FCC RF Test Report

APPLICANT	:	Ubiquiti Networks
EQUIPMENT	:	m POWER
BRAND NAME	:	Ubiquiti Networks
MODEL NAME	:	mPower
FCC ID	:	SWX-MPOWER
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jul. 26, 2012 and completely tested on Aug. 16, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR272643	Rev. 01	Initial issue of report	Aug. 20, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	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 0.19 dB at 2489.200 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.90 dB at 0.150 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Ubiquiti Networks
2580 Orchard Parkway San Jose, CA 95131

1.2 Manufacturer

Nanning FuGui Precision Industrial Co., LTD
No. 18, Zhongbu Road, Nanning New& High-Tech Industrial Development Zone, Guangxi

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	m POWER
Brand Name	Ubiquiti Networks
Model Name	mPower
FCC ID	SWX-MPOWER
EUT supports Radios application	WLAN 11bgn
EUT Stage	Production Unit

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

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 19.74 dBm (0.0942 W) 802.11g : 21.05 dBm (0.1274 W) 802.11n HT-20 : 20.76 dBm (0.1191 W) 802.11n HT-40 : 20.28 dBm (0.1067 W)
99% Occupied Bandwidth	802.11b : 15.25MHz 802.11g : 19.20MHz 802.11n HT-20 : 19.55MHz 802.11n HT-40 : 37.70MHz
Antenna Type	Monopole Antenna with gain 4.00 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH02-HY	CO05-HY	03CH05-HY	722060/4086B-1

1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01
- FCC TCB Workshop 2012, April
- 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.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
3.	Lamp	N/A	N/A	N/A	N/A	Unshielded, 1.8 m
4.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	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).

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

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

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.42	19.44	19.67	**19.74**

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	20.42	20.42	20.44	20.67	20.57	20.95	21.03	**21.05**

2.4GHz 802.11n HT-20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.97	19.98	19.97	19.88	19.89	20.74	20.67	**20.76**

2.4GHz 802.11n HT-40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.38	19.33	19.54	19.58	19.34	20.22	20.25	**20.28**

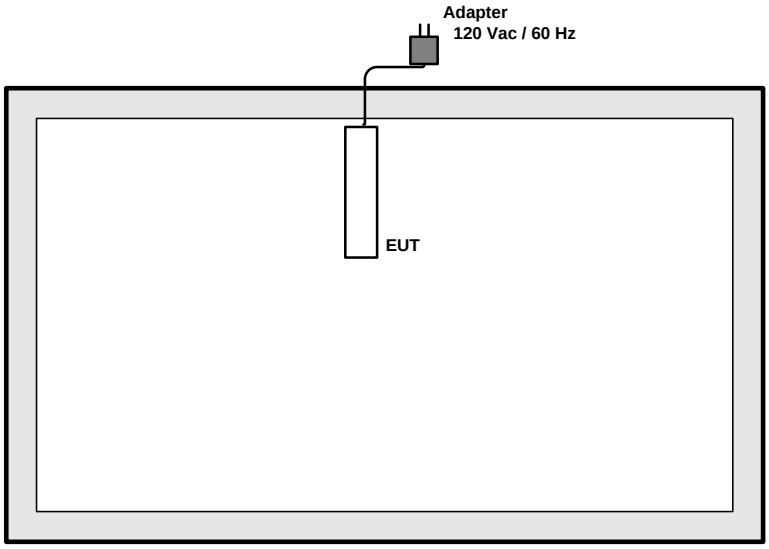
2.3 Test Mode

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

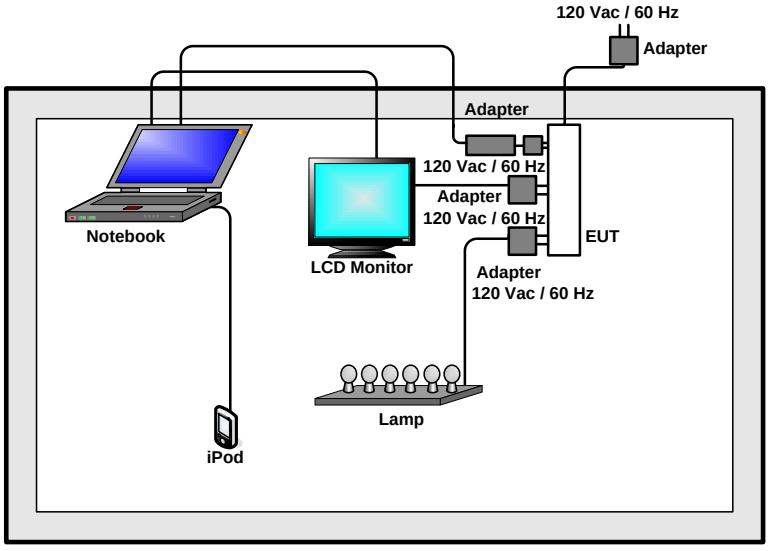
Test Cases				
	Test Items	**Mode**	**Data Rate**	**Test Channel**
Conducted TCs	**6dB and 99% BW Power Spectral Density**	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT-20	**6.5 Mbps**	**1/6/11**
		802.11n HT-40	**13.5 Mbps**	**3/6/9**
	Output Power	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT-20	**6.5 Mbps**	**1/6/11**
		802.11n HT-40	**13.5 Mbps**	**3/6/9**
	Conducted Band EDGE	**802.11b**	**1 Mbps**	**1/11**
		802.11g	**6 Mbps**	**1/11**
		802.11n HT-20	**6.5 Mbps**	**1/11**
		802.11n HT-40	**13.5 Mbps**	**3/9**
	Conducted Spurious Emission	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT-20	**6.5 Mbps**	**1/6/11**
		802.11n HT-40	**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 HT-20	**6.5 Mbps**	**1/11**
		802.11n HT-40	**13.5 Mbps**	**3/9**
	Radiated Spurious Emission	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT-20	**6.5 Mbps**	**1/6/11**
		802.11n HT-40	**13.5 Mbps**	**3/6/9**
AC Conducted Emission	Mode 1 ： WLAN Link + TC			
Remark: TC stands for Test Configuration, and consists of notebook, LCD Monitor, and lamp.				

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

For WLAN function, programmed RF utility, “art2_ver_2_59BIN” installed in the notebook 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 FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW).Set the Video bandwidth (VBW) ≥ 3 * RBW. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.

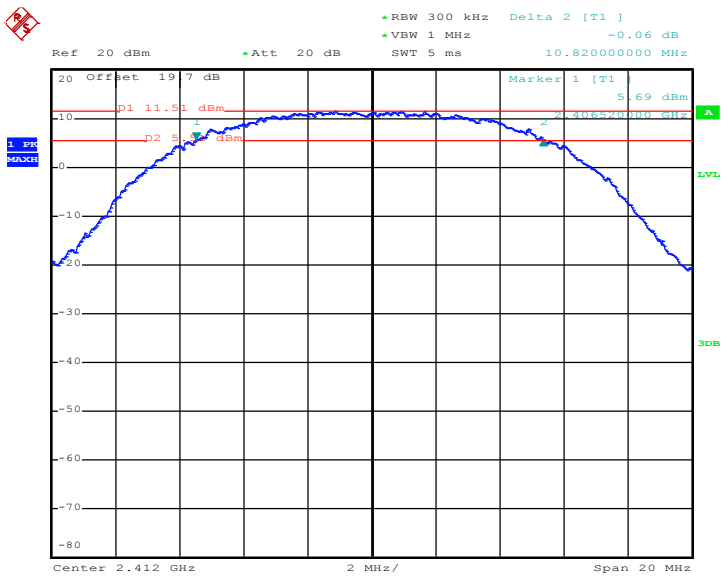
3.1.4 Test Setup

3.1.5 Test Result of 6dB Bandwidth

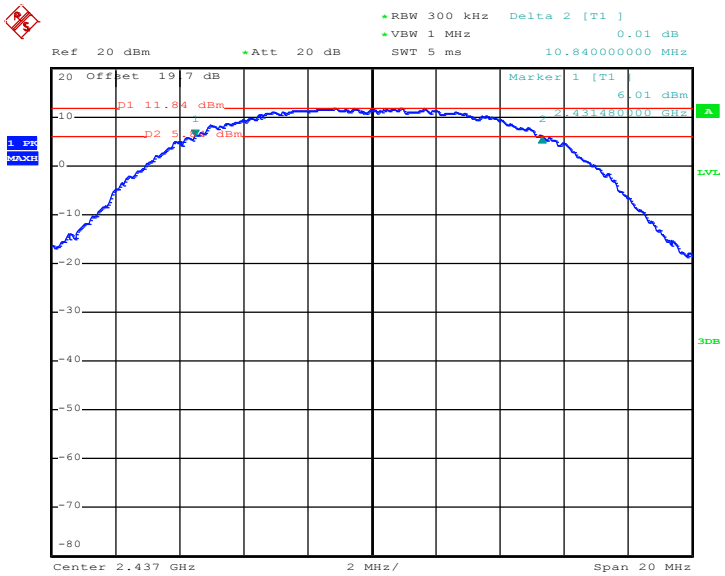
Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.82	0.5	Pass
06	2437	10.84	0.5	Pass
11	2462	10.84	0.5	Pass

6 dB Bandwidth Plot on 802.11b Channel 01



6 dB Bandwidth Plot on 802.11b Channel 06



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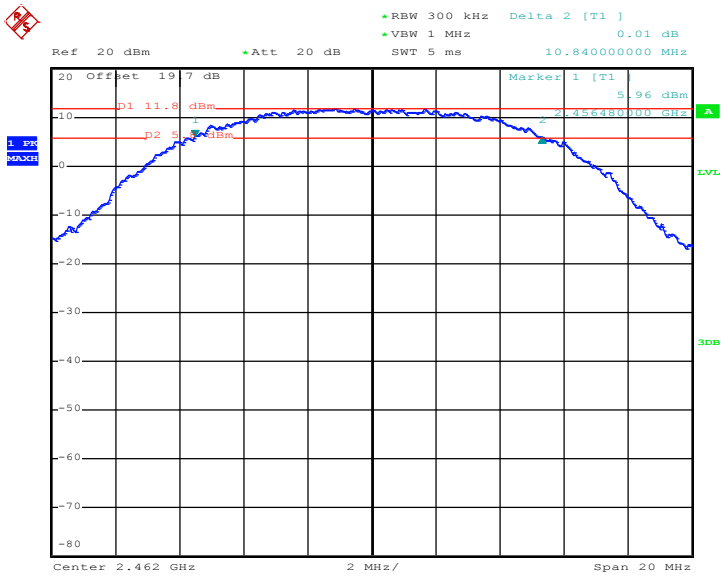
6 dB Bandwidth Plot on 802.11b Channel 11



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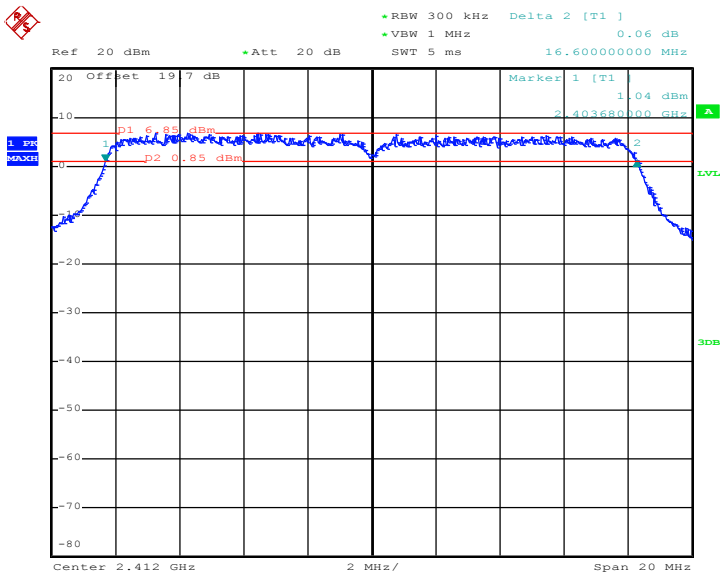
Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.60	0.5	Pass
06	2437	16.56	0.5	Pass
11	2462	16.56	0.5	Pass

6 dB Bandwidth Plot on 802.11g Channel 01



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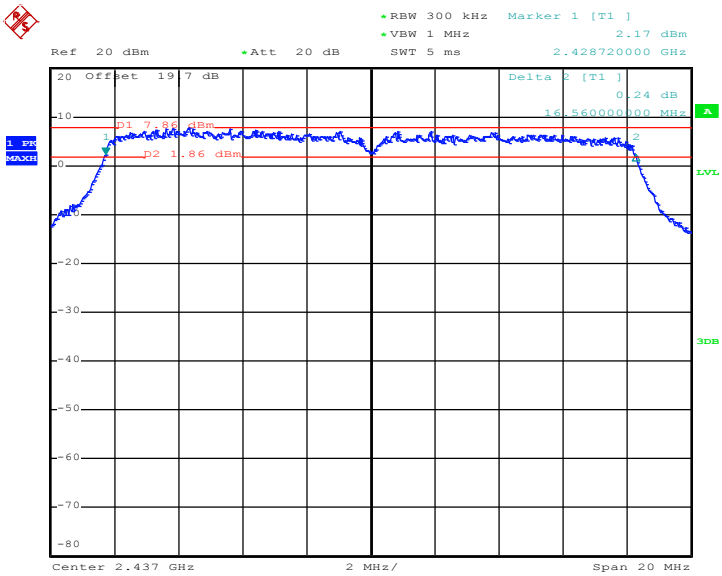
6 dB Bandwidth Plot on 802.11g Channel 06



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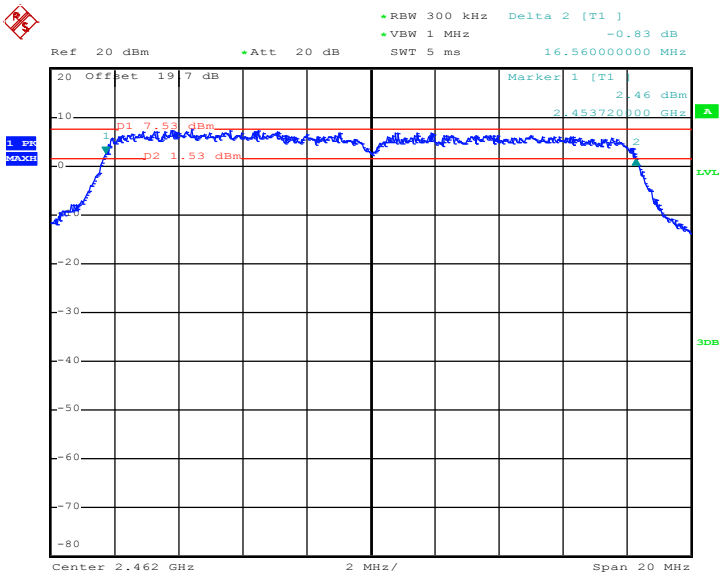
6 dB Bandwidth Plot on 802.11g Channel 11

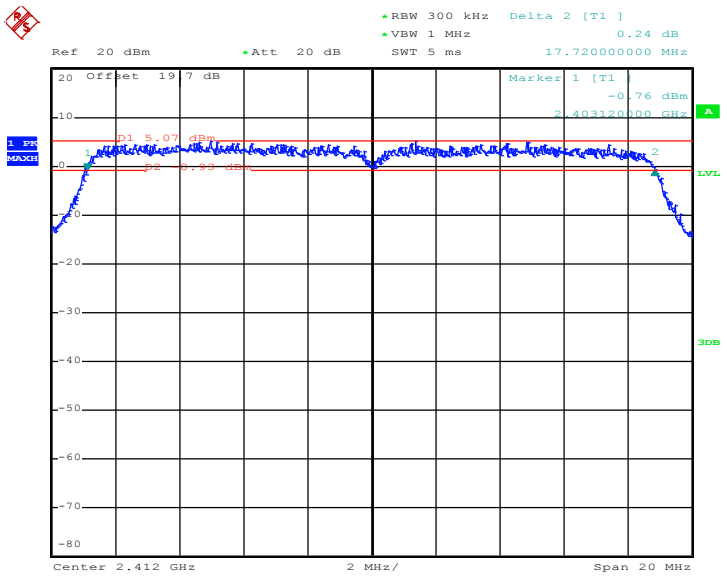


Date: 7.AUG.2012 08:51:04

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.72	0.5	Pass
06	2437	17.72	0.5	Pass
11	2462	17.68	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT-20 Channel 01



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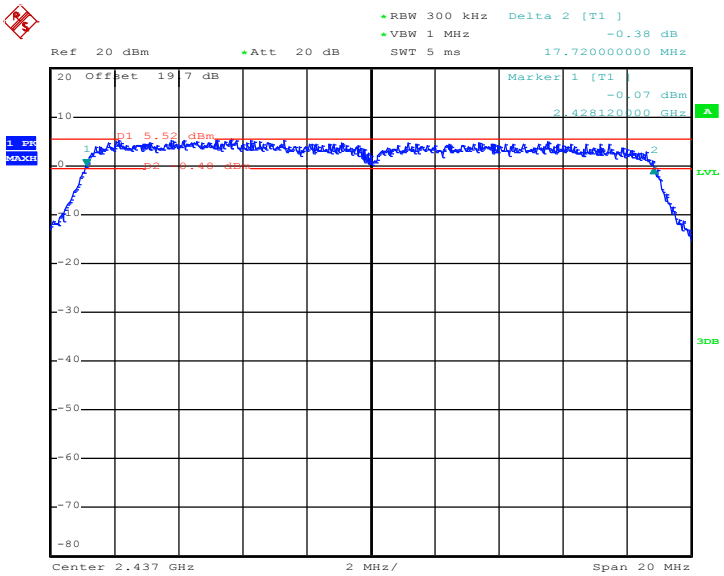
6 dB Bandwidth Plot on 802.11n HT-20 Channel 06



