

# FCC RF Test Report

**APPLICANT** : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Tablet PC IdeaTab A2207A-F  
**BRAND NAME** : lenovo  
**MODEL NAME** : 60023; 4357  
**FCC ID** : O57A2207AF  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on Oct. 26, 2012 and completely tested on Nov. 14, 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:



Jones Tsai / Manager



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



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## SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 5.18 dB at 958.794 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 10.49 dB at 0.400 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**Lenovo (Shanghai) Electronics Technology Co., Ltd.**  
 No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ, Shanghai, China

## 1.2 Manufacturer

**Lenovo (Singapore) Pte Ltd.**  
 151, Lorong Chuan, #02-01, New Tech Park, 556741, Singapore

## 1.3 Feature of Equipment Under Test

Product Feature	
<b>Equipment</b>	Tablet PC IdeaTab A2207A-F
<b>Brand Name</b>	lenovo
<b>Model Name</b>	60023; 4357
<b>FCC ID</b>	O57A2207AF
<b>EUT supports Radios application</b>	WLAN 11bgn/Bluetooth 2.1 EDR/Bluetooth 3.0 EDR/Bluetooth 4.0 - LE
<b>HW Version</b>	Lepad A2207A-F
<b>SW Version</b>	A2207_user_130120
<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 : 16.56 dBm (0.0453 W) 802.11g : 22.87 dBm (0.1936 W) 802.11n HT20 : 20.89 dBm (0.1227 W) 802.11n HT40 : 21.78 dBm (0.1507 W)
<b>99% Occupied Bandwidth</b>	802.11b : 11.80MHz 802.11g : 17.80MHz 802.11n HT20 : 18.35MHz 802.11n HT40 : 36.20MHz
<b>Antenna Type</b>	PIFA Antenna with gain 5.30 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.	DC Power Supply	GWINSTEK	GPS-3030D	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	Lenovo	LBH301	N/A	N/A	N/A



## 2 Test Configuration of Equipment Under Test

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

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

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

### 2.1 Carrier Frequency Channel

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

## 2.2 Pre-Scanned RF Power

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

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	16.56	16.19	15.78	16.01
CH 06	2437 MHz	16.52	16.49	16.27	16.07
CH 11	2462 MHz	16.49	16.43	16.08	16.36

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	22.69	22.38	22.66	22.55	22.53	22.57	22.63	22.36
CH 06	2437 MHz	22.87	22.66	22.56	22.65	22.78	22.79	22.76	22.81
CH 11	2462 MHz	22.85	22.83	22.81	22.64	22.8	22.79	22.6	22.81

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 01	2412 MHz	20.67	20.06	20.21	20.37	20.43	20.21	20.25	20.32
CH 06	2437 MHz	20.88	20.34	20.6	20.06	20.38	20.13	20.22	20.27
CH 11	2462 MHz	20.89	20.56	20.23	20.38	20.51	20.28	20.21	20.3

Channel	Frequency	2.4GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 03	2422 MHz	21.64	20.22	20.2	20.51	19.98	19.92	20.04	20.02
CH 06	2437 MHz	21.72	20.39	20.4	20.25	20.34	20.29	20.31	20.41
CH 09	2452 MHz	21.78	20.25	20.71	20.32	20.35	20.36	20.28	20.55

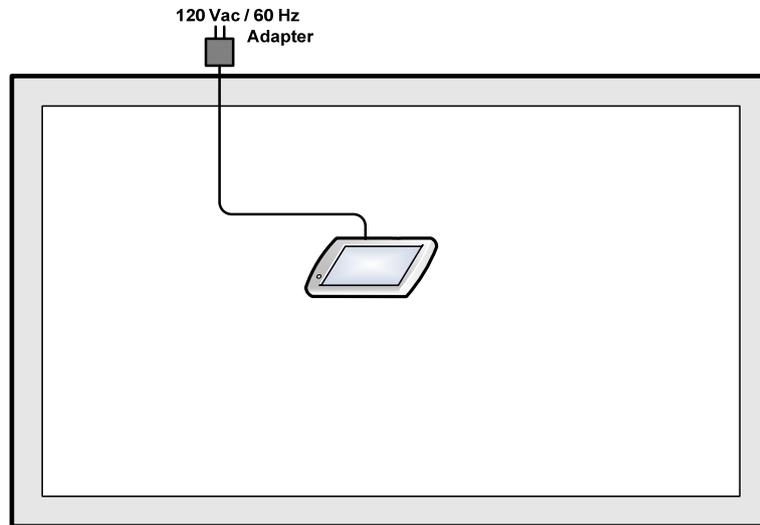
### 2.3 Test Mode

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

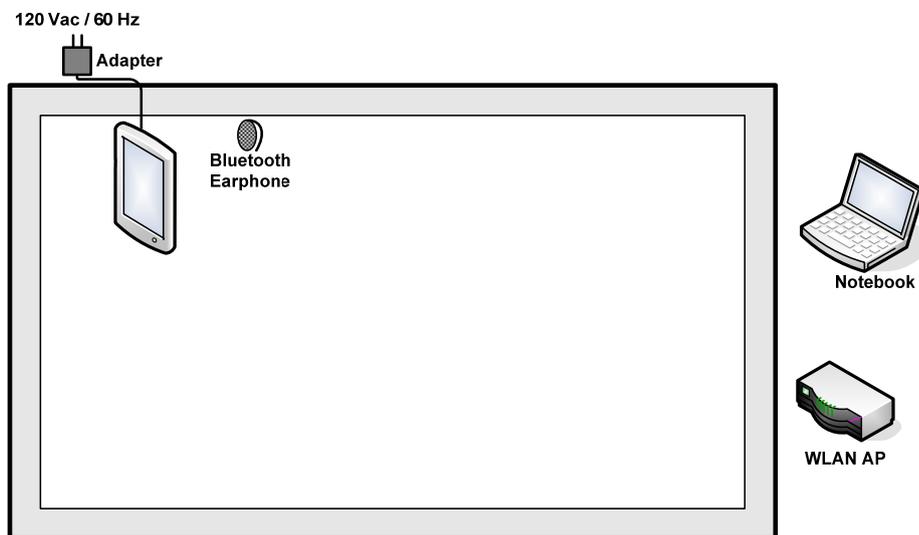
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		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 : WLAN Link + Bluetooth Link + Adapter			

## 2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



## 2.5 RF Utility

For WLAN function, programmed RF utility, "Enter Engineer" installed in the EUT make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

### 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.

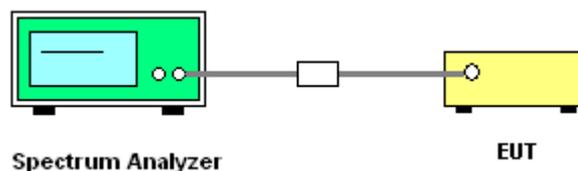
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows 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. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

##### 3.1.4 Test Setup

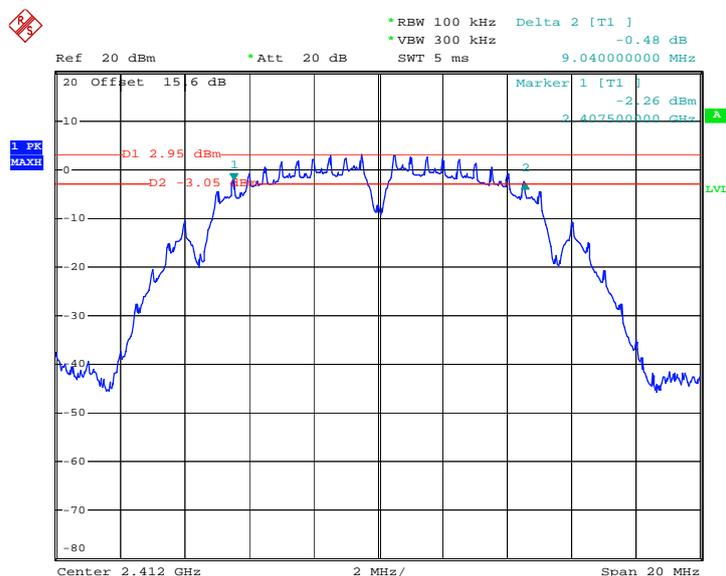


### 3.1.5 Test Result of 6dB Bandwidth

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	9.04	0.5	Pass
11	2462	9.04	0.5	Pass

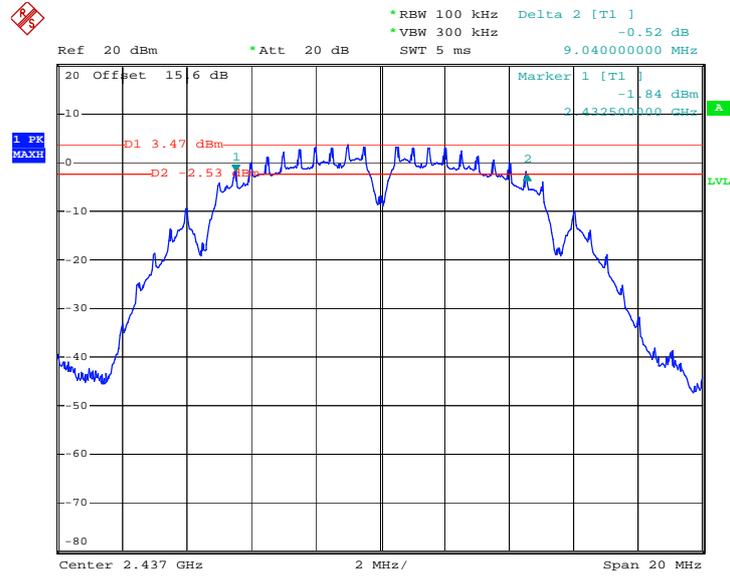
6 dB Bandwidth Plot on 802.11b Channel 01



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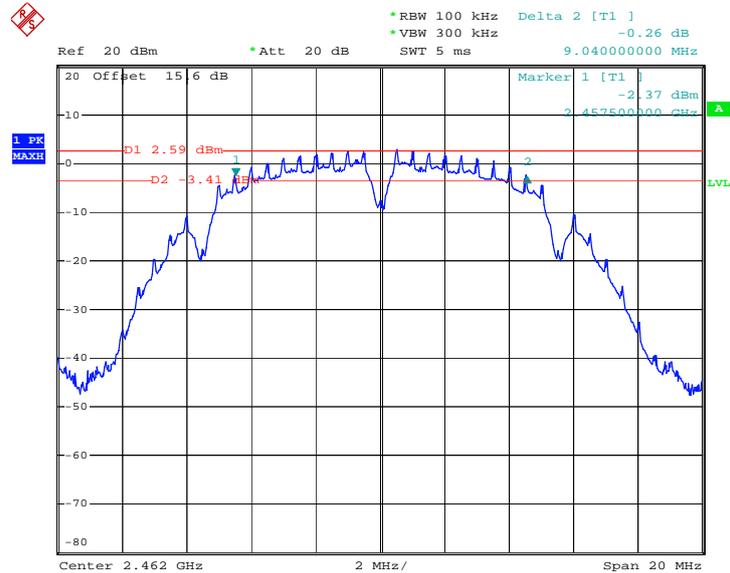


### 6 dB Bandwidth Plot on 802.11b Channel 06



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



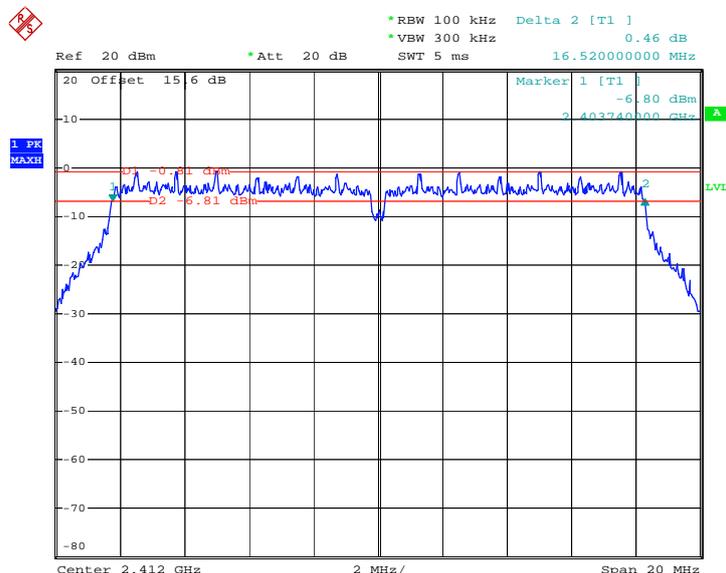
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Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.52	0.5	Pass
06	2437	16.48	0.5	Pass
11	2462	16.48	0.5	Pass

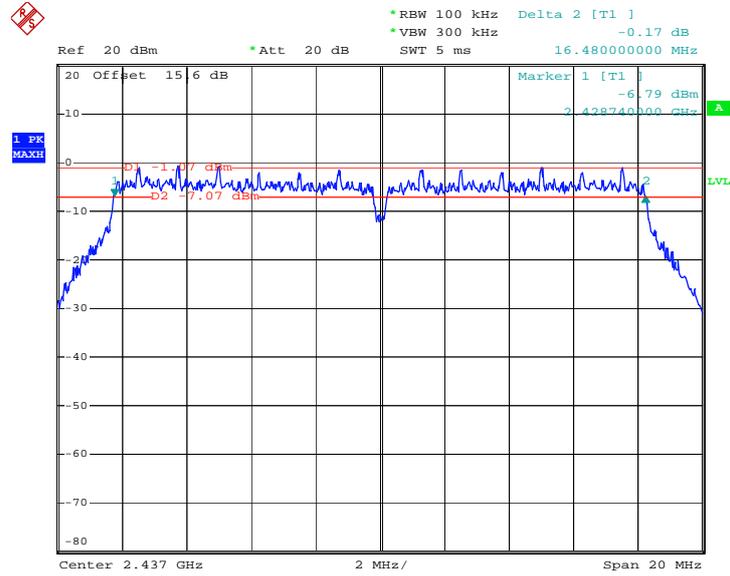
6 dB Bandwidth Plot on 802.11g Channel 01



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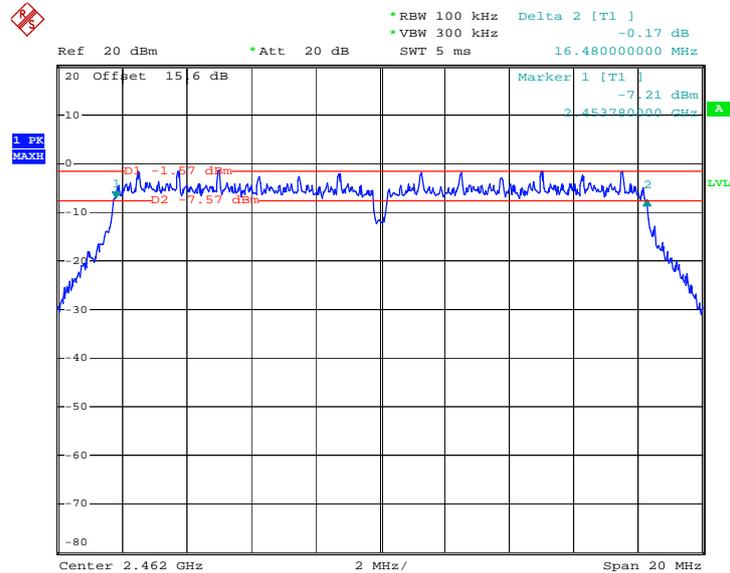


### 6 dB Bandwidth Plot on 802.11g Channel 06



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



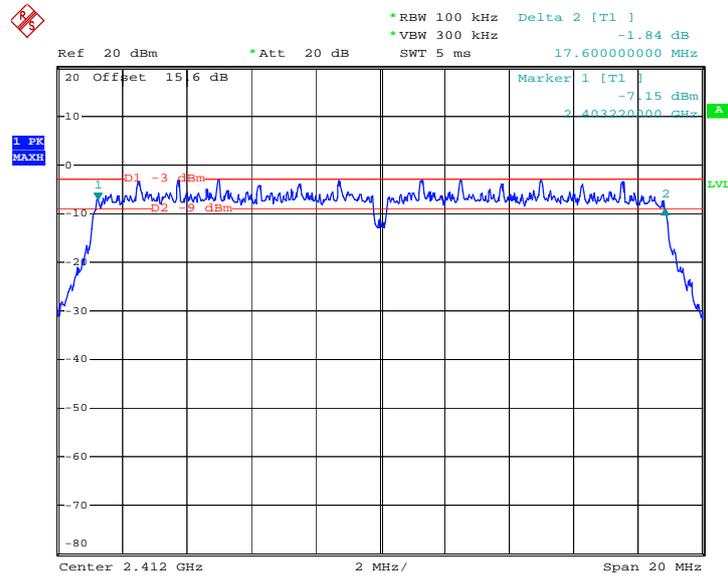
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Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.60	0.5	Pass
06	2437	17.56	0.5	Pass
11	2462	17.60	0.5	Pass

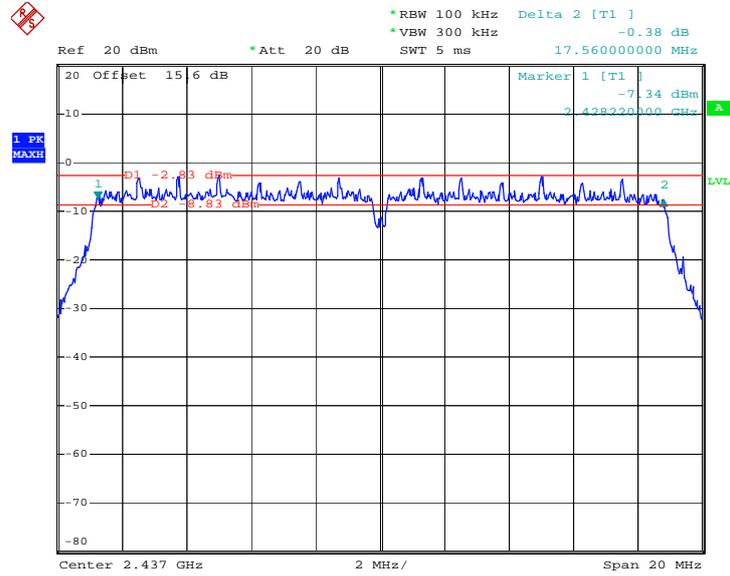
6 dB Bandwidth Plot on 802.11n HT20 Channel 01



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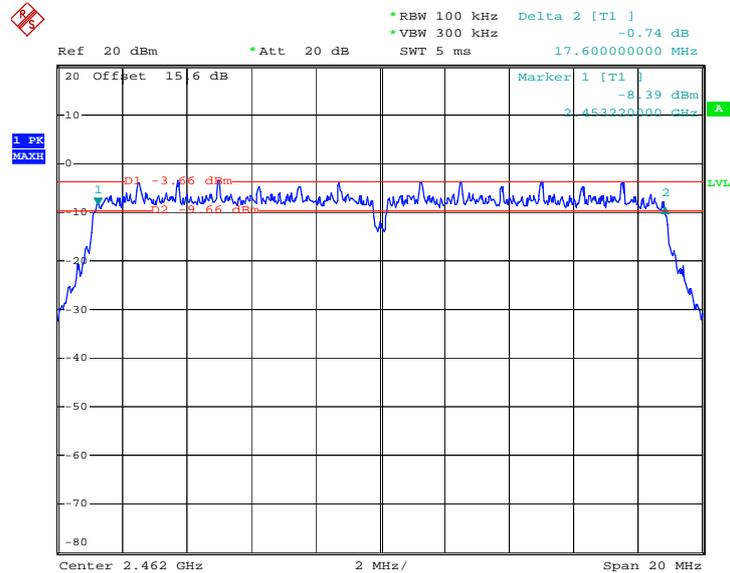


6 dB Bandwidth Plot on 802.11n HT20 Channel 06



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6 dB Bandwidth Plot on 802.11n HT20 Channel 11



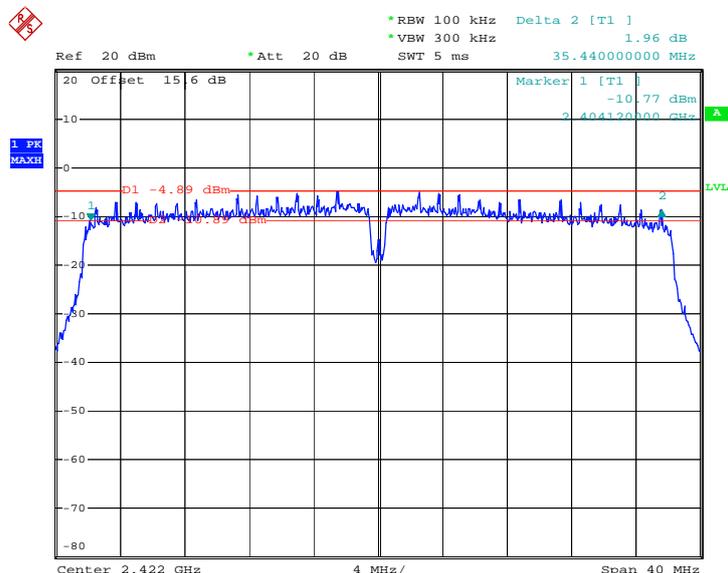
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Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	35.44	0.5	Pass
06	2437	35.12	0.5	Pass
09	2452	35.12	0.5	Pass

