



# FCC RF Test Report

**APPLICANT** : Symbol Technologies Inc.  
**EQUIPMENT** : Enterprise Digital Assistant (EDA)  
**BRAND NAME** : Motorola  
**MODEL NAME** : MC55A0  
**FCC ID** : H9PMC55A0  
**STANDARD** : FCC Part 15 Subpart E  
**CLASSIFICATION** : Unlicensed National Information Infrastructure (UNII)

The product was received on Oct. 04, 2010 and completely tested on Oct. 27, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Anderson Chiu / Deputy Manager



## **SPORTON INTERNATIONAL INC.**

**No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.**

SPORTON INTERNATIONAL INC.

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FCC ID : H9PMC55A0

Page Number : 1 of 102

Report Issued Date : Nov. 15, 2010

Report Version : Rev. 01



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR000411C	Rev. 01	Initial issue of report	Nov. 15, 2010



### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	A9.2	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	A9.2	Maximum Conducted Output Power	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	A9.2	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(b)	A9.3	Frequency Band Edges	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	-
3.5	15.407(b)	A9.3	Spurious Emission	EIRP < -27 dBm/MHz	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 12.4 dB at 0.438 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 4.55 dB at 11200 MHz
3.8	15.407(b)	A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.9	15.407(c)	A9.5	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.10	15.407(g)	A9.5	Frequency Stability	Within Operation Band	Pass	-
3.11	15.203 & 15.407(a)	A9.2	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

Symbol Technologies Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

## 1.2 Manufacturer

Symbol Technologies Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Enterprise Digital Assistant (EDA)
Brand Name	Motorola
Model Name	MC55A0
FCC ID	H9PMC55A0
Tx/Rx Frequency Range	5150 MHz ~ 5250 MHz 5250 MHz ~ 5350 MHz 5470 MHz ~ 5725 MHz
Maximum Output Power to Antenna	<5150 MHz ~ 5250 MHz> 802.11a : 14.30 dBm / 0.027 W <5250 MHz ~ 5350 MHz> 802.11a : 15.01 dBm / 0.032 W <5470 MHz ~ 5725 MHz> 802.11a : 13.78 dBm / 0.024 W
Antenna Type	PIFA Antenna with gain 2.94 dBi
HW Version	DV
SW Version	BSP34
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

### Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Unlicensed National Information Infrastructure (UNII).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### 1.4 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.		
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	CO05-HY	03CH05-HY	722060/4086B-1

### 1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issued 7

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.



### 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

## 2 Test Configuration of Equipment Under Test

### 2.1 Carrier Frequency Channel

Channel Spacing 20MHz							
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220	48	5240
52	5260	56	5280	60	5300	64	5320
100	5500	104	5520	108	5540	112	5560
116	5580	120	5600	124	5620	128	5640
132	5660	136	5680	140	5700		

### 2.2 RF Power

Preliminary RF power output tests were performed in different data rate and recorded the in the following table:

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	13.05	12.61	12.57	12.54	12.59	12.58	11.82	11.80
CH 44	5220 MHz	14.30	13.13	13.08	12.78	12.96	12.97	10.61	10.71
CH 48	5240 MHz	12.50	11.40	11.31	11.33	11.3	11.21	10.43	10.55
CH 52	5260 MHz	<b>15.01</b>	14.28	14.25	14.43	13.99	14.00	11.82	11.82
CH 60	5300 MHz	14.60	14.50	14.50	14.53	14.32	14.34	12.09	12.01
CH 64	5320 MHz	11.70	11.06	10.92	10.94	10.80	10.88	10.93	10.83
CH 100	5500 MHz	12.51	13.14	12.94	13.11	12.90	12.86	12.04	11.80
CH 120	5600 MHz	13.78	14.77	14.70	14.73	14.22	14.15	11.72	11.44
CH 140	5700 MHz	8.40	9.33	9.51	9.45	9.44	9.41	9.46	9.46

**Remark:**

1. The 802.11a data rate was set in 6Mbps due to the highest RF output power.
2. The EUT is programmed to transmit signal continuously for all testing.



### 2.3 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

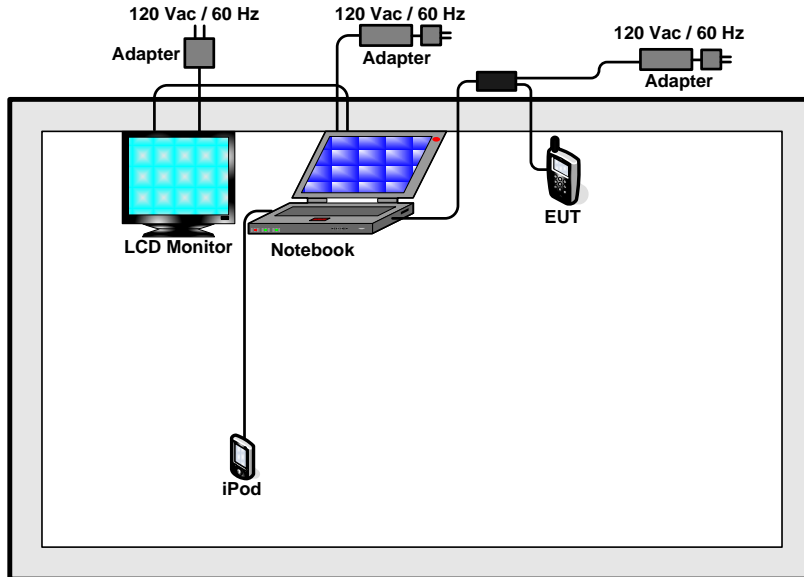
Test Cases	
Test Item	802.11a (Modulation : OFDM)
<b>Conducted TCs</b>	<ul style="list-style-type: none"> <li>■ Mode 1: CH36_5180 MHz</li> <li>■ Mode 2: CH44_5220 MHz</li> <li>■ Mode 3: CH48_5240 MHz</li> <li>■ Mode 4: CH52_5260 MHz</li> <li>■ Mode 5: CH60_5300 MHz</li> <li>■ Mode 6: CH64_5320 MHz</li> <li>■ Mode 7: CH100_5500 MHz</li> <li>■ Mode 8: CH120_5600 MHz</li> <li>■ Mode 9: CH140_5700 MHz</li> </ul>
<b>Radiated TCs</b>	<ul style="list-style-type: none"> <li>■ Mode 1: CH36_5180 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 2: CH44_5220 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 3: CH48_5240 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 4: CH52_5260 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 5: CH60_5300 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 6: CH64_5320 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 7: CH100_5500 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 8: CH120_5600 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 9: CH140_5700 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner</li> <li>■ Mode 10: CH64_5320 MHz + Numeric Keypad + Battery (2400mAh) + 1D Scanner</li> <li>■ Mode 11: CH120_5600 MHz + PIM Keypad + Battery (2400mAh) + 1D Scanner</li> </ul>



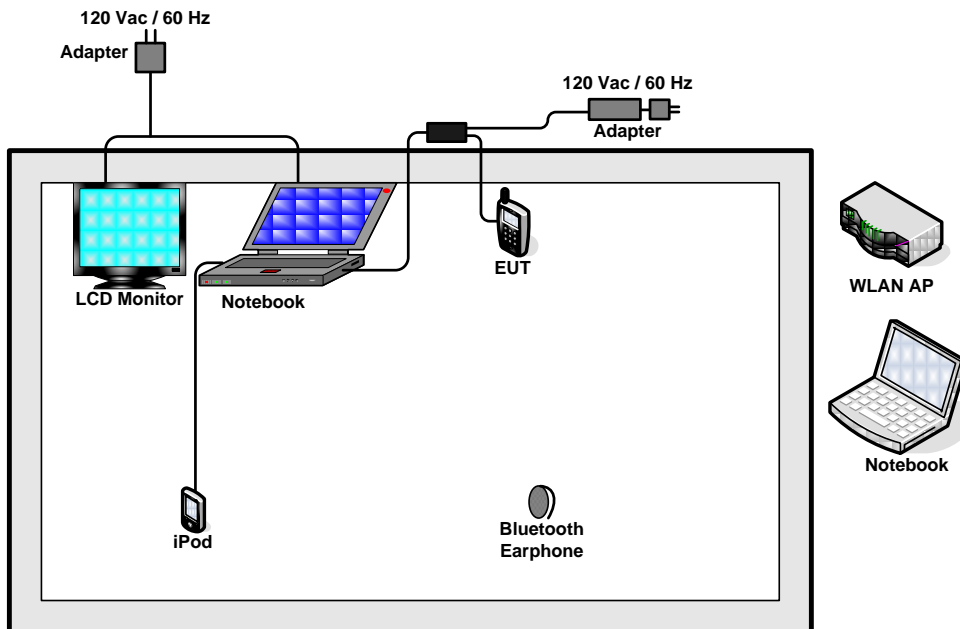
Test Item	802.11a (Modulation : OFDM)
<b>AC Conducted Emission</b>	Mode 1 : WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner Mode 2 : WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner Mode 3 : WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner
<b>Remark:</b> <ol style="list-style-type: none"><li>1. For radiated TCs test was performed together with USB Charging cable with AC power.</li><li>2. "Bluetooth Link" stands for terminal linked to headset by Bluetooth function.</li><li>3. "WLAN Link" stands for terminal associated with AP at 5GHz band.</li><li>4. "USB Link" stands for Activesync RNDIS file transfer.</li></ol>	

## 2.4 Connection Diagram of Test System

### <Radiation Test>



### <Conduction Test>





## **2.5 RF Utility**

The programmed RF Utility "CEcTxRx" is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The 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.

### 3 Test Result

#### 3.1 26dB & 99% Bandwidth Measurement

##### 3.1.1 Limit of 26dB & 99% Bandwidth

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B). For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B. For the band 5.725-5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W (30dBm) or 17 dBm + 10log B.

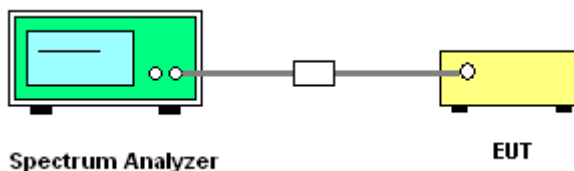
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Read RBW and repeat measurement as needed until the RBW/BW ratio is approximately 1%.
4. Use a RBW = approximately 1% of the emission bandwidth; Set the VBW > RBW; Use a peak detector.
5. Measure the maximum width of the emission that is 26 dB relative to the peak of the emission and 99% occupied bandwidth.

##### 3.1.4 Test Setup





3.1.5 Test Result of 26dB & 99% Bandwidth

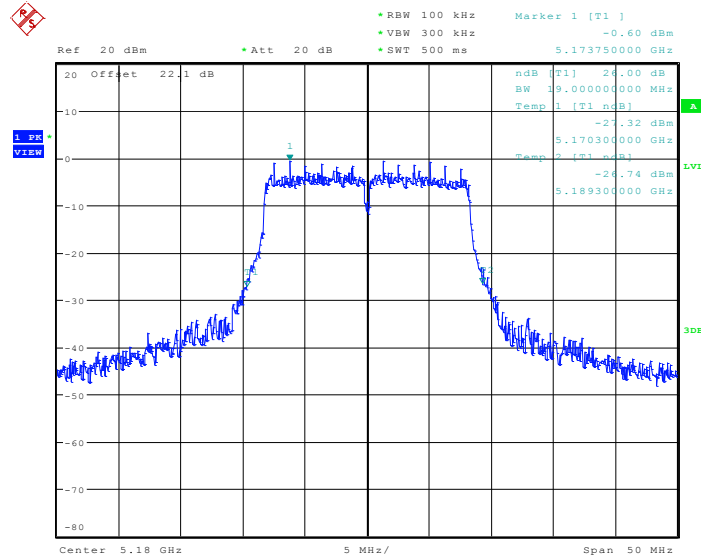
Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Pass/Fail
36	5180	19.00	17.05	N/A
44	5220	18.95	17.05	N/A
48	5240	18.95	17.05	N/A
52	5260	18.85	17.10	N/A
60	5300	18.85	17.10	N/A
64	5320	19.20	17.05	N/A
100	5500	18.95	17.05	N/A
120	5600	19.10	17.20	N/A
140	5700	19.15	17.00	N/A



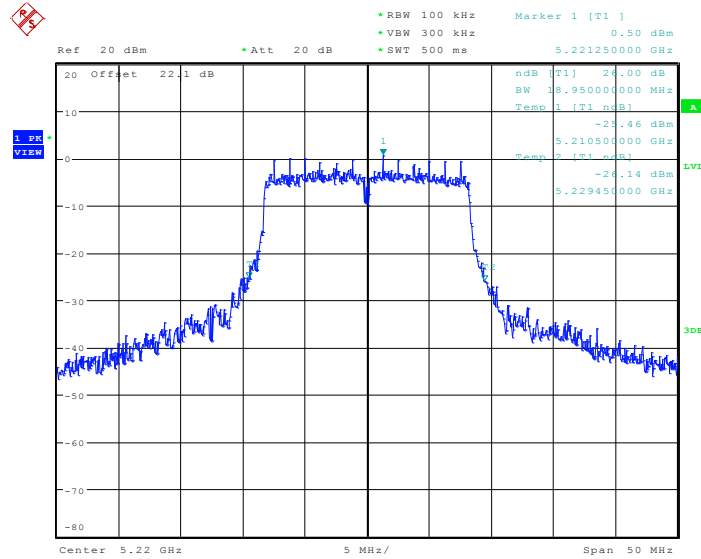
### 3.1.6 Test Result of 26dB Bandwidth Plots

#### Mode 1 : 26 dB Bandwidth Plot on 802.11a Channel 36



Date: 27.OCT.2010 17:34:21

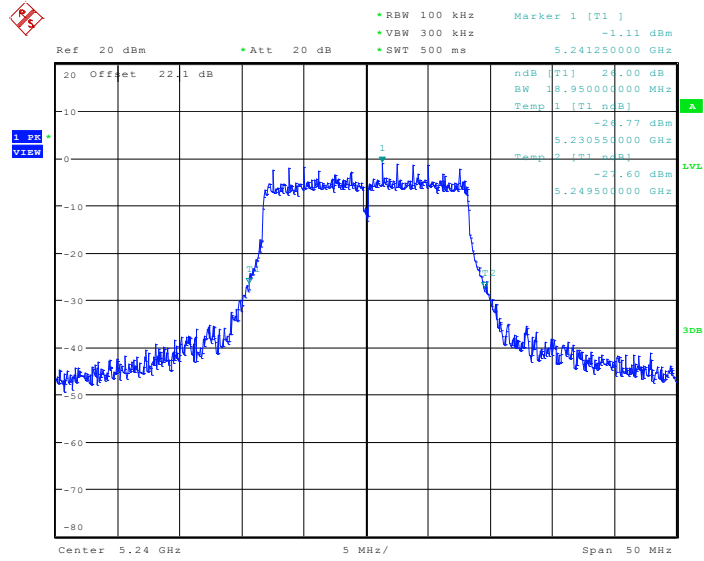
#### Mode 2 : 26 dB Bandwidth Plot on 802.11a Channel 44



Date: 27.OCT.2010 18:04:47

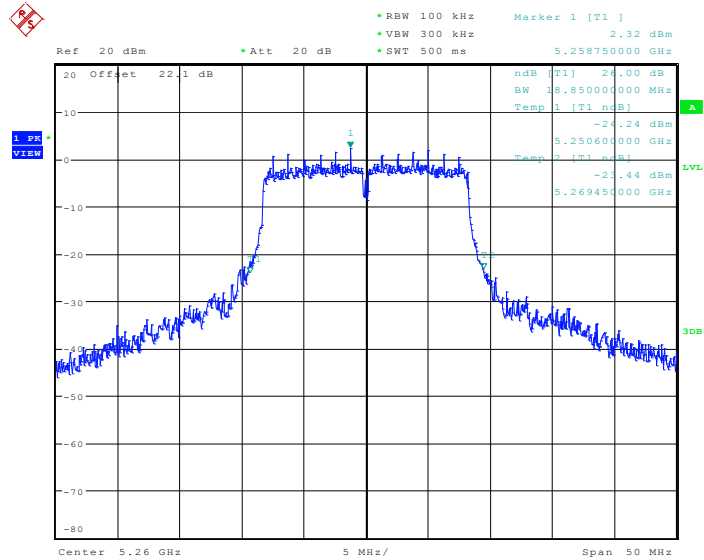


Mode 3 : 26 dB Bandwidth Plot on 802.11a Channel 48



Date: 27.OCT.2010 18:07:23

Mode 4 : 26 dB Bandwidth Plot on 802.11a Channel 52

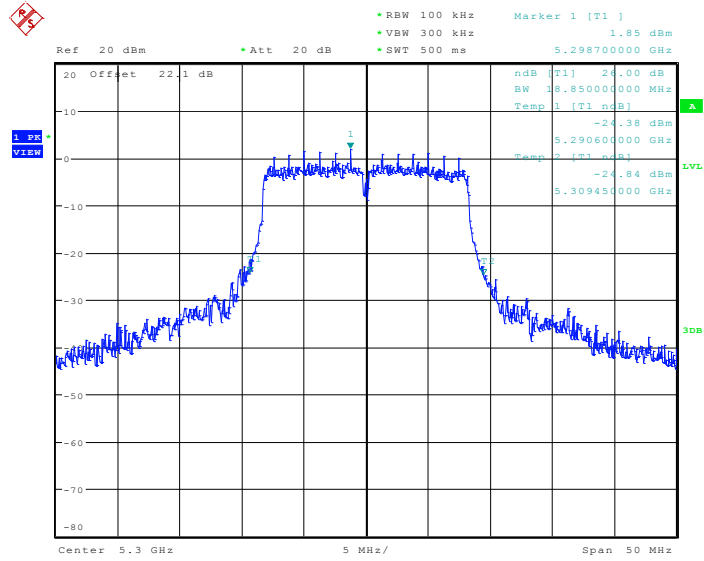


Date: 27.OCT.2010 18:09:58



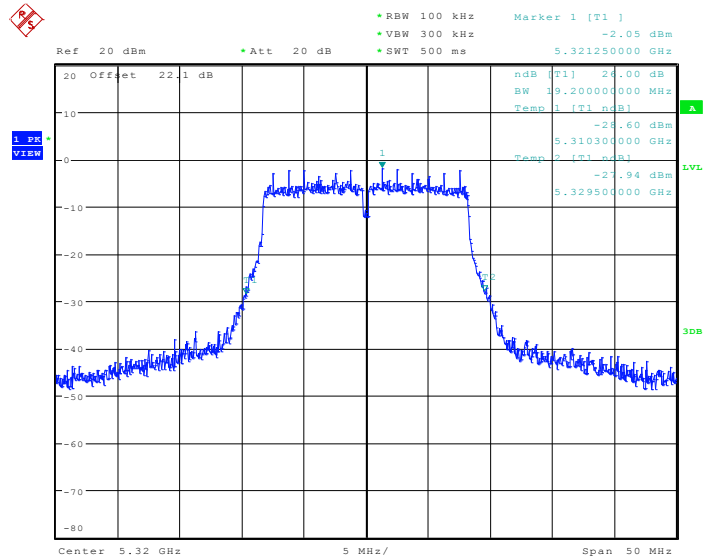


Mode 5 : 26 dB Bandwidth Plot on 802.11a Channel 60



Date: 27.OCT.2010 18:12:47

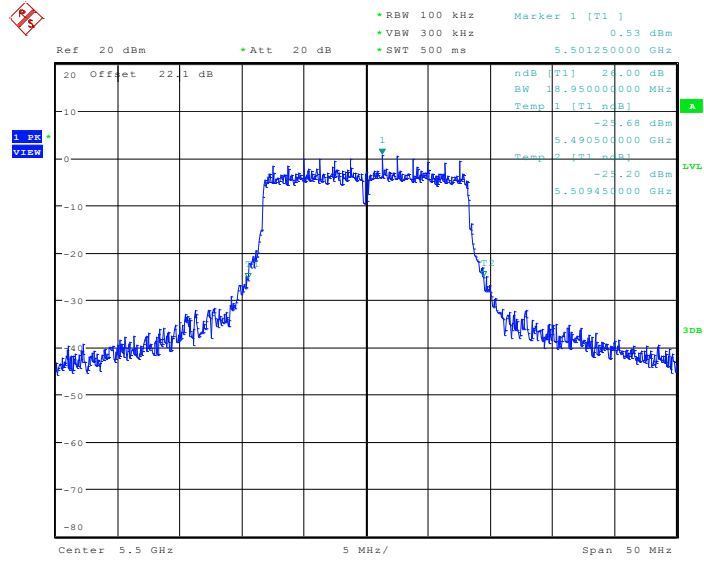
Mode 6 : 26 dB Bandwidth Plot on 802.11a Channel 64