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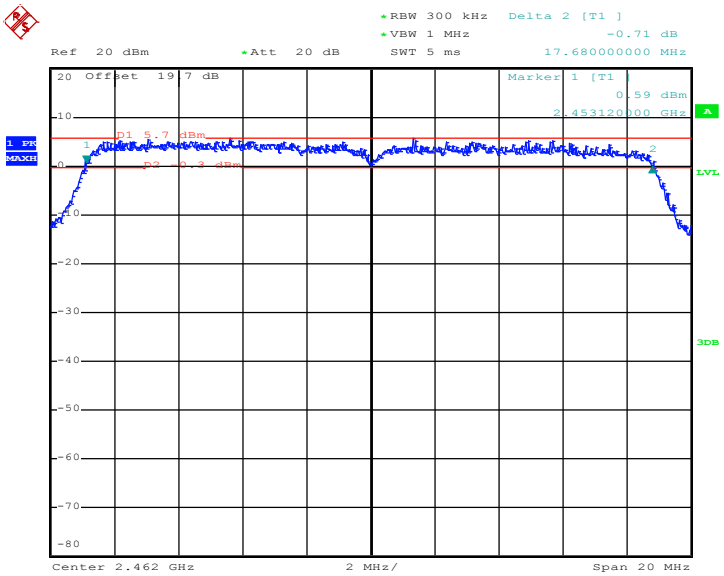
6 dB Bandwidth Plot on 802.11n HT-20 Channel 11



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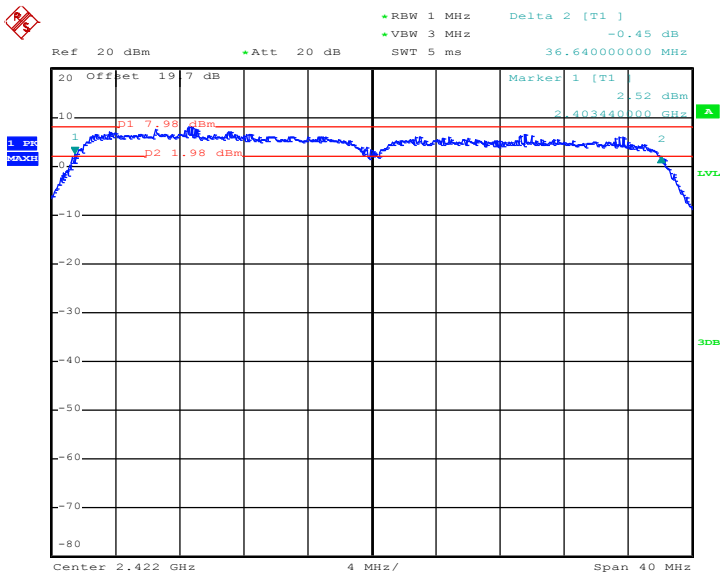
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.64	0.5	Pass
06	2437	36.32	0.5	Pass
09	2452	36.32	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT-40 Channel 03



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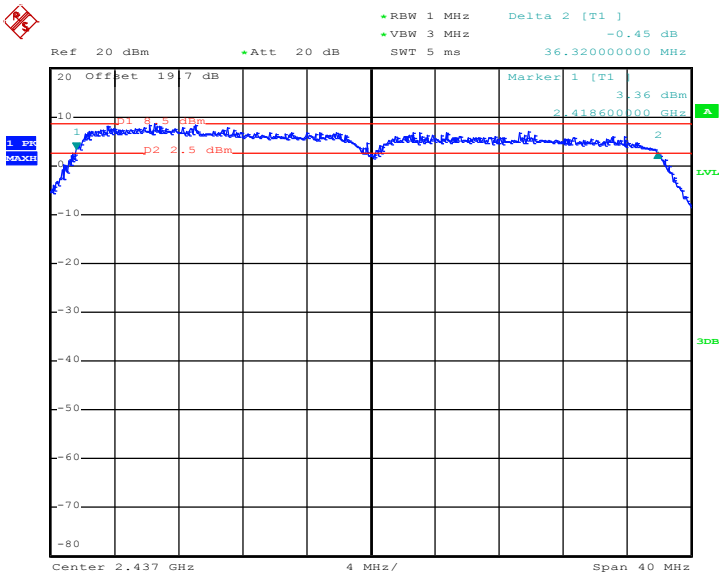
6 dB Bandwidth Plot on 802.11n HT-40 Channel 06



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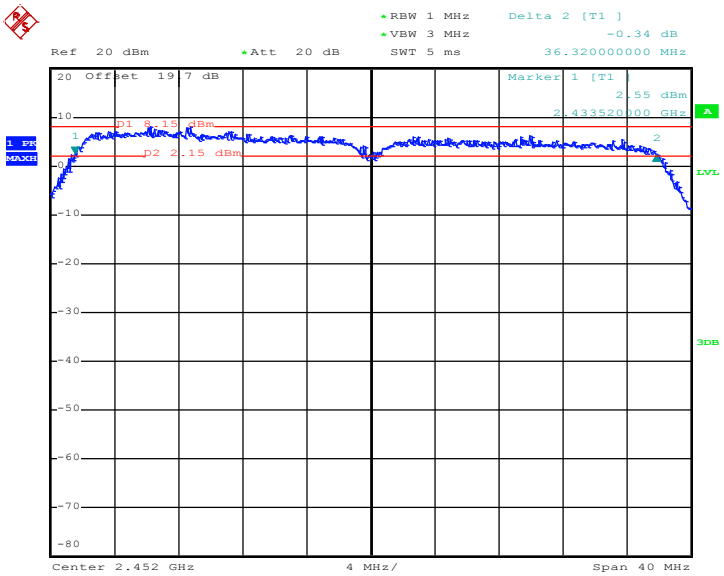
6 dB Bandwidth Plot on 802.11n HT-40Channel 09



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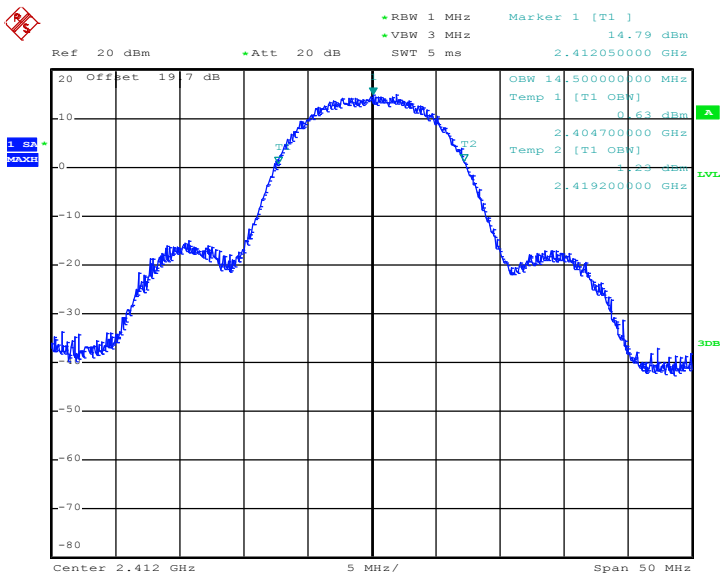
3.1.6 Test Result of 99% Occupied Bandwidth

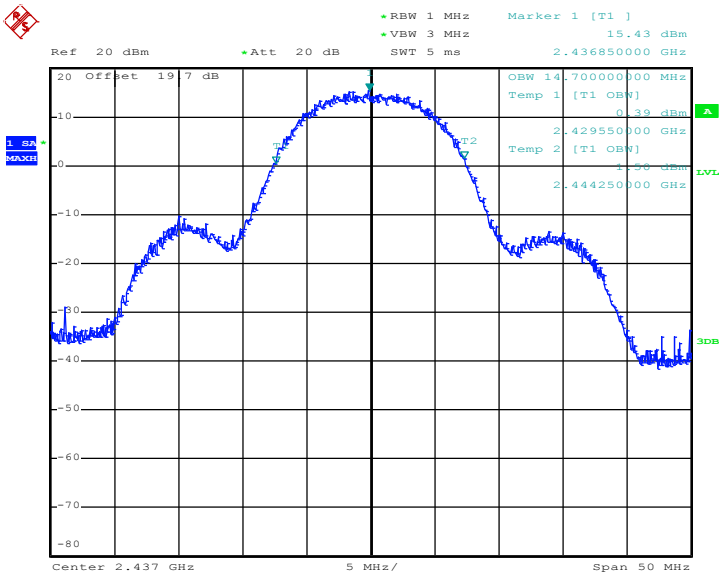
Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.50	Pass
06	2437	14.70	Pass
11	2462	15.25	Pass

99% Occupied Bandwidth Plot on 802.11b Channel 01



99% Occupied Bandwidth Plot on 802.11b Channel 06



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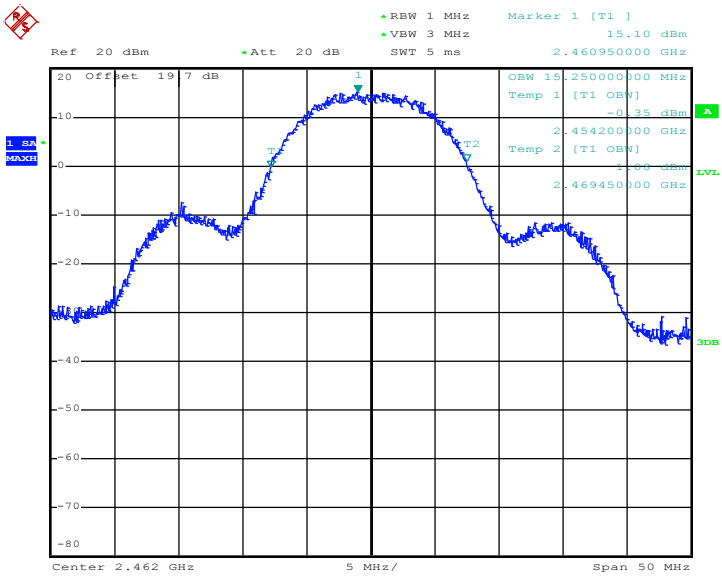
99% Occupied Bandwidth Plot on 802.11b Channel 11



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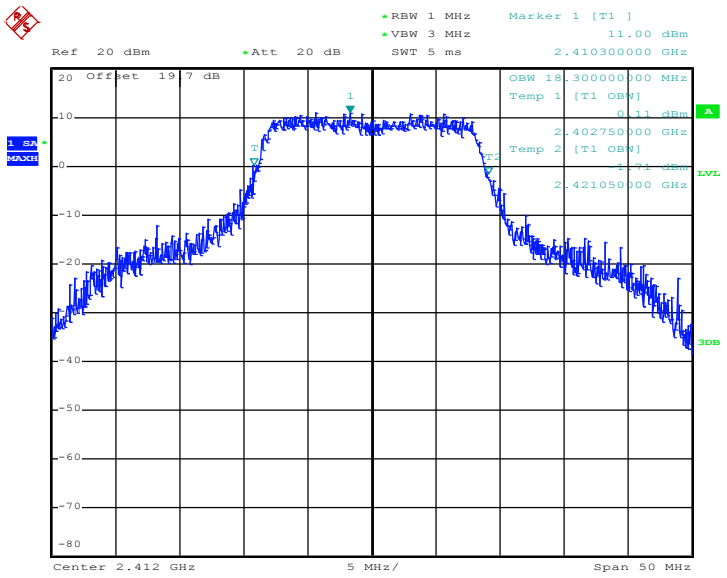
Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.30	Pass
06	2437	18.70	Pass
11	2462	19.20	Pass

99% Occupied Bandwidth Plot on 802.11g Channel 01



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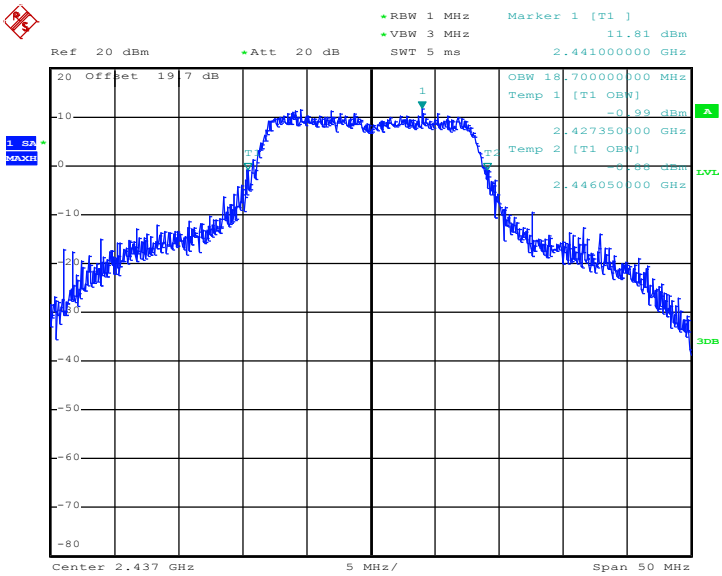
99% Occupied Bandwidth Plot on 802.11g Channel 06



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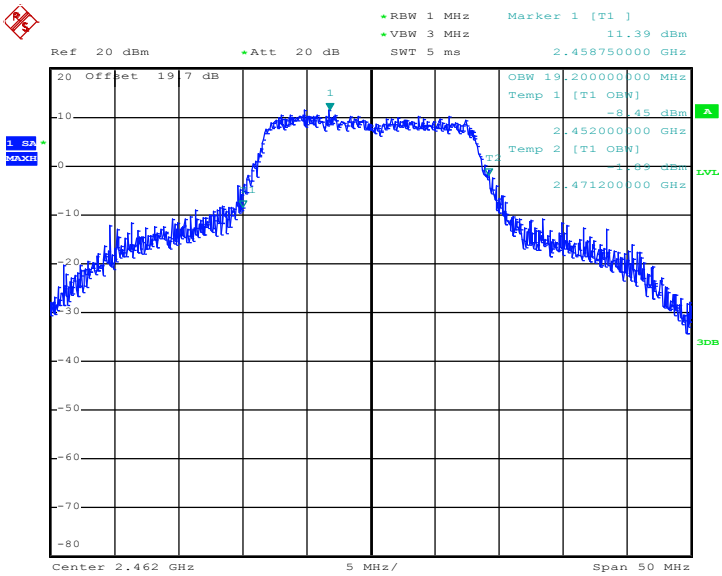
99% Occupied Bandwidth Plot on 802.11g Channel 11



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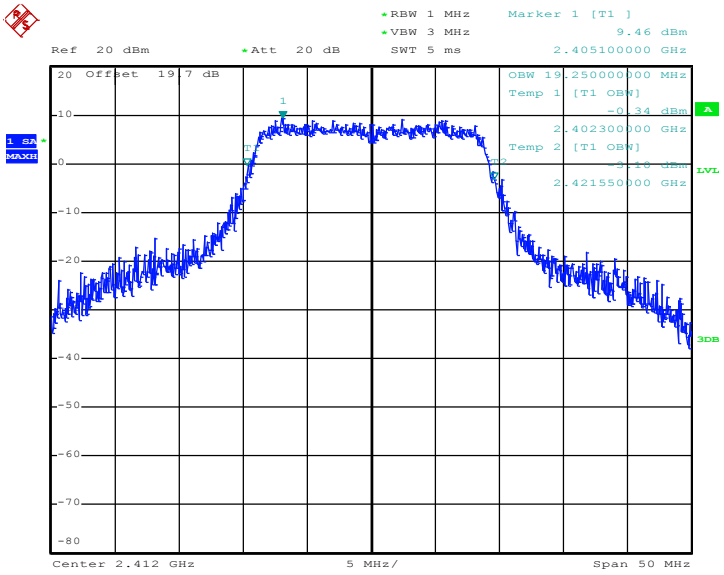
Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.25	Pass
06	2437	19.45	Pass
11	2462	19.55	Pass

99% Occupied Bandwidth Plot 802.11n HT-20 Channel 01



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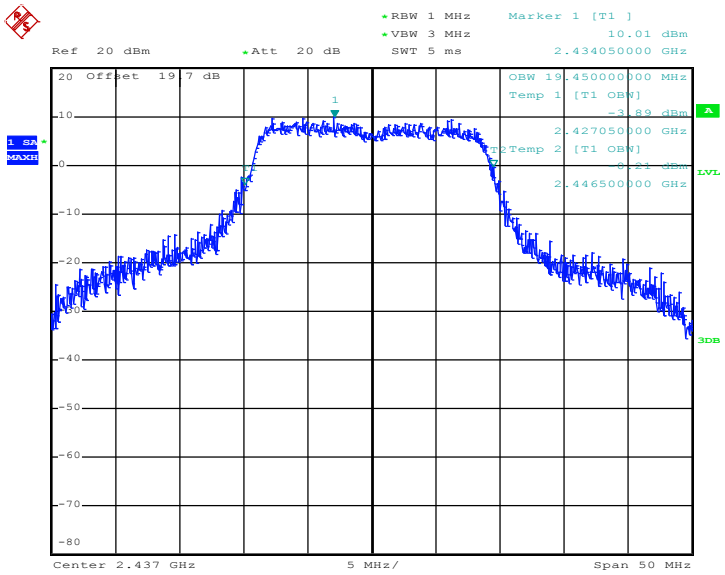
99% Occupied Bandwidth Plot 802.11n HT-20 Channel 06



