Test Report

Product Name ： WIRELESS-N NETWORK MINI PCI ADAPTER

Model No. ： IWAVEPORT WLM200NX

Applicant ： Compex Systems Pte Ltd

Address ： 135 Joo Seng Road, #08-01 PM Industrial Building
Singapore 368363

Date of Receipt ： 2008/09/10

Issued Date ： 2008/10/31

Report No. ： 089S061R-RF-CE-P20V01

Test Report Certification

Issued Date : 2008/10/31
Report No. : 089S061R-RF-CE-P20V01

QuieTek

Product Name	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Applicant	:	Compex Systems Pte Ltd
Address	:	135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363
Manufacturer	:	Compex Systems Pte Ltd
Address	:	135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363
Model No.	:	IWAVEPORT WLM200NX
Rated Voltage	:	AC 230 V / 50 Hz
EUT Voltage	:	DC 3.3 V
Trade Name	:	COMPEX
Applicable Standard	:	ETSI EN 301 893 V1.4.1 (2007-07)
Test Result	:	Complied
Performed Location	:	SuZhou EMC laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

Documented By : Lanny Jin
(Lanny Jin)

Reviewed By : Marlin Chen
(Marlin Chen)

Approved By : Gene Zhang
(Gene Zhang)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	**:**	**BSMI, DGT, CNLA**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0
1313

LinKou Testing Laboratory :
No. 5, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : +886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0
0914

Suzhou Testing Laboratory :
No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

NVLAP Lab Code : 200743-0
1596

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	WIRELESS-N NETWORK MINI PCI ADAPTER
Trade Name	COMPEX
Model No.	IWAVEPORT WLM200NX

WLAN	WIRELESS-N NETWORK MINI PCI ADAPTER
Working Voltage	DC 3.3V
Frequency Range	**For 2.4GHz Band** 802.11b/g/n(20MHz): 2412 - 2472 MHz 802.11n(40MHz): 2422 - 2452 MHz **For 5.0GHz Band** 802.11a/n(20MHz): 5180 - 5320 MHz, 5500 - 5700 MHz, 5745-5825MHz 802.11n(40MHz): 5190 - 5310 MHz, 5510 - 5670 MHz
Channel Number	**For 2.4GHz Band** 802.11b/g/n(20MHz): 13 802.11n(40MHz): 7 **For 5.0GHz Band** 802.11a/n(20MHz): 22 802.11n(40MHz): 9
Type of Modulation	802.11b: DSSS
	802.11a/g/n: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 450 Mbps
Channel Control	Auto
Antenna Type	Omni Antenna
Antenna Gain	Refer to the “Antenna List”

For 5.0GHz Band

802.11a/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz	48	5240 MHz
52	5260 MHz	56	5280 MHz	60	5300 MHz	64	5320 MHz
100	5500 MHz	104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz	149	5745 MHz
157	5785 MHz	165	5825MHz	N/A	N/A	N/A	N/A

802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz	62	5310 MHz
102	5510 MHz	110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz	N/A	N/A	N/A	N/A	N/A	N/A

For 2.4GHz Band

802.11b/g/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	12	2467 MHz
13	2472 MHz	N/A	N/A	N/A	N/A	N/A	N/A

802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

802.11a/b/g/n Antenna List

Antenna	Manufacturer	Model No.	Peak Gain
Combined Antenna	Exceltek Electronics (Kunshan) Co.,Ltd	C0053-ANG0004	2.0 dBi

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

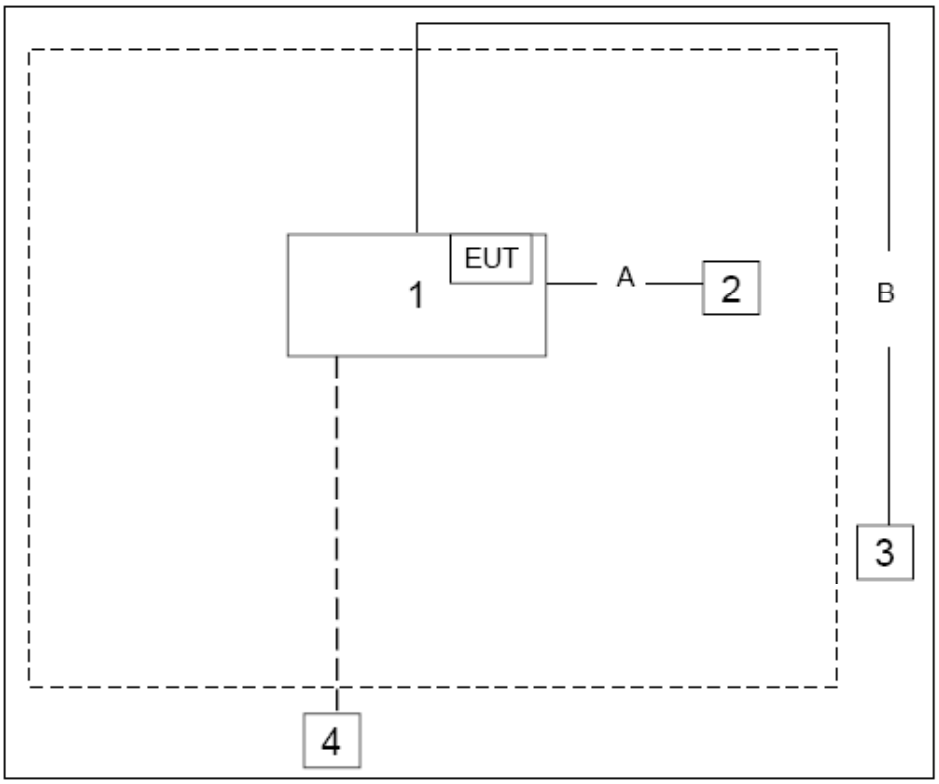
Test Mode
Mode 1: Transmit by 802.11a
Mode 2: Transmit by 802.11n(20MHz)
Mode 3: Transmit by 802.11n(40MHz)
Mode 4: Receive by 802.11n(20MHz)
Mode 5: Receive by 802.11n(40MHz)

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Router Frame	Compex	B-543W	N/A	N/A
2	Adapter	DVE	DSA-15P-24	N/A	N/A
3	Notebook	DELL	PP19L	JH097 A01	Power by adapter
4	MacBook	Apple	MB061CH	W8732B4TZ5V	Power by adapter

1.4. Configuration of Tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	Power Cable	Non-Shielded, 1.8m
B	LAN Cable	Non-Shielded, >10m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Execute the “brinks” software, then select test mode and test channel, press OK to transmit data with another Notebook P.C. by wireless.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Carrier Frequencies	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
Occupied Channel Bandwidth	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
RF Output Power, Transmit Power Control (TPC) and Power Density	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
Transmitter Unwanted Emissions Outside the 5GHz RLAN Bands	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
Transmitter Unwanted Emissions Within the 5GHz RLAN Bands	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
Receiver Spurious Emissions	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No
Dynamic Frequency Selection (DFS)	ETSI EN 301 893 V1.4.1 (2007-07)	Yes	No

Note: The requirement of **Medium Access Protocol** and **User Access Restrictions for DFS Controls** shall be implemented by manufacture.

2.2. Measurement Uncertainty

Where releveant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	±1 x 10^{-7}
RF Power Conducted	±0.7dB
RF Power Radiated	±5.2dB
Spurious Emissions, Conducted	±2.8dB
Spurious Emissions, Radiated	±5.2dB
Humidity	±1%
Temperature	±0.5℃
Time	±8%

2.3. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Carrier Frequencies

3.1. Test Equipment

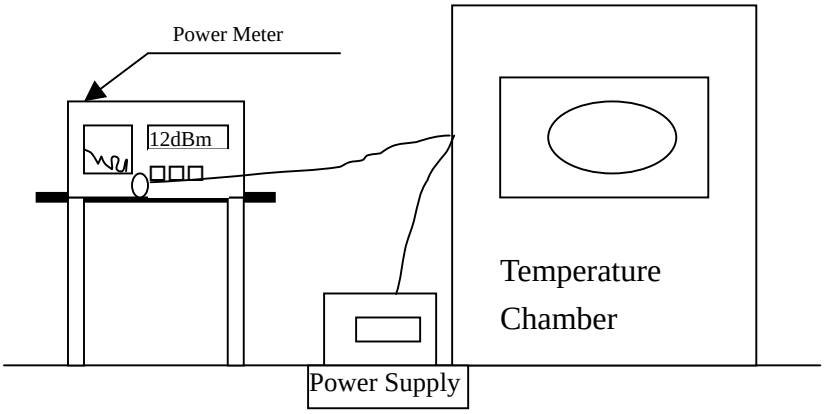
Carrier Frequencies / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
Preamplifier	QuieTek	AP-180C	CHM-0602013	2007/11/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2007/11/25
AC Power Supply	IDRC	CF-500TP	979422	2008/10/21
DC Power Supply	IDRC	CD-035-020PR	977272	2008/10/21
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2008/01/19
Coaxial Cable	Huber+Suhner	AC4-RH	07	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

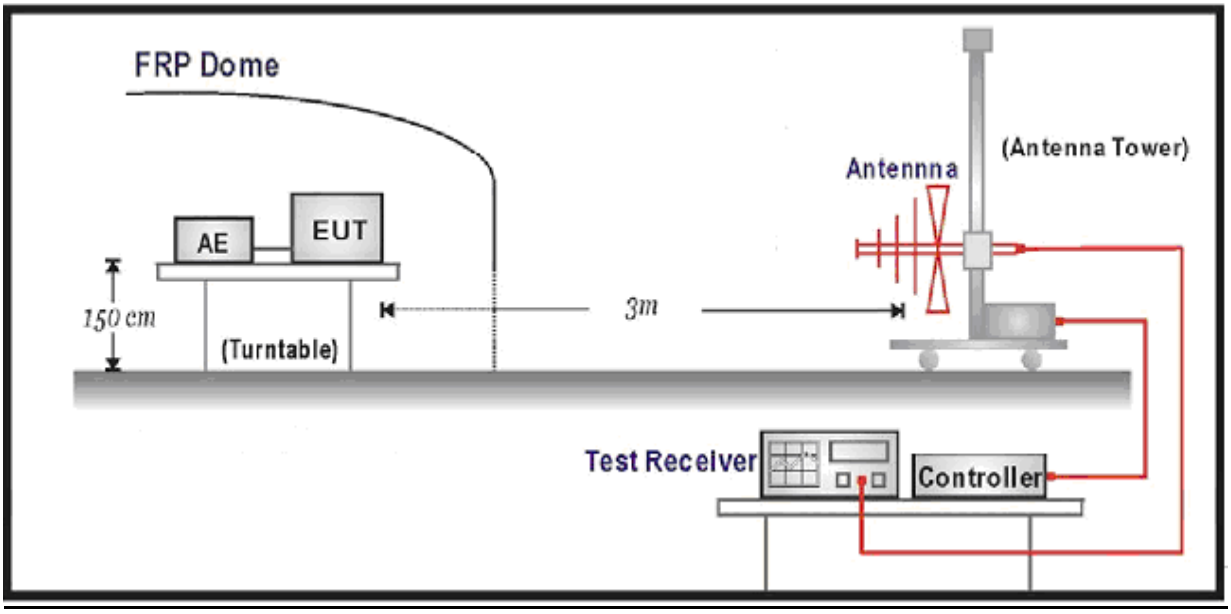
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup

For Conducted Measurement



For Radiated Measurement



3.3. Limit

The actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range $f_c \pm 20$ ppm.

3.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.2

3.5. Test Result

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Carrier Frequencies
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

Test Conditions		Frequency (MHz)	Measured Carrier Frequency (MHz)	△F (ppm)	Limit (ppm)
Tnom (25 ℃)	Vnom (AC 230V)	5180.000000	5179.985564	-2.79	±20
		5320.000000	5319.986000	-2.63	±20
		5500.000000	5499.991333	-1.58	±20
		5700.000000	5699.988333	-2.05	±20
Tmax (40 ℃)	Vmax (AC 253V)	5180.000000	5179.974373	-4.95	±20
		5320.000000	5319.972446	-5.18	±20
		5500.000000	5499.983562	-2.99	±20
		5700.000000	5699.978426	-3.78	±20
Tmax (40 ℃)	Vmin (AC 207V)	5180.000000	5179.975677	-4.70	±20
		5320.000000	5319.971237	-5.41	±20
		5500.000000	5499.983021	-3.09	±20
		5700.000000	5699.978527	-3.77	±20
Tmin (0 ℃)	Vmax (AC 253V)	5180.000000	5179.970832	-5.63	±20
		5320.000000	5319.974863	-4.72	±20
		5500.000000	5499.982895	-3.11	±20
		5700.000000	5699.976853	-4.06	±20
Tmin (0 ℃)	Vmin (AC 207V)	5180.000000	5179.970524	-5.69	±20
		5320.000000	5319.974962	-4.71	±20
		5500.000000	5499.982674	-3.15	±20
		5700.000000	5699.977563	-3.94	±20

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Carrier Frequencies
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

Test Conditions		Frequency (MHz)	Measured Carrier Frequency (MHz)	△F (ppm)	Limit (ppm)
Tnom (25 ℃)	Vnom (AC 230V)	5180.000000	5179.991564	-1.63	±20
		5320.000000	5319.982000	-3.38	±20
		5500.000000	5499.992333	-1.39	±20
		5700.000000	5699.991333	-1.52	±20
Tmax (40 ℃)	Vmax (AC 253V)	5180.000000	5179.981373	-3.60	±20
		5320.000000	5319.972446	-5.18	±20
		5500.000000	5499.983562	-2.99	±20
		5700.000000	5699.983426	-2.91	±20
Tmax (40 ℃)	Vmin (AC 207V)	5180.000000	5179.980677	-3.73	±20
		5320.000000	5319.971237	-5.41	±20
		5500.000000	5499.983021	-3.09	±20
		5700.000000	5699.983527	-2.89	±20
Tmin (0 ℃)	Vmax (AC 253V)	5180.000000	5179.980832	-3.70	±20
		5320.000000	5319.968863	-5.85	±20
		5500.000000	5499.982895	-3.11	±20
		5700.000000	5699.982853	-3.01	±20
Tmin (0 ℃)	Vmin (AC 207V)	5180.000000	5179.980524	-3.76	±20
		5320.000000	5319.969962	-5.65	±20
		5500.000000	5499.970674	-5.33	±20
		5700.000000	5699.982563	-3.06	±20

4. Occupied Channel Bandwidth

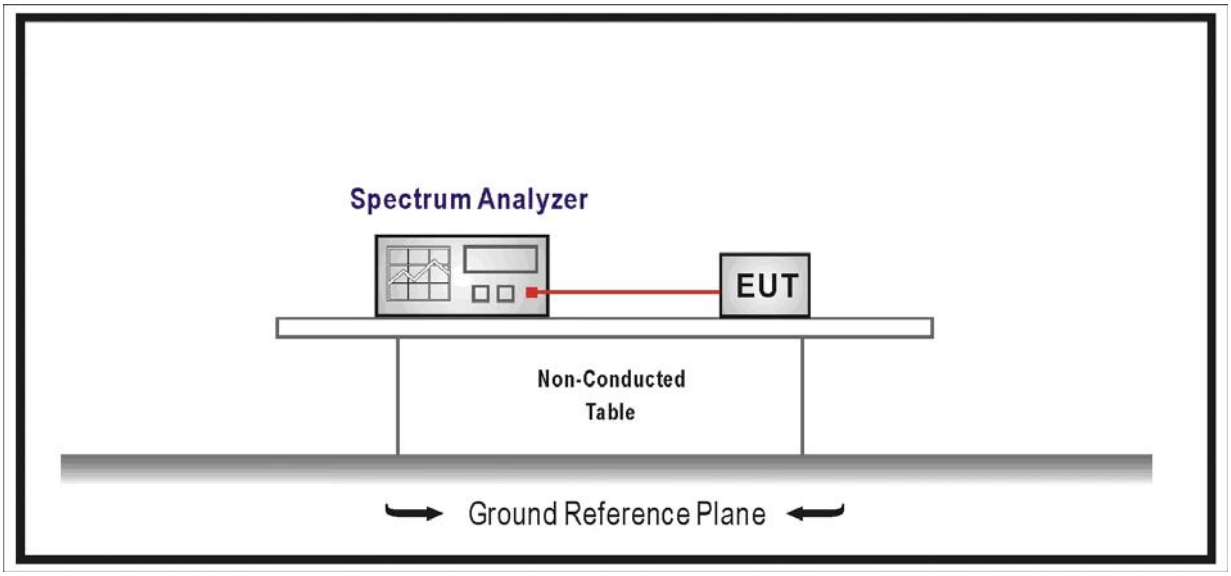
4.1. Test Equipment

Occupied Channel Bandwidth / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup



4.3. Limit

The nominal bandwidth shall be in the range from 10 MHz to 40 MHz.

The occupied channel bandwidth shall be between 80% and 100% of the declared nominal channel bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.

Note: The limit for occupied bandwidth is not applicable for devices with a nominal bandwidth of 40 MHz when temporarily operating in a mode in which they transmit only in the upper or lower 20 MHz part of a 40 MHz channel. (e.g. to transmit a packet in the upper or lower 20 MHz part of a 40 MHz channel).

4.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.3

4.5. Test Result

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5180	16.58	16~20	20	82.90	80 - 100
5320	16.60	16~20	20	83.00	80 - 100
5500	16.45	16~20	20	82.25	80 - 100
5700	16.50	16~20	20	82.50	80 - 100

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 010

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5180	16.52	16~20	20	82.60	80 - 100
5320	16.58	16~20	20	82.90	80 - 100
5500	16.54	16~20	20	82.70	80 - 100
5700	16.58	16~20	20	82.90	80 - 100

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 010

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5190	35.85	32~40	40	89.63	80 - 100
5310	36.02	32~40	40	90.05	80 - 100
5510	36.00	32~40	40	90.00	80 - 100
5670	36.04	32~40	40	90.10	80 - 100

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5180	16.42	16~20	20	82.10	80 - 100
5320	16.45	16~20	20	82.25	80 - 100
5500	16.42	16~20	20	82.10	80 - 100
5700	16.53	16~20	20	82.65	80 - 100

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 100

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5180	16.42	16~20	20	82.10	80 - 100
5320	16.42	16~20	20	82.10	80 - 100
5500	16.48	16~20	20	82.40	80 - 100
5700	16.44	16~20	20	82.20	80 - 100

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Occupied Channel Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 100

Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Limit (MHz)	Declared Nominal Channel Bandwidth (MHz)	Occupied Channel Bandwidth (%)	Limit (%)
5190	36.00	32~40	40	90.00	80 - 100
5310	36.00	32~40	40	90.00	80 - 100
5510	35.85	32~40	40	89.63	80 - 100
5670	36.00	32~40	40	90.00	80 - 100

5. RF Output Power, Transmit Power Control (TPC) and Power Density

5.1. Test Equipment

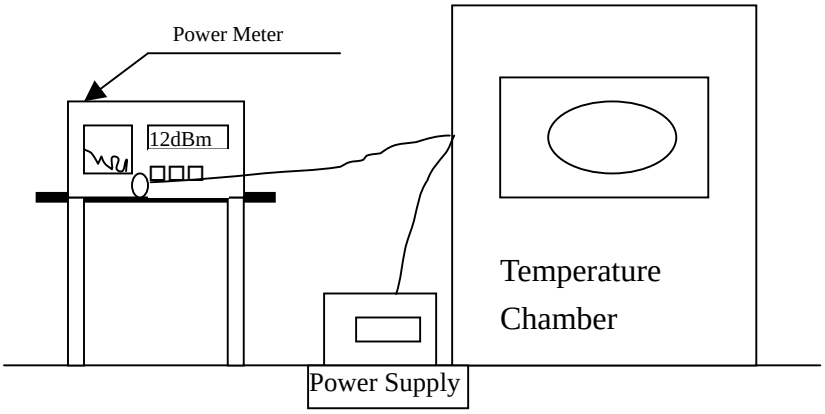
RF Output Power, Transmit Power Control (TPC) and Power Density / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
PSG Analog S.G.	Agilent	E8257D	MY44321116	2008/06/11
Power Meter	Agilent	E4416A	GB41293844	2008/10/21
Power Sensor	Agilent	E9323A	MY44420302	2008/10/21
Preamplifier	QuieTek	AP-180C	CHM-0602013	2007/11/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2007/11/25
AC Power Supply	IDRC	CF-500TP	979422	2008/10/21
DC Power Supply	IDRC	CD-035-020PR	977272	2008/10/21
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2008/01/19
Coaxial Cable	Huber+Suhner	AC4-RH	07	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-T	08	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

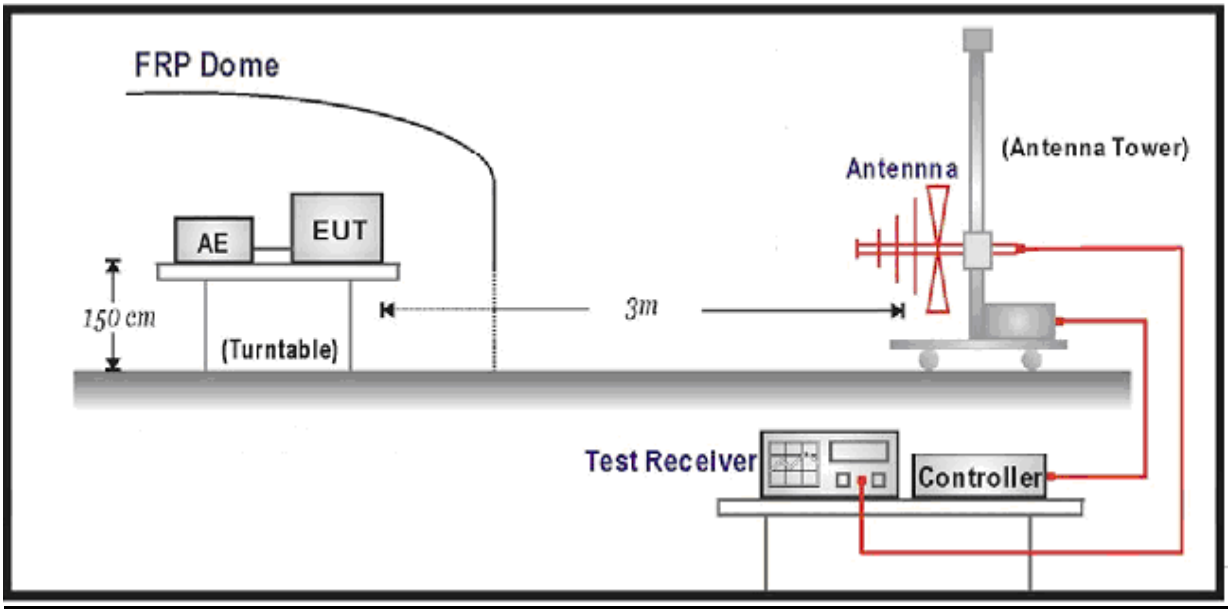
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup

For Conducted Measurement



For Radiated Measurement



5.3. Limit

RF Output Power and Power density at the Highest Power Level

For devices with TPC, the RF output power and the power density when configured to operate at the highest stated power level of the TPC range shall not exceed the levels given in following table.

For devices without TPC, the limits in table shall be reduced by 3 dB, except when operating on channels whose nominal bandwidth falls completely within the band 5150 MHz to 5250 MHz.

Mean EIRP limits for RF Output Power and Power Density at the Highest Power Level		
Frequency Range	Mean EIRP Limit	Mean EIRP Density Limit
5150 MHz to 5350 MHz	23 dBm	10 dBm/MHz
5470 MHz to 5725 MHz	30 dBm (see note)	17 dBm/MHz (see note)
Note: For Slave devices without a Radar Interference Detection function the mean EIRP shall be less than 23 dBm and the mean EIRP density shall be less than 10 dBm/MHz.		

RF Output Power at the Lowest Power Level of the TPC Range

For devices using TPC, the RF output power during a transmission burst when configured to operate at the lowest stated power level of the TPC range shall not exceed the levels given in following table.

Mean EIRP Limits for RF Output Power at the Lowest Power Level of the TPC Range	
Frequency Range	Mean EIRP
5250 MHz to 5350 MHz	17 dBm
5470 MHz to 5725 MHz	24 dBm (see note)
Note: For Slave devices without a Radar Interference Detection function the mean EIRP shall be less than 17 dBm.	

5.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.4

5.5. Test Result

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5180	17.62	1.3	20.96	23
		5320	17.56	1.3	20.90	23
		5500	15.96	1.3	19.30	30
		5700	16.01	1.3	19.35	30
Tmax (40 ℃)	Vmax (AC 253V)	5180	16.47	1.3	19.81	23
		5320	16.38	1.3	19.72	23
		5500	14.88	1.3	18.22	30
		5700	14.94	1.3	18.28	30
Tmax (40 ℃)	Vmin (AC 207V)	5180	16.46	1.3	19.80	23
		5320	16.38	1.3	19.72	23
		5500	14.87	1.3	18.21	30
		5700	14.94	1.3	18.28	30
Tmin (0 ℃)	Vmax (AC 253V)	5180	18.82	1.3	22.16	23
		5320	18.77	1.3	22.11	23
		5500	17.04	1.3	20.38	30
		5700	17.13	1.3	20.47	30
Tmin (0 ℃)	Vmin (AC 207V)	5180	18.80	1.3	22.14	23
		5320	18.76	1.3	22.10	23
		5500	17.04	1.3	20.38	30
		5700	17.14	1.3	20.48	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5180	17.52	1.3	20.86	23
		5320	17.32	1.3	20.66	23
		5500	15.58	1.3	18.92	30
		5700	15.81	1.3	19.15	30
Tmax (40 ℃)	Vmax (AC 253V)	5180	16.38	1.3	19.72	23
		5320	16.20	1.3	19.54	23
		5500	14.73	1.3	18.07	30
		5700	14.66	1.3	18.00	30
Tmax (40 ℃)	Vmin (AC 207V)	5180	16.36	1.3	19.70	23
		5320	16.20	1.3	19.54	23
		5500	14.72	1.3	18.06	30
		5700	14.66	1.3	18.00	30
Tmin (0 ℃)	Vmax (AC 253V)	5180	18.76	1.3	22.10	23
		5320	18.62	1.3	21.96	23
		5500	16.63	1.3	19.97	30
		5700	16.84	1.3	20.18	30
Tmin (0 ℃)	Vmin (AC 207V)	5180	18.75	1.3	22.09	23
		5320	18.60	1.3	21.94	23
		5500	16.64	1.3	19.98	30
		5700	16.84	1.3	20.18	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5190	17.55	1.3	20.93	23
		5310	17.32	1.3	20.70	23
		5510	16.04	1.3	19.42	30
		5670	15.82	1.3	19.20	30
Tmax (40 ℃)	Vmax (AC 253V)	5190	16.34	1.3	19.72	23
		5310	16.25	1.3	19.63	23
		5510	15.02	1.3	18.40	30
		5670	14.80	1.3	18.18	30
Tmax (40 ℃)	Vmin (AC 207V)	5190	16.34	1.3	19.72	23
		5310	16.24	1.3	19.62	23
		5510	15.03	1.3	18.41	30
		5670	14.80	1.3	18.18	30
Tmin (0 ℃)	Vmax (AC 253V)	5190	18.73	1.3	22.11	23
		5310	18.47	1.3	21.85	23
		5510	17.10	1.3	20.48	30
		5670	17.03	1.3	20.41	30
Tmin (0 ℃)	Vmin (AC 207V)	5190	18.74	1.3	22.12	23
		5310	18.47	1.3	21.85	23
		5510	17.10	1.3	20.48	30
		5670	17.05	1.3	20.43	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5180	17.63	1.3	20.97	23
		5320	17.59	1.3	20.93	23
		5500	15.33	1.3	18.67	30
		5700	15.14	1.3	18.48	30
Tmax (40 ℃)	Vmax (AC 253V)	5180	16.32	1.3	19.66	23
		5320	16.35	1.3	19.69	23
		5500	14.26	1.3	17.60	30
		5700	14.01	1.3	17.35	30
Tmax (40 ℃)	Vmin (AC 207V)	5180	16.33	1.3	19.67	23
		5320	16.35	1.3	19.69	23
		5500	14.25	1.3	17.59	30
		5700	14.00	1.3	17.34	30
Tmin (0 ℃)	Vmax (AC 253V)	5180	18.72	1.3	22.06	23
		5320	18.61	1.3	21.95	23
		5500	16.52	1.3	19.86	30
		5700	16.37	1.3	19.71	30
Tmin (0 ℃)	Vmin (AC 207V)	5180	18.71	1.3	22.05	23
		5320	18.60	1.3	21.94	23
		5500	16.51	1.3	19.85	30
		5700	16.38	1.3	19.72	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5180	17.47	1.3	20.81	23
		5320	17.48	1.3	20.82	23
		5500	14.59	1.3	17.93	30
		5700	14.88	1.3	18.22	30
Tmax (40 ℃)	Vmax (AC 253V)	5180	16.25	1.3	19.59	23
		5320	16.24	1.3	19.58	23
		5500	13.36	1.3	16.70	30
		5700	13.79	1.3	17.13	30
Tmax (40 ℃)	Vmin (AC 207V)	5180	16.23	1.3	19.57	23
		5320	16.24	1.3	19.58	23
		5500	13.35	1.3	16.69	30
		5700	13.80	1.3	17.14	30
Tmin (0 ℃)	Vmax (AC 253V)	5180	18.52	1.3	21.86	23
		5320	18.56	1.3	21.90	23
		5500	15.73	1.3	19.07	30
		5700	16.02	1.3	19.36	30
Tmin (0 ℃)	Vmin (AC 207V)	5180	18.50	1.3	21.84	23
		5320	18.55	1.3	21.89	23
		5500	15.72	1.3	19.06	30
		5700	16.02	1.3	19.36	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5190	17.53	1.3	20.91	23
		5310	17.43	1.3	20.81	23
		5510	14.19	1.3	17.57	30
		5670	14.31	1.3	17.69	30
Tmax (40 ℃)	Vmax (AC 253V)	5190	16.25	1.3	19.63	23
		5310	16.14	1.3	19.52	23
		5510	13.15	1.3	16.53	30
		5670	13.26	1.3	16.64	30
Tmax (40 ℃)	Vmin (AC 207V)	5190	16.24	1.3	19.62	23
		5310	16.14	1.3	19.52	23
		5510	13.14	1.3	16.52	30
		5670	13.26	1.3	16.64	30
Tmin (0 ℃)	Vmax (AC 253V)	5190	18.72	1.3	22.10	23
		5310	18.64	1.3	22.02	23
		5510	15.31	1.3	18.69	30
		5670	15.43	1.3	18.81	30
Tmin (0 ℃)	Vmin (AC 207V)	5190	18.72	1.3	22.10	23
		5310	18.64	1.3	22.02	23
		5510	15.30	1.3	18.68	30
		5670	15.41	1.3	18.79	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 110

