



FCC RF Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : Smart HandHeld
BRAND NAME : Acer
MODEL NAME : S110
FCC ID : HLZSHS110
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Mar. 19, 2010 and completely tested on May 10, 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 the 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.

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FCC ID : HLZSHS110

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 16.1 dB at 0.278 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.01 dB at 2389.99 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Acer Incorporated

8F., No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan

1.2 Manufacturer

Inventec Appliances (Pudong) Corporation

No. 789, Puxing Rd., Minhang District, Shanghai, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	S110
FCC ID	HLZSHS110
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 14.76 dBm (29.92 mW) 802.11g : 22.22 dBm (166.72 mW) 802.11n (BW 20MHz) : 21.43 dBm (139.00 mW)
Antenna Type	Chip Antenna with gain -0.4 dBi
HW Version	V0.3
SW Version	Firmware version: 2.1-update1 Build number:Acer_A3_0.022a.00 _EMEA_GEN1 Baseband version:A3-00.19.02
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : 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 Digital Transmission System (DTS).
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 C §15.247
- ♦ FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issue 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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	LCD TV	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		At DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	14.76	14.62	14.75	14.69
CH 06	2437 MHz	14.46	14.54	14.51	14.43
CH 11	2462 MHz	14.45	14.41	14.43	14.40

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	21.97	22.05	21.88	21.93	21.90	22.07	21.99	22.01
CH 06	2437 MHz	21.60	21.70	21.58	21.51	21.65	21.76	21.57	21.66
CH 11	2462 MHz	22.03	22.05	21.95	22.02	22.03	22.13	22.11	22.22

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		At OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	21.09	20.83	20.73	21.32	21.3	21.33	21.18	21.33
CH 06	2437 MHz	20.52	20.25	20.56	21.21	21.11	21.1	20.86	20.93
CH 11	2462 MHz	20.72	20.57	20.84	21.31	21.32	21.3	21.42	21.43

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 54Mbps for 802.11g, and 65Mbps for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.



2.2 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: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

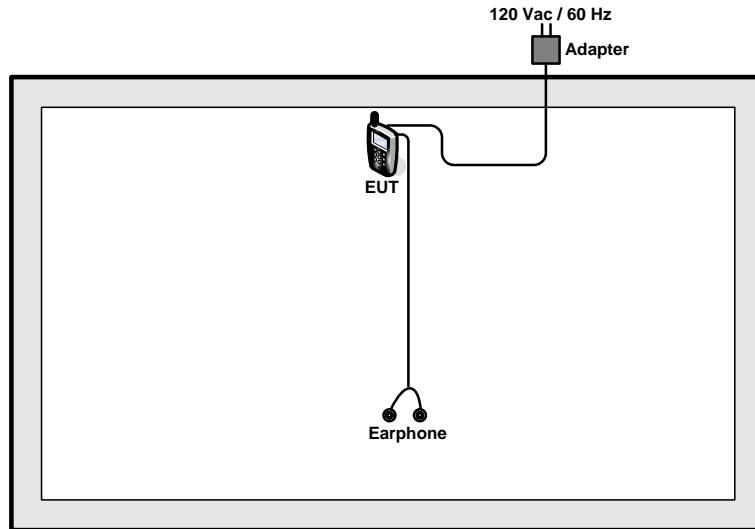
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

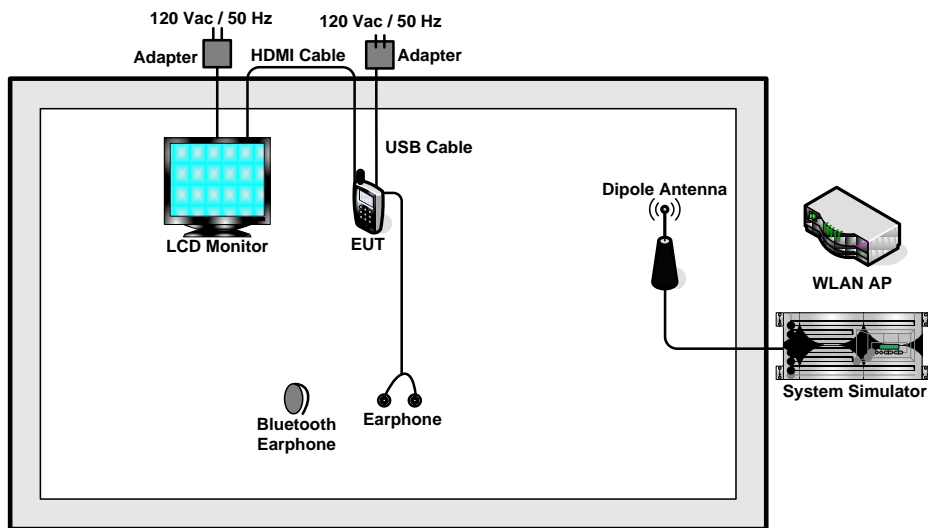
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + HDMI Cable 2 + USB Cable (Charging from Adapter)	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<EUT with Adapter Mode>



2.4 RF Utility

The programmed RF utility "A3 Simple Test" 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 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

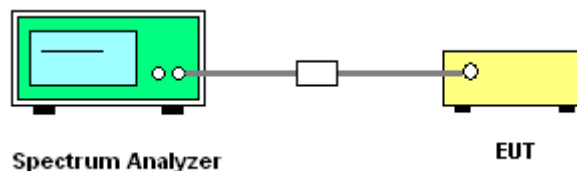
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz.
In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



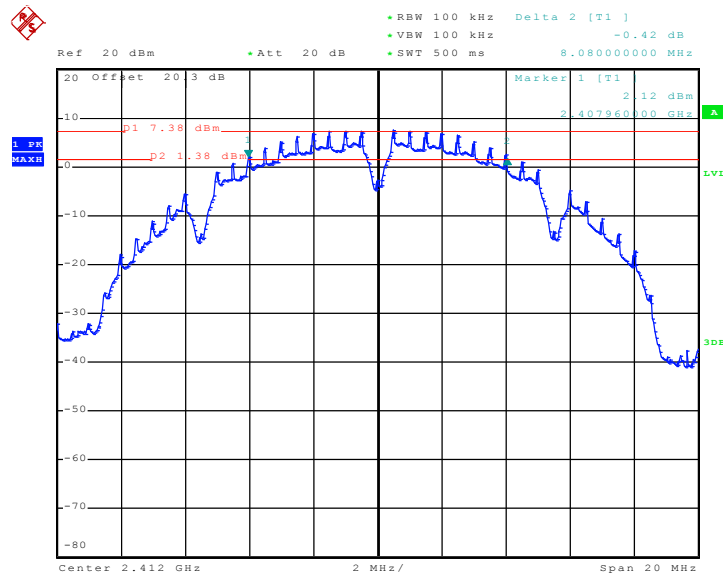


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.08	0.5	Pass
06	2437	8.08	0.5	Pass
11	2462	8.08	0.5	Pass

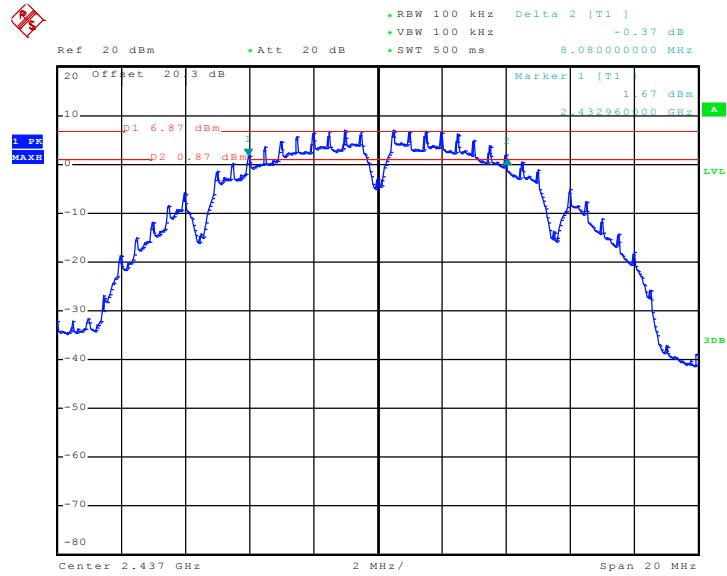
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 12.APR.2010 20:37:21

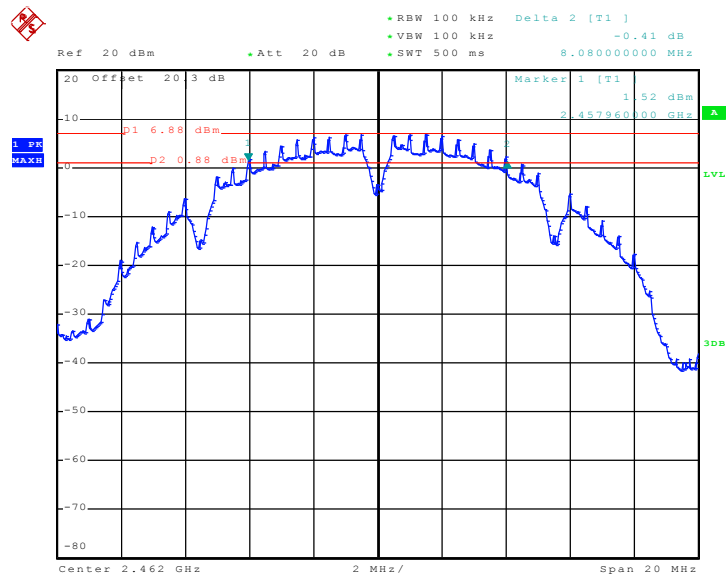


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 12.APR.2010 20:39:26

Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



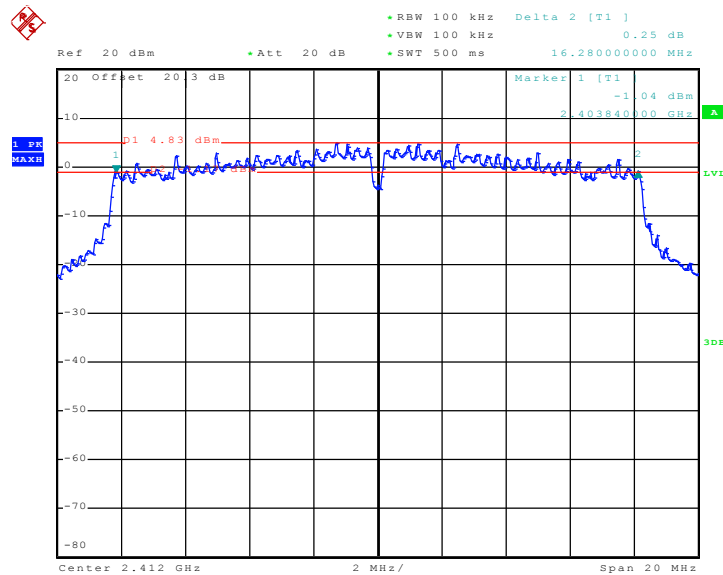
Date: 12.APR.2010 20:40:59



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.28	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	15.72	0.5	Pass

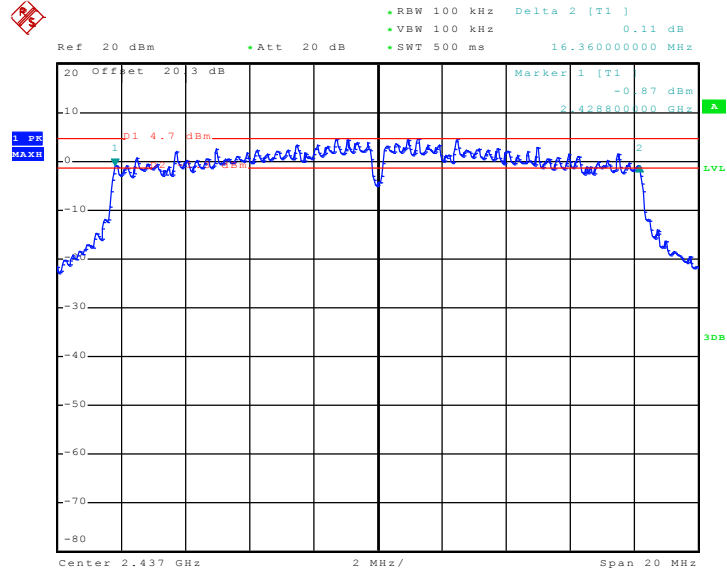
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 12.APR.2010 20:52:52

