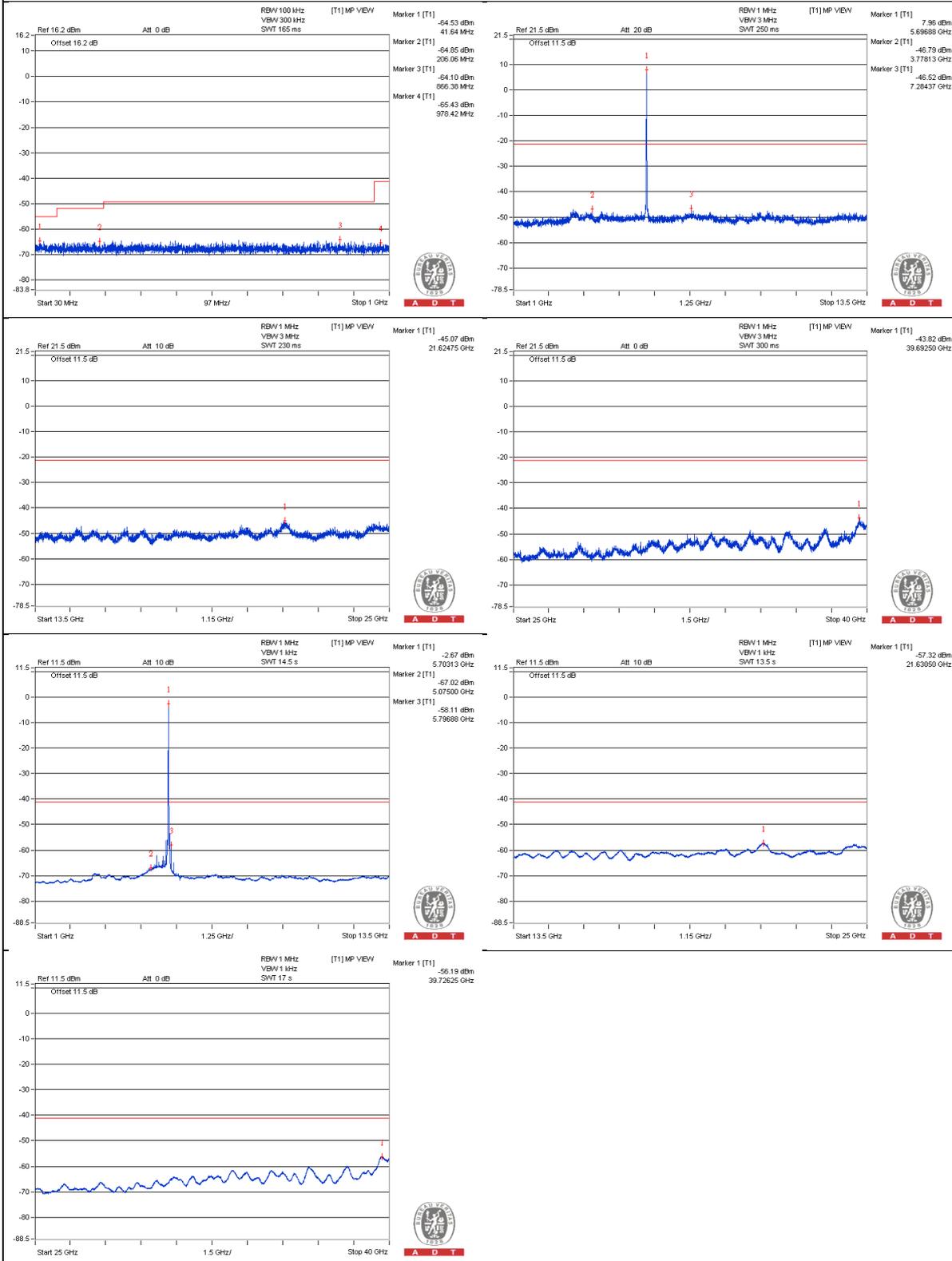
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

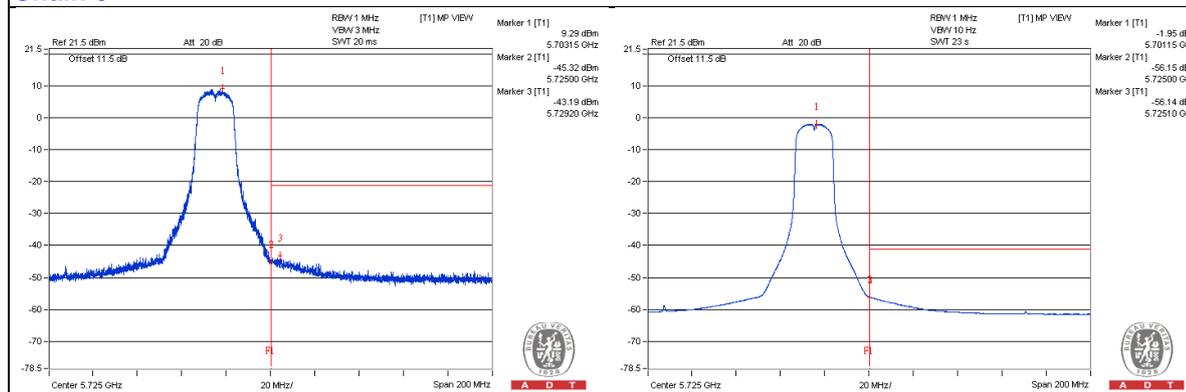


### Bandedge table

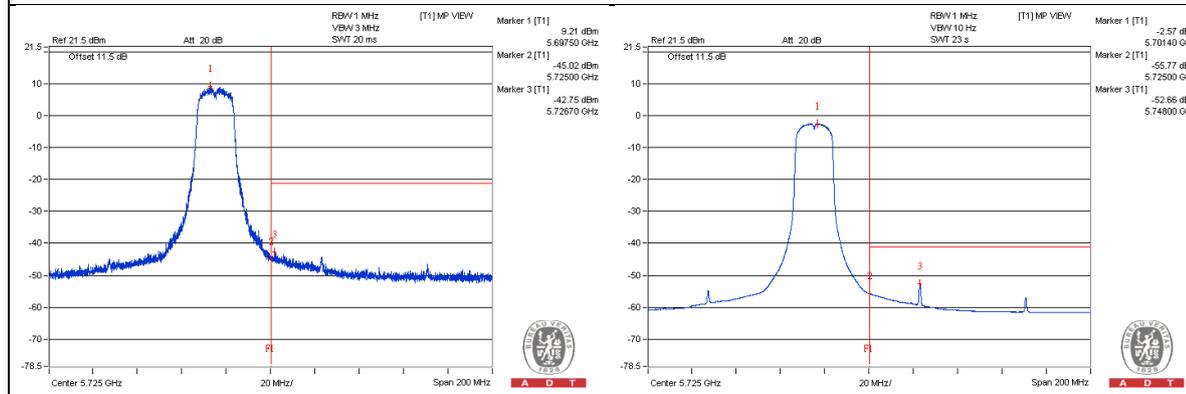
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5726.9 PK	62.22	74	-11.78	-44.87	-42.97	7.77	-33.04
2	5748 AV	51.14	54	-2.86	-59.81	-52.66	7.77	-44.12

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 144

### Conducted spurious emission table

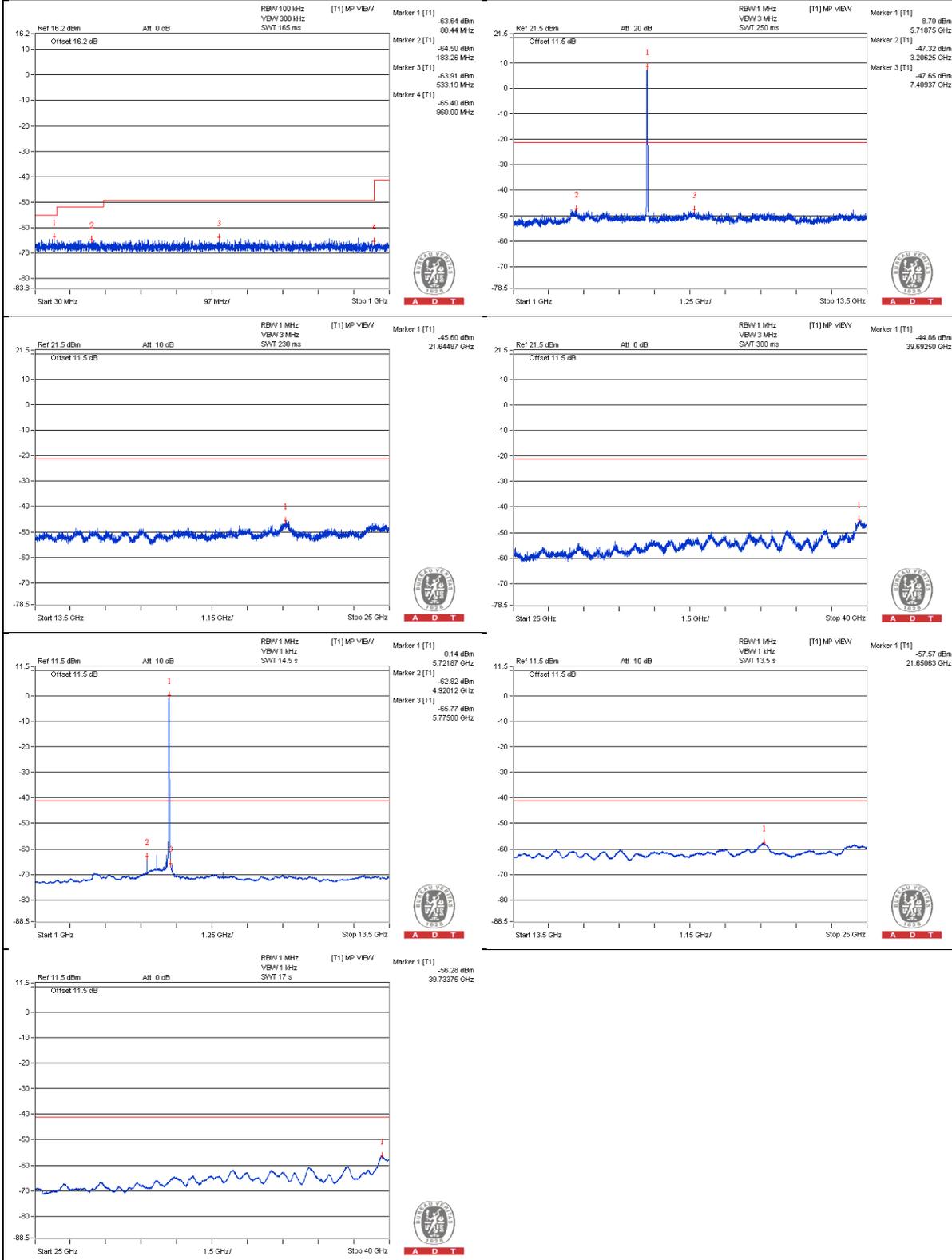
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3800 PK	56.06	74	-17.94	-50.74	-49.33	7.77	-39.2
2	3796.875 AV	34.6	54	-19.4	-71.38	-71.5	7.77	-60.66
3	7618.75 PK	55.83	74	-18.17	-50.52	-49.93	7.77	-39.43
4	7628.125 AV	35.9	54	-18.1	-69.22	-71.32	7.77	-59.36
5	11450 PK	54.77	74	-19.23	-51.83	-50.78	7.77	-40.49
6	11446.875 AV	33.83	54	-20.17	-72.34	-72.08	7.77	-61.43
7	17154.125 PK	54.48	74	-19.52	-51.74	-51.39	7.77	-40.78
8	17145.5 AV	43.4	54	-10.6	-62.62	-62.67	7.77	-51.86

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1

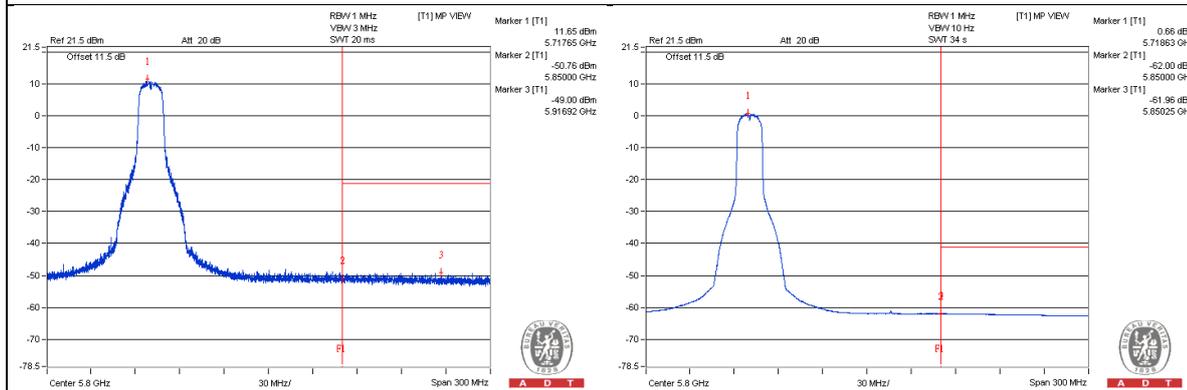


### Bandedge table

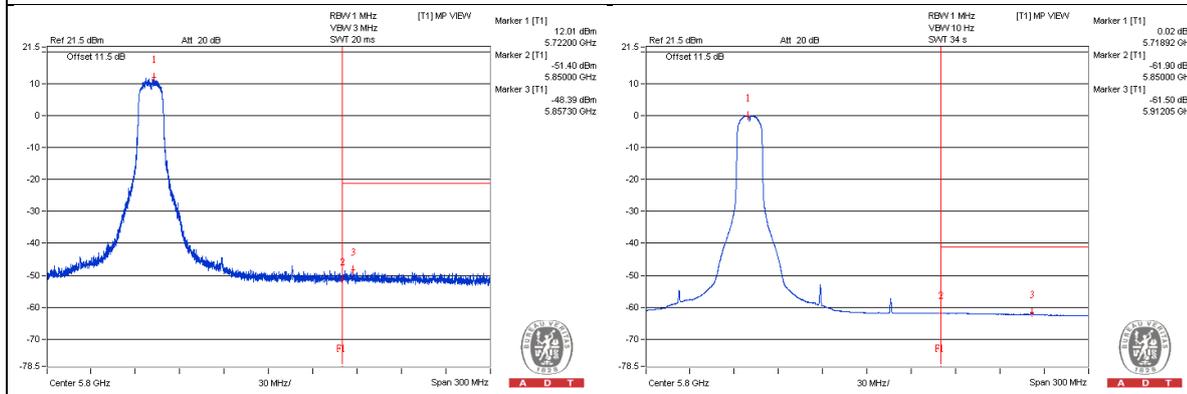
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5848.075 PK	56.7	74	-17.3	-49.14	-49.55	7.77	-38.56
2	5912.05 AV	44.15	54	-9.85	-62.31	-61.5	7.77	-51.11

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT20) - Channel 36

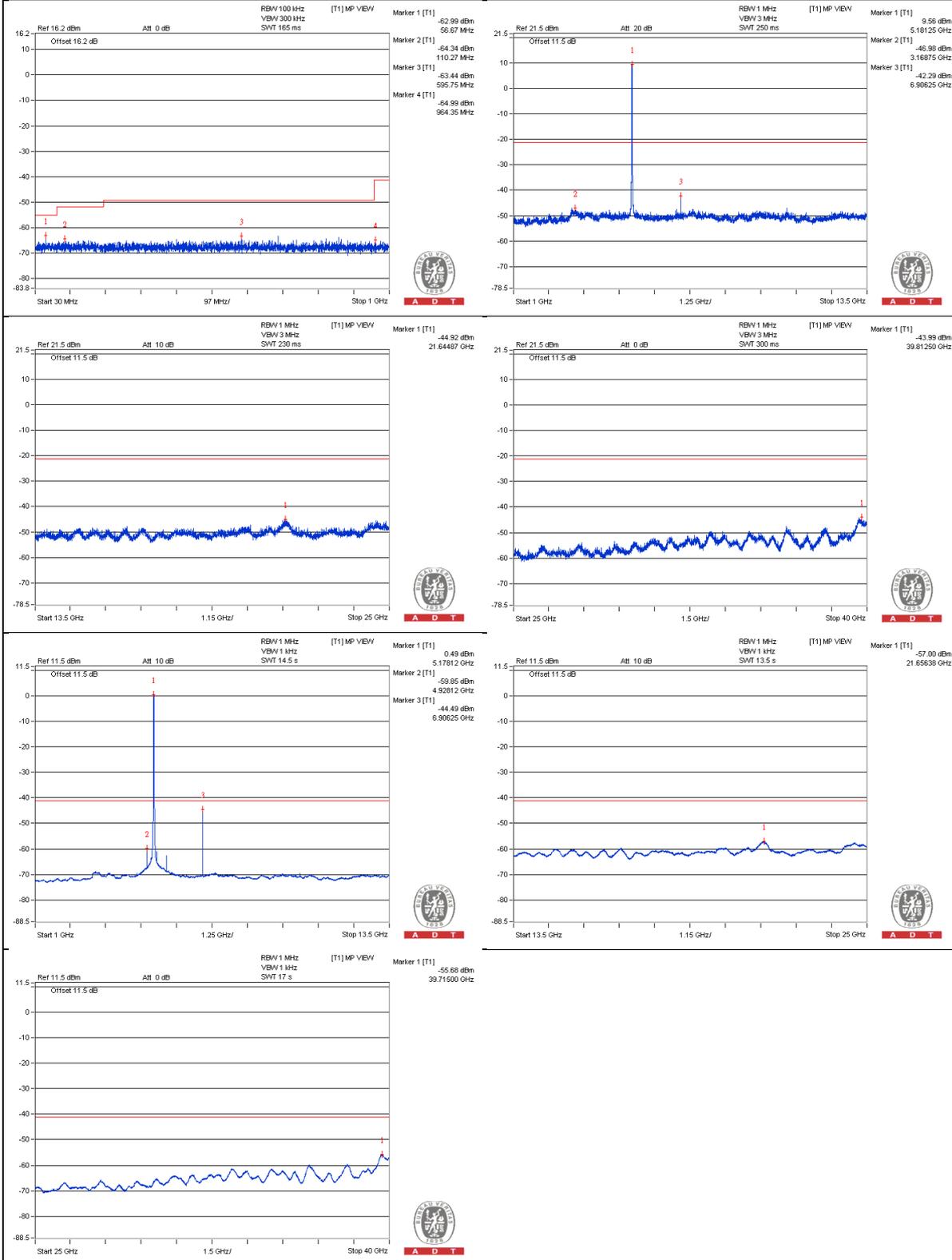
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3446.875 PK	54.84	74	-19.16	-49.27	-49.78	6.09	-40.42
2	3434.375 AV	33.68	54	-20.32	-70.69	-70.67	6.09	-61.58
3	6906.25 PK	61.28	68.2	-6.92	-42.29	-44.04	6.09	-33.98
4	10356.25 PK	54.92	74	-19.08	-48.96	-49.99	6.09	-40.34
5	10365.625 AV	34.34	54	-19.66	-69.7	-70.37	6.09	-60.92
6	15541.25 PK	54.38	74	-19.62	-48.98	-51.29	6.09	-40.88
7	15521.125 AV	43.18	54	-10.82	-60.96	-61.41	6.09	-52.08

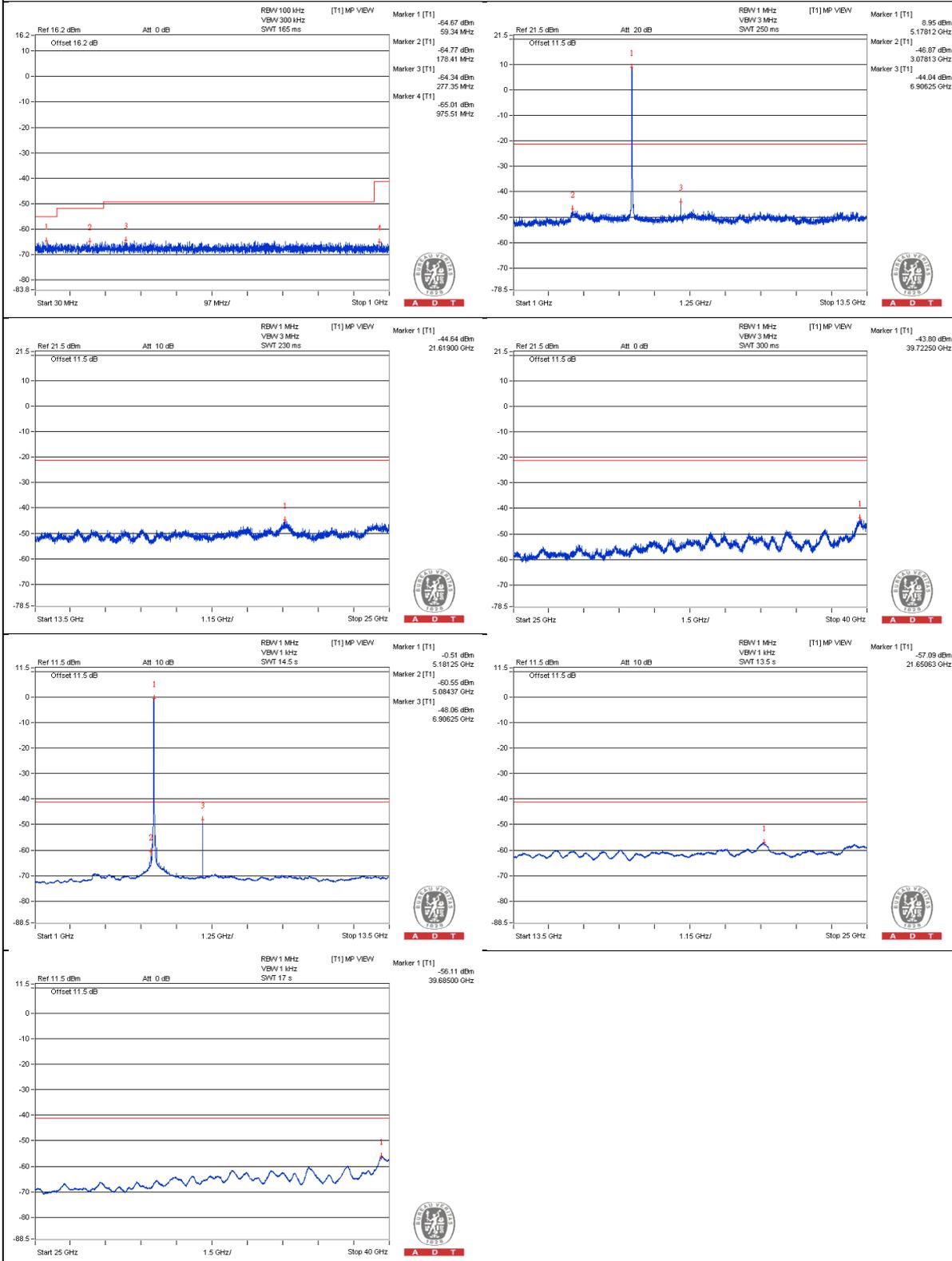
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1

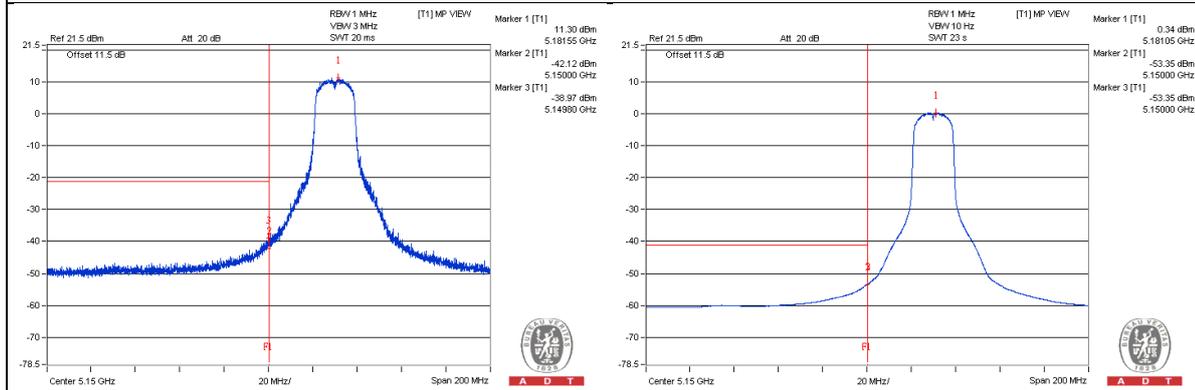


**Bandedge table**

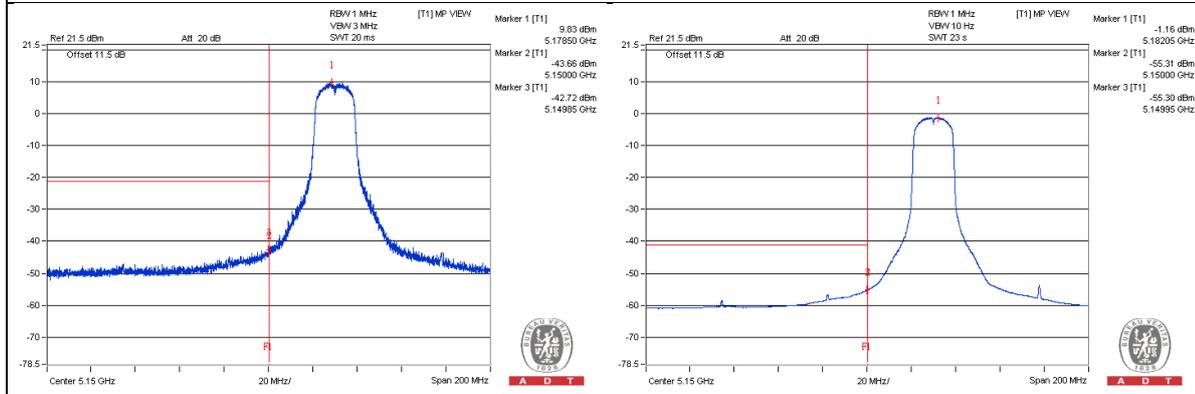
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5149.8 PK	63.89	74	-10.11	-38.97	-42.79	6.09	-31.37
2	5150 AV	50.14	54	-3.86	-53.35	-55.31	6.09	-45.12

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



## 802.11ac (VHT20) - Channel 40

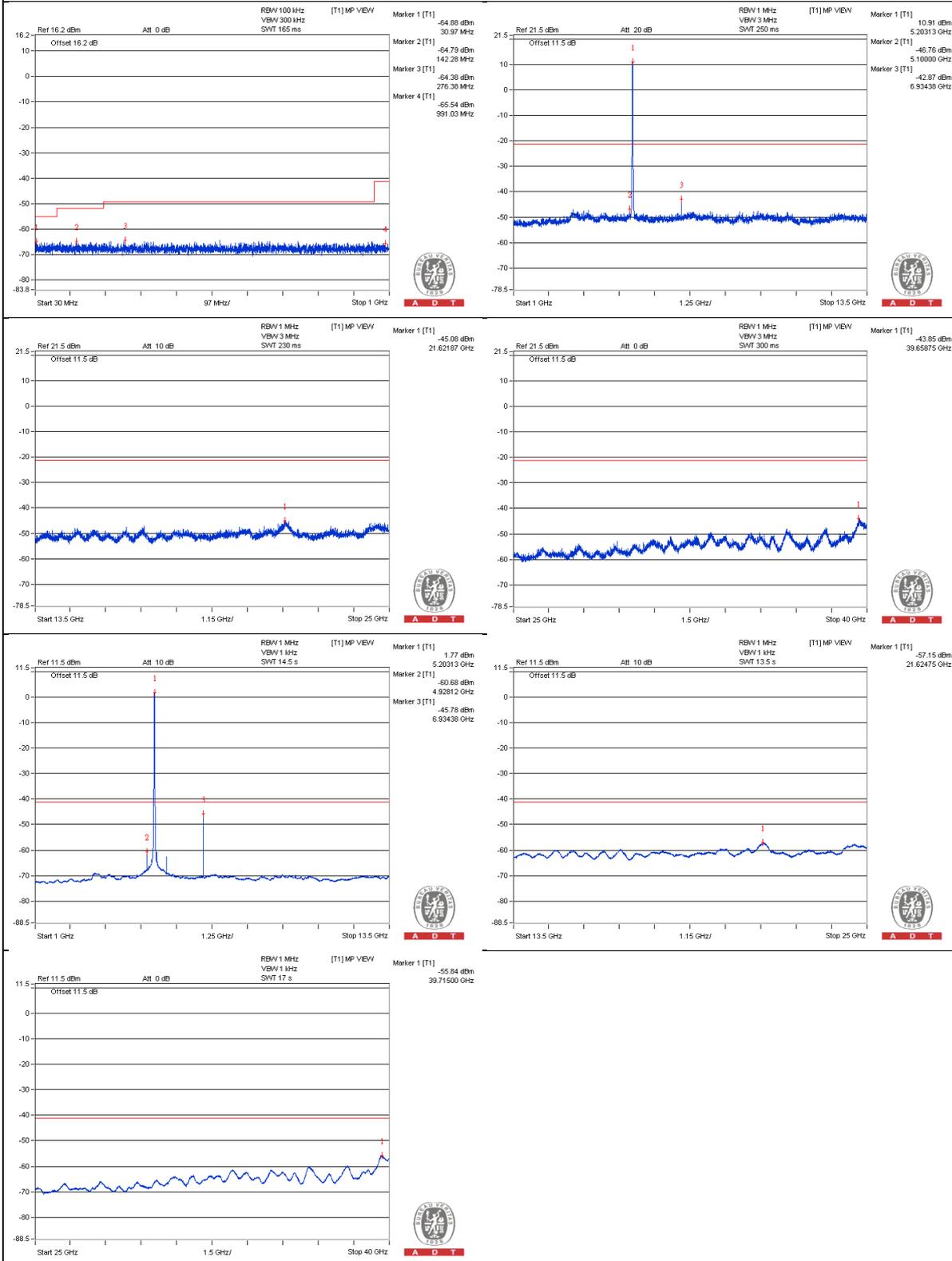
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3475 PK	55.43	74	-18.57	-47.64	-50.78	6.09	-39.83
2	3459.375 AV	33.6	54	-20.4	-70.6	-70.93	6.09	-61.66
3	6934.375 PK	60.46	68.2	-7.74	-42.87	-45.25	6.09	-34.8
4	10384.375 PK	54.53	74	-19.47	-49.99	-49.67	6.09	-40.73
5	10403.125 AV	34.13	54	-19.87	-70.1	-70.36	6.09	-61.13
6	15613.125 PK	54.31	74	-19.69	-51.82	-48.8	6.09	-40.95
7	15587.25 AV	42.14	54	-11.86	-62.25	-62.19	6.09	-53.12

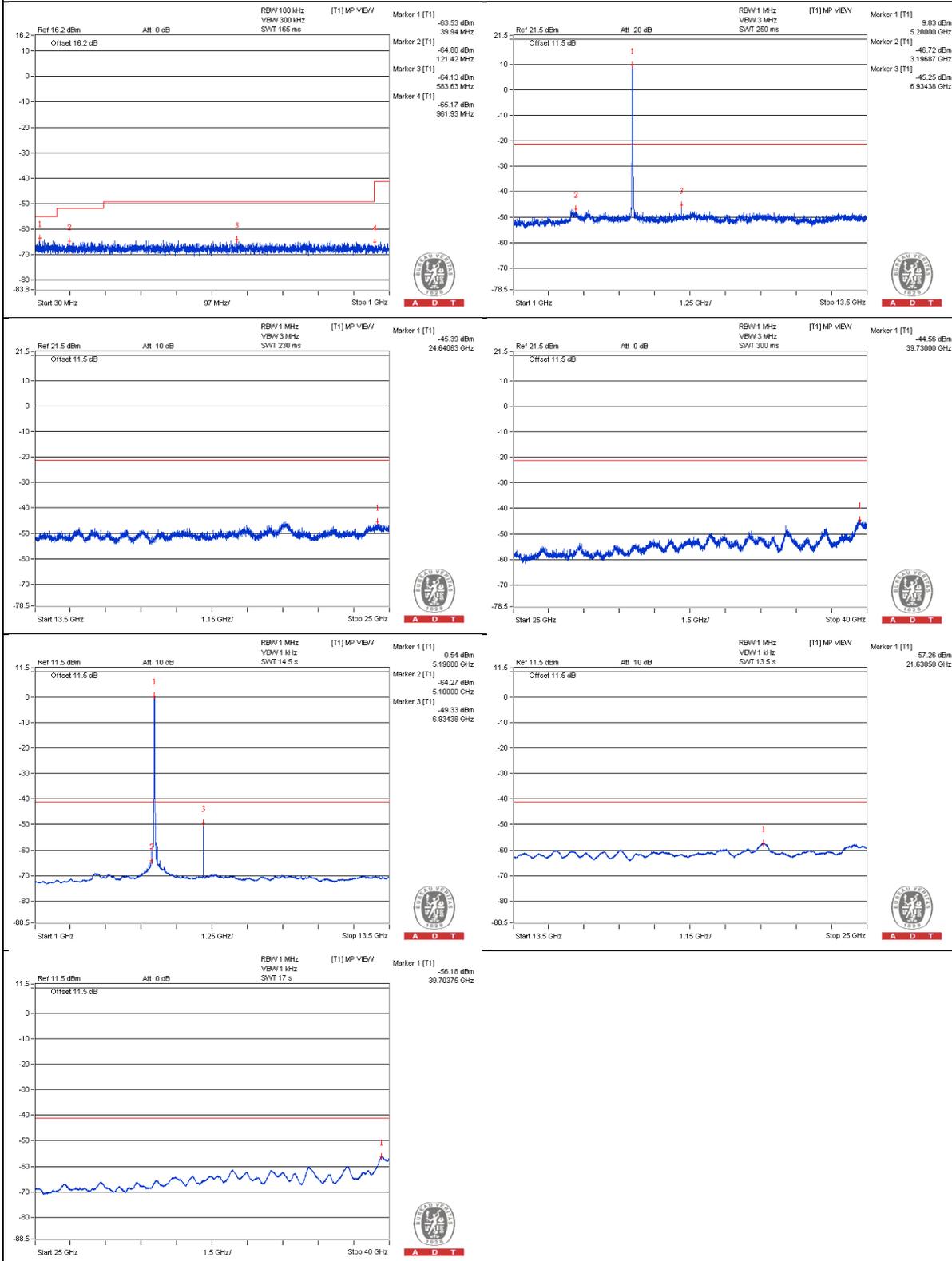
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**802.11ac (VHT20) - Channel 48**

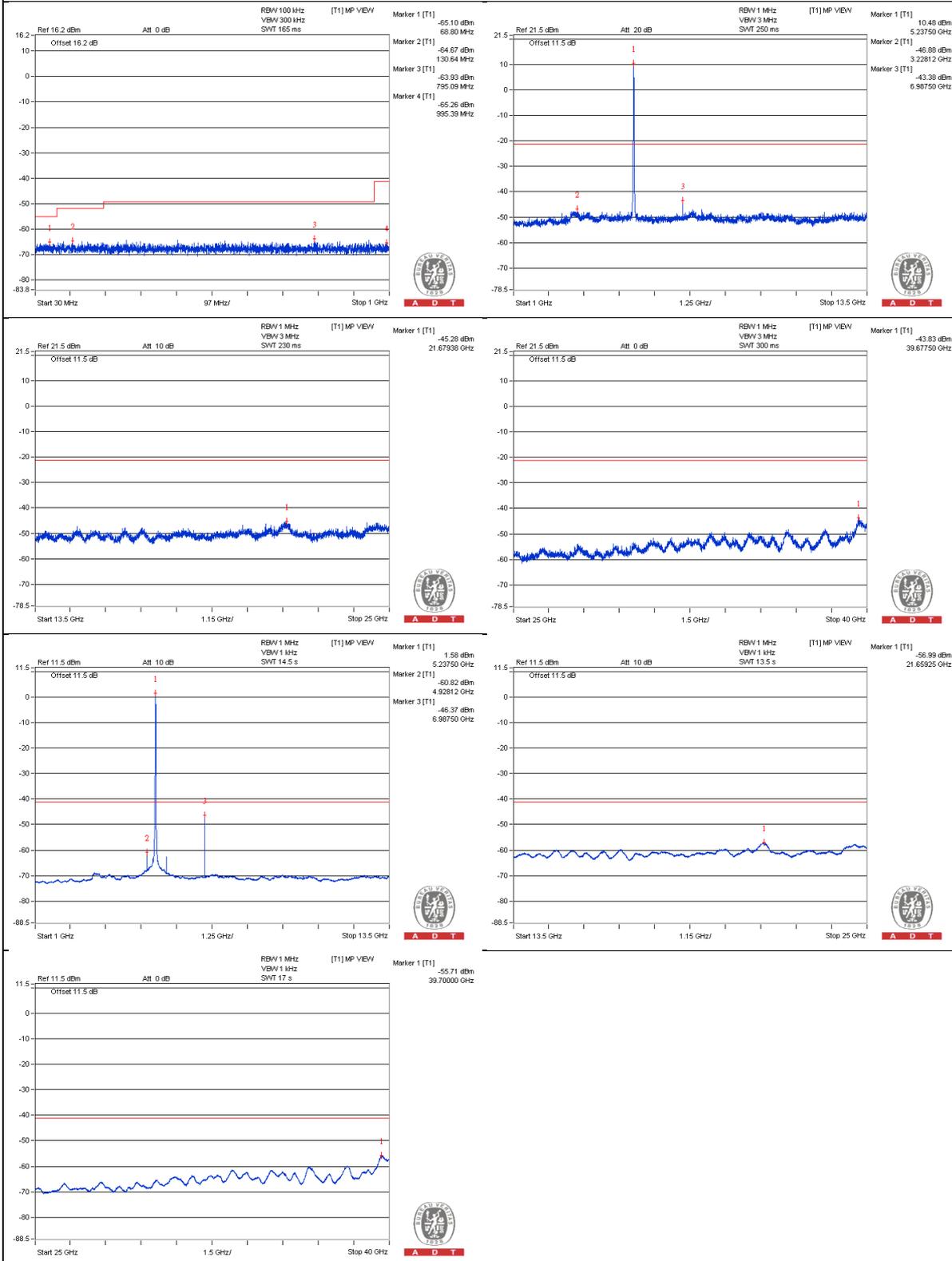
**Conducted spurious emission table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3478.125 PK	54.86	74	-19.14	-49.46	-49.55	6.09	-40.4
2	3509.375 AV	33.99	54	-20.01	-70.33	-70.41	6.09	-61.27
3	6987.5 PK	59.48	68.2	-8.72	-43.38	-47.2	6.09	-35.78
4	10487.5 PK	54.07	74	-19.93	-50.19	-50.4	6.09	-41.19
5	10484.375 AV	33.7	54	-20.3	-70.46	-70.87	6.09	-61.56
6	15736.75 PK	53.46	74	-20.54	-51	-50.8	6.09	-41.8
7	15736.75 AV	42.08	54	-11.92	-62.34	-62.23	6.09	-53.18

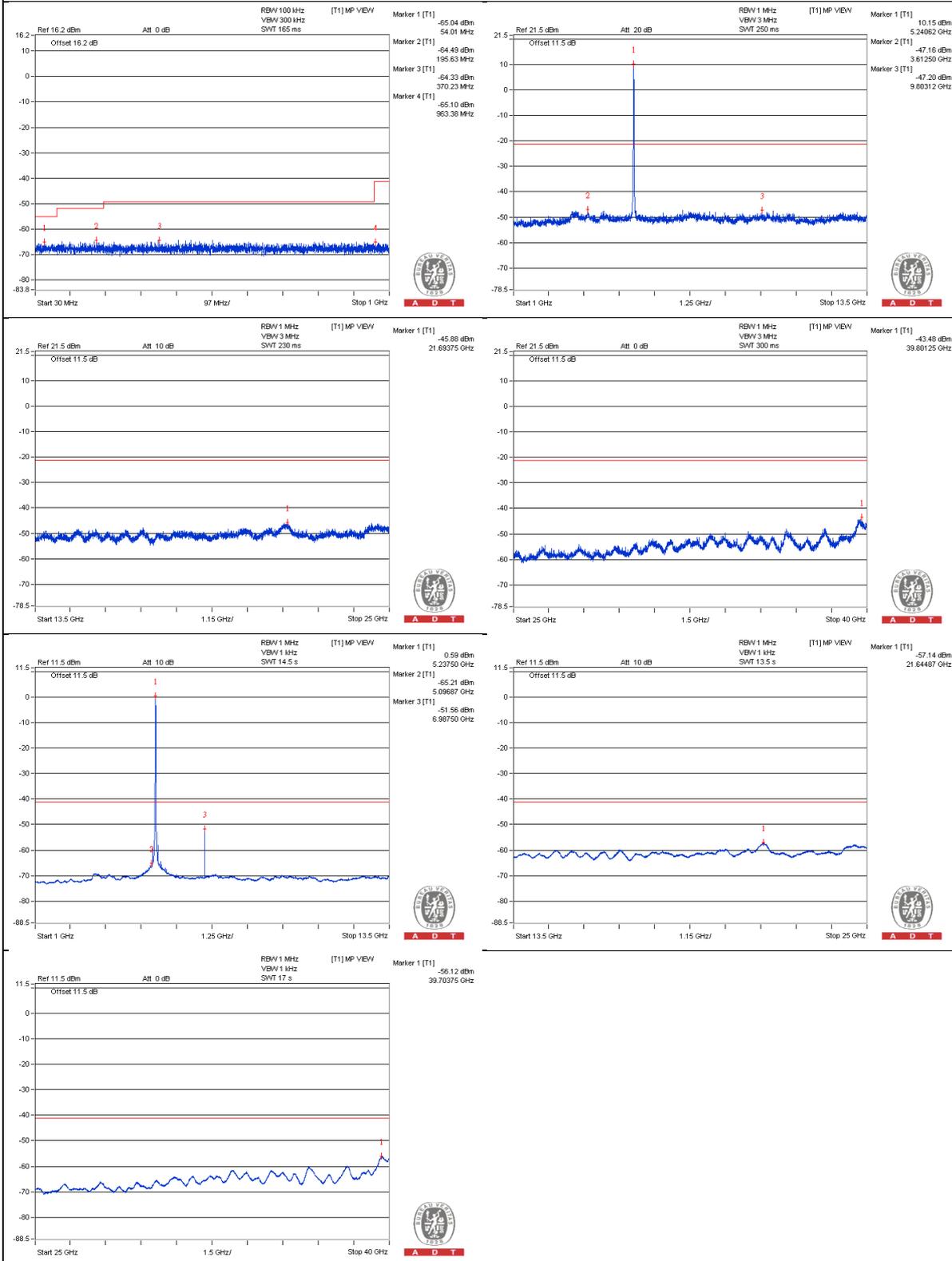
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT20) - Channel 52

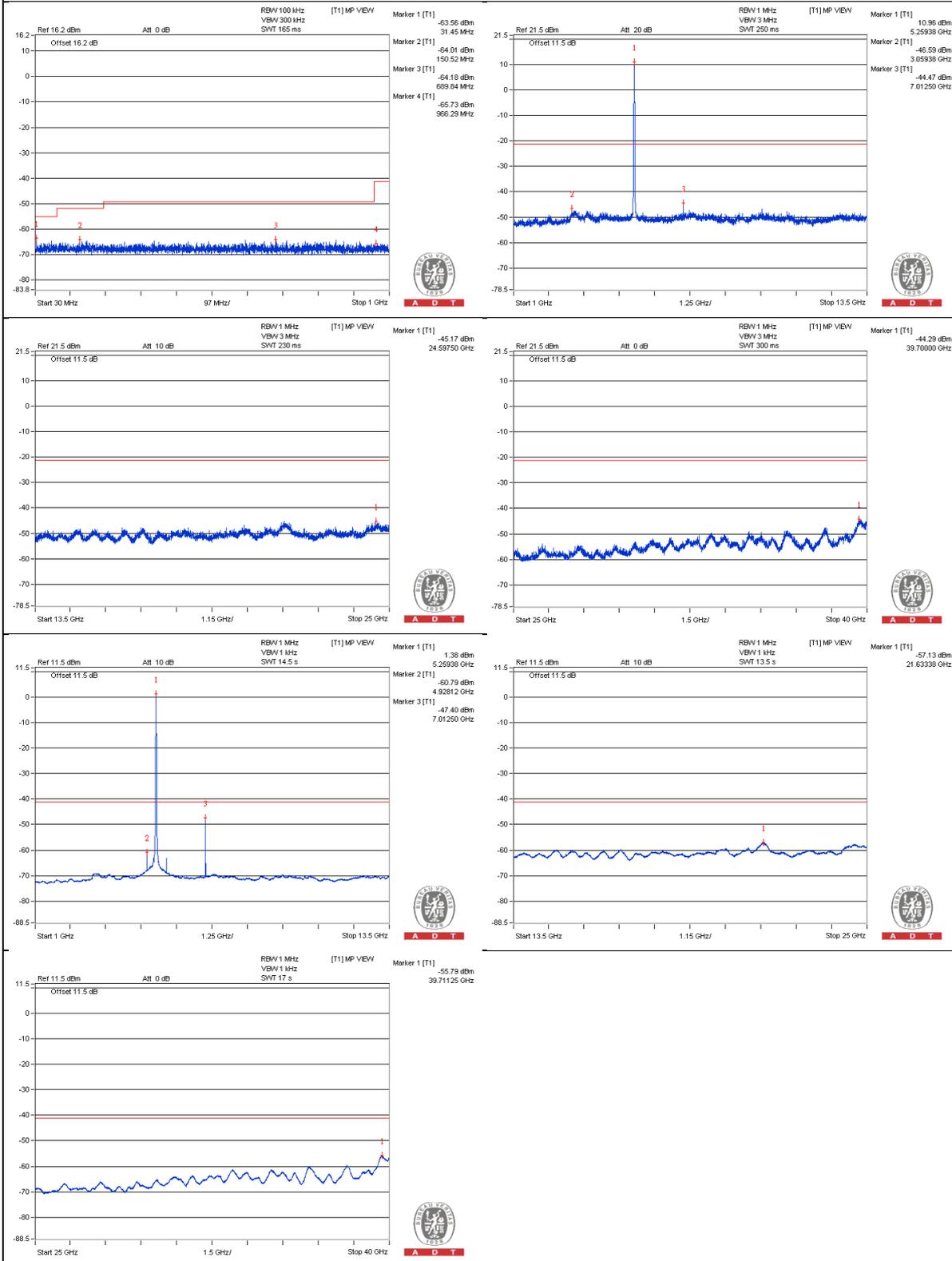
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3515.625 PK	55.21	74	-18.79	-49.43	-48.89	6.09	-40.05
2	3525 AV	34.14	54	-19.86	-70.3	-70.15	6.09	-61.12
3	7012.5 PK	58.89	68.2	-9.31	-44.47	-46.77	6.09	-36.37
4	10534.375 PK	54.08	74	-19.92	-49.62	-51.05	6.09	-41.18
5	10525 AV	33.79	54	-20.21	-70.39	-70.76	6.09	-61.47
6	15782.75 PK	53.94	74	-20.06	-49.98	-50.91	6.09	-41.32
7	15797.125 AV	43.1	54	-10.9	-61.11	-61.41	6.09	-52.16

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT20) - Channel 60

#### Conducted spurious emission table

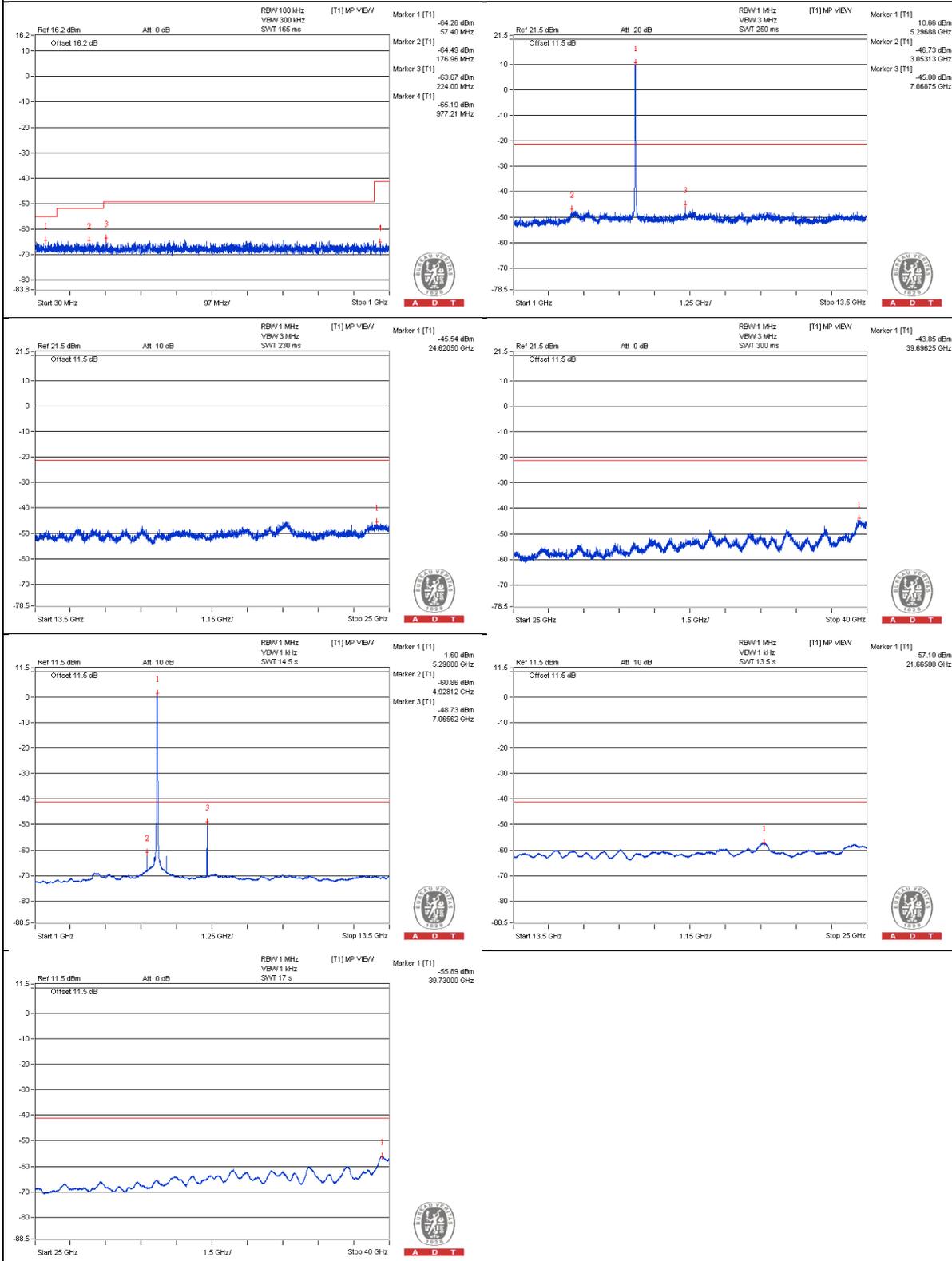
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3528.125 PK	55.51	74	-18.49	-49.08	-48.64	6.09	-39.75
2	3550 AV	34.38	54	-19.62	-69.97	-70	6.09	-60.88
3	7068.75 PK	58.52	68.2	-9.68	-45.08	-46.76	6.09	-36.74
4	10606.25 PK	53.96	74	-20.04	-50.57	-50.24	6.09	-41.3
5	10603.125 AV	33.79	54	-20.21	-70.38	-70.76	6.09	-61.47
6	15903.5 PK	54.56	74	-19.44	-50.48	-49.21	6.09	-40.7
7	15880.5 AV	43.03	54	-10.97	-61.3	-61.36	6.09	-52.23

Note :

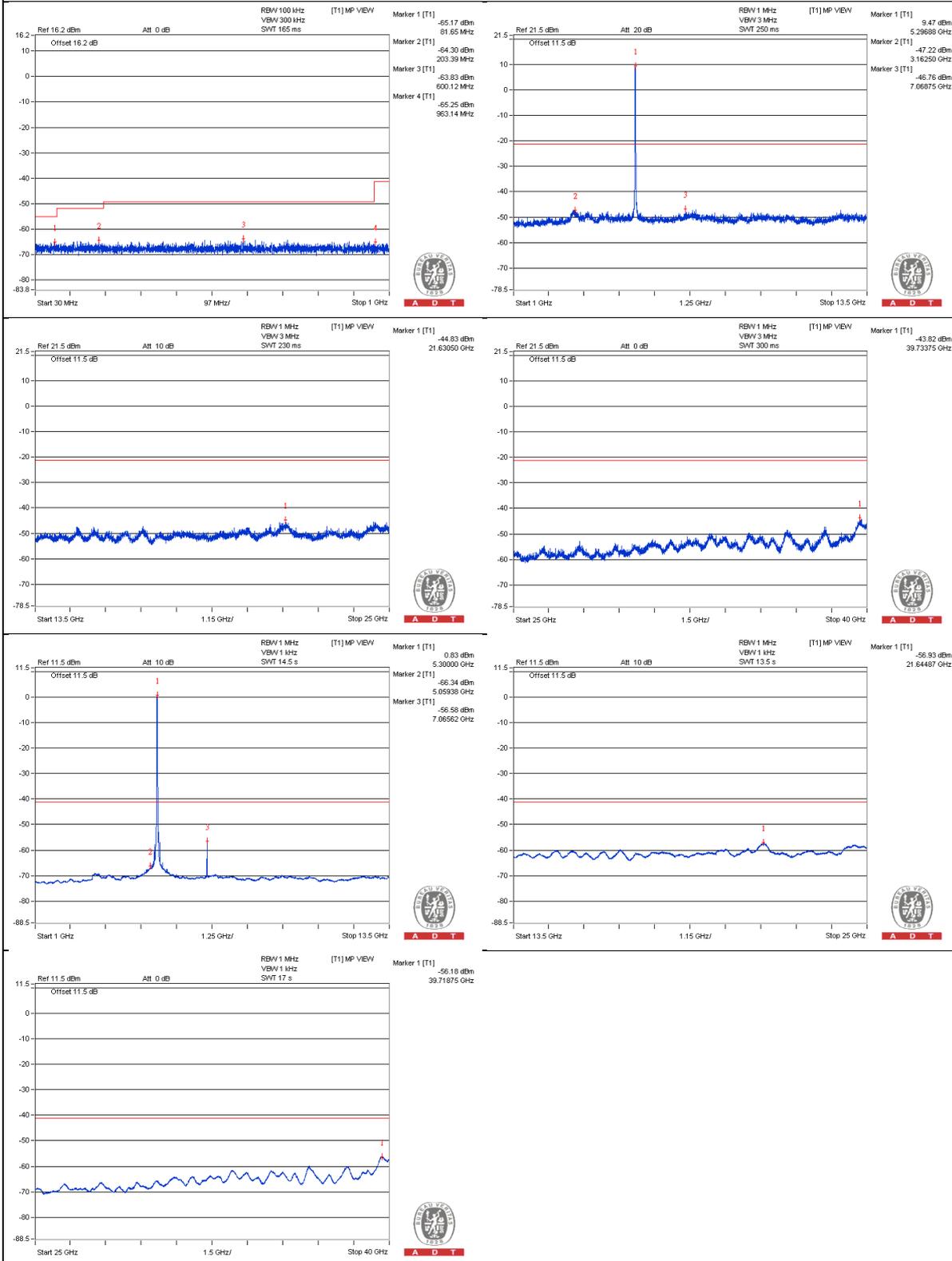
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT20) - Channel 64

### Conducted spurious emission table

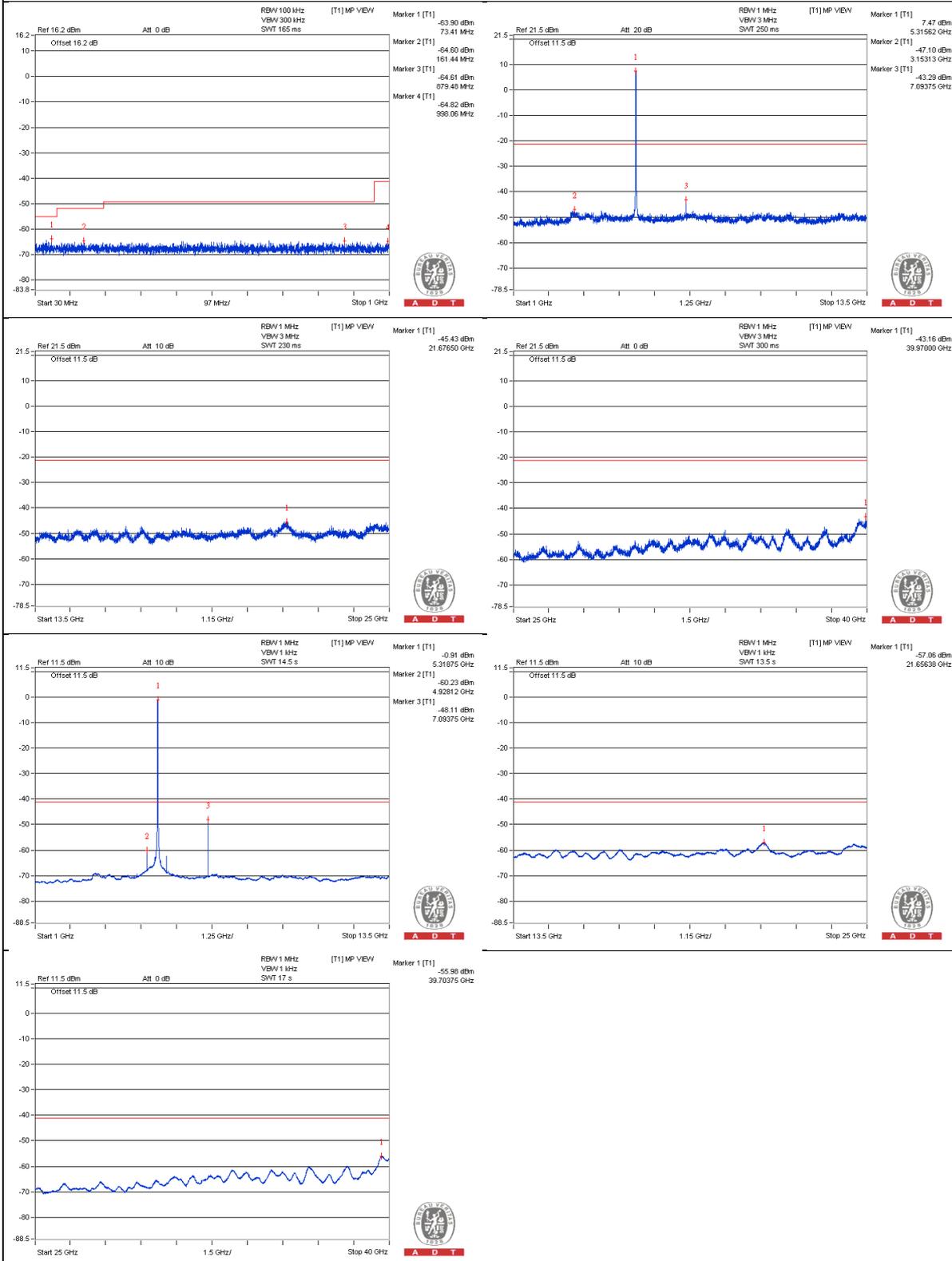
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3556.25 PK	55.33	74	-18.67	-48.21	-50.05	6.09	-39.93
2	3562.5 AV	34.42	54	-19.58	-69.92	-69.96	6.09	-60.84
3	7093.75 PK	59.24	68.2	-8.96	-43.29	-48.36	6.09	-36.02
4	10631.25 PK	54.47	74	-19.53	-50.4	-49.43	6.09	-40.79
5	10659.375 AV	33.58	54	-20.42	-70.79	-70.77	6.09	-61.68
6	15952.375 PK	53.44	74	-20.56	-50.37	-51.54	6.09	-41.82
7	15972.5 AV	42.37	54	-11.63	-61.82	-62.17	6.09	-52.89

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

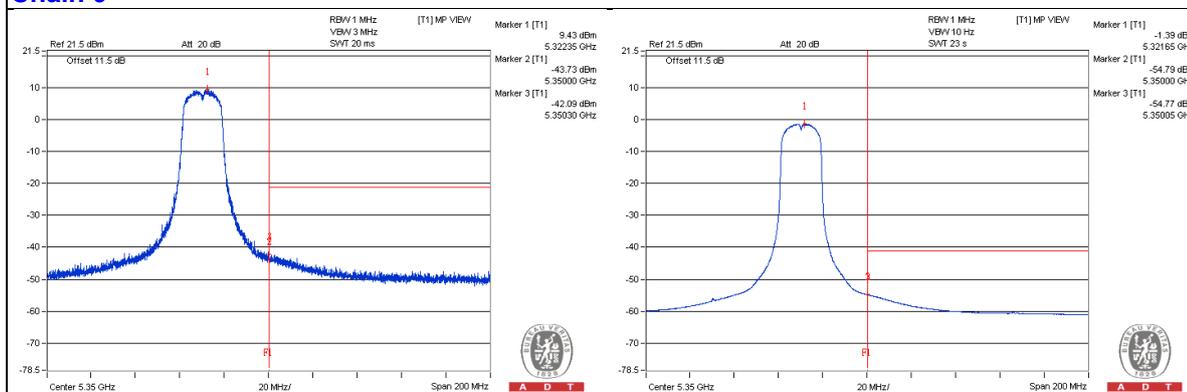
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5351.45 PK	61.58	74	-12.42	-42.43	-43.17	6.09	-33.68
2	5368 AV	50.58	54	-3.42	-58.11	-51.65	6.09	-44.68

Note :

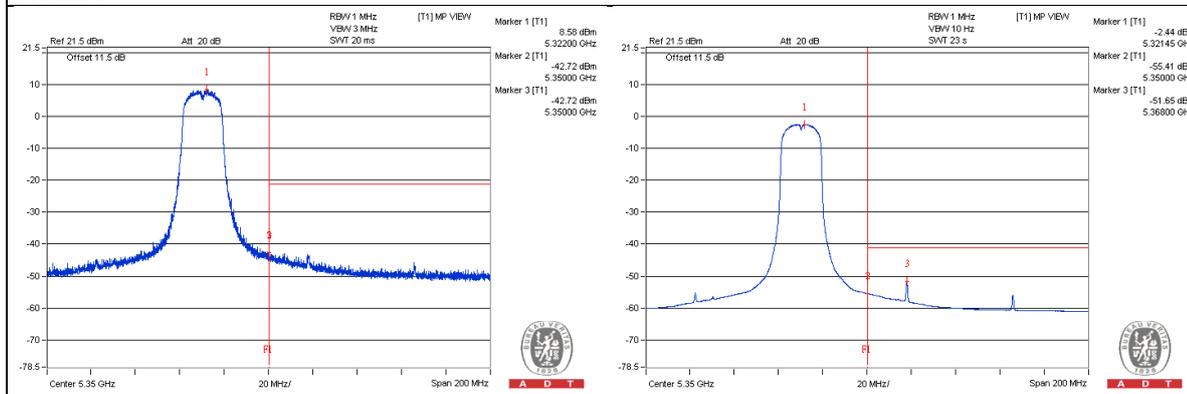
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT20) - Channel 100

