

FCC RF Test Report

APPLICANT : PSION INC.
EQUIPMENT : EP10 Hand-Held Computer
BRAND NAME : 
MODEL NAME : 7515C
FCC ID : GM37515CA
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Mar. 10, 2011 and completely tested on Jun. 20, 2011. 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 / Manager



SPORTON INTERNATIONAL INC.

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FCC ID : GM37515CA

Page Number : 1 of 106

Report Issued Date : Aug. 01, 2011

Report Version : Rev. 02

TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	7
1.5 Applied Standards	7
1.6 Ancillary Equipment List	8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	9
2.1 RF Power	9
2.2 Test Mode	11
2.3 Connection Diagram of Test System	12
2.4 RF Utility	12
3 TEST RESULT	13
3.1 6dB Bandwidth Measurement	13
3.2 Output Power Measurement	26
3.3 Band Edges Measurement	29
3.4 Spurious Emission Measurement	39
3.5 Power Spectral Density Measurement	55
3.6 AC Conducted Emission Measurement	66
3.7 Radiated Emission Measurement	70
3.8 Antenna Requirements	103
4 LIST OF MEASURING EQUIPMENT	104
5 UNCERTAINTY OF EVALUATION	105
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR143002B	Rev. 01	Initial issue of report	Jul. 19, 2011
FR143002B	Rev. 02	Update report for revising the received date of product, the requirements of FCC Part 15, Subpart B (certification), and removing the 99% Bandwidth Measurement	Aug. 01, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.1.8	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.2	15.247(d)	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.3	15.247(d)	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.4	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 9 dB at 0.17 MHz
3.6	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.01 dB at 31.89 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

PSION INC.

2100 Meadowvale Blvd, Mississauga ON L5N 7J9, CANADA

1.2 Manufacturer

PSION INC.

2100 Meadowvale Blvd, Mississauga ON L5N 7J9, CANADA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	EP10 Hand-Held Computer
Brand Name	PSION
Model Name	7515C
FCC ID	GM37515CA
Tx/Rx Frequency Range	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5725 MHz ~ 5850 MHz
Channel Spacing	802.11b/g : 5 MHz 802.11a : 20 MHz
Maximum Output Power to Antenna	<2400 MHz ~ 2483.5 MHz> 802.11b : 20.23 dBm (0.105 W) 802.11g : 23.58 dBm (0.228 W) 802.11n (BW 20MHz) : 22.41 dBm (0.174 W) <5725 MHz ~ 5850 MHz> 802.11a : 20.81 dBm (0.12 W) 802.11n (BW 20MHz) : 21.24 dBm (0.13 W)
Antenna Type	802.11b/g/n : PIFA Antenna with gain 3.73 dBi <5150 MHz ~ 5250 MHz> 802.11a/n : PIFA Antenna with gain 4.85 dBi <5250 MHz ~ 5350 MHz> 802.11a/n : PIFA Antenna with gain 4.86 dBi <5470 MHz ~ 5725 MHz> 802.11a/n : PIFA Antenna with gain 4.87 dBi
HW Version	2
SW Version	1.1
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

List of Accessory:

Specification of Accessory		
AC Adapter 1	Brand Name	Leader
	Model Name	IU18-2050300-WP
AC Adapter 2	Brand Name	Phihong
	Model Name	PSA15R-050P
Battery	Brand Name	PSION / ETI
	Model Name	RV3010 / BP08-000760
Car Charger	Brand Name	AOEM
	Model Name	C15C-0520CD0-C0
Desktop Charger Cradle (Single Dock)	Brand Name	PSION
	Model Name	RV4000
Desktop Charger Cradle (AC Adapter)	Brand Name	FSP
	Model Name	FSP050-DBAB1
Charger Snap Module 1	Brand Name	PSION
	Model Name	RV4001
Charger Snap Module 2	Brand Name	PSION
	Model Name	RV4002
LCD Panel	Brand Name	Sharp
	Model Name	LS037V7DW01
Pouch	Brand Name	Psion
	Model Name	RV6091

Remark: For accessories equipped with this EUT, please refer to Appendix A.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003

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 (certification), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
4.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
5.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
7.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	20.23	20.11	20.17	20.2
CH 06	2437 MHz	20.09	20.1	20.17	19.96
CH 11	2462 MHz	19.67	19.78	19.84	19.86

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	22.57	22.3	22.44	22.46	23.3	22.77	22.68	22.77
CH 06	2437 MHz	22.36	22.1	22.26	22.33	22.99	22.62	22.74	22.73
CH 11	2462 MHz	21.69	22.16	22.47	22.16	23.58	22.71	22.85	22.69

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	21.33	21.32	21.3	21.82	21.64	22.33	21.53	22.15
CH 06	2437 MHz	21.81	21.01	21.37	21.9	21.78	21.5	21.7	22
CH 11	2462 MHz	21.43	21.76	22.03	22.09	21.86	21.97	21.65	22.41

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH149	5745 MHz	20.81	20.64	20.66	20.73	20.77	20.57	20.77	20.71
CH157	5785 MHz	19.52	19.58	19.47	19.59	19.5	19.64	19.63	19.62
CH165	5825 MHz	18.83	18.79	18.82	18.85	18.8	18.77	18.86	18.75

Channel	Frequency	5GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH149	5745 MHz	21.24	20.89	21.02	20.96	21	21.11	21	20.82
CH157	5785 MHz	19.61	19.65	19.66	19.64	19.62	19.6	19.54	19.57
CH165	5825 MHz	18.91	18.8	18.82	18.83	18.87	18.92	18.83	18.86

Remark:

1. The EUT is programmed to transmit signals continuously for all testing.
2. The data rates of WLAN 802.11a/b/g/n were set in 1Mbps for 802.11b, 24Mbps for 802.11g, MCS7 for 802.11n (BW 20MHz), 6Mbps for 802.11a, and MCS0 for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
3. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.2 Test Mode

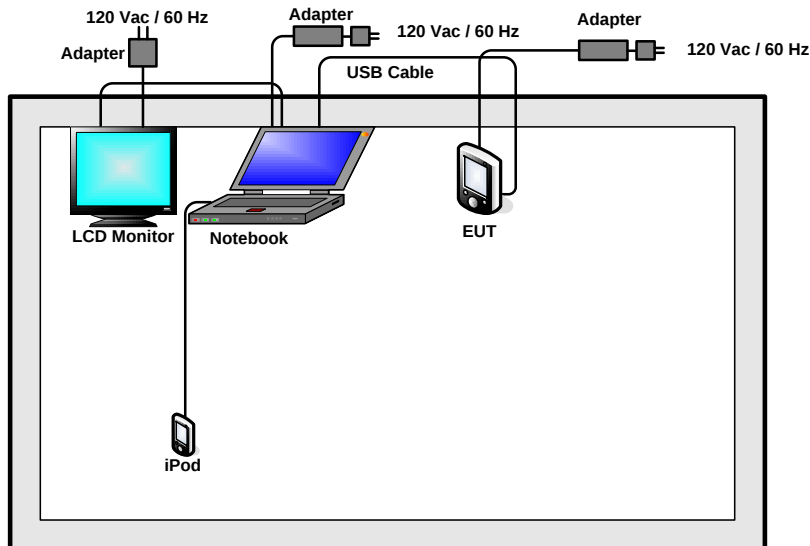
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

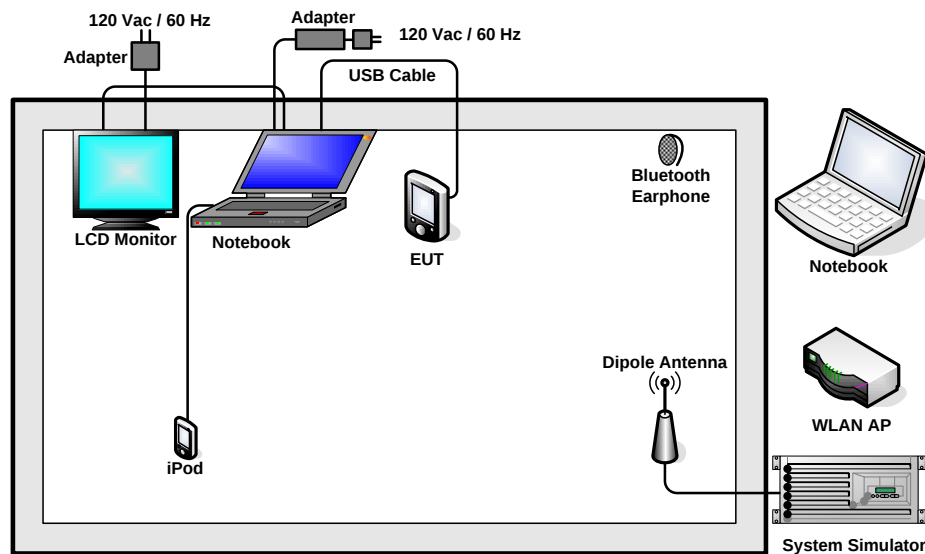
Test Cases		
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)	802.11a/n (Modulation : OFDM)
Conducted TCs	Mode 1: 802.11b_CH01_2412 MHz	Mode 10: 802.11a_CH149_5745 MHz
	Mode 2: 802.11b_CH06_2437 MHz	Mode 11: 802.11a_CH157_5785 MHz
	Mode 3: 802.11b_CH11_2462 MHz	Mode 12: 802.11a_CH165_5825 MHz
	Mode 4: 802.11g_CH01_2412 MHz	Mode 13: 802.11n_CH149_5745 MHz (BW 20M)
	Mode 5: 802.11g_CH06_2437 MHz	Mode 14: 802.11n_CH157_5785 MHz (BW 20M)
	Mode 6: 802.11g_CH11_2462 MHz	Mode 15: 802.11n_CH165_5825 MHz (BW 20M)
	Mode 7: 802.11n_CH01_2412 MHz (BW 20M)	
	Mode 8: 802.11n_CH06_2437 MHz (BW 20M)	
	Mode 9: 802.11n_CH11_2462 MHz (BW 20M)	
Radiated TCs	Mode 1: 802.11b_CH01_2412 MHz	Mode 10: 802.11a_CH149_5745 MHz
	Mode 2: 802.11b_CH06_2437 MHz	Mode 11: 802.11a_CH157_5785 MHz
	Mode 3: 802.11b_CH11_2462 MHz	Mode 12: 802.11a_CH165_5825 MHz
	Mode 4: 802.11g_CH01_2412 MHz	Mode 13: 802.11n_CH149_5745 MHz (BW 20M)
	Mode 5: 802.11g_CH06_2437 MHz	Mode 14: 802.11n_CH157_5785 MHz (BW 20M)
	Mode 6: 802.11g_CH11_2462 MHz	Mode 15: 802.11n_CH165_5825 MHz (BW 20M)
	Mode 7: 802.11n_CH01_2412 MHz (BW 20M)	
	Mode 8: 802.11n_CH06_2437 MHz (BW 20M)	
	Mode 9: 802.11n_CH11_2462 MHz (BW 20M)	
AC Conducted Emission	Mode 1: GSM 850 Idle + WLAN (2.4G) + Bluetooth Link + MP3 + Camera + Sleeve (USB + DC Jack) + Battery 3600mA + AC Wall Adapter 1 + USB Cable(Link with Notebook)	
Remark: 1. TC stands for Test Configuration, and consists of iPod, monitor and RJ-45. 2. The worst case of conducted emission is mode 1; only the test data of it was reported.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility "call23WM", is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

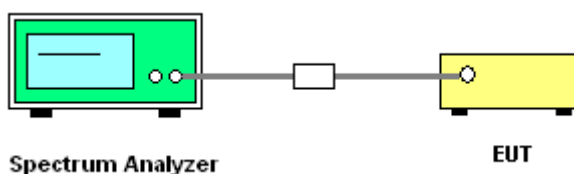
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.04 MHz	0.5	Pass
06	2437	9.04 MHz	0.5	Pass
11	2462	9.04 MHz	0.5	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.40 MHz	0.5	Pass
06	2437	16.34 MHz	0.5	Pass
11	2462	16.36 MHz	0.5	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.52 MHz	0.5	Pass
06	2437	17.20 MHz	0.5	Pass
11	2462	17.24 MHz	0.5	Pass

Note: Chain A+B was tested by combiner, and the chain A and B was tested individually.

Test Mode :	Mode 10, 11, 12	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	15.64 MHz	0.5	Pass
157	5785	15.80 MHz	0.5	Pass
165	5825	15.44 MHz	0.5	Pass

Test Mode :	Mode 13, 14, 15	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	16.02 MHz	0.5	Pass
157	5785	15.68 MHz	0.5	Pass
165	5825	15.50 MHz	0.5	Pass

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.12 MHz	Pass
06	2437	14.12 MHz	Pass
11	2462	14.12 MHz	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.44 MHz	Pass
06	2437	18.44 MHz	Pass
11	2462	18.36 MHz	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.28 MHz	Pass
06	2437	19.24 MHz	Pass
11	2462	19.20 MHz	Pass

Note: Chain A+B was tested by combiner, and the chain A and B was tested individually.

Test Mode :	Mode 10, 11, 12	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	17.00 MHz	Pass
157	5785	17.08 MHz	Pass
165	5825	17.20 MHz	Pass

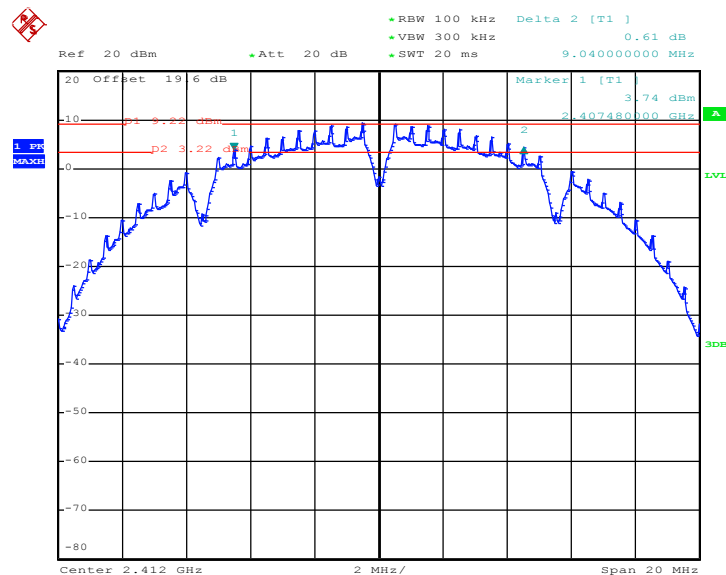
Test Mode :	Mode 13, 14, 15	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	18.04 MHz	Pass
157	5785	18.16 MHz	Pass
165	5825	18.24 MHz	Pass



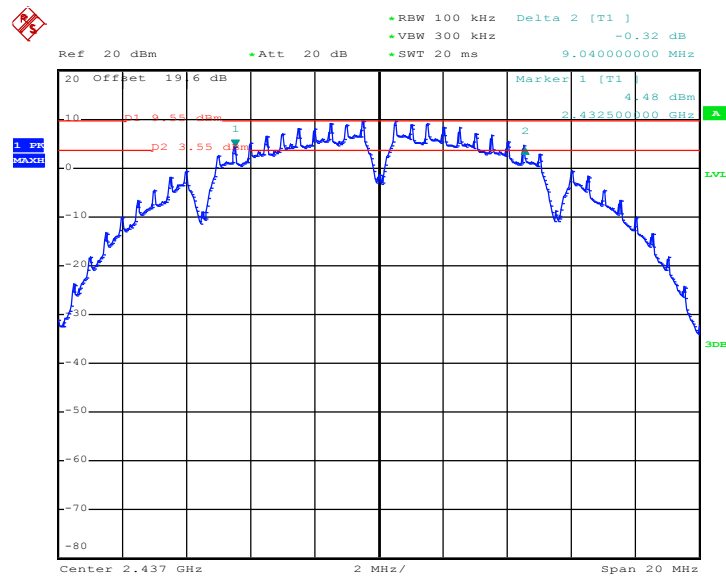
3.1.7 Test Result of 6dB Bandwidth Plots

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



Date: 10.MAR.2011 10:11:17

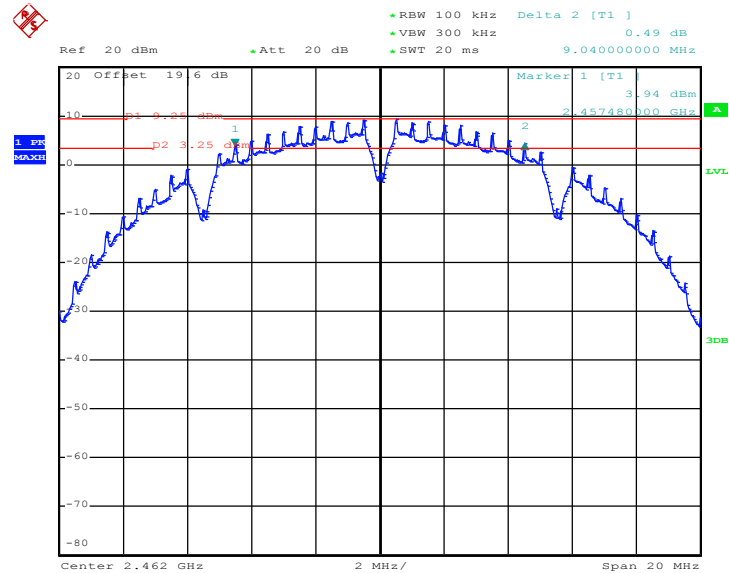
Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 10.MAR.2011 11:47:37

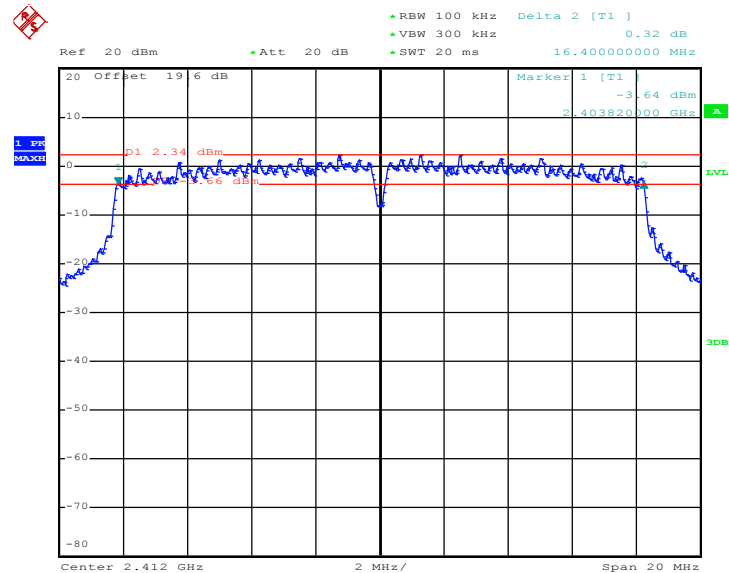


Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



Date: 10.MAR.2011 11:51:07

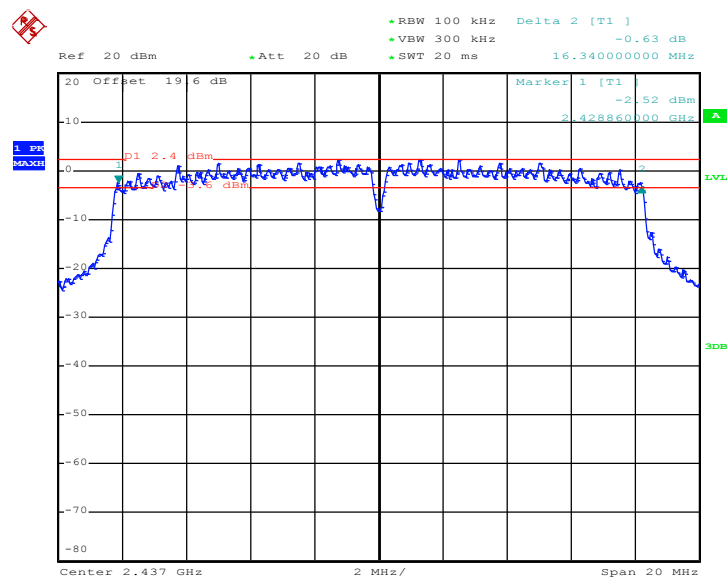
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 10.MAR.2011 11:27:31