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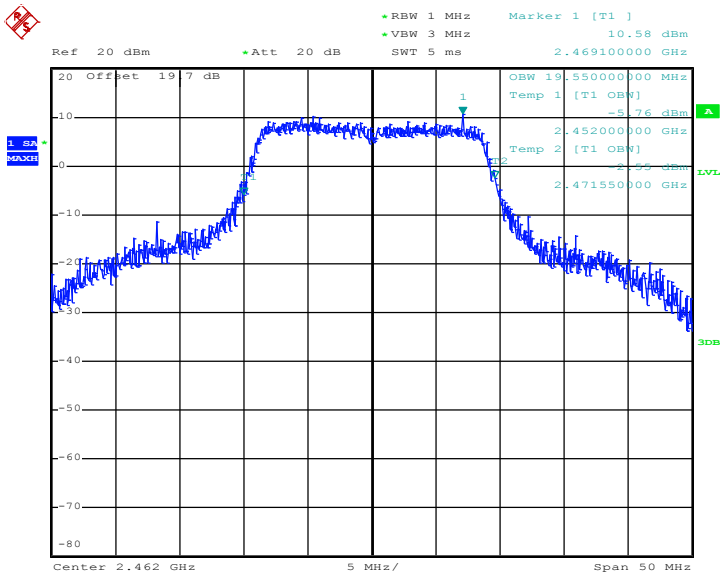
99% Occupied Bandwidth Plot 802.11n HT-20 Channel 11



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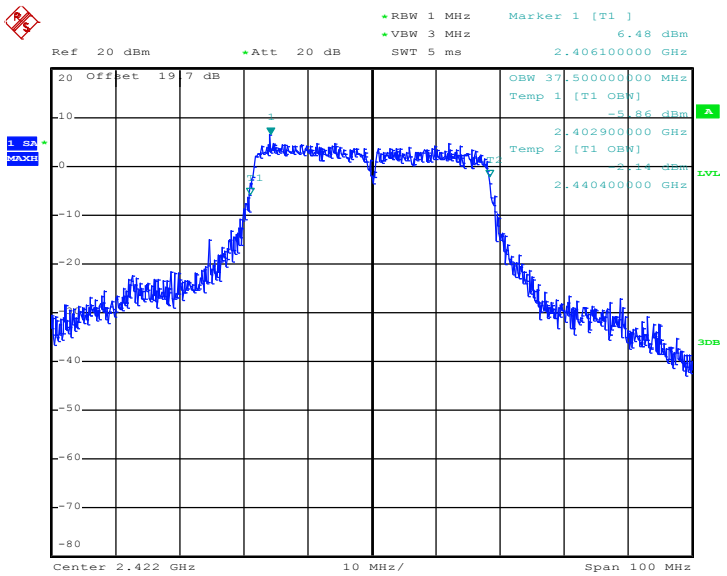
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

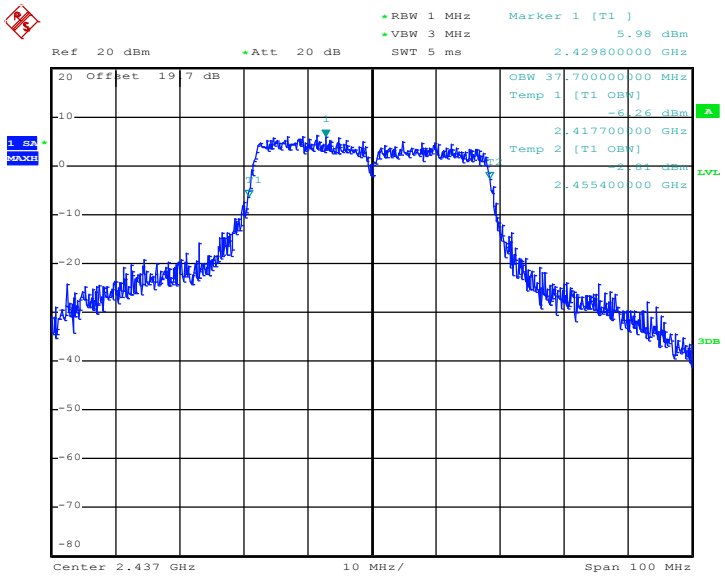
Channel	Frequency (MHz)	2.4GHz 802.11n HT-40 99% Occupied Bandwidth (MHz)	Pass/Fail
03	2422	37.50	Pass
06	2437	37.70	Pass
09	2452	37.70	Pass

99% Occupied Bandwidth Plot 802.11n HT-40 Channel 03



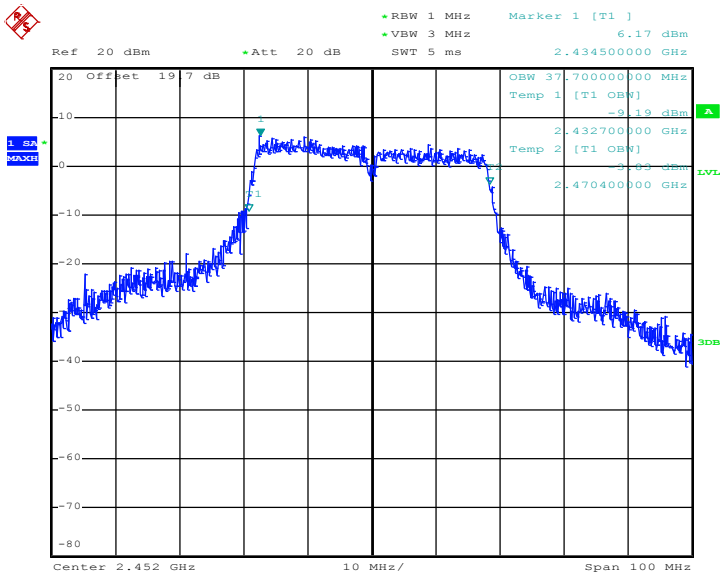
Date: 7.AUG.2012 11:51:06

99% Occupied Bandwidth Plot 802.11n HT-40 Channel 06



Date: 7.AUG.2012 11:54:41

99% Occupied Bandwidth Plot 802.11n HT-40 Channel 09



Date: 7.AUG.2012 11:40:52

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

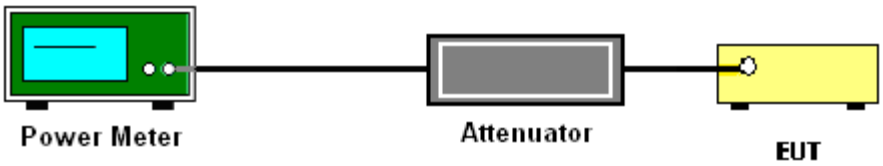
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure 7.2.1.3 Option 3(peak power meter method) of FCC KDB No. 558074 DTS Meas. Guidance DR01.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.22	30	Pass
06	2437	19.65	30	Pass
11	2462	19.74	30	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.05	30	Pass
06	2437	20.41	30	Pass
11	2462	19.91	30	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.76	30	Pass
06	2437	19.91	30	Pass
11	2462	19.98	30	Pass

Test Mode :	2.4GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	20.28	30	Pass
06	2437	19.54	30	Pass
09	2452	19.36	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53
Duty Cycle:	98.73%	Duty Factor:	0.06dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	15.99
06	2437	17.58
11	2462	18.15

Test Mode :	802.11g	Temperature :	24~26
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53
Duty Cycle:	91.96%	Duty Factor:	0.36dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	14.45
06	2437	14.19
11	2462	13.92

Test Mode :	802.11n HT-20	Temperature :	24~26
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53
Duty Cycle:	90.82%	Duty Factor:	0.42dB

Channel	Frequency (MHz)	802.11n HT-20 Average Output Power (dBm)
01	2412	13.41
06	2437	13.13
11	2462	13.02

Test Mode :	802.11n HT-40	Temperature :	24~26
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53
Duty Cycle:	87.82%	Duty Factor:	0.56dB

Channel	Frequency (MHz)	802.11n HT-40 Average Output Power (dBm)
03	2422	12.07
06	2437	11.93
09	2452	11.99

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.

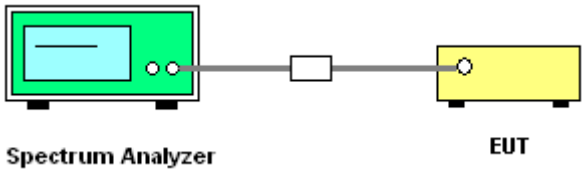
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 5.3.1 (Peak PSD) of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW) >= 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Record the measurement data derived from spectrum analyzer.
7. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

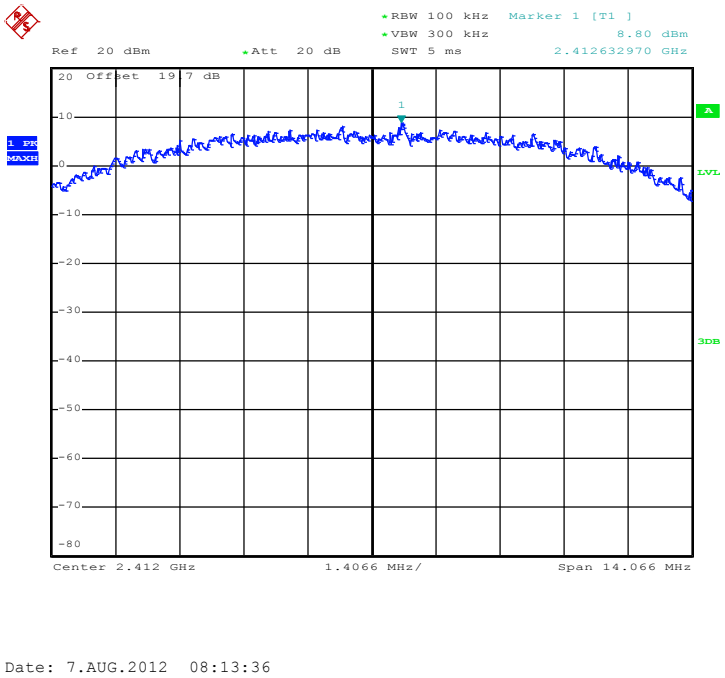
Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	8.80	-6.40	8	Pass
06	2437	8.93	-6.27	8	Pass
11	2462	9.02	-6.18	8	Pass

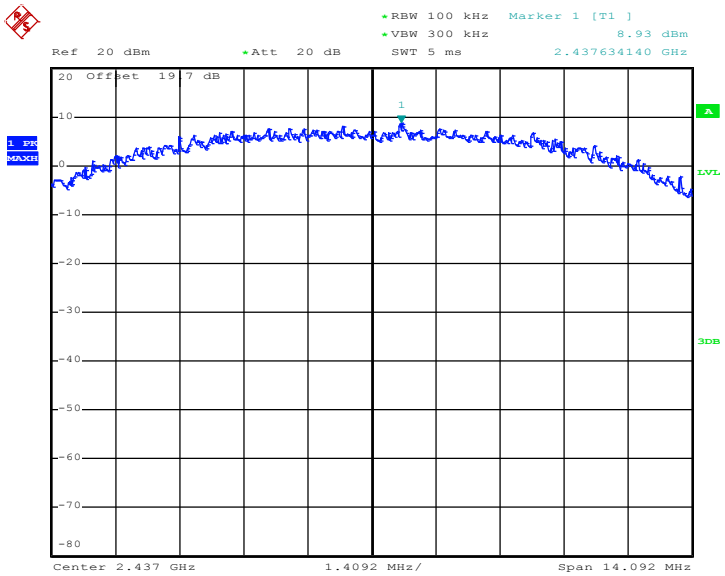
Note:

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

PSD Plot on 802.11b Channel 01

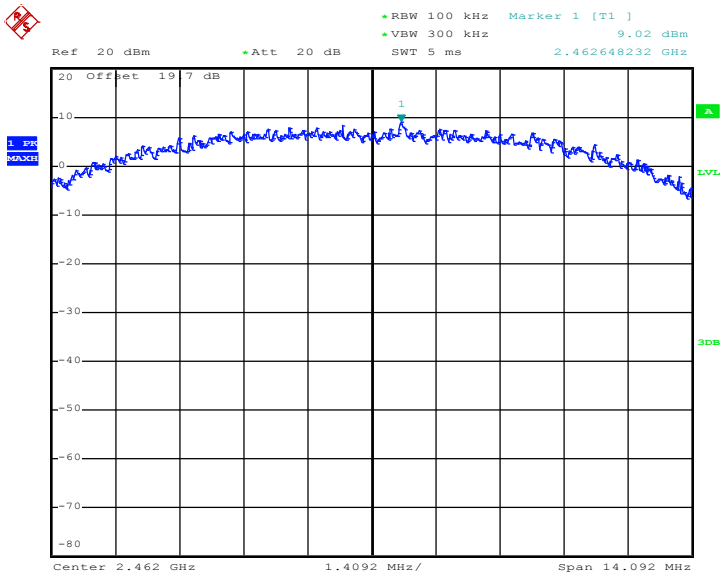


PSD Plot on 802.11b Channel 06



Date: 7.AUG.2012 08:32:38

PSD Plot on 802.11b Channel 11



Date: 7.AUG.2012 08:23:09

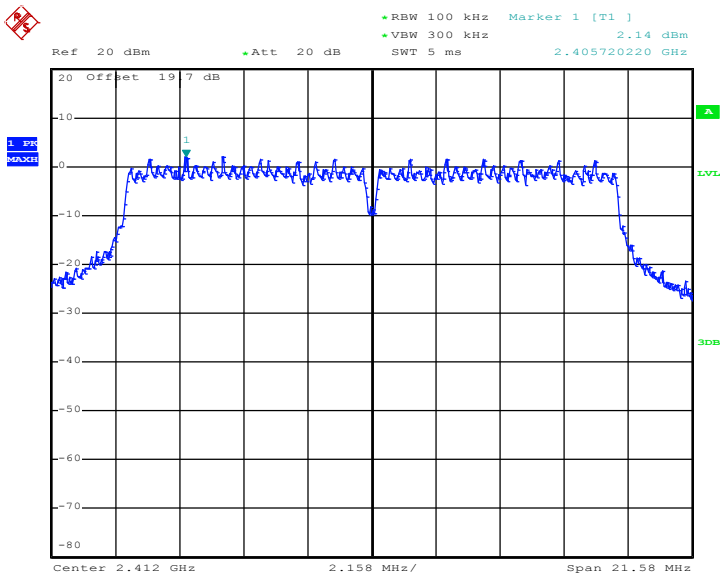
Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.14	-13.06	8	Pass
06	2437	2.90	-12.30	8	Pass
11	2462	2.73	-12.47	8	Pass

Note:

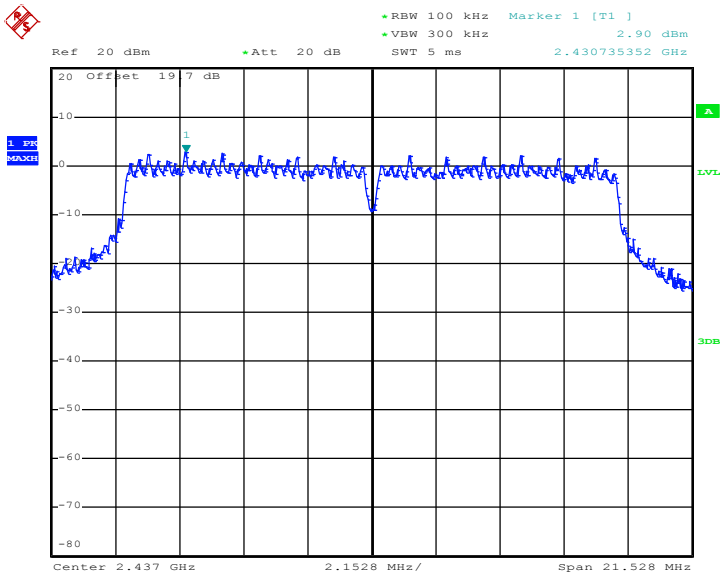
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

PSD Plot on 802.11g Channel 01



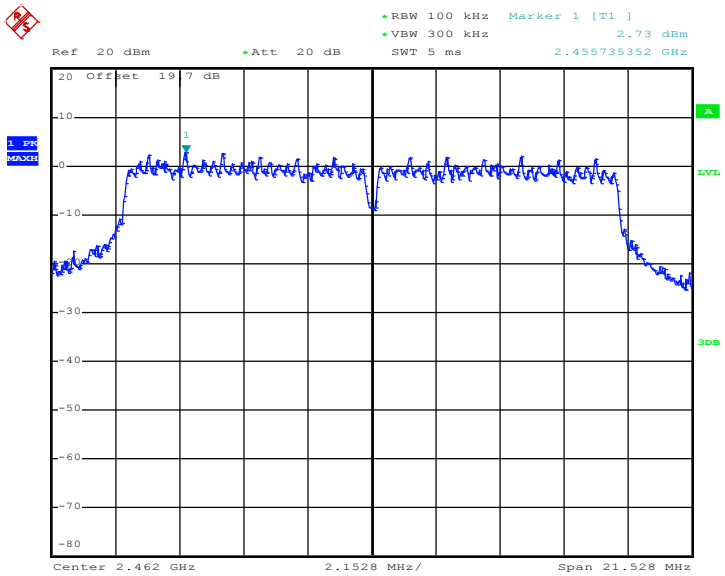
Date: 7.AUG.2012 08:40:00

PSD Plot on 802.11g Channel 06



Date: 7.AUG.2012 08:45:33

PSD Plot on 802.11g Channel 11



Date: 7.AUG.2012 08:51:43

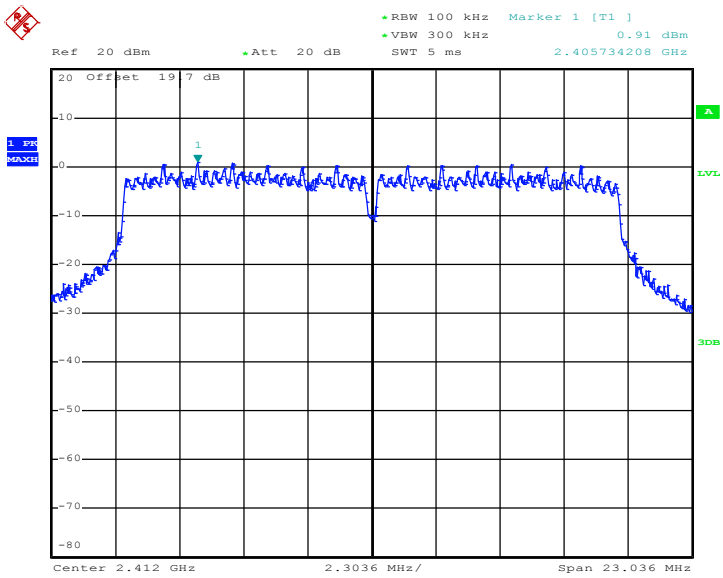
Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-20 Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	0.91	-14.29	8	Pass
06	2437	1.69	-13.51	8	Pass
11	2462	1.38	-13.82	8	Pass

