



FCC RF Test Report

APPLICANT : Dagabod LLC
EQUIPMENT : Electronic Display Device
MODEL NAME : CW24Wi
FCC ID : 2AHXB-4396
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The testing was completed on Jan. 27, 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



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : 2AHXB-4396

Page Number : 1 of 58

Report Issued Date : Mar. 10, 2017

Report Version : Rev. 01

Report Template No.: BU5-FR15CWL MA Version 1.3



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.....	8
2.3 Connection Diagram of Test System.....	9
2.4 Support Unit used in test configuration and system	10
2.5 EUT Operation Test Setup	10
2.6 Measurement Results Explanation Example.....	11
3 TEST RESULT	12
3.1 6dB and 99% Bandwidth Measurement	12
3.2 Peak Output Power Measurement	14
3.3 Power Spectral Density Measurement	15
3.4 Conducted Band Edges and Spurious Emission Measurement	17
3.5 Radiated Band Edges and Spurious Emission Measurement	48
3.6 AC Conducted Emission Measurement.....	52
3.7 Antenna Requirements.....	56
4 LIST OF MEASURING EQUIPMENT	57
5 UNCERTAINTY OF EVALUATION.....	58
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
FR662707-01B	Rev. 01	Initial issue of report	Mar. 10, 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

Dagabod LLC

1105 2nd Street South, Suite 100, Nampa, Idaho 83651

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Electronic Display Device
Model Name	CW24Wi
FCC ID	2AHXB-4396
EUT supports Radios application	WLAN 11b/g/n HT20 Bluetooth BR/EDR

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 : 20.33 dBm (0.1079 W) 802.11g : 26.14 dBm (0.4111 W) 802.11n HT20 : 26.11 dBm (0.4083 W) <Ant. 2> 802.11b : 20.50 dBm (0.1122 W) 802.11g : 26.45 dBm (0.4416 W) 802.11n HT20 : 26.50 dBm (0.4467 W)							
99% Occupied Bandwidth		802.11b : 14.25MHz 802.11g : 17.50MHz 802.11n HT20 : 18.50MHz							
Antenna Type / Gain		<Ant 1> Fixed Internal Antenna type with gain -0.30 dBi <Ant 2> Fixed Internal Antenna type with gain -4.90 dBi							
Type of Modulation		802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)							
Antenna Function for Transmitter		<table><tr><td></td><td>Ant. 1</td><td>Ant. 2</td></tr><tr><td>802.11 b/g/n</td><td>V</td><td>V</td></tr></table>			Ant. 1	Ant. 2	802.11 b/g/n	V	V
	Ant. 1	Ant. 2							
802.11 b/g/n	V	V							

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
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- 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, Z 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

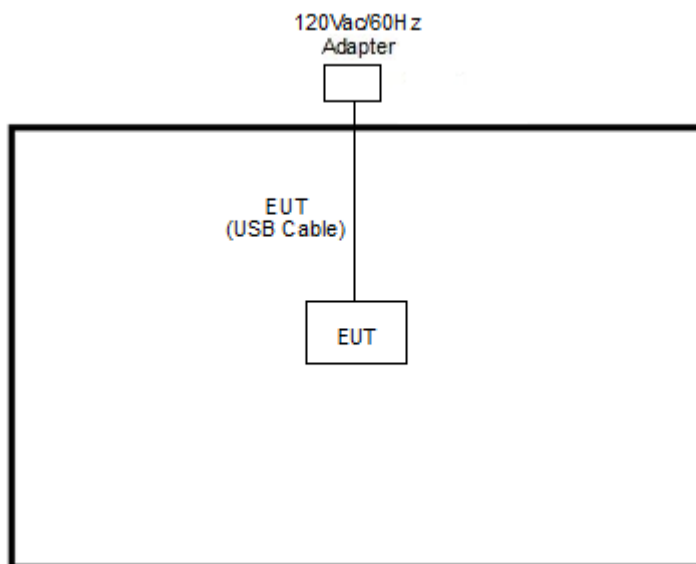
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

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

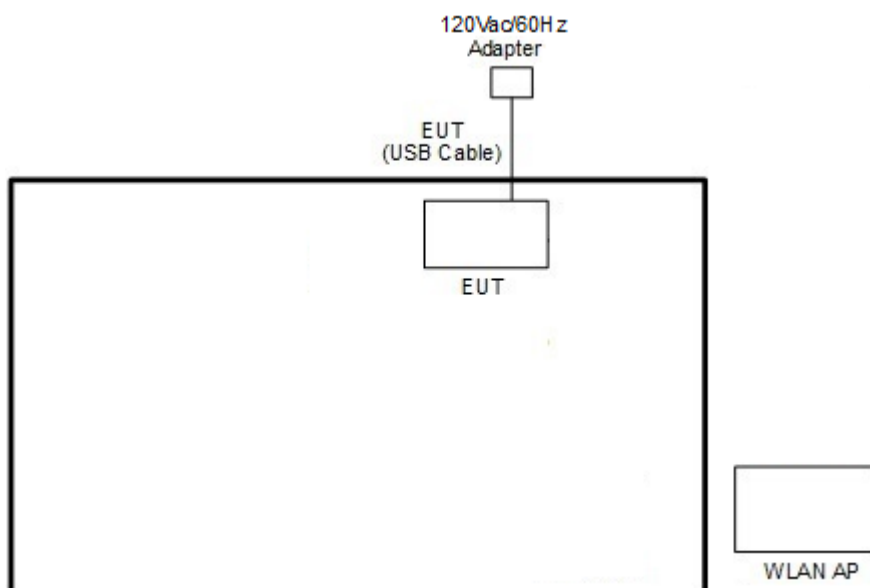
Test Cases	
AC Conducted Emission	Mode 1 :WLAN (2.4GHz) Link + USB Cable (Charging from Adapter) Mode 2 Bluetooth Link + USB Cable (Charging from Adapter)
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

2.3 Connection Diagram of Test System

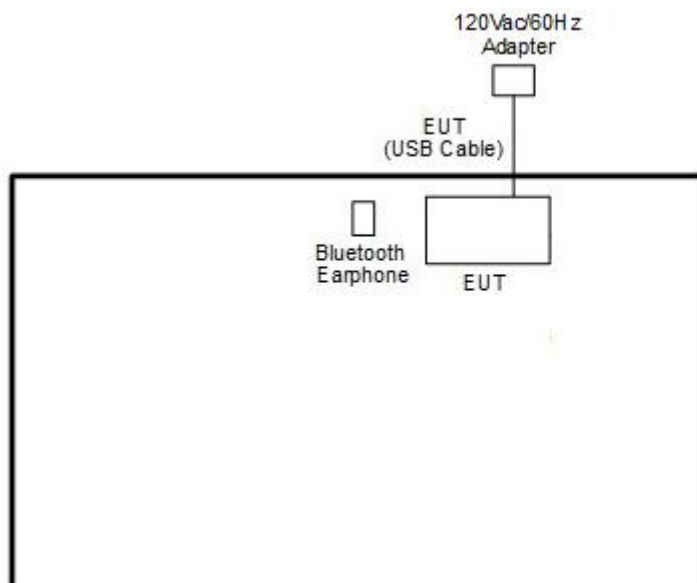
<WLAN Tx Mode>



<AC Conducted Emission Mode for WLAN Link>



<AC Conducted Emission Mode for Bluetooth Link>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Adapter	N/A	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, programmed RF utility, “ADB” 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.

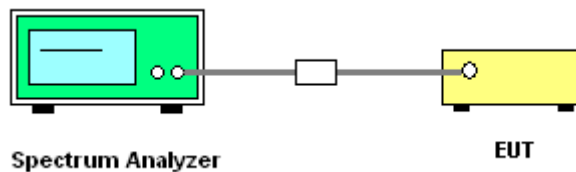
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

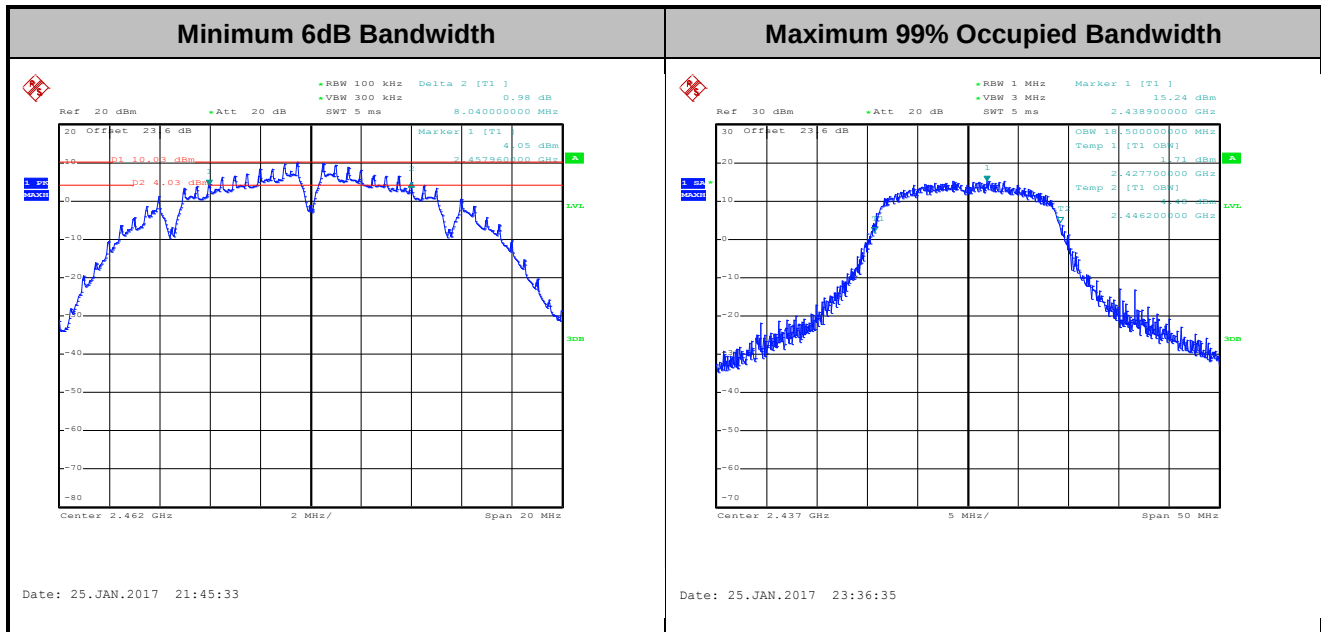
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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.



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

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

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

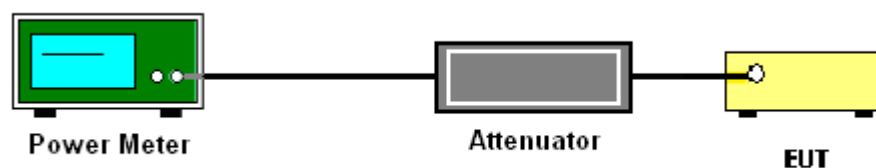
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance 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.

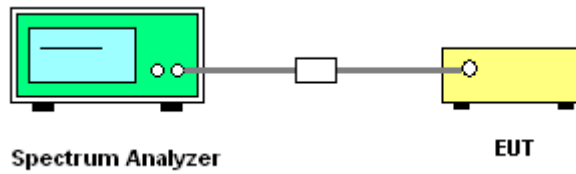
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

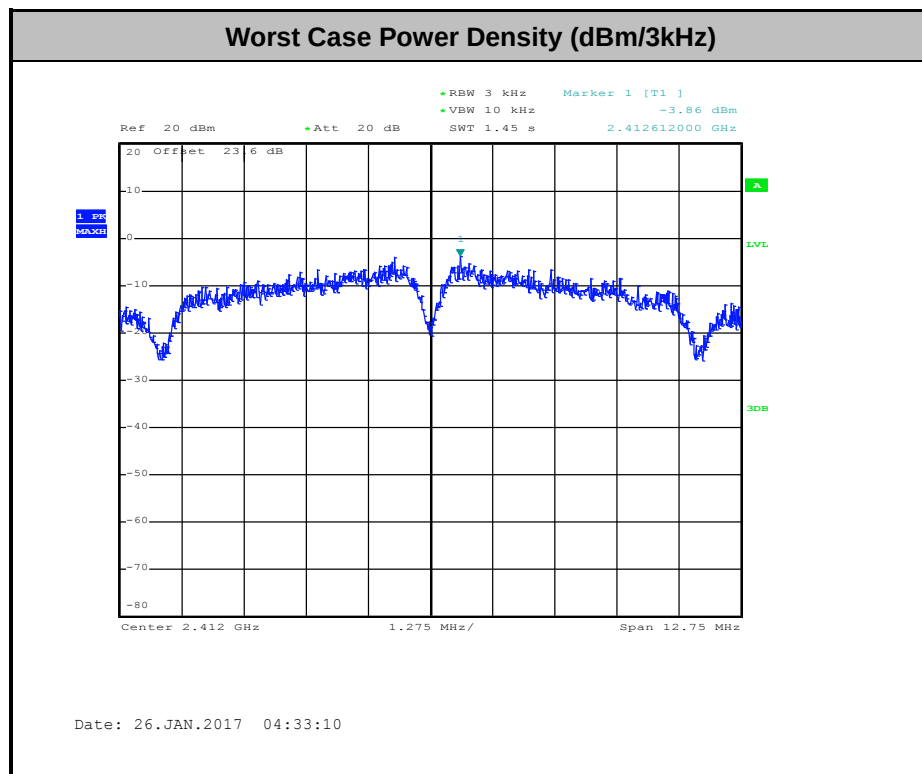
1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum 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.



