

# Radio Test Report

of

**EN 300 328 V1.7.1 (2006-10)**

And

**EN 301 893 V1.2.3 (2003-08)**

**EN 301 893 V1.5.1 (2008-12)**

**PRODUCT NAME** : Wireless-AG Network Mini PCI Adapter

**BRAND NAME** : Compex

**MODEL NAME** : iWavePort WLM54AG

**APPLICANT** : Compex Systems Pte Ltd..

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

**MANUFACTURER** : Compex Systems Pte Ltd..

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

**Survey By** : Cal-tech Technology Co.,Ltd.

2F., No.2, Lane 295, Sinming Rd., Neihu District, Taipei City  
114, Taiwan (R.O.C.)

## Statements

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**HISTORY OF THIS TEST REPORT**

Original Report Issue Date: April 03, 2009

No additional attachment.

additional attachment were issued as following record :

Attachment No.	Issue Date	Description
0508EMC001-328+893V2	2008/06/02	ETSI EN300 328 V1.7.1 (10-2006) ETSI EN301 893 V1.2.3 (08-2003)
EY891815-Compex-EN301893V1.5.1-DFS (Slave)	2009/04/02	ETSI EN 301 893 V1.5.1 (2008-12)

# CERTIFICATE OF COMPLIANCE

with

**EN 300 328 V1.7.1 (2006-10)**

And

**EN 301 893 V1.2.3 (2003-08)**

**EN 301 893 V1.5.1 (2008-12)**

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**BRAND NAME** : **Compex**

**MODEL NAME** : iWavePort WLM54AG

**APPLICANT** : **Compex Systems Pte Ltd..**

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

**MANUFACTURER** : **Compex Systems Pte Ltd..**

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

**I HEREBY** CERTIFY THAT:

The measurements shown in this test report were made for essential requirement of **EUROPEAN COUNCIL DIRECTIVE 99/5/EC**. All test performed according to EN 300 328 V1.7.1 and EN 300 893 V1.5.1 was found in compliance with the requirement. The test was carried out on June 2th, 2008 and April 2th, 2009 at Max Light Technology Co.,Ltd. and SPORTON International Inc. LAB.

Checked :



4/3/2009

**Dr. Jam Cheng**  
Engineering Manager

**1. General Description of Equipment under Test**

**1.1 Applicant**

**Compex Systems Pte Ltd.**

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

**1.2 Manufacturer**

**Compex Systems Pte Ltd.**

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

**1.3 Basic Description of Equipment under Test**

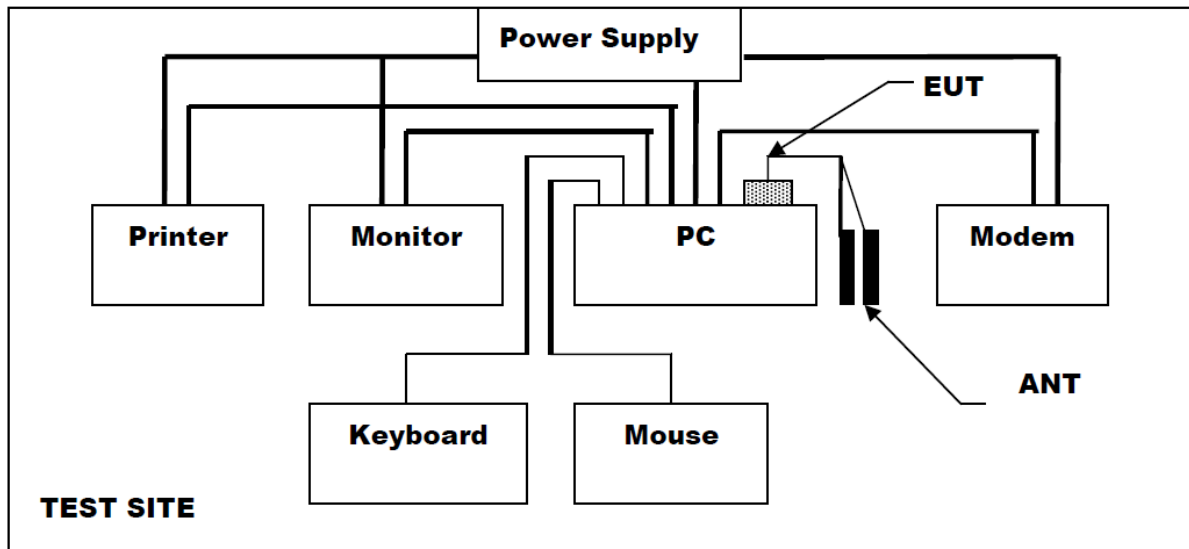
This product is a Wireless-AG Network Mini PCI Adapter with 802.11a/b/g wireless solution. The technical data has been listed on section “ Features of Equipment under Test ”. The Compex iWavePort WLM54AG maintains interoperability within the 2.4 GHz and 5 GHz frequency band, offering full compatibility with 802.11b/g and 802.11a networks. It supports key security features like Wi-Fi Protected Access (WPA),WPA2, WEP and 802.1x.

**1.4 Technical data of EUT**

Items	Description
Type of Modulation	Direct Sequence Spread Spectrum
Type of Antenna	1/4 λDIOPLE Antenna
Antenna Gain (dBi)	2.0 dBi
Frequency of Channel	802.11b/g :13CH ; 802.11a : 19 CH
Operating Frequency	2412MHz~2472MHz ; 5150MHz~5350MHz ; 5470MHz~5725MHz
Output Power	20dBm
Input Rating	Powered By PC (Desktop)

2. Test Configuration of Equipment under Test

2.1 Connection Diagram of Test System



2.2 The Test Mode Description

During testing the EUT (Wireless Adapter) 's Mini PCI interface via a PCMCIA to mini-PCI extender connected to the Desktop PC, and the monitor/modem/keyboard/mouse/printer connected to desktop's PC I/O port.

2.3 Description of Test Supporting Units

Support unit	Brand	Manufacturer	Model
Notebook	IBM	IBM	16W
Monitor	IBM	IBM	10L6145 030
Keyboard	IBM	IBM	KB-9930
Mouse	IBM	IBM	0180-05N
Modem	ASKEY	ASKEY	WS1414SV
Printer	PANASONIC	PANASONIC	KX-P1080I

### 3. General Information of Test

#### 3.1 Test laboratory

1. Test Site Location : Max Light Technology Co.,Ltd.  
 Address : Room 5, 8F, No.125, Section 3 Roosevelt Road,Taipei, Taiwan., R.O.C.  
 Test standard : EN 300 328 V1.6.1 (2004-11) & EN 300 893 V1.3.2(2003-08)
  
2. Test Site Location : SPORTON International Inc. LAB  
 Address : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.  
 Test standard : EN 301 893 V1.5.1 (2008-12)

#### 3.2 Test Conditions

Normal Voltage : 230 V  
 Normal Temperature : +20 °C~+28  
 Relative Humidity : 60% ~ 85%

#### 3.3 Standard for Methods of Measurement

Here is the list of the standards followed in this test report.

- EN 300 328 V1.7.1(2006-10)
- EN 301 893 V1.3.2(2003-08)
- EN 301 893 V1.5.1 (2008-12)

#### 3.4 Frequency Range Investigated

Radiated emission test: from 30 MHz to 26.5 GHz

#### 3.5 Test Distance

1. The test distance of radiated emission (30MHz~1GHz) test from antenna to EUT is 3 M.
2. The test distance of radiated emission (1GHz~26.5GHz) test from antenna to EUT is 1.5 M.

#### 3.6 Test Software

During testing, Channel & Power Controlling Software: This was provided by the manufacturer and is able to let the test engineer select the operating channel as well as the RF output power. The parameters for channel selection is trying to offer the test engineer the ability to fix the operating channel for testing, both normal data and continuously transmitting modes are allowed, and that for RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test Software	ART					
Test Channel(802.11b/g)	CH 01	CH 07	CH 10	CH 13		
Test Channel(802.11a)	CH 01	CH 04	CH 08	CH 09	CH 14	CH 19

## 4. Summary of Test Results

<b>ETSI EN 300 328 V1.7.1(2006-10)</b>			
<b>Paragraph</b>	<b>Measurement</b>	<b>Reference Clause(s)</b>	<b>Test</b>
	<b>Transmitter Parameters</b>		
5.1	Equivalent Isotropic Radiated Power	5.7.2	PASSED
5.2	Maximum Spectral Power Density	5.7.3	PASSED
5.3	Transmitter Frequency Range	5.7.4	PASSED
5.4	Transmitter Spurious Emissions (Transmitter Operating / Radiated)	5.7.5	PASSED
	<b>Receiver Parameter</b>		
5.5	Receiver Spurious Emissions	5.7.6	PASSED
<b>ETSI EN 300 893 V1.2.3(2003-08)</b>			
<b>Paragraph</b>	<b>Measurement</b>	<b>Reference Clause(s)</b>	<b>Test</b>
	<b>Transmitter Parameters</b>		
6.1	Carrier Frequency Stability	4.2	PASSED
6.2	Effective Radiated Power	4.3	PASSED
6.3	Peak Power Density	4.3	PASSED
6.4	Unwanted Emissions outside 5GHz RLAN Band	4.4	PASSED
6.5	Unwanted Emissions within 5GHz RLAN Band	4.4	PASSED
6.6	Dynamic Frequency Selection ( DFS ) <b>(ETSI EN 300 893 V1.5.1(2008-12)</b>	4.7	PASSED
	<b>Receiver Parameter</b>		
6.7	Receiver Spurious Emissions	4.5	PASSED



## 5. TEST PROCEDURES AND RESULTS FOR 2.4GHz BAND

### 5.1 Equivalent Isotropic Radiated Power

#### 5.1.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%

#### 5.1.2 Limits of Effective Radiated Power (Clause 4.3.1.2)

Condition	Limits (dBm/dBW)	
	Peak	Average
Under all test conditions	23dBm/-7dBW	20dBm/-10dBW

The effective radiated power is defined as the total power of the transmitter and is calculated according to the procedure given in subclause 5.7.2. The effective radiated power shall be equal to or less than -10 dBW (100 mW)e.i.r.p. This limit shall apply for any combination of power level and intended antenna assembly.

#### 5.1.3 Test Results

Test Mode : 802.11b (CH01/CH07/CH10/CH13)

Test Conditions				Average Transmitter EIRP ( dBm )			
				CH 01	CH 07	CH 10	CH 13
T nom (°C)	+21	V nom(V)	230.00	13.68	13.57	13.22	13.34
T min (°C)	0	V max(V)	253.00	13.72	13.60	13.31	13.50
		V min(V)	207.00	13.61	13.49	13.16	13.37
T max (°C)	+55	V max(V)	253.00	13.76	13.65	13.36	13.57
		V min(V)	207.00	13.65	13.56	13.27	13.45
Limits				<b>20dBm (-10dBW)</b>			
Measurement Uncertainty				-1.24dB / +1.20dB			

Test Mode : 802.11g (CH01/CH07/CH10/CH13)

Test Conditions				Average Transmitter EIRP ( dBm )			
				CH 01	CH 07	CH 10	CH 13
T nom (°C)	21	V nom(V)	230.00	10.18	10.02	10.25	9.95
T min (°C)	0	V max(V)	253.00	10.01	9.93	10.06	10.02
		V min(V)	207.00	10.13	10.16	10.10	9.86
T max (°C)	55	V max(V)	253.00	10.03	10.06	10.07	9.99
		V min(V)	207.00	9.94	10.00	10.03	10.07
Limits				<b>20dBm (-10dBW)</b>			
Measurement Uncertainty				-1.24dB / +1.20dB			

**5.2 Maximum Spectral Power Density (Clause 5.7.3)**

(DSSS and Other Types of Modulation)

**5.2.1 Test Condition**

- Ambient Temperature: 24°C
- Relative Humidity:67%
- Duty Cycle of the Equipment During the Test:100.00%

**5.2.2 Limits of Transmitter Peak Power Density (Clause 4.3.2.2)**

Condition	Limits (dBm/dBW)
Under all test conditions	10dBm/1MHz

The maximum spectral power density is defined as the highest level of power in Watts per Hertz generated by the transmitter within the power envelope. For wide band modulations other than FHSS (e.g. DSSS, OFDM, etc.), the maximum e.i.r.p. spectral density is limited to 10 mW per MHz.

**5.2.3 Test Results**

Test Mode : 802.11b (CH01/CH07/CH10/CH13)

Test Conditions		Transmitter Peak Power Density ( dBm/1MHz)			
Bitrate 11.0 Mbit/s		CH 01	CH 07	CH 10	CH 13
Limit	10dBm/1MHz	8.53dBm/MHz	8.33dBm/MHz	8.47dBm/MHz	8.44dBm/MHz
Measurement Uncertainty		-1.15dB / +1.35dB			

Test Mode : 802.11g (CH01/CH07/CH10/CH13)

Test Conditions		Transmitter Peak Power Density ( dBm/1MHz)			
Bitrate 11.0 Mbit/s		CH 10	CH 07	CH 10	CH 13
Limit	10dBm/1MHz	8.67dBm/MHz	8.64dBm/MHz	8.44dBm/MHz	8.36dBm/MHz
Measurement Uncertainty		-1.15dB / +1.35dB			

**5.3 Transmitter Frequency Range (Clause 5.7.4)**
**5.3.1 Test Condition**

- Modulation Type: DSSS and Other Types of modulation
- Ambient Temperature: 26°C
- Relative Humidity:67%
- Duty Cycle of the Equipment During the Test:100.00%

**5.3.2 Limits of Transmitter Frequency Range (Clause 4.3.3)**

Condition	Limits (MHz)	
	EU	France
Under all test conditions	FL>=2400.0MHz FH>=2483.5MHz	FL>=2446.5MHz FH>=2483.5MHz

The frequency range of the equipment is determined by the lowest and highest frequencies occupied by the power envelope. f<sub>H</sub> is the highest frequency of the power envelope: it is the frequency furthest above the frequency of maximum power where the output power drops below the level of -80 dBm/Hz e.i.r.p. spectral power density (-30 dBm if measured in a 100 kHz bandwidth). f<sub>L</sub> is the lowest frequency of the power envelope; it is the frequency furthest below the frequency of maximum power where the output power drops below the level equivalent to -80 dBm/Hz e.i.r.p. spectral power density (or -30 dBm if measured in a 100 kHz bandwidth). For a given operating frequency, the width of the power envelope is (f<sub>H</sub> - f<sub>L</sub>). In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allocated band. The frequency range is determined by the lowest value of f<sub>L</sub> and the highest value of f<sub>H</sub> resulting from the adjustment of the equipment to the lowest and highest operating frequencies. For all equipment the frequency range shall lie within the band 2,4 GHz to 2,4835 GHz (f<sub>L</sub> > 2,4 GHz and f<sub>H</sub> < 2,4835 GHz).