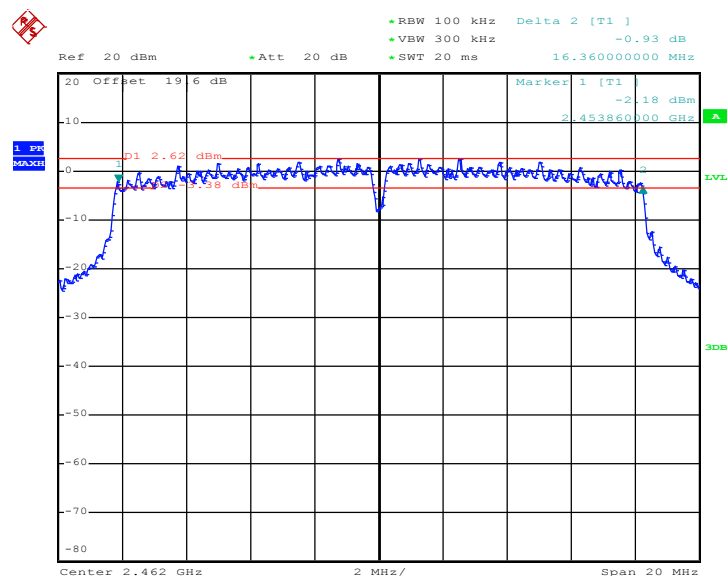


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06

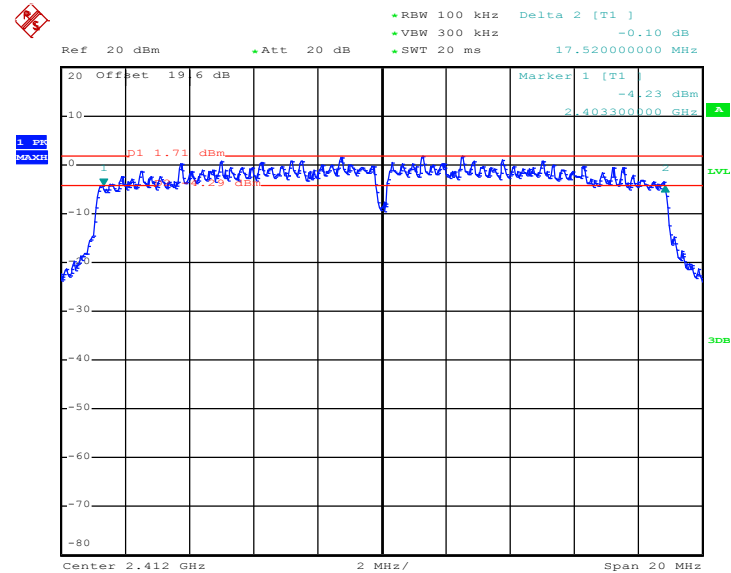


Date: 10.MAR.2011 11:14:43

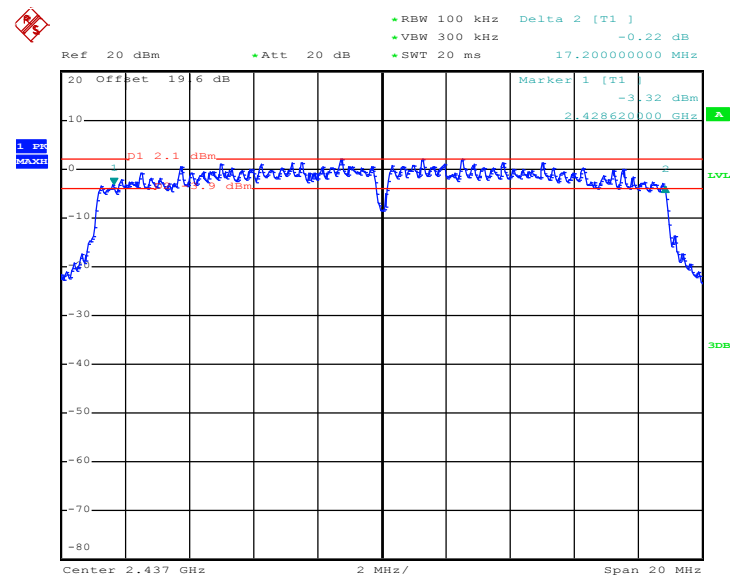
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



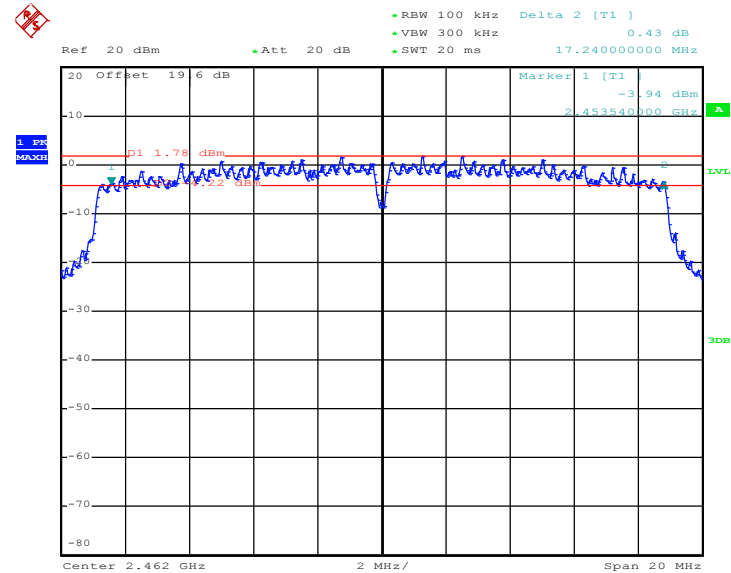
Date: 10.MAR.2011 10:58:40

Mode 7 : 6 dB Bandwidth Plot on 802.11n Channel 01


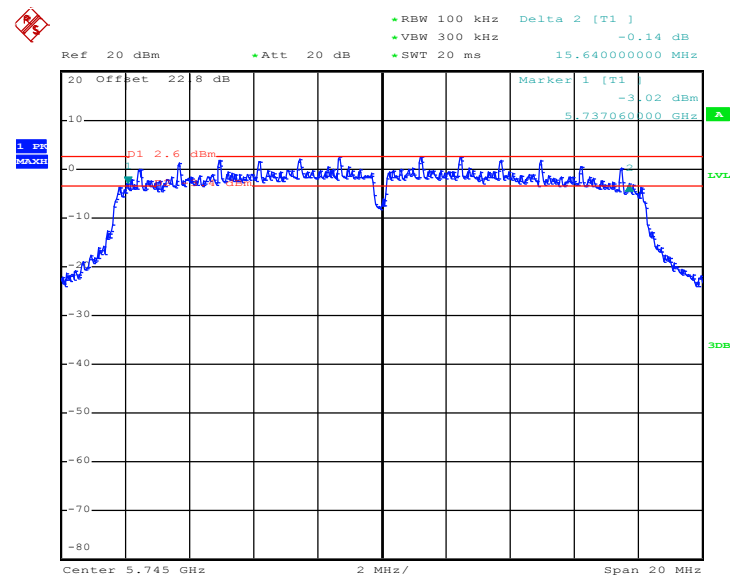
Date: 10.MAR.2011 13:29:02

Mode 8 : 6 dB Bandwidth Plot on 802.11n Channel 06


Date: 10.MAR.2011 12:39:32

Mode 9 : 6 dB Bandwidth Plot on 802.11n Channel 11


Date: 10.MAR.2011 12:51:26

Mode 10: 6 dB Bandwidth Plot on 802.11a Channel 149


Date: 23.MAR.2011 08:25:44



Ref 20 dBm • Att 20 dB • RBW 100 kHz Delta 2 [T1] 0.04 dB
 • VBW 300 kHz 15.800000000 MHz

Marker 1 [T1] -1.07 dBm
 5.777060000 GHz

Offset 22.8 dB

20
-10
0
-10
-30
-40
-50
-60
-70
-80

Center 5.785 GHz 2 MHz/ Span 20 MHz

1.56
0.048

01 4.68 dBm

LVL

3DB

Date: 23.MAR.2011 08:39:49

Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms Delta 2 [T1]

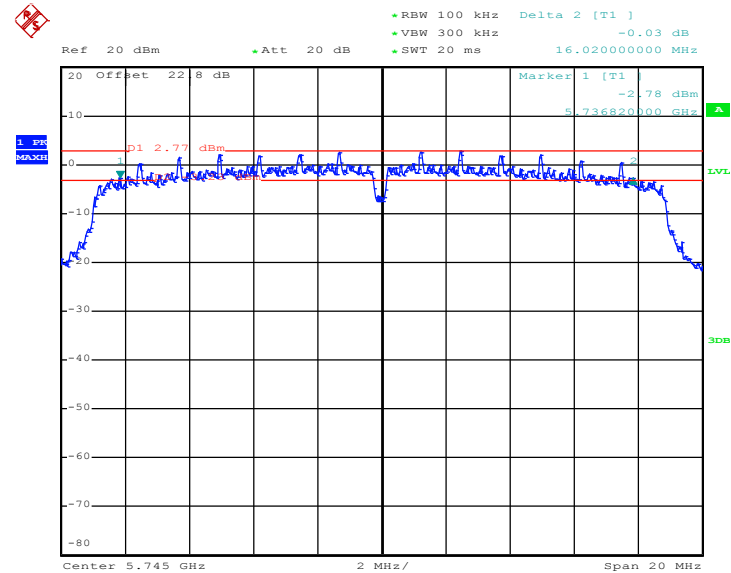
20 Offset 22.8 dBm

Marker 1 [T1] -0.31 dBm 5.817060000 GHz

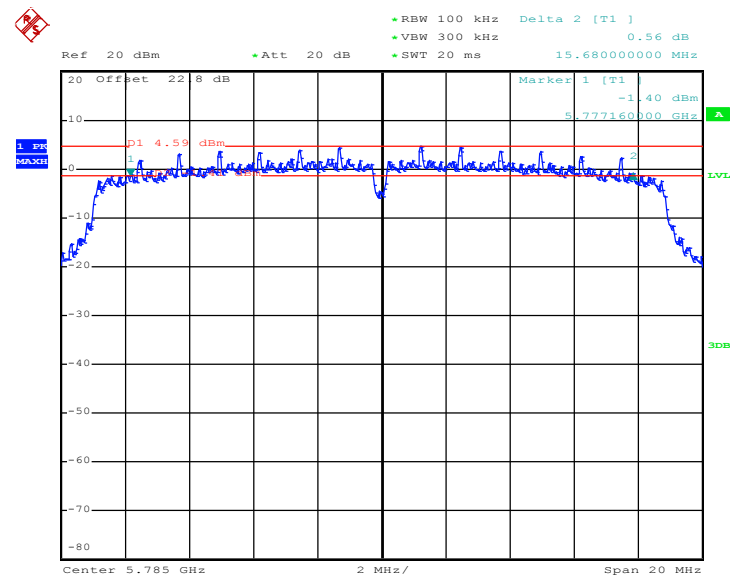
p1 5.45 dBm

Center 5.825 GHz Span 20 MHz

Date: 23.MAR.2011 08:42:13

Mode 13: 6 dB Bandwidth Plot on 802.11n Channel 149


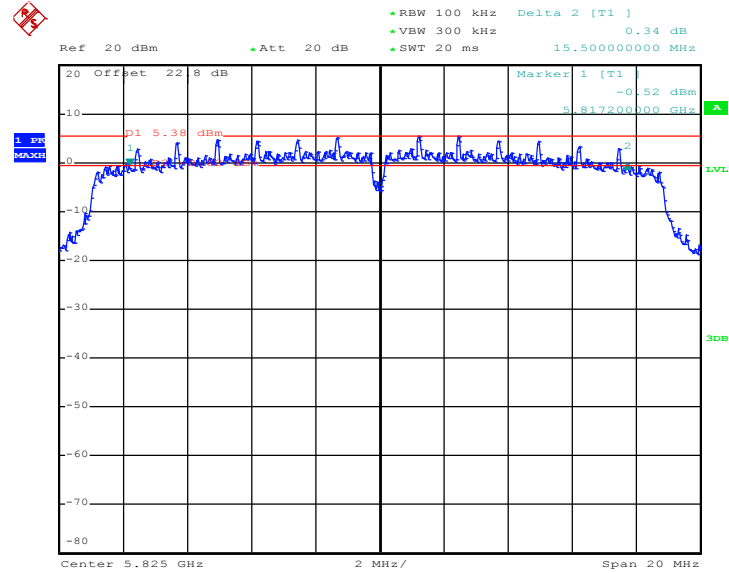
Date: 23.MAR.2011 09:26:53

Mode 14: 6 dB Bandwidth Plot on 802.11n Channel 157


Date: 23.MAR.2011 09:12:46



Mode 15: 6 dB Bandwidth Plot on 802.11n Channel 165



Date: 23.MAR.2011 08:56:37

3.1.8 Output Power Measurement

3.1.9 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

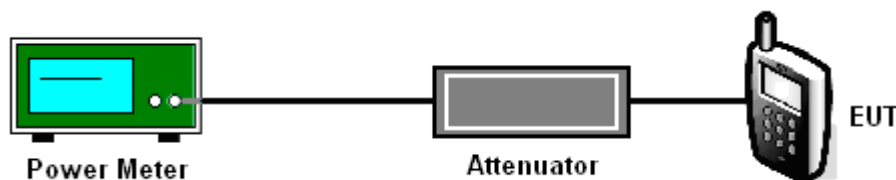
3.1.10 Measuring Instruments

See list of measuring instruments of this test report.

3.1.11 Test Procedures

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

3.1.12 Test Setup



3.1.13 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.23	30	Pass
06	2437	20.09	30	Pass
11	2462	19.67	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.30	30	Pass
06	2437	22.99	30	Pass
11	2462	23.58	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.15	30	Pass
06	2437	22.00	30	Pass
11	2462	22.41	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	20.81	30	Pass
157	5785	19.52	30	Pass
165	5825	18.83	30	Pass

Test Mode :	Mode 13, 14, 15	Temperature :	22~24°C
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	21.24	30	Pass
157	5785	19.61	30	Pass
165	5825	18.91	30	Pass

3.2 Band Edges Measurement

3.2.1 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.

3.2.2 Measuring Instruments

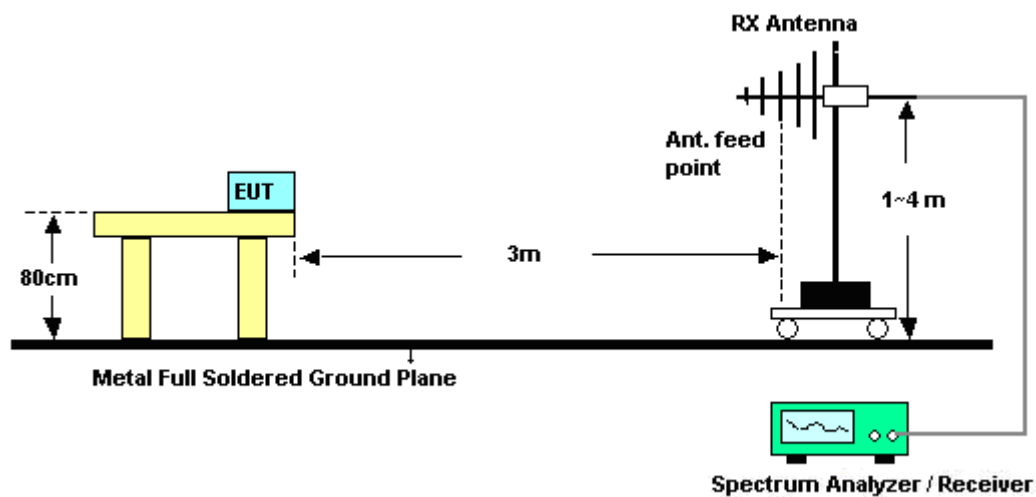
See list of measuring instruments of this test report.

3.2.3 Test Procedures

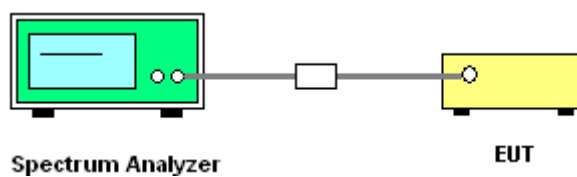
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band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

3.2.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.2.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~25 °C
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.81	56.27	-17.73	74	51.91	32.18	6.03	33.85	102	10	Peak
2385.81	47.28	-6.72	54	42.92	32.18	6.03	33.85	102	10	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384.1	54.41	-19.59	74	50.07	32.16	6.03	33.85	188	53	Peak
2384.1	45.03	-8.97	54	40.69	32.16	6.03	33.85	188	53	Average

Test Mode :	Mode 3	Temperature :	23~25 °C
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.65	58.33	-15.67	74	53.75	32.3	6.18	33.9	100	360	Peak
2487.65	48.95	-5.05	54	44.37	32.3	6.18	33.9	100	360	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.46	56	-18	74	51.44	32.28	6.18	33.9	179	34	Peak
2487.46	46.86	-7.14	54	42.3	32.28	6.18	33.9	179	34	Average



Test Mode :	Mode 4	Temperature :	23~25 °C
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	64.16	-9.84	74	59.8	32.18	6.03	33.85	102	10	Peak
2389.61	44.36	-9.64	54	40	32.18	6.03	33.85	102	10	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	63.55	-10.45	74	59.19	32.18	6.03	33.85	152	36	Peak
2389.99	42.72	-11.28	54	38.36	32.18	6.03	33.85	152	36	Average

Test Mode :	Mode 6	Temperature :	23~25 °C
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	64.32	-9.68	74	59.76	32.28	6.18	33.9	100	360	Peak
2483.5	46.09	-7.91	54	41.53	32.28	6.18	33.9	100	360	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	63.04	-10.96	74	58.48	32.28	6.18	33.9	179	43	Peak
2483.85	45.09	-8.91	54	40.53	32.28	6.18	33.9	179	43	Average



Test Mode :	Mode 7	Temperature :	23~25 °C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	61.96	-12.04	74	57.6	32.18	6.03	33.85	101	10	Peak
2389.99	43.09	-10.91	54	38.73	32.18	6.03	33.85	101	10	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	58.15	-15.85	74	53.79	32.18	6.03	33.85	187	49	Peak
2389.61	40.45	-13.55	54	36.09	32.18	6.03	33.85	187	49	Average

Test Mode :	Mode 9	Temperature :	23~25 °C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

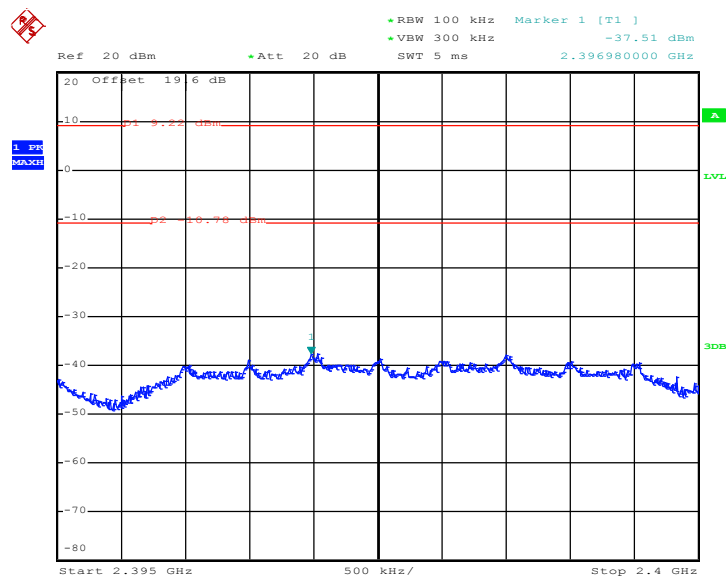
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	64.53	-9.47	74	59.97	32.28	6.18	33.9	100	360	Peak
2484.42	45.38	-8.62	54	40.82	32.28	6.18	33.9	100	360	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	63.42	-10.58	74	58.86	32.28	6.18	33.9	182	41	Peak
2483.5	44.33	-9.67	54	39.77	32.28	6.18	33.9	182	41	Average

3.2.6 Test Result of Conducted Band Edges

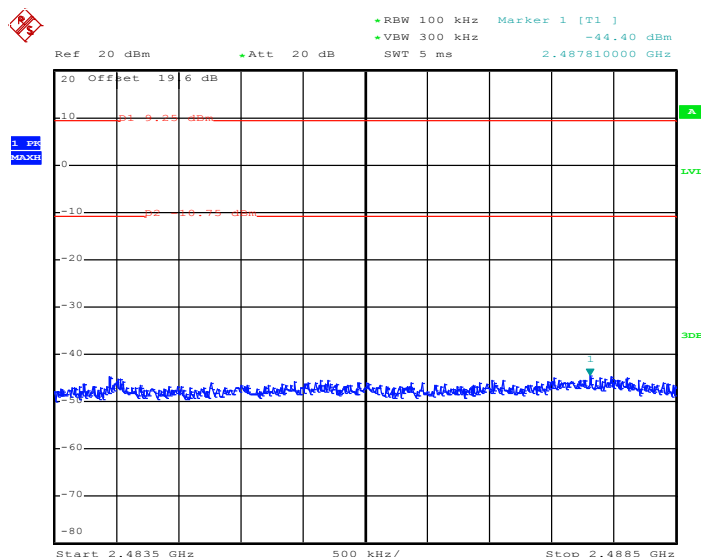
Test Mode :	Mode 1 and 3	Temperature :	22~24℃
Test Band :	802.11b	Relative Humidity :	48~52%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 10.MAR.2011 10:12:25