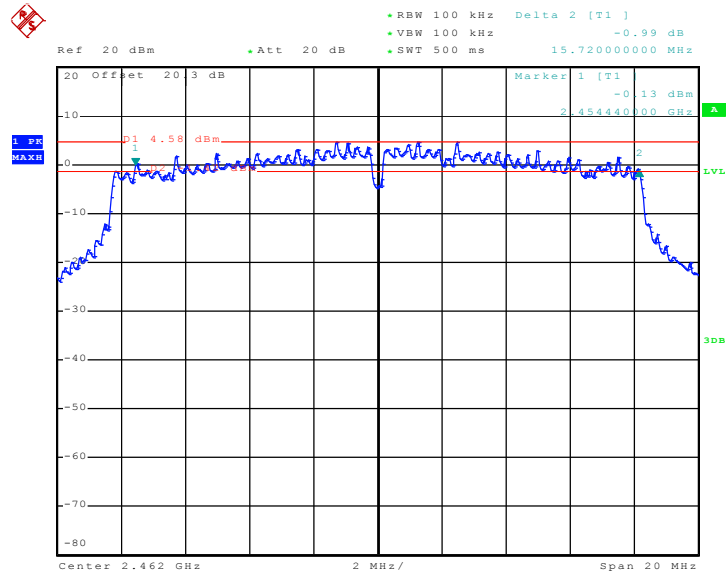


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 12.APR.2010 20:57:43

Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



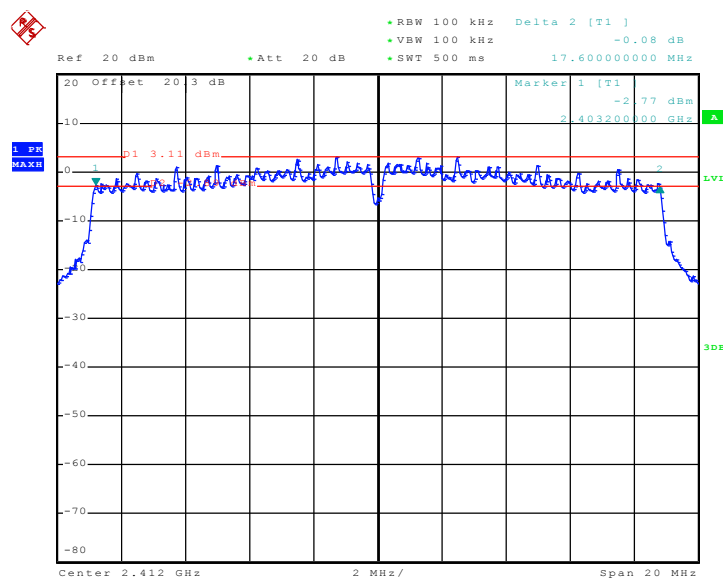
Date: 12.APR.2010 21:00:35



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.60	0.5	Pass
06	2437	17.64	0.5	Pass
11	2462	17.00	0.5	Pass

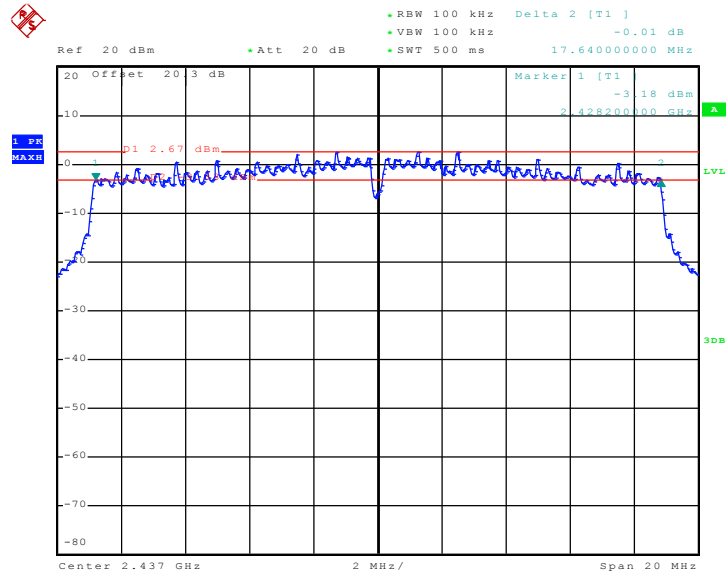
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 12.APR.2010 21:22:47

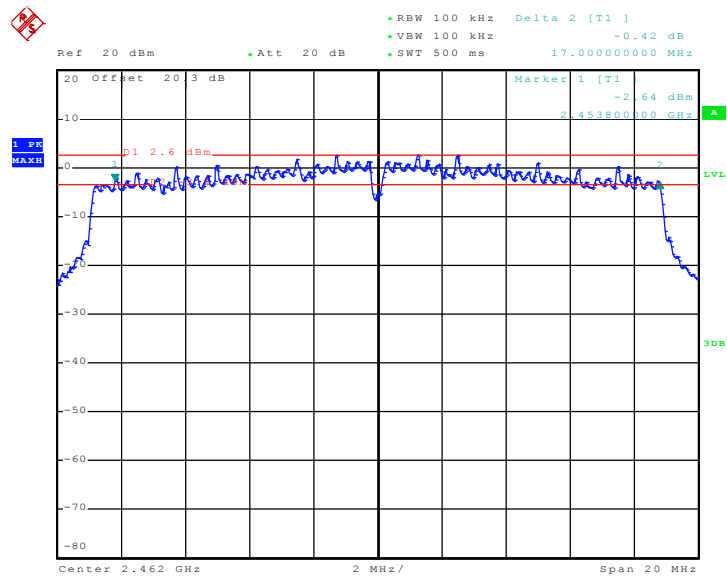


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 12.APR.2010 21:21:15

Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



Date: 12.APR.2010 21:12:11

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

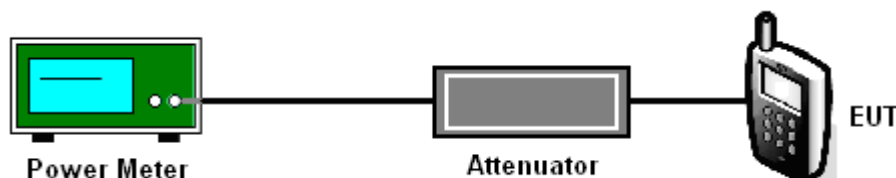
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

3.2.4 Test Setup





3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	14.76	30	Pass
06	2437	14.46	30	Pass
11	2462	14.45	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.01	30	Pass
06	2437	21.66	30	Pass
11	2462	22.22	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.33	30	Pass
06	2437	20.93	30	Pass
11	2462	21.43	30	Pass



3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

3.3.2 Measuring Instruments

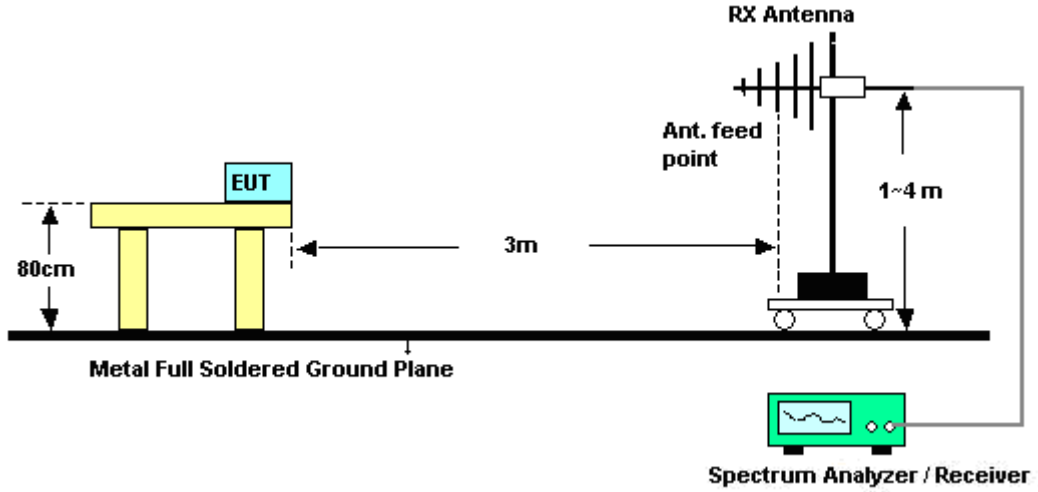
See list of measuring instruments of this test report.

3.3.3 Test Procedures

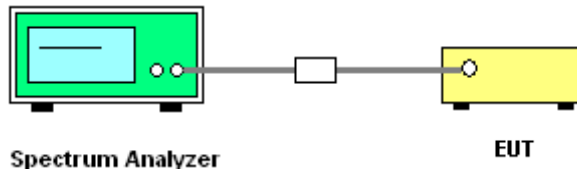
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23°C
Test Band :	802.11b	Relative Humidity :	42~43%%
Test Channel :	01	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
2389.42	56.09	-17.91	74	52.65	32.13	5.46	34.15	133	340	Peak
2389.42	37.27	-16.73	54	33.83	32.13	5.46	34.15	133	340	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
2375.17	52.1	-21.9	74	48.67	32.11	5.47	34.15	135	292	Peak
2375.17	34.62	-19.38	54	31.19	32.11	5.47	34.15	135	292	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Band :	802.11b	Relative Humidity :	42~43%%
Test Channel :	11	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
2484.61	60.56	-13.44	74	57.1	32.27	5.38	34.19	193	353	Peak
2484.61	37.95	-16.05	54	34.49	32.27	5.38	34.19	193	353	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
2483.5	58.97	-15.03	74	55.51	32.27	5.38	34.19	100	69	Peak
2483.5	36.43	-17.57	54	32.97	32.27	5.38	34.19	100	69	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	42~43%%
Test Channel :	01	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
2389.99	70.99	-3.01	74	67.56	32.13	5.46	34.16	129	314	Peak
2389.99	46.79	-7.21	54	43.36	32.13	5.46	34.16	129	314	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
2389.99	70.74	-3.26	74	67.31	32.13	5.46	34.16	135	346	Peak
2389.99	43.18	-10.82	54	39.75	32.13	5.46	34.16	135	346	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	42~43%%
Test Channel :	11	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
2484.42	70.52	-3.48	74	67.06	32.27	5.38	34.19	100	17	Peak
2484.42	45.27	-8.73	54	41.81	32.27	5.38	34.19	100	17	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
2483.85	70.42	-3.58	74	66.96	32.27	5.38	34.19	119	305	Peak
2483.85	41.55	-12.45	54	38.09	32.27	5.38	34.19	119	305	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%%
Test Channel :	01	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
2389.99	69.62	-4.38	74	66.19	32.13	5.46	34.16	100	352	Peak
2389.99	42.46	-11.54	54	39.03	32.13	5.46	34.16	100	352	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
2388.66	66.9	-7.1	74	63.46	32.13	5.46	34.15	100	63	Peak
2388.66	41.35	-12.65	54	37.91	32.13	5.46	34.15	100	63	Average

Test Mode :	Mode 9	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%%
Test Channel :	11	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
2483.66	70.47	-3.53	74	67.01	32.27	5.38	34.19	100	319	Peak
2483.66	41.9	-12.1	54	38.44	32.27	5.38	34.19	100	319	Average

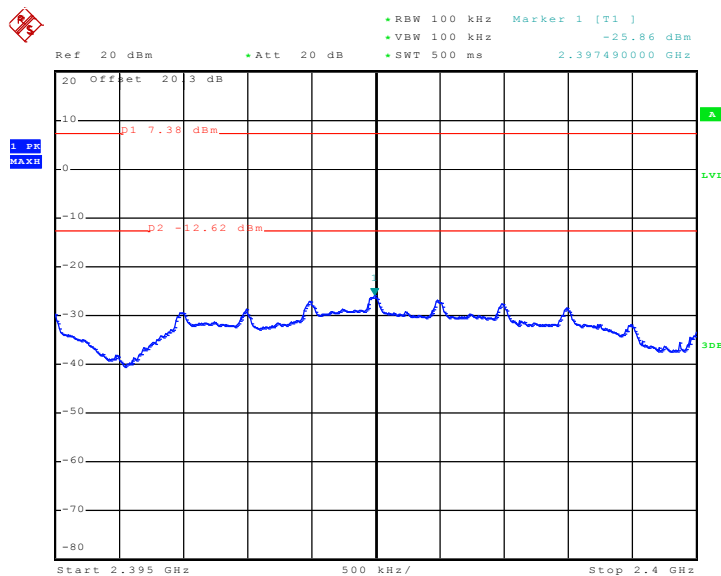
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	65.78	-8.22	74	62.32	32.27	5.38	34.19	100	311	Peak
2483.5	39.97	-14.03	54	36.51	32.27	5.38	34.19	100	311	Average



3.3.6 Test Plots of Conducted Band Edges

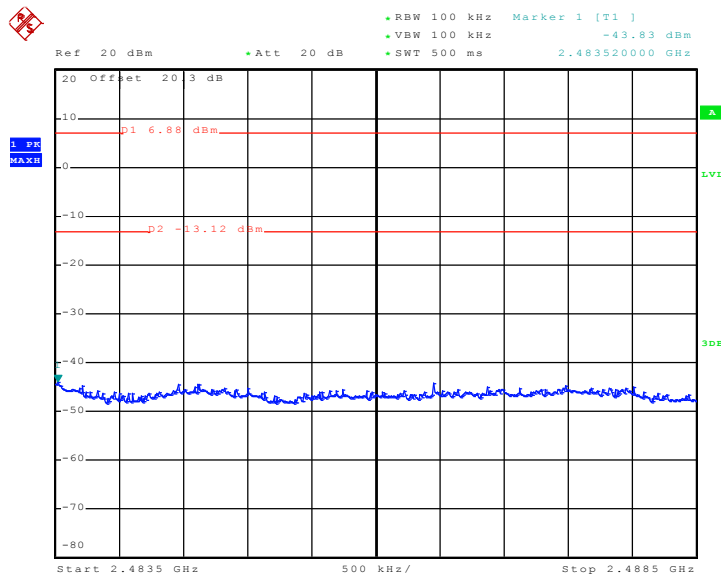
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	46~49%
Test Channel :	01 and 11	Test Engineer :	Andy Yeh

