


FCC RF Test Report

APPLICANT : Motorola, Inc.
EQUIPMENT : Enterprise Digital Assistant (EDA)
BRAND NAME : Motorola
MODEL NAME : MC659B
FCC ID : UZ7MC659B
STANDARD : FCC Part 15 Subpart E
CLASSIFICATION : Unlicensed National Information Infrastructure (UNII)

The product was received on Jan. 08, 2010 and completely tested on Feb. 02, 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: Roy Wu / Manager



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR010801C	Rev. 01	Initial issue of report	Feb. 22, 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	$\leq 17, 24, 30$ dBm (depend on band)	Pass	-
3.3	15.407(a)	A9.2	Power Spectral Density	$\leq 4, 11, 17$ dBm (depend on band)	Pass	-
3.4	15.407(b)	A9.3	Frequency Band Edges	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	-
3.5	15.407(b)	A9.3	Spurious Emission	< 20 dBc	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 14.2 dB at 0.486 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	Under limit 6.11 dB at 5725 MHz
3.8	15.407(b)	A9.3	Peak Excursion Ratio	≤ 13 dB	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

Motorola, Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.2 Manufacturer

Askey Technology (Jiangsu)

No. 1388, Jiao Tong Road, WuJiang Economic-Technological Development Area, Jiangsu Province
215200, P. R. C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Enterprise Digital Assistant (EDA)
Brand Name	Motorola
Model Name	MC659B
FCC ID	UZ7MC659B
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 : 14.87 dBm / 30.69 mW <5250 MHz ~ 5350 MHz> 802.11a : 14.85 dBm / 30.55 mW <5470 MHz ~ 5725 MHz> 802.11a : 14.33 dBm / 27.10 mW
Antenna Type	PIFA Antenna
Antenna Gain	3.70 dBi (2.70 + 1.0 dB trace loss)
HW Version	EVT2
SW Version	BSP2410
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

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	TW1022/4086B-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.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
7.	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)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	12.23	12.29	12.13	12.21	11.91	11.82	11.68	10.65
CH 44	5220 MHz	14.87	14.63	14.77	14.62	14.50	12.71	11.62	10.60
CH 48	5240 MHz	14.86	14.76	14.81	14.72	14.54	12.59	11.60	10.69
CH 52	5260 MHz	14.85	14.68	14.50	14.62	14.39	12.49	11.50	10.71
CH 60	5300 MHz	14.68	14.53	14.51	14.42	14.23	12.41	11.35	10.51
CH 64	5320 MHz	13.00	12.94	12.80	12.81	12.63	12.46	11.58	10.62
CH 100	5500 MHz	11.83	11.77	11.70	11.70	11.46	11.23	11.15	10.27
CH 120	5600 MHz	14.36	14.33	14.28	14.30	14.03	11.43	10.91	9.75
CH 140	5700 MHz	10.12	10.04	9.94	9.89	9.73	9.53	9.53	9.51

Remark:

1. The 802.11a data rate was set in 6Mbps on 5150MHz to 5350MHz and 5470 MHz to 5725 MHz 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).

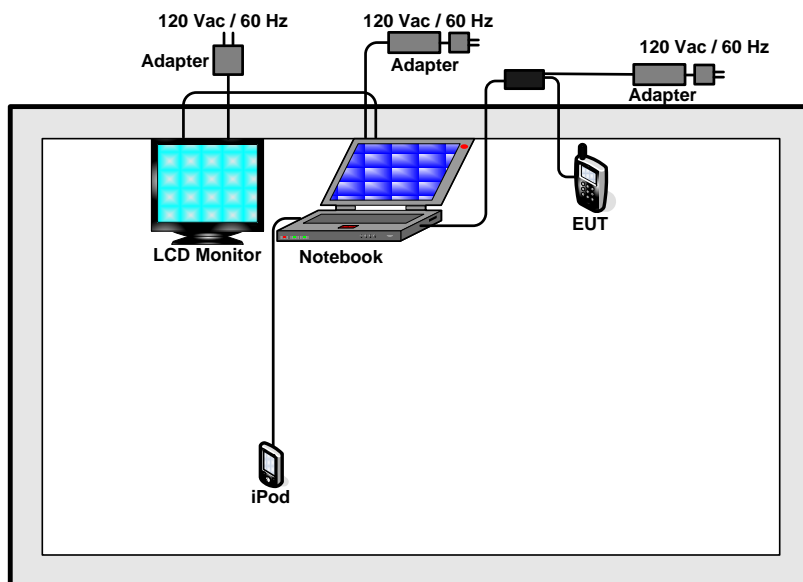
The following tables are showing the test modes as the worst cases and recorded in this report.

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

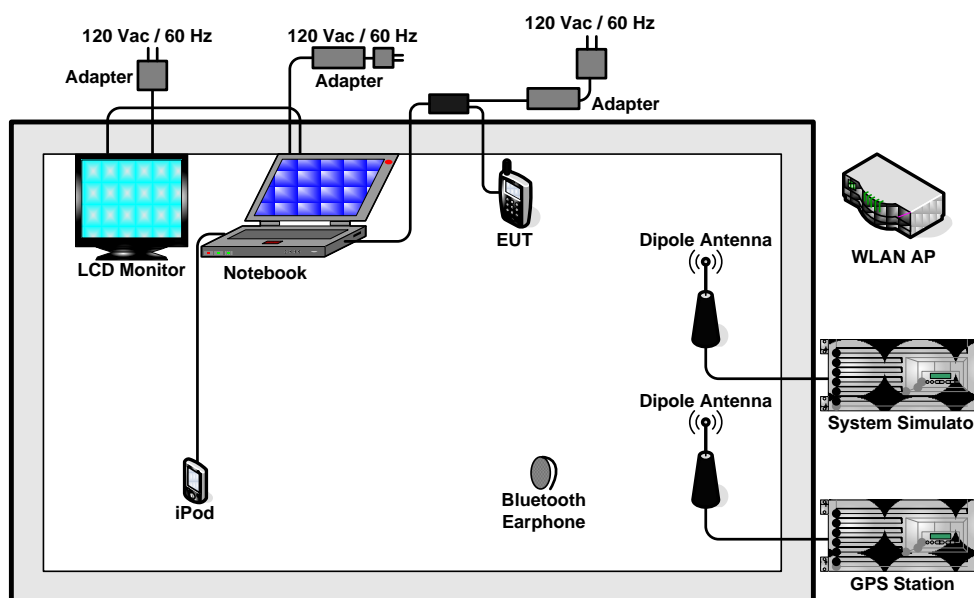
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Qwerty Keypad
	Mode 2 : WCDMA Band V Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Scanner + MP3 + Qwerty Keypad
	Mode 3 : CDMA2000 BC0 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Numeric Keypad
Remark: <ol style="list-style-type: none"> 1. For radiated TCs test was performed together with USB Charging cable with AC power. 2. "Bluetooth Link" stands for terminal linked to headset by Bluetooth function. 3. "WLAN Link" stands for terminal associated with AP at 5GHz band. 4. "GPS Rx" stands for receive signals from GPS station continuously. 5. "Scanner" stands for scanning and decoding a barcode by scanner. 6. "MP3" stands for playing MP3 file. 7. "Camera" stands for playing camera to capture picture. 8. "USB Link" stands for active sync file transfer. 	

2.4 Connection Diagram of Test System

<Radiation Test>



<Conduction Test>





2.5 RF Utility

The programmed RF Utility "Fcc test2009" 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.

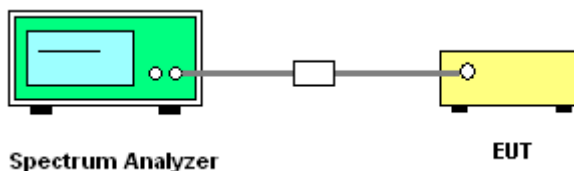
3.1.2 Measuring Instruments

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



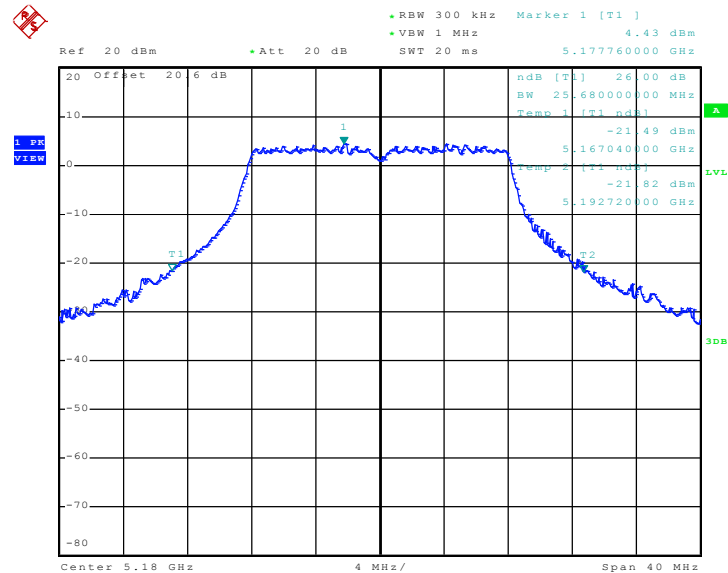
3.1.5 Test Result of 26dB & 99% Bandwidth

Test Mode :	Mode 1~9	Temperature :	24~26℃
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Pass/Fail
36	5180	25.68	20.08	Pass
44	5220	28.16	21.28	Pass
48	5240	28.24	21.20	Pass
52	5260	28.32	21.04	Pass
60	5300	26.88	21.28	Pass
64	5320	25.92	20.32	Pass
100	5500	25.12	20.16	Pass
120	5600	27.76	20.88	Pass
140	5700	25.12	20.32	Pass

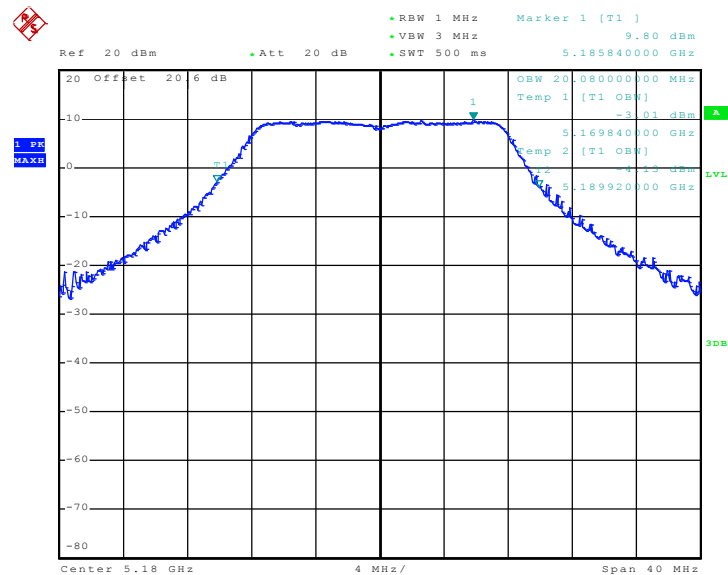
3.1.6 Test Result of 26dB & 99% Bandwidth Plots

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

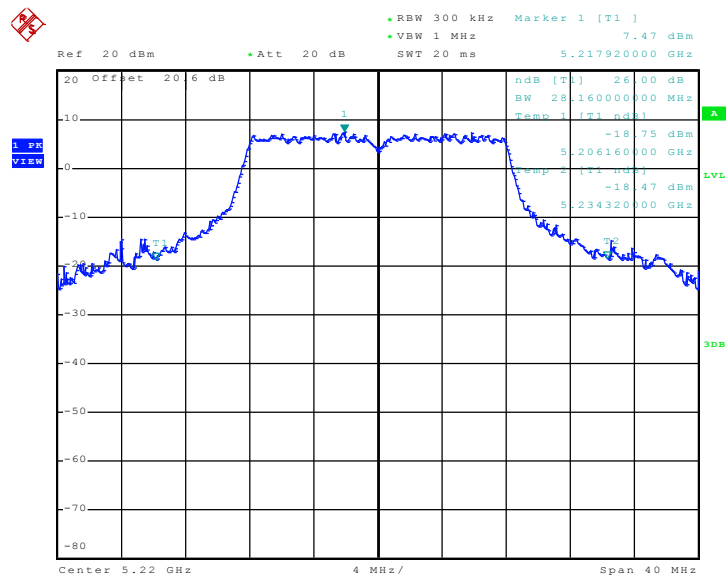


Date: 2.FEB.2010 15:53:33

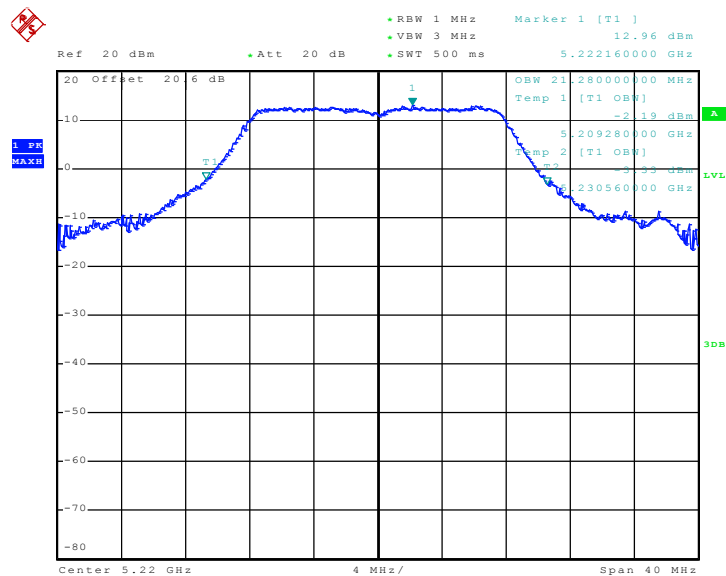
Mode 1 : 99% Bandwidth Plot on 802.11a Channel 36



Date: 24.JAN.2010 07:12:27

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


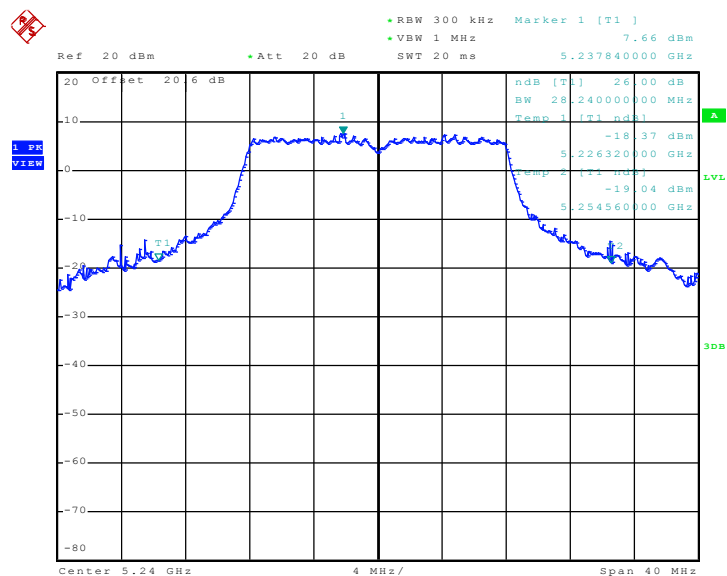
Date: 2.FEB.2010 15:54:23

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


Date: 24.JAN.2010 07:13:00

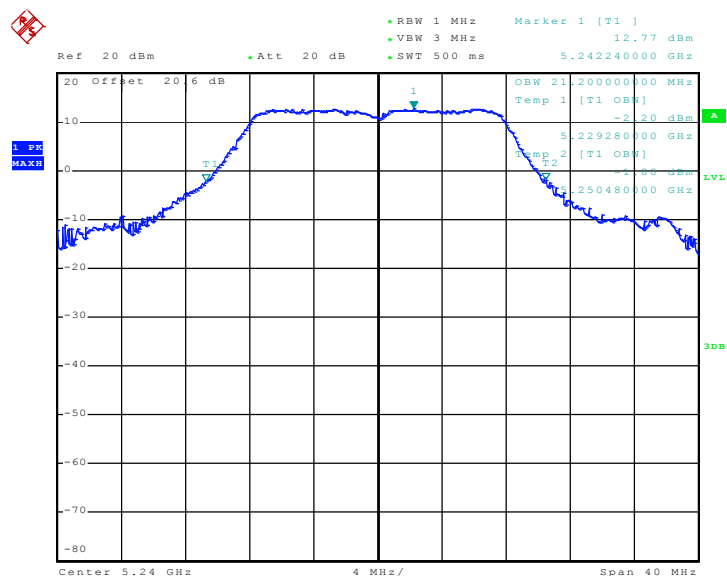


Mode 3 : 26 dB Bandwidth Plot on 802.11a Channel 48

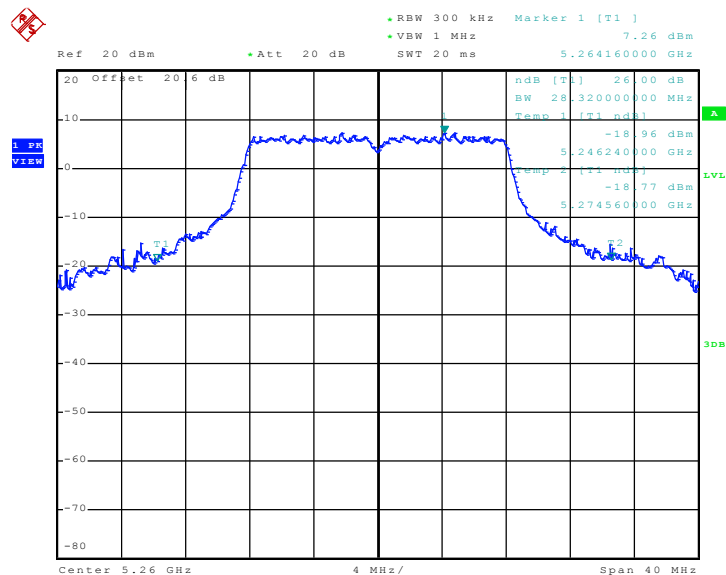


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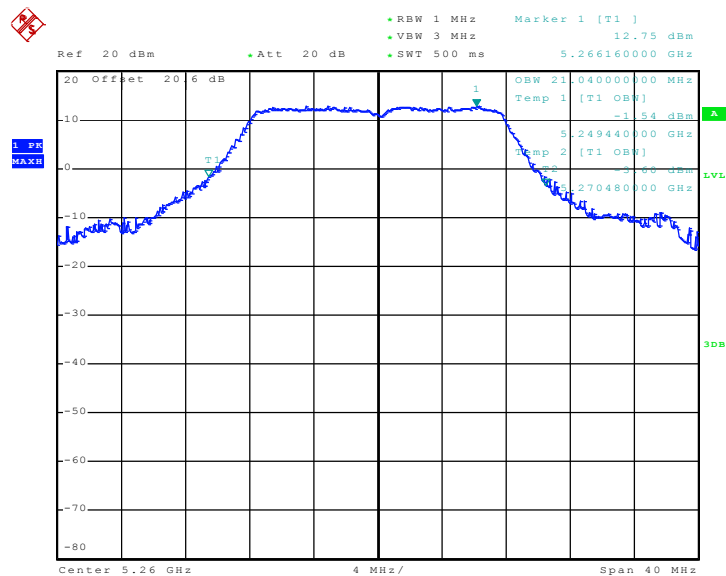
Mode 3 : 99% Bandwidth Plot on 802.11a Channel 48