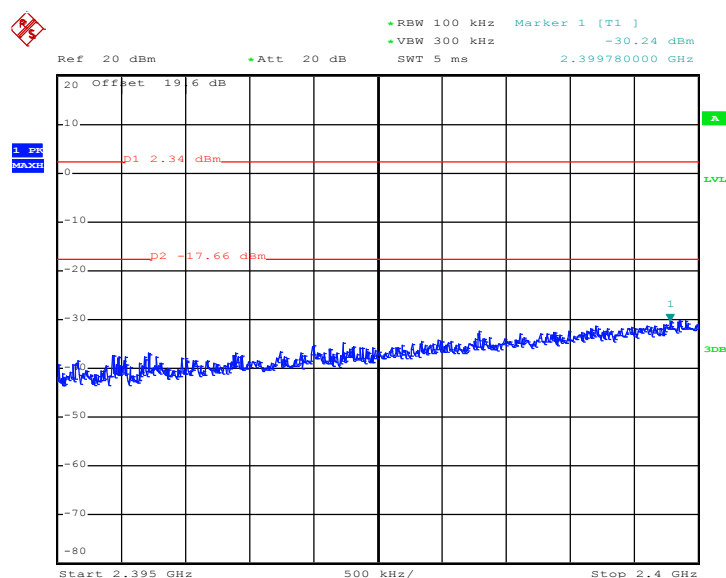
High Band Edge Plot on 802.11b Channel 11



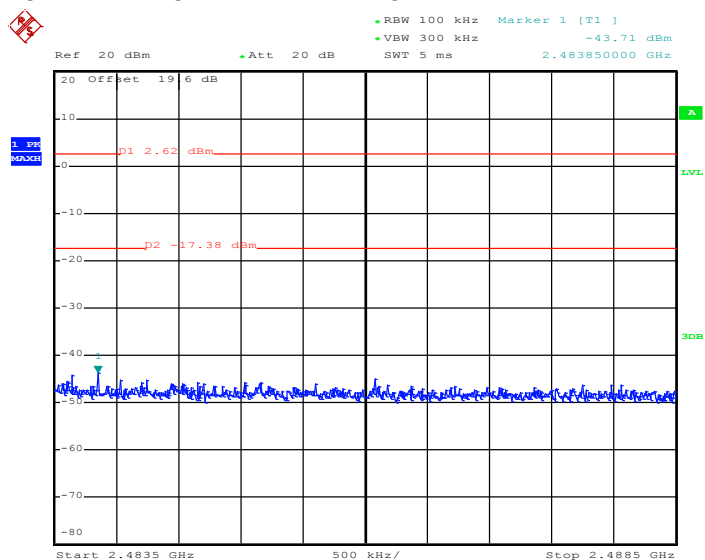
Date: 10.MAR.2011 11:51:53



Test Mode :	Mode 4 and 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	48~52%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01

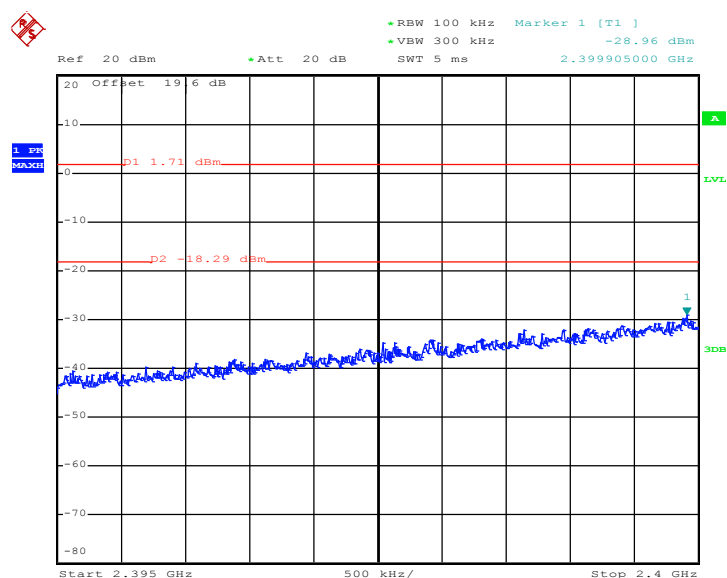
Date: 10.MAR.2011 11:28:39

High Band Edge Plot on 802.11g Channel 11

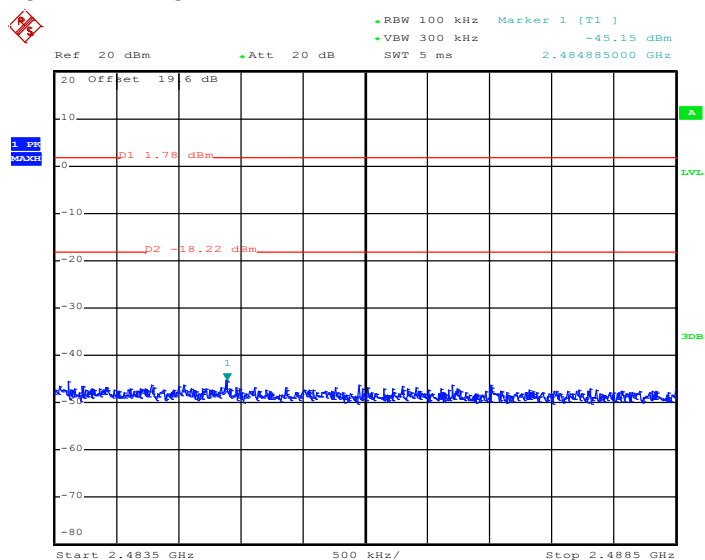
Date: 10.MAR.2011 10:59:27



Test Mode :	Mode 7 and 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

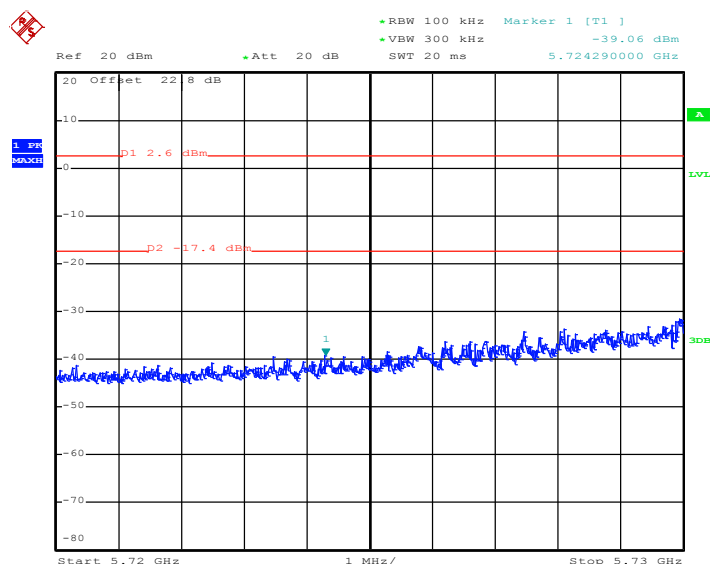
Low Band Edge Plot on 802.11n Channel 01

Date: 10.MAR.2011 13:30:10

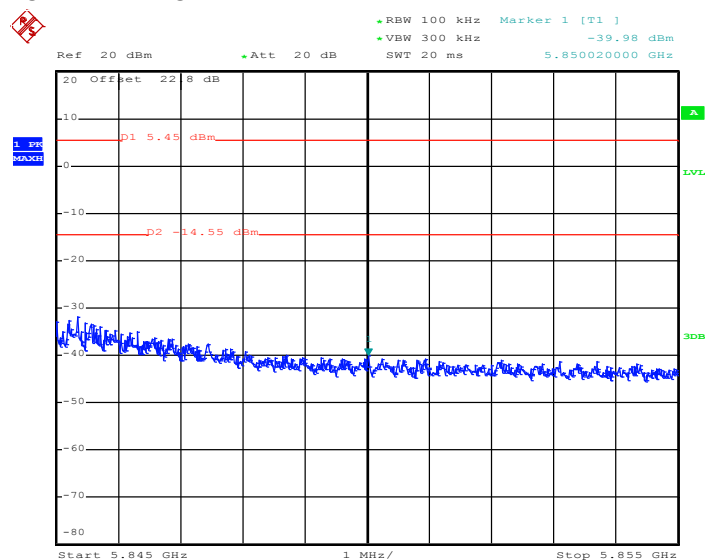
High Band Edge Plot on 802.11n Channel 11

Date: 10.MAR.2011 12:52:13

Test Mode :	Mode 10 and 12	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	48~52%
Test Channel :	149 and 165	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11a Channel 149


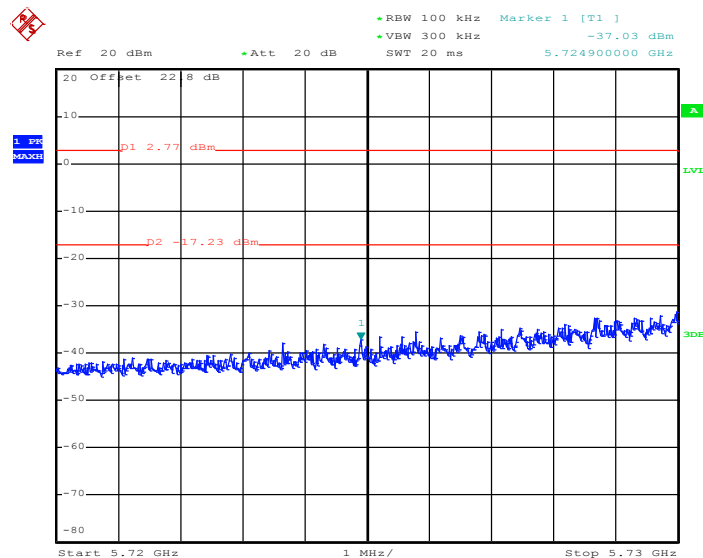
Date: 23.MAR.2011 08:26:10

High Band Edge Plot on 802.11a Channel 165


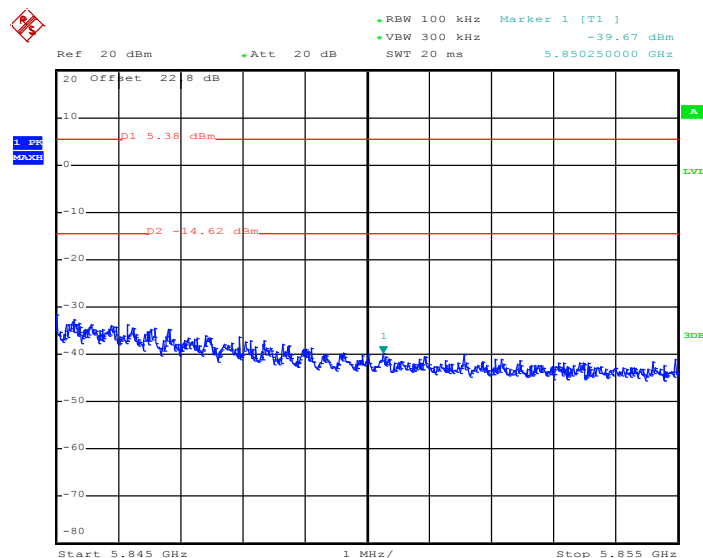
Date: 23.MAR.2011 08:42:38



Test Mode :	Mode 13 and 15	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	149 and 165	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11n Channel 149

Date: 23.MAR.2011 09:27:19

High Band Edge Plot on 802.11n Channel 165

Date: 23.MAR.2011 08:57:03

3.3 Spurious Emission Measurement

3.3.1 Limit of Spurious Emission Measurement

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

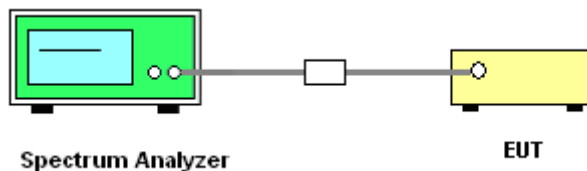
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedure

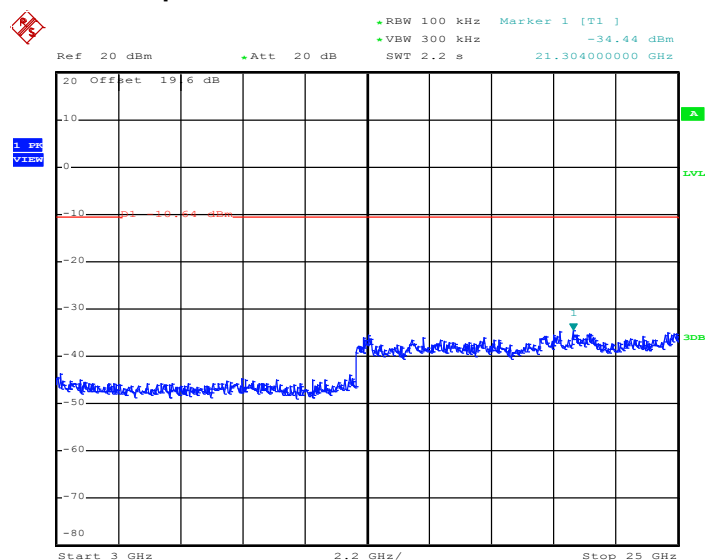
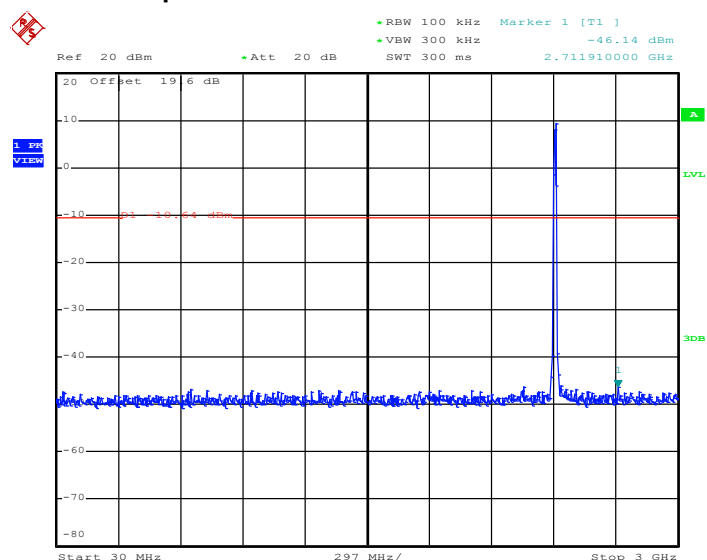
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

3.3.4 Test Setup





Test Mode :	Mode 1	Temperature :	22~24℃
Test Band :	802.11b	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Pinkston Tu

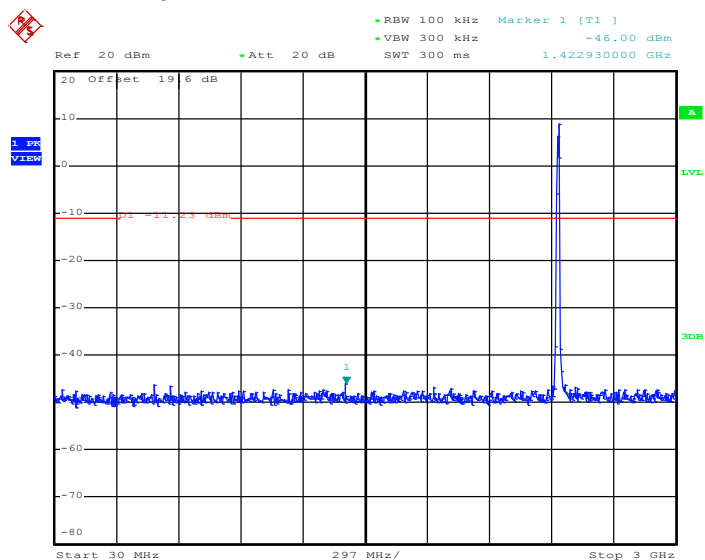


Date: 10.MAR.2011 10:23:31



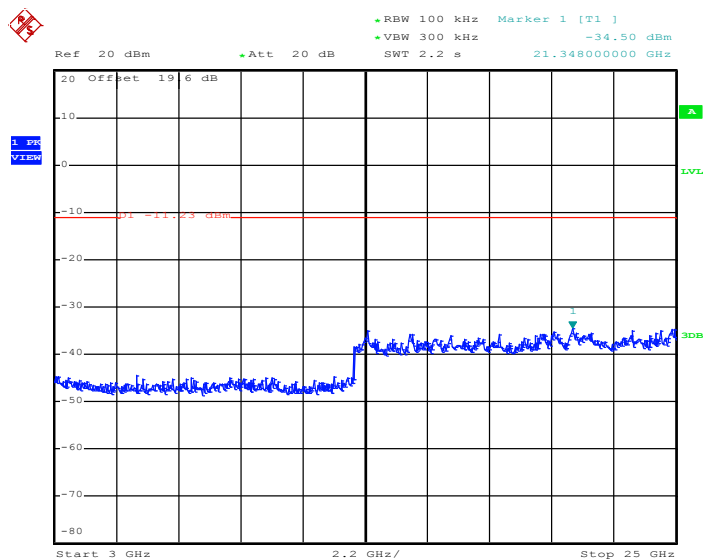
Test Mode :	Mode 2	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	48~52%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 10.MAR.2011 11:48:28

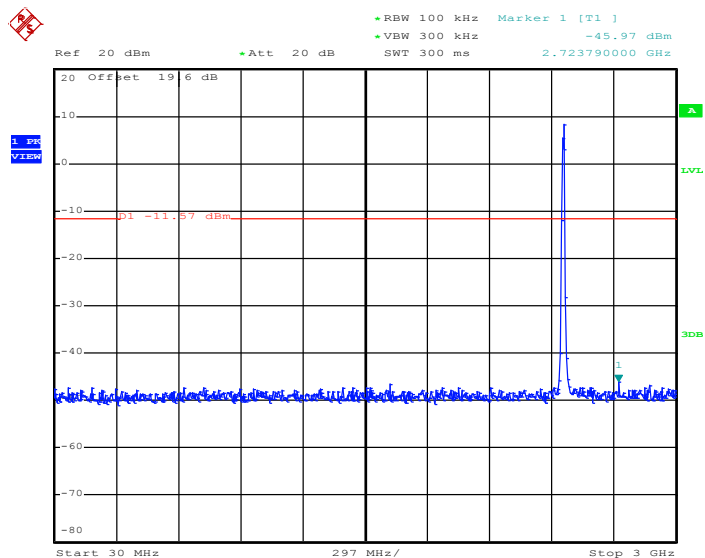
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



