

FCC RF Test Report

APPLICANT : Tecom Co., Ltd.
EQUIPMENT : Household Burglar-Alarm and Fire Warning System Unit
BRAND NAME : Cisco
MODEL NAME : DLC-100
FCC ID : D6XDLC100
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Apr. 18, 2012 and completely tested on Jul. 17, 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 / Manager



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
FR241855	Rev. 01	Initial issue of report	Sep. 03, 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	$\geq 0.5\text{MHz}$	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	$\leq 8\text{dBm/3kHz}$	Pass	-
3.2.6	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	
			Conducted Spurious Emission		Pass	
3.2.6	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	
			Radiated Spurious Emission		Pass	Under limit 1.02 dB at 2483.520 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 14.90 dB at 0.654 MHz
3.6	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Tecom Co., Ltd.

No. 23 R&D Road 2, Science-Based Industrial Park, Hsin-Chu Taiwan

1.2 Manufacturer

Global Brands Manufacture (DongGuan) Ltd.

Yue Yuan Industrial Estate, Huang Jiang Zhen, DongGuan City, Guangdong Province, China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Household Burglar-Alarm and Fire Warning System Unit
Brand Name	Cisco
Model Name	DLC-100
FCC ID	D6XDLC100
Radios application	GSM/EGPRS/WCDMA/HSPA WLAN 11bgn
EUT Stage	Identical Prototype

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

Product Specification subjective to this standard				
Tx/Rx Channel Frequency Range		802.11b/g/n : 2412 MHz ~ 2462 MHz		
Maximum Output Power to Antenna		<Legacy Ant 0> 802.11b : 22.22 dBm (0.1667 W) 802.11g : 25.59 dBm (0.3622 W) <SISO Ant 0> 802.11n HT-20 : 25.59 dBm (0.3622 W) <SISO Ant 1> 802.11n HT-20 : 25.55 dBm (0.3589 W) <MIMO Ant 0+1> 802.11n HT-20 : 28.24 dBm (0.6661 W) 802.11n HT-40 : 27.18 dBm (0.5219 W)		
99% Occupied Bandwidth		<Legacy Ant 0> 802.11b : 11.00MHz 802.11g : 17.00MHz <SISO Ant 0> 802.11n HT-20 : 17.90MHz <MIMO Ant 0+1> 802.11n HT-20 : 18.00MHz 802.11n HT-40 : 36.90MHz		
Antenna Type		Main Antenna : PIFA Antenna with gain 3.90 dBm Aux. Antenna : PIFA Antenna with gain 0.90 dBm		
Type of Modulation		802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)		
Antenna Function for Transmitter				
		Ant 0.	Ant 1.	
		802.11 b	V	-
		802.11 g	V	-
		802.11 n HT-20 SISO	V	V
		802.11 n HT-20 MIMO	V	V
		802.11 n HT-40 MIMO	V	V
Note: MIMO mode is completely uncorrelated.				

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH02-HY	CO05-HY	03CH06-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
- ♦ 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.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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 and 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.

<Legacy Ant 0>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	22.22	21.77	22.11	22.19

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	25.59	25.56	25.49	25.46	25.52	25.47	25.49	25.56

<SISO Ant 0>

2.4GHz 802.11n HT-20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	25.59	25.49	25.44	25.52	25.46	25.50	25.47	25.41

<SISO Ant 1>

2.4GHz 802.11n HT-20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	25.55	25.48	25.44	25.43	25.45	25.49	25.41	25.30

<MIMO Ant 0+1>

2.4GHz 802.11n HT-20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Power (dBm) MIMO – Ant 0	25.22	25.12	25.14	25.17	25.21	25.21	25.17	25.10
Power (dBm) MIMO – Ant 1	25.23	25.13	25.19	25.21	25.21	25.23	25.25	25.20
MIMO Ant 0 + 1 (Measure and Sum)	28.24	28.14	28.18	28.20	28.22	28.23	28.22	28.16



2.4GHz 802.11n HT-40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Power (dBm) MIMO – Ant 0	24.11	23.62	23.50	23.44	23.36	23.55	23.44	24.21
Power (dBm) MIMO – Ant 1	24.22	23.96	23.88	24.01	23.87	23.54	24.17	24.10
MIMO Ant 0 + 1 (Measure and Sum)	27.18	26.80	26.70	26.74	26.63	26.56	26.83	27.17

Note: MIMO Ant 0+1 is a calculated result from sum of the power MIMO Ant 0 and MIMO Ant 1.

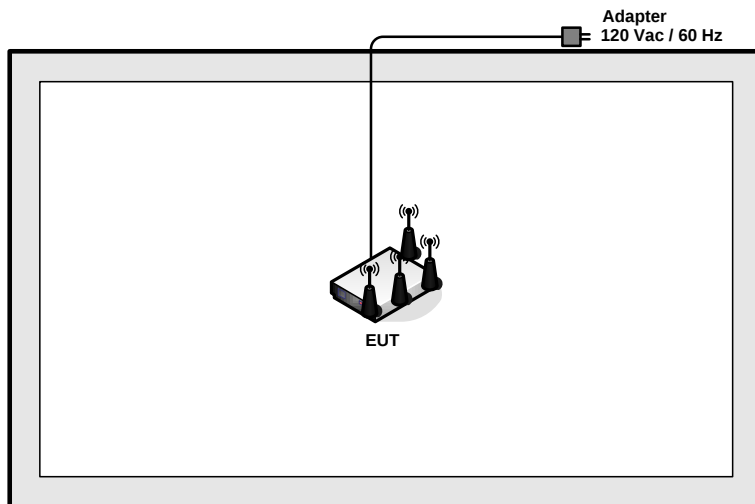
2.3 Test Mode

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

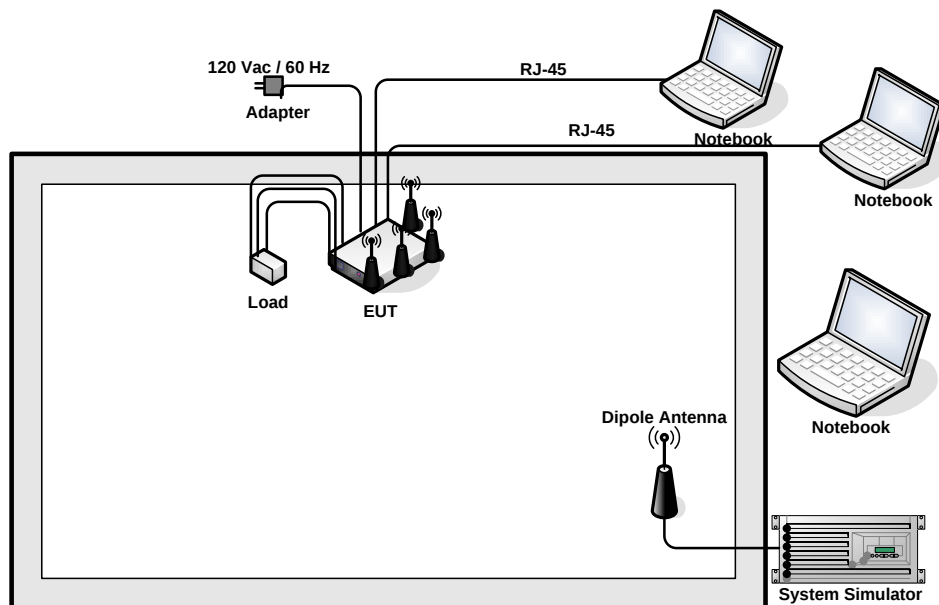
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT-20	6.5 Mbps	1/6/11
		802.11n HT-40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT-20	6.5 Mbps	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 : GSM850 Idle + WLAN (2.4G) Link + LAN Link + WAN Link + Adapter			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

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

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

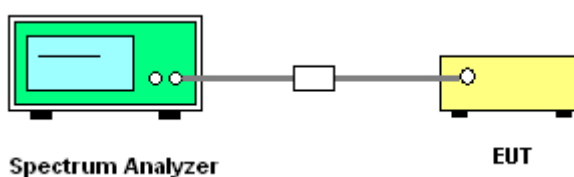
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) $\geq 3 * RBW$. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Ant 0		
01	2412	8.12	0.5	Pass
06	2437	8.16	0.5	Pass
11	2462	8.12	0.5	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Ant 0		
01	2412	15.64	0.5	Pass
06	2437	15.64	0.5	Pass
11	2462	15.64	0.5	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 6dB Bandwidth (MHz)			6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		SISO Ant 0	MIMO Ant 0	MIMO Ant 1		
01	2412	17.00	17.16	16.96	0.5	Pass
06	2437	16.92	17.16	16.60	0.5	Pass
11	2462	17.32	17.04	16.52	0.5	Pass



Test Mode :	802.11n HT-40	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-40 6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		MIMO Ant 0	MIMO Ant 1		
03	2422	36.72	36.64	0.5	Pass
06	2437	36.72	36.56	0.5	Pass
09	2452	36.48	36.40	0.5	Pass

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
		Ant 0	
01	2412	11.00	Pass
06	2437	11.00	Pass
11	2462	11.00	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
		Ant 0	
01	2412	16.95	Pass
06	2437	17.00	Pass
11	2462	16.95	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 99% Occupied Bandwidth (MHz)			Pass/Fail
		SISO Ant 0	MIMO Ant 0	MIMO Ant 1	
01	2412	17.80	17.90	17.95	Pass
06	2437	17.90	17.95	18.00	Pass
11	2462	17.90	17.80	17.90	Pass



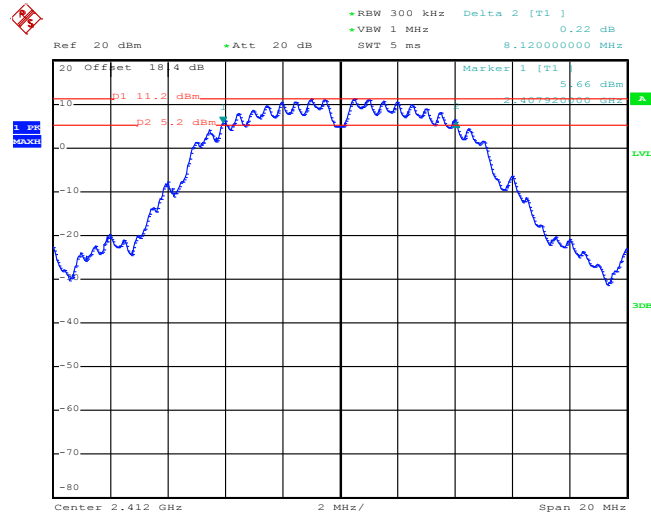
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-40 99% Occupied Bandwidth (MHz)		Pass/Fail
		MIMO Ant 1	MIMO Ant 2	
03	2422	36.80	36.80	Pass
06	2437	36.70	36.90	Pass
09	2452	36.90	36.80	Pass

3.1.7 Test Result of 6dB Bandwidth Plots

802.11b – Ant 0

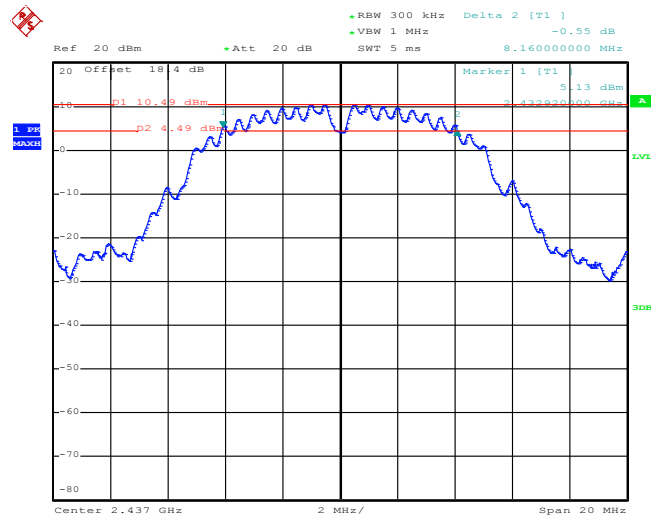
6 dB Bandwidth Plot on Channel 01



Date: 12.JUL.2012 19:38:11

802.11b – Ant 0

6 dB Bandwidth Plot on Channel 06

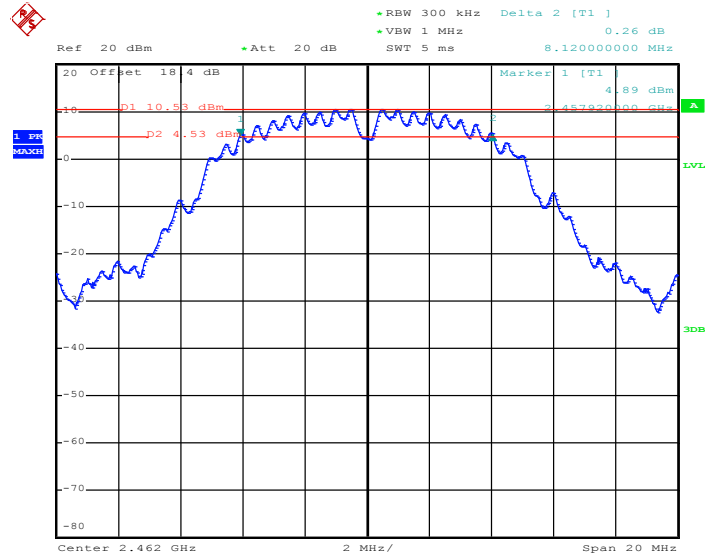


Date: 12.JUL.2012 20:00:03



802.11b – Ant 0

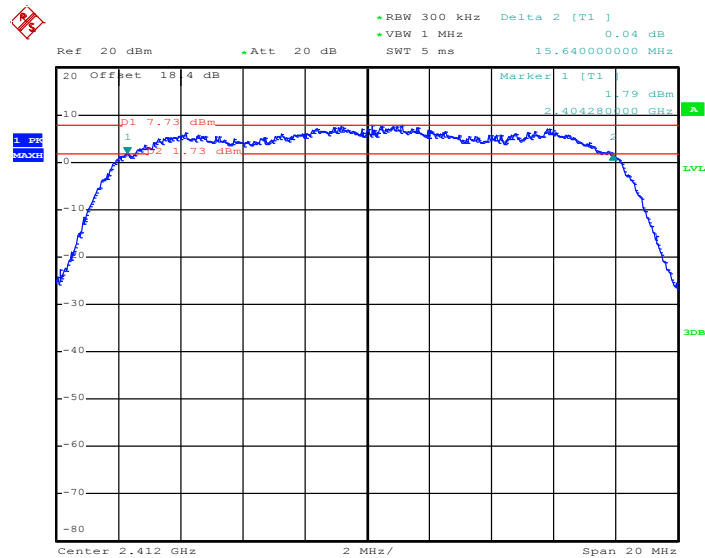
6 dB Bandwidth Plot on Channel 11



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802.11g – Ant 0

6 dB Bandwidth Plot on Channel 01

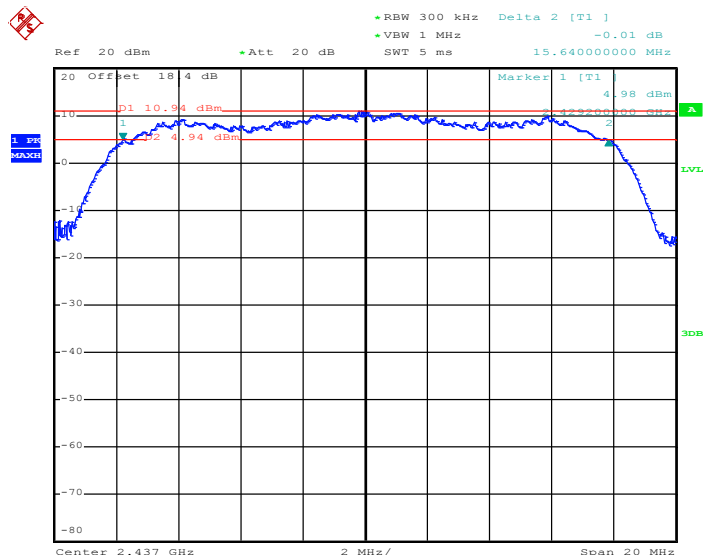


Date: 12.JUL.2012 19:07:22



802.11g – Ant 0

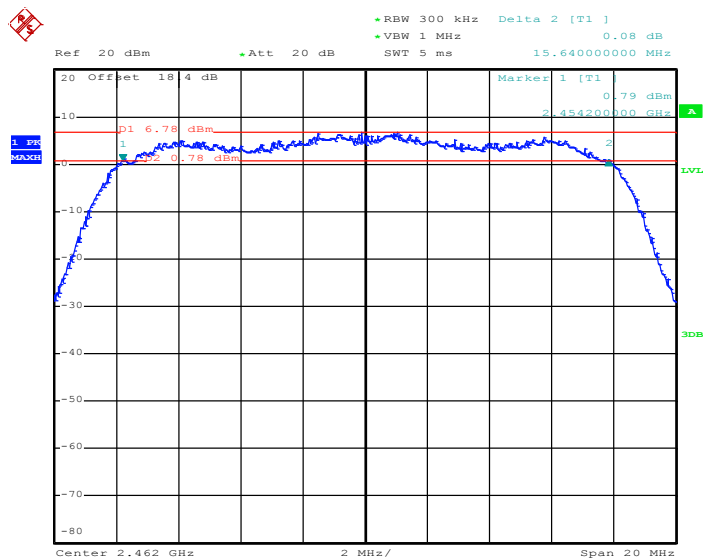
6 dB Bandwidth Plot on Channel 06



Date: 12.JUL.2012 19:27:57

802.11g – Ant 0

6 dB Bandwidth Plot Channel 11

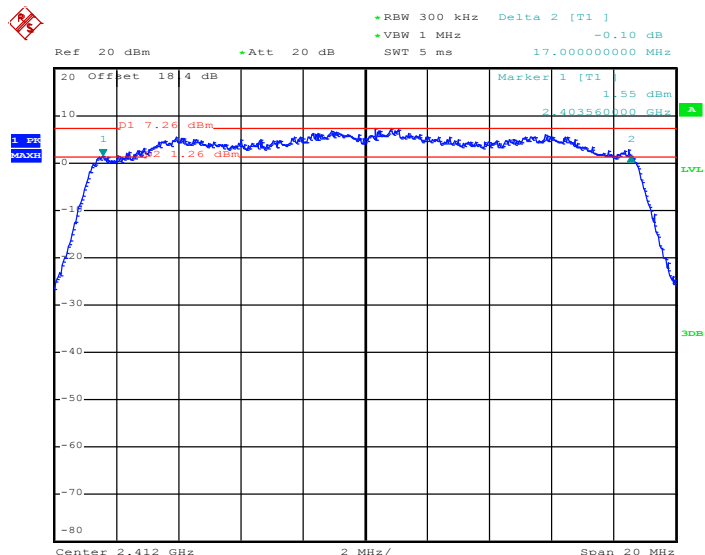


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802.11n HT-20 – SISO Ant 0

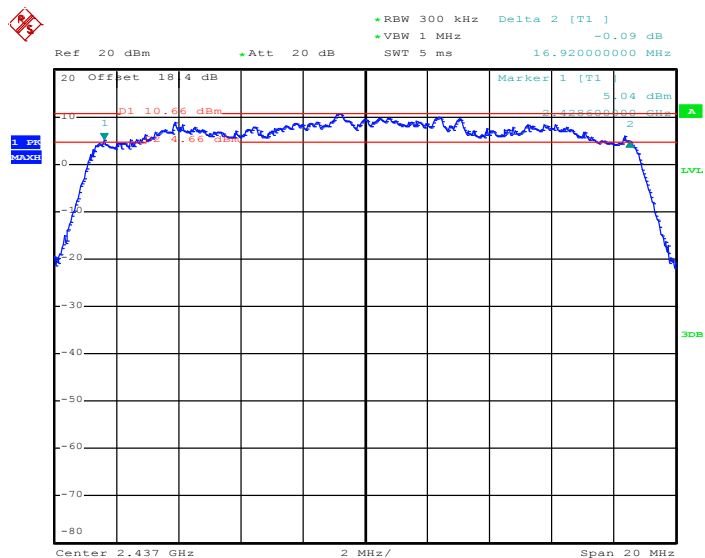
6 dB Bandwidth Plot on Channel 01



Date: 13.JUL.2012 01:36:11

802.11n HT-20 – SISO Ant 0

6 dB Bandwidth Plot on Channel 06

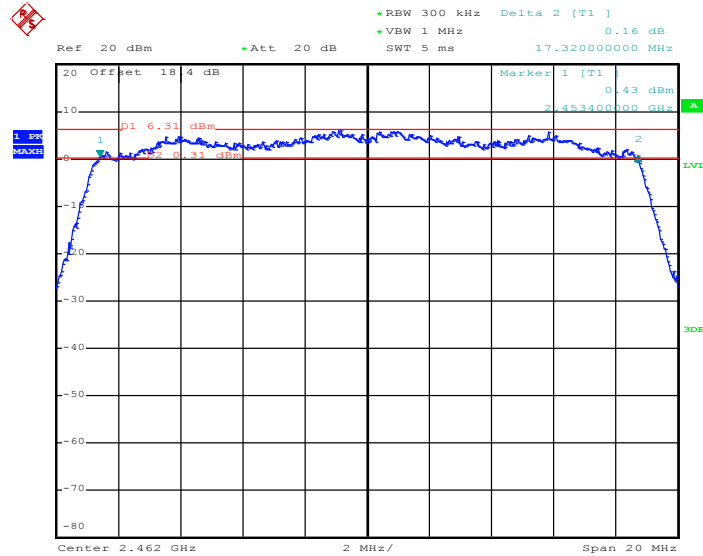


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802.11n HT-20 – SISO Ant 0

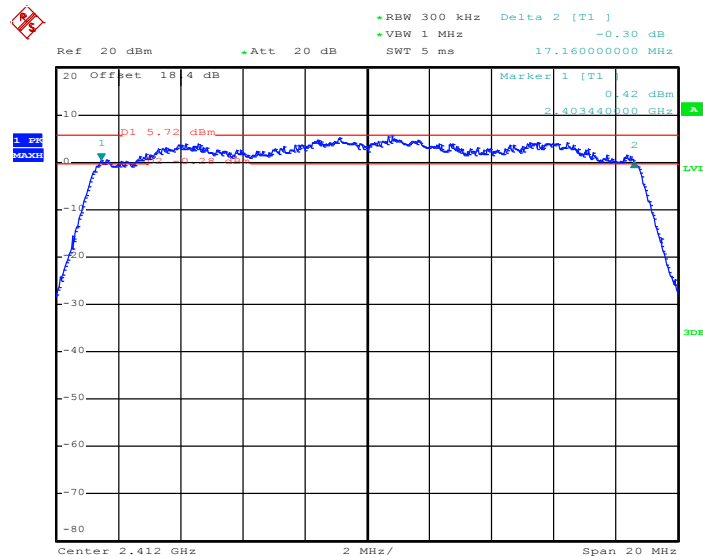
6 dB Bandwidth Plot on Channel 11



Date: 13.JUL.2012 01:44:54

802.11n HT-20 – MIMO Ant 0

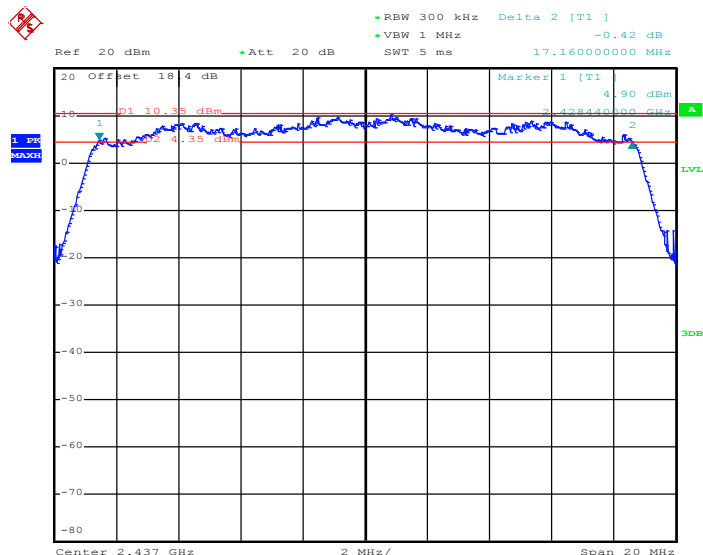
6 dB Bandwidth Plot on Channel 01



Date: 13.JUL.2012 01:08:06

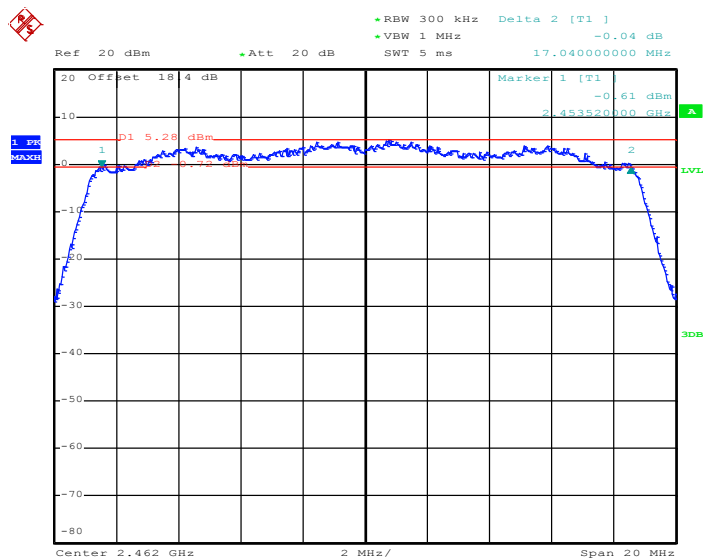


6 dB Bandwidth Plot on Channel 06

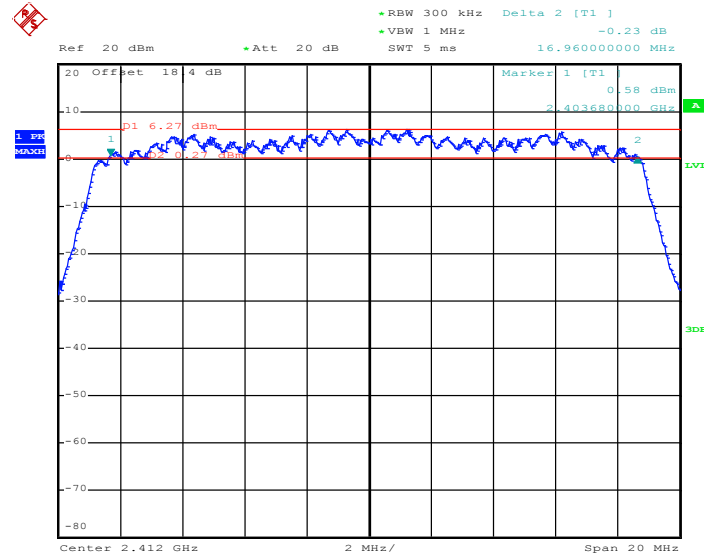


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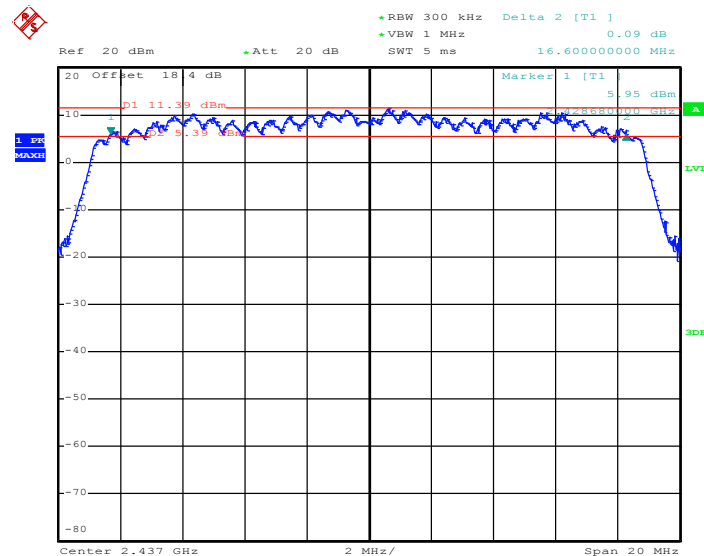
6 dB Bandwidth Plot on Channel 11