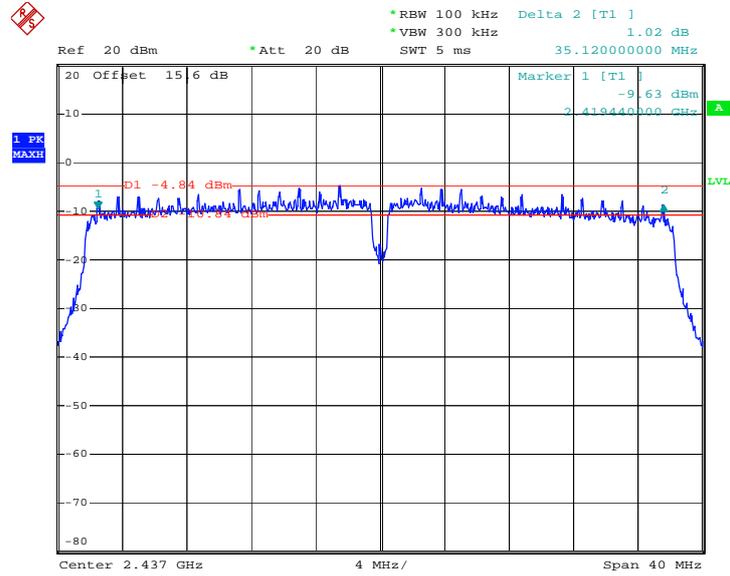
6 dB Bandwidth Plot on 802.11n HT40 Channel 03



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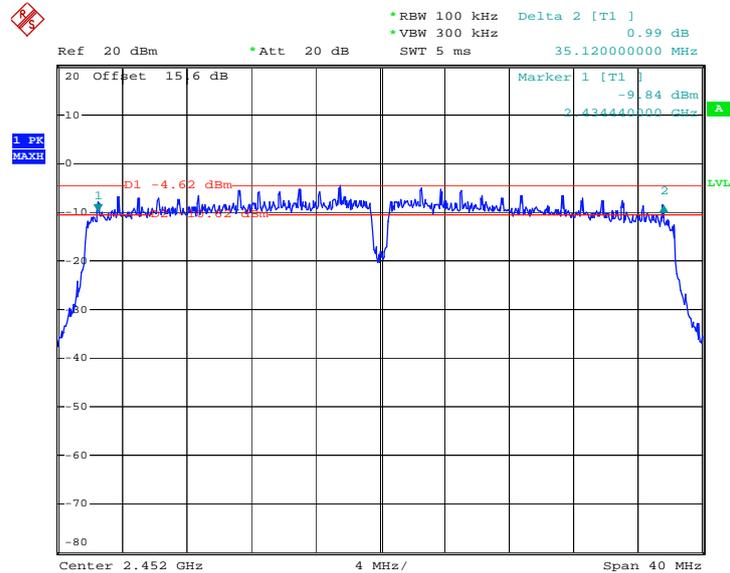


6 dB Bandwidth Plot on 802.11n HT40 Channel 06



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6 dB Bandwidth Plot on 802.11n HT40Channel 09



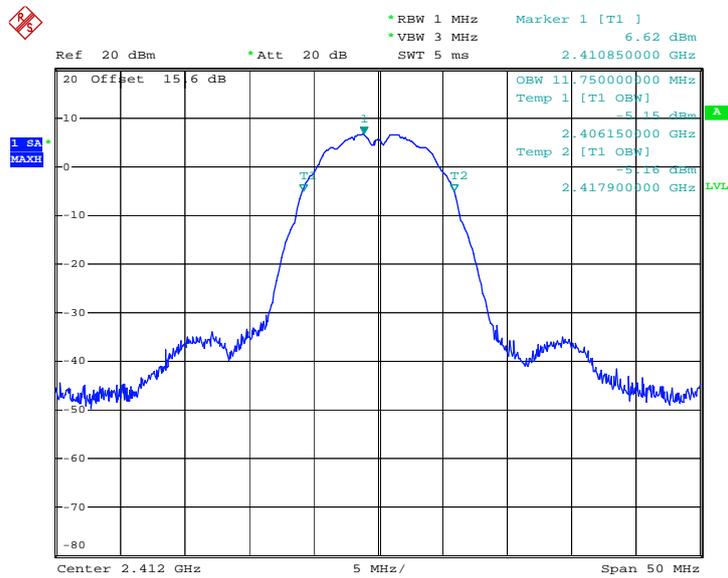
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### 3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	11.75	Pass
06	2437	11.80	Pass
11	2462	11.80	Pass

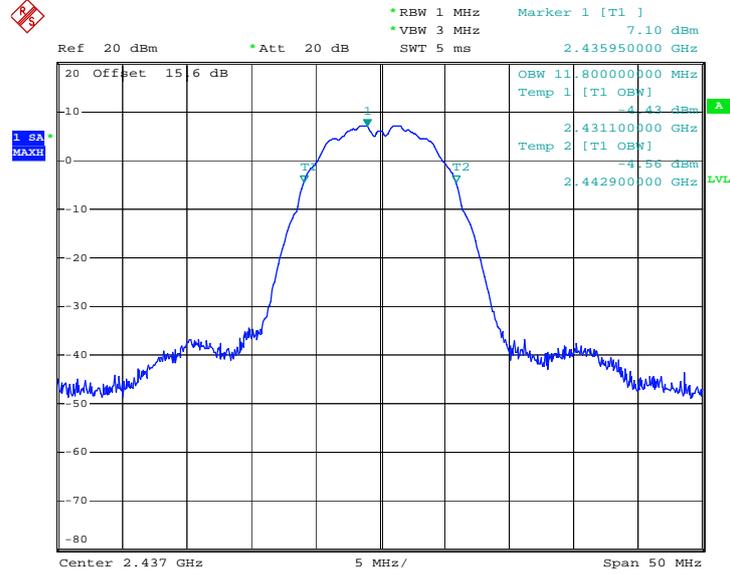
99% Occupied Bandwidth Plot on 802.11b Channel 01



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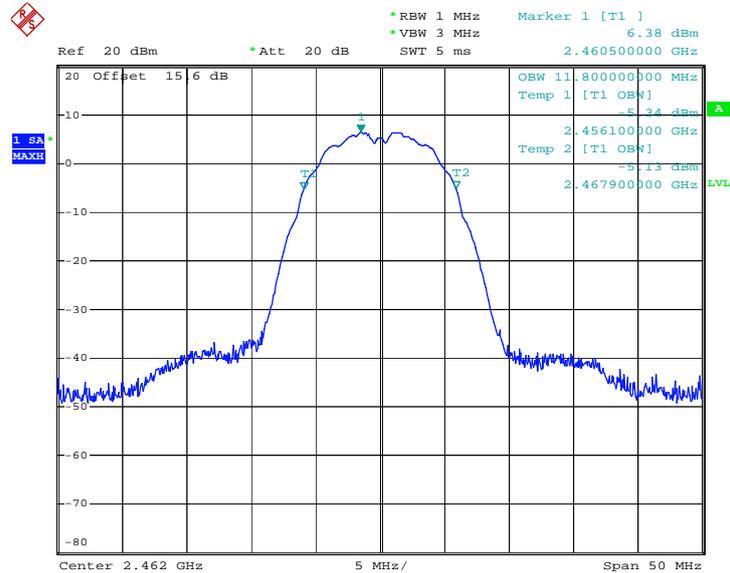


99% Occupied Bandwidth Plot on 802.11b Channel 06



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99% Occupied Bandwidth Plot on 802.11b Channel 11



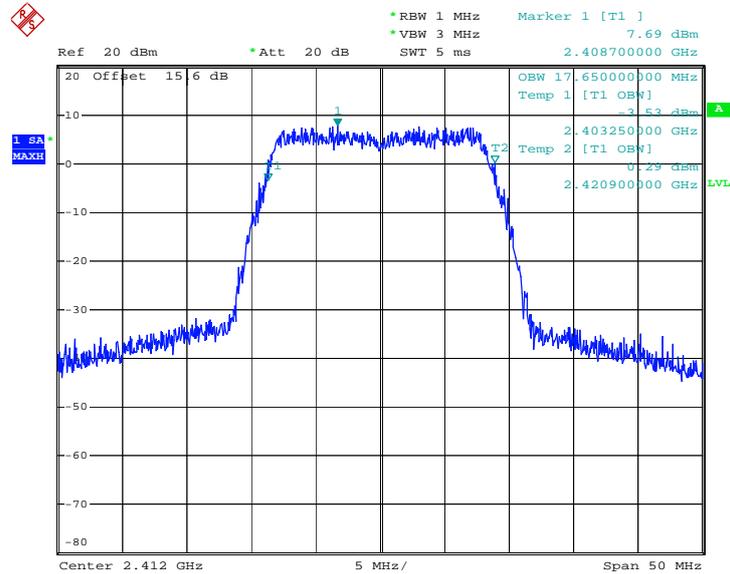
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Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.65	Pass
06	2437	17.80	Pass
11	2462	17.70	Pass

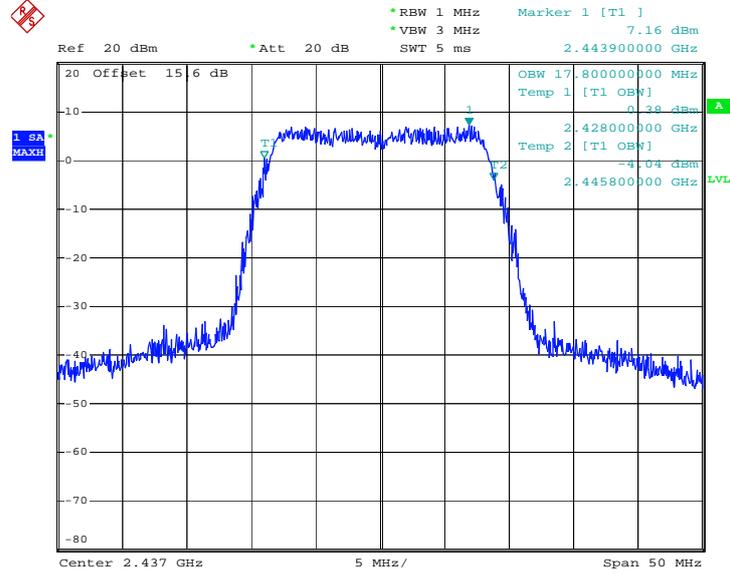
99% Occupied Bandwidth Plot on 802.11g Channel 01



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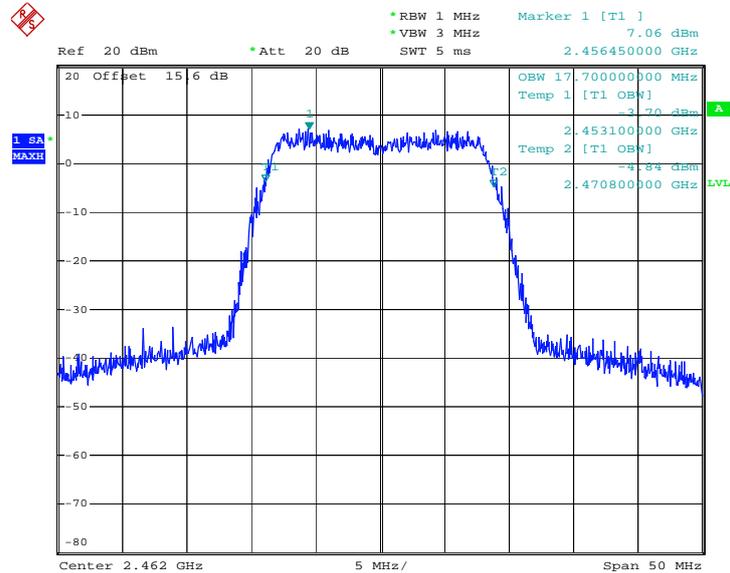


99% Occupied Bandwidth Plot on 802.11g Channel 06



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99% Occupied Bandwidth Plot on 802.11g Channel 11



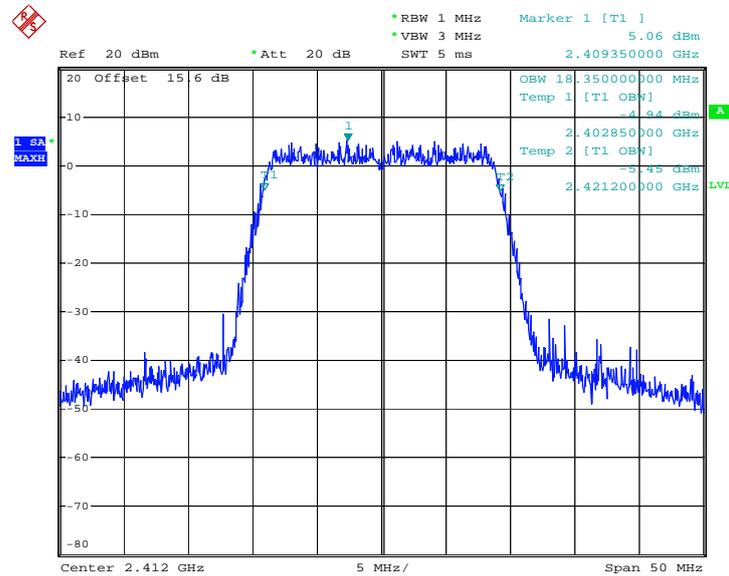
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Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.35	Pass
06	2437	18.35	Pass
11	2462	18.35	Pass

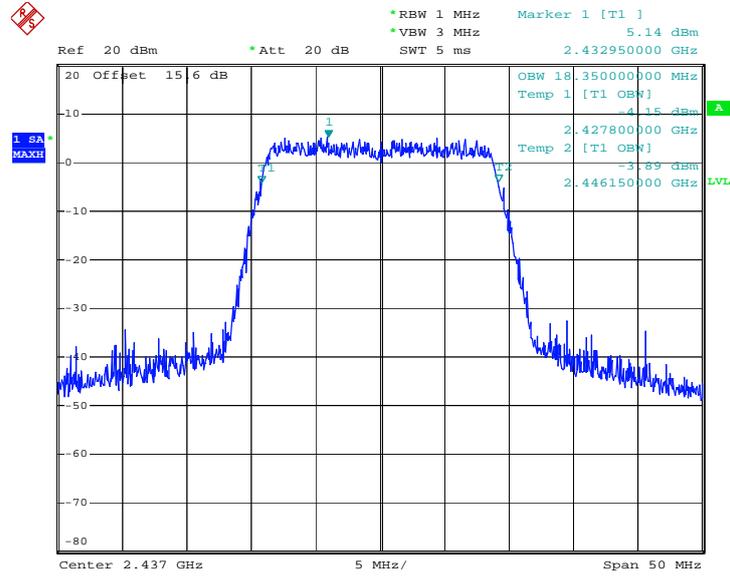
99% Occupied Bandwidth Plot 802.11n HT20 Channel 01



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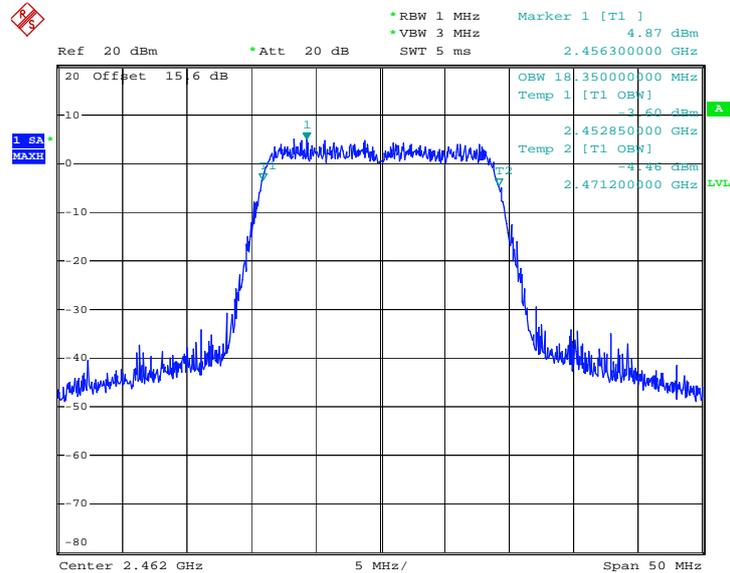


99% Occupied Bandwidth Plot 802.11n HT20 Channel 06



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99% Occupied Bandwidth Plot 802.11n HT20 Channel 11



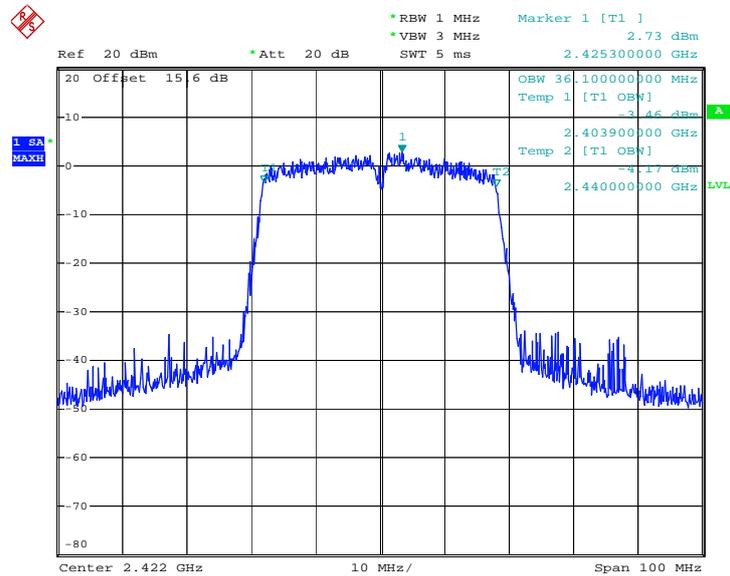
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Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 99% Occupied Bandwidth (MHz)	Pass/Fail
03	2422	36.10	Pass
06	2437	36.10	Pass
09	2452	36.20	Pass

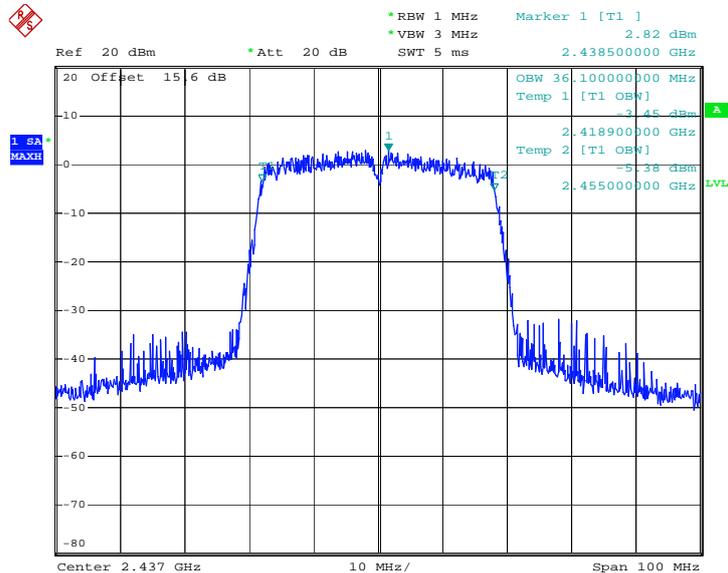
99% Occupied Bandwidth Plot 802.11n HT40 Channel 03



Date: 8.NOV.2012 15:48:27

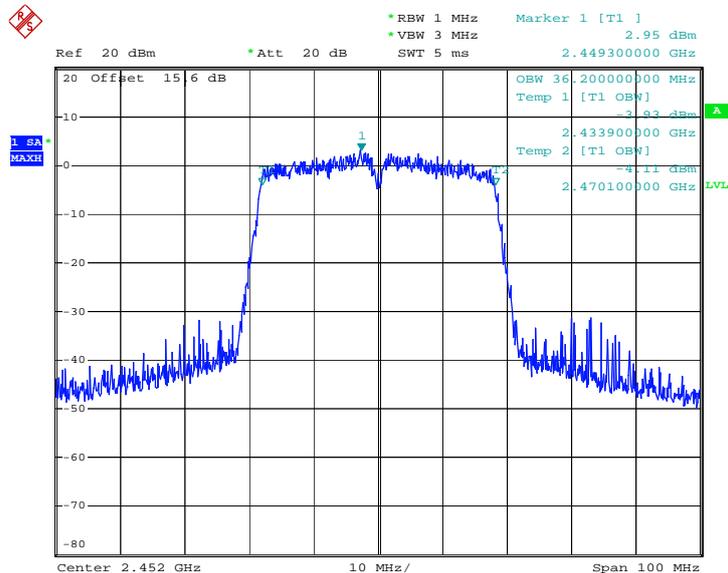


99% Occupied Bandwidth Plot 802.11n HT40 Channel 06



Date: 8.NOV.2012 15:52:03

99% Occupied Bandwidth Plot 802.11n HT40 Channel 09



Date: 8.NOV.2012 15:54:46

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

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

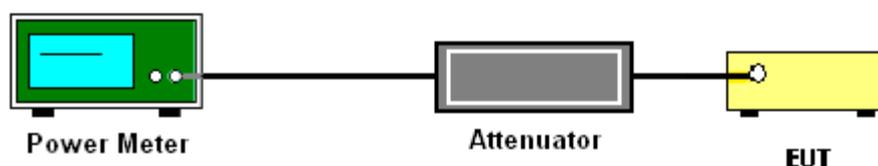
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

