

FCC RF Test Report

APPLICANT : Stratocumulous LLC
EQUIPMENT : Wireless Camera
MODEL NAME : PB04JL
FCC ID : 2AHUE-9536
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The testing was completed on May 29, 2017. 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



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TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Product Feature of Equipment Under Test.....	5
1.3 Product Specification of Equipment Under Test.....	5
1.4 Modification of EUT	5
1.5 Testing Location	6
1.6 Applicable Standards.....	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Carrier Frequency and Channel	7
2.2 Test Mode.....	7
2.3 Connection Diagram of Test System.....	8
2.4 Support Unit used in test configuration and system	9
2.5 EUT Operation Test Setup	9
2.6 Measurement Results Explanation Example.....	9
3 TEST RESULT	10
3.1 6dB and 99% Bandwidth Measurement	10
3.2 Output Power Measurement.....	12
3.3 Power Spectral Density Measurement	13
3.4 Conducted Band Edges and Spurious Emission Measurement	15
3.5 Radiated Band Edges and Spurious Emission Measurement	46
3.6 AC Conducted Emission Measurement.....	50
3.7 Antenna Requirements.....	54
4 LIST OF MEASURING EQUIPMENT	55
5 UNCERTAINTY OF EVALUATION	57
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. RADIATED SPURIOUS EMISSION	
APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS	
APPENDIX D. DUTY CYCLE PLOTS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR651909-01B	Rev. 01	Initial issue of report	Mar. 14, 2017
FR651909-01B	Rev. 02	Revising antenna information in section 1.3 and appendix a, and revising modulation information of 802.11g in section 3.4.5.	Mar. 28, 2017
FR651909-01B	Rev. 03	Revising antenna gain information in section 1.3 and revising conducted power and RSE test data for antenna 1 in appendix a, appendix b, and appendix c.	May 31, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass
3.1	-	99% Bandwidth	-	Pass
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass
		Conducted Spurious Emission		Pass
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass
3.6	15.207	AC Conducted Emission	15.207(a)	Pass
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass



1 General Description

1.1 Applicant

Stratocumulous LLC

11414 W. Park Place, Suite 202, Milwaukee, Wisconsin 53224, USA

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Camera
Model Name	PB04JL
FCC ID	2AHUE-9536
EUT supports Radios application	WLAN 11b/g/n HT20 Bluetooth LE

1.3 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2472 MHz
Maximum (Peak) Output Power to antenna	<Ant.1> 802.11b : 19.92 dBm (0.0982 W) 802.11g : 25.03 dBm (0.3184 W) 802.11n HT20 : 25.20 dBm (0.3311 W) <Ant.2> 802.11b : 20.28 dBm (0.1067 W) 802.11g : 25.34 dBm (0.3420 W) 802.11n HT20 : 25.41 dBm (0.3475 W)
99% Occupied Bandwidth	<Ant.1> 802.11b : 14.75MHz 802.11g : 18.60MHz 802.11n HT20 : 19.15MHz <Ant.2> 802.11b : 14.85MHz 802.11g : 18.30MHz 802.11n HT20 : 18.95MHz
Antenna Type / Gain	Ant.1 : PIFA Antenna type with gain 1.87 dBi Ant.2 : Dipole Antenna type with gain 3.85 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

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. TW0007 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 1 st 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.	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH12-HY	

Note: The test site complies with ANSI C63.4 2014 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 v03r05.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane for Ant.1, X plane for Ant.2) were recorded in this report.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	8	2447
	2	2417	9	2452
	3	2422	10	2457
	4	2427	11	2462
	5	2432	12	2467
	6	2437	13	2472
	7	2442	-	-

2.2 Test Mode

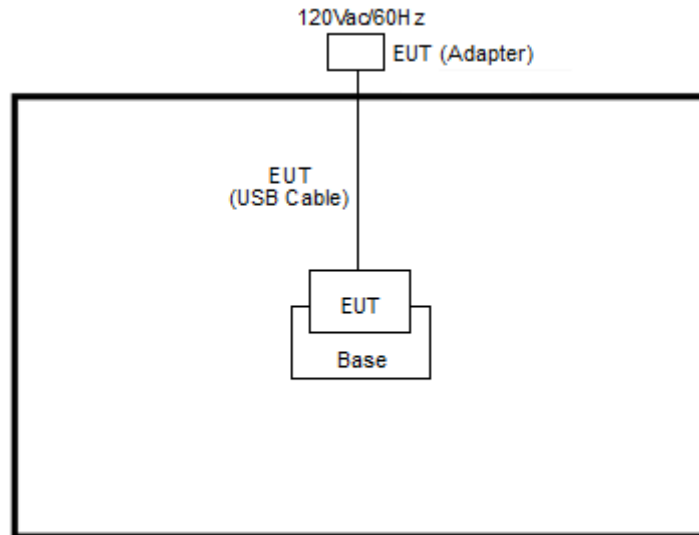
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

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

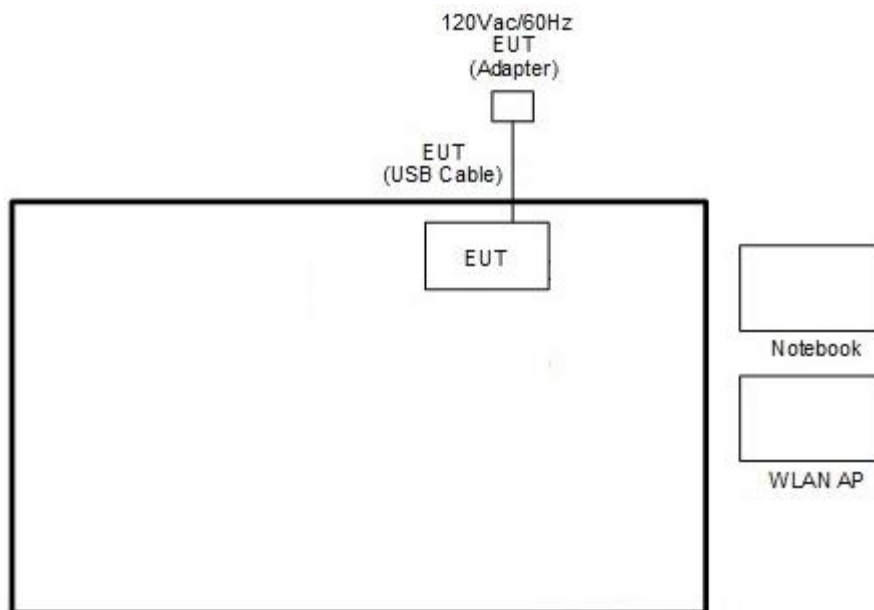
Test Cases	
AC Conducted	Mode 1 : WLAN (2.4G) Link + EUT + Audio On + USB Cable (Powered from Adapter)
Emission	Mode 2 : Bluetooth Tx + USB Cable (Powered from Adapter)
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 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

2.5 EUT Operation Test Setup

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

2.6 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.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

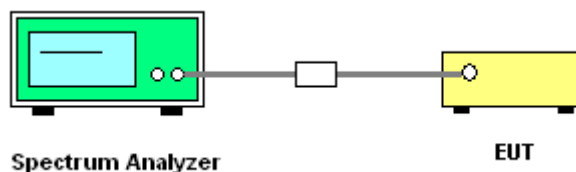
3.1.2 Measuring Instruments

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 v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup

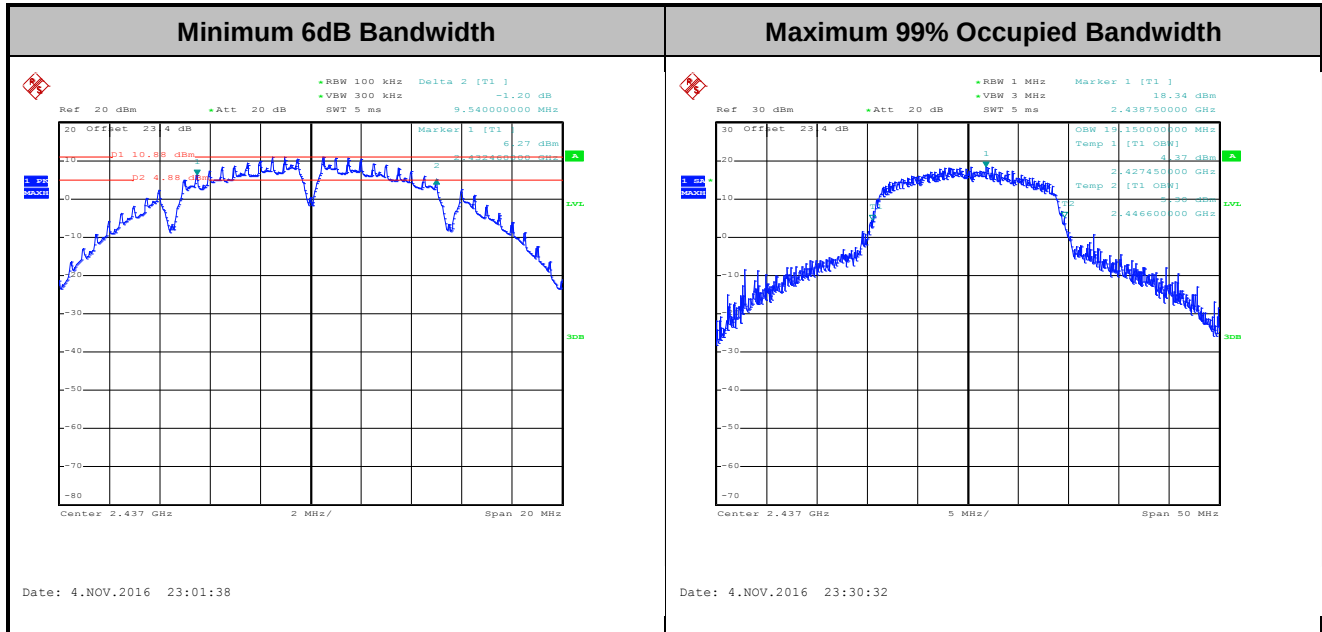




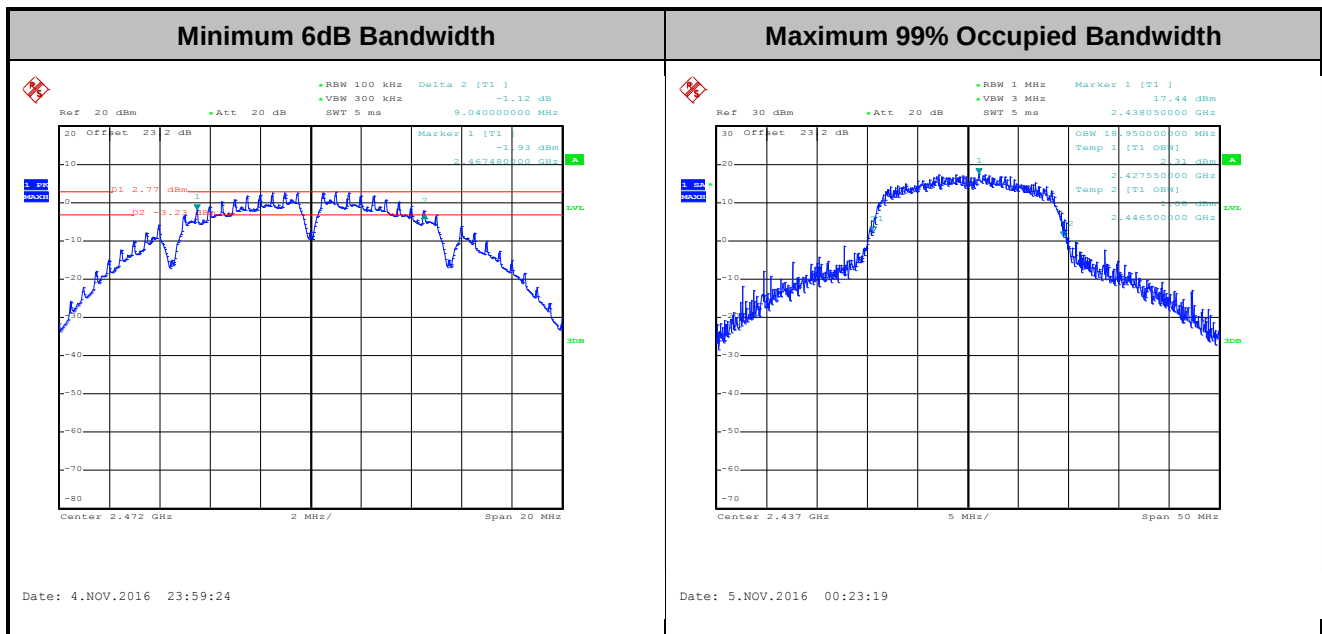
3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

<Ant.1>



<Ant.2>



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

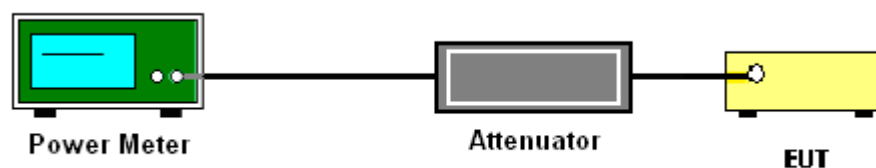
3.2.2 Measuring Instruments

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 v03r05 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.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

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.

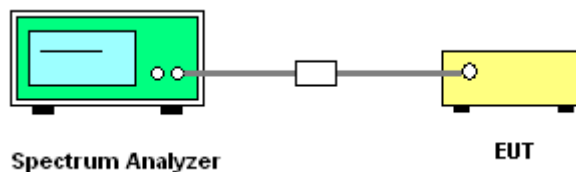
3.3.2 Measuring Instruments

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 v03r05
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup

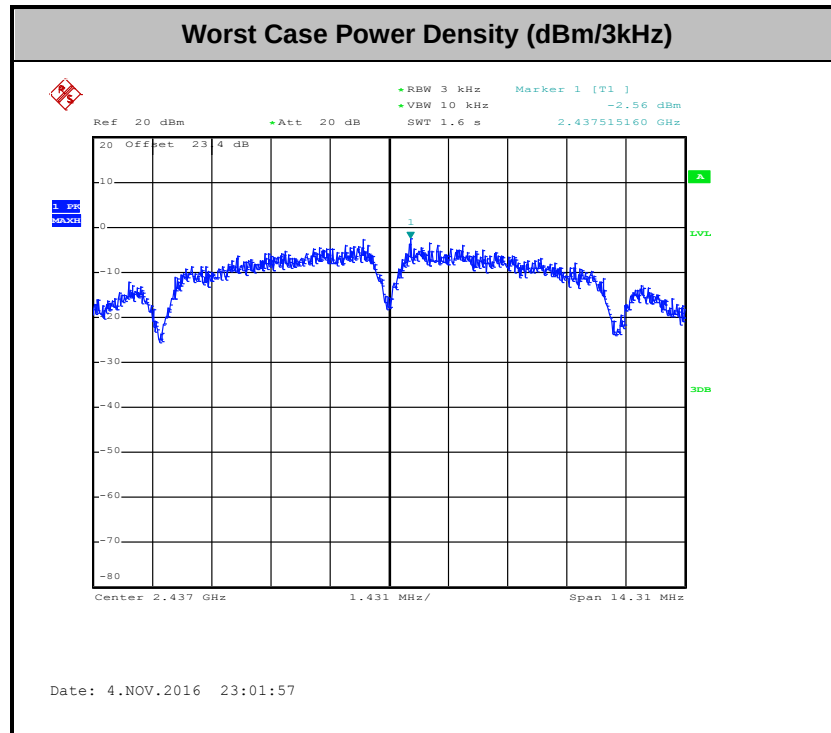




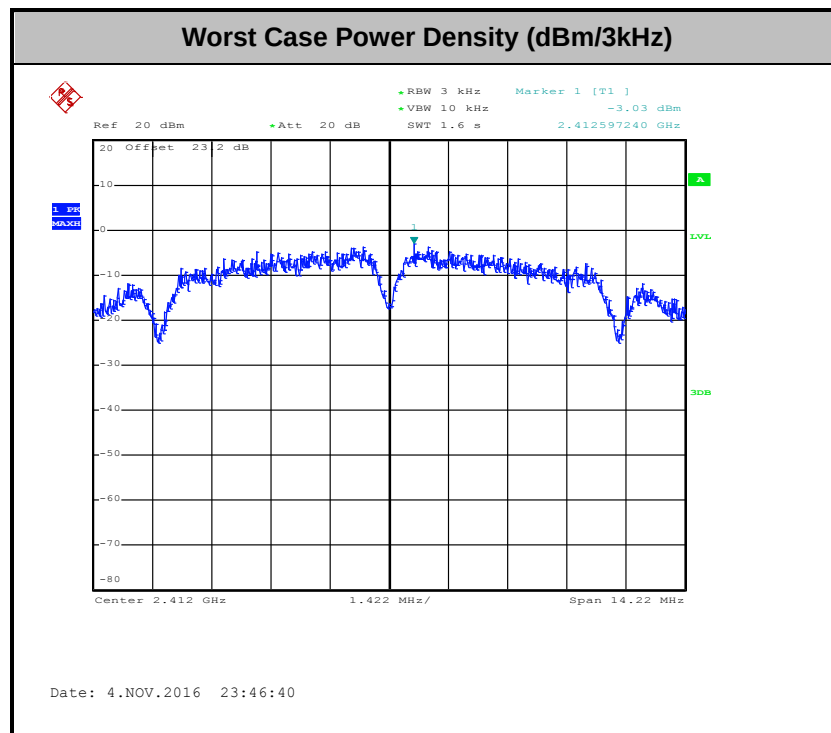
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

<Ant. 1>



<Ant. 2>



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).

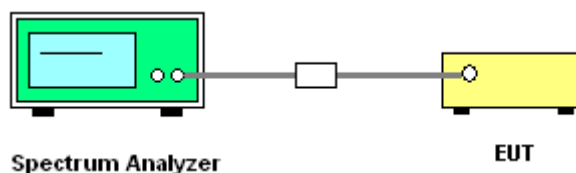
3.4.2 Measuring Instruments

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 v03r05.
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





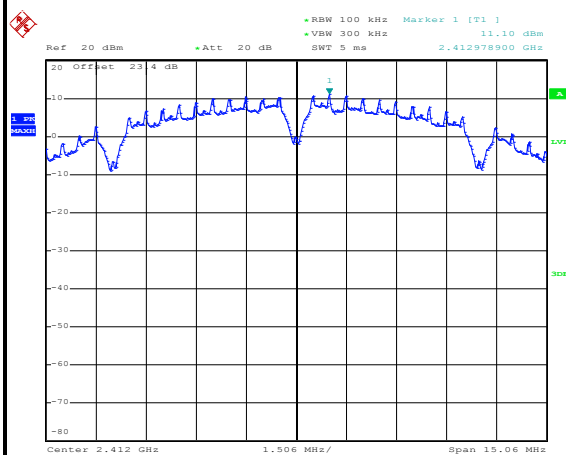
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

<Ant. 1>

Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

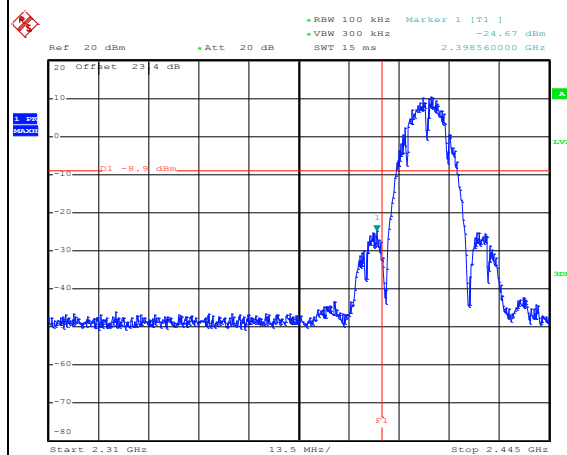
WLAN 802.11b Channel 01

100kHz PSD reference Level



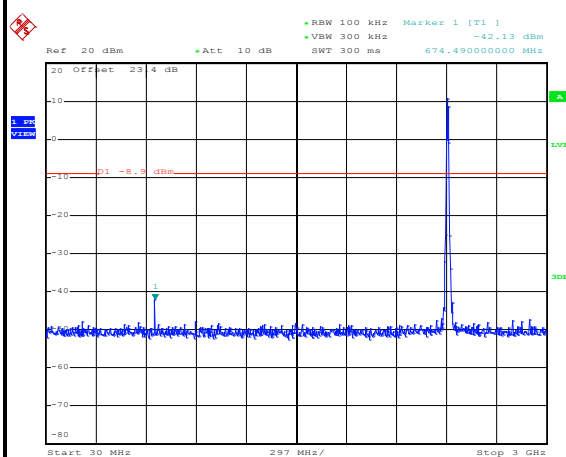
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Low Channel Plot



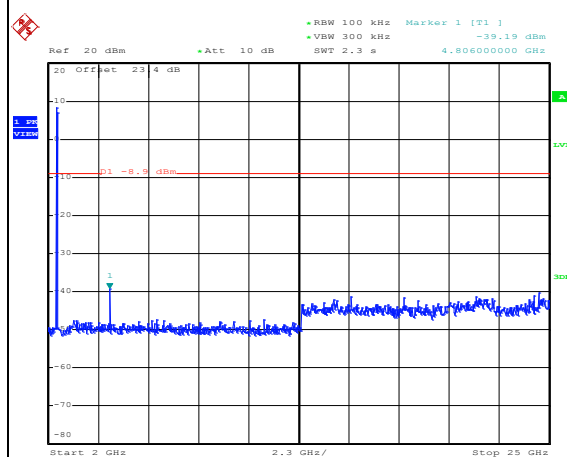
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Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:00:17

Spurious Emission 2GHz~25GHz



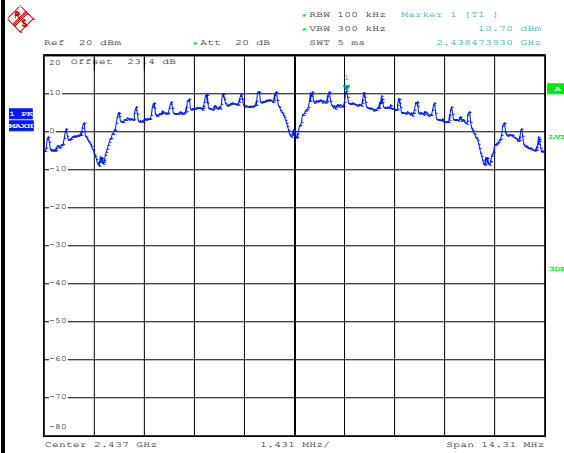
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Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11b Channel 06

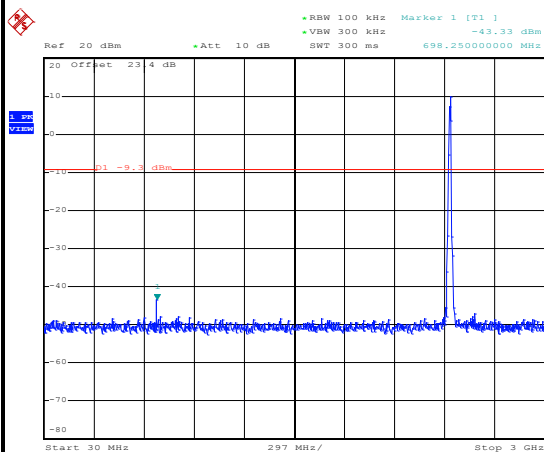
100kHz PSD reference Level



Date: 4.NOV.2016 23:02:09

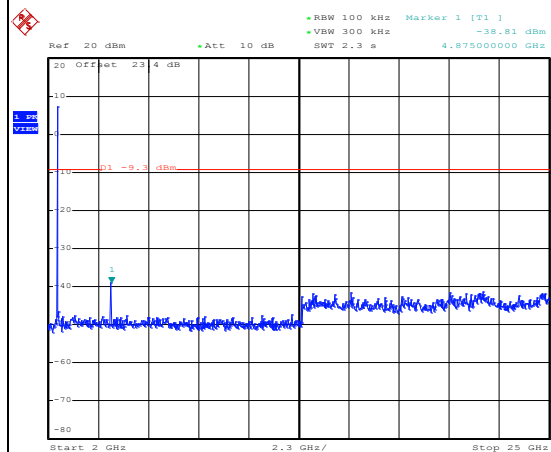
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:02:20