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).

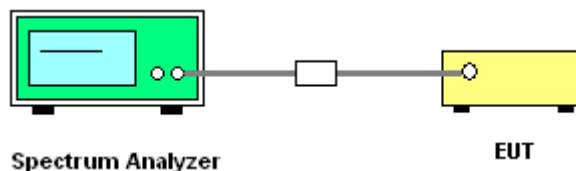
3.4.2 Measuring Instruments

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

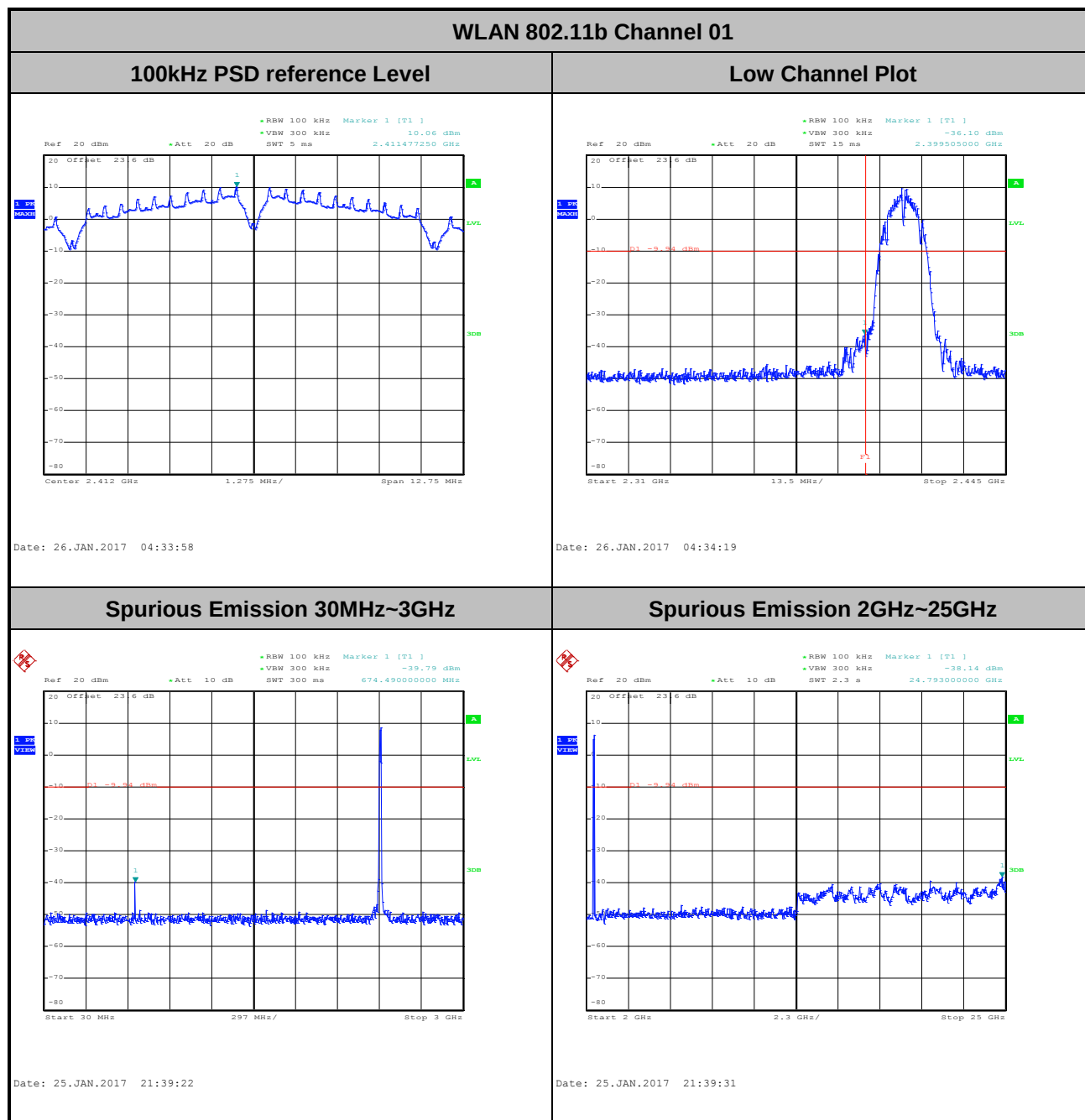




3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

Number of TX	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

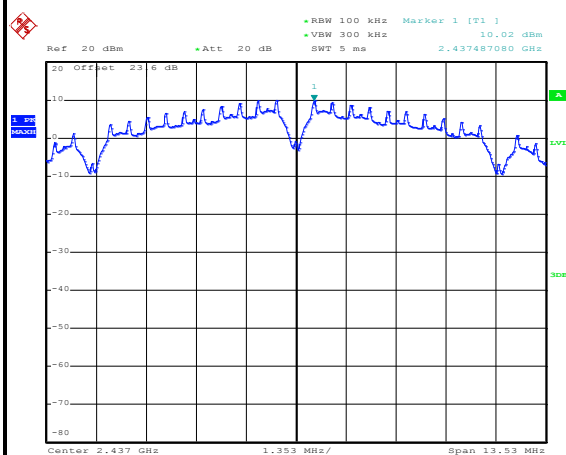




Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

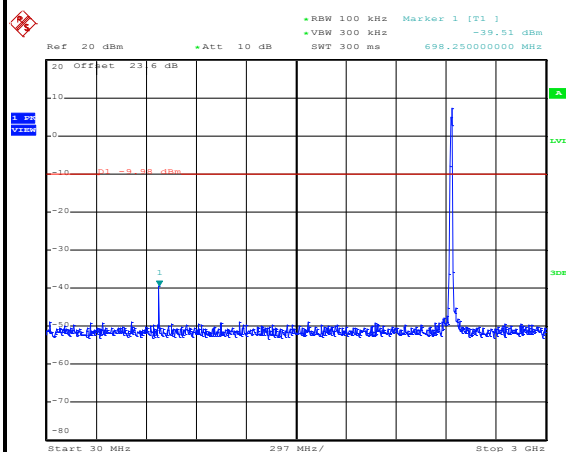
WLAN 802.11b Channel 06

100kHz PSD reference Level



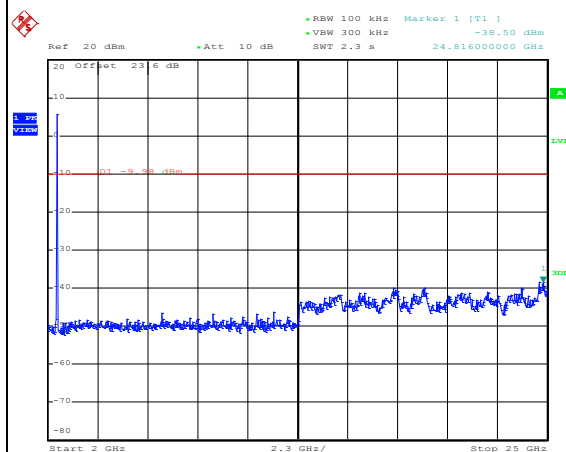
Date: 25.JAN.2017 21:42:10

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 21:42:29

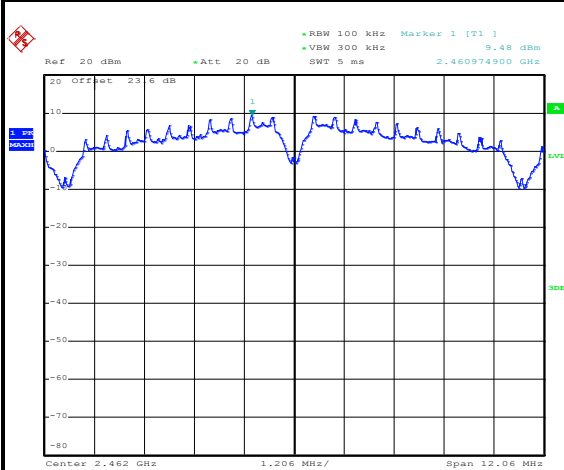
Spurious Emission 2GHz~25GHz



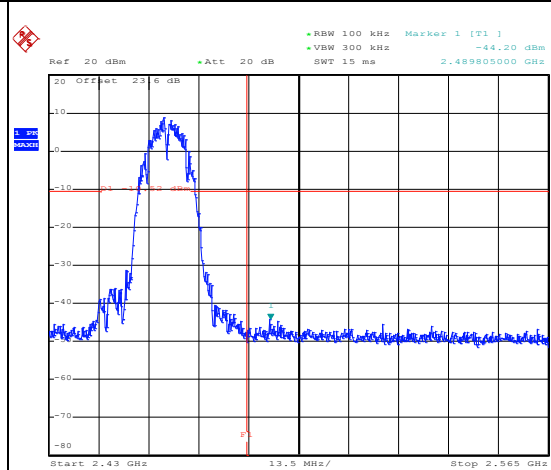
Date: 25.JAN.2017 21:42:37



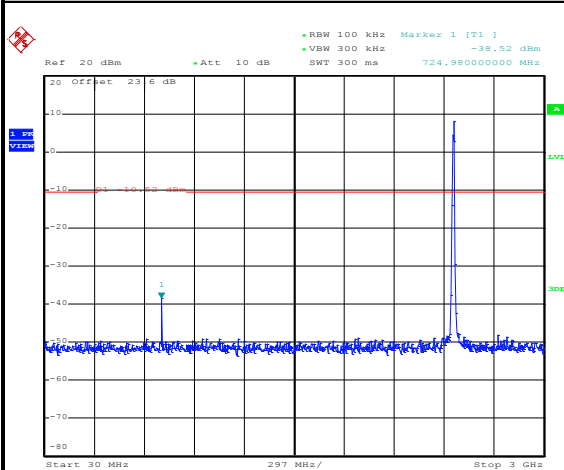
Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

WLAN 802.11b Channel 11**100kHz PSD reference Level**

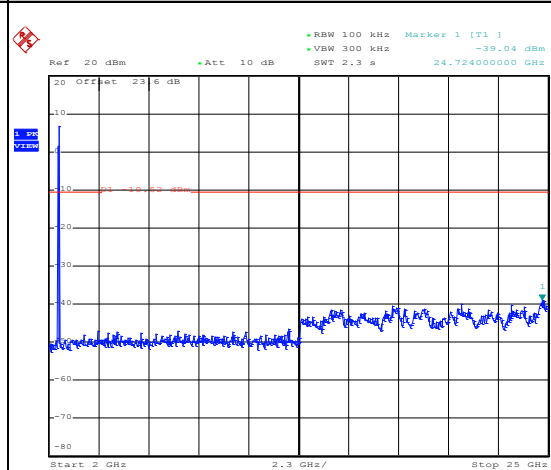
Date: 25.JAN.2017 21:46:11

High Channel Plot

Date: 25.JAN.2017 21:46:43

Spurious Emission 30MHz~3GHz

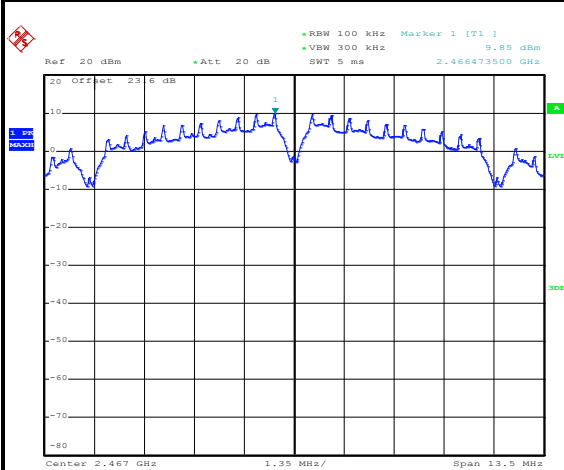
Date: 25.JAN.2017 21:46:54

Spurious Emission 2GHz~25GHz

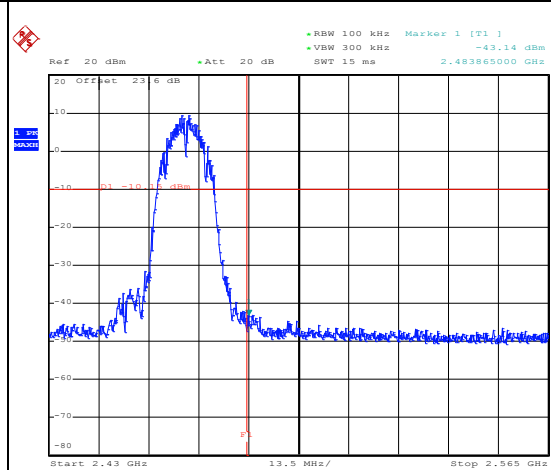
Date: 25.JAN.2017 21:47:03



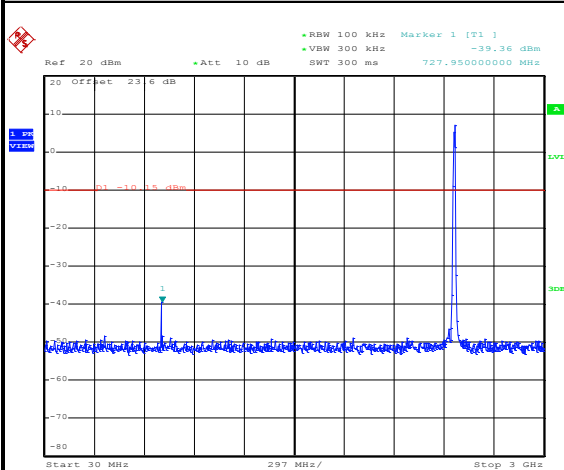
Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