**5.3.3 Test Results**

Test Mode : 802.11b {CH01~CH13 (For EU) / CH10~CH13 (For France)}

Test Conditions				Frequency (MHz) Edges above Threshold -80 dBm/Hz	
CH01~CH13 (For EU)				CH 01	CH 13
T nom (°C)	21	V nom(V)	230.00	2401.68	2482.24
T min (°C)	0	V max(V)	253.00	2401.65	2481.29
		V min(V)	207.00	2401.59	2482.21
T max (°C)	55	V max(V)	253.00	2401.61	2482.19
		V min(V)	207.00	2401.61	2482.19
Measured High/Low Edges				<b>f<sub>L</sub> = 2401.59</b>	<b>f<sub>H</sub> = 2482.21</b>
Limits				<b>f<sub>L</sub> &gt; 2400.0 MHz ; f<sub>H</sub> &lt; 2483.5 MHz</b>	
Measurement Uncertainty				+-100KHz@fo=2400MHz	

Test Conditions				Frequency (MHz) Edges above Threshold -80 dBm/Hz	
CH10~CH13 (For France)				CH 10	CH 13
T nom (°C)	21	V nom(V)	230.00	2446.68	2482.24
T min (°C)	0	V max(V)	253.00	2446.64	2482.29
		V min(V)	207.00	2446.57	2482.21
T max (°C)	55	V max(V)	253.00	2446.73	2482.25
		V min(V)	207.00	2446.61	2482.19
Measured High/Low Edges				<b>f<sub>L</sub> = 2446.570</b>	<b>f<sub>H</sub> = 2482.29</b>
Limits				<b>f<sub>L</sub> &gt; 2446.5 MHz ; f<sub>H</sub> &lt; 2483.5 MHz</b>	
Measurement Uncertainty				+-100KHz@fo=2400MHz	

Test Mode : 802.11g {CH01~CH13 (For EU) / CH10~CH13 (For France)}

Test Conditions				Frequency (MHz) Edges above Threshold -80 dBm/Hz	
CH01~CH13 (For EU)				CH 01	CH 13
T nom (°C)	21	V nom(V)	230.00	2402.32	2481.60
T min (°C)	0	V max(V)	253.00	2402.28	2481.63
		V min(V)	207.00	2402.35	2481.55
T max (°C)	55	V max(V)	253.00	2402.39	2481.71
		V min(V)	207.00	2402.34	2481.58
Measured High/Low Edges				<b>f<sub>L</sub> = 2446.570</b>	<b>f<sub>H</sub> = 2482.29</b>
Limits				<b>f<sub>L</sub> &gt; 2446.5 MHz ; f<sub>H</sub> &lt; 2483.5 MHz</b>	
Measurement Uncertainty				+-100KHz@fo=2400MHz	

Test Conditions				Frequency (MHz) Edges above Threshold -80 dBm/Hz	
CH10~CH13 (For France )				CH 10	CH 13
T nom (°C)	21	V nom(V)	230.00	2447.08	2481.60
T min (°C)	0	V max(V)	253.00	2447.06	2481.63
		V min(V)	207.00	2446.99	2481.55
T max (°C)	55	V max(V)	253.00	2447.11	2481.71
		V min(V)	207.00	2447.02	2481.58
Measured High/Low Edges				<b>f<sub>L</sub> = 2446.99</b>	<b>f<sub>H</sub> = 2481.71</b>
Limits				<b>f<sub>L</sub> &gt; 2446.5 MHz ; f<sub>H</sub> &lt; 2483.5 MHz</b>	
Measurement Uncertainty				+-100KHz@fo=2400MHz	

#### 5.4 Transmitter Spurious Emissions (Clause 5.7.5)

##### 5.4.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test:100.00%

##### 5.4.2 Transmitter Limits for Spurious Emissions (Clause 4.3.4.2)

###### Narrowband Spurious Emissions

Frequency Range	Limits (dBm)	
	Operating Limit	Standby Limit
30MHz to 1GHz	-36dBm	-57dBm
Above 1GHz to 12.75GHz	-30dBm	-47dBm
1.8GHz to 1.9GHz, 5.15GHz to 5.3GHz	-47dBm	-47dBm

###### Wideband Spurious Emissions

Frequency Range	Limits (dBm/Hz)	
	Operating Limit	Standby Limit
30MHz to 1GHz	-86dBm/Hz	-107dBm/Hz
Above 1GHz to 12.75GHz	-80dBm/Hz	-97dBm/Hz
1.8GHz to 1.9GHz, 5.15GHz to 5.3GHz	-97dBm/Hz	-97dBm/Hz

##### 5.4.3 Test Results (Radiated)

Test Mode : 802.11b/CH01 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.88	-57.53	-36	-21.53
499.30	-51.73	-36	-15.73
699.61	-52.46	-36	-16.46
1347.50	-54.66	-30	-24.66
1877.50	-49.98	-30	-19.98
4825.00	-46.98	-30	-16.98
7235.50	-44.87	-30	-14.87
9649.00	-43.55	-30	-13.55
12057.50	-43.83	-30	-13.83
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.80	-54.20	-36	-18.20
499.28	-56.14	-36	-20.14
699.63	-54.82	-36	-18.82
1347.50	-53.62	-30	-23.62
1877.50	-50.77	-30	-20.77
3765.50	-47.54	-30	-17.54
7235.50	-42.51	-30	-12.51
9649.00	-44.98	-30	-14.98
12057.50	-45.38	-30	-15.38
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	



Test Mode : 802.11b/CH07 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.85	-56.83	-36	-20.83
498.99	-54.74	-36	-18.74
700.02	-55.19	-36	-19.19
1345.00	-51.01	-30	-21.01
1870.50	-49.53	-30	-19.53
4885.00	-48.47	-30	-18.47
7327.50	-44.55	-30	-14.55
9768.50	-43.87	-30	-13.87
12211.00	-46.08	-30	-16.08
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.86	-54.86	-36	-18.86
498.99	-56.95	-36	-20.95
700.01	-56.77	-36	-20.77
1345.00	-51.42	-30	-21.42
1870.50	-49.33	-30	-19.33
3765.00	-48.73	-30	-18.73
7327.50	-44.74	-30	-14.74
9768.50	-45.02	-30	-15.02
12211.00	-44.81	-30	-14.81
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11b/CH10 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.90	-58.65	-36	-22.65
499.32	-54.14	-36	-18.14
699.60	-53.55	-36	-17.55
1345.50	-53.77	-30	-23.77
1870.50	-49.28	-30	-19.28
4914.50	-46.22	-30	-16.22
7372.00	-44.08	-30	-14.08
9828.50	-43.41	-30	-13.41
12286.00	-45.25	-30	-15.25
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.91	-55.73	-36	-19.73
499.33	-57.41	-36	-21.41
699.60	-58.95	-36	-22.95
1345.50	-54.33	-30	-24.33
1870.50	-50.52	-30	-20.52
3765.50	-48.63	-30	-18.63
7372.00	-47.53	-30	-17.53
9828.50	-43.44	-30	-13.44
12286.00	-45.89	-30	-15.89
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11b/CH13 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.82	-57.44	-36	-21.44
499.25	-56.88	-36	-20.88
699.57	-56.37	-36	-20.37
1345.50	-50.98	-30	-20.98
1870.50	-47.54	-30	-17.54
4945.00	-46.98	-30	-16.98
7416.50	-44.38	-30	-14.38
9889.50	-45.21	-30	-15.21
12361.50	-45.87	-30	-15.87
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.82	-58.22	-36	-22.22
499.25	-55.44	-36	-19.44
699.58	-53.06	-36	-17.06
1345.50	-51.73	-30	-21.73
1870.50	-49.28	-30	-19.28
3766.00	-48.21	-30	-18.21
7416.50	-45.43	-30	-15.43
9889.50	-44.08	-30	-14.08
12361.50	-45.16	-30	-15.16
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH01 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.88	-57.83	-36	-21.83
499.30	-55.22	-36	-19.22
699.61	-53.10	-36	-17.10
1347.50	-50.75	-30	-20.75
1877.50	-48.63	-30	-18.63
4825.00	-46.44	-30	-16.44
7235.50	-43.87	-30	-13.87
9649.00	-44.29	-30	-14.29
12057.50	-45.11	-30	-15.11
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.87	-55.37	-36	-19.37
499.30	-54.85	-36	-18.85
699.63	-53.63	-36	-17.63
1347.50	-50.25	-30	-20.25
1877.50	-50.72	-30	-20.72
3765.50	-48.25	-30	-18.25
7235.50	-44.22	-30	-14.22
9649.00	-45.72	-30	-15.72
12057.50	-46.19	-30	-16.19
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH07 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.84	-57.28	-36	-21.28
498.97	-57.58	-36	-21.58
700.01	-53.43	-36	-17.43
1345.00	-54.29	-30	-24.29
1870.50	-50.14	-30	-20.14
4885.00	-48.36	-30	-18.36
7327.50	-47.42	-30	-17.42
9768.50	-45.84	-30	-15.84
12211.00	-46.96	-30	-16.96
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.86	-57.41	-36	-21.41
498.97	-54.88	-36	-18.88
700.01	-53.29	-36	-17.29
1345.00	-55.08	-30	-25.08
1870.50	-49.91	-30	-19.91
3765.00	-48.37	-30	-18.37
7327.50	-45.95	-30	-15.95
9768.50	-46.02	-30	-16.02
12211.00	-45.33	-30	-15.33
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH10 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.91	-56.79	-36	-20.79
499.41	-58.02	-36	-22.02
699.62	-57.34	-36	-21.34
1345.50	-50.63	-30	-20.63
1870.50	-47.25	-30	-17.25
4914.00	-48.94	-30	-18.94
7372.00	-46.55	-30	-16.55
9828.50	-44.87	-30	-14.87
12286.00	-46.03	-30	-16.03
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.91	-57.22	-36	-21.22
499.41	-55.84	-36	-19.84
699.60	-55.62	-36	-19.62
1345.50	-51.42	-30	-21.42
1870.50	-51.02	-30	-21.02
3765.50	-47.44	-30	-17.44
7372.00	-45.25	-30	-15.25
9828.50	-43.61	-30	-13.61
12286.00	-43.98	-30	-13.98
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH13 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.84	-58.24	-36	-22.24
499.26	-56.37	-36	-20.37
699.55	-52.81	-36	-16.81
1345.50	-50.77	-30	-20.77
1870.50	-49.72	-30	-19.72
4945.00	-48.37	-30	-18.37
7416.50	-44.63	-30	-14.63
9889.50	-44.23	-30	-14.23
12361.50	-43.98	-30	-13.98
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.83	-56.38	-36	-20.38
499.26	-54.15	-36	-18.15
699.56	-55.27	-36	-19.27
1345.50	-56.02	-30	-26.02
1870.50	-50.01	-30	-20.01
3766.00	-47.48	-30	-17.48
7416.50	-46.53	-30	-16.53
9889.00	-43.41	-30	-13.41
12361.50	-44.28	-30	-14.28
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

**5.5 Receiver Spurious Emissions (Clause 5.7.6)**

**5.5.1 Test Condition**

- Ambient Temperature: 26°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test:100.00%

**5.5.2 Receiver Limits for Spurious Emissions (Clause 4.3.5.2)**

Narrowband Spurious Emissions

Frequency Range	Limits (dBm)
30MHz to 1GHz	-57dBm
Above 1GHz to 12.75GHz	-47dBm

Wideband Spurious Emissions

Frequency Range	Limits (dBm/Hz)
30MHz to 1GHz	-107dBm/Hz
Above 1GHz to 12.75GHz	-97dBm/Hz

**5.5.3 Test Results**



Test Mode : 802.11b/CH01(Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.73	-67.53	-57	-10.53
125.02	-64.38	-57	-7.38
177.82	-65.28	-57	-8.28
389.27	-63.16	-57	-6.16
640.27	-64.44	-57	-7.44
720.52	-63.98	-57	-6.98
1538.50	-58.75	-47	-11.75
3782.50	-59.03	-47	-12.03
6951.00	-58.88	-47	-11.88
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.72	-66.99	-57	-9.99
125.02	-68.20	-57	-11.20
177.80	-65.43	-57	-8.43
389.28	-64.18	-57	-7.18
640.27	-64.03	-57	-7.03
720.51	-66.93	-57	-9.93
1538.50	-57.28	-47	-10.28
3782.50	-56.44	-47	-9.44
6951.00	-57.14	-47	-10.14
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11b/CH07 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
50.83	-68.73	-57	-11.73
125.11	-65.62	-57	-8.62
165.42	-64.33	-57	-7.33
395.77	-65.98	-57	-8.98
644.27	-63.74	-57	-6.74
720.43	-66.02	-57	-9.02
1538.50	-58.55	-47	-11.55
3782.50	-57.46	-47	-10.46
6951.00	-56.38	-47	-9.38
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
50.80	-69.01	-57	-12.01
125.10	-64.33	-57	-7.33
165.42	-65.61	-57	-8.61
395.76	-64.27	-57	-7.27
644.25	-66.31	-57	-9.31
720.44	-63.79	-57	-6.79
1538.50	-57.18	-47	-10.18
3782.50	-57.42	-47	-10.42
6951.00	-56.08	-47	-9.08
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11b/CH10 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
51.43	-67.99	-57	-10.99
125.06	-66.47	-57	-9.47
175.47	-65.28	-57	-8.28
384.97	-64.18	-57	-7.18
641.33	-64.79	-57	-7.79
721.67	-65.33	-57	-8.33
1538.50	-59.28	-47	-12.28
3782.50	-57.85	-47	-10.85
6951.00	-56.08	-47	-9.08
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
51.44	-66.38	-57	-9.38
125.06	-65.29	-57	-8.29
175.45	-65.33	-57	-8.33
384.98	-64.17	-57	-7.17
641.33	-65.61	-57	-8.61
721.62	-67.42	-57	-10.42
1538.50	-60.08	-47	-13.08
3782.50	-57.53	-47	-10.53
6951.00	-54.29	-47	-7.29
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11b/CH13 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.52	-67.28	-57	-10.28
124.89	-66.33	-57	-9.33
176.33	-66.29	-57	-9.29
390.52	-64.87	-57	-7.87
640.54	-65.28	-57	-8.28
720.17	-64.10	-57	-7.10
1538.50	-56.38	-47	-9.38
3782.50	-55.27	-47	-8.27
6951.00	-56.09	-47	-9.09
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.51	-66.31	-57	-9.31
124.88	-67.29	-57	-10.29
176.33	-65.82	-57	-8.82
390.51	-64.33	-57	-7.33
640.52	-64.16	-57	-7.16
720.16	-66.08	-57	-9.08
1538.50	-57.24	-47	-10.24
3782.50	-56.58	-47	-9.58
6951.00	-58.11	-47	-11.11
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH01(Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.72	-68.36	-57	-11.36
125.05	-69.88	-57	-12.88
177.81	-67.41	-57	-10.41
389.24	-65.38	-57	-8.38
640.22	-64.69	-57	-7.69
720.50	-65.08	-57	-8.08
1538.50	-57.56	-47	-10.56
3782.50	-58.43	-47	-11.43
6951.00	-57.19	-47	-10.19
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.72	-68.42	-57	-11.42
125.02	-67.38	-57	-10.38
177.80	-66.94	-57	-9.94
389.28	-65.72	-57	-8.72
640.27	-64.28	-57	-7.28
720.51	-64.14	-57	-7.14
1538.50	-59.53	-47	-12.53
3782.50	-58.77	-47	-11.77
6951.00	-57.73	-47	-10.73
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH07(Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
50.80	-66.53	-57	-9.53
125.10	-67.84	-57	-10.84
165.44	-67.24	-57	-10.24
395.71	-66.58	-57	-9.58
644.29	-66.49	-57	-9.49
720.40	-64.27	-57	-7.27
1538.50	-57.18	-47	-10.18
3782.50	-58.33	-47	-11.33
6951.00	-57.49	-47	-10.49
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
50.82	-68.37	-57	-11.37
125.15	-64.27	-57	-7.27
165.43	-67.59	-57	-10.59
395.78	-66.33	-57	-9.33
644.26	-65.08	-57	-8.08
720.40	-63.27	-57	-6.27
1538.50	-59.99	-47	-12.99
3782.50	-58.74	-47	-11.74
6951.00	-59.06	-47	-12.06
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH10(Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
51.39	-69.25	-57	-12.25
125.08	-67.43	-57	-10.43
175.52	-66.33	-57	-9.33
384.94	-67.28	-57	-10.28
641.30	-65.28	-57	-8.28
721.65	-63.77	-57	-6.77
1538.50	-58.42	-47	-11.42
3782.50	-59.38	-47	-12.38
6951.00	-57.19	-47	-10.19
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
51.38	-66.22	-57	-9.22
125.04	-67.15	-57	-10.15
175.38	-65.83	-57	-8.83
384.94	-64.98	-57	-7.98
641.31	-65.27	-57	-8.27
721.60	-64.12	-57	-7.12
1538.50	-57.63	-47	-10.63
3782.50	-56.56	-47	-9.56
6951.00	-55.87	-47	-8.87
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