Spurious Emission 2GHz~25GHz



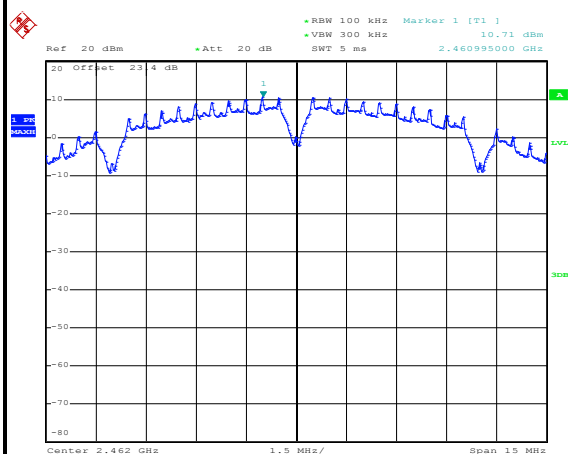
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Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

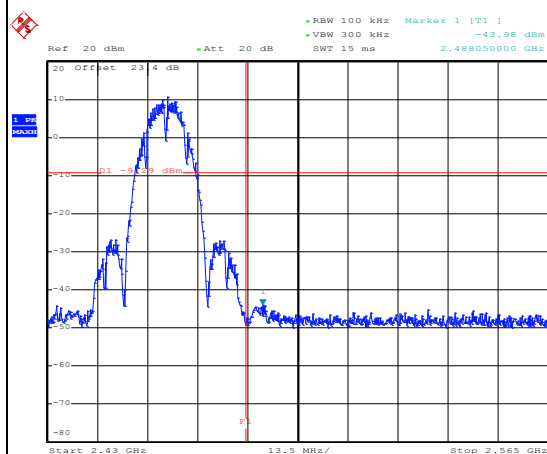
WLAN 802.11b Channel 11

100kHz PSD reference Level



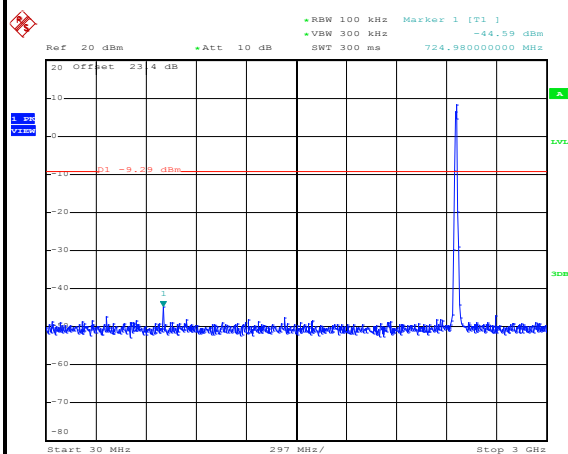
Date: 4.NOV.2016 23:04:46

High Channel Plot



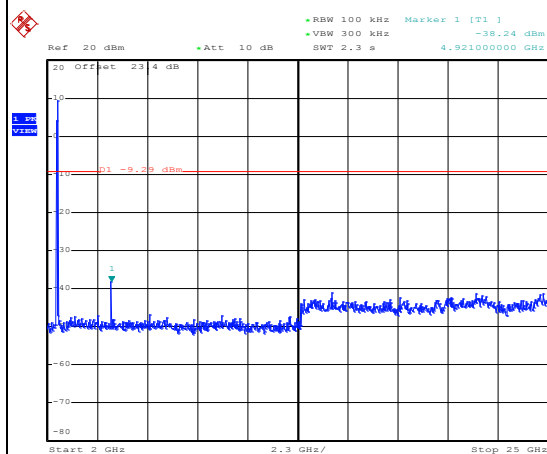
Date: 4.NOV.2016 23:05:00

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:05:11

Spurious Emission 2GHz~25GHz



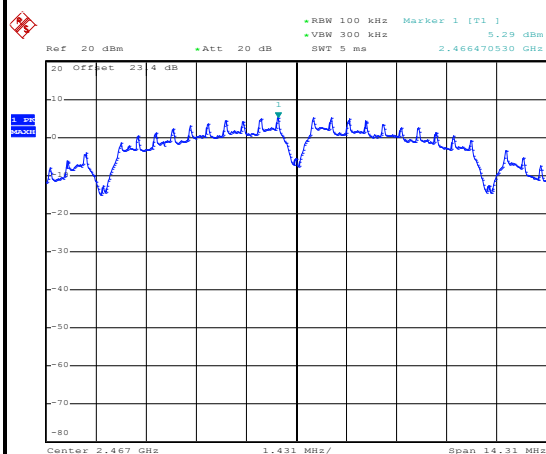
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Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

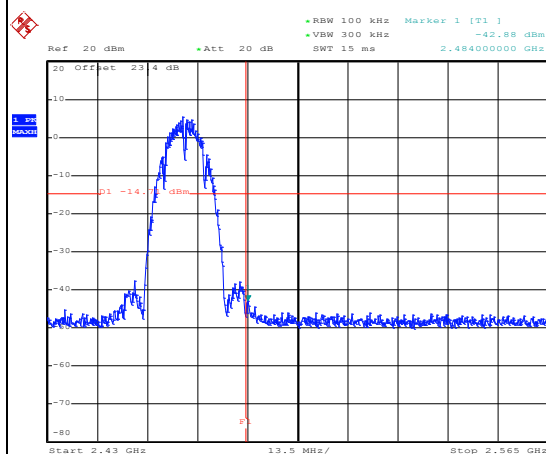
WLAN 802.11b Channel 12

100kHz PSD reference Level



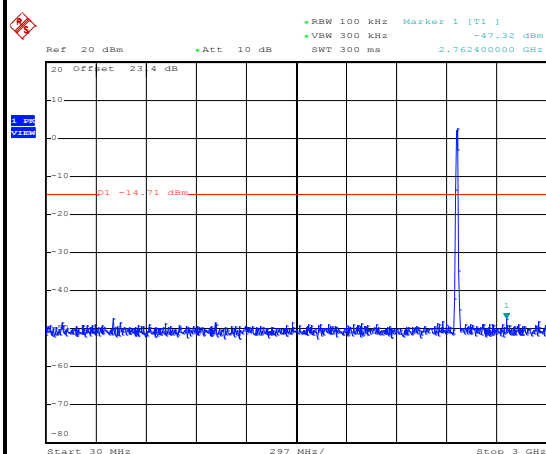
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Low Channel Plot



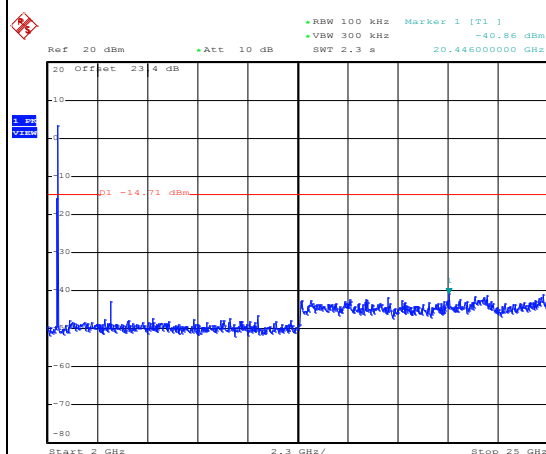
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Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:07:58

Spurious Emission 2GHz~25GHz



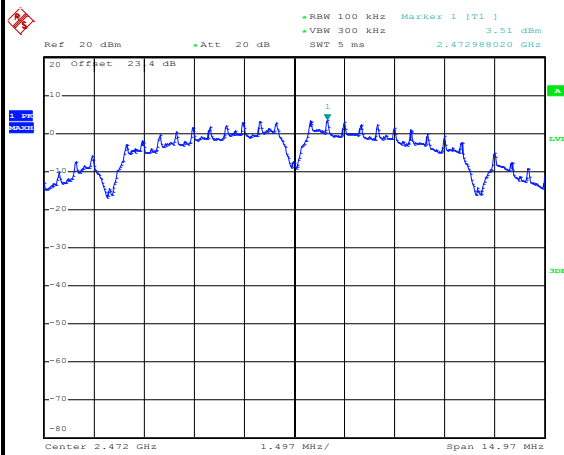
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Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

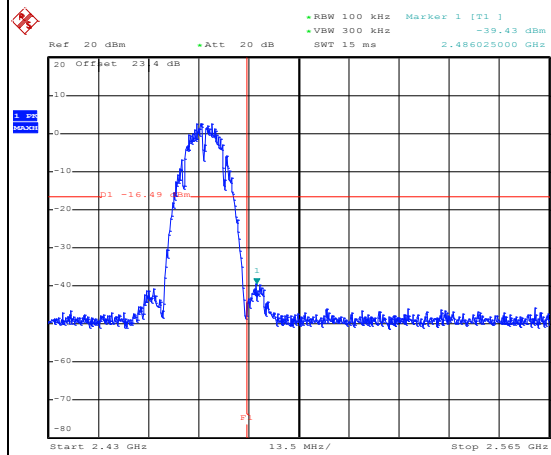
WLAN 802.11b Channel 13

100kHz PSD reference Level



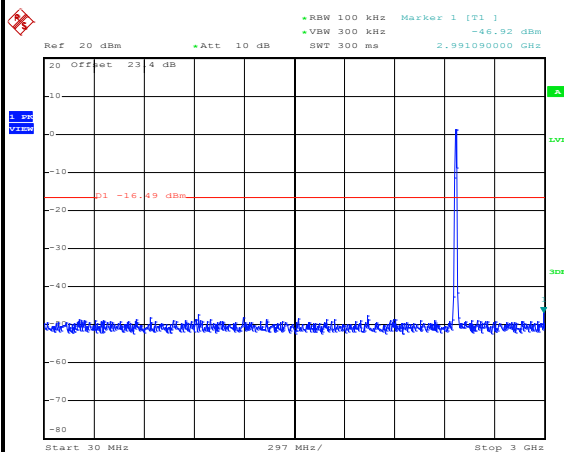
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Low Channel Plot



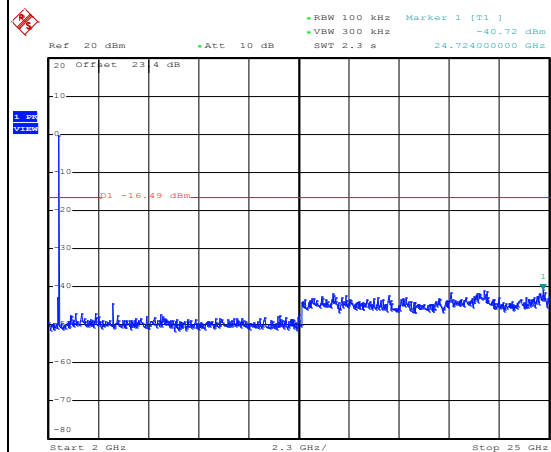
Date: 4.NOV.2016 23:10:12

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:10:24

Spurious Emission 2GHz~25GHz



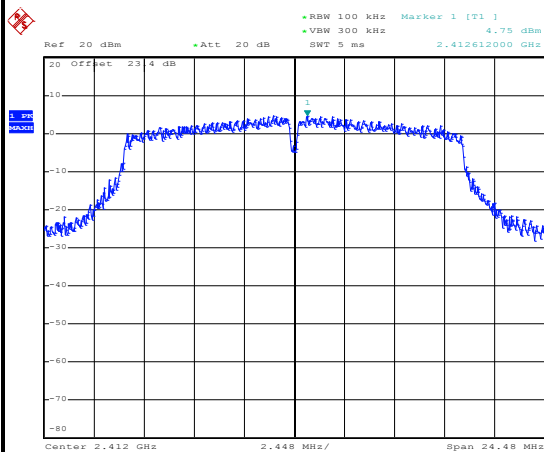
Date: 4.NOV.2016 23:10:32



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

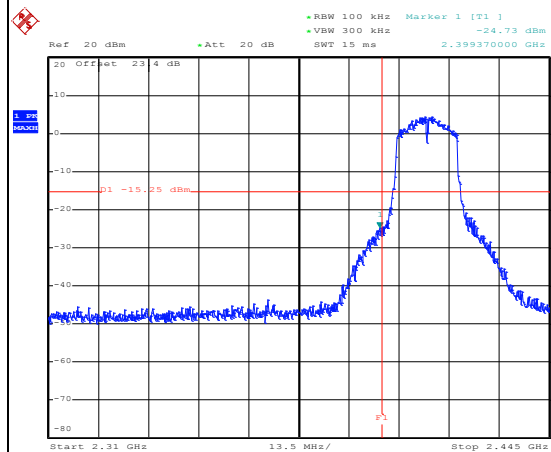
WLAN 802.11g Channel 01

100kHz PSD reference Level



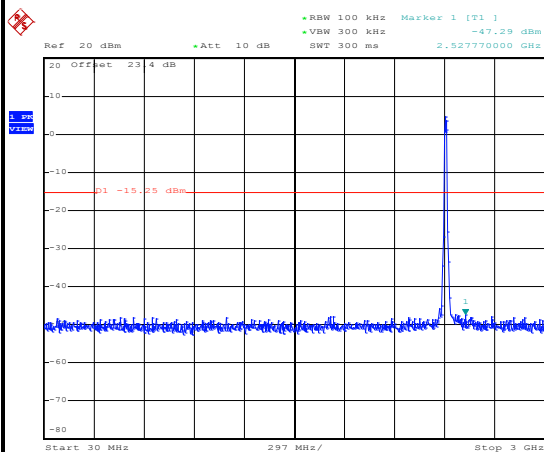
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Low Channel Plot



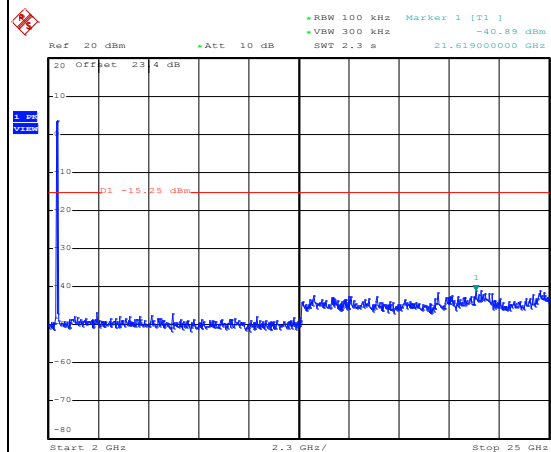
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Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:12:55

Spurious Emission 2GHz~25GHz



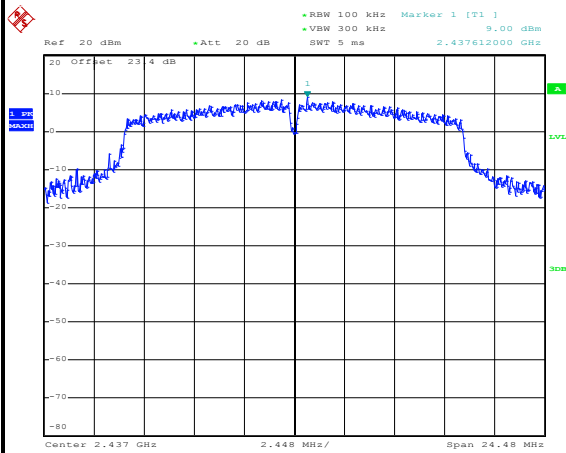
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Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11g Channel 06

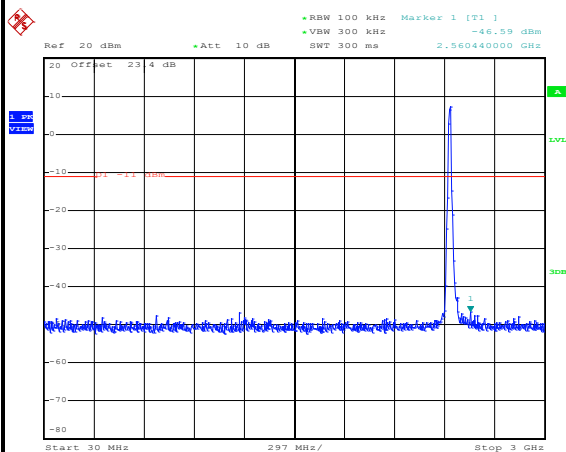
100kHz PSD reference Level



Date: 4.NOV.2016 23:14:44

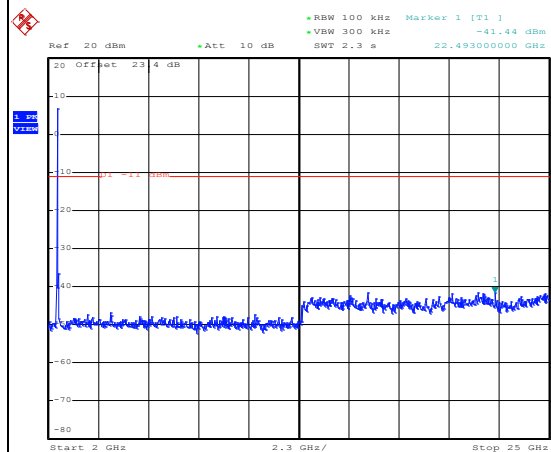
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:15:06