Low Band Edge Plot on 802.11b Channel 01



Date: 12.APR.2010 20:47:03

High Band Edge Plot on 802.11b Channel 11

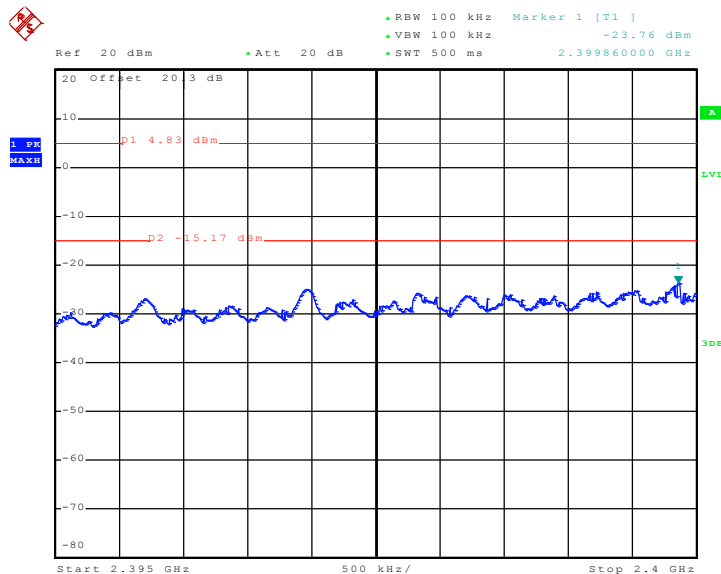


Date: 12.APR.2010 20:43:20



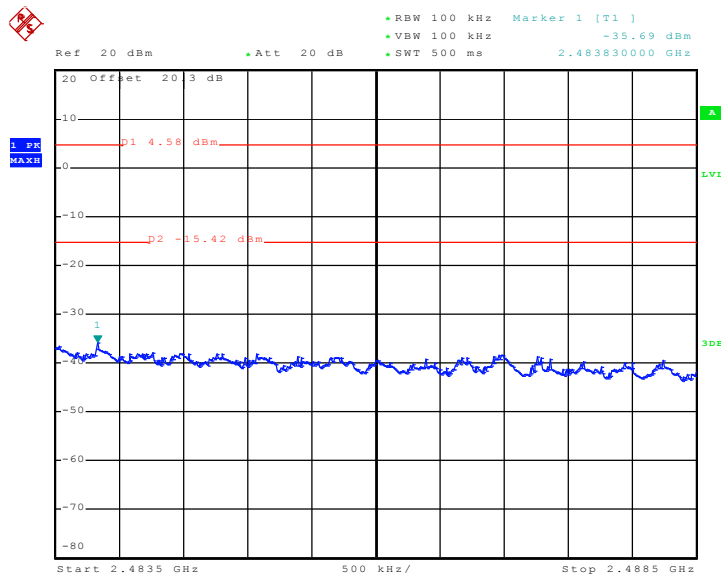
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	46~49%
Test Channel :	01 and 11	Test Engineer :	Andy Yeh

Low Band Edge Plot on 802.11g Channel 01



Date: 12.APR.2010 20:54:22

High Band Edge Plot on 802.11g Channel 11

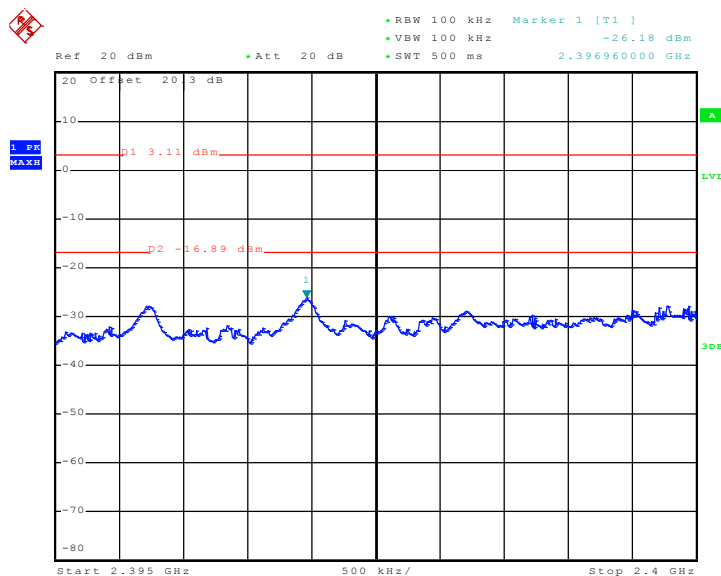


Date: 12.APR.2010 21:04:52



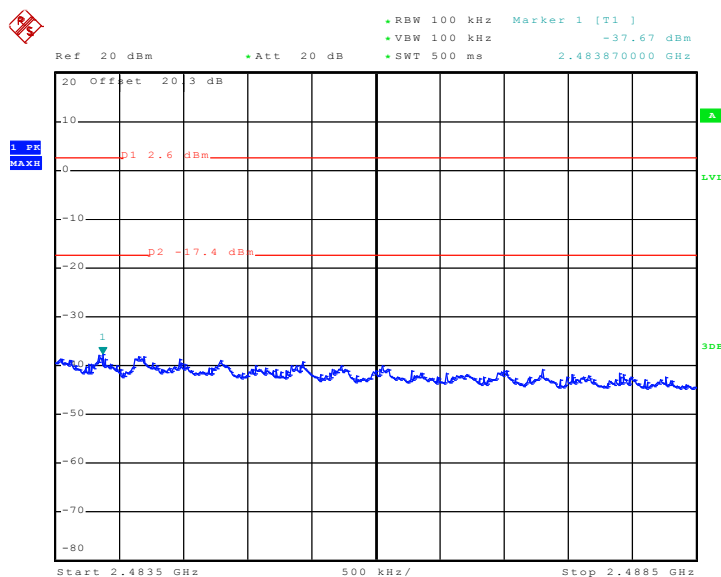
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~49%
Test Channel :	01 and 11	Test Engineer :	Andy Yeh

Low Band Edge Plot on 802.11n (BW 20MHz) Channel 01



Date: 12.APR.2010 21:25:38

High Band Edge Plot on 802.11n (BW 20MHz) Channel 11



Date: 12.APR.2010 21:16:09

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

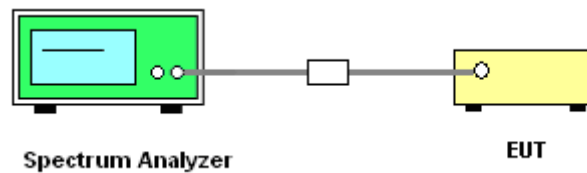
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 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) \geq 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.

3.4.4 Test Setup

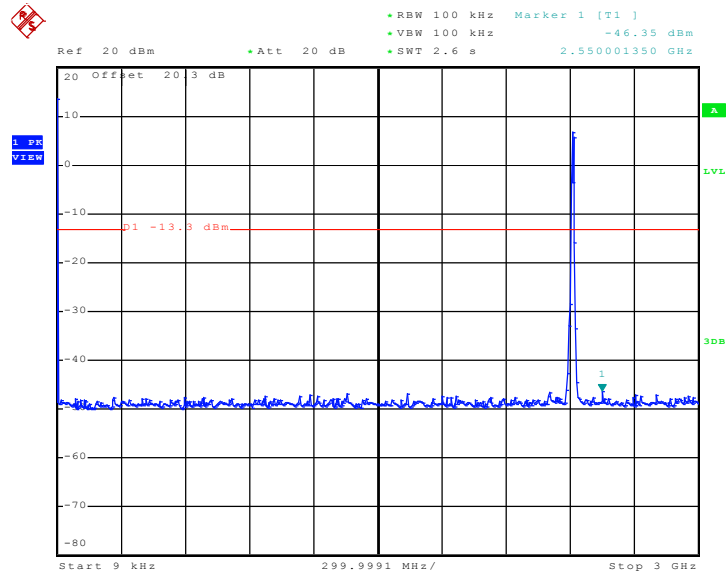




3.4.5 Test Plots of Spurious Emission

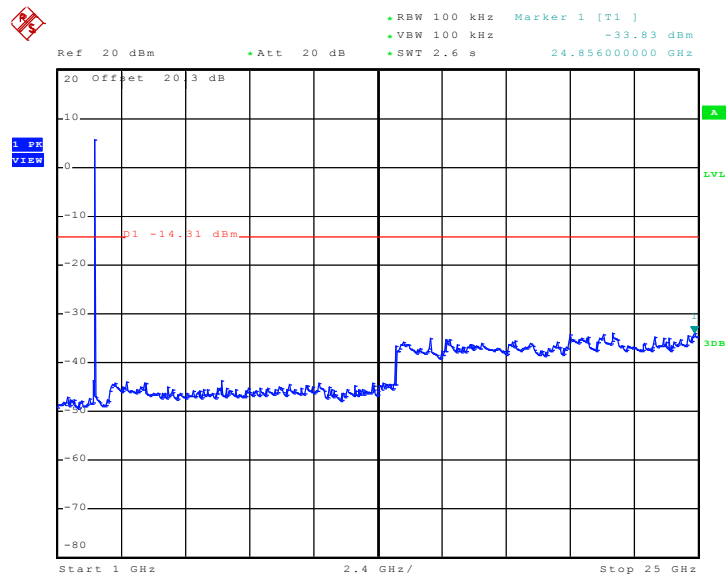
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	46~49%
Test Channel :	01	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:25:20

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

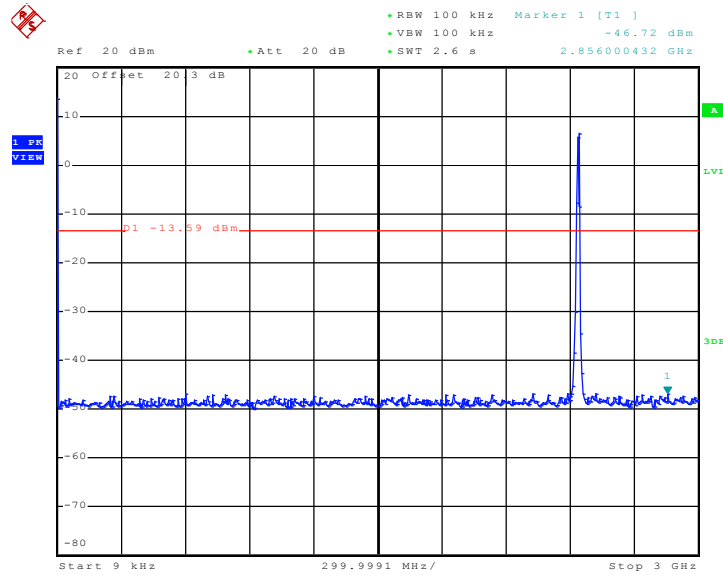


Date: 13.APR.2010 00:26:32



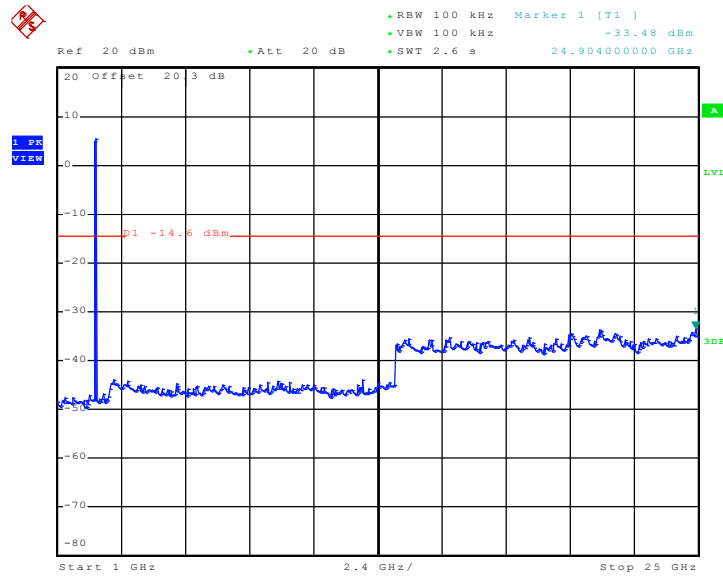
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	46~49%
Test Channel :	06	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:27:16

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

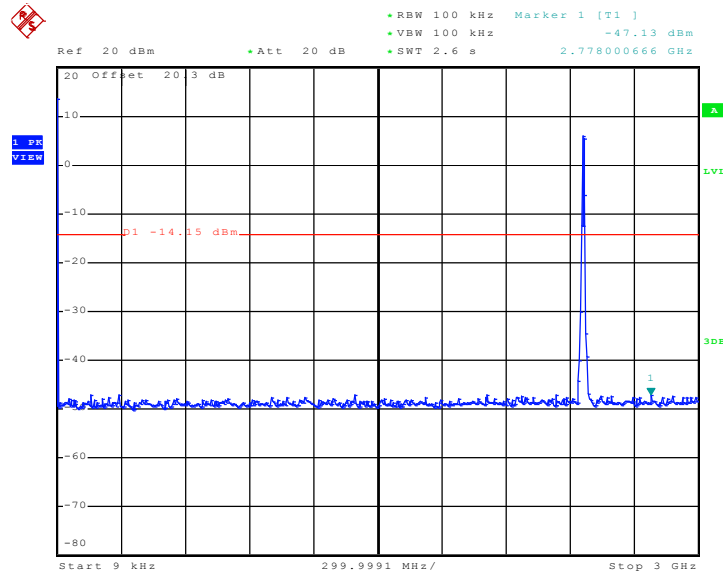


Date: 13.APR.2010 00:28:19



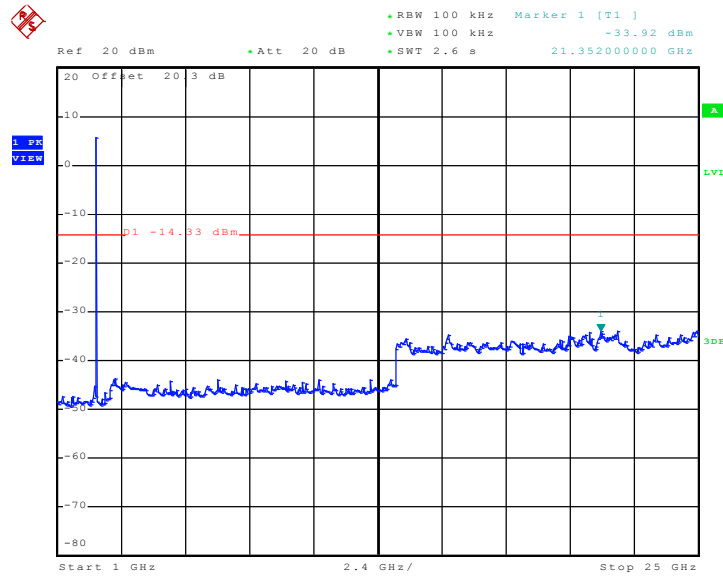
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	46~49%
Test Channel :	11	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:28:58