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

### 3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

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

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.56	30	Pass
06	2437	16.52	30	Pass
11	2462	16.49	30	Pass

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

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.69	30	Pass
06	2437	22.87	30	Pass
11	2462	22.85	30	Pass

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 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.67	30	Pass
06	2437	20.88	30	Pass
11	2462	20.89	30	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	21.64	30	Pass
06	2437	21.72	30	Pass
09	2452	21.78	30	Pass



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	21~22
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	13.07
06	2437	13.17
11	2462	13.22

Test Mode :	802.11g	Temperature :	21~22
Test Engineer :	Cloud Peng	Relative Humidity :	41~42
Duty Cycle:	58.45%	Duty Factor:	2.33dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	12.29
06	2437	12.51
11	2462	12.66

Test Mode :	802.11n HT20	Temperature :	21~22
Test Engineer :	Cloud Peng	Relative Humidity :	41~42
Duty Cycle:	59.12%	Duty Factor:	2.28dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	10.56
06	2437	10.64
11	2462	10.76

Test Mode :	802.11n HT40	Temperature :	21~22
Test Engineer :	Cloud Peng	Relative Humidity :	41~42
Duty Cycle:	44.34%	Duty Factor:	3.53dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	10.89
06	2437	11.16
09	2452	11.19

### 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.

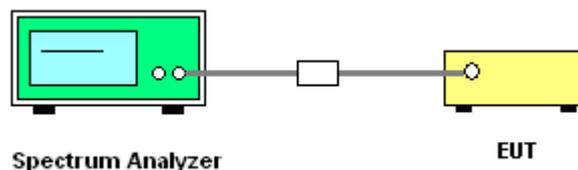
#### 3.3.2 Measuring Instruments

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	2.95	-8.20	8	Pass
06	2437	3.49	-9.51	8	Pass
11	2462	2.32	-10.51	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	-0.77	-13.98	8	Pass
06	2437	-0.92	-14.04	8	Pass
11	2462	-1.50	-14.20	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	-2.97	-15.70	8	Pass
06	2437	-2.83	-16.62	8	Pass
11	2462	-3.49	-17.24	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	-5.05	-18.52	8	Pass
06	2437	-4.92	-18.72	8	Pass
09	2452	-4.73	-18.81	8	Pass

**Note:**

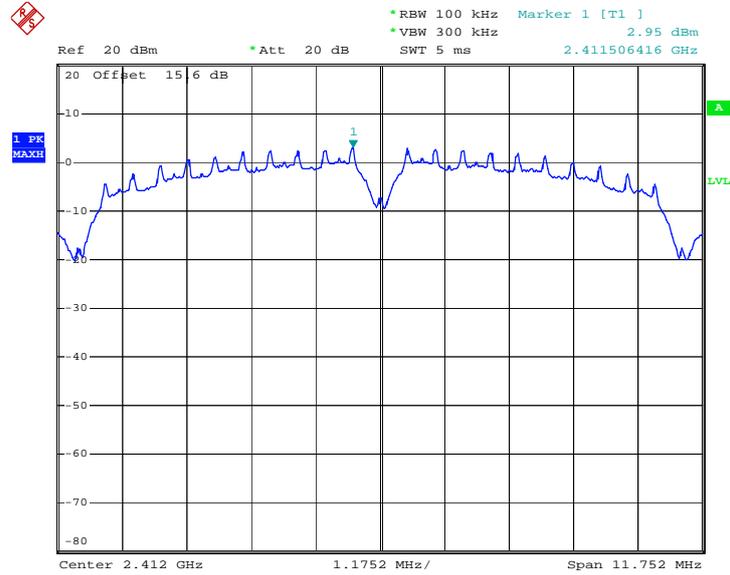
1. Measured power density (dBm) has offset with cable loss.
2. Measured power density (dBm)/ 100KHz is for 20dBc reference only



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

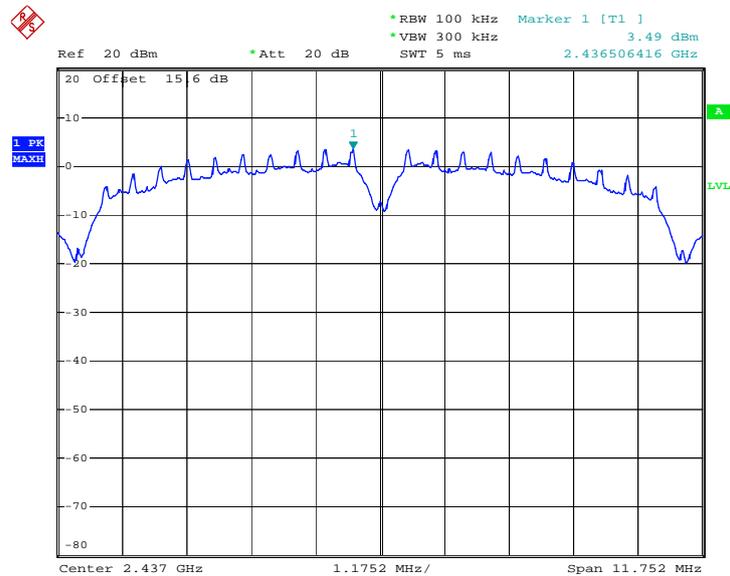
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PSD 100KHz Plot on 802.11b Channel 01



Date: 8.NOV.2012 15:14:14

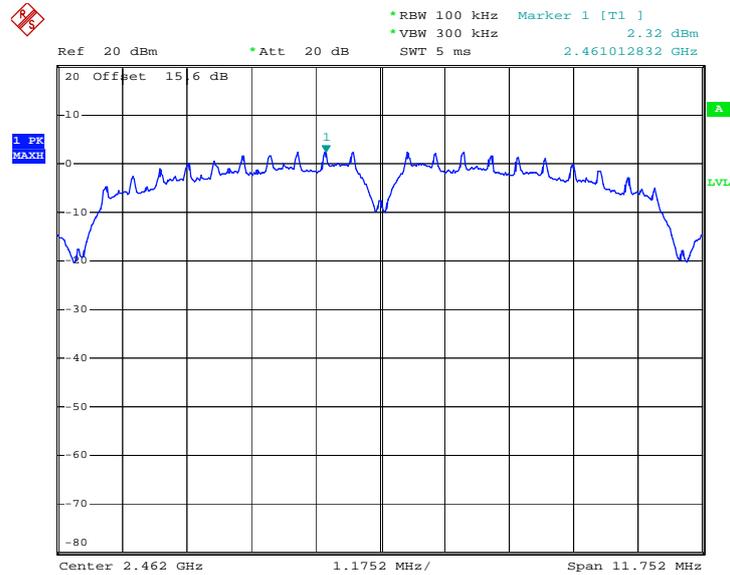
PSD 100KHz Plot on 802.11b Channel 06



Date: 8.NOV.2012 15:17:39



PSD 100KHz Plot on 802.11b Channel 11

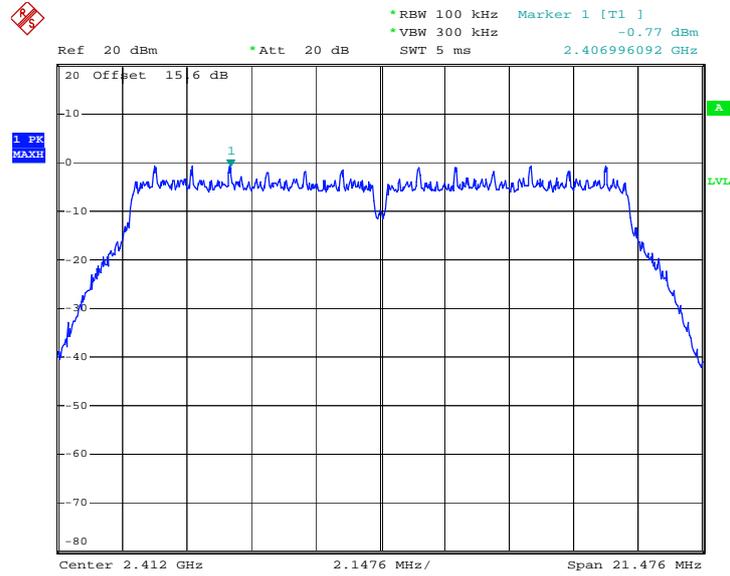


Date: 8.NOV.2012 15:20:18



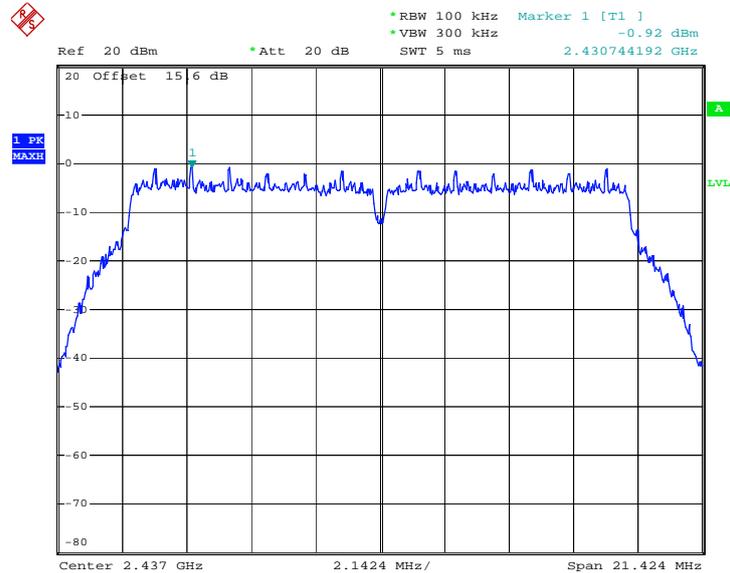
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PSD 100KHz Plot on 802.11g Channel 01



Date: 8.NOV.2012 15:24:10

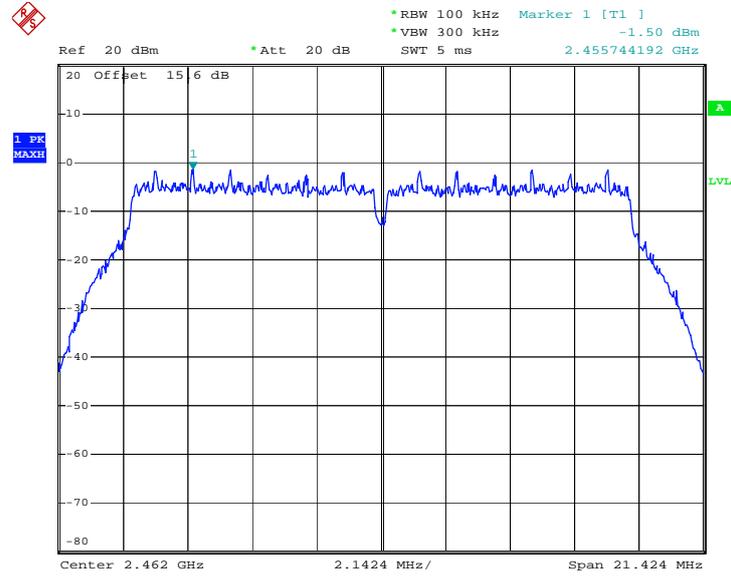
PSD 100KHz Plot on 802.11g Channel 06



Date: 8.NOV.2012 15:26:54



PSD 100KHz Plot on 802.11g Channel 11

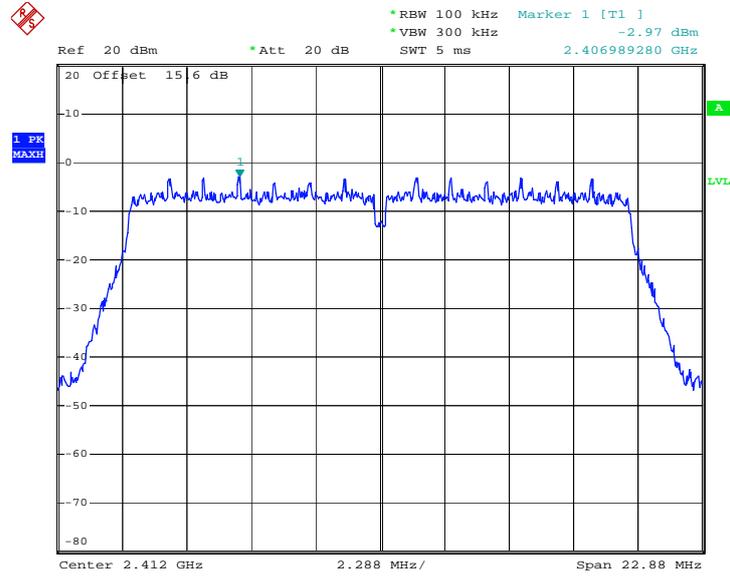


Date: 8.NOV.2012 15:31:46



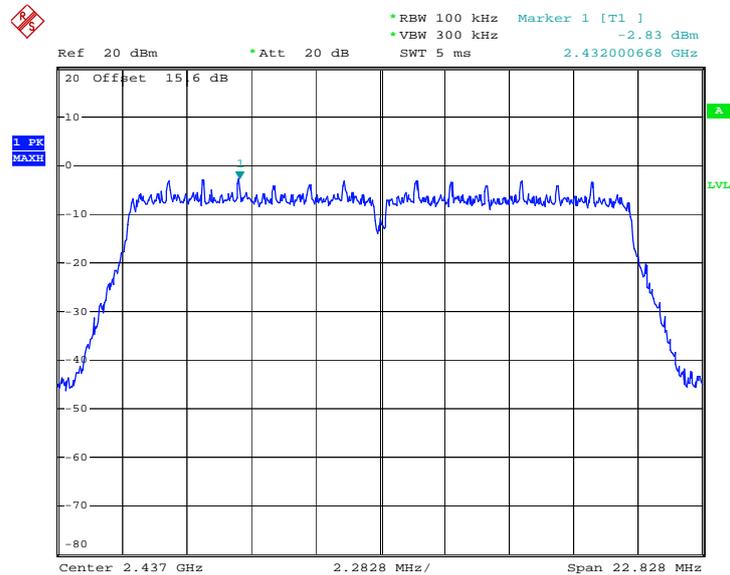
<2.4GHz 802.11n HT-20>

PSD 100KHz Plot on 2.4G 802.11n HT20 Channel 01



Date: 8.NOV.2012 15:35:02

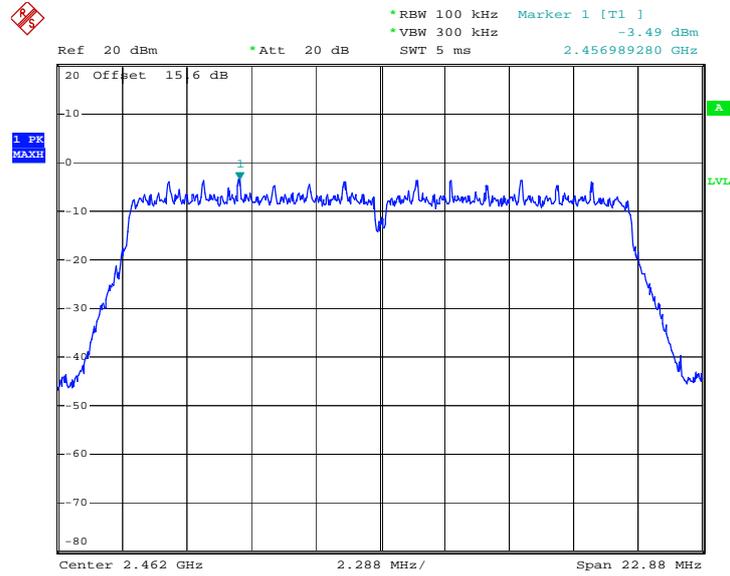
PSD 100KHz Plot on 2.4G 802.11n HT20 Channel 06



Date: 8.NOV.2012 15:38:26



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

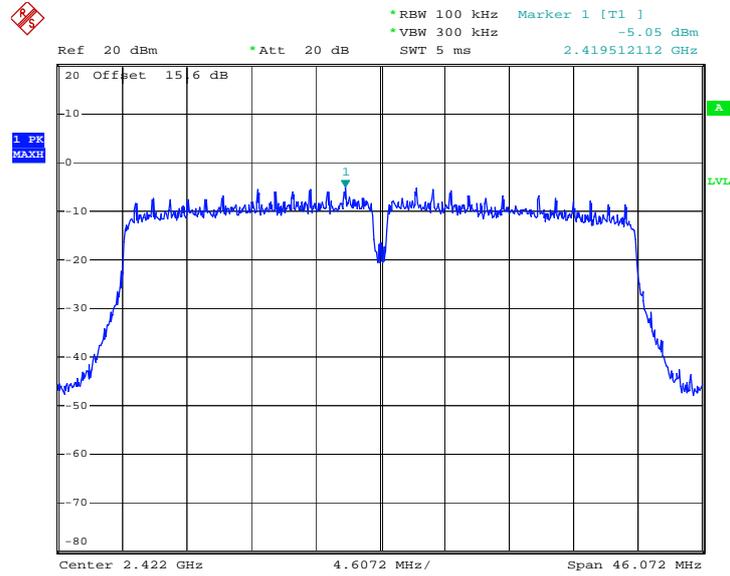


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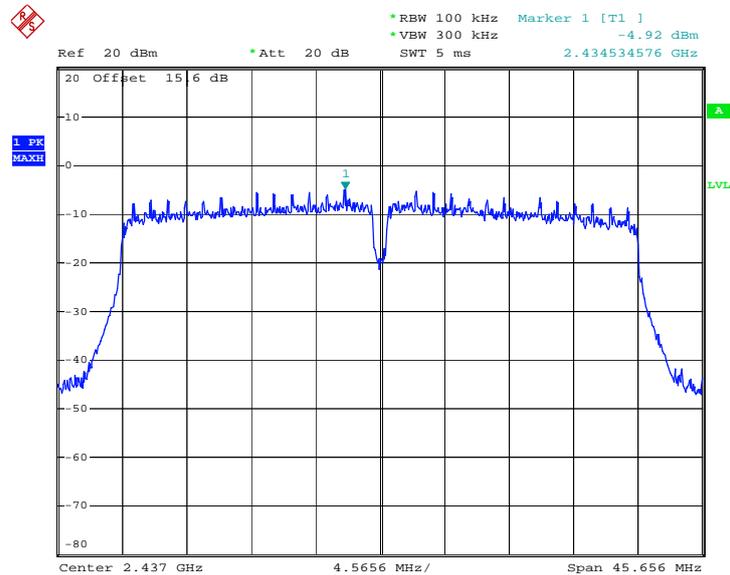
<2.4GHz 802.11n HT-40>

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



Date: 8.NOV.2012 15:47:09

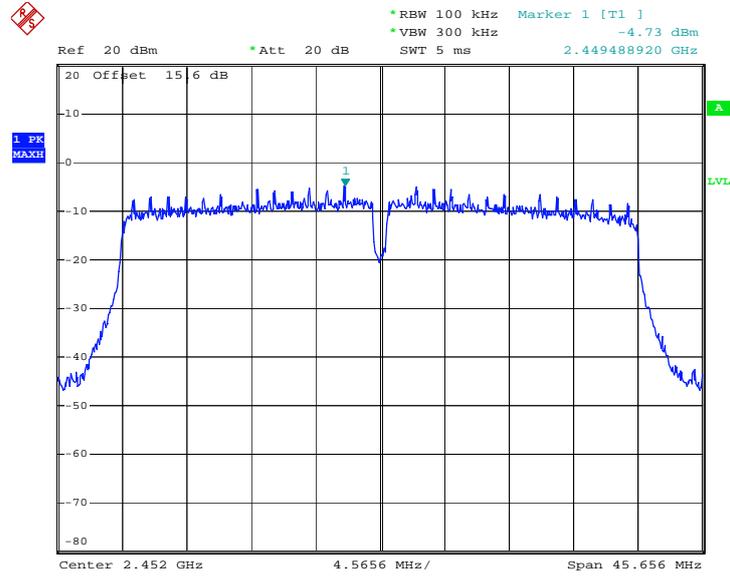
PSD 100KHz Plot on 2.4G 802.11n HT40 Channel 06



