FCC/IC RF Test Report

APPLICANT	:	Qualcomm Atheros, Inc.
EQUIPMENT	:	1X1 802.11b/g/n – BT4.0 Combo PCIe minicard
BRAND NAME	:	Qualcomm Atheros
MODEL NAME	:	QCWB335
FCC ID	:	PPD-QCWB335
IC	:	4104A-QCWB335
STANDARD	:	FCC Part 15 Subpart C §15.247 IC RSS-210 Issue 8
CLASSIFICATION	:	(DTS) Digital Transmission System

The WiFi + Bluetooth module was tested on extended card inserted to a host laptop PC. The product was received on Apr. 03, 2012 and completely tested on May 25, 2012. 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:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR240322B	Rev. 01	Initial issue of report	May 14, 2012
FR240322B	Rev. 02	Update report of revising band edges, radiated emission, and removing Bluetooth and WLAN Co-location Measurement.	May 14, 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	≥ 0.5MHz	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
0	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
0	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 15.30 dB at 7.806 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.00 dB at 2486.700 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Qualcomm Atheros, Inc.
1700 Technology Drive, San Jose, CA95110

1.2 Manufacturer

Qualcomm Atheros, Inc.
1700 Technology Drive, San Jose, CA95110

1.3 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st 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	03CH05-HY	722060/4086B-1

1.4 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 DR01
- ANSI C63.4-2003
- 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.

1.5 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.	Notebook	DELL	Studio	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	1X1 802.11b/g/n – BT4.0 Combo PCIe minicard
Brand Name	Qualcomm Atheros
Model Name	QCWB335
FCC ID	PPD-QCWB335
IC	4104A-QCWB335
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11 for 802.11b, 802.11g, 802.11g/n (20MHz) 7 for 802.11g/n (40MHz)
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Transfer Rate	**802.11b:** 11 / 5.5 / 2 / 1Mbps **802.11g:** 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps **802.11g/n (20MHz, Guard Interval: 800ns):** 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps **802.11g/n (40MHz, Guard Interval: 800ns):** 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5 Mbps **802.11g/n (20MHz, Guard Interval: 400ns):** 72.2 / 65 / 57.8 / 43.3 / 28.9 / 21.7 / 14.4 / 7.2Mbps **802.11g/n (40MHz, Guard Interval: 400ns):** 150 / 135 / 120 / 90 / 60 / 45 / 30 / 15Mbps
Maximum Output Power to Antenna	802.11b : 19.94 dBm (0.0986 W) 802.11g : 24.91 dBm (0.3097 W) 802.11g/n (BW 20MHz) : 24.25 dBm (0.2661 W) 802.11g/n (BW 40MHz) : 24.18 dBm (0.2618 W)
Duty Cycle	802.11b : 100.00% 802.11g : 97.21% 802.11g/n (BW 20MHz) : 96.93% 802.11g/n (BW 40MHz) : 96.10%
Antenna Type	Antenna 1 : PIFA Antenna with gain 3.62 dBi Antenna 2 : Dipole Antenna with gain 3.20 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
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.

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate as below table and the highest power data rates (11b, 11g, 11g/n (BW 20MHz), 11g/n (BW 40MHz) modes) were chosen for full test in the following sections to demonstrate compliance to the FCC limit line.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.94	19.88	19.90	19.87

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)	24.91	24.84	24.78	24.87	24.73	24.76	24.90	24.78

2.4GHz 802.11g/n (BW 20MHz) mode (Guard Interval:800 ns)								
Data Rate (MHz)	6.5M bps	13M bps	19.5M bps	26M bps	39M bps	52M bps	58M bps	65M bps
Peak Power (dBm)	24.25	24.19	24.04	24.00	24.18	24.13	24.08	24.22

2.4GHz 802.11g/n (BW 20MHz) mode (Guard Interval: 400 ns)								
Data Rate (MHz)	7.2M bps	14.4M bps	21.7M bps	28.9M bps	43.3M bps	57.8M bps	65M bps	72.2M bps
Peak Power (dBm)	24.21	24.12	24.02	24.17	24.11	24.14	23.99	24.03

2.4GHz 802.11g/n (BW 40MHz) mode (Guard Interval: 800 ns)								
Data Rate (MHz)	13.5M bps	27M bps	40.5M bps	54M bps	81M bps	108M bps	121.5M bps	135M bps
Peak Power (dBm)	24.18	23.09	23.07	23.10	23.21	23.14	22.95	23.03

2.4GHz 802.11g/n (BW 40MHz) mode (Guard Interval: 400 ns)								
Data Rate (MHz)	15M bps	30M bps	45M bps	60M bps	90M bps	120M bps	135M bps	150M bps
Peak Power (dBm)	23.23	23.11	23.17	23.21	23.00	22.85	23.06	23.17

2.3 Maximum Peak Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	19.30	**19.94**	19.83	23.90	**24.91**	23.27

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm) (Guard Interval: 800 ns)		
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Peak Power	23.00	**24.25**	22.75

Band	2.4GHz 802.11g/n (BW 40MHz) RF Power (dBm) (Guard Interval: 800 ns)		
Channel	3	6	9
Frequency (MHz)	2422	2437	2452
Peak Power	21.76	**24.18**	22.10

Remark:

The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11g/n (BW 20MHz) with Guard Interval setting = 800 ns, 13.5Mbps for 802.11g/n (BW 40MHz) with Guard Interval setting = 800 ns for all the test cases due to the highest RF output power.

2.4 Maximum Average Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Average Power	17.30	**18.04**	17.76	14.80	**18.01**	15.02

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm) (Guard Interval: 800 ns)		
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Average Power	13.59	**16.45**	**13.92**

Band	2.4GHz 802.11g/n (BW 40MHz) RF Power (dBm) (Guard Interval: 800 ns)		
Channel	3	6	9
Frequency (MHz)	2422	2437	2452
Average Power	11.98	**14.56**	13.24

Remark:

1. The average power, which is used by the test method, Option 3 (average power meter method), in DTS Meas. Guidance DR01, is reporting only.
2. The EUT is programmed to transmit signals continuously.

2.5 Antenna Information

Brand / Model Name	Type	Frequency Range (MHz)	Antenna Gain (dBi)
Wistron Neweb Corporation / EBJ Aux	PIFA	2400 ~ 2483.5	3.62
INPAQ / DAMA1BM30000402	Dipole	2400 ~ 2483.5	3.20

	Antenna port 0	Antenna port 1
Single antenna	WLAN/BT timely coexistence	RX diversity or terminated
Dual antenna	WLAN TX/RX	Bluetooth TX/RX

2.6 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).

WORST-CASE CONFIGURATION AND MODE
The worst-case data rates are determined to be as follows for each mode, based on the investigations by measuring the average power, peak power and PPSD across all the data rates, bandwidths, modulations and spatial stream modes.
Thus all tests were made with following data rates:
802.11b mode, 20 MHz Channel Bandwidth, 1 Mb/s, CCK Modulation:
802.11g mode, 20 MHz Channel Bandwidth, 6 Mb/s, OFDM Modulation:
802.11n HT20 mode, 20 MHz Channel Bandwidth, MCS0, 6.5 Mb/s, OFDM Modulation;
802.11n HT40 mode, 40 MHz Channel Bandwidth, MCS0, 13.5 Mb/s, OFDM Modulation;

For radiated: The EUT's antenna was pre-tested under the following modes:

Test Mode	Description
Mode A	**X-Y axis**
Mode B	Y-Z axis
Mode C	X-Z axis

From the above modes, the worst case was found in Mode A. Therefore only the test data of the mode was recorded in this report.

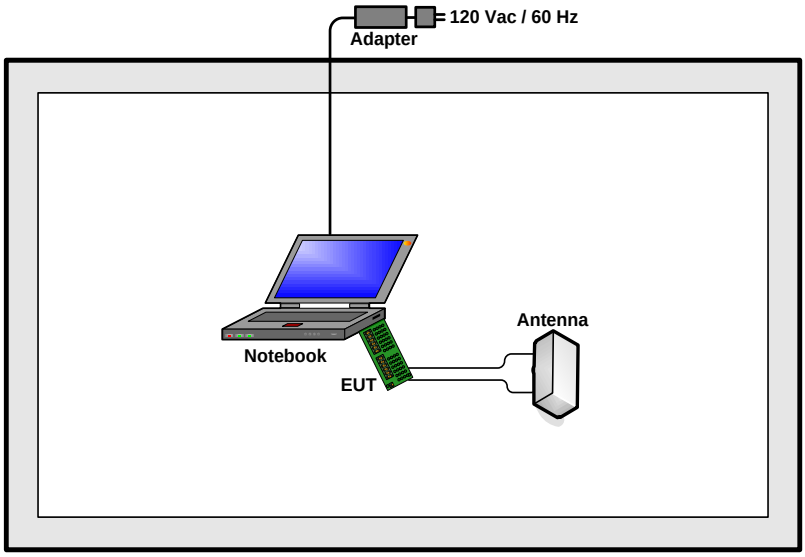
The details of test channels and bandwidth were for RF conductive measurement.

Mode	Tested Channel	6dB&99% Bandwidth	Output Power	Band Edges	Spurious Emission	Power Spectral Density	Radiated Emission
802.11b	1, 6, 11	✓	✓	✓	✓	✓	✓
802.11g	1, 6, 11	✓	✓	✓	✓	✓	✓
802.11n (BW 20MHz)	1, 6, 11	✓	✓	✓	✓	✓	✓
802.11n (BW 40MHz)	3, 6, 9	✓	✓	✓	✓	✓	✓

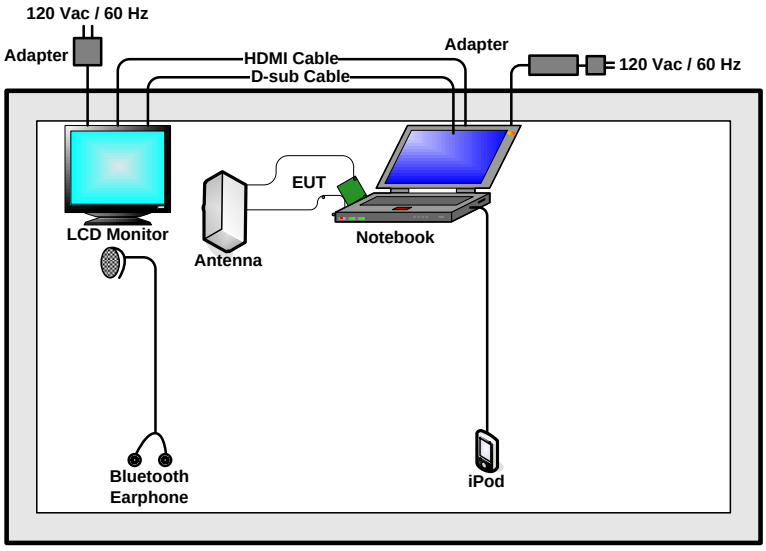
Test Cases	
Test Item	**802.11b (Modulation : DSSS)** **802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11g/n (BW 20M)_CH01_2412 MHz Mode 8: 802.11g/n (BW 20M)_CH06_2437 MHz Mode 9: 802.11g/n (BW 20M)_CH11_2462 MHz Mode 10: 802.11g/n (BW 40M)_CH03_2422 MHz Mode 11: 802.11g/n (BW 40M)_CH06_2437 MHz Mode 12: 802.11g/n (BW 40M)_CH09_2452 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz for Antenna 1 Mode 2 : 802.11b CH06_2437 MHz for Antenna 1 Mode 3 : 802.11b CH11_2462 MHz for Antenna 1 Mode 4: 802.11g_CH01_2412 MHz for Antenna 1 Mode 5: 802.11g_CH06_2437 MHz for Antenna 1 Mode 6: 802.11g_CH11_2462 MHz for Antenna 1 Mode 7: 802.11g/n (BW 20M)_CH01_2412 MHz for Antenna 1 Mode 8: 802.11g/n (BW 20M)_CH06_2437 MHz for Antenna 1 Mode 9: 802.11g/n (BW 20M)_CH11_2462 MHz for Antenna 1 Mode 10: 802.11g/n (BW 40M)_CH03_2422 MHz for Antenna 1 Mode 11: 802.11g/n (BW 40M)_CH06_2437 MHz for Antenna 1 Mode 12: 802.11g/n (BW 40M)_CH09_2452 MHz for Antenna 1 Mode 13 : 802.11b CH01_2412 MHz for Antenna 2 Mode 14 : 802.11b CH06_2437 MHz for Antenna 2 Mode 15 : 802.11b CH11_2462 MHz for Antenna 2 Mode 16: 802.11g_CH01_2412 MHz for Antenna 2 Mode 17: 802.11g_CH06_2437 MHz for Antenna 2 Mode 18: 802.11g_CH11_2462 MHz for Antenna 2 Mode 19: 802.11g/n (BW 20M)_CH01_2412 MHz for Antenna 2 Mode 20: 802.11g/n (BW 20M)_CH06_2437 MHz for Antenna 2 Mode 21: 802.11g/n (BW 20M)_CH11_2462 MHz for Antenna 2 Mode 22: 802.11g/n (BW 40M)_CH03_2422 MHz for Antenna 2 Mode 23: 802.11g/n (BW 40M)_CH06_2437 MHz for Antenna 2 Mode 24: 802.11g/n (BW 40M)_CH09_2452 MHz for Antenna 2
AC Conducted Emission	Mode 1 ： WLAN (2.4G) Link + Bluetooth Link for Antenna 1

2.7 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.8 RF Utility

The programmed RF utility, execute “artgui.exe” 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 D01 DTS Meas. Guidance DR01.
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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW).Set the Video bandwidth (VBW) ≥ 3 * RBW. In order to make an accurate measurement. 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.

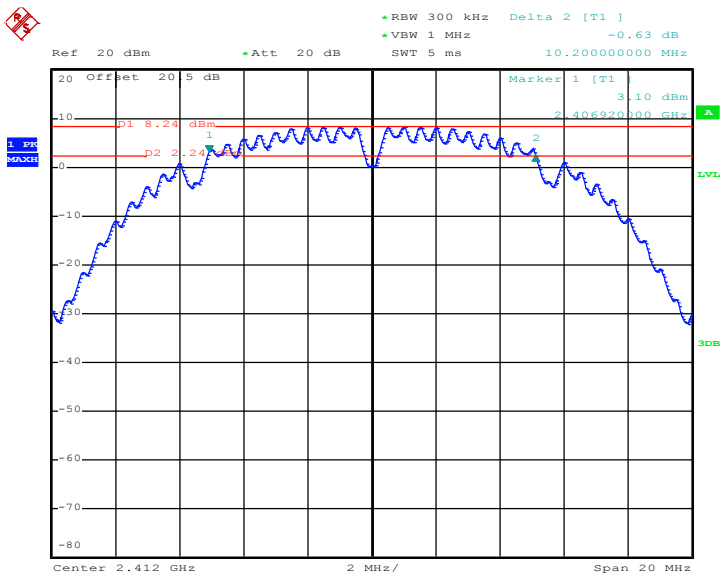
3.1.4 Test Setup

3.1.5 Test Result of 6dB Bandwidth

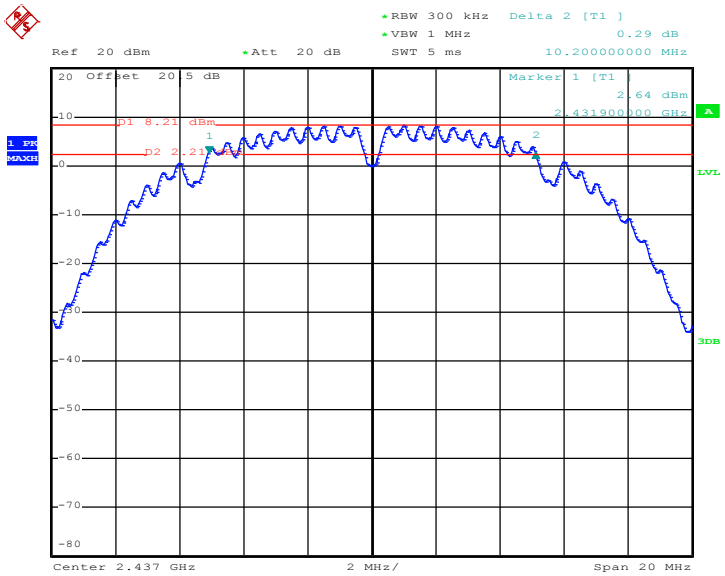
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.20	0.5	Pass
06	2437	10.20	0.5	Pass
11	2462	10.20	0.5	Pass

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



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



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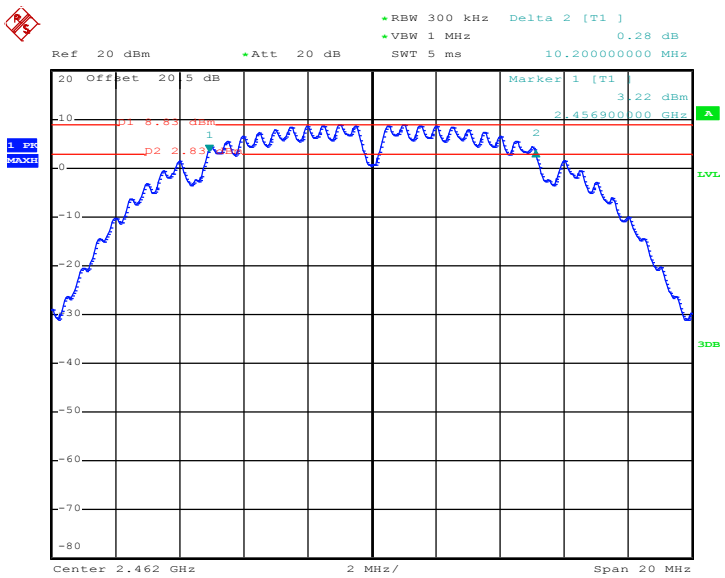
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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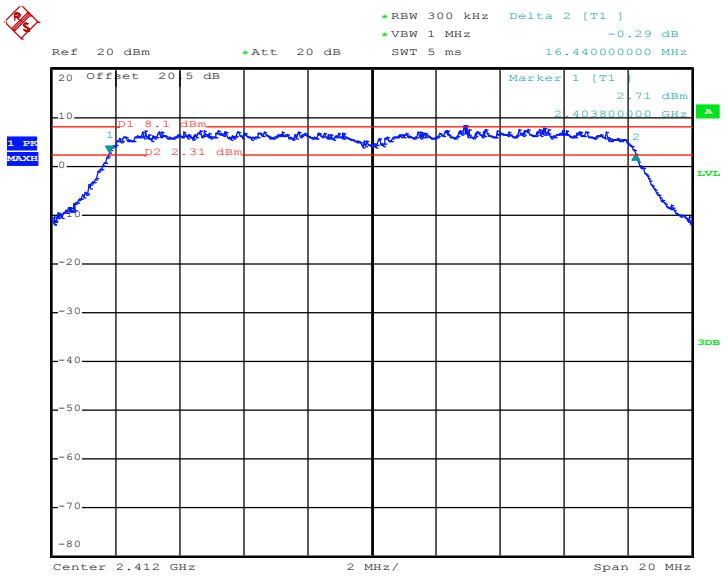
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.52	0.5	Pass
11	2462	16.44	0.5	Pass

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



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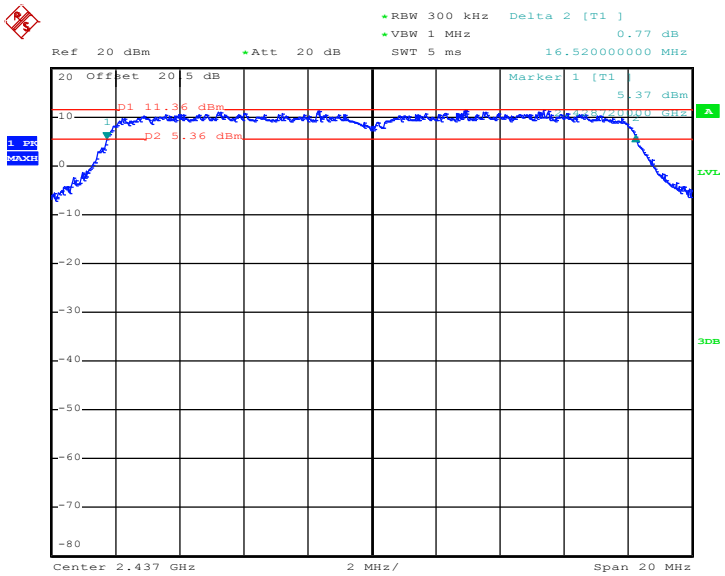
Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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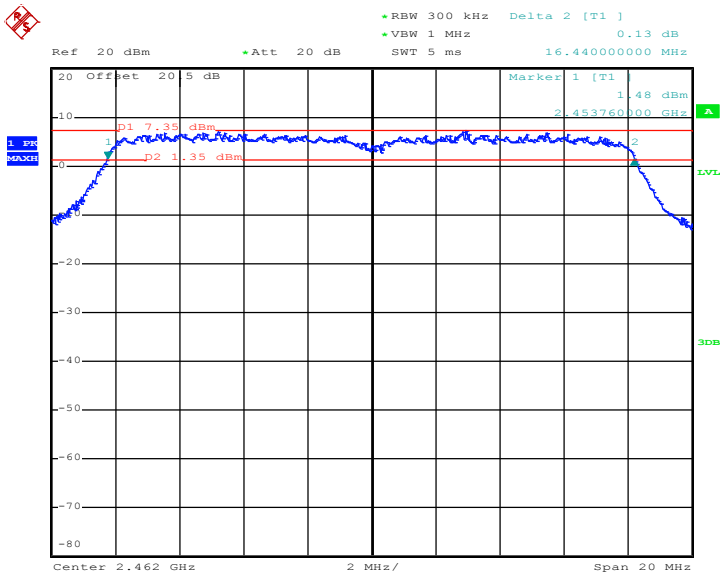
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11

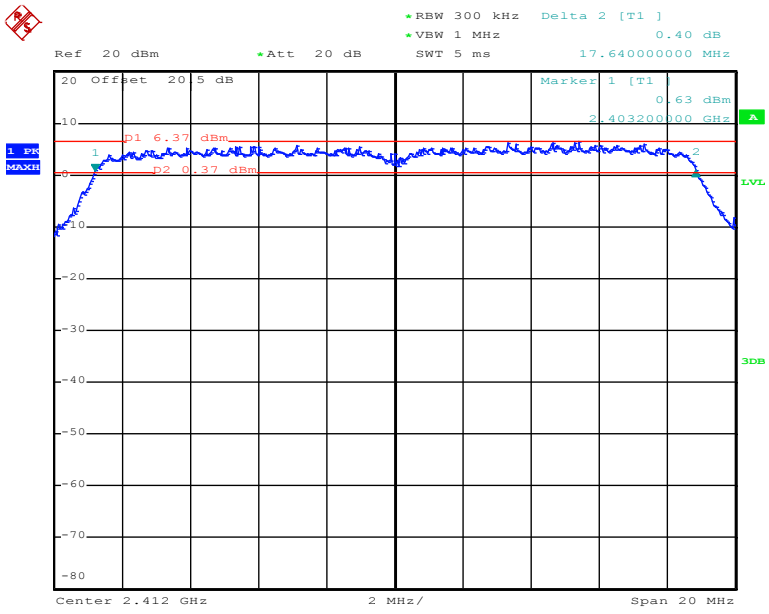


Date: 25.APR.2012 10:47:53

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.64	0.5	Pass
06	2437	17.68	0.5	Pass
11	2462	17.72	0.5	Pass