### Conducted spurious emission table

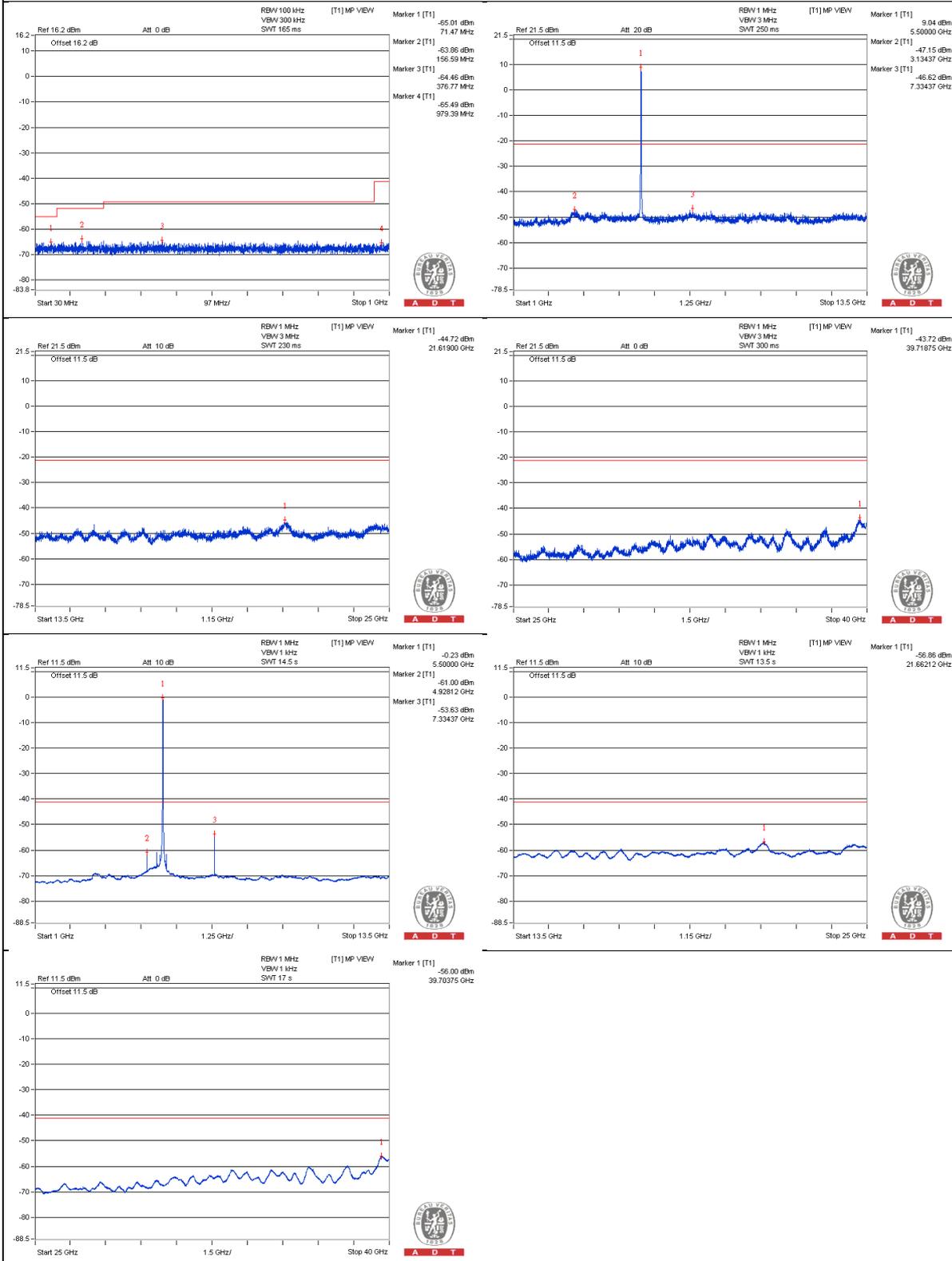
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3656.25 PK	56.65	74	-17.35	-49.36	-49.43	7.77	-38.61
2	3653.125 AV	35.95	54	-18.05	-69.95	-70.24	7.77	-59.31
3	7334.375 PK	58.42	74	-15.58	-46.62	-48.93	7.77	-36.84
4	7334.375 AV	49.69	54	-4.31	-53.63	-65.27	7.77	-45.57
5	11018.75 PK	55.63	74	-18.37	-50.56	-50.27	7.77	-39.63
6	11000 AV	34.59	54	-19.41	-71.57	-71.33	7.77	-60.67
7	16501.5 PK	56.21	74	-17.79	-50	-49.66	7.77	-39.05
8	16481.375 AV	44.96	54	-9.04	-61.07	-61.09	7.77	-50.3

Note :

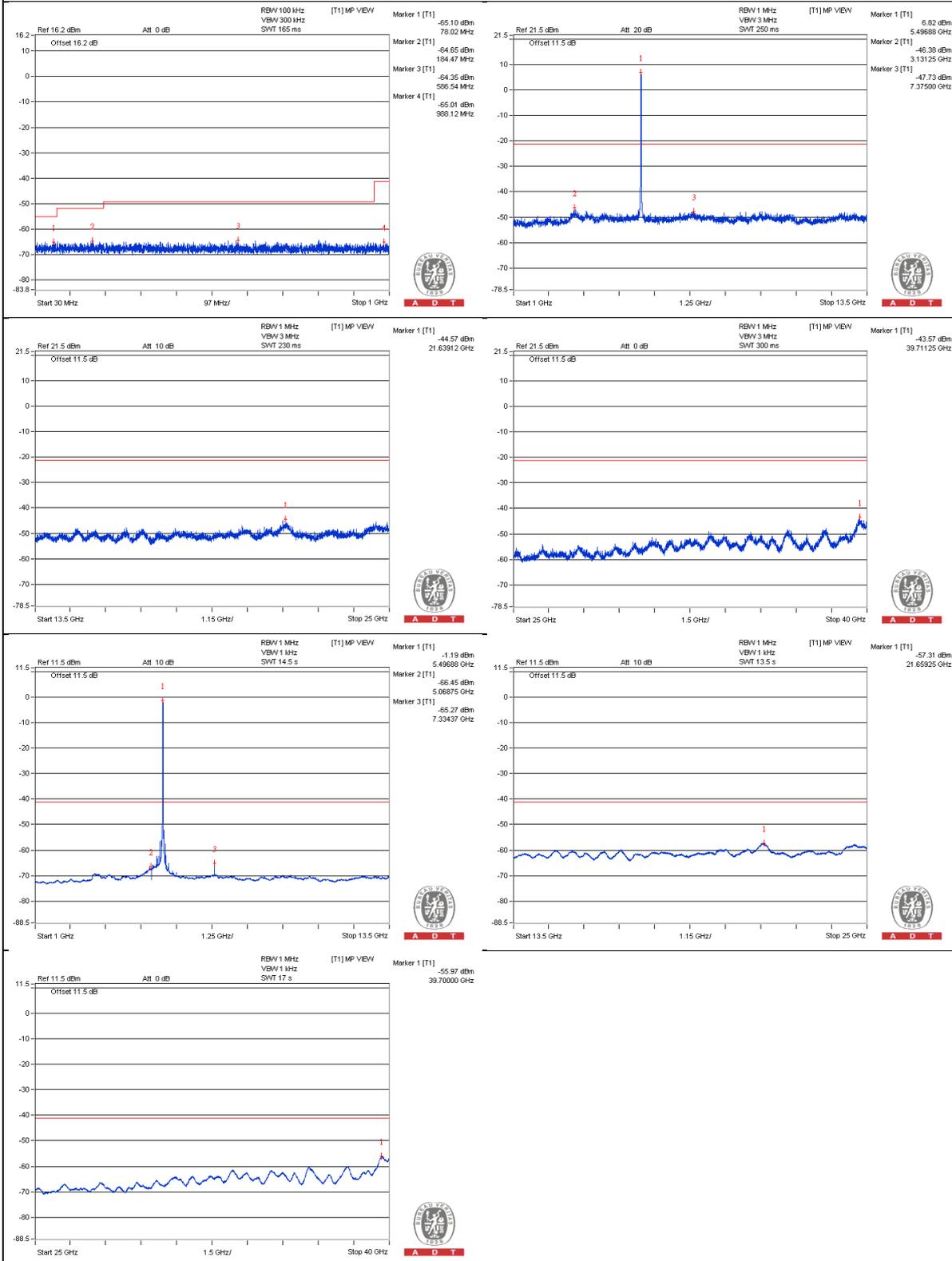
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

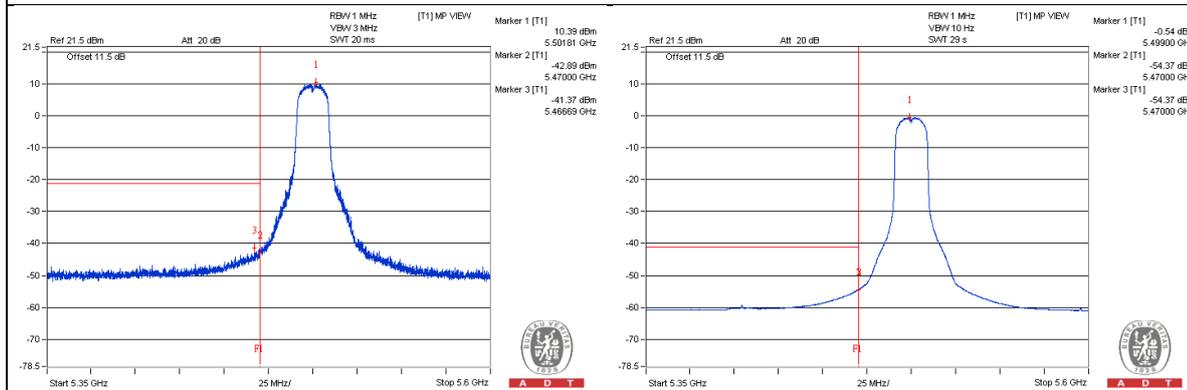


### Bandedge table

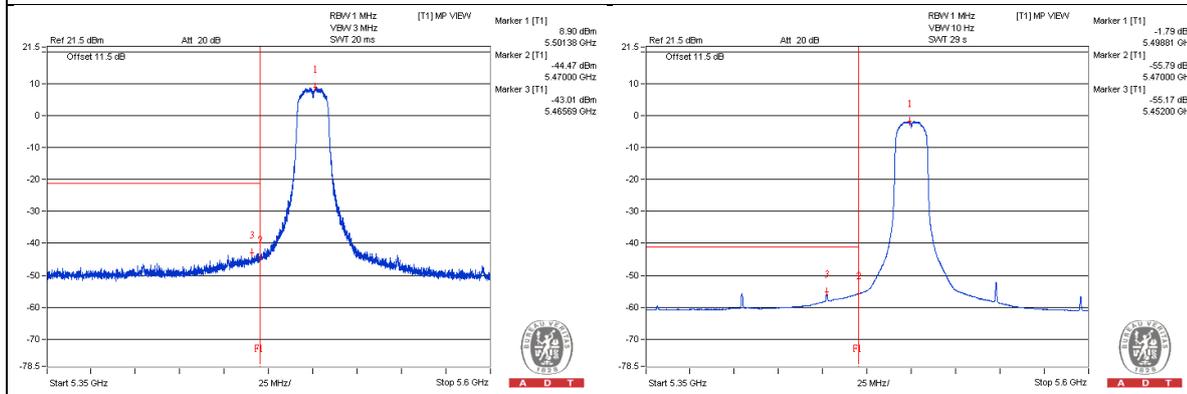
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5469.1875 PK	63.31	74	-10.69	-42.23	-43.29	7.77	-31.95
2	5470 AV	51.02	54	-2.98	-54.37	-55.79	7.77	-44.24

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

#### Chain 0



#### Chain 1



**802.11ac (VHT20) - Channel 120**

**Conducted spurious emission table**

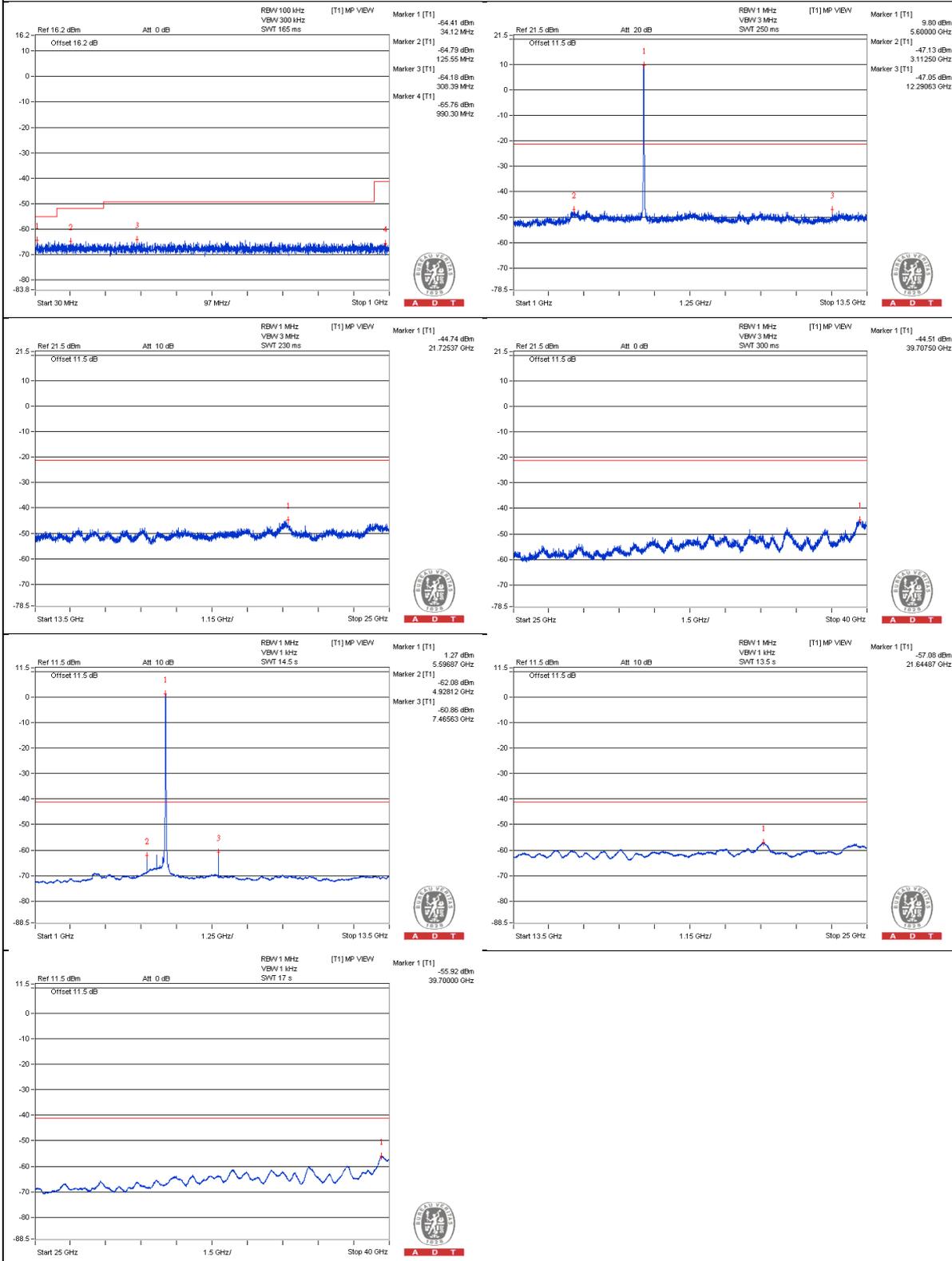
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3746.875 PK	56.61	74	-17.39	-49.43	-49.43	7.77	-38.65
2	3740.625 AV	35.72	54	-18.28	-70.24	-70.4	7.77	-59.54
3	7456.25 PK	56.57	74	-17.43	-50.24	-48.81	7.77	-38.69
4	7465.625 AV	42.64	54	-11.36	-60.86	-70.32	7.77	-52.62
5	11206.25 PK	56.72	74	-17.28	-48.99	-49.67	7.77	-38.54
6	11200 AV	34.78	54	-19.22	-71.41	-71.12	7.77	-60.48
7	16809.125 PK	55.03	74	-18.97	-50.4	-51.71	7.77	-40.23
8	16817.75 AV	44.3	54	-9.7	-61.64	-61.85	7.77	-50.96

Note :

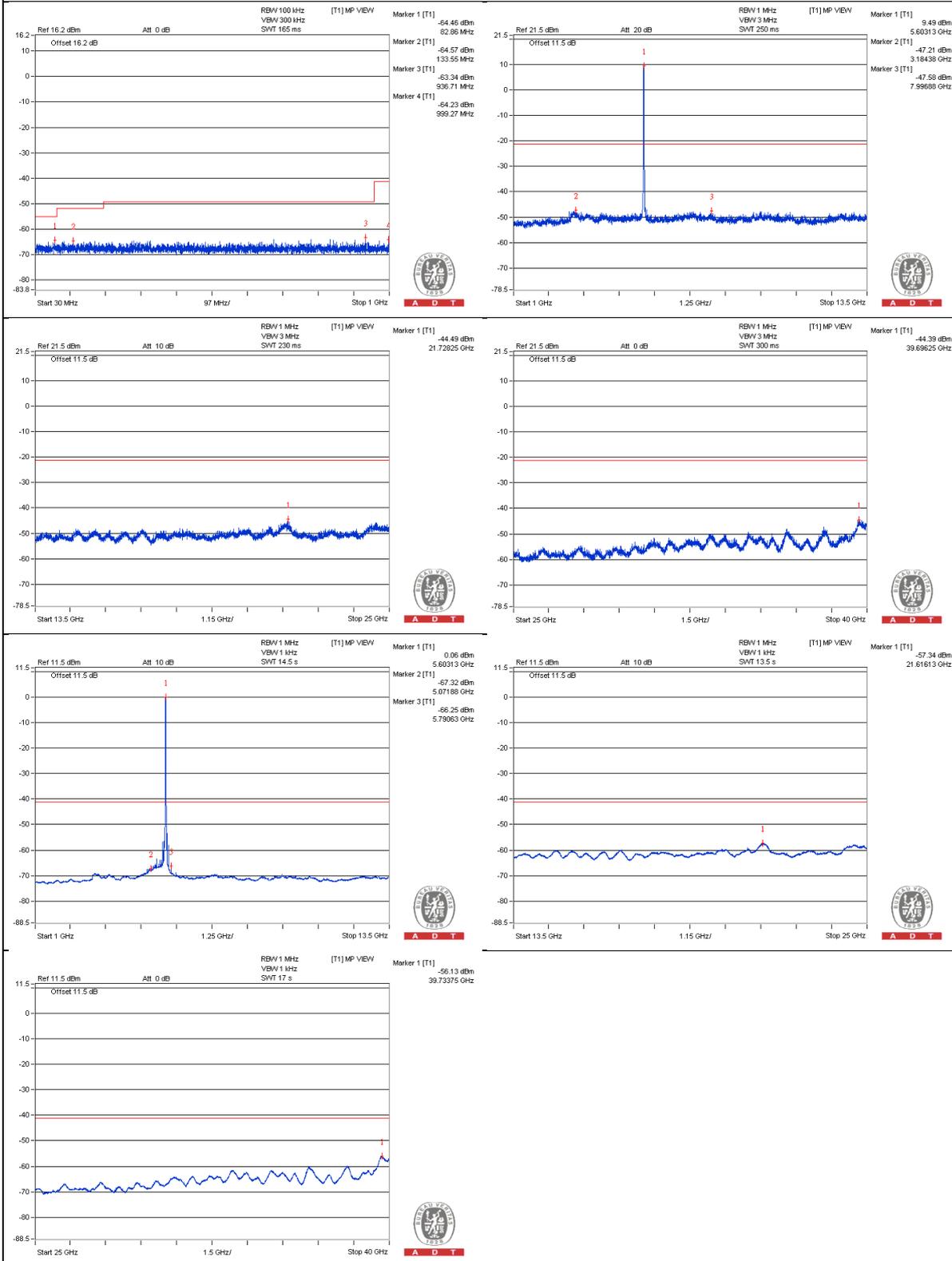
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



### 802.11ac (VHT20) - Channel 140

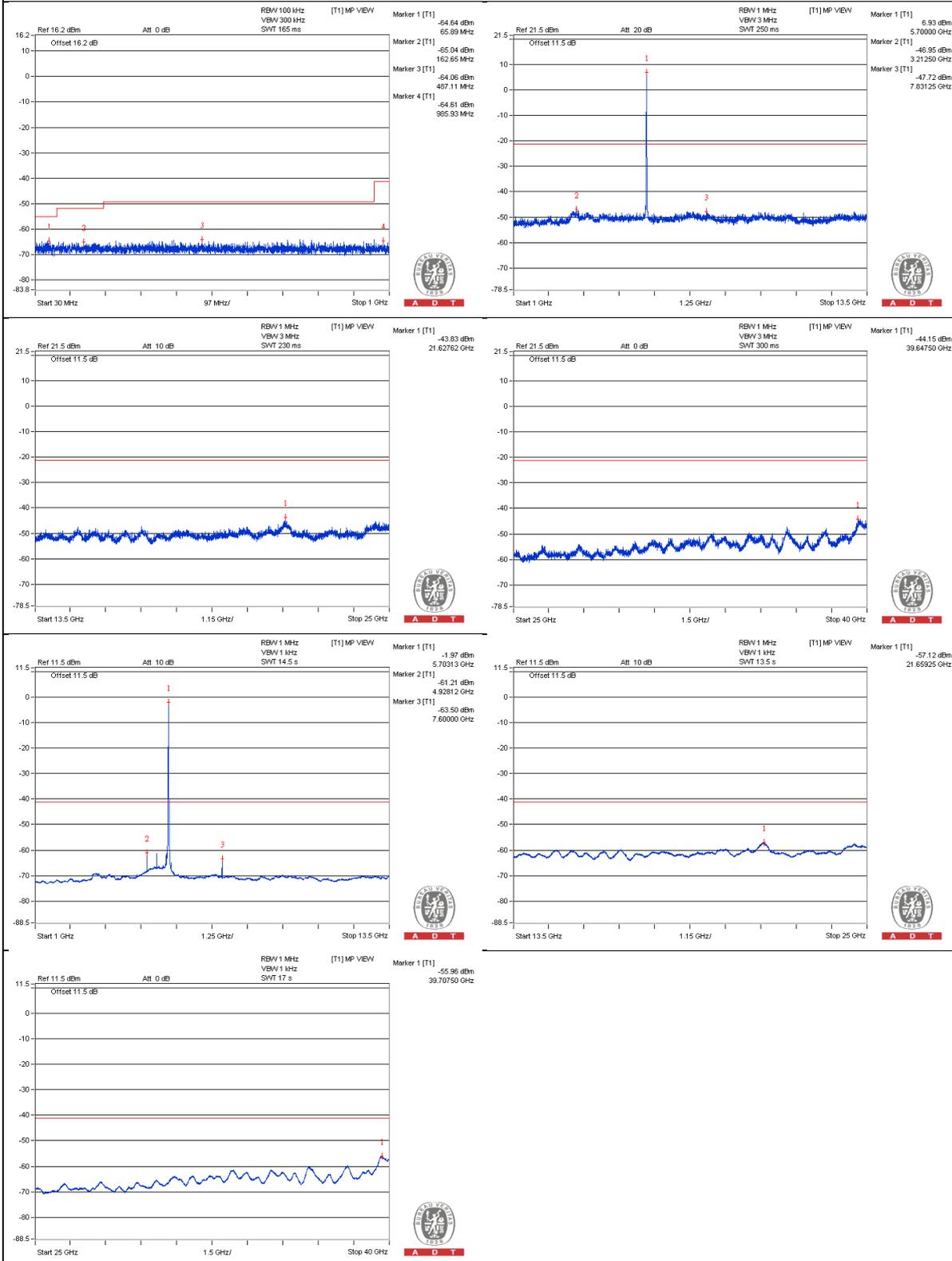
#### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3787.5 PK	56.26	74	-17.74	-49.31	-50.3	7.77	-39
2	3784.375 AV	35.29	54	-18.71	-70.87	-70.64	7.77	-59.97
3	7600 PK	56.59	74	-17.41	-49.93	-49.02	7.77	-38.67
4	7600 AV	40.29	54	-13.71	-63.5	-70.68	7.77	-54.97
5	11412.5 PK	55.08	74	-18.92	-50.46	-51.52	7.77	-40.18
6	11390.625 AV	34.36	54	-19.64	-71.59	-71.77	7.77	-60.9
7	17082.25 PK	55.97	74	-18.03	-49.8	-50.36	7.77	-39.29
8	17090.875 AV	44.67	54	-9.33	-61.44	-61.31	7.77	-50.59

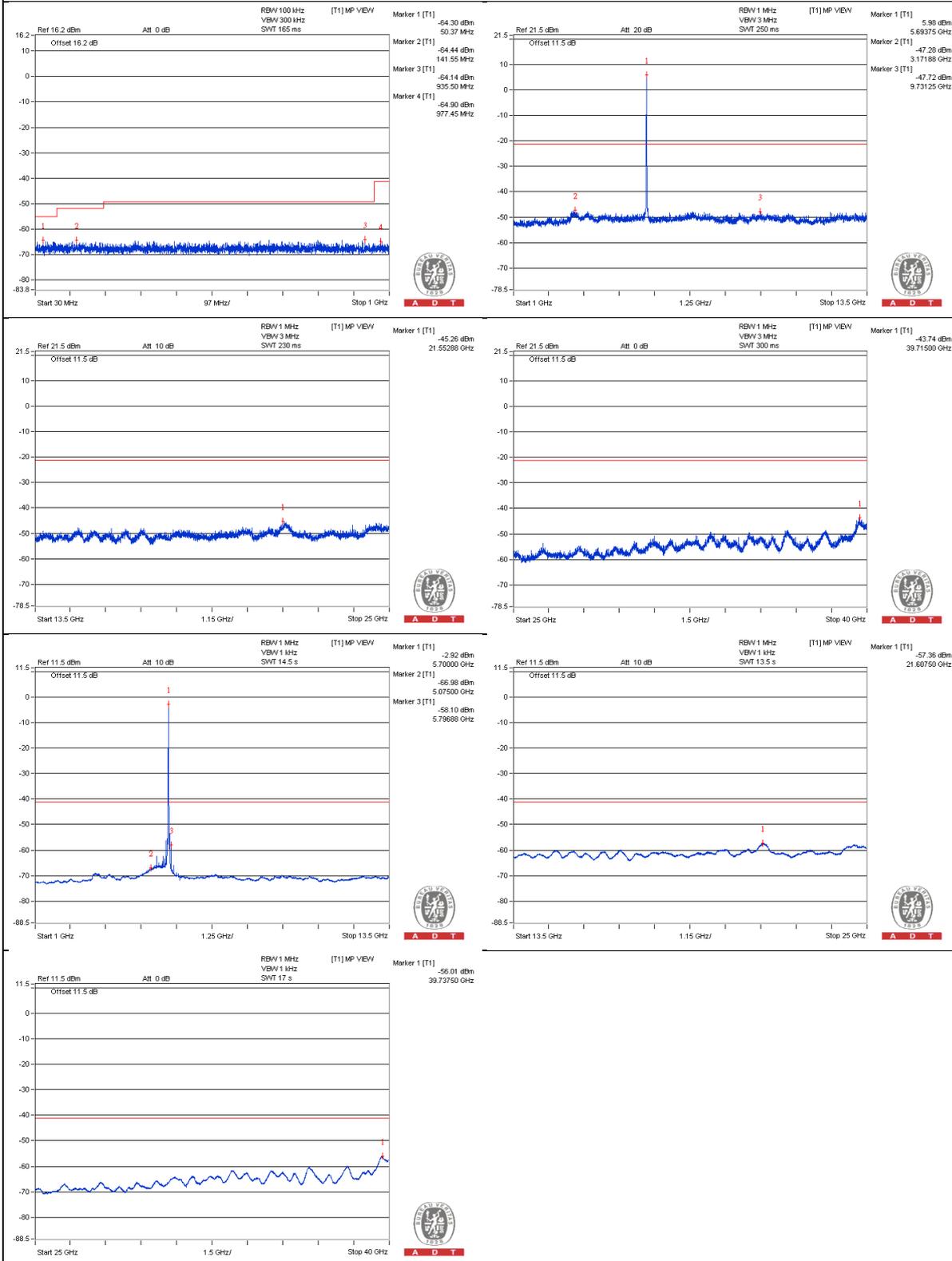
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

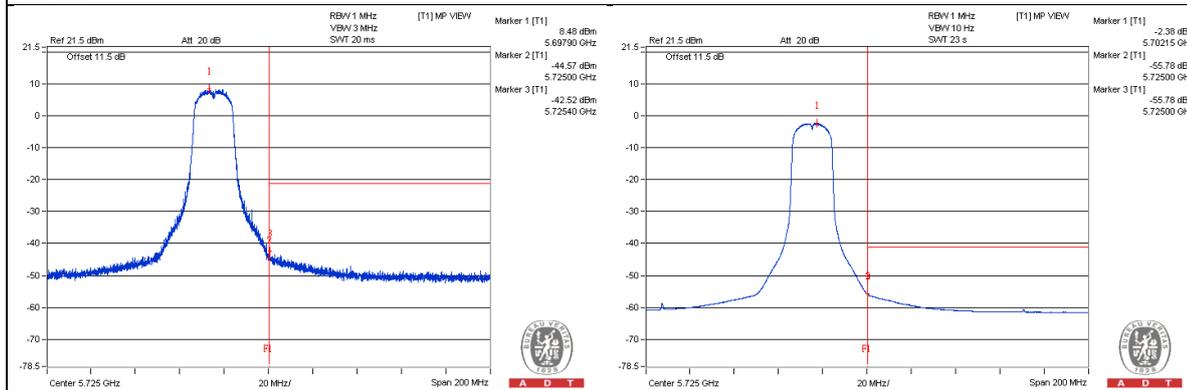


### Bandedge table

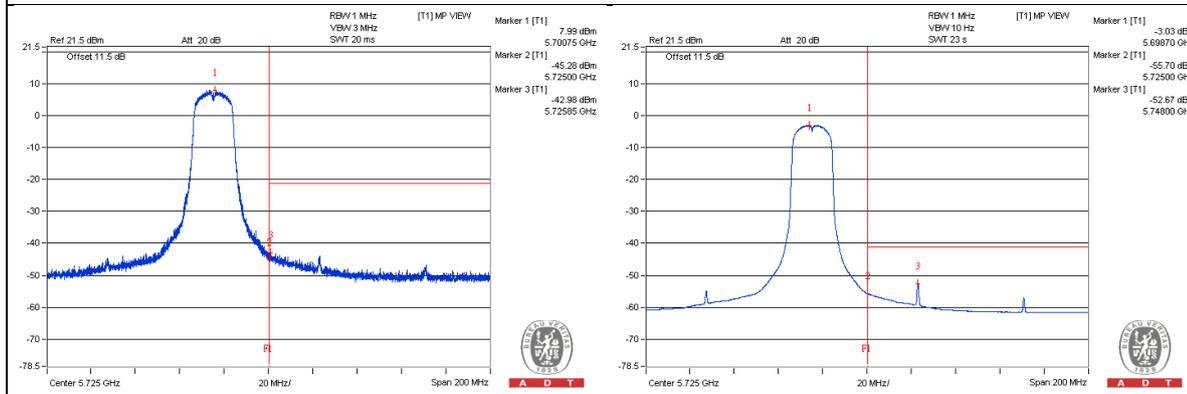
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5725.5 PK	62.84	74	-11.16	-43.22	-43.19	7.77	-32.42
2	5747.95 AV	51.12	54	-2.88	-59.85	-52.67	7.77	-44.14

Note :  
 $Emission\ Level\ (dBuV/m) = EIRP\ Level\ (dBm) - 20\log(d) + 104.8$   
 d = measurement distance in 3 meters.

#### Chain 0



#### Chain 1



## 802.11ac (VHT20) - Channel 144

### Conducted spurious emission table

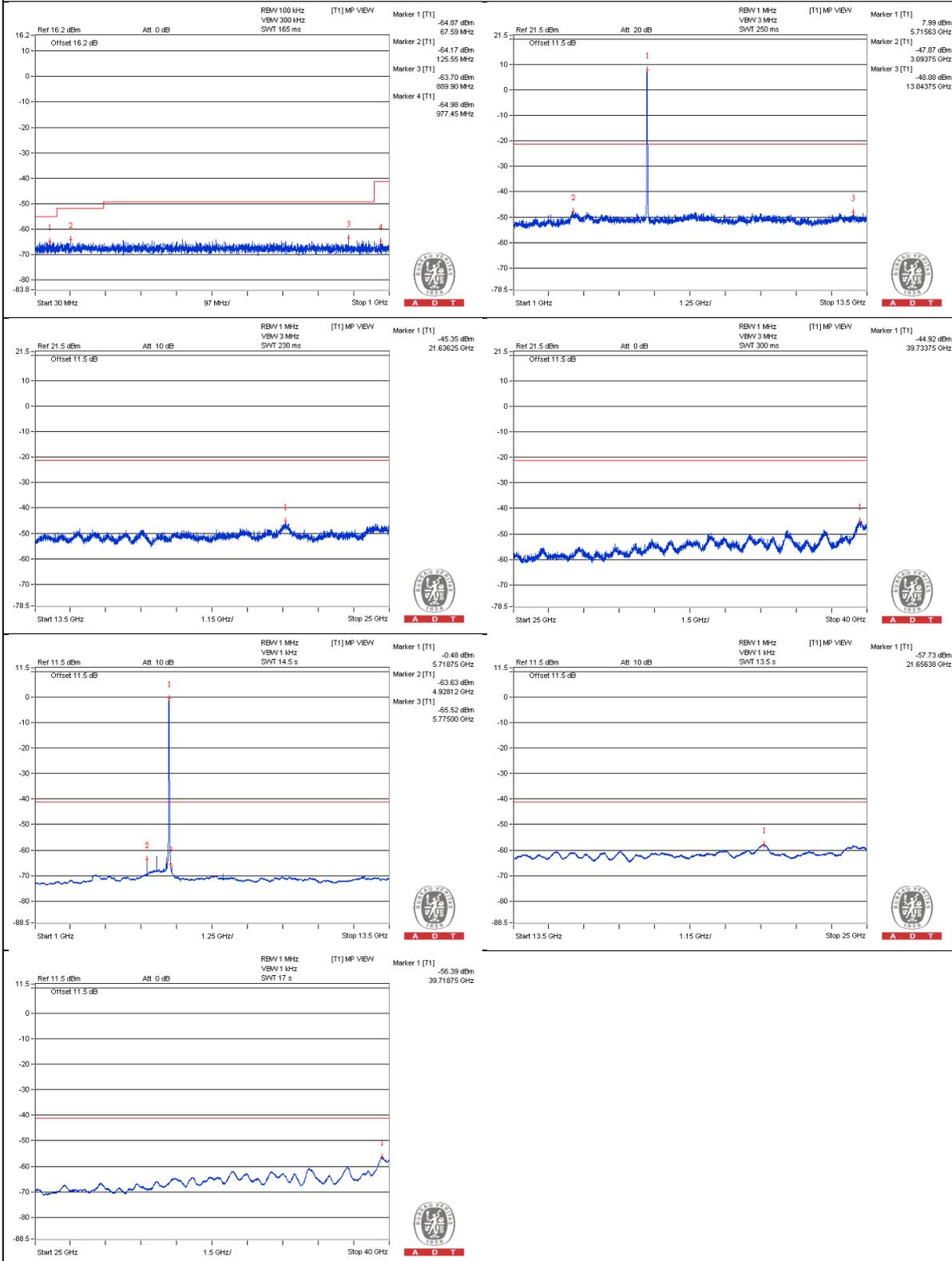
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3800 PK	55.65	74	-18.35	-51.35	-49.6	7.77	-39.61
2	3793.75 AV	34.55	54	-19.45	-71.43	-71.56	7.77	-60.71
3	7640.625 PK	56.23	74	-17.77	-48.89	-50.99	7.77	-39.03
4	7628.125 AV	35.83	54	-18.17	-69.29	-71.38	7.77	-59.43
5	11450 PK	55.27	74	-18.73	-50.13	-51.51	7.77	-39.99
6	11440.625 AV	33.77	54	-20.23	-72.5	-72.06	7.77	-61.49
7	17148.375 PK	54.25	74	-19.75	-51.8	-51.79	7.77	-41.01
8	17145.5 AV	43.33	54	-10.67	-62.76	-62.66	7.77	-51.93

Note :

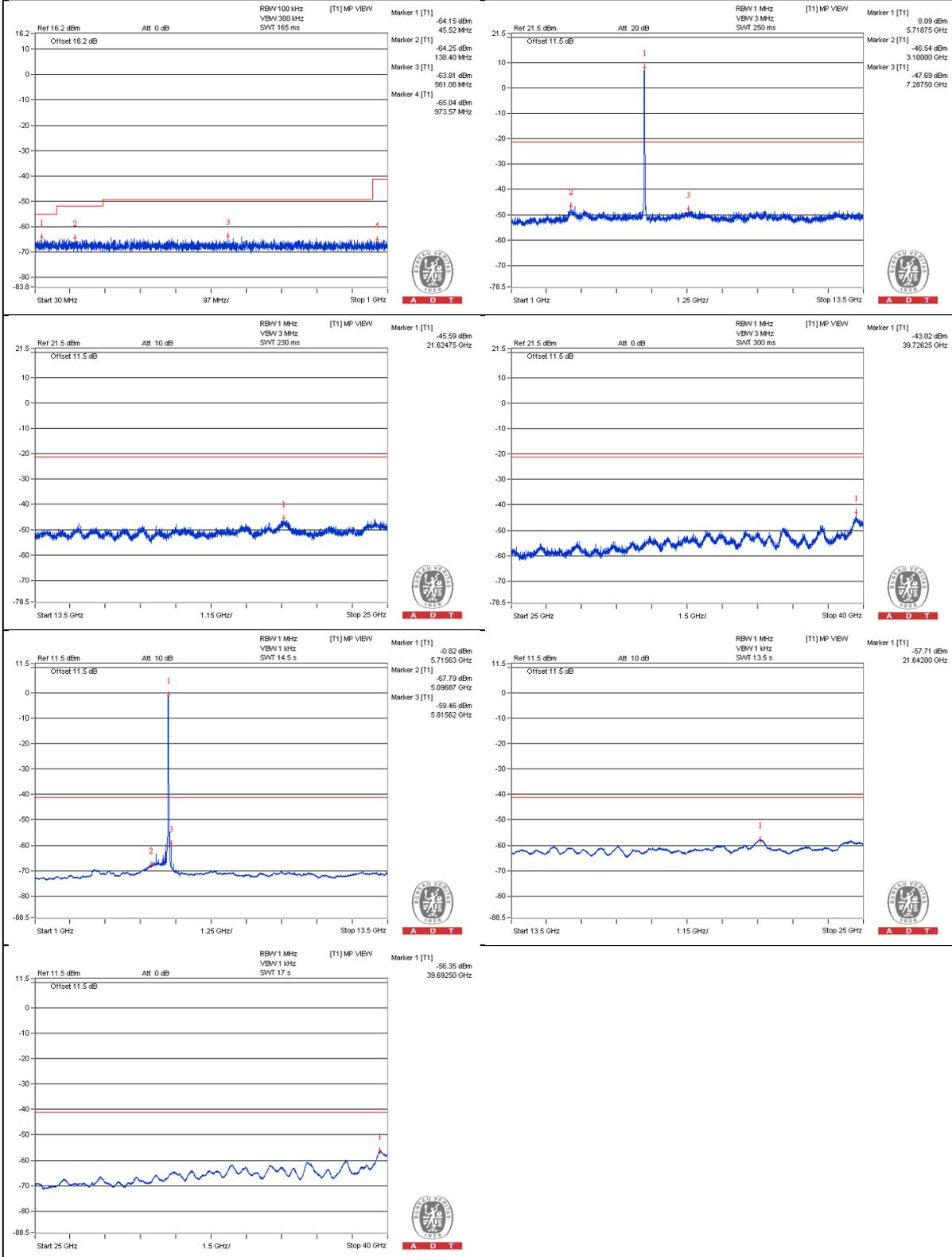
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1

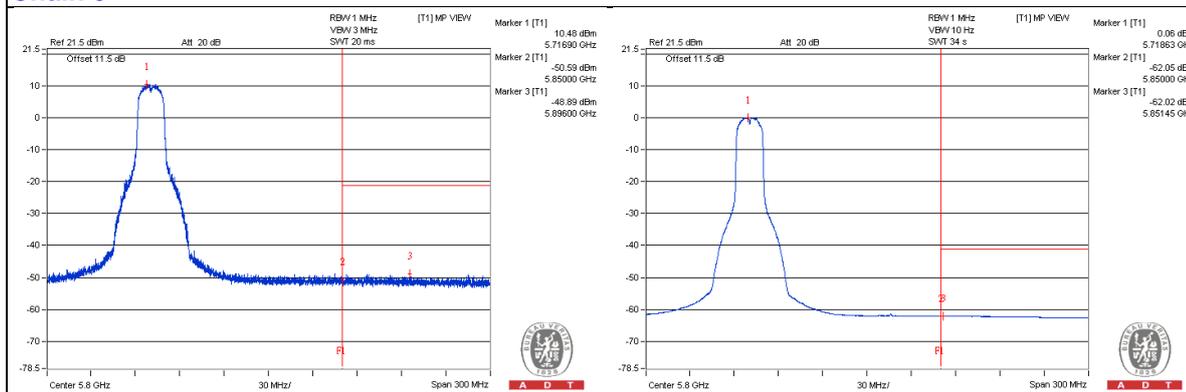


### Bandedge table

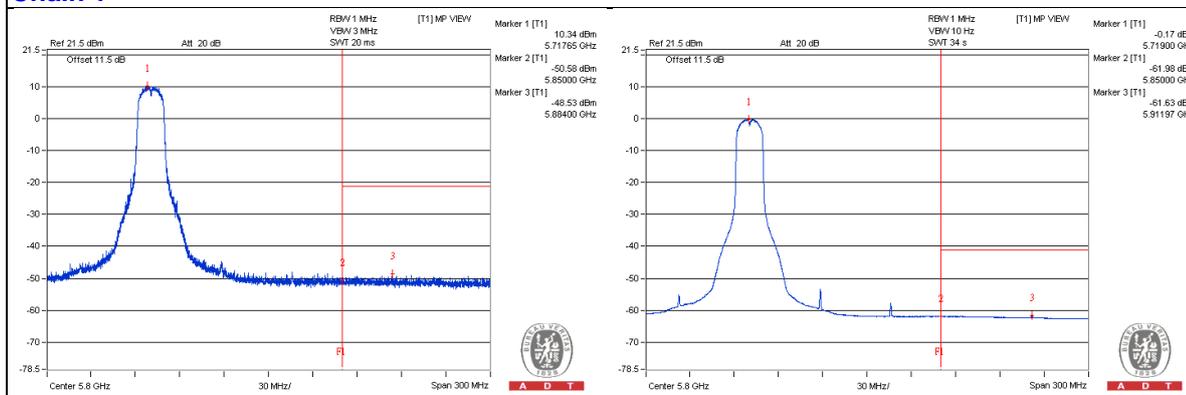
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5838.325 PK	56.47	74	-17.53	-50.25	-48.98	7.77	-38.79
2	5912.05 AV	44.07	54	-9.93	-62.35	-61.63	7.77	-51.19

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT40) - Channel 38

#### Conducted spurious emission table

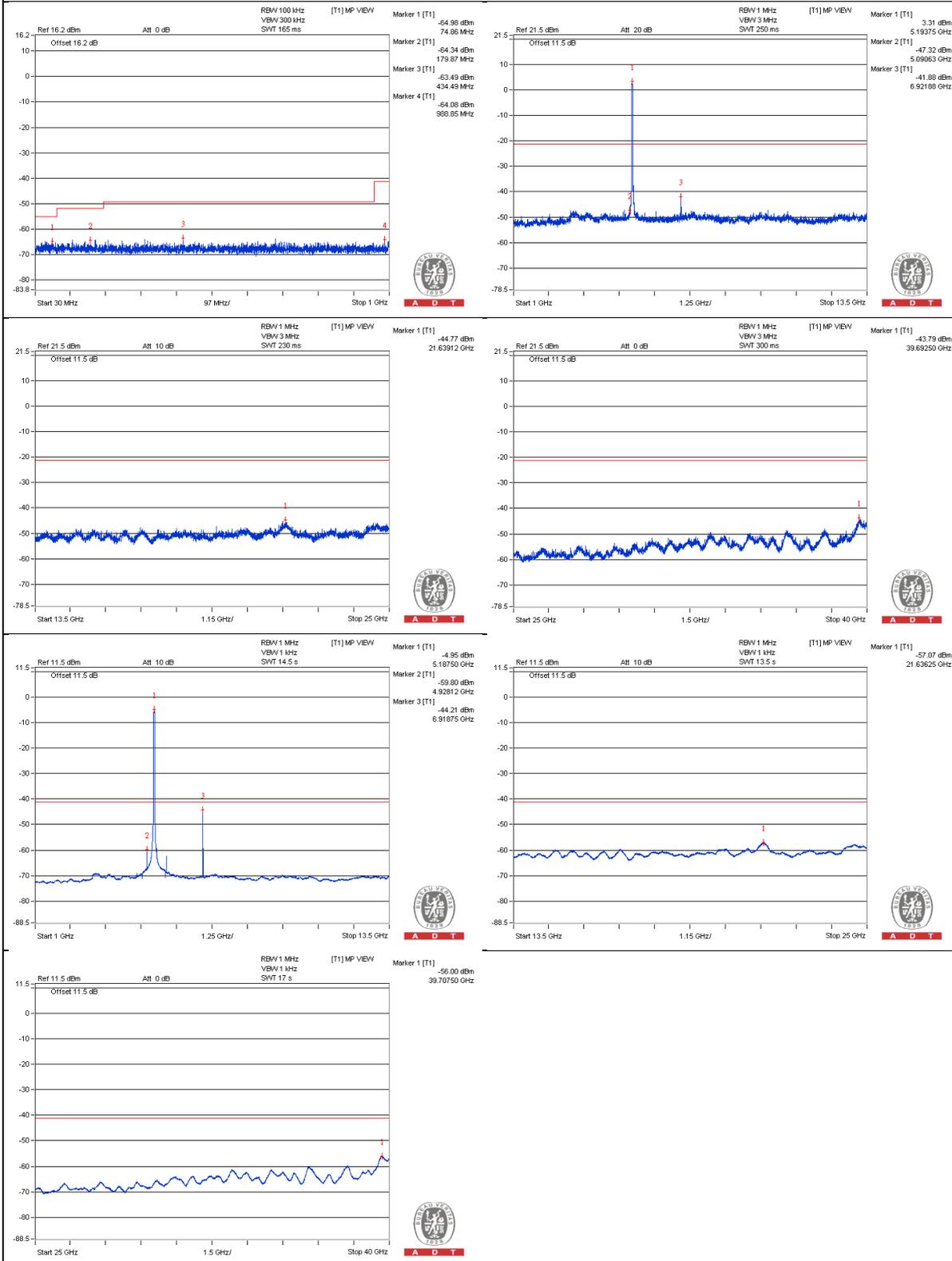
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3450 PK	54.43	74	-19.57	-49.56	-50.34	6.09	-40.83
2	3462.5 AV	33.6	54	-20.4	-70.68	-70.84	6.09	-61.66
3	6921.875 PK	61.64	68.2	-6.56	-41.88	-43.77	6.09	-33.62
4	10387.5 PK	54.48	74	-19.52	-49.46	-50.35	6.09	-40.78
5	10362.5 AV	33.69	54	-20.31	-70.58	-70.77	6.09	-61.57
6	15555.625 PK	53.74	74	-20.26	-49.65	-51.88	6.09	-41.52
7	15552.75 AV	42.57	54	-11.43	-61.82	-61.76	6.09	-52.69

Note :

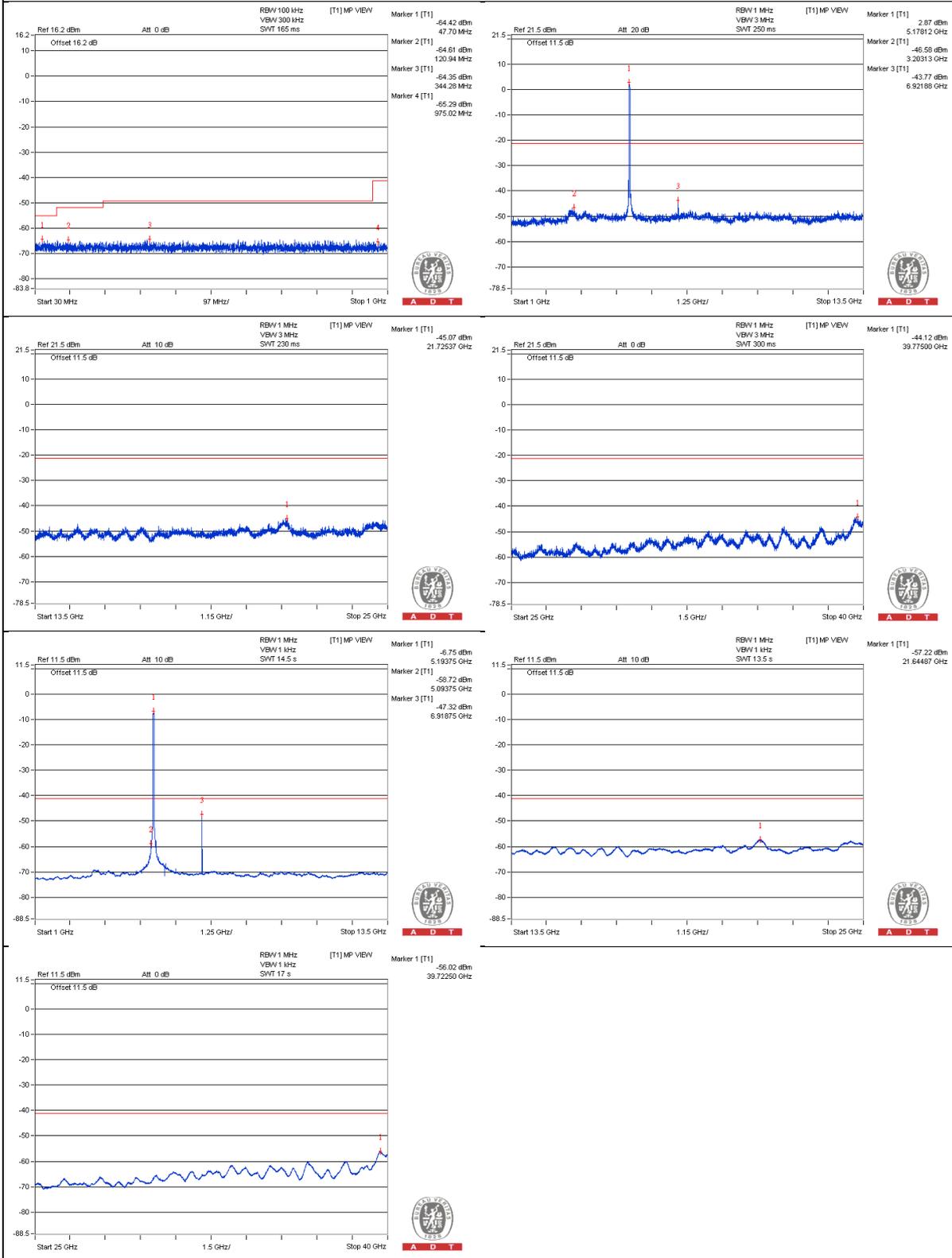
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.



### Chain 0



### Chain 1

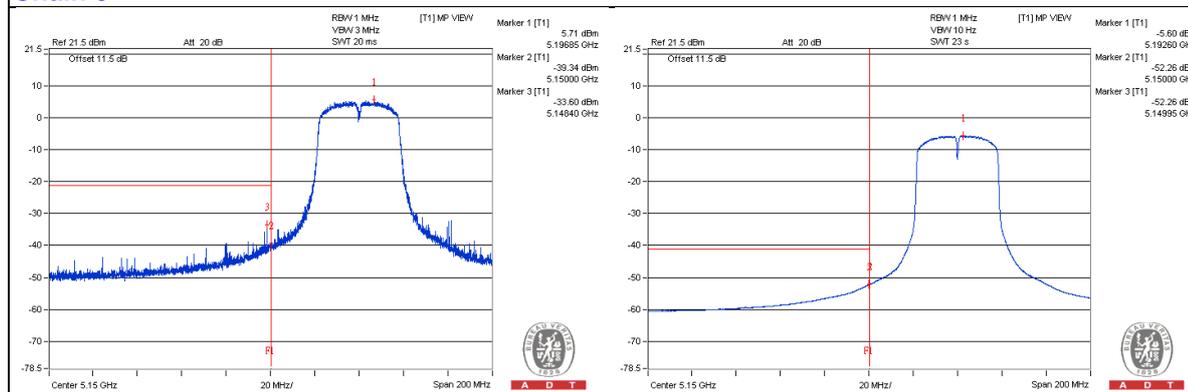


### Bandedge table

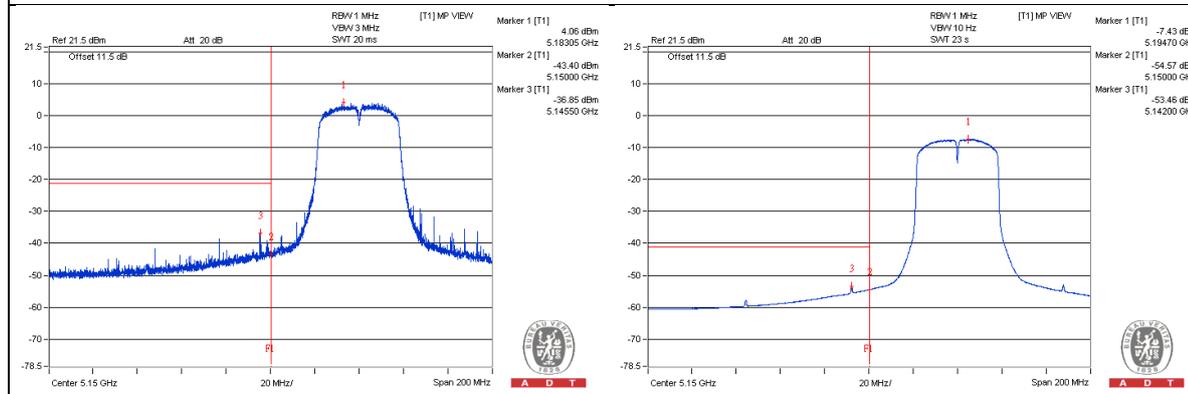
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5148.4 PK	68.17	74	-5.83	-33.6	-43.57	6.09	-27.09
2	5149.9 AV	51.11	54	-2.89	-52.26	-54.54	6.09	-44.15

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT40) - Channel 46

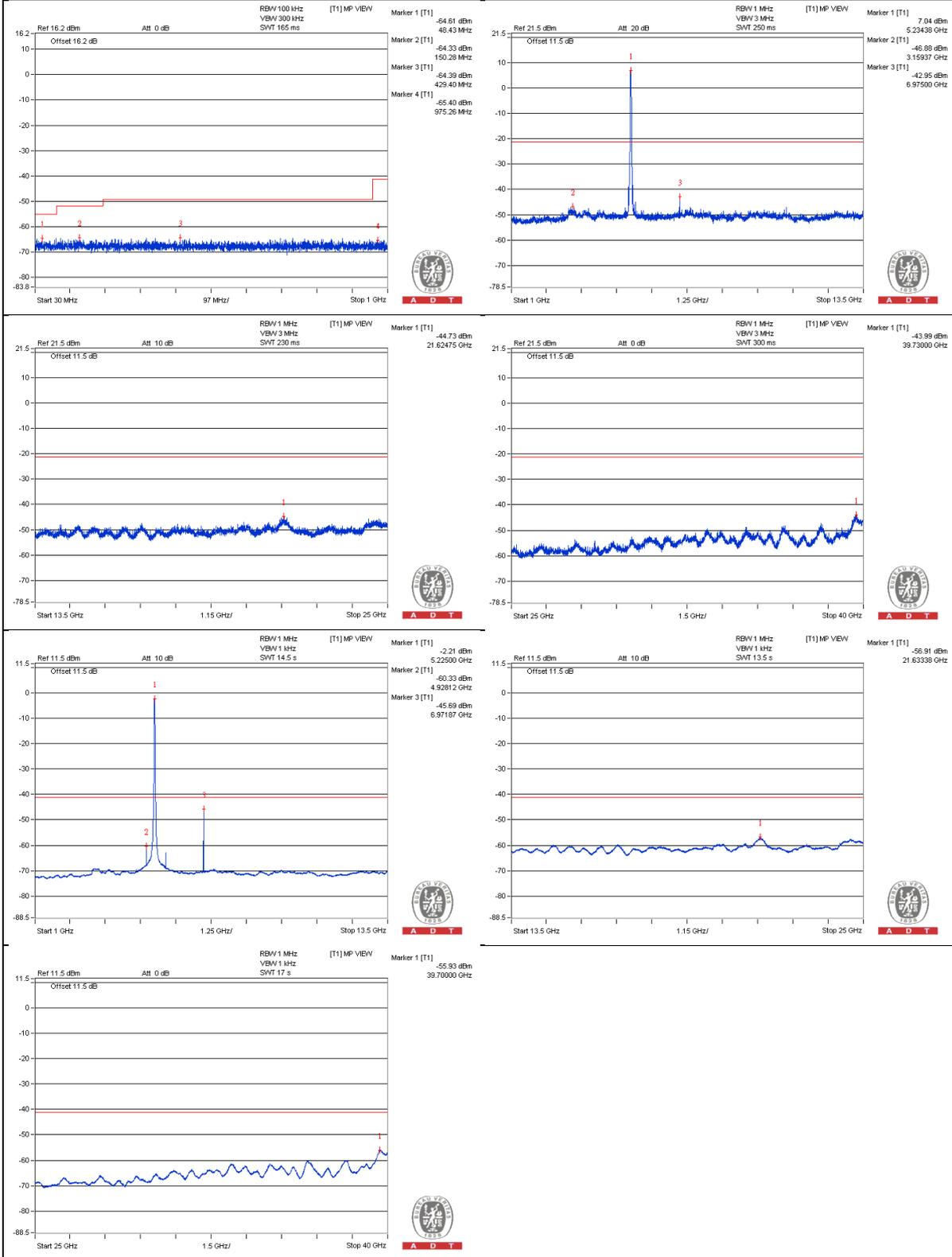
#### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3475 PK	54.96	74	-19.04	-50.4	-48.59	6.09	-40.3
2	3506.25 AV	33.77	54	-20.23	-70.59	-70.6	6.09	-61.49
3	6975 PK	60.63	68.2	-7.57	-42.95	-44.68	6.09	-34.63
4	10478.125 PK	53.89	74	-20.11	-50.15	-50.81	6.09	-41.37
5	10456.25 AV	33.25	54	-20.75	-70.89	-71.35	6.09	-62.01
6	15670.625 PK	53.47	74	-20.53	-50.65	-51.14	6.09	-41.79
7	15702.25 AV	41.97	54	-12.03	-62.34	-62.45	6.09	-53.29

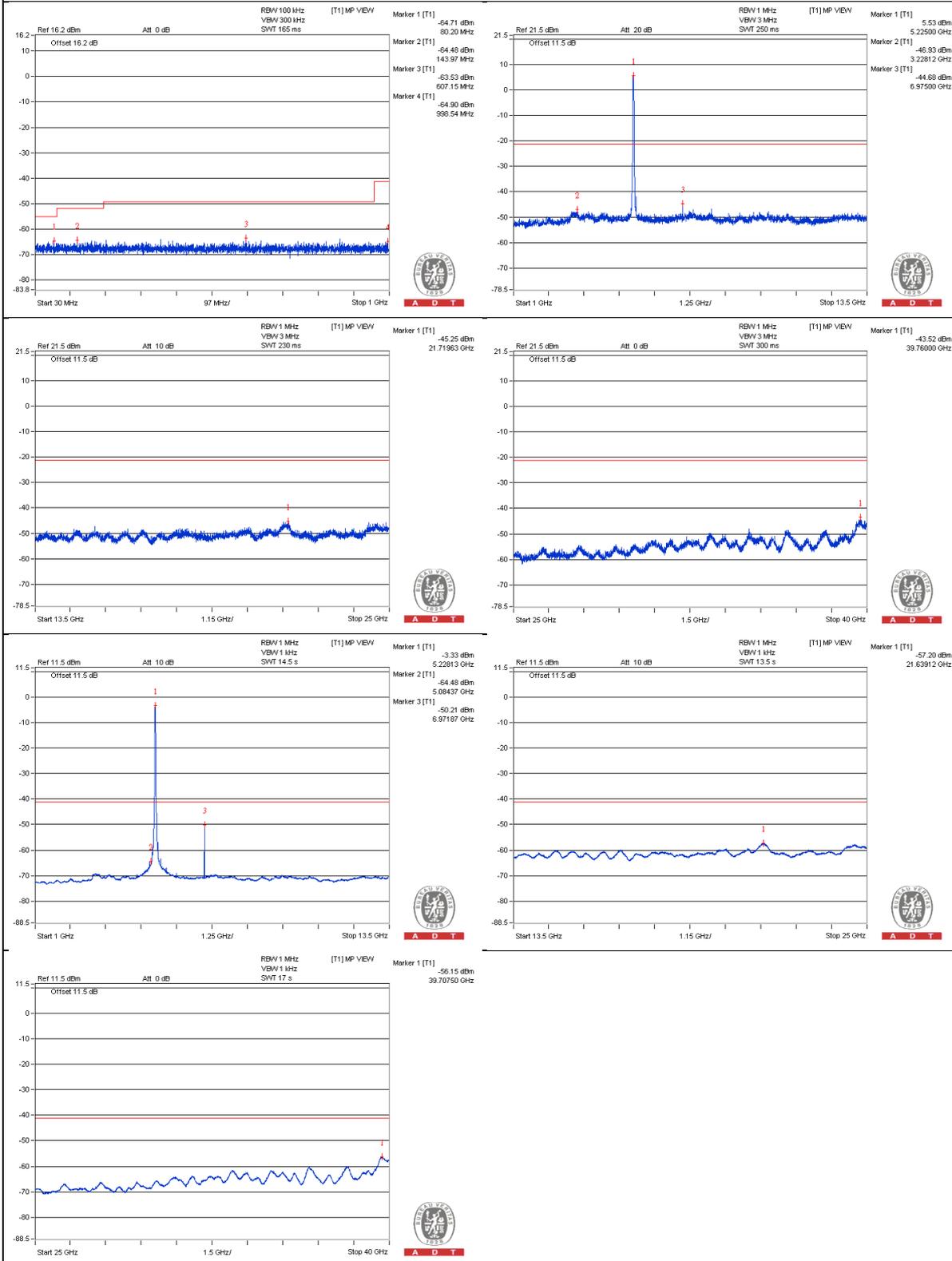
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT40) - Channel 54

### Conducted spurious emission table

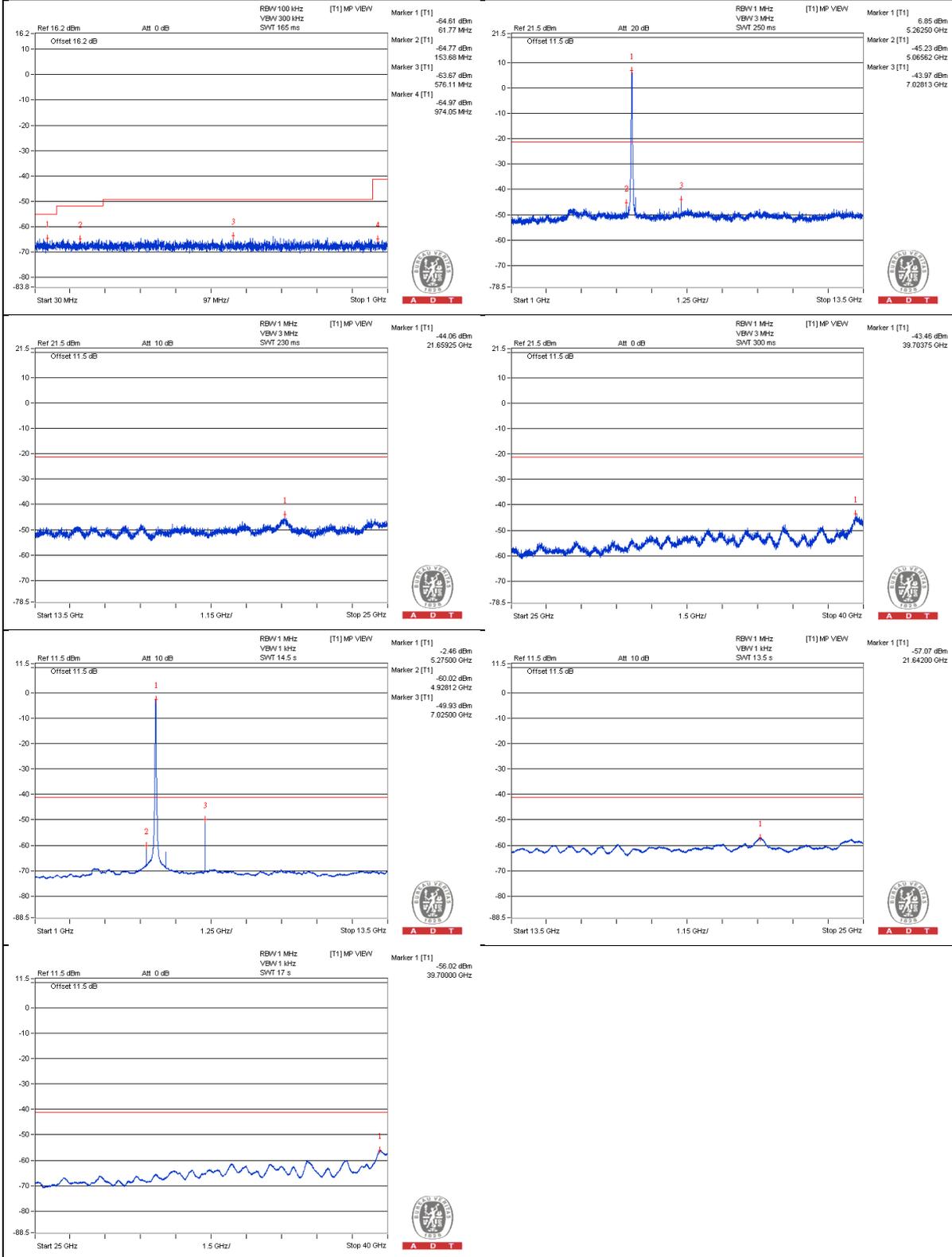
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3525 PK	55.35	74	-18.65	-50.33	-48	6.09	-39.91
2	3521.875 AV	34.26	54	-19.74	-70.05	-70.16	6.09	-61
3	7028.125 PK	58.3	74	-15.7	-43.97	-50.23	6.09	-36.96
4	7025 AV	51.46	54	-2.54	-49.93	-70.57	6.09	-43.8
5	10550 PK	54.4	74	-19.6	-49.99	-49.94	6.09	-40.86
6	10546.875 AV	33.62	54	-20.38	-70.68	-70.8	6.09	-61.64
7	15811.5 PK	54.74	74	-19.26	-49.28	-49.99	6.09	-40.52
8	15805.75 AV	43.09	54	-10.91	-61.11	-61.44	6.09	-52.17