Test Mode : 802.11g/CH13(Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.51	-67.24	-57	-10.24
124.82	-68.06	-57	-11.06
176.43	-66.41	-57	-9.41
390.65	-65.22	-57	-8.22
640.57	-66.53	-57	-9.53
720.21	-65.87	-57	-8.87
1538.50	-58.27	-47	-11.27
3782.50	-56.98	-47	-9.98
6951.00	-56.53	-47	-9.53
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
52.51	-67.14	-57	-10.14
124.85	-66.53	-57	-9.53
176.36	-64.98	-57	-7.98
390.47	-65.27	-57	-8.27
640.53	-64.74	-57	-7.74
720.15	-65.36	-57	-8.36
1538.50	-56.33	-47	-9.33
3782.50	-57.28	-47	-10.28
6951.00	-56.43	-47	-9.43
<b>Measurement Uncertainty</b>		+2.41dB/-1.85dB	



## 6. TEST PROCEDURES AND RESULTS FOR 5GHz BAND

Table for Carrier Frequencies

Channel	Frequency	Channel	Frequency
1	5180	11	5540
2	5200	12	5560
3	5220	13	5580
4	5240	14	5600
5	5260	15	5620
6	5280	16	5640
7	5300	17	5660
8	5320	18	5680
9	5500	19	5700
10	5520		

**6.1 Carrier Frequency Stability**

**6.1.1 Test Condition**

- Ambient Temperature: 25°C
- Relative Humidity: 66%
- Duty Cycle of the Equipment During the Test: 100.00%

**6.1.2 Test Limit**

- Reference to ETSI DEN 301 893 Clause 5.3.1The EUT transmitter is adjusted to produce a CW carrier without modulation. Temperature :55°C ; 21°C ; 0°C Limit : ±20 ppm

**6.1.3 Test Results**

Condition : 21°C 230V AC				
Channel Frequency ( MHz )	Results Frequency ( MHz )	Delta Frequency ( kHz )	20ppm Limit ±kHz	Margin kHz
5180	5180.0005	-0.5	103.6	103.1
5200	5199.9998	0.2	104.0	103.8
5220	5219.9997	0.3	104.4	104.1
5240	5239.9998	0.2	104.8	104.6
5260	5259.9998	0.2	105.2	105.0
5280	5279.9995	0.5	105.6	105.1
5300	5299.9996	0.4	106.0	105.6
5320	5319.9995	0.5	106.4	105.9
5500	5499.9996	0.4	110.0	109.6
5520	5519.9997	0.3	110.4	110.1
5540	5539.9992	0.8	110.8	110.0
5560	5559.9993	0.7	111.2	110.5
5580	5579.9991	0.9	111.6	110.7
5600	5599.9989	1.1	112.0	110.9
5620	5619.9987	1.3	112.4	111.1
5640	5639.9993	0.7	112.8	112.1
5660	5659.9994	0.6	113.2	112.6
5680	5679.9995	0.5	113.6	113.1
5700	5699.9993	0.7	114.0	113.3

Condition : 0°C 207V AC				
Channel Frequency ( MHz )	Results Frequency ( MHz )	Delta Frequency ( kHz )	20ppm Limit $\pm$ kHz	Margin kHz
5180	5180.0001	-0.1	103.6	103.5
5200	5199.9994	0.6	104.0	103.4
5220	5219.9992	0.8	104.4	103.6
5240	5239.9992	0.8	104.8	104.0
5260	5259.9993	0.7	105.2	104.5
5280	5279.9990	1	105.6	104.6
5300	5299.9991	0.9	106.0	105.1
5320	5319.9991	0.9	106.4	105.5
5500	5499.9990	1	110.0	109.0
5520	5519.9991	0.9	110.4	109.5
5540	5539.9988	1.2	110.8	109.6
5560	5559.9986	1.4	111.2	109.8
5580	5579.9988	1.2	111.6	110.4
5600	5599.9989	1.1	112.0	110.9
5620	5619.9982	1.8	112.4	110.6
5640	5639.9983	1.7	112.8	111.1
5660	5659.9984	1.6	113.2	111.6
5680	5679.9983	1.7	113.6	111.9
5700	5699.9983	1.7	114.0	112.3

Condition : 0°C 253V AC				
Channel Frequency ( MHz )	Results Frequency ( MHz )	Delta Frequency ( kHz )	20ppm Limit $\pm$ kHz	Margin kHz
5180	5179.9998	0.2	103.6	103.4
5200	5199.9996	0.4	104.0	103.6
5220	5219.9995	0.5	104.4	103.9
5240	5239.9995	0.5	104.8	104.3
5260	5259.9996	0.4	105.2	104.8
5280	5279.9992	0.8	105.6	104.8
5300	5299.9990	1	106.0	105.0
5320	5319.9994	0.6	106.4	105.8
5500	5499.9992	0.8	110.0	109.2
5520	5519.9992	0.8	110.4	109.6
5540	5539.9989	1.1	110.8	109.7
5560	5559.9989	1.1	111.2	110.1
5580	5579.9987	1.3	111.6	110.3
5600	5599.9987	1.3	112.0	110.7
5620	5619.9985	1.5	112.4	110.9
5640	5639.9987	1.3	112.8	111.5
5660	5659.9986	1.4	113.2	111.8
5680	5679.9985	1.5	113.6	112.1
5700	5699.9984	1.6	114.0	112.4

Condition : 55°C 207V AC				
Channel Frequency ( MHz )	Results Frequency ( MHz )	Delta Frequency ( kHz )	20ppm Limit $\pm$ kHz	Margin kHz
5180	5179.9987	1.3	103.6	102.3
5200	5199.9985	1.5	104.0	102.5
5220	5219.9983	1.7	104.4	102.7
5240	5239.9987	1.3	104.8	103.5
5260	5259.9985	1.5	105.2	103.7
5280	5279.9985	1.5	105.6	104.1
5300	5299.9986	1.4	106.0	104.6
5320	5319.9986	1.4	106.4	105.0
5500	5499.9983	1.7	110.0	108.3
5520	5519.9986	1.4	110.4	109.0
5540	5539.9983	1.7	110.8	109.1
5560	5559.9984	1.6	111.2	109.6
5580	5579.9987	1.3	111.6	110.3
5600	5599.9986	1.4	112.0	110.6
5620	5619.9983	1.7	112.4	110.7
5640	5639.9986	1.4	112.8	111.4
5660	5659.9987	1.3	113.2	111.9
5680	5679.9986	1.4	113.6	112.2
5700	5699.9985	1.5	114.0	112.5

Condition : 55°C 253V AC				
Channel Frequency ( MHz )	Results Frequency ( MHz )	Delta Frequency ( kHz )	20ppm Limit $\pm$ kHz	Margin kHz
5180	5179.9986	1.4	103.6	102.2
5200	5199.9986	1.4	104.0	102.6
5220	5219.9984	1.6	104.4	102.8
5240	5239.9985	1.5	104.8	103.3
5260	5259.9985	1.5	105.2	103.7
5280	5279.9986	1.4	105.6	104.2
5300	5299.9984	1.6	106.0	104.4
5320	5319.9984	1.6	106.4	104.8
5500	5499.9983	1.7	110.0	108.3
5520	5519.9983	1.7	110.4	108.7
5540	5539.9981	1.9	110.8	108.9
5560	5559.9982	1.8	111.2	109.4
5580	5579.9982	1.8	111.6	109.8
5600	5599.9982	1.8	112.0	110.2
5620	5619.9981	1.9	112.4	110.5
5640	5639.99816	1.84	112.8	111.0
5660	5659.9983	1.7	113.2	111.5
5680	5679.9982	1.8	113.6	111.8
5700	5699.9982	1.8	114.0	112.2

**6.2 Effective Radiated Power**

**6.2.1 Test Condition**

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

**6.2.2 Test Limit**

Highest power level

Frequency (MHz)	RF Power Level ( dBm )	Power Density Limit
5150 - 5350	23.0	11 dBm/MHz
5470 - 5725	30.0	18 dBm/MHz

Lowest power level

Frequency (MHz)	Limit
5150 - 5350	17 dBm
5470 - 5725	17 dBm

**6.2.3 Test Results**

- Antenna Assembly Gain: 2.0dBi
- Cable Loss: 7.52dB
- Duty Cycle of the Equipment During the Test:100.00%
- 

Output power at the lowest power level

<b>Condition : 21°C 230V AC</b>				
<b>Frequency ( MHz )</b>	<b>Results ( dBm )</b>	<b>EIRP ( dBm )</b>	<b>Limit ( dBm )</b>	<b>Margin ( dBm )</b>
5180	5.61	15.13	17.0	-1.87
5260	4.83	14.35	17.0	-2.65
5320	4.46	13.98	17.0	-3.02
5500	5.94	15.46	24.0	-8.54
5600	5.73	15.25	24.0	-8.75
5700	6.03	15.55	24.0	-8.45
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		



Condition : 0°C 207V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	5.96	15.48	17.0	-1.52
5260	5.43	14.95	17.0	-2.05
5320	5.34	14.86	17.0	-2.14
5500	6.50	16.02	24.0	-7.98
5600	6.35	15.87	24.0	-8.13
5700	6.79	16.31	24.0	-7.69
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 0°C 253V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	5.98	15.50	17.0	-1.50
5260	5.31	14.83	17.0	-2.17
5320	5.28	14.80	17.0	-2.20
5500	6.45	15.97	24.0	-8.03
5600	6.24	15.76	24.0	-8.24
5700	6.69	16.21	24.0	-7.79
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 55°C 207V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	5.47	14.99	17.0	-2.01
5260	4.71	14.23	17.0	-2.77
5320	4.21	13.73	17.0	-3.27
5500	5.71	15.23	24.0	-8.77
5600	5.11	14.63	24.0	-9.37
5700	5.37	14.89	24.0	-9.11
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 55°C 253V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	5.33	14.85	17.0	-2.15
5260	4.58	14.10	17.0	-2.90
5320	4.12	13.64	17.0	-3.36
5500	5.57	15.09	24.0	-8.91
5600	4.95	14.47	24.0	-9.53
5700	5.22	14.74	24.0	-9.26
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Output power at the highest power level

Condition : 21°C 230V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	11.45	20.97	23.0	-2.03
5260	10.62	20.14	23.0	-2.86
5320	10.29	19.81	23.0	-3.19
5500	11.75	21.27	30.0	-8.73
5600	11.65	21.17	30.0	-8.83
5700	11.75	21.27	30.0	-8.73
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 0°C 207V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	11.59	21.11	23.0	-1.89
5260	11.30	20.82	23.0	-2.18
5320	11.21	20.73	23.0	-2.27
5500	12.24	21.76	30.0	-8.24
5600	12.08	21.60	30.0	-8.40
5700	12.61	22.13	30.0	-7.87
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 0°C 253V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	11.63	21.15	23.0	-1.85
5260	11.02	20.54	23.0	-2.46
5320	10.98	20.50	23.0	-2.50
5500	12.29	21.81	30.0	-8.19
5600	11.90	21.42	30.0	-8.58
5700	12.61	22.13	30.0	-7.87
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

Condition : 55°C 207V AC				
Frequency ( MHz )	Results ( dBm )	EIRP ( dBm )	Limit ( dBm )	Margin ( dBm )
5180	11.26	20.78	23.0	-2.22
5260	10.37	19.89	23.0	-3.11
5320	9.94	19.46	23.0	-3.54
5500	11.49	21.01	30.0	-8.99
5600	10.85	20.37	30.0	-9.63
5700	11.26	20.78	30.0	-9.22
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>		

### 6.3 Peak Power Density

#### 6.3.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

#### 6.3.2 Test Limit

Highest power level

Frequency (MHz)	RF Power Level ( dBm )	Power Density Limit
5150 - 5350	23.0	11 dBm/MHz
5470 - 5725	30.0	18 dBm/MHz

Lowest power level

Frequency (MHz)	Limit
5150 - 5350	17 dBm
5470 - 5725	17 dBm

#### 6.3.3 Test Results

- Antenna Assembly Gain: 2.0dBi
- Cable Loss: 7.52dB

Condition : 25°C 230V AC			
Frequency ( MHz )	EIRP ( dBm/MHz )	Limit ( dBm/MHz )	Margin ( dBm )
5180	5.23	11	-5.77
5260	4.89	11	-6.11
5320	4.50	11	-6.50
5500	4.39	18	-13.61
5600	4.22	18	-13.78
5700	4.01	18	-13.99
<b>Measurement Uncertainty</b>		<b>-1.24dB / +1.20dB</b>	

## 6.4 Unwanted Emissions outside 5GHz RLAN Band

### 6.4.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

### 6.4.2 Test Limit

Frequency Range ( MHz )	Maximum power, ERP (dBm)	Bandwidth (kHz)
25 to 47	-36	100
47 to 74	-54	100
74 to 87.5	-36	100
87.5 to 118	-54	100
118 to 174	-36	100
174 to 230	-54	100
230 to 470	-36	100
470 to 862	-54	100
862 to 1000	-36	100
1000 to 5150	-30	1000
5150 to 5470	-30	1000
5470 to 26.5GHz	-30	1000

## 6.4.3 Test Results (Radiated)

Test Mode : CH01 (Operating)

Spurious Emissions (HORIZONTAL)			
Frequency (MHz)	Amplitude (dBm)	Limits (dBm)	Margin (dB)
99.86	-57.83	-36	-21.83
149.37	-51.67	-36	-15.67
699.61	-53.10	-36	-17.10
800.10	-53.57	-30	-23.57
846.90	-49.80	-30	-19.80
3765.50	-53.62	-30	-23.62
5440.30	-46.96	-30	-16.96
11496.60	-48.73	-30	-18.73
16795.30	-46.92	-30	-16.92
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	
Spurious Emissions (VERTICAL)			
Frequency (MHz)	Amplitude (dBm)	Limits (dBm)	Margin (dB)
99.87	-55.37	-36	-19.37
149.37	-53.17	-36	-17.17
699.63	-53.51	-36	-17.51
800.10	-50.04	-30	-20.04
846.92	-51.15	-30	-21.15
3765.5	-48.51	-30	-18.51
5440.3	-45.37	-30	-15.37
11496.7	-43.62	-30	-13.62
16795.5	-48.32	-30	-18.32
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	