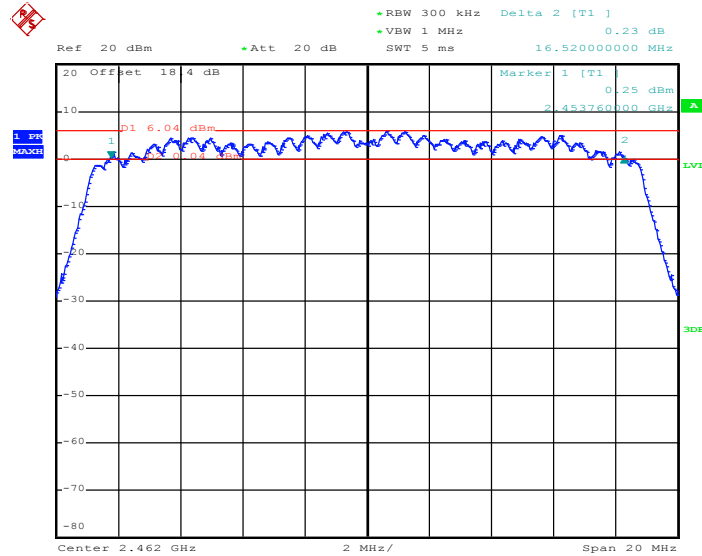
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802.11n HT-20 – MIMO Ant 1
6 dB Bandwidth Plot on Channel 01


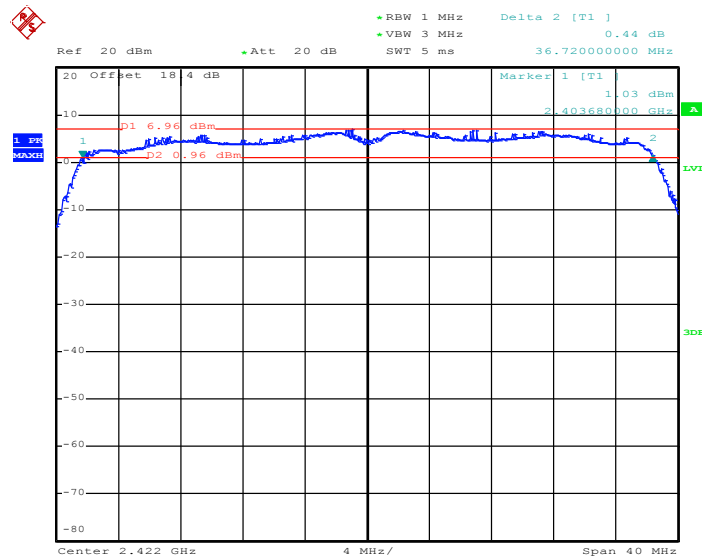
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802.11n HT-20 – MIMO Ant 1
6 dB Bandwidth Plot on Channel 06


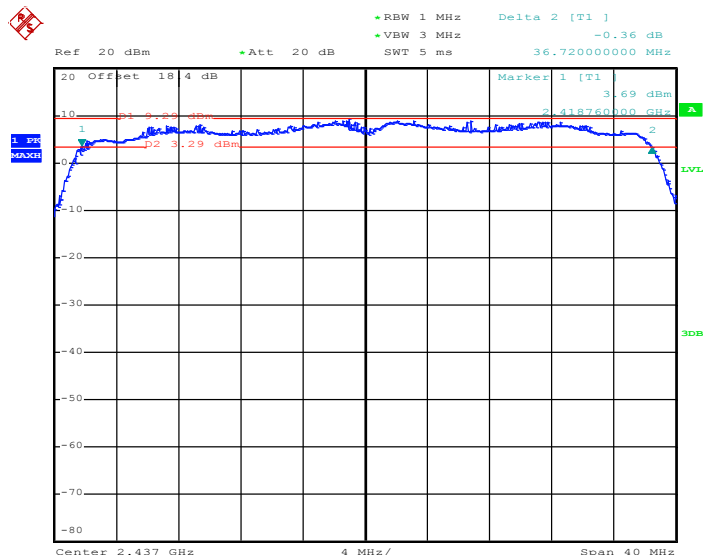
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802.11n HT-20 – MIMO Ant 1
6 dB Bandwidth Plot on Channel 11


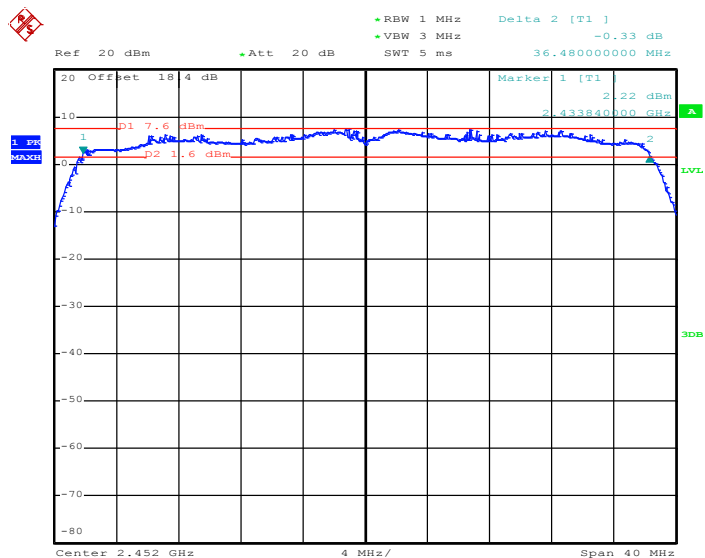
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802.11n HT-40 – MIMO Ant 0
6 dB Bandwidth Plot on Channel 03


Date: 13.JUL.2012 00:30:01

802.11n HT-40 – MIMO Ant 0
6 dB Bandwidth Plot on Channel 06


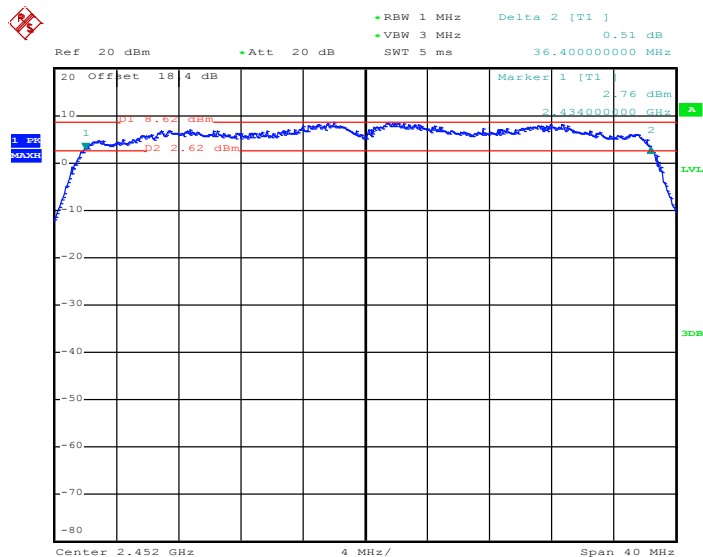
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802.11n HT-40 – MIMO Ant 0
6 dB Bandwidth Plot on Channel 09


Date: 13.JUL.2012 00:48:37



6 dB Bandwidth Plot on Channel 09



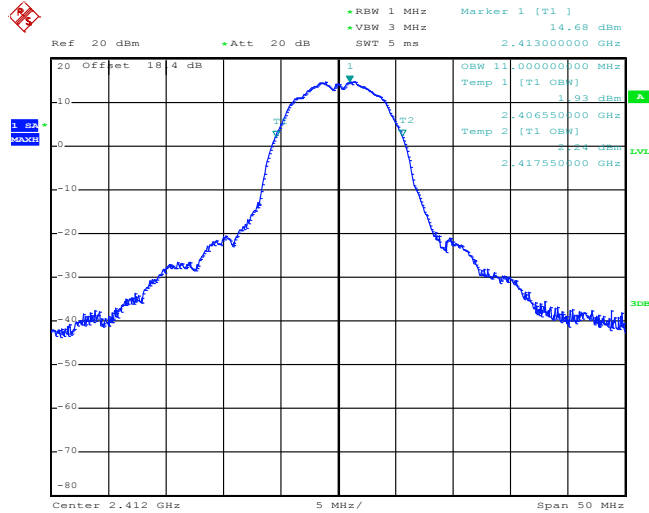
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3.1.8 Test Result of 99% Bandwidth Plots

802.11b – Ant 0

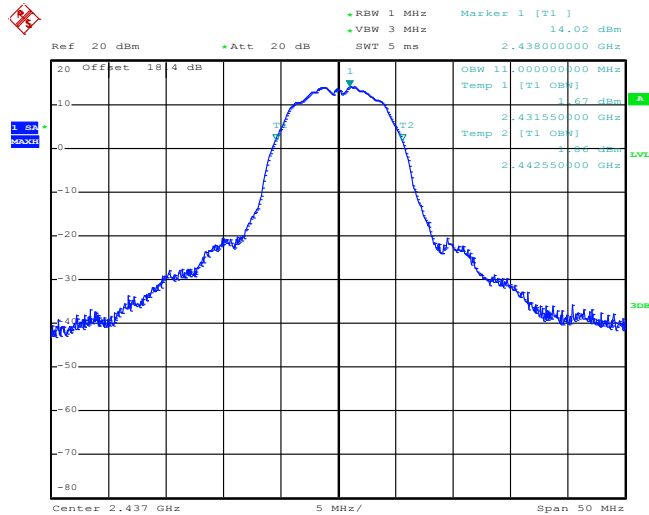
99% Occupied Bandwidth Plot on Channel 01



Date: 12.JUL.2012 19:40:19

802.11b – Ant 0

99% Occupied Bandwidth Plot on Channel 06

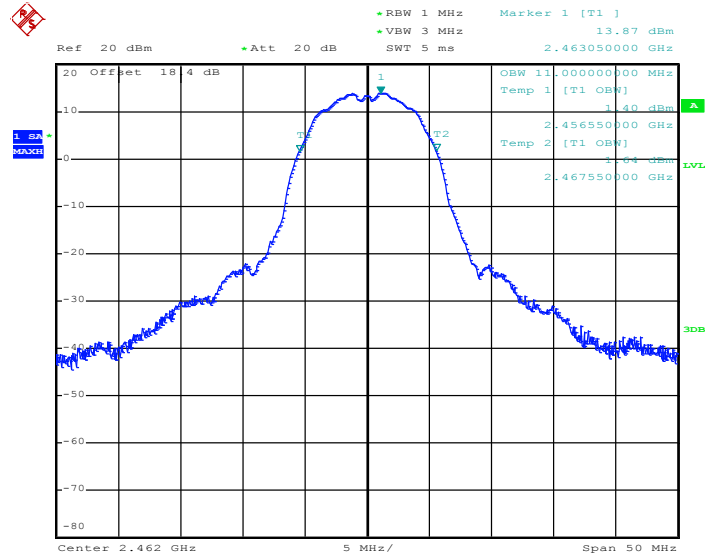


Date: 12.JUL.2012 20:01:44



802.11b – Ant 0

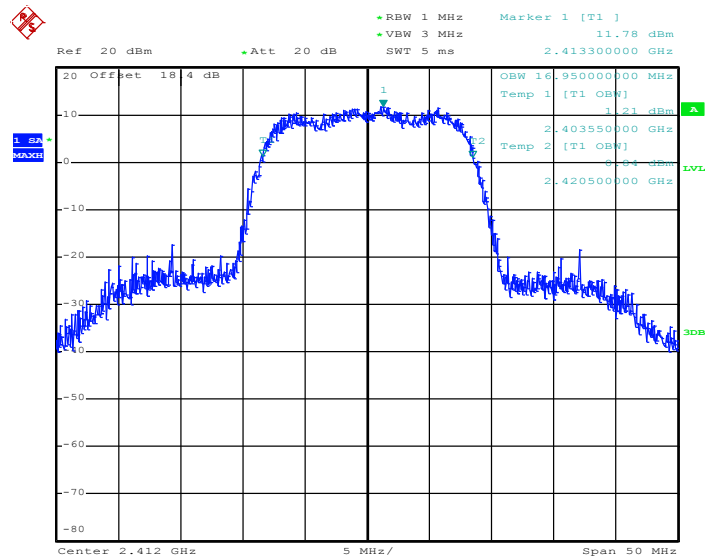
99% Occupied Bandwidth Plot on Channel 11



Date: 12.JUL.2012 19:44:05

802.11g – Ant 0

99% Occupied Bandwidth Plot on Channel 01

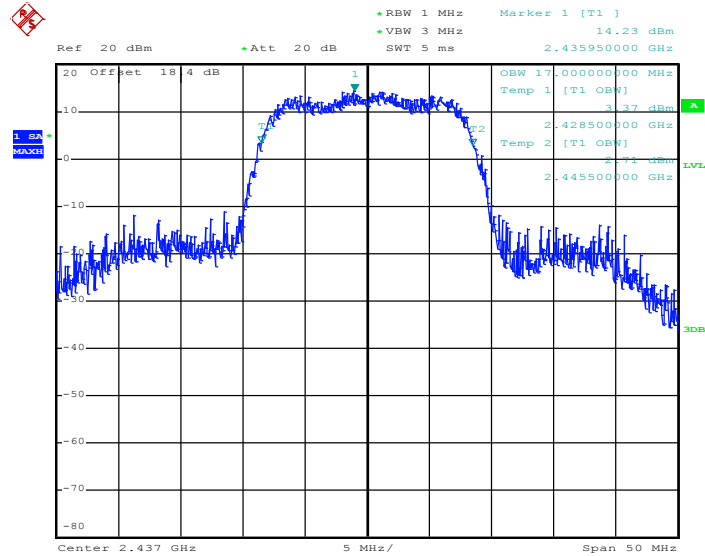


Date: 12.JUL.2012 19:09:44



802.11g – Ant 0

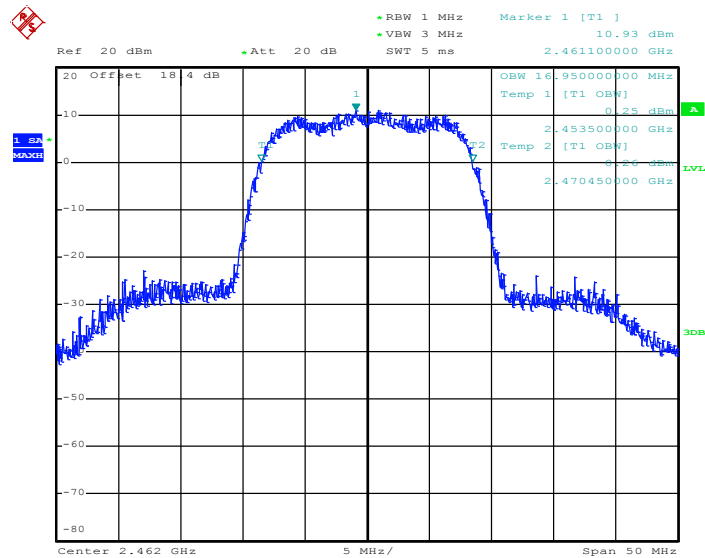
99% Occupied Bandwidth Plot on Channel 06



Date: 12.JUL.2012 19:29:58

802.11g – Ant 0

99% Occupied Bandwidth Plot Channel 11

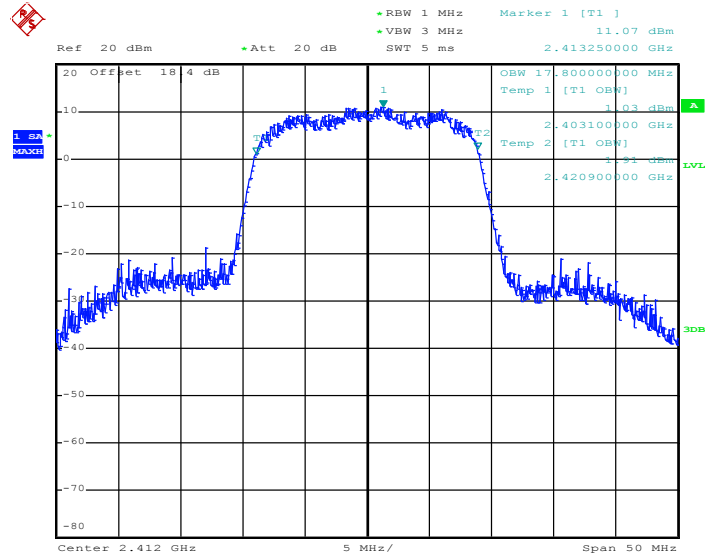


Date: 12.JUL.2012 19:32:59



802.11n HT-20 – SISO Ant 0

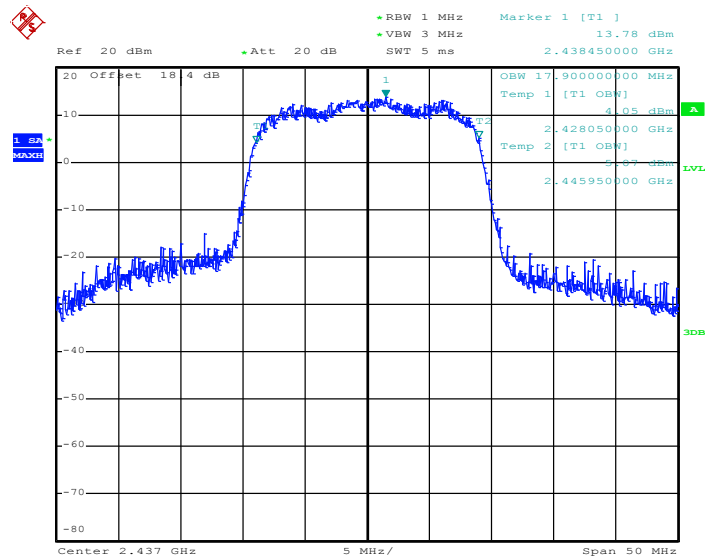
99% Occupied Bandwidth Plot on Channel 01



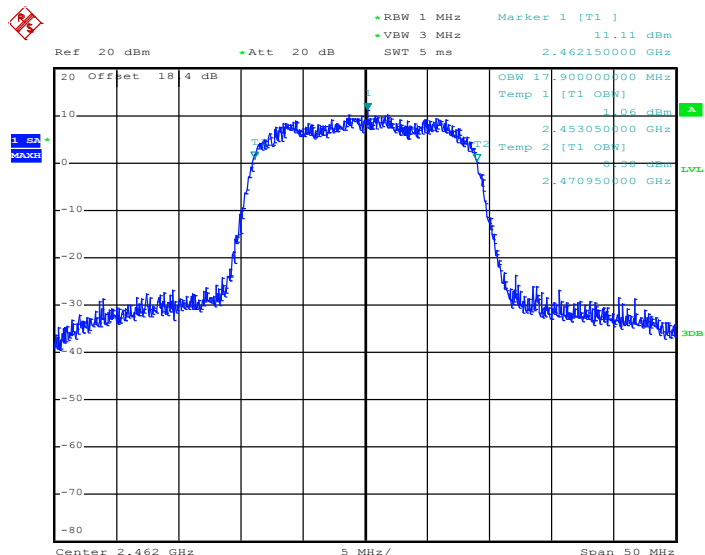
Date: 13.JUL.2012 01:37:54

802.11n HT-20 – SISO Ant 0

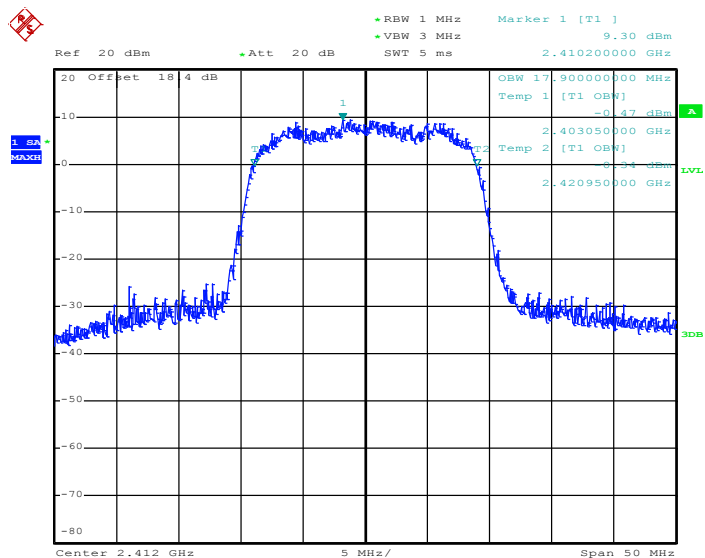
99% Occupied Bandwidth Plot on Channel 06



Date: 13.JUL.2012 01:43:08

802.11n HT-20 – SISO Ant 0
99% Occupied Bandwidth Plot on Channel 11


Date: 13.JUL.2012 01:46:41

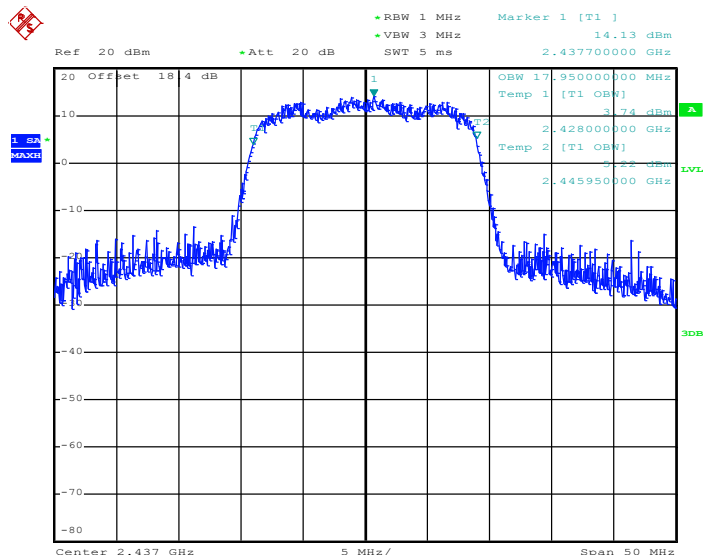
802.11n HT-20 – MIMO Ant 0
99% Occupied Bandwidth Plot on Channel 01


Date: 13.JUL.2012 01:09:53



802.11n HT-20 – MIMO Ant 0

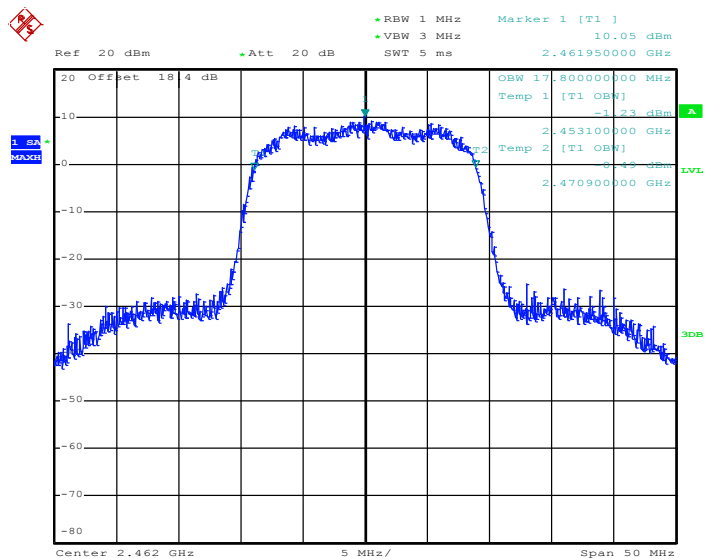
99% Occupied Bandwidth Plot on Channel 06



Date: 13.JUL.2012 01:05:38

802.11n HT-20 – MIMO Ant 0

99% Occupied Bandwidth Plot on Channel 11

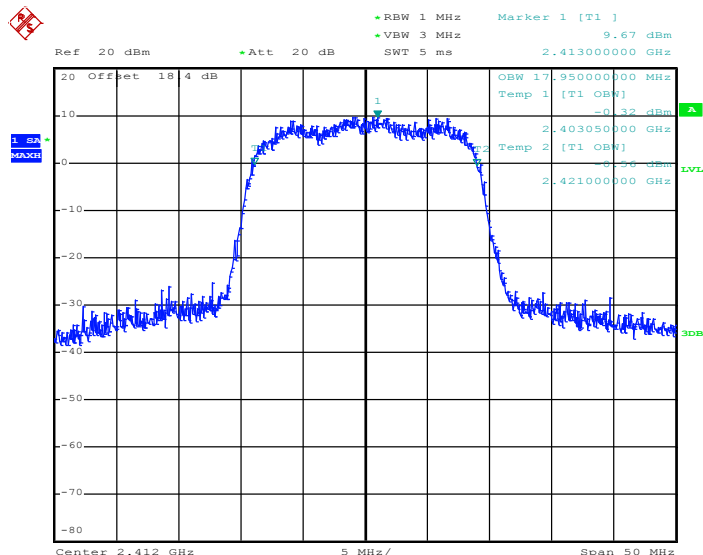


Date: 13.JUL.2012 01:32:08



802.11n HT-20 – MIMO Ant 1

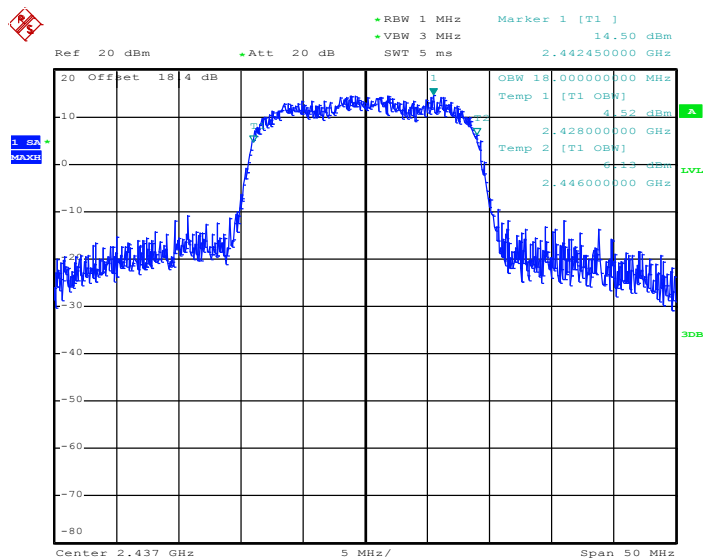
99% Occupied Bandwidth Plot on Channel 01



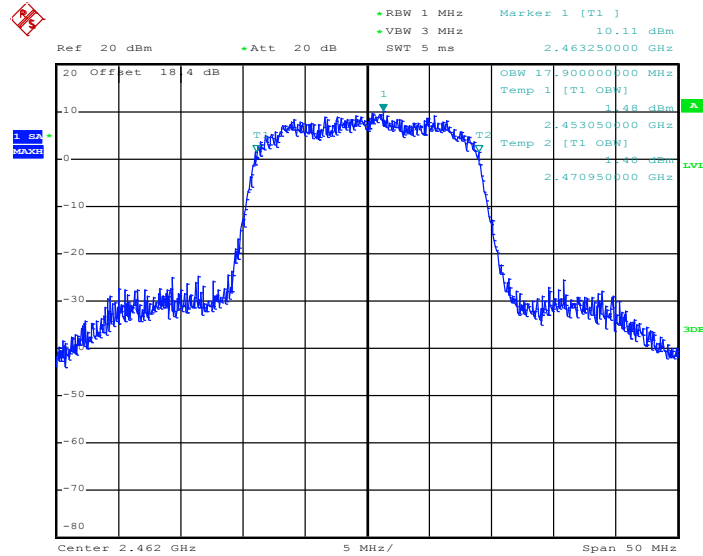
Date: 13.JUL.2012 01:14:16

802.11n HT-20 – MIMO Ant 1

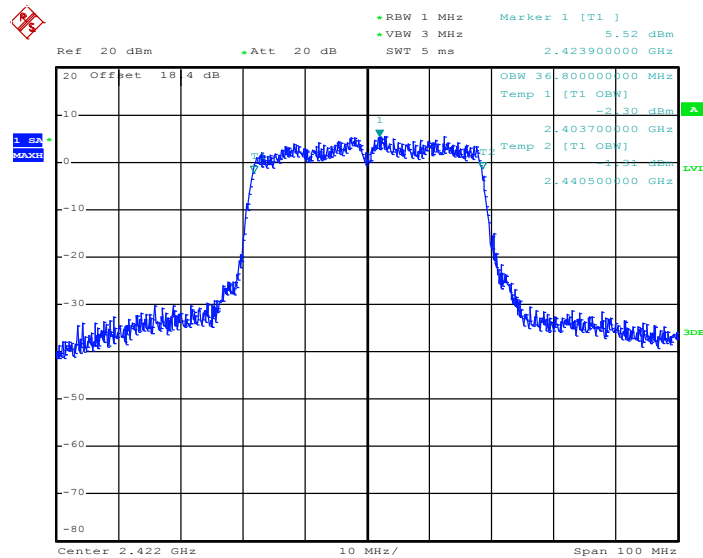
99% Occupied Bandwidth Plot on Channel 06