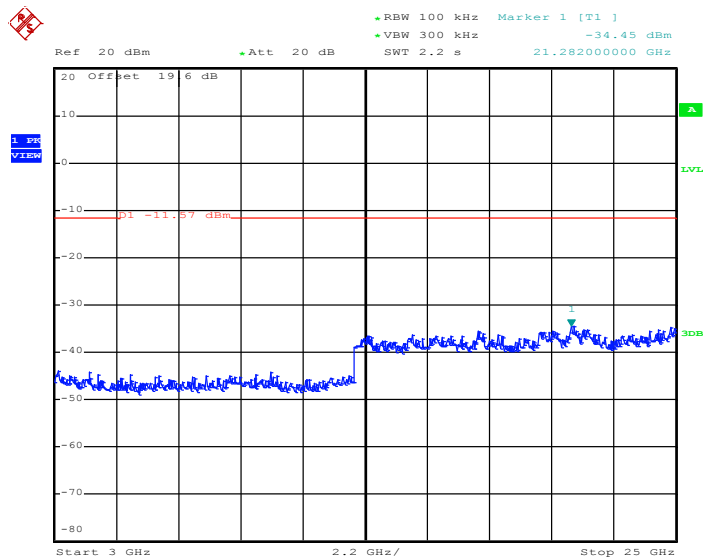
Date: 10.MAR.2011 11:48:45



Test Mode :	Mode 3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

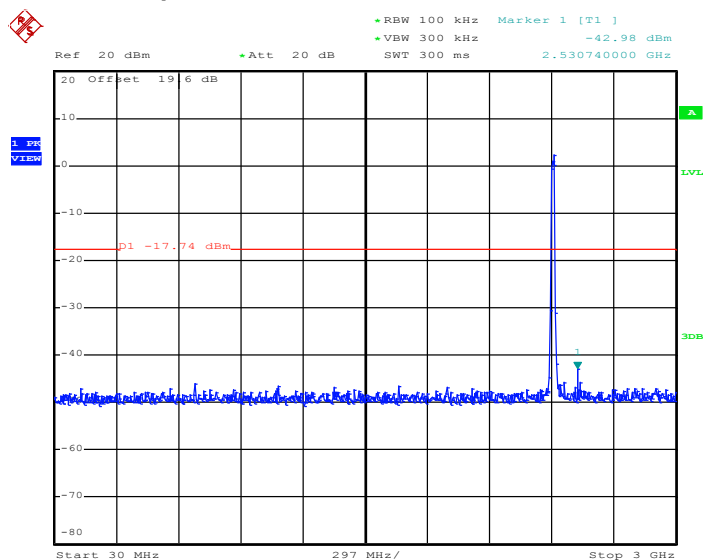
Date: 10.MAR.2011 12:01:12

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

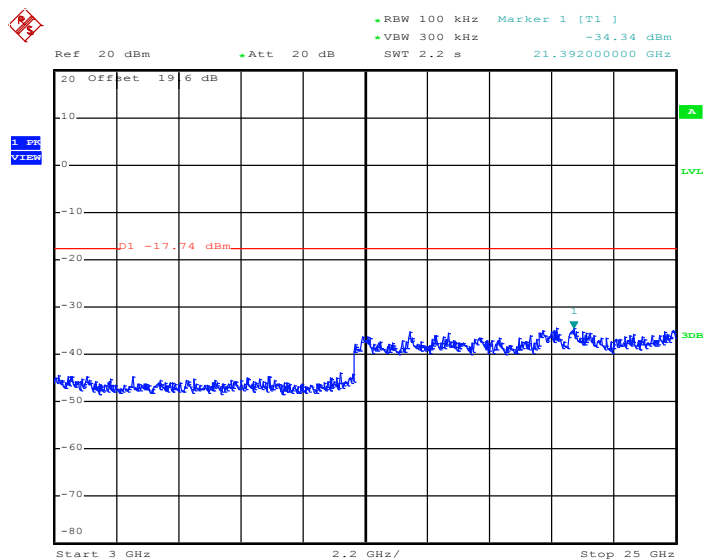
Date: 10.MAR.2011 12:01:29



Test Mode :	Mode 4	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

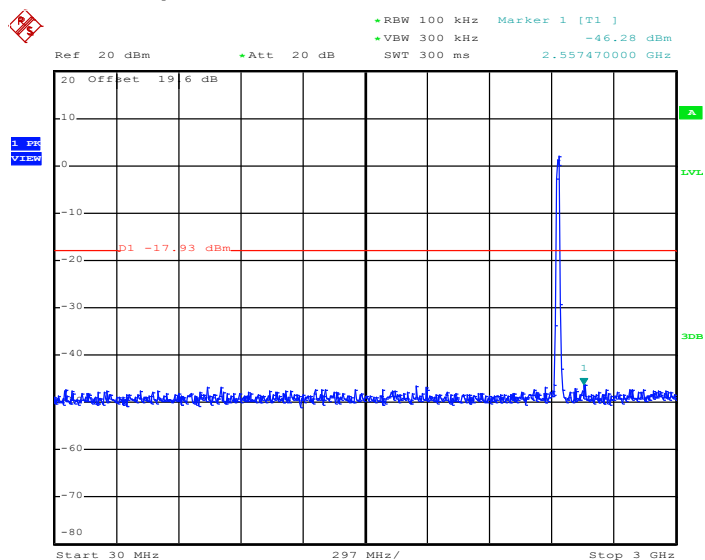
Date: 10.MAR.2011 11:39:20

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 10.MAR.2011 11:39:37

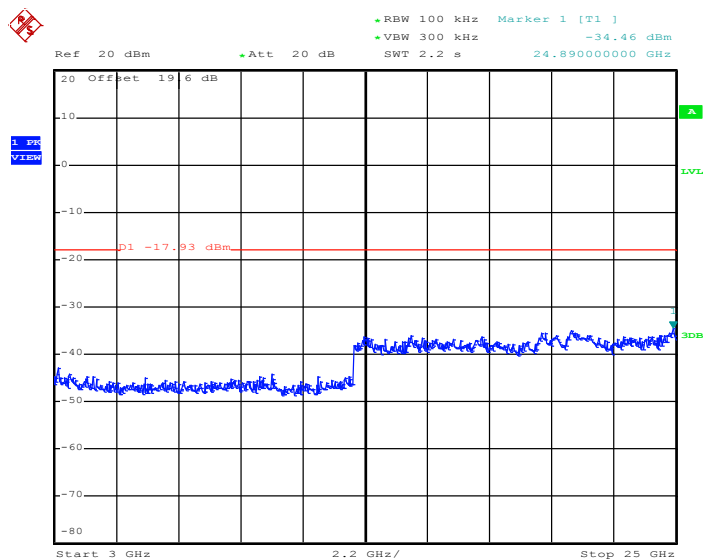
Test Mode :	Mode 5	Temperature :	22~24℃
Test Band :	802.11g	Relative Humidity :	48~52%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 10.MAR.2011 11:24:11

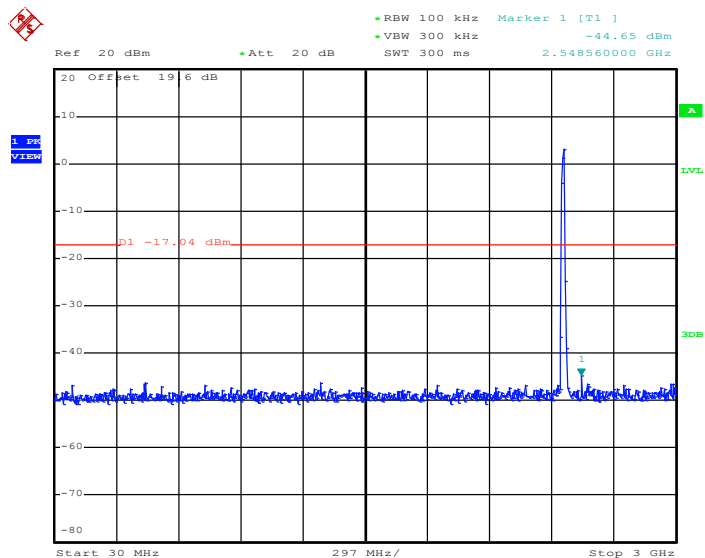
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



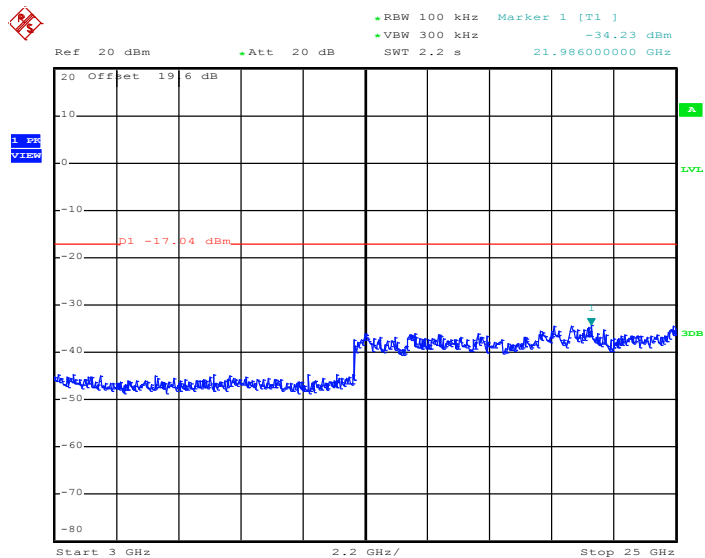
Date: 10.MAR.2011 11:24:28



Test Mode :	Mode 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

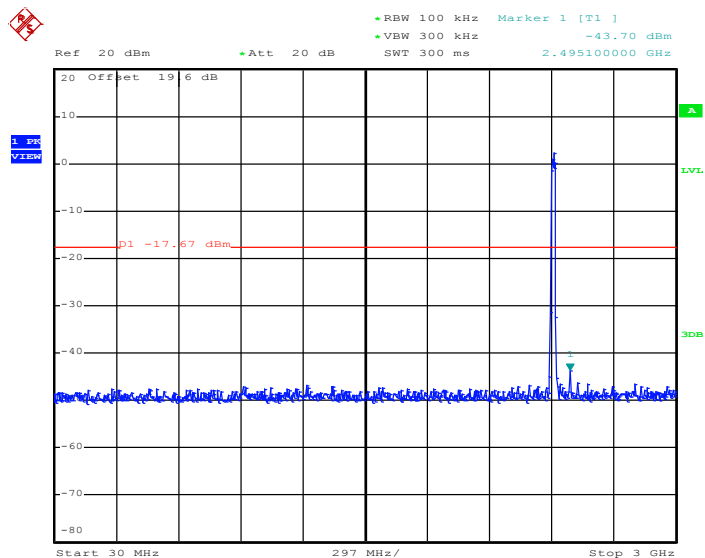
Date: 10.MAR.2011 11:09:01

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

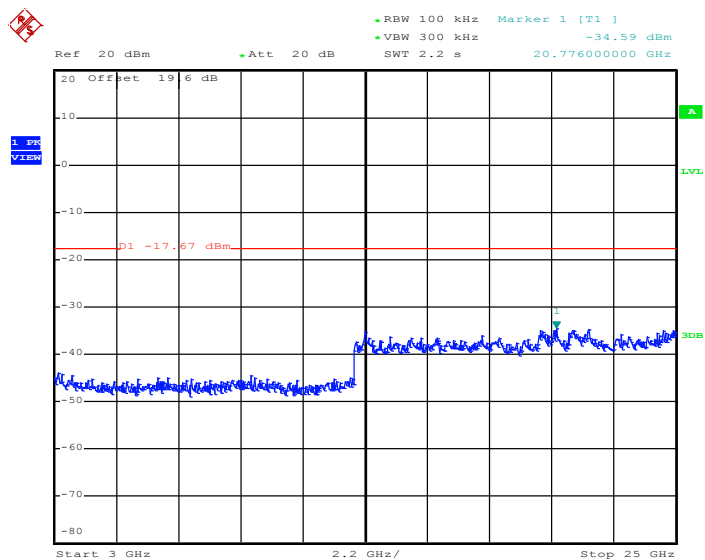
Date: 10.MAR.2011 11:09:18



Test Mode :	Mode 7	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 10.MAR.2011 12:35:42

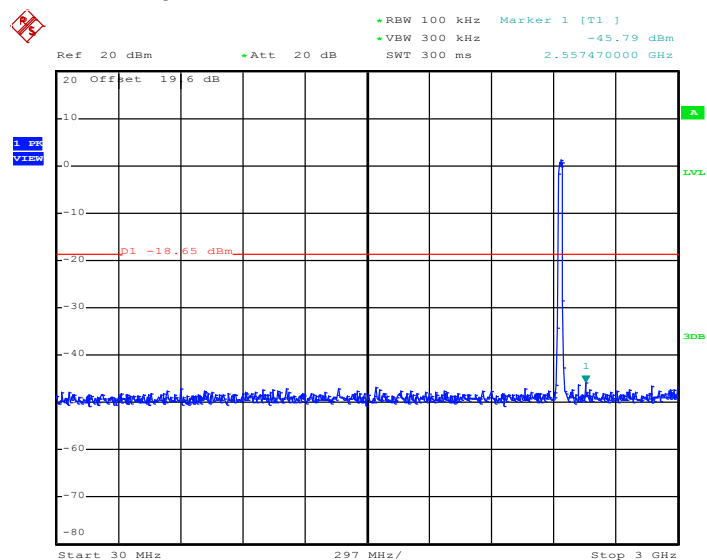
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 10.MAR.2011 12:35:59



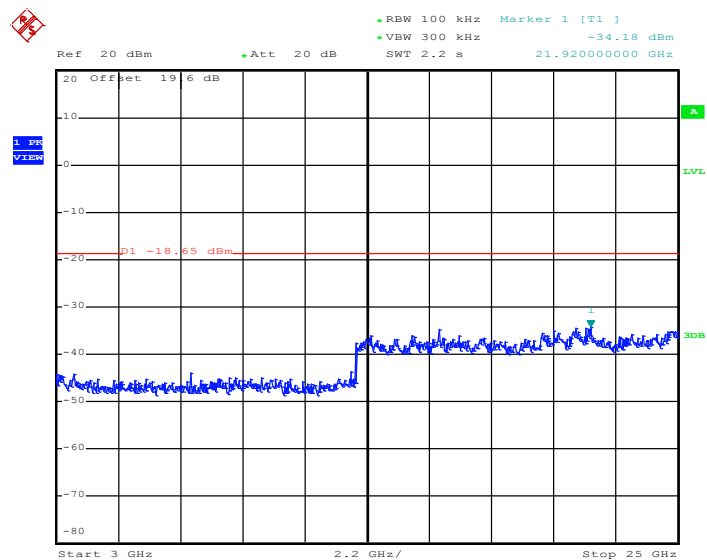
Test Mode :	Mode 8	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 10.MAR.2011 12:49:03

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

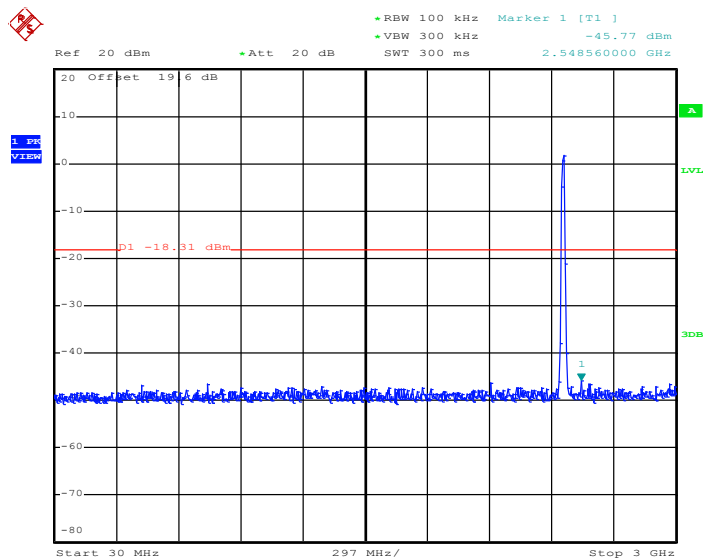


Date: 10.MAR.2011 12:49:20



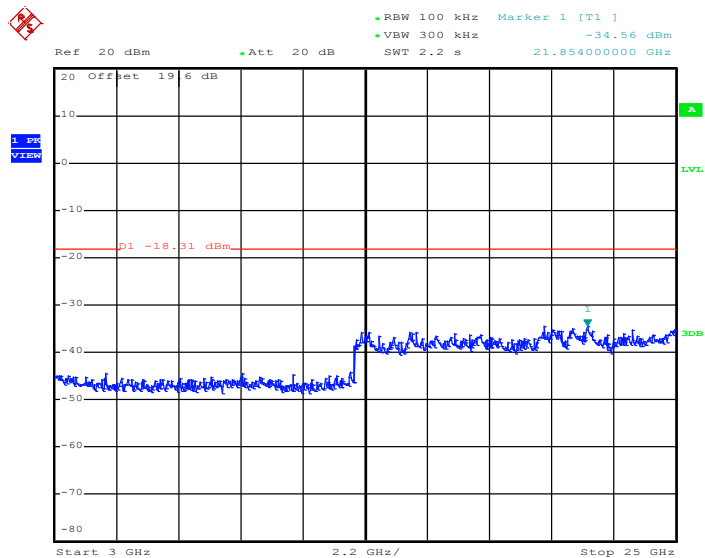
Test Mode :	Mode 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 10.MAR.2011 13:23:32

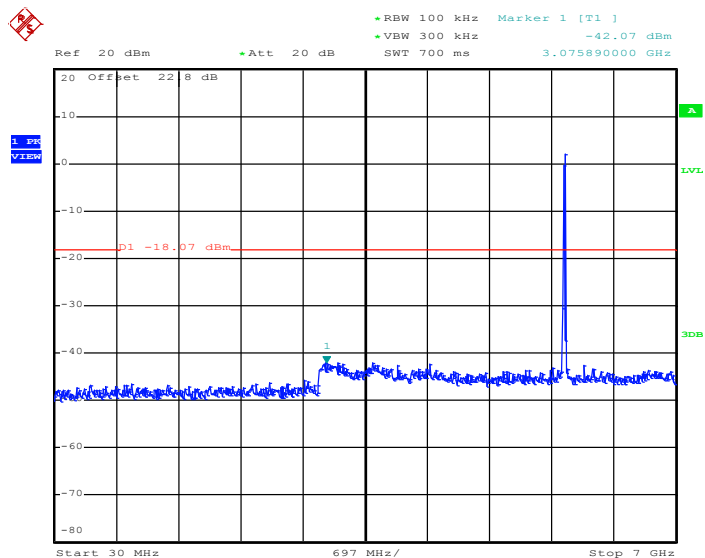
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



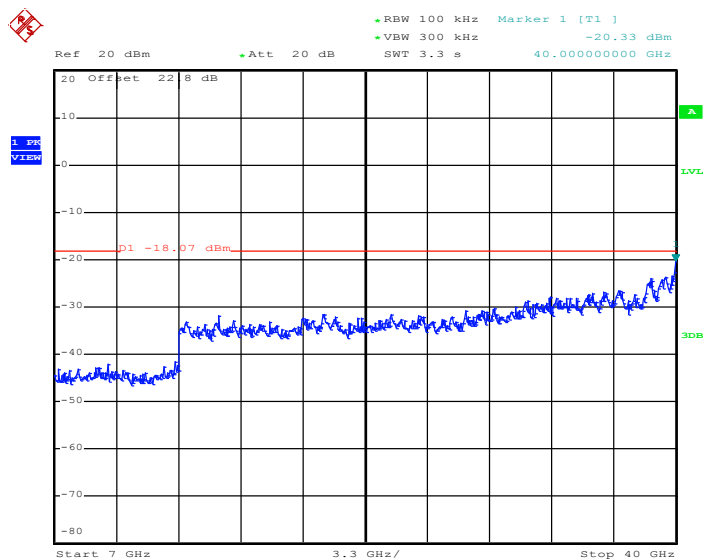
Date: 10.MAR.2011 13:23:49



Test Mode :	Mode 10	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	48~52%
Test Channel :	149	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz

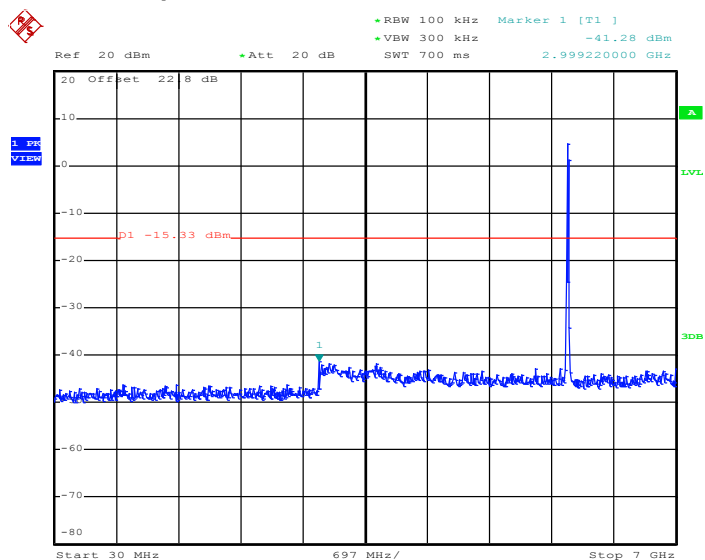
Date: 23.MAR.2011 08:23:21

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

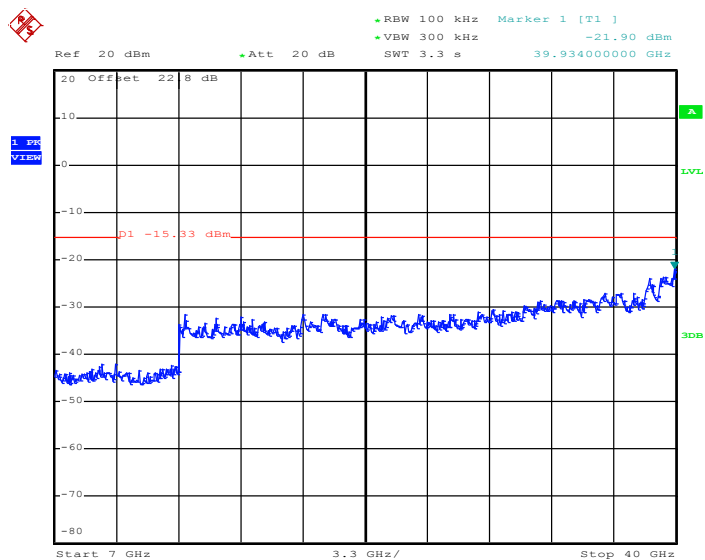
Date: 23.MAR.2011 08:23:38



Test Mode :	Mode 11	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	48~52%
Test Channel :	157	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz

Date: 23.MAR.2011 08:38:20

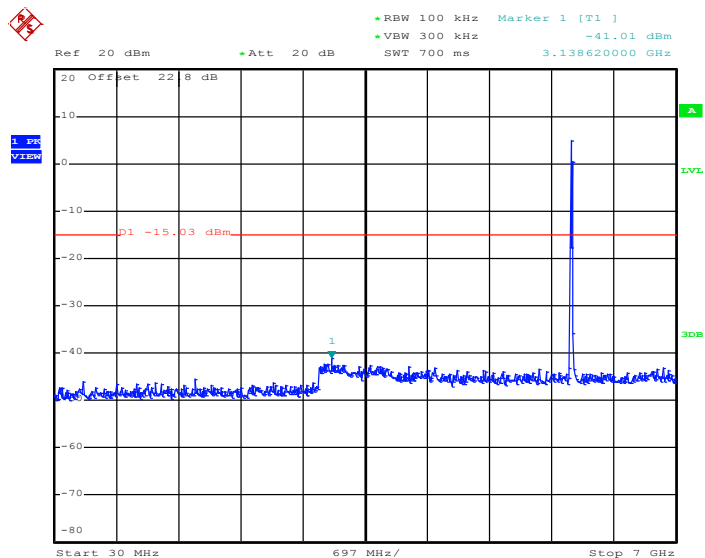
Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

Date: 23.MAR.2011 08:38:37



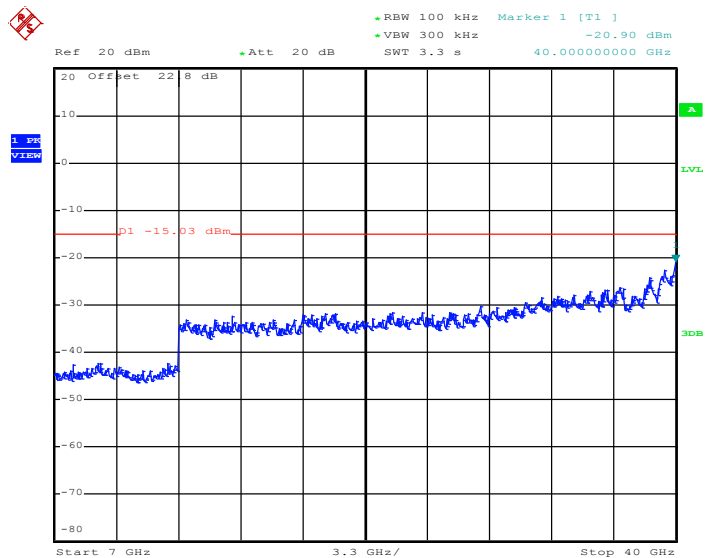
Test Mode :	Mode 12	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	48~52%
Test Channel :	165	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 23.MAR.2011 08:52:04

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

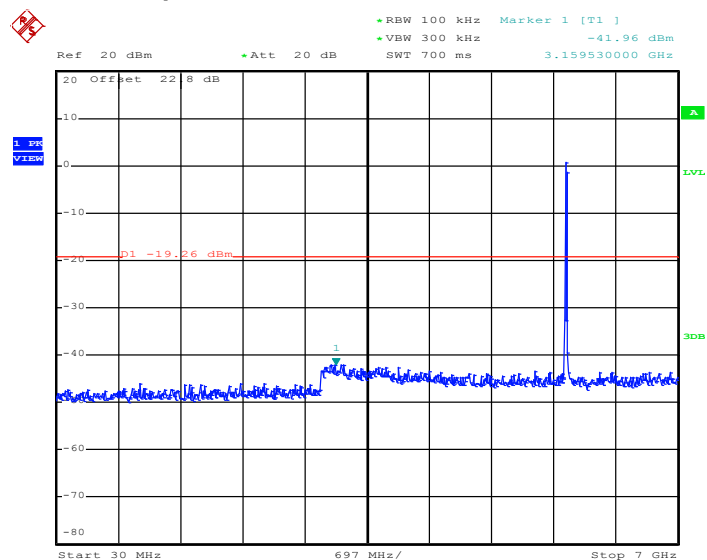


Date: 23.MAR.2011 08:52:21



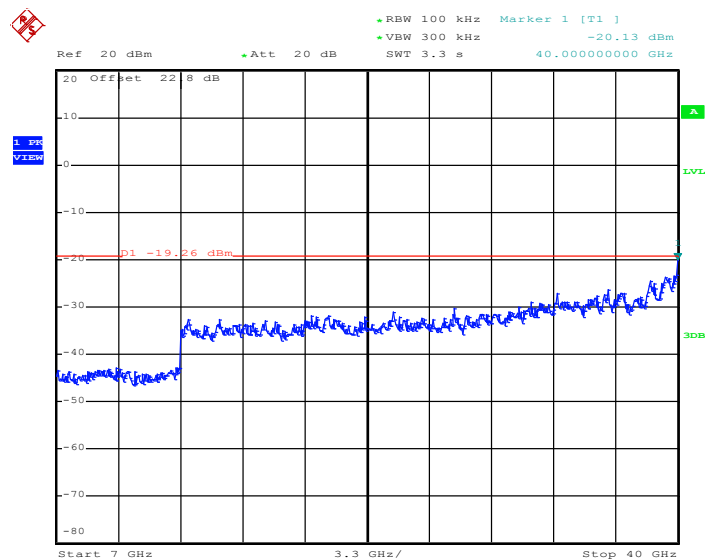
Test Mode :	Mode 13	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	149	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



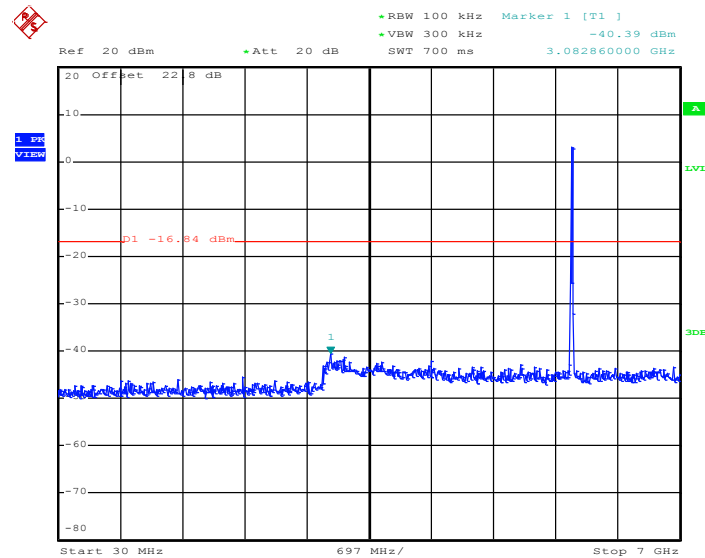
Date: 23.MAR.2011 09:36:46

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

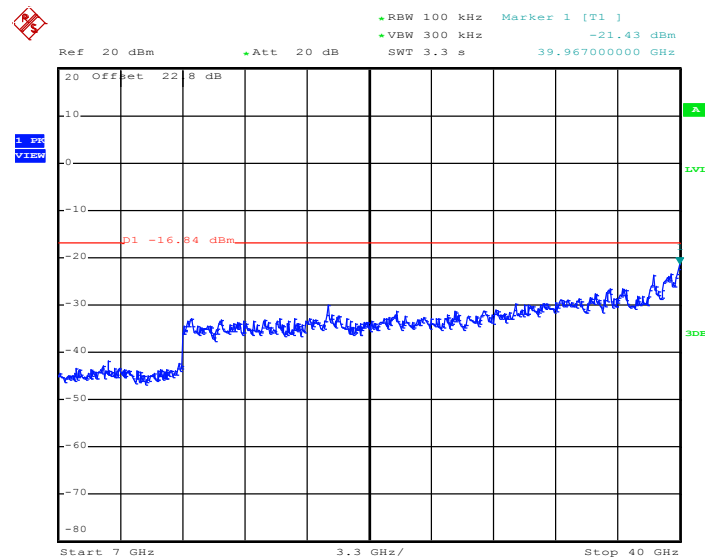


Date: 23.MAR.2011 09:37:02

Test Mode :	Mode 14	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	157	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz


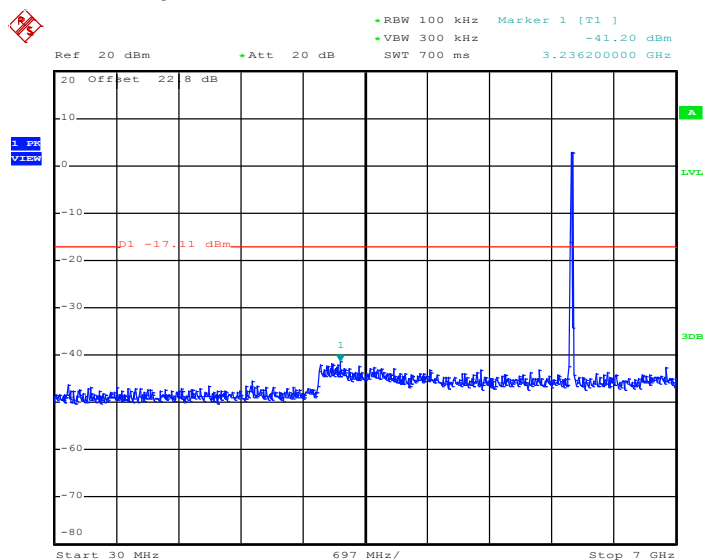
Date: 23.MAR.2011 09:22:18

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz


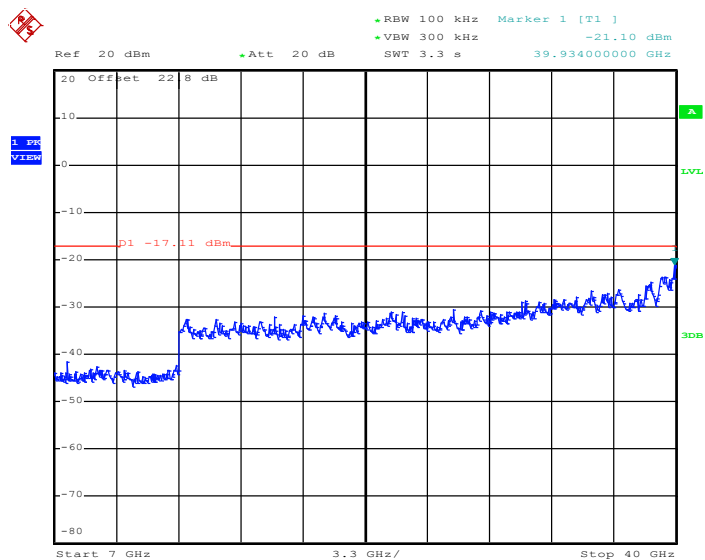
Date: 23.MAR.2011 09:22:35



Test Mode :	Mode 15	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~52%
Test Channel :	165	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz

Date: 23.MAR.2011 09:09:22

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

Date: 23.MAR.2011 09:09:39

3.4 Power Spectral Density Measurement

3.4.1 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.

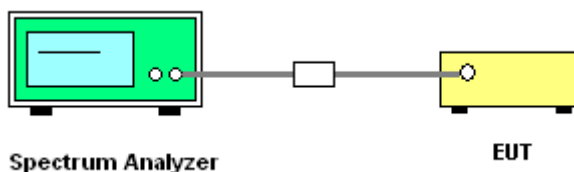
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

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

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-4.46	8	Pass
06	2437	-4.42	8	Pass
11	2462	-4.46	8	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.73	8	Pass
06	2437	-10.67	8	Pass
11	2462	-10.52	8	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.08	8	Pass
06	2437	-12.10	8	Pass
11	2462	-12.50	8	Pass



Test Mode :	Mode 10, 11, 12	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-10.60	8	Pass
157	5785	-8.78	8	Pass
165	5825	-8.04	8	Pass

Test Mode :	Mode 13, 14, 15	Temperature :	22~24℃
Test Engineer :	Pinkston Tu	Relative Humidity :	48~52%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-10.50	8	Pass
157	5785	-8.79	8	Pass
165	5825	-8.26	8	Pass



Ref 20 dBm Att 20 dB Marker 1 [T1] -4.46 dBm

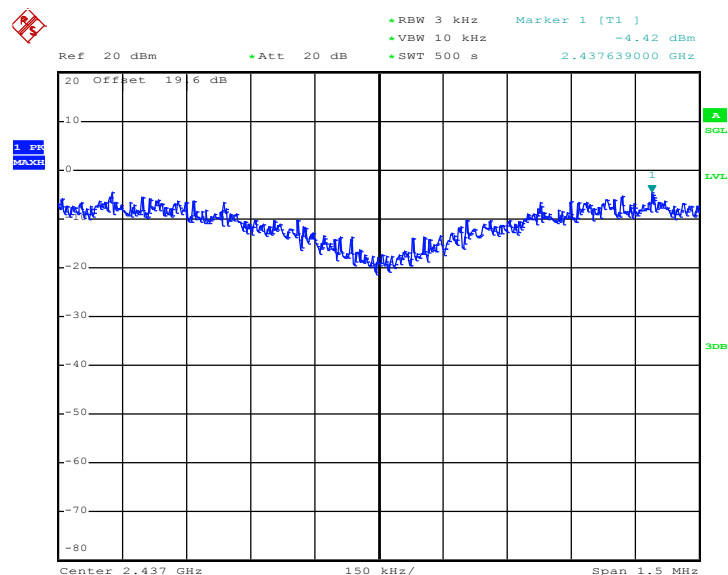
RBW 3 kHz VBW 10 kHz SWT 500 s 2.412639000 GHz