Note:

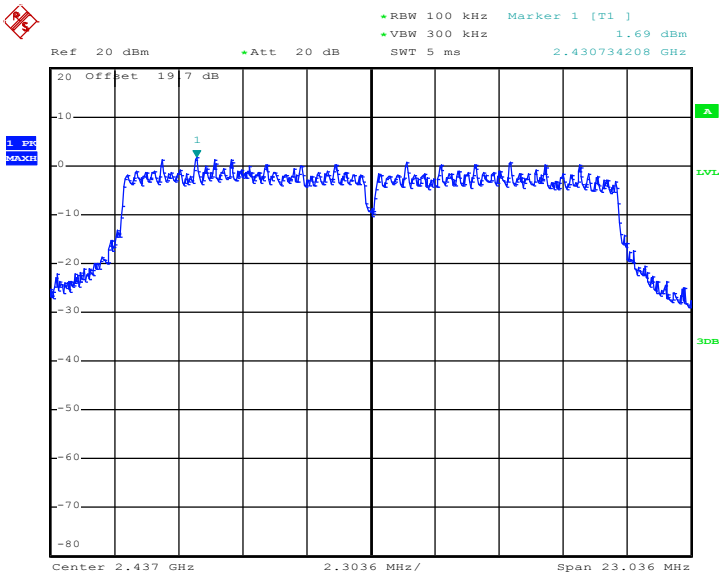
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

PSD Plot on 802.11n HT-20 Channel 01



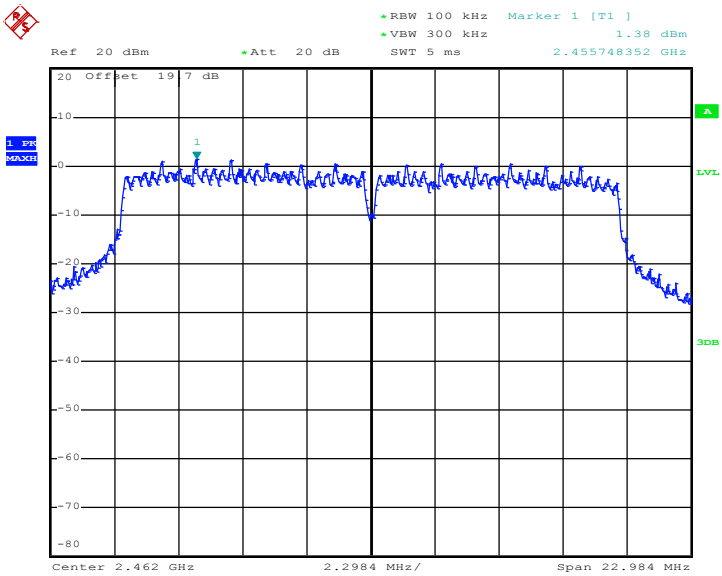
Date: 7.AUG.2012 09:32:33

PSD Plot on 802.11n HT-20 Channel 06



Date: 7.AUG.2012 09:36:29

PSD Plot on 802.11n HT-20 Channel 11



Date: 7.AUG.2012 11:24:29

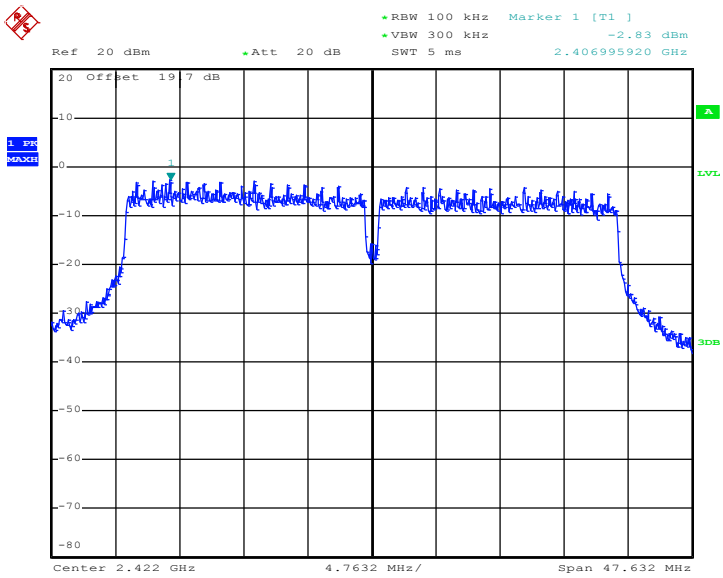
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen and Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-40 Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-2.83	-18.03	8	Pass
06	2437	-1.69	-16.89	8	Pass
09	2452	-2.49	-17.69	8	Pass

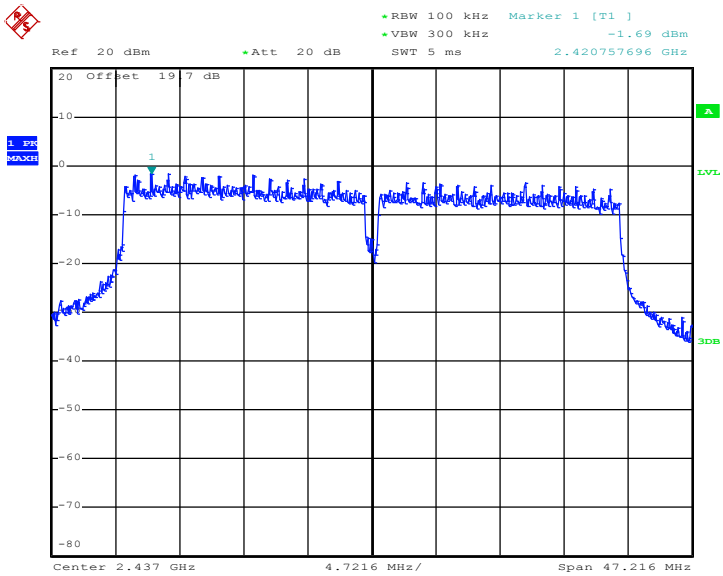
Note:

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

PSD Plot on 802.11n HT-40 Channel 03

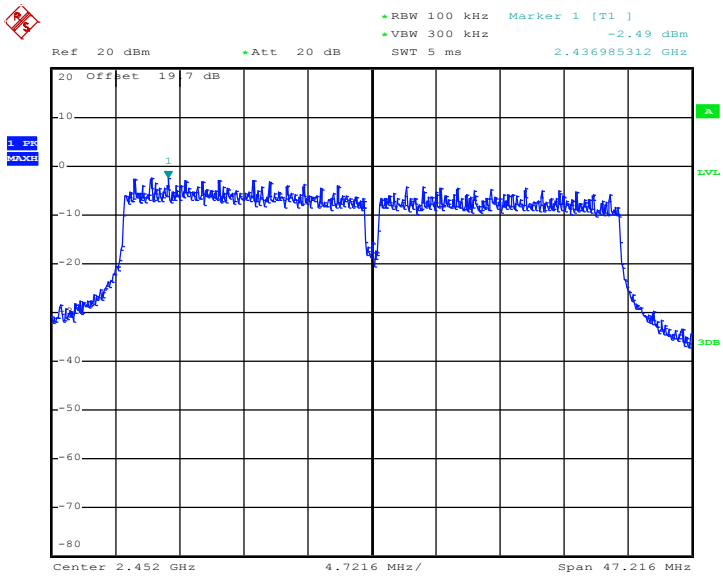


PSD Plot on 802.11n HT-40 Channel 06



Date: 7.AUG.2012 11:53:42

PSD Plot on 802.11n HT-40 Channel 09



Date: 7.AUG.2012 11:36:45

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

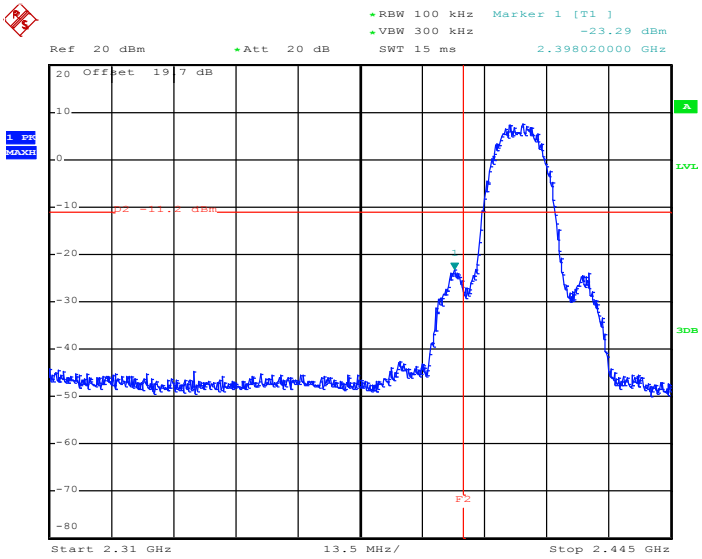
1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions 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

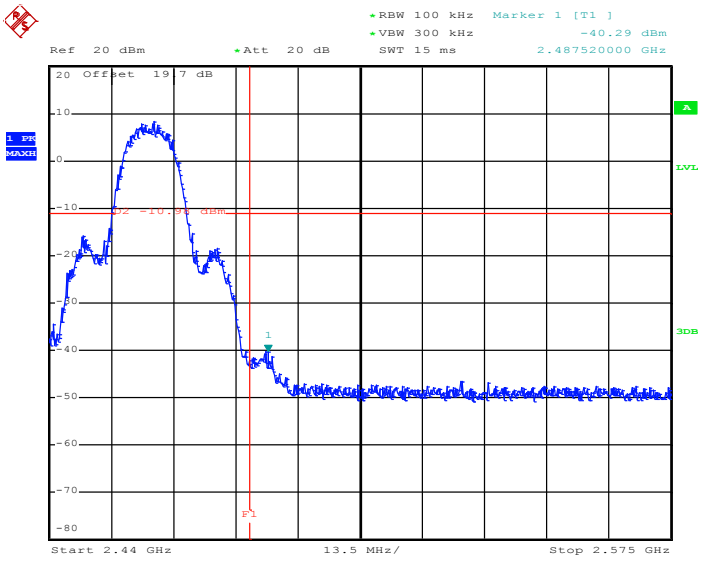
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	Low and High	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Kenny Chen and Book Lin

Low Band Edge Plot on 802.11b Channel 01



Date: 7.AUG.2012 08:14:00

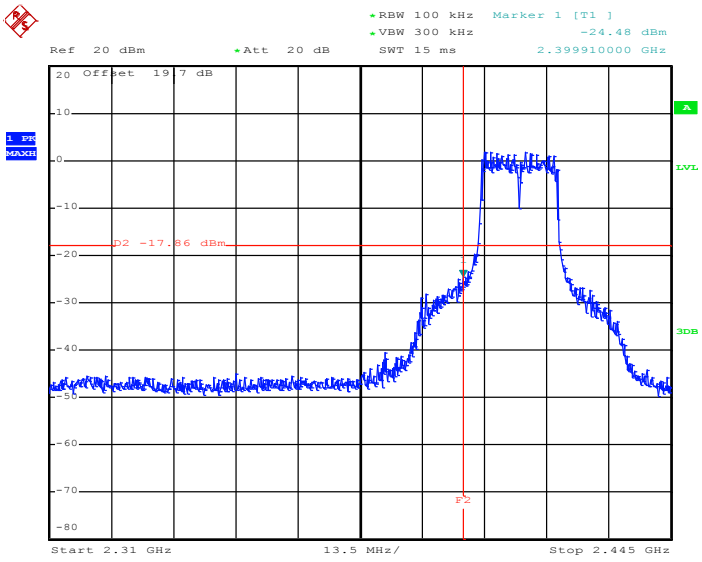
High Band Edge Plot on 802.11b Channel 11



Date: 7.AUG.2012 08:23:35

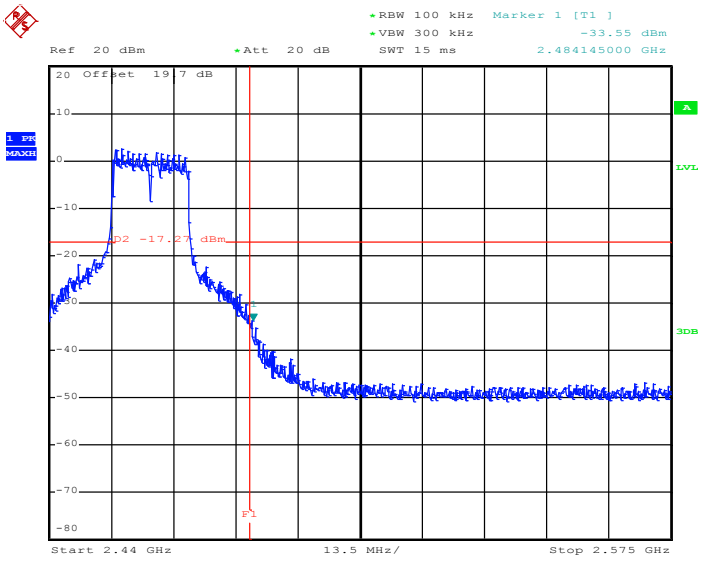
Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Kenny Chen and Book Lin

Low Band Edge Plot on 802.11g Channel 01



Date: 7.AUG.2012 08:40:16

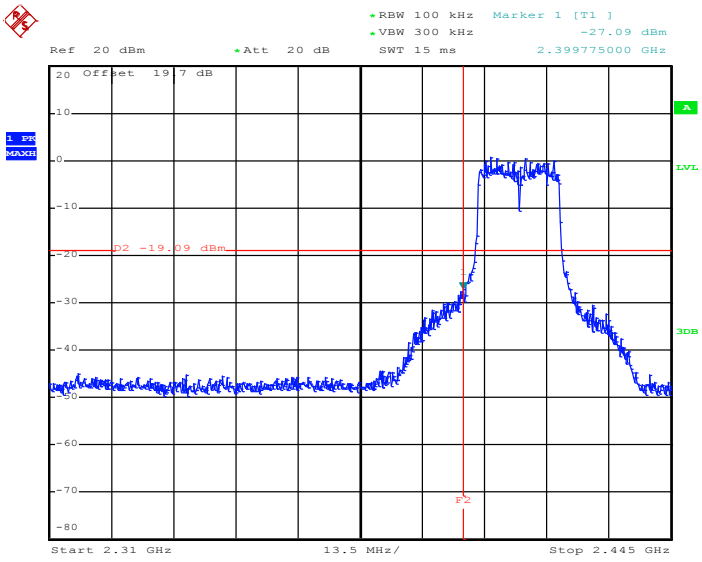
High Band Edge Plot on 802.11g Channel 11



Date: 7.AUG.2012 08:52:21

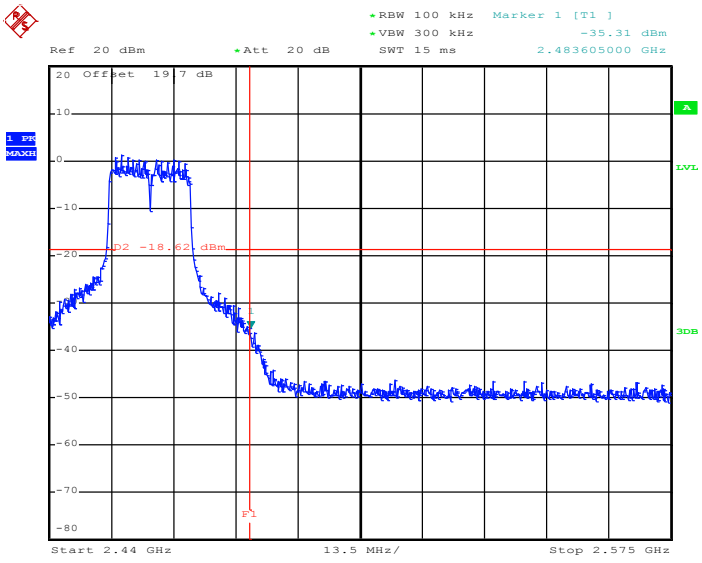
Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Kenny Chen and Book Lin