Date: 13.JUL.2012 01:01:25

802.11n HT-20 – MIMO Ant 1
99% Occupied Bandwidth Plot on Channel 11


Date: 13.JUL.2012 01:26:53

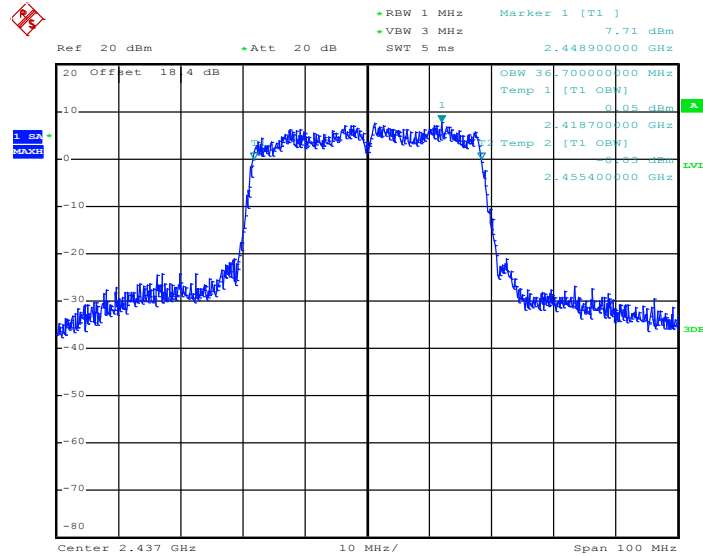
802.11n HT-40 – MIMO Ant 0
99% Occupied Bandwidth Plot on Channel 03


Date: 13.JUL.2012 00:31:49



802.11n HT-40 – MIMO Ant 0

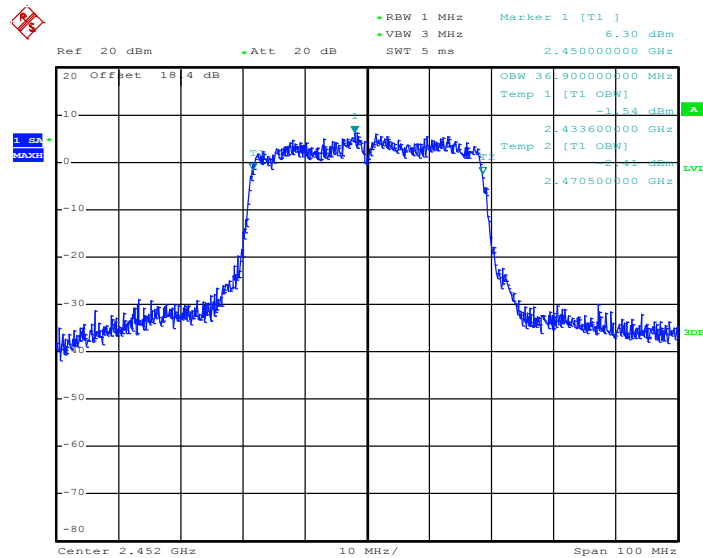
99% Occupied Bandwidth Plot on Channel 06



Date: 13.JUL.2012 00:44:31

802.11n HT-40 – MIMO Ant 0

99% Occupied Bandwidth Plot on Channel 09

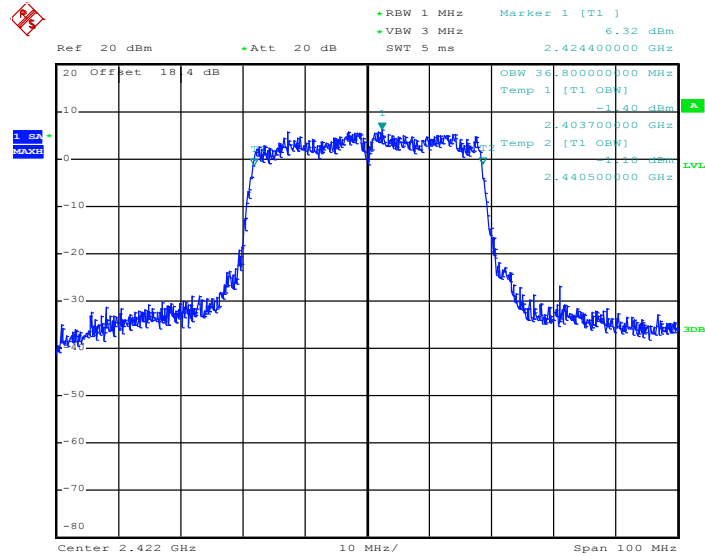


Date: 13.JUL.2012 00:50:19



802.11n HT-40 – MIMO Ant 1

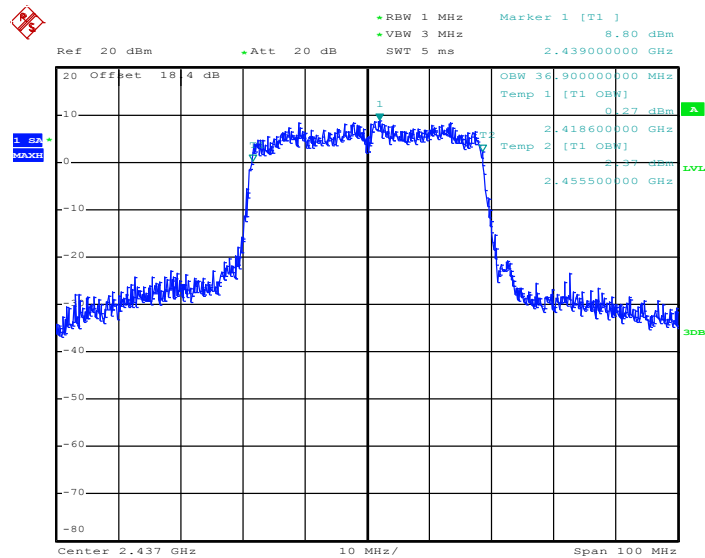
99% Occupied Bandwidth Plot on Channel 03



Date: 13.JUL.2012 00:40:38

802.11n HT-40 – MIMO Ant 1

99% Occupied Bandwidth Plot on Channel 06

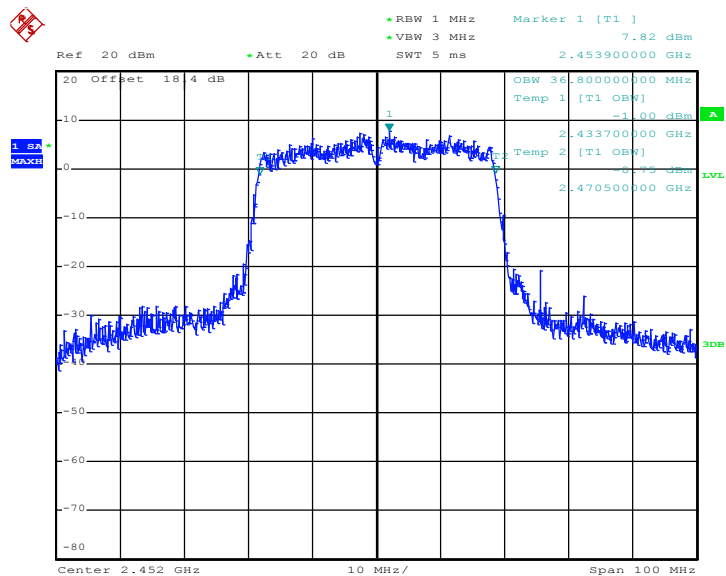


Date: 13.JUL.2012 00:17:20



802.11n HT-40 – MIMO Ant 1

99% Occupied Bandwidth Plot on Channel 09



Date: 13.JUL.2012 00:56:38

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

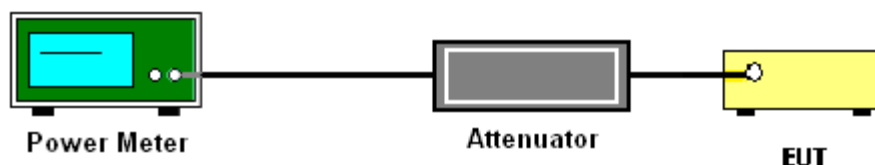
3.2.2 Measuring Instruments

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 and TCB Workshop 2012, April.
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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Ant 0		
01	2412	22.22	30	Pass
06	2437	21.69	30	Pass
11	2462	21.27	30	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Ant 0		
01	2412	24.80	30	Pass
06	2437	25.59	30	Pass
11	2462	23.32	30	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT-20 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant 0	SISO Ant 1	MIMO Ant 0	MIMO Ant 1	MIMO Ant 0+1		
01	2412	24.57	23.77	23.15	22.88	26.03	30	Pass
06	2437	25.59	25.55	25.22	25.23	28.24	30	Pass
11	2462	22.99	23.46	22.97	22.12	25.58	30	Pass

Note : MIMO Ant 0+1 is a calculated result from sum of the power MIMO Ant 0 and MIMO Ant 1.



Test Mode :	802.11n HT-40	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT-40 Peak Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		MIMO Ant 0	MIMO Ant 1	MIMO Ant 0+1		
03	2422	22.48	22.61	25.56	30	Pass
06	2437	24.11	24.22	27.18	30	Pass
09	2452	22.25	22.51	25.56	30	Pass

Note : MIMO Ant 0+1 is a calculated result from sum of the power MIMO Ant 0 and MIMO Ant 1.

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%
Duty Cycle:	100.00%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
		Ant 0
01	2412	18.45
06	2437	17.96
11	2462	17.70

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%
Duty Cycle:	96.89%	Duty Factor:	0.14dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
		Ant 0
01	2412	14.35
06	2437	16.67
11	2462	13.13

Test Mode :	802.11n HT-20	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%
Duty Cycle:	96.66% for SISO Ant. 0 97.20% for SISO Ant. 1 93.97% for MIMO Ant. 0 93.47% for MIMO Ant. 1	Duty Factor:	0.15dB for SISO Ant. 0 0.12dB for SISO Ant. 1 0.27dB for MIMO Ant. 0 0.29dB for MIMO Ant. 1

Channel	Frequency (MHz)	802.11n HT-20 Average Output Power (dBm)				
		SISO Ant 0	SISO Ant 1	MIMO Ant 0	MIMO Ant 1	MIMO Ant 0+1
01	2412	13.53	13.07	12.08	12.23	15.17
06	2437	16.71	16.66	16.56	16.89	19.74
11	2462	12.71	12.88	11.75	11.65	14.71

Test Mode :	802.11n HT-40	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%
Duty Cycle:	88.21% for MIMO Ant. 0 88.46% for MIMO Ant. 1	Duty Factor:	0.54dB for MIMO Ant. 0 0.53dB for MIMO Ant. 1

Channel	Frequency (MHz)	802.11n HT-40 Average Output Power (dBm)		
		MIMO Ant 0	MIMO Ant 1	MIMO Ant 0+1
03	2422	11.40	11.71	14.57
06	2437	13.55	13.95	16.77
09	2452	11.93	12.39	15.18

Note :

1. MIMO Ant 0+1 is a calculated result from sum of the power MIMO Ant 0 and MIMO Ant 1.
2. The average power is measured by power meter with average power sensor and is reporting only.

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. Record the measurement data derived from spectrum analyzer.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW) $\geq$ 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r01.

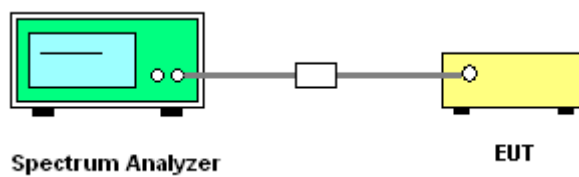
If measurements performed using method (2) plus $10\log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

Method (2): Measure and add $10\log(N)\text{ dB}$, where N is the number of outputs. (N=2)

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass /Fail
		Ant 0			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	10.43	-4.77	8	Pass
06	2437	9.93	-5.27	8	Pass
11	2462	10.07	-5.13	8	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass /Fail
		Ant 0			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	3.91	-11.29	8	Pass
06	2437	6.36	-8.84	8	Pass
11	2462	2.79	-12.41	8	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Ch.	Freq. (MHz)	802.11n HT-20 Power Density						Max. Limits (dBm)	Pass /Fail
		SISO Ant 0		MIMO Ant 0		MIMO Ant 1			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10log2	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10log2		
01	2412	2.97	-12.23	1.81	-10.38	1.79	-10.40	8	Pass
06	2437	7.84	-7.36	6.34	-5.85	6.36	-5.83	8	Pass
11	2462	2.40	-12.80	1.45	-10.74	1.28	-10.91	8	Pass

Test Mode :	802.11n HT-40	Temperature :	24~26°C
Test Engineer :	Book Lin and Pinkston Tu	Relative Humidity :	55~58%

Ch.	Freq. (MHz)	802.11n HT-40 Power Density				Max. Limits (dBm)	Pass /Fail
		MIMO Ant 0		MIMO Ant 1			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10log2	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10log2		
03	2422	-2.26	-14.45	-1.79	-13.98	8	Pass
06	2437	-0.18	-12.37	0.45	-11.74	8	Pass
09	2452	-1.73	-13.92	-1.18	-13.37	8	Pass

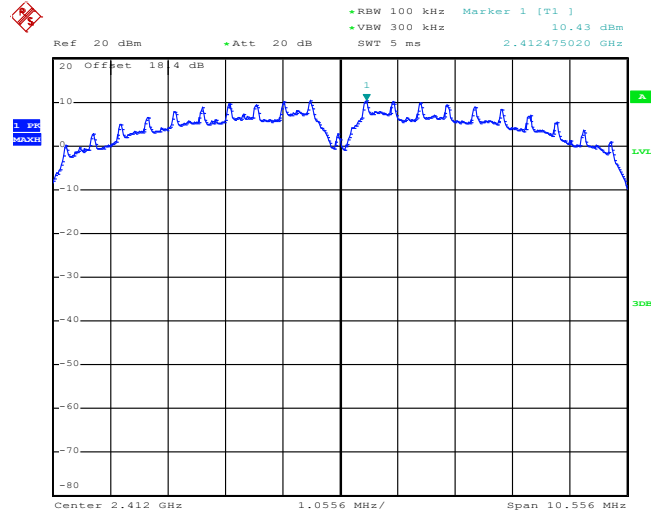
Note:

1. Measured power density (dBm) has offset with cable loss.
2. $BWCF (dB) = 10 \log (3k/100k) = -15.2 \text{ dB}$
3. $\text{Power Density/ 3KHz (dBm)} = \text{Measured power density/ 100KHz (dBm)} + BWCF (dB)$
4. $\text{MIMO Power Density/ 3KHz (dBm)} = \text{Measured power density/ 100KHz (dBm)} + BWCF (dB) + 10\text{LOG}(N=2), \text{where } N=2 \text{ transmitters.}$

