

FCC RF Test Report

APPLICANT : Symbol Technologies Inc.
EQUIPMENT : Enterprise Digital Assistant (EDA)
BRAND NAME : Motorola
MODEL NAME : MC55A0
FCC ID : H9PMC55A0
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Oct. 04, 2010 and completely tested on Nov. 05, 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:



Anderson Chiu / Deputy Manager



SPORTON INTERNATIONAL INC.

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

TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 RF Power	8
2.2 Test Mode	9
2.3 Connection Diagram of Test System	11
2.4 RF Utility	12
3 TEST RESULT	13
3.1 6dB and 99% Bandwidth Measurement	13
3.2 Output Power Measurement	26
3.3 Band Edges Measurement	28
3.4 Spurious Emission Measurement	35
3.5 Power Spectral Density Measurement	45
3.6 AC Conducted Emission Measurement	52
3.7 Radiated Emission Measurement	60
3.8 Antenna Requirements	85
4 LIST OF MEASURING EQUIPMENT	86
5 UNCERTAINTY OF EVALUATION	87
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR000411B	Rev. 01	Initial issue of report	Nov. 12, 2010

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	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Output Power Measurement	$\leq 30\text{dBm}$	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 13.9 dB at 0.454 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.3 dB at 4874 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Symbol Technologies Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.2 Manufacturer

Symbol Technologies Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Enterprise Digital Assistant (EDA)
Brand Name	Motorola
Model Name	MC55A0
FCC ID	H9PMC55A0
Tx/Rx Frequency Range	802.11b/g : 2400 MHz ~ 2483.5 MHz 802.11a : 5725 MHz ~ 5850 MHz
Channel Spacing	802.11b/g : 5 MHz 802.11a : 20 MHz
Maximum Output Power to Antenna	802.11b : 16.92 dBm (0.049 W) 802.11g : 21.88 dBm (0.154 W) 802.11a : 21.48 dBm (0.141 W)
Antenna Type	802.11b/g : PIFA Antenna with gain 2.55 dBi 802.11a : PIFA Antenna with gain 2.94 dBi
Type of Antenna Connector	N/A
HW Version	DV
SW Version	BSP34
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/a : 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	03CH05HY	722060/4086B-1

1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 7 Annex 8

Remark:

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

1.6 Ancillary Equipment List

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

2 Test Configuration of Equipment Under Test

2.1 RF Power

Preliminary tests were performed in different data rate and recorded the RF Output Power in the following table:

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.38	16.00	15.91	16.17
CH 06	2437 MHz	16.60	15.60	15.70	15.95
CH 11	2462 MHz	16.27	16.66	16.68	16.92

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	21.10	20.46	20.74	20.09	20.82	20.74	20.36	20.56
CH 06	2437 MHz	21.88	21.49	21.58	21.46	21.53	21.55	21.16	21.21
CH 11	2462 MHz	21.04	20.73	21.07	20.62	21.11	21.07	20.74	20.85

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH149	5745 MHz	21.09	21.4	21.47	21.37	21.48	21.47	20.25	20.49
CH157	5785 MHz	21.45	21.38	21.33	21.31	21.31	21.21	19.83	20.16
CH165	5825 MHz	20.81	21.07	21.02	20.70	21.00	20.89	19.54	19.59

Remark:

1. The data rates of WLAN 802.11a/b/g were set in 11Mbps for 802.11b, 6Mbps for 802.11g, and 24Mbps for 802.11a for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signal 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 (Modulation : OFDM)	802.11a Band III (Modulation : OFDM)
Conducted TCs	Mode 1: 802.11b_CH01_ 2412 MHz	Mode 4: 802.11g_CH01_ 2412 MHz	Mode 7: 802.11a_CH149_ 5745 MHz
	Mode 2: 802.11b_CH06_ 2437 MHz	Mode 5: 802.11g_CH06_ 2437 MHz	Mode 8: 802.11a_CH157_ 5785 MHz
	Mode 3: 802.11b_CH11_ 2462 MHz	Mode 6: 802.11g_CH11_ 2462 MHz	Mode 9: 802.11a_CH165_ 5825 MHz

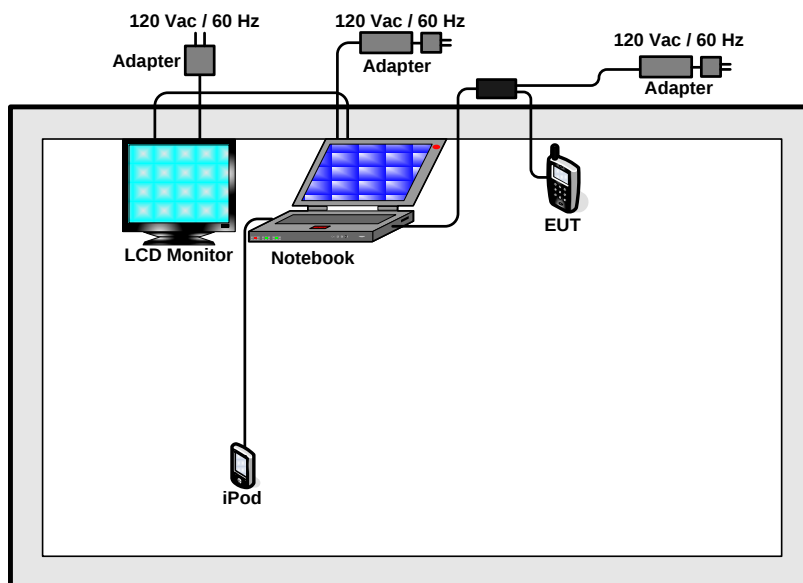


Test Cases			
Test Item	802.11b (Modulation : DSSS)	802.11g (Modulation : OFDM)	802.11a Band III (Modulation : OFDM)
Radiated TCs	Mode 1: 802.11b_CH01_ 2412 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 4: 802.11g_CH01_ 2412 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 8: 802.11a_CH149_ 5745 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner
	Mode 2: 802.11b_CH06_ 2437 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 5: 802.11g_CH06_ 2437 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 9: 802.11a_CH157_ 5785 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner
	Mode 3: 802.11b_CH11_ 2462 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 6: 802.11g_CH11_ 2462 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner	Mode 10: 802.11a_CH165_ 5825 MHz + Qwerty Keypad + Battery (3600mAh) + 2D Scanner
		Mode 7: 802.11g_CH06_ 2437 MHz + PIM Keypad + Battery (2400mAh) + 1D Scanner	Mode 11: 802.11a_CH165_ 5825 MHz + Numeric Keypad + Battery (2400mAh) + 1D Scanner

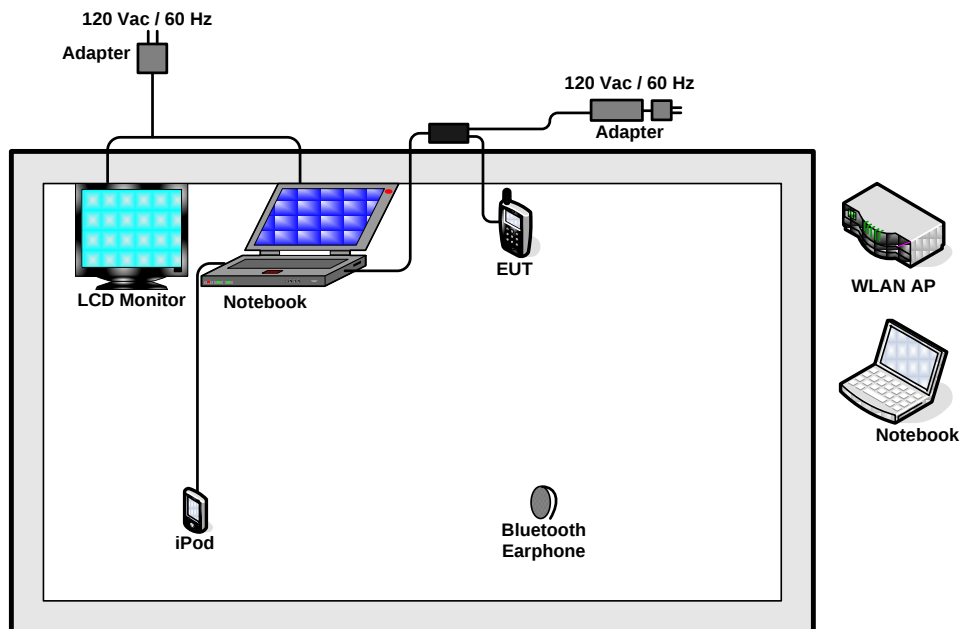
Test Cases	
AC Conducted Emission	Mode 1 :WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner
	Mode 2 :WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner
	Mode 3 :WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner
Remark: - For radiated TCs test was performed together with USB charging cable with AC power. "BT Link" stands for terminal linked to headset by BT function. "WLAN Link" stands for terminal associated with AP at 2.4GHz band. "USB Link" stands for Activesync RNDIS file transfer.	

2.3 Connection Diagram of Test System

<Radiation Test>



<Conduction Test>



2.4 RF Utility

The programmed RF utility “CEcTxRx” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

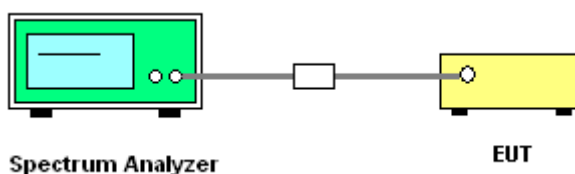
3.1.2 Measuring Instruments

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

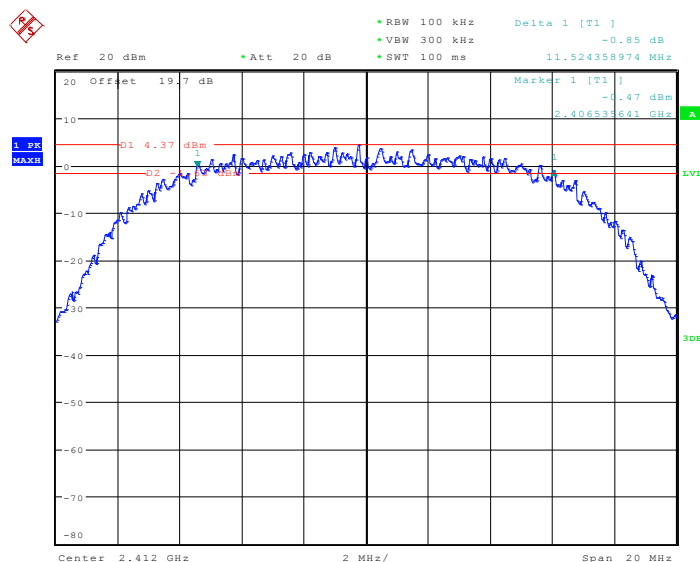


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	11.52	0.5	Pass
06	2437	12.08	0.5	Pass
11	2462	12.07	0.5	Pass

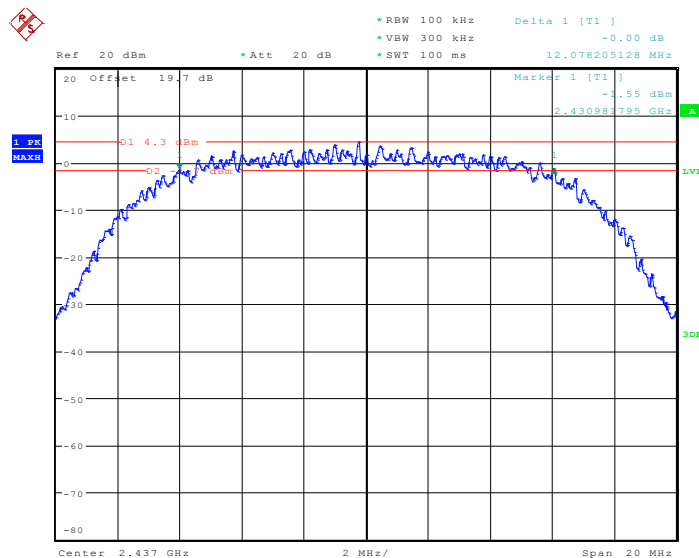
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 8.OCT.2010 11:04:08

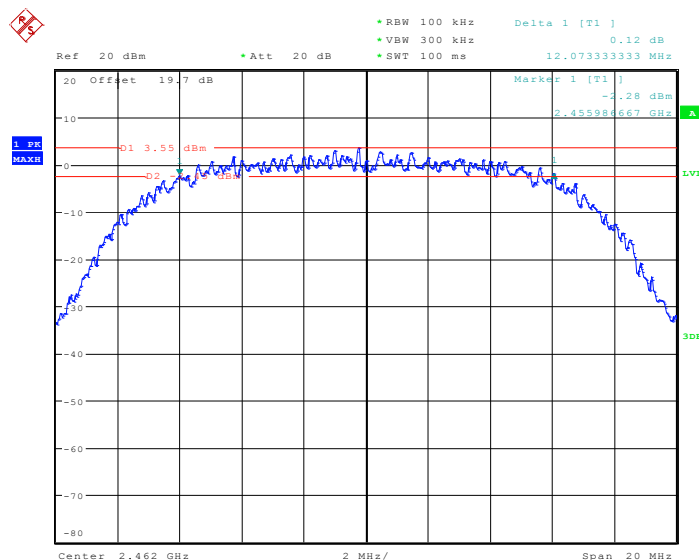


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 8.OCT.2010 13:10:48

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



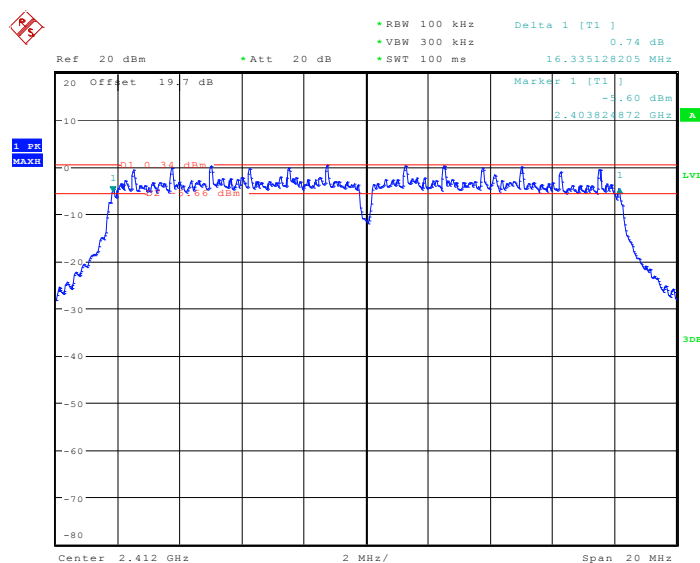
Date: 8.OCT.2010 13:23:31



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.34	0.5	Pass
06	2437	16.29	0.5	Pass
11	2462	16.32	0.5	Pass

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



Date: 8.OCT.2010 14:09:09



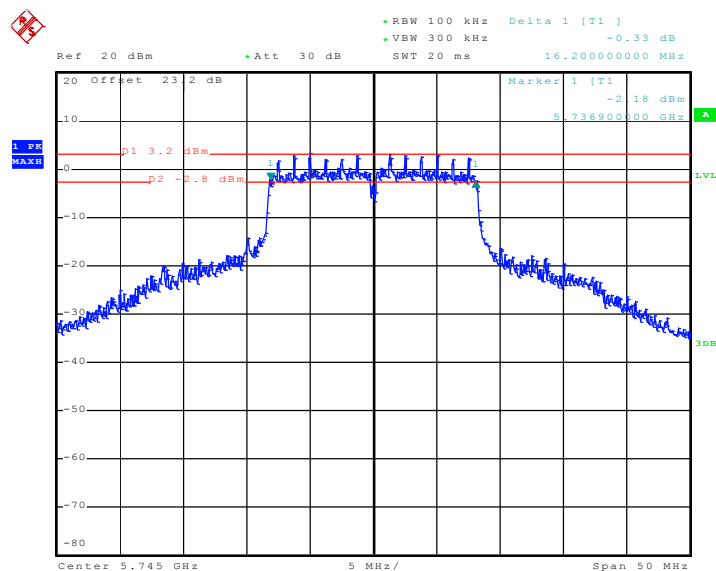
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



