FCC RF Test Report

APPLICANT	**:**	**Quill Royal LLC**
EQUIPMENT	**:**	**HDMI Digital Media Receiver**
MODEL NAME	**:**	**DV83YW**
FCC ID	**:**	**2ADU5-4902**
STANDARD	**:**	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	**:**	**(DTS) Digital Transmission System**

The testing was completed on Jun. 04, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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APPENDIX A. CONDUCTED TEST RESULTS

APPENDIX B. RADIATED TEST RESULTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR511534-02C	Rev. 01	Initial issue of report	Jun. 15, 2015
FR511534-02C	Rev. 02	Update report of revising 3.2.3 step 1 description at page 14	Jul. 03, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.53 dB at 2389.830 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.50 dB at 0.678 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Quill Royal LLC
950 Bannock Street, Suite 1100
Boise, Idaho 83702

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	HDMI Digital Media Receiver
Model Name	DV83YW
FCC ID	2ADU5-4902
EUT supports Radios application	WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.1 EDR/LE

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

1.3 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum Output Power to antenna	**<Ant. 1>** 802.11b : 22.41 dBm (0.1742 W) 802.11g : 25.84 dBm (0.3837 W) **<SISO Ant. 1>** 802.11n HT20 : 25.80 dBm (0.3802 W) 802.11n HT40 : 22.66 dBm (0.1845 W) **<CDD Ant. 1+2>** 802.11n HT20 : 28.54 dBm (0.7145 W) 802.11n HT40 : 26.31 dBm (0.4276 W)
Antenna Type	**<Ant 1>** 802.11b/g/n : Fixed Internal Antenna type with gain 4.20 dBi **<Ant 2>** 802.11b/g/n : Fixed Internal Antenna type with gain 4.60 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Function for Transmitter	<table><tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr><tr><td>802.11 b/g</td><td>V</td><td>-</td></tr><tr><td>802.11 n SISO</td><td>V</td><td>-</td></tr><tr><td>802.11 n CDD</td><td>V</td><td>V</td></tr></table>

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		
	TH02-HY	CO05-HY	03CH07-HY

Note: The test site complies with ANSI C63.4 2009 requirement.

1.6 Applicable 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 v03r03
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2009

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

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

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

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

2.1 Carrier Frequency and Channel

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

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

<Ant. 1>

802.11b				
Data Rate (MHz)	**1M bps**	**2M bps**	**5.5M bps**	**11M bps**
Peak Power (dBm)	**22.41**	22.40	22.01	22.07

802.11g								
Data Rate (MHz)	**6M bps**	**9M bps**	**12M bps**	**18M bps**	**24M bps**	**36M bps**	**48M bps**	**54M bps**
Peak Power (dBm)	**25.84**	25.45	25.51	25.54	25.35	25.27	25.41	25.40

<SISO Ant. 1>

2.4GHz 802.11n HT20								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**25.80**	25.56	25.57	25.62	25.27	25.25	25.32	25.43

2.4GHz 802.11n HT40								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**22.66**	22.65	22.52	22.56	22.12	22.22	22.03	21.65

CDD <Ant. 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**28.54**	28.52	28.50	28.37	28.10	28.28	28.45	28.51

2.4GHz 802.11n HT40								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**26.31**	26.29	26.14	26.18	25.10	25.51	25.20	24.69

Note: CDD Ant. 1+2 is a calculated result from sum of the power CDD Ant. 1 and CDD Ant. 2.

2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Single Antenna

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

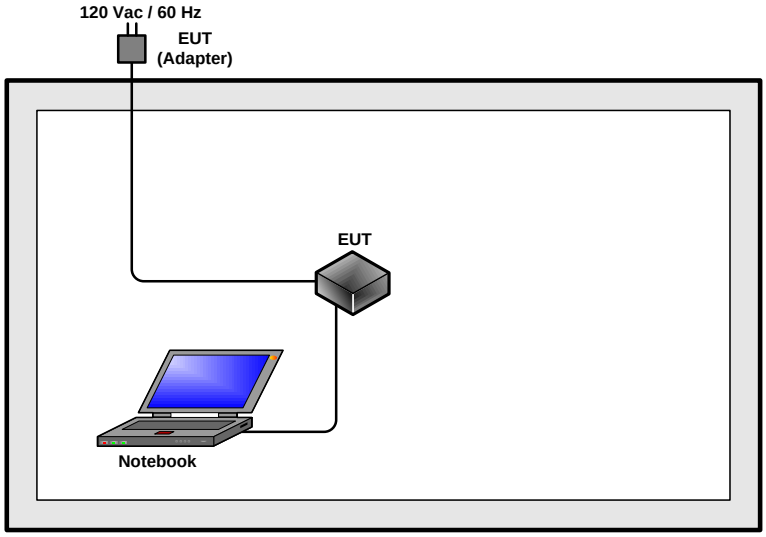
CDD Antenna

Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0

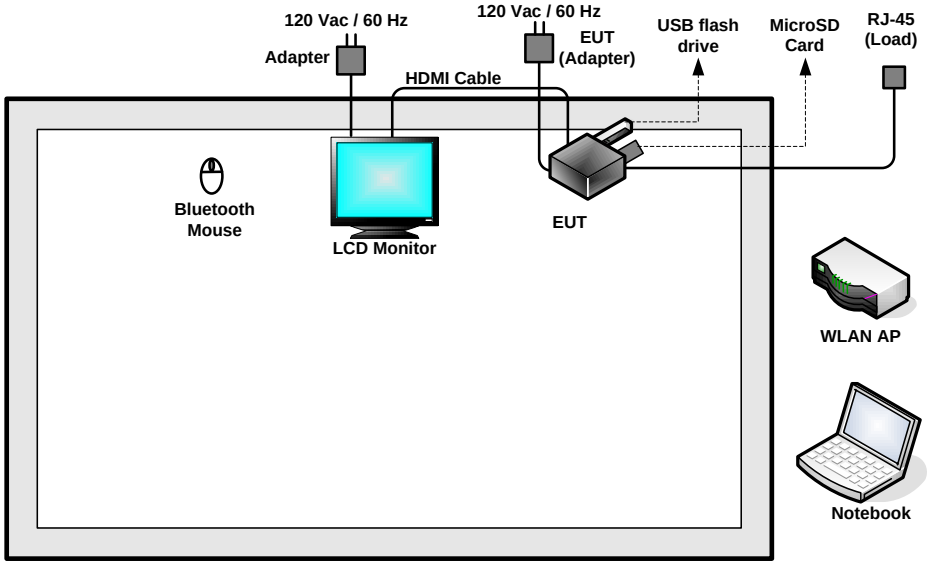
Test Cases	
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 (4k) + HDMI Cable (4k Resolution) + MicroSD Card (No Streaming) + RJ-45 (LAN) Load + USB flash drive (Streaming) + Adapter

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	DELL	Latitude E3340	FCC DoC/ Contains FCC ID: PD97260NGU	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	LCD Monitor	DELL	P2715Qt	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Mouse	Logitech	M557	FCC DoC	N/A	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
7.	RJ-45 Cable	N/A	N/A	N/A	N/A	N/A
8.	USB flash drive	N/A	N/A	N/A	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, “cmd” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

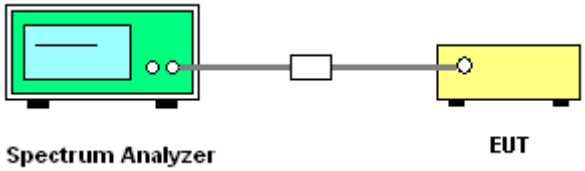
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r03.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. Measure and record the results in the test report.

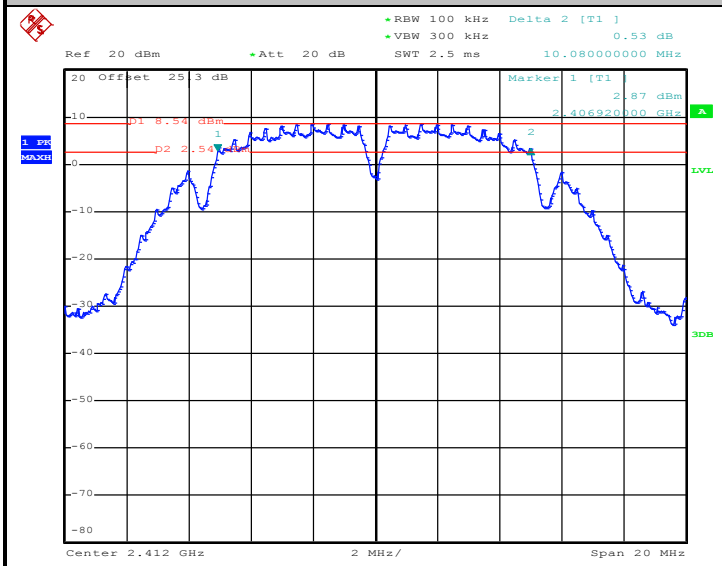
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A of this report.

Minimum 6dB Bandwidth



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3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is 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.

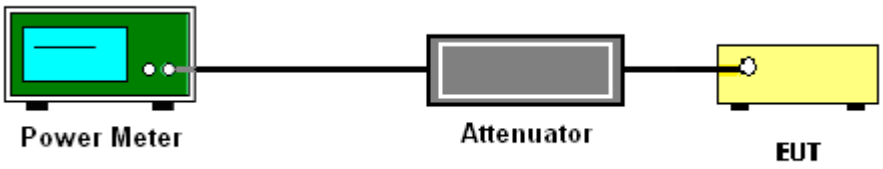
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 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 v03r03 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter 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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A of this report.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this report.

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

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03
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.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

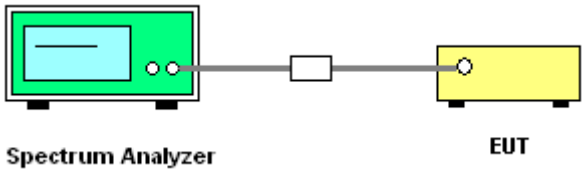
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

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

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

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

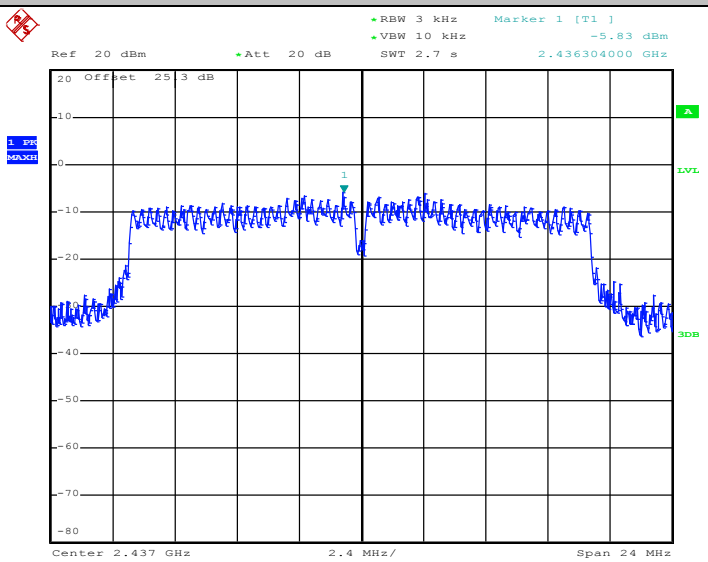
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this report.

Worst Case Power Density (dBm/3kHz)



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).

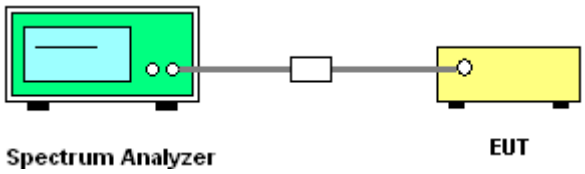
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03.
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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



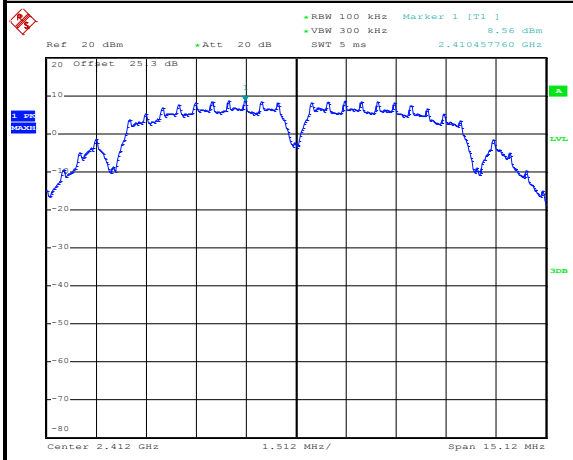
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Number of TX = 1, Ant. 1 (Measured)

Number of TX	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Bill Kuo

WLAN 802.11b Channel 01

100kHz PSD reference Level



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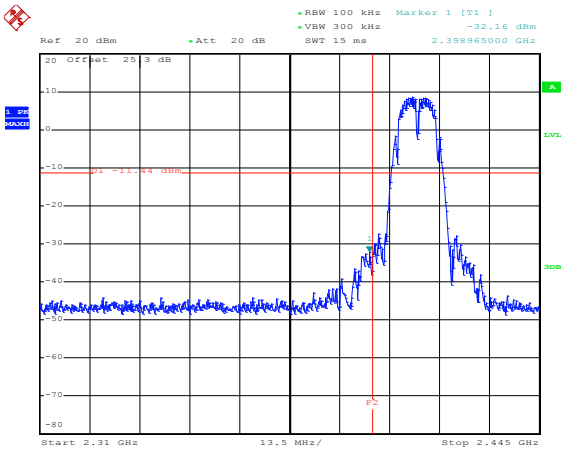
Low Channel Plot



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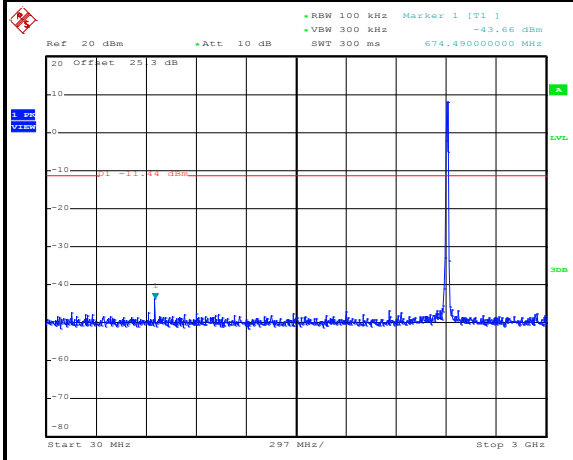
Spurious Emission 30MHz~3GHz



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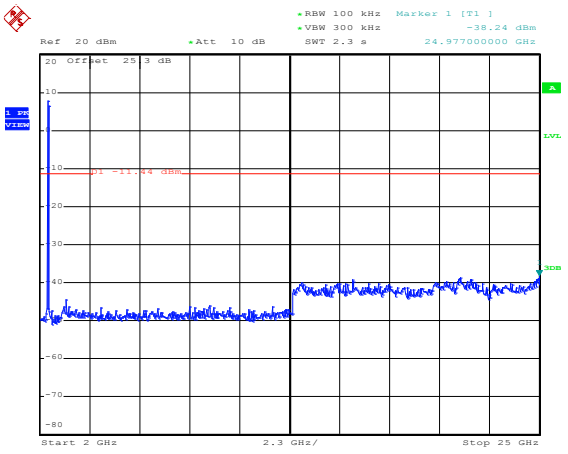
Spurious Emission 2GHz~25GHz



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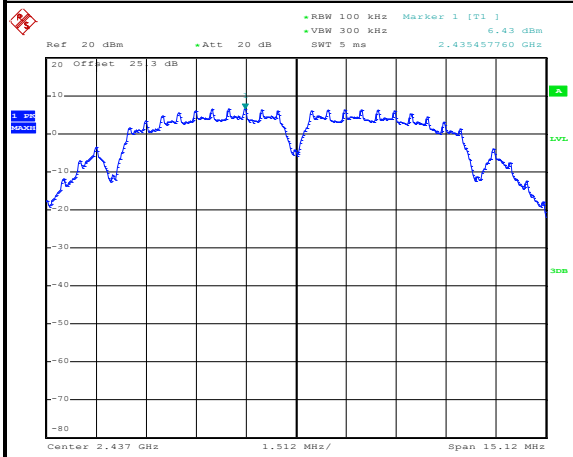
Number of TX :	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

WLAN 802.11b Channel 06

100kHz PSD reference Level



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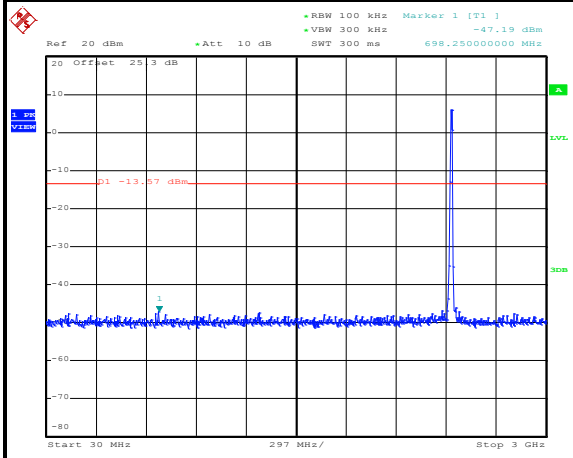
Spurious Emission 30MHz~3GHz



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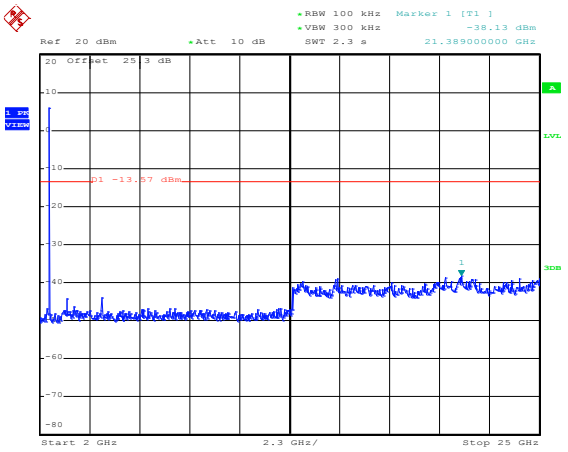
Spurious Emission 2GHz~25GHz

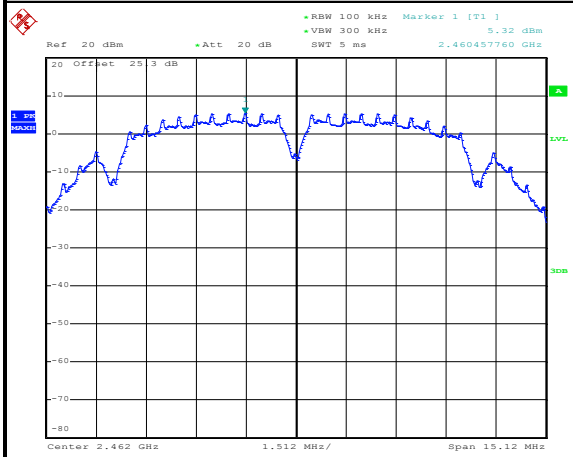


Date: 7.MAY.2015 22:37:24

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Bill Kuo

WLAN 802.11b Channel 11

100kHz PSD reference Level



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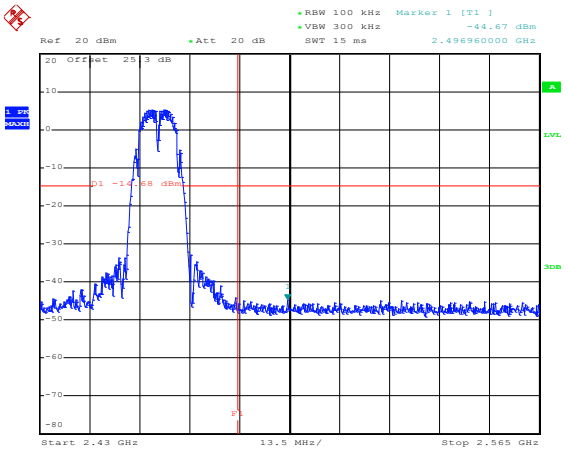
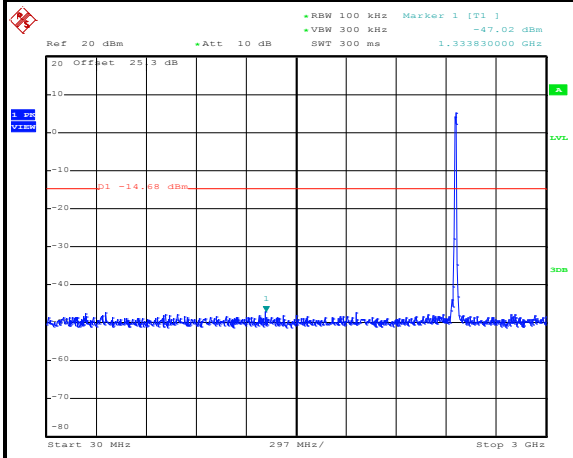
High Channel Plot