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5180	17.35	1.3	20.69	23
		5320	17.31	1.3	20.65	23
		5500	19.37	1.3	22.71	30
		5700	19.88	1.3	23.22	30
Tmax (40 ℃)	Vmax (AC 253V)	5180	16.26	1.3	19.60	23
		5320	16.22	1.3	19.56	23
		5500	18.15	1.3	21.49	30
		5700	18.74	1.3	22.08	30
Tmax (40 ℃)	Vmin (AC 207V)	5180	16.24	1.3	19.58	23
		5320	16.22	1.3	19.56	23
		5500	18.14	1.3	21.48	30
		5700	18.74	1.3	22.08	30
Tmin (0 ℃)	Vmax (AC 253V)	5180	18.42	1.3	21.76	23
		5320	18.40	1.3	21.74	23
		5500	20.52	1.3	23.86	30
		5700	20.92	1.3	24.26	30
Tmin (0 ℃)	Vmin (AC 207V)	5180	18.40	1.3	21.74	23
		5320	18.40	1.3	21.74	23
		5500	20.51	1.3	23.85	30
		5700	20.90	1.3	24.24	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5190	17.62	1.3	21.00	23
		5310	17.43	1.3	20.81	23
		5510	19.76	1.3	23.14	30
		5670	19.53	1.3	22.91	30
Tmax (40 ℃)	Vmax (AC 253V)	5190	16.53	1.3	19.91	23
		5310	16.37	1.3	19.75	23
		5510	18.54	1.3	21.92	30
		5670	18.42	1.3	21.80	30
Tmax (40 ℃)	Vmin (AC 207V)	5190	16.52	1.3	19.90	23
		5310	16.37	1.3	19.75	23
		5510	18.53	1.3	21.91	30
		5670	18.42	1.3	21.80	30
Tmin (0 ℃)	Vmax (AC 253V)	5190	18.76	1.3	22.14	23
		5310	18.63	1.3	22.01	23
		5510	20.83	1.3	24.21	30
		5670	20.74	1.3	24.12	30
Tmin (0 ℃)	Vmin (AC 207V)	5190	18.74	1.3	22.12	23
		5310	18.64	1.3	22.02	23
		5510	20.82	1.3	24.20	30
		5670	20.74	1.3	24.12	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	RF Output Power
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5190	17.55	1.3	20.93	23
		5310	17.32	1.3	20.70	23
		5510	16.04	1.3	19.42	30
		5670	15.82	1.3	19.20	30
Tmax (40 ℃)	Vmax (AC 253V)	5190	16.34	1.3	19.72	23
		5310	16.25	1.3	19.63	23
		5510	15.02	1.3	18.40	30
		5670	14.80	1.3	18.18	30
Tmax (40 ℃)	Vmin (AC 207V)	5190	16.34	1.3	19.72	23
		5310	16.24	1.3	19.62	23
		5510	15.03	1.3	18.41	30
		5670	14.80	1.3	18.18	30
Tmin (0 ℃)	Vmax (AC 253V)	5190	18.73	1.3	22.11	23
		5310	18.47	1.3	21.85	23
		5510	17.10	1.3	20.48	30
		5670	17.03	1.3	20.41	30
Tmin (0 ℃)	Vmin (AC 207V)	5190	18.74	1.3	22.12	23
		5310	18.47	1.3	21.85	23
		5510	17.10	1.3	20.48	30
		5670	17.05	1.3	20.43	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5320	12.18	1.3	15.52	23
		5500	12.24	1.3	15.58	30
		5700	12.29	1.3	15.63	30
Tmax (40 ℃)	Vmax (AC 253V)	5320	11.04	1.3	14.38	23
		5500	11.15	1.3	14.49	30
		5700	11.17	1.3	14.51	30
Tmax (40 ℃)	Vmin (AC 207V)	5320	11.04	1.3	14.38	23
		5500	11.16	1.3	14.50	30
		5700	11.17	1.3	14.51	30
Tmin (0 ℃)	Vmax (AC 253V)	5320	13.20	1.3	16.54	23
		5500	13.32	1.3	16.66	30
		5700	13.40	1.3	16.74	30
Tmin (0 ℃)	Vmin (AC 207V)	5320	13.20	1.3	16.54	23
		5500	13.32	1.3	16.66	30
		5700	13.40	1.3	16.74	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5320	12.08	1.3	15.42	23
		5500	12.20	1.3	15.54	30
		5700	12.31	1.3	15.65	30
Tmax (40 ℃)	Vmax (AC 253V)	5320	10.97	1.3	14.31	23
		5500	11.14	1.3	14.48	30
		5700	11.18	1.3	14.52	30
Tmax (40 ℃)	Vmin (AC 207V)	5320	10.98	1.3	14.32	23
		5500	11.14	1.3	14.48	30
		5700	11.18	1.3	14.52	30
Tmin (0 ℃)	Vmax (AC 253V)	5320	13.12	1.3	16.46	23
		5500	13.35	1.3	16.69	30
		5700	13.42	1.3	16.76	30
Tmin (0 ℃)	Vmin (AC 207V)	5320	13.12	1.3	16.46	23
		5500	13.36	1.3	16.70	30
		5700	13.42	1.3	16.76	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5310	12.10	1.3	15.48	23
		5510	12.23	1.3	15.61	30
		5670	11.94	1.3	15.32	30
Tmax (40 ℃)	Vmax (AC 253V)	5310	11.05	1.3	14.43	23
		5510	11.19	1.3	14.57	30
		5670	10.03	1.3	13.41	30
Tmax (40 ℃)	Vmin (AC 207V)	5310	11.04	1.3	14.42	23
		5510	11.20	1.3	14.58	30
		5670	10.04	1.3	13.42	30
Tmin (0 ℃)	Vmax (AC 253V)	5310	13.22	1.3	16.60	23
		5510	13.36	1.3	16.74	30
		5670	13.06	1.3	16.44	30
Tmin (0 ℃)	Vmin (AC 207V)	5310	13.20	1.3	16.58	23
		5510	13.36	1.3	16.74	30
		5670	13.07	1.3	16.45	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5320	12.26	1.3	15.60	23
		5500	12.27	1.3	15.61	30
		5700	12.01	1.3	15.35	30
Tmax (40 ℃)	Vmax (AC 253V)	5320	11.15	1.3	14.49	23
		5500	11.14	1.3	14.48	30
		5700	10.89	1.3	14.23	30
Tmax (40 ℃)	Vmin (AC 207V)	5320	11.15	1.3	14.49	23
		5500	11.12	1.3	14.46	30
		5700	10.90	1.3	14.24	30
Tmin (0 ℃)	Vmax (AC 253V)	5320	13.34	1.3	16.68	23
		5500	13.35	1.3	16.69	30
		5700	13.10	1.3	16.44	30
Tmin (0 ℃)	Vmin (AC 207V)	5320	13.34	1.3	16.68	23
		5500	13.36	1.3	16.70	30
		5700	13.08	1.3	16.42	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5320	12.02	1.3	15.36	23
		5500	12.28	1.3	15.62	30
		5700	12.44	1.3	15.78	30
Tmax (40 ℃)	Vmax (AC 253V)	5320	10.95	1.3	14.29	23
		5500	11.12	1.3	14.46	30
		5700	11.23	1.3	14.57	30
Tmax (40 ℃)	Vmin (AC 207V)	5320	10.97	1.3	14.31	23
		5500	11.10	1.3	14.44	30
		5700	11.21	1.3	14.55	30
Tmin (0 ℃)	Vmax (AC 253V)	5320	13.14	1.3	16.48	23
		5500	13.32	1.3	16.66	30
		5700	13.50	1.3	16.84	30
Tmin (0 ℃)	Vmin (AC 207V)	5320	13.14	1.3	16.48	23
		5500	13.30	1.3	16.64	30
		5700	13.50	1.3	16.84	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5310	12.38	1.3	15.76	23
		5510	12.01	1.3	15.39	30
		5670	12.02	1.3	15.40	30
Tmax (40 ℃)	Vmax (AC 253V)	5310	11.14	1.3	14.52	23
		5510	10.85	1.3	14.23	30
		5670	10.92	1.3	14.30	30
Tmax (40 ℃)	Vmin (AC 207V)	5310	11.15	1.3	14.53	23
		5510	10.84	1.3	14.22	30
		5670	10.92	1.3	14.30	30
Tmin (0 ℃)	Vmax (AC 253V)	5310	13.47	1.3	16.85	23
		5510	13.21	1.3	16.59	30
		5670	13.22	1.3	16.60	30
Tmin (0 ℃)	Vmin (AC 207V)	5310	13.47	1.3	16.85	23
		5510	13.20	1.3	16.58	30
		5670	13.22	1.3	16.60	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5320	13.87	1.3	17.21	23
		5500	14.00	1.3	17.34	30
		5700	14.05	1.3	17.39	30
Tmax (40 ℃)	Vmax (AC 253V)	5320	12.75	1.3	16.09	23
		5500	12.95	1.3	16.29	30
		5700	12.97	1.3	16.31	30
Tmax (40 ℃)	Vmin (AC 207V)	5320	12.74	1.3	16.08	23
		5500	12.96	1.3	16.30	30
		5700	12.95	1.3	16.29	30
Tmin (0 ℃)	Vmax (AC 253V)	5320	14.97	1.3	18.31	23
		5500	15.12	1.3	18.46	30
		5700	15.17	1.3	18.51	30
Tmin (0 ℃)	Vmin (AC 207V)	5320	14.96	1.3	18.30	23
		5500	15.12	1.3	18.46	30
		5700	15.17	1.3	18.51	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmit Power Control (TPC)
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Power (dBm)	Test Cable Loss (dB)	EIRP of TPC (dBm)	Limit (dBm)
Tnom (25 ℃)	Vnom (AC 230V)	5310	13.91	1.3	17.29	23
		5510	13.99	1.3	17.37	30
		5670	13.77	1.3	17.15	30
Tmax (40 ℃)	Vmax (AC 253V)	5310	12.86	1.3	16.24	23
		5510	12.94	1.3	16.32	30
		5670	12.69	1.3	16.07	30
Tmax (40 ℃)	Vmin (AC 207V)	5310	12.86	1.3	16.24	23
		5510	12.95	1.3	16.33	30
		5670	12.70	1.3	16.08	30
Tmin (0 ℃)	Vmax (AC 253V)	5310	14.98	1.3	18.36	23
		5510	15.03	1.3	18.41	30
		5670	14.82	1.3	18.20	30
Tmin (0 ℃)	Vmin (AC 207V)	5310	15.00	1.3	18.38	23
		5510	15.04	1.3	18.42	30
		5670	14.82	1.3	18.20	30

EIRP = Measured Power + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5180	5.59	1.3	8.93	10
		5320	5.14	1.3	8.48	10
		5500	3.23	1.3	6.57	17
		5700	2.91	1.3	6.25	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5180	5.35	1.3	8.69	10
		5320	4.95	1.3	8.29	10
		5500	2.15	1.3	5.49	17
		5700	2.59	1.3	5.93	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 010

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5190	1.48	1.3	4.86	10
		5310	2.96	1.3	6.34	10
		5510	0.70	1.3	4.08	17
		5670	0.34	1.3	3.72	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5180	4.46	1.3	7.80	10
		5320	4.37	1.3	7.71	10
		5500	1.62	1.3	4.96	17
		5700	-0.83	1.3	2.51	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5180	4.13	1.3	7.47	10
		5320	4.09	1.3	7.43	10
		5500	1.69	1.3	5.03	17
		5700	-0.94	1.3	2.40	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 100

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5190	1.84	1.3	5.22	10
		5310	1.48	1.3	4.86	10
		5510	-1.70	1.3	1.68	17
		5670	-5.19	1.3	-1.81	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 99 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5180	5.97	1.3	9.31	10
		5320	5.90	1.3	9.24	10
		5500	5.79	1.3	9.13	17
		5700	5.53	1.3	8.87	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Power Density
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz) – chain 110

Antenna Gain = 2dBi, Duty Cycle = 98 %						
Test Conditions		Frequency (MHz)	Measured Density (dBm/MHz)	Test Cable Loss (dB)	Power Density (dBm/MHz)	Limit (dBm/MHz)
Tnom (25 ℃)	Vnom (AC 230V)	5190	3.20	1.3	6.58	10
		5310	3.01	1.3	6.39	10
		5510	3.29	1.3	6.67	17
		5670	4.30	1.3	7.68	17

Power Density = Measured Density + Antenna Gain + Test Cable Loss + 10 log (1/Duty Cycle)

6. Transmitter Unwanted Emissions Outside the 5GHz RLAN Bands

6.1. Test Equipment

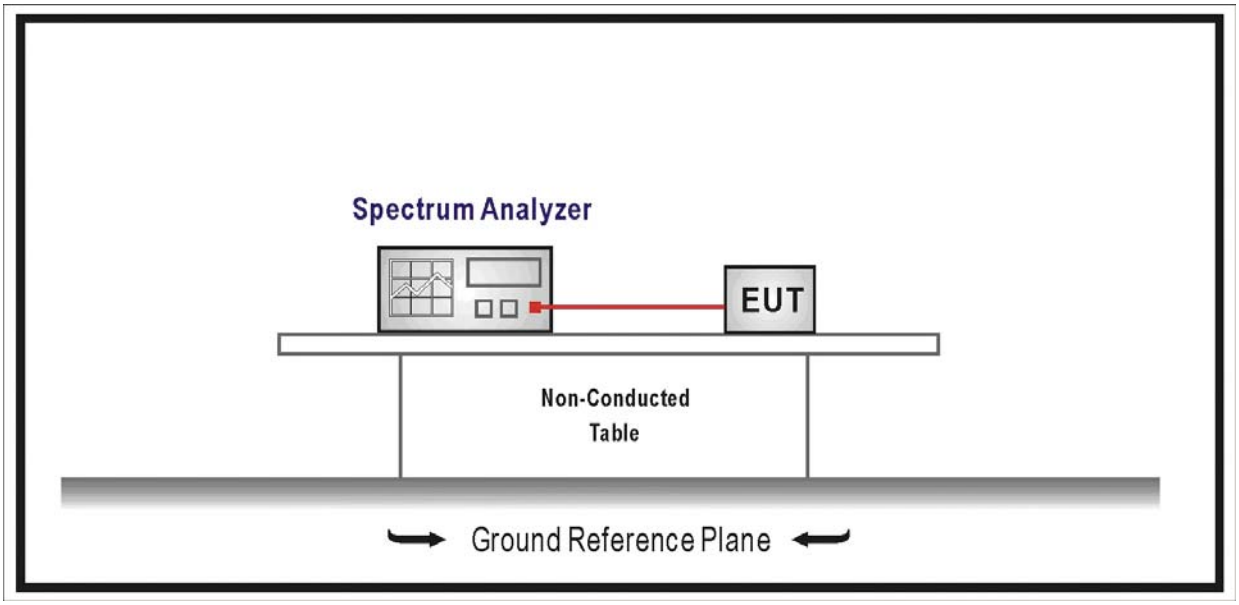
Transmitter Unwanted Emissions Outside the 5GHz RLAN Bands / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
PSG Analog S.G.	Agilent	E8257D	MY44321116	2008/06/11
Preamplifier	QuieTek	AP-025C	QT-AP005	2007/11/25
Preamplifier	QuieTek	AP-180C	CHM-0602013	2007/11/25
Bilog Type Antenna	Schaffner	CBL6141A	4278	2007/11/25
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2007/11/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	499	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	295	2008/06/28
High-Pass Filter	Wainwright	WHKX7.0/18G-8SS	SN16	2008/03/03
Low-Pass Filter	Wainwright	WLKS4500-9SS	SN2	2008/03/03
Coaxial Cable	Huber+Suhner	AC4-RL	06	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RH	07	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-T	08	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

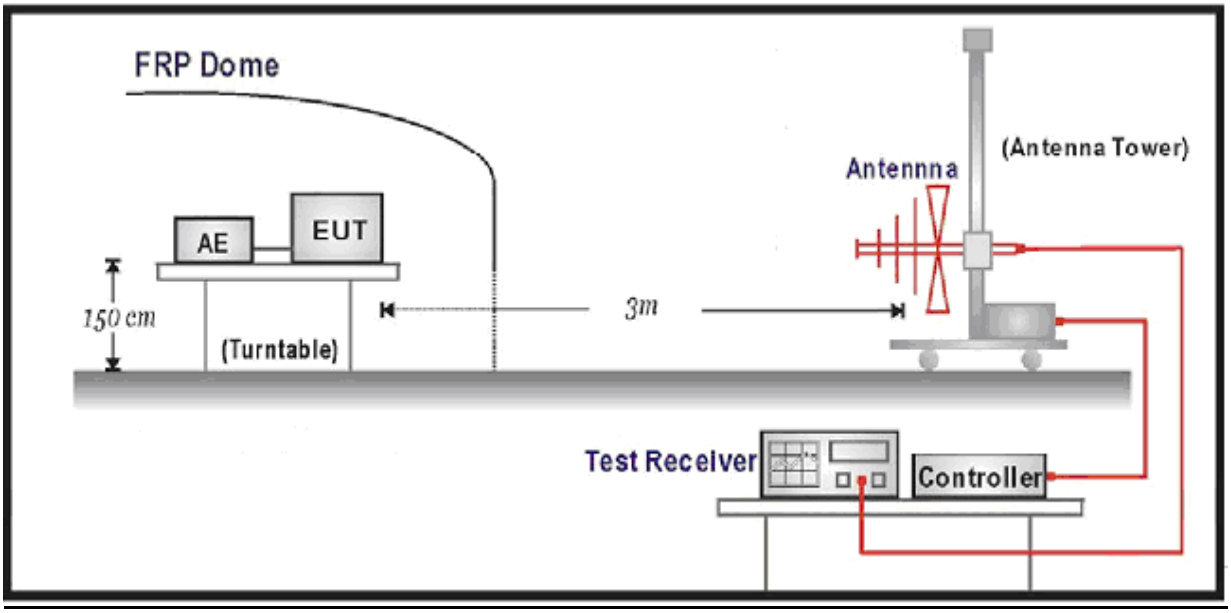
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup

For Conducted Measurement



For Radiated Measurement



6.3. Limit

Frequency Range	Maximum Power, ERP	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87.5 MHz	-36 dBm	100 kHz
87.5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 5.15 GHz	-30 dBm	1 MHz
5.35 GHz to 5.47 GHz	-30 dBm	1 MHz
5.725 GHz to 26.5 GHz	-30 dBm	1 MHz

6.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.5

6.5. Test Result

Mode 1: 802.11a (Chain 100)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
136.70	H	-54.06	-36	-18.06	PEAK
136.70	V	-55.84	-36	-19.84	PEAK
295.13	H	-55.04	-36	-19.04	PEAK
295.13	V	-57.23	-36	-21.23	PEAK
398.60	H	-56.11	-36	-20.11	PEAK
398.60	V	-57.25	-36	-21.25	PEAK
2487.08	H	-57.15	-30	-27.15	PEAK
2487.08	V	-56.43	-30	-26.43	PEAK
5439.20	H	-51.88	-30	-21.88	PEAK
5439.20	V	-51.80	-30	-21.80	PEAK
15524.58	H	-37.64	-30	-7.64	PEAK
15524.58	V	-38.64	-30	-8.64	PEAK
Channel 64 (5320MHz)					
110.83	H	-61.10	-54	-7.10	PEAK
110.83	V	-63.23	-54	-9.23	PEAK
156.10	H	-49.09	-36	-13.09	PEAK
156.10	V	-55.55	-36	-19.55	PEAK
254.71	H	-51.96	-36	-15.96	PEAK
254.71	V	-54.33	-36	-18.33	PEAK
2812.16	H	-56.78	-30	-26.78	PEAK
2812.16	V	-55.07	-30	-25.07	PEAK
5413.00	H	-52.01	-30	-22.01	PEAK
5413.00	V	-51.56	-30	-21.56	PEAK
15963.87	H	-36.05	-30	-6.05	PEAK
15963.87	V	-37.13	-30	-7.13	PEAK
Channel 100 (5500MHz)					
107.60	H	-62.26	-54	-8.26	PEAK
107.60	V	-63.23	-54	-9.23	PEAK
167.42	H	-52.75	-36	-16.75	PEAK
167.42	V	-51.00	-36	-15.00	PEAK
361.42	H	-52.56	-36	-16.56	PEAK
361.42	V	-52.51	-36	-16.51	PEAK

3247.92	H	-55.19	-30	-25.19	PEAK
3247.92	V	-57.79	-30	-27.79	PEAK
5407.80	H	-51.79	-30	-21.79	PEAK
5407.80	V	-51.37	-30	-21.37	PEAK
16504.54	H	-40.61	-30	-10.61	PEAK
16504.54	V	-38.19	-30	-8.19	PEAK
Channel 140 (5700MHz)					
154.48	H	-50.86	-36	-14.86	PEAK
154.48	V	-55.38	-36	-19.38	PEAK
280.58	H	-50.17	-36	-14.17	PEAK
280.58	V	-52.21	-36	-16.21	PEAK
377.58	H	-58.66	-36	-22.66	PEAK
377.58	V	-57.25	-36	-21.25	PEAK
3469.25	H	-56.43	-30	-26.43	PEAK
3469.25	V	-55.38	-30	-25.38	PEAK
5418.60	H	-51.88	-30	-21.88	PEAK
5418.60	V	-52.57	-30	-22.57	PEAK
17079.00	H	-40.57	-30	-10.57	PEAK
17079.00	V	-38.27	-30	-8.27	PEAK

Mode 1: 802.11n(20MHz) (Chain 100)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
116.73	H	-60.14	-54	-6.14	PEAK
116.73	V	-62.54	-54	-8.54	PEAK
297.00	H	-55.24	-36	-19.24	PEAK
297.00	V	-57.15	-36	-21.15	PEAK
379.60	H	-55.00	-36	-19.00	PEAK
379.60	V	-56.26	-36	-20.26	PEAK
2527.03	H	-57.15	-30	-27.15	PEAK
2527.03	V	-56.53	-30	-26.53	PEAK
5389.20	H	-51.74	-30	-21.74	PEAK
5389.20	V	-51.47	-30	-21.47	PEAK
15524.58	H	-37.85	-30	-7.85	PEAK
15524.58	V	-39.05	-30	-9.05	PEAK
Channel 64 (5320MHz)					
104.37	H	-60.05	-54	-6.05	PEAK
104.37	V	-61.11	-54	-7.11	PEAK
187.35	H	-50.32	-36	-14.32	PEAK
187.35	V	-53.35	-36	-17.35	PEAK
266.24	H	-50.56	-36	-14.56	PEAK
266.24	V	-52.74	-36	-16.74	PEAK
2864.53	H	-55.42	-30	-25.42	PEAK
2864.53	V	-54.47	-30	-24.47	PEAK
5384.03	H	-51.12	-30	-21.12	PEAK
5384.03	V	-50.06	-30	-20.06	PEAK
15963.87	H	-37.35	-30	-7.35	PEAK
15963.87	V	-38.42	-30	-8.42	PEAK
Channel 100 (5500MHz)					
108.37	H	-60.15	-54	-6.15	PEAK
108.37	V	-62.84	-54	-8.84	PEAK
178.84	H	-50.63	-36	-14.63	PEAK
178.84	V	-51.24	-36	-15.24	PEAK
365.44	H	-51.75	-36	-15.75	PEAK
365.44	V	-52.36	-36	-16.36	PEAK
3345.37	H	-56.12	-30	-26.12	PEAK

3345.37	V	-58.05	-30	-28.05	PEAK
5419.36	H	-50.73	-30	-20.73	PEAK
5419.36	V	-51.62	-30	-21.62	PEAK
16504.54	H	-37.75	-30	-7.75	PEAK
16504.54	V	-38.32	-30	-8.32	PEAK
Channel 140 (5700MHz)					
169.35	H	-52.47	-36	-16.47	PEAK
169.35	V	-54.27	-36	-18.27	PEAK
273.34	H	-51.25	-36	-15.25	PEAK
273.34	V	-53.67	-36	-17.67	PEAK
380.33	H	-57.34	-36	-21.34	PEAK
380.33	V	-56.27	-36	-20.27	PEAK
3247.75	H	-55.28	-30	-25.28	PEAK
3247.75	V	-56.06	-30	-26.06	PEAK
5374.63	H	-50.07	-30	-20.07	PEAK
5374.63	V	-52.72	-30	-22.72	PEAK
17079.00	H	-39.12	-30	-9.12	PEAK
17079.00	V	-38.05	-30	-8.05	PEAK

Mode 1: 802.11n(40MHz) (Chain 100)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
104.27	H	-59.26	-54	-5.26	PEAK
104.27	V	-61.96	-54	-7.96	PEAK
317.05	H	-54.33	-36	-18.33	PEAK
317.05	V	-54.07	-36	-18.07	PEAK
573.62	H	-63.12	-54	-9.12	PEAK
573.62	V	-62.38	-54	-8.38	PEAK
2426.15	H	-55.85	-30	-25.85	PEAK
2426.15	V	-57.34	-30	-27.34	PEAK
5388.24	H	-53.74	-30	-23.74	PEAK
5388.24	V	-52.46	-30	-22.46	PEAK
15524.58	H	-38.94	-30	-8.94	PEAK
15524.58	V	-39.22	-30	-9.22	PEAK
Channel 62 (5310MHz)					
122.46	H	-62.32	-36	-26.32	PEAK
122.46	V	-61.38	-36	-25.38	PEAK
217.35	H	-61.86	-54	-7.86	PEAK
217.35	V	-63.44	-54	-9.44	PEAK
477.26	H	-62.39	-54	-8.39	PEAK
477.26	V	-62.07	-54	-8.07	PEAK
2537.55	H	-56.14	-30	-26.14	PEAK
2537.55	V	-55.26	-30	-25.26	PEAK
5374.08	H	-50.35	-30	-20.35	PEAK
5374.08	V	-52.44	-30	-22.44	PEAK
15963.87	H	-39.24	-30	-9.24	PEAK
15963.87	V	-39.89	-30	-9.89	PEAK
Channel 102 (5510MHz)					
157.23	H	-63.23	-36	-27.23	PEAK
157.23	V	-61.23	-36	-25.23	PEAK
297.85	H	-51.76	-36	-15.76	PEAK
297.85	V	-53.85	-36	-17.85	PEAK
565.47	H	-65.24	-54	-11.24	PEAK
565.47	V	-63.37	-54	-9.37	PEAK
3865.35	H	-55.22	-30	-25.22	PEAK

3865.35	V	-56.19	-30	-26.19	PEAK
5379.58	H	-50.06	-30	-20.06	PEAK
5379.58	V	-53.70	-30	-23.70	PEAK
16504.54	H	-38.95	-30	-8.95	PEAK
16504.54	V	-39.54	-30	-9.54	PEAK
Channel 134 (5670MHz)					
135.67	H	-51.16	-36	-15.16	PEAK
135.67	V	-55.64	-36	-19.64	PEAK
294.35	H	-50.73	-36	-14.73	PEAK
294.35	V	-52.43	-36	-16.43	PEAK
480.22	H	-63.47	-54	-9.47	PEAK
480.22	V	-65.88	-54	-11.88	PEAK
3185.75	H	-54.47	-30	-24.47	PEAK
3185.75	V	-55.22	-30	-25.22	PEAK
5426.23	H	-50.14	-30	-20.14	PEAK
5426.23	V	-53.08	-30	-23.08	PEAK
17079.00	H	-38.10	-30	-8.10	PEAK
17079.00	V	-37.43	-30	-7.43	PEAK

Mode 1: 802.11a (Chain 010)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
236.75	H	-56.15	-36	-20.15	PEAK
236.75	V	-54.46	-36	-18.46	PEAK
455.12	H	-53.44	-36	-17.44	PEAK
455.12	V	-55.93	-36	-19.93	PEAK
795.60	H	-60.67	-54	-6.67	PEAK
795.60	V	-63.07	-54	-9.07	PEAK
2225.08	H	-56.60	-30	-26.60	PEAK
2225.08	V	-54.15	-30	-24.15	PEAK
5439.20	H	-52.34	-30	-22.34	PEAK
5439.20	V	-50.96	-30	-20.96	PEAK
15524.58	H	-36.13	-30	-6.13	PEAK
15524.58	V	-37.57	-30	-7.57	PEAK
Channel 64 (5320MHz)					
112.83	H	-61.10	-54	-7.10	PEAK
112.83	V	-63.23	-54	-9.23	PEAK
155.10	H	-49.09	-36	-13.09	PEAK
155.10	V	-55.55	-36	-19.55	PEAK
236.73	H	-51.96	-36	-15.96	PEAK
236.73	V	-54.33	-36	-18.33	PEAK
2826.16	H	-56.78	-30	-26.78	PEAK
2826.16	V	-55.07	-30	-25.07	PEAK
5433.05	H	-52.01	-30	-22.01	PEAK
5433.05	V	-51.56	-30	-21.56	PEAK
15963.87	H	-36.05	-30	-6.05	PEAK
15963.87	V	-37.13	-30	-7.13	PEAK
Channel 100 (5500MHz)					
102.60	H	-62.15	-54	-8.15	PEAK
102.60	V	-62.46	-54	-8.46	PEAK
186.43	H	-61.48	-54	-7.48	PEAK
186.43	V	-60.05	-54	-6.05	PEAK
365.43	H	-51.30	-36	-15.30	PEAK
365.43	V	-52.15	-36	-16.15	PEAK
3238.92	H	-54.46	-30	-24.46	PEAK

3238.92	V	-56.35	-30	-26.35	PEAK
5446.80	H	-51.32	-30	-21.32	PEAK
5446.80	V	-51.24	-30	-21.24	PEAK
16504.54	H	-39.37	-30	-9.37	PEAK
16504.54	V	-38.74	-30	-8.74	PEAK
Channel 140 (5700MHz)					
154.48	H	-50.25	-36	-14.25	PEAK
154.48	V	-55.35	-36	-19.35	PEAK
280.58	H	-50.47	-36	-14.47	PEAK
280.58	V	-52.74	-36	-16.74	PEAK
377.58	H	-58.46	-36	-22.46	PEAK
377.58	V	-57.20	-36	-21.20	PEAK
3469.25	H	-56.15	-30	-26.15	PEAK
3469.25	V	-55.00	-30	-25.00	PEAK
5418.60	H	-51.24	-30	-21.24	PEAK
5418.60	V	-52.63	-30	-22.63	PEAK
17079.00	H	-40.29	-30	-10.29	PEAK
17079.00	V	-38.12	-30	-8.12	PEAK

Mode 1: 802.11n(20MHz) (Chain 010)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
175.28	H	-63.23	-54	-9.23	PEAK
175.28	V	-66.65	-54	-12.65	PEAK
252.27	H	-54.64	-36	-18.64	PEAK
252.27	V	-55.36	-36	-19.36	PEAK
475.59	H	-63.11	-54	-9.11	PEAK
475.59	V	-64.89	-54	-10.89	PEAK
2468.24	H	-56.12	-30	-26.12	PEAK
2468.24	V	-54.40	-30	-24.40	PEAK
5454.22	H	-50.38	-30	-20.38	PEAK
5454.22	V	-53.85	-30	-23.85	PEAK
15524.58	H	-36.37	-30	-6.37	PEAK
15524.58	V	-38.28	-30	-8.28	PEAK
Channel 64 (5320MHz)					
194.53	H	-62.24	-54	-8.24	PEAK
194.53	V	-64.86	-54	-10.86	PEAK
226.22	H	-62.46	-54	-8.46	PEAK
226.22	V	-63.33	-54	-9.33	PEAK
527.52	H	-62.07	-54	-8.07	PEAK
527.52	V	-64.14	-54	-10.14	PEAK
2359.10	H	-53.26	-30	-23.26	PEAK
2359.10	V	-55.47	-30	-25.47	PEAK
5385.17	H	-50.67	-30	-20.67	PEAK
5385.17	V	-52.86	-30	-22.86	PEAK
15963.87	H	-38.38	-30	-8.38	PEAK
15963.87	V	-39.86	-30	-9.86	PEAK
Channel 100 (5500MHz)					
100.35	H	-62.25	-54	-8.25	PEAK
100.35	V	-63.75	-54	-9.75	PEAK
184.80	H	-61.48	-54	-7.48	PEAK
184.80	V	-62.95	-54	-8.95	PEAK
372.41	H	-50.38	-36	-14.38	PEAK
372.41	V	-52.95	-36	-16.95	PEAK
3015.32	H	-55.36	-30	-25.36	PEAK

3015.32	V	-57.85	-30	-27.85	PEAK
5383.27	H	-50.33	-30	-20.33	PEAK
5383.27	V	-52.10	-30	-22.10	PEAK
16504.54	H	-36.29	-30	-6.29	PEAK
16504.54	V	-37.06	-30	-7.06	PEAK
Channel 140 (5700MHz)					
127.54	H	-52.26	-36	-16.26	PEAK
127.54	V	-53.67	-36	-17.67	PEAK
279.50	H	-51.83	-36	-15.83	PEAK
279.50	V	-55.23	-36	-19.23	PEAK
384.14	H	-57.07	-36	-21.07	PEAK
384.14	V	-56.14	-36	-20.14	PEAK
3059.25	H	-57.26	-30	-27.26	PEAK
3059.25	V	-55.08	-30	-25.08	PEAK
5443.60	H	-52.10	-30	-22.10	PEAK
5443.60	V	-51.38	-30	-21.38	PEAK
17079.00	H	-39.90	-30	-9.90	PEAK
17079.00	V	-37.57	-30	-7.57	PEAK

Mode 1: 802.11n(40MHz) (Chain 010)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
102.75	H	-63.44	-54	-9.44	PEAK
102.75	V	-59.92	-54	-5.92	PEAK
340.40	H	-52.67	-36	-16.67	PEAK
340.40	V	-50.07	-36	-14.07	PEAK
662.12	H	-63.09	-54	-9.09	PEAK
662.12	V	-64.86	-54	-10.86	PEAK
2245.00	H	-51.05	-30	-21.05	PEAK
2245.00	V	-50.83	-30	-20.83	PEAK
5387.60	H	-51.19	-30	-21.19	PEAK
5387.60	V	-52.38	-30	-22.38	PEAK
15524.58	H	-40.20	-30	-10.20	PEAK
15524.58	V	-39.52	-30	-9.52	PEAK
Channel 62 (5310MHz)					
107.60	H	-62.26	-54	-8.26	PEAK
107.60	V	-64.75	-54	-10.75	PEAK
590.98	H	-64.32	-54	-10.32	PEAK
590.98	V	-62.94	-54	-8.94	PEAK
856.12	H	-64.86	-54	-10.86	PEAK
856.12	V	-65.17	-54	-11.17	PEAK
2998.92	H	-48.62	-30	-18.62	PEAK
2998.92	V	-49.05	-30	-19.05	PEAK
5409.60	H	-51.28	-30	-21.28	PEAK
5409.60	V	-53.20	-30	-23.20	PEAK
15963.87	H	-38.46	-30	-8.46	PEAK
15963.87	V	-37.40	-30	-7.40	PEAK
Channel 102 (5510MHz)					
136.70	H	-54.06	-36	-18.06	PEAK
136.70	V	-55.54	-36	-19.54	PEAK
288.67	H	-51.39	-36	-15.39	PEAK
288.67	V	-53.00	-36	-17.00	PEAK
531.17	H	-60.87	-54	-6.87	PEAK
531.17	V	-60.26	-54	-6.26	PEAK
3483.92	H	-47.93	-30	-17.93	PEAK

3483.92	V	-47.14	-30	-17.14	PEAK
5416.60	H	-52.27	-30	-22.27	PEAK
5416.60	V	-50.37	-30	-20.37	PEAK
16504.54	H	-39.05	-30	-9.05	PEAK
16504.54	V	-38.50	-30	-8.50	PEAK
Channel 134 (5670MHz)					
148.02	H	-51.61	-36	-15.61	PEAK
148.02	V	-52.45	-36	-16.45	PEAK
435.78	H	-54.36	-36	-18.36	PEAK
435.78	V	-53.74	-36	-17.74	PEAK
608.77	H	-62.94	-54	-8.94	PEAK
608.77	V	-60.87	-54	-6.87	PEAK
3745.92	H	-49.26	-30	-19.26	PEAK
3745.92	V	-47.55	-30	-17.55	PEAK
5428.00	H	-53.27	-30	-23.27	PEAK
5428.00	V	-52.18	-30	-22.18	PEAK
17079.00	H	-39.55	-30	-9.55	PEAK
17079.00	V	-38.51	-30	-8.51	PEAK

Mode 1: 802.11n(20MHz) (Chain 110)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
128.62	H	-56.62	-36	-20.62	PEAK
128.62	V	-55.57	-36	-19.57	PEAK
390.52	H	-49.44	-36	-13.44	PEAK
390.52	V	-50.07	-36	-14.07	PEAK
561.88	H	-60.86	-54	-6.86	PEAK
561.88	V	-61.95	-54	-7.95	PEAK
2058.25	H	-49.58	-30	-19.58	PEAK
2058.25	V	-47.25	-30	-17.25	PEAK
5387.60	H	-53.06	-30	-23.06	PEAK
5387.60	V	-51.44	-30	-21.44	PEAK
15524.58	H	-37.59	-30	-7.59	PEAK
15524.58	V	-39.57	-30	-9.57	PEAK
Channel 64 (5320MHz)					
167.42	H	-52.75	-36	-16.75	PEAK
167.42	V	-54.85	-36	-18.85	PEAK
545.72	H	-60.46	-54	-6.46	PEAK
545.72	V	-62.58	-54	-8.58	PEAK
720.32	H	-68.15	-54	-14.15	PEAK
720.32	V	-69.24	-54	-15.24	PEAK
2431.75	H	-51.38	-30	-21.38	PEAK
2431.75	V	-50.03	-30	-20.03	PEAK
5407.80	H	-53.48	-30	-23.48	PEAK
5407.80	V	-52.17	-30	-22.17	PEAK
15963.87	H	-38.47	-30	-8.47	PEAK
15963.87	V	-39.19	-30	-9.19	PEAK
Channel 100 (5500MHz)					
114.07	H	-59.58	-54	-5.58	PEAK
114.07	V	-57.36	-54	-3.36	PEAK
306.45	H	-54.12	-36	-18.12	PEAK
306.45	V	-55.37	-36	-19.37	PEAK
547.88	H	-61.38	-54	-7.38	PEAK
547.88	V	-60.73	-54	-6.73	PEAK

2998.92	H	-49.56	-30	-19.56	PEAK
2998.92	V	-48.73	-30	-18.73	PEAK
5415.80	H	-51.30	-30	-21.30	PEAK
5415.80	V	-52.47	-30	-22.47	PEAK
16504.54	H	-39.05	-30	-9.05	PEAK
16504.54	V	-38.58	-30	-8.58	PEAK
Channel 140 (5700MHz)					
204.60	H	-60.56	-54	-6.56	PEAK
204.60	V	-60.16	-54	-6.16	PEAK
413.15	H	-52.64	-36	-16.64	PEAK
413.15	V	-54.38	-36	-18.38	PEAK
679.90	H	-65.16	-54	-11.16	PEAK
679.90	V	-64.89	-54	-10.89	PEAK
2058.25	H	-49.68	-30	-19.68	PEAK
2058.25	V	-50.27	-30	-20.27	PEAK
5427.60	H	-53.27	-30	-23.27	PEAK
5427.60	V	-51.49	-30	-21.49	PEAK
17079.00	H	-39.57	-30	-9.57	PEAK
17079.00	V	-38.42	-30	-8.42	PEAK