Note :

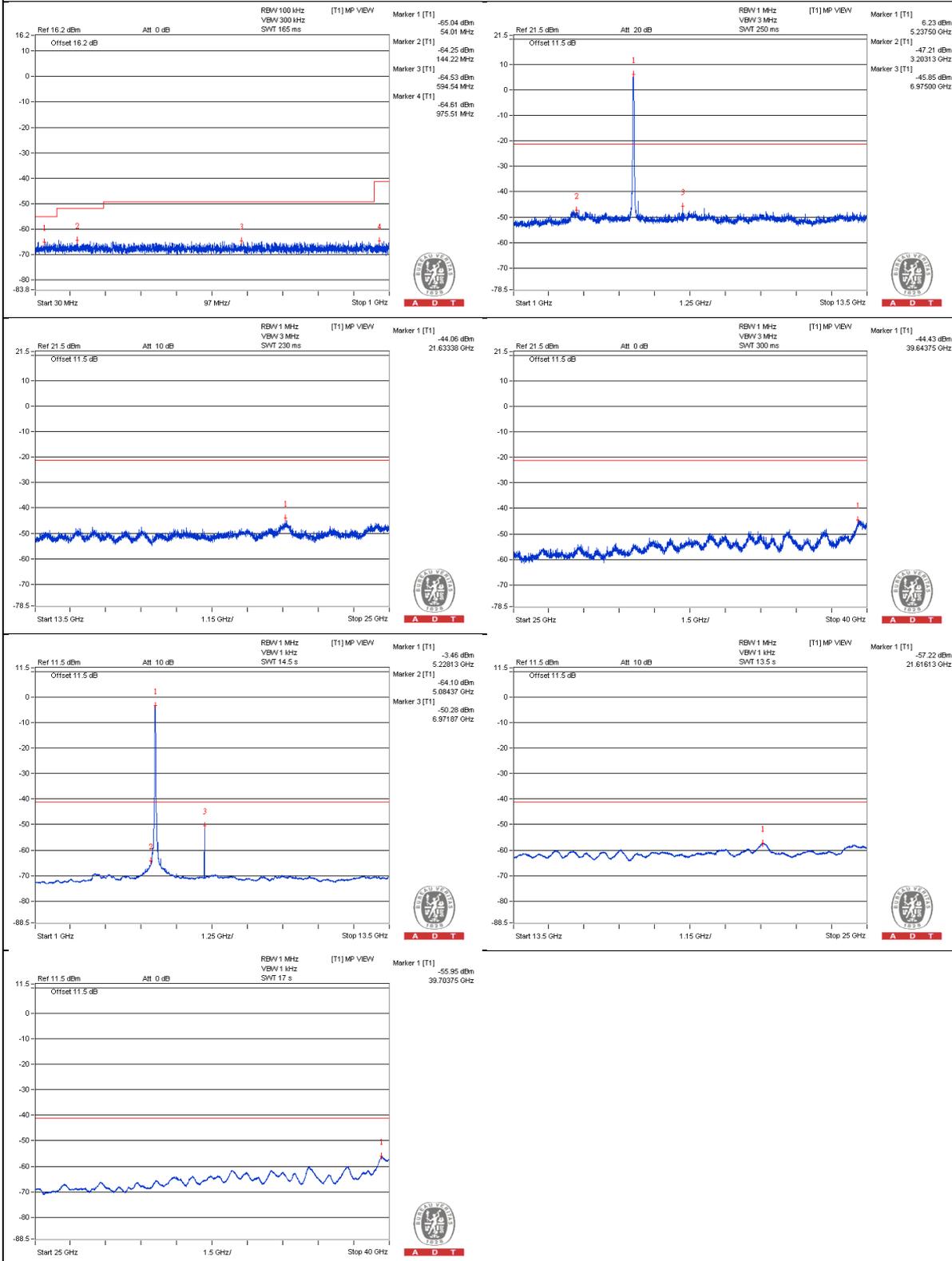
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT40) - Channel 62

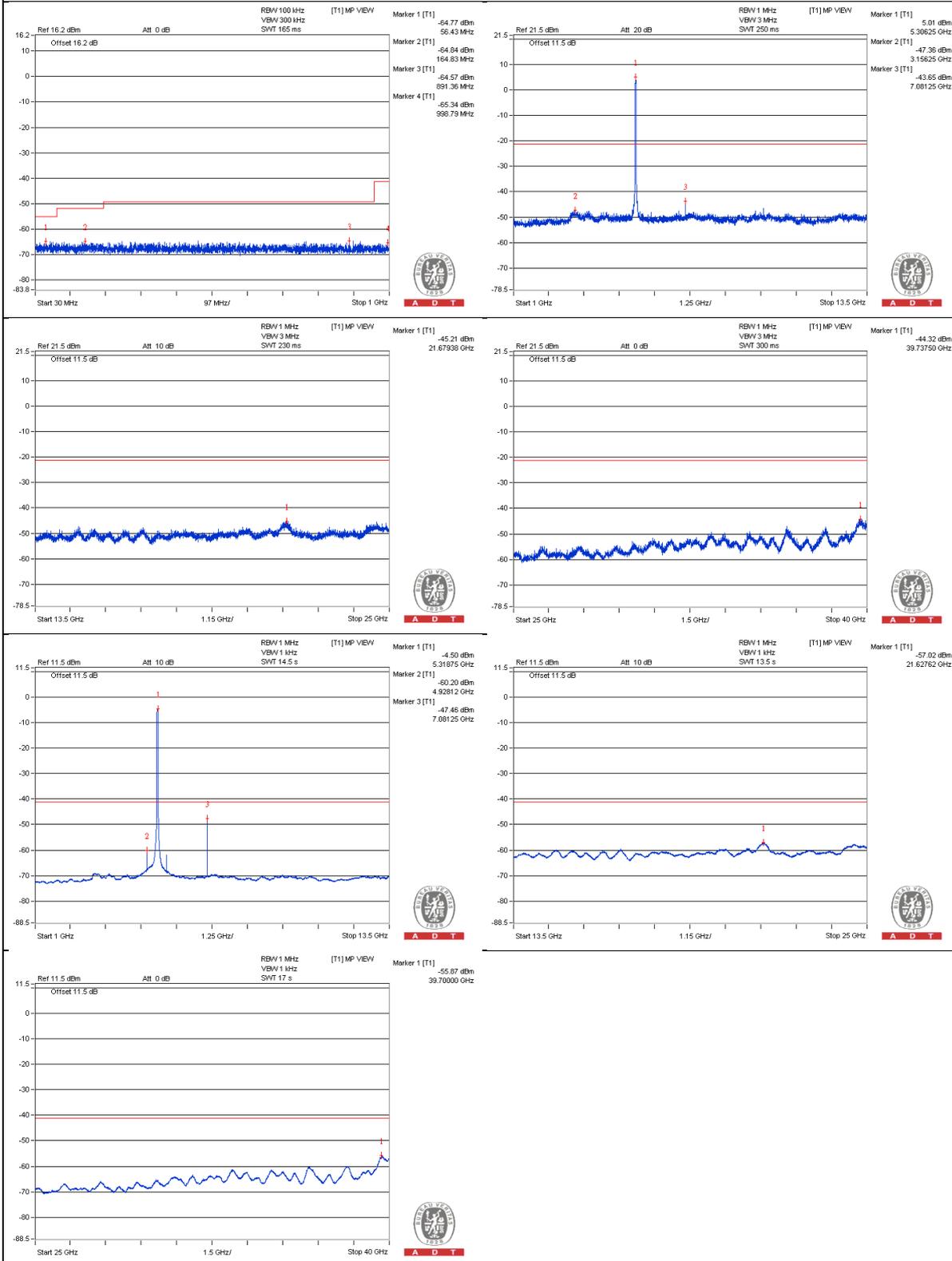
### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3525 PK	55.49	74	-18.51	-48.28	-49.55	6.09	-39.77
2	3556.25 AV	34.48	54	-19.52	-69.81	-69.96	6.09	-60.78
3	7081.25 PK	59.11	68.2	-9.09	-43.65	-47.81	6.09	-36.15
4	10621.875 PK	54.55	74	-19.45	-48.82	-51.1	6.09	-40.71
5	10618.75 AV	33.51	54	-20.49	-70.88	-70.83	6.09	-61.75
6	15923.625 PK	54.54	74	-19.46	-49.35	-50.34	6.09	-40.72
7	15915 AV	42.55	54	-11.45	-61.69	-61.94	6.09	-52.71

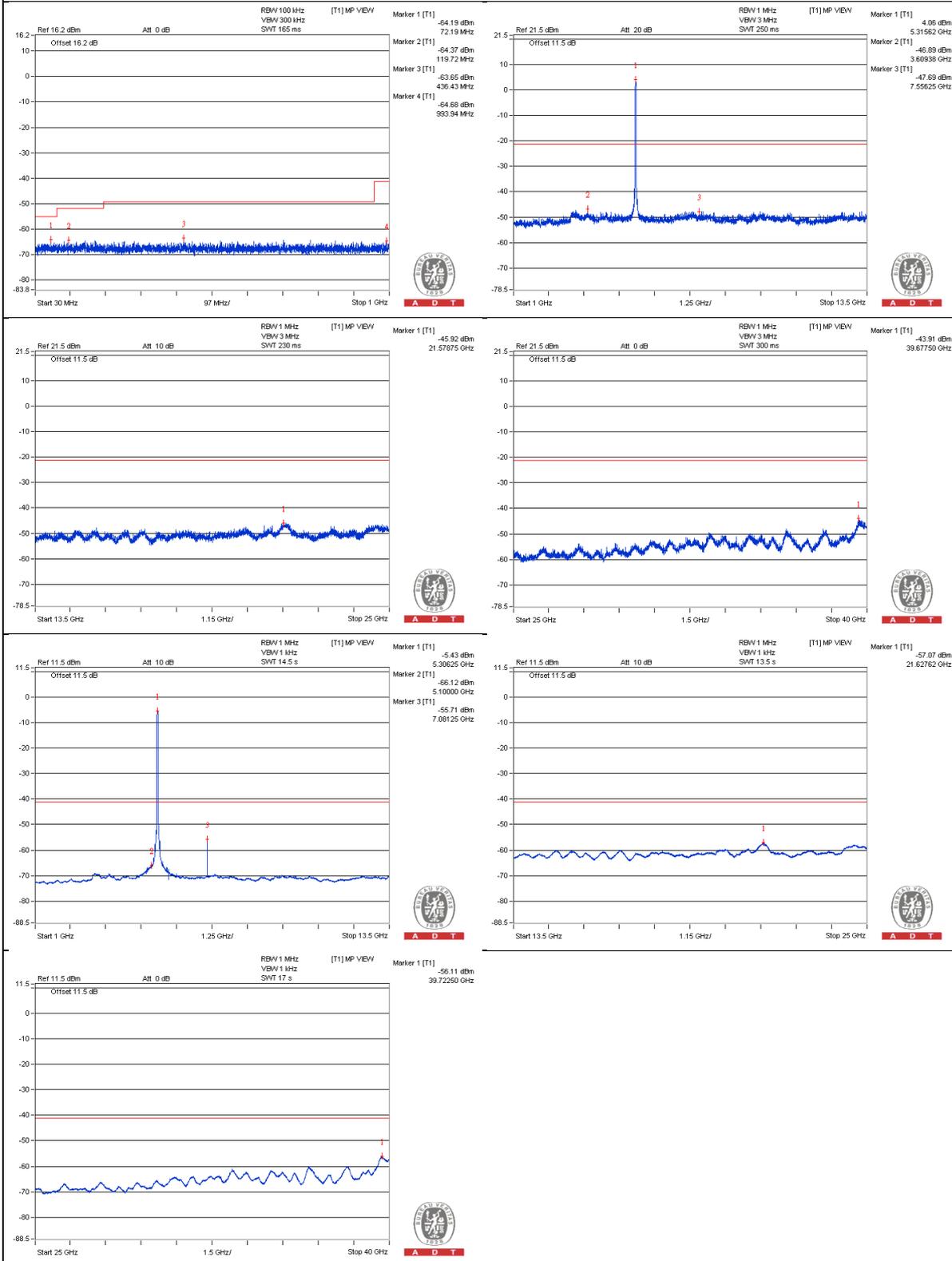
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

### Chain 0



### Chain 1

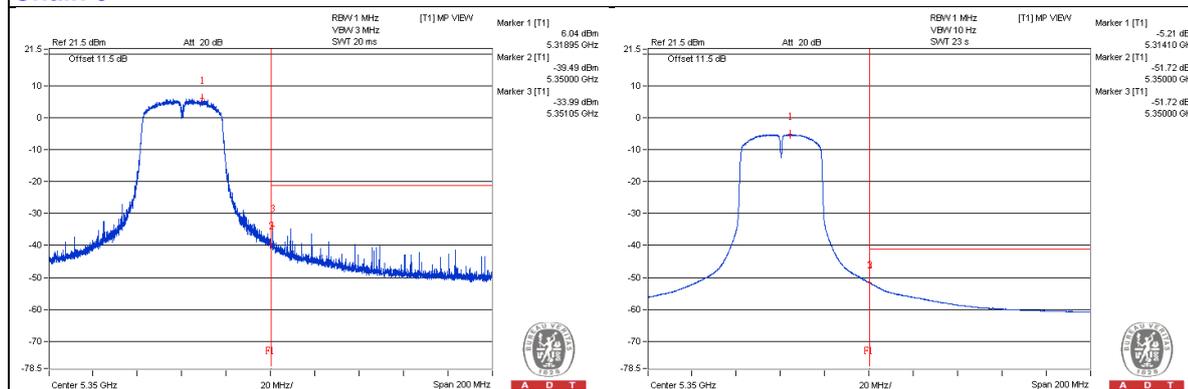


### Bandedge table

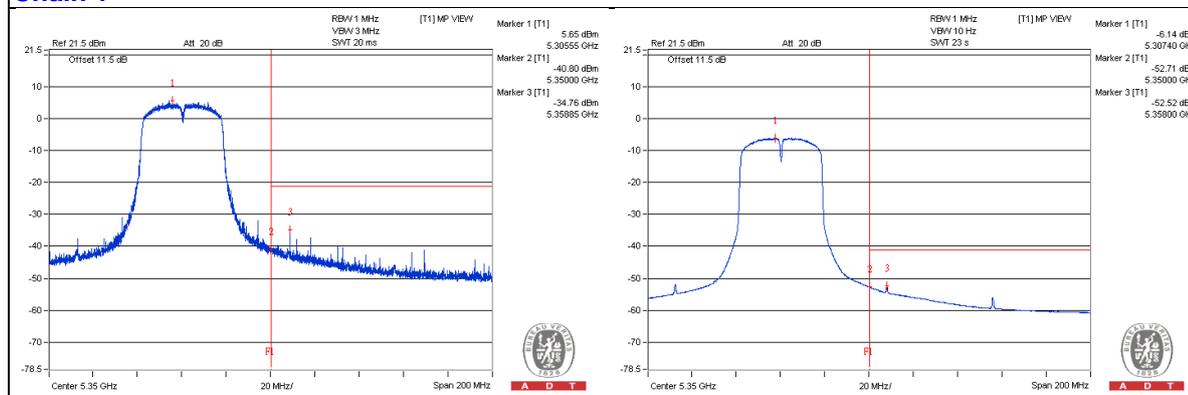
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5351.05 PK	68.15	74	-5.85	-33.99	-41.02	6.09	-27.11
2	5350 AV	52.17	54	-1.83	-51.72	-52.71	6.09	-43.09

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



802.11ac (VHT40) - Channel 102

Conducted spurious emission table

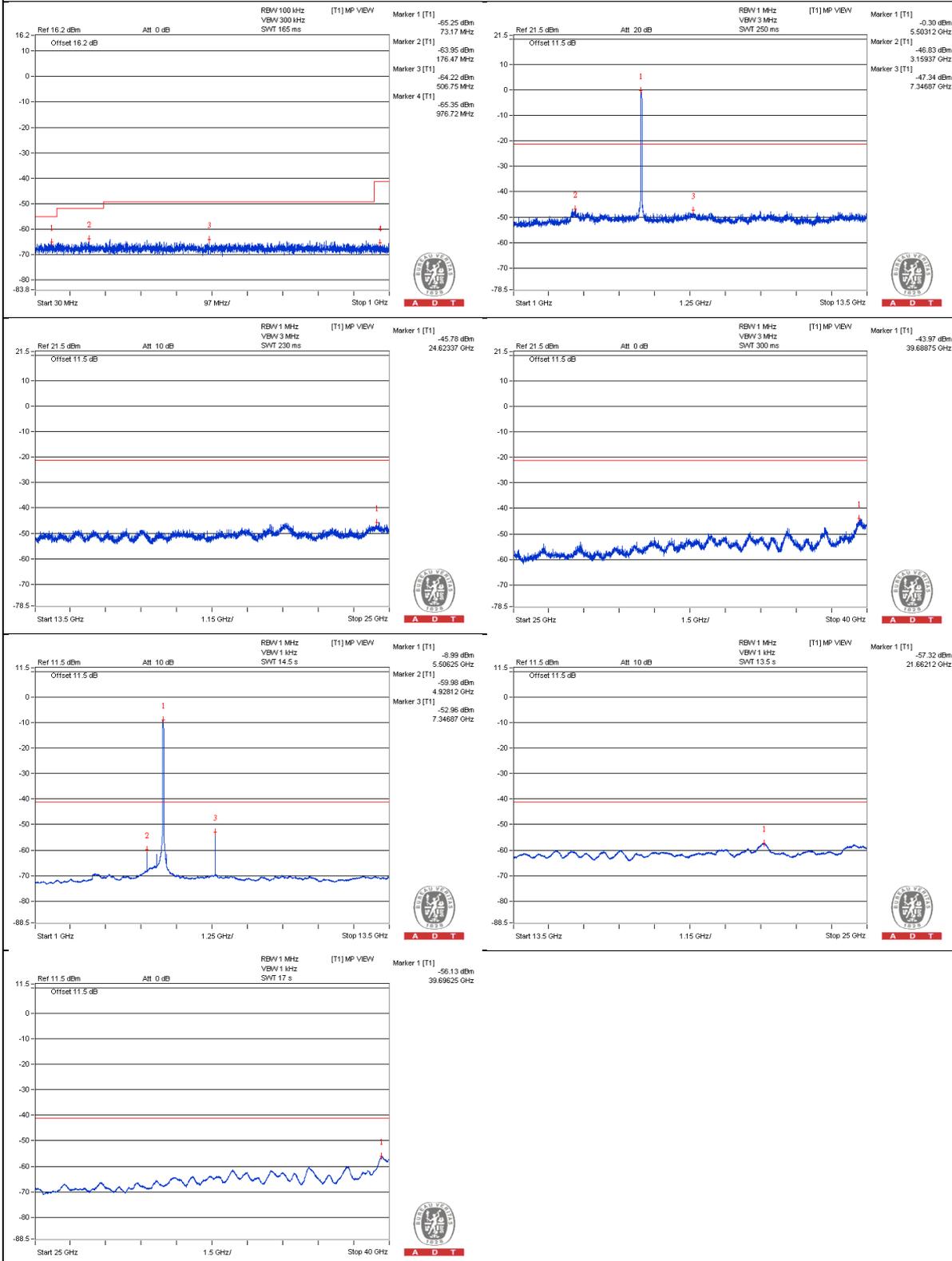
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3678.125 PK	57.97	74	-16.03	-50.12	-46.68	7.77	-37.29
2	3656.25 AV	35.69	54	-18.31	-70.31	-70.39	7.77	-59.57
3	7346.875 PK	58.63	74	-15.37	-47.34	-47.48	7.77	-36.63
4	7346.875 AV	50.33	54	-3.67	-52.96	-64.98	7.77	-44.93
5	11000 PK	54.88	74	-19.12	-50.43	-52.04	7.77	-40.38
6	11000 AV	34.26	54	-19.74	-71.95	-71.62	7.77	-61
7	16533.125 PK	55.53	74	-18.47	-49.76	-51.41	7.77	-39.73
8	16510.125 AV	44.48	54	-9.52	-61.58	-61.55	7.77	-50.78

Note :

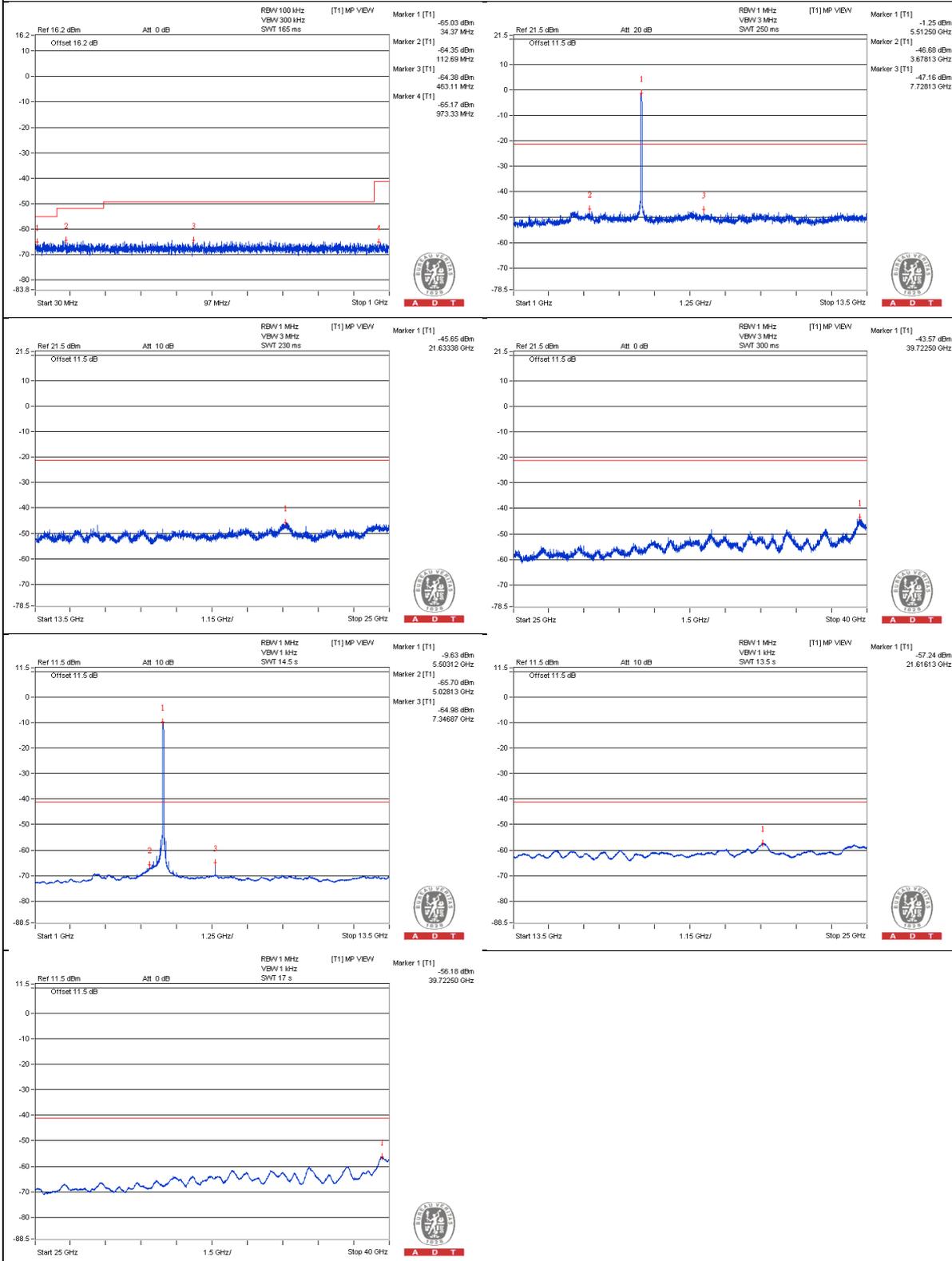
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

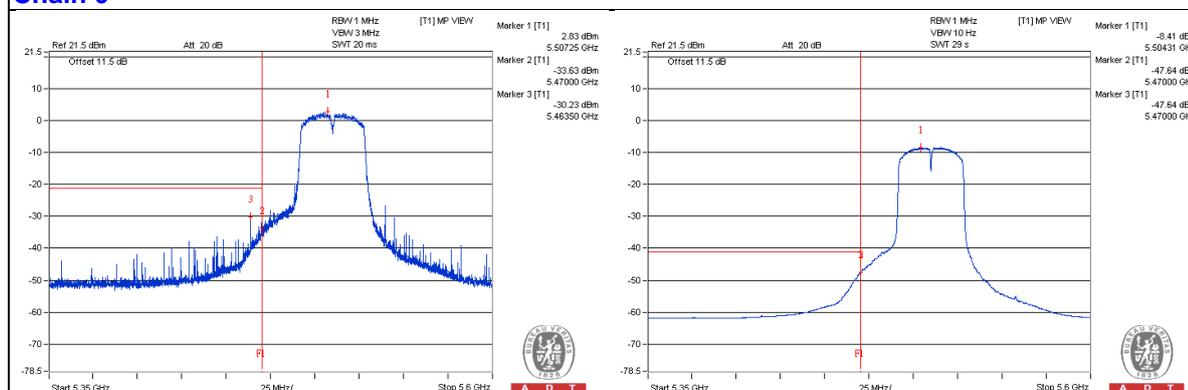
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5463.5 PK	73	74	-1	-30.23	-43.39	7.77	-22.26
2	5470 AV	56.21	54	* 2.21	-47.64	-54.44	7.77	-39.05

Note :

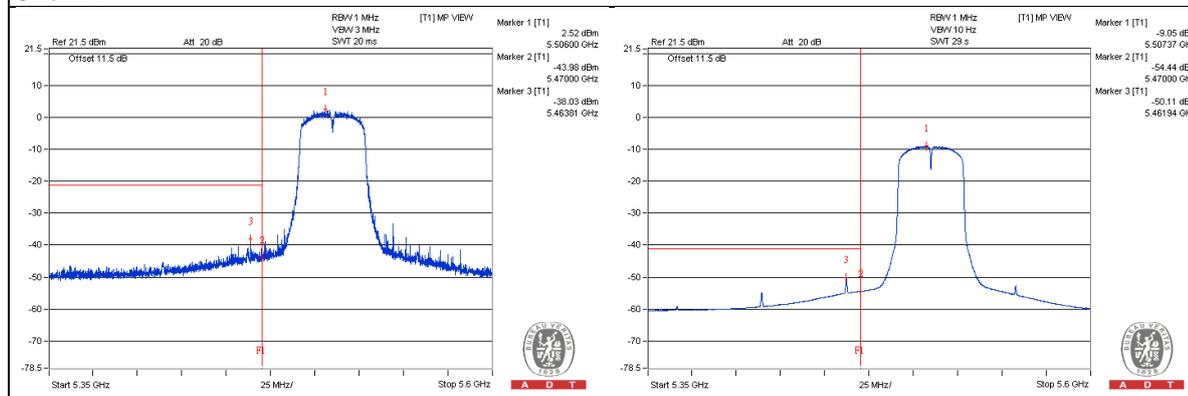
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

\* The unwanted emission was verified and the test result was passed by radiated measurement.  
(Please refer APPENDIX A)

#### Chain 0



#### Chain 1



## 802.11ac (VHT40) - Channel 118

### Conducted spurious emission table

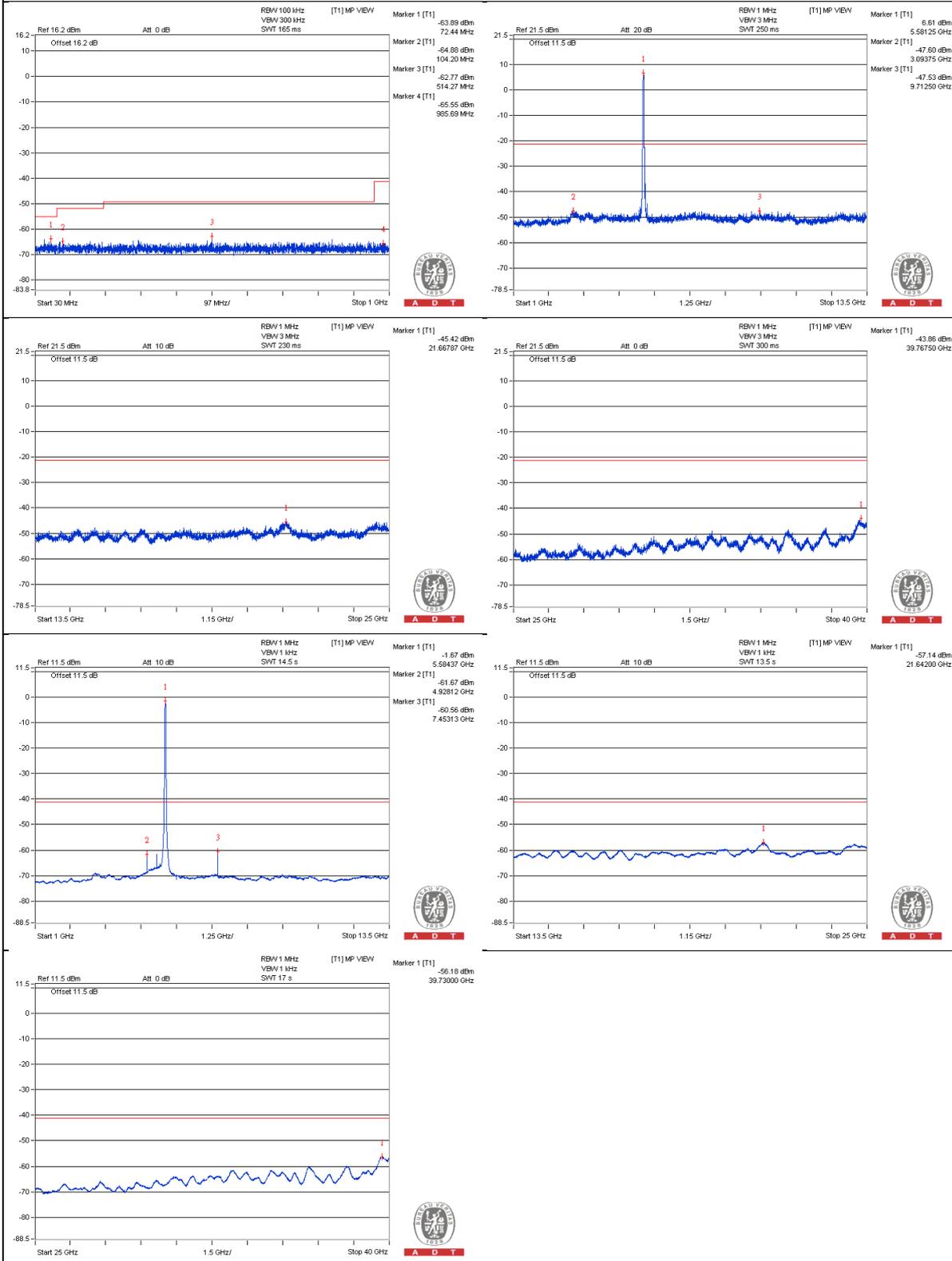
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3743.75 PK	56.7	74	-17.3	-48.51	-50.37	7.77	-38.56
2	3734.375 AV	35.63	54	-18.37	-70.31	-70.52	7.77	-59.63
3	7440.625 PK	56.99	74	-17.01	-49.74	-48.45	7.77	-38.27
4	7453.125 AV	42.94	54	-11.06	-60.56	-69.98	7.77	-52.32
5	11184.375 PK	55.25	74	-18.75	-50.98	-50.6	7.77	-40.01
6	11184.375 AV	34.54	54	-19.46	-71.58	-71.42	7.77	-60.72
7	16751.625 PK	55.31	74	-18.69	-51.42	-50.13	7.77	-39.95
8	16780.375 AV	44.1	54	-9.9	-62.08	-61.81	7.77	-51.16

Note :

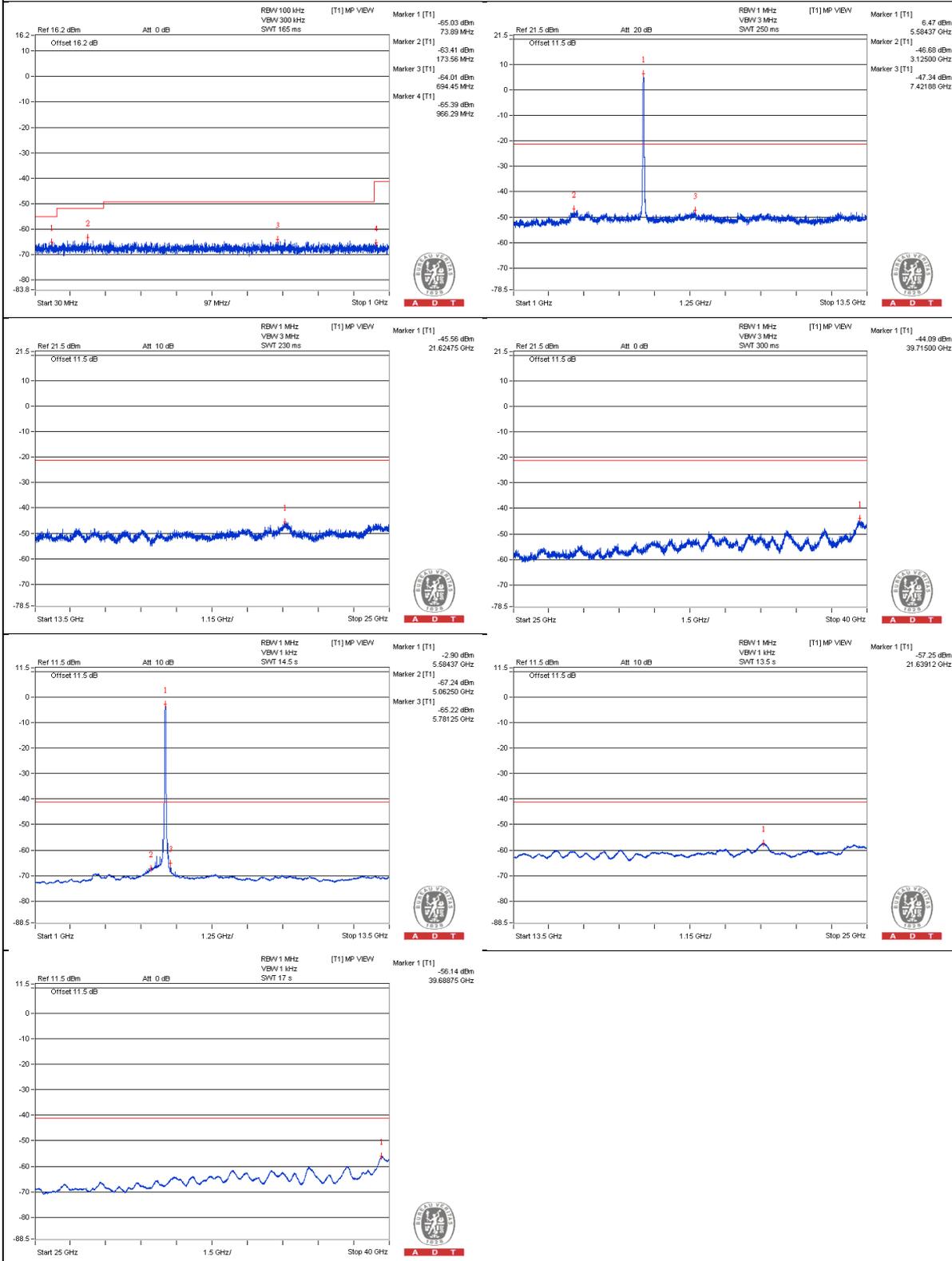
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



### 802.11ac (VHT40) - Channel 134

#### Conducted spurious emission table

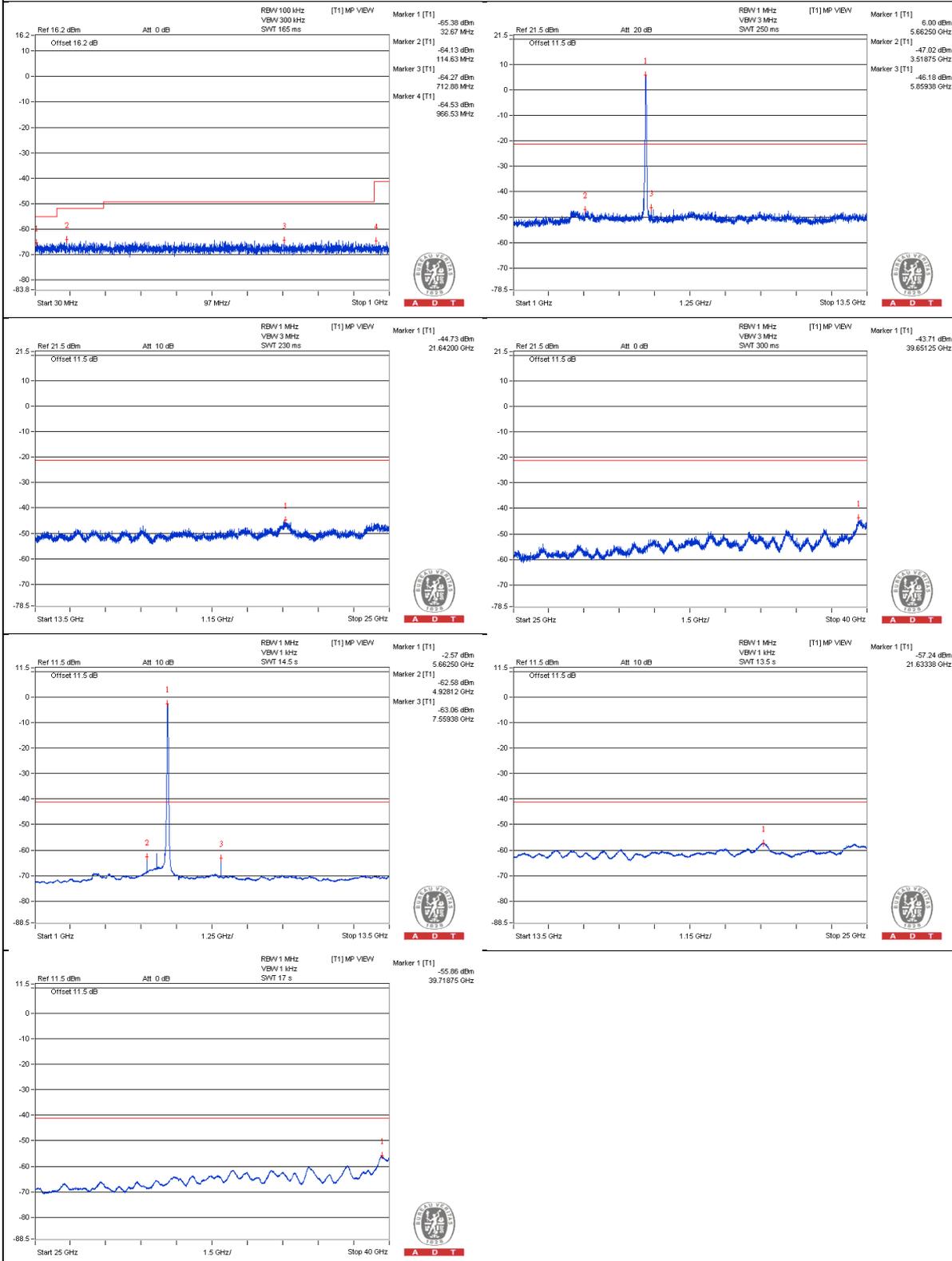
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3768.75 PK	56.94	74	-17.06	-48	-50.58	7.77	-38.32
2	3765.625 AV	35.65	54	-18.35	-70.13	-70.67	7.77	-59.61
3	7550 PK	56.78	74	-17.22	-48.78	-49.8	7.77	-38.48
4	7559.375 AV	40.68	54	-13.32	-63.06	-70.56	7.77	-54.58
5	11328.125 PK	55.84	74	-18.16	-51.21	-49.38	7.77	-39.42
6	11325 AV	34.67	54	-19.33	-71.15	-71.6	7.77	-60.59
7	16993.125 PK	56.75	74	-17.25	-48.45	-50.34	7.77	-38.51
8	16990.25 AV	45.97	54	-8.03	-59.8	-60.36	7.77	-49.29

Note :

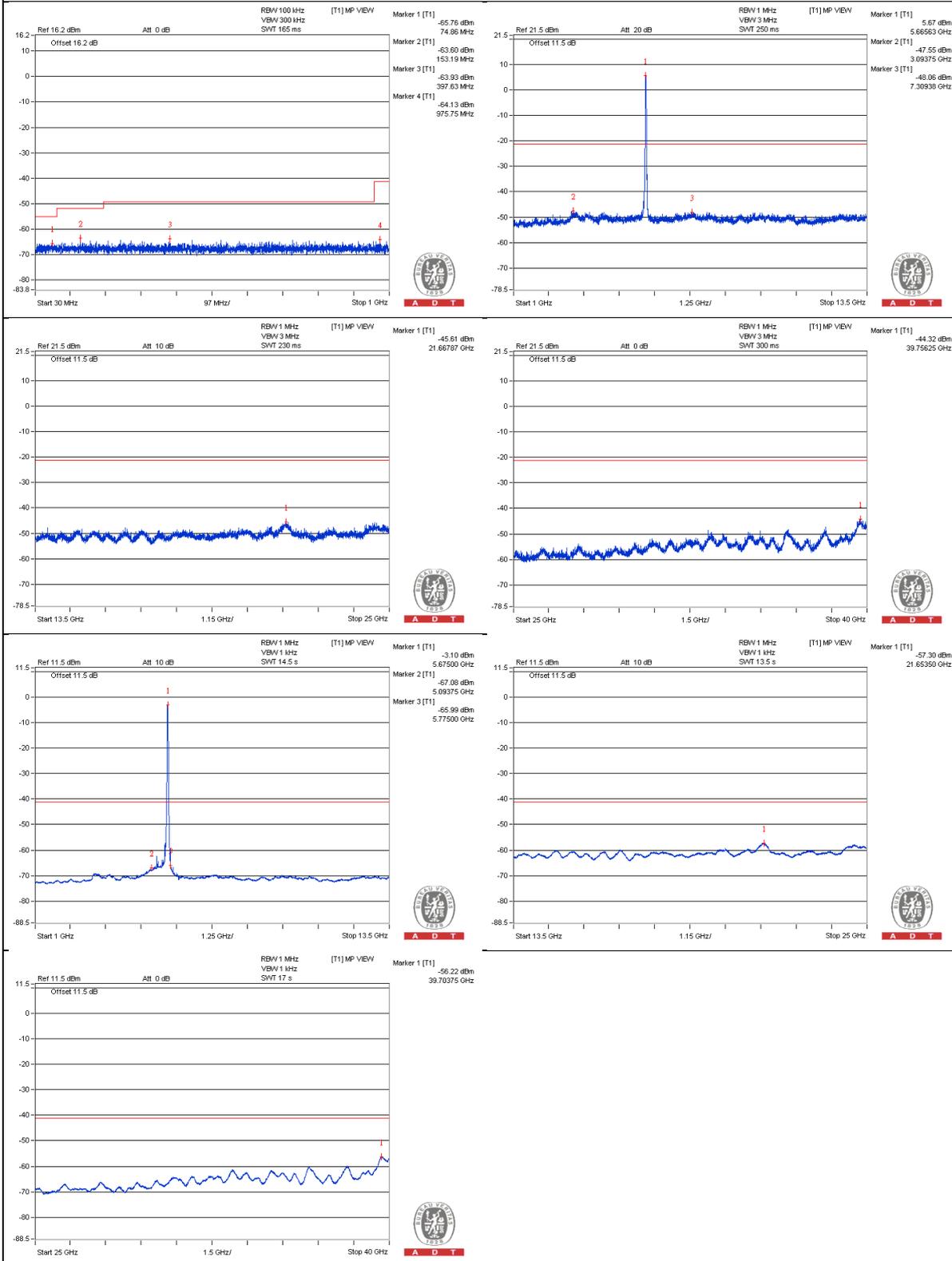
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

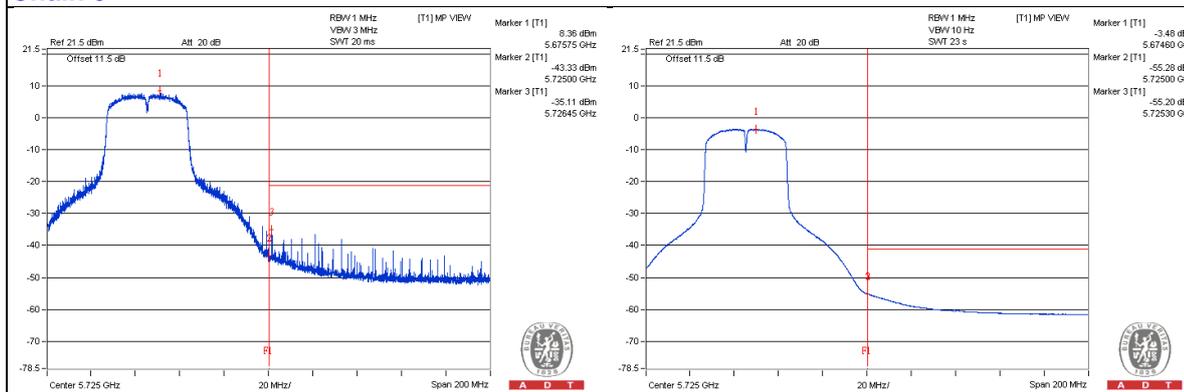
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5726.45 PK	68.5	74	-5.5	-35.11	-43.56	7.77	-26.76
2	5725.05 AV	50.74	54	-3.26	-55.27	-55.34	7.77	-44.52

Note :

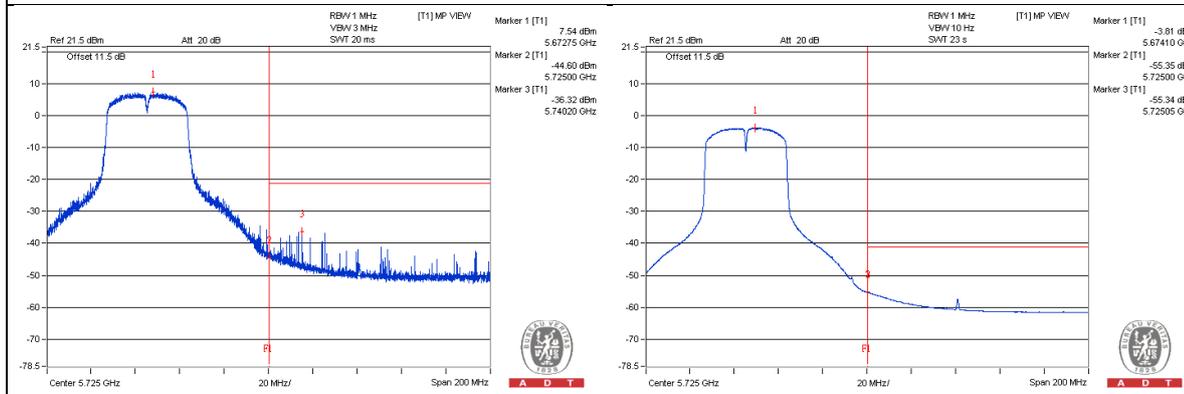
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT40) - Channel 142

### Conducted spurious emission table

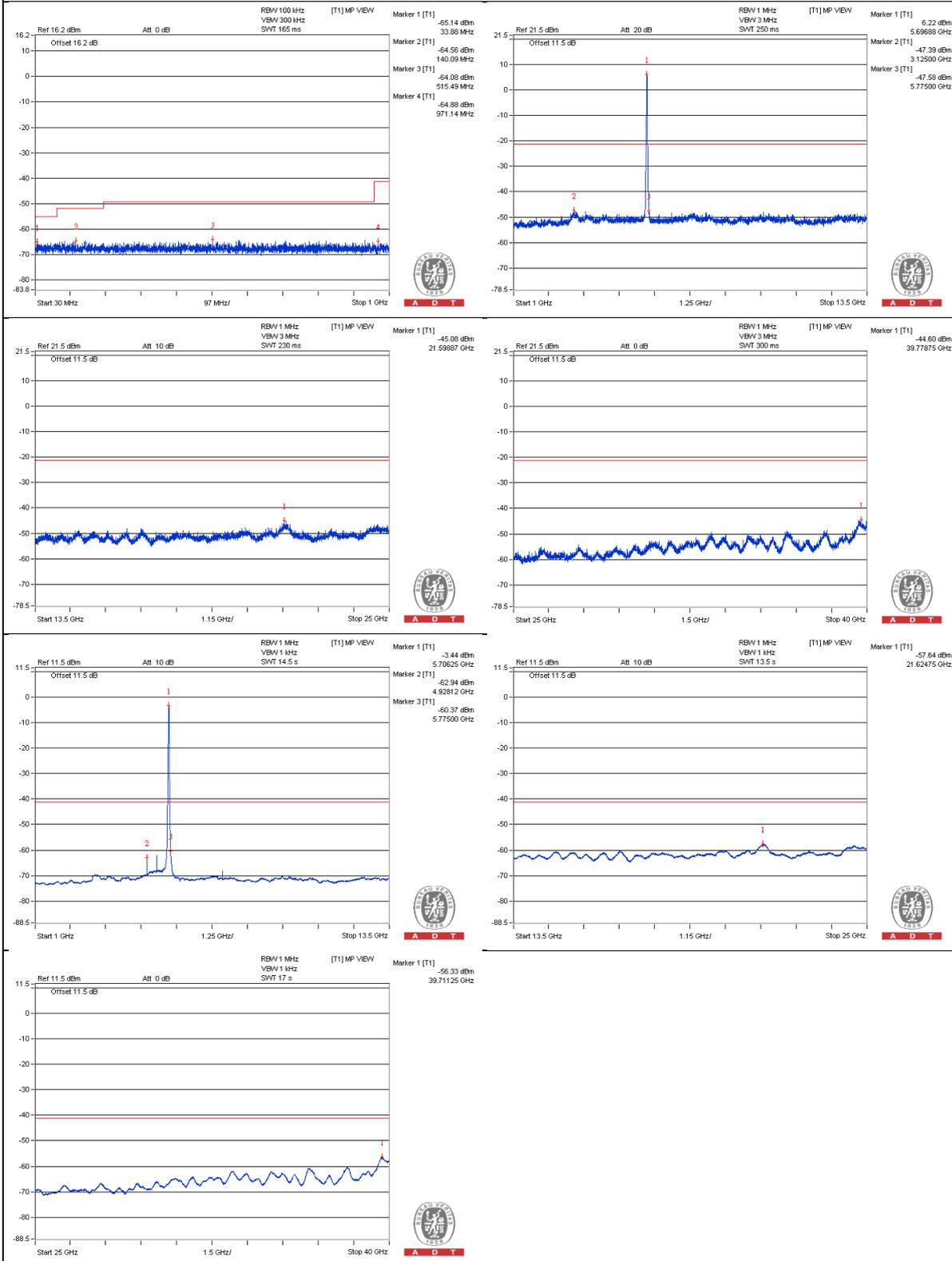
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3796.875 PK	55.67	74	-18.33	-51.47	-49.5	7.77	-39.59
2	3790.625 AV	34.76	54	-19.24	-71.44	-71.13	7.77	-60.5
3	7596.875 PK	56.65	74	-17.35	-50.62	-48.44	7.77	-38.61
4	7612.5 AV	36.42	54	-17.58	-68.38	-71.35	7.77	-58.84
5	11409.375 PK	54.38	74	-19.62	-52.22	-51.17	7.77	-40.88
6	11412.5 AV	33.75	54	-20.25	-72.24	-72.34	7.77	-61.51
7	17128.25 PK	55.03	74	-18.97	-51.93	-50.26	7.77	-40.23
8	17116.75 AV	43.76	54	-10.24	-62.29	-62.28	7.77	-51.5

Note :

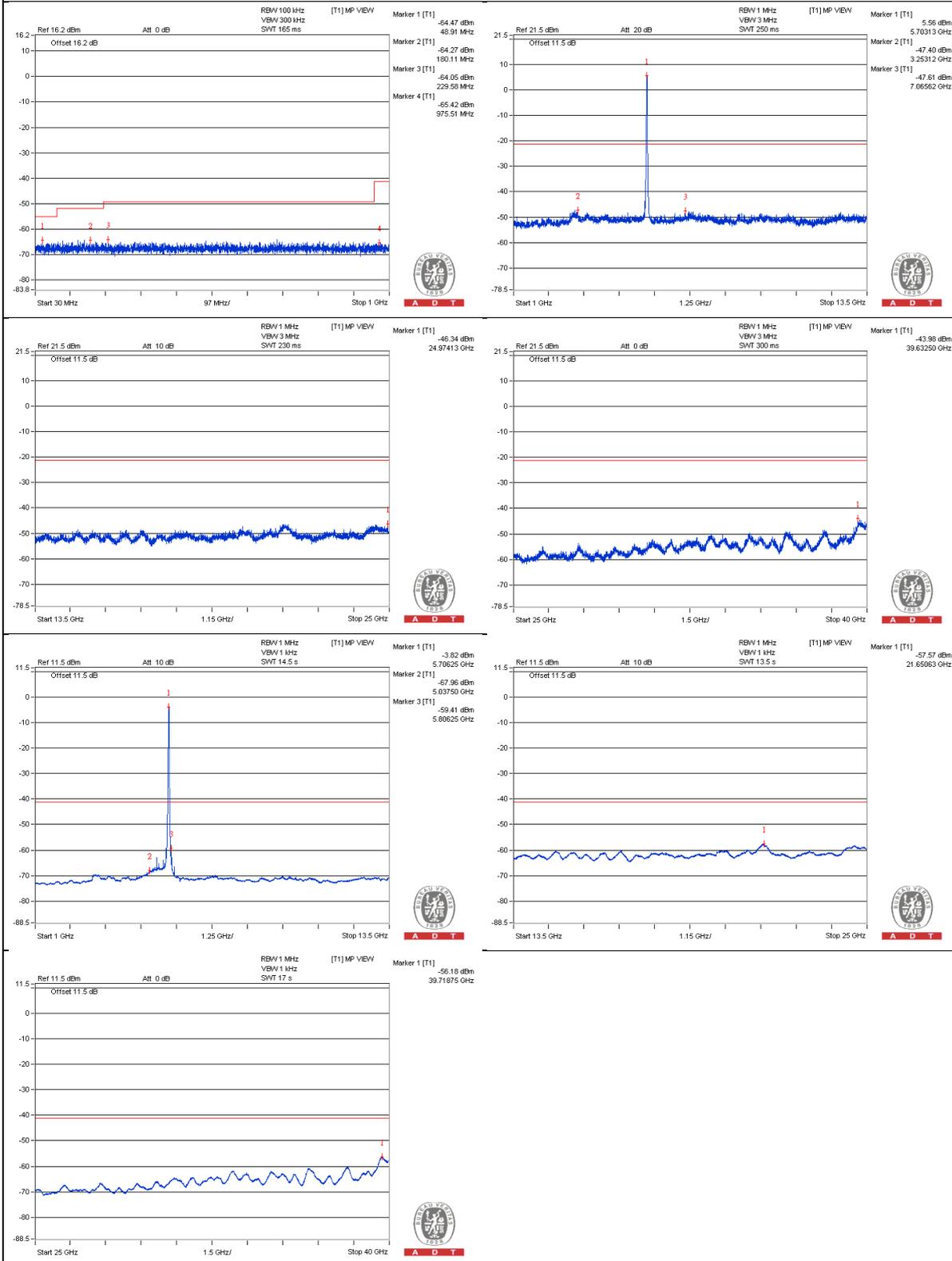
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



### Bandedge table

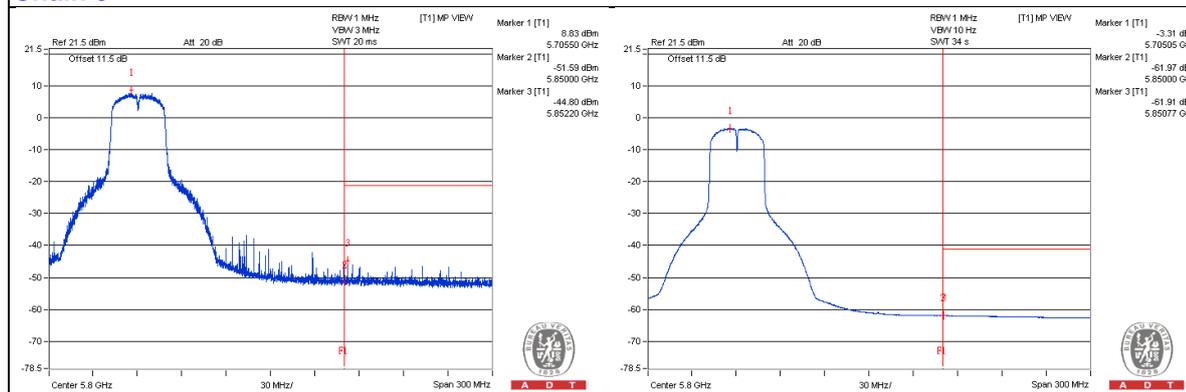
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5828.125 PK	61.44	74	-12.56	-42.13	-50.89	7.77	-33.82
2	5825.35 AV	44.23	54	-9.77	-61.84	-61.78	7.77	-51.03

Note :

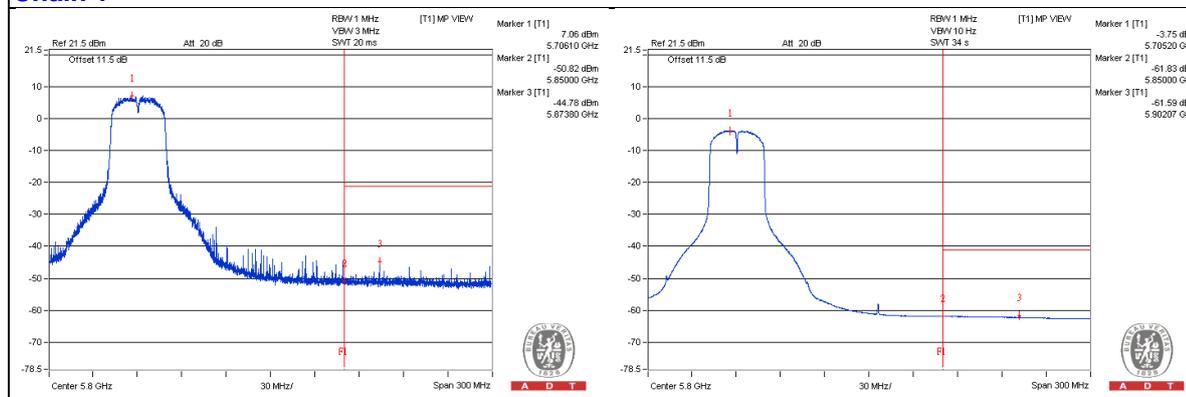
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11ac (VHT80) - Channel 42

### Conducted spurious emission table

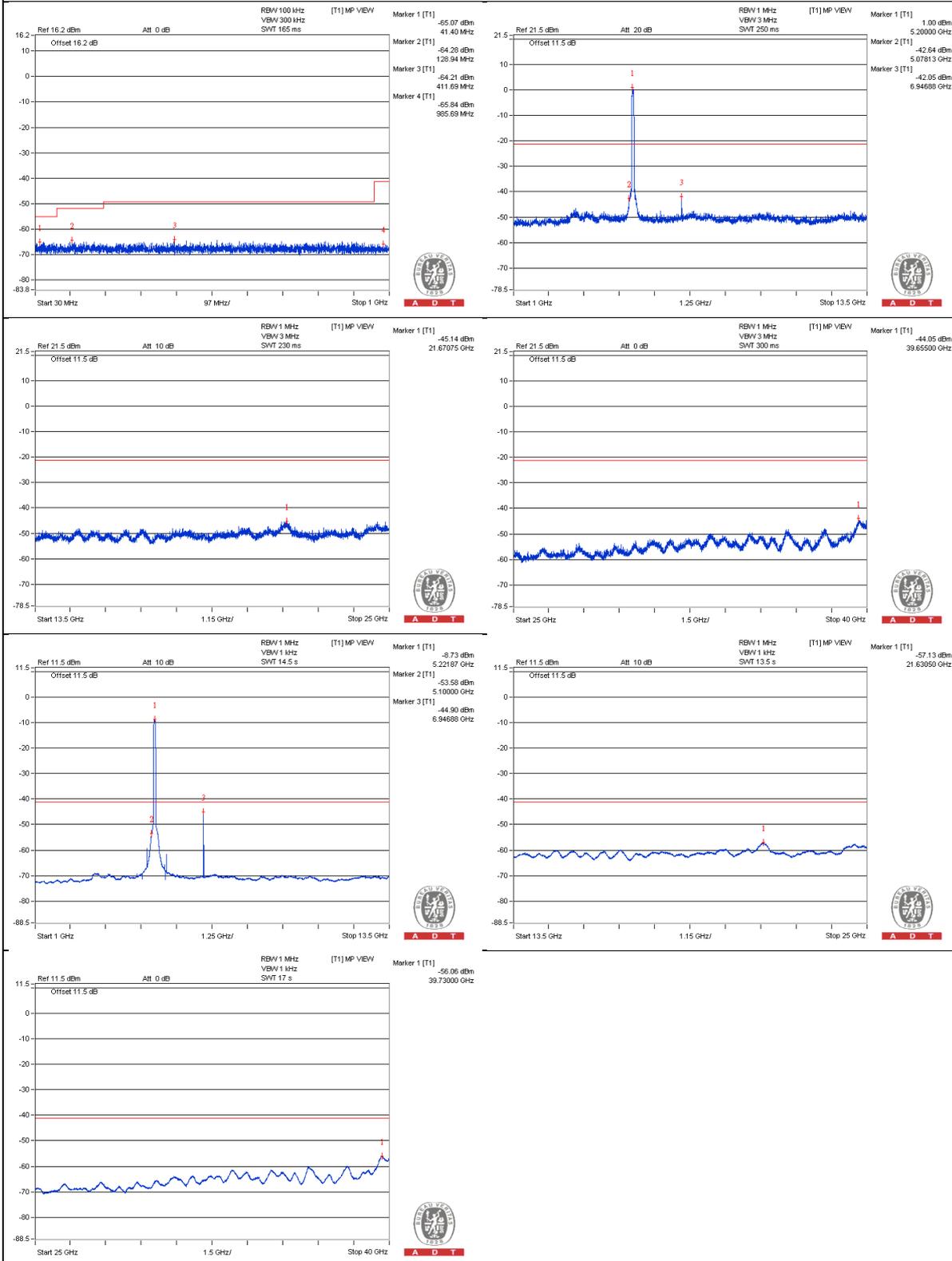
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3484.375 PK	55.15	74	-18.85	-48.12	-50.66	6.09	-40.11
2	3456.25 AV	33.52	54	-20.48	-70.86	-70.83	6.09	-61.74
3	6946.875 PK	61	68.2	-7.2	-42.05	-45.25	6.09	-34.26
4	10406.25 PK	54.61	74	-19.39	-49.82	-49.69	6.09	-40.65
5	10418.75 AV	33.27	54	-20.73	-70.89	-71.29	6.09	-61.99
6	15644.75 PK	52.97	74	-21.03	-50.76	-52.13	6.09	-42.29
7	15641.875 AV	41.85	54	-12.15	-62.46	-62.57	6.09	-53.41

Note :