Low Band Edge Plot on 802.11n HT-20 Channel 01



Date: 7.AUG.2012 09:32:58

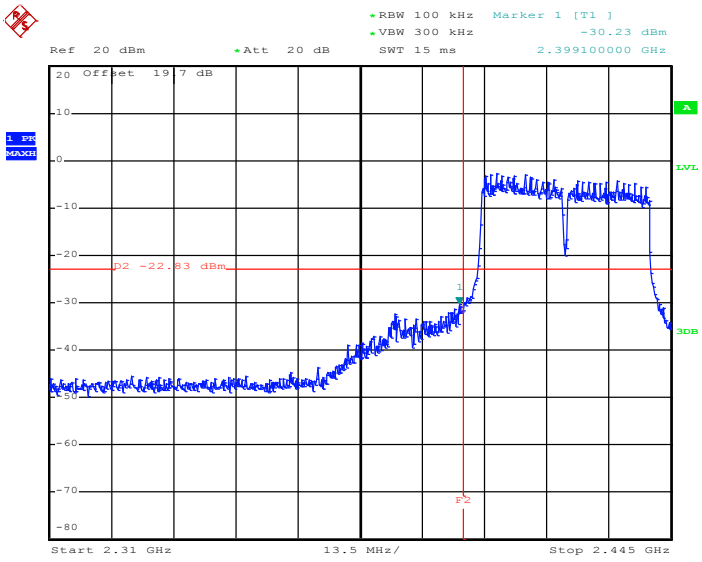
High Band Edge Plot on 802.11n HT-20 Channel 11



Date: 7.AUG.2012 11:24:53

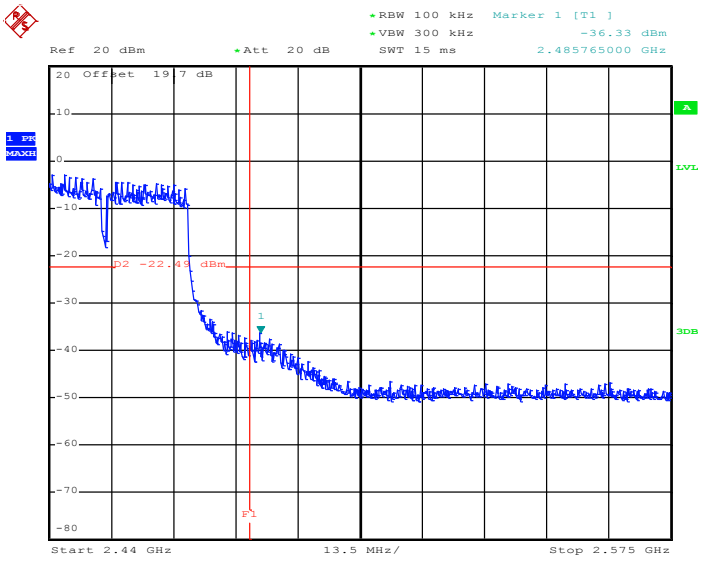
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Kenny Chen and Book Lin

Low Band Edge Plot on 802.11n HT-40 Channel 03



Date: 7.AUG.2012 11:47:58

High Band Edge Plot on 802.11n HT-40 Channel 09



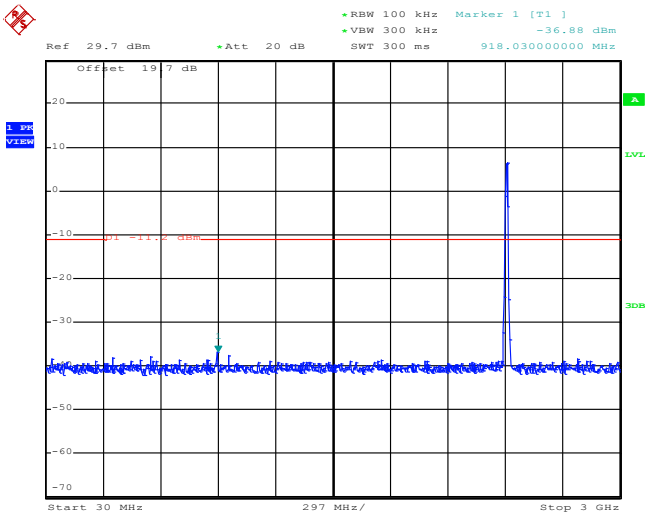
Date: 7.AUG.2012 11:37:19

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Kenny Chen and Book Lin

802.11b 30 MHz~3 GHz

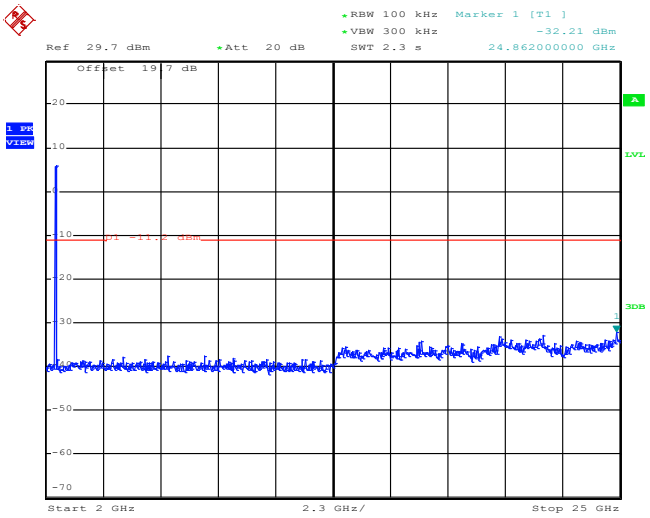
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 08:36:18

802.11b 2 GHz~25 GHz

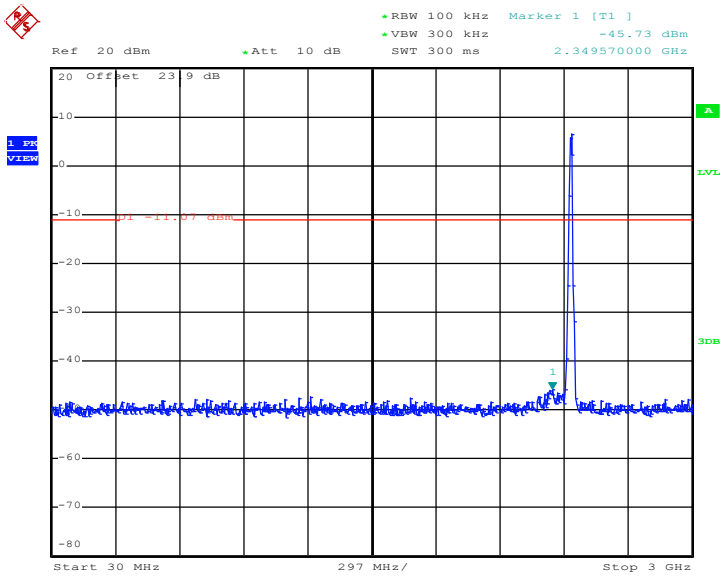
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 08:36:36

802.11b 30 MHz~3 GHz

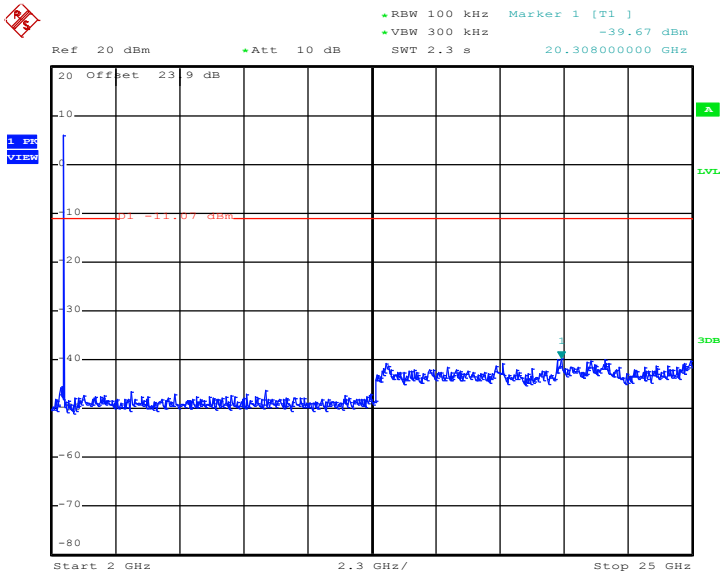
Conducted Spurious Emission Plot on Channel 06



Date: 16.AUG.2012 19:31:58

802.11b 2 GHz~25 GHz

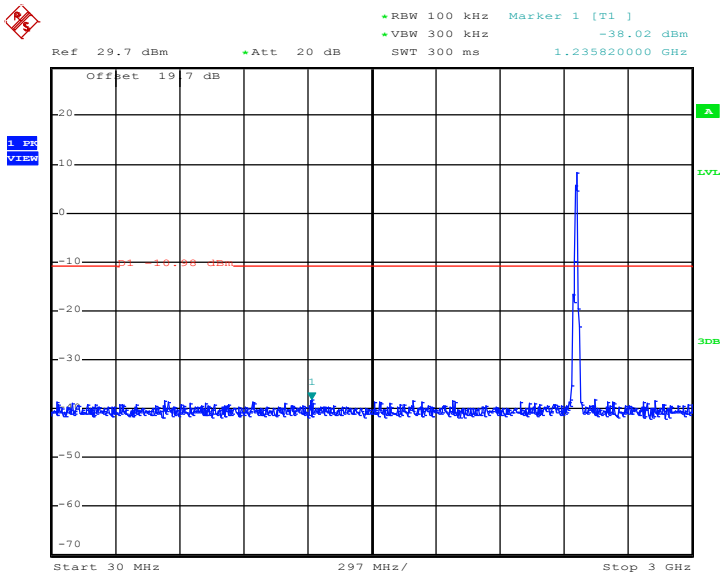
Conducted Spurious Emission Plot on Channel 06



Date: 16.AUG.2012 19:32:15

802.11b 30 MHz~3 GHz

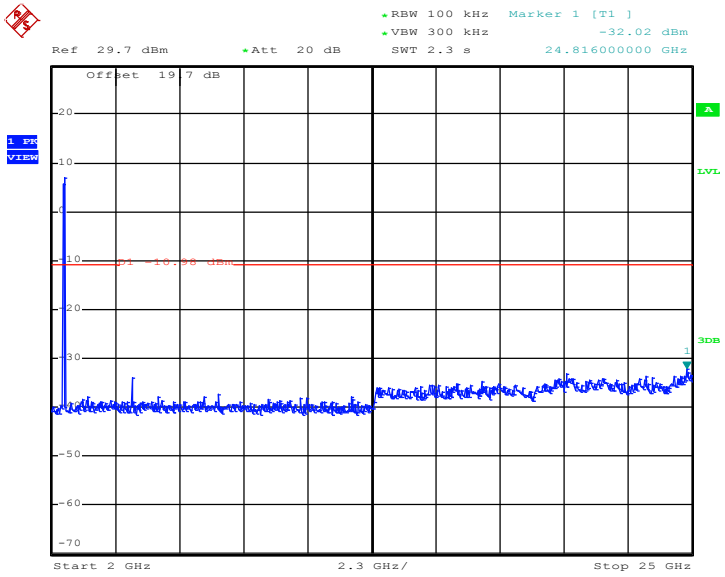
Conducted Spurious Emission Plot on Channel 11



Date: 7.AUG.2012 08:24:46

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

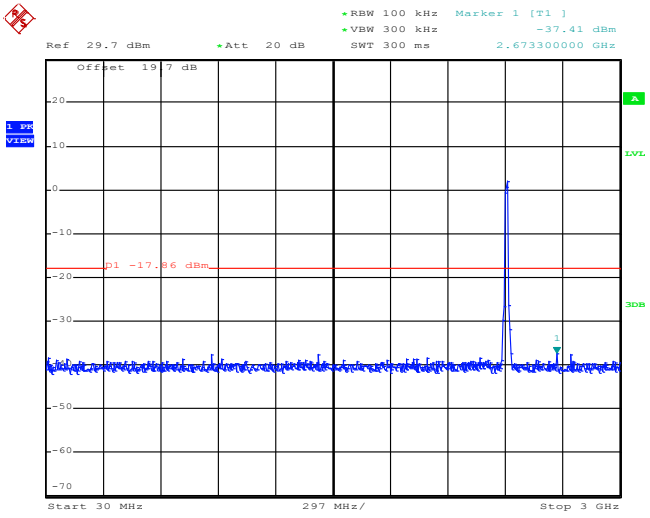


Date: 7.AUG.2012 08:25:04

Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Kenny Chen and Book Lin

802.11g 30 MHz~3 GHz

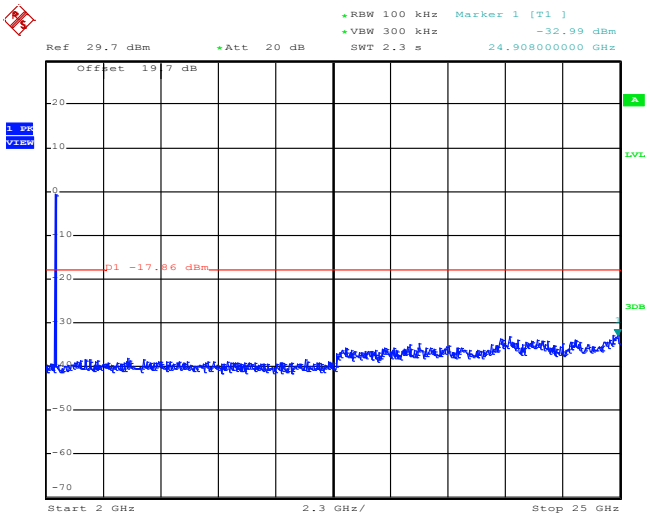
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 08:40:42

802.11g 2 GHz~25 GHz

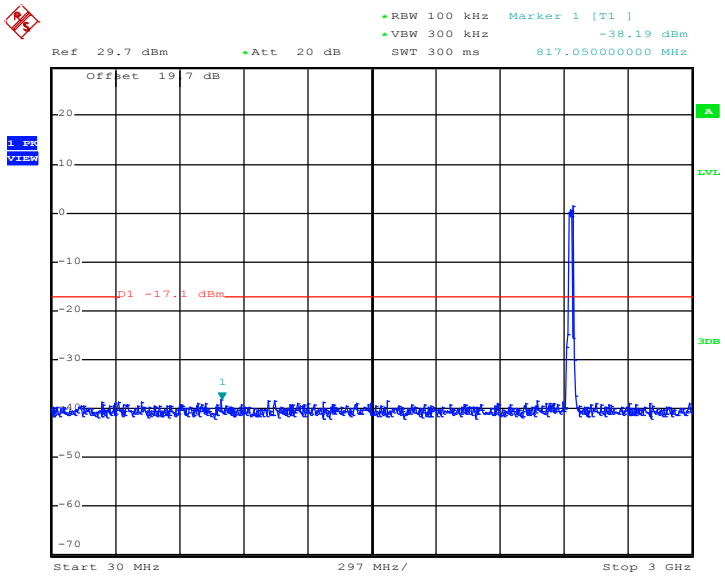
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 08:40:59

802.11g 30 MHz~3 GHz

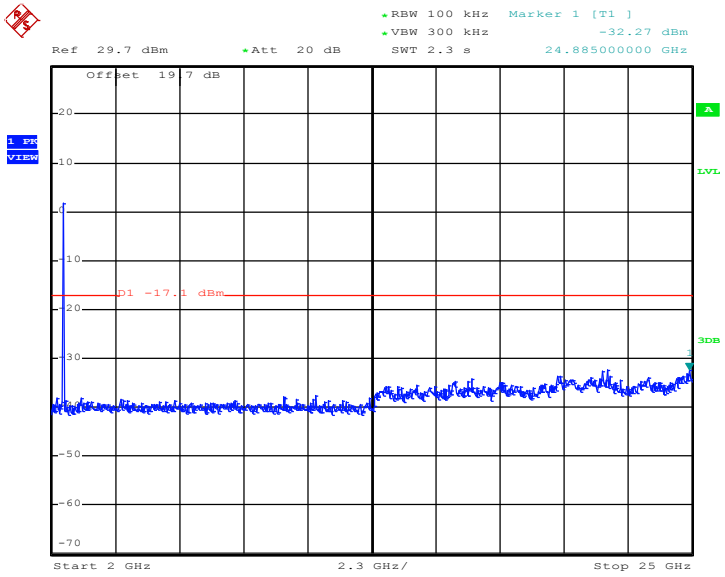
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 08:46:07

802.11g 2 GHz~25 GHz

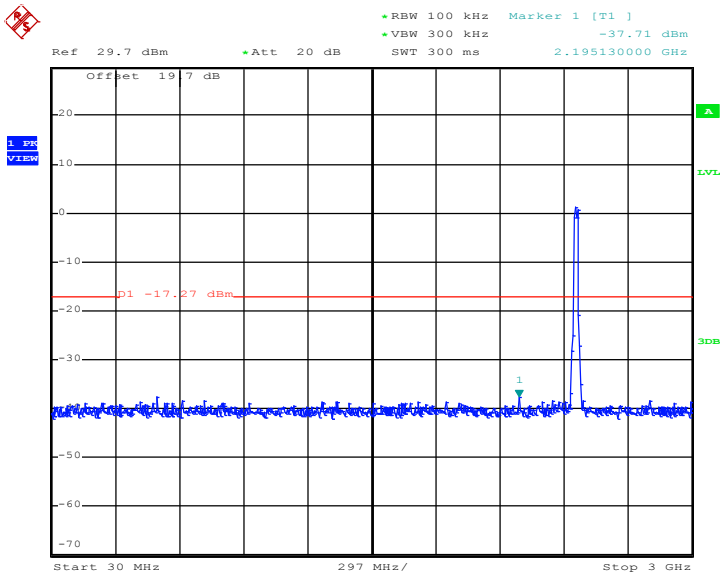
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 08:46:24