Date: 27.OCT.2010 18:15:33

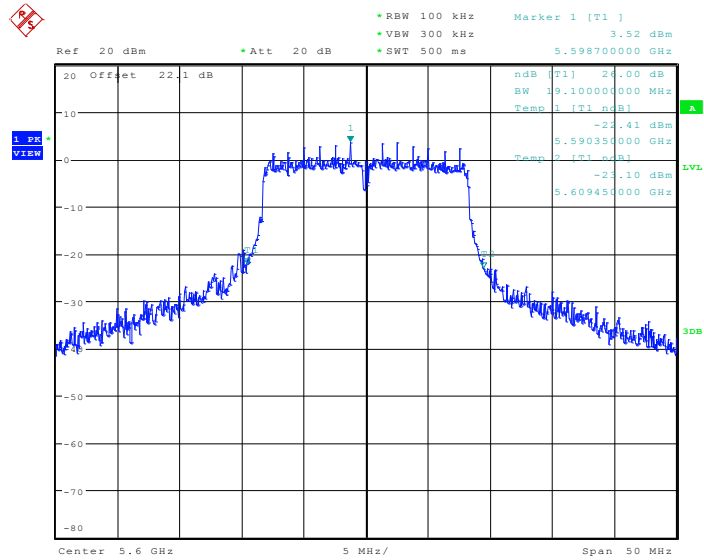


Mode 7 : 26 dB Bandwidth Plot on 802.11a Channel 100



Date: 27.OCT.2010 18:19:15

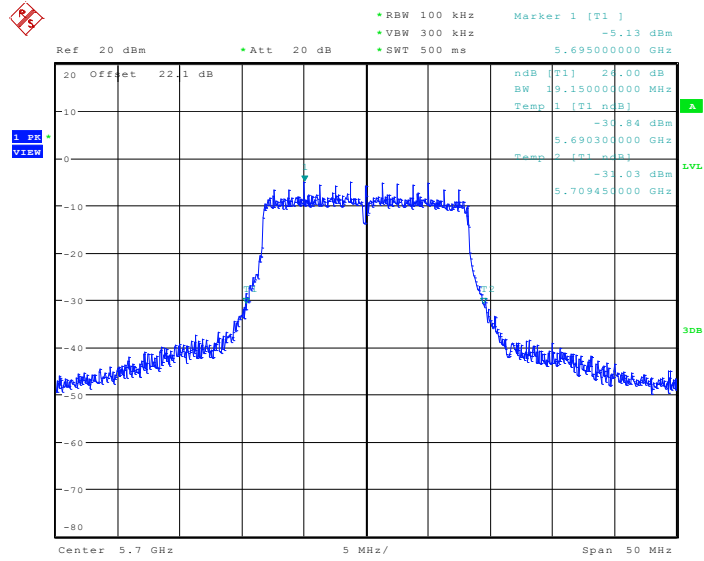
Mode 8 : 26 dB Bandwidth Plot on 802.11a Channel 120



Date: 27.OCT.2010 18:23:15



Mode 9 : 26 dB Bandwidth Plot on 802.11a Channel 140

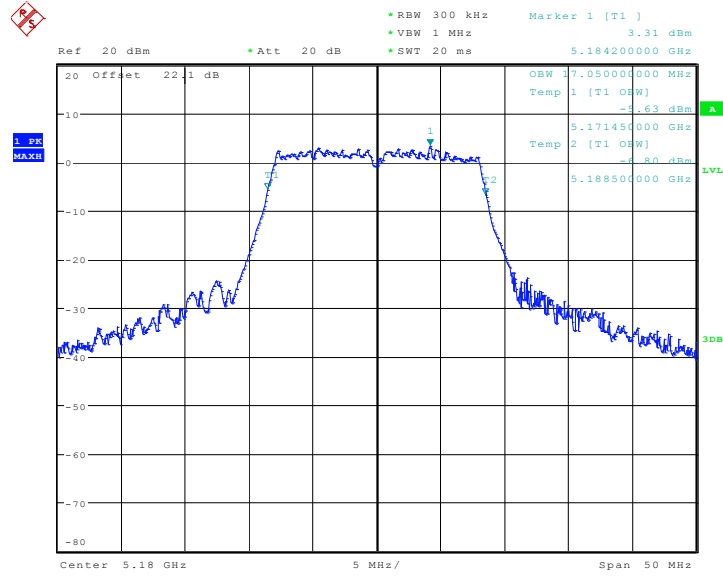


Date: 27.OCT.2010 18:25:35



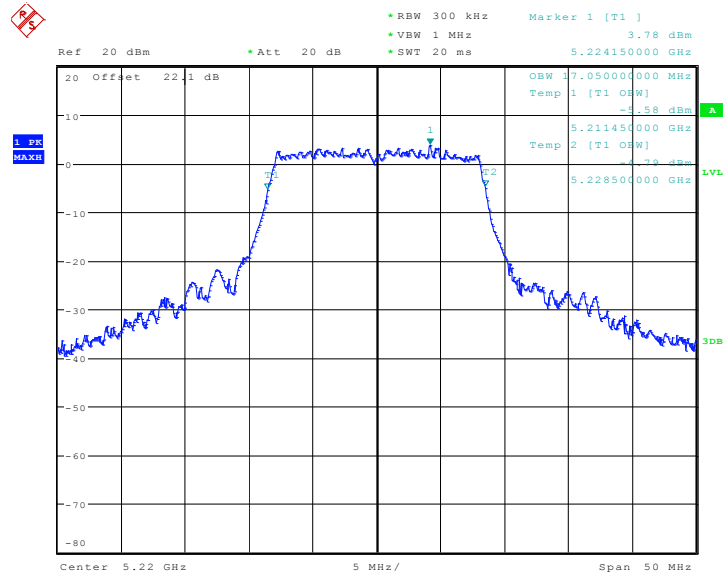
### 3.1.7 Test Result of 99% Bandwidth Plots

#### Mode 1 : 99% Bandwidth Plot on 802.11a Channel 36



Date: 27.OCT.2010 17:35:49

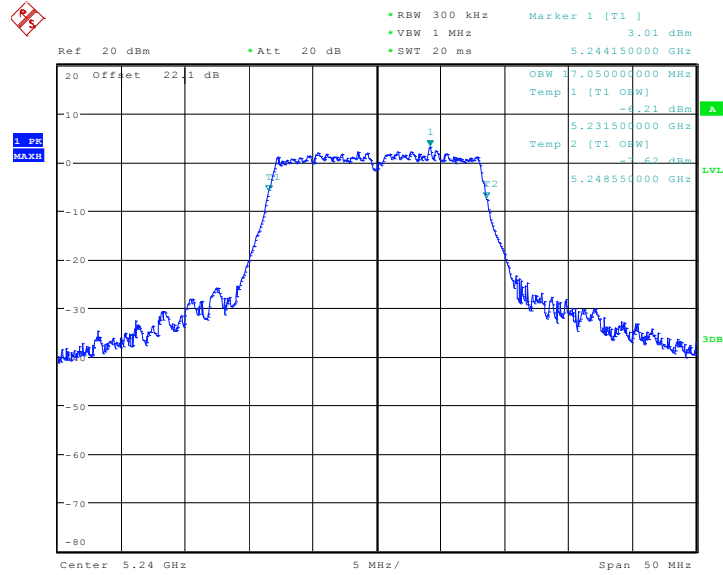
#### Mode 2 : 99% Bandwidth Plot on 802.11a Channel 44



Date: 27.OCT.2010 18:05:56

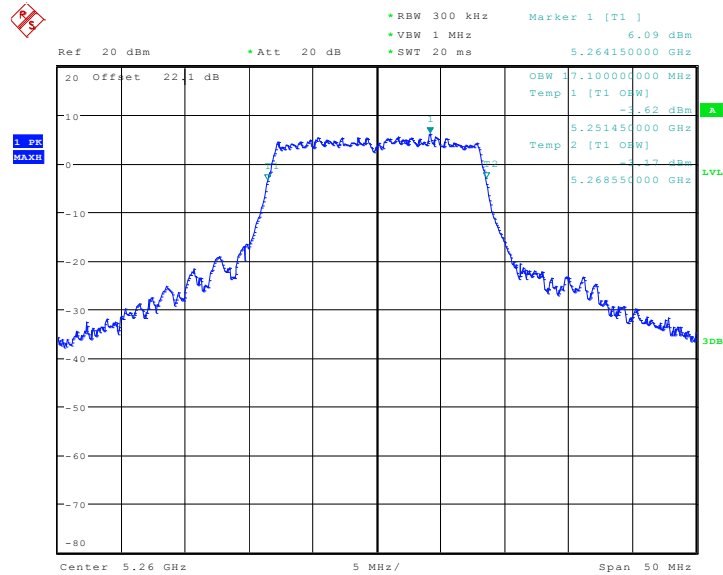


Mode 3 : 99% Bandwidth Plot on 802.11a Channel 48



Date: 27.OCT.2010 18:08:32

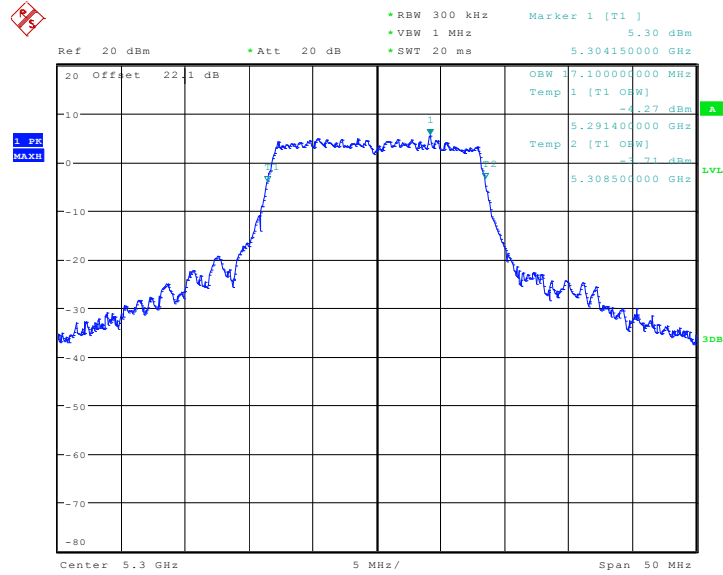
Mode 4 : 99% Bandwidth Plot on 802.11a Channel 52



Date: 27.OCT.2010 18:11:38

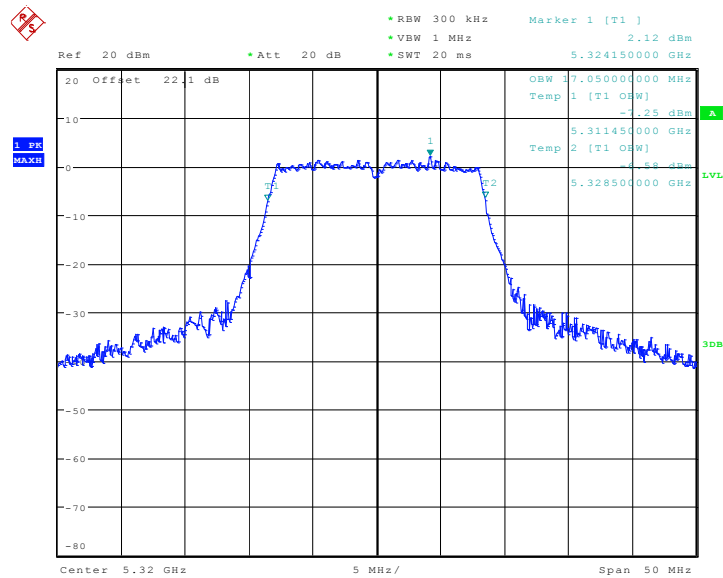


Mode 5 : 99% Bandwidth Plot on 802.11a Channel 60



Date: 27.OCT.2010 18:14:23

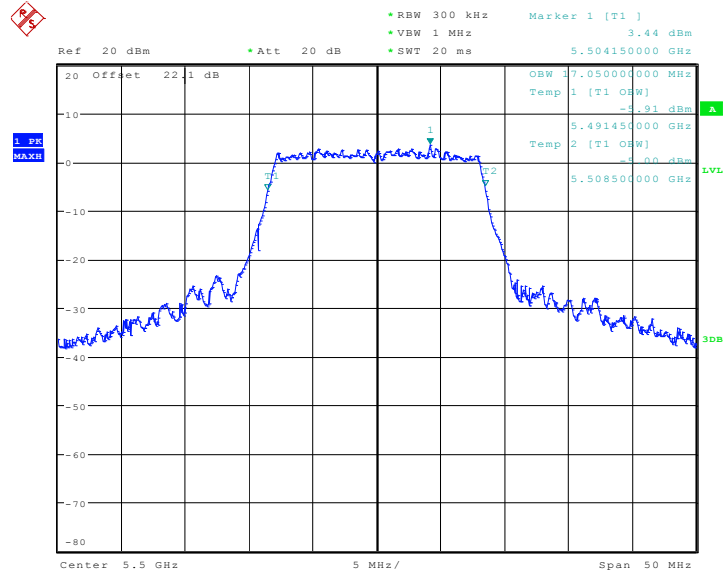
Mode 6 : 99% Bandwidth Plot on 802.11a Channel 64



Date: 27.OCT.2010 18:17:16

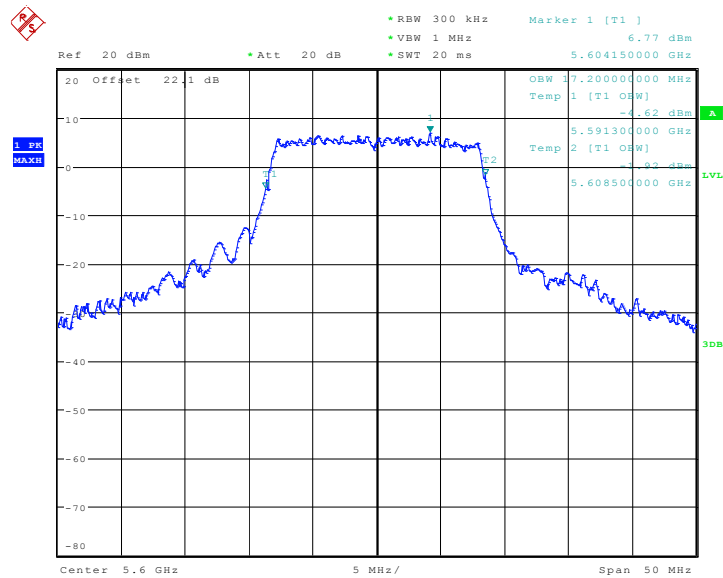


Mode 7 : 99% Bandwidth Plot on 802.11a Channel 100



Date: 27.OCT.2010 18:21:04

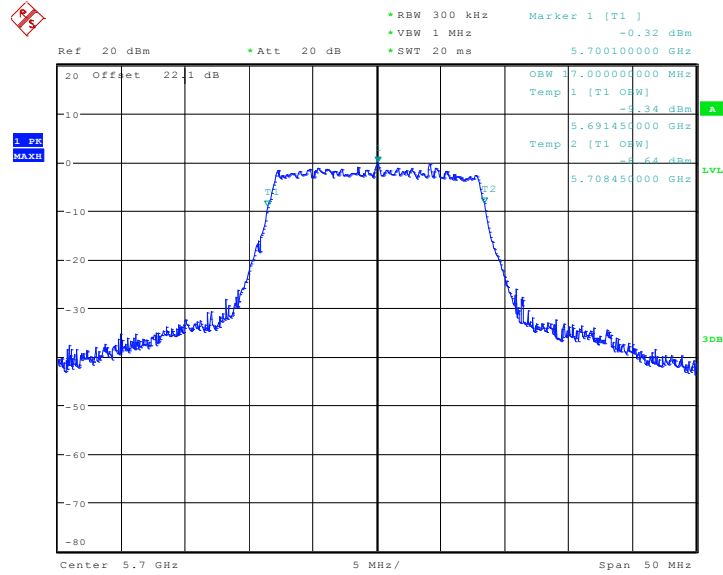
Mode 8 : 99% Bandwidth Plot on 802.11a Channel 120



Date: 27.OCT.2010 18:24:40



Mode 9 : 99% Bandwidth Plot on 802.11a Channel 140



Date: 27.OCT.2010 18:26:51



## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

For the band 5.15~5.25 GHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or  $4 \text{ dBm} + 10\log B$ , where B is the 26 dB emissions bandwidth in MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power and power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or  $11 \text{ dBm} + 10\log B$ . If transmitting antenna directional gain is greater than 6 dBi, the peak output power and power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

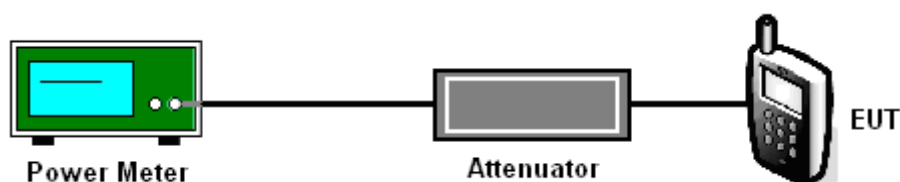
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power and record it.

### 3.2.4 Test Setup





3.2.5 Test Result of Maximum Conducted Output Power

Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	Measured Power Output (dBm)	Max. Limits (dBm )	Pass/Fail
36	5180	13.05	16.79	Pass
44	5220	14.30	16.78	Pass
48	5240	12.50	16.78	Pass
52	5260	15.01	23.75	Pass
60	5300	14.60	23.75	Pass
64	5320	11.70	23.83	Pass
100	5500	12.51	23.78	Pass
120	5600	13.78	23.81	Pass
140	5700	8.40	23.82	Pass

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1MHz band. For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

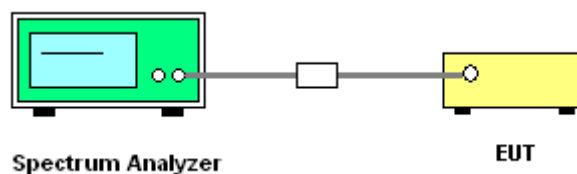
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

The transmitter output is connected to the spectrum analyzer. According to the method 3 of DA-02-2138, the resolution bandwidth is set to 1 MHz, video bandwidth is 3MHz, trace average 100 traces in power averaging mode, and sample detection is used, and the analyzer is set for video averaging.

#### 3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

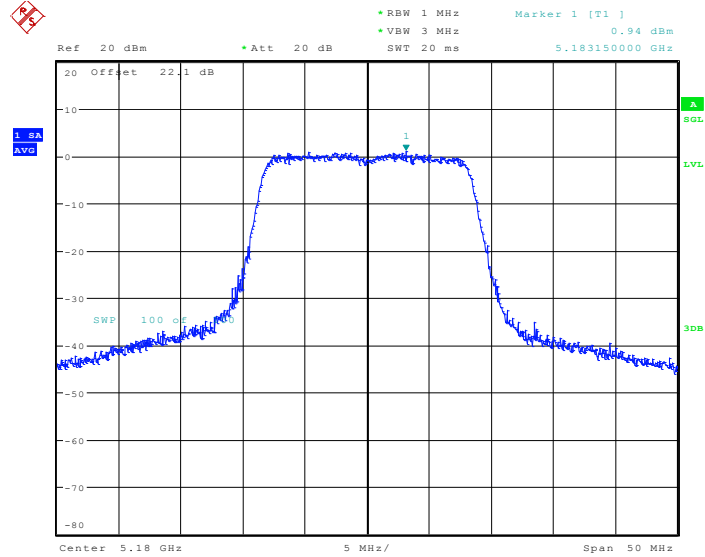
Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm )	Pass/Fail
36	5180	0.94	4	Pass
44	5220	1.14	4	Pass
48	5240	0.12	4	Pass
52	5260	3.21	11	Pass
60	5300	2.88	11	Pass
64	5320	-0.41	11	Pass
100	5500	0.93	11	Pass
120	5600	4.65	11	Pass
140	5700	-3.25	11	Pass



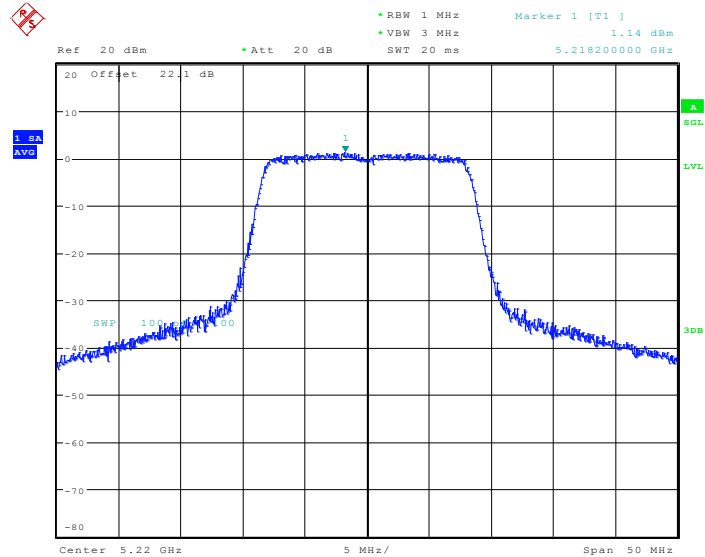
### 3.3.6 Test Result of Power Spectral Density Plots