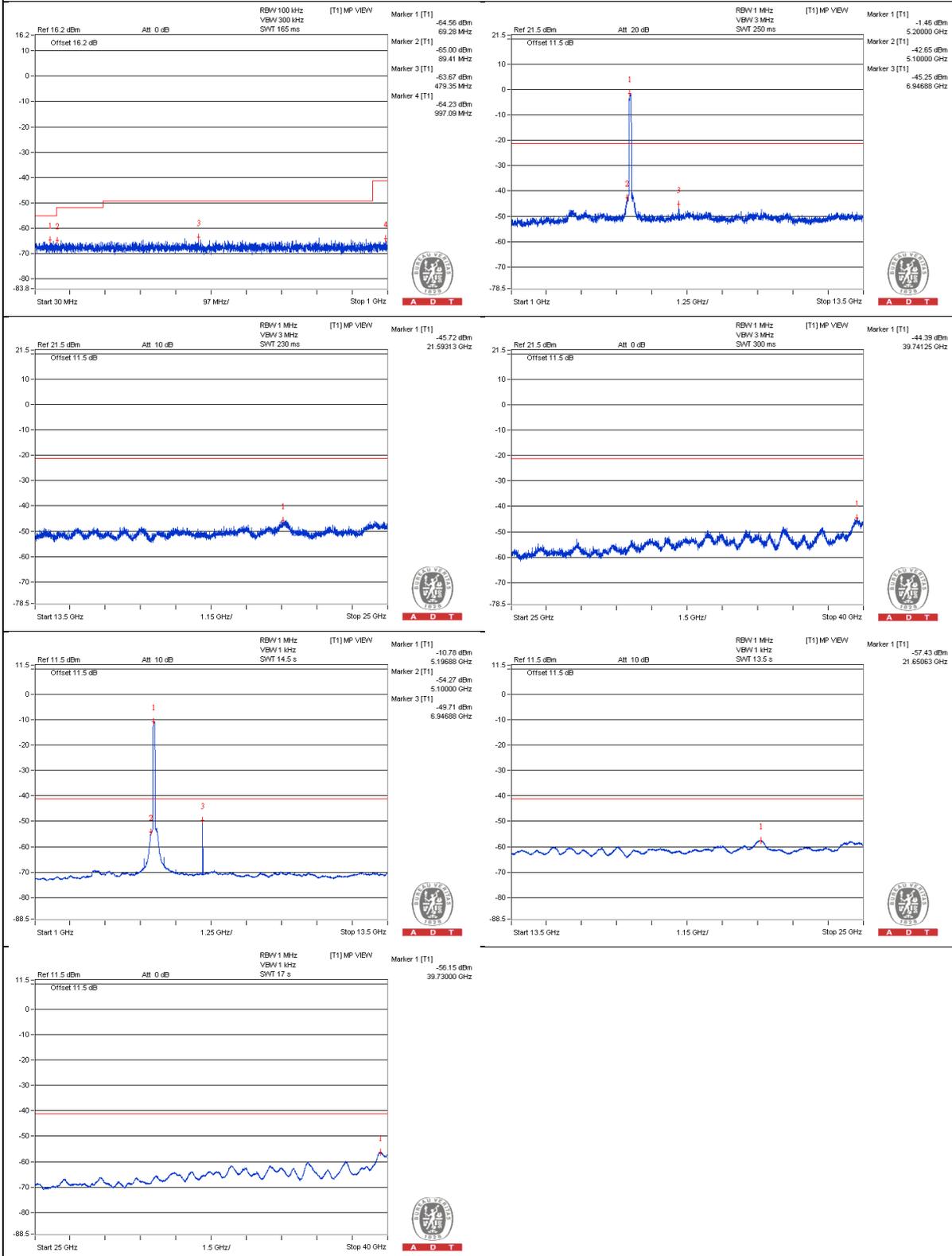
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**Bandedge table**

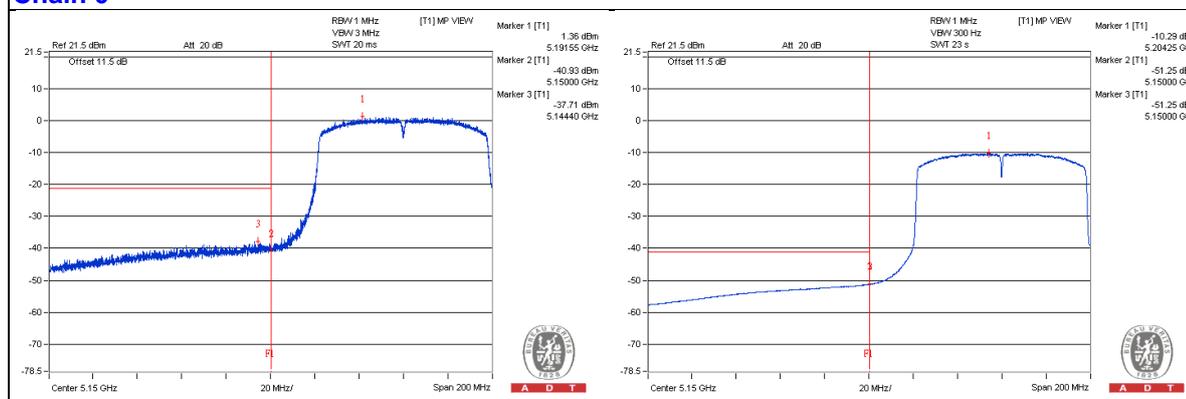
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5142.65 PK	64.86	74	-9.14	-37.72	-42.57	6.09	-30.4
2	5150 AV	51.95	54	-2.05	-51.25	-54.01	6.09	-43.31

Note :

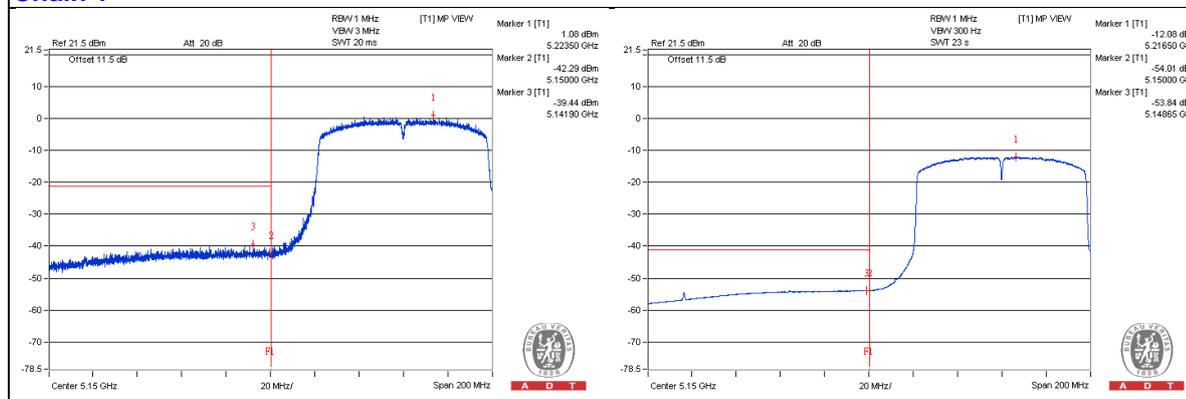
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



### 802.11ac (VHT80) - Channel 58

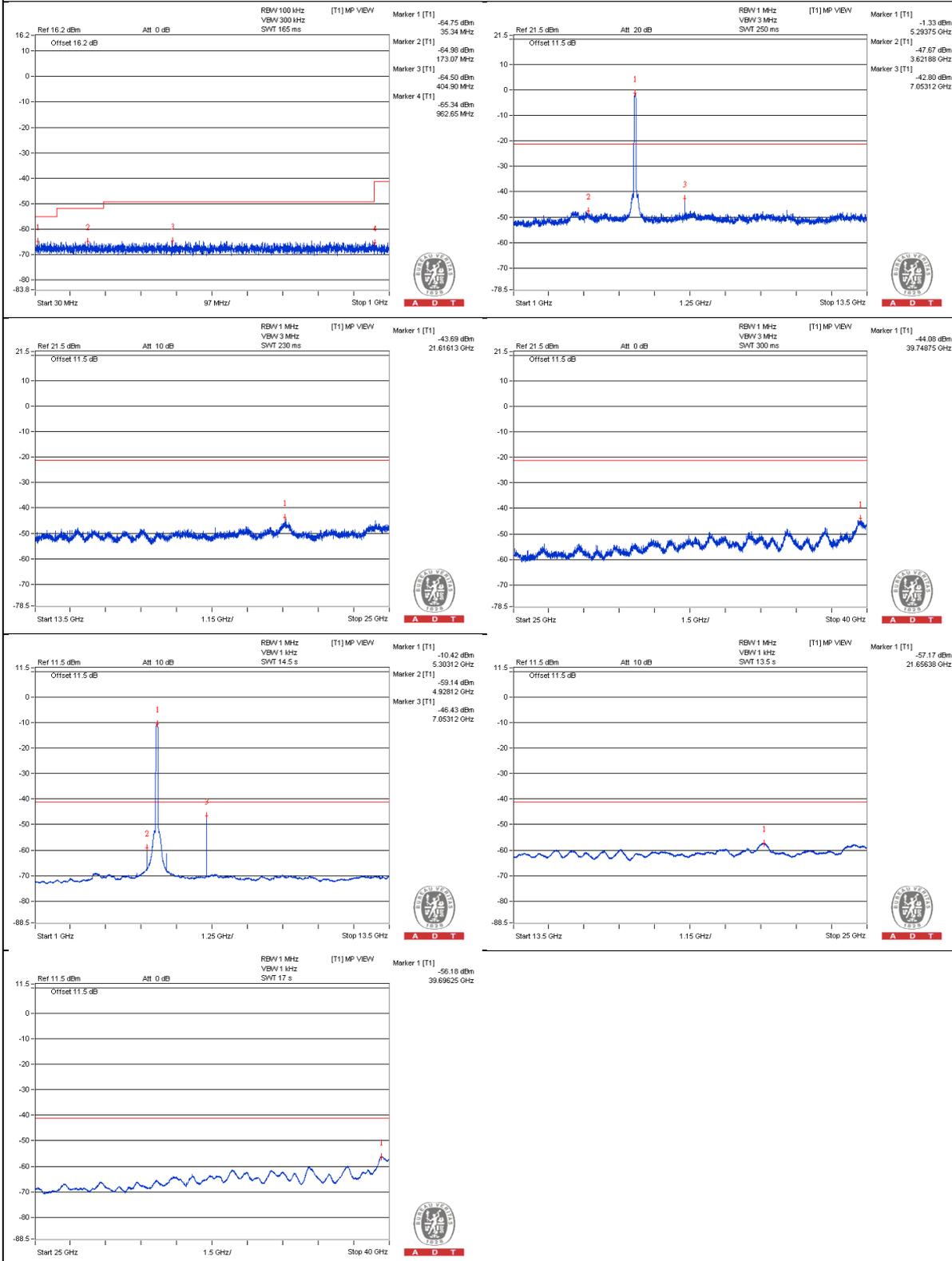
#### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3531.25 PK	56.02	74	-17.98	-47.92	-48.81	6.09	-39.24
2	3540.625 AV	34.32	54	-19.68	-69.95	-70.13	6.09	-60.94
3	7053.125 PK	60.09	68.2	-8.11	-42.8	-46.51	6.09	-35.17
4	10562.5 PK	54.44	74	-19.56	-50.04	-49.81	6.09	-40.82
5	10581.25 AV	33.39	54	-20.61	-71	-70.95	6.09	-61.87
6	15889.125 PK	54.39	74	-19.61	-49.93	-50.02	6.09	-40.87
7	15863.25 AV	43.14	54	-10.86	-61.3	-61.14	6.09	-52.12

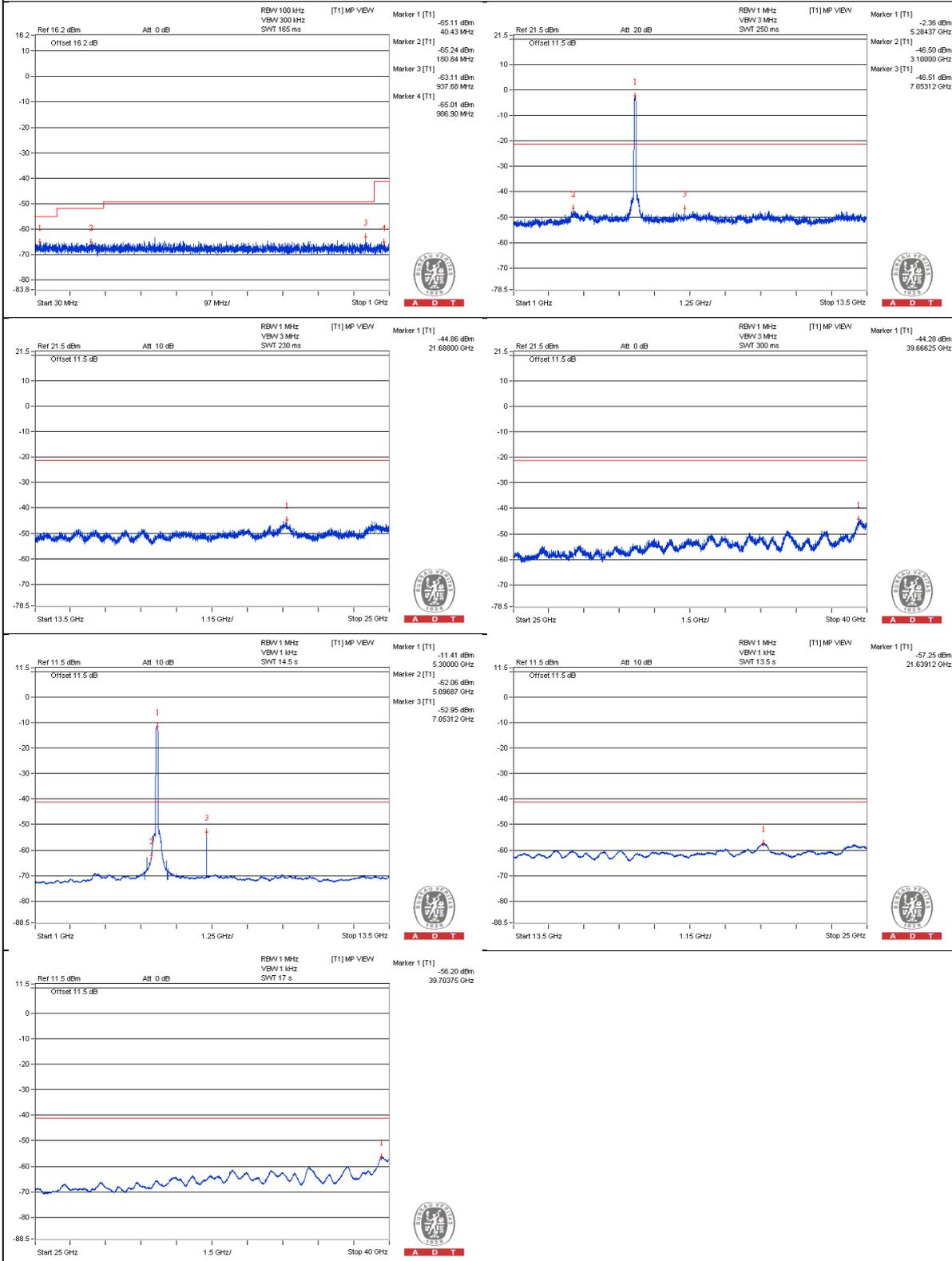
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

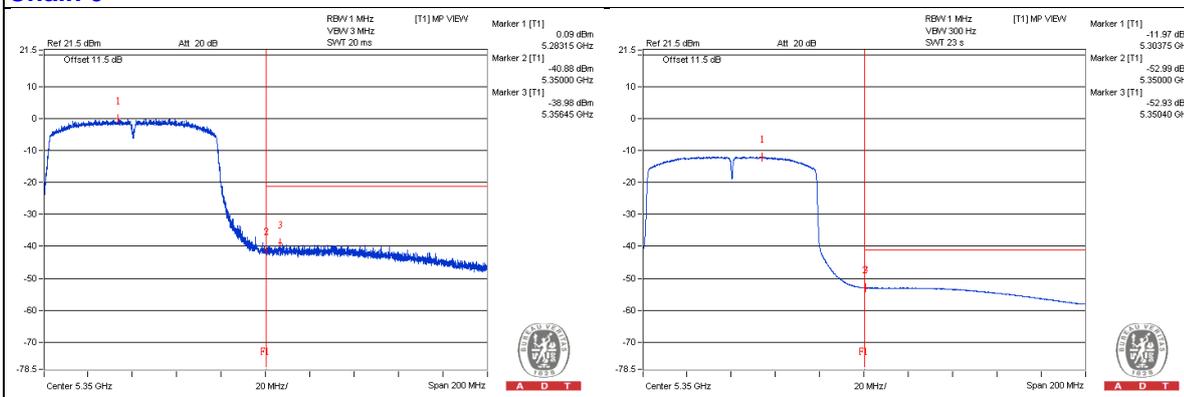


### Bandedge table

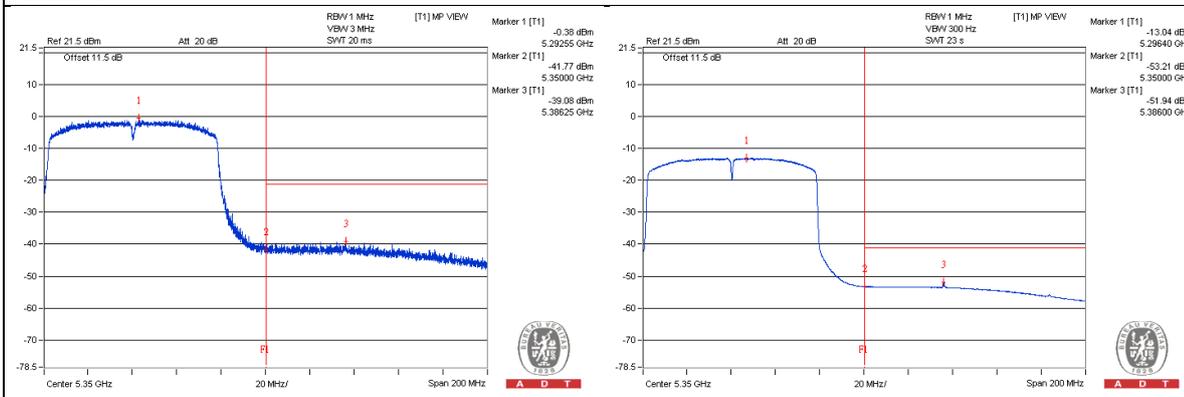
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5394.7 PK	64.24	74	-9.76	-39.74	-40.53	6.09	-31.02
2	5386 AV	51.83	54	-2.17	-53.22	-51.94	6.09	-43.43

Note :  
 $Emission\ Level\ (dBuV/m) = EIRP\ Level\ (dBm) - 20\log(d) + 104.8$   
 d = measurement distance in 3 meters.

#### Chain 0



#### Chain 1



## 802.11ac (VHT80) - Channel 106

### Conducted spurious emission table

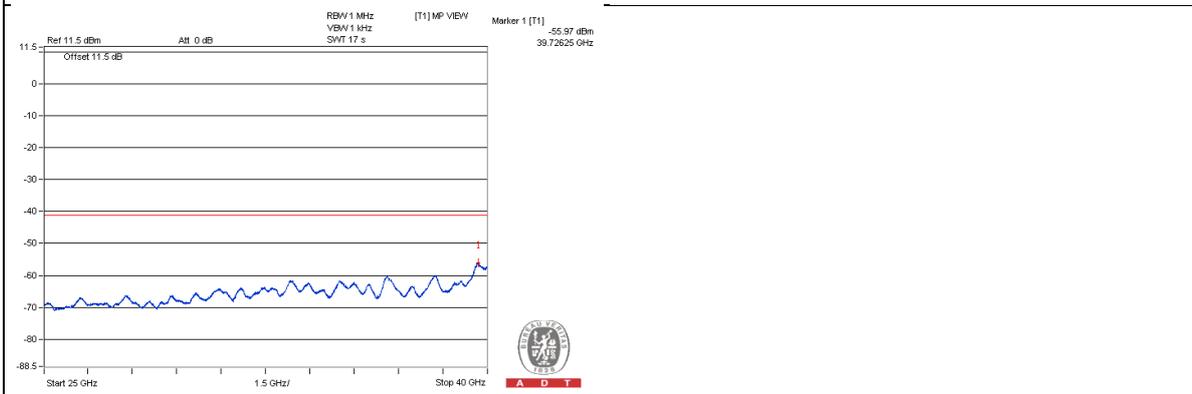
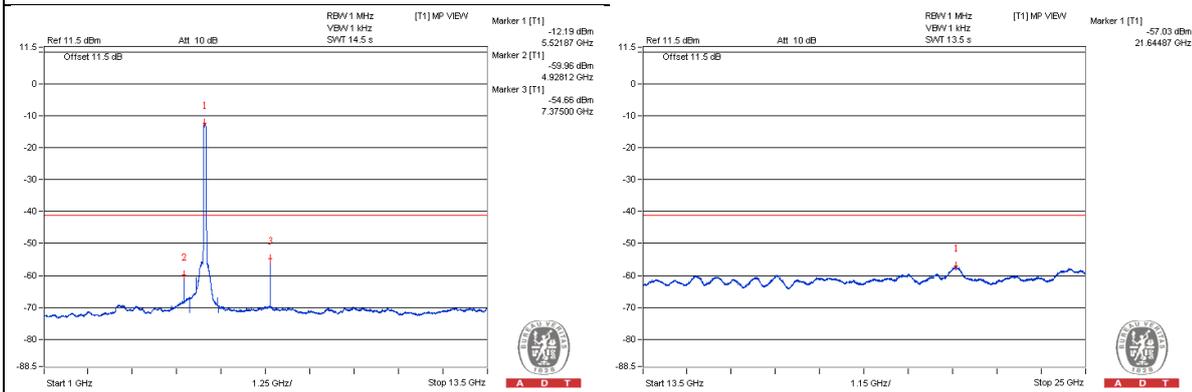
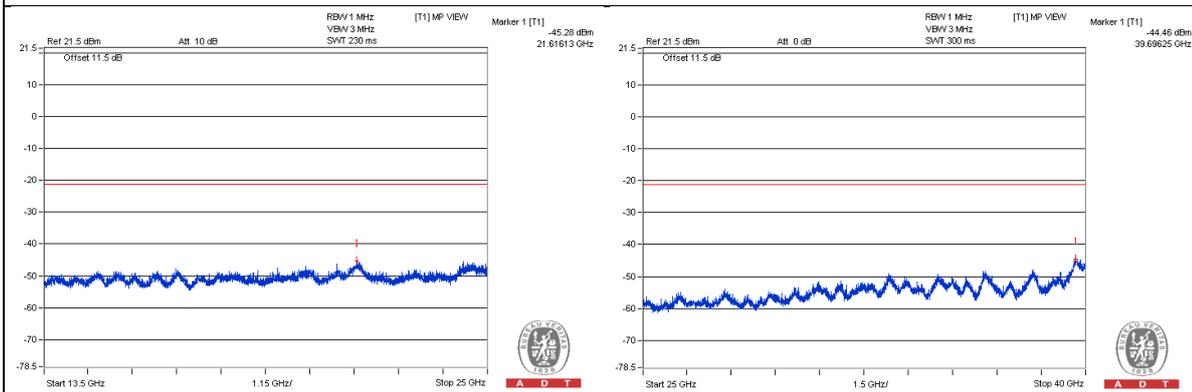
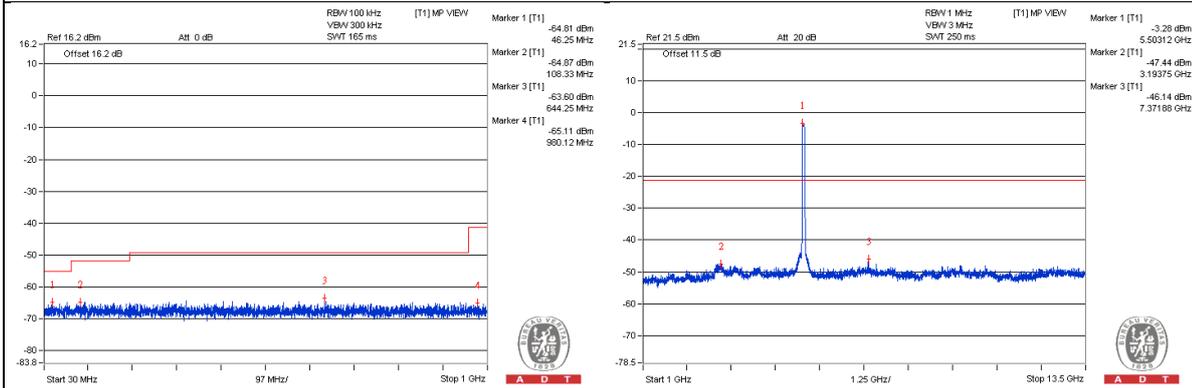
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3678.125 PK	56.87	74	-17.13	-49.7	-48.7	7.77	-38.39
2	3687.5 AV	35.61	54	-18.39	-70.27	-70.59	7.77	-59.65
3	7371.875 PK	58.4	74	-15.6	-46.14	-49.94	7.77	-36.86
4	7371.875 AV	48.5	54	-5.5	-54.67	-69.5	7.77	-46.76
5	11059.375 PK	55.25	74	-18.75	-51.14	-50.47	7.77	-40.01
6	11065.625 AV	33.93	54	-20.07	-71.96	-72.27	7.77	-61.33
7	16582 PK	54.47	74	-19.53	-52.72	-50.67	7.77	-40.79
8	16570.5 AV	43.24	54	-10.76	-62.64	-62.96	7.77	-52.02

Note :

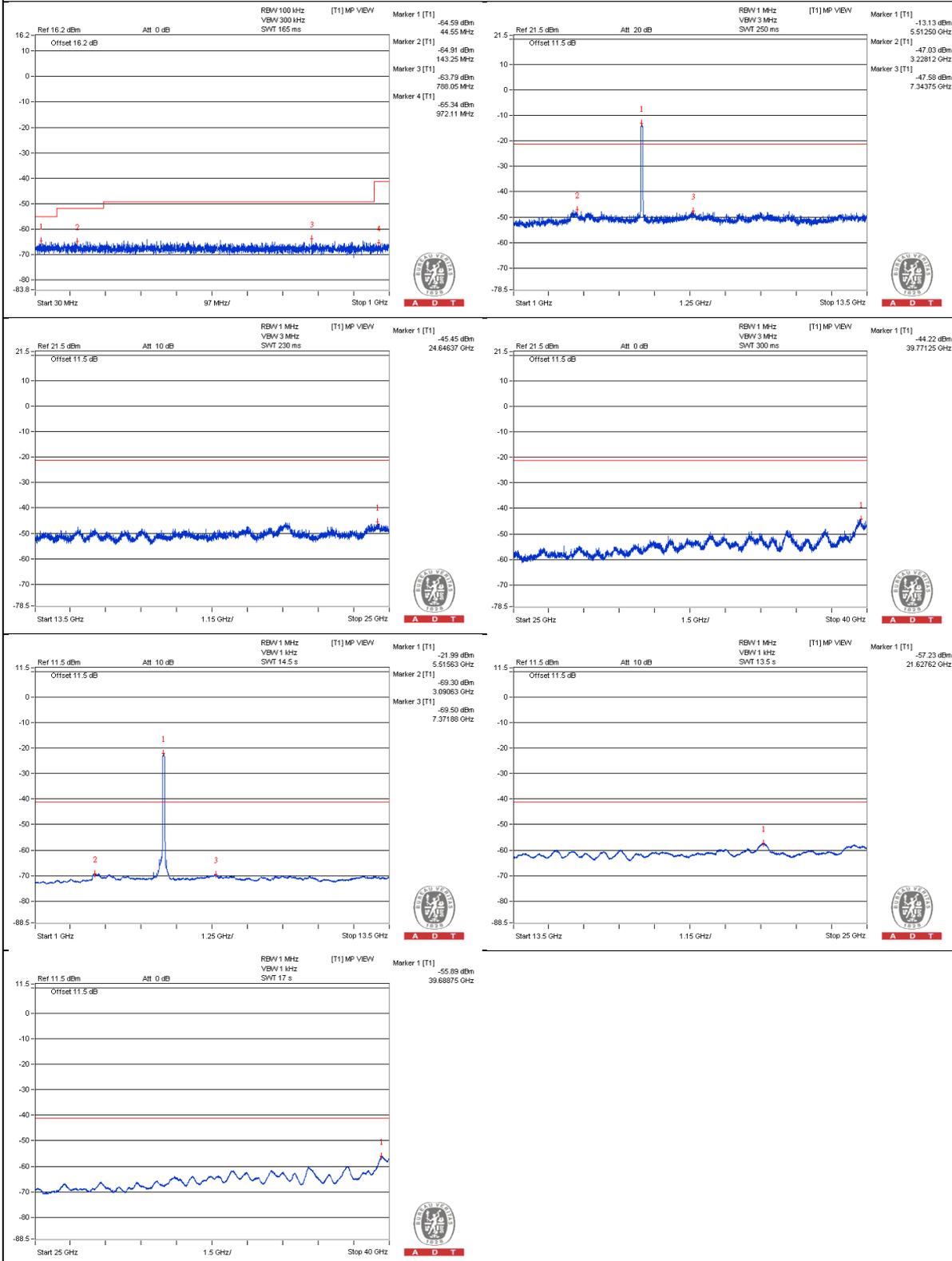
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



### Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5465.6875 PK	71.01	74	-2.99	-44.44	-32.28	7.77	-24.25
2	5468.1875 AV	56.98	54	* 2.98	-55.79	-46.54	7.77	-38.28

Note :

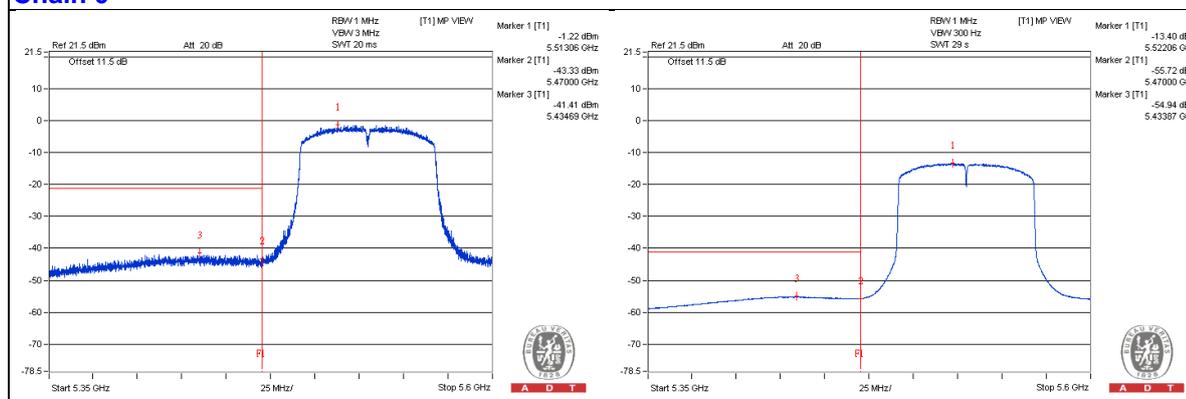
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

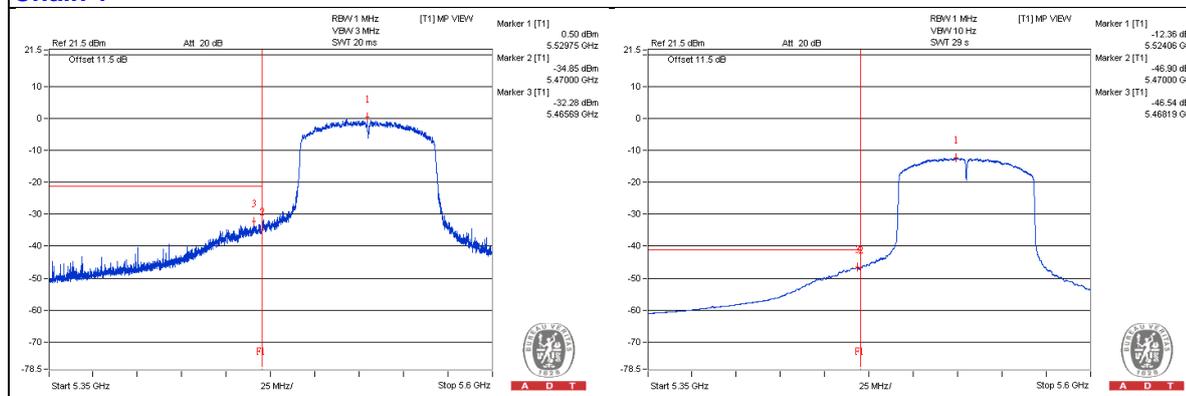
\* The unwanted emission was verified and the test result was passed by radiated measurement.

(Please refer APPENDIX A)

### Chain 0



### Chain 1



## 802.11ac (VHT80) - Channel 122

### Conducted spurious emission table

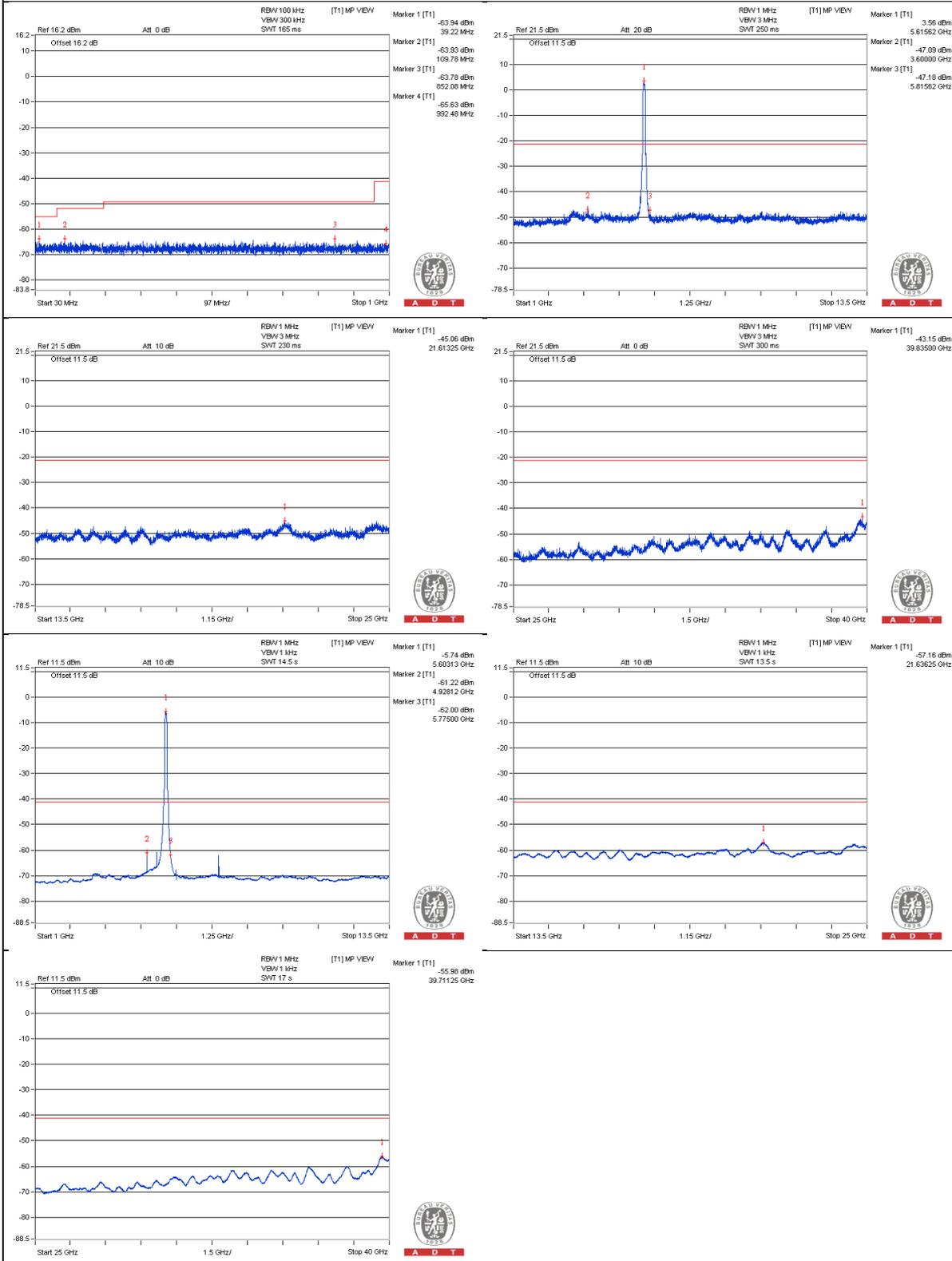
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3750 PK	56.5	74	-17.5	-49.02	-50.13	7.77	-38.76
2	3737.5 AV	35.69	54	-18.31	-70.17	-70.54	7.77	-59.57
3	7493.75 PK	56.52	74	-17.48	-48.74	-50.46	7.77	-38.74
4	7481.25 AV	41.56	54	-12.44	-62.05	-70.52	7.77	-53.7
5	11206.25 PK	55.52	74	-18.48	-50.07	-51.02	7.77	-39.74
6	11221.875 AV	34.58	54	-19.42	-71.52	-71.4	7.77	-60.68
7	16846.5 PK	56.53	74	-17.47	-48.66	-50.56	7.77	-38.73
8	16846.5 AV	44.7	54	-9.3	-61.2	-61.49	7.77	-50.56

Note :

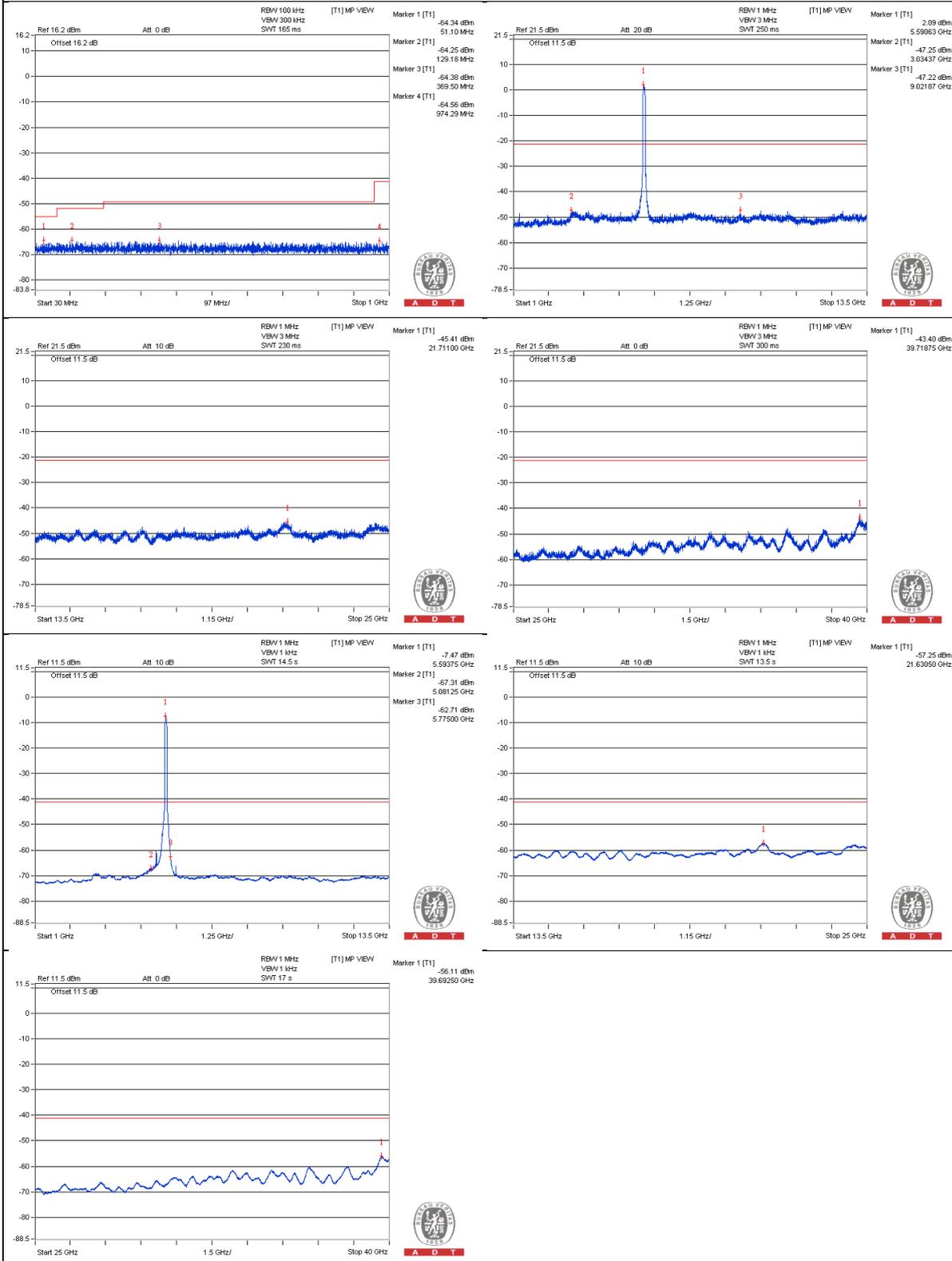
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1

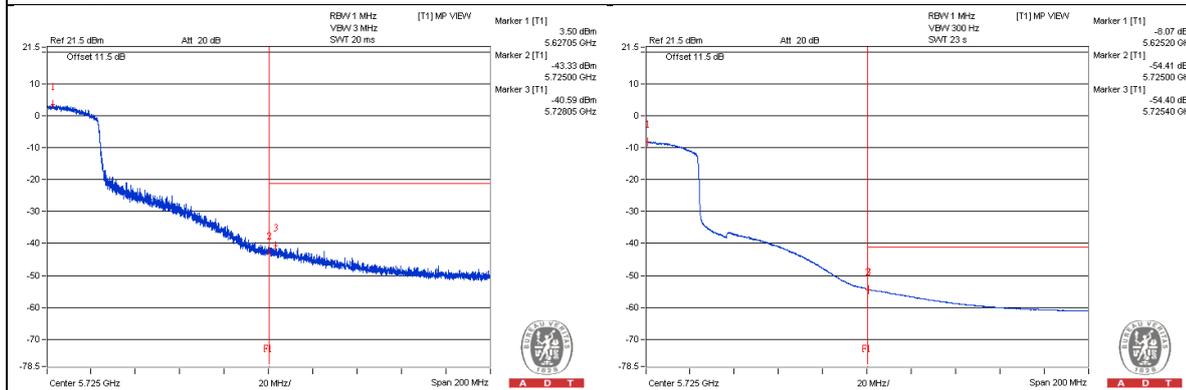


### Bandedge table

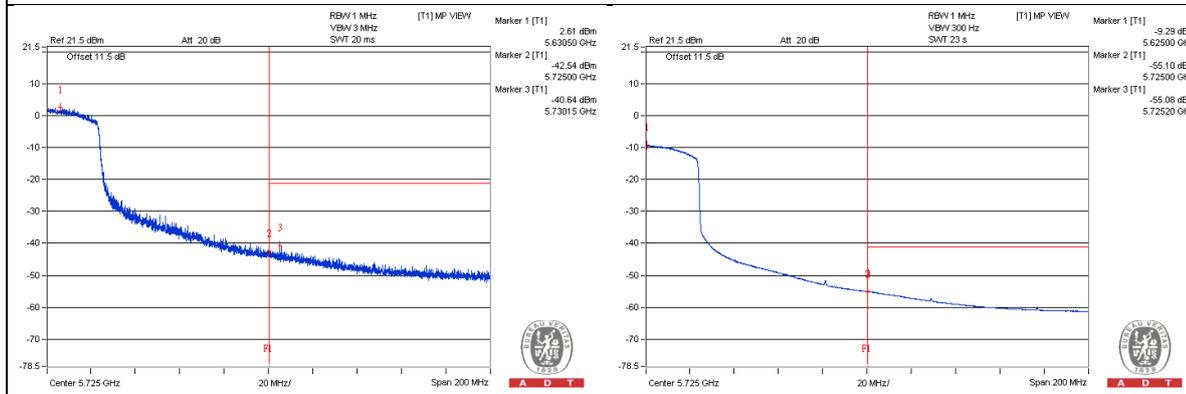
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5730.15 PK	64.62	74	-9.38	-42.38	-40.64	7.77	-30.64
2	5725 AV	51.3	54	-2.7	-54.41	-55.1	7.77	-43.96

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT80) - Channel 138

#### Conducted spurious emission table

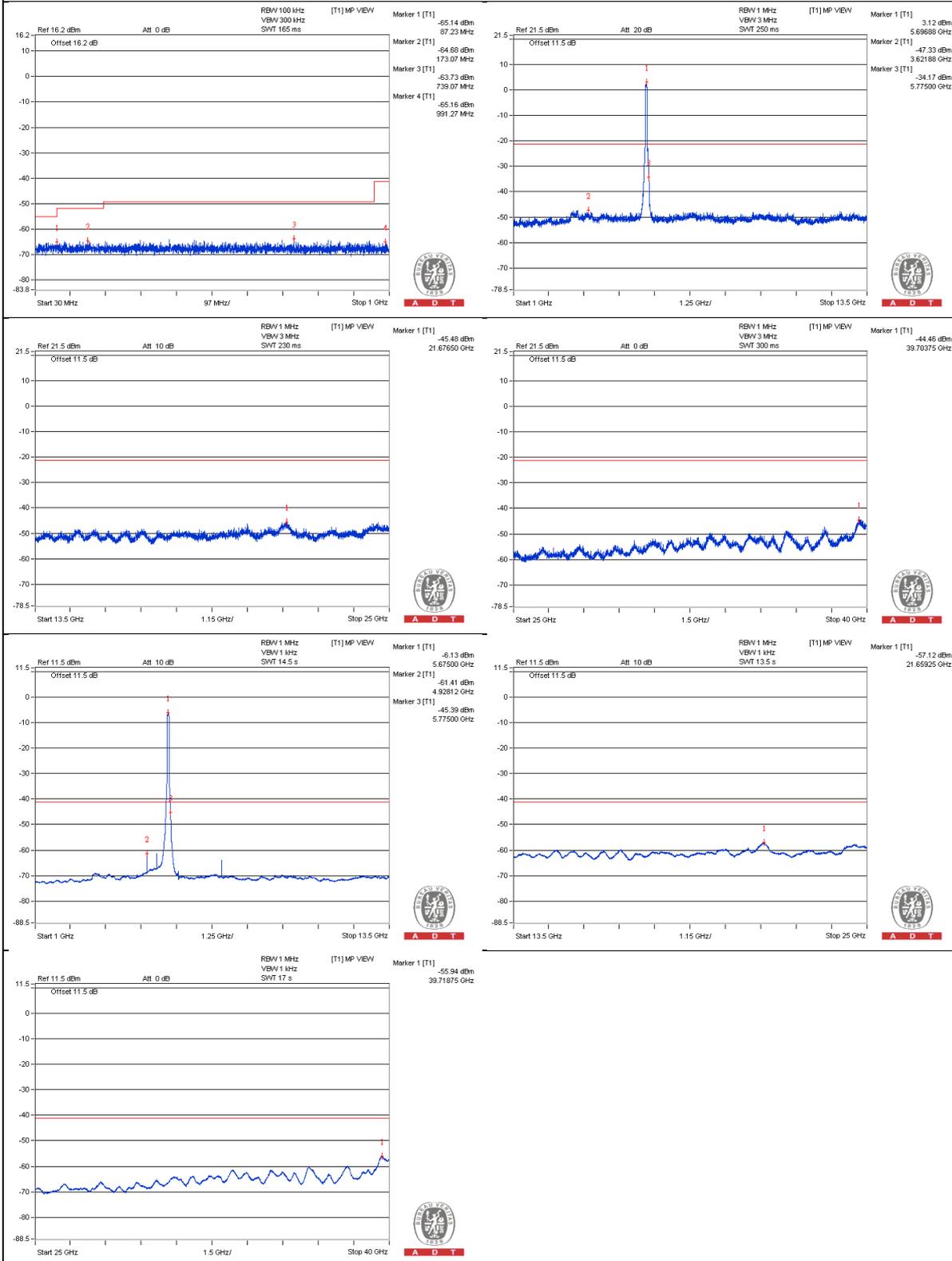
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3784.375 PK	56.51	74	-17.49	-49.83	-49.25	7.77	-38.75
2	3775 AV	35.58	54	-18.42	-70.24	-70.7	7.77	-59.68
3	7606.25 PK	56.79	74	-17.21	-48.6	-50.01	7.77	-38.47
4	7587.5 AV	39.91	54	-14.09	-64	-70.51	7.77	-55.35
5	11375 PK	55.4	74	-18.6	-50.65	-50.63	7.77	-39.86
6	11378.125 AV	34.49	54	-19.51	-71.38	-71.73	7.77	-60.77
7	17070.75 PK	56.68	74	-17.32	-50.22	-48.65	7.77	-38.58
8	17062.125 AV	45.07	54	-8.93	-60.96	-60.99	7.77	-50.19

Note :

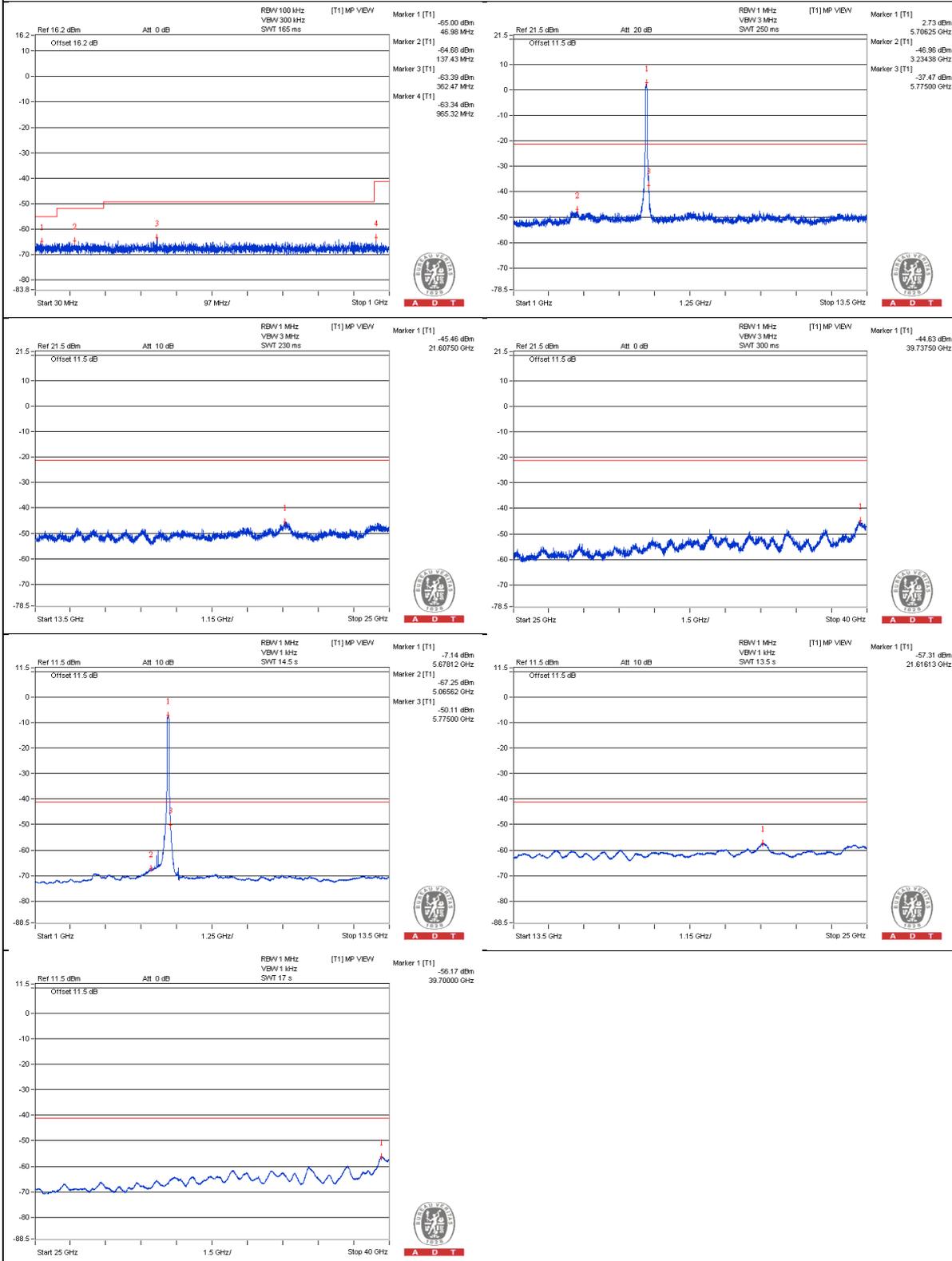
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



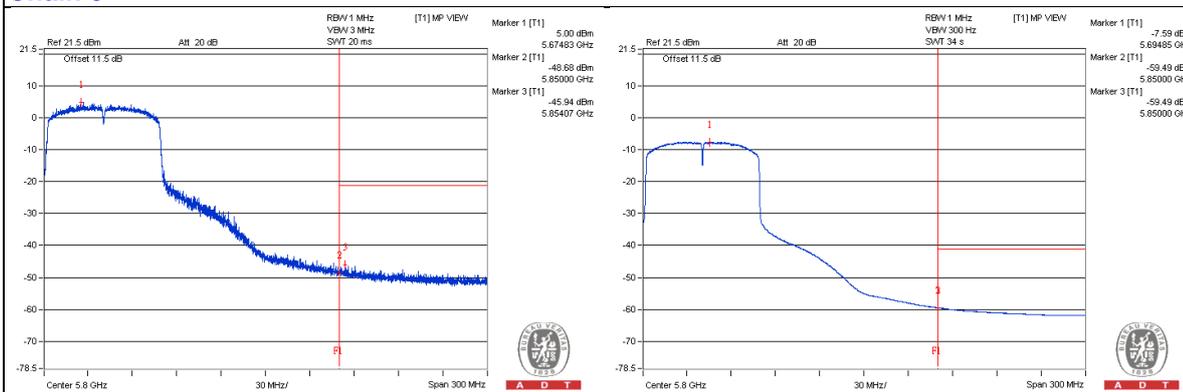
### Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5834.05 PK	60.61	74	-13.39	-46.36	-44.66	7.77	-34.65
2	5825.05 AV	48.29	54	-5.71	-57.57	-57.93	7.77	-46.97

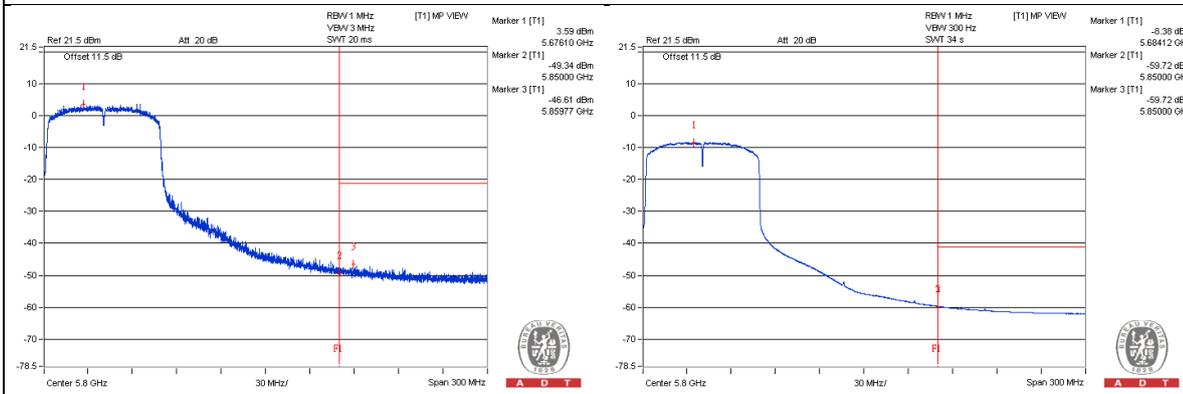
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

#### Chain 0



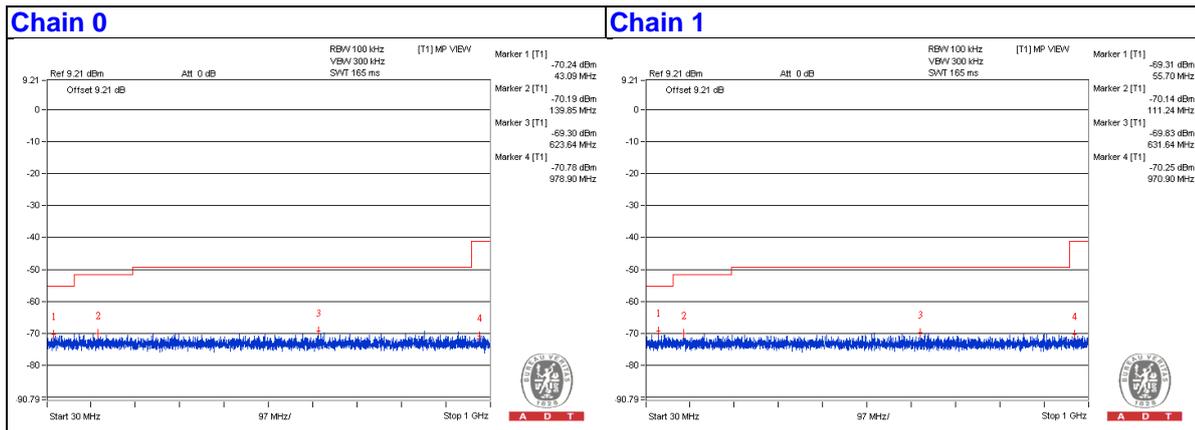
#### Chain 1



**Below 1GHz Data**  
**802.11ac (VHT20) - Channel 60**  
**Conducted spurious emission table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	55.705	35.29	40	-4.71	-72.93	-69.31	7.77	-59.97
2	139.8525	35.12	43.5	-8.38	-70.19	-71.8	7.77	-60.14
3	310.0875	35.26	46	-10.74	-70.45	-71.13	7.77	-60
4	505.0575	35.02	46	-10.98	-71.16	-70.88	7.77	-60.24
5	631.6425	35.33	46	-10.67	-71.82	-69.83	7.77	-59.93
6	857.1675	35.8	46	-10.2	-69.31	-71.42	7.77	-59.46

Note :  
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

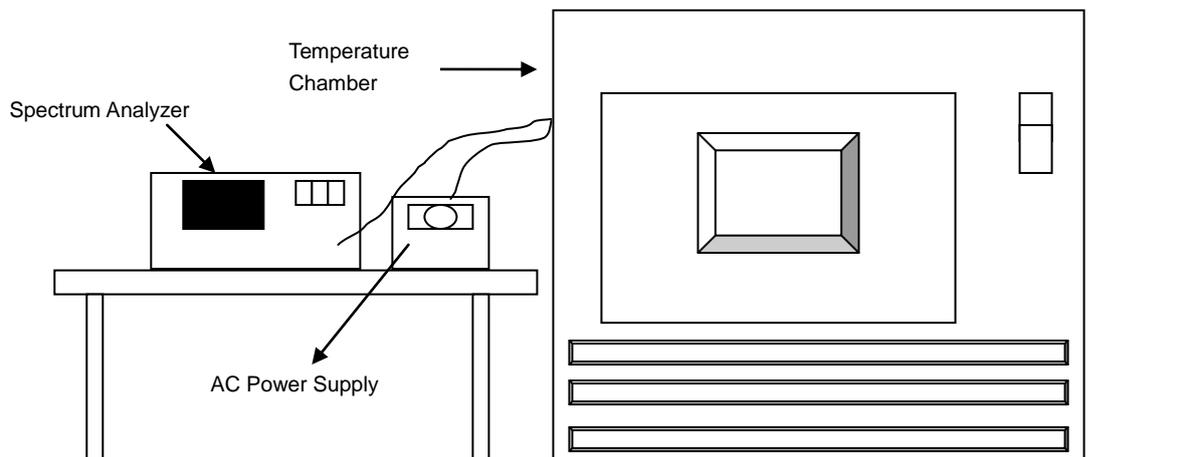


## 4.5 Frequency Stability Measurement

### 4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

#### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

### 4.5.4 Test Procedures

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 4.5.5 Deviation from Test Standard

No deviation.

#### 4.5.6 EUT Operating Conditions

Set the EUT transmit at un-modulation mode to test frequency stability.

#### 4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5320MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)						
50	120	5319.988	-0.00023	5319.9873	-0.00024	5319.9847	-0.00029	5319.9838	-0.00030
40	120	5319.9931	-0.00013	5319.9917	-0.00016	5319.9935	-0.00012	5319.9952	-0.00009
30	120	5319.9796	-0.00038	5319.9797	-0.00038	5319.977	-0.00043	5319.9778	-0.00042
20	120	5319.9958	-0.00008	5319.9982	-0.00003	5320.0001	0.00000	5319.9964	-0.00007
10	120	5320.0208	0.00039	5320.0204	0.00038	5320.0197	0.00037	5320.0206	0.00039
0	120	5320.0152	0.00029	5320.0143	0.00027	5320.0167	0.00031	5320.0155	0.00029
-10	120	5320.017	0.00032	5320.0167	0.00031	5320.0173	0.00033	5320.0174	0.00033
-20	120	5320.0027	0.00005	5320.0055	0.00010	5320.0044	0.00008	5320.0041	0.00008
-30	120	5320.0018	0.00003	5320.0016	0.00003	5320.0001	0.00000	5319.9983	-0.00003

Frequency Stability Versus Temp.									
Operating Frequency: 5320MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)						
20	138	5319.9959	-0.00008	5319.9988	-0.00002	5320.001	0.00002	5319.9954	-0.00009
	120	5319.9958	-0.00008	5319.9982	-0.00003	5320.0001	0.00000	5319.9964	-0.00007
	102	5319.9967	-0.00006	5319.9992	-0.00002	5320.0009	0.00002	5319.9954	-0.00009

## 4.6 Conducted Emission Measurement

### 4.6.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.6.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Feb. 11, 2015

### 4.6.3 Test Procedures

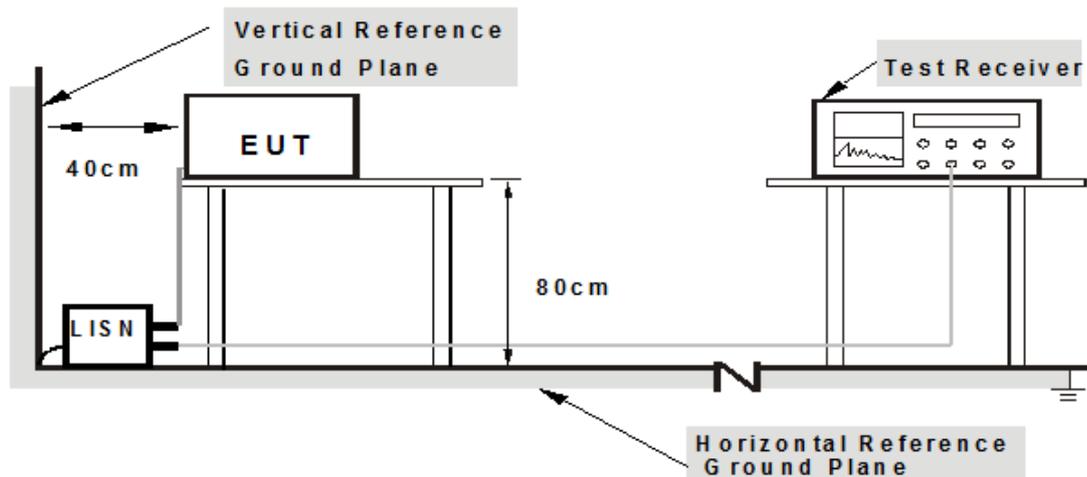
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

### 4.6.4 Deviation from Test Standard

No deviation.

### 4.6.5 Test Setup



**Note: 1.** Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 4.6.6 EUT Operating Conditions

Same as 4.4.6.