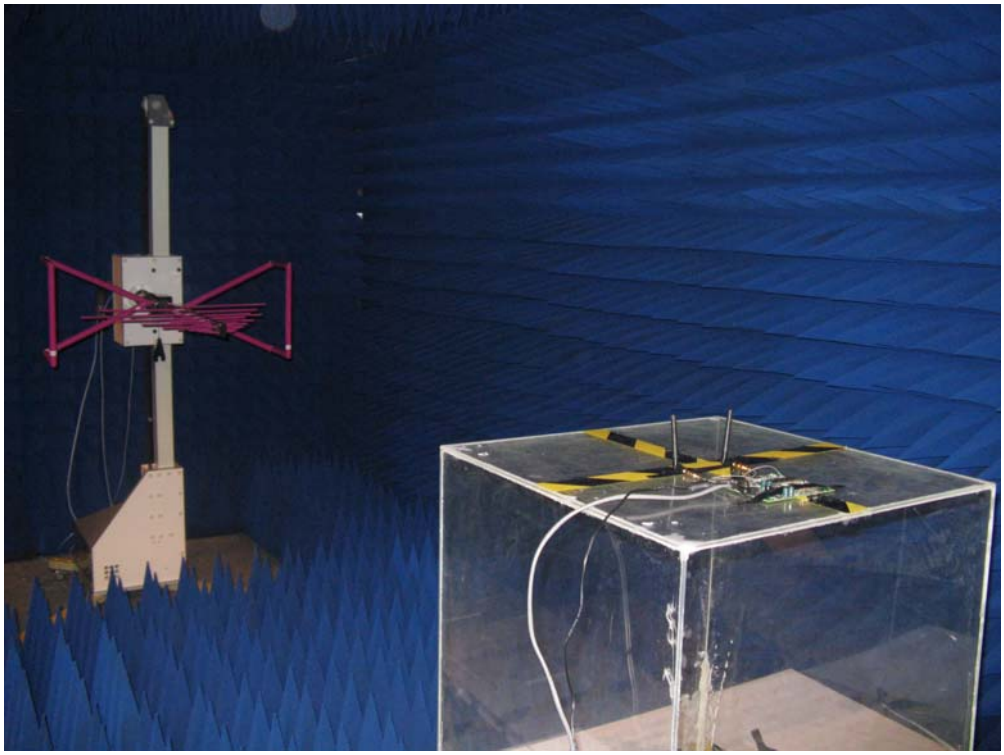
Mode 1: 802.11n(40MHz) (Chain 110)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
178.73	H	-62.15	-54	-8.15	PEAK
178.73	V	-61.28	-54	-7.28	PEAK
306.45	H	-54.12	-36	-18.12	PEAK
306.45	V	-56.14	-36	-20.14	PEAK
435.78	H	-55.42	-36	-19.42	PEAK
435.78	V	-53.78	-36	-17.78	PEAK
1989.08	H	-48.82	-30	-18.82	PEAK
1989.08	V	-49.16	-30	-19.16	PEAK
5415.80	H	-51.47	-30	-21.47	PEAK
5415.80	V	-52.93	-30	-22.93	PEAK
15524.58	H	-38.56	-30	-8.56	PEAK
15524.58	V	-39.57	-30	-9.57	PEAK
Channel 62 (5310MHz)					
122.15	H	-58.28	-36	-22.28	PEAK
122.15	V	-59.38	-36	-23.38	PEAK
340.40	H	-53.47	-36	-17.47	PEAK
340.40	V	-55.28	-36	-19.28	PEAK
608.76	H	-61.38	-54	-7.38	PEAK
608.76	V	-62.46	-54	-8.46	PEAK
2390.25	H	-46.42	-30	-16.42	PEAK
2390.25	V	-48.14	-30	-18.14	PEAK
5407.80	H	-53.64	-30	-23.64	PEAK
5407.80	V	-51.39	-30	-21.39	PEAK
15963.87	H	-40.28	-30	-10.28	PEAK
15963.87	V	-38.45	-30	-8.45	PEAK
Channel 102 (5510MHz)					
251.48	H	-59.77	-36	-23.77	PEAK
251.48	V	-60.39	-36	-24.39	PEAK
489.13	H	-59.94	-54	-5.94	PEAK
489.13	V	-60.37	-54	-6.37	PEAK
641.10	H	-61.18	-54	-7.18	PEAK
641.10	V	-62.45	-54	-8.45	PEAK
2431.75	H	-50.26	-30	-20.26	PEAK

2431.75	V	-47.25	-30	-17.25	PEAK
5416.60	H	-52.93	-30	-22.93	PEAK
5416.60	V	-51.38	-30	-21.38	PEAK
16504.54	H	-40.27	-30	-10.27	PEAK
16504.54	V	-38.05	-30	-8.05	PEAK
Channel 134 (5670MHz)					
144.78	H	-55.45	-36	-19.45	PEAK
144.78	V	-54.39	-36	-18.39	PEAK
306.45	H	-54.11	-36	-18.11	PEAK
306.45	V	-55.28	-36	-19.28	PEAK
794.68	H	-69.41	-54	-15.41	PEAK
794.68	V	-68.25	-54	-14.25	PEAK
2245.00	H	-48.27	-30	-18.27	PEAK
2245.00	V	-46.56	-30	-16.56	PEAK
5428.00	H	-51.37	-30	-21.37	PEAK
5428.00	V	-53.28	-30	-23.28	PEAK
17079.00	H	-38.57	-30	-8.57	PEAK
17079.00	V	-37.04	-30	-7.04	PEAK

6.6. Test Photograph

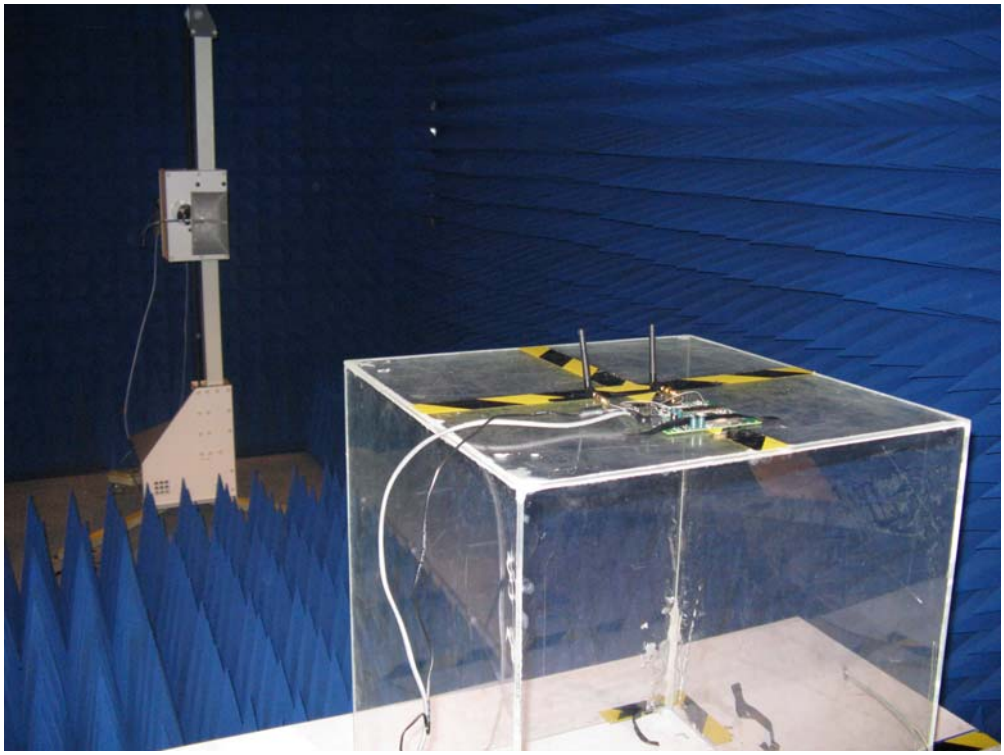
Test Mode : Transmit

Description : Transmitter Spurious Emissions Test Setup for Under 1GHz



Test Mode : Transmit

Description : Transmitter Spurious Emissions Test Setup for Above 1GHz



7. Transmitter Unwanted Emissions Within the 5GHz RLAN Bands

7.1. Test Equipment

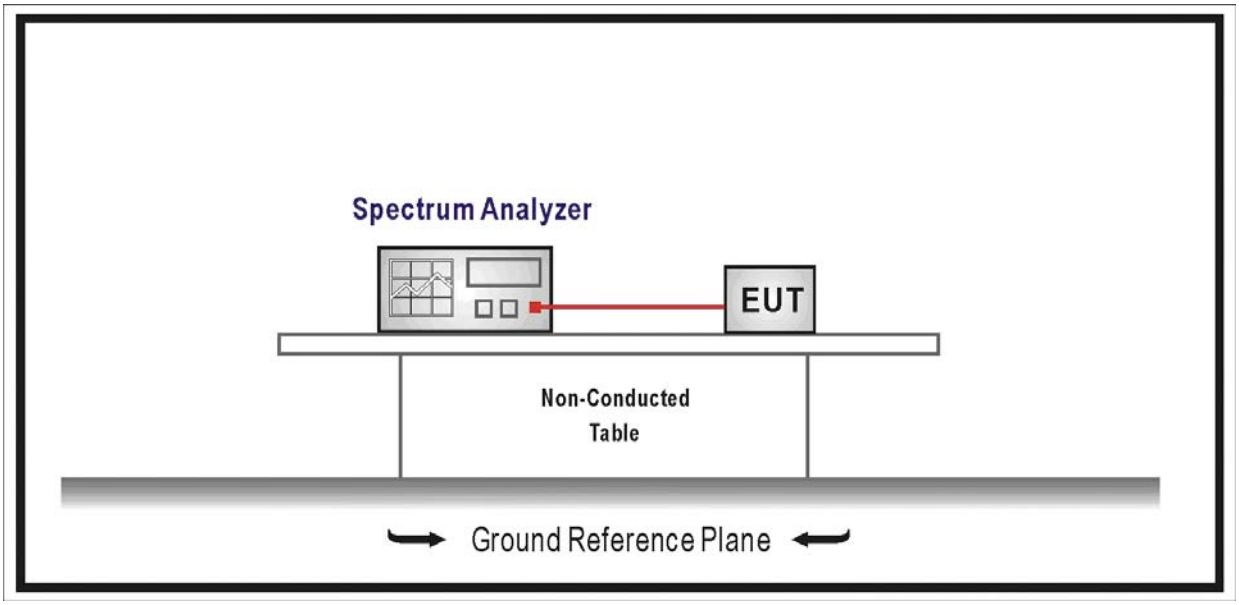
Transmitter Unwanted Emissions Within the 5GHz RLAN Bands / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
Preamplifier	QuieTek	AP-180C	CHM-0602013	2007/11/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/06/28
Coaxial Cable	Huber+Suhner	AC4-RH	07	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

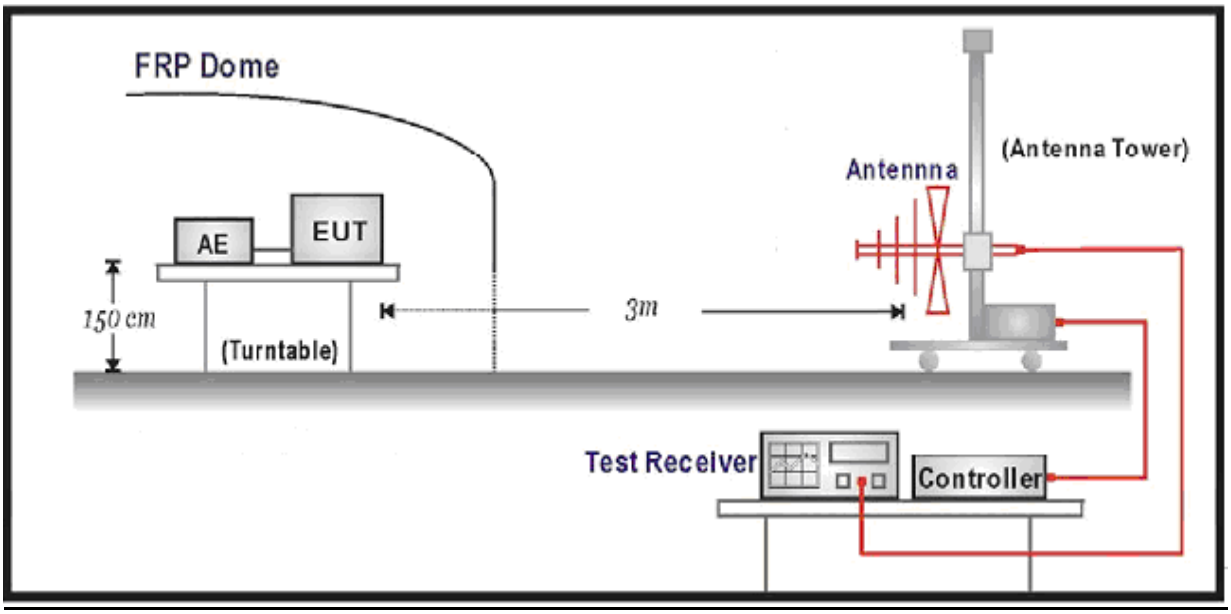
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup

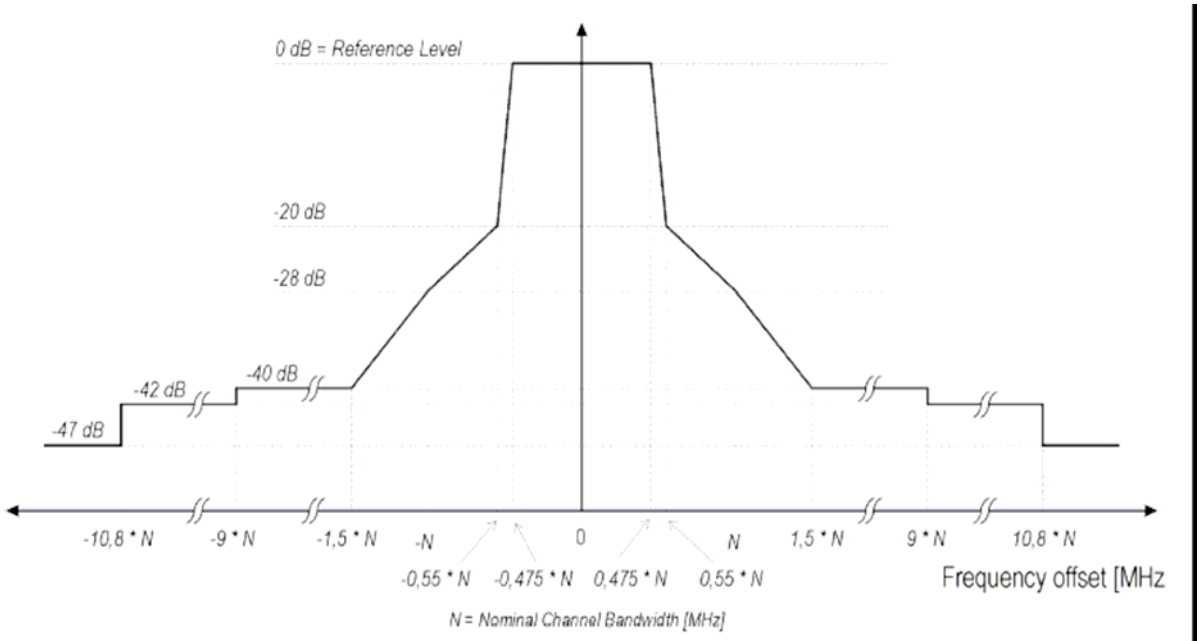
For Conducted Measurement



For Radiated Measurement



7.3. Limit



NOTE: dBc is the spectral density relative to the maximum spectral power density of the transmitted signal.

Figure 1: Transmit spectral power mask

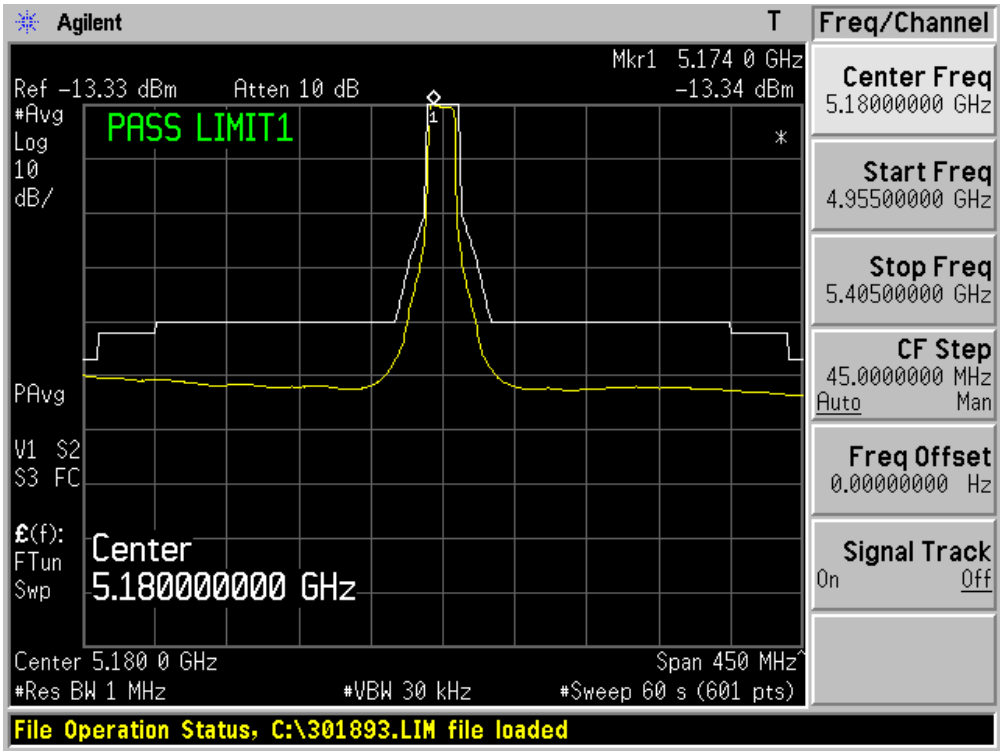
7.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.6

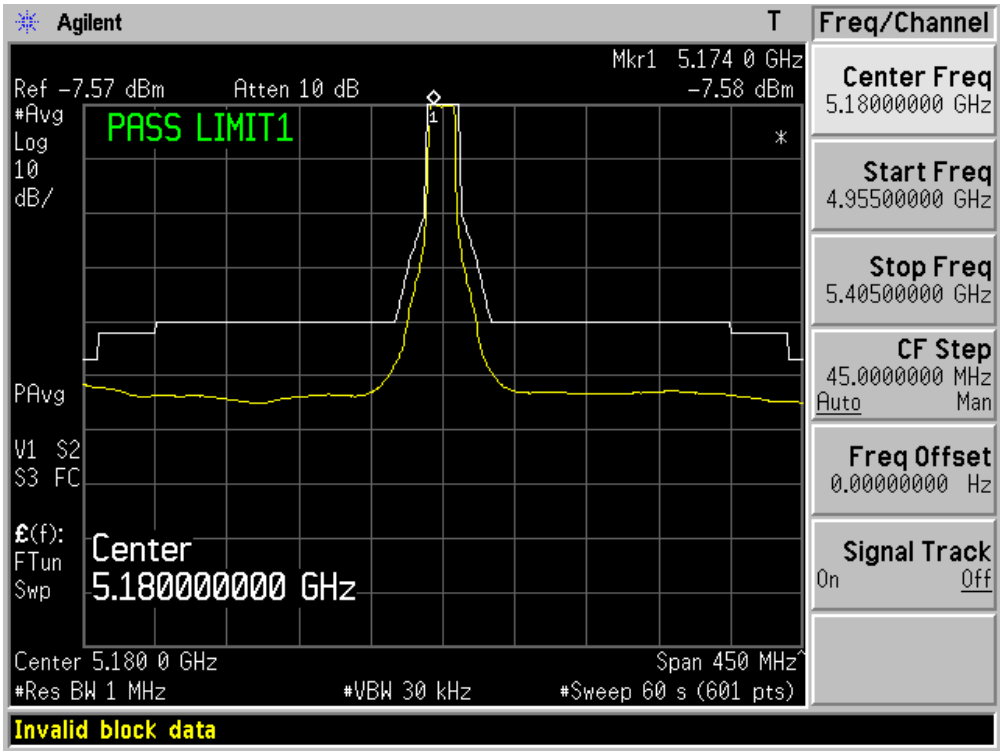
7.5. Test Result

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 010

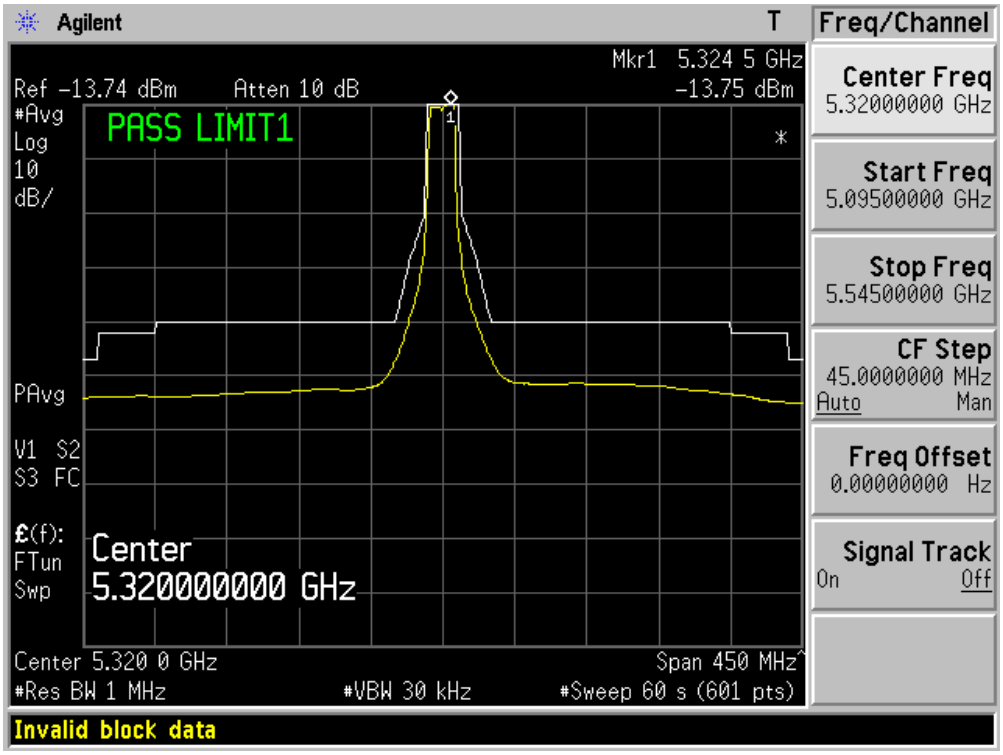
Horizontal



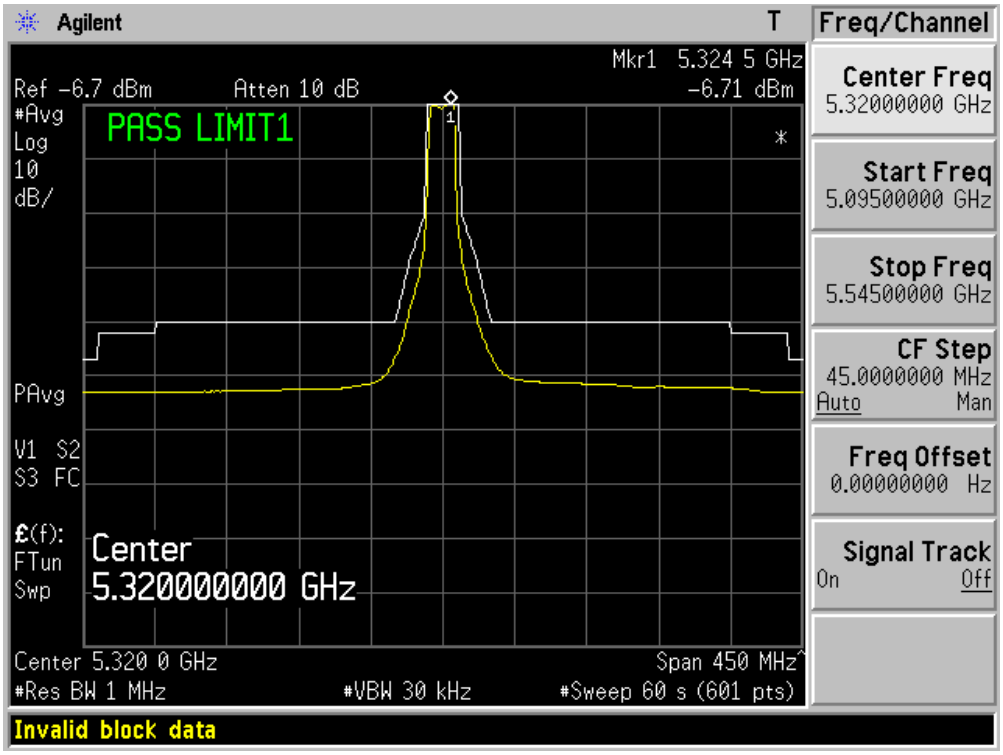
Vertical



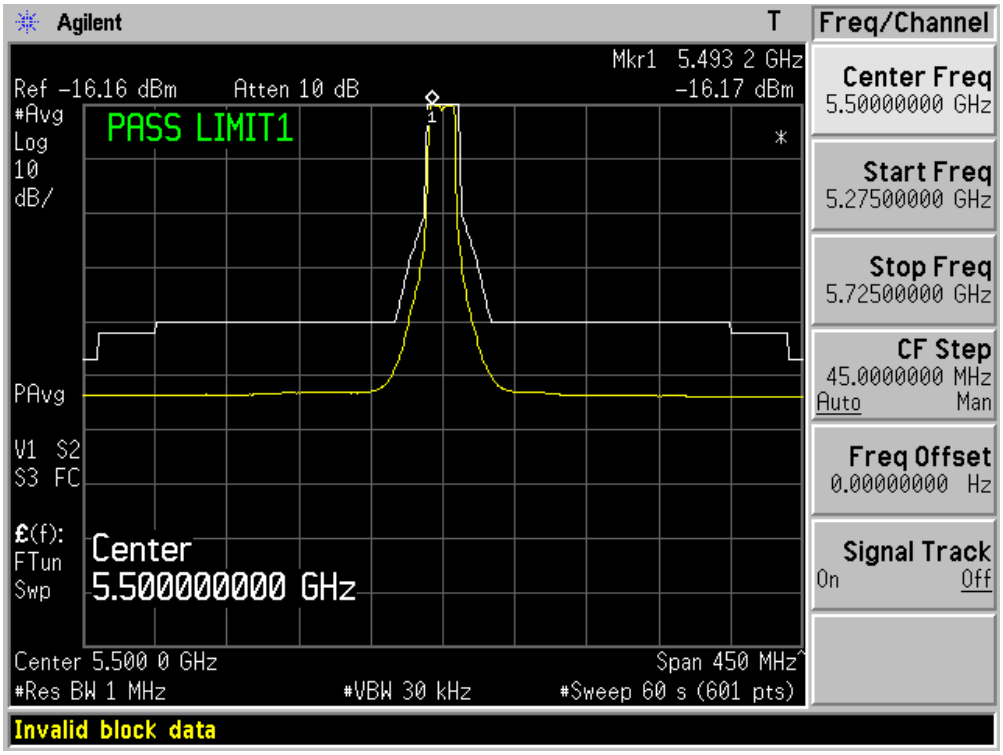
Horizontal



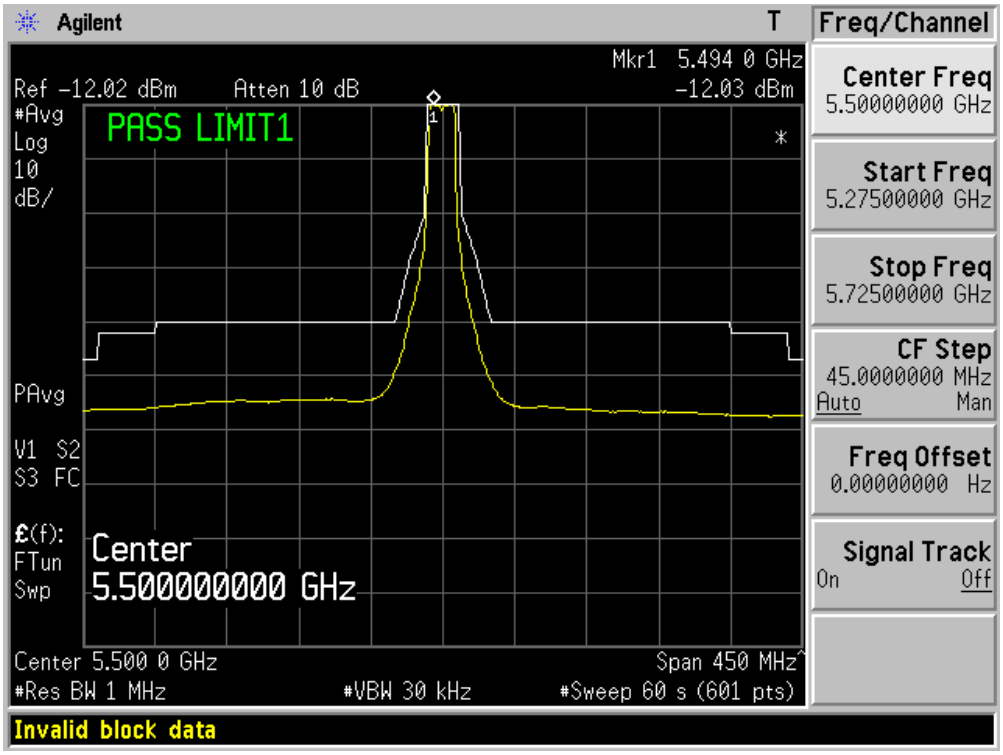
Vertical



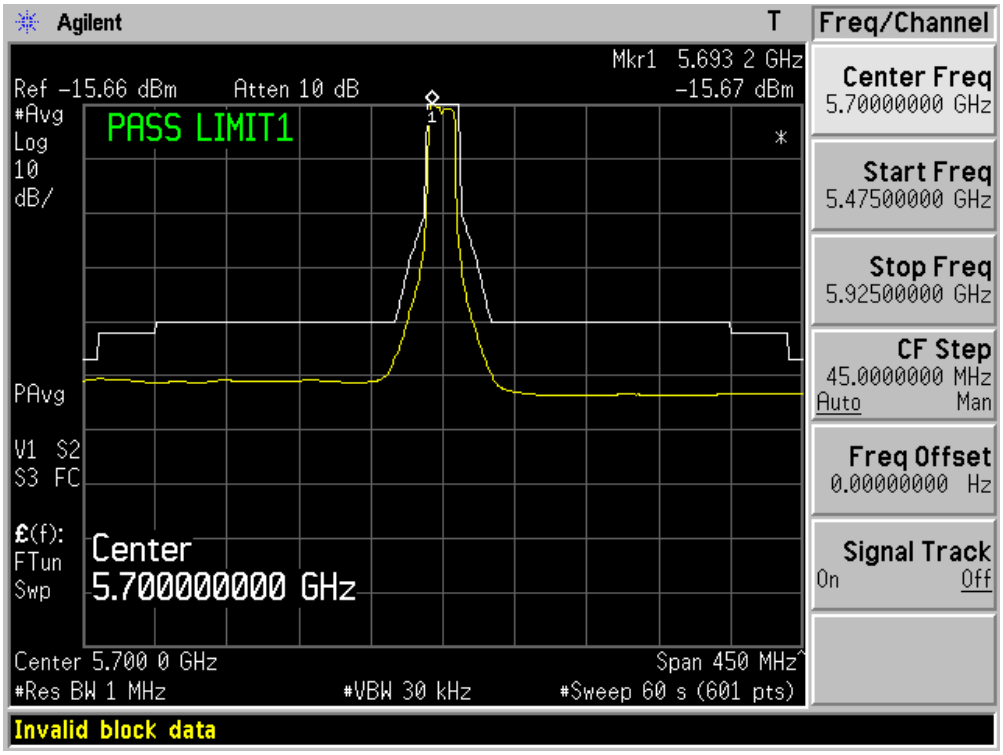
Horizontal



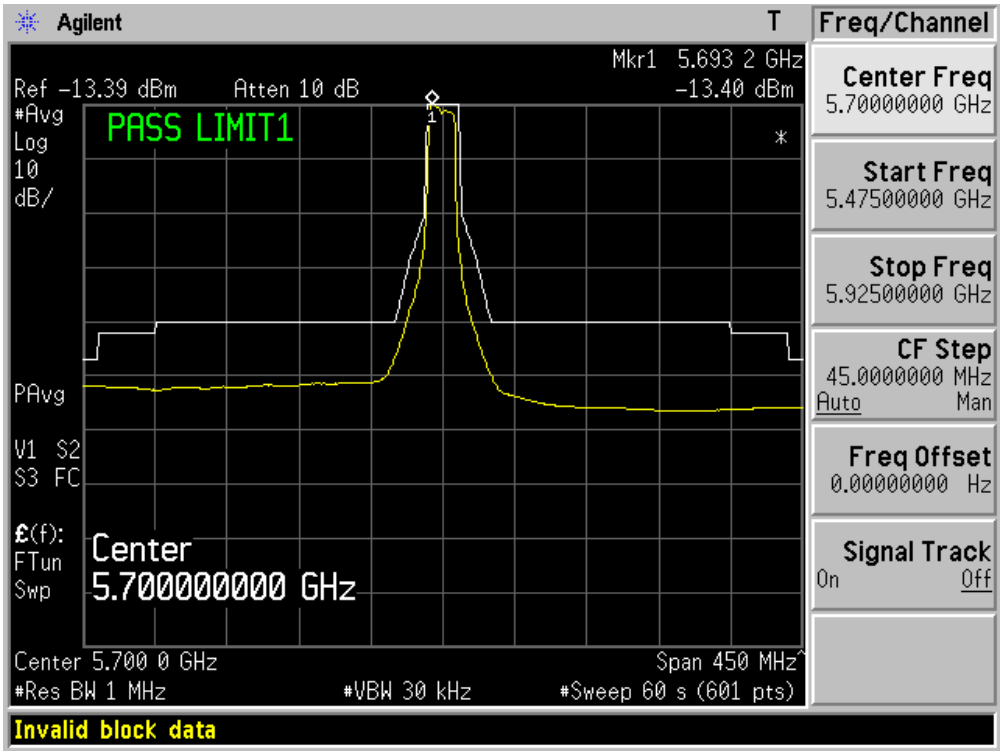
Vertical



Horizontal

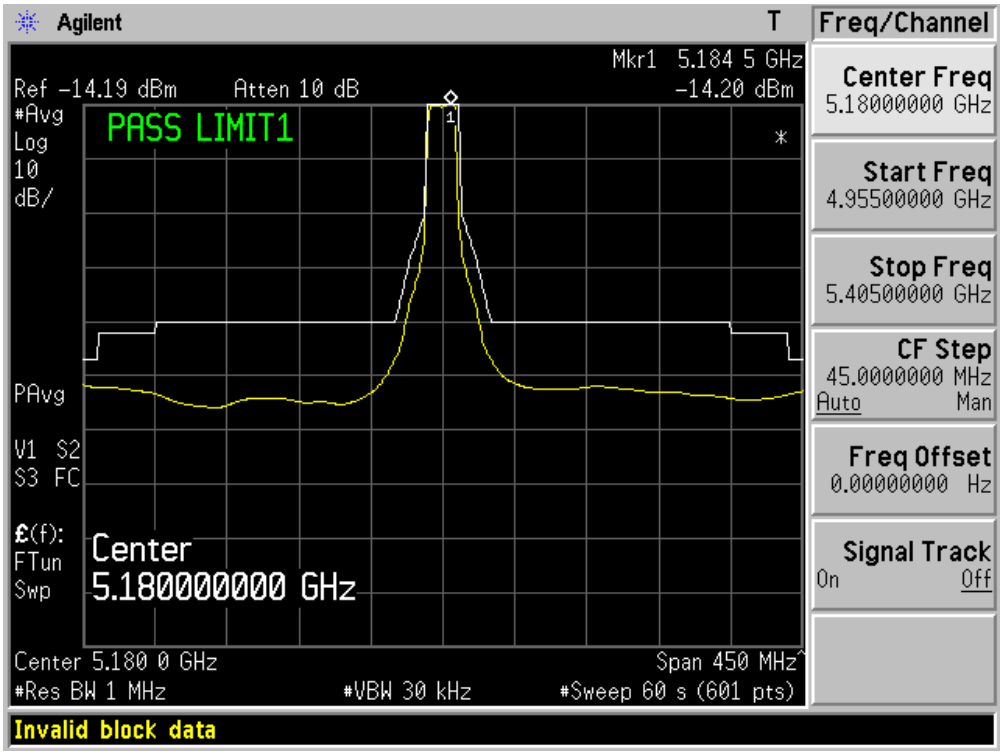


Vertical

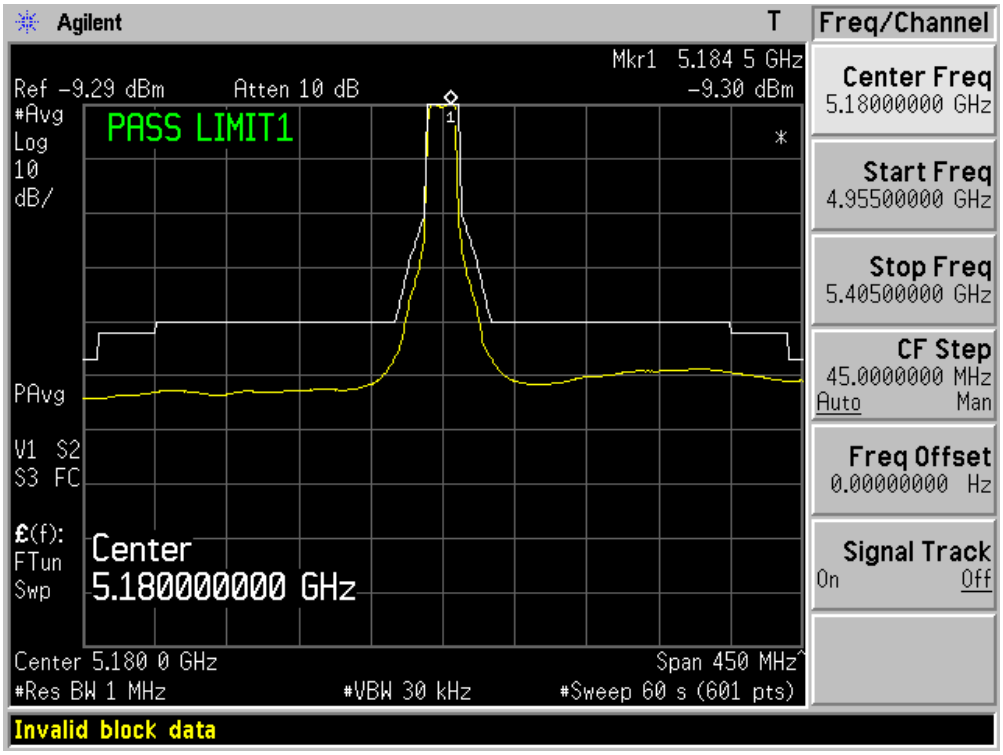

Agilent
T
Freq/Channel
Mkr1 5.693 2 GHz
-13.40 dBm
Ref -13.39 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.700000000 GHz
Center Freq
5.70000000 GHz
Start Freq
5.47500000 GHz
Stop Freq
5.92500000 GHz
CF Step
45.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.700 0 GHz
Span 450 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n (20MHz) – chain 010