Date: 24.JAN.2010 07:13:29

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


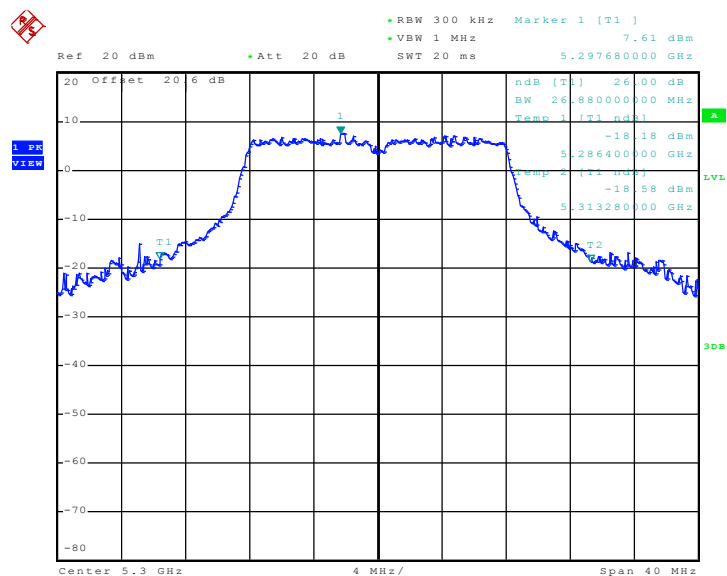
Date: 2.FEB.2010 15:57:10

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


Date: 24.JAN.2010 07:14:15

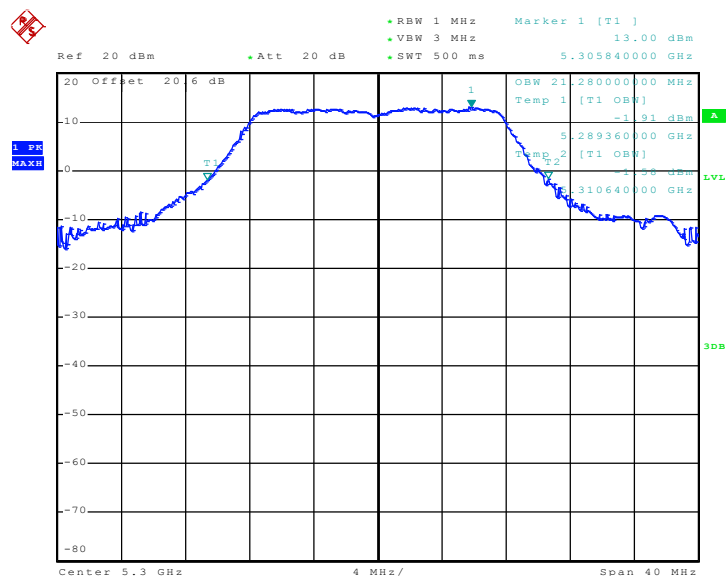


Mode 5 : 26 dB Bandwidth Plot on 802.11a Channel 60



Date: 2.FEB.2010 15:59:48

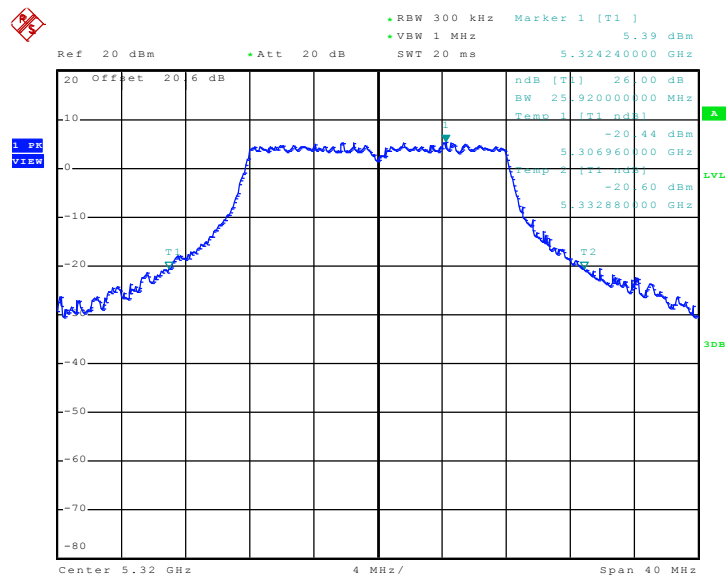
Mode 5 : 99% Bandwidth Plot on 802.11a Channel 60



Date: 24.JAN.2010 07:14:44

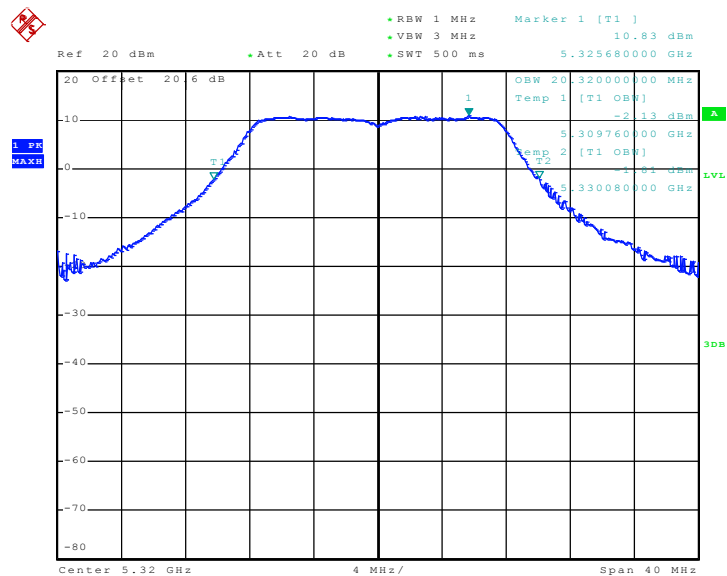


Mode 6 : 26 dB Bandwidth Plot on 802.11a Channel 64



Date: 2.FEB.2010 15:59:18

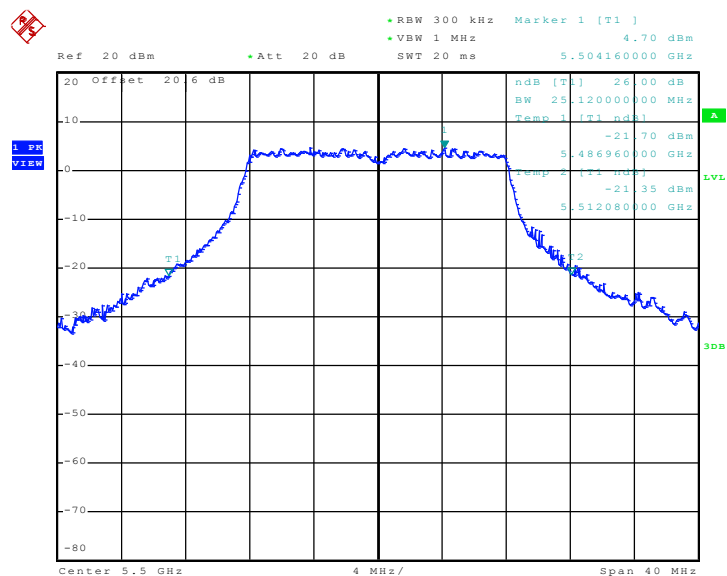
Mode 6 : 99% Bandwidth Plot on 802.11a Channel 64



Date: 24.JAN.2010 07:15:24

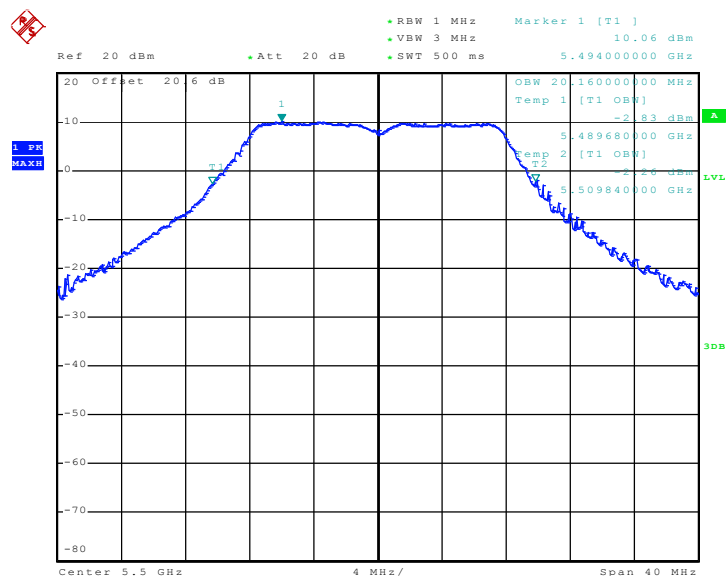


Mode 7 : 26 dB Bandwidth Plot on 802.11a Channel 100

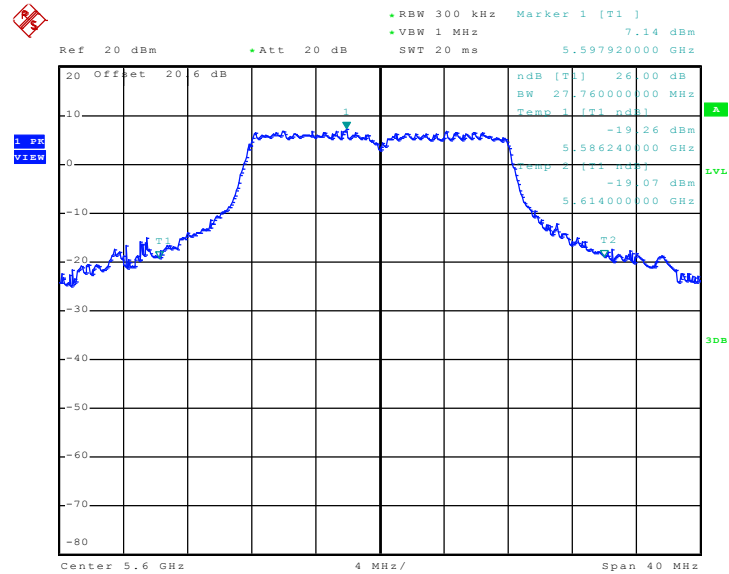


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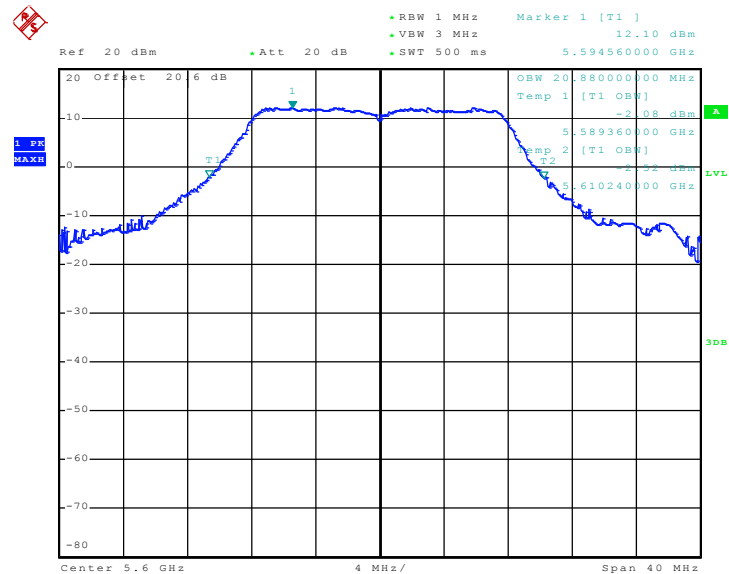
Mode 7 : 99% Bandwidth Plot on 802.11a Channel 100



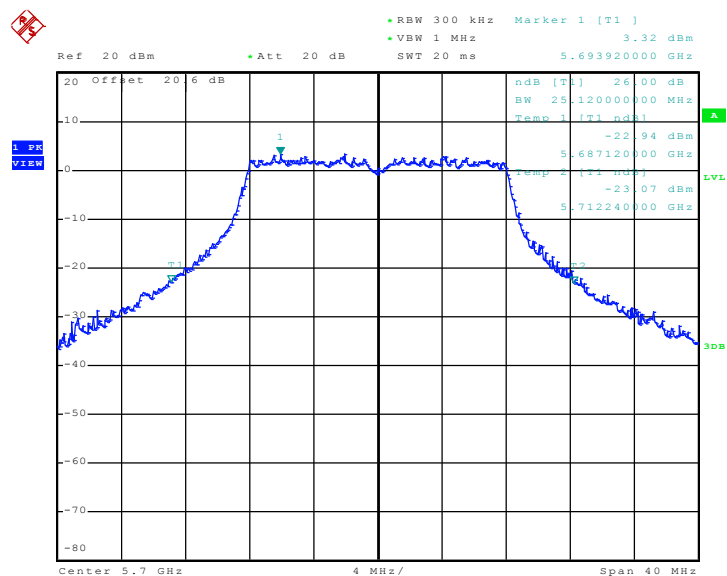
Date: 24.JAN.2010 07:16:02

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


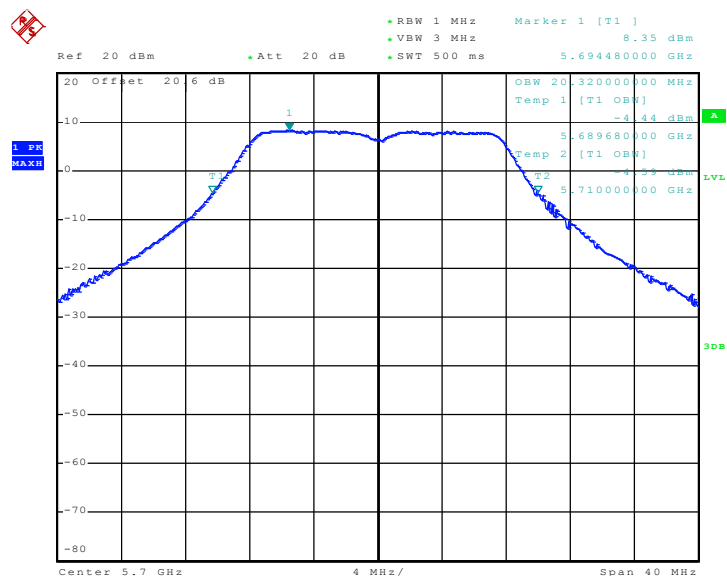
Date: 2.FEB.2010 16:01:30

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


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


Date: 2.FEB.2010 16:02:31

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


Date: 24.JAN.2010 07:17:24

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.

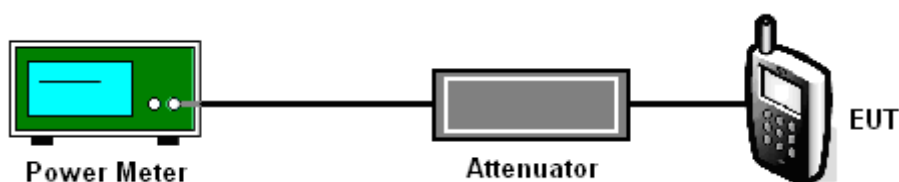
3.2.2 Measuring Instruments

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℃
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Channel	Frequency (MHz)	Measured Power Output (dBm)	Max. Limits (dBm)	Pass/Fail
36	5180	12.23	17	Pass
44	5220	14.87	17	Pass
48	5240	14.86	17	Pass
52	5260	14.85	24	Pass
60	5300	14.68	24	Pass
64	5320	13.00	24	Pass
100	5500	11.83	24	Pass
120	5600	14.36	24	Pass
140	5700	10.12	24	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.

