

FCC RF Test Report

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

The product was received on Nov. 14, 2012 and completely tested on Nov. 23, 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
FR2N1443	Rev. 01	Initial issue of report	Dec. 26, 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	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	Under limit 5.14 dB at 2483.500 MHz
			Radiated Spurious Emission		Pass	
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 3.10 dB at 3.518 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Ubiquiti Networks

2580 Orchard Parkway San Jose, CA 95131

1.2 Manufacturer

Nanning FuGui Precision Industrial Co., LTD.

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

1.3 Feature of Equipment Under Test

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

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

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 21.13 dBm (0.1297 W) 802.11g : 22.84 dBm (0.1923 W) 802.11n HT20 : 21.98 dBm (0.1578 W) 802.11n HT40 : 20.89 dBm (0.1227 W)
99% Occupied Bandwidth	802.11b : 14.55MHz 802.11g : 18.25MHz 802.11n HT20 : 19.15MHz 802.11n HT40 : 37.50MHz
Antenna Type	Monopole Antenna type with gain 4.00 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 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	03CH07-HY	722060/4086B-1

1.5 Applied Standards

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

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

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Table Lamp	Sampo	LH-K704TL	N/A	N/A	Unshielded, 1.8 m
2.	Lamp A	N/A	N/A	N/A	N/A	Unshielded, 1.8 m
3.	Lamp B	N/A	N/A	N/A	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

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

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

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

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	21.13	20.94	21.11	21.06

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.83	21.94	22.09	22.21	22.17	22.83	22.46	22.84

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.23	21.31	21.81	21.27	21.69	21.87	21.85	21.98

2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	20.89	20.47	20.47	20.76	20.49	20.8	20.83	20.88

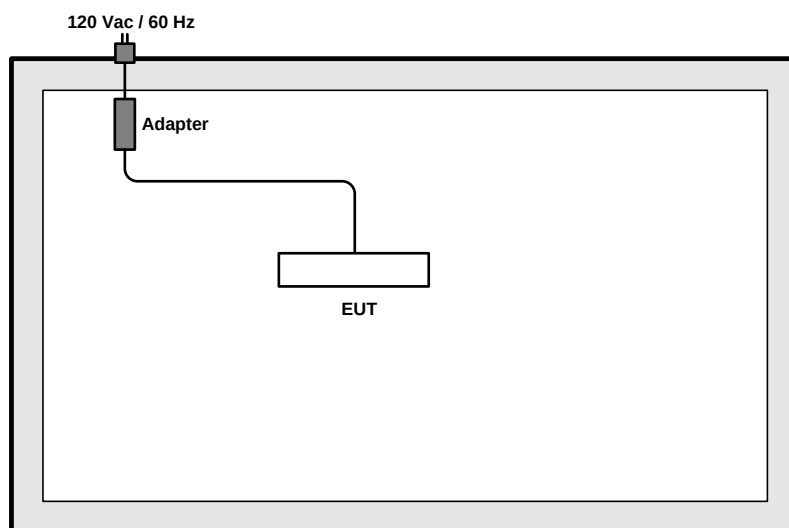
2.3 Test Mode

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

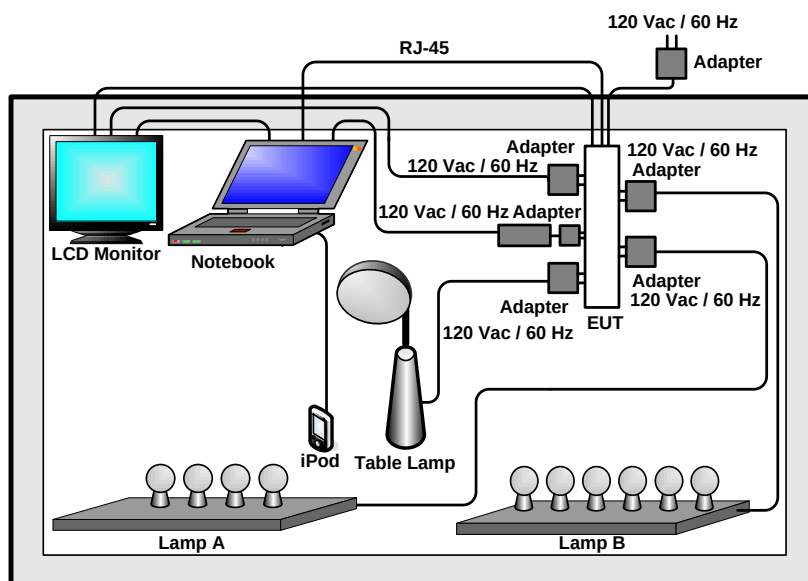
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
AC Conducted Emission	Mode 1 : WLAN Link + Lan Link + TC			
Remark: TC stands for Test Configuration, and consist Lamp A, Lamp B, Notebook, LCD Monitor, And Table Lamp.				

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

For WLAN function, programmed RF utility, “Atheros Radio Test2 (ART2-GUI)” installed in the notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

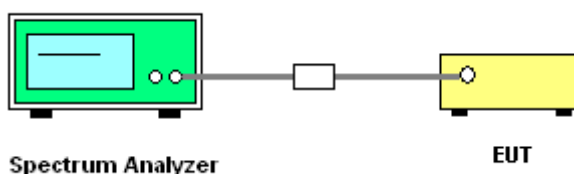
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup

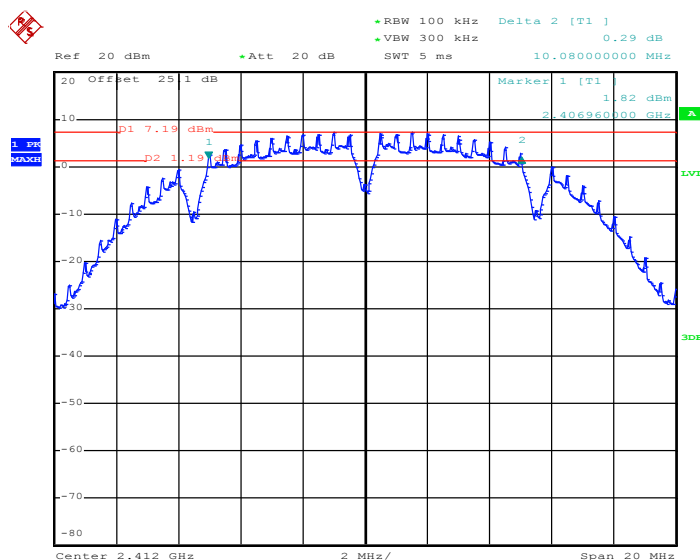


3.1.5 Test Result of 6dB Bandwidth

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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.08	0.5	Pass
06	2437	10.08	0.5	Pass
11	2462	10.08	0.5	Pass

6 dB Bandwidth Plot on 802.11b Channel 01



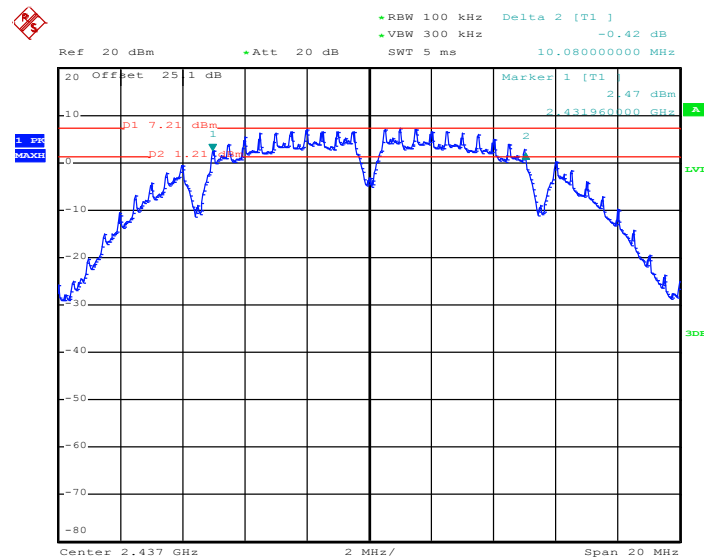
Date: 22.NOV.2012 22:12:19

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Example: the 6dB bandwidth test item, the peak point of fundamental signal is 10.08dBm, has added (offset) with the total loss = attenuator factor + cable loss = 25.1dB, where, cable loss = 5.1dB and 20dB attenuator, and then the 6dB bandwidth is measured and compliance with the limit line. Hereafter, each plot of spectrum analyzer has been added the total loss respectively and to demonstrate in compliance with the limit line.

6 dB Bandwidth Plot on 802.11b Channel 06

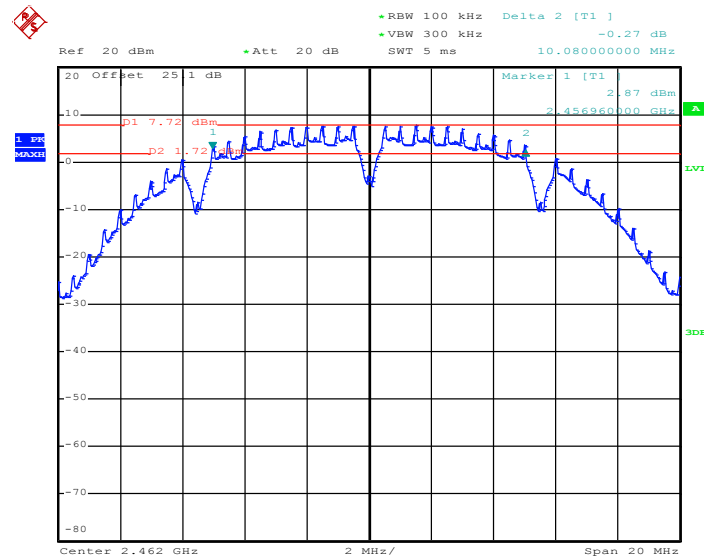


Date: 22.NOV.2012 22:16:24

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

6 dB Bandwidth Plot on 802.11b Channel 11



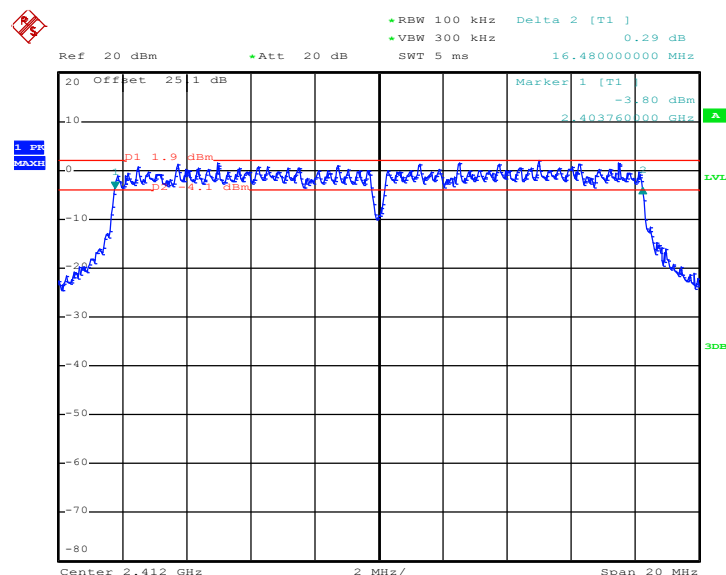
Date: 22.NOV.2012 22:19:39

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.48	0.5	Pass
06	2437	16.50	0.5	Pass
11	2462	16.50	0.5	Pass

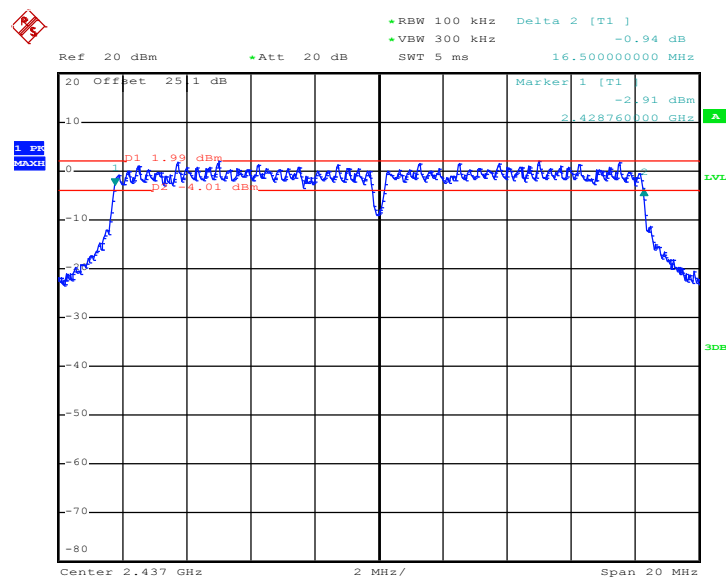
6 dB Bandwidth Plot on 802.11g Channel 01


Date: 22.NOV.2012 22:33:28

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

6 dB Bandwidth Plot on 802.11g Channel 06

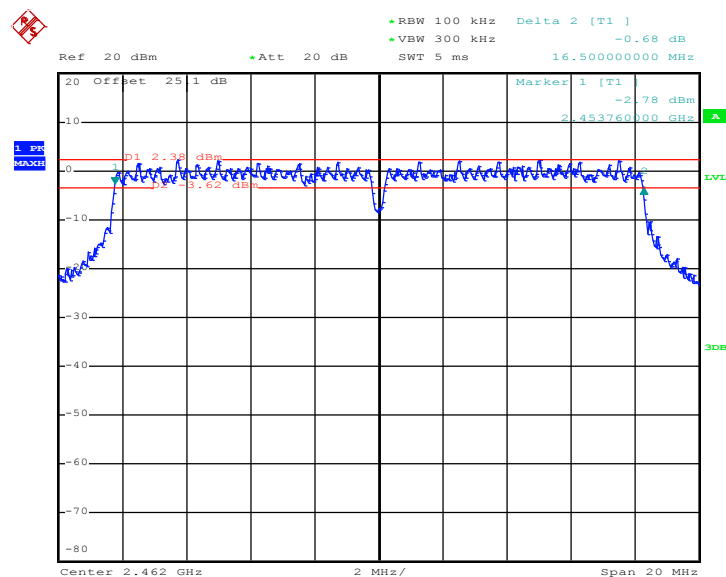


Date: 22.NOV.2012 22:30:12

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

6 dB Bandwidth Plot on 802.11g Channel 11



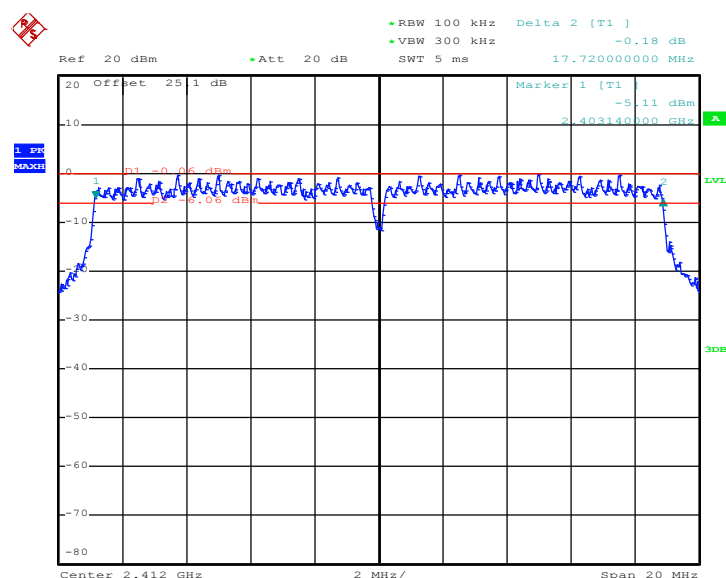
Date: 22.NOV.2012 22:24:49

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

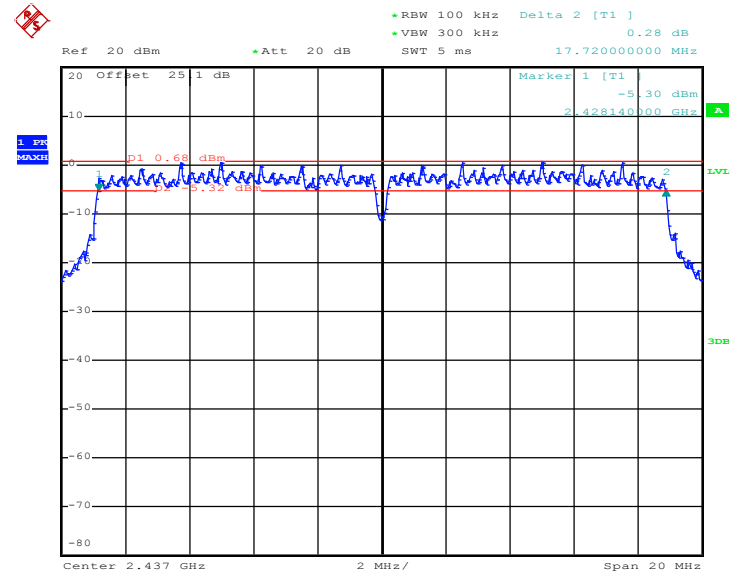
Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.72	0.5	Pass
06	2437	17.72	0.5	Pass
11	2462	17.70	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT20 Channel 01


Date: 22.NOV.2012 22:37:36

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

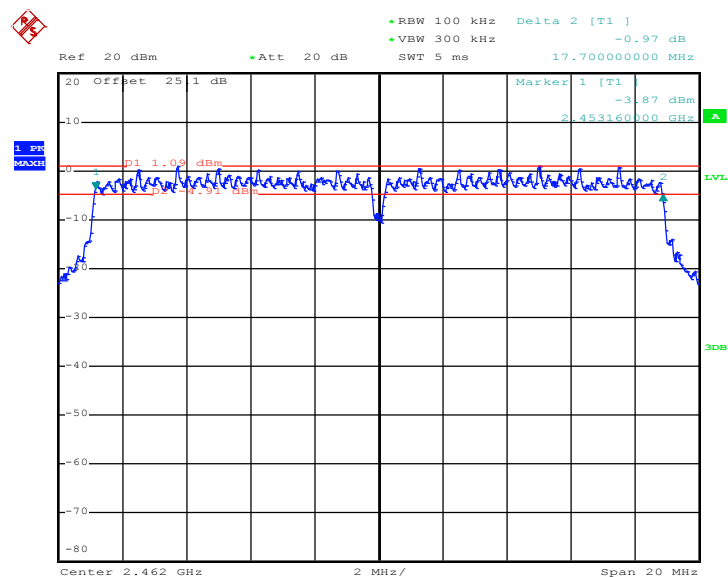
6 dB Bandwidth Plot on 802.11n HT20 Channel 06