3.3.6 Test Result of Power Spectral Density Plots

802.11b – Ant 0

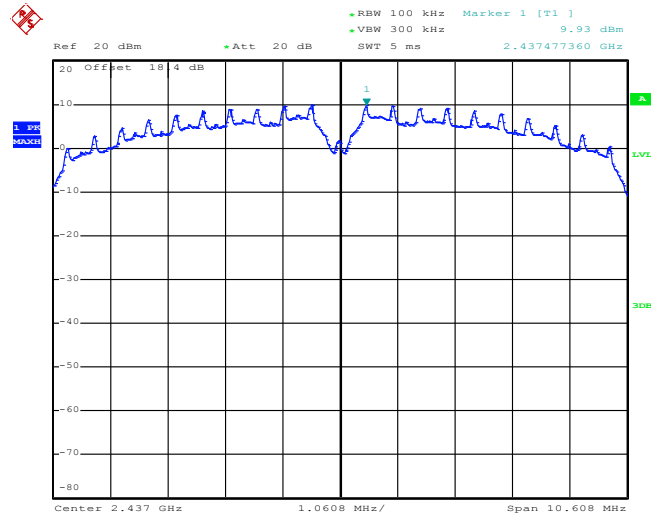
PSD Plot on Channel 01



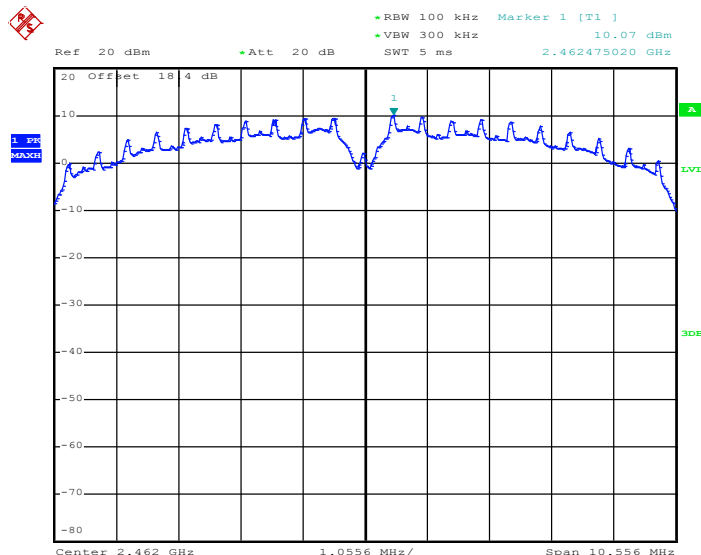
Date: 12.JUL.2012 19:38:32

802.11b – Ant 0

PSD Plot on Channel 06

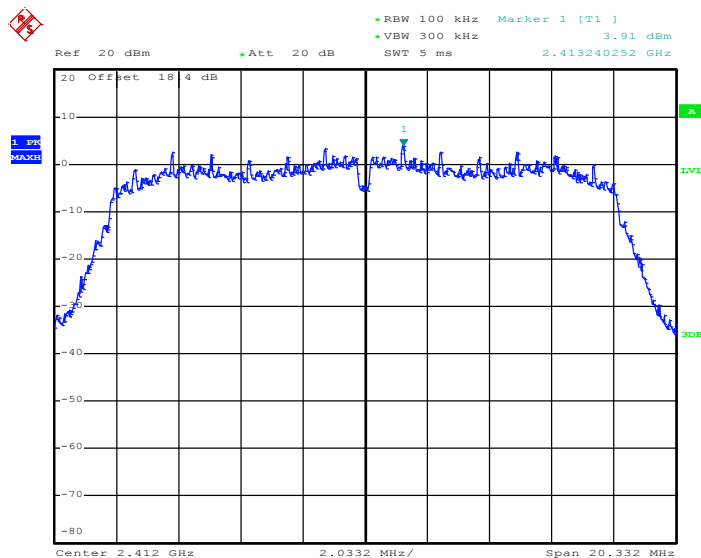


Date: 12.JUL.2012 20:00:40

802.11b – Ant 0
PSD Plot on Channel 11


Date: 12.JUL.2012 19:42:37

<

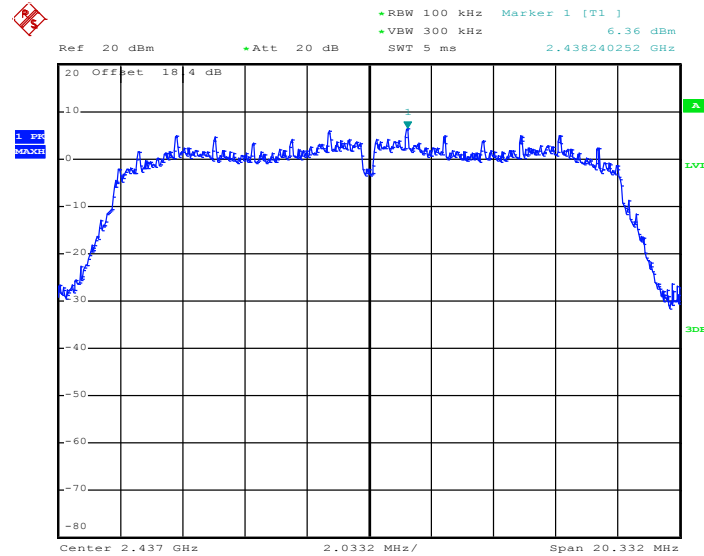
802.11g – Ant 0
PSD Plot on Channel 01


Date: 12.JUL.2012 19:08:06



802.11g – Ant 0

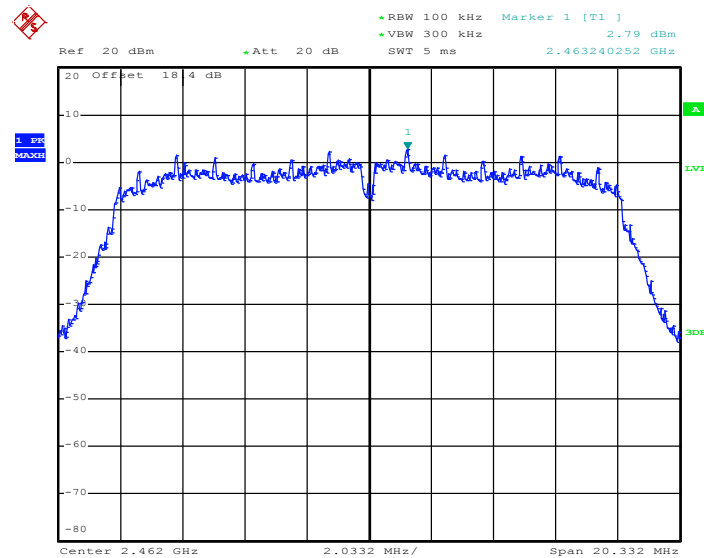
PSD Plot on Channel 06



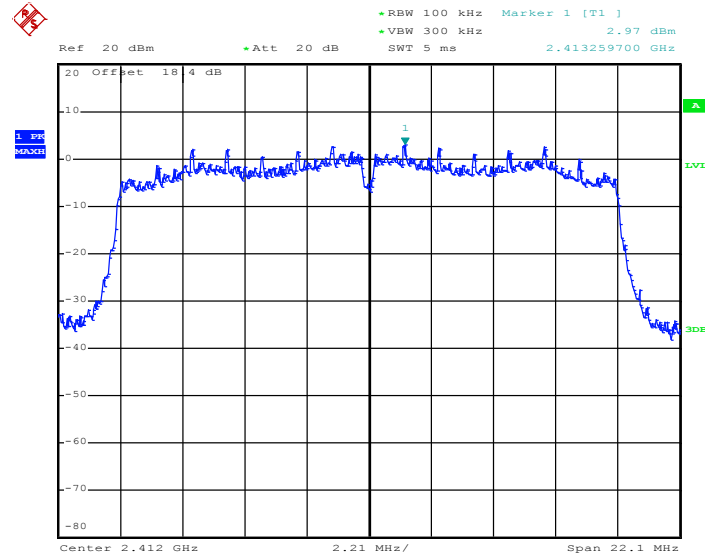
Date: 12.JUL.2012 19:28:38

802.11g – Ant 0

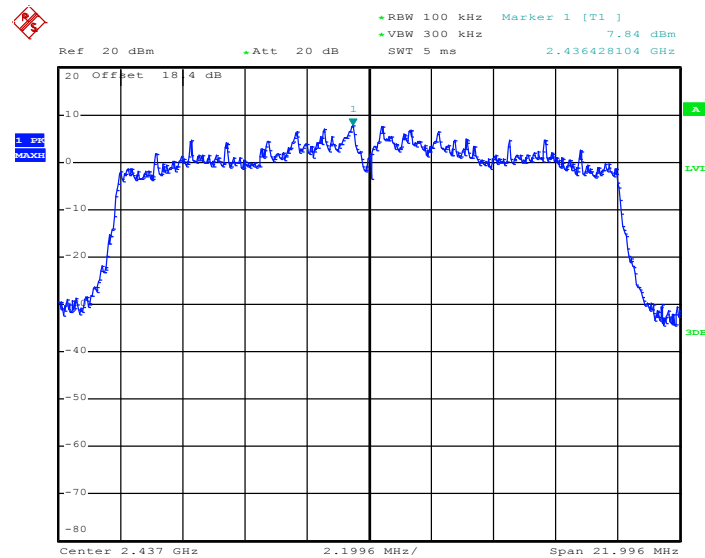
PSD Plot Channel 11



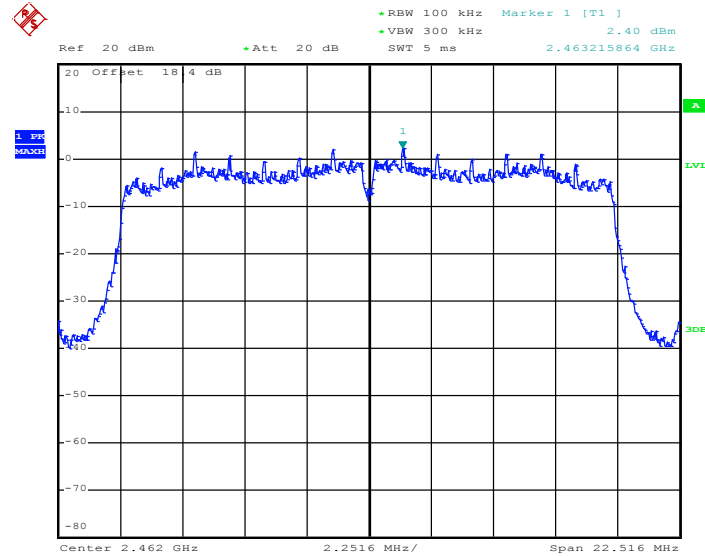
Date: 12.JUL.2012 19:31:45

802.11n HT-20 – SISO Ant 0
PSD Plot on Channel 01


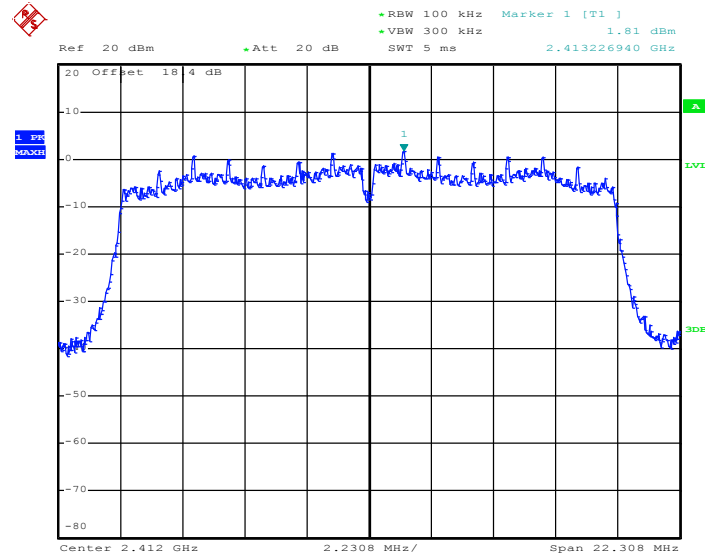
Date: 13.JUL.2012 01:36:42

802.11n HT-20 – SISO Ant 0
PSD Plot on Channel 06


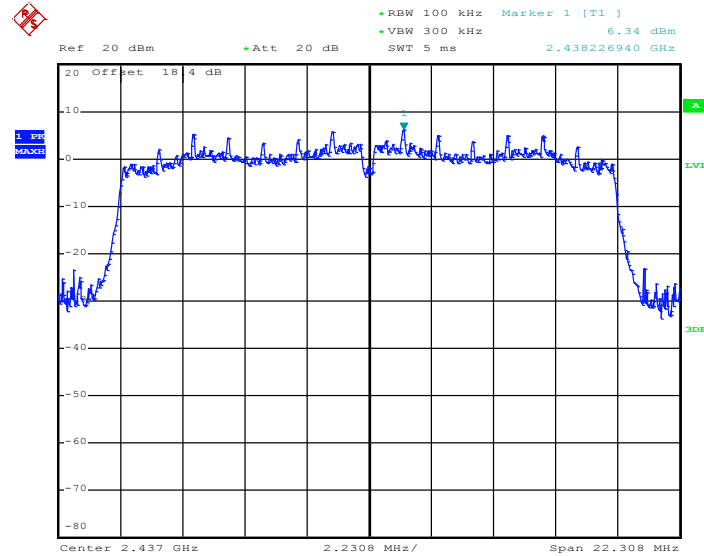
Date: 13.JUL.2012 01:42:10

802.11n HT-20 – SISO Ant 0
PSD Plot on Channel 11


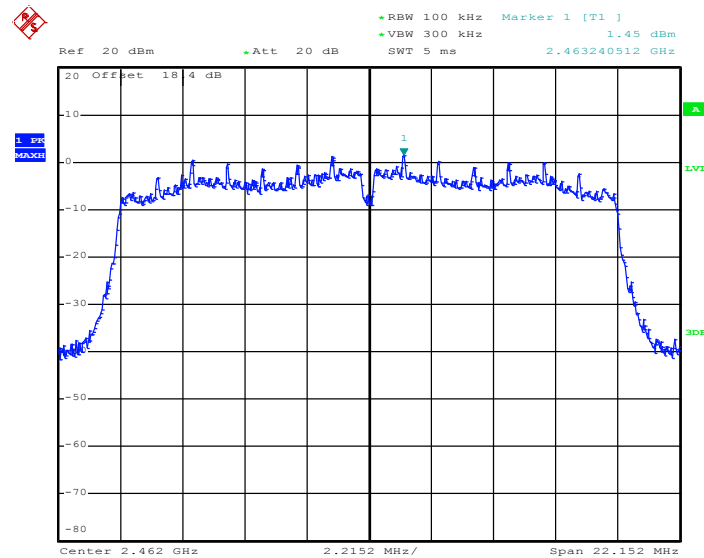
Date: 13.JUL.2012 01:45:22

802.11n HT-20 – MIMO Ant 0
PSD Plot on Channel 01


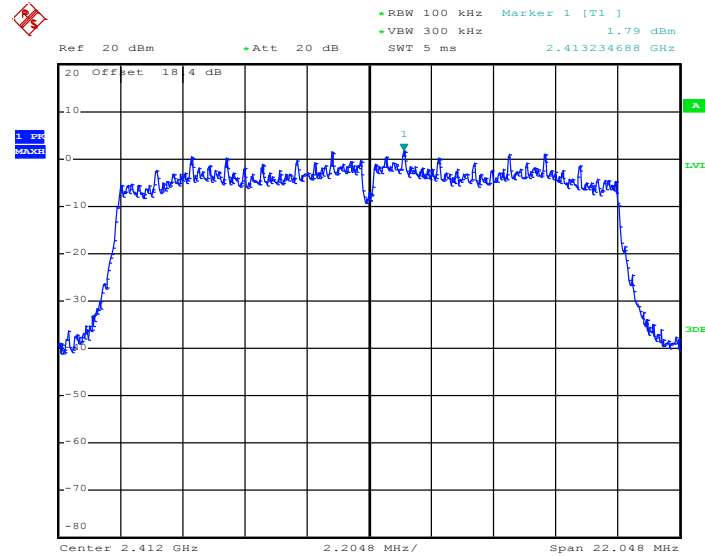
Date: 13.JUL.2012 01:08:35

802.11n HT-20 – MIMO Ant 0
PSD Plot on Channel 06


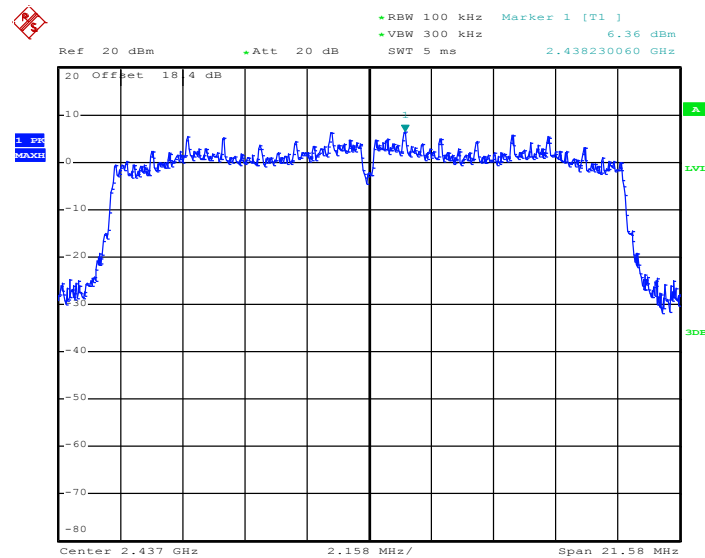
Date: 13.JUL.2012 01:04:48

802.11n HT-20 – MIMO Ant 0
PSD Plot on Channel 11


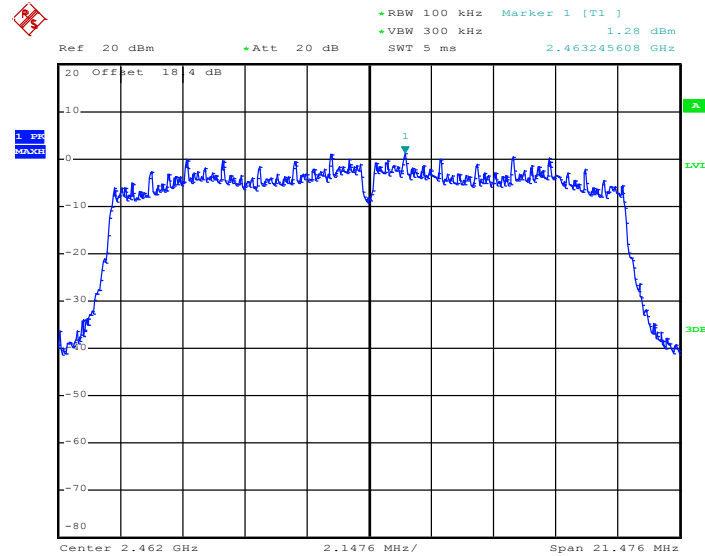
Date: 13.JUL.2012 01:29:37

802.11n HT-20 – MIMO Ant 1
PSD Plot on Channel 01


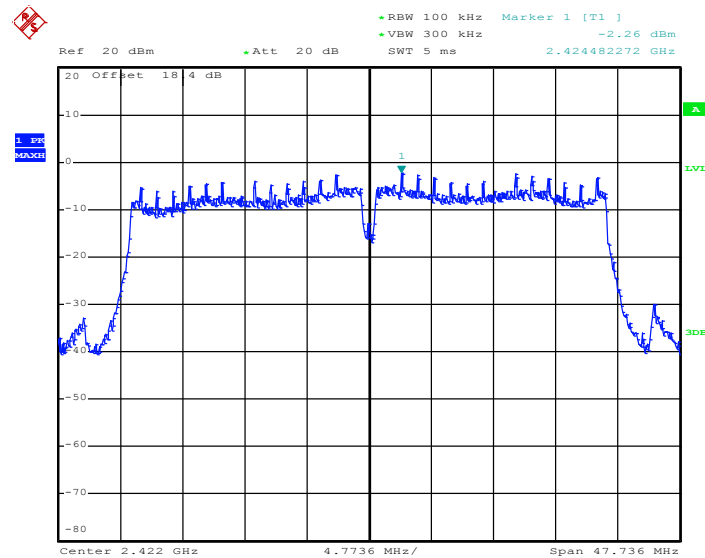
Date: 13.JUL.2012 01:12:42

802.11n HT-20 – MIMO Ant 1
PSD Plot on Channel 06


Date: 13.JUL.2012 01:00:32

802.11n HT-20 – MIMO Ant 1
PSD Plot on Channel 11


Date: 13.JUL.2012 01:21:41

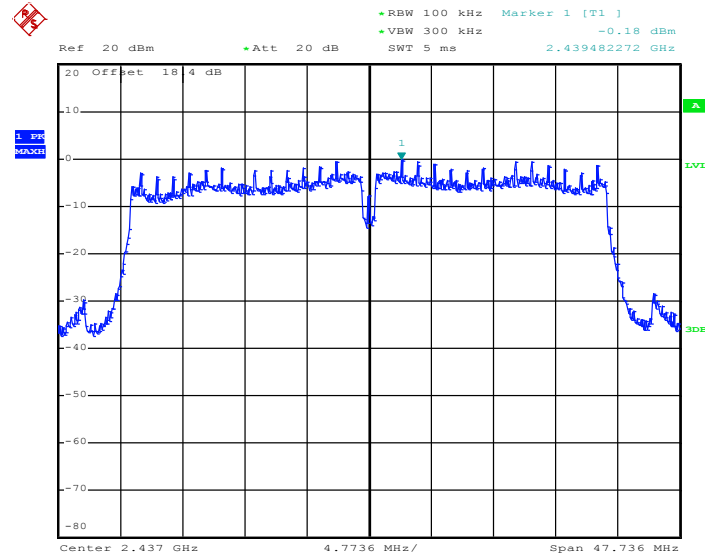
802.11n HT-40 – MIMO Ant 0
PSD Plot on Channel 03


Date: 13.JUL.2012 00:30:32



802.11n HT-40 – MIMO Ant 0

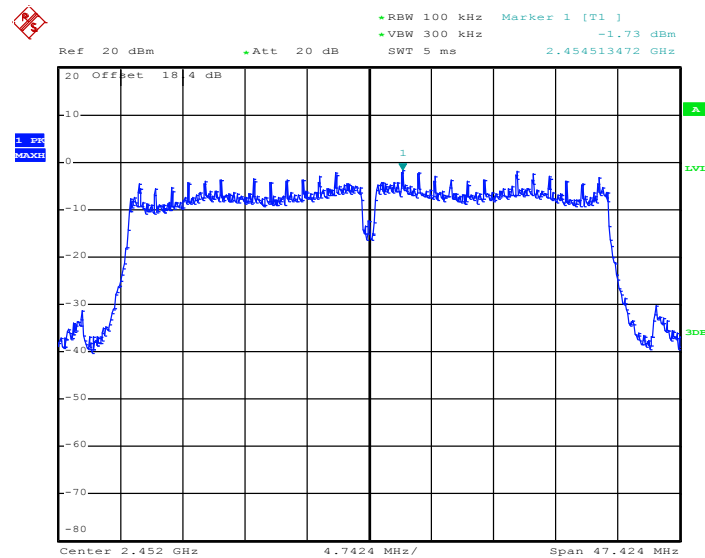
PSD Plot on Channel 06



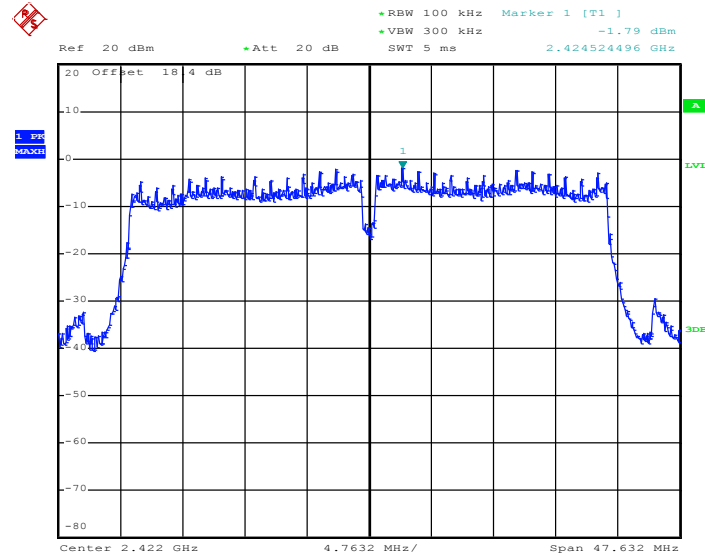
Date: 13.JUL.2012 00:24:51

802.11n HT-40 – MIMO Ant 0

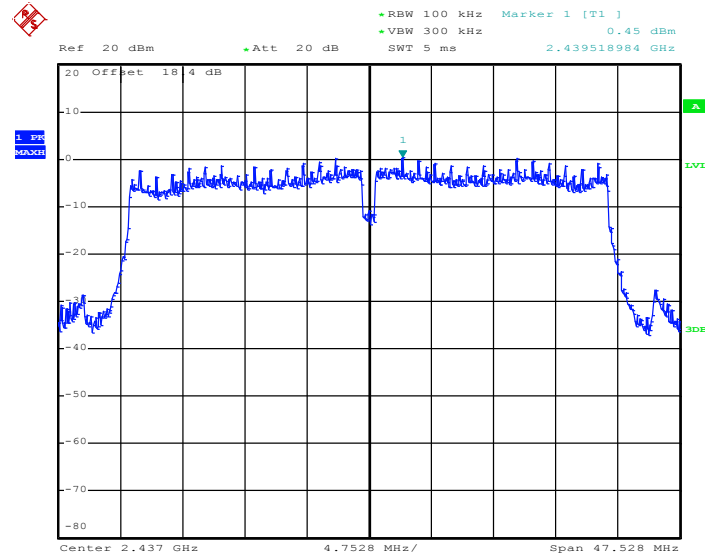
PSD Plot on Channel 09



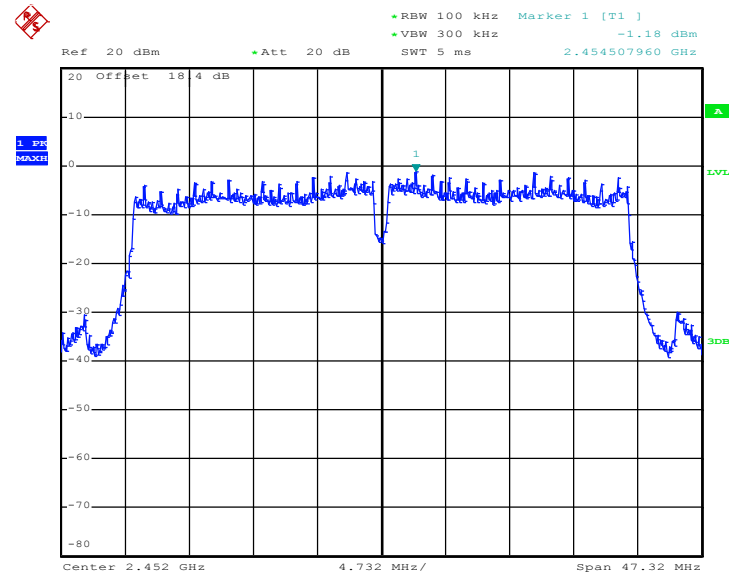
Date: 13.JUL.2012 00:49:05

802.11n HT-40 – MIMO Ant 1
PSD Plot on Channel 03


Date: 13.JUL.2012 00:38:47

802.11n HT-40 – MIMO Ant 1
PSD Plot on Channel 06


Date: 13.JUL.2012 00:16:25

802.11n HT-40 – MIMO Ant 1
PSD Plot on Channel 09


Date: 13.JUL.2012 00:55:27

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).

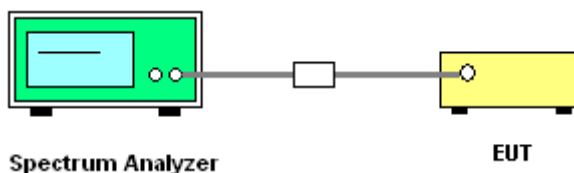
3.4.2 Measuring Instruments

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 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure and record the results in the test report.

3.4.4 Test Setup

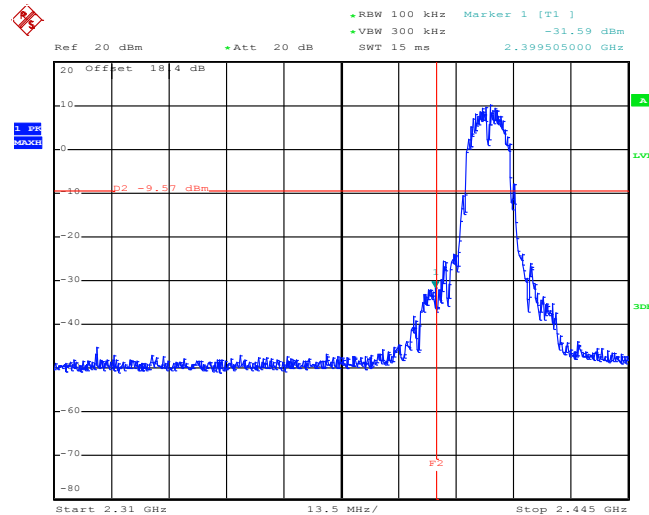


3.4.5 Test Result of Conducted Spurious at Band Edges

Test Mode :	802.11b <Ant 0>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	01 and 11	Test Engineer :	Book Lin and Pinkston Tu

802.11b

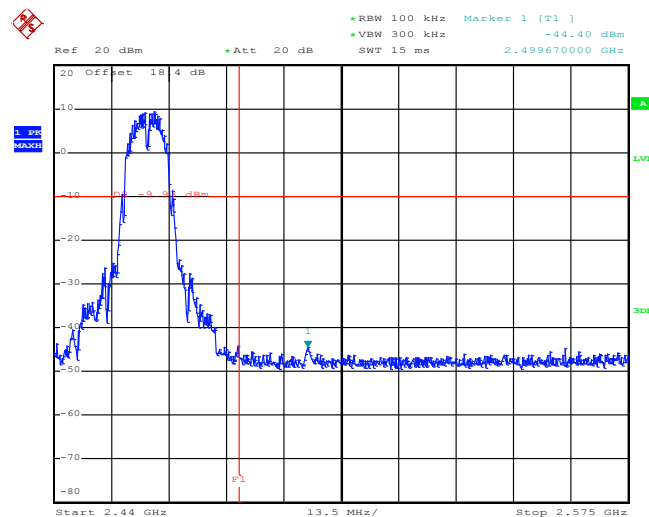
Low Band Edge Plot on Channel 01



Date: 12.JUL.2012 19:39:12

802.11b

High Band Edge Plot on Channel 11



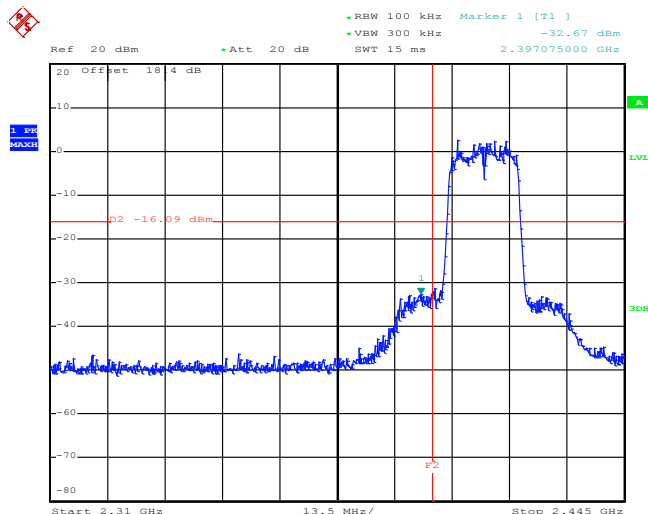
Date: 12.JUL.2012 19:43:04



Test Mode :	802.11g <Ant 0>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	01 and 11	Test Engineer :	Book Lin and Pinkston Tu

802.11g

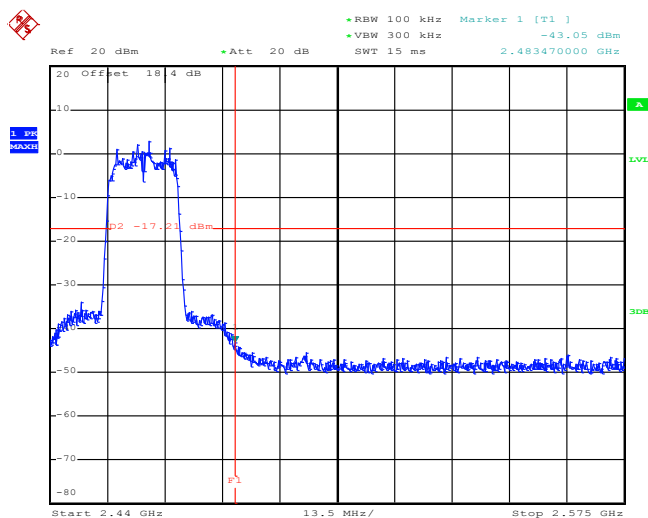
Low Band Edge Plot on Channel 01



Date: 12.JUL.2012 19:08:27

802.11g

High Band Edge Plot on Channel 11



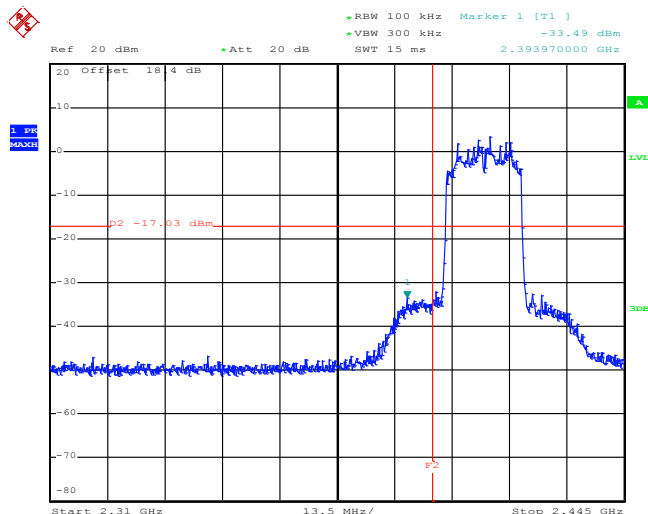
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Test Mode :	802.11n HT-20 <SISO Ant 0>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	01 and 11	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-20

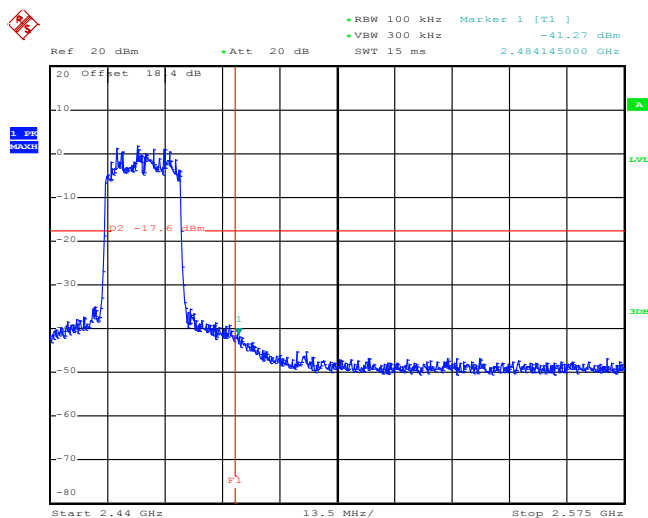
Low Band Edge Plot on Channel 01



Date: 13.JUL.2012 01:36:58

802.11n HT-20

High Band Edge Plot on Channel 11



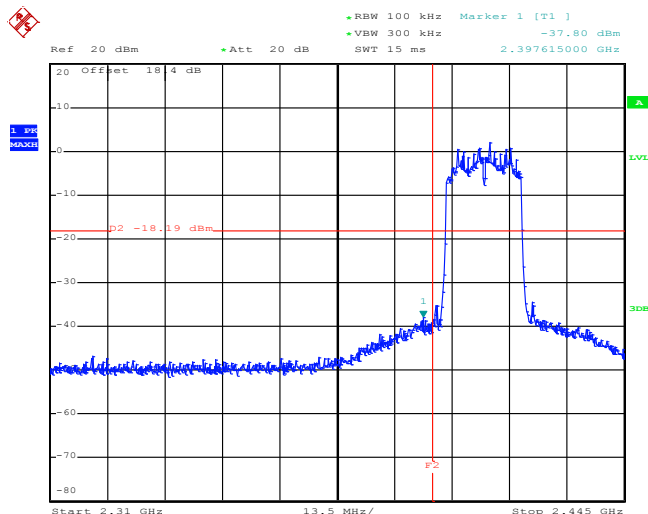
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Test Mode :	802.11n HT-20 <MIMO Ant 0>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	01 and 11	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-20

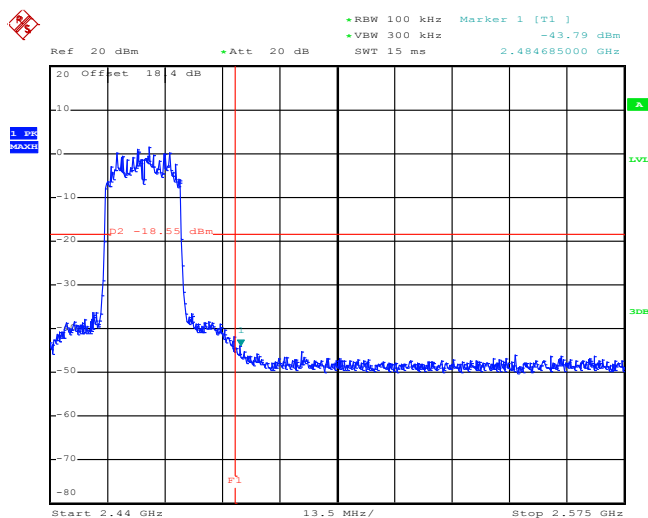
Low Band Edge Plot on Channel 01



Date: 13.JUL.2012 01:08:58

802.11n HT-20

High Band Edge Plot on Channel 11

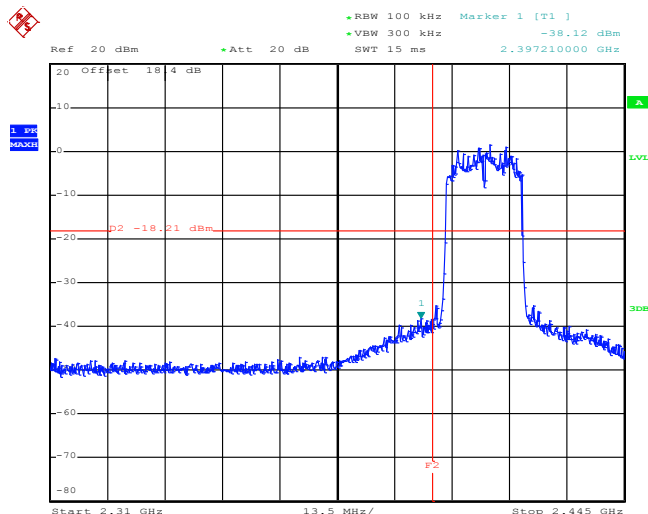


Date: 13.JUL.2012 01:31:01



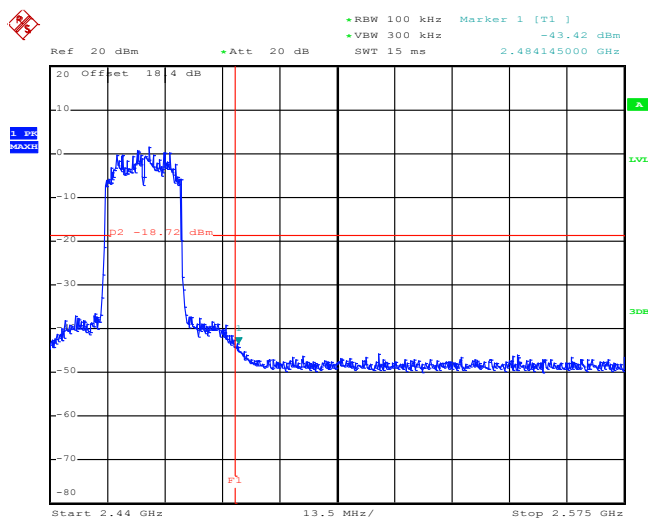
Test Mode :	802.11n HT-20 <MIMO Ant 1>	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	01 and 11	Test Engineer :	Book Lin and Pinkston Tu