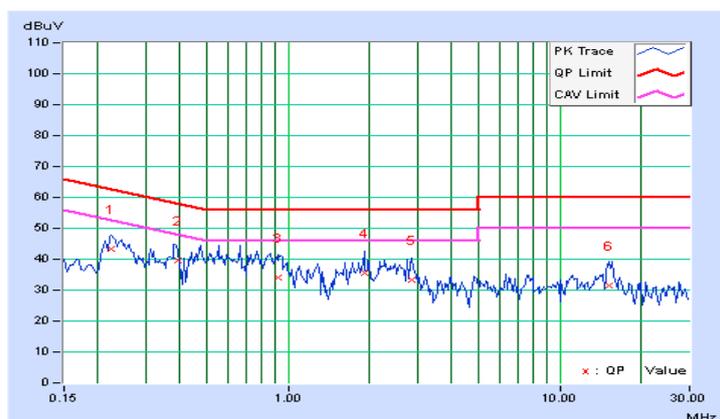
#### 4.6.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22422	0.07	43.24	32.40	43.31	32.47	62.66	52.66	-19.35	-20.19
<b>2</b>	<b>0.39547</b>	<b>0.09</b>	<b>39.40</b>	<b>32.46</b>	<b>39.49</b>	<b>32.55</b>	<b>57.95</b>	<b>47.95</b>	<b>-18.46</b>	<b>-15.40</b>
3	0.91563	0.12	33.84	24.72	33.96	24.84	56.00	46.00	-22.04	-21.16
4	1.90234	0.18	35.54	29.52	35.72	29.70	56.00	46.00	-20.28	-16.30
5	2.86328	0.21	33.04	25.08	33.25	25.29	56.00	46.00	-22.75	-20.71
6	15.15625	0.59	30.78	21.82	31.37	22.41	60.00	50.00	-28.63	-27.59

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

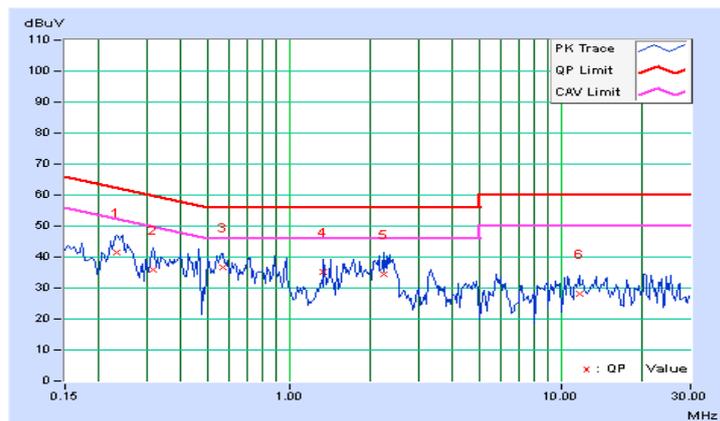


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23203	0.06	41.52	31.68	41.58	31.74	62.38	52.38	-20.79	-20.63
2	0.31797	0.08	35.72	30.10	35.80	30.18	59.76	49.76	-23.96	-19.58
3	0.56797	0.10	36.52	27.00	36.62	27.10	56.00	46.00	-19.38	-18.90
4	1.34375	0.15	35.08	28.28	35.23	28.43	56.00	46.00	-20.77	-17.57
5	2.22266	0.19	34.08	28.10	34.27	28.29	56.00	46.00	-21.73	-17.71
6	11.66016	0.51	27.58	19.12	28.09	19.63	60.00	50.00	-31.91	-30.37

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## 6 Appendix A – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26051924

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

## 7 Appendix B – Radiated Emission Measurement

### 7.1.1 Limits of Radiated Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

### 7.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21,2014	July 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Feb. 06, 2015

### 7.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

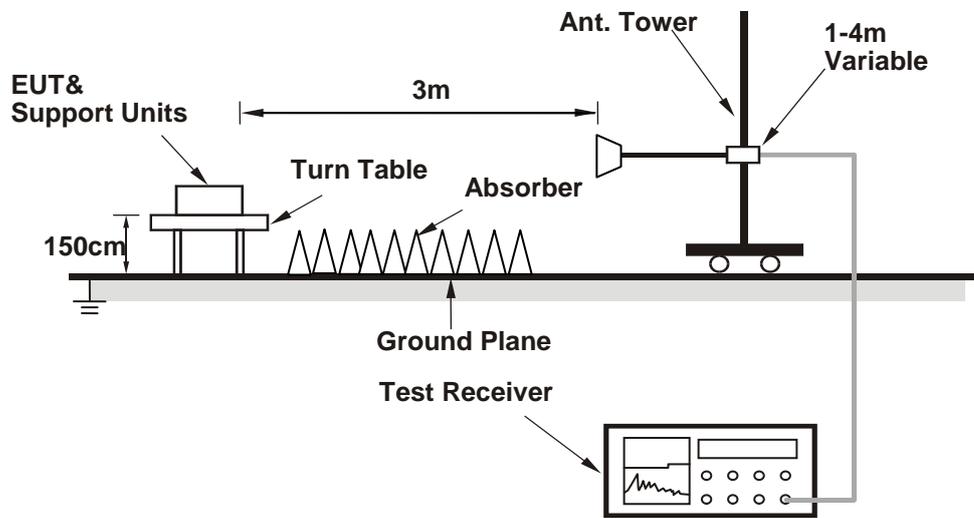
#### NOTE:

1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

### 7.1.4 Deviation from Test Standard

No deviation

### 7.1.5 Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

### 7.1.6 EUT Operating Conditions

Same as 4.4.6.

### 7.1.7 Test Results

The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

#### 802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 102	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	63.2 PK	74.0	-10.8	1.02 H	311	55.27	7.93
2	#5470.00	48.4 AV	54.0	-5.6	1.02 H	311	40.47	7.93
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	64.9 PK	74.0	-9.1	1.05 V	85	56.97	7.93
2	#5470.00	51.0 AV	54.0	-3.0	1.05 V	85	43.07	7.93

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	59.6 PK	74.0	-14.4	1.10 H	141	54.67	4.93
2	#5715.00	50.9 AV	54.0	-3.1	1.10 H	141	45.97	4.93

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	58.8 PK	74.0	-15.2	1.10 V	122	53.87	4.93
2	#5715.00	50.8 AV	54.0	-3.2	1.10 V	122	45.87	4.93

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 106	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.3 PK	74.0	-14.7	1.02 H	300	51.37	7.93
2	#5470.00	46.5 AV	54.0	-7.5	1.02 H	300	38.57	7.93

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.7 PK	74.0	-13.3	1.05 V	84	52.77	7.93
2	#5470.00	47.7 AV	54.0	-6.3	1.05 V	84	39.77	7.93

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. " # ": The radiated frequency is out of the restricted band.

--- END ---

## FCC Test Report (WLAN)

**Report No.:** RF170816E06G-A-4

**FCC ID:** TK4WLT674

**Test Model:** WLT674

**Received Date:** Feb. 09, 2015

**Test Date:** Feb. 06 to 11, 2015 & Sep. 23, 2015

**Issued Date:** Aug. 30, 2018

**Applicant:** Compex Systems Pte. Ltd.

**Address:** No. 9 Harrison Road, #05-01 Singapore 369651

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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### Release Control Record

Issue No.	Description	Date Issued
RF170816E06G-A-4	Original release.	Aug. 30, 2018

## 1 Certificate of Conformity

**Product:** Wireless M.2 Type A/E with BLE Module

**Brand:** Compex

**Test Model:** WLT674

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Compex Systems Pte. Ltd.

**Test Date:** Feb. 09, 2015 & Sep. 23, 2015

**Standard:** 47 CFR FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Mary Ko , **Date:** Aug. 30, 2018  
Mary Ko / Specialist

**Approved by :** May Chen , **Date:** Aug. 30, 2018  
May Chen / Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -3.0dB at 5708.00MHz & 5702.00MHz.
15.407(a)(1/2 /3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2 /3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ( $\pm$ )
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 dB
	18GHz ~ 40GHz	4.11 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT (U-NII-3)

Product	Wireless M.2 Type A/E with BLE Module
Brand	Compex
Test Model	WLT674
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc form host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5.745 ~ 5.825GHz
Number of Channel	6 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 3 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
Output Power	802.11a: 129.755mW 802.11ac (VHT20): 130.06mW 802.11ac (VHT40): 157.439mW 802.11ac (VHT80): 31.894mW
Antenna Type	See item 3.2
Antenna Connector	See item 3.2
Accessory Device	NA
Data Cable Supplied	NA

**Note:**

1. This is a duplicate report according to Qualcomm Atheros, Inc. authority letter.( FCC ID : PPD-QCNFA364AH )
2. There are Bluetooth technology and WLAN technology used for the EUT.

3. The EUT incorporates a 2T2R function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
VHT40	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.3.1)

4. In original report , the EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
<b>Mode B</b>	<b>800ns GI</b>

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

5. WLAN/BT coexistence mode:

- ◆ 2x2 WLAN + BT:
  - 5GHz 802.11a/an (or 11ac) transmit concurrent with BT.
  - 2.4GHz: timely shared coexistence.

6. In original report, the emission (conducted & radiated emission) of the simultaneous operation (WiFi <5GHz> & Bluetooth) have been evaluated and no non-compliance found. The detail combinations of transmitters / frequencies / modes as below table

Mode	Available Channel	Tested Channel	Modulation Technology
5 GHz (802.11ac (VHT40))	38 to 159	159	OFDM
+ Bluetooth (LE)	0 to 39	0	GFSK

7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Antenna

The antenna gain was declared by client; please refer to the following table:

Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		

Note: 1. Above antenna gains of antenna are Total (H+V).

For Testing, we select the highest gain on each frequency band for calculation and testing

The detail information as below:

Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)+(1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		

### 3.3 Description of Test Modes

#### FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11ac (VHT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11ac (VHT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

#### FOR channel straddling 5725MHz:

1 channel is provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency
144	5720 MHz

1 channel is provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency
142	5710 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
138	5690 MHz

### 3.3.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	UE $\geq$ 1G	UE<1G	PLC	APCM	
-	√	√	-	√	-

Where **UE $\geq$ 1G**: Unwanted Emission above 1GHz      **UE<1G**: Unwanted Emission below 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

**NOTE:**

1. "-" means no effect.

#### Unwanted Emission Test (Above 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5
802.11ac (VHT80)		155	155	OFDM	29.3
802.11a	straddling 5725MHz	144	144	OFDM	6
802.11ac (VHT20)		144	144	OFDM	6.5
802.11ac (VHT40)		142	142	OFDM	13.5
802.11ac (VHT80)		138	138	OFDM	29.3

#### Unwanted Emission Test (Below 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11ac (VHT40)	151 to 159	159	OFDM	BPSK	13.5

**Antenna Port Conducted Measurement:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5
802.11ac (VHT80)		155	155	OFDM	29.3
802.11a	straddling 5725MHz	144	144	OFDM	6
802.11ac (VHT20)		144	144	OFDM	6.5
802.11ac (VHT40)		142	142	OFDM	13.5
802.11ac (VHT80)		138	138	OFDM	29.3

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
UE≥1G	25deg. C, 69%RH	120Vac, 60Hz	Weiwei Lo
UE<1G	24deg. C, 66%RH	120Vac, 60Hz	Weiwei Lo
APCM	25deg. C, 65%RH	120Vac, 60Hz	Anderson Chen

### 3.4 Duty Cycle of Test Signal

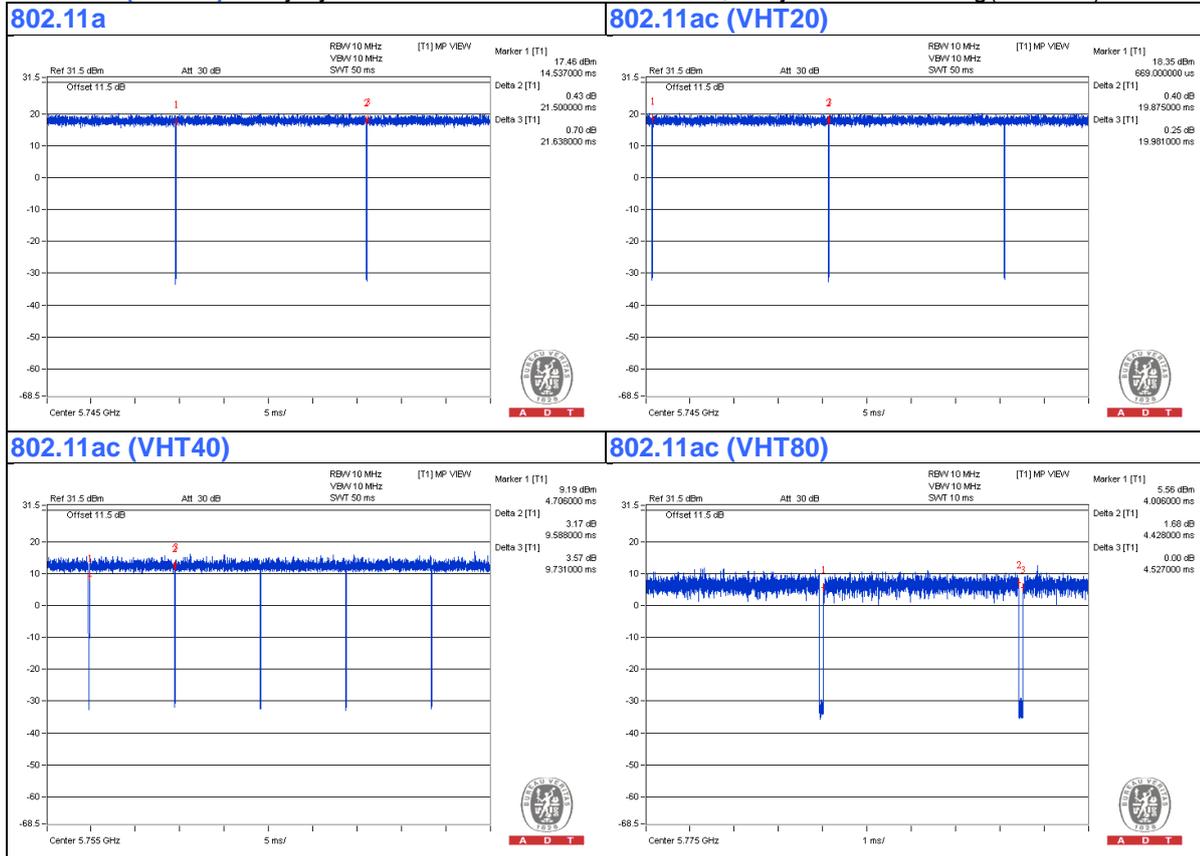
If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.  
 If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11a:** Duty cycle = 21.5 ms/21.638 ms = 0.994

**802.11ac (VHT20):** Duty cycle = 19.875 ms/19.981 ms = 0.995

**802.11ac (VHT40):** Duty cycle = 9.588 ms/9.731 ms = 0.985

**802.11ac (VHT80):** Duty cycle = 4.428 ms/4.527 ms = 0.978, Duty factor =  $10 * \log(1/0.978) = 0.10$



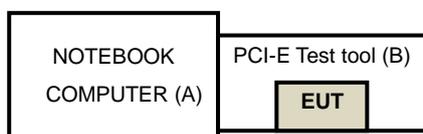
### 3.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B	PCI-E Test tool	Qualcomm Atheros	NA	NA	NA	Supplied by Client

**NOTE:** All power cords of the above support units are non-shielded (1.8 m).

#### 3.5.1 Configuration of System under Test



### 3.6 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**  
**789033 D02 General UNII Test Procedure New Rules v01**  
**662911 D01 Multiple Transmitter Output v02r01**  
ANSI C63.10- 2013

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Transmit Power Measurement

#### 4.1.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

Note: \*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

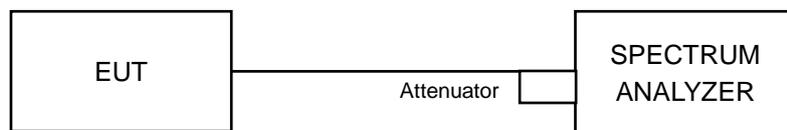
Array Gain =  $5 \log(N_{ANT}/N_{SS})$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $N_{ANT} \geq 5$ .

For power measurements on all other devices: Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB.

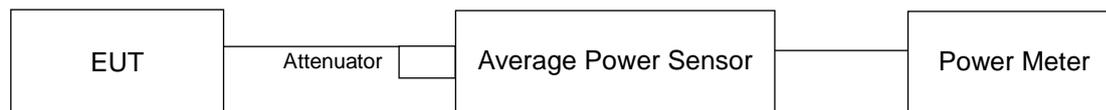
#### 4.1.2 Test Setup

##### FOR POWER OUTPUT MEASUREMENT

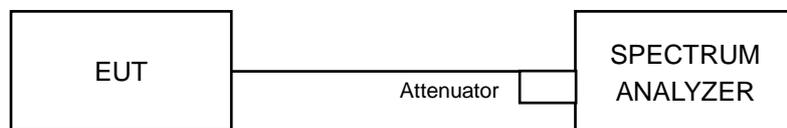
For channel straddling 5725MHz:



For other channels:



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.1.3 Test Instruments

#### FOR POWER OUTPUT MEASUREMENT

##### For channel straddling 5725MHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

##### For other channels:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Sep. 23, 2015

#### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

#### 4.1.4 Test Procedures

##### FOR AVERAGE POWER MEASUREMENT

###### For channel straddling 5725MHz:

Follow FCC KDB 789033 UNII test procedure:

###### 802.11ac (VHT80)

Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

###### Other Modulation mode

Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW  $\geq 3 \times$  RBW.
4. Number of points in sweep  $\geq 2$  Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle  $\geq 98$  percent) ; Set video trigger (duty cycle < 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

###### For other channels:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

##### FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.1.5 Deviation from Test Standard

No deviation.

#### 4.1.6 EUT Operating Conditions

The software (QRCT Version: 3.0.33.0) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.1.7 Test Results

#### POWER OUTPUT

#### 802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	15.03	15.38	66.356	18.22	28.23	Pass
157	5785	18.03	18.21	129.755	21.13	28.23	Pass
165	5825	18.16	18.00	128.56	21.09	28.23	Pass
*144 (UNII-2C Band)	5720	12.95	12.51	37.548	15.75	21.25	Pass
*144 (UNII-3 Band)	5720	5.79	5.22	7.12	8.52	28.23	Pass

**NOTE:** 1. 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

2. 5725~5850MHz:  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , therefore the limit needs to reduce, so the power limit shall be reduced to  $30-(7.77-6) = 28.23\text{dBm}$ .

\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
*144	5720	44.668	16.50

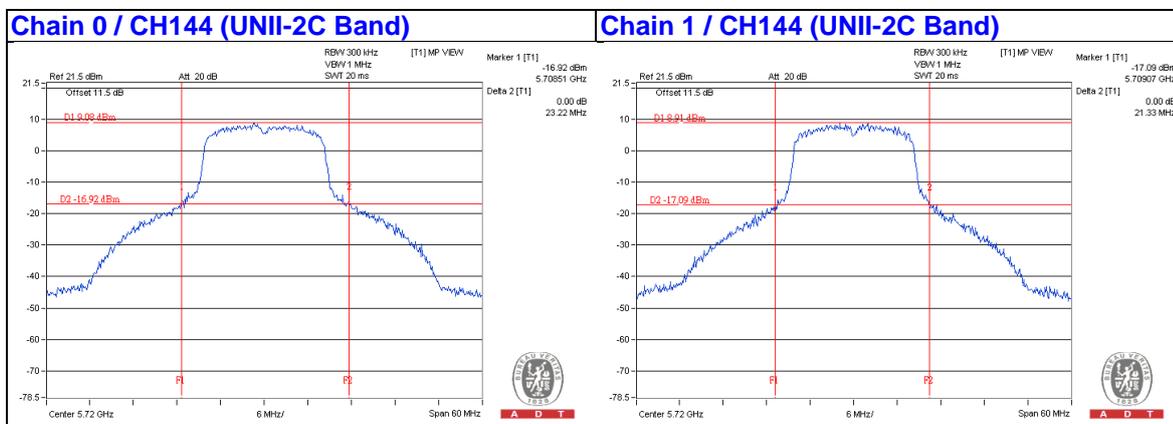
Note: The total power was calculated through formula and record the value for reference only.

## 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
144 (UNII-2C Band)	5720	16.49	15.93

**Note: For U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 11dBm + 10logB < U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
144 (UNII-2C Band)	5720	15.93	23.02 < 24



**NOTE:**

For CH144 (UNII-2C Band) = 5725MHz - Marker 1

### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.89	17.40	116.472	20.66

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT20)**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	15.04	15.01	63.611	18.04	28.23	Pass
157	5785	18.03	18.23	130.06	21.14	28.23	Pass
165	5825	16.98	17.55	106.773	20.28	28.23	Pass
*144 (UNII-2C Band)	5720	12.72	12.37	35.965	15.56	21.24	Pass
*144 (UNII-3 Band)	5720	5.93	5.44	7.416	8.70	28.23	Pass

**NOTE:** 1. 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

2. 5725~5850MHz:  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , therefore the limit needs to reduce, so the power limit shall be reduced to  $30-(7.77-6) = 28.23\text{dBm}$ .

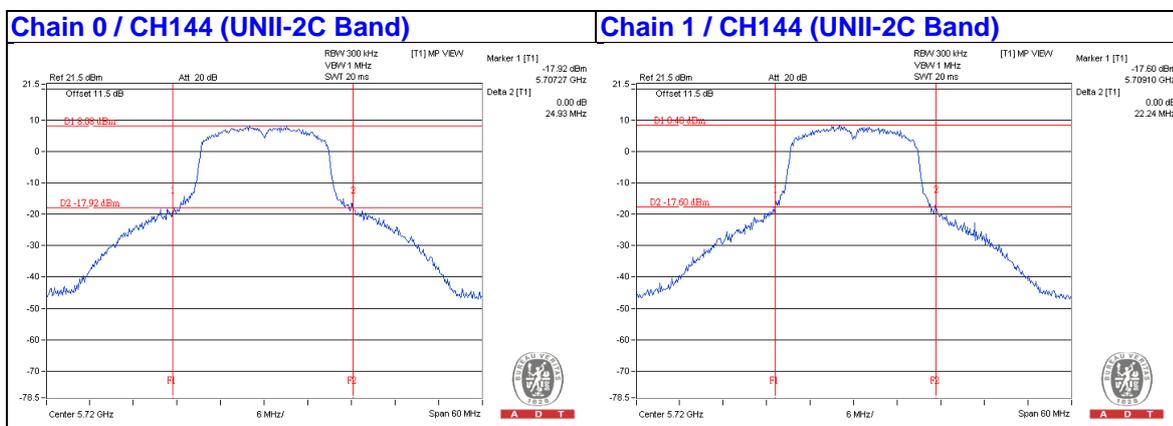
\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
144 (UNII-2C Band)	5720	17.73	15.90

**Note: For U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 11dBm + 10logB < U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
144 (UNII-2C Band)	5720	15.90	23.01 < 24



**NOTE:**

For CH144 (UNII-2C Band) = 5725MHz - Marker 1

### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.98	17.28	116.262	20.65

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT40)**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	12.78	12.37	36.225	15.59	28.23	Pass
159	5795	19.18	18.73	157.439	21.97	28.23	Pass
*142 (UNII-2C Band)	5710	12.88	12.78	38.376	15.84	22.23	Pass
*142 (UNII-3 Band)	5710	0.93	0.07	2.255	3.53	28.23	Pass

**NOTE:** 1. 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

2. 5725~5850MHz:  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , therefore the limit needs to reduce, so the power limit shall be reduced to  $30-(7.77-6) = 28.23\text{dBm}$ .

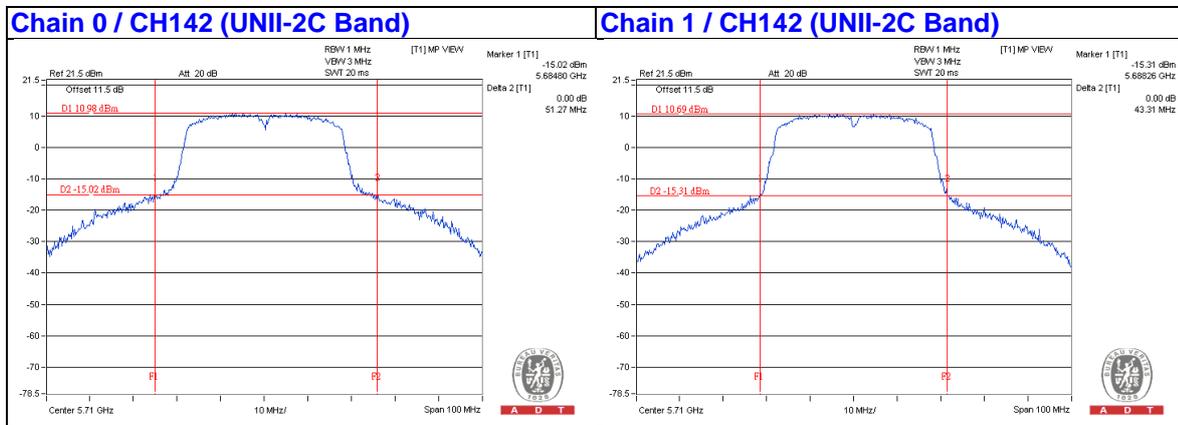
\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
142 (UNII-2C Band)	5710	40.20	36.74

**Note: For U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 11dBm + 10logB < U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
142 (UNII-2C Band)	5710	36.74	26.65 > 24



**NOTE:**

For CH142 (UNII-2C Band) = 5725MHz - Marker 1

### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	17.88	17.23	114.221	20.58

Note: The total power was calculated through formula and record the value for reference only.

**802.11ac (VHT80)**

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	11.90	12.15	31.894	15.04	28.23	Pass
*138 (UNII-2C Band)	5690	11.16	10.78	25.671	14.09	22.23	Pass
*138 (UNII-3 Band)	5690	-4.53	-5.79	0.632	-1.99	28.23	Pass

**NOTE:** 1. 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to "Determined Conducted Limit-(7.77-6)".

2. 5725~5850MHz:  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$  , therefore the limit needs to reduce, so the power limit shall be reduced to  $30-(7.77-6) = 28.23\text{dBm}$ .

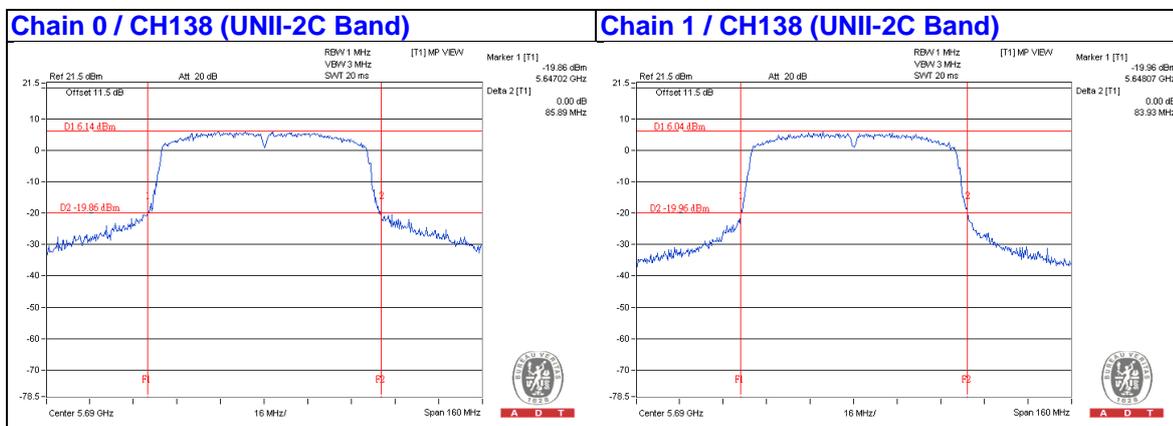
\* Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

### 26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
138 (UNII-2C Band)	5690	77.98	76.93

**Note: For U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 11dBm + 10logB < U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
138 (UNII-2C Band)	5690	76.93	29.86 > 24



**NOTE:**

For CH138 (UNII-2C Band) = 5725MHz - Marker 1

### For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	16.37	15.93	82.525	19.17

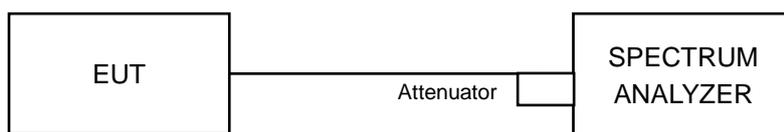
Note: The total power was calculated through formula and record the value for reference only.

## 4.2 Peak Power Spectral Density Measurement

### 4.2.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

### 4.2.2 Test Setup



### 4.2.3 Test Instruments

#### For channel straddling 5725MHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

#### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

#### For other channels:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016

#### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Sep. 23, 2015

#### 4.2.4 Test Procedures

##### For U-NII-2C:

- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
- c. Sweep time = auto, trigger set to "free run".
- d. Trace average at least 100 traces in power averaging mode.
- e. Record the max value and for duty cycle of test signal is < 98% add 10 log (1/duty cycle)
- f. Record the max value

##### For U-NII-3:

- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 300 kHz, Set VBW  $\geq$  1 MHz, Detector = RMS
- c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
- e. Sweep time = auto, trigger set to "free run".
- f. Trace average at least 100 traces in power averaging mode.
- g. Record the max value and for duty cycle of test signal is < 98% add 10 log (1/duty cycle)

#### 4.2.5 Deviation from Test Standard

No deviation.

#### 4.2.6 EUT Operating Conditions

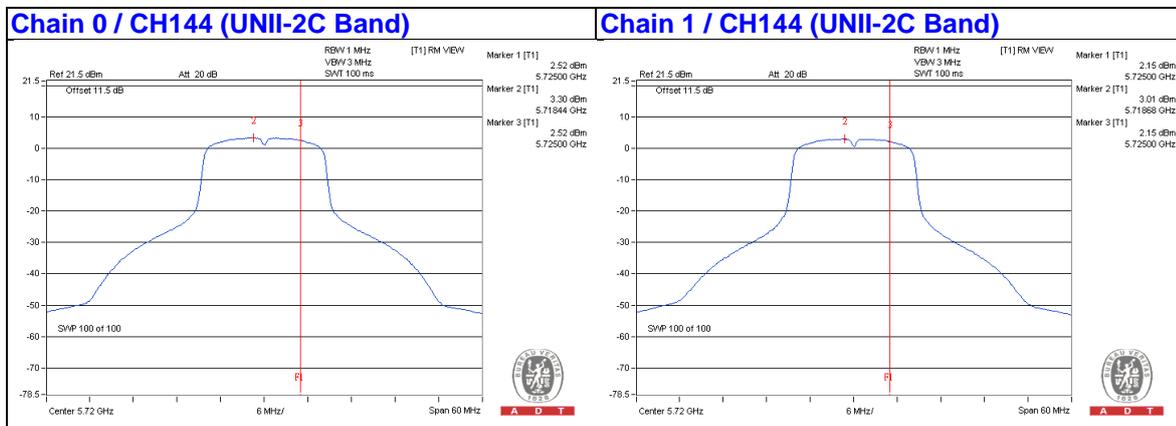
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 4.2.7 Test Results

**For U-NII-2C:  
802.11a**

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
144 (UNII-2C Band)	5720	3.30	2.99	6.16	9.23	Pass

- NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.

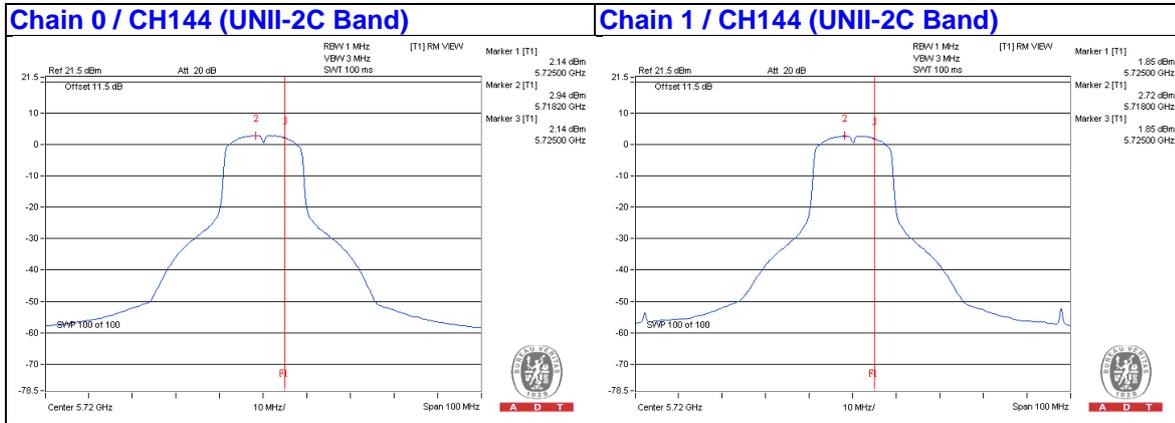


802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
144 (UNII-2C Band)	5720	2.94	2.72	5.84	9.23	Pass

**NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.

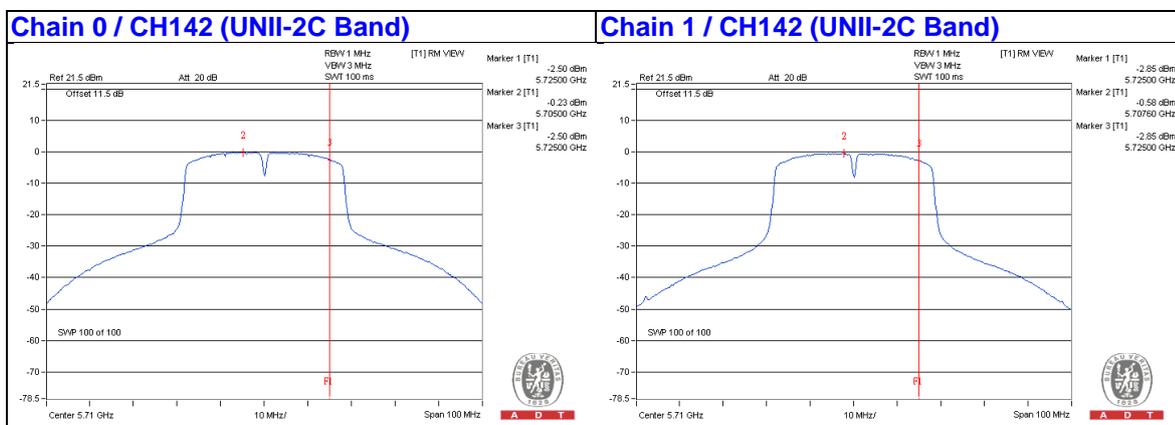


802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
142 (UNII-2C Band)	5710	-0.23	-0.59	2.60	9.23	Pass

**NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

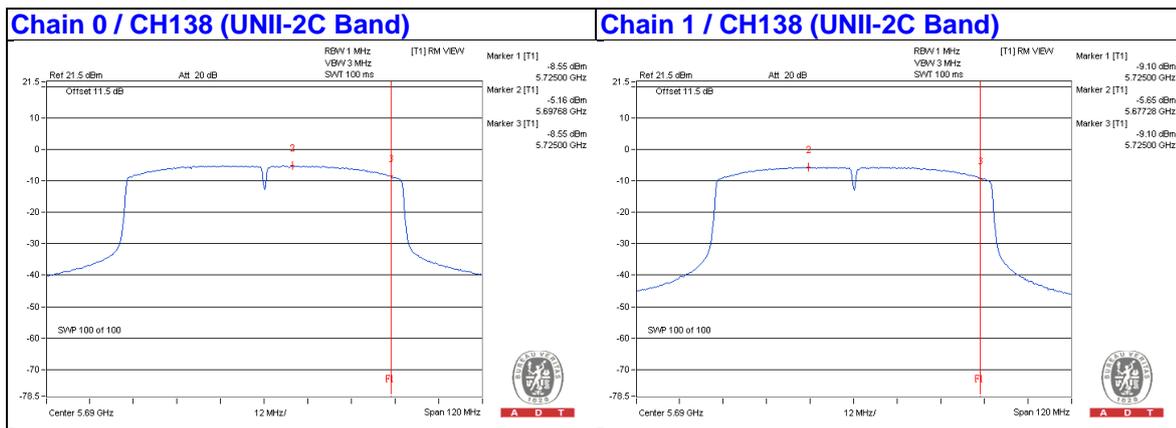
2. 5470~5725MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 11-(7.77-6) = 9.23dBm.



**802.11ac (VHT80):**

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
138 (UNII-2C Band)	5690	-5.16	-5.73	0.11	-2.32	9.23	Pass

- NOTE:**
- Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
  - 5470~5725MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dB}$ , so the power density limit shall be reduced to  $11 - (7.77 - 6) = 9.23\text{dBm}$ .
  - Refer to section 3.4 for duty cycle spectrum plot.



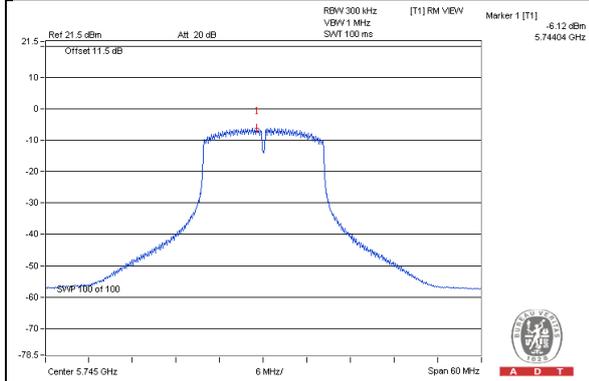
For U-NII-3:

802.11a

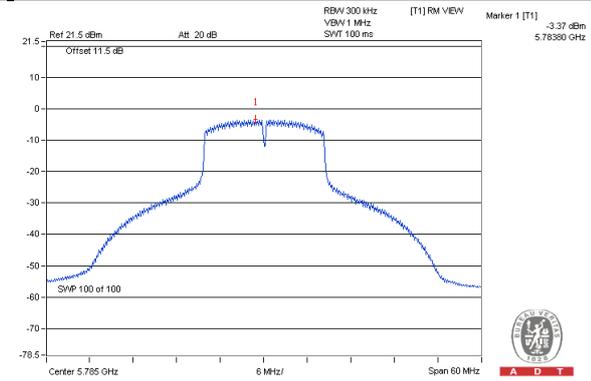
TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-6.12	-3.90	3.01	-0.89	28.23	Pass
	157	5785	-3.37	-1.15	3.01	1.86	28.23	Pass
	165	5825	-3.96	-1.74	3.01	1.27	28.23	Pass
	144 (UNII-3 Band)	5720	-5.50	-3.28	3.01	-0.27	28.23	Pass
1	149	5745	-5.79	-3.57	3.01	-0.56	28.23	Pass
	157	5785	-3.32	-1.10	3.01	1.91	28.23	Pass
	165	5825	-3.26	-1.04	3.01	1.97	28.23	Pass
	144 (UNII-3 Band)	5720	-5.86	-3.64	3.01	-0.63	28.23	Pass

**NOTE:** 1. 5725~5850MHz: Directional gain =  $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dB}$ , so the power density limit shall be reduced to  $30 - (7.77 - 6) = 28.23\text{dBm}$ .

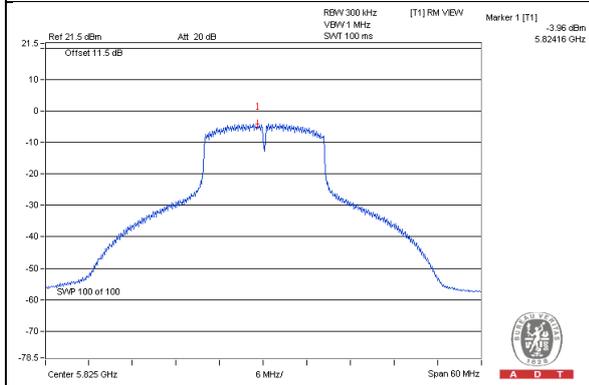
### Chain 0 / CH149



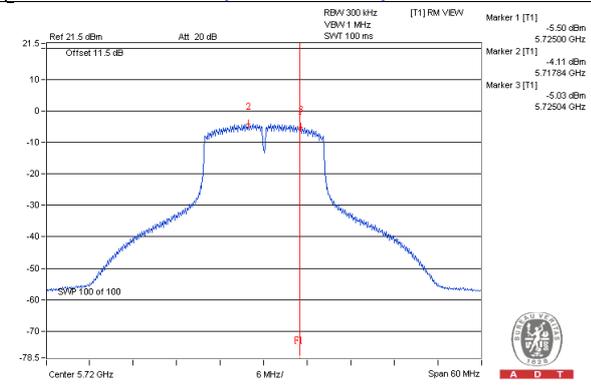
### Chain 0 / CH157



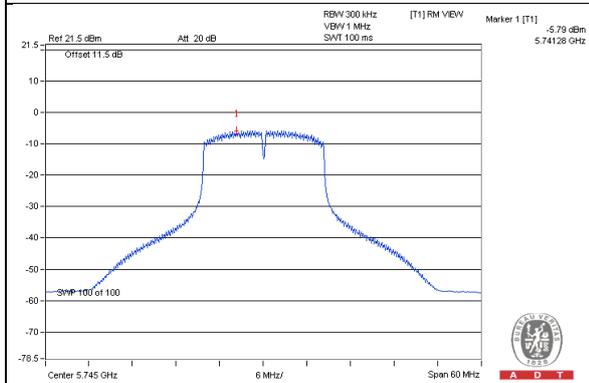
### Chain 0 / CH165



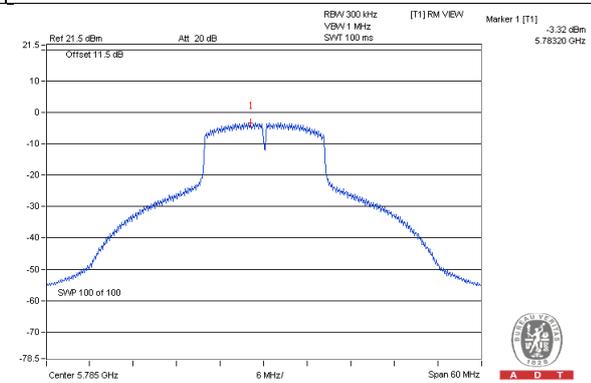
### Chain 0 / CH144 (UNII-3 Band)



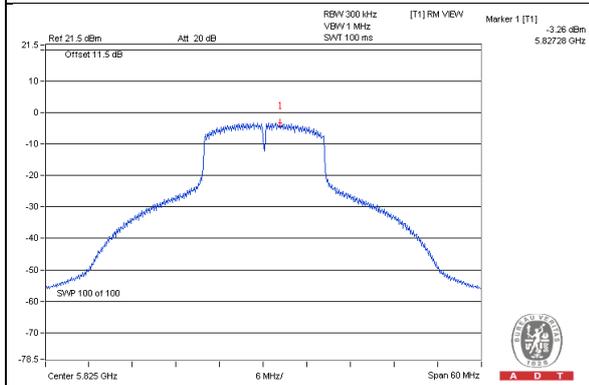
### Chain 1 / CH149



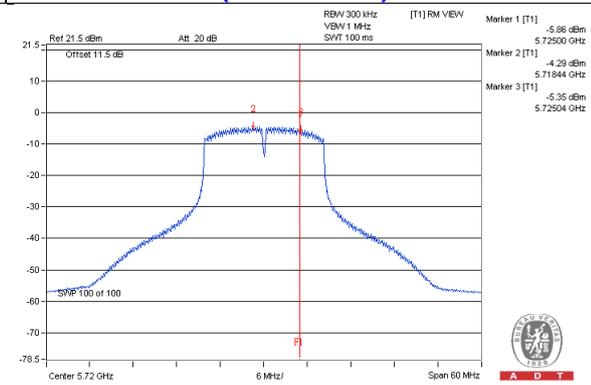
### Chain 1 / CH157



### Chain 1 / CH165



### Chain 1 / CH144 (UNII-3 Band)

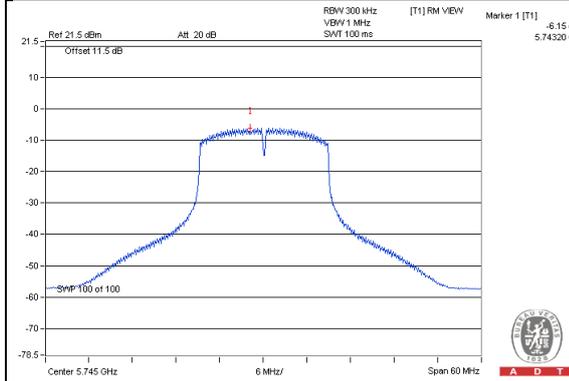


**802.11ac (VHT20)**

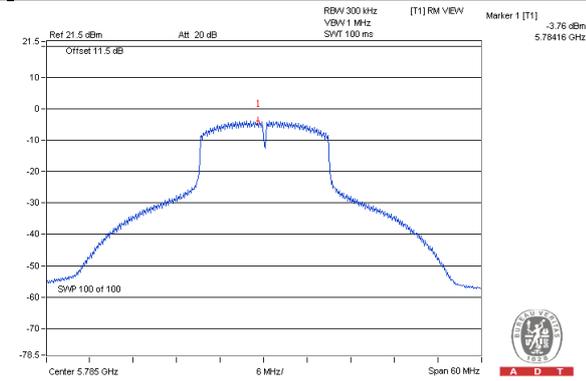
TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-6.15	-3.93	3.01	-0.92	28.23	Pass
	157	5785	-3.76	-1.54	3.01	1.47	28.23	Pass
	165	5825	-4.85	-2.63	3.01	0.38	28.23	Pass
	144 (UNII-3 Band)	5720	-5.78	-3.56	3.01	-0.55	28.23	Pass
1	149	5745	-6.06	-3.84	3.01	-0.83	28.23	Pass
	157	5785	-3.70	-1.48	3.01	1.53	28.23	Pass
	165	5825	-4.14	-1.92	3.01	1.09	28.23	Pass
	144 (UNII-3 Band)	5720	-5.85	-3.63	3.01	-0.62	28.23	Pass

**NOTE:** 1. 5725~5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

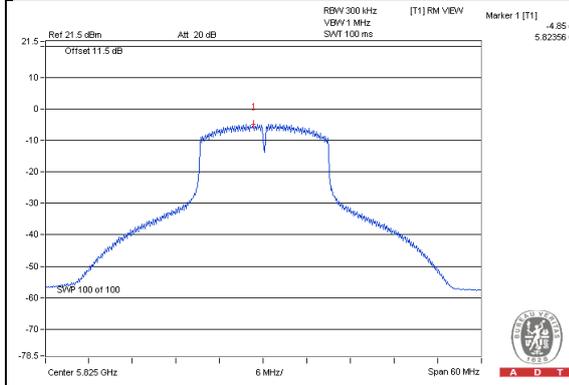
### Chain 0 / CH149



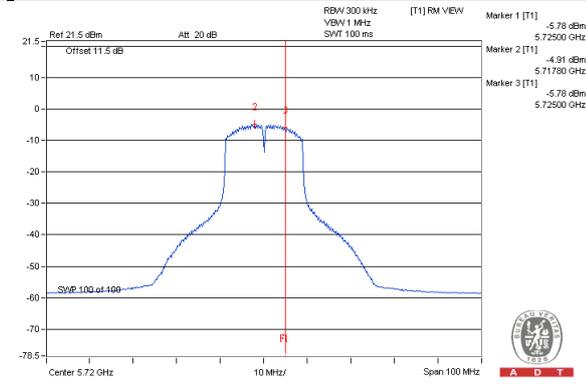
### Chain 0 / CH157



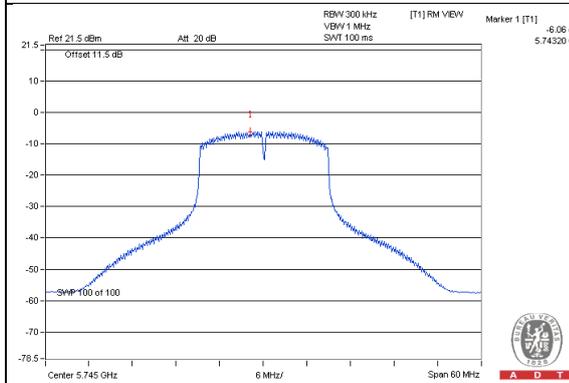
### Chain 0 / CH165



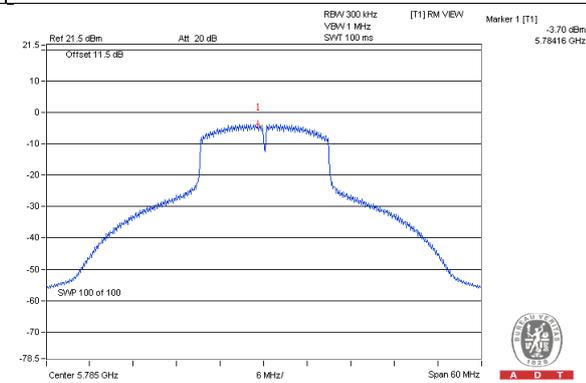
### Chain 0 / CH144 (UNII-3 Band)



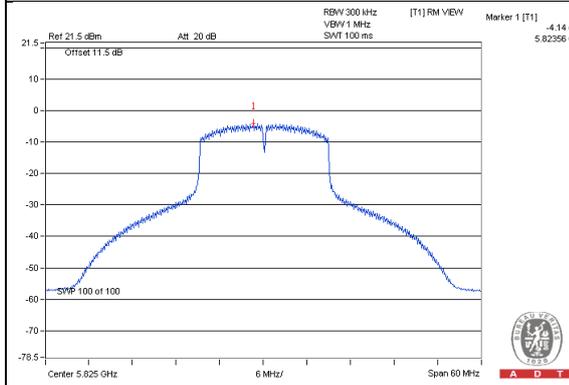
### Chain 1 / CH149



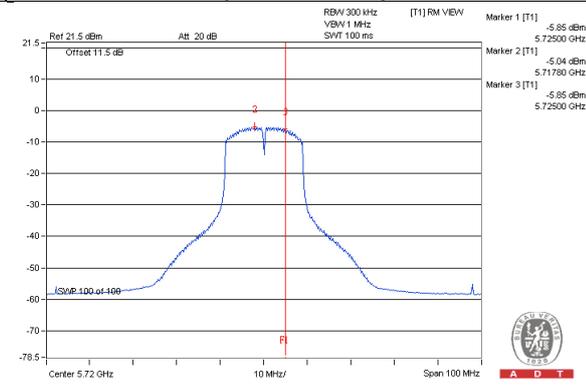
### Chain 1 / CH157



### Chain 1 / CH165



### Chain 1 / CH144 (UNII-3 Band)

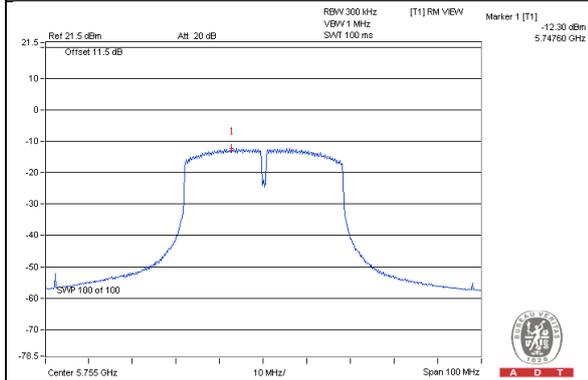


802.11ac (VHT40)

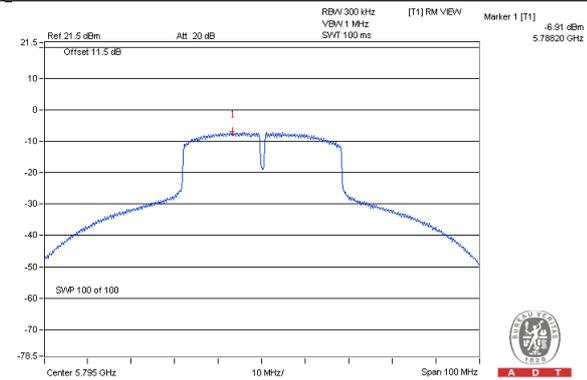
TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	151	5755	-12.30	-10.08	3.01	-7.07	28.23	Pass
	159	5795	-6.91	-4.69	3.01	-1.68	28.23	Pass
	142 (UNII-3 Band)	5710	-10.25	-8.03	3.01	-5.02	28.23	Pass
1	151	5755	-12.16	-9.94	3.01	-6.93	28.23	Pass
	159	5795	-6.73	-4.51	3.01	-1.50	28.23	Pass
	142 (UNII-3 Band)	5710	-10.65	-8.43	3.01	-5.42	28.23	Pass

**NOTE:** 1. 5725~5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

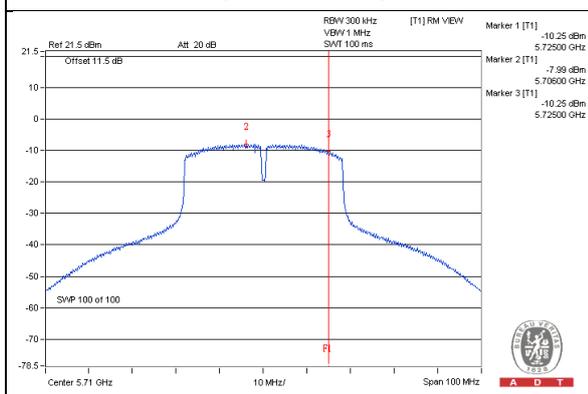
Chain 0 / CH151



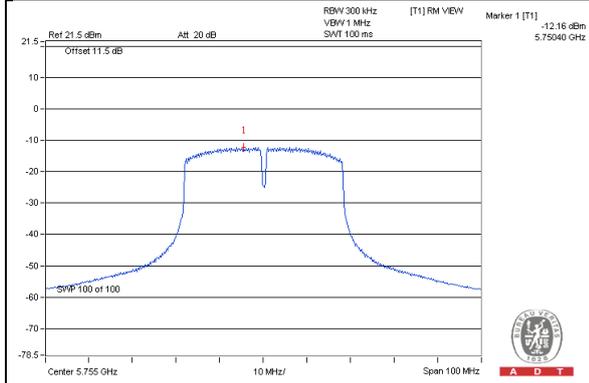
Chain 0 / CH159



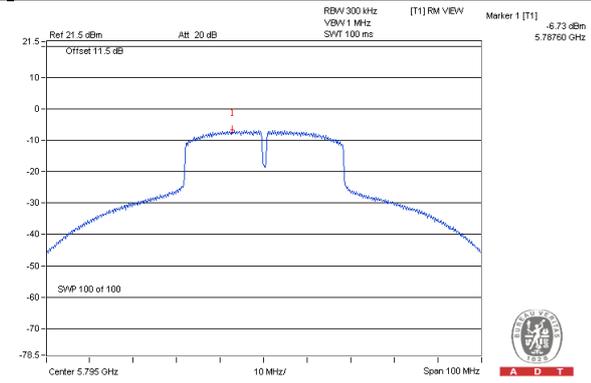
Chain 0 / CH142 (UNII-3 Band)



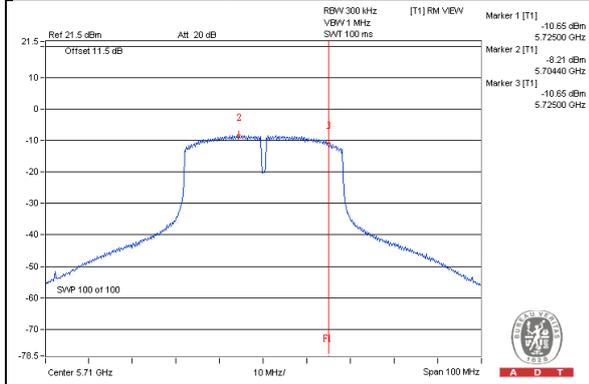
### Chain 1 / CH151



### Chain 1 / CH159



### Chain 1 / CH142 (UNII-3 Band)



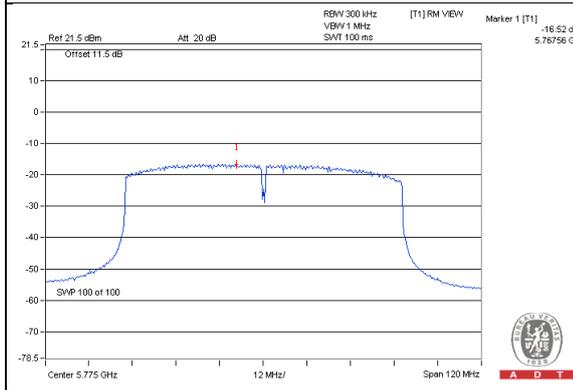
### 802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-16.52	-14.30	3.01	0.10	-11.19	28.23	Pass
	138 (UNII-3 Band)	5690	-16.79	-14.57	3.01	0.11	-11.45	28.23	Pass
1	155	5775	-16.34	-14.12	3.01	0.10	-11.01	28.23	Pass
	138 (UNII-3 Band)	5690	-17.33	-15.11	3.01	0.11	-11.99	28.23	Pass

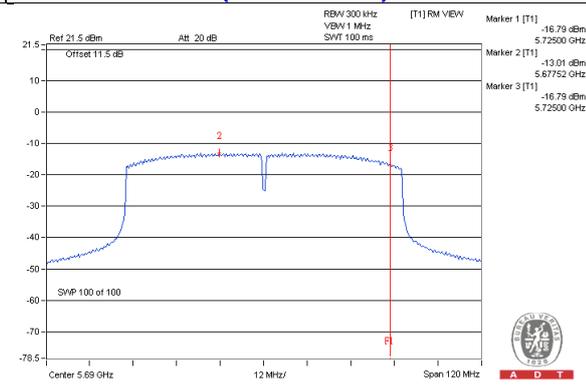
**NOTE:** 1. 5725–5850MHz: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

2. Refer to section 3.4 for duty cycle spectrum plot.

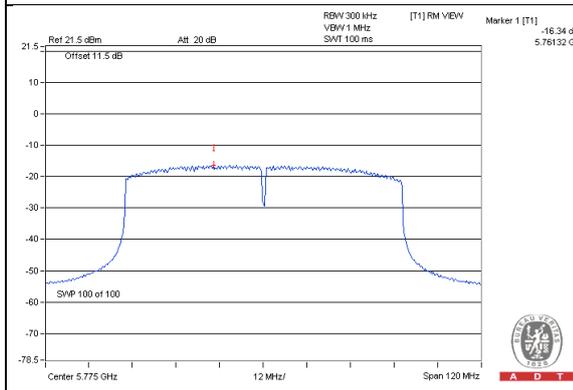
**Chain 0 / CH155**



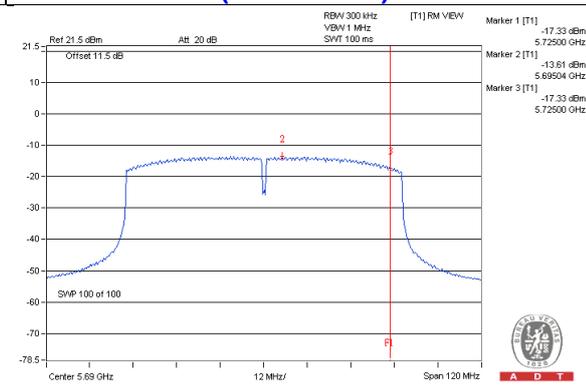
**Chain 0 / CH138 (UNII-3 Band)**



**Chain 1 / CH155**



**Chain 1 / CH138 (UNII-3 Band)**

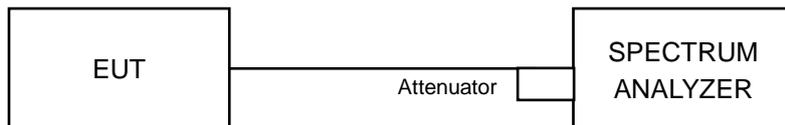


### 4.3 6dB Bandwidth Measurement

#### 4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

##### For channel straddling 5725MHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Feb. 09, 2015

##### For other channels:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Sep. 23, 2015

#### 4.3.4 Test Procedures

##### **MEASUREMENT PROCEDURE REF**

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 4.3.7 Test Results

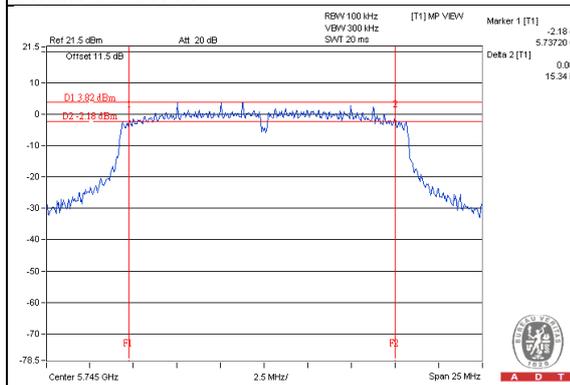
#### 802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.34	15.19	0.5	Pass
157	5785	16.41	16.36	0.5	Pass
165	5825	15.09	16.07	0.5	Pass
144 (UNII-3 Band)	5720	2.75	2.58	0.5	Pass

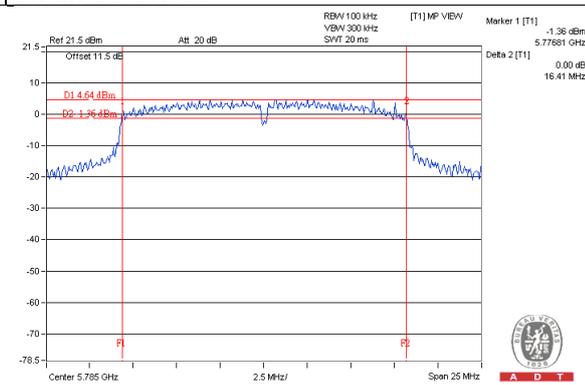
**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

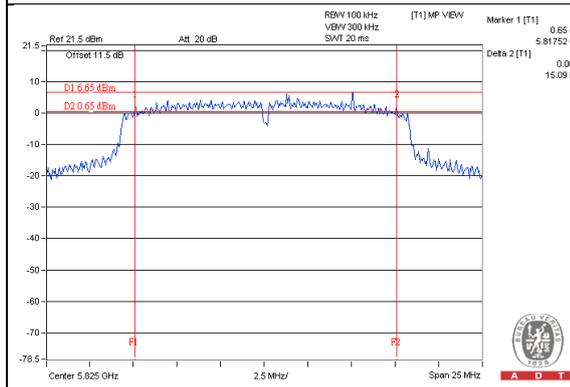
**Chain 0 / CH149**



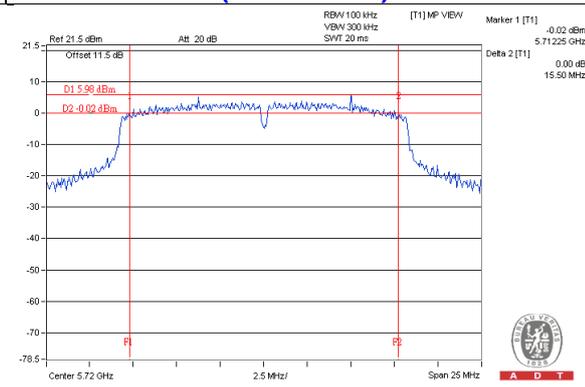
**Chain 0 / CH157**



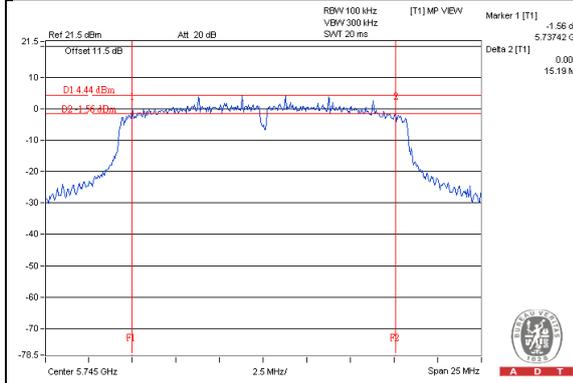
**Chain 0 / CH165**



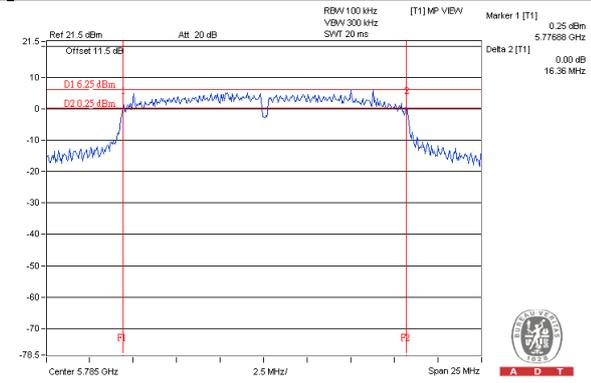
**Chain 0 / CH144 (UNII-3 Band)**



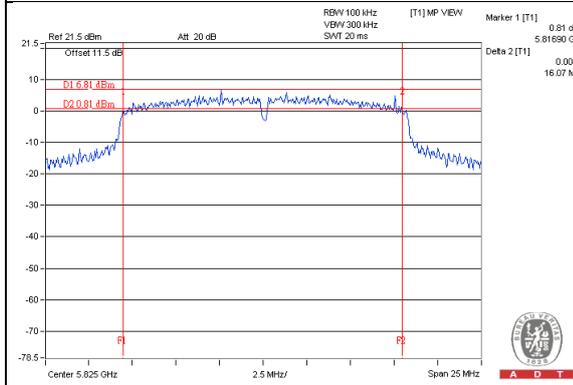
### Chain 1 / CH149



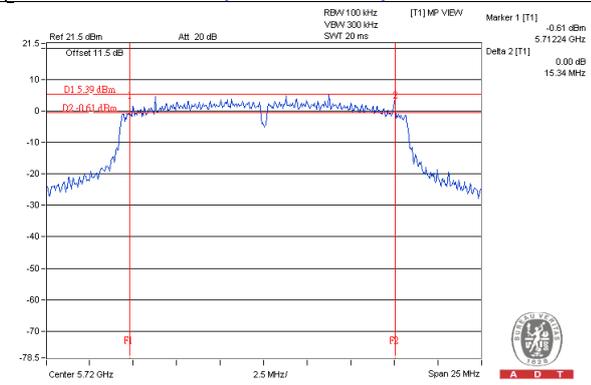
### Chain 1 / CH157



### Chain 1 / CH165



### Chain 1 / CH144 (UNII-3 Band)



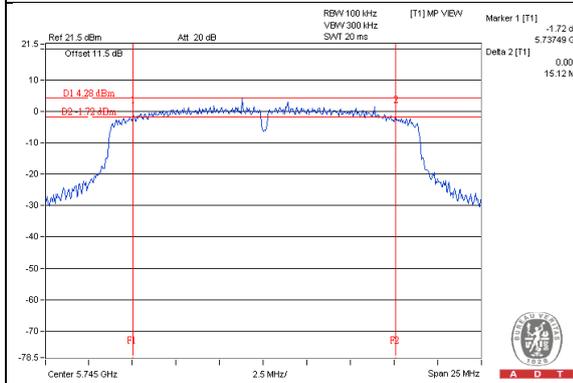
### 802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.12	15.45	0.5	Pass
157	5785	16.32	15.74	0.5	Pass
165	5825	13.46	15.06	0.5	Pass
144 (UNII-3 Band)	5720	2.55	2.56	0.5	Pass