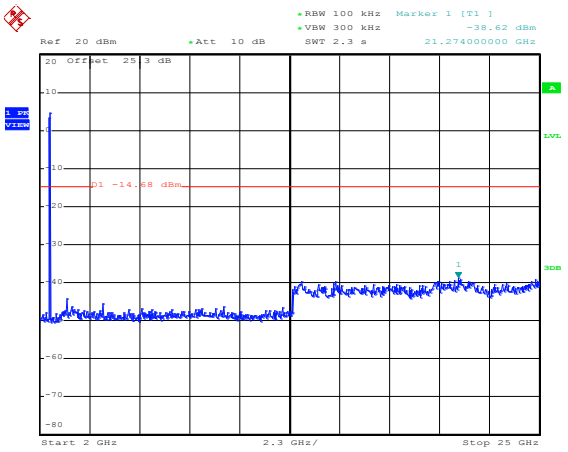
Date: 7.MAY.2015 22:43:38

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 22:43:59

Spurious Emission 2GHz~25GHz

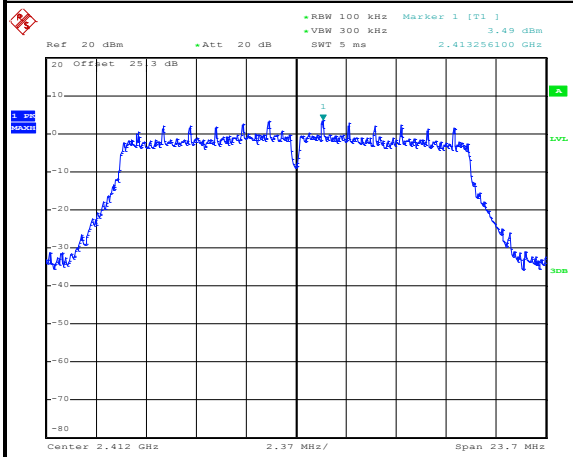


Date: 7.MAY.2015 22:44:17

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11g	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Bill Kuo

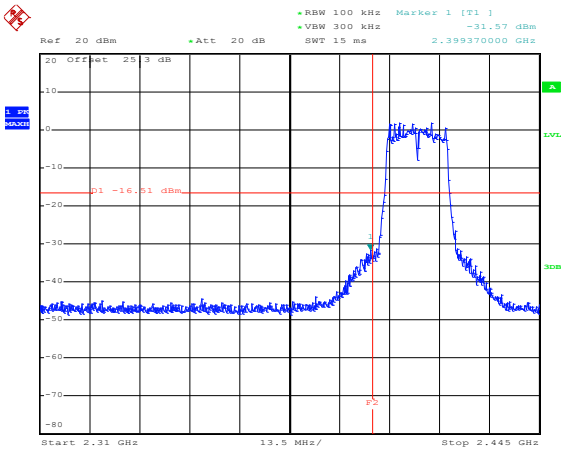
WLAN 802.11g Channel 01

100kHz PSD reference Level



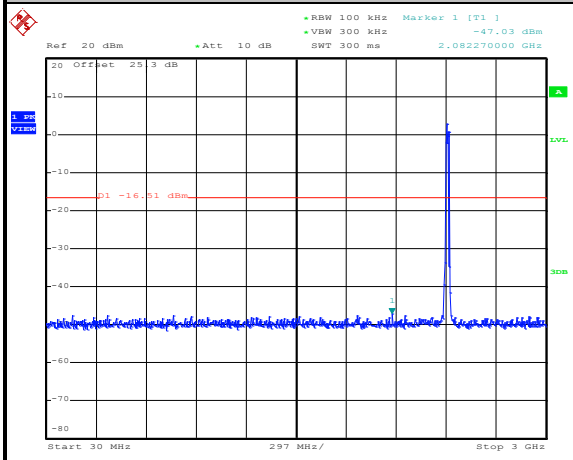
Date: 7.MAY.2015 23:07:16

Low Channel Plot



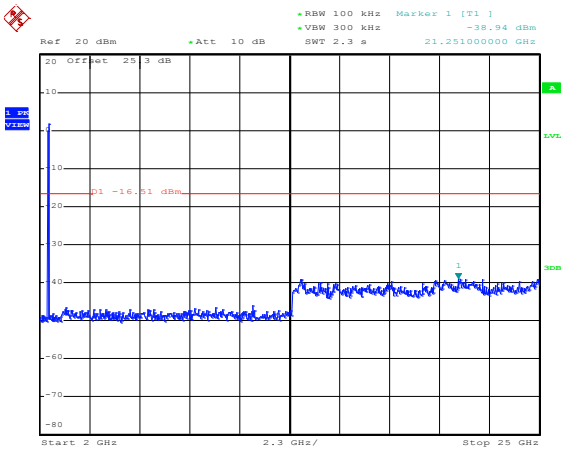
Date: 7.MAY.2015 23:07:33

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:07:59

Spurious Emission 2GHz~25GHz

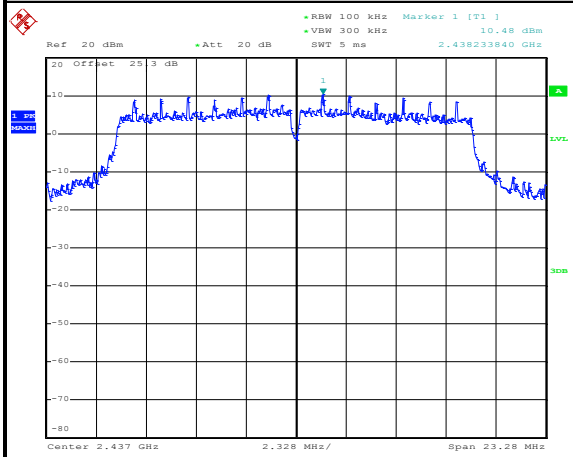


Date: 7.MAY.2015 23:08:17

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11g	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

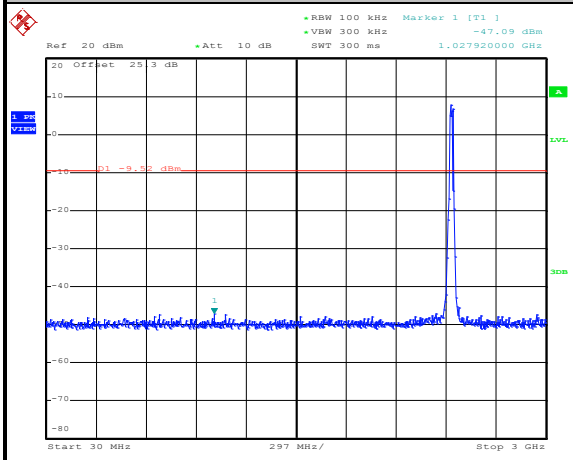
WLAN 802.11g Channel 06

100kHz PSD reference Level



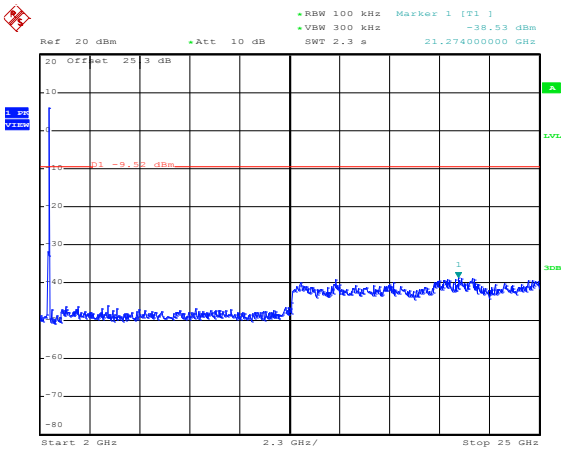
Date: 7.MAY.2015 22:55:17

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 22:55:38

Spurious Emission 2GHz~25GHz

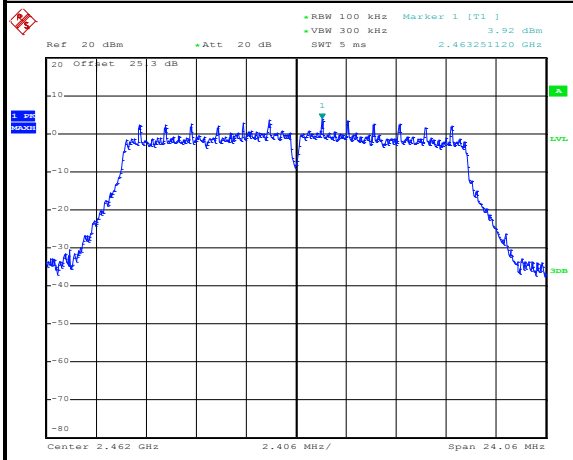


Date: 7.MAY.2015 22:55:56

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11g	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Bill Kuo

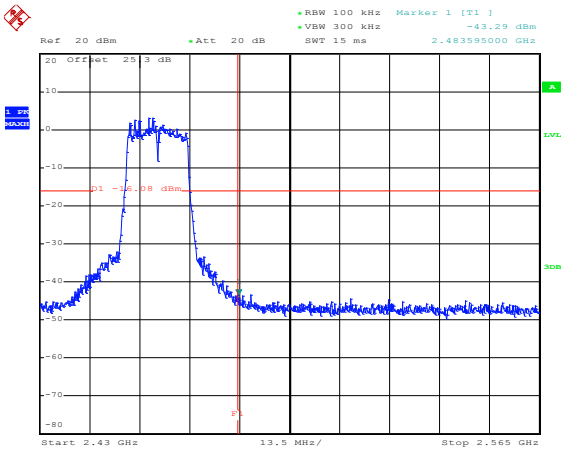
WLAN 802.11g Channel 11

100kHz PSD reference Level



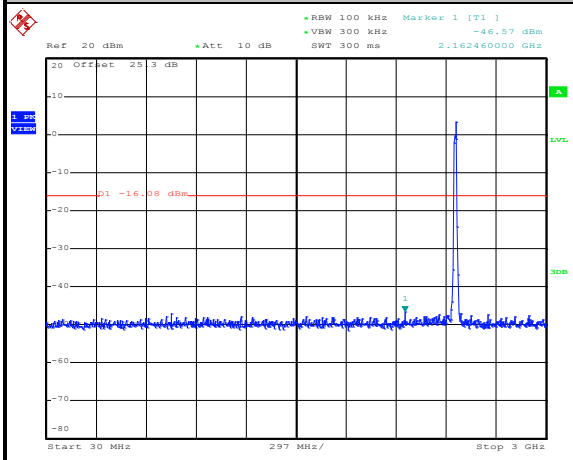
Date: 7.MAY.2015 22:51:46

High Channel Plot



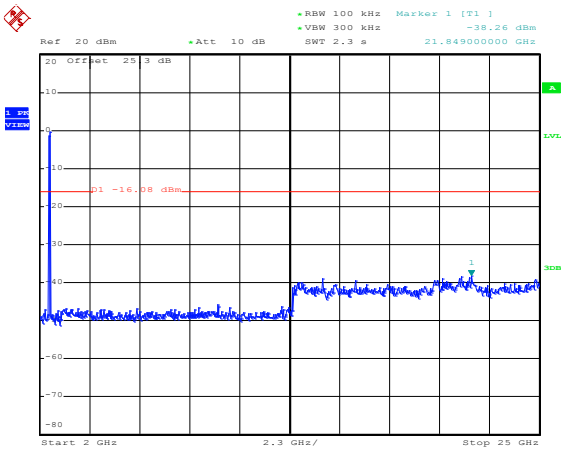
Date: 7.MAY.2015 22:52:09

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 22:52:31

Spurious Emission 2GHz~25GHz

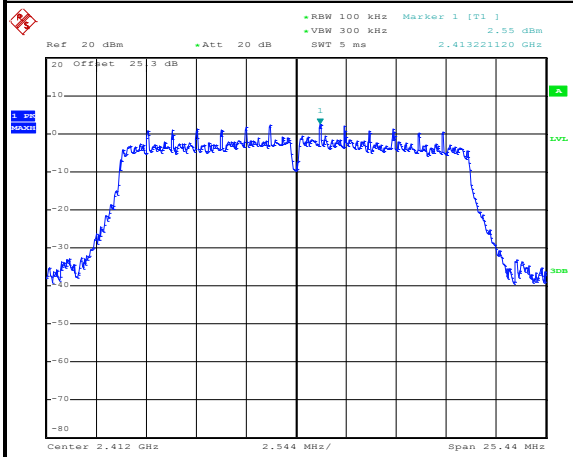


Date: 7.MAY.2015 22:52:49

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Bill Kuo

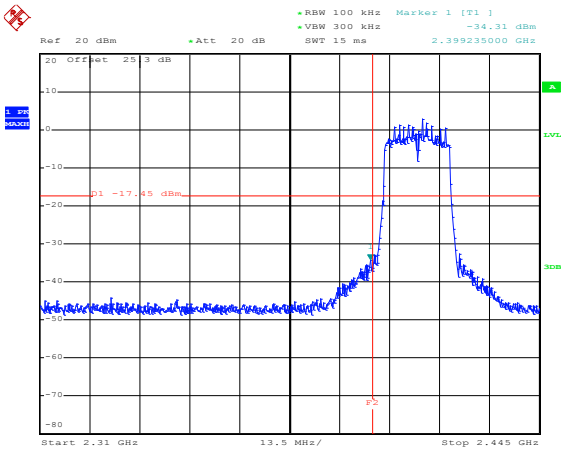
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



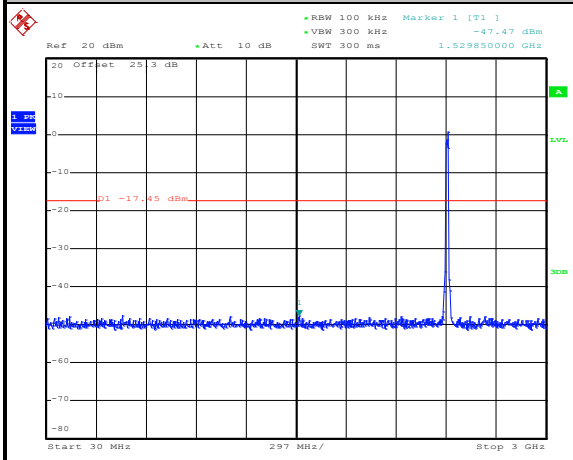
Date: 7.MAY.2015 23:11:38

Low Channel Plot



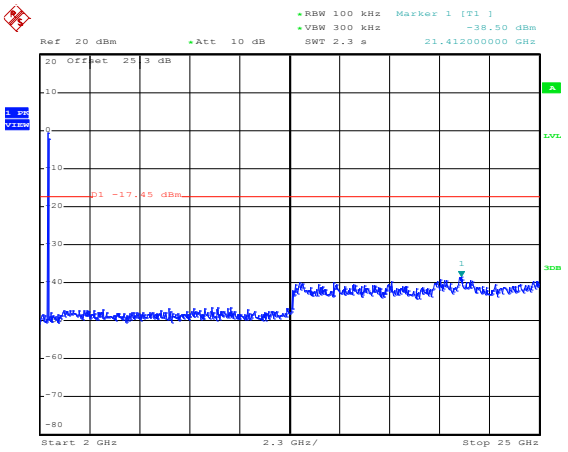
Date: 7.MAY.2015 23:11:55

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:12:21

Spurious Emission 2GHz~25GHz

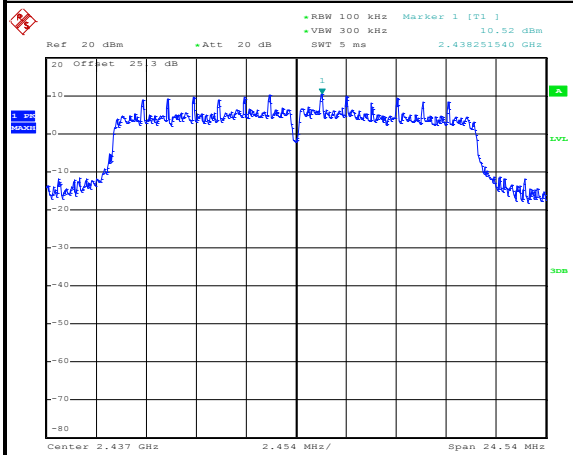


Date: 7.MAY.2015 23:12:39

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

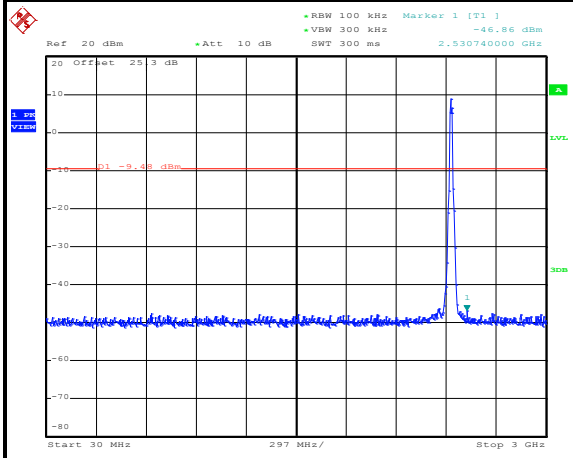
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



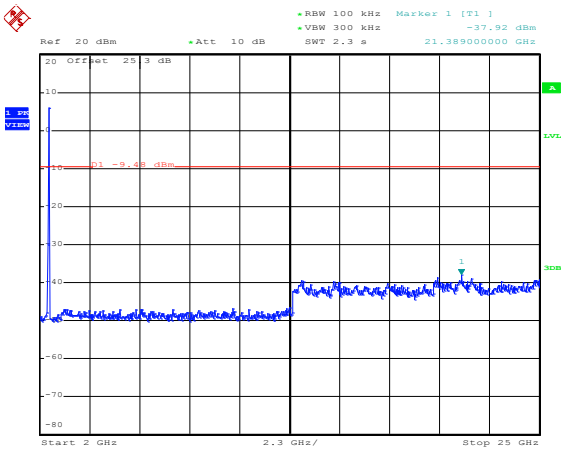
Date: 7.MAY.2015 23:15:33

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:15:55

Spurious Emission 2GHz~25GHz

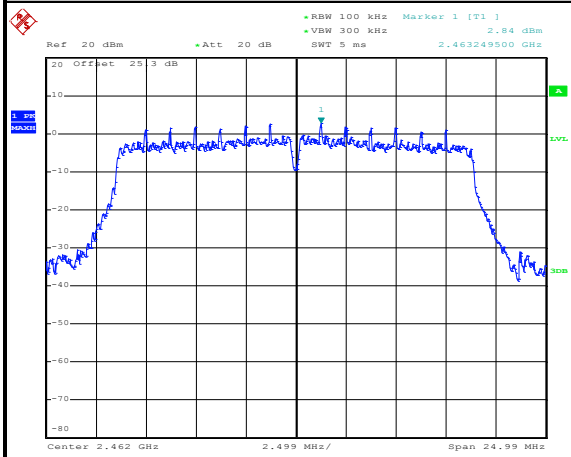


Date: 7.MAY.2015 23:16:13

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Bill Kuo

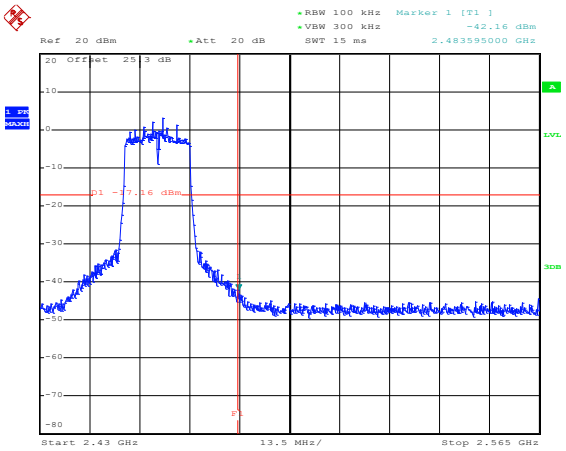
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