Test Mode : CH04(Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.87	-57.83	-36	-21.83
149.37	-50.21	-36	-14.21
699.60	-54.20	-36	-18.20
800.08	-54.09	-30	-24.09
846.88	-50.07	-30	-20.07
3765.5	-53.20	-30	-23.20
5440.3	-45.91	-30	-15.91
11496.6	-47.97	-30	-17.97
16795.3	-46.80	-30	-16.80
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.9	-54.80	-36	-18.80
149.4	-51.87	-36	-15.87
699.6	-54.32	-36	-18.32
800.1	-49.49	-30	-19.49
846.9	-49.54	-30	-19.54
3765.5	-49.43	-30	-19.43
5440.3	-45.53	-30	-15.53
11496.7	-42.87	-30	-12.87
16795.5	-48.43	-30	-18.43
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH08 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.87	-57.76	-36	-21.76
149.39	-50.58	-36	-14.58
699.64	-52.11	-36	-16.11
800.09	-53.33	-30	-23.33
846.87	-51.71	-30	-21.71
3765.49	-53.88	-30	-23.88
5440.33	-46.08	-30	-16.08
11496.62	-46.91	-30	-16.91
16795.28	-48.88	-30	-18.88
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.86	-57.51	-36	-21.51
149.36	-51.70	-36	-15.70
699.62	-54.95	-36	-18.95
800.10	-47.89	-30	-17.89
846.94	-52.57	-30	-22.57
3765.49	-48.79	-30	-18.79
5440.31	-43.55	-30	-13.55
11496.70	-44.08	-30	-14.08
16795.52	-49.24	-30	-19.24
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH09 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.88	-56.10	-36	-20.10
149.38	-51.45	-36	-15.45
699.63	-54.05	-36	-18.05
800.08	-52.97	-30	-22.97
846.88	-51.09	-30	-21.09
3765.52	-55.49	-30	-25.49
5440.28	-47.86	-30	-17.86
11496.61	-47.60	-30	-17.60
16795.29	-46.78	-30	-16.78
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.87	-53.83	-36	-17.83
149.38	-52.91	-36	-16.91
699.64	-55.18	-36	-19.18
800.12	-48.71	-30	-18.71
846.92	-51.71	-30	-21.71
3765.51	-48.59	-30	-18.59
5440.28	-47.12	-30	-17.12
11496.73	-44.65	-30	-14.65
16795.48	-49.09	-30	-19.09
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH14 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.85	-57.29	-36	-21.29
149.35	-53.58	-36	-17.58
699.61	-54.70	-36	-18.70
800.11	-55.52	-30	-25.52
846.91	-49.84	-30	-19.84
3765.51	-54.99	-30	-24.99
5440.30	-48.21	-30	-18.21
11496.60	-50.04	-30	-20.04
16795.31	-46.98	-30	-16.98
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.87	-55.46	-36	-19.46
149.36	-54.75	-36	-18.75
699.61	-55.53	-36	-19.53
800.09	-51.17	-30	-21.17
846.94	-49.19	-30	-19.19
3765.52	-49.88	-30	-19.88
5440.29	-44.93	-30	-14.93
11496.73	-42.79	-30	-12.79
16795.47	-48.76	-30	-18.76
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH19 (Operating)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.88	-56.80	-36	-20.80
149.38	-53.29	-36	-17.29
699.58	-55.24	-36	-19.24
800.12	-54.47	-30	-24.47
846.91	-51.64	-30	-21.64
3765.53	-53.50	-30	-23.50
5440.29	-48.47	-30	-18.47
11496.57	-49.05	-30	-19.05
16795.32	-47.08	-30	-17.08
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

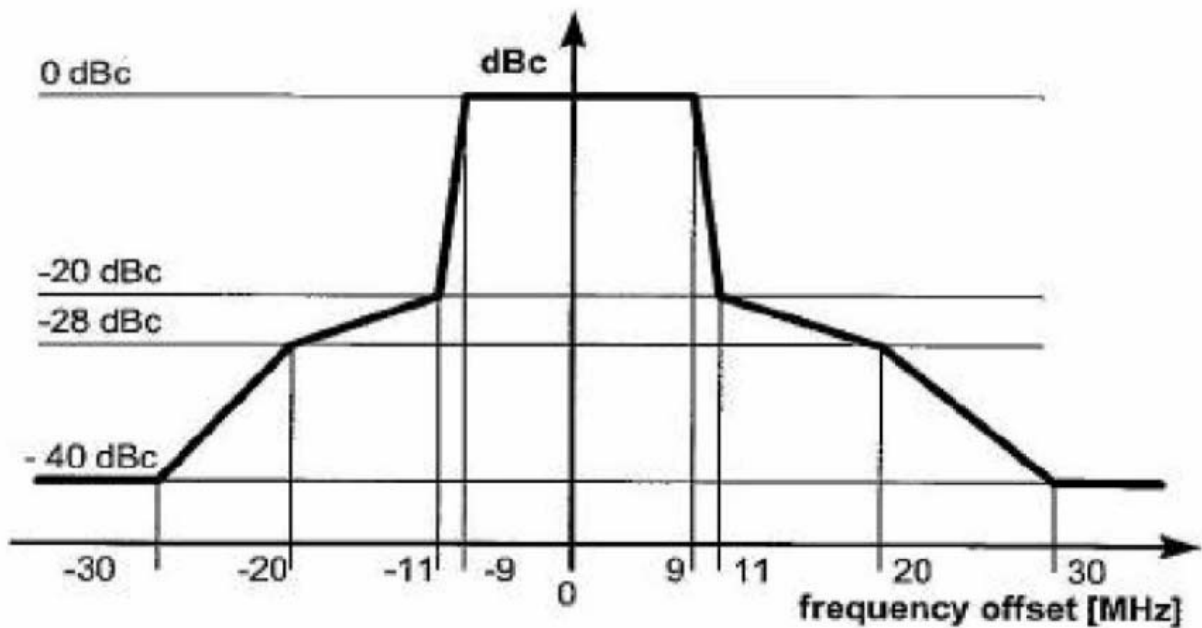
<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
99.89	-55.54	-36	-19.54
149.35	-55.31	-36	-19.31
699.63	-54.21	-36	-18.21
800.10	-50.08	-30	-20.08
846.94	-52.10	-30	-22.10
3765.51	-46.80	-30	-16.80
5440.30	-45.74	-30	-15.74
11496.71	-44.35	-30	-14.35
16795.49	-49.49	-30	-19.49
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

## 6.5 Unwanted Emissions within 5GHz RLAN Band

### 6.5.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

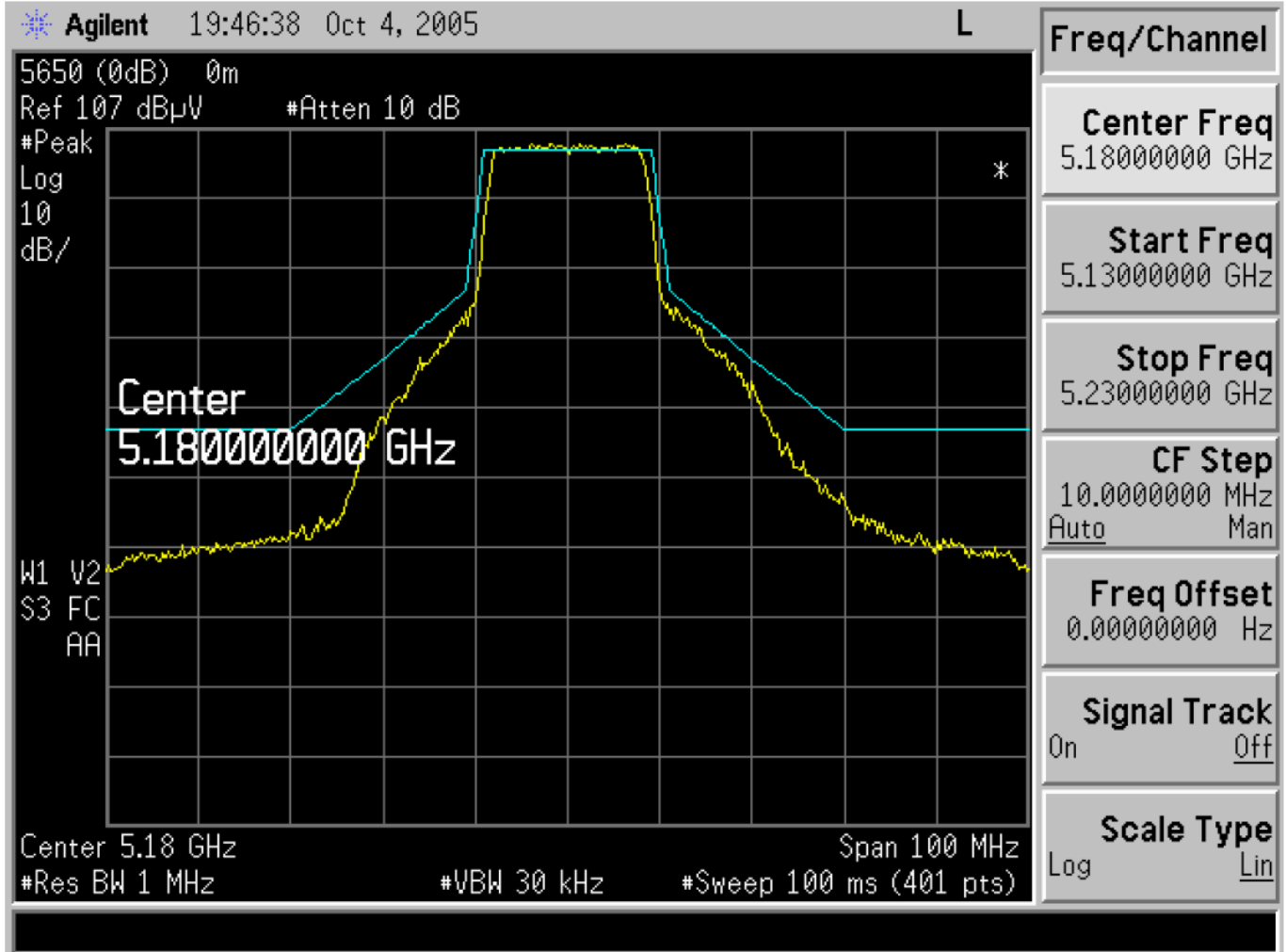
### 6.5.2 Test Limit



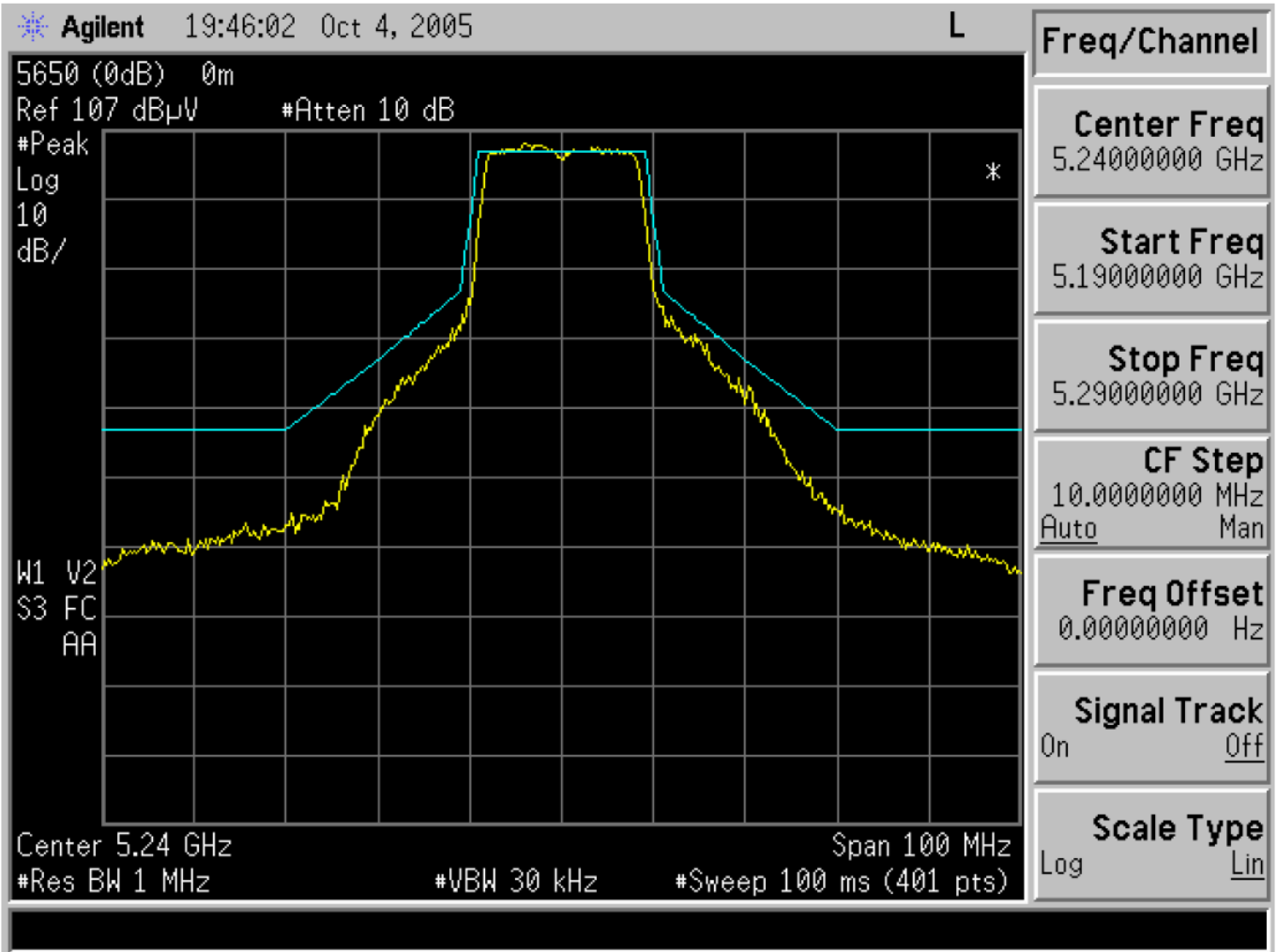
**Figure : Transmit spectral power mask. dBc is the spectral density relative to the maximum spectral power density of the transmitted signal.**