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



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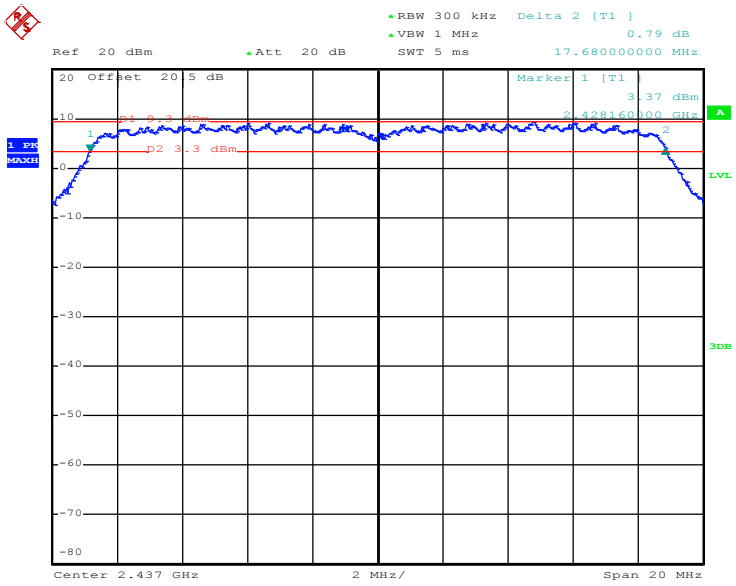
Mode 8 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 06



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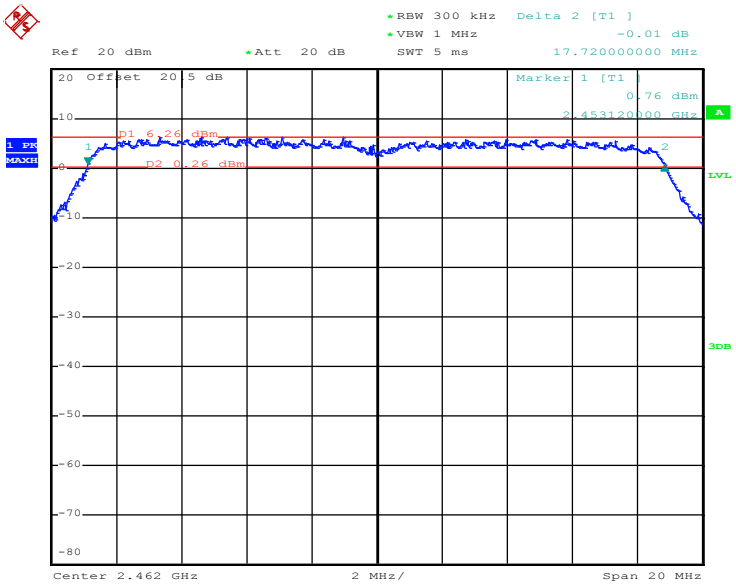
Mode 9 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 11



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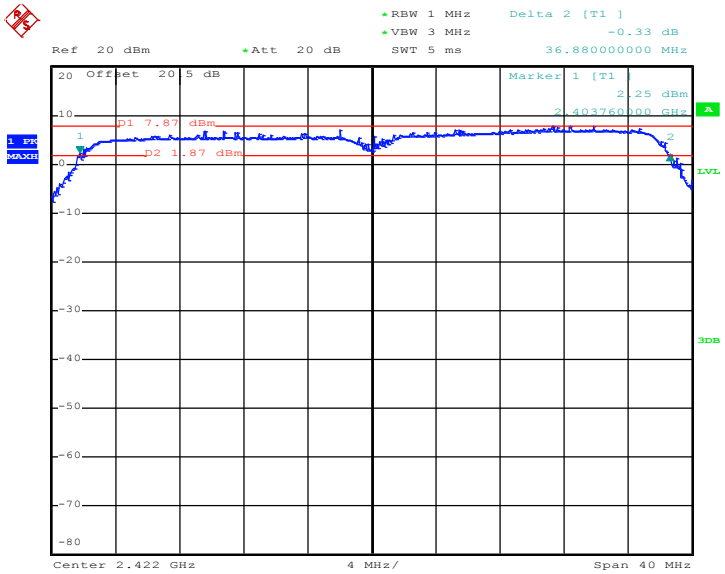
Test Mode :	Mode 10, 11, 12	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.88	0.5	Pass
06	2437	36.88	0.5	Pass
09	2452	37.12	0.5	Pass

Mode 10 : 6 dB Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 03



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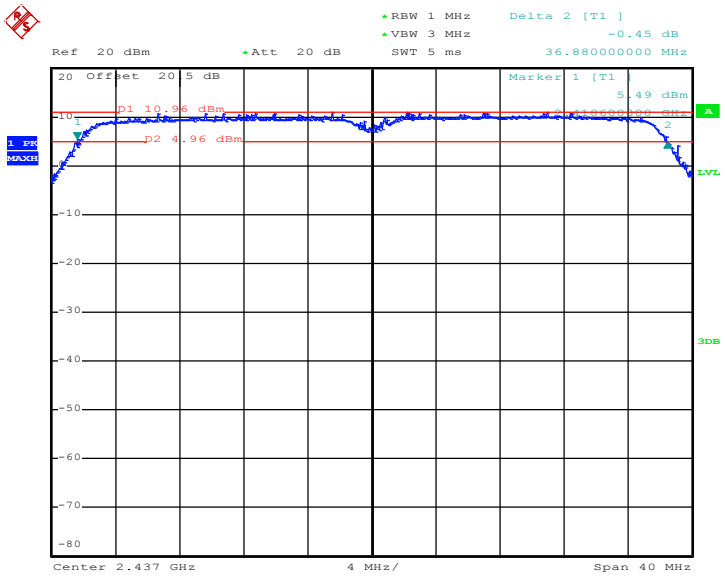
Mode 11 : 6 dB Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 06



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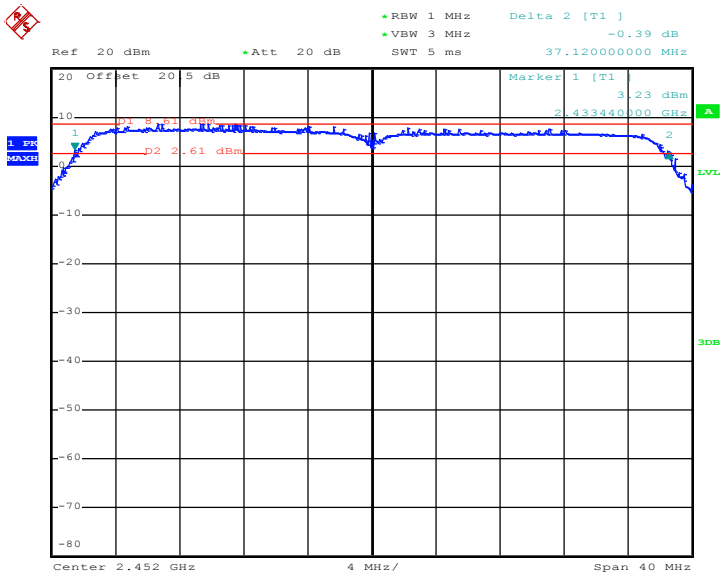
Mode 12 : 6 dB Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 09



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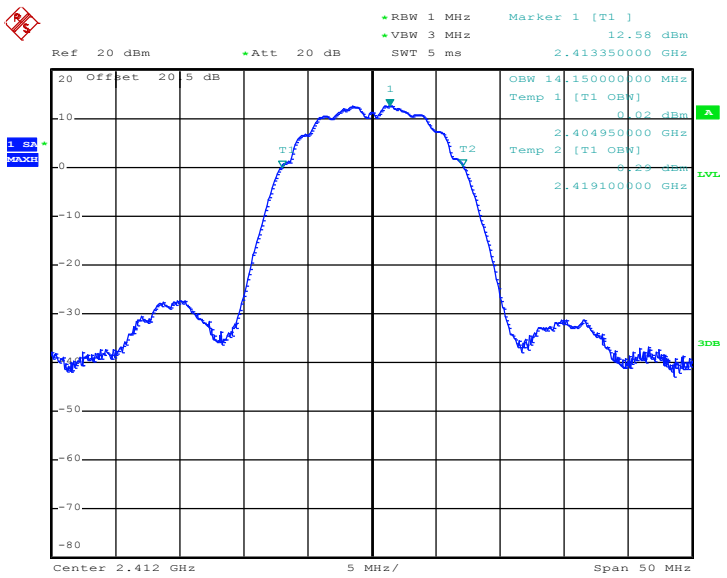
3.1.6 Test Result of 99% Occupied Bandwidth

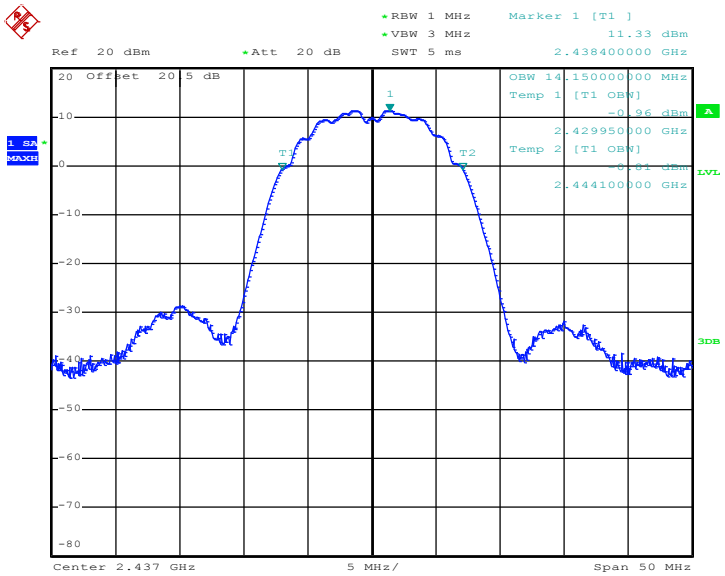
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)
01	2412	14.15
06	2437	14.15
11	2462	14.15

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

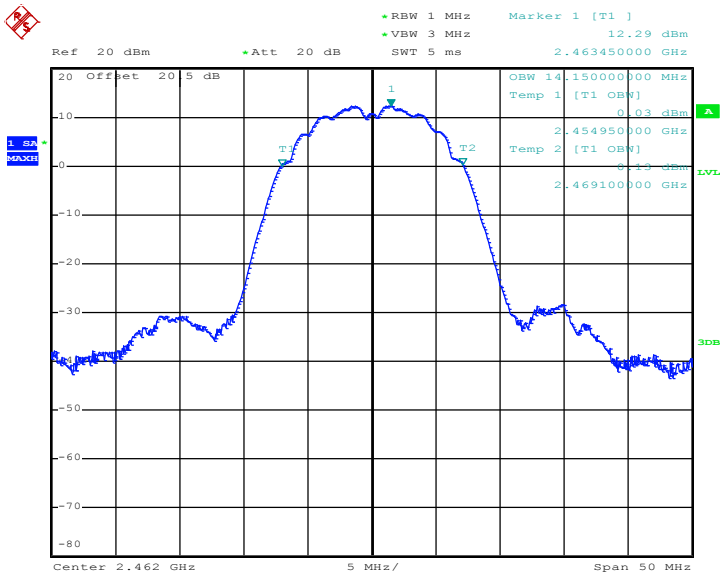


Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 26.APR.2012 17:09:13

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

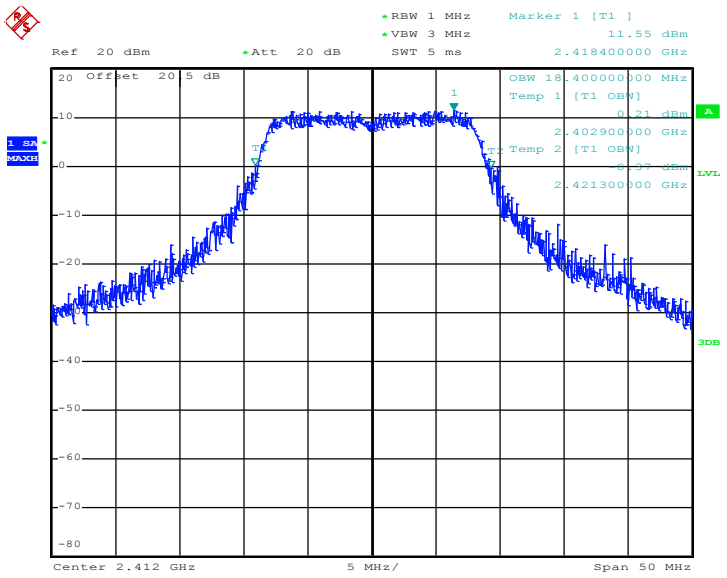


Date: 26.APR.2012 17:09:44

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

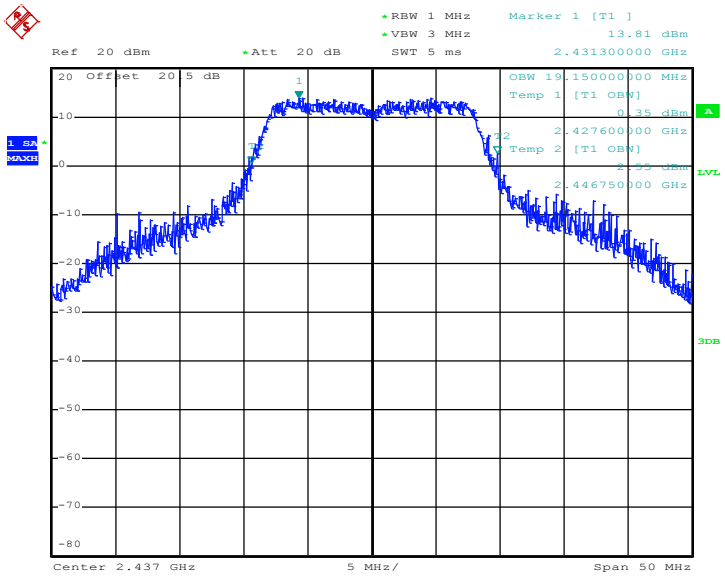
Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)
01	2412	18.40
06	2437	19.15
11	2462	18.35

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



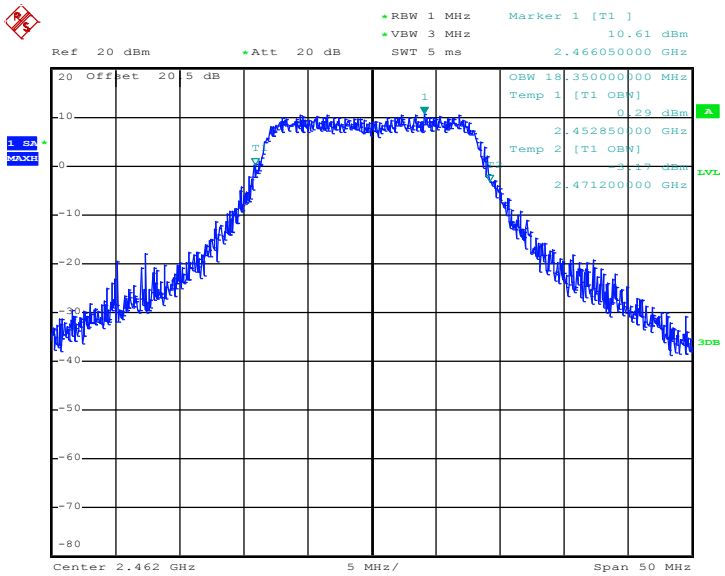
Date: 26.APR.2012 17:12:19

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



Date: 26.APR.2012 17:12:52

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

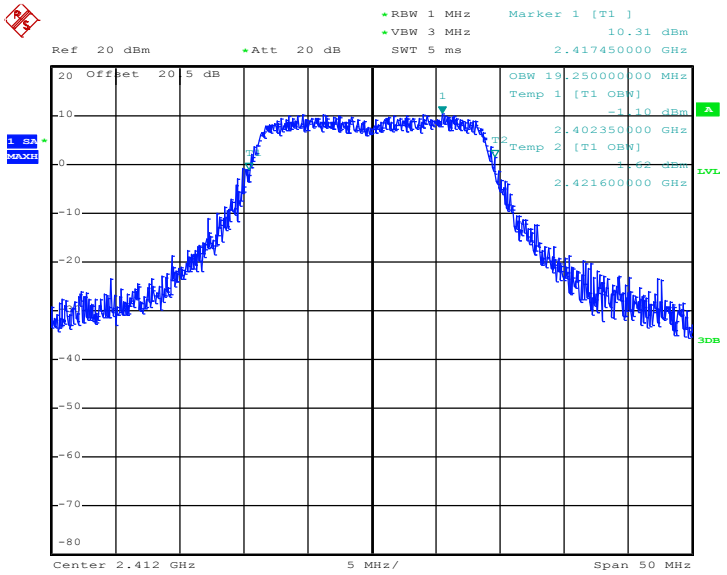


Date: 26.APR.2012 17:11:41

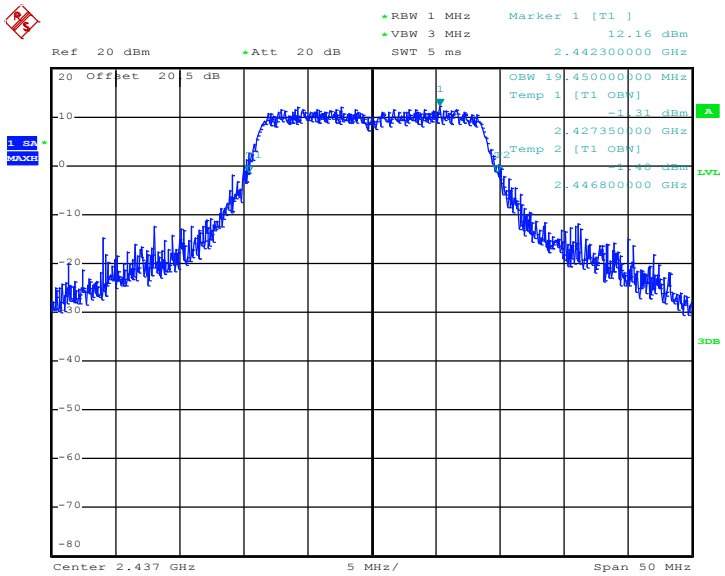
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 99% Occupied Bandwidth (MHz)
01	2412	19.25
06	2437	19.45
11	2462	19.20

Mode 7 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 01

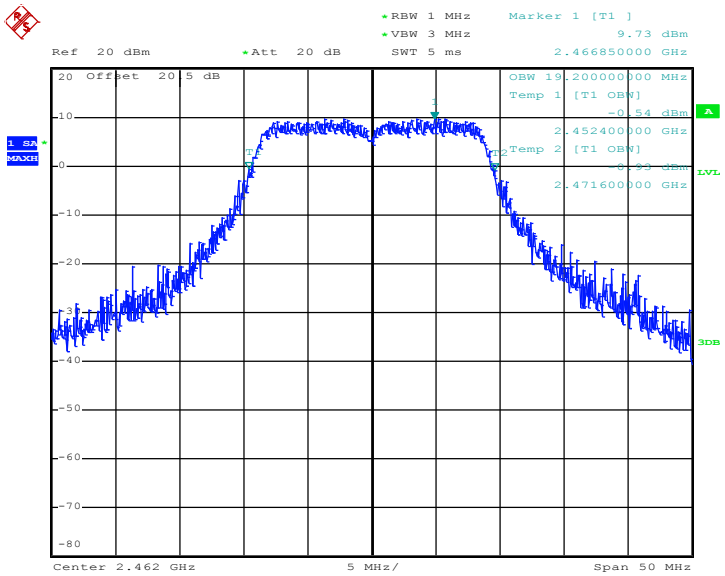


Mode 8 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 06



Date: 26.APR.2012 17:16:41

Mode 9 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 11

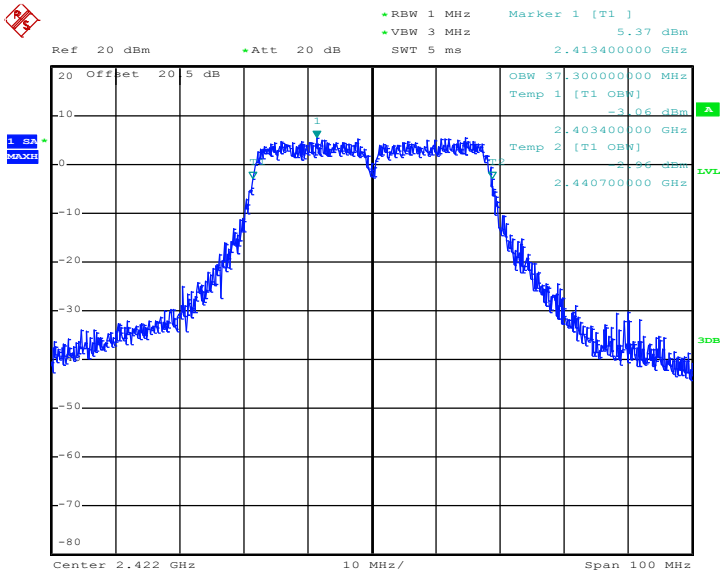


Date: 26.APR.2012 17:17:17

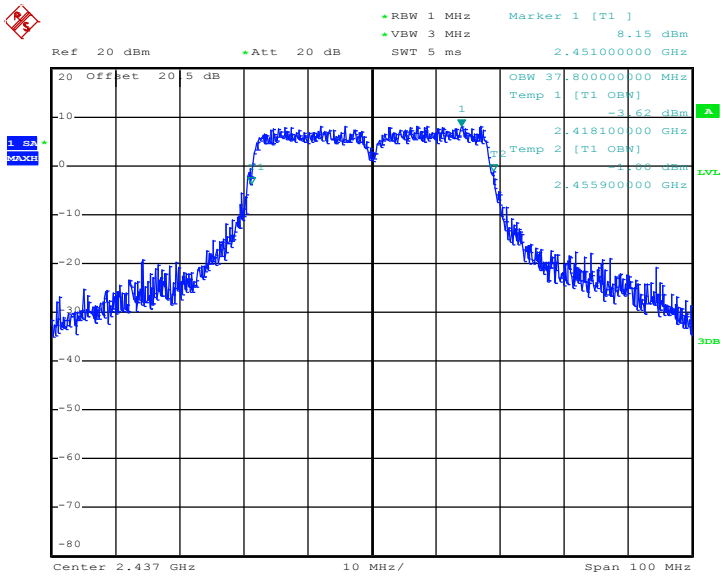
Test Mode :	Mode 10, 11, 12	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 40MHz) 99% Occupied Bandwidth (MHz)
03	2422	37.30
06	2437	37.80
09	2452	37.50

Mode 10 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 03

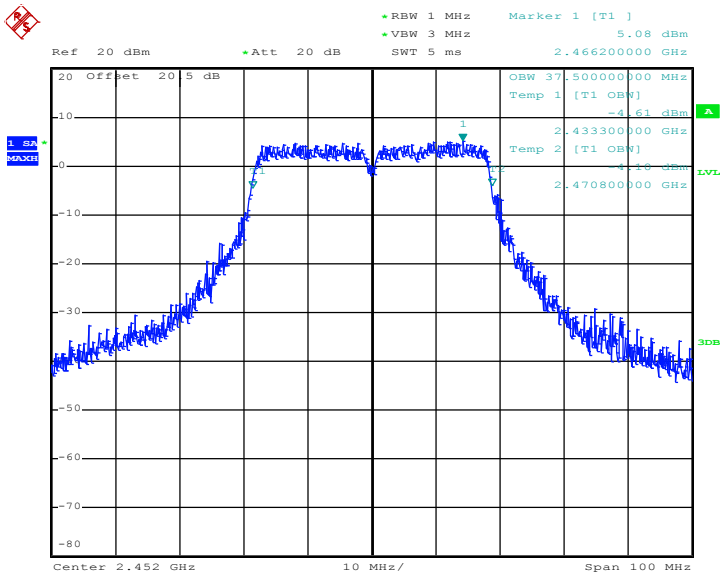


Mode 11 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 06



Date: 26.APR.2012 17:19:16

Mode 12 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 40MHz) Channel 09



Date: 26.APR.2012 17:19:59

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.