#### Mode 1 : PSD Plot on 802.11a Channel 36



Date: 27.OCT.2010 17:34:46

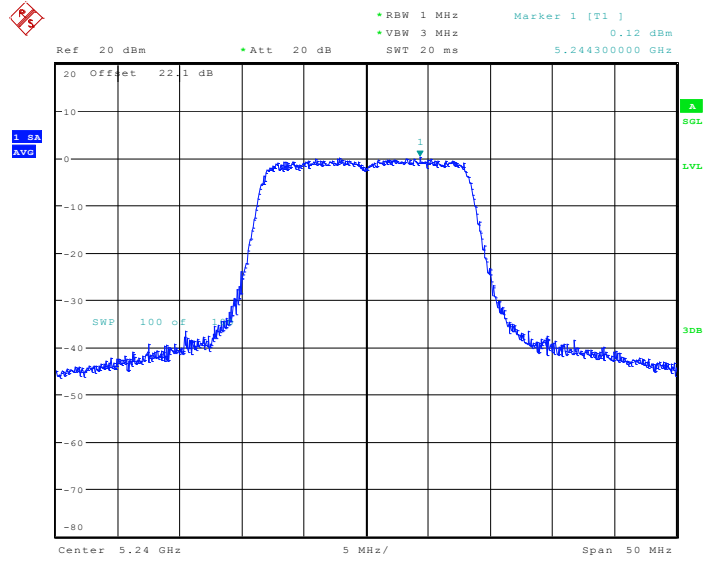
#### Mode 2 : PSD Plot on 802.11a Channel 44



Date: 27.OCT.2010 18:05:05

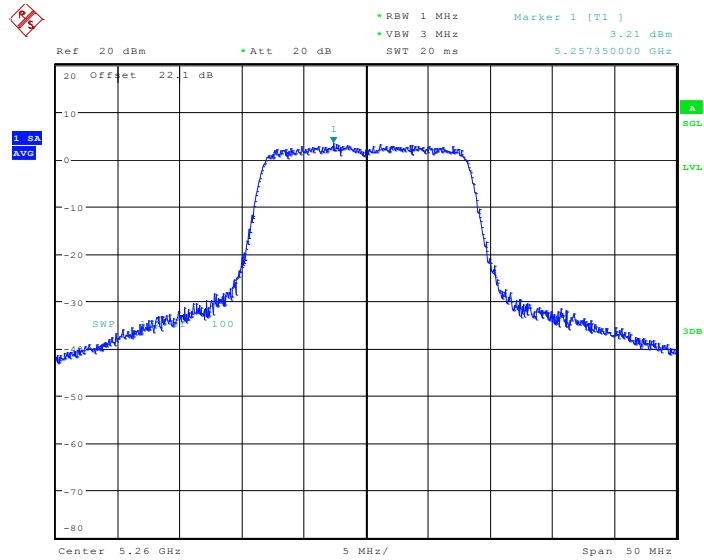


Mode 3 : PSD Plot on 802.11a Channel 48



Date: 27.OCT.2010 18:07:42

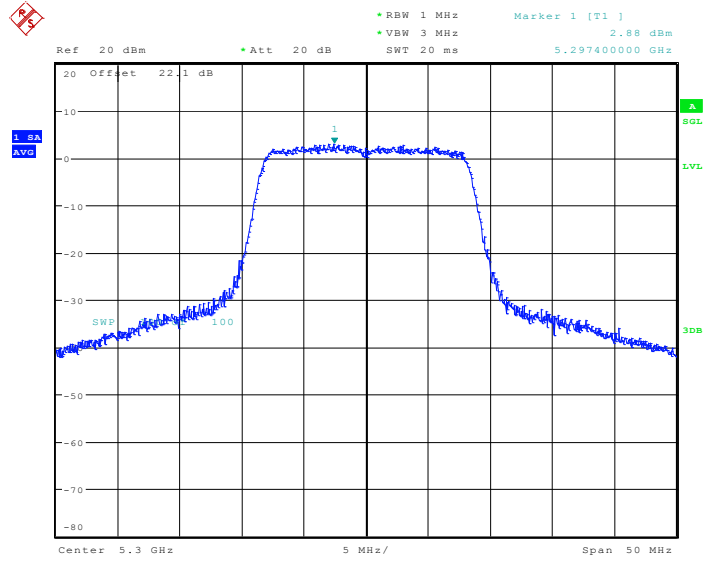
Mode 4 : PSD Plot on 802.11a Channel 52



Date: 27.OCT.2010 18:10:32

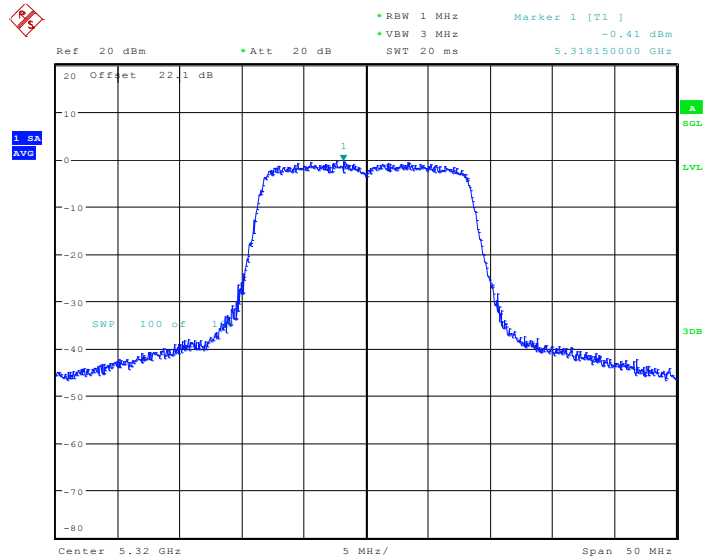


Mode 5 : PSD Plot on 802.11a Channel 60



Date: 27.OCT.2010 18:13:18

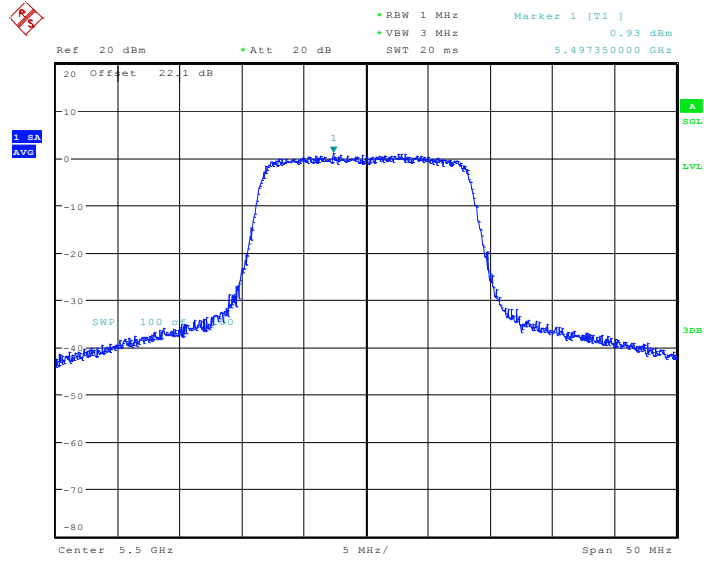
Mode 6 : PSD Plot on 802.11a Channel 64



Date: 27.OCT.2010 18:16:14

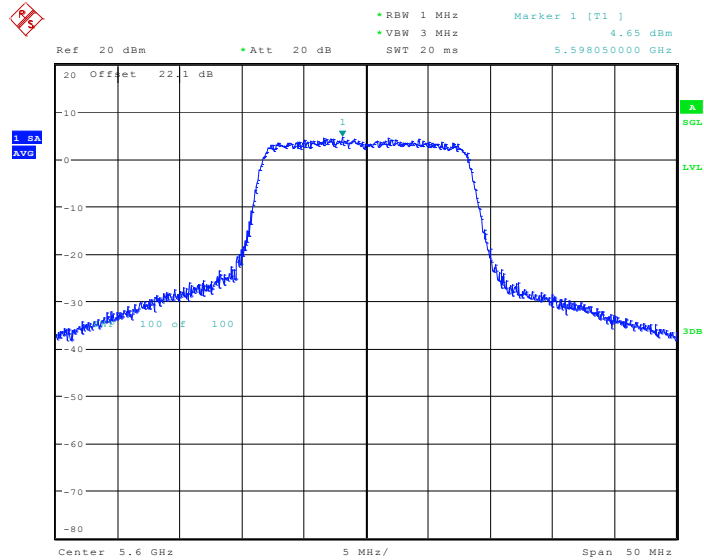


Mode 7 : PSD Plot on 802.11a Channel 100



Date: 27.OCT.2010 18:20:00

Mode 8 : PSD Plot on 802.11a Channel 120

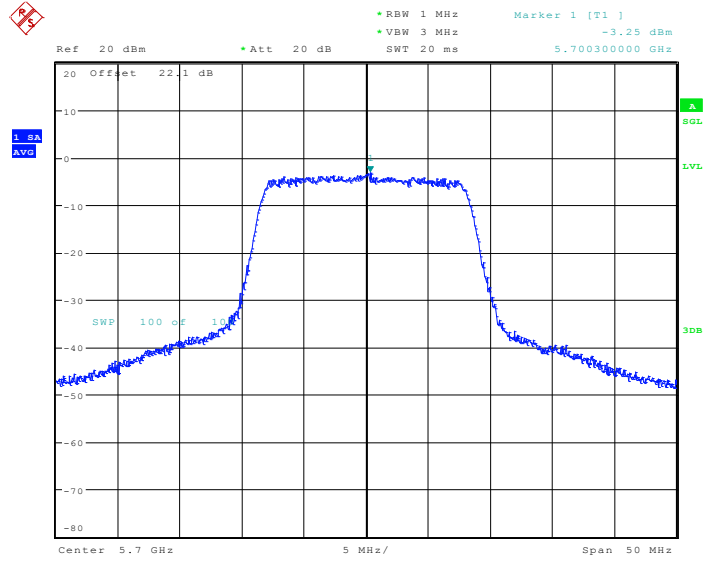


Date: 27.OCT.2010 18:23:33





Mode 9 : PSD Plot on 802.11a Channel 140



Date: 27.OCT.2010 18:25:59



## 3.4 Band Edges Measurement

### 3.4.1 Limit of Band Edges

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band. For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

### 3.4.2 Measuring Instruments

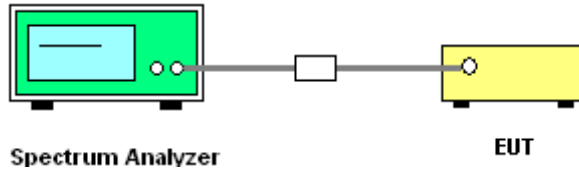
See list of measuring instruments of this test report.

### 3.4.3 Test Procedures

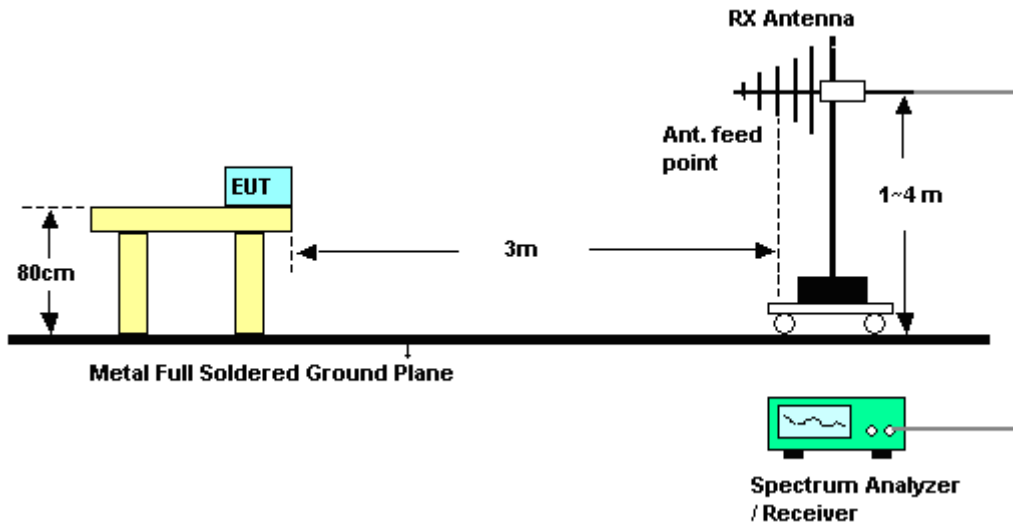
1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

### 3.4.4 Test Setup

<Conducted>



<Radiated>

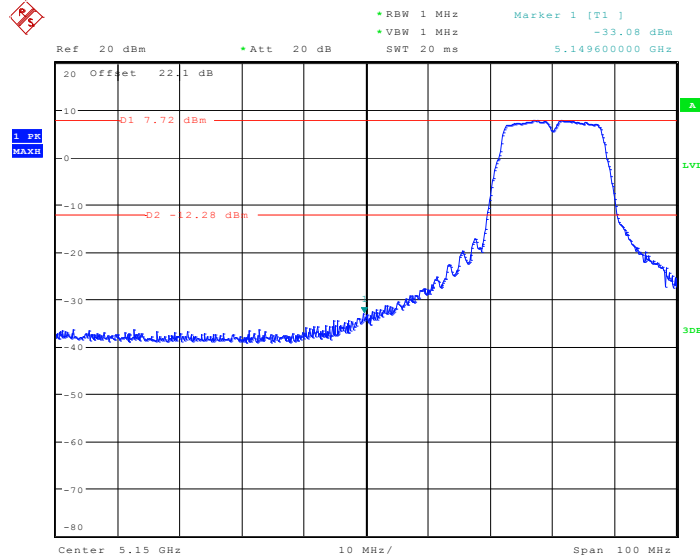




### 3.4.5 Test Result of Conducted Band Edges

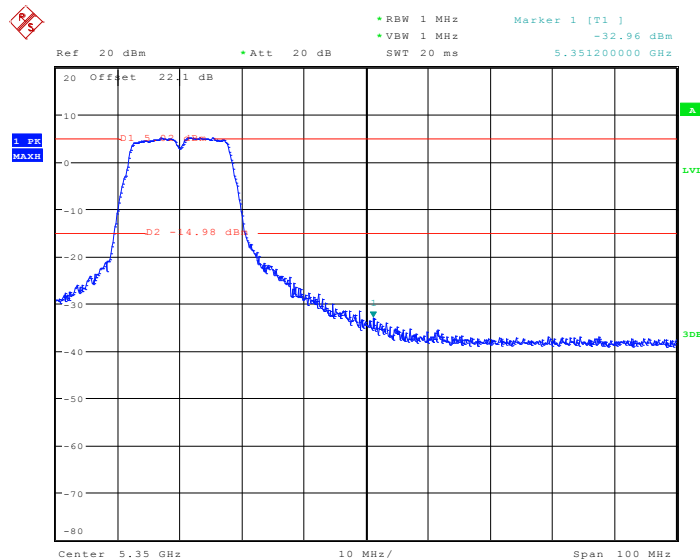
Test Mode :	Mode 1 and Mode 6	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Mode 1 : Low Band Edge Plot on Channel 36



Date: 27.OCT.2010 19:51:04

Mode : High Band Edge Plot on Channel 64

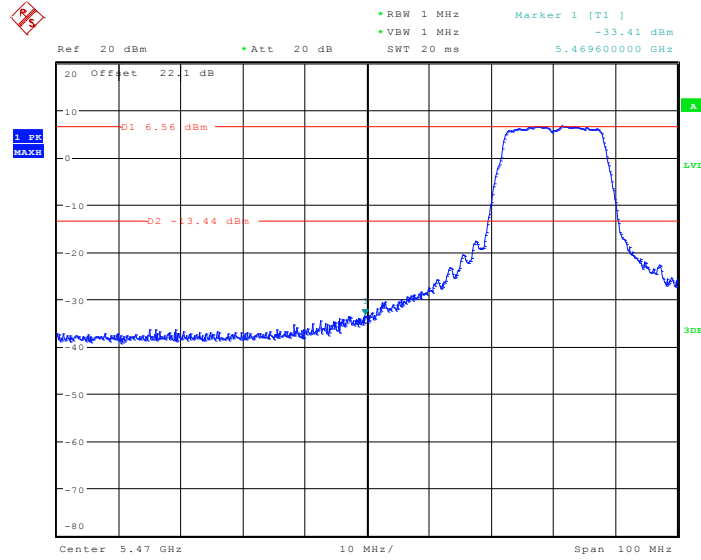


Date: 27.OCT.2010 19:48:41



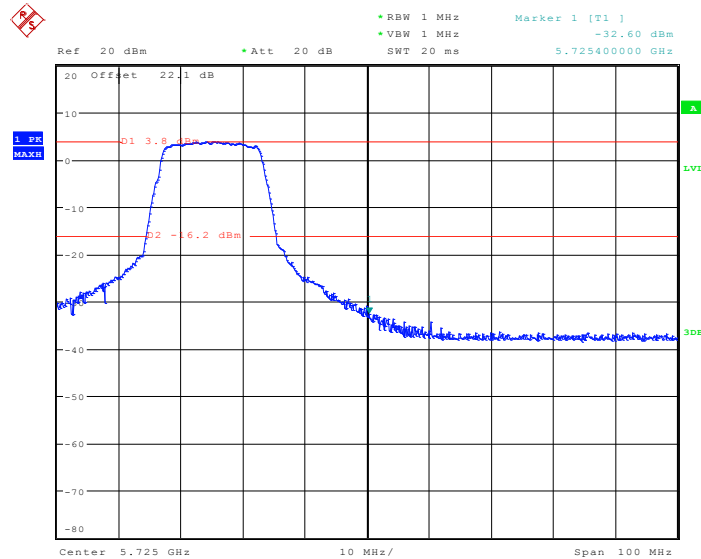
Test Mode :	Mode 7 and Mode 9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Mode 1 : Low Band Edge Plot on Channel 100



Date: 27.OCT.2010 19:44:40

Mode 3 : High Band Edge Plot on Channel 140



Date: 27.OCT.2010 19:41:44



3.4.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	50~54%
Test Channel :	36	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5150	58.74	-15.26	74	51.67	33.92	6.7	33.55	145	59	Peak
5150	42.53	-11.47	54	35.46	33.92	6.7	33.55	145	59	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5150	55.56	-18.44	74	48.49	33.92	6.7	33.55	100	126	Peak
5150	42.8	-11.2	54	35.73	33.92	6.7	33.55	100	126	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	50~54%
Test Channel :	64	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5350	67.95	-6.05	74	60.6	34.08	6.8	33.53	164	112	Peak
5350	48.46	-5.54	54	41.11	34.08	6.8	33.53	164	112	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5350	61.43	-12.57	74	54.08	34.08	6.8	33.53	119	171	Peak
5350	46.13	-7.87	54	38.78	34.08	6.8	33.53	119	171	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	50~54%
Test Channel :	100	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5470	62.19	-26.11	88.3	54.67	34.17	6.87	33.52	163	139	Peak
5470	46.34	-21.96	68.3	38.82	34.17	6.87	33.52	163	139	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5470	60.2	-28.1	88.3	52.68	34.17	6.87	33.52	111	159	Peak
5470	46.6	-21.7	68.3	39.08	34.17	6.87	33.52	111	159	Average

Test Mode :	Mode 9	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	50~54%
Test Channel :	140	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5725	59.68	-28.62	88.3	51.74	34.51	7.01	33.58	158	132	Peak
5725	45.59	-22.71	68.3	37.65	34.51	7.01	33.58	158	132	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5725	59.31	-28.99	88.3	51.37	34.51	7.01	33.58	145	130	Peak
5725	45.23	-23.07	68.3	37.29	34.51	7.01	33.58	145	130	Average

## 3.5 Spurious Emission

### 3.5.1 Limit of Spurious Emission Measurement

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of  $-27$  dBm/MHz in the 5.15–5.25 GHz band.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.

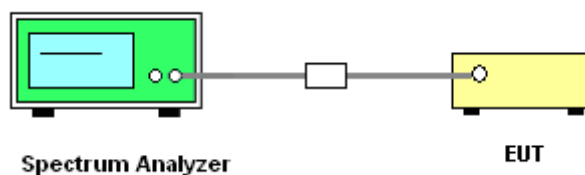
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = VBW = 1 MHz, Video bandwidth (VBW), scan from 30 MHz to 40 GHz.