6.5.3 Test Results

Test Mode : CH01 5180MHz

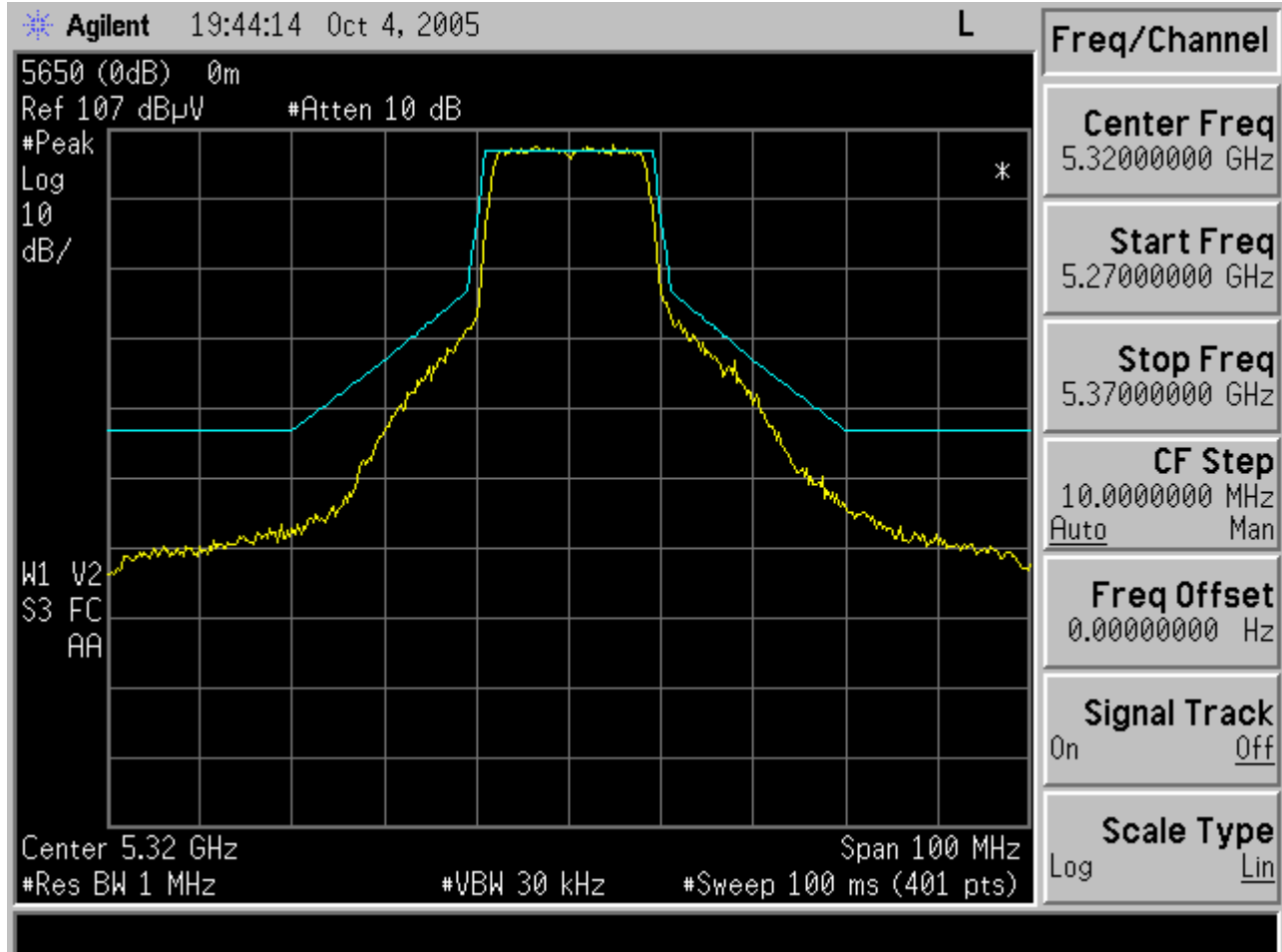


Test Mode : CH04 5240MHz

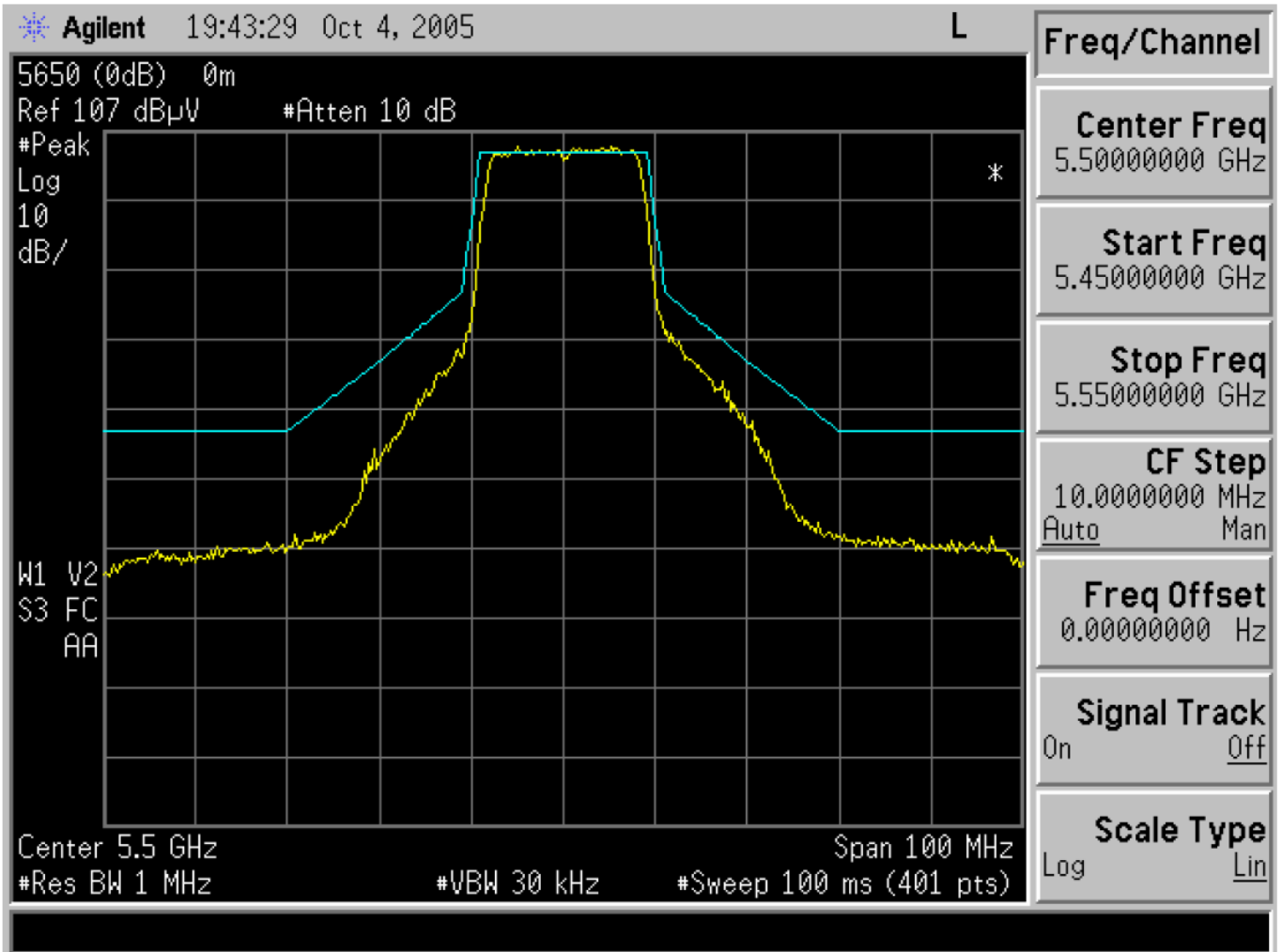




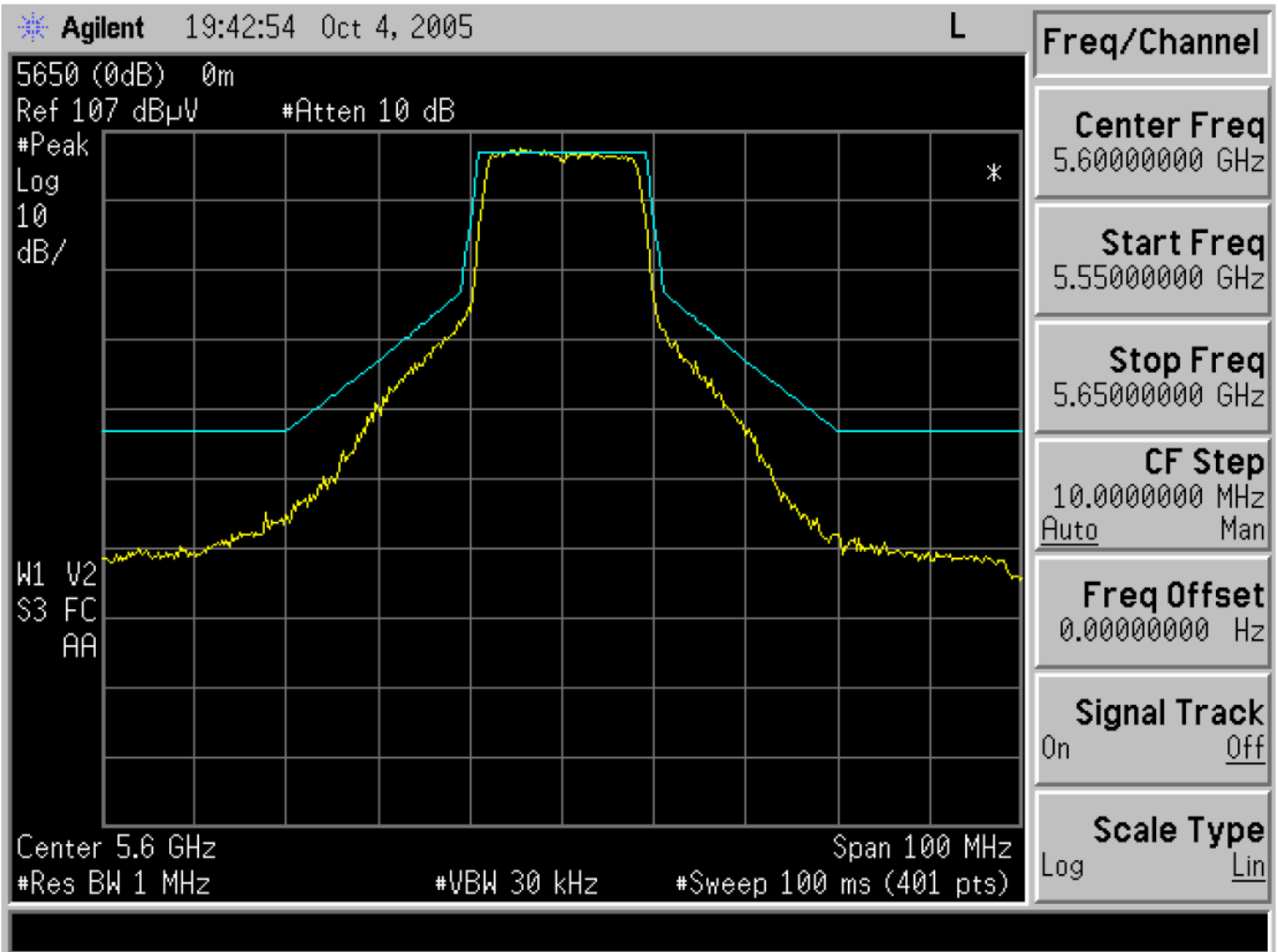
Test Mode : CH08 5320MHz



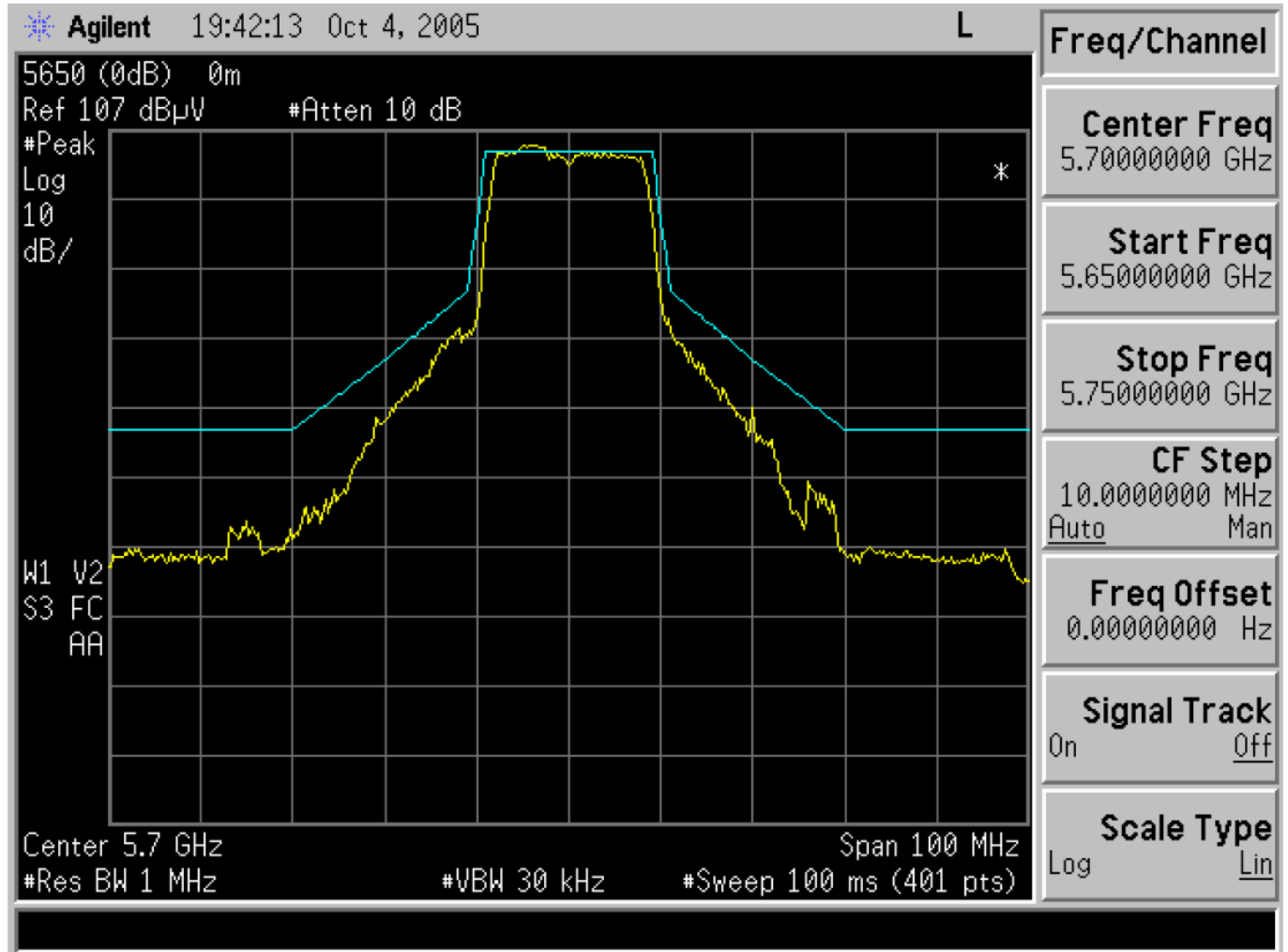
Test Mode : CH09 5500MHz



Test Mode : CH14 5600MHz



Test Mode : CH19 5700MHz



**6.6 Dynamic Frequency Selection (DFS)**

**6.6.1 Test Condition**

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

**6.6.2 EUT Operating Mode**

EUT Operating Mode	Master	Slave, without radar detection function	Slave, with radar detection function
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**6.6.3 Test Limit**

- DFS is required for RLAN devices in the frequency ranges 5250 MHz to 5350 MHz and 5470 MHz to 5725 MHz. Radar detection is not required in the frequency range 5150 MHz to 5250 MHz.