Date: 8.NOV.2012 15:49:39



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



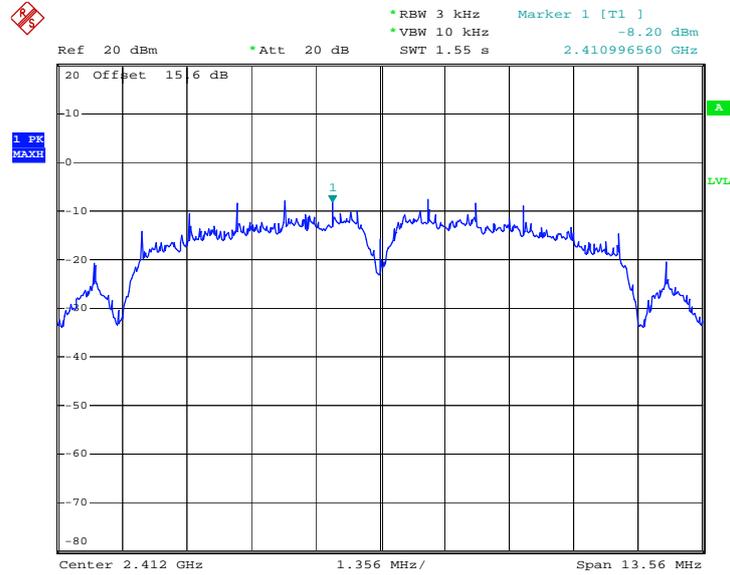
Date: 8.NOV.2012 15:53:35



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

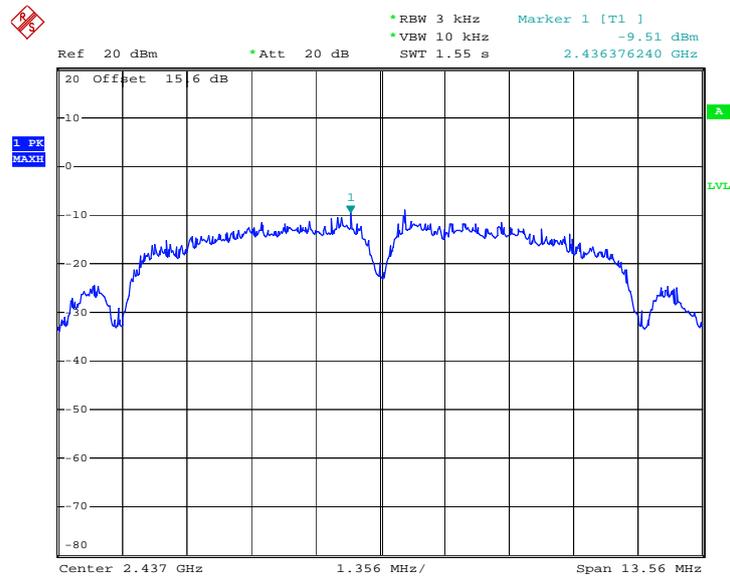
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PSD 3KHz Plot on 802.11b Channel 01



Date: 8.NOV.2012 16:06:09

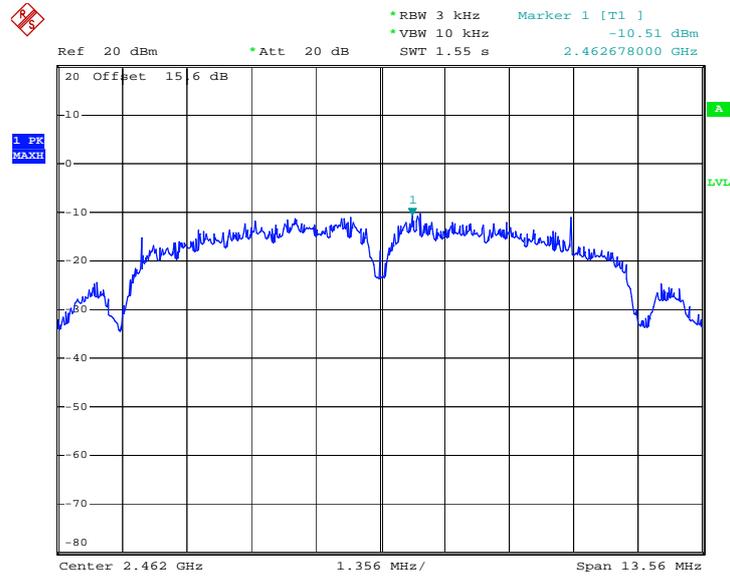
PSD 3KHz Plot on 802.11b Channel 06



Date: 8.NOV.2012 16:06:58



PSD 3KHz Plot on 802.11b Channel 11

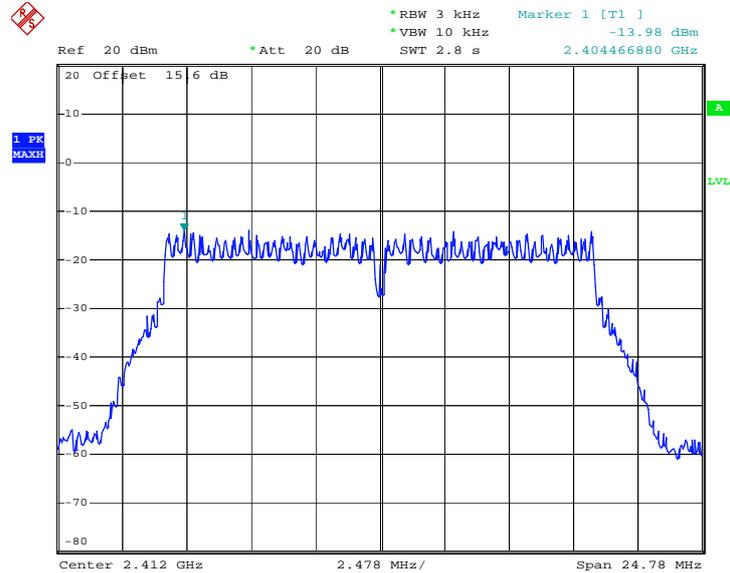


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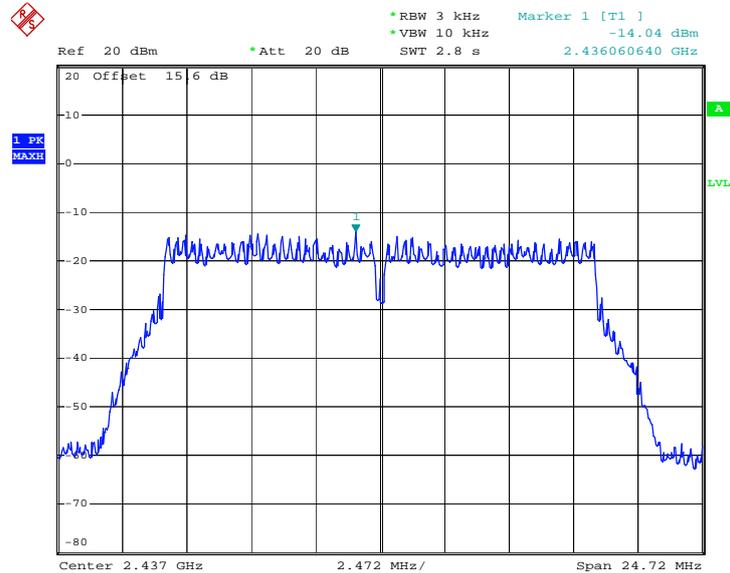
<802.11g>

PSD 3KHz Plot on 802.11g Channel 01



Date: 8.NOV.2012 16:08:43

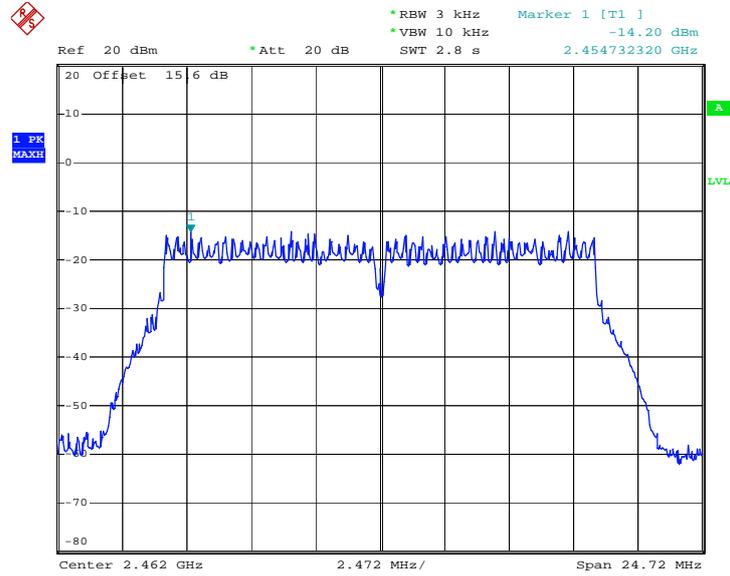
PSD 3KHz Plot on 802.11g Channel 06



Date: 8.NOV.2012 16:10:12



PSD 3KHz Plot on 802.11g Channel 11

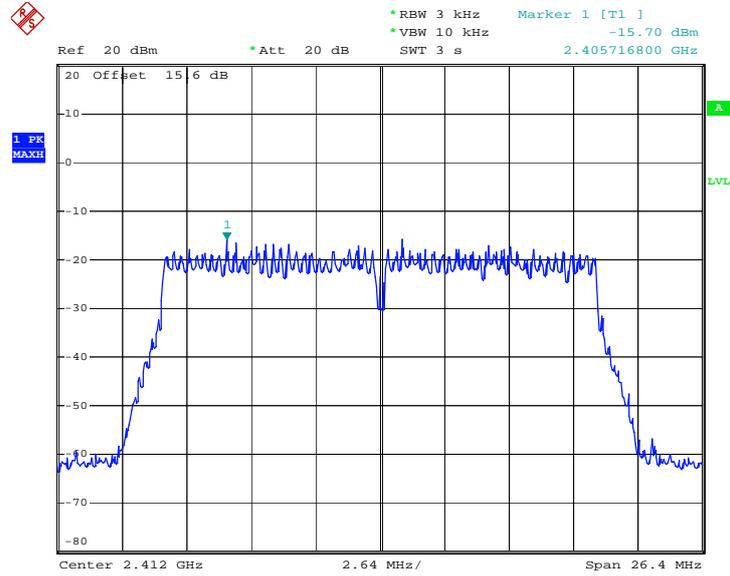


Date: 8.NOV.2012 16:11:14



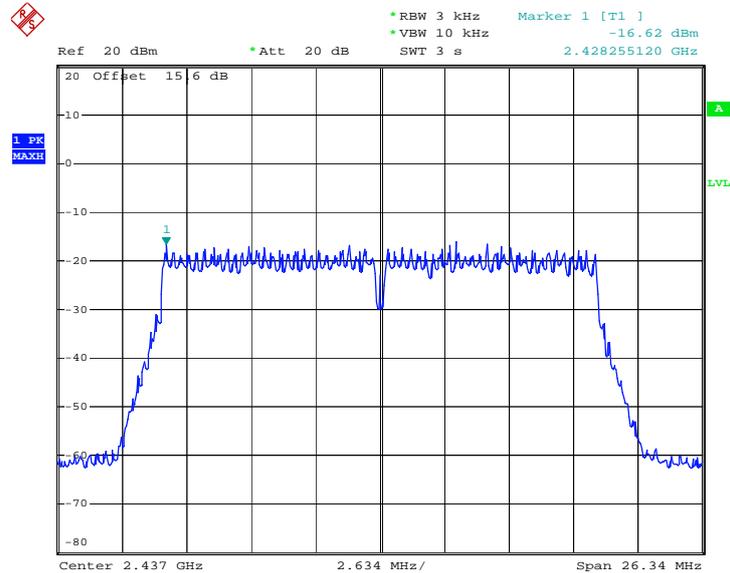
<2.4GHz 802.11n HT-20>

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



Date: 8.NOV.2012 16:12:04

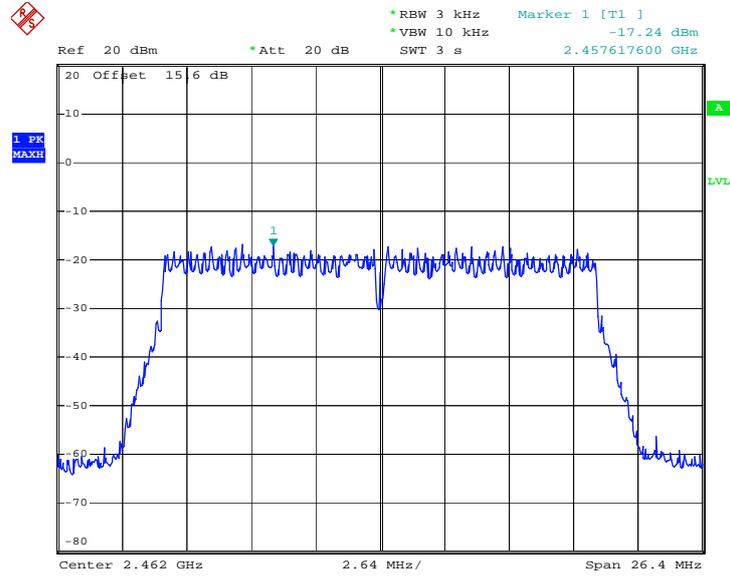
PSD 3KHz Plot on 2.4G 802.11n HT20 Channel 06



Date: 8.NOV.2012 16:13:07



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

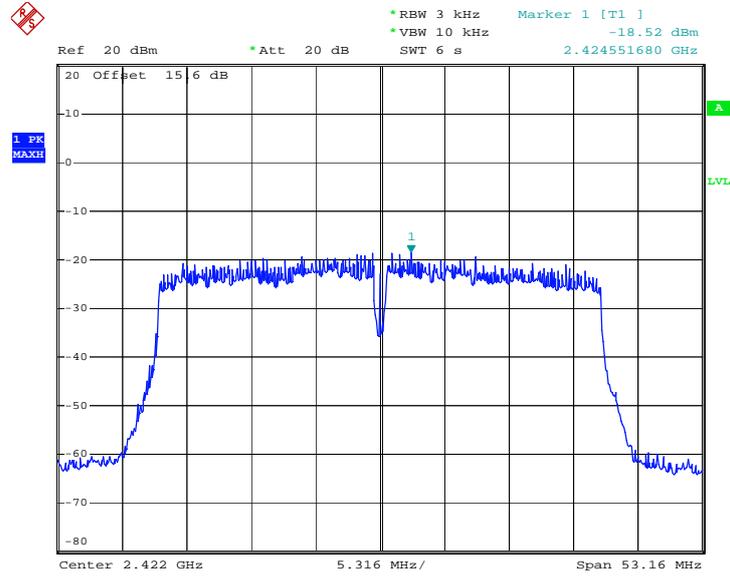


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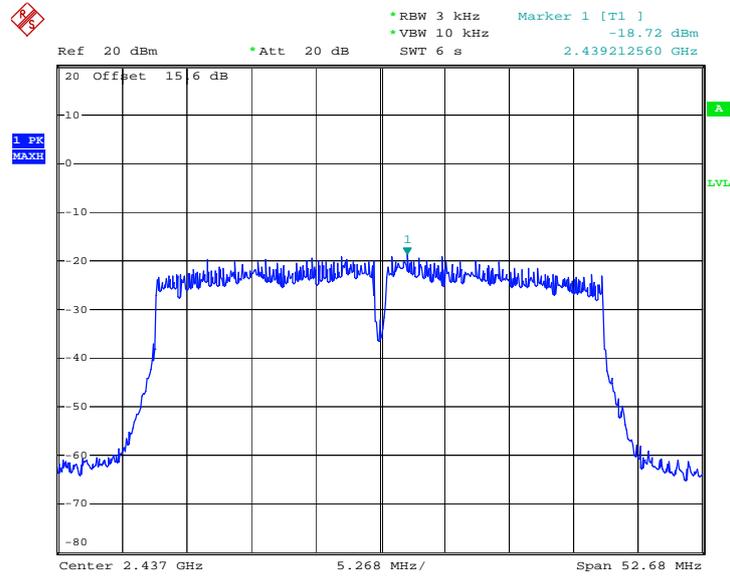
<2.4GHz 802.11n HT-40>

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



Date: 8.NOV.2012 16:17:25

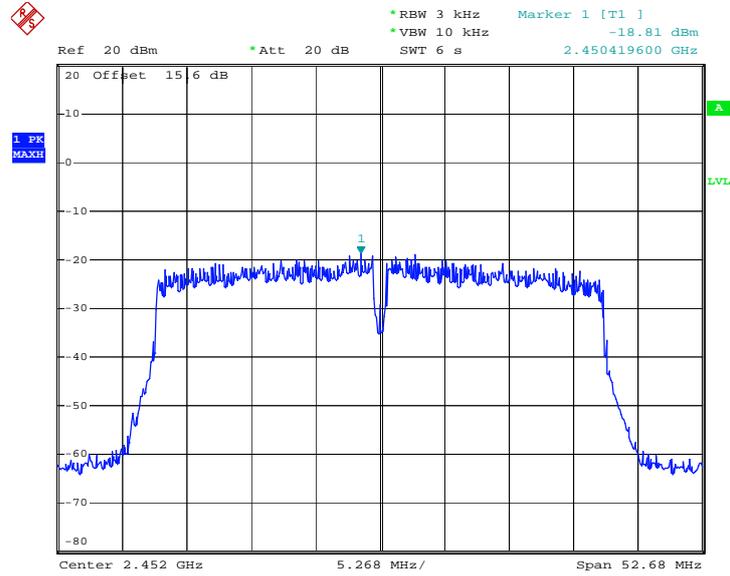
PSD 3KHz Plot on 2.4G 802.11n HT40 Channel 06



Date: 8.NOV.2012 16:16:09



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



Date: 8.NOV.2012 16:15:18

## 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).

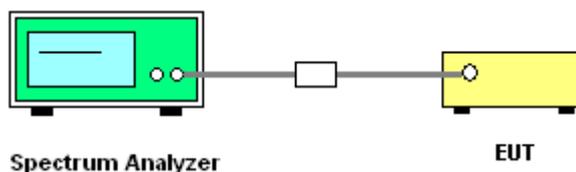
### 3.4.2 Measuring Instruments

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.

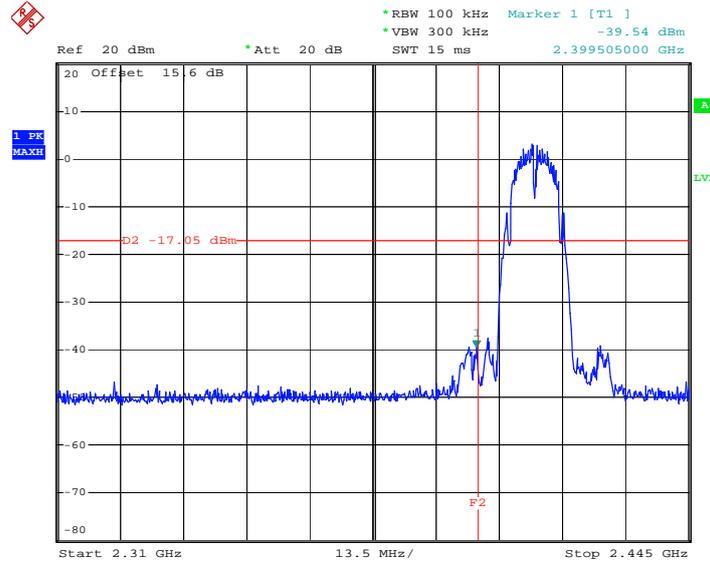
### 3.4.4 Test Setup



### 3.4.5 Test Plots of Conducted Band Edges

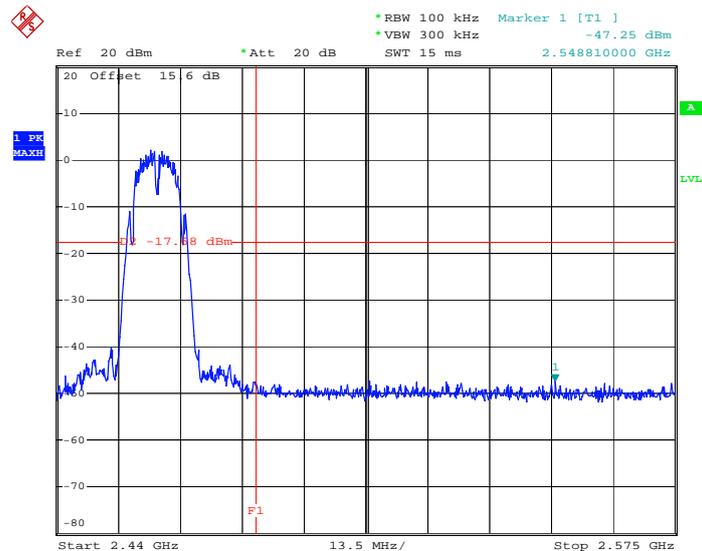
Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11b Channel 01