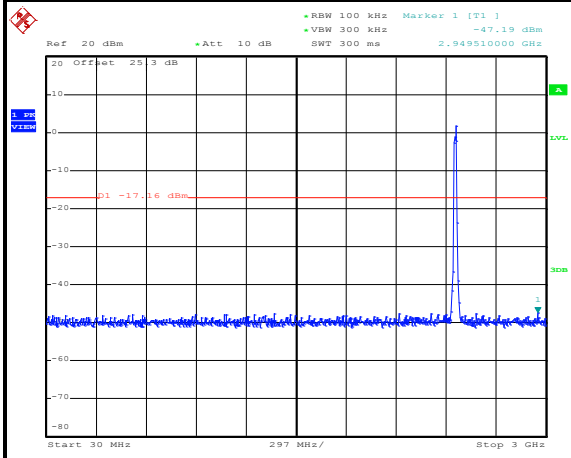
Date: 7.MAY.2015 23:18:16

High Channel Plot



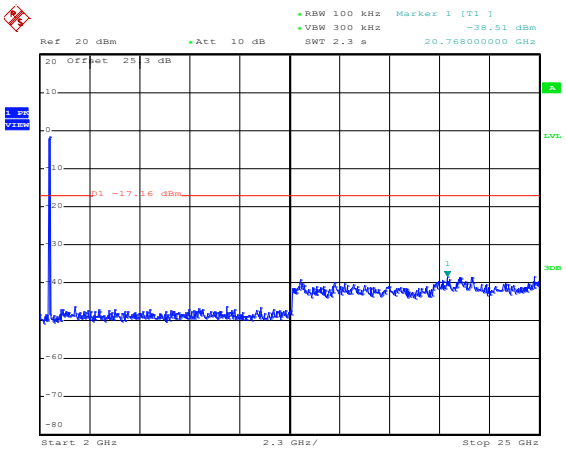
Date: 7.MAY.2015 23:18:51

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:19:55

Spurious Emission 2GHz~25GHz

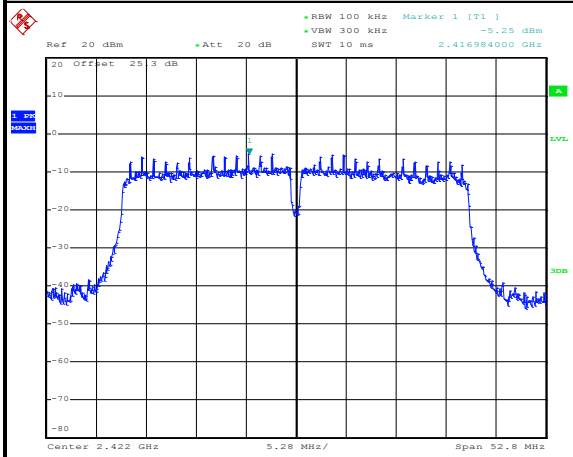


Date: 7.MAY.2015 23:20:13

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	03	**Test Engineer :**	Bill Kuo

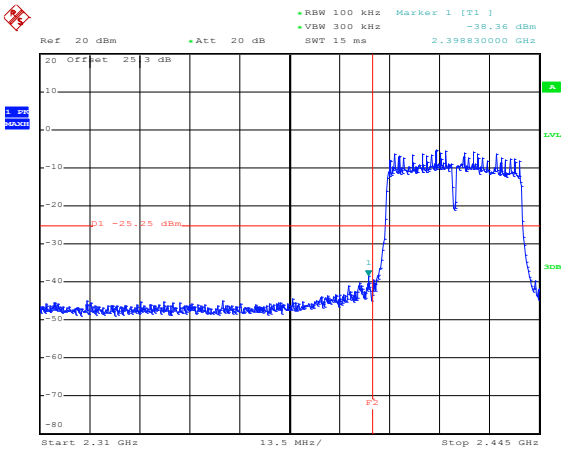
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



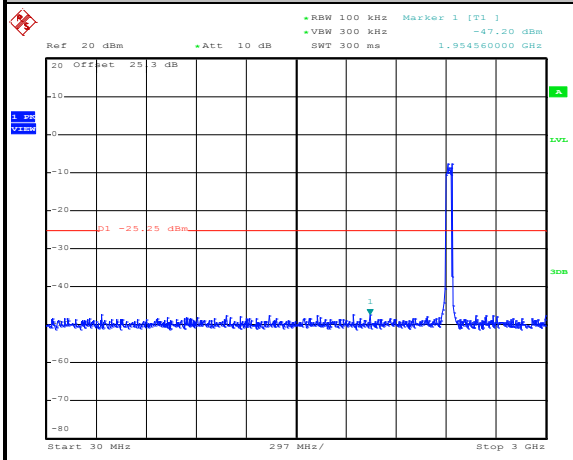
Date: 7.MAY.2015 23:51:17

Low Channel Plot



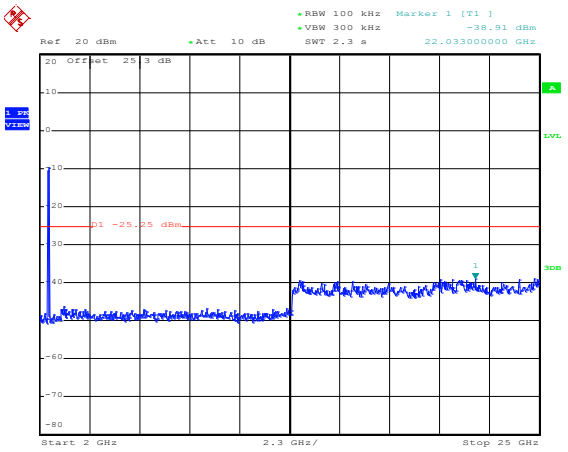
Date: 7.MAY.2015 23:51:36

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:53:57

Spurious Emission 2GHz~25GHz

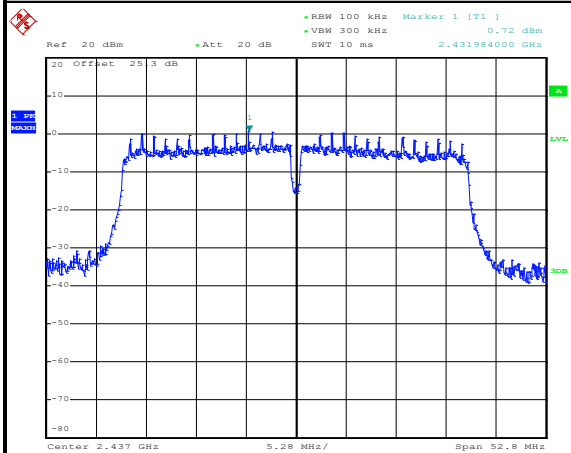


Date: 7.MAY.2015 23:54:15

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

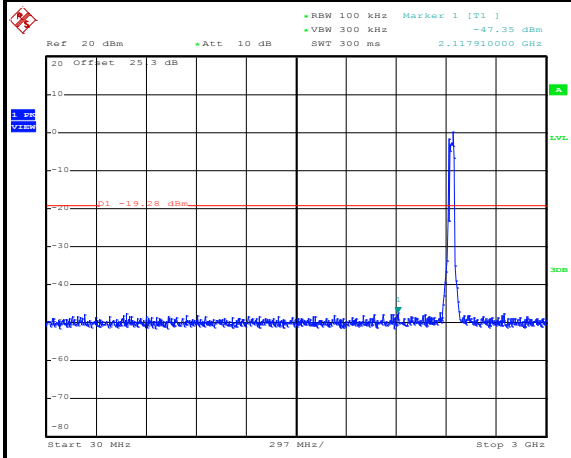
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



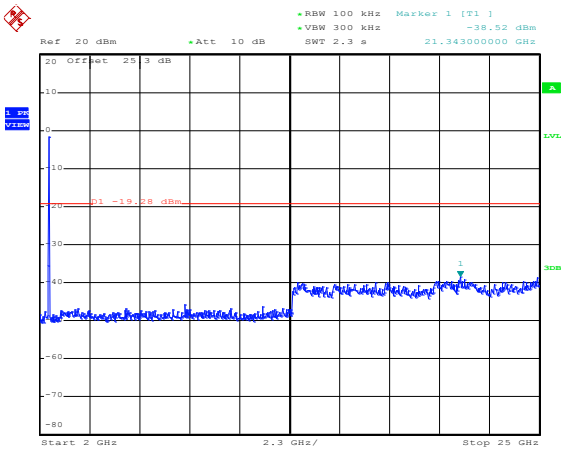
Date: 7.MAY.2015 23:57:09

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:02:11

Spurious Emission 2GHz~25GHz

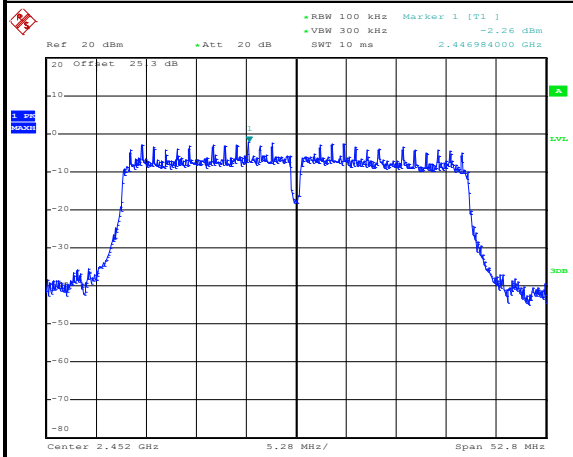


Date: 8.MAY.2015 00:01:35

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	09	**Test Engineer :**	Bill Kuo

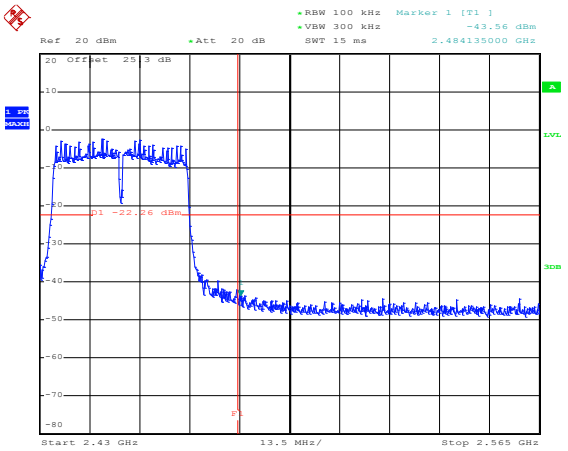
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



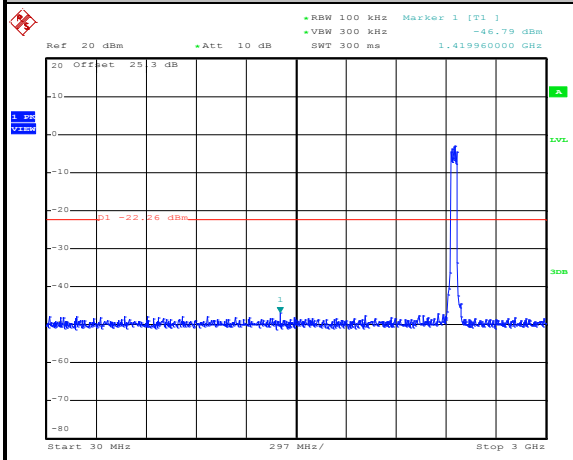
Date: 8.MAY.2015 00:05:39

High Channel Plot



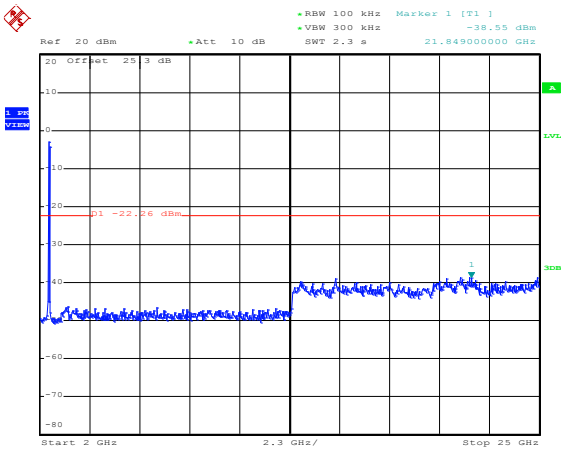
Date: 8.MAY.2015 00:05:58

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:07:31

Spurious Emission 2GHz~25GHz



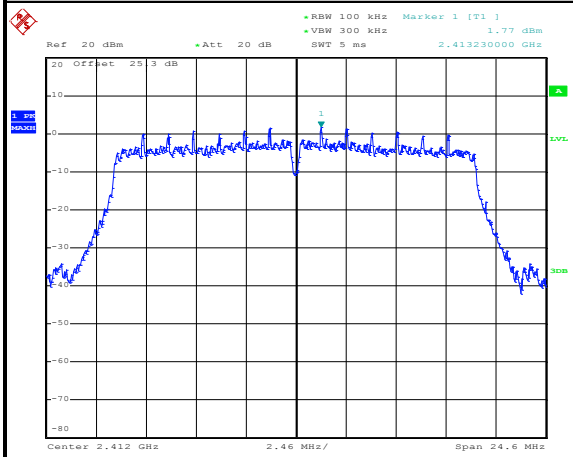
Date: 8.MAY.2015 00:06:39

Number of TX = 2, Ant. 1 (Measured)

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Bill Kuo

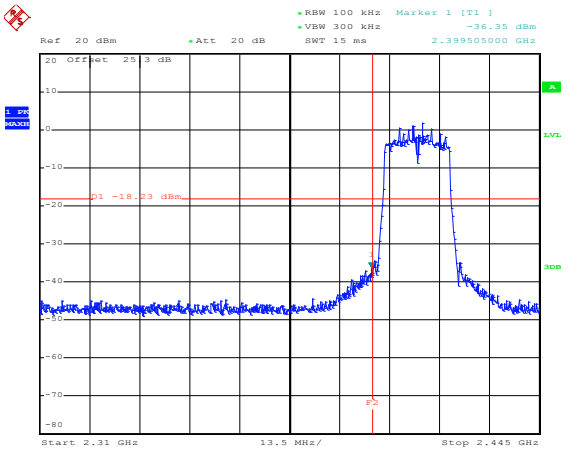
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



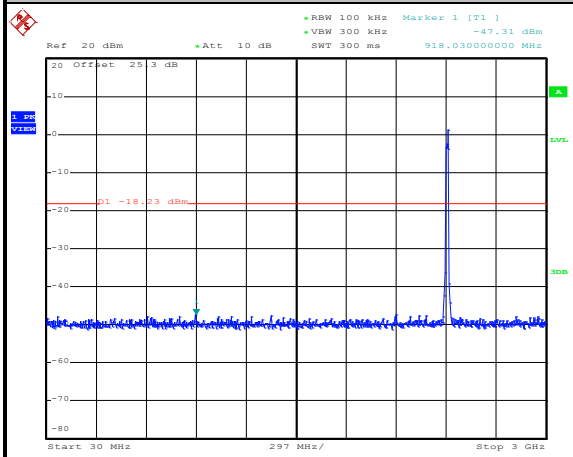
Date: 7.MAY.2015 23:41:31

Low Channel Plot



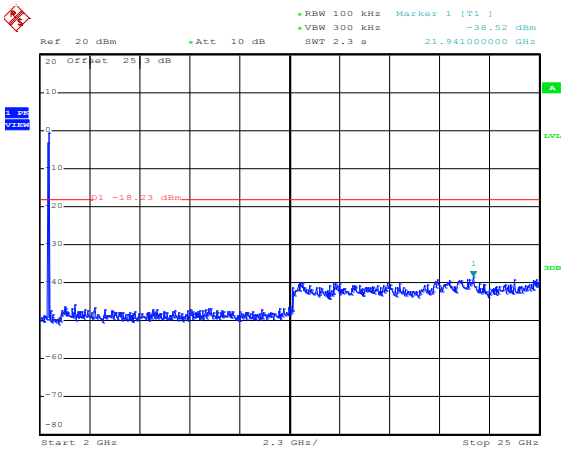
Date: 7.MAY.2015 23:41:48

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:42:15

Spurious Emission 2GHz~25GHz

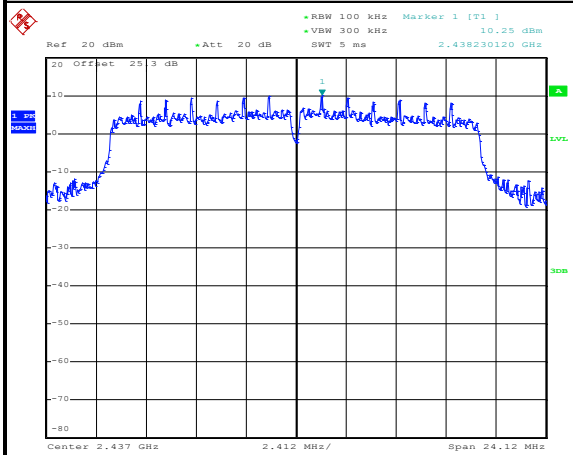


Date: 7.MAY.2015 23:42:33

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

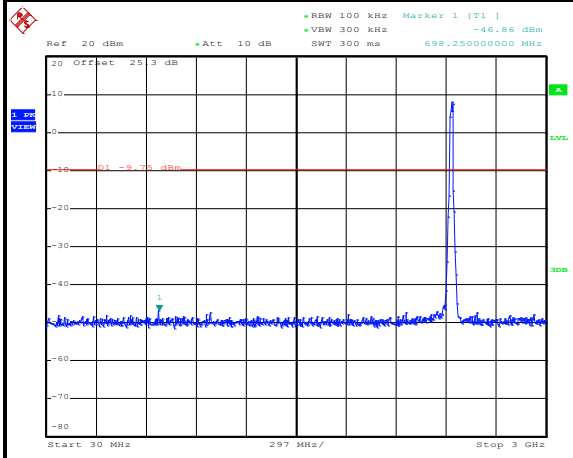
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



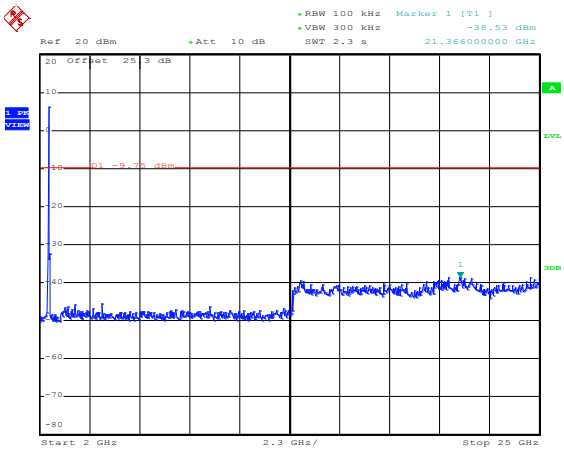
Date: 7.MAY.2015 23:37:34

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:38:03

Spurious Emission 2GHz~25GHz

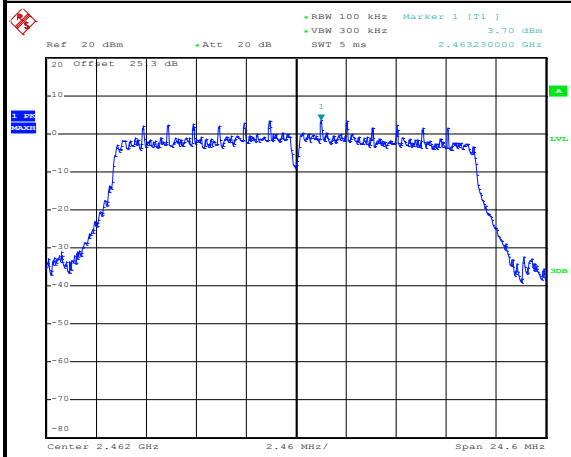


Date: 7.MAY.2015 23:38:21

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Bill Kuo

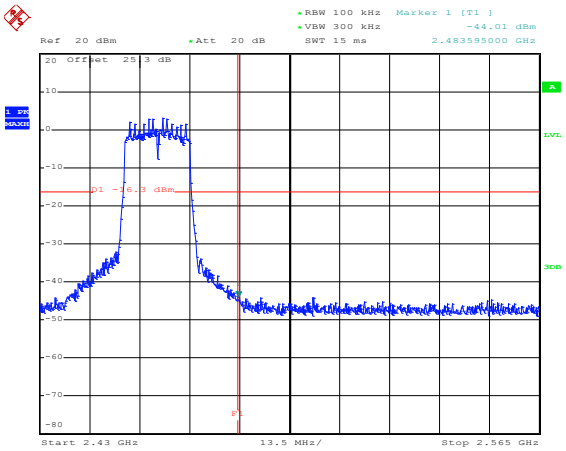
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



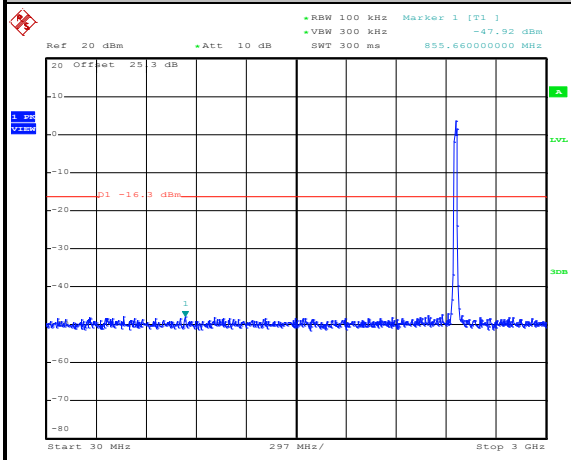
Date: 7.MAY.2015 23:23:28

High Channel Plot



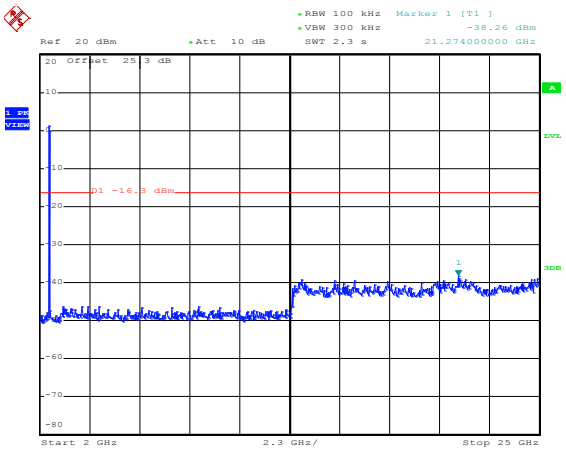
Date: 7.MAY.2015 23:23:44

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:24:09

Spurious Emission 2GHz~25GHz

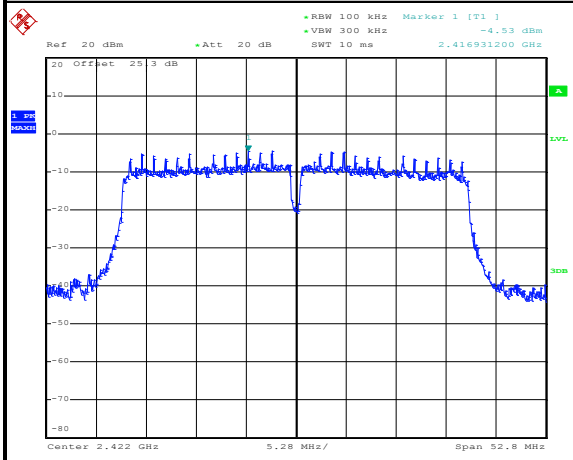


Date: 7.MAY.2015 23:24:27

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	03	**Test Engineer :**	Bill Kuo