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

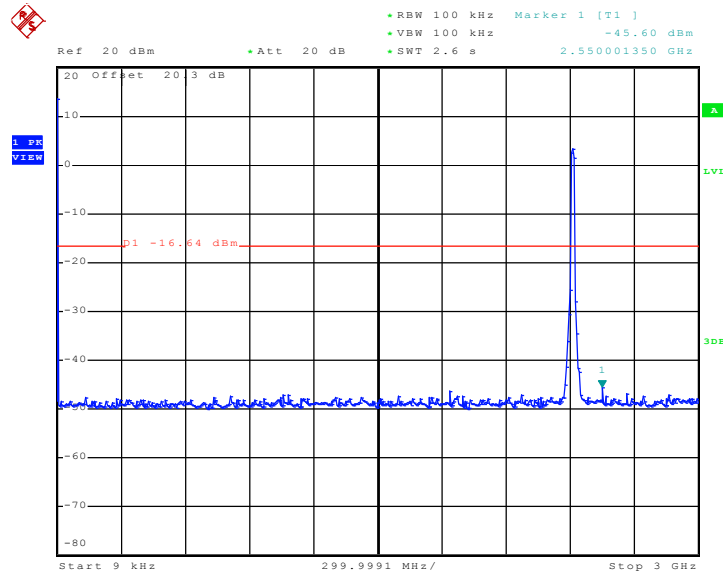


Date: 13.APR.2010 00:30:52



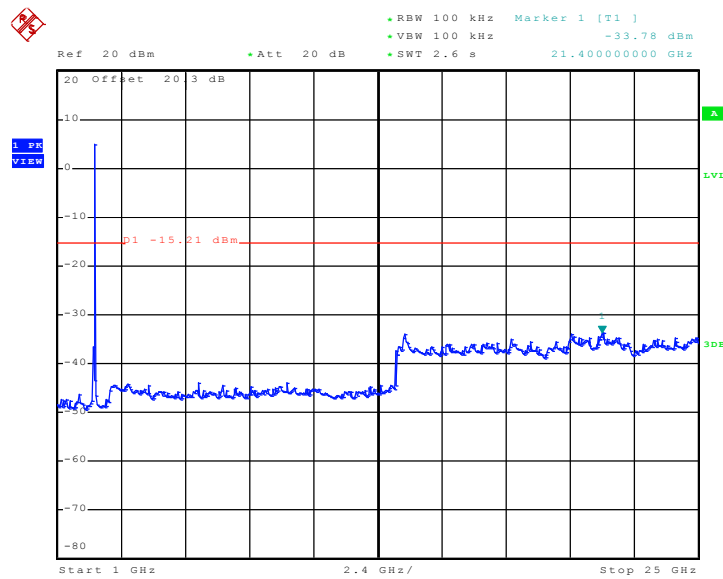
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	46~49%
Test Channel :	01	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:36:02

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

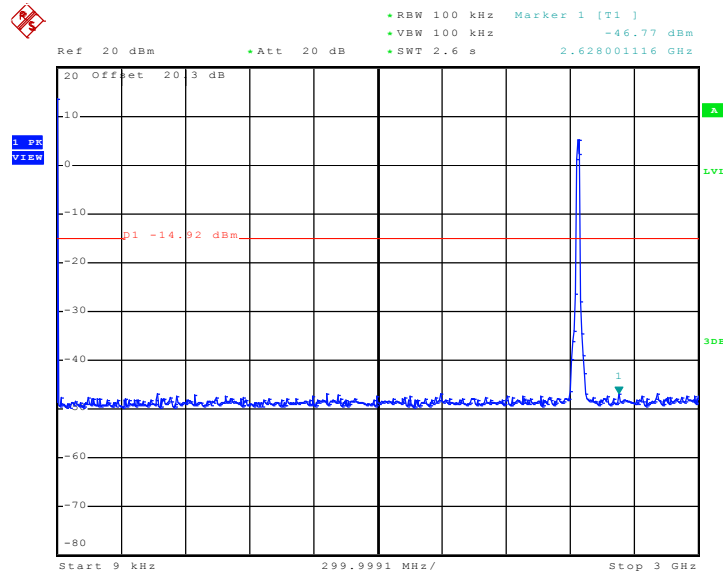


Date: 13.APR.2010 00:36:44



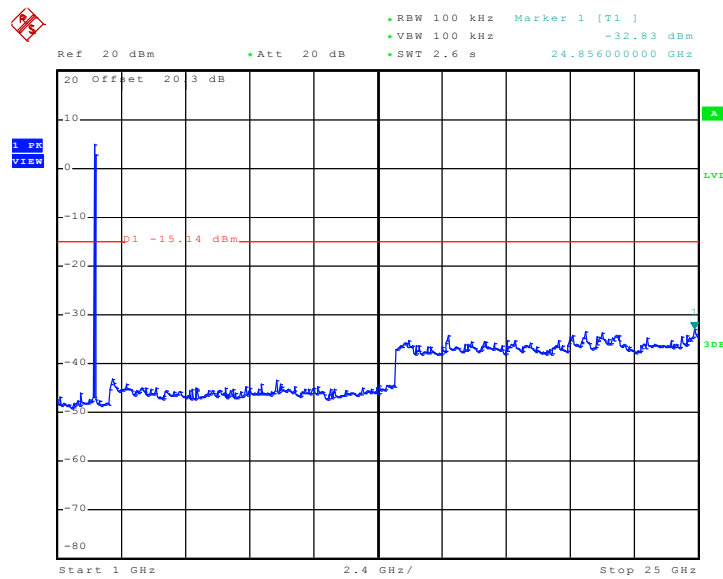
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	46~49
Test Channel :	06	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:37:27

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

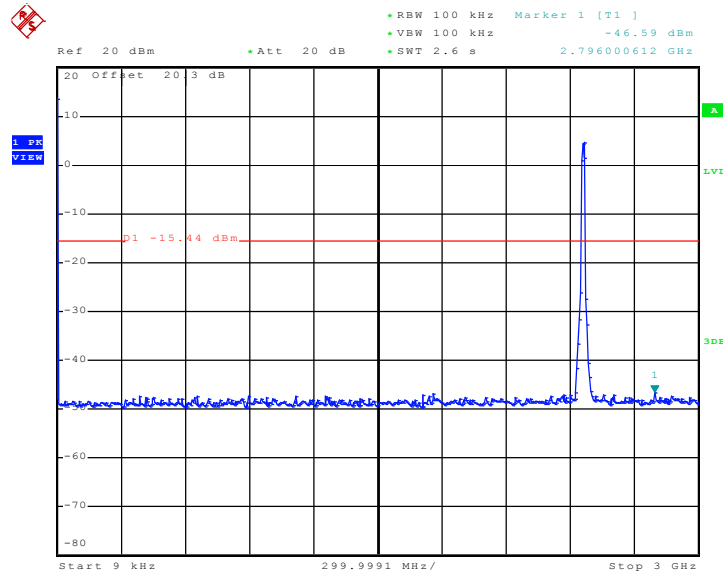


Date: 13.APR.2010 00:38:29



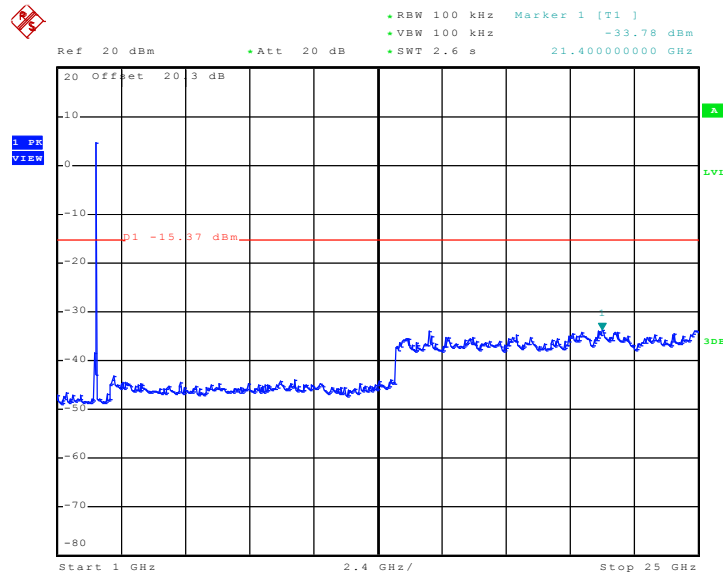
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	46~49%
Test Channel :	11	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:39:16

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

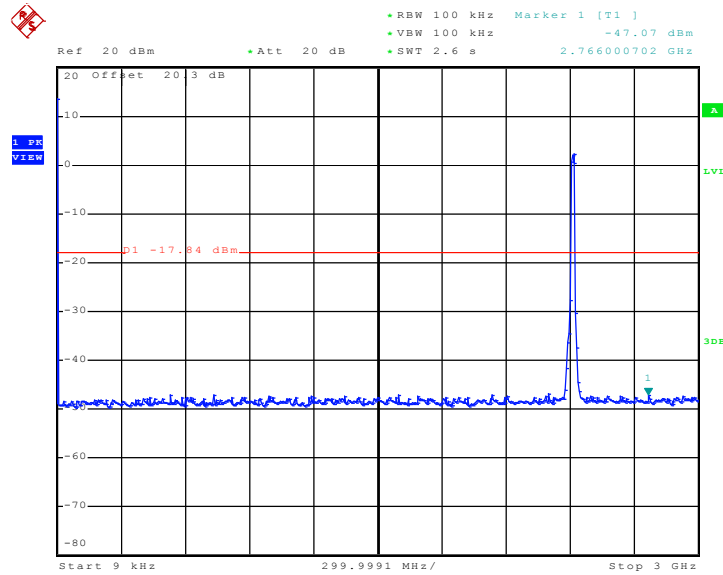


Date: 13.APR.2010 00:40:45



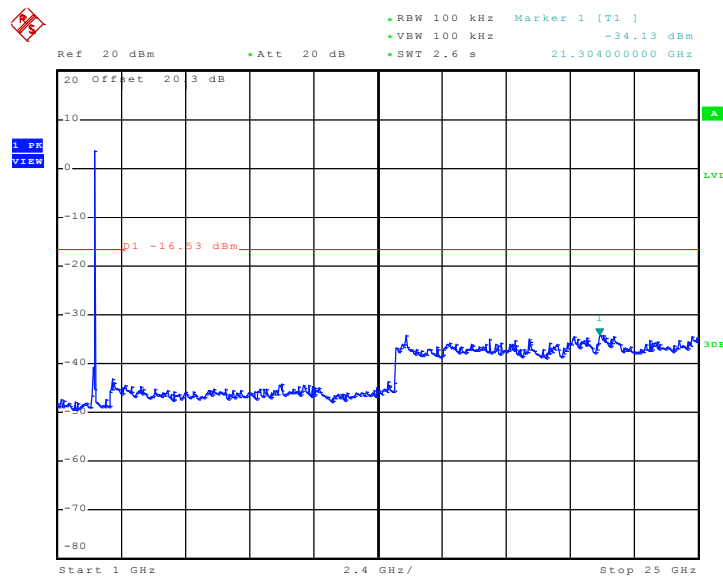
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~49%
Test Channel :	01	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:51:00

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

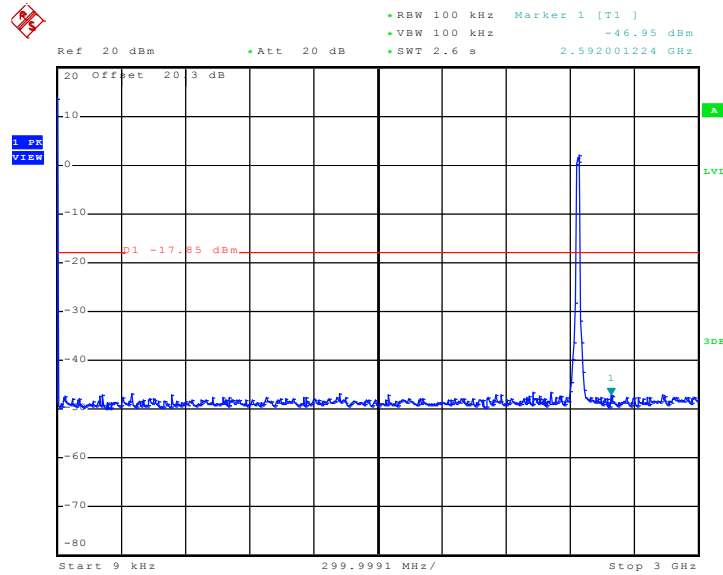


Date: 13.APR.2010 00:51:29



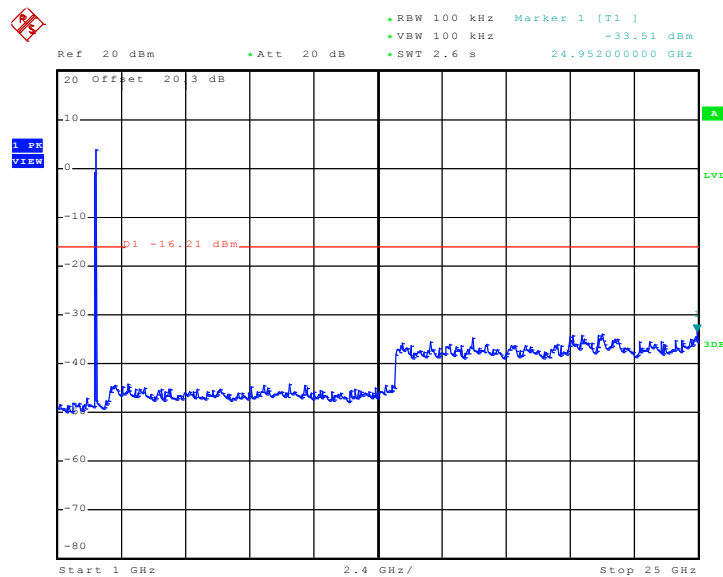
Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~49%
Test Channel :	06	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:52:13