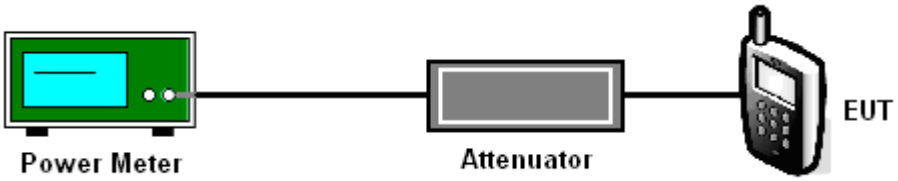
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure Option 3 (peak power meter method) of FCC KDB No. 558074 DTS Meas. Guidance DR01.
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℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.30	30	Pass
06	2437	19.94	30	Pass
11	2462	19.83	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.90	30	Pass
06	2437	24.91	30	Pass
11	2462	23.27	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.00	30	Pass
06	2437	24.25	30	Pass
11	2462	22.75	30	Pass

Test Mode :	Mode 10, 11, 12	**Temperature :**	24~26℃
Test Engineer :	Pinkston Tu	**Relative Humidity :**	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 40MHz) Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	21.76	30	Pass
06	2437	24.18	30	Pass
09	2452	22.10	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

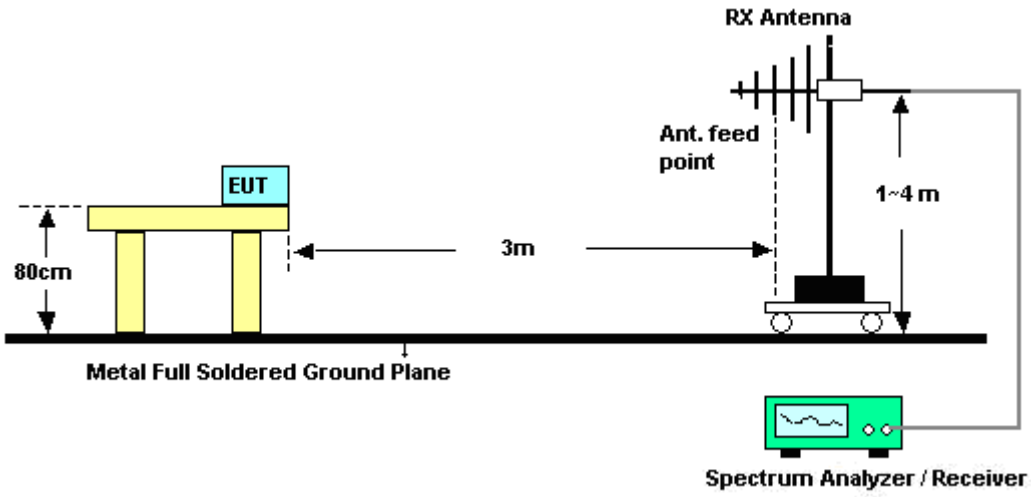
See list of measuring instruments of this test report.

3.3.3 Test Procedures

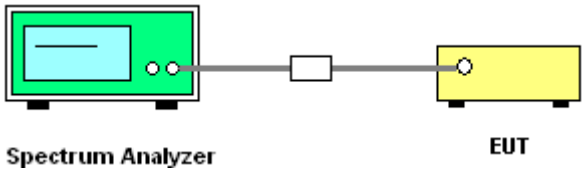
1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01.
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) ≥ RBW. Out of the authorized frequency band emissions must be at least 20 dB lower than the highest emission level within the authorized band as measured with a 100 KHz RBW. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
3. Radiated emission test: Apply to band edge emissions that falling on 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 measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, then modify the unit for continuous operation. Use the settings in this paragraph to correct the reading level by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation per 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 :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke

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	57.91	-16.09	74	57.19	32.02	4.58	35.88	100	108	Peak
2386	50.48	-3.52	54	49.76	32.02	4.58	35.88	100	108	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	51.72	-22.28	74	51	32.02	4.58	35.88	100	243	Peak
2386	42.58	-11.42	54	41.86	32.02	4.58	35.88	100	243	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke

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
2487.84	59.53	-14.47	74	58.6	32.1	4.64	35.81	146	105	Peak
2487.84	52.6	-1.4	54	51.67	32.1	4.64	35.81	146	105	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
2483.5	54.14	-19.86	74	53.22	32.09	4.64	35.81	122	245	Peak
2483.5	46.54	-7.46	54	45.62	32.09	4.64	35.81	122	245	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke

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
2389.99	71.57	-2.43	74	70.83	32.02	4.58	35.86	113	107	Peak
2389.99	52.34	-1.66	54	51.6	32.02	4.58	35.86	113	107	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
2389.99	66.35	-7.65	74	65.61	32.02	4.58	35.86	130	14	Peak
2389.99	48.99	-5.01	54	48.25	32.02	4.58	35.86	130	14	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke

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
2483.5	72.6	-1.4	74	71.68	32.09	4.64	35.81	200	108	Peak
2483.5	51.73	-2.27	54	50.81	32.09	4.64	35.81	200	108	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
2483.85	66.24	-7.76	74	65.32	32.09	4.64	35.81	100	11	Peak
2483.85	46.93	-7.07	54	46.01	32.09	4.64	35.81	100	11	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke
Guard Interval:	800 ns		

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
2389.99	71.98	-2.02	74	71.24	32.02	4.58	35.86	117	108	Peak
2389.99	52.87	-1.13	54	52.13	32.02	4.58	35.86	117	108	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
2389.61	67.31	-6.69	74	66.59	32.02	4.58	35.88	131	15	Peak
2389.61	49.4	-4.6	54	48.68	32.02	4.58	35.88	131	15	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke
Guard Interval:	800 ns		

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
2483.5	71.1	-2.9	74	70.18	32.09	4.64	35.81	200	110	Peak
2483.5	52.4	-1.6	54	51.48	32.09	4.64	35.81	200	110	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
2485.18	63.89	-10.11	74	62.97	32.09	4.64	35.81	100	12	Peak
2485.18	47.29	-6.71	54	46.37	32.09	4.64	35.81	100	12	Average

Test Mode :	Mode 10	**Temperature :**	23~24℃
Test Band :	802.11g/n (BW 40MHz)	**Relative Humidity :**	45~46%
Test Channel :	03	**Test Engineer :**	David Ke
Guard Interval:	800 ns		

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**
2384.67	69.64	-4.36	74	68.94	32	4.58	35.88	187	292	Peak
2384.67	52.92	-1.08	54	52.22	32	4.58	35.88	187	292	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**
2384.86	66.06	-7.94	74	65.36	32	4.58	35.88	131	13	Peak
2384.86	49.6	-4.4	54	48.9	32	4.58	35.88	131	13	Average

Test Mode :	Mode 12	**Temperature :**	23~24℃
Test Band :	802.11g/n (BW 40MHz)	**Relative Humidity :**	45~46%
Test Channel :	09	**Test Engineer :**	David Ke
Guard Interval:	800 ns		

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**
2483.66	68.62	-5.38	74	67.7	32.09	4.64	35.81	142	109	Peak
2483.66	52.7	-1.3	54	51.78	32.09	4.64	35.81	142	109	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**
2493.16	58.8	-15.2	74	57.86	32.1	4.64	35.8	133	11	Peak
2493.16	43.96	-10.04	54	43.02	32.1	4.64	35.8	133	11	Average

Test Mode :	Mode 13	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke

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
2386.19	53.09	-20.91	74	52.37	32.02	4.58	35.88	111	193	Peak
2386.19	45.08	-8.92	54	44.36	32.02	4.58	35.88	111	193	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
2386.19	59.09	-14.91	74	58.37	32.02	4.58	35.88	100	126	Peak
2386.19	52.32	-1.68	54	51.6	32.02	4.58	35.88	100	126	Average

Test Mode :	Mode 15	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke

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
2487.65	52.61	-21.39	74	51.68	32.1	4.64	35.81	110	194	Peak
2487.65	44.13	-9.87	54	43.2	32.1	4.64	35.81	110	194	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
2487.65	58.03	-15.97	74	57.1	32.1	4.64	35.81	100	71	Peak
2487.65	51.19	-2.81	54	50.26	32.1	4.64	35.81	100	71	Average

Test Mode :	Mode 16	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke

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
2389.99	68.78	-5.22	74	68.04	32.02	4.58	35.86	114	187	Peak
2389.99	47.3	-6.7	54	46.56	32.02	4.58	35.86	114	187	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
2389.8	71.79	-2.21	74	71.05	32.02	4.58	35.86	150	120	Peak
2389.8	51.24	-2.76	54	50.5	32.02	4.58	35.86	150	120	Average

Test Mode :	Mode 18	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke

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
2483.5	67.83	-6.17	74	66.91	32.09	4.64	35.81	110	192	Peak
2483.5	43.89	-10.11	54	42.97	32.09	4.64	35.81	110	192	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
2483.5	72.49	-1.51	74	71.57	32.09	4.64	35.81	100	106	Peak
2483.5	48.9	-5.1	54	47.98	32.09	4.64	35.81	100	106	Average

Test Mode :	Mode 19	Temperature :	23~24℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	David Ke
Guard Interval:	800 ns		

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
2389.8	67.23	-6.77	74	66.49	32.02	4.58	35.86	114	192	Peak
2389.8	44.33	-9.67	54	43.59	32.02	4.58	35.86	114	192	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
2389.61	72.23	-1.77	74	71.51	32.02	4.58	35.88	100	122	Peak
2389.61	50.57	-3.43	54	49.85	32.02	4.58	35.88	100	122	Average

Test Mode :	Mode 21	Temperature :	23~24℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	David Ke
Guard Interval:	800 ns		

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
2484.42	67.29	-6.71	74	66.37	32.09	4.64	35.81	110	192	Peak
2484.42	43.66	-10.34	54	42.74	32.09	4.64	35.81	110	192	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
2483.66	72.9	-1.1	74	71.98	32.09	4.64	35.81	100	117	Peak
2483.66	50.55	-3.45	54	49.63	32.09	4.64	35.81	100	117	Average

Test Mode :	Mode 22	**Temperature :**	23~24℃
Test Band :	802.11g/n (BW 40MHz)	**Relative Humidity :**	45~46%
Test Channel :	03	**Test Engineer :**	David Ke
Guard Interval:	800 ns		

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**
2389.23	64.75	-9.25	74	64.03	32.02	4.58	35.88	114	188	Peak
2389.23	46.69	-7.31	54	45.97	32.02	4.58	35.88	114	188	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**
2389.61	69.39	-4.61	74	68.67	32.02	4.58	35.88	100	156	Peak
2389.61	50.88	-3.12	54	50.16	32.02	4.58	35.88	100	156	Average

Test Mode :	Mode 24	**Temperature :**	23~24℃
Test Band :	802.11g/n (BW 40MHz)	**Relative Humidity :**	45~46%
Test Channel :	09	**Test Engineer :**	David Ke
Guard Interval:	800 ns		

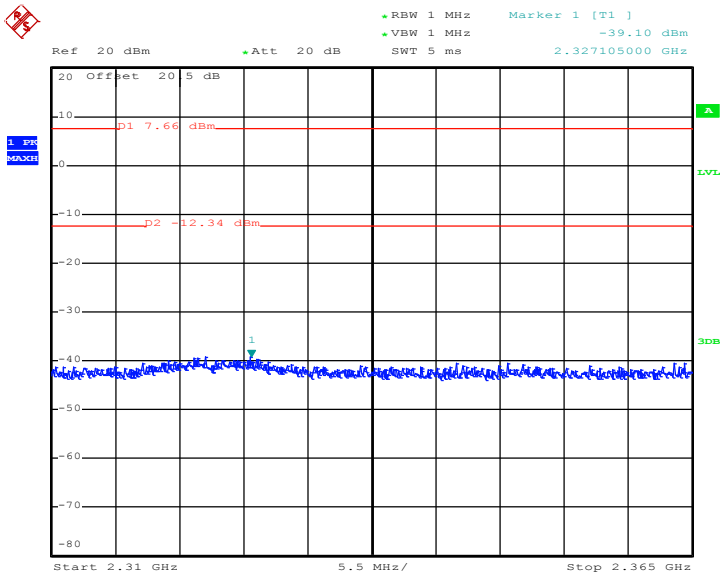
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2485.94	62.47	-11.53	74	61.55	32.09	4.64	35.81	102	265	Peak
2485.94	43.42	-10.58	54	42.5	32.09	4.64	35.81	102	265	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**
2486.7	73	-1	74	72.07	32.1	4.64	35.81	100	131	Peak
2486.7	52.7	-1.3	54	51.78	32.09	4.64	35.81	100	131	Average

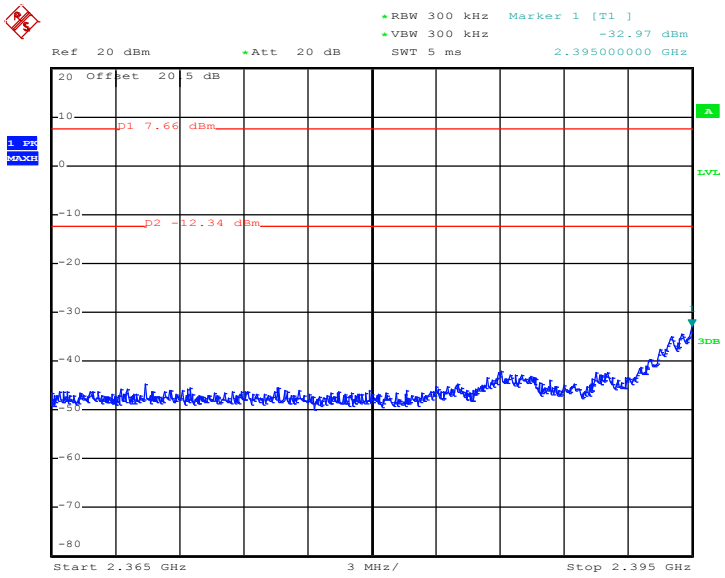
3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

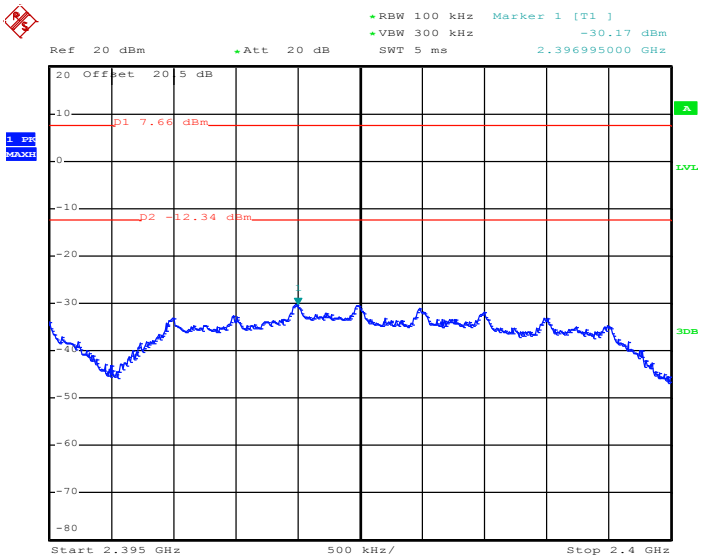
Low Band Edge Plot on 802.11b Channel 01



Date: 21.APR.2012 14:45:04

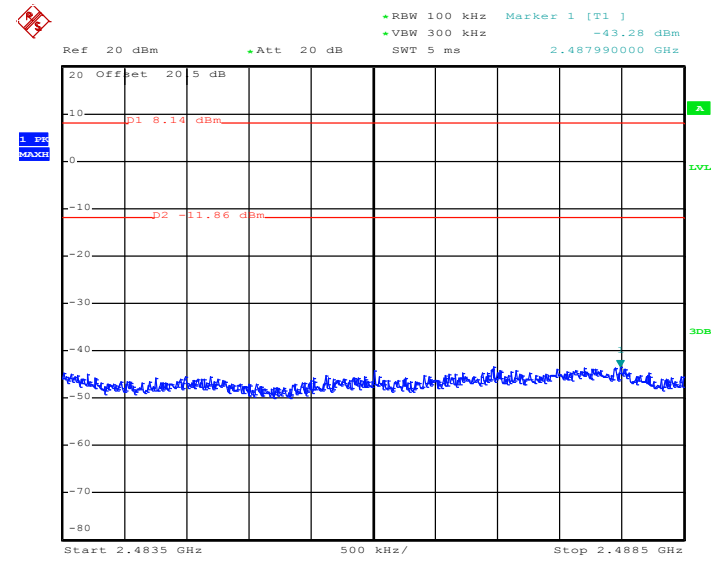


Date: 21.APR.2012 14:45:16

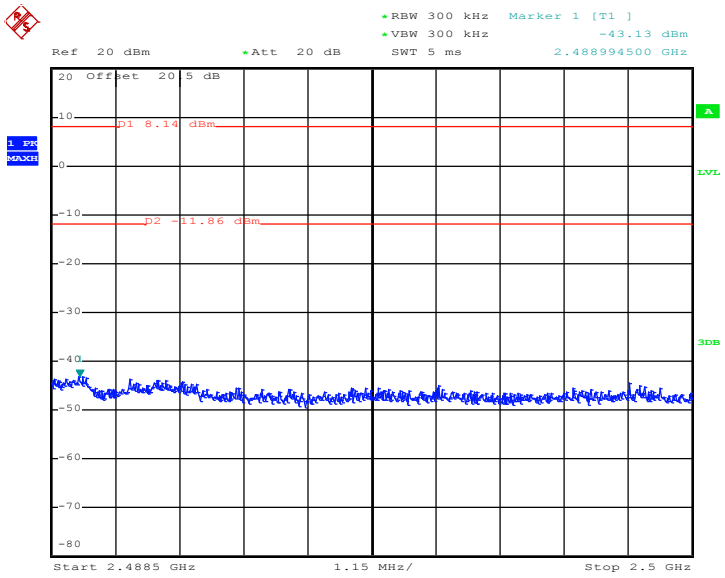


Date: 21.APR.2012 14:45:30

High Band Edge Plot on 802.11b Channel 11



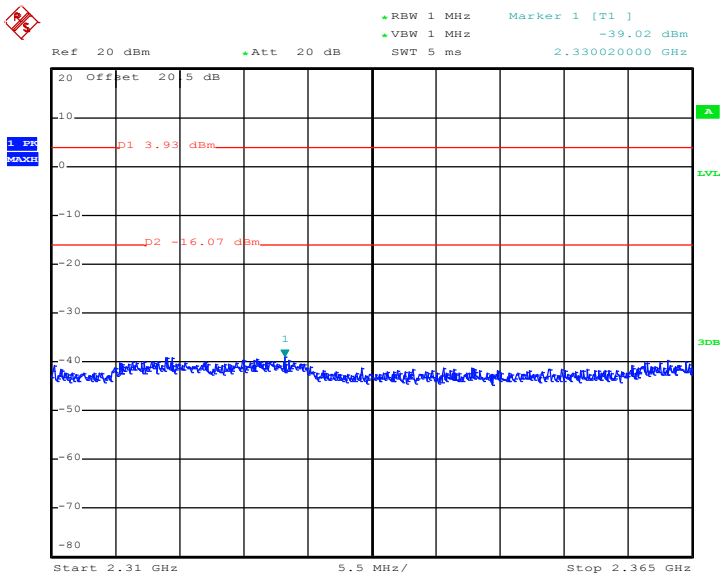
Date: 21.APR.2012 14:51:41



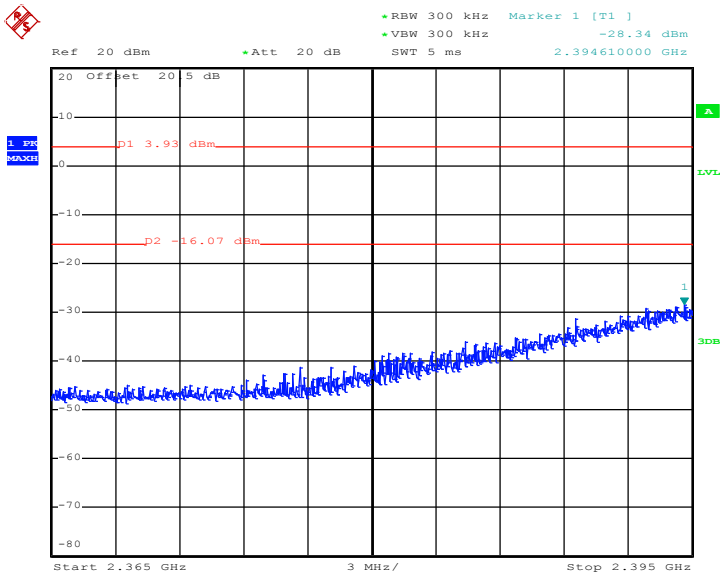
Date: 21.APR.2012 14:51:28

Test Mode :	Mode 4 and 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

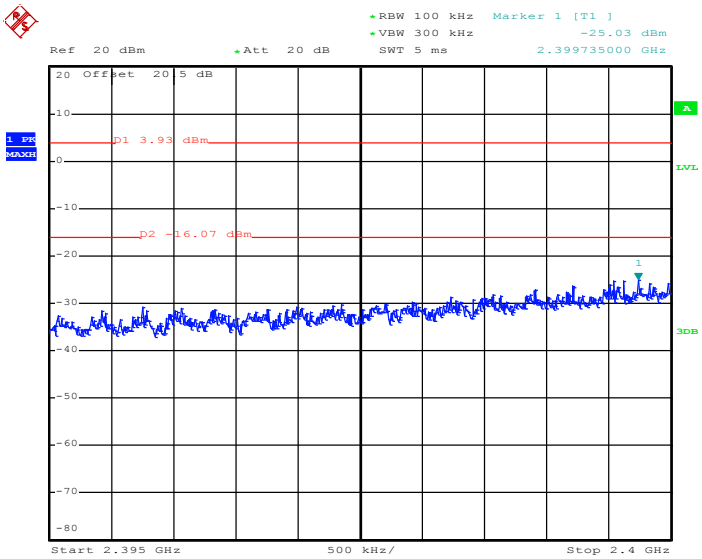
Low Band Edge Plot on 802.11g Channel 01