Date: 8.NOV.2012 15:14:30

High Band Edge Plot on 802.11b Channel 11

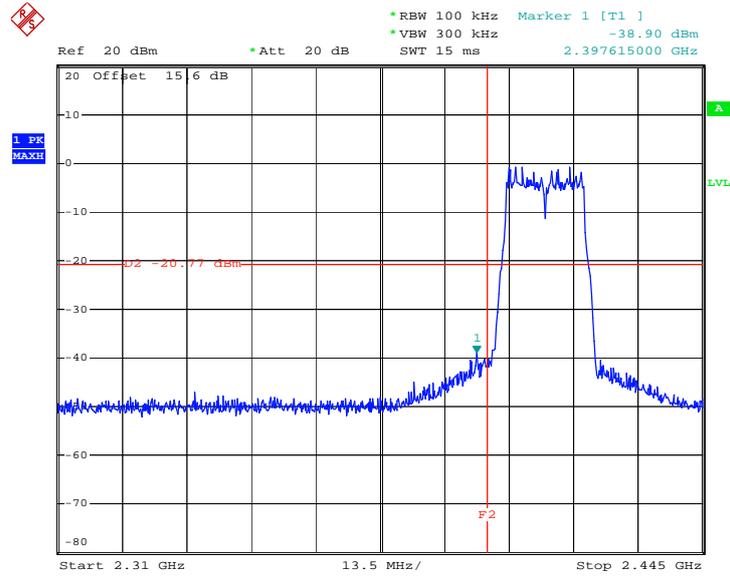


Date: 8.NOV.2012 15:21:06



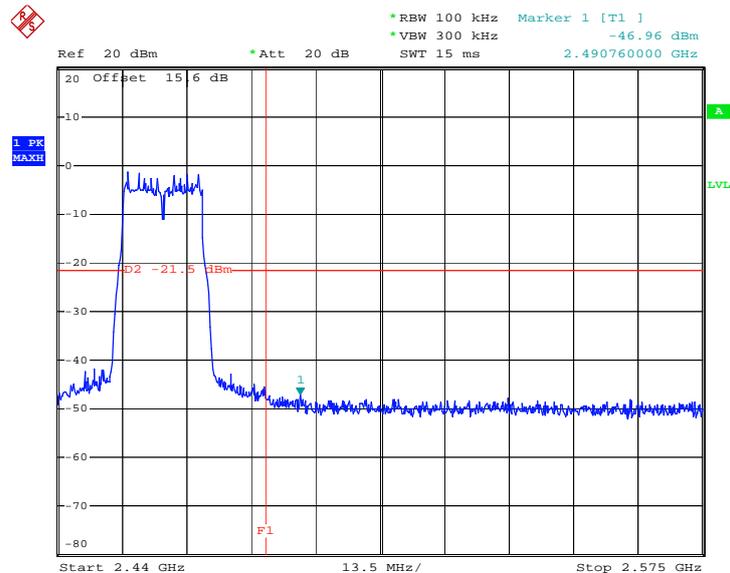
Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11g Channel 01



Date: 8.NOV.2012 15:24:32

High Band Edge Plot on 802.11g Channel 11

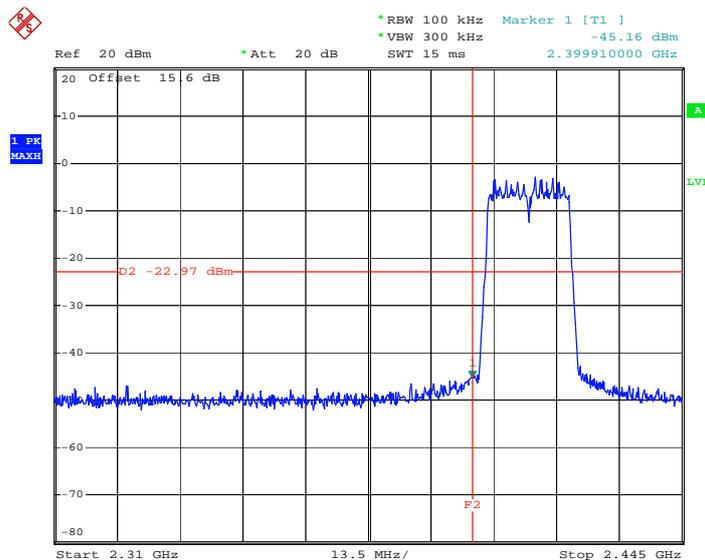


Date: 8.NOV.2012 15:32:02



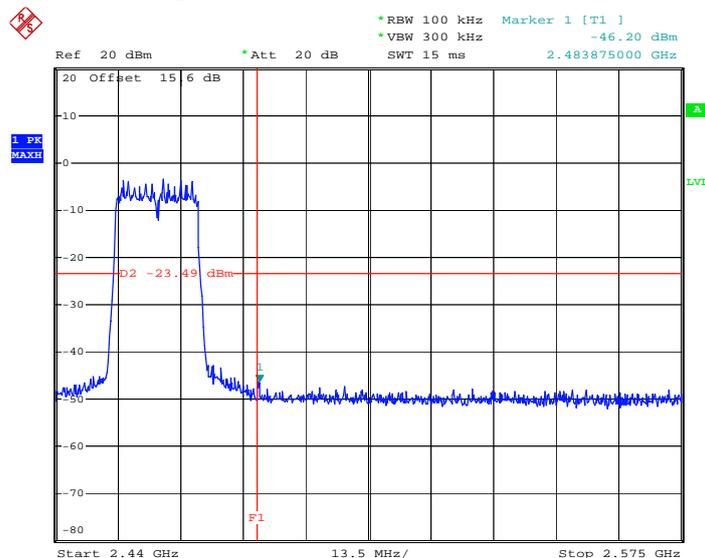
Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 8.NOV.2012 15:35:22

High Band Edge Plot on 802.11n HT20 Channel 11

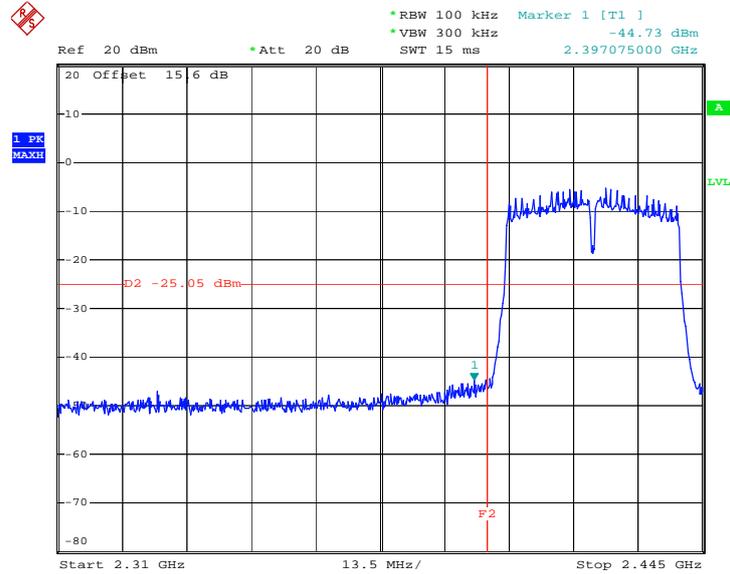


Date: 8.NOV.2012 15:41:29



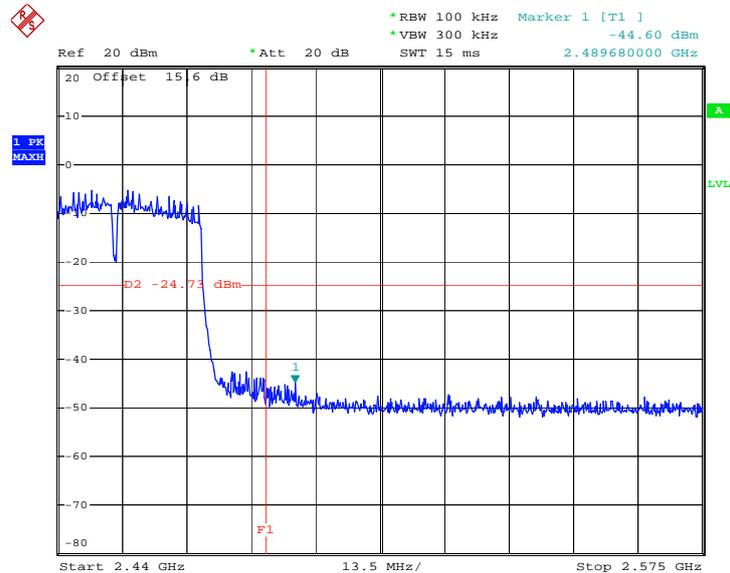
Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	03 and 09	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11n HT40 Channel 03



Date: 8.NOV.2012 15:47:26

High Band Edge Plot on 802.11n HT40 Channel 09



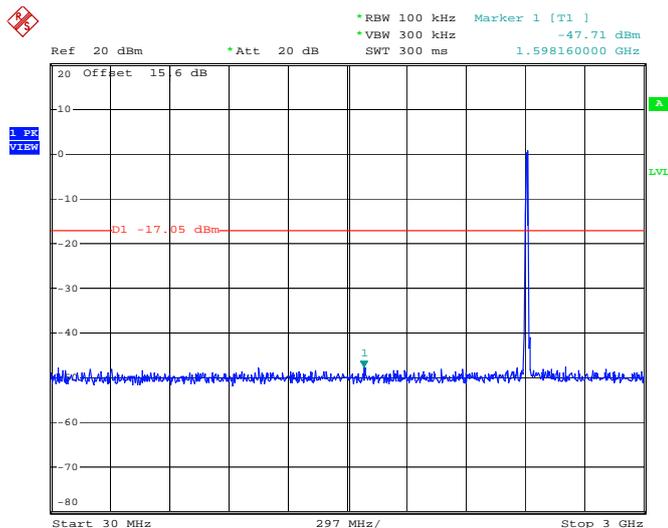
Date: 8.NOV.2012 15:53:52

### 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

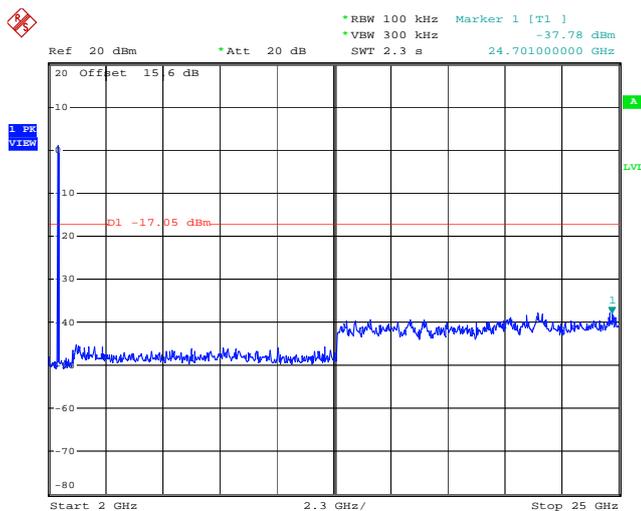
#### Conducted Spurious Emission Plot on Channel 01



Date: 8.NOV.2012 15:15:04

#### 802.11b 2 GHz~25 GHz

#### Conducted Spurious Emission Plot on Channel 01

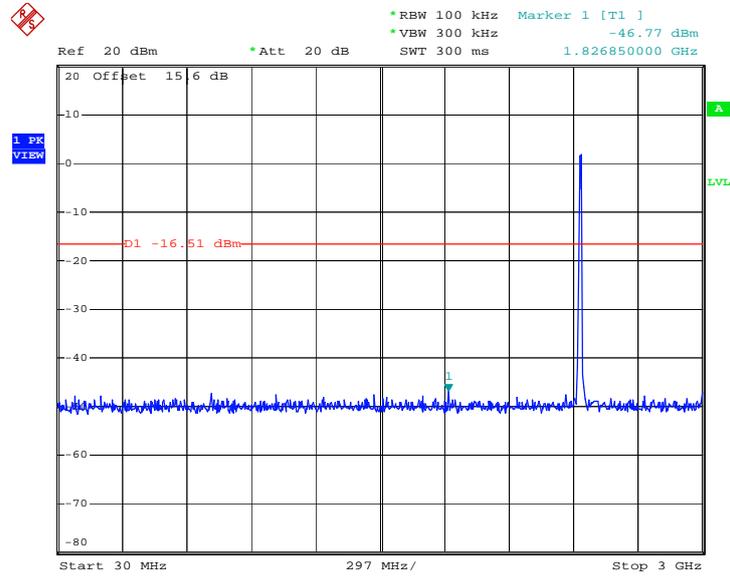


Date: 8.NOV.2012 15:15:23



802.11b 30 MHz~3 GHz

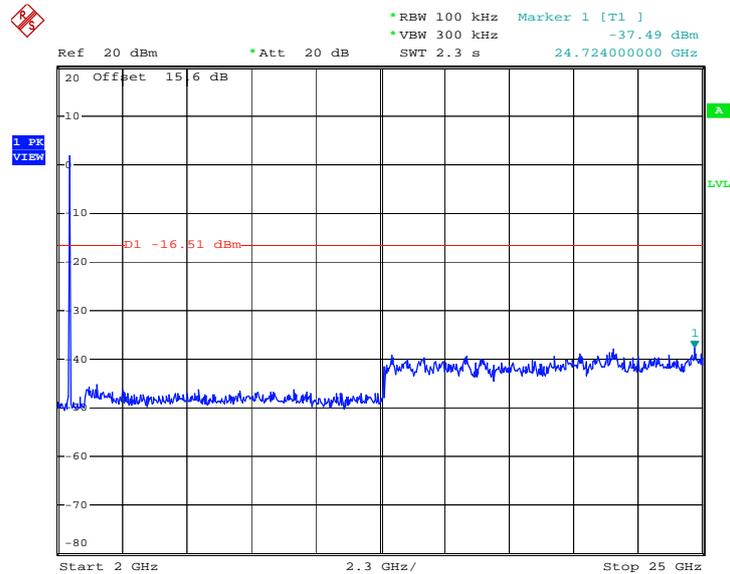
Conducted Spurious Emission Plot on Channel 06



Date: 8.NOV.2012 15:18:15

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

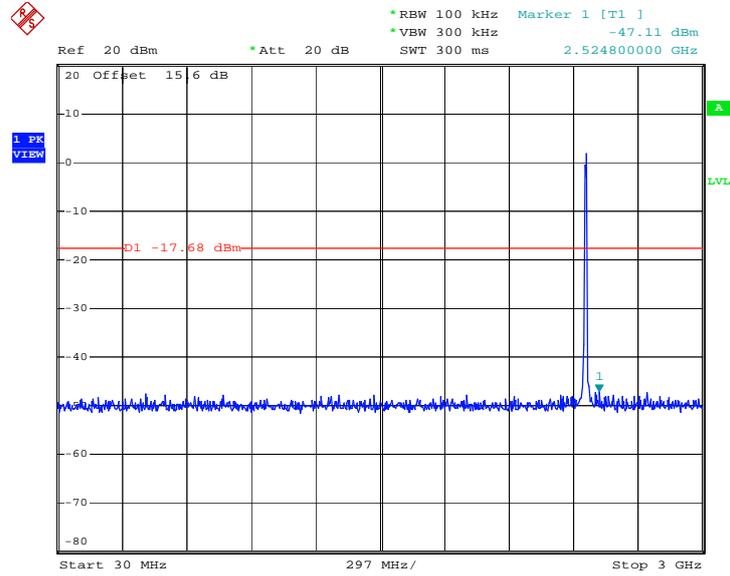


Date: 8.NOV.2012 15:18:34



802.11b 30 MHz~3 GHz

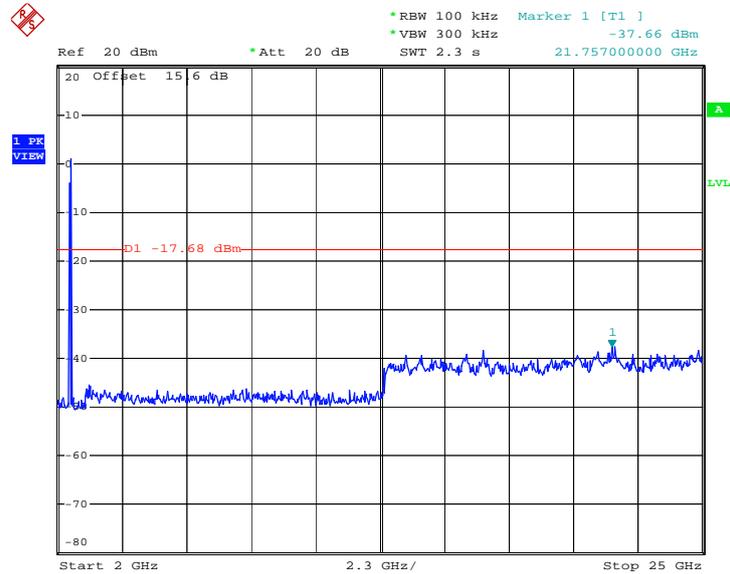
Conducted Spurious Emission Plot on Channel 11



Date: 8.NOV.2012 15:21:30

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



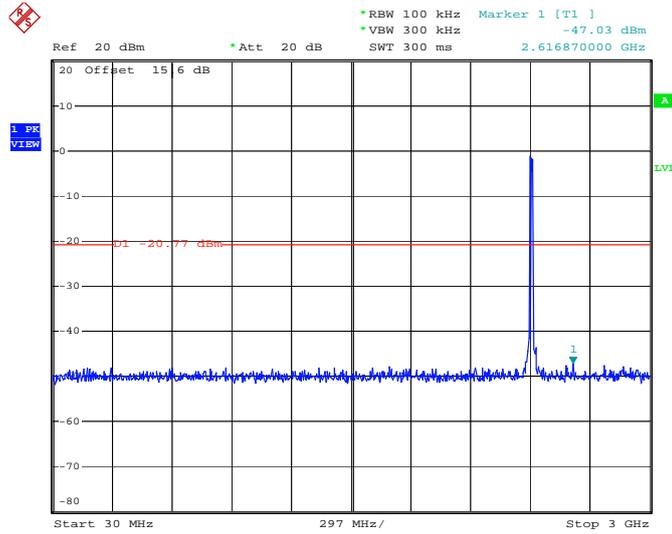
Date: 8.NOV.2012 15:21:48



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

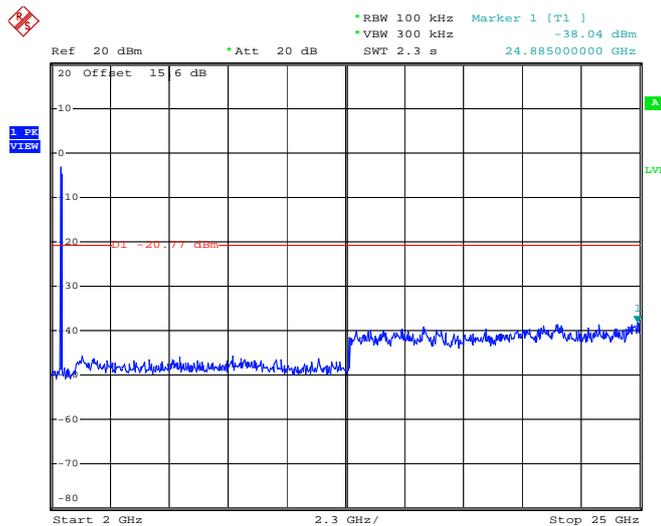
Conducted Spurious Emission Plot on Channel 01



Date: 8.NOV.2012 15:25:03

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

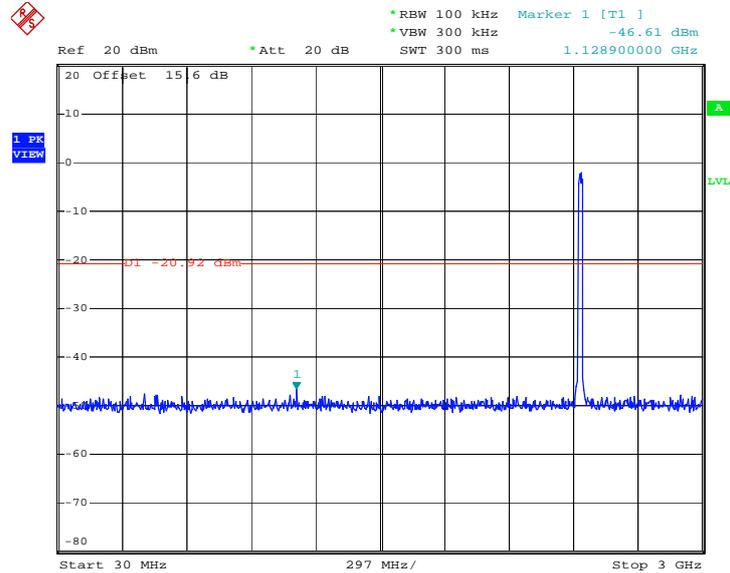


Date: 8.NOV.2012 15:25:21



802.11g 30 MHz~3 GHz

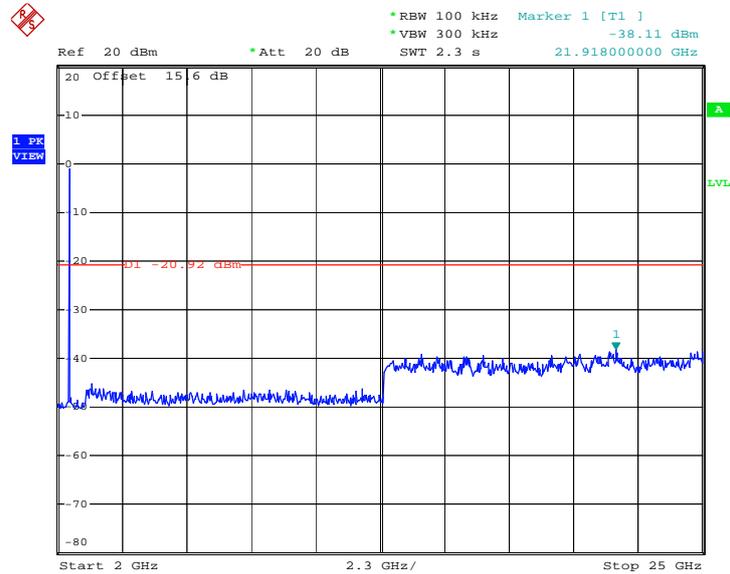
Conducted Spurious Emission Plot on Channel 06