### 3.5.4 Test Setup





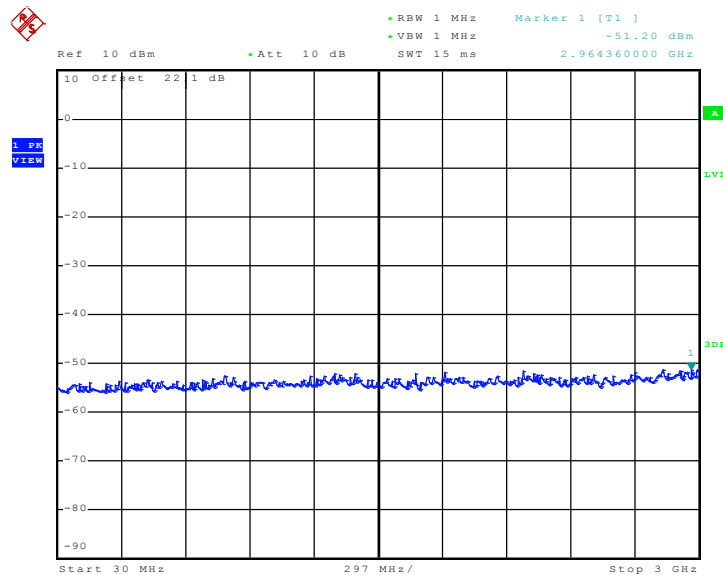


3.5.5 Test Result

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	36, 44, 48	Test Engineer :	Alan Liu

Channel	Frequency (MHz)	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
36	5180	2964.36	-51.2	2.94	-48.26	-27
		5056.4	-42.75	2.94	-39.81	
		40000	-33.96	2.94	-31.02	
44	5220	3000	-51.07	2.94	-48.13	-27
		10441.2	-42.7	2.94	-39.76	
		40000	-34.33	2.94	-31.39	
48	5240	2910.9	-50.82	2.94	-47.88	-27
		10483.6	-43.18	2.94	-40.24	
		40000	-34.35	2.94	-31.41	

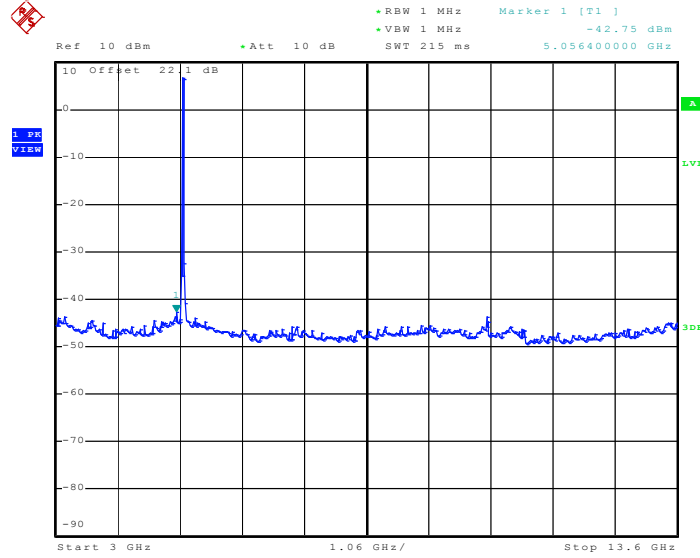
Mode 1: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:24:58

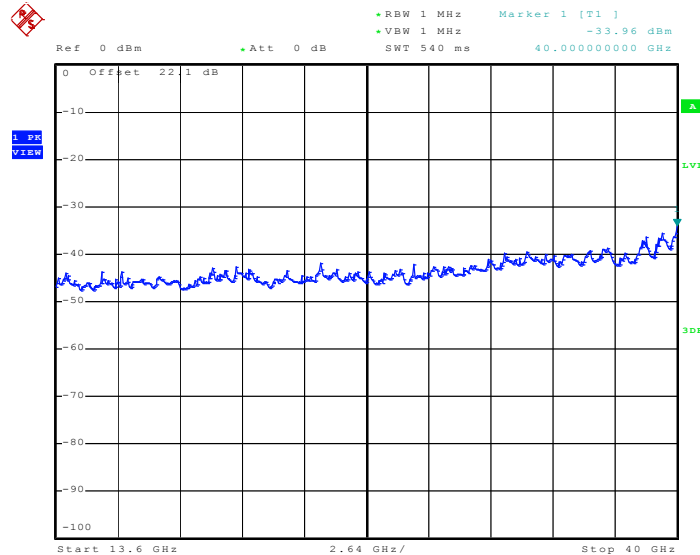


Mode 1: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:25:10

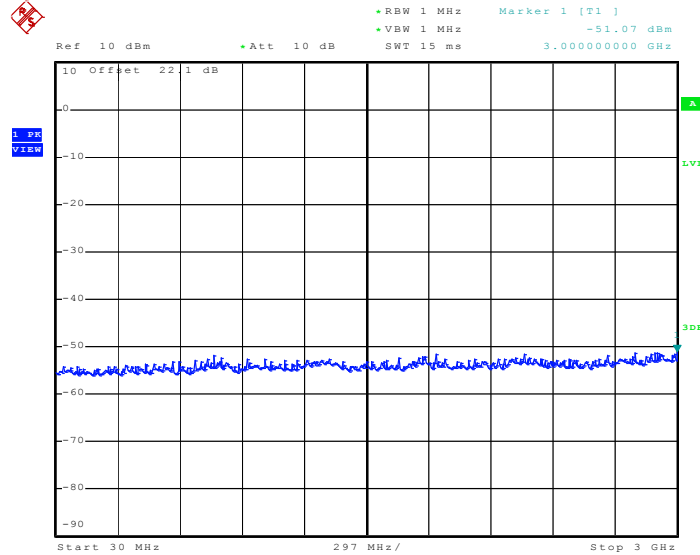
Mode 1: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:25:22

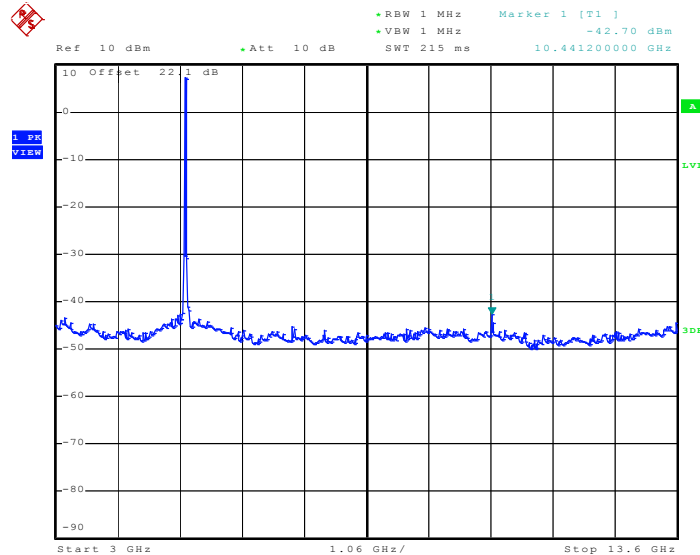


Mode 2: Conducted Spurious Emission Plot between  
30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:25:46

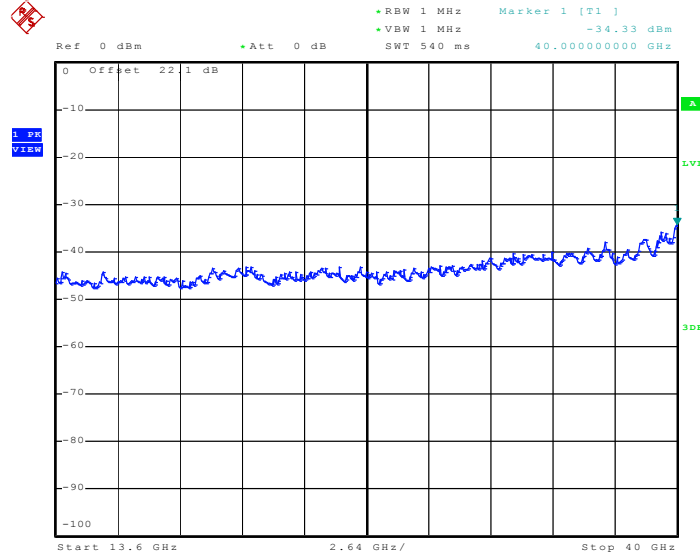
Mode 2: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:25:58

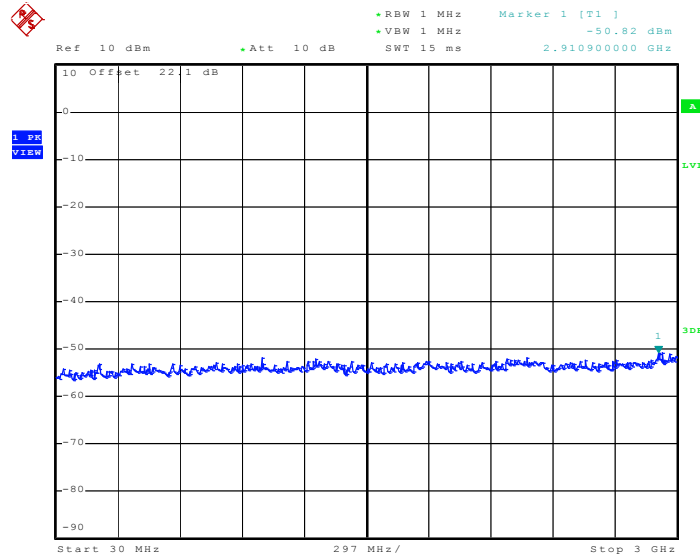


Mode 2: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:26:10

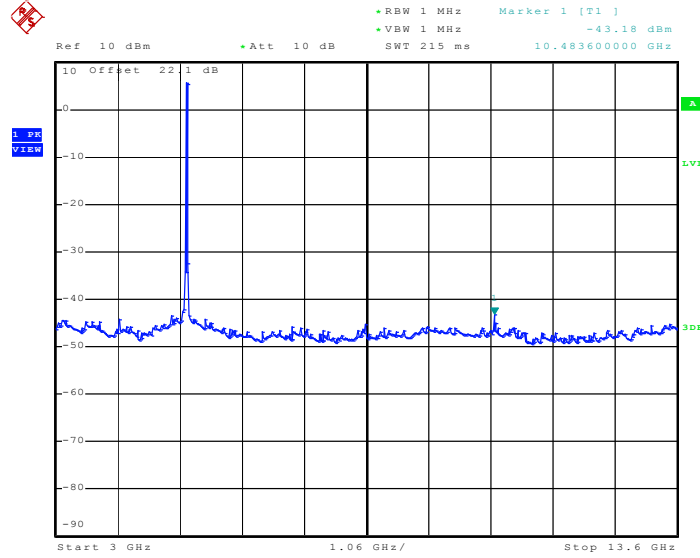
Mode 3: Conducted Spurious Emission Plot between  
30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:26:30

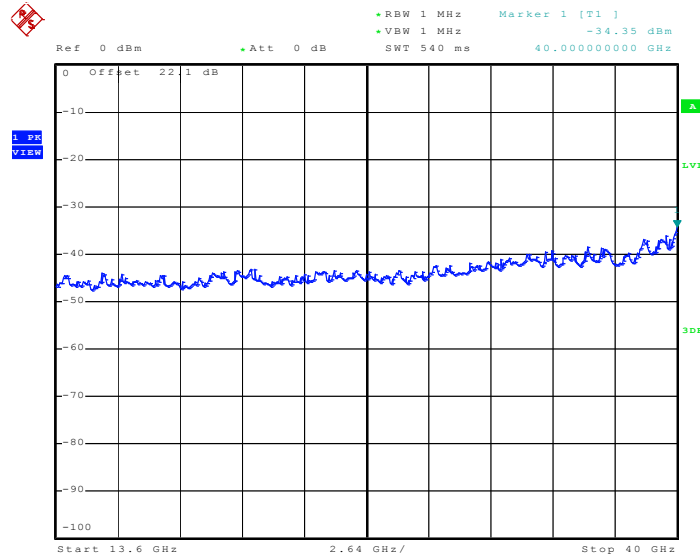


Mode 3: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:26:42

Mode 3: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



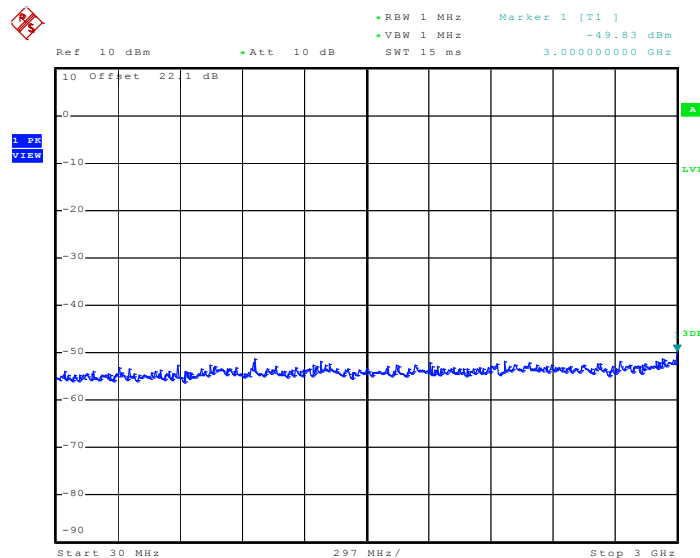
Date: 27.OCT.2010 21:26:54



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	52, 60, 64	Test Engineer :	Alan Liu

Channel	Frequency (MHz)	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
52	5260	3000	-49.83	2.94	-46.89	-27
		10526	-42.09	2.94	-39.15	
		40000	-34.41	2.94	-31.47	
60	5300	3000	-50.05	2.94	-47.11	-27
		5416.8	-42.49	2.94	-39.55	
		40000	-34.73	2.94	-31.79	
64	5320	2263.44	-51.49	2.94	-48.55	-27
		5544	-43.41	2.94	-40.47	
		40000	-32.93	2.94	-29.99	

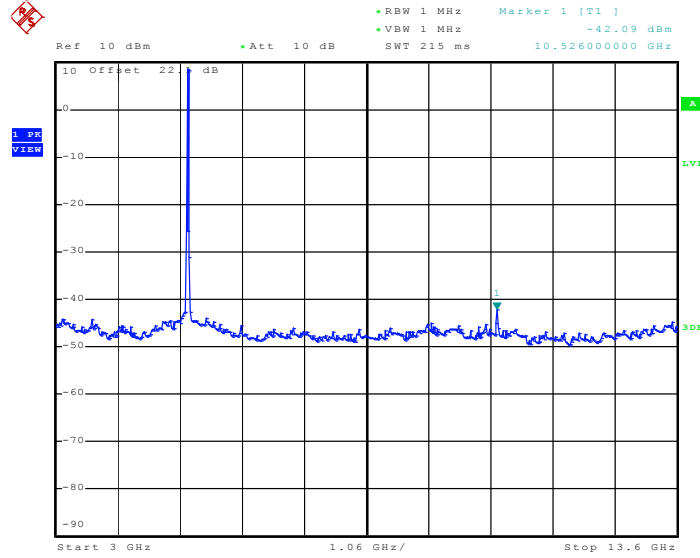
**Mode 4: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz**



Date: 27.OCT.2010 21:27:15

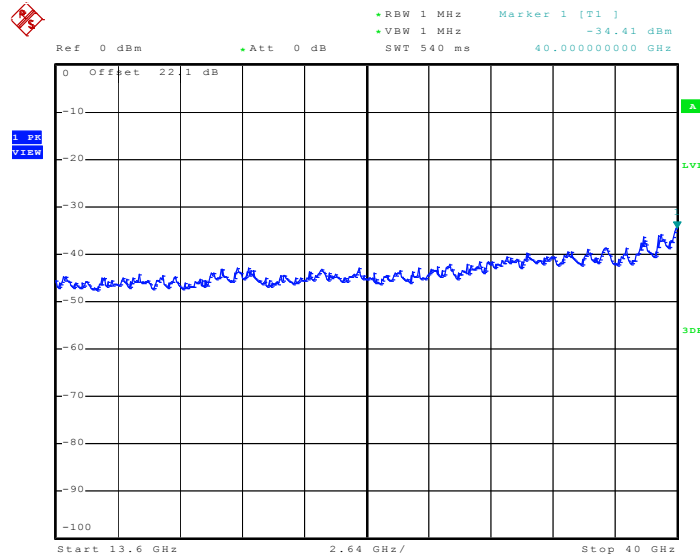


Mode 4: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:27:27

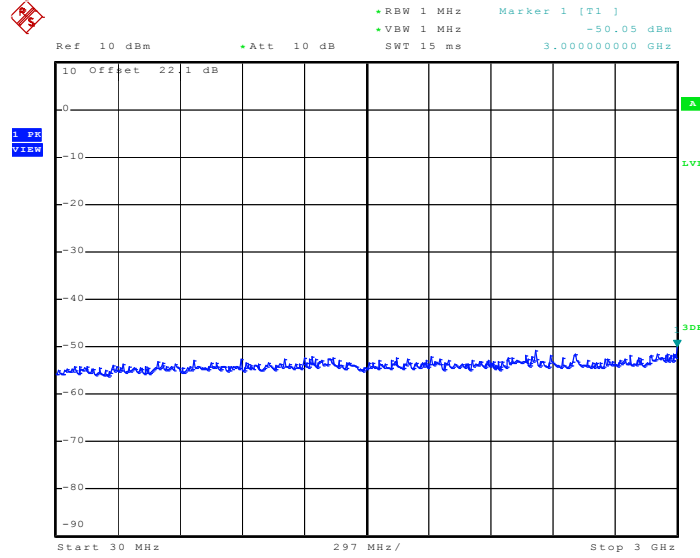
Mode 4: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:27:38

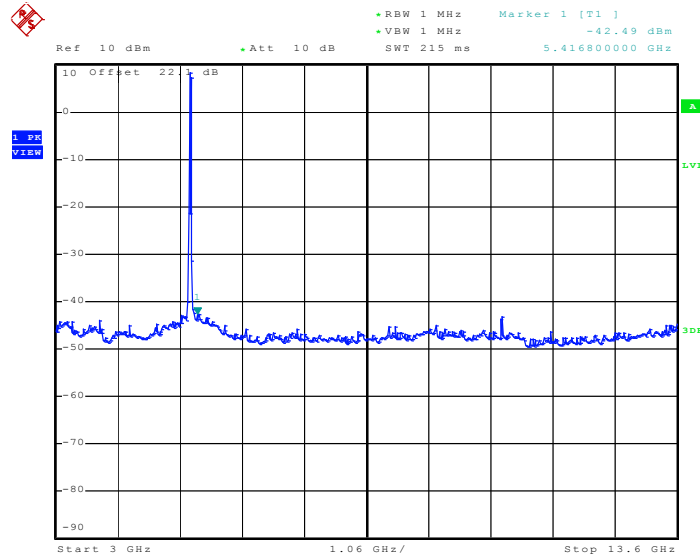


Mode 5: Conducted Spurious Emission Plot between  
30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:28:01

Mode 5: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz

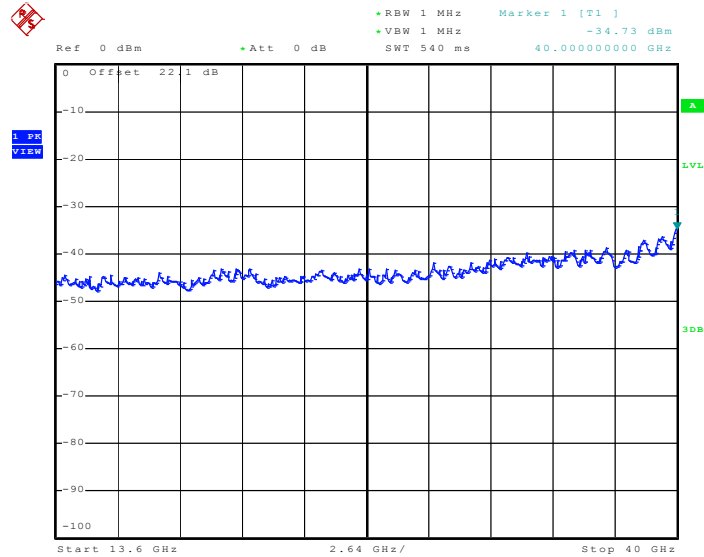


Date: 27.OCT.2010 21:28:13



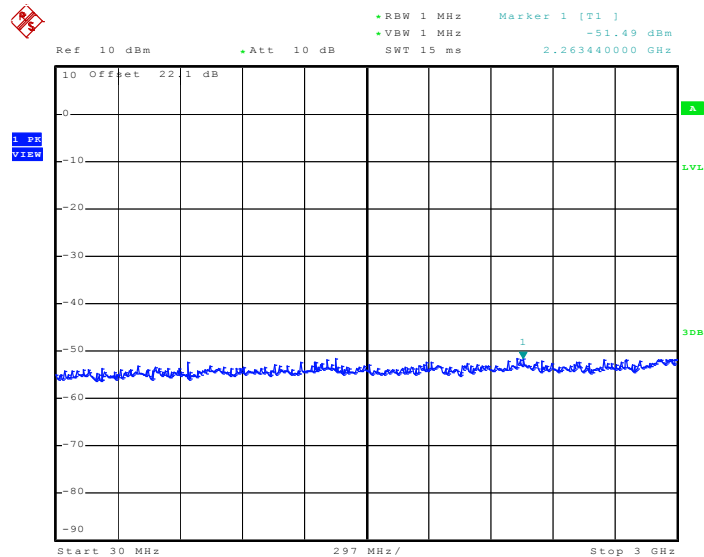


Mode 5: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:28:25

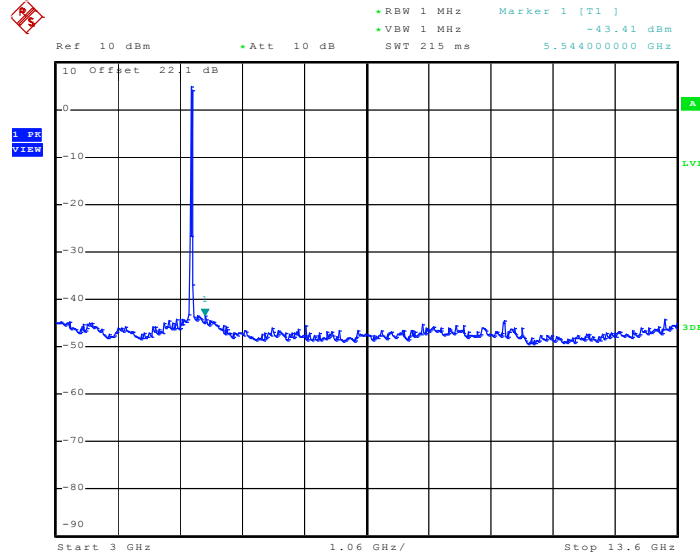
Mode 6: Conducted Spurious Emission Plot between  
30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:28:47