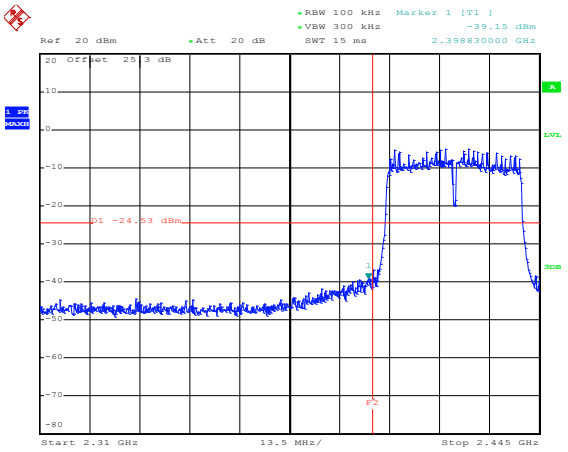
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



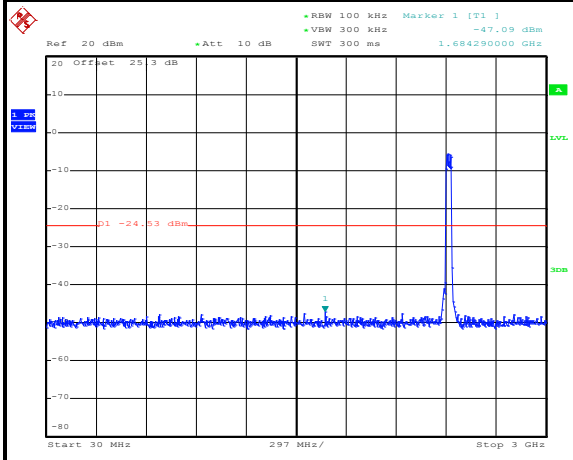
Date: 8.MAY.2015 00:25:08

Low Channel Plot



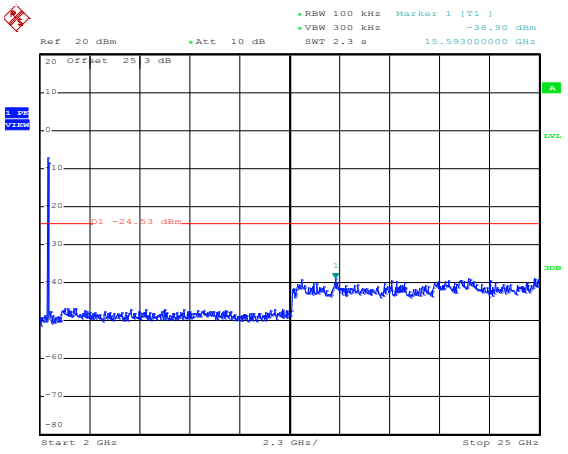
Date: 8.MAY.2015 00:25:25

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:26:34

Spurious Emission 2GHz~25GHz

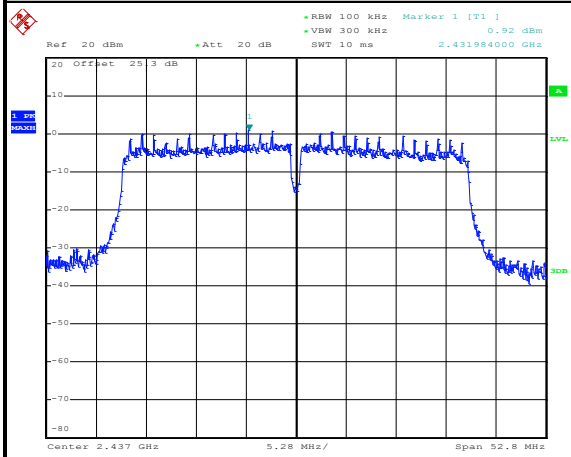


Date: 8.MAY.2015 00:26:05

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

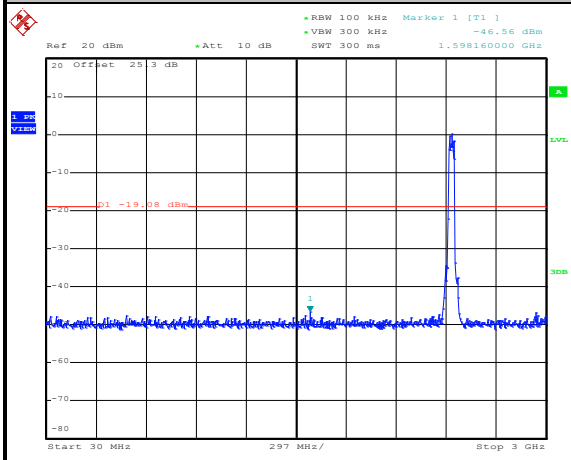
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



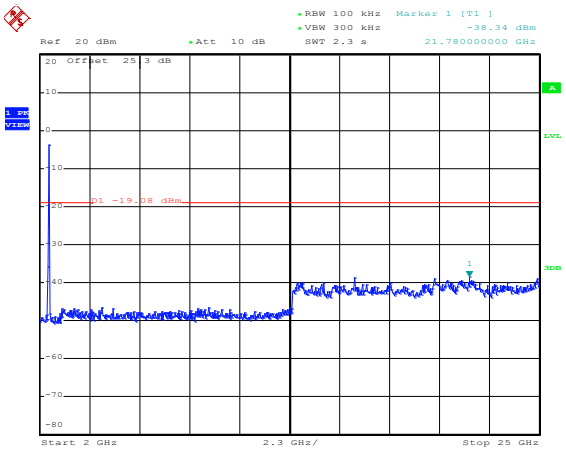
Date: 8.MAY.2015 00:21:29

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:21:50

Spurious Emission 2GHz~25GHz

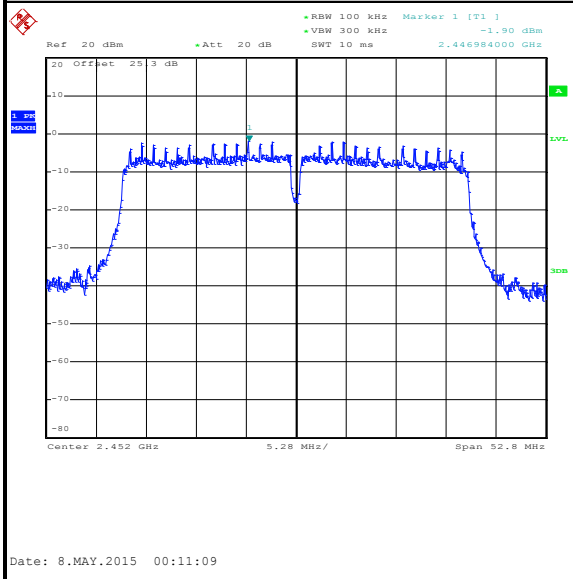


Date: 8.MAY.2015 00:22:08

Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	09	Test Engineer :	Bill Kuo

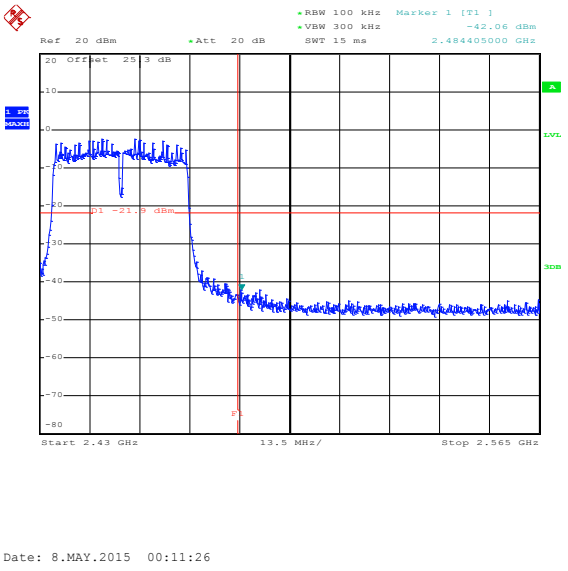
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



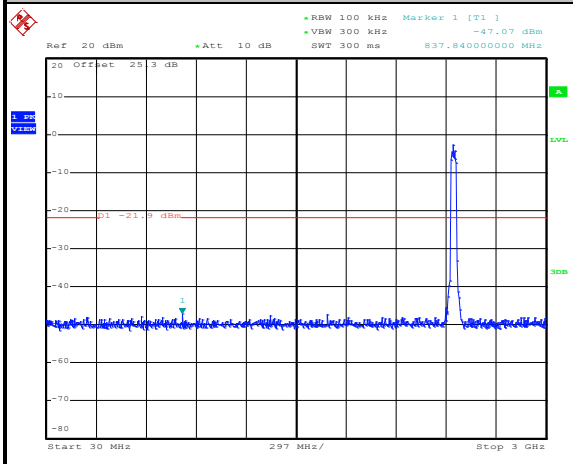
Date: 8.MAY.2015 00:11:09

High Channel Plot



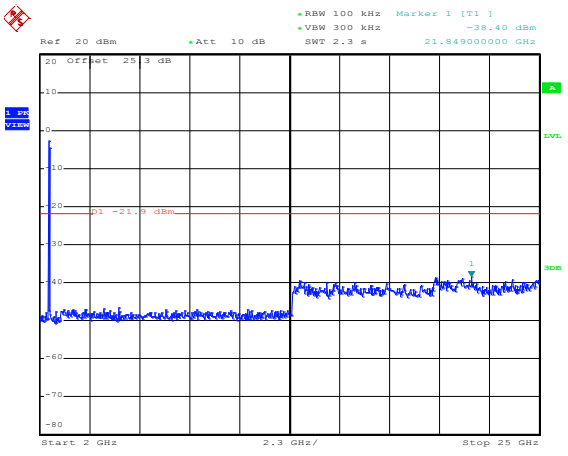
Date: 8.MAY.2015 00:11:26

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:11:49

Spurious Emission 2GHz~25GHz



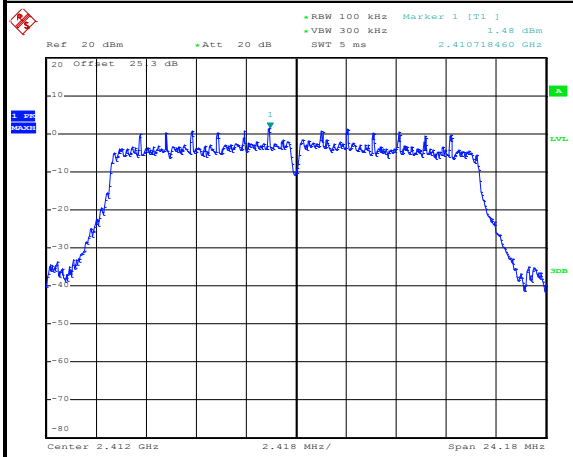
Date: 8.MAY.2015 00:12:07

Number of TX = 2, Ant. 2 (Measured)

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Bill Kuo

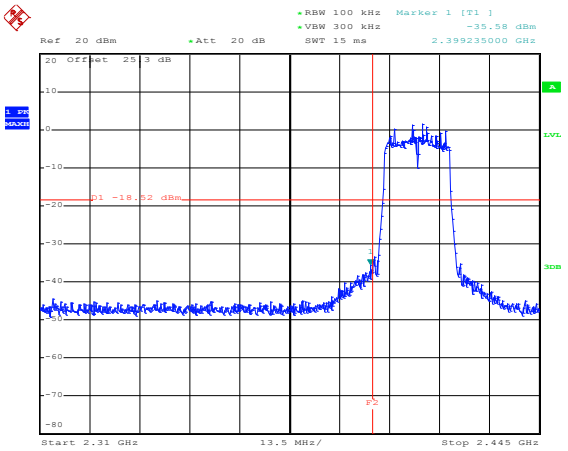
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



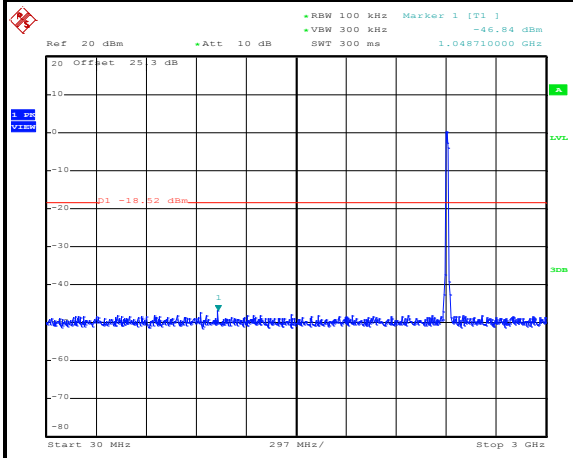
Date: 7.MAY.2015 23:45:42

Low Channel Plot



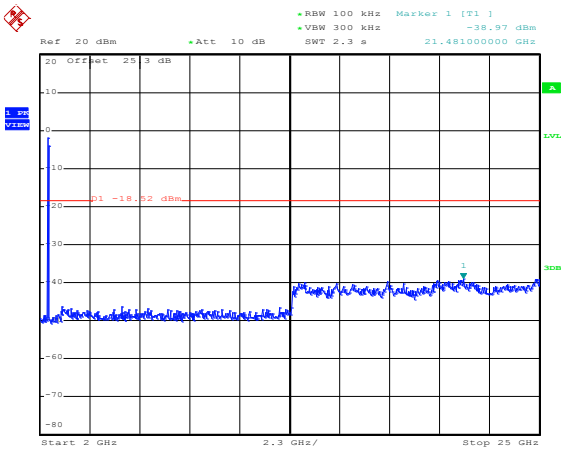
Date: 7.MAY.2015 23:46:00

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:46:22

Spurious Emission 2GHz~25GHz

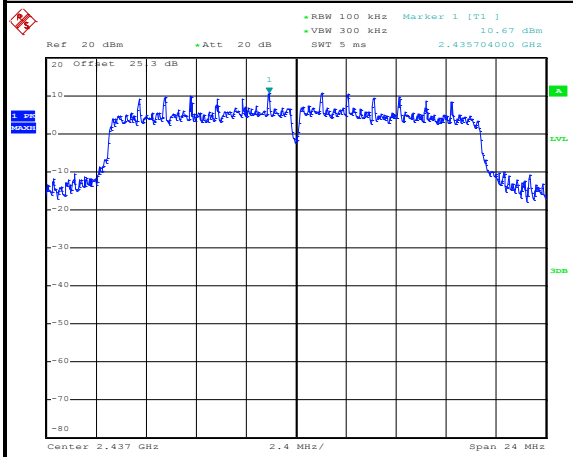


Date: 7.MAY.2015 23:46:40

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

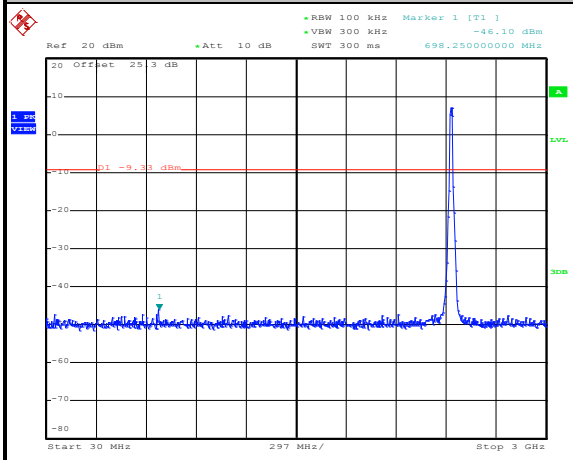
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



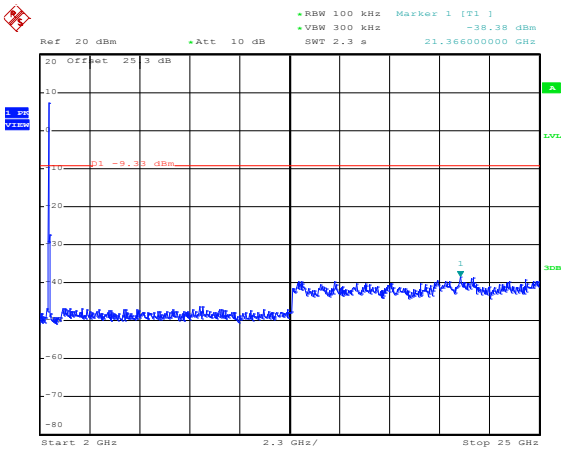
Date: 7.MAY.2015 23:33:43

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:34:06

Spurious Emission 2GHz~25GHz

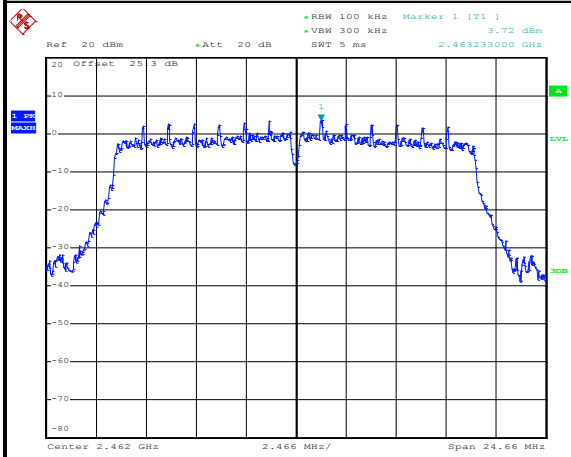


Date: 7.MAY.2015 23:34:24

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Bill Kuo

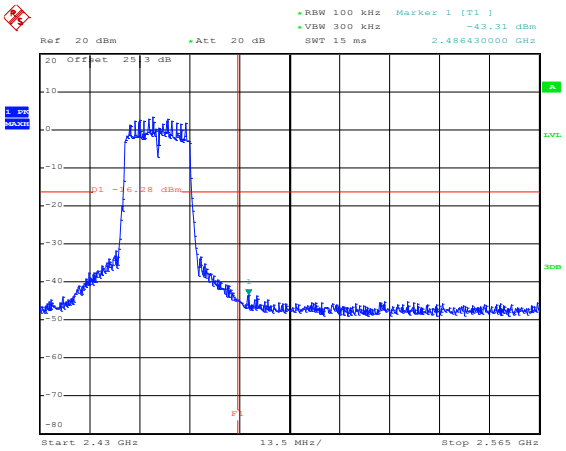
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



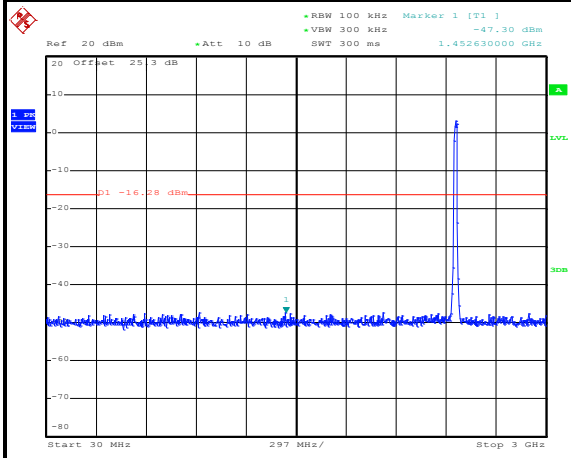
Date: 7.MAY.2015 23:26:56

High Channel Plot



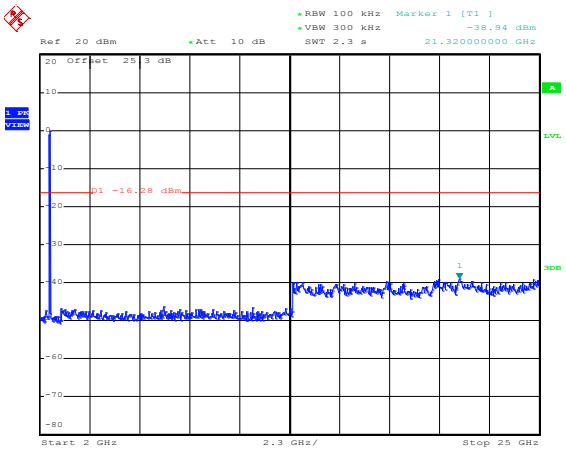
Date: 7.MAY.2015 23:27:29

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 23:27:52

Spurious Emission 2GHz~25GHz

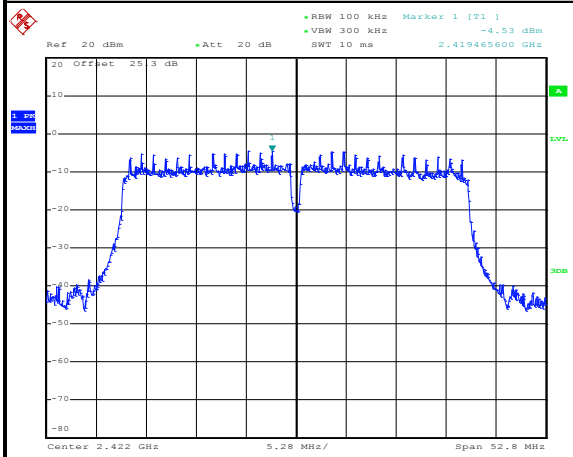


Date: 7.MAY.2015 23:28:10

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	51~54%
Test Channel :	03	**Test Engineer :**	Bill Kuo