Date: 8.NOV.2012 15:27:25

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

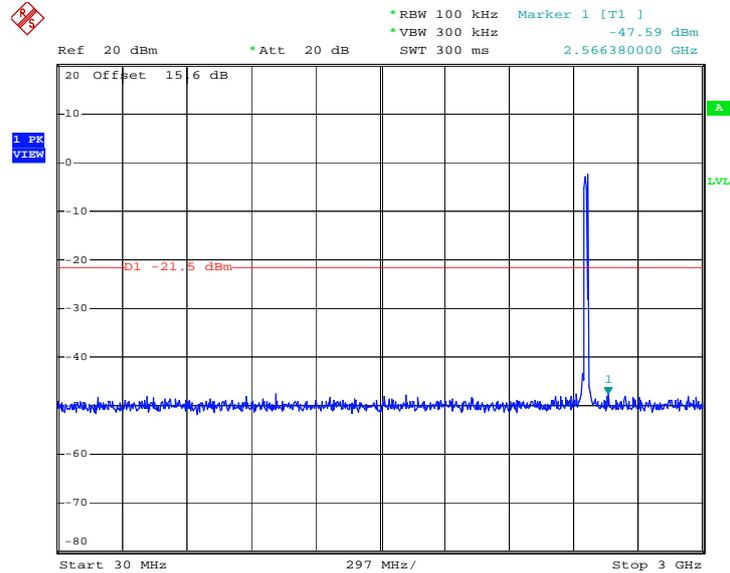


Date: 8.NOV.2012 15:27:43



802.11g 30 MHz~3 GHz

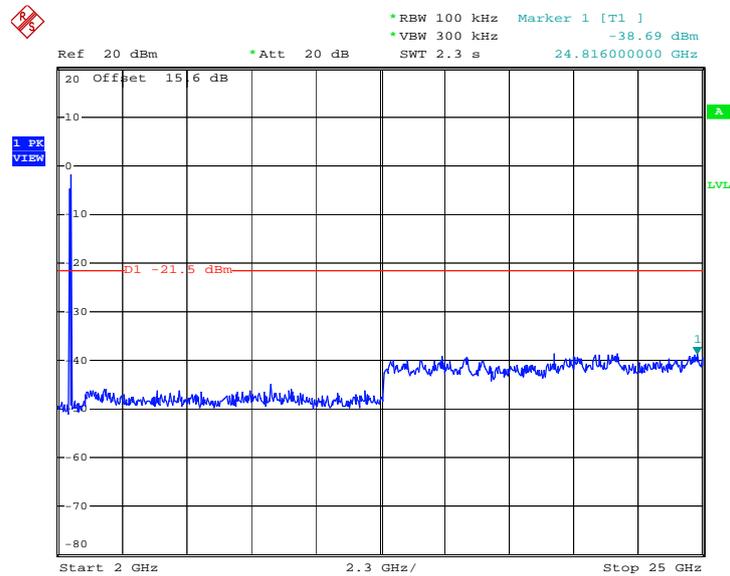
Conducted Spurious Emission Plot on Channel 11



Date: 8.NOV.2012 15:32:24

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



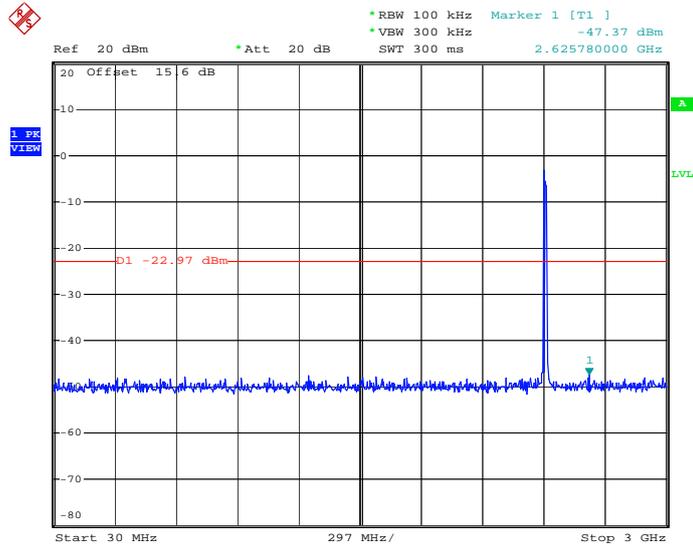
Date: 8.NOV.2012 15:32:42



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

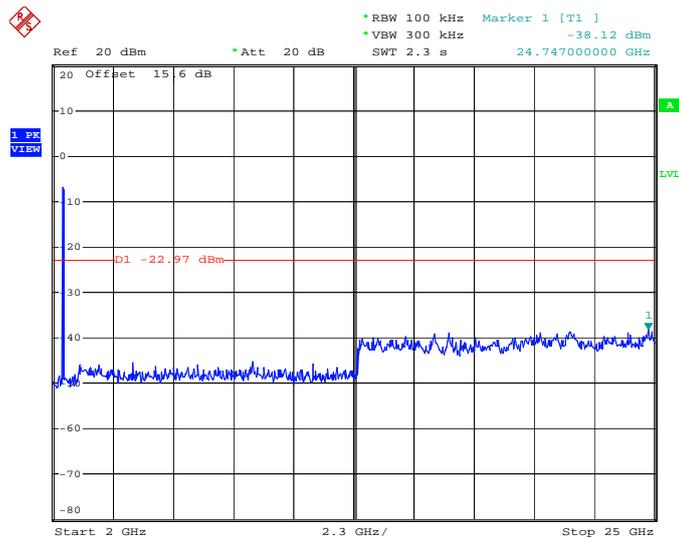
Conducted Spurious Emission Plot on Channel 01



Date: 8.NOV.2012 15:36:27

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

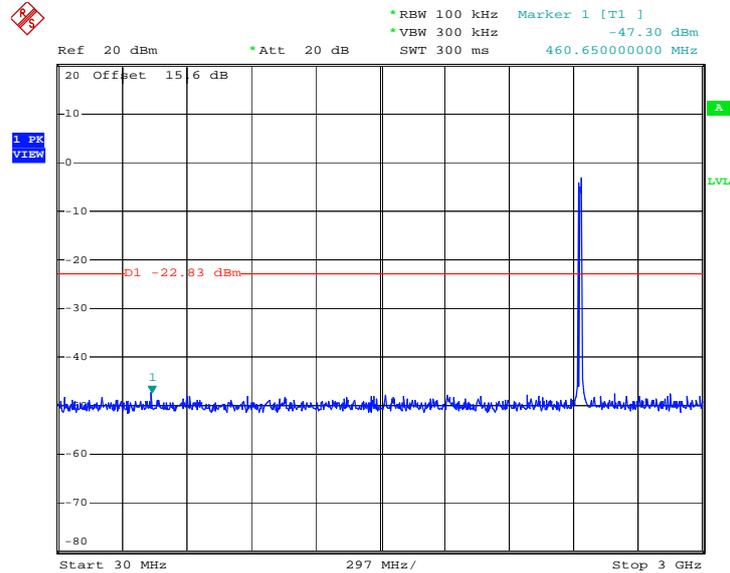


Date: 8.NOV.2012 15:36:45



802.11n HT20 30 MHz~3 GHz

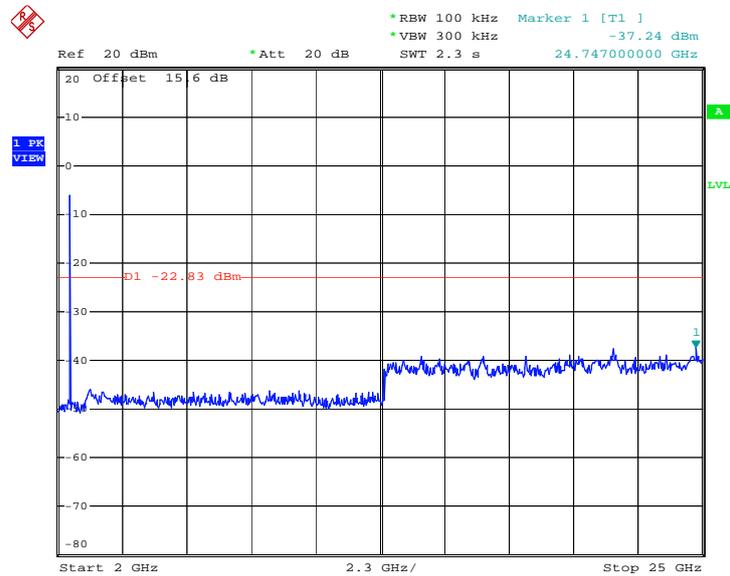
Conducted Spurious Emission Plot on Channel 06



Date: 8.NOV.2012 15:39:00

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

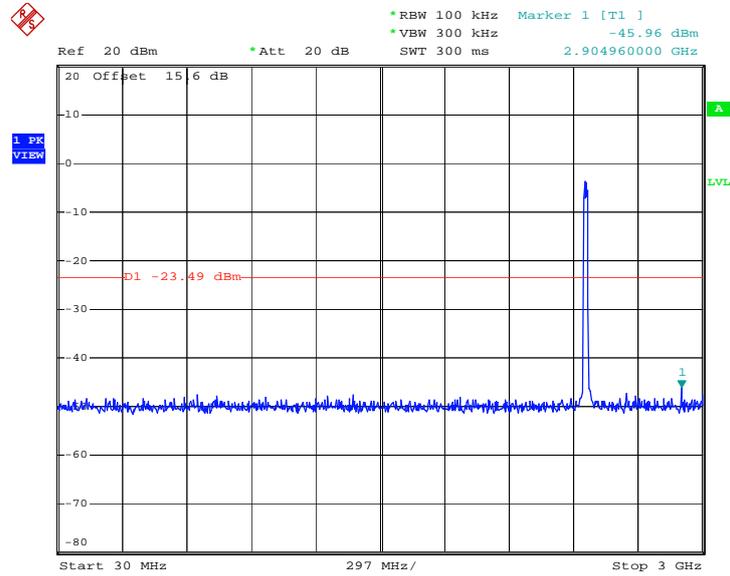


Date: 8.NOV.2012 15:39:18



### 802.11n HT20 30 MHz~3 GHz

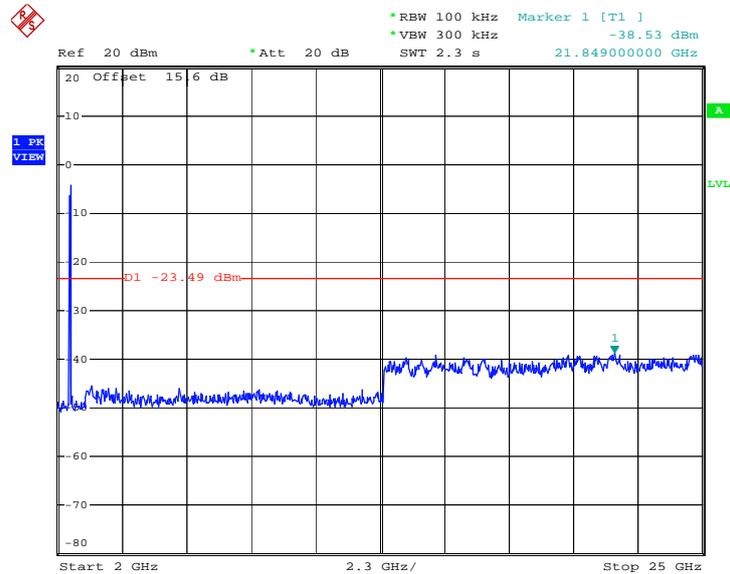
#### Conducted Spurious Emission Plot on Channel 11



Date: 8.NOV.2012 15:41:54

### 802.11n HT20 2 GHz~25 GHz

#### Conducted Spurious Emission Plot on Channel 11



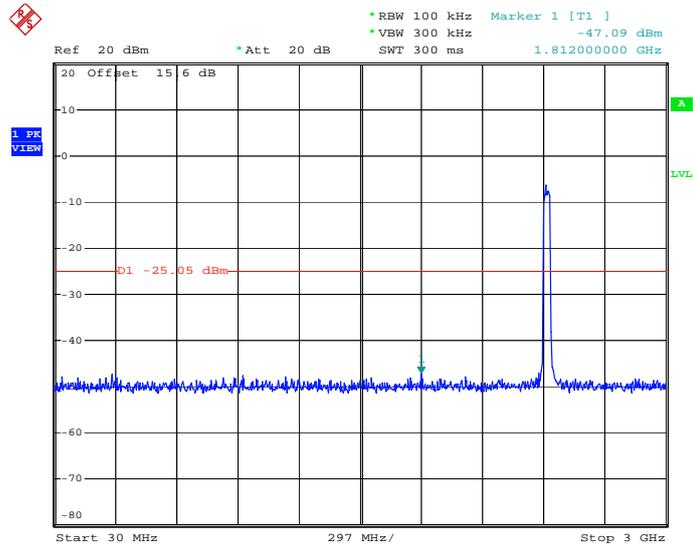
Date: 8.NOV.2012 15:42:12



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

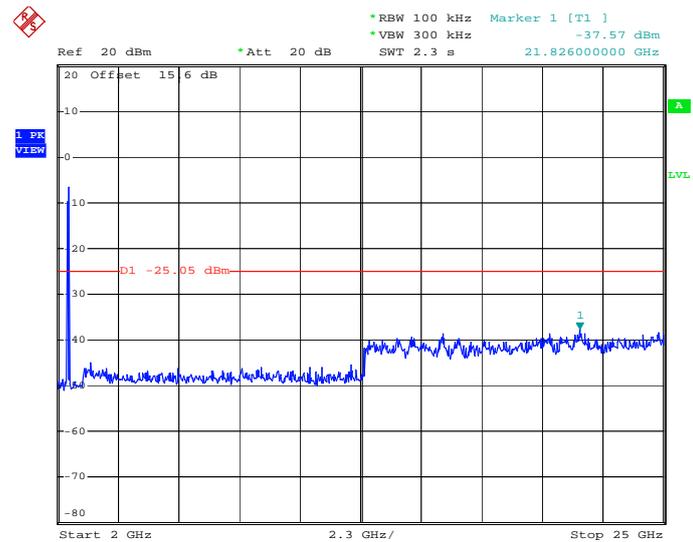
Conducted Spurious Emission Plot on Channel 01



Date: 8.NOV.2012 15:47:54

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01



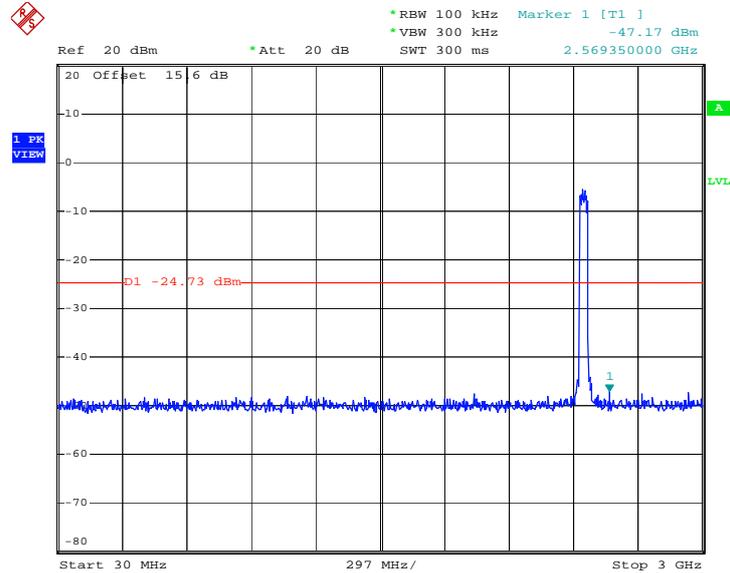
Date: 8.NOV.2012 15:48:12





802.11n HT40 30 MHz~3 GHz

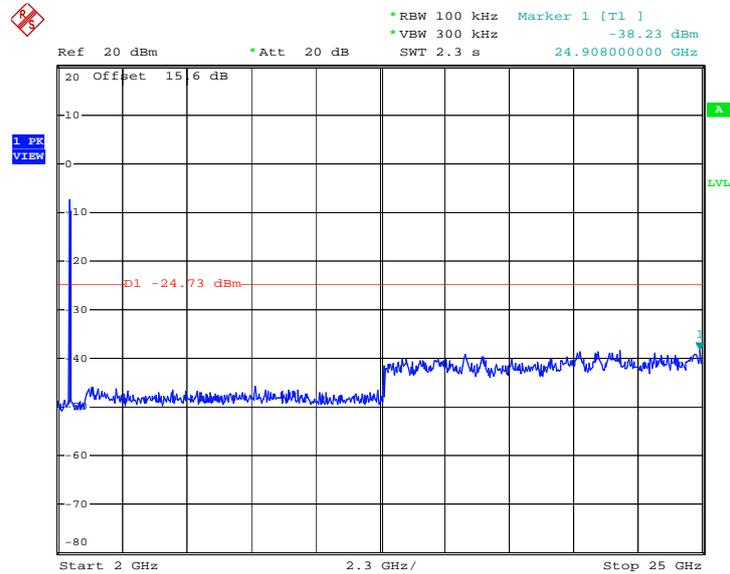
Conducted Spurious Emission Plot on Channel 11



Date: 8.NOV.2012 15:54:14

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



Date: 8.NOV.2012 15:54:32

### 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

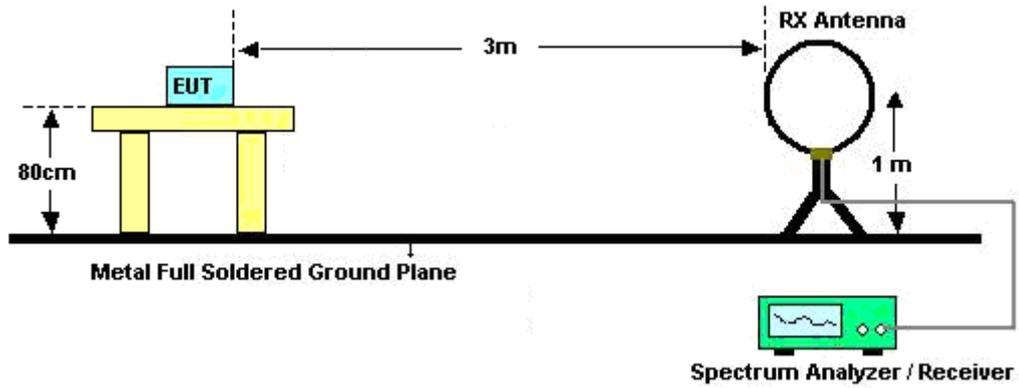
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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	98.591549	-	-	10Hz
802.11g	92	1.380	0.72463768	1KHz
2.4G 802.11n HT20	91.011236	1.296	0.77160494	1KHz
2.4G 802.11n HT40	84.514436	0.644	1.55279503	3KHz

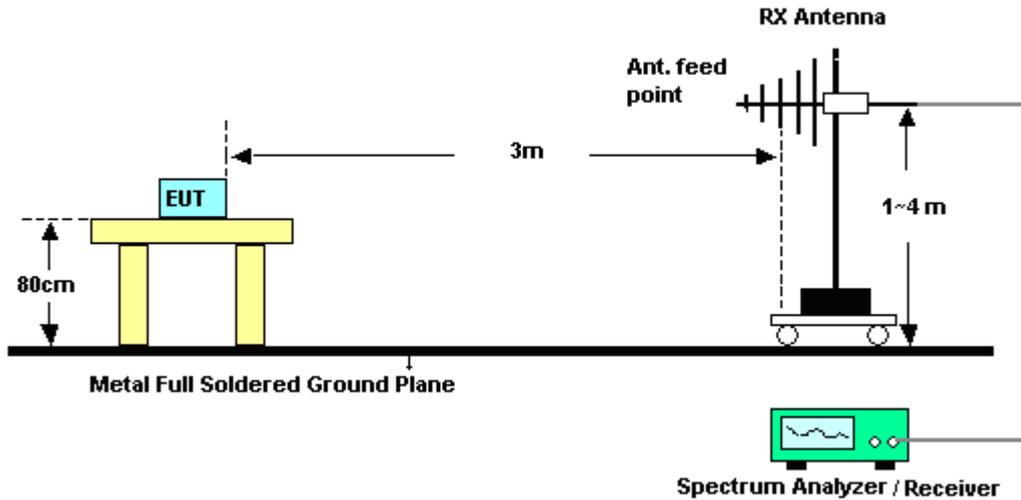
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be reported by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