Low Band Edge Plot on Channel 01



Date: 13.JUL.2012 01:13:22

High Band Edge Plot on Channel 11

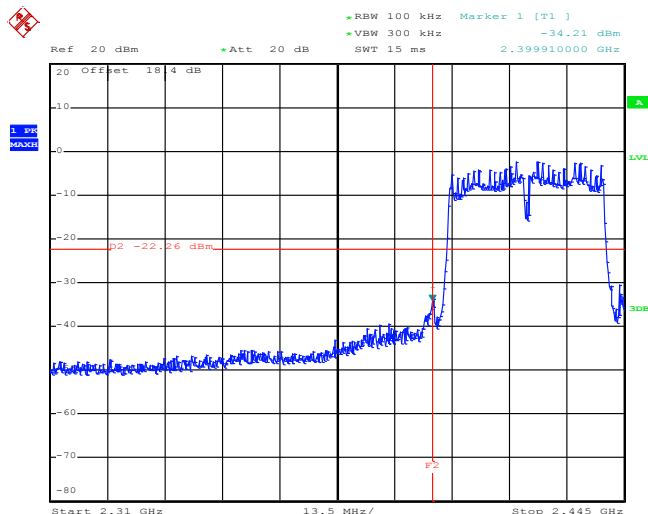


Date: 13.JUL.2012 01:26:24

Test Mode :	802.11n HT-40 <MIMO Ant 0>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	03 and 09	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-40

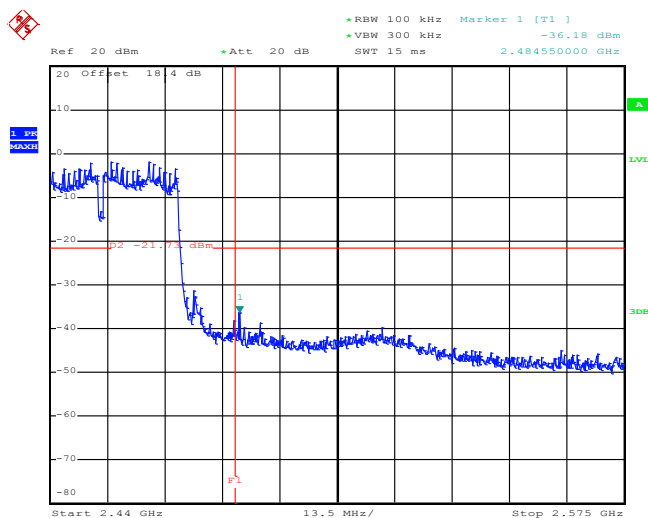
Low Band Edge Plot on Channel 03



Date: 13.JUL.2012 00:30:47

802.11n HT-40

High Band Edge Plot on Channel 09

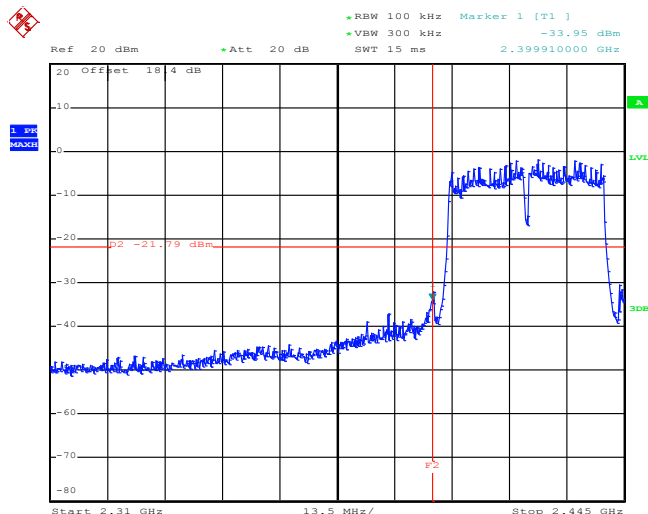


Date: 13.JUL.2012 00:49:21

Test Mode :	802.11n HT-40<MIMO Ant 1>	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	55~58%
Test Channel :	03 and 09	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-40

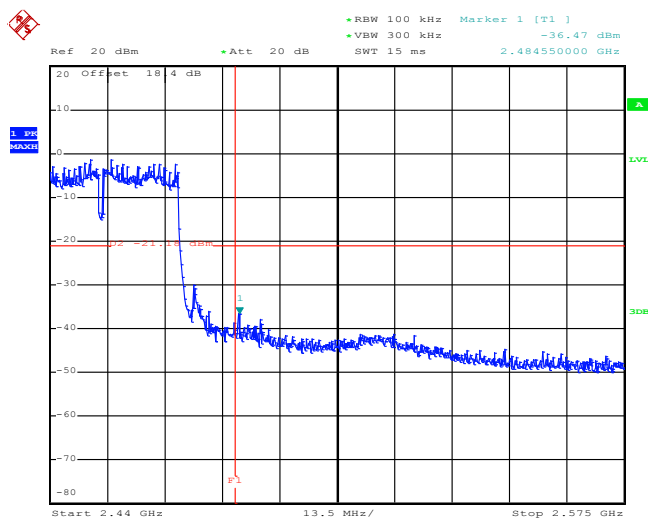
Low Band Edge Plot on Channel 03



Date: 13.JUL.2012 00:40:21

802.11n HT-40

High Band Edge Plot on Channel 09



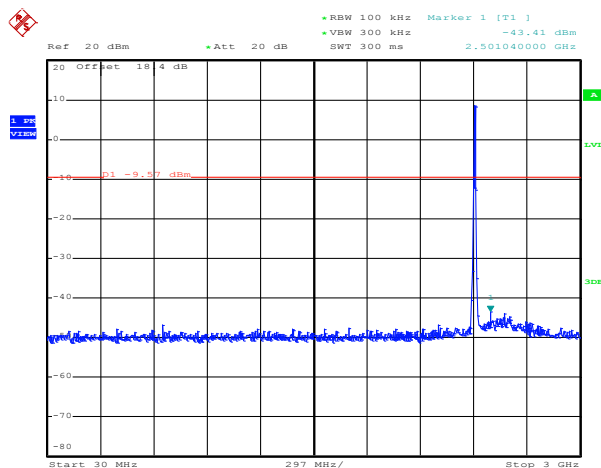
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3.4.5 Test Result of Conducted Spurious Emission

Test Mode :	802.11b <Ant 0>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin and Pinkston Tu

802.11b 30 MHz~3 GHz

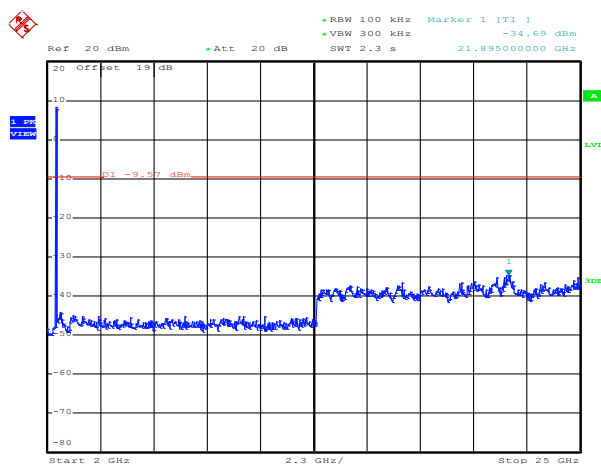
Conducted Spurious Emission Plot on Channel 01



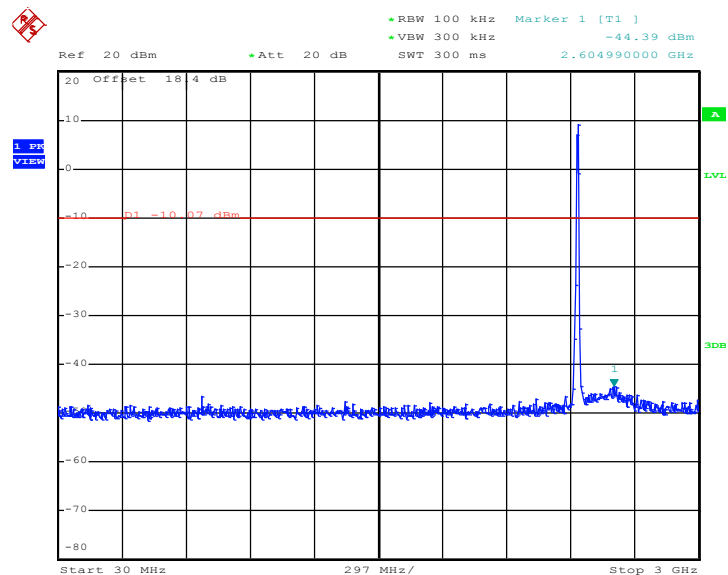
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802.11b 2 GHz~25 GHz

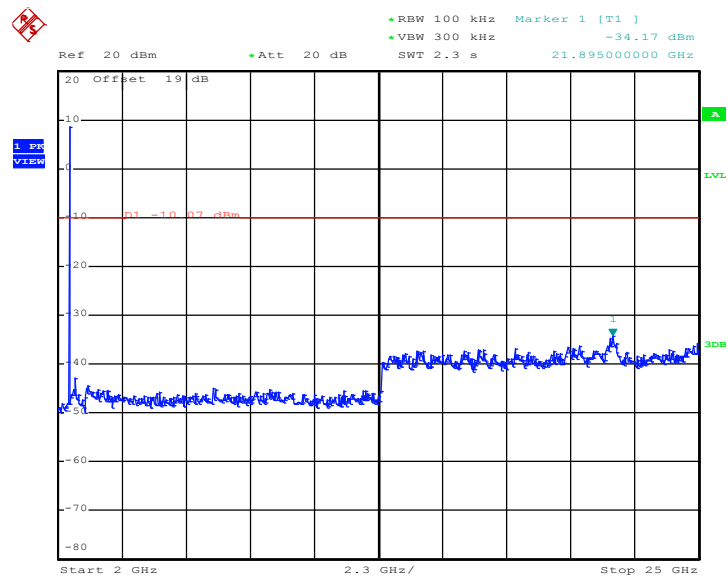
Conducted Spurious Emission Plot on Channel 01



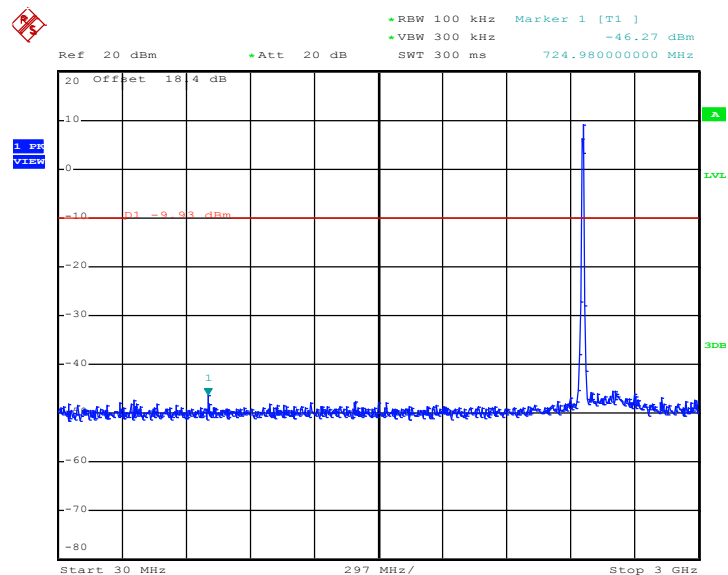
Date: 12.JUL.2012 19:40:01

802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


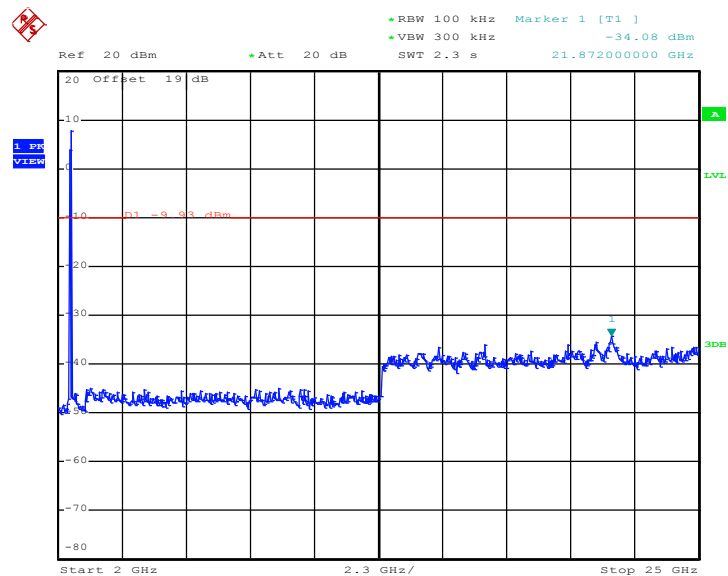
Date: 12.JUL.2012 20:01:01

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 12.JUL.2012 20:01:19

802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 12.JUL.2012 19:43:35

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


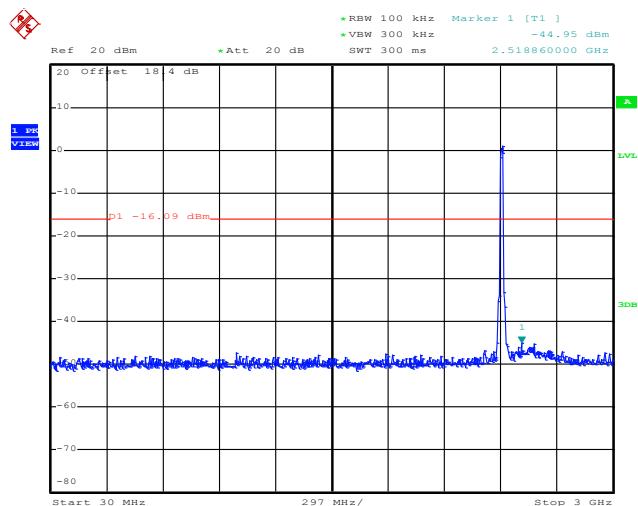
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Test Mode :	802.11g <Ant 0>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin and Pinkston Tu

802.11g 30 MHz~3 GHz

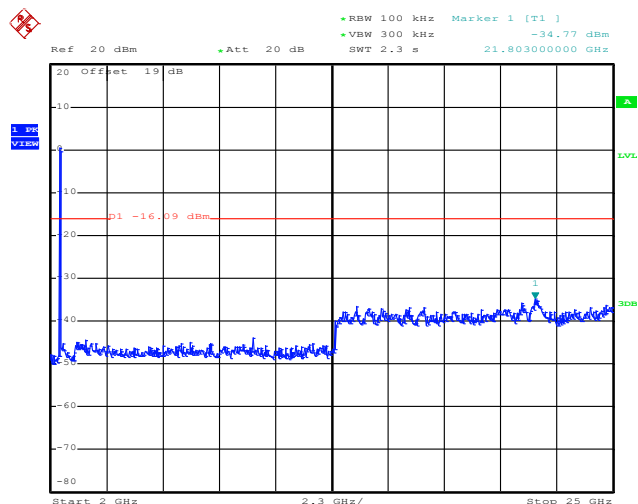
Conducted Spurious Emission Plot on Channel 01



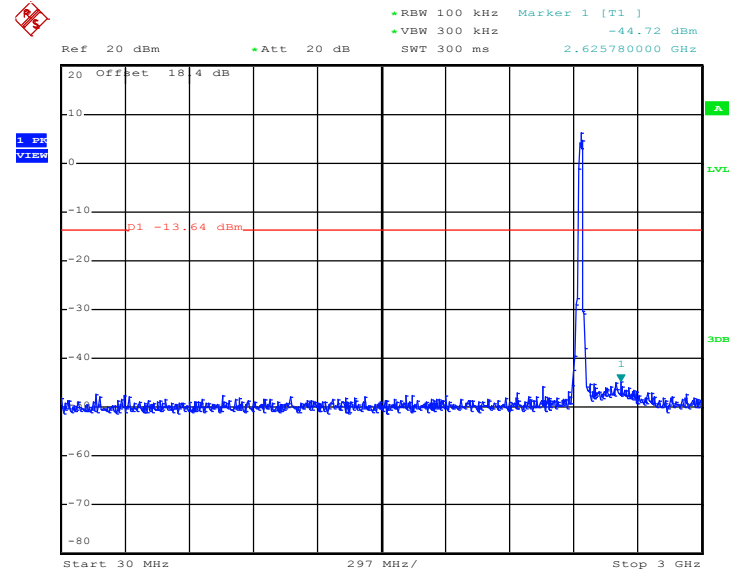
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802.11g 2 GHz~25 GHz

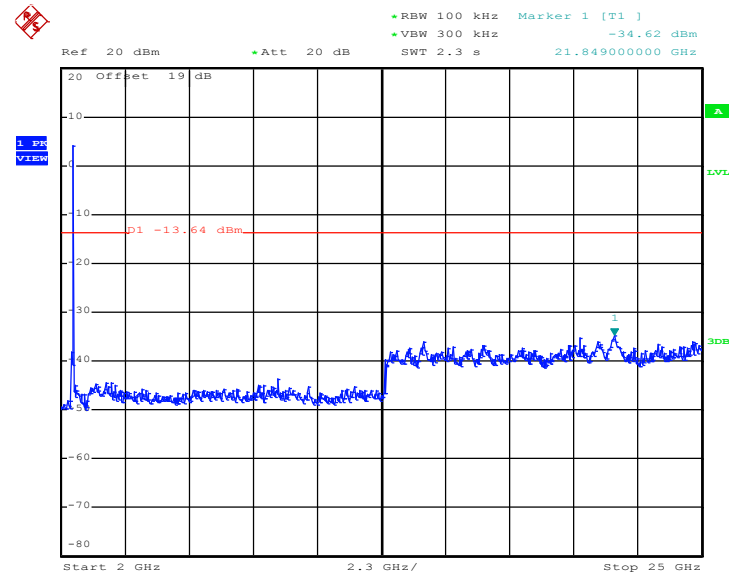
Conducted Spurious Emission Plot on Channel 01



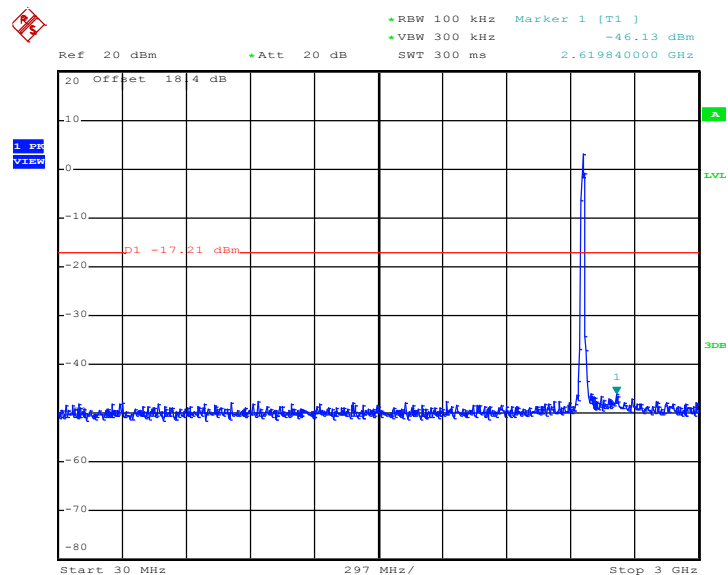
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802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


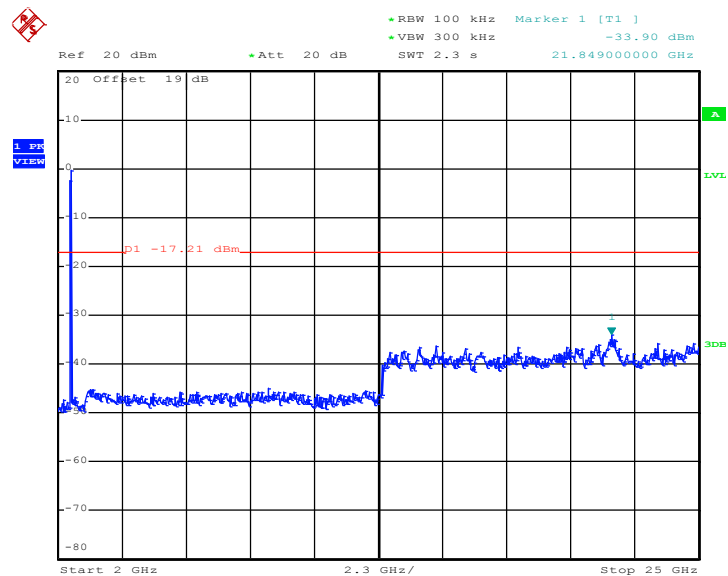
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802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 12.JUL.2012 19:29:46

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 12.JUL.2012 19:32:29

802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


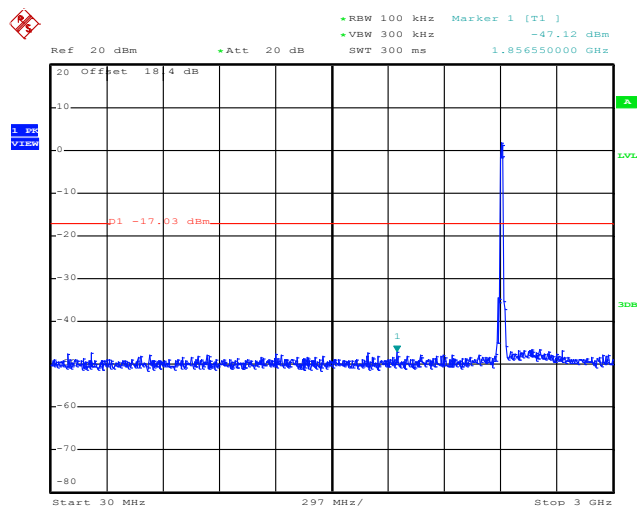
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Test Mode :	802.11n HT-20 <SISO Ant 0>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-20 30 MHz~3 GHz

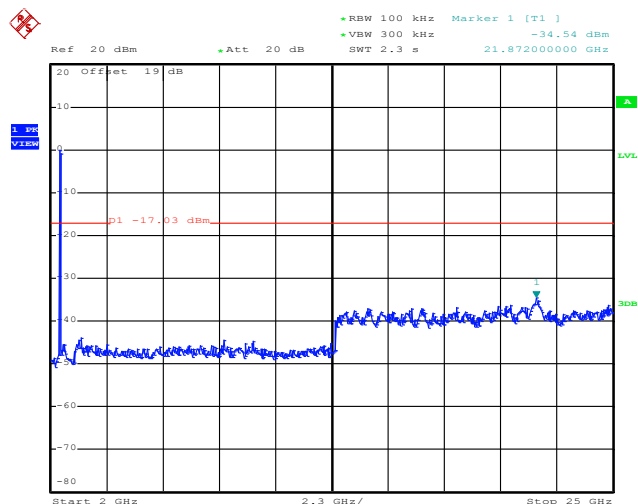
Conducted Spurious Emission Plot on Channel 01



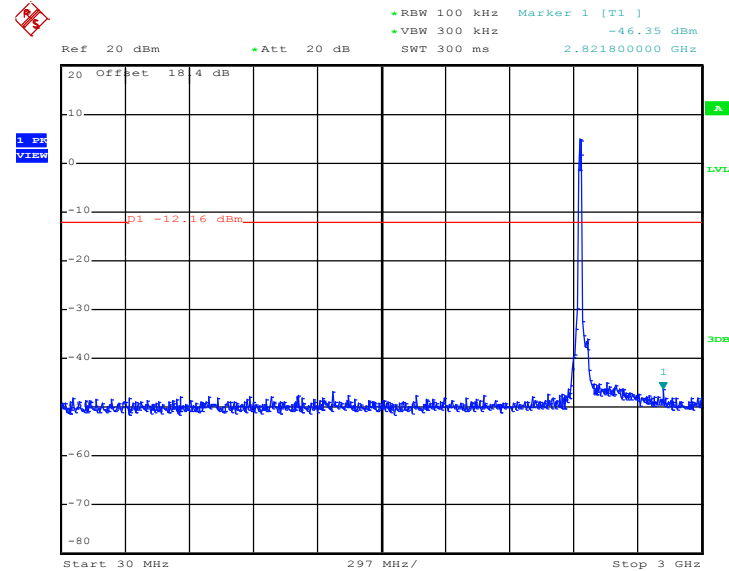
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802.11n HT-20 2 GHz~25 GHz

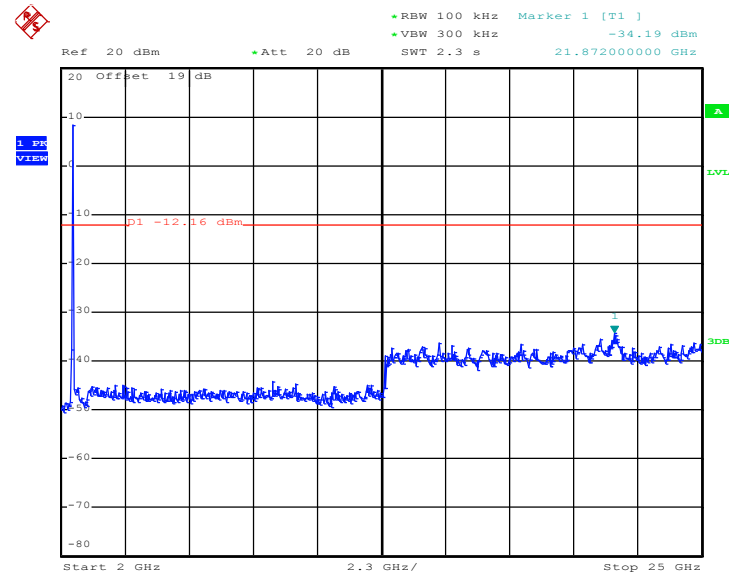
Conducted Spurious Emission Plot on Channel 01



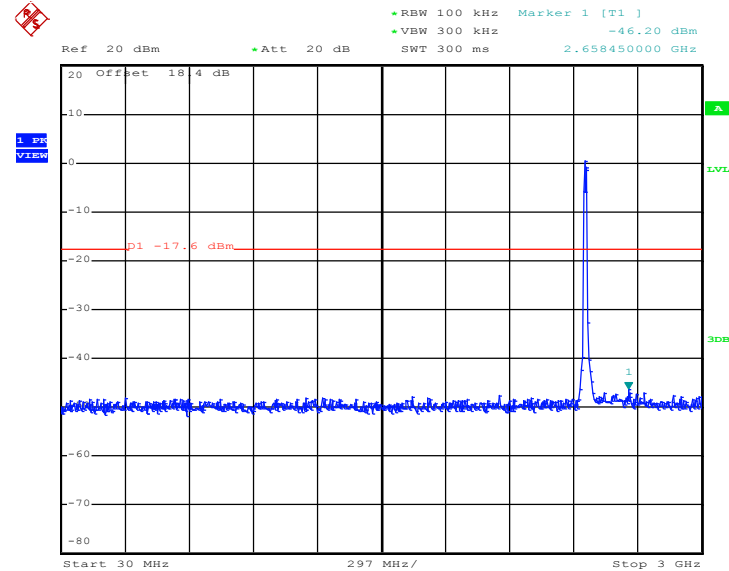
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802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