Date: 22.NOV.2012 22:40:48

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

6 dB Bandwidth Plot on 802.11n HT20 Channel 11



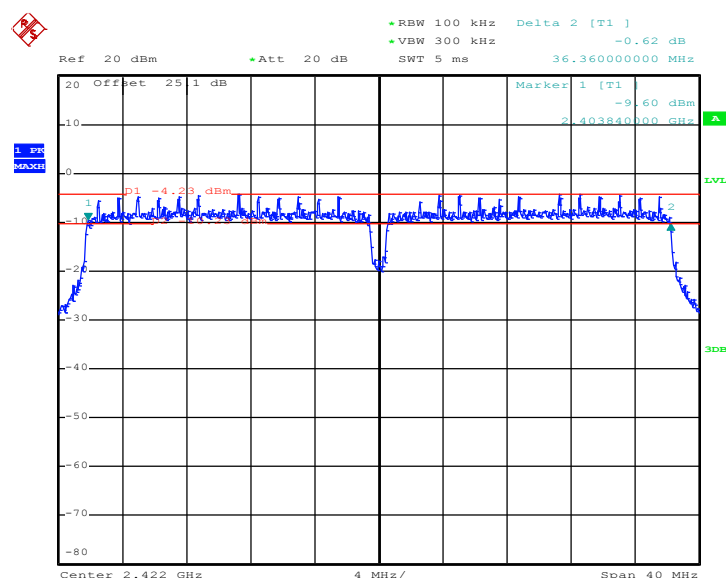
Date: 22.NOV.2012 22:44:42

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.36	0.5	Pass
06	2437	36.32	0.5	Pass
09	2452	36.36	0.5	Pass

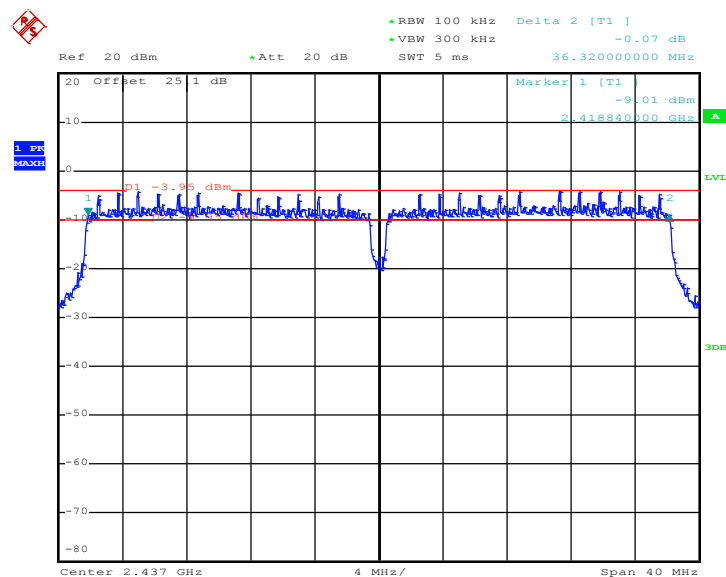
6 dB Bandwidth Plot on 802.11n HT40 Channel 03


Date: 22.NOV.2012 22:48:54

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

6 dB Bandwidth Plot on 802.11n HT40 Channel 06



Date: 22.NOV.2012 22:51:45

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



Ref 20 dBm • Att 20 dB • RBW 100 kHz Delta 2 [T1] -0.31 dB
 SWT 5 ms 36.36000000 MHz

20 Offset 25 1 dB Marker 1 [T1] -8.75 dBm
 2.43384000 GHz

1. 200 kHz

1 p1 -3.7 dBm 2

Center 2.452 GHz 4 MHz/ Span 40 MHz

Date: 22.NOV.2012 22:55:09

Note:

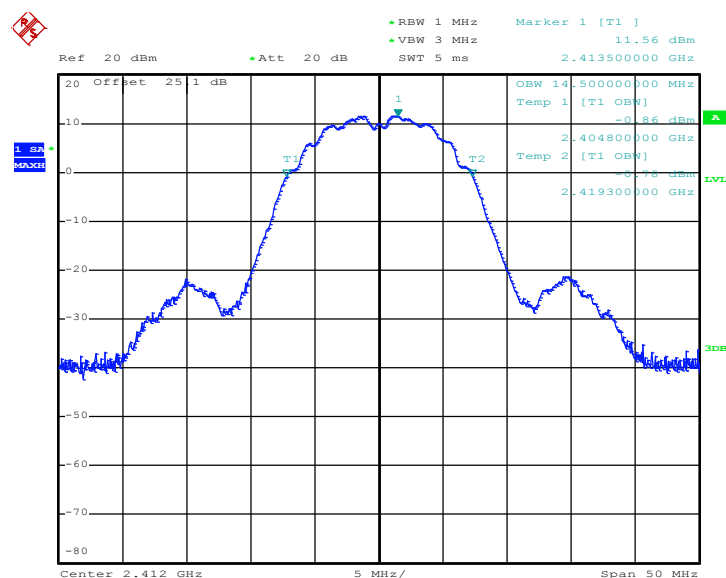
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.50	Pass
06	2437	14.50	Pass
11	2462	14.55	Pass

99% Occupied Bandwidth Plot on 802.11b Channel 01

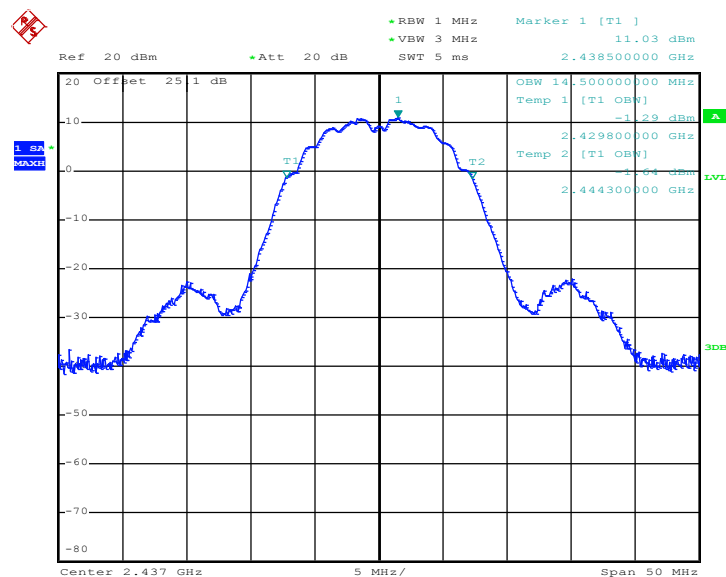


Date: 22.NOV.2012 22:14:17

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

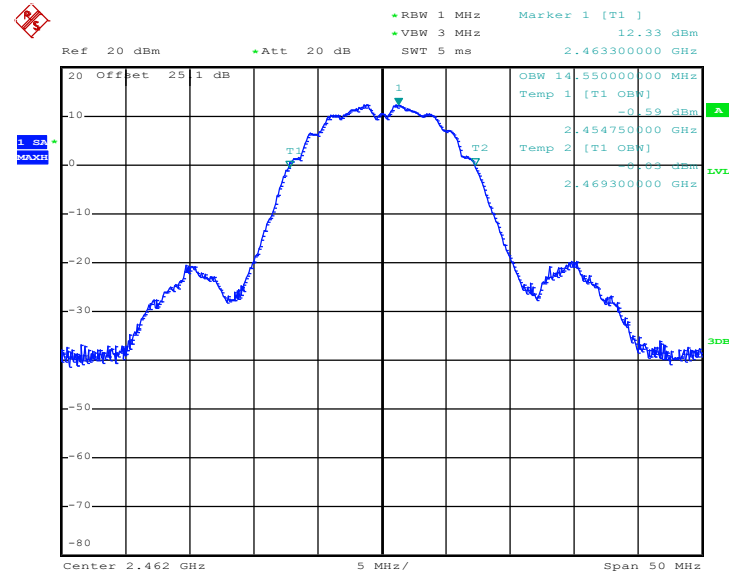
99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 22.NOV.2012 22:17:41

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot on 802.11b Channel 11


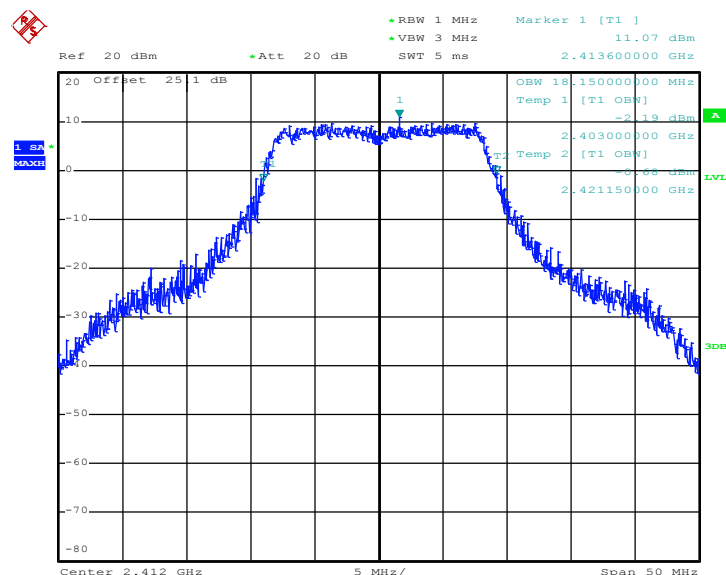
Date: 22.NOV.2012 22:21:08

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.15	Pass
06	2437	18.15	Pass
11	2462	18.25	Pass

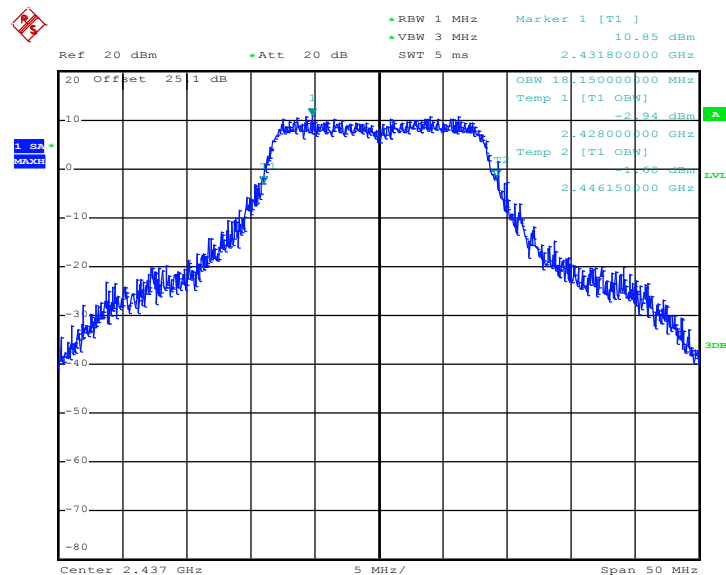
99% Occupied Bandwidth Plot on 802.11g Channel 01


Date: 22.NOV.2012 22:34:58

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot on 802.11g Channel 06

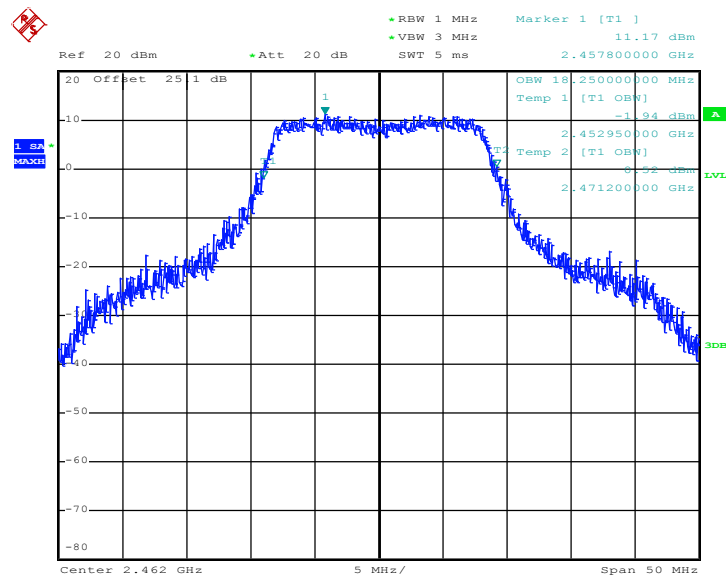


Date: 22.NOV.2012 22:31:30

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot on 802.11g Channel 11



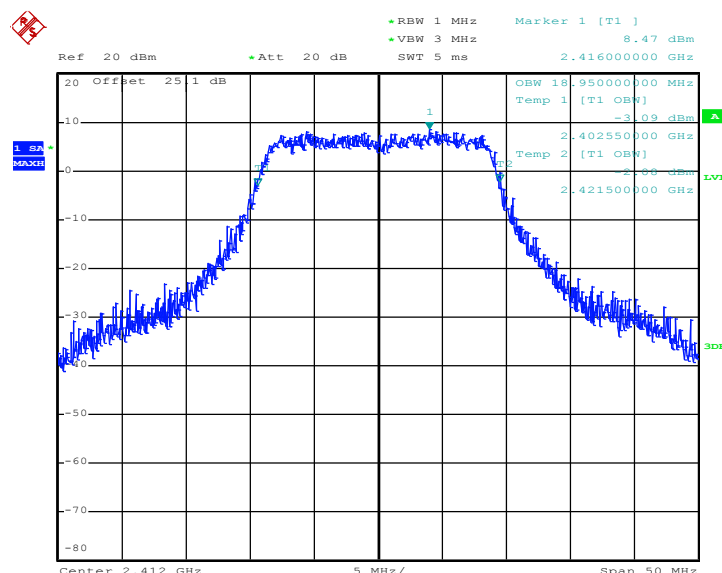
Date: 22.NOV.2012 22:26:19

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.95	Pass
06	2437	19.05	Pass
11	2462	19.15	Pass

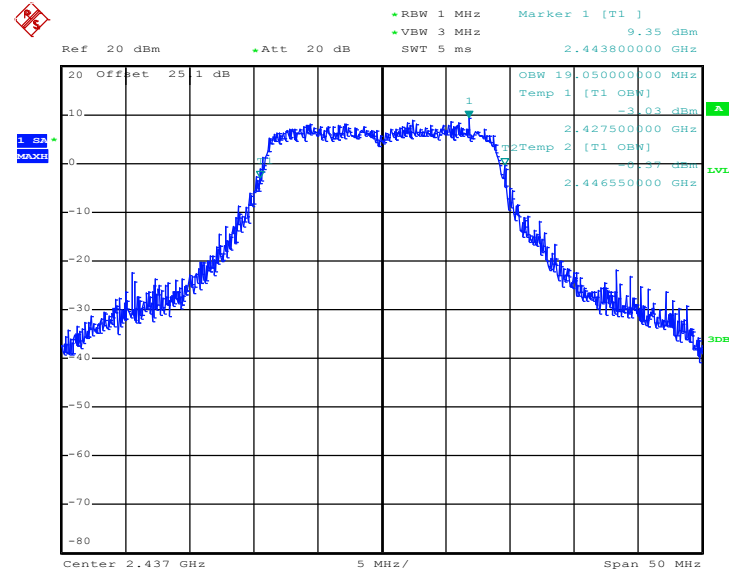
99% Occupied Bandwidth Plot 802.11n HT20 Channel 01


Date: 22.NOV.2012 22:39:07

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot 802.11n HT20 Channel 06



Date: 22.NOV.2012 22:42:06

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



• RBW 1 MHz
 • VBW 3 MHz
 • Att 20 dB
 SWT 5 ms

Ref 20 dBm
 Marker 1 [T1]
 9.89 dBm
 2.456850000 GHz

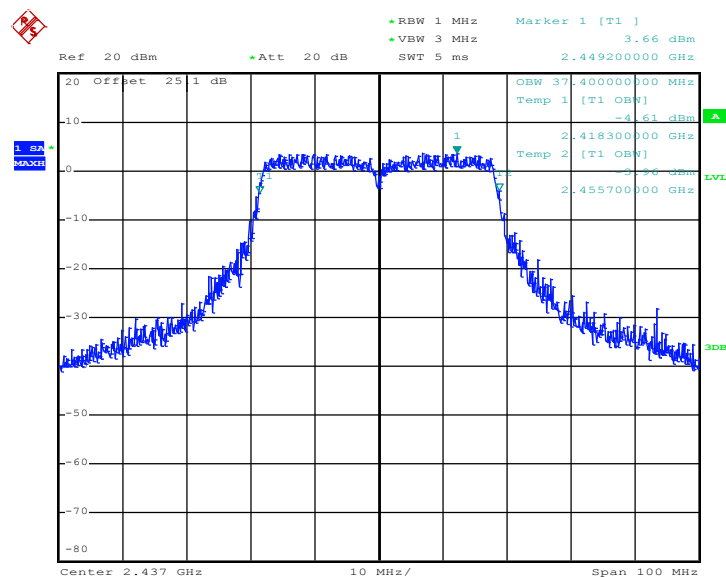
OBW 19.150000000 MHz
 Temp 1 [T1 OBW]
 -0.54 dBm
 2.452400000 GHz
 Temp 2 [T1 OBW]
 -2.45 dBm
 2.471550000 GHz

Center 2.462 GHz
 Span 50 MHz

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot 802.11n HT40 Channel 06

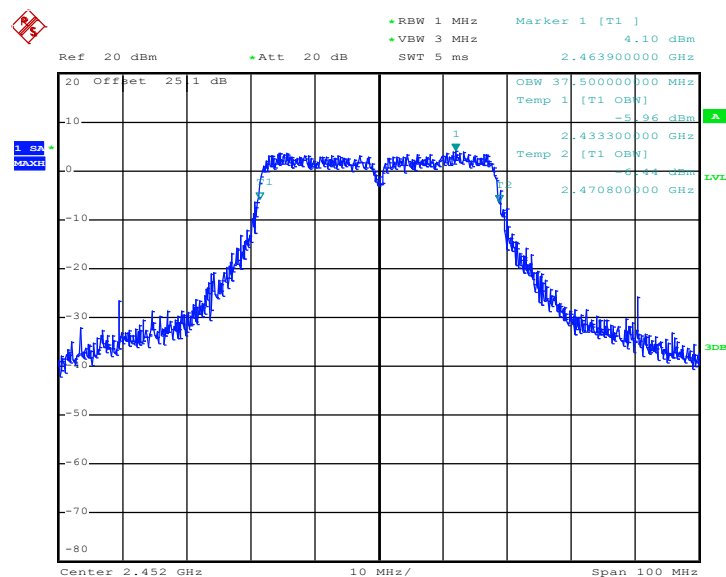


Date: 22.NOV.2012 22:53:06

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

99% Occupied Bandwidth Plot 802.11n HT40 Channel 09



Date: 22.NOV.2012 22:56:42

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

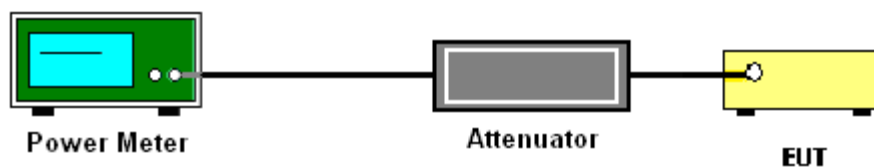
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.05	30	Pass
06	2437	20.95	30	Pass
11	2462	21.13	30	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.34	30	Pass
06	2437	22.81	30	Pass
11	2462	22.84	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.96	30	Pass
06	2437	21.94	30	Pass
11	2462	21.98	30	Pass

Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~26
Test Engineer :	Book Lin	Relative Humidity :	50~53

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	20.61	30	Pass
06	2437	20.75	30	Pass
09	2452	20.89	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26
Test Engineer :	Book Lin	Relative Humidity :	50~53
Duty Cycle:	100.00%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	18.13
06	2437	18.26
11	2462	18.41

Test Mode :	802.11g	Temperature :	24~26
Test Engineer :	Book Lin	Relative Humidity :	50~53
Duty Cycle:	92.26%	Duty Factor:	0.35dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	14.43
06	2437	14.66
11	2462	14.80

Test Mode :	802.11n HT20	Temperature :	24~26
Test Engineer :	Book Lin	Relative Humidity :	50~53
Duty Cycle:	91.16%	Duty Factor:	0.40dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	13.24
06	2437	13.27
11	2462	13.46

Test Mode :	802.11n HT40	Temperature :	24~26
Test Engineer :	Book Lin	Relative Humidity :	50~53
Duty Cycle:	98.53%	Duty Factor:	0.06dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	11.85
06	2437	11.67
09	2452	12.16

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

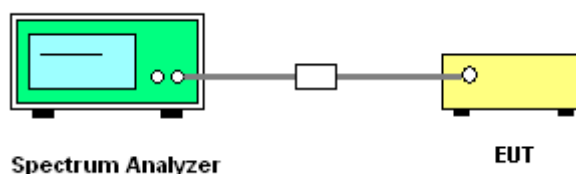
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

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

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	7.29	-7.36	8	Pass
06	2437	6.09	-6.79	8	Pass
11	2462	7.53	-5.39	8	Pass

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

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	0.91	-12.70	8	Pass
06	2437	1.43	-12.68	8	Pass
11	2462	2.10	-11.42	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-0.41	-14.00	8	Pass
06	2437	-0.06	-14.49	8	Pass
11	2462	0.94	-14.20	8	Pass



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	50~53%

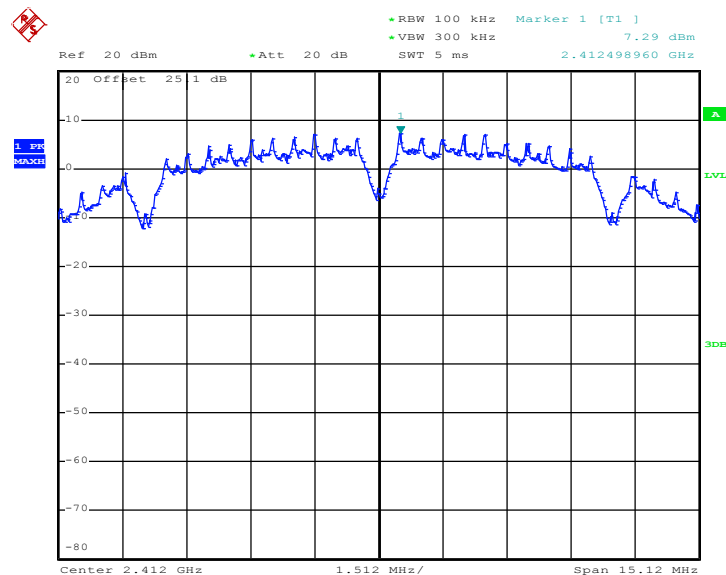
Channel	Frequency (MHz)	802.11n HT40 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-4.24	-18.49	8	Pass
06	2437	-4.30	-17.05	8	Pass
09	2452	-3.93	-18.40	8	Pass

Note:

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.

3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01

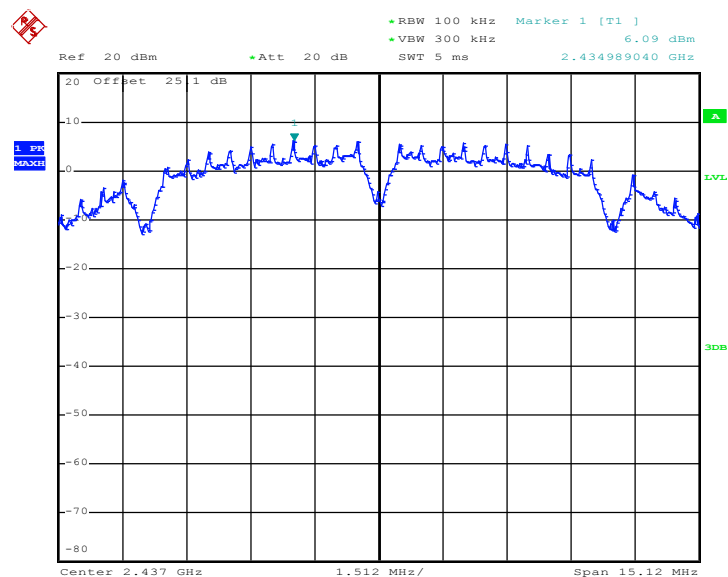


Date: 22.NOV.2012 22:12:58

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11b Channel 06

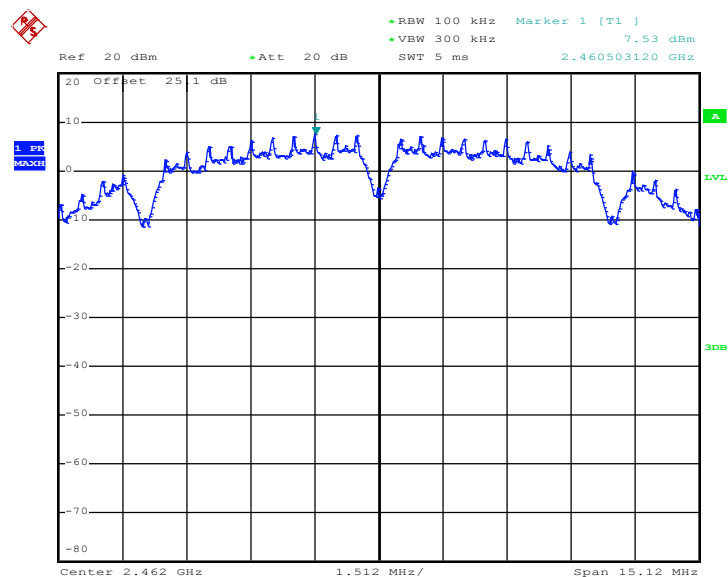


Date: 22.NOV.2012 22:16:53

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11b Channel 11

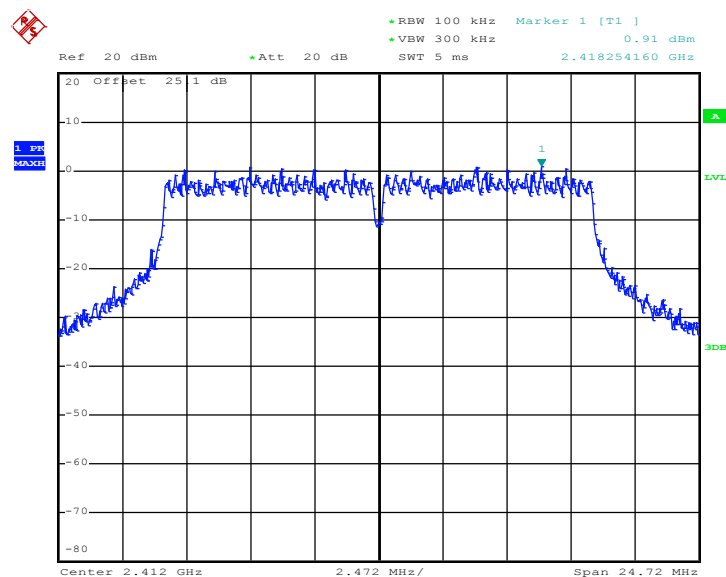


Date: 22.NOV.2012 22:20:07

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11g Channel 01

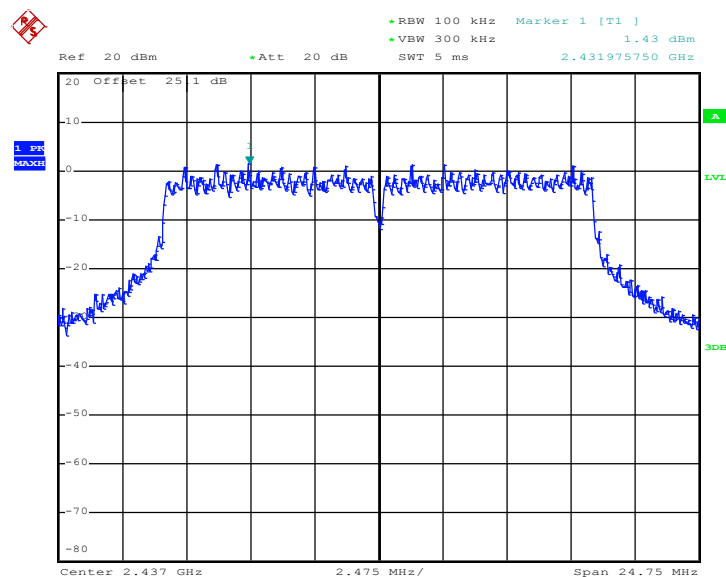


Date: 22.NOV.2012 22:33:58

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11g Channel 06

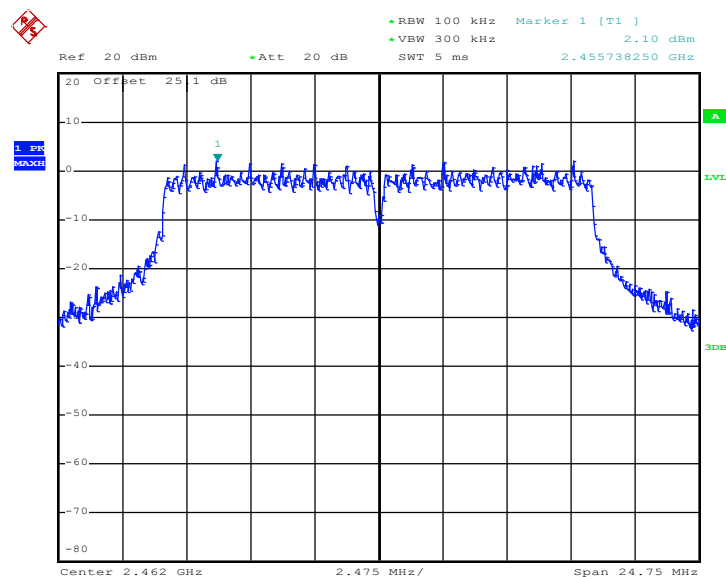


Date: 22.NOV.2012 22:30:42

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11g Channel 11

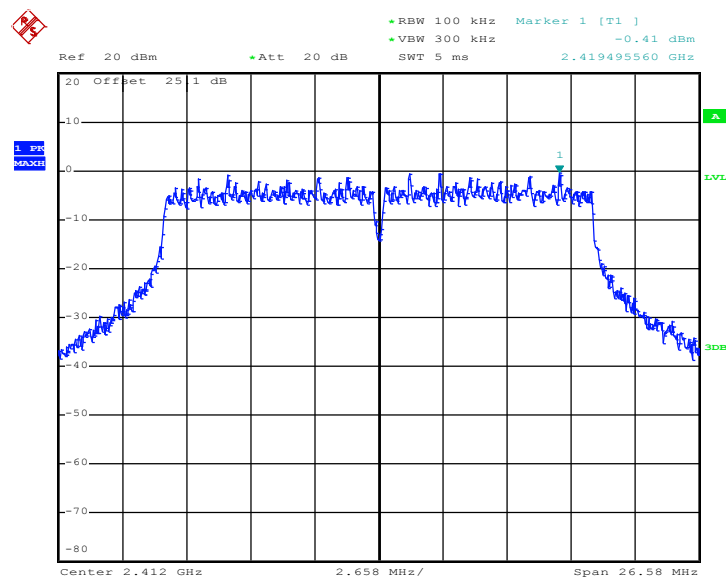


Date: 22.NOV.2012 22:25:19

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT20 Channel 01

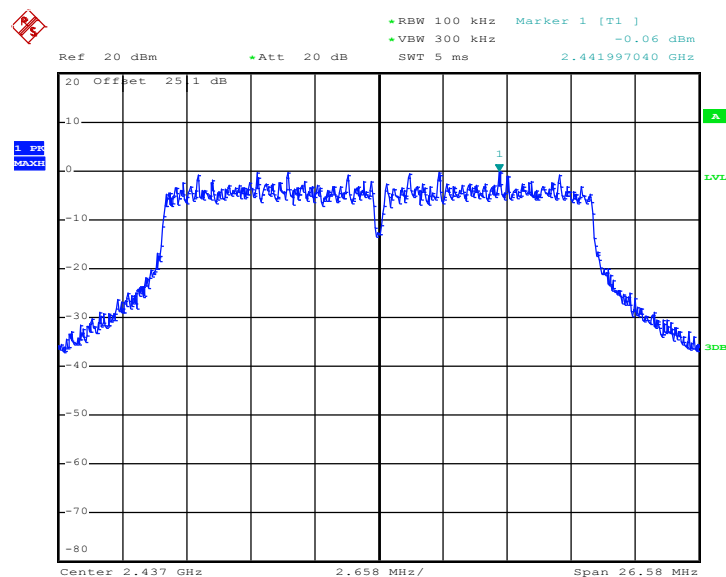


Date: 22.NOV.2012 22:38:06

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT20 Channel 06

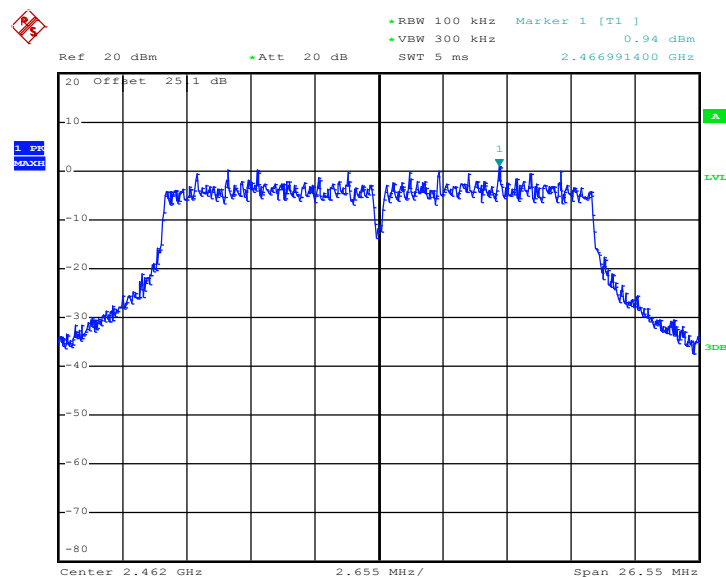


Date: 22.NOV.2012 22:41:18

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT20 Channel 11

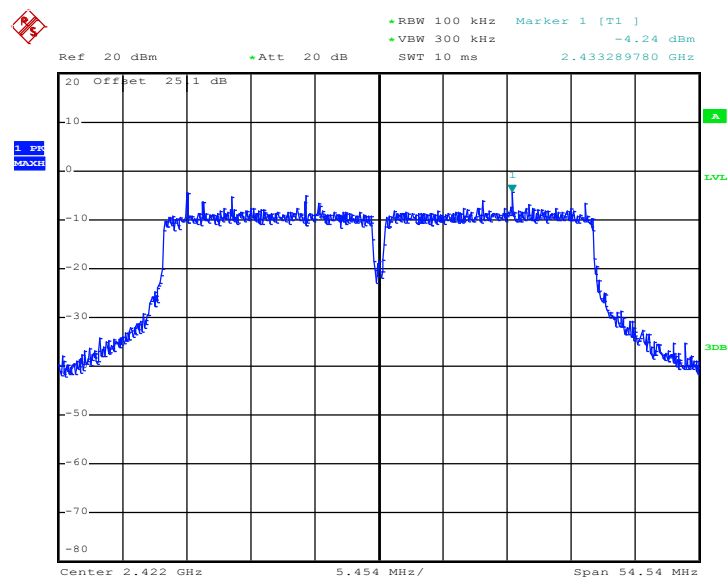


Date: 22.NOV.2012 22:45:11

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT40 Channel 03

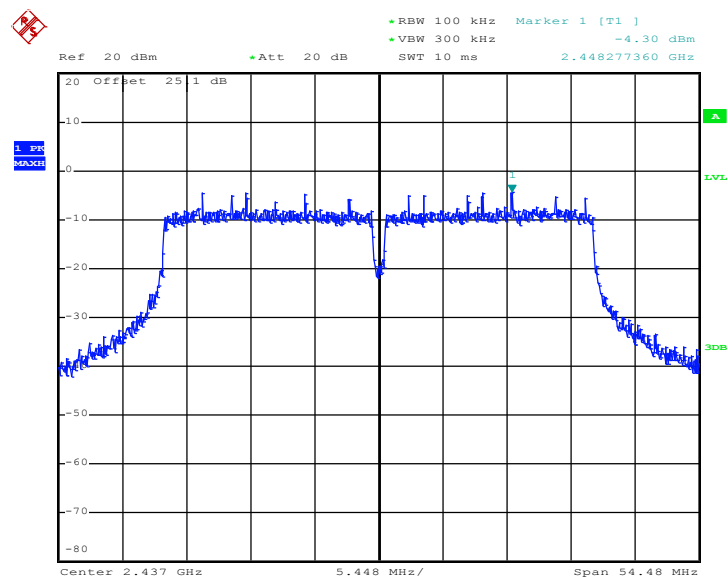


Date: 22.NOV.2012 22:49:28

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT40 Channel 06

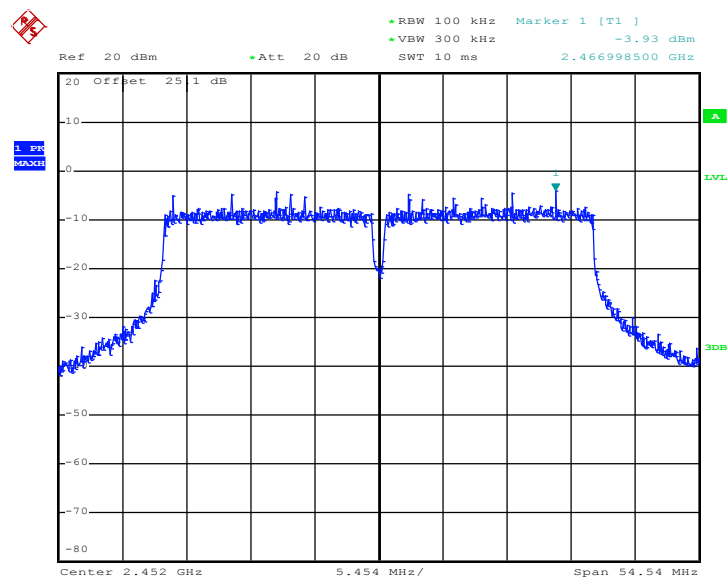


Date: 22.NOV.2012 22:52:18

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 100kHz Plot on 802.11n HT40 Channel 09