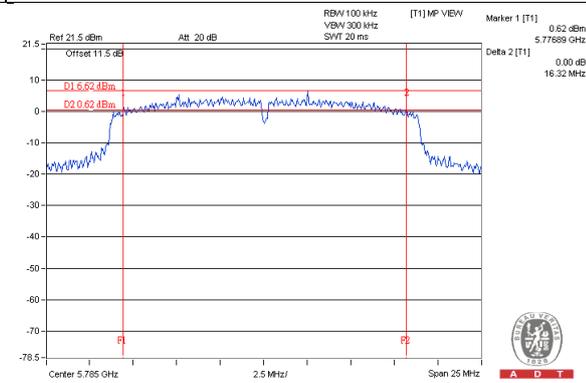
**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

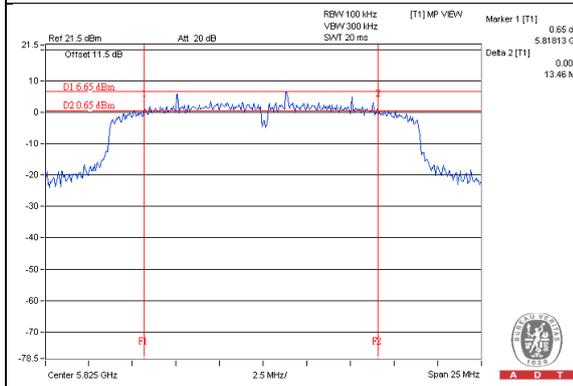
**Chain 0 / CH149**



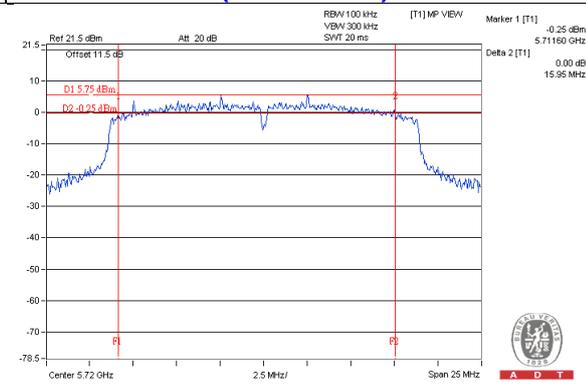
**Chain 0 / CH157**



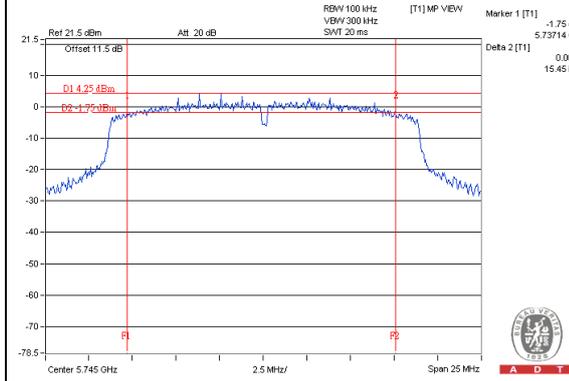
**Chain 0 / CH165**



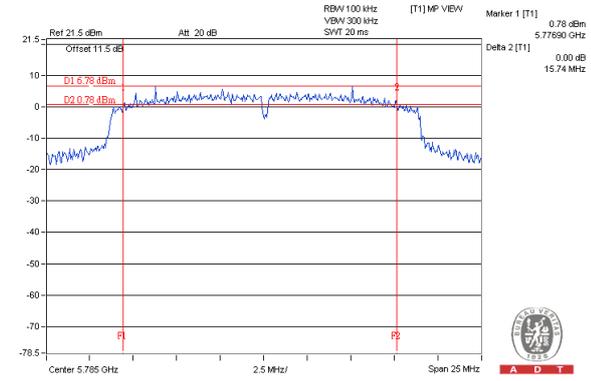
**Chain 0 / CH144 (UNII-3 Band)**



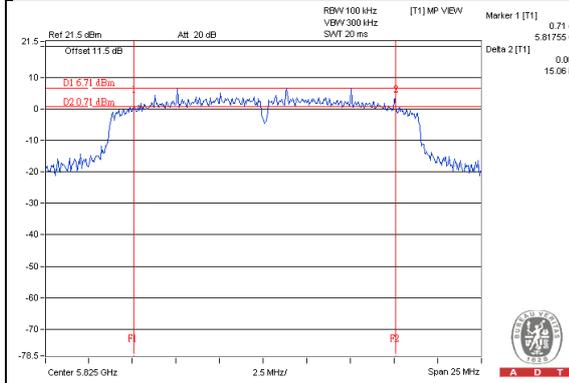
**Chain 1 / CH149**



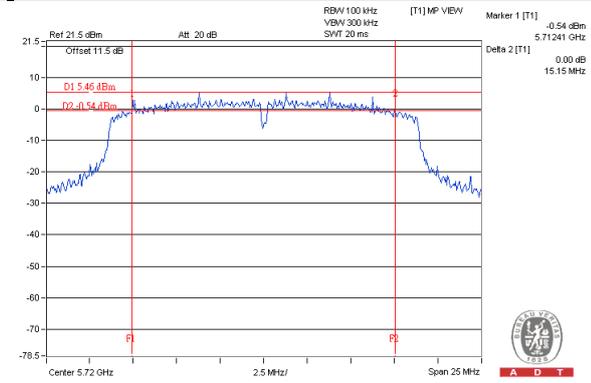
**Chain 1 / CH157**



**Chain 1 / CH165**



**Chain 1 / CH144 (UNII-3 Band)**



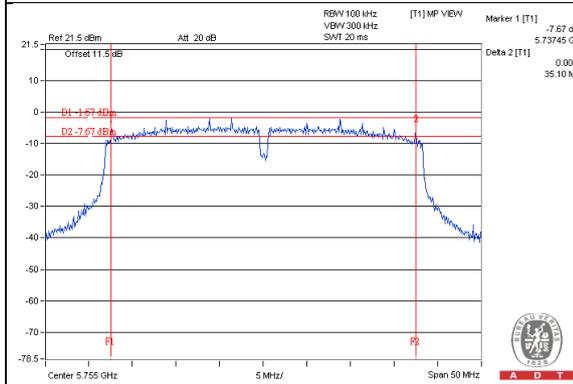
### 802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.10	33.80	0.5	Pass
159	5795	32.02	33.92	0.5	Pass
142 (UNII-3 Band)	5710	2.65	2.51	0.5	Pass

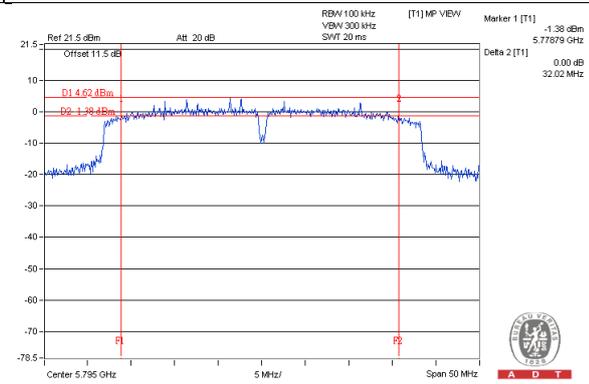
**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

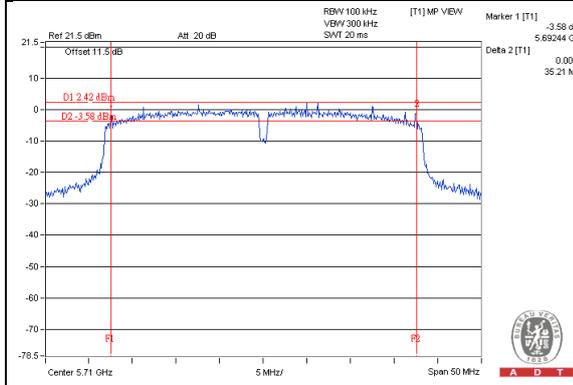
**Chain 0 / CH151**



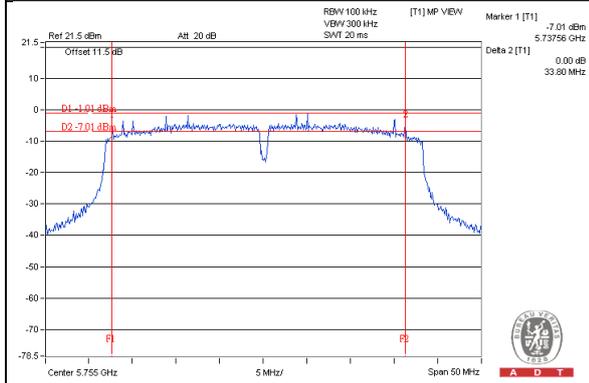
**Chain 0 / CH159**



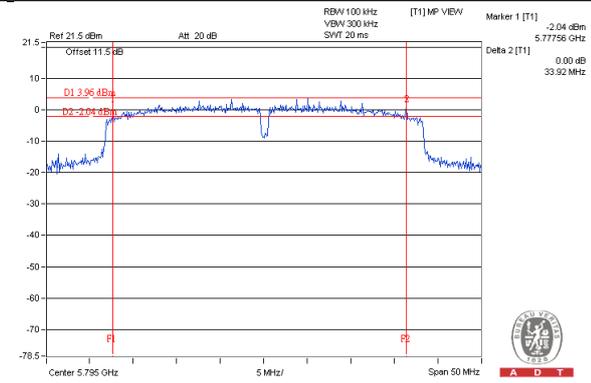
**Chain 0 / CH142 (UNII-3 Band)**



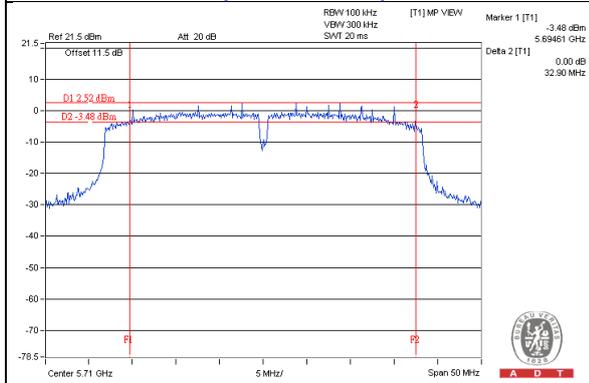
### Chain 1 / CH151



### Chain 1 / CH159



### Chain 1 / CH142 (UNII-3 Band)

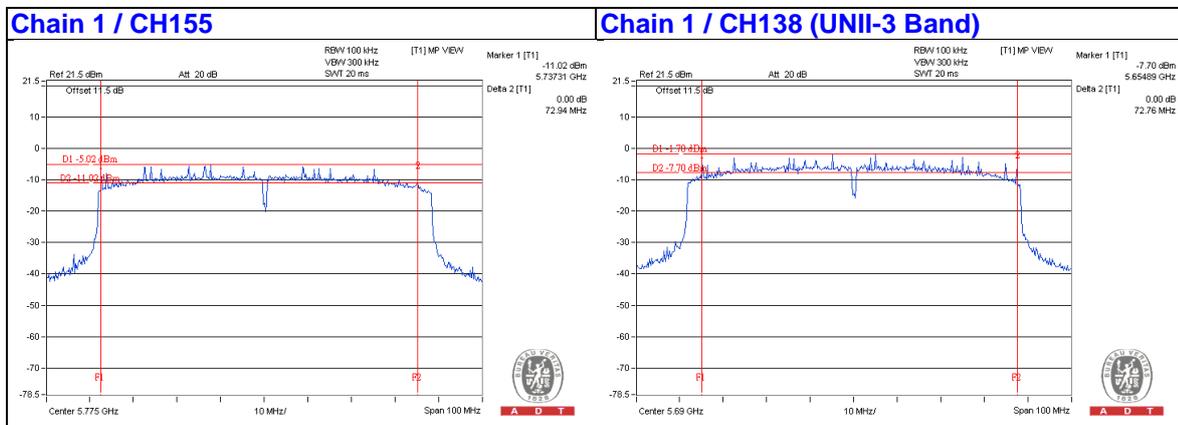
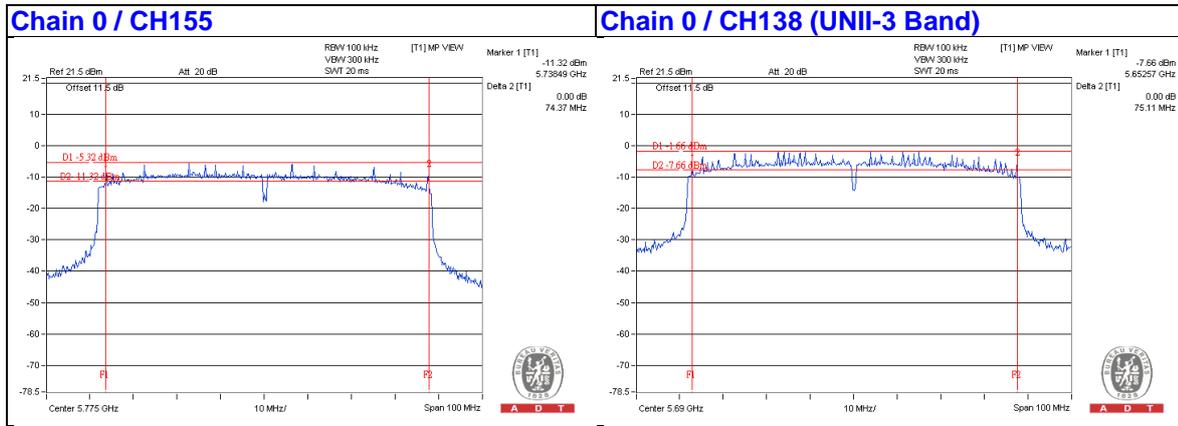


### 802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	74.37	72.94	0.5	Pass
138 (UNII-3 Band)	5690	2.68	2.65	0.5	Pass

**NOTE:**

The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz



#### 4.4 Unwanted Emission (Radiated Versus Conducted)

##### 4.4.1 Limits of Unwanted Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

**LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS**

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBµV/m)	AV:54 (dBµV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBµV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) <sup>*1</sup> PK:-17 (dBm/MHz) <sup>*2</sup>	PK: 68.2(dBµV/m) <sup>*1</sup> PK:78.2 (dBµV/m) <sup>*2</sup>

**NOTE:** <sup>\*1</sup> beyond 10MHz of the band edge <sup>\*2</sup> within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).$$

#### 4.4.2 Test Instruments

##### For Above 1GHz (Only for channel straddling 5725MHz):

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

##### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Feb. 06 to 11, 2015

**For above 1GHz test (other channels):**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Sep. 23, 2015

**For below 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 09, 2015	Feb. 08, 2016
RF Cable	8D-FB	CHHCAB-001-1	Oct. 05, 2014	Oct. 04, 2015
		CHHCAB-001-2		
	RF-141	CHHCAB-004	Oct. 05, 2014	Oct. 04, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. H.
3. The FCC Site Registration No. is 797305.
4. The CANADA Site Registration No. is IC 7450H-3.
5. Tested Date: Sep. 23, 2015

#### 4.4.3 Test Procedure

Following FCC KDB 789033 D02 General UNII Test Procedures:  
Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test
  - e-1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
  - e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
  - e-3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
  - e-4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
  - e-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
  - e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

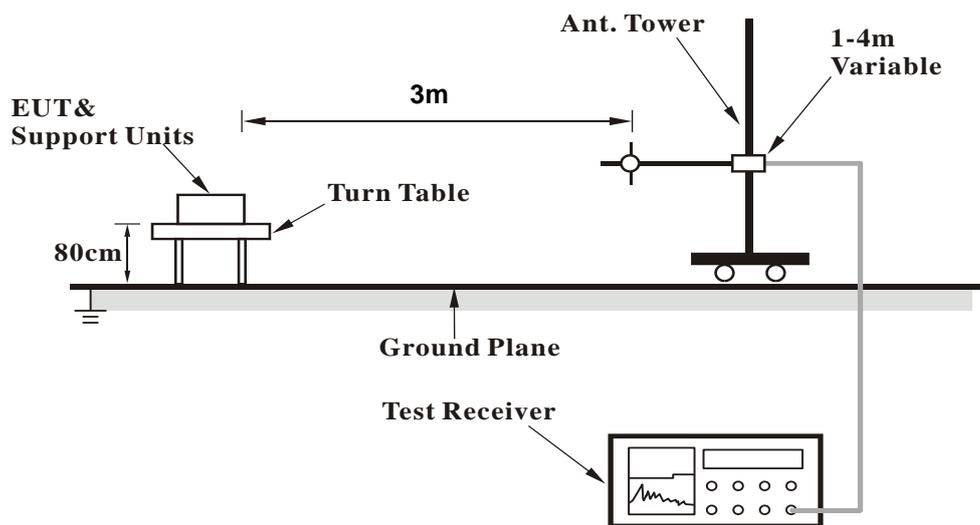
4.4.4 Deviation from Test Standard

No deviation.

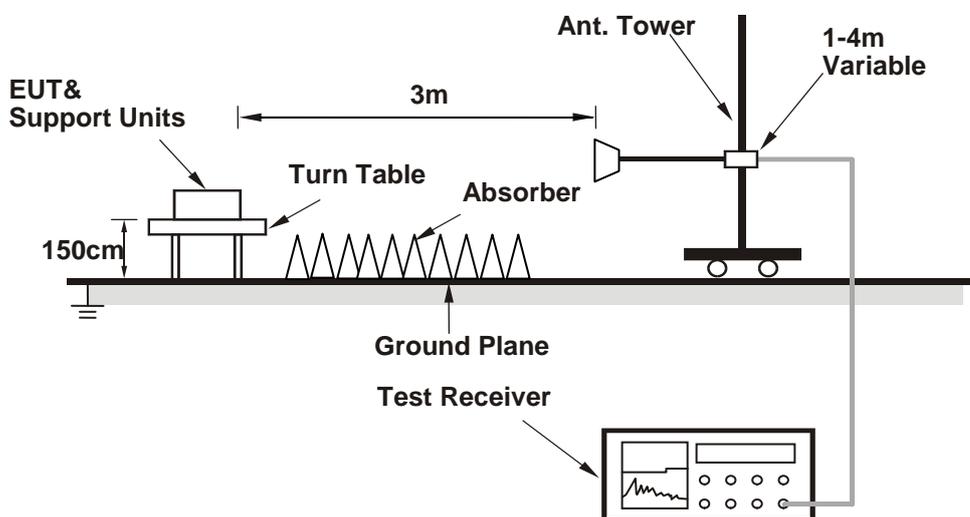
4.4.5 Test Setup

For radiated configuration:

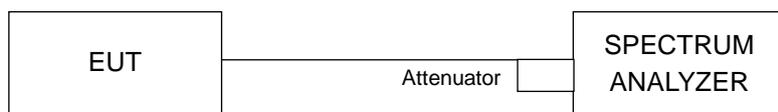
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.4.6 EUT Operating Condition

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QRCT Version: 3.0.33.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

#### 4.4.7 Test Results (Radiated Measurement)

<b>Radiated versus Conducted Measurement</b>	
<input type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement
<p><u>For Radiated measurement:</u>            The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)</p> <p><u>For Conducted measurement:</u>            The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).</p>	

Radiated test was done with 50ohm terminator on antenna port

Above 1GHz Data :

802.11a

<b>CHANNEL</b>	TX Channel 144	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.3 PK	74.0	-17.7	1.00 H	207	41.91	14.39
2	11440.00	42.4 AV	54.0	-11.6	1.00 H	207	28.01	14.39
3	#17160.00	60.7 PK	74.0	-13.3	1.00 H	56	38.69	22.01
4	#17160.00	47.9 AV	54.0	-6.1	1.00 H	56	25.89	22.01

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.1 PK	74.0	-17.9	1.04 V	83	41.71	14.39
2	11440.00	42.5 AV	54.0	-11.5	1.04 V	83	28.11	14.39
3	#17160.00	61.1 PK	74.0	-12.9	1.00 V	98	39.09	22.01
4	#17160.00	47.5 AV	54.0	-6.5	1.00 V	98	25.49	22.01

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 149	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11490.00	56.3 PK	74.0	-17.7	1.05 H	211	39.58	16.72
2	11490.00	42.8 AV	54.0	-11.2	1.05 H	211	26.08	16.72
3	#17235.00	60.2 PK	74.0	-13.8	1.01 H	58	34.35	25.85
4	#17235.00	47.3 AV	54.0	-6.7	1.01 H	58	21.45	25.85

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11490.00	55.5 PK	74.0	-18.5	1.02 V	94	38.78	16.72
2	11490.00	42.3 AV	54.0	-11.7	1.02 V	94	25.58	16.72
3	#17235.00	61.1 PK	74.0	-12.9	1.04 V	99	35.25	25.85
4	#17235.00	47.7 AV	54.0	-6.3	1.04 V	99	21.85	25.85

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11570.00	57.8 PK	74.0	-16.2	1.01 H	209	40.58	17.22
2	11570.00	43.4 AV	54.0	-10.6	1.01 H	209	26.18	17.22
3	#17355.00	60.9 PK	74.0	-13.1	1.03 H	56	34.75	26.15
4	#17355.00	48.1 AV	54.0	-5.9	1.03 H	56	21.95	26.15

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11570.00	56.5 PK	74.0	-17.5	1.05 V	107	39.28	17.22
2	11570.00	42.9 AV	54.0	-11.1	1.05 V	107	25.68	17.22
3	#17355.00	61.4 PK	74.0	-12.6	1.10 V	93	35.25	26.15
4	#17355.00	47.6 AV	54.0	-6.4	1.10 V	93	21.45	26.15

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11650.00	56.2 PK	74.0	-17.8	1.06 H	214	38.73	17.47
2	11650.00	42.4 AV	54.0	-11.6	1.06 H	214	24.93	17.47
3	#17475.00	60.2 PK	74.0	-13.8	1.05 H	48	33.31	26.89
4	#17475.00	47.3 AV	54.0	-6.7	1.05 H	48	20.41	26.89

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11650.00	55.8 PK	74.0	-18.2	1.02 V	124	38.33	17.47
2	11650.00	42.7 AV	54.0	-11.3	1.02 V	124	25.23	17.47
3	#17475.00	61.0 PK	74.0	-13.0	1.00 V	88	34.11	26.89
4	#17475.00	47.6 AV	54.0	-6.4	1.00 V	88	20.71	26.89

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 144	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.9 PK	74.0	-17.1	1.00 H	201	42.51	14.39
2	11440.00	42.8 AV	54.0	-11.2	1.00 H	201	28.41	14.39
3	#17160.00	60.5 PK	74.0	-13.5	1.04 H	54	38.49	22.01
4	#17160.00	47.6 AV	54.0	-6.4	1.04 H	54	25.59	22.01

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11440.00	56.5 PK	74.0	-17.5	1.03 V	123	42.11	14.39
2	11440.00	43.2 AV	54.0	-10.8	1.03 V	123	28.81	14.39
3	#17160.00	61.7 PK	74.0	-12.3	1.00 V	98	39.69	22.01
4	#17160.00	47.8 AV	54.0	-6.2	1.00 V	98	25.79	22.01

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 149	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11490.00	56.5 PK	74.0	-17.5	1.06 H	212	39.78	16.72
2	11490.00	42.9 AV	54.0	-11.1	1.06 H	212	26.18	16.72
3	#17235.00	61.4 PK	74.0	-12.6	1.04 H	83	35.55	25.85
4	#17235.00	48.0 AV	54.0	-6.0	1.04 H	83	22.15	25.85

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11490.00	56.5 PK	74.0	-17.5	1.10 V	83	39.78	16.72
2	11490.00	42.7 AV	54.0	-11.3	1.10 V	83	25.98	16.72
3	#17235.00	61.2 PK	74.0	-12.8	1.01 V	82	35.35	25.85
4	#17235.00	48.0 AV	54.0	-6.0	1.01 V	82	22.15	25.85

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11570.00	57.2 PK	74.0	-16.8	1.05 H	202	39.98	17.22
2	11570.00	43.0 AV	54.0	-11.0	1.05 H	202	25.78	17.22
3	#17355.00	60.3 PK	74.0	-13.7	1.04 H	68	34.15	26.15
4	#17355.00	47.3 AV	54.0	-6.7	1.04 H	68	21.15	26.15

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11570.00	55.5 PK	74.0	-18.5	1.05 V	88	38.28	17.22
2	11570.00	42.7 AV	54.0	-11.3	1.05 V	88	25.48	17.22
3	#17355.00	60.7 PK	74.0	-13.3	1.06 V	112	34.55	26.15
4	#17355.00	47.4 AV	54.0	-6.6	1.06 V	112	21.25	26.15

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11650.00	57.0 PK	74.0	-17.0	1.06 H	222	39.53	17.47
2	11650.00	43.5 AV	54.0	-10.5	1.06 H	222	26.03	17.47
3	#17475.00	60.4 PK	74.0	-13.6	1.01 H	49	33.51	26.89
4	#17475.00	47.5 AV	54.0	-6.5	1.01 H	49	20.61	26.89

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11650.00	55.9 PK	74.0	-18.1	1.05 V	90	38.43	17.47
2	11650.00	43.0 AV	54.0	-11.0	1.05 V	90	25.53	17.47
3	#17475.00	61.4 PK	74.0	-12.6	1.07 V	111	34.51	26.89
4	#17475.00	47.8 AV	54.0	-6.2	1.07 V	111	20.91	26.89

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

**802.11ac (VHT40)**

<b>CHANNEL</b>	TX Channel 142	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11420.00	56.6 PK	74.0	-17.4	1.03 H	209	42.19	14.41
2	11420.00	42.6 AV	54.0	-11.4	1.03 H	209	28.19	14.41
3	#17130.00	61.1 PK	74.0	-12.9	1.01 H	78	39.21	21.89
4	#17130.00	48.0 AV	54.0	-6.0	1.01 H	78	26.11	21.89

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11420.00	56.0 PK	74.0	-18.0	1.00 V	96	41.59	14.41
2	11420.00	43.1 AV	54.0	-10.9	1.00 V	96	28.69	14.41
3	#17130.00	61.4 PK	74.0	-12.6	1.00 V	78	39.51	21.89
4	#17130.00	47.7 AV	54.0	-6.3	1.00 V	78	25.81	21.89

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11510.00	56.5 PK	74.0	-17.5	1.00 H	183	39.77	16.73
2	11510.00	42.8 AV	54.0	-11.2	1.00 H	183	26.07	16.73
3	#17265.00	60.0 PK	74.0	-14.0	1.09 H	53	34.25	25.75
4	#17265.00	47.1 AV	54.0	-6.9	1.09 H	53	21.35	25.75

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11510.00	56.0 PK	74.0	-18.0	1.00 V	104	39.27	16.73
2	11510.00	42.4 AV	54.0	-11.6	1.00 V	104	25.67	16.73
3	#17265.00	60.2 PK	74.0	-13.8	1.03 V	106	34.45	25.75
4	#17265.00	47.1 AV	54.0	-6.9	1.03 V	106	21.35	25.75

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 159	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11590.00	57.3 PK	74.0	-16.7	1.03 H	207	39.93	17.37
2	11590.00	43.1 AV	54.0	-10.9	1.03 H	207	25.73	17.37
3	#17385.00	60.6 PK	74.0	-13.4	1.05 H	45	34.16	26.44
4	#17385.00	47.7 AV	54.0	-6.3	1.05 H	45	21.26	26.44

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11590.00	55.7 PK	74.0	-18.3	1.00 V	94	38.33	17.37
2	11590.00	42.5 AV	54.0	-11.5	1.00 V	94	25.13	17.37
3	#17385.00	61.3 PK	74.0	-12.7	1.06 V	100	34.86	26.44
4	#17385.00	48.1 AV	54.0	-5.9	1.06 V	100	21.66	26.44

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

**802.11ac (VHT80)**

<b>CHANNEL</b>	TX Channel 138	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11380.00	57.1 PK	74.0	-16.9	1.00 H	194	42.71	14.39
2	11380.00	42.6 AV	54.0	-11.4	1.00 H	194	28.21	14.39
3	#17070.00	60.8 PK	74.0	-13.2	1.00 H	58	39.11	21.69
4	#17070.00	47.4 AV	54.0	-6.6	1.00 H	58	25.71	21.69

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11380.00	55.3 PK	74.0	-18.7	1.01 V	116	40.91	14.39
2	11380.00	42.3 AV	54.0	-11.7	1.01 V	116	27.91	14.39
3	#17070.00	61.7 PK	74.0	-12.3	1.00 V	107	40.01	21.69
4	#17070.00	47.8 AV	54.0	-6.2	1.00 V	107	26.11	21.69

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 155	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11550.00	56.9 PK	74.0	-17.1	1.01 H	197	39.84	17.06
2	11550.00	42.9 AV	54.0	-11.1	1.01 H	197	25.84	17.06
3	#17325.00	60.2 PK	74.0	-13.8	1.06 H	75	34.33	25.87
4	#17325.00	47.5 AV	54.0	-6.5	1.06 H	75	21.63	25.87

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11550.00	56.1 PK	74.0	-17.9	1.01 V	93	39.04	17.06
2	11550.00	42.7 AV	54.0	-11.3	1.01 V	93	25.64	17.06
3	#17325.00	62.0 PK	74.0	-12.0	1.05 V	95	36.13	25.87
4	#17325.00	48.6 AV	54.0	-5.4	1.05 V	95	22.73	25.87

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.
6. The resolution bandwidth of test receiver is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) for Average detection (AV). Emission AV measured by RBW/VBW= 1MHz/300Hz

**Below 1GHz Data**

**802.11ac (VHT40)**

<b>CHANNEL</b>	TX Channel 159	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	78.93	34.4 QP	40.0	-5.6	2.00 H	353	52.00	-17.59
2	166.02	40.4 QP	43.5	-3.1	1.73 H	74	53.63	-13.23
3	333.22	35.3 QP	46.0	-10.7	1.00 H	357	46.04	-10.77
4	473.53	38.0 QP	46.0	-8.0	1.00 H	33	45.80	-7.76
5	624.70	36.7 QP	46.0	-9.3	1.50 H	0	41.02	-4.34
6	797.12	37.7 QP	46.0	-8.3	1.00 H	46	39.20	-1.53

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.60	32.5 QP	40.0	-7.5	1.00 V	56	47.43	-14.89
2	81.13	30.9 QP	40.0	-9.1	1.00 V	334	48.99	-18.06
3	99.66	31.8 QP	43.5	-11.8	1.00 V	336	49.11	-17.36
4	266.63	33.7 QP	46.0	-12.3	1.00 V	34	46.95	-13.29
5	473.38	34.7 QP	46.0	-11.3	1.00 V	340	42.47	-7.77
6	797.07	34.7 QP	46.0	-11.3	1.00 V	308	36.22	-1.53

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

#### 4.4.8 Test Results (Conducted Measurement)

Radiated versus Conducted Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement
<p><u>For Radiated measurement:</u>            The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)</p> <p><u>For Conducted measurement:</u>            The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).</p>	

Conducted Measurement Factor
<p>a. The composite gain will be used when signal support the correlated signal.            (Composite gain = <math>4.76\text{dBi} + 10\log(2) = 7.77\text{dBi}</math>)</p> <p>b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.</p> <p>c. For the band edge the gain for the specific band may have been used.</p> <p>d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection:            For <math>f = 30 - 1000</math> MHz, add 4.7 dB.</p> <p>Note: The conducted emission test was considered some factor to compute test result.</p>

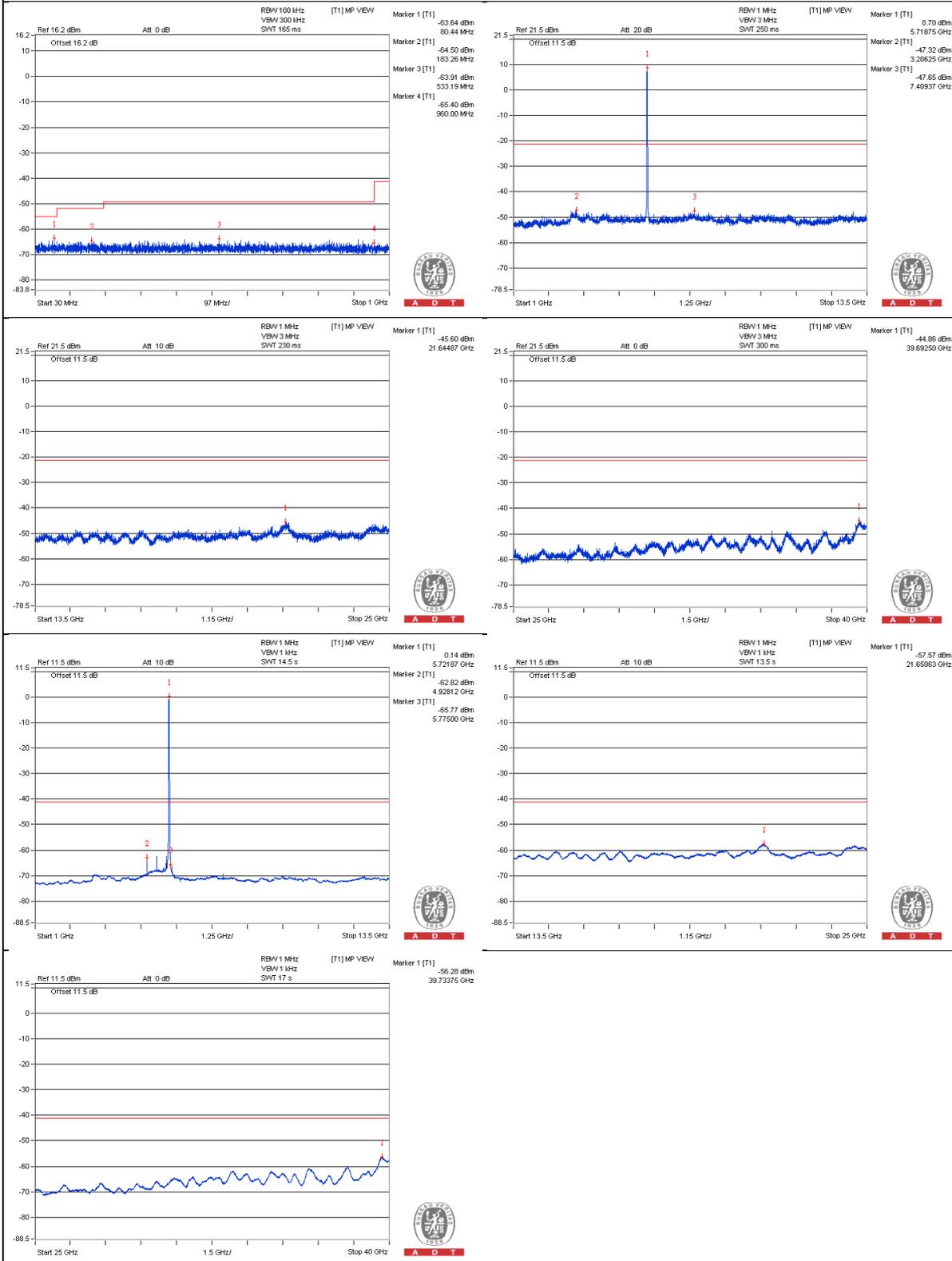
**Above 1GHz Data**  
**802.11a - Channel 144**

**Conducted spurious emission table**

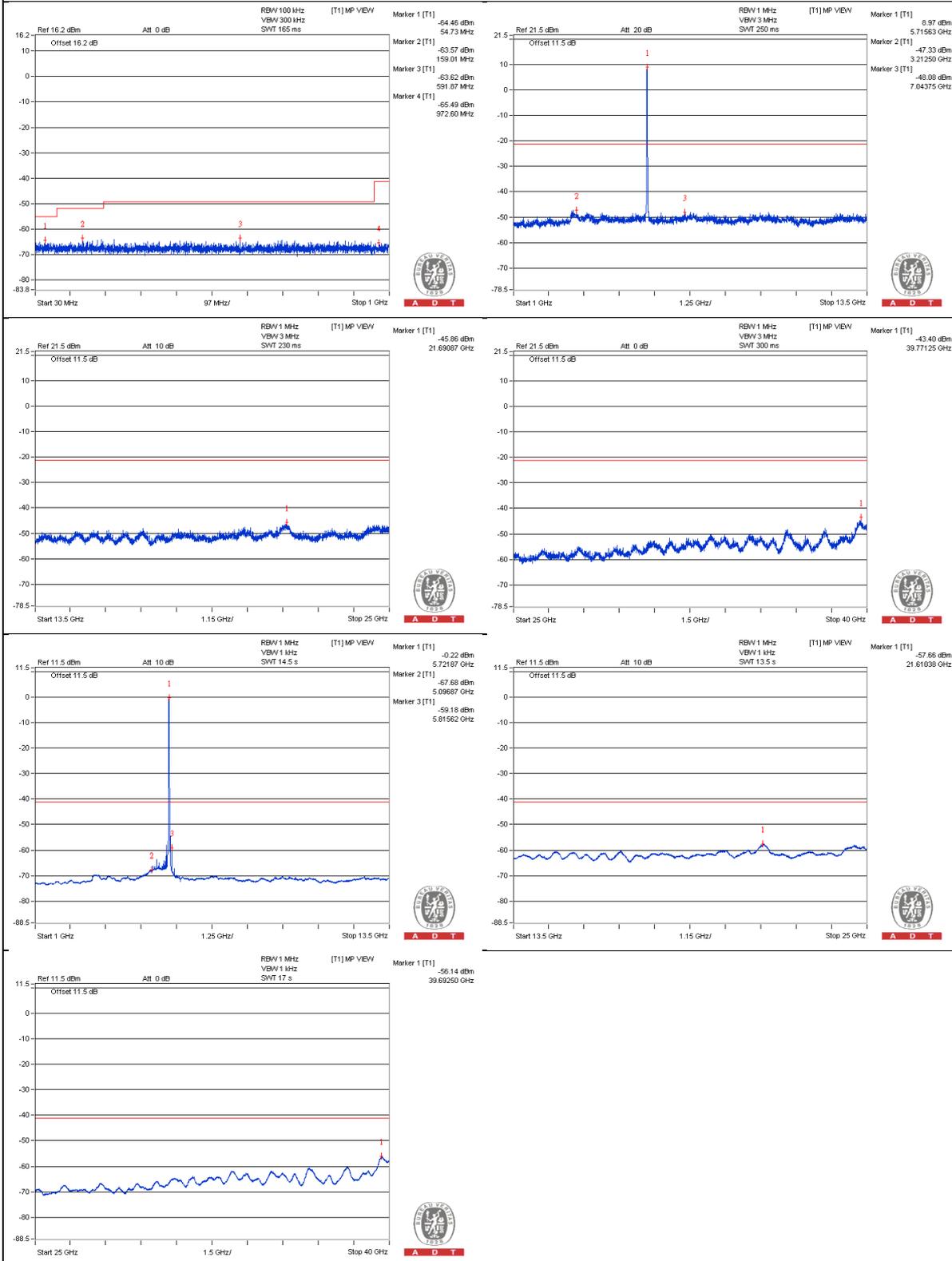
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3800 PK	56.06	74	-17.94	-50.74	-49.33	7.77	-39.2
2	3796.875 AV	34.6	54	-19.4	-71.38	-71.5	7.77	-60.66
3	7618.75 PK	55.83	74	-18.17	-50.52	-49.93	7.77	-39.43
4	7628.125 AV	35.9	54	-18.1	-69.22	-71.32	7.77	-59.36
5	11450 PK	54.77	74	-19.23	-51.83	-50.78	7.77	-40.49
6	11446.875 AV	33.83	54	-20.17	-72.34	-72.08	7.77	-61.43
7	17154.125 PK	54.48	74	-19.52	-51.74	-51.39	7.77	-40.78
8	17145.5 AV	43.4	54	-10.6	-62.62	-62.67	7.77	-51.86

Note :  
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



### Bandedge table

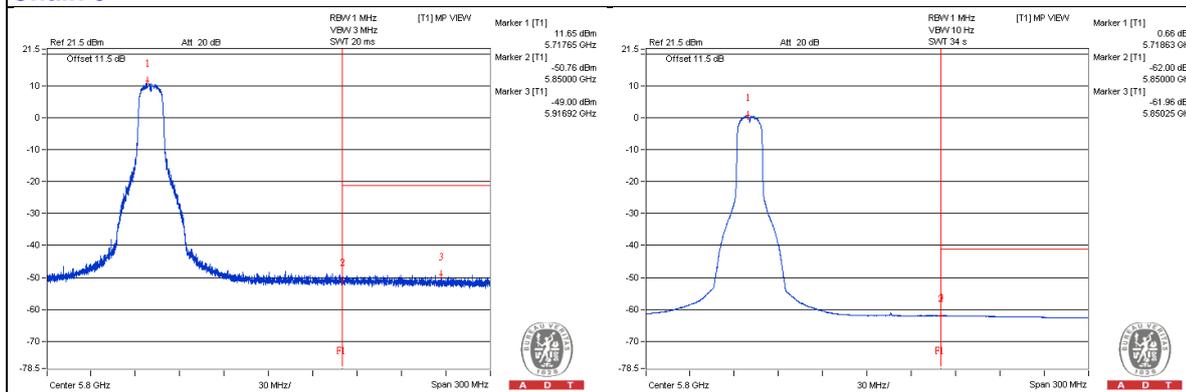
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5848.075 PK	56.7	74	-17.3	-49.14	-49.55	7.77	-38.56
2	5912.05 AV	44.15	54	-9.85	-62.31	-61.5	7.77	-51.11

Note :

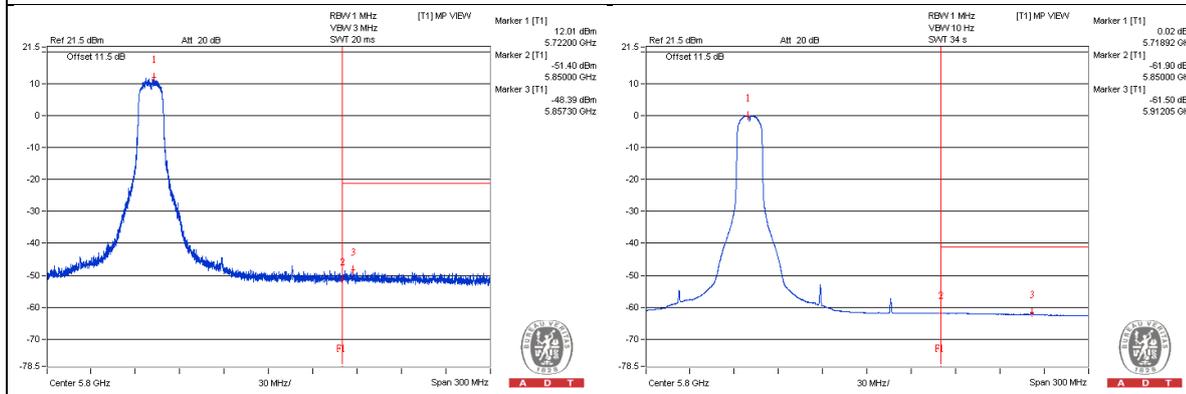
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 149

### Conducted spurious emission table

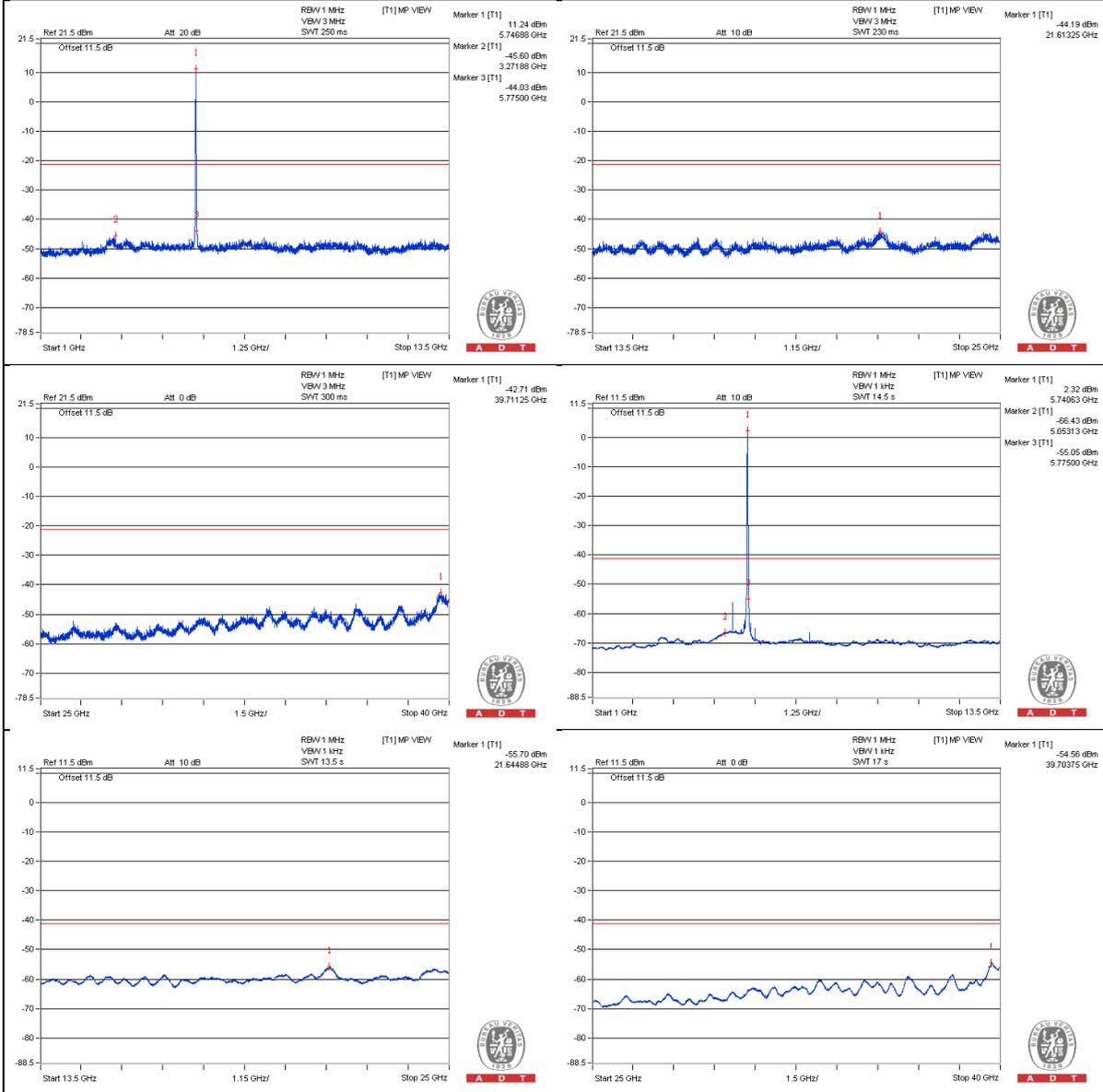
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3831.25 PK	56.39	74	-17.61	-50.69	-48.81	7.77	-38.87
2	3828.125 AV	35.68	54	-18.32	-70.25	-70.48	7.77	-59.58
3	7659.375 PK	56.39	74	-17.61	-49.83	-49.47	7.77	-38.87
4	7659.375 AV	38.28	54	-15.72	-66.47	-69.61	7.77	-56.98
5	11490.625 PK	55.68	74	-18.32	-51.39	-49.53	7.77	-39.58
6	11490.625 AV	35.36	54	-18.64	-71.16	-70.24	7.77	-59.9
7	17234.625 PK	54.67	74	-19.33	-50.43	-52.57	7.77	-40.59
8	17234.625 AV	43.73	54	-10.27	-62.11	-62.51	7.77	-51.53

Note :

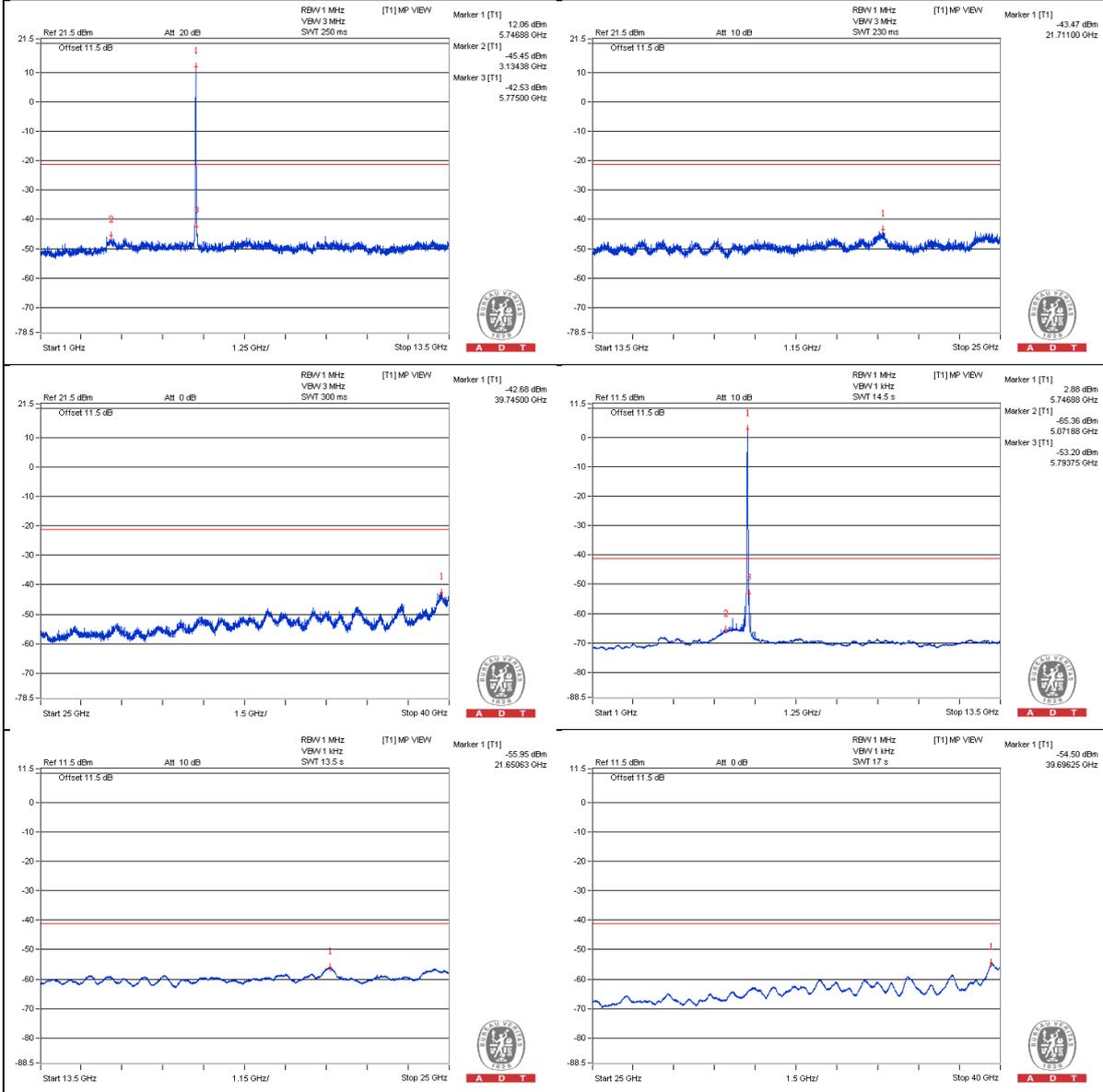
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



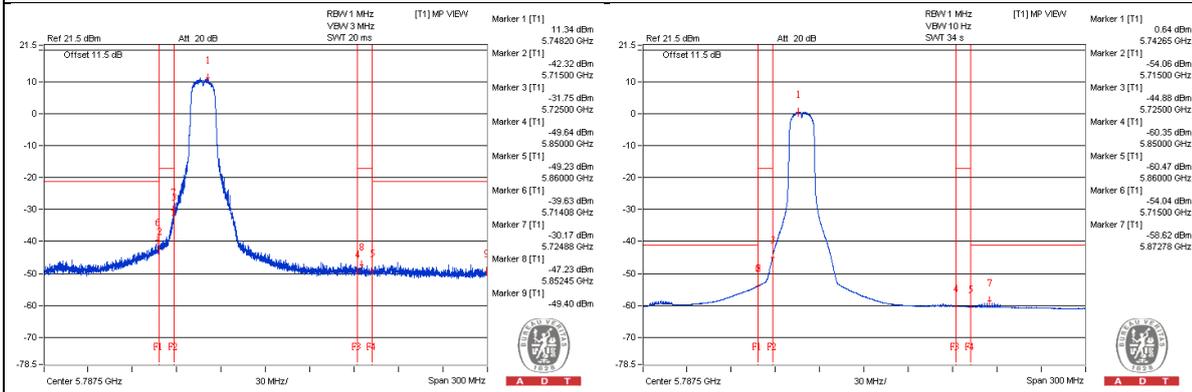
**Bandedge table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5712.575 PK	64.02	68.2	-4.18	-41.64	-42.43	7.77	-31.24
2	5724.875 PK	74.65	78.2	-3.55	-30.17	-33.09	7.77	-20.61

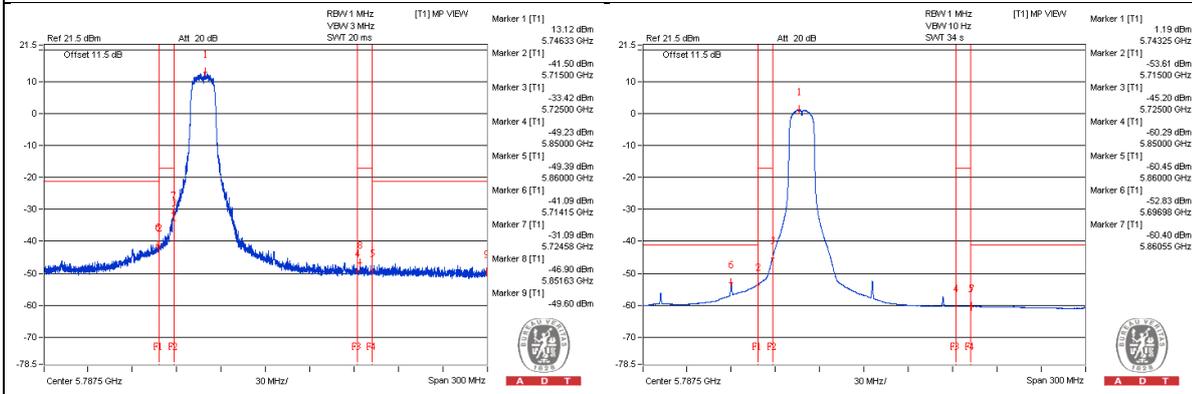
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



802.11a - Channel 157

Conducted spurious emission table

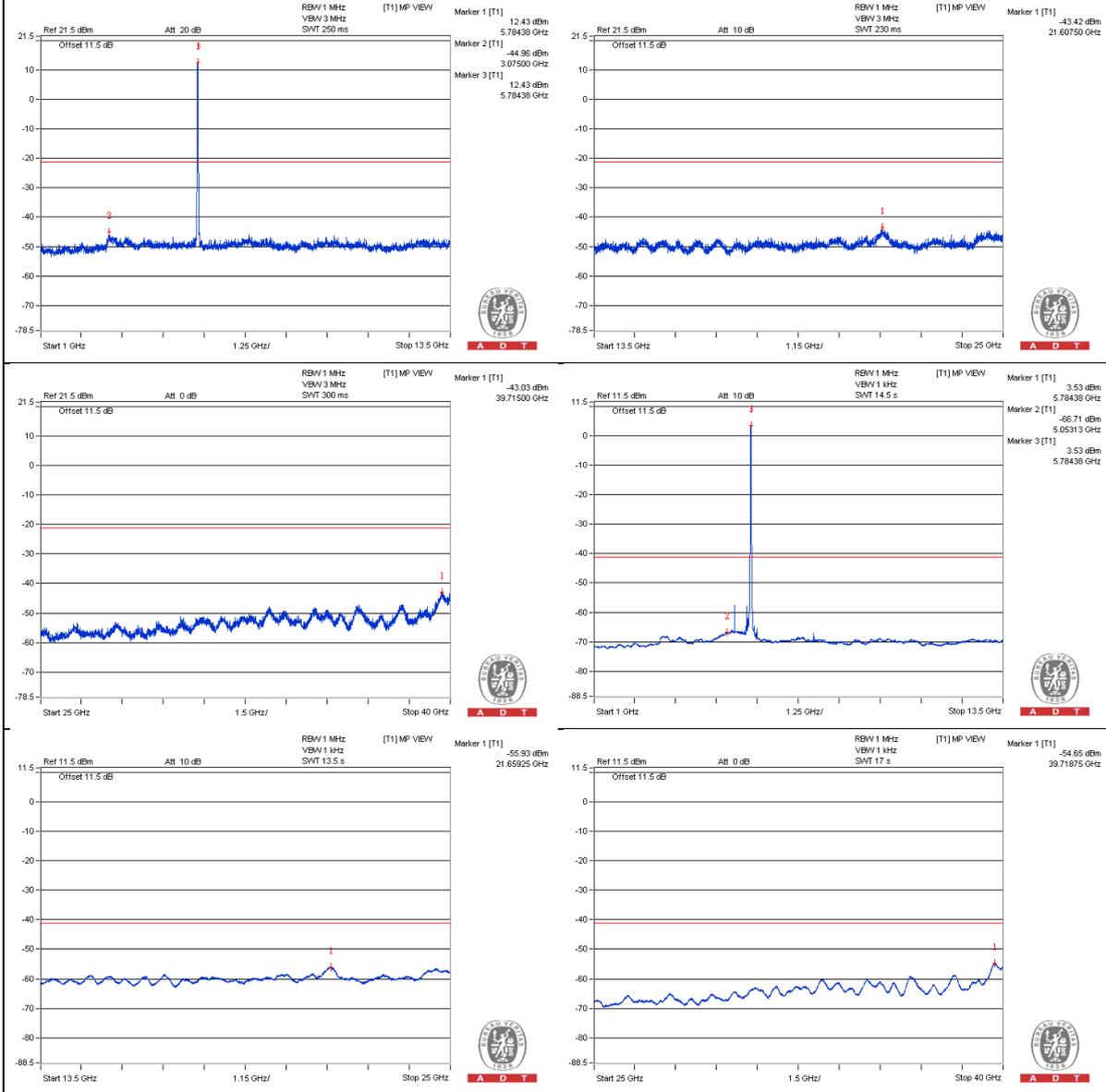
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3856.25 PK	55.41	74	-18.59	-50.9	-50.37	7.77	-39.85
2	3856.25 AV	35.57	54	-18.43	-70.24	-70.72	7.77	-59.69
3	7712.5 PK	56.38	74	-17.62	-49.2	-50.18	7.77	-38.88
4	7712.5 AV	37.98	54	-16.02	-67.02	-69.43	7.77	-57.28
5	11568.75 PK	55.44	74	-18.56	-49.69	-51.75	7.77	-39.82
6	11571.875 AV	35.35	54	-18.65	-71.27	-70.18	7.77	-59.91
7	17355.375 PK	54.44	74	-19.56	-52	-51.23	7.77	-40.82
8	17355.375 AV	44.12	54	-9.88	-61.83	-62.02	7.77	-51.14

Note :

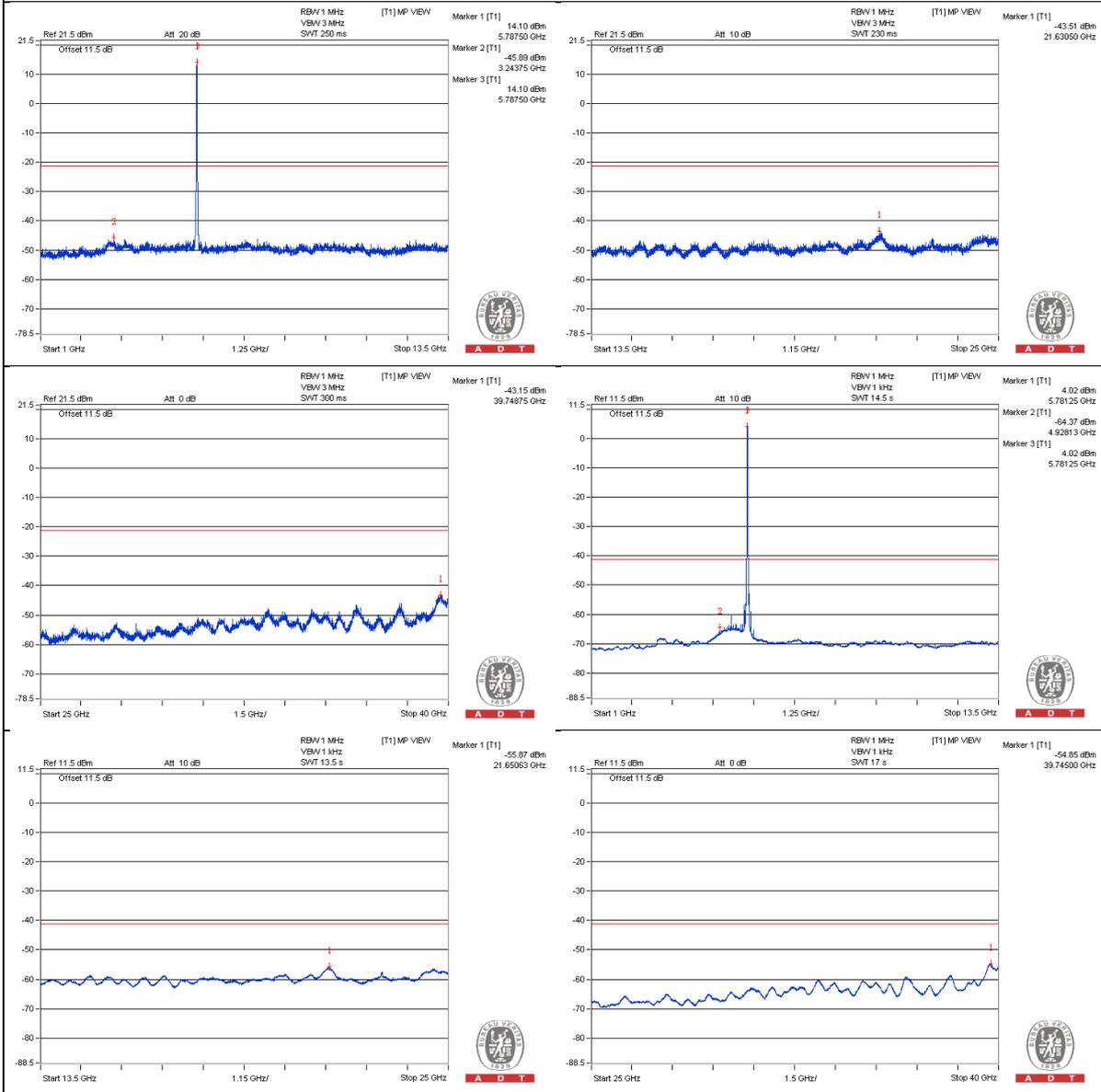
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