**6.6.4 Applicability of DFS requirements**

Requirement	DFS Operational mode		
	Master	Slave without radar detection (see table D.2)	Slave with radar detection (see table D.2)
Channel Availability Check	√	Not required	√ (note2)
Off-Channel CAC (note 1)	√	Not required	√ (note2)
In-Service Monitoring	√	Not required	√
Channel Shutdown	√	√	√
Non-Occupancy Period	√	Not required	√
Uniform Spreading	√	Not required	Not required

NOTE 1: Where implemented by the manufacturer.

NOTE 2: A slave with radar detection is not required to perform a CAC or Off-Channel CAC at initial use of the channel but only after the slave has detected a radar signal on a channel by In-Service Monitoring.

6.6.5 DFS requirement values

Parameter	Value
Channel Availability Check Time	60 seconds (see note 1)
Maximum Off-Channel CAC Time	4 hours (see note 2)
Channel Move Time	10 seconds
Channel Closing Transmission Time	1 second.
Non-occupancy period	Minimum 30 minutes

Note 1: For channels whose nominal bandwidth falls completely or partly within the band 5600-5650 MHz, the Channel Availability Check Time shall be 10 minutes. Note 2: For channels whose nominal bandwidth falls completely or partly within the band 5600-5650 MHz, the Maximum Off-Channel CAC Time shall be 24 hours.

6.6.6 Radar Detection Threshold

EIRP Spectral Density (dBm/MHz)	Value (see notes 1 and 2)
10	-62 dBm

NOTE 1: This is the level at the input of the receiver of a RLAN device with a maximum EIRP density of 10 dBm/MHz and assuming a 0 dBi receive antenna. For devices employing different EIRP spectral density and/or a different receive antenna gain G (dBi) the DFS threshold level at the receiver input follows the following relationship:  
 $DFS\ Detection\ Threshold\ (dBm) = -62 + 10 \cdot EIRP\ Spectral\ Density\ (dBm/MHz) + G\ (dBi)$ , however the DFS threshold level shall not be lower than -64 dBm assuming a 0 dBi receive antenna gain.

NOTE 2: Slave devices with a maximum EIRP of less than 23 dBm do not have to implement radar detection.

The radar Detection Threshold, lowest antenna gain is the parameter of Interference radar DFS detection threshold, The Interference **Detection Threshold** is the **(-62dBm) + 10 - 7+ (3.00) G [dBi]**.

## 6.6.7 DFS Radar Signal Parameter

Radar test signal # (note 1 to 3)	Pulse width W [ $\mu$ s]		Pulse repetition frequency PRF (PPS)		Number of different PRFs	Pulses per burst for each PRF (PPB) (note 5)
	Min	Max	Min	Max		
1	0.8	5	200	1000	1	10 (note 6)
2	0.8	15	200	1600	1	15 (note 6)
3	0.8	15	2 300	4000	1	25
4	20	30	2 000	4000	1	20
5	0.8	2	300	400	2/3	10 (note 6)
6	0.8	2	400	1200	2/3	15 (note 6)
Reference	1	1	700	700	1	18

NOTE 1: Radar test signals 1 to 4 are constant PRF based signals. See figure D.1. These radar test signals are intended to simulate also radars using a packet based Staggered PRF. See figure D.2.

NOTE 2: Radar test signal 4 is a modulated radar test signal. The modulation to be used is a chirp modulation with a  $\pm 2,5$  MHz frequency deviation which is described below.

NOTE 3: Radar test signals 5 and 6 are single pulse based Staggered PRF radar test signals using 2 or 3 different PRF values. For radar test signal 5, the difference between the PRF values chosen shall be between 20 and 50 pps. For radar test signal 6, the difference between the PRF values chosen shall be between 80 and 400 pps. See figure D.3

NOTE 4: Apart for the Off-Channel CAC testing, the radar test signals above shall only contain a single burst of pulses. See figure D.1, D.2 and D.3. For the Off-Channel CAC testing, repetitive bursts shall be used for the total duration of the test. See figure D.4.

NOTE 5: The total number of pulses in a burst is equal to the number of pulses for a single PRF multiplied by the number of different PRFs used.

NOTE 6: For the CAC and Off-Channel CAC requirements, the minimum number of pulses (for each PRF) for any of the radar test signals to be detected in the band 5600 to 5650 MHz shall be 18.

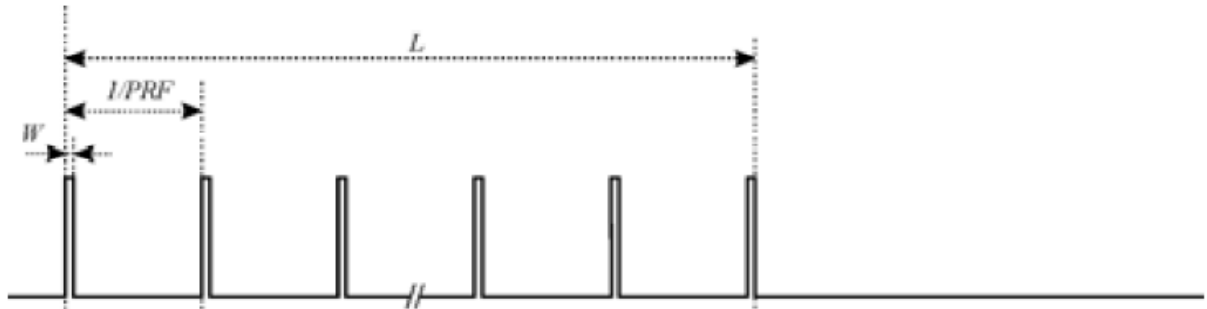


Figure D.1: General structure of a single burst / constant PRF based radar test signal

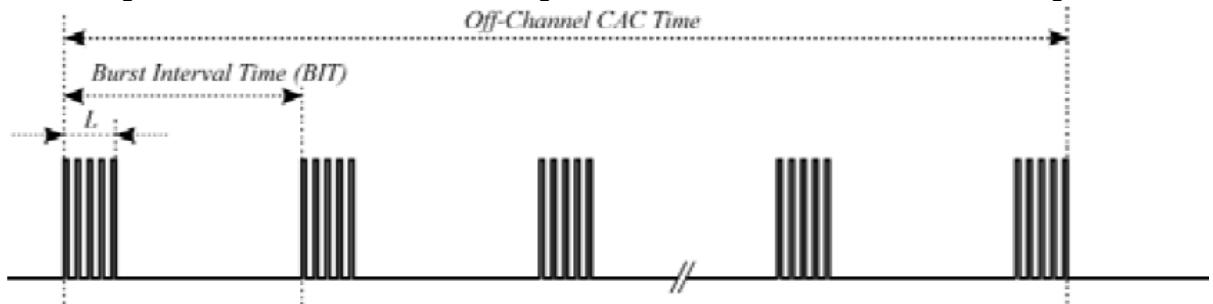


Figure D.2: General structure of a multiple burst / constant PRF based radar test signal

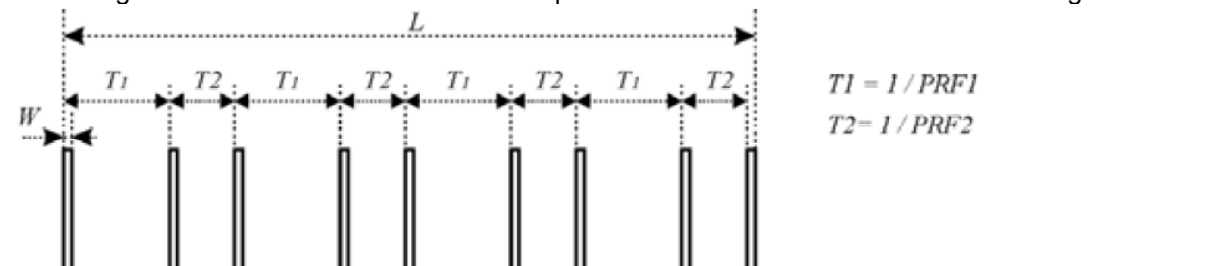


Figure D.3: General structure of a single burst / single pulse based staggered PRF radar test signal

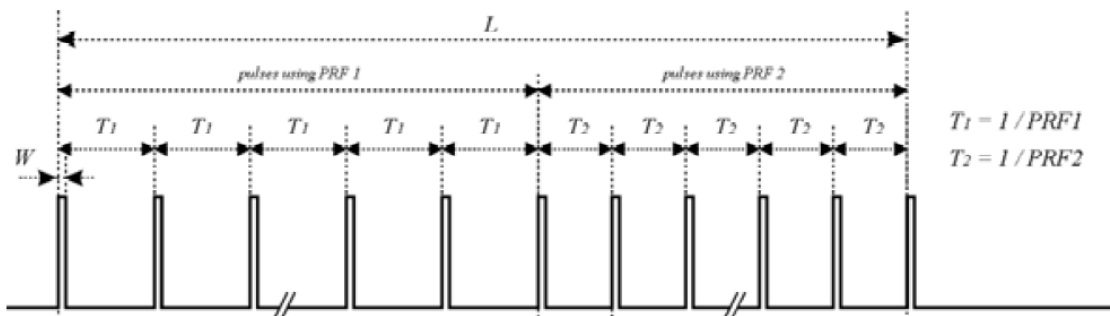


Figure D.4: General structure of a single burst / packet based staggered PRF radar test signal

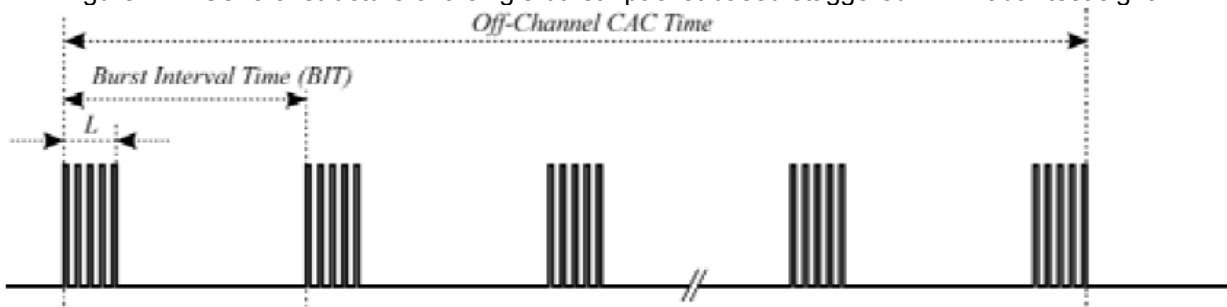


Figure D.5: General structure of a multiple burst / packet based staggered PRF based radar test signal



**6.6.8 Dynamic Frequency Selection (DFS) radar detection probability (%)**

Parameter	Detection Probability (Pd)	
	Channels whose nominal bandwidth falls partly or completely within the 5600 – 5650 MHz band	Other channels
CAC, Off-Channel CAC	99.99 %	60%
In-Service Monitoring	60 %	60%
NOTE: Pd gives the probability of detection per simulated radar burst and represents a minimum level of detection performance under defined conditions. Therefore Pd does not represent the overall detection probability for any particular radar under real life conditions.		

**6.6.9 Off-Channel CAC for Minimum number of burst detections for channels within the 5600-5650 MHz band**

Off-Channel CAC Time (Minutes)	Number of Bursts generated assuming a BIT of 10 minutes	Minimum Number of burst detections
60	6	5
90	9	6
160	16	7
320	32	8
1440	144	9

**6.6.10 Test Procedures**
**Channel Shutdown**

The steps below define the procedure to verify the Channel Shutdown process and to determine the Channel Closing Transmission Time, the Channel Move Time.

a) When the EUT is a slave device (with or without a Radar Interference Detection function), the EUT shall associate with a master device.

In both cases, it is assumed that the channel selection mechanism for the *Uniform Spreading* requirement is disabled in the master.

a) The EUT shall transmit a test transmission sequence in accordance transmitter minimum activity ratio of 30 % measured over an interval of 100 ms on the selected channel Chr.

b) At a certain time T0, a single burst test signal is generated on Chr using the reference DFS test signal defined in table D.3 and at a level of up to 10 dB above the Radar Detection Threshold level on the selected channel. T1 denotes the end of the radar burst.

c) The transmissions of the EUT following instant T1 on the selected channel shall be observed for a period greater than or equal to the Channel Move Time limit. The aggregate duration (Channel Closing Transmission Time) of all transmissions from the EUT during the Channel Move Time shall be compared to the limit.

NOTE: The aggregate duration of all transmissions of the EUT does not include quiet periods in between transmissions of the EUT.

d) T2 denotes the instant when the EUT has ceased all transmissions on the channel. The time difference between T1 and T2 shall be measured. This value (Channel Move Time) shall be noted and compared with the limit

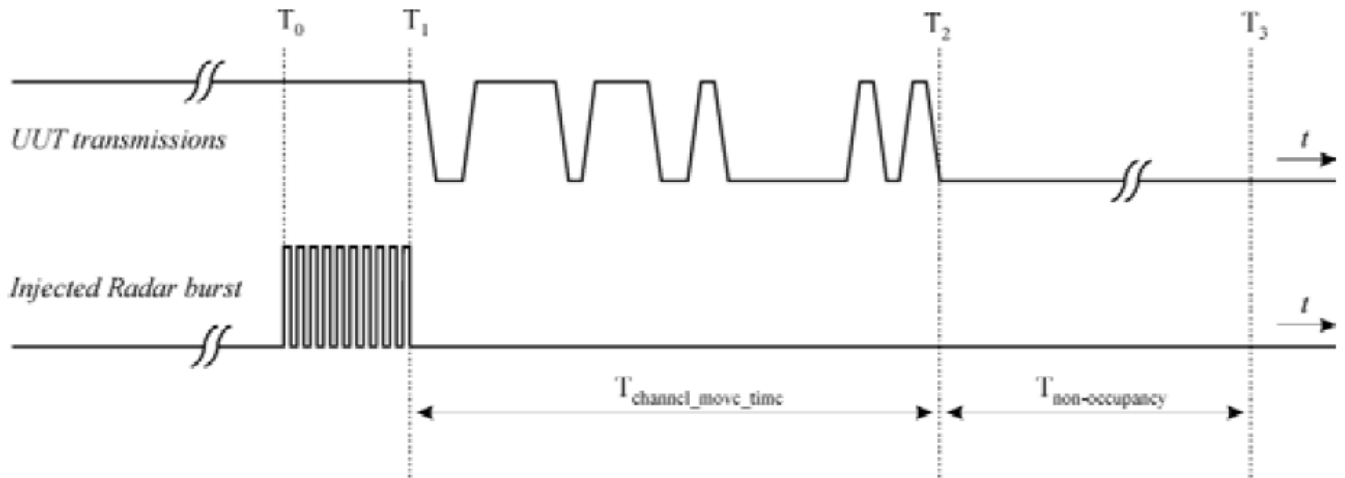
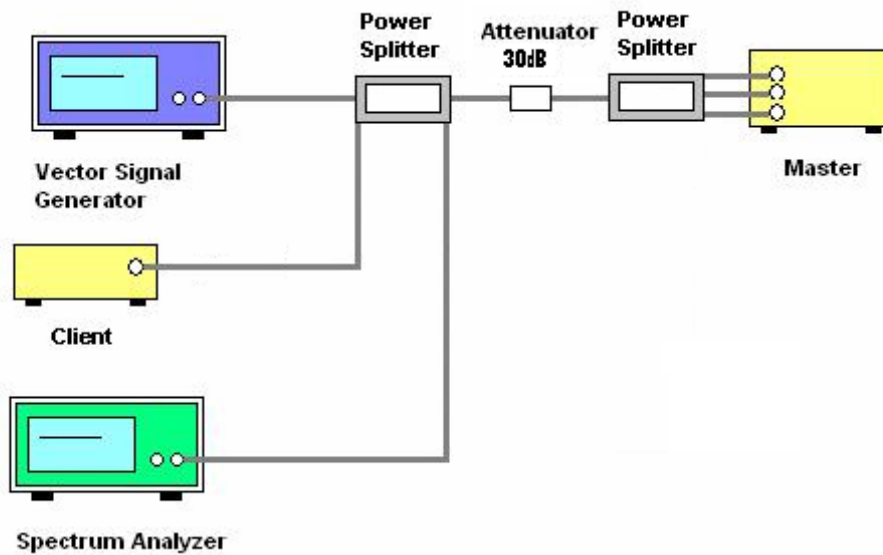


Figure 1: Channel Closing Transmission Time, Channel Move Time

### 6.6.11 Test Setup Layout



### 6.6.12 Test Deviation

There is no deviation with the original standard.