802.11g 30 MHz~3 GHz

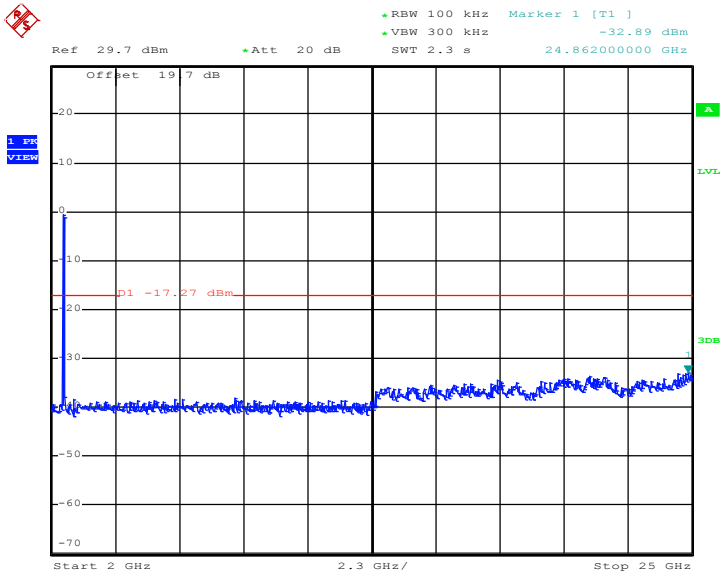
Conducted Spurious Emission Plot on Channel 11



Date: 7.AUG.2012 08:52:53

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

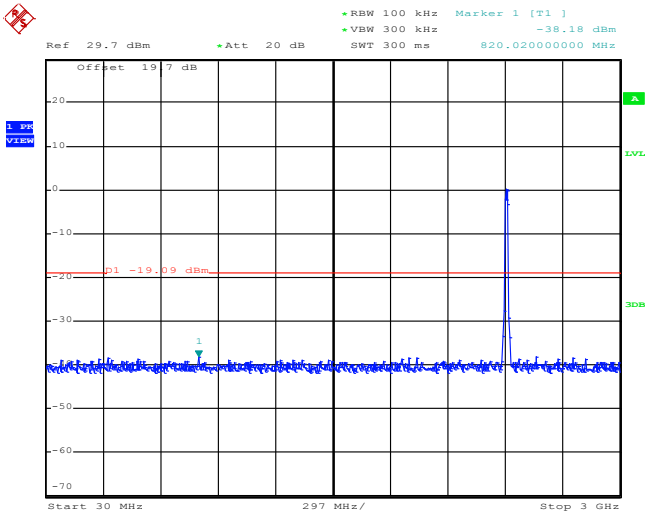


Date: 7.AUG.2012 08:53:11

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Kenny Chen and Book Lin

802.11n HT-20 30 MHz~3 GHz

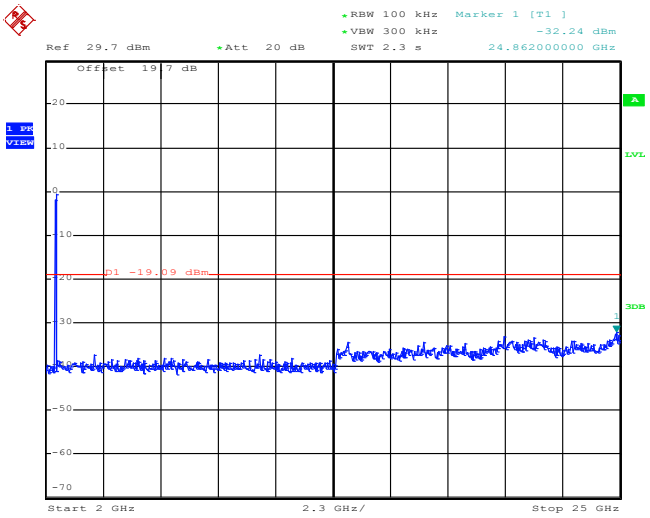
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 09:34:06

802.11n HT-20 2 GHz~25 GHz

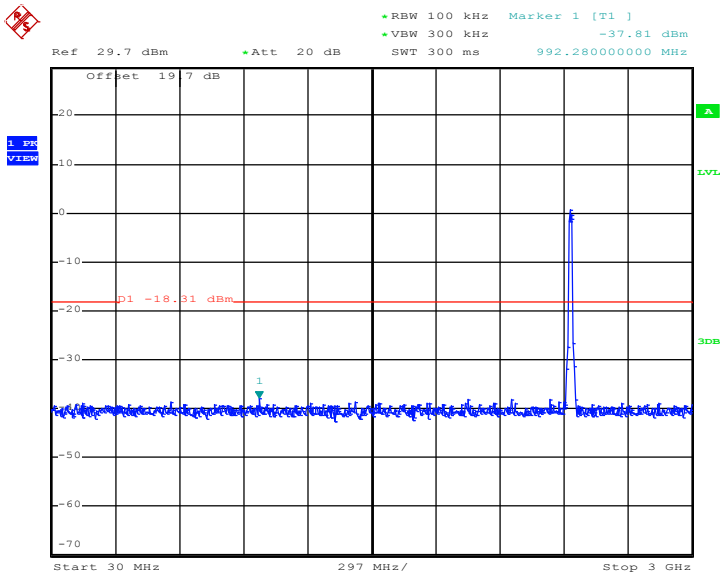
Conducted Spurious Emission Plot on Channel 01



Date: 7.AUG.2012 09:34:24

802.11n HT-20 30 MHz~3 GHz

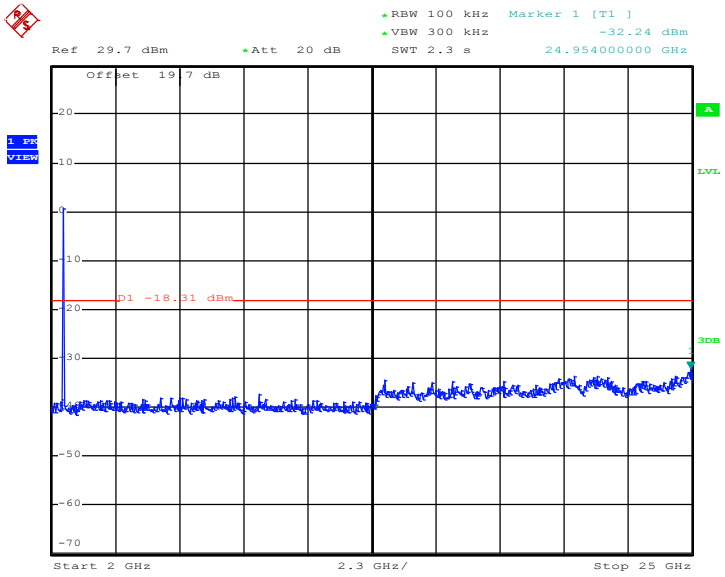
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 09:36:54

802.11n HT-20 2 GHz~25 GHz

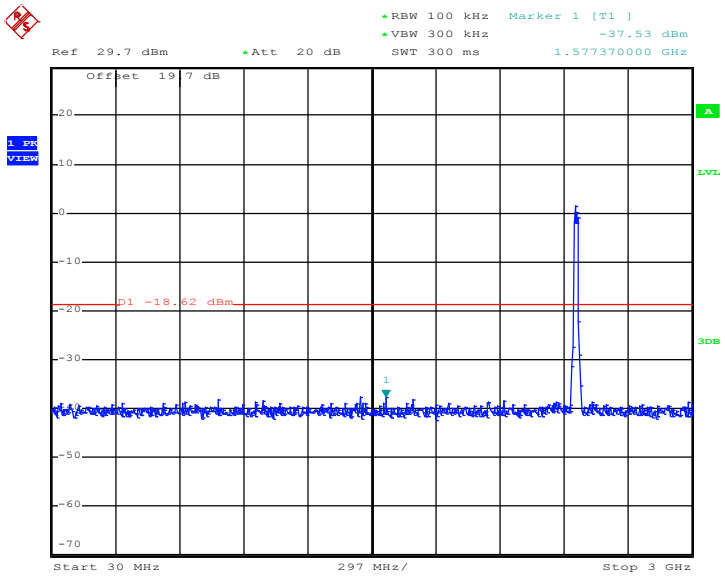
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 09:37:12

802.11n HT-20 30 MHz~3 GHz

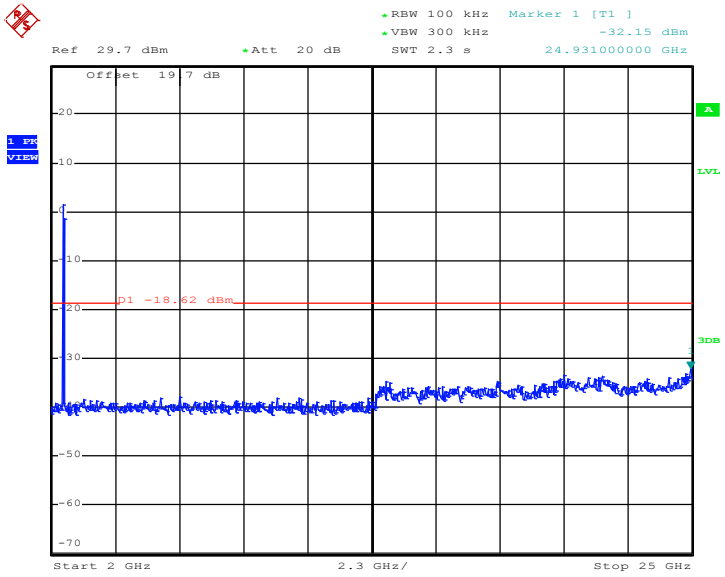
Conducted Spurious Emission Plot on Channel 11



Date: 7.AUG.2012 11:57:51

802.11n HT-20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

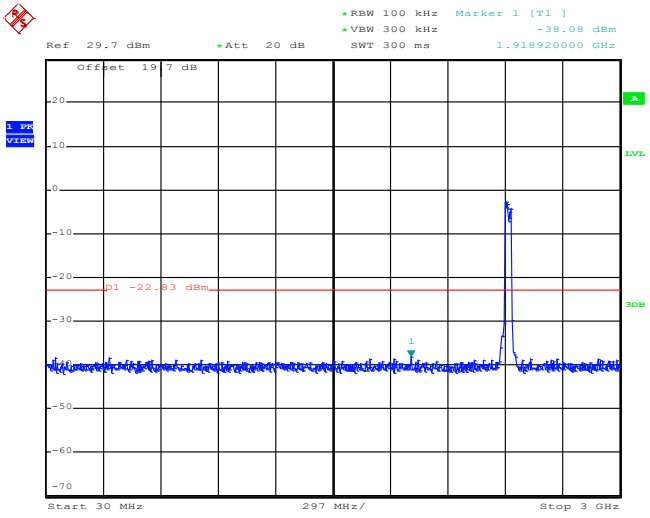


Date: 7.AUG.2012 11:58:09

Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	03, 06, 09	Test Engineer :	Kenny Chen and Book Lin

802.11n HT-40 30 MHz~3 GHz

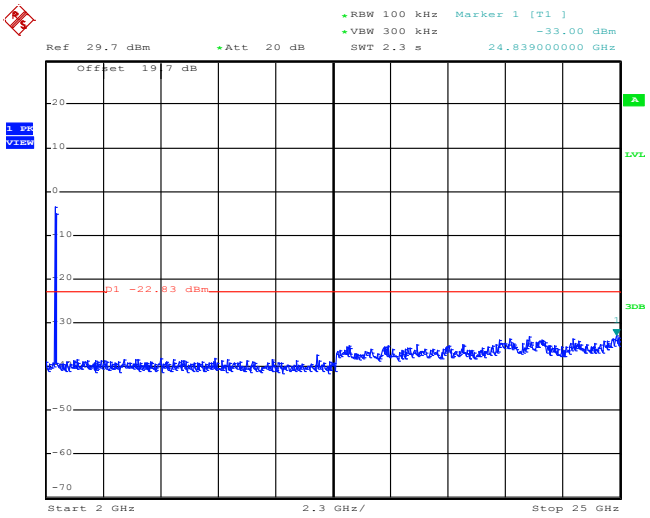
Conducted Spurious Emission Plot on Channel 03



Date: 7.AUG.2012 11:50:34

802.11n HT-40 2 GHz~25 GHz

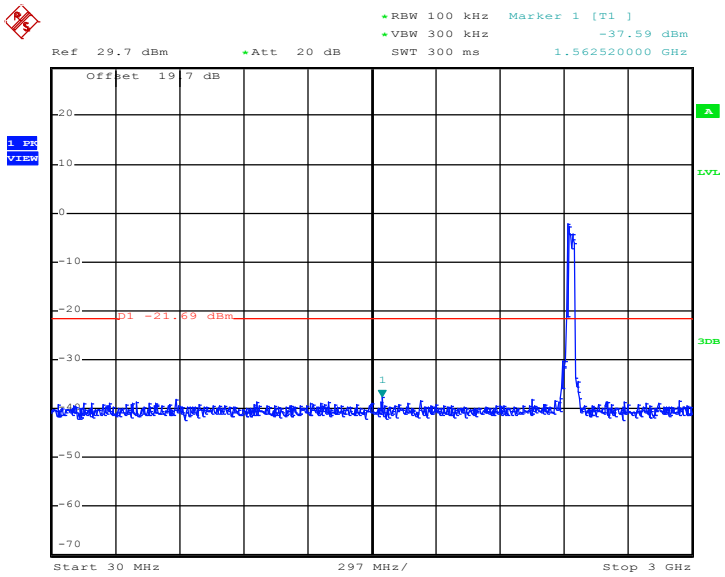
Conducted Spurious Emission Plot on Channel 03



Date: 7.AUG.2012 11:50:51

802.11n HT-40 30 MHz~3 GHz

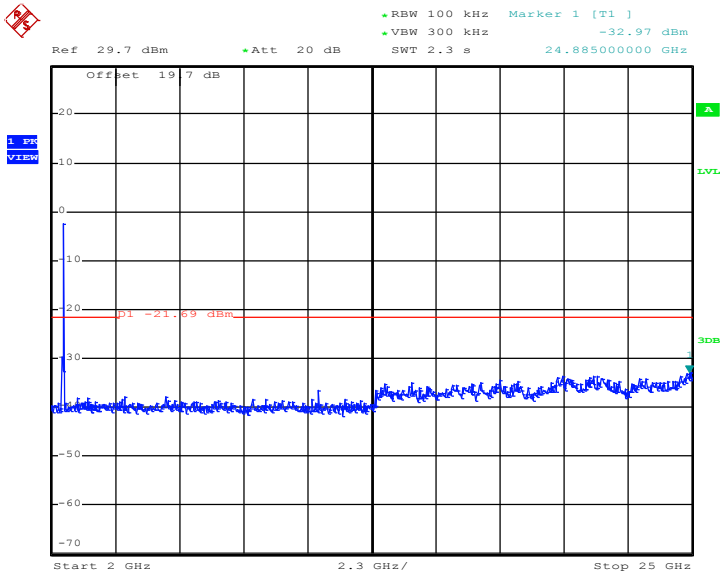
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 11:54:08

802.11n HT-40 2 GHz~25 GHz

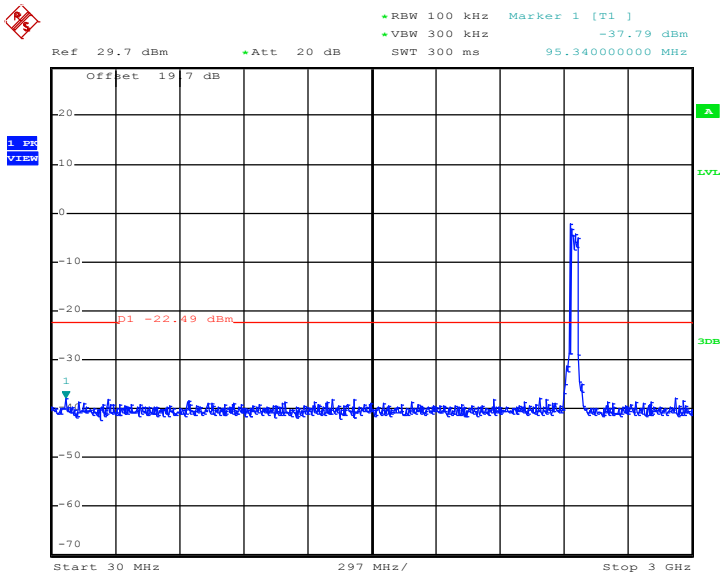
Conducted Spurious Emission Plot on Channel 06



Date: 7.AUG.2012 11:54:25

802.11n HT-40 30 MHz~3 GHz

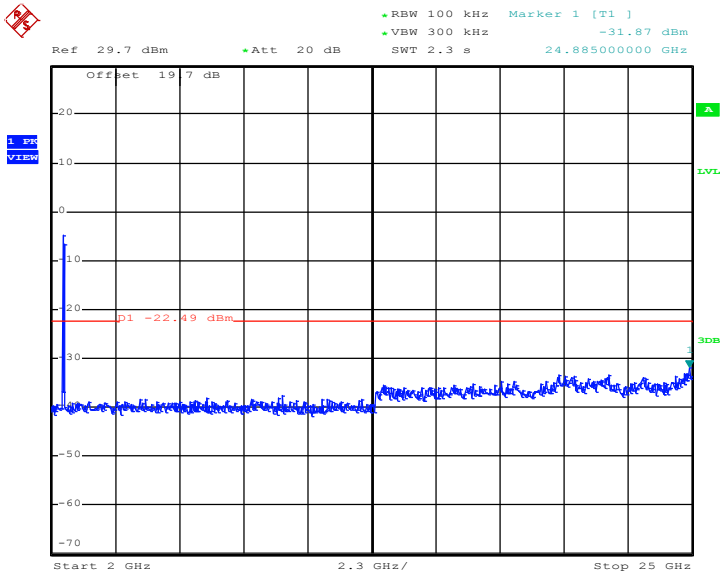
Conducted Spurious Emission Plot on Channel 09



Date: 7.AUG.2012 11:40:28

802.11n HT-40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 7.AUG.2012 11:39:03

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

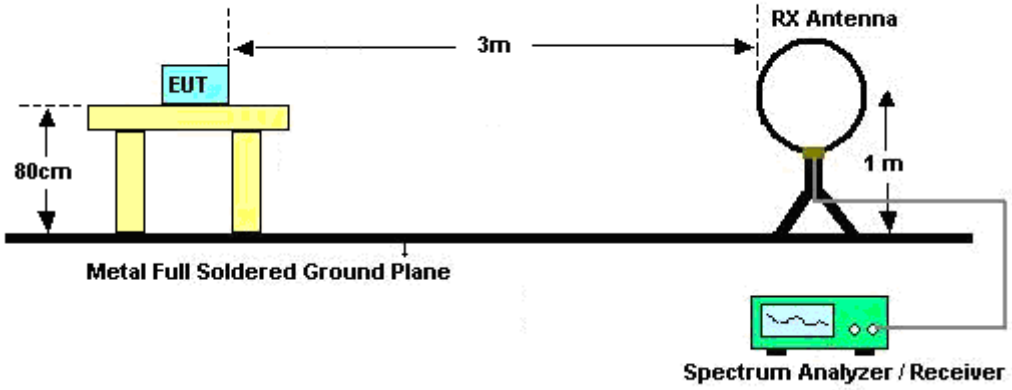
See list of measuring instruments of this test report.