WLAN 802.11b Channel 12**100kHz PSD reference Level**

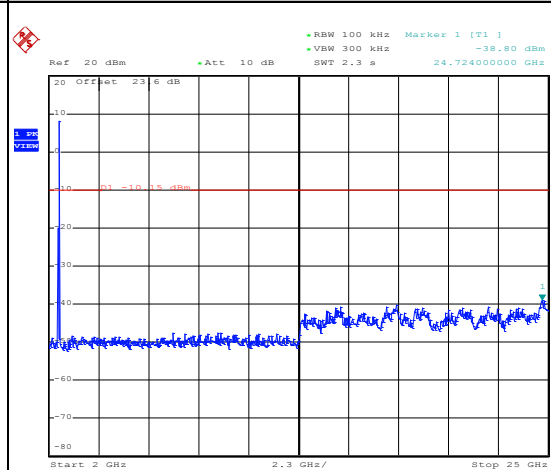
Date: 25.JAN.2017 21:50:22

High Channel Plot

Date: 25.JAN.2017 21:50:35

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 21:50:49

Spurious Emission 2GHz~25GHz

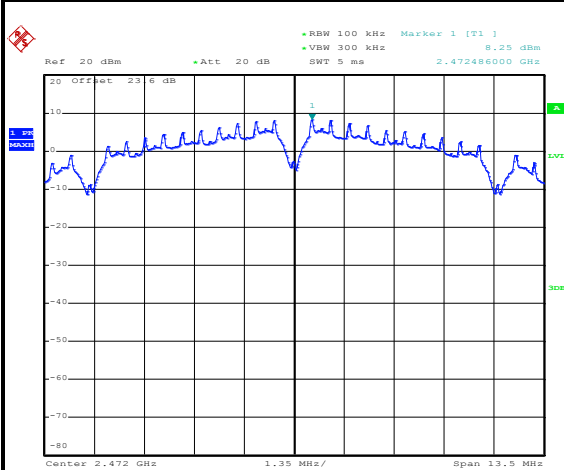
Date: 25.JAN.2017 21:50:58



Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

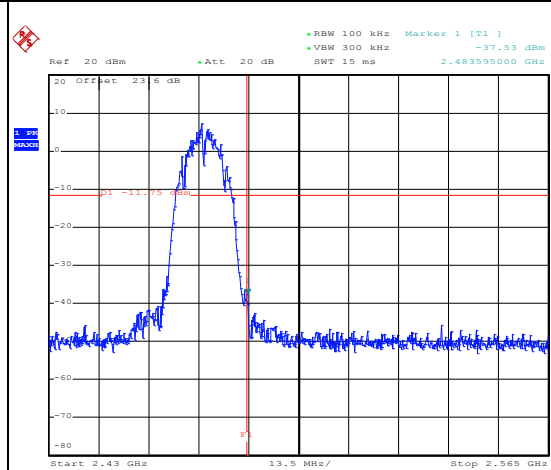
WLAN 802.11b Channel 13

100kHz PSD reference Level



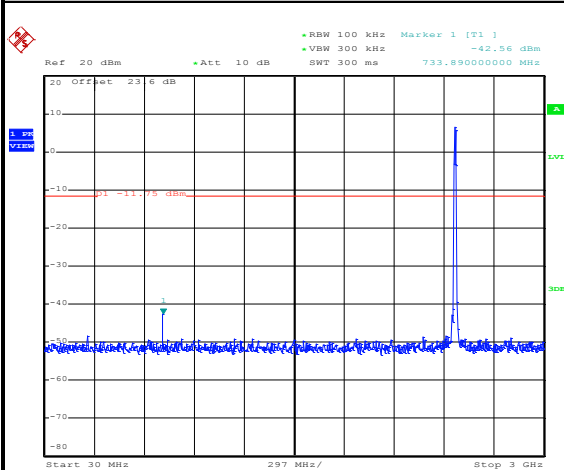
Date: 25.JAN.2017 21:56:36

High Channel Plot



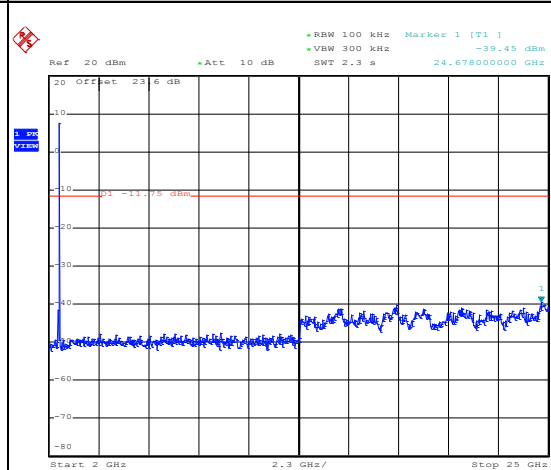
Date: 25.JAN.2017 21:57:56

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 21:58:19

Spurious Emission 2GHz~25GHz



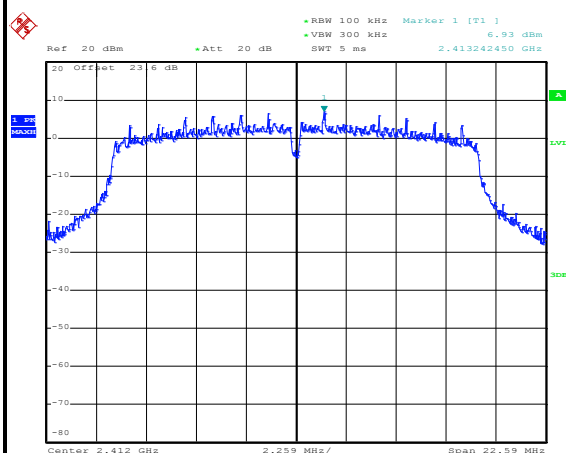
Date: 25.JAN.2017 21:58:27



Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

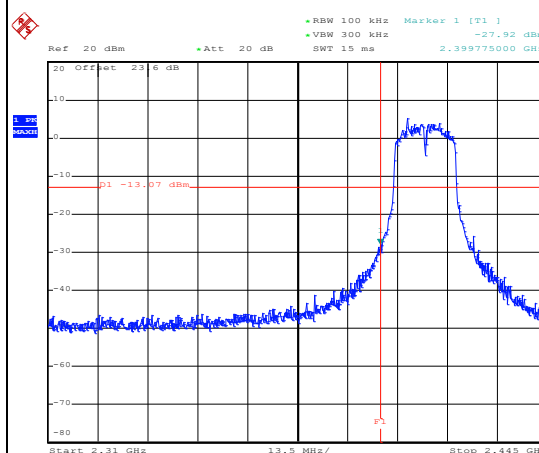
WLAN 802.11g Channel 01

100kHz PSD reference Level



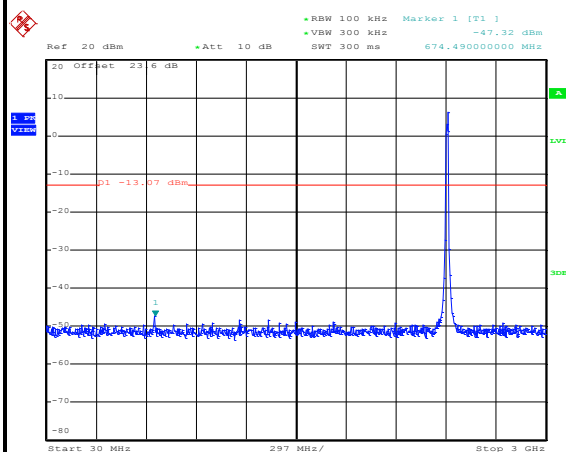
Date: 25.JAN.2017 22:33:05

Low Channel Plot



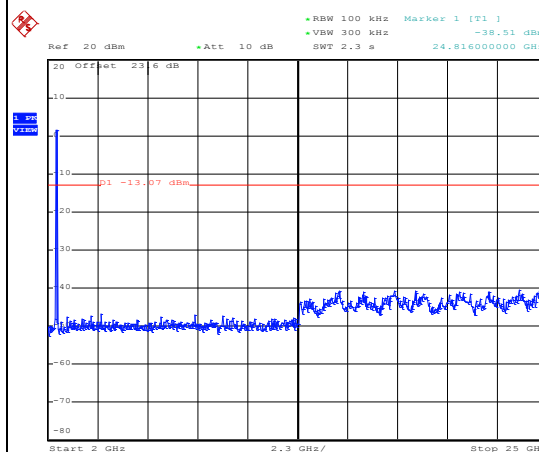
Date: 25.JAN.2017 22:33:13

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:33:26

Spurious Emission 2GHz~25GHz



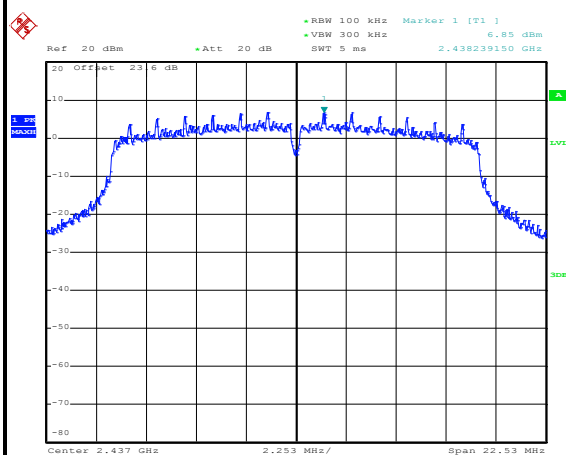
Date: 25.JAN.2017 22:33:34



Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

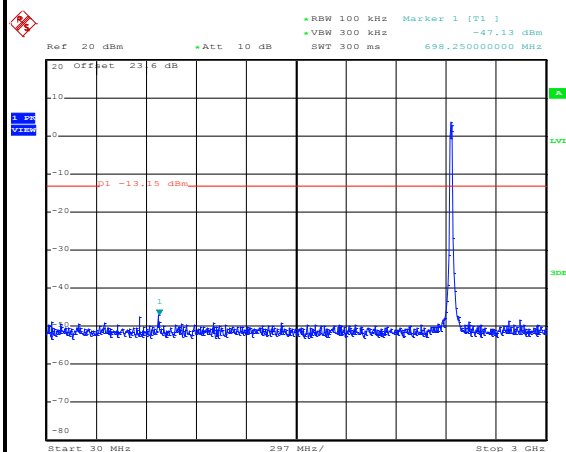
WLAN 802.11g Channel 06

100kHz PSD reference Level



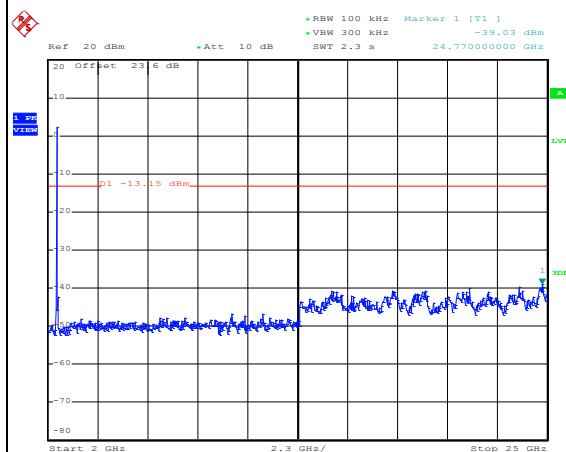
Date: 25.JAN.2017 22:35:24

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:35:38

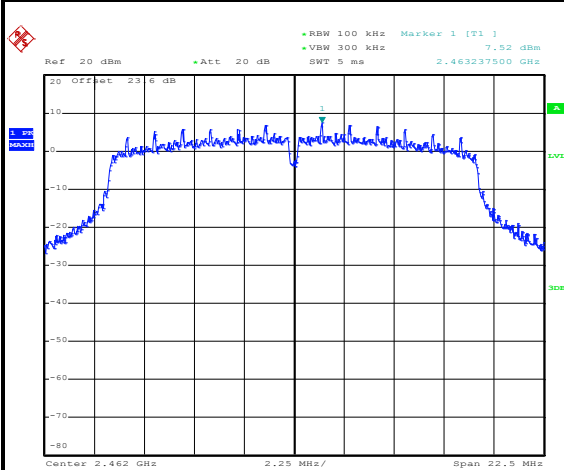