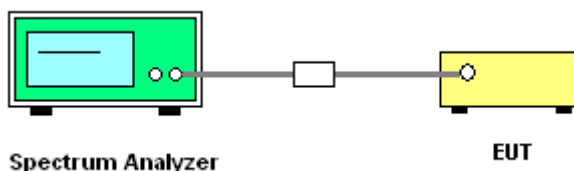
3.3.2 Measuring Instruments

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



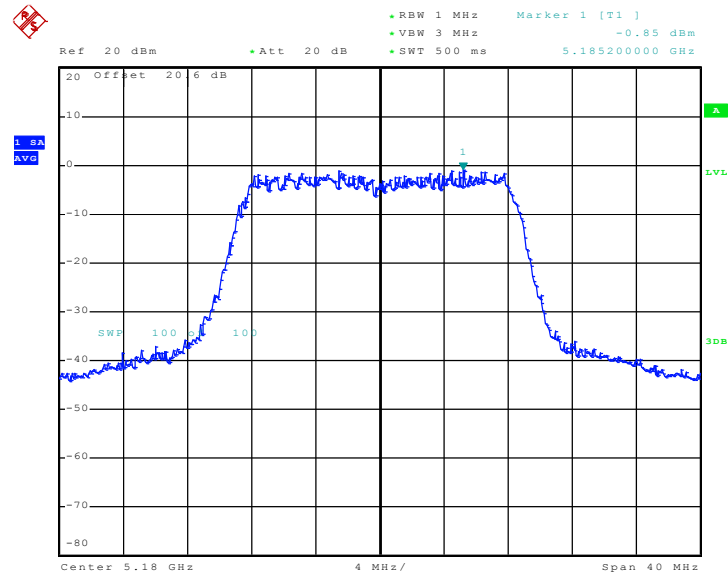
3.3.5 Test Result of Power Spectral Density

Test Mode :	Mode 1~9	Temperature :	24~26℃
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
36	5180	-0.85	4	Pass
44	5220	1.66	4	Pass
48	5240	2.13	4	Pass
52	5260	1.56	11	Pass
60	5300	1.96	11	Pass
64	5320	-0.01	11	Pass
100	5500	-0.97	11	Pass
120	5600	1.63	11	Pass
140	5700	-2.99	11	Pass

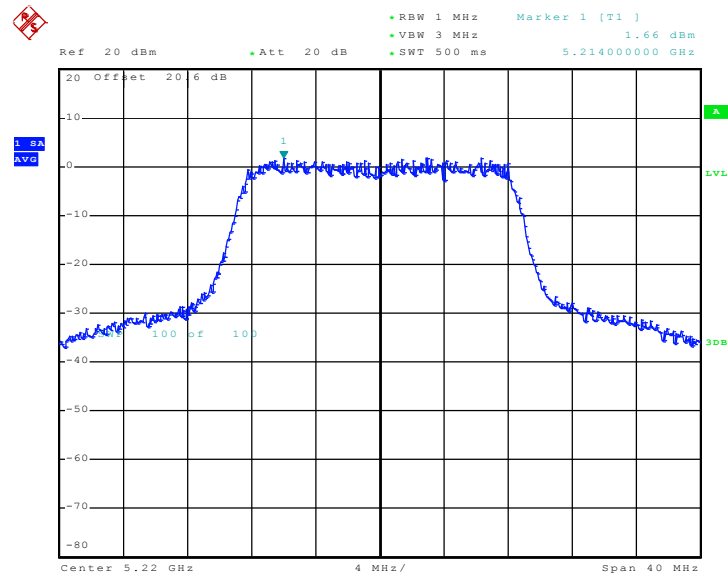
3.3.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11a Channel 36



Date: 24..JAN.2010 07:46:53

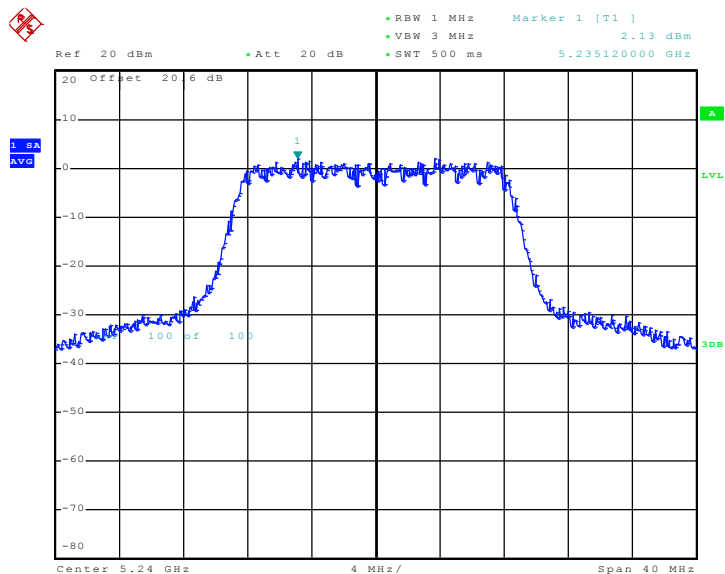
Mode 2 : PSD Plot on 802.11a Channel 44



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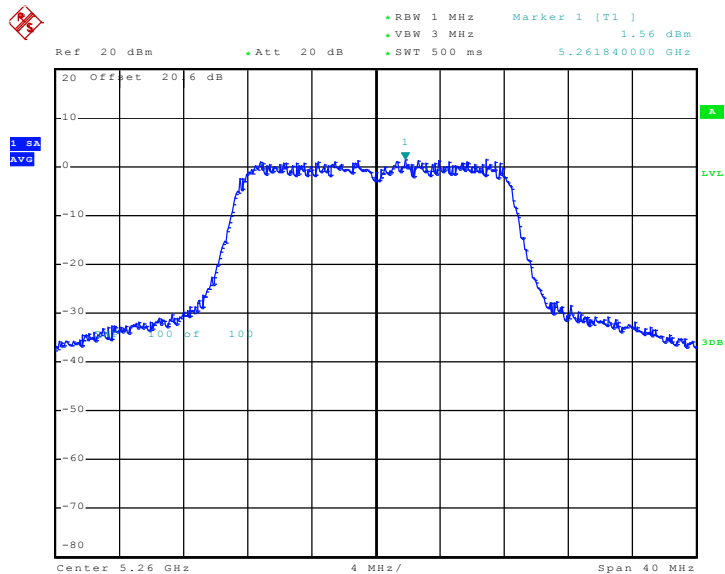


Mode 3 : PSD Plot on 802.11a Channel 48



Date: 24.JAN.2010 07:44:05

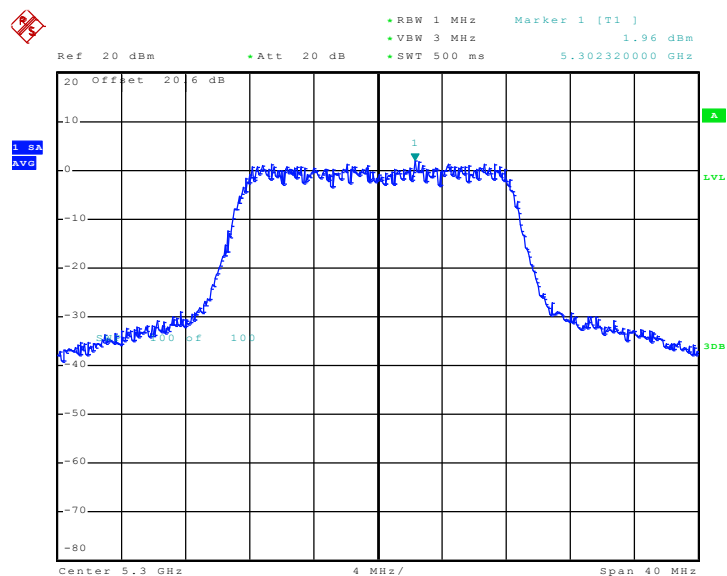
Mode 4 : PSD Plot on 802.11a Channel 52



Date: 24.JAN.2010 07:42:40

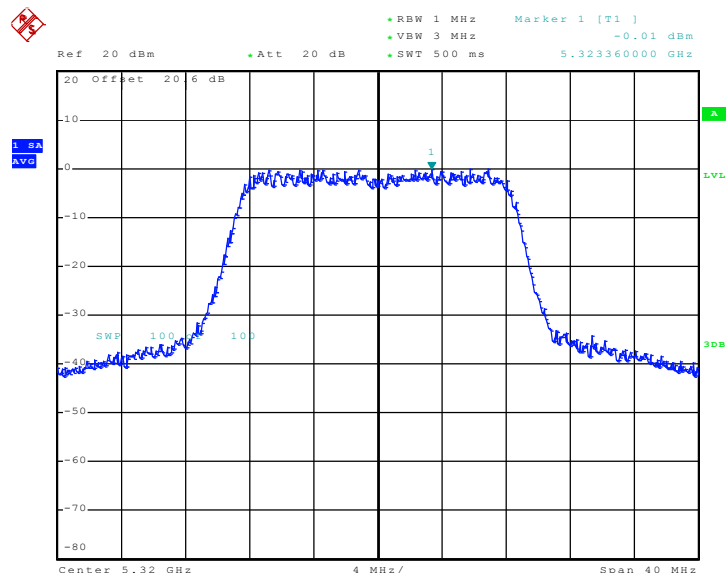


Mode 5 : PSD Plot on 802.11a Channel 60



Date: 24.JAN.2010 07:40:49

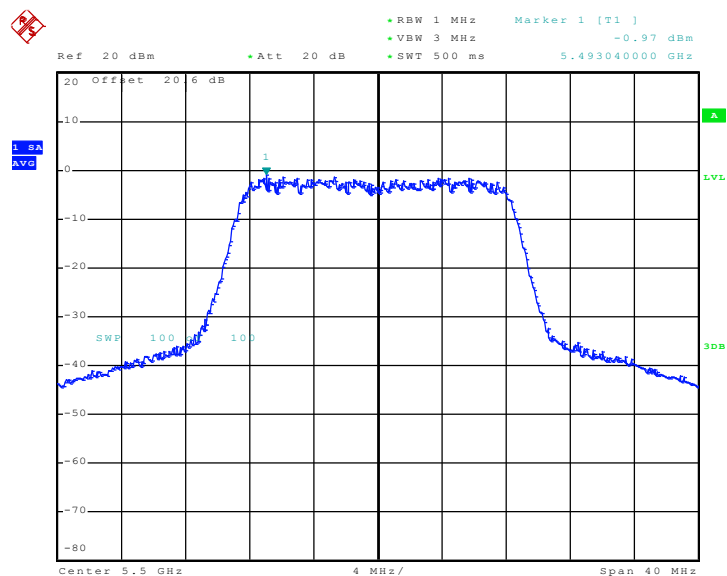
Mode 6 : PSD Plot on 802.11a Channel 64



Date: 24.JAN.2010 07:39:35

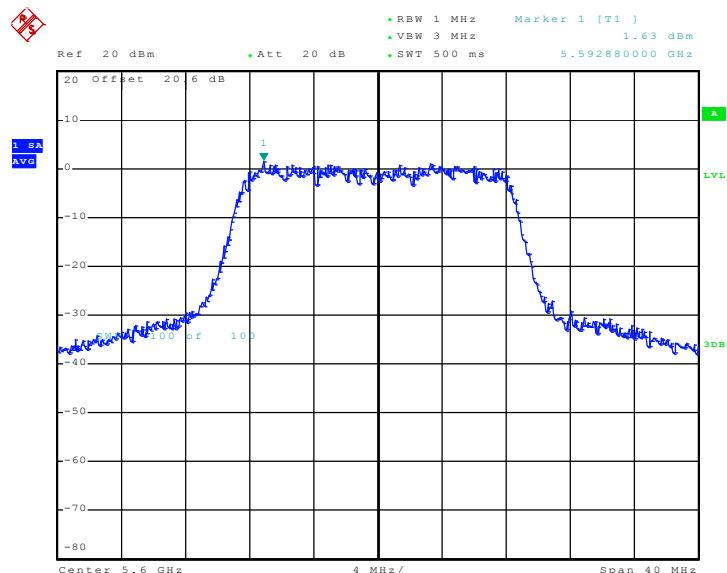


Mode 7 : PSD Plot on 802.11a Channel 100



Date: 24.JAN.2010 07:38:07

Mode 8 : PSD Plot on 802.11a Channel 120



Date: 24.JAN.2010 07:33:35



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

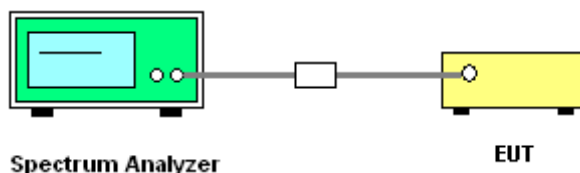
See list of measuring instruments of this test report.

3.4.3 Test Procedures

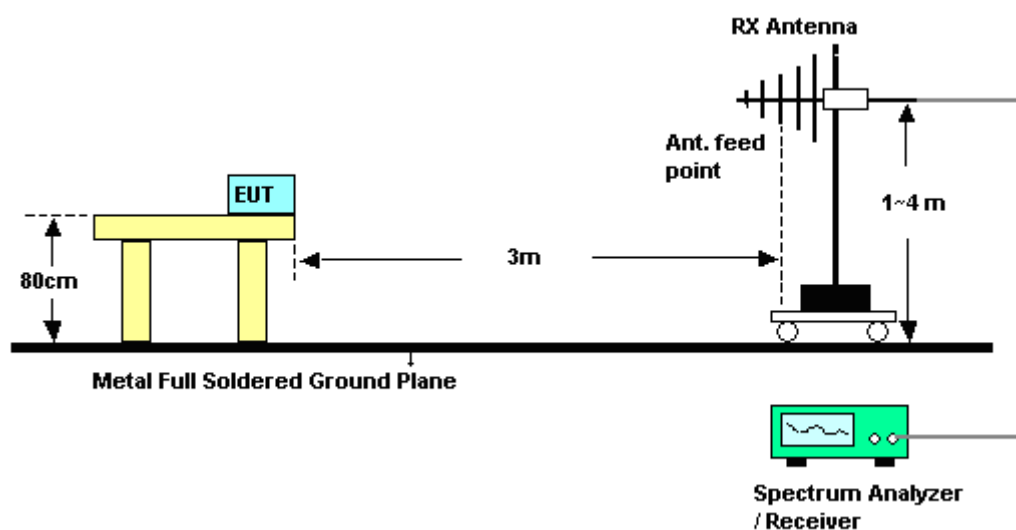
1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.4.4 Test Setup

<Conducted>



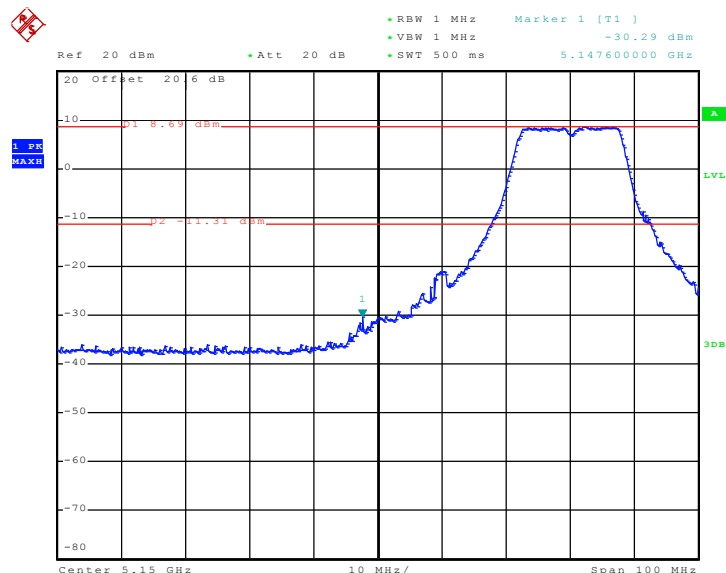
<Radiated>



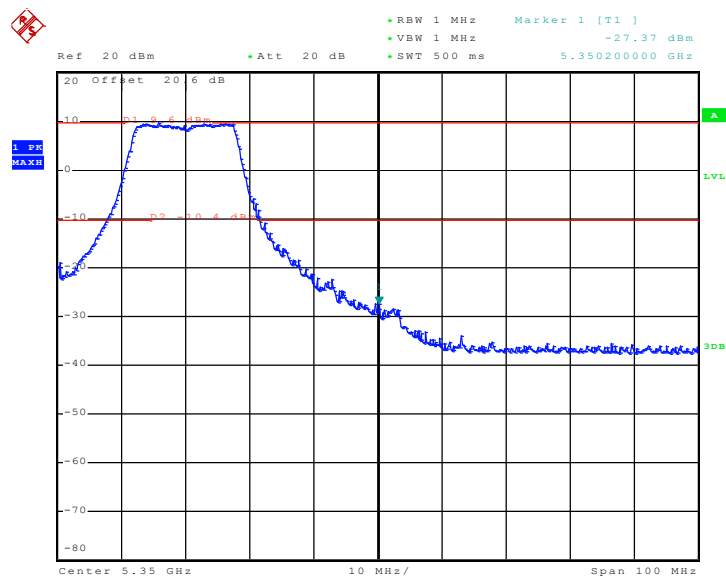
3.4.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1 and Mode 6	Temperature :	24~26°C
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Mode 1 : Low Band Edge Plot on Channel 36