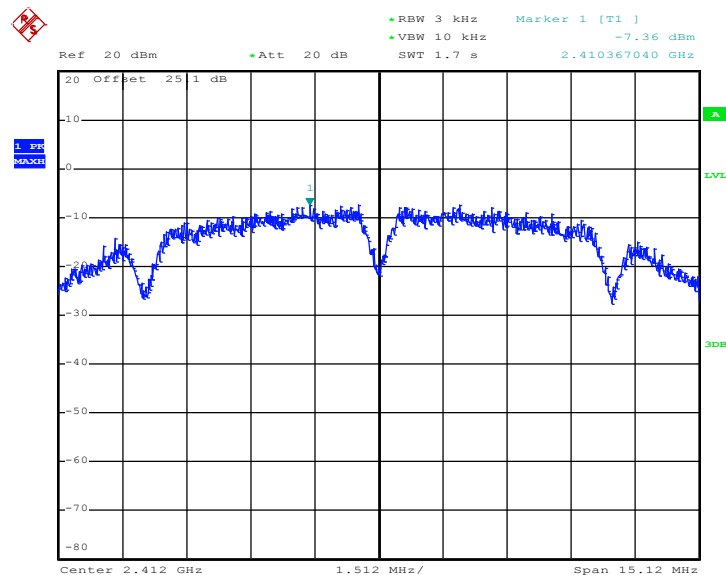
Date: 22.NOV.2012 22:55:42

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01

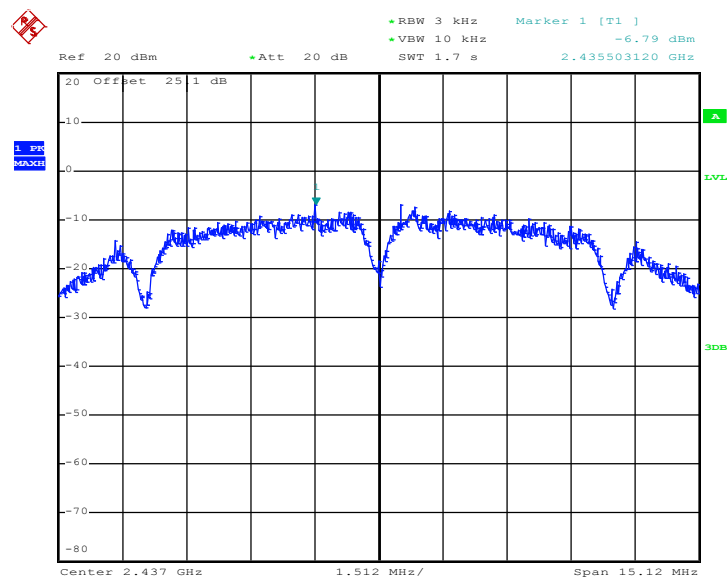


Date: 22.NOV.2012 22:12:51

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11b Channel 06

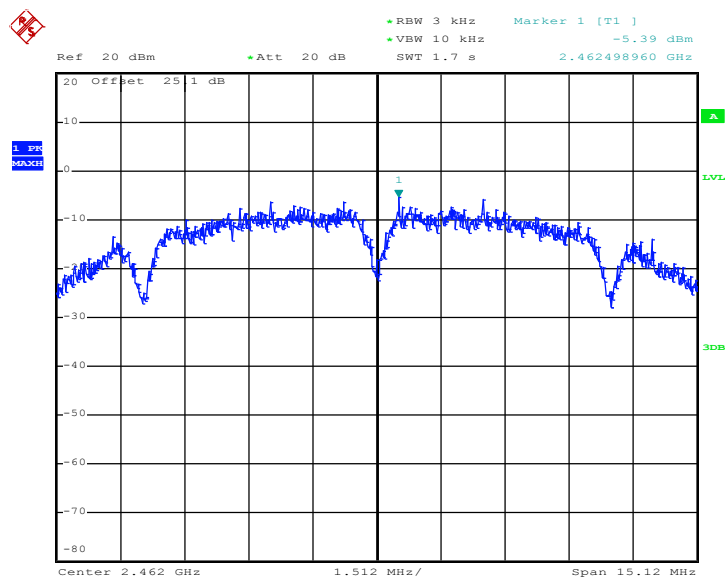


Date: 22.NOV.2012 22:16:43

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11b Channel 11

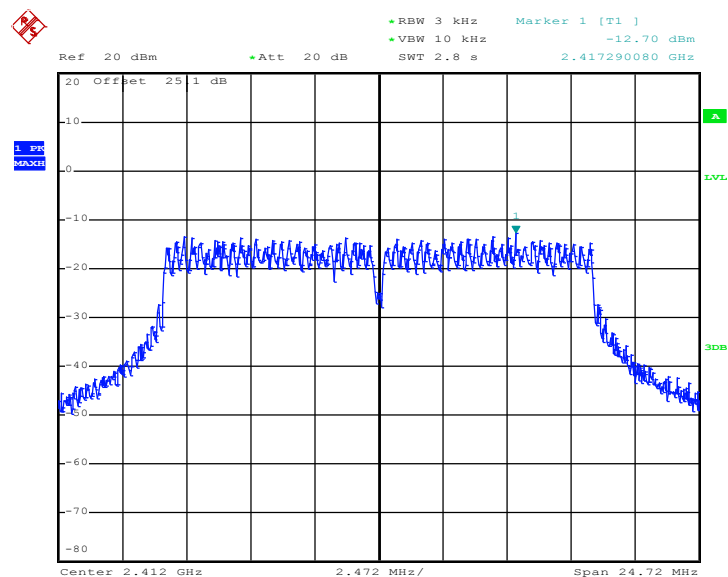


Date: 22.NOV.2012 22:19:58

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11g Channel 01

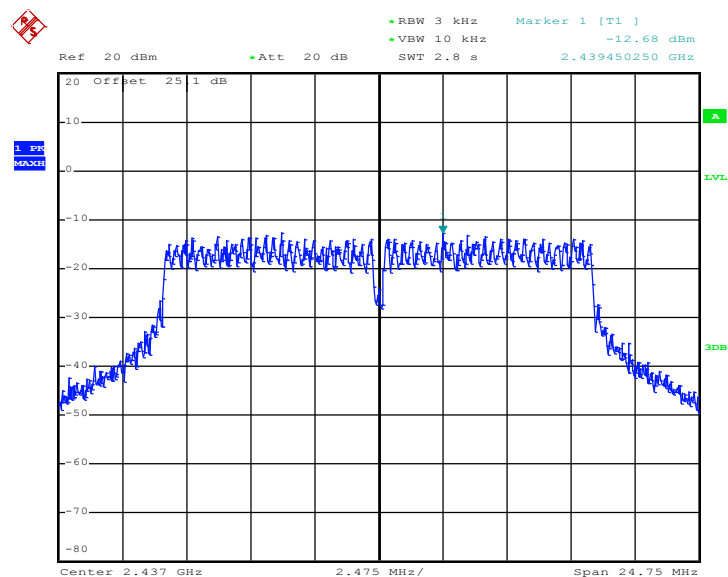


Date: 22.NOV.2012 22:33:49

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11g Channel 06

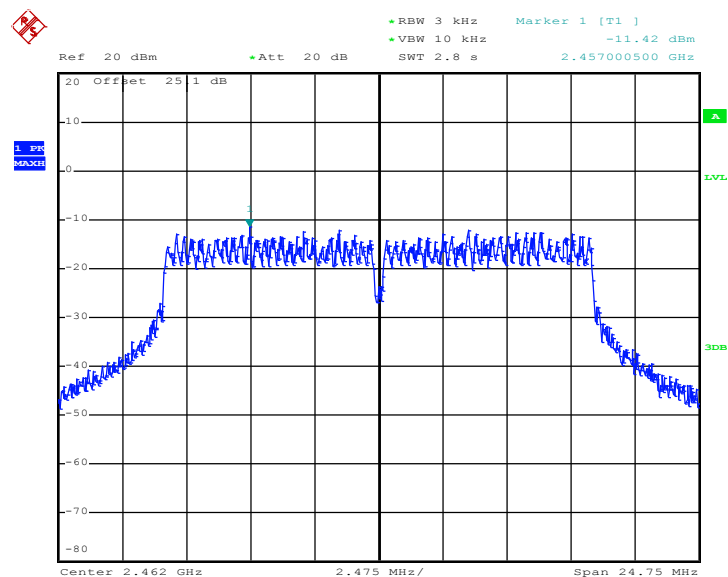


Date: 22.NOV.2012 22:30:32

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11g Channel 11

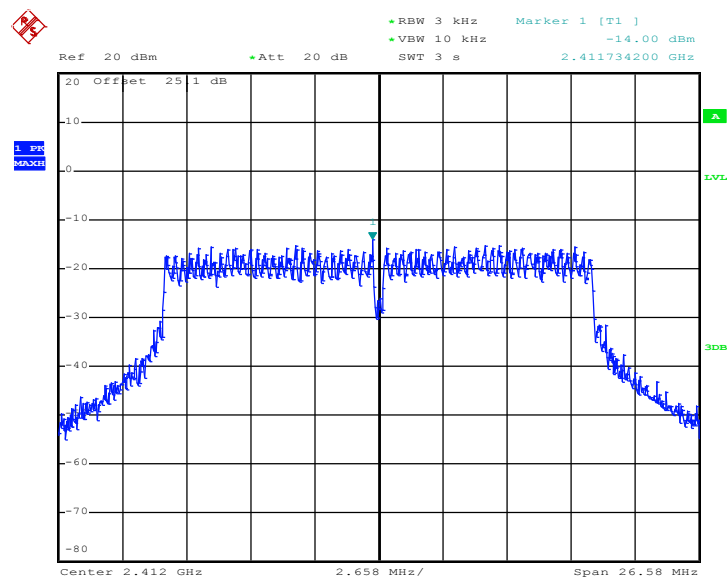


Date: 22.NOV.2012 22:25:10

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

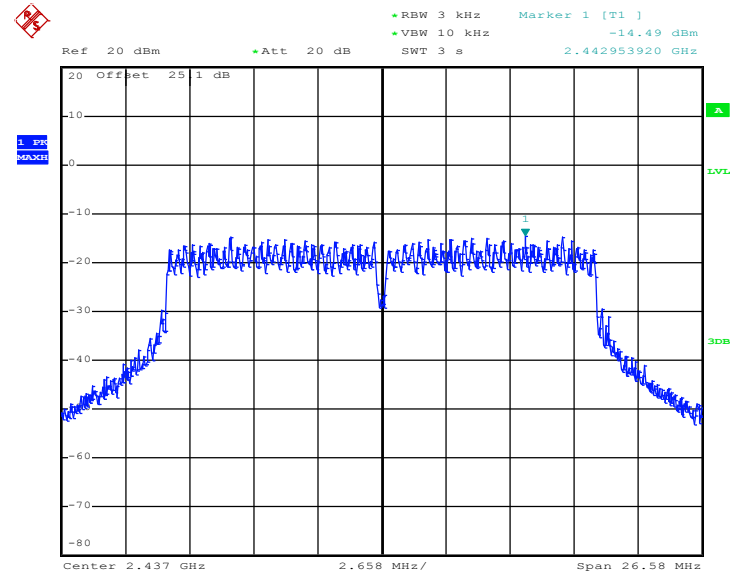
PSD 3kHz Plot on 802.11n HT20 Channel 01



Date: 22.NOV.2012 22:37:57

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

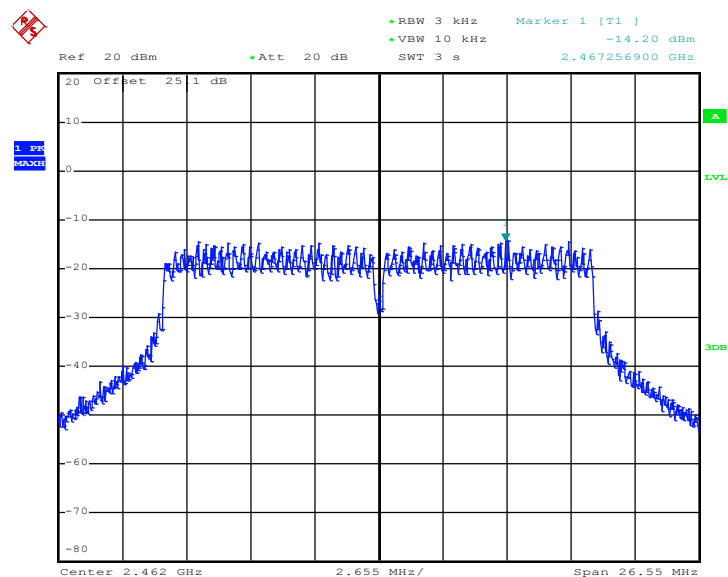
PSD 3kHz Plot on 802.11n HT20 Channel 06


Date: 22.NOV.2012 22:41:09

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11n HT20 Channel 11

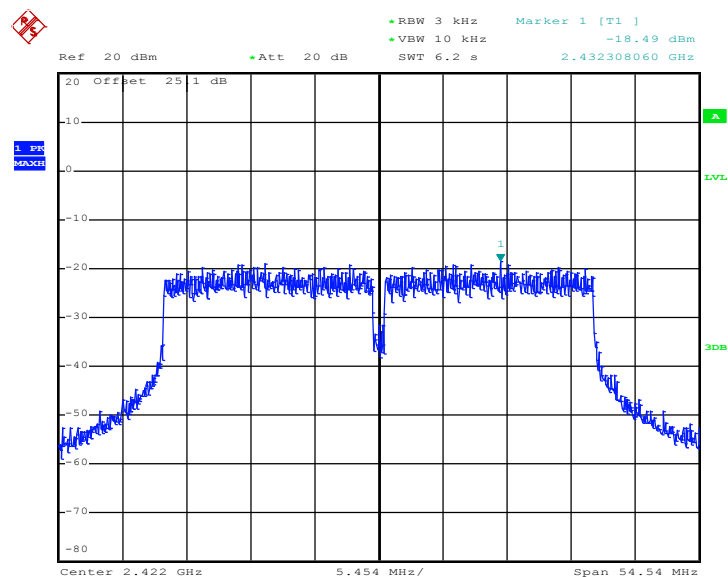


Date: 22.NOV.2012 22:45:02

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11n HT40 Channel 03

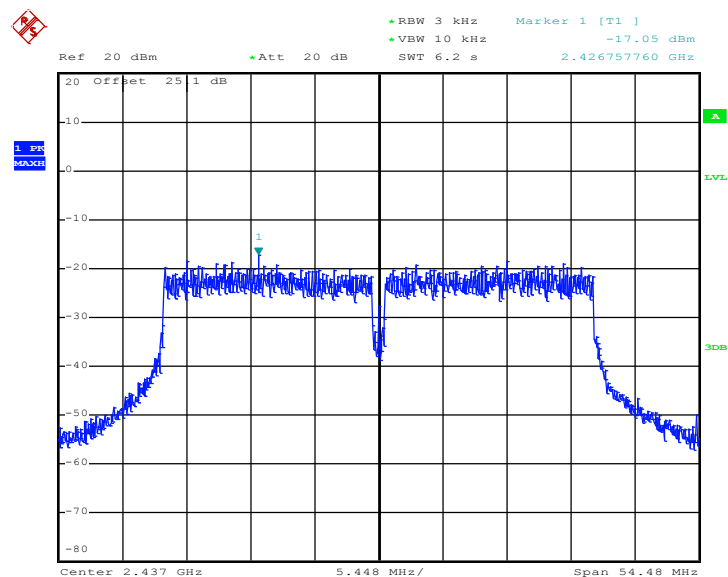


Date: 22.NOV.2012 22:49:18

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11n HT40 Channel 06

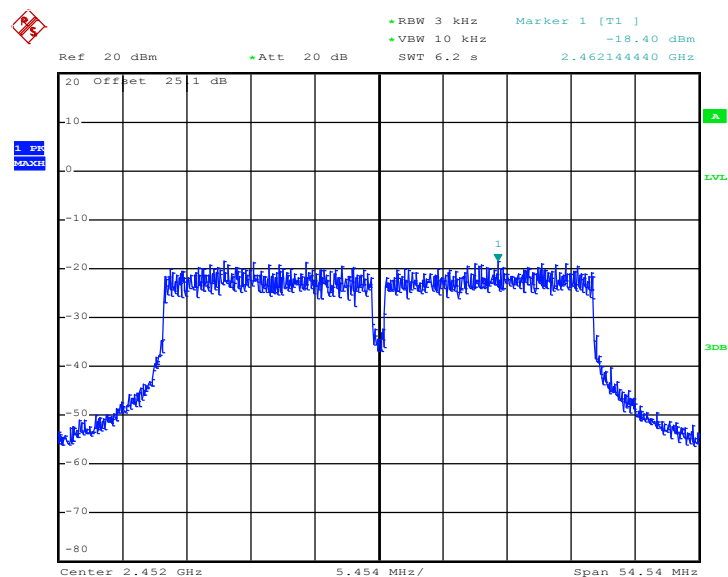


Date: 22.NOV.2012 22:52:09

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

PSD 3kHz Plot on 802.11n HT40 Channel 09



Date: 22.NOV.2012 22:55:33

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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).

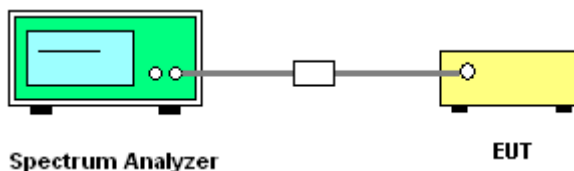
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. 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.
5. Measure and record the results in the test report.