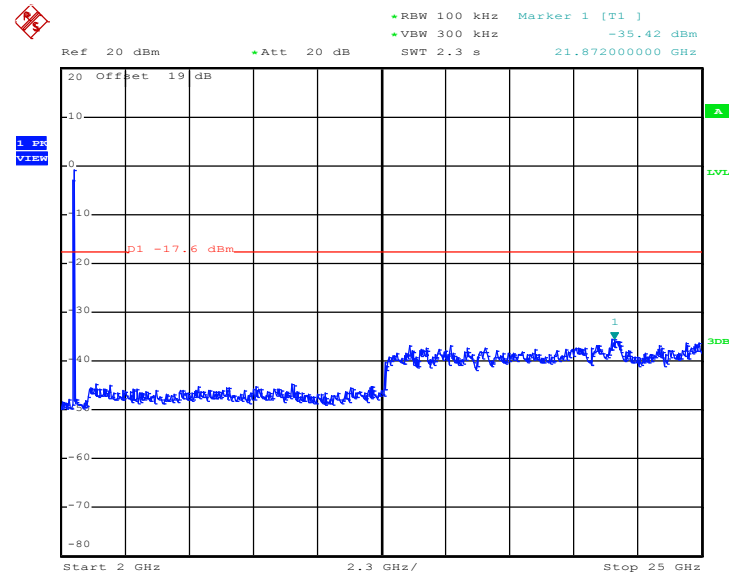
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802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 13.JUL.2012 01:42:48

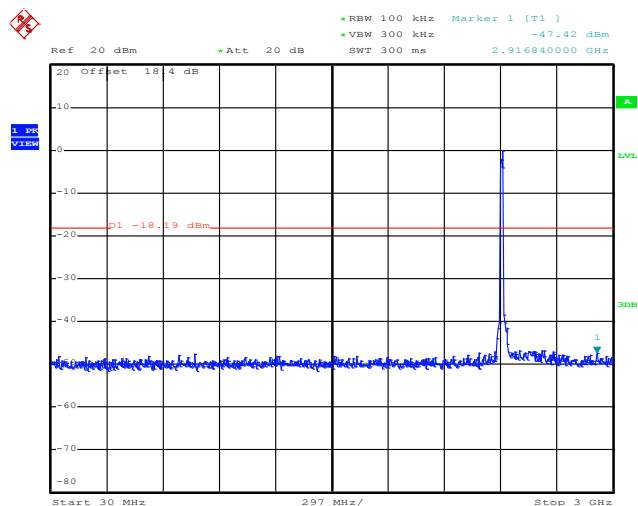
802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 13.JUL.2012 01:46:05

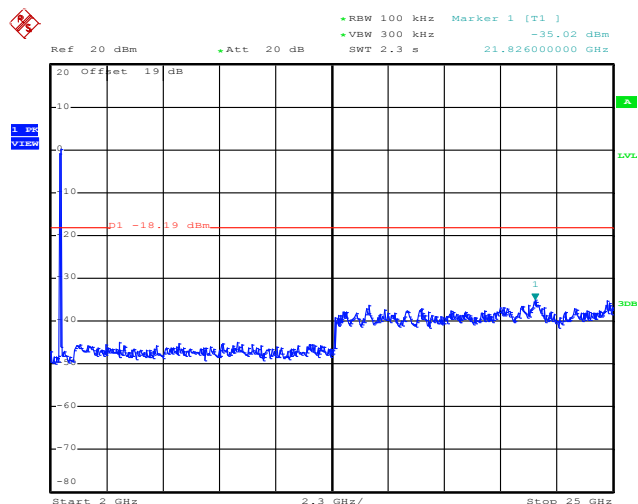
802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 13.JUL.2012 01:46:24

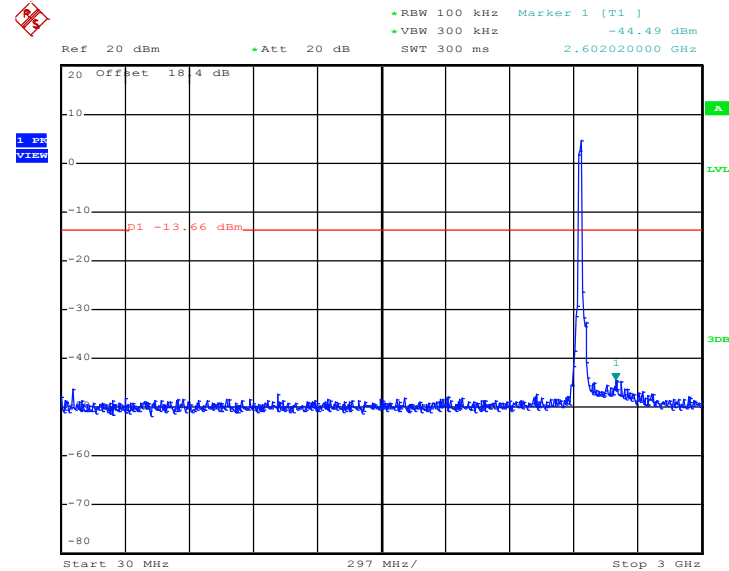
Test Mode :	802.11n HT-20 <MIMO Ant 0>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


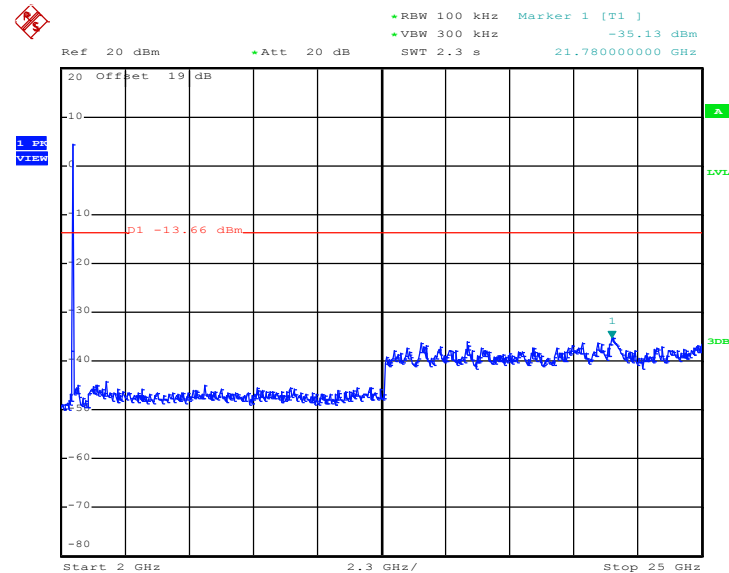
Date: 13.JUL.2012 01:09:21

802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


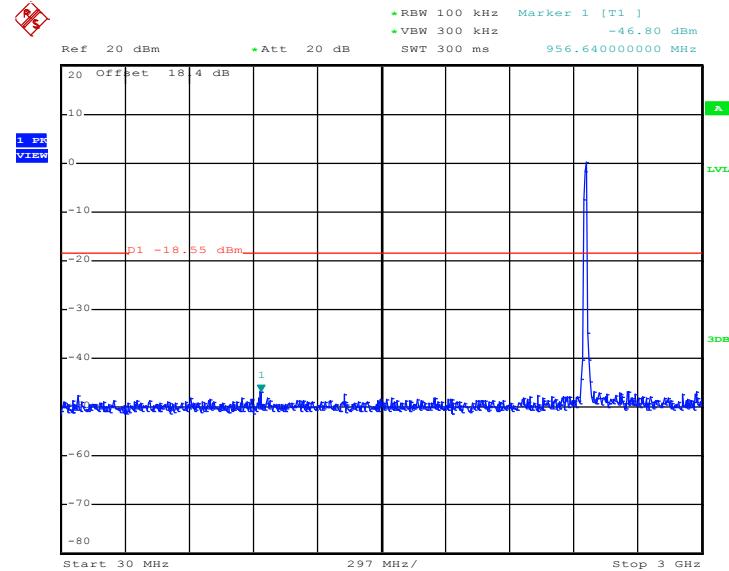
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802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


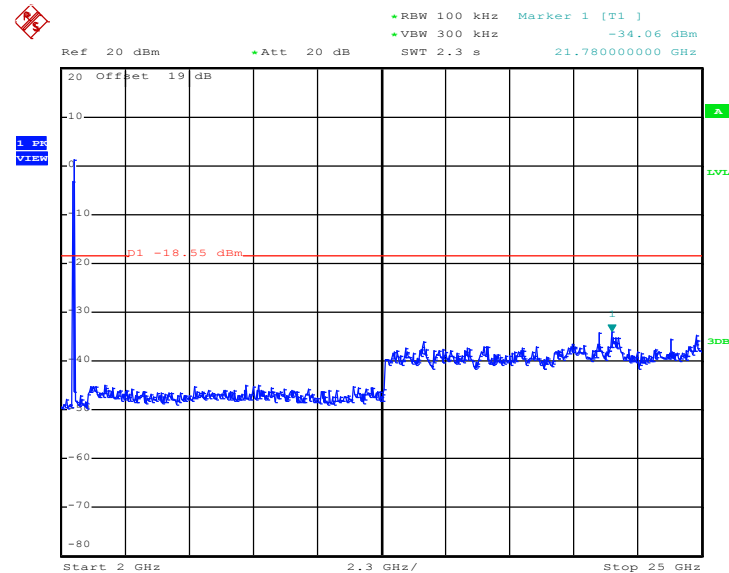
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802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 13.JUL.2012 01:05:26

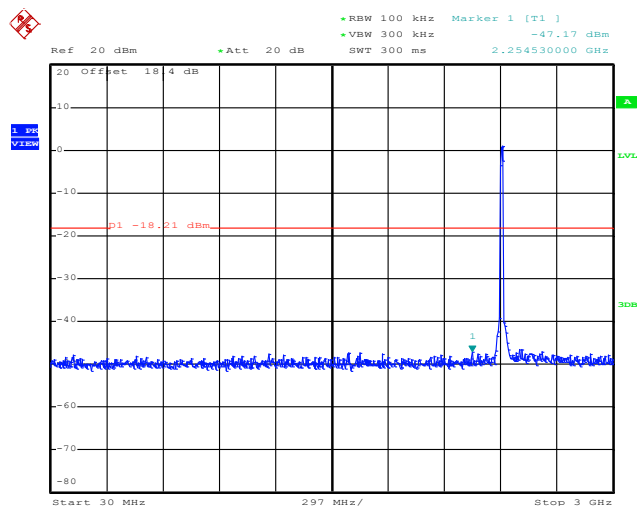
802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 13.JUL.2012 01:31:30

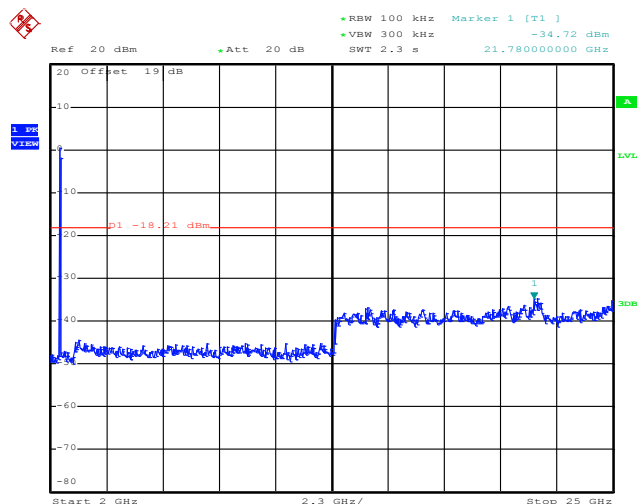
802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


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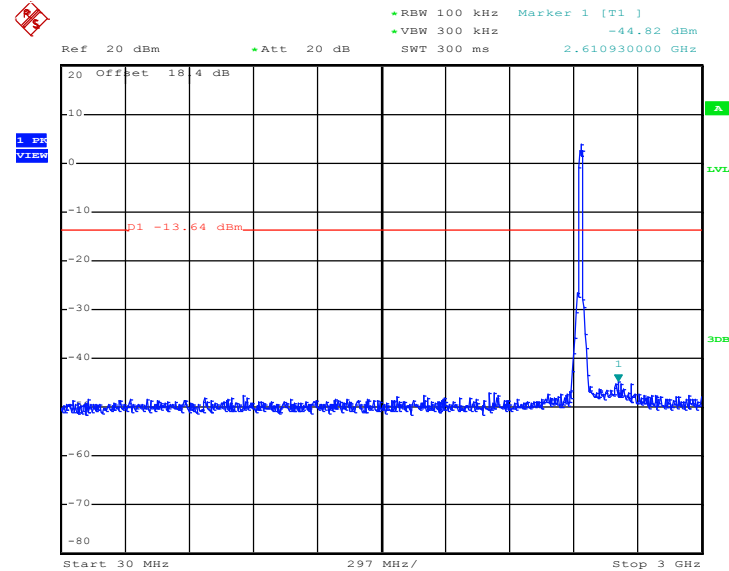
Test Mode :	802.11n HT-20 <MIMO Ant 1>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


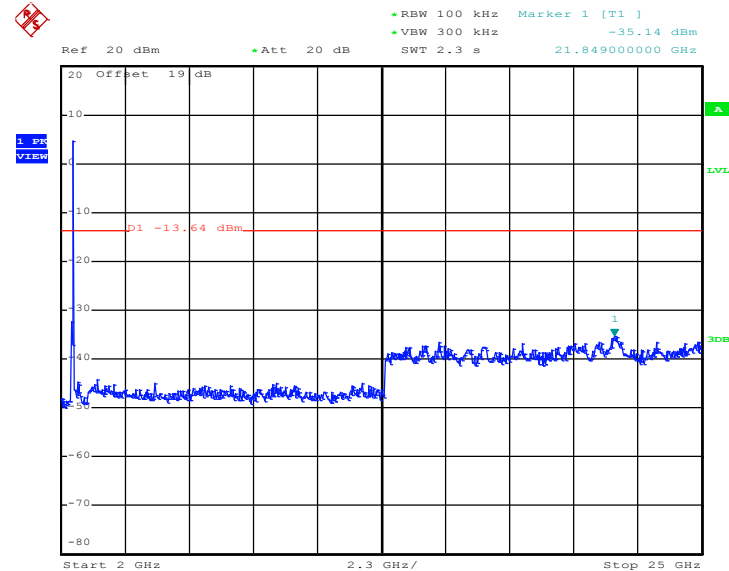
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802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


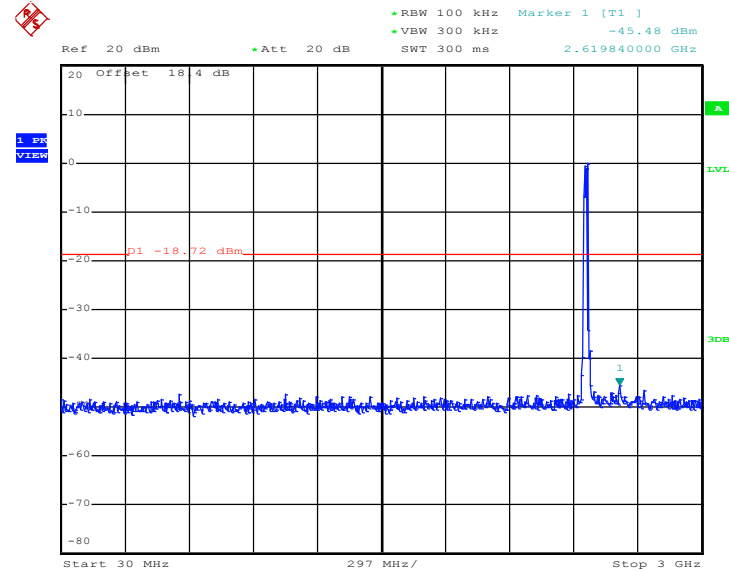
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802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


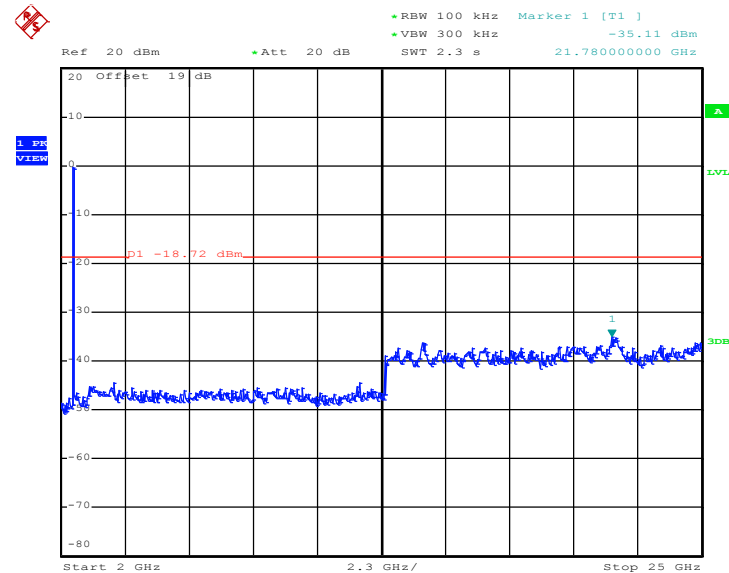
Date: 13.JUL.2012 01:00:53

802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 13.JUL.2012 01:01:11

802.11n HT-20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


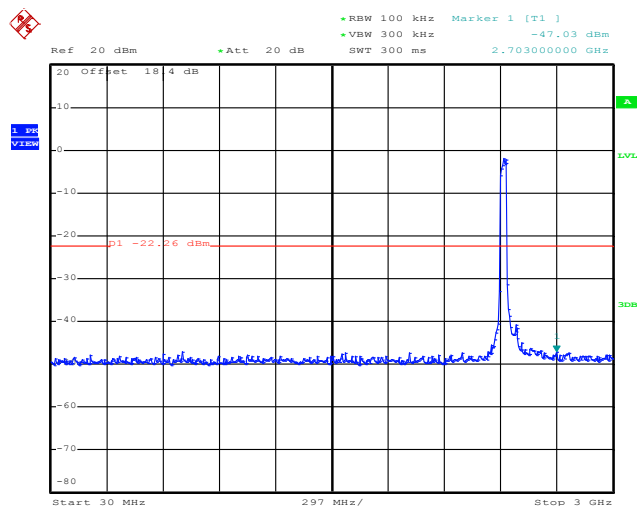
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802.11n HT-20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


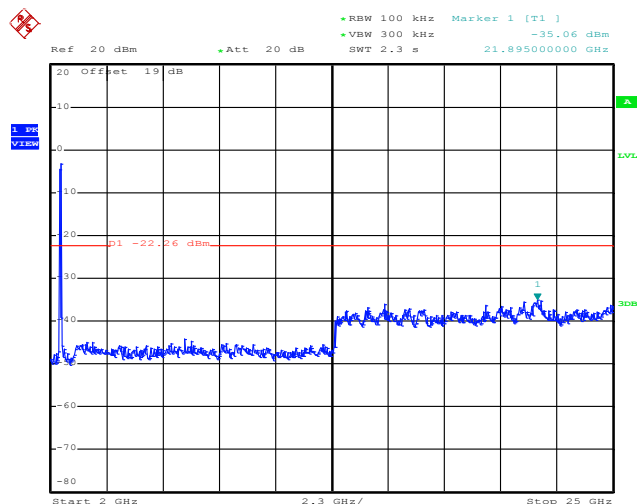
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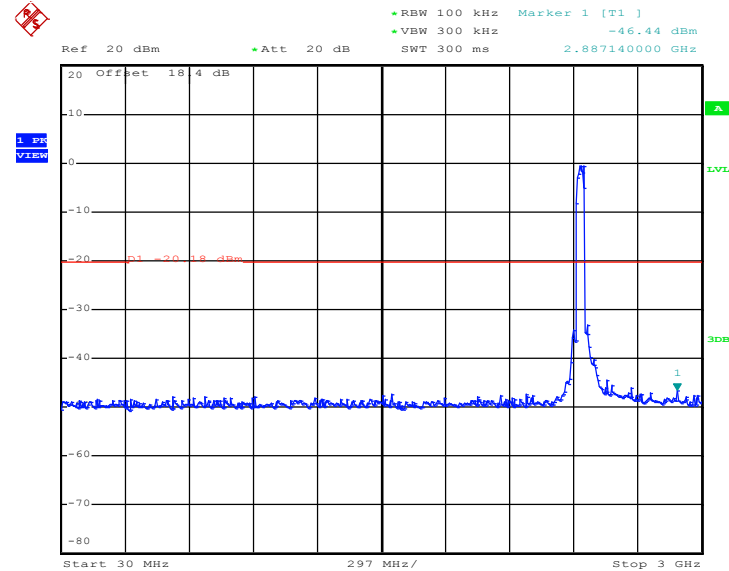
Test Mode :	802.11n HT-40 <MIMO Ant 0>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	03, 06, 09	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-40 30 MHz~3 GHz**Conducted Spurious Emission Plot on Channel 01**

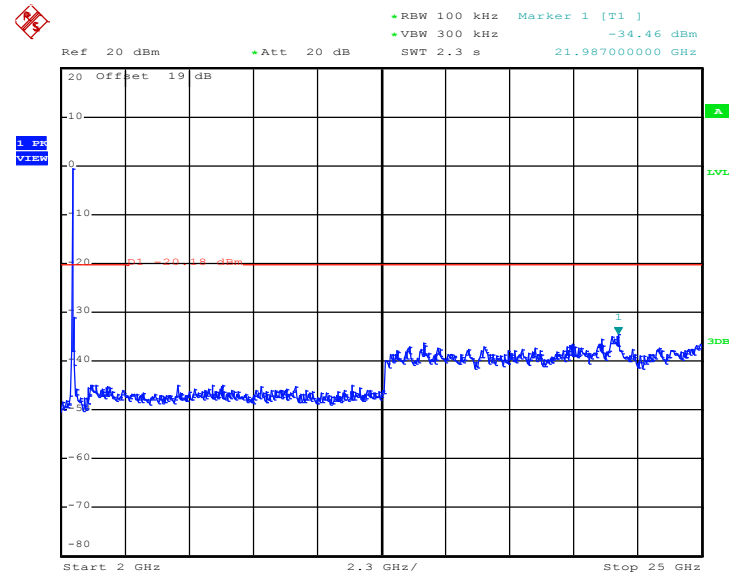
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802.11n HT-40 2 GHz~25 GHz**Conducted Spurious Emission Plot on Channel 01**

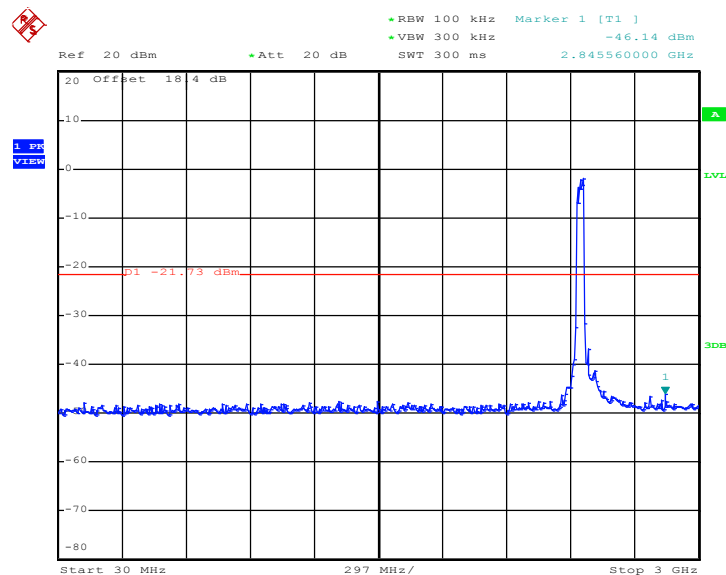
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802.11n HT-40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


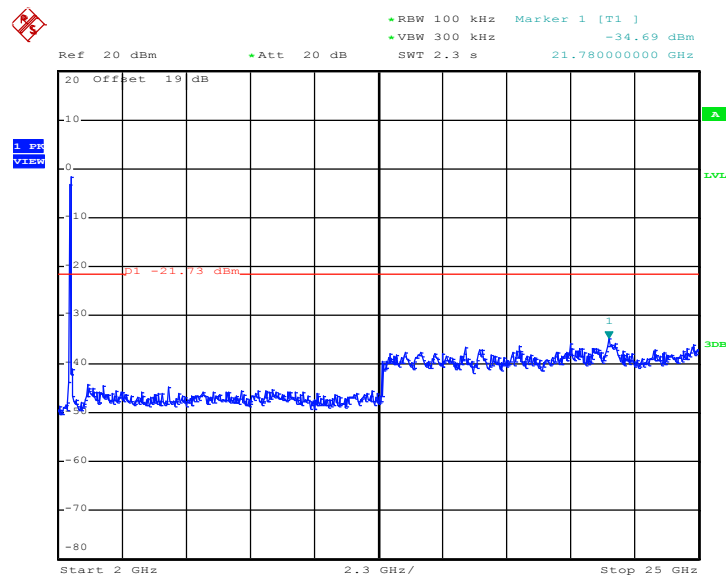
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802.11n HT-40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 13.JUL.2012 00:25:32

802.11n HT-40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


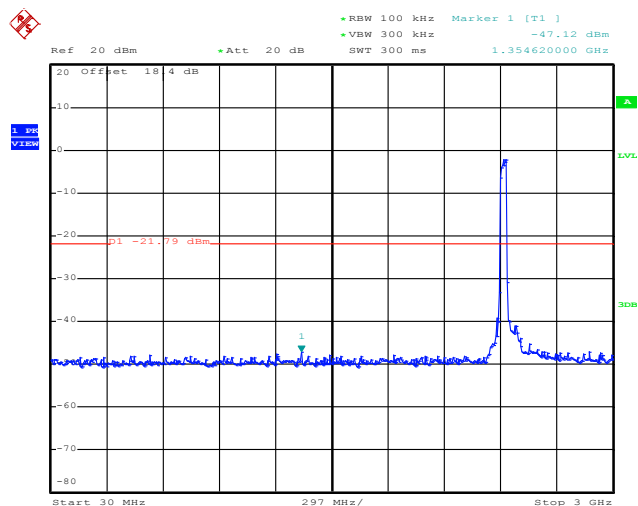
Date: 13.JUL.2012 00:52:20

802.11n HT-40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


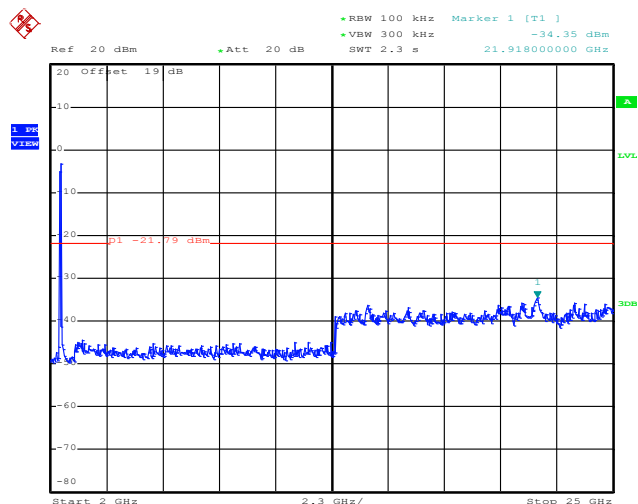
Date: 13.JUL.2012 00:50:05



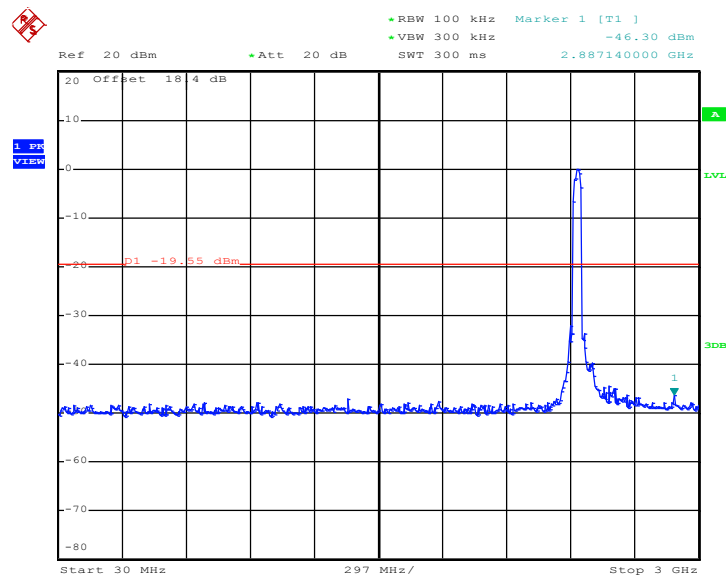
Test Mode :	802.11n HT-40 <MIMO Ant 1>	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	55~58%
Test Channel :	03, 06, 09	Test Engineer :	Book Lin and Pinkston Tu