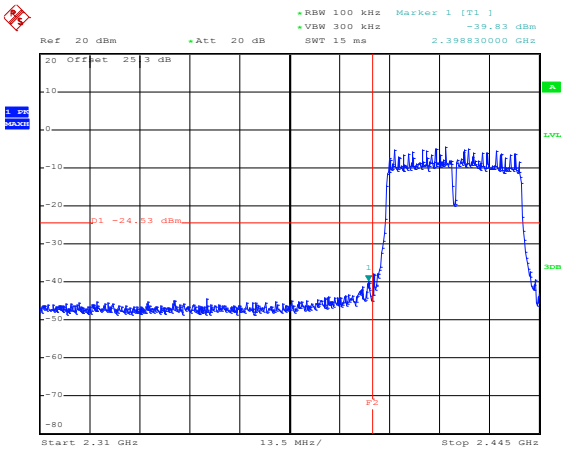
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



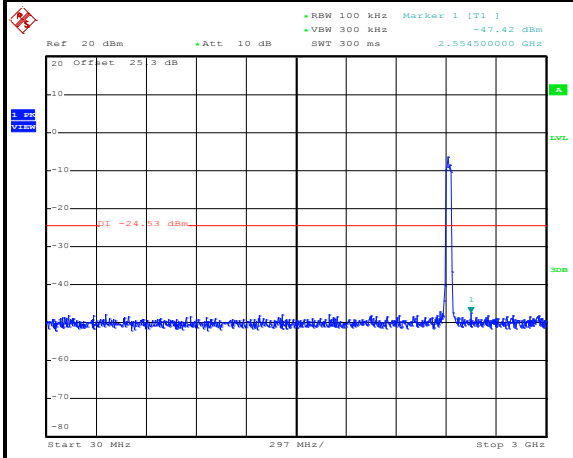
Date: 8.MAY.2015 00:28:55

Low Channel Plot



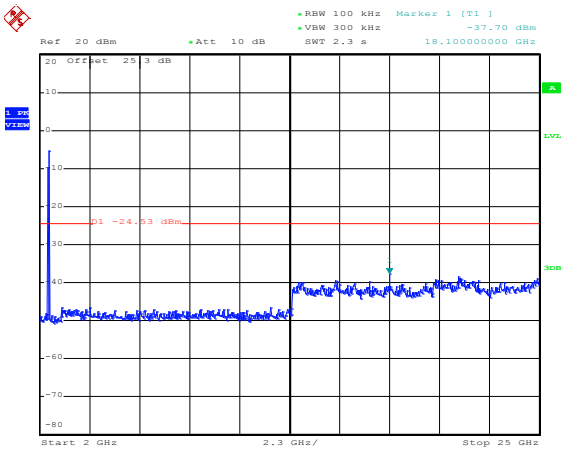
Date: 8.MAY.2015 00:29:15

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:30:21

Spurious Emission 2GHz~25GHz

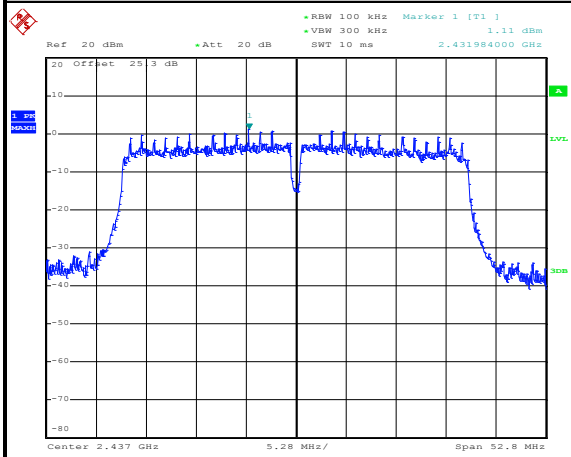


Date: 8.MAY.2015 00:29:54

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	51~54%
Test Channel :	06	**Test Engineer :**	Bill Kuo

WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



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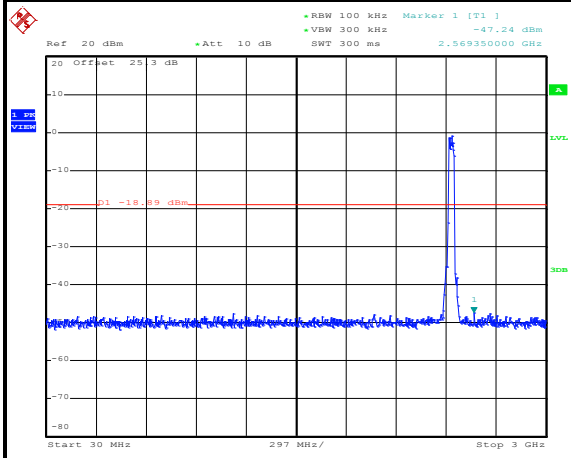
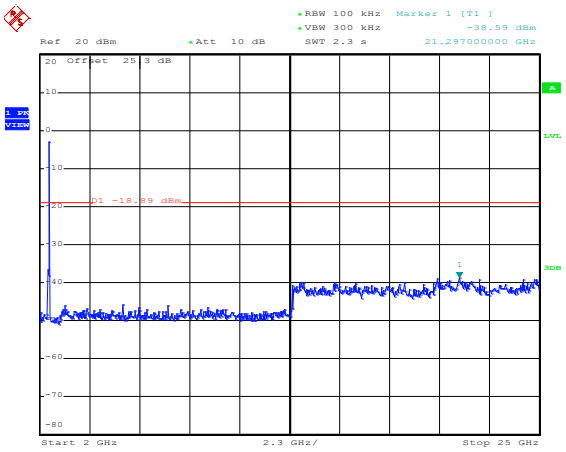
Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:19:25

Spurious Emission 2GHz~25GHz

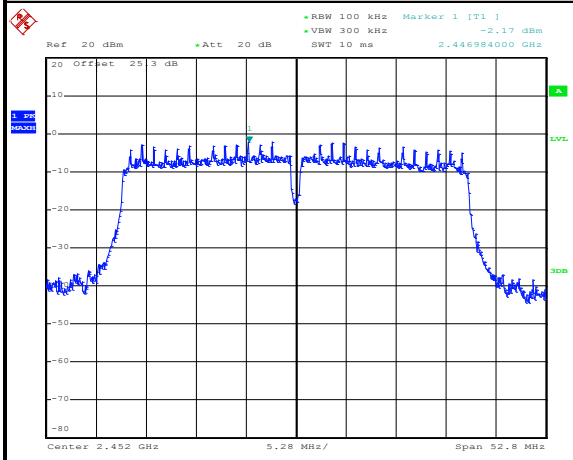


Date: 8.MAY.2015 00:19:00

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT40	**Temperature :**	21~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	51~54%
Test Channel :	09	**Test Engineer :**	Bill Kuo

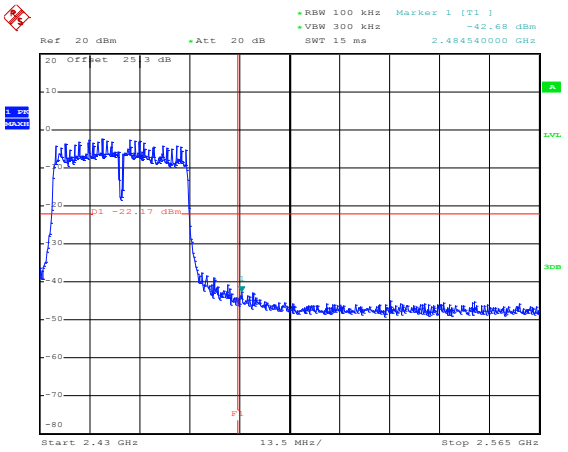
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



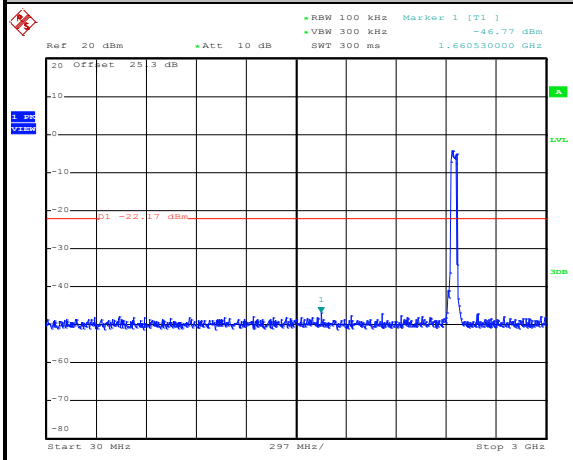
Date: 8.MAY.2015 00:14:27

High Channel Plot



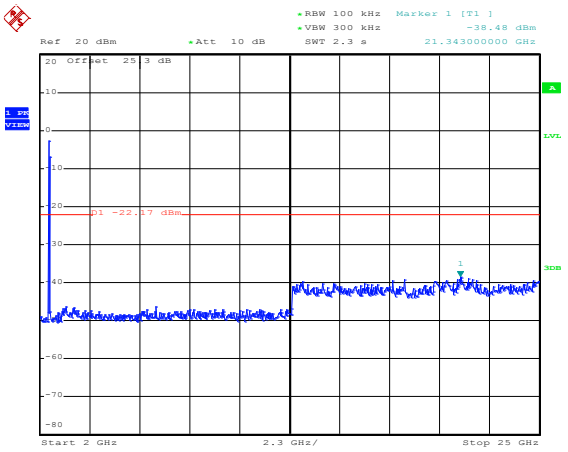
Date: 8.MAY.2015 00:14:44

Spurious Emission 30MHz~3GHz



Date: 8.MAY.2015 00:15:08

Spurious Emission 2GHz~25GHz



Date: 8.MAY.2015 00:15:26

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

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

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

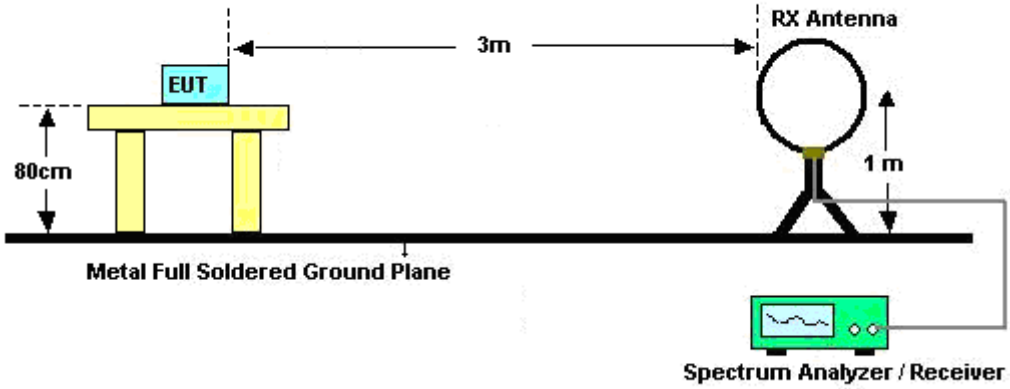
3.5.3 Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03.
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 for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively 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 - Preamp 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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.

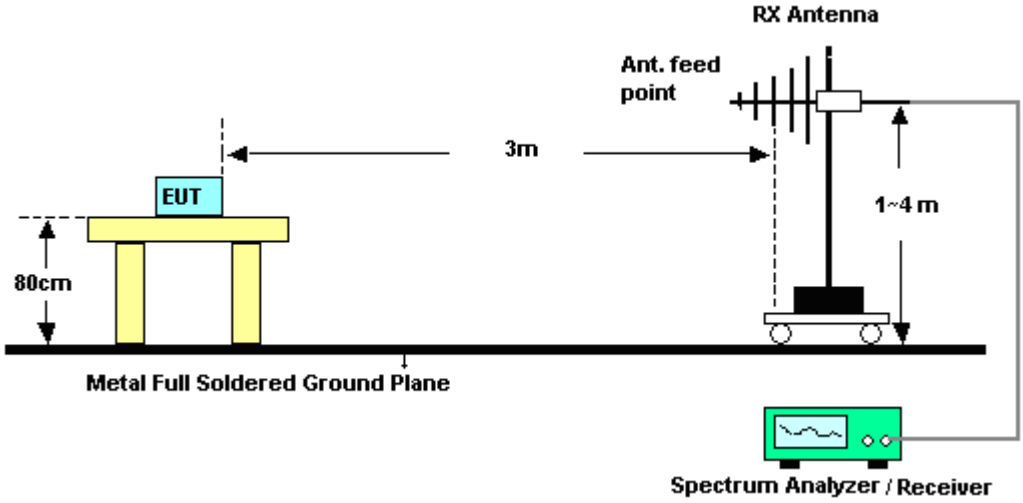
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	98.20	-	-	10Hz
1	802.11g	90.91	2040.00	0.49	1kHz
1	2.4GHz 802.11n HT20	90.23	1884.00	0.53	1kHz
1+2	2.4GHz 802.11n HT20 for Ant 1	89.95	1880.00	0.53	1kHz
1+2	2.4GHz 802.11n HT20 for Ant 2	90.00	1890.00	0.53	1kHz
1	2.4GHz 802.11n HT40	82.27	928.00	1.08	2kHz
1+2	2.4GHz 802.11n HT40 for Ant 1	82.27	928.00	1.08	2kHz
1+2	2.4GHz 802.11n HT40 for Ant 2	81.56	920.00	1.09	2kHz

3.5.4 Test Setup

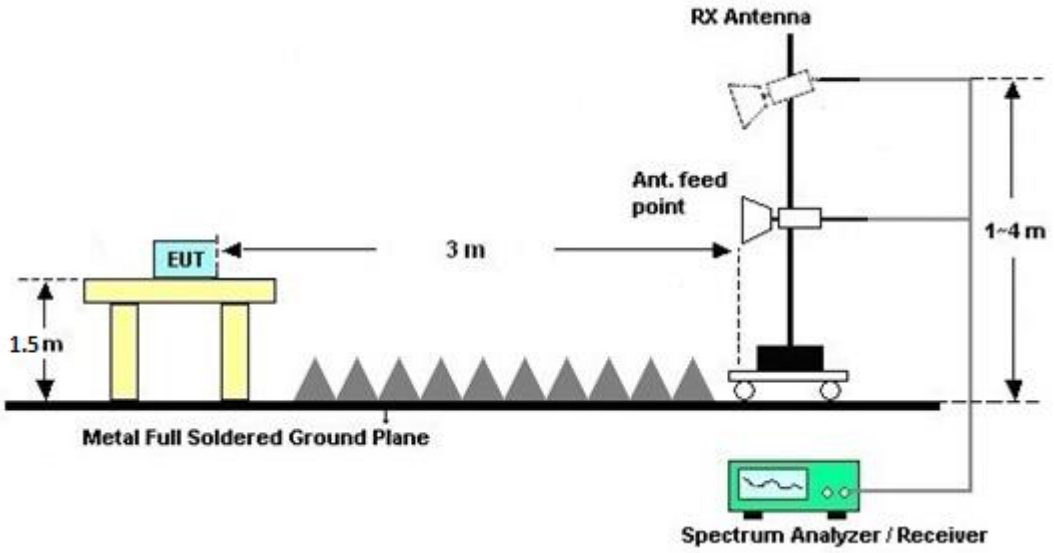
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

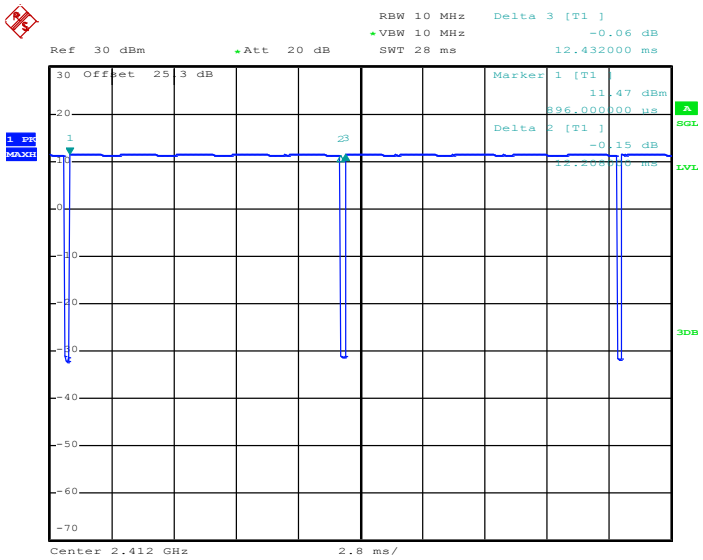
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B of this report.

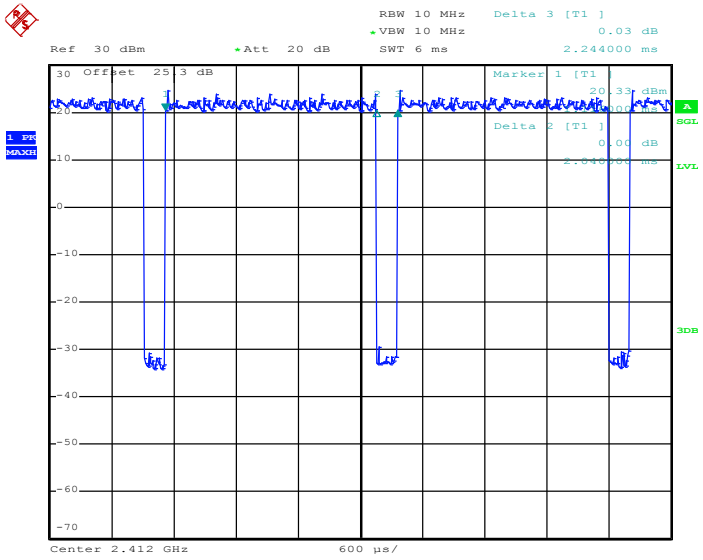
3.5.7 Duty Cycle

802.11b Ant. 1



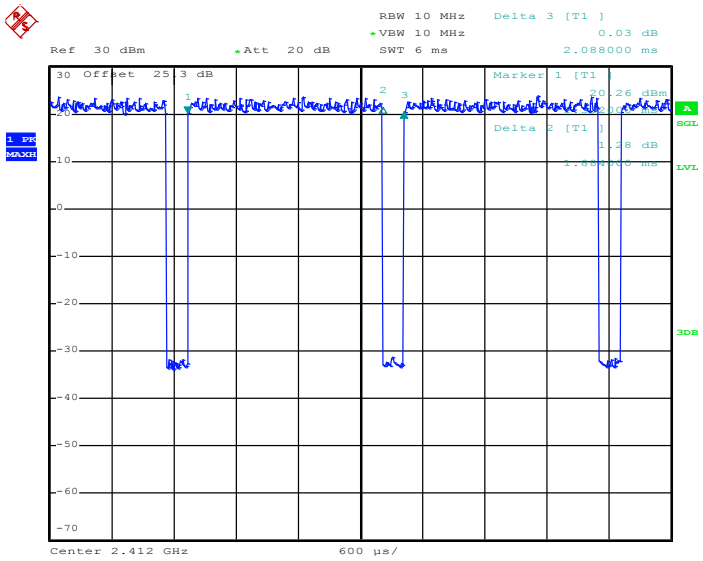
Date: 5.MAY.2015 20:20:39

802.11g Ant. 1



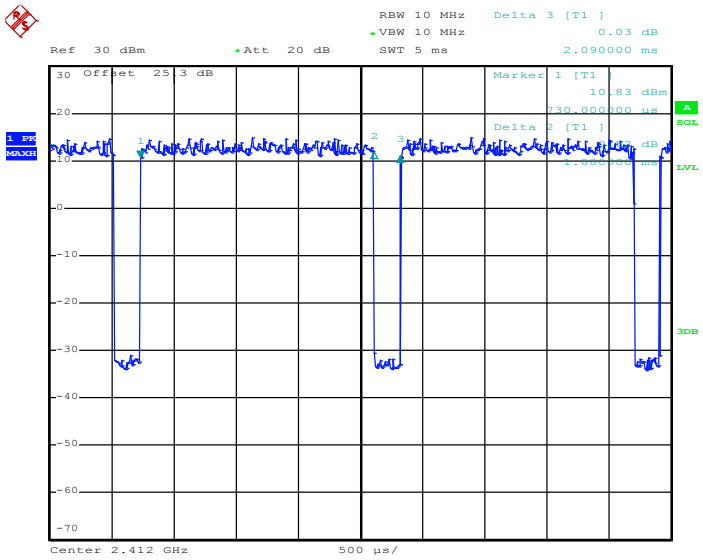
Date: 5.MAY.2015 20:22:52

802.11n HT20 SISO Ant. 1



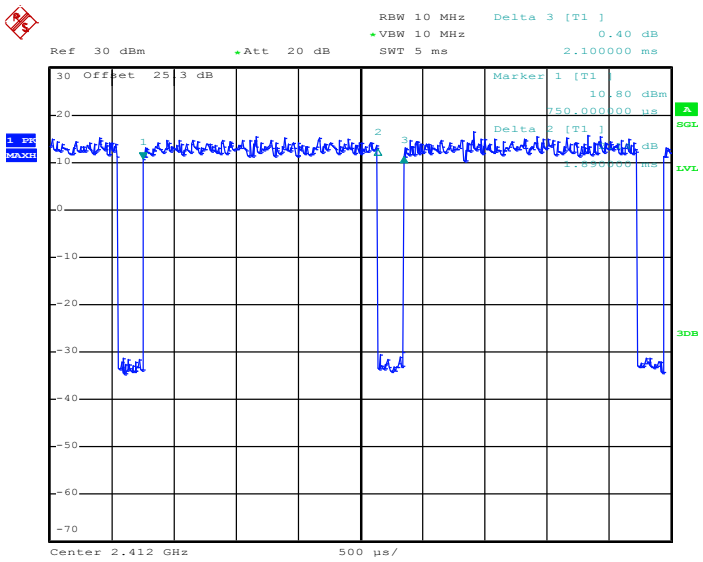
Date: 5.MAY.2015 20:25:56

802.11n HT20 CDD Ant. 1+2(1)