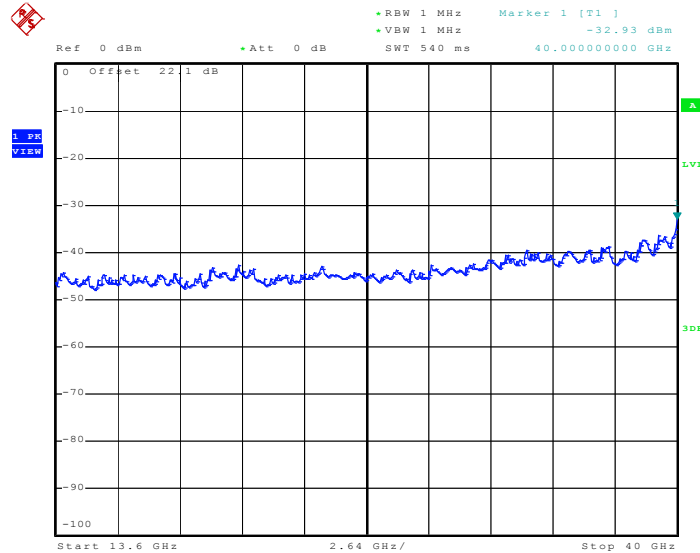


Mode 6: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:28:59

Mode 6: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



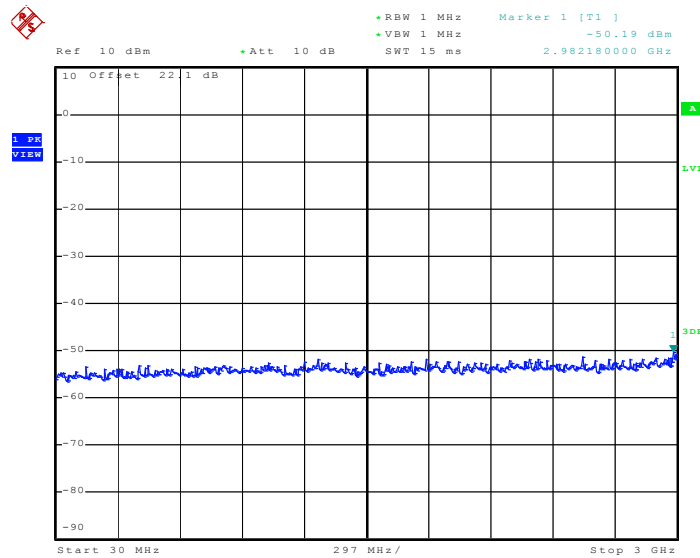
Date: 27.OCT.2010 21:29:11



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	100, 120, 140	Test Engineer :	Alan Liu

Channel	Frequency (MHz)	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
100	5500	2982.18	-50.19	2.94	-47.25	-27
		5353.2	-43.43	2.94	-40.49	
		40000	-33.1	2.94	-30.16	
120	5600	790.32	-51.19	2.94	-48.25	-27
		11204.4	-41.84	2.94	-38.9	
		40000	-33.58	2.94	-30.64	
140	5700	3000	-50.18	2.94	-47.24	-27
		5607.6	-42.18	2.94	-39.24	
		40000	-34.05	2.94	-31.11	

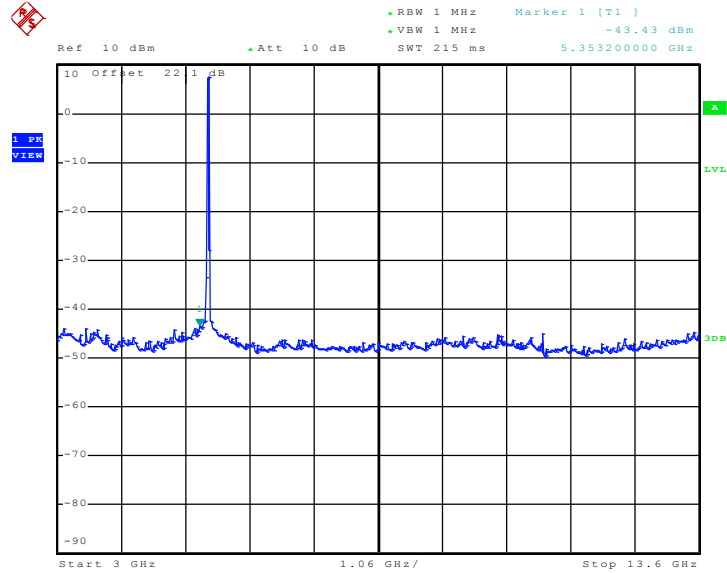
**Mode 7: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz**



Date: 27.OCT.2010 21:29:34

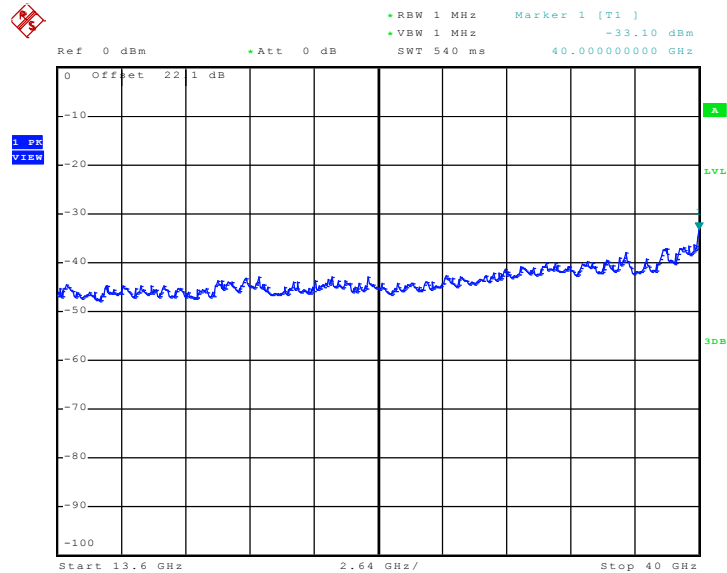


Mode 7: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:29:46

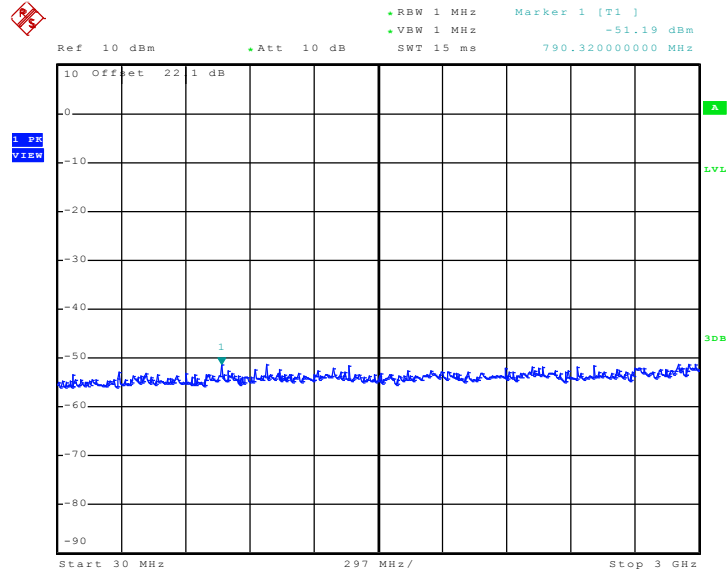
Mode 7: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:29:58

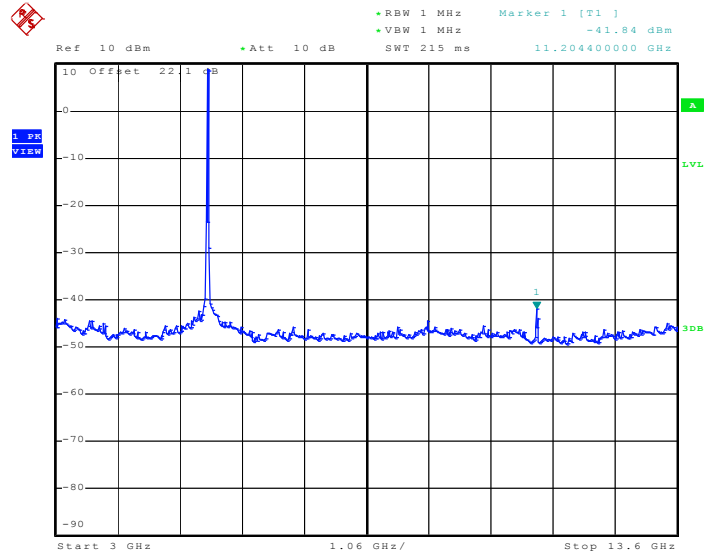


Mode 8: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz



Date: 27.OCT.2010 21:30:22

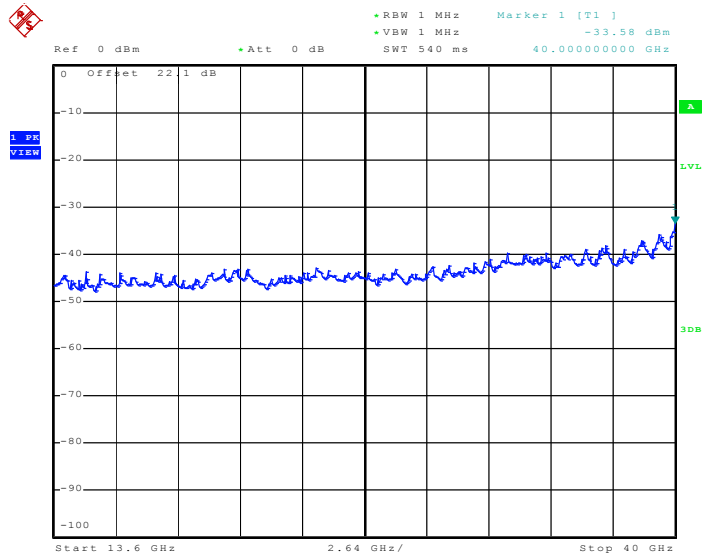
Mode 8: Conducted Spurious Emission Plot between 3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:30:34

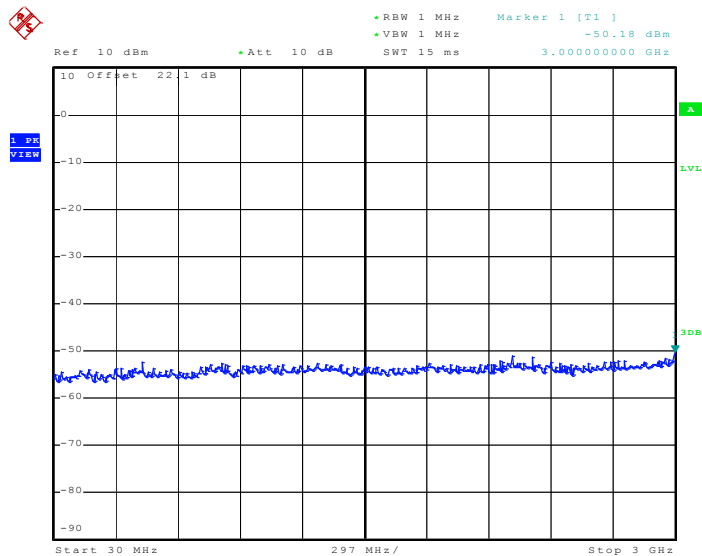


**Mode 8: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz**



Date: 27.OCT.2010 21:30:45

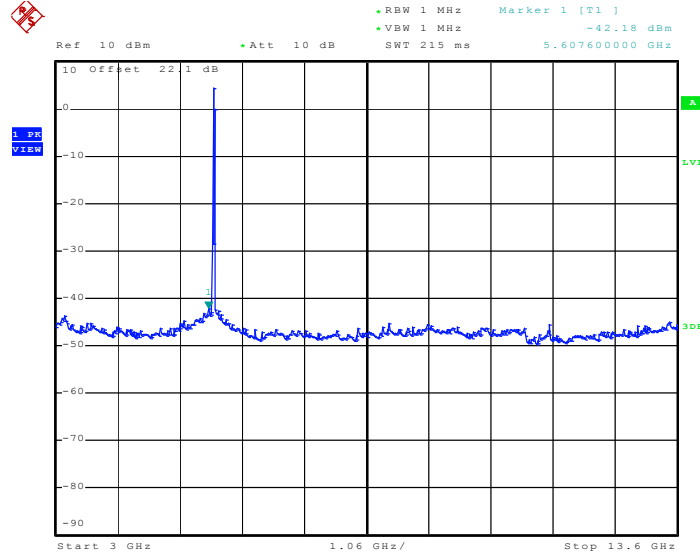
**Mode 9: Conducted Spurious Emission Plot between  
30 MHz ~ 3 GHz**



Date: 27.OCT.2010 21:31:07

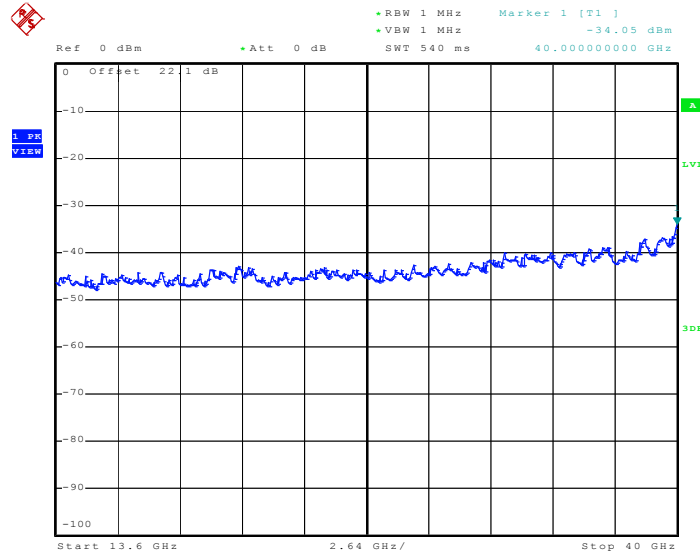


Mode 9: Conducted Spurious Emission Plot between  
3 GHz ~ 13.6 GHz



Date: 27.OCT.2010 21:31:19

Mode 9: Conducted Spurious Emission Plot between  
13.6 GHz ~ 40 GHz



Date: 27.OCT.2010 21:31:31

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

### 3.6.2 Measuring Instruments

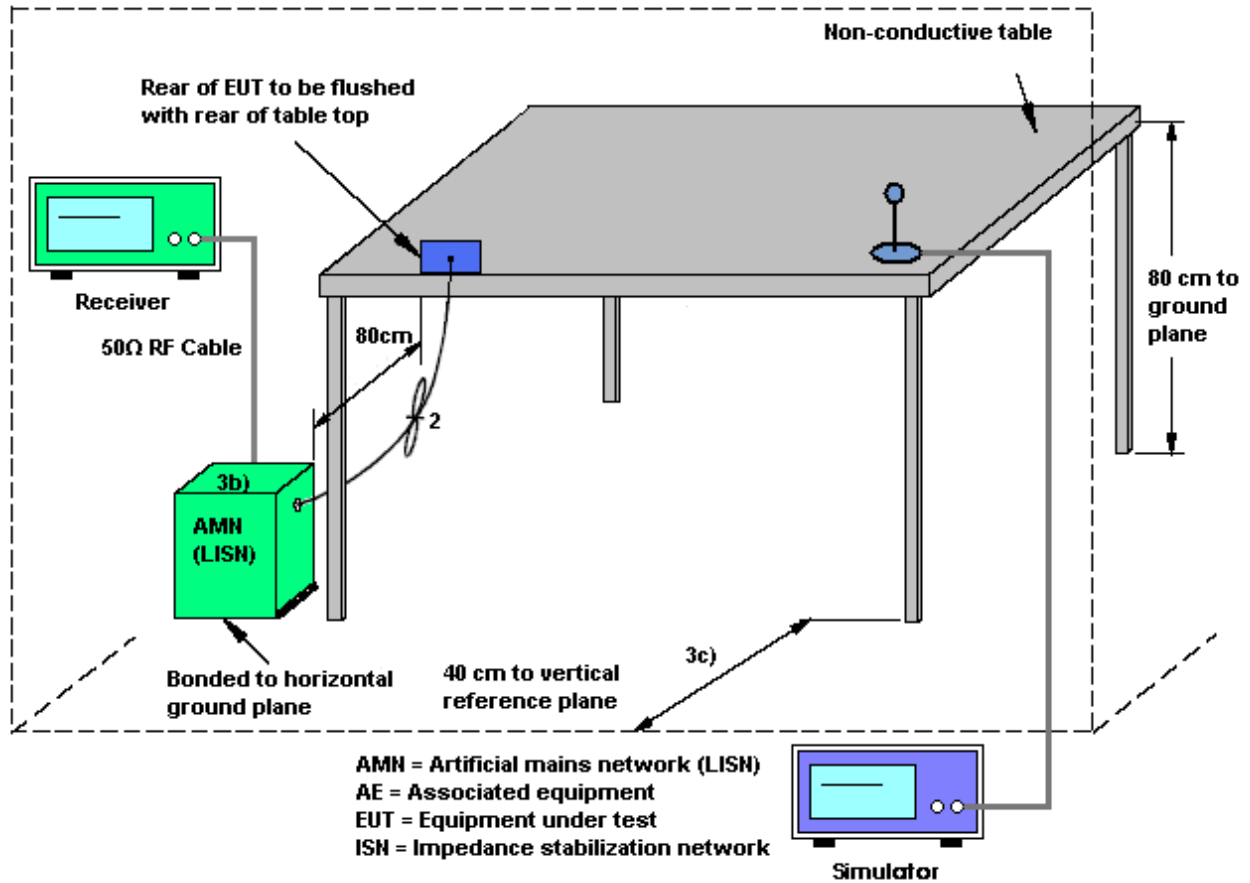
See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

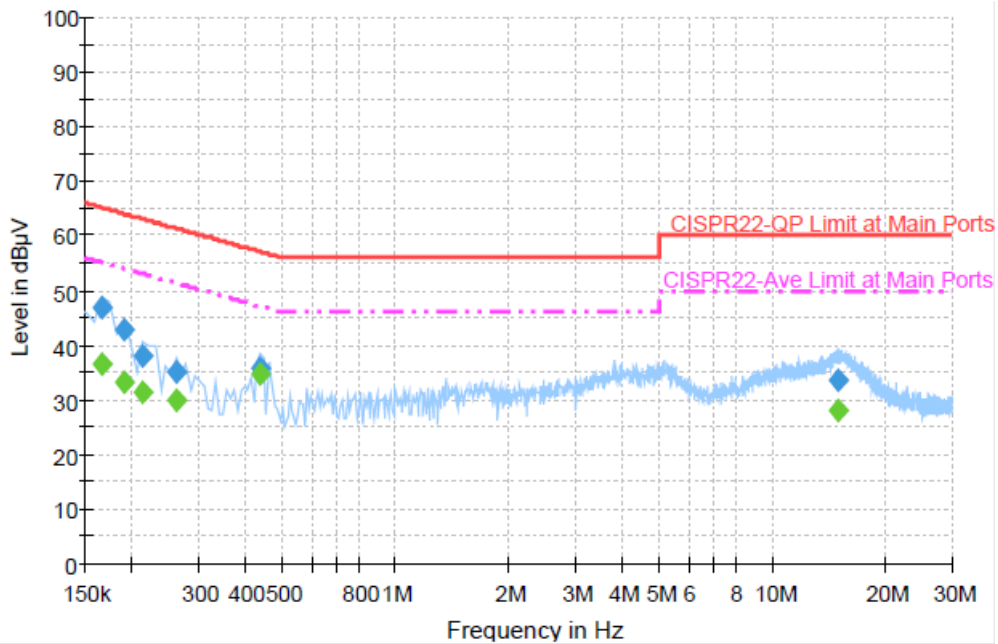


### 3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



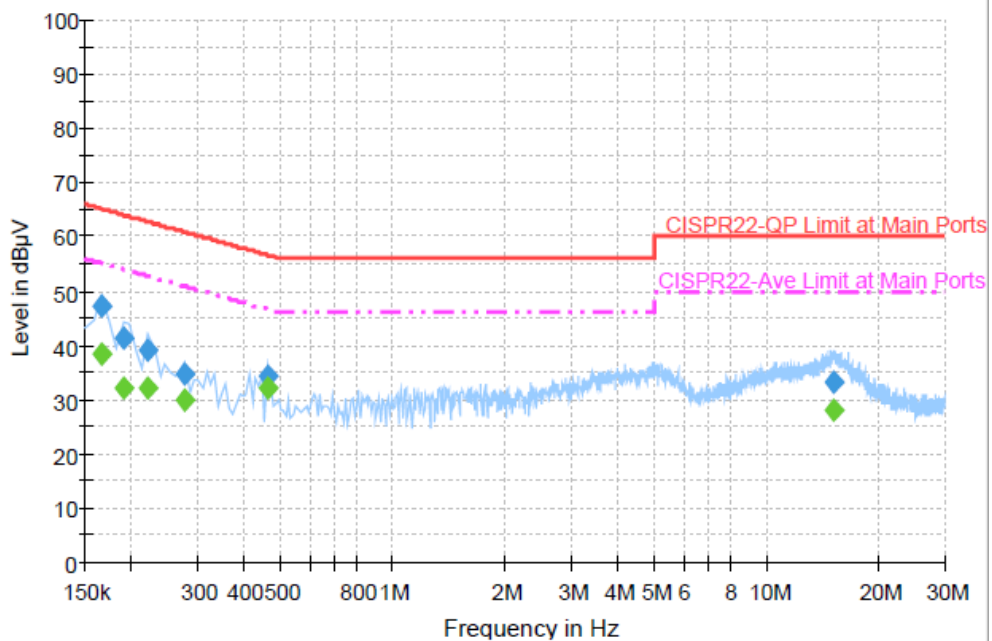
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	46.7	Off	L1	19.3	18.5	65.2
0.190000	42.7	Off	L1	19.4	21.3	64.0
0.214000	38.1	Off	L1	19.3	24.9	63.0
0.262000	35.0	Off	L1	19.3	26.4	61.4
0.438000	35.9	Off	L1	19.4	21.2	57.1
15.030000	33.7	Off	L1	19.8	26.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	36.6	Off	L1	19.3	18.6	55.2
0.190000	33.1	Off	L1	19.4	20.9	54.0
0.214000	31.5	Off	L1	19.3	21.5	53.0
0.262000	30.0	Off	L1	19.3	21.4	51.4
0.438000	34.7	Off	L1	19.4	12.4	47.1
15.030000	27.9	Off	L1	19.8	22.1	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