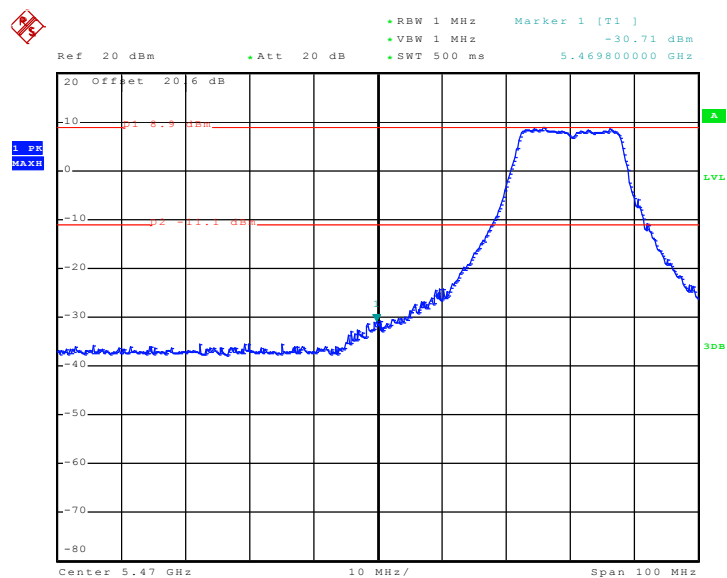


Mode 6 : High Band Edge Plot on Channel 64

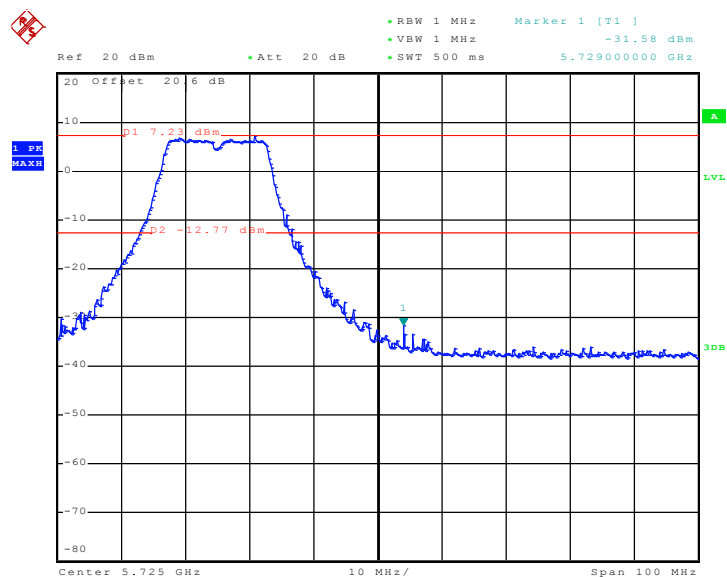




Test Mode :	Mode 7 and Mode 9	Temperature :	24~26°C
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Mode 7 : Low Band Edge Plot on Channel 100

Date: 24.JAN.2010 06:50:17

Mode 9 : High Band Edge Plot on Channel 140

Date: 24.JAN.2010 06:49:11

3.4.7 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	36	Test Engineer :	Kay Wu

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	65.36	-8.64	74	57.27	34.49	8.07	34.47	100	52	Peak
5150	46.05	-7.95	54	37.96	34.49	8.07	34.47	100	52	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	65.25	-8.75	74	57.16	34.49	8.07	34.47	100	259	Peak
5150	45.88	-8.12	54	37.79	34.49	8.07	34.47	100	259	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%%
Test Channel :	64	Test Engineer :	Kay Wu

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	65.16	-8.84	74	56.75	34.61	8.23	34.43	135	44	Peak
5350	46.31	-7.69	54	37.9	34.61	8.23	34.43	135	44	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	65.98	-8.02	74	57.57	34.61	8.23	34.43	100	304	Peak
5350	46.38	-7.62	54	37.97	34.61	8.23	34.43	100	304	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	100	Test Engineer :	Kay Wu

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	61.52	-6.78	68.3	52.93	34.68	8.32	34.41	102	56	Peak

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	61.31	-6.99	68.3	52.72	34.68	8.32	34.41	102	252	Peak

Test Mode :	Mode 9	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%%
Test Channel :	140	Test Engineer :	Kay Wu

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	61.38	-6.92	68.3	52.46	35.01	8.4	34.49	100	303	Peak

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	62.06	-6.24	68.3	53.14	35.01	8.4	34.49	100	314	Peak



Test Mode :	Mode 10	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	64	Test Engineer :	Kay Wu

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	66.55	-7.45	74	58.14	34.61	8.23	34.43	123	47	Peak
5350	47.38	-6.62	54	38.97	34.61	8.23	34.43	123	47	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	66.62	-7.38	74	58.21	34.61	8.23	34.43	111	299	Peak
5350	47.06	-6.94	54	38.65	34.61	8.23	34.43	111	299	Average

Test Mode :	Mode 11	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%%
Test Channel :	140	Test Engineer :	Kay Wu

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	62.19	-6.11	68.3	91.53	0	6.4	35.74	100	297	Peak

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	61.99	-6.31	68.3	91.33	0	6.4	35.74	100	248	Peak

3.5 Spurious Emission

3.5.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

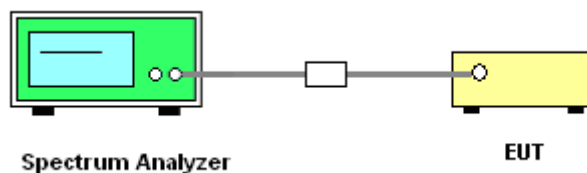
3.5.2 Measuring Instruments

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 = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

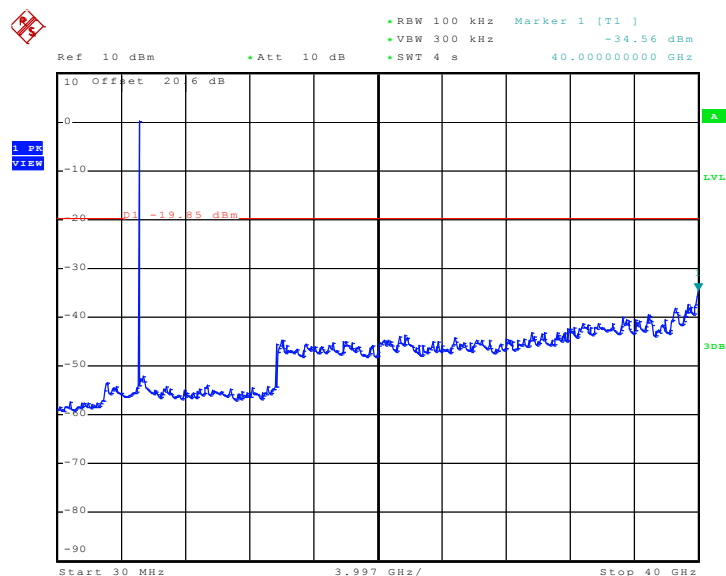
3.5.4 Test Setup



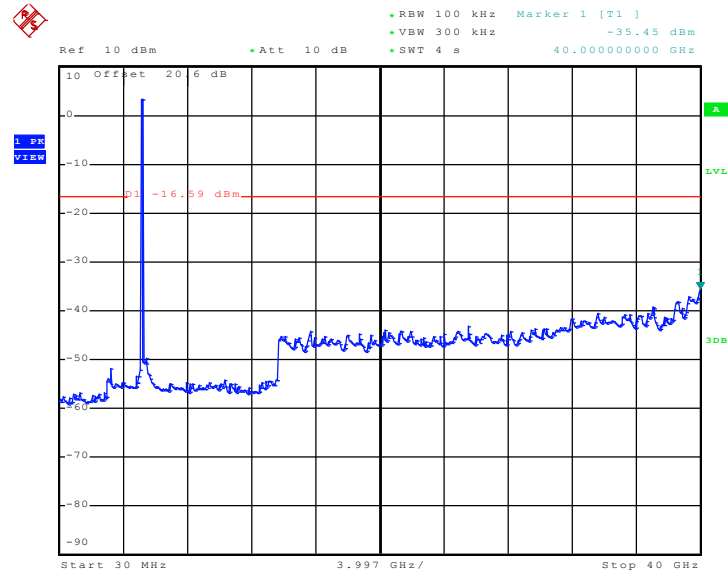
3.5.5 Test Result

Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

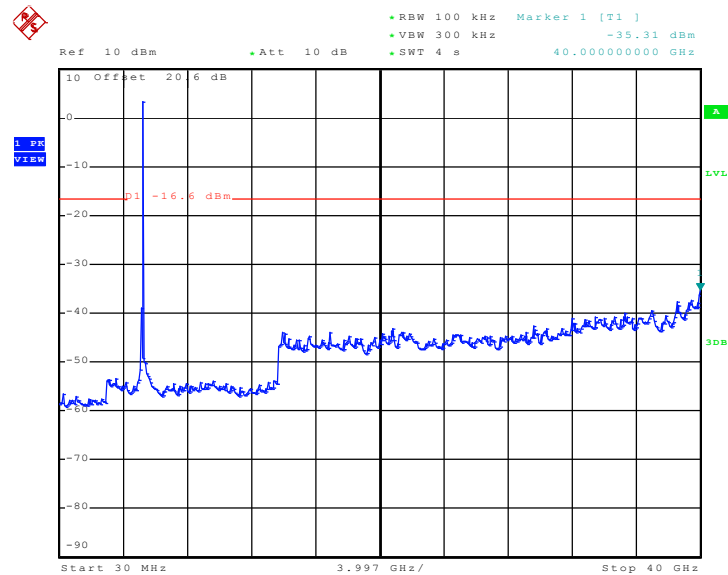
Mode 1 : Spurious Emission Plot on channel 36 between 30 MHz~40 GHz



Date: 24.JAN.2010 07:48:40

**Mode 2 : Spurious Emission Plot on channel 44
between 30 MHz~40 GHz**


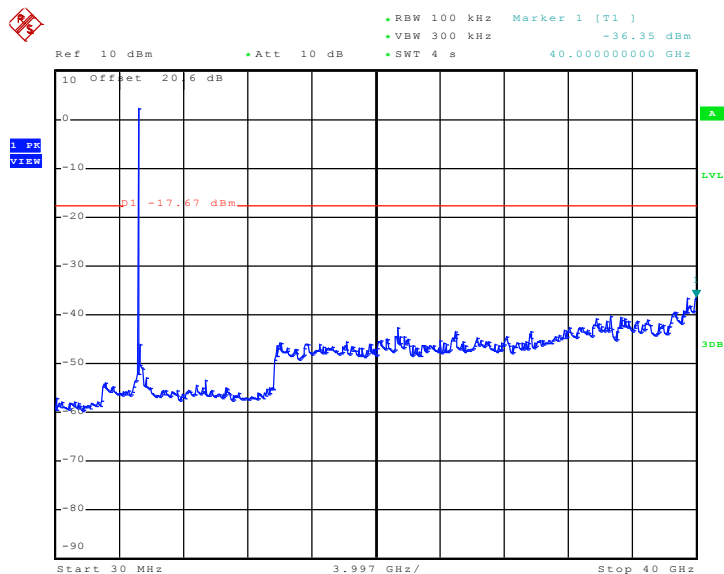
Date: 24.JAN.2010 07:51:02

**Mode 3 : Spurious Emission Plot on channel 48
between 30 MHz~40 GHz**


Date: 24.JAN.2010 07:53:29

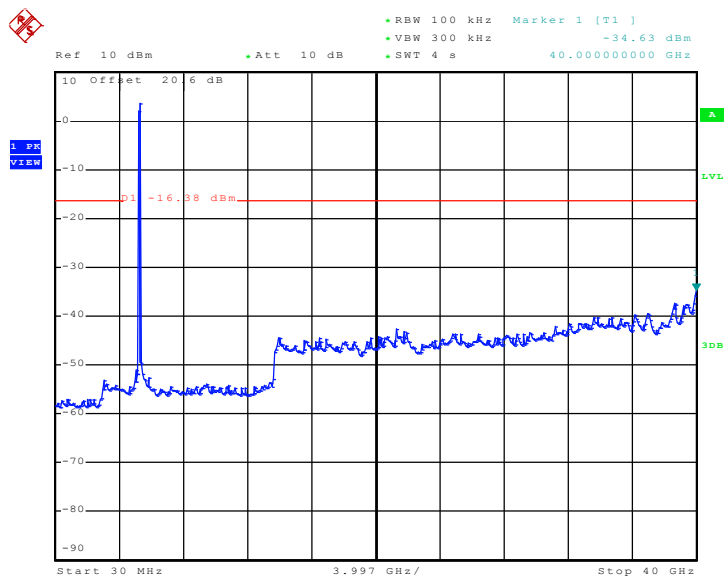


Mode 4 : Spurious Emission Plot on channel 52
between 30 MHz~40 GHz



Date: 24.JAN.2010 07:54:08

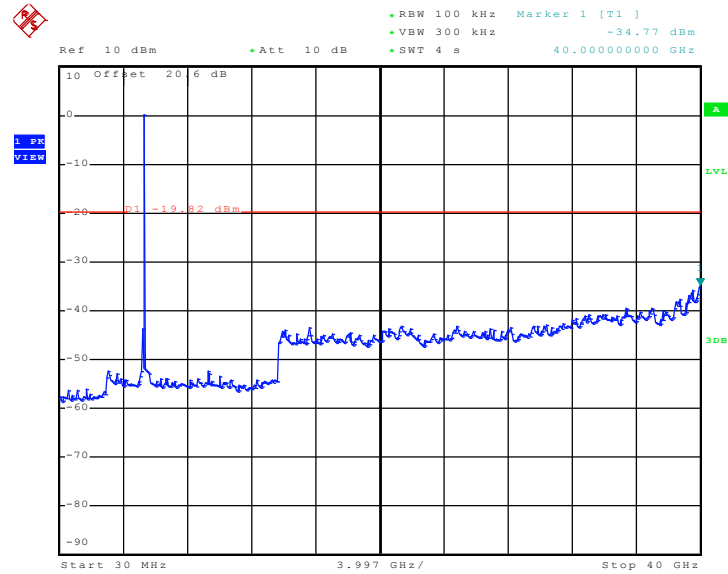
Mode 5 : Spurious Emission Plot on channel 60
between 30 MHz~40 GHz



Date: 24.JAN.2010 07:55:24

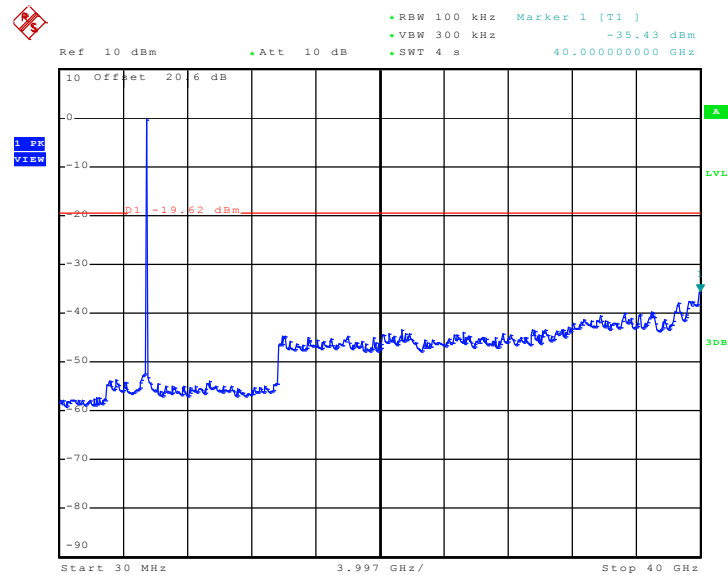


Mode 6 : Spurious Emission Plot on channel 64
between 30 MHz~40 GHz

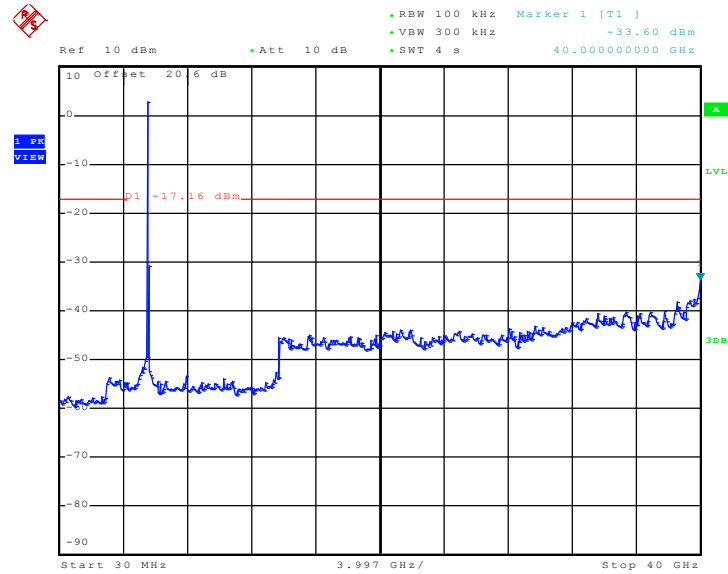


Date: 24.JAN.2010 07:57:34

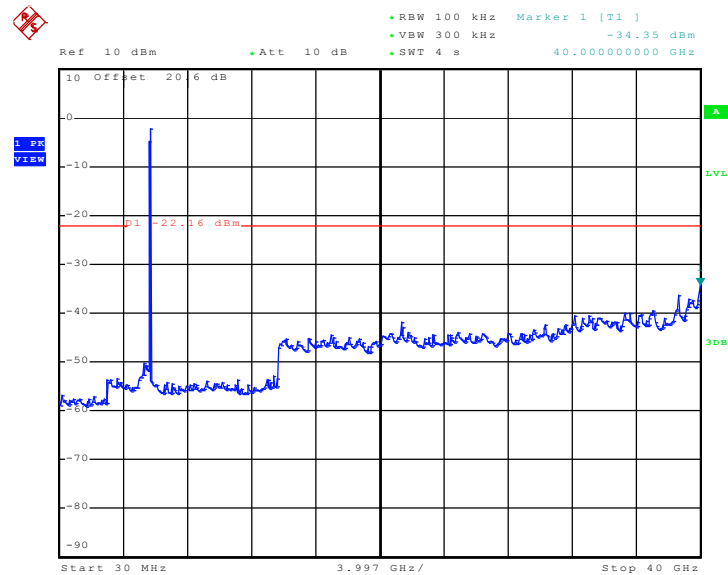
Mode 7 : Spurious Emission Plot on channel 100
between 30 MHz~40 GHz



Date: 24.JAN.2010 07:58:23

**Mode 8 : Spurious Emission Plot on channel 120
between 30 MHz~40 GHz**


Date: 24.JAN.2010 07:59:13

**Mode 9 : Spurious Emission Plot on channel 140
between 30 MHz~40 GHz**


Date: 24.JAN.2010 08:00:29

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.