Date: 25.APR.2012 10:35:07

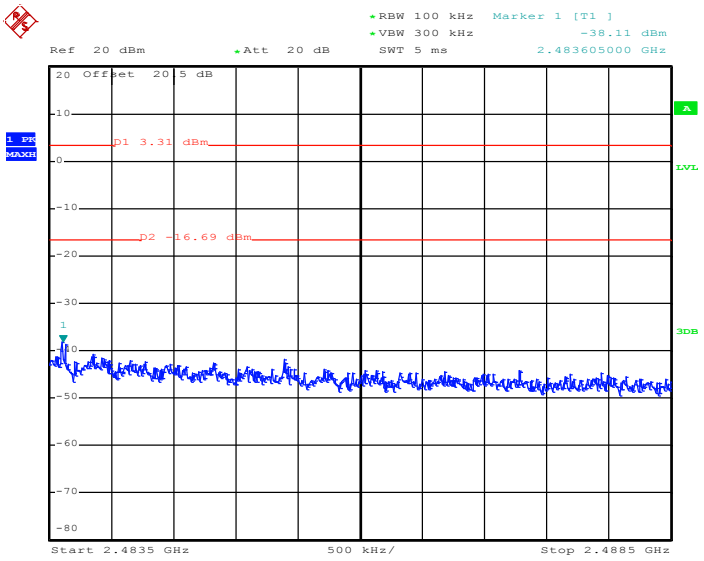


Date: 25.APR.2012 10:35:20

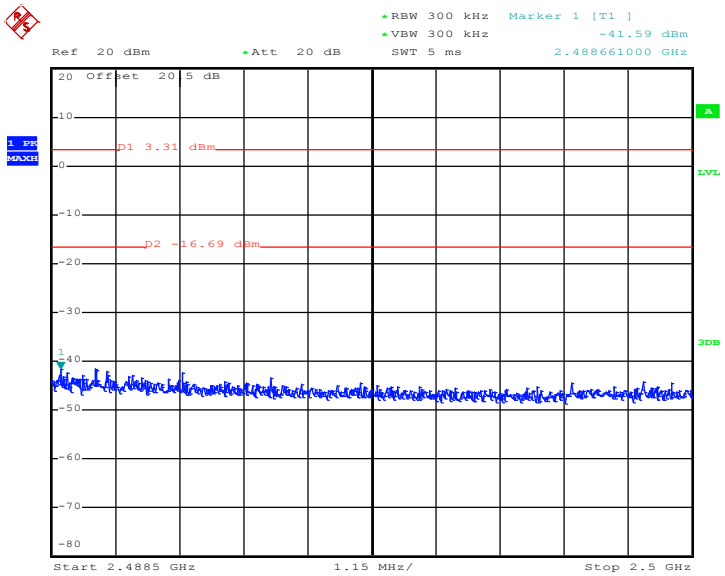


Date: 25.APR.2012 10:35:32

High Band Edge Plot on 802.11g Channel 11



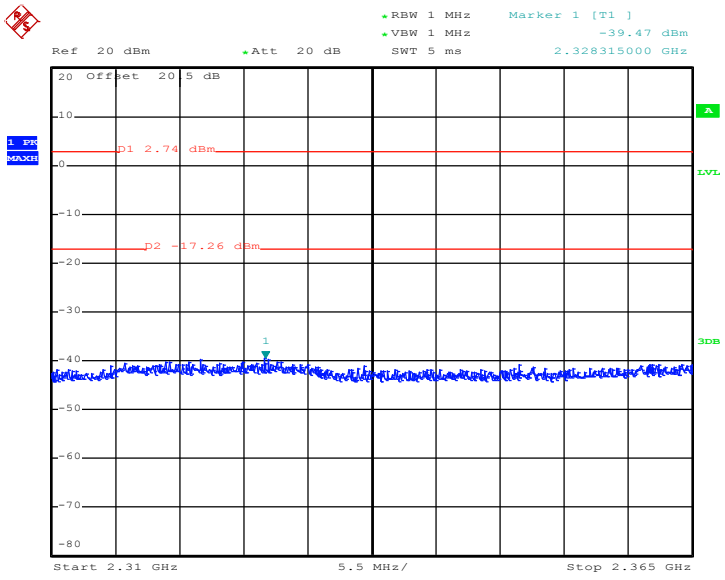
Date: 25.APR.2012 10:48:41



Date: 25.APR.2012 10:48:29

Test Mode :	Mode 7 and 9	**Temperature :**	24~26℃
Test Band :	802.11g/n (BW 20MHz)	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Pinkston Tu
Guard Interval:	800 ns		

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



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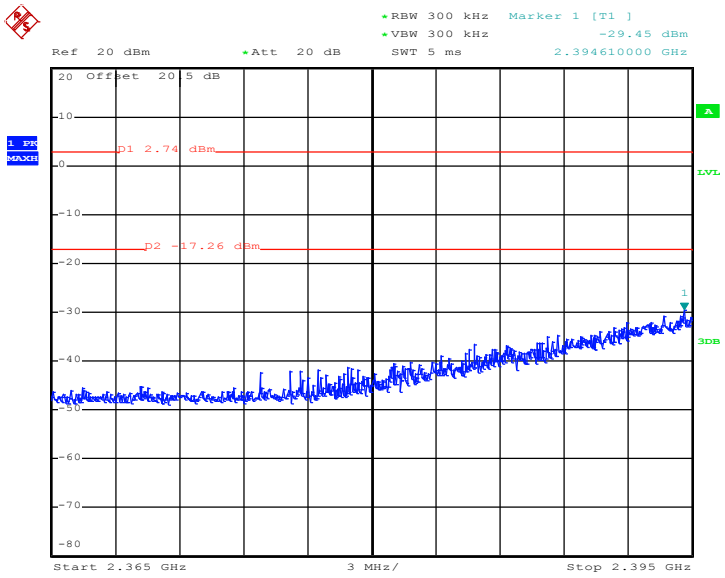
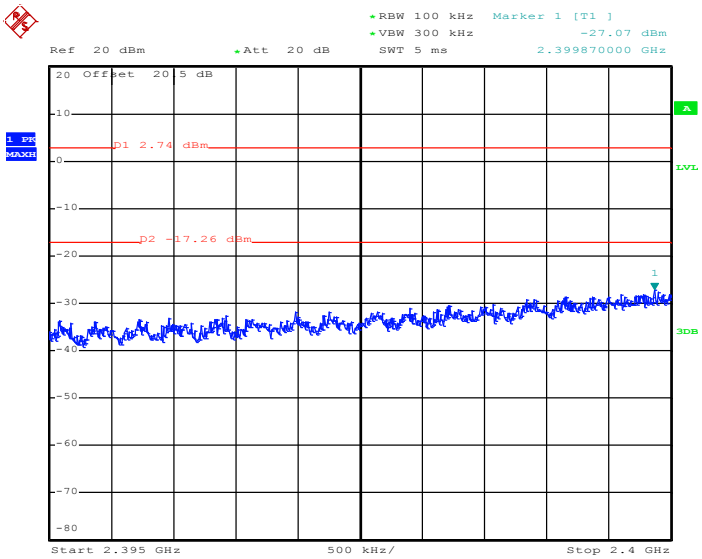
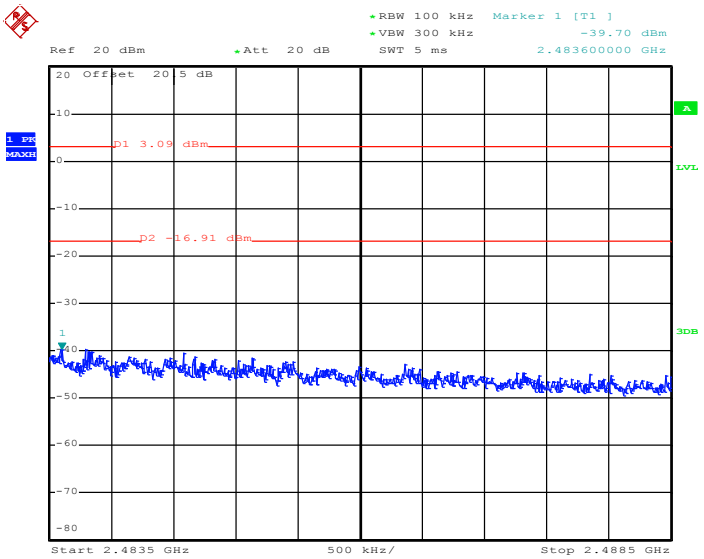


Date: 25.APR.2012 10:55:01

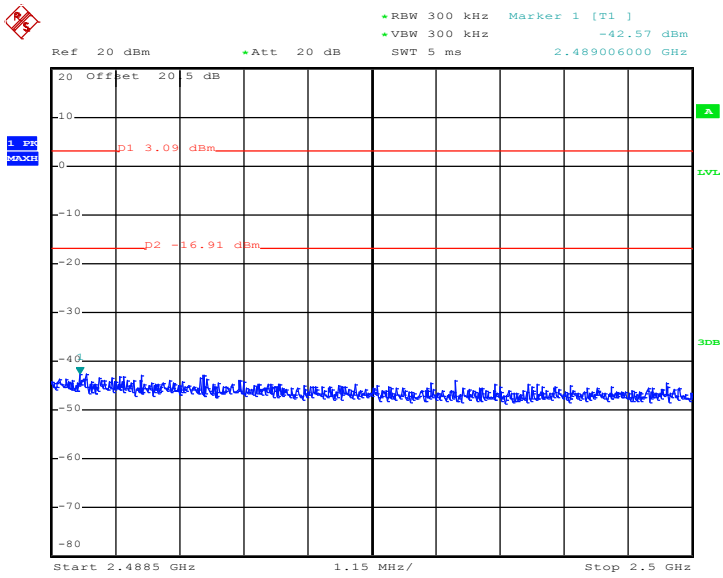


Date: 25.APR.2012 10:55:13

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



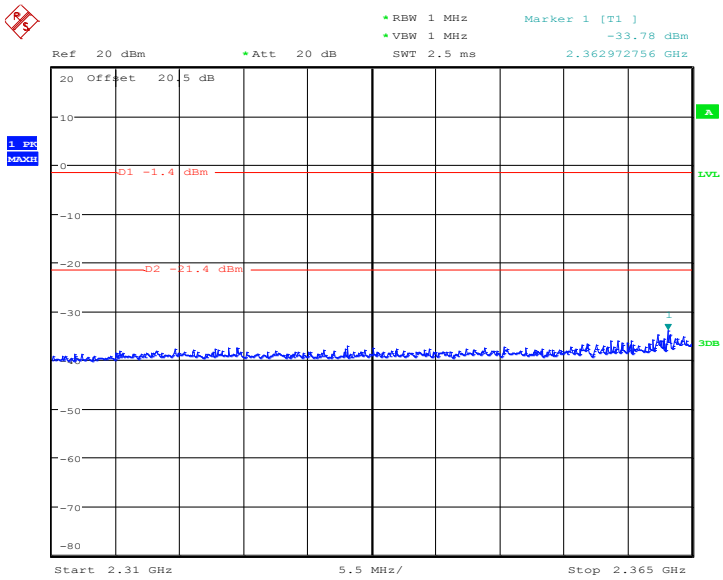
Date: 25.APR.2012 11:07:07



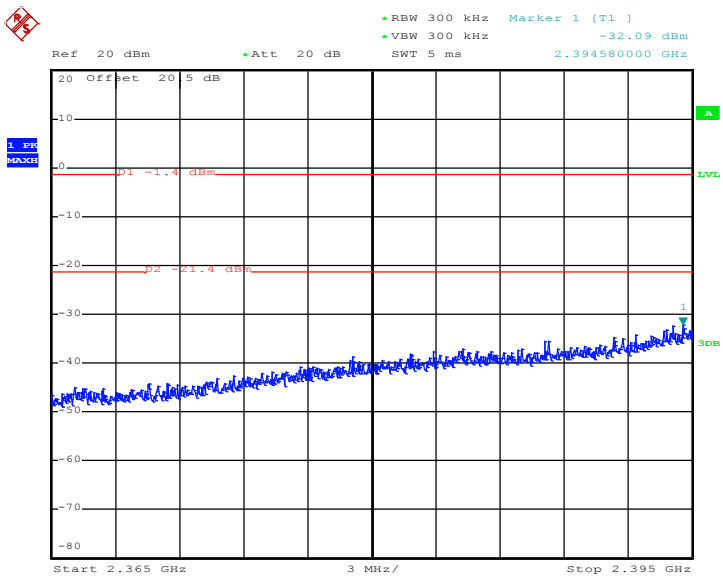
Date: 25.APR.2012 11:06:55

Test Mode :	Mode 10 and 12	**Temperature :**	24~26℃
Test Band :	802.11g/n (BW 40MHz)	**Relative Humidity :**	50~53%
Test Channel :	03 and 09	**Test Engineer :**	Pinkston Tu
Guard Interval:	800 ns		

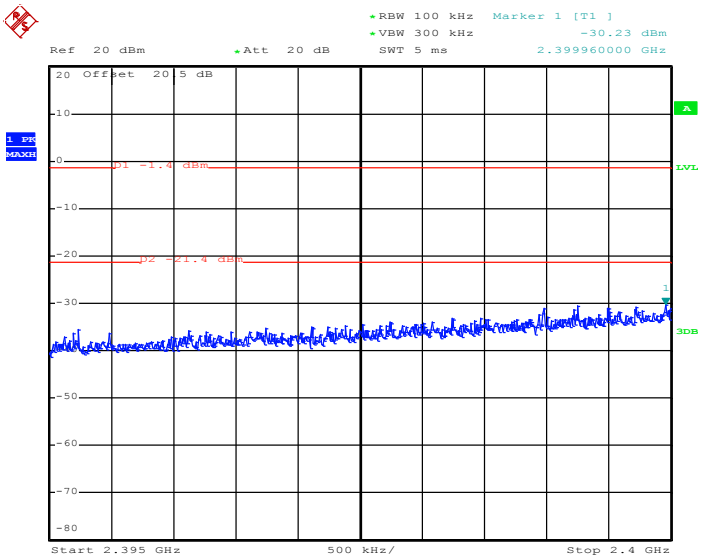
Low Band Edge Plot on 802.11g/n (BW 40MHz) Channel 03



Date: 25.MAY.2012 17:13:02

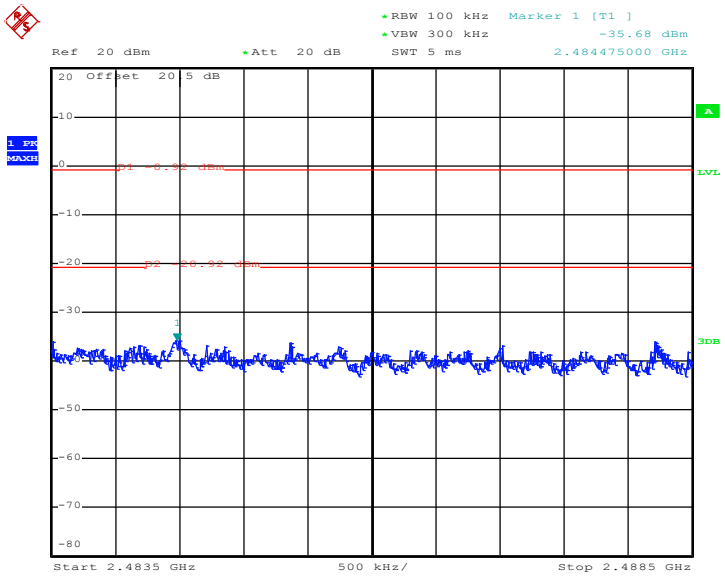


Date: 25.APR.2012 11:25:32

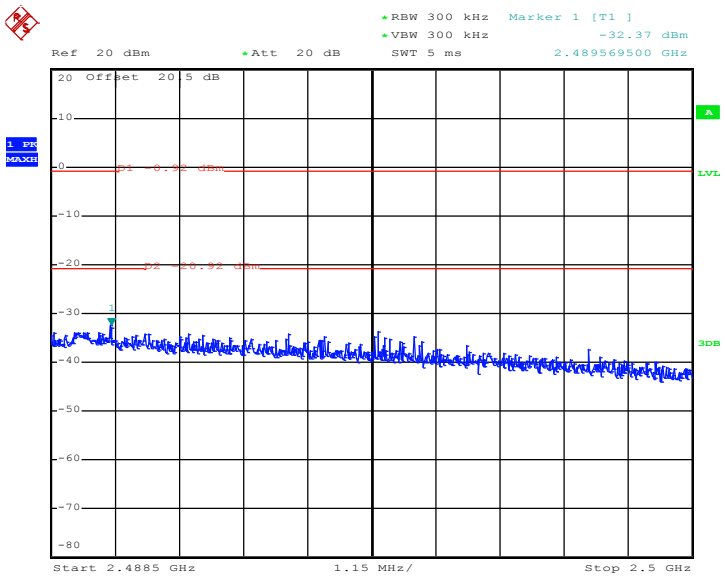


Date: 25.APR.2012 11:25:44

High Band Edge Plot on 802.11g/n (BW 40MHz) Channel 09



Date: 25.APR.2012 11:46:49



Date: 25.APR.2012 11:47:01

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

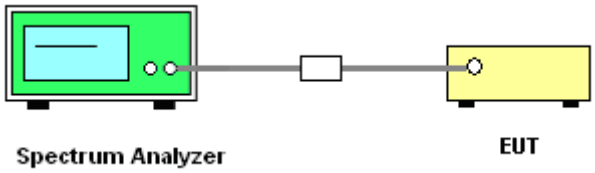
3.4.2 Measuring Instruments

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. The path loss was compensated to the results for each measurement.
2. Set RBW = 100 KHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW.

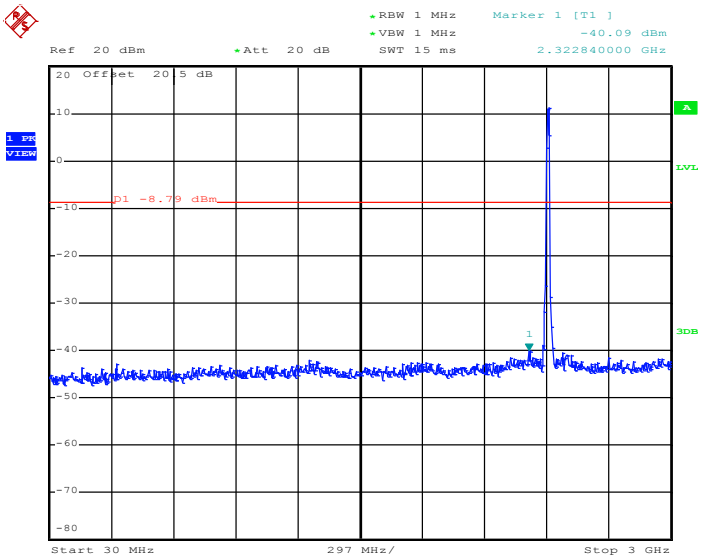
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

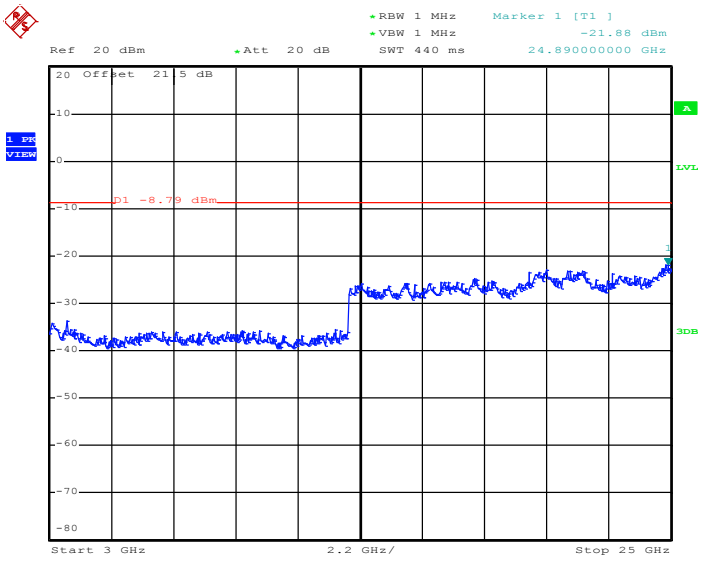
Test Mode :	Mode 1	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.APR.2012 14:45:59

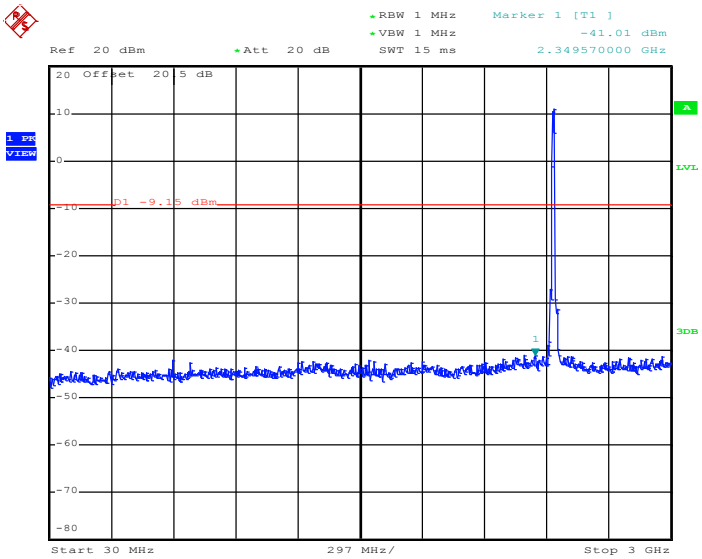
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 21.APR.2012 14:46:18

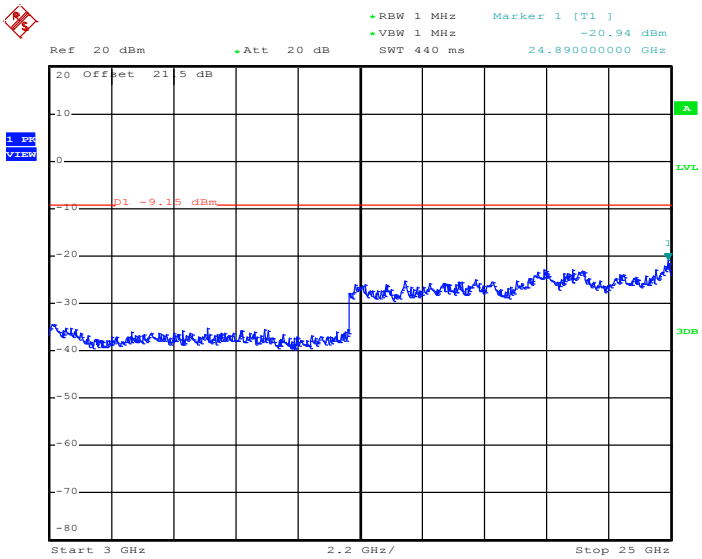
Test Mode :	Mode 2	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.APR.2012 14:48:30