Spurious Emission 2GHz~25GHz



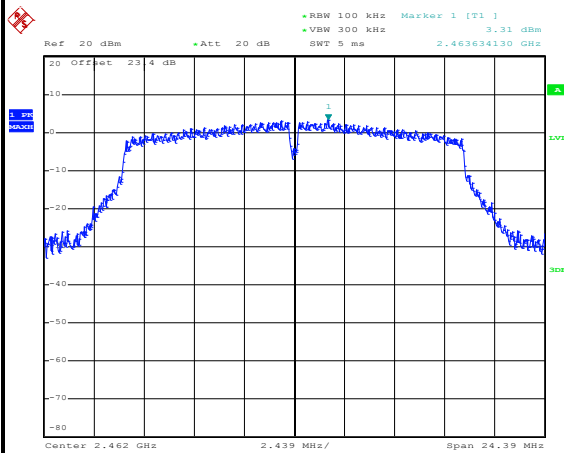
Date: 4.NOV.2016 23:15:14



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

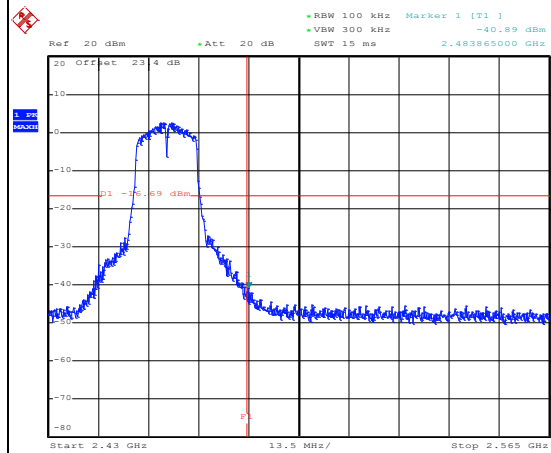
WLAN 802.11g Channel 11

100kHz PSD reference Level



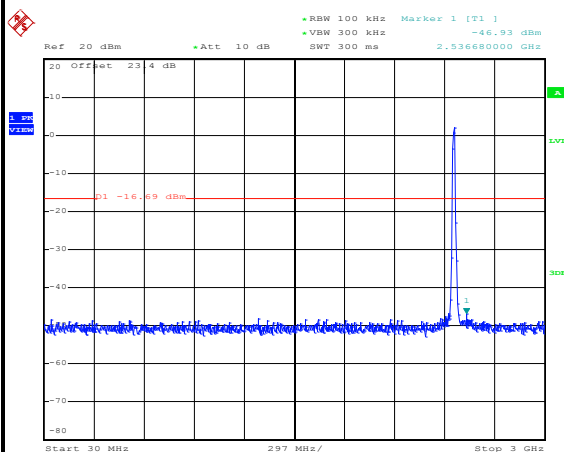
Date: 4.NOV.2016 23:17:41

High Channel Plot



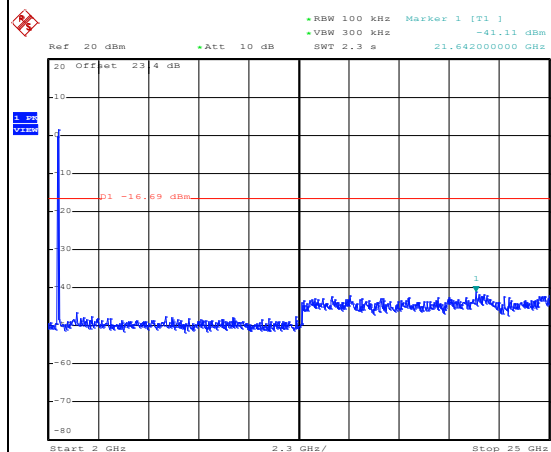
Date: 4.NOV.2016 23:17:51

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:18:02

Spurious Emission 2GHz~25GHz



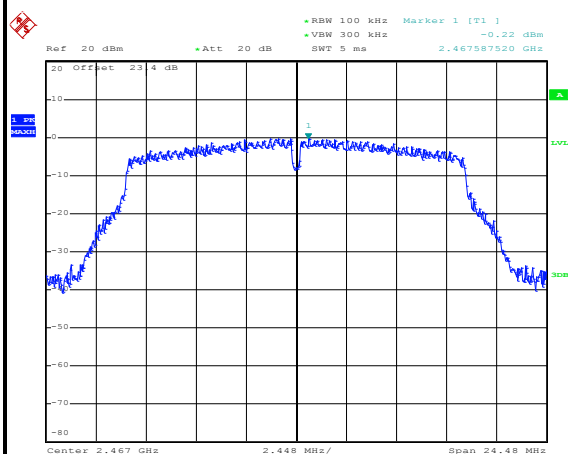
Date: 4.NOV.2016 23:18:11



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

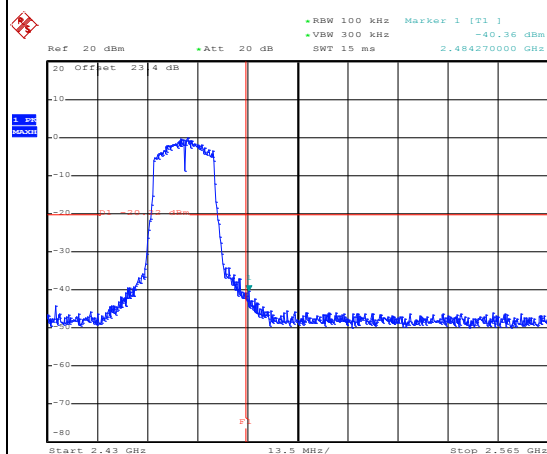
WLAN 802.11g Channel 12

100kHz PSD reference Level



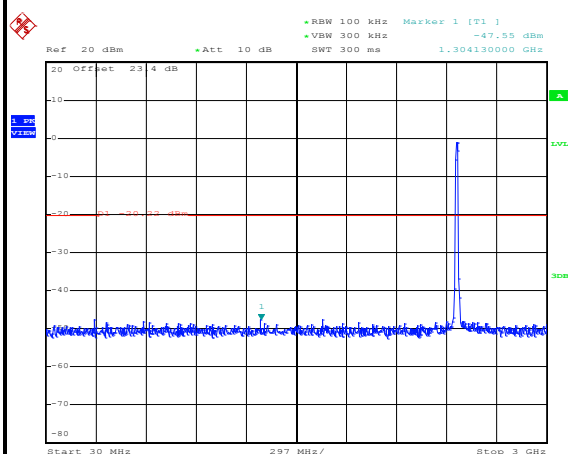
Date: 4.NOV.2016 23:20:24

Low Channel Plot



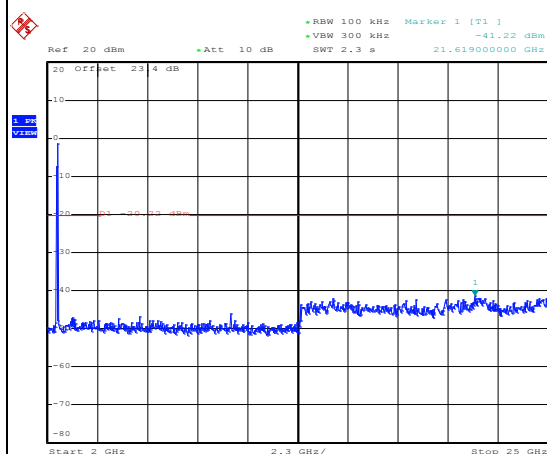
Date: 4.NOV.2016 23:20:37

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:20:54

Spurious Emission 2GHz~25GHz



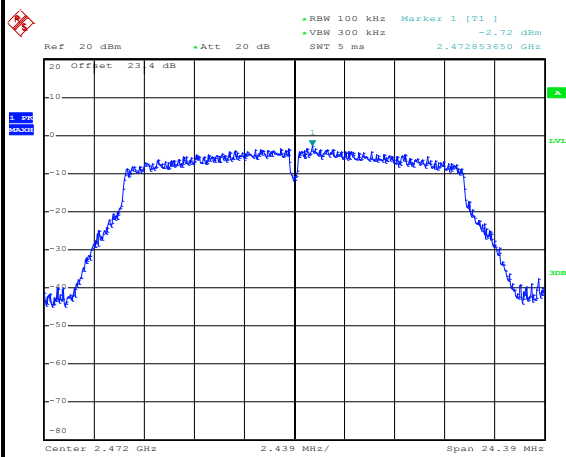
Date: 4.NOV.2016 23:21:03



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

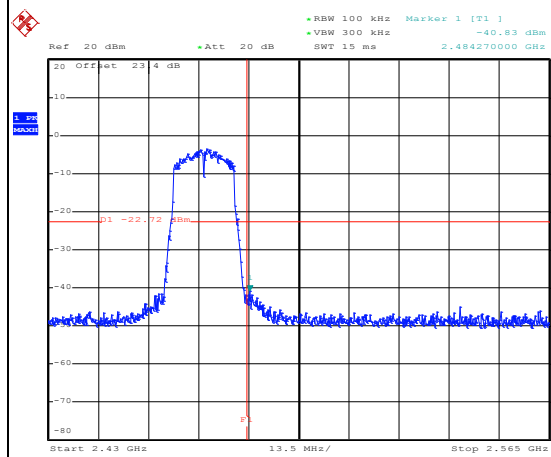
WLAN 802.11g Channel 13

100kHz PSD reference Level



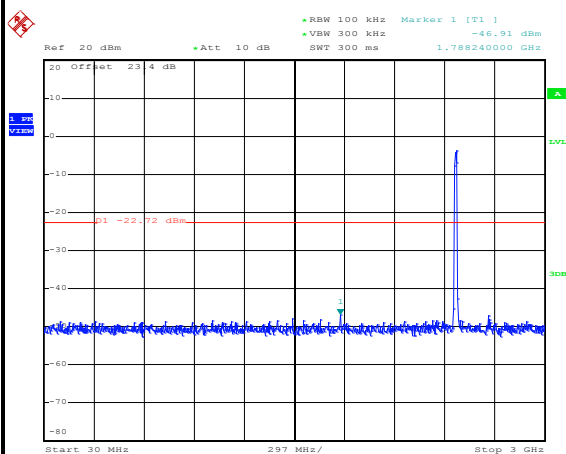
Date: 4.NOV.2016 23:23:11

Low Channel Plot



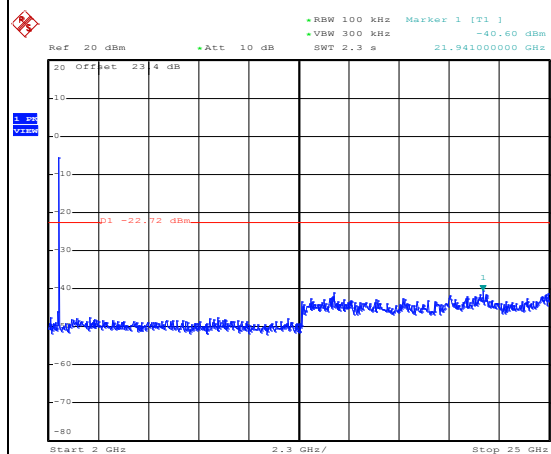
Date: 4.NOV.2016 23:23:21

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:23:32

Spurious Emission 2GHz~25GHz



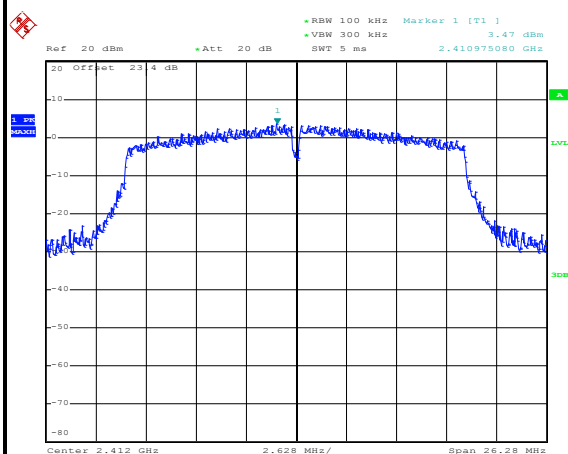
Date: 4.NOV.2016 23:23:41



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

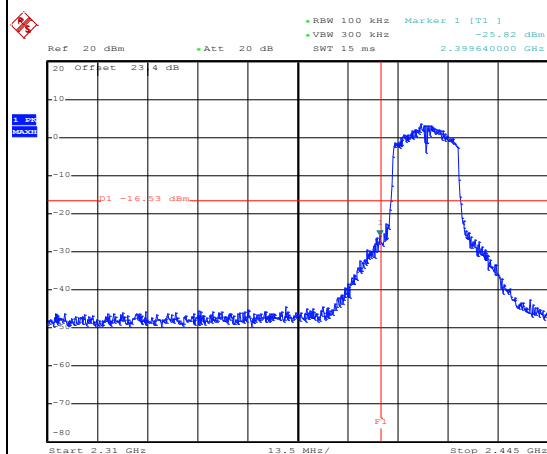
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



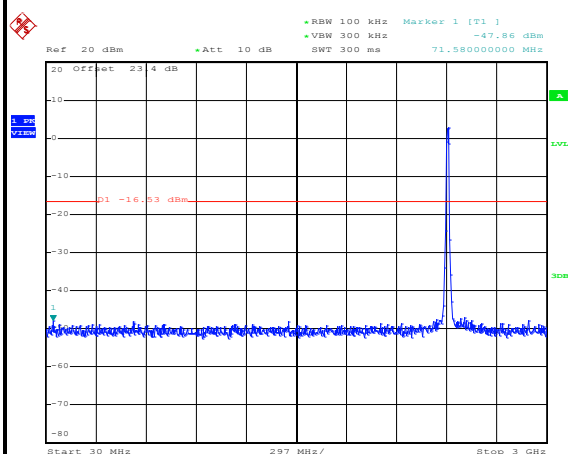
Date: 4.NOV.2016 23:27:12

Low Channel Plot



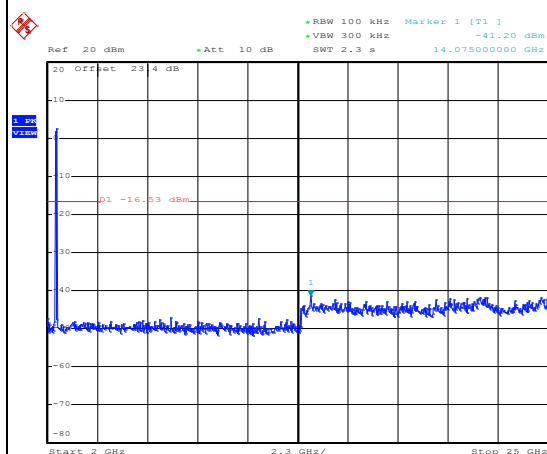
Date: 4.NOV.2016 23:27:23

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:27:34

Spurious Emission 2GHz~25GHz



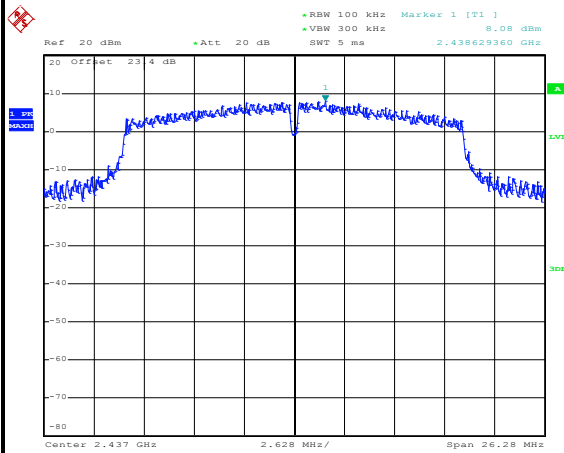
Date: 4.NOV.2016 23:27:42



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11n HT20 Channel 06

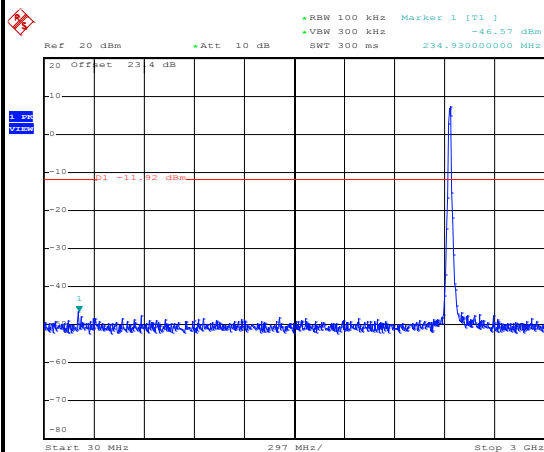
100kHz PSD reference Level



Date: 4.NOV.2016 23:29:47

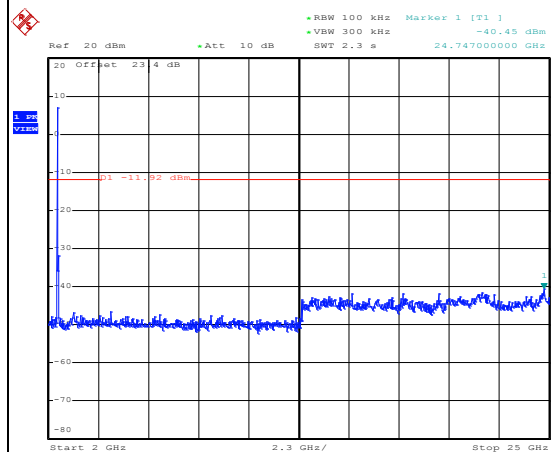
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:30:12

Spurious Emission 2GHz~25GHz



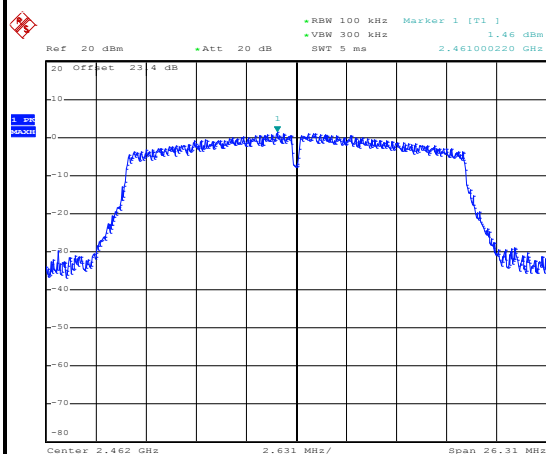
Date: 4.NOV.2016 23:30:21



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

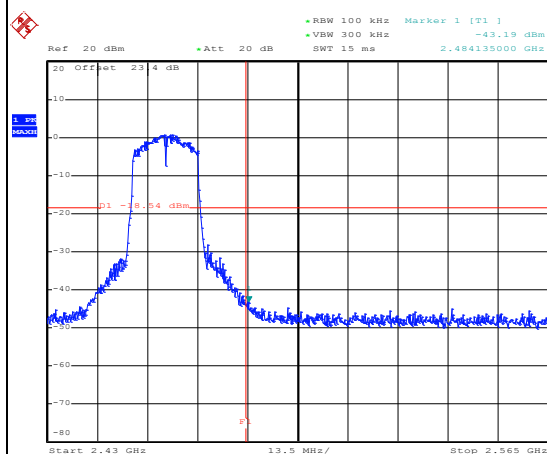
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



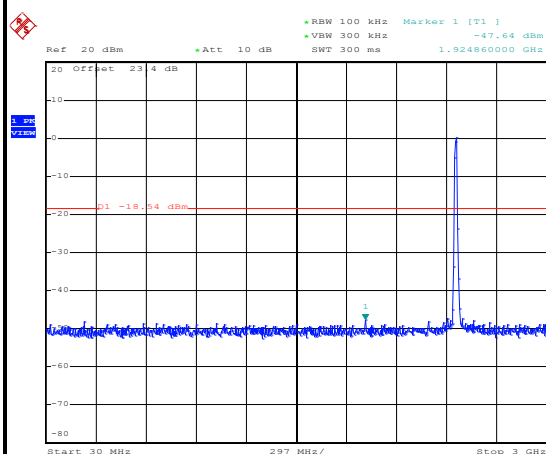
Date: 4.NOV.2016 23:36:14

High Channel Plot



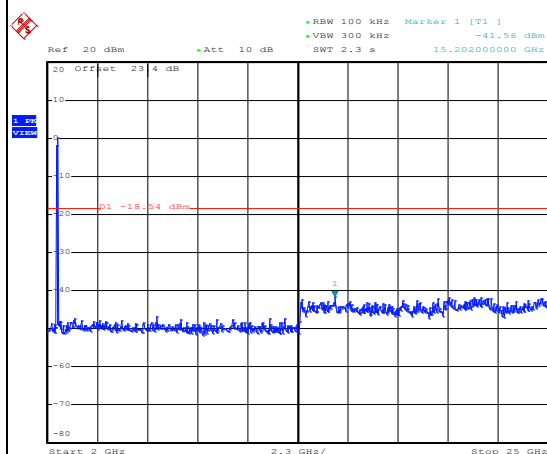
Date: 4.NOV.2016 23:36:24

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:36:37

Spurious Emission 2GHz~25GHz



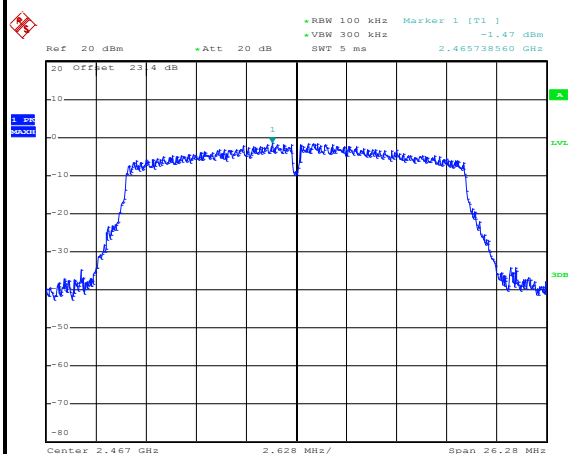
Date: 4.NOV.2016 23:36:46



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

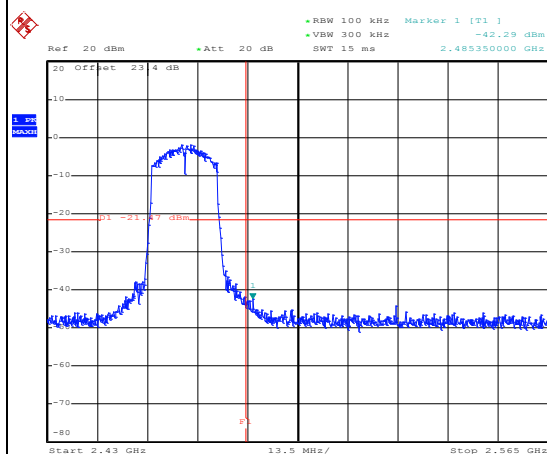
WLAN 802.11n HT20 Channel 12

100kHz PSD reference Level



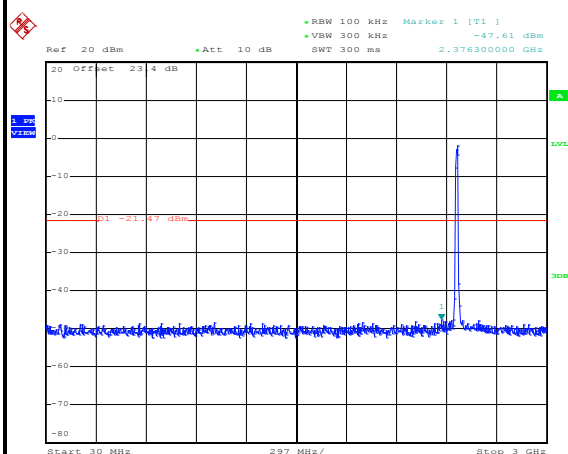
Date: 4.NOV.2016 23:39:06

Low Channel Plot



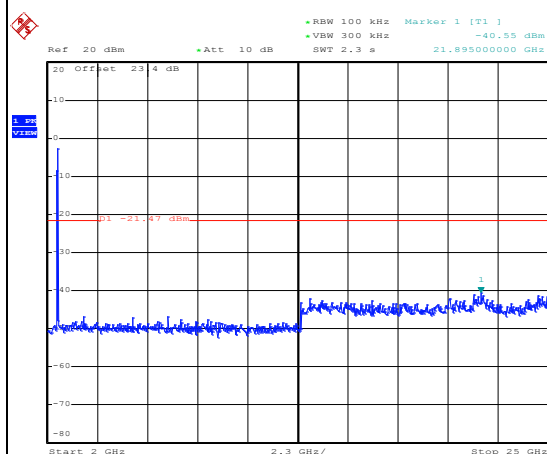
Date: 4.NOV.2016 23:39:18

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:39:32

Spurious Emission 2GHz~25GHz



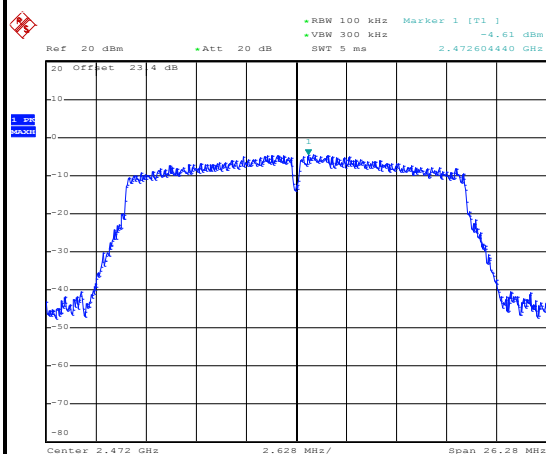
Date: 4.NOV.2016 23:39:40



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

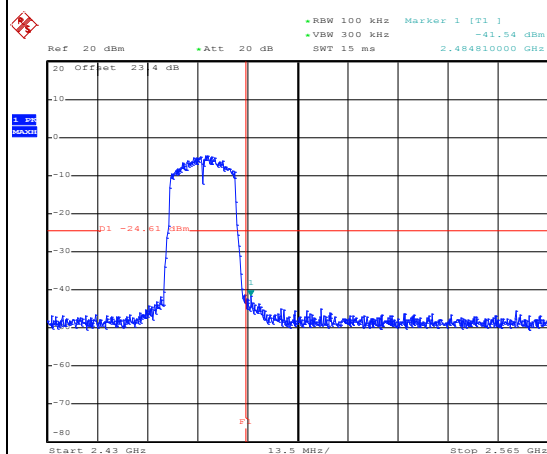
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



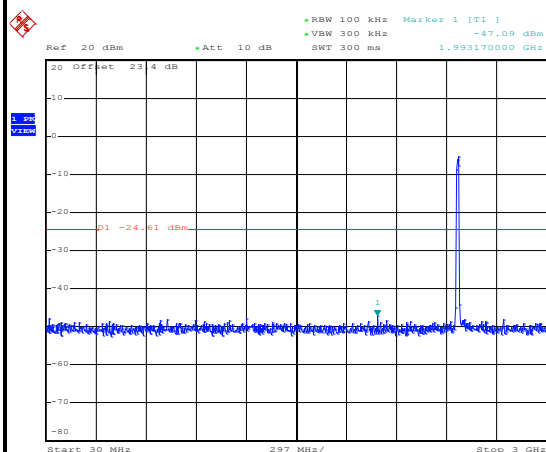
Date: 4.NOV.2016 23:41:43

Low Channel Plot



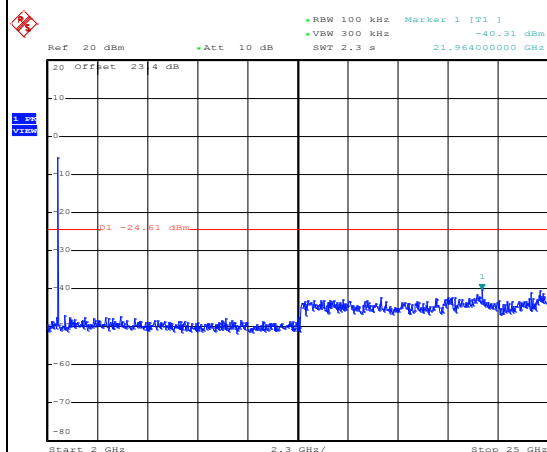
Date: 4.NOV.2016 23:41:53

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:42:04

Spurious Emission 2GHz~25GHz



Date: 4.NOV.2016 23:42:13

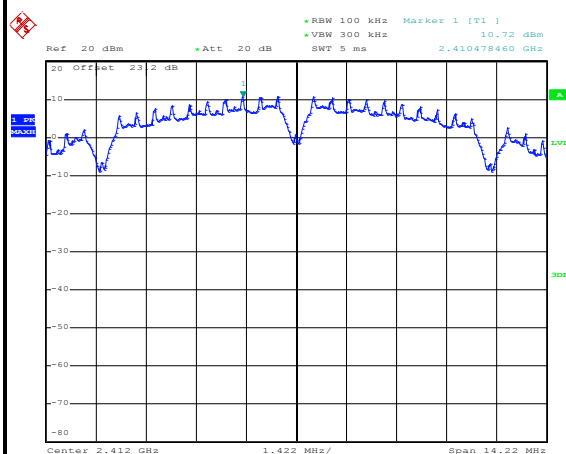


<Ant. 2>

Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

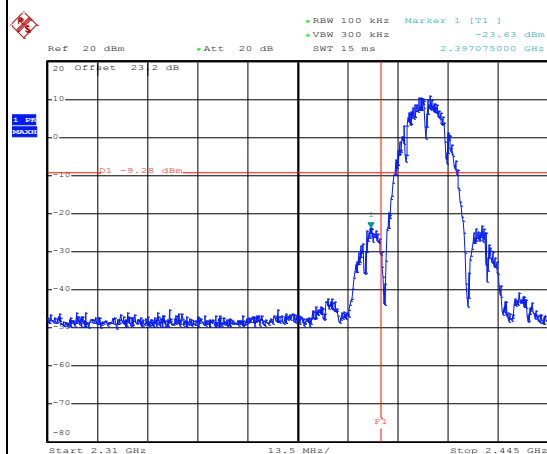
WLAN 802.11b Channel 01

100kHz PSD reference Level



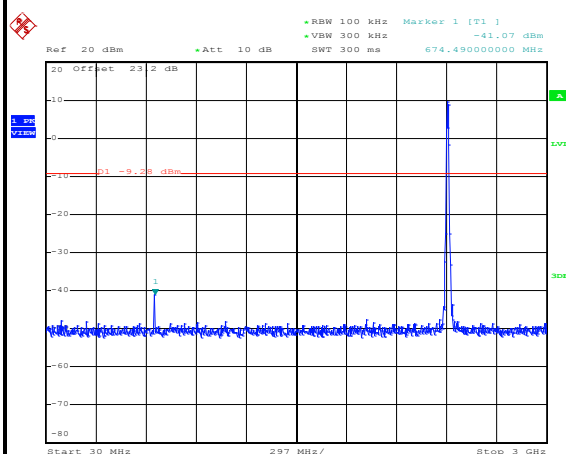
Date: 4.NOV.2016 23:46:50

Low Channel Plot



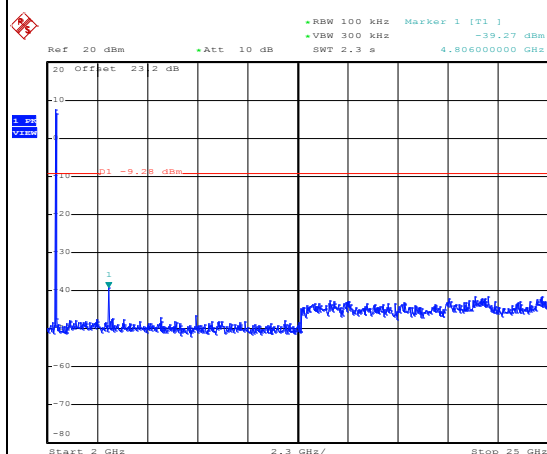
Date: 4.NOV.2016 23:47:02

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:47:17

Spurious Emission 2GHz~25GHz



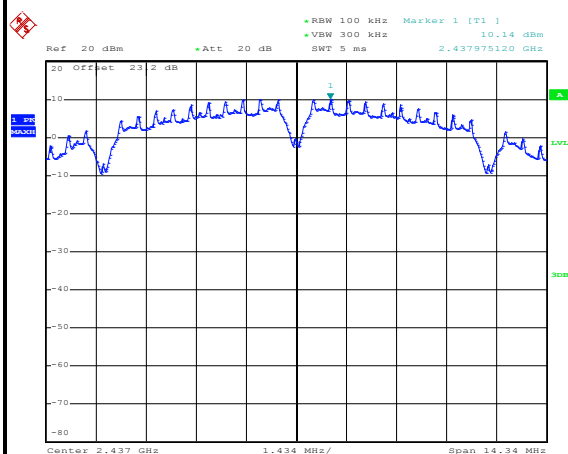
Date: 4.NOV.2016 23:47:25



Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11b Channel 06

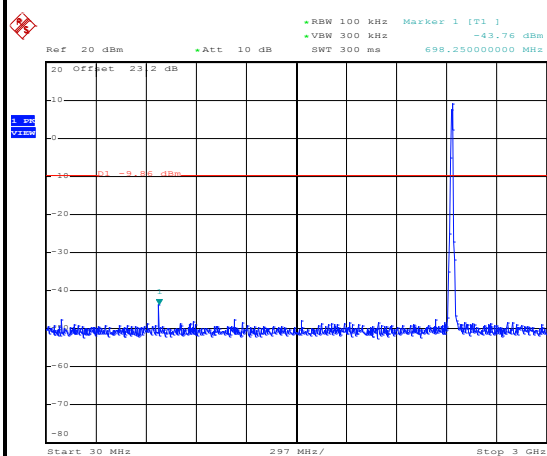
100kHz PSD reference Level



Date: 4.NOV.2016 23:49:30

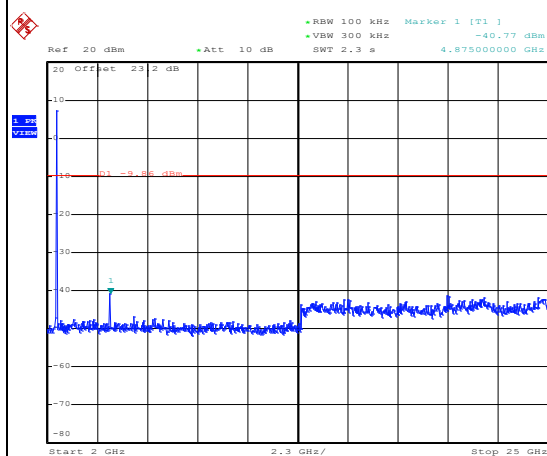
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:49:42

