

# FCC RF Test Report

**APPLICANT** : ZTE CORPORATION  
**EQUIPMENT** : WCDMA Digital Mobile Phone  
**BRAND NAME** : ZTE  
**MODEL NAME** : ZTE V8110  
**FCC ID** : Q78-V8110  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on Oct. 15, 2012 and completely tested on Nov. 27, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



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Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.**



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**APPENDIX A. PHOTOGRAPHS OF EUT**

**APPENDIX B. SETUP PHOTOGRAPHS**



### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.19 dB at 4924.000 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.16 dB at 0.280 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

## 1.3 Feature of Equipment Under Test

Product Feature	
<b>Equipment</b>	WCDMA Digital Mobile Phone
<b>Brand Name</b>	ZTE
<b>Model Name</b>	ZTE V8110
<b>FCC ID</b>	Q78-V8110
<b>EUT supports Radios application</b>	GSM / GPRS / EGPRS / WCDMA / HSPA / WLAN11bgn / Bluetooth
<b>HW Version</b>	MB7501C_V1BMB_C
<b>SW Version</b>	V8110_Z54_ES_3SMO11B5000001
<b>EUT Stage</b>	Identical Prototype

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

Product Specification subjective to this standard	
<b>Tx/Rx Frequency Range</b>	2412 MHz ~ 2462 MHz
<b>Number of Channels</b>	11
<b>Carrier Frequency of Each Channel</b>	2412+(n-1)*5 MHz; n=1~11
<b>Maximum Output Power to Antenna</b>	802.11b : 16.06 dBm (0.0404 W) 802.11g : 23.76 dBm (0.2377 W) 802.11n HT20 : 23.13 dBm (0.2056 W) 802.11n HT40 : 23.39 dBm (0.2183 W)
<b>Antenna Type</b>	PIFA Antenna with gain 0 dBi
<b>Type of Modulation</b>	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.4 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC/IC Registration No.</b>
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

## 1.5 Applied Standards

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

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

**Remark:**

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

## 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
5.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m



## 2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

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

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

### 2.1 Carrier Frequency Channel

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

## 2.2 Pre-Scanned RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.06	15.85	15.25	15.87
CH 06	2437 MHz	14.02	14.46	13.52	13.54
CH 11	2462 MHz	15.48	15.47	15.02	14.95

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	23.54	23.47	23.61	23.75	23.74	23.61	23.69	23.75
CH 06	2437 MHz	23.76	23.73	23.71	23.65	23.63	23.68	23.61	23.58
CH 11	2462 MHz	23.57	23.56	23.55	23.67	23.65	23.72	23.65	23.68

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	22.94	22.96	22.88	22.84	23.05	22.74	22.89	22.78
CH 06	2437 MHz	22.91	22.97	23.03	22.86	23.01	22.97	22.86	22.96
CH 11	2462 MHz	23.13	22.75	22.74	22.86	22.87	22.69	22.82	22.98

Channel	Frequency	2.4GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422 MHz	23.28	22.98	22.81	23.03	22.68	22.93	22.84	22.78
CH 06	2437 MHz	23.39	22.69	22.81	22.82	22.85	22.95	22.68	22.87
CH 09	2452 MHz	23.28	22.85	22.63	22.89	22.52	22.47	22.87	22.72

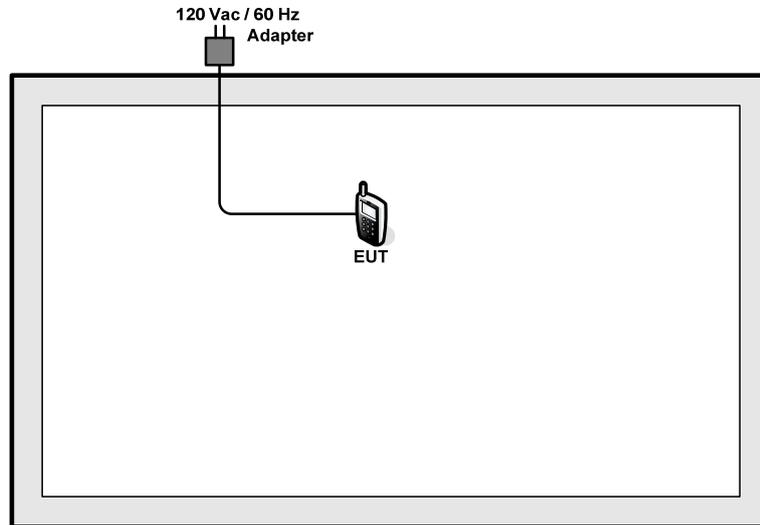
### 2.3 Test Mode

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

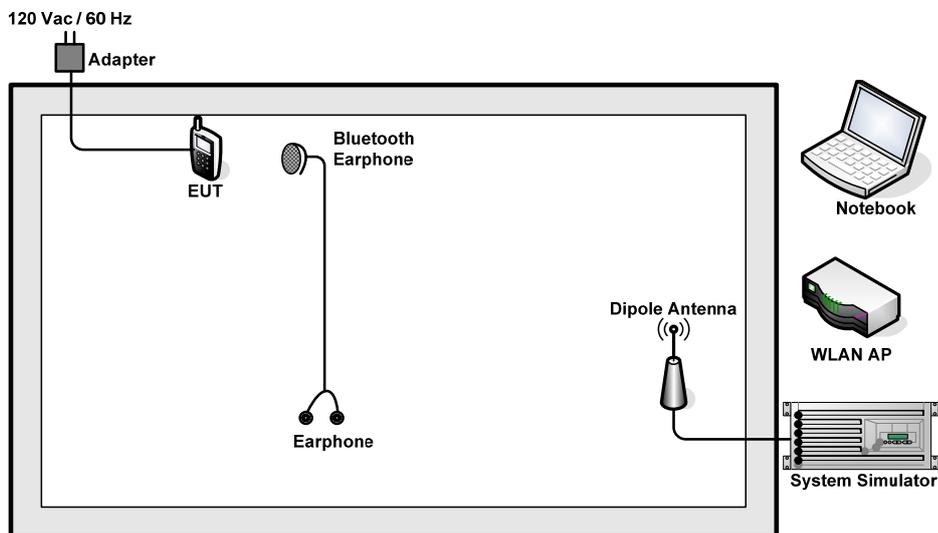
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Conducted Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
Radiated TCs	Radiated Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)			

## 2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



## 2.5 RF Utility

For WLAN function, key in “\* # \* # 3646633 # \* # \*” on the EUT directly. Then, the EUT will get into the engineering modes to contact with WLAN AP for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

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

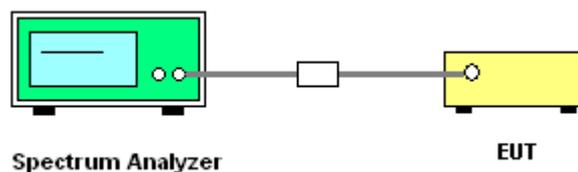
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

##### 3.1.4 Test Setup



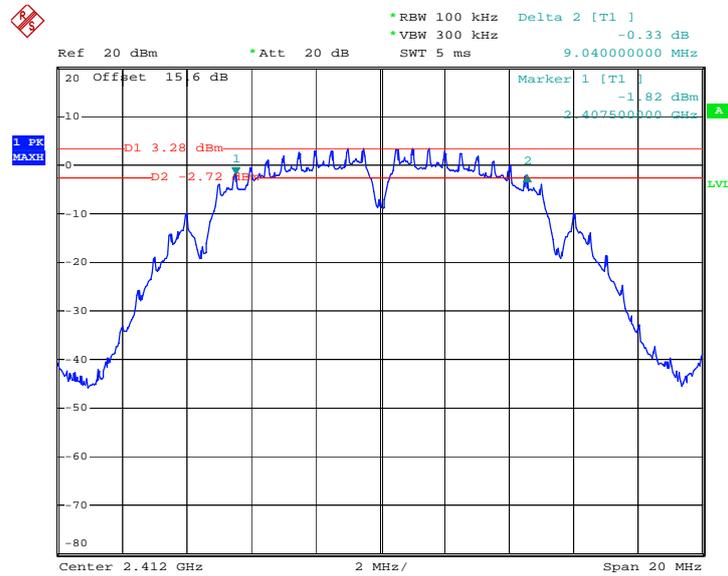
### 3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.04	0.5	Pass
06	2437	9.00	0.5	Pass
11	2462	9.04	0.5	Pass

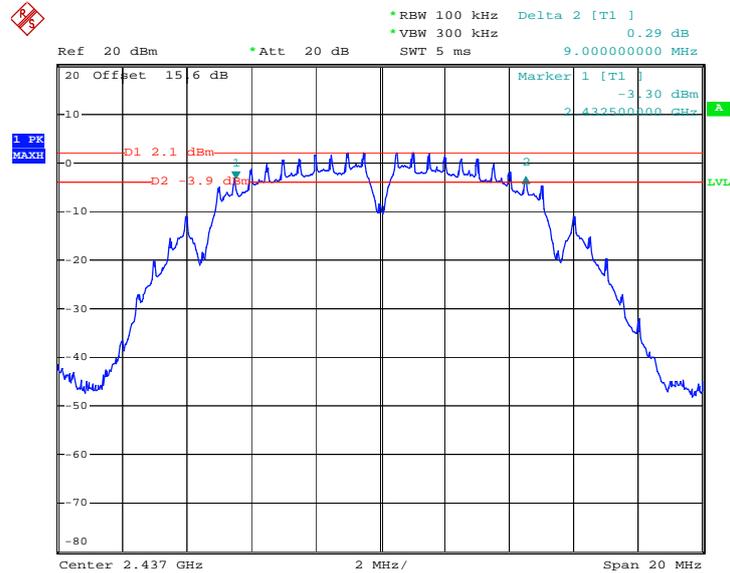
6 dB Bandwidth Plot on 802.11b Channel 01



Date: 24.NOV.2012 01:52:54

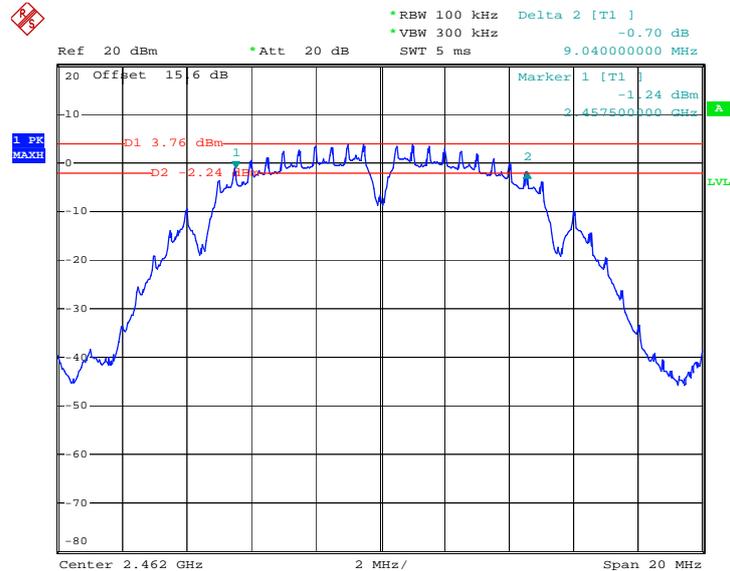


6 dB Bandwidth Plot on 802.11b Channel 06



Date: 24.NOV.2012 01:42:29

6 dB Bandwidth Plot on 802.11b Channel 11



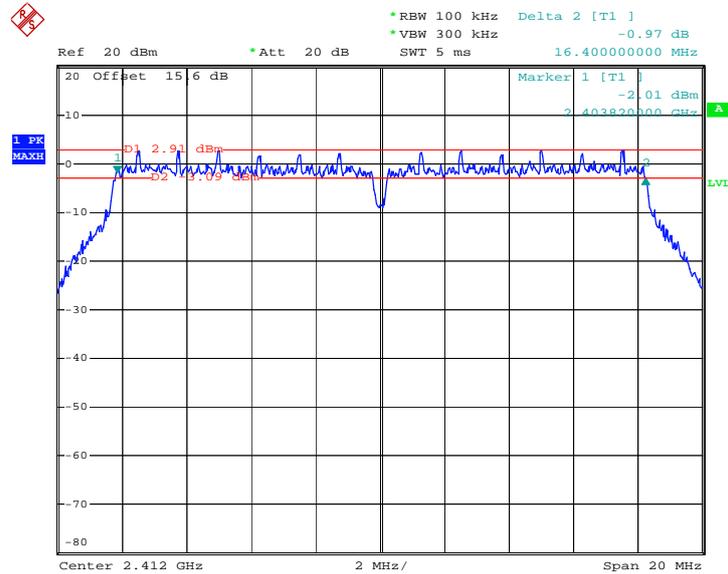
Date: 24.NOV.2012 01:45:29



Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.40	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.48	0.5	Pass

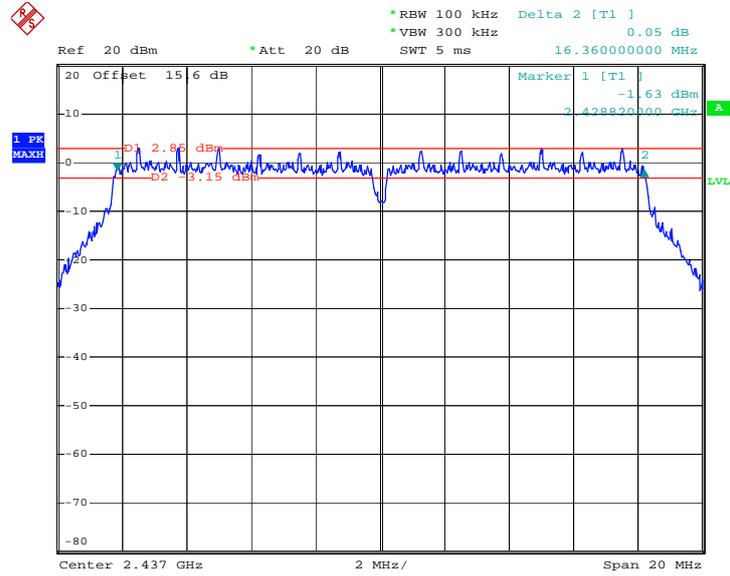
6 dB Bandwidth Plot on 802.11g Channel 01



Date: 9.NOV.2012 00:05:50

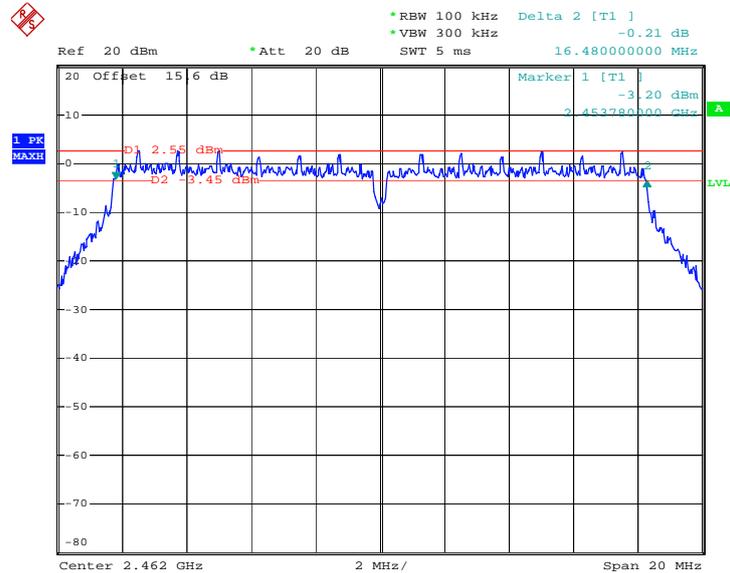


### 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 9.NOV.2012 00:07:27

### 6 dB Bandwidth Plot on 802.11g Channel 11



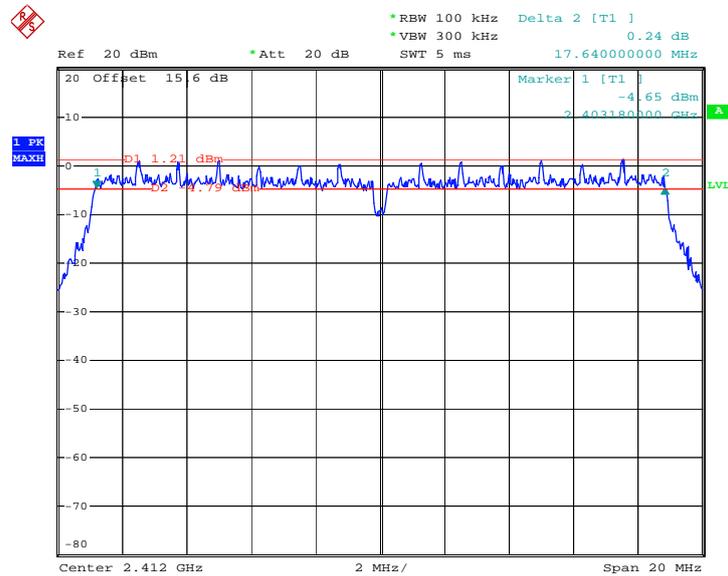
Date: 9.NOV.2012 00:08:54



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.64	0.5	Pass
06	2437	17.60	0.5	Pass
11	2462	17.64	0.5	Pass