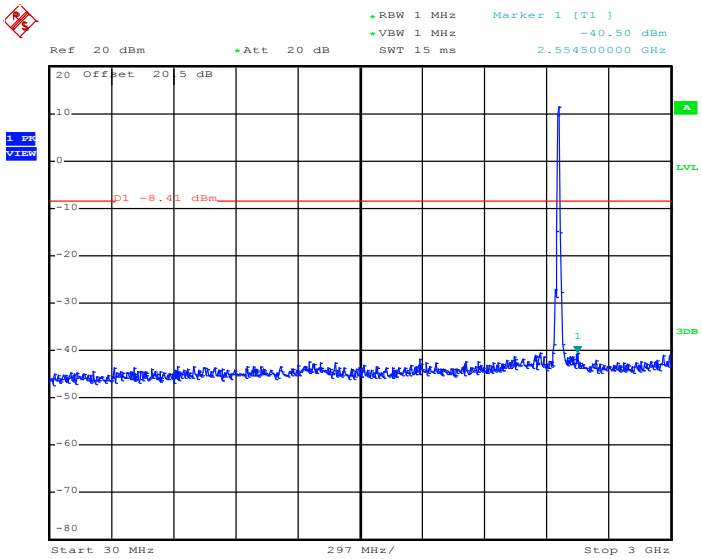
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 21.APR.2012 14:48:48

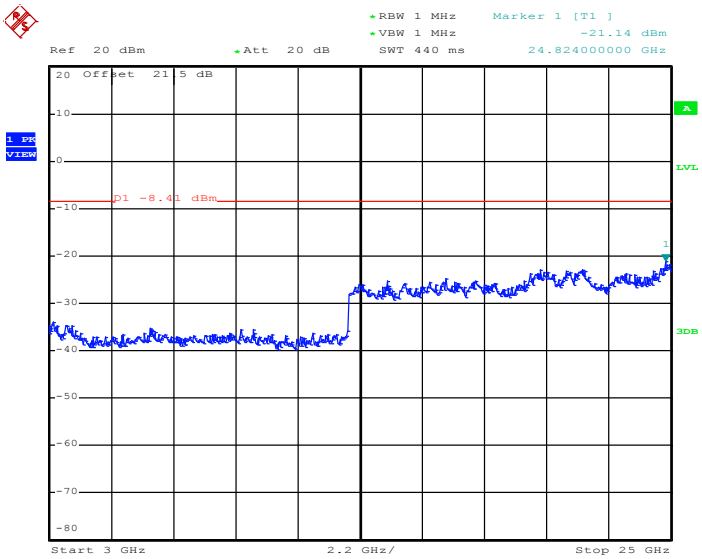
Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.APR.2012 14:52:06

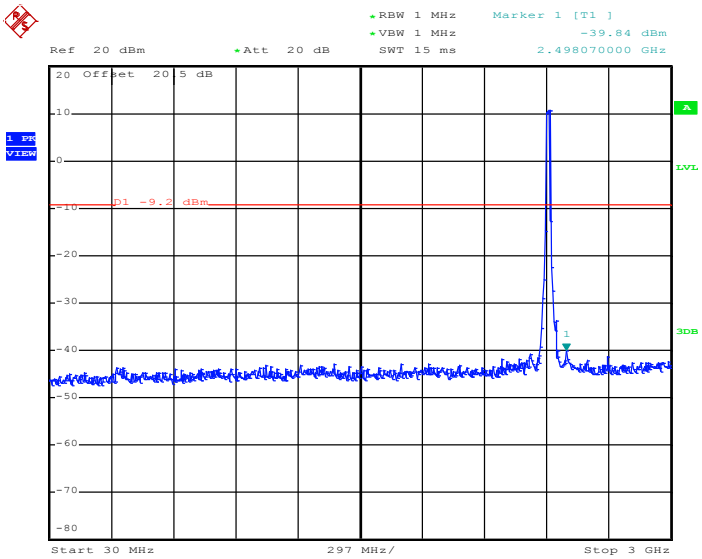
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 21.APR.2012 14:52:27

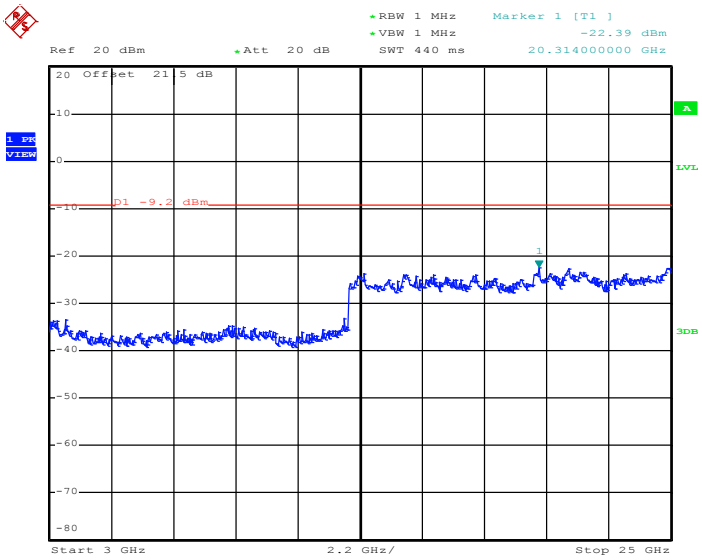
Test Mode :	Mode 4	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:16:57

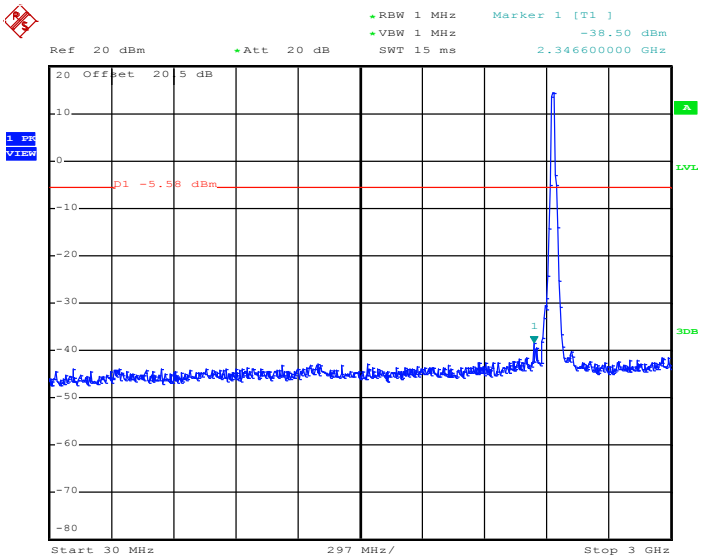
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:17:15

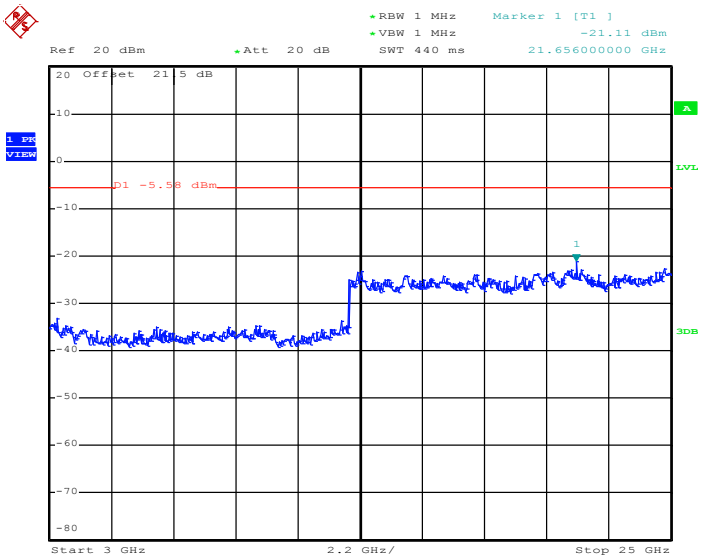
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	50~53
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:17:41

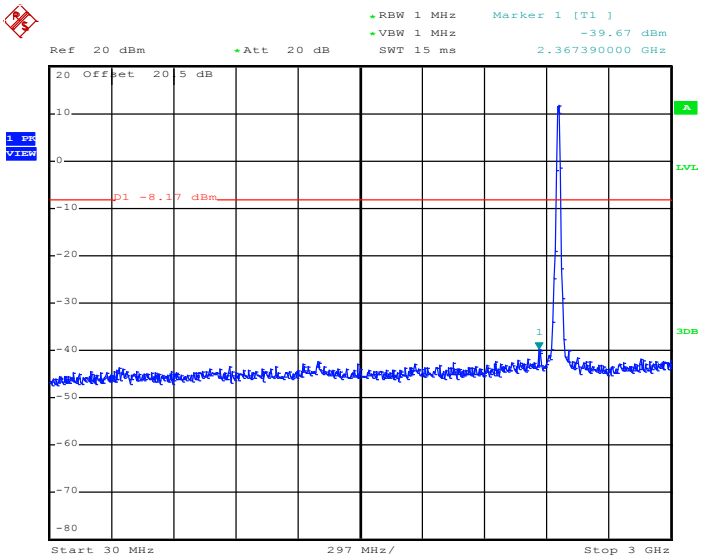
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:17:58

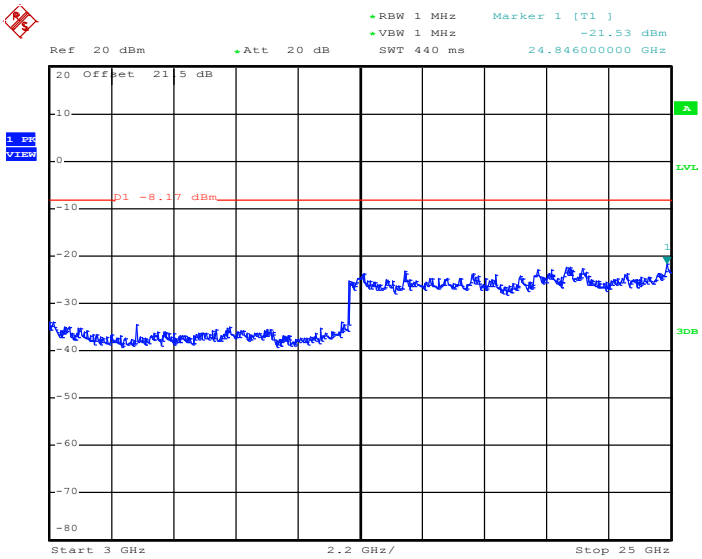
Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:18:23

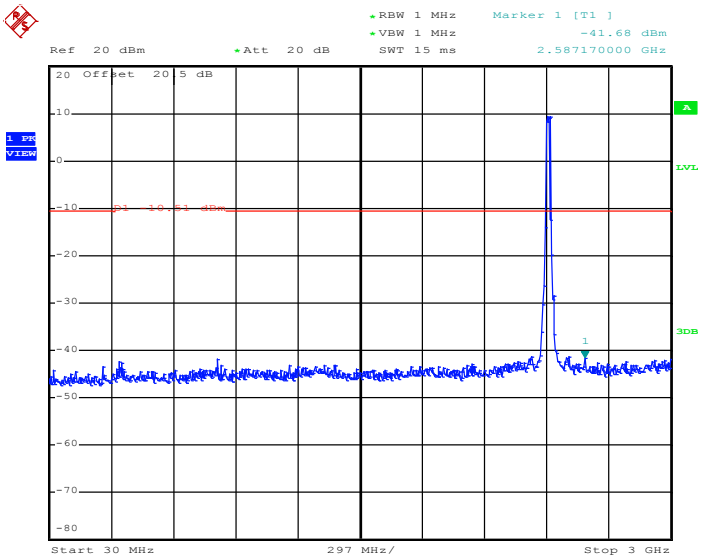
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:18:41

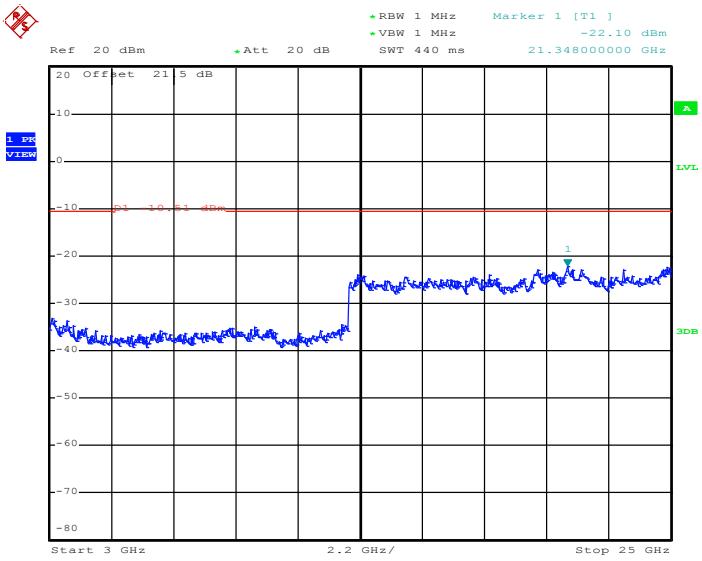
Test Mode :	Mode 7	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:14:55

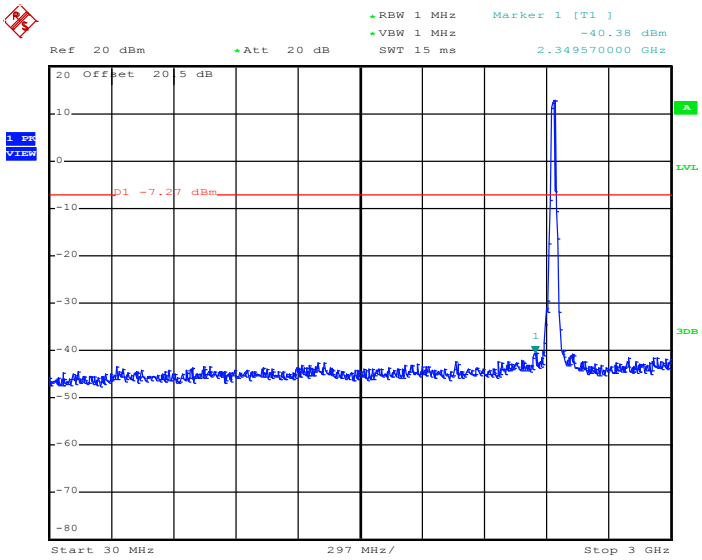
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:15:13

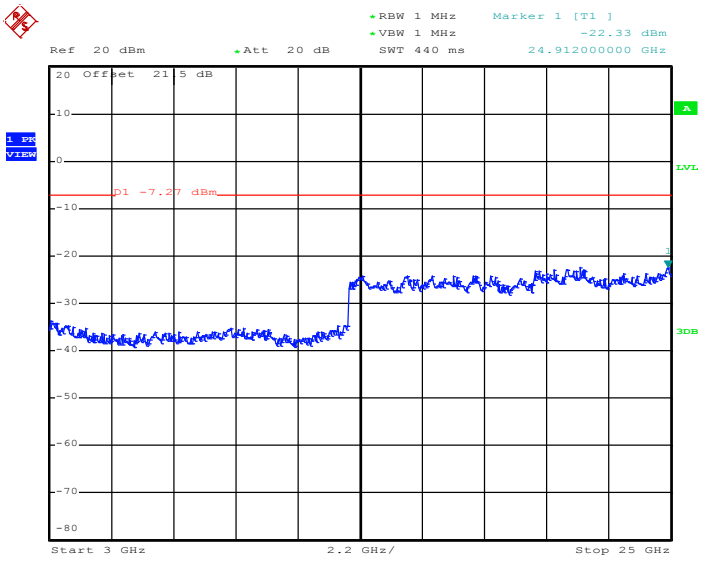
Test Mode :	Mode 8	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:13:25

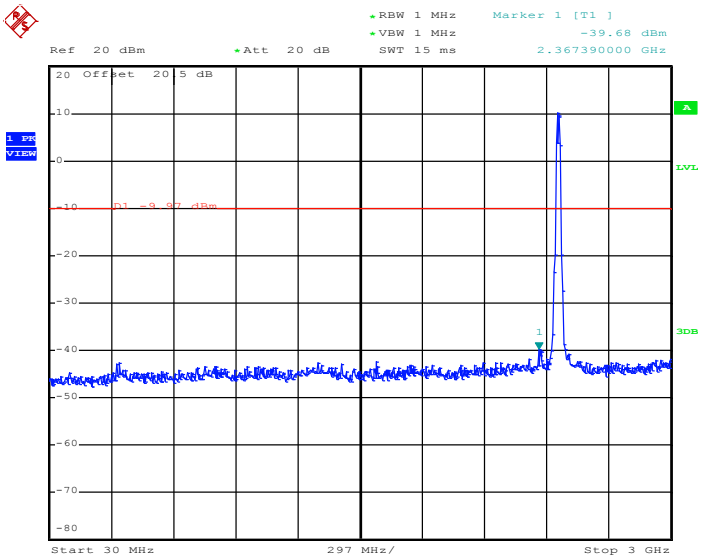
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:13:42

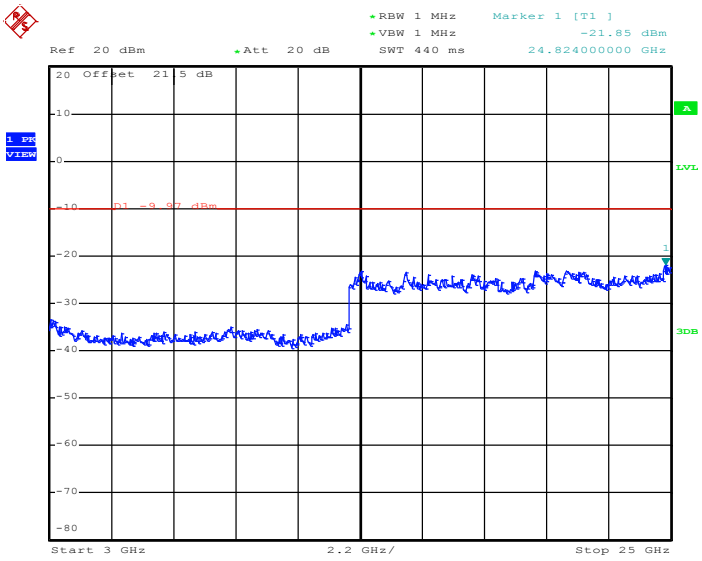
Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:15:34

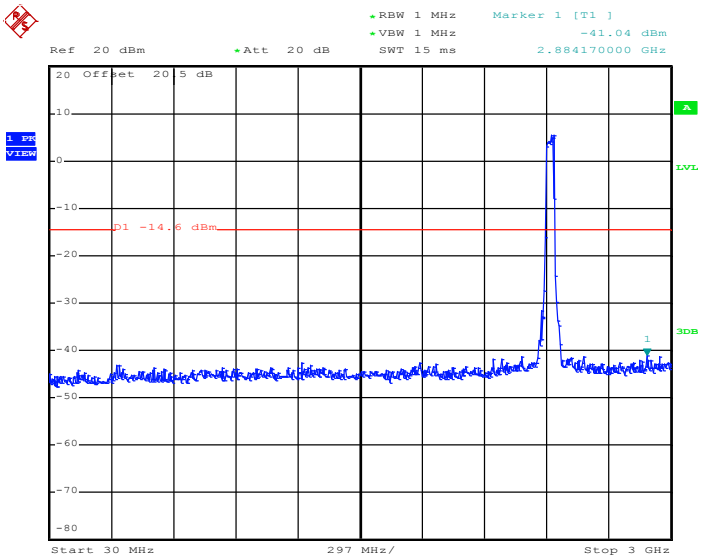
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:15:51

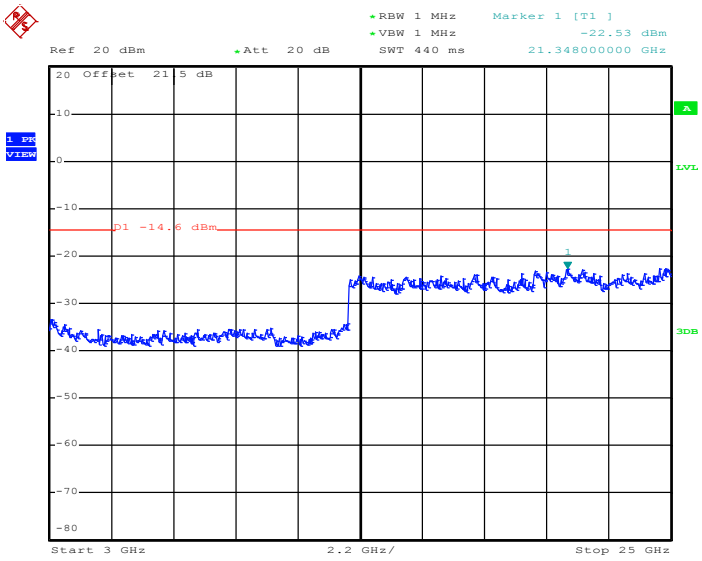
Test Mode :	Mode 10	Temperature :	24~26℃
Test Band :	802.11g/n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:27:52

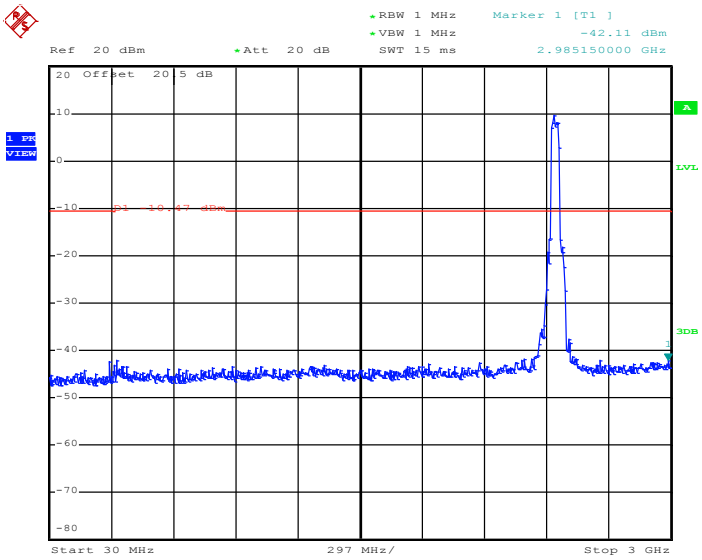
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:28:09