Spurious Emission 2GHz~25GHz



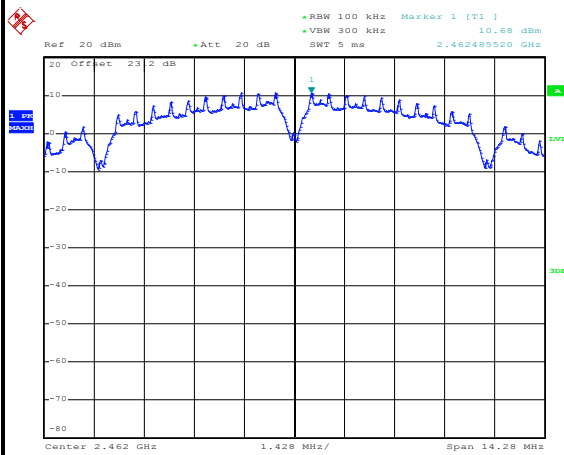
Date: 4.NOV.2016 23:49:50



Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

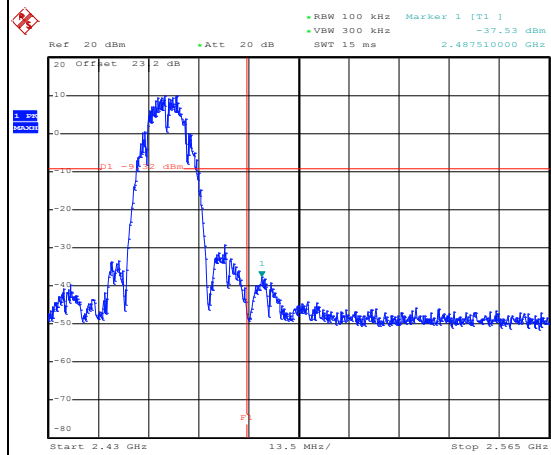
WLAN 802.11b Channel 11

100kHz PSD reference Level



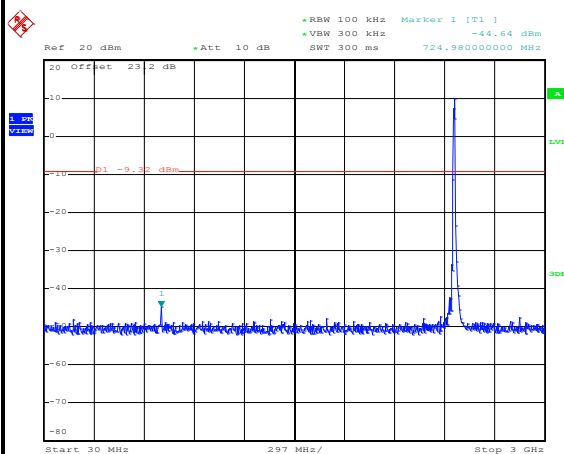
Date: 4.NOV.2016 23:51:36

High Channel Plot



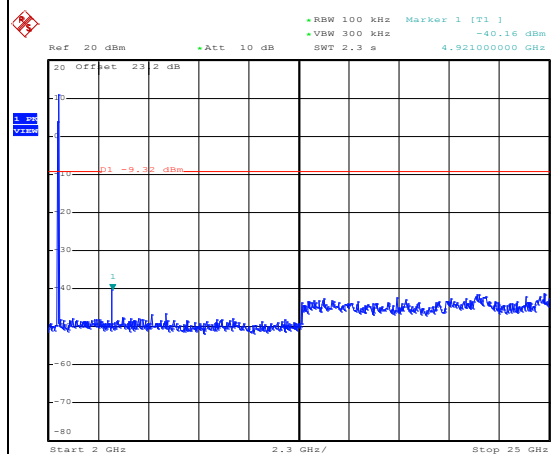
Date: 4.NOV.2016 23:51:53

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:54:09

Spurious Emission 2GHz~25GHz



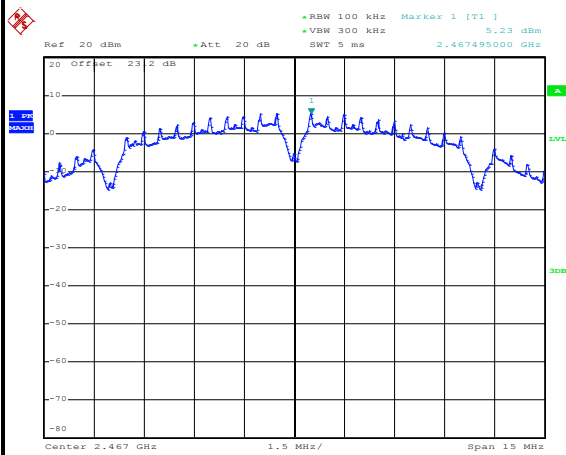
Date: 4.NOV.2016 23:53:37



Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

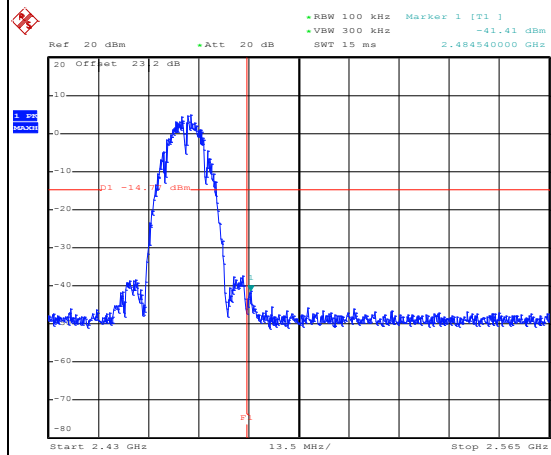
WLAN 802.11b Channel 12

100kHz PSD reference Level



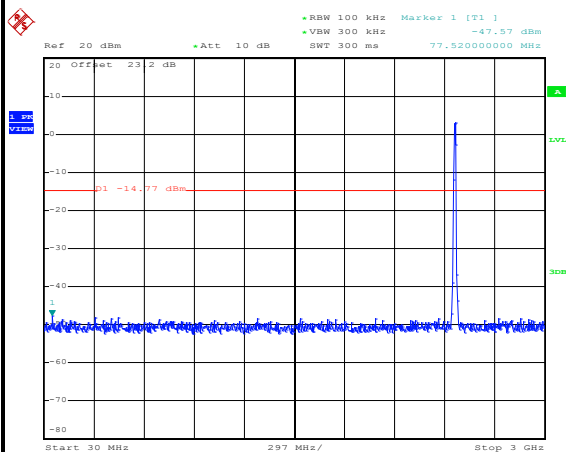
Date: 4.NOV.2016 23:56:28

Low Channel Plot



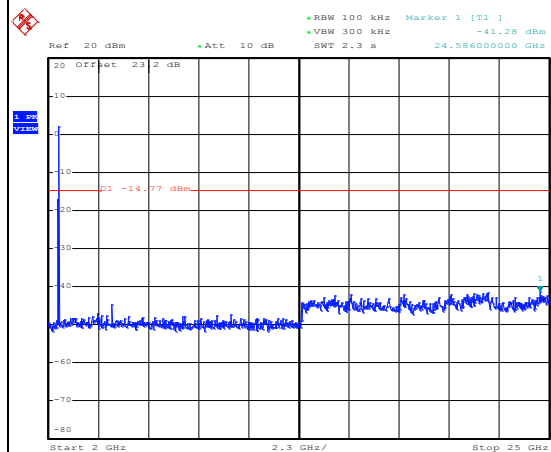
Date: 4.NOV.2016 23:56:52

Spurious Emission 30MHz~3GHz



Date: 4.NOV.2016 23:57:10

Spurious Emission 2GHz~25GHz



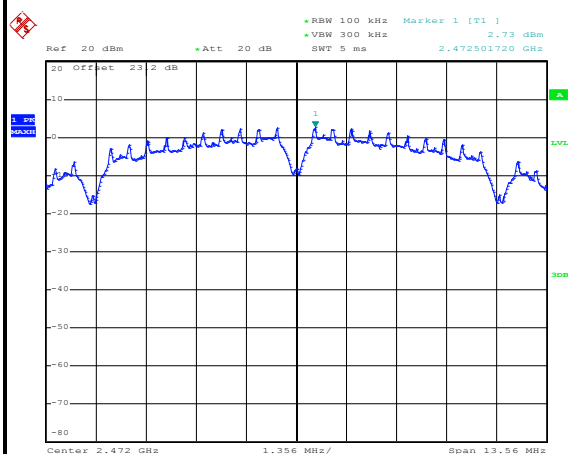
Date: 4.NOV.2016 23:57:18



Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

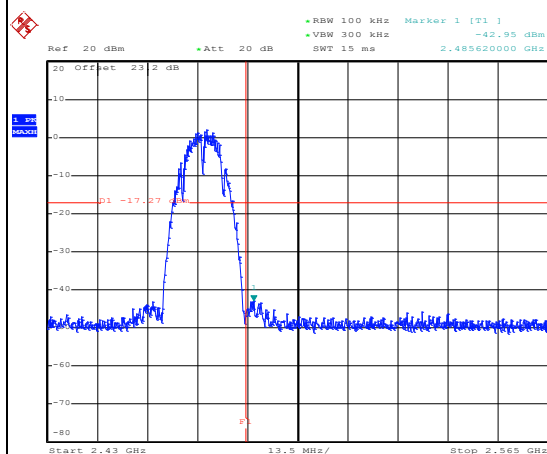
WLAN 802.11b Channel 13

100kHz PSD reference Level



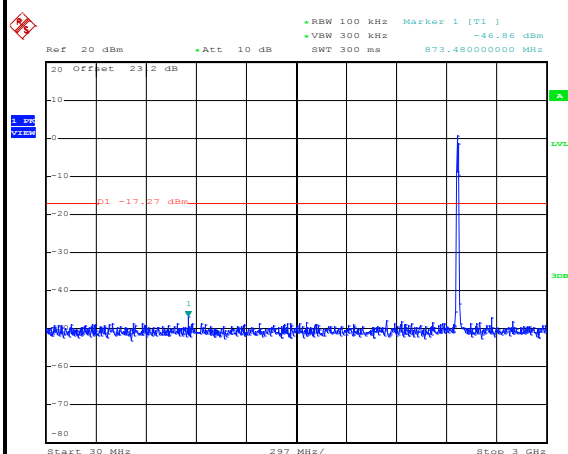
Date: 5.NOV.2016 00:00:11

Low Channel Plot



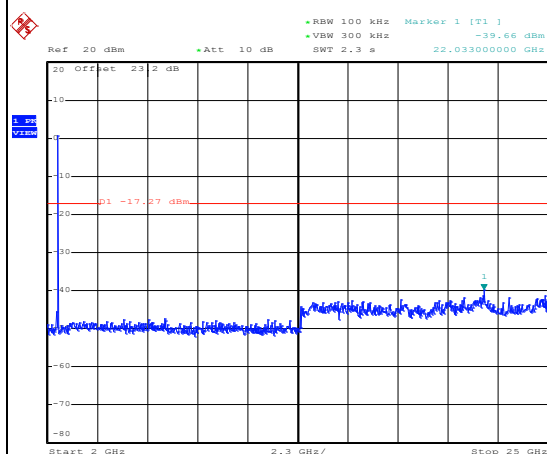
Date: 5.NOV.2016 00:00:19

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:00:30

Spurious Emission 2GHz~25GHz



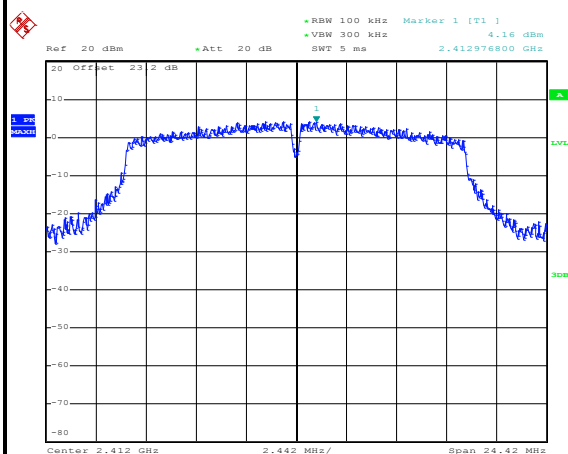
Date: 5.NOV.2016 00:00:39



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

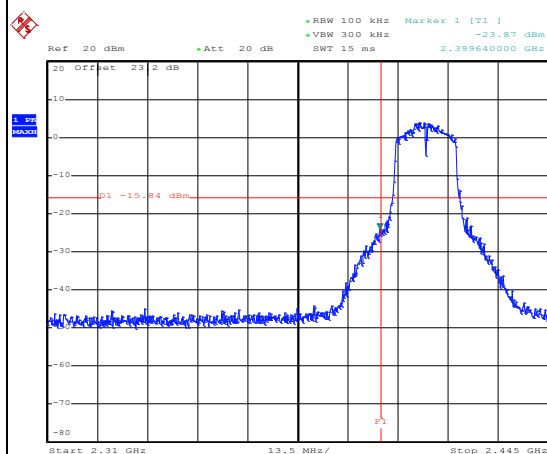
WLAN 802.11g Channel 01

100kHz PSD reference Level



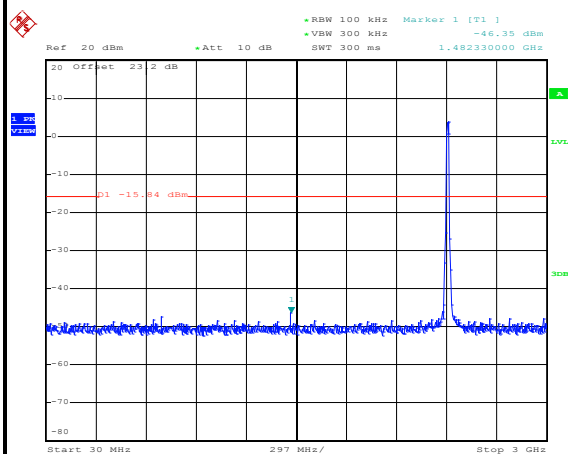
Date: 5.NOV.2016 00:03:14

Low Channel Plot



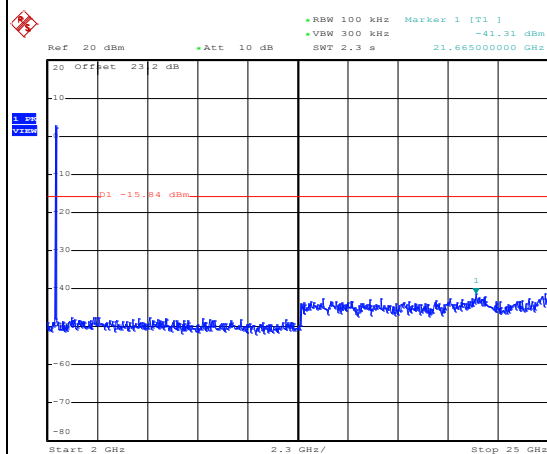
Date: 5.NOV.2016 00:03:26

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:03:38

Spurious Emission 2GHz~25GHz



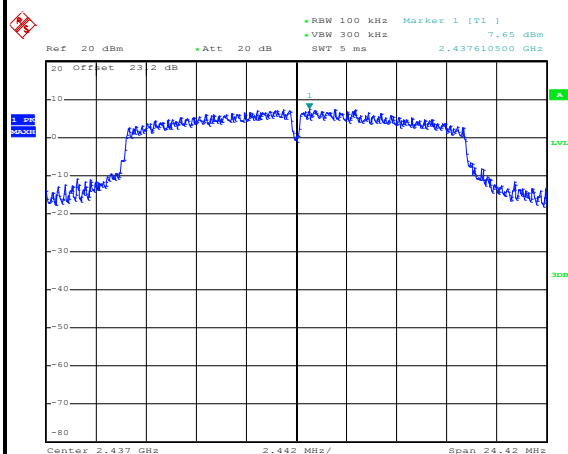
Date: 5.NOV.2016 00:03:47



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11g Channel 06

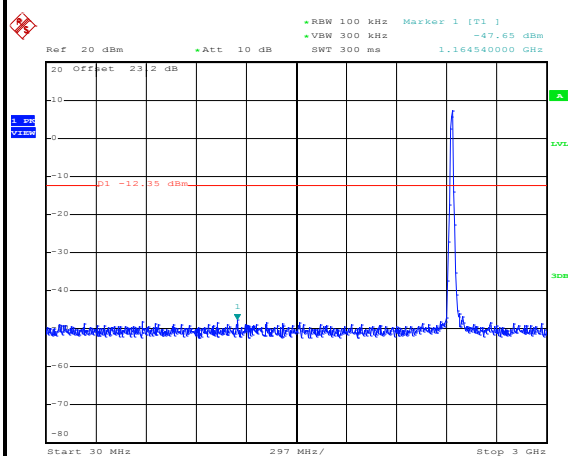
100kHz PSD reference Level



Date: 5.NOV.2016 00:05:49

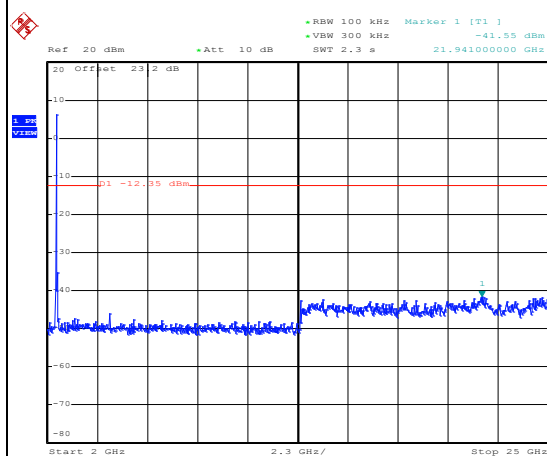
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:06:00