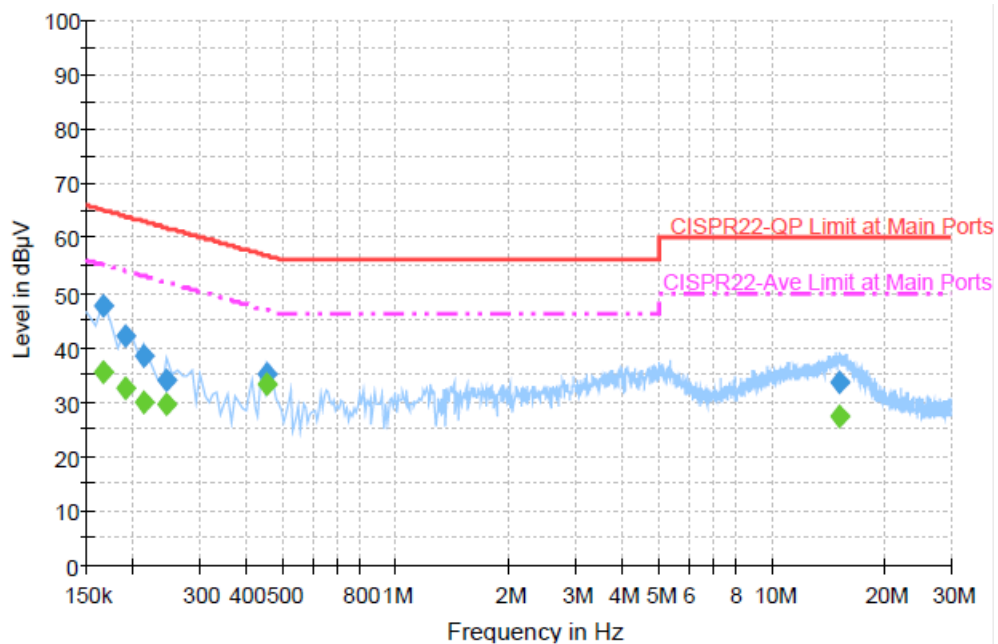
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.4	Off	N	19.3	17.8	65.2
0.190000	41.2	Off	N	19.4	22.8	64.0
0.222000	39.0	Off	N	19.3	23.7	62.7
0.278000	34.8	Off	N	19.3	26.1	60.9
0.462000	34.3	Off	N	19.3	22.4	56.7
15.182000	33.3	Off	N	19.9	26.7	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	38.2	Off	N	19.3	17.0	55.2
0.190000	32.2	Off	N	19.4	21.8	54.0
0.222000	32.1	Off	N	19.3	20.6	52.7
0.278000	30.0	Off	N	19.3	20.9	50.9
0.462000	32.2	Off	N	19.3	14.5	46.7
15.182000	27.9	Off	N	19.9	22.1	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



**Final Result 1**

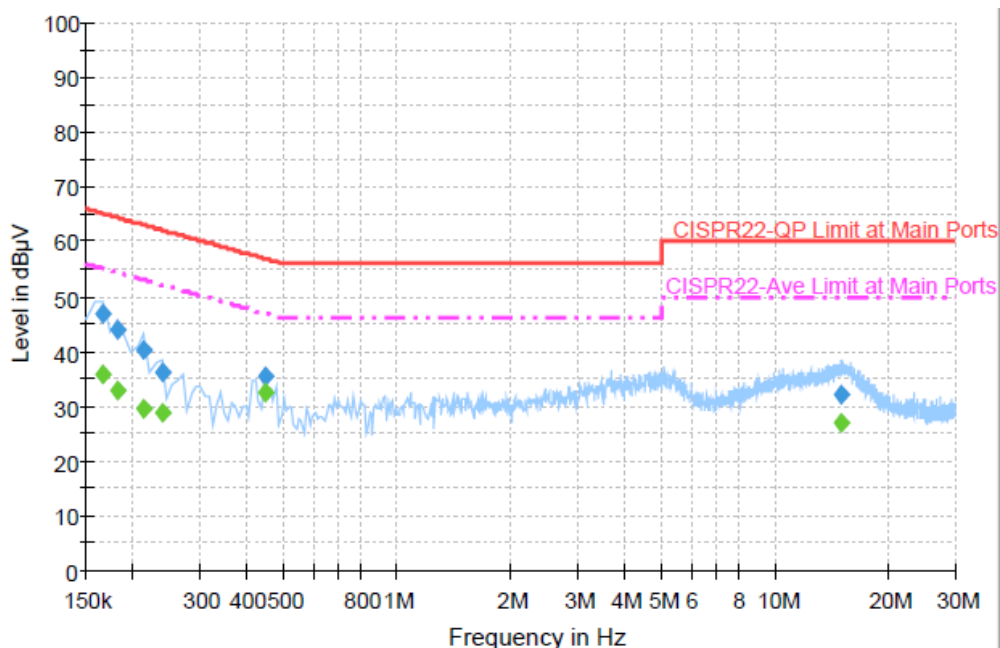
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.5	Off	L1	19.3	17.7	65.2
0.190000	42.0	Off	L1	19.4	22.0	64.0
0.214000	38.2	Off	L1	19.3	24.8	63.0
0.246000	34.1	Off	L1	19.4	27.8	61.9
0.454000	35.2	Off	L1	19.3	21.6	56.8
15.102000	33.5	Off	L1	19.8	26.5	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	35.3	Off	L1	19.3	19.9	55.2
0.190000	32.3	Off	L1	19.4	21.7	54.0
0.214000	30.0	Off	L1	19.3	23.0	53.0
0.246000	29.6	Off	L1	19.4	22.3	51.9
0.454000	33.2	Off	L1	19.3	13.6	46.8
15.102000	27.4	Off	L1	19.8	22.6	50.0



Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

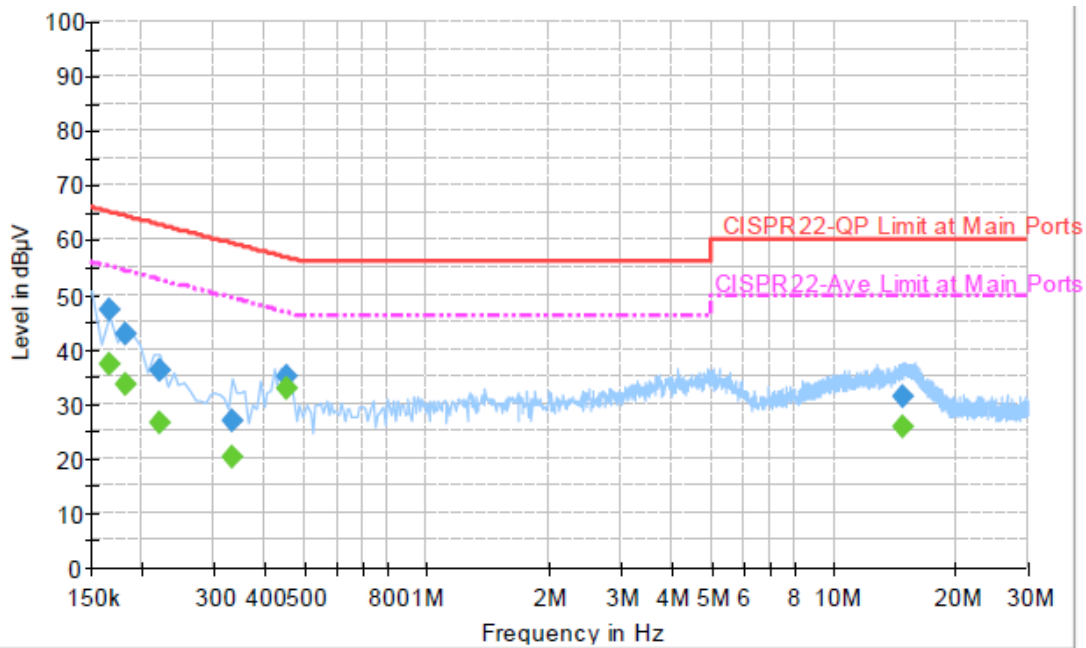
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.0	Off	N	19.3	18.2	65.2
0.182000	43.8	Off	N	19.4	20.6	64.4
0.214000	40.3	Off	N	19.4	22.7	63.0
0.238000	36.1	Off	N	19.4	26.1	62.2
0.446000	35.5	Off	N	19.3	21.4	56.9
14.998000	32.2	Off	N	19.8	27.8	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	35.7	Off	N	19.3	19.5	55.2
0.182000	32.9	Off	N	19.4	21.5	54.4
0.214000	29.6	Off	N	19.4	23.4	53.0
0.238000	28.8	Off	N	19.4	23.4	52.2
0.446000	32.4	Off	N	19.3	14.5	46.9
14.998000	26.8	Off	N	19.8	23.2	50.0



Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

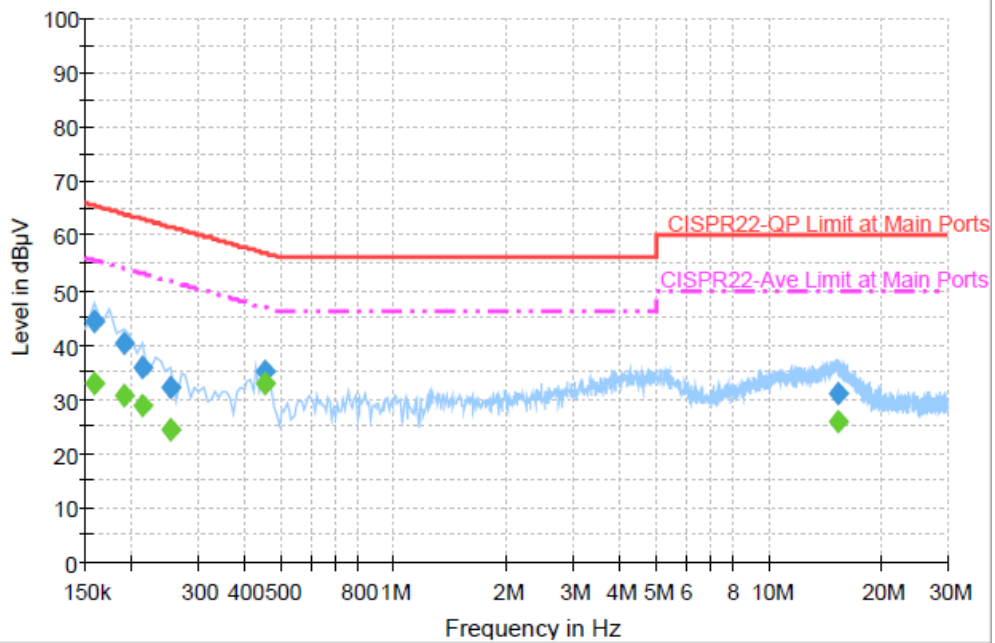
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.2	Off	L1	19.3	18.0	65.2
0.182000	42.9	Off	L1	19.4	21.5	64.4
0.222000	36.3	Off	L1	19.3	26.4	62.7
0.334000	27.1	Off	L1	19.3	32.3	59.4
0.454000	35.0	Off	L1	19.3	21.8	56.8
14.742000	31.4	Off	L1	19.8	28.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	37.1	Off	L1	19.3	18.1	55.2
0.182000	33.7	Off	L1	19.4	20.7	54.4
0.222000	26.4	Off	L1	19.3	26.3	52.7
0.334000	20.4	Off	L1	19.3	31.0	49.4
0.454000	32.8	Off	L1	19.3	14.0	46.8
14.742000	25.9	Off	L1	19.8	24.1	50.0



Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link(5G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	44.2	Off	N	19.4	21.4	65.6
0.190000	40.1	Off	N	19.4	23.9	64.0
0.214000	35.7	Off	N	19.4	27.3	63.0
0.254000	32.0	Off	N	19.4	29.6	61.6
0.454000	35.0	Off	N	19.3	21.8	56.8
15.262000	31.0	Off	N	19.8	29.0	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	33.0	Off	N	19.4	22.6	55.6
0.190000	30.5	Off	N	19.4	23.5	54.0
0.214000	28.9	Off	N	19.4	24.1	53.0
0.254000	24.2	Off	N	19.4	27.4	51.6
0.454000	32.7	Off	N	19.3	14.1	46.8
15.262000	25.7	Off	N	19.8	24.3	50.0

### 3.7 Radiated Emission Measurement

#### 3.7.1 Limit of Radiated Emission

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

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

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

#### 3.7.2 Measuring Instruments

See list of measuring instruments of this test report.



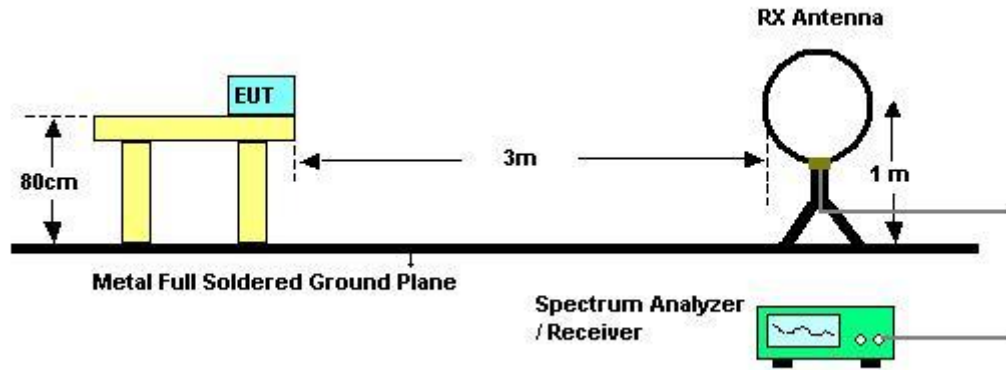


### **3.7.3 Test Procedures**

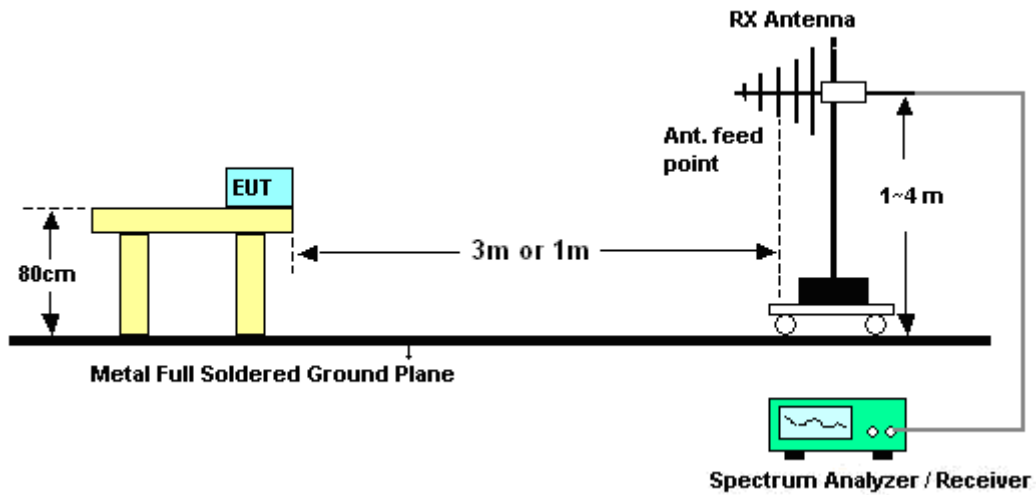
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
6. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
7. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
8. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
9. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





3.7.5 Test Results of Radiated Emissions (9kHz ~ 30MHz)

Temperature	22~23°C	Humidity	50~54%
Test Engineer	Cona Huang		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

**Note:**

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.



3.7.6 Test Result of Radiated Emission (30MHz ~ 25GHz)

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	50~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	5180 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
52.68	28.2	-11.8	40	51.33	7.69	0.73	31.55	100	199	Peak
142.32	25.4	-18.1	43.5	44.58	11.26	1.07	31.51	-	-	Peak
270.03	31.19	-14.81	46	47.67	13.47	1.48	31.43	-	-	Peak
332.9	33.49	-12.51	46	48.55	14.61	1.63	31.3	-	-	Peak
491.8	30.02	-15.98	46	41.1	18.03	1.98	31.09	-	-	Peak
666.8	29.49	-16.51	46	38.15	19.74	2.35	30.75	-	-	Peak
5150	42.53	-11.47	54	35.46	33.92	6.7	33.55	145	59	Average
5150	58.74	-15.26	74	51.67	33.92	6.7	33.55	145	59	Peak
5180	95.61	-	-	88.5	33.95	6.71	33.55	145	59	Average
5180	105.42	-	-	98.31	33.95	6.71	33.55	145	59	Peak
5350	37.98	-16.02	54	30.63	34.08	6.8	33.53	145	59	Average
5350	48.64	-25.36	74	41.29	34.08	6.8	33.53	145	59	Peak
10360	44.13	-24.17	68.3	53.07	37.32	10.31	56.57	100	215	Average
10360	54.98	-33.32	88.3	63.92	37.32	10.31	56.57	100	215	Peak



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5180 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level (dBuV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
43.23	33.97	-6.03	40	53.86	10.93	0.73	31.55	100	177	Peak
53.76	32.89	-7.11	40	56.17	7.53	0.73	31.54	-	-	Peak
161.22	34.55	-8.95	43.5	54.93	9.98	1.14	31.5	-	-	Peak
313.3	29.6	-16.4	46	45.24	14.09	1.55	31.28	-	-	Peak
614.3	27.69	-18.31	46	36.94	19.39	2.2	30.84	-	-	Peak
664	31.72	-14.28	46	40.46	19.72	2.3	30.76	-	-	Peak
5150	42.8	-11.2	54	35.73	33.92	6.7	33.55	100	126	Average
5150	55.56	-18.44	74	48.49	33.92	6.7	33.55	100	126	Peak
5180	91.5	-	-	84.39	33.95	6.71	33.55	100	126	Average
5180	101.16	-	-	94.05	33.95	6.71	33.55	100	126	Peak
5350	38.77	-15.23	54	31.42	34.08	6.8	33.53	100	126	Average
5350	49.74	-24.26	74	42.39	34.08	6.8	33.53	100	126	Peak
10360	47.92	-20.38	68.3	56.86	37.32	10.31	56.57	143	161	Average
10360	58.77	-29.53	88.3	67.71	37.32	10.31	56.57	143	161	Peak



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5220 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
52.95	31.41	-8.59	40	54.69	7.53	0.73	31.54	100	147	Peak
143.94	30.49	-13.01	43.5	49.79	11.07	1.14	31.51	-	-	Peak
274.89	31.99	-14.01	46	48.55	13.36	1.48	31.4	-	-	Peak
318.2	34.64	-11.36	46	50.01	14.28	1.63	31.28	-	-	Peak
491.8	31.46	-14.54	46	42.54	18.03	1.98	31.09	-	-	Peak
666.8	31.34	-14.66	46	40	19.74	2.35	30.75	-	-	Peak
5150	40.9	-13.1	54	33.83	33.92	6.7	33.55	145	59	Average
5150	51.9	-22.1	74	44.83	33.92	6.7	33.55	145	59	Peak
5220	95.11	-	-	87.94	33.97	6.74	33.54	145	59	Average
5220	105.23	-	-	98.06	33.97	6.74	33.54	145	59	Peak
5350	38.11	-15.89	54	30.76	34.08	6.8	33.53	145	59	Average
5350	49.08	-24.92	74	41.73	34.08	6.8	33.53	145	59	Peak
10440	44.05	-24.25	68.3	52.98	37.36	10.22	56.51	148	168	Average
10440	56.31	-31.99	88.3	65.24	37.36	10.22	56.51	148	168	Peak
15660	45.11	-8.89	54	46.38	40.2	12.28	53.75	116	314	Average
15660	57.37	-16.63	74	58.64	40.2	12.28	53.75	116	314	Peak