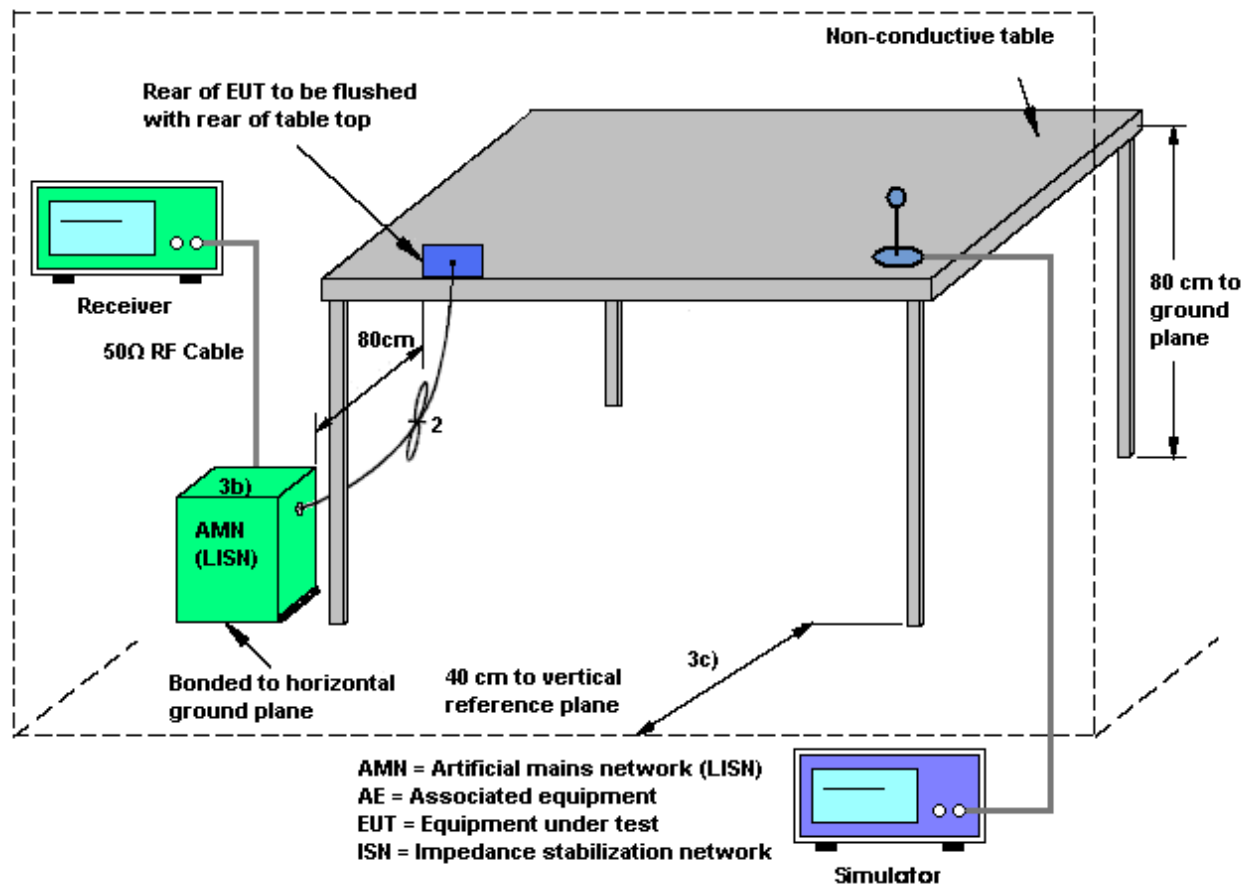
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

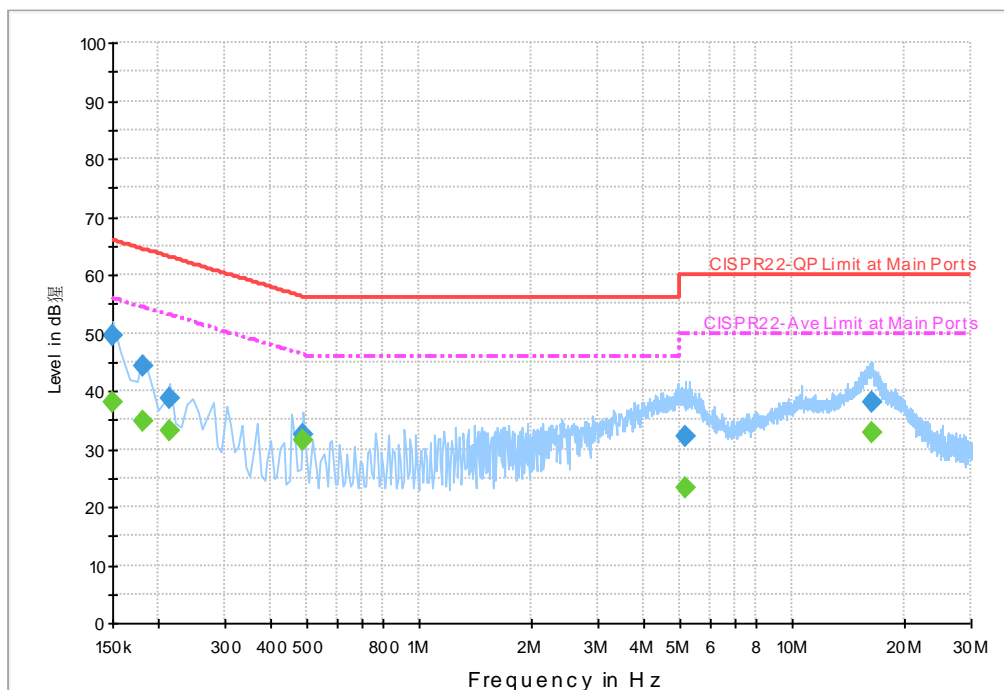
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All 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℃
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Qwerty Keypad		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



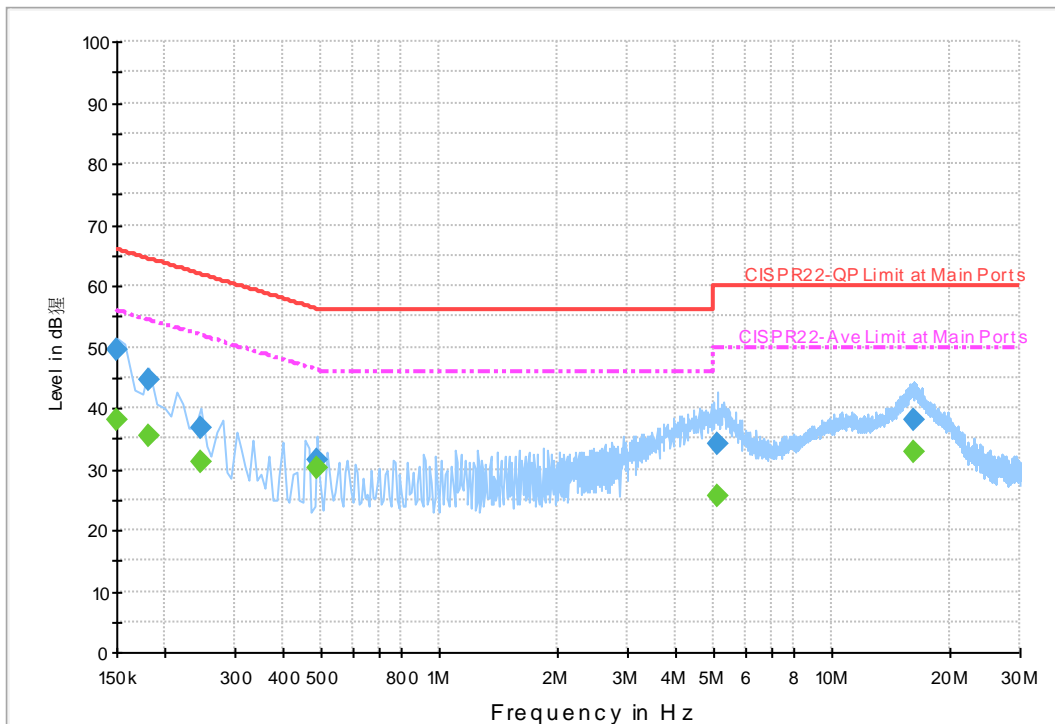
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	49.5	Off	L1	19.5	16.5	66.0
0.182000	44.3	Off	L1	19.5	20.1	64.4
0.214000	38.6	Off	L1	19.5	24.4	63.0
0.486000	32.4	Off	L1	19.4	23.8	56.2
5.166000	32.1	Off	L1	19.5	27.9	60.0
16.318000	38.2	Off	L1	19.7	21.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	38.0	Off	L1	19.5	18.0	56.0
0.182000	34.8	Off	L1	19.5	19.6	54.4
0.214000	33.0	Off	L1	19.5	20.0	53.0
0.486000	31.5	Off	L1	19.4	14.7	46.2
5.166000	23.2	Off	L1	19.5	26.8	50.0
16.318000	32.6	Off	L1	19.7	17.4	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Qwerty Keypad		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

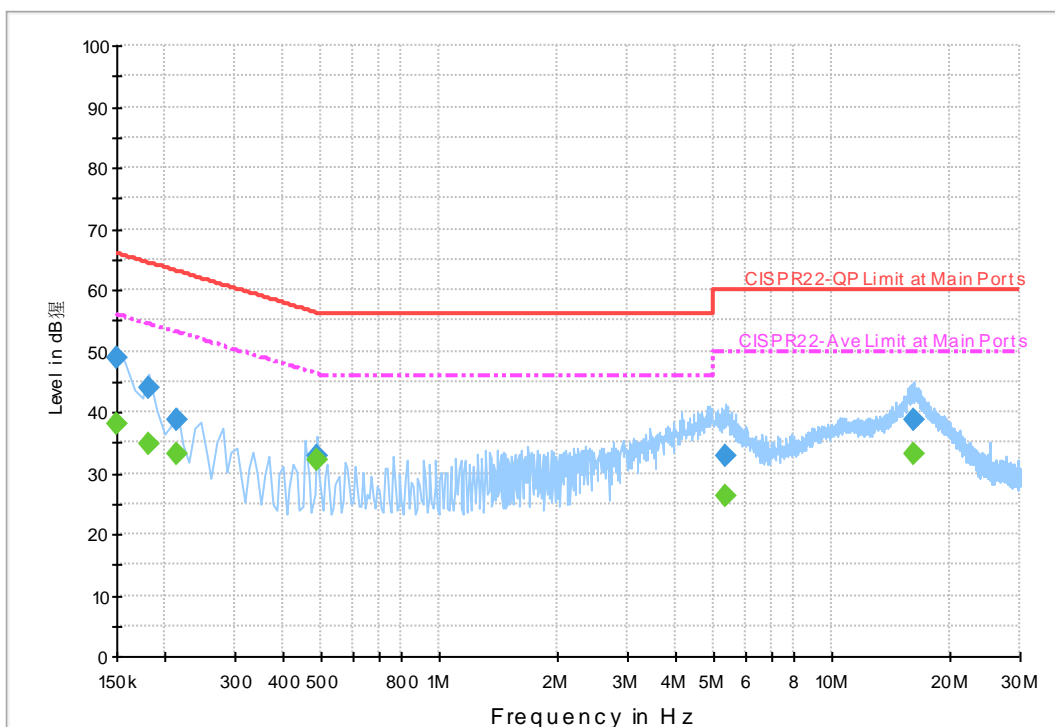

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	49.4	Off	N	19.5	16.6	66.0
0.182000	44.5	Off	N	19.5	19.9	64.4
0.246000	36.6	Off	N	19.5	25.3	61.9
0.486000	31.6	Off	N	19.4	24.6	56.2
5.086000	34.0	Off	N	19.5	26.0	60.0
16.134000	38.2	Off	N	19.8	21.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	38.2	Off	N	19.5	17.8	56.0
0.182000	35.3	Off	N	19.5	19.2	54.4
0.246000	31.3	Off	N	19.5	20.6	51.9
0.486000	30.1	Off	N	19.4	16.1	46.2
5.086000	25.7	Off	N	19.5	24.3	50.0
16.134000	32.9	Off	N	19.8	17.1	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Scanner + MP3 + Qwerty Keypad		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

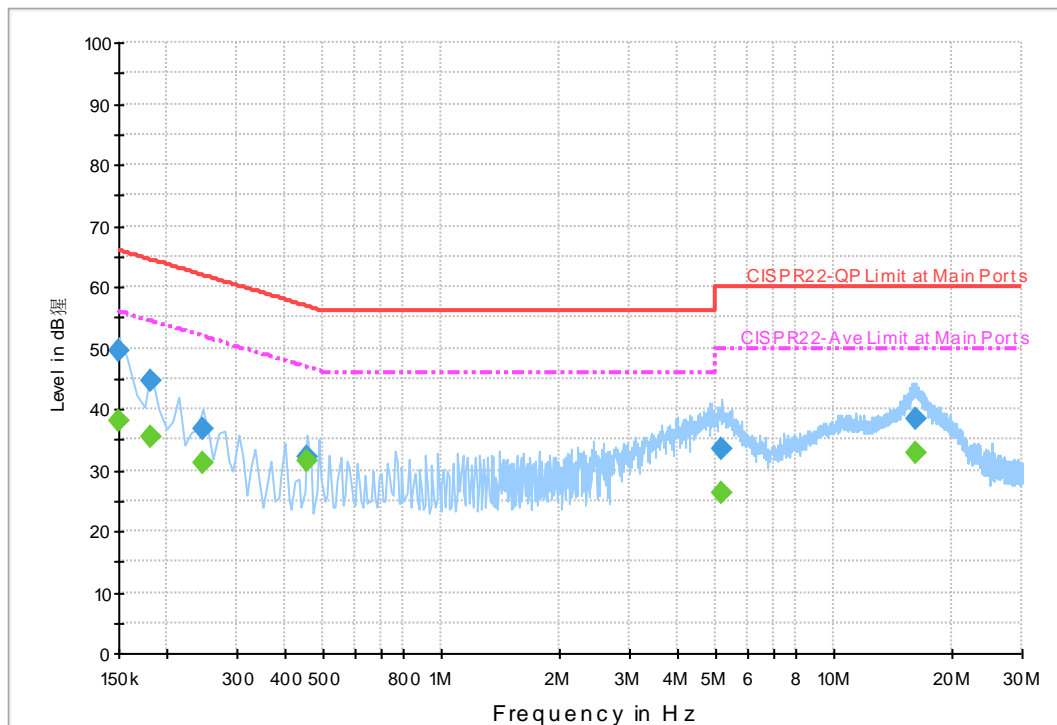

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	49.0	Off	L1	19.5	17.0	66.0
0.182000	44.0	Off	L1	19.5	20.4	64.4
0.214000	38.6	Off	L1	19.5	24.4	63.0
0.486000	32.8	Off	L1	19.4	23.4	56.2
5.318000	32.8	Off	L1	19.5	27.2	60.0
16.166000	38.7	Off	L1	19.7	21.3	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.9	Off	L1	19.5	18.1	56.0
0.182000	34.8	Off	L1	19.5	19.6	54.4
0.214000	33.2	Off	L1	19.5	19.8	53.0
0.486000	32.0	Off	L1	19.4	14.2	46.2
5.318000	26.3	Off	L1	19.5	23.7	50.0
16.166000	33.2	Off	L1	19.7	16.8	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Scanner + MP3 + Qwerty Keypad		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