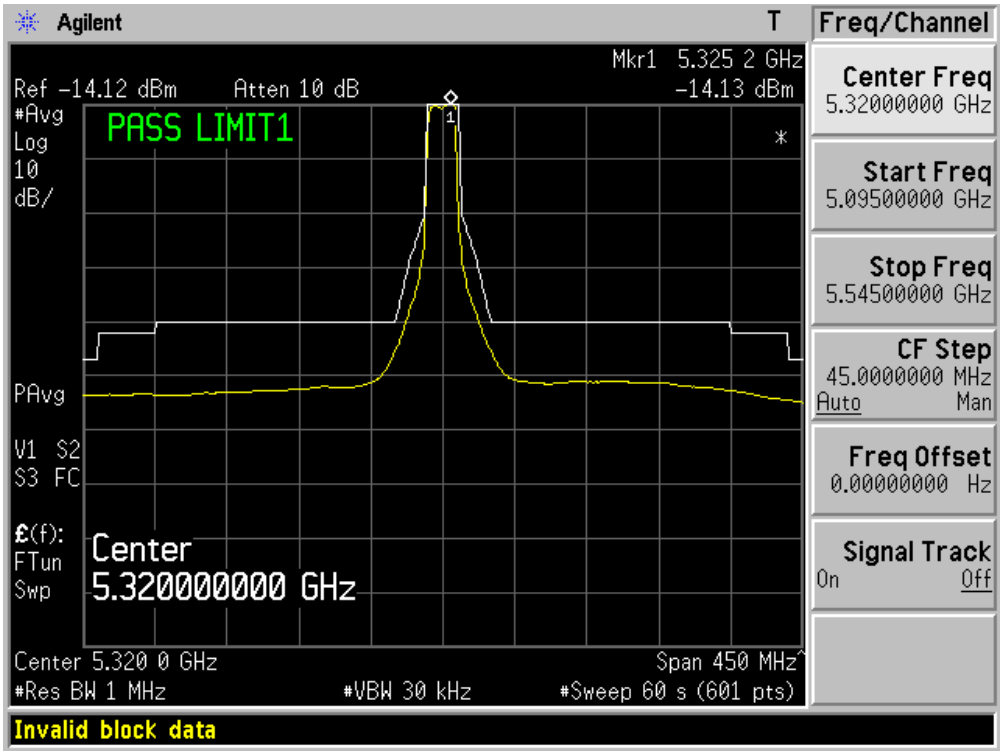
Horizontal



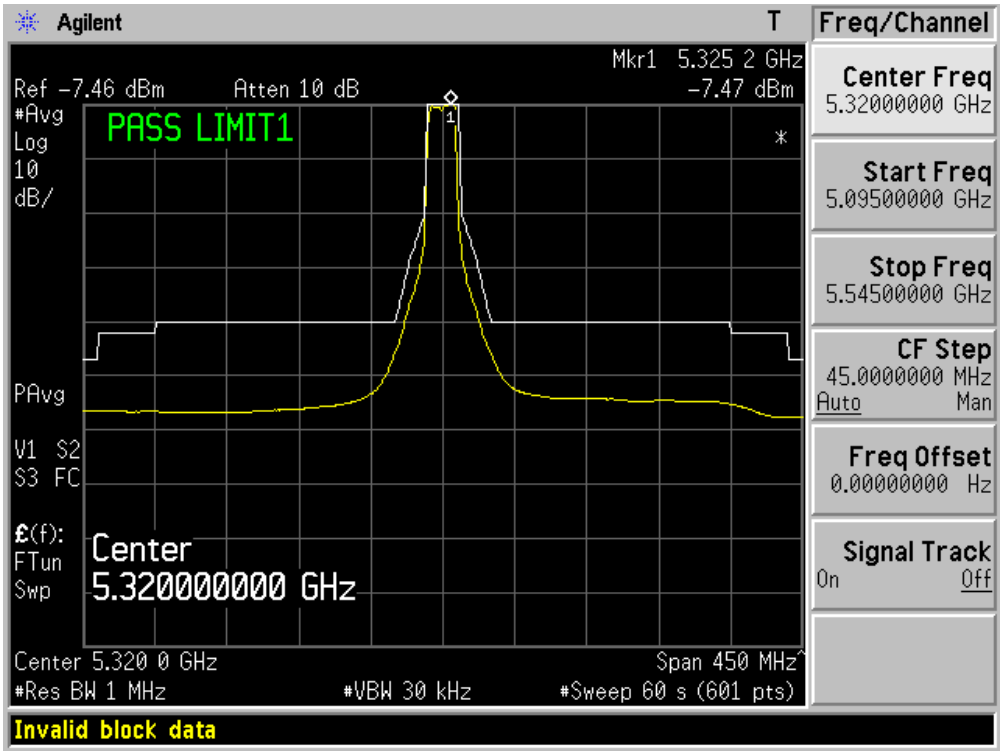
Vertical



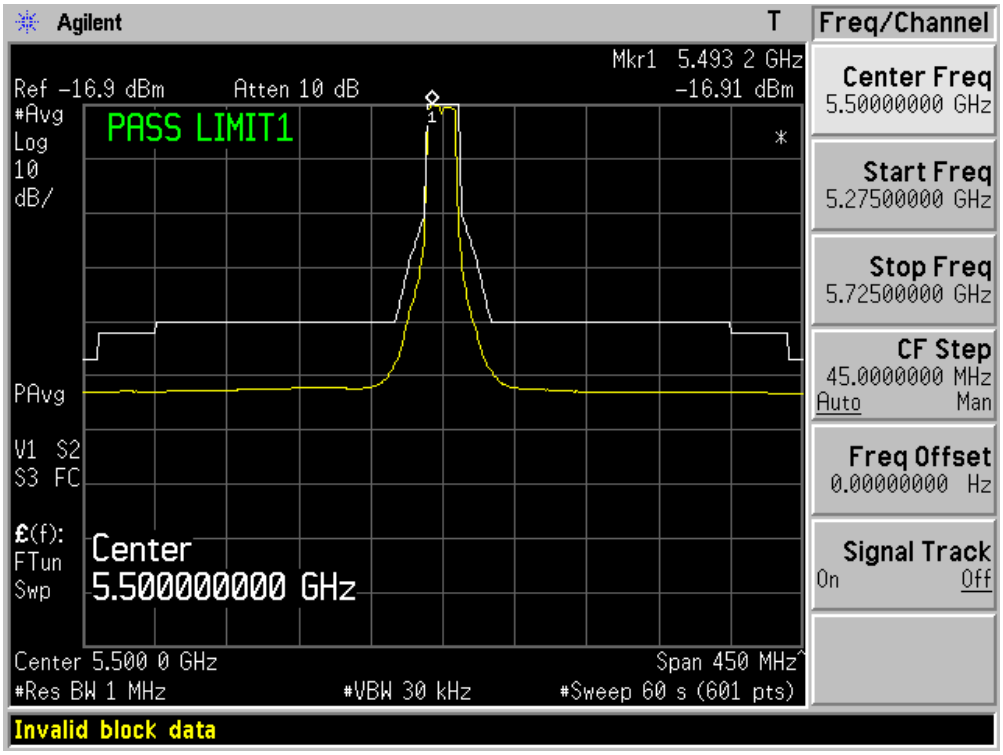
Horizontal



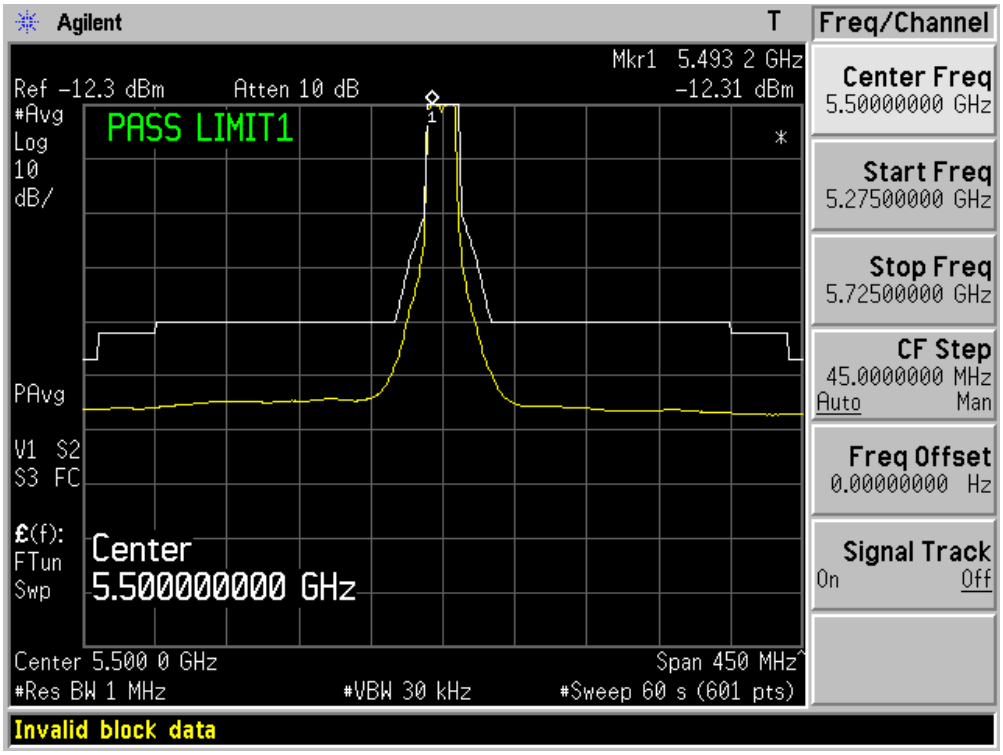
Vertical



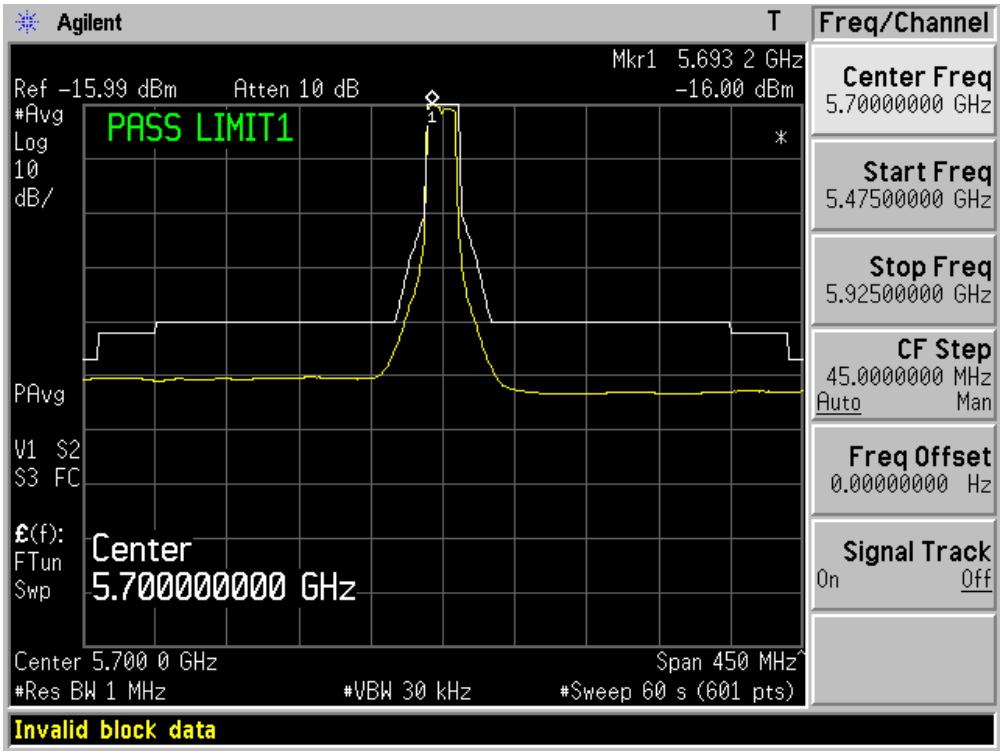
Horizontal



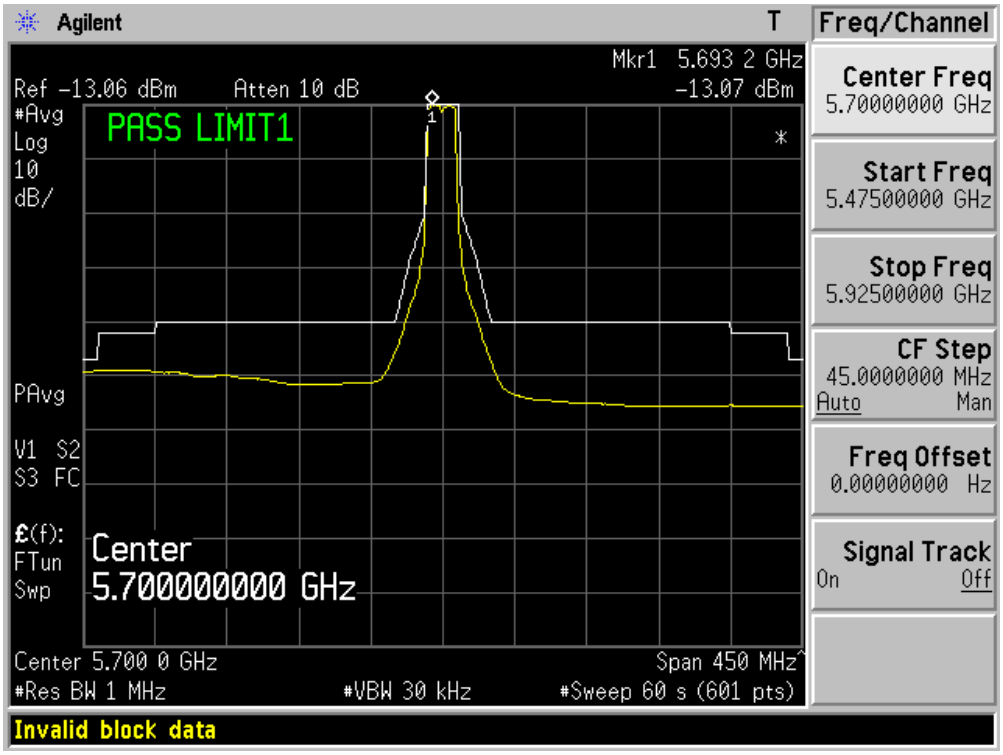
Vertical



Horizontal

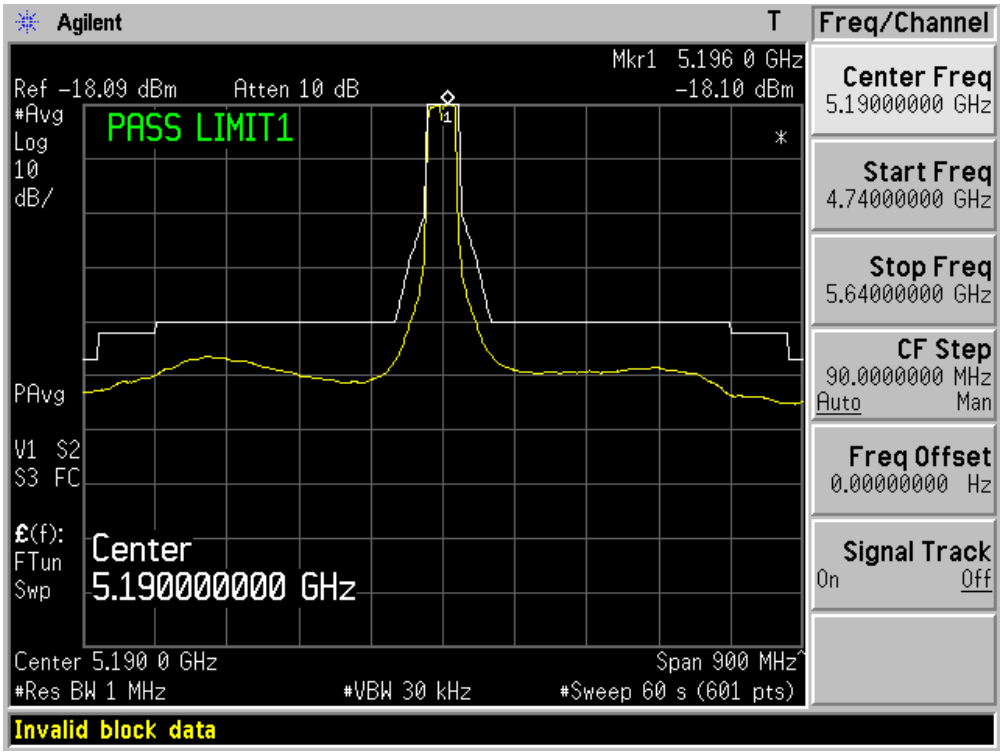


Vertical

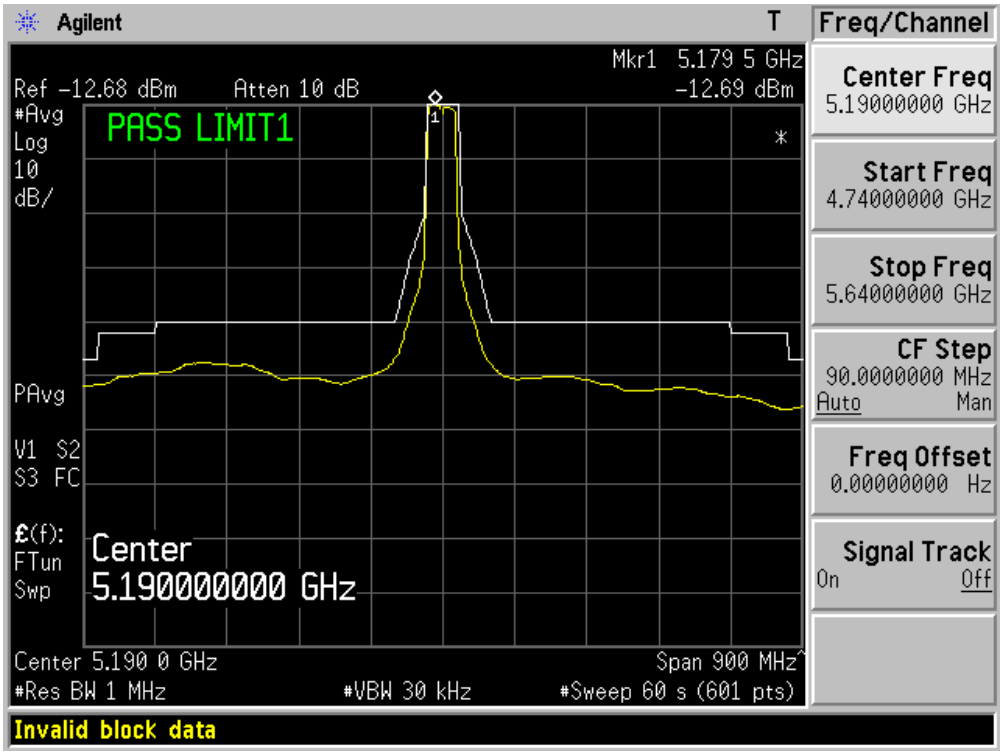

Agilent
T
Freq/Channel
Mkr1 5.693 2 GHz
-13.07 dBm
Ref -13.06 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.700000000 GHz
Center Freq
5.70000000 GHz
Start Freq
5.47500000 GHz
Stop Freq
5.92500000 GHz
CF Step
45.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.700 0 GHz
Span 450 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n (40MHz) – chain 010