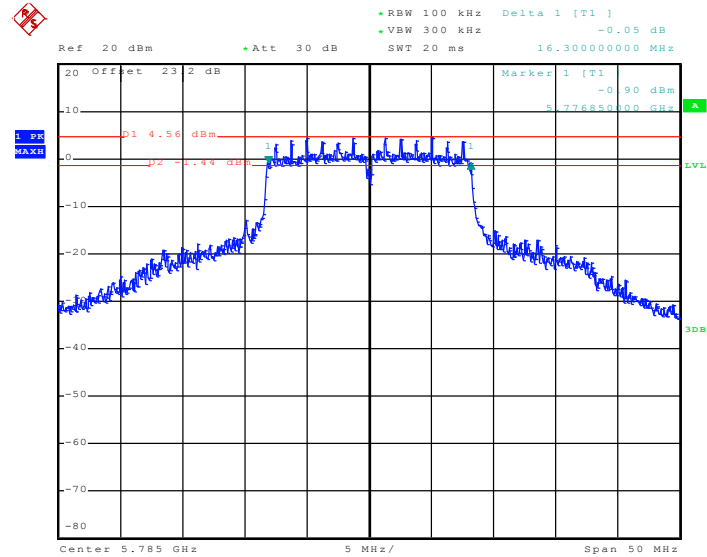


Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

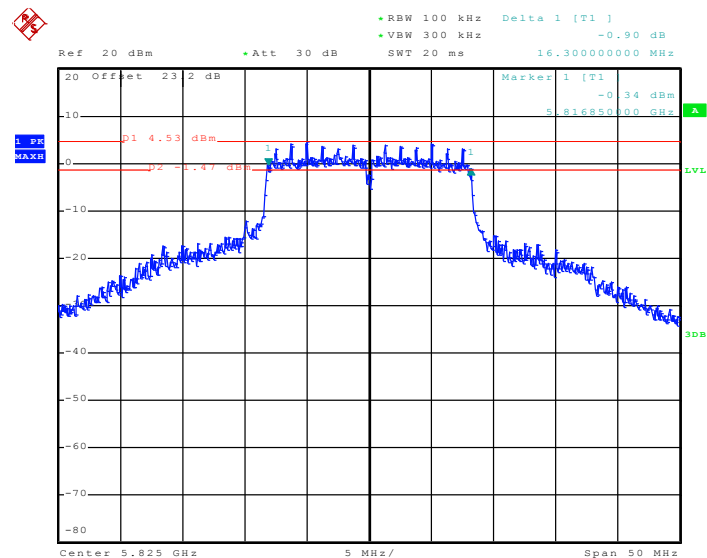
Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	16.20	0.5	Pass
157	5785	16.30	0.5	Pass
165	5825	16.30	0.5	Pass

Mode 7: 6 dB Bandwidth Plot on 802.11a Channel 149

Date: 8.OCT.2010 19:59:32

Mode 8: 6 dB Bandwidth Plot on 802.11a Channel 157


Date: 8.OCT.2010 18:29:47

Mode 9: 6 dB Bandwidth Plot on 802.11a Channel 165


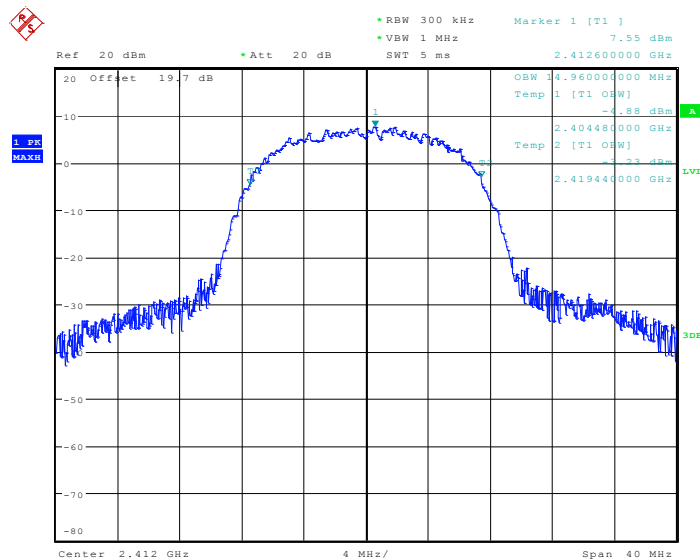
Date: 8.OCT.2010 19:44:23

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.96	Pass
06	2437	14.96	Pass
11	2462	15.00	Pass

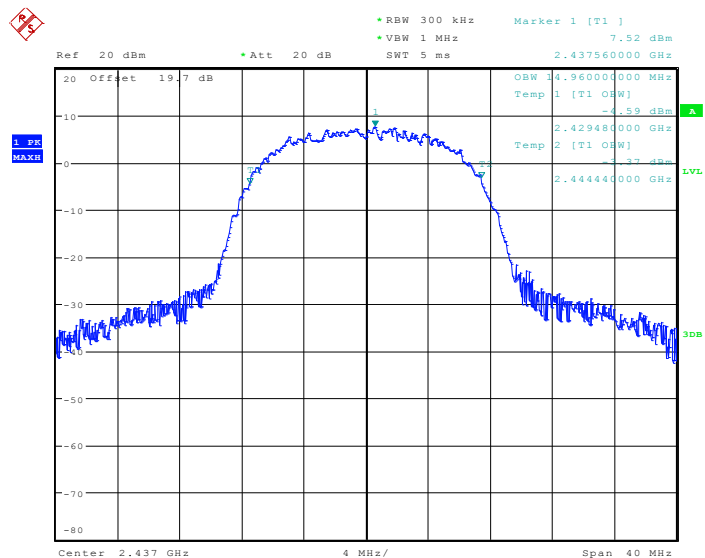
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 8.OCT.2010 13:51:23

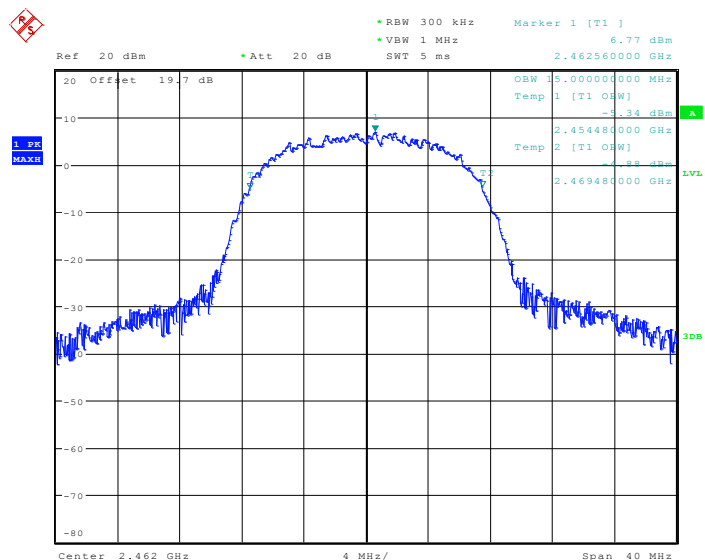


Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 8.OCT.2010 13:50:02

Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11



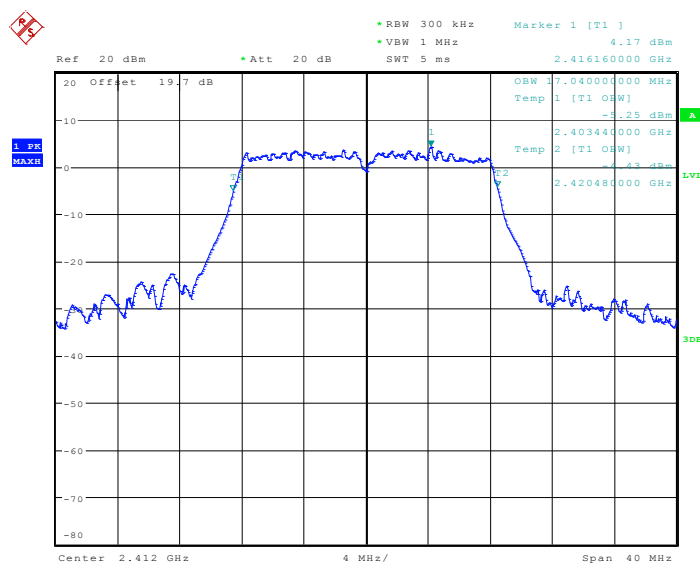
Date: 8.OCT.2010 13:41:44



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.04	Pass
06	2437	17.44	Pass
11	2462	17.04	Pass

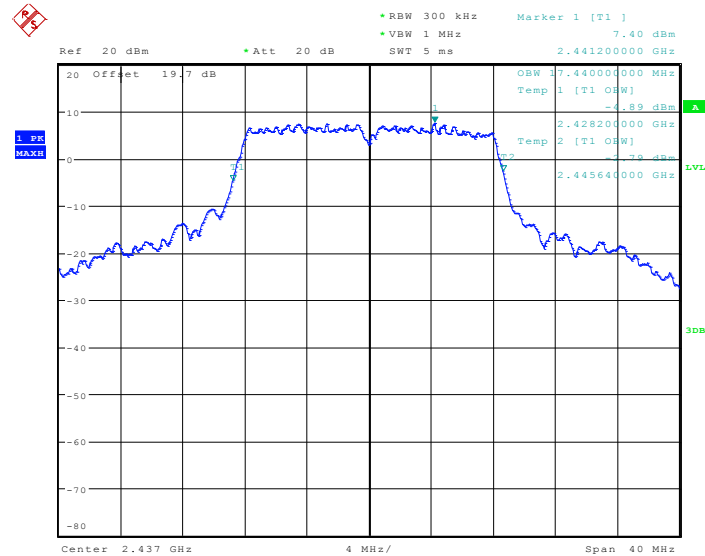
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



Date: 8.OCT.2010 14:27:10

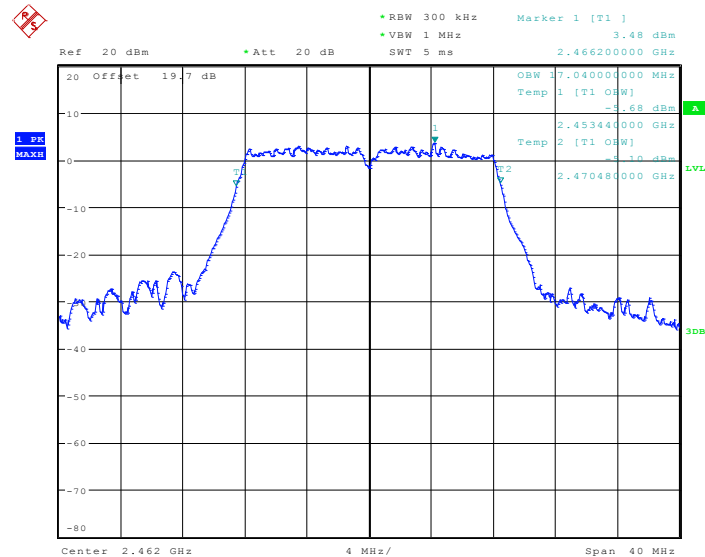


Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 8.OCT.2010 14:41:54

Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



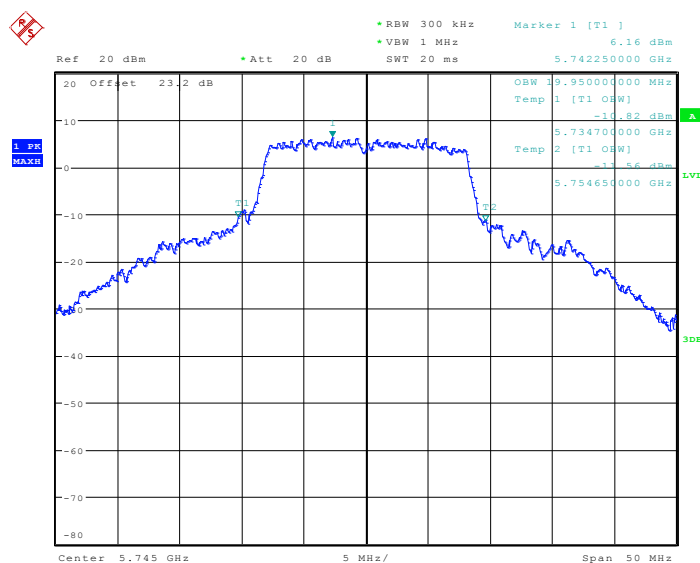
Date: 8.OCT.2010 15:08:02



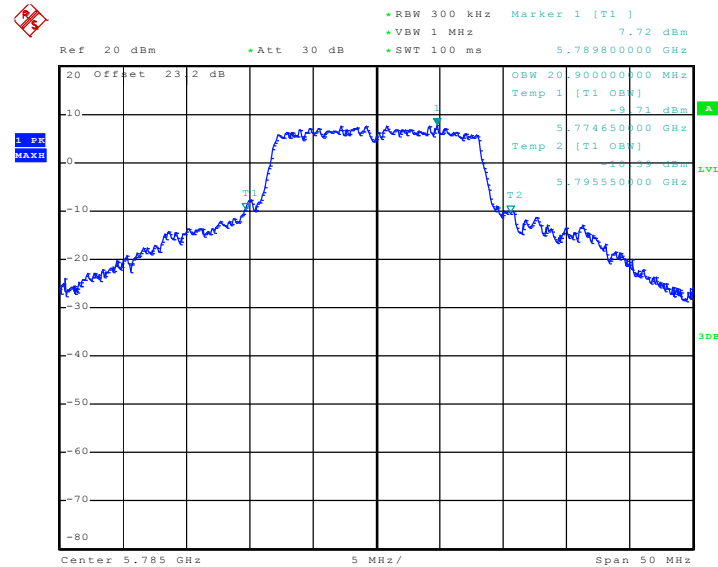
Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	19.95	Pass
157	5785	20.90	Pass
165	5825	22.45	Pass

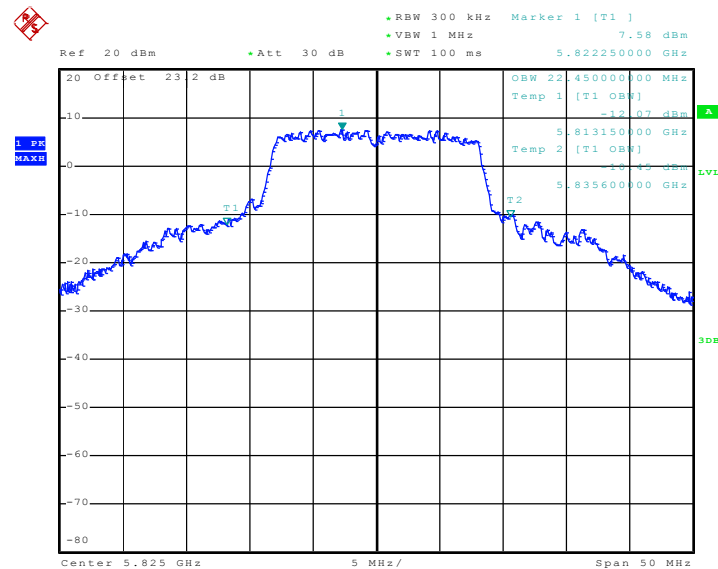
Mode 7: 99% Occupied Bandwidth Plot on 802.11a Channel 149



Date: 8.OCT.2010 16:46:21

Mode 8: 99% Occupied Bandwidth Plot on 802.11a Channel 157


Date: 8.OCT.2010 18:55:58

Mode 9: 99% Occupied Bandwidth Plot on 802.11a Channel 165


Date: 8.OCT.2010 19:56:45

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, 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.

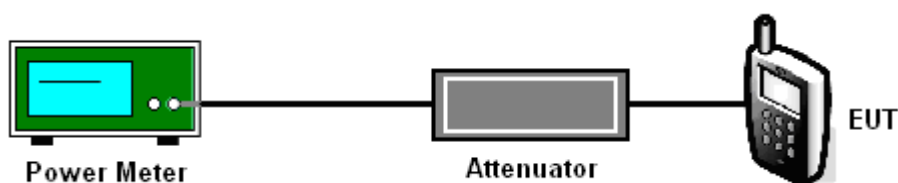
3.2.2 Measuring Instruments

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 :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.17	30	Pass
06	2437	15.95	30	Pass
11	2462	16.92	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.10	30	Pass
06	2437	21.88	30	Pass
11	2462	21.04	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	21.48	30	Pass
157	5785	21.31	30	Pass
165	5825	21.00	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

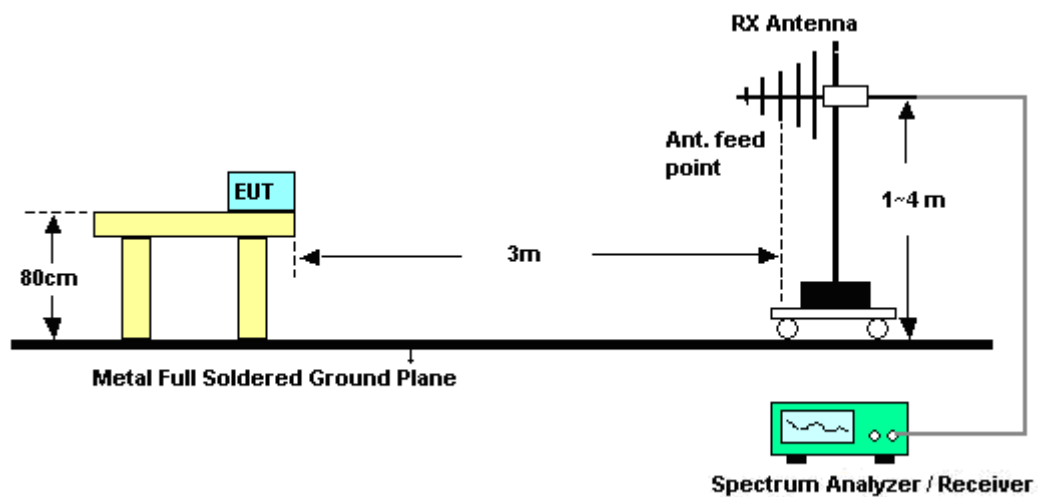
See list of measuring instruments of this test report.