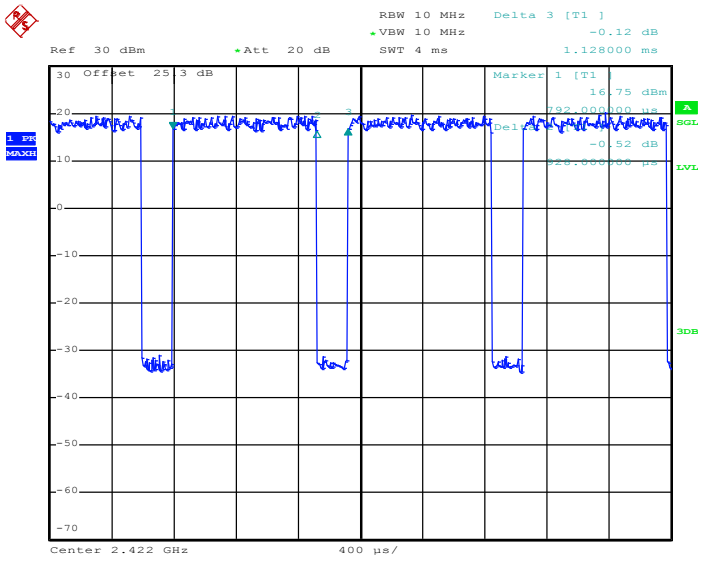
Date: 5.MAY.2015 20:31:57

802.11n HT20 CDD Ant. 1+2(2)



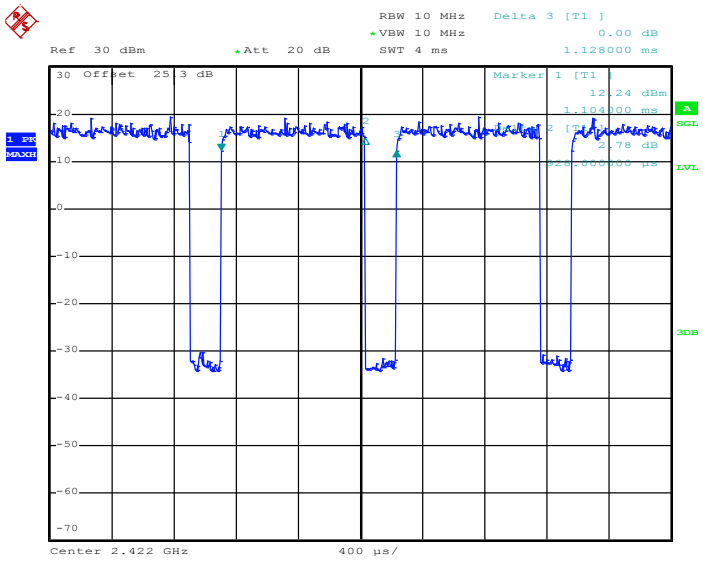
Date: 5.MAY.2015 20:32:49

802.11n HT40 SISO Ant. 1



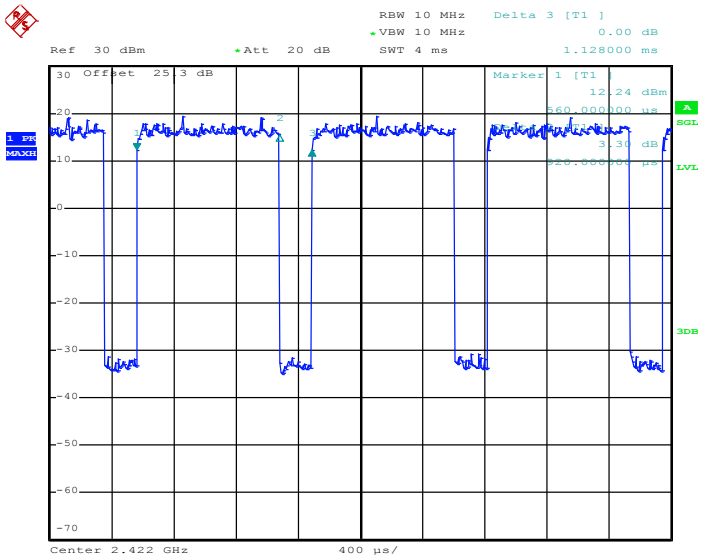
Date: 5.MAY.2015 20:41:04

802.11n HT40 CDD Ant. 1+2(1)



Date: 5.MAY.2015 20:38:50

802.11n HT40 CDD Ant. 1+2(2)



Date: 5.MAY.2015 20:39:15

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

Please refer to Appendix B of this report.

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 (dBμV)	
	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.

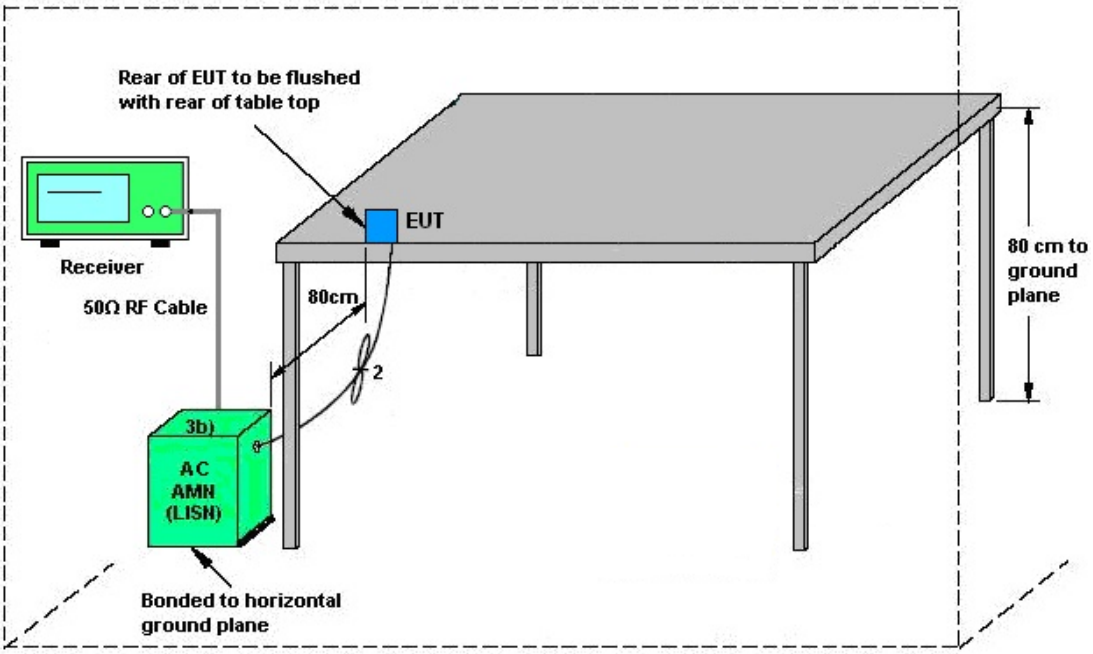
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

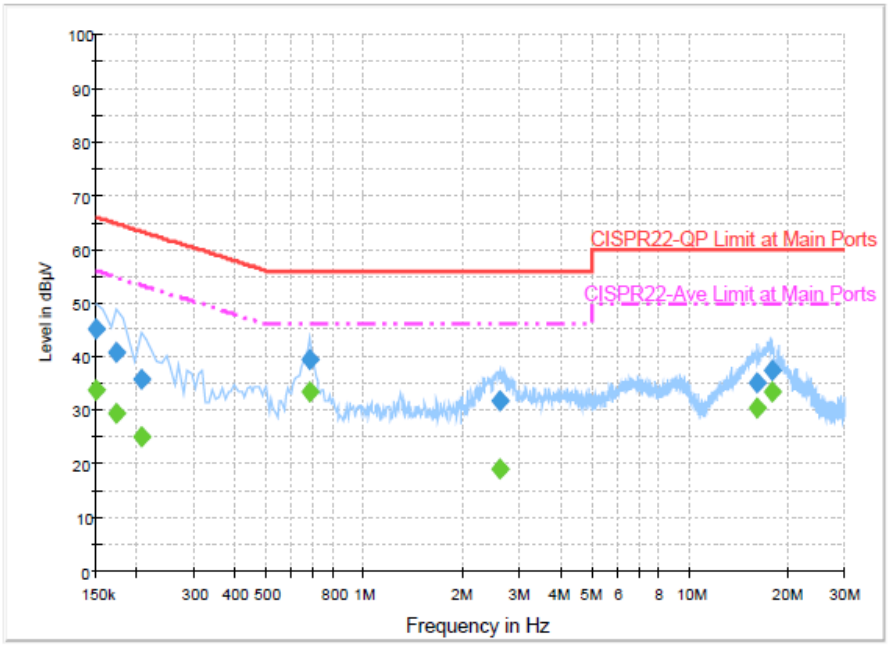
3.6.4 Test Setup



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 :**	22~24℃
Test Engineer :	Eric Jeng	**Relative Humidity :**	60~63%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 (4k) + HDMI Cable (4k Resolution) + MicroSD Card (No Streaming) + RJ-45 (LAN) Load + USB flash drive (Streaming) + Adapter		



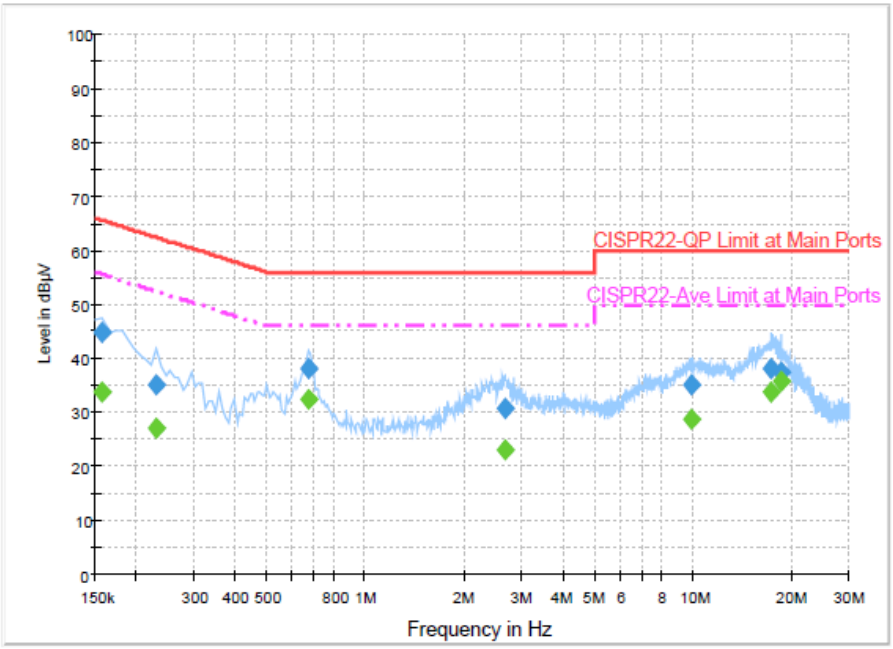
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.0	Off	L1	19.5	21.0	66.0
0.174000	40.7	Off	L1	19.5	24.1	64.8
0.206000	35.7	Off	L1	19.4	27.7	63.4
0.678000	39.4	Off	L1	19.6	16.6	56.0
2.622000	31.6	Off	L1	19.7	24.4	56.0
16.182000	35.1	Off	L1	20.0	24.9	60.0
18.054000	37.4	Off	L1	20.0	22.6	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	33.8	Off	L1	19.5	22.2	56.0
0.174000	29.3	Off	L1	19.5	25.5	54.8
0.206000	25.2	Off	L1	19.4	28.2	53.4
0.678000	33.5	Off	L1	19.6	12.5	46.0
2.622000	19.2	Off	L1	19.7	26.8	46.0
16.182000	30.3	Off	L1	20.0	19.7	50.0
18.054000	33.3	Off	L1	20.0	16.7	50.0

Test Mode :	Mode 1	**Temperature :**	22~24℃
Test Engineer :	Eric Jeng	**Relative Humidity :**	60~63%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 (4k) + HDMI Cable (4k Resolution) + MicroSD Card (No Streaming) + RJ-45 (LAN) Load + USB flash drive (Streaming) + Adapter		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	44.7	Off	N	19.5	20.9	65.6
0.230000	35.2	Off	N	19.6	27.2	62.4
0.670000	38.1	Off	N	19.5	17.9	56.0
2.662000	30.9	Off	N	19.7	25.1	56.0
9.902000	35.0	Off	N	19.9	25.0	60.0
17.366000	38.2	Off	N	20.0	21.8	60.0
18.638000	37.3	Off	N	20.1	22.7	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	33.9	Off	N	19.5	21.7	55.6
0.230000	27.1	Off	N	19.6	25.3	52.4
0.670000	32.3	Off	N	19.5	13.7	46.0
2.662000	23.1	Off	N	19.7	22.9	46.0
9.902000	28.7	Off	N	19.9	21.3	50.0
17.366000	33.7	Off	N	20.0	16.3	50.0
18.638000	35.8	Off	N	20.1	14.2	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 Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

For CDD and beamforming transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports CDD mode and beamforming.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	4.20	4.60	7.41	7.41	1.41	1.41

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 09, 2014	May 05, 2015 ~ May 08, 2015	Aug. 08, 2015	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 11, 2014	May 05, 2015 ~ May 08, 2015	Aug. 10, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	May 05, 2015 ~ May 08, 2015	Jun. 08, 2015	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz – 2.75GHz	Dec. 01, 2014	Jun. 04, 2015	Nov. 30, 2015	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2014	Jun. 04, 2015	Dec. 01, 2015	Conduction (CO05-HY)
AC Power Source()	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 04, 2015	N/A	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 08, 2014	Jun. 04, 2015	Dec. 07, 2015	Conduction (CO05-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	May 06, 2015 ~ May 15, 2015	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2014	May 06, 2015 ~ May 15, 2015	Aug. 18, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2014	May 06, 2015 ~ May 15, 2015	Aug. 29, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 03, 2014	May 06, 2015 ~ May 15, 2015	Nov. 02, 2015	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	May 06, 2015 ~ May 15, 2015	Jul. 27, 2015	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz ~ 18GHz	Apr. 20, 2015	May 06, 2015 ~ May 15, 2015	Apr. 19, 2016	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 12, 2015	May 06, 2015 ~ May 15, 2015	Mar. 11, 2016	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 21, 2014	May 06, 2015 ~ May 15, 2015	Oct. 20, 2015	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Mar. 10, 2015	May 06, 2015 ~ May 15, 2015	Mar. 09, 2016	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	May 06, 2015 ~ May 15, 2015	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	May 06, 2015 ~ May 15, 2015	N/A	Radiation (03CH07-HY)
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 09, 2014	May 06, 2015 ~ May 15, 2015	Jun. 08, 2015	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Sep. 17, 2014	May 06, 2015 ~ May 15, 2015	Sep. 16, 2015	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50**

Appendix A. Conducted Test Results

Test Engineer:	Bill Kuo	Temperature:	21~25	°C
Test Date:	2015/5/5~2015/5/8	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2		
11b	1Mbps	1	1	2412			10.08		0.50	Pass
11b	1Mbps	1	6	2437			10.08		0.50	Pass
11b	1Mbps	1	11	2462			10.08		0.50	Pass
11g	6Mbps	1	1	2412			15.80		0.50	Pass
11g	6Mbps	1	6	2437			15.52		0.50	Pass
11g	6Mbps	1	11	2462			16.04		0.50	Pass
HT20	MCS0	1	1	2412			16.96		0.50	Pass
HT20	MCS0	1	6	2437			16.36		0.50	Pass
HT20	MCS0	1	11	2462			16.66		0.50	Pass
HT40	MCS0	1	3	2422			35.20		0.50	Pass
HT40	MCS0	1	6	2437			35.20		0.50	Pass
HT40	MCS0	1	9	2452			35.20		0.50	Pass
HT20	MCS0	2	1	2412			16.40	16.12	0.50	Pass
HT20	MCS0	2	6	2437			16.08	16.00	0.50	Pass
HT20	MCS0	2	11	2462			16.40	16.44	0.50	Pass
HT40	MCS0	2	3	2422			35.20	35.20	0.50	Pass
HT40	MCS0	2	6	2437			35.20	35.20	0.50	Pass
HT40	MCS0	2	9	2452			35.20	35.20	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	22.41			30.00	30.00	4.20	4.60	26.61		36.00	36.00	Pass
11b	1Mbps	1	6	2437	20.35			30.00	30.00	4.20	4.60	24.55		36.00	36.00	Pass
11b	1Mbps	1	11	2462	19.45			30.00	30.00	4.20	4.60	23.65		36.00	36.00	Pass
11g	6Mbps	1	1	2412	23.02			30.00	30.00	4.20	4.60	27.22		36.00	36.00	Pass
11g	6Mbps	1	2	2417	24.79			30.00	30.00	4.20	4.60	28.99		36.00	36.00	Pass
11g	6Mbps	1	6	2437	25.84			30.00	30.00	4.20	4.60	30.04		36.00	36.00	Pass
11g	6Mbps	1	10	2457	24.53			30.00	30.00	4.20	4.60	28.73		36.00	36.00	Pass
11g	6Mbps	1	11	2462	23.85			30.00	30.00	4.20	4.60	28.05		36.00	36.00	Pass
HT20	MCS0	1	1	2412	22.25			30.00	30.00	4.20	4.60	26.45		36.00	36.00	Pass
HT20	MCS0	1	2	2417	24.46			30.00	30.00	4.20	4.60	28.66		36.00	36.00	Pass
HT20	MCS0	1	6	2437	25.80			30.00	30.00	4.20	4.60	30.00		36.00	36.00	Pass
HT20	MCS0	1	10	2457	24.61			30.00	30.00	4.20	4.60	28.81		36.00	36.00	Pass
HT20	MCS0	1	11	2462	22.39			30.00	30.00	4.20	4.60	26.59		36.00	36.00	Pass
HT40	MCS0	1	3	2422	17.61			30.00	30.00	4.20	4.60	21.81		36.00	36.00	Pass
HT40	MCS0	1	4	2427	19.70			30.00	30.00	4.20	4.60	23.90		36.00	36.00	Pass
HT40	MCS0	1	6	2437	22.66			30.00	30.00	4.20	4.60	26.86		36.00	36.00	Pass
HT40	MCS0	1	8	2447	20.55			30.00	30.00	4.20	4.60	24.75		36.00	36.00	Pass
HT40	MCS0	1	9	2452	20.99			30.00	30.00	4.20	4.60	25.19		36.00	36.00	Pass
HT20	MCS0	2	1	2412	21.66	21.78	24.73	28.59		7.41		32.14		36.00		Pass
HT20	MCS0	2	2	2417	24.05	24.24	27.16	28.59		7.41		34.57		36.00		Pass
HT20	MCS0	2	6	2437	25.51	25.55	28.54	28.59		7.41		35.95		36.00		Pass
HT20	MCS0	2	10	2457	24.44	24.50	27.48	28.59		7.41		34.89		36.00		Pass
HT20	MCS0	2	11	2462	23.55	23.55	26.56	28.59		7.41		33.97		36.00		Pass
HT40	MCS0	2	3	2422	18.22	19.01	21.64	28.59		7.41		29.06		36.00		Pass
HT40	MCS0	2	4	2427	19.77	19.36	22.58	28.59		7.41		29.99		36.00		Pass
HT40	MCS0	2	6	2437	22.99	23.59	26.31	28.59		7.41		33.72		36.00		Pass
HT40	MCS0	2	8	2447	21.29	21.18	24.25	28.59		7.41		31.66		36.00		Pass
HT40	MCS0	2	9	2452	21.21	20.99	24.11	28.59		7.41		31.52		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power