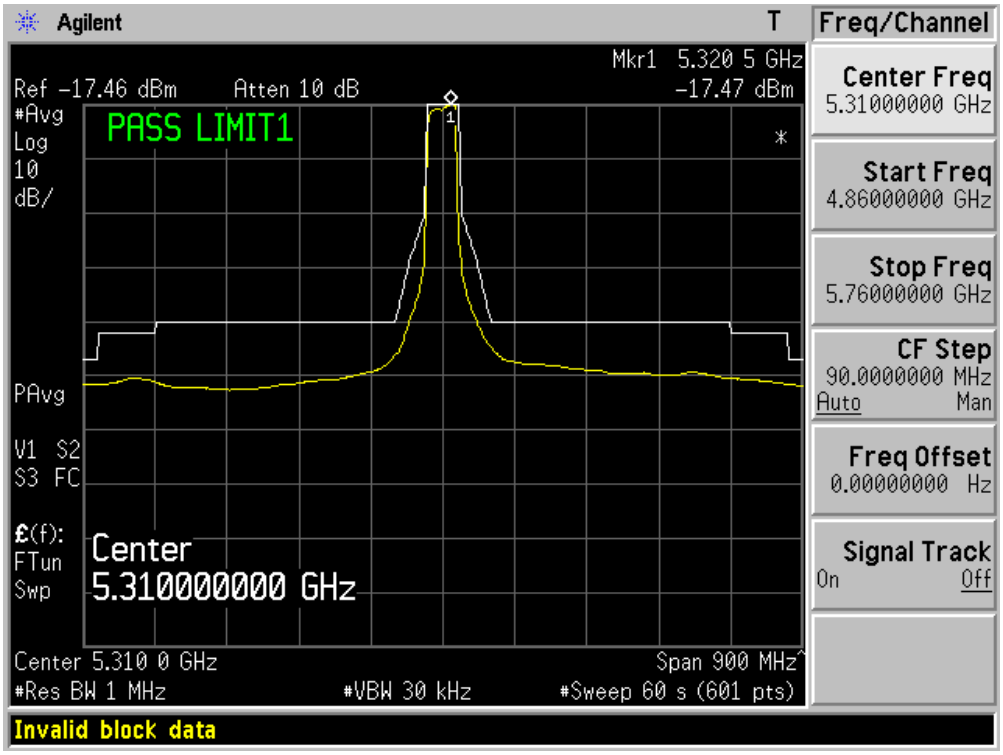
Horizontal



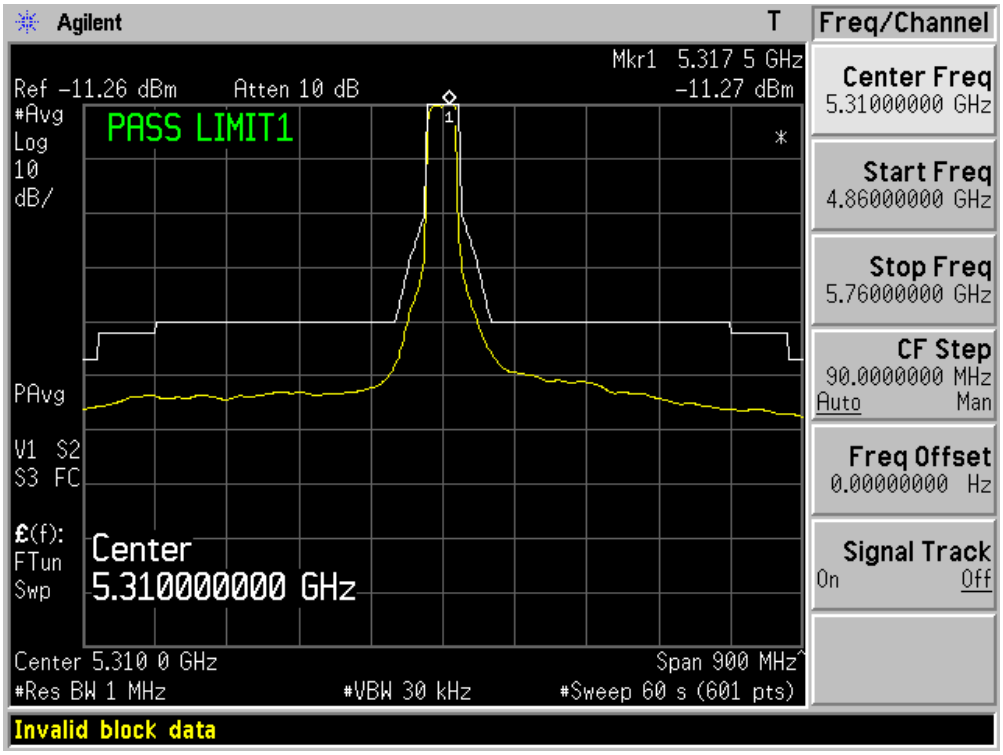
Vertical



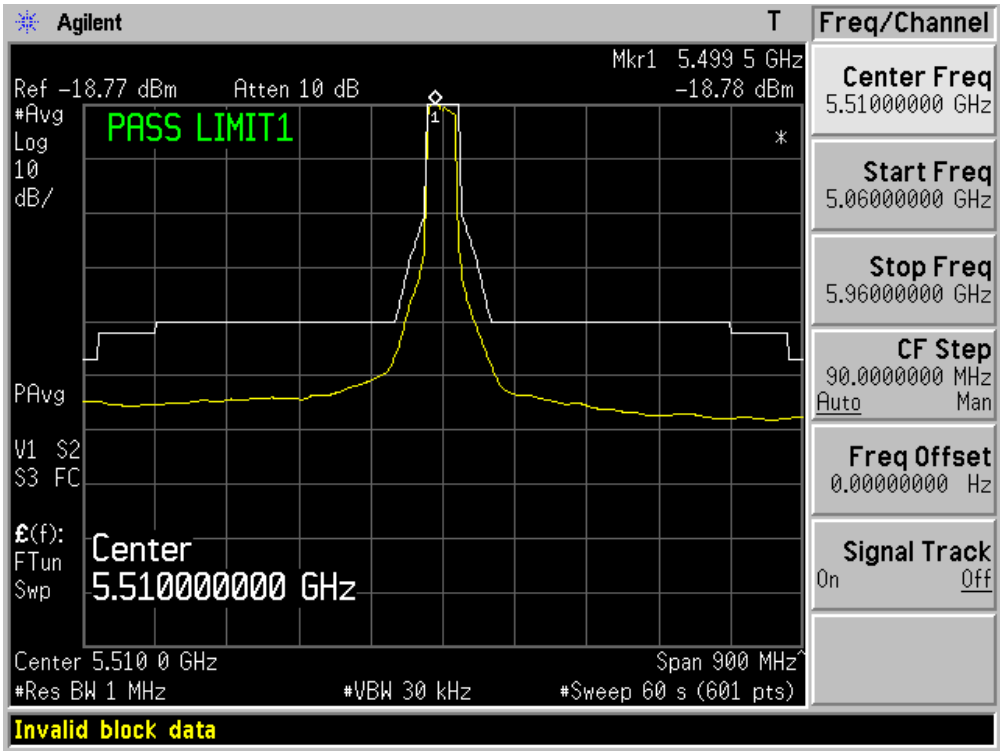
Horizontal



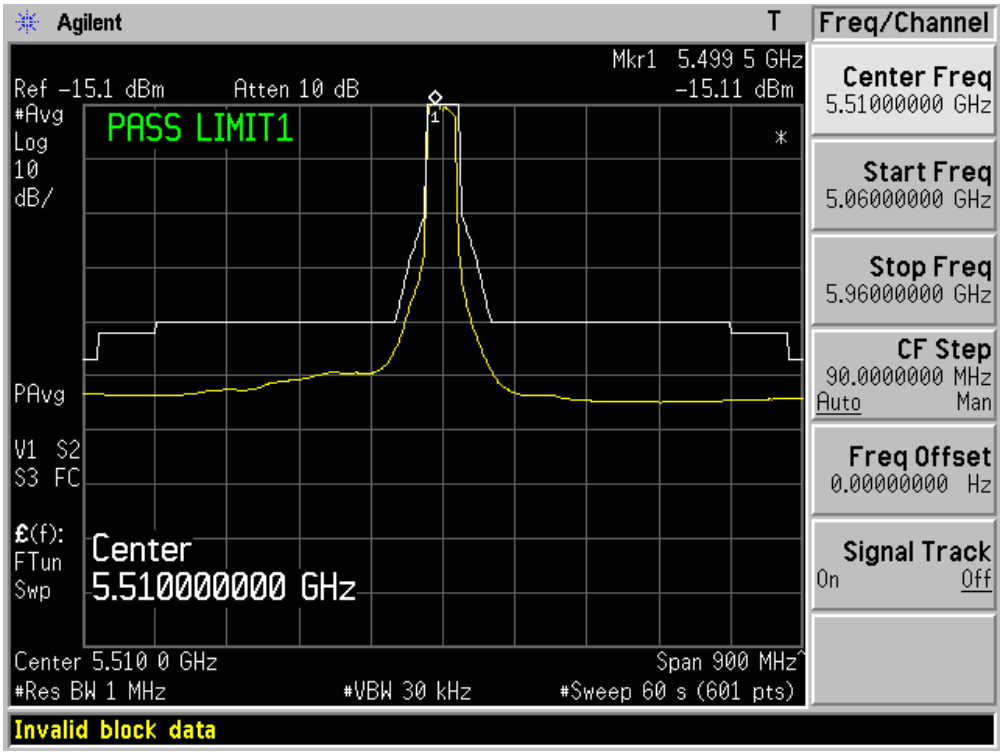
Vertical



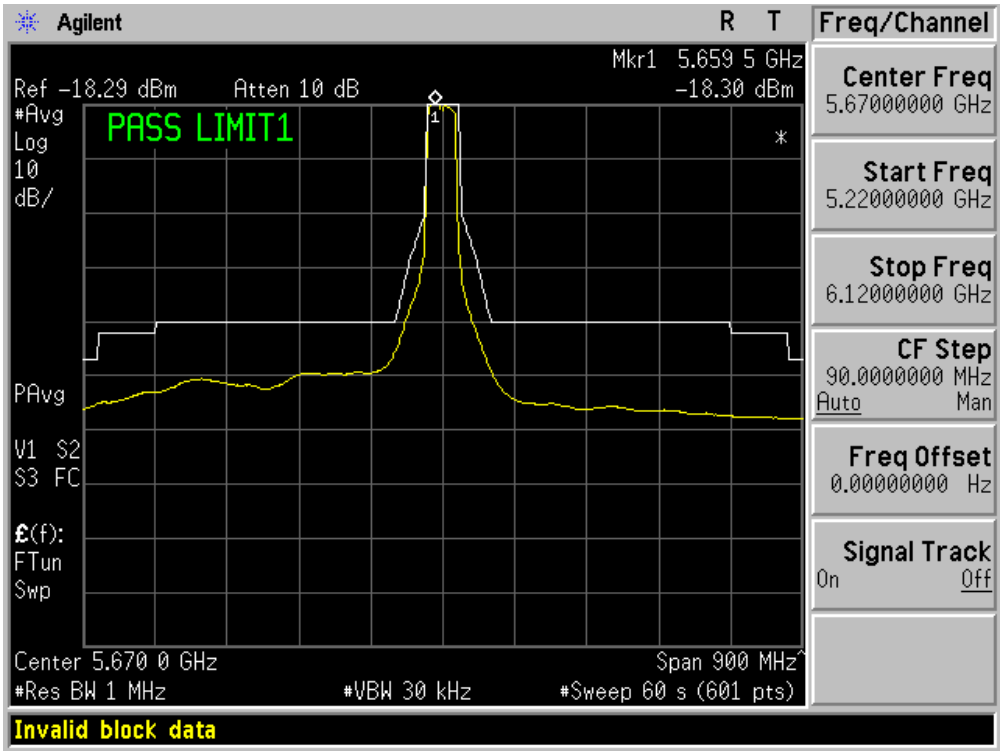
Horizontal



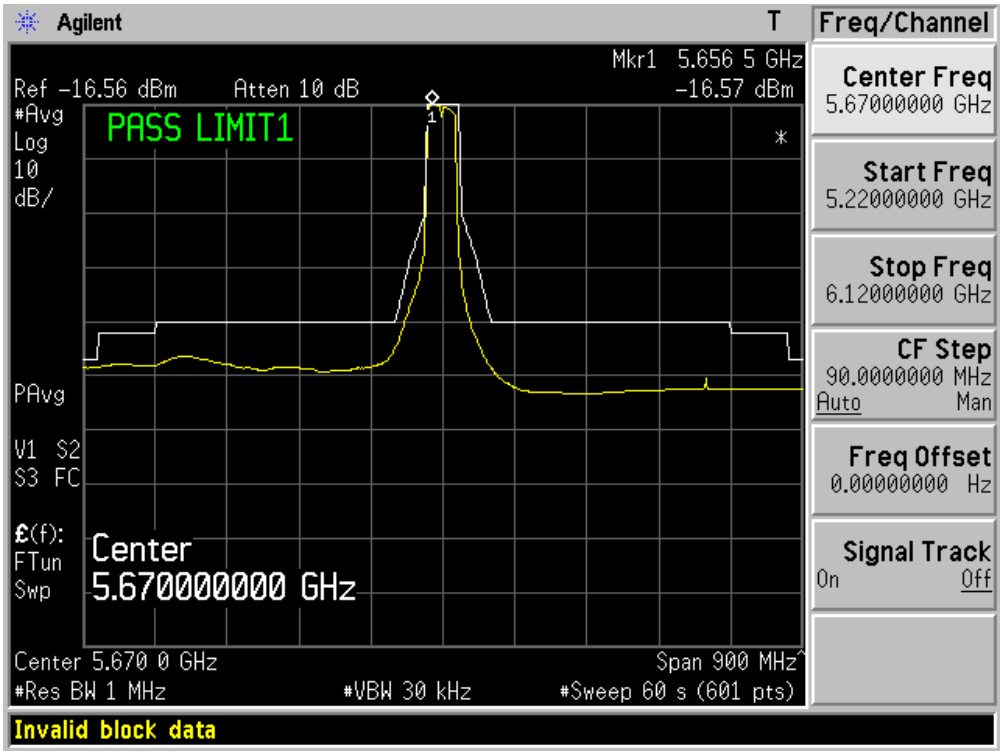
Vertical



Horizontal

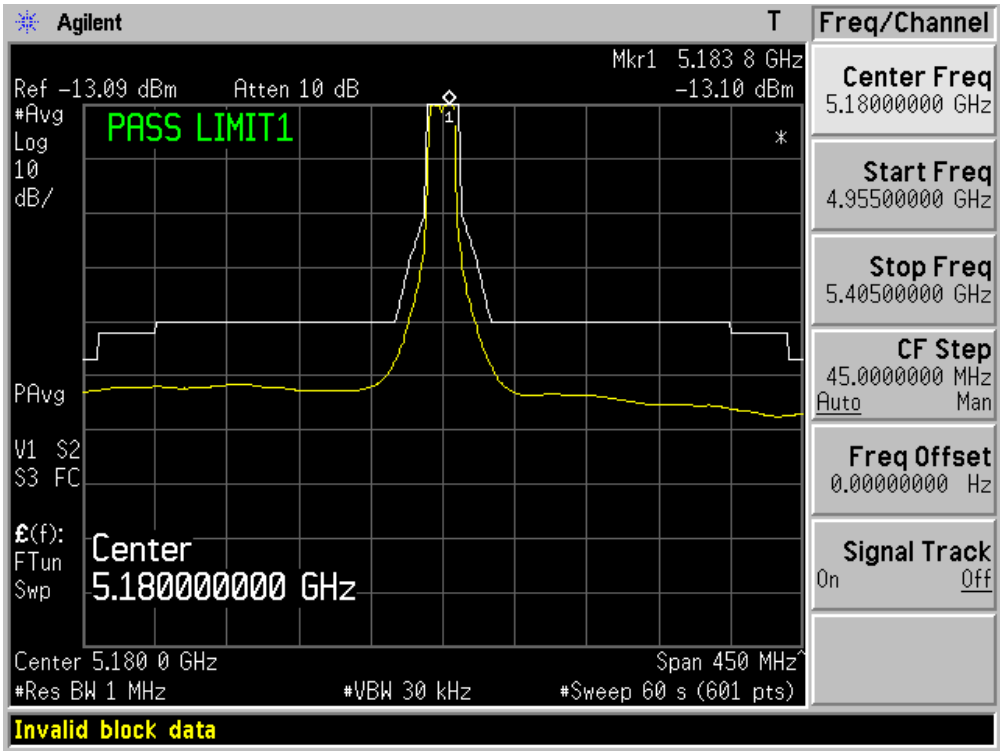


Vertical

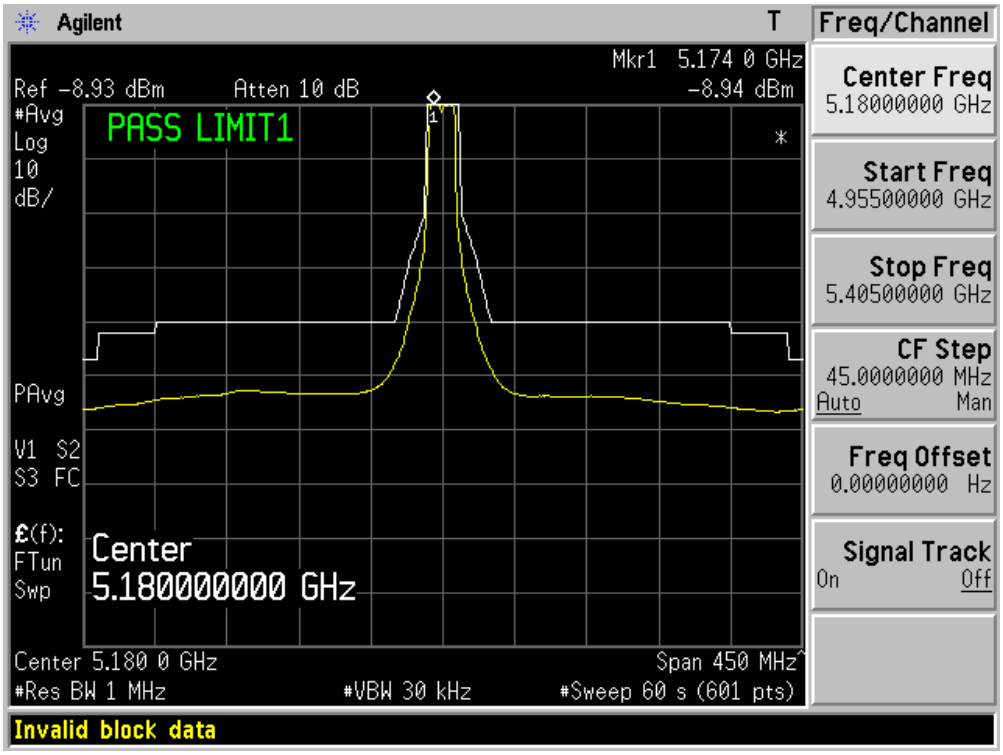

Agilent
T
Freq/Channel
Mkr1 5.656 5 GHz
-16.57 dBm
Ref -16.56 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
1
*
Center Freq
5.67000000 GHz
Start Freq
5.22000000 GHz
Stop Freq
6.12000000 GHz
CF Step
90.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.670000000 GHz
Center 5.670 0 GHz
Span 900 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11a – chain 100

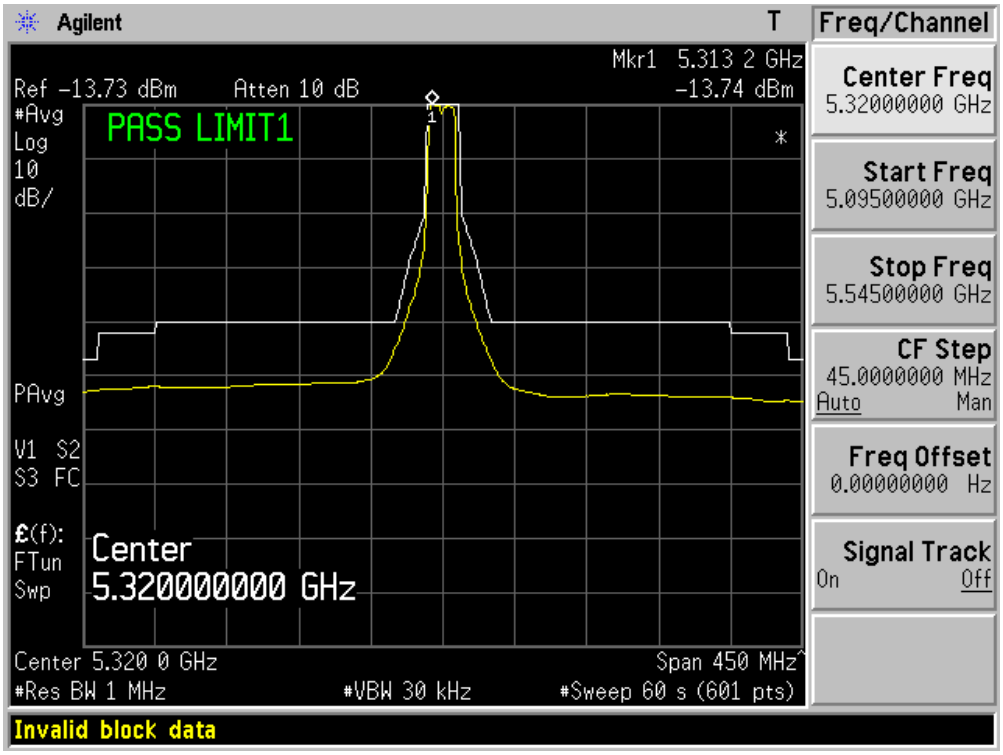
Horizontal



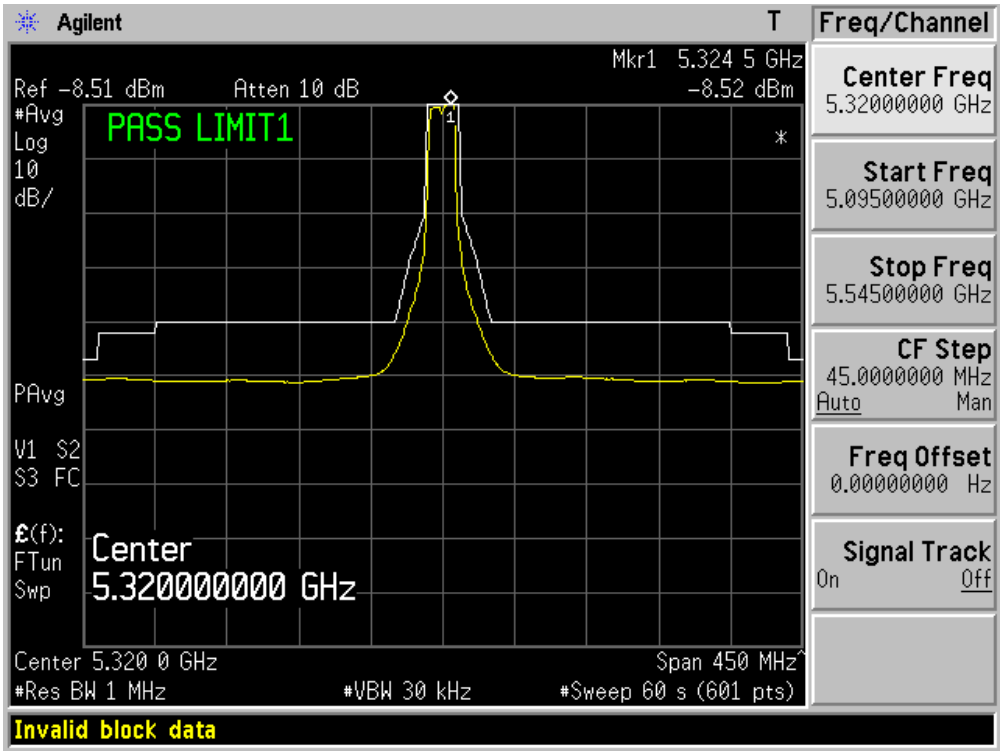
Vertical



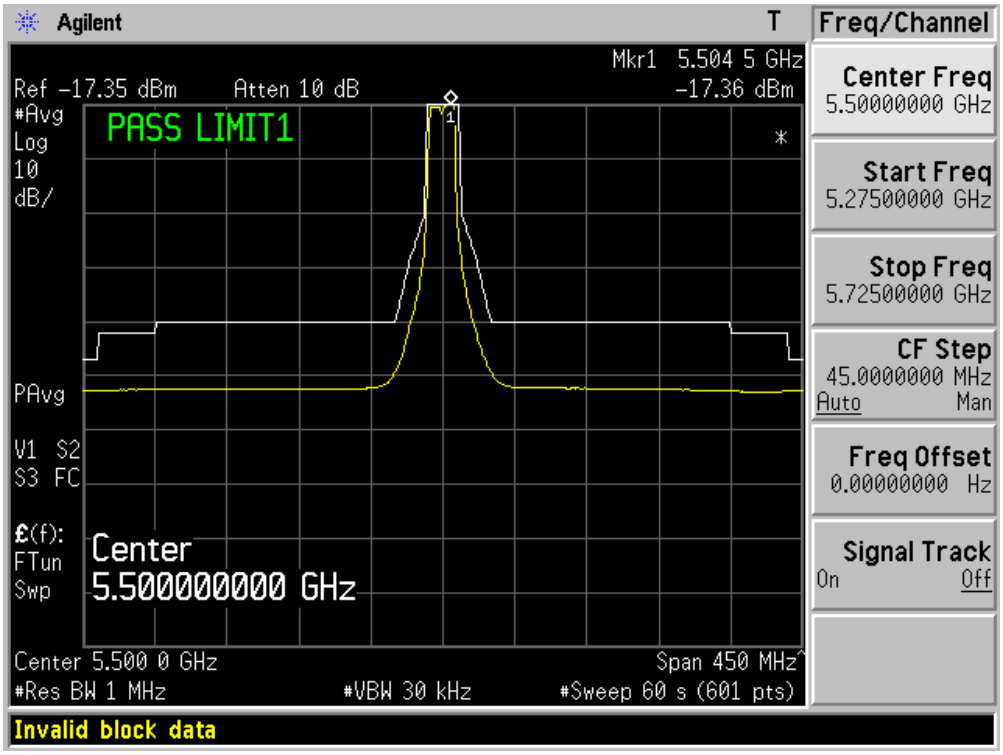
Horizontal



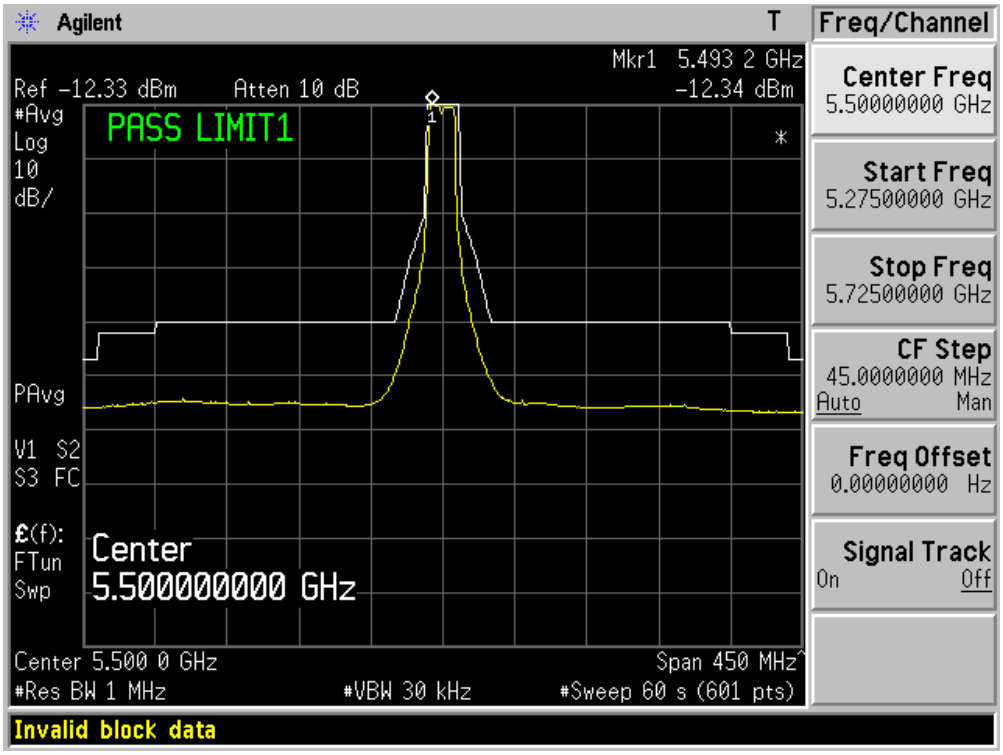
Vertical



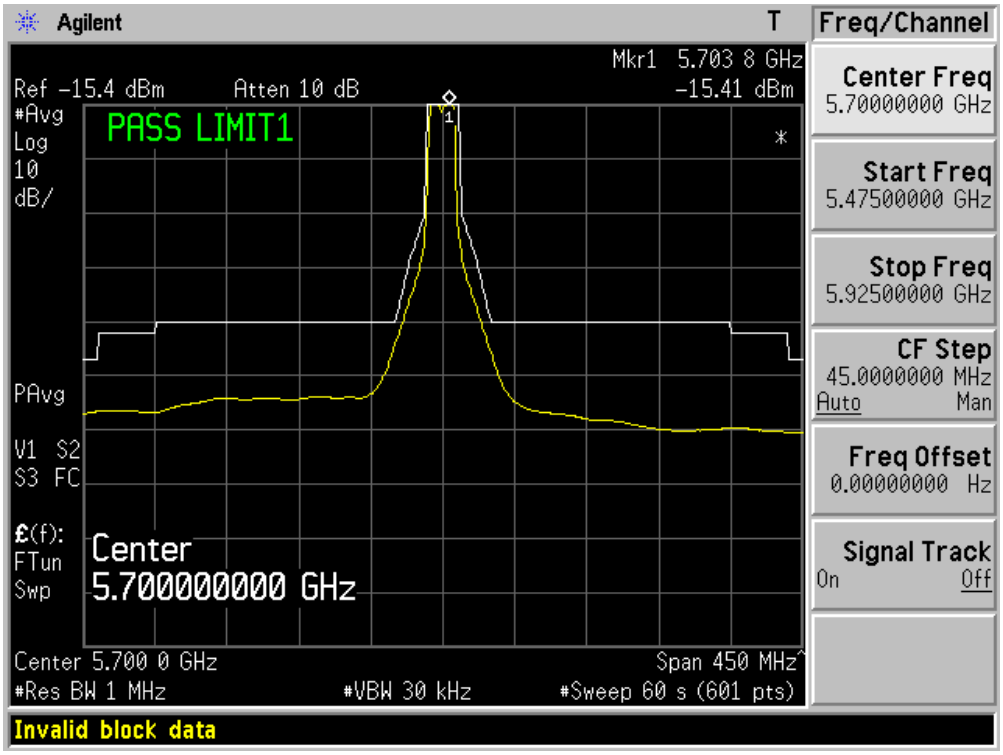
Horizontal



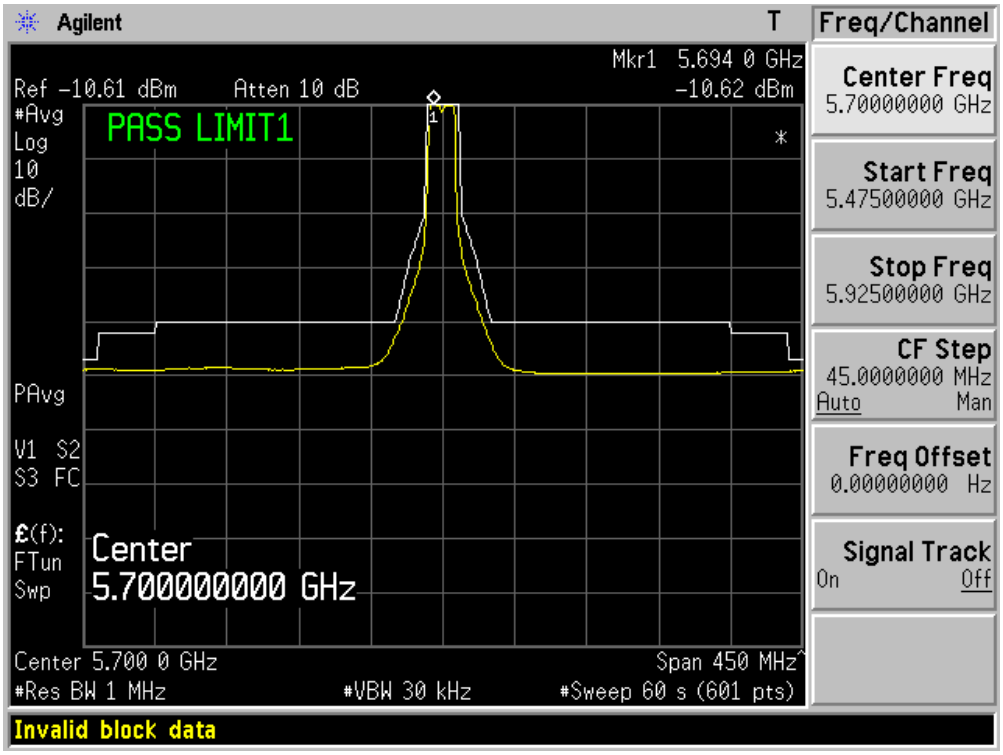
Vertical



Horizontal

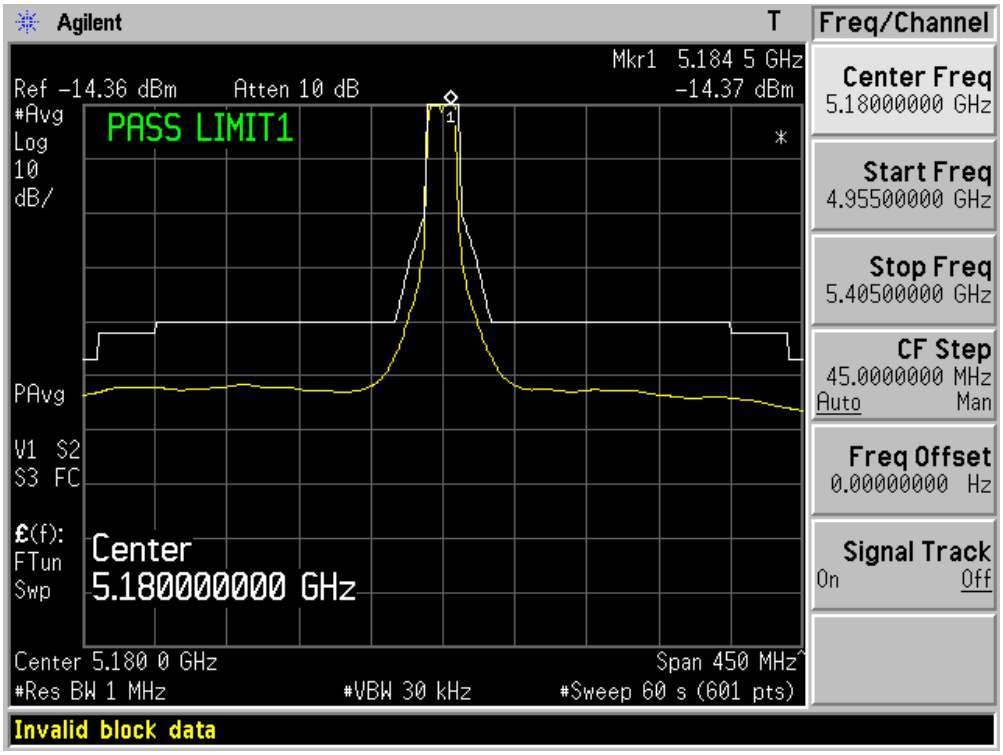


Vertical

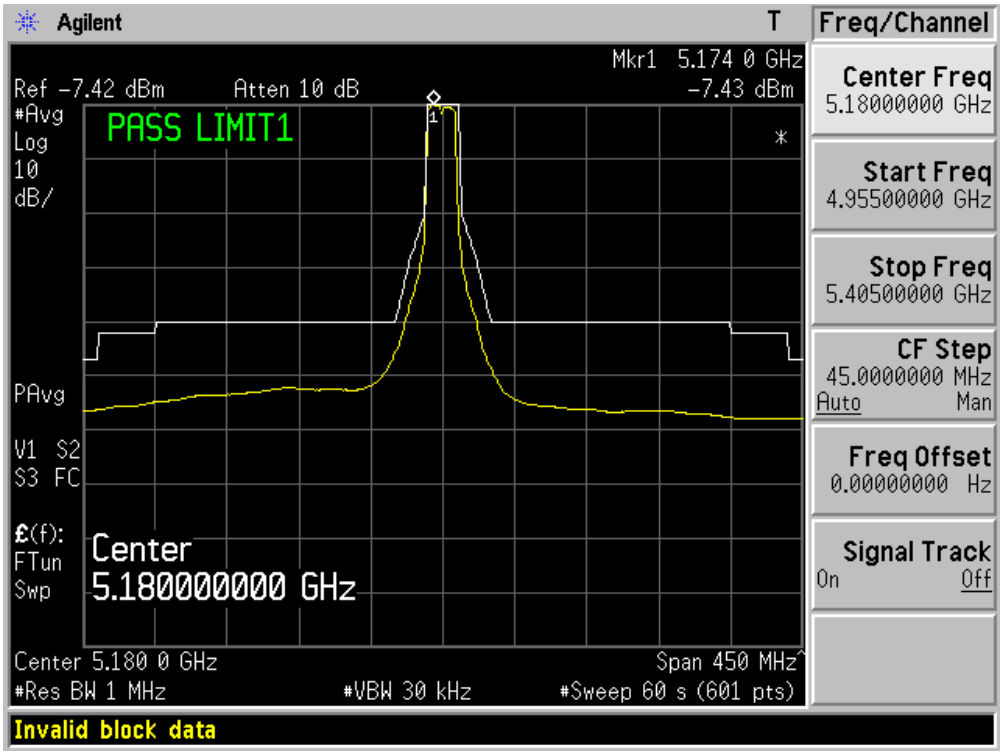

Agilent
T
Freq/Channel
Mkr1 5.694 0 GHz
-10.62 dBm
Ref -10.61 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.700000000 GHz
Center Freq
5.70000000 GHz
Start Freq
5.47500000 GHz
Stop Freq
5.92500000 GHz
CF Step
45.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.700 0 GHz
Span 450 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n (20MHz) – chain 100