3.3.3 Test Procedures

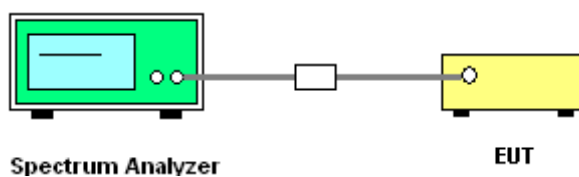
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, 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℃
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	63.32	-10.68	74	61.2	31.7	4.5	34.08	193	256	Peak
2389.99	41.39	-12.61	54	39.27	31.7	4.5	34.08	193	256	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	63.68	-10.32	74	61.56	31.7	4.5	34.08	128	208	Peak
2389.99	41.55	-12.45	54	39.43	31.7	4.5	34.08	128	208	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	69	-5	74	66.71	31.78	4.59	34.08	194	10	Peak
2483.66	50.52	-3.48	54	48.23	31.78	4.59	34.08	194	10	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
2483.66	62.15	-11.85	74	59.86	31.78	4.59	34.08	100	175	Peak
2483.66	37.34	-16.66	54	35.05	31.78	4.59	34.08	100	175	Average



Test Mode :	Mode 4	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	62.64	-11.36	74	60.52	31.7	4.5	34.08	121	250	Peak
2390	42.64	-11.36	54	40.52	31.7	4.5	34.08	121	250	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
2390	66.59	-7.41	74	64.47	31.7	4.5	34.08	100	174	Peak
2390	45.39	-8.61	54	43.27	31.7	4.5	34.08	100	174	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Cona Huang

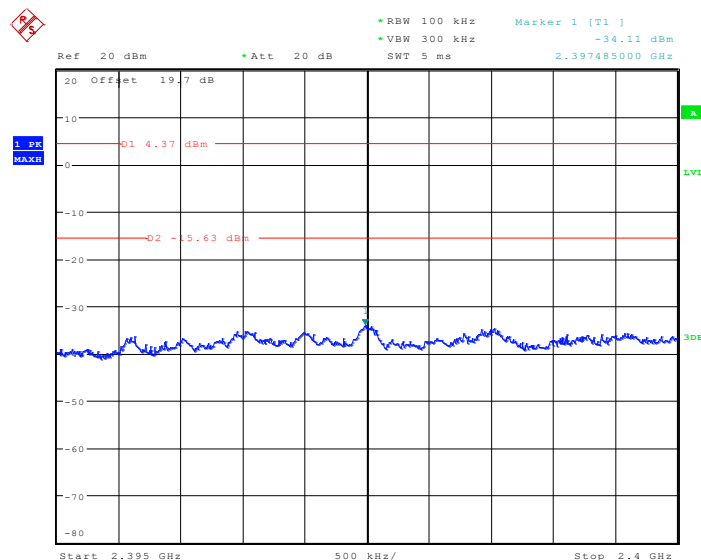
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	49.14	-4.86	54	46.85	31.78	4.59	34.08	195	10	Peak
2483.5	70.5	-3.5	74	68.21	31.78	4.59	34.08	195	10	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
2484	61.12	-12.88	74	58.83	31.78	4.59	34.08	100	173	Peak
2484	41.16	-12.84	54	38.87	31.78	4.59	34.08	100	173	Average

3.3.6 Test Result of Conducted Band Edges

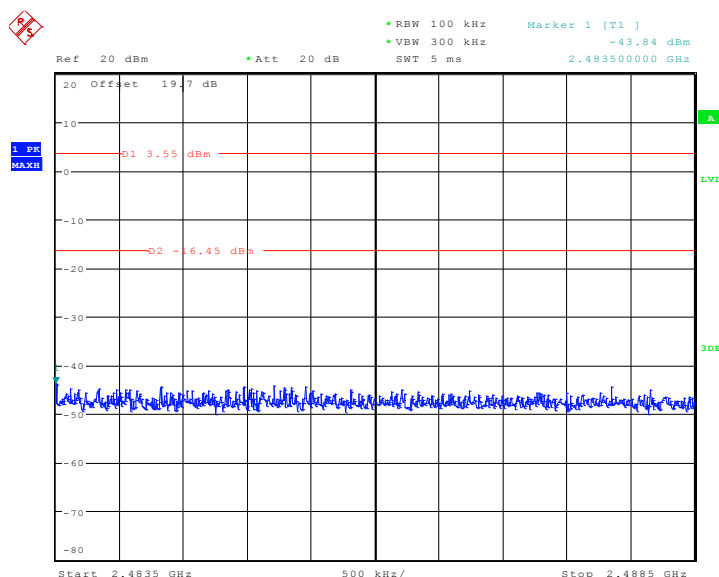
Test Mode :	Mode 1 and 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	01 and 11	Test Engineer :	Alan Liu

Low Band Edge Plot on 802.11b Channel 01



Date: 8.OCT.2010 14:23:49

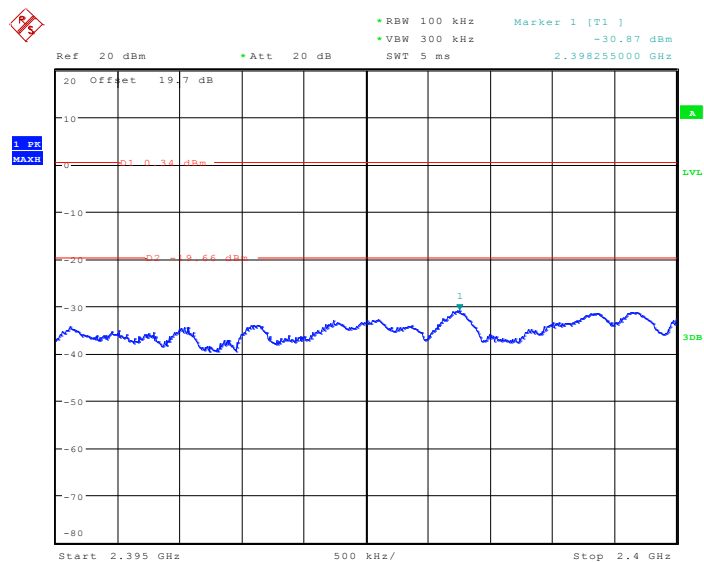
High Band Edge Plot on 802.11b Channel 11



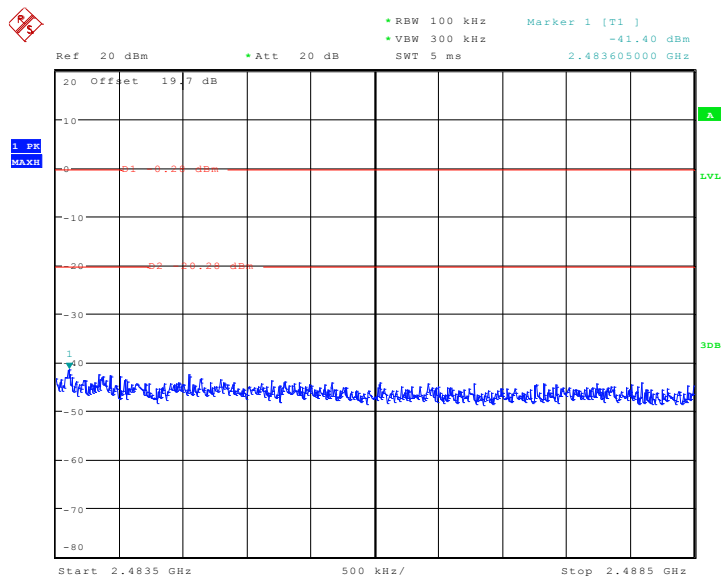
Date: 8.OCT.2010 13:24:16



Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	01 and 11	Test Engineer :	Alan Liu

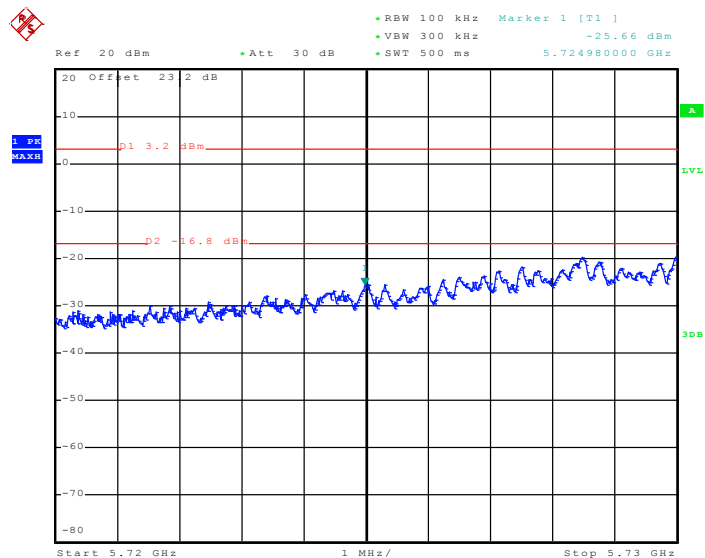
Low Band Edge Plot on 802.11g Channel 01

Date: 8.OCT.2010 14:14:30

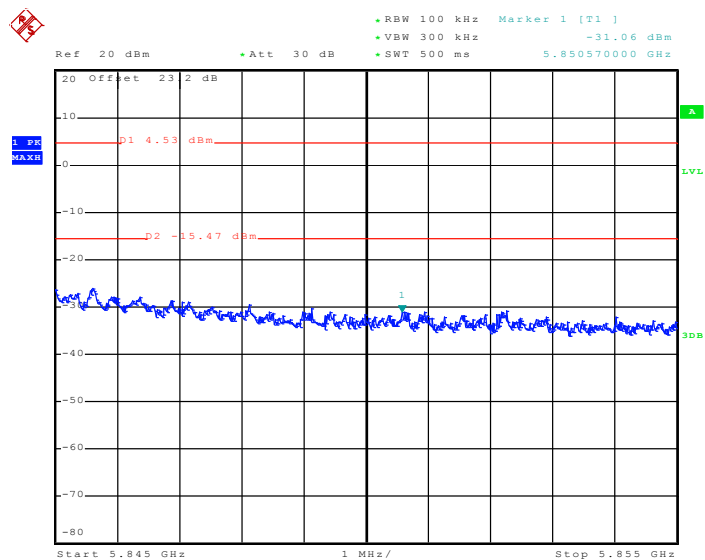
High Band Edge Plot on 802.11g Channel 11

Date: 8.OCT.2010 15:06:20

Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	149 and 165	Test Engineer :	Alan Liu

Low Band Edge Plot on 802.11a Channel 149


Date: 8.OCT.2010 20:00:49

High Band Edge Plot on 802.11a Channel 165


Date: 8.OCT.2010 19:44:47

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.

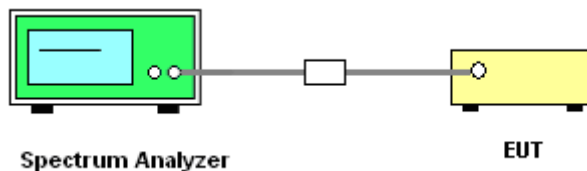
3.4.2 Measuring Instruments

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.

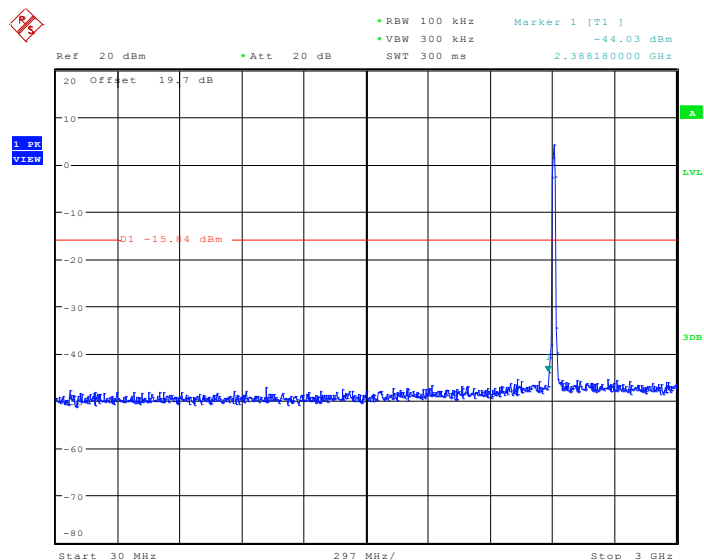
3.4.4 Test Setup



3.4.5 Test Result

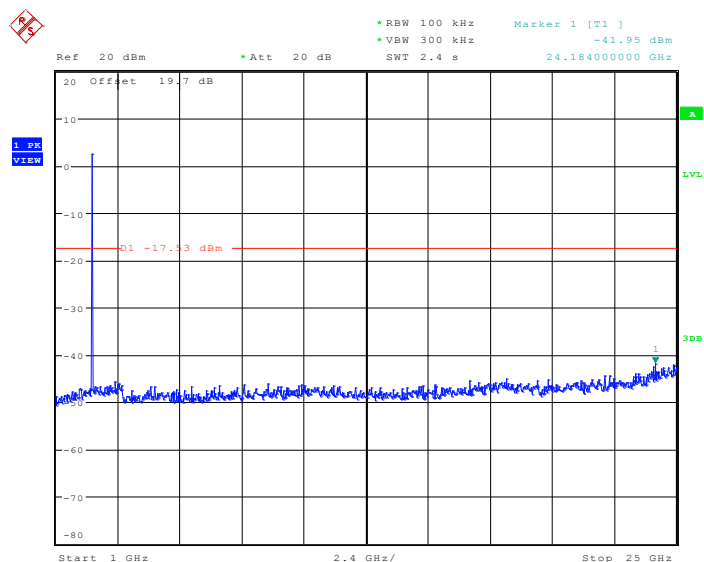
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	01	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 8.OCT.2010 12:45:47

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

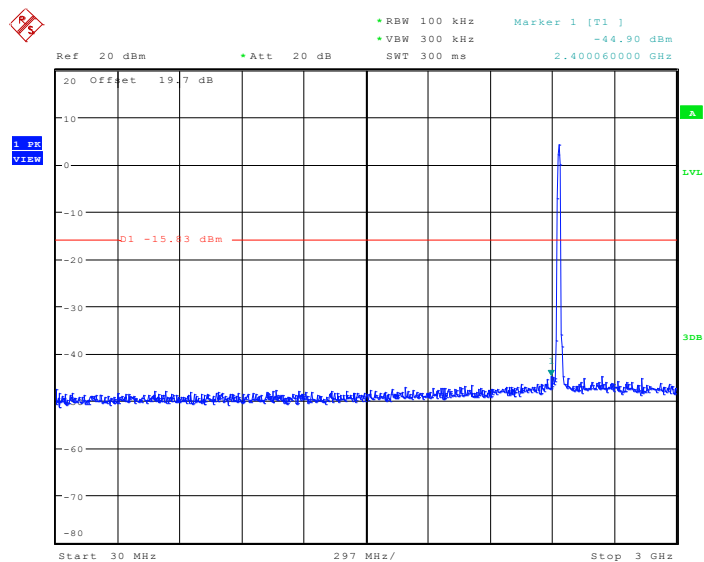


Date: 8.OCT.2010 12:46:04



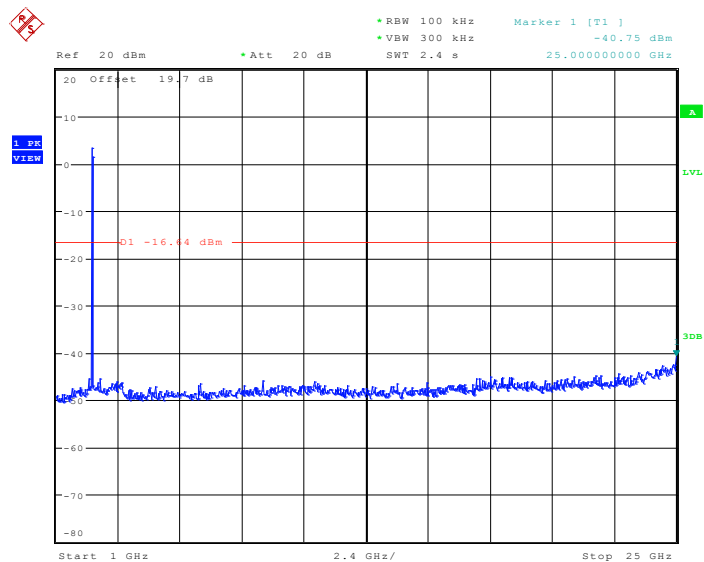
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	06	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 8.OCT.2010 13:11:34