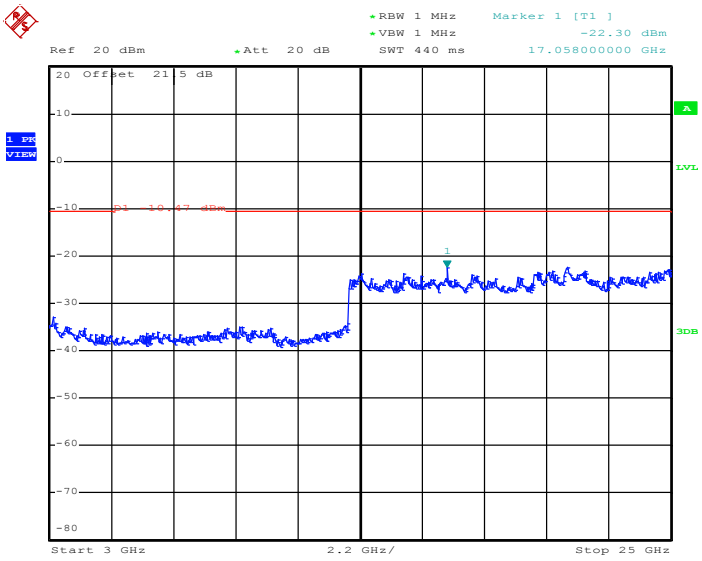
Test Mode :	Mode 11	Temperature :	24~26℃
Test Band :	802.11g/n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:42:55

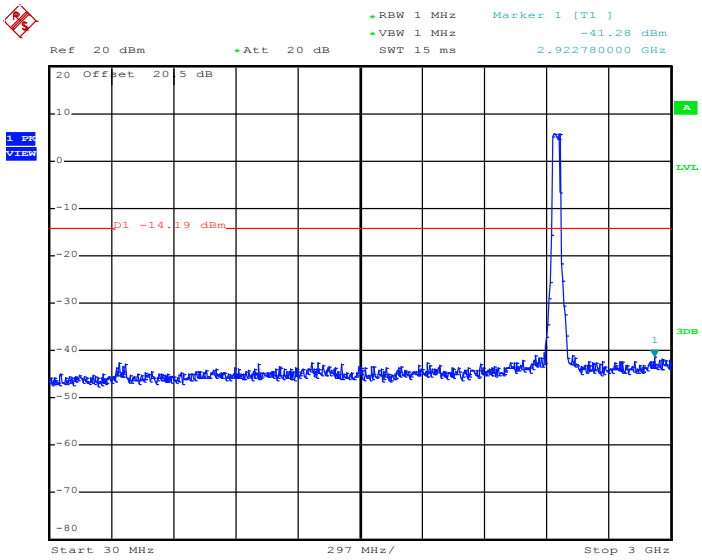
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:43:12

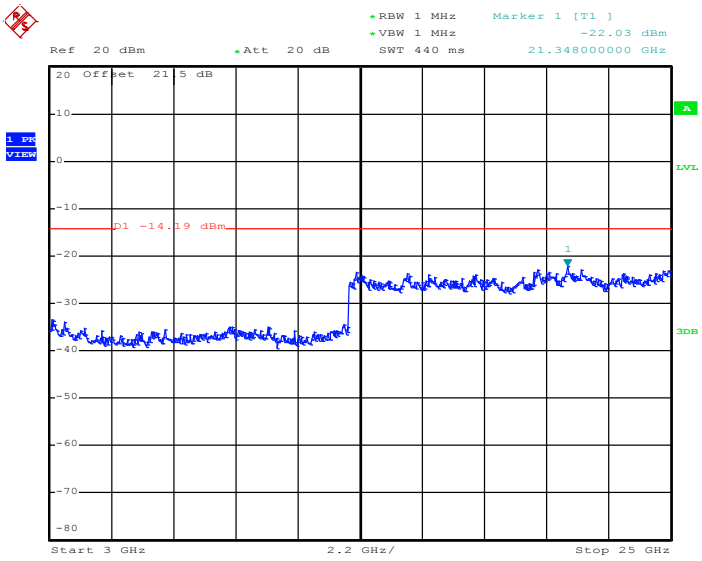
Test Mode :	Mode 12	Temperature :	24~26℃
Test Band :	802.11g/n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Pinkston Tu
Guard Interval:	800 ns		

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 25.APR.2012 11:47:21

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 25.APR.2012 11:47:38

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

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

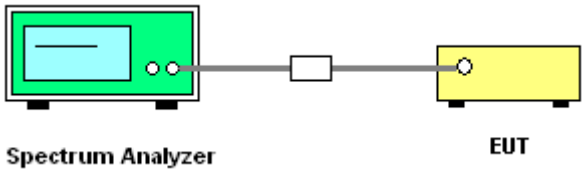
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01.
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. Record the measurement data derived from spectrum analyzer.
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 5-30% greater than Emission Bandwidth (EBW)
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 in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).

3.5.4 Test Setup



3.5.5 Test Result of Power Spectral Density

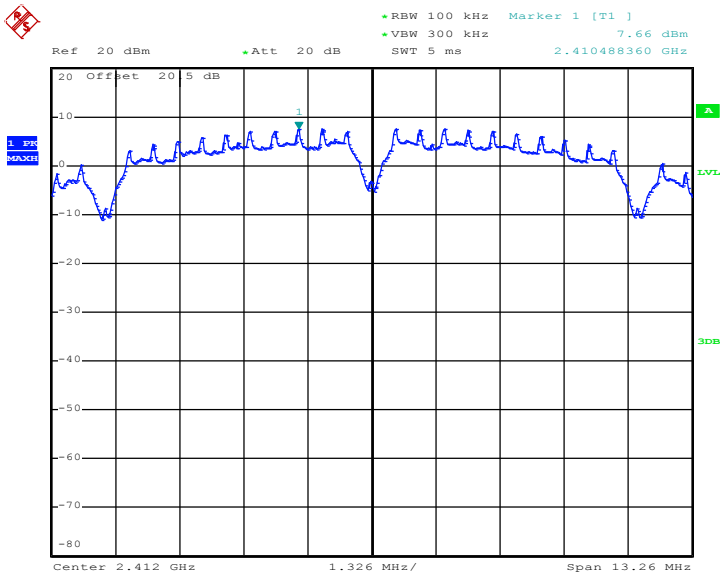
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	7.66	-7.54	8	Pass
06	2437	7.46	-7.74	8	Pass
11	2462	8.14	-7.06	8	Pass

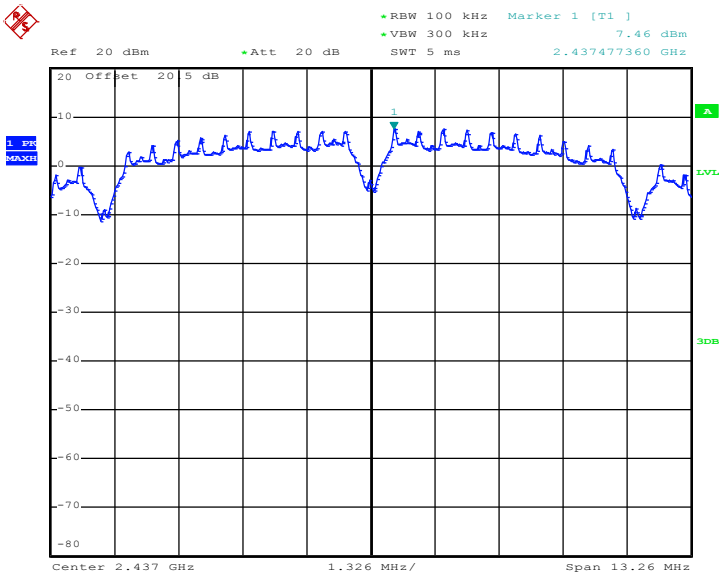
Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3kHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

Mode 1 : PSD Plot on 802.11b Channel 01

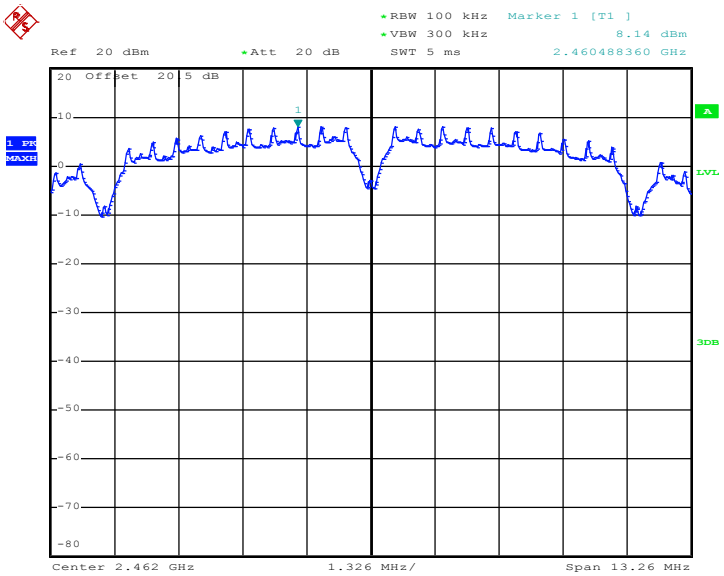


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 21.APR.2012 14:48:09

Mode 3 : PSD Plot on 802.11b Channel 11



Date: 21.APR.2012 14:51:11

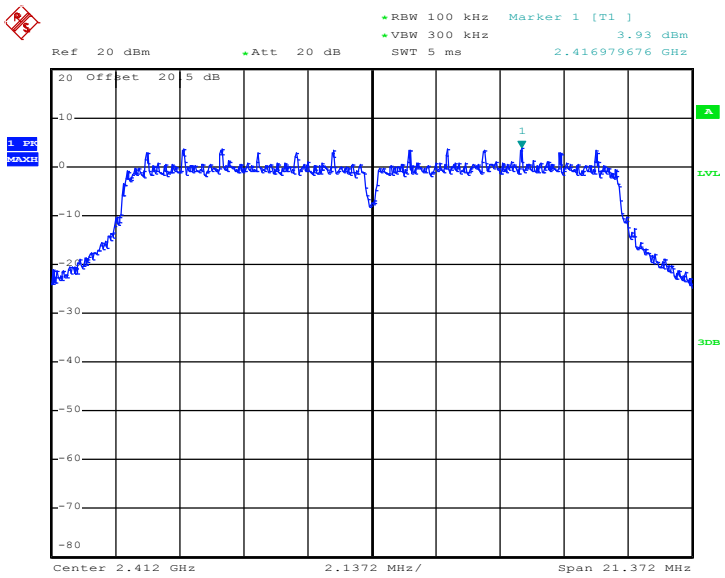
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	3.93	-11.27	8	Pass
06	2437	7.92	-7.28	8	Pass
11	2462	3.31	-11.89	8	Pass

Note:

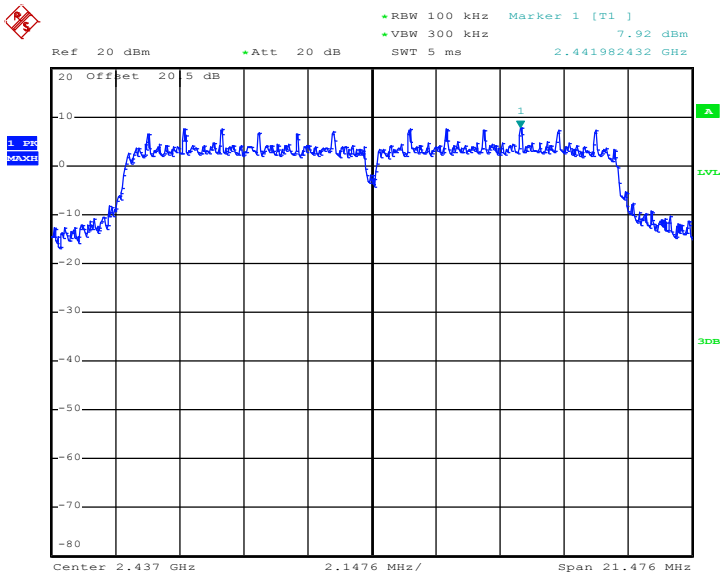
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

Mode 4 : PSD Plot on 802.11g Channel 01



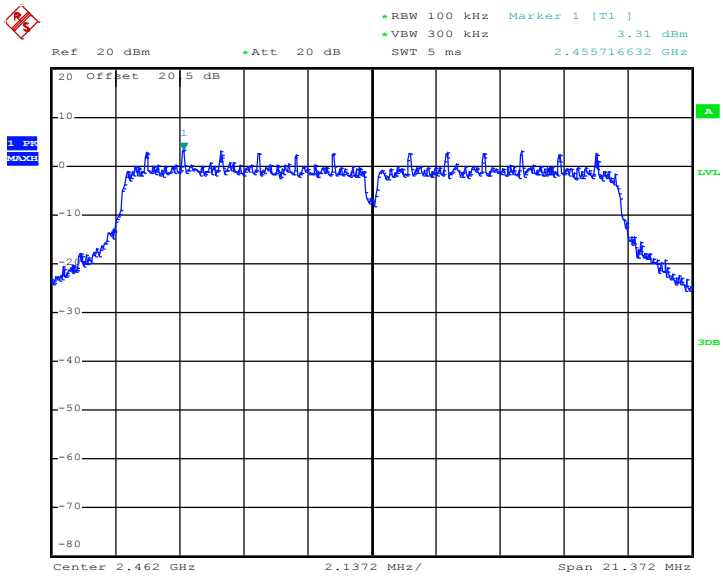
Date: 25.APR.2012 10:34:44

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 25.APR.2012 10:45:17

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 25.APR.2012 10:48:13

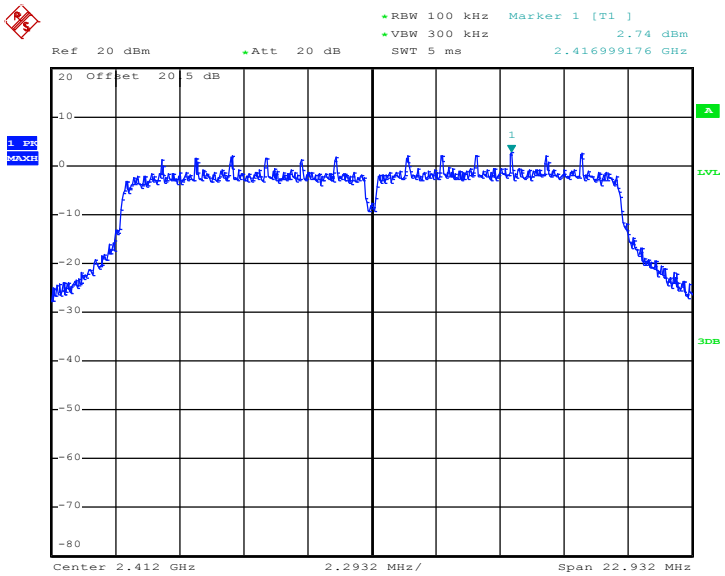
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.74	-12.46	8	Pass
06	2437	5.79	-9.41	8	Pass
11	2462	3.09	-12.11	8	Pass

Note:

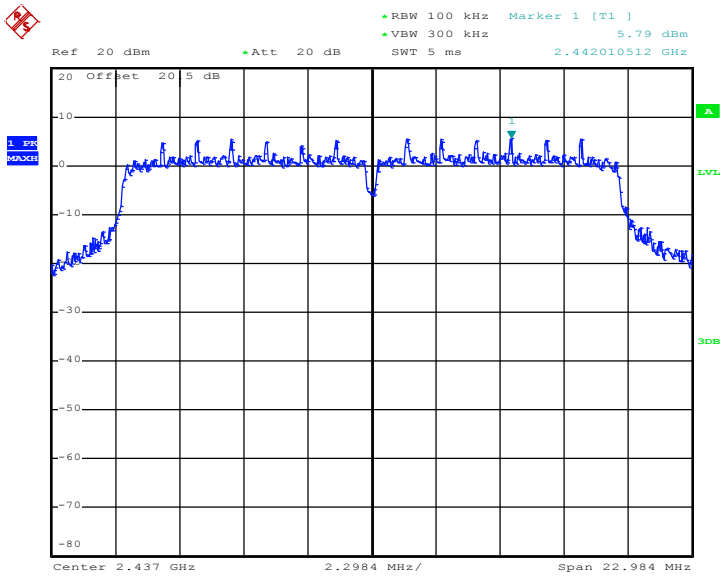
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

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



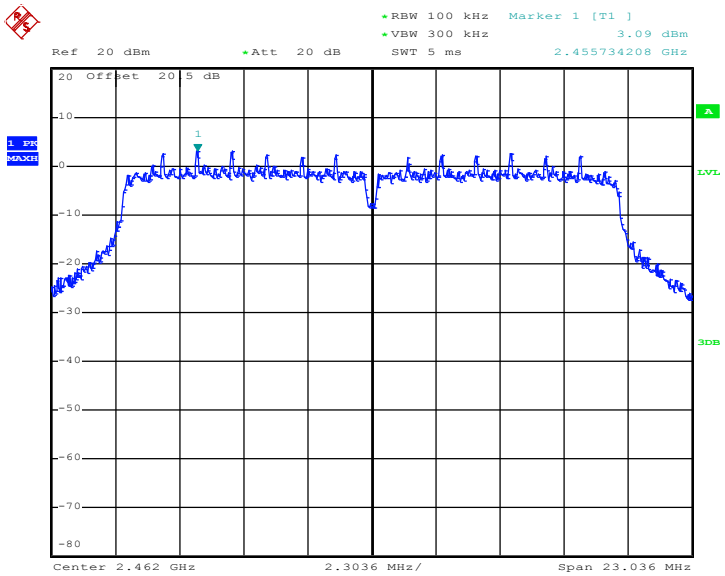
Date: 25.APR.2012 10:54:24

Mode 8 : PSD Plot on802.11g/n (BW 20MHz) Channel 06



Date: 25.APR.2012 11:03:11

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



Date: 25.APR.2012 11:06:37

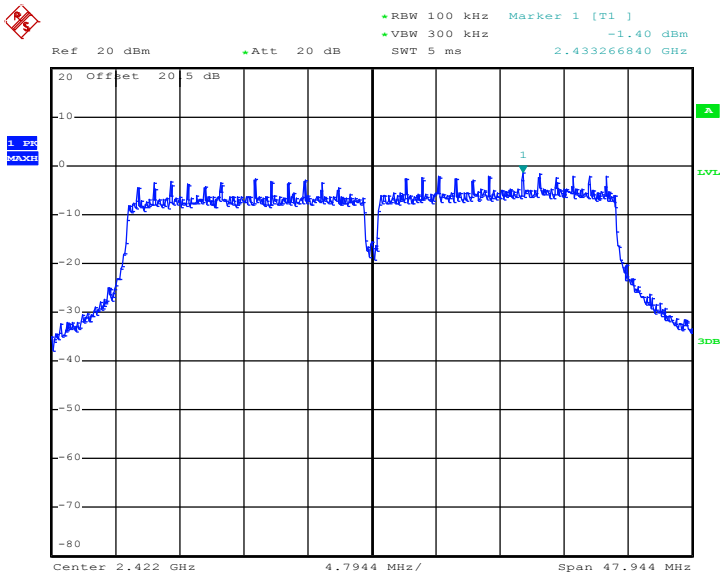
Test Mode :	Mode 10, 11, 12	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%
Guard Interval:	800 ns		

Channel	Frequency (MHz)	802.11g/n (BW 40MHz) Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-1.40	-16.60	8	Pass
06	2437	1.92	-13.28	8	Pass
09	2452	-0.92	-16.12	8	Pass

Note:

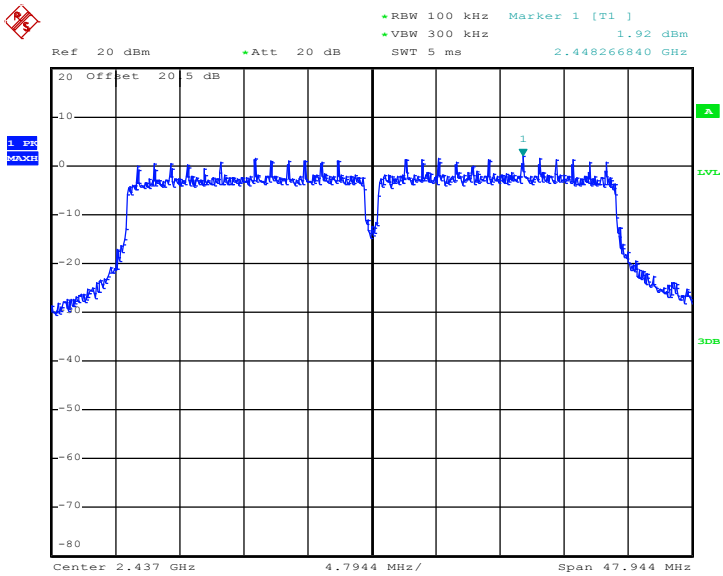
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

Mode 10 : PSD Plot on 802.11g/n (BW 40MHz) Channel 03



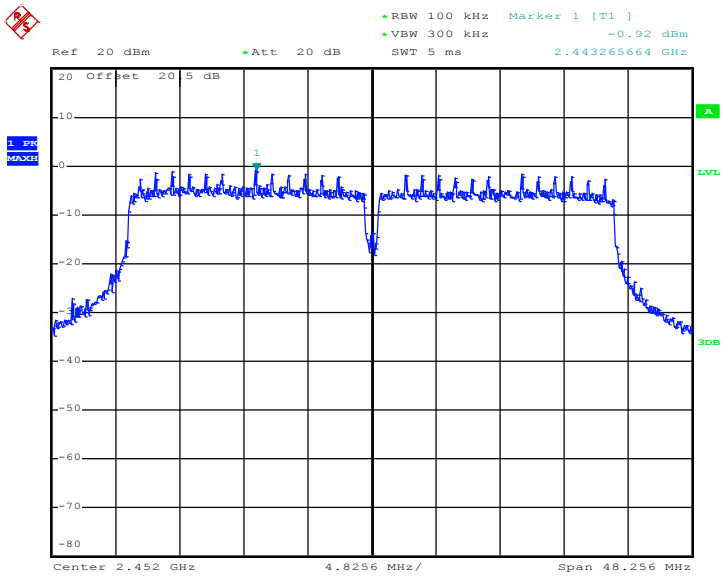
Date: 25.APR.2012 11:24:58

Mode 11 : PSD Plot on802.11g/n (BW 40MHz) Channel 06



Date: 25.APR.2012 11:30:26

Mode 12 : PSD Plot on 802.11g/n (BW 40MHz) Channel 09



Date: 25.APR.2012 11:46:35

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.