20 Offset 19.6 dB

1.9% 50.000

Center 2.412 GHz 150 kHz/ Span 1.5 MHz

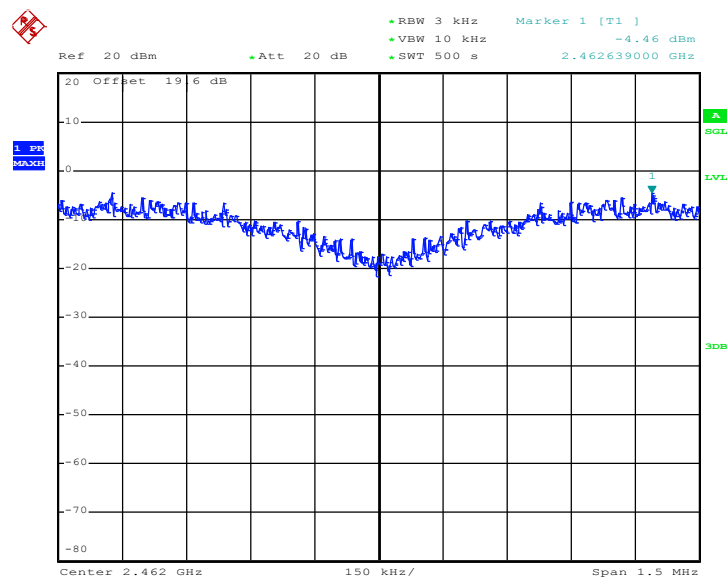
Mode 2 : PSD Plot on 802.11b Channel 06



Date: 10.MAR.2011 12:18:14

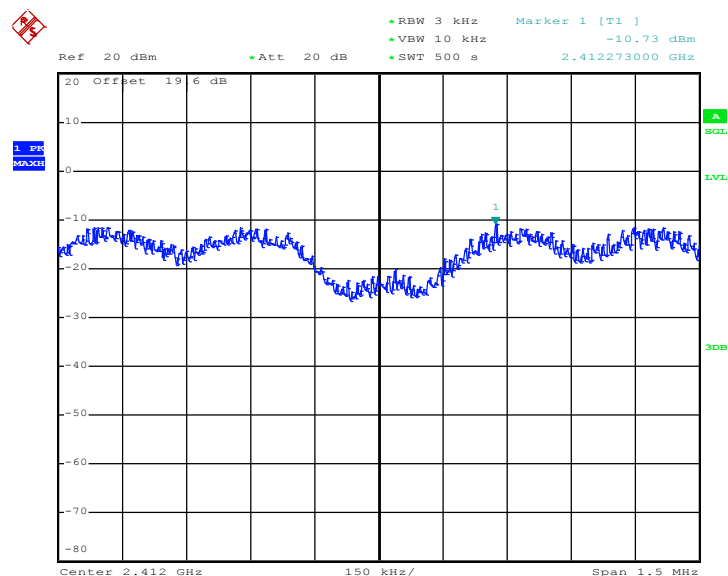


Mode 3 : PSD Plot on 802.11b Channel 11

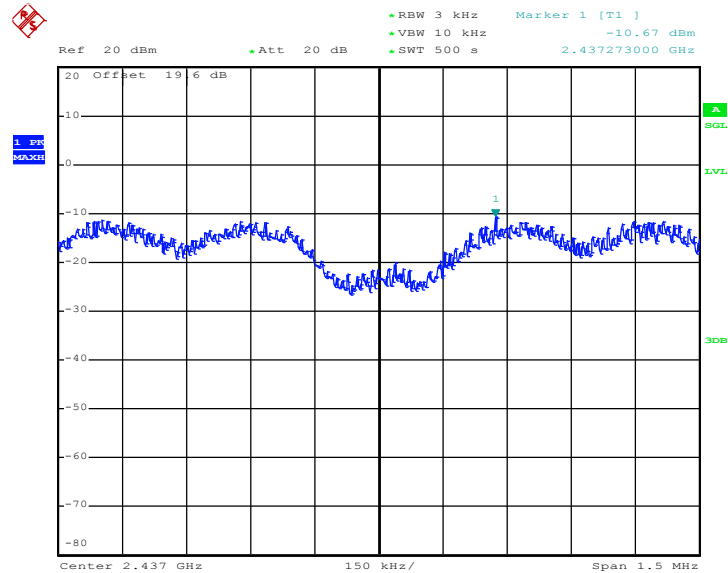


Date: 10.MAR.2011 12:00:52

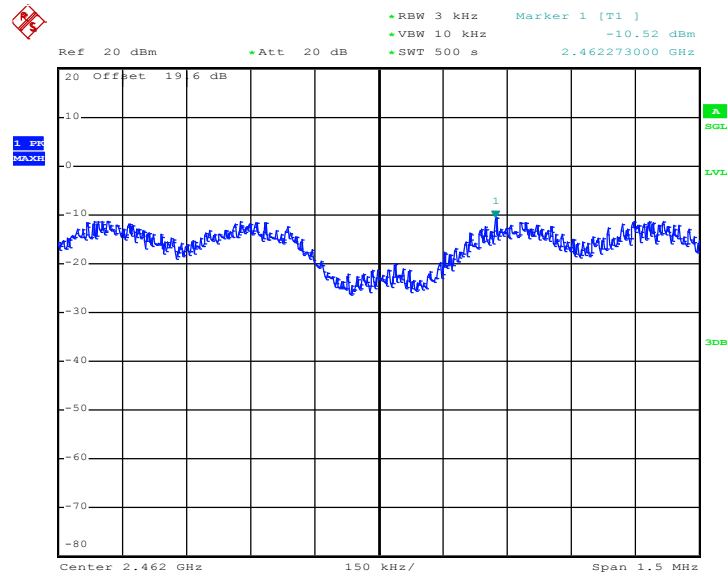
Mode 4 : PSD Plot on 802.11g Channel 01



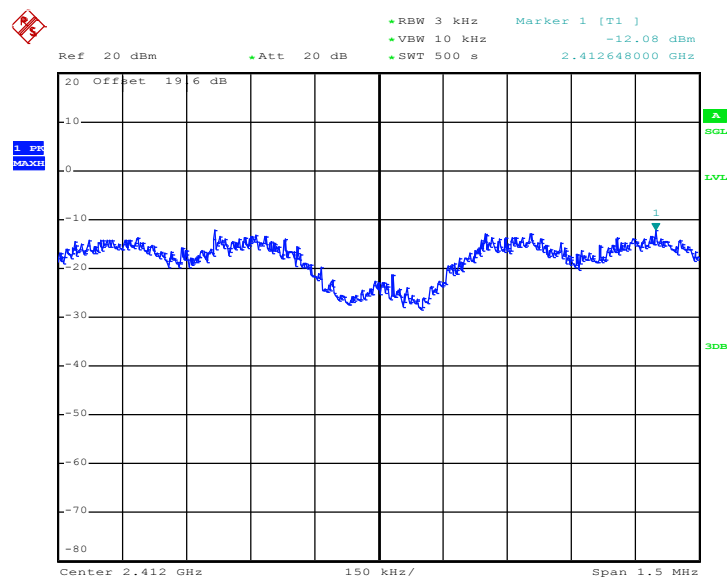
Date: 10.MAR.2011 11:38:59

Mode 5 : PSD Plot on 802.11g Channel 06


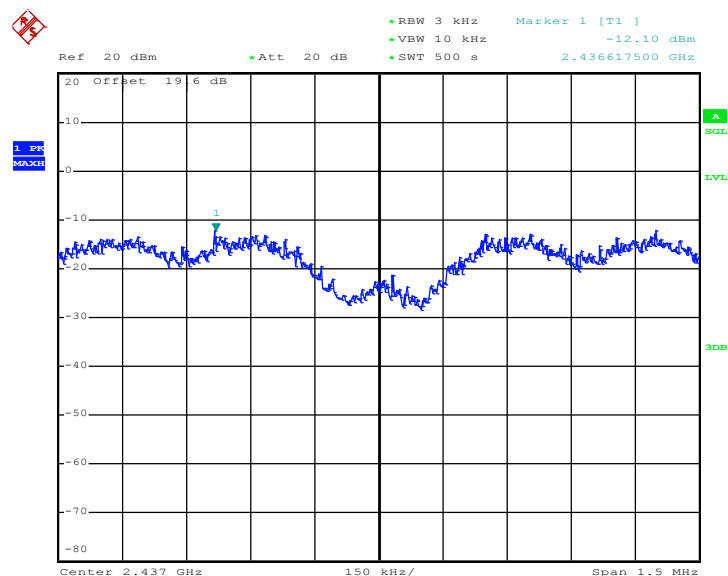
Date: 10.MAR.2011 11:23:50

Mode 6 : PSD Plot on 802.11g Channel 11


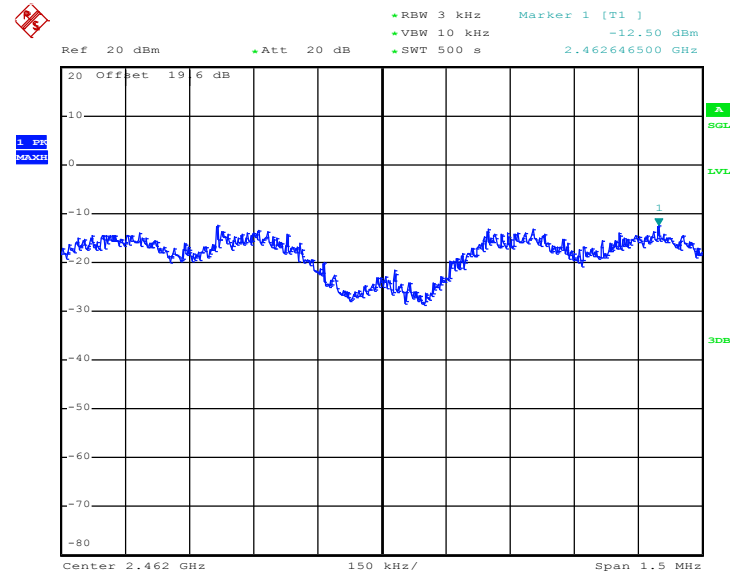
Date: 10.MAR.2011 11:08:40

Mode 7 : PSD Plot on 802.11n Channel 01


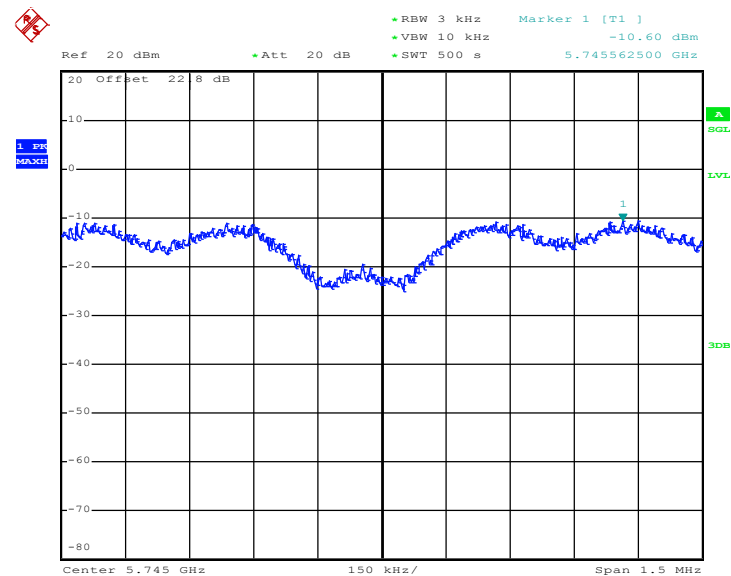
Date: 10.MAR.2011 12:35:21

Mode 8 : PSD Plot on 802.11n Channel 06


Date: 10.MAR.2011 12:48:42

Mode 9 : PSD Plot on 802.11n Channel 11


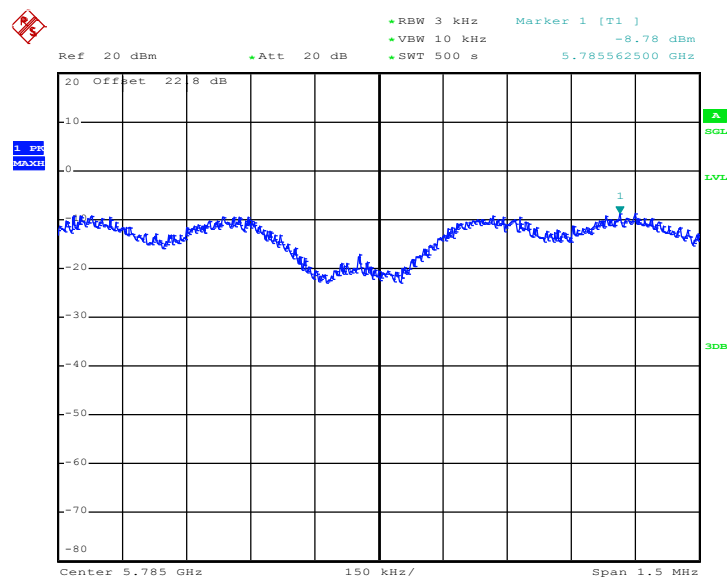
Date: 10.MAR.2011 13:23:11

Mode 10: PSD Plot on 802.11a Channel 149


Date: 23.MAR.2011 08:23:01

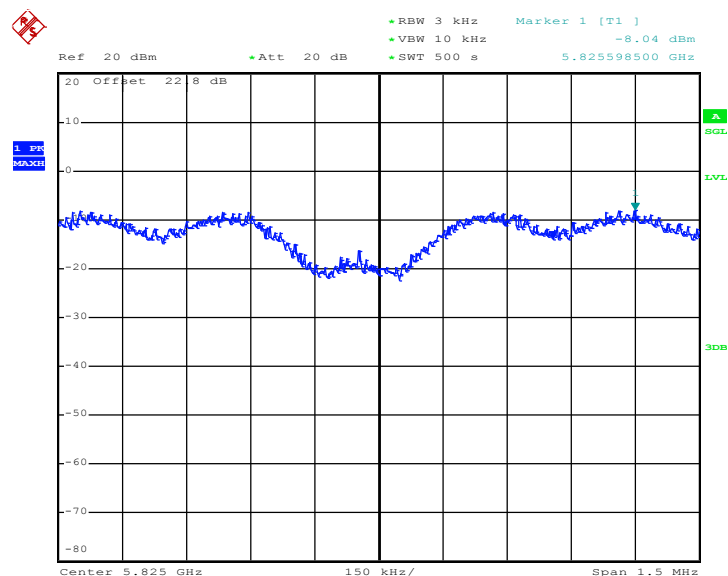


Mode 11: PSD Plot on 802.11a Channel 157

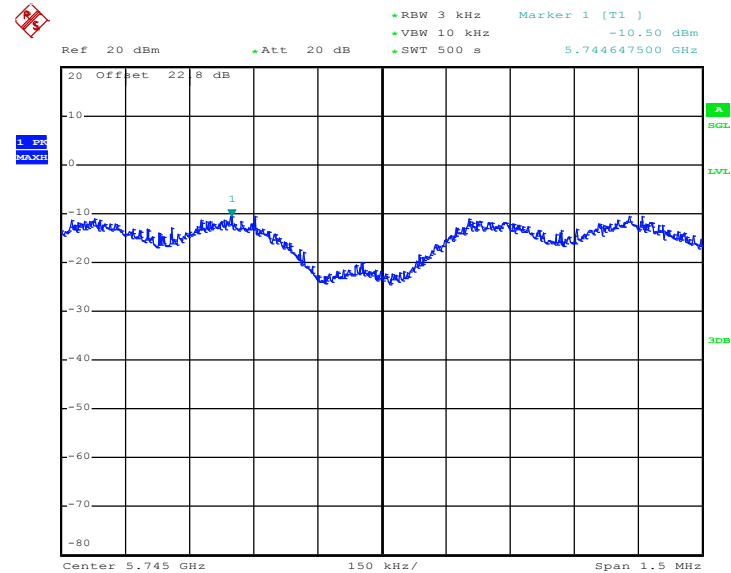


Date: 23.MAR.2011 08:37:59

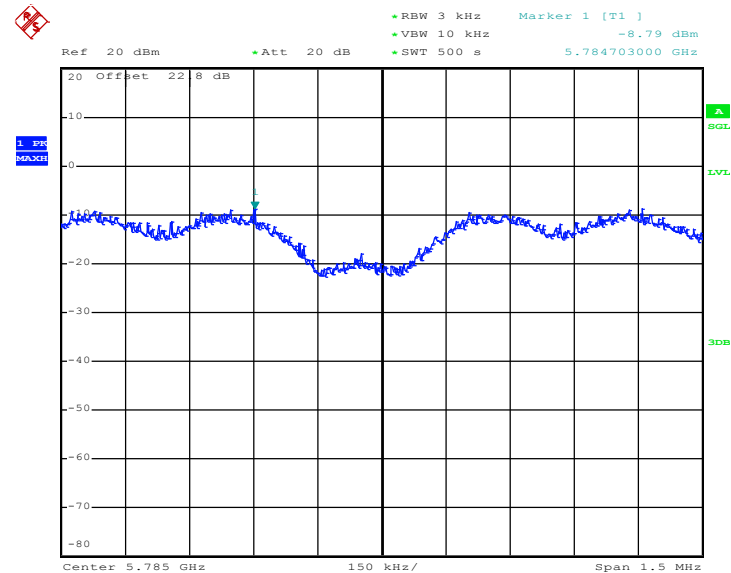
Mode 12: PSD Plot on 802.11a Channel 165



Date: 23.MAR.2011 08:51:44

Mode 13: PSD Plot on 802.11n Channel 149


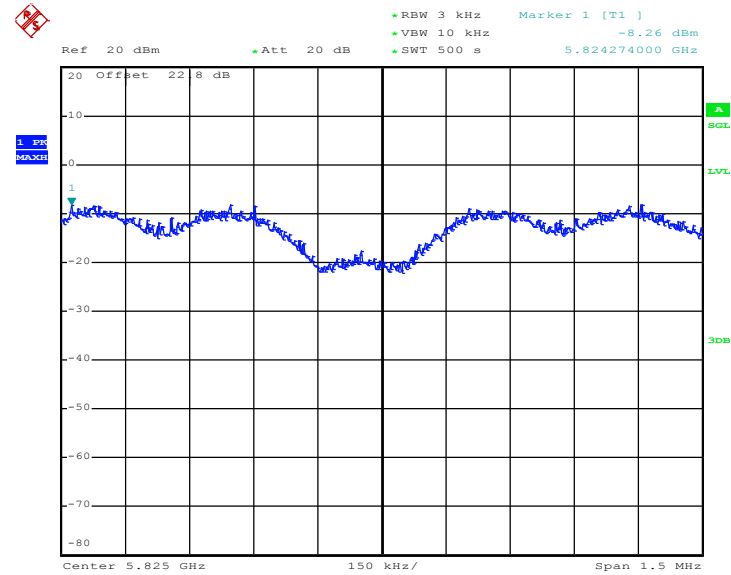
Date: 23.MAR.2011 09:36:25

Mode 14: PSD Plot on 802.11n Channel 157


Date: 23.MAR.2011 09:21:57



Mode 15: PSD Plot on 802.11n Channel 165



Date: 23.MAR.2011 09:08:07

3.5 AC Conducted Emission Measurement

3.5.1 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.

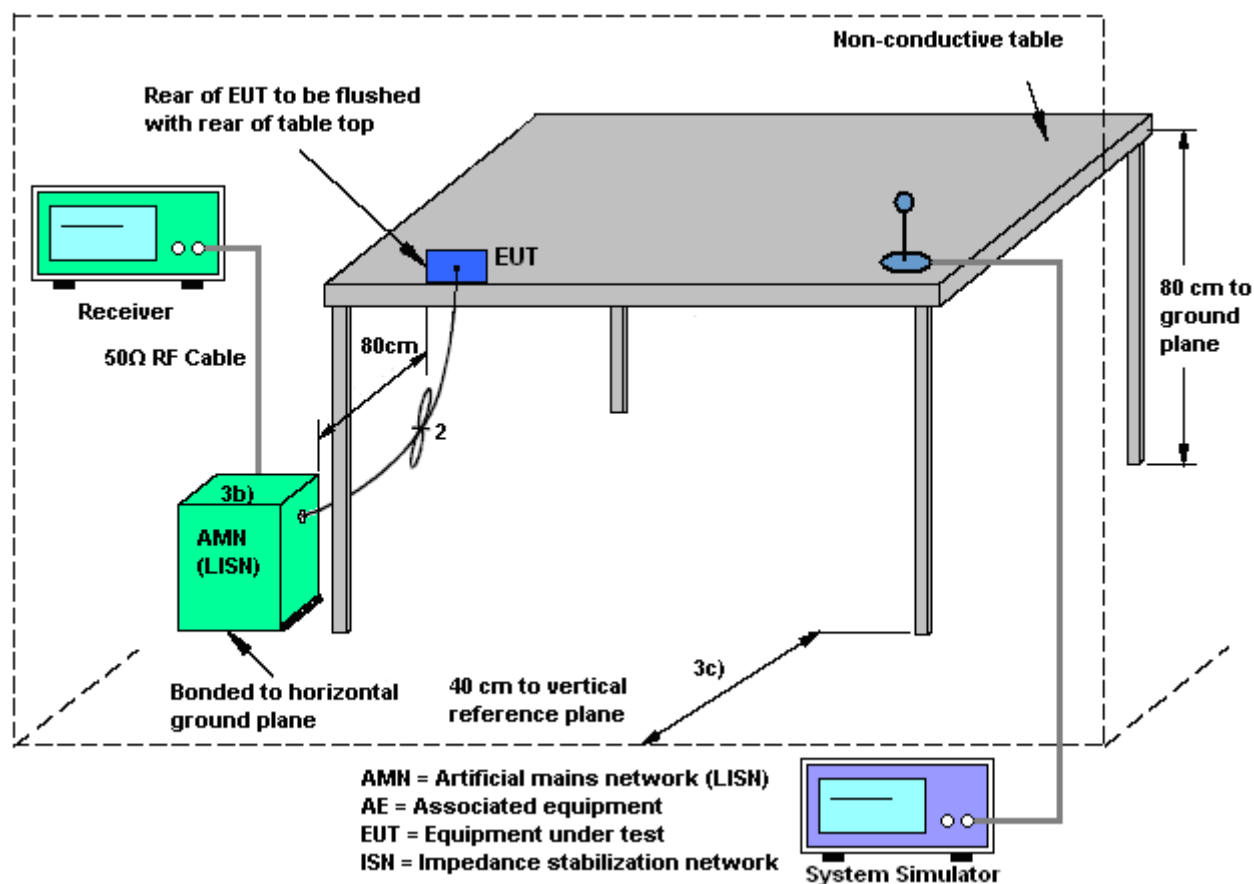
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

4. The testing follows the guidelines in ANSI C63.4-2003.
5. 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.
6. Connect EUT to the power mains through a line impedance stabilization network (LISN).
7. All the support units are connecting to the other LISN.
8. The LISN provides 50 ohm coupling impedance for the measuring instrument.
9. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
10. Both sides of AC line were checked for maximum conducted interference.
11. The frequency range from 150 kHz to 30 MHz was searched.
12. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

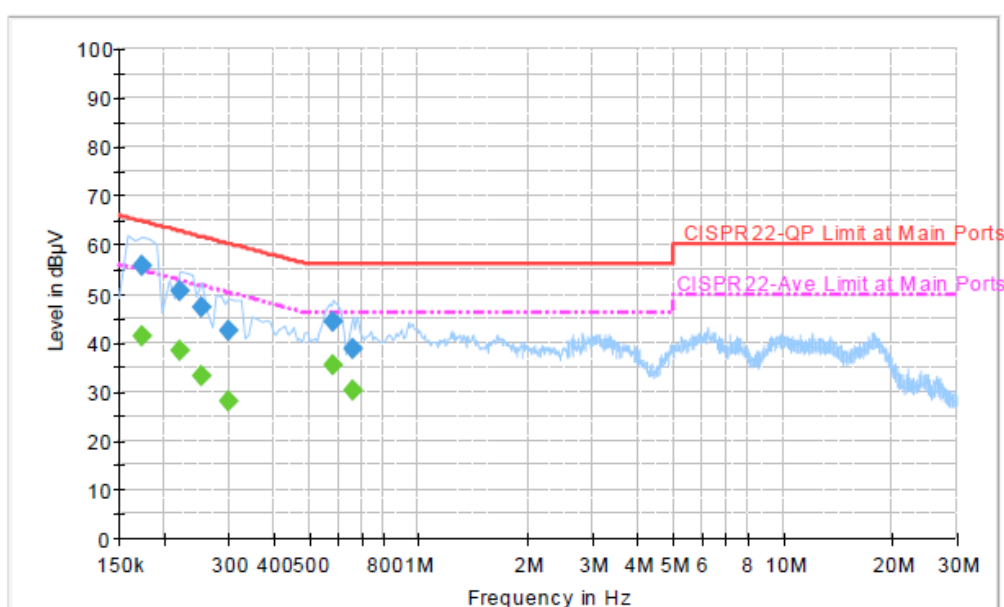
3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + WLAN (2.4G) + Bluetooth Link + MP3 + Camera + Sleeve (USB + DC Jack) + Battery 3600mA + AC Wall Adapter 1 + USB Cable(Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

ENV216 Auto Test



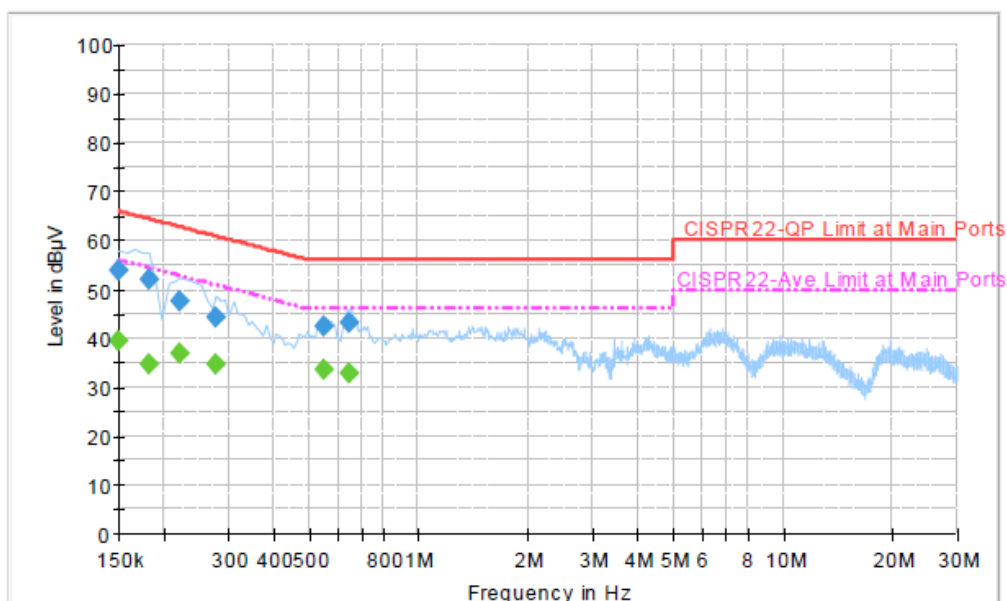
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	55.8	Off	L1	19.4	9.0	64.8
0.222000	50.7	Off	L1	19.4	12.0	62.7
0.254000	47.2	Off	L1	19.4	14.4	61.6
0.302000	42.6	Off	L1	19.4	17.6	60.2
0.582000	44.3	Off	L1	19.4	11.7	56.0
0.662000	38.8	Off	L1	19.4	17.2	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	41.5	Off	L1	19.4	13.3	54.8
0.222000	38.5	Off	L1	19.4	14.2	52.7
0.254000	33.3	Off	L1	19.4	18.3	51.6
0.302000	28.0	Off	L1	19.4	22.2	50.2
0.582000	35.5	Off	L1	19.4	10.5	46.0
0.662000	30.4	Off	L1	19.4	15.6	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM 850 Idle + WLAN (2.4G) + Bluetooth Link + MP3 + Camera + Sleeve (USB + DC Jack) + Battery 3600mA + AC Wall Adapter 1 + USB Cable(Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

ENV216 Auto Test

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.0	Off	N	19.4	12.0	66.0
0.182000	52.1	Off	N	19.4	12.3	64.4
0.222000	47.7	Off	N	19.4	15.0	62.7
0.278000	44.4	Off	N	19.4	16.5	60.9
0.550000	42.4	Off	N	19.4	13.6	56.0
0.646000	43.0	Off	N	19.4	13.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	39.5	Off	N	19.4	16.5	56.0
0.182000	34.5	Off	N	19.4	19.9	54.4
0.222000	36.8	Off	N	19.4	15.9	52.7
0.278000	34.7	Off	N	19.4	16.2	50.9
0.550000	33.6	Off	N	19.4	12.4	46.0
0.646000	32.7	Off	N	19.4	13.3	46.0

3.6 Radiated Emission Measurement

3.6.1 Limit of Radiated Emission

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.6.2 Measuring Instruments

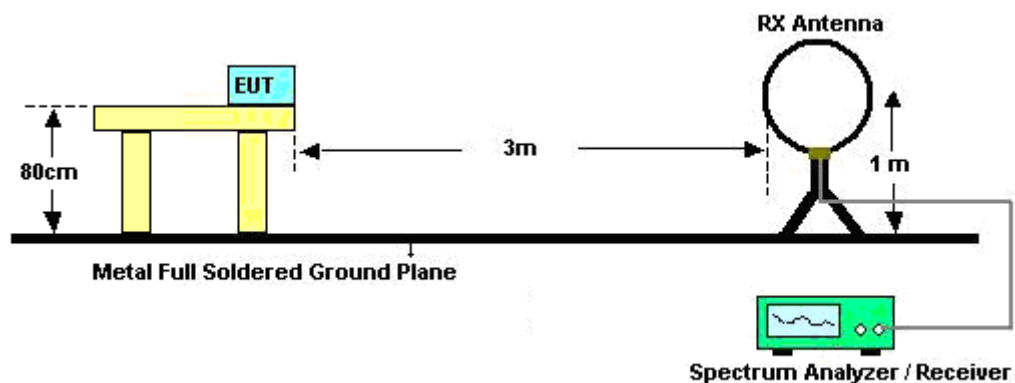
See list of measuring instruments of this test report.