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

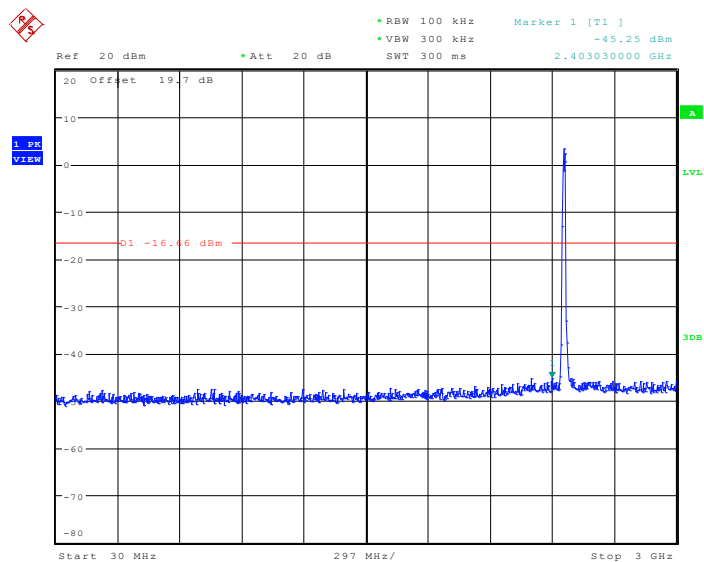


Date: 8.OCT.2010 13:11:51



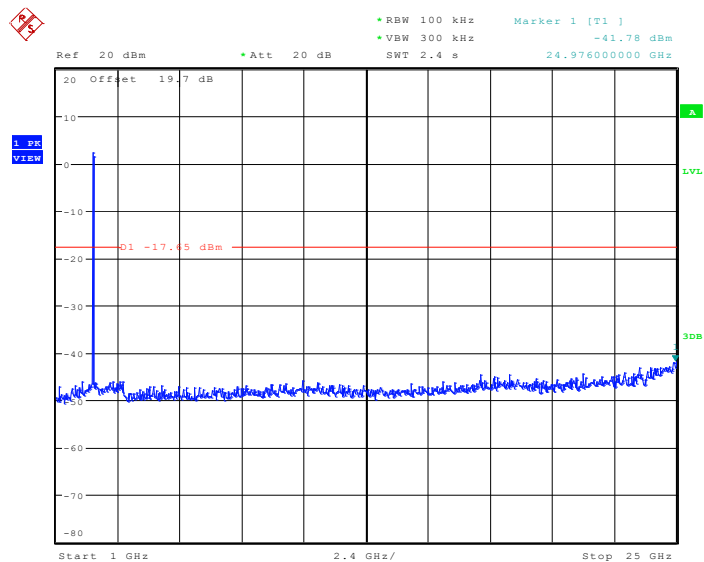
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	11	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 8.OCT.2010 13:26:26

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

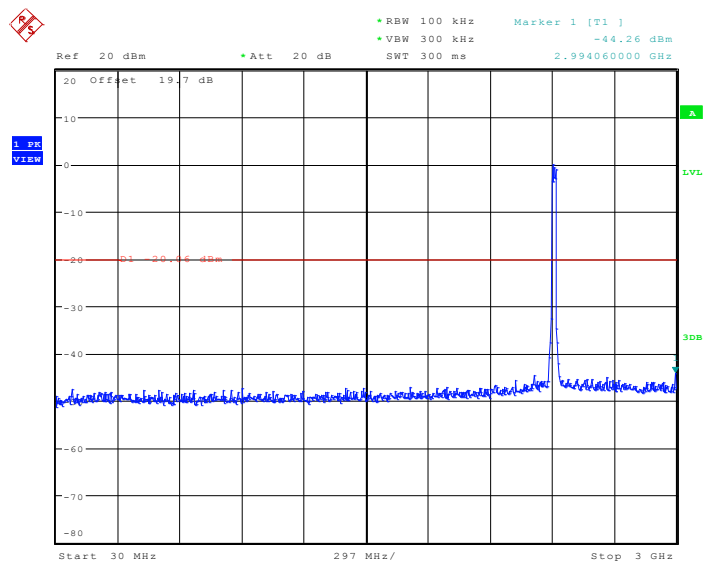


Date: 8.OCT.2010 13:26:42



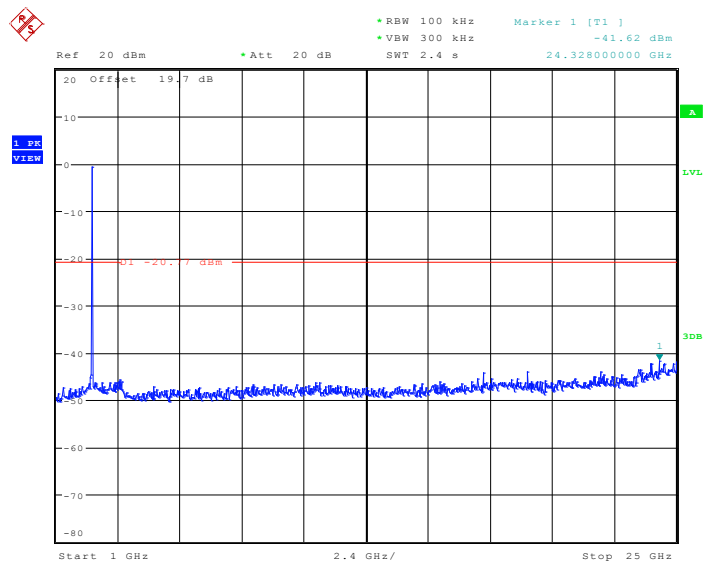
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	01	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 8.OCT.2010 14:27:37

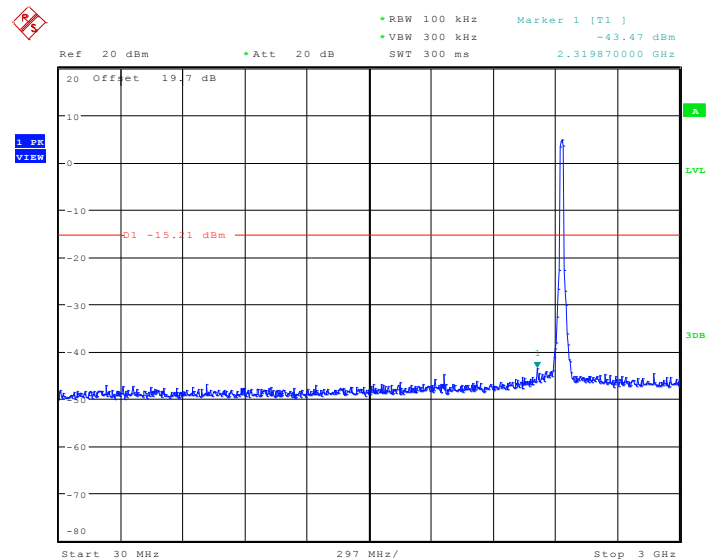
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



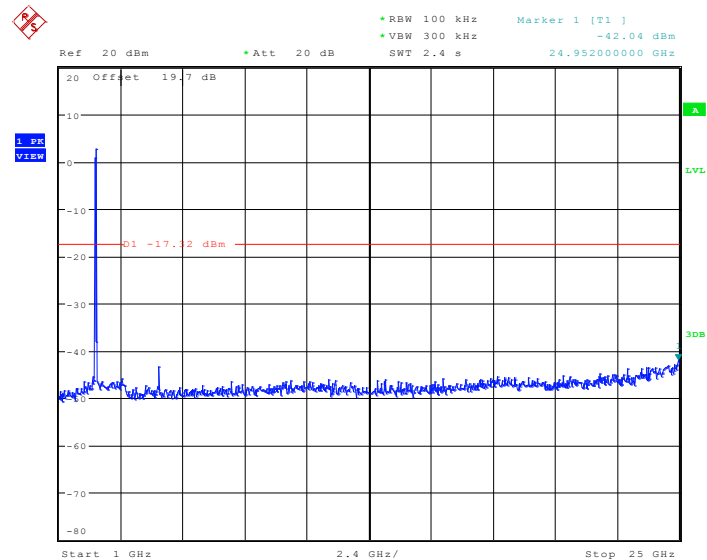
Date: 8.OCT.2010 14:27:53



Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	06	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 8.OCT.2010 14:49:24

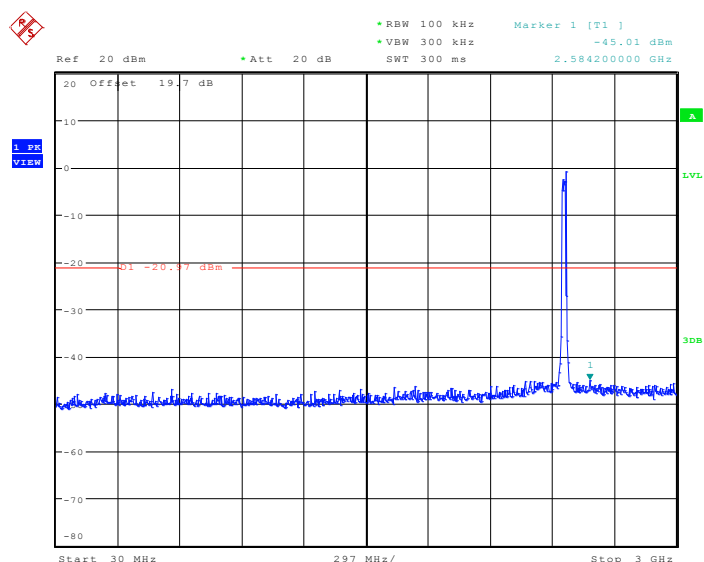
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

Date: 8.OCT.2010 14:43:56



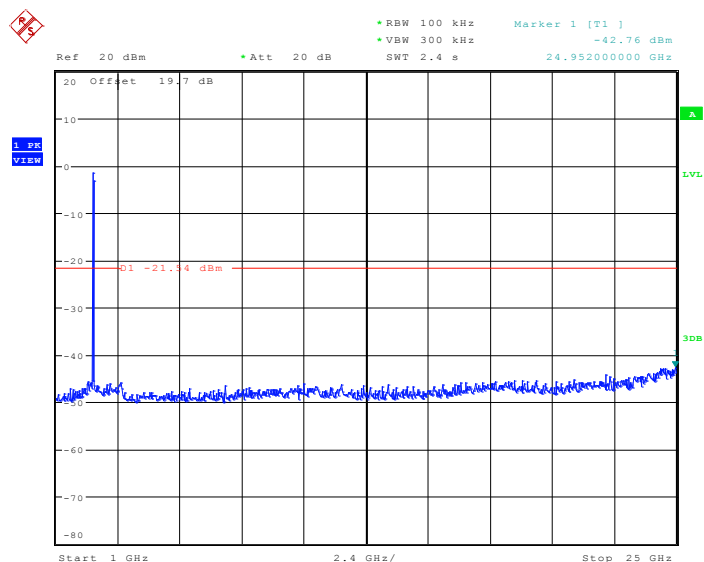
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	11	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 8.OCT.2010 15:08:32

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

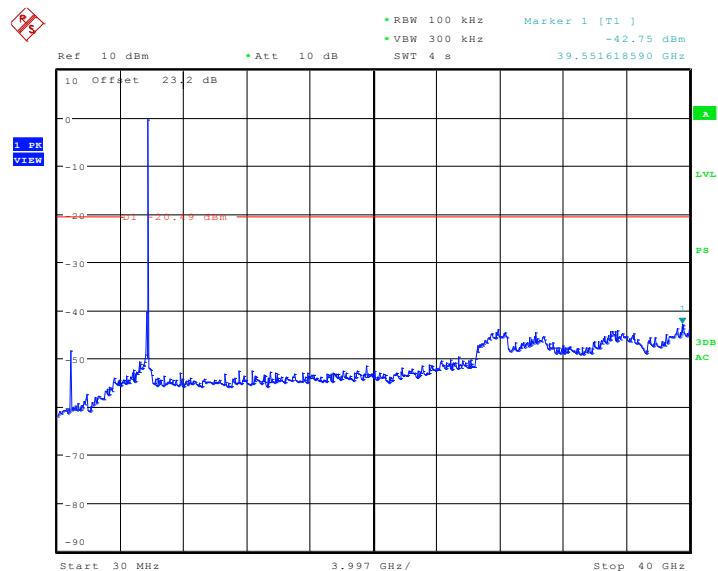


Date: 8.OCT.2010 15:08:48



Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	149	Test Engineer :	Alan Liu

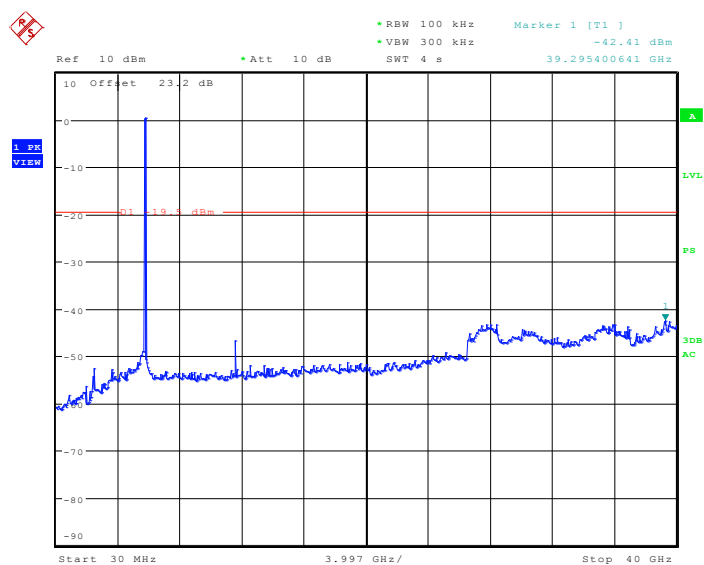
Conducted Spurious Emission Plot between 30MHz ~ 40 GHz



Date: 5.NOV.2010 10:50:17

Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	157	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 40 GHz

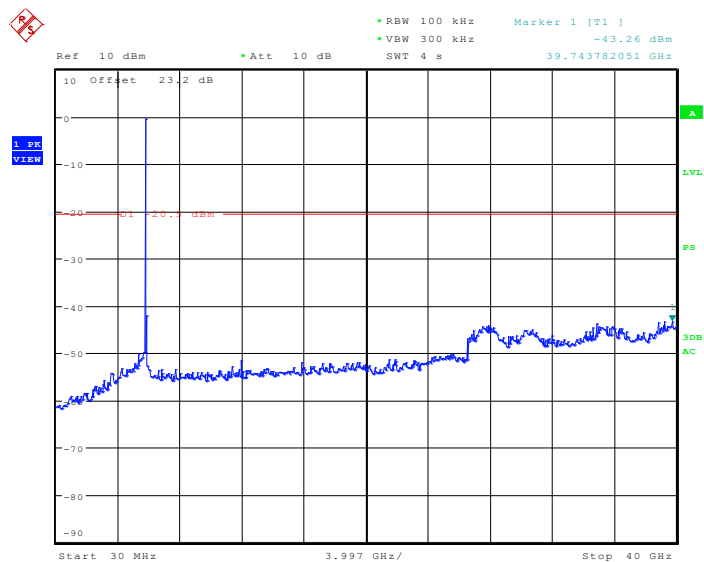


Date: 5.NOV.2010 10:49:12



Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11a	Relative Humidity :	43~46%
Test Channel :	165	Test Engineer :	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 40 GHz



Date: 5.NOV.2010 10:51:43

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 3 kHz band at any time interval of continuous transmission.