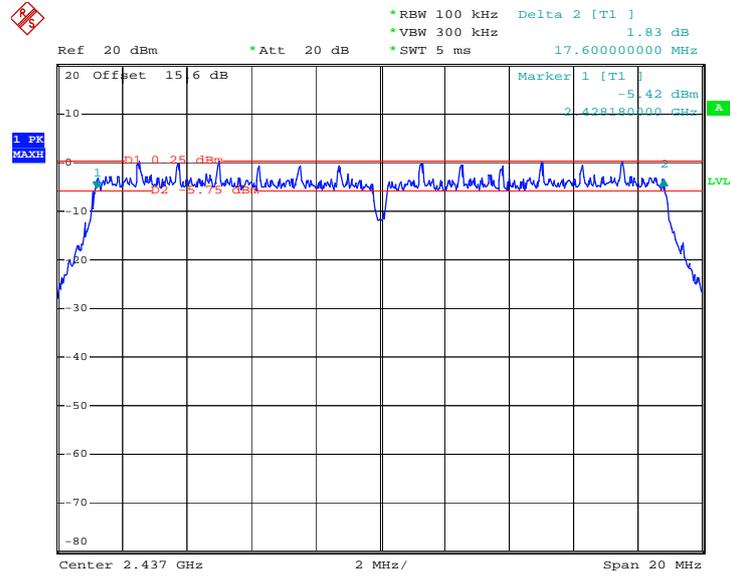
6 dB Bandwidth Plot on 802.11n HT20 Channel 01



Date: 9.NOV.2012 00:11:25

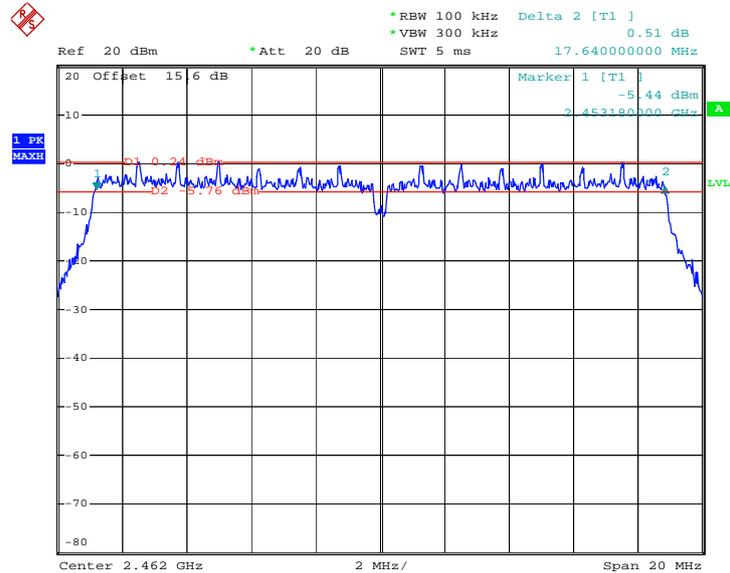


6 dB Bandwidth Plot on 802.11n HT20 Channel 06



Date: 9.NOV.2012 00:12:46

6 dB Bandwidth Plot on 802.11n HT20 Channel 11



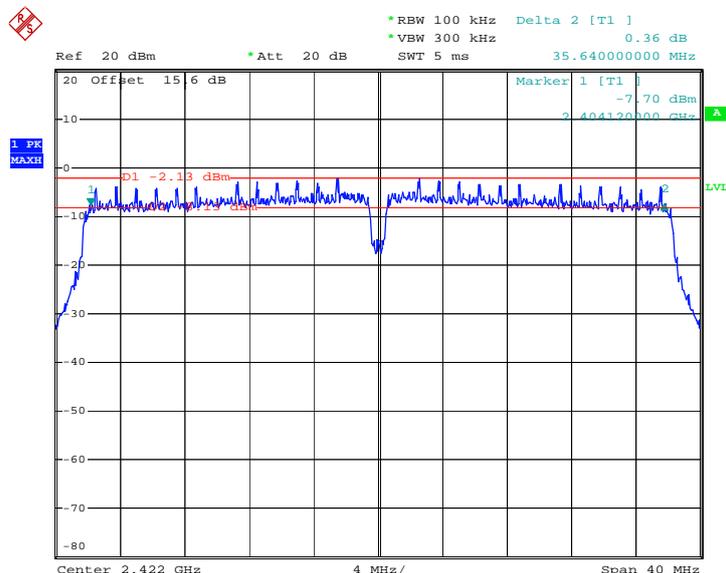
Date: 9.NOV.2012 00:13:45



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	35.64	0.5	Pass
06	2437	35.68	0.5	Pass
09	2452	35.68	0.5	Pass

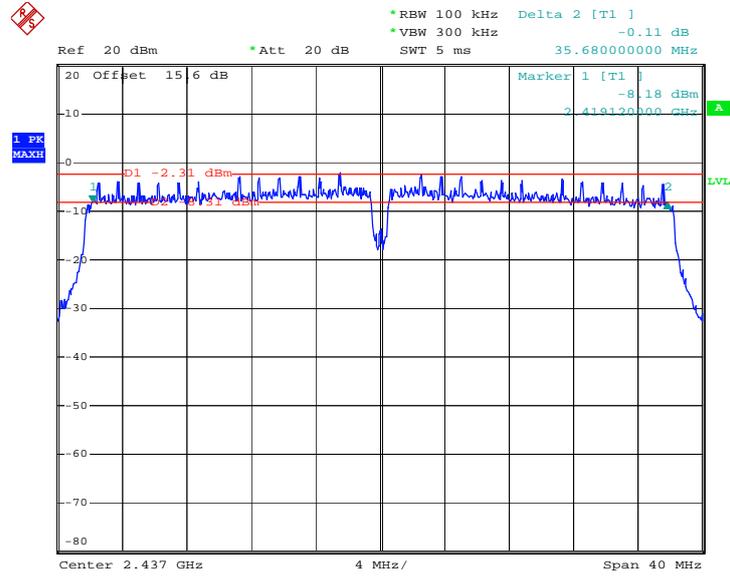
6 dB Bandwidth Plot on 802.11n HT40 Channel 03



Date: 9.NOV.2012 00:16:35

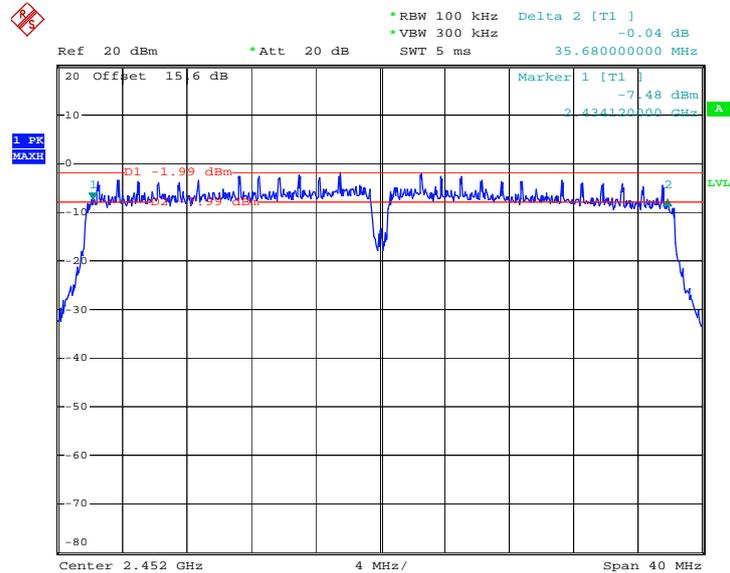


6 dB Bandwidth Plot on 802.11n HT40 Channel 06



Date: 9.NOV.2012 00:17:55

6 dB Bandwidth Plot on 802.11n HT40Channel 09



Date: 9.NOV.2012 00:18:52

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

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

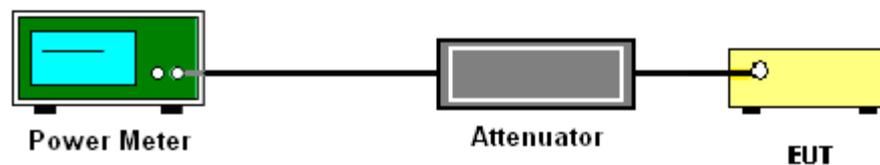
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

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

### 3.2.4 Test Setup



**3.2.5 Test Result of Peak Output Power**

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Cloud Peng	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.06	30	Pass
06	2437	14.02	30	Pass
11	2462	15.48	30	Pass

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Cloud Peng	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.54	30	Pass
06	2437	23.76	30	Pass
11	2462	23.57	30	Pass

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Cloud Peng	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.94	30	Pass
06	2437	22.91	30	Pass
11	2462	23.13	30	Pass

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	21~22
<b>Test Engineer :</b>	Cloud Peng	<b>Relative Humidity :</b>	41~42

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	23.28	30	Pass
06	2437	23.39	30	Pass
09	2452	23.28	30	Pass



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	98.59%	Duty Factor:	0.06dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	12.42
06	2437	10.30
11	2462	11.90

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	91.45%	Duty Factor:	0.39dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	14.07
06	2437	14.54
11	2462	13.88

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	62.07%	Duty Factor:	2.07dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	12.39
06	2437	12.83
11	2462	12.12

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	47.79%	Duty Factor:	3.21dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	13.51
06	2437	13.27
09	2452	12.89

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

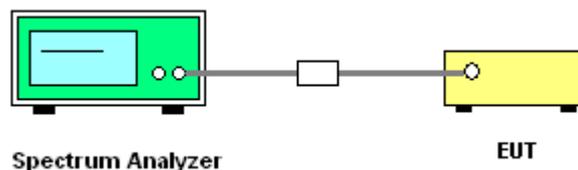
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz in order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Record the measurement data derived from spectrum analyzer.

#### 3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	3.22	-8.19	8	Pass
06	2437	2.05	-10.33	8	Pass
11	2462	2.72	-10.95	8	Pass

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	3.35	-10.78	8	Pass
06	2437	3.49	-11.42	8	Pass
11	2462	3.37	-10.66	8	Pass



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802. 11n HT20 Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	1.68	-12.21	8	Pass
06	2437	1.35	-13.90	8	Pass
11	2462	1.21	-13.87	8	Pass

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802. 11n HT40 Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-0.50	-16.27	8	Pass
06	2437	-0.99	-15.25	8	Pass
09	2452	-0.90	-14.53	8	Pass

**Note:**

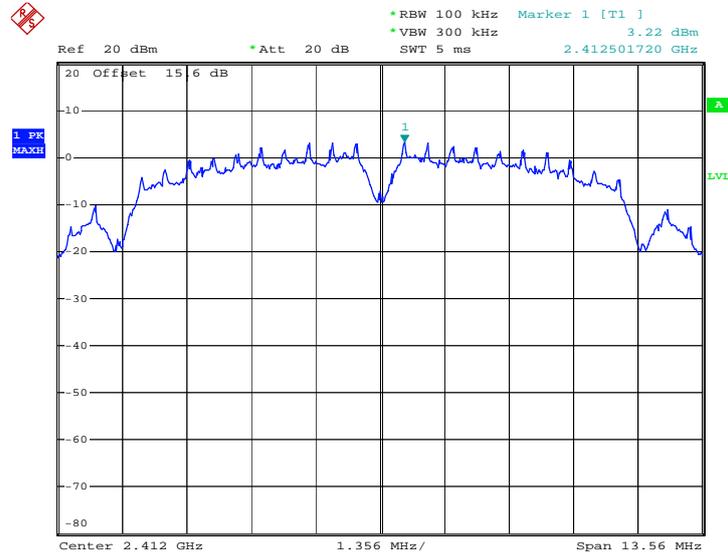
1. Measured power density (dBm) has offset with cable loss.
2. Measured power density (dBm)/ 100KHz is for 20dBc reference only