Spurious Emission 2GHz~25GHz



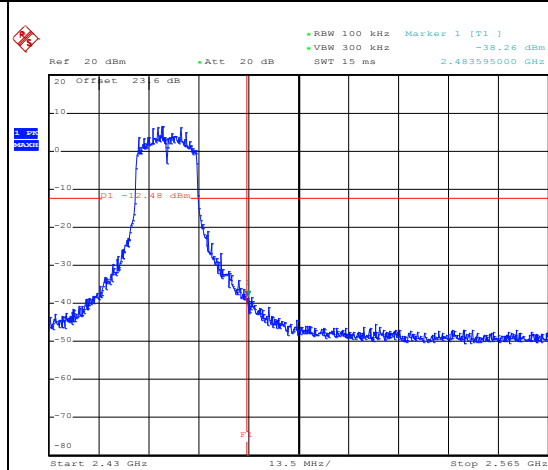
Date: 25.JAN.2017 22:35:46



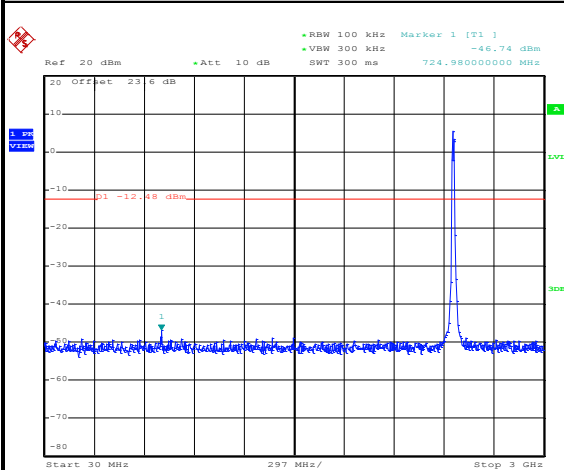
Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 11**100kHz PSD reference Level**

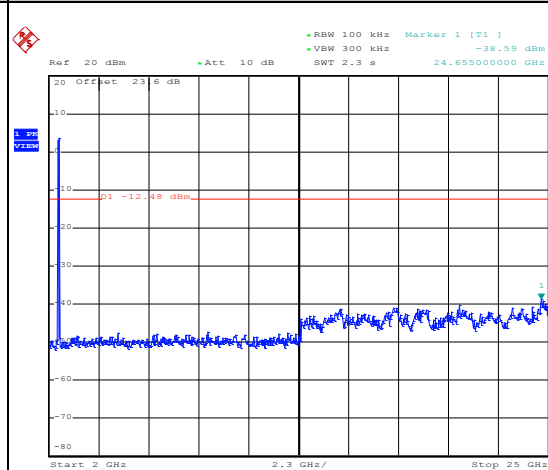
Date: 25.JAN.2017 22:39:31

High Channel Plot

Date: 25.JAN.2017 22:39:45

Spurious Emission 30MHz~3GHz

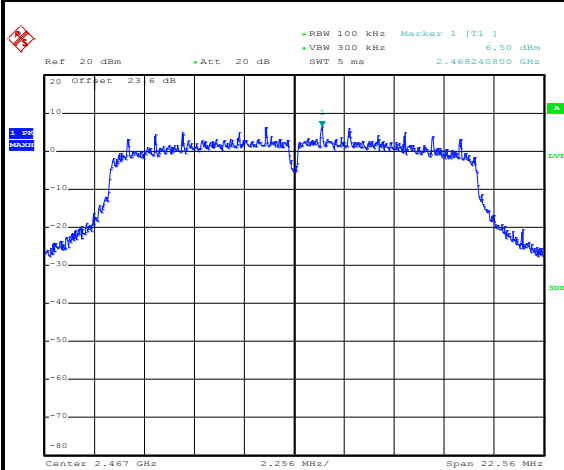
Date: 25.JAN.2017 22:45:13

Spurious Emission 2GHz~25GHz

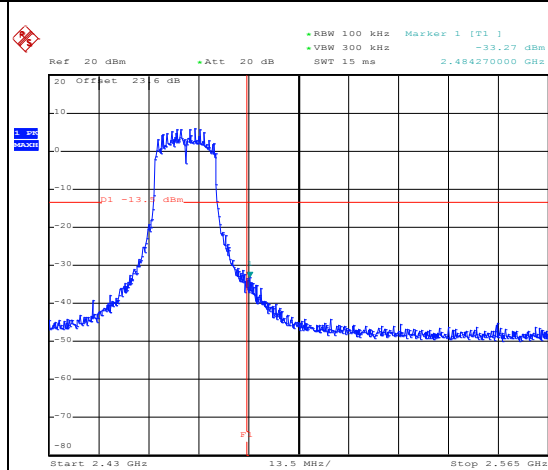
Date: 25.JAN.2017 22:45:21



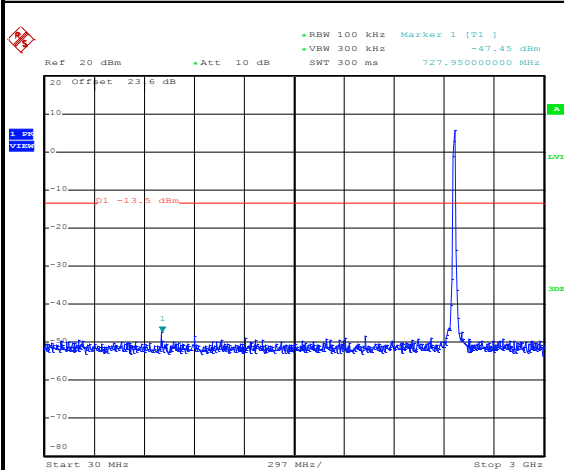
Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 12**100kHz PSD reference Level**

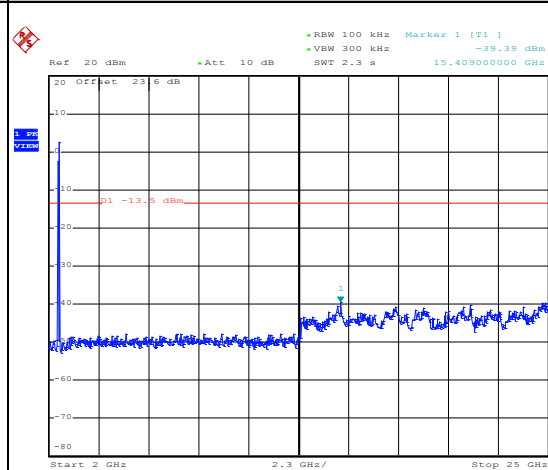
Date: 25.JAN.2017 22:49:49

High Channel Plot

Date: 25.JAN.2017 22:50:19

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 22:50:34

Spurious Emission 2GHz~25GHz

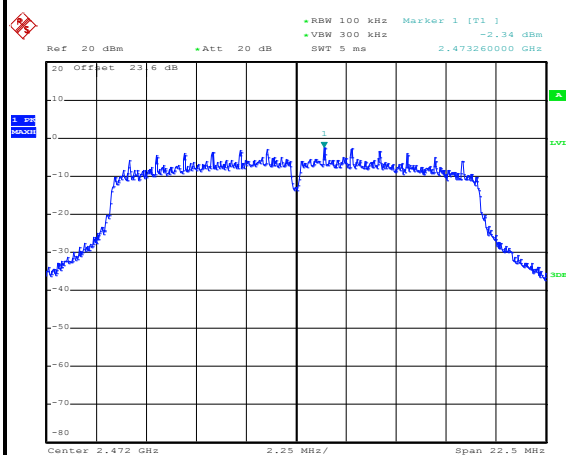
Date: 25.JAN.2017 22:50:42



Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

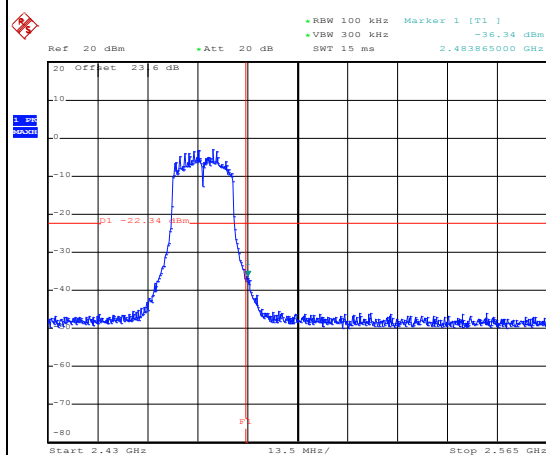
WLAN 802.11g Channel 13

100kHz PSD reference Level



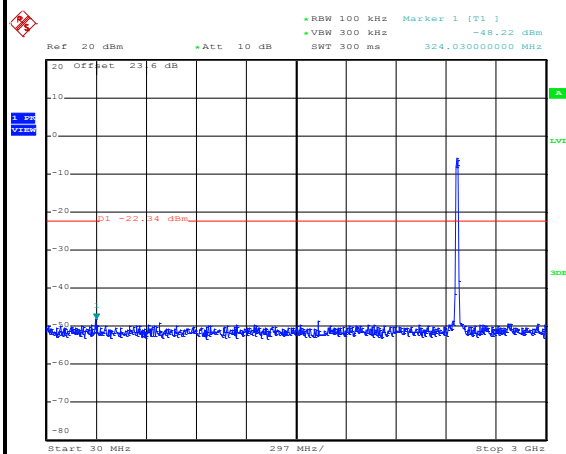
Date: 25.JAN.2017 22:53:13

High Channel Plot



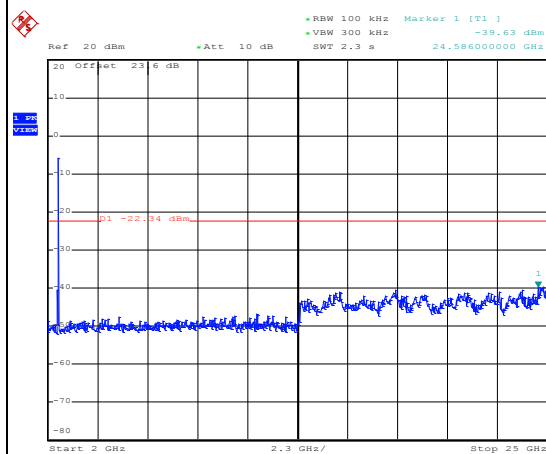
Date: 25.JAN.2017 22:53:39

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:53:51

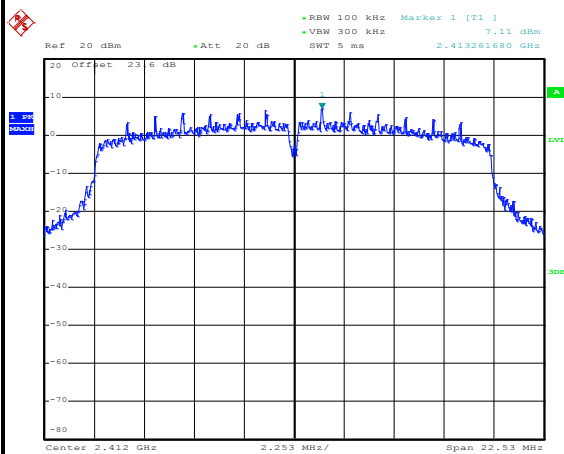
Spurious Emission 2GHz~25GHz



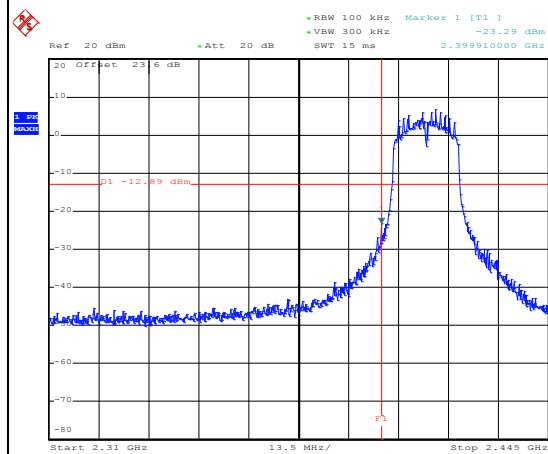
Date: 25.JAN.2017 22:54:00



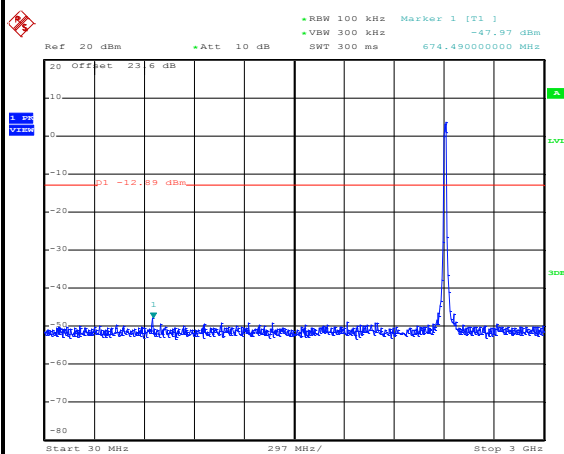
Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