3.6.3 Test Procedures

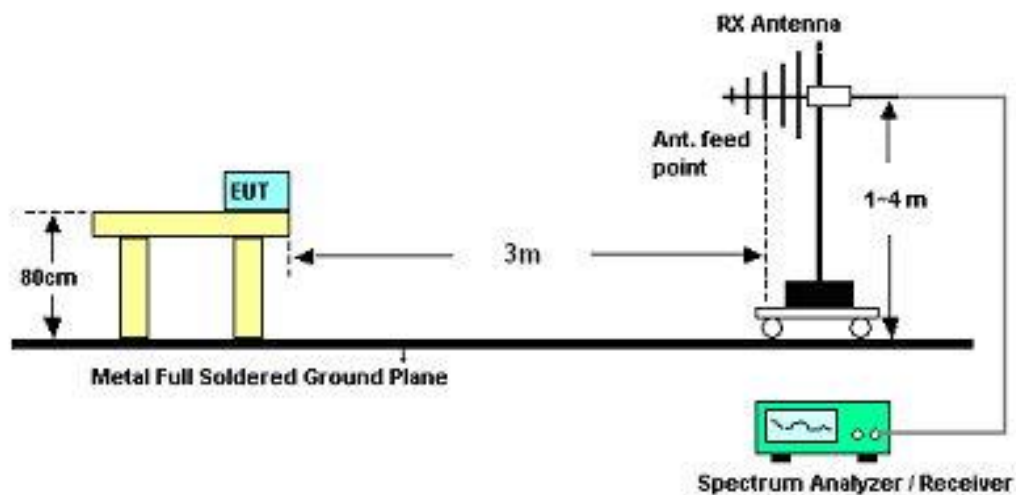
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.6.4 Test Setup

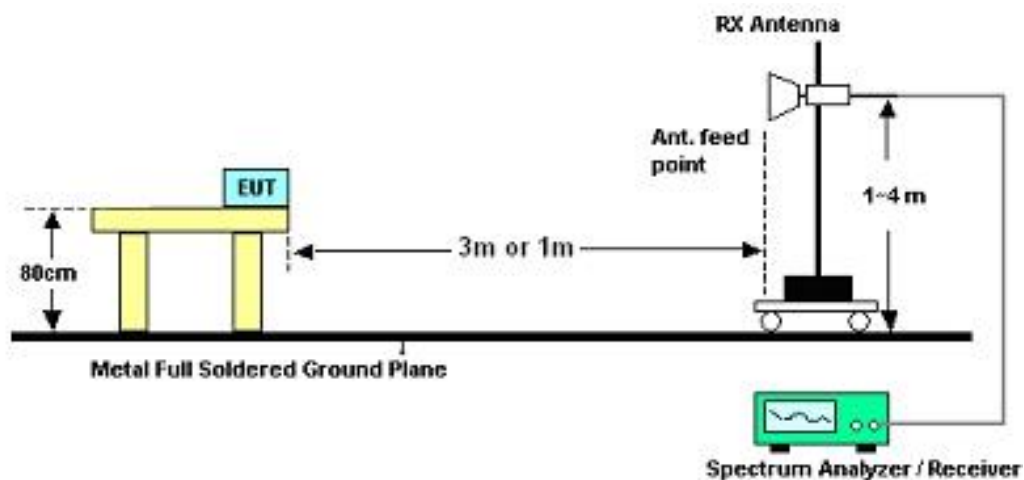
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Ivan Chiang	Temperature :	23~25 °C	
		Relative Humidity :	49~51%	

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

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

Test Mode :	Mode 1	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.96	-8.04	40	51.69	11.13	0.64	31.5	100	113	Peak
167.97	28.19	-15.31	43.5	48.59	9.89	1.23	31.52	-	-	Peak
287.85	34.4	-11.6	46	50.78	13.27	1.68	31.33	-	-	Peak
310.5	34.44	-11.56	46	50.18	13.79	1.79	31.32	-	-	Peak
383.3	36.59	-9.41	46	49.66	16.05	2.11	31.23	-	-	Peak
407.8	33.59	-12.41	46	45.9	16.69	2.17	31.17	-	-	Peak
2385.81	56.27	-17.73	74	51.91	32.18	6.03	33.85	102	10	Peak
2385.81	47.28	-6.72	54	42.92	32.18	6.03	33.85	102	10	Average
2412	111.11	-	-	106.71	32.2	6.07	33.87	102	10	Peak
2412	107.21	-	-	102.81	32.2	6.07	33.87	102	10	Average
2484	38.29	-15.71	54	33.73	32.28	6.18	33.9	102	10	Average
2484	50.42	-23.58	74	45.86	32.28	6.18	33.9	102	10	Peak

Test Mode :	Mode 1	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.42	36.28	-3.72	40	55.56	11.59	0.64	31.51	100	21	Peak
94.26	29.4	-14.1	43.5	50.84	9.12	0.97	31.53	-	-	Peak
238.17	29.4	-16.6	46	47.45	11.85	1.52	31.42	-	-	Peak
335	32.16	-13.84	46	47.06	14.54	1.87	31.31	-	-	Peak
383.3	33.1	-12.9	46	46.17	16.05	2.11	31.23	-	-	Peak
430.9	27.1	-18.9	46	38.91	17.07	2.25	31.13	-	-	Peak
2384.1	54.41	-19.59	74	50.07	32.16	6.03	33.85	188	53	Peak
2384.1	45.03	-8.97	54	40.69	32.16	6.03	33.85	188	53	Average
2412	109.23	-	-	104.83	32.2	6.07	33.87	188	53	Peak
2412	105.33	-	-	100.93	32.2	6.07	33.87	188	53	Average
2486	36.84	-17.16	54	32.28	32.28	6.18	33.9	188	53	Average
2486	49.66	-24.34	74	45.1	32.28	6.18	33.9	188	53	Peak
2532	60.56	-28.67	89.23	55.96	32.34	6.23	33.97	100	0	Peak
2580	57.69	-31.54	89.23	53.05	32.4	6.28	34.04	100	0	Peak
2612	54.28	-34.95	89.23	49.61	32.44	6.31	34.08	100	0	Peak
7236	52.75	-36.48	89.23	65.32	35.51	10.03	58.11	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.8	-8.2	40	51.53	11.13	0.64	31.5	110	31	Peak
81.3	29.67	-10.33	40	52.94	7.37	0.89	31.53	-	-	Peak
287.85	35.91	-10.09	46	52.29	13.27	1.68	31.33	-	-	Peak
335	35.95	-10.05	46	50.85	14.54	1.87	31.31	-	-	Peak
383.3	32.89	-13.11	46	45.96	16.05	2.11	31.23	-	-	Peak
430.9	36.74	-9.26	46	48.55	17.07	2.25	31.13	-	-	Peak
2356	54.63	-19.37	74	50.38	32.13	5.95	33.83	100	11	Peak
2356	38.28	-15.72	54	34.03	32.13	5.95	33.83	100	11	Average
2437	110.6	-	-	106.13	32.24	6.11	33.88	100	11	Peak
2437	106.74	-	-	102.27	32.24	6.11	33.88	100	11	Average
2484	52.79	-21.21	74	48.23	32.28	6.18	33.9	100	11	Peak
2484	41.56	-12.44	54	37	32.28	6.18	33.9	100	11	Average
2518	62.44	-28.16	90.6	57.85	32.32	6.21	33.94	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	36.62	-3.38	40	51.49	16.04	0.55	31.46	-	-	Peak
41.61	36.82	-3.18	40	55.66	12.04	0.63	31.51	100	136	Peak
179.85	28.73	-14.77	43.5	49.9	9.11	1.25	31.53	-	-	Peak
335	32.5	-13.5	46	47.4	14.54	1.87	31.31	-	-	Peak
358.1	31.55	-14.45	46	45.51	15.27	2.04	31.27	-	-	Peak
430.9	30.65	-15.35	46	42.46	17.07	2.25	31.13	-	-	Peak
2382	47.4	-26.6	74	43.06	32.16	6.03	33.85	148	35	Peak
2382	35.87	-18.13	54	31.53	32.16	6.03	33.85	148	35	Average
2437	108.79	-	-	104.32	32.24	6.11	33.88	148	35	Peak
2437	104.91	-	-	100.44	32.24	6.11	33.88	148	35	Average
2484	51.82	-22.18	74	47.26	32.28	6.18	33.9	148	35	Peak
2484	39.72	-14.28	54	35.16	32.28	6.18	33.9	148	35	Average
2518	64.27	-24.52	88.79	59.68	32.32	6.21	33.94	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.9	-8.1	40	51.63	11.13	0.64	31.5	100	154	Peak
137.73	31.99	-11.51	43.5	50.76	11.59	1.19	31.55	-	-	Peak
240.06	31.51	-14.49	46	49.42	11.98	1.53	31.42	-	-	Peak
360.2	31.7	-14.3	46	45.58	15.33	2.06	31.27	-	-	Peak
407.8	33.14	-12.86	46	45.45	16.69	2.17	31.17	-	-	Peak
430.9	31.78	-14.22	46	43.59	17.07	2.25	31.13	-	-	Peak
2342	50.23	-23.77	74	46	32.11	5.95	33.83	100	360	Peak
2342	35.46	-18.54	54	31.23	32.11	5.95	33.83	100	360	Average
2462	107.77	-	-	103.26	32.26	6.14	33.89	100	360	Average
2462	111.56	-	-	107.05	32.26	6.14	33.89	100	360	Peak
2487.65	58.33	-15.67	74	53.75	32.3	6.18	33.9	100	360	Peak
2487.65	48.95	-5.05	54	44.37	32.3	6.18	33.9	100	360	Average

Test Mode :	Mode 3	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	36.03	-3.97	40	50.45	16.51	0.53	31.46	-	-	Peak
41.61	36.19	-3.81	40	55.03	12.04	0.63	31.51	100	311	Peak
170.13	33.83	-9.67	43.5	54.35	9.77	1.23	31.52	-	-	Peak
335	30.87	-15.13	46	45.77	14.54	1.87	31.31	-	-	Peak
383.3	29.92	-16.08	46	42.99	16.05	2.11	31.23	-	-	Peak
419	29.14	-16.86	46	41.2	16.88	2.21	31.15	-	-	Peak
2382	53.49	-20.51	74	49.15	32.16	6.03	33.85	179	34	Peak
2382	35.66	-18.34	54	31.32	32.16	6.03	33.85	179	34	Average
2462	105.16	-	-	100.65	32.26	6.14	33.89	179	34	Average
2462	109.07	-	-	104.56	32.26	6.14	33.89	179	34	Peak
2487.46	56	-18	74	51.44	32.28	6.18	33.9	179	34	Peak
2487.46	46.86	-7.14	54	42.3	32.28	6.18	33.9	179	34	Average
2540	62.25	-26.82	89.07	57.63	32.36	6.23	33.97	100	0	Peak
2582	60.27	-28.8	89.07	55.63	32.4	6.28	34.04	100	0	Peak
2622	66.21	-22.86	89.07	61.55	32.44	6.33	34.11	100	0	Peak
7386	43.24	-30.76	74	55.93	35.38	10.1	58.17	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.95	-8.05	40	51.68	11.13	0.64	31.5	103	151	Peak
167.97	24.34	-19.16	43.5	44.74	9.89	1.23	31.52	-	-	Peak
287.85	36.55	-9.45	46	52.93	13.27	1.68	31.33	-	-	Peak
310.5	34.59	-11.41	46	50.33	13.79	1.79	31.32	-	-	Peak
335	36.15	-9.85	46	51.05	14.54	1.87	31.31	-	-	Peak
358.1	34.18	-11.82	46	48.14	15.27	2.04	31.27	-	-	Peak
2389.61	64.16	-9.84	74	59.8	32.18	6.03	33.85	102	10	Peak
2389.61	44.36	-9.64	54	40	32.18	6.03	33.85	102	10	Average
2412	109.87	-	-	105.47	32.2	6.07	33.87	102	10	Peak
2412	96.06	-	-	91.66	32.2	6.07	33.87	102	10	Average
2492	37.82	-16.18	54	33.24	32.3	6.18	33.9	102	10	Average
2492	59.97	-14.03	74	55.39	32.3	6.18	33.9	102	10	Peak
2534	57.31	-32.56	89.87	52.71	32.34	6.23	33.97	100	0	Peak
2580	57.61	-32.26	89.87	52.97	32.4	6.28	34.04	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	36.76	-3.24	40	51.41	16.27	0.54	31.46	102	15	Peak
42.42	35.8	-4.2	40	55.08	11.59	0.64	31.51	-	-	Peak
93.45	30.28	-13.22	43.5	51.84	9.01	0.96	31.53	-	-	Peak
335	33.03	-12.97	46	47.93	14.54	1.87	31.31	-	-	Peak
358.1	33.62	-12.38	46	47.58	15.27	2.04	31.27	-	-	Peak
430.9	31.34	-14.66	46	43.15	17.07	2.25	31.13	-	-	Peak
2389.99	63.55	-10.45	74	59.19	32.18	6.03	33.85	152	36	Peak
2389.99	42.72	-11.28	54	38.36	32.18	6.03	33.85	152	36	Average
2412	108.08	-	-	103.68	32.2	6.07	33.87	152	36	Peak
2412	93.75	-	-	89.35	32.2	6.07	33.87	152	36	Average
2494	37.41	-16.59	54	32.83	32.3	6.18	33.9	152	36	Average
2494	59.08	-14.92	74	54.5	32.3	6.18	33.9	152	36	Peak
2534	58.2	-29.88	88.08	53.6	32.34	6.23	33.97	100	0	Peak
2580	65.17	-22.91	88.08	60.53	32.4	6.28	34.04	100	0	Peak
2614	52.49	-35.59	88.08	47.82	32.44	6.31	34.08	100	0	Peak

Test Mode :	Mode 5	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.51	-8.49	40	51.24	11.13	0.64	31.5	-	-	Peak
179.85	26.38	-17.12	43.5	47.55	9.11	1.25	31.53	-	-	Peak
287.85	34.75	-11.25	46	51.13	13.27	1.68	31.33	-	-	Peak
310.5	35.85	-10.15	46	51.59	13.79	1.79	31.32	-	-	Peak
335	38.82	-7.18	46	53.72	14.54	1.87	31.31	100	31	Peak
430.9	33.91	-12.09	46	45.72	17.07	2.25	31.13	-	-	Peak
2364	52.8	-21.2	74	48.52	32.13	5.99	33.84	100	12	Peak
2364	35.4	-18.6	54	31.12	32.13	5.99	33.84	100	12	Average
2437	109.32	-	-	104.85	32.24	6.11	33.88	100	12	Peak
2437	95.73	-	-	91.26	32.24	6.11	33.88	100	12	Average
2484	54.35	-19.65	74	49.79	32.28	6.18	33.9	100	12	Peak
2484	37.1	-16.9	54	32.54	32.28	6.18	33.9	100	12	Average
2518	59.09	-30.23	89.32	54.5	32.32	6.21	33.94	100	0	Peak
2550	55.54	-33.78	89.32	50.93	32.36	6.26	34.01	100	0	Peak
2604	55.23	-34.09	89.32	50.58	32.42	6.31	34.08	100	0	Peak

Test Mode :	Mode 5	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	36.67	-3.33	40	51.54	16.04	0.55	31.46	106	187	Peak
41.61	35.94	-4.06	40	54.78	12.04	0.63	31.51	-	-	Peak
93.18	29.97	-13.53	43.5	51.53	9.01	0.96	31.53	-	-	Peak
335	32.96	-13.04	46	47.86	14.54	1.87	31.31	-	-	Peak
371.4	29.08	-16.92	46	42.56	15.69	2.08	31.25	-	-	Peak
430.9	30.64	-15.36	46	42.45	17.07	2.25	31.13	-	-	Peak
2356	48.56	-25.44	74	44.31	32.13	5.95	33.83	146	35	Peak
2356	33.97	-20.03	54	29.72	32.13	5.95	33.83	146	35	Average
2437	108	-	-	103.53	32.24	6.11	33.88	146	35	Peak
2437	94.4	-	-	89.93	32.24	6.11	33.88	146	35	Average
2484	52.77	-21.23	74	48.21	32.28	6.18	33.9	146	35	Peak
2484	36.07	-17.93	54	31.51	32.28	6.18	33.9	146	35	Average
2518	60.77	-27.23	88	56.18	32.32	6.21	33.94	100	0	Peak
2558	60.12	-27.88	88	55.49	32.38	6.26	34.01	100	0	Peak
2604	65.34	-22.66	88	60.69	32.42	6.31	34.08	100	0	Peak
2630	53.28	-34.72	88	48.6	32.46	6.33	34.11	100	0	Peak

Test Mode :	Mode 6	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.67	-8.33	40	51.4	11.13	0.64	31.5	100	211	Peak
179.85	24.92	-18.58	43.5	46.09	9.11	1.25	31.53	-	-	Peak
287.85	34.9	-11.1	46	51.28	13.27	1.68	31.33	-	-	Peak
335	34.93	-11.07	46	49.83	14.54	1.87	31.31	-	-	Peak
358.1	37.11	-8.89	46	51.07	15.27	2.04	31.27	-	-	Peak
430.9	33.04	-12.96	46	44.85	17.07	2.25	31.13	-	-	Peak
2382	51.19	-22.81	74	46.85	32.16	6.03	33.85	100	360	Peak
2382	34.16	-19.84	54	29.82	32.16	6.03	33.85	100	360	Average
2462	96.32	-	-	91.81	32.26	6.14	33.89	100	360	Average
2462	110.13	-	-	105.62	32.26	6.14	33.89	100	360	Peak
2483.5	64.32	-9.68	74	59.76	32.28	6.18	33.9	100	360	Peak
2483.5	46.09	-7.91	54	41.53	32.28	6.18	33.9	100	360	Average
2542	58.7	-31.43	90.13	54.08	32.36	6.23	33.97	100	0	Peak
2580	53.61	-36.52	90.13	48.97	32.4	6.28	34.04	100	0	Peak
2628	53.92	-36.21	90.13	49.24	32.46	6.33	34.11	100	0	Peak