### 6.6.13 EUT Operation during Test

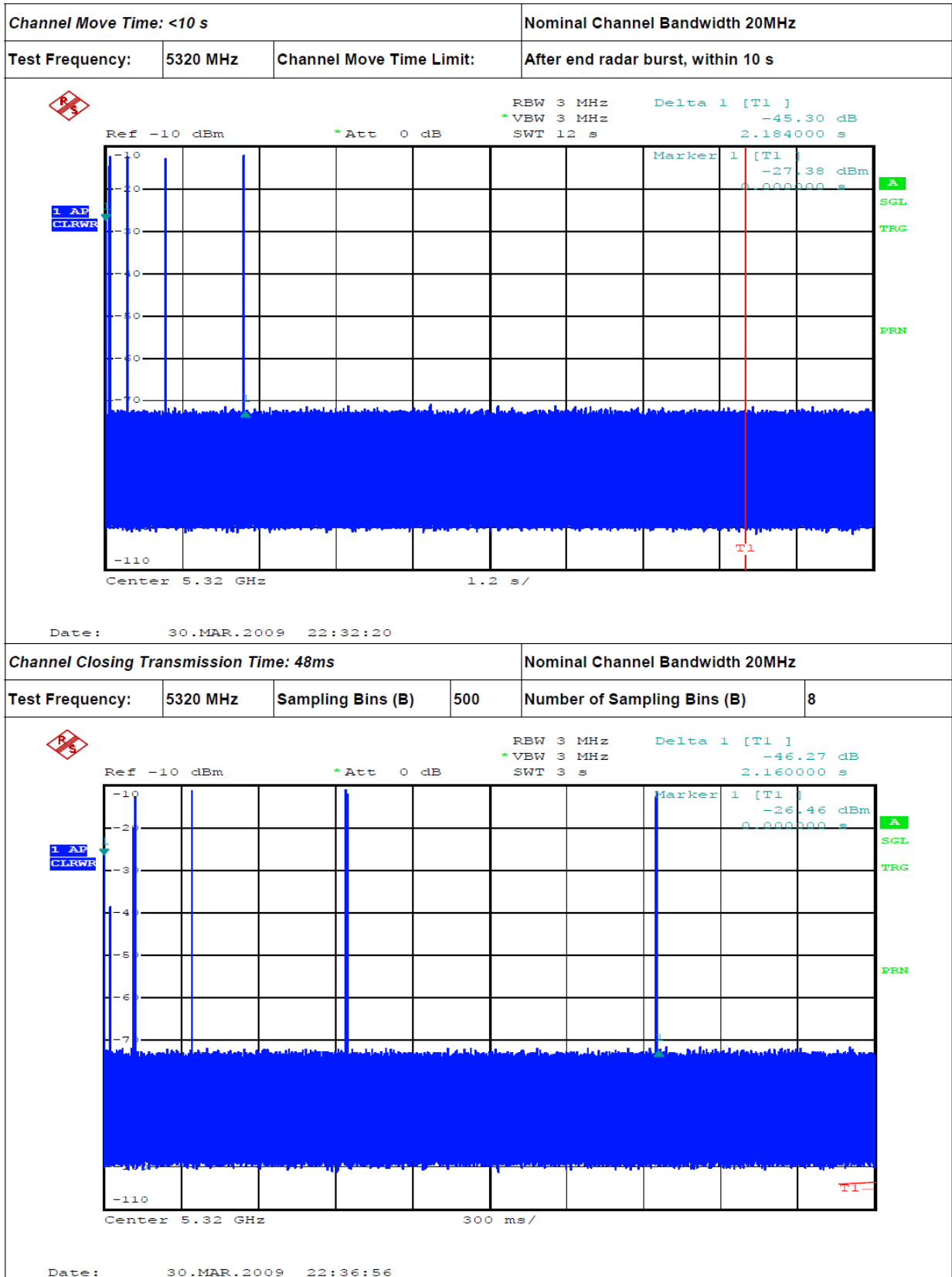
EUT transmitter minimum activity ratio of 30 % measured over an interval of 100 ms.

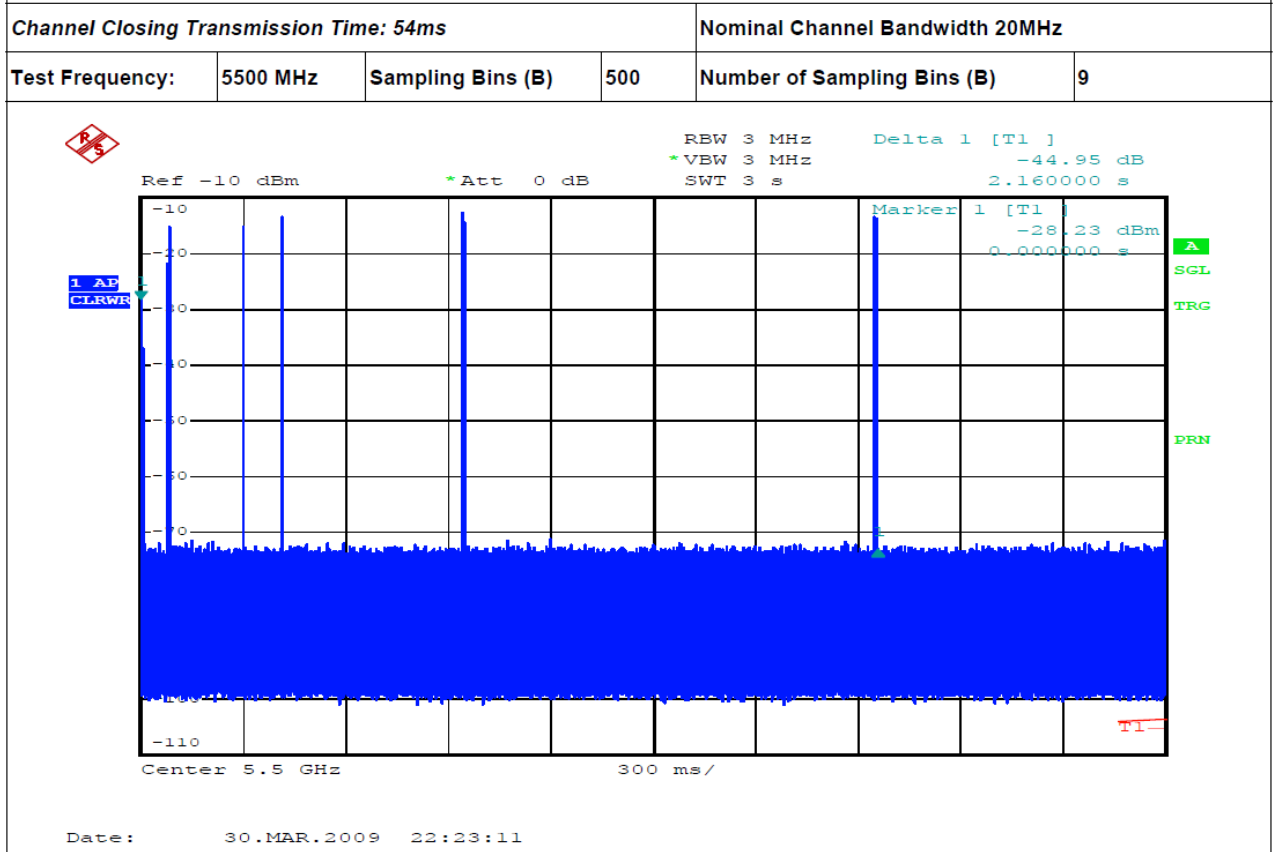
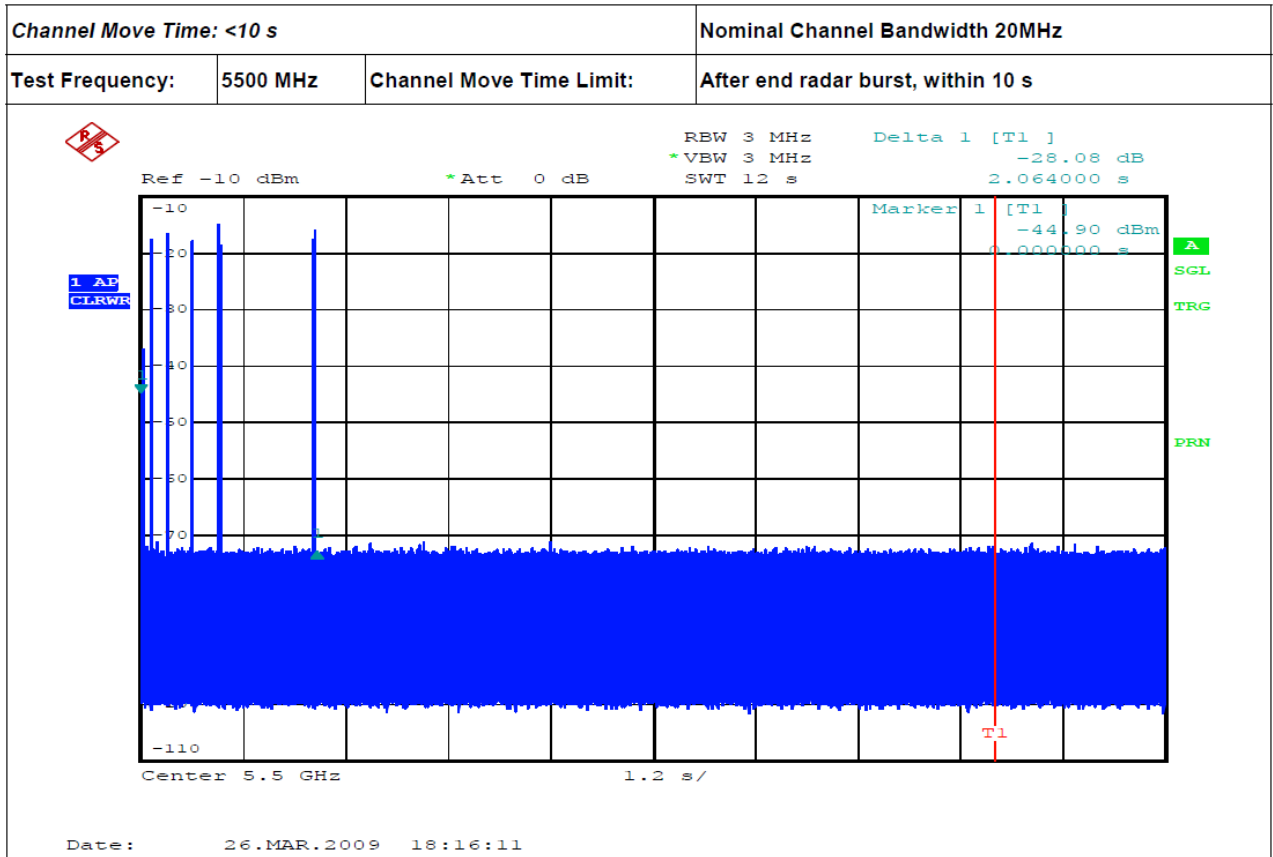
6.6.14 Test Result of Channel Shutdown

**Channel Shutdown**

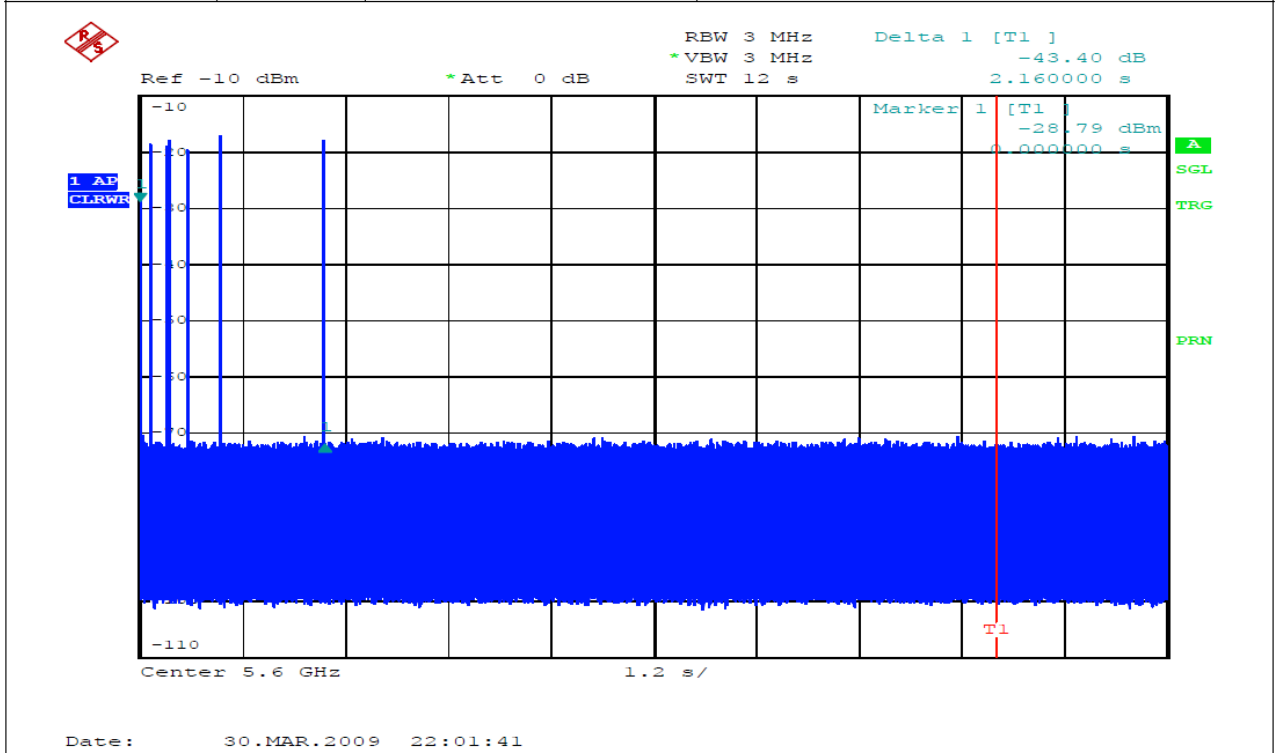
<b>Test Conditions</b> (see clause EN 301 893, clause 5.3.8.1): <b>Nominal Channel Bandwidth 20MHz</b>			
Antenna gain: 3 dBi (see EN 301 893, clause 5.3.8.2.1, paragraph 3)			
Power Density: 7 dBm/MHz			
Radar Detection Threshold level: (-55dBm+10dB)			
Duty Cycle: 30%	<b>Test results</b>		
Rel. Humidity: 62%	<b>Radar Test Signal (#)</b>	<b>Channel Closing</b>	<b>Channel Move Time (s)</b>
Ambient Temp.: 24.3°C		<b>Transmission Time</b>	
<b>Test Frequency:</b>		<b>(ms)</b>	
<b>5320 MHz</b>	Ref	48ms	2.184sec
<b>5500 MHz</b>	Ref	54ms	2.064sec
<b>5600 MHz</b>	Ref	36ms	2.16sec
<b>Measurement uncertainty:</b> [n.a.]			