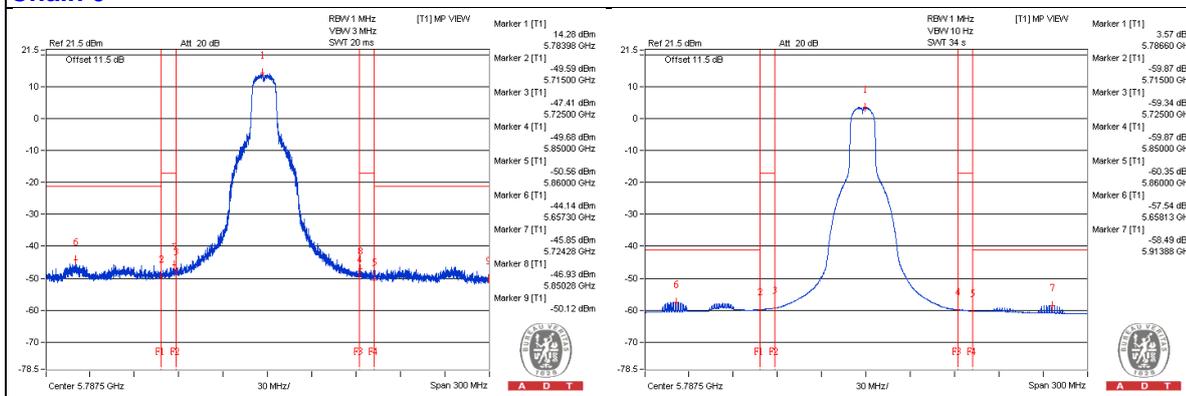
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5712.725 PK	57.95	68.2	-10.25	-47.87	-48.32	7.77	-37.31
2	5724.275 PK	59.25	78.2	-18.95	-45.85	-47.99	7.77	-36.01
3	5854.25 PK	58.7	78.2	-19.5	-48.42	-46.47	7.77	-36.56
4	5860.325 PK	57.69	68.2	-10.51	-47.62	-49.22	7.77	-37.57

Note :

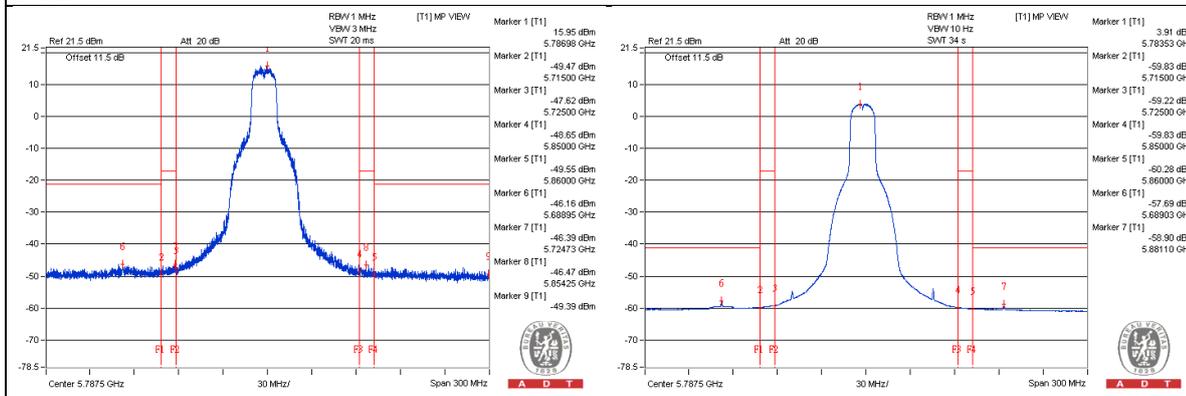
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



## 802.11a - Channel 165

### Conducted spurious emission table

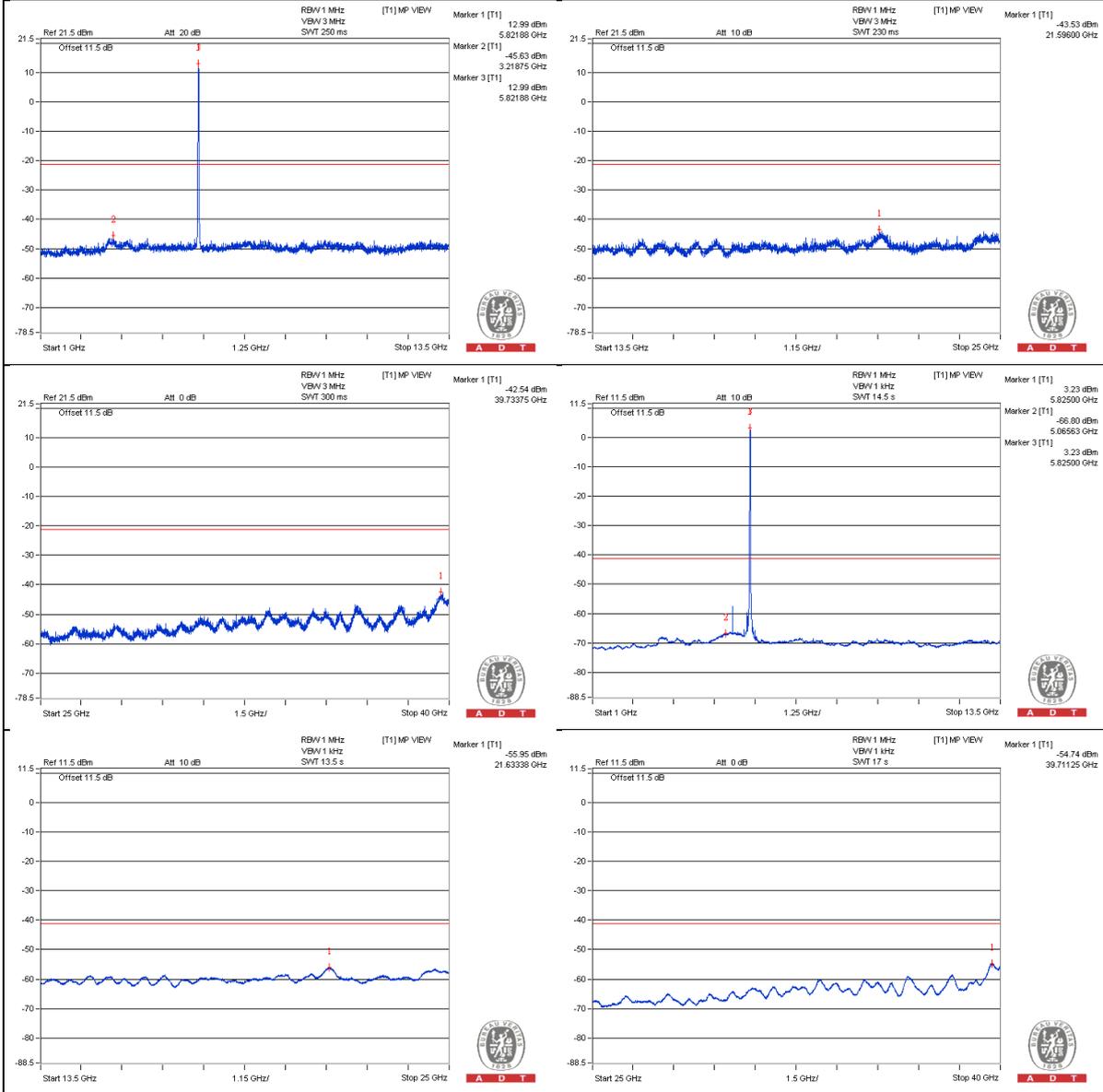
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	56.57	74	-17.43	-49.52	-49.43	7.77	-38.69
2	3884.375 AV	35.65	54	-18.35	-70.26	-70.52	7.77	-59.61
3	7765.625 PK	56.62	74	-17.38	-49.85	-49.03	7.77	-38.64
4	7765.625 AV	37.22	54	-16.78	-68.48	-69.2	7.77	-58.04
5	11650 PK	54.3	74	-19.7	-52.05	-51.46	7.77	-40.96
6	11650 AV	35.64	54	-18.36	-71.13	-69.77	7.77	-59.62
7	17476.125 PK	56.41	74	-17.59	-50.52	-48.9	7.77	-38.85
8	17473.25 AV	45.87	54	-8.13	-60.34	-60.01	7.77	-49.39

Note :

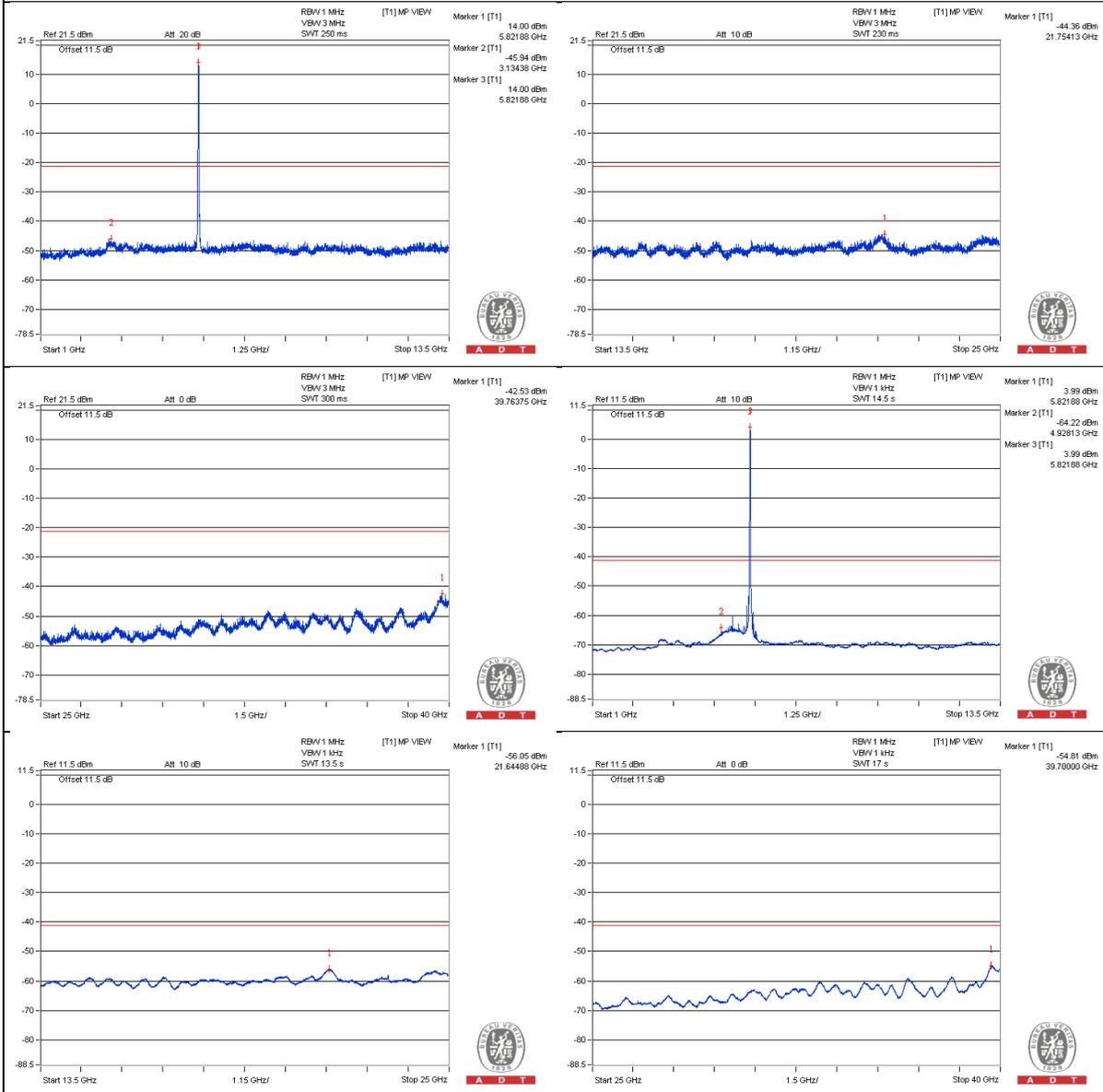
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**Bandedge table**

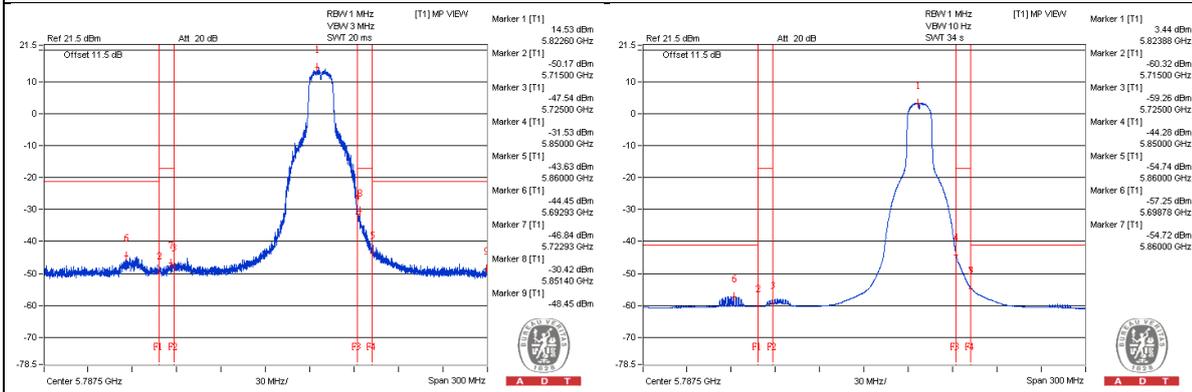
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5851.4 PK	73.6	78.2	-4.6	-30.42	-36.35	7.77	-21.66
2	5866.85 PK	62.54	68.2	-5.66	-44.58	-42.64	7.77	-32.72

Note :

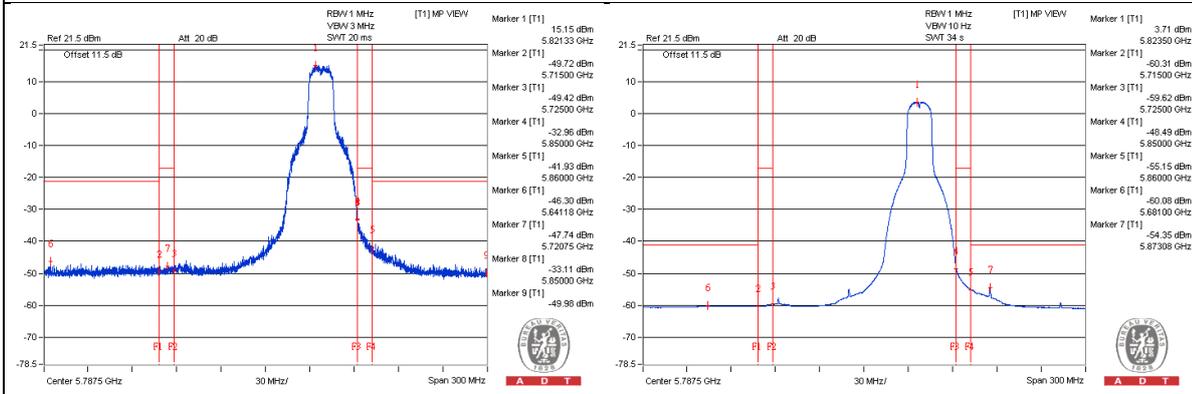
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



## 802.11ac (VHT20) - Channel 144

### Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3800 PK	55.65	74	-18.35	-51.35	-49.6	7.77	-39.61
2	3793.75 AV	34.55	54	-19.45	-71.43	-71.56	7.77	-60.71
3	7640.625 PK	56.23	74	-17.77	-48.89	-50.99	7.77	-39.03
4	7628.125 AV	35.83	54	-18.17	-69.29	-71.38	7.77	-59.43
5	11450 PK	55.27	74	-18.73	-50.13	-51.51	7.77	-39.99
6	11440.625 AV	33.77	54	-20.23	-72.5	-72.06	7.77	-61.49
7	17148.375 PK	54.25	74	-19.75	-51.8	-51.79	7.77	-41.01
8	17145.5 AV	43.33	54	-10.67	-62.76	-62.66	7.77	-51.93

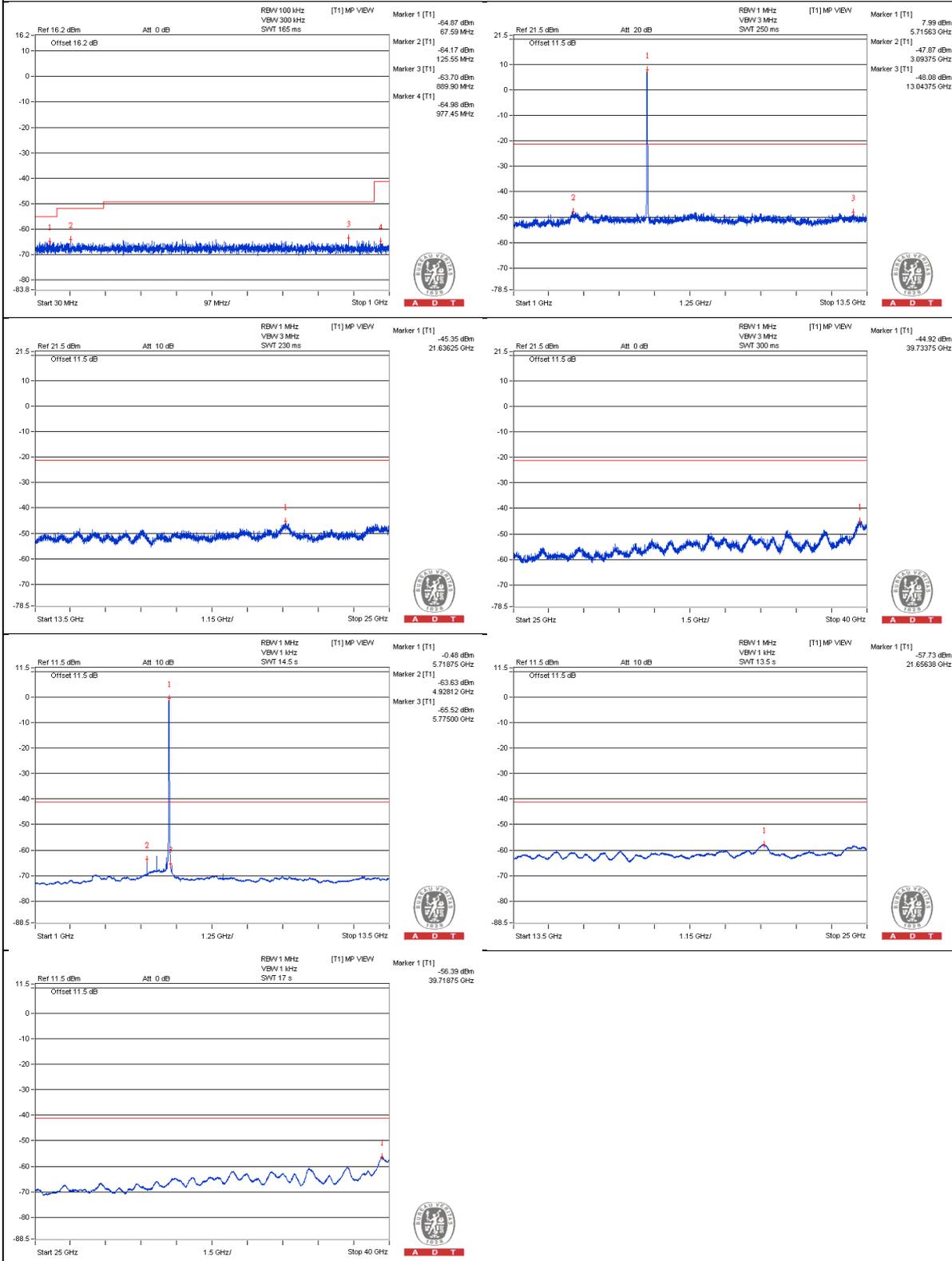
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

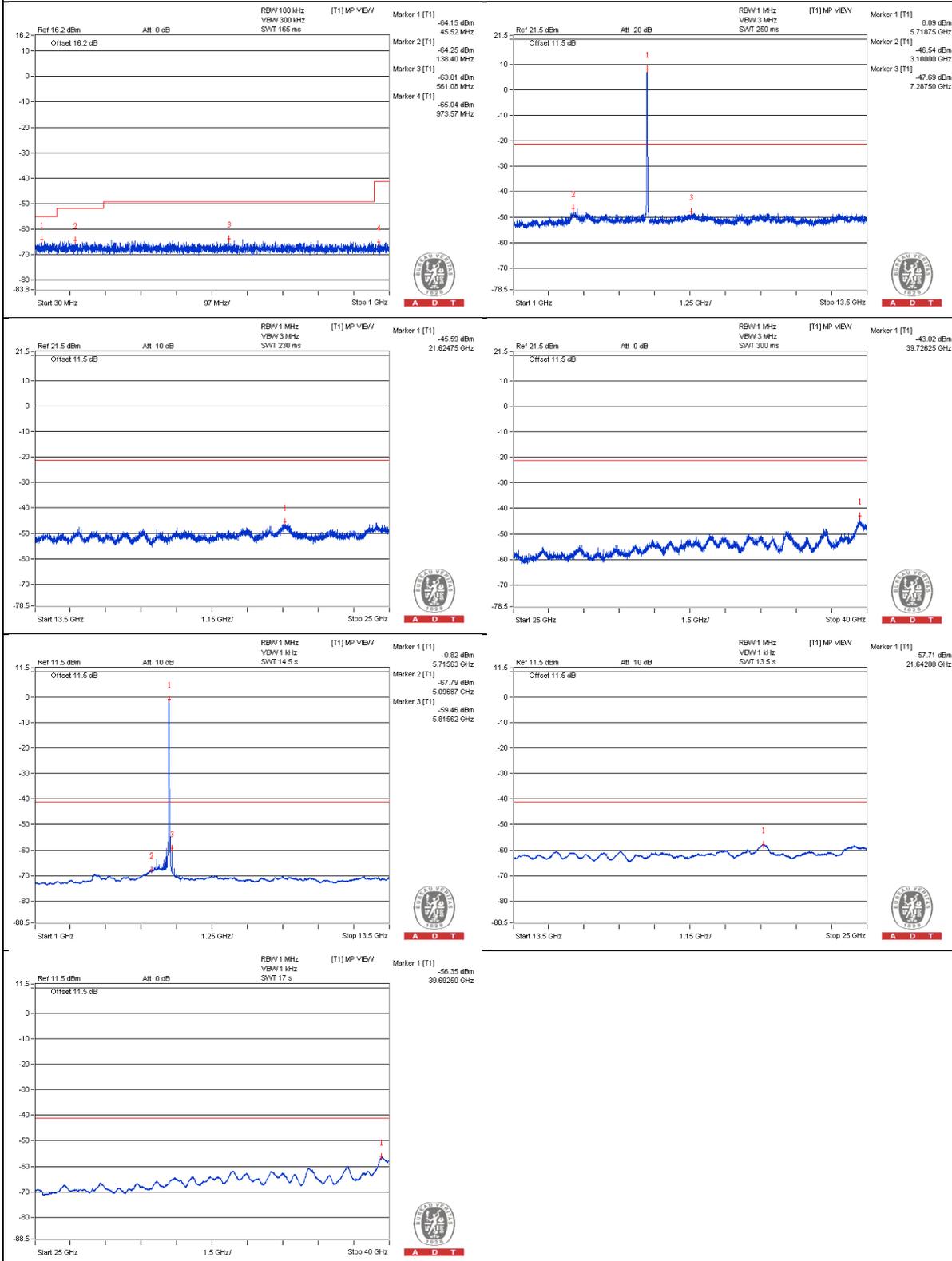
d = measurement distance in 3 meters.



### Chain 0



### Chain 1

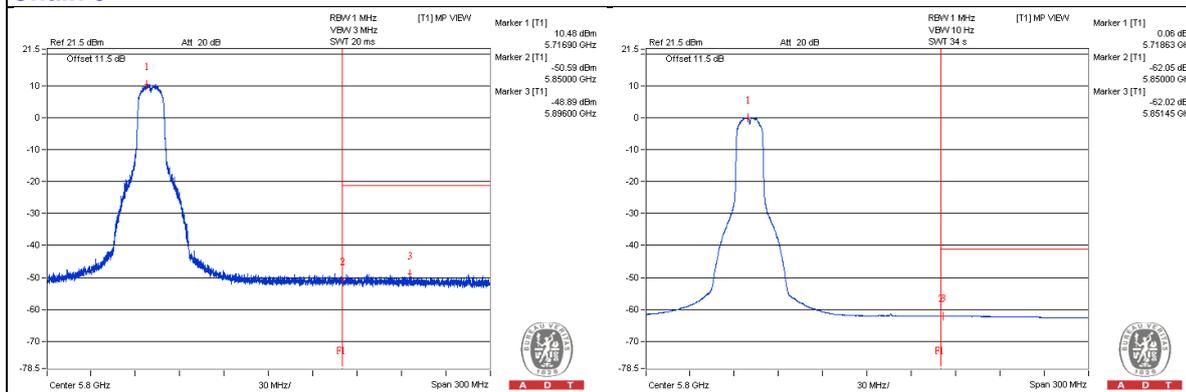


### Bandedge table

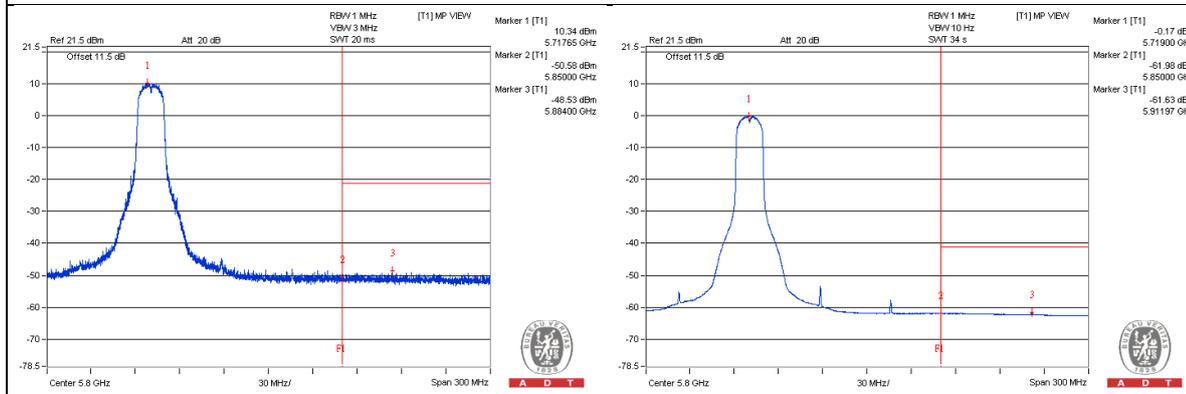
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5838.325 PK	56.47	74	-17.53	-50.25	-48.98	7.77	-38.79
2	5912.05 AV	44.07	54	-9.93	-62.35	-61.63	7.77	-51.19

Note :  
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT20) - Channel 149

#### Conducted spurious emission table

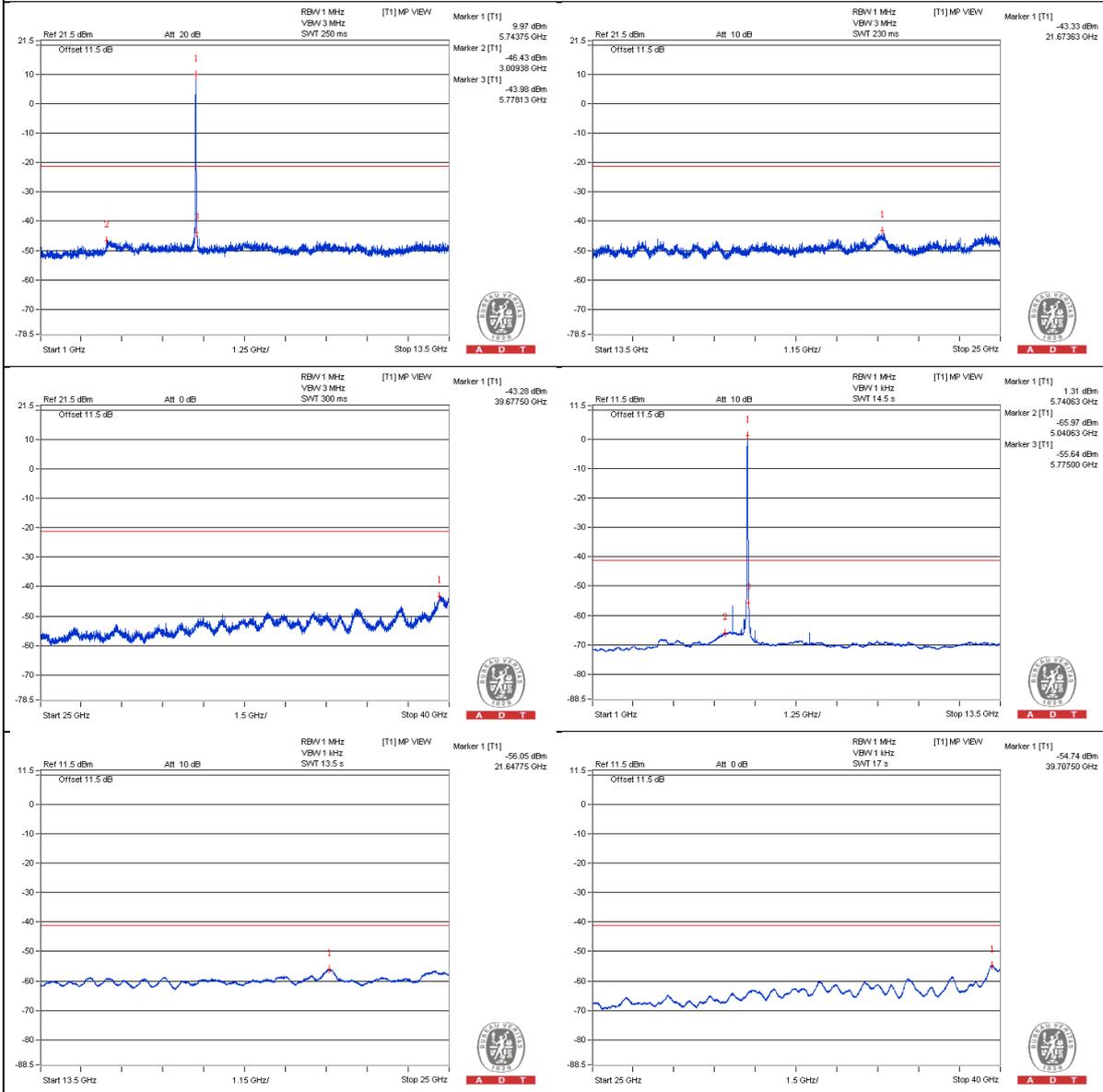
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3831.25 PK	56.2	74	-17.8	-50.54	-49.24	7.77	-39.06
2	3831.25 AV	35.59	54	-18.41	-70.45	-70.46	7.77	-59.67
3	7659.375 PK	56.41	74	-17.59	-49.48	-49.79	7.77	-38.85
4	7659.375 AV	38.57	54	-15.43	-66.12	-69.44	7.77	-56.69
5	11490.625 PK	55.85	74	-18.15	-51.09	-49.44	7.77	-39.41
6	11490.625 AV	35.59	54	-18.41	-70.91	-70.03	7.77	-59.67
7	17234.625 PK	54.57	74	-19.43	-52.21	-50.83	7.77	-40.69
8	17234.625 AV	43.66	54	-10.34	-62.41	-62.35	7.77	-51.6

Note :

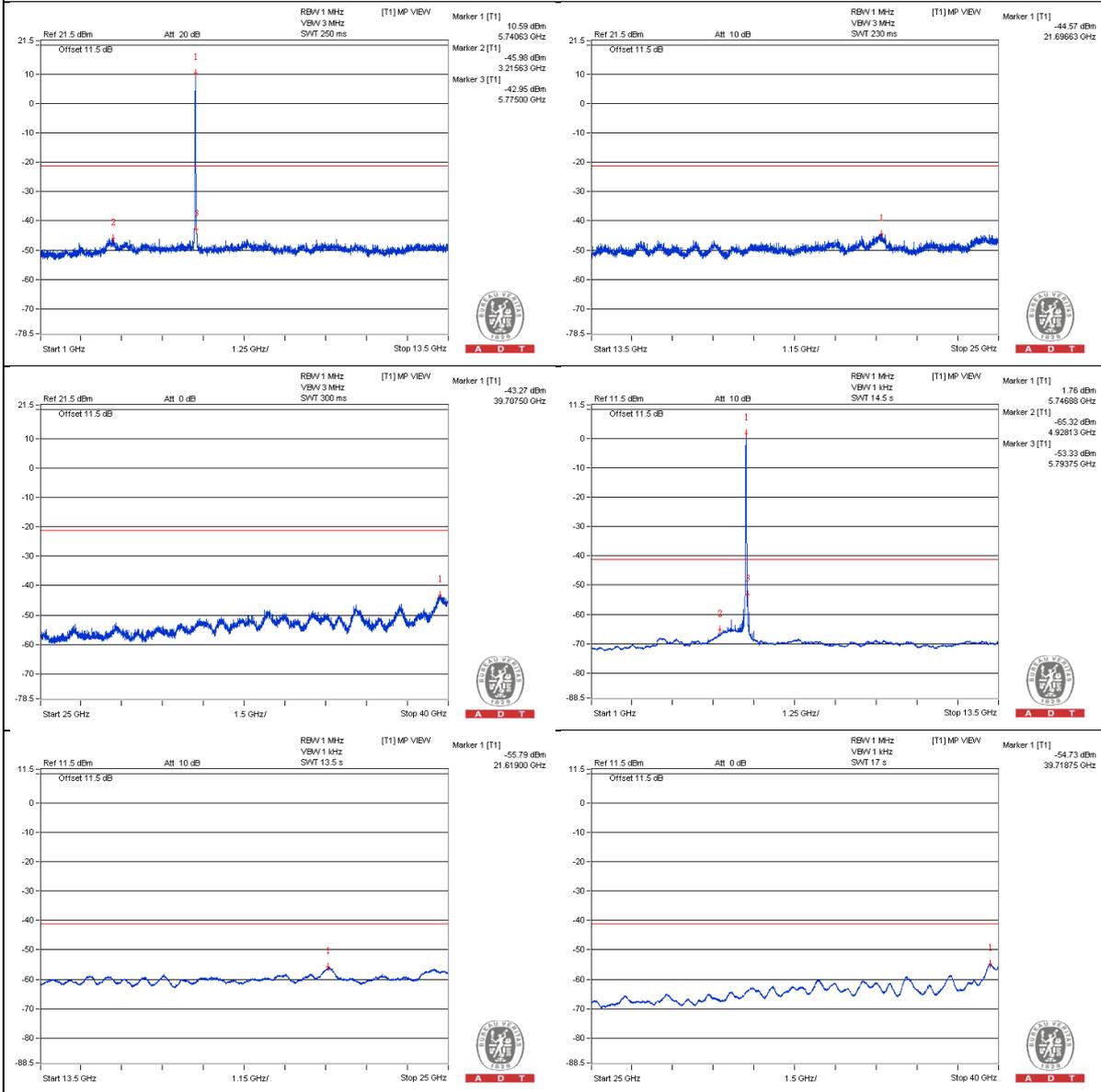
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



**Chain 1**



### Bandedge table

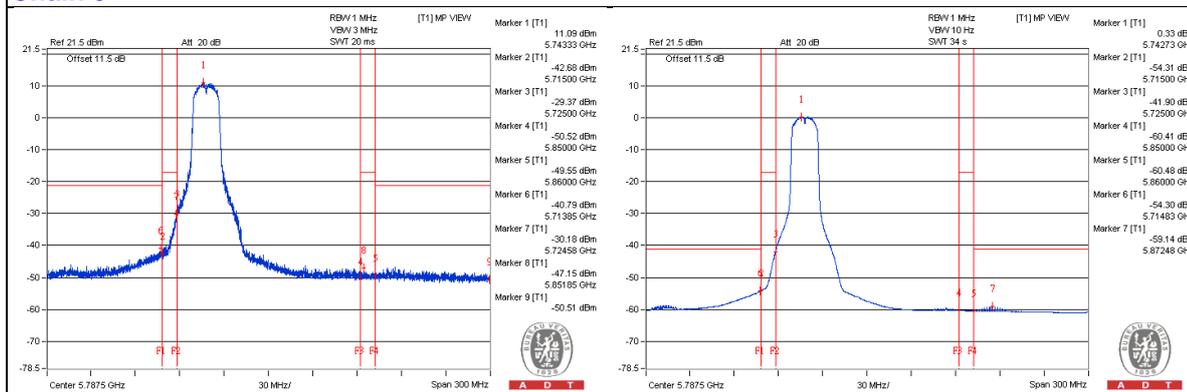
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5713.775 PK	64.44	68.2	-3.76	-40.91	-42.42	7.77	-30.82
2	5724.875 PK	74.63	78.2	-3.57	-31.98	-30.9	7.77	-20.63

Note :

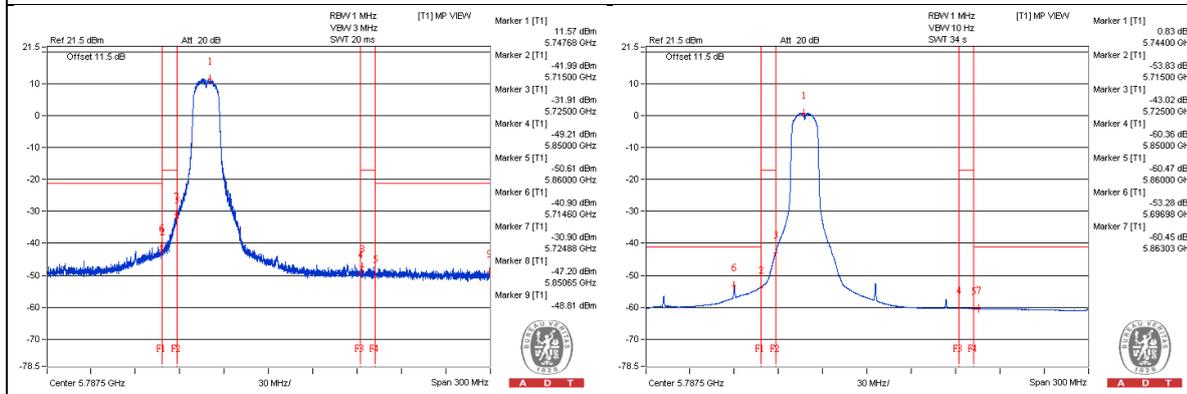
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT20) - Channel 157

#### Conducted spurious emission table

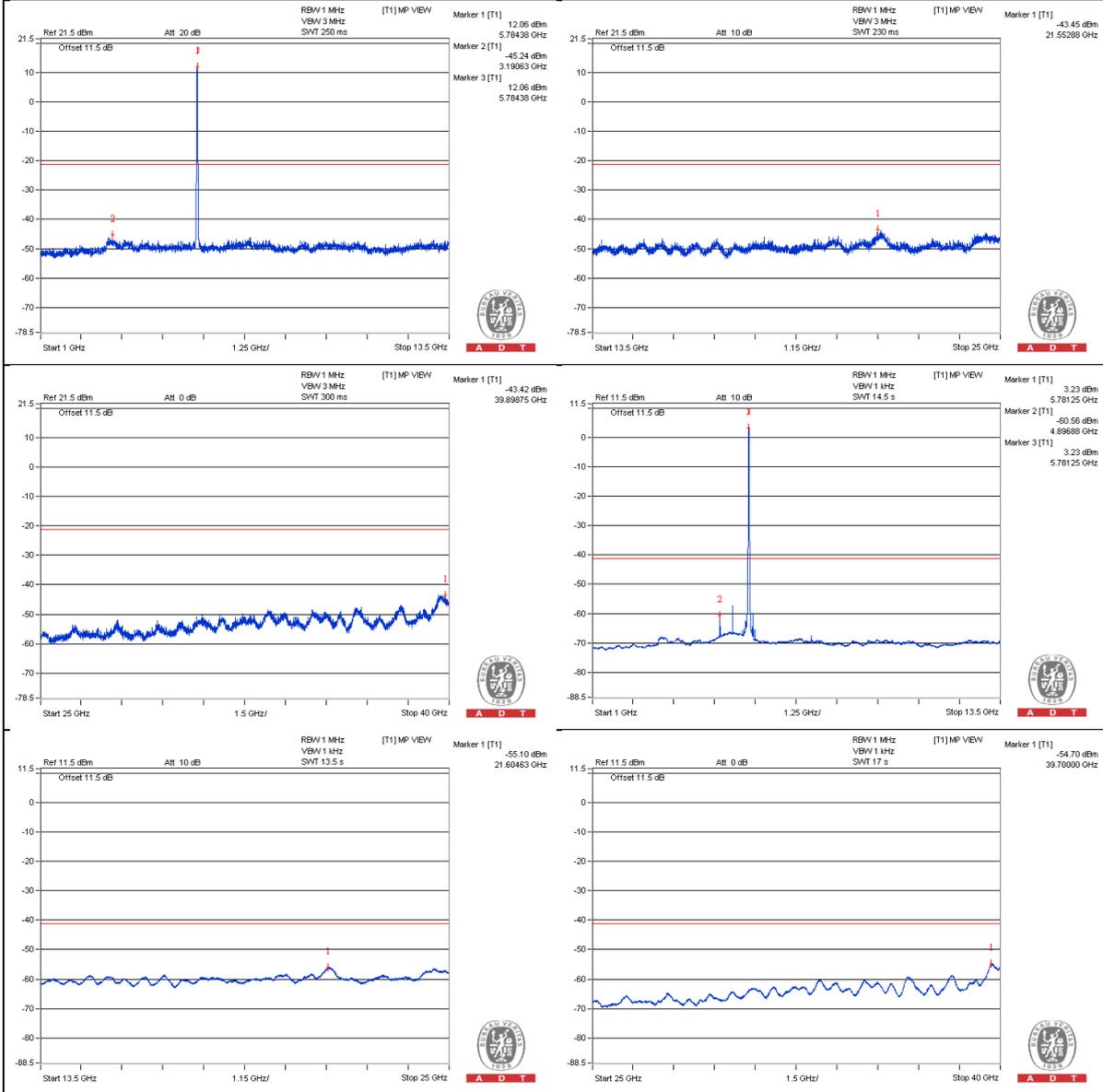
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3856.25 PK	55.25	74	-18.75	-50.49	-51.12	7.77	-40.01
2	3856.25 AV	35.46	54	-18.54	-70.6	-70.56	7.77	-59.8
3	7712.5 PK	56.75	74	-17.25	-48.96	-49.64	7.77	-38.51
4	7712.5 AV	37.83	54	-16.17	-67.46	-69.11	7.77	-57.43
5	11568.75 PK	55.04	74	-18.96	-51.34	-50.68	7.77	-40.22
6	11571.875 AV	35.46	54	-18.54	-71.4	-69.89	7.77	-59.8
7	17355.375 PK	54.57	74	-19.43	-51.78	-51.19	7.77	-40.69
8	17355.375 AV	43.93	54	-10.07	-62.12	-62.11	7.77	-51.33

Note :

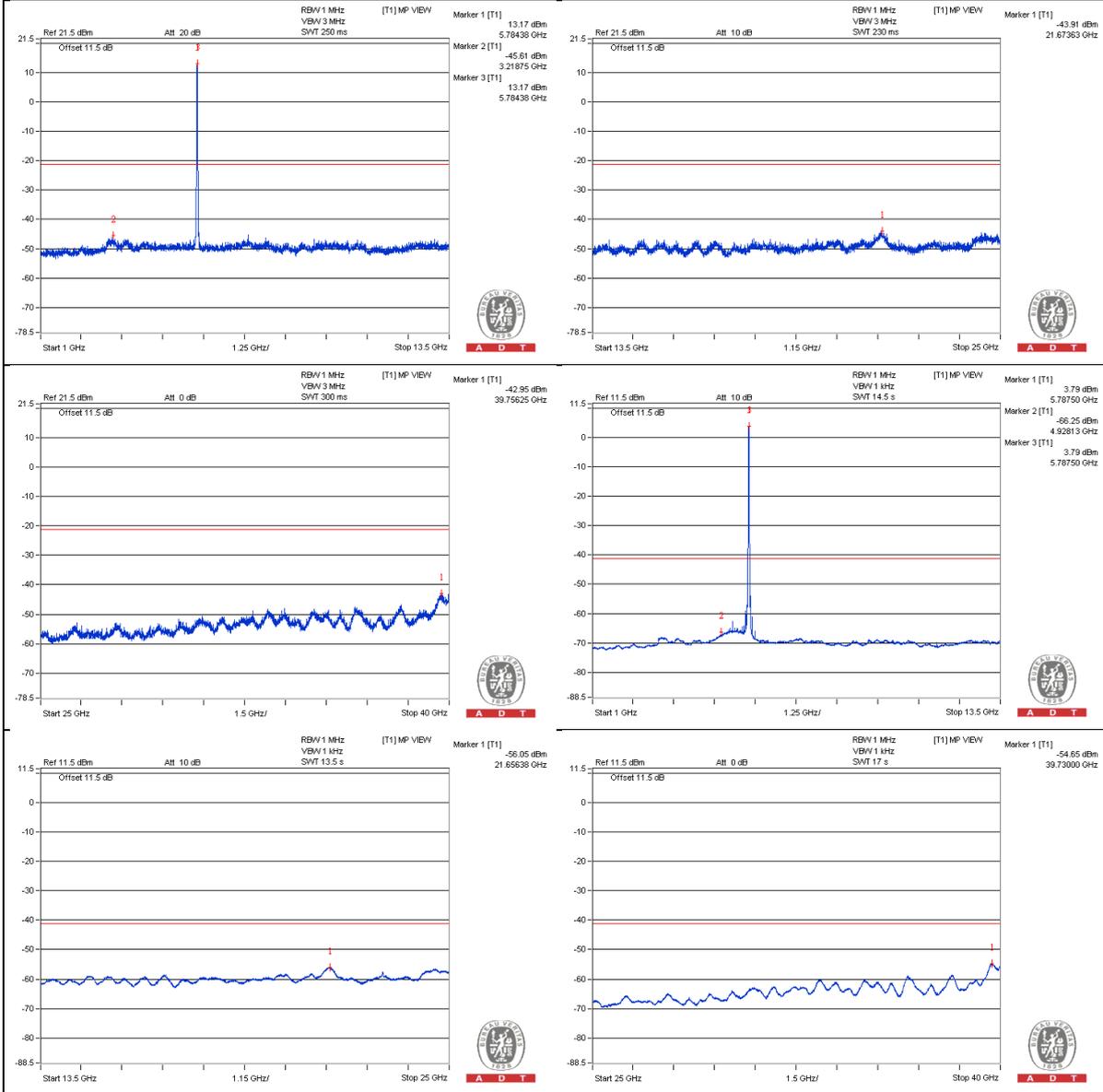
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

**Chain 0**



### Chain 1



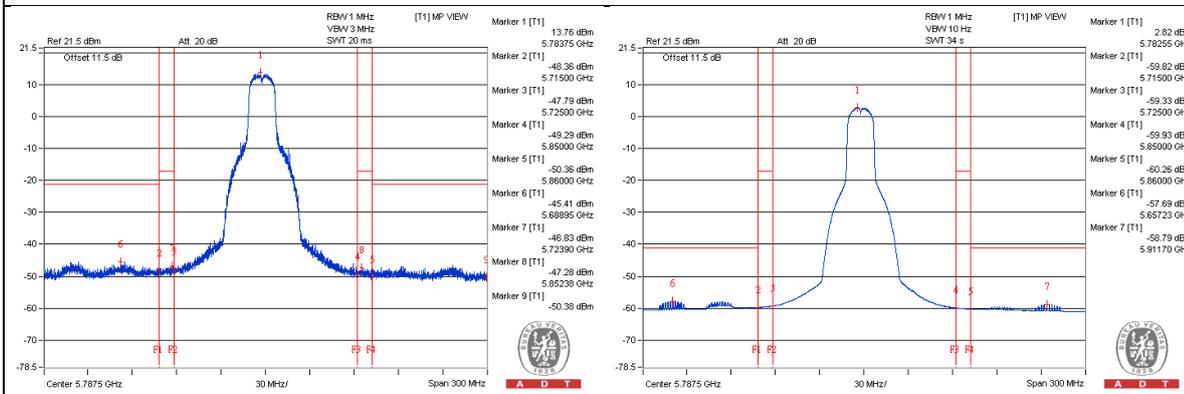
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5715.275 PK	58.74	68.2	-9.46	-48.57	-46.32	7.77	-36.52
2	5724.275 PK	59.31	78.2	-18.89	-46.38	-47.12	7.77	-35.95
3	5853.725 PK	58.22	78.2	-19.98	-47.04	-48.76	7.77	-37.04
4	5860.4 PK	58.16	68.2	-10.04	-48.38	-47.44	7.77	-37.1

Note :

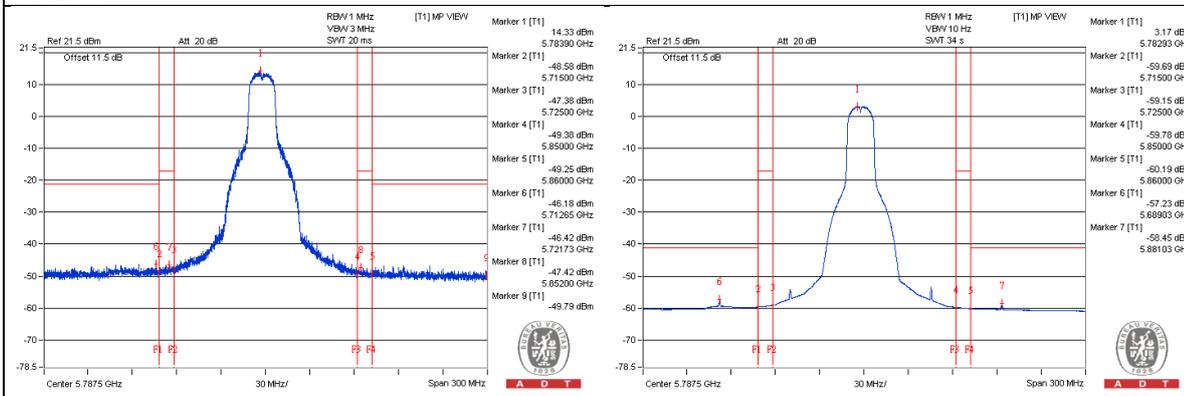
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### 802.11ac (VHT20) - Channel 165

#### Conducted spurious emission table

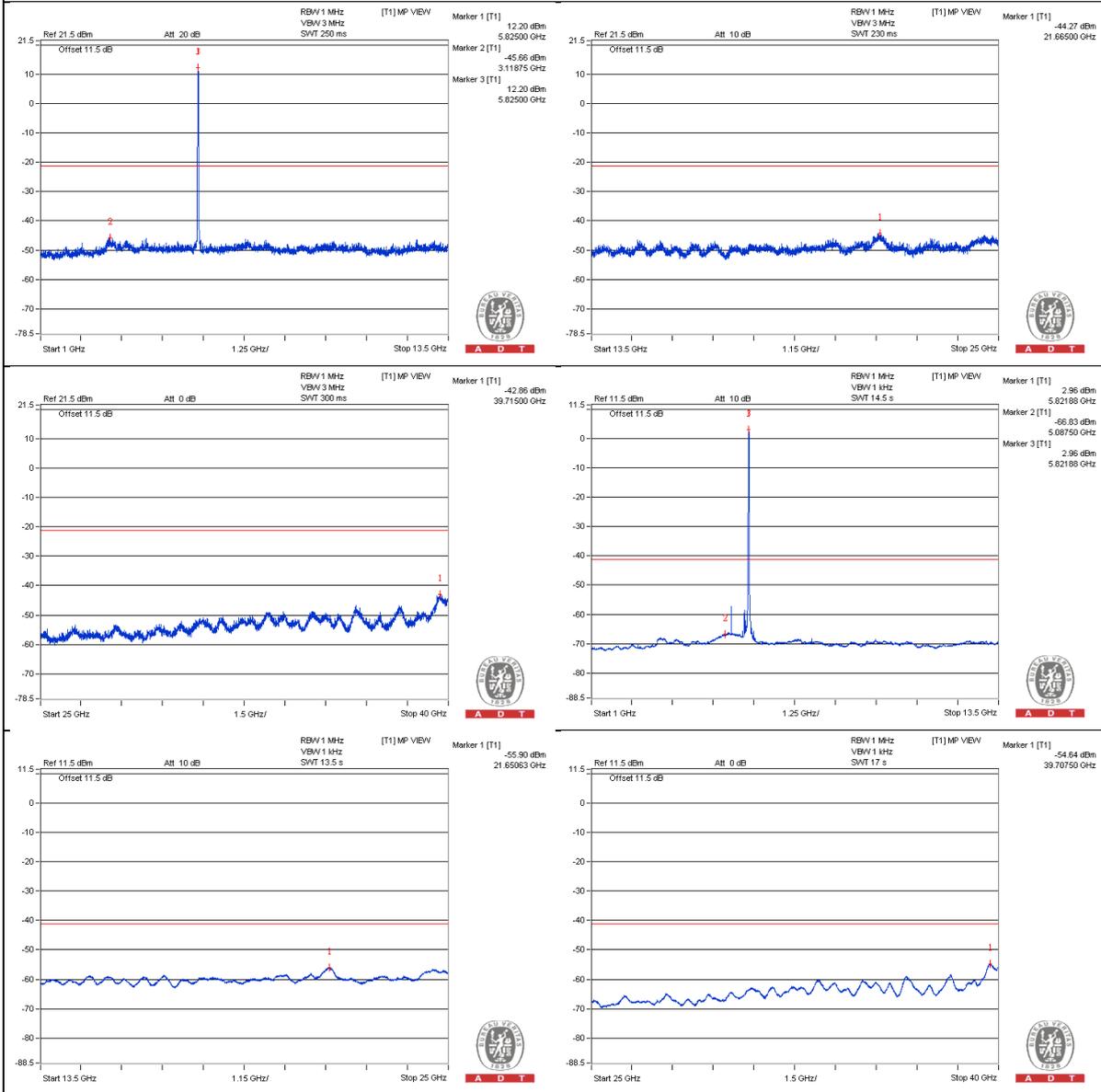
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	56.04	74	-17.96	-49.85	-50.16	7.77	-39.22
2	3884.375 AV	35.65	54	-18.35	-70.37	-70.42	7.77	-59.61
3	7765.625 PK	56.27	74	-17.73	-49.84	-49.71	7.77	-38.99
4	7765.625 AV	37.36	54	-16.64	-68.29	-69.1	7.77	-57.9
5	11650 PK	55.21	74	-18.79	-50.99	-50.68	7.77	-40.05
6	11650 AV	35.73	54	-18.27	-71.14	-69.62	7.77	-59.53
7	17473.25 PK	56.59	74	-17.41	-49.19	-49.72	7.77	-38.67
8	17476.125 AV	45.81	54	-8.19	-60.42	-60.04	7.77	-49.45

Note :

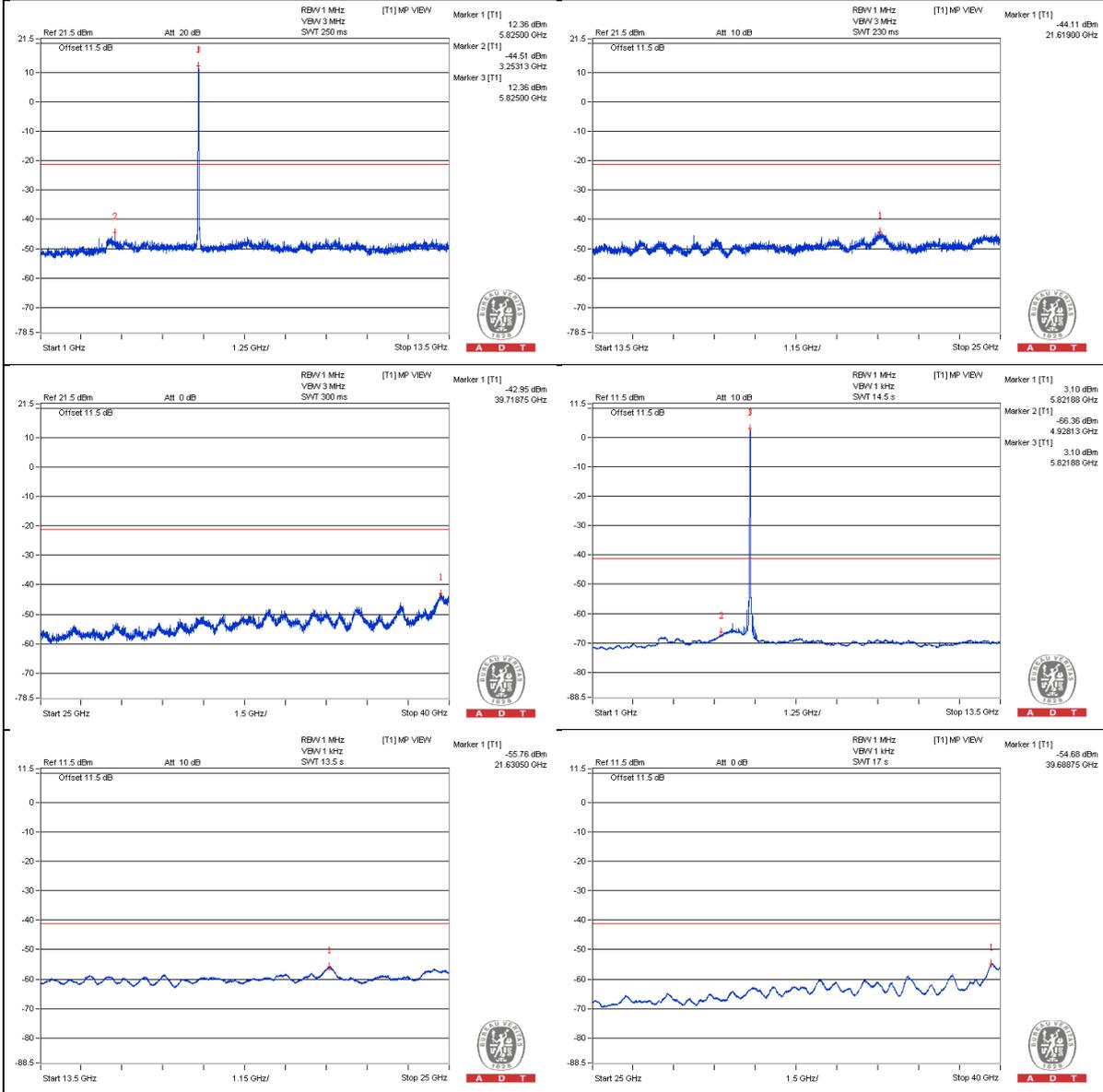
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



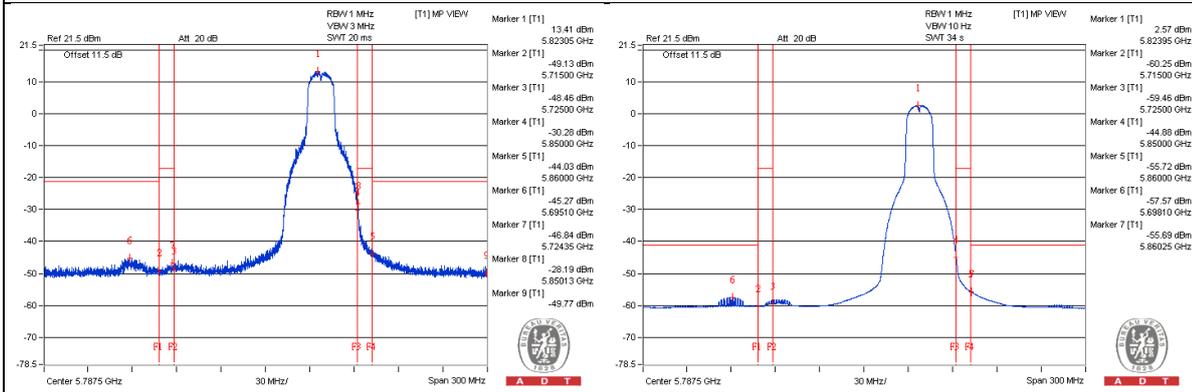
**Bandedge table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5850.125 PK	76.4	78.2	-1.8	-28.19	-31.83	7.77	-18.86
2	5860.475 PK	63.07	68.2	-5.13	-44.08	-42.09	7.77	-32.19

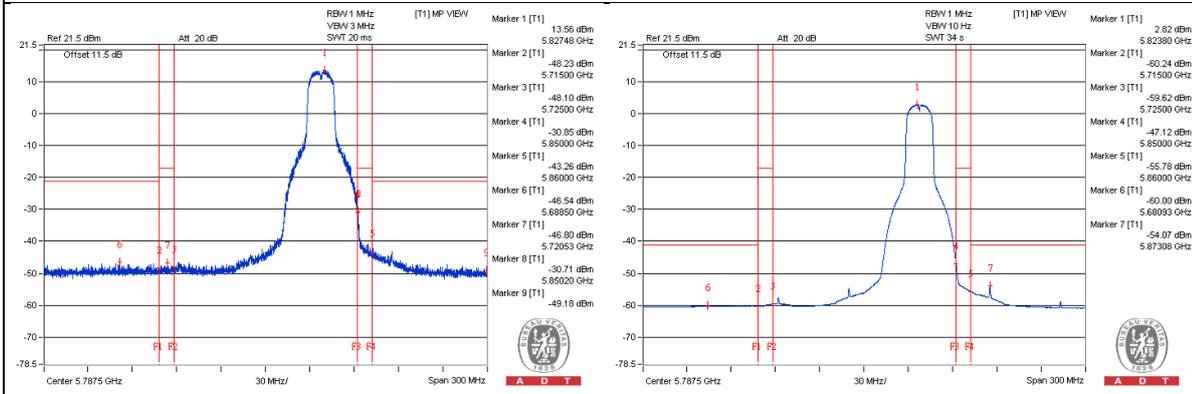
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



## 802.11ac (VHT40) - Channel 142

### Conducted spurious emission table

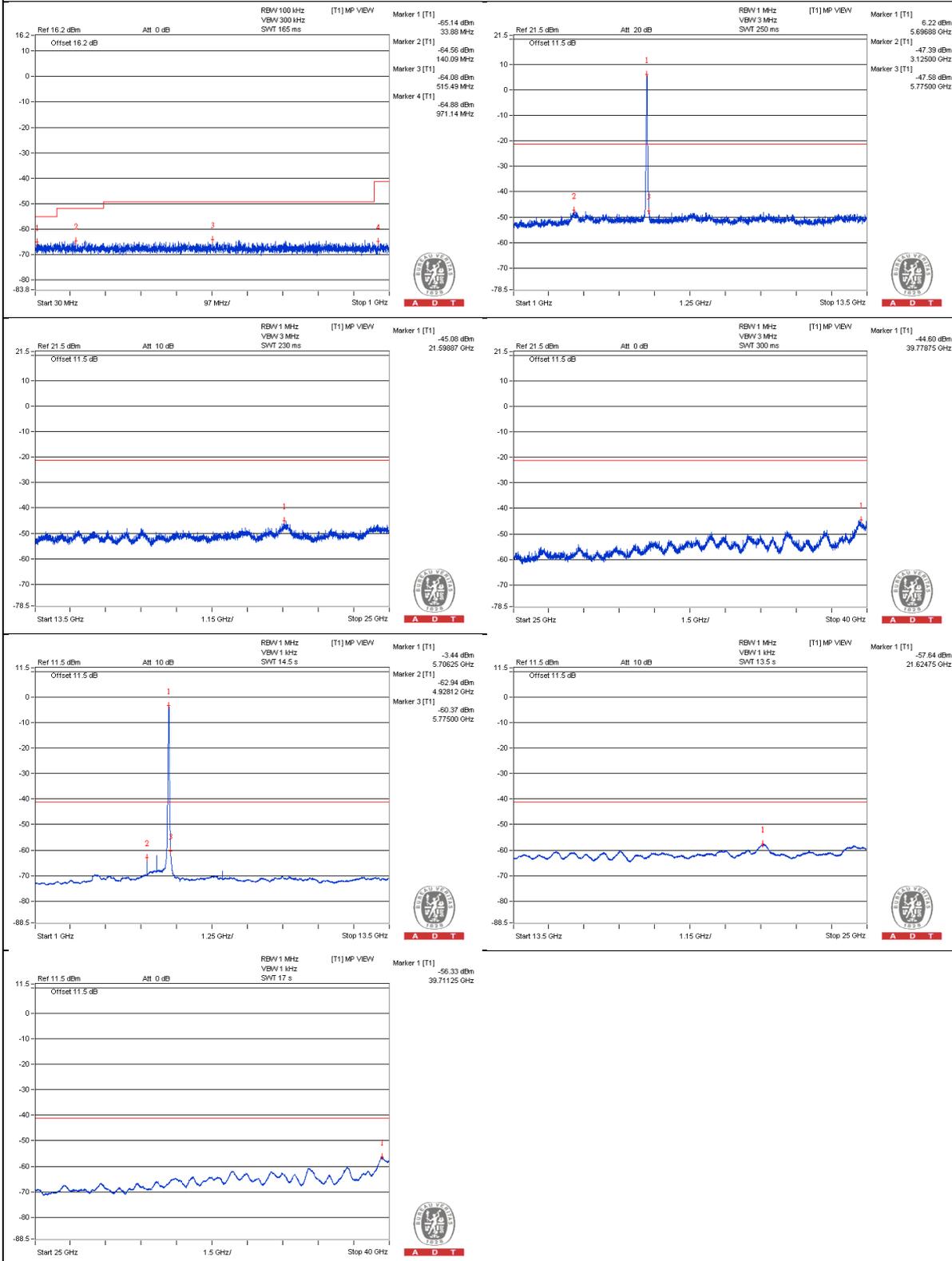
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3796.875 PK	55.67	74	-18.33	-51.47	-49.5	7.77	-39.59
2	3790.625 AV	34.76	54	-19.24	-71.44	-71.13	7.77	-60.5
3	7596.875 PK	56.65	74	-17.35	-50.62	-48.44	7.77	-38.61
4	7612.5 AV	36.42	54	-17.58	-68.38	-71.35	7.77	-58.84
5	11409.375 PK	54.38	74	-19.62	-52.22	-51.17	7.77	-40.88
6	11412.5 AV	33.75	54	-20.25	-72.24	-72.34	7.77	-61.51
7	17128.25 PK	55.03	74	-18.97	-51.93	-50.26	7.77	-40.23
8	17116.75 AV	43.76	54	-10.24	-62.29	-62.28	7.77	-51.5

Note :

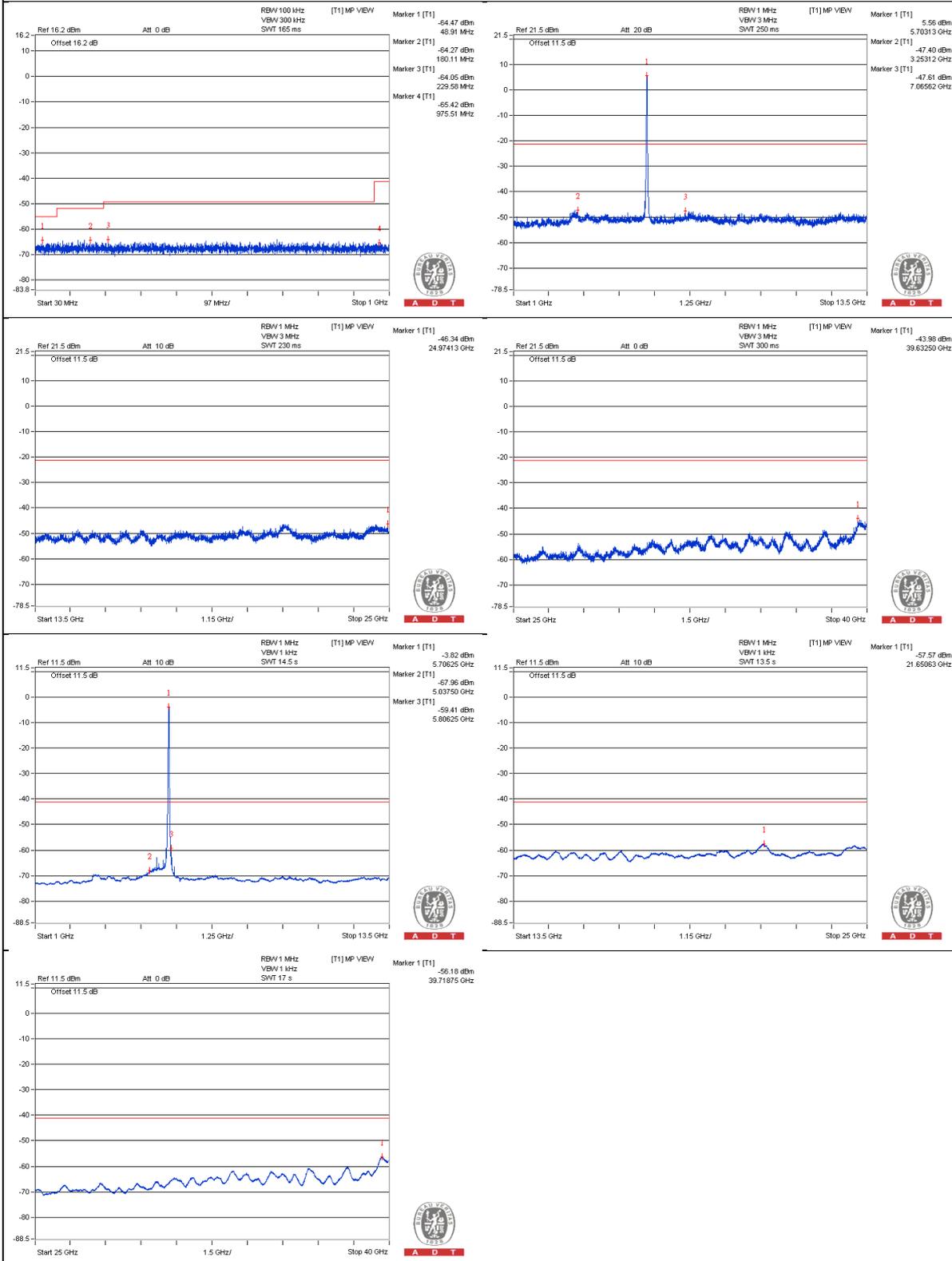
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1

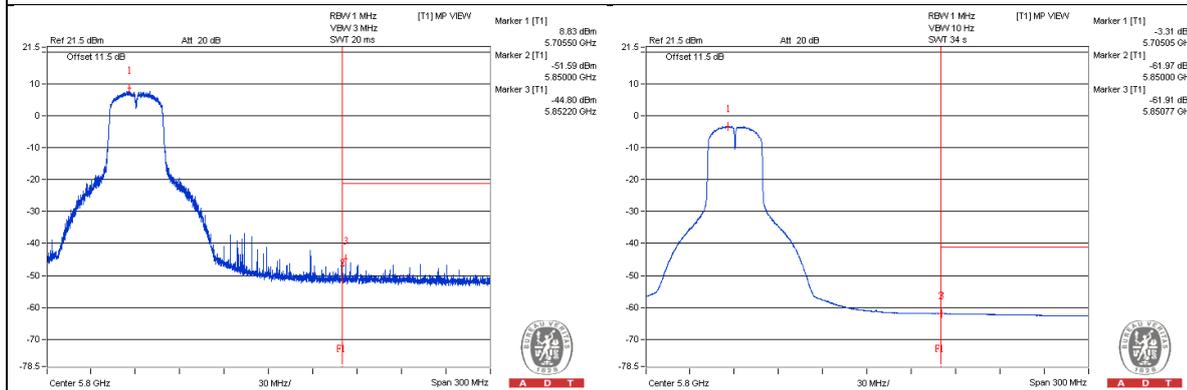


### Bandedge table

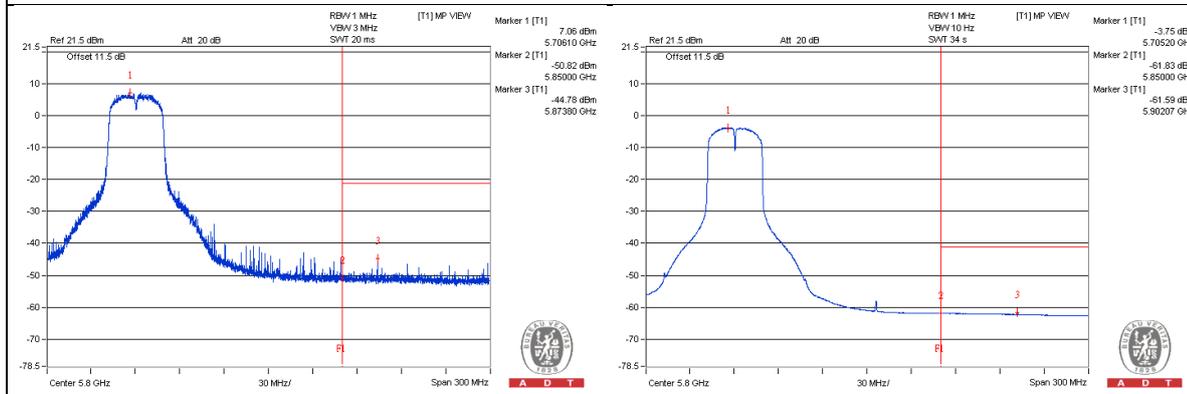
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5828.125 PK	61.44	74	-12.56	-42.13	-50.89	7.77	-33.82
2	5825.35 AV	44.23	54	-9.77	-61.84	-61.78	7.77	-51.03

Note :  
 $Emission\ Level\ (dBuV/m) = EIRP\ Level\ (dBm) - 20\log(d) + 104.8$   
 d = measurement distance in 3 meters.