### 3.5.4 Test Setup

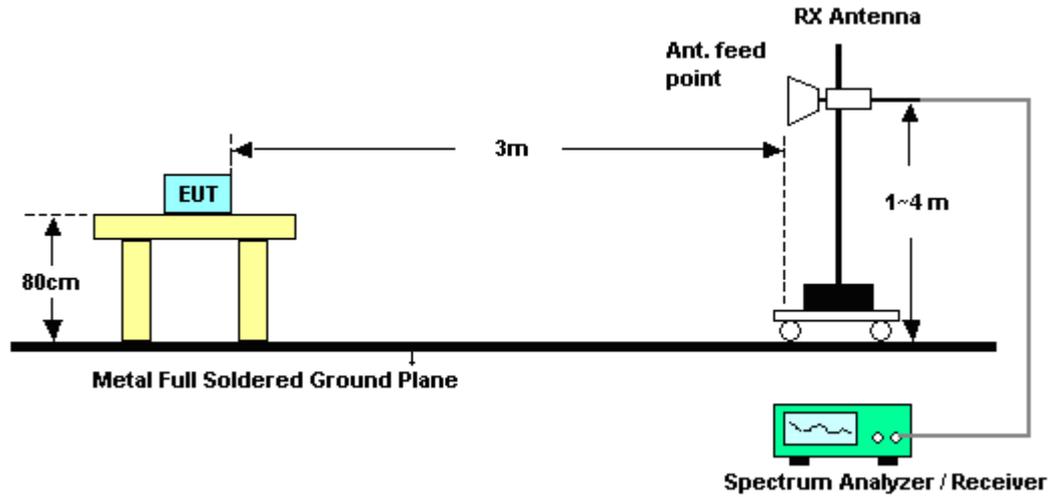
For radiated emissions below 30MHz



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 :	23~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Steven Hao

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
2389.02	50.61	-23.39	74	47.15	32.86	2.11	31.51	109	126	Peak
2390	38.05	-15.95	54	34.59	32.86	2.11	31.51	109	121	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2386.77	51.18	-22.82	74	47.72	32.86	2.11	31.51	100	92	Peak
2386.86	38.53	-15.47	54	35.07	32.86	2.11	31.51	100	92	Average

Test Mode :	802.11b	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Steven Hao

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2487.24	53.19	-20.81	74	49.53	33.01	2.16	31.51	110	54	Peak
2488.64	39.37	-14.63	54	35.66	33.05	2.17	31.51	110	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2488.42	52.37	-21.63	74	48.66	33.05	2.17	31.51	100	87	Peak
2487.7	38.44	-15.56	54	34.73	33.05	2.17	31.51	100	87	Average



Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Steven Hao

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
2389.56	57.47	-16.53	74	54.01	32.86	2.11	31.51	100	305	Peak
2390	42.43	-11.57	54	38.97	32.86	2.11	31.51	100	300	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
2388.66	53.43	-20.57	74	49.97	32.86	2.11	31.51	100	266	Peak
2390	39.56	-14.44	54	36.1	32.86	2.11	31.51	100	266	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Steven Hao

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
2483.64	59.7	-14.3	74	56.04	33.01	2.16	31.51	100	306	Peak
2483.66	41.31	-12.69	54	37.65	33.01	2.16	31.51	100	300	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	55.89	-18.11	74	52.23	33.01	2.16	31.51	100	230	Peak
2484.3	39.95	-14.05	54	36.29	33.01	2.16	31.51	100	260	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Steven Hao

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.48	59.11	-14.89	74	55.65	32.86	2.11	31.51	128	303	Peak
2390	42.68	-11.32	54	39.22	32.86	2.11	31.51	128	303	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
2388.39	56.6	-17.4	74	53.14	32.86	2.11	31.51	127	237	Peak
2390	40.27	-13.73	54	36.81	32.86	2.11	31.51	127	237	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Steven Hao

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	59.29	-14.71	74	55.63	33.01	2.16	31.51	100	293	Peak
2483.64	41.93	-12.07	54	38.27	33.01	2.16	31.51	100	293	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
2484.68	53.24	-20.76	74	49.58	33.01	2.16	31.51	126	283	Peak
2483.5	39.16	-14.84	54	35.5	33.01	2.16	31.51	126	283	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	03	Test Engineer :	Steven Hao

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
2389.74	59.93	-14.07	74	56.47	32.86	2.11	31.51	102	234	Peak
2389.74	45.25	-8.75	54	41.79	32.86	2.11	31.51	102	234	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
2383.98	54.42	-19.58	74	51.01	32.83	2.09	31.51	100	297	Peak
2390	40.66	-13.34	54	37.2	32.86	2.11	31.51	100	297	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	09	Test Engineer :	Steven Hao

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
2483.78	63.68	-10.32	74	60.02	33.01	2.16	31.51	100	234	Peak
2484.5	44.88	-9.12	54	41.22	33.01	2.16	31.51	100	234	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
2484.44	59.5	-14.5	74	55.84	33.01	2.16	31.51	130	324	Peak
2485.24	41.8	-12.2	54	38.14	33.01	2.16	31.51	130	324	Average



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

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Steven Hao	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
30.211	18.9	-21.1	40	34.13	18	0.34	33.57	-	-	Peak
44.12	16.43	-23.57	40	40.04	9.6	0.41	33.62	-	-	Peak
159.225	16.28	-27.22	43.5	39.48	9.64	0.74	33.58	-	-	Peak
285.978	21.67	-24.33	46	41.31	12.78	0.97	33.39	-	-	Peak
449.556	26.27	-19.73	46	41.98	16.3	1.2	33.21	-	-	Peak
958.794	37.78	-8.22	46	47.67	20.78	1.77	32.44	132	145	Peak
2412	95.43	-	-	91.93	32.89	2.12	31.51	109	121	Average
2412	100.76	-	-	97.26	32.89	2.12	31.51	109	121	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Steven Hao	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
33.328	20.15	-19.85	40	37.35	16.04	0.35	33.59	-	-	Peak
47.826	20.61	-19.39	40	45.28	8.5	0.43	33.6	-	-	Peak
88.964	19.72	-23.78	43.5	44.18	8.61	0.55	33.62	-	-	Peak
129.015	20.49	-23.01	43.5	41.7	11.71	0.67	33.59	-	-	Peak
451.135	22.05	-23.95	46	37.74	16.31	1.2	33.2	-	-	Peak
948.761	39.75	-6.25	46	49.71	20.73	1.75	32.44	120	142	Peak
2412	95.6	-	-	92.1	32.89	2.12	31.51	100	92	Average
2412	101.6	-	-	98.1	32.89	2.12	31.51	100	92	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
33.095	19.01	-20.99	40	36.21	16.04	0.35	33.59	-	-	Peak
44.12	16.82	-23.18	40	40.43	9.6	0.41	33.62	-	-	Peak
162.041	16.13	-27.37	43.5	39.43	9.53	0.75	33.58	-	-	Peak
275.157	20.73	-25.27	46	40.65	12.53	0.96	33.41	-	-	Peak
451.135	26.56	-19.44	46	42.25	16.31	1.2	33.2	-	-	Peak
958.794	37.79	-8.21	46	47.68	20.78	1.77	32.44	120	213	Peak
2437	95.7	-	-	92.12	32.95	2.14	31.51	110	130	Average
2437	101.13	-	-	97.55	32.95	2.14	31.51	110	130	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
35.005	25.63	-14.37	40	43.77	15.1	0.37	33.61	-	-	Peak
42.9	19.52	-20.48	40	42.27	10.48	0.4	33.63	-	-	Peak
88.964	19.88	-23.62	43.5	44.34	8.61	0.55	33.62	-	-	Peak
129.015	21.16	-22.34	43.5	42.37	11.71	0.67	33.59	-	-	Peak
447.982	24.59	-21.41	46	40.31	16.29	1.2	33.21	-	-	Peak
945.44	38.1	-7.9	46	48.08	20.71	1.75	32.44	110	142	Peak
2437	96.2	-	-	92.62	32.95	2.14	31.51	125	99	Average
2437	101.41	-	-	97.83	32.95	2.14	31.51	125	99	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
32.179	18.67	-21.33	40	35.35	16.55	0.35	33.58	-	-	Peak
44.275	16.25	-23.75	40	39.86	9.6	0.41	33.62	-	-	Peak
158.668	17.63	-25.87	43.5	40.83	9.64	0.74	33.58	-	-	Peak
285.978	21.26	-24.74	46	40.9	12.78	0.97	33.39	-	-	Peak
449.556	24.58	-21.42	46	40.29	16.3	1.2	33.21	-	-	Peak
945.44	34.28	-11.72	46	44.26	20.71	1.75	32.44	110	254	Peak
2462	99.66	-	-	96.04	32.98	2.15	31.51	106	54	Average
2462	105	-	-	101.38	32.98	2.15	31.51	106	54	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
33.095	19.62	-20.38	40	36.82	16.04	0.35	33.59	-	-	Peak
47.826	19.49	-20.51	40	44.16	8.5	0.43	33.6	-	-	Peak
88.964	19.21	-24.29	43.5	43.67	8.61	0.55	33.62	-	-	Peak
129.015	20.76	-22.74	43.5	41.97	11.71	0.67	33.59	-	-	Peak
449.556	22.68	-23.32	46	38.39	16.3	1.2	33.21	-	-	Peak
945.44	37.06	-8.94	46	47.04	20.71	1.75	32.44	122	214	Peak
2462	97.23	-	-	93.61	32.98	2.15	31.51	100	87	Average
2462	102.56	-	-	98.94	32.98	2.15	31.51	100	87	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
56.001	25.05	-14.95	40	52.19	5.98	0.46	33.58	-	-	Peak
159.225	16.47	-27.03	43.5	39.67	9.64	0.74	33.58	-	-	Peak
280.024	20.8	-25.2	46	40.57	12.66	0.97	33.4	-	-	Peak
452.72	24.62	-21.38	46	40.27	16.34	1.21	33.2	-	-	Peak
782.345	28.97	-17.03	46	40.15	19.86	1.63	32.67	-	-	Peak
958.794	38.68	-7.32	46	48.57	20.78	1.77	32.44	141	102	Peak
2412	86.68	-	-	83.18	32.89	2.12	31.51	188	300	Average
2412	98	-	-	94.5	32.89	2.12	31.51	188	300	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
33.211	20.71	-19.29	40	37.91	16.04	0.35	33.59	-	-	Peak
47.826	20.46	-19.54	40	45.13	8.5	0.43	33.6	-	-	Peak
129.015	20.62	-22.88	43.5	41.83	11.71	0.67	33.59	-	-	Peak
446.414	22.59	-23.41	46	38.32	16.28	1.2	33.21	-	-	Peak
782.345	23.59	-22.41	46	34.77	19.86	1.63	32.67	-	-	Peak
958.794	37.98	-8.02	46	47.87	20.78	1.77	32.44	142	51	Peak
2412	80.71	-	-	77.21	32.89	2.12	31.51	100	270	Average
2412	93.08	-	-	89.58	32.89	2.12	31.51	100	270	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
31.843	18.94	-21.06	40	35.62	16.55	0.35	33.58	-	-	Peak
44.12	16.92	-23.08	40	40.53	9.6	0.41	33.62	-	-	Peak
129.015	17.22	-26.28	43.5	38.43	11.71	0.67	33.59	-	-	Peak
284.977	22.33	-23.67	46	41.99	12.76	0.97	33.39	-	-	Peak
419.108	25.97	-20.03	46	41.97	16.1	1.17	33.27	-	-	Peak
938.833	36.98	-9.02	46	46.99	20.68	1.75	32.44	120	154	Peak
2437	86.23	-	-	82.65	32.95	2.14	31.51	100	166	Average
2437	98.33	-	-	94.75	32.95	2.14	31.51	100	166	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
35.251	20.1	-19.9	40	38.24	15.1	0.37	33.61	-	-	Peak
47.826	19.98	-20.02	40	44.65	8.5	0.43	33.6	-	-	Peak
88.964	19.47	-24.03	43.5	43.93	8.61	0.55	33.62	-	-	Peak
129.015	20.88	-22.62	43.5	42.09	11.71	0.67	33.59	-	-	Peak
449.556	22.35	-23.65	46	38.06	16.3	1.2	33.21	-	-	Peak
958.794	38.46	-7.54	46	48.35	20.78	1.77	32.44	145	41	Peak
2437	83.39	-	-	79.81	32.95	2.14	31.51	200	300	Average
2437	94.58	-	-	91	32.95	2.14	31.51	200	300	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
31.955	19.15	-20.85	40	35.83	16.55	0.35	33.58	-	-	Peak
44.12	16.17	-23.83	40	39.78	9.6	0.41	33.62	-	-	Peak
158.668	15.99	-27.51	43.5	39.19	9.64	0.74	33.58	-	-	Peak
284.977	21.76	-24.24	46	41.42	12.76	0.97	33.39	-	-	Peak
449.556	28.29	-17.71	46	44	16.3	1.2	33.21	-	-	Peak
958.794	39.45	-6.55	46	49.34	20.78	1.77	32.44	132	142	Peak
2462	88.83	-	-	85.21	32.98	2.15	31.51	186	300	Average
2462	99.04	-	-	95.42	32.98	2.15	31.51	186	300	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
30.962	20.28	-19.72	40	36.23	17.29	0.34	33.58	125	41	Peak
47.826	19.94	-20.06	40	44.61	8.5	0.43	33.6	-	-	Peak
88.964	18.72	-24.78	43.5	43.18	8.61	0.55	33.62	-	-	Peak
129.015	20.47	-23.03	43.5	41.68	11.71	0.67	33.59	-	-	Peak
454.31	22.86	-23.14	46	38.5	16.35	1.21	33.2	-	-	Peak
962.162	31.02	-22.98	54	40.89	20.8	1.77	32.44	-	-	Peak
2462	85.87	-	-	82.25	32.98	2.15	31.51	100	261	Average
2462	96.49	-	-	92.87	32.98	2.15	31.51	100	261	Peak



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
150.011	17.07	-26.43	43.5	39.92	10	0.73	33.58	-	-	Peak
284.977	22.23	-23.77	46	41.89	12.76	0.97	33.39	-	-	Peak
414.722	24.87	-21.13	46	40.91	16.08	1.16	33.28	-	-	Peak
449.556	24.37	-21.63	46	40.08	16.3	1.2	33.21	-	-	Peak
782.345	27.34	-18.66	46	38.52	19.86	1.63	32.67	-	-	Peak
958.794	40.82	-5.18	46	50.71	20.78	1.77	32.44	124	54	Peak
2412	90.34	-	-	86.84	32.89	2.12	31.51	100	303	Average
2412	100.32	-	-	96.82	32.89	2.12	31.51	100	303	Peak

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
30.638	20.64	-19.36	40	36.59	17.29	0.34	33.58	-	-	Peak
47.826	19.48	-20.52	40	44.15	8.5	0.43	33.6	-	-	Peak
88.964	18.88	-24.62	43.5	43.34	8.61	0.55	33.62	-	-	Peak
129.015	20.78	-22.72	43.5	41.99	11.71	0.67	33.59	-	-	Peak
449.556	21.41	-24.59	46	37.12	16.3	1.2	33.21	-	-	Peak
938.833	38.65	-7.35	46	48.66	20.68	1.75	32.44	120	0	Peak
2412	88.34	-	-	84.84	32.89	2.12	31.51	137	20	Average
2412	97.57	-	-	94.07	32.89	2.12	31.51	137	20	Peak



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
44.12	17.04	-22.96	40	40.65	9.6	0.41	33.62	-	-	Peak
159.225	16.88	-26.62	43.5	40.08	9.64	0.74	33.58	-	-	Peak
289.002	21.12	-24.88	46	40.69	12.84	0.98	33.39	-	-	Peak
406.088	25.32	-20.68	46	41.44	16.03	1.15	33.3	-	-	Peak
449.556	26.96	-19.04	46	42.67	16.3	1.2	33.21	-	-	Peak
942.131	38.02	-7.98	46	48.01	20.7	1.75	32.44	124	54	Peak
2437	91.68	-	-	88.1	32.95	2.14	31.51	100	185	Average
2437	100.58	-	-	97	32.95	2.14	31.51	100	185	Peak

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
47.826	20.47	-19.53	40	45.14	8.5	0.43	33.6	-	-	Peak
53.882	19.69	-20.31	40	46.32	6.49	0.46	33.58	-	-	Peak
88.964	19.1	-24.4	43.5	43.56	8.61	0.55	33.62	-	-	Peak
129.015	20.2	-23.3	43.5	41.41	11.71	0.67	33.59	-	-	Peak
452.72	22.88	-23.12	46	38.53	16.34	1.21	33.2	-	-	Peak
938.833	38.44	-7.56	46	48.45	20.68	1.75	32.44	120	154	Peak
2437	87.39	-	-	83.81	32.95	2.14	31.51	135	168	Average
2437	95.94	-	-	92.36	32.95	2.14	31.51	135	168	Peak



<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
129.015	15.93	-27.57	43.5	37.14	11.71	0.67	33.59	-	-	Peak
159.225	16.64	-26.86	43.5	39.84	9.64	0.74	33.58	-	-	Peak
285.978	21.63	-24.37	46	41.27	12.78	0.97	33.39	-	-	Peak
452.72	24.36	-21.64	46	40.01	16.34	1.21	33.2	-	-	Peak
782.345	25.3	-20.7	46	36.48	19.86	1.63	32.67	-	-	Peak
945.44	38.2	-7.8	46	48.18	20.71	1.75	32.44	165	41	Peak
2462	91.91	-	-	88.29	32.98	2.15	31.51	103	236	Average
2462	101.44	-	-	97.82	32.98	2.15	31.51	103	236	Peak

<b>Test Mode :</b>	802.11n-HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
33.211	20.57	-19.43	40	37.77	16.04	0.35	33.59	-	-	Peak
47.826	20.22	-19.78	40	44.89	8.5	0.43	33.6	-	-	Peak
88.964	18.37	-25.13	43.5	42.83	8.61	0.55	33.62	-	-	Peak
129.015	20.48	-23.02	43.5	41.69	11.71	0.67	33.59	-	-	Peak
449.556	23.73	-22.27	46	39.44	16.3	1.2	33.21	-	-	Peak
945.44	36.64	-9.36	46	46.62	20.71	1.75	32.44	132	154	Peak
2462	86.89	-	-	83.27	32.98	2.15	31.51	111	166	Average
2462	96.93	-	-	93.31	32.98	2.15	31.51	111	166	Peak



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
30.745	19.35	-20.65	40	35.3	17.29	0.34	33.58	-	-	Peak
44.12	16.95	-23.05	40	40.56	9.6	0.41	33.62	-	-	Peak
290.017	20.56	-25.44	46	40.11	12.85	0.98	33.38	-	-	Peak
449.556	24.16	-21.84	46	39.87	16.3	1.2	33.21	-	-	Peak
782.345	23.43	-22.57	46	34.61	19.86	1.63	32.67	-	-	Peak
945.44	32.78	-13.22	46	42.76	20.71	1.75	32.44	110	251	Peak
2422	92.37	-	-	88.83	32.92	2.13	31.51	104	306	Average
2422	99.35	-	-	95.81	32.92	2.13	31.51	104	306	Peak

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
34.639	20.49	-19.51	40	38.63	15.1	0.37	33.61	100	0	Peak
47.826	20.01	-19.99	40	44.68	8.5	0.43	33.6	-	-	Peak
88.964	19.8	-23.7	43.5	44.26	8.61	0.55	33.62	-	-	Peak
129.015	20.67	-22.83	43.5	41.88	11.71	0.67	33.59	-	-	Peak
449.556	24.31	-21.69	46	40.02	16.3	1.2	33.21	-	-	Peak
962.162	32.63	-21.37	54	42.5	20.8	1.77	32.44	-	-	Peak
2422	86.52	-	-	82.98	32.92	2.13	31.51	112	167	Average
2422	93.87	-	-	90.33	32.92	2.13	31.51	112	167	Peak



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
30.531	19.43	-20.57	40	35.38	17.29	0.34	33.58	-	-	Peak
44.12	17.11	-22.89	40	40.72	9.6	0.41	33.62	-	-	Peak
150.011	16.09	-27.41	43.5	38.94	10	0.73	33.58	-	-	Peak
285.978	21.17	-24.83	46	40.81	12.78	0.97	33.39	-	-	Peak
452.72	25.86	-20.14	46	41.51	16.34	1.21	33.2	-	-	Peak
938.833	37.65	-8.35	46	47.66	20.68	1.75	32.44	120	154	Peak
2437	93.71	-	-	90.13	32.95	2.14	31.51	102	233	Average
2437	99.43	-	-	95.85	32.95	2.14	31.51	102	233	Peak