Spurious Emission 2GHz~25GHz



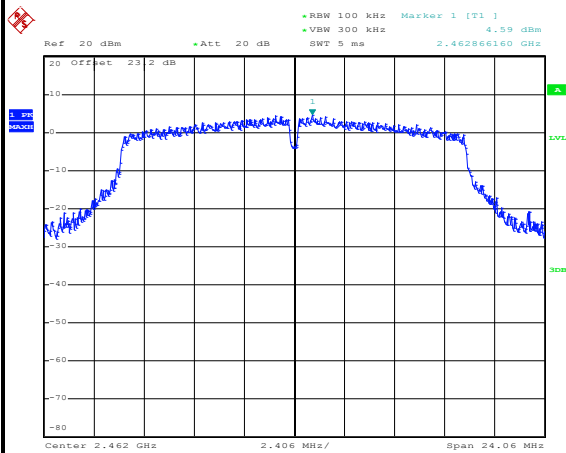
Date: 5.NOV.2016 00:06:08



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

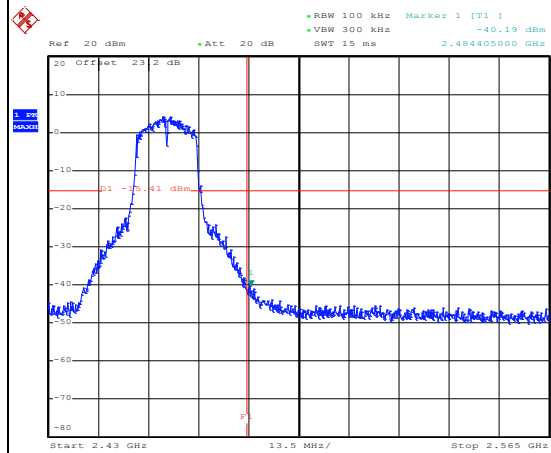
WLAN 802.11g Channel 11

100kHz PSD reference Level



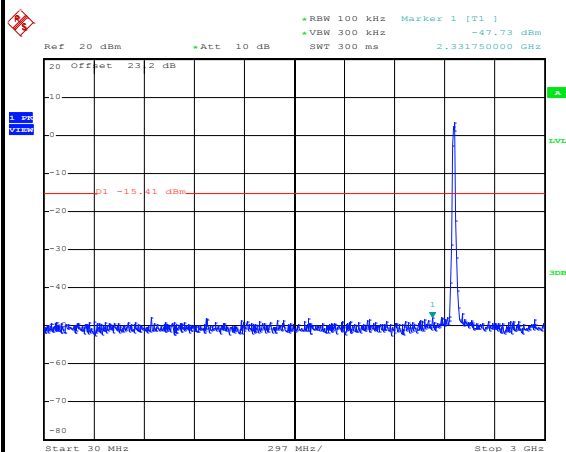
Date: 5.NOV.2016 00:10:08

High Channel Plot



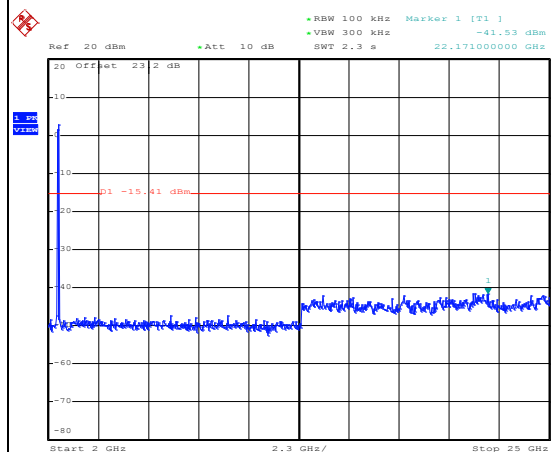
Date: 5.NOV.2016 00:10:19

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:10:31

Spurious Emission 2GHz~25GHz



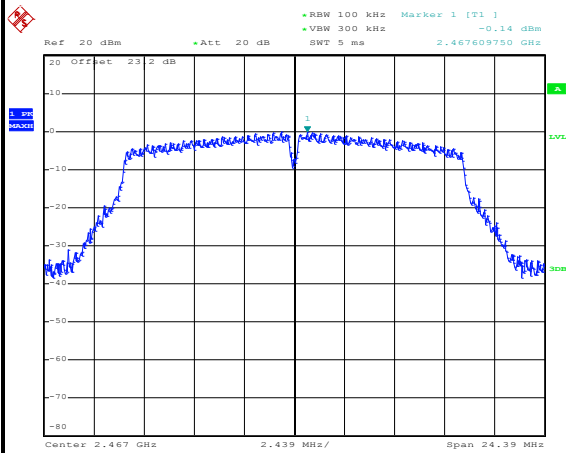
Date: 5.NOV.2016 00:10:39



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

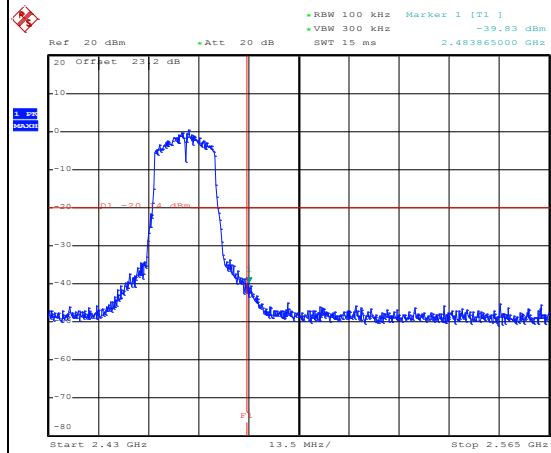
WLAN 802.11g Channel 12

100kHz PSD reference Level



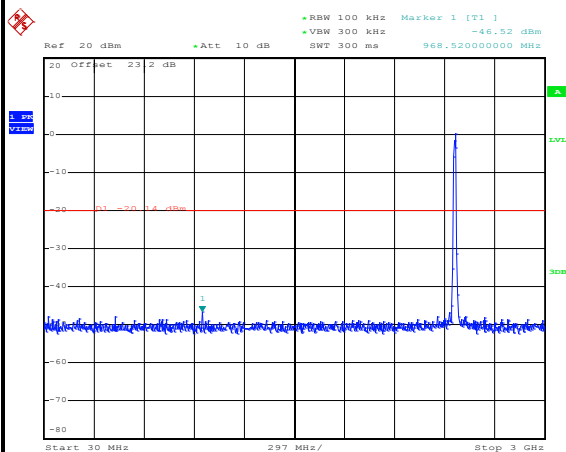
Date: 5.NOV.2016 00:12:34

Low Channel Plot



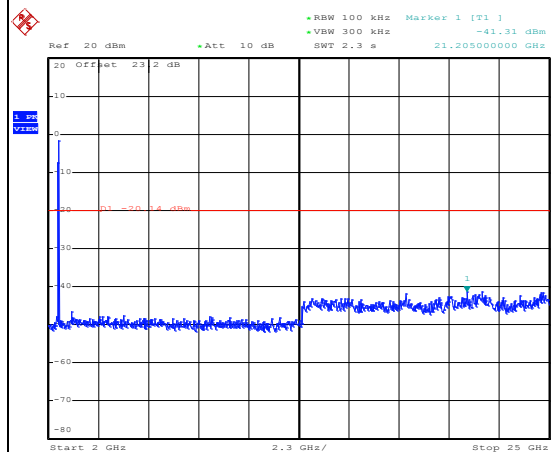
Date: 5.NOV.2016 00:12:47

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:13:13

Spurious Emission 2GHz~25GHz



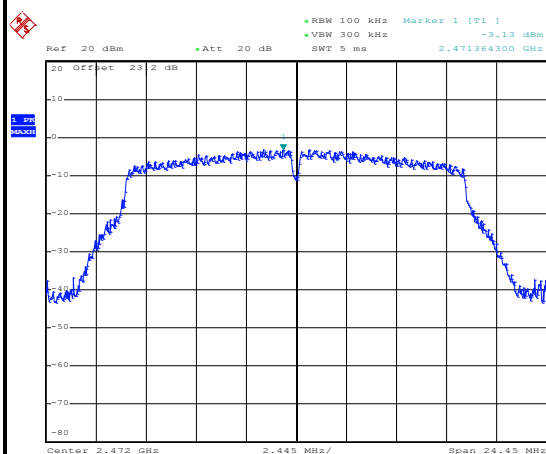
Date: 5.NOV.2016 00:13:22



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

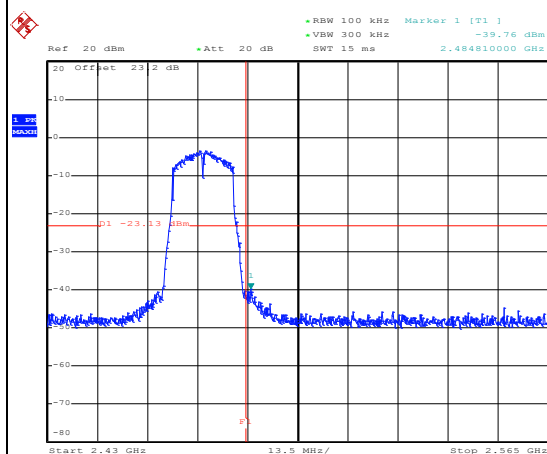
WLAN 802.11g Channel 13

100kHz PSD reference Level



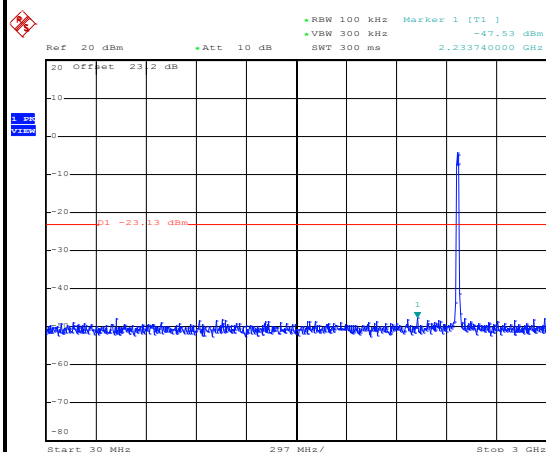
Date: 5.NOV.2016 00:17:13

Low Channel Plot



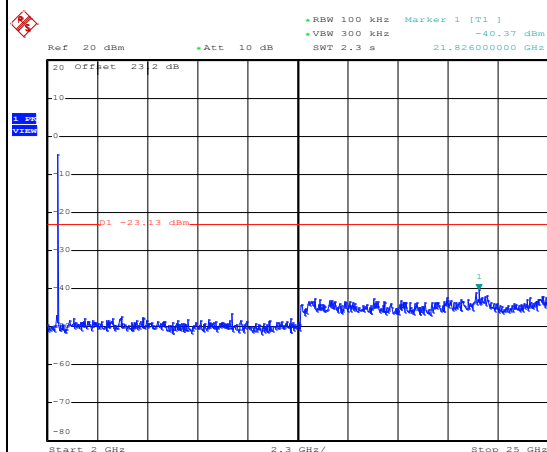
Date: 5.NOV.2016 00:17:26

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:17:38

Spurious Emission 2GHz~25GHz



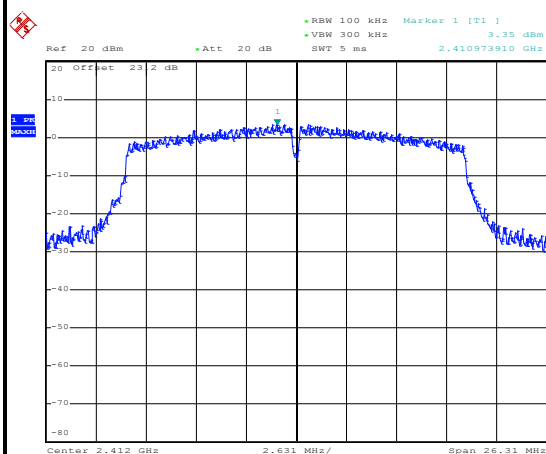
Date: 5.NOV.2016 00:17:47



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang and Derek Hsu

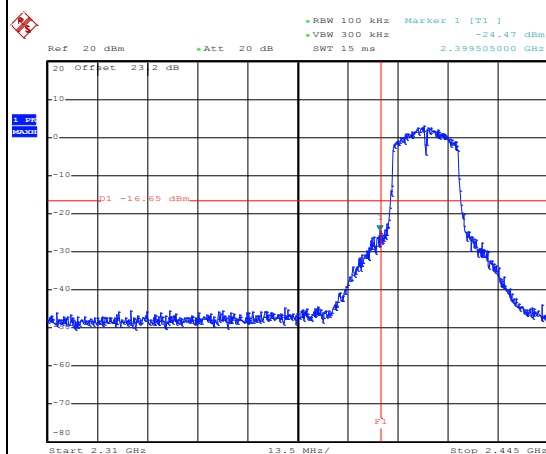
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



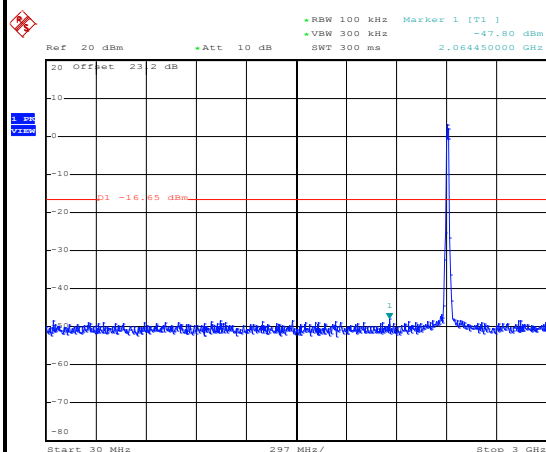
Date: 5.NOV.2016 00:20:33

Low Channel Plot



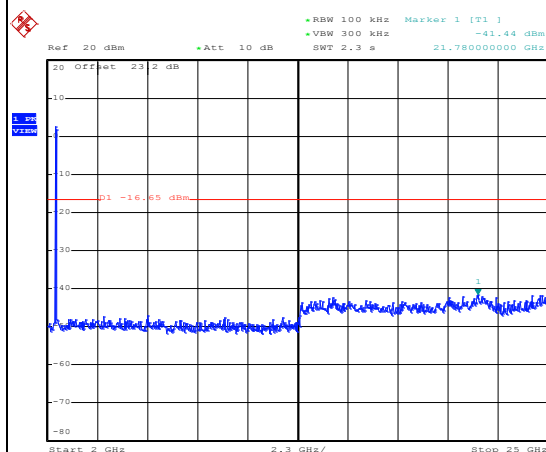
Date: 5.NOV.2016 00:20:43

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:20:54

Spurious Emission 2GHz~25GHz



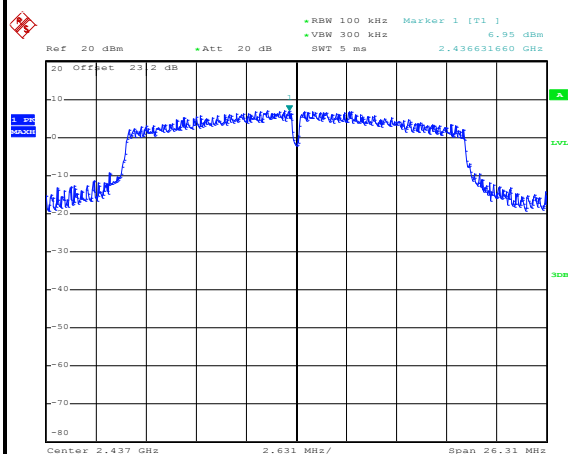
Date: 5.NOV.2016 00:21:03



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang and Derek Hsu

WLAN 802.11n HT20 Channel 06

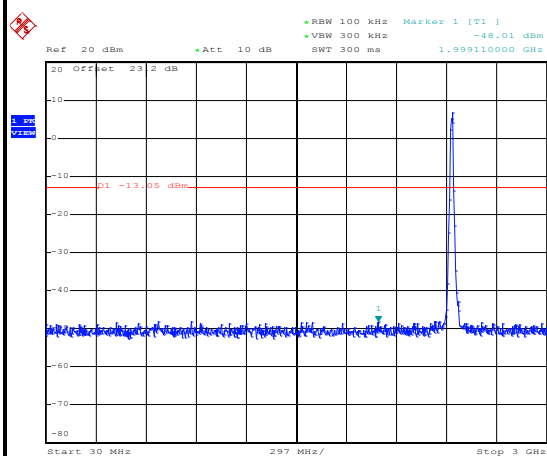
100kHz PSD reference Level



Date: 5.NOV.2016 00:22:50

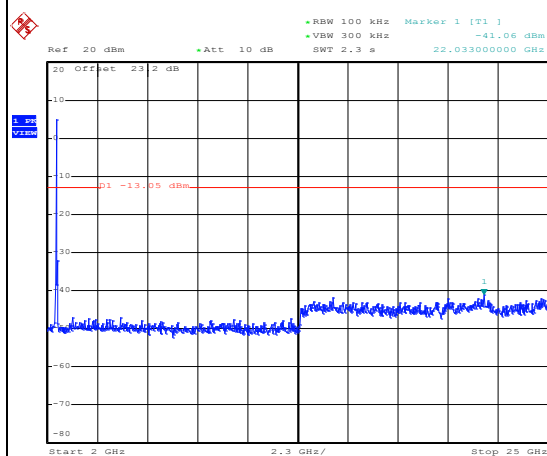
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:23:01

Spurious Emission 2GHz~25GHz



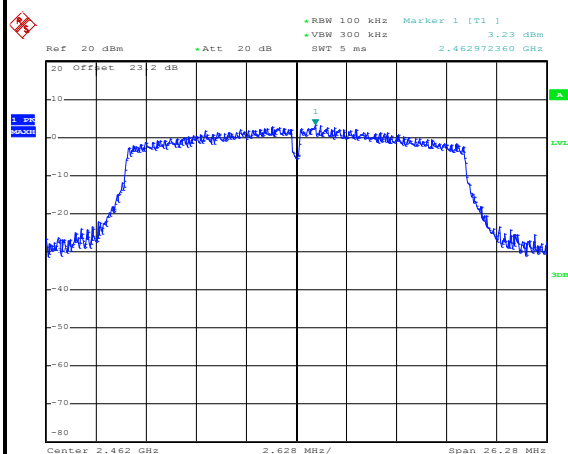
Date: 5.NOV.2016 00:23:10



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang and Derek Hsu

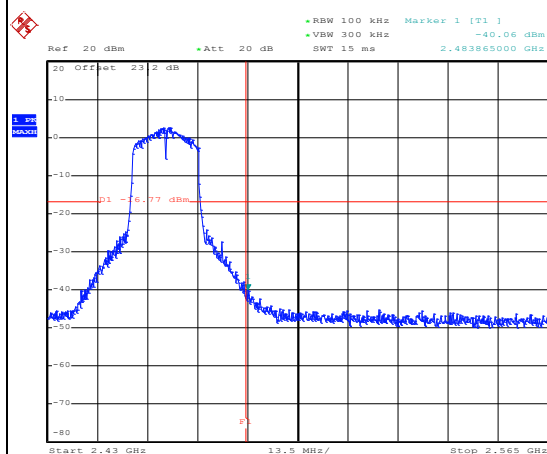
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



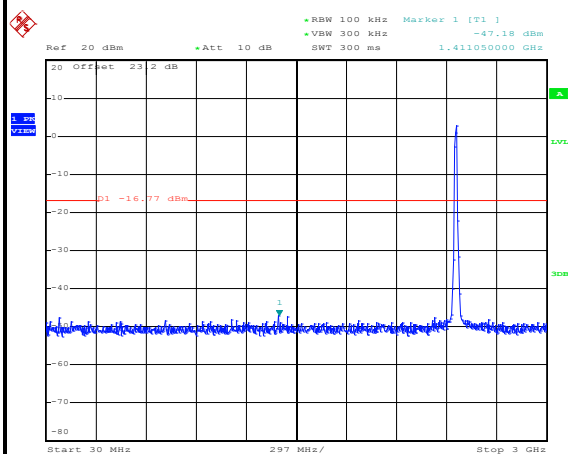
Date: 5.NOV.2016 00:29:03

High Channel Plot



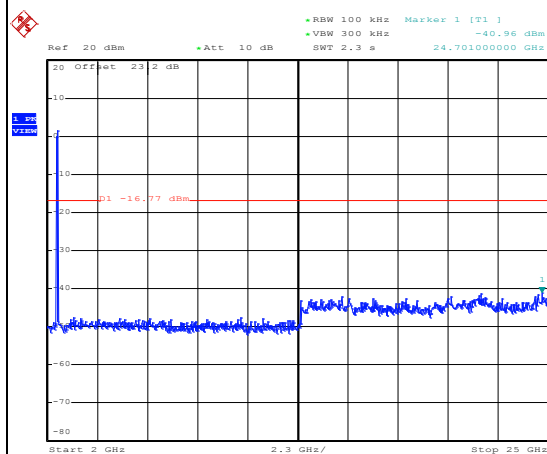
Date: 5.NOV.2016 00:29:25

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:29:40

Spurious Emission 2GHz~25GHz



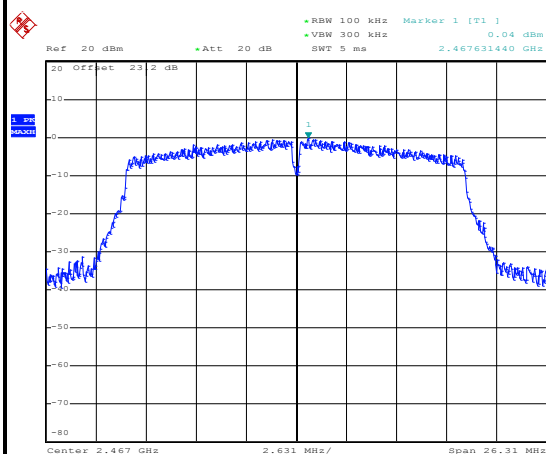
Date: 5.NOV.2016 00:29:48



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	AC Chang and Derek Hsu

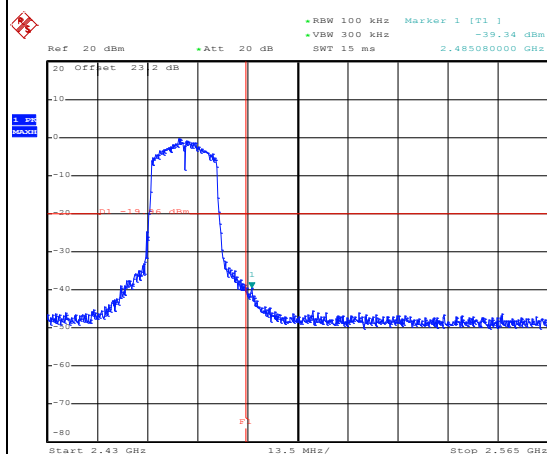
WLAN 802.11n HT20 Channel 12

100kHz PSD reference Level



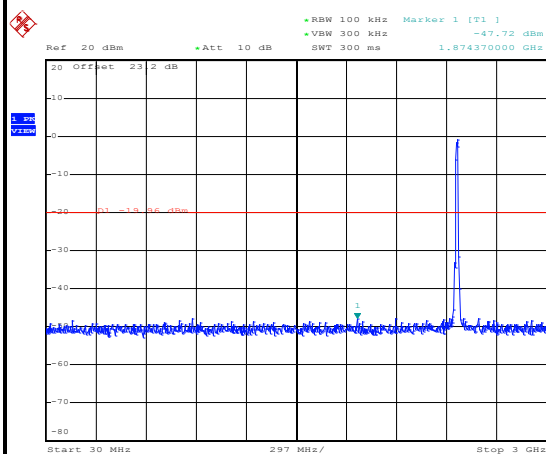
Date: 5.NOV.2016 00:34:19

Low Channel Plot



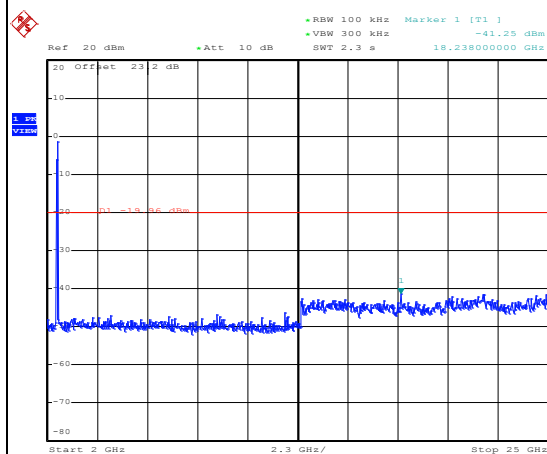
Date: 5.NOV.2016 00:34:44

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:34:56

Spurious Emission 2GHz~25GHz



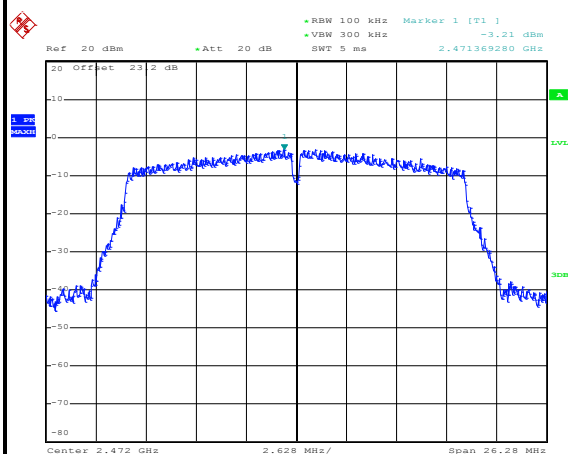
Date: 5.NOV.2016 00:35:04



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	AC Chang and Derek Hsu

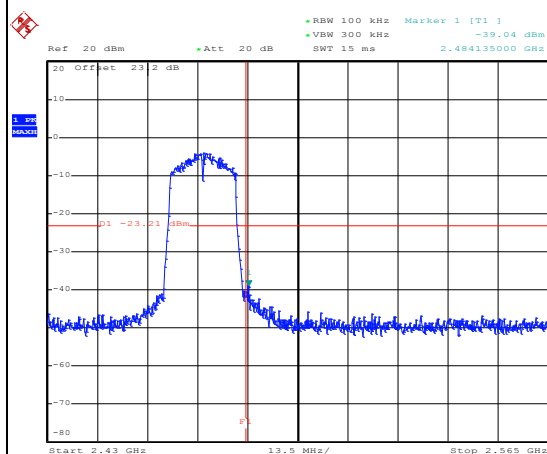
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



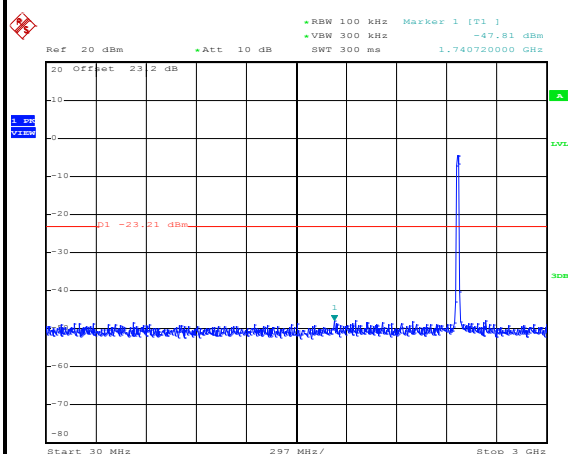
Date: 5.NOV.2016 00:37:12

Low Channel Plot



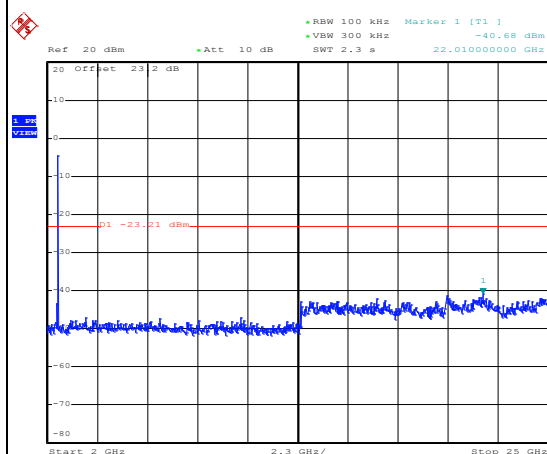
Date: 5.NOV.2016 00:37:53

Spurious Emission 30MHz~3GHz



Date: 5.NOV.2016 00:38:11

Spurious Emission 2GHz~25GHz



Date: 5.NOV.2016 00:38:19

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

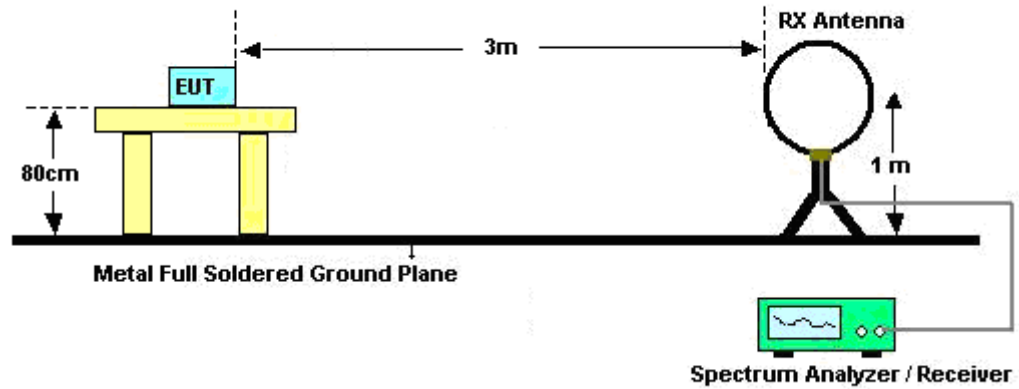
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