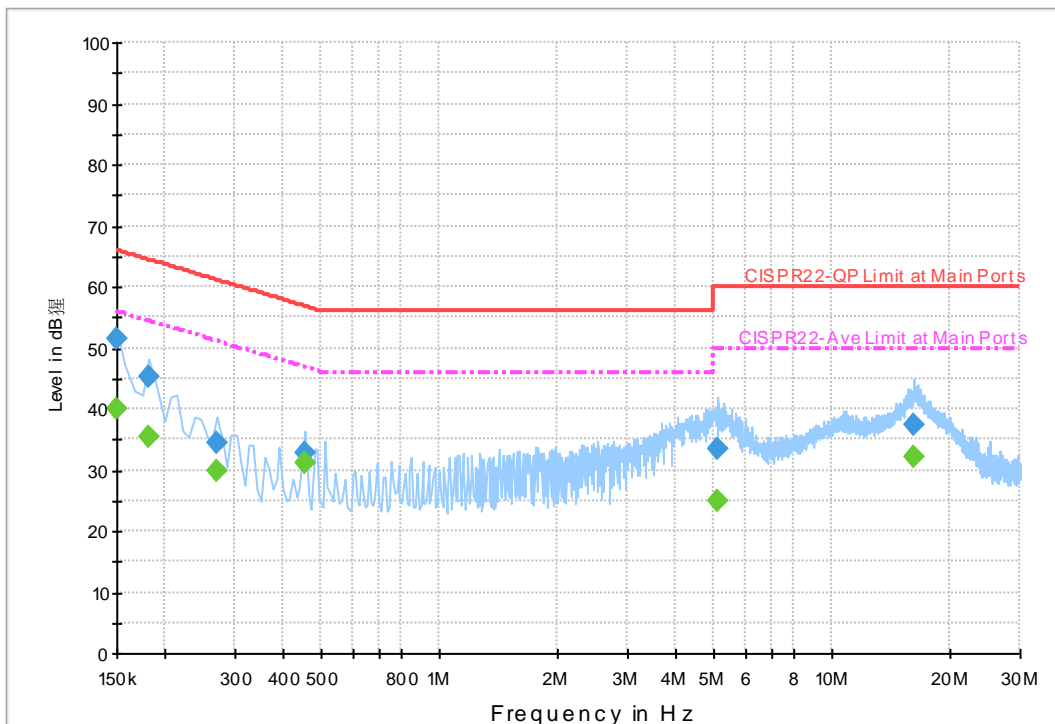

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	49.5	Off	N	19.5	16.5	66.0
0.182000	44.5	Off	N	19.5	19.9	64.4
0.246000	36.7	Off	N	19.5	25.2	61.9
0.454000	32.0	Off	N	19.4	24.8	56.8
5.174000	33.5	Off	N	19.5	26.5	60.0
16.126000	38.5	Off	N	19.8	21.5	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	38.1	Off	N	19.5	17.9	56.0
0.182000	35.3	Off	N	19.5	19.1	54.4
0.246000	31.1	Off	N	19.5	20.8	51.9
0.454000	31.5	Off	N	19.4	15.3	46.8
5.174000	26.1	Off	N	19.5	23.9	50.0
16.126000	32.9	Off	N	19.8	17.1	50.0

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Numeric Keypad		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

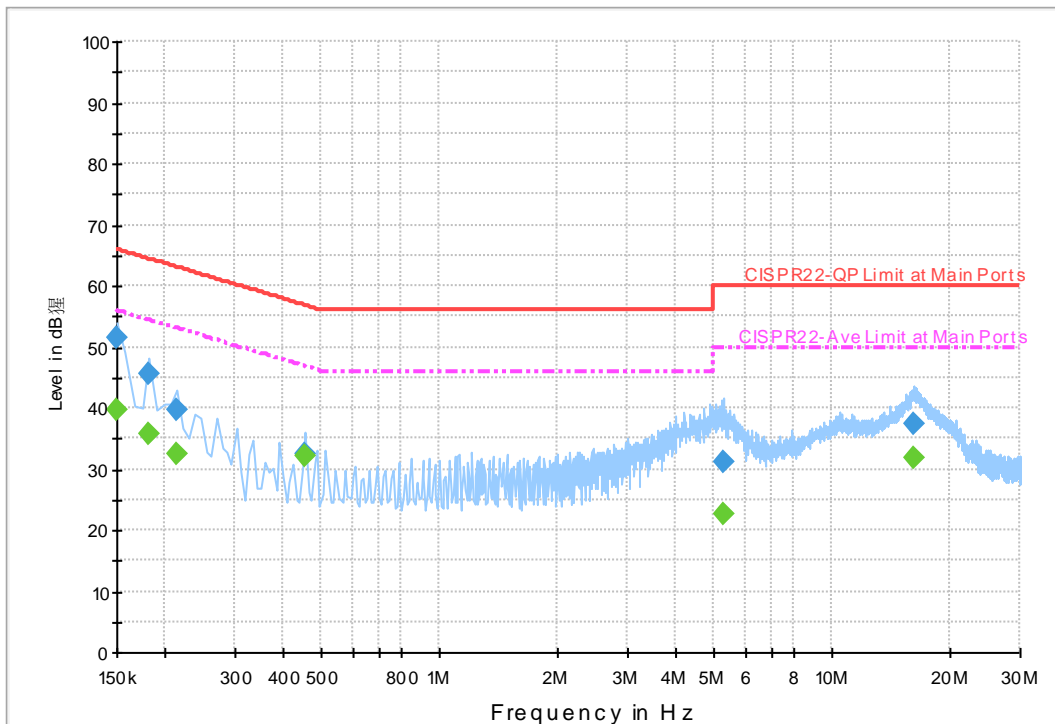

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	51.5	Off	L1	19.5	14.5	66.0
0.182000	45.3	Off	L1	19.5	19.1	64.4
0.270000	34.5	Off	L1	19.4	26.6	61.1
0.454000	32.7	Off	L1	19.4	24.1	56.8
5.118000	33.5	Off	L1	19.5	26.5	60.0
16.038000	37.5	Off	L1	19.7	22.5	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	39.9	Off	L1	19.5	16.1	56.0
0.182000	35.5	Off	L1	19.5	18.9	54.4
0.270000	29.9	Off	L1	19.4	21.3	51.1
0.454000	31.1	Off	L1	19.4	15.7	46.8
5.118000	25.0	Off	L1	19.5	25.0	50.0
16.038000	32.1	Off	L1	19.7	17.9	50.0

Test Mode :	Mode 3	Temperature :	20~22℃
Test Engineer :	Hayden Wu	Relative Humidity :	41~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + WLAN Link (5G) + Bluetooth Link + GPS Rx + USB Link + USB Charging cable with AC power + Camera + MP3 + Numeric Keypad		
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)
0.150000	51.5	Off	N	19.5	14.5	66.0
0.182000	45.5	Off	N	19.5	18.9	64.4
0.214000	39.6	Off	N	19.5	23.4	63.0
0.454000	32.3	Off	N	19.4	24.5	56.8
5.286000	31.0	Off	N	19.5	29.0	60.0
16.158000	37.5	Off	N	19.8	22.5	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	39.7	Off	N	19.5	16.3	56.0
0.182000	35.9	Off	N	19.5	18.5	54.4
0.214000	32.5	Off	N	19.5	20.5	53.0
0.454000	32.2	Off	N	19.4	14.6	46.8
5.286000	22.6	Off	N	19.5	27.4	50.0
16.158000	32.0	Off	N	19.8	18.0	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.
- (2) 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

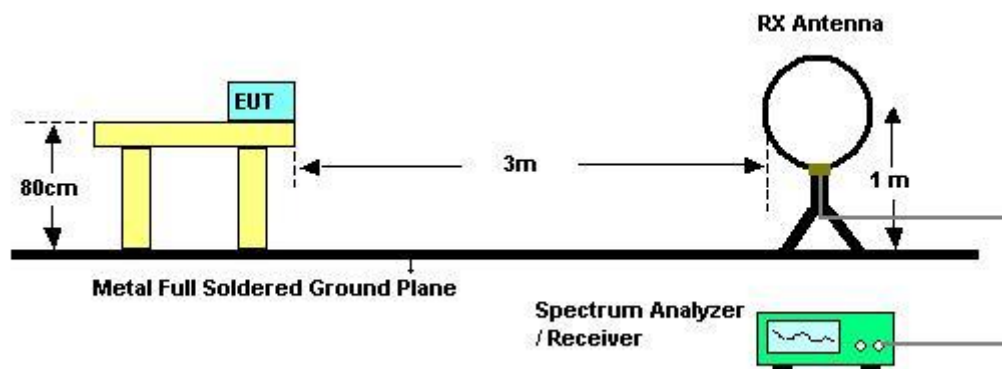
See list of measuring instruments of this test report.

3.7.3 Test Procedures

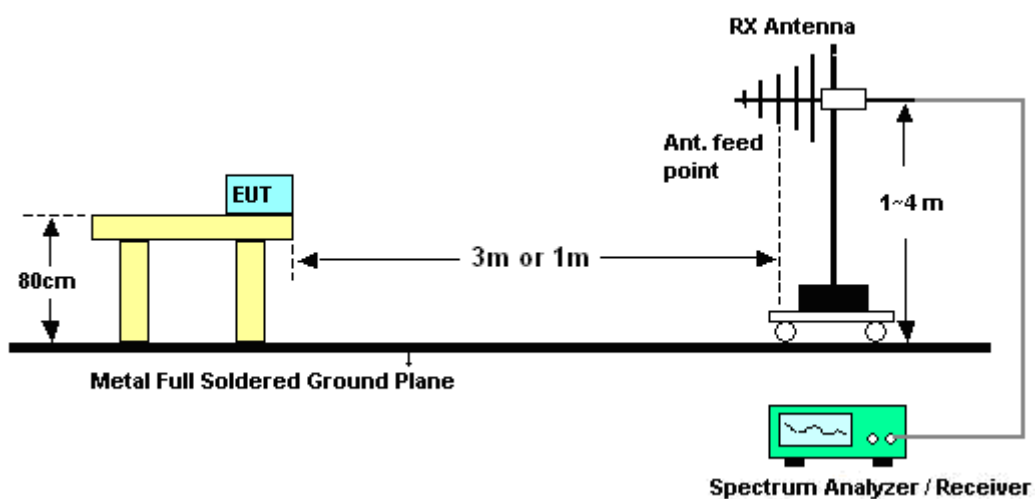
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna 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	42~43%
Test Engineer	Kay Wu		

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 :	42~43%
Test Engineer :	Kay Wu	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
37.29	21.82	-18.18	40	37.68	15.13	0.71	31.7	110	86	Peak
45.93	20.92	-19.08	40	41.45	10.43	0.74	31.7	-	-	Peak
187.14	21.96	-21.54	43.5	42.96	8.96	1.65	31.61	-	-	Peak
399.4	23.51	-22.49	46	36.06	16.11	2.54	31.2	-	-	Peak
799.8	25.09	-20.91	46	29.72	22.22	3.85	30.7	-	-	Peak
903.4	26.38	-19.62	46	29.69	23.22	4.17	30.7	-	-	Peak
5150	46.05	-7.95	54	37.96	34.49	8.07	34.47	100	52	Average
5150	65.36	-8.64	74	57.27	34.49	8.07	34.47	100	52	Peak
5180	94.72	-	-	86.57	34.51	8.1	34.46	100	52	Average
5180	105.69	-	-	97.54	34.51	8.1	34.46	100	52	Peak
5350	53.68	-20.32	74	45.27	34.61	8.23	34.43	100	52	Peak
5350	40.87	-13.13	54	32.46	34.61	8.23	34.43	100	52	Average
8268	55.27	-18.73	74	44.34	36	10.03	35.1	100	38	Peak
8268	43.11	-10.89	54	32.18	36	10.03	35.1	100	38	Average



Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
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
52.41	30.65	-9.35	40	53.93	7.57	0.85	31.7	-	-	Peak
71.58	31.17	-8.83	40	55.13	6.77	0.97	31.7	100	48	Peak
188.22	28.14	-15.36	43.5	49.16	8.94	1.65	31.61	-	-	Peak
615	24.28	-21.72	46	31.79	20.18	3.3	30.99	-	-	Peak
848.1	29.38	-16.62	46	33.44	22.68	3.96	30.7	-	-	Peak
903.4	28.4	-17.6	46	31.71	23.22	4.17	30.7	-	-	Peak
5150	45.88	-8.12	54	37.79	34.49	8.07	34.47	100	259	Average
5150	65.25	-8.75	74	57.16	34.49	8.07	34.47	100	259	Peak
5180	93.73	-	-	85.58	34.51	8.1	34.46	100	259	Average
5180	106.81	-	-	98.66	34.51	8.1	34.46	100	259	Peak
5350	40.04	-13.96	54	31.63	34.61	8.23	34.43	100	259	Average
5350	51.98	-22.02	74	43.57	34.61	8.23	34.43	100	259	Peak
8452	54.22	-19.78	74	43.18	36	10.14	35.1	110	74	Peak
8452	41.28	-12.72	54	30.24	36	10.14	35.1	110	74	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
37.29	22.27	-17.73	40	38.13	15.13	0.71	31.7	-	-	Peak
71.85	20.24	-19.76	40	44.2	6.77	0.97	31.7	-	-	Peak
172.02	22.83	-20.67	43.5	43.37	9.53	1.56	31.63	-	-	Peak
399.4	25.2	-20.8	46	37.75	16.11	2.54	31.2	-	-	Peak
848.1	30.07	-15.93	46	34.13	22.68	3.96	30.7	110	144	Peak
943.3	26.33	-19.67	46	28.9	23.84	4.25	30.66	-	-	Peak
5150	40.36	-13.64	54	32.27	34.49	8.07	34.47	100	265	Average
5150	52.44	-21.56	74	44.35	34.49	8.07	34.47	100	265	Peak
5220	106.61	-	-	98.41	34.53	8.12	34.45	100	265	Peak
5220	94.94	-	-	86.75	34.53	8.12	34.46	100	265	Average
5350	40.03	-13.97	54	31.62	34.61	8.23	34.43	100	265	Average
5350	50.85	-23.15	74	42.44	34.61	8.23	34.43	100	265	Peak
8414	54.86	-19.14	74	43.84	36	10.12	35.1	117	39	Peak
8414	42.99	-11.01	54	31.97	36	10.12	35.1	117	39	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
42.42	28.25	-11.75	40	47.05	12.18	0.72	31.7	-	-	Peak
72.66	29.97	-10.03	40	53.84	6.86	0.97	31.7	100	36	Peak
188.22	27.22	-16.28	43.5	48.24	8.94	1.65	31.61	-	-	Peak
514.9	23.09	-22.91	46	32.74	18.46	2.98	31.09	-	-	Peak
848.1	28.45	-17.55	46	32.51	22.68	3.96	30.7	-	-	Peak
909.7	26.83	-19.17	46	30.01	23.33	4.18	30.69	-	-	Peak
5150	43.4	-10.6	54	35.31	34.49	8.07	34.47	100	308	Average
5150	54.27	-19.73	74	46.18	34.49	8.07	34.47	100	308	Peak
5220	110.75	-	-	102.55	34.53	8.12	34.45	100	308	Peak
5220	98.69	-	-	90.5	34.53	8.12	34.46	100	308	Average
5350	41.83	-12.17	54	33.42	34.61	8.23	34.43	100	308	Average
5350	54.35	-19.65	74	45.94	34.61	8.23	34.43	100	308	Peak
8398	54.48	-19.52	74	43.47	36	10.11	35.1	100	44	Peak
8398	42.11	-11.89	54	31.1	36	10.11	35.1	100	44	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
30.81	22.4	-17.6	40	34.5	18.95	0.65	31.7	100	61	Peak
147.45	22.19	-21.31	43.5	41.05	11.34	1.45	31.65	-	-	Peak
172.02	22.61	-20.89	43.5	43.15	9.53	1.56	31.63	-	-	Peak
399.4	25.61	-20.39	46	38.16	16.11	2.54	31.2	-	-	Peak
466.6	23.3	-22.7	46	34.11	17.48	2.84	31.13	-	-	Peak
928.6	26.85	-19.15	46	29.69	23.61	4.22	30.67	-	-	Peak
5150	40.81	-13.19	54	32.72	34.49	8.07	34.47	100	268	Average
5150	52.3	-21.7	74	44.21	34.49	8.07	34.47	100	268	Peak
5240	94.8	-	-	86.57	34.54	8.14	34.45	100	268	Average
5240	106.51	-	-	98.26	34.55	8.15	34.45	100	268	Peak
5350	50.34	-23.66	74	41.93	34.61	8.23	34.43	100	268	Peak
5350	38.96	-15.04	54	30.55	34.61	8.23	34.43	100	268	Average
8396	54.36	-19.64	74	43.35	36	10.11	35.1	100	134	Peak
8396	42.64	-11.36	54	31.63	36	10.11	35.1	100	134	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
43.77	28.6	-11.4	40	48.03	11.55	0.72	31.7	-	-	Peak
72.66	31.05	-8.95	40	54.92	6.86	0.97	31.7	110	39	Peak
190.38	27.38	-16.12	43.5	48.41	8.92	1.66	31.61	-	-	Peak
514.9	22.51	-23.49	46	32.16	18.46	2.98	31.09	-	-	Peak
640.9	23.27	-22.73	46	30.47	20.38	3.38	30.96	-	-	Peak
825	26.27	-19.73	46	30.6	22.46	3.91	30.7	-	-	Peak
5150	43.09	-10.91	54	35	34.49	8.07	34.47	100	307	Average
5150	55.31	-18.69	74	47.22	34.49	8.07	34.47	100	307	Peak
5240	110.04	-	-	101.81	34.54	8.14	34.45	100	307	Peak
5240	98.18	-	-	89.95	34.54	8.14	34.45	100	307	Average
5350	42.66	-11.34	54	34.25	34.61	8.23	34.43	100	307	Average
5350	55.11	-18.89	74	46.7	34.61	8.23	34.43	100	307	Peak
8476	53.89	-20.11	74	42.82	36	10.17	35.1	128	31	Peak
8476	41.64	-12.36	54	30.57	36	10.17	35.1	128	31	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
37.29	21.13	-18.87	40	36.99	15.13	0.71	31.7	130	45	Peak
148.26	21.58	-21.92	43.5	40.48	11.29	1.46	31.65	-	-	Peak
187.41	21.37	-22.13	43.5	42.37	8.96	1.65	31.61	-	-	Peak
399.4	23.02	-22.98	46	35.57	16.11	2.54	31.2	-	-	Peak
466.6	23.5	-22.5	46	34.31	17.48	2.84	31.13	-	-	Peak
856.5	25.7	-20.3	46	29.65	22.76	3.99	30.7	-	-	Peak
5150	42.42	-11.58	54	34.33	34.49	8.07	34.47	100	57	Average
5150	54.46	-19.54	74	46.37	34.49	8.07	34.47	100	57	Peak
5260	107.71	-	-	99.46	34.55	8.15	34.45	100	57	Peak
5260	96.11	-	-	87.84	34.56	8.16	34.45	100	57	Average
5350	41.91	-12.09	54	33.5	34.61	8.23	34.43	100	57	Average
5350	53.49	-20.51	74	45.08	34.61	8.23	34.43	100	57	Peak
8286	54.57	-19.43	74	43.63	36	10.04	35.1	100	104	Peak
8286	42.49	-11.51	54	31.55	36	10.04	35.1	100	104	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
43.5	29.36	-10.64	40	48.79	11.55	0.72	31.7	100	41	Peak
74.01	29.15	-10.85	40	52.93	6.95	0.97	31.7	-	-	Peak
190.38	27.2	-16.3	43.5	48.23	8.92	1.66	31.61	-	-	Peak
564.6	22.06	-23.94	46	30.57	19.39	3.14	31.04	-	-	Peak
825	25.28	-20.72	46	29.61	22.46	3.91	30.7	-	-	Peak
937	26.62	-19.38	46	29.31	23.74	4.23	30.66	-	-	Peak
5150	42.46	-11.54	54	34.37	34.49	8.07	34.47	102	308	Average
5150	54.97	-19.03	74	46.88	34.49	8.07	34.47	102	308	Peak
5260	108.19	-	-	99.92	34.56	8.16	34.45	102	308	Peak
5260	98.42	-	-	90.15	34.56	8.16	34.45	102	308	Average
5350	43.51	-10.49	54	35.1	34.61	8.23	34.43	102	308	Average
5350	55.44	-18.56	74	47.03	34.61	8.23	34.43	102	308	Peak
8476	54.47	-19.53	74	43.4	36	10.17	35.1	114	61	Peak
8476	41.79	-12.21	54	30.72	36	10.17	35.1	114	61	Average

Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
37.29	21.54	-18.46	40	37.4	15.13	0.71	31.7	-	-	Peak
147.45	21.98	-21.52	43.5	40.84	11.34	1.45	31.65	-	-	Peak
172.02	22.73	-20.77	43.5	43.27	9.53	1.56	31.63	-	-	Peak
399.4	24.81	-21.19	46	37.36	16.11	2.54	31.2	-	-	Peak
861.4	26.74	-19.26	46	30.62	22.81	4.01	30.7	-	-	Peak
926.5	27.72	-18.28	46	30.6	23.58	4.21	30.67	119	100	Peak
5150	41.34	-12.66	54	33.25	34.49	8.07	34.47	100	59	Average
5150	52.83	-21.17	74	44.74	34.49	8.07	34.47	100	59	Peak
5300	108.29	-	-	99.96	34.58	8.19	34.44	100	59	Peak
5300	95.61	-	-	87.28	34.58	8.19	34.44	100	59	Average
5350	43.64	-10.36	54	35.23	34.61	8.23	34.43	100	59	Average
5350	59.52	-14.48	74	51.11	34.61	8.23	34.43	100	59	Peak
8374	54.49	-19.51	74	43.49	36	10.1	35.1	100	88	Peak
8374	41.6	-12.4	54	30.6	36	10.1	35.1	100	88	Average



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
42.69	28.57	-11.43	40	47.37	12.18	0.72	31.7	-	-	Peak
74.82	30.5	-9.5	40	54.18	7.04	0.98	31.7	110	74	Peak
136.65	29.55	-13.95	43.5	48.1	11.72	1.39	31.66	-	-	Peak
466.6	22.47	-23.53	46	33.28	17.48	2.84	31.13	-	-	Peak
727.7	23.5	-22.5	46	29.5	21.22	3.63	30.85	-	-	Peak
881	25.6	-20.4	46	29.23	22.99	4.08	30.7	-	-	Peak
5150	39.85	-14.15	54	31.76	34.49	8.07	34.47	100	314	Average
5150	52.18	-21.82	74	44.09	34.49	8.07	34.47	100	314	Peak
5300	109.14	-	-	100.81	34.58	8.19	34.44	100	314	Peak
5300	96.89	-	-	88.56	34.58	8.19	34.44	100	314	Average
5350	44.54	-9.46	54	36.13	34.61	8.23	34.43	100	314	Average
5350	57.73	-16.27	74	49.32	34.61	8.23	34.43	100	314	Peak
8436	54.64	-19.36	74	43.61	36	10.13	35.1	121	36	Peak
8436	41.72	-12.28	54	30.69	36	10.13	35.1	121	36	Average
10600	36.65	-37.35	74	68.6	-8.46	11.28	34.77	100	37	Peak
10600	25.95	-28.05	54	57.9	-8.46	11.28	34.77	100	37	Average
15900	40.88	-33.12	74	66.7	-4.6	14.07	35.29	100	47	Peak
15900	29.56	-24.44	54	55.38	-4.6	14.07	35.29	100	47	Average



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
46.74	23.3	-16.7	40	44.3	9.94	0.76	31.7	100	64	Peak
172.02	22.78	-20.72	43.5	43.32	9.53	1.56	31.63	-	-	Peak
267.06	22.9	-23.1	46	39.4	13	1.97	31.47	-	-	Peak
416.2	24.54	-21.46	46	36.63	16.45	2.64	31.18	-	-	Peak
721.4	24.36	-21.64	46	30.48	21.13	3.61	30.86	-	-	Peak
892.9	26.14	-19.86	46	29.6	23.11	4.13	30.7	-	-	Peak
5150	52.07	-21.93	74	43.98	34.49	8.07	34.47	135	44	Peak
5150	40.05	-13.95	54	31.96	34.49	8.07	34.47	135	44	Average
5320	94.74	-	-	86.39	34.59	8.2	34.44	135	44	Average
5320	106.37	-	-	98.02	34.59	8.2	34.44	135	44	Peak
5350	65.16	-8.84	74	56.75	34.61	8.23	34.43	135	44	Peak
5350	46.31	-7.69	54	37.9	34.61	8.23	34.43	135	44	Average
8412	54.49	-19.51	74	43.47	36	10.12	35.1	100	46	Peak
8412	41.27	-12.73	54	30.25	36	10.12	35.1	100	46	Average



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
51.33	31.37	-8.63	40	54.46	7.77	0.84	31.7	116	100	Peak
74.01	29.63	-10.37	40	53.41	6.95	0.97	31.7	-	-	Peak
164.46	28	-15.5	43.5	48.07	10.03	1.53	31.63	-	-	Peak
564.6	22.29	-23.71	46	30.8	19.39	3.14	31.04	-	-	Peak
750.1	23.67	-22.33	46	29.25	21.52	3.7	30.8	-	-	Peak
937.7	26.31	-19.69	46	28.98	23.75	4.24	30.66	-	-	Peak
5150	41.08	-12.92	54	32.99	34.49	8.07	34.47	100	304	Average
5150	52.5	-21.5	74	44.41	34.49	8.07	34.47	100	304	Peak
5320	106.88	-	-	98.53	34.59	8.2	34.44	100	304	Average
5320	93.54	-	-	85.19	34.59	8.2	34.44	100	304	Average
5350	65.98	-8.02	74	57.57	34.61	8.23	34.43	100	304	Peak
5350	46.38	-7.62	54	37.97	34.61	8.23	34.43	100	304	Average
8398	54.42	-19.58	74	43.41	36	10.11	35.1	110	37	Peak
8398	42	-12	54	30.99	36	10.11	35.1	110	37	Average

Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5500 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 16500 MHz are not within a restricted band.		

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
46.74	22.79	-17.21	40	43.79	9.94	0.76	31.7	100	98	Peak
73.74	20.89	-19.11	40	44.67	6.95	0.97	31.7	-	-	Peak
143.94	21.51	-21.99	43.5	40.22	11.52	1.43	31.66	-	-	Peak
399.4	25.01	-20.99	46	37.56	16.11	2.54	31.2	-	-	Peak
466.6	22.73	-23.27	46	33.54	17.48	2.84	31.13	-	-	Peak
845.3	25.22	-20.78	46	29.31	22.66	3.95	30.7	-	-	Peak
5470	61.52	-6.78	68.3	52.93	34.68	8.32	34.41	102	56	Peak
5500	105.64	-	-	96.99	34.7	8.35	34.4	102	56	Peak
5500	94.02	-	-	85.37	34.7	8.35	34.4	102	56	Average
5725	48.2	-20.1	68.3	39.28	35.01	8.4	34.49	102	56	Peak
8444	54.66	-19.34	74	43.62	36	10.14	35.1	105	26	Peak
8444	42.94	-11.06	54	31.9	36	10.14	35.1	105	26	Average
16500	36.75	-31.55	68.3	68.17	-10.1	13.68	35	100	0	Peak

Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5500 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 16500 MHz are not within a restricted band.		

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	30.8	-9.2	40	49.6	12.18	0.72	31.7	120	72	Peak
74.82	30	-10	40	53.68	7.04	0.98	31.7	-	-	Peak
164.73	28.13	-15.37	43.5	48.2	10.03	1.53	31.63	-	-	Peak
514.9	22.01	-23.99	46	31.66	18.46	2.98	31.09	-	-	Peak
615	23.33	-22.67	46	30.84	20.18	3.3	30.99	-	-	Peak
917.4	27.02	-18.98	46	30.06	23.44	4.2	30.68	-	-	Peak
5470	61.31	-6.99	68.3	52.72	34.68	8.32	34.41	102	252	Peak
5500	104.18	-	-	95.55	34.69	8.34	34.4	102	252	Peak
5500	92.24	-	-	83.59	34.7	8.35	34.4	102	252	Average
5725	49.56	-18.74	68.3	40.64	35.01	8.4	34.49	102	252	Peak
8428	54.79	-19.21	74	43.76	36	10.13	35.1	100	64	Peak
8428	41.34	-12.66	54	30.31	36	10.13	35.1	100	64	Average
16500	36.19	-32.11	68.3	67.61	-10.1	13.68	35	100	0	Peak

Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	120	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5600 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 16800 MHz are not within a restricted band.		

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
46.74	21.29	-18.71	40	42.29	9.94	0.76	31.7	-	-	Peak
99.66	21.74	-21.76	43.5	41.94	10.34	1.16	31.7	-	-	Peak
144.21	21.37	-22.13	43.5	40.13	11.47	1.43	31.66	-	-	Peak
399.4	24.38	-21.62	46	36.93	16.11	2.54	31.2	-	-	Peak
881.7	25.94	-20.06	46	29.55	23	4.09	30.7	-	-	Peak
940.5	26.4	-19.6	46	29.02	23.8	4.24	30.66	-	-	Peak
5470	55.08	-13.22	68.3	46.49	34.68	8.32	34.41	103	53	Peak
5600	95.16	-	-	86.39	34.84	8.37	34.44	103	53	Average
5600	105.56	-	-	96.81	34.82	8.37	34.44	103	53	Peak
5725	50.79	-17.51	68.3	41.87	35.01	8.4	34.49	103	53	Peak
8300	55	-19	74	44.06	36	10.04	35.1	100	48	Peak
8300	42.91	-11.09	54	31.97	36	10.04	35.1	100	48	Average
16800	43.62	-24.68	68.3	74.16	-10.1	14.15	34.59	100	36	Peak

Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	120	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5600 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 16800 MHz are not within a restricted band.		

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
43.5	31.81	-8.19	40	51.24	11.55	0.72	31.7	140	112	Peak
72.93	31.55	-8.45	40	55.42	6.86	0.97	31.7	-	-	Peak
164.46	28.63	-14.87	43.5	48.7	10.03	1.53	31.63	-	-	Peak
466.6	22.25	-23.75	46	33.06	17.48	2.84	31.13	-	-	Peak
615	23.27	-22.73	46	30.78	20.18	3.3	30.99	-	-	Peak
954.5	26.93	-19.07	46	29.31	24	4.27	30.65	-	-	Peak
5470	54.76	-13.54	68.3	46.17	34.68	8.32	34.41	100	202	Peak
5600	105.18	-	-	96.43	34.82	8.37	34.44	100	202	Peak
5600	93.14	-	-	84.37	34.84	8.37	34.44	100	202	Average
5725	50.91	-17.39	68.3	41.99	35.01	8.4	34.49	100	202	Peak
8388	54.83	-19.17	74	43.82	36	10.11	35.1	100	125	Peak
8388	42.79	-11.21	54	31.78	36	10.11	35.1	100	125	Average
16800	39.53	-28.77	68.3	70.04	-10.1	14.15	34.56	100	12	Peak

Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz and 5725 MHz are not within a restricted band.		

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
37.29	21.37	-18.63	40	37.23	15.13	0.71	31.7	100	70	Peak
73.74	18.58	-21.42	40	42.36	6.95	0.97	31.7	-	-	Peak
140.7	22.42	-21.08	43.5	41.02	11.65	1.41	31.66	-	-	Peak
318.2	22.48	-23.52	46	37.68	13.95	2.21	31.36	-	-	Peak
399.4	23.46	-22.54	46	36.01	16.11	2.54	31.2	-	-	Peak
934.9	27.19	-18.81	46	29.92	23.71	4.23	30.67	-	-	Peak
5470	50.42	-17.88	68.3	41.83	34.68	8.32	34.41	100	303	Peak
5700	102.94	-	-	94.05	34.97	8.4	34.48	100	303	Peak
5700	91.14	-	-	82.25	34.97	8.4	34.48	100	303	Average
5725	61.38	-6.92	68.3	52.46	35.01	8.4	34.49	100	303	Peak
8380	55.5	-18.5	74	44.5	36	10.1	35.1	120	102	Peak
8380	43.1	-10.9	54	32.1	36	10.1	35.1	120	102	Average



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz and 5725 MHz are not within a restricted band.		

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	29.79	-10.21	40	48.59	12.18	0.72	31.7	-	-	Peak
74.82	30.03	-9.97	40	53.71	7.04	0.98	31.7	151	100	Peak
165.54	27.52	-15.98	43.5	47.66	9.96	1.53	31.63	-	-	Peak
466.6	22.86	-23.14	46	33.67	17.48	2.84	31.13	-	-	Peak
615	23.57	-22.43	46	31.08	20.18	3.3	30.99	-	-	Peak
836.2	26.24	-19.76	46	30.45	22.56	3.93	30.7	-	-	Peak
5470	49.37	-18.93	68.3	40.78	34.68	8.32	34.41	100	314	Peak
5700	102.98	-	-	94.08	34.99	8.4	34.49	100	314	Peak
5700	91.38	-	-	82.49	34.97	8.4	34.48	100	314	Peak
5725	62.06	-6.24	68.3	53.14	35.01	8.4	34.49	100	314	Peak
8406	54.43	-19.57	74	43.41	36	10.12	35.1	100	68	Peak
8406	41.41	-12.59	54	30.39	36	10.12	35.1	100	68	Average

Test Mode :	Mode 10	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	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
30	21.88	-18.12	40	33.43	19.51	0.64	31.7	100	37	Peak
159.33	18.6	-24.9	43.5	38.27	10.46	1.51	31.64	-	-	Peak
196.86	16.64	-26.86	43.5	37.71	8.84	1.69	31.6	-	-	Peak
453.3	22.92	-23.08	46	34.06	17.2	2.81	31.15	-	-	Peak
685.7	23.2	-22.8	46	29.87	20.73	3.51	30.91	-	-	Peak
946.1	26.44	-19.56	46	28.97	23.87	4.25	30.65	-	-	Peak
5150	40	-14	54	31.91	34.49	8.07	34.47	123	47	Average
5150	50.81	-23.19	74	42.72	34.49	8.07	34.47	123	47	Peak
5320	95.31	-	-	86.96	34.59	8.2	34.44	123	47	Average
5320	105.52	-	-	97.17	34.59	8.2	34.44	123	47	Peak
5350	66.55	-7.45	74	58.14	34.61	8.23	34.43	123	47	Peak
5350	47.38	-6.62	54	38.97	34.61	8.23	34.43	123	47	Average
8428	54.5	-19.5	74	43.47	36	10.13	35.1	100	251	Peak
8428	39.45	-14.55	54	28.42	36	10.13	35.1	100	251	Average
15960	48.69	-25.31	74	74.27	-4.25	14.02	35.35	100	0	Peak



Test Mode :	Mode 10	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	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
30.81	23.47	-16.53	40	35.57	18.95	0.65	31.7	-	-	Peak
72.66	24.38	-15.62	40	48.25	6.86	0.97	31.7	100	66	Peak
159.33	18.64	-24.86	43.5	38.31	10.46	1.51	31.64	-	-	Peak
508.6	22.08	-23.92	46	31.88	18.33	2.96	31.09	-	-	Peak
699.7	24.95	-21.05	46	31.47	20.83	3.55	30.9	-	-	Peak
903.4	29.01	-16.99	46	32.32	23.22	4.17	30.7	-	-	Peak
5150	41.67	-12.33	54	33.58	34.49	8.07	34.47	111	299	Average
5150	53.97	-20.03	74	45.88	34.49	8.07	34.47	111	299	Peak
5320	94.19	-	-	85.84	34.59	8.2	34.44	111	299	Average
5320	106.16	-	-	97.81	34.59	8.2	34.44	111	299	Peak
5350	66.62	-7.38	74	58.21	34.61	8.23	34.43	111	299	Peak
5350	47.06	-6.94	54	38.65	34.61	8.23	34.43	111	299	Average
8420	54.32	-19.68	74	43.3	36	10.12	35.1	100	21	Peak
8420	38.88	-15.12	54	27.86	36	10.12	35.1	100	21	Average
15960	47.38	-26.62	74	72.84	-4.11	14.02	35.37	100	0	Peak

Test Mode :	Mode 11	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz and 5725 MHz are not within a restricted band.		