### 3.3.6 Test Result of Power Spectral Density Plots (100KHz)

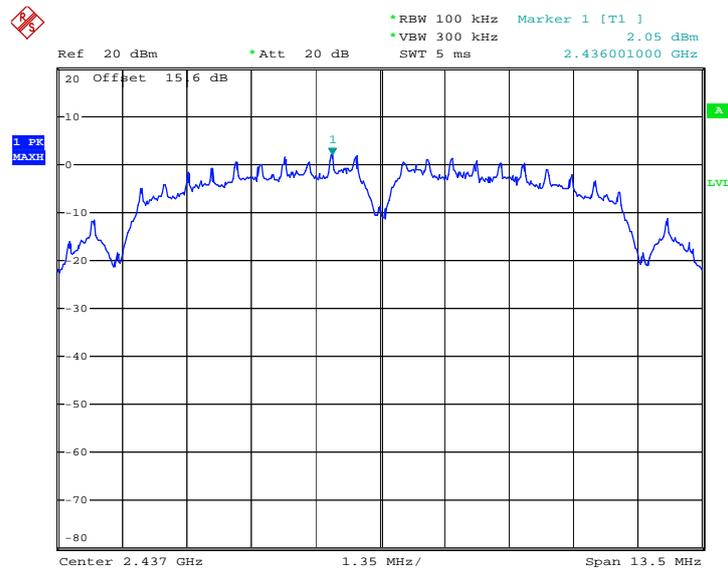
<802.11b>

PSD 100KHz Plot on 802.11b Channel 01



Date: 24.NOV.2012 01:37:22

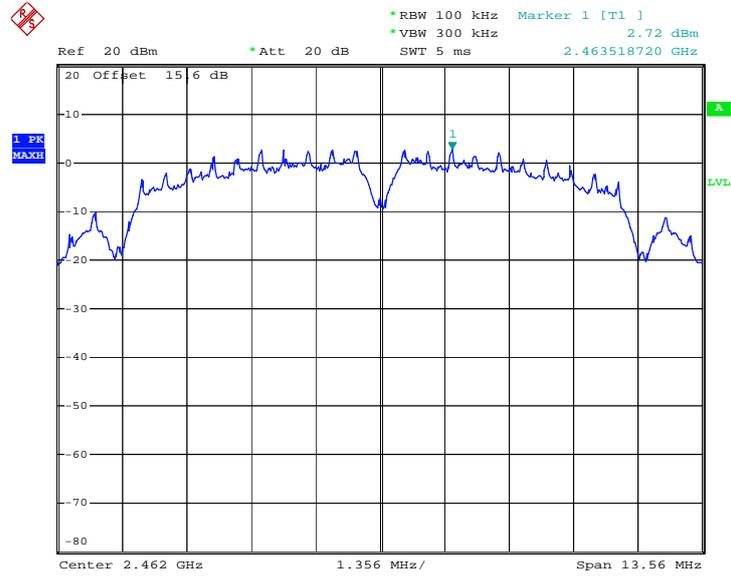
PSD 100KHz Plot on 802.11b Channel 06



Date: 24.NOV.2012 01:42:58



PSD 100KHz Plot on 802.11b Channel 11

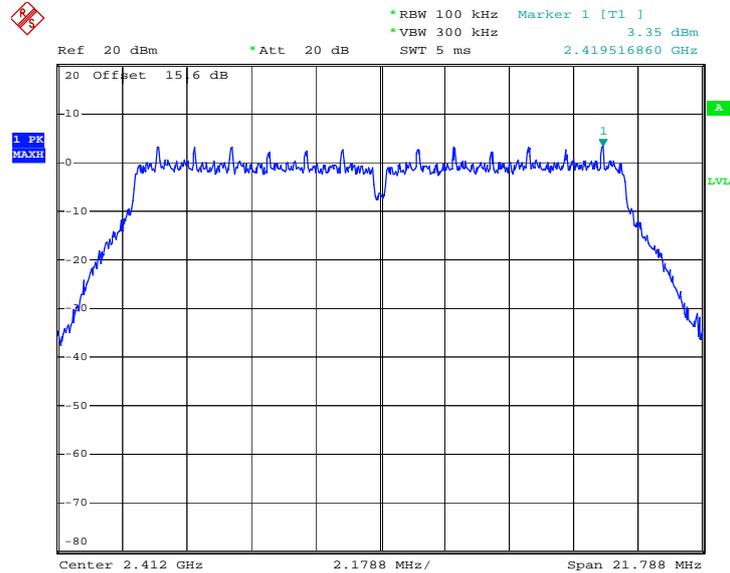


Date: 24.NOV.2012 01:46:20



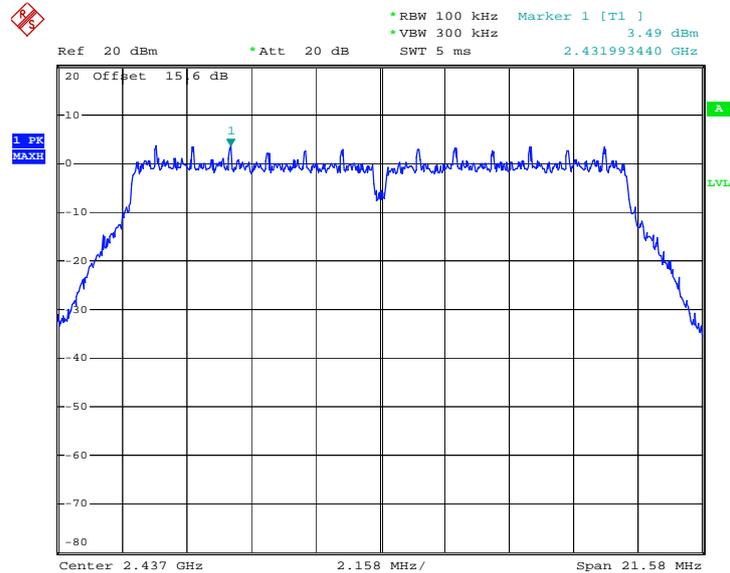
<802.11g>

PSD 100KHz Plot on 802.11g Channel 01



Date: 30.OCT.2012 21:38:31

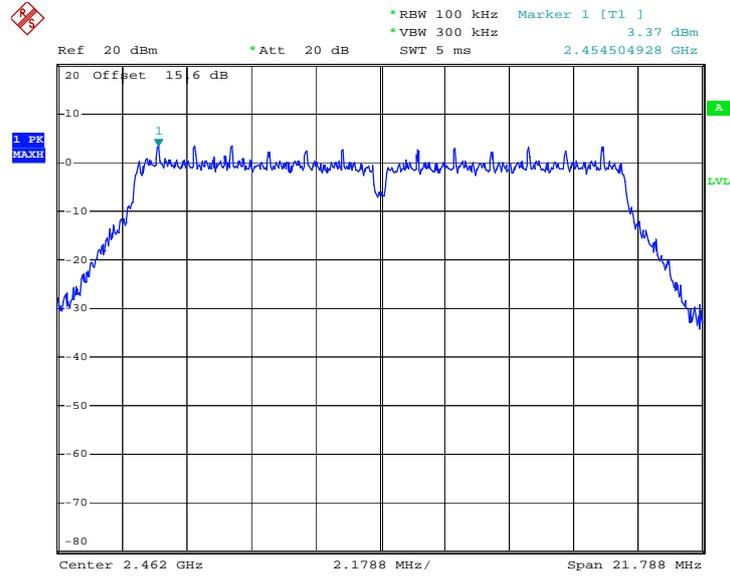
PSD 100KHz Plot on 802.11g Channel 06



Date: 30.OCT.2012 21:44:47



PSD 100KHz Plot on 802.11g Channel 11

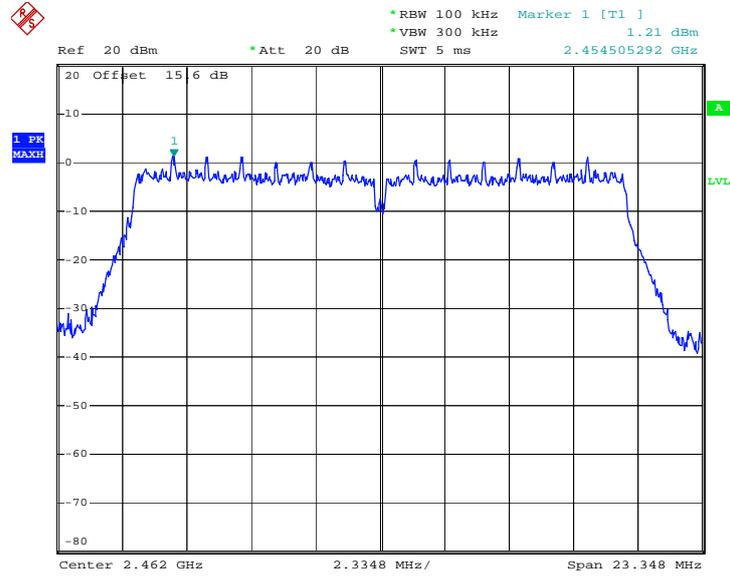


Date: 30.OCT.2012 21:49:11





PSD 100KHz Plot on 2.4G 802.11n HT20 Channel 11

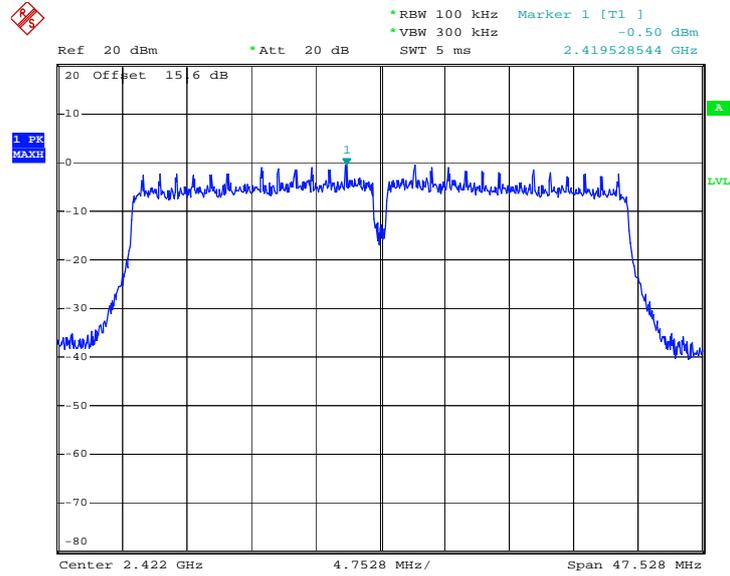


Date: 30.OCT.2012 22:06:31



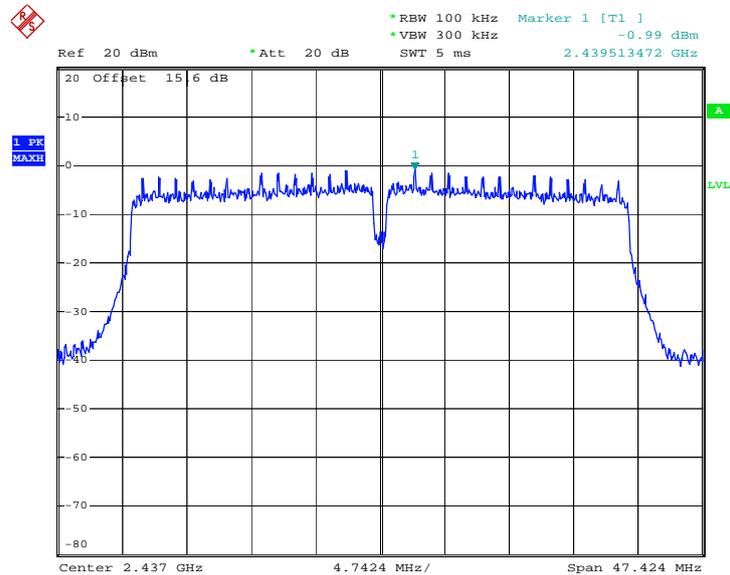
<2.4GHz 802.11n HT-40>

PSD 100KHz Plot on 2.4G 802.11n HT40 Channel 03



Date: 30.OCT.2012 22:13:23

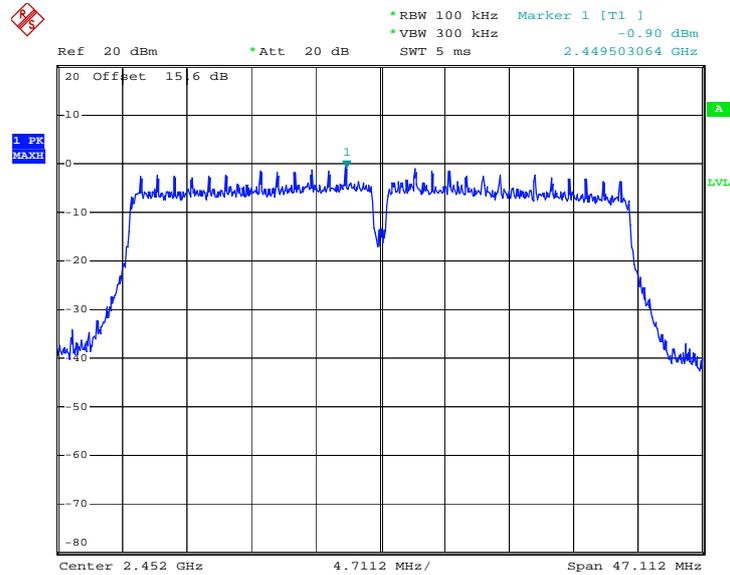
PSD 100KHz Plot on 2.4G 802.11n HT40 Channel 06



Date: 30.OCT.2012 22:17:17



PSD 100KHz Plot on 2.4G 802.11n HT40 Channel 09



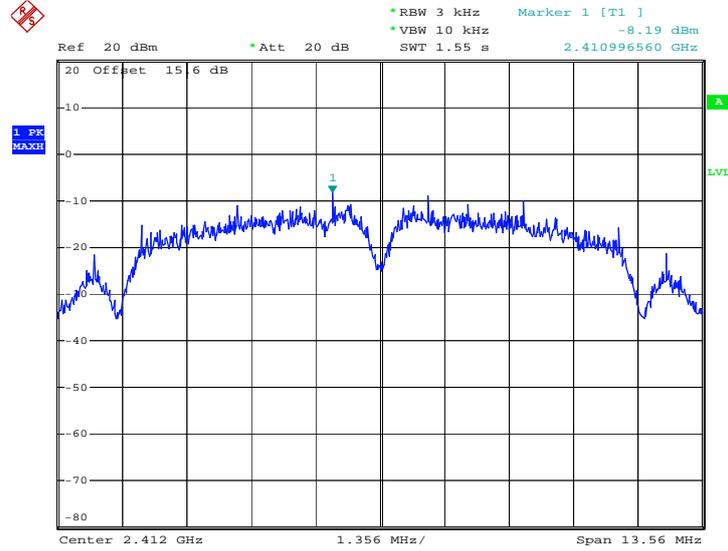
Date: 30.OCT.2012 22:21:13



### 3.3.7 Test Result of Power Spectral Density Plots (3KHz)

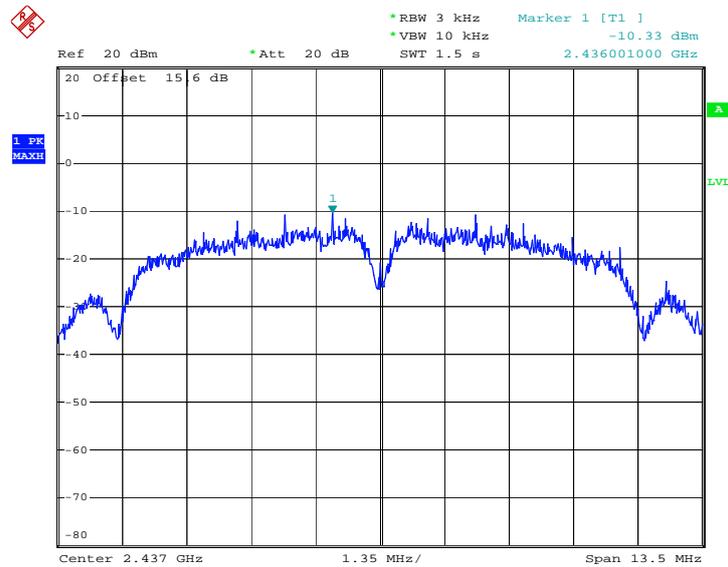
<802.11b>

PSD 3KHz Plot on 802.11b Channel 01



Date: 24.NOV.2012 01:37:02

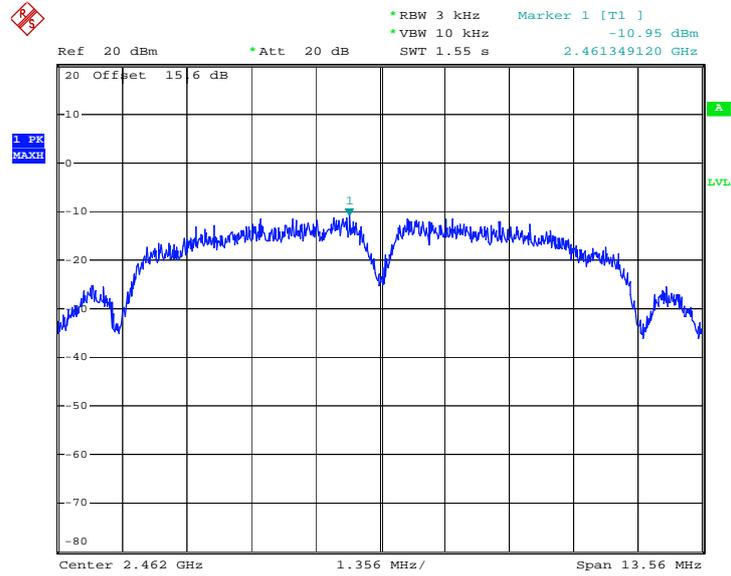
PSD 3KHz Plot on 802.11b Channel 06



Date: 24.NOV.2012 01:42:52



PSD 3KHz Plot on 802.11b Channel 11

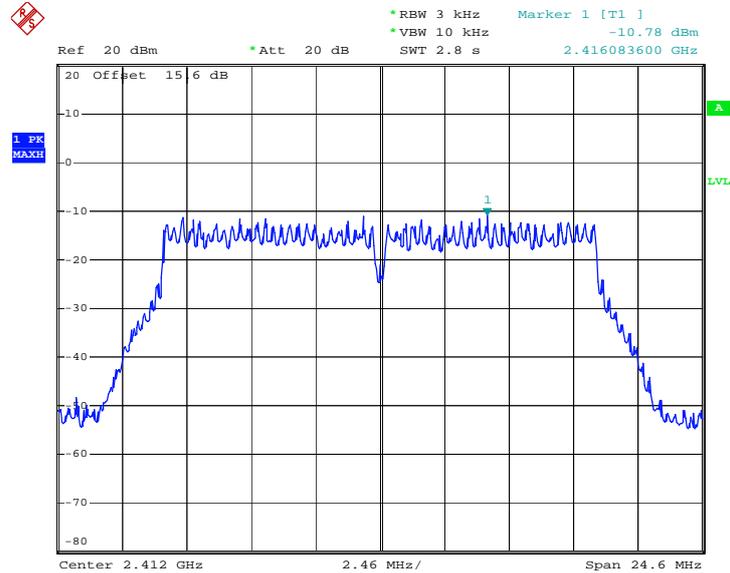


Date: 24.NOV.2012 01:45:53



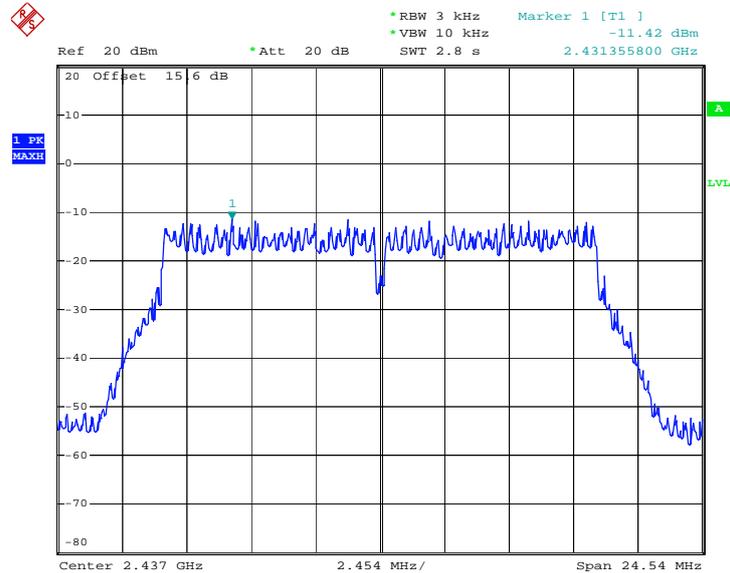
<802.11g>

PSD 3KHz Plot on 802.11g Channel 01



Date: 9.NOV.2012 00:35:57

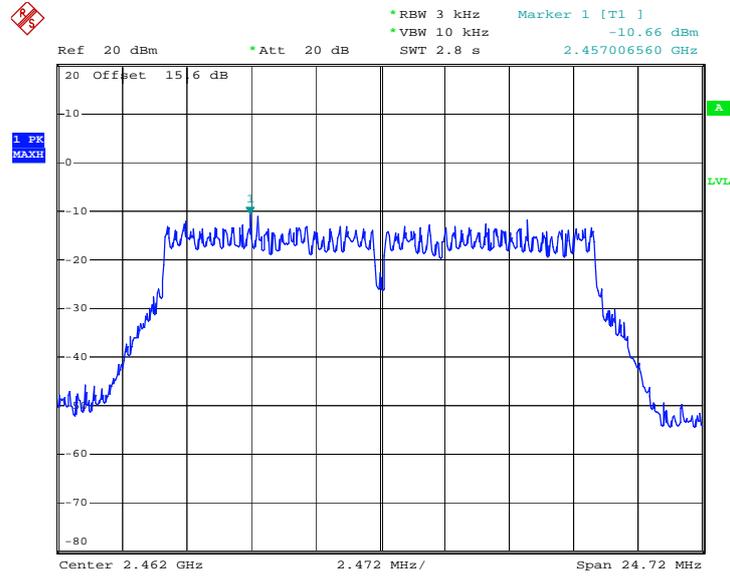
PSD 3KHz Plot on 802.11g Channel 06



Date: 9.NOV.2012 00:37:04



PSD 3KHz Plot on 802.11g Channel 11

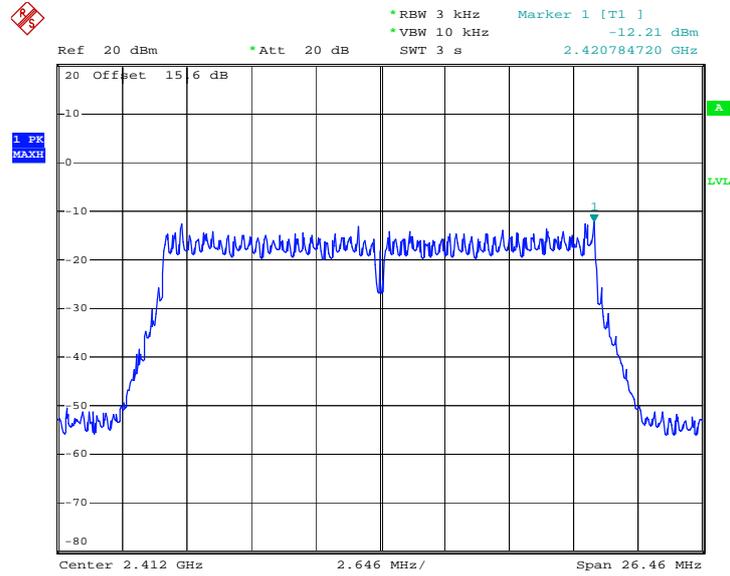


Date: 9.NOV.2012 00:37:36



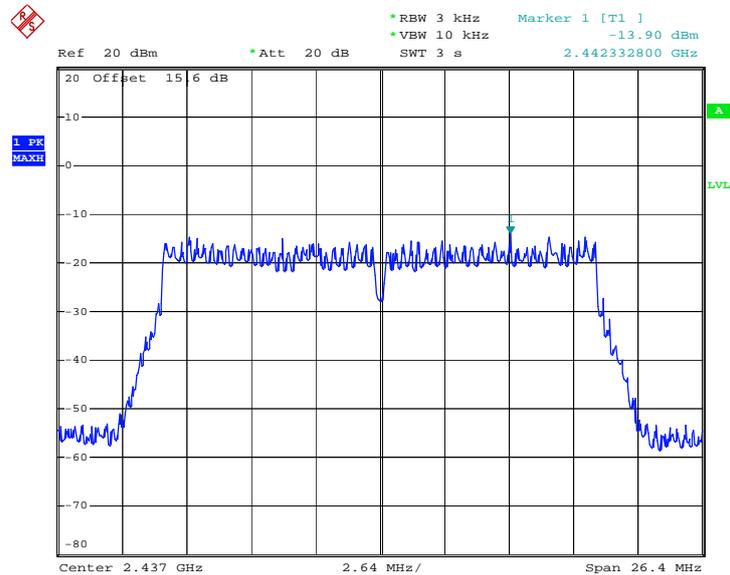
<2.4GHz 802.11n HT-20>

PSD 3KHz Plot on 2.4G 802.11n HT20 Channel 01



Date: 9.NOV.2012 00:39:12

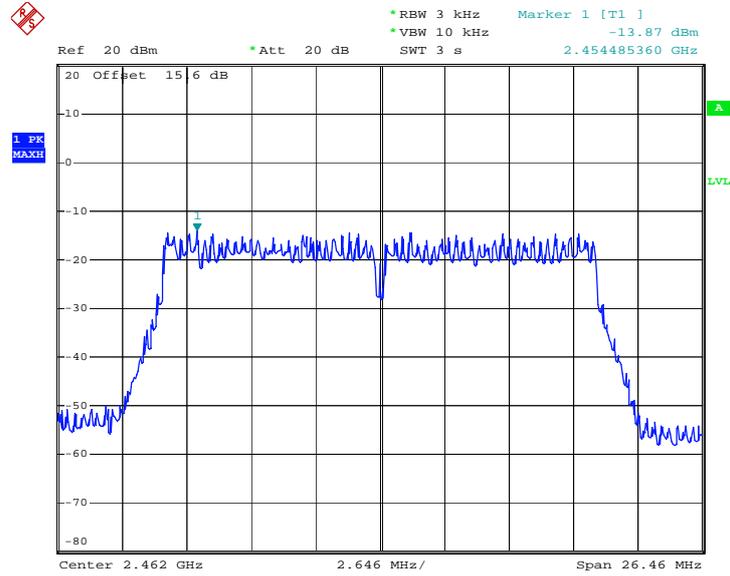
PSD 3KHz Plot on 2.4G 802.11n HT20 Channel 06