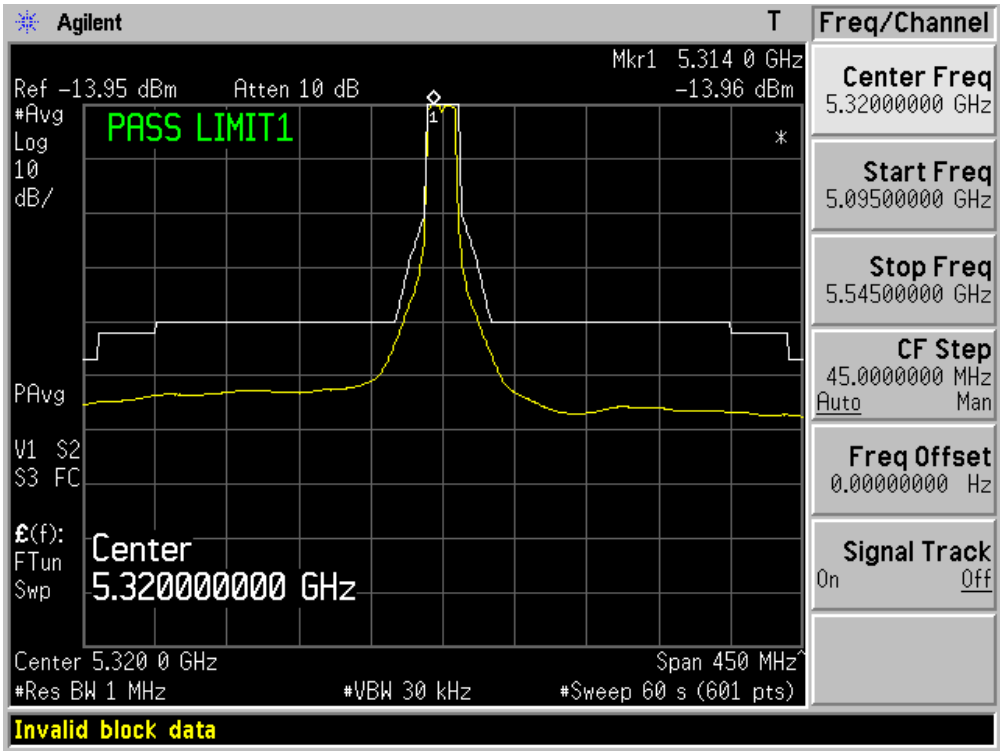
Horizontal



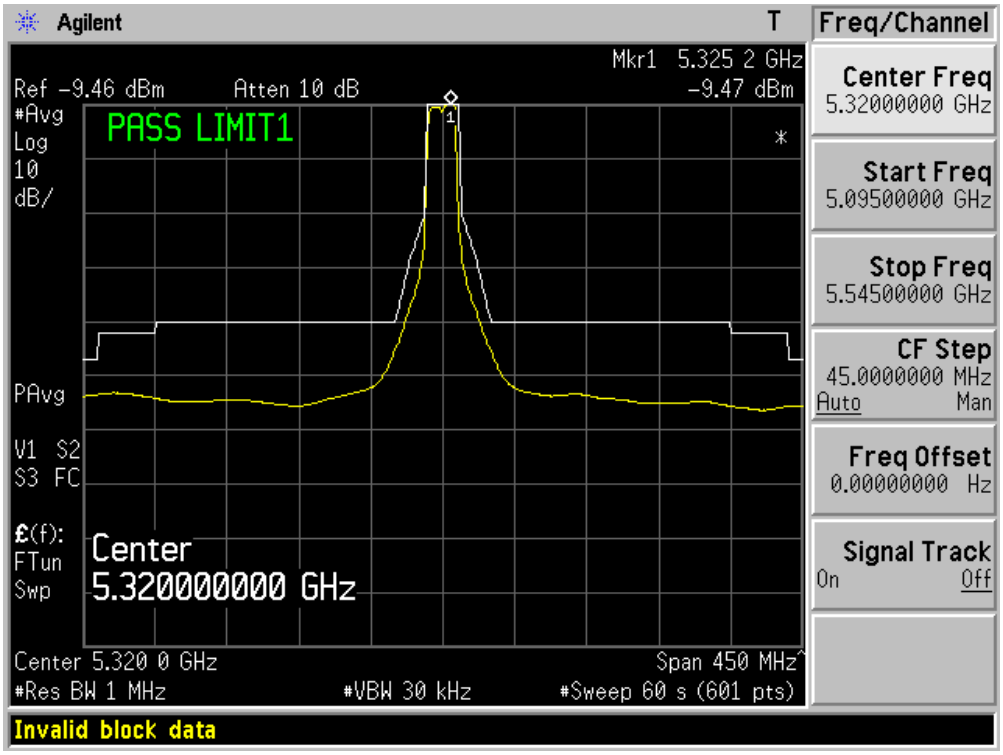
Vertical



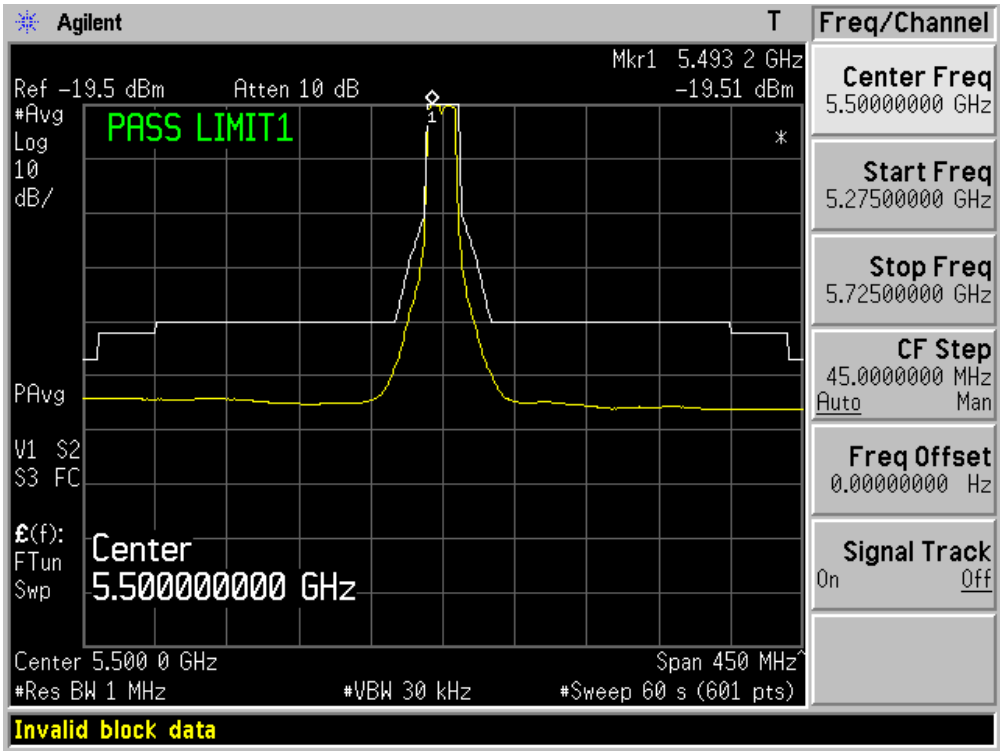
Horizontal



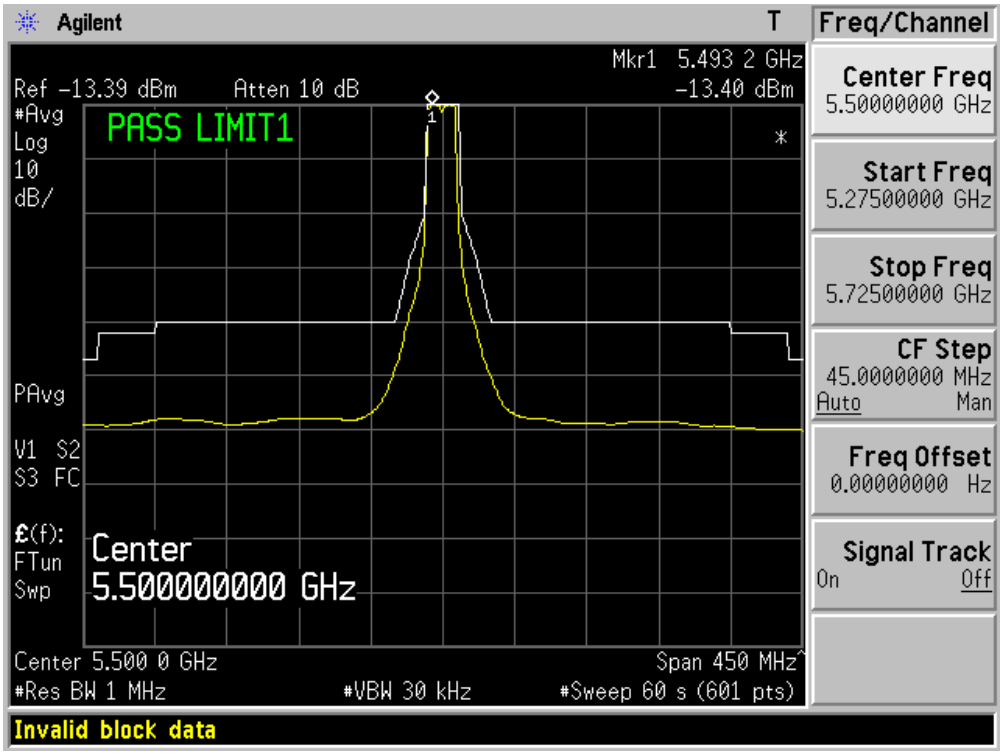
Vertical



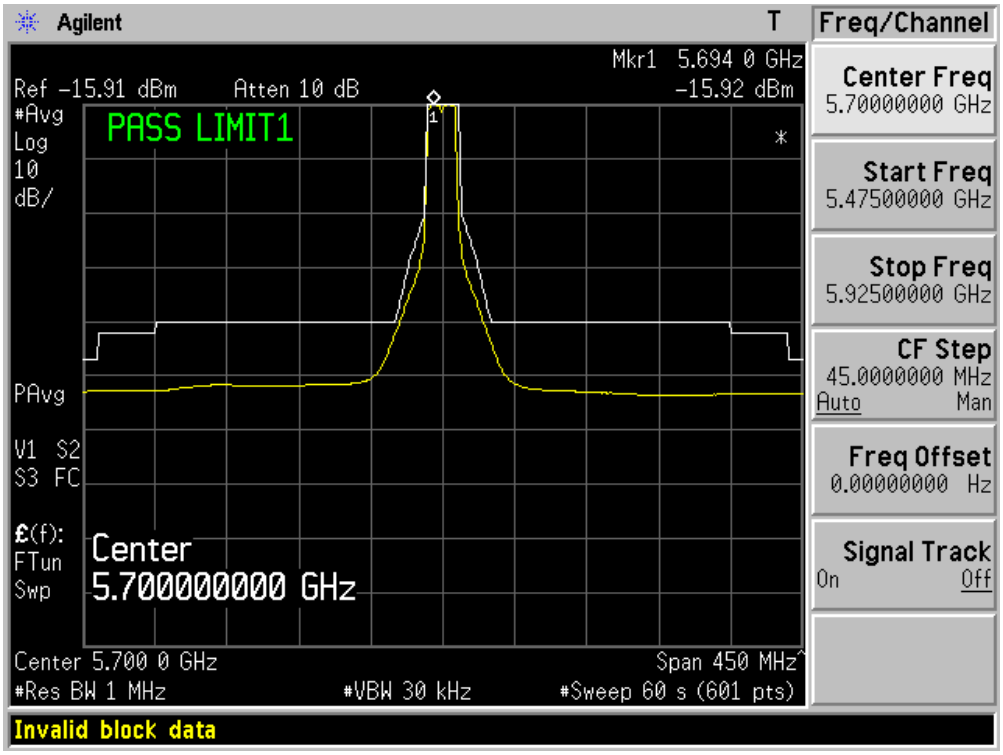
Horizontal



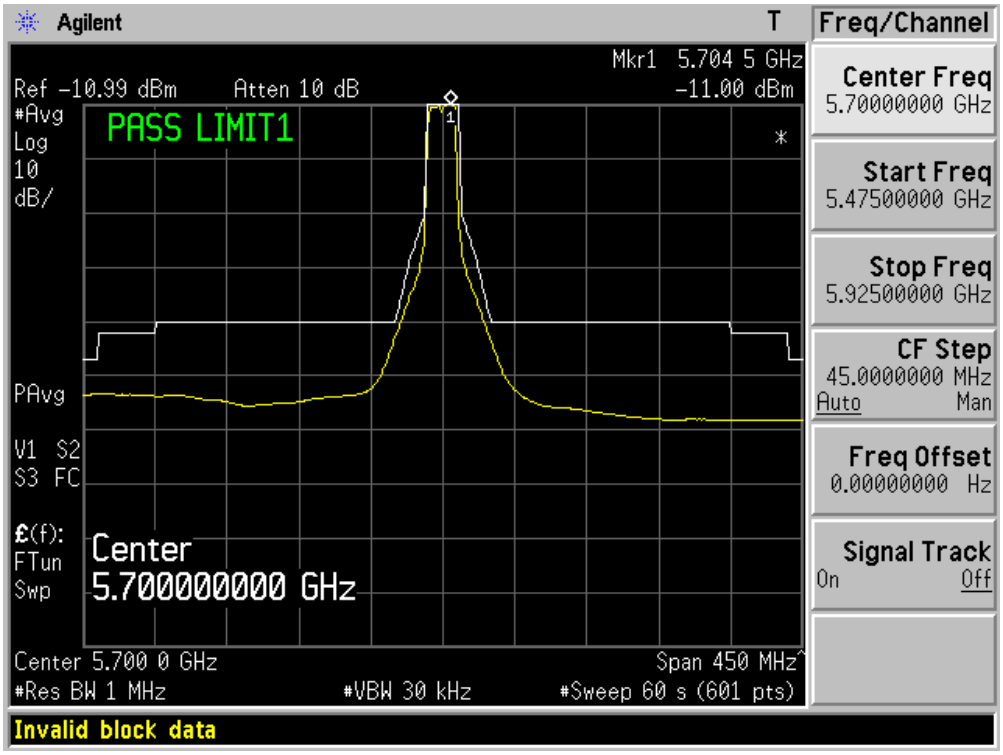
Vertical



Horizontal

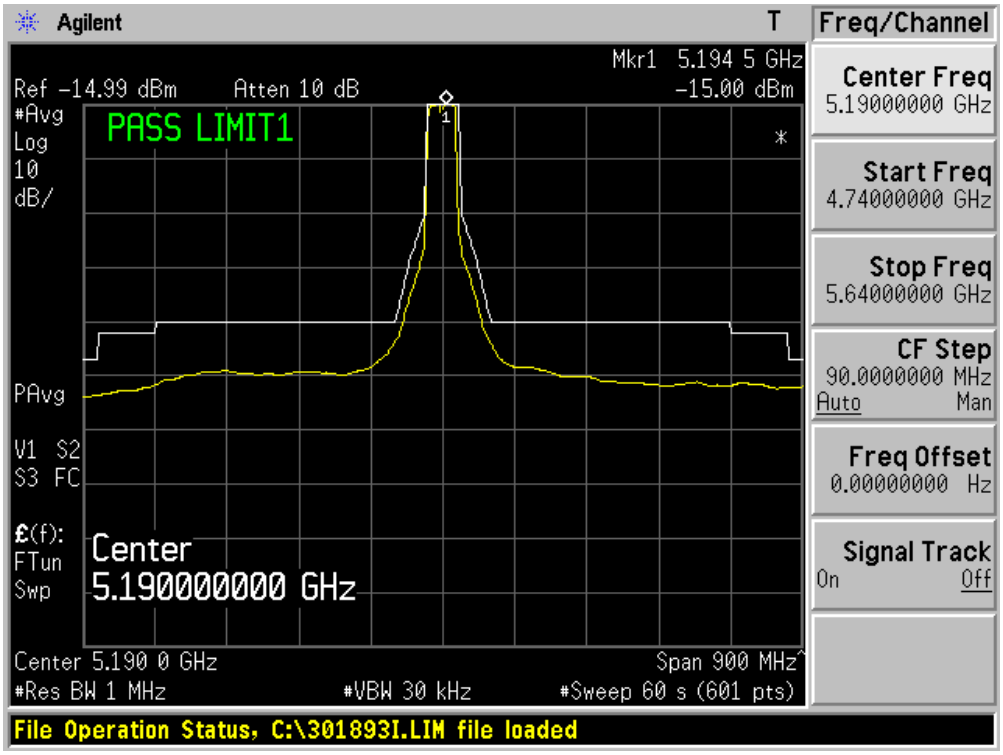


Vertical

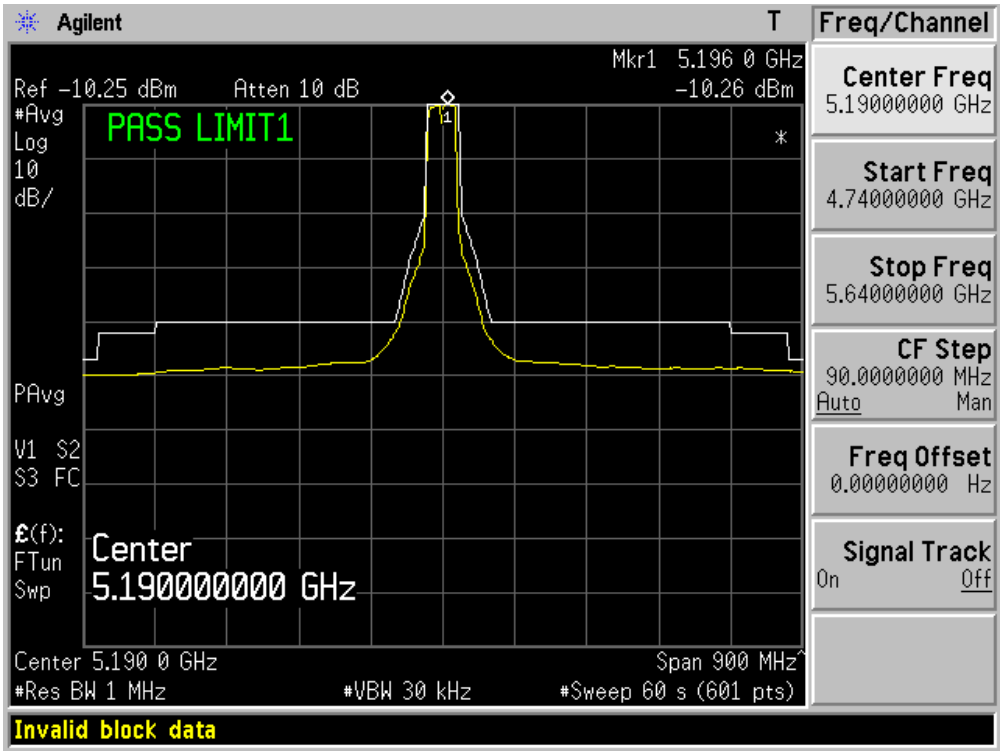

Agilent
T
Freq/Channel
Mkr1 5.704 5 GHz
-11.00 dBm
Ref -10.99 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.700000000 GHz
Center Freq
5.70000000 GHz
Start Freq
5.47500000 GHz
Stop Freq
5.92500000 GHz
CF Step
45.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.700 0 GHz
Span 450 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n (40MHz) – chain 100

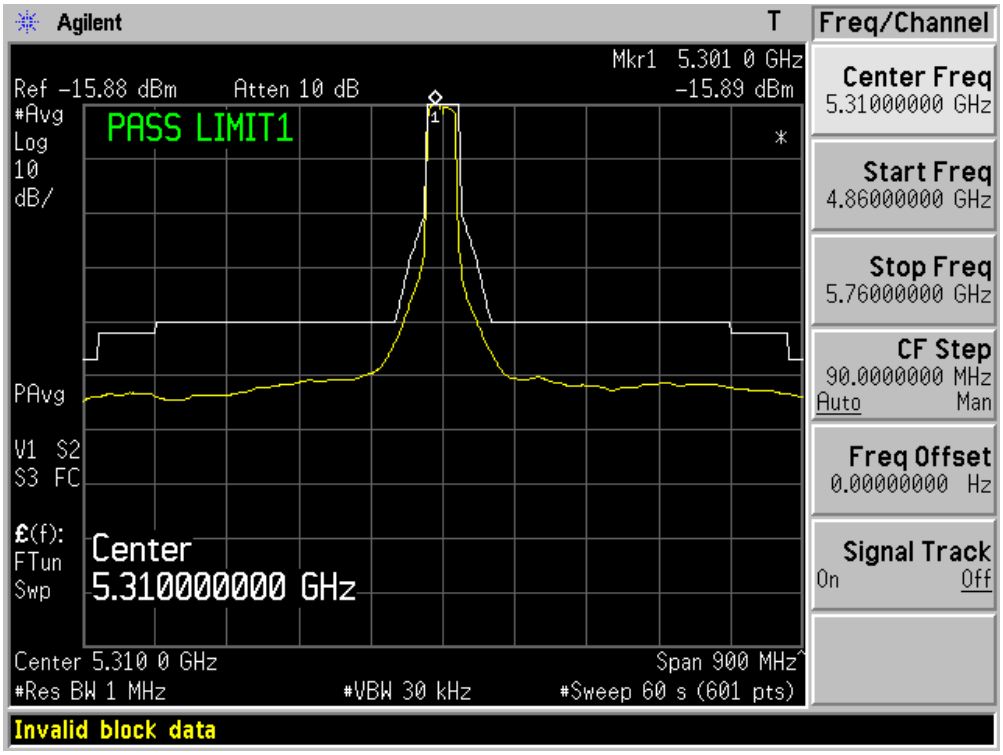
Horizontal



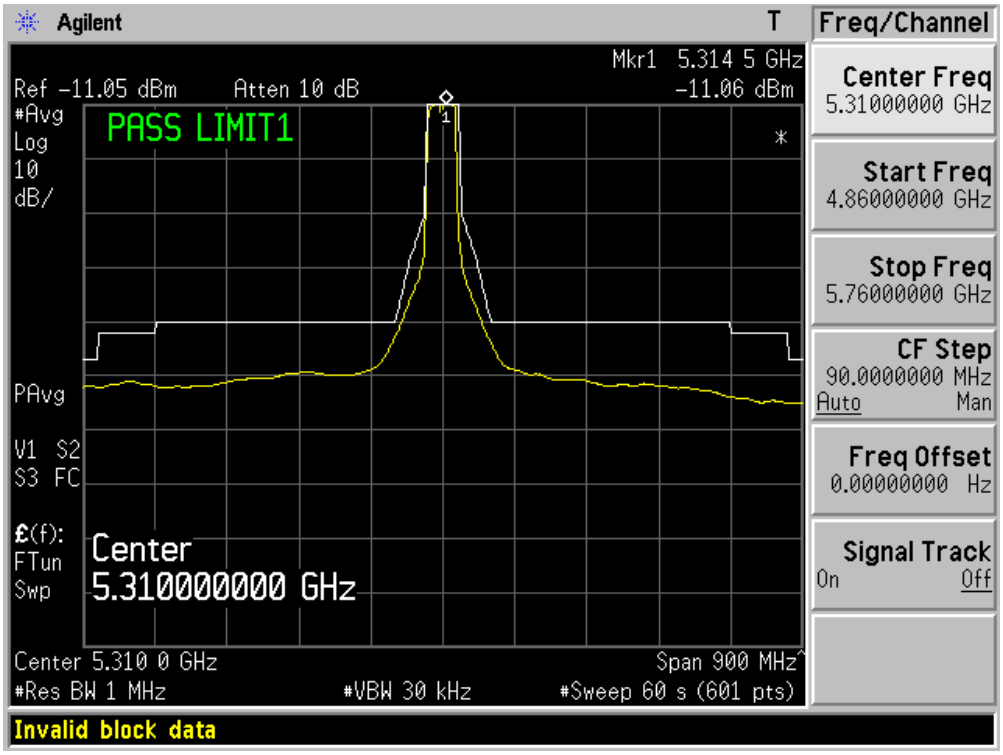
Vertical



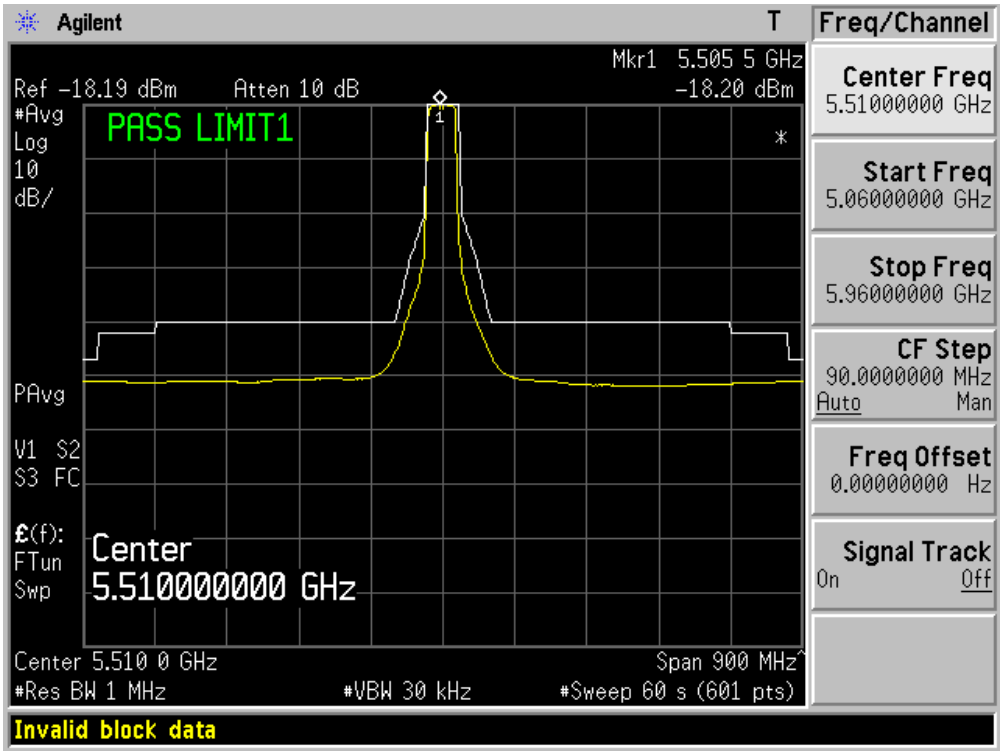
Horizontal



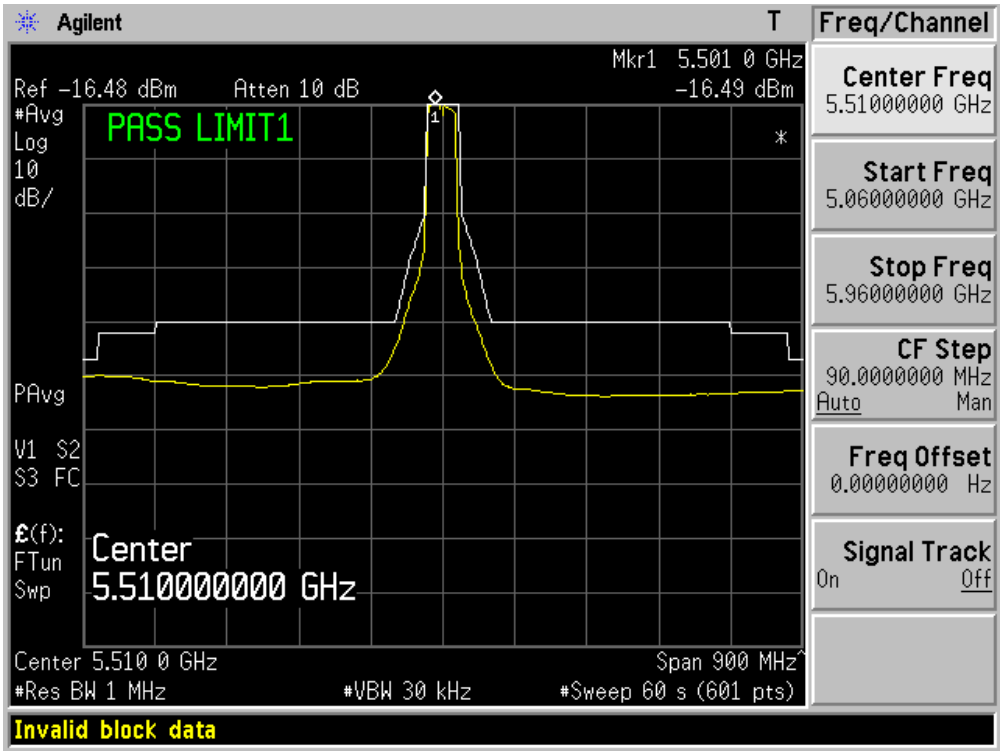
Vertical



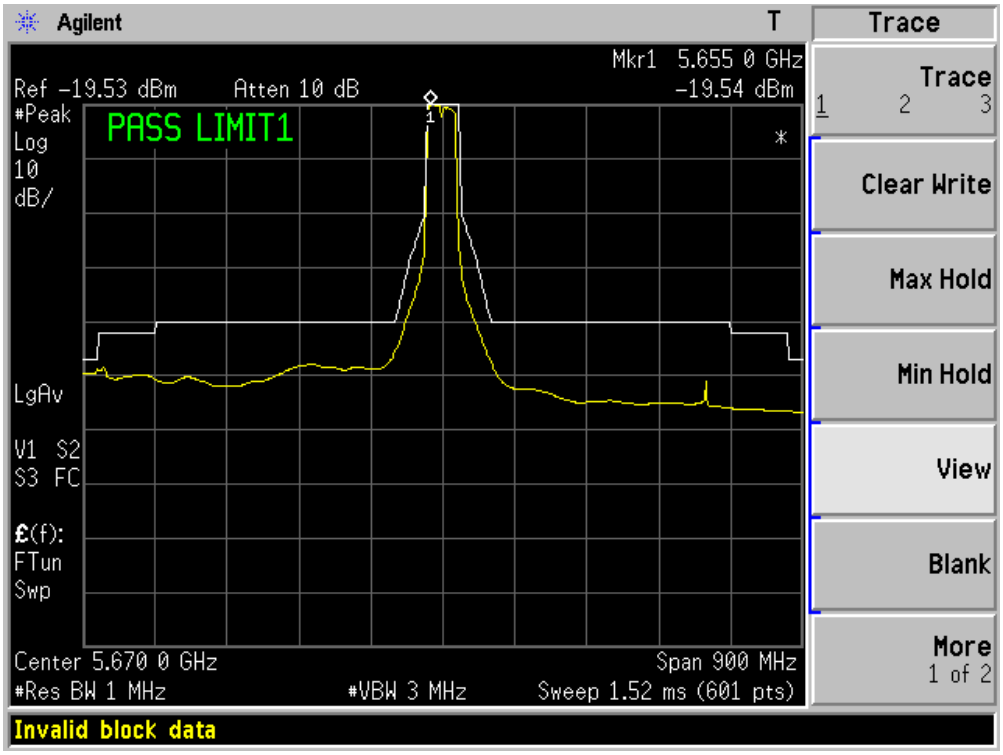
Horizontal



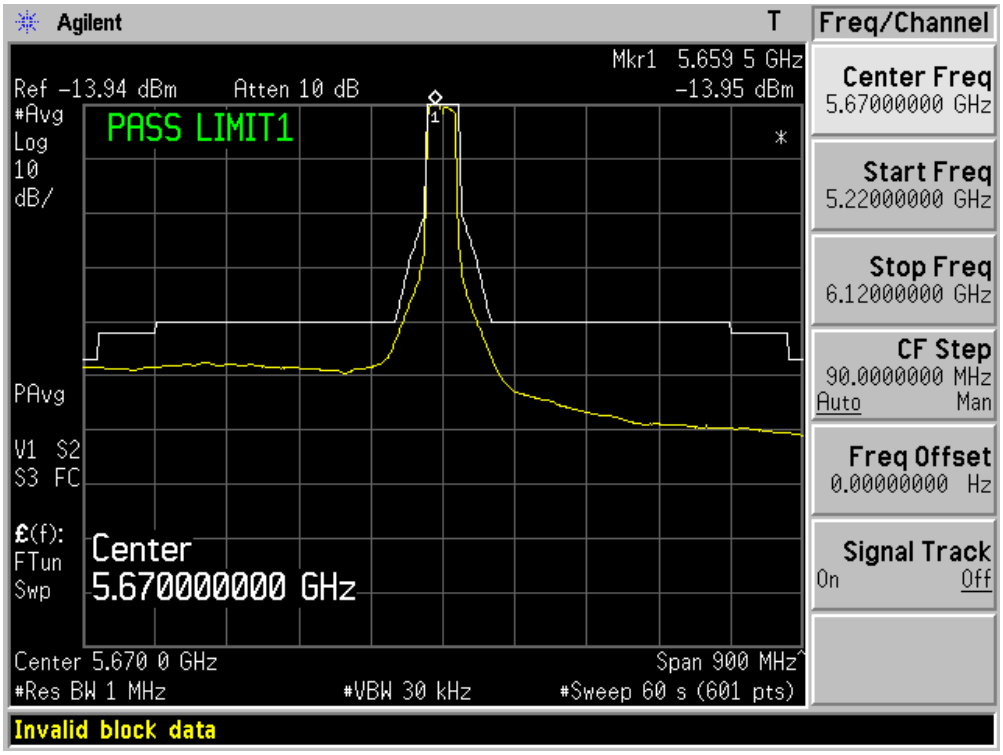
Vertical



Horizontal

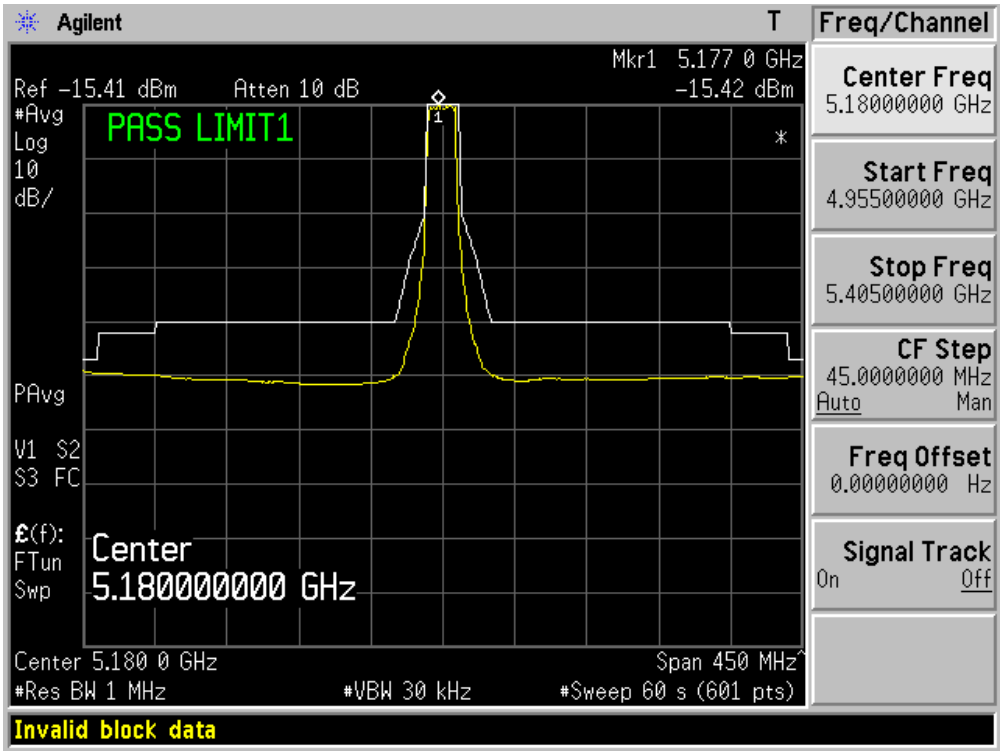


Vertical

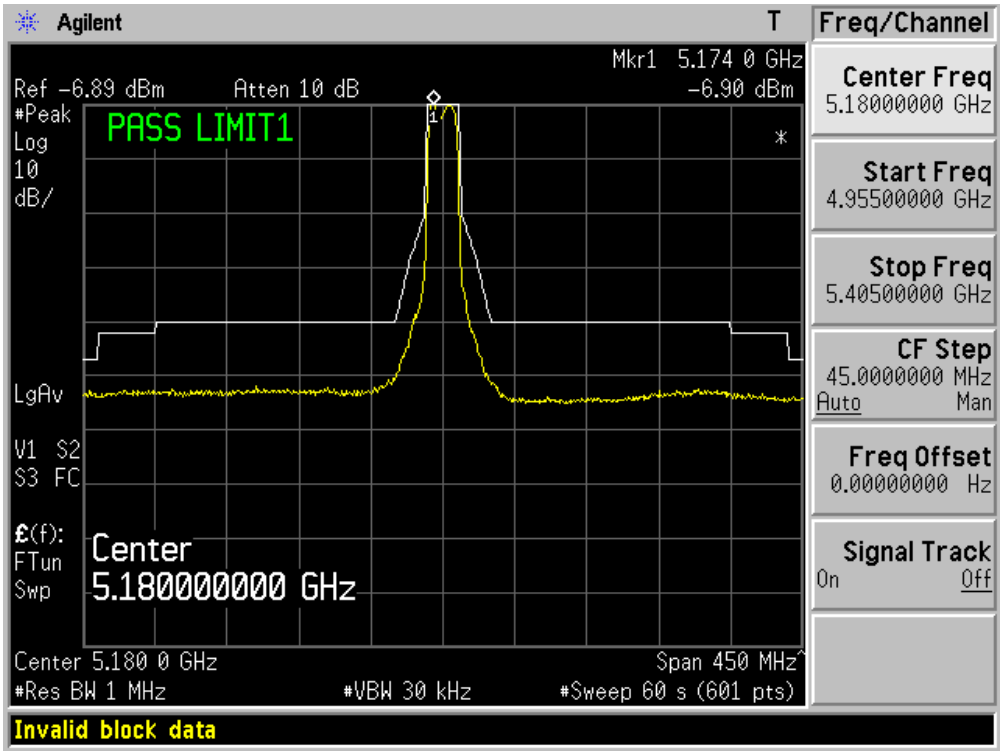

Agilent
T
Freq/Channel
Mkr1 5.659 5 GHz
-13.95 dBm
Ref -13.94 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.670000000 GHz
Center 5.670 0 GHz
#Res BW 1 MHz
#VBW 30 kHz
Span 900 MHz
#Sweep 60 s (601 pts)
Center Freq
5.67000000 GHz
Start Freq
5.22000000 GHz
Stop Freq
6.12000000 GHz
CF Step
90.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11n (20MHz) – chain 110