802.11n HT-40 30 MHz~3 GHz**Conducted Spurious Emission Plot on Channel 01**

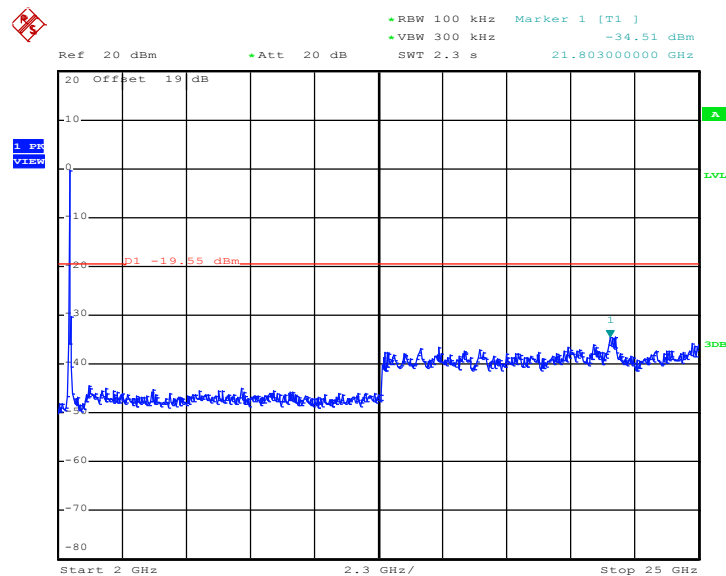
Date: 13.JUL.2012 00:41:50

802.11n HT-40 2 GHz~25 GHz**Conducted Spurious Emission Plot on Channel 01**

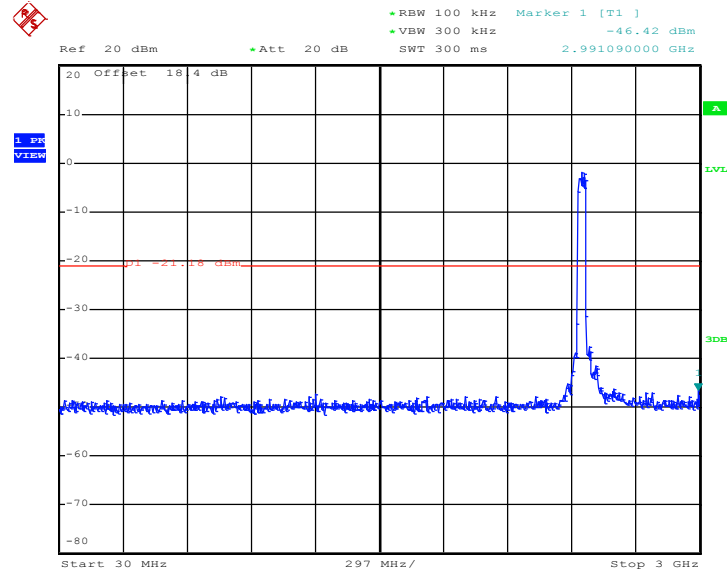
Date: 13.JUL.2012 00:39:44

802.11n HT-40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


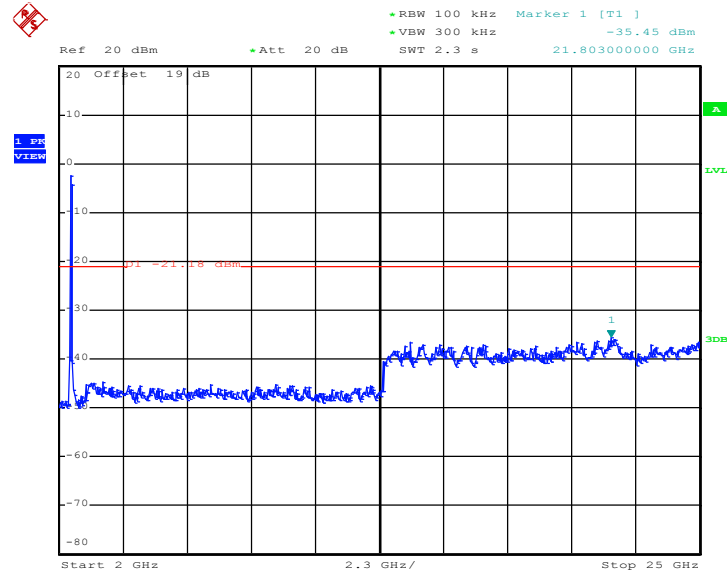
Date: 13.JUL.2012 00:21:28

802.11n HT-40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 13.JUL.2012 00:18:51

802.11n HT-40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 13.JUL.2012 00:56:05

802.11n HT-40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 13.JUL.2012 00:56:23

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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.

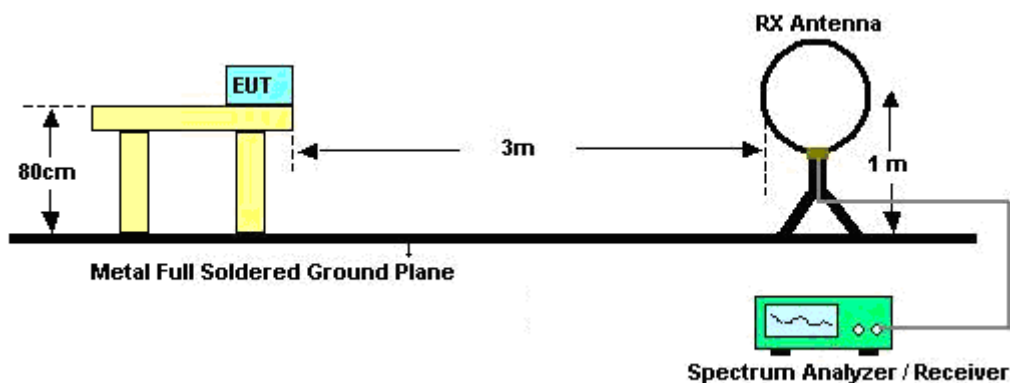
3.5.3 Test Procedure

1. The testing follows TCB Workshop 2012, April and the guidelines in ANSI C63.10-2009 and fulfills ANSI C63.4-2003 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. The table was rotated 360 degrees to determine the position of the highest radiation.
5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 KHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;

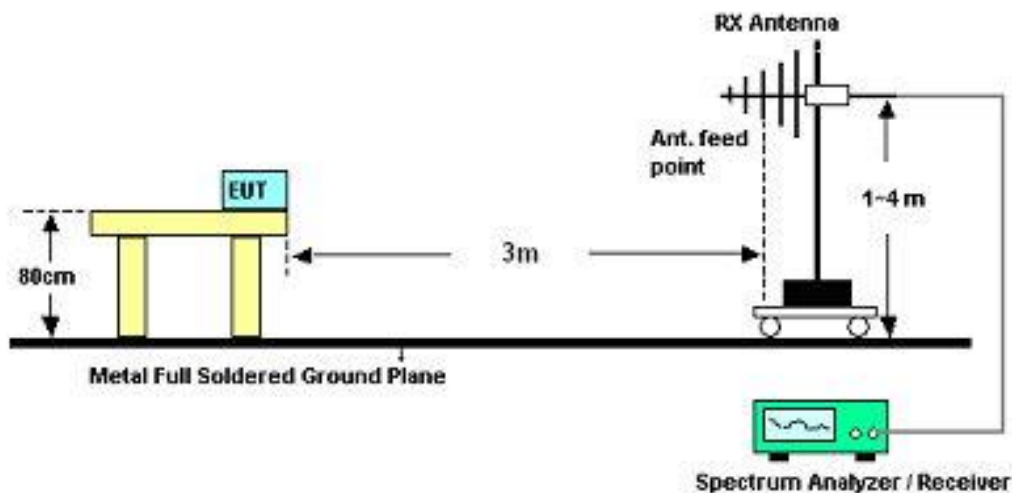
- (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for Peak measurement, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
7. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported

3.5.4 Test Setup

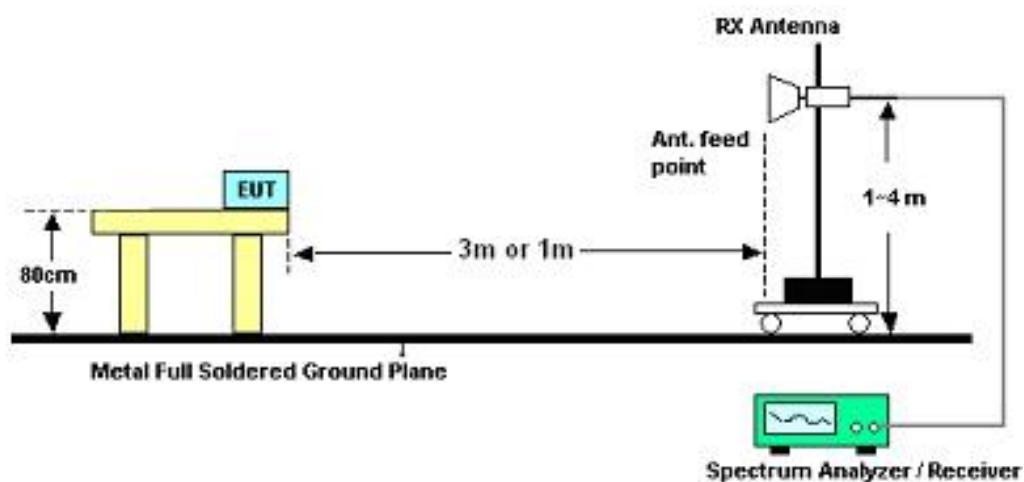
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 Spurious at Band Edges

<Legacy Ant 0>

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	01	Test Engineer :	Timberland Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	50.11	-23.89	74	47.35	31.9	5.4	34.54	100	161	Peak
2390	38.03	-15.97	54	35.27	31.9	5.4	34.54	100	161	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	58.74	-15.26	74	55.98	31.9	5.4	34.54	100	210	Peak
2390	46.69	-7.31	54	43.93	31.9	5.4	34.54	100	210	Average

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	11	Test Engineer :	Timberland Lin

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
2483.7	52.73	-21.27	74	49.76	31.98	5.52	34.53	100	77	Peak
2483.5	40.2	-13.8	54	37.23	31.98	5.52	34.53	100	77	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	63.12	-10.88	74	60.15	31.98	5.52	34.53	117	360	Peak
2483.5	50.72	-3.28	54	47.75	31.98	5.52	34.53	117	360	Average

Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	01	Test Engineer :	Timberland Lin

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
2389.11	65.02	-8.98	74	62.26	31.9	5.4	34.54	100	78	Peak
2386.77	42.44	-11.56	54	39.68	31.9	5.4	34.54	100	78	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.57	72.64	-1.36	74	69.88	31.9	5.4	34.54	100	211	Peak
2390	52.87	-1.13	54	50.11	31.9	5.4	34.54	100	211	Average

Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	11	Test Engineer :	Timberland Lin

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
2483.52	60.96	-13.04	74	57.99	31.98	5.52	34.53	100	76	Peak
2483.5	44.62	-9.38	54	41.65	31.98	5.52	34.53	100	76	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
2484.58	70.59	-3.41	74	67.62	31.98	5.52	34.53	100	223	Peak
2483.5	52.96	-1.04	54	49.99	31.98	5.52	34.53	100	223	Average

<SISO Ant 0>

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	01	Test Engineer :	Timberland Lin

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
2385.42	62.6	-11.4	74	59.86	31.88	5.4	34.54	102	77	Peak
2390	40.97	-13.03	54	38.21	31.9	5.4	34.54	102	77	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	72.21	-1.79	74	69.45	31.9	5.4	34.54	100	213	Peak
2390	51.53	-2.47	54	48.77	31.9	5.4	34.54	100	213	Average

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	11	Test Engineer :	Timberland Lin

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
2484.08	64.63	-9.37	74	61.66	31.98	5.52	34.53	100	75	Peak
2483.5	46.11	-7.89	54	43.14	31.98	5.52	34.53	100	75	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
2484.64	71.01	-2.99	74	68.04	31.98	5.52	34.53	100	218	Peak
2483.5	52.81	-1.19	54	49.84	31.98	5.52	34.53	100	218	Average

<SISO Ant 1>

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	01	Test Engineer :	Timberland Lin

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
2387.31	72.35	-1.65	74	69.59	31.9	5.4	34.54	136	337	Peak
2390	50.93	-3.07	54	48.17	31.9	5.4	34.54	136	337	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
2389.38	67.3	-6.7	74	64.54	31.9	5.4	34.54	100	204	Peak
2390	45.86	-8.14	54	43.1	31.9	5.4	34.54	100	204	Average

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	11	Test Engineer :	Timberland Lin

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
2483.7	72.61	-1.39	74	69.64	31.98	5.52	34.53	179	180	Peak
2483.52	52.98	-1.02	54	50.01	31.98	5.52	34.53	179	180	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
2483.56	66.24	-7.76	74	63.27	31.98	5.52	34.53	102	205	Peak
2483.5	44	-10	54	41.03	31.98	5.52	34.53	102	205	Average

<MIMO Ant 0+1>

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	01	Test Engineer :	Timberland Lin

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
2389.83	63.97	-10.03	74	81.03	31.9	5.4	54.36	112	185	Peak
2390	48.03	-5.97	54	65.09	31.9	5.4	54.36	112	185	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.92	61.1	-12.9	74	78.16	31.9	5.4	54.36	151	208	Peak
2390	46.93	-7.07	54	63.99	31.9	5.4	54.36	151	208	Average

Test Mode :	802.11n HT-20	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	11	Test Engineer :	Timberland Lin

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
2484.26	71.58	-2.42	74	88.47	31.98	5.52	54.39	180	175	Peak
2483.5	52.1	-1.9	54	68.99	31.98	5.52	54.39	180	175	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	70.73	-3.27	74	87.62	31.98	5.52	54.39	117	20	Peak
2483.52	50.35	-3.65	54	67.24	31.98	5.52	54.39	117	20	Average

<MIMO Ant 0+1>

Test Mode :	802.11n HT-40	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	51~52%
Test Channel :	03	Test Engineer :	Timberland Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384.97	68.38	-5.62	74	85.46	31.88	5.4	54.36	189	329	Peak
2389.38	50.74	-3.26	54	67.8	31.9	5.4	54.36	189	329	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
2385.42	67.51	-6.49	74	84.59	31.88	5.4	54.36	100	218	Peak
2390.01	49.39	-4.61	54	66.45	31.9	5.4	54.36	100	218	Average

Test Mode :	802.11n HT-40	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	51~52%
Test Channel :	09	Test Engineer :	Timberland Lin

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	72.67	-1.33	74	89.56	31.98	5.52	54.39	182	166	Peak
2484.34	51.15	-2.85	54	68.04	31.98	5.52	54.39	182	166	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
2483.9	72.49	-1.51	74	89.38	31.98	5.52	54.39	118	8	Peak
2483.62	51.65	-2.35	54	68.54	31.98	5.52	54.39	118	8	Average

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

<Legacy Ant 0>

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 104.3 dBuV/m - 20dB = 84.3 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
2390	38.03	-15.97	54	35.27	31.9	5.4	34.54	100	161	Average
2390	50.11	-23.89	74	47.35	31.9	5.4	34.54	100	161	Peak
2412	99.84	-	-	97.03	31.91	5.43	34.53	100	161	Average
2412	104.3	-	-	101.49	31.91	5.43	34.53	100	161	Peak
2486	34.51	-19.49	54	31.54	31.98	5.52	34.53	100	161	Average
2486	47.16	-26.84	74	44.19	31.98	5.52	34.53	100	161	Peak
7236	52.93	-31.37	84.3	62.6	35.66	11.02	56.35	113	53	Peak
7500	44.5	-9.5	54	53.85	35.5	11.39	56.24	101	146	Average
7500	53.08	-20.92	74	62.43	35.5	11.39	56.24	101	146	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 3216 MHz and 7236 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	46.69	-7.31	54	43.93	31.9	5.4	34.54	100	210	Average
2390	58.74	-15.26	74	55.98	31.9	5.4	34.54	100	210	Peak
2412	107.87	-	-	105.06	31.91	5.43	34.53	100	210	Average
2412	112.86	-	-	110.05	31.91	5.43	34.53	100	210	Peak
2488	43.27	-10.73	54	40.28	32	5.52	34.53	100	210	Average
2488	56.03	-17.97	74	53.04	32	5.52	34.53	100	210	Peak
3216	46.81	-46.05	92.86	62.51	32.58	6.35	54.63	100	0	Peak
7236	51.76	-41.4	92.86	61.43	35.66	11.02	56.35	101	359	Peak
7500	50.27	-23.73	74	59.61	35.5	11.39	56.23	100	0	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	12.76	-27.24	40	26.06	18.02	0.4	31.72	-	-	Peak
98.31	15.65	-27.85	43.5	35.56	10.72	1.05	31.68	-	-	Peak
250.05	20.83	-25.17	46	37.8	12.4	2.28	31.65	-	-	Peak
374.9	30.4	-15.6	46	44.88	14.9	2.32	31.7	-	-	Peak
428.1	33.26	-12.74	46	46.12	16.5	2.47	31.83	100	245	Peak
897.8	25.74	-20.26	46	32.89	20.7	3.76	31.61	-	-	Peak
2388	36.78	-17.22	54	34.02	31.9	5.4	34.54	116	60	Average
2388	49.08	-24.92	74	46.32	31.9	5.4	34.54	116	60	Peak
2437	101.4	-	-	98.52	31.95	5.46	34.53	116	60	Average
2437	105.79	-	-	102.91	31.95	5.46	34.53	116	60	Peak
2500	39.88	-14.12	54	36.89	32	5.52	34.53	116	60	Average
2500	51.06	-22.94	74	48.07	32	5.52	34.53	116	60	Peak
7311	46.17	-7.83	54	55.76	35.61	11.12	56.32	112	54	Average
7311	52.19	-21.81	74	61.78	35.61	11.12	56.32	112	54	Peak
7500	44.54	-9.46	54	53.89	35.5	11.39	56.24	102	140	Average
7500	53.67	-20.33	74	63.02	35.5	11.39	56.24	102	140	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 3249 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.04	14.47	-25.53	40	35.22	10.38	0.57	31.7	-	-	Peak
98.31	19.96	-23.54	43.5	39.87	10.72	1.05	31.68	-	-	Peak
250.05	14.23	-31.77	46	31.2	12.4	2.28	31.65	-	-	Peak
423.9	22.31	-23.69	46	35.18	16.5	2.46	31.83	-	-	Peak
624.8	23.44	-22.56	46	33.12	19.15	3.22	32.05	-	-	Peak
875.4	25.39	-20.61	46	32.75	20.56	3.83	31.75	100	148	Peak
2378	43.99	-10.01	54	41.28	31.88	5.37	34.54	100	356	Average
2378	54.91	-19.09	74	52.2	31.88	5.37	34.54	100	356	Peak
2437	108.59	-	-	105.71	31.95	5.46	34.53	100	356	Average
2437	113.17	-	-	110.29	31.95	5.46	34.53	100	356	Peak
2484	43.22	-10.78	54	40.25	31.98	5.52	34.53	100	356	Average
2484	56.5	-17.5	74	53.53	31.98	5.52	34.53	100	356	Peak
3249	46.42	-46.75	93.17	62.06	32.6	6.4	54.64	100	0	Peak
7311	42.16	-11.84	54	51.75	35.61	11.12	56.32	102	1	Average
7311	51.62	-22.38	74	61.21	35.61	11.12	56.32	102	1	Peak
7500	50.82	-23.18	74	60.17	35.5	11.39	56.24	100	0	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	33.97	-20.03	54	31.21	31.9	5.4	34.54	100	77	Average
2386	48.04	-25.96	74	45.28	31.9	5.4	34.54	100	77	Peak
2462	100.02	-	-	97.09	31.97	5.49	34.53	100	77	Average
2462	104.27	-	-	101.34	31.97	5.49	34.53	100	77	Peak
2483.5	40.2	-13.8	54	37.23	31.98	5.52	34.53	100	77	Average
2483.7	52.73	-21.27	74	49.76	31.98	5.52	34.53	100	77	Peak
7386	46.07	-7.93	54	55.58	35.56	11.22	56.29	115	56	Average
7386	52.47	-21.53	74	61.98	35.56	11.22	56.29	115	56	Peak
7500	44.61	-9.39	54	53.96	35.5	11.39	56.24	104	138	Average
7500	53.75	-20.25	74	63.1	35.5	11.39	56.24	103	138	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 3282 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388	40.09	-13.91	54	37.33	31.9	5.4	34.54	117	360	Average
2388	52.46	-21.54	74	49.7	31.9	5.4	34.54	117	360	Peak
2462	109.58	-	-	106.65	31.97	5.49	34.53	117	360	Average
2462	114.16	-	-	111.23	31.97	5.49	34.53	117	360	Peak
2483.5	50.72	-3.28	54	47.75	31.98	5.52	34.53	117	360	Average
2484	63.12	-10.88	74	60.15	31.98	5.52	34.53	117	360	Peak
3282	47.58	-46.58	94.16	63.2	32.61	6.43	54.66	100	0	Peak
7386	42.31	-11.69	54	51.82	35.56	11.22	56.29	100	360	Average
7386	51.95	-22.05	74	61.46	35.56	11.22	56.29	100	360	Peak
7500	50.02	-23.98	74	59.37	35.5	11.39	56.24	100	0	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	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
2386.77	42.44	-11.56	54	39.68	31.9	5.4	34.54	100	78	Average
2389.11	65.02	-8.98	74	62.26	31.9	5.4	34.54	100	78	Peak
2412	90.02	-	-	87.21	31.91	5.43	34.53	100	78	Average
2412	101.46	-	-	98.65	31.91	5.43	34.53	100	78	Peak
2484	36.68	-17.32	54	33.71	31.98	5.52	34.53	100	78	Average
2484	49.61	-24.39	74	46.64	31.98	5.52	34.53	100	78	Peak
7500	44.48	-9.52	54	53.83	35.5	11.39	56.24	101	135	Average
7500	53.25	-20.75	74	62.6	35.5	11.39	56.24	101	135	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	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
2388.57	72.64	-1.36	74	69.88	31.9	5.4	34.54	100	211	Peak
2390	52.87	-1.13	54	50.11	31.9	5.4	34.54	100	211	Average
2412	97.87	-	-	95.06	31.91	5.43	34.53	100	211	Average
2412	110.51	-	-	107.7	31.91	5.43	34.53	100	211	Peak
2484	42.02	-11.98	54	39.05	31.98	5.52	34.53	100	211	Average
2484	54.53	-19.47	74	51.56	31.98	5.52	34.53	100	211	Peak
7500	50.3	-23.7	74	59.64	35.5	11.39	56.23	100	0	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	13.03	-26.97	40	25.55	18.8	0.4	31.72	-	-	Peak
98.85	15.36	-28.14	43.5	35.05	10.96	1.03	31.68	-	-	Peak
250.05	21.21	-24.79	46	38.18	12.4	2.28	31.65	-	-	Peak
428.8	34.07	-11.93	46	46.92	16.5	2.48	31.83	100	248	Peak
634.6	21.9	-24.1	46	31.43	19.2	3.29	32.02	-	-	Peak
875.4	25.09	-20.91	46	32.45	20.56	3.83	31.75	-	-	Peak
2390	36.54	-17.46	54	33.78	31.9	5.4	34.54	115	61	Average
2390	49.06	-24.94	74	46.3	31.9	5.4	34.54	115	61	Peak
2437	94.14	-	-	91.26	31.95	5.46	34.53	115	61	Average
2437	106.11	-	-	103.23	31.95	5.46	34.53	115	61	Peak
2500	41.42	-12.58	54	38.43	32	5.52	34.53	115	61	Average
2500	51.4	-22.6	74	48.41	32	5.52	34.53	115	61	Peak
7500	44.52	-9.48	54	53.87	35.5	11.39	56.24	103	142	Average
7500	53.66	-20.34	74	63	35.5	11.39	56.23	103	142	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	14.56	-25.44	40	27.08	18.8	0.4	31.72	-	-	Peak
97.5	19.92	-23.58	43.5	39.82	10.72	1.05	31.67	-	-	Peak
261.93	14.37	-31.63	46	30.36	13.54	2.18	31.71	-	-	Peak
428.1	21.85	-24.15	46	34.71	16.5	2.47	31.83	-	-	Peak
624.8	24.2	-21.8	46	33.88	19.15	3.22	32.05	100	186	Peak
875.4	23.52	-22.48	46	30.88	20.56	3.83	31.75	-	-	Peak
2390	41.34	-12.66	54	38.58	31.9	5.4	34.54	121	358	Average
2390	59.12	-14.88	74	56.36	31.9	5.4	34.54	121	358	Peak
2437	102.21	-	-	99.33	31.95	5.46	34.53	121	358	Average
2437	115.46	-	-	112.58	31.95	5.46	34.53	121	358	Peak
2500	47.77	-6.23	54	44.78	32	5.52	34.53	121	358	Average
2500	58.85	-15.15	74	55.86	32	5.52	34.53	121	358	Peak
7500	50.26	-23.74	74	59.61	35.5	11.39	56.24	100	0	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384	33.42	-20.58	54	30.68	31.88	5.4	34.54	100	76	Average
2384	46.63	-27.37	74	43.89	31.88	5.4	34.54	100	76	Peak
2462	90.25	-	-	87.32	31.97	5.49	34.53	100	76	Average
2462	101.93	-	-	99	31.97	5.49	34.53	100	76	Peak
2483.5	44.62	-9.38	54	41.65	31.98	5.52	34.53	100	76	Average
2483.52	60.96	-13.04	74	57.99	31.98	5.52	34.53	100	76	Peak
7500	44.49	-9.51	54	53.84	35.5	11.39	56.24	103	141	Average
7500	53.58	-20.42	74	62.92	35.5	11.39	56.23	103	141	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2370	37.69	-16.31	54	34.98	31.88	5.37	34.54	100	223	Average
2370	51.86	-22.14	74	49.15	31.88	5.37	34.54	100	223	Peak
2462	96.9	-	-	93.97	31.97	5.49	34.53	100	223	Average
2462	109.63	-	-	106.7	31.97	5.49	34.53	100	223	Peak
2483.5	52.96	-1.04	54	49.99	31.98	5.52	34.53	100	223	Average
2484.58	70.59	-3.41	74	67.62	31.98	5.52	34.53	100	223	Peak
7500	50.03	-23.97	74	59.38	35.5	11.39	56.24	100	0	Peak