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5220 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.96	33.65	-6.35	40	53.12	11.34	0.73	31.54	100	56	Peak
54.57	33.18	-6.82	40	56.62	7.36	0.73	31.53	-	-	Peak
164.19	35.07	-8.43	43.5	55.56	9.89	1.14	31.52	-	-	Peak
332.2	30.29	-15.71	46	45.37	14.59	1.63	31.3	-	-	Peak
562.5	27.87	-18.13	46	37.35	19.3	2.15	30.93	-	-	Peak
664	30.93	-15.07	46	39.67	19.72	2.3	30.76	-	-	Peak
5150	39.41	-14.59	54	32.34	33.92	6.7	33.55	114	126	Average
5150	50.48	-23.52	74	43.41	33.92	6.7	33.55	114	126	Peak
5220	91.3	-	-	84.13	33.97	6.74	33.54	114	126	Average
5220	101.24	-	-	94.07	33.97	6.74	33.54	114	126	Peak
5350	39.42	-14.58	54	32.07	34.08	6.8	33.53	114	126	Average
5350	50.46	-23.54	74	43.11	34.08	6.8	33.53	114	126	Peak
10440	45.82	-22.48	68.3	54.75	37.36	10.22	56.51	125	261	Average
10440	58.08	-30.22	88.3	67.01	37.36	10.22	56.51	125	261	Peak
15660	47.79	-6.21	54	49.06	40.2	12.28	53.75	126	255	Average
15660	60.05	-13.95	74	61.32	40.2	12.28	53.75	126	255	Peak



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5240 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
52.95	32.75	-7.25	40	56.03	7.53	0.73	31.54	100	180	Peak
144.75	29.07	-14.43	43.5	48.46	10.98	1.14	31.51	-	-	Peak
271.38	31.65	-14.35	46	48.17	13.42	1.48	31.42	-	-	Peak
331.5	33.13	-12.87	46	48.23	14.57	1.63	31.3	-	-	Peak
491.8	38	-8	46	49.08	18.03	1.98	31.09	-	-	Peak
666.8	32.35	-13.65	46	41.01	19.74	2.35	30.75	-	-	Peak
5150	41.27	-12.73	54	34.2	33.92	6.7	33.55	192	69	Average
5150	51.49	-22.51	74	44.42	33.92	6.7	33.55	192	69	Peak
5240	95.51	-	-	88.31	33.99	6.75	33.54	192	69	Average
5240	105.3	-	-	98.1	33.99	6.75	33.54	192	69	Peak
5350	39.55	-14.45	54	32.2	34.08	6.8	33.53	192	69	Average
5350	49.88	-24.12	74	42.53	34.08	6.8	33.53	192	69	Peak
10480	44.32	-23.98	68.3	53.23	37.39	10.17	56.47	100	149	Average
10480	53.08	-35.22	88.3	61.99	37.39	10.17	56.47	100	149	Peak





<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5240 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.96	33.21	-6.79	40	52.68	11.34	0.73	31.54	106	37	Peak
54.3	33.14	-6.86	40	56.58	7.36	0.73	31.53	-	-	Peak
166.89	35.27	-8.23	43.5	55.85	9.81	1.14	31.53	-	-	Peak
332.9	30.19	-15.81	46	45.25	14.61	1.63	31.3	-	-	Peak
589.1	28.42	-17.58	46	37.83	19.3	2.18	30.89	-	-	Peak
664	31.87	-14.13	46	40.61	19.72	2.3	30.76	-	-	Peak
5150	38.24	-15.76	54	31.17	33.92	6.7	33.55	100	358	Average
5150	49.78	-24.22	74	42.71	33.92	6.7	33.55	100	358	Peak
5240	91.08	-	-	83.88	33.99	6.75	33.54	100	358	Average
5240	101.04	-	-	93.84	33.99	6.75	33.54	100	358	Peak
5350	38.54	-15.46	54	31.19	34.08	6.8	33.53	100	358	Average
5350	49.66	-24.34	74	42.31	34.08	6.8	33.53	100	358	Peak
10480	48.91	-19.39	68.3	57.82	37.39	10.17	56.47	117	270	Average
10480	57.67	-30.63	88.3	66.58	37.39	10.17	56.47	117	270	Peak



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	52	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5260 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
53.49	31.51	-8.49	40	54.79	7.53	0.73	31.54	100	311	Peak
108.03	29.22	-14.28	43.5	47.64	12.16	0.95	31.53	-	-	Peak
143.94	28.88	-14.62	43.5	48.18	11.07	1.14	31.51	-	-	Peak
331.5	33.93	-12.07	46	49.03	14.57	1.63	31.3	-	-	Peak
503.7	30.01	-15.99	46	40.85	18.19	2.04	31.07	-	-	Peak
664	31.7	-14.3	46	40.44	19.72	2.3	30.76	-	-	Peak
5150	39.2	-14.8	54	32.13	33.92	6.7	33.55	172	62	Average
5150	49.6	-24.4	74	42.53	33.92	6.7	33.55	172	62	Peak
5260	94.67	-	-	87.45	34.01	6.75	33.54	172	62	Average
5260	104.59	-	-	97.37	34.01	6.75	33.54	172	62	Peak
5350	39.72	-14.28	54	32.37	34.08	6.8	33.53	172	62	Average
5350	50.67	-23.33	74	43.32	34.08	6.8	33.53	172	62	Peak
10520	42.68	-25.62	68.3	51.51	37.41	10.18	56.42	122	187	Average
10520	54.44	-33.86	88.3	63.27	37.41	10.18	56.42	122	187	Peak
15780	44.83	-9.17	54	46.29	40.2	12.2	53.86	109	143	Average
15780	56.35	-17.65	74	57.81	40.2	12.2	53.86	109	143	Peak



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	52	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5260 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.69	33.45	-6.55	40	52.92	11.34	0.73	31.54	102	109	Peak
54.3	32.87	-7.13	40	56.31	7.36	0.73	31.53	-	-	Peak
163.38	34.94	-8.56	43.5	55.4	9.92	1.14	31.52	-	-	Peak
332.9	31.35	-14.65	46	46.41	14.61	1.63	31.3	-	-	Peak
491.8	30.55	-15.45	46	41.63	18.03	1.98	31.09	-	-	Peak
666.8	32.01	-13.99	46	40.67	19.74	2.35	30.75	-	-	Peak
5150	37.8	-16.2	54	30.73	33.92	6.7	33.55	100	144	Average
5150	49.27	-24.73	74	42.2	33.92	6.7	33.55	100	144	Peak
5260	90.93	-	-	83.71	34.01	6.75	33.54	100	144	Average
5260	100.84	-	-	93.62	34.01	6.75	33.54	100	144	Peak
5350	40.09	-13.91	54	32.74	34.08	6.8	33.53	100	144	Average
5350	51.4	-22.6	74	44.05	34.08	6.8	33.53	100	144	Peak
10520	45.9	-22.4	68.3	54.73	37.41	10.18	56.42	133	244	Average
10520	57.48	-30.82	88.3	66.31	37.41	10.18	56.42	133	244	Peak
15780	47.95	-6.05	54	49.41	40.2	12.2	53.86	125	272	Average
15780	59.53	-14.47	74	60.99	40.2	12.2	53.86	125	272	Peak



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	60	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5300 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
53.22	31	-9	40	54.28	7.53	0.73	31.54	100	135	Peak
144.75	28.91	-14.59	43.5	48.3	10.98	1.14	31.51	-	-	Peak
283.26	32.09	-13.91	46	48.69	13.28	1.48	31.36	-	-	Peak
331.5	34.15	-11.85	46	49.25	14.57	1.63	31.3	-	-	Peak
491.8	33.59	-12.41	46	44.67	18.03	1.98	31.09	-	-	Peak
664	32.4	-13.6	46	41.14	19.72	2.3	30.76	-	-	Peak
5150	46.63	-7.37	54	39.56	33.92	6.7	33.55	166	111	Average
5150	59.92	-14.08	74	52.85	33.92	6.7	33.55	166	111	Peak
5300	102.42	-	-	95.14	34.04	6.78	33.54	166	111	Average
5300	112.6	-	-	105.32	34.04	6.78	33.54	166	111	Peak
5350	46.96	-7.04	54	39.61	34.08	6.8	33.53	166	111	Average
5350	61.07	-12.93	74	53.72	34.08	6.8	33.53	166	111	Peak
10600	40.54	-13.46	54	49.14	37.46	10.22	56.28	132	118	Average
10600	52.93	-21.07	74	61.53	37.46	10.22	56.28	132	118	Peak
15900	44.45	-9.55	54	46.1	40.2	12.12	53.97	107	294	Average
15900	56.84	-17.16	74	58.49	40.2	12.12	53.97	107	294	Peak



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	60	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5300 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.42	33.48	-6.52	40	53.1	11.34	0.58	31.54	-	-	Peak
54.03	33.57	-6.43	40	57.01	7.36	0.73	31.53	100	123	Peak
163.92	35.21	-8.29	43.5	55.67	9.92	1.14	31.52	-	-	Peak
331.5	30.14	-15.86	46	45.24	14.57	1.63	31.3	-	-	Peak
566.7	28.76	-17.24	46	38.23	19.3	2.15	30.92	-	-	Peak
666.8	31.22	-14.78	46	39.88	19.74	2.35	30.75	-	-	Peak
5150	43.98	-10.02	54	36.91	33.92	6.7	33.55	116	154	Average
5150	58.52	-15.48	74	51.45	33.92	6.7	33.55	116	154	Peak
5300	98.94	-	-	91.66	34.04	6.78	33.54	116	154	Average
5300	108.89	-	-	101.61	34.04	6.78	33.54	116	154	Peak
5350	46	-8	54	38.65	34.08	6.8	33.53	116	154	Average
5350	60.14	-13.86	74	52.79	34.08	6.8	33.53	116	154	Peak
10600	45.96	-8.04	54	54.56	37.46	10.22	56.28	100	326	Average
10600	58.35	-15.65	74	66.95	37.46	10.22	56.28	100	326	Peak
15900	46.95	-7.05	54	48.6	40.2	12.12	53.97	104	270	Average
15900	59.34	-14.66	74	60.99	40.2	12.12	53.97	104	270	Peak



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	64	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5320 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
53.22	33.33	-6.67	40	56.61	7.53	0.73	31.54	100	57	Peak
142.32	28.89	-14.61	43.5	48.07	11.26	1.07	31.51	-	-	Peak
297.03	32.67	-13.33	46	48.88	13.53	1.55	31.29	-	-	Peak
332.9	34.17	-11.83	46	49.23	14.61	1.63	31.3	-	-	Peak
503.7	31.89	-14.11	46	42.73	18.19	2.04	31.07	-	-	Peak
666.1	32.54	-13.46	46	41.25	19.74	2.3	30.75	-	-	Peak
5150	45.32	-8.68	54	38.25	33.92	6.7	33.55	164	112	Average
5150	60.49	-13.51	74	53.42	33.92	6.7	33.55	164	112	Peak
5320	99.43	-	-	92.13	34.05	6.79	33.54	164	112	Average
5320	109.51	-	-	102.21	34.05	6.79	33.54	164	112	Peak
5350	48.46	-5.54	54	41.11	34.08	6.8	33.53	164	112	Average
5350	67.95	-6.05	74	60.6	34.08	6.8	33.53	164	112	Peak
10640	40.93	-13.07	54	49.42	37.48	10.25	56.22	141	174	Average
10640	52.1	-21.9	74	60.59	37.48	10.25	56.22	141	174	Peak



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	64	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5320 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
43.23	33.33	-6.67	40	53.22	10.93	0.73	31.55	100	185	Peak
54.03	33.08	-6.92	40	56.52	7.36	0.73	31.53	-	-	Peak
165	34	-9.5	43.5	54.51	9.87	1.14	31.52	-	-	Peak
332.9	31.2	-14.8	46	46.26	14.61	1.63	31.3	-	-	Peak
566.7	28.22	-17.78	46	37.69	19.3	2.15	30.92	-	-	Peak
664	32.32	-13.68	46	41.06	19.72	2.3	30.76	-	-	Peak
5150	43.94	-10.06	54	36.87	33.92	6.7	33.55	119	171	Average
5150	59.48	-14.52	74	52.41	33.92	6.7	33.55	119	171	Peak
5320	95.79	-	-	88.49	34.05	6.79	33.54	119	171	Average
5320	105.77	-	-	98.47	34.05	6.79	33.54	119	171	Peak
5350	46.13	-7.87	54	38.78	34.08	6.8	33.53	119	171	Average
5350	61.43	-12.57	74	54.08	34.08	6.8	33.53	119	171	Peak
10640	45.87	-8.13	54	54.36	37.48	10.25	56.22	128	224	Average
10640	56.95	-17.05	74	65.44	37.48	10.25	56.22	128	224	Peak



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	100	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5500 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
52.41	26.83	-13.17	40	49.96	7.69	0.73	31.55	-	-	Peak
140.43	25.15	-18.35	43.5	44.14	11.45	1.07	31.51	-	-	Peak
276.51	32.09	-13.91	46	48.68	13.32	1.48	31.39	-	-	Peak
324.5	36.81	-9.19	46	52.04	14.43	1.63	31.29	105	244	Peak
503.7	29.14	-16.86	46	39.98	18.19	2.04	31.07	-	-	Peak
664	30.18	-15.82	46	38.92	19.72	2.3	30.76	-	-	Peak
5470	46.34	-21.96	68.3	38.82	34.17	6.87	33.52	163	139	Average
5470	62.19	-26.11	88.3	54.67	34.17	6.87	33.52	163	139	Peak
5500	95.01	-	-	87.45	34.2	6.88	33.52	163	139	Average
5500	105.9	-	-	98.34	34.2	6.88	33.52	163	139	Peak
5725	44.39	-23.91	68.3	36.45	34.51	7.01	33.58	163	139	Average
5725	59.64	-28.66	88.3	51.7	34.51	7.01	33.58	163	139	Peak
11000	42.25	-11.75	54	49.73	37.7	10.44	55.62	120	323	Average
11000	54.83	-19.17	74	62.31	37.7	10.44	55.62	120	323	Peak





<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	100	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5500 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
41.61	33.36	-6.64	40	52.56	11.75	0.58	31.53	-	-	Peak
54.03	33.72	-6.28	40	57.16	7.36	0.73	31.53	100	106	Peak
170.67	34.28	-9.22	43.5	54.87	9.73	1.23	31.55	-	-	Peak
321	28.94	-17.06	46	44.23	14.37	1.63	31.29	-	-	Peak
566	29	-17	46	38.47	19.3	2.15	30.92	-	-	Peak
666.8	30.46	-15.54	46	39.12	19.74	2.35	30.75	-	-	Peak
5470	46.6	-21.7	68.3	39.08	34.17	6.87	33.52	111	159	Average
5470	60.2	-28.1	88.3	52.68	34.17	6.87	33.52	111	159	Peak
5500	91.13	-	-	83.57	34.2	6.88	33.52	111	159	Average
5500	101.98	-	-	94.42	34.2	6.88	33.52	111	159	Peak
5725	44.34	-23.96	68.3	36.4	34.51	7.01	33.58	111	159	Average
5725	59.73	-28.57	88.3	51.79	34.51	7.01	33.58	111	159	Peak
11000	45.49	-8.51	54	52.97	37.7	10.44	55.62	100	305	Average
11000	54.83	-19.17	74	62.31	37.7	10.44	55.62	100	305	Peak



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	120	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5600 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
53.49	27.72	-12.28	40	51	7.53	0.73	31.54	-	-	Peak
142.86	25.99	-17.51	43.5	45.2	11.16	1.14	31.51	-	-	Peak
287.85	32.1	-13.9	46	48.58	13.37	1.48	31.33	-	-	Peak
332.9	33.77	-12.23	46	48.83	14.61	1.63	31.3	102	153	Peak
491.8	31.98	-14.02	46	43.06	18.03	1.98	31.09	-	-	Peak
664	28.9	-17.1	46	37.64	19.72	2.3	30.76	-	-	Peak
5470	45	-23.3	68.3	37.48	34.17	6.87	33.52	157	119	Average
5470	59.5	-28.8	88.3	51.98	34.17	6.87	33.52	157	119	Peak
5600	98.57	-	-	90.84	34.34	6.94	33.55	157	119	Average
5600	108.58	-	-	100.85	34.34	6.94	33.55	157	119	Peak
5725	45.54	-22.76	68.3	37.6	34.51	7.01	33.58	157	119	Average
5725	59.43	-28.87	88.3	51.49	34.51	7.01	33.58	157	119	Peak
11200	47.32	-6.68	54	54.66	37.86	10.46	55.66	124	141	Average
11200	54.98	-19.02	74	62.32	37.86	10.46	55.66	124	141	Peak



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	120	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5600 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.69	32.32	-7.68	40	51.79	11.34	0.73	31.54	-	-	Peak
52.95	32.48	-7.52	40	55.76	7.53	0.73	31.54	100	79	Peak
170.67	34.65	-8.85	43.5	55.24	9.73	1.23	31.55	-	-	Peak
320.3	28.59	-17.41	46	43.9	14.35	1.63	31.29	-	-	Peak
618.5	28.5	-17.5	46	37.66	19.42	2.25	30.83	-	-	Peak
664	30.61	-15.39	46	39.35	19.72	2.3	30.76	-	-	Peak
5470	44.29	-24.01	68.3	36.77	34.17	6.87	33.52	113	170	Average
5470	59.33	-28.97	88.3	51.81	34.17	6.87	33.52	113	170	Peak
5600	94.1	-	-	86.37	34.34	6.94	33.55	113	170	Average
5600	104.11	-	-	96.38	34.34	6.94	33.55	113	170	Peak
5725	45.55	-22.75	68.3	37.61	34.51	7.01	33.58	113	170	Average
5725	60.04	-28.26	88.3	52.1	34.51	7.01	33.58	113	170	Peak
11200	49.45	-4.55	54	56.79	37.86	10.46	55.66	129	256	Average
11200	58.62	-15.38	74	65.96	37.86	10.46	55.66	129	256	Peak



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	140	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5700 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
53.49	26.6	-13.4	40	49.88	7.53	0.73	31.54	-	-	Peak
142.32	25.6	-17.9	43.5	44.78	11.26	1.07	31.51	-	-	Peak
274.62	33.4	-12.6	46	49.96	13.36	1.48	31.4	-	-	Peak
331.5	33.78	-12.22	46	48.88	14.57	1.63	31.3	100	167	Peak
491.8	30.66	-15.34	46	41.74	18.03	1.98	31.09	-	-	Peak
666.8	29.72	-16.28	46	38.38	19.74	2.35	30.75	-	-	Peak
5470	43.88	-24.42	68.3	36.36	34.17	6.87	33.52	158	132	Average
5470	58.33	-29.97	88.3	50.81	34.17	6.87	33.52	158	132	Peak
5700	94.63	-	-	86.74	34.47	7	33.58	158	132	Average
5700	104.44	-	-	96.55	34.47	7	33.58	158	132	Peak
5725	45.59	-22.71	68.3	37.65	34.51	7.01	33.58	158	132	Average
5725	59.68	-28.62	88.3	51.74	34.51	7.01	33.58	158	132	Peak
11400	38.41	-15.59	54	45.62	38.02	10.47	55.7	100	321	Average
11400	49.88	-24.12	74	57.09	38.02	10.47	55.7	100	321	Peak



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	140	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5700 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
41.88	33.18	-6.82	40	52.38	11.75	0.58	31.53	-	-	Peak
53.49	33.52	-6.48	40	56.8	7.53	0.73	31.54	100	59	Peak
170.67	33.73	-9.77	43.5	54.32	9.73	1.23	31.55	-	-	Peak
308.4	30.37	-15.63	46	46.19	13.91	1.55	31.28	-	-	Peak
491.8	25.31	-20.69	46	36.39	18.03	1.98	31.09	-	-	Peak
666.8	32.37	-13.63	46	41.03	19.74	2.35	30.75	-	-	Peak
5470	43.17	-25.13	68.3	35.65	34.17	6.87	33.52	145	130	Average
5470	57.91	-30.39	88.3	50.39	34.17	6.87	33.52	145	130	Peak
5700	90.5	-	-	82.61	34.47	7	33.58	145	130	Average
5700	100.31	-	-	92.42	34.47	7	33.58	145	130	Peak
5725	45.23	-23.07	68.3	37.29	34.51	7.01	33.58	145	130	Average
5725	59.31	-28.99	88.3	51.37	34.51	7.01	33.58	145	130	Peak
11400	44.47	-9.53	54	51.68	38.02	10.47	55.7	124	263	Average
11400	53.69	-20.31	74	60.9	38.02	10.47	55.7	124	263	Peak