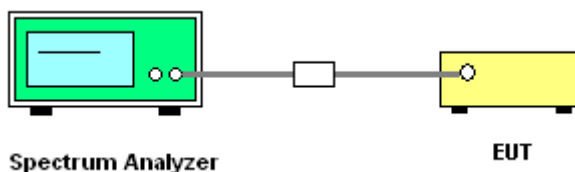
3.5.2 Measuring Instruments

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

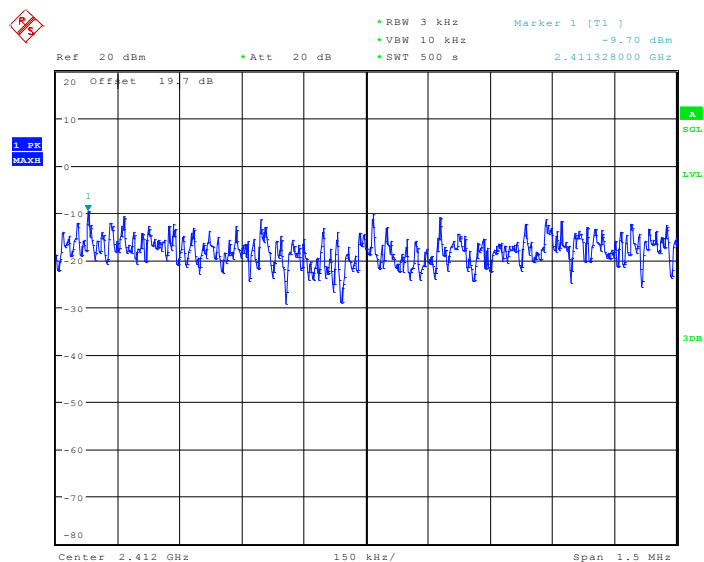


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.70	8	Pass
06	2437	-9.78	8	Pass
11	2462	-10.63	8	Pass

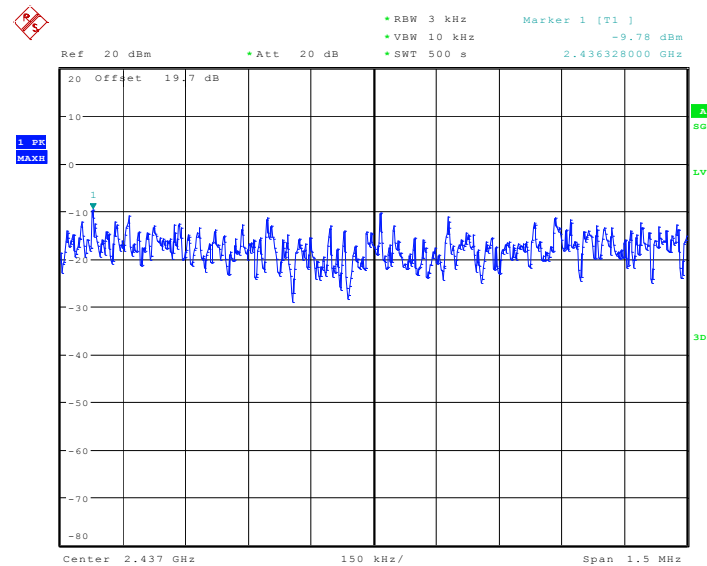
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 8.OCT.2010 11:51:57

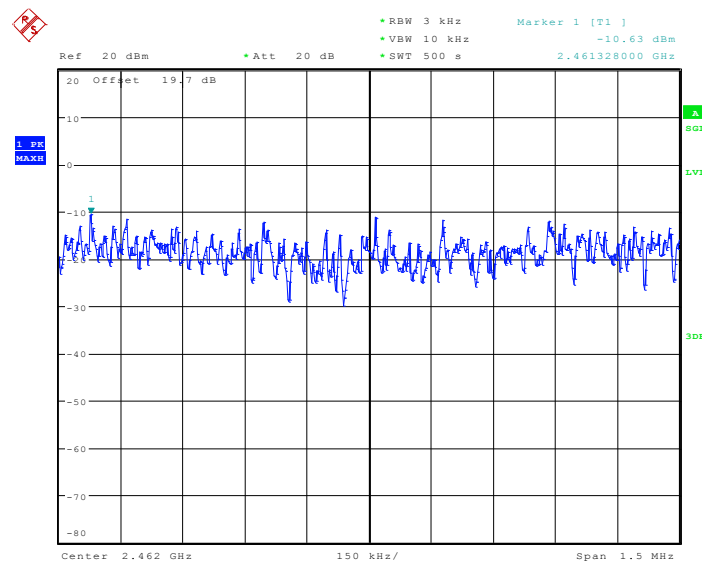


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 8.OCT.2010 13:20:34

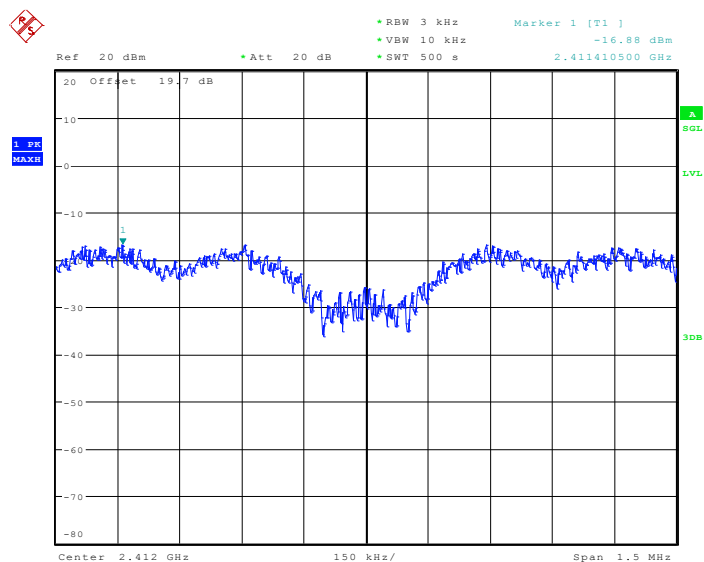
Mode 3 : PSD Plot on 802.11b Channel 11



Date: 8.OCT.2010 13:34:59

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Alan Liu	Relative Humidity :	43~46%

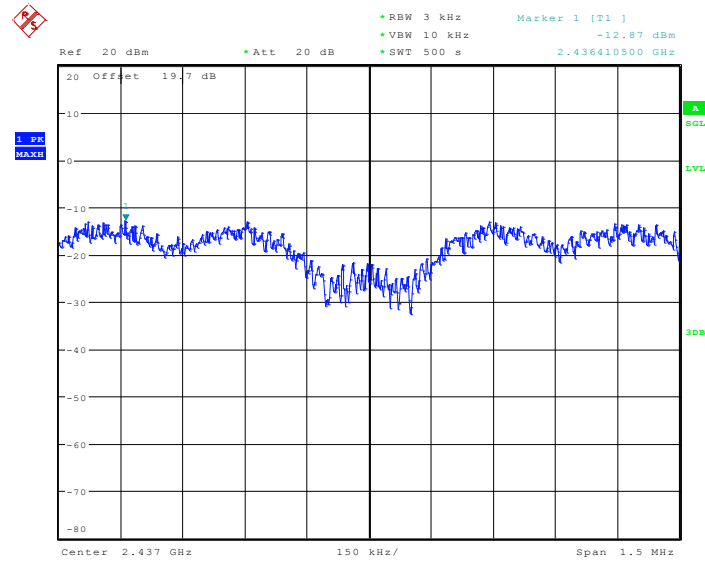
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-16.88	8	Pass
06	2437	-12.87	8	Pass
11	2462	-17.57	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


Date: 8.OCT.2010 14:36:29

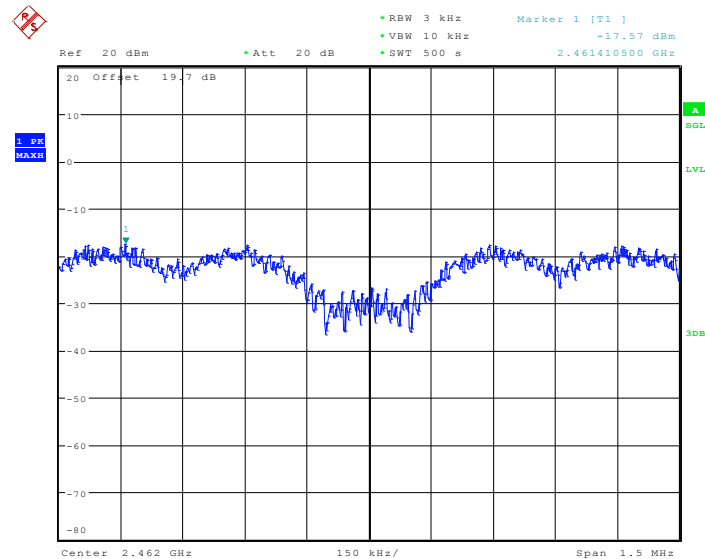


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 8.OCT.2010 14:58:21

Mode 6 : PSD Plot on 802.11g Channel 11



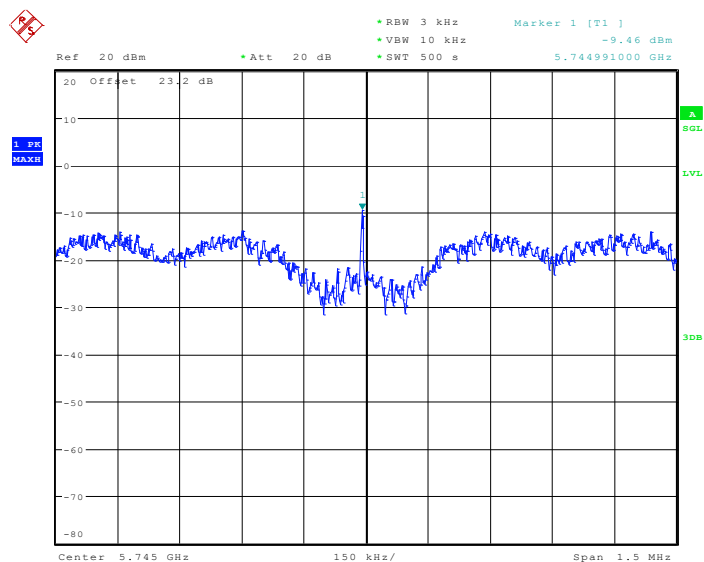
Date: 8.OCT.2010 15:19:06



Test Mode :	Mode 7, 8, 9	Temperature :	24~26
Test Engineer :	Alan Liu	Relative Humidity :	43~46

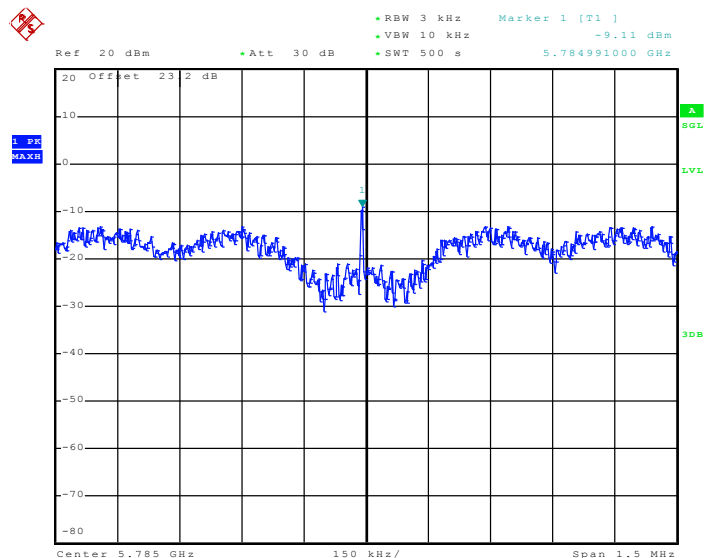
Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-9.46	8	Pass
157	5785	-9.11	8	Pass
165	5825	-9.69	8	Pass

Mode 7 : PSD Plot on 802.11a Channel 149



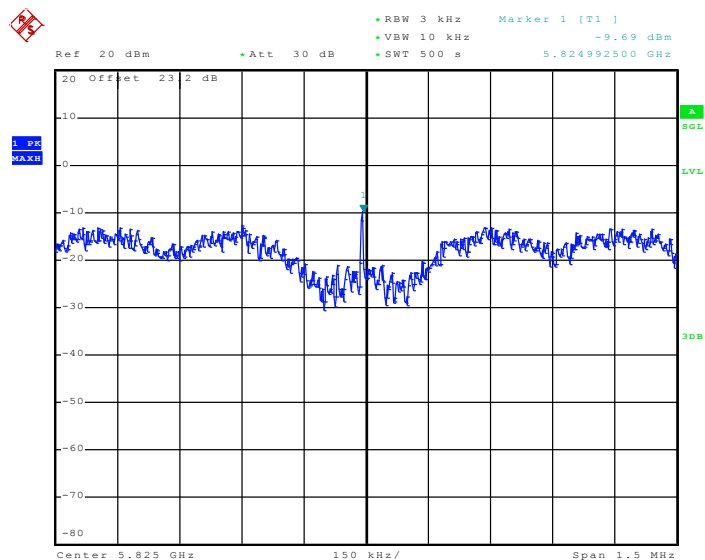
Date: 8.OCT.2010 17:14:15

Mode 8 : PSD Plot on 802.11a Channel 157



Date: 8.OCT.2010 18:24:36

Mode 9 : PSD Plot on 802.11a Channel 165



Date: 8.OCT.2010 20:13:10

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.

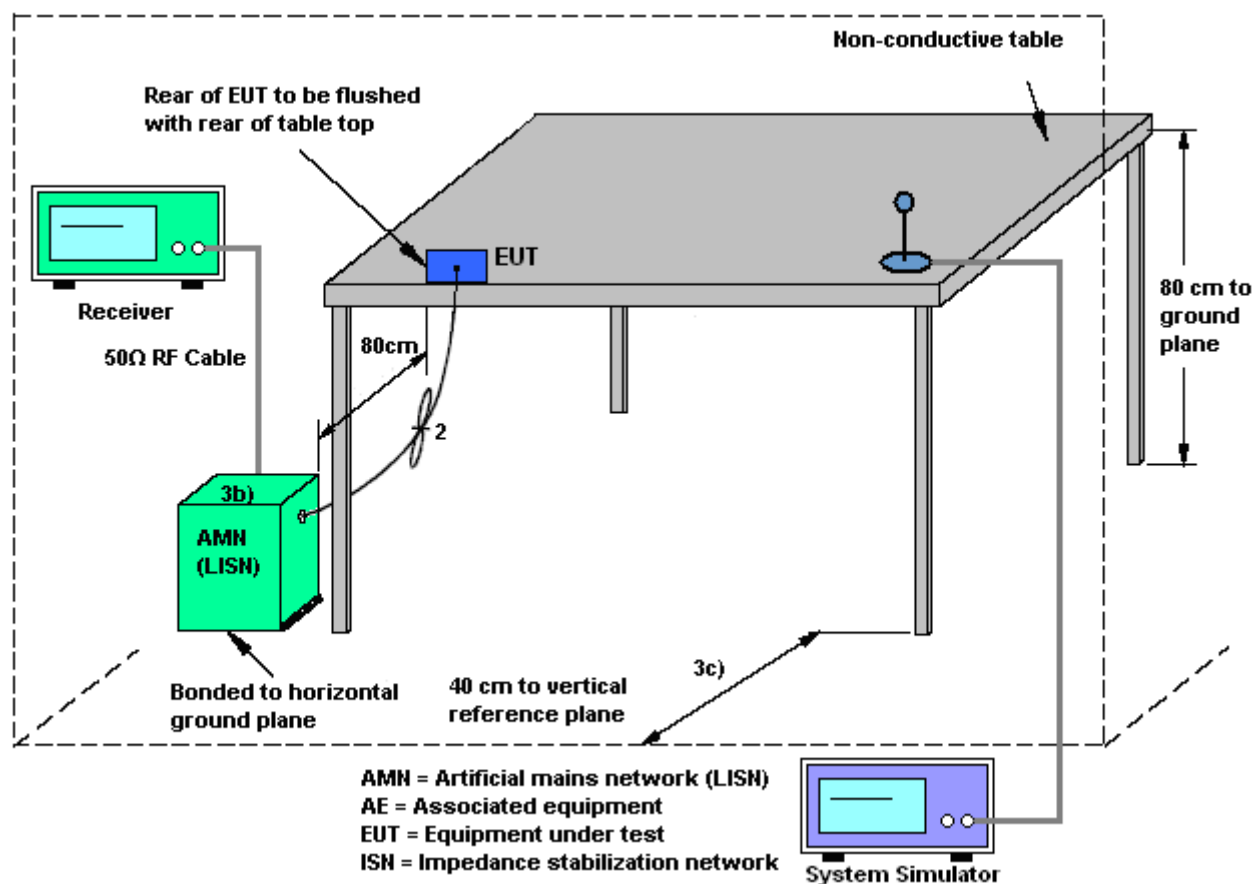
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