Date: 9.NOV.2012 00:39:52



PSD 3KHz Plot on 2.4G 802.11n HT20 Channel 11

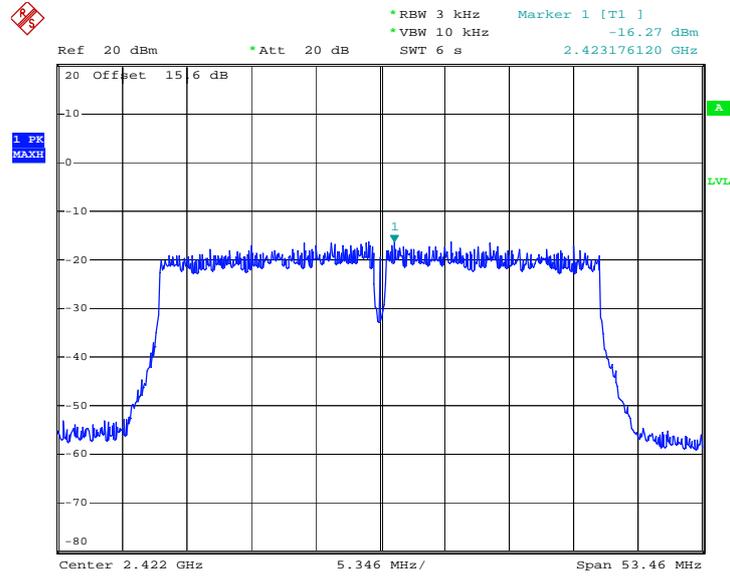


Date: 9.NOV.2012 00:40:38



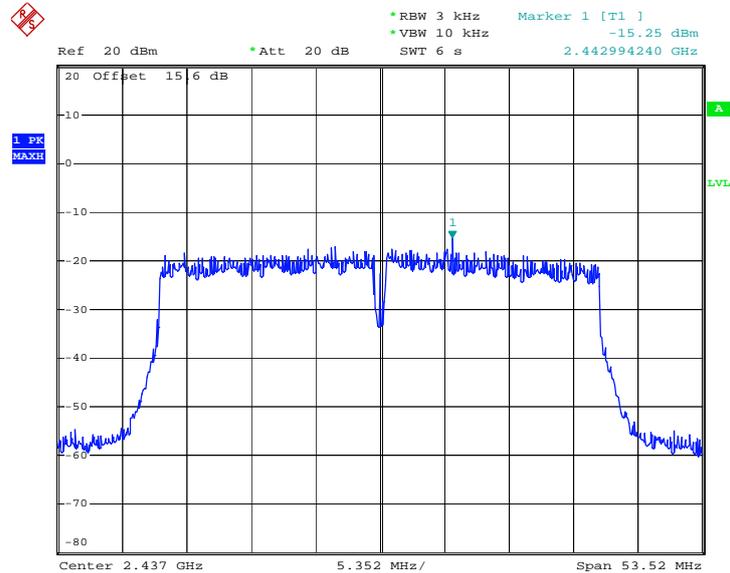
<2.4GHz 802.11n HT-40>

PSD 3KHz Plot on 2.4G 802.11n HT40 Channel 03



Date: 9.NOV.2012 00:42:03

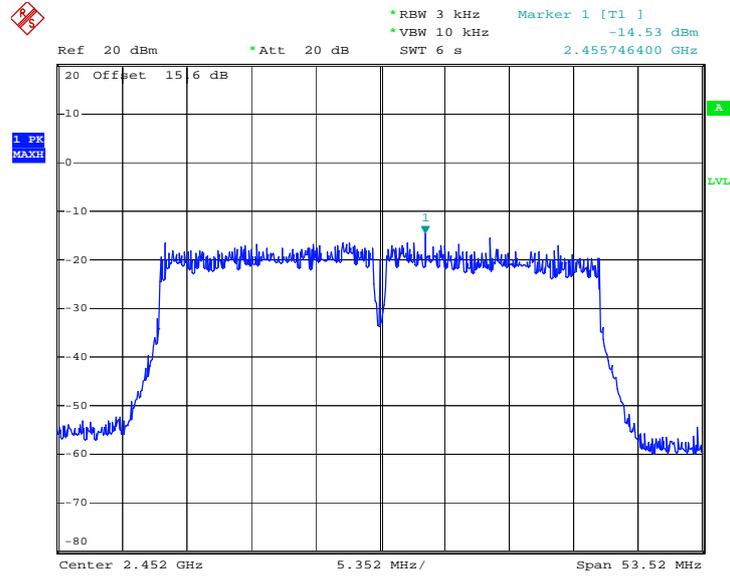
PSD 3KHz Plot on 2.4G 802.11n HT40 Channel 06



Date: 9.NOV.2012 00:42:50



PSD 3KHz Plot on 2.4G 802.11n HT40 Channel 09



Date: 9.NOV.2012 00:47:58

## 3.4 Conducted Band Edges and Spurious Emission Measurement

### 3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

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

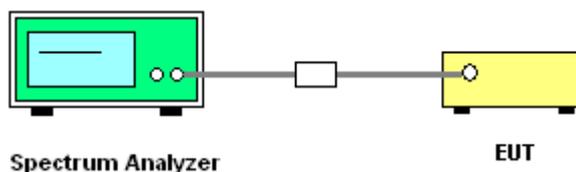
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedures

1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
4. Measure and record the results in the test report.

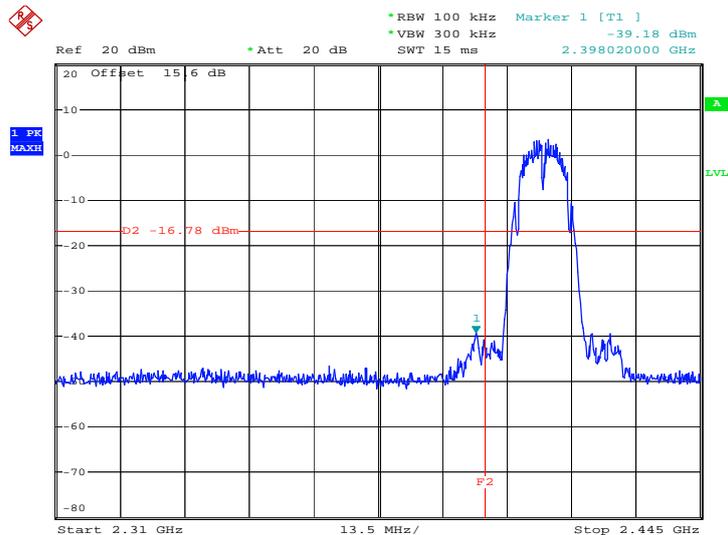
### 3.4.4 Test Setup



### 3.4.5 Test Plots of Conducted Band Edges

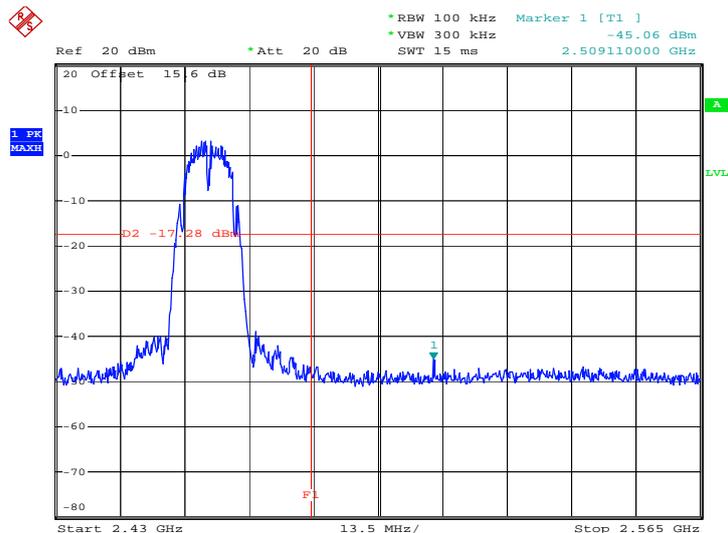
Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11b Channel 01



Date: 24.NOV.2012 01:37:37

High Band Edge Plot on 802.11b Channel 11

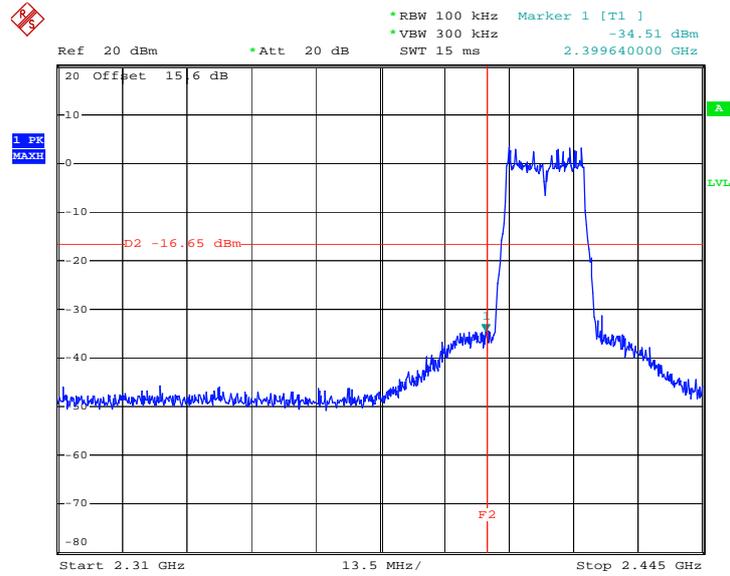


Date: 24.NOV.2012 01:46:44



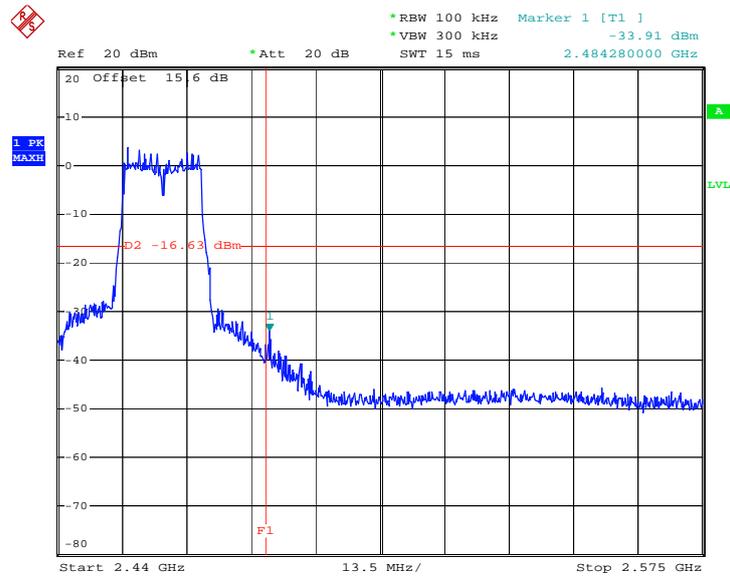
Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11g Channel 01



Date: 30.OCT.2012 21:39:16

High Band Edge Plot on 802.11g Channel 11

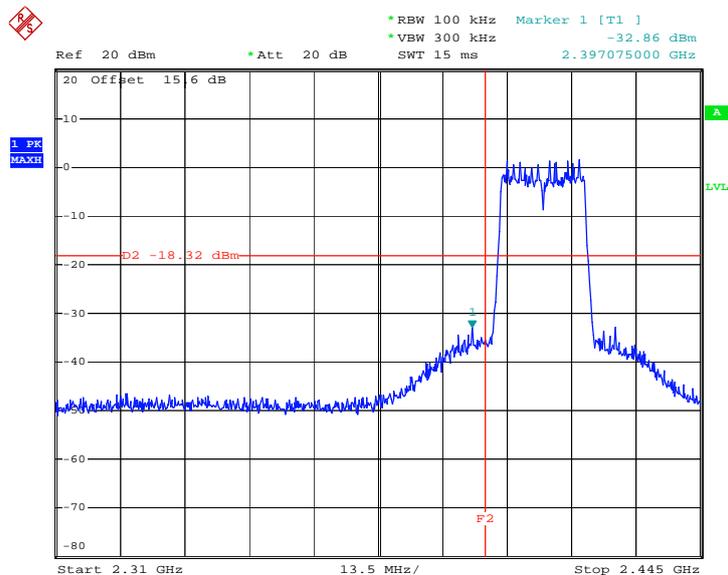


Date: 30.OCT.2012 21:49:34



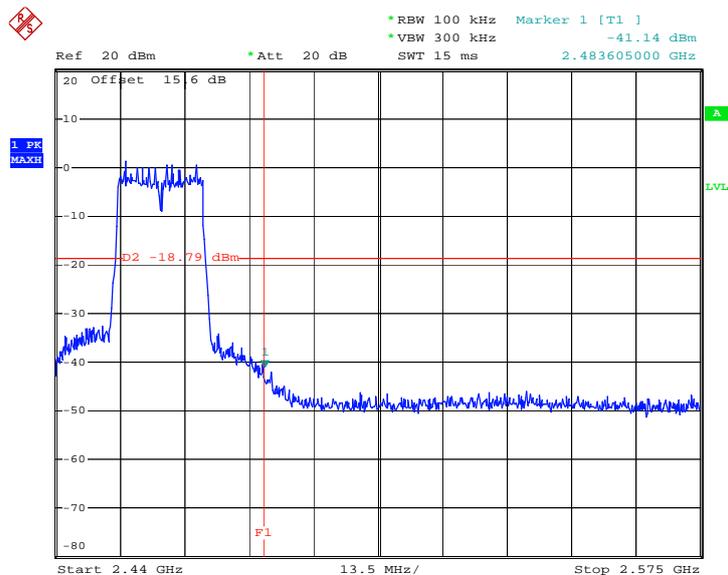
Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 30.OCT.2012 21:59:13

High Band Edge Plot on 802.11n HT20 Channel 11

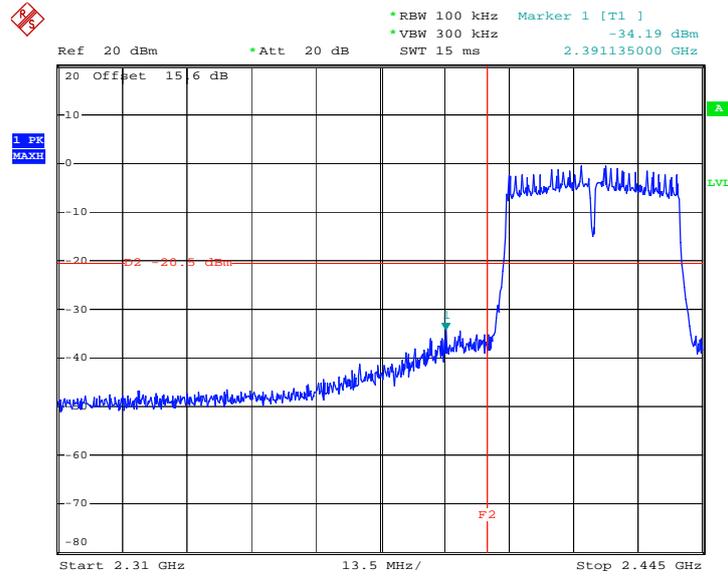


Date: 30.OCT.2012 22:07:57



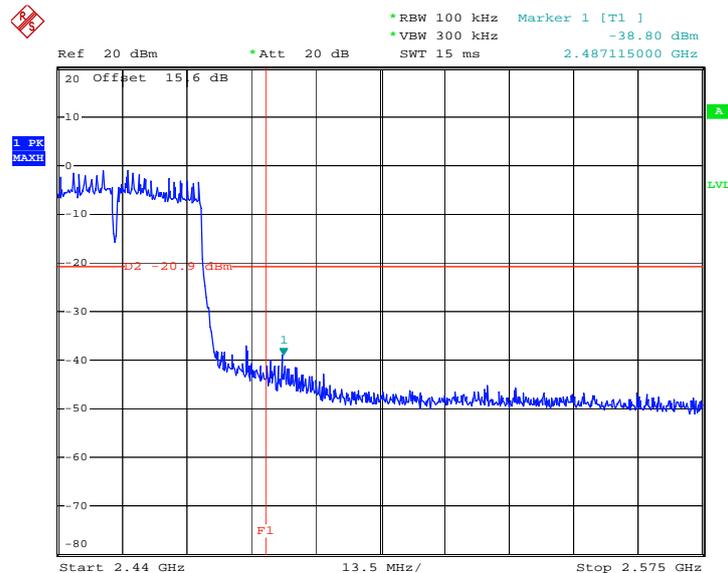
Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	03 and 09	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11n HT40 Channel 03