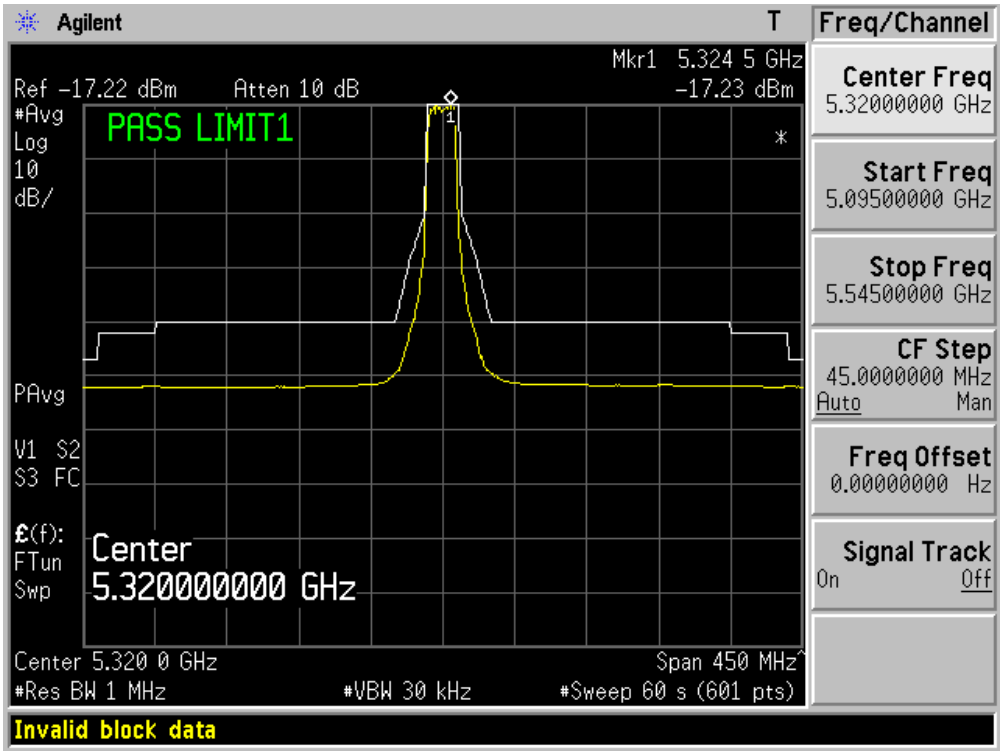
Horizontal



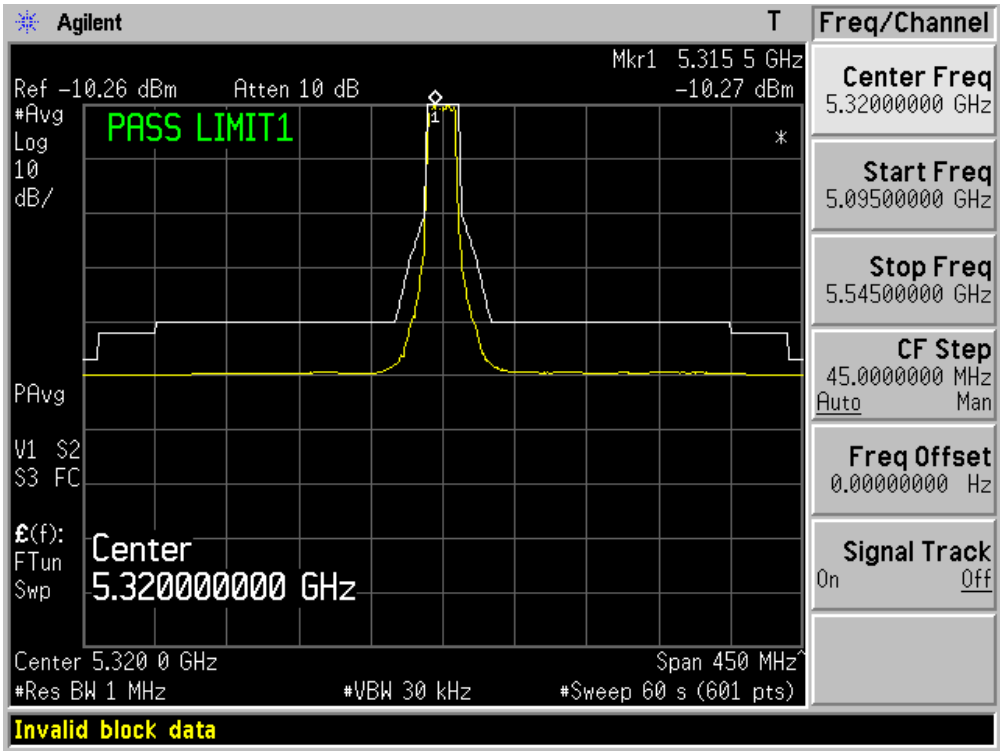
Vertical



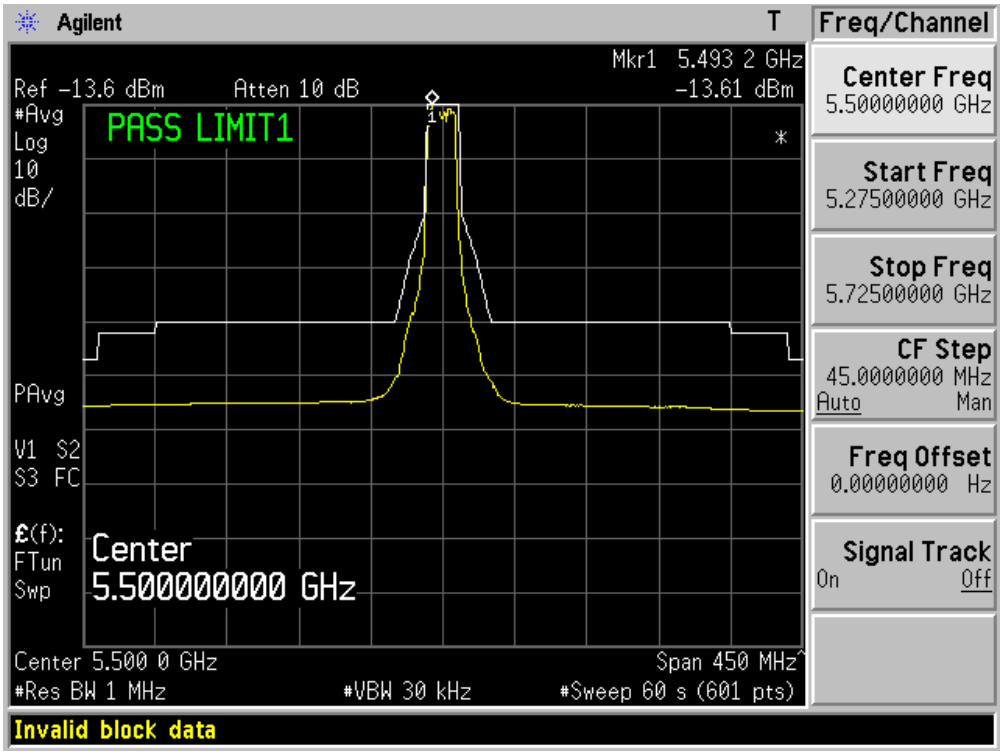
Horizontal



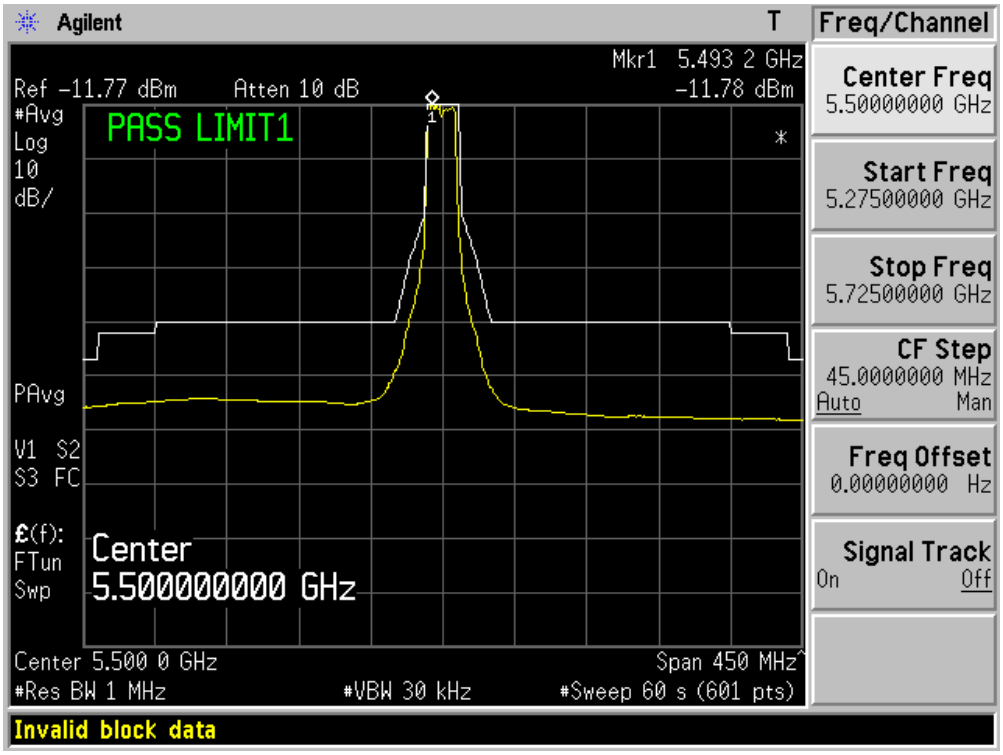
Vertical



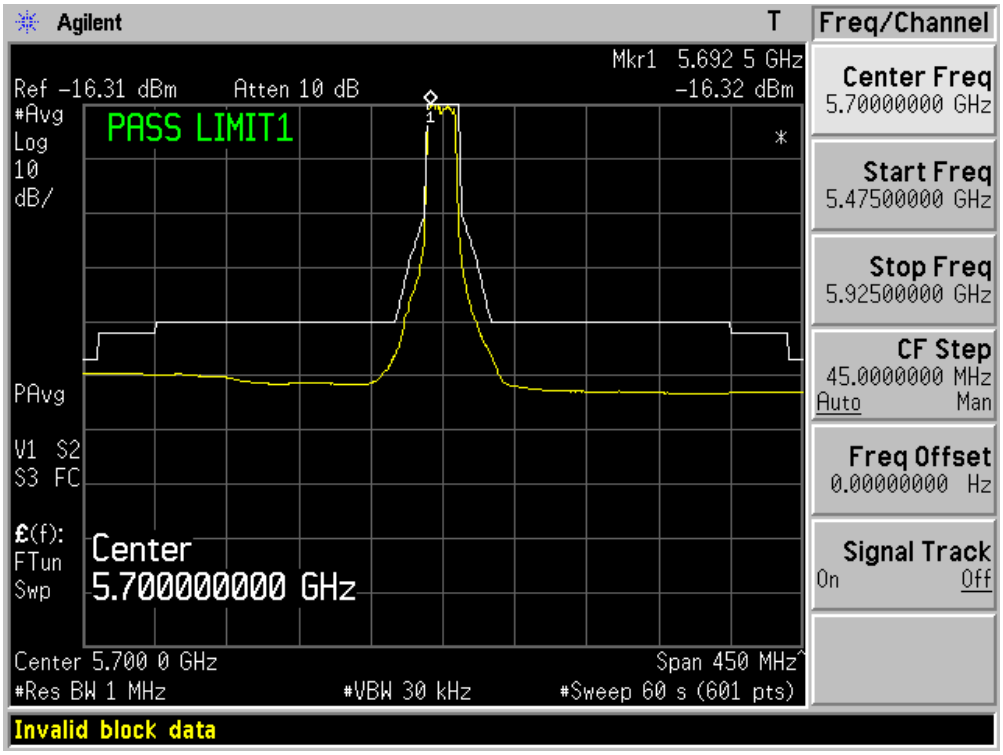
Horizontal



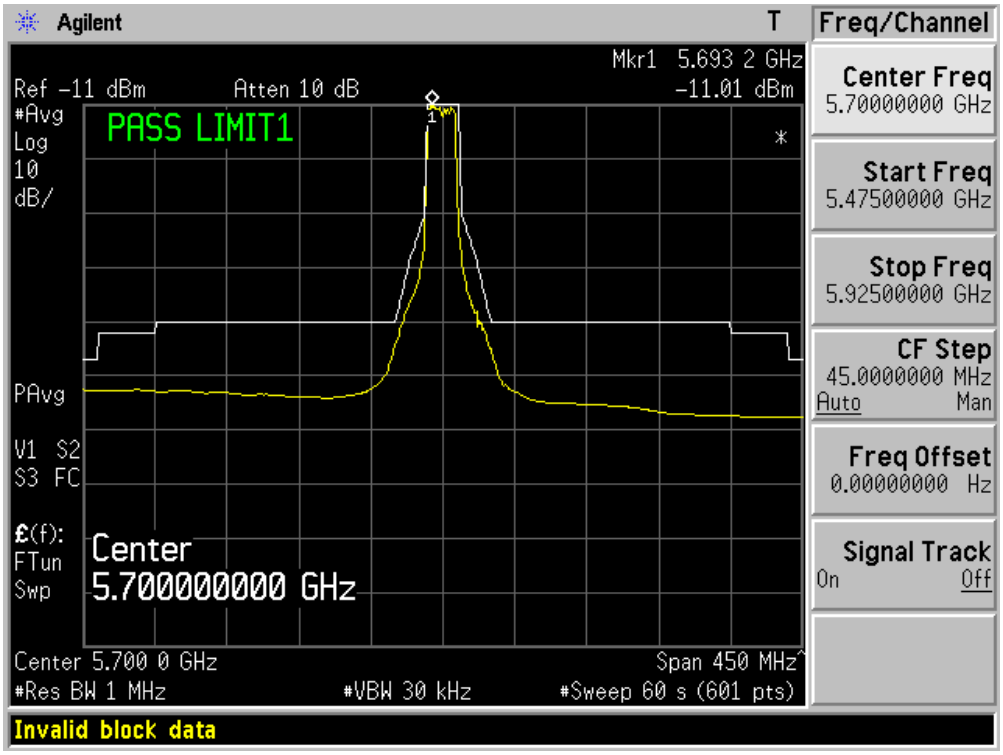
Vertical



Horizontal

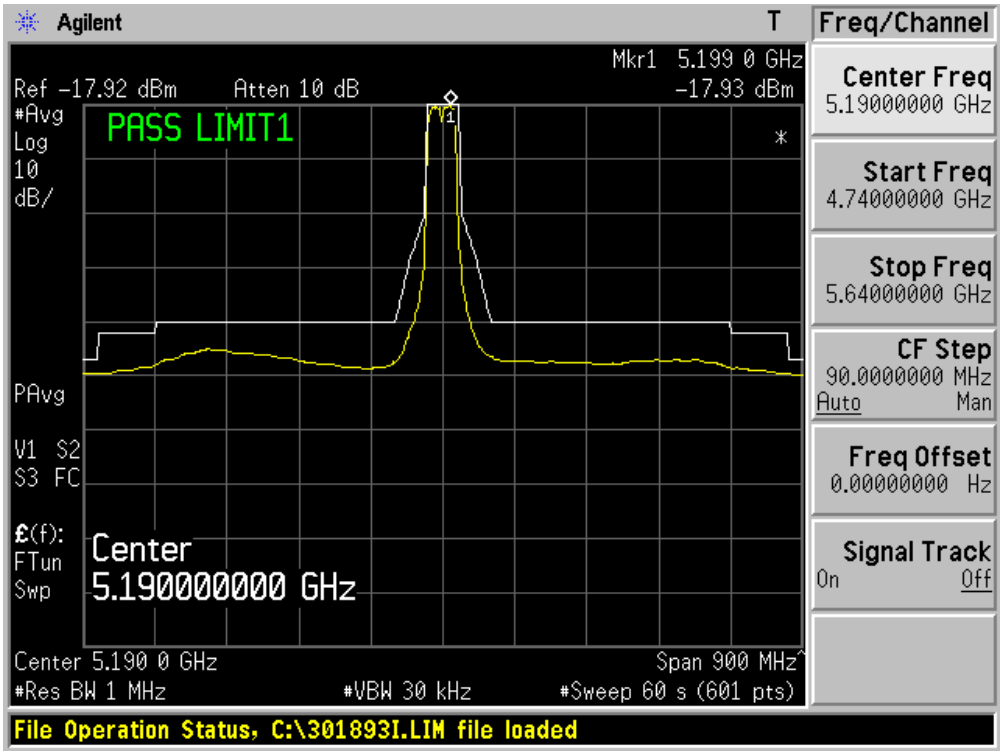


Vertical

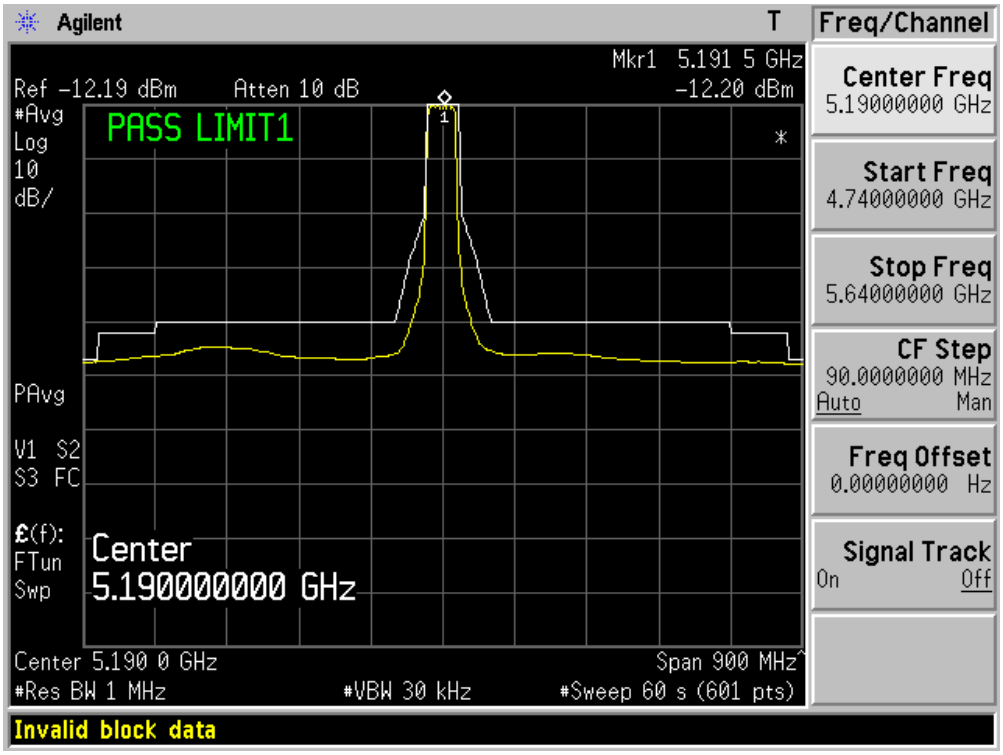

Agilent
T
Freq/Channel
Mkr1 5.693 2 GHz
-11.01 dBm
Ref -11 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.700000000 GHz
Center 5.700 0 GHz
#Res BW 1 MHz
#VBW 30 kHz
Span 450 MHz
#Sweep 60 s (601 pts)
Center Freq
5.70000000 GHz
Start Freq
5.47500000 GHz
Stop Freq
5.92500000 GHz
CF Step
45.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Invalid block data

Product	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	:	Transmitter Unwanted Emissions Within the 5GHz RLAN Bands
Test Site	:	AC-4
Test Mode	:	Mode 3: Transmit by 802.11n (40MHz) – chain 110

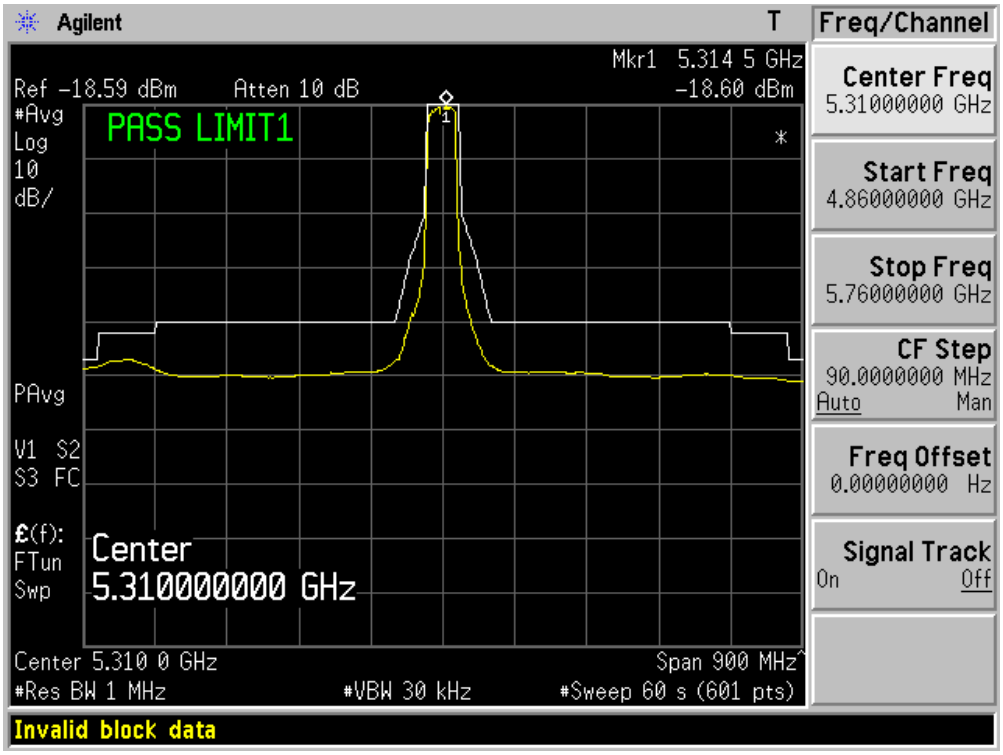
Horizontal



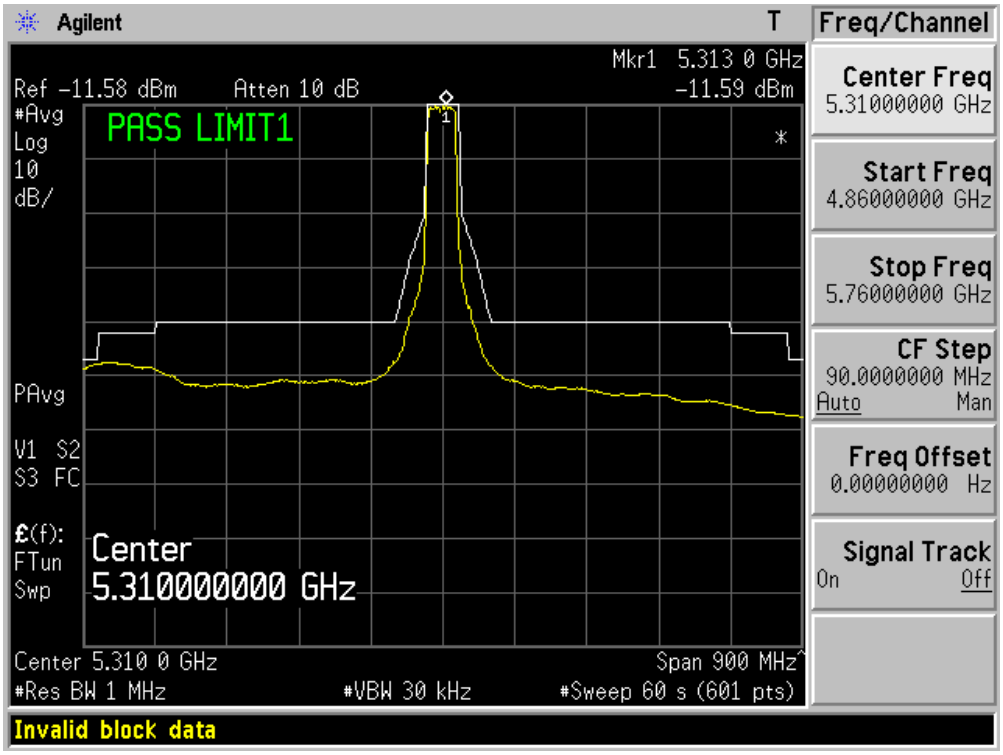
Vertical



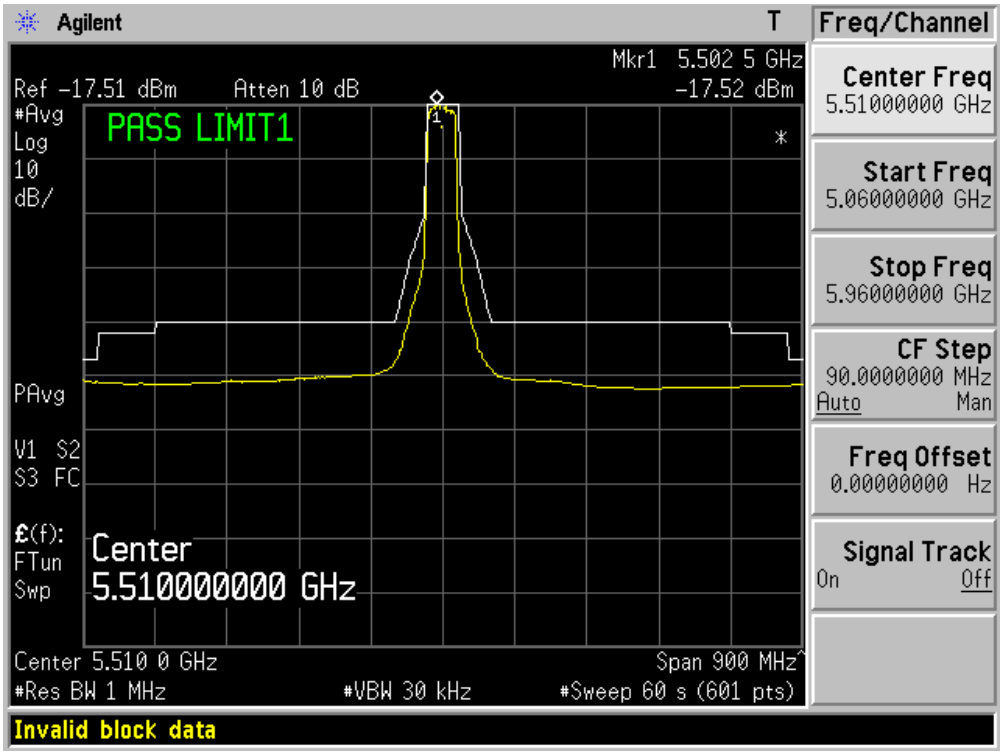
Horizontal



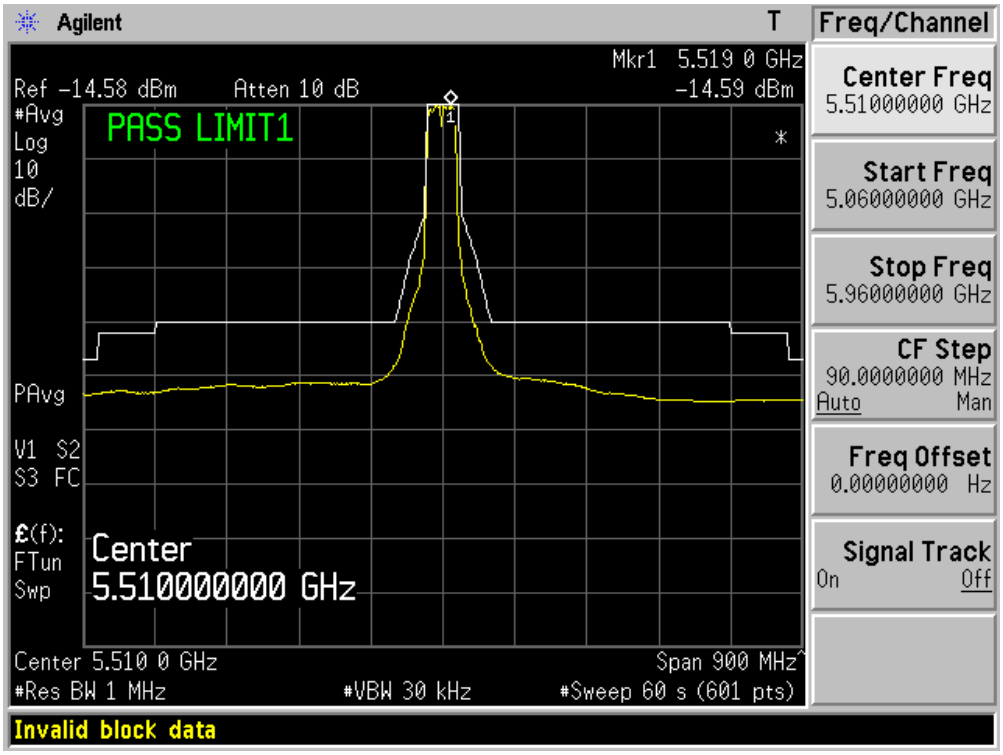
Vertical



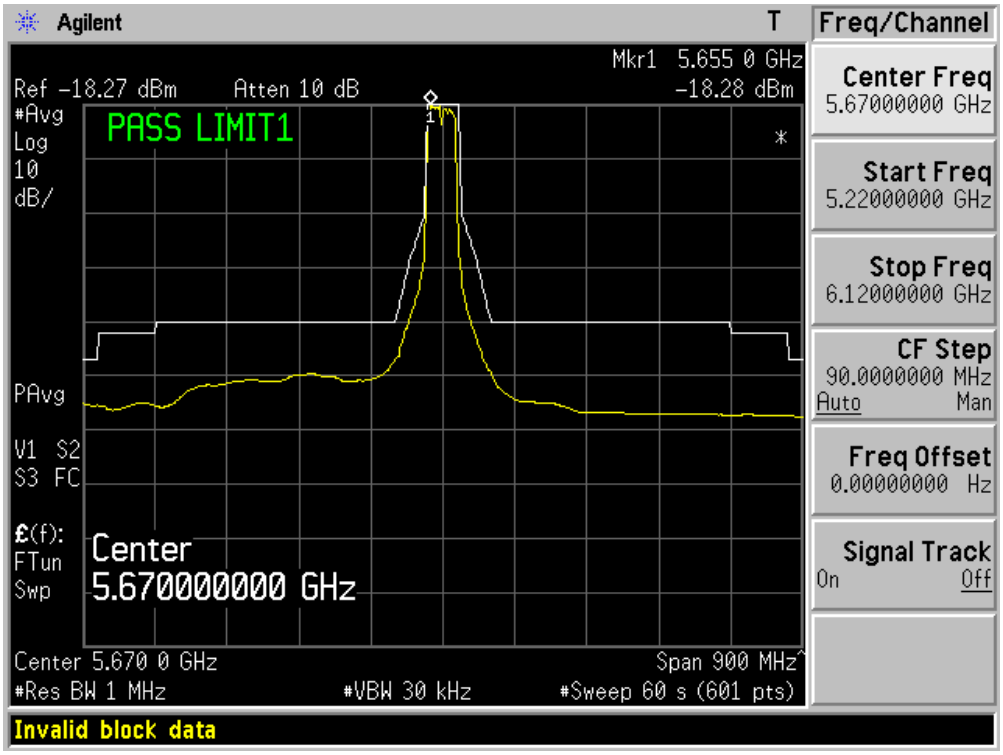
Horizontal



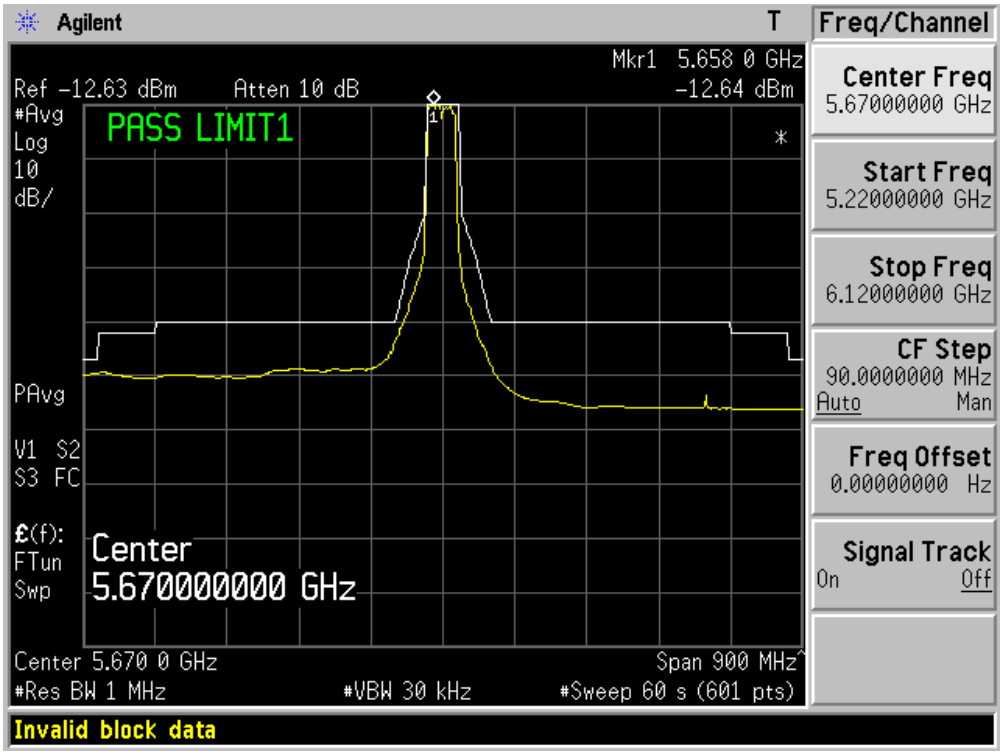
Vertical



Horizontal



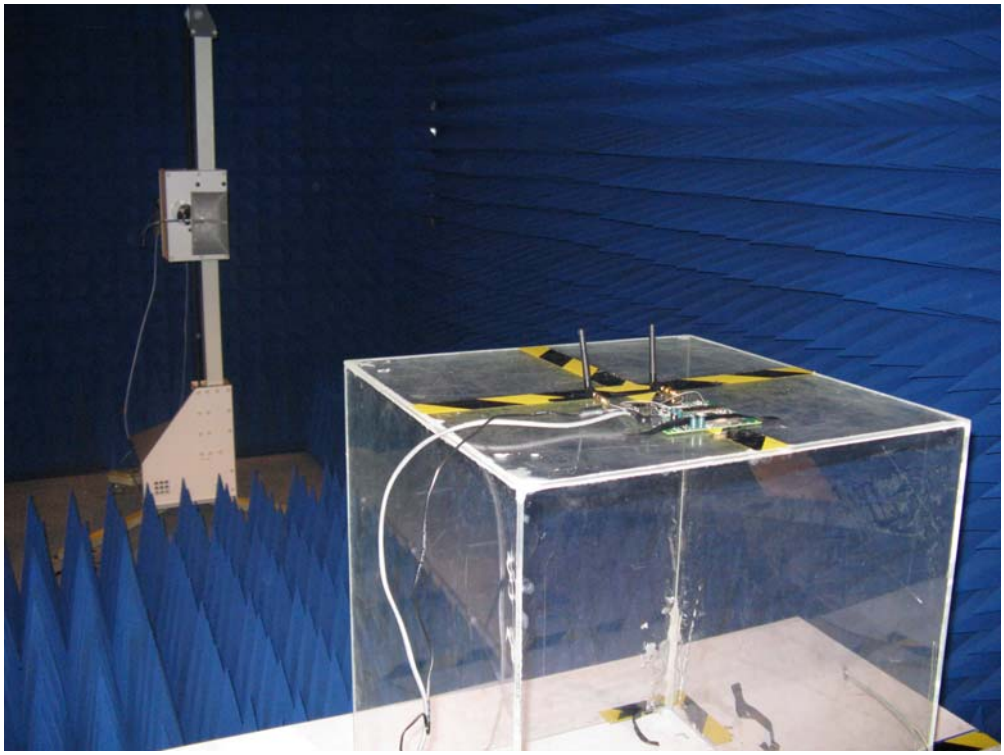
Vertical


Agilent
T
Freq/Channel
Mkr1 5.658 0 GHz
-12.64 dBm
Ref -12.63 dBm
Atten 10 dB
#Avg
Log
10
dB/
PASS LIMIT1
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Center
5.670000000 GHz
Center Freq
5.67000000 GHz
Start Freq
5.22000000 GHz
Stop Freq
6.12000000 GHz
CF Step
90.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.670 0 GHz
Span 900 MHz
#Res BW 1 MHz
#VBW 30 kHz
#Sweep 60 s (601 pts)
Invalid block data

7.6. Test Photograph

Test Mode : Transmit

Description : Transmitter Unwanted Emissions Within the 5GHz RLAN Bands



8. Receiver Spurious Emissions

8.1. Test Equipment

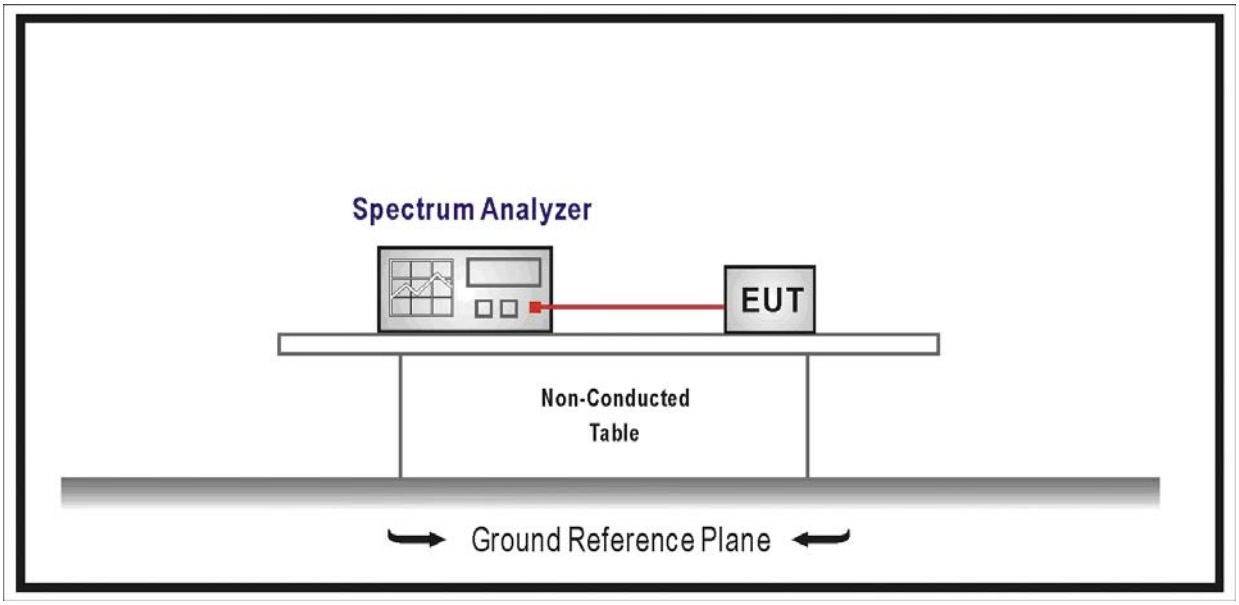
Receiver Spurious Emissions / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2008/06/11
PSG Analog S.G.	Agilent	E8257D	MY44321116	2008/06/11
Preamplifier	QuieTek	AP-025C	QT-AP005	2007/11/25
Preamplifier	QuieTek	AP-180C	CHM-0602013	2007/11/25
Bilog Type Antenna	Schaffner	CBL6141A	4278	2007/11/25
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2007/11/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	499	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2008/06/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	295	2008/06/28
Coaxial Cable	Huber+Suhner	AC4-RL	06	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RH	07	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-T	08	2007/11/25
Coaxial Cable	Huber+Suhner	AC4-RF	09	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