<b>Test Mode :</b>	Mode 10	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	64	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5320 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
52.68	28.75	-11.25	40	51.88	7.69	0.73	31.55	100	254	Peak
107.76	26.3	-17.2	43.5	44.72	12.16	0.95	31.53	-	-	Peak
292.98	32.53	-13.47	46	48.83	13.46	1.55	31.31	-	-	Peak
331.5	34.35	-11.65	46	49.45	14.57	1.63	31.3	-	-	Peak
503.7	33.47	-12.53	46	44.31	18.19	2.04	31.07	-	-	Peak
666.8	31.95	-14.05	46	40.61	19.74	2.35	30.75	-	-	Peak
5150	41.66	-12.34	54	34.59	33.92	6.7	33.55	100	26	Average
5150	53.01	-20.99	74	45.94	33.92	6.7	33.55	100	26	Peak
5320	98.8	-	-	91.5	34.05	6.79	33.54	100	26	Average
5320	108.76	-	-	101.46	34.05	6.79	33.54	100	26	Peak
5350	48.64	-5.36	54	41.29	34.08	6.8	33.53	100	26	Average
5350	66.93	-7.07	74	59.58	34.08	6.8	33.53	100	26	Peak
10640	40.97	-13.03	54	49.46	37.48	10.25	56.22	143	267	Average
10640	52.05	-21.95	74	60.54	37.48	10.25	56.22	143	267	Peak



<b>Test Mode :</b>	Mode 10	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	64	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5320 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
41.34	33.37	-6.63	40	52.57	11.75	0.58	31.53	-	-	Peak
54.3	33.99	-6.01	40	57.43	7.36	0.73	31.53	100	36	Peak
167.16	33.54	-9.96	43.5	54.12	9.81	1.14	31.53	-	-	Peak
332.9	31.9	-14.1	46	46.96	14.61	1.63	31.3	-	-	Peak
664	31.64	-14.36	46	40.38	19.72	2.3	30.76	-	-	Peak
767.6	32.15	-13.85	46	39.42	20.73	2.54	30.54	-	-	Peak
5150	39.73	-14.27	54	32.66	33.92	6.7	33.55	100	101	Average
5150	51.94	-22.06	74	44.87	33.92	6.7	33.55	100	101	Peak
5320	92.25	-	-	84.95	34.05	6.79	33.54	100	101	Average
5320	102.07	-	-	94.77	34.05	6.79	33.54	100	101	Peak
5350	42.61	-11.39	54	35.26	34.08	6.8	33.53	100	101	Average
5350	60.51	-13.49	74	53.16	34.08	6.8	33.53	100	101	Peak
10640	42.45	-11.55	54	50.94	37.48	10.25	56.22	100	158	Average
10640	53.53	-20.47	74	62.02	37.48	10.25	56.22	100	158	Peak



<b>Test Mode :</b>	Mode 11	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	120	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5600 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
99.12	24.95	-18.55	43.5	44.54	11.03	0.95	31.57	-	-	Peak
143.94	26.36	-17.14	43.5	45.66	11.07	1.14	31.51	-	-	Peak
270.57	31.84	-14.16	46	48.34	13.44	1.48	31.42	-	-	Peak
321.7	34.06	-11.94	46	49.35	14.37	1.63	31.29	102	256	Peak
443.5	31.66	-14.34	46	43.89	17	1.92	31.15	-	-	Peak
664	31.96	-14.04	46	40.7	19.72	2.3	30.76	-	-	Peak
5470	39.85	-28.45	68.3	32.33	34.17	6.87	33.52	109	58	Average
5470	50.8	-37.5	88.3	43.28	34.17	6.87	33.52	109	58	Peak
5600	96.49	-	-	88.76	34.34	6.94	33.55	109	58	Average
5600	106.36	-	-	98.63	34.34	6.94	33.55	109	58	Peak
5725	41.54	-26.76	68.3	33.6	34.51	7.01	33.58	109	58	Average
5725	52.61	-35.69	88.3	44.67	34.51	7.01	33.58	109	58	Peak
11200	41.98	-12.02	54	49.32	37.86	10.46	55.66	105	86	Average
11200	52.32	-21.68	74	59.66	37.86	10.46	55.66	105	86	Peak
16800	45.55	-22.75	68.3	44.72	41.42	13	53.59	100	239	Average
16800	58.44	-29.86	88.3	57.61	41.42	13	53.59	100	239	Peak





<b>Test Mode :</b>	Mode 11	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	120	<b>Relative Humidity :</b>	50~54%
<b>Test Engineer :</b>	Cona Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5600 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
35.94	32.88	-7.12	40	48.88	14.94	0.58	31.52	100	198	Peak
52.95	31.34	-8.66	40	54.62	7.53	0.73	31.54	-	-	Peak
80.22	29.49	-10.51	40	52.84	7.36	0.84	31.55	-	-	Peak
316.1	32.66	-13.34	46	48.19	14.2	1.55	31.28	-	-	Peak
331.5	31.21	-14.79	46	46.31	14.57	1.63	31.3	-	-	Peak
666.1	31.09	-14.91	46	39.8	19.74	2.3	30.75	-	-	Peak
5470	39.15	-29.15	68.3	31.63	34.17	6.87	33.52	100	100	Average
5470	51	-37.3	88.3	43.48	34.17	6.87	33.52	100	100	Peak
5600	94.7	-	-	86.97	34.34	6.94	33.55	100	100	Average
5600	104.45	-	-	96.72	34.34	6.94	33.55	100	100	Peak
5725	40.46	-27.84	68.3	32.52	34.51	7.01	33.58	100	100	Average
5725	51.28	-37.02	88.3	43.34	34.51	7.01	33.58	100	100	Peak
11200	43.86	-10.14	54	51.2	37.86	10.46	55.66	100	164	Average
11200	54.2	-19.8	74	61.54	37.86	10.46	55.66	100	164	Peak

## 3.8 Peak Excursion Ratio Measurement

### 3.8.1 Limit of Peak Excursion Ratio

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

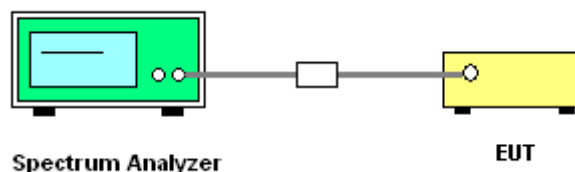
### 3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.8.3 Test Procedures

1. The transmitter output is connected to the spectrum analyzer.
2. The resolution bandwidth and video bandwidth are set as below,  
Trace A: RBW=1 MHz, VBW=3 MHz  
Trace B: RBW=1 MHz, VBW=300 kHz
3. Trace A is set peak detector and to Max Hold, then to View. Then the detector is readjusted to sample detector, max hold to run for 60 seconds, and the signal under this measurement condition is captured in Trace B in Accordance with the method 3 of DA-02-2138.
4. The difference between the traces is investigated. The marker is placed at the frequency, which shows the largest difference. The amplitude delta between the traces at this frequency is the peak excursion.

### 3.8.4 Test Setup

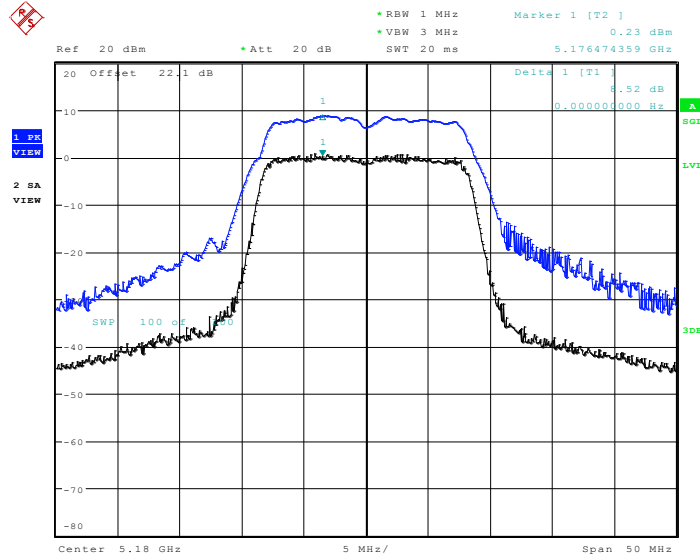




### 3.8.5 Test Result of Peak Excursion Ratio

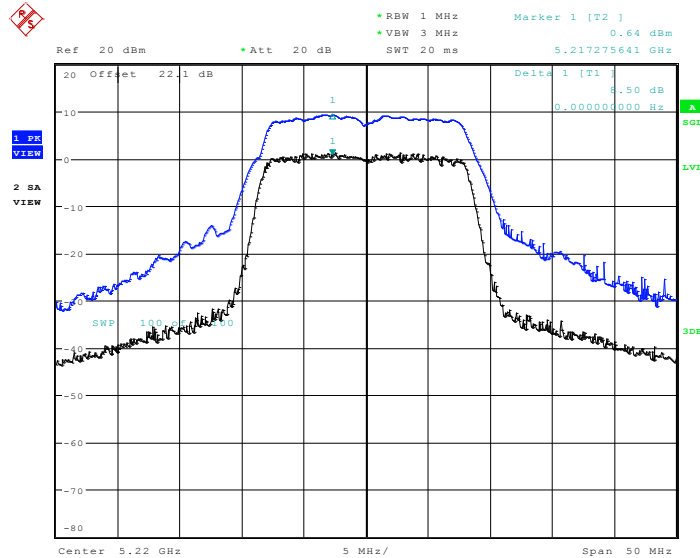
Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Mode 1 : Peak Excursion Ratio Plot on 802.11a Channel 36



Date: 27.OCT.2010 17:35:20

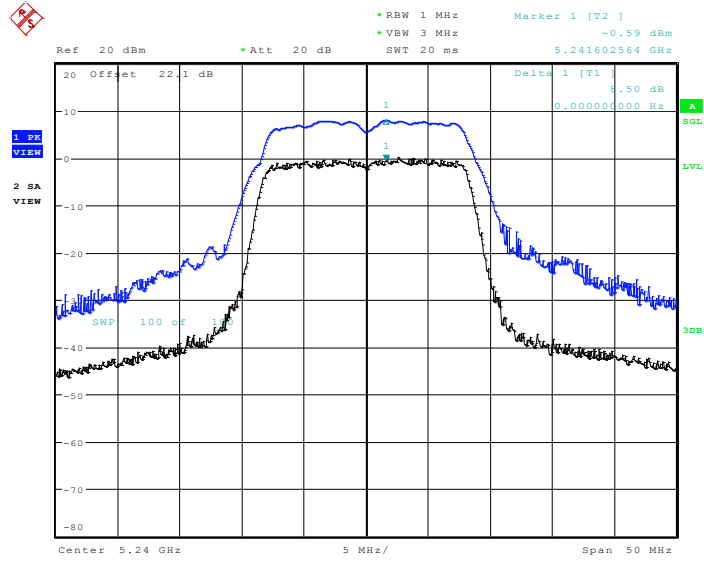
Mode 2 : Peak Excursion Ratio Plot on 802.11a Channel 44



Date: 27.OCT.2010 18:05:28

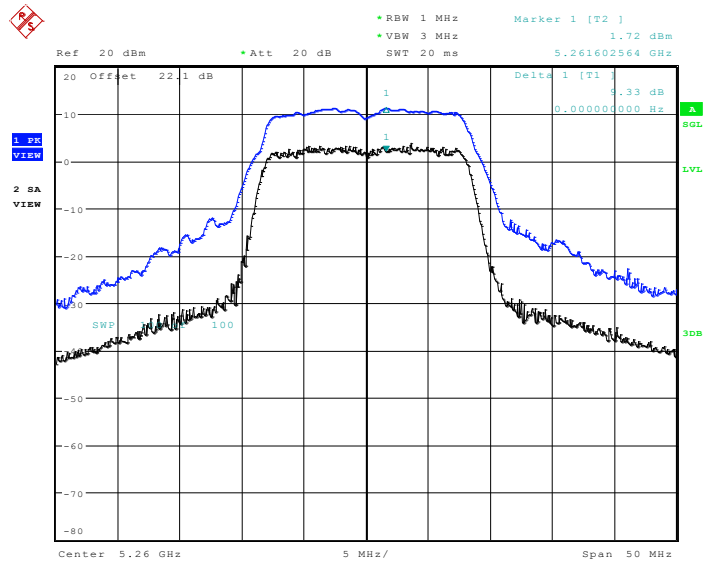


Mode 3 : Peak Excursion Ratio Plot on 802.11a Channel 48



Date: 27.OCT.2010 18:08:13

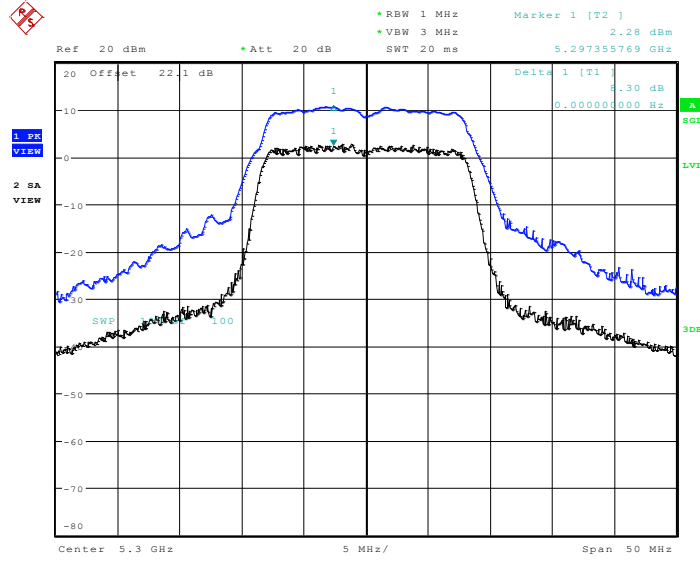
Mode 4 : Peak Excursion Ratio Plot on 802.11a Channel 52



Date: 27.OCT.2010 18:11:00

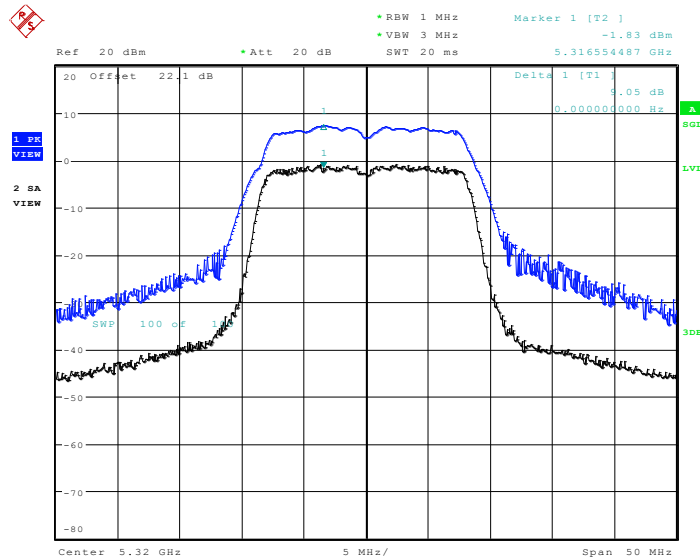


Mode 5 : Peak Excursion Ratio Plot on 802.11a Channel 60



Date: 27.OCT.2010 18:14:01

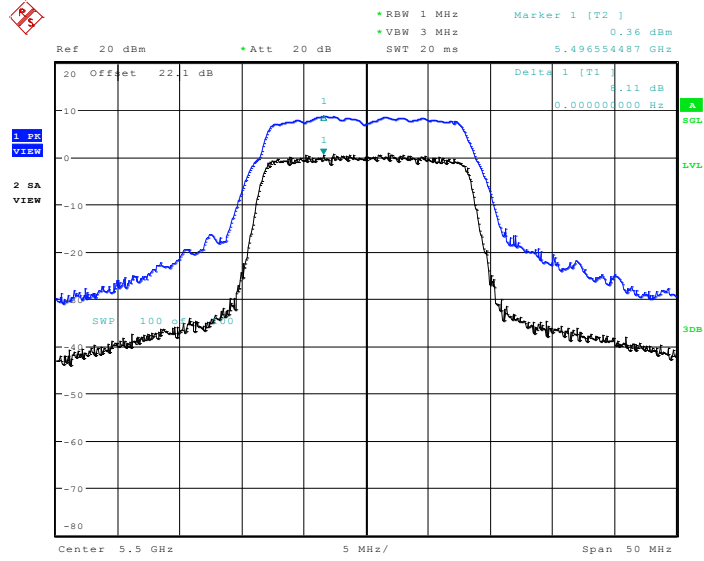
Mode 6 : Peak Excursion Ratio Plot on 802.11a Channel 64



Date: 27.OCT.2010 18:16:49

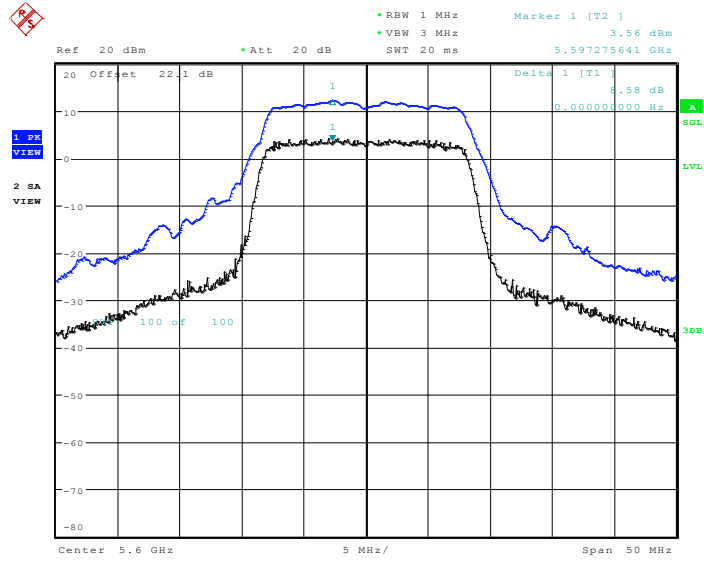


Mode 7 : Peak Excursion Ratio Plot on 802.11a Channel 100



Date: 27.OCT.2010 18:20:36

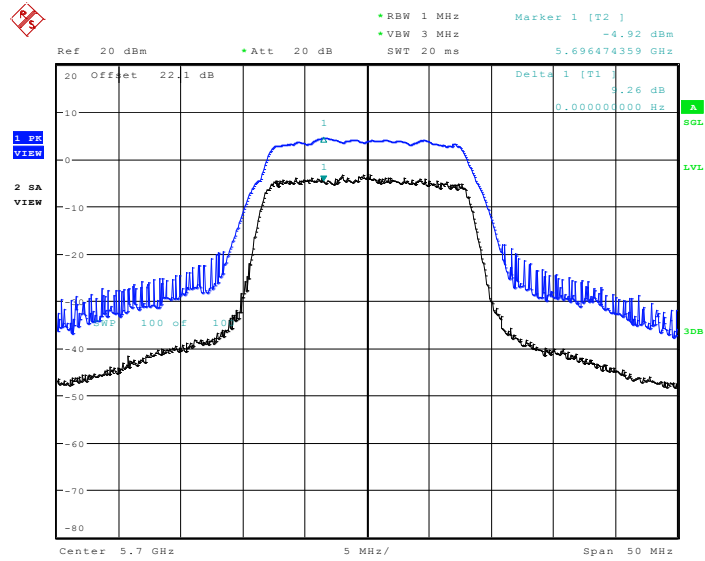
Mode 8 : Peak Excursion Ratio Plot on 802.11a Channel 120



Date: 27.OCT.2010 18:24:10



Mode 9 : Peak Excursion Ratio Plot on 802.11a Channel 140



Date: 27.OCT.2010 18:26:25



## **3.9 Automatically Discontinue Transmission**

### **3.9.1 Limit of Automatically Discontinue Transmission**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### **3.9.2 Measuring Instruments**

See list of measuring instruments of this test report.

### **3.9.3 Test Result of Automatically Discontinue Transmission**

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



## 3.10 Frequency Stability Measurement

### 3.10.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

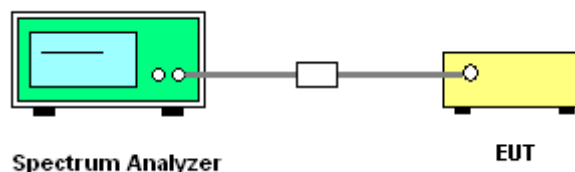
### 3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.10.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

### 3.10.4 Test Setup





3.10.5 Test Result of Frequency Stability

Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
36	5180	5171.68	5188.28	-3.86
44	5220	5211.68	5228.28	-3.83
48	5240	5231.70	5248.28	-1.91
52	5260	5251.68	5268.28	-3.80
60	5300	5291.68	5308.28	-3.77
64	5320	5311.68	5328.28	-3.76
100	5500	5491.68	5508.28	-3.64
120	5600	5591.68	5608.28	-3.57
140	5700	5691.68	5708.28	-3.51



## **3.11 Antenna Requirements**

### **3.11.1 Standard Applicable**

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **3.11.2 Antenna Connected Construction**

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement of FCC.

### **3.11.3 Antenna Gain**

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

## 4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-40GHz	Nov. 3, 2010	Nov. 2, 2011	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 1GHz	Nov. 6, 2010	Nov. 5, 2011	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 15, 2010	Apr. 14, 2011	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2010	Aug. 04, 2011	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH05-HY)

## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of $X_i$		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.13</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.26</b>		

### Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of $X_i$		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.54</b>		



**Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)**

Contribution	Uncertainty of $X_i$		$u(X_i)$	$C_i$	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>4.72</b>				



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP000411 as below.