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

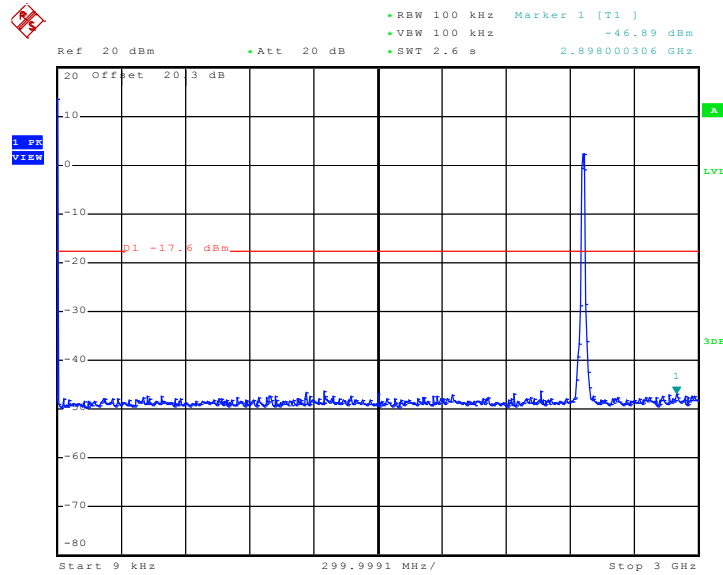


Date: 13.APR.2010 00:52:34



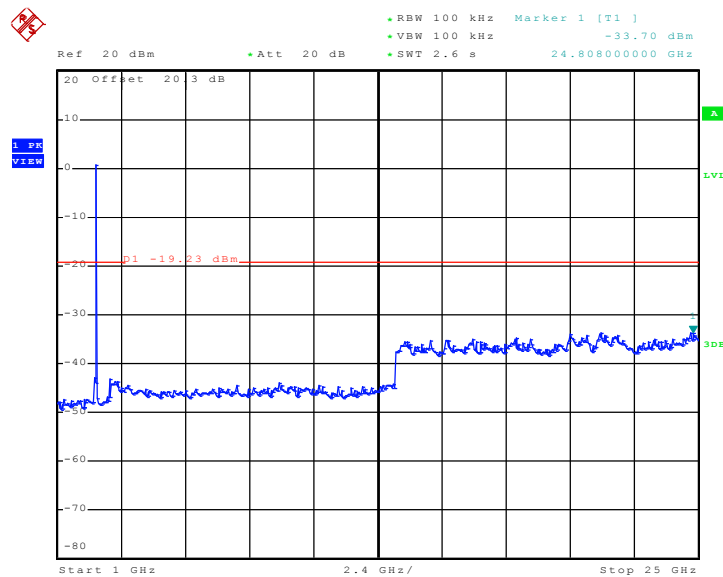
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~49%
Test Channel :	11	Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 13.APR.2010 00:53:22

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 13.APR.2010 00:54:22

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

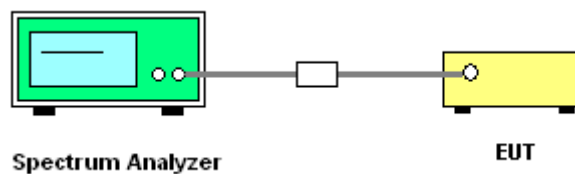
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.5.4 Test Setup



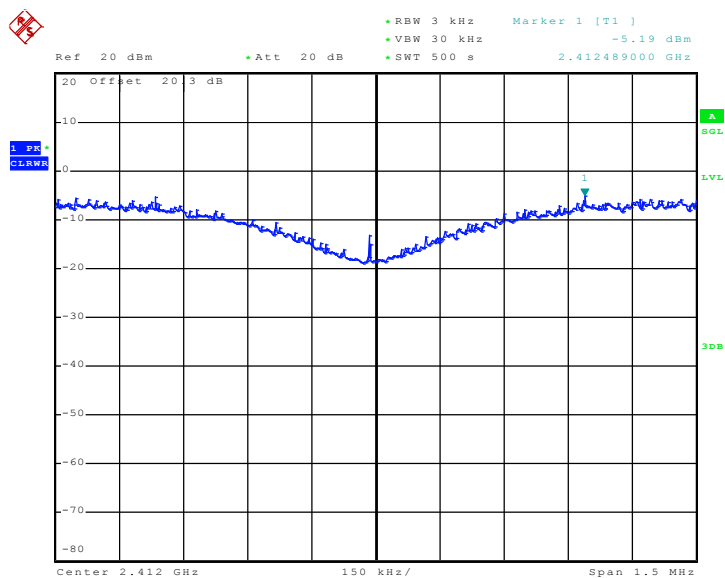


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-5.19	8	Pass
06	2437	-5.79	8	Pass
11	2462	-5.23	8	Pass

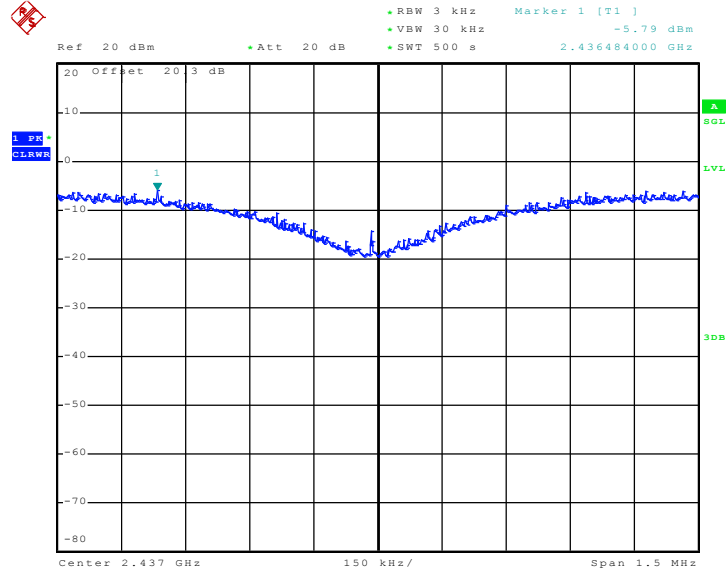
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 12.APR.2010 23:14:43

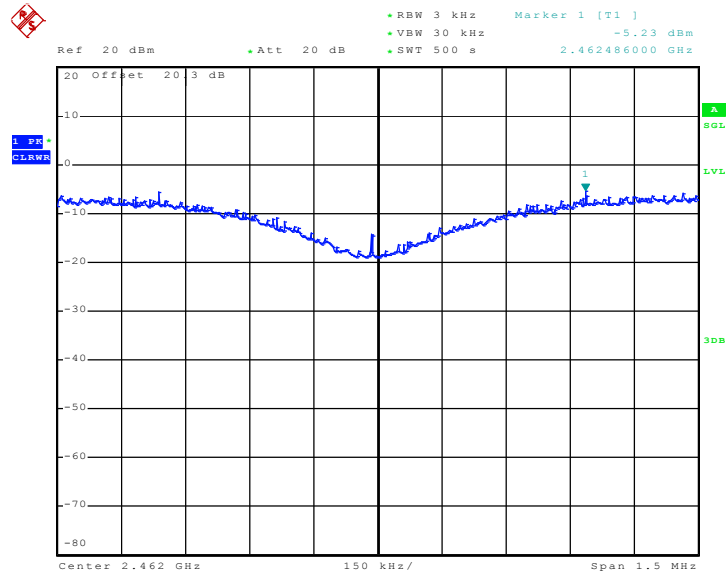


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 12.APR.2010 23:05:45

Mode 3 : PSD Plot on 802.11b Channel 11



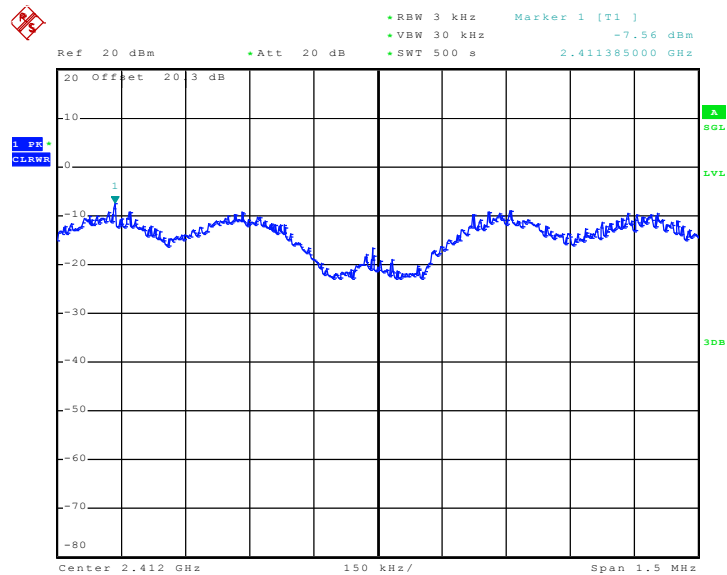
Date: 12.APR.2010 22:56:02



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.56	8	Pass
06	2437	-7.61	8	Pass
11	2462	-7.98	8	Pass

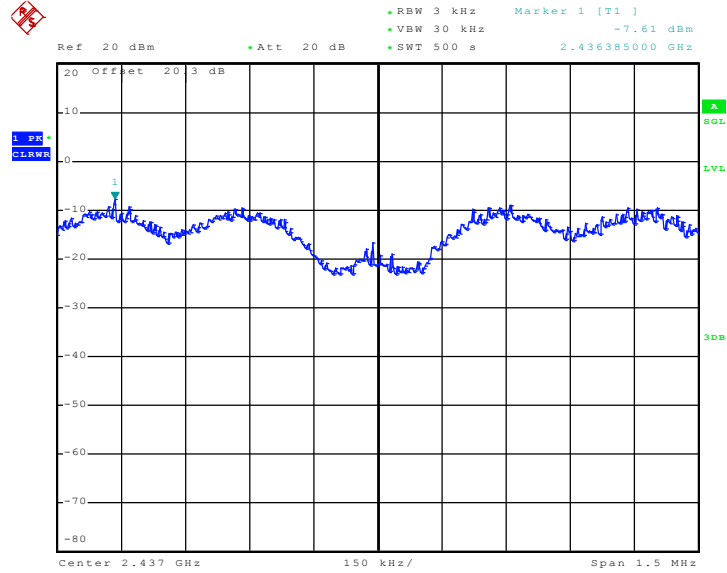
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 12.APR.2010 22:10:21

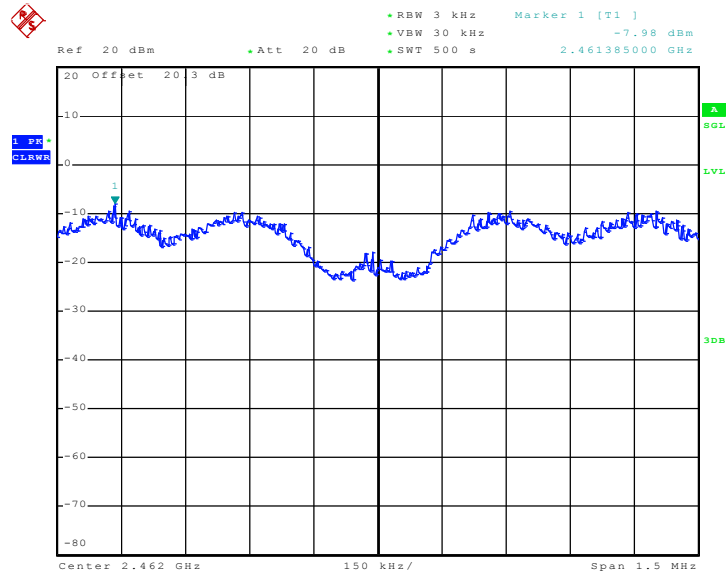


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 12.APR.2010 21:59:28

Mode 6 : PSD Plot on 802.11g Channel 11



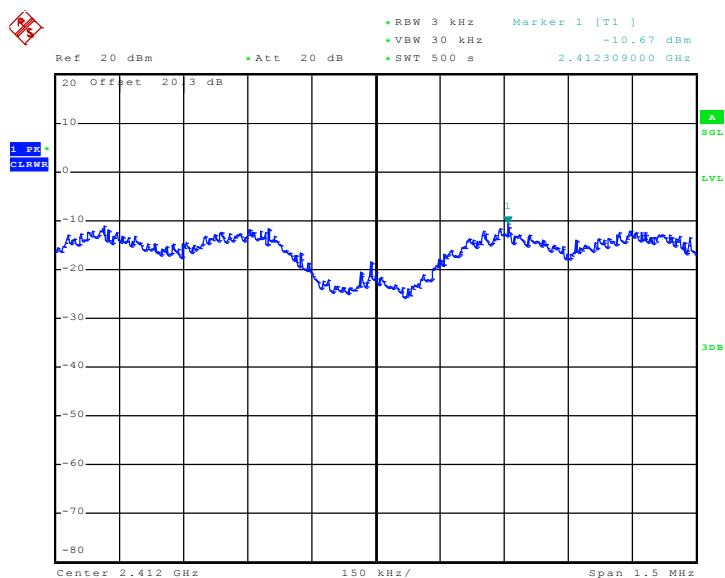
Date: 12.APR.2010 21:49:00



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.67	8	Pass
06	2437	-11.21	8	Pass
11	2462	-11.27	8	Pass