3.5.3 Test Procedures

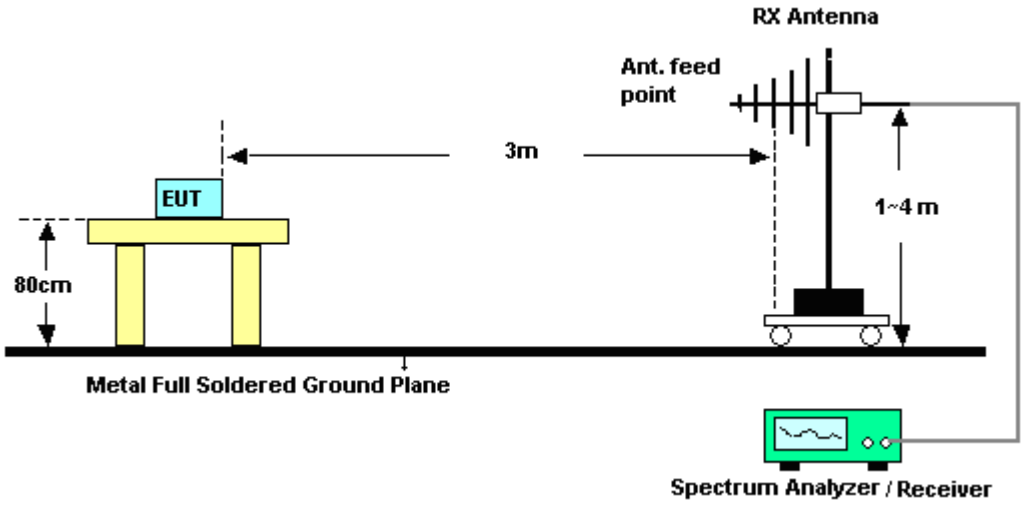
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for Peak measurement, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
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

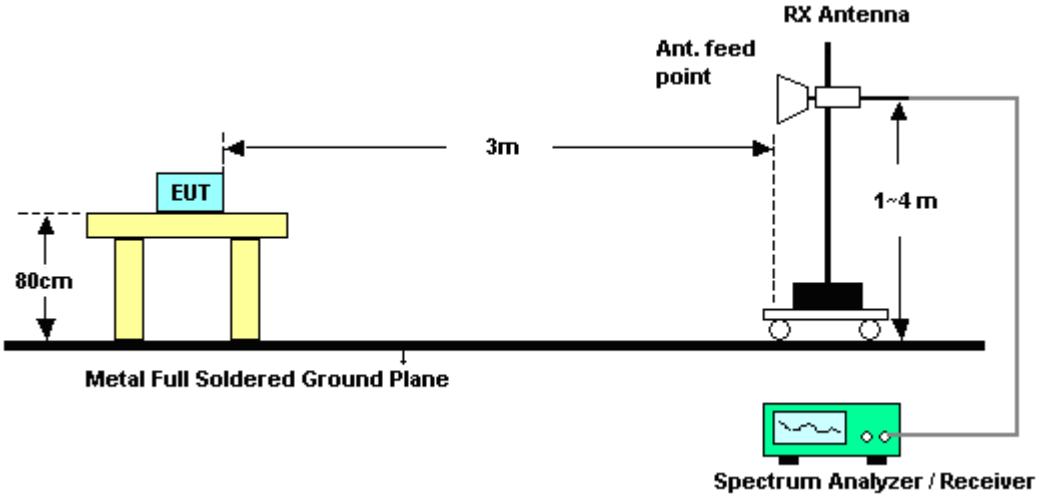
For radiated emissions below 30MHz



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℃
Test Band :	Low	**Relative Humidity :**	53~54%
Test Channel :	01	**Test Engineer :**	David Yang

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**
2323.23	54.37	-19.63	74	53.65	32.09	4.53	35.9	200	208	Peak
2322.87	38.32	-15.68	54	37.6	32.09	4.53	35.9	200	208	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**
2321.88	54.26	-19.74	74	53.54	32.09	4.53	35.9	100	69	Peak
2387.31	37.52	-16.48	54	36.64	32.18	4.58	35.88	100	69	Average

Test Mode :	802.11b	**Temperature :**	23~25℃
Test Band :	High	**Relative Humidity :**	53~54%
Test Channel :	11	**Test Engineer :**	David Yang

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**
2487.78	62.39	-11.61	74	61.26	32.3	4.64	35.81	200	198	Peak
2483.5	49.37	-4.63	54	48.26	32.28	4.64	35.81	200	198	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBμV/m)**	**Over Limit (dB)**	**Limit Line (dBμV/m)**	**Read Level (dBμV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2487.28	62.79	-11.21	74	61.68	32.28	4.64	35.81	100	70	Peak
2483.5	50.15	-3.85	54	49.04	32.28	4.64	35.81	100	70	Average

Test Mode :	802.11g	Temperature :	23~25℃
Test Band :	Low	Relative Humidity :	53~54%
Test Channel :	01	Test Engineer :	David Yang

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	71.91	-2.09	74	71.03	32.18	4.58	35.88	200	206	Peak
2390	49.1	-4.9	54	48.2	32.18	4.58	35.86	200	206	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	68.69	-5.31	74	67.79	32.18	4.58	35.86	100	73	Peak
2390	45.33	-8.67	54	44.43	32.18	4.58	35.86	100	73	Average

Test Mode :	802.11g	Temperature :	23~25℃
Test Band :	High	Relative Humidity :	53~54%
Test Channel :	11	Test Engineer :	David Yang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	73.8	-0.2	74	72.69	32.28	4.64	35.81	197	198	Peak
2483.5	51.49	-2.51	54	50.38	32.28	4.64	35.81	197	198	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.8	73.63	-0.37	74	72.52	32.28	4.64	35.81	100	72	Peak
2483.5	51.16	-2.84	54	50.05	32.28	4.64	35.81	100	72	Average

Test Mode :	802.11n HT-20	Temperature :	23~25℃
Test Band :	Low	Relative Humidity :	53~54%
Test Channel :	01	Test Engineer :	David Yang

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	70.55	-3.45	74	69.67	32.18	4.58	35.88	200	206	Peak
2390	47.38	-6.62	54	46.48	32.18	4.58	35.86	200	206	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.74	66	-8	74	65.12	32.18	4.58	35.88	100	71	Peak
2390	44.11	-9.89	54	43.21	32.18	4.58	35.86	100	71	Average

Test Mode :	802.11n HT-20	Temperature :	23~25℃
Test Band :	High	Relative Humidity :	53~54%
Test Channel :	11	Test Engineer :	David Yang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.68	63.85	-10.15	74	62.74	32.28	4.64	35.81	200	205	Peak
2483.5	39.51	-14.49	54	38.4	32.28	4.64	35.81	200	205	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.54	64.42	-9.58	74	63.31	32.28	4.64	35.81	100	75	Peak
2483.5	39.56	-14.44	54	38.45	32.28	4.64	35.81	100	75	Average

Test Mode :	802.11n HT-40	Temperature :	23~25℃
Test Band :	Low	Relative Humidity :	53~54%
Test Channel :	03	Test Engineer :	David Yang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.5	71.27	-2.73	74	70.39	32.18	4.58	35.88	164	207	Peak
2389.74	51.47	-2.53	54	50.59	32.18	4.58	35.88	164	207	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
2386.14	70.73	-3.27	74	69.85	32.18	4.58	35.88	100	69	Peak
2389.92	50.45	-3.55	54	49.55	32.18	4.58	35.86	100	69	Average

Test Mode :	802.11n HT-40	Temperature :	23~25℃
Test Band :	High	Relative Humidity :	53~54%
Test Channel :	09	Test Engineer :	David Yang

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
2489.2	73.81	-0.19	74	72.68	32.3	4.64	35.81	200	204	Peak
2484.74	53.62	-0.38	54	52.51	32.28	4.64	35.81	200	204	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
2489.6	71.39	-2.61	74	70.26	32.3	4.64	35.81	100	69	Peak
2485	51.66	-2.34	54	50.55	32.28	4.64	35.81	100	69	Average

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

Test Mode :	802.11b	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	53~54%
Test Engineer :	David Yang	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 9648 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 104.03 dBuV/m - 20dB = 84.03 dBuV/m.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	94.71	-	-	93.78	32.2	4.59	35.86	200	208	Average
2412	104.03	-	-	103.1	32.2	4.59	35.86	200	208	Peak
4824	53.7	-0.3	54	71.94	34.27	6.51	59.02	104	355	Average
4824	67.66	-6.34	74	85.9	34.27	6.51	59.02	104	355	Peak
9648	60.4	-23.63	84.03	69.77	37.09	9.48	55.94	100	0	Peak
12057	49.43	-24.57	74	55.83	38.94	10.6	55.94	100	0	Peak

Test Mode :	802.11b	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	53~54%
Test Engineer :	David Yang	**Polarization :**	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	91.82	-	-	90.89	32.2	4.59	35.86	100	69	Average
2412	100.99	-	-	100.06	32.2	4.59	35.86	100	69	Peak
4824	51.21	-2.79	54	69.45	34.27	6.51	59.02	100	317	Average
4824	64.46	-9.54	74	82.7	34.27	6.51	59.02	100	317	Peak
7236	45.4	-35.59	80.99	58.93	36.05	8.29	57.87	100	0	Peak
9648	50.62	-30.37	80.99	59.99	37.09	9.48	55.94	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	95.83	-	-	94.84	32.22	4.61	35.84	200	199	Average
2437	105.62	-	-	104.63	32.22	4.61	35.84	200	199	Peak
4875	53.53	-0.47	54	71.6	34.28	6.53	58.88	103	2	Average
4875	67.11	-6.89	74	85.18	34.28	6.53	58.88	103	2	Peak
7314	49.57	-24.43	74	63.1	36.04	8.42	57.99	100	0	Peak
9747	63.12	-22.5	85.62	72.31	37.21	9.49	55.89	100	0	Peak
12186	43.42	-10.58	54	49.84	39.05	10.6	56.07	137	66	Average
12186	55.37	-18.63	74	61.79	39.05	10.6	56.07	137	66	Peak

Test Mode :	802.11b	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	95.25	-	-	94.26	32.22	4.61	35.84	100	69	Average
2437	104.87	-	-	103.88	32.22	4.61	35.84	100	69	Peak
4875	51.84	-2.16	54	69.91	34.28	6.53	58.88	100	310	Average
4875	64.55	-9.45	74	82.62	34.28	6.53	58.88	100	310	Peak
7311	47.9	-26.1	74	61.43	36.04	8.42	57.99	100	0	Peak
9747	56.65	-28.22	84.87	65.84	37.21	9.49	55.89	100	0	Peak
12186	40.64	-13.36	54	47.06	39.05	10.6	56.07	100	191	Average
12186	52.04	-21.96	74	58.46	39.05	10.6	56.07	100	191	Peak