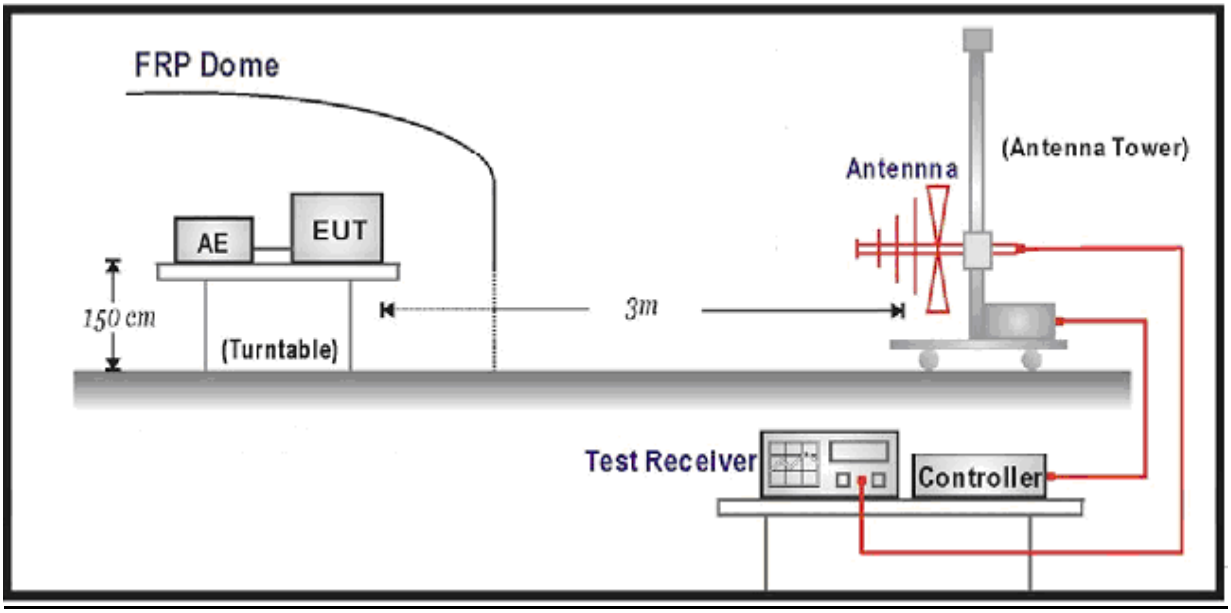
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup

For Conducted Measurement



For Radiated Measurement



8.3. Limit

Frequency Range	Maximum Power, ERP	Measurement Bandwidth
30 MHz to 1GHz	-57 dBm	100 kHz
1 GHz to 26 GHz	-47 dBm	1 MHz

8.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.7

8.5. Test Result

Mode 1: 802.11n(20MHz) (Chain 100)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
233.70	H	-63.64	-57	-6.64	PEAK
233.70	V	-62.74	-57	-5.74	PEAK
340.40	H	-67.73	-57	-10.73	PEAK
340.40	V	-66.48	-57	-9.48	PEAK
527.93	H	-71.56	-57	-14.56	PEAK
527.93	V	-69.35	-57	-12.35	PEAK
2264.03	H	-58.35	-47	-11.35	PEAK
2264.03	V	-57.38	-47	-10.38	PEAK
3477.45	H	-55.48	-47	-8.48	PEAK
3477.45	V	-53.27	-47	-6.27	PEAK
3933.58	H	-54.93	-47	-7.93	PEAK
3933.58	V	-52.28	-47	-5.28	PEAK
Channel 64 (5320MHz)					
215.43	H	-64.63	-57	-7.63	PEAK
215.43	V	-63.46	-57	-6.46	PEAK
357.36	H	-66.83	-57	-9.83	PEAK
357.36	V	-65.55	-57	-8.55	PEAK
617.95	H	-69.54	-57	-12.54	PEAK
617.95	V	-67.57	-57	-10.57	PEAK
2485.15	H	-60.35	-47	-13.35	PEAK
2485.15	V	-58.33	-47	-11.33	PEAK
3163.45	H	-54.57	-47	-7.57	PEAK
3163.45	V	-53.44	-47	-6.44	PEAK
3743.57	H	-55.57	-47	-8.57	PEAK
3743.57	V	-54.25	-47	-7.25	PEAK
Channel 100 (5500MHz)					
237.42	H	-62.35	-57	-5.35	PEAK
237.42	V	-60.47	-57	-3.47	PEAK
379.16	H	-64.83	-57	-7.83	PEAK
379.16	V	-63.58	-57	-6.58	PEAK
794.22	H	-65.57	-57	-8.57	PEAK
794.22	V	-66.44	-57	-9.44	PEAK
1960.46	H	-61.47	-47	-14.47	PEAK

1960.46	V	-57.35	-47	-10.35	PEAK
2763.45	H	-55.56	-47	-8.56	PEAK
2763.45	V	-53.45	-47	-6.45	PEAK
3583.78	H	-57.55	-47	-10.55	PEAK
3583.78	V	-54.34	-47	-7.34	PEAK
Channel 140 (5700MHz)					
427.25	H	-66.73	-57	-9.73	PEAK
427.25	V	-65.52	-57	-8.52	PEAK
589.22	H	-65.68	-57	-8.68	PEAK
589.22	V	-63.57	-57	-6.57	PEAK
758.10	H	-70.52	-57	-13.52	PEAK
758.10	V	-67.58	-57	-10.58	PEAK
2070.85	H	-60.22	-47	-13.22	PEAK
2070.85	V	-57.67	-47	-10.67	PEAK
2853.25	H	-55.86	-47	-8.86	PEAK
2853.25	V	-54.57	-47	-7.57	PEAK
3855.21	H	-57.55	-47	-10.55	PEAK
3855.21	V	-55.37	-47	-8.37	PEAK

Mode 1: 802.11n(40MHz) (Chain 100)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
274.55	H	-64.36	-57	-7.36	PEAK
274.55	V	-62.63	-57	-5.63	PEAK
340.64	H	-66.85	-57	-9.85	PEAK
340.64	V	-65.64	-57	-8.64	PEAK
503.95	H	-70.47	-57	-13.47	PEAK
503.95	V	-67.54	-57	-10.54	PEAK
2147.23	H	-57.78	-47	-10.78	PEAK
2147.23	V	-55.95	-47	-8.95	PEAK
3357.25	H	-56.86	-47	-9.86	PEAK
3357.25	V	-54.27	-47	-7.27	PEAK
3863.55	H	-55.87	-47	-8.87	PEAK
3863.55	V	-53.27	-47	-6.27	PEAK
Channel 62 (5310MHz)					
200.22	H	-63.37	-57	-6.37	PEAK
200.22	V	-62.58	-57	-5.58	PEAK
355.35	H	-65.57	-57	-8.57	PEAK
355.35	V	-63.58	-57	-6.58	PEAK
608.28	H	-69.53	-57	-12.53	PEAK
608.28	V	-66.67	-57	-9.67	PEAK
2424.47	H	-62.42	-47	-15.42	PEAK
2424.47	V	-59.75	-47	-12.75	PEAK
3074.45	H	-56.32	-47	-9.32	PEAK
3074.45	V	-53.37	-47	-6.37	PEAK
3573.57	H	-54.66	-47	-7.66	PEAK
3573.57	V	-53.37	-47	-6.37	PEAK
Channel 102 (5510MHz)					
368.42	H	-63.47	-57	-6.47	PEAK
368.42	V	-60.58	-57	-3.58	PEAK
534.24	H	-62.38	-57	-5.38	PEAK
534.24	V	-65.35	-57	-8.35	PEAK
756.22	H	-63.33	-57	-6.33	PEAK
756.22	V	-63.37	-57	-6.37	PEAK
1896.42	H	-65.49	-47	-18.49	PEAK

1896.42	V	-58.74	-47	-11.74	PEAK
2533.25	H	-54.35	-47	-7.35	PEAK
2533.25	V	-53.85	-47	-6.85	PEAK
3423.72	H	-56.77	-47	-9.77	PEAK
3423.72	V	-55.73	-47	-8.73	PEAK
Channel 134 (5670MHz)					
407.25	H	-67.26	-57	-10.26	PEAK
407.25	V	-63.22	-57	-6.22	PEAK
559.35	H	-64.37	-57	-7.37	PEAK
559.35	V	-67.84	-57	-10.84	PEAK
718.15	H	-72.55	-57	-15.55	PEAK
718.15	V	-62.75	-57	-5.75	PEAK
1890.85	H	-66.36	-47	-19.36	PEAK
1890.85	V	-56.67	-47	-9.67	PEAK
2733.27	H	-53.37	-47	-6.37	PEAK
2733.27	V	-57.75	-47	-10.75	PEAK
3745.05	H	-56.68	-47	-9.68	PEAK
3745.05	V	-56.67	-47	-9.67	PEAK

Mode 1: 802.11n(20MHz) (Chain 010)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
212.35	H	-65.23	-57	-8.23	PEAK
212.35	V	-63.32	-57	-6.32	PEAK
322.43	H	-67.40	-57	-10.40	PEAK
322.43	V	-65.45	-57	-8.45	PEAK
625.95	H	-70.85	-57	-13.85	PEAK
625.95	V	-67.66	-57	-10.66	PEAK
2014.12	H	-59.93	-47	-12.93	PEAK
2014.12	V	-56.39	-47	-9.39	PEAK
3557.45	H	-58.57	-47	-11.57	PEAK
3557.45	V	-56.50	-47	-9.50	PEAK
3783.59	H	-56.46	-47	-9.46	PEAK
3783.59	V	-53.74	-47	-6.74	PEAK
Channel 64 (5320MHz)					
227.43	H	-65.34	-57	-8.34	PEAK
227.43	V	-62.97	-57	-5.97	PEAK
316.36	H	-66.96	-57	-9.96	PEAK
316.36	V	-65.94	-57	-8.94	PEAK
665.87	H	-67.75	-57	-10.75	PEAK
665.87	V	-66.45	-57	-9.45	PEAK
2087.15	H	-62.58	-47	-15.58	PEAK
2087.15	V	-56.34	-47	-9.34	PEAK
3353.45	H	-57.55	-47	-10.55	PEAK
3353.45	V	-55.89	-47	-8.89	PEAK
3845.57	H	-54.77	-47	-7.77	PEAK
3845.57	V	-53.88	-47	-6.88	PEAK
Channel 100 (5500MHz)					
245.42	H	-67.33	-57	-10.33	PEAK
245.42	V	-64.48	-57	-7.48	PEAK
388.27	H	-66.36	-57	-9.36	PEAK
388.27	V	-64.36	-57	-7.36	PEAK
806.22	H	-66.52	-57	-9.52	PEAK
806.22	V	-64.47	-57	-7.47	PEAK
1974.45	H	-60.64	-47	-13.64	PEAK

1974.45	V	-57.43	-47	-10.43	PEAK
2795.45	H	-56.22	-47	-9.22	PEAK
2795.45	V	-55.28	-47	-8.28	PEAK
3558.58	H	-56.17	-47	-9.17	PEAK
3558.58	V	-53.24	-47	-6.24	PEAK
Channel 140 (5700MHz)					
327.25	H	-67.77	-57	-10.77	PEAK
327.25	V	-66.95	-57	-9.95	PEAK
575.53	H	-65.96	-57	-8.96	PEAK
575.53	V	-64.65	-57	-7.65	PEAK
755.35	H	-72.67	-57	-15.67	PEAK
755.35	V	-66.87	-57	-9.87	PEAK
2075.75	H	-62.56	-47	-15.56	PEAK
2075.75	V	-58.75	-47	-11.75	PEAK
2745.25	H	-57.55	-47	-10.55	PEAK
2745.25	V	-55.64	-47	-8.64	PEAK
3833.15	H	-56.74	-47	-9.74	PEAK
3833.15	V	-54.47	-47	-7.47	PEAK

Mode 1: 802.11n(40MHz) (Chain 010)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
275.05	H	-65.37	-57	-8.37	PEAK
275.05	V	-63.64	-57	-6.64	PEAK
344.64	H	-67.63	-57	-10.63	PEAK
344.64	V	-64.57	-57	-7.57	PEAK
733.95	H	-72.34	-57	-15.34	PEAK
733.95	V	-63.63	-57	-6.63	PEAK
2094.15	H	-56.36	-47	-9.36	PEAK
2094.15	V	-53.85	-47	-6.85	PEAK
3074.25	H	-56.63	-47	-9.63	PEAK
3074.25	V	-59.75	-47	-12.75	PEAK
3855.05	H	-55.69	-47	-8.69	PEAK
3855.05	V	-54.73	-47	-7.73	PEAK
Channel 62 (5310MHz)					
205.58	H	-65.36	-57	-8.36	PEAK
205.58	V	-63.29	-57	-6.29	PEAK
350.35	H	-64.36	-57	-7.36	PEAK
350.35	V	-62.46	-57	-5.46	PEAK
617.25	H	-67.94	-57	-10.94	PEAK
617.25	V	-65.73	-57	-8.73	PEAK
2264.47	H	-64.66	-47	-17.66	PEAK
2264.47	V	-58.36	-47	-11.36	PEAK
3135.45	H	-57.28	-47	-10.28	PEAK
3135.45	V	-55.56	-47	-8.56	PEAK
3595.57	H	-55.84	-47	-8.84	PEAK
3595.57	V	-53.85	-47	-6.85	PEAK
Channel 102 (5510MHz)					
354.45	H	-64.63	-57	-7.63	PEAK
354.45	V	-62.25	-57	-5.25	PEAK
568.24	H	-64.56	-57	-7.56	PEAK
568.24	V	-63.94	-57	-6.94	PEAK
785.27	H	-65.73	-57	-8.73	PEAK
785.27	V	-63.78	-57	-6.78	PEAK
1746.45	H	-63.87	-47	-16.87	PEAK

1746.45	V	-57.77	-47	-10.77	PEAK
2473.25	H	-55.33	-47	-8.33	PEAK
2473.25	V	-53.45	-47	-6.45	PEAK
3694.75	H	-54.34	-47	-7.34	PEAK
3694.75	V	-55.59	-47	-8.59	PEAK
Channel 134 (5670MHz)					
389.25	H	-66.24	-57	-9.24	PEAK
389.25	V	-64.22	-57	-7.22	PEAK
527.35	H	-66.67	-57	-9.67	PEAK
527.35	V	-64.84	-57	-7.84	PEAK
726.15	H	-71.75	-57	-14.75	PEAK
726.15	V	-64.45	-57	-7.45	PEAK
1486.85	H	-65.54	-47	-18.54	PEAK
1486.85	V	-57.43	-47	-10.43	PEAK
2583.46	H	-53.37	-47	-6.37	PEAK
2583.46	V	-55.35	-47	-8.35	PEAK
3575.05	H	-53.68	-47	-6.68	PEAK
3575.05	V	-55.63	-47	-8.63	PEAK

Mode 1: 802.11n(20MHz) (Chain 110)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
206.35	H	-66.36	-57	-9.36	PEAK
206.35	V	-63.48	-57	-6.48	PEAK
345.43	H	-65.56	-57	-8.56	PEAK
345.43	V	-65.45	-57	-8.45	PEAK
732.75	H	-72.86	-57	-15.86	PEAK
732.75	V	-68.57	-57	-11.57	PEAK
1974.26	H	-57.37	-47	-10.37	PEAK
1974.26	V	-55.46	-47	-8.46	PEAK
3245.45	H	-58.37	-47	-11.37	PEAK
3245.45	V	-57.62	-47	-10.62	PEAK
3855.65	H	-54.48	-47	-7.48	PEAK
3855.65	V	-54.16	-47	-7.16	PEAK
Channel 64 (5320MHz)					
218.45	H	-68.19	-57	-11.19	PEAK
218.45	V	-64.20	-57	-7.20	PEAK
309.56	H	-66.07	-57	-9.07	PEAK
309.56	V	-68.56	-57	-11.56	PEAK
615.85	H	-64.48	-57	-7.48	PEAK
615.85	V	-65.29	-57	-8.29	PEAK
2136.15	H	-63.37	-47	-16.37	PEAK
2136.15	V	-58.74	-47	-11.74	PEAK
3576.45	H	-57.77	-47	-10.77	PEAK
3576.45	V	-55.47	-47	-8.47	PEAK
4075.59	H	-56.37	-47	-9.37	PEAK
4075.59	V	-54.28	-47	-7.28	PEAK
Channel 100 (5500MHz)					
225.75	H	-68.15	-57	-11.15	PEAK
225.75	V	-66.39	-57	-9.39	PEAK
395.35	H	-67.36	-57	-10.36	PEAK
395.35	V	-66.08	-57	-9.08	PEAK
894.22	H	-64.07	-57	-7.07	PEAK
894.22	V	-63.58	-57	-6.58	PEAK
2174.45	H	-63.80	-47	-16.80	PEAK

2174.45	V	-56.46	-47	-9.46	PEAK
2875.45	H	-58.37	-47	-11.37	PEAK
2875.45	V	-57.26	-47	-10.26	PEAK
3658.58	H	-55.24	-47	-8.24	PEAK
3658.58	V	-54.71	-47	-7.71	PEAK
Channel 140 (5700MHz)					
367.25	H	-68.24	-57	-11.24	PEAK
367.25	V	-67.35	-57	-10.35	PEAK
578.53	H	-66.46	-57	-9.46	PEAK
578.53	V	-66.96	-57	-9.96	PEAK
774.26	H	-71.46	-57	-14.46	PEAK
774.26	V	-65.77	-57	-8.77	PEAK
2275.55	H	-60.56	-47	-13.56	PEAK
2275.55	V	-57.87	-47	-10.87	PEAK
2785.25	H	-58.48	-47	-11.48	PEAK
2785.25	V	-55.57	-47	-8.57	PEAK
3965.15	H	-57.40	-47	-10.40	PEAK
3965.15	V	-53.56	-47	-6.56	PEAK

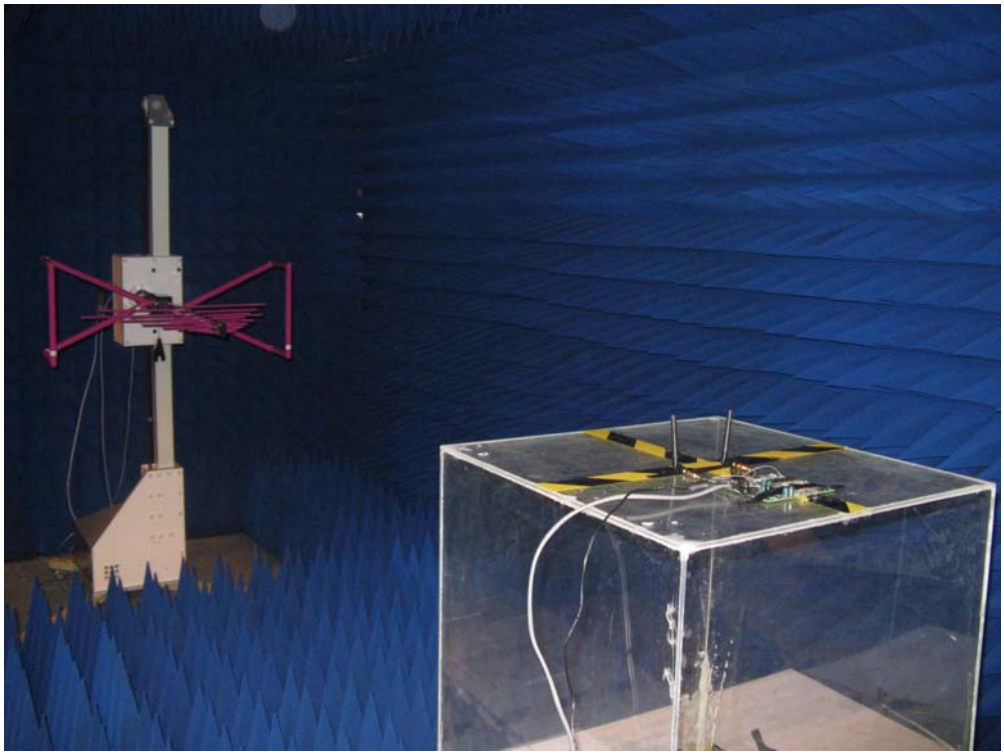
Mode 1: 802.11n(40MHz) (Chain 110)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
226.24	H	-66.37	-57	-9.37	PEAK
226.24	V	-65.64	-57	-8.64	PEAK
358.65	H	-65.63	-57	-8.63	PEAK
358.65	V	-63.57	-57	-6.57	PEAK
725.75	H	-70.34	-57	-13.34	PEAK
725.55	V	-66.45	-57	-9.45	PEAK
2015.37	H	-57.74	-47	-10.74	PEAK
2015.37	V	-55.72	-47	-8.72	PEAK
3075.46	H	-58.84	-47	-11.84	PEAK
3075.46	V	-57.58	-47	-10.58	PEAK
3945.05	H	-54.03	-47	-7.03	PEAK
3945.05	V	-53.36	-47	-6.36	PEAK
Channel 62 (5310MHz)					
214.36	H	-66.34	-57	-9.34	PEAK
214.36	V	-64.84	-57	-7.84	PEAK
348.55	H	-66.47	-57	-9.47	PEAK
348.55	V	-64.38	-57	-7.38	PEAK
627.25	H	-65.36	-57	-8.36	PEAK
627.25	V	-64.38	-57	-7.38	PEAK
2074.47	H	-63.49	-47	-16.49	PEAK
2074.47	V	-57.06	-47	-10.06	PEAK
3385.45	H	-56.70	-47	-9.70	PEAK
3385.45	V	-53.00	-47	-6.00	PEAK
3745.55	H	-57.14	-47	-10.14	PEAK
3745.55	V	-55.18	-47	-8.18	PEAK
Channel 102 (5510MHz)					
357.45	H	-63.63	-57	-6.63	PEAK
357.45	V	-67.25	-57	-10.25	PEAK
584.25	H	-65.56	-57	-8.56	PEAK
584.25	V	-66.94	-57	-9.94	PEAK
789.64	H	-64.73	-57	-7.73	PEAK
789.64	V	-65.78	-57	-8.78	PEAK
1896.45	H	-62.87	-47	-15.87	PEAK

1896.45	V	-58.77	-47	-11.77	PEAK
2484.25	H	-56.33	-47	-9.33	PEAK
2484.25	V	-55.45	-47	-8.45	PEAK
3724.75	H	-53.34	-47	-6.34	PEAK
3724.75	V	-56.59	-47	-9.59	PEAK
Channel 134 (5670MHz)					
364.25	H	-68.34	-57	-11.34	PEAK
364.25	V	-65.45	-57	-8.45	PEAK
519.78	H	-66.54	-57	-9.54	PEAK
519.78	V	-63.47	-57	-6.47	PEAK
755.15	H	-72.95	-57	-15.95	PEAK
755.15	V	-65.33	-57	-8.33	PEAK
1647.85	H	-65.46	-47	-18.46	PEAK
1647.85	V	-58.73	-47	-11.73	PEAK
2723.45	H	-55.45	-47	-8.45	PEAK
2723.45	V	-57.74	-47	-10.74	PEAK
3635.25	H	-54.27	-47	-7.27	PEAK
3635.25	V	-55.06	-47	-8.06	PEAK

8.6. Test Photograph

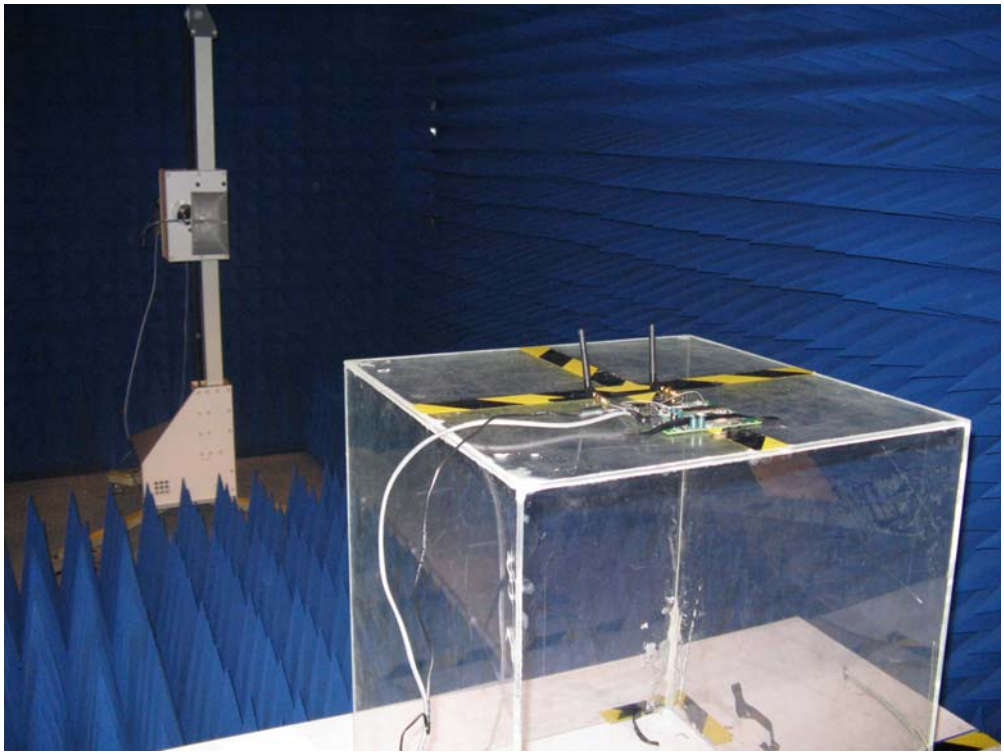
Test Mode: Transmit

Description: Receiver Spurious Emissions Test Setup for Under 1GHz



Test Mode: Transmit

Description: Receiver Spurious Emissions Test Setup for Above 1GHz



9. Dynamic Frequency Selection (DFS)

9.1. Test Equipment

Dynamic Frequency Selection (DFS) / AC-4

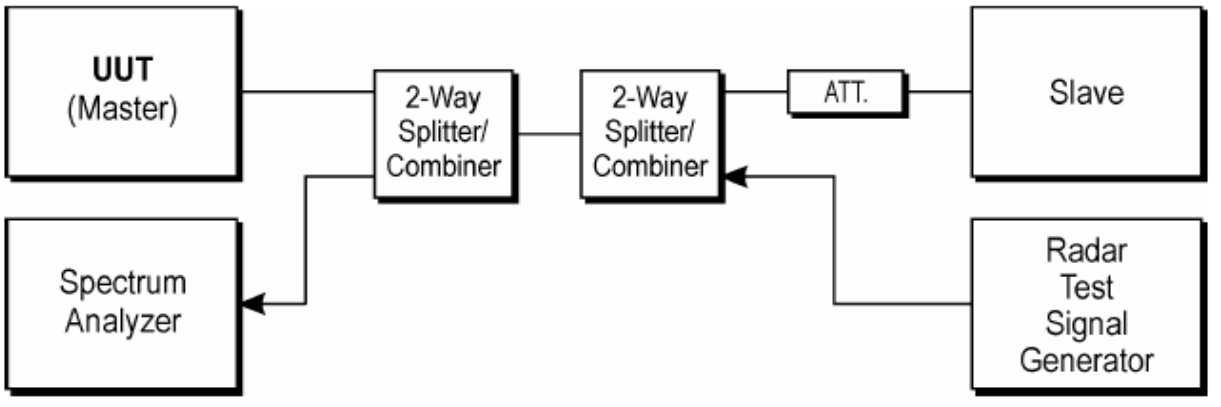
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP7	100561	2007/09/03
Vector Signal Generator	Rohde & Schwarz	SUM 200A	102168	2008/01/23
Splitter/Combiner (Qty: 2)	Mini-Circuits	ZAPD-50W 4.2-6.0 GHz	NN256400424	2008/05/18
ATT (Qty: 2)	Mini-Circuits	BW-S3W2 DC-18GHz	0025	2008/05/18
Aironet Lightweight Access Point	Cisco System	1242AG	FOC10352PCV	2007/08/15
RF Cable (Qty: 5)	Schaffner	N/A	25494/6	2008/05/18

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup

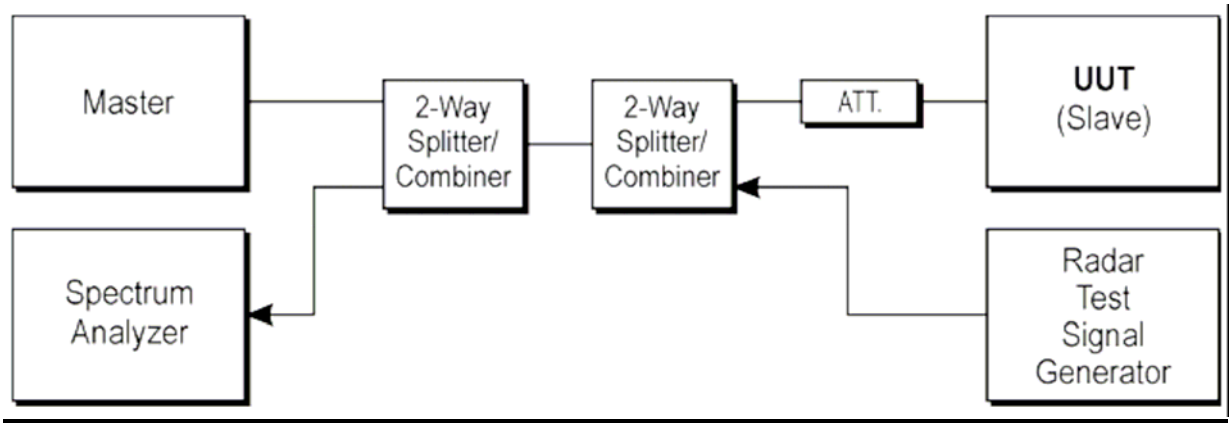
Set-up A

Set-up A is a set-up whereby the UUT is a RLAN device operating in master mode. Radar test signals are injected into the UUT. This set-up also contains a RLAN device operating in slave mode which is associated with the UUT.



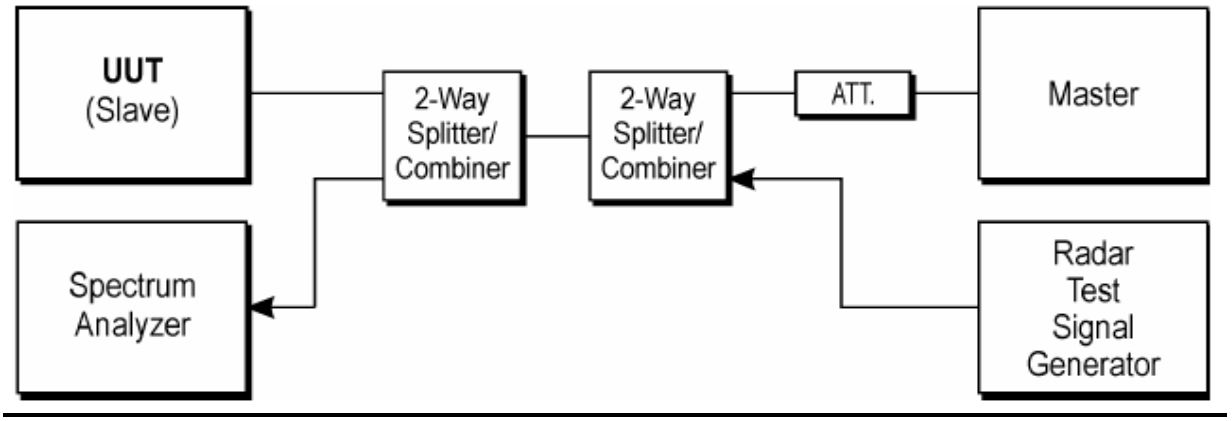
Set-up B

Set-up B is a set-up whereby the UUT is a RLAN device operating in slave mode. With or without Radar Interference Detection function. This set-up also contains a RLAN device operating in master mode. The radar test signals are injected into the master device. The UUT (slave device) is associated with the master device.



Set-up C

The UUT is a RLAN device operating in slave mode with Radar Interference Detection function. Radar test signals are injected into the slave device. This set-up also contains a RLAN device operating in master mode. The UUT (slave device) is associated with the master device.



9.3. Limit

DFS technical requirements specifications

Following Table lists the DFS related essential requirements and their applicability for each of the operational modes described in clause 4.7.1 of standard. If the RLAN device is capable of operating in more than one operational mode then each operating mode shall be assessed separately.

Requirement	DFS Operational mode		
	Master	Slave without radar detection (see table D.3)	Slave with radar detection (see table D.3)
Channel Availability Check	✓	Not required	Not required
In-Service Monitoring	✓	Not required	✓
Channel Shutdown	✓	✓	✓
Non-Occupancy Period	✓	Not required	✓
Uniform Spreading	✓	Not required	Not required

In-Service Monitoring

The *In-Service Monitoring* shall be used to continuously monitor an *Operating Channel*.
The *In-Service Monitoring* shall start immediately after the RLAN has started transmissions on an *Operating Channel*.
During the *In-Service Monitoring*, the RLAN shall be capable of detecting any of the radar signals that fall within the range given by table D.4 of standard with a level above the *Interference Detection Threshold* defined in tables D.2 and D.3 of standard.
The detection probability for a given radar signal shall be greater than the value defined in table D.4 of standard.

Channel Shutdown

The *Channel Shutdown* process shall start immediately after a radar signal has been detected.
The *Channel Move Time* shall not exceed the limit defined in table D.1 of standard.
The *Channel Closing Transmission Time* shall not exceed the limit defined in table D.1 of standard.

Non-Occupancy Period

The Non-Occupancy Period shall not be less than the value defined in table D.1 of standard.

Uniform Spreading

Each of the declared channel plans (combination of centre frequencies and declared nominal bandwidths) shall make use of at least 80% of the spectrum available in the applicable sub-band(s).

The probability of selecting each of the *usable channels* shall be within 10 % of the theoretical probability. For “n” *Usable channels*, the theoretical probability is 1/n.

Table D.1: DFS requirement values

Parameter	Value
Channel Availability Check Time	60 s
Channel Move Time	10 s
Channel Closing Transmission Time	260 ms
Non-Occupancy Period	30 min

Table D.2: Interference threshold values, master

Maximum transmit power (EIRP)	Value (see note)
≥ 200 mW	-64 dBm
< 200 mW	-62 dBm
NOTE: This is the level at the input of the receiver assuming a 0 dBi receive antenna.	

Table D.3: Interference threshold values, slave

Maximum transmit power (EIRP)	Value (see note)
≥ 200 mW	-64 dBm
< 200 mW	N/A
NOTE: This is the level at the input of the receiver assuming a 0 dBi receive antenna.	

9.4. Test Procedure

Refer to ETSI EN 301 893 V1.4.1 (2007-07) Clause 5.3.8

9.5. Test Result

This test result was based on Quietek report **XXXX**

10. Attachment

➢ EUT Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo