

FCC RF Test Report

APPLICANT : Intel Corp.
EQUIPMENT : Android Smart Phone
BRAND NAME : Intel
MODEL NAME : Black Bay/XOLO
MARKETING NAME : AZ510
FCC ID : O2Z-AZ510
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 26, 2012 and completely tested on Oct. 07, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : O2Z-AZ510

Page Number : 1 of 73

Report Issued Date : Nov. 12, 2012

Report Version : Rev. 01



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	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Carrier Frequency Channel	7
2.2 Pre-Scanned RF Power	8
2.3 Test Mode	9
2.4 Connection Diagram of Test System	10
2.5 RF Utility	10
3 TEST RESULT	11
3.1 6dB Bandwidth Measurement	11
3.2 Output Power Measurement	18
3.3 Power Spectral Density Measurement	21
3.4 Conducted Band Edges and Spurious Emission Measurement	28
3.5 Radiated Emission Measurement	44
3.6 AC Conducted Emission Measurement	61
3.7 Antenna Requirements	71
4 LIST OF MEASURING EQUIPMENT	72
5 UNCERTAINTY OF EVALUATION	73
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR232306-04B	Rev. 01	Initial issue of report	Nov. 12, 2012

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 Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	Under limit 0.90 dB at 2484.120 MHz
			Radiated Spurious Emission		Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 4.90 dB at 3.990 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Intel Corp.

SC1-20, 2200 Mission College Blvd, Santa Clara, CA 95054, USA

1.2 Manufacturer

Chi Mei Communication Systems, Inc.

No. 4, Mingsheng Street, Tucheng City, New Taipei City 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Android Smart Phone
Brand Name	Intel
Model Name	Black Bay/XOLO
Marketing Name	AZ510
FCC ID	O2Z-AZ510
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA WLAN 11abgn / Bluetooth
HW Version	PR3.3
SW Version	6892
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 18.47 dBm (0.0703 W) 802.11g : 23.80 dBm (0.2399 W) 802.11n HT20 : 21.57 dBm (0.1435 W)
Antenna Type	PIFA Antenna type with gain 1.93 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

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.
	TH02-HY	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v01r02
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3

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, 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.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals 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) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.47	18.41	18.07	18.18

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	23.80	23.78	23.75	23.67	23.46	23.57	23.08	23.00

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.57	21.10	20.83	21.12	20.83	20.87	21.11	21.08

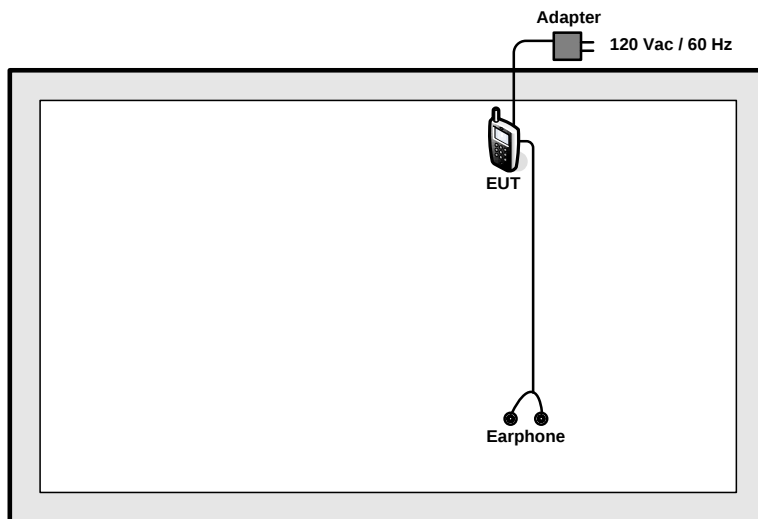
2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

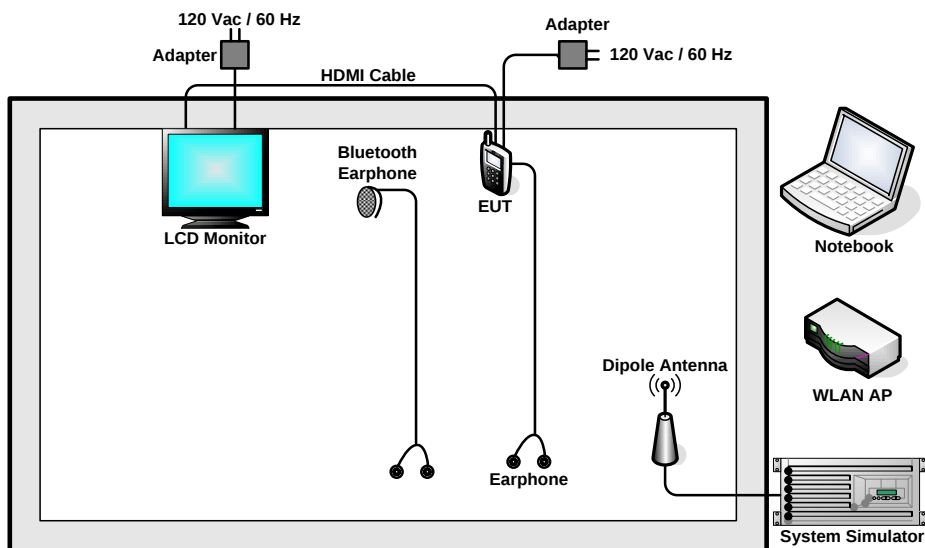
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Conducted Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
Radiated TCs	Radiated Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

The programmed RF utility "Intel bt/wi-fi tools" 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.

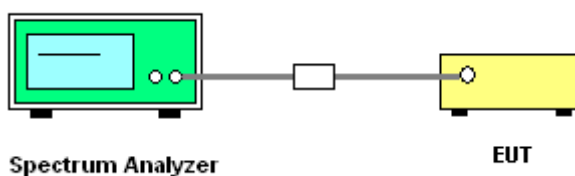
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) $\geq 3 * RBW$. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.

3.1.4 Test Setup

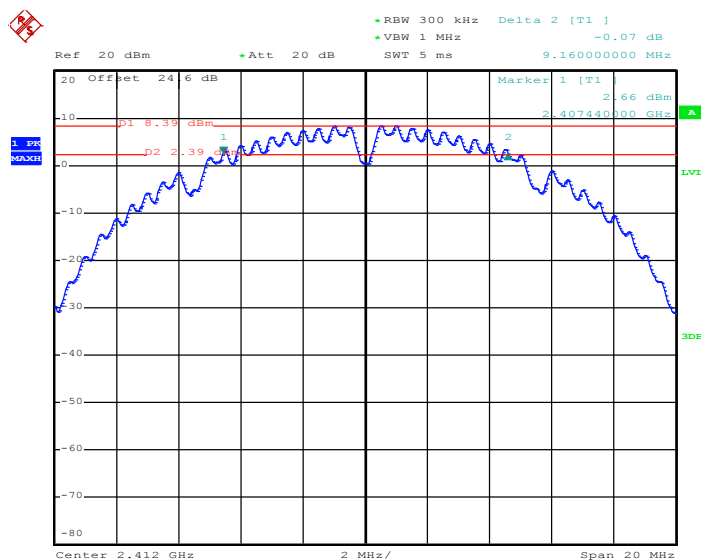


3.1.5 Test Result of 6dB Bandwidth

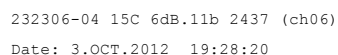
Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.16	0.5	Pass
06	2437	9.16	0.5	Pass
11	2462	9.16	0.5	Pass

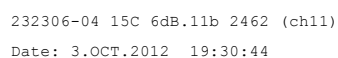
6 dB Bandwidth Plot on 802.11b Channel 01



232306-04 15C 6dB.11b 2412 (ch01)
Date: 3.OCT.2012 19:23:36

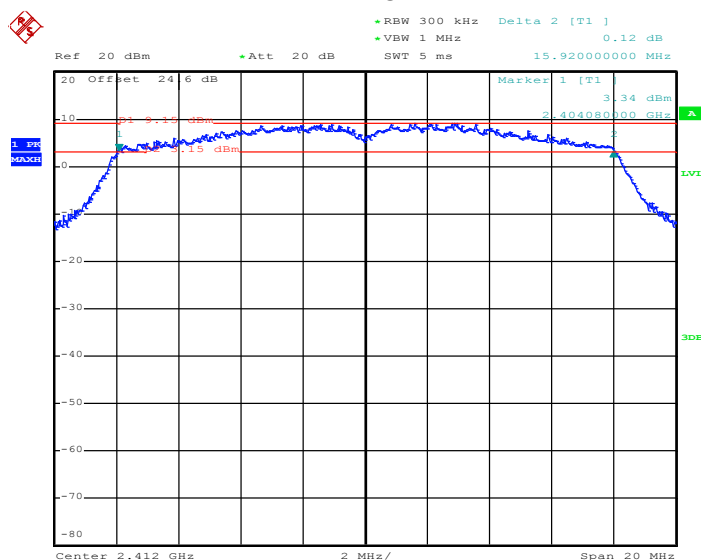


6 dB Bandwidth Plot on 802.11b Channel 11





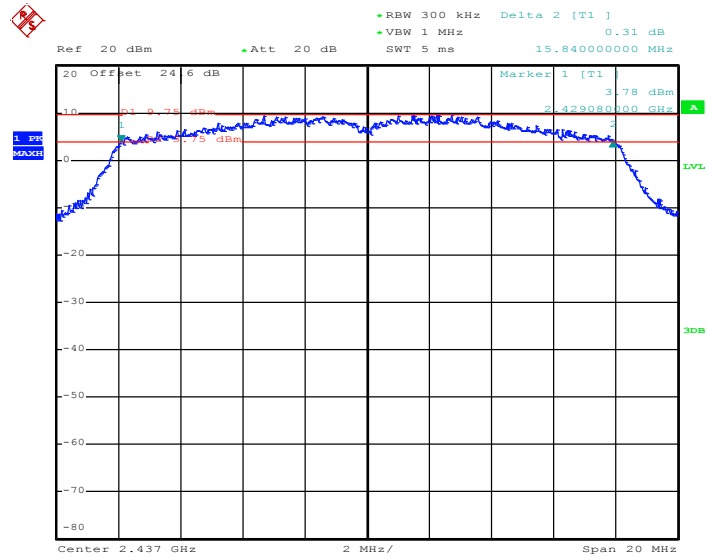
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.92	0.5	Pass
06	2437	15.84	0.5	Pass
11	2462	15.84	0.5	Pass



Date: 3.OCT.2012 19:39:30



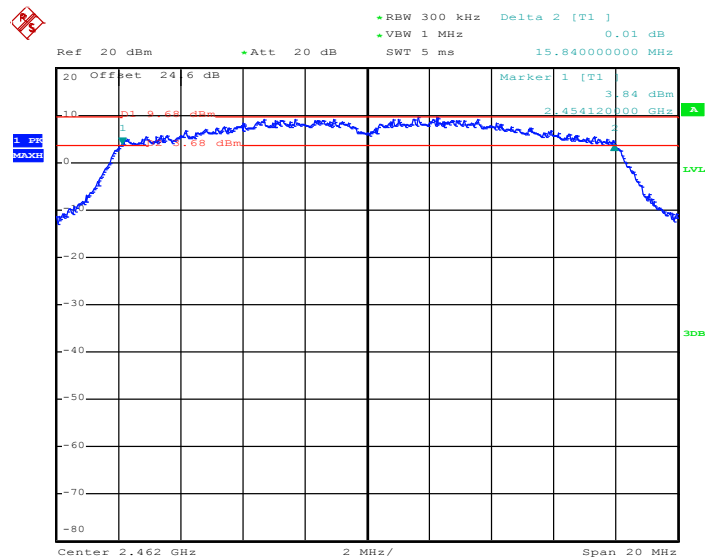
6 dB Bandwidth Plot on 802.11g Channel 06



232306-04 15C 6dB.11g 2437 (ch06)

Date: 3.OCT.2012 19:36:40

6 dB Bandwidth Plot on 802.11g Channel 11

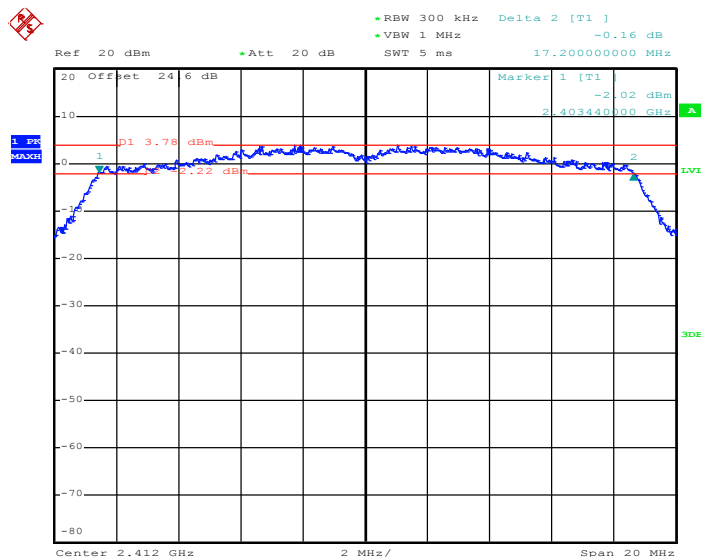


232306-04 15C 6dB.11g 2462 (ch11)

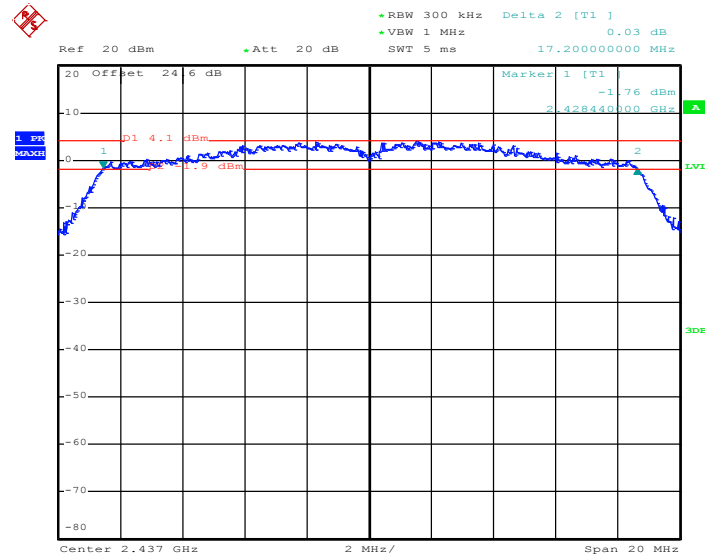
Date: 3.OCT.2012 19:33:33



Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.20	0.5	Pass
06	2437	17.20	0.5	Pass
11	2462	17.20	0.5	Pass

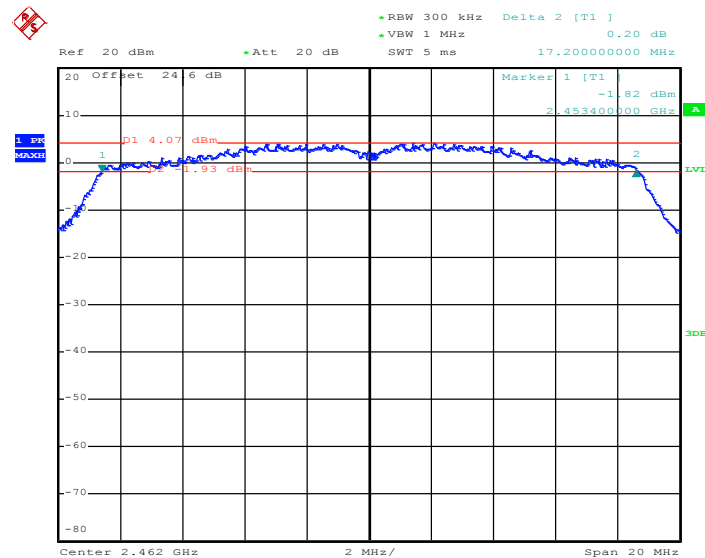


232306-04 15C 6dB.11g_N20 2412 (ch01)
Date: 3.OCT.2012 19:57:07

6 dB Bandwidth Plot on 802.11n HT20 Channel 06


232306-04 15C 6dB.11g_N20 2437 (ch06)

Date: 3.OCT.2012 19:53:44

6 dB Bandwidth Plot on 802.11n HT20 Channel 11


232306-04 15C 6dB.11g_N20 2462 (ch11)

Date: 3.OCT.2012 20:00:27

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.

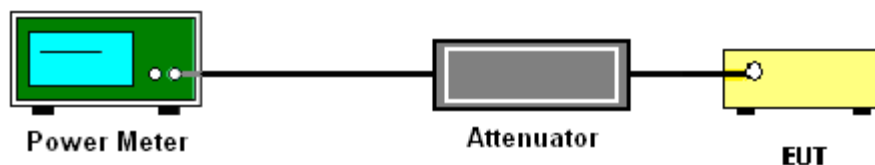
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.47	30	Pass
06	2437	18.34	30	Pass
11	2462	18.43	30	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.64	30	Pass
06	2437	23.80	30	Pass
11	2462	23.67	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.25	30	Pass
06	2437	21.57	30	Pass
11	2462	21.22	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26
Test Engineer :	Bill Kuo	Relative Humidity :	50~53
Duty Cycle:	100.00%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	16.32
06	2437	16.23
11	2462	16.22

Test Mode :	802.11g	Temperature :	24~26
Test Engineer :	Bill Kuo	Relative Humidity :	50~53
Duty Cycle:	97.77%	Duty Factor:	0.10dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	16.09
06	2437	16.29
11	2462	16.12

Test Mode :	802.11n HT20	Temperature :	24~26
Test Engineer :	Bill Kuo	Relative Humidity :	50~53
Duty Cycle:	97.77%	Duty Factor:	0.10dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	10.85
06	2437	11.13
11	2462	11.04

3.3 Power Spectral Density Measurement

3.3.1 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.

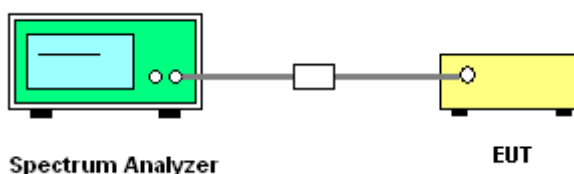
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Video bandwidth VBW = 300 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Record the measurement data derived from spectrum analyzer.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density	Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)		
01	2412	7.60	8	Pass
06	2437	7.66	8	Pass
11	2462	7.73	8	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density	Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)		
01	2412	5.88	8	Pass
06	2437	5.91	8	Pass
11	2462	5.81	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

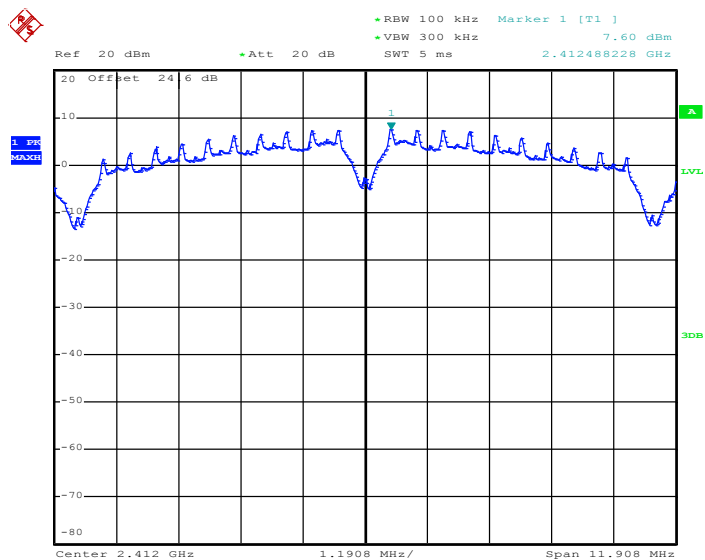
Channel	Frequency (MHz)	802.11n HT20 Power Density	Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)		
01	2412	0.48	8	Pass
06	2437	0.76	8	Pass
11	2462	0.81	8	Pass

Note:

1. Measured power density (dBm) has offset with cable loss.
2. Measured power density (dBm)/ 100KHz is for 20dBc reference only.

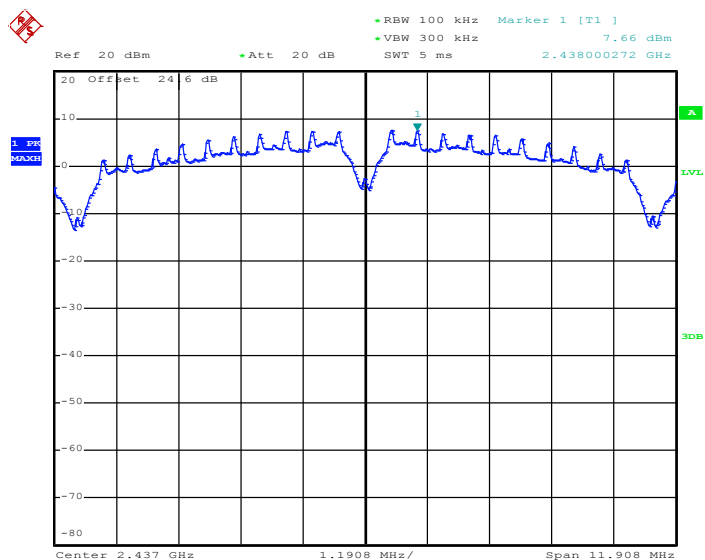
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



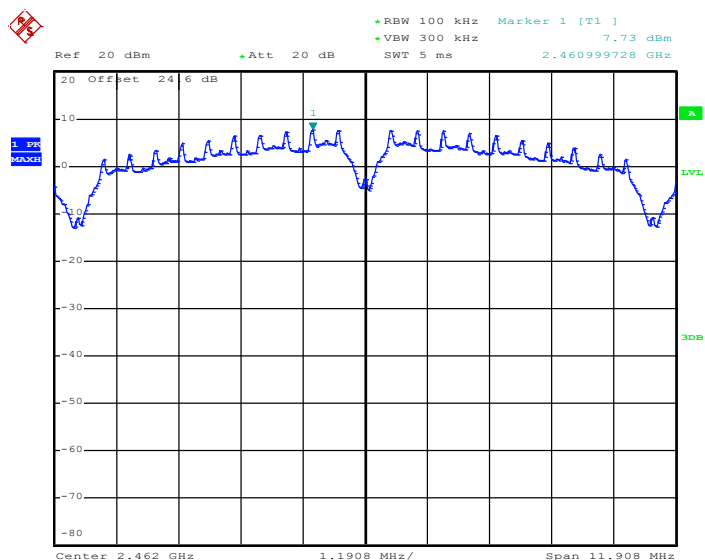
232306-04 15C PSD 802.11b 2412 (ch01)

Date: 3.OCT.2012 19:23:55

PSD 100kHz Plot on 802.11b Channel 06


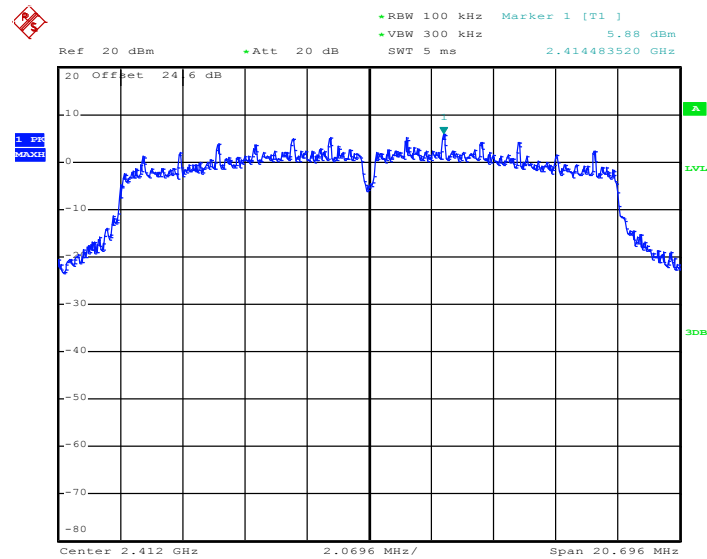
232306-04 15C PSD 802.11b 2437 (ch06)

Date: 3.OCT.2012 19:28:38

PSD 100kHz Plot on 802.11b Channel 11


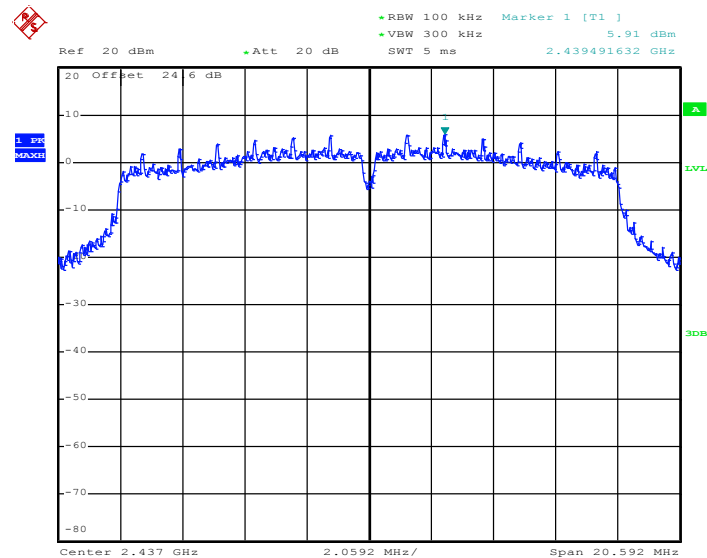
232306-04 15C PSD 802.11b 2462 (ch11)

Date: 3.OCT.2012 19:31:03

PSD 100kHz Plot on 802.11g Channel 01


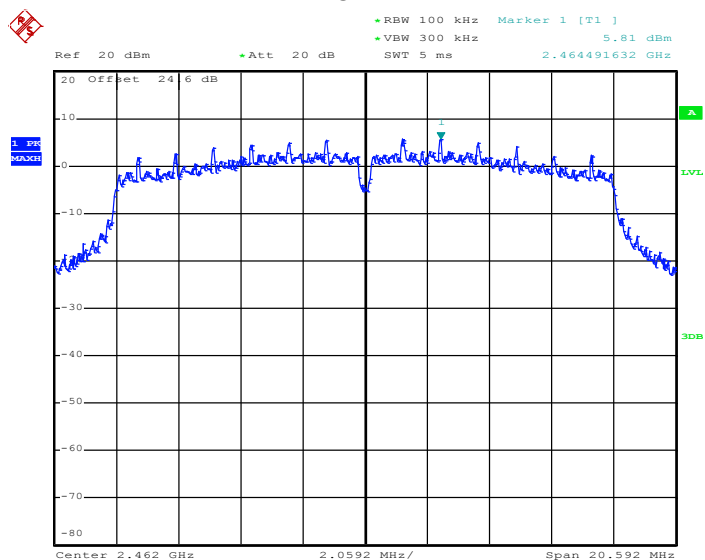
232306-04 15C PSD 802.11g 2412 (ch01)

Date: 3.OCT.2012 19:39:50

PSD 100kHz Plot on 802.11g Channel 06


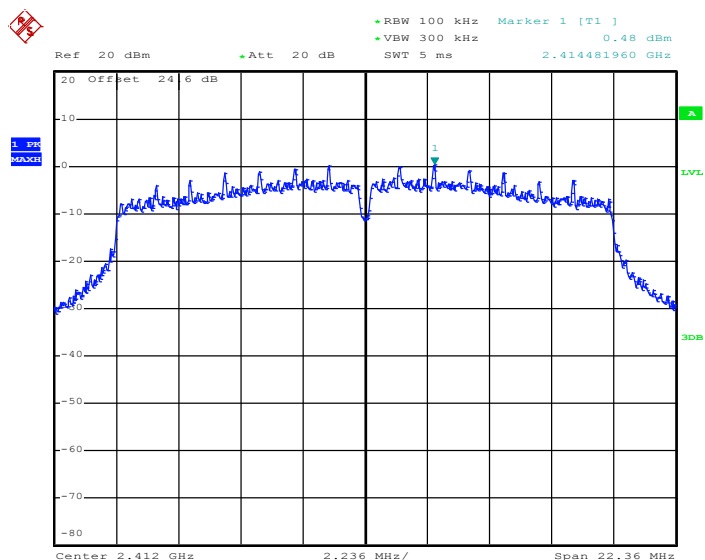
232306-04 15C PSD 802.11g 2437 (ch06)

Date: 3.OCT.2012 19:36:58

PSD 100kHz Plot on 802.11g Channel 11


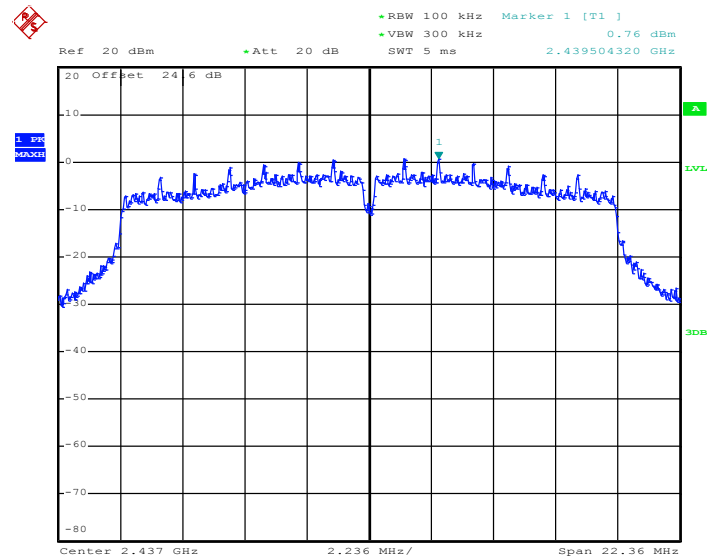
232306-04 15C PSD 802.11g 2462 (ch11)

Date: 3.OCT.2012 19:33:51

PSD 100kHz Plot on 802.11n HT20 Channel 01


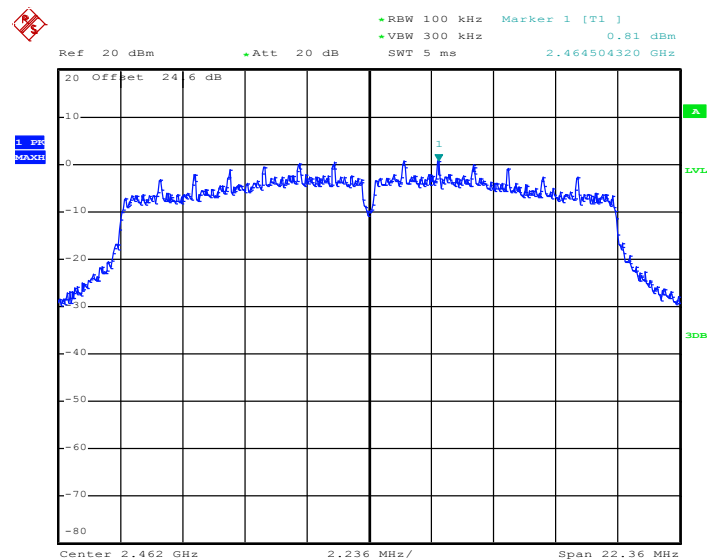
232306-04 15C PSD 802.11g_N20 2412 (ch01)

Date: 3.OCT.2012 19:57:26

PSD 100kHz Plot on 802.11n HT20 Channel 06


232306-04 15C PSD 802.11g_N20 2437 (ch06)

Date: 3.OCT.2012 19:54:03

PSD 100kHz Plot on 802.11n HT20 Channel 11


232306-04 15C PSD 802.11g_N20 2462 (ch11)

Date: 3.OCT.2012 20:00:46

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

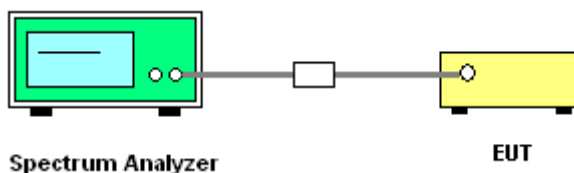
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
4. Measure and record the results in the test report.

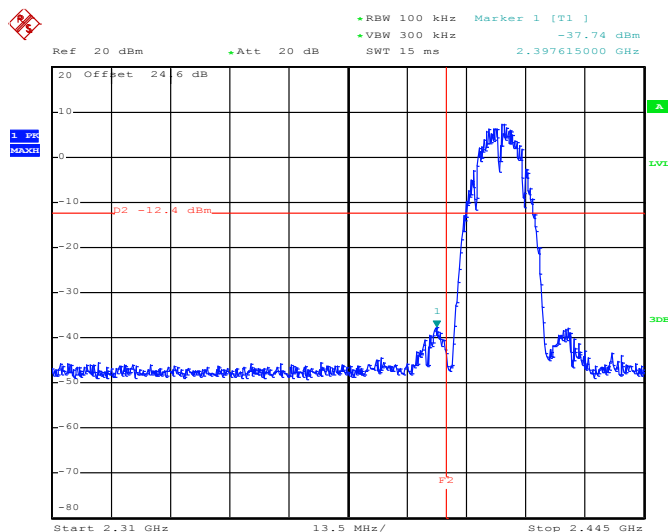
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Bill Kuo

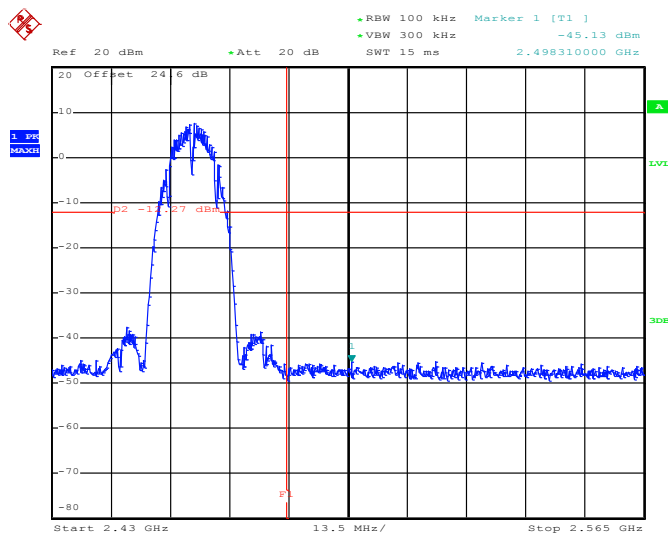
Low Band Edge Plot on 802.11b Channel 01



232306-04 15C BandEdge 802.11b 2412 (ch01)

Date: 3.OCT.2012 19:24:11

High Band Edge Plot on 802.11b Channel 11

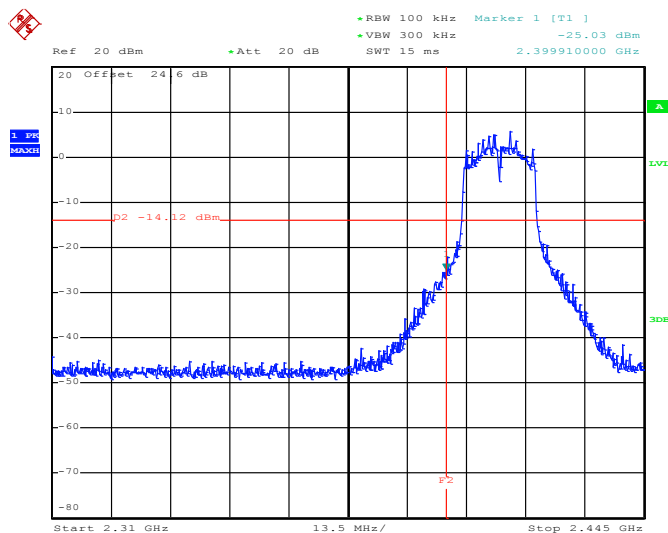


232306-04 15C BandEdge 802.11b 2462 (ch11)

Date: 3.OCT.2012 19:31:19

Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Bill Kuo

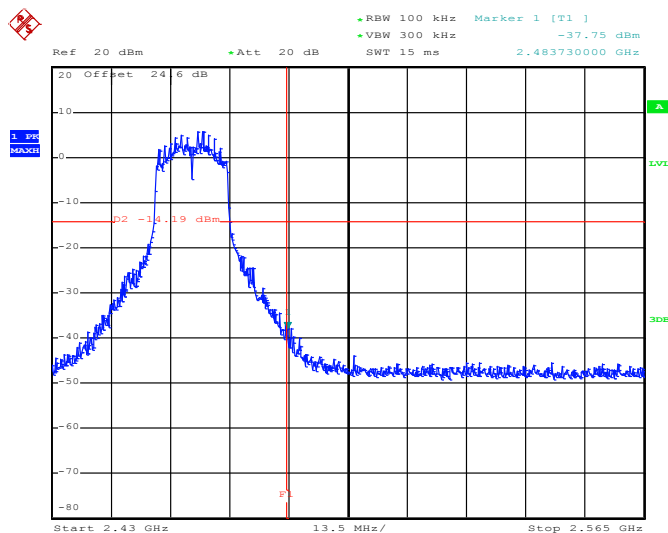
Low Band Edge Plot on 802.11g Channel 01



232306-04 15C BandEdge 802.11g 2412 (ch01)

Date: 3.OCT.2012 19:40:13

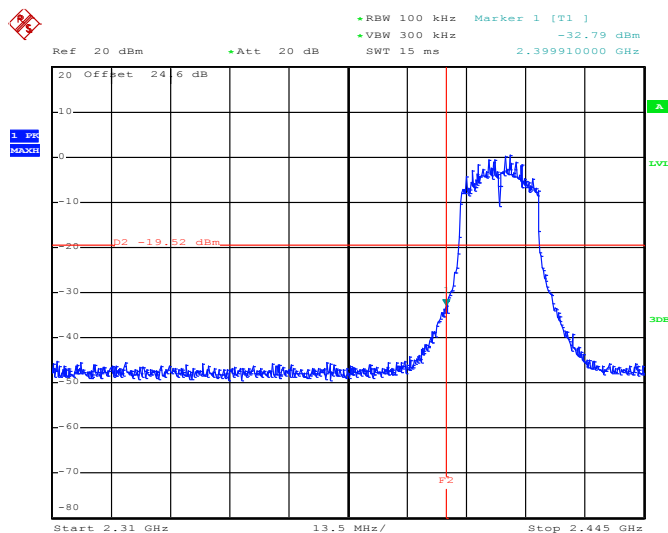
High Band Edge Plot on 802.11g Channel 11



232306-04 15C BandEdge 802.11g 2462 (ch11)

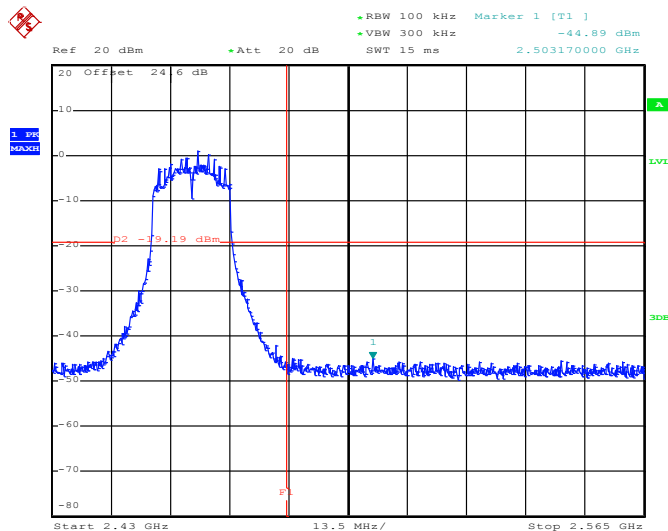
Date: 3.OCT.2012 19:34:17

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Bill Kuo

Low Band Edge Plot on 802.11n HT20 Channel 01


232306-04 15C BandEdge 802.11g_N20 2412 (ch01)

Date: 3.OCT.2012 19:57:40

High Band Edge Plot on 802.11n HT20 Channel 11


232306-04 15C BandEdge 802.11g_N20 2462 (ch11)

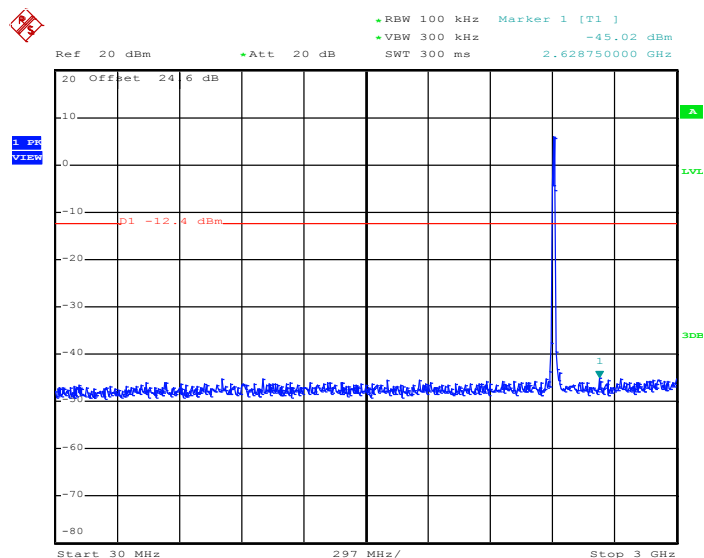
Date: 3.OCT.2012 20:01:44

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Bill Kuo

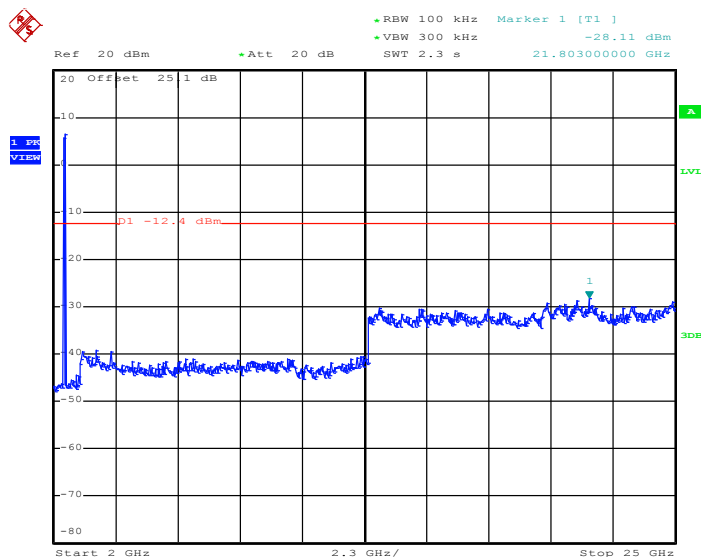
802.11b 30 MHz~3 GHz

Conducted Spurious Emission Plot on Channel 01



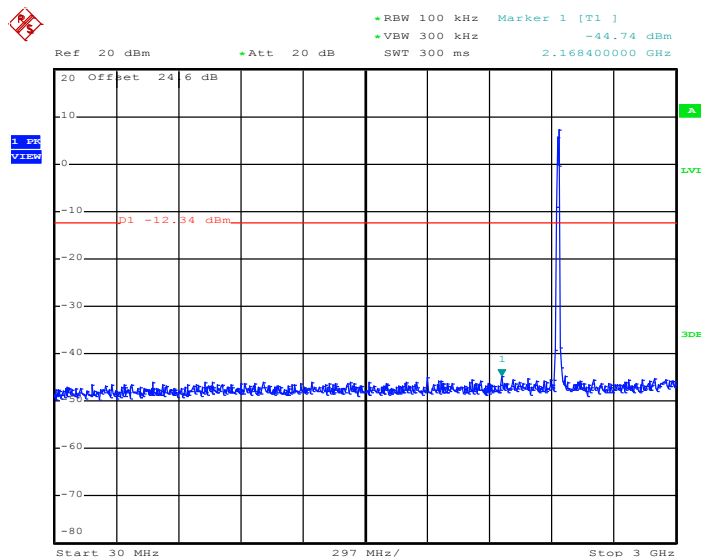
232306-04 15C Spurious 802.11b 2412 (ch01)

Date: 3.OCT.2012 19:24:47

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


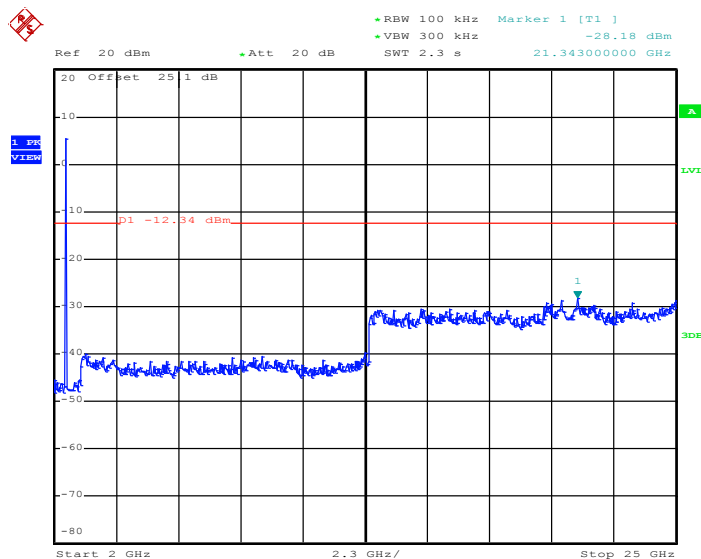
232306-04 15C Spurious 802.11b 2412 (ch01)

Date: 3.OCT.2012 19:25:04

802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


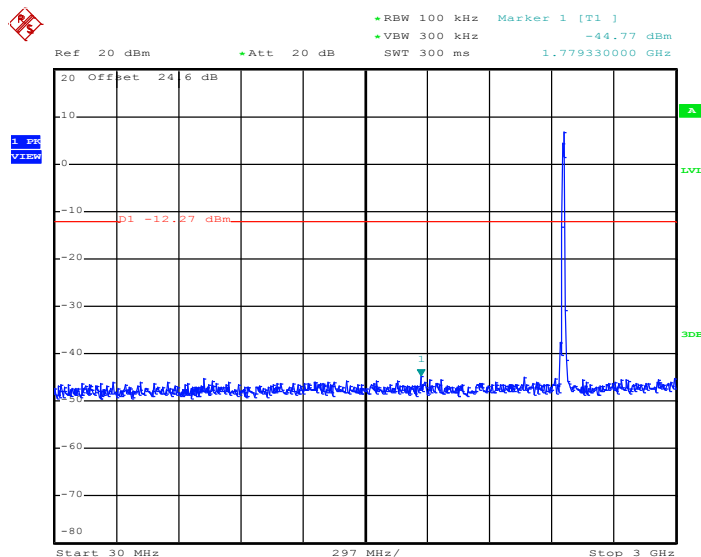
232306-04 15C Spurious 802.11b 2437 (ch06)

Date: 3.OCT.2012 19:28:58

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


232306-04 15C Spurious 802.11b 2437 (ch06)

Date: 3.OCT.2012 19:29:15

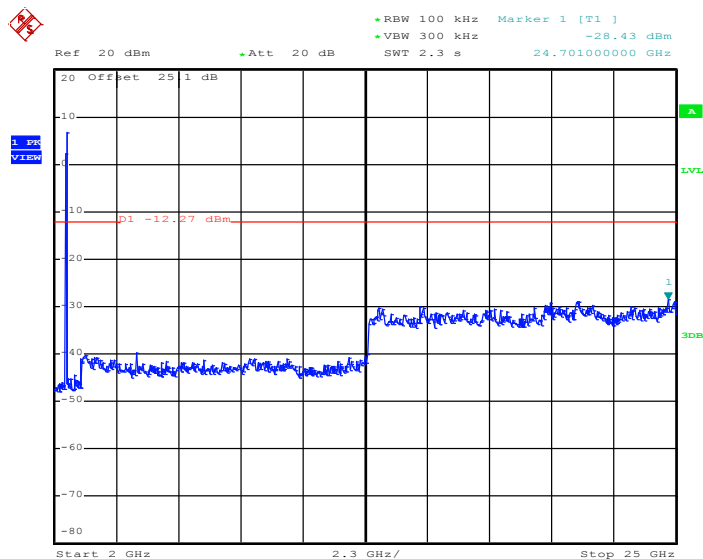
802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


232306-04 15C Spurious 802.11b 2462 (ch11)

Date: 3.OCT.2012 19:31:40



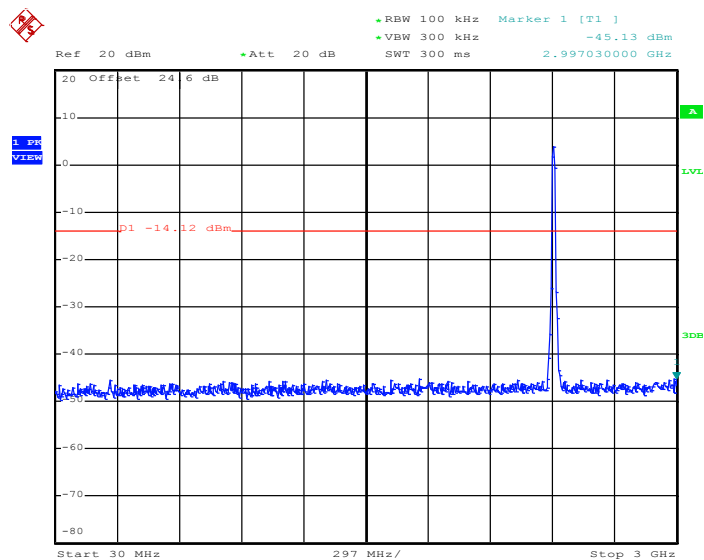
Conducted Spurious Emission Plot on Channel 11



232306-04 15C Spurious 802.11b 2462 (ch11)

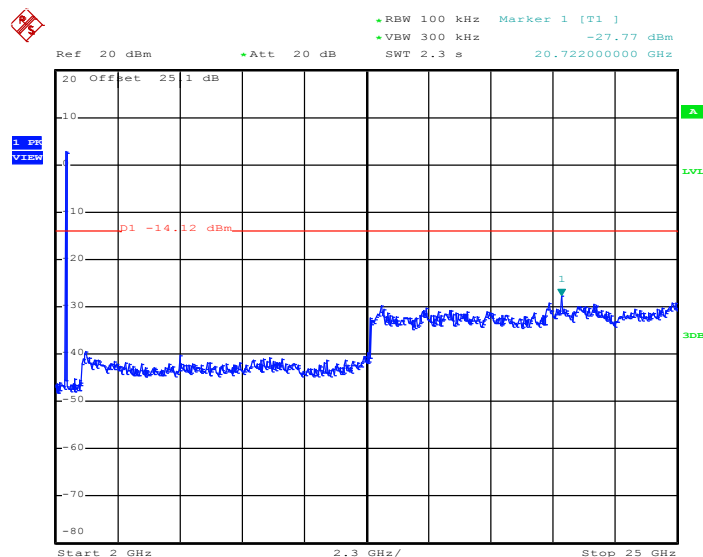
Date: 3.OCT.2012 19:31:58

Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Bill Kuo

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


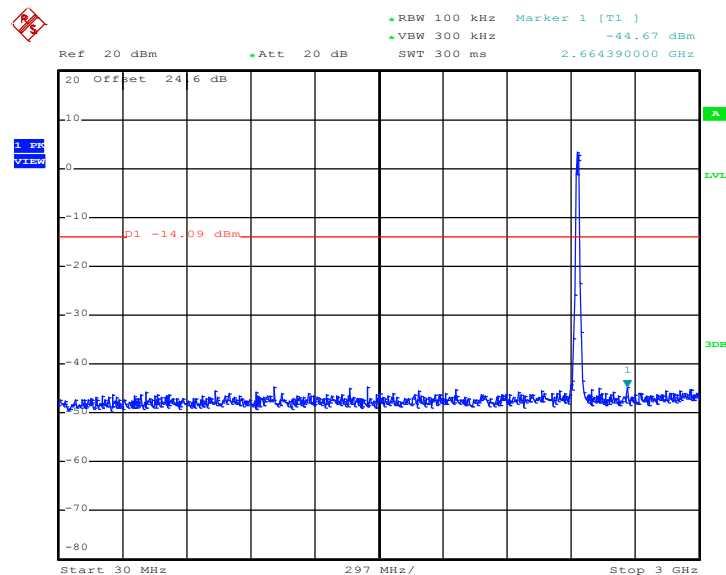
232306-04 15C Spurious 802.11g 2412 (ch01)

Date: 3.OCT.2012 19:40:38

802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


232306-04 15C Spurious 802.11g 2412 (ch01)

Date: 3.OCT.2012 19:40:55

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


232306-04 15C Spurious 802.11g 2437 (ch06)

Date: 3.OCT.2012 19:37:46



Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz Marker 1 [T1] -29.03 dBm
SWT 2.3 s 24.90800000 GHz

Offset 25.1 dB

p1 -14.09 dBm

Start 2 GHz 2.3 GHz/ Stop 25 GHz

Date: 3.OCT.2012 19:38:04

802.11g 30 MHz~3 GHz

RBW 100 kHz VBW 300 kHz SWT 300 ms Marker 1 [T1] -44.95 dBm

Ref 20 dBm Att 20 dB 2.322840000 GHz

20 Offset 24 6 dB

1. 596 V10W

D1 -14.19 dBm

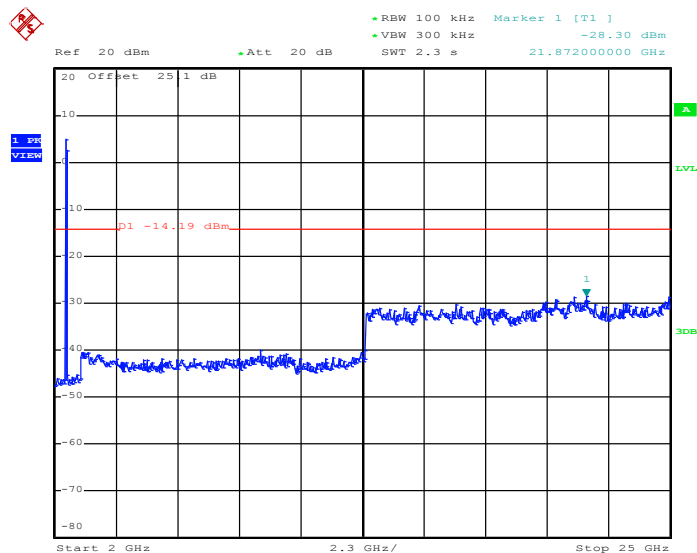
1

Start 30 MHz 297 MHz/ Stop 3 GHz

Date: 3.OCT.2012 19:35:24

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



232306-04 15C Spurious 802.11g 2462 (ch11)

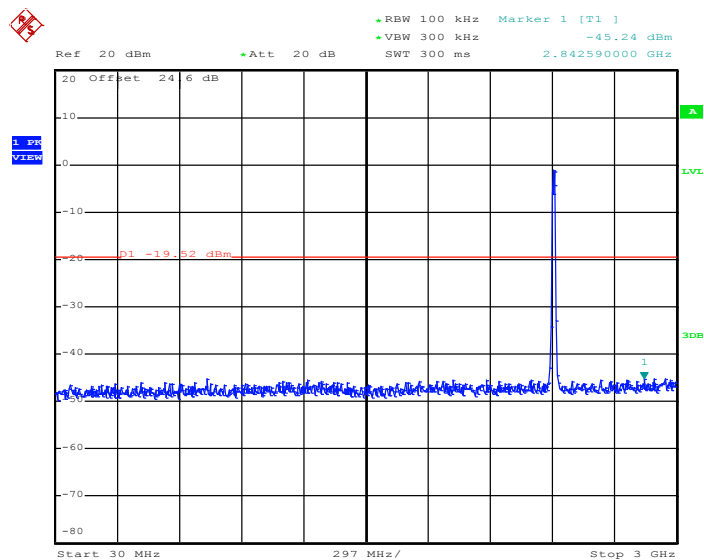
Date: 3.OCT.2012 19:35:41



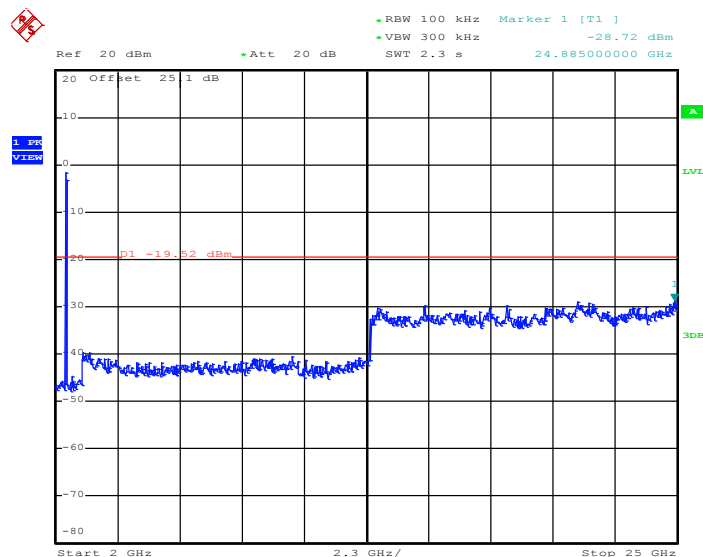
Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Bill Kuo

802.11n HT20 30 MHz~3 GHz

Conducted Spurious Emission Plot on Channel 01

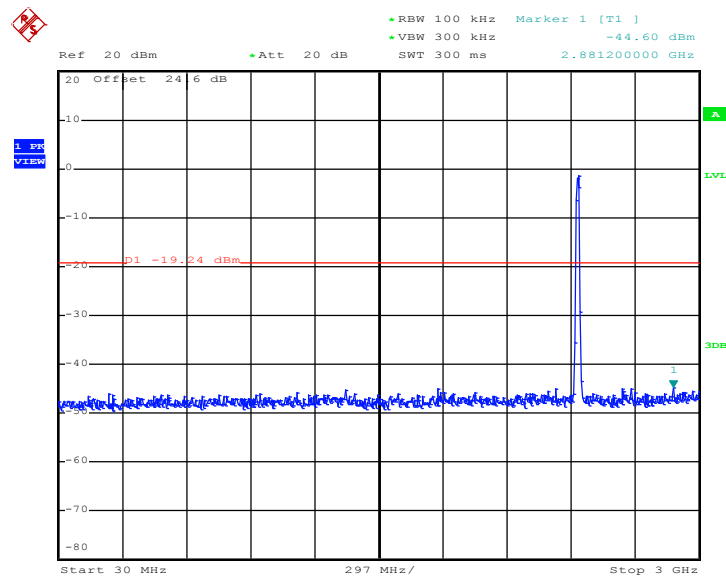


232306-04 15C Spurious 802.11g_N20 2412 (ch01)
Date: 3.OCT.2012 19:58:00

802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


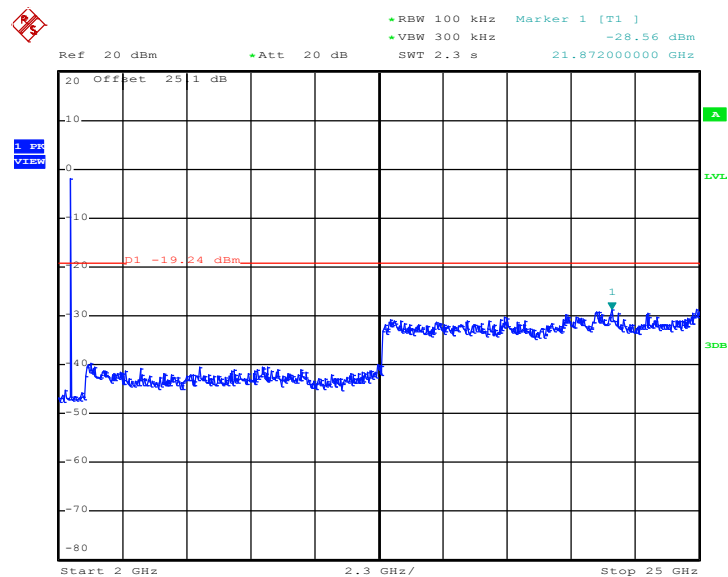
232306-04 15C Spurious 802.11g_N20 2412 (ch01)

Date: 3.OCT.2012 19:58:17

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


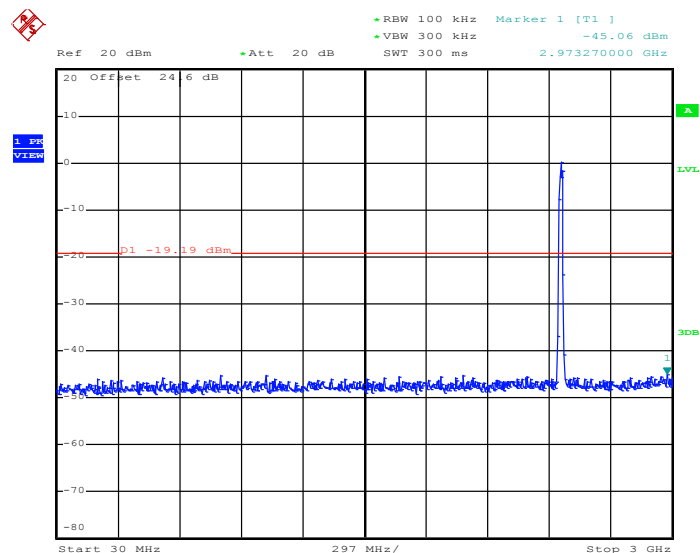
232306-04 15C Spurious 802.11g_N20 2437 (ch06)

Date: 3.OCT.2012 19:54:48

802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


232306-04 15C Spurious 802.11g_N20 2437 (ch06)

Date: 3.OCT.2012 19:55:06

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


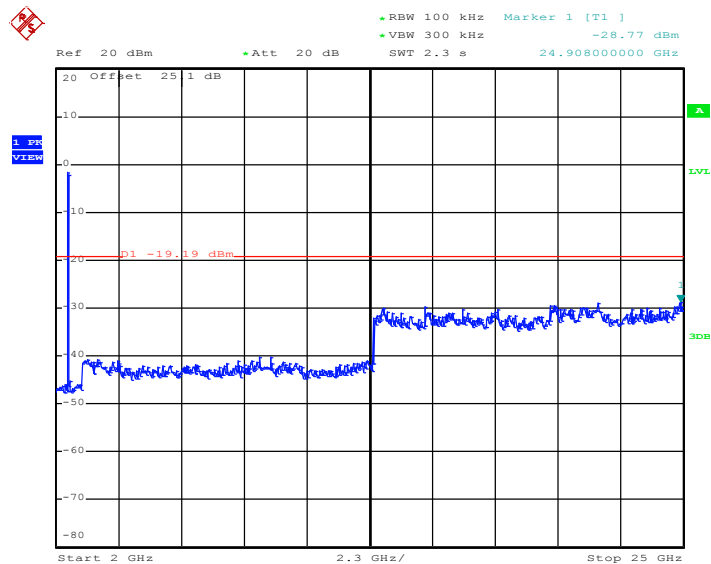
232306-04 15C Spurious 802.11g_N20 2462 (ch11)

Date: 3.OCT.2012 20:02:15



802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



232306-04 15C Spurious 802.11g_N20 2462 (ch11)

Date: 3.OCT.2012 20:02:33

3.5 Radiated Emission Measurement

3.5.1 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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 KHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, $VBW = 3$ MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

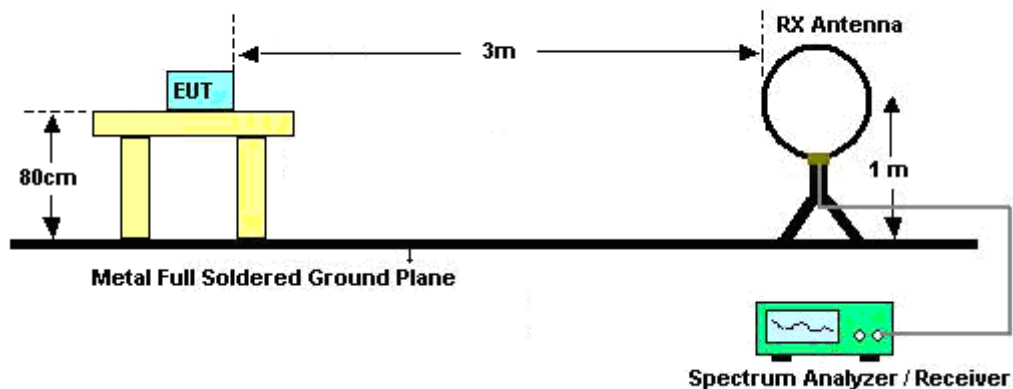
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	97.77	1400.00	0.714	1KHz
802.11n HT20	97.77	1314.00	0.761	1KHz

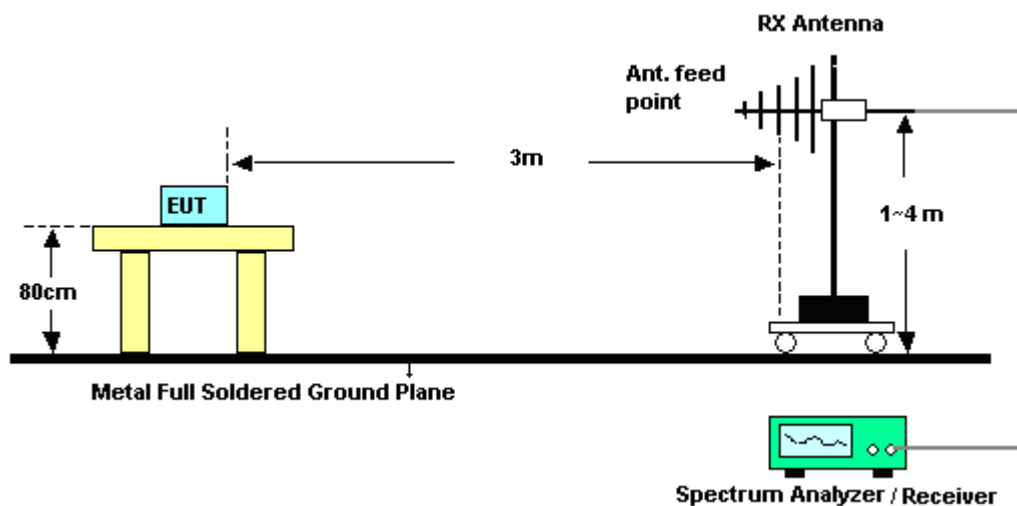
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

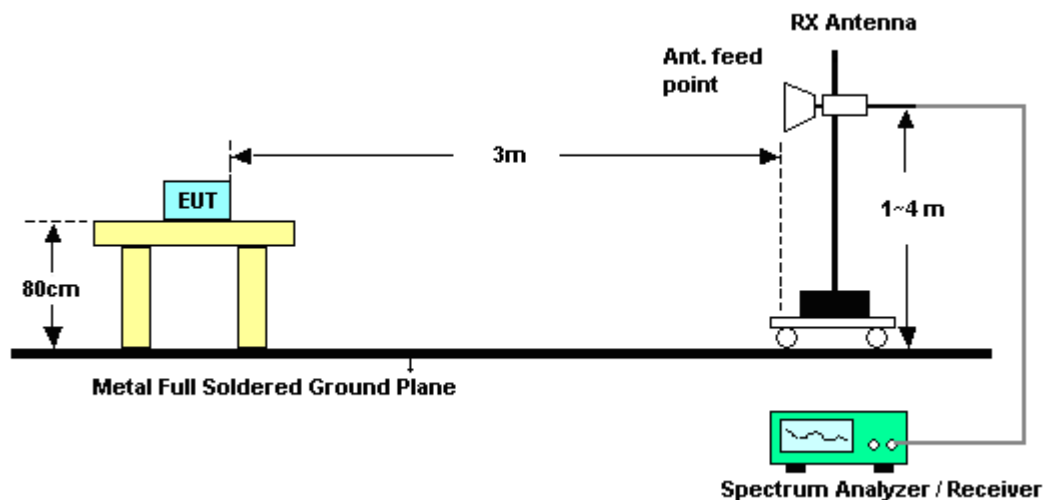
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	25~26℃
Test Band :	Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.23	54.37	-19.63	74	50	32.3	6.03	33.96	148	159	Peak
2385.42	44.98	-9.02	54	40.63	32.28	6.03	33.96	148	159	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.32	54.03	-19.97	74	49.66	32.3	6.03	33.96	132	284	Peak
2386.59	43.48	-10.52	54	39.11	32.3	6.03	33.96	132	284	Average

Test Mode :	802.11b	Temperature :	25~26℃
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.16	55.08	-18.92	74	50.5	32.4	6.18	34	145	164	Peak
2490.3	43.59	-10.41	54	39.01	32.4	6.18	34	145	164	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.14	55.25	-18.75	74	50.67	32.4	6.18	34	102	282	Peak
2490.3	43.87	-10.13	54	39.29	32.4	6.18	34	102	282	Average



Test Mode :	802.11g	Temperature :	25~26°C
Test Band :	Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	69.83	-4.17	74	65.46	32.3	6.03	33.96	148	166	Peak
2390	46.37	-7.63	54	42	32.3	6.03	33.96	148	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.2	67.61	-6.39	74	63.24	32.3	6.03	33.96	132	295	Peak
2390	46.59	-7.41	54	42.22	32.3	6.03	33.96	132	295	Average

Test Mode :	802.11g	Temperature :	25~26°C
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.12	73.1	-0.9	74	68.54	32.38	6.18	34	144	182	Peak
2483.5	49.25	-4.75	54	44.69	32.38	6.18	34	144	182	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.38	72.86	-1.14	74	68.3	32.38	6.18	34	102	282	Peak
2483.5	49.01	-4.99	54	44.45	32.38	6.18	34	102	282	Average



Test Mode :	802.11n HT20	Temperature :	25~26℃
Test Band :	Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.84	56.72	-17.28	74	52.35	32.3	6.03	33.96	147	157	Peak
2390	41.5	-12.5	54	37.13	32.3	6.03	33.96	147	157	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.38	55.57	-18.43	74	51.2	32.3	6.03	33.96	130	292	Peak
2390	41.16	-12.84	54	36.79	32.3	6.03	33.96	130	292	Average

Test Mode :	802.11n HT20	Temperature :	25~26℃
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.96	64.29	-9.71	74	59.73	32.38	6.18	34	144	16	Peak
2483.5	45.9	-8.1	54	41.34	32.38	6.18	34	144	16	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484	59.34	-14.66	74	54.78	32.38	6.18	34	127	287	Peak
2483.54	42.52	-11.48	54	37.96	32.38	6.18	34	127	287	Average

3.5.7 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	802.11b	Temperature :	25~26℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	104.08	-	-	99.67	32.31	6.07	33.97	148	159	Average
2412	109.09	-	-	104.68	32.31	6.07	33.97	148	159	Peak
4824	50.08	-23.92	74	64.46	33.97	9.12	57.47	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	102.97	-	-	98.56	32.31	6.07	33.97	132	284	2412
2412	107.86	-	-	103.45	32.31	6.07	33.97	132	284	2412
4824	49.64	-24.36	74	64.02	33.97	9.12	57.47	100	0	4824

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	104.73	-	-	100.25	32.35	6.11	33.98	122	155	Average
2437	109.72	-	-	105.24	32.35	6.11	33.98	122	155	Peak
4875	50.16	-3.84	54	64.56	33.95	9.13	57.48	100	239	Average
4875	51.73	-22.27	74	66.13	33.95	9.13	57.48	100	239	Peak
7314	45	-29	74	57.42	35.54	10.06	58.02	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	102.46	-	-	97.98	32.35	6.11	33.98	129	265	Average
2437	107.42	-	-	102.94	32.35	6.11	33.98	129	265	Peak
4875	50.49	-3.51	54	64.89	33.95	9.13	57.48	137	262	Average
4875	51.87	-22.13	74	66.27	33.95	9.13	57.48	137	262	Peak
7311	42.05	-31.95	74	54.47	35.54	10.06	58.02	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	104.41	-	-	99.89	32.37	6.14	33.99	145	164	Average
2462	109.57	-	-	105.05	32.37	6.14	33.99	145	164	Peak
4923	50.25	-3.75	54	64.66	33.93	9.14	57.48	100	238	Average
4923	52.48	-21.52	74	66.89	33.93	9.14	57.48	100	238	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	103.19	-	-	98.67	32.37	6.14	33.99	102	282	Average
2462	107.99	-	-	103.47	32.37	6.14	33.99	102	282	Peak
4923	50.53	-3.47	54	64.94	33.93	9.14	57.48	134	263	Average
4923	51.44	-22.56	74	65.85	33.93	9.14	57.48	134	263	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	101.08	-	-	96.67	32.31	6.07	33.97	148	166	Average
2412	111.19	-	-	106.78	32.31	6.07	33.97	148	166	Peak
4821	49.86	-24.14	74	64.24	33.97	9.12	57.47	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	98.78	-	-	94.37	32.31	6.07	33.97	132	295	Average
2412	108.84	-	-	104.43	32.31	6.07	33.97	132	295	Peak
4824	48.54	-25.46	74	62.92	33.97	9.12	57.47	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	101.08	-	-	96.6	32.35	6.11	33.98	123	175	Average
2437	111.27	-	-	106.79	32.35	6.11	33.98	123	175	Peak
4872	49.99	-24.01	74	64.39	33.95	9.13	57.48	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	98.38	-	-	93.9	32.35	6.11	33.98	129	264	Average
2437	108.21	-	-	103.73	32.35	6.11	33.98	129	264	Peak
4875	40.56	-13.44	54	54.96	33.95	9.13	57.48	163	285	Average
4875	51.56	-22.44	74	65.96	33.95	9.13	57.48	163	285	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	20.81	-19.19	40	32.15	20	0.53	31.87	-	-	Peak
186.87	21.83	-21.67	43.5	42.87	8.97	1.27	31.28	-	-	Peak
291.63	29.93	-16.07	46	46.43	13.19	1.71	31.4	102	218	Peak
645.8	22.72	-23.28	46	30.09	20.17	2.83	30.37	-	-	Peak
728.4	22.98	-23.02	46	29.46	21.02	3.01	30.51	-	-	Peak
804	24.59	-21.41	46	29.49	22.14	3.15	30.19	-	-	Peak
2462	102.18	-	-	97.66	32.37	6.14	33.99	144	182	Average
2462	111.78	-	-	107.26	32.37	6.14	33.99	144	182	Peak
4923	41.39	-12.61	54	55.8	33.93	9.14	57.48	100	237	Average
4923	52.26	-21.74	74	66.67	33.93	9.14	57.48	100	237	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.59	31.53	-8.47	40	46.43	16.4	0.58	31.88	106	163	Peak
61.05	21.55	-18.45	40	46.44	6.12	0.77	31.78	-	-	Peak
165.27	29.97	-13.53	43.5	50.04	10.03	1.23	31.33	-	-	Peak
598.9	21.94	-24.06	46	30.04	19.77	2.68	30.55	-	-	Peak
806.1	24.45	-21.55	46	29.34	22.16	3.16	30.21	-	-	Peak
904.8	25.08	-20.92	46	29.39	23.17	3.35	30.83	-	-	Peak
2462	99.3	-	-	94.78	32.37	6.14	33.99	102	282	Average
2462	109.85	-	-	105.33	32.37	6.14	33.99	102	282	Peak
4920	39.98	-14.02	54	54.39	33.93	9.14	57.48	111	266	Average
4920	52.29	-21.71	74	66.7	33.93	9.14	57.48	111	266	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	95	-	-	90.59	32.31	6.07	33.97	147	157	Average
2412	105.48	-	-	101.07	32.31	6.07	33.97	147	157	Peak
4824	43.78	-30.22	74	58.16	33.97	9.12	57.47	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	92.74	-	-	88.33	32.31	6.07	33.97	130	292	Average
2412	102.89	-	-	98.48	32.31	6.07	33.97	130	292	Peak
4821	47.07	-26.93	74	61.45	33.97	9.12	57.47	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	97.9	-	-	93.42	32.35	6.11	33.98	178	20	Average
2437	108.33	-	-	103.85	32.35	6.11	33.98	178	20	Peak
4875	43.9	-30.1	74	58.3	33.95	9.13	57.48	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	94.95	-	-	90.47	32.35	6.11	33.98	103	285	Average
2437	105.01	-	-	100.53	32.35	6.11	33.98	103	285	Peak
4878	46.28	-27.72	74	60.67	33.95	9.14	57.48	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	97.81	-	-	93.29	32.37	6.14	33.99	144	16	Average
2462	108	-	-	103.48	32.37	6.14	33.99	144	16	Peak
4923	46.18	-27.82	74	60.59	33.93	9.14	57.48	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	94.71	-	-	90.19	32.37	6.14	33.99	127	287	Average
2462	104.82	-	-	100.3	32.37	6.14	33.99	127	287	Peak
4923	45.72	-28.28	74	60.13	33.93	9.14	57.48	100	0	Peak

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.

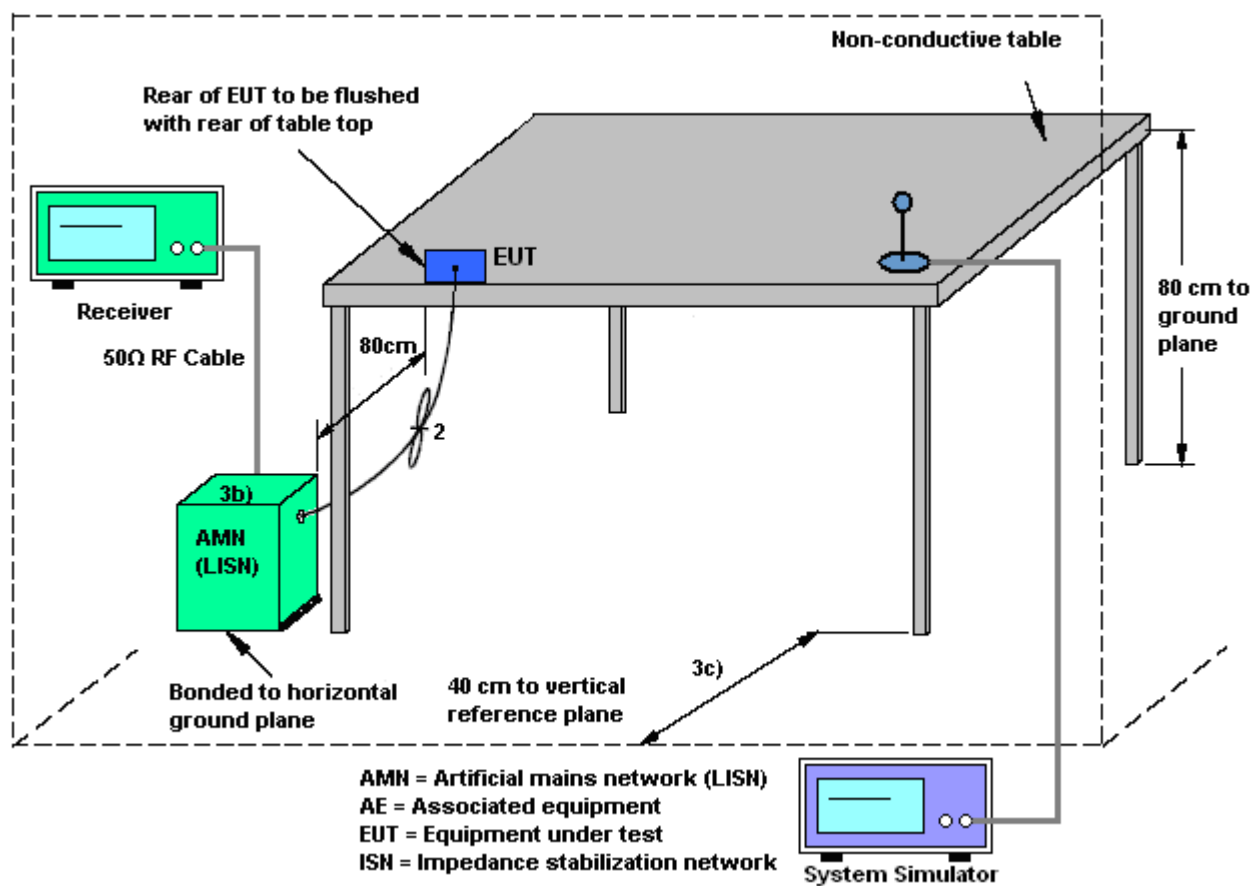
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

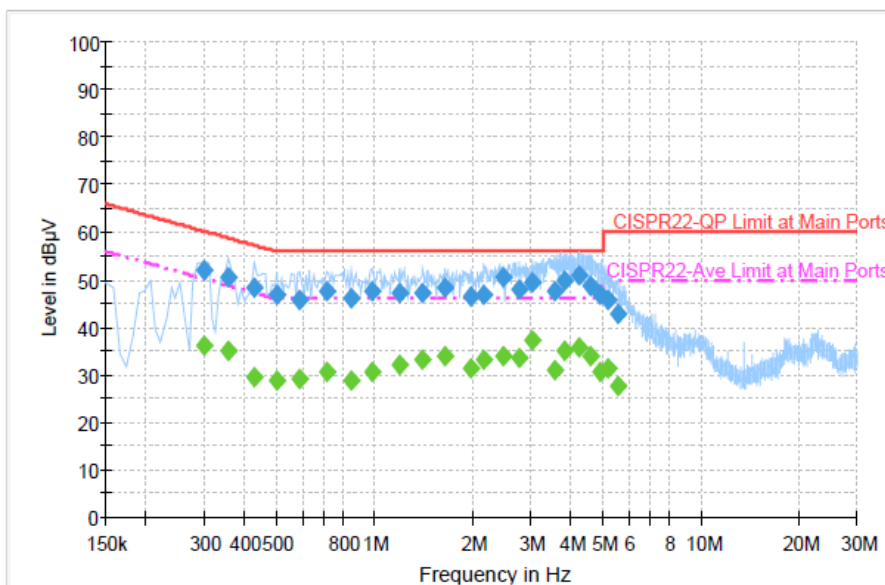
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance 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

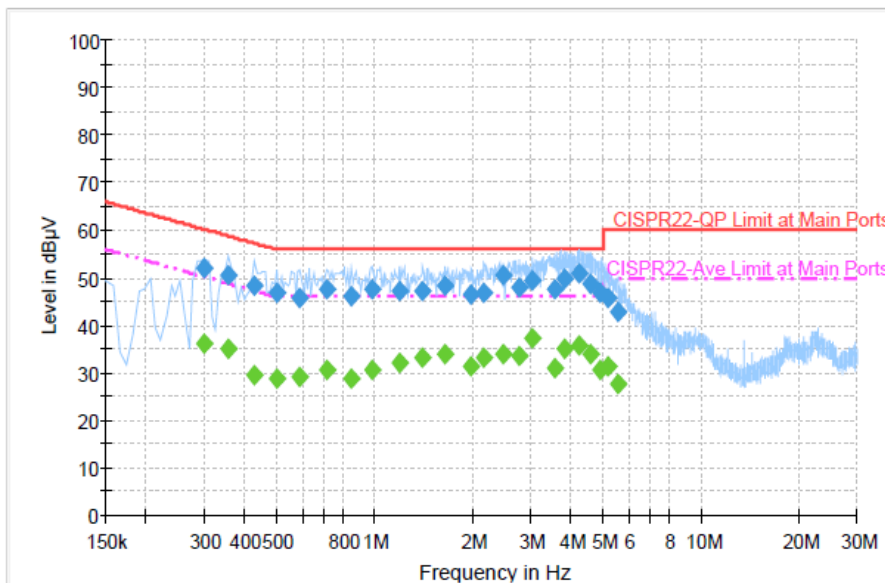
Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

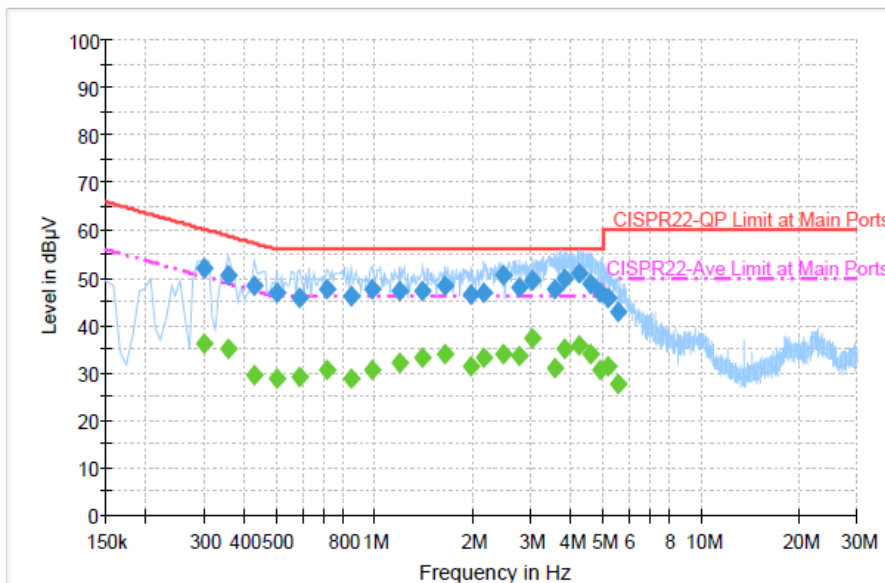
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.302000	51.9	Off	L1	19.3	8.3	60.2
0.358000	50.4	Off	L1	19.4	8.4	58.8
0.430000	48.3	Off	L1	19.4	9.0	57.3
0.502000	47.0	Off	L1	19.3	9.0	56.0
0.590000	45.6	Off	L1	19.4	10.4	56.0
0.718000	47.5	Off	L1	19.5	8.5	56.0
0.846000	46.1	Off	L1	19.5	9.9	56.0
0.982000	47.6	Off	L1	19.5	8.4	56.0
1.190000	47.2	Off	L1	19.5	8.8	56.0
1.406000	47.4	Off	L1	19.4	8.6	56.0
1.646000	48.2	Off	L1	19.5	7.8	56.0
1.974000	46.3	Off	L1	19.5	9.7	56.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Quasi-Peak

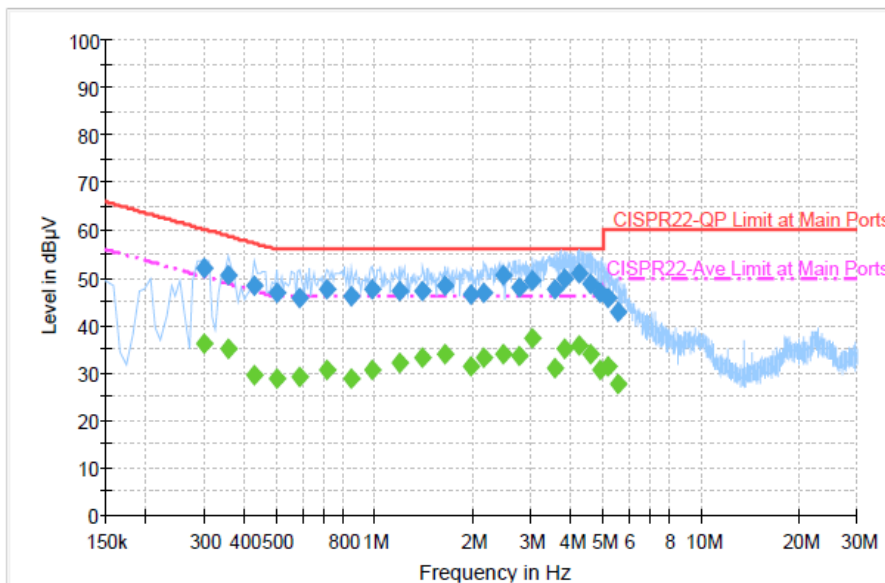
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.166000	46.9	Off	L1	19.6	9.1	56.0
2.470000	50.7	Off	L1	19.6	5.3	56.0
2.766000	48.1	Off	L1	19.6	7.9	56.0
3.054000	49.3	Off	L1	19.6	6.7	56.0
3.550000	47.6	Off	L1	19.6	8.4	56.0
3.806000	49.9	Off	L1	19.6	6.1	56.0
4.222000	50.7	Off	L1	19.6	5.3	56.0
4.558000	48.7	Off	L1	19.6	7.3	56.0
4.918000	46.7	Off	L1	19.6	9.3	56.0
5.198000	45.6	Off	L1	19.5	14.4	60.0
5.526000	42.7	Off	L1	19.6	17.3	60.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Average

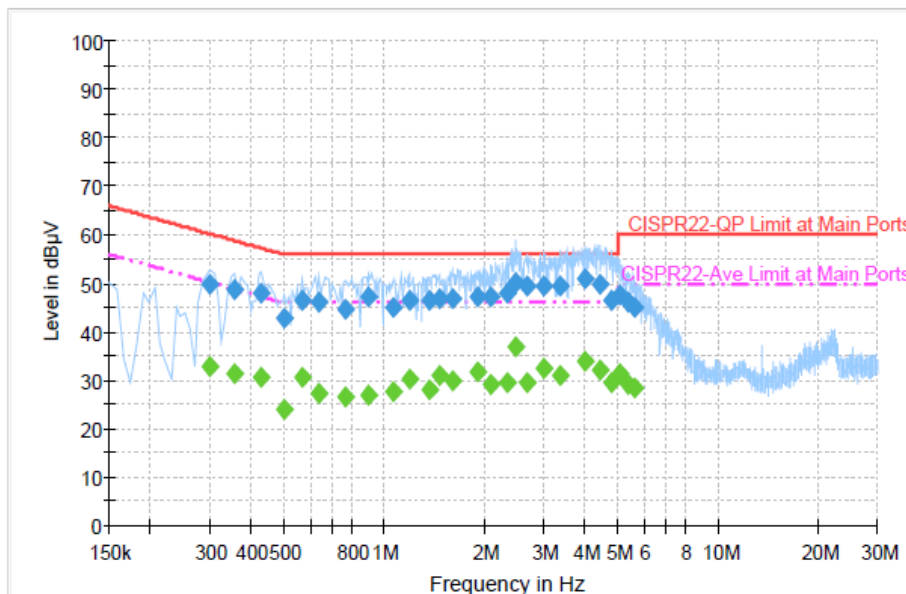
Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.302000	36.3	Off	L1	19.3	13.9	50.2
0.358000	35.1	Off	L1	19.4	13.7	48.8
0.430000	29.4	Off	L1	19.4	17.9	47.3
0.502000	28.9	Off	L1	19.3	17.1	46.0
0.590000	29.2	Off	L1	19.4	16.8	46.0
0.718000	30.7	Off	L1	19.5	15.3	46.0
0.846000	28.7	Off	L1	19.5	17.3	46.0
0.982000	30.5	Off	L1	19.5	15.5	46.0
1.190000	32.2	Off	L1	19.5	13.8	46.0
1.406000	33.1	Off	L1	19.4	12.9	46.0
1.646000	34.1	Off	L1	19.5	11.9	46.0
1.974000	31.4	Off	L1	19.5	14.6	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Average

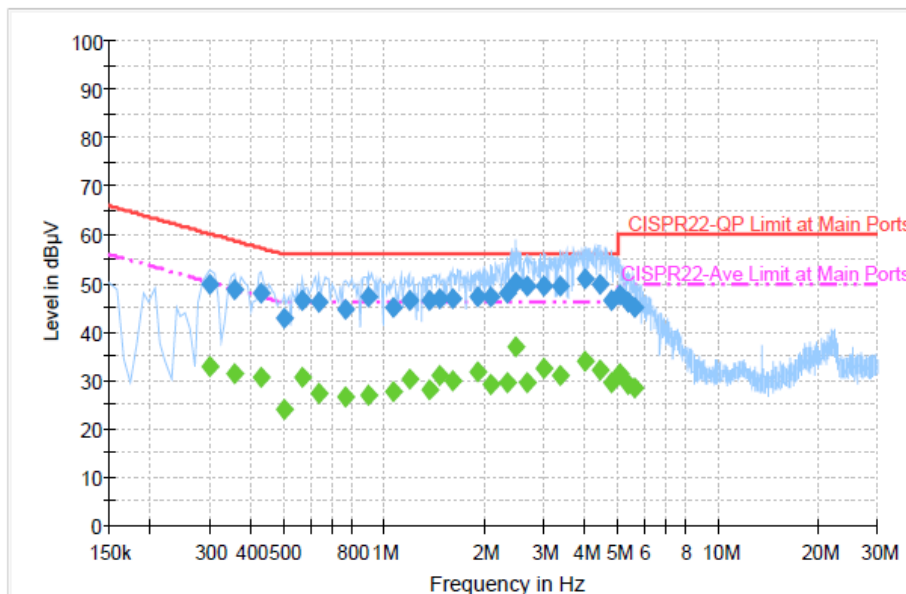
Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.166000	33.2	Off	L1	19.6	12.8	46.0
2.470000	34.0	Off	L1	19.6	12.0	46.0
2.766000	33.7	Off	L1	19.6	12.3	46.0
3.054000	37.3	Off	L1	19.6	8.7	46.0
3.550000	31.1	Off	L1	19.6	14.9	46.0
3.806000	34.9	Off	L1	19.6	11.1	46.0
4.222000	35.6	Off	L1	19.6	10.4	46.0
4.558000	34.0	Off	L1	19.6	12.0	46.0
4.918000	30.8	Off	L1	19.6	15.2	46.0
5.198000	31.5	Off	L1	19.5	18.5	50.0
5.526000	27.7	Off	L1	19.6	22.3	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Quasi-Peak

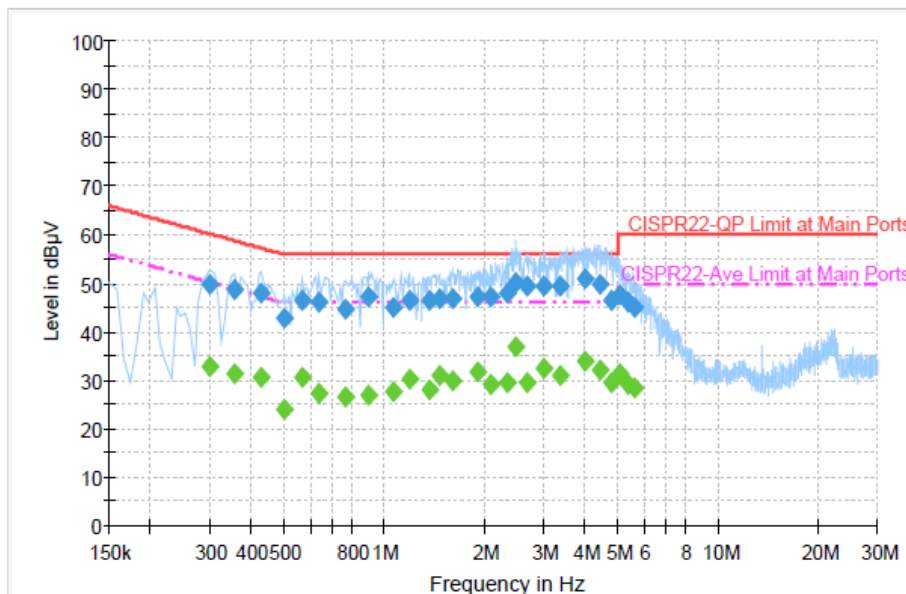
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.302000	50.0	Off	N	19.4	10.2	60.2
0.358000	48.7	Off	N	19.4	10.1	58.8
0.430000	48.1	Off	N	19.4	9.2	57.3
0.502000	42.6	Off	N	19.4	13.4	56.0
0.566000	46.6	Off	N	19.4	9.4	56.0
0.638000	46.0	Off	N	19.4	10.0	56.0
0.766000	44.8	Off	N	19.5	11.2	56.0
0.902000	47.1	Off	N	19.5	8.9	56.0
1.062000	45.1	Off	N	19.4	10.9	56.0
1.190000	46.6	Off	N	19.5	9.4	56.0
1.366000	46.4	Off	N	19.5	9.6	56.0
1.462000	46.8	Off	N	19.5	9.2	56.0
1.598000	46.7	Off	N	19.5	9.3	56.0
1.910000	47.3	Off	N	19.5	8.7	56.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Quasi-Peak

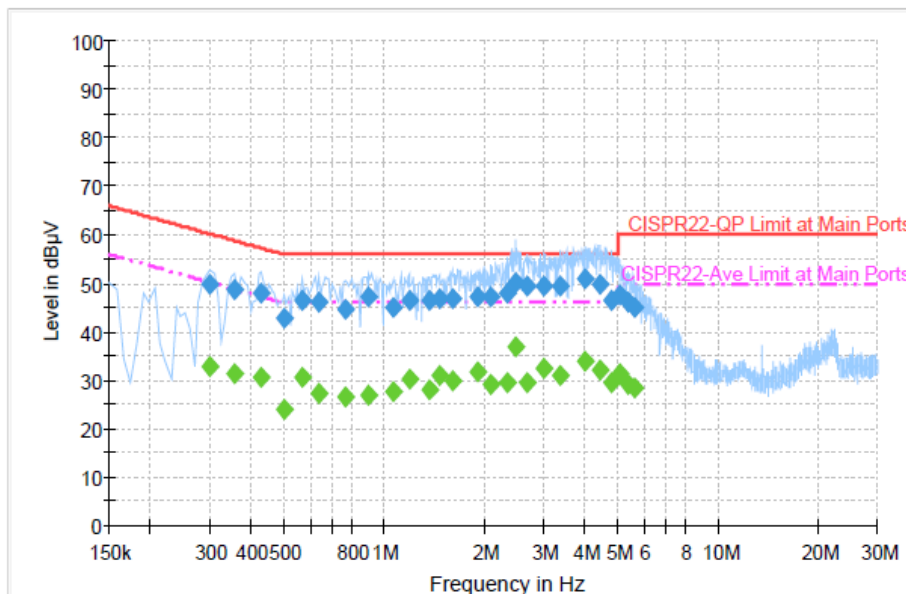
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.086000	47.3	Off	N	19.6	8.7	56.0
2.342000	48.0	Off	N	19.6	8.0	56.0
2.470000	50.1	Off	N	19.6	5.9	56.0
2.678000	49.4	Off	N	19.6	6.6	56.0
3.006000	49.5	Off	N	19.6	6.5	56.0
3.382000	49.3	Off	N	19.7	6.7	56.0
3.990000	51.1	Off	N	19.6	4.9	56.0
4.438000	49.8	Off	N	19.6	6.2	56.0
4.774000	46.7	Off	N	19.6	9.3	56.0
5.054000	47.6	Off	N	19.6	12.4	60.0
5.374000	46.1	Off	N	19.6	13.9	60.0
5.590000	45.0	Off	N	19.7	15.0	60.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.302000	32.9	Off	N	19.4	17.3	50.2
0.358000	31.5	Off	N	19.4	17.3	48.8
0.430000	30.4	Off	N	19.4	16.9	47.3
0.502000	24.1	Off	N	19.4	21.9	46.0
0.566000	30.7	Off	N	19.4	15.3	46.0
0.638000	27.3	Off	N	19.4	18.7	46.0
0.766000	26.4	Off	N	19.5	19.6	46.0
0.902000	26.9	Off	N	19.5	19.1	46.0
1.062000	27.8	Off	N	19.4	18.2	46.0
1.190000	30.2	Off	N	19.5	15.8	46.0
1.366000	28.2	Off	N	19.5	17.8	46.0
1.462000	31.0	Off	N	19.5	15.0	46.0
1.598000	29.9	Off	N	19.5	16.1	46.0
1.910000	31.6	Off	N	19.5	14.4	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + Camera + Earphone + Battery + USB Cable (Charging from Adapter) + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.086000	29.0	Off	N	19.6	17.0	46.0
2.342000	29.6	Off	N	19.6	16.4	46.0
2.470000	37.0	Off	N	19.6	9.0	46.0
2.678000	29.7	Off	N	19.6	16.3	46.0
3.006000	32.6	Off	N	19.6	13.4	46.0
3.382000	30.8	Off	N	19.7	15.2	46.0
3.990000	33.9	Off	N	19.6	12.1	46.0
4.438000	32.0	Off	N	19.6	14.0	46.0
4.774000	29.4	Off	N	19.6	16.6	46.0
5.054000	31.3	Off	N	19.6	18.7	50.0
5.374000	29.1	Off	N	19.6	20.9	50.0
5.590000	28.3	Off	N	19.7	21.7	50.0

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Oct. 02, 2012 ~ Oct. 03, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Oct. 02, 2012 ~ Oct. 03, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Oct. 02, 2012 ~ Oct. 03, 2012	Sep. 07, 2013	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Oct. 02, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Oct. 02, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Oct. 02, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Oct. 02, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	116457	N/A	Jun. 24, 2011	Oct. 02, 2012	Jun. 23, 2013	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Oct. 06, 2012~ Oct. 07, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Oct. 06, 2012~ Oct. 07, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2012	Oct. 06, 2012~ Oct. 07, 2012	Jul. 31, 2013	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz ~ 26.5GHz	Dec. 05, 2011	Oct. 06, 2012~ Oct. 07, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Feb. 27, 2012	Oct. 06, 2012~ Oct. 07, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSQ	200578/026	20Hz~26.5GHz	Feb. 06, 2012	Oct. 06, 2012~ Oct. 07, 2012	Feb. 05, 2013	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Oct. 06, 2012~ Oct. 07, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Oct. 06, 2012~ Oct. 07, 2012	Oct. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	100315	9KHz ~ 30MHz	May 14, 2012	Oct. 06, 2012~ Oct. 07, 2012	May 13, 2013	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

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 EP232306-04 as below.