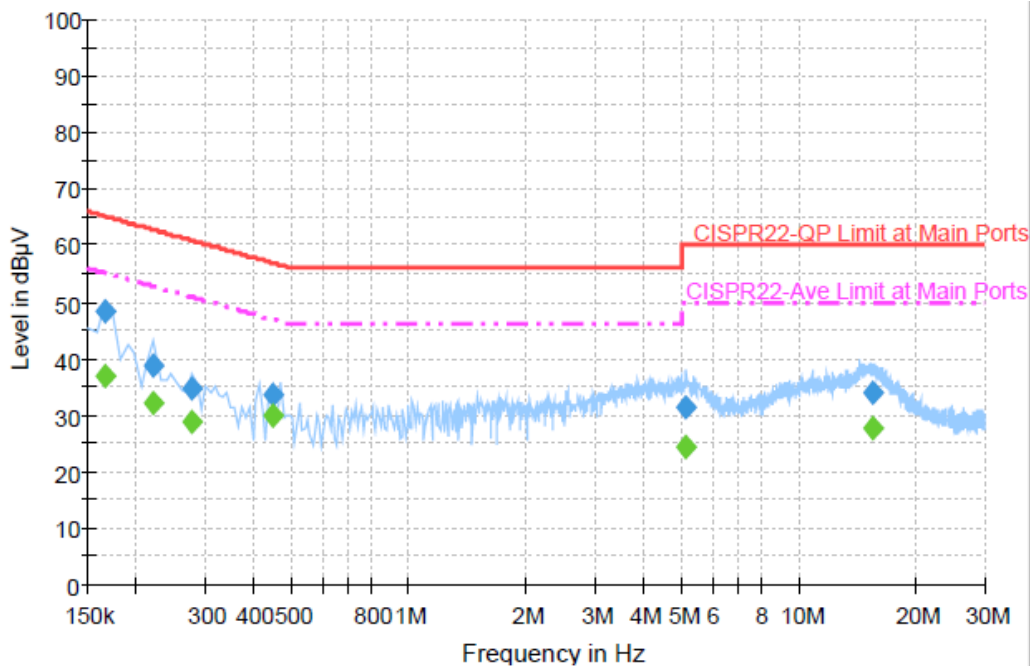
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



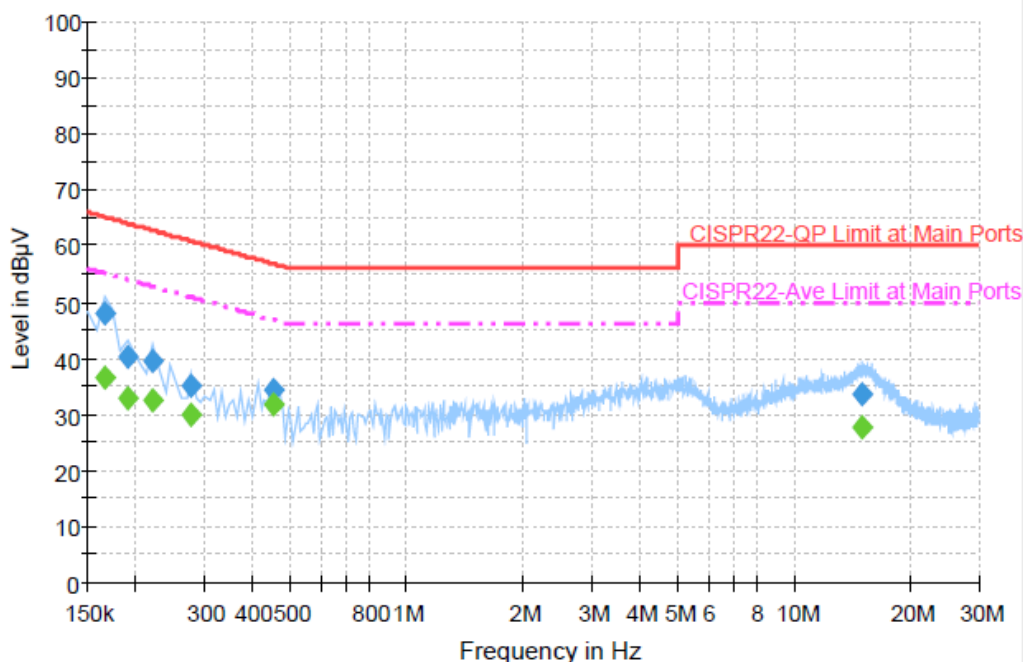
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	48.4	Off	L1	19.3	16.8	65.2
0.222000	38.8	Off	L1	19.3	23.9	62.7
0.278000	34.6	Off	L1	19.3	26.3	60.9
0.446000	33.6	Off	L1	19.3	23.3	56.9
5.158000	31.3	Off	L1	19.5	28.7	60.0
15.414000	33.8	Off	L1	19.8	26.2	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	37.0	Off	L1	19.3	18.2	55.2
0.222000	32.1	Off	L1	19.3	20.6	52.7
0.278000	28.7	Off	L1	19.3	22.2	50.9
0.446000	29.8	Off	L1	19.3	17.1	46.9
5.158000	24.4	Off	L1	19.5	25.6	50.0
15.414000	27.8	Off	L1	19.8	22.2	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Qwerty Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

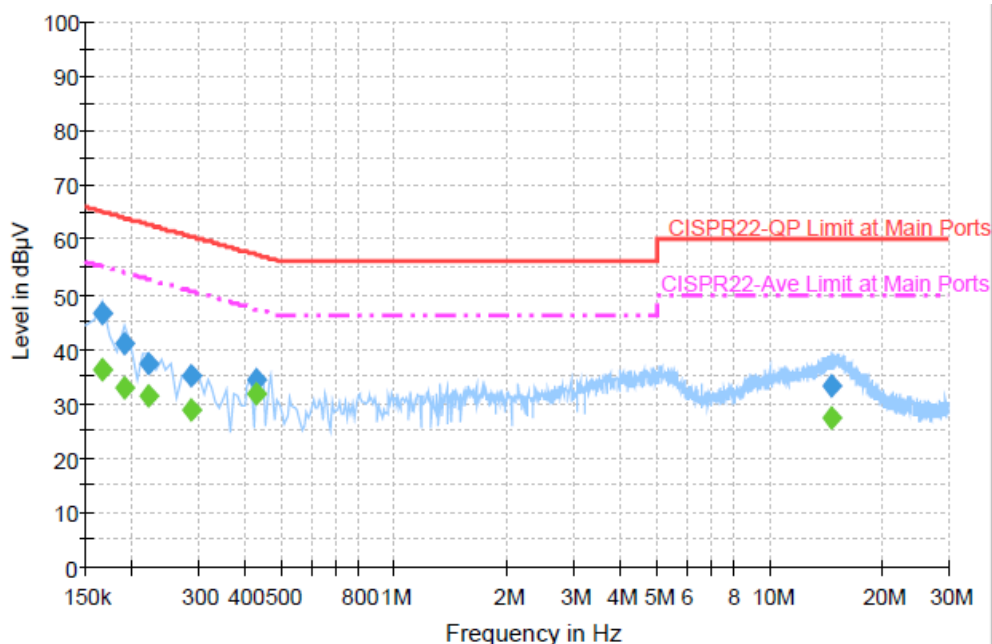

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	47.9	Off	N	19.3	17.3	65.2
0.190000	40.4	Off	N	19.4	23.6	64.0
0.222000	39.4	Off	N	19.3	23.3	62.7
0.278000	34.9	Off	N	19.3	26.0	60.9
0.454000	34.4	Off	N	19.3	22.4	56.8
14.974000	33.5	Off	N	19.8	26.5	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	36.6	Off	N	19.3	18.6	55.2
0.190000	32.7	Off	N	19.4	21.3	54.0
0.222000	32.4	Off	N	19.3	20.3	52.7
0.278000	30.0	Off	N	19.3	20.9	50.9
0.454000	31.9	Off	N	19.3	14.9	46.8
14.974000	27.6	Off	N	19.8	22.4	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

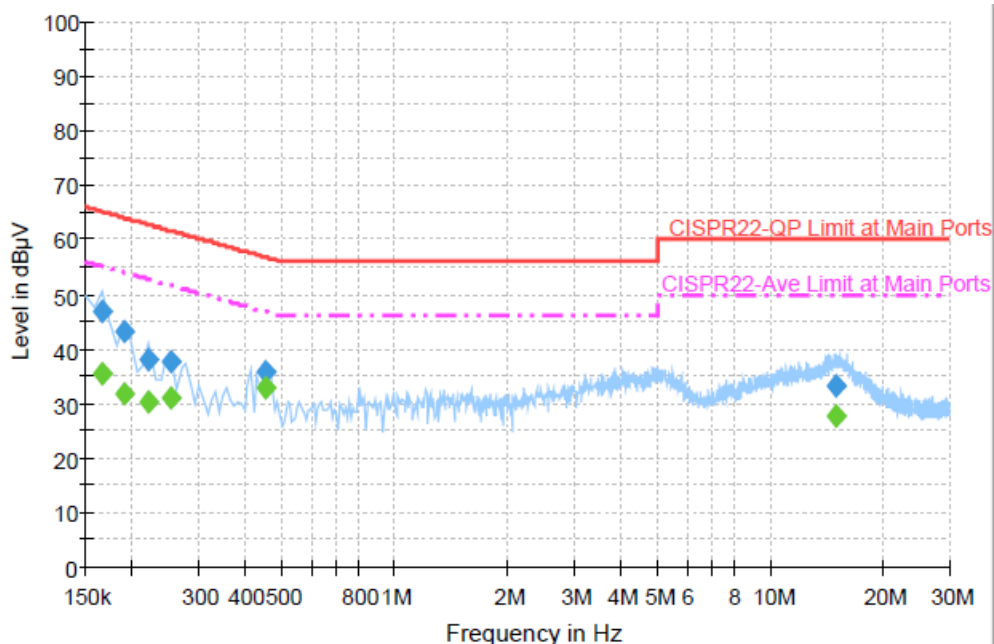

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	46.4	Off	L1	19.3	18.8	65.2
0.190000	41.0	Off	L1	19.4	23.0	64.0
0.222000	37.1	Off	L1	19.3	25.6	62.7
0.286000	34.9	Off	L1	19.3	25.7	60.6
0.430000	34.2	Off	L1	19.4	23.1	57.3
14.614000	33.2	Off	L1	19.8	26.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	36.2	Off	L1	19.3	19.0	55.2
0.190000	32.9	Off	L1	19.4	21.1	54.0
0.222000	31.3	Off	L1	19.3	21.4	52.7
0.286000	28.9	Off	L1	19.3	21.7	50.6
0.430000	31.7	Off	L1	19.4	15.6	47.3
14.614000	27.5	Off	L1	19.8	22.5	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + Numeric Keypad + Battery (3600mAh) + 2D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

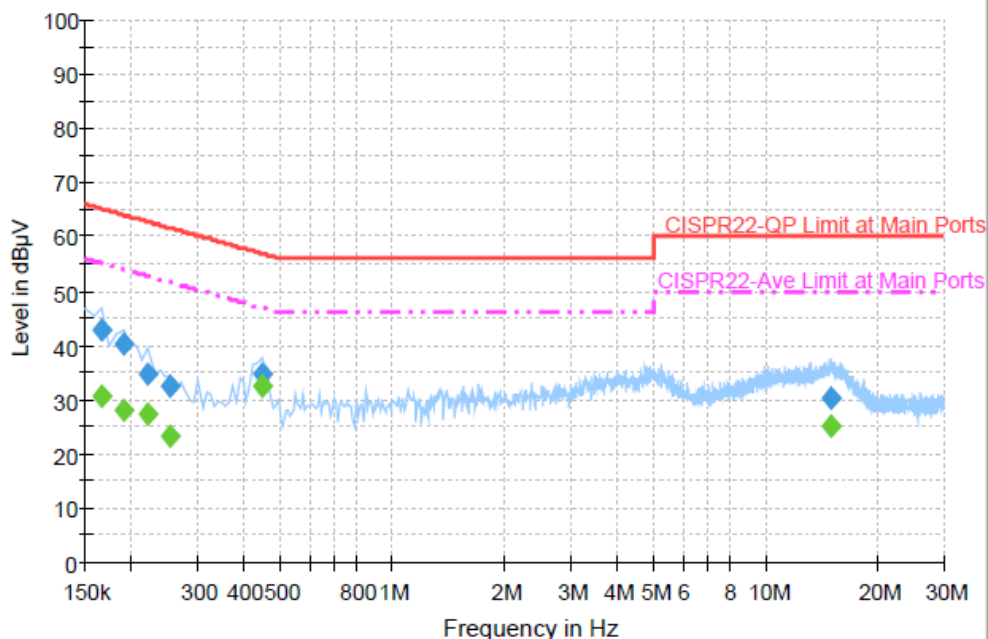

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	46.8	Off	N	19.3	18.4	65.2
0.190000	43.1	Off	N	19.4	20.9	64.0
0.222000	38.2	Off	N	19.3	24.5	62.7
0.254000	37.6	Off	N	19.4	24.0	61.6
0.454000	35.9	Off	N	19.3	20.9	56.8
15.046000	33.1	Off	N	19.8	26.9	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	35.4	Off	N	19.3	19.8	55.2
0.190000	31.8	Off	N	19.4	22.2	54.0
0.222000	30.3	Off	N	19.3	22.4	52.7
0.254000	31.0	Off	N	19.4	20.6	51.6
0.454000	32.9	Off	N	19.3	13.9	46.8
15.046000	27.7	Off	N	19.8	22.3	50.0

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	:WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

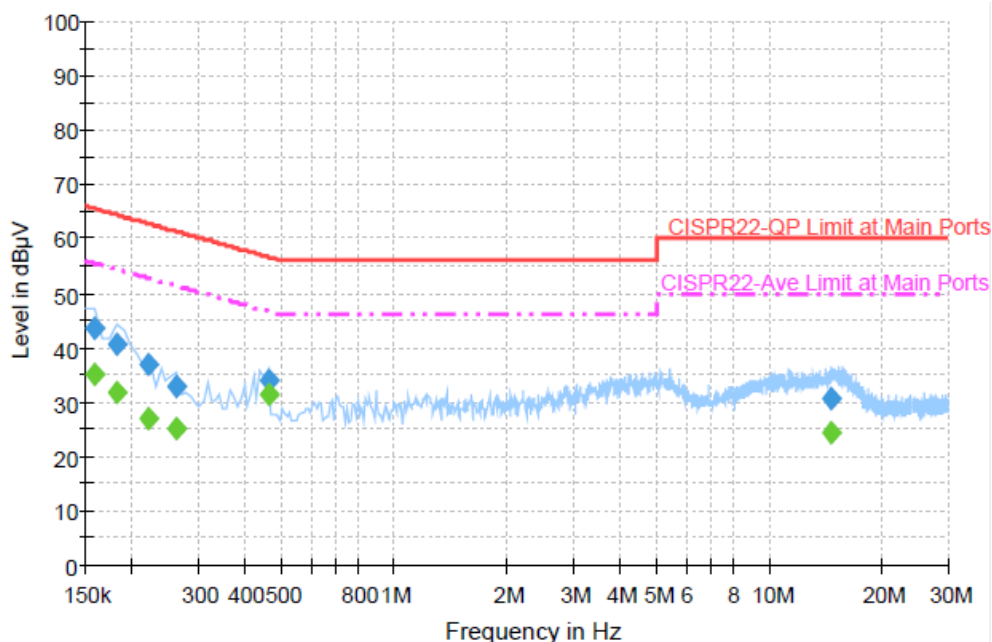

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	42.7	Off	L1	19.3	22.5	65.2
0.190000	40.2	Off	L1	19.4	23.8	64.0
0.222000	34.6	Off	L1	19.3	28.1	62.7
0.254000	32.4	Off	L1	19.3	29.2	61.6
0.446000	34.7	Off	L1	19.3	22.2	56.9
15.022000	30.1	Off	L1	19.8	29.9	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	30.8	Off	L1	19.3	24.4	55.2
0.190000	28.0	Off	L1	19.4	26.0	54.0
0.222000	27.3	Off	L1	19.3	25.4	52.7
0.254000	23.1	Off	L1	19.3	28.5	51.6
0.446000	32.4	Off	L1	19.3	14.5	46.9
15.022000	25.1	Off	L1	19.8	24.9	50.0