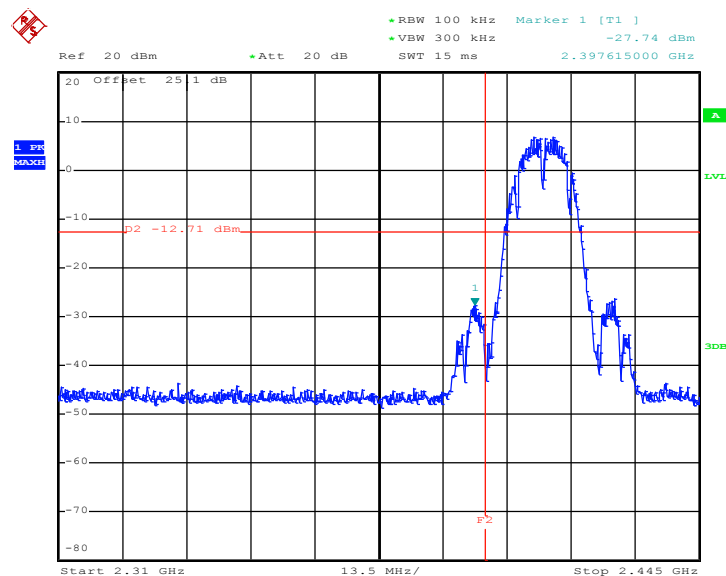
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

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

Low Band Edge Plot on 802.11b Channel 01

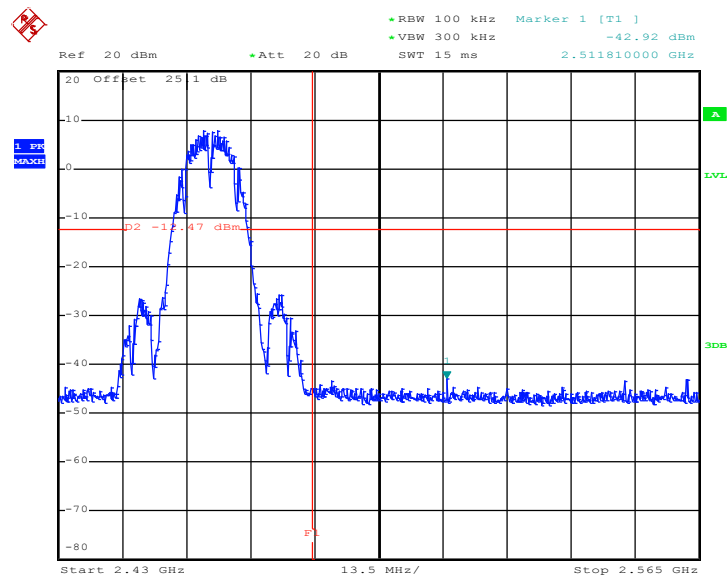


Date: 22.NOV.2012 22:13:15

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

High Band Edge Plot on 802.11b Channel 11

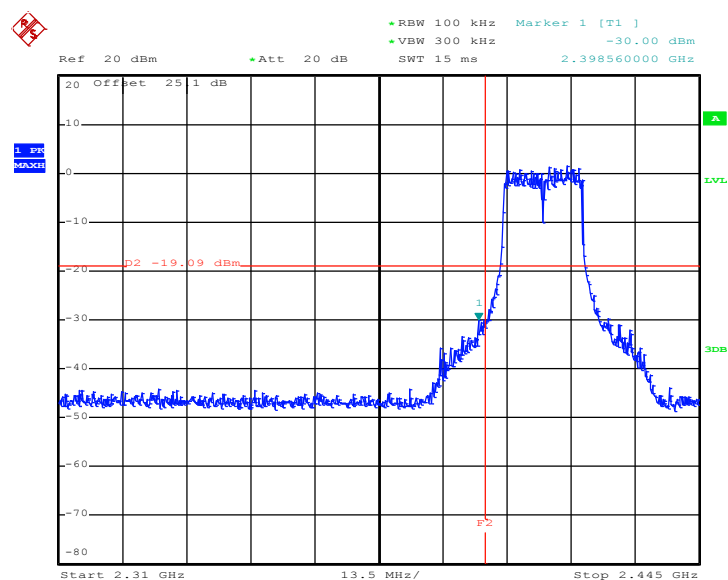


Date: 22.NOV.2012 22:20:23

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

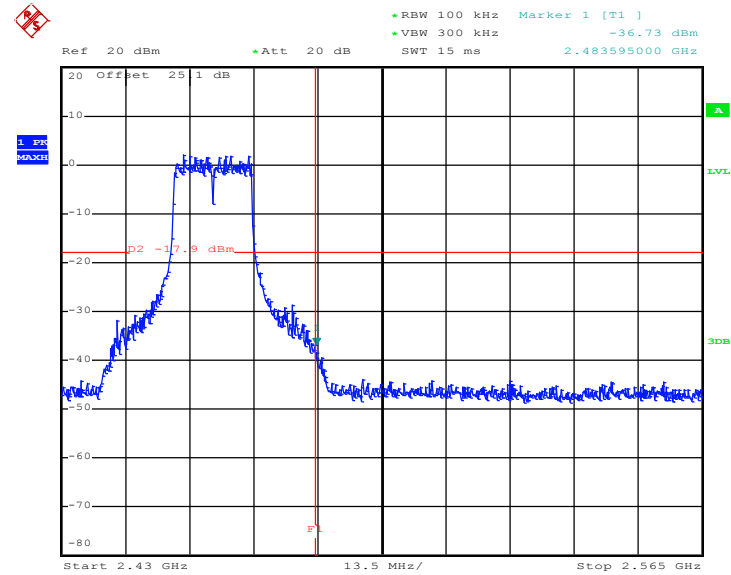
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Book Lin

Low Band Edge Plot on 802.11g Channel 01


Date: 22.NOV.2012 22:34:13

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

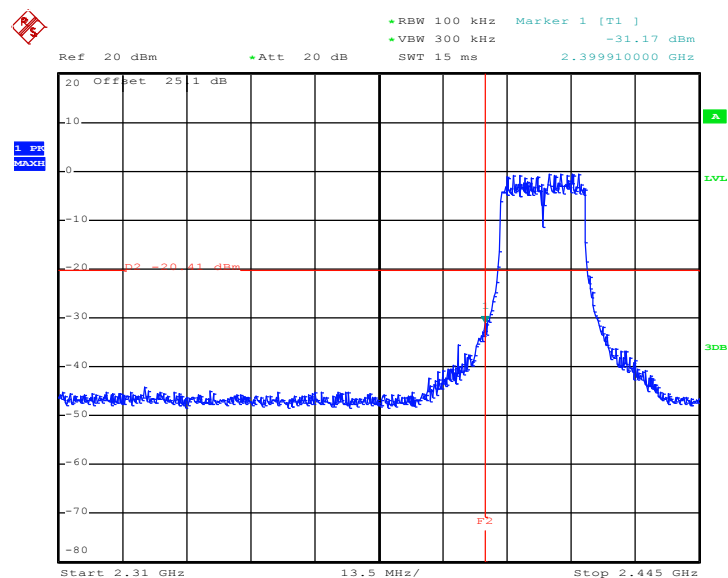
High Band Edge Plot on 802.11g Channel 11


Date: 22.NOV.2012 22:25:34

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

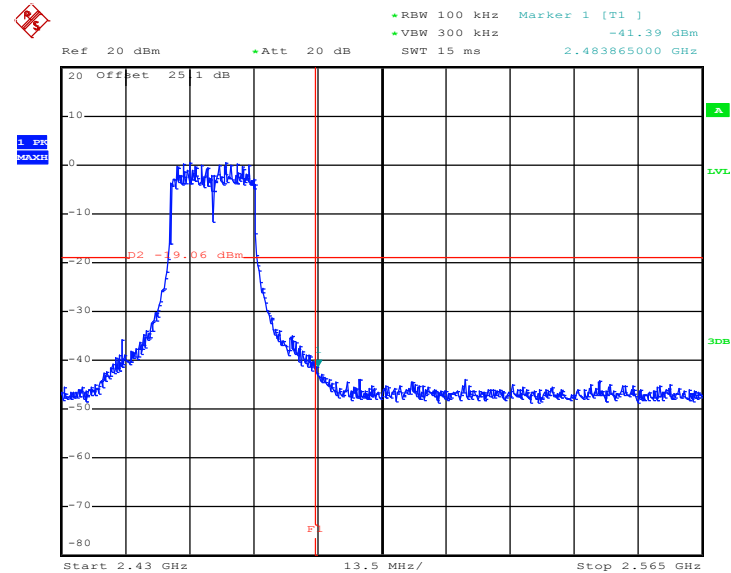
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Book Lin

Low Band Edge Plot on 802.11n HT20 Channel 01


Date: 22.NOV.2012 22:38:22

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

High Band Edge Plot on 802.11n HT20 Channel 11


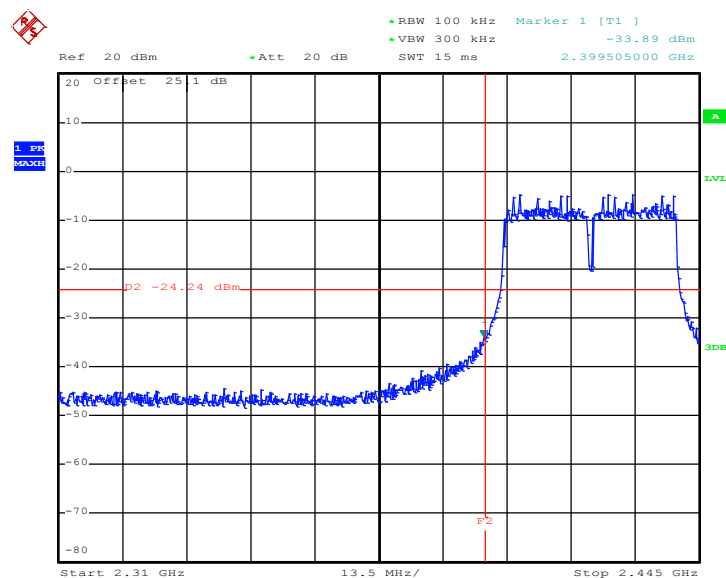
Date: 22.NOV.2012 22:45:27

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Book Lin

Low Band Edge Plot on 802.11n HT40 Channel 03

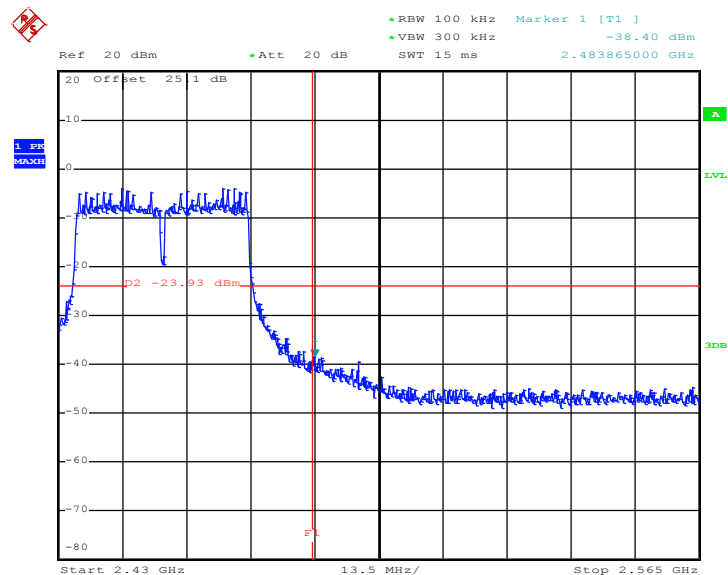


Date: 22.NOV.2012 22:59:39

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

High Band Edge Plot on 802.11n HT40 Channel 09



Date: 22.NOV.2012 22:55:57

Note:

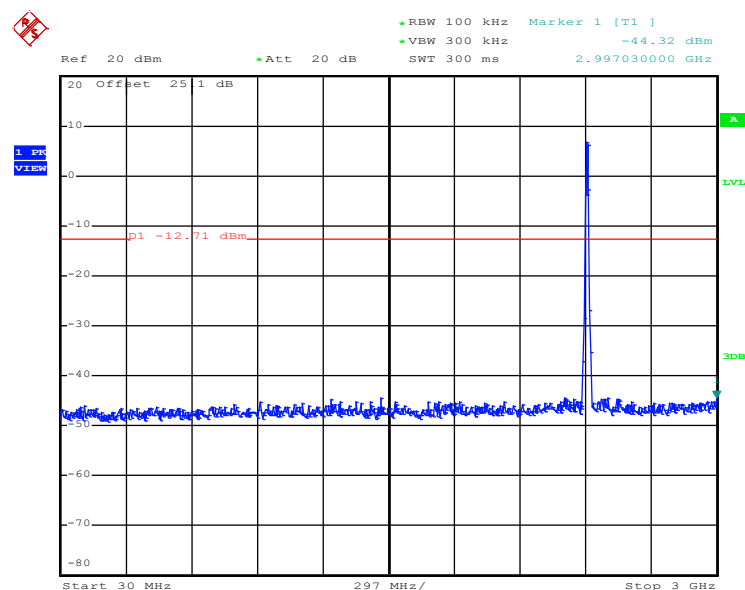
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.4.6 Test Plots of Spurious Emission

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

802.11b 30 MHz~3 GHz

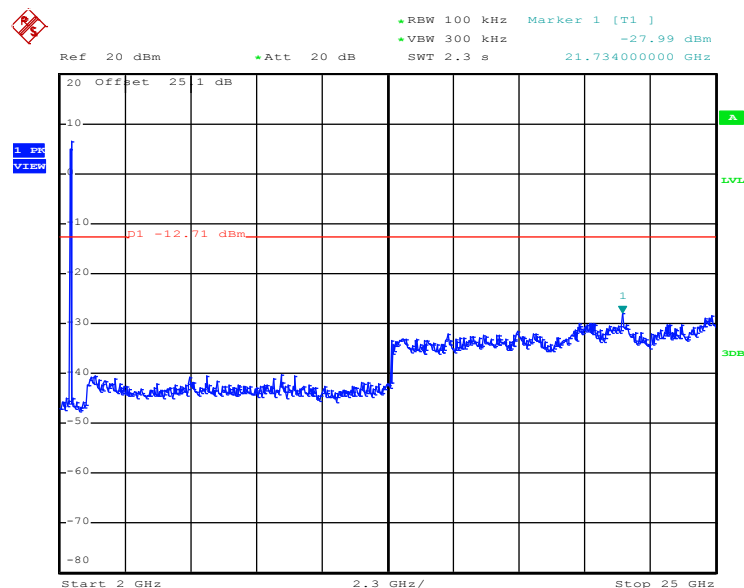
Conducted Spurious Emission Plot on Channel 01



Date: 22.NOV.2012 22:13:47

Note:

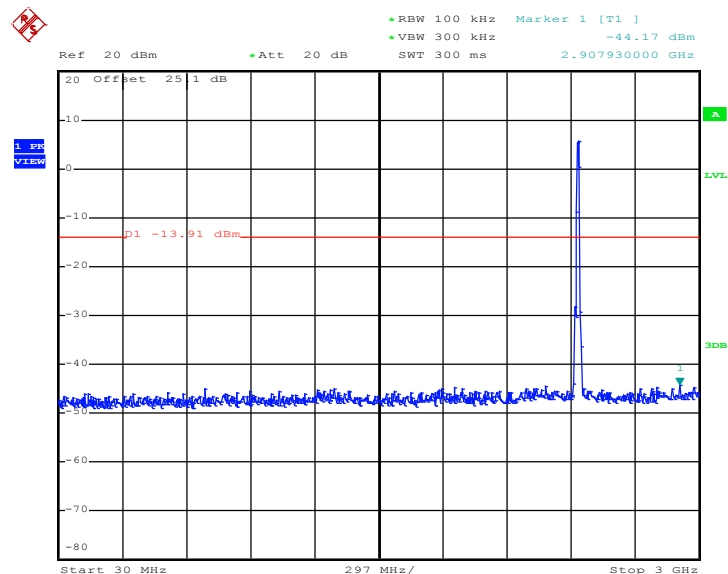
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


Date: 22.NOV.2012 22:14:05

Note:

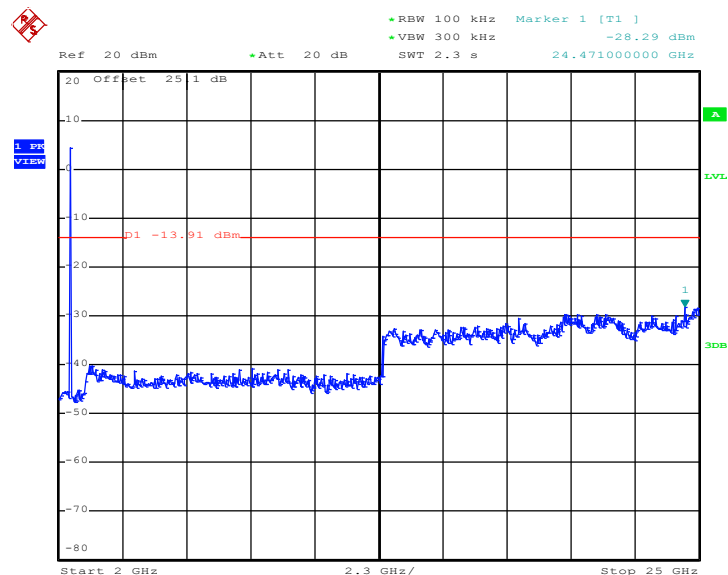
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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


Date: 22.NOV.2012 22:17:14

Note:

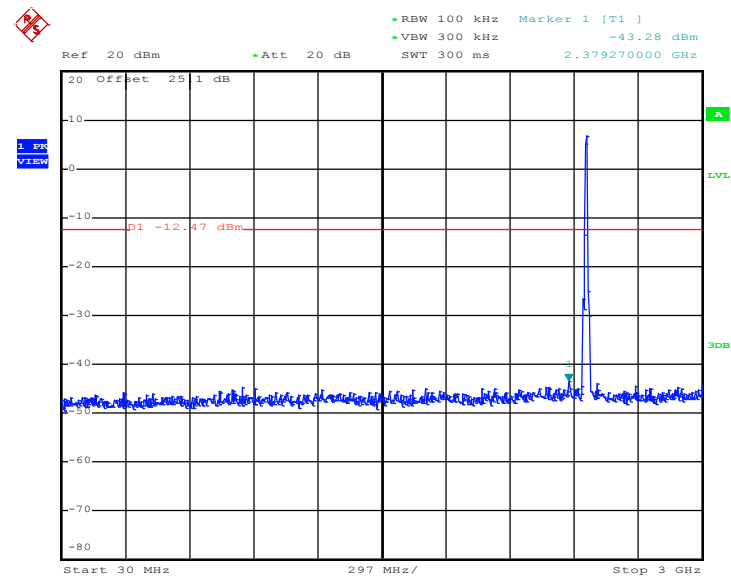
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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


Date: 22.NOV.2012 22:17:31

Note:

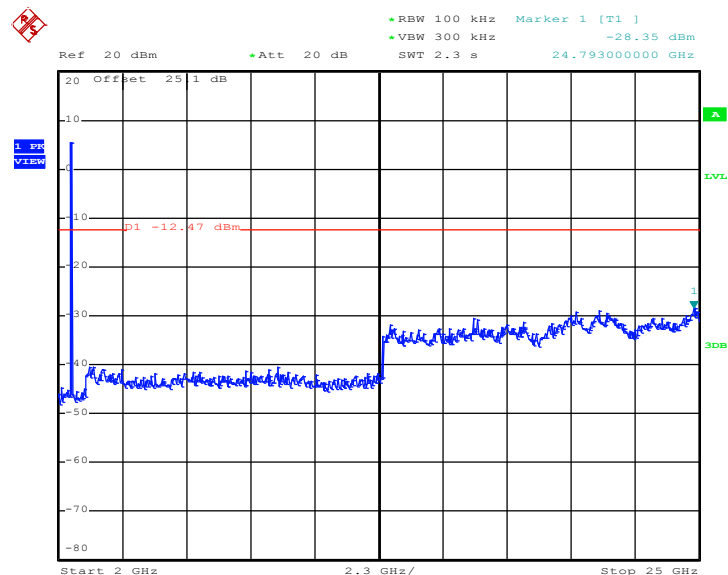
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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


Date: 22.NOV.2012 22:20:41

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

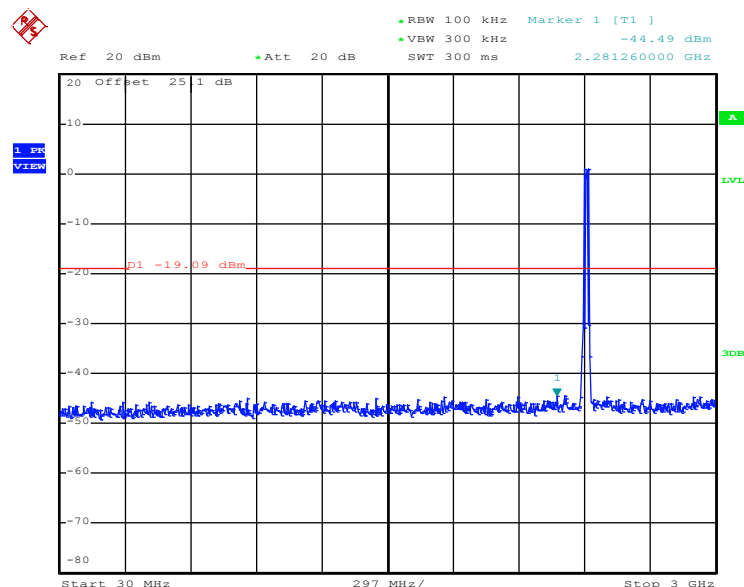
802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 22.NOV.2012 22:20:58

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


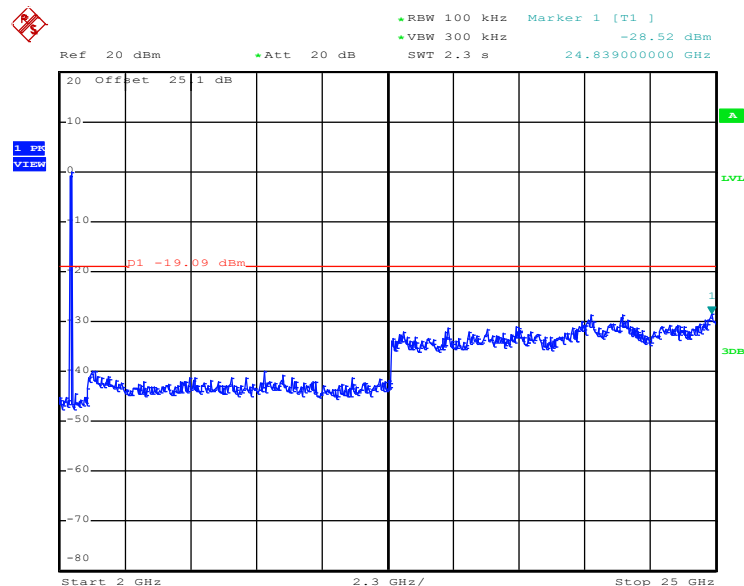
Date: 22.NOV.2012 22:34:31

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11g 2 GHz~25 GHz

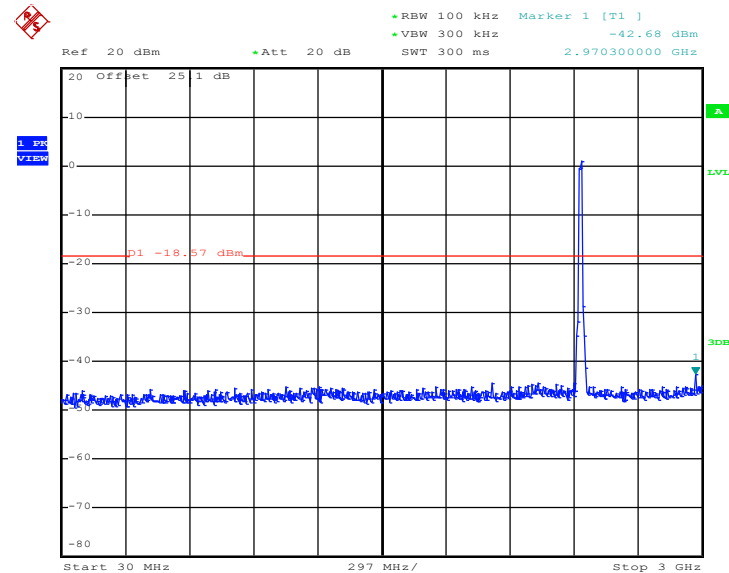
Conducted Spurious Emission Plot on Channel 01



Date: 22.NOV.2012 22:34:49

Note:

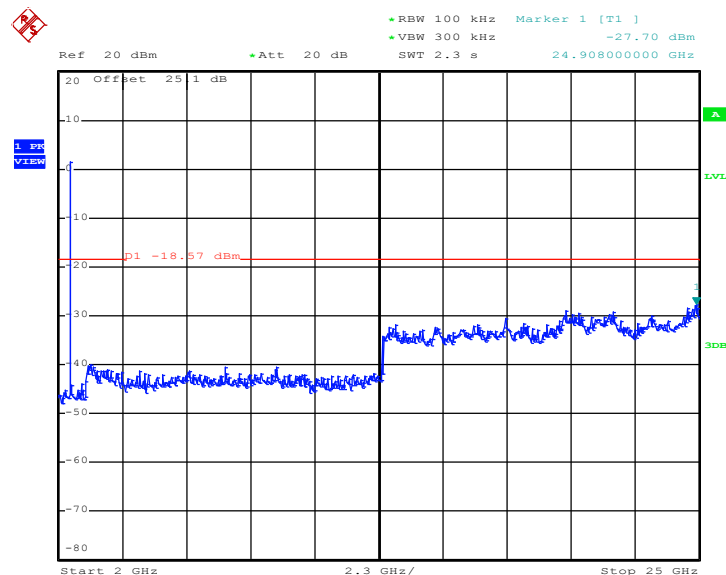
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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


Date: 22.NOV.2012 22:31:03

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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


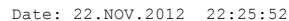
Date: 22.NOV.2012 22:31:20

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



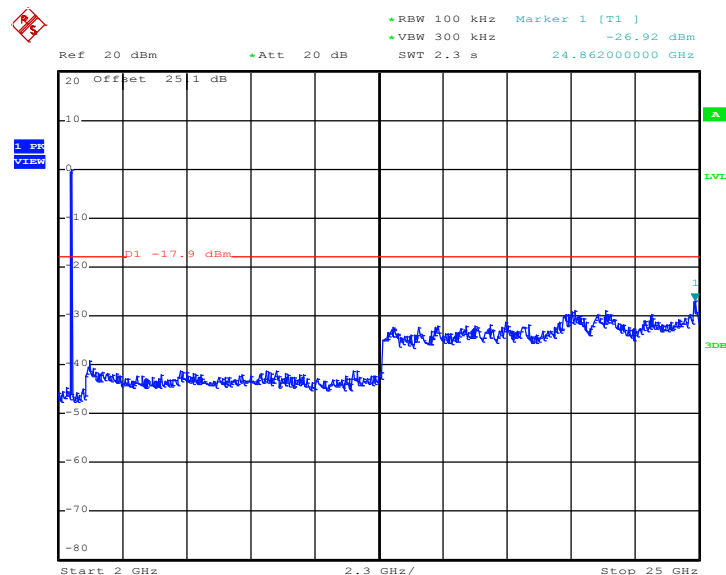
Conducted Spurious Emission Plot on Channel 11



The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

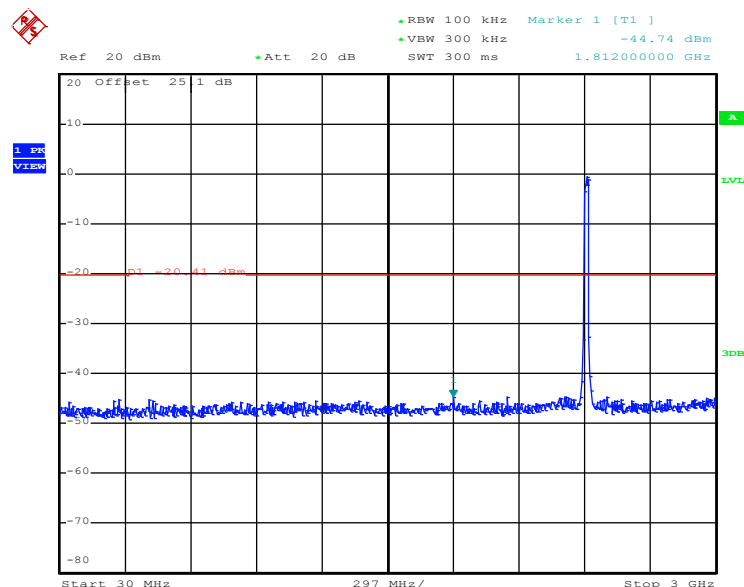


Date: 22.NOV.2012 22:26:10

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Book Lin

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


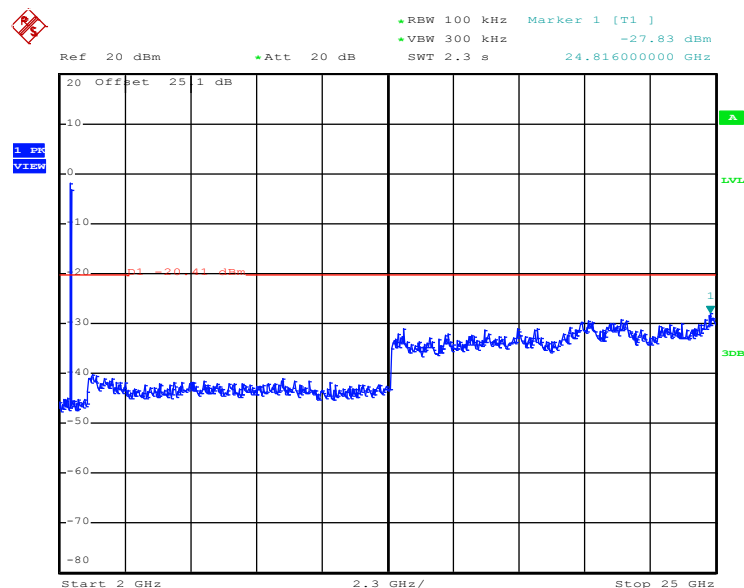
Date: 22.NOV.2012 22:38:40

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



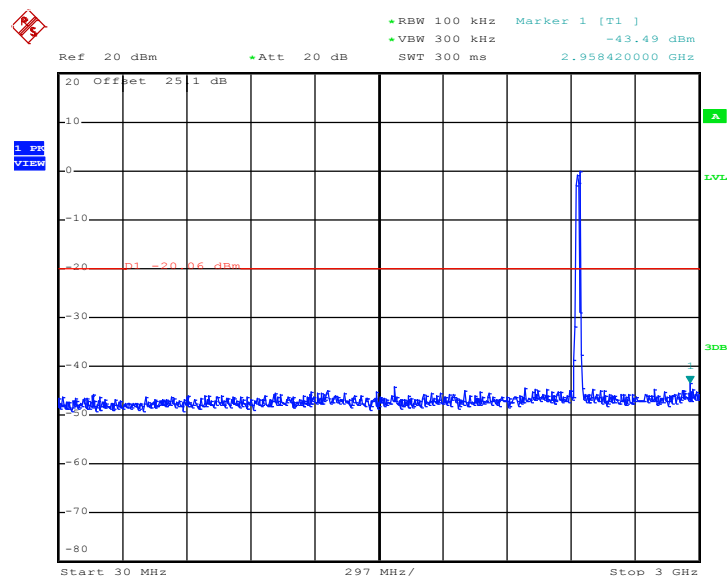
Conducted Spurious Emission Plot on Channel 01



Date: 22.NOV.2012 22:38:57

Note:

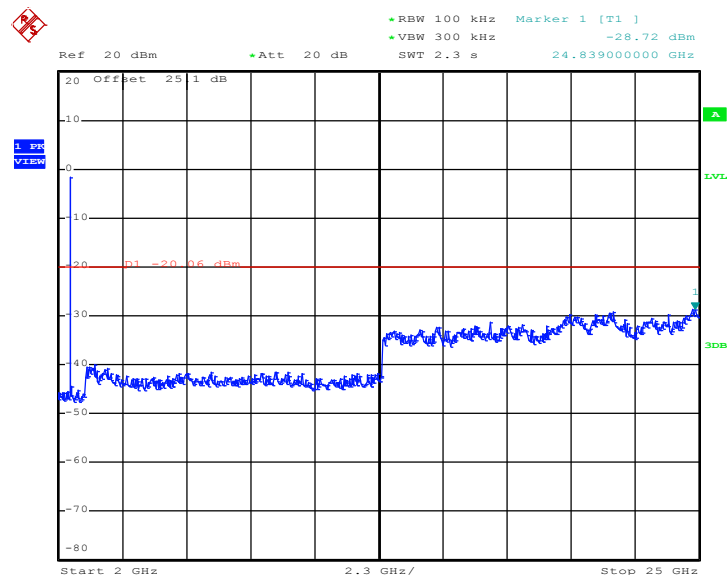
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 22.NOV.2012 22:41:39

Note:

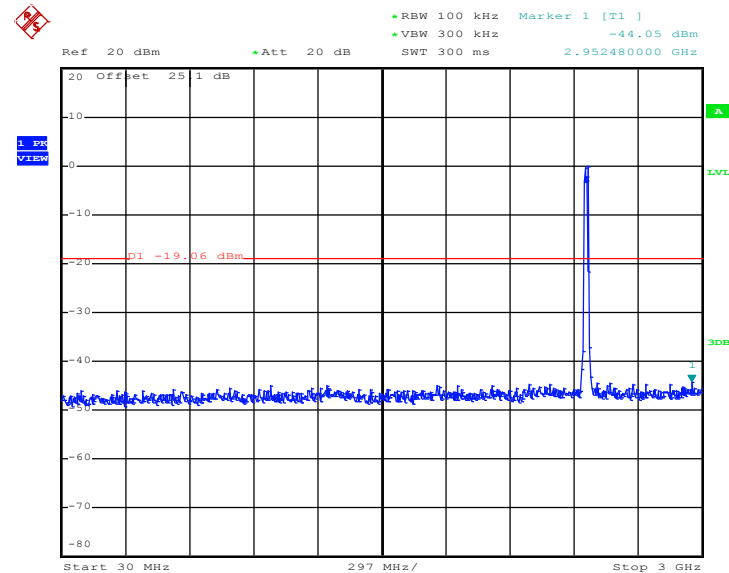
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 22.NOV.2012 22:41:57

Note:

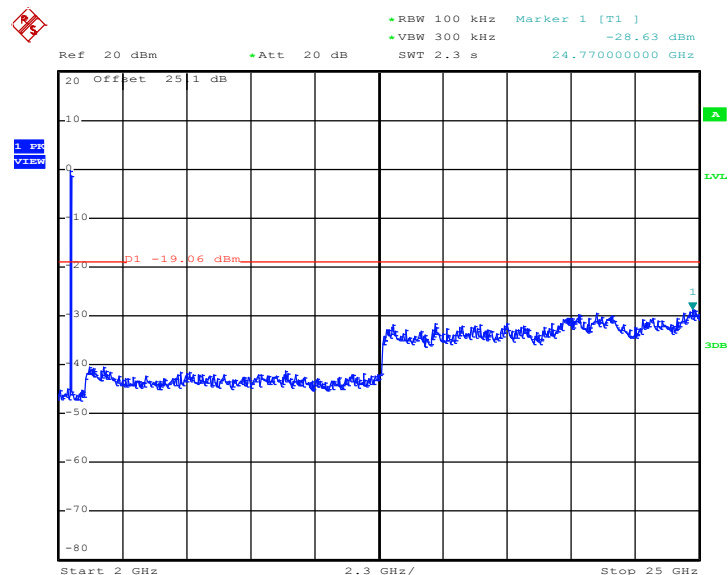
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 22.NOV.2012 22:45:45

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

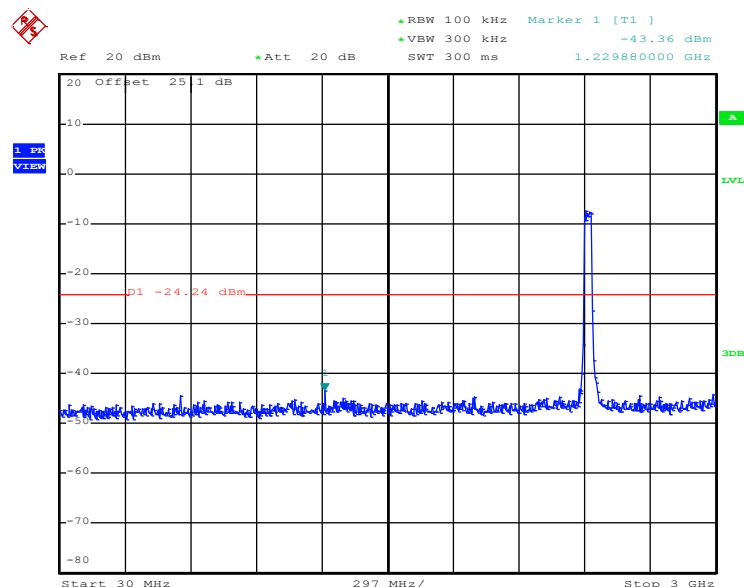
802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 22.NOV.2012 22:46:03

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Test Mode :	802.11n HT40	Temperature :	24~26
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53
Test Channel :	03, 06, 09	Test Engineer :	Book Lin