WLAN 802.11n HT20 Channel 01**100kHz PSD reference Level**

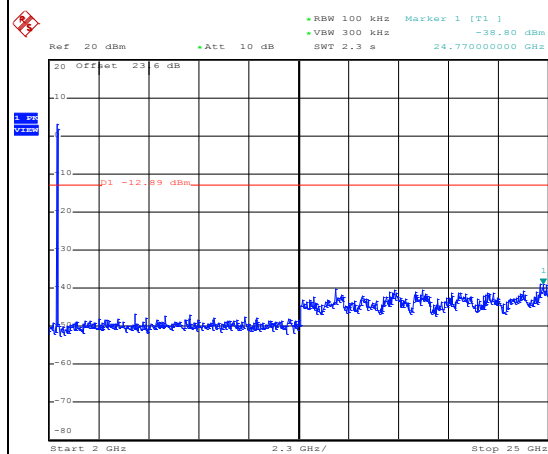
Date: 25.JAN.2017 23:14:52

Low Channel Plot

Date: 25.JAN.2017 23:15:07

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 23:15:24

Spurious Emission 2GHz~25GHz

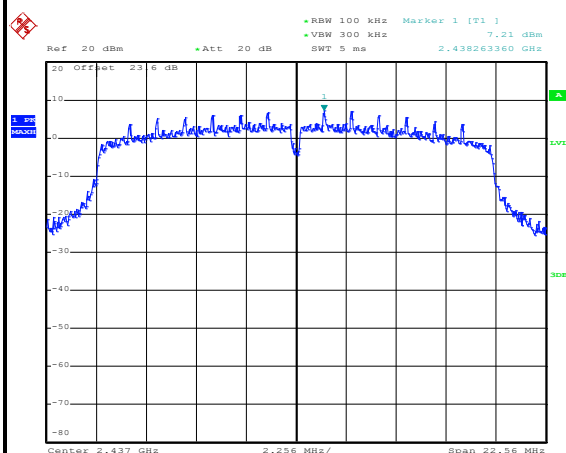
Date: 25.JAN.2017 23:15:32



Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

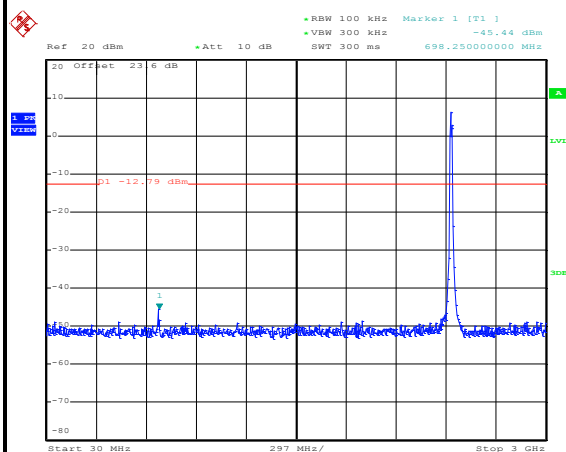
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



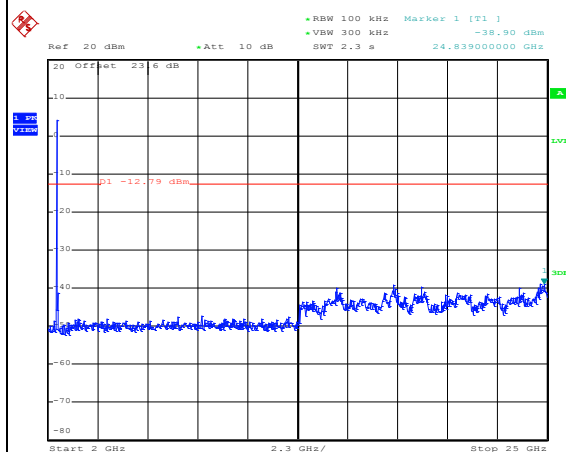
Date: 25.JAN.2017 23:17:20

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:17:32

Spurious Emission 2GHz~25GHz



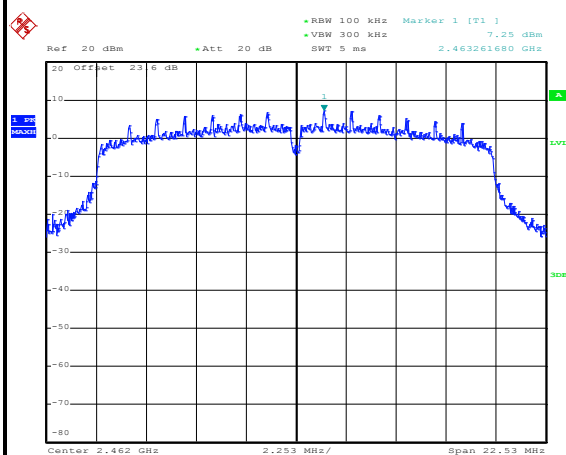
Date: 25.JAN.2017 23:17:40



Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

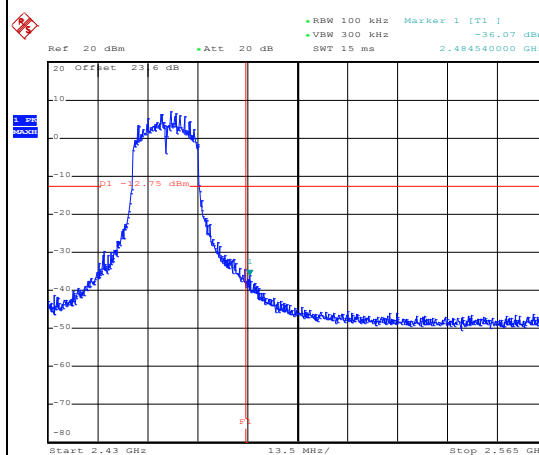
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



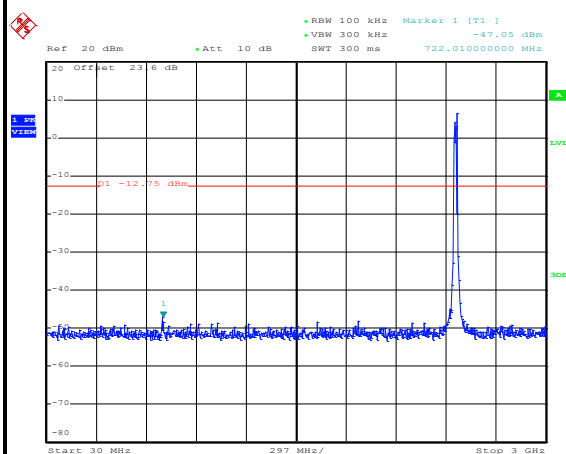
Date: 25.JAN.2017 23:19:30

High Channel Plot



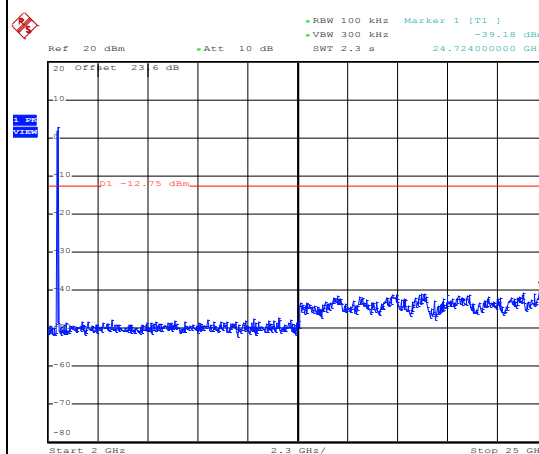
Date: 25.JAN.2017 23:19:51

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:48:01

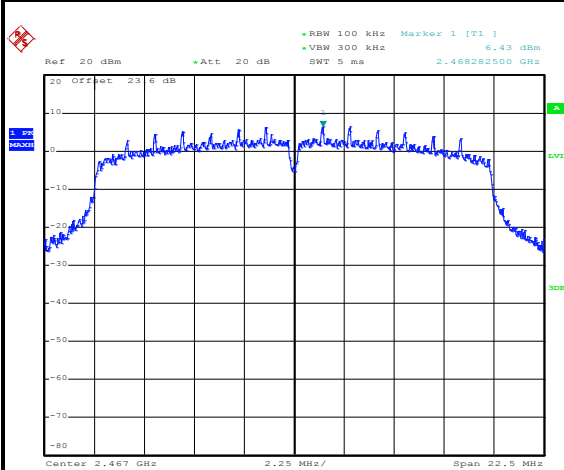
Spurious Emission 2GHz~25GHz



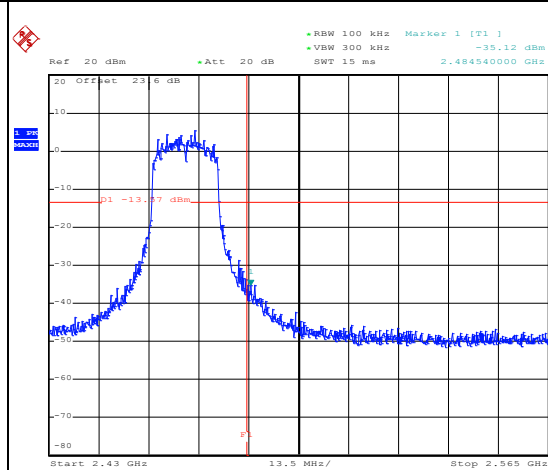
Date: 25.JAN.2017 23:48:10



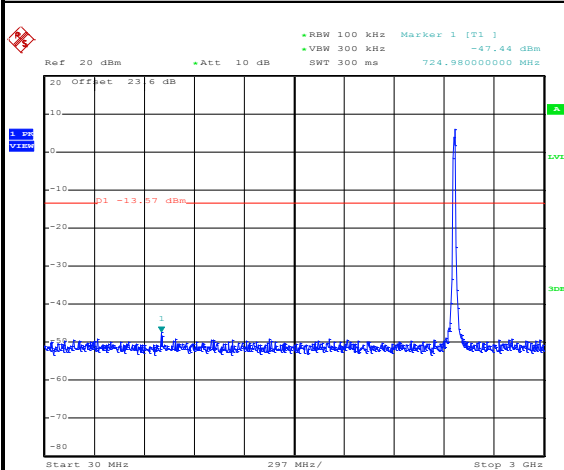
Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