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Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	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
2385.42	62.6	-11.4	74	59.86	31.88	5.4	34.54	102	77	Peak
2390	40.97	-13.03	54	38.21	31.9	5.4	34.54	102	77	Average
2412	90.09	-	-	87.28	31.91	5.43	34.53	102	77	Average
2412	102.58	-	-	99.77	31.91	5.43	34.53	102	77	Peak
2484	36.18	-17.82	54	33.21	31.98	5.52	34.53	102	77	Average
2484	49.52	-24.48	74	46.55	31.98	5.52	34.53	102	77	Peak
7500	44.28	-9.72	54	53.63	35.5	11.39	56.24	102	143	Average
7500	53.11	-20.89	74	62.46	35.5	11.39	56.24	102	143	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	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
2390	51.53	-2.47	54	48.77	31.9	5.4	34.54	100	213	Average
2390	72.21	-1.79	74	69.45	31.9	5.4	34.54	100	213	Peak
2412	97.59	-	-	94.78	31.91	5.43	34.53	100	213	Average
2412	110.11	-	-	107.3	31.91	5.43	34.53	100	213	Peak
2486	41.21	-12.79	54	38.24	31.98	5.52	34.53	100	213	Average
2486	53.55	-20.45	74	50.58	31.98	5.52	34.53	100	213	Peak
7500	50.35	-23.65	74	59.69	35.5	11.39	56.23	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.59	13.18	-26.82	40	29.56	14.9	0.42	31.7	-	-	Peak
98.31	17.09	-26.41	43.5	37	10.72	1.05	31.68	-	-	Peak
266.25	21.23	-24.77	46	37.59	13.14	2.2	31.7	-	-	Peak
428.1	33.76	-12.24	46	46.62	16.5	2.47	31.83	100	196	Peak
705.3	20.4	-25.6	46	29.82	19.05	3.55	32.02	-	-	Peak
875.4	26.37	-19.63	46	33.73	20.56	3.83	31.75	-	-	Peak
2390	36.72	-17.28	54	33.96	31.9	5.4	34.54	116	58	Average
2390	58.65	-15.35	74	55.89	31.9	5.4	34.54	116	58	Peak
2437	93.71	-	-	90.83	31.95	5.46	34.53	116	58	Average
2437	107.24	-	-	104.36	31.95	5.46	34.53	116	58	Peak
2500	40.13	-13.87	54	37.14	32	5.52	34.53	116	58	Average
2500	52.16	-21.84	74	49.17	32	5.52	34.53	116	58	Peak
7500	44.29	-9.71	54	53.64	35.5	11.39	56.24	102	138	Average
7500	52.96	-21.04	74	62.31	35.5	11.39	56.24	102	138	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 3216 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	13.55	-26.45	40	26.07	18.8	0.4	31.72	-	-	Peak
44.04	14.72	-25.28	40	35.47	10.38	0.57	31.7	-	-	Peak
98.31	20.34	-23.16	43.5	40.25	10.72	1.05	31.68	-	-	Peak
420.4	22.17	-23.83	46	35.06	16.5	2.44	31.83	-	-	Peak
624.8	23.55	-22.45	46	33.23	19.15	3.22	32.05	-	-	Peak
875.4	24.71	-21.29	46	32.07	20.56	3.83	31.75	100	218	Peak
2390	41.18	-12.82	54	38.42	31.9	5.4	34.54	120	357	Average
2390	58.23	-15.77	74	55.47	31.9	5.4	34.54	120	357	Peak
2437	101.52	-	-	98.64	31.95	5.46	34.53	120	357	Average
2437	114.98	-	-	112.1	31.95	5.46	34.53	120	357	Peak
2500	48.33	-5.67	54	45.34	32	5.52	34.53	120	357	Average
2500	59.71	-14.29	74	56.72	32	5.52	34.53	120	357	Peak
3216	45.62	-49.36	94.98	61.32	32.58	6.35	54.63	100	0	Peak
7500	50.66	-23.34	74	60	35.5	11.39	56.23	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2352	33.37	-20.63	54	30.71	31.86	5.34	34.54	100	75	Average
2352	46.88	-27.12	74	44.22	31.86	5.34	34.54	100	75	Peak
2462	90.35	-	-	87.42	31.97	5.49	34.53	100	75	Average
2462	102.18	-	-	99.25	31.97	5.49	34.53	100	75	Peak
2483.5	46.11	-7.89	54	43.14	31.98	5.52	34.53	100	75	Average
2484.08	64.63	-9.37	74	61.66	31.98	5.52	34.53	100	75	Peak
7500	44.21	-9.79	54	53.56	35.5	11.39	56.24	103	142	Average
7500	53.03	-20.97	74	62.37	35.5	11.39	56.23	103	142	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	39.79	-14.21	54	37.03	31.9	5.4	34.54	100	218	Average
2390	52.72	-21.28	74	49.96	31.9	5.4	34.54	100	218	Peak
2462	96.56	-	-	93.63	31.97	5.49	34.53	100	218	Average
2462	108.99	-	-	106.06	31.97	5.49	34.53	100	218	Peak
2483.5	52.81	-1.19	54	49.84	31.98	5.52	34.53	100	218	Average
2484.64	71.01	-2.99	74	68.04	31.98	5.52	34.53	100	218	Peak
7500	49.87	-24.13	74	59.22	35.5	11.39	56.24	100	0	Peak

<SISO Ant 1>

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	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
2387.31	72.35	-1.65	74	69.59	31.9	5.4	34.54	136	337	Peak
2390	50.93	-3.07	54	48.17	31.9	5.4	34.54	136	337	Average
2412	96.69	-	-	93.88	31.91	5.43	34.53	136	337	Average
2412	109.89	-	-	107.08	31.91	5.43	34.53	136	337	Peak
2494	41.6	-12.4	54	38.61	32	5.52	34.53	136	337	Average
2494	54.6	-19.4	74	51.61	32	5.52	34.53	136	337	Peak
7500	50.74	-23.26	74	60.09	35.5	11.39	56.24	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.38	67.3	-6.7	74	64.54	31.9	5.4	34.54	100	204	Peak
2390	45.86	-8.14	54	43.1	31.9	5.4	34.54	100	204	Average
2412	90.61	-	-	87.8	31.91	5.43	34.53	100	204	Average
2412	104.27	-	-	101.46	31.91	5.43	34.53	100	204	Peak
2500	39.04	-14.96	54	36.05	32	5.52	34.53	100	204	Average
2500	52.79	-21.21	74	49.8	32	5.52	34.53	100	204	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388	38.09	-15.91	54	35.33	31.9	5.4	34.54	108	24	Average
2388	59.83	-14.17	74	57.07	31.9	5.4	34.54	108	24	Peak
2437	95.78	-	-	92.9	31.95	5.46	34.53	108	24	Average
2437	108.09	-	-	105.21	31.95	5.46	34.53	108	24	Peak
2500	41.47	-12.53	54	38.48	32	5.52	34.53	108	24	Average
2500	53.69	-20.31	74	50.7	32	5.52	34.53	108	24	Peak
7500	38.58	-15.42	54	47.93	35.5	11.39	56.24	100	44	Average
7500	52.48	-21.52	74	61.83	35.5	11.39	56.24	100	44	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	40.13	-13.87	54	37.37	31.9	5.4	34.54	111	333	Average
2390	59.69	-14.31	74	56.93	31.9	5.4	34.54	111	333	Peak
2437	99.78	-	-	96.9	31.95	5.46	34.53	111	333	Average
2437	112.35	-	-	109.47	31.95	5.46	34.53	111	333	Peak
2500	47	-7	54	44.01	32	5.52	34.53	111	333	Average
2500	60.46	-13.54	74	57.47	32	5.52	34.53	111	333	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384	38.52	-15.48	54	35.78	31.88	5.4	34.54	179	180	Average
2384	51.14	-22.86	74	48.4	31.88	5.4	34.54	179	180	Peak
2462	98.68	-	-	95.75	31.97	5.49	34.53	179	180	Average
2462	110.97	-	-	108.04	31.97	5.49	34.53	179	180	Peak
2483.52	52.98	-1.02	54	50.01	31.98	5.52	34.53	179	180	Average
2483.7	72.61	-1.39	74	69.64	31.98	5.52	34.53	179	180	Peak
7500	43.23	-10.77	54	52.58	35.5	11.39	56.24	102	158	Average
7500	51.07	-22.93	74	60.42	35.5	11.39	56.24	102	158	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	34.52	-19.48	54	31.76	31.9	5.4	34.54	102	205	Average
2386	47.69	-26.31	74	44.93	31.9	5.4	34.54	102	205	Peak
2462	89.7	-	-	86.77	31.97	5.49	34.53	102	205	Average
2462	102.27	-	-	99.34	31.97	5.49	34.53	102	205	Peak
2483.5	44	-10	54	41.03	31.98	5.52	34.53	102	205	Average
2483.56	66.24	-7.76	74	63.27	31.98	5.52	34.53	102	205	Peak

<MIMO Ant 0+1>

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	63.97	-10.03	74	81.03	31.9	5.4	54.36	112	185	Peak
2390	48.03	-5.97	54	65.09	31.9	5.4	54.36	112	185	Average
2412	74.15	-	-	91.18	31.91	5.43	54.37	112	185	Average
2412	88.76	-	-	105.79	31.91	5.43	54.37	112	185	Peak
2486	21.82	-32.18	54	38.71	31.98	5.52	54.39	112	185	Average
2486	34.43	-39.57	74	51.32	31.98	5.52	54.39	112	185	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.92	61.1	-12.9	74	78.16	31.9	5.4	54.36	151	208	Peak
2390	46.93	-7.07	54	63.99	31.9	5.4	54.36	151	208	Average
2412	73.17	-	-	90.2	31.91	5.43	54.37	151	208	Average
2412	88.21	-	-	105.24	31.91	5.43	54.37	151	208	Peak
2494	20	-34	54	36.87	32	5.52	54.39	151	208	Average
2494	31.47	-42.53	74	48.34	32	5.52	54.39	151	208	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.27	13.85	-26.15	40	26.37	18.8	0.4	31.72	-	-	Peak
97.5	16.17	-27.33	43.5	36.07	10.72	1.05	31.67	-	-	Peak
298.38	21.47	-24.53	46	37.56	13.18	2.39	31.66	-	-	Peak
428.1	34.26	-11.74	46	47.12	16.5	2.47	31.83	100	186	Peak
653.5	20.45	-25.55	46	29.8	19.2	3.42	31.97	-	-	Peak
897.8	27.2	-18.8	46	34.35	20.7	3.76	31.61	-	-	Peak
2390	23.9	-30.1	54	40.96	31.9	5.4	54.36	110	159	Average
2390	45.28	-28.72	74	62.34	31.9	5.4	54.36	110	159	Peak
2437	78.64	-	-	95.61	31.95	5.46	54.38	110	159	Average
2437	93.33	-	-	110.3	31.95	5.46	54.38	110	159	Peak
2500	27.13	-26.87	54	44	32	5.52	54.39	110	159	Average
2500	37.15	-36.85	74	54.02	32	5.52	54.39	110	159	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.04	14.54	-25.46	40	35.29	10.38	0.57	31.7	-	-	Peak
98.31	19.63	-23.87	43.5	39.54	10.72	1.05	31.68	-	-	Peak
250.05	13.81	-32.19	46	30.78	12.4	2.28	31.65	-	-	Peak
428.1	21.91	-24.09	46	34.77	16.5	2.47	31.83	-	-	Peak
624.8	23.53	-22.47	46	33.21	19.15	3.22	32.05	-	-	Peak
897.8	26.12	-19.88	46	33.27	20.7	3.76	31.61	100	249	Peak
2388	23.26	-30.74	54	40.32	31.9	5.4	54.36	119	20	Average
2388	37.32	-36.68	74	54.38	31.9	5.4	54.36	119	20	Peak
2437	79.34	-	-	96.31	31.95	5.46	54.38	119	20	Average
2437	94.64	-	-	111.62	31.93	5.46	54.37	119	20	Peak
2492	25.96	-28.04	54	42.83	32	5.52	54.39	119	20	Average
2492	37.96	-36.04	74	54.83	32	5.52	54.39	119	20	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384	18.05	-35.95	54	35.13	31.88	5.4	54.36	180	175	Average
2384	28.4	-45.6	74	45.48	31.88	5.4	54.36	180	175	Peak
2462	75.69	-	-	92.61	31.97	5.49	54.38	180	175	Average
2462	90.34	-	-	107.26	31.97	5.49	54.38	180	175	Peak
2483.5	52.1	-1.9	54	68.99	31.98	5.52	54.39	180	175	Average
2484.26	71.58	-2.42	74	88.47	31.98	5.52	54.39	180	175	Peak

Test Mode :	802.11n-HT20	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388	19.85	-34.15	54	36.91	31.9	5.4	54.36	117	20	Average
2388	30.53	-43.47	74	47.59	31.9	5.4	54.36	117	20	Peak
2462	75.26	-	-	92.18	31.97	5.49	54.38	117	20	Average
2462	90.25	-	-	107.17	31.97	5.49	54.38	117	20	Peak
2483.52	50.35	-3.65	54	67.24	31.98	5.52	54.39	117	20	Average
2484.44	70.73	-3.27	74	87.62	31.98	5.52	54.39	117	20	Peak

<MIMO Ant 0+1>

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2422 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384.97	68.38	-5.62	74	85.46	31.88	5.4	54.36	189	329	Peak
2389.38	50.74	-3.26	54	67.8	31.9	5.4	54.36	189	329	Average
2422	66.53	-	-	83.54	31.93	5.43	54.37	189	329	Average
2422	83.85	-	-	100.86	31.93	5.43	54.37	189	329	Peak
2488	25.74	-28.26	54	42.61	32	5.52	54.39	189	329	Average
2488	39.99	-34.01	74	56.86	32	5.52	54.39	189	329	Peak

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2422 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.42	67.51	-6.49	74	84.59	31.88	5.4	54.36	100	218	Peak
2390.01	49.39	-4.61	54	66.45	31.9	5.4	54.36	100	218	Average
2422	66.37	-	-	83.38	31.93	5.43	54.37	100	218	Average
2422	87.2	-	-	104.21	31.93	5.43	54.37	100	218	Peak
2488	29.33	-24.67	54	46.2	32	5.52	54.39	100	218	Average
2488	44.08	-29.92	74	60.95	32	5.52	54.39	100	218	Peak

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	13.35	-26.65	40	25.87	18.8	0.4	31.72	-	-	Peak
98.31	15.74	-27.76	43.5	35.65	10.72	1.05	31.68	-	-	Peak
281.1	20.48	-25.52	46	37.08	12.91	2.21	31.72	-	-	Peak
428.1	34.04	-11.96	46	46.9	16.5	2.47	31.83	100	194	Peak
570.9	20.77	-25.23	46	30.95	18.81	3	31.99	-	-	Peak
875.4	26.86	-19.14	46	34.22	20.56	3.83	31.75	-	-	Peak
2376	29.25	-24.75	54	46.36	31.88	5.37	54.36	114	333	Average
2376	43.82	-30.18	74	60.93	31.88	5.37	54.36	114	333	Peak
2437	69.21	-	-	86.18	31.95	5.46	54.38	114	333	Average
2437	86.6	-	-	103.58	31.93	5.46	54.37	114	333	Peak
2498	32.59	-21.41	54	49.46	32	5.52	54.39	114	333	Average
2498	48.7	-25.3	74	65.57	32	5.52	54.39	114	333	Peak

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	13.55	-26.45	40	26.07	18.8	0.4	31.72	-	-	Peak
44.04	13.94	-26.06	40	34.69	10.38	0.57	31.7	-	-	Peak
97.5	19.53	-23.97	43.5	39.43	10.72	1.05	31.67	-	-	Peak
428.1	21.63	-24.37	46	34.49	16.5	2.47	31.83	-	-	Peak
624.8	24.21	-21.79	46	33.89	19.15	3.22	32.05	100	49	Peak
875.4	23.81	-22.19	46	31.17	20.56	3.83	31.75	-	-	Peak
2390	31.81	-22.19	54	48.87	31.9	5.4	54.36	119	26	Average
2390	49.47	-24.53	74	66.53	31.9	5.4	54.36	119	26	Peak
2437	71.38	-	-	88.35	31.95	5.46	54.38	119	26	Average
2437	89.78	-	-	106.76	31.93	5.46	54.37	119	26	Peak
2484	32.97	-21.03	54	49.86	31.98	5.52	54.39	119	26	Average
2484	49.1	-24.9	74	65.99	31.98	5.52	54.39	119	26	Peak

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Horizontal
Remark :	2452 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	28.16	-25.84	54	45.22	31.9	5.4	54.36	182	166	Average
2390	42.03	-31.97	74	59.09	31.9	5.4	54.36	182	166	Peak
2452	69.91	-	-	86.88	31.95	5.46	54.38	182	166	Average
2452	87.32	-	-	104.29	31.95	5.46	54.38	182	166	Peak
2483.78	72.67	-1.33	74	89.56	31.98	5.52	54.39	182	166	Peak
2484.34	51.15	-2.85	54	68.04	31.98	5.52	54.39	182	166	Average

Test Mode :	802.11n-HT40	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	51~52%
Test Engineer :	Timberland Lin	Polarization :	Vertical
Remark :	2452 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388	28.35	-25.65	54	45.41	31.9	5.4	54.36	118	8	Average
2388	42.44	-31.56	74	59.5	31.9	5.4	54.36	118	8	Peak
2452	69.94	-	-	86.91	31.95	5.46	54.38	118	8	Average
2452	89.31	-	-	106.28	31.95	5.46	54.38	118	8	Peak
2483.62	51.65	-2.35	54	68.54	31.98	5.52	54.39	118	8	Average
2483.9	72.49	-1.51	74	89.38	31.98	5.52	54.39	118	8	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.

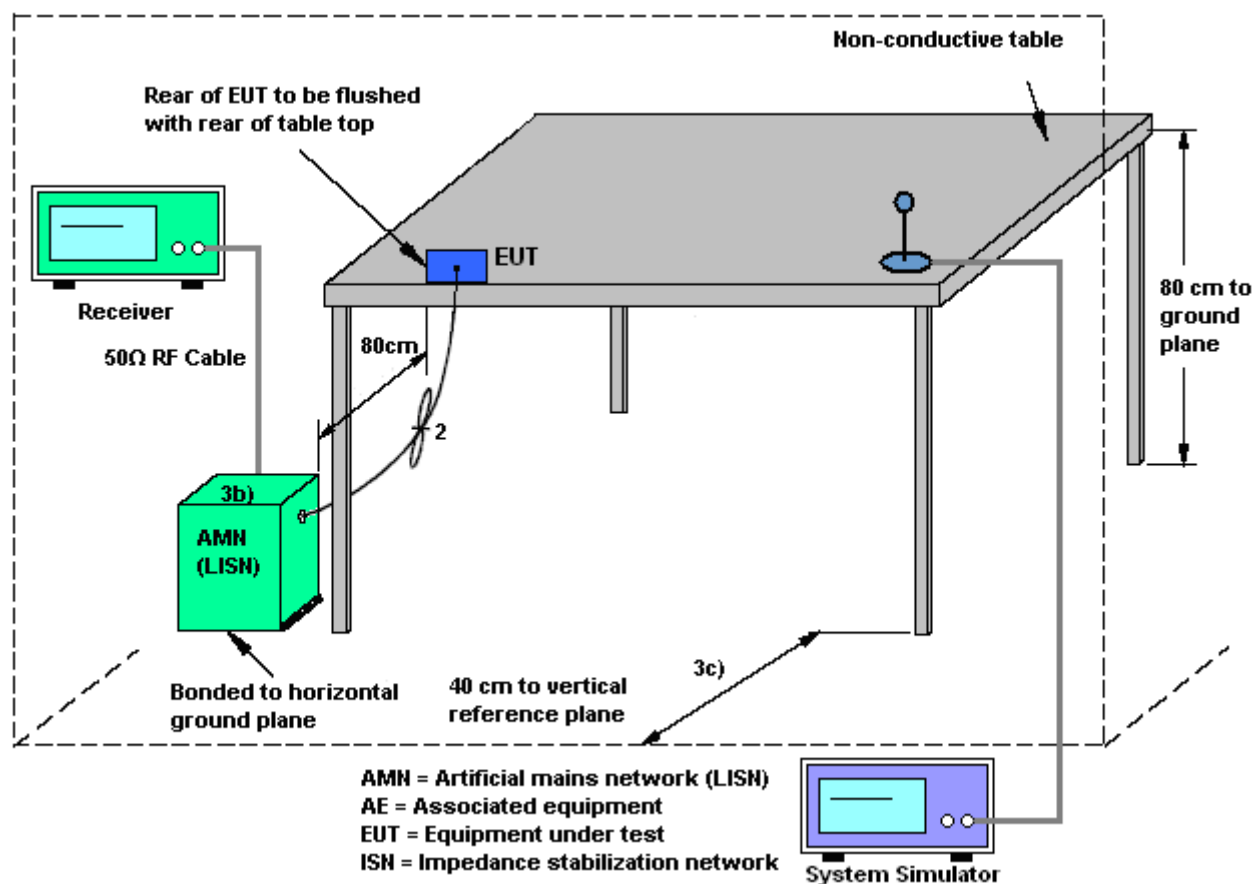
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

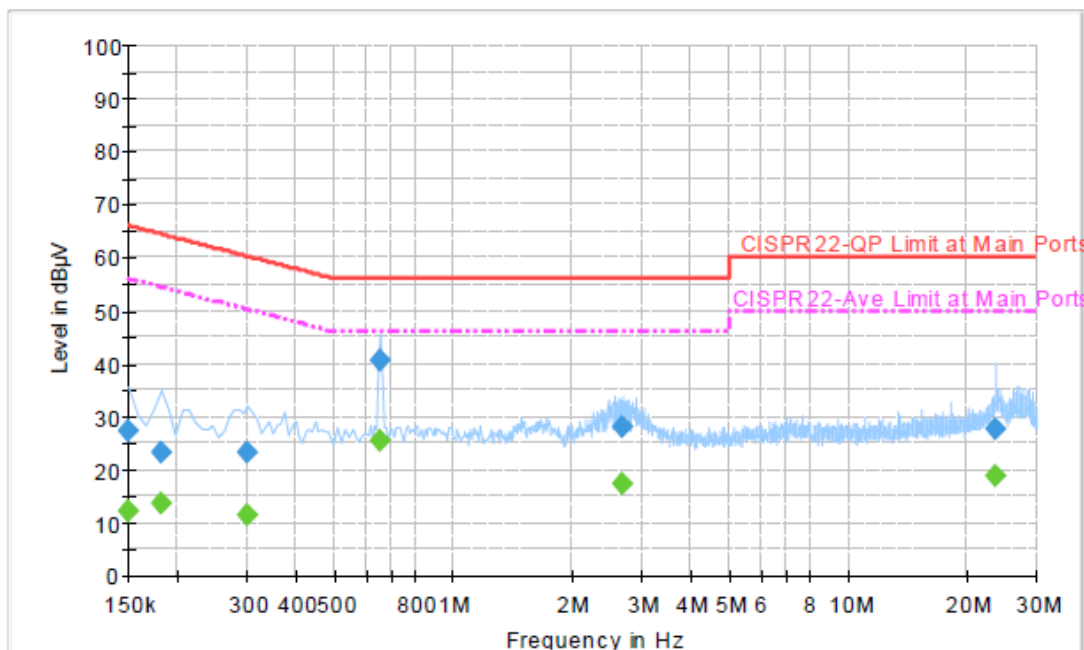
1. The testing follows the guidelines in ANSI C63.10-2009 and fulfills ANSI C63.4-2003 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power 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



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN (2.4G) Link + LAN Link + WAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



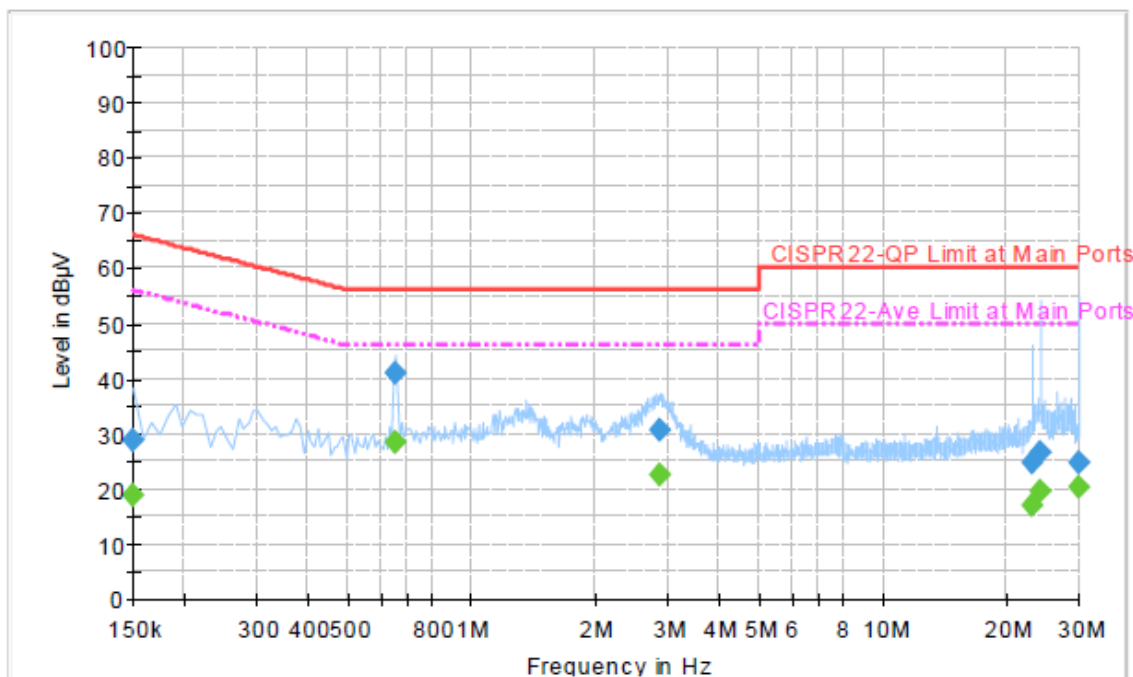
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	27.2	Off	L1	19.4	38.8	66.0
0.182000	23.2	Off	L1	19.4	41.2	64.4
0.302000	23.2	Off	L1	19.3	37.0	60.2
0.654000	40.8	Off	L1	19.4	15.2	56.0
2.694000	27.9	Off	L1	19.6	28.1	56.0
23.630000	27.5	Off	L1	19.9	32.5	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	12.2	Off	L1	19.4	43.8	56.0
0.182000	13.6	Off	L1	19.4	40.8	54.4
0.302000	11.4	Off	L1	19.3	38.8	50.2
0.654000	25.6	Off	L1	19.4	20.4	46.0
2.694000	17.2	Off	L1	19.6	28.8	46.0
23.630000	18.9	Off	L1	19.9	31.1	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN (2.4G) Link + LAN Link + WAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	28.7	Off	N	19.4	37.3	66.0
0.654000	41.1	Off	N	19.4	14.9	56.0
2.870000	30.5	Off	N	19.6	25.5	56.0
23.014000	24.6	Off	N	20.0	35.4	60.0
24.150000	26.7	Off	N	20.0	33.3	60.0
29.958000	24.9	Off	N	20.1	35.1	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	18.8	Off	N	19.4	37.2	56.0
0.654000	28.3	Off	N	19.4	17.7	46.0
2.870000	22.4	Off	N	19.6	23.6	46.0
23.014000	16.8	Off	N	20.0	33.2	50.0
24.150000	19.4	Off	N	20.0	30.6	50.0
29.958000	20.4	Off	N	20.1	29.6	50.0

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. The EUT supports completely uncorrelated MIMO mode. The composite antenna gain for 2.4GHz is 2.65 dBi.

	2.4GHz
ANT 1 GAIN (dBi)	3.9
ANT 2 GAIN (dBi)	0.9
COMPOSITE GAIN (dBi)	2.65

FCC KDB 662911 D01 Multiple Transmitter Output v01r01

Unequal antenna gains, with equal transmit powers.

For antenna gains given by $G_1, G_2, \dots, G_N$ dBi.

If all transmit signals are *completely uncorrelated*, then

Directional gain = $10 \log[(10^{G_1/10} + 10^{G_2/10} + \dots + 10^{G_N/10})/N]$ dBi

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. 12, 2012 ~ Jul. 13, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Jul. 12, 2012 ~ Jul. 13, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Jul. 12, 2012 ~ Jul. 13, 2012	Sep. 17, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Jul. 17, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Jul. 17, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Jul. 17, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Jul. 17, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Jul. 17, 2012	Oct. 20, 2013	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz ~ 26.5GHz	Nov. 23, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Nov. 22, 2012	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-30GHz	Nov. 01, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Oct. 31, 2012	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz ~ 1000MHz	May 04, 2012	Jul. 02, 2012 ~ Jul. 14, 2012	May. 03, 2013	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 22, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Oct. 21, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Jul. 31, 2012	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Oct. 20, 2012	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Apr. 13, 2012	Jul. 02, 2012 ~ Jul. 14, 2012	Apr. 12, 2013	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz ~ 1GHz	Apr. 11, 2012	Jul. 02, 2012 ~ Jul. 14, 2012	Apr. 10, 2013	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2011	Jul. 02, 2012 ~ Jul. 14, 2012	Jul. 17, 2012	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 02, 2012 ~ Jul. 14, 2012	Jul. 28, 2012	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

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

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

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

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

Please refer to Sporton report number EP241855 as below.