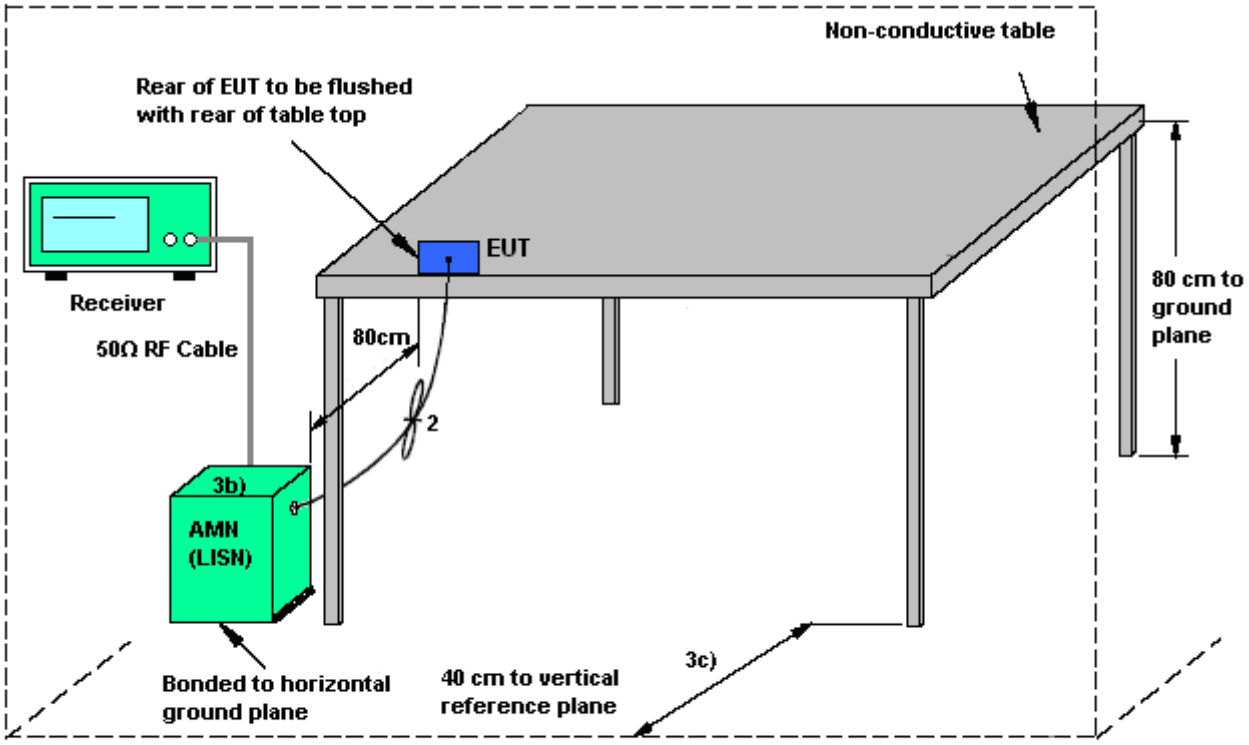
3.6.2 Measuring Instruments

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.

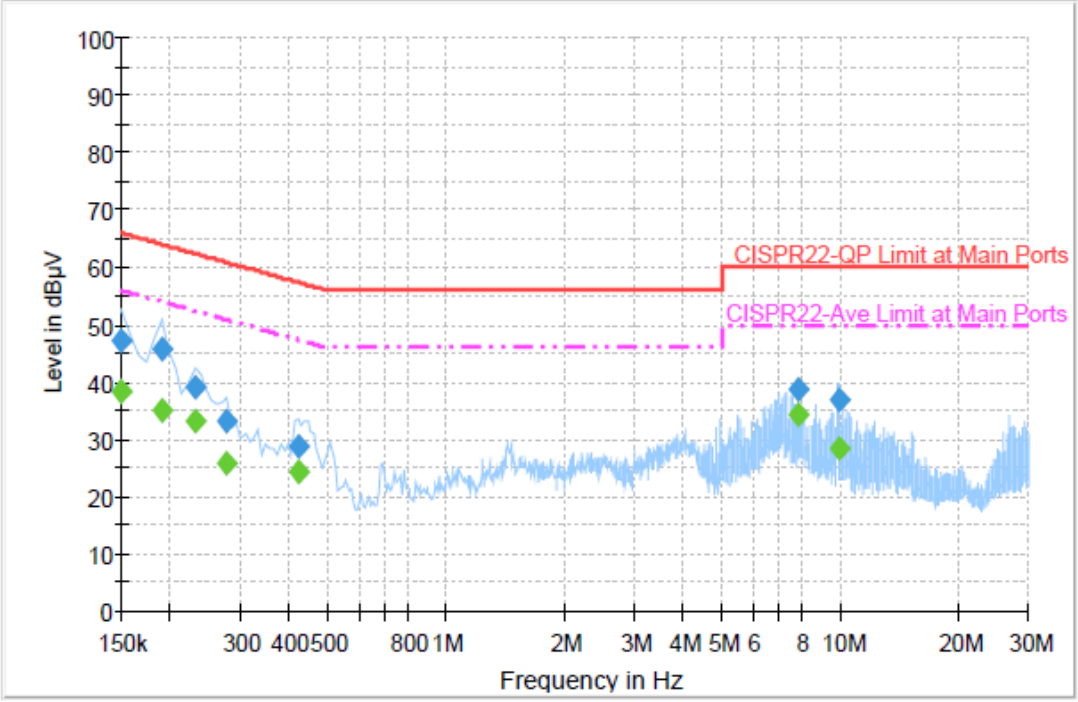
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	45~47%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN (2.4G) Link + Bluetooth Link for Antenna 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



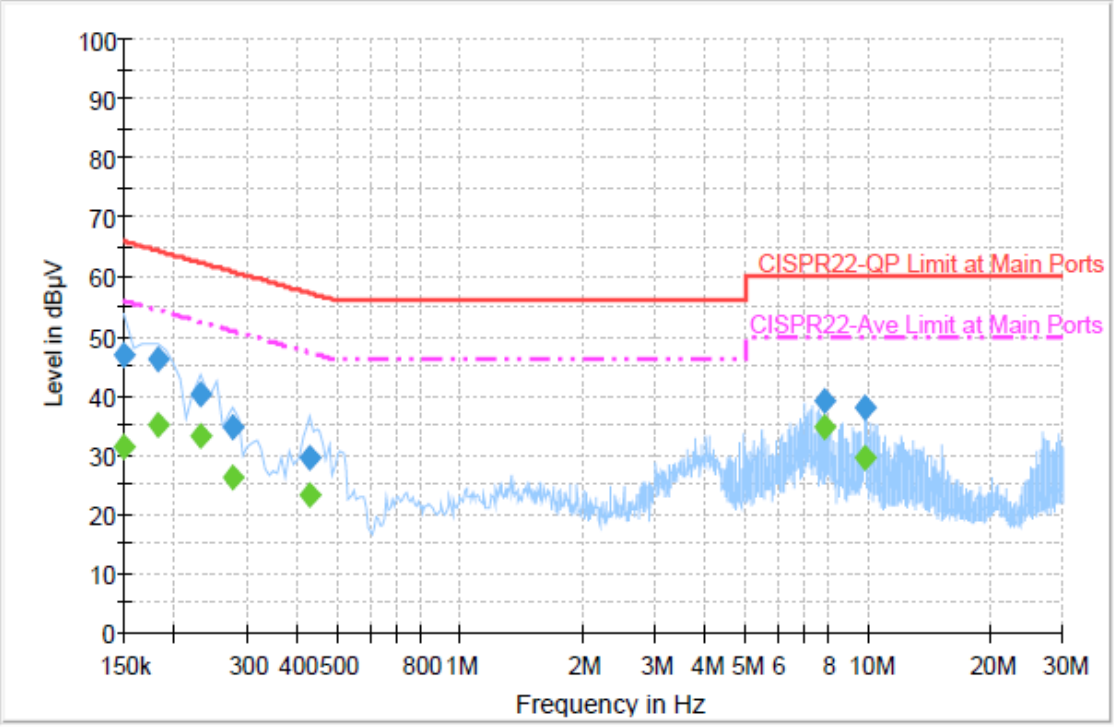
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.2	Off	L1	19.4	18.8	66.0
0.190000	45.7	Off	L1	19.4	18.3	64.0
0.230000	39.3	Off	L1	19.4	23.1	62.4
0.278000	33.1	Off	L1	19.4	27.8	60.9
0.422000	28.6	Off	L1	19.5	28.8	57.4
7.806000	38.9	Off	L1	19.5	21.1	60.0
9.902000	36.9	Off	L1	19.6	23.1	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	38.5	Off	L1	19.4	17.5	56.0
0.190000	34.9	Off	L1	19.4	19.1	54.0
0.230000	33.0	Off	L1	19.4	19.4	52.4
0.278000	25.8	Off	L1	19.4	25.1	50.9
0.422000	24.5	Off	L1	19.5	22.9	47.4
7.806000	34.4	Off	L1	19.5	15.6	50.0
9.902000	28.3	Off	L1	19.6	21.7	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (2.4G) Link + Bluetooth Link for Antenna 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.7	Off	N	19.4	19.3	66.0
0.182000	46.2	Off	N	19.4	18.2	64.4
0.230000	40.2	Off	N	19.5	22.2	62.4
0.278000	34.6	Off	N	19.4	26.3	60.9
0.430000	29.6	Off	N	19.5	27.7	57.3
7.806000	39.1	Off	N	19.6	20.9	60.0
9.846000	38.0	Off	N	19.6	22.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	31.5	Off	N	19.4	24.5	56.0
0.182000	35.0	Off	N	19.4	19.4	54.4
0.230000	33.3	Off	N	19.5	19.1	52.4
0.278000	26.1	Off	N	19.4	24.8	50.9
0.430000	23.1	Off	N	19.5	24.2	47.3
7.806000	34.7	Off	N	19.6	15.3	50.0
9.846000	29.6	Off	N	19.6	20.4	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)
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.

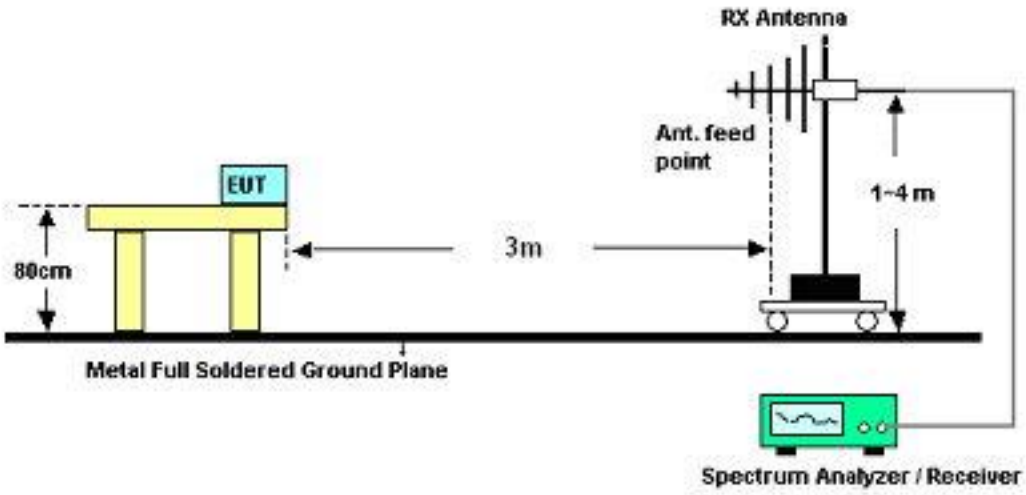
3.7.3 Test Procedures

1. For each suspected emission, 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 to comply with the guidelines in ANSI C63.4-2003.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 1 MHz for f ≥ 1 GHz, 100 KHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Measurement above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB per decade from 3m to 1m.

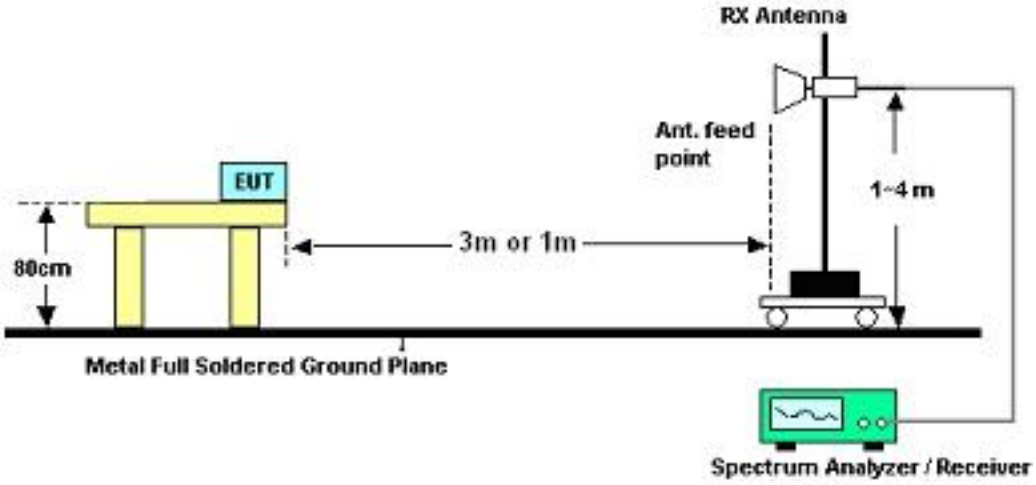
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	45~46%
Test Engineer :	David Ke	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 109.42 dBuV/m - 20dB = 89.42 dBuV/m.		

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	50.48	-3.52	54	49.76	32.02	4.58	35.88	100	108	Average
2386	57.91	-16.09	74	57.19	32.02	4.58	35.88	100	108	Peak
2412	105.32	-	-	104.56	32.03	4.59	35.86	100	108	Average
2412	109.42	-	-	108.66	32.03	4.59	35.86	100	108	Peak
2500	42.69	-11.31	54	41.75	32.1	4.64	35.8	100	108	Average
2500	52.97	-21.03	74	52.03	32.1	4.64	35.8	100	108	Peak
4824	43.25	-30.75	74	61.93	33.83	6.51	59.02	100	0	Peak
7236	46.88	-42.54	89.42	60.86	35.6	8.29	57.87	100	0	Peak

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band.		

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	42.58	-11.42	54	41.86	32.02	4.58	35.88	100	243	Average
2386	51.72	-22.28	74	51	32.02	4.58	35.88	100	243	Peak
2412	100.49	-	-	99.73	32.03	4.59	35.86	100	243	Average
2412	104.71	-	-	103.95	32.03	4.59	35.86	100	243	Peak
2498	38.42	-15.58	54	37.48	32.1	4.64	35.8	100	243	Average
2498	48.79	-25.21	74	47.85	32.1	4.64	35.8	100	243	Peak
4824	43.77	-30.23	74	62.45	33.83	6.51	59.02	100	0	Peak
4980	48.76	-25.24	74	66.99	33.8	6.58	58.61	100	0	Peak
7236	48.45	-36.26	84.71	62.43	35.6	8.29	57.87	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
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
2390	42.23	-11.77	54	41.49	32.02	4.58	35.86	200	107	Average
2390	51.97	-22.03	74	51.23	32.02	4.58	35.86	200	107	Peak
2437	104.77	-	-	103.94	32.06	4.61	35.84	200	107	Average
2437	107.31	-	-	106.48	32.06	4.61	35.84	200	107	Peak
2484	42.34	-11.66	54	41.42	32.09	4.64	35.81	200	107	Average
2484	52.26	-21.74	74	51.34	32.09	4.64	35.81	200	107	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2388	40.59	-13.41	54	39.87	32.02	4.58	35.88	100	10	Average
2388	50.82	-23.18	74	50.1	32.02	4.58	35.88	100	10	Peak
2437	101.78	-	-	100.95	32.06	4.61	35.84	100	10	Average
2437	104.23	-	-	103.4	32.06	4.61	35.84	100	10	Peak
2498	39.41	-14.59	54	38.47	32.1	4.64	35.8	100	10	Average
2498	50.46	-23.54	74	49.52	32.1	4.64	35.8	100	10	Peak
4874	43.53	-30.47	74	61.54	33.82	6.53	58.36	100	0	Peak
7311	45.32	-28.68	74	59	35.6	8.42	57.7	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2374	44.08	-9.92	54	43.39	32	4.57	35.88	146	105	Average
2374	52.83	-21.17	74	52.14	32	4.57	35.88	146	105	Peak
2462	107.14	-	-	106.28	32.07	4.62	35.83	146	105	Average
2462	111.31	-	-	110.45	32.07	4.62	35.83	146	105	Peak
2487.84	52.6	-1.4	54	51.67	32.1	4.64	35.81	146	105	Average
2487.84	59.53	-14.47	74	58.6	32.1	4.64	35.81	146	105	Peak
4924	47.52	-26.48	74	65.89	33.81	6.56	58.74	100	0	Peak
4983	48.73	-25.27	74	66.96	33.8	6.58	58.61	100	0	Peak
7386	45.34	-28.66	74	59.32	35.6	8.55	58.13	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2370	37.25	-16.75	54	36.56	32	4.57	35.88	122	245	Average
2370	48.78	-25.22	74	48.09	32	4.57	35.88	122	245	Peak
2462	100.52	-	-	99.66	32.07	4.62	35.83	122	245	Average
2462	104.47	-	-	103.61	32.07	4.62	35.83	122	245	Peak
2483.5	46.54	-7.46	54	45.62	32.09	4.64	35.81	122	245	Average
2483.5	54.14	-19.86	74	53.22	32.09	4.64	35.81	122	245	Peak
4924	46.99	-27.01	74	65.36	33.81	6.56	58.74	100	0	Peak
4980	48.08	-25.92	74	66.31	33.8	6.58	58.61	100	0	Peak
7386	47.84	-26.16	74	61.82	35.6	8.55	58.13	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	2412 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
2389.99	52.34	-1.66	54	51.6	32.02	4.58	35.86	113	107	Average
2389.99	71.57	-2.43	74	70.83	32.02	4.58	35.86	113	107	Peak
2412	99.65	-	-	98.89	32.03	4.59	35.86	113	107	Average
2412	109.4	-	-	108.64	32.03	4.59	35.86	113	107	Peak
2494	41.24	-12.76	54	40.3	32.1	4.64	35.8	113	107	Average
2494	53.89	-20.11	74	52.95	32.1	4.64	35.8	113	107	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	2412 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
2389.99	48.99	-5.01	54	48.25	32.02	4.58	35.86	130	14	Average
2389.99	66.35	-7.65	74	65.61	32.02	4.58	35.86	130	14	Peak
2412	96.91	-	-	96.15	32.03	4.59	35.86	130	14	Average
2412	106.37	-	-	105.59	32.03	4.59	35.84	130	14	Peak
2498	39.31	-14.69	54	38.37	32.1	4.64	35.8	130	14	Average
2498	51.28	-22.72	74	50.34	32.1	4.64	35.8	130	14	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
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
2390	45.88	-8.12	54	45.14	32.02	4.58	35.86	100	107	Average
2390	61.24	-12.76	74	60.5	32.02	4.58	35.86	100	107	Peak
2437	100.76	-	-	99.93	32.06	4.61	35.84	100	107	Average
2437	112.07	-	-	111.24	32.06	4.61	35.84	100	107	Peak
2484	44.64	-9.36	54	43.72	32.09	4.64	35.81	100	107	Average
2484	59.98	-14.02	74	59.06	32.09	4.64	35.81	100	107	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2390	38.69	-15.31	54	37.95	32.02	4.58	35.86	100	246	Average
2390	53.48	-20.52	74	52.74	32.02	4.58	35.86	100	246	Peak
2437	96.14	-	-	95.31	32.06	4.61	35.84	100	246	Average
2437	107.48	-	-	106.65	32.06	4.61	35.84	100	246	Peak
2486	41.51	-12.49	54	40.59	32.09	4.64	35.81	100	246	Average
2486	55.71	-18.29	74	54.79	32.09	4.64	35.81	100	246	Peak

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2380	39.46	-14.54	54	38.76	32	4.58	35.88	200	108	Average
2380	51.74	-22.26	74	51.04	32	4.58	35.88	200	108	Peak
2462	99.06	-	-	98.2	32.07	4.62	35.83	200	108	Average
2462	109.15	-	-	108.27	32.07	4.62	35.81	200	108	Peak
2483.5	51.73	-2.27	54	50.81	32.09	4.64	35.81	200	108	Average
2483.5	72.6	-1.4	74	71.68	32.09	4.64	35.81	200	108	Peak

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2378	40.15	-13.85	54	39.46	32	4.57	35.88	100	11	Average
2378	51.59	-22.41	74	50.9	32	4.57	35.88	100	11	Peak
2462	95	-	-	94.14	32.07	4.62	35.83	100	11	Average
2462	104.03	-	-	103.15	32.07	4.62	35.81	100	11	Peak
2483.85	46.93	-7.07	54	46.01	32.09	4.64	35.81	100	11	Average
2483.85	66.24	-7.76	74	65.32	32.09	4.64	35.81	100	11	Peak

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	2412 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
2389.99	52.87	-1.13	54	52.13	32.02	4.58	35.86	117	108	Average
2389.99	71.98	-2.02	74	71.24	32.02	4.58	35.86	117	108	Peak
2412	98.19	-	-	97.43	32.03	4.59	35.86	117	108	Average
2412	107.94	-	-	107.18	32.03	4.59	35.86	117	108	Peak
2494	41.41	-12.59	54	40.47	32.1	4.64	35.8	117	108	Average
2494	53.93	-20.07	74	52.99	32.1	4.64	35.8	117	108	Peak

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	2412 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
2389.61	49.4	-4.6	54	48.68	32.02	4.58	35.88	131	15	Average
2389.61	67.31	-6.69	74	66.59	32.02	4.58	35.88	131	15	Peak
2412	95.64	-	-	94.88	32.03	4.59	35.86	131	15	Average
2412	104.77	-	-	104.01	32.03	4.59	35.86	131	15	Peak
2494	38.89	-15.11	54	37.95	32.1	4.64	35.8	131	15	Average
2494	51.46	-22.54	74	50.52	32.1	4.64	35.8	131	15	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
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
2352	42.17	-11.83	54	41.52	31.99	4.55	35.89	112	111	Average
2352	53.38	-20.62	74	52.73	31.99	4.55	35.89	112	111	Peak
2437	100.27	-	-	99.44	32.06	4.61	35.84	112	111	Average
2437	109.44	-	-	108.63	32.04	4.61	35.84	112	111	Peak
2486	42.53	-11.47	54	41.61	32.09	4.64	35.81	112	111	Average
2486	55.46	-18.54	74	54.54	32.09	4.64	35.81	112	111	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
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
2356	40.4	-13.6	54	39.75	31.99	4.55	35.89	129	11	Average
2356	51.77	-22.23	74	51.12	31.99	4.55	35.89	129	11	Peak
2437	96.6	-	-	95.77	32.06	4.61	35.84	129	11	Average
2437	106.22	-	-	105.38	32.06	4.61	35.83	129	11	Peak
2484	40.6	-13.4	54	39.68	32.09	4.64	35.81	129	11	Average
2484	54.98	-19.02	74	54.06	32.09	4.64	35.81	129	11	Peak

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
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
2380	39.83	-14.17	54	39.13	32	4.58	35.88	200	110	Average
2380	52.12	-21.88	74	51.42	32	4.58	35.88	200	110	Peak
2462	98.35	-	-	97.49	32.07	4.62	35.83	200	110	Average
2462	108.12	-	-	107.24	32.07	4.62	35.81	200	110	Peak
2483.5	52.4	-1.6	54	51.48	32.09	4.64	35.81	200	110	Average
2483.5	71.1	-2.9	74	70.18	32.09	4.64	35.81	200	110	Peak

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
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
2378	40.02	-13.98	54	39.33	32	4.57	35.88	100	12	Average
2378	51.82	-22.18	74	51.13	32	4.57	35.88	100	12	Peak
2462	94.26	-	-	93.4	32.07	4.62	35.83	100	12	Average
2462	103.13	-	-	102.25	32.07	4.62	35.81	100	12	Peak
2485.18	47.29	-6.71	54	46.37	32.09	4.64	35.81	100	12	Average
2485.18	63.89	-10.11	74	62.97	32.09	4.64	35.81	100	12	Peak

Test Mode :	Mode 10	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 3228 MHz is not within a restricted band.		