WLAN 802.11n HT20 Channel 12**100kHz PSD reference Level**

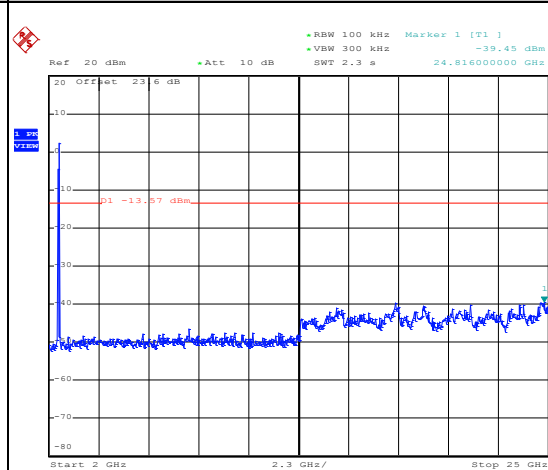
Date: 25.JAN.2017 23:23:19

High Channel Plot

Date: 25.JAN.2017 23:23:33

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 23:24:23

Spurious Emission 2GHz~25GHz

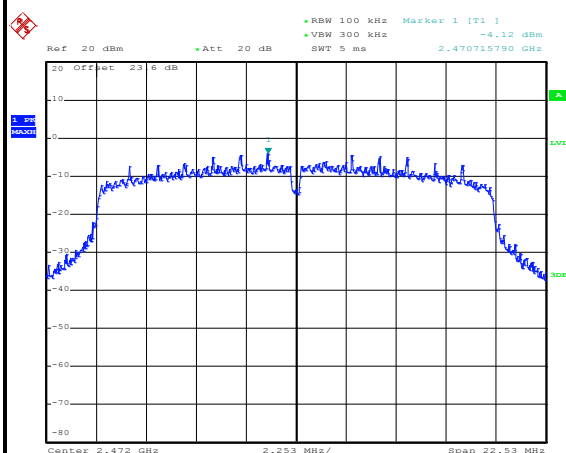
Date: 25.JAN.2017 23:24:32



Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

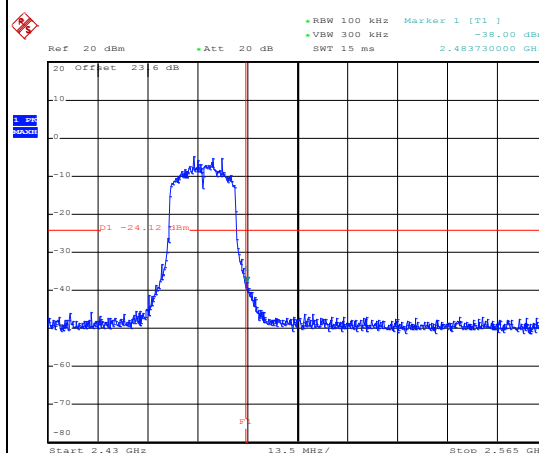
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



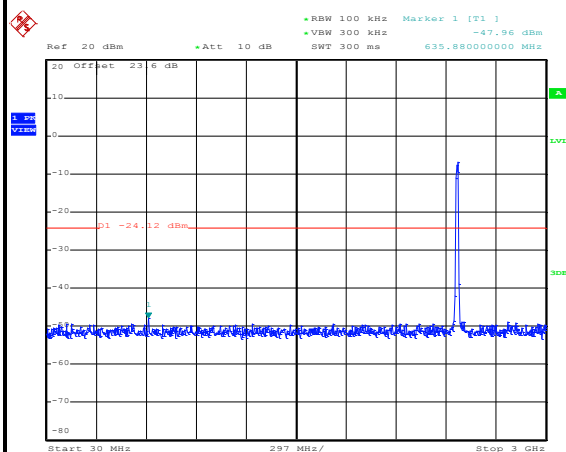
Date: 25.JAN.2017 23:30:41

High Channel Plot



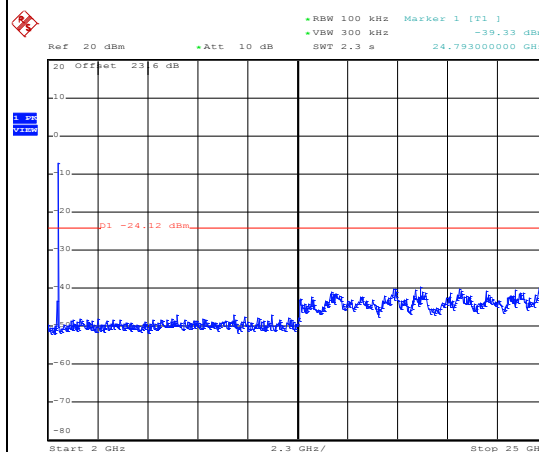
Date: 25.JAN.2017 23:30:52

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:31:12

Spurious Emission 2GHz~25GHz



Date: 25.JAN.2017 23:31:21

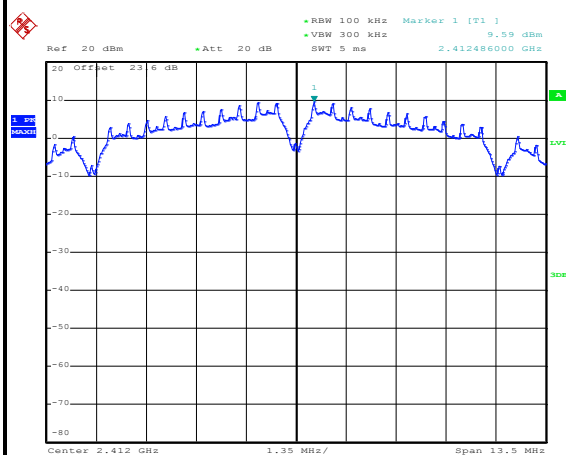


Number of TX = 1, Ant. 2 (Measured)

Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

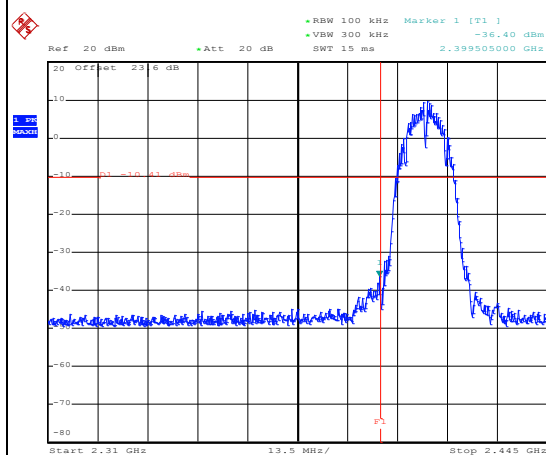
WLAN 802.11b Channel 01

100kHz PSD reference Level



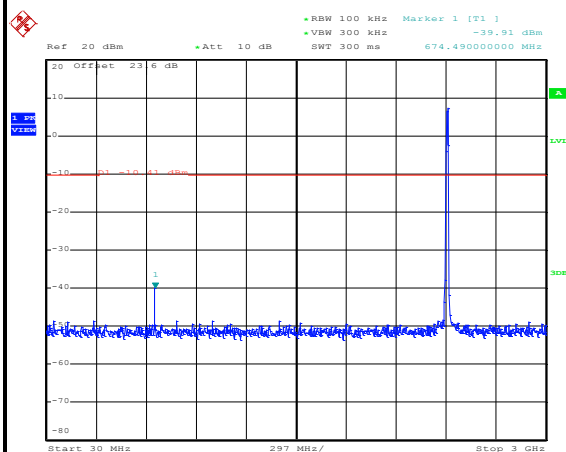
Date: 25.JAN.2017 22:03:31

Low Channel Plot



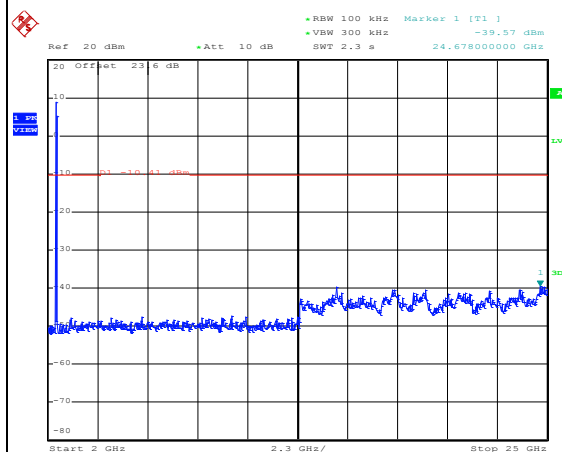
Date: 25.JAN.2017 22:03:48

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:03:59

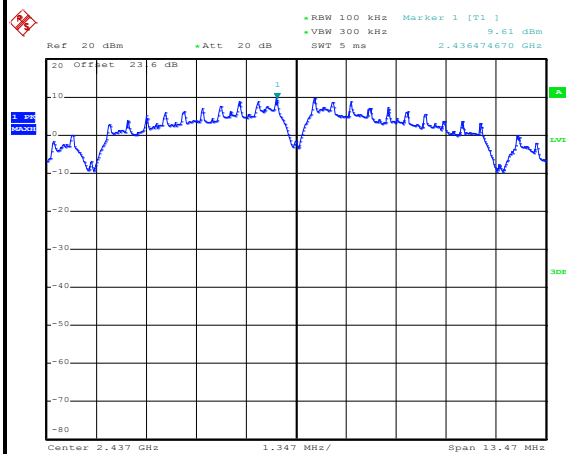
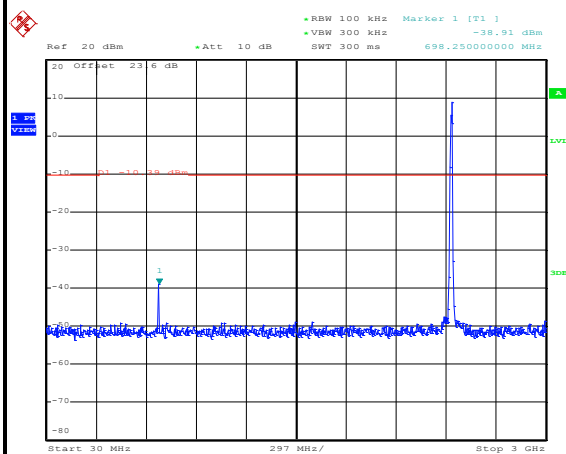
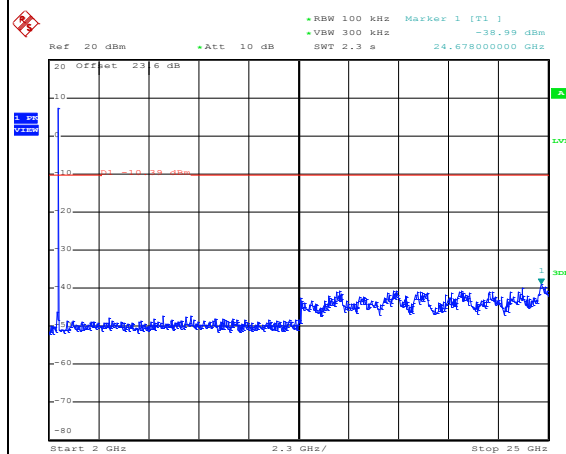
Spurious Emission 2GHz~25GHz



Date: 25.JAN.2017 22:04:07



Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

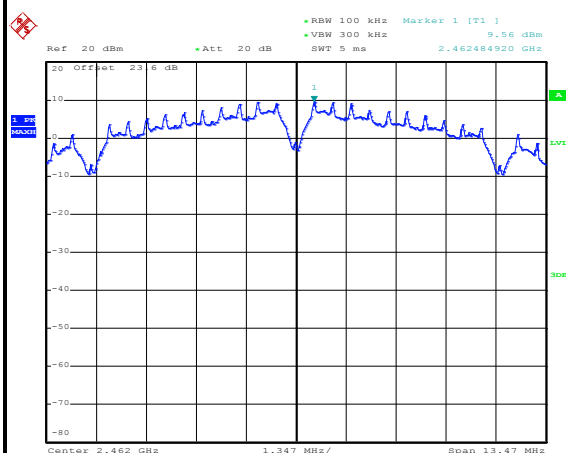
WLAN 802.11b Channel 06**100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

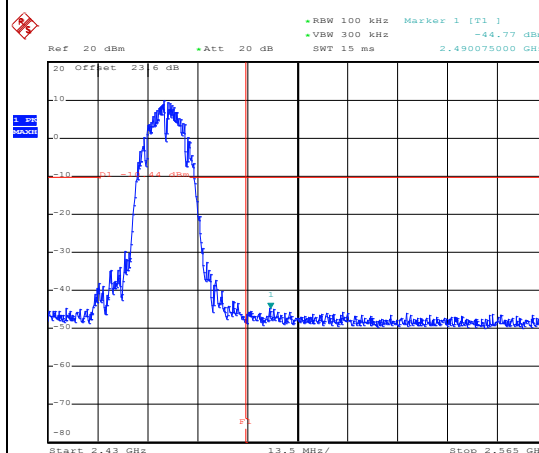
WLAN 802.11b Channel 11

100kHz PSD reference Level



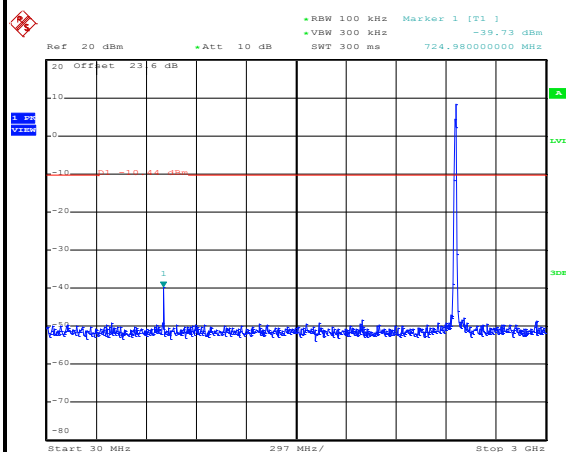
Date: 25.JAN.2017 22:09:57

High Channel Plot



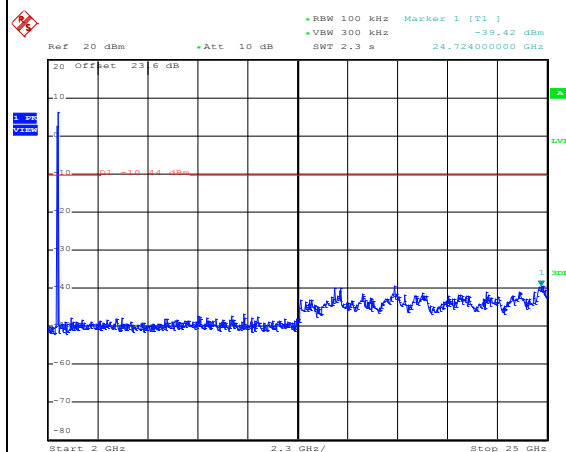
Date: 25.JAN.2017 22:10:21

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:10:32

Spurious Emission 2GHz~25GHz



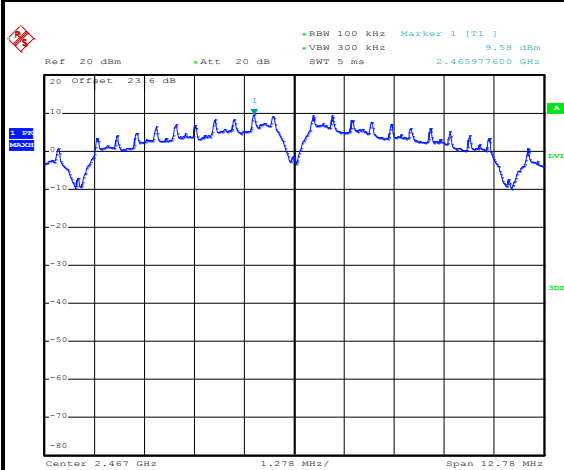
Date: 25.JAN.2017 22:10:40



Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

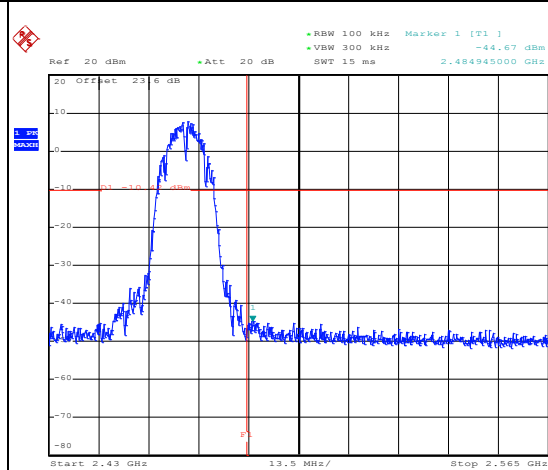
WLAN 802.11b Channel 12

100kHz PSD reference Level



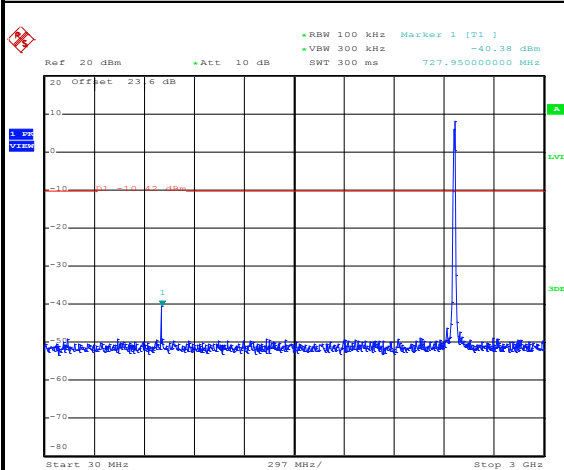
Date: 25.JAN.2017 22:13:02

High Channel Plot



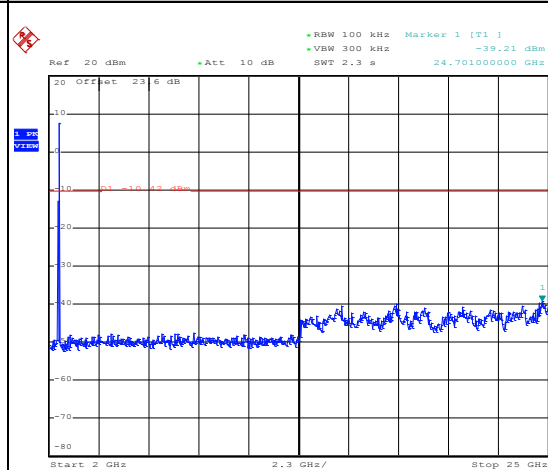
Date: 25.JAN.2017 22:13:26

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:13:40

Spurious Emission 2GHz~25GHz



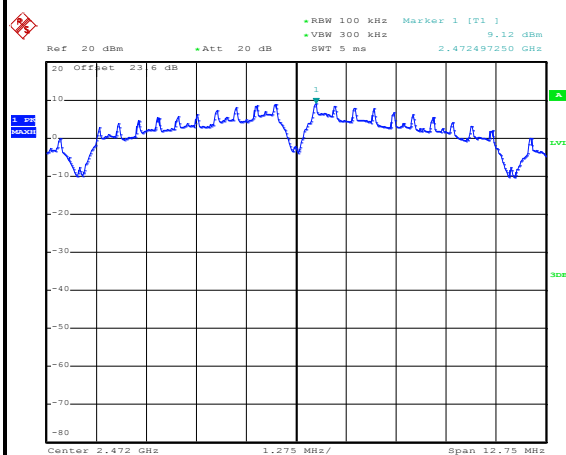
Date: 25.JAN.2017 22:13:48



Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

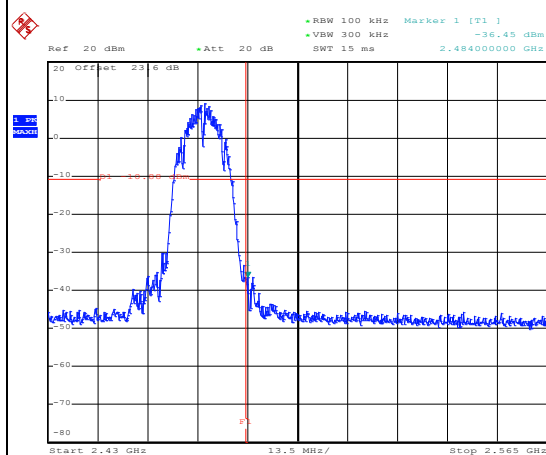
WLAN 802.11b Channel 13

100kHz PSD reference Level



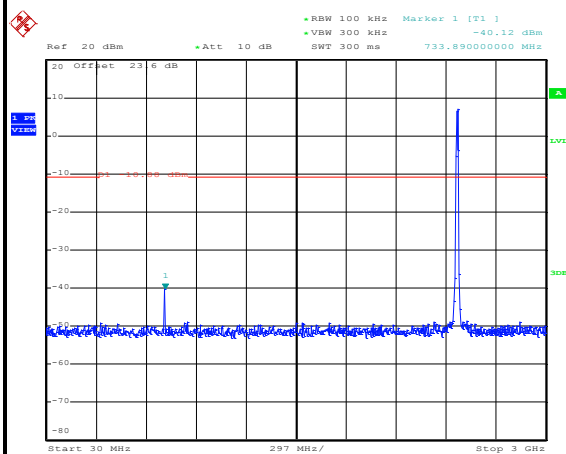
Date: 25.JAN.2017 22:17:16

High Channel Plot



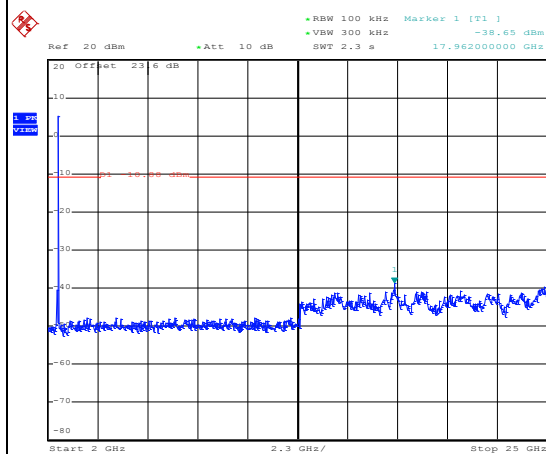
Date: 25.JAN.2017 22:30:00

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:20:26

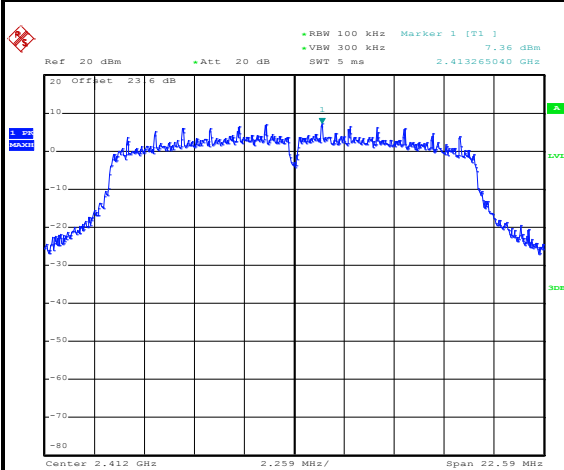
Spurious Emission 2GHz~25GHz



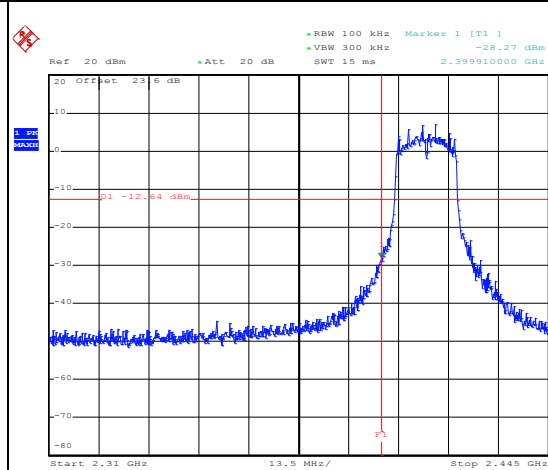
Date: 25.JAN.2017 22:20:34



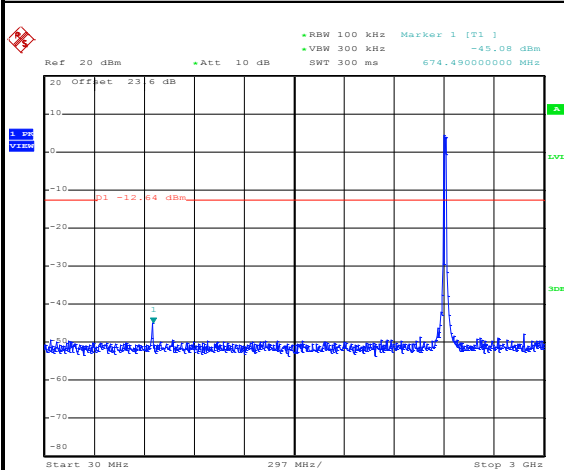
Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 01**100kHz PSD reference Level**