Test Mode :	802.11b	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	97.96	-	-	96.91	32.26	4.62	35.83	200	198	Average
2462	107.34	-	-	106.29	32.26	4.62	35.83	200	198	Peak
4926	53.62	-0.38	54	71.51	34.29	6.56	58.74	103	342	Average
4926	64.5	-9.5	74	82.39	34.29	6.56	58.74	103	342	Peak
7386	50.85	-23.15	74	64.41	36.02	8.55	58.13	100	0	Peak
9849	64.29	-23.05	87.34	73.28	37.33	9.51	55.83	100	0	Peak
12309	50.24	-23.76	74	56.67	39.15	10.61	56.19	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	96.49	-	-	95.44	32.26	4.62	35.83	100	70	Average
2462	105.95	-	-	104.9	32.26	4.62	35.83	100	70	Peak
4926	50.99	-3.01	54	68.88	34.29	6.56	58.74	100	24	Average
4926	63.69	-10.31	74	81.58	34.29	6.56	58.74	100	24	Peak
7386	48.35	-25.65	74	61.91	36.02	8.55	58.13	100	0	Peak
9849	55.42	-30.53	85.95	64.41	37.33	9.51	55.83	100	0	Peak
12309	50.2	-23.8	74	56.63	39.15	10.61	56.19	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	01	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 9648 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	86.32	-	-	85.39	32.2	4.59	35.86	200	206	Average
2412	102.43	-	-	101.5	32.2	4.59	35.86	200	206	Peak
4821	47.74	-6.26	54	65.98	34.27	6.51	59.02	100	169	Average
4821	61.34	-12.66	74	79.58	34.27	6.51	59.02	100	169	Peak
9648	61.05	-21.38	82.43	70.42	37.09	9.48	55.94	100	0	Peak
12063	41.8	-12.2	54	48.2	38.96	10.6	55.96	107	33	Average
12063	53.02	-20.98	74	59.42	38.96	10.6	55.96	107	33	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	01	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 9645 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	84.98	-	-	84.05	32.2	4.59	35.86	100	73	Average
2412	101.62	-	-	100.69	32.2	4.59	35.86	100	73	Peak
4827	46.86	-7.14	54	65.1	34.27	6.51	59.02	100	24	Average
4827	62.57	-11.43	74	80.81	34.27	6.51	59.02	100	24	Peak
9645	50.99	-30.63	81.62	60.36	37.09	9.48	55.94	100	0	Peak
12060	39.93	-14.07	54	46.33	38.96	10.6	55.96	100	12	Average
12060	52.2	-21.8	74	58.6	38.96	10.6	55.96	100	12	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	87.22	-	-	86.21	32.24	4.61	35.84	200	201	Average
2437	104.89	-	-	103.9	32.22	4.61	35.84	200	201	Peak
4872	46.14	-7.86	54	64.21	34.28	6.53	58.88	103	336	Average
4872	58.87	-15.13	74	76.94	34.28	6.53	58.88	103	336	Peak
9747	56.06	-28.83	84.89	65.25	37.21	9.49	55.89	100	0	Peak
12186	41.18	-12.82	54	47.6	39.05	10.6	56.07	100	32	Average
12186	54.25	-19.75	74	60.67	39.05	10.6	56.07	100	32	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9744 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	86.97	-	-	85.96	32.24	4.61	35.84	100	71	Average
2437	103.43	-	-	102.42	32.24	4.61	35.84	100	71	Peak
4875	44.16	-9.84	54	62.23	34.28	6.53	58.88	100	22	Average
4875	53.18	-20.82	74	71.25	34.28	6.53	58.88	100	22	Peak
9744	49.69	-33.74	83.43	58.9	37.19	9.49	55.89	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9837 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	87.94	-	-	86.89	32.26	4.62	35.83	197	198	Average
2462	104.59	-	-	103.54	32.26	4.62	35.83	197	198	Peak
4923	44.29	-9.71	54	62.19	34.29	6.55	58.74	100	31	Average
4923	56.21	-17.79	74	74.11	34.29	6.55	58.74	100	31	Peak
7389	49.27	-24.73	74	62.83	36.02	8.55	58.13	100	0	Peak
9837	53.17	-31.42	84.59	62.2	37.31	9.5	55.84	100	0	Peak
12306	50.79	-23.21	74	57.22	39.15	10.61	56.19	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9846 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	87.67	-	-	86.62	32.26	4.62	35.83	100	72	Average
2462	103.55	-	-	102.48	32.26	4.62	35.81	100	72	Peak
4923	44.94	-9.06	54	62.84	34.29	6.55	58.74	103	345	Average
4923	56.72	-17.28	74	74.62	34.29	6.55	58.74	103	345	Peak
9846	48.78	-34.77	83.55	57.8	37.31	9.51	55.84	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	01	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 9648 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	85.75	-	-	84.82	32.2	4.59	35.86	200	206	Average
2412	101.99	-	-	101.06	32.2	4.59	35.86	200	206	Peak
4821	44.07	-9.93	54	62.31	34.27	6.51	59.02	100	171	Average
4821	57.82	-16.18	74	76.06	34.27	6.51	59.02	100	171	Peak
9648	55.12	-26.87	81.99	64.49	37.09	9.48	55.94	100	0	Peak
12057	37.1	-16.9	54	43.5	38.94	10.6	55.94	100	64	Average
12057	51.48	-22.52	74	57.88	38.94	10.6	55.94	100	64	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	01	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 9648 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	83.45	-	-	82.52	32.2	4.59	35.86	100	71	Average
2412	100.19	-	-	99.26	32.2	4.59	35.86	100	71	Peak
4821	44.19	-9.81	54	62.43	34.27	6.51	59.02	100	307	Average
4821	58.84	-15.16	74	77.08	34.27	6.51	59.02	100	307	Peak
9648	49.84	-30.35	80.19	59.21	37.09	9.48	55.94	100	0	Peak
12054	49.09	-24.91	74	55.49	38.94	10.6	55.94	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9744 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	86.08	-	-	85.07	32.24	4.61	35.84	200	210	Average
2437	103.79	-	-	102.78	32.24	4.61	35.84	200	210	Peak
4875	41.15	-12.85	54	59.22	34.28	6.53	58.88	158	20	Average
4875	55.47	-18.53	74	73.54	34.28	6.53	58.88	158	20	Peak
9744	56.14	-27.65	83.79	65.35	37.19	9.49	55.89	100	0	Peak
12186	39.55	-14.45	54	45.97	39.05	10.6	56.07	100	20	Average
12186	53.13	-20.87	74	59.55	39.05	10.6	56.07	100	20	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	85.9	-	-	84.89	32.24	4.61	35.84	100	78	Average
2437	102.78	-	-	101.77	32.24	4.61	35.84	100	78	Peak
4872	41.95	-12.05	54	60.02	34.28	6.53	58.88	100	29	Average
4872	56.86	-17.14	74	74.93	34.28	6.53	58.88	100	29	Peak
9747	49.08	-33.7	82.78	58.27	37.21	9.49	55.89	100	0	Peak
12171	50.32	-23.68	74	56.74	39.04	10.6	56.06	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	86.94	-	-	85.89	32.26	4.62	35.83	200	205	Average
2462	103.73	-	-	102.68	32.26	4.62	35.83	200	205	Peak
4923	39.72	-14.28	54	57.62	34.29	6.55	58.74	100	168	Average
4923	53.99	-20.01	74	71.89	34.29	6.55	58.74	100	168	Peak
9849	50.39	-33.34	83.73	59.38	37.33	9.51	55.83	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~25℃
Test Channel :	11	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	85.57	-	-	84.52	32.26	4.62	35.83	100	75	Average
2462	102.38	-	-	101.33	32.26	4.62	35.83	100	75	Peak
4923	40.99	-13.01	54	58.89	34.29	6.55	58.74	100	320	Average
4923	54.39	-19.61	74	72.29	34.29	6.55	58.74	100	320	Peak
9849	48.21	-34.17	82.38	57.2	37.33	9.51	55.83	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	03	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 9687 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2422	79.9	-	-	78.93	32.22	4.59	35.84	164	207	Average
2422	98.42	-	-	97.41	32.24	4.61	35.84	164	207	Peak
4845	39.35	-14.65	54	57.53	34.27	6.52	58.97	100	168	Average
4845	54.22	-19.78	74	72.4	34.27	6.52	58.97	100	168	Peak
9687	51.8	-26.62	78.42	61.1	37.13	9.49	55.92	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	03	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 9687 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2422	79.18	-	-	78.21	32.22	4.59	35.84	100	69	Average
2422	96.66	-	-	95.69	32.22	4.59	35.84	100	69	Peak
4848	38.78	-15.22	54	56.96	34.27	6.52	58.97	100	312	Average
4848	52.44	-21.56	74	70.62	34.27	6.52	58.97	100	312	Peak
9687	47.24	-29.42	76.66	56.54	37.13	9.49	55.92	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	81.32	-	-	80.3	32.24	4.61	35.83	199	190	Average
2437	99.31	-	-	98.29	32.24	4.61	35.83	199	190	Peak
4878	39.16	-14.84	54	57.22	34.28	6.54	58.88	100	165	Average
4878	53.61	-20.39	74	71.67	34.28	6.54	58.88	100	165	Peak
9747	51.91	-27.4	79.31	61.1	37.21	9.49	55.89	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	06	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	79.71	-	-	78.72	32.22	4.61	35.84	100	70	Average
2437	97.57	-	-	96.58	32.22	4.61	35.84	100	70	Peak
4872	39.68	-14.32	54	57.75	34.28	6.53	58.88	100	311	Average
4872	54.65	-19.35	74	72.72	34.28	6.53	58.88	100	311	Peak
9747	49.07	-28.5	77.57	58.26	37.21	9.49	55.89	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	09	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 9807 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
31.08	27.48	-12.52	40	39.29	19.12	0.71	31.64	-	-	Peak
113.43	23.14	-20.36	43.5	41.84	11.6	1.17	31.47	-	-	Peak
151.23	31.33	-12.17	43.5	50.16	11.14	1.28	31.25	-	-	Peak
400.1	37.97	-8.03	46	51.14	16.03	2.01	31.21	100	293	Peak
720.7	30.07	-15.93	46	35.94	21.64	2.69	30.2	-	-	Peak
800.5	37.09	-8.91	46	41.97	22.1	2.83	29.81	-	-	Peak
2452	81.9	-	-	80.88	32.24	4.61	35.83	200	204	Average
2452	100.66	-	-	99.59	32.26	4.62	35.81	200	204	Peak
4908	50.89	-23.11	74	68.85	34.28	6.55	58.79	100	0	Peak
9807	49.72	-30.94	80.66	58.81	37.27	9.5	55.86	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	23~25℃
Test Channel :	09	Relative Humidity :	53~54%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 9807 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
32.97	31.37	-8.63	40	44.52	17.76	0.72	31.63	-	-	Peak
39.99	27.36	-12.64	40	44.9	13.3	0.75	31.59	-	-	Peak
113.97	21.55	-21.95	43.5	40.15	11.7	1.17	31.47	-	-	Peak
400.1	37.86	-8.14	46	51.03	16.03	2.01	31.21	103	141	Peak
643.7	23.94	-22.06	46	31.03	20.48	2.57	30.14	-	-	Peak
800.5	32.52	-13.48	46	37.4	22.1	2.83	29.81	-	-	Peak
2452	80.97	-	-	79.95	32.24	4.61	35.83	100	69	Average
2452	98.55	-	-	97.5	32.26	4.62	35.83	100	69	Peak
4917	37.9	-16.1	54	55.86	34.28	6.55	58.79	100	319	Average
4917	51.86	-22.14	74	69.82	34.28	6.55	58.79	100	319	Peak
9807	46.8	-31.75	78.55	55.89	37.27	9.5	55.86	100	0	Peak

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

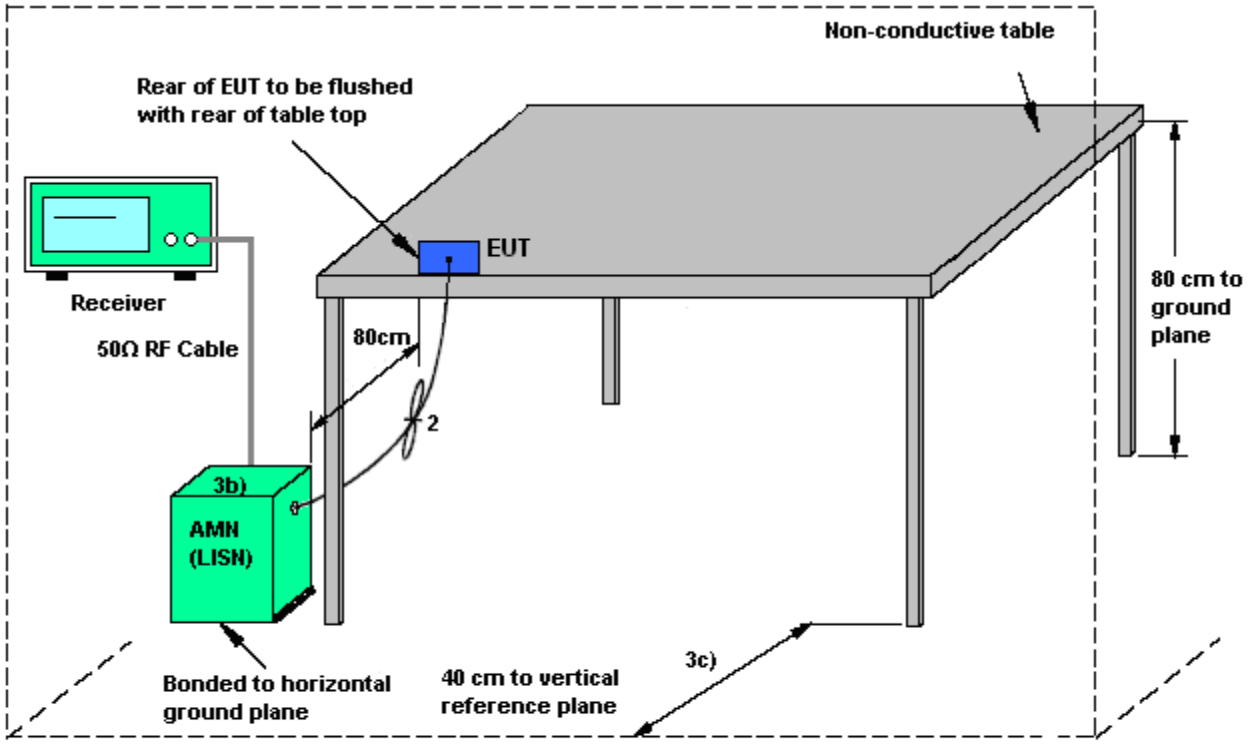
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

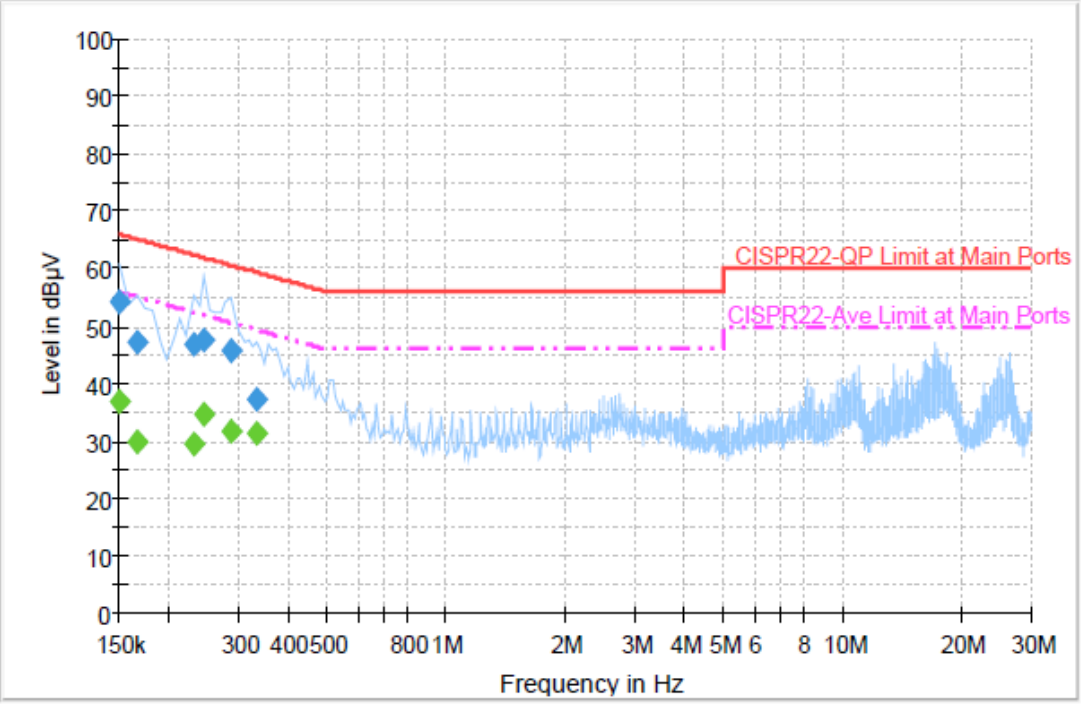
3.6.4 Test Setup



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

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	47~50%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



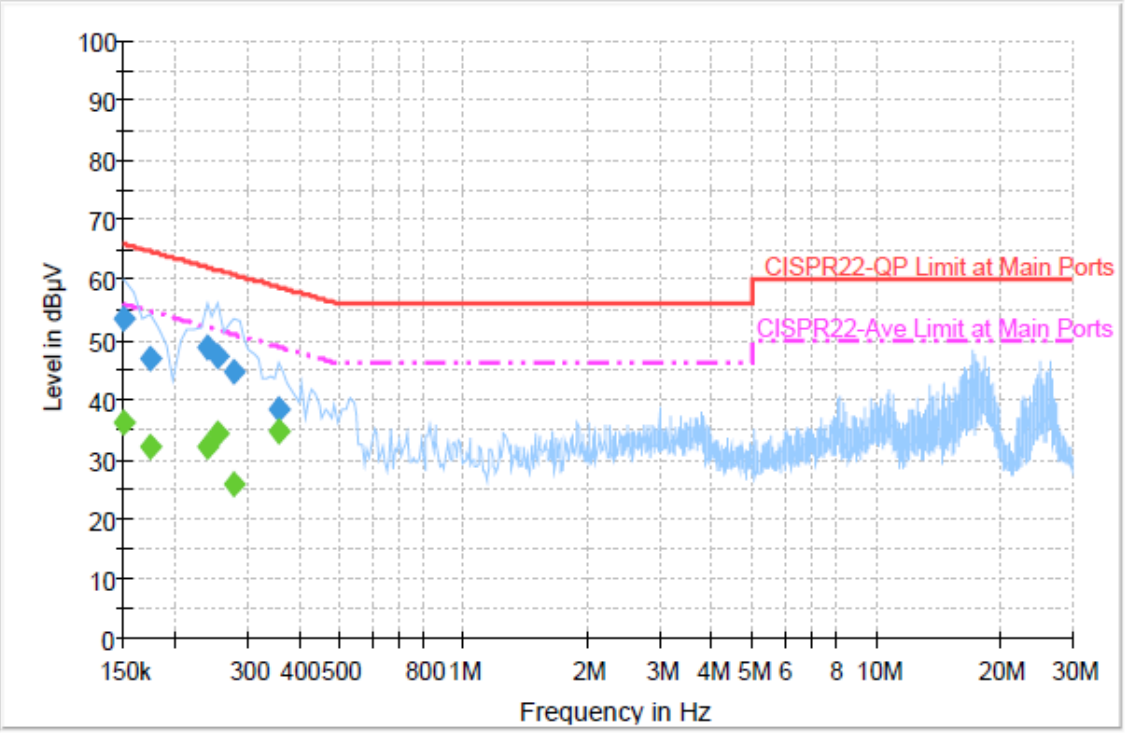
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.1	Off	L1	19.4	11.9	66.0
0.166000	47.2	Off	L1	19.3	18.0	65.2
0.230000	46.7	Off	L1	19.5	15.7	62.4
0.246000	47.6	Off	L1	19.4	14.3	61.9
0.286000	45.8	Off	L1	19.4	14.8	60.6
0.334000	37.2	Off	L1	19.4	22.2	59.4

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	37.0	Off	L1	19.4	19.0	56.0
0.166000	29.9	Off	L1	19.3	25.3	55.2
0.230000	29.5	Off	L1	19.5	22.9	52.4
0.246000	34.7	Off	L1	19.4	17.2	51.9
0.286000	31.8	Off	L1	19.4	18.8	50.6
0.334000	31.4	Off	L1	19.4	18.0	49.4

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	47~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	53.5	Off	N	19.4	12.5	66.0
0.174000	46.9	Off	N	19.3	17.9	64.8
0.238000	48.6	Off	N	19.4	13.6	62.2
0.254000	47.3	Off	N	19.4	14.3	61.6
0.278000	44.5	Off	N	19.4	16.4	60.9
0.358000	38.3	Off	N	19.3	20.5	58.8

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	36.1	Off	N	19.4	19.9	56.0
0.174000	32.1	Off	N	19.3	22.7	54.8
0.238000	32.1	Off	N	19.4	20.1	52.2
0.254000	34.5	Off	N	19.4	17.1	51.6
0.278000	25.9	Off	N	19.4	25.0	50.9
0.358000	34.7	Off	N	19.3	14.1	48.8

3.7 Antenna Requirements

3.7.1 Standard Applicable

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

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Jul. 31, 2012 ~ Aug. 16, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Jul. 31, 2012 ~ Aug. 16, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Jul. 31, 2012 ~ Aug. 16, 2012	Sep. 17, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Jul. 27, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Jul. 27, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Jul. 27, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Jul. 27, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Aug. 14, 2012 ~ Aug. 15, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Aug. 14, 2012 ~ Aug. 15, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Aug. 14, 2012 ~ Aug. 15, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103A	161075	10Hz ~ 1000MHz Gain:32dB	Feb. 27, 2012	Aug. 14, 2012 ~ Aug. 15, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	Aug. 14, 2012 ~ Aug. 15, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Aug. 29, 2012	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Oct. 20, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Aug. 14, 2012 ~ Aug. 15, 2012	Jul. 02, 2014	Radiation (03CH05-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Aug. 21, 2012	Radiation (03CH05-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Aug. 14, 2012 ~ Aug. 15, 2012	Dec. 05, 2012	Radiation (03CH05-HY)

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**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**

Appendix A. Photographs of EUT

Please refer to Sporton report number EP272643 as below.