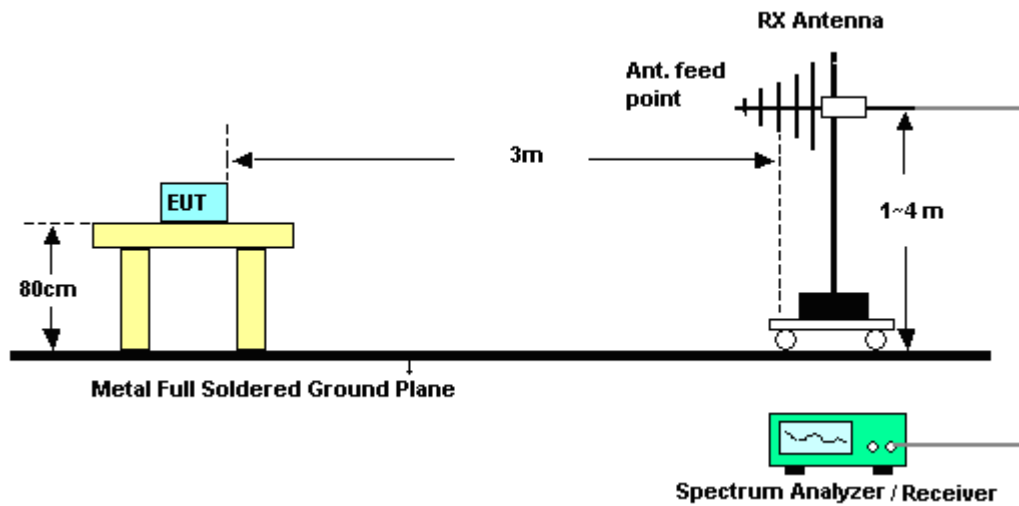
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

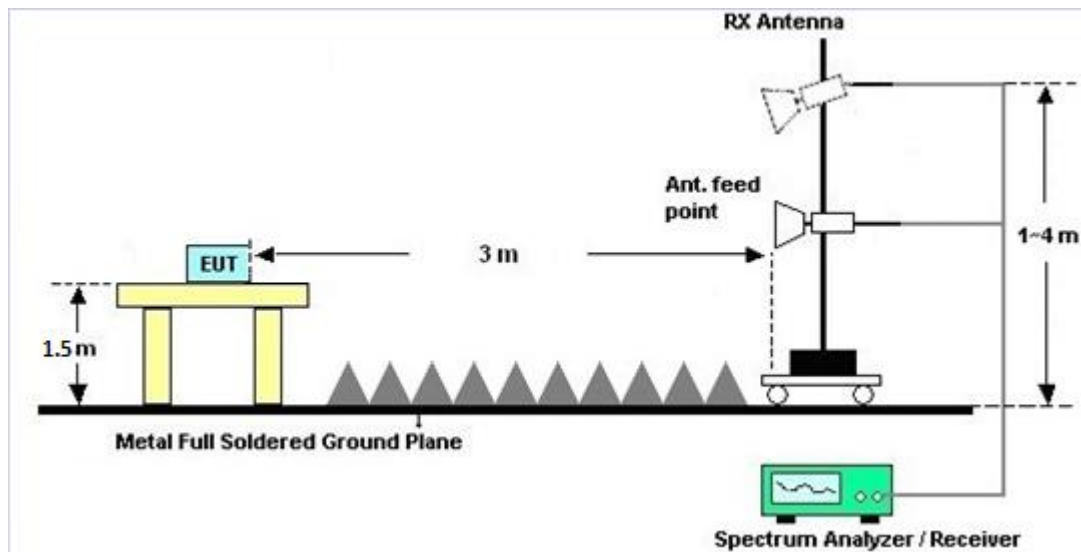
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious 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 and C.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

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 (dB μ V)	
	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.

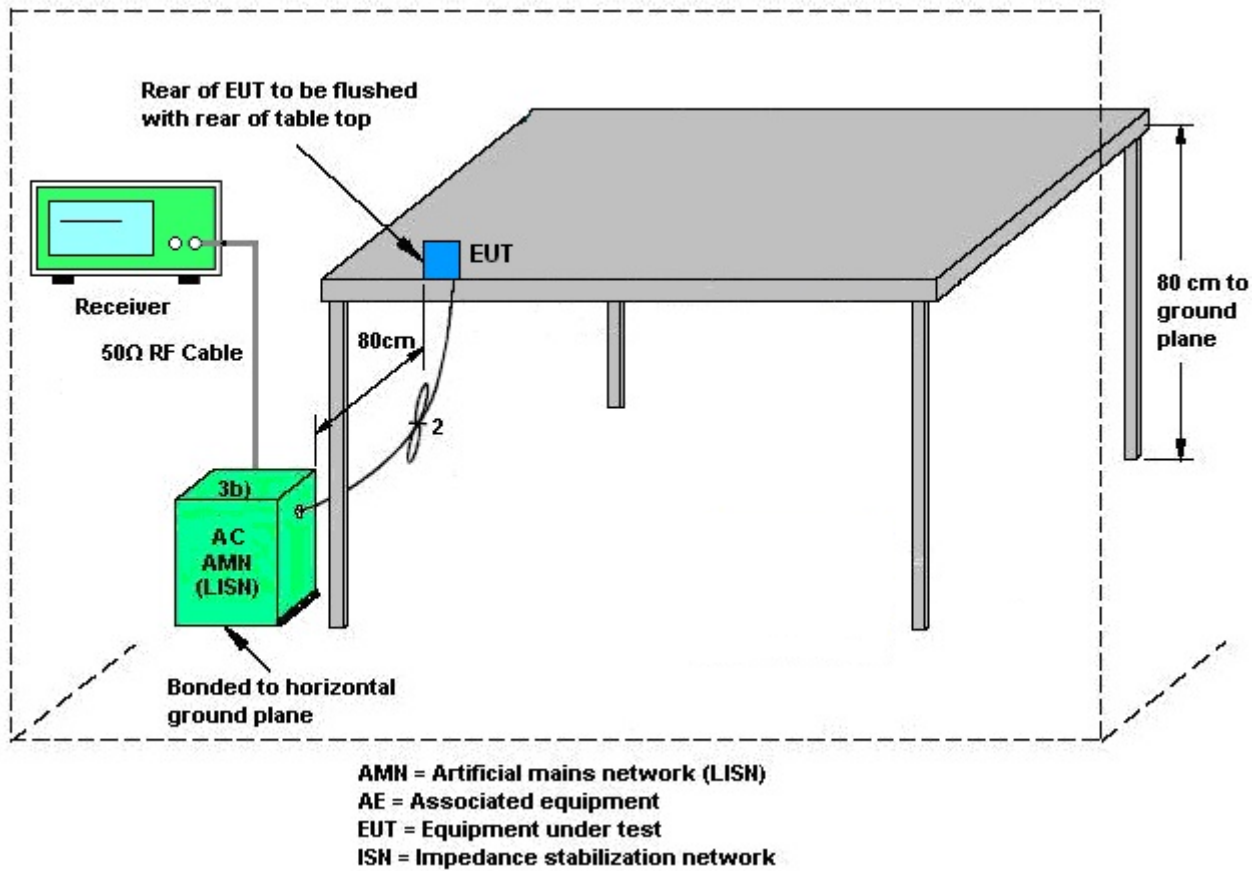
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

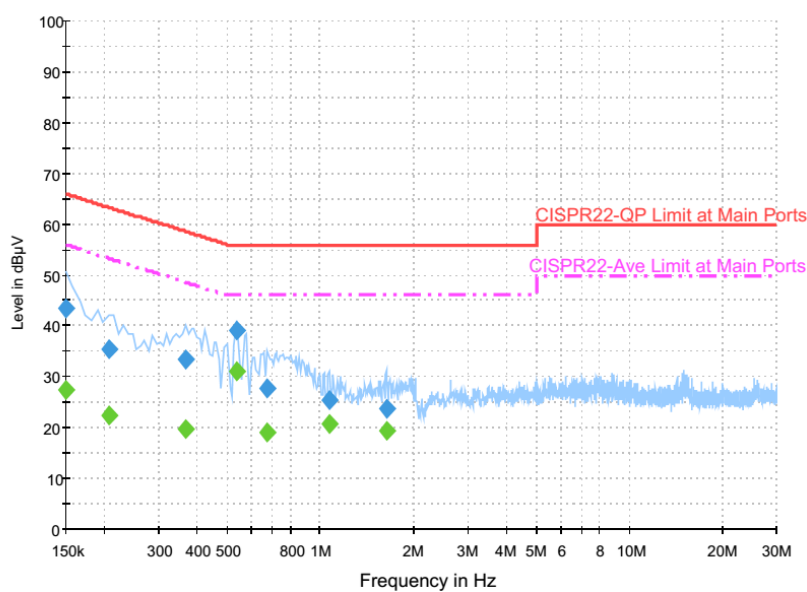
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	50~51%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Tx + USB Cable (Powered from Adapter)		



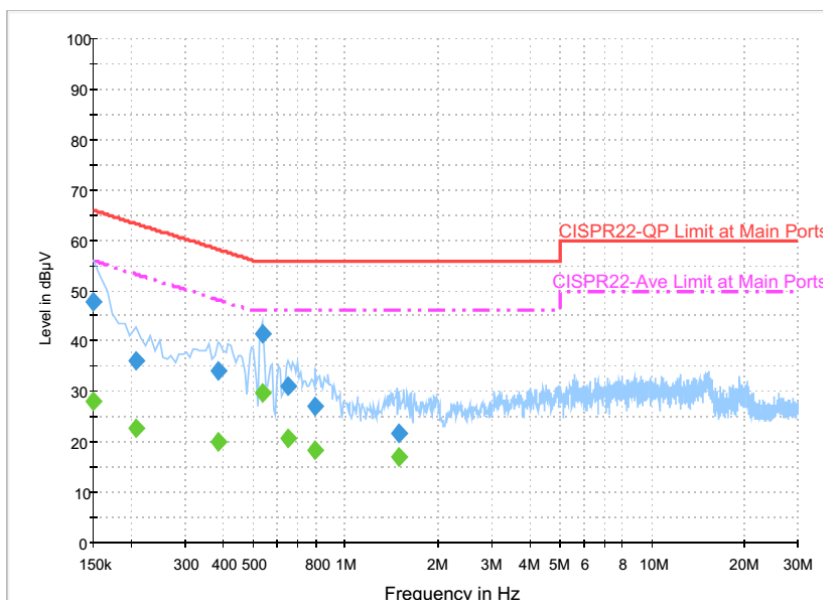
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	43.4	Off	L1	19.6	22.6	66.0
0.206000	35.3	Off	L1	19.6	28.1	63.4
0.366000	33.4	Off	L1	19.6	25.2	58.6
0.534000	39.1	Off	L1	19.6	16.9	56.0
0.670000	27.7	Off	L1	19.6	28.3	56.0
1.070000	25.4	Off	L1	19.7	30.6	56.0
1.638000	23.6	Off	L1	19.7	32.4	56.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	27.5	Off	L1	19.6	28.5	56.0
0.206000	22.5	Off	L1	19.6	30.9	53.4
0.366000	19.7	Off	L1	19.6	28.9	48.6
0.534000	31.3	Off	L1	19.6	14.7	46.0
0.670000	19.2	Off	L1	19.6	26.8	46.0
1.070000	20.6	Off	L1	19.7	25.4	46.0
1.638000	19.5	Off	L1	19.7	26.5	46.0

Test Mode :	Mode 2	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	50~51%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Tx + USB Cable (Powered from Adapter)		


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.8	Off	N	19.6	18.2	66.0
0.206000	36.0	Off	N	19.6	27.4	63.4
0.382000	34.2	Off	N	19.6	24.0	58.2
0.534000	41.4	Off	N	19.6	14.6	56.0
0.646000	31.1	Off	N	19.6	24.9	56.0
0.798000	27.1	Off	N	19.6	28.9	56.0
1.494000	21.8	Off	N	19.6	34.2	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	28.2	Off	N	19.6	27.8	56.0
0.206000	22.8	Off	N	19.6	30.6	53.4
0.382000	20.1	Off	N	19.6	28.1	48.2
0.534000	29.8	Off	N	19.6	16.2	46.0
0.646000	20.8	Off	N	19.6	25.2	46.0
0.798000	18.3	Off	N	19.6	27.7	46.0
1.494000	17.2	Off	N	19.6	28.8	46.0



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

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



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	0932001	300MHz~40GHz	Sep. 29, 2016	Oct. 28, 2016 ~ May 29, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Oct. 28, 2016 ~ May 29, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 23, 2015	Oct. 28, 2016 ~ Nov. 21, 2016	Nov. 22, 2016	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 25, 2016	Nov. 25, 2016 ~ Mar. 09, 2017	Nov. 24, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Oct. 27, 2016 ~ Nov. 23, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Oct. 27, 2016 ~ Nov. 23, 2016	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Oct. 27, 2016 ~ Nov. 23, 2016	Dec. 01, 2016	Conduction (CO05-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 02, 2015	Oct. 31, 2016 ~ Mar. 07, 2017	Sep. 01, 2017	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Oct. 31, 2016 ~ Nov. 04, 2016	Nov. 19, 2016	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Feb. 25, 2017 ~ Mar. 07, 2017	Nov. 09, 2017	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	37059&01	30MHz~1GHz	Oct. 15, 2016	Oct. 31, 2016 ~ Mar. 07, 2017	Oct. 14, 2017	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 21, 2015	Oct. 31, 2016 ~ Nov. 04, 2016	Dec. 20, 2016	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 23, 2016	Feb. 25, 2017 ~ May 25, 2017	Dec. 22, 2017	Radiation (03CH12-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 14, 2016	Oct. 31, 2016 ~ May 25, 2017	Jun. 13, 2017	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1G~18GHz	Oct. 25, 2016	Oct. 31, 2016 ~ May 25, 2017	Oct. 24, 2017	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1815698	1GHz~18GHz	Dec. 14, 2015	Oct. 31, 2016 ~ Nov. 04, 2016	Dec. 13, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1815698	1GHz~18GHz	Dec. 01, 2016	Feb. 25, 2017 ~ May 25, 2017	Nov. 30, 2017	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 30, 2016	Oct. 31, 2016 ~ Nov. 04, 2016	Jan. 29, 2017	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 12, 2017	Feb. 25, 2017 ~ May 25, 2017	Jan. 11, 2018	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Oct. 31, 2016 ~ May 25, 2017	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Oct. 31, 2016 ~ May 25, 2017	N/A	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 15, 2016	Oct. 31, 2016 ~ Mar. 07, 2017	Apr. 14, 2017	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 27, 2017	May 24, 2017~ May 25, 2017	Apr. 26, 2018	Radiation (03CH12-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1
---	-----

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Derek Hsu/Aking	Temperature:	21~25	°C
Test Date:	2016/10/28~2017/05/29	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	14.75	14.85	10.04	9.48	0.50	Pass
11b	1Mbps	1	6	2437	14.70	14.70	9.54	9.56	0.50	Pass
11b	1Mbps	1	11	2462	14.70	14.50	10.00	9.52	0.50	Pass
11b	1Mbps	1	12	2467	14.45	14.50	9.54	10.00	0.50	Pass
11b	1Mbps	1	13	2472	14.45	14.40	9.98	9.04	0.50	Pass
11g	6Mbps	1	1	2412	17.40	17.35	16.32	16.28	0.50	Pass
11g	6Mbps	1	6	2437	18.60	18.30	16.32	16.28	0.50	Pass
11g	6Mbps	1	11	2462	17.40	17.50	16.26	16.04	0.50	Pass
11g	6Mbps	1	12	2467	17.25	17.30	16.32	16.26	0.50	Pass
11g	6Mbps	1	13	2472	17.20	17.35	16.26	16.30	0.50	Pass
HT20	MCS0	1	1	2412	18.20	18.30	17.52	17.54	0.50	Pass
HT20	MCS0	1	6	2437	19.15	18.95	17.52	17.54	0.50	Pass
HT20	MCS0	1	11	2462	18.25	18.25	17.54	17.52	0.50	Pass
HT20	MCS0	1	12	2467	18.20	18.25	17.52	17.54	0.50	Pass
HT20	MCS0	1	13	2472	18.15	18.15	17.52	17.52	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	19.92	20.28		30.00	30.00	1.87	3.85	21.79	24.13	36.00	36.00	Pass
11b	1Mbps	1	6	2437	19.84	20.23		30.00	30.00	1.87	3.85	21.71	24.08	36.00	36.00	Pass
11b	1Mbps	1	11	2462	19.70	20.22		30.00	30.00	1.87	3.85	21.57	24.07	36.00	36.00	Pass
11b	1Mbps	1	12	2467	15.94	15.86		30.00	30.00	1.87	3.85	17.81	19.71	36.00	36.00	Pass
11b	1Mbps	1	13	2472	14.35	13.70		30.00	30.00	1.87	3.85	16.22	17.55	36.00	36.00	Pass
11g	6Mbps	1	1	2412	24.26	24.92		30.00	30.00	1.87	3.85	26.13	28.77	36.00	36.00	Pass
11g	6Mbps	1	6	2437	25.03	25.34		30.00	30.00	1.87	3.85	26.90	29.19	36.00	36.00	Pass
11g	6Mbps	1	11	2462	23.92	24.71		30.00	30.00	1.87	3.85	25.79	28.56	36.00	36.00	Pass
11g	6Mbps	1	12	2467	23.17	23.00		30.00	30.00	1.87	3.85	25.04	26.85	36.00	36.00	Pass
11g	6Mbps	1	13	2472	21.21	20.91		30.00	30.00	1.87	3.85	23.08	24.76	36.00	36.00	Pass
HT20	MCS0	1	1	2412	23.97	15.35		30.00	30.00	1.87	3.85	25.84	19.20	36.00	36.00	Pass
HT20	MCS0	1	6	2437	25.20	25.41		30.00	30.00	1.87	3.85	27.07	29.26	36.00	36.00	Pass
HT20	MCS0	1	11	2462	23.51	24.08		30.00	30.00	1.87	3.85	25.38	27.93	36.00	36.00	Pass
HT20	MCS0	1	12	2467	22.37	22.74		30.00	30.00	1.87	3.85	24.24	26.59	36.00	36.00	Pass
HT20	MCS0	1	13	2472	20.00	20.30		30.00	30.00	1.87	3.85	21.87	24.15	36.00	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	0.00	0.00	18.02	18.51	
11b	1Mbps	1	6	2437	0.00	0.00	17.99	18.42	
11b	1Mbps	1	11	2462	0.00	0.00	17.84	18.40	
11b	1Mbps	1	12	2467	0.00	0.00	14.10	13.80	
11b	1Mbps	1	13	2472	0.00	0.00	12.51	11.63	
11g	6Mbps	1	1	2412	0.00	0.00	17.11	17.72	
11g	6Mbps	1	6	2437	0.00	0.00	19.21	20.27	
11g	6Mbps	1	11	2462	0.00	0.00	16.10	16.76	
11g	6Mbps	1	12	2467	0.00	0.00	13.05	13.01	
11g	6Mbps	1	13	2472	0.00	0.00	9.94	9.66	
HT20	MCS0	1	1	2412	0.00	0.00	16.54	16.85	
HT20	MCS0	1	6	2437	0.00	0.00	20.10	20.04	
HT20	MCS0	1	11	2462	0.00	0.00	15.22	15.81	
HT20	MCS0	1	12	2467	0.00	0.00	11.91	12.69	
HT20	MCS0	1	13	2472	0.00	0.00	8.84	9.48	

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	-3.05	-3.03	-	1.87	3.85	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-2.56	-4.33		1.87	3.85	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-4.20	-3.71		1.87	3.85	8.00	8.00	Pass
11b	1Mbps	1	12	2467	-8.84	-8.50		1.87	3.85	8.00	8.00	Pass
11b	1Mbps	1	13	2472	-10.60	-11.88		1.87	3.85	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-5.80	-7.40		1.87	3.85	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-3.80	-3.60		1.87	3.85	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-9.30	-7.30		1.87	3.85	8.00	8.00	Pass
11g	6Mbps	1	12	2467	-11.61	-11.30		1.87	3.85	8.00	8.00	Pass
11g	6Mbps	1	13	2472	-13.99	-14.47		1.87	3.85	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-8.96	-8.34		1.87	3.85	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-3.60	-5.14		1.87	3.85	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-10.32	-7.55		1.87	3.85	8.00	8.00	Pass
HT20	MCS0	1	12	2467	-13.00	-12.65		1.87	3.85	8.00	8.00	Pass
HT20	MCS0	1	13	2472	-15.77	-15.00		1.87	3.85	8.00	8.00	Pass

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



Appendix B. Radiated Spurious Emission

Test Engineer :	Karl Hou, Nick Yu and Peter Chiu	Temperature :	23~25°C
		Relative Humidity :	52~55%

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		2386.545	54.21	-19.79	74	44.58	27.06	4.03	31.49	215	343	P	H
		2387.7	43.19	-10.81	54	33.56	27.06	4.03	31.49	215	343	A	H
	*	2412	108.6	-	-	98.87	27.14	4.05	31.49	215	343	P	H
	*	2412	104.49	-	-	94.76	27.14	4.05	31.49	215	343	A	H
		2388.015	52.89	-21.11	74	43.26	27.06	4.03	31.49	112	334	P	V
		2387.805	41.45	-12.55	54	31.82	27.06	4.03	31.49	112	334	A	V
	*	2412	103.11	-	-	93.38	27.14	4.05	31.49	112	334	P	V
	*	2412	98.95	-	-	89.22	27.14	4.05	31.49	112	334	A	V
802.11b CH 06 2437MHz		2357.74	53.43	-20.57	74	43.92	26.97	4.01	31.5	105	294	P	H
		2374.12	42.41	-11.59	54	32.84	27.02	4.01	31.49	105	294	A	H
	*	2437	108.18	-	-	98.35	27.21	4.07	31.48	105	294	P	H
	*	2437	103.98	-	-	94.15	27.21	4.07	31.48	105	294	A	H
		2484.6	53.51	-20.49	74	43.49	27.35	4.11	31.47	105	294	P	H
		2500	42.92	-11.08	54	32.84	27.4	4.11	31.46	105	294	A	H
		2363.2	52.65	-21.35	74	43.12	26.99	4.01	31.5	100	335	P	V
		2374.12	41.23	-12.77	54	31.66	27.02	4.01	31.49	100	335	A	V
	*	2437	100.38	-	-	90.55	27.21	4.07	31.48	100	335	P	V
	*	2437	96.18	-	-	86.35	27.21	4.07	31.48	100	335	A	V
		2493.21	52.36	-21.64	74	42.3	27.38	4.11	31.46	100	335	P	V
		2500	40.67	-13.33	54	30.59	27.4	4.11	31.46	100	335	A	V