Date: 30.OCT.2012 22:13:42

High Band Edge Plot on 802.11n HT40 Channel 09



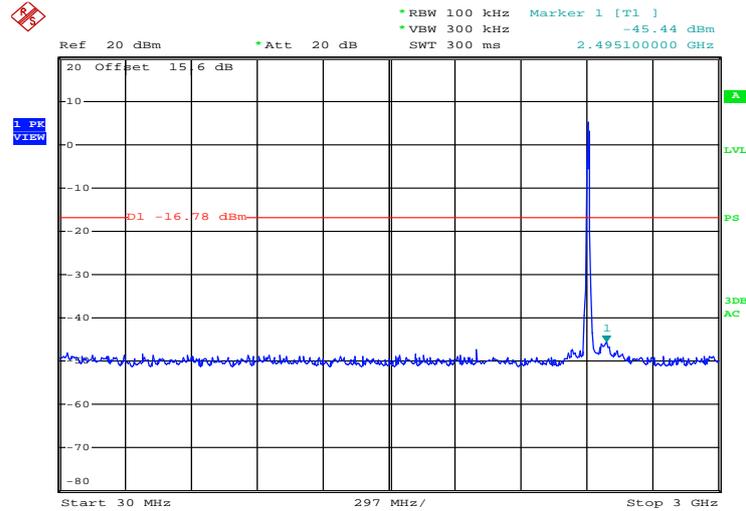
Date: 30.OCT.2012 22:21:33

### 3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

#### 802.11b 30 MHz~3 GHz

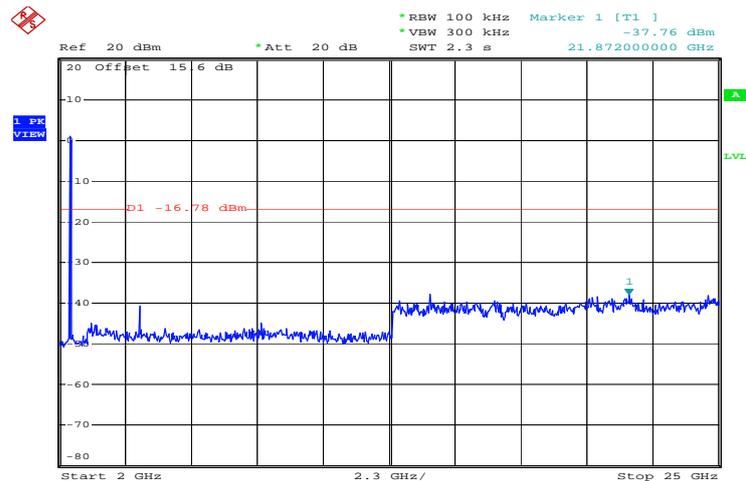
##### Conducted Spurious Emission Plot on Channel 01



Date: 27.NOV.2012 15:04:35

#### 802.11b 2 GHz~25 GHz

##### Conducted Spurious Emission Plot on Channel 01

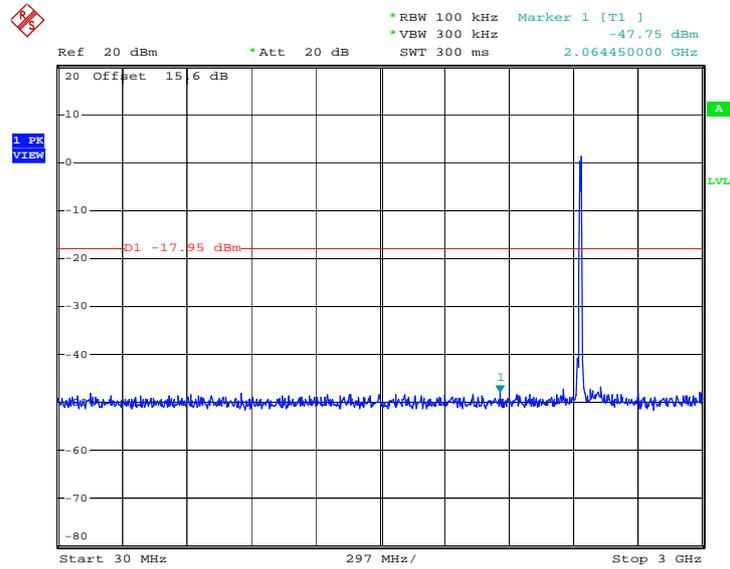


Date: 24.NOV.2012 01:40:07



802.11b 30 MHz~3 GHz

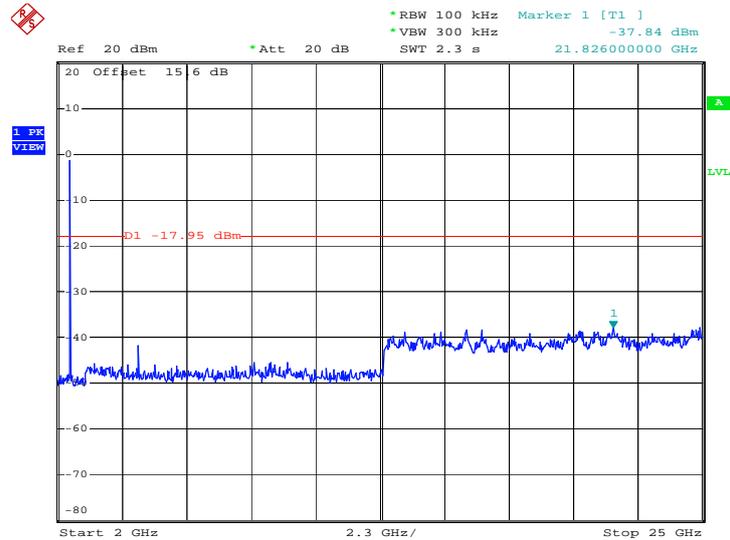
Conducted Spurious Emission Plot on Channel 06



Date: 24.NOV.2012 01:43:27

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

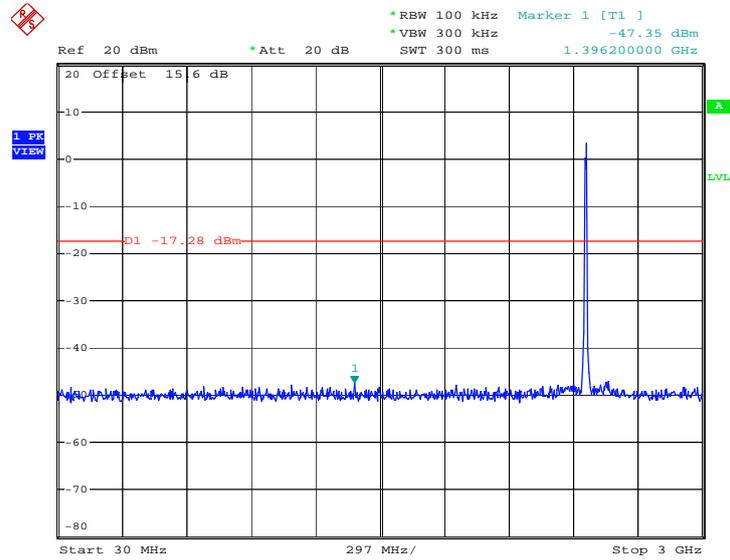


Date: 24.NOV.2012 01:43:45



802.11b 30 MHz~3 GHz

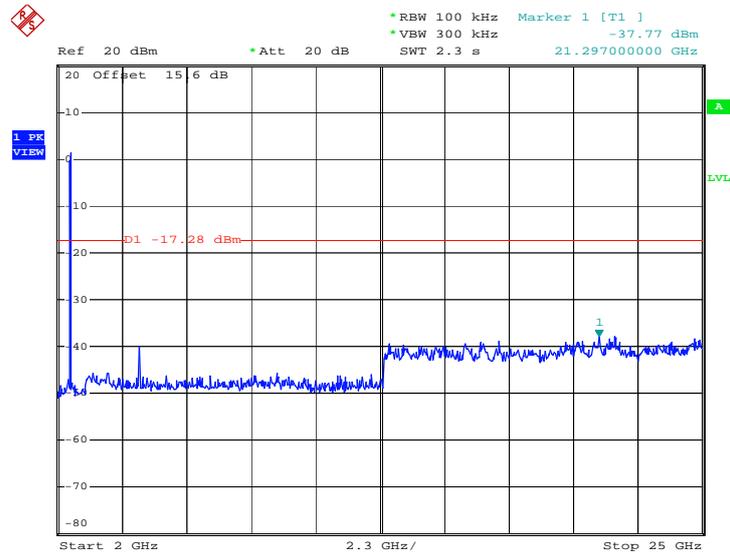
Conducted Spurious Emission Plot on Channel 11



Date: 24.NOV.2012 01:47:29

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



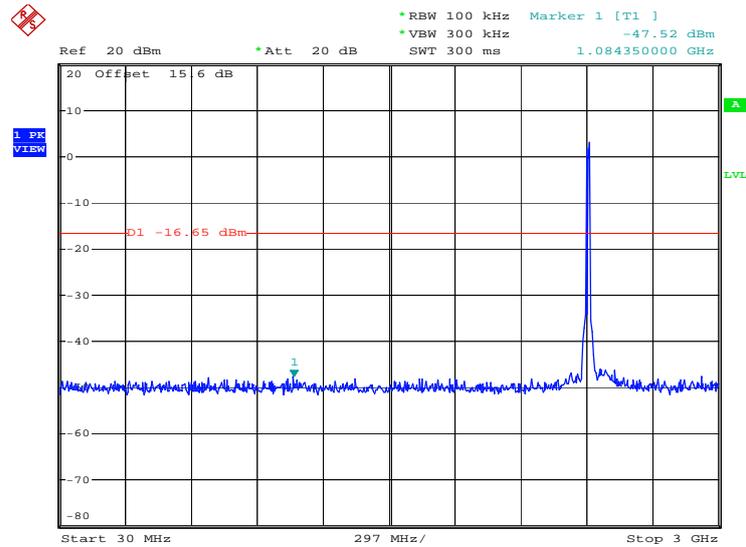
Date: 24.NOV.2012 01:47:47



Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

802.11g 30 MHz~3 GHz

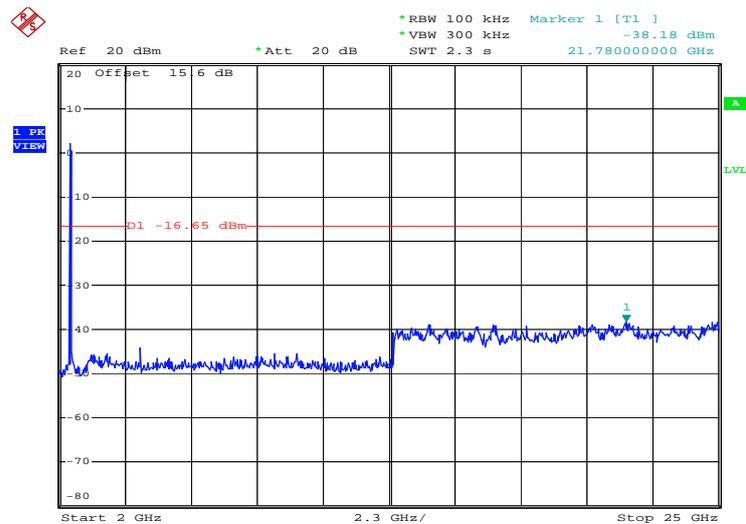
Conducted Spurious Emission Plot on Channel 01



Date: 30.OCT.2012 21:41:07

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01



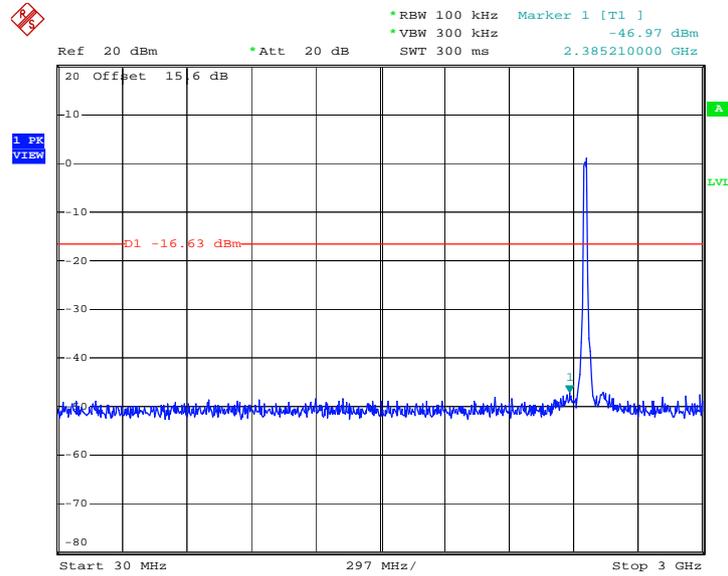
Date: 30.OCT.2012 21:41:25





### 802.11g 30 MHz~3 GHz

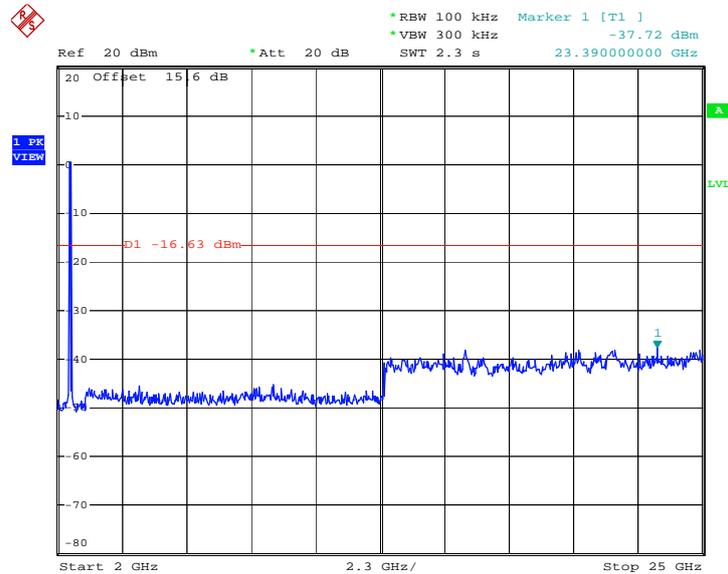
#### Conducted Spurious Emission Plot on Channel 11



Date: 30.OCT.2012 21:50:05

### 802.11g 2 GHz~25 GHz

#### Conducted Spurious Emission Plot on Channel 11



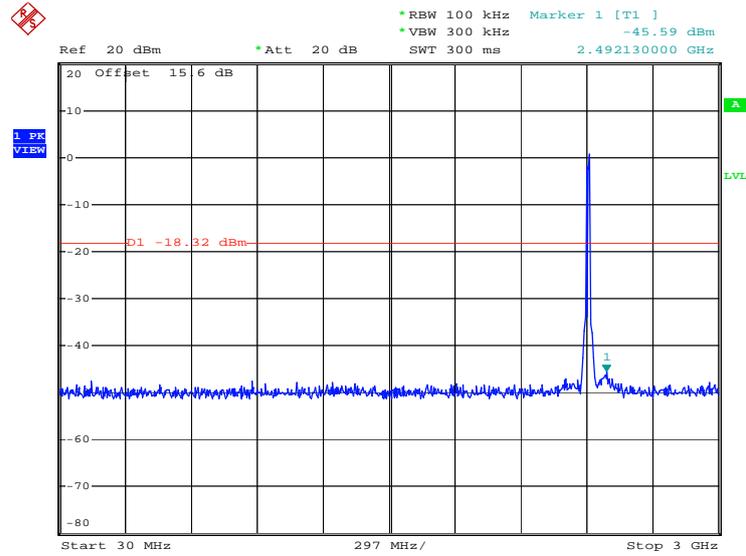
Date: 30.OCT.2012 21:50:23



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

802.11n HT20 30 MHz~3 GHz

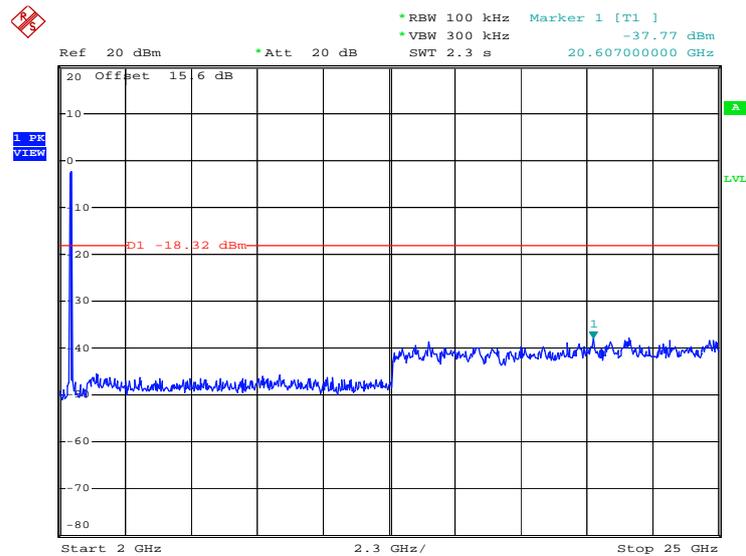
Conducted Spurious Emission Plot on Channel 01



Date: 30.OCT.2012 22:00:01

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

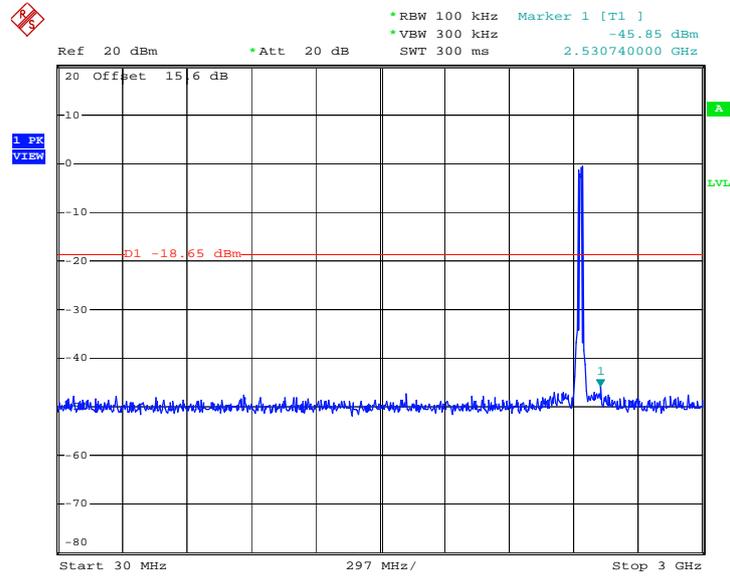


Date: 30.OCT.2012 22:00:19



802.11n HT20 30 MHz~3 GHz

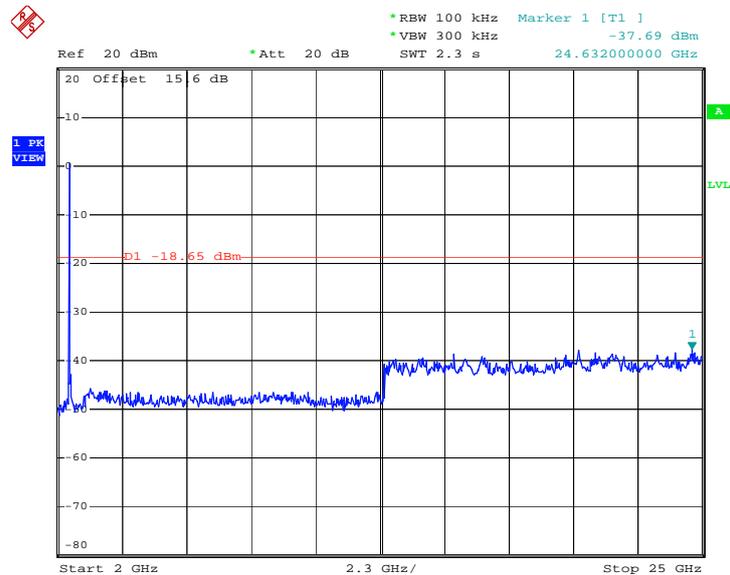
Conducted Spurious Emission Plot on Channel 06



Date: 30.OCT.2012 22:03:44

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

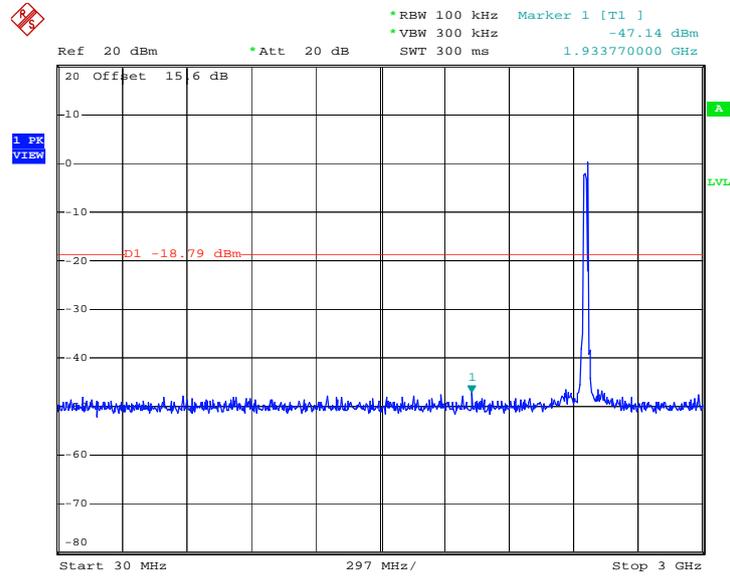


Date: 30.OCT.2012 22:04:03



802.11n HT20 30 MHz~3 GHz

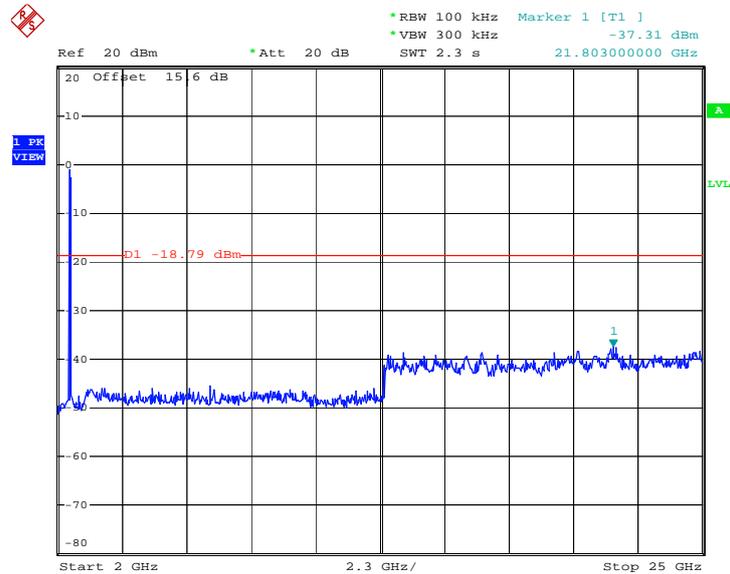
Conducted Spurious Emission Plot on Channel 11



Date: 30.OCT.2012 22:09:46

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



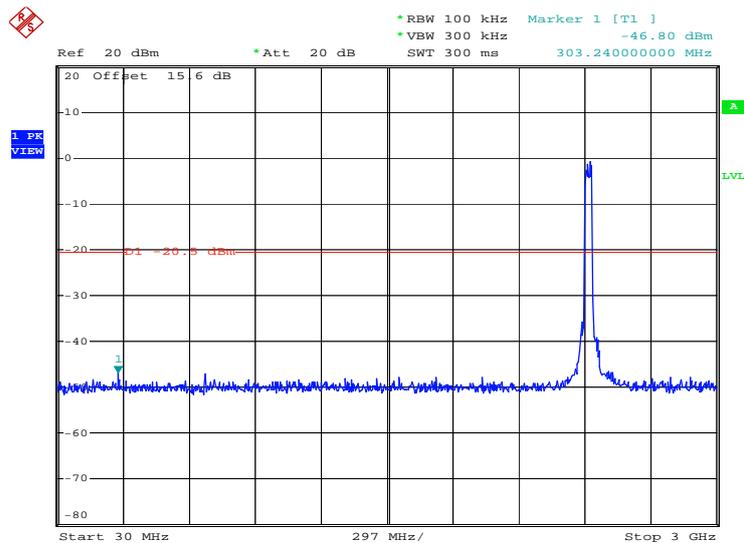
Date: 30.OCT.2012 22:10:05



Test Mode :	802.11n HT40	Temperature :	21~22
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42
Test Channel :	03, 06, 09	Test Engineer :	Cloud Peng

802.11n HT40 30 MHz~3 GHz

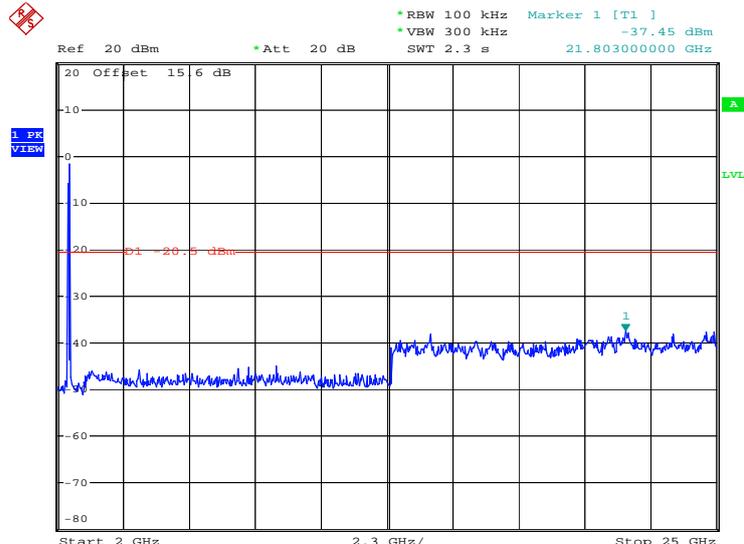
Conducted Spurious Emission Plot on Channel 03



Date: 30.OCT.2012 22:14:06

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 03

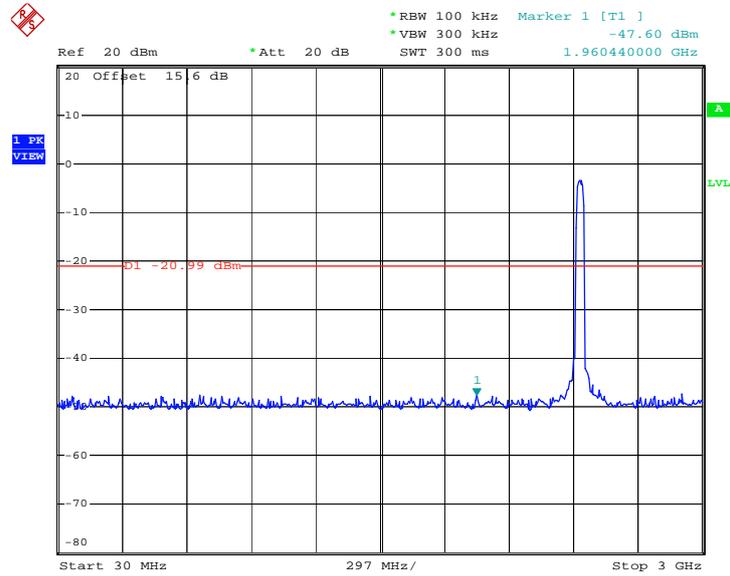


Date: 30.OCT.2012 22:14:24



802.11n HT40 30 MHz~3 GHz

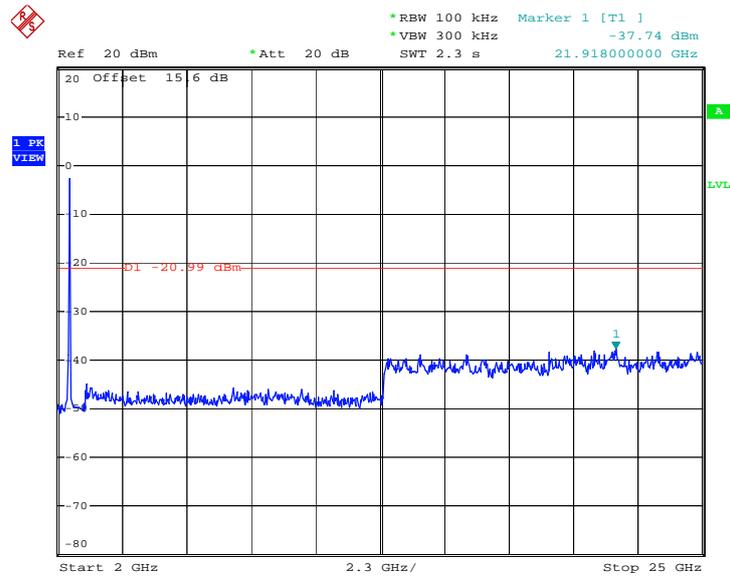
Conducted Spurious Emission Plot on Channel 06



Date: 27.NOV.2012 13:43:00

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

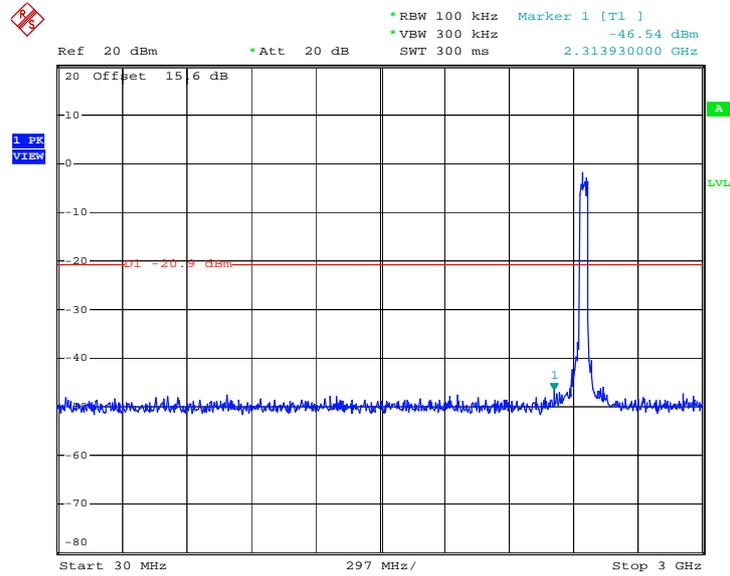


Date: 30.OCT.2012 22:19:20



802.11n HT40 30 MHz~3 GHz

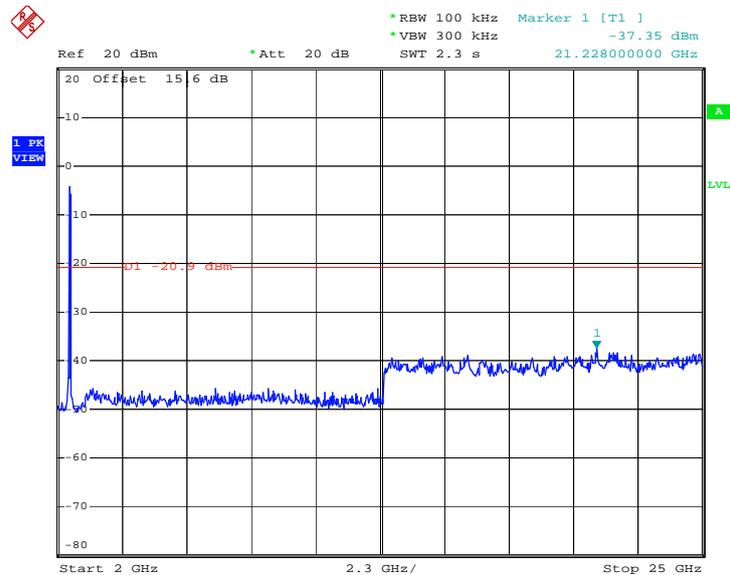
Conducted Spurious Emission Plot on Channel 09



Date: 30.OCT.2012 22:22:10

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 30.OCT.2012 22:22:28



### 3.5 Radiated Emission Measurement

#### 3.5.1 Limit of Radiated Emission

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

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

#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

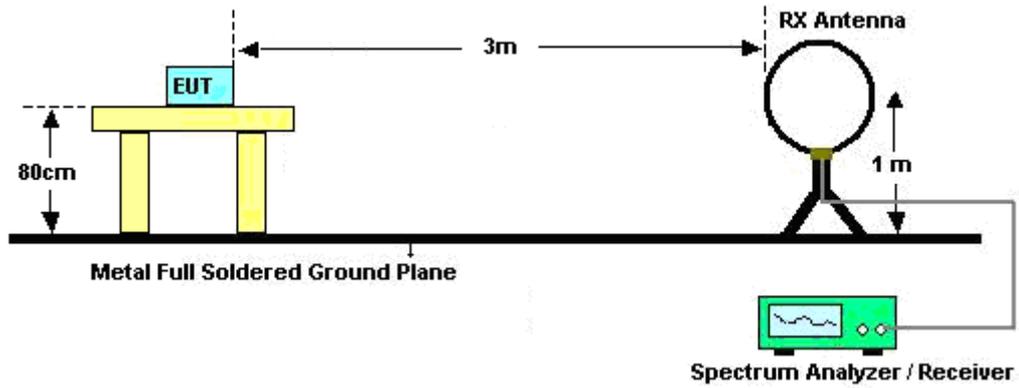
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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.
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. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 KHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for Peak measurement:
    - $VBW = 10$  Hz, when duty cycle is no less than 98 percent.
    - $VBW \geq 1/T$ , when duty cycle is less than 98 percent while maintaining all of the other instrument settings for Average measurement.

Band	Duty Cycle(%)	T(ms)	1/T(KHz)	VBW Setting
802.11b	98.59	-	-	10Hz
802.11g	91.45	1.39	0.72	1Khz
2.4G 802.11n HT20	91.67	1.298	0.77	1Khz
2.4G 802.11n HT40	83.11	0.63	1.59	3Khz

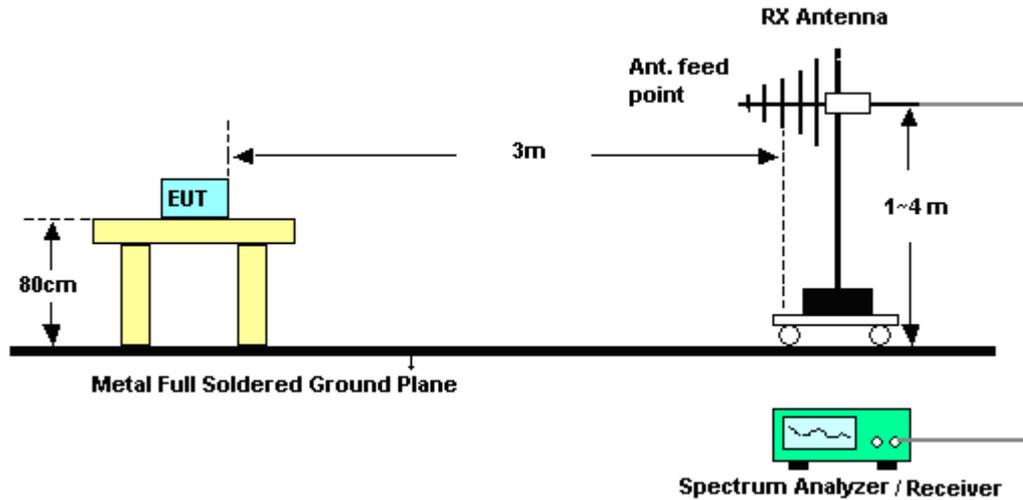
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be reported by using the quasi-peak detector.

### 3.5.4 Test Setup

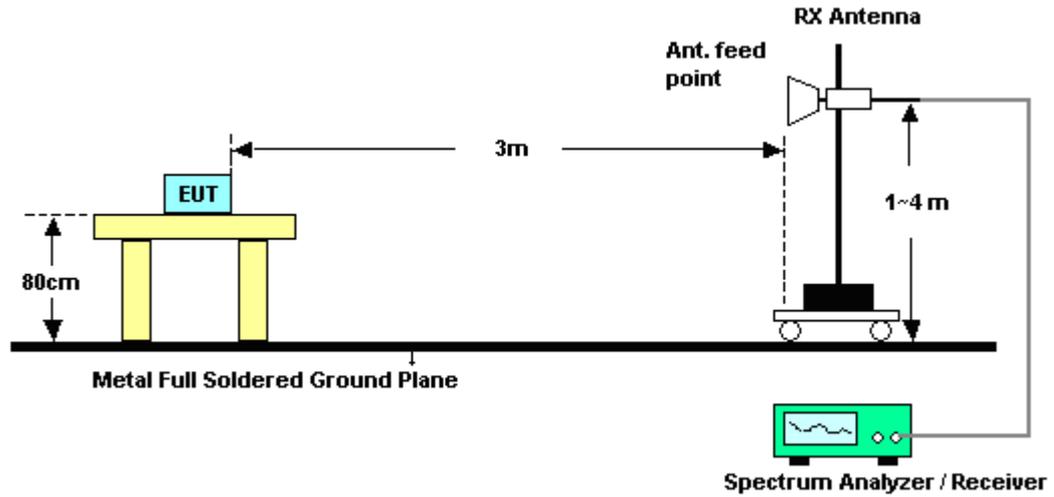
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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



3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2389.65	54.16	-19.84	74	50.7	32.86	2.11	31.51	104	39	Peak
2390	42.59	-11.41	54	39.13	32.86	2.11	31.51	104	39	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
2389.92	51.74	-22.26	74	48.28	32.86	2.11	31.51	200	265	Peak
2389.65	38.93	-15.07	54	35.47	32.86	2.11	31.51	200	265	Average

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Chenmy Cheng

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
2486.04	51.19	-22.81	74	47.53	33.01	2.16	31.51	110	325	Peak
2483.5	37.74	-16.26	54	34.08	33.01	2.16	31.51	100	331	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
2486.44	51.58	-22.42	74	47.92	33.01	2.16	31.51	100	189	Peak
2483.5	36.79	-17.21	54	33.13	33.01	2.16	31.51	100	189	Average



Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2389.29	70.11	-3.89	74	66.65	32.86	2.11	31.51	192	17	Peak
2390	49.63	-4.37	54	46.17	32.86	2.11	31.51	192	17	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
2389.11	66.39	-7.61	74	62.93	32.86	2.11	31.51	200	337	Peak
2390	46.23	-7.77	54	42.77	32.86	2.11	31.51	200	337	Average

Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Chenmy Cheng

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
2483.56	63.21	-10.79	74	59.55	33.01	2.16	31.51	190	10	Peak
2483.5	42.25	-11.75	54	38.59	33.01	2.16	31.51	190	10	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
2483.74	61.51	-12.49	74	57.85	33.01	2.16	31.51	195	307	Peak
2483.5	41.3	-12.7	54	37.64	33.01	2.16	31.51	194	346	Average



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2389.92	66.49	-7.51	74	63.03	32.86	2.11	31.51	187	49	Peak
2390	49.02	-4.98	54	45.56	32.86	2.11	31.51	189	49	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
2388.57	57.32	-16.68	74	53.86	32.86	2.11	31.51	190	142	Peak
2390	41.16	-12.84	54	37.7	32.86	2.11	31.51	186	142	Average

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Chenmy Cheng

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
2484.48	60.99	-13.01	74	57.33	33.01	2.16	31.51	101	22	Peak
2483.5	44.97	-9.03	54	41.31	33.01	2.16	31.51	101	22	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.04	57.93	-16.07	74	54.27	33.01	2.16	31.51	195	311	Peak
2483.5	41.98	-12.02	54	38.32	33.01	2.16	31.51	195	311	Average



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	03	Test Engineer :	Chenmy Cheng

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
2390	67.25	-6.75	74	63.79	32.86	2.11	31.51	106	50	Peak
2390	49.56	-4.44	54	46.1	32.86	2.11	31.51	106	51	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
2390	64.29	-9.71	74	60.83	32.86	2.11	31.51	200	318	Peak
2390	46.8	-7.2	54	43.34	32.86	2.11	31.51	200	315	Average

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	09	Test Engineer :	Chenmy Cheng

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
2483.56	59.08	-14.92	74	55.42	33.01	2.16	31.51	100	160	Peak
2483.84	44.25	-9.75	54	40.59	33.01	2.16	31.51	100	160	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.02	56.69	-17.31	74	53.03	33.01	2.16	31.51	200	162	Peak
2483.72	43.34	-10.66	54	39.68	33.01	2.16	31.51	200	325	Average



3.5.7 Test Result of Radiated Emission (30 MHz ~ 10<sup>th</sup> Harmonic)

Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	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
40.276	22.32	-17.68	40	43.93	11.64	0.39	33.64	200	0	Peak
54.071	19.89	-20.11	40	46.52	6.49	0.46	33.58	-	-	Peak
100.934	22.47	-21.03	43.5	44.88	10.62	0.58	33.61	-	-	Peak
201.393	23.4	-20.1	43.5	47.06	9.08	0.82	33.56	-	-	Peak
291.036	24.02	-21.98	46	43.55	12.87	0.98	33.38	-	-	Peak
640.611	25.76	-20.24	46	38.41	18.85	1.45	32.95	-	-	Peak
2412	101.15	-	-	97.65	32.89	2.12	31.51	187	37	Peak
2412	95.71	-	-	92.21	32.89	2.12	31.51	187	37	Average

Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	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
34.396	23.49	-16.51	40	41.63	15.1	0.37	33.61	-	-	Peak
51.481	25.1	-14.9	40	51.03	7.21	0.44	33.58	100	20	Peak
88.652	20.14	-23.36	43.5	44.91	8.3	0.55	33.62	-	-	Peak
129.015	18.48	-25.02	43.5	39.69	11.71	0.67	33.59	-	-	Peak
226.099	20.79	-25.21	46	42.83	10.59	0.87	33.5	-	-	Peak
520.888	23.25	-22.75	46	37.31	17.7	1.33	33.09	-	-	Peak
2412	96.74	-	-	93.24	32.89	2.12	31.51	200	308	Peak
2412	91.49	-	-	87.99	32.89	2.12	31.51	200	308	Average



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.179	19.07	-20.93	40	35.75	16.55	0.35	33.58	-	-	Peak
91.175	22.02	-21.48	43.5	45.97	9.12	0.55	33.62	-	-	Peak
100.934	21.64	-21.86	43.5	44.05	10.62	0.58	33.61	-	-	Peak
129.015	16.59	-26.91	43.5	37.8	11.71	0.67	33.59	-	-	Peak
226.099	28.79	-17.21	46	50.83	10.59	0.87	33.5	100	151	Peak
558.73	20.11	-25.89	46	33.27	18.51	1.34	33.01	-	-	Peak
2437	99.74	-	-	96.16	32.95	2.14	31.51	157	51	Peak
2437	94.5	-	-	90.92	32.95	2.14	31.51	157	51	Average

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
44.12	22.53	-17.47	40	46.14	9.6	0.41	33.62	-	-	Peak
54.835	31.16	-8.84	40	58.08	6.2	0.46	33.58	100	200	Peak
102.36	22.89	-20.61	43.5	45.04	10.87	0.59	33.61	-	-	Peak
226.099	25.05	-20.95	46	47.09	10.59	0.87	33.5	-	-	Peak
443.294	23.99	-22.01	46	39.74	16.27	1.2	33.22	-	-	Peak
875.247	29.69	-16.31	46	40.09	20.48	1.7	32.58	-	-	Peak
2437	93.85	-	-	90.27	32.95	2.14	31.51	171	334	Peak
2437	88.67	-	-	85.09	32.95	2.14	31.51	171	334	Average
4874	52.74	-21.26	74	45.96	35.18	3.12	31.52	100	217	Peak
4874	47.57	-6.43	54	40.79	35.18	3.12	31.52	100	217	Average



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.634	19.08	-20.92	40	36.28	16.04	0.35	33.59	-	-	Peak
91.495	21.66	-21.84	43.5	45.61	9.12	0.55	33.62	-	-	Peak
102.36	20.69	-22.81	43.5	42.84	10.87	0.59	33.61	-	-	Peak
129.015	19.67	-23.83	43.5	40.88	11.71	0.67	33.59	-	-	Peak
291.036	18.99	-27.01	46	38.52	12.87	0.98	33.38	-	-	Peak
875.247	29.56	-16.44	46	39.96	20.48	1.7	32.58	200	172	Peak
2462	98.19	-	-	94.57	32.98	2.15	31.51	148	50	Peak
2462	91.59	-	-	87.97	32.98	2.15	31.51	148	50	Average

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
51.843	23.05	-16.95	40	49.17	7.01	0.45	33.58	-	-	Peak
60.069	32.48	-7.52	40	60.28	5.3	0.48	33.58	200	0	Peak
98.833	34.25	-9.25	43.5	56.96	10.33	0.58	33.62	-	-	Peak
116.54	27.91	-15.59	43.5	49.1	11.8	0.62	33.61	-	-	Peak
129.015	19.76	-23.74	43.5	40.97	11.71	0.67	33.59	-	-	Peak
875.247	29.81	-16.19	46	40.21	20.48	1.7	32.58	-	-	Peak
2462	93.81	-	-	90.19	32.98	2.15	31.51	158	314	Peak
2462	88.73	-	-	85.11	32.98	2.15	31.51	158	314	Average
4924	56.37	-17.63	74	49.54	35.19	3.15	31.51	100	360	Peak
4924	52.81	-1.19	54	45.98	35.19	3.15	31.51	100	360	Average



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
33.211	18.8	-21.2	40	36	16.04	0.35	33.59	-	-	Peak
90.537	21.48	-22.02	43.5	45.65	8.9	0.55	33.62	-	-	Peak
101.289	21.56	-21.94	43.5	43.97	10.62	0.58	33.61	-	-	Peak
129.015	17.32	-26.18	43.5	38.53	11.71	0.67	33.59	-	-	Peak
875.247	30.1	-15.9	46	40.5	20.48	1.7	32.58	100	20	Peak
952.094	28.33	-17.67	46	38.28	20.74	1.75	32.44	-	-	Peak
2412	103.8	-	-	100.3	32.89	2.12	31.51	192	16	Peak
2412	93.5	-	-	90	32.89	2.12	31.51	192	16	Average

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
44.12	21.94	-18.06	40	45.55	9.6	0.41	33.62	-	-	Peak
55.027	23.06	-16.94	40	49.98	6.2	0.46	33.58	-	-	Peak
102.36	22.74	-20.76	43.5	44.89	10.87	0.59	33.61	-	-	Peak
233.349	20.56	-25.44	46	41.97	11.17	0.89	33.47	-	-	Peak
541.373	28.3	-17.7	46	41.67	18.33	1.33	33.03	-	-	Peak
875.247	32.4	-13.6	46	42.8	20.48	1.7	32.58	100	0	Peak
2412	96.82	-	-	93.32	32.89	2.12	31.51	200	337	Peak
2412	86.23	-	-	82.73	32.89	2.12	31.51	200	337	Average



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
33.328	22.84	-17.16	40	40.04	16.04	0.35	33.59	-	-	Peak
50.942	24.07	-15.93	40	50	7.21	0.44	33.58	200	321	Peak
88.964	21.93	-21.57	43.5	46.39	8.61	0.55	33.62	-	-	Peak
129.015	18.85	-24.65	43.5	40.06	11.71	0.67	33.59	-	-	Peak
201.393	18.94	-24.56	43.5	42.6	9.08	0.82	33.56	-	-	Peak
651.942	24.1	-21.9	46	36.68	18.91	1.46	32.95	-	-	Peak
2437	101.88	-	-	98.3	32.95	2.14	31.51	190	8	Peak
2437	90.7	-	-	87.12	32.95	2.14	31.51	190	8	Average

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
34.76	22.8	-17.2	40	40.94	15.1	0.37	33.61	-	-	Peak
51.301	24.84	-15.16	40	50.77	7.21	0.44	33.58	120	300	Peak
88.964	20.6	-22.9	43.5	45.06	8.61	0.55	33.62	-	-	Peak
201.393	22.06	-21.44	43.5	45.72	9.08	0.82	33.56	-	-	Peak
875.247	24.99	-21.01	46	35.39	20.48	1.7	32.58	-	-	Peak
942.131	30.75	-15.25	46	40.74	20.7	1.75	32.44	-	-	Peak
2437	99.47	-	-	95.89	32.95	2.14	31.51	200	310	Peak
2437	88.87	-	-	85.29	32.95	2.14	31.51	200	310	Average



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
31.51	19.26	-20.74	40	35.94	16.55	0.35	33.58	-	-	Peak
90.855	22.07	-21.43	43.5	46.02	9.12	0.55	33.62	-	-	Peak
140.835	19.92	-23.58	43.5	41.98	10.82	0.71	33.59	-	-	Peak
284.977	19.41	-26.59	46	39.07	12.76	0.97	33.39	-	-	Peak
640.611	28.27	-17.73	46	40.92	18.85	1.45	32.95	100	20	Peak
872.183	26.24	-19.76	46	36.67	20.49	1.69	32.61	-	-	Peak
2462	100.85	-	-	97.23	32.98	2.15	31.51	189	9	Peak
2462	90.52	-	-	86.9	32.98	2.15	31.51	189	9	Average

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
32.864	23.26	-16.74	40	40.46	16.04	0.35	33.59	-	-	Peak
44.12	23.05	-16.95	40	46.66	9.6	0.41	33.62	-	-	Peak
52.945	22.32	-17.68	40	48.65	6.8	0.45	33.58	-	-	Peak
102.36	25.52	-17.98	43.5	47.67	10.87	0.59	33.61	-	-	Peak
233.349	25.65	-20.35	46	47.06	11.17	0.89	33.47	-	-	Peak
744.866	33.84	-12.16	46	45.19	19.86	1.58	32.79	200	0	Peak
2462	98.35	-	-	94.73	32.98	2.15	31.51	195	306	Peak
2462	87.7	-	-	84.08	32.98	2.15	31.51	195	306	Average



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
33.211	19.33	-20.67	40	36.53	16.04	0.35	33.59	-	-	Peak
90.22	20.67	-22.83	43.5	44.84	8.9	0.55	33.62	-	-	Peak
100.934	21.34	-22.16	43.5	43.75	10.62	0.58	33.61	-	-	Peak
142.824	19.61	-23.89	43.5	41.84	10.64	0.71	33.58	-	-	Peak
295.147	31.89	-14.11	46	51.35	12.93	0.99	33.38	200	0	Peak
955.438	27.72	-18.28	46	37.64	20.76	1.76	32.44	-	-	Peak
2412	101.67	-	-	98.17	32.89	2.12	31.51	187	49	Peak
2412	90.46	-	-	86.96	32.89	2.12	31.51	187	49	Average

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
44.12	22.03	-17.97	40	45.64	9.6	0.41	33.62	-	-	Peak
53.131	22.97	-17.03	40	49.3	6.8	0.45	33.58	-	-	Peak
102.36	23.89	-19.61	43.5	46.04	10.87	0.59	33.61	-	-	Peak
129.015	20.24	-23.26	43.5	41.45	11.71	0.67	33.59	-	-	Peak
651.942	20.86	-25.14	46	33.44	18.91	1.46	32.95	-	-	Peak
875.247	30.55	-15.45	46	40.95	20.48	1.7	32.58	200	310	Peak
2412	91.7	-	-	88.2	32.89	2.12	31.51	185	145	Peak
2412	81.6	-	-	78.1	32.89	2.12	31.51	185	145	Average



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
33.799	19.43	-20.57	40	37.11	15.56	0.36	33.6	-	-	Peak
94.76	20.53	-22.97	43.5	43.79	9.8	0.56	33.62	-	-	Peak
154.821	21.15	-22.35	43.5	44.19	9.8	0.74	33.58	-	-	Peak
285.978	21.91	-24.09	46	41.55	12.78	0.97	33.39	-	-	Peak
558.73	20.63	-25.37	46	33.79	18.51	1.34	33.01	-	-	Peak
948.761	33.58	-12.42	46	43.54	20.73	1.75	32.44	100	200	Peak
2437	100.86	-	-	97.28	32.95	2.14	31.51	187	23	Peak
2437	89.82	-	-	86.24	32.95	2.14	31.51	187	23	Average

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
32.406	22.99	-17.01	40	39.67	16.55	0.35	33.58	-	-	Peak
44.12	21.55	-18.45	40	45.16	9.6	0.41	33.62	-	-	Peak
56.792	22.14	-17.86	40	49.5	5.75	0.47	33.58	-	-	Peak
102.36	20.7	-22.8	43.5	42.85	10.87	0.59	33.61	-	-	Peak
129.015	16.67	-26.83	43.5	37.88	11.71	0.67	33.59	-	-	Peak
875.247	29.16	-16.84	46	39.56	20.48	1.7	32.58	100	145	Peak
2437	96.83	-	-	93.25	32.95	2.14	31.51	200	312	Peak
2437	86.61	-	-	83.03	32.95	2.14	31.51	200	312	Average



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
33.095	19.19	-20.81	40	36.39	16.04	0.35	33.59	-	-	Peak
91.816	20.16	-23.34	43.5	43.87	9.35	0.56	33.62	-	-	Peak
129.015	17.76	-25.74	43.5	38.97	11.71	0.67	33.59	-	-	Peak
140.835	18.52	-24.98	43.5	40.58	10.82	0.71	33.59	-	-	Peak
289.002	15.77	-30.23	46	35.34	12.84	0.98	33.39	-	-	Peak
872.183	25.39	-20.61	46	35.82	20.49	1.69	32.61	100	320	Peak
2462	99.99	-	-	96.37	32.98	2.15	31.51	100	35	Peak
2462	89.62	-	-	86	32.98	2.15	31.51	100	35	Average

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
44.12	21.59	-18.41	40	45.2	9.6	0.41	33.62	200	0	Peak
51.662	18.06	-21.94	40	43.99	7.21	0.44	33.58	-	-	Peak
88.964	18.67	-24.83	43.5	43.13	8.61	0.55	33.62	-	-	Peak
102.36	20.44	-23.06	43.5	42.59	10.87	0.59	33.61	-	-	Peak
129.015	16.79	-26.71	43.5	38	11.71	0.67	33.59	-	-	Peak
520.888	21.66	-24.34	46	35.72	17.7	1.33	33.09	-	-	Peak
2462	97.73	-	-	94.11	32.98	2.15	31.51	195	359	Peak
2462	86.2	-	-	82.58	32.98	2.15	31.51	195	359	Average



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
31.731	19	-21	40	35.68	16.55	0.35	33.58	-	-	Peak
90.855	19.77	-23.73	43.5	43.72	9.12	0.55	33.62	-	-	Peak
102.36	20.04	-23.46	43.5	42.19	10.87	0.59	33.61	-	-	Peak
520.888	21.83	-24.17	46	35.89	17.7	1.33	33.09	-	-	Peak
875.247	30.23	-15.77	46	40.63	20.48	1.7	32.58	-	-	Peak
945.44	30.99	-15.01	46	40.97	20.71	1.75	32.44	100	20	Peak
2422	99.39	-	-	95.85	32.92	2.13	31.51	106	0	Peak
2422	88.35	-	-	84.81	32.92	2.13	31.51	106	0	Average

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
32.864	22.39	-17.61	40	39.59	16.04	0.35	33.59	-	-	Peak
54.643	32.62	-7.38	40	59.25	6.49	0.46	33.58	100	191	Peak
102.36	20.4	-23.1	43.5	42.55	10.87	0.59	33.61	-	-	Peak
226.099	25.86	-20.14	46	47.9	10.59	0.87	33.5	-	-	Peak
875.247	28.59	-17.41	46	38.99	20.48	1.7	32.58	-	-	Peak
945.44	28.96	-17.04	46	38.94	20.71	1.75	32.44	-	-	Peak
2422	95.64	-	-	92.1	32.92	2.13	31.51	200	317	Peak
2422	85.11	-	-	81.57	32.92	2.13	31.51	200	317	Average



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
30	17.75	-22.25	40	32.98	18	0.34	33.57	-	-	Peak
90.855	19.96	-23.54	43.5	43.91	9.12	0.55	33.62	-	-	Peak
101.289	19.83	-23.67	43.5	42.24	10.62	0.58	33.61	-	-	Peak
520.888	22.09	-23.91	46	36.15	17.7	1.33	33.09	-	-	Peak
875.247	28.85	-17.15	46	39.25	20.48	1.7	32.58	-	-	Peak
958.794	29.74	-16.26	46	39.63	20.78	1.77	32.44	100	181	Peak
2437	98.2	-	-	94.62	32.95	2.14	31.51	106	0	Peak
2437	87.18	-	-	83.6	32.95	2.14	31.51	106	0	Average

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
33.445	22.56	-17.44	40	40.24	15.56	0.36	33.6	-	-	Peak
44.12	23	-17	40	46.61	9.6	0.41	33.62	-	-	Peak
51.662	22.77	-17.23	40	48.7	7.21	0.44	33.58	-	-	Peak
102.36	23.98	-19.52	43.5	46.13	10.87	0.59	33.61	-	-	Peak
875.247	30.84	-15.16	46	41.24	20.48	1.7	32.58	100	122	Peak
945.44	29.98	-16.02	46	39.96	20.71	1.75	32.44	-	-	Peak
2437	94.88	-	-	91.3	32.95	2.14	31.51	200	328	Peak
2437	84.09	-	-	80.51	32.95	2.14	31.51	200	328	Average



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.634	18.83	-21.17	40	36.03	16.04	0.35	33.59	-	-	Peak
142.324	16.66	-26.84	43.5	38.89	10.64	0.71	33.58	-	-	Peak
378.584	16.85	-29.15	46	33.67	15.38	1.13	33.33	-	-	Peak
558.73	20.26	-25.74	46	33.42	18.51	1.34	33.01	-	-	Peak
875.247	31.41	-14.59	46	41.81	20.48	1.7	32.58	-	-	Peak
958.794	32.3	-13.7	46	42.19	20.78	1.77	32.44	100	100	Peak
2452	99.16	-	-	95.58	32.95	2.14	31.51	105	0	Peak
2452	88.39	-	-	84.81	32.95	2.14	31.51	105	0	Average

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
33.562	22.68	-17.32	40	40.36	15.56	0.36	33.6	-	-	Peak
44.12	22.13	-17.87	40	45.74	9.6	0.41	33.62	-	-	Peak
50.057	19.35	-20.65	40	45.09	7.4	0.44	33.58	-	-	Peak
102.36	20.92	-22.58	43.5	43.07	10.87	0.59	33.61	-	-	Peak
875.247	28.82	-17.18	46	39.22	20.48	1.7	32.58	-	-	Peak
958.794	32.06	-13.94	46	41.95	20.78	1.77	32.44	100	162	Peak
2452	96.13	-	-	92.55	32.95	2.14	31.51	200	317	Peak
2452	84.93	-	-	81.35	32.95	2.14	31.51	200	317	Average

## 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.

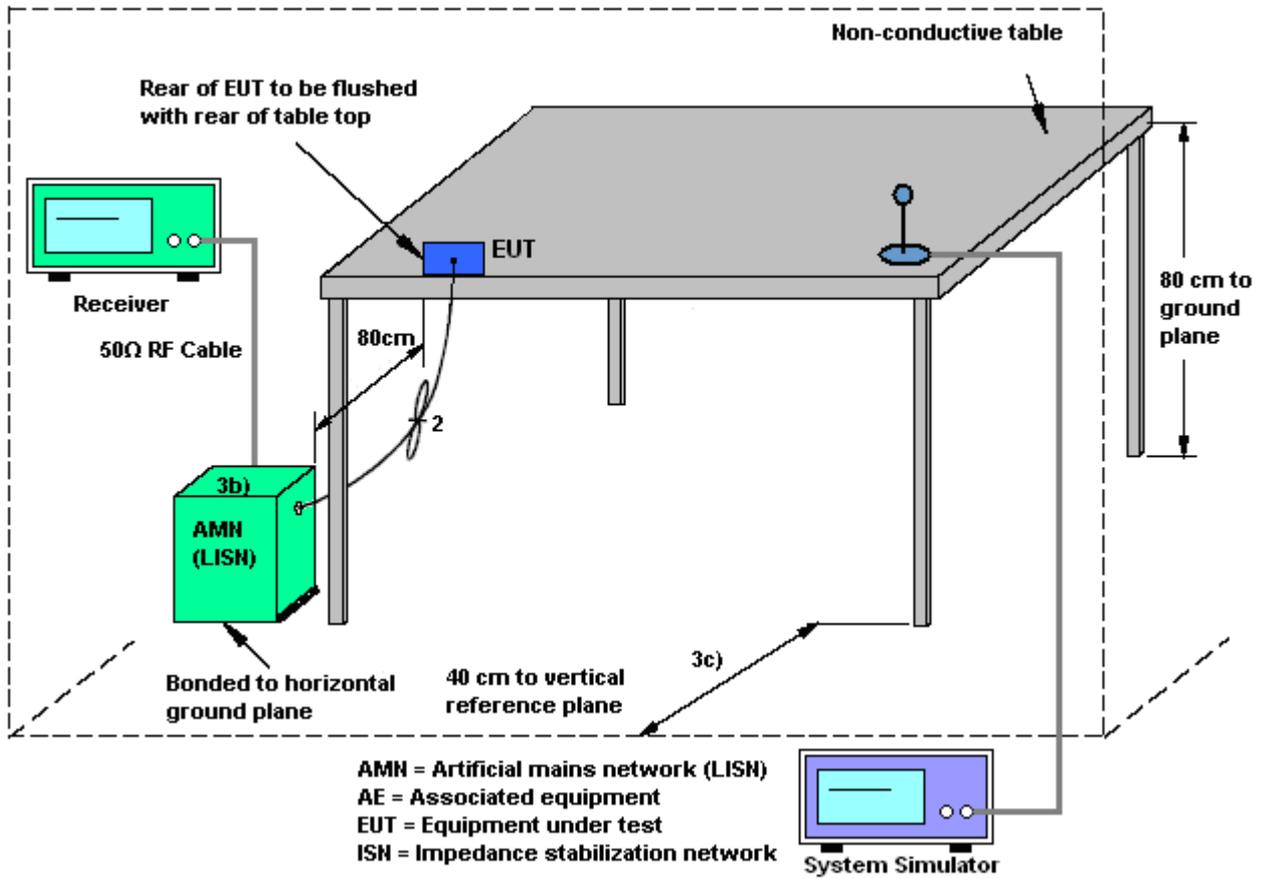
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

1. The testing follows the guidelines in FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. ANSI C63.4-2003 and ANSI C63.10-2009.
3. 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.
4. Connect EUT to the power mains through a line impedance stabilization network (LISN).
5. All the support units are connecting to the other LISN.
6. The LISN provides 50 ohm coupling impedance for the measuring instrument.
7. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
8. Both sides of AC line were checked for maximum conducted interference.
9. The frequency range from 150 KHz to 30 MHz was searched.
10. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

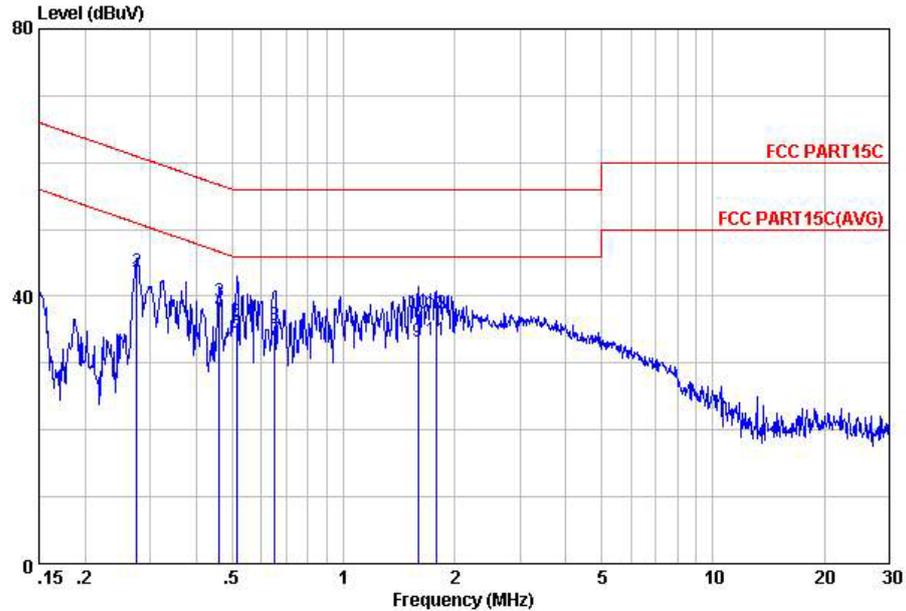
### 3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

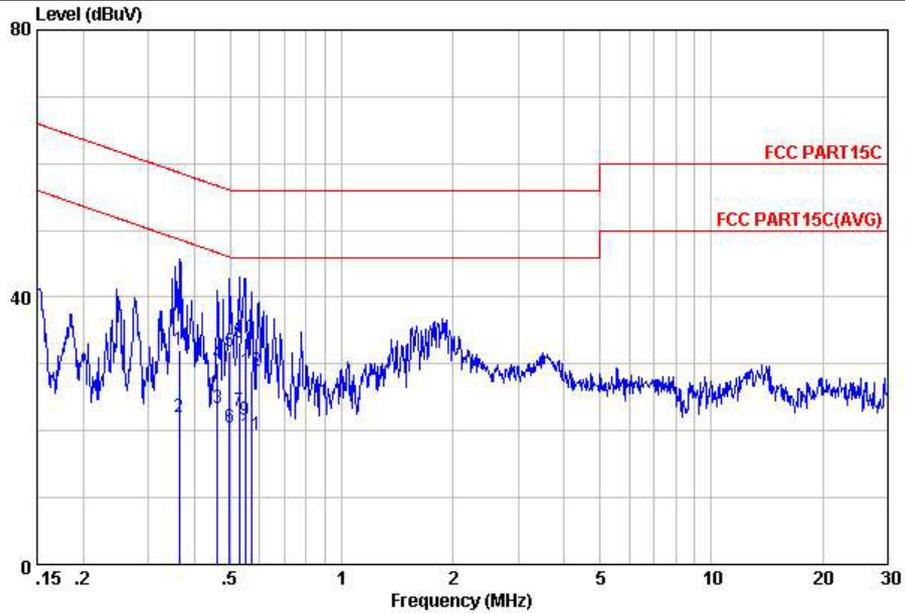


Site : C001-KS  
 Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.28	42.78	-8.16	50.94	32.30	-0.07	10.55	Average
2	0.28	43.58	-17.36	60.94	33.10	-0.07	10.55	QP
3	0.46	39.14	-17.53	56.67	28.60	-0.08	10.62	QP
4	0.46	37.74	-8.93	46.67	27.20	-0.08	10.62	Average
5	0.51	34.54	-11.46	46.00	23.99	-0.08	10.63	Average
6	0.51	36.14	-19.86	56.00	25.59	-0.08	10.63	QP
7	0.65	33.45	-12.55	46.00	22.90	-0.09	10.64	Average
8	0.65	35.65	-20.35	56.00	25.10	-0.09	10.64	QP
9	1.59	33.18	-12.82	46.00	22.60	-0.11	10.69	Average
10	1.59	37.48	-18.52	56.00	26.90	-0.11	10.69	QP
11	1.78	33.39	-12.61	46.00	22.81	-0.11	10.69	Average
12	1.78	37.49	-18.51	56.00	26.91	-0.11	10.69	QP



Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC PART15C LISN-111230 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.36	32.13	-26.52	58.65	21.60	-0.08	10.61	QP
2	0.36	22.13	-26.52	48.65	11.60	-0.08	10.61	Average
3	0.46	23.44	-23.23	46.67	12.90	-0.08	10.62	Average
4	0.46	30.14	-26.53	56.67	19.60	-0.08	10.62	QP
5	0.50	31.84	-24.21	56.05	21.30	-0.08	10.62	QP
6	0.50	20.44	-25.61	46.05	9.90	-0.08	10.62	Average
7	0.53	22.85	-23.15	46.00	12.30	-0.08	10.63	Average
8	0.53	33.15	-22.85	56.00	22.60	-0.08	10.63	QP
9	0.55	21.65	-24.35	46.00	11.10	-0.08	10.63	Average
10	0.55	33.95	-22.05	56.00	23.40	-0.08	10.63	QP
11	0.57	19.45	-26.55	46.00	8.90	-0.08	10.63	Average
12	0.57	29.05	-26.95	56.00	18.50	-0.08	10.63	QP



## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

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

### **3.7.2 Antenna Connected Construction**

Non-standard connector used.

### **3.7.3 Antenna Gain**

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

## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Oct. 30, 2012~ Nov. 27, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Oct. 30, 2012~ Nov. 27, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Oct. 30, 2012~ Nov. 27, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Oct. 30, 2012~ Nov. 27, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Oct. 30, 2012~ Nov. 27, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Nov. 23, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Nov. 23, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Nov. 23, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Nov. 23, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Nov. 23, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Nov. 23, 2012	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Nov. 23, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 06, 2012	Nov. 23, 2012	Nov. 05, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 10, 2012	Nov. 23, 2012	Oct. 09, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Oct. 29, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Oct. 29, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Oct. 29, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	N/A	Nov. 16, 2011	Oct. 29, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Oct. 29, 2012	Dec. 29, 2012	Conduction (CO01-KS)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.26
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.54
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.72
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## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP2O1506 as below.