### Chain 0



### Chain 1



802.11ac (VHT40) - Channel 151

Conducted spurious emission table

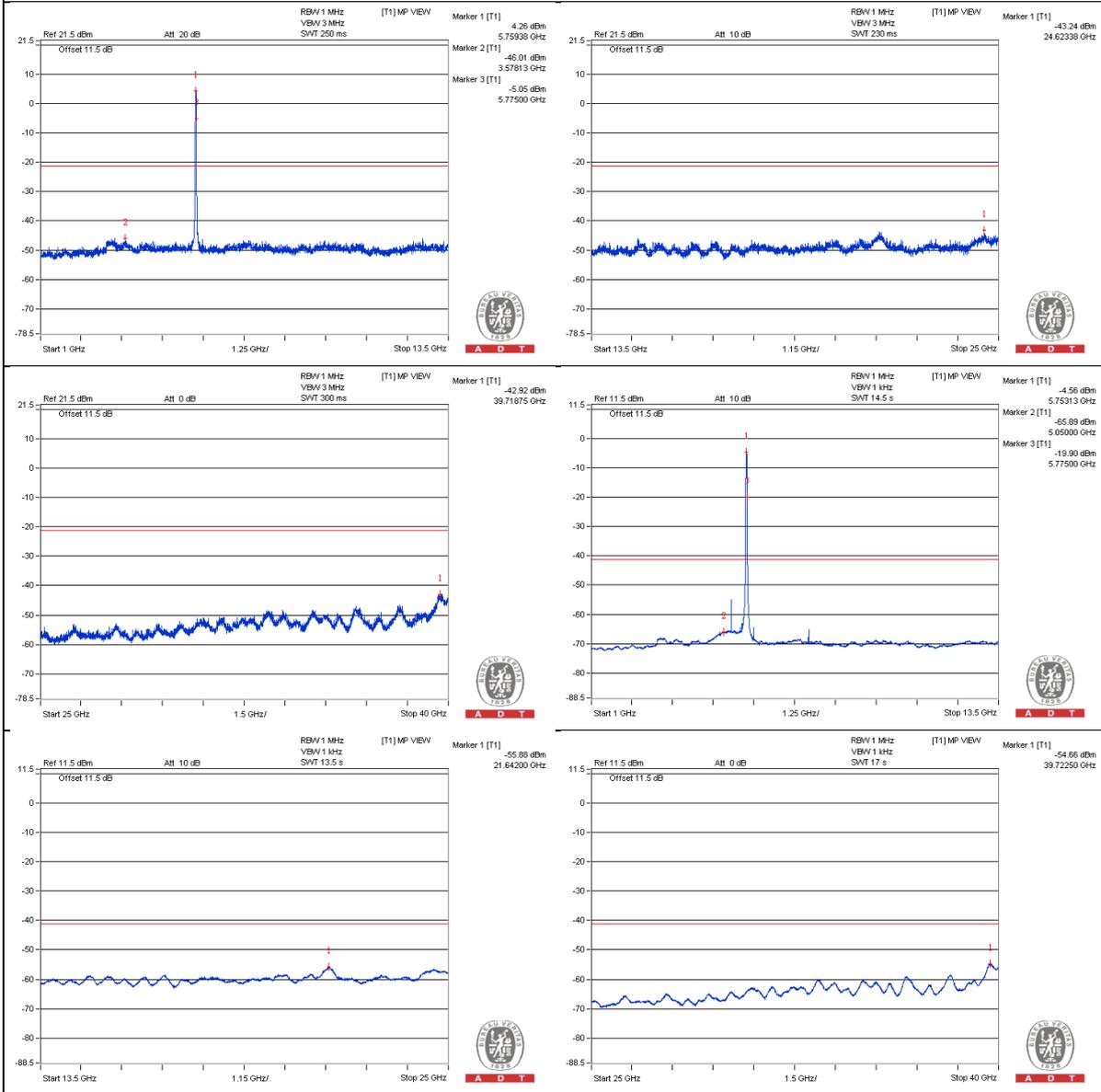
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3837.5 PK	55.91	74	-18.09	-50.54	-49.75	7.77	-39.35
2	3837.5 AV	35.61	54	-18.39	-70.27	-70.6	7.77	-59.65
3	7675 PK	57.4	74	-16.6	-48.8	-48.48	7.77	-37.86
4	7675 AV	39.21	54	-14.79	-65.15	-69.62	7.77	-56.05
5	11509.375 PK	55.83	74	-18.17	-50.54	-49.91	7.77	-39.43
6	11509.375 AV	35.21	54	-18.79	-71.07	-70.6	7.77	-60.05
7	17263.375 PK	53.79	74	-20.21	-52.93	-51.67	7.77	-41.47
8	17263.375 AV	43.38	54	-10.62	-62.51	-62.82	7.77	-51.88

Note :

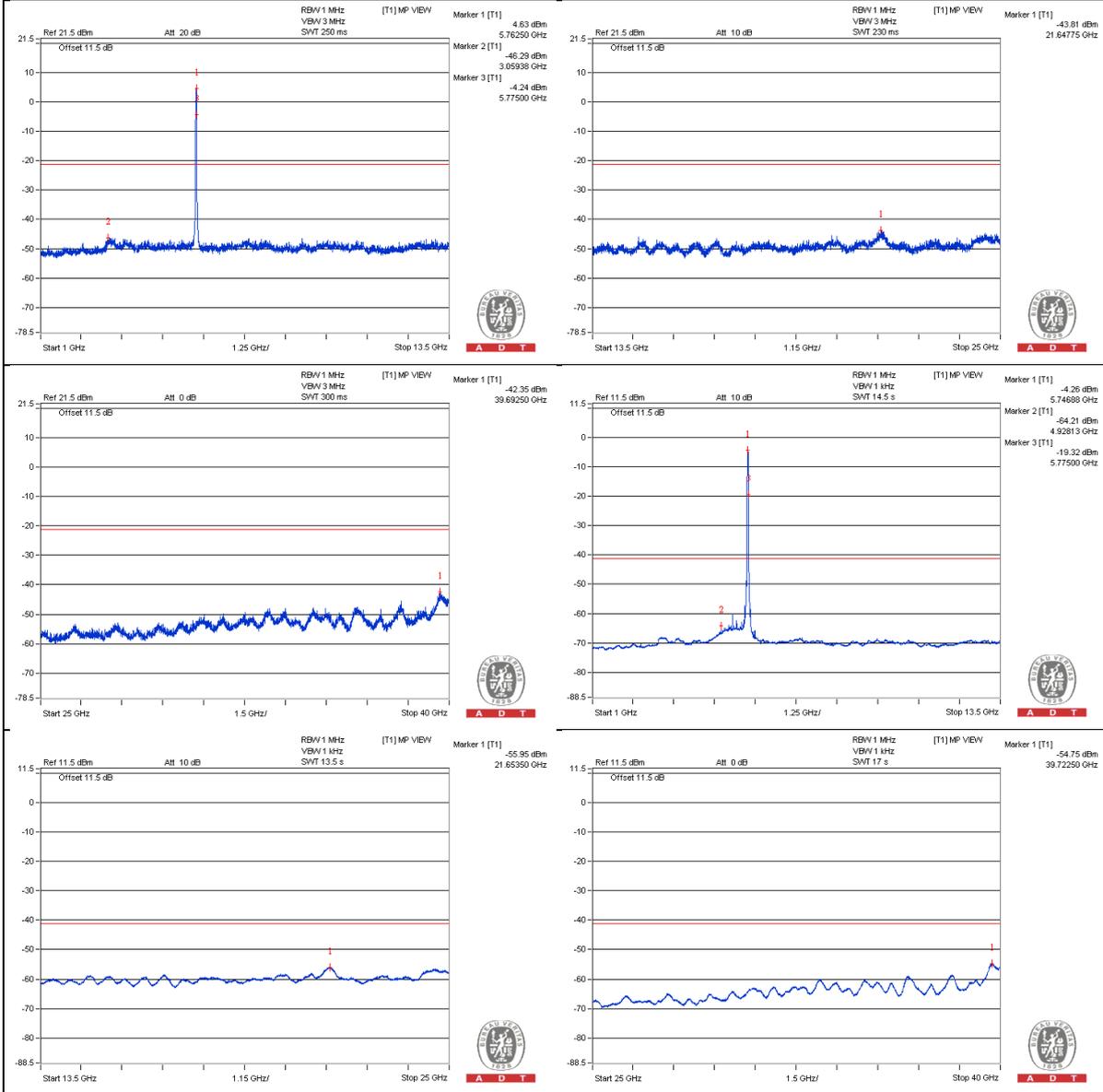
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**Bandedge table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5708.15 PK	69.13	68.2	* 0.93	-34.72	-41.54	7.77	-26.13
2	5724.95 PK	70.22	78.2	-7.98	-36.34	-35.36	7.77	-25.04

Note :

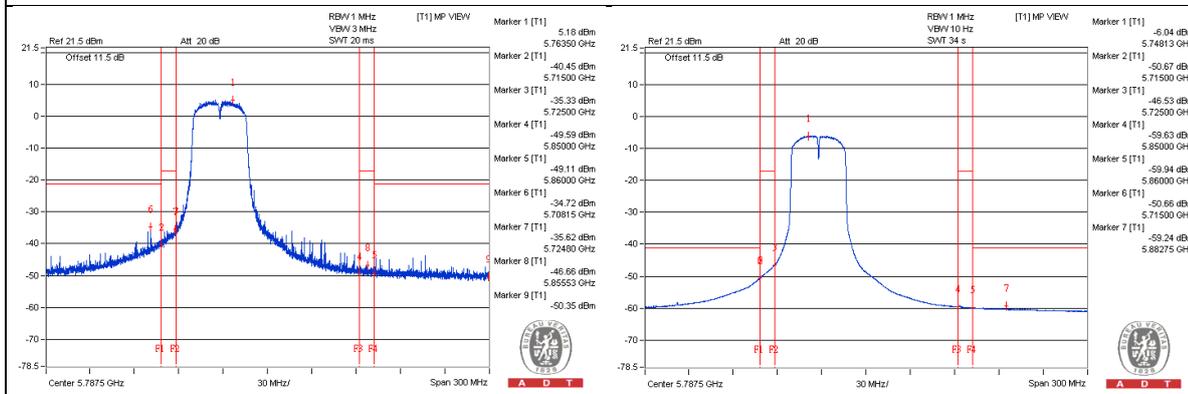
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

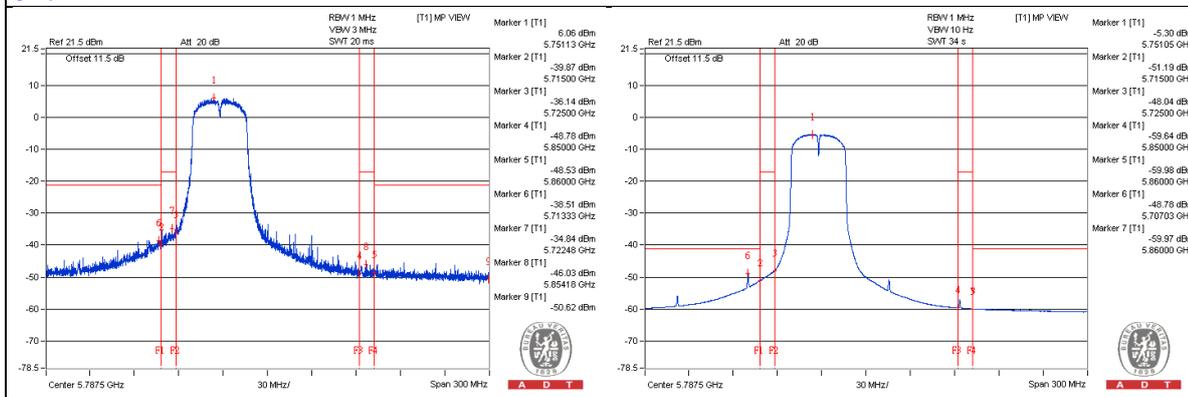
\* The unwanted emission was verified and the test result was passed by radiated measurement.

(Please refer APPENDIX A)

**Chain 0**



**Chain 1**



### 802.11ac (VHT40) - Channel 159

#### Conducted spurious emission table

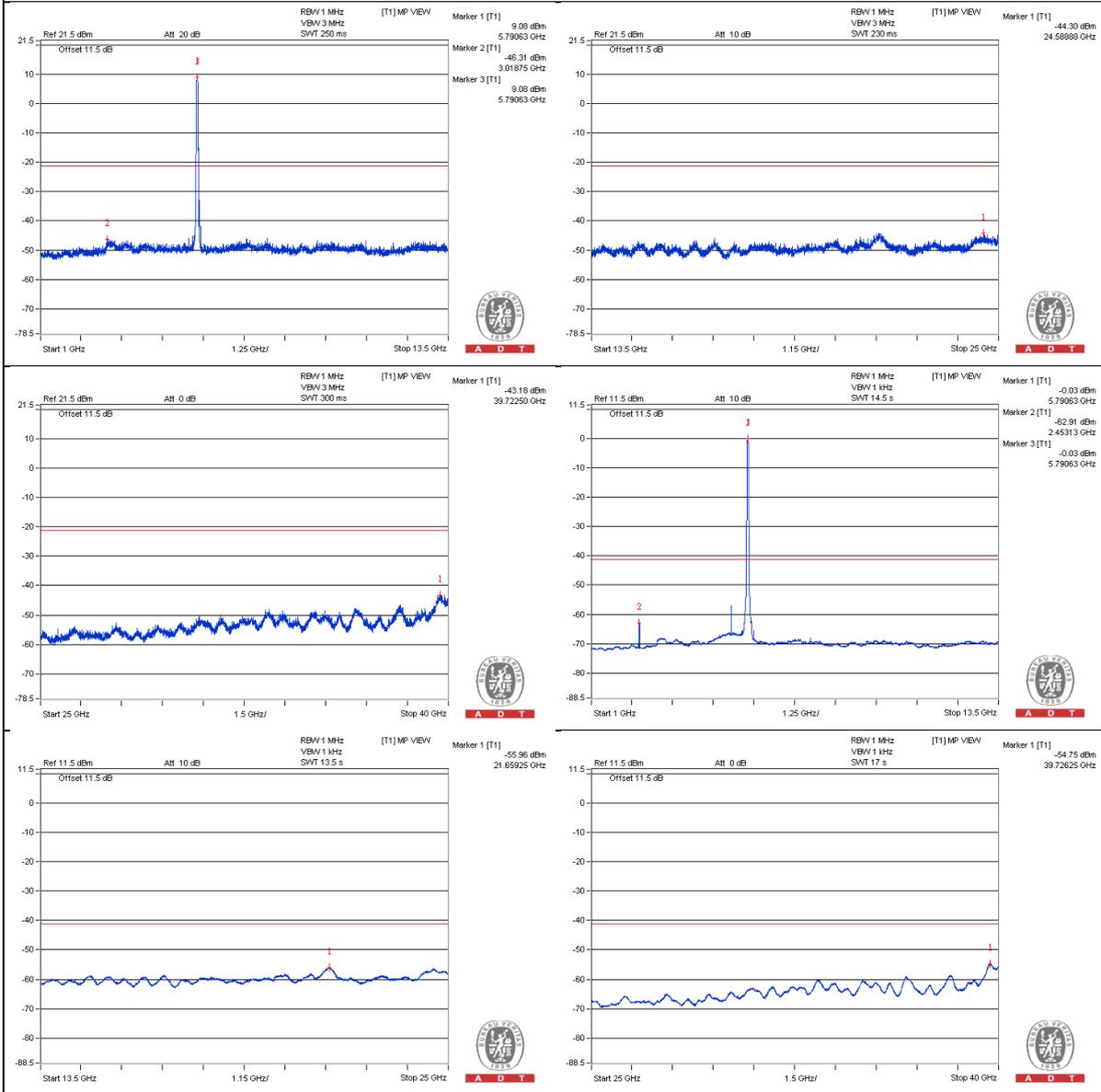
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3862.5 PK	55.81	74	-18.19	-49.95	-50.52	7.77	-39.45
2	3862.5 AV	35.41	54	-18.59	-70.54	-70.72	7.77	-59.85
3	7725 PK	56.91	74	-17.09	-49.14	-49.13	7.77	-38.35
4	7728.125 AV	37.55	54	-16.45	-68.02	-69.01	7.77	-57.71
5	11590.625 PK	55.03	74	-18.97	-51.24	-50.79	7.77	-40.23
6	11590.625 AV	35.04	54	-18.96	-71.29	-70.73	7.77	-60.22
7	17384.125 PK	54.9	74	-19.1	-51.43	-50.86	7.77	-40.36
8	17387 AV	44.53	54	-9.47	-61.55	-61.48	7.77	-50.73

Note :

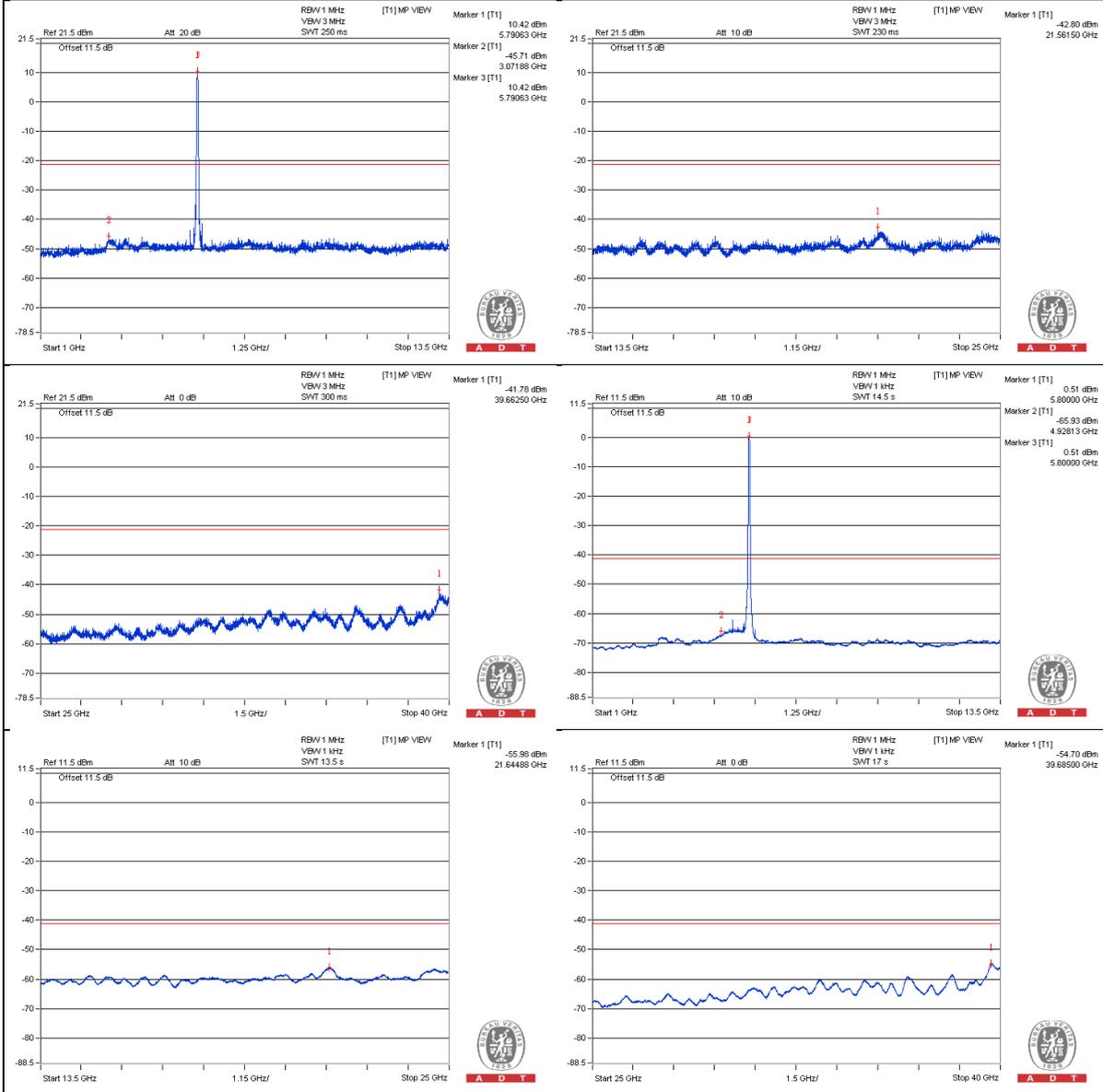
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

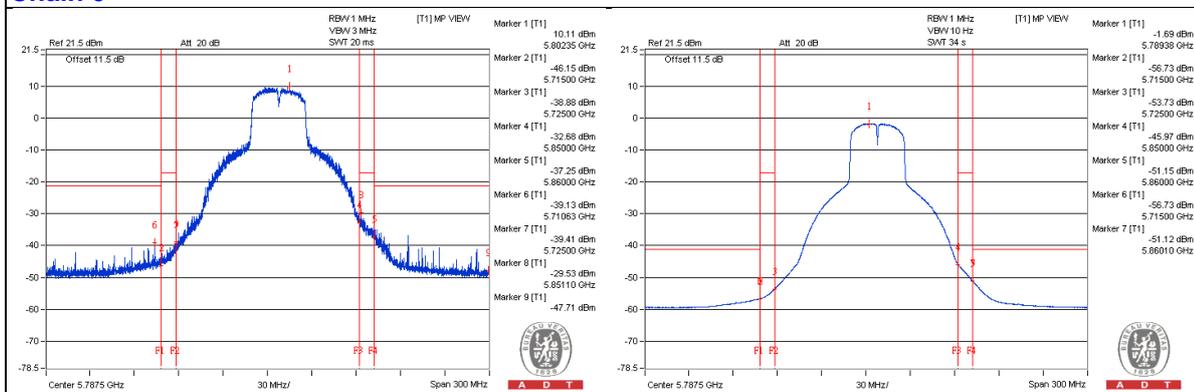
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5851.1 PK	74.75	78.2	-3.45	-29.53	-34.29	7.77	-20.51
2	5860.625 PK	69.48	74	-4.52	-34.94	-39.18	7.77	-25.78
3	5860.025 AV	54.54	54	* 0.54	-51.15	-51.88	7.77	-40.72

Note :

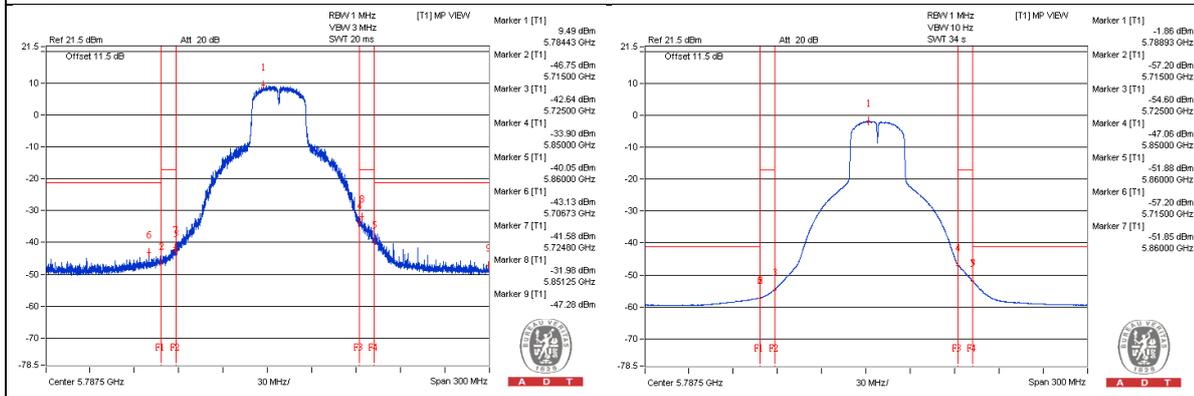
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8  
d = measurement distance in 3 meters.

\* The unwanted emission was verified and the test result was passed by radiated measurement.  
(Please refer APPENDIX A)

### Chain 0



### Chain 1



### 802.11ac (VHT80) - Channel 138

#### Conducted spurious emission table

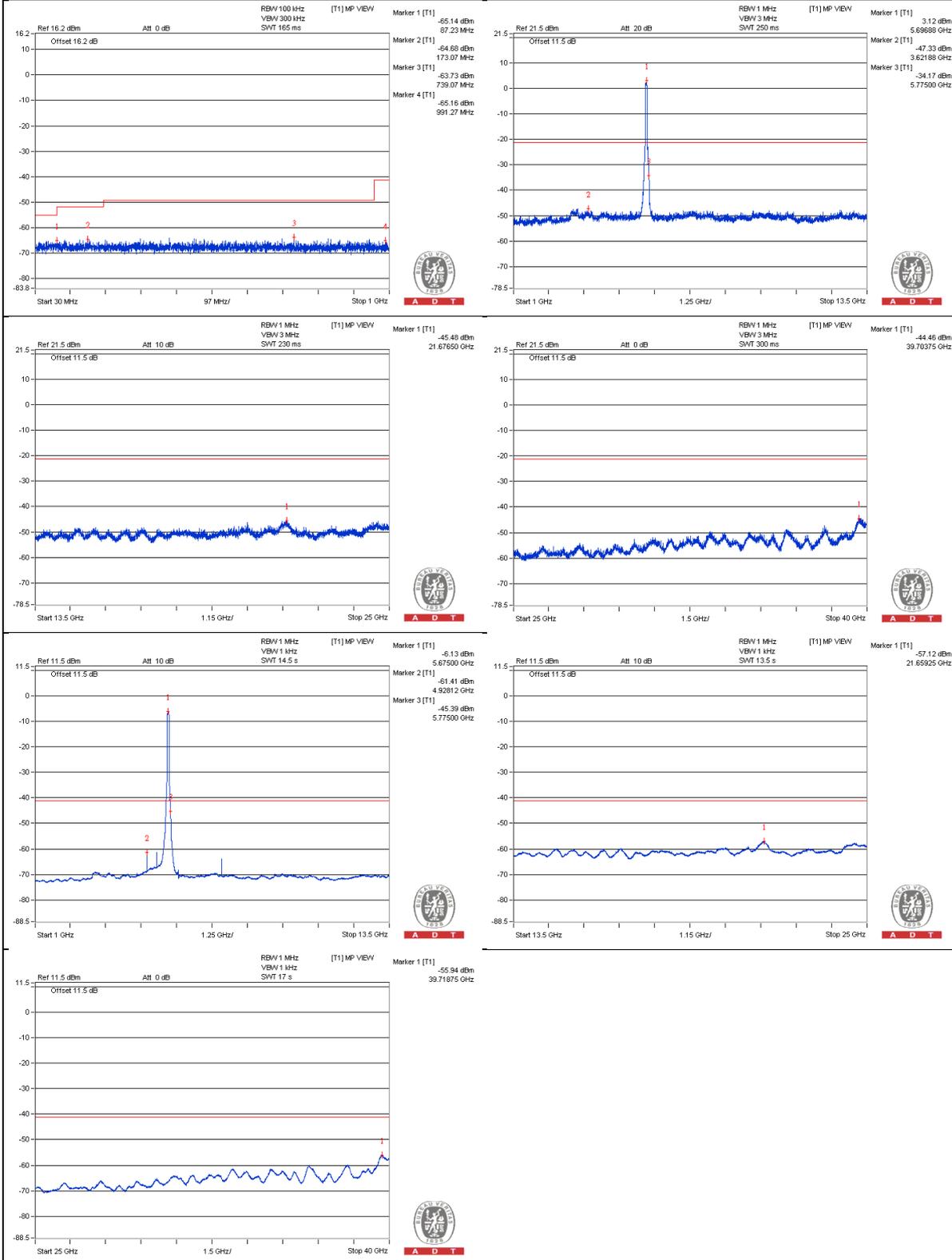
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3784.375 PK	56.51	74	-17.49	-49.83	-49.25	7.77	-38.75
2	3775 AV	35.58	54	-18.42	-70.24	-70.7	7.77	-59.68
3	7606.25 PK	56.79	74	-17.21	-48.6	-50.01	7.77	-38.47
4	7587.5 AV	39.91	54	-14.09	-64	-70.51	7.77	-55.35
5	11375 PK	55.4	74	-18.6	-50.65	-50.63	7.77	-39.86
6	11378.125 AV	34.49	54	-19.51	-71.38	-71.73	7.77	-60.77
7	17070.75 PK	56.68	74	-17.32	-50.22	-48.65	7.77	-38.58
8	17062.125 AV	45.07	54	-8.93	-60.96	-60.99	7.77	-50.19

Note :

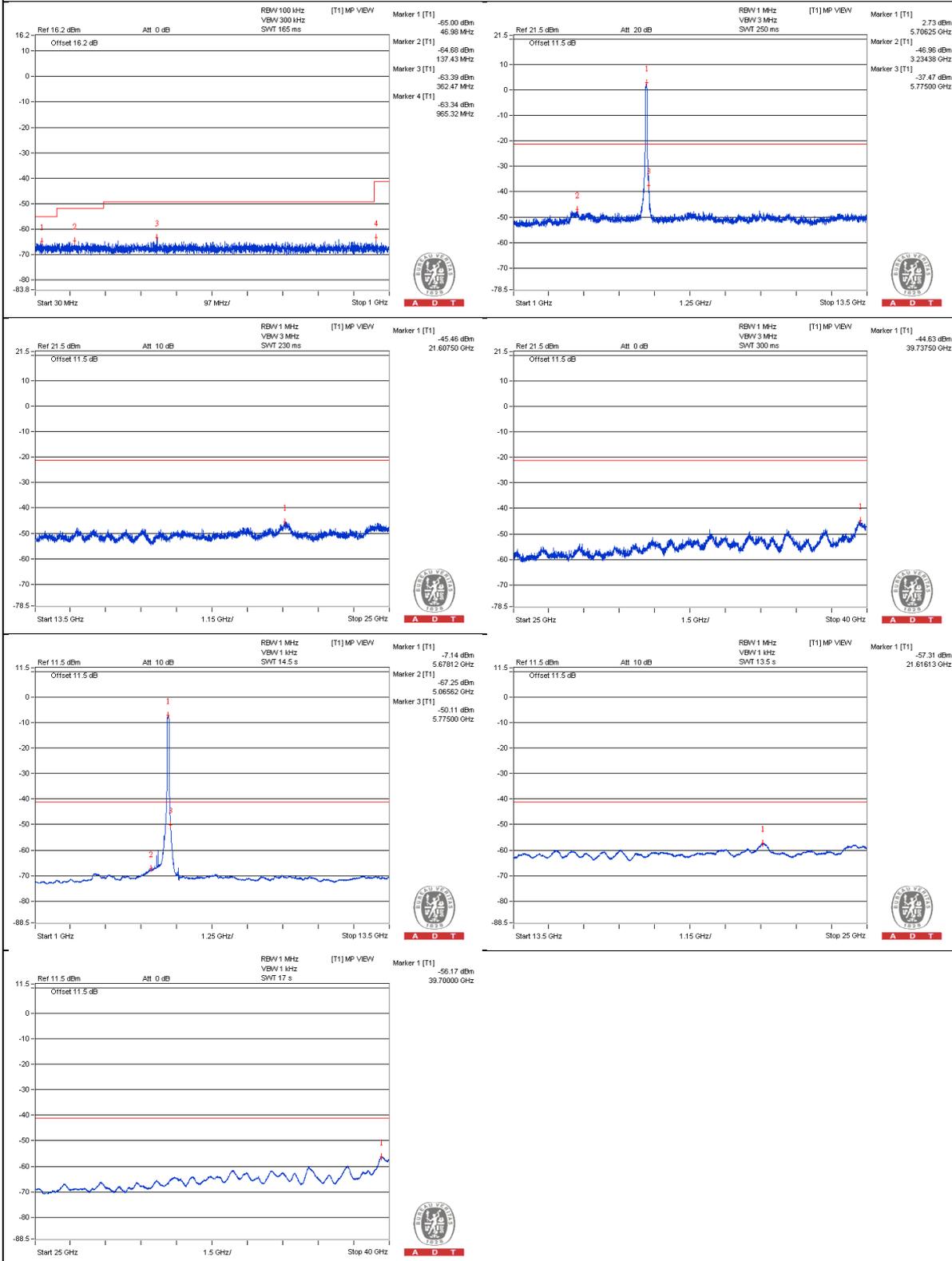
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



**Bandedge table**

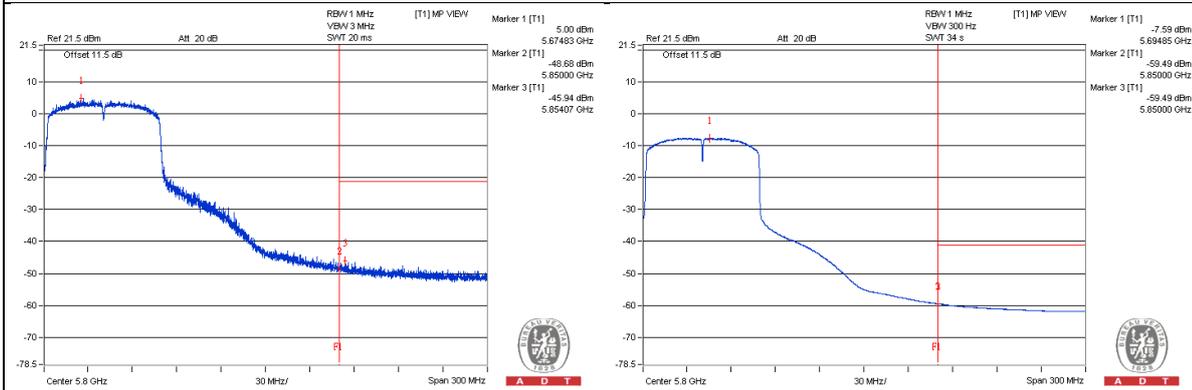
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5834.05 PK	60.61	74	-13.39	-46.36	-44.66	7.77	-34.65
2	5825.05 AV	48.29	54	-5.71	-57.57	-57.93	7.77	-46.97

Note :

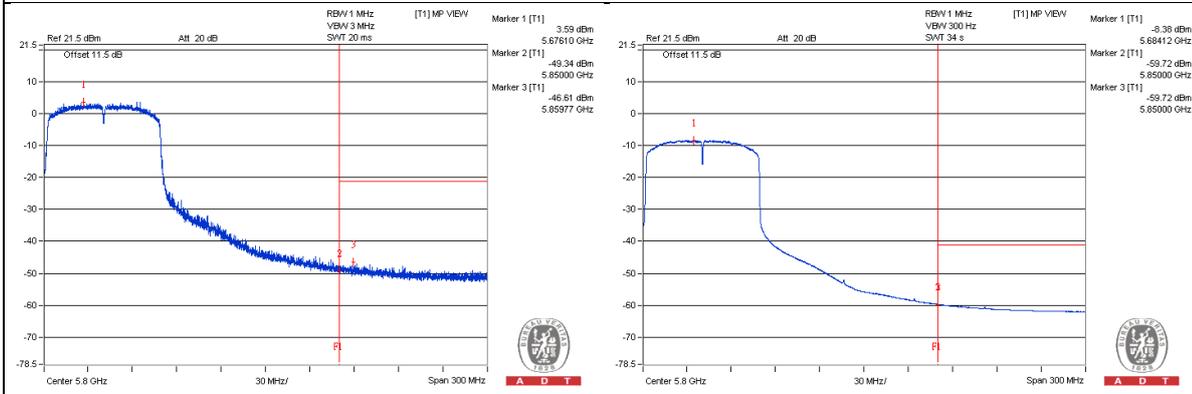
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

**Chain 0**



**Chain 1**



### 802.11ac (VHT80) - Channel 155

#### Conducted spurious emission table

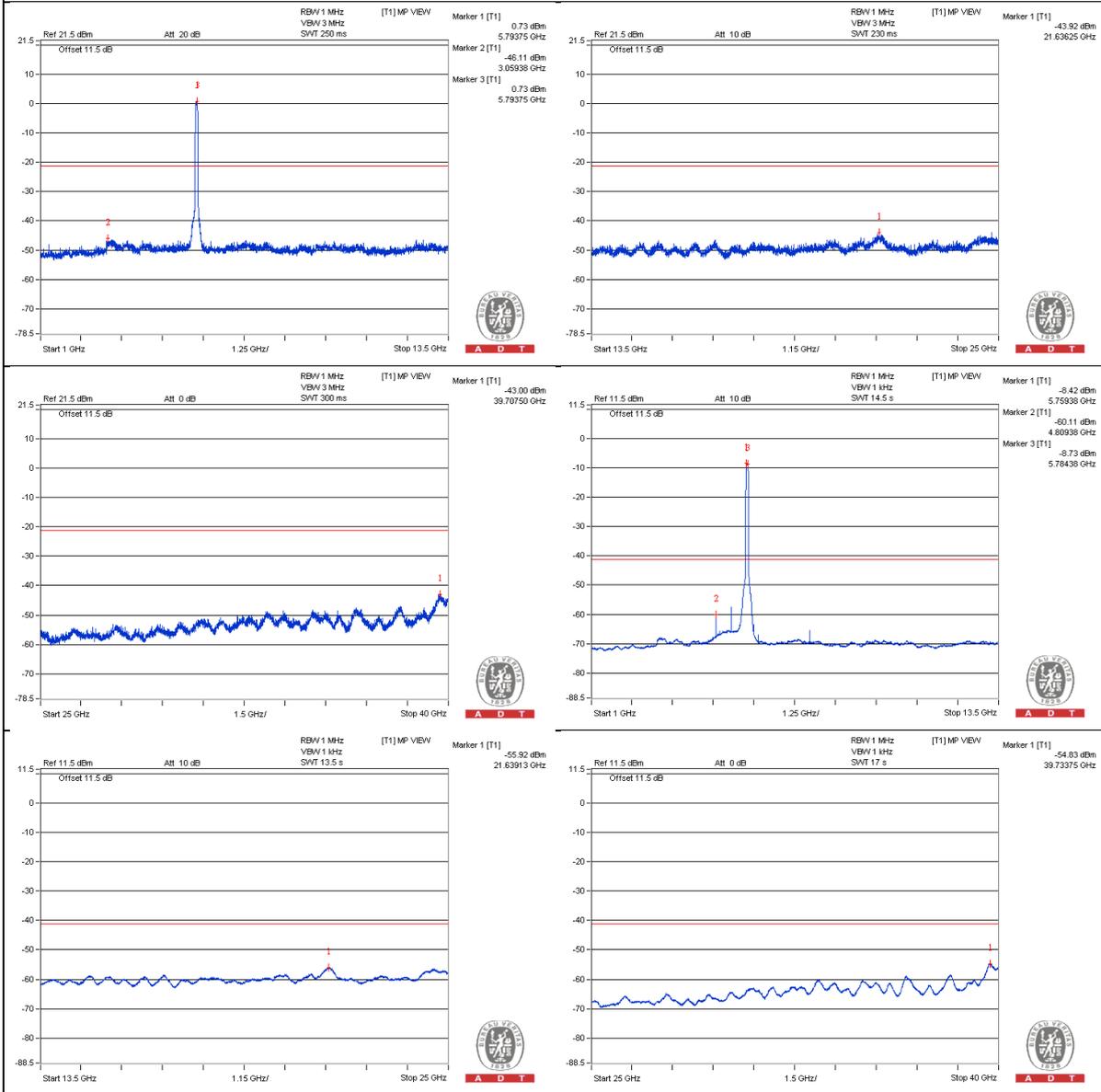
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3850 PK	55.26	74	-18.74	-51.24	-50.37	7.77	-40
2	3850 AV	35.54	54	-18.46	-70.54	-70.46	7.77	-59.72
3	7700 PK	56.48	74	-17.52	-49.67	-49.46	7.77	-38.78
4	7700 AV	39.14	54	-14.86	-65.47	-69.04	7.77	-56.12
5	11550 PK	54.67	74	-19.33	-51.96	-50.85	7.77	-40.59
6	11550 AV	34.82	54	-19.18	-71.45	-71.01	7.77	-60.44
7	17323.75 PK	55.24	74	-18.76	-50.9	-50.7	7.77	-40.02
8	17323.75 AV	43.79	54	-10.21	-62.13	-62.38	7.77	-51.47

Note :

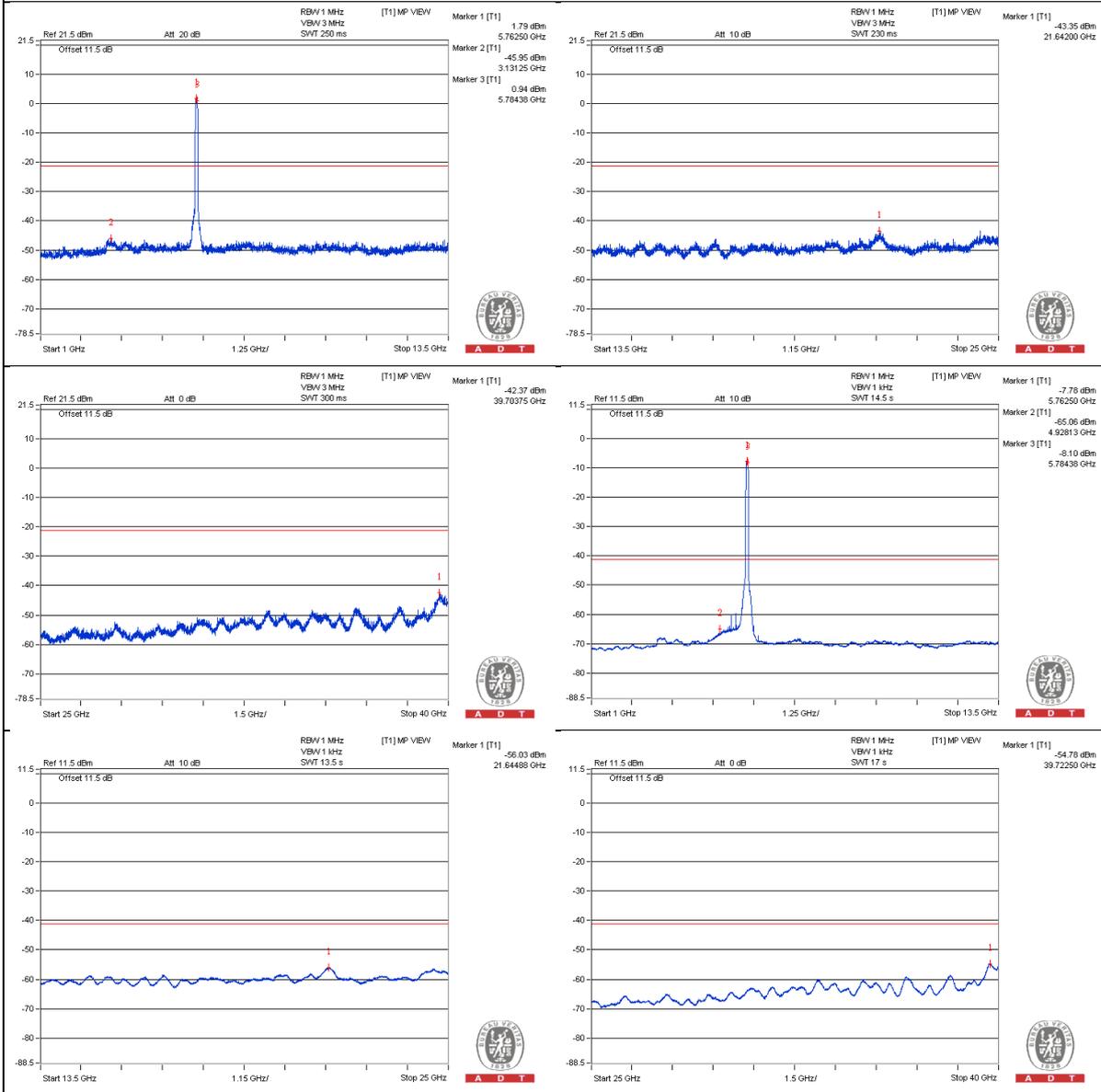
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

### Chain 0



### Chain 1



### Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5701.85 PK	68.94	68.2	* 0.74	-39.43	-35.59	7.77	-26.32
2	5723.825 PK	72.54	78.2	-5.66	-33.51	-33.49	7.77	-22.72
3	5850.8 PK	66.24	78.2	-11.96	-40.7	-39.06	7.77	-29.02
4	5873.375 PK	65.9	68.2	-2.3	-43.53	-38.26	7.77	-29.36

Note :

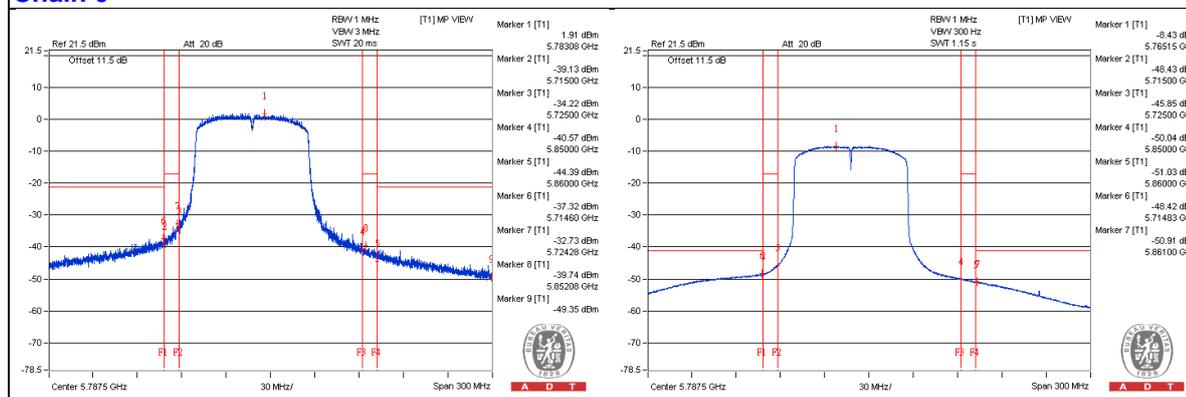
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

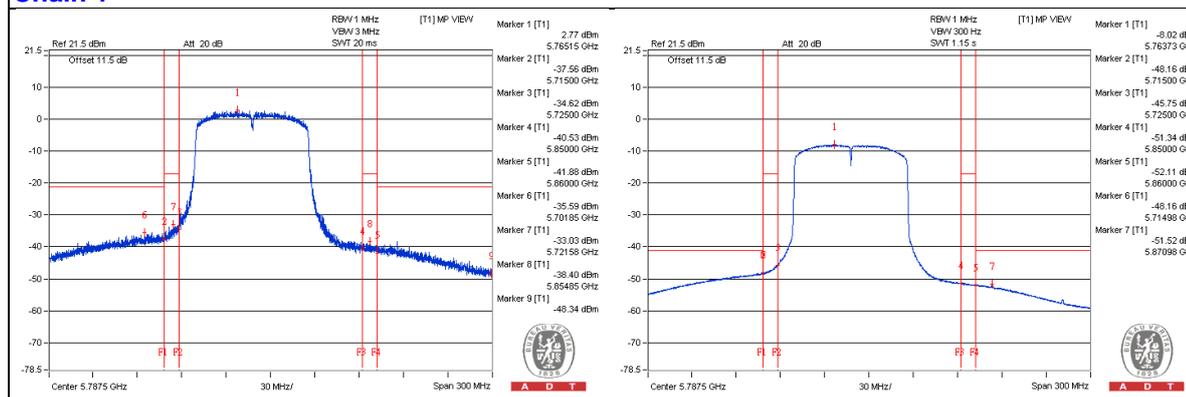
\* The unwanted emission was verified and the test result was passed by radiated measurement.

(Please refer APPENDIX A)

### Chain 0



### Chain 1



**Below 1GHz Data**  
**802.11a - Channel 157**

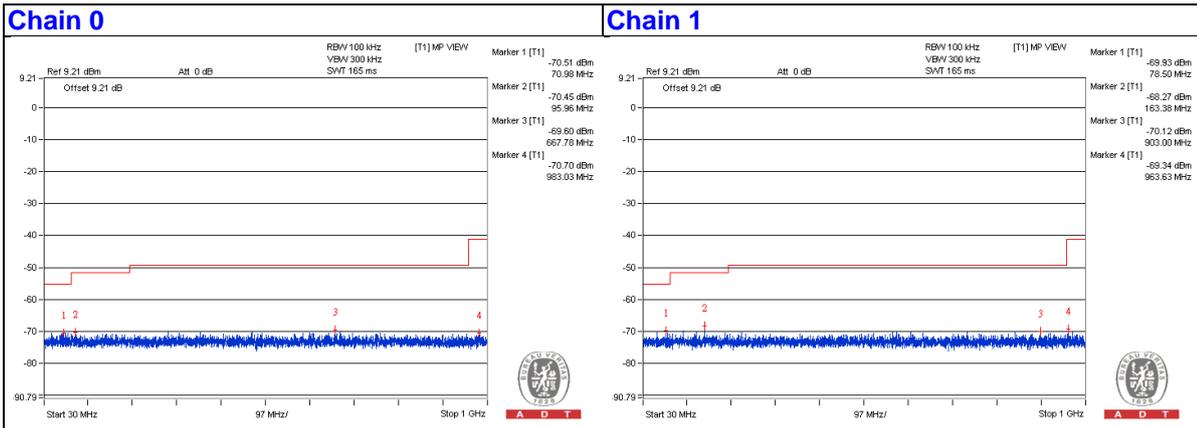
**Conducted spurious emission table**

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	78.5	34.65	40	-5.35	-73.59	-69.93	7.77	-60.61
2	163.375	36.15	43.5	-7.35	-72.51	-68.27	7.77	-59.11
3	371.6825	34.53	46	-11.47	-70.07	-73.69	7.77	-60.73
4	426.9725	34.74	46	-11.26	-71.3	-71.31	7.77	-60.52
5	767.4425	35.3	46	-10.7	-70.54	-70.94	7.77	-59.96
6	963.625	35.24	54	-18.76	-73	-69.34	7.77	-60.02

Note :

$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

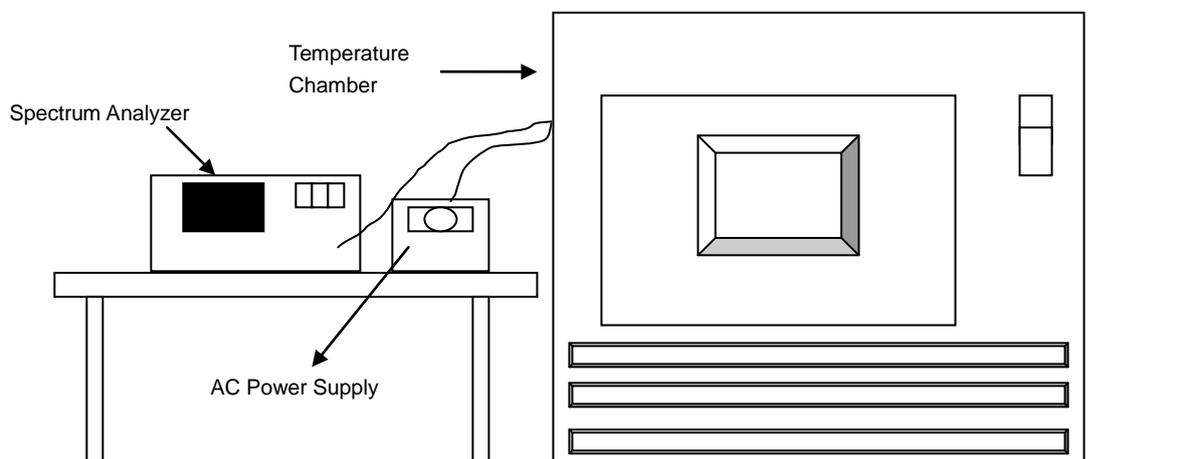


## 4.5 Frequency Stability Measurement

### 4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : July 02, 2015

### 4.5.4 Test Procedures

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 4.5.5 Deviation from Test Standard

No deviation.

#### 4.5.6 EUT Operating Conditions

Set the EUT transmit at un-modulation mode to test frequency stability.

#### 4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)						
50	120	5745.0267	0.00046	5745.0239	0.00042	5745.029	0.00050	5745.0276	0.00048
40	120	5744.9738	-0.00046	5744.9759	-0.00042	5744.9731	-0.00047	5744.9708	-0.00051
30	120	5744.9789	-0.00037	5744.9746	-0.00044	5744.978	-0.00038	5744.9746	-0.00044
20	120	5745.0241	0.00042	5745.0249	0.00043	5745.0241	0.00042	5745.0244	0.00042
10	120	5744.9977	-0.00004	5744.9959	-0.00007	5744.9954	-0.00008	5744.9958	-0.00007
0	120	5744.9976	-0.00004	5745.001	0.00002	5745.0022	0.00004	5744.9981	-0.00003
-10	120	5745.0171	0.00030	5745.0209	0.00036	5745.0195	0.00034	5745.0176	0.00031
-20	120	5744.9739	-0.00045	5744.9699	-0.00052	5744.9699	-0.00052	5744.9737	-0.00046
-30	120	5745.0055	0.00010	5745.0049	0.00009	5745.0005	0.00001	5745.0017	0.00003

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)						
20	138	5745.0251	0.00044	5745.0243	0.00042	5745.0241	0.00042	5745.0253	0.00044
	120	5745.0241	0.00042	5745.0249	0.00043	5745.0241	0.00042	5745.0244	0.00042
	102	5745.0239	0.00042	5745.0254	0.00044	5745.0242	0.00042	5745.024	0.00042

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## 6 Appendix A – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

## 7 Appendix B – Radiated Emission Measurement

### 7.1.1 Limits of Radiated Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

### 7.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Sep. 23, 2015

### 7.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

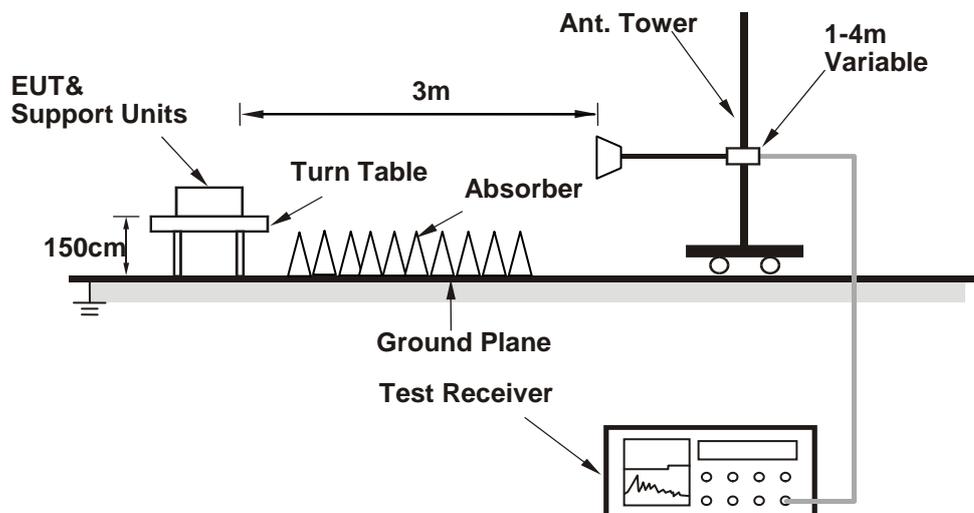
#### NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

### 7.1.4 Deviation from Test Standard

No deviation

### 7.1.5 Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

### 7.1.6 EUT Operating Conditions

Same as 4.4.6.

7.1.7 Test Results

In original report, the EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5708.00	65.2 PK	68.2	-3.0	1.95 H	338	54.18	11.02
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5708.00	65.1 PK	68.2	-3.1	1.52 V	173	54.08	11.02

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

<b>CHANNEL</b>	TX Channel 159	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5860.00	68.4 PK	74.0	-5.6	1.79 H	147	57.10	11.30
2	#5860.00	50.6 AV	54.0	-3.4	1.79 H	147	39.30	11.30

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5860.00	67.8 PK	74.0	-6.2	1.47 V	183	56.50	11.30
2	#5860.00	50.1 AV	54.0	-3.9	1.47 V	183	38.80	11.30

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. "#": The radiated frequency is out of the restricted band.

**802.11ac (VHT80)**

<b>CHANNEL</b>	TX Channel 155	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5702.00	65.1 PK	68.2	-3.1	1.82 H	339	54.10	11.00

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5702.00	65.2 PK	68.2	-3.0	1.51 V	173	54.20	11.00

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

--- END ---