802.11b CH 11 2462MHz	*	2462	109.04	-	-	99.11	27.29	4.08	31.47	128	321	P	H
	*	2462	104.89	-	-	94.96	27.29	4.08	31.47	128	321	A	H
		2486.84	55.49	-18.51	74	45.46	27.36	4.11	31.47	128	321	P	H
		2486.4	45.74	-8.26	54	35.71	27.36	4.11	31.47	128	321	A	H
	*	2462	101.07	-	-	91.14	27.29	4.08	31.47	100	336	P	V
	*	2462	96.94	-	-	87.01	27.29	4.08	31.47	100	336	A	V
		2485.28	53.01	-20.99	74	42.98	27.36	4.11	31.47	100	336	P	V
		2486.44	41.71	-12.29	54	31.68	27.36	4.11	31.47	100	336	A	V
802.11b CH 12 2467MHz	*	2467	105.9	-	-	102.42	27.42	7.53	31.47	157	321	P	H
	*	2467	101.69	-	-	98.21	27.42	7.53	31.47	157	321	A	H
		2484.96	62.85	-11.15	74	59.33	27.46	7.53	31.47	157	321	P	H
		2484.16	52.82	-1.18	54	49.3	27.46	7.53	31.47	157	321	A	H
	*	2467	99.71	-	-	96.23	27.42	7.53	31.47	100	0	P	V
	*	2467	95.36	-	-	91.88	27.42	7.53	31.47	100	0	A	V
		2497.92	61.38	-12.62	74	57.81	27.5	7.53	31.46	100	0	P	V
		2484.16	50.33	-3.67	54	46.81	27.46	7.53	31.47	100	0	A	V
802.11b CH 13 2472MHz	*	2472	104.33	-	-	100.81	27.46	7.53	31.47	156	321	P	H
	*	2472	99.82	-	-	96.3	27.46	7.53	31.47	156	321	A	H
		2486.92	63.13	-10.87	74	59.61	27.46	7.53	31.47	156	321	P	H
		2487.48	52.92	-1.08	54	49.4	27.46	7.53	31.47	156	321	A	H
	*	2472	98.4	-	-	94.88	27.46	7.53	31.47	100	1	P	V
	*	2472	94.07	-	-	90.55	27.46	7.53	31.47	100	1	A	V
		2483.84	61.4	-12.6	74	57.88	27.46	7.53	31.47	100	1	P	V
		2487.16	50.77	-3.23	54	47.25	27.46	7.53	31.47	100	1	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11b (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	49.57	-24.43	74	69	32.18	6.17	58.31	338	211	P	H
		4824	44.59	-9.41	54	64.02	32.18	6.17	58.31	338	221	A	H
		12060	52.7	-21.3	74	60.68	39.16	10.1	57.63	185	159	P	H
		12060	42.15	-11.85	54	50.13	39.16	10.1	57.63	185	159	A	H
		4824	51.98	-22.02	74	71.41	32.18	6.17	58.31	254	219	P	V
		4824	48.15	-5.85	54	67.58	32.18	6.17	58.31	254	219	A	V
		12060	51.81	-22.19	74	59.79	39.16	10.1	57.63	400	118	P	V
		12060	40.3	-13.7	54	48.28	39.16	10.1	57.63	400	118	A	V
802.11b CH 06 2437MHz		4874	47.49	-26.51	74	66.73	32.27	6.21	58.24	110	4874	P	H
		4874	41.47	-12.53	54	60.71	32.27	6.21	58.24	110	4874	A	H
		7311	55.44	-18.56	74	69.49	36.97	7.72	59.09	213	7311	P	H
		7311	48.11	-5.89	54	62.16	36.97	7.72	59.09	213	7311	A	H
		12185	53.73	-20.27	74	61.78	39.09	10.15	57.68	188	12185	P	H
		12185	44	-10	54	52.05	39.09	10.15	57.68	188	12185	A	H
		4874	49.06	-24.94	74	68.3	32.27	6.21	58.24	106	4874	P	V
		4874	44.14	-9.86	54	63.38	32.27	6.21	58.24	106	4874	A	V
		7311	54.76	-19.24	74	68.81	36.97	7.72	59.09	223	7311	P	V
		7311	47.73	-6.27	54	61.78	36.97	7.72	59.09	223	7311	A	V
		12185	52.68	-21.32	74	60.73	39.09	10.15	57.68	391	12185	P	V
		12185	42.44	-11.56	54	50.49	39.09	10.15	57.68	391	12185	A	V



802.11b CH 11 2462MHz		4924	46.33	-27.67	74	65.42	32.36	6.23	58.18	100	77	P	H
		4924	39.12	-14.88	54	58.21	32.36	6.23	58.18	100	77	A	H
		7386	58.41	-15.59	74	72.36	37.18	7.72	59.14	224	71	P	H
		7386	52.8	-1.2	54	66.75	37.18	7.72	59.14	224	71	A	H
		12310	54.81	-19.19	74	62.92	39.01	10.2	57.72	189	160	P	H
		12310	46.54	-7.46	54	54.65	39.01	10.2	57.72	189	160	A	H
		4924	48.72	-25.28	74	67.81	32.36	6.23	58.18	108	229	P	V
		4924	43.84	-10.16	54	62.93	32.36	6.23	58.18	108	229	A	V
		7386	53.72	-20.28	74	67.67	37.18	7.72	59.14	207	151	P	V
		7386	46.35	-7.65	54	60.3	37.18	7.72	59.14	207	151	A	V
		12310	53.97	-20.03	74	62.08	39.01	10.2	57.72	400	124	P	V
		12310	44.2	-9.8	54	52.31	39.01	10.2	57.72	400	124	A	V
802.11b CH 12 2467MHz		4932	47.2	-26.8	74	62.73	31.49	11.04	58.06	100	0	P	H
		7401	59.24	-14.76	74	67.56	36.56	14.27	59.15	207	148	P	H
		7401	53.04	-0.96	54	61.36	36.56	14.27	59.15	207	148	A	H
		12335	57.06	-16.94	74	57.32	38.45	19.23	57.94	280	209	P	H
		12335	50.21	-3.79	54	50.47	38.45	19.23	57.94	280	209	A	H
		4932	47.71	-26.29	74	63.24	31.49	11.04	58.06	100	0	P	V
		7401	57.81	-16.19	74	66.13	36.56	14.27	59.15	288	243	P	V
		7401	52	-2	54	60.32	36.56	14.27	59.15	288	243	A	V
		12335	54.49	-19.51	74	54.75	38.45	19.23	57.94	392	131	P	V
		12335	46.55	-7.45	54	46.81	38.45	19.23	57.94	392	131	A	V
802.11b CH 13 2472MHz		4944	40.34	-33.66	74	55.67	31.52	11.19	58.04	100	0	P	H
		7416	45.36	-28.64	74	53.68	36.56	14.27	59.15	100	0	P	H
		4944	39.78	-34.22	74	55.11	31.52	11.19	58.04	100	0	P	V
		7416	47.39	-26.61	74	55.71	36.56	14.27	59.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2390	66.38	-7.62	74	56.74	27.07	4.03	31.49	162	337	P	H
		2390	51.64	-2.36	54	42	27.07	4.03	31.49	162	337	A	H
	*	2412	110.92	-	-	101.19	27.14	4.05	31.49	162	337	P	H
	*	2412	101.08	-	-	91.35	27.14	4.05	31.49	162	337	A	H
		2389.59	61.85	-12.15	74	52.21	27.07	4.03	31.49	115	335	P	V
		2390	47.4	-6.6	54	37.76	27.07	4.03	31.49	115	335	A	V
	*	2412	104.55	-	-	94.82	27.14	4.05	31.49	115	335	P	V
	*	2412	94.55	-	-	84.82	27.14	4.05	31.49	115	335	A	V
802.11g CH 06 2437MHz		2341.08	55.14	-18.86	74	45.69	26.92	4	31.5	104	294	P	H
		2389.8	43.37	-10.63	54	33.73	27.07	4.03	31.49	104	294	A	H
	*	2437	112.28	-	-	102.45	27.21	4.07	31.48	104	294	P	H
	*	2437	102.59	-	-	92.76	27.21	4.07	31.48	104	294	A	H
		2486.63	55.4	-18.6	74	45.37	27.36	4.11	31.47	104	294	P	H
		2483.5	43.72	-10.28	54	33.7	27.35	4.11	31.47	104	294	A	H
		2335.9	53.44	-20.56	74	44.03	26.91	3.98	31.51	105	335	P	V
		2346.82	41.29	-12.71	54	31.82	26.94	4	31.5	105	335	A	V
	*	2437	104.09	-	-	94.26	27.21	4.07	31.48	105	335	P	V
	*	2437	94.11	-	-	84.28	27.21	4.07	31.48	105	335	A	V
		2494.19	53.17	-20.83	74	43.11	27.38	4.11	31.46	105	335	P	V
		2483.69	40.67	-13.33	54	30.65	27.35	4.11	31.47	105	335	A	V
802.11g CH 11 2462MHz	*	2462	111.08	-	-	101.15	27.29	4.08	31.47	187	342	P	H
	*	2462	101.31	-	-	91.38	27.29	4.08	31.47	187	342	A	H
		2483.72	67.94	-6.06	74	57.92	27.35	4.11	31.47	187	342	P	H
		2483.52	52.3	-1.7	54	42.28	27.35	4.11	31.47	187	342	A	H
	*	2462	102.68	-	-	92.75	27.29	4.08	31.47	107	337	P	V
	*	2462	93.07	-	-	83.14	27.29	4.08	31.47	107	337	A	V
		2483.8	60.62	-13.38	74	50.6	27.35	4.11	31.47	107	337	P	V
		2483.52	45.49	-8.51	54	35.47	27.35	4.11	31.47	107	337	A	V



802.11g CH 12 2467MHz	*	2467	107.49	-	-	104.01	27.42	7.53	31.47	154	295	P	H
	*	2467	97.67	-	-	94.19	27.42	7.53	31.47	154	295	A	H
		2483.68	67.38	-6.62	74	63.86	27.46	7.53	31.47	154	295	P	H
		2483.52	53.43	-0.57	54	49.91	27.46	7.53	31.47	154	295	A	H
	*	2467	99.06	-	-	95.58	27.42	7.53	31.47	113	358	P	V
	*	2467	90.01	-	-	86.53	27.42	7.53	31.47	113	358	A	V
		2486.32	62.04	-11.96	74	58.52	27.46	7.53	31.47	113	358	P	V
		2483.52	50.2	-3.8	54	46.68	27.46	7.53	31.47	113	358	A	V
802.11g CH 13 2472MHz	*	2472	103.41	-	-	100.03	27.32	7.53	31.47	170	306	P	H
	*	2472	94.27	-	-	90.89	27.32	7.53	31.47	170	306	A	H
		2484.52	66.04	-7.96	74	62.52	27.46	7.53	31.47	170	306	P	H
		2484.12	53.44	-0.56	54	49.92	27.46	7.53	31.47	170	306	A	H
	*	2472	96.86	-	-	93.48	27.32	7.53	31.47	128	359	P	V
	*	2472	87.52	-	-	84.14	27.32	7.53	31.47	128	359	A	V
		2484.96	62.35	-11.65	74	58.83	27.46	7.53	31.47	128	359	P	V
		2484.2	50.37	-3.63	54	46.85	27.46	7.53	31.47	128	359	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11g (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	52.33	-21.67	74	71.76	32.18	6.17	58.31	103	97	P	H
		4824	35	-19	54	54.43	32.18	6.17	58.31	103	97	A	H
		12060	59.01	-14.99	74	66.99	39.16	10.1	57.63	188	160	P	H
		12060	41.02	-12.98	54	49	39.16	10.1	57.63	188	160	A	H
		4824	52.31	-21.69	74	71.74	32.18	6.17	58.31	100	241	P	V
		4824	34.88	-19.12	54	54.31	32.18	6.17	58.31	100	241	A	V
		12060	58.2	-15.8	74	66.18	39.16	10.1	57.63	391	126	P	V
		12060	40.09	-13.91	54	48.07	39.16	10.1	57.63	391	126	A	V
802.11g CH 06 2437MHz		4874	55.73	-18.27	74	74.97	32.27	6.21	58.24	100	82	P	H
		4874	38.42	-15.58	54	57.66	32.27	6.21	58.24	100	82	A	H
		7311	63.37	-10.63	74	77.42	36.97	7.72	59.09	100	153	P	H
		7311	47.5	-6.5	54	61.55	36.97	7.72	59.09	100	153	A	H
		12185	62.51	-11.49	74	70.56	39.09	10.15	57.68	188	160	P	H
		12185	44.46	-9.54	54	52.51	39.09	10.15	57.68	188	160	A	H
		4874	56.93	-17.07	74	76.17	32.27	6.21	58.24	102	228	P	V
		4874	39.97	-14.03	54	59.21	32.27	6.21	58.24	102	228	A	V
		7311	60.27	-13.73	74	74.32	36.97	7.72	59.09	304	43	P	V
		7311	44.14	-9.86	54	58.19	36.97	7.72	59.09	304	43	A	V
		12185	60.48	-13.52	74	68.53	39.09	10.15	57.68	392	124	P	V
		12185	42.72	-11.28	54	50.77	39.09	10.15	57.68	392	124	A	V



802.11g CH 11 2462MHz		4924	53.76	-20.24	74	72.85	32.36	6.23	58.18	100	89	P	H
		4924	34.39	-19.61	54	53.48	32.36	6.23	58.18	100	89	A	H
		7386	59.2	-14.8	74	73.15	37.18	7.72	59.14	100	158	P	H
		7386	43.39	-10.61	54	57.34	37.18	7.72	59.14	100	158	A	H
		12310	57.9	-16.1	74	66.01	39.01	10.2	57.72	197	159	P	H
		12310	39.57	-14.43	54	47.68	39.01	10.2	57.72	197	159	A	H
		4924	55.32	-18.68	74	74.41	32.36	6.23	58.18	100	236	P	V
		4924	36.19	-17.81	54	55.28	32.36	6.23	58.18	100	236	A	V
		7386	57.28	-16.72	74	71.23	37.18	7.72	59.14	298	43	P	V
		7386	40.44	-13.56	54	54.39	37.18	7.72	59.14	298	43	A	V
		12310	55.05	-18.95	74	63.16	39.01	10.2	57.72	384	122	P	V
		12310	38.06	-15.94	54	46.17	39.01	10.2	57.72	384	122	A	V
802.11g CH 12 2467MHz		4934	39.7	-34.3	74	55.23	31.49	11.04	58.06	100	0	P	H
		7403	47.4	-26.6	74	55.72	36.56	14.27	59.15	100	0	P	H
		4934	39.13	-34.87	74	54.66	31.49	11.04	58.06	100	0	P	V
		7403	49.87	-24.13	74	58.19	36.56	14.27	59.15	100	0	P	V
802.11g CH 13 2472MHz		4944	39.44	-34.56	74	54.77	31.52	11.19	58.04	100	0	P	H
		7418	45.31	-28.69	74	53.59	36.61	14.27	59.16	100	0	P	H
		4944	38.66	-35.34	74	53.99	31.52	11.19	58.04	100	0	P	V
		7418	48.3	-25.7	74	56.58	36.61	14.27	59.16	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.905	62	-12	74	52.36	27.07	4.03	31.49	121	350	P	H
		2390	47.08	-6.92	54	37.44	27.07	4.03	31.49	121	350	A	H
	*	2412	107.06	-	-	97.33	27.14	4.05	31.49	121	350	P	H
	*	2412	97.1	-	-	87.37	27.14	4.05	31.49	121	350	A	H
		2389.8	59.65	-14.35	74	50.01	27.07	4.03	31.49	114	334	P	V
		2390	44.77	-9.23	54	35.13	27.07	4.03	31.49	114	334	A	V
	*	2412	102.73	-	-	93	27.14	4.05	31.49	114	334	P	V
	*	2412	92.83	-	-	83.1	27.14	4.05	31.49	114	334	A	V
802.11n HT20 CH 06 2437MHz		2389.8	53.06	-20.94	74	43.42	27.07	4.03	31.49	210	343	P	H
		2389.94	41.25	-12.75	54	31.61	27.07	4.03	31.49	210	343	A	H
	*	2437	112.45	-	-	102.62	27.21	4.07	31.48	210	343	P	H
	*	2437	102.54	-	-	92.71	27.21	4.07	31.48	210	343	A	H
		2483.9	54.93	-19.07	74	44.91	27.35	4.11	31.47	210	343	P	H
		2483.9	42.56	-11.44	54	32.54	27.35	4.11	31.47	210	343	A	H
		2381.26	52.37	-21.63	74	42.76	27.04	4.03	31.49	100	333	P	V
		2389.24	40.1	-13.9	54	30.46	27.07	4.03	31.49	100	333	A	V
	*	2437	104.13	-	-	94.3	27.21	4.07	31.48	100	333	P	V
	*	2437	93.84	-	-	84.01	27.21	4.07	31.48	100	333	A	V
		2497.41	53.17	-20.83	74	43.1	27.39	4.11	31.46	100	333	P	V
		2488.94	40.33	-13.67	54	30.29	27.37	4.11	31.47	100	333	A	V
802.11n HT20 CH 11 2462MHz	*	2462	108.21	-	-	98.28	27.29	4.08	31.47	108	336	P	H
	*	2462	98.42	-	-	88.49	27.29	4.08	31.47	108	336	A	H
		2483.72	65.02	-8.98	74	55	27.35	4.11	31.47	108	336	P	H
		2483.52	49.28	-4.72	54	39.26	27.35	4.11	31.47	108	336	A	H
	*	2462	99.84	-	-	89.91	27.29	4.08	31.47	105	335	P	V
	*	2462	89.93	-	-	80	27.29	4.08	31.47	105	335	A	V
		2483.88	57.82	-16.18	74	47.8	27.35	4.11	31.47	105	335	P	V
		2483.52	43.6	-10.4	54	33.58	27.35	4.11	31.47	105	335	A	V



802.11n HT20 CH 12 2467Hz	*	2467	106.83	-	-	103.35	27.42	7.53	31.47	157	324	P	H
	*	2467	97.12	-	-	93.64	27.42	7.53	31.47	157	324	A	H
		2483.64	65.86	-8.14	74	62.34	27.46	7.53	31.47	157	324	P	H
		2483.52	53.18	-0.82	54	49.66	27.46	7.53	31.47	157	324	A	H
	*	2467	99.19	-	-	95.71	27.42	7.53	31.47	101	31	P	V
	*	2467	89.86	-	-	86.38	27.42	7.53	31.47	101	31	A	V
		2484.68	61.92	-12.08	74	58.4	27.46	7.53	31.47	101	31	P	V
		2483.68	50.14	-3.86	54	46.62	27.46	7.53	31.47	101	31	A	V
802.11n HT20 CH 13 2472MHz	*	2472	103.48	-	-	99.96	27.46	7.53	31.47	100	323	P	H
	*	2472	93.61	-	-	90.23	27.32	7.53	31.47	100	323	A	H
		2484.36	65.35	-8.65	74	61.83	27.46	7.53	31.47	100	323	P	H
		2483.52	53.09	-0.91	54	49.57	27.46	7.53	31.47	100	323	A	H
	*	2472	95.84	-	-	92.46	27.32	7.53	31.47	106	33	P	V
	*	2472	86.02	-	-	82.64	27.32	7.53	31.47	106	33	A	V
		2488.44	62.33	-11.67	74	58.77	27.5	7.53	31.47	106	33	P	V
		2483.52	50.11	-3.89	54	46.59	27.46	7.53	31.47	106	33	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	50.97	-23.03	74	70.4	32.18	6.17	58.31	104	98	P	H
		4824	33.46	-20.54	54	52.89	32.18	6.17	58.31	104	98	A	H
		12060	58.28	-15.72	74	66.26	39.16	10.1	57.63	187	160	P	H
		12060	40.59	-13.41	54	48.57	39.16	10.1	57.63	187	160	A	H
		4824	50.49	-23.51	74	69.92	32.18	6.17	58.31	112	282	P	V
		4824	33.43	-20.57	54	52.86	32.18	6.17	58.31	112	282	A	V
		12060	57.83	-16.17	74	65.81	39.16	10.1	57.63	392	125	P	V
		12060	39.78	-14.22	54	47.76	39.16	10.1	57.63	392	125	A	V
802.11n HT20 CH 06 2437MHz		4874	54.17	-19.83	74	73.41	32.27	6.21	58.24	100	95	P	H
		4874	36.55	-17.45	54	55.79	32.27	6.21	58.24	100	95	A	H
		7311	63.15	-10.85	74	77.2	36.97	7.72	59.09	100	159	P	H
		7311	47.01	-6.99	54	61.06	36.97	7.72	59.09	100	159	A	H
		12185	62.39	-11.61	74	70.44	39.09	10.15	57.68	187	160	P	H
		12185	44.3	-9.7	54	52.35	39.09	10.15	57.68	187	160	A	H
		4874	56.36	-17.64	74	75.6	32.27	6.21	58.24	103	229	P	V
		4874	38.79	-15.21	54	58.03	32.27	6.21	58.24	103	229	A	V
		7311	61.11	-12.89	74	75.16	36.97	7.72	59.09	302	44	P	V
		7311	44.94	-9.06	54	58.99	36.97	7.72	59.09	302	44	A	V
		12185	61.17	-12.83	74	69.22	39.09	10.15	57.68	384	127	P	V
		12185	42.64	-11.36	54	50.69	39.09	10.15	57.68	384	127	A	V



802.11n HT20 CH 11 2462MHz		4924	53.96	-20.04	74	73.05	32.36	6.23	58.18	101	89	P	H
		4924	33	-21	54	52.09	32.36	6.23	58.18	101	89	A	H
		7386	54.82	-19.18	74	68.77	37.18	7.72	59.14	100	160	P	H
		7386	38.97	-15.03	54	52.92	37.18	7.72	59.14	100	160	A	H
		12310	54.13	-19.87	74	62.24	39.01	10.2	57.72	389	171	P	H
		12310	37.09	-16.91	54	45.2	39.01	10.2	57.72	389	171	A	H
		4924	55.17	-18.83	74	74.26	32.36	6.23	58.18	100	230	P	V
		4924	33.87	-20.13	54	52.96	32.36	6.23	58.18	100	230	A	V
		7386	55.33	-18.67	74	69.28	37.18	7.72	59.14	299	42	P	V
		7386	37.75	-16.25	54	51.7	37.18	7.72	59.14	299	42	A	V
		12310	53.56	-20.44	74	61.67	39.01	10.2	57.72	400	122	P	V
		12310	36.25	-17.75	54	44.36	39.01	10.2	57.72	400	122	A	V
802.11n HT20 CH 12 2467MHz		4932	38.67	-35.33	74	54.2	31.49	11.04	58.06	100	0	P	H
		7401	44.48	-29.52	74	52.8	36.56	14.27	59.15	100	0	P	H
		4934	39.09	-34.91	74	54.62	31.49	11.04	58.06	100	0	P	V
		7401	48.72	-25.28	74	57.04	36.56	14.27	59.15	100	0	P	V
802.11n HT20 CH 13 2472MHz		4944	38.41	-35.59	74	53.74	31.52	11.19	58.04	100	0	P	H
		7416	45.11	-28.89	74	53.43	36.56	14.27	59.15	100	0	P	H
		4944	38.42	-35.58	74	53.75	31.52	11.19	58.04	100	0	P	V
		7416	44.01	-29.99	74	52.33	36.56	14.27	59.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****Emission below 1GHz****2.4GHz WIFI 802.11g (LF)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4GHz 802.11g LF		84.81	24.39	-15.61	40	41.27	14.5	1.06	32.44	-	-	P	H
		88.59	30.33	-13.17	43.5	46.85	14.86	1.06	32.44	100	0	P	H
		138.27	17.63	-25.87	43.5	30.62	18	1.43	32.42	-	-	P	H
		346.2	23.75	-22.25	46	32.52	21.08	2.44	32.29	-	-	P	H
		534.5	25.93	-20.07	46	30.73	24.41	3.19	32.4	-	-	P	H
		674.5	27.49	-18.51	46	29.94	26.14	3.82	32.41	-	-	P	H
		71.58	25.47	-14.53	40	44.02	12.84	1.06	32.45	100	0	P	V
		96.42	22.48	-21.02	43.5	37.97	15.88	1.06	32.43	-	-	P	V
		110.73	21.5	-22	43.5	35.15	17.35	1.43	32.43	-	-	P	V
		435.8	23.16	-22.84	46	29.68	22.97	2.89	32.38	-	-	P	V
		561.8	25.3	-20.7	46	29.67	24.73	3.3	32.4	-	-	P	V
		722.8	29.09	-16.91	46	30.72	26.84	3.89	32.36	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2372.265	57.14	-16.86	74	54.24	27.02	7.37	31.49	379	7	P	H
		2386.965	46.92	-7.08	54	43.9	27.06	7.45	31.49	379	7	A	H
	*	2412	110.67	-	-	107.57	27.14	7.45	31.49	379	7	P	H
	*	2412	106.24	-	-	103.14	27.14	7.45	31.49	379	7	A	H
		2330.265	55.58	-18.42	74	52.9	26.89	7.3	31.51	378	302	P	V
		2386.965	44.21	-9.79	54	41.19	27.06	7.45	31.49	378	302	A	V
	*	2412	105	-	-	101.9	27.14	7.45	31.49	378	302	P	V
	*	2412	100.51	-	-	97.41	27.14	7.45	31.49	378	302	A	V
802.11b CH 06 2437MHz		2326.66	56.32	-17.68	74	53.44	27.09	7.3	31.51	364	10	P	H
		2383.22	44.6	-9.4	54	41.43	27.21	7.45	31.49	364	10	A	H
	*	2437	111.74	-	-	108.52	27.21	7.49	31.48	364	10	P	H
	*	2437	107.34	-	-	104.12	27.21	7.49	31.48	364	10	A	H
		2490.9	56.5	-17.5	74	52.94	27.5	7.53	31.47	364	10	P	H
		2491.04	44.96	-9.04	54	41.4	27.5	7.53	31.47	364	10	A	H
		2362.64	55.68	-18.32	74	52.64	27.17	7.37	31.5	298	306	P	V
		2383.22	44.05	-9.95	54	40.88	27.21	7.45	31.49	298	306	A	V
	*	2437	106.74	-	-	103.52	27.21	7.49	31.48	298	306	P	V
	*	2437	102.36	-	-	99.14	27.21	7.49	31.48	298	306	A	V
		2490.55	56.11	-17.89	74	52.55	27.5	7.53	31.47	298	306	P	V
		2488.73	44.3	-9.7	54	40.74	27.5	7.53	31.47	298	306	A	V
802.11b CH 11 2462MHz	*	2462	109.72	-	-	106.37	27.29	7.53	31.47	358	11	P	H
	*	2462	105.26	-	-	101.91	27.29	7.53	31.47	358	11	A	H
		2486.72	57.61	-16.39	74	54.19	27.36	7.53	31.47	358	11	P	H
		2487.88	46.73	-7.27	54	43.31	27.36	7.53	31.47	358	11	A	H
	*	2462	105.2	-	-	101.85	27.29	7.53	31.47	375	301	P	V
	*	2462	100.71	-	-	97.36	27.29	7.53	31.47	375	301	A	V
		2493.48	56.87	-17.13	74	53.42	27.38	7.53	31.46	375	301	P	V
		2487.8	44.78	-9.22	54	41.36	27.36	7.53	31.47	375	301	A	V