2.4GHz Band									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11b	1Mbps	1	1	2412	0.08		19.19		
11b	1Mbps	1	6	2437	0.08		17.07		
11b	1Mbps	1	11	2462	0.08		16.07		
11g	6Mbps	1	1	2412	0.41		13.82		
11g	6Mbps	1	2	2417	0.41		17.38		
11g	6Mbps	1	6	2437	0.41		20.76		
11g	6Mbps	1	10	2457	0.41		16.48		
11g	6Mbps	1	11	2462	0.41		14.40		
HT20	MCS0	1	1	2412	0.45		12.94		
HT20	MCS0	1	2	2417	0.45		15.16		
HT20	MCS0	1	6	2437	0.45		20.70		
HT20	MCS0	1	10	2457	0.45		16.80		
HT20	MCS0	1	11	2462	0.45		13.36		
HT40	MCS0	1	3	2422	0.85		8.10		
HT40	MCS0	1	4	2427	0.85		10.59		
HT40	MCS0	1	6	2437	0.85		14.24		
HT40	MCS0	1	8	2447	0.85		11.48		
HT40	MCS0	1	9	2452	0.85		11.30		
HT20	MCS0	2	1	2412	0.46	0.46	12.31	12.15	15.24
HT20	MCS0	2	2	2417	0.46	0.46	15.85	15.88	18.87
HT20	MCS0	2	6	2437	0.46	0.46	20.13	20.74	23.45
HT20	MCS0	2	10	2457	0.46	0.46	16.65	16.89	19.78
HT20	MCS0	2	11	2462	0.46	0.46	14.24	14.32	17.29
HT40	MCS0	2	3	2422	0.85	0.89	8.94	9.21	12.08
HT40	MCS0	2	4	2427	0.85	0.89	10.49	10.09	13.30
HT40	MCS0	2	6	2437	0.85	0.89	14.56	14.84	17.71
HT40	MCS0	2	8	2447	0.85	0.89	12.29	12.21	15.26
HT40	MCS0	2	9	2452	0.85	0.89	11.76	11.54	14.66

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant 1	Ant 2	Worse + 3.01	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	-6.68		-	4.20	4.60	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-8.66			4.20	4.60	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-9.33			4.20	4.60	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-12.50			4.20	4.60	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-6.04			4.20	4.60	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-13.15			4.20	4.60	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-14.18			4.20	4.60	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-6.38			4.20	4.60	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-14.14			4.20	4.60	8.00	8.00	Pass
HT40	MCS0	1	3	2422	-21.22			4.20	4.60	8.00	8.00	Pass
HT40	MCS0	1	6	2437	-15.45			4.20	4.60	8.00	8.00	Pass
HT40	MCS0	1	9	2452	-18.49			4.20	4.60	8.00	8.00	Pass
HT20	MCS0	2	1	2412	-15.23	-14.50	-11.49	7.41		6.59		Pass
HT20	MCS0	2	6	2437	-6.83	-5.83	-2.82	7.41		6.59		Pass
HT20	MCS0	2	11	2462	-13.14	-13.12	-10.11	7.41		6.59		Pass
HT40	MCS0	2	3	2422	-20.78	-20.43	-17.42	7.41		6.59		Pass
HT40	MCS0	2	6	2437	-15.91	-15.41	-12.40	7.41		6.59		Pass
HT40	MCS0	2	9	2452	-18.61	-17.68	-14.67	7.41		6.59		Pass

Measured power density (dBm) has offset with cable loss.

Appendix B. Radiated Spurious Emission

Test Engineer :	Nick Yu and Ken Wu and James Chiu	Temperature :	22~23°C
		Relative Humidity :	58~62%

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2389.92	72.89	-1.11	74	67.26	32.18	7.75	34.3	102	122	P	H
		2387.94	52	-2	54	46.34	32.18	7.75	34.27	102	122	A	H
	*	2410.271	116.17	-	-	110.52	32.2	7.75	34.3	102	122	P	H
	*	2409.185	110.94	-	-	105.29	32.2	7.75	34.3	102	122	A	H
													H
													H
		2389.56	64.36	-9.64	74	58.7	32.18	7.75	34.27	309	100	P	V
		2387.94	46.93	-7.07	54	41.27	32.18	7.75	34.27	309	100	A	V
	*	2410.521	111.91	-	-	106.26	32.2	7.75	34.3	309	100	P	V
	*	2409.185	106.55	-	-	100.9	32.2	7.75	34.3	309	100	A	V
													V
													V
802.11b CH 06 2437MHz		2374.17	61.05	-12.95	74	55.48	32.16	7.68	34.27	102	130	P	H
		2345.91	47.42	-6.58	54	41.88	32.11	7.68	34.25	102	130	A	H
	*	2437	114.23	-	-	108.51	32.24	7.83	34.35	102	130	P	H
	*	2437	109.49	-	-	103.77	32.24	7.83	34.35	102	130	A	H
		2496.96	60.2	-13.8	74	54.47	32.3	7.91	34.48	102	130	P	H
		2497.44	46.43	-7.57	54	40.7	32.3	7.91	34.48	102	130	A	H
		2364	59.1	-14.9	74	53.54	32.13	7.68	34.25	396	78	P	V
		2332.14	45.31	-8.69	54	39.84	32.09	7.6	34.22	396	78	A	V
	*	2437	109.75	-	-	104.03	32.24	7.83	34.35	396	78	P	V
	*	2437	104.24	-	-	98.52	32.24	7.83	34.35	396	78	A	V
		2492.24	59.06	-14.94	74	53.33	32.3	7.91	34.48	396	78	P	V
		2488.48	44.91	-9.09	54	39.13	32.3	7.91	34.43	396	78	A	V

802.11b CH 11 2462MHz	*	2462	112.93	-	-	107.15	32.26	7.91	34.39	100	126	P	H
	*	2462	107.98	-	-	102.2	32.26	7.91	34.39	100	126	A	H
		2483.52	69.86	-4.14	74	64.1	32.28	7.91	34.43	100	126	P	H
		2487.12	49.04	-4.96	54	43.28	32.28	7.91	34.43	100	126	A	H
													H
													H
	*	2462	106.62	-	-	100.84	32.26	7.91	34.39	398	86	P	V
	*	2462	102.06	-	-	96.28	32.26	7.91	34.39	398	86	A	V
		2484.16	60.2	-13.8	74	54.44	32.28	7.91	34.43	398	86	P	V
		2487	45.13	-8.87	54	39.37	32.28	7.91	34.43	398	86	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	53.64	-20.36	74	67.86	34.26	11.16	59.64	119	239	P	H
		4824	52.55	-1.45	54	66.77	34.26	11.16	59.64	119	239	A	H
													H
													H
		4824	49.82	-24.18	74	64.04	34.26	11.16	59.64	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	55.81	-18.19	74	69.87	34.3	11.21	59.57	102	237	P	H
		4872	53.12	-0.88	54	67.18	34.3	11.21	59.57	102	237	A	H
		7308	42.41	-31.59	74	50.2	35.6	15.08	58.47	100	0	P	H
													H
		4872	48.03	-25.97	74	62.09	34.3	11.21	59.57	100	0	P	V
		7308	41.71	-32.29	74	49.5	35.6	15.08	58.47	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	55.85	-18.15	74	69.74	34.34	11.27	59.5	111	236	P	H
		4926	53.18	-0.82	54	67.07	34.34	11.27	59.5	111	236	A	H
		7386	41.54	-32.46	74	49.38	35.6	15.14	58.58	100	0	P	H
													H
		4926	51.54	-22.46	74	65.43	34.34	11.27	59.5	316	49	P	V
		4926	48.56	-5.44	54	62.45	34.34	11.27	59.5	316	49	A	V
		7386	41.49	-32.51	74	49.33	35.6	15.14	58.58	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2388.84	67.4	-6.6	74	61.74	32.18	7.75	34.27	102	121	P	H
		2390	53.27	-0.73	54	47.64	32.18	7.75	34.3	102	121	A	H
	*	2407.264	114.09	-	-	108.44	32.2	7.75	34.3	102	121	P	H
	*	2413.11	103.11	-	-	97.46	32.2	7.75	34.3	102	121	A	H
													H
													H
		2389.38	60.91	-13.09	74	55.25	32.18	7.75	34.27	307	101	P	V
		2390	48.45	-5.55	54	42.82	32.18	7.75	34.3	307	101	A	V
	*	2412	108.85	-	-	103.2	32.2	7.75	34.3	307	101	P	V
	*	2410.938	98.1	-	-	92.45	32.2	7.75	34.3	307	101	A	V
													V
													V
802.11g CH 02 2417MHz		2389.56	68.56	-5.44	74	62.9	32.18	7.75	34.27	139	40	P	H
		2390	53.43	-0.57	54	47.8	32.18	7.75	34.3	139	40	A	H
	*	2417	116.63	-	-	111.03	32.2	7.75	34.35	139	40	P	H
	*	2417	106.48	-	-	100.88	32.2	7.75	34.35	139	40	A	H
													H
													H
		2386.77	61.91	-12.09	74	56.25	32.18	7.75	34.27	345	120	P	V
		2389.74	47.73	-6.27	54	42.07	32.18	7.75	34.27	345	120	A	V
	*	2417	110.42	-	-	104.82	32.2	7.75	34.35	345	120	P	V
	*	2417	100.35	-	-	94.75	32.2	7.75	34.35	345	120	A	V
													V
													V

802.11g CH 06 2437MHz		2387.76	68.94	-5.06	74	63.28	32.18	7.75	34.27	103	125	P	H
		2389.92	52.79	-1.21	54	47.16	32.18	7.75	34.3	103	125	A	H
	*	2438.493	121.28	-	-	115.56	32.24	7.83	34.35	103	125	P	H
	*	2437.909	111	-	-	105.28	32.24	7.83	34.35	103	125	A	H
		2485.16	65.89	-8.11	74	60.13	32.28	7.91	34.43	103	125	P	H
		2483.68	50.32	-3.68	54	44.56	32.28	7.91	34.43	103	125	A	H
		2383.8	61.23	-12.77	74	55.59	32.16	7.75	34.27	398	98	P	V
		2384.88	47.62	-6.38	54	41.98	32.16	7.75	34.27	398	98	A	V
	*	2438.326	117.33	-	-	111.61	32.24	7.83	34.35	398	98	P	V
	*	2435.738	107.29	-	-	101.59	32.22	7.83	34.35	398	98	A	V
		2499.84	59.46	-14.54	74	53.73	32.3	7.91	34.48	398	98	P	V
		2487.92	46.23	-7.77	54	40.45	32.3	7.91	34.43	398	98	A	V
802.11g CH 10 2457MHz	*	2457	118.75	-	-	113.05	32.26	7.83	34.39	100	115	P	H
	*	2457	107.97	-	-	102.27	32.26	7.83	34.39	100	115	A	H
		2484.6	68.03	-5.97	74	62.27	32.28	7.91	34.43	100	115	P	H
		2483.72	53.04	-0.96	54	47.28	32.28	7.91	34.43	100	115	A	H
	*	2457	111.26	-	-	105.56	32.26	7.83	34.39	270	76	P	V
	*	2457	100.75	-	-	95.05	32.26	7.83	34.39	270	76	A	V
		2483.68	60.79	-13.21	74	55.03	32.28	7.91	34.43	270	76	P	V
		2483.52	47.04	-6.96	54	41.28	32.28	7.91	34.43	270	76	A	V
802.11g CH 11 2462MHz	*	2463.543	113.85	-	-	108.07	32.26	7.91	34.39	100	115	P	H
	*	2463.042	103.82	-	-	98.04	32.26	7.91	34.39	100	115	A	H
		2483.96	67.24	-6.76	74	61.48	32.28	7.91	34.43	100	115	P	H
		2483.76	53.12	-0.88	54	47.36	32.28	7.91	34.43	100	115	A	H
	*	2462	106.73	-	-	100.95	32.26	7.91	34.39	361	156	P	V
	*	2463.126	96.37	-	-	90.59	32.26	7.91	34.39	361	156	A	V
		2484.4	61.16	-12.84	74	55.4	32.28	7.91	34.43	361	156	P	V
		2483.64	47.67	-6.33	54	41.91	32.28	7.91	34.43	361	156	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	46.15	-27.85	74	60.37	34.26	11.16	59.64	100	0	P	H
													H
													H
													H
		4824	44.48	-29.52	74	58.7	34.26	11.16	59.64	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	56.44	-17.56	74	70.5	34.3	11.21	59.57	100	236	P	H
		4874	44.28	-9.72	54	58.34	34.3	11.21	59.57	100	236	A	H
		7311	42.07	-31.93	74	49.86	35.6	15.08	58.47	100	0	P	H
													H
		4872	47.3	-26.7	74	61.36	34.3	11.21	59.57	100	0	P	V
		7311	42.7	-31.3	74	50.49	35.6	15.08	58.47	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	52.69	-21.31	74	66.58	34.34	11.27	59.5	100	237	P	H
		4926	40.58	-13.42	54	54.47	34.34	11.27	59.5	100	237	A	H
		7386	43.34	-30.66	74	51.18	35.6	15.14	58.58	100	0	P	H
													H
		4924	47.84	-26.16	74	61.73	34.34	11.27	59.5	100	0	P	V
		7386	42.93	-31.07	74	50.77	35.6	15.14	58.58	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2389.47	68.46	-5.54	74	62.8	32.18	7.75	34.27	101	128	P	H
		2389.92	52.66	-1.34	54	47.03	32.18	7.75	34.3	101	128	A	H
	*	2413.36	111.69	-	-	106.04	32.2	7.75	34.3	101	128	P	H
	*	2413.444	101.75	-	-	96.1	32.2	7.75	34.3	101	128	A	H
802.11n													H
HT20													H
CH 01		2389.11	61.24	-12.76	74	55.58	32.18	7.75	34.27	310	100	P	V
2412MHz		2390	48.21	-5.79	54	42.58	32.18	7.75	34.3	310	100	A	V
	*	2410.438	107.52	-	-	101.87	32.2	7.75	34.3	310	100	P	V
	*	2410.438	97.5	-	-	91.85	32.2	7.75	34.3	310	100	A	V
													V
													V
		2389.2	69.22	-4.78	74	63.56	32.18	7.75	34.27	100	116	P	H
		2389.83	52.87	-1.13	54	47.24	32.18	7.75	34.3	100	116	A	H
	*	2417	115.98	-	-	110.38	32.2	7.75	34.35	100	116	P	H
	*	2417	105.94	-	-	100.34	32.2	7.75	34.35	100	116	A	H
802.11n													H
HT20													H
CH 02		2388.84	61.08	-12.92	74	55.42	32.18	7.75	34.27	347	78	P	V
2417MHz		2389.47	46.08	-7.92	54	40.42	32.18	7.75	34.27	347	78	A	V
	*	2417	109.4	-	-	103.8	32.2	7.75	34.35	347	78	P	V
	*	2417	99.41	-	-	93.81	32.2	7.75	34.35	347	78	A	V
													V
													V

		2389.38	70.4	-3.6	74	64.74	32.18	7.75	34.27	101	126	P	H
		2389.83	53.47	-0.53	54	47.84	32.18	7.75	34.3	101	126	A	H
	*	2435.822	120.73	-	-	115.03	32.22	7.83	34.35	101	126	P	H
	*	2438.577	110.6	-	-	104.88	32.24	7.83	34.35	101	126	A	H
802.11n		2488	69.69	-4.31	74	63.91	32.3	7.91	34.43	101	126	P	H
HT20		2484.24	51.27	-2.73	54	45.51	32.28	7.91	34.43	101	126	A	H
CH 06		2382.18	64.88	-9.12	74	59.24	32.16	7.75	34.27	397	100	P	V
2437MHz		2389.83	48.61	-5.39	54	42.98	32.18	7.75	34.3	397	100	A	V
	*	2435.822	117.19	-	-	111.49	32.22	7.83	34.35	397	100	P	V
	*	2435.571	106.83	-	-	101.13	32.22	7.83	34.35	397	100	A	V
		2487	60.82	-13.18	74	55.06	32.28	7.91	34.43	397	100	P	V
		2483.72	46.64	-7.36	54	40.88	32.28	7.91	34.43	397	100	A	V
	*	2457	117.41	-	-	111.71	32.26	7.83	34.39	100	114	P	H
	*	2457	107.3	-	-	101.6	32.26	7.83	34.39	100	114	A	H
802.11n		2484.16	71.95	-2.05	74	66.19	32.28	7.91	34.43	100	114	P	H
HT20		2483.6	52.63	-1.37	54	46.87	32.28	7.91	34.43	100	114	A	H
CH 10	*	2457	110.24	-	-	104.54	32.26	7.83	34.39	269	77	P	V
2457MHz	*	2457	100.22	-	-	94.52	32.26	7.83	34.39	269	77	A	V
		2484.68	63.26	-10.74	74	57.5	32.28	7.91	34.43	269	77	P	V
		2483.8	47.07	-6.93	54	41.31	32.28	7.91	34.43	269	77	A	V
	*	2462	112.89	-	-	107.11	32.26	7.91	34.39	100	126	P	H
	*	2462	102.83	-	-	97.05	32.26	7.91	34.39	100	126	A	H
802.11n		2483.68	67.39	-6.61	74	61.63	32.28	7.91	34.43	100	126	P	H
HT20		2483.8	53.13	-0.87	54	47.37	32.28	7.91	34.43	100	126	A	H
CH 11	*	2462	106.96	-	-	101.18	32.26	7.91	34.39	332	102	P	V
2462MHz	*	2462	96.84	-	-	91.06	32.26	7.91	34.39	332	102	A	V
		2483.56	64.22	-9.78	74	58.46	32.28	7.91	34.43	332	102	P	V
		2483.52	49.66	-4.34	54	43.9	32.28	7.91	34.43	332	102	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4824	44.48	-29.52	74	58.7	34.26	11.16	59.64	100	0	P	H
													H
802.11n													H
HT20													H
CH 01		4824	42.99	-31.01	74	57.21	34.26	11.16	59.64	100	0	P	V
2412MHz													V
													V
													V
		4872	57.92	-16.08	74	71.98	34.3	11.21	59.57	102	236	P	H
		4872	44.3	-9.7	54	58.36	34.3	11.21	59.57	102	236	A	H
802.11n		7308	43.63	-30.37	74	51.42	35.6	15.08	58.47	100	0	P	H
HT20													H
CH 06		4872	49.31	-24.69	74	63.37	34.3	11.21	59.57	100	0	P	V
2437MHz		7308	43.44	-30.56	74	51.23	35.6	15.08	58.47	100	0	P	V
													V
													V
		4926	54.35	-19.65	74	68.24	34.34	11.27	59.5	114	237	P	H
		4926	38.76	-15.24	54	52.65	34.34	11.27	59.5	114	237	A	H
802.11n		7386	42.64	-31.36	74	50.48	35.6	15.14	58.58	100	0	P	H
HT20													H
CH 11		4926	48.14	-25.86	74	62.03	34.34	11.27	59.5	100	0	P	V
2462MHz		7386	43.2	-30.8	74	51.04	35.6	15.14	58.58	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2387.49	69.16	-4.84	74	63.5	32.18	7.75	34.27	100	124	P	H
		2389.56	53.1	-0.9	54	47.44	32.18	7.75	34.27	100	124	A	H
	*	2422	104.64	-	-	98.94	32.22	7.83	34.35	100	124	P	H
	*	2422	95.13	-	-	89.43	32.22	7.83	34.35	100	124	A	H
802.11n		2485.2	59.71	-14.29	74	53.95	32.28	7.91	34.43	100	124	P	H
HT40		2487.32	46.72	-7.28	54	40.96	32.28	7.91	34.43	100	124	A	H
CH 03		2387.31	64.46	-9.54	74	58.8	32.18	7.75	34.27	285	103	P	V
2422MHz		2389.47	49.35	-4.65	54	43.69	32.18	7.75	34.27	285	103	A	V
	*	2422	98.95	-	-	93.25	32.22	7.83	34.35	285	103	P	V
	*	2422	89.48	-	-	83.78	32.22	7.83	34.35	285	103	A	V
		2487.32	58.49	-15.51	74	52.73	32.28	7.91	34.43	285	103	P	V
		2493.64	45.98	-8.02	54	40.25	32.3	7.91	34.48	285	103	A	V
		2388.66	68.33	-5.67	74	62.67	32.18	7.75	34.27	100	116	P	H
		2389.2	53.02	-0.98	54	47.36	32.18	7.75	34.27	100	116	A	H
	*	2427	108.62	-	-	102.92	32.22	7.83	34.35	100	116	P	H
	*	2427	99.01	-	-	93.31	32.22	7.83	34.35	100	116	A	H
802.11n		2491.88	59.59	-14.41	74	53.86	32.3	7.91	34.48	100	116	P	H
HT40		2483.56	47.34	-6.66	54	41.58	32.28	7.91	34.43	100	116	A	H
CH 04		2347.8	58.6	-15.4	74	53.06	32.11	7.68	34.25	396	76	P	V
2427MHz		2325.84	45.79	-8.21	54	40.32	32.09	7.6	34.22	396	76	A	V
	*	2427	101.06	-	-	95.36	32.22	7.83	34.35	396	76	P	V
	*	2427	91.38	-	-	85.68	32.22	7.83	34.35	396	76	A	V
		2483.88	58.67	-15.33	74	52.91	32.28	7.91	34.43	396	76	P	V
		2487.88	45.78	-8.22	54	40	32.3	7.91	34.43	396	76	A	V