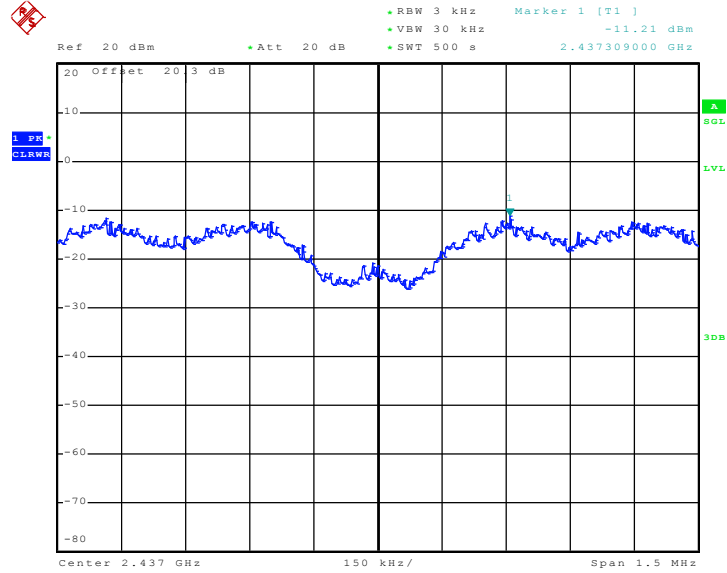
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 12.APR.2010 22:19:23

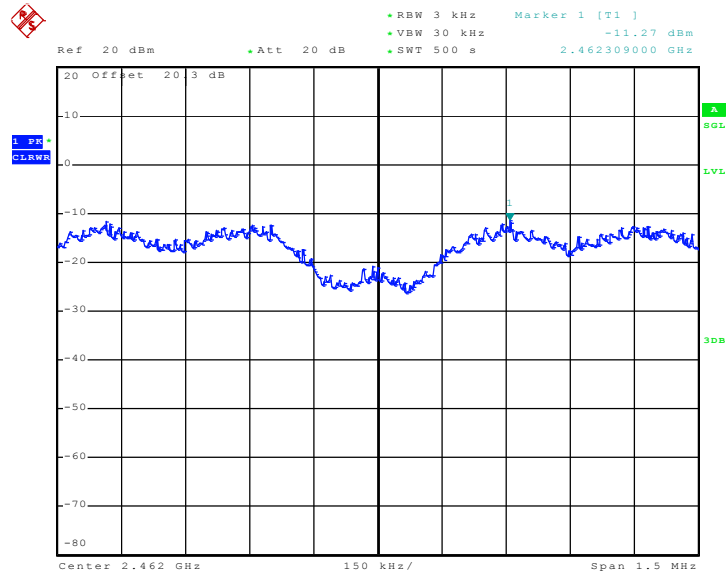


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 12.APR.2010 22:28:26

Mode 9 : PSD Plot on 802.11n (BW 20MHz) Channel 11



Date: 12.APR.2010 22:46:12

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

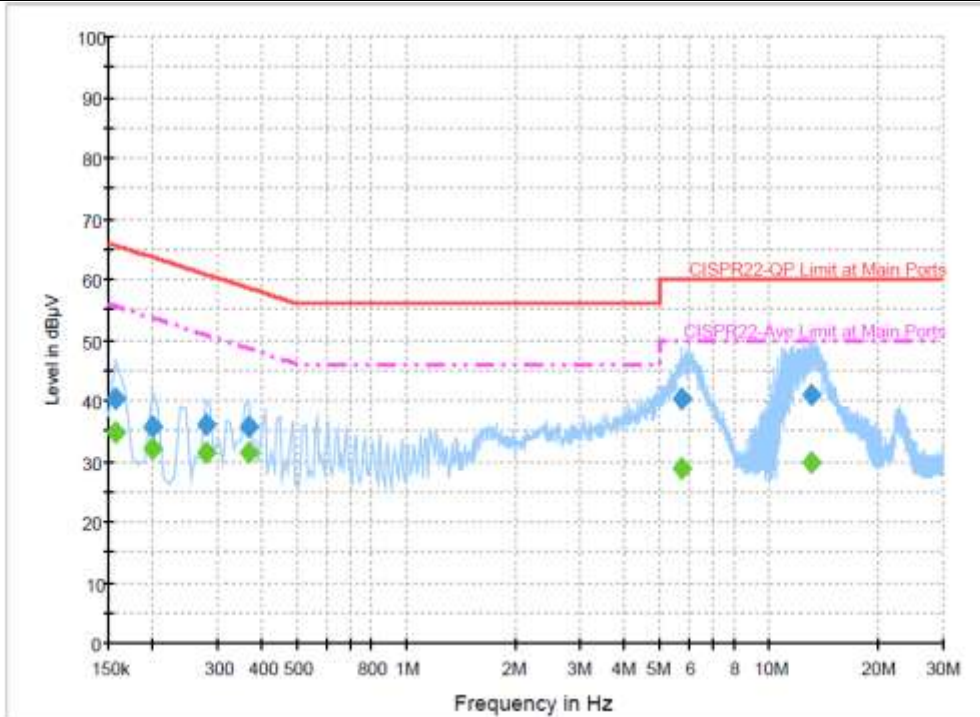
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + HDMI Cable 2 + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

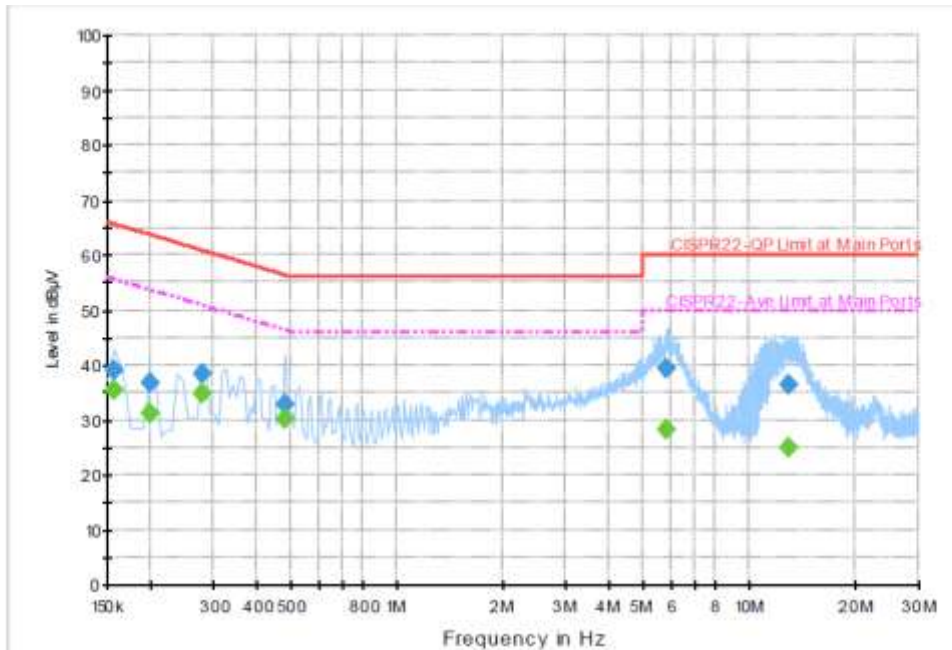
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	40.3	Off	L1	19.5	25.3	65.6
0.198000	35.7	Off	L1	19.6	28.0	63.7
0.278000	36.2	Off	L1	19.5	24.7	60.9
0.366000	35.8	Off	L1	19.5	22.8	58.6
5.726000	40.2	Off	L1	19.5	19.8	60.0
13.094000	40.9	Off	L1	19.6	19.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	34.6	Off	L1	19.5	21.0	55.6
0.198000	32.2	Off	L1	19.6	21.5	53.7
0.278000	31.6	Off	L1	19.5	19.3	50.9
0.366000	31.6	Off	L1	19.5	17.0	48.6
5.726000	29.0	Off	L1	19.5	21.0	50.0
13.094000	29.8	Off	L1	19.6	20.2	50.0



Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + HDMI Cable 2 + USB Cable (Charging from Adapter)		
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	39.0	Off	N	19.5	26.6	65.6
0.198000	36.7	Off	N	19.5	27.0	63.7
0.278000	38.5	Off	N	19.5	22.4	60.9
0.478000	32.9	Off	N	19.4	23.5	56.4
5.806000	39.3	Off	N	19.5	20.7	60.0
12.886000	36.5	Off	N	19.6	23.5	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	35.3	Off	N	19.5	20.3	55.6
0.198000	31.2	Off	N	19.5	22.5	53.7
0.278000	34.8	Off	N	19.5	16.1	50.9
0.478000	30.3	Off	N	19.4	16.1	46.4
5.806000	28.2	Off	N	19.5	21.8	50.0
12.886000	24.8	Off	N	19.6	25.2	50.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.7.2 Measuring Instruments

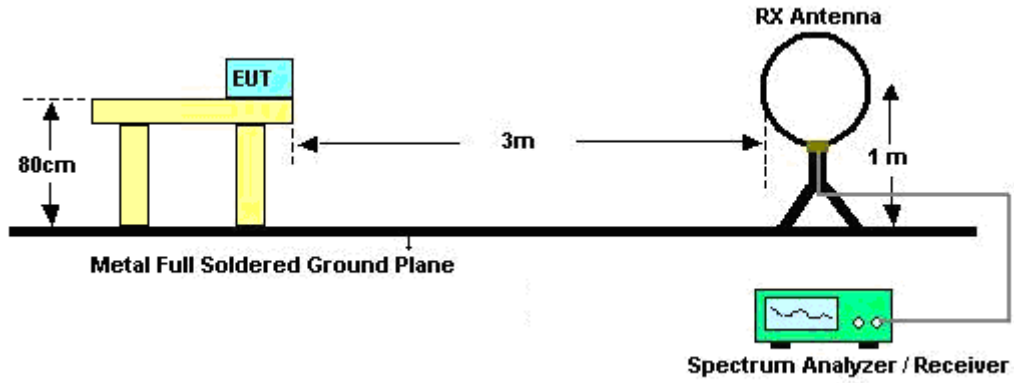
See list of measuring instruments of this test report.

3.7.3 Test Procedures

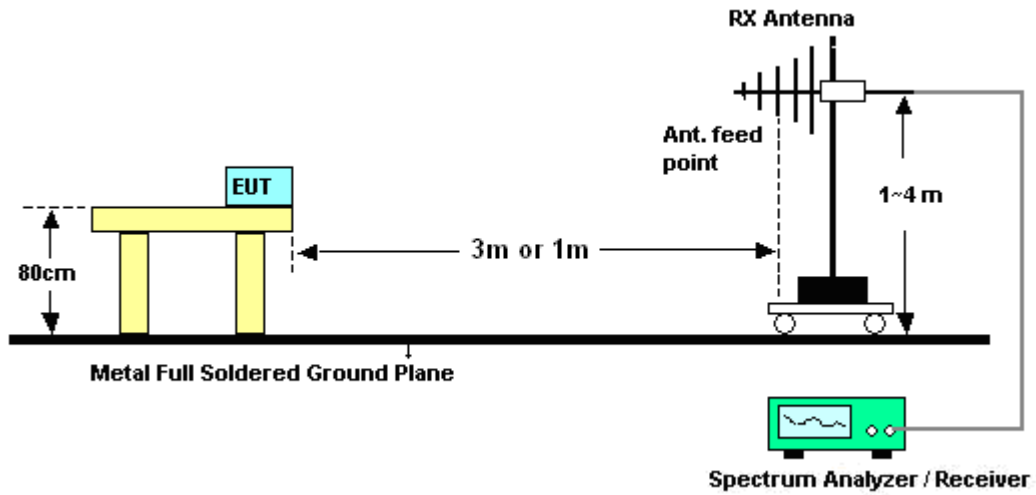
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
Distance extrapolation factor = $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
- Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Kay Wu	Temperature :	22~23°C
		Relative Humidity :	42~43%

Frequency (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 (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 MHz is 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
38.37	23.66	-16.34	40	39.96	14.59	0.61	31.5	100	158	Peak
107.49	24.47	-19.03	43.5	43.92	11.06	1.04	31.55	-	-	Peak
156.9	21.04	-22.46	43.5	40.72	10.63	1.22	31.53	-	-	Peak
340.6	22.63	-23.37	46	37.5	14.54	1.89	31.3	-	-	Peak
652.1	23.04	-22.96	46	30.6	20.47	2.84	30.87	-	-	Peak
917.4	25.94	-20.06	46	29.77	23.44	3.38	30.65	-	-	Peak
2389.42	56.09	-17.91	74	52.65	32.13	5.46	34.15	133	340	Peak
2389.42	37.27	-16.73	54	33.83	32.13	5.46	34.15	133	340	Average
2412	102.15	-	-	98.71	32.16	5.44	34.16	133	340	Peak
2412	98.02	-	-	94.58	32.16	5.44	34.16	133	340	Average
2500	34.75	-19.25	54	31.28	32.3	5.37	34.2	133	340	Average
2500	47.44	-26.56	74	43.97	32.3	5.37	34.2	133	340	Peak
4824	51.44	-22.56	74	43.8	34.33	7.81	34.5	119	115	Peak
4824	48.29	-5.71	54	40.65	34.33	7.81	34.5	119	115	Average
8406	54.72	-19.28	74	43.7	36	10.12	35.1	100	158	Peak
8406	40.46	-13.54	54	29.44	36	10.12	35.1	100	158	Average
9648	37.01	-45.14	82.15	71.89	-10.32	10.74	35.3	100	0	Peak



Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 MHz is 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
63.21	25.43	-14.57	40	50.07	6.12	0.78	31.54	100	158	Peak
98.58	26.3	-17.2	43.5	46.66	10.19	0.99	31.54	-	-	Peak
200.37	27.01	-16.49	43.5	48.35	8.82	1.32	31.48	-	-	Peak
663.3	24.1	-21.9	46	31.53	20.56	2.87	30.86	-	-	Peak
842.5	25.15	-20.85	46	29.99	22.63	3.25	30.72	-	-	Peak
920.9	25.91	-20.09	46	29.68	23.49	3.39	30.65	-	-	Peak
2375.17	52.1	-21.9	74	48.67	32.11	5.47	34.15	135	292	Peak
2375.17	34.62	-19.38	54	31.19	32.11	5.47	34.15	135	292	Average
2412	99.21	-	-	95.77	32.16	5.44	34.16	135	292	Peak
2412	95.34	-	-	91.9	32.16	5.44	34.16	135	292	Average
2492	33.42	-20.58	54	29.95	32.3	5.37	34.2	135	292	Average
2492	45.55	-28.45	74	42.08	32.3	5.37	34.2	135	292	Peak
4824	52.46	-21.54	74	44.82	34.33	7.81	34.5	100	71	Peak
4824	47	-7	54	39.36	34.33	7.81	34.5	100	71	Average
8409	54.74	-19.26	74	43.72	36	10.12	35.1	100	119	Peak
8409	40.9	-13.1	54	29.88	36	10.12	35.1	100	119	Average
9648	36.69	-42.52	79.21	71.57	-10.32	10.74	35.3	100	0	Peak



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2437 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
39.45	24.43	-15.57	40	41.26	14.06	0.62	31.51	100	195	Peak
109.38	24.18	-19.32	43.5	43.44	11.24	1.05	31.55	-	-	Peak
213.33	22.83	-20.67	43.5	43.89	9.03	1.38	31.47	-	-	Peak
329.4	22.71	-23.29	46	37.91	14.26	1.85	31.31	-	-	Peak
668.2	23.34	-22.66	46	30.72	20.59	2.88	30.85	-	-	Peak
833.4	25.5	-20.5	46	30.44	22.54	3.23	30.71	-	-	Peak
2390	48.58	-25.42	74	45.15	32.13	5.46	34.16	132	343	Peak
2390	34.91	-19.09	54	31.48	32.13	5.46	34.16	132	343	Average
2437	102.67	-	-	99.22	32.19	5.43	34.17	132	343	Peak
2437	98.73	-	-	95.27	32.22	5.41	34.17	132	343	Average
2484	51.09	-22.91	74	47.63	32.27	5.38	34.19	132	343	Peak
2484	35.33	-18.67	54	31.87	32.27	5.38	34.19	132	343	Average
4874	53.01	-20.99	74	45.31	34.35	7.85	34.5	135	138	Peak
4874	48.79	-5.21	54	41.09	34.35	7.85	34.5	135	138	Average
8418	54.52	-19.48	74	43.5	36	10.12	35.1	100	59	Peak
8418	40.59	-13.41	54	29.57	36	10.12	35.1	100	59	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9748 MHz is 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
31.62	27.81	-12.19	40	40.32	18.4	0.55	31.46	100	142	Peak
61.86	25.27	-14.73	40	49.98	6.05	0.78	31.54	-	-	Peak
200.37	27.88	-15.62	43.5	49.22	8.82	1.32	31.48	-	-	Peak
486.9	20.46	-25.54	46	31.22	17.9	2.4	31.06	-	-	Peak
663.3	23.62	-22.38	46	31.05	20.56	2.87	30.86	-	-	Peak
859.3	26.14	-19.86	46	30.79	22.79	3.28	30.72	-	-	Peak
2348	46.43	-27.57	74	43.02	32.05	5.5	34.14	100	190	Peak
2348	34.03	-19.97	54	30.62	32.05	5.5	34.14	100	190	Average
2437	94.33	-	-	90.87	32.22	5.41	34.17	100	190	Average
2437	99.15	-	-	95.69	32.22	5.41	34.17	100	190	Peak
2486	48.34	-25.66	74	44.88	32.27	5.38	34.19	100	190	Peak
2486	33.71	-20.29	54	30.25	32.27	5.38	34.19	100	190	Average
4874	51.91	-22.09	74	44.21	34.35	7.85	34.5	113	174	Peak
4874	50.78	-3.22	54	43.08	34.35	7.85	34.5	113	174	Average
8397	54.47	-19.53	74	43.46	36	10.11	35.1	100	142	Peak
8397	41.26	-12.74	54	30.25	36	10.11	35.1	100	142	Average
9748	37.41	-41.74	79.15	72.02	-10.12	10.81	35.3	100	0	Peak



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2462 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
108.3	24.54	-18.96	43.5	43.9	11.15	1.04	31.55	-	-	Peak
162.3	26.57	-16.93	43.5	46.63	10.24	1.22	31.52	100	210	Peak
211.98	23.11	-20.39	43.5	44.19	9.02	1.37	31.47	-	-	Peak
327.3	19.02	-26.98	46	34.31	14.18	1.84	31.31	-	-	Peak
509.3	20.25	-25.75	46	30.48	18.35	2.47	31.05	-	-	Peak
853.7	25.51	-20.49	46	30.23	22.73	3.28	30.73	-	-	Peak
2388	46.54	-27.46	74	43.1	32.13	5.46	34.15	193	353	Peak
2388	35.02	-18.98	54	31.58	32.13	5.46	34.15	193	353	Average
2462	103.13	-	-	99.67	32.24	5.4	34.18	193	353	Peak
2462	98.29	-	-	94.83	32.24	5.4	34.18	193	353	Average
2484.61	60.56	-13.44	74	57.1	32.27	5.38	34.19	193	353	Peak
2484.61	37.95	-16.05	54	34.49	32.27	5.38	34.19	193	353	Average
4924	54.9	-19.1	74	47.14	34.37	7.89	34.5	141	123	Peak
4924	49.38	-4.62	54	41.62	34.37	7.89	34.5	141	123	Average
8265	54.29	-19.71	74	43.37	36	10.02	35.1	100	155	Peak
8265	40.8	-13.2	54	29.88	36	10.02	35.1	100	155	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2462 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
48.9	29.73	-10.27	40	51.62	8.96	0.68	31.53	100	155	Peak
62.94	25.49	-14.51	40	50.13	6.12	0.78	31.54	-	-	Peak
200.37	27.28	-16.22	43.5	48.62	8.82	1.32	31.48	-	-	Peak
514.9	20.23	-25.77	46	30.33	18.46	2.48	31.04	-	-	Peak
615	23.74	-22.26	46	31.74	20.18	2.73	30.91	-	-	Peak
923	26.38	-19.62	46	30.09	23.53	3.4	30.64	-	-	Peak
2388	46.38	-27.62	74	42.94	32.13	5.46	34.15	100	69	Peak
2388	34.29	-19.71	54	30.85	32.13	5.46	34.15	100	69	Average
2462	100.34	-	-	96.88	32.24	5.4	34.18	100	69	Peak
2462	95.87	-	-	92.41	32.24	5.4	34.18	100	69	Average
2483.5	58.97	-15.03	74	55.51	32.27	5.38	34.19	100	69	Peak
2483.5	36.43	-17.57	54	32.97	32.27	5.38	34.19	100	69	Average
4924	52.32	-21.68	74	44.56	34.37	7.89	34.5	119	103	Peak
4924	47.39	-6.61	54	39.63	34.37	7.89	34.5	119	103	Average
8022	54.1	-19.9	74	43.35	36	9.85	35.1	100	255	Peak
8022	40.54	-13.46	54	29.79	36	9.85	35.1	100	255	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz and 9648 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
41.61	26.91	-13.09	40	44.99	12.8	0.63	31.51	100	31	Peak
200.1	20.64	-22.86	43.5	42	8.8	1.32	31.48	-	-	Peak
230.34	21.7	-24.3	46	41.22	10.43	1.49	31.44	-	-	Peak
327.3	20.62	-25.38	46	35.91	14.18	1.84	31.31	-	-	Peak
416.9	21.55	-24.45	46	34.03	16.47	2.2	31.15	-	-	Peak
741	23.92	-22.08	46	30.2	21.4	3.04	30.72	-	-	Peak
2389.99	46.79	-7.21	54	43.36	32.13	5.46	34.16	129	314	Average
2389.99	70.99	-3.01	74	67.56	32.13	5.46	34.16	129	314	Peak
2412	109.05	-	-	105.61	32.16	5.44	34.16	129	314	Peak
2412	66.08	-	-	62.64	32.16	5.44	34.16	129	314	Average
2486	38.65	-15.35	54	35.19	32.27	5.38	34.19	129	314	Average
2486	54.41	-19.59	74	50.95	32.27	5.38	34.19	129	314	Peak
4824	55.92	-18.08	74	48.28	34.33	7.81	34.5	100	311	Peak
4824	37.79	-16.21	54	30.15	34.33	7.81	34.5	100	311	Average
7236	64.59	-24.46	89.05	53.7	35.9	9.88	34.89	100	0	Peak
9648	46.06	-42.99	89.05	80.94	-10.32	10.74	35.3	100	0	Peak



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz and 9648 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
41.61	25.46	-14.54	40	43.54	12.8	0.63	31.51	100	285	Peak
91.02	24.14	-19.36	43.5	45.68	9.03	0.95	31.52	-	-	Peak
227.37	25.64	-20.36	46	45.66	9.97	1.46	31.45	-	-	Peak
441.4	18.47	-27.53	46	30.34	16.97	2.28	31.12	-	-	Peak
615	24.99	-21.01	46	32.99	20.18	2.73	30.91	-	-	Peak
663.3	24.85	-21.15	46	32.28	20.56	2.87	30.86	-	-	Peak
2389.99	70.74	-3.26	74	67.31	32.13	5.46	34.16	135	346	Peak
2389.99	43.18	-10.82	54	39.75	32.13	5.46	34.16	135	346	Average
2412	105.92	-	-	102.48	32.16	5.44	34.16	135	346	Peak
2412	62.28	-	-	58.84	32.16	5.44	34.16	135	346	Average
2484	50.46	-23.54	74	47	32.27	5.38	34.19	135	346	Peak
2484	33.78	-20.22	54	30.32	32.27	5.38	34.19	135	346	Average
4824	54.18	-19.82	74	46.54	34.33	7.81	34.5	100	18	Peak
4824	37.87	-16.13	54	30.23	34.33	7.81	34.5	100	18	Average
7236	59.65	-26.27	85.92	48.76	35.9	9.88	34.89	100	0	Peak
9648	43.86	-42.06	85.92	78.74	-10.32	10.74	35.3	100	0	Peak
12060	41.04	-32.96	74	74.13	-10.42	12.07	34.74	100	0	Peak



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9748 MHz is 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
41.61	26.93	-13.07	40	45.01	12.8	0.63	31.51	100	33	Peak
200.1	21.11	-22.39	43.5	42.47	8.8	1.32	31.48	-	-	Peak
228.18	21.76	-24.24	46	41.65	10.08	1.47	31.44	-	-	Peak
329.4	21.27	-24.73	46	36.47	14.26	1.85	31.31	-	-	Peak
416.9	22.23	-23.77	46	34.71	16.47	2.2	31.15	-	-	Peak
514.9	21.94	-24.06	46	32.04	18.46	2.48	31.04	-	-	Peak
2390	59.49	-14.51	74	56.06	32.13	5.46	34.16	100	16	Peak
2390	39.94	-14.06	54	36.51	32.13	5.46	34.16	100	16	Average
2437	110.09	-	-	106.63	32.22	5.41	34.17	100	16	Peak
2437	66.7	-	-	63.24	32.22	5.41	34.17	100	16	Average
2484	40.97	-13.03	54	37.51	32.27	5.38	34.19	100	16	Average
2484	59.6	-14.4	74	56.14	32.27	5.38	34.19	100	16	Peak
4874	56.02	-17.98	74	48.32	34.35	7.85	34.5	100	12	Peak
4874	37.96	-16.04	54	30.26	34.35	7.85	34.5	100	12	Average
7311	65.28	-8.72	74	54.5	35.9	9.81	34.93	100	351	Peak
7311	41.34	-12.66	54	30.55	35.9	9.81	34.92	100	351	Average
9748	41.51	-48.58	90.09	76.09	-10.1	10.82	35.3	100	0	Peak



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 12185 MHz is 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
41.61	24.65	-15.35	40	42.73	12.8	0.63	31.51	100	77	Peak
91.02	24.58	-18.92	43.5	46.12	9.03	0.95	31.52	-	-	Peak
228.45	25.48	-20.52	46	45.25	10.2	1.47	31.44	-	-	Peak
368.6	18.31	-27.69	46	32.2	15.29	2.08	31.26	-	-	Peak
615	24.42	-21.58	46	32.42	20.18	2.73	30.91	-	-	Peak
663.3	25.25	-20.75	46	32.68	20.56	2.87	30.86	-	-	Peak
2390	56.55	-17.45	74	53.12	32.13	5.46	34.16	105	313	Peak
2390	38.97	-15.03	54	35.54	32.13	5.46	34.16	105	313	Average
2437	107.88	-	-	104.43	32.19	5.43	34.17	105	313	Peak
2437	64.8	-	-	61.34	32.22	5.41	34.17	105	313	Average
2484	39.7	-14.3	54	36.24	32.27	5.38	34.19	105	313	Average
2484	55.51	-18.49	74	52.05	32.27	5.38	34.19	105	313	Peak
4874	53.45	-20.55	74	45.75	34.35	7.85	34.5	100	13	Peak
4874	38.03	-15.97	54	30.33	34.35	7.85	34.5	100	13	Average
7311	62.57	-11.43	74	51.78	35.9	9.81	34.92	100	12	Peak
7311	41.3	-12.7	54	30.51	35.9	9.81	34.92	100	12	Average
9748	42.3	-31.7	74	76.88	-10.1	10.82	35.3	100	0	Peak
12185	41.1	-45.58	87.88	74.03	-10.48	12.19	34.64	100	0	Peak