802.11n HT40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 03


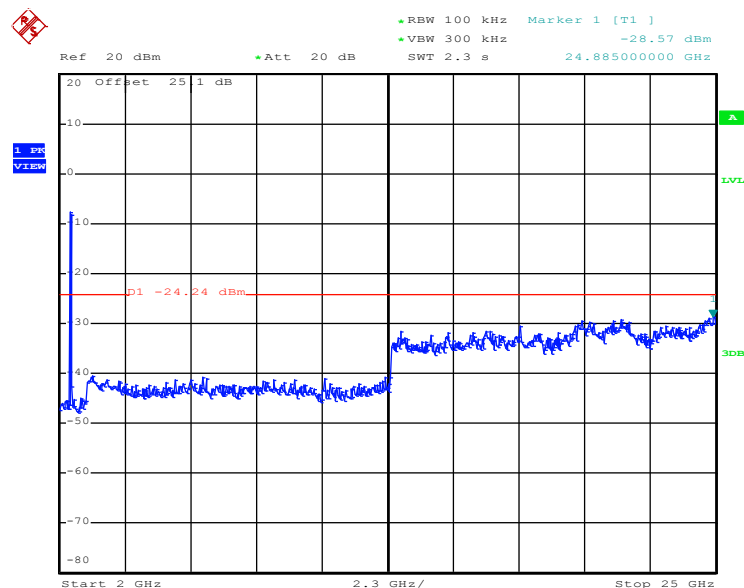
Date: 22.NOV.2012 22:50:01

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT40 2 GHz~25 GHz

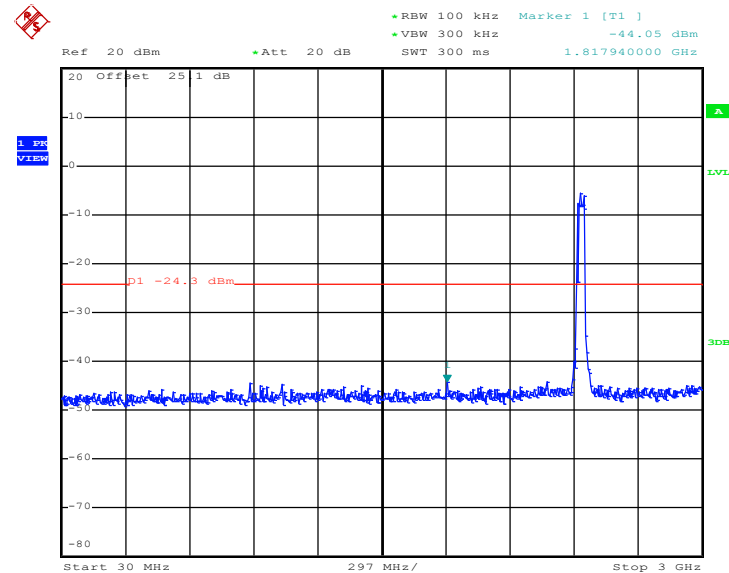
Conducted Spurious Emission Plot on Channel 03



Date: 22.NOV.2012 22:50:19

Note:

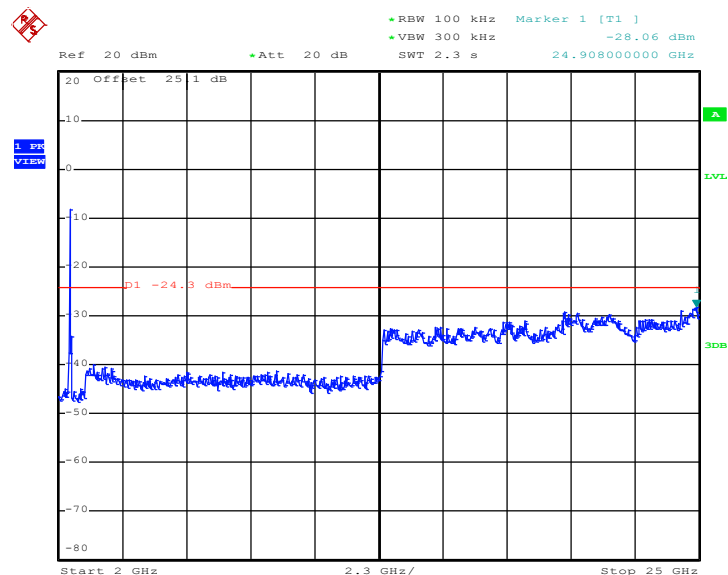
The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 22.NOV.2012 23:01:09

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


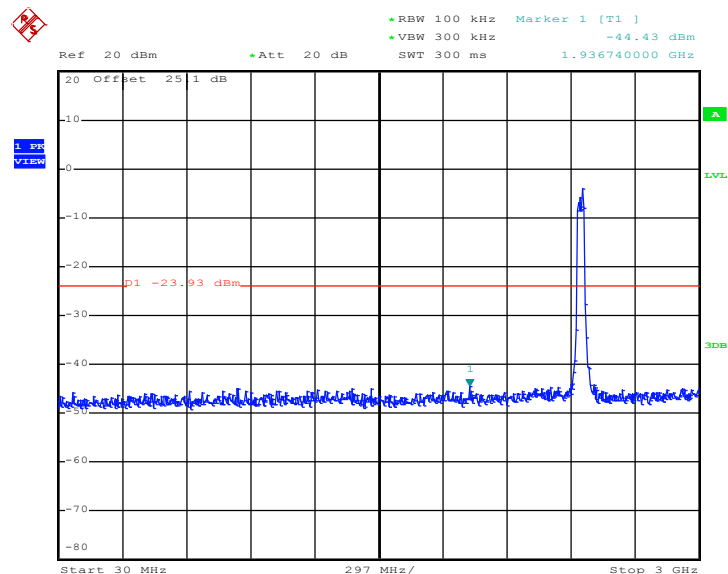
Date: 22.NOV.2012 23:01:26

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT40 30 MHz~3 GHz

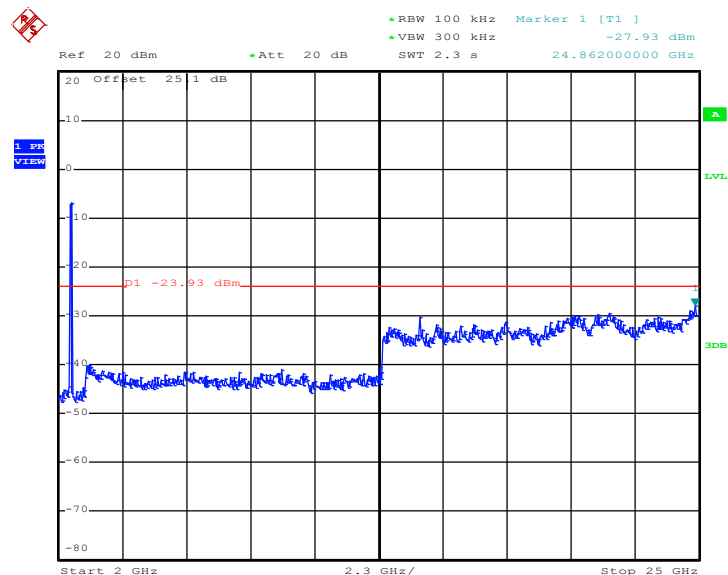
Conducted Spurious Emission Plot on Channel 09



Date: 22.NOV.2012 22:56:15

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

802.11n HT40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 09


Date: 22.NOV.2012 22:56:33

Note:

The total loss is 25.1dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.5 Radiated Emission Measurement

3.5.1 Limit of Radiated Emission

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

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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63. 10-2009
2. 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.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 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.
7. 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.

For average measurement:

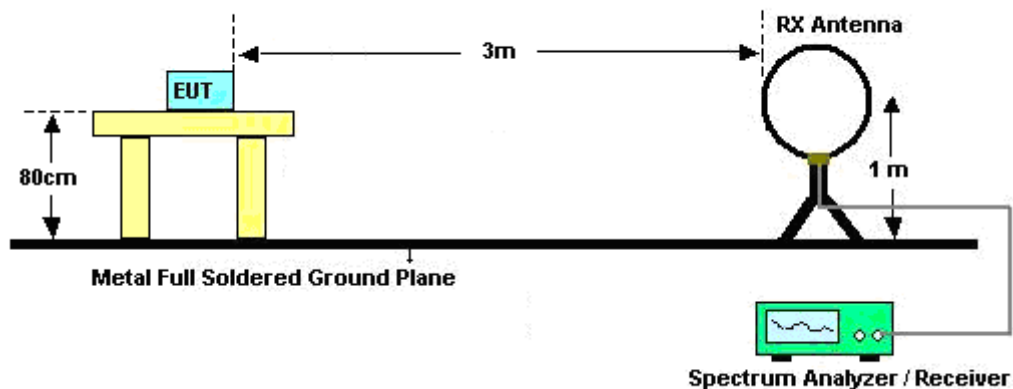
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle (%)	T(us)	1/T(KHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	92.26	620.00	1.613	3kHz
2.4G 802.11n HT20	91.16	536.00	1.866	3kHz
2.4G 802.11n HT40	98.53	-	-	10Hz

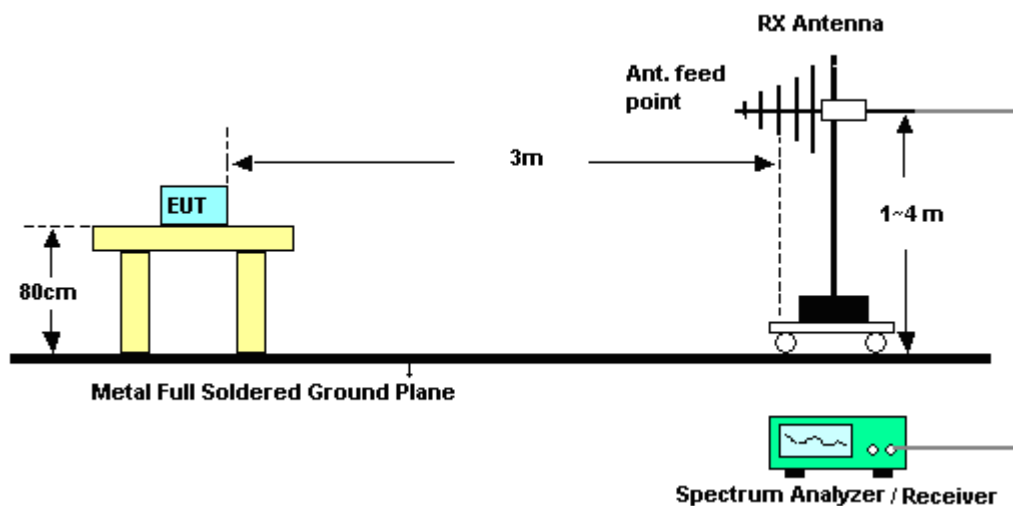
Note: For average measurement with duty cycle $< 98\%$, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

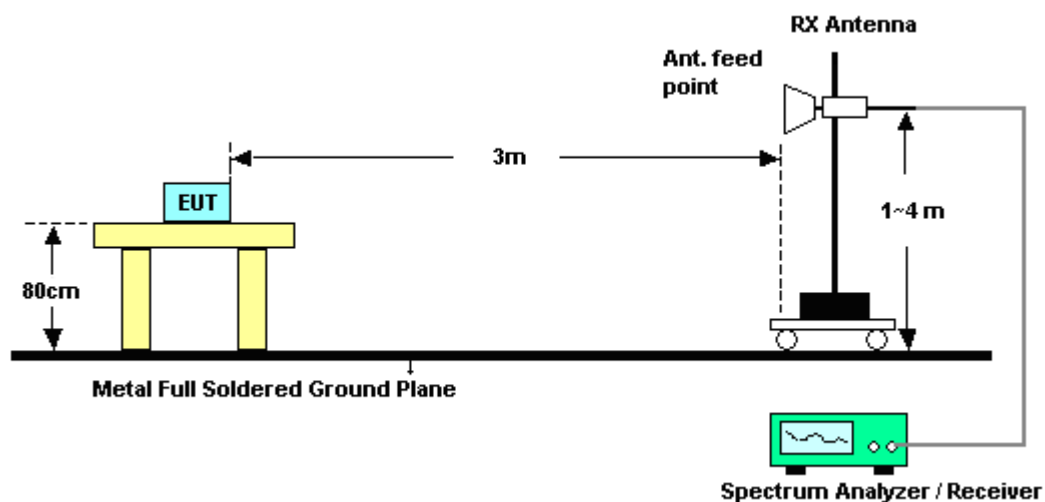
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Chiang

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
2324.85	49.68	-24.32	74	45.46	32.23	5.92	33.93	171	304	Peak
2385.96	35.91	-18.09	54	31.54	32.3	6.03	33.96	171	304	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
2323.86	48.92	-25.08	74	44.7	32.23	5.92	33.93	112	244	Peak
2384.07	34.38	-19.62	54	30.03	32.28	6.03	33.96	112	244	Average

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2489.54	53.98	-20.02	74	49.4	32.4	6.18	34	130	92	Peak
2487.4	42.38	-11.62	54	37.82	32.38	6.18	34	130	92	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
2496.92	50.05	-23.95	74	45.47	32.4	6.18	34	170	241	Peak
2490.54	36.88	-17.12	54	32.3	32.4	6.18	34	170	241	Average



Test Mode :	802.11g	Temperature :	23~24℃
Test Band :	Low	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Chiang

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	58.59	-15.41	74	54.22	32.3	6.03	33.96	110	98	Peak
2390	39.47	-14.53	54	35.1	32.3	6.03	33.96	110	98	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	53.65	-20.35	74	49.28	32.3	6.03	33.96	112	247	Peak
2390	35.96	-18.04	54	31.59	32.3	6.03	33.96	112	247	Average

Test Mode :	802.11g	Temperature :	23~24℃
Test Band :	High	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Chiang

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	68.03	-5.97	74	63.47	32.38	6.18	34	130	97	Peak
2483.5	44.73	-9.27	54	40.17	32.38	6.18	34	130	97	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
2483.72	64.25	-9.75	74	59.69	32.38	6.18	34	170	242	Peak
2483.5	41.64	-12.36	54	37.08	32.38	6.18	34	170	242	Average



Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Band :	Low	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.02	53.93	-20.07	74	49.56	32.3	6.03	33.96	111	92	Peak
2390	37.41	-16.59	54	33.04	32.3	6.03	33.96	111	92	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
2389.02	53.01	-20.99	74	48.64	32.3	6.03	33.96	112	244	Peak
2390	34.96	-19.04	54	30.59	32.3	6.03	33.96	112	244	Average

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Band :	High	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Chiang

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
2483.54	66.65	-7.35	74	62.09	32.38	6.18	34	166	28	Peak
2483.62	43.56	-10.44	54	39	32.38	6.18	34	166	28	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.54	58.57	-15.43	74	54.01	32.38	6.18	34	169	152	Peak
2483.5	37.85	-16.15	54	33.29	32.38	6.18	34	169	152	Average



Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Band :	Low	Relative Humidity :	50~52%
Test Channel :	03	Test Engineer :	Ivan Chiang

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
2381.64	57.93	-16.07	74	53.58	32.28	6.03	33.96	200	360	Peak
2390	40.07	-13.93	54	35.7	32.3	6.03	33.96	200	360	Average
2499.06	50.34	-23.66	74	45.76	32.4	6.18	34	200	360	Peak
2483.6	36.57	-17.43	54	32.01	32.38	6.18	34	200	360	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
2389.47	51.96	-22.04	74	47.59	32.3	6.03	33.96	109	155	Peak
2390	36.57	-17.43	54	32.2	32.3	6.03	33.96	109	155	Average
2499.84	47.81	-26.19	74	43.23	32.4	6.18	34	109	155	Peak
2500	34.33	-19.67	54	29.75	32.4	6.18	34	109	155	Average



Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Band :	High	Relative Humidity :	50~52%
Test Channel :	09	Test Engineer :	Ivan Chiang

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
2357.88	47.54	-26.46	74	43.24	32.26	5.99	33.95	108	12	Peak
2374.89	34.63	-19.37	54	30.31	32.28	5.99	33.95	108	12	Average
2486.16	66.81	-7.19	74	62.25	32.38	6.18	34	108	12	Peak
2483.5	48.86	-5.14	54	44.3	32.38	6.18	34	108	12	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
2313.42	45.68	-28.32	74	41.48	32.21	5.92	33.93	184	9	Peak
2336.28	32.61	-21.39	54	28.36	32.24	5.95	33.94	184	9	Average
2490.5	58.83	-15.17	74	54.25	32.4	6.18	34	184	9	Peak
2488.56	39.12	-14.88	54	34.54	32.4	6.18	34	184	9	Average

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

Test Mode :	802.11b	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	96.5	-	-	92.09	32.31	6.07	33.97	171	304	Average
2412	101.91	-	-	97.5	32.31	6.07	33.97	171	304	Peak

Test Mode :	802.11b	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	92.16	-	-	87.75	32.31	6.07	33.97	112	244	Average
2412	97.35	-	-	92.94	32.31	6.07	33.97	112	244	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	96.47	-	-	91.99	32.35	6.11	33.98	110	94	Average
2437	101.48	-	-	97	32.35	6.11	33.98	110	94	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	91.87	-	-	87.39	32.35	6.11	33.98	137	253	Average
2437	97.07	-	-	92.59	32.35	6.11	33.98	137	253	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	100.52	-	-	96	32.37	6.14	33.99	130	92	Average
2462	105.7	-	-	101.18	32.37	6.14	33.99	130	92	Peak

Test Mode :	802.11b	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	96.17	-	-	91.65	32.37	6.14	33.99	170	241	Average
2462	101.42	-	-	96.9	32.37	6.14	33.99	170	241	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	88.45	-	-	84.04	32.31	6.07	33.97	110	98	Average
2412	100.73	-	-	96.32	32.31	6.07	33.97	110	98	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	83.68	-	-	79.27	32.31	6.07	33.97	112	247	Average
2412	95.46	-	-	91.05	32.31	6.07	33.97	112	247	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	89.01	-	-	84.53	32.35	6.11	33.98	108	100	Average
2437	100.91	-	-	96.43	32.35	6.11	33.98	108	100	Peak

Test Mode :	802.11g	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	84.58	-	-	80.1	32.35	6.11	33.98	138	255	Average
2437	96.68	-	-	92.2	32.35	6.11	33.98	138	255	Peak

Test Mode :	802.11g	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	91.7	-	-	87.18	32.37	6.14	33.99	130	97	Average
2462	103.71	-	-	99.19	32.37	6.14	33.99	130	97	Peak

Test Mode :	802.11g	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	88.38	-	-	83.86	32.37	6.14	33.99	170	242	Average
2462	94.42	-	-	89.9	32.37	6.14	33.99	170	242	Peak

Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	84.93	-	-	80.52	32.31	6.07	33.97	111	92	Average
2412	97.31	-	-	92.9	32.31	6.07	33.97	111	92	Peak

Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	80.63	-	-	76.22	32.31	6.07	33.97	112	244	Average
2412	92.65	-	-	88.24	32.31	6.07	33.97	112	244	Peak

Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	85.78	-	-	81.3	32.35	6.11	33.98	140	304	Average
2437	97.56	-	-	93.08	32.35	6.11	33.98	140	304	Peak

Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	81.57	-	-	77.09	32.35	6.11	33.98	119	250	Average
2437	90.52	-	-	86.04	32.35	6.11	33.98	119	250	Peak

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	89.52	-	-	85	32.37	6.14	33.99	166	29	Average
2462	100.87	-	-	96.35	32.37	6.14	33.99	166	29	Peak

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	84.6	-	-	80.08	32.37	6.14	33.99	169	152	Average
2462	95.43	-	-	90.91	32.37	6.14	33.99	169	152	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2422	83.25	-	-	78.82	32.33	6.07	33.97	200	360	Average
2422	94.54	-	-	90.11	32.33	6.07	33.97	200	360	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2422	78.56	-	-	74.13	32.33	6.07	33.97	109	155	Average
2422	89.97	-	-	85.54	32.33	6.07	33.97	109	155	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	86.29	-	-	81.81	32.35	6.11	33.98	109	12	Average
2437	97.81	-	-	93.33	32.35	6.11	33.98	109	12	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	79.52	-	-	75.04	32.35	6.11	33.98	140	154	Average
2437	90.48	-	-	86	32.35	6.11	33.98	140	154	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

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
42.96	29.96	-10.04	40	49.37	11.7	0.64	31.75	100	23	Peak
119.91	13.52	-29.98	43.5	32.34	11.7	1.1	31.62	-	-	Peak
234.93	14.5	-31.5	46	32.68	11.52	1.5	31.2	-	-	Peak
400.1	33.47	-12.53	46	46.83	16.02	2.14	31.52	-	-	Peak
624.8	21.09	-24.91	46	28.78	19.99	2.76	30.44	-	-	Peak
800.5	29.21	-16.79	46	34.13	22.1	3.14	30.16	-	-	Peak
2452	85.81	-	-	81.33	32.35	6.11	33.98	108	12	Average
2452	97.84	-	-	93.36	32.35	6.11	33.98	108	12	Peak

Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	50~52%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

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
69.96	28.14	-11.86	40	52.79	6.3	0.84	31.79	100	98	Peak
97.77	18.32	-25.18	43.5	39.43	9.56	0.99	31.66	-	-	Peak
161.49	12.6	-30.9	43.5	32.45	10.31	1.22	31.38	-	-	Peak
400.1	30.41	-15.59	46	43.77	16.02	2.14	31.52	-	-	Peak
533.1	19.84	-26.16	46	29.79	18.66	2.52	31.13	-	-	Peak
800.5	25.18	-20.82	46	30.1	22.1	3.14	30.16	-	-	Peak
2452	78.47	-	-	73.99	32.35	6.11	33.98	184	9	Average
2452	90.26	-	-	85.78	32.35	6.11	33.98	184	9	Peak

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

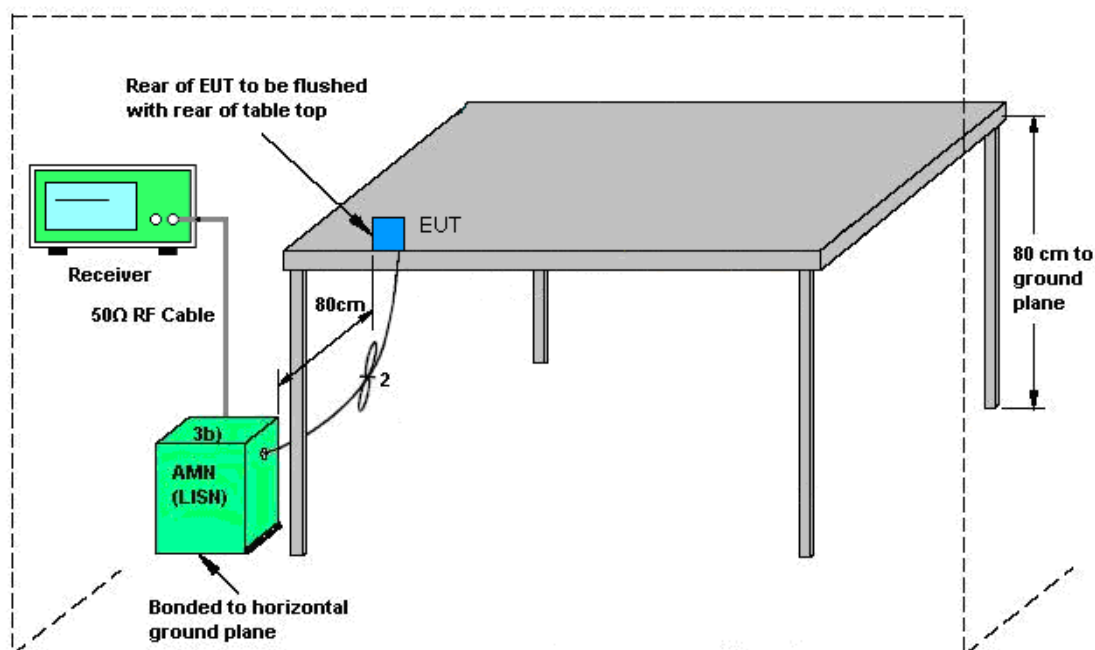
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

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

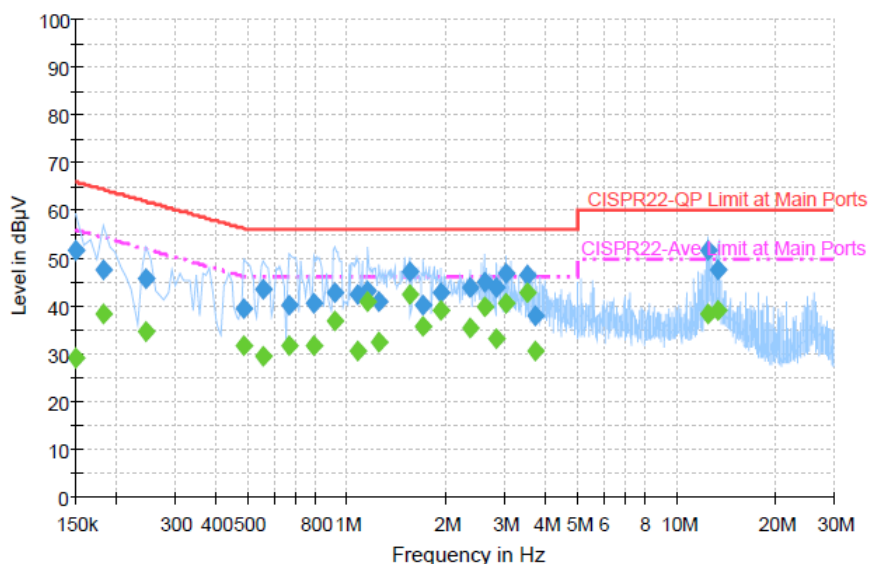
3.6.4 Test Setup



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

3.6.5 Test Result of AC Conducted Emission

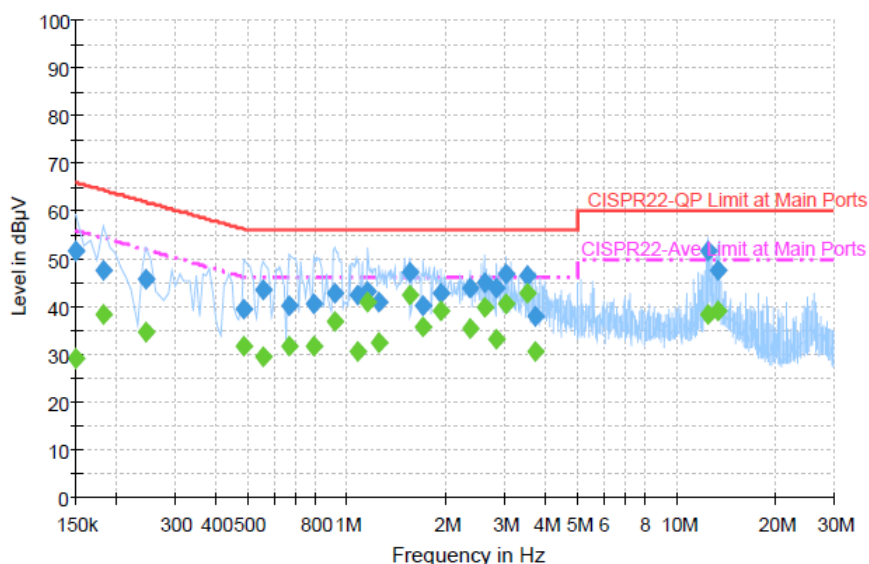
Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Lan Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

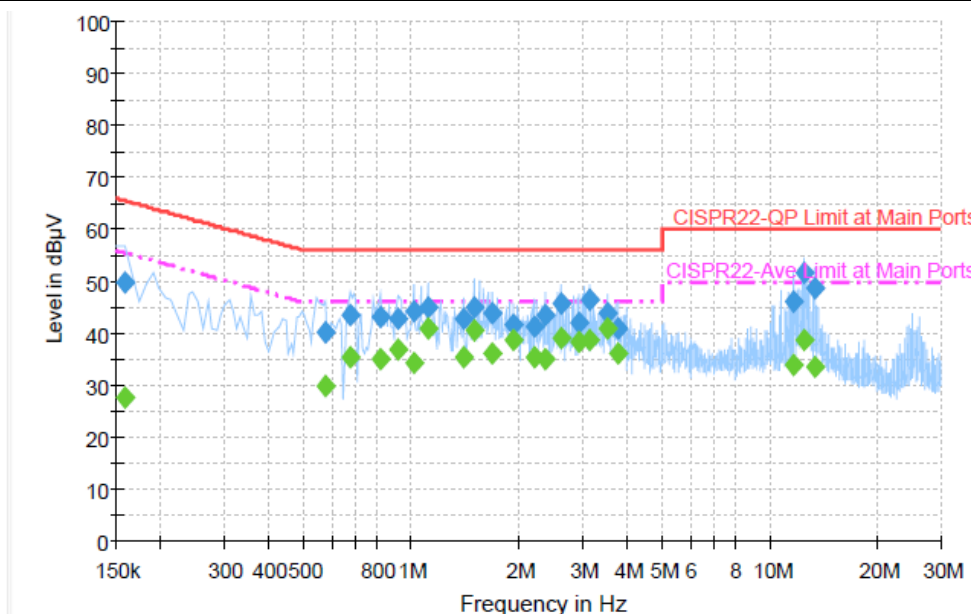
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	51.6	Off	L1	19.4	14.4	66.0
0.182000	47.5	Off	L1	19.4	16.9	64.4
0.246000	45.7	Off	L1	19.4	16.2	61.9
0.486000	39.5	Off	L1	19.4	16.7	56.2
0.558000	43.4	Off	L1	19.4	12.6	56.0
0.670000	40.2	Off	L1	19.5	15.8	56.0
0.790000	40.8	Off	L1	19.5	15.2	56.0
0.918000	42.8	Off	L1	19.4	13.2	56.0
1.078000	42.4	Off	L1	19.5	13.6	56.0
1.158000	43.1	Off	L1	19.5	12.9	56.0
1.254000	41.0	Off	L1	19.5	15.0	56.0
1.542000	47.1	Off	L1	19.4	8.9	56.0
1.702000	40.1	Off	L1	19.5	15.9	56.0
1.926000	42.7	Off	L1	19.5	13.3	56.0
2.366000	44.0	Off	L1	19.6	12.0	56.0
2.606000	45.1	Off	L1	19.6	10.9	56.0
2.846000	44.0	Off	L1	19.6	12.0	56.0
3.038000	46.8	Off	L1	19.6	9.2	56.0
3.518000	46.5	Off	L1	19.6	9.5	56.0
3.718000	37.9	Off	L1	19.6	18.1	56.0
12.486000	51.6	Off	L1	19.8	8.4	60.0
13.310000	47.7	Off	L1	19.8	12.3	60.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Lan Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Average

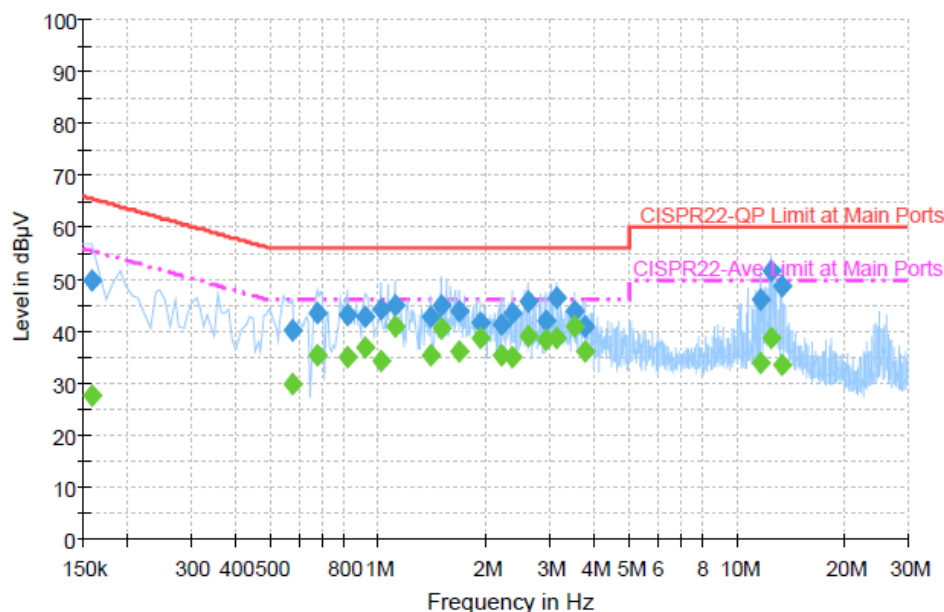
Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.1	Off	L1	19.4	26.9	56.0
0.182000	38.4	Off	L1	19.4	16.0	54.4
0.246000	34.8	Off	L1	19.4	17.1	51.9
0.486000	31.8	Off	L1	19.4	14.4	46.2
0.558000	29.4	Off	L1	19.4	16.6	46.0
0.670000	31.7	Off	L1	19.5	14.3	46.0
0.790000	31.8	Off	L1	19.5	14.2	46.0
0.918000	36.9	Off	L1	19.4	9.1	46.0
1.078000	30.6	Off	L1	19.5	15.4	46.0
1.158000	41.0	Off	L1	19.5	5.0	46.0
1.254000	32.4	Off	L1	19.5	13.6	46.0
1.542000	42.4	Off	L1	19.4	3.6	46.0
1.702000	35.7	Off	L1	19.5	10.3	46.0
1.926000	39.2	Off	L1	19.5	6.8	46.0
2.366000	35.5	Off	L1	19.6	10.5	46.0
2.606000	39.8	Off	L1	19.6	6.2	46.0
2.846000	33.4	Off	L1	19.6	12.6	46.0
3.038000	40.6	Off	L1	19.6	5.4	46.0
3.518000	42.9	Off	L1	19.6	3.1	46.0
3.718000	30.8	Off	L1	19.6	15.2	46.0
12.486000	38.4	Off	L1	19.8	11.6	50.0
13.310000	39.2	Off	L1	19.8	10.8	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 :	WLAN Link + Lan Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	49.8	Off	N	19.3	15.8	65.6
0.574000	40.1	Off	N	19.4	15.9	56.0
0.678000	43.7	Off	N	19.5	12.3	56.0
0.822000	43.0	Off	N	19.6	13.0	56.0
0.918000	42.7	Off	N	19.4	13.3	56.0
1.014000	44.4	Off	N	19.5	11.6	56.0
1.110000	45.0	Off	N	19.4	11.0	56.0
1.398000	43.0	Off	N	19.5	13.0	56.0
1.494000	45.2	Off	N	19.5	10.8	56.0
1.686000	44.0	Off	N	19.5	12.0	56.0
1.926000	41.8	Off	N	19.5	14.2	56.0
2.214000	41.3	Off	N	19.6	14.7	56.0
2.366000	43.6	Off	N	19.6	12.4	56.0
2.606000	45.9	Off	N	19.6	10.1	56.0
2.942000	42.2	Off	N	19.6	13.8	56.0
3.134000	46.6	Off	N	19.7	9.4	56.0
3.518000	44.0	Off	N	19.6	12.0	56.0
3.766000	40.8	Off	N	19.6	15.2	56.0
11.670000	46.1	Off	N	19.8	13.9	60.0
12.486000	51.5	Off	N	19.9	8.5	60.0
13.310000	48.7	Off	N	19.9	11.3	60.0

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


Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	27.9	Off	N	19.3	27.7	55.6
0.574000	29.7	Off	N	19.4	16.3	46.0
0.678000	35.3	Off	N	19.5	10.7	46.0
0.822000	34.9	Off	N	19.6	11.1	46.0
0.918000	36.8	Off	N	19.4	9.2	46.0
1.014000	34.1	Off	N	19.5	11.9	46.0
1.110000	41.1	Off	N	19.4	4.9	46.0
1.398000	35.4	Off	N	19.5	10.6	46.0
1.494000	40.5	Off	N	19.5	5.5	46.0
1.686000	36.0	Off	N	19.5	10.0	46.0
1.926000	38.8	Off	N	19.5	7.2	46.0
2.214000	35.2	Off	N	19.6	10.8	46.0
2.366000	34.9	Off	N	19.6	11.1	46.0
2.606000	39.0	Off	N	19.6	7.0	46.0
2.942000	38.2	Off	N	19.6	7.8	46.0
3.134000	38.8	Off	N	19.7	7.2	46.0
3.518000	41.0	Off	N	19.6	5.0	46.0
3.766000	36.3	Off	N	19.6	9.7	46.0
11.670000	34.1	Off	N	19.8	15.9	50.0
12.486000	38.6	Off	N	19.9	11.4	50.0
13.310000	33.7	Off	N	19.9	16.3	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.

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	Nov. 20, 2012 ~ Nov. 22, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Nov. 20, 2012 ~ Nov. 22, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Nov. 20, 2012 ~ Nov. 22, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 06, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Oct. 05, 2013	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Nov. 21, 2012 ~ Nov. 22, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 22, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Aug. 21, 2013	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz ~ 26.5GHz	Dec. 05, 2011	Nov. 21, 2012 ~ Nov. 22, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB.GAIN	Feb. 27, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Sep. 02, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Sep. 27, 2013	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Nov. 21, 2012 ~ Nov. 22, 2012	Jul. 02, 2014	Radiation (03CH07-HY)
EMI Test Receiver	R&S	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Nov. 23, 2012	Sep. 02, 2013	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Nov. 23, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Nov. 23, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Nov. 23, 2012	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

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

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

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

Please refer to Sporton report number EP2N1443 as below.