		2387.76	66.99	-7.01	74	61.33	32.18	7.75	34.27	100	126	P	H
		2389.92	53.25	-0.75	54	47.62	32.18	7.75	34.3	100	126	A	H
	*	2437	110.63	-	-	104.91	32.24	7.83	34.35	100	126	P	H
	*	2437	101.11	-	-	95.39	32.24	7.83	34.35	100	126	A	H
802.11n		2483.64	66.15	-7.85	74	60.39	32.28	7.91	34.43	100	126	P	H
HT40		2483.52	50.93	-3.07	54	45.17	32.28	7.91	34.43	100	126	A	H
CH 06		2386.95	61.67	-12.33	74	56.01	32.18	7.75	34.27	396	99	P	V
2437MHz		2388.75	48.43	-5.57	54	42.77	32.18	7.75	34.27	396	99	A	V
	*	2437	106.75	-	-	101.03	32.24	7.83	34.35	396	99	P	V
	*	2437	97.19	-	-	91.47	32.24	7.83	34.35	396	99	A	V
		2483.92	59.2	-14.8	74	53.44	32.28	7.91	34.43	396	99	P	V
		2484.08	46.39	-7.61	54	40.63	32.28	7.91	34.43	396	99	A	V
		2364.81	60.53	-13.47	74	54.99	32.13	7.68	34.27	100	117	P	H
		2390	48.44	-5.56	54	42.81	32.18	7.75	34.3	100	117	A	H
	*	2447	109.99	-	-	104.31	32.24	7.83	34.39	100	117	P	H
	*	2447	100.31	-	-	94.63	32.24	7.83	34.39	100	117	A	H
802.11n		2485.24	66.31	-7.69	74	60.55	32.28	7.91	34.43	100	117	P	H
HT40		2483.6	52.69	-1.31	54	46.93	32.28	7.91	34.43	100	117	A	H
CH 08		2322.6	58.89	-15.11	74	53.42	32.09	7.6	34.22	276	80	P	V
2447MHz		2389.2	46.12	-7.88	54	40.46	32.18	7.75	34.27	276	80	A	V
	*	2447	102.19	-	-	96.51	32.24	7.83	34.39	276	80	P	V
	*	2447	92.63	-	-	86.95	32.24	7.83	34.39	276	80	A	V
		2490.92	59.33	-14.67	74	53.55	32.3	7.91	34.43	276	80	P	V
		2483.56	46.63	-7.37	54	40.87	32.28	7.91	34.43	276	80	A	V

		2351.31	60.2	-13.8	74	54.66	32.11	7.68	34.25	100	127	P	H
		2387.76	47.37	-6.63	54	41.71	32.18	7.75	34.27	100	127	A	H
	*	2452	108.29	-	-	102.61	32.24	7.83	34.39	100	127	P	H
	*	2452	98.54	-	-	92.86	32.24	7.83	34.39	100	127	A	H
802.11n		2484.44	68.76	-5.24	74	63	32.28	7.91	34.43	100	127	P	H
HT40		2483.6	53.38	-0.62	54	47.62	32.28	7.91	34.43	100	127	A	H
CH 09		2342.94	58.72	-15.28	74	53.18	32.11	7.68	34.25	398	96	P	V
2452MHz		2353.83	46.1	-7.9	54	40.54	32.13	7.68	34.25	398	96	A	V
	*	2452	103.49	-	-	97.81	32.24	7.83	34.39	398	96	P	V
	*	2452	93.72	-	-	88.04	32.24	7.83	34.39	398	96	A	V
		2485.24	59.78	-14.22	74	54.02	32.28	7.91	34.43	398	96	P	V
		2494.24	46.61	-7.39	54	40.88	32.3	7.91	34.48	398	96	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4842	42.1	-31.9	74	56.28	34.28	11.16	59.62	100	0	P	H
		7266	44.46	-29.54	74	52.23	35.6	15.06	58.43	100	0	P	H
802.11n													H
HT40													H
CH 03		4842	42.5	-31.5	74	56.68	34.28	11.16	59.62	100	0	P	V
2422MHz		7266	43.54	-30.46	74	51.31	35.6	15.06	58.43	100	0	P	V
													V
													V
		4872	46.12	-27.88	74	60.18	34.3	11.21	59.57	100	0	P	H
		7308	43.87	-30.13	74	51.66	35.6	15.08	58.47	100	0	P	H
802.11n													H
HT40													H
CH 06		4872	42.86	-31.14	74	56.92	34.3	11.21	59.57	100	0	P	V
2437MHz		7308	43.68	-30.32	74	51.47	35.6	15.08	58.47	100	0	P	V
													V
													V
		4902	44.08	-29.92	74	58	34.33	11.27	59.52	100	0	P	H
		7356	42.95	-31.05	74	50.77	35.6	15.11	58.53	100	0	P	H
802.11n													H
HT40													H
CH 09		4902	42.1	-31.9	74	56.02	34.33	11.27	59.52	100	0	P	V
2452MHz		7356	43.65	-30.35	74	51.47	35.6	15.11	58.53	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		31.08	22.51	-17.49	40	33.92	18.28	1.77	31.46			P	H
		130.44	25.69	-17.81	43.5	42.51	11.9	2.38	31.1			P	H
		282.72	31.07	-14.93	46	45.96	12.89	3.16	30.94			P	H
		367.9	31.99	-14.01	46	44.81	14.85	3.39	31.06			P	H
		432.3	33.31	-12.69	46	43.49	16.93	3.63	30.74	154	48	P	H
		698.3	31.32	-14.68	46	36.79	20.58	4.35	30.4			P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT20		30.81	32.28	-7.72	40	43.69	18.28	1.77	31.46	115	83	P	V
LF		127.47	31.3	-12.2	43.5	48.26	11.76	2.38	31.1			P	V
		166.08	28.08	-15.42	43.5	46.83	9.78	2.61	31.14			P	V
		424.6	27.3	-18.7	46	37.65	16.8	3.63	30.78			P	V
		696.9	28	-18	46	33.49	20.57	4.35	30.41			P	V
		976.9	29.17	-24.83	54	29.58	24.94	4.94	30.29			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2388.66	67.46	-6.54	74	61.8	32.18	7.75	34.27	316	124	P	H
		2389.92	51.96	-2.04	54	46.33	32.18	7.75	34.3	316	124	A	H
	*	2412	111.57	-	-	105.92	32.2	7.75	34.3	316	124	P	H
	*	2412	101.62	-	-	95.97	32.2	7.75	34.3	316	124	A	H
802.11n													H
HT20													H
CH 01		2389.92	62.89	-11.11	74	57.26	32.18	7.75	34.3	308	162	P	V
2412MHz		2390	48.04	-5.96	54	42.41	32.18	7.75	34.3	308	162	A	V
	*	2412	103.73	-	-	98.08	32.2	7.75	34.3	308	162	P	V
	*	2412	93.75	-	-	88.1	32.2	7.75	34.3	308	162	A	V
													V
													V
		2389.29	69.51	-4.49	74	63.85	32.18	7.75	34.27	122	118	P	H
		2389.92	52.93	-1.07	54	47.3	32.18	7.75	34.3	122	118	A	H
	*	2417	115.59	-	-	109.99	32.2	7.75	34.35	122	118	P	H
	*	2417	105.62	-	-	100.02	32.2	7.75	34.35	122	118	A	H
802.11n													H
HT20													H
CH 02		2314.86	58.56	-15.44	74	53.11	32.07	7.6	34.22	396	81	P	V
2417MHz		2325.48	45.5	-8.5	54	40.03	32.09	7.6	34.22	396	81	A	V
	*	2417	109.87	-	-	104.27	32.2	7.75	34.35	396	81	P	V
	*	2417	99.83	-	-	94.23	32.2	7.75	34.35	396	81	A	V
													V
													V

		2389.74	69.31	-4.69	74	63.65	32.18	7.75	34.27	100	129	P	H
		2390	52.81	-1.19	54	47.18	32.18	7.75	34.3	100	129	A	H
	*	2437	121.04	-	-	115.32	32.24	7.83	34.35	100	129	P	H
	*	2437	111.06	-	-	105.34	32.24	7.83	34.35	100	129	A	H
802.11n		2487.96	69.59	-4.41	74	63.81	32.3	7.91	34.43	100	129	P	H
HT20		2483.72	50.78	-3.22	54	45.02	32.28	7.91	34.43	100	129	A	H
CH 06		2386.95	62.14	-11.86	74	56.48	32.18	7.75	34.27	397	86	P	V
2437MHz		2389.92	47.04	-6.96	54	41.41	32.18	7.75	34.3	397	86	A	V
	*	2437	119.12	-	-	113.4	32.24	7.83	34.35	397	86	P	V
	*	2437	108.78	-	-	103.06	32.24	7.83	34.35	397	86	A	V
		2484.4	60.99	-13.01	74	55.23	32.28	7.91	34.43	397	86	P	V
		2483.92	46.67	-7.33	54	40.91	32.28	7.91	34.43	397	86	A	V
	*	2457	117.54	-	-	111.84	32.26	7.83	34.39	100	114	P	H
	*	2457	107.38	-	-	101.68	32.26	7.83	34.39	100	114	A	H
802.11n		2484.44	71.91	-2.09	74	66.15	32.28	7.91	34.43	100	114	P	H
HT20		2483.52	53.31	-0.69	54	47.55	32.28	7.91	34.43	100	114	A	H
CH 10	*	2457	113.36	-	-	107.66	32.26	7.83	34.39	304	76	P	V
2457MHz	*	2457	103.27	-	-	97.57	32.26	7.83	34.39	304	76	A	V
		2484.24	64.95	-9.05	74	59.19	32.28	7.91	34.43	304	76	P	V
		2483.52	47.79	-6.21	54	42.03	32.28	7.91	34.43	304	76	A	V
	*	2462	112.72	-	-	106.94	32.26	7.91	34.39	100	126	P	H
	*	2462	102.79	-	-	97.01	32.26	7.91	34.39	100	126	A	H
802.11n		2485.44	69.84	-4.16	74	64.08	32.28	7.91	34.43	100	126	P	H
HT20		2483.88	53.15	-0.85	54	47.39	32.28	7.91	34.43	100	126	A	H
CH 11	*	2462	107.47	-	-	101.69	32.26	7.91	34.39	100	109	P	V
2462MHz	*	2462	97.48	-	-	91.7	32.26	7.91	34.39	100	109	A	V
		2485.36	63.52	-10.48	74	57.76	32.28	7.91	34.43	100	109	P	V
		2484	48.72	-5.28	54	42.96	32.28	7.91	34.43	100	109	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4824	48.69	-25.31	74	62.91	34.26	11.16	59.64	100	0	P	H
													H
802.11n													H
HT20													H
CH 01		4824	45.97	-28.03	74	60.19	34.26	11.16	59.64	100	0	P	V
2412MHz													V
													V
													V
		4872	62.57	-11.43	74	76.63	34.3	11.21	59.57	101	236	P	H
		4872	48.01	-5.99	54	62.07	34.3	11.21	59.57	101	236	A	H
802.11n		7308	47.63	-26.37	74	55.42	35.6	15.08	58.47	100	0	P	H
HT20													H
CH 06		4872	58.59	-15.41	74	72.65	34.3	11.21	59.57	364	59	P	V
2437MHz		4872	43.43	-10.57	54	57.49	34.3	11.21	59.57	364	59	A	V
		7308	48.94	-25.06	74	56.73	35.6	15.08	58.47	100	0	P	V
													V
		4926	54.55	-19.45	74	68.44	34.34	11.27	59.5	105	267	P	H
		4926	38.93	-15.07	54	52.82	34.34	11.27	59.5	105	267	A	H
802.11n		7386	43.14	-30.86	74	50.98	35.6	15.14	58.58	100	0	P	H
HT20													H
CH 11		4926	48.58	-25.42	74	62.47	34.34	11.27	59.5	100	0	P	V
2462MHz		7386	43.43	-30.57	74	51.27	35.6	15.14	58.58	100	0	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2387.76	65.64	-8.36	74	59.98	32.18	7.75	34.27	102	298	P	H
		2389.74	51.35	-2.65	54	45.69	32.18	7.75	34.27	102	298	A	H
	*	2422	103.03	-	-	97.33	32.22	7.83	34.35	102	298	P	H
	*	2422	92.43	-	-	86.73	32.22	7.83	34.35	102	298	A	H
802.11n		2491.76	59.16	-14.84	74	53.43	32.3	7.91	34.48	102	298	P	H
HT40		2487.16	46.26	-7.74	54	40.5	32.28	7.91	34.43	102	298	A	H
CH 03		2387.58	65.14	-8.86	74	59.48	32.18	7.75	34.27	352	109	P	V
2422MHz		2390	50.09	-3.91	54	44.46	32.18	7.75	34.3	352	109	A	V
	*	2422	102.39	-	-	96.69	32.22	7.83	34.35	352	109	P	V
	*	2422	92.59	-	-	86.89	32.22	7.83	34.35	352	109	A	V
		2491.28	58.37	-15.63	74	52.59	32.3	7.91	34.43	352	109	P	V
		2485.08	45.89	-8.11	54	40.13	32.28	7.91	34.43	352	109	A	V
		2389.47	69.59	-4.41	74	63.93	32.18	7.75	34.27	102	116	P	H
		2389.74	53.36	-0.64	54	47.7	32.18	7.75	34.27	102	116	A	H
	*	2427	109	-	-	103.3	32.22	7.83	34.35	102	116	P	H
	*	2427	99.38	-	-	93.68	32.22	7.83	34.35	102	116	A	H
802.11n		2497.28	60.26	-13.74	74	54.53	32.3	7.91	34.48	102	116	P	H
HT40		2483.56	47.13	-6.87	54	41.37	32.28	7.91	34.43	102	116	A	H
CH 04		2388.03	61.34	-12.66	74	55.68	32.18	7.75	34.27	389	127	P	V
2427MHz		2389.65	47.53	-6.47	54	41.87	32.18	7.75	34.27	389	127	A	V
	*	2427	103	-	-	97.3	32.22	7.83	34.35	389	127	P	V
	*	2427	93.51	-	-	87.81	32.22	7.83	34.35	389	127	A	V
		2490.84	58.55	-15.45	74	52.77	32.3	7.91	34.43	389	127	P	V
		2486.84	45.87	-8.13	54	40.11	32.28	7.91	34.43	389	127	A	V

		2386.95	66.89	-7.11	74	61.23	32.18	7.75	34.27	100	128	P	H
		2389.74	53.18	-0.82	54	47.52	32.18	7.75	34.27	100	128	A	H
	*	2437	110.76	-	-	105.04	32.24	7.83	34.35	100	128	P	H
	*	2438.41	101.03	-	-	95.31	32.24	7.83	34.35	100	128	A	H
802.11n		2485.24	65.97	-8.03	74	60.21	32.28	7.91	34.43	100	128	P	H
HT40		2484	51.25	-2.75	54	45.49	32.28	7.91	34.43	100	128	A	H
CH 06		2389.11	60.59	-13.41	74	54.93	32.18	7.75	34.27	381	0	P	V
2437MHz		2389.47	47.17	-6.83	54	41.51	32.18	7.75	34.27	381	0	A	V
	*	2438.827	106.52	-	-	100.8	32.24	7.83	34.35	381	0	P	V
	*	2438.41	96.97	-	-	91.25	32.24	7.83	34.35	381	0	A	V
		2494.92	58.63	-15.37	74	52.9	32.3	7.91	34.48	381	0	P	V
		2484.48	45.94	-8.06	54	40.18	32.28	7.91	34.43	381	0	A	V
		2383.89	60.68	-13.32	74	55.04	32.16	7.75	34.27	100	118	P	H
		2389.83	48.47	-5.53	54	42.84	32.18	7.75	34.3	100	118	A	H
	*	2447	110.01	-	-	104.33	32.24	7.83	34.39	100	118	P	H
	*	2447	100.39	-	-	94.71	32.24	7.83	34.39	100	118	A	H
802.11n		2484.8	68.59	-5.41	74	62.83	32.28	7.91	34.43	100	118	P	H
HT40		2483.8	53.28	-0.72	54	47.52	32.28	7.91	34.43	100	118	A	H
CH 08		2332.86	58.38	-15.62	74	52.91	32.09	7.6	34.22	397	88	P	V
2447MHz		2329.8	45.67	-8.33	54	40.2	32.09	7.6	34.22	397	88	A	V
	*	2447	103.68	-	-	98	32.24	7.83	34.39	397	88	P	V
	*	2447	93.9	-	-	88.22	32.24	7.83	34.39	397	88	A	V
		2491.32	58.84	-15.16	74	53.06	32.3	7.91	34.43	397	88	P	V
		2490.4	45.99	-8.01	54	40.21	32.3	7.91	34.43	397	88	A	V

		2350.59	60.11	-13.89	74	54.57	32.11	7.68	34.25	100	123	P	H
		2376.6	47.46	-6.54	54	41.89	32.16	7.68	34.27	100	123	A	H
	*	2450.017	108.93	-	-	103.25	32.24	7.83	34.39	100	123	P	H
	*	2450.267	99.25	-	-	93.57	32.24	7.83	34.39	100	123	A	H
802.11n		2484.76	69.02	-4.98	74	63.26	32.28	7.91	34.43	100	123	P	H
HT40		2484.08	53.42	-0.58	54	47.66	32.28	7.91	34.43	100	123	A	H
CH 09		2311.71	59.38	-14.62	74	53.9	32.07	7.6	34.19	383	15	P	V
2452MHz		2320.8	46.15	-7.85	54	40.68	32.09	7.6	34.22	383	15	A	V
	*	2450.184	106.1	-	-	100.42	32.24	7.83	34.39	383	15	P	V
	*	2450.768	96.39	-	-	90.71	32.24	7.83	34.39	383	15	A	V
		2484.4	61.35	-12.65	74	55.59	32.28	7.91	34.43	383	15	P	V
		2483.68	47.83	-6.17	54	42.07	32.28	7.91	34.43	383	15	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4842	42.35	-31.65	74	56.53	34.28	11.16	59.62	100	0	P	H
		7266	44.8	-29.2	74	52.57	35.6	15.06	58.43	100	0	P	H
802.11n													H
HT40													H
CH 03		4842	41.82	-32.18	74	56	34.28	11.16	59.62	100	0	P	V
2422MHz		7266	44.12	-29.88	74	51.89	35.6	15.06	58.43	100	0	P	V
													V
													V
		4874	53.25	-20.75	74	67.31	34.3	11.21	59.57	102	237	P	H
		4874	43.32	-10.68	54	57.38	34.3	11.21	59.57	102	237	A	H
802.11n		7311	43.39	-30.61	74	51.18	35.6	15.08	58.47	100	0	P	H
HT40													H
CH 06		4874	46.6	-27.4	74	60.66	34.3	11.21	59.57	100	0	P	V
2437MHz		7311	43.92	-30.08	74	51.71	35.6	15.08	58.47	100	0	P	V
													V
													V
		4902	42.64	-31.36	74	56.56	34.33	11.27	59.52	100	0	P	H
		7356	43.74	-30.26	74	51.56	35.6	15.11	58.53	100	0	P	H
802.11n													H
HT40													H
CH 09		4902	41.72	-32.28	74	55.64	34.33	11.27	59.52	100	0	P	V
2452MHz		7356	44.2	-29.8	74	52.02	35.6	15.11	58.53	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C Emission below 1GHz

2.4GHz WIFI 802.11n HT40 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		99.66	26.95	-16.55	43.5	45.59	10.4	2.06	31.1			P	H
		131.25	28.4	-15.1	43.5	45.22	11.9	2.38	31.1			P	H
		282.72	30.62	-15.38	46	45.51	12.89	3.16	30.94			P	H
		313.3	29.93	-16.07	46	44.32	13.33	3.28	31			P	H
		370	32.12	-13.88	46	44.88	14.9	3.39	31.05			P	H
		433.7	33.79	-12.21	46	43.95	16.94	3.63	30.73	145	133	P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT40		30.54	32.42	-7.58	40	43.83	18.28	1.77	31.46	120	68	P	V
LF		92.1	27.48	-16.02	43.5	47.62	8.9	2.06	31.1			P	V
		127.74	30.96	-12.54	43.5	47.84	11.84	2.38	31.1			P	V
		365.8	28.57	-17.43	46	41.44	14.81	3.39	31.07			P	V
		414.1	30.62	-15.38	46	41.53	16.4	3.52	30.83			P	V
		432.3	30.37	-15.63	46	40.55	16.93	3.63	30.74			P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".