802.11b CH 12 2467MHz	*	2467	106.96	-	-	103.6	27.3	7.53	31.47	394	21	P	H
	*	2467	102.59	-	-	99.23	27.3	7.53	31.47	394	21	A	H
		2483.52	60.92	-13.08	74	57.4	27.46	7.53	31.47	394	21	P	H
		2484.16	53.18	-0.82	54	49.66	27.46	7.53	31.47	394	21	A	H
	*	2467	103.19	-	-	99.71	27.42	7.53	31.47	393	92	P	V
	*	2467	98.89	-	-	95.41	27.42	7.53	31.47	393	92	A	V
		2483.8	59.13	-14.87	74	55.61	27.46	7.53	31.47	393	92	P	V
		2484.16	49.53	-4.47	54	46.01	27.46	7.53	31.47	393	92	A	V
802.11b CH 13 2472MHz	*	2472	104.79	-	-	101.27	27.46	7.53	31.47	397	21	P	H
	*	2472	100.65	-	-	97.13	27.46	7.53	31.47	397	21	A	H
		2487.44	60.01	-13.99	74	56.49	27.46	7.53	31.47	397	21	P	H
		2487.28	52.61	-1.39	54	49.09	27.46	7.53	31.47	397	21	A	H
	*	2472	101.38	-	-	97.86	27.46	7.53	31.47	393	93	P	V
	*	2472	97.17	-	-	93.65	27.46	7.53	31.47	393	93	A	V
		2483.52	59.08	-14.92	74	55.56	27.46	7.53	31.47	393	93	P	V
		2487.2	49.45	-4.55	54	45.93	27.46	7.53	31.47	393	93	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	52.8	-21.2	74	68.19	32.18	10.74	58.31	382	178	P	H
		4824	50.49	-3.51	54	65.88	32.18	10.74	58.31	382	178	A	H
		4824	48.28	-25.72	74	63.67	32.18	10.74	58.31	100	0	P	V
802.11b CH 06 2437MHz		4874	52.99	-21.01	74	68.07	32.27	10.89	58.24	399	181	P	H
		4874	50.69	-3.31	54	65.77	32.27	10.89	58.24	399	181	A	H
		7311	51.28	-22.72	74	59.22	36.97	14.18	59.09	106	83	P	H
		7311	43.73	-10.27	54	51.67	36.97	14.18	59.09	106	83	A	H
		4874	47.72	-26.28	74	62.8	32.27	10.89	58.24	100	0	P	V
		7311	49.95	-24.05	74	57.89	36.97	14.18	59.09	100	0	P	V
802.11b CH 11 2462MHz		4924	45.85	-28.15	74	60.63	32.36	11.04	58.18	100	0	P	H
		7386	49.13	-24.87	74	56.82	37.18	14.27	59.14	100	0	P	H
		4924	44.45	-29.55	74	59.23	32.36	11.04	58.18	100	0	P	V
		7386	48.93	-25.07	74	56.62	37.18	14.27	59.14	100	0	P	V
802.11b CH 12 2462MHz		4932	56.82	-17.18	74	72.35	31.49	11.04	58.06	323	42	P	H
		4932	50.87	-3.13	54	66.4	31.49	11.04	58.06	323	42	A	H
		7404	46.79	-27.21	74	55.11	36.56	14.27	59.15	100	0	P	H
		4932	52.94	-21.06	74	68.47	31.49	11.04	58.06	325	26	P	V
		4932	46.89	-7.11	54	62.42	31.49	11.04	58.06	325	26	A	V
		7404	48	-26	74	56.32	36.56	14.27	59.15	100	0	P	V
802.11b CH 13 2472MHz		4944	53.39	-20.61	74	68.72	31.52	11.19	58.04	321	42	P	H
		4944	47.49	-6.51	54	62.82	31.52	11.19	58.04	321	42	A	H
		7416	44.95	-29.05	74	53.27	36.56	14.27	59.15	100	0	P	H
		4944	50.74	-23.26	74	66.07	31.52	11.19	58.04	100	0	P	V
		7416	45.99	-28.01	74	54.31	36.56	14.27	59.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.8	68.2	-5.8	74	65.17	27.07	7.45	31.49	360	10	P	H
		2390	52.03	-1.97	54	49	27.07	7.45	31.49	360	10	A	H
	*	2412	111.84	-	-	108.74	27.14	7.45	31.49	360	10	P	H
	*	2412	102.99	-	-	99.89	27.14	7.45	31.49	360	10	A	H
		2389.8	63.51	-10.49	74	60.48	27.07	7.45	31.49	352	62	P	V
		2390	48.18	-5.82	54	45.15	27.07	7.45	31.49	352	62	A	V
	*	2412	107.99	-	-	104.89	27.14	7.45	31.49	352	62	P	V
	*	2412	98.57	-	-	95.47	27.14	7.45	31.49	352	62	A	V
802.11g CH 06 2437MHz		2380.42	57.47	-16.53	74	54.3	27.21	7.45	31.49	321	13	P	H
		2389.94	45.81	-8.19	54	42.6	27.25	7.45	31.49	321	13	A	H
	*	2437	115.2	-	-	111.81	27.38	7.49	31.48	321	13	P	H
	*	2437	106.12	-	-	102.73	27.38	7.49	31.48	321	13	A	H
		2484.88	59.97	-14.03	74	56.45	27.46	7.53	31.47	321	13	P	H
		2483.76	46.13	-7.87	54	42.61	27.46	7.53	31.47	321	13	A	H
		2389.52	56.11	-17.89	74	52.9	27.25	7.45	31.49	400	88	P	V
		2389.8	44.3	-9.7	54	41.09	27.25	7.45	31.49	400	88	A	V
	*	2437	110.53	-	-	107.14	27.38	7.49	31.48	400	88	P	V
	*	2437	101.5	-	-	98.11	27.38	7.49	31.48	400	88	A	V
		2486.77	58.52	-15.48	74	55	27.46	7.53	31.47	400	88	P	V
		2483.76	45.42	-8.58	54	41.9	27.46	7.53	31.47	400	88	A	V
802.11g CH 11 2462MHz	*	2462	110.87	-	-	107.52	27.29	7.53	31.47	346	14	P	H
	*	2462	101.28	-	-	97.93	27.29	7.53	31.47	346	14	A	H
		2483.6	67.63	-6.37	74	64.22	27.35	7.53	31.47	346	14	P	H
		2483.52	52.73	-1.27	54	49.32	27.35	7.53	31.47	346	14	A	H
	*	2462	108.57	-	-	105.22	27.29	7.53	31.47	337	62	P	V
	*	2462	99.03	-	-	95.68	27.29	7.53	31.47	337	62	A	V
		2483.84	65.05	-8.95	74	61.64	27.35	7.53	31.47	337	62	P	V
		2483.52	51.73	-2.27	54	48.32	27.35	7.53	31.47	337	62	A	V



802.11g CH 12 2467MHz	*	2467	108.12	-	-	104.64	27.42	7.53	31.47	395	16	P	H
	*	2467	98.39	-	-	94.91	27.42	7.53	31.47	395	16	A	H
		2484.2	67.56	-6.44	74	64.04	27.46	7.53	31.47	395	16	P	H
		2483.52	52.81	-1.19	54	49.29	27.46	7.53	31.47	395	16	A	H
	*	2467	105.34	-	-	101.86	27.42	7.53	31.47	391	100	P	V
	*	2467	96.41	-	-	92.93	27.42	7.53	31.47	391	100	A	V
		2484.36	64.09	-9.91	74	60.57	27.46	7.53	31.47	391	100	P	V
		2483.52	50.72	-3.28	54	47.2	27.46	7.53	31.47	391	100	A	V
802.11g CH 13 2472MHz	*	2472	104.73	-	-	101.21	27.46	7.53	31.47	393	17	P	H
	*	2472	95.13	-	-	91.61	27.46	7.53	31.47	393	17	A	H
		2484.12	67.46	-6.54	74	63.94	27.46	7.53	31.47	393	17	P	H
		2484.12	52.9	-1.1	54	49.38	27.46	7.53	31.47	393	17	A	H
	*	2472	102.11	-	-	98.59	27.46	7.53	31.47	393	100	P	V
	*	2472	92.77	-	-	89.25	27.46	7.53	31.47	393	100	A	V
		2485.36	65.12	-8.88	74	61.6	27.46	7.53	31.47	393	100	P	V
		2484.16	50.19	-3.81	54	46.67	27.46	7.53	31.47	393	100	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11g (Harmonic @ 3m)**

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	56	-18	74	72.08	31.32	10.74	58.14	298	172	P	H
		4824	41.44	-12.56	54	57.52	31.32	10.74	58.14	298	172	A	H
		4824	54.42	-19.58	74	70.5	31.32	10.74	58.14	400	140	P	V
		4824	37.36	-16.64	54	53.44	31.32	10.74	58.14	400	140	A	V
802.11g CH 06 2437MHz		4874	57.66	-16.34	74	73.46	31.41	10.89	58.1	316	40	P	H
		4874	43.1	-10.9	54	58.9	31.41	10.89	58.1	316	40	A	H
		7311	56.44	-17.56	74	65.08	36.27	14.18	59.09	254	315	P	H
		7311	44.8	-9.2	54	53.44	36.27	14.18	59.09	254	315	A	H
		4874	57.13	-16.87	74	72.93	31.41	10.89	58.1	400	129	P	V
		4874	43.47	-10.53	54	59.27	31.41	10.89	58.1	400	129	A	V
		7311	57.84	-16.16	74	66.48	36.27	14.18	59.09	255	0	P	V
		7311	44.2	-9.8	54	52.84	36.27	14.18	59.09	255	0	A	V
802.11g CH 11 2462MHz		4924	55.65	-18.35	74	71.18	31.49	11.04	58.06	295	46	P	H
		4924	39.18	-14.82	54	54.71	31.49	11.04	58.06	295	46	A	H
		7386	52.19	-21.81	74	60.55	36.51	14.27	59.14	254	318	P	H
		7386	40.68	-13.32	54	49.04	36.51	14.27	59.14	254	318	A	H
		4924	56.16	-17.84	74	71.69	31.49	11.04	58.06	317	145	P	V
		4924	37.73	-16.27	54	53.26	31.49	11.04	58.06	317	145	A	V
		7386	54.06	-19.94	74	62.42	36.51	14.27	59.14	388	0	P	V
		7386	39.96	-14.04	54	48.32	36.51	14.27	59.14	388	0	A	V



802.11g CH 12 2462MHz		4934	54.74	-19.26	74	70.27	31.49	11.04	58.06	298	46	P	H
		4934	34.7	-19.3	54	50.23	31.49	11.04	58.06	298	46	A	H
		7401	46.76	-27.24	74	55.08	36.56	14.27	59.15	100	0	P	H
		4934	51.86	-22.14	74	67.39	31.49	11.04	58.06	300	19	P	V
		4934	32.77	-21.23	54	48.3	31.49	11.04	58.06	300	19	A	V
		7401	49.02	-24.98	74	57.34	36.56	14.27	59.15	100	0	P	V
802.11g CH 13 2472MHz		4944	48.29	-25.71	74	63.62	31.52	11.19	58.04	100	0	P	H
		7416	43.87	-30.13	74	52.19	36.56	14.27	59.15	100	0	P	H
		4944	50.94	-23.06	74	66.27	31.52	11.19	58.04	100	0	P	V
		7416	44.49	-29.51	74	52.81	36.56	14.27	59.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.8	67.94	-6.06	74	64.91	27.07	7.45	31.49	357	8	P	H
		2390	52.97	-1.03	54	49.94	27.07	7.45	31.49	357	8	A	H
	*	2412	111.22	-	-	108.12	27.14	7.45	31.49	357	8	P	H
	*	2412	102.27	-	-	99.17	27.14	7.45	31.49	357	8	A	H
		2389.38	63.02	-10.98	74	59.99	27.07	7.45	31.49	353	61	P	V
		2390	48.51	-5.49	54	45.48	27.07	7.45	31.49	353	61	A	V
	*	2412	106.71	-	-	103.61	27.14	7.45	31.49	353	61	P	V
	*	2412	97.42	-	-	94.32	27.14	7.45	31.49	353	61	A	V
802.11n HT20 CH 06 2437MHz		2388.4	56.37	-17.63	74	53.16	27.25	7.45	31.49	362	33	P	H
		2389.94	45.24	-8.76	54	42.03	27.25	7.45	31.49	362	33	A	H
	*	2437	114.09	-	-	110.87	27.21	7.49	31.48	362	33	P	H
	*	2437	104.86	-	-	101.64	27.21	7.49	31.48	362	33	A	H
		2484.46	59.68	-14.32	74	56.16	27.46	7.53	31.47	362	33	P	H
		2483.97	45.88	-8.12	54	42.36	27.46	7.53	31.47	362	33	A	H
		2373	56.84	-17.16	74	53.75	27.21	7.37	31.49	396	56	P	V
		2389.94	44.44	-9.56	54	41.23	27.25	7.45	31.49	396	56	A	V
	*	2437	111.55	-	-	108.33	27.21	7.49	31.48	396	56	P	V
	*	2437	101.59	-	-	98.37	27.21	7.49	31.48	396	56	A	V
		2489.78	60.02	-13.98	74	56.46	27.5	7.53	31.47	396	56	P	V
		2483.97	45.61	-8.39	54	42.09	27.46	7.53	31.47	396	56	A	V
802.11n HT20 CH 11 2462MHz	*	2462	110.1	-	-	106.75	27.29	7.53	31.47	275	8	P	H
	*	2462	101.14	-	-	97.79	27.29	7.53	31.47	275	8	A	H
		2484.32	66.72	-7.28	74	63.31	27.35	7.53	31.47	275	8	P	H
		2483.52	52.09	-1.91	54	48.68	27.35	7.53	31.47	275	8	A	H
	*	2462	107.69	-	-	104.34	27.29	7.53	31.47	337	64	P	V
	*	2462	97.96	-	-	94.61	27.29	7.53	31.47	337	64	A	V
		2484.96	67.58	-6.42	74	64.17	27.35	7.53	31.47	337	64	P	V
		2483.52	50.47	-3.53	54	47.06	27.35	7.53	31.47	337	64	A	V



802.11n HT20 CH 12 2467Hz	*	2467	107.1	-	-	103.74	27.3	7.53	31.47	394	21	P	H
	*	2467	97.4	-	-	94.04	27.3	7.53	31.47	394	21	A	H
		2484.32	68.14	-5.86	74	64.62	27.46	7.53	31.47	394	21	P	H
		2483.52	53.09	-0.91	54	49.57	27.46	7.53	31.47	394	21	A	H
	*	2467	104.44	-	-	101.08	27.3	7.53	31.47	392	97	P	V
	*	2467	94.87	-	-	91.51	27.3	7.53	31.47	392	97	A	V
		2484.16	63.01	-10.99	74	59.49	27.46	7.53	31.47	392	97	P	V
		2483.52	50.08	-3.92	54	46.56	27.46	7.53	31.47	392	97	A	V
802.11n HT20 CH 13 2472MHz	*	2472	104.5	-	-	101.12	27.32	7.53	31.47	393	21	P	H
	*	2472	94.48	-	-	91.1	27.32	7.53	31.47	393	21	A	H
		2483.76	66.03	-7.97	74	62.51	27.46	7.53	31.47	393	21	P	H
		2483.52	53.24	-0.76	54	49.72	27.46	7.53	31.47	393	21	A	H
	*	2472	101.44	-	-	98.06	27.32	7.53	31.47	392	97	P	V
	*	2472	91.43	-	-	88.05	27.32	7.53	31.47	392	97	A	V
		2483.88	65.18	-8.82	74	61.66	27.46	7.53	31.47	392	97	P	V
		2483.52	50.29	-3.71	54	46.77	27.46	7.53	31.47	392	97	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	56.52	-17.48	74	72.6	31.32	10.74	58.14	131	32	P	H
		4824	35.87	-18.13	54	51.95	31.32	10.74	58.14	131	32	A	H
		4824	55.44	-18.56	74	71.52	31.32	10.74	58.14	100	358	P	V
		4824	32.49	-21.51	54	48.57	31.32	10.74	58.14	100	358	A	V
802.11n HT20 CH 06 2437MHz		4872	61.96	-12.04	74	77.76	31.41	10.89	58.1	133	32	P	H
		4872	41.94	-12.06	54	57.74	31.41	10.89	58.1	133	32	A	H
		7308	59.19	-14.81	74	67.83	36.27	14.18	59.09	237	301	P	H
		7308	43.09	-10.91	54	51.73	36.27	14.18	59.09	237	301	A	H
		4874	58.55	-15.45	74	74.35	31.41	10.89	58.1	382	339	P	V
		4874	39.56	-14.44	54	55.36	31.41	10.89	58.1	382	339	A	V
		7308	58.19	-15.81	74	66.83	36.27	14.18	59.09	100	68	P	V
		7308	42.49	-11.51	54	51.13	36.27	14.18	59.09	100	68	A	V
802.11n HT20 CH 11 2462MHz		4926	58.85	-15.15	74	74.38	31.49	11.04	58.06	127	34	P	H
		4926	36.09	-17.91	54	51.62	31.49	11.04	58.06	127	34	A	H
		7386	54.59	-19.41	74	62.95	36.51	14.27	59.14	240	305	P	H
		7386	38.1	-15.9	54	46.46	36.51	14.27	59.14	240	305	A	H
		4926	56.92	-17.08	74	72.45	31.49	11.04	58.06	400	4	P	V
		4926	35.05	-18.95	54	50.58	31.49	11.04	58.06	400	4	A	V
		7386	55.93	-18.07	74	64.29	36.51	14.27	59.14	103	325	P	V
		7386	37.62	-16.38	54	45.98	36.51	14.27	59.14	103	325	A	V



802.11n HT20 CH 12 2462MHz		4934	56.7	-17.3	74	72.23	31.49	11.04	58.06	305	44	P	H
		4934	33.74	-20.26	54	49.27	31.49	11.04	58.06	305	44	A	H
		7404	47.58	-26.42	74	55.9	36.56	14.27	59.15	100	0	P	H
		4934	50.96	-23.04	74	66.49	31.49	11.04	58.06	100	0	P	V
		7401	48.6	-25.4	74	56.92	36.56	14.27	59.15	100	0	P	V
802.11n HT20 CH 13 2472MHz		4944	49.47	-24.53	74	64.8	31.52	11.19	58.04	100	0	P	H
		7416	43.59	-30.41	74	51.91	36.56	14.27	59.15	100	0	P	H
		4944	46.13	-27.87	74	61.46	31.52	11.19	58.04	100	0	P	V
		7416	44.95	-29.05	74	53.27	36.56	14.27	59.15	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT20 LF		82.92	20.32	-19.68	40	37.44	14.26	1.06	32.44	-	-	P	H
		92.1	19.91	-23.59	43.5	35.92	15.36	1.06	32.43	-	-	P	H
		167.97	17.78	-25.72	43.5	32.09	16.36	1.75	32.42	-	-	P	H
		344.1	24.2	-21.8	46	33.02	21.03	2.44	32.29	-	-	P	H
		495.3	25.41	-20.59	46	30.63	24.1	3.08	32.4	-	-	P	H
		650	26.98	-19.02	46	29.77	26	3.61	32.4	100	0	P	H
		48.36	24.07	-15.93	40	39.72	16.03	0.78	32.46	100	0	P	V
		97.23	26.42	-17.08	43.5	41.78	16.01	1.06	32.43	-	-	P	V
		105.06	26.13	-17.37	43.5	40.28	16.85	1.43	32.43	-	-	P	V
		381.2	21.73	-24.27	46	29.44	21.95	2.68	32.34	-	-	P	V
		507.2	24.61	-21.39	46	29.58	24.24	3.19	32.4	-	-	P	V
		629.7	26.76	-19.24	46	29.76	25.79	3.61	32.4	-	-	P	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.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		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”.



Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Karl Hou, Nick Yu and Peter Chiu	Temperature :	23~25°C
		Relative Humidity :	52~55%

Note symbol

-L	Low channel location
-R	High channel location

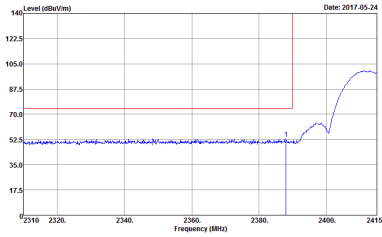
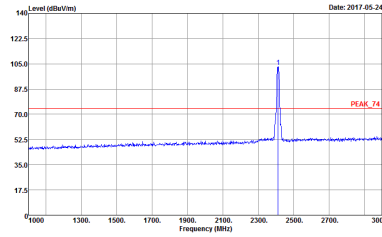
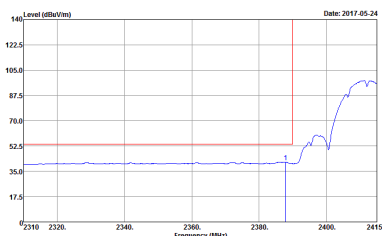
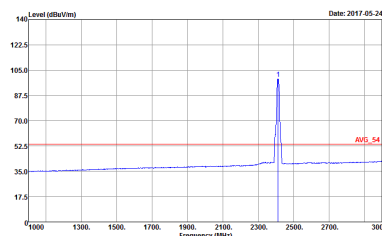


2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK, RE_74 3m HORN, 9120D, 1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak	Site : 03CH12-HY Condition : PEAK, RE_74 3m HORN, 9120D, 1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak
Avg.	Site : 03CH12-HY Condition : AVG, RE_54 3m HORN, 9120D, 1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Peak	Site : 03CH12-HY Condition : AVG, RE_54 3m HORN, 9120D, 1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_91200_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SVT:Auto Peak	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_91200_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SVT:Auto Peak
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_91200_1328 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SVT:Auto Peak	 Site : 03CH12-HY Condition : AVG_54 3m HORN_91200_1328 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SVT:Auto Peak