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
30.27	21.99	-18.01	40	33.54	19.51	0.64	31.7	100	167	Peak
142.86	17.54	-25.96	43.5	36.22	11.56	1.42	31.66	-	-	Peak
159.33	18.55	-24.95	43.5	38.22	10.46	1.51	31.64	-	-	Peak
307	22.99	-23.01	46	38.54	13.67	2.16	31.38	-	-	Peak
379.8	24.83	-21.17	46	37.99	15.6	2.48	31.24	-	-	Peak
811.7	25.29	-20.71	46	29.78	22.33	3.88	30.7	-	-	Peak
5470	50.97	-17.33	68.3	42.38	34.68	8.32	34.41	100	297	Peak
5700	102.84	-	-	93.95	34.97	8.4	34.48	100	297	Peak
5700	91.96	-	-	83.07	34.97	8.4	34.48	100	297	Average
5725	62.19	-6.11	68.3	91.53	0	6.4	35.74	100	297	Peak
8382	53.96	-20.04	74	42.96	36	10.1	35.1	100	221	Peak
8382	39.33	-14.67	54	28.33	36	10.1	35.1	100	221	Average

Test Mode :	Mode 11	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz and 5725 MHz are not within a restricted band.		

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
72.66	24.47	-15.53	40	48.34	6.86	0.97	31.7	100	285	Peak
91.02	23.81	-19.69	43.5	45.36	9.03	1.12	31.7	-	-	Peak
368.6	19.23	-26.77	46	32.77	15.29	2.43	31.26	-	-	Peak
503	21.78	-24.22	46	31.69	18.24	2.95	31.1	-	-	Peak
797	25.45	-20.55	46	30.14	22.18	3.84	30.71	-	-	Peak
5470	49.95	-18.35	68.3	41.36	34.68	8.32	34.41	100	248	Peak
5700	101.42	-	-	92.53	34.97	8.4	34.48	100	248	Peak
5700	90.22	-	-	81.33	34.97	8.4	34.48	100	248	Average
5725	61.99	-6.31	68.3	91.33	0	6.4	35.74	100	248	Peak
8292	40.68	-13.32	54	29.74	36	10.04	35.1	100	195	Average
8292	54.42	-19.58	74	43.48	36	10.04	35.1	100	195	Peak
72.66	24.47	-15.53	40	48.34	6.86	0.97	31.7	100	285	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.

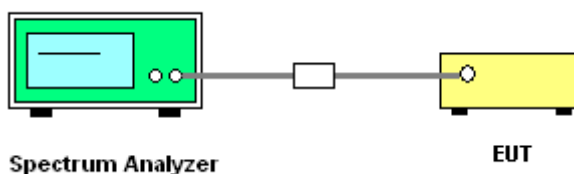
3.8.2 Measuring Instruments

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 is set to and maintained at 1 MHz. The video bandwidth is set to 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.

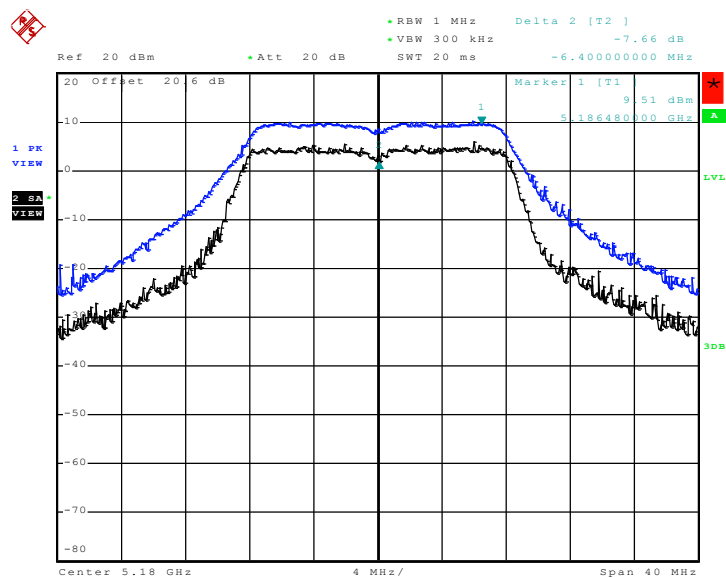
3.8.4 Test Setup



3.8.5 Test Result of Peak Excursion Ratio

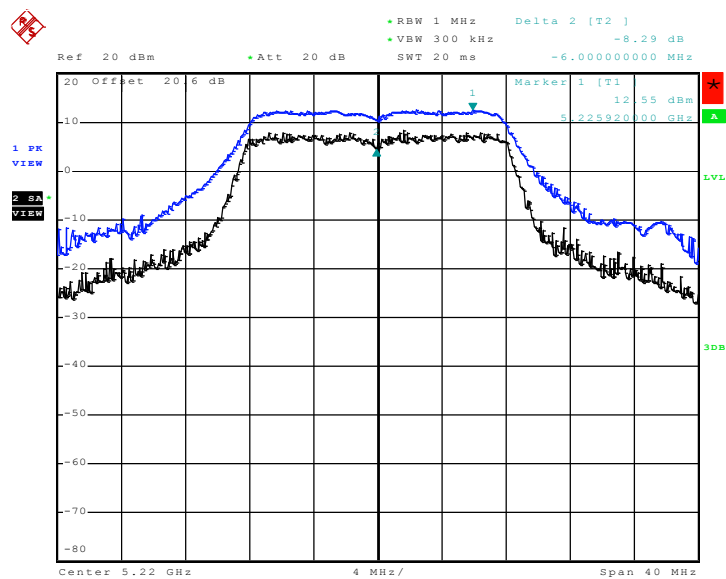
Test Mode :	Mode 1~9	Temperature :	24~26°C
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

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

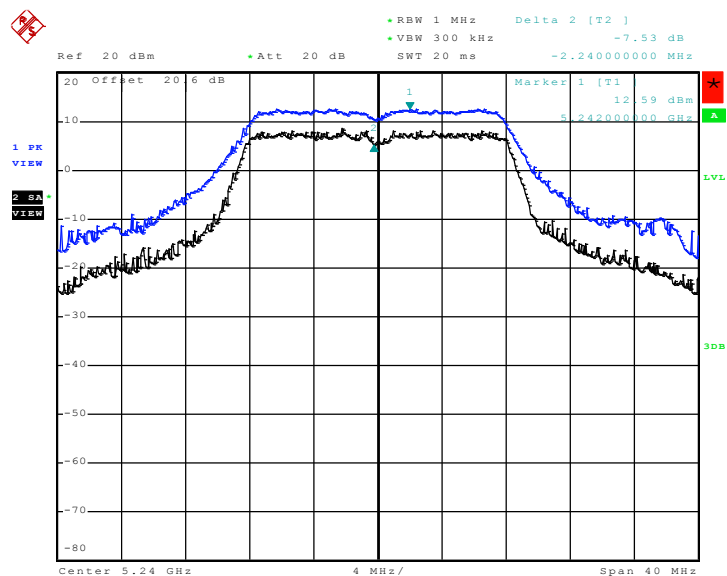


Date: 24.JAN.2010 07:19:09

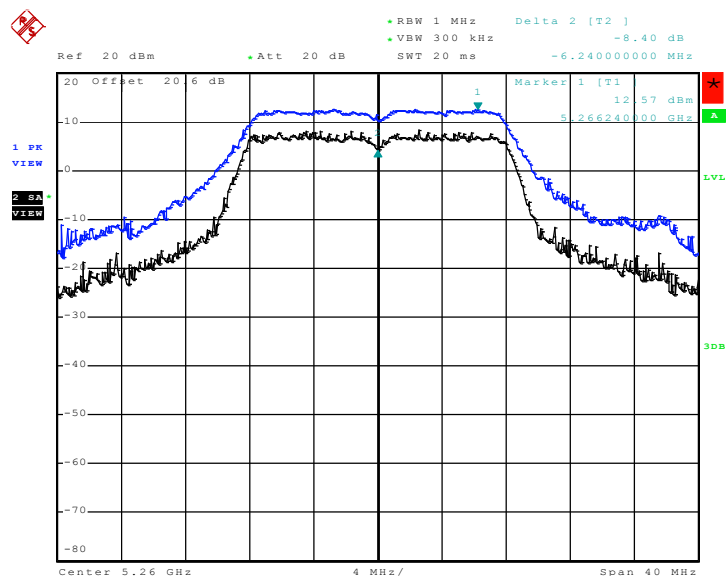
Mode 2 : Peak Excursion Ratio Plot on 802.11a Channel 44



Date: 24.JAN.2010 07:20:23

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


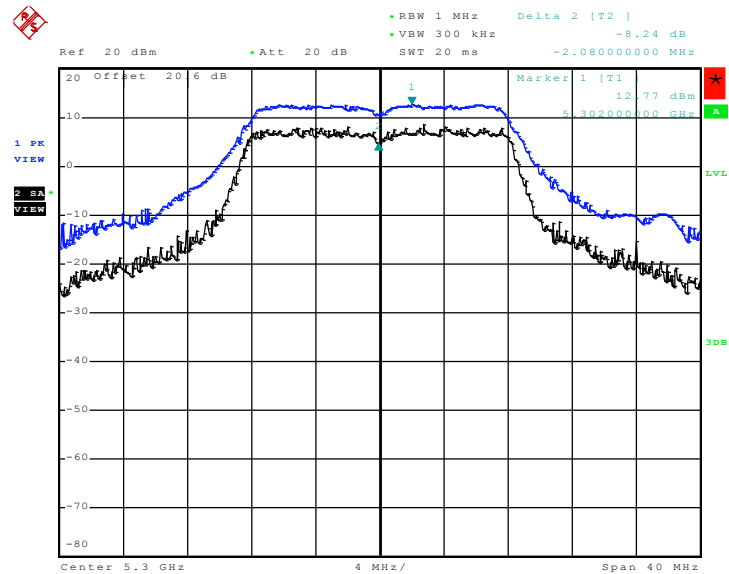
Date: 24.JAN.2010 07:22:31

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


Date: 24.JAN.2010 07:23:43

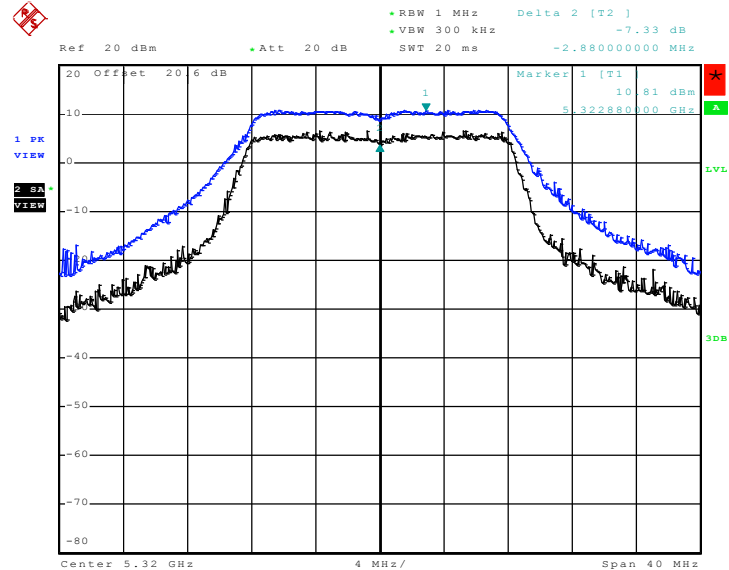


Mode 5 : Peak Excursion Ratio Plot on 802.11a Channel 60

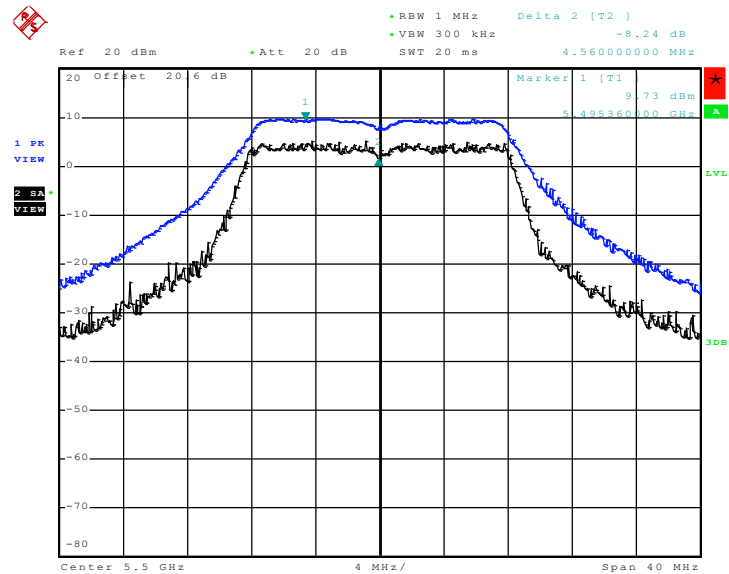


Date: 24.JAN.2010 07:25:14

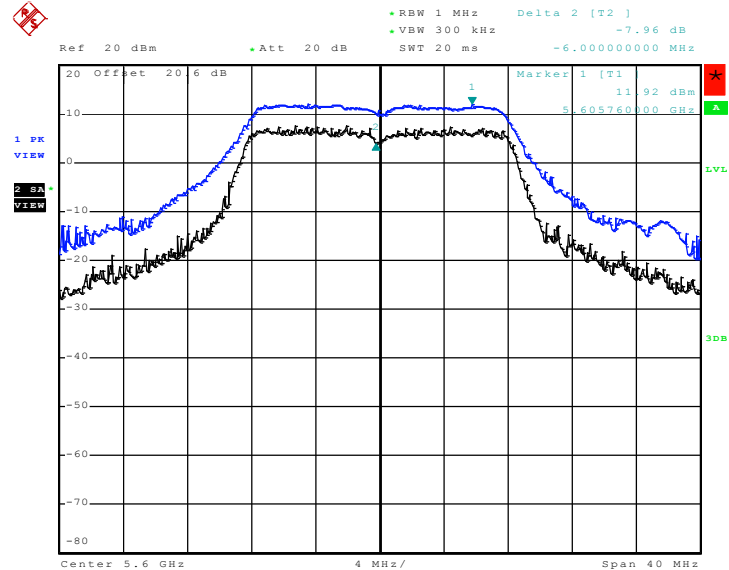
Mode 6 : Peak Excursion Ratio Plot on 802.11a Channel 64



Date: 24.JAN.2010 07:26:22

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


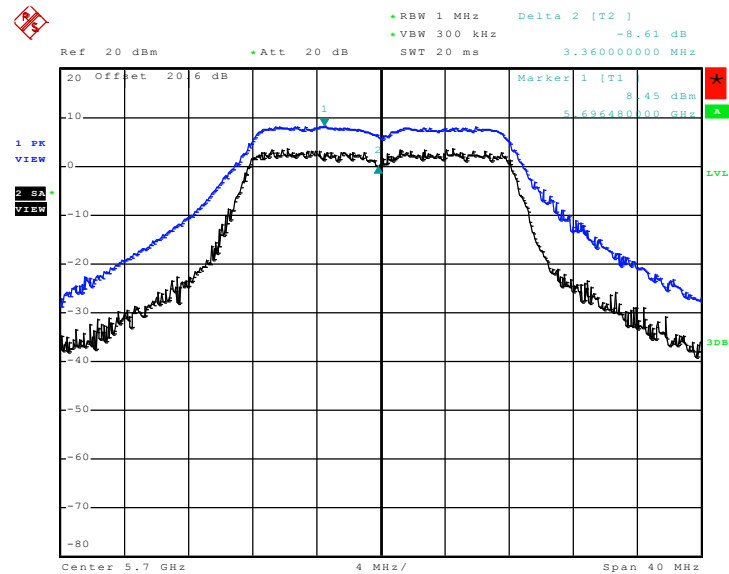
Date: 24.JAN.2010 07:27:41

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


Date: 24.JAN.2010 07:28:50



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



Date: 24.JAN.2010 07:30:16

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.

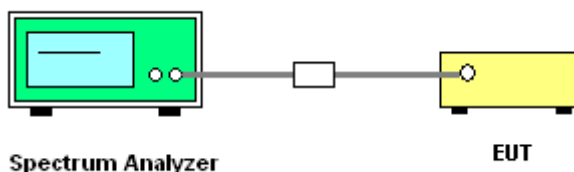
3.10.2 Measuring Instruments

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℃
Test Engineer :	Ken Hsu	Relative Humidity :	37~40%

Channel	Frequency (MHz)	Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
36	5180	5171.64	5188.28	-7.72
44	5220	5211.64	5228.28	-7.66
48	5240	5231.68	5248.28	-3.82
52	5260	5251.68	5268.28	-3.80
60	5300	5291.68	5308.28	-3.77
64	5320	5311.64	5328.28	-7.52
100	5500	5491.64	5508.28	-7.27
120	5600	5591.64	5608.28	-7.14
140	5700	5691.64	5708.28	-7.02

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 antenna 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	FSP40	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	-

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
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

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
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP010801 as below.