Test Mode :	Mode 6	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	35.41	-4.59	40	50.52	15.8	0.56	31.47	-	-	Peak
42.42	36.05	-3.95	40	55.33	11.59	0.64	31.51	100	112	Peak
93.45	29.58	-13.92	43.5	51.14	9.01	0.96	31.53	-	-	Peak
310.5	27.69	-18.31	46	43.43	13.79	1.79	31.32	-	-	Peak
383.3	26.28	-19.72	46	39.35	16.05	2.11	31.23	-	-	Peak
430.9	26.45	-19.55	46	38.26	17.07	2.25	31.13	-	-	Peak
2382	48.5	-25.5	74	44.16	32.16	6.03	33.85	179	43	Peak
2382	33.75	-20.25	54	29.41	32.16	6.03	33.85	179	43	Average
2462	94.92	-	-	90.41	32.26	6.14	33.89	179	43	Average
2462	108.54	-	-	104.03	32.26	6.14	33.89	179	43	Peak
2483.85	63.04	-10.96	74	58.48	32.28	6.18	33.9	179	43	Peak
2483.85	45.09	-8.91	54	40.53	32.28	6.18	33.9	179	43	Average
2540	58.83	-29.71	88.54	54.21	32.36	6.23	33.97	100	0	Peak
2582	58.37	-30.17	88.54	53.73	32.4	6.28	34.04	100	0	Peak
2628	59.53	-29.01	88.54	54.85	32.46	6.33	34.11	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	31.92	-8.08	40	52.1	10.67	0.65	31.5	100	144	Peak
179.85	28.53	-14.97	43.5	49.7	9.11	1.25	31.53	-	-	Peak
287.85	33.68	-12.32	46	50.06	13.27	1.68	31.33	-	-	Peak
360.2	34.95	-11.05	46	48.83	15.33	2.06	31.27	-	-	Peak
407.8	34.2	-11.8	46	46.51	16.69	2.17	31.17	-	-	Peak
478.5	30.59	-15.41	46	41.42	17.86	2.37	31.06	-	-	Peak
2389.99	61.96	-12.04	74	57.6	32.18	6.03	33.85	101	10	Peak
2389.99	43.09	-10.91	54	38.73	32.18	6.03	33.85	101	10	Average
2412	108.99	-	-	104.59	32.2	6.07	33.87	101	10	Peak
2412	91.41	-	-	87.01	32.2	6.07	33.87	101	10	Average
2494	35.39	-18.61	54	30.81	32.3	6.18	33.9	101	10	Average
2494	59.84	-14.16	74	55.26	32.3	6.18	33.9	101	10	Peak
2532	57.74	-31.25	88.99	53.14	32.34	6.23	33.97	100	0	Peak
2580	59.15	-29.84	88.99	54.51	32.4	6.28	34.04	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~25 °C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	36.26	-3.74	40	50.91	16.27	0.54	31.46	100	111	Peak
41.61	35.75	-4.25	40	54.59	12.04	0.63	31.51	-	-	Peak
92.1	29.76	-13.74	43.5	51.42	8.9	0.96	31.52	-	-	Peak
335	28.1	-17.9	46	43	14.54	1.87	31.31	-	-	Peak
371.4	29.7	-16.3	46	43.18	15.69	2.08	31.25	-	-	Peak
419	28.83	-17.17	46	40.89	16.88	2.21	31.15	-	-	Peak
2389.61	58.15	-15.85	74	53.79	32.18	6.03	33.85	187	49	Peak
2389.61	40.45	-13.55	54	36.09	32.18	6.03	33.85	187	49	Average
2412	106.07	-	-	101.67	32.2	6.07	33.87	187	49	Peak
2412	89.07	-	-	84.67	32.2	6.07	33.87	187	49	Average
2492	34.57	-19.43	54	29.99	32.3	6.18	33.9	187	49	Average
2492	57.28	-16.72	74	52.7	32.3	6.18	33.9	187	49	Peak
2534	59.37	-26.7	86.07	54.77	32.34	6.23	33.97	100	0	Peak
2580	62.73	-23.34	86.07	58.09	32.4	6.28	34.04	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	31.93	-8.07	40	52.11	10.67	0.65	31.5	-	-	Peak
240.06	31.95	-14.05	46	49.86	11.98	1.53	31.42	-	-	Peak
287.85	35.54	-10.46	46	51.92	13.27	1.68	31.33	-	-	Peak
310.5	38.08	-7.92	46	53.82	13.79	1.79	31.32	100	41	Peak
335	34.61	-11.39	46	49.51	14.54	1.87	31.31	-	-	Peak
383.3	35.54	-10.46	46	48.61	16.05	2.11	31.23	-	-	Peak
2356	51.83	-22.17	74	47.58	32.13	5.95	33.83	100	11	Peak
2356	35.04	-18.96	54	30.79	32.13	5.95	33.83	100	11	Average
2437	109.04	-	-	104.57	32.24	6.11	33.88	100	11	Peak
2437	91.12	-	-	86.65	32.24	6.11	33.88	100	11	Average
2484	53.17	-20.83	74	48.61	32.28	6.18	33.9	100	11	Peak
2484	36.99	-17.01	54	32.43	32.28	6.18	33.9	100	11	Average
2516	57.66	-31.38	89.04	53.07	32.32	6.21	33.94	100	0	Peak
2550	55.19	-33.85	89.04	50.58	32.36	6.26	34.01	100	0	Peak
2604	56.54	-32.5	89.04	51.89	32.42	6.31	34.08	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~25 °C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.89	36.99	-3.01	40	51.86	16.04	0.55	31.46	100	123	Peak
41.34	36.74	-3.26	40	55.58	12.04	0.63	31.51	-	-	Peak
92.37	29.8	-13.7	43.5	51.46	8.9	0.96	31.52	-	-	Peak
335	29.46	-16.54	46	44.36	14.54	1.87	31.31	-	-	Peak
383.3	29.26	-16.74	46	42.33	16.05	2.11	31.23	-	-	Peak
430.9	30.13	-15.87	46	41.94	17.07	2.25	31.13	-	-	Peak
2356	49.64	-24.36	74	45.39	32.13	5.95	33.83	152	40	Peak
2356	34.2	-19.8	54	29.95	32.13	5.95	33.83	152	40	Average
2437	107.32	-	-	102.87	32.22	6.11	33.88	152	40	Peak
2437	89.72	-	-	85.25	32.24	6.11	33.88	152	40	Average
2484	51.26	-22.74	74	46.7	32.28	6.18	33.9	152	40	Peak
2484	35.73	-18.27	54	31.17	32.28	6.18	33.9	152	40	Average
2516	57.82	-29.5	87.32	53.23	32.32	6.21	33.94	100	0	Peak
2558	59.11	-28.21	87.32	54.48	32.38	6.26	34.01	100	0	Peak
2604	63.75	-23.57	87.32	59.1	32.42	6.31	34.08	100	0	Peak

Test Mode :	Mode 9	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.52	-8.48	40	51.25	11.13	0.64	31.5	100	131	Peak
240.06	32.23	-13.77	46	50.14	11.98	1.53	31.42	-	-	Peak
287.85	35.27	-10.73	46	51.65	13.27	1.68	31.33	-	-	Peak
310.5	35.02	-10.98	46	50.76	13.79	1.79	31.32	-	-	Peak
335	36.8	-9.2	46	51.7	14.54	1.87	31.31	-	-	Peak
358.1	35.28	-10.72	46	49.24	15.27	2.04	31.27	-	-	Peak
2382	50.76	-23.24	74	46.42	32.16	6.03	33.85	100	360	Peak
2382	34.05	-19.95	54	29.71	32.16	6.03	33.85	100	360	Average
2462	91.95	-	-	87.44	32.26	6.14	33.89	100	360	Average
2462	109.09	-	-	104.58	32.26	6.14	33.89	100	360	Peak
2484.42	64.53	-9.47	74	59.97	32.28	6.18	33.9	100	360	Peak
2484.42	45.38	-8.62	54	40.82	32.28	6.18	33.9	100	360	Average
2542	57.78	-31.31	89.09	53.16	32.36	6.23	33.97	100	0	Peak
2582	52.91	-36.18	89.09	48.27	32.4	6.28	34.04	100	0	Peak
2628	54.75	-34.34	89.09	50.07	32.46	6.33	34.11	100	0	Peak

Test Mode :	Mode 9	Temperature :	23~25 °C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	36.64	-3.36	40	51.29	16.27	0.54	31.46	100	111	Peak
42.42	35.79	-4.21	40	55.07	11.59	0.64	31.51	-	-	Peak
93.18	30.09	-13.41	43.5	51.65	9.01	0.96	31.53	-	-	Peak
335	27.62	-18.38	46	42.52	14.54	1.87	31.31	-	-	Peak
360.2	26.7	-19.3	46	40.58	15.33	2.06	31.27	-	-	Peak
407.8	26.29	-19.71	46	38.6	16.69	2.17	31.17	-	-	Peak
2380	49.11	-24.89	74	44.77	32.16	6.03	33.85	182	41	Peak
2380	33.93	-20.07	54	29.59	32.16	6.03	33.85	182	41	Average
2462	89.88	-	-	85.37	32.26	6.14	33.89	182	41	Average
2462	107.26	-	-	102.75	32.26	6.14	33.89	182	41	Peak
2483.5	63.42	-10.58	74	58.86	32.28	6.18	33.9	182	41	Peak
2483.5	44.33	-9.67	54	39.77	32.28	6.18	33.9	182	41	Average
2542	57.12	-30.14	87.26	52.5	32.36	6.23	33.97	100	0	Peak
2580	55.44	-31.82	87.26	50.8	32.4	6.28	34.04	100	0	Peak
2628	58.2	-29.06	87.26	53.52	32.46	6.33	34.11	100	0	Peak

Test Mode :	Mode 10	Temperature :	23~25 °C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	32.38	-7.62	40	52.56	10.67	0.65	31.5	100	211	Peak
240.06	33.58	-12.42	46	51.49	11.98	1.53	31.42	-	-	Peak
287.85	34.62	-11.38	46	51	13.27	1.68	31.33	-	-	Peak
310.5	33.48	-12.52	46	49.22	13.79	1.79	31.32	-	-	Peak
430.9	33.27	-12.73	46	45.08	17.07	2.25	31.13	-	-	Peak
478.5	30.71	-15.29	46	41.54	17.86	2.37	31.06	-	-	Peak
5745	108.64	-	-	97.1	34.84	9.91	33.21	100	324	Peak
5745	97.86	-	-	86.32	34.84	9.91	33.21	100	324	Average
6934	62.9	-25.74	88.64	51.59	35.67	9.9	34.26	100	0	Peak



Test Mode :	Mode 10	Temperature :	23~25 °C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	36.44	-3.56	40	51.09	16.27	0.54	31.46	105	187	Peak
41.61	35.71	-4.29	40	54.55	12.04	0.63	31.51	-	-	Peak
94.26	29.46	-14.04	43.5	50.9	9.12	0.97	31.53	-	-	Peak
310.5	27.82	-18.18	46	43.56	13.79	1.79	31.32	-	-	Peak
358.1	27.91	-18.09	46	41.87	15.27	2.04	31.27	-	-	Peak
394.5	28.97	-17.03	46	41.63	16.41	2.13	31.2	-	-	Peak
5745	111.45	-	-	99.91	34.84	9.91	33.21	100	268	Peak
5745	100.74	-	-	89.2	34.84	9.91	33.21	100	268	Average
6942	60.51	-30.94	91.45	49.19	35.68	9.91	34.27	100	0	Peak

Test Mode :	Mode 11	Temperature :	23~25 °C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.68	-8.32	40	51.41	11.13	0.64	31.5	100	111	Peak
179.85	25.95	-17.55	43.5	47.12	9.11	1.25	31.53	-	-	Peak
240.06	33.52	-12.48	46	51.43	11.98	1.53	31.42	-	-	Peak
335	35.67	-10.33	46	50.57	14.54	1.87	31.31	-	-	Peak
383.3	34.7	-11.3	46	47.77	16.05	2.11	31.23	-	-	Peak
659.8	29.01	-16.99	46	36.58	20.43	2.86	30.86	-	-	Peak
5785	108.1	-	-	96.55	34.88	9.9	33.23	100	324	Peak
5785	97.86	-	-	86.31	34.88	9.9	33.23	100	324	Average
6942	62.77	-25.33	88.1	51.45	35.68	9.91	34.27	100	0	Peak



Test Mode :	Mode 11	Temperature :	23~25 °C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	36.11	-3.89	40	50.98	16.04	0.55	31.46	100	211	Peak
42.42	35.97	-4.03	40	55.25	11.59	0.64	31.51	-	-	Peak
94.53	30.57	-12.93	43.5	51.88	9.24	0.98	31.53	-	-	Peak
310.5	28.86	-17.14	46	44.6	13.79	1.79	31.32	-	-	Peak
358.1	31.3	-14.7	46	45.26	15.27	2.04	31.27	-	-	Peak
430.9	27.45	-18.55	46	39.26	17.07	2.25	31.13	-	-	Peak
5785	112.46	-	-	100.91	34.88	9.9	33.23	100	269	Peak
5785	101.74	-	-	90.19	34.88	9.9	33.23	100	269	Average
6934	61.59	-30.87	92.46	50.28	35.67	9.9	34.26	100	0	Peak

Test Mode :	Mode 12	Temperature :	23~25 °C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	32.33	-7.67	40	52.51	10.67	0.65	31.5	100	151	Peak
124.77	24.99	-18.51	43.5	43.87	11.56	1.12	31.56	-	-	Peak
287.85	34.57	-11.43	46	50.95	13.27	1.68	31.33	-	-	Peak
335	34.7	-11.3	46	49.6	14.54	1.87	31.31	-	-	Peak
358.1	36.37	-9.63	46	50.33	15.27	2.04	31.27	-	-	Peak
383.3	34.77	-11.23	46	47.84	16.05	2.11	31.23	-	-	Peak
5825	107.04	-	-	95.52	34.93	9.88	33.29	109	326	Peak
5825	96.58	-	-	85.06	34.93	9.88	33.29	109	326	Average
6934	64.39	-22.65	87.04	53.08	35.67	9.9	34.26	100	0	Peak



Test Mode :	Mode 12	Temperature :	23~25 °C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	36.29	-3.71	40	51.4	15.8	0.56	31.47	100	211	Peak
41.61	35.82	-4.18	40	54.66	12.04	0.63	31.51	-	-	Peak
93.18	29.26	-14.24	43.5	50.82	9.01	0.96	31.53	-	-	Peak
335	27.93	-18.07	46	42.83	14.54	1.87	31.31	-	-	Peak
358.1	29.48	-16.52	46	43.44	15.27	2.04	31.27	-	-	Peak
383.3	28.35	-17.65	46	41.42	16.05	2.11	31.23	-	-	Peak
5825	112.56	-	-	101.04	34.93	9.88	33.29	100	254	Peak
5825	101.98	-	-	90.46	34.93	9.88	33.29	100	254	Average
6942	56.91	-35.65	92.56	45.59	35.68	9.91	34.27	100	0	Peak

Test Mode :	Mode 13	Temperature :	23~25 °C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	32.18	-7.82	40	51.91	11.13	0.64	31.5	108	44	Peak
179.85	27.65	-15.85	43.5	48.82	9.11	1.25	31.53	-	-	Peak
287.85	34.98	-11.02	46	51.36	13.27	1.68	31.33	-	-	Peak
310.5	36.66	-9.34	46	52.4	13.79	1.79	31.32	-	-	Peak
335	36.31	-9.69	46	51.21	14.54	1.87	31.31	-	-	Peak
407.8	34.55	-11.45	46	46.86	16.69	2.17	31.17	-	-	Peak
5745	107.73	-	-	96.19	34.84	9.91	33.21	110	328	Peak
5745	97.26	-	-	85.72	34.84	9.91	33.21	110	328	Average
6932	60.45	-27.28	87.73	49.14	35.67	9.9	34.26	100	0	Peak

Test Mode :	Mode 13	Temperature :	23~25 °C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	35.9	-4.1	40	50.55	16.27	0.54	31.46	-	-	Peak
41.61	36.38	-3.62	40	55.22	12.04	0.63	31.51	100	133	Peak
94.26	29.45	-14.05	43.5	50.89	9.12	0.97	31.53	-	-	Peak
335	31.21	-14.79	46	46.11	14.54	1.87	31.31	-	-	Peak
346.9	28.98	-17.02	46	43.39	14.93	1.95	31.29	-	-	Peak
419	28	-18	46	40.06	16.88	2.21	31.15	-	-	Peak
5745	111.26	-	-	99.72	34.84	9.91	33.21	100	267	Peak
5745	100.07	-	-	88.53	34.84	9.91	33.21	100	267	Average
6932	59.84	-31.42	91.26	48.53	35.67	9.9	34.26	100	0	Peak

Test Mode :	Mode 14	Temperature :	23~25 °C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.95	-8.05	40	51.68	11.13	0.64	31.5	109	44	Peak
240.06	32.16	-13.84	46	50.07	11.98	1.53	31.42	-	-	Peak
287.85	34.83	-11.17	46	51.21	13.27	1.68	31.33	-	-	Peak
310.5	33.99	-12.01	46	49.73	13.79	1.79	31.32	-	-	Peak
335	35.52	-10.48	46	50.42	14.54	1.87	31.31	-	-	Peak
430.9	36.94	-9.06	46	48.75	17.07	2.25	31.13	-	-	Peak
5785	108.27	-	-	96.72	34.88	9.9	33.23	110	326	Peak
5785	96.71	-	-	85.16	34.88	9.9	33.23	110	326	Average
6932	61.23	-27.04	88.27	49.92	35.67	9.9	34.26	100	0	Peak

Test Mode :	Mode 14	Temperature :	23~25 °C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	36.4	-3.6	40	51.27	16.04	0.55	31.46	100	133	Peak
41.61	35.69	-4.31	40	54.53	12.04	0.63	31.51	-	-	Peak
93.45	30.1	-13.4	43.5	51.66	9.01	0.96	31.53	-	-	Peak
310.5	29.65	-16.35	46	45.39	13.79	1.79	31.32	-	-	Peak
335	33.64	-12.36	46	48.54	14.54	1.87	31.31	-	-	Peak
430.9	27.68	-18.32	46	39.49	17.07	2.25	31.13	-	-	Peak
5785	113.9	-	-	102.35	34.88	9.9	33.23	100	269	Peak
5785	100.84	-	-	89.29	34.88	9.9	33.23	100	269	Average
6940	62.28	-31.62	93.9	50.97	35.67	9.91	34.27	100	0	Peak

Test Mode :	Mode 15	Temperature :	23~25 °C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	31.91	-8.09	40	52.09	10.67	0.65	31.5	110	163	Peak
240.06	33.49	-12.51	46	51.4	11.98	1.53	31.42	-	-	Peak
287.85	33.62	-12.38	46	50	13.27	1.68	31.33	-	-	Peak
335	35.56	-10.44	46	50.46	14.54	1.87	31.31	-	-	Peak
358.1	34.04	-11.96	46	48	15.27	2.04	31.27	-	-	Peak
430.9	31.42	-14.58	46	43.23	17.07	2.25	31.13	-	-	Peak
5825	108.43	-	-	96.91	34.93	9.88	33.29	109	326	Peak
5825	95.69	-	-	84.17	34.93	9.88	33.29	109	326	Average
6934	63.07	-25.36	88.43	51.76	35.67	9.9	34.26	100	0	Peak

Test Mode :	Mode 15	Temperature :	23~25 °C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	36.73	-3.27	40	51.38	16.27	0.54	31.46	106	66	Peak
42.42	36.28	-3.72	40	55.56	11.59	0.64	31.51	-	-	Peak
94.53	29.31	-14.19	43.5	50.62	9.24	0.98	31.53	-	-	Peak
310.5	26.94	-19.06	46	42.68	13.79	1.79	31.32	-	-	Peak
358.1	35.41	-10.59	46	49.37	15.27	2.04	31.27	-	-	Peak
419	29.01	-16.99	46	41.07	16.88	2.21	31.15	-	-	Peak
5825	112.75	-	-	101.23	34.93	9.88	33.29	100	255	Peak
5825	100.89	-	-	89.37	34.93	9.88	33.29	100	255	Average
6932	57.01	-35.74	92.75	45.7	35.67	9.9	34.26	100	0	Peak

3.7 Antenna Requirements

3.7.1 Standard Applicable

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

3.7.2 Antenna Connected Construction

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

3.7.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
ISN	Teseq GmbH	ISN T400A	25696	N/A	Jun. 16, 2011	Jun. 15, 2012	Conduction (CO05-HY)
ISN	Teseq GmbH	ISN T800	27134	N/A	Jun. 16, 2011	Jun. 15, 2012	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000485	0.1MHz~200MHz	Jun. 08, 2011	Jun. 07, 2012	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000484	0.1MHz~200MHz	Jun. 08, 2011	Jun. 07, 2012	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB.GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP143002 as below.