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	22.9	-17.1	40	34.04	19.8	0.7	31.64	-	-	Peak
199.83	39.9	-3.6	43.5	60.46	9.1	1.46	31.12	100	64	Peak
298.92	41.46	-4.54	46	57.25	13.39	1.78	30.96	-	-	Peak
332.2	39.68	-6.32	46	54.98	13.88	1.86	31.04	-	-	Peak
402.2	35.37	-10.63	46	48.46	16.08	2.02	31.19	-	-	Peak
761.3	25.29	-20.71	46	30.34	22.29	2.77	30.11	-	-	Peak
2384.67	52.92	-1.08	54	52.22	32	4.58	35.88	187	292	Average
2384.67	69.64	-4.36	74	68.94	32	4.58	35.88	187	292	Peak
2422	90.78	-	-	89.99	32.04	4.59	35.84	187	292	Average
2422	100.09	-	-	99.33	32.03	4.59	35.86	187	292	Peak
2484	39.42	-14.58	54	38.5	32.09	4.64	35.81	187	292	Average
2484	52.08	-21.92	74	51.16	32.09	4.64	35.81	187	292	Peak
3228	46.21	-33.88	80.09	66.29	32.76	5.57	58.41	100	0	Peak
4980	44.26	-29.74	74	62.03	33.8	6.58	58.15	100	0	Peak

Test Mode :	Mode 10	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 3228 MHz is not within a restricted band.		

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
40.8	32.76	-7.24	40	50.87	12.72	0.75	31.58	100	103	Peak
68.07	28.83	-11.17	40	53.32	6.14	0.9	31.53	-	-	Peak
199.83	27.31	-16.19	43.5	47.87	9.1	1.46	31.12	-	-	Peak
331.5	34.55	-11.45	46	49.87	13.85	1.86	31.03	-	-	Peak
621.3	31.11	-14.89	46	38.37	20.52	2.49	30.27	-	-	Peak
742.4	31.79	-14.21	46	36.93	22.32	2.73	30.19	-	-	Peak
2384.86	49.6	-4.4	54	48.9	32	4.58	35.88	131	13	Average
2384.86	66.06	-7.94	74	65.36	32	4.58	35.88	131	13	Peak
2422	88.11	-	-	87.32	32.04	4.59	35.84	131	13	Average
2422	98.45	-	-	97.69	32.03	4.59	35.86	131	13	Peak
2494	35.53	-18.47	54	34.59	32.1	4.64	35.8	131	13	Average
2494	48.16	-25.84	74	47.22	32.1	4.64	35.8	131	13	Peak
3228	43.69	-34.76	78.45	63.77	32.76	5.57	58.41	100	0	Peak
4980	44.46	-29.54	74	62.23	33.8	6.58	58.15	100	0	Peak

Test Mode :	Mode 11	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 3249 MHz is not within a restricted band.		

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
2390	51.54	-2.46	54	50.8	32.02	4.58	35.86	115	111	Average
2390	67.55	-6.45	74	66.81	32.02	4.58	35.86	115	111	Peak
2437	96.23	-	-	95.4	32.06	4.61	35.84	115	111	Average
2437	106.51	-	-	105.7	32.04	4.61	35.84	115	111	Peak
2484	48.16	-5.84	54	47.24	32.09	4.64	35.81	115	111	Average
2484	66.75	-7.25	74	65.83	32.09	4.64	35.81	115	111	Peak
3249	45.93	-40.58	86.51	66.02	32.75	5.58	58.42	100	0	Peak
4980	43.06	-30.94	74	60.83	33.8	6.58	58.15	100	0	Peak

Test Mode :	Mode 11	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 3249 MHz is not within a restricted band.		

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
2390	49.93	-4.07	54	49.19	32.02	4.58	35.86	105	10	Average
2390	65.98	-8.02	74	65.24	32.02	4.58	35.86	105	10	Peak
2437	92.2	-	-	91.37	32.06	4.61	35.84	105	10	Average
2437	102.52	-	-	101.71	32.04	4.61	35.84	105	10	Peak
2486	42	-12	54	41.08	32.09	4.64	35.81	105	10	Average
2486	57.36	-16.64	74	56.44	32.09	4.64	35.81	105	10	Peak
3249	43.53	-38.99	82.52	63.62	32.75	5.58	58.42	100	0	Peak
4980	43.52	-30.48	74	61.29	33.8	6.58	58.15	100	0	Peak

Test Mode :	Mode 12	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 3270 MHz is not within a restricted band.		

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
2390	40.32	-13.68	54	39.58	32.02	4.58	35.86	142	109	Average
2390	54.76	-19.24	74	54.02	32.02	4.58	35.86	142	109	Peak
2452	93.19	-	-	92.35	32.06	4.61	35.83	142	109	Average
2452	102.71	-	-	101.87	32.06	4.61	35.83	142	109	Peak
2483.66	52.7	-1.3	54	51.78	32.09	4.64	35.81	142	109	Average
2483.66	68.62	-5.38	74	67.7	32.09	4.64	35.81	142	109	Peak
3270	44.85	-37.86	82.71	64.97	32.74	5.59	58.45	100	0	Peak
4998	41.93	-32.07	74	59.66	33.8	6.59	58.12	100	0	Peak

Test Mode :	Mode 12	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 3270 MHz is not within a restricted band.		

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
2372	38.71	-15.29	54	38.02	32	4.57	35.88	133	11	Average
2372	50.66	-23.34	74	49.97	32	4.57	35.88	133	11	Peak
2452	89.53	-	-	88.69	32.06	4.61	35.83	133	11	Average
2452	98.63	-	-	97.79	32.06	4.61	35.83	133	11	Peak
2493.16	43.96	-10.04	54	43.02	32.1	4.64	35.8	133	11	Average
2493.16	58.8	-15.2	74	57.86	32.1	4.64	35.8	133	11	Peak
3270	41.92	-36.71	78.63	62.04	32.74	5.59	58.45	100	0	Peak
4998	44.12	-29.88	74	61.85	33.8	6.59	58.12	100	0	Peak

Test Mode :	Mode 13	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
2386.19	45.08	-8.92	54	44.36	32.02	4.58	35.88	111	193	Average
2386.19	53.09	-20.91	74	52.37	32.02	4.58	35.88	111	193	Peak
2412	100.64	-	-	99.88	32.03	4.59	35.86	111	193	Average
2412	103.37	-	-	102.61	32.03	4.59	35.86	111	193	Peak
2500	37.27	-16.73	54	36.33	32.1	4.64	35.8	111	193	Average
2500	47.3	-26.7	74	46.36	32.1	4.64	35.8	111	193	Peak
4980	45.36	-28.64	74	63.59	33.8	6.58	58.61	100	0	Peak
7236	46.09	-37.28	83.37	60.07	35.6	8.29	57.87	100	0	Peak

Test Mode :	Mode 13	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
2386.19	52.32	-1.68	54	51.6	32.02	4.58	35.88	100	126	Average
2386.19	59.09	-14.91	74	58.37	32.02	4.58	35.88	100	126	Peak
2412	106.1	-	-	105.34	32.03	4.59	35.86	100	126	Average
2412	110.1	-	-	109.34	32.03	4.59	35.86	100	126	Peak
2484	42.93	-11.07	54	42.01	32.09	4.64	35.81	100	126	Average
2484	48.28	-25.72	74	47.36	32.09	4.64	35.81	100	126	Peak
4824	46.2	-27.8	74	64.88	33.83	6.51	59.02	100	0	Peak
4992	48.18	-25.82	74	66.36	33.8	6.58	58.56	100	0	Peak
7236	47.17	-42.93	90.1	61.15	35.6	8.29	57.87	100	0	Peak

Test Mode :	Mode 14	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
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
2350	39.69	-14.31	54	39.05	31.98	4.55	35.89	115	194	Average
2350	48.81	-25.19	74	48.17	31.98	4.55	35.89	115	194	Peak
2437	101.6	-	-	100.77	32.06	4.61	35.84	115	194	Average
2437	105.58	-	-	104.75	32.06	4.61	35.84	115	194	Peak
2488	38.24	-15.76	54	37.31	32.1	4.64	35.81	115	194	Average
2488	48.37	-25.63	74	47.44	32.1	4.64	35.81	115	194	Peak
4992	44.01	-29.99	74	62.19	33.8	6.58	58.56	100	0	Peak
7311	46.53	-27.47	74	60.5	35.6	8.42	57.99	100	0	Peak

Test Mode :	Mode 14	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2354	45.27	-8.73	54	44.62	31.99	4.55	35.89	100	134	Average
2354	52.61	-21.39	74	51.96	31.99	4.55	35.89	100	134	Peak
2437	106.53	-	-	105.7	32.06	4.61	35.84	100	134	Average
2437	110.74	-	-	109.91	32.06	4.61	35.84	100	134	Peak
2484	42.1	-11.9	54	41.18	32.09	4.64	35.81	100	134	Average
2484	51.59	-22.41	74	50.67	32.09	4.64	35.81	100	134	Peak
4874	46.52	-27.48	74	65.05	33.82	6.53	58.88	100	0	Peak
4989	48.2	-25.8	74	66.38	33.8	6.58	58.56	100	0	Peak
7311	47.09	-26.91	74	61.06	35.6	8.42	57.99	100	0	Peak

Test Mode :	Mode 15	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2376	39.22	-14.78	54	38.53	32	4.57	35.88	110	194	Average
2376	48.35	-25.65	74	47.66	32	4.57	35.88	110	194	Peak
2462	101.42	-	-	100.56	32.07	4.62	35.83	110	194	Average
2462	105.27	-	-	104.41	32.07	4.62	35.83	110	194	Peak
2487.65	44.13	-9.87	54	43.2	32.1	4.64	35.81	110	194	Average
2487.65	52.61	-21.39	74	51.68	32.1	4.64	35.81	110	194	Peak
4989	44.23	-29.77	74	62.41	33.8	6.58	58.56	100	0	Peak
7386	45.84	-28.16	74	59.82	35.6	8.55	58.13	100	0	Peak

Test Mode :	Mode 15	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2376	46.94	-7.06	54	46.25	32	4.57	35.88	100	71	Average
2376	54.45	-19.55	74	53.76	32	4.57	35.88	100	71	Peak
2462	106.84	-	-	105.98	32.07	4.62	35.83	100	71	Average
2462	111.06	-	-	110.2	32.07	4.62	35.83	100	71	Peak
2487.65	51.19	-2.81	54	50.26	32.1	4.64	35.81	100	71	Average
2487.65	58.03	-15.97	74	57.1	32.1	4.64	35.81	100	71	Peak
4924	44.3	-29.7	74	62.67	33.81	6.56	58.74	100	0	Peak
4986	48.02	-25.98	74	66.25	33.8	6.58	58.61	100	0	Peak
7386	47.65	-26.35	74	61.63	35.6	8.55	58.13	100	0	Peak

Test Mode :	Mode 16	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	2412 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
2389.99	47.3	-6.7	54	46.56	32.02	4.58	35.86	114	187	Average
2389.99	68.78	-5.22	74	68.04	32.02	4.58	35.86	114	187	Peak
2412	92.79	-	-	92.03	32.03	4.59	35.86	114	187	Average
2412	104.41	-	-	103.65	32.03	4.59	35.86	114	187	Peak
2496	35.97	-18.03	54	35.03	32.1	4.64	35.8	114	187	Average
2496	47.54	-26.46	74	46.6	32.1	4.64	35.8	114	187	Peak

Test Mode :	Mode 16	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	2412 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
2389.8	51.24	-2.76	54	50.5	32.02	4.58	35.86	150	120	Average
2389.8	71.79	-2.21	74	71.05	32.02	4.58	35.86	150	120	Peak
2412	98.64	-	-	97.88	32.03	4.59	35.86	150	120	Average
2412	110.65	-	-	109.89	32.03	4.59	35.86	150	120	Peak
2496	39.94	-14.06	54	39	32.1	4.64	35.8	150	120	Average
2496	52.24	-21.76	74	51.3	32.1	4.64	35.8	150	120	Peak

Test Mode :	Mode 17	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
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
2390	41.41	-12.59	54	40.67	32.02	4.58	35.86	117	189	Average
2390	58.63	-15.37	74	57.89	32.02	4.58	35.86	117	189	Peak
2437	95.66	-	-	94.83	32.06	4.61	35.84	117	189	Average
2437	107.96	-	-	107.13	32.06	4.61	35.84	117	189	Peak
2486	38.73	-15.27	54	37.81	32.09	4.64	35.81	117	189	Average
2486	53.31	-20.69	74	52.39	32.09	4.64	35.81	117	189	Peak

Test Mode :	Mode 17	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2390	46.32	-7.68	54	45.58	32.02	4.58	35.86	100	124	Average
2390	64.74	-9.26	74	64	32.02	4.58	35.86	100	124	Peak
2437	101.54	-	-	100.71	32.06	4.61	35.84	100	124	Average
2437	113.33	-	-	112.5	32.06	4.61	35.84	100	124	Peak
2484	43.77	-10.23	54	42.85	32.09	4.64	35.81	100	124	Average
2484	63.26	-10.74	74	62.34	32.09	4.64	35.81	100	124	Peak

Test Mode :	Mode 18	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2380	38.21	-15.79	54	37.51	32	4.58	35.88	110	192	Average
2380	50.61	-23.39	74	49.91	32	4.58	35.88	110	192	Peak
2462	92.42	-	-	91.56	32.07	4.62	35.83	110	192	Average
2462	104.71	-	-	103.85	32.07	4.62	35.83	110	192	Peak
2483.5	43.89	-10.11	54	42.97	32.09	4.64	35.81	110	192	Average
2483.5	67.83	-6.17	74	66.91	32.09	4.64	35.81	110	192	Peak

Test Mode :	Mode 18	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	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
2370	44.32	-9.68	54	43.63	32	4.57	35.88	100	106	Average
2370	56.42	-17.58	74	55.73	32	4.57	35.88	100	106	Peak
2462	97.8	-	-	96.94	32.07	4.62	35.83	100	106	Average
2462	109.77	-	-	108.91	32.07	4.62	35.83	100	106	Peak
2483.5	48.9	-5.1	54	47.98	32.09	4.64	35.81	100	106	Average
2483.5	72.49	-1.51	74	71.57	32.09	4.64	35.81	100	106	Peak

Test Mode :	Mode 19	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	2412 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
2389.8	44.33	-9.67	54	43.59	32.02	4.58	35.86	114	192	Average
2389.8	67.23	-6.77	74	66.49	32.02	4.58	35.86	114	192	Peak
2412	90.67	-	-	89.91	32.03	4.59	35.86	114	192	Average
2412	102.35	-	-	101.59	32.03	4.59	35.86	114	192	Peak
2500	35.75	-18.25	54	34.81	32.1	4.64	35.8	114	192	Average
2500	48.46	-25.54	74	47.52	32.1	4.64	35.8	114	192	Peak

Test Mode :	Mode 19	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	2412 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
2389.61	50.57	-3.43	54	49.85	32.02	4.58	35.88	100	122	Average
2389.61	72.23	-1.77	74	71.51	32.02	4.58	35.88	100	122	Peak
2412	96.1	-	-	95.34	32.03	4.59	35.86	100	122	Average
2412	108.22	-	-	107.46	32.03	4.59	35.86	100	122	Peak
2496	41.38	-12.62	54	40.44	32.1	4.64	35.8	100	122	Average
2496	53.84	-20.16	74	52.9	32.1	4.64	35.8	100	122	Peak

Test Mode :	Mode 20	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
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
2390	45.16	-8.84	54	44.42	32.02	4.58	35.86	100	122	Average
2390	63.11	-10.89	74	62.37	32.02	4.58	35.86	100	122	Peak
2437	99.57	-	-	98.74	32.06	4.61	35.84	100	122	Average
2437	111.48	-	-	110.65	32.06	4.61	35.84	100	122	Peak
2486	42.57	-11.43	54	41.65	32.09	4.64	35.81	100	122	Average
2486	56.83	-17.17	74	55.91	32.09	4.64	35.81	100	122	Peak

Test Mode :	Mode 20	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
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
2390	40.32	-13.68	54	39.58	32.02	4.58	35.86	114	192	Average
2390	54.35	-19.65	74	53.61	32.02	4.58	35.86	114	192	Peak
2437	94.61	-	-	93.78	32.06	4.61	35.84	114	192	Average
2437	105.81	-	-	104.98	32.06	4.61	35.84	114	192	Peak
2484	38.58	-15.42	54	37.66	32.09	4.64	35.81	114	192	Average
2484	51.83	-22.17	74	50.91	32.09	4.64	35.81	114	192	Peak

Test Mode :	Mode 21	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
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
2368	38	-16	54	37.32	31.99	4.57	35.88	110	192	Average
2368	50.03	-23.97	74	49.35	31.99	4.57	35.88	110	192	Peak
2462	91.03	-	-	90.17	32.07	4.62	35.83	110	192	Average
2462	103.29	-	-	102.43	32.07	4.62	35.83	110	192	Peak
2484.42	43.66	-10.34	54	42.74	32.09	4.64	35.81	110	192	Average
2484.42	67.29	-6.71	74	66.37	32.09	4.64	35.81	110	192	Peak

Test Mode :	Mode 21	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
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
2370	43.39	-10.61	54	42.7	32	4.57	35.88	100	117	Average
2370	55.53	-18.47	74	54.84	32	4.57	35.88	100	117	Peak
2462	96.53	-	-	95.67	32.07	4.62	35.83	100	117	Average
2462	108.55	-	-	107.69	32.07	4.62	35.83	100	117	Peak
2483.66	50.55	-3.45	54	49.63	32.09	4.64	35.81	100	117	Average
2483.66	72.9	-1.1	74	71.98	32.09	4.64	35.81	100	117	Peak

Test Mode :	Mode 22	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	2422 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
2389.23	46.69	-7.31	54	45.97	32.02	4.58	35.88	114	188	Average
2389.23	64.75	-9.25	74	64.03	32.02	4.58	35.88	114	188	Peak
2422	87.45	-	-	86.66	32.04	4.59	35.84	114	188	Average
2422	100.19	-	-	99.4	32.04	4.59	35.84	114	188	Peak
2486	36.41	-17.59	54	35.49	32.09	4.64	35.81	114	188	Average
2486	49.33	-24.67	74	48.41	32.09	4.64	35.81	114	188	Peak

Test Mode :	Mode 22	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	2422 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
2389.61	50.88	-3.12	54	50.16	32.02	4.58	35.88	100	156	Average
2389.61	69.39	-4.61	74	68.67	32.02	4.58	35.88	100	156	Peak
2422	91.61	-	-	90.82	32.04	4.59	35.84	100	156	Average
2422	104.6	-	-	103.81	32.04	4.59	35.84	100	156	Peak
2496	39.67	-14.33	54	38.73	32.1	4.64	35.8	100	156	Average
2496	52.96	-21.04	74	52.02	32.1	4.64	35.8	100	156	Peak

Test Mode :	Mode 23	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
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
2389.04	41.57	-12.43	54	40.85	32.02	4.58	35.88	104	264	Average
2389.04	60.84	-13.16	74	60.1	32.02	4.58	35.86	104	264	Peak
2437	86.51	-	-	85.68	32.06	4.61	35.84	104	264	Average
2437	99.13	-	-	98.34	32.04	4.59	35.84	104	264	Peak
2483.66	39.2	-14.8	54	38.28	32.09	4.64	35.81	104	264	Average
2483.66	59.5	-14.5	74	58.58	32.09	4.64	35.81	104	264	Peak
4995	44.75	-29.25	74	62.93	33.8	6.58	58.56	100	0	Peak

Test Mode :	Mode 23	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
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
2389.99	49.09	-4.91	54	48.35	32.02	4.58	35.86	100	152	Average
2389.99	70.55	-3.45	74	69.81	32.02	4.58	35.86	100	152	Peak
2437	94.39	-	-	93.56	32.06	4.61	35.84	100	152	Average
2437	106.76	-	-	105.97	32.04	4.59	35.84	100	152	Peak
2483.5	49.57	-4.43	54	48.65	32.09	4.64	35.81	100	152	Average
2483.5	72.59	-1.41	74	71.67	32.09	4.64	35.81	100	152	Peak
4992	48.75	-25.25	74	66.93	33.8	6.58	58.56	100	0	Peak

Test Mode :	Mode 24	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Horizontal
Guard Interval:	800 ns		
Remark :	2452 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
2372	35.86	-18.14	54	35.17	32	4.57	35.88	102	265	Average
2372	47.17	-26.83	74	46.48	32	4.57	35.88	102	265	Peak
2452	84.05	-	-	83.21	32.06	4.61	35.83	102	265	Average
2452	96.61	-	-	95.77	32.06	4.61	35.83	102	265	Peak
2485.94	43.42	-10.58	54	42.5	32.09	4.64	35.81	102	265	Average
2485.94	62.47	-11.53	74	61.55	32.09	4.64	35.81	102	265	Peak
4992	44.69	-29.31	74	62.87	33.8	6.58	58.56	100	0	Peak

Test Mode :	Mode 24	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	45~46%
Test Engineer :	David Ke	Polarization :	Vertical
Guard Interval:	800 ns		
Remark :	2452 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
2390	40.63	-13.37	54	39.89	32.02	4.58	35.86	100	131	Average
2390	58.69	-15.31	74	57.95	32.02	4.58	35.86	100	131	Peak
2452	92.27	-	-	91.43	32.06	4.61	35.83	100	131	Average
2452	104.99	-	-	104.16	32.06	4.61	35.84	100	131	Peak
2486.7	52.7	-1.3	54	51.78	32.09	4.64	35.81	100	131	Average
2486.7	73	-1	74	72.07	32.1	4.64	35.81	100	131	Peak
4992	48.75	-25.25	74	66.93	33.8	6.58	58.56	100	0	Peak

3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

The antennas type used in this product are Antenna 1 : PIFA Antenna with IPEX connector and Antenna 2 : Dipole Antenna with Reverse-SMA type RF 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Apr. 21, 2012 ~ May 25, 2012	Jun. 12, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Apr. 25, 2012 ~ Apr. 26, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Apr. 25, 2012 ~ Apr. 26, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Apr. 25, 2012 ~ Apr. 26, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Apr. 25, 2012 ~ Apr. 26, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Apr. 14, 2012 ~ May 08, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Apr. 14, 2012 ~ May 08, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Apr. 14, 2012 ~ May 08, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Apr. 14, 2012 ~ May 08, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Apr. 14, 2012 ~ May 08, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103A	161075	10Hz ~ 1000MHz Gain:32dB	Feb. 27, 2012	Apr. 14, 2012 ~ May 08, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	Apr. 14, 2012 ~ May 08, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Apr. 14, 2012 ~ May 08, 2012	Aug. 29, 2012	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP240322 as below.