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	:WLAN Link (2.4G) + Bluetooth Link + USB Charging Cable with AC Power + USB Link + PIM Keypad + Battery (2400mAh) + 1D Scanner		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	43.7	Off	N	19.4	21.9	65.6
0.182000	40.5	Off	N	19.4	23.9	64.4
0.222000	37.0	Off	N	19.3	25.7	62.7
0.262000	32.9	Off	N	19.4	28.5	61.4
0.462000	34.1	Off	N	19.3	22.6	56.7
14.702000	30.5	Off	N	19.8	29.5	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	35.0	Off	N	19.4	20.6	55.6
0.182000	31.9	Off	N	19.4	22.5	54.4
0.222000	27.1	Off	N	19.3	25.6	52.7
0.262000	25.2	Off	N	19.4	26.2	51.4
0.462000	31.3	Off	N	19.3	15.4	46.7
14.702000	24.4	Off	N	19.8	25.6	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

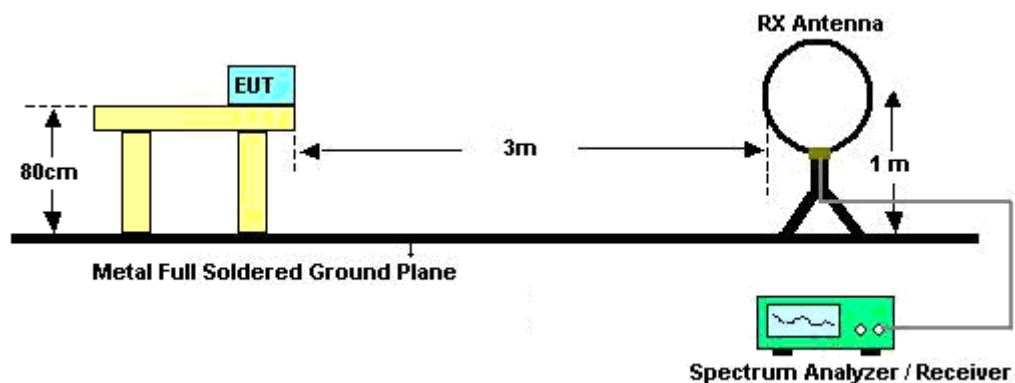
See list of measuring instruments of this test report.

3.7.3 Test Procedures

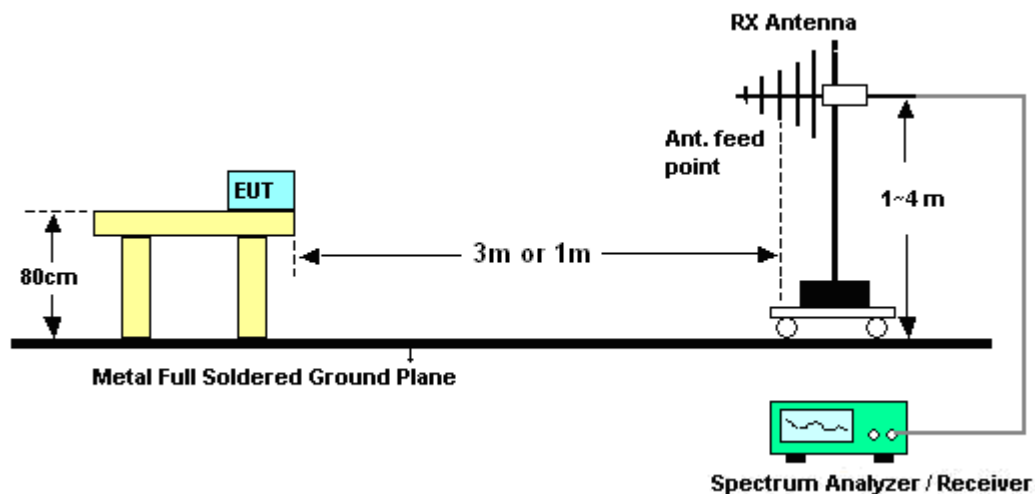
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = 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 (9kHz ~ 30MHz)

Test Engineer :	Cona Huang	Temperature :	22~23℃	
		Relative Humidity :	49~51%	
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 (30MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	2412 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
171.21	27.53	-15.97	43.5	48.18	9.66	1.23	31.54	-	-	Peak
199.83	28.79	-14.71	43.5	49.33	9.65	1.26	31.45	-	-	Peak
291.36	33	-13	46	49.42	13.42	1.48	31.32	-	-	Peak
332.9	35.12	-10.88	46	50.18	14.61	1.63	31.3	100	25	Peak
444.2	31.76	-14.24	46	43.97	17.02	1.92	31.15	-	-	Peak
664	31	-15	46	39.74	19.72	2.3	30.76	-	-	Peak
2389.99	41.39	-12.61	54	39.27	31.7	4.5	34.08	193	256	Average
2389.99	63.32	-10.68	74	61.2	31.7	4.5	34.08	193	256	Peak
2412	98.66	-	-	96.53	31.71	4.5	34.08	193	256	Average
2412	107.05	-	-	104.92	31.71	4.5	34.08	193	256	Peak
2486	35.31	-18.69	54	33.02	31.78	4.59	34.08	193	256	Average
2486	50.99	-23.01	74	48.7	31.78	4.59	34.08	193	256	Peak
4824	37.59	-16.41	54	53.83	33.77	6.44	56.45	186	115	Average
4824	47.53	-26.47	74	63.77	33.77	6.44	56.45	186	115	Peak

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	2412 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
51.6	31.3	-8.7	40	54.27	7.86	0.73	31.56	-	-	Peak
64.29	31.21	-8.79	40	55.8	6.2	0.73	31.52	-	-	Peak
75.09	32.98	-7.02	40	57.12	6.57	0.84	31.55	100	36	Peak
332.9	31.92	-14.08	46	46.98	14.61	1.63	31.3	-	-	Peak
468	28.08	-17.92	46	39.69	17.53	1.98	31.12	-	-	Peak
664	34.85	-11.15	46	43.59	19.72	2.3	30.76	-	-	Peak
2389.99	41.55	-12.45	54	39.43	31.7	4.5	34.08	128	208	Average
2389.99	63.68	-10.32	74	61.56	31.7	4.5	34.08	128	208	Peak
2412	98.07	-	-	95.94	31.71	4.5	34.08	128	208	Average
2412	106.82	-	-	104.69	31.71	4.5	34.08	128	208	Peak
2494	33.75	-20.25	54	31.41	31.8	4.62	34.08	128	208	Average
2494	49.32	-24.68	74	46.98	31.8	4.62	34.08	128	208	Peak
4824	34.52	-19.48	54	50.76	33.77	6.44	56.45	100	205	Average
4824	46.9	-27.1	74	63.14	33.77	6.44	56.45	100	205	Peak

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
170.67	27.64	-15.86	43.5	48.23	9.73	1.23	31.55	-	-	Peak
199.83	29.96	-13.54	43.5	50.5	9.65	1.26	31.45	-	-	Peak
298.65	33.53	-12.47	46	49.7	13.56	1.55	31.28	-	-	Peak
322.4	34.75	-11.25	46	50.02	14.39	1.63	31.29	100	85	Peak
456.1	30.06	-15.94	46	42.07	17.21	1.92	31.14	-	-	Peak
664	31.2	-14.8	46	39.94	19.72	2.3	30.76	-	-	Peak
2388	41.62	-12.38	54	39.53	31.7	4.47	34.08	190	260	Average
2388	56.94	-17.06	74	54.85	31.7	4.47	34.08	190	260	Peak
2437	99.47	-	-	97.27	31.75	4.53	34.08	190	260	Average
2437	108.13	-	-	105.93	31.75	4.53	34.08	190	260	Peak
2484	35.96	-18.04	54	33.67	31.78	4.59	34.08	190	260	Average
2484	54.61	-19.39	74	52.32	31.78	4.59	34.08	190	260	Peak
4874	41.12	-12.88	54	57.34	33.78	6.49	56.49	186	124	Average
4874	50.48	-23.52	74	66.7	33.78	6.49	56.49	186	124	Peak

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
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
47.82	32.35	-7.65	40	53.91	9.27	0.73	31.56	-	-	Peak
63.75	31.09	-8.91	40	55.68	6.2	0.73	31.52	-	-	Peak
74.28	33.63	-6.37	40	57.77	6.57	0.84	31.55	100	96	Peak
331.5	32.07	-13.93	46	47.17	14.57	1.63	31.3	-	-	Peak
468	29.01	-16.99	46	40.62	17.53	1.98	31.12	-	-	Peak
664	35.63	-10.37	46	44.37	19.72	2.3	30.76	-	-	Peak
2390	42.77	-11.23	54	40.65	31.7	4.5	34.08	124	209	Average
2390	55.65	-18.35	74	53.53	31.7	4.5	34.08	124	209	Peak
2437	99.54	-	-	97.34	31.75	4.53	34.08	124	209	Average
2437	107.97	-	-	105.77	31.75	4.53	34.08	124	209	Peak
2484	39.03	-14.97	54	36.74	31.78	4.59	34.08	124	209	Average
2484	52.84	-21.16	74	50.55	31.78	4.59	34.08	124	209	Peak

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
170.67	26	-17.5	43.5	46.59	9.73	1.23	31.55	-	-	Peak
199.56	26.92	-16.58	43.5	47.46	9.65	1.26	31.45	-	-	Peak
294.6	31.95	-14.05	46	48.21	13.49	1.55	31.3	-	-	Peak
309.8	34.07	-11.93	46	49.85	13.95	1.55	31.28	100	74	Peak
443.5	30.74	-15.26	46	42.97	17	1.92	31.15	-	-	Peak
663.3	29.59	-16.41	46	38.33	19.72	2.3	30.76	-	-	Peak
2390	40.81	-13.19	54	38.69	31.7	4.5	34.08	194	10	Average
2390	57.04	-16.96	74	54.92	31.7	4.5	34.08	194	10	Peak
2462	101.36	-	-	99.11	31.77	4.56	34.08	194	10	Average
2462	110.11	-	-	107.86	31.77	4.56	34.08	194	10	Peak
2483.66	50.52	-3.48	54	48.23	31.78	4.59	34.08	194	10	Average
2483.66	69	-5	74	66.71	31.78	4.59	34.08	194	10	Peak
4924	41.76	-12.24	54	57.95	33.79	6.54	56.52	180	123	Average
4924	51.51	-22.49	74	67.7	33.79	6.54	56.52	180	123	Peak

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
51.06	30.71	-9.29	40	53.68	7.86	0.73	31.56	-	-	Peak
63.75	30.14	-9.86	40	54.73	6.2	0.73	31.52	-	-	Peak
72.93	33.08	-6.92	40	57.44	6.33	0.84	31.53	100	47	Peak
332.9	32.44	-13.56	46	47.5	14.61	1.63	31.3	-	-	Peak
491.8	31.99	-14.01	46	43.07	18.03	1.98	31.09	-	-	Peak
666.8	34.93	-11.07	46	43.59	19.74	2.35	30.75	-	-	Peak
2372	41.01	-12.99	54	38.94	31.68	4.47	34.08	100	175	Average
2372	56.65	-17.35	74	54.58	31.68	4.47	34.08	100	175	Peak
2462	98.76	-	-	96.51	31.77	4.56	34.08	100	175	Average
2462	107.02	-	-	104.77	31.77	4.56	34.08	100	175	Peak
2483.66	37.34	-16.66	54	35.05	31.78	4.59	34.08	100	175	Average
2483.66	62.15	-11.85	74	59.86	31.78	4.59	34.08	100	175	Peak
4924	37.12	-16.88	54	53.31	33.79	6.54	56.52	100	216	Average
4924	48.69	-25.31	74	64.88	33.79	6.54	56.52	100	216	Peak

Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	2412 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
169.05	27.66	-15.84	43.5	48.22	9.76	1.23	31.55	-	-	Peak
247.62	31.43	-14.57	46	49.16	12.38	1.42	31.53	-	-	Peak
277.59	32.2	-13.8	46	48.82	13.29	1.48	31.39	-	-	Peak
332.9	34.35	-11.65	46	49.41	14.61	1.63	31.3	100	87	Peak
443.5	30.12	-15.88	46	42.35	17	1.92	31.15	-	-	Peak
664	31.81	-14.19	46	40.55	19.72	2.3	30.76	-	-	Peak
2390	42.64	-11.36	54	40.52	31.7	4.5	34.08	121	250	Average
2390	62.64	-11.36	74	60.52	31.7	4.5	34.08	121	250	Peak
2412	94.17	-	-	92.04	31.71	4.5	34.08	121	250	Average
2412	104.09	-	-	101.96	31.71	4.5	34.08	121	250	Peak
2490	35.79	-18.21	54	33.45	31.8	4.62	34.08	121	250	Average
2490	47.7	-26.3	74	45.36	31.8	4.62	34.08	121	250	Peak
4824	37.17	-16.83	54	53.41	33.77	6.44	56.45	188	116	Average
4824	51.84	-22.16	74	68.08	33.77	6.44	56.45	188	116	Peak

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	2412 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
50.79	30.46	-9.54	40	53.27	8.03	0.73	31.57	-	-	Peak
64.29	30.74	-9.26	40	55.33	6.2	0.73	31.52	-	-	Peak
74.28	33.25	-6.75	40	57.39	6.57	0.84	31.55	100	54	Peak
332.9	32.13	-13.87	46	47.19	14.61	1.63	31.3	-	-	Peak
474.3	29.14	-16.86	46	40.54	17.74	1.98	31.12	-	-	Peak
664	34.68	-11.32	46	43.42	19.72	2.3	30.76	-	-	Peak
2390	45.39	-8.61	54	43.27	31.7	4.5	34.08	100	174	Average
2390	66.59	-7.41	74	64.47	31.7	4.5	34.08	100	174	Peak
2412	94.39	-	-	92.26	31.71	4.5	34.08	100	174	Average
2412	104.12	-	-	101.99	31.71	4.5	34.08	100	174	Peak
2494	37.59	-16.41	54	35.25	31.8	4.62	34.08	100	174	Average
2494	48.49	-25.51	74	46.15	31.8	4.62	34.08	100	174	Peak
4824	34.84	-19.16	54	51.08	33.77	6.44	56.45	100	212	Average
4824	50.38	-23.62	74	66.62	33.77	6.44	56.45	100	212	Peak

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
95.88	27.32	-16.18	43.5	47.4	10.52	0.95	31.55	-	-	Peak
199.29	28.08	-15.42	43.5	48.62	9.65	1.26	31.45	-	-	Peak
296.76	31.98	-14.02	46	48.19	13.53	1.55	31.29	-	-	Peak
332.9	35.26	-10.74	46	50.32	14.61	1.63	31.3	100	21	Peak
449.8	32.74	-13.26	46	44.85	17.12	1.92	31.15	-	-	Peak
666.8	31.29	-14.71	46	39.95	19.74	2.35	30.75	-	-	Peak
2390	44.33	-9.67	54	42.21	31.7	4.5	34.08	162	10	Average
2390	60.78	-13.22	74	58.66	31.7	4.5	34.08	162	10	Peak
2437	101.37	-	-	99.17	31.75	4.53	34.08	162	10	Average
2437	111.37	-	-	109.17	31.75	4.53	34.08	162	10	Peak
2486	41.92	-12.08	54	39.63	31.78	4.59	34.08	162	10	Average
2486	56.76	-17.24	74	54.47	31.78	4.59	34.08	162	10	Peak
4874	51.22	-2.78	54	67.44	33.78	6.49	56.49	190	127	Average
4874	59.4	-14.6	74	75.62	33.78	6.49	56.49	190	127	Peak
7311	34.86	-19.14	54	48.59	35.15	8.1	56.98	100	324	Average
7311	48.17	-25.83	74	61.9	35.15	8.1	56.98	100	324	Peak