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 MHz is 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
41.61	26.6	-13.4	40	44.68	12.8	0.63	31.51	100	29	Peak
200.1	21.63	-21.87	43.5	42.99	8.8	1.32	31.48	-	-	Peak
227.1	20.87	-25.13	46	40.89	9.97	1.46	31.45	-	-	Peak
329.4	21.87	-24.13	46	37.07	14.26	1.85	31.31	-	-	Peak
416.9	21.13	-24.87	46	33.61	16.47	2.2	31.15	-	-	Peak
780.2	24.22	-21.78	46	29.86	21.94	3.11	30.69	-	-	Peak
2380	50.57	-23.43	74	47.14	32.11	5.47	34.15	100	17	Peak
2380	39.21	-14.79	54	35.78	32.11	5.47	34.15	100	17	Average
2462	110.8	-	-	107.34	32.24	5.4	34.18	100	17	Peak
2462	66.45	-	-	62.99	32.24	5.4	34.18	100	17	Average
2484.42	70.52	-3.48	74	67.06	32.27	5.38	34.19	100	17	Peak
2484.42	45.27	-8.73	54	41.81	32.27	5.38	34.19	100	17	Average
4924	56.95	-17.05	74	49.19	34.37	7.89	34.5	100	331	Peak
4924	38.98	-15.02	54	31.22	34.37	7.89	34.5	100	331	Average
7386	63.32	-10.68	74	52.64	35.9	9.73	34.95	100	351	Peak
7386	42.18	-11.82	54	31.5	35.9	9.73	34.95	100	351	Average
9848	39.47	-51.33	90.8	73.78	-9.9	10.89	35.3	100	0	Peak
12310	38.75	-35.25	74	71.52	-10.52	12.31	34.56	100	0	Peak



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 MHz is 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
41.61	24.77	-15.23	40	42.85	12.8	0.63	31.51	100	17	Peak
91.29	24.07	-19.43	43.5	45.61	9.03	0.95	31.52	-	-	Peak
139.89	25.11	-18.39	43.5	43.76	11.7	1.2	31.55	-	-	Peak
379.8	17.06	-28.94	46	30.6	15.6	2.1	31.24	-	-	Peak
615	25.41	-20.59	46	33.41	20.18	2.73	30.91	-	-	Peak
713	25.6	-20.4	46	32.41	21.01	2.97	30.79	-	-	Peak
2382	48.58	-25.42	74	45.15	32.11	5.47	34.15	119	305	Peak
2382	35.19	-18.81	54	31.76	32.11	5.47	34.15	119	305	Average
2462	106.02	-	-	102.56	32.24	5.4	34.18	119	305	Peak
2462	62.4	-	-	58.94	32.24	5.4	34.18	119	305	Average
2483.85	70.42	-3.58	74	66.96	32.27	5.38	34.19	119	305	Peak
2483.85	41.55	-12.45	54	38.09	32.27	5.38	34.19	119	305	Average
4924	55.7	-18.3	74	47.94	34.37	7.89	34.5	104	6	Peak
4924	38.65	-15.35	54	30.89	34.37	7.89	34.5	104	6	Average
7386	62.12	-11.88	74	51.44	35.9	9.73	34.95	100	360	Peak
7386	41.28	-12.72	54	30.6	35.9	9.73	34.95	100	360	Average
9848	40.6	-45.42	86.02	74.9	-9.9	10.9	35.3	100	0	Peak
12310	43.48	-30.52	74	76.25	-10.52	12.31	34.56	100	0	Peak



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz and 9648 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
41.61	26.5	-13.5	40	44.58	12.8	0.63	31.51	100	94	Peak
200.1	20.74	-22.76	43.5	42.1	8.8	1.32	31.48	-	-	Peak
228.18	21.41	-24.59	46	41.3	10.08	1.47	31.44	-	-	Peak
329.4	21.93	-24.07	46	37.13	14.26	1.85	31.31	-	-	Peak
416.9	21.43	-24.57	46	33.91	16.47	2.2	31.15	-	-	Peak
595.4	22.66	-23.34	46	30.93	19.98	2.68	30.93	-	-	Peak
2389.99	42.46	-11.54	54	39.03	32.13	5.46	34.16	100	352	Average
2389.99	69.62	-4.38	74	66.19	32.13	5.46	34.16	100	352	Peak
2412	106.32	-	-	102.88	32.16	5.44	34.16	100	352	Peak
2412	60.72	-	-	57.28	32.16	5.44	34.16	100	352	Average
2486	34.55	-19.45	54	31.09	32.27	5.38	34.19	100	352	Average
2486	49.87	-24.13	74	46.41	32.27	5.38	34.19	100	352	Peak
4824	54.21	-19.79	74	46.57	34.33	7.81	34.5	100	328	Peak
4824	37.92	-16.08	54	30.28	34.33	7.81	34.5	100	328	Average
7236	60.8	-35.52	86.32	49.91	35.9	9.88	34.89	100	0	Peak
9648	44.45	-41.87	86.32	79.33	-10.32	10.74	35.3	100	0	Peak



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz and 9648 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
41.61	25.11	-14.89	40	43.19	12.8	0.63	31.51	100	25	Peak
91.02	24.27	-19.23	43.5	45.81	9.03	0.95	31.52	-	-	Peak
194.97	25.72	-17.78	43.5	47.05	8.86	1.3	31.49	-	-	Peak
466.6	20.23	-25.77	46	31.48	17.48	2.34	31.07	-	-	Peak
615	24.49	-21.51	46	32.49	20.18	2.73	30.91	-	-	Peak
663.3	25.45	-20.55	46	32.88	20.56	2.87	30.86	-	-	Peak
2388.66	41.35	-12.65	54	37.91	32.13	5.46	34.15	100	63	Average
2388.66	66.9	-7.1	74	63.46	32.13	5.46	34.15	100	63	Peak
2412	103.87	-	-	100.43	32.16	5.44	34.16	100	63	Peak
2412	59.43	-	-	55.99	32.16	5.44	34.16	100	63	Average
2484	32.5	-21.5	54	29.04	32.27	5.38	34.19	100	63	Average
2484	44.39	-29.61	74	40.93	32.27	5.38	34.19	100	63	Peak
4824	54.11	-19.89	74	46.47	34.33	7.81	34.5	100	181	Peak
4824	38.31	-15.69	54	30.67	34.33	7.81	34.5	100	181	Average
7236	55.92	-27.95	83.87	45.03	35.9	9.88	34.89	100	0	Peak
9648	41.9	-41.97	83.87	76.78	-10.32	10.74	35.3	100	0	Peak



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9748 MHz is 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
41.61	26.54	-13.46	40	44.62	12.8	0.63	31.51	100	86	Peak
200.1	21.18	-22.32	43.5	42.54	8.8	1.32	31.48	-	-	Peak
229.53	21.3	-24.7	46	40.94	10.32	1.48	31.44	-	-	Peak
329.4	20.74	-25.26	46	35.94	14.26	1.85	31.31	-	-	Peak
416.9	21.23	-24.77	46	33.71	16.47	2.2	31.15	-	-	Peak
858.6	24.95	-21.05	46	29.61	22.78	3.28	30.72	-	-	Peak
2390	57.15	-16.85	74	53.72	32.13	5.46	34.16	100	345	Peak
2390	35.36	-18.64	54	31.93	32.13	5.46	34.16	100	345	Average
2437	107.31	-	-	103.85	32.22	5.41	34.17	100	345	Peak
2437	61.36	-	-	57.9	32.22	5.41	34.17	100	345	Average
2484	35.01	-18.99	54	31.55	32.27	5.38	34.19	100	345	Average
2484	53.83	-20.17	74	50.37	32.27	5.38	34.19	100	345	Peak
4874	55.71	-18.29	74	48.01	34.35	7.85	34.5	100	245	Peak
4874	38.77	-15.23	54	31.07	34.35	7.85	34.5	100	245	Average
7311	63.42	-10.58	74	52.64	35.9	9.81	34.93	100	247	Peak
7311	40.84	-13.16	54	30.05	35.9	9.81	34.92	100	247	Average
9748	41.3	46.01	87.31	75.88	-10.1	10.82	35.3	100	0	Peak



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9748 MHz is 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
61.86	25.2	-14.8	40	49.91	6.05	0.78	31.54	100	66	Peak
91.29	24.1	-19.4	43.5	45.64	9.03	0.95	31.52	-	-	Peak
227.1	26.34	-19.66	46	46.36	9.97	1.46	31.45	-	-	Peak
329.4	17.26	-28.74	46	32.46	14.26	1.85	31.31	-	-	Peak
514.9	21.71	-24.29	46	31.81	18.46	2.48	31.04	-	-	Peak
663.3	25.52	-20.48	46	32.95	20.56	2.87	30.86	-	-	Peak
2390	53.59	-20.41	74	50.16	32.13	5.46	34.16	100	320	Peak
2390	34.33	-19.67	54	30.9	32.13	5.46	34.16	100	320	Average
2437	104.05	-	-	100.59	32.22	5.41	34.17	100	320	Peak
2437	59.36	-	-	55.9	32.22	5.41	34.17	100	320	Average
2486	34.34	-19.66	54	30.88	32.27	5.38	34.19	100	320	Average
2486	51.86	-22.14	74	48.4	32.27	5.38	34.19	100	320	Peak
4874	53.94	-20.06	74	46.24	34.35	7.85	34.5	105	251	Peak
4874	38.69	-15.31	54	30.99	34.35	7.85	34.5	105	251	Average
7311	61.84	-12.16	74	51.05	35.9	9.81	34.92	100	346	Peak
7311	41.08	-12.92	54	30.29	35.9	9.81	34.92	100	346	Average
9748	42.02	-42.03	84.05	76.6	-10.1	10.82	35.3	100	0	Peak
12185	39.47	-34.53	74	72.4	-10.48	12.19	34.64	100	0	Peak



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 MHz is 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
41.61	26.91	-13.09	40	44.99	12.8	0.63	31.51	100	31	Peak
200.1	21.23	-22.27	43.5	42.59	8.8	1.32	31.48	-	-	Peak
227.37	22.16	-23.84	46	42.18	9.97	1.46	31.45	-	-	Peak
330.1	20.56	-25.44	46	35.76	14.26	1.85	31.31	-	-	Peak
416.9	21.72	-24.28	46	34.2	16.47	2.2	31.15	-	-	Peak
766.2	23.82	-22.18	46	29.67	21.75	3.09	30.69	-	-	Peak
2390	50.02	-23.98	74	46.59	32.13	5.46	34.16	100	319	Peak
2390	34.46	-19.54	54	31.03	32.13	5.46	34.16	100	319	Average
2462	107.37	-	-	103.91	32.24	5.4	34.18	100	319	Peak
2462	62.48	-	-	59.02	32.24	5.4	34.18	100	319	Average
2483.66	41.9	-12.1	54	38.44	32.27	5.38	34.19	100	319	Average
2483.66	70.47	-3.53	74	67.01	32.27	5.38	34.19	100	319	Peak
4924	54.94	-19.06	74	47.18	34.37	7.89	34.5	100	31	Peak
4924	38.98	-15.02	54	31.22	34.37	7.89	34.5	100	31	Average
7386	60.84	-13.16	74	50.16	35.9	9.73	34.95	100	10	Peak
7386	41.7	-12.3	54	31.02	35.9	9.73	34.95	100	10	Average
9848	40.32	-47.05	87.37	74.63	-9.9	10.89	35.3	100	0	Peak



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 MHz is 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
41.61	24.76	-15.24	40	42.84	12.8	0.63	31.51	100	98	Peak
91.29	24.52	-18.98	43.5	46.06	9.03	0.95	31.52	-	-	Peak
227.37	25.46	-20.54	46	45.48	9.97	1.46	31.45	-	-	Peak
343.4	17.93	-28.07	46	32.69	14.62	1.92	31.3	-	-	Peak
514.9	22.69	-23.31	46	32.79	18.46	2.48	31.04	-	-	Peak
663.3	25.98	-20.02	46	33.41	20.56	2.87	30.86	-	-	Peak
2390	48.44	-25.56	74	45.01	32.13	5.46	34.16	100	311	Peak
2390	33.97	-20.03	54	30.54	32.13	5.46	34.16	100	311	Average
2462	103.77	-	-	100.31	32.24	5.4	34.18	100	311	Peak
2462	59.48	-	-	56.02	32.24	5.4	34.18	100	311	Average
2483.5	39.97	-14.03	54	36.51	32.27	5.38	34.19	100	311	Average
2483.5	65.78	-8.22	74	62.32	32.27	5.38	34.19	100	311	Peak
4924	53.11	-20.89	74	45.35	34.37	7.89	34.5	100	162	Peak
4924	38.02	-15.98	54	30.26	34.37	7.89	34.5	100	162	Average
7386	60.15	-13.85	74	49.47	35.9	9.73	34.95	100	360	Peak
7386	40.79	-13.21	54	30.11	35.9	9.73	34.95	100	360	Average
9848	41.46	-42.31	83.77	75.76	-9.9	10.9	35.3	100	0	Peak



3.8 Antenna Requirements

3.8.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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



4 List of Measuring Equipment

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)
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, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-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-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	105934	N/A	Nov. 11, 2008	Nov. 10, 2010	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

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 (30 MHz ~ 1000 MHz)

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 (1 GHz ~ 40 GHz)

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 EP031938-01 as below.