6.6.15 Test Result of Channel Shutdown Time Plots

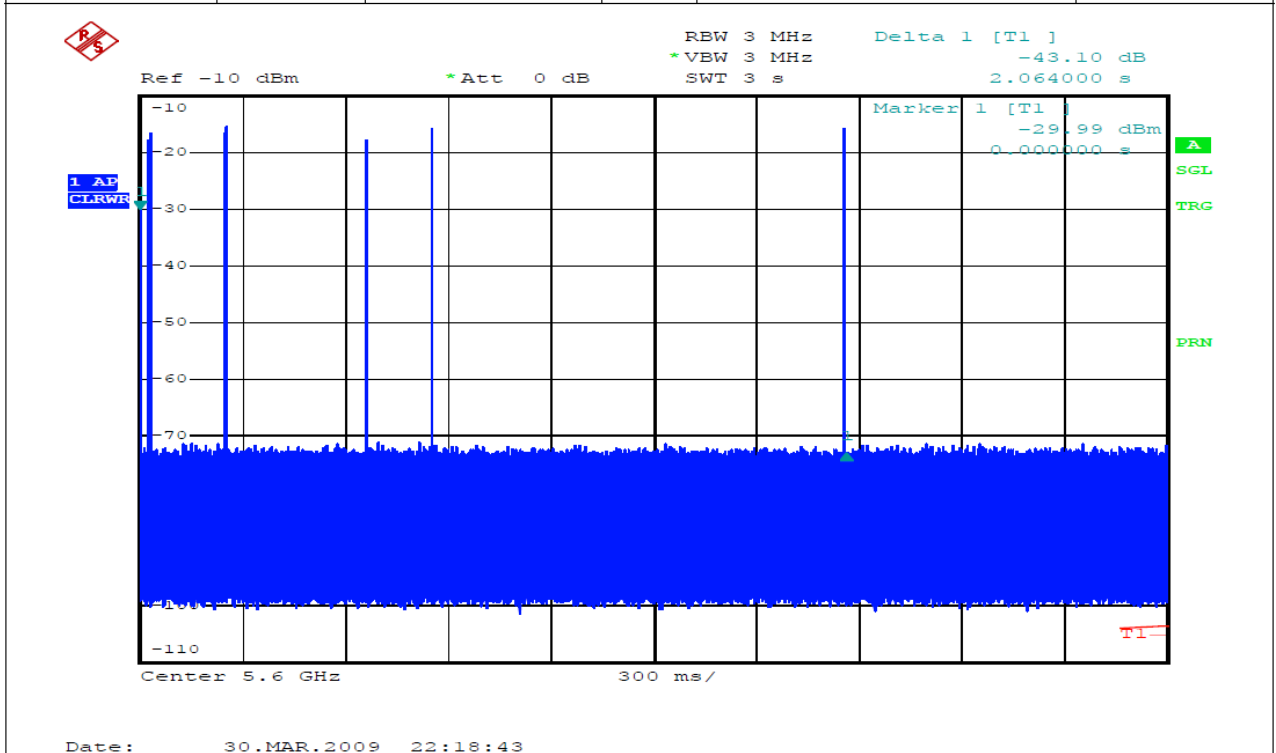




Channel Move Time: <10 s		Nominal Channel Bandwidth 20MHz	
Test Frequency:	5600 MHz	Channel Move Time Limit:	After end radar burst, within 10 s



Channel Closing Transmission Time: 36ms			Nominal Channel Bandwidth 20MHz		
Test Frequency:	5600 MHz	Sampling Bins (B)	500	Number of Sampling Bins (B)	6



## 6.7 Receiver Spurious Emissions (Radiated)

### 6.7.1 Test Condition

- Ambient Temperature: 25°C
- Relative Humidity: 65%
- Duty Cycle of the Equipment During the Test: 100.00%

### 6.7.2 Test Limit

- 25MHz to 1GHz -57 dBm in a 100kHz Bandwidth
- 1GHz to 26.5GHz -47 dBm in a 1MHz Bandwidth

### 6.7.3 Test Results

Test Mode : CH01 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.56	-72.38	-57	-15.38
416.88	-71.42	-57	-14.42
446.68	-65.71	-57	-8.71
2980.1	-69.93	-47	-22.93
15663.6	-65.65	-47	-18.65
17751.2	-65.58	-47	-18.58
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	
<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.57	-72.97	-57	-15.97
416.88	-72.57	-57	-15.57
446.68	-69.38	-57	-12.38
2980.2	-68.62	-47	-21.62
15662.8	-65.39	-47	-18.39
17751.7	-66.70	-47	-19.70
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH04 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.57	-73.74	-57	-16.74
416.88	-72.80	-57	-15.80
446.66	-65.65	-57	-8.65
2980.1	-69.24	-47	-22.24
15663.6	-64.18	-47	-17.18
17751.2	-66.10	-47	-19.10
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.56	-73.35	-57	-16.35
416.87	-71.11	-57	-14.11
446.67	-68.46	-57	-11.46
2980.2	-69.66	-47	-22.66
15662.8	-66.11	-47	-19.11
17751.7	-65.71	-47	-18.71
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	



Test Mode : CH08 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.58	-73.41	-57	-16.41
416.88	-72.23	-57	-15.23
446.70	-66.76	-57	-9.76
2980.1	-70.32	-47	-23.32
15663.6	-65.69	-47	-18.69
17751.2	-64.67	-47	-17.67
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.55	-71.27	-57	-14.27
416.91	-74.31	-57	-17.31
446.70	-68.70	-57	-11.70
2980.1	-66.72	-47	-19.72
15662.8	-66.49	-47	-19.49
17751.7	-67.52	-47	-20.52
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH09 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.56	-72.34	-57	-15.34
416.86	-70.77	-57	-13.77
446.68	-66.48	-57	-9.48
2980.1	-68.99	-47	-21.99
15663.6	-67.52	-47	-20.52
17751.2	-65.06	-47	-18.06
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.59	-73.18	-57	-16.18
416.90	-72.55	-57	-15.55
446.69	-70.24	-57	-13.24
2980.1	-69.17	-47	-22.17
15662.8	-65.06	-47	-18.06
17751.7	-67.38	-47	-20.38
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH14 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.56	-71.91	-57	-14.91
416.85	-69.95	-57	-12.95
446.66	-64.21	-57	-7.21
2980.1	-68.63	-47	-21.63
15663.6	-66.11	-47	-19.11
17751.2	-67.21	-47	-20.21
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.55	-72.32	-57	-15.32
416.90	-71.12	-57	-14.12
446.68	-67.79	-57	-10.79
2980.2	-69.99	-47	-22.99
15662.8	-66.99	-47	-19.99
17751.8	-66.03	-47	-19.03
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

Test Mode : CH19 (Receiver)

<b>Spurious Emissions (HORIZONTAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.55	-71.94	-57	-14.94
416.86	-69.92	-57	-12.92
446.68	-65.79	-57	-8.79
2980.1	-69.64	-47	-22.64
15663.6	-66.86	-47	-19.86
17751.2	-63.50	-47	-16.50
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

<b>Spurious Emissions (VERTICAL)</b>			
<b>Frequency (MHz)</b>	<b>Amplitude (dBm)</b>	<b>Limits (dBm)</b>	<b>Margin (dB)</b>
237.57	-71.20	-57	-14.20
416.89	-70.89	-57	-13.89
446.65	-70.24	-57	-13.24
2980.1	-70.49	-47	-23.49
15662.8	-64.29	-47	-17.29
17751.7	-67.33	-47	-20.33
<b>Measurement Uncertainty</b>		<b>+2.41dB/-1.85dB</b>	

7. Photographs of Spurious Emissions Test Configuration

7.1 The photographs show the configuration that generates the maximum emission.



FRONT VIEW

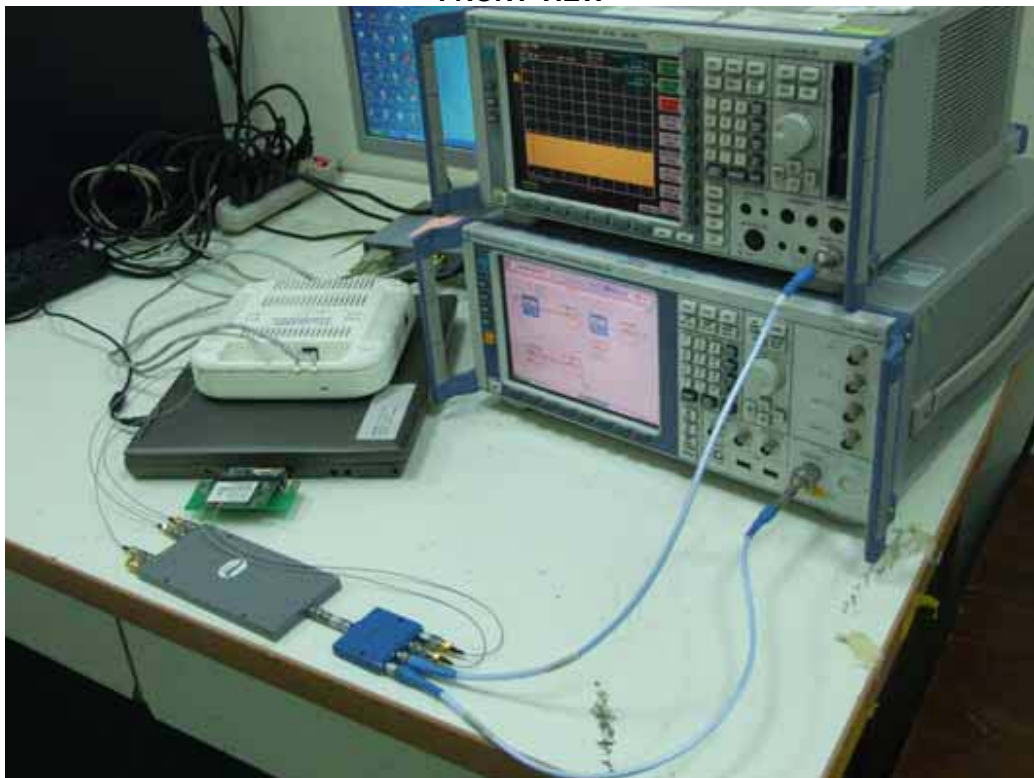


SIDE VIEW

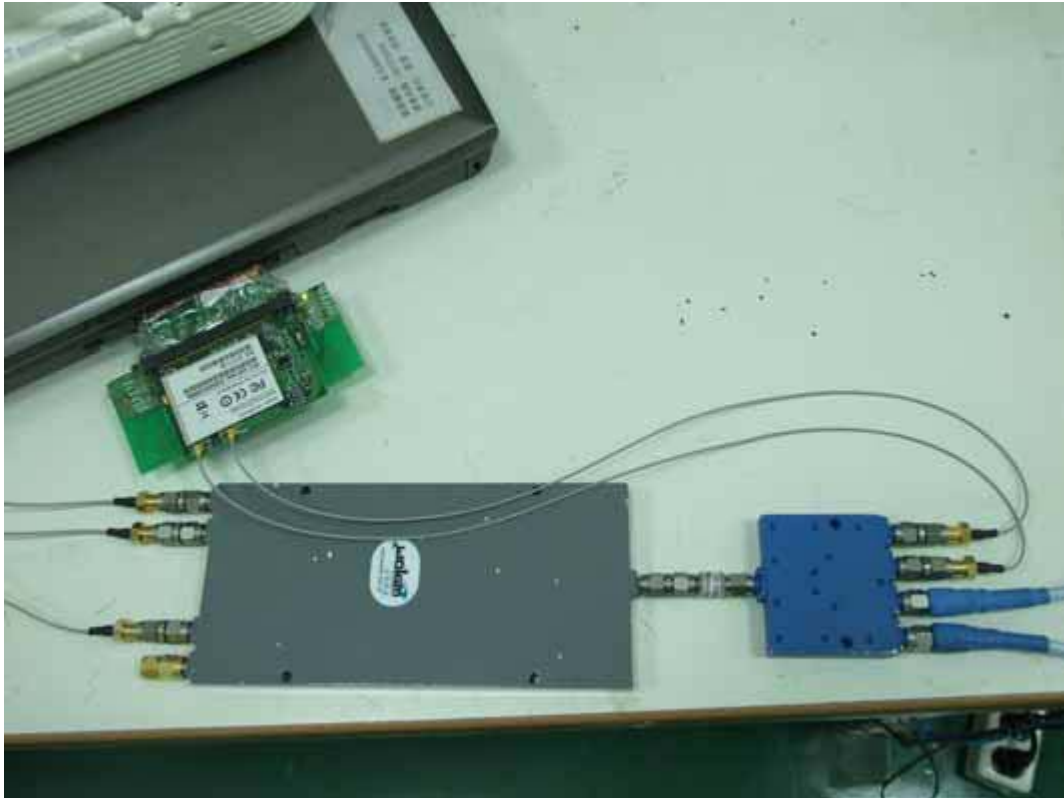
7.2 Test Setup Photo(DFS)



FRONT VIEW



SIDE VIEW



ZOOM IN VIEW

8. Photographs of EUT



Component Side of PCB



Solder Side of PCB



**9. Test Equipment and Ancillaries Used for Tests**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Power Metter	HP	HP 435A		Power Metter		
Power Sensor	HP	8481A		Power Sensor		
Signal Generator	HP			CW Signal Generator		
Spectrum Analyzer	Agilent	E4407B		9KHz-26.5GHZ		
Biconilog Antenna	SCHWARZBE CK	BBHA 9120D				
Biconilog Antenna	SCHWARZBE CK	BBHA 9170				
Pre Amplifier	HP	8449B				
High Pass Filter	HP	84300-80038		High Pass Filter		
High Pass Filter	HP	84300-80039		High Pass Filter		
Power Supply	Variable			AC Power Supply		
Multimeter	Fluke	Fluke 45		Multimeter		
Temperature Chamber	Giant Force	GT-150		Temperature Chamber		
Chamber		GTH-064S		Environmental Chamber		
Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Jan. 09, 2009	For DFS Test
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2008	For DFS Test
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Dec. 14, 2008	For DFS Test
RF Power Divider	HP	11636A	102934	N/A	N/A	For DFS Test
RF Power Splitter	Anaren	44100	881840 / 881850	N/A	N/A	For DFS Test



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RF Power Splitter	Anaren	42100	8817950 /8817960	N/A	N/A	For DFS
RF Cable-0.5m	SUHNER	SUCOFLEX 106	TH01-HY -01~ 06	1GHz~26.5GHz	Feb. 02, 2009	For DFS

※ Calibration Interval of instruments listed above is one year.