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
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
35.94	29.51	-10.49	40	45.51	14.94	0.58	31.52	-	-	Peak
64.02	29.12	-10.88	40	53.71	6.2	0.73	31.52	-	-	Peak
74.55	32.46	-7.54	40	56.6	6.57	0.84	31.55	100	32	Peak
332.9	31.87	-14.13	46	46.93	14.61	1.63	31.3	-	-	Peak
503.7	29.44	-16.56	46	40.28	18.19	2.04	31.07	-	-	Peak
666.1	34.87	-11.13	46	43.58	19.74	2.3	30.75	-	-	Peak
2390	44.32	-9.68	54	42.2	31.7	4.5	34.08	123	203	Average
2390	61.27	-12.73	74	59.15	31.7	4.5	34.08	123	203	Peak
2437	99.12	-	-	96.92	31.75	4.53	34.08	123	203	Average
2437	108.93	-	-	106.73	31.75	4.53	34.08	123	203	Peak
2486	40.93	-13.07	54	38.64	31.78	4.59	34.08	123	203	Average
2486	56.37	-17.63	74	54.08	31.78	4.59	34.08	123	203	Peak
4874	47.66	-6.34	54	63.88	33.78	6.49	56.49	100	212	Average
4874	59.39	-14.61	74	75.61	33.78	6.49	56.49	100	212	Peak
7311	39.97	-14.03	54	53.7	35.15	8.1	56.98	100	131	Average
7311	52.17	-21.83	74	65.9	35.15	8.1	56.98	100	131	Peak

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
95.88	23.37	-20.13	43.5	43.45	10.52	0.95	31.55	-	-	Peak
199.83	28.12	-15.38	43.5	48.66	9.65	1.26	31.45	-	-	Peak
295.14	32.65	-13.35	46	48.91	13.49	1.55	31.3	-	-	Peak
331.5	34.47	-11.53	46	49.57	14.57	1.63	31.3	100	65	Peak
503.7	31.96	-14.04	46	42.8	18.19	2.04	31.07	-	-	Peak
664	30.91	-15.09	46	39.65	19.72	2.3	30.76	-	-	Peak
2382	43.77	-10.23	54	41.7	31.68	4.47	34.08	195	10	Average
2382	54.08	-19.92	74	52.01	31.68	4.47	34.08	195	10	Peak
2462	97.47	-	-	95.22	31.77	4.56	34.08	195	10	Average
2462	107.82	-	-	105.57	31.77	4.56	34.08	195	10	Peak
2483.5	49.14	-4.86	54	46.85	31.78	4.59	34.08	195	10	Average
2483.5	70.5	-3.5	74	68.21	31.78	4.59	34.08	195	10	Peak
4920	50.12	-23.88	74	66.31	33.79	6.54	56.52	100	0	Peak

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
35.94	32.91	-7.09	40	48.91	14.94	0.58	31.52	-	-	Peak
47.82	32.23	-7.77	40	53.79	9.27	0.73	31.56	-	-	Peak
73.2	33.98	-6.02	40	58.35	6.33	0.84	31.54	100	98	Peak
331.5	32.35	-13.65	46	47.45	14.57	1.63	31.3	-	-	Peak
503.7	28.99	-17.01	46	39.83	18.19	2.04	31.07	-	-	Peak
664	34.79	-11.21	46	43.53	19.72	2.3	30.76	-	-	Peak
2370	41.17	-12.83	54	39.1	31.68	4.47	34.08	100	173	Average
2370	54.03	-19.97	74	51.96	31.68	4.47	34.08	100	173	Peak
2462	94.44	-	-	92.19	31.77	4.56	34.08	100	173	Average
2462	104.28	-	-	102.03	31.77	4.56	34.08	100	173	Peak
2484	41.16	-12.84	54	38.87	31.78	4.59	34.08	100	173	Average
2484	61.12	-12.88	74	58.83	31.78	4.59	34.08	100	173	Peak
4924	38.91	-15.09	54	55.1	33.79	6.54	56.52	102	296	Average
4924	55.39	-18.61	74	71.58	33.79	6.54	56.52	102	296	Peak

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	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
169.05	25.14	-18.36	43.5	45.7	9.76	1.23	31.55	-	-	Peak
199.83	28.36	-15.14	43.5	48.9	9.65	1.26	31.45	-	-	Peak
292.17	31.75	-14.25	46	48.14	13.44	1.48	31.31	-	-	Peak
331.5	34.11	-11.89	46	49.21	14.57	1.63	31.3	100	108	Peak
486.2	31.8	-14.2	46	42.94	17.98	1.98	31.1	-	-	Peak
664	31.4	-14.6	46	40.14	19.72	2.3	30.76	-	-	Peak
2390	43	-11	54	40.32	31.7	4.5	33.52	103	13	Average
2390	55.64	-18.36	74	52.96	31.7	4.5	33.52	103	13	Peak
2437	97.15	-	-	94.42	31.75	4.53	33.55	103	13	Average
2437	107.67	-	-	104.94	31.75	4.53	33.55	103	13	Peak
2484	42.83	-11.17	54	40.03	31.78	4.59	33.57	103	13	Average
2484	55.87	-18.13	74	53.07	31.78	4.59	33.57	103	13	Peak
4874	51.7	-2.3	54	67.92	33.78	6.49	56.49	100	340	Average
4874	66.97	-7.03	74	83.19	33.78	6.49	56.49	100	340	Peak
7311	36.83	-17.17	54	50.56	35.15	8.1	56.98	122	179	Average
7311	52.1	-21.9	74	65.83	35.15	8.1	56.98	122	179	Peak

Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
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
35.94	33.03	-6.97	40	49.03	14.94	0.58	31.52	-	-	Peak
50.79	32.1	-7.9	40	54.91	8.03	0.73	31.57	-	-	Peak
75.09	33.95	-6.05	40	58.09	6.57	0.84	31.55	100	52	Peak
331.5	32.18	-13.82	46	47.28	14.57	1.63	31.3	-	-	Peak
474.3	32.16	-13.84	46	43.56	17.74	1.98	31.12	-	-	Peak
666.1	34.1	-11.9	46	42.81	19.74	2.3	30.75	-	-	Peak
2390	42.42	-11.58	54	39.74	31.7	4.5	33.52	109	292	Average
2390	57.19	-16.81	74	54.51	31.7	4.5	33.52	109	292	Peak
2437	96.21	-	-	93.48	31.75	4.53	33.55	109	292	Average
2437	106.75	-	-	104.02	31.75	4.53	33.55	109	292	Peak
2484	41.62	-12.38	54	38.82	31.78	4.59	33.57	109	292	Average
2484	54.41	-19.59	74	51.61	31.78	4.59	33.57	109	292	Peak
4874	42.55	-11.45	54	58.77	33.78	6.49	56.49	100	163	Average
4874	57.82	-16.18	74	74.04	33.78	6.49	56.49	100	163	Peak
7311	50.42	-23.58	74	64.15	35.15	8.1	56.98			Peak

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	5745 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
95.88	25.43	-18.07	43.5	45.51	10.52	0.95	31.55	-	-	Peak
199.56	27.74	-15.76	43.5	48.28	9.65	1.26	31.45	-	-	Peak
294.6	32.96	-13.04	46	49.22	13.49	1.55	31.3	-	-	Peak
331.5	34.16	-11.84	46	49.26	14.57	1.63	31.3	100	56	Peak
503.7	29.93	-16.07	46	40.77	18.19	2.04	31.07	-	-	Peak
666.8	31.34	-14.66	46	40	19.74	2.35	30.75	-	-	Peak
5725	74.48	-11.71	86.19	66.54	34.51	7.01	33.58	174	207	Peak
5745	95.23	-	-	87.25	34.54	7.03	33.59	174	207	Average
5745	106.19	-	-	98.21	34.54	7.03	33.59	174	207	Peak
5850	51.84	-34.35	86.19	43.69	34.68	7.09	33.62	174	207	Peak
11490	48.65	-5.35	54	55.8	38.09	10.48	55.72	122	136	Average
11490	56.03	-17.97	74	63.18	38.09	10.48	55.72	122	136	Peak
17235	56.95	-29.24	86.19	56.16	41.31	13.18	53.7	100	0	Peak

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	5745 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
50.79	30	-10	40	52.81	8.03	0.73	31.57	-	-	Peak
64.02	30.99	-9.01	40	55.58	6.2	0.73	31.52	-	-	Peak
74.01	33.74	-6.26	40	57.99	6.45	0.84	31.54	100	89	Peak
331.5	32.07	-13.93	46	47.17	14.57	1.63	31.3	-	-	Peak
498.1	28.52	-17.48	46	39.48	18.08	2.04	31.08	-	-	Peak
664	34.5	-11.5	46	43.24	19.72	2.3	30.76	-	-	Peak
5725	76.3	-11.59	87.89	68.36	34.51	7.01	33.58	120	132	Peak
5745	96.44	-	-	88.46	34.54	7.03	33.59	120	132	Average
5745	107.89	-	-	99.91	34.54	7.03	33.59	120	132	Peak
5850	52	-35.89	87.89	43.85	34.68	7.09	33.62	120	132	Peak
11490	49.27	-4.73	54	56.42	38.09	10.48	55.72	107	289	Average
11490	58.93	-15.07	74	66.08	38.09	10.48	55.72	107	289	Peak
17235	61.28	-26.61	87.89	60.49	41.31	13.18	53.7	100	0	Peak

Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	5785 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
138	23.78	-19.72	43.5	42.58	11.64	1.07	31.51	-	-	Peak
169.05	27.62	-15.88	43.5	48.18	9.76	1.23	31.55	-	-	Peak
275.43	31.95	-14.05	46	48.53	13.34	1.48	31.4	-	-	Peak
332.9	33.75	-12.25	46	48.81	14.61	1.63	31.3	100	111	Peak
472.9	30.17	-15.83	46	41.63	17.68	1.98	31.12	-	-	Peak
666.8	31.48	-14.52	46	40.14	19.74	2.35	30.75	-	-	Peak
5725	54.72	-33.46	88.18	46.78	34.51	7.01	33.58	155	250	Peak
5785	97.86	-	-	89.82	34.59	7.05	33.6	155	250	Average
5785	108.18	-	-	100.14	34.59	7.05	33.6	155	250	Peak
5850	53.06	-35.12	88.18	44.91	34.68	7.09	33.62	155	250	Peak
11570	47.74	-6.26	54	54.5	38.2	10.54	55.5	128	132	Average
11570	56.11	-17.89	74	62.87	38.2	10.54	55.5	128	132	Peak
17355	56.9	-31.28	88.18	56.36	41.22	13.2	53.88	100	0	Peak

Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
35.94	32.12	-7.88	40	48.12	14.94	0.58	31.52	100	33	Peak
47.01	31.82	-8.18	40	53.38	9.27	0.73	31.56	-	-	Peak
64.02	32.03	-7.97	40	56.62	6.2	0.73	31.52	-	-	Peak
332.9	32.3	-13.7	46	47.36	14.61	1.63	31.3	-	-	Peak
664	34.36	-11.64	46	43.1	19.72	2.3	30.76	-	-	Peak
700.4	32.65	-13.35	46	41	19.97	2.4	30.72	-	-	Peak
5725	54.93	-34.53	89.46	46.99	34.51	7.01	33.58	114	120	Peak
5785	98.03	-	-	89.99	34.59	7.05	33.6	114	120	Average
5785	109.46	-	-	101.42	34.59	7.05	33.6	114	120	Peak
5850	55.07	-34.39	89.46	46.92	34.68	7.09	33.62	114	120	Peak
11570	48.28	-5.72	54	55.04	38.2	10.54	55.5	101	282	Average
11570	59.68	-14.32	74	66.44	38.2	10.54	55.5	101	282	Peak
17355	56.06	-33.4	89.46	55.52	41.22	13.2	53.88	100	0	Peak

Test Mode :	Mode 10	Temperature :	22~23℃
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	5825 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
95.88	26.71	-16.79	43.5	46.79	10.52	0.95	31.55	-	-	Peak
169.86	27.14	-16.36	43.5	47.73	9.73	1.23	31.55	-	-	Peak
273.81	31.31	-14.69	46	47.86	13.38	1.48	31.41	-	-	Peak
331.5	34.67	-11.33	46	49.77	14.57	1.63	31.3	-	-	Peak
473.6	36.46	-9.54	46	47.89	17.71	1.98	31.12	108	269	Peak
664	31.44	-14.56	46	40.18	19.72	2.3	30.76	-	-	Peak
5725	50.63	-38.1	88.73	42.69	34.51	7.01	33.58	183	45	Peak
5825	96.42	-	-	88.3	34.66	7.07	33.61	183	45	Average
5825	108.73	-	-	100.61	34.66	7.07	33.61	183	45	Peak
5850	66.78	-21.95	88.73	58.63	34.68	7.09	33.62	183	45	Peak
11650	48.31	-5.69	54	54.69	38.29	10.6	55.27	123	131	Average
11650	55.36	-18.64	74	61.74	38.29	10.6	55.27	123	131	Peak

Test Mode :	Mode 10	Temperature :	22~23
Test Channel :	165	Relative Humidity :	49~51
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
35.94	30.28	-9.72	40	46.28	14.94	0.58	31.52	-	-	Peak
47.82	30.64	-9.36	40	52.2	9.27	0.73	31.56	-	-	Peak
73.47	32.89	-7.11	40	57.14	6.45	0.84	31.54	100	76	Peak
331.5	32.72	-13.28	46	47.82	14.57	1.63	31.3	-	-	Peak
510	35.21	-10.79	46	45.88	18.34	2.04	31.05	-	-	Peak
666.8	33.91	-12.09	46	42.57	19.74	2.35	30.75	-	-	Peak
5725	53.63	-36.1	89.73	45.69	34.51	7.01	33.58	106	215	Peak
5825	97.63	-	-	89.51	34.66	7.07	33.61	106	215	Average
5825	109.73	-	-	101.61	34.66	7.07	33.61	106	215	Peak
5850	70.78	-18.95	89.73	62.63	34.68	7.09	33.62	106	215	Peak
11650	50.28	-3.72	54	56.66	38.29	10.6	55.27	117	269	Average
11650	58.16	-15.84	74	64.54	38.29	10.6	55.27	117	269	Peak
17475	60.99	-28.74	89.73	60.69	41.13	13.22	54.05	100	0	Peak

Test Mode :	Mode 11	Temperature :	22~23℃
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	5825 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
96.15	22.4	-21.1	43.5	42.48	10.52	0.95	31.55	-	-	Peak
199.29	29.64	-13.86	43.5	50.18	9.65	1.26	31.45	-	-	Peak
271.65	31.91	-14.09	46	48.43	13.42	1.48	31.42	-	-	Peak
332.9	33.99	-12.01	46	49.05	14.61	1.63	31.3	101	228	Peak
491.8	29.86	-16.14	46	40.94	18.03	1.98	31.09	-	-	Peak
666.8	31.29	-14.71	46	39.95	19.74	2.35	30.75	-	-	Peak
5725	53.48	-36.75	90.23	45.54	34.51	7.01	33.58	101	359	Peak
5825	99.29	-	-	91.17	34.66	7.07	33.61	101	359	Average
5825	110.23	-	-	102.11	34.66	7.07	33.61	101	359	Peak
5850	71.99	-18.24	90.23	63.84	34.68	7.09	33.62	101	359	Peak
11650	44.08	-9.92	54	50.46	38.29	10.6	55.27	103	249	Average
11650	57.05	-16.95	74	63.43	38.29	10.6	55.27	103	249	Peak

Test Mode :	Mode 11	Temperature :	22~23
Test Channel :	165	Relative Humidity :	49~51
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
35.94	31.54	-8.46	40	47.54	14.94	0.58	31.52	-	-	Peak
51.87	31.4	-8.6	40	54.53	7.69	0.73	31.55	-	-	Peak
74.28	33.75	-6.25	40	57.89	6.57	0.84	31.55	100	46	Peak
331.5	32.08	-13.92	46	47.18	14.57	1.63	31.3	-	-	Peak
503.7	31.46	-14.54	46	42.3	18.19	2.04	31.07	-	-	Peak
666.8	34.37	-11.63	46	43.03	19.74	2.35	30.75	-	-	Peak
5725	52.62	-33.48	86.1	44.68	34.51	7.01	33.58	100	78	Peak
5825	95.53	-	-	87.41	34.66	7.07	33.61	100	78	Average
5825	106.1	-	-	97.98	34.66	7.07	33.61	100	78	Peak
5850	67.5	-18.6	86.1	59.35	34.68	7.09	33.62	100	78	Peak
11650	50.72	-3.28	54	57.1	38.29	10.6	55.27	100	31	Average
11650	63.69	-10.31	74	70.07	38.29	10.6	55.27	100	31	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 PIFA 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	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-40GHz	Nov. 3, 2010	Nov. 2, 2011	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 1GHz	Nov. 6, 2010	Nov. 5, 2011	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 15, 2010	Apr. 14, 2011	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2010	Aug. 04, 2011	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH05-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz - 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)

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 EP000411 as below.