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
47.826	20.13	-19.87	40	44.8	8.5	0.43	33.6	-	-	Peak
88.964	17.89	-25.61	43.5	42.35	8.61	0.55	33.62	-	-	Peak
129.015	20.2	-23.3	43.5	41.41	11.71	0.67	33.59	-	-	Peak
449.556	25.09	-20.91	46	40.8	16.3	1.2	33.21	-	-	Peak
782.345	25.41	-20.59	46	36.59	19.86	1.63	32.67	-	-	Peak
958.794	38.9	-7.1	46	48.79	20.78	1.77	32.44	112	54	Peak
2437	88.33	-	-	84.75	32.95	2.14	31.51	138	168	Average
2437	94.4	-	-	90.82	32.95	2.14	31.51	138	168	Peak



<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
30.105	18.88	-21.12	40	34.11	18	0.34	33.57	-	-	Peak
158.668	15.75	-27.75	43.5	38.95	9.64	0.74	33.58	-	-	Peak
283.979	21.55	-24.45	46	41.23	12.74	0.97	33.39	-	-	Peak
446.414	26.2	-19.8	46	41.93	16.28	1.2	33.21	-	-	Peak
782.345	28.22	-17.78	46	39.4	19.86	1.63	32.67	124	124	Peak
962.162	31.66	-22.34	54	41.53	20.8	1.77	32.44	-	-	Peak
2452	92.85	-	-	89.27	32.95	2.14	31.51	102	300	Average
2452	99.46	-	-	95.88	32.95	2.14	31.51	102	300	Peak

<b>Test Mode :</b>	802.11n-HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Steven Hao	<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
47.826	20.99	-19.01	40	45.66	8.5	0.43	33.6	-	-	Peak
88.964	18.07	-25.43	43.5	42.53	8.61	0.55	33.62	-	-	Peak
129.015	21.04	-22.46	43.5	42.25	11.71	0.67	33.59	-	-	Peak
449.556	23.78	-22.22	46	39.49	16.3	1.2	33.21	-	-	Peak
782.345	23.5	-22.5	46	34.68	19.86	1.63	32.67	-	-	Peak
945.44	29.7	-16.3	46	39.68	20.71	1.75	32.44	124	54	Peak
2452	86.82	-	-	83.24	32.95	2.14	31.51	176	260	Average
2452	93.72	-	-	90.14	32.95	2.14	31.51	176	260	Peak

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 KHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

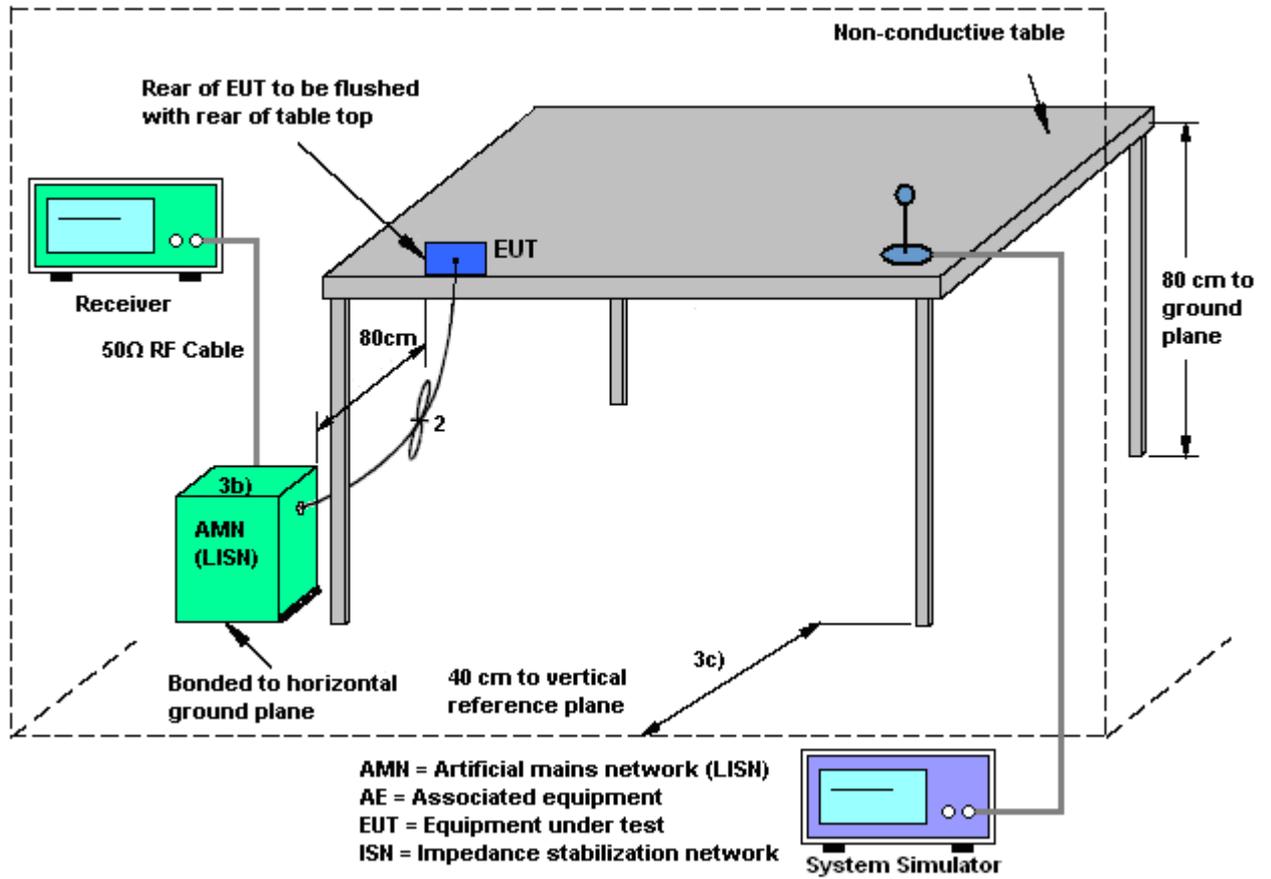
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

1. The testing follows the guidelines in 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.

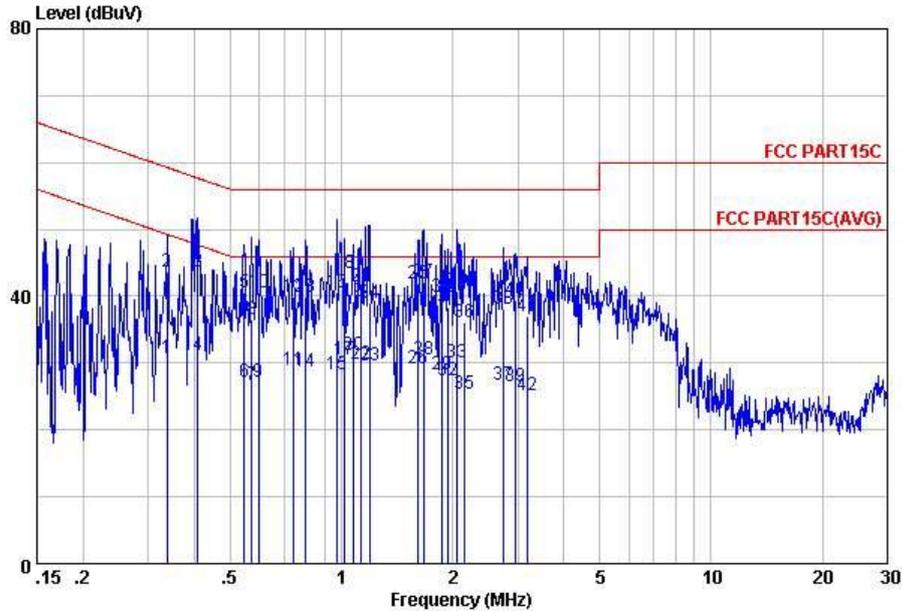
### 3.6.4 Test Setup





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 :	WLAN Link + Bluetooth Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC CLASS-B LISN-111230 LINE  
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.34	30.67	-18.60	49.27	20.50	-0.08	10.25	Average
2	0.34	43.77	-15.50	59.27	33.60	-0.08	10.25	QP
3	0.41	43.77	-13.91	57.68	33.60	-0.08	10.25	QP
4	0.41	31.27	-16.41	47.68	21.10	-0.08	10.25	Average
5	0.55	40.57	-15.43	56.00	30.39	-0.08	10.26	QP
6	0.55	27.27	-18.73	46.00	17.09	-0.08	10.26	Average
7	0.57	26.68	-19.32	46.00	16.50	-0.08	10.26	Average
8	0.57	36.48	-19.52	56.00	26.30	-0.08	10.26	QP
9	0.60	27.18	-18.82	46.00	17.01	-0.09	10.26	Average
10	0.60	40.48	-15.52	56.00	30.31	-0.09	10.26	QP
11	0.74	28.88	-17.12	46.00	18.70	-0.09	10.27	Average
12	0.74	39.88	-16.12	56.00	29.70	-0.09	10.27	QP
13	0.80	39.98	-16.02	56.00	29.79	-0.09	10.28	QP
14	0.80	28.68	-17.32	46.00	18.49	-0.09	10.28	Average
15	0.97	28.28	-17.72	46.00	18.10	-0.10	10.28	Average
16	0.97	40.48	-15.52	56.00	30.30	-0.10	10.28	QP
17	1.02	30.48	-15.52	46.00	20.30	-0.10	10.28	Average
18	1.02	43.38	-12.62	56.00	33.20	-0.10	10.28	QP
19	1.08	39.18	-16.82	56.00	29.00	-0.10	10.28	QP
20	1.08	31.18	-14.82	46.00	21.00	-0.10	10.28	Average
21	1.13	41.48	-14.52	56.00	31.30	-0.10	10.28	QP
22	1.13	29.78	-16.22	46.00	19.60	-0.10	10.28	Average
23	1.19	29.58	-16.42	46.00	19.40	-0.10	10.28	Average
24	1.19	38.98	-17.02	56.00	28.80	-0.10	10.28	QP
25	1.61	41.89	-14.11	56.00	31.70	-0.11	10.30	QP
26	1.61	29.19	-16.81	46.00	19.00	-0.11	10.30	Average
27	1.67	42.19	-13.81	56.00	32.00	-0.11	10.30	QP

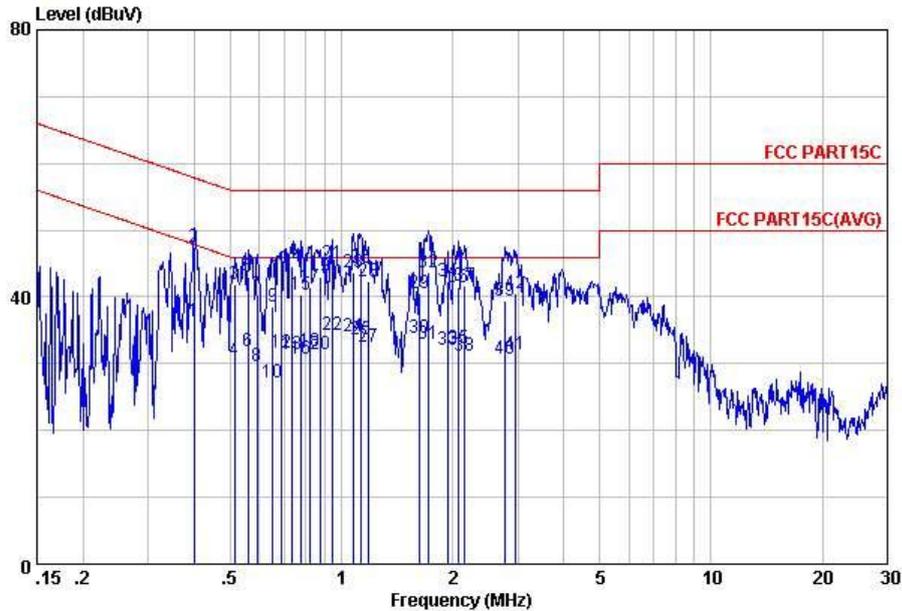


Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Bluetooth Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
28	1.67	30.49	-15.51	46.00	20.30	-0.11	10.30	Average
29	1.87	28.39	-17.61	46.00	18.20	-0.11	10.30	Average
30	1.87	39.79	-16.21	56.00	29.60	-0.11	10.30	QP
31	1.94	38.29	-17.71	56.00	28.10	-0.11	10.30	QP
32	1.94	27.49	-18.51	46.00	17.30	-0.11	10.30	Average
33	2.04	29.99	-16.01	46.00	19.80	-0.11	10.30	Average
34	2.04	40.79	-15.21	56.00	30.60	-0.11	10.30	QP
35	2.14	25.49	-20.51	46.00	15.30	-0.11	10.30	Average
36	2.14	36.19	-19.81	56.00	26.00	-0.11	10.30	QP
37	2.75	26.80	-19.20	46.00	16.61	-0.12	10.31	Average
38	2.75	38.20	-17.80	56.00	28.01	-0.12	10.31	QP
39	2.95	26.50	-19.50	46.00	16.30	-0.12	10.32	Average
40	2.95	39.40	-16.60	56.00	29.20	-0.12	10.32	QP
41	3.17	37.10	-18.90	56.00	26.90	-0.12	10.32	QP
42	3.17	25.10	-20.90	46.00	14.90	-0.12	10.32	Average



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



Site : C001-KS  
 Condition: FCC CLASS-B LISN-111230 NEUTRAL

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.40	36.27	-11.59	47.86	26.10	-0.08	10.25	Average
2	0.40	47.37	-10.49	57.86	37.20	-0.08	10.25	QP
3	0.51	41.98	-14.02	56.00	31.80	-0.08	10.26	QP
4	0.51	30.48	-15.52	46.00	20.30	-0.08	10.26	Average
5	0.56	42.98	-13.02	56.00	32.80	-0.08	10.26	QP
6	0.56	31.78	-14.22	46.00	21.60	-0.08	10.26	Average
7	0.59	40.38	-15.62	56.00	30.20	-0.08	10.26	QP
8	0.59	29.68	-16.32	46.00	19.50	-0.08	10.26	Average
9	0.65	38.49	-17.51	56.00	28.30	-0.08	10.27	QP
10	0.65	27.19	-18.81	46.00	17.00	-0.08	10.27	Average
11	0.69	43.09	-12.91	56.00	32.90	-0.08	10.27	QP
12	0.69	31.59	-14.41	46.00	21.40	-0.08	10.27	Average
13	0.73	31.49	-14.51	46.00	21.30	-0.08	10.27	Average
14	0.73	44.59	-11.41	56.00	34.40	-0.08	10.27	QP
15	0.78	40.39	-15.61	56.00	30.20	-0.08	10.27	QP
16	0.78	30.79	-15.21	46.00	20.60	-0.08	10.27	Average
17	0.82	41.39	-14.61	56.00	31.19	-0.08	10.28	QP
18	0.82	31.79	-14.21	46.00	21.59	-0.08	10.28	Average
19	0.88	43.09	-12.91	56.00	32.90	-0.09	10.28	QP
20	0.88	31.39	-14.61	46.00	21.20	-0.09	10.28	Average
21	0.95	45.09	-10.91	56.00	34.90	-0.09	10.28	QP
22	0.95	34.29	-11.71	46.00	24.10	-0.09	10.28	Average
23	1.08	43.59	-12.41	56.00	33.40	-0.09	10.28	QP
24	1.08	34.09	-11.91	46.00	23.90	-0.09	10.28	Average
25	1.13	33.59	-12.41	46.00	23.40	-0.09	10.28	Average
26	1.13	44.29	-11.71	56.00	34.10	-0.09	10.28	QP
27	1.18	32.59	-13.41	46.00	22.40	-0.09	10.28	Average



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	19~20°C																																																																																																																																																																		
<b>Test Engineer :</b>	Tom Wang	<b>Relative Humidity :</b>	39~40%																																																																																																																																																																		
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	<table border="1"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>LISN</th> <th>Cable</th> <th></th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV</th> <th>Limit</th> <th>Line</th> <th>Level</th> <th>Factor</th> <th>Loss</th> <th>Remark</th> </tr> <tr> <th></th> <th></th> <th></th> <th>dB</th> <th>dBuV</th> <th>dBuV</th> <th>dB</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr><td>28</td><td>1.18</td><td>42.39</td><td>-13.61</td><td>56.00</td><td>32.20</td><td>-0.09</td><td>10.28</td><td>QP</td></tr> <tr><td>29</td><td>1.63</td><td>40.49</td><td>-15.51</td><td>56.00</td><td>30.30</td><td>-0.11</td><td>10.30</td><td>QP</td></tr> <tr><td>30</td><td>1.63</td><td>33.89</td><td>-12.11</td><td>46.00</td><td>23.70</td><td>-0.11</td><td>10.30</td><td>Average</td></tr> <tr><td>31</td><td>1.73</td><td>32.89</td><td>-13.11</td><td>46.00</td><td>22.70</td><td>-0.11</td><td>10.30</td><td>Average</td></tr> <tr><td>32</td><td>1.73</td><td>43.59</td><td>-12.41</td><td>56.00</td><td>33.40</td><td>-0.11</td><td>10.30</td><td>QP</td></tr> <tr><td>33</td><td>1.94</td><td>32.09</td><td>-13.91</td><td>46.00</td><td>21.90</td><td>-0.11</td><td>10.30</td><td>Average</td></tr> <tr><td>34</td><td>1.94</td><td>42.39</td><td>-13.61</td><td>56.00</td><td>32.20</td><td>-0.11</td><td>10.30</td><td>QP</td></tr> <tr><td>35</td><td>2.08</td><td>32.39</td><td>-13.61</td><td>46.00</td><td>22.20</td><td>-0.11</td><td>10.30</td><td>Average</td></tr> <tr><td>36</td><td>2.08</td><td>41.49</td><td>-14.51</td><td>56.00</td><td>31.30</td><td>-0.11</td><td>10.30</td><td>QP</td></tr> <tr><td>37</td><td>2.16</td><td>41.59</td><td>-14.41</td><td>56.00</td><td>31.40</td><td>-0.11</td><td>10.30</td><td>QP</td></tr> <tr><td>38</td><td>2.16</td><td>31.09</td><td>-14.91</td><td>46.00</td><td>20.90</td><td>-0.11</td><td>10.30</td><td>Average</td></tr> <tr><td>39</td><td>2.78</td><td>39.40</td><td>-16.60</td><td>56.00</td><td>29.21</td><td>-0.12</td><td>10.31</td><td>QP</td></tr> <tr><td>40</td><td>2.78</td><td>30.80</td><td>-15.20</td><td>46.00</td><td>20.61</td><td>-0.12</td><td>10.31</td><td>Average</td></tr> <tr><td>41</td><td>2.96</td><td>31.50</td><td>-14.50</td><td>46.00</td><td>21.30</td><td>-0.12</td><td>10.32</td><td>Average</td></tr> <tr><td>42</td><td>2.96</td><td>40.50</td><td>-15.50</td><td>56.00</td><td>30.30</td><td>-0.12</td><td>10.32</td><td>QP</td></tr> </tbody> </table>		Freq	Level	Over	Limit	Read	LISN	Cable			MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark				dB	dBuV	dBuV	dB	dB		28	1.18	42.39	-13.61	56.00	32.20	-0.09	10.28	QP	29	1.63	40.49	-15.51	56.00	30.30	-0.11	10.30	QP	30	1.63	33.89	-12.11	46.00	23.70	-0.11	10.30	Average	31	1.73	32.89	-13.11	46.00	22.70	-0.11	10.30	Average	32	1.73	43.59	-12.41	56.00	33.40	-0.11	10.30	QP	33	1.94	32.09	-13.91	46.00	21.90	-0.11	10.30	Average	34	1.94	42.39	-13.61	56.00	32.20	-0.11	10.30	QP	35	2.08	32.39	-13.61	46.00	22.20	-0.11	10.30	Average	36	2.08	41.49	-14.51	56.00	31.30	-0.11	10.30	QP	37	2.16	41.59	-14.41	56.00	31.40	-0.11	10.30	QP	38	2.16	31.09	-14.91	46.00	20.90	-0.11	10.30	Average	39	2.78	39.40	-16.60	56.00	29.21	-0.12	10.31	QP	40	2.78	30.80	-15.20	46.00	20.61	-0.12	10.31	Average	41	2.96	31.50	-14.50	46.00	21.30	-0.12	10.32	Average	42	2.96	40.50	-15.50	56.00	30.30	-0.12	10.32	QP		
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## **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	Nov. 08, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY451015 55	N/A	Aug. 22, 2012	Nov. 08, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY444211 98	N/A	Aug. 22, 2012	Nov. 08, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Nov. 08, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-9605 02	N/A	Dec. 30, 2011	Nov. 08, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Nov. 14, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Nov. 14, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Nov. 14, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Nov. 14, 2012	Jul. 02, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Nov. 14, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Nov. 14, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Dec. 30, 2011	Nov. 14, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 06, 2012	Nov. 14, 2012	Nov. 05, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15GHz~40GHz	Oct. 12, 2012	Nov. 14, 2012	Oct.11, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Nov. 05, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Nov. 05, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Nov. 05, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 16, 2011	Nov. 05, 2012	Nov. 15, 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 EP2O2604 as below.