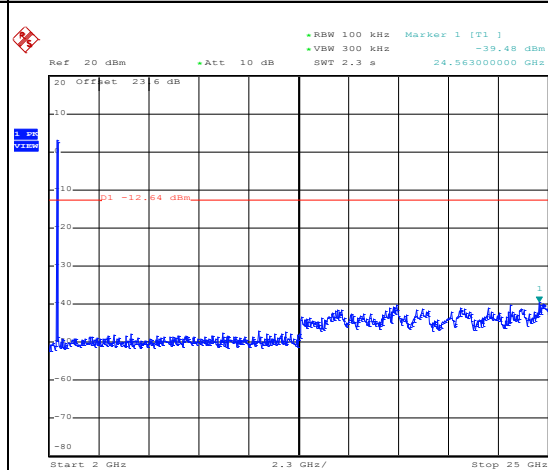
Date: 25.JAN.2017 22:56:57

Low Channel Plot

Date: 25.JAN.2017 22:57:09

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 22:57:21

Spurious Emission 2GHz~25GHz

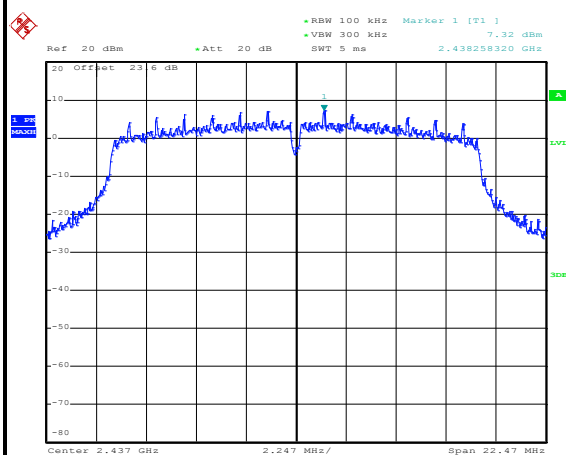
Date: 25.JAN.2017 22:57:29



Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

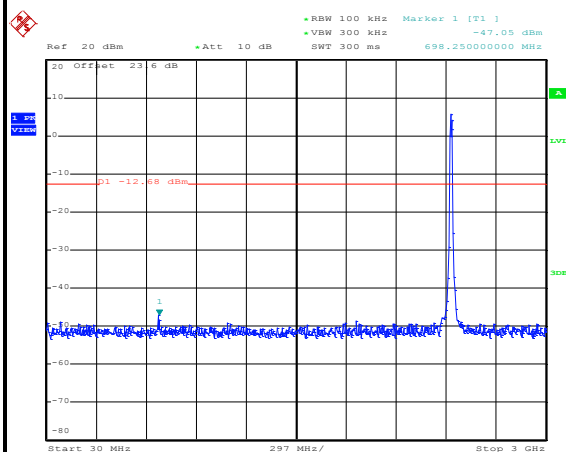
WLAN 802.11g Channel 06

100kHz PSD reference Level



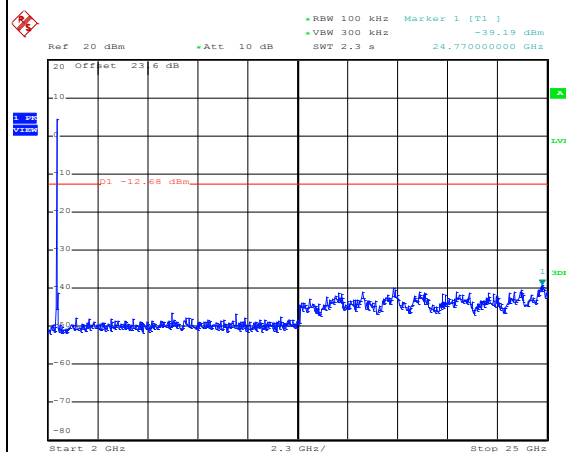
Date: 25.JAN.2017 22:59:16

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 22:59:29

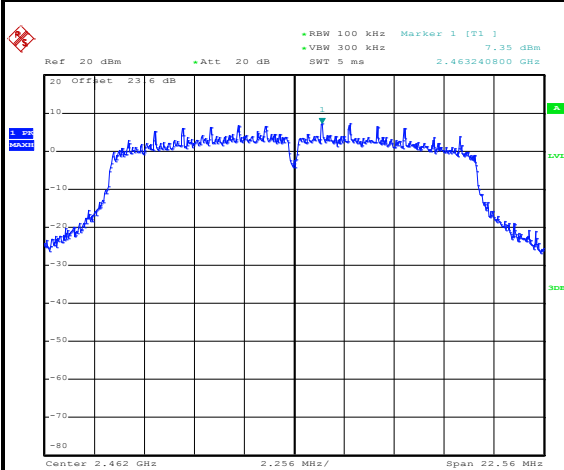
Spurious Emission 2GHz~25GHz



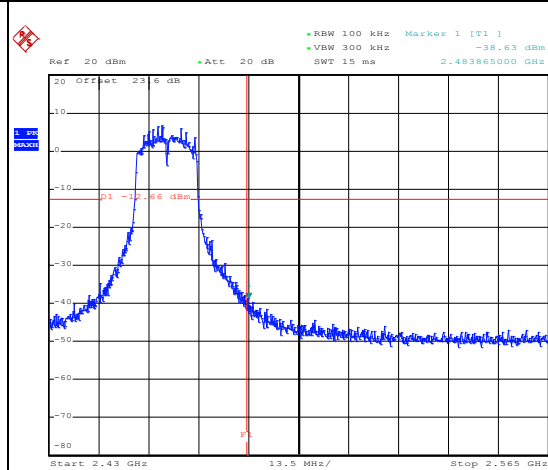
Date: 25.JAN.2017 22:59:37



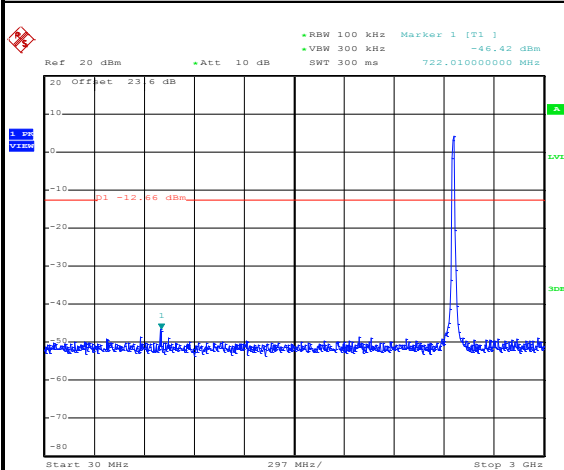
Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 11**100kHz PSD reference Level**

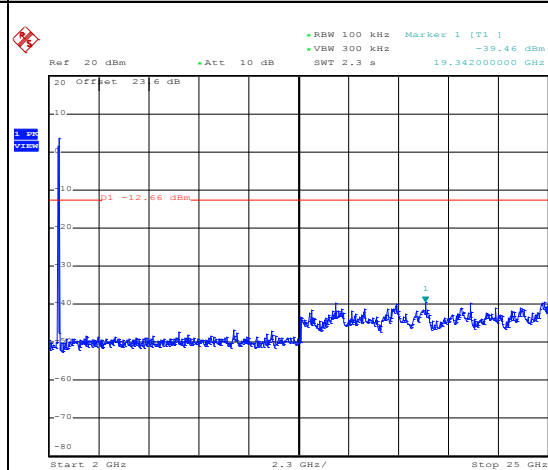
Date: 25.JAN.2017 23:01:27

High Channel Plot

Date: 25.JAN.2017 23:01:37

Spurious Emission 30MHz~3GHz

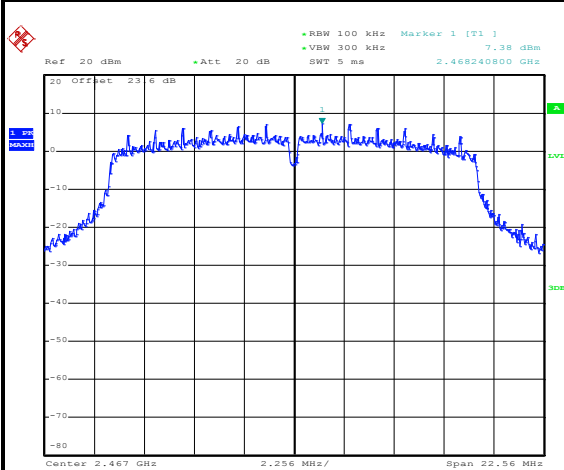
Date: 25.JAN.2017 23:01:48

Spurious Emission 2GHz~25GHz

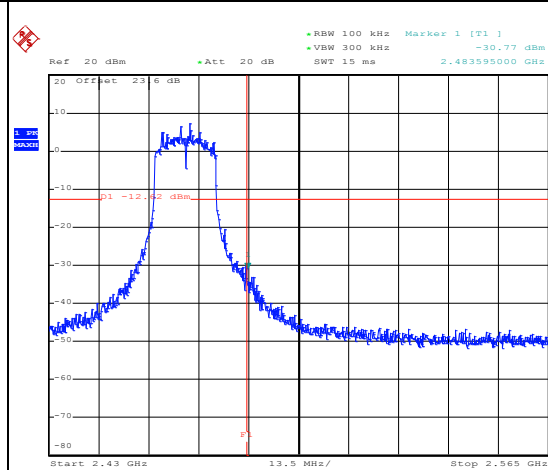
Date: 25.JAN.2017 23:01:57



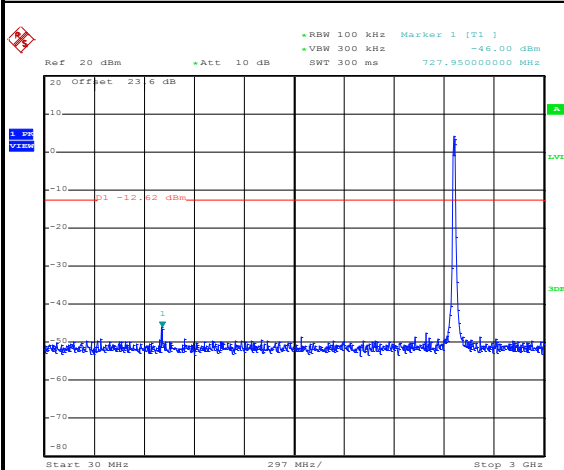
Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 12**100kHz PSD reference Level**

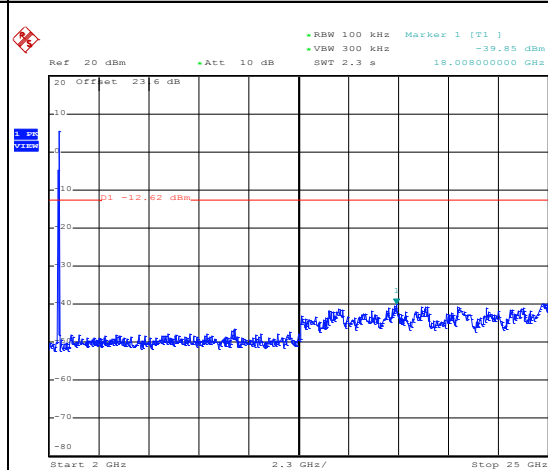
Date: 25.JAN.2017 23:05:14

High Channel Plot

Date: 25.JAN.2017 23:05:25

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 23:05:41

Spurious Emission 2GHz~25GHz

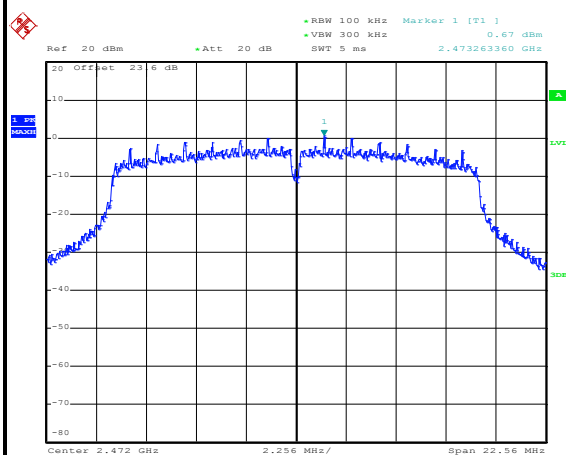
Date: 25.JAN.2017 23:05:49



Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

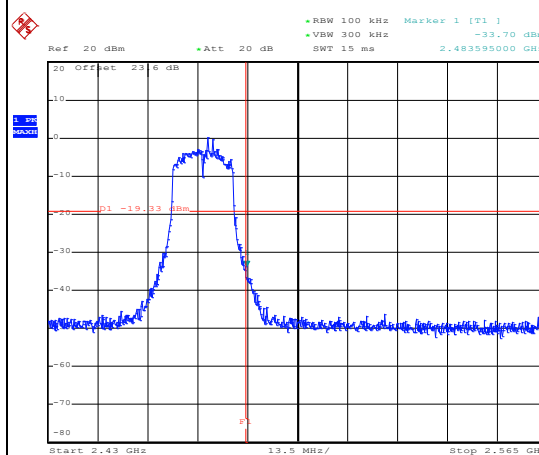
WLAN 802.11g Channel 13

100kHz PSD reference Level



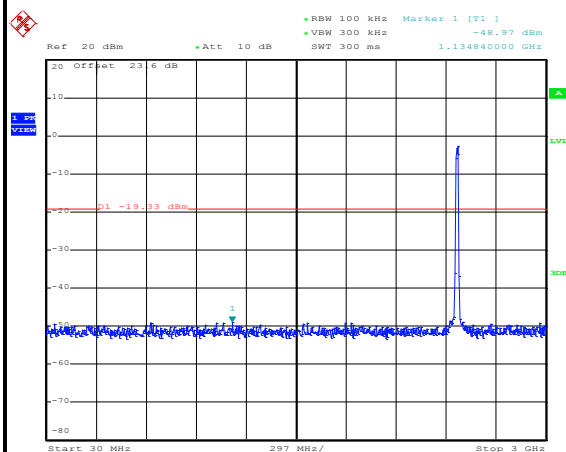
Date: 25.JAN.2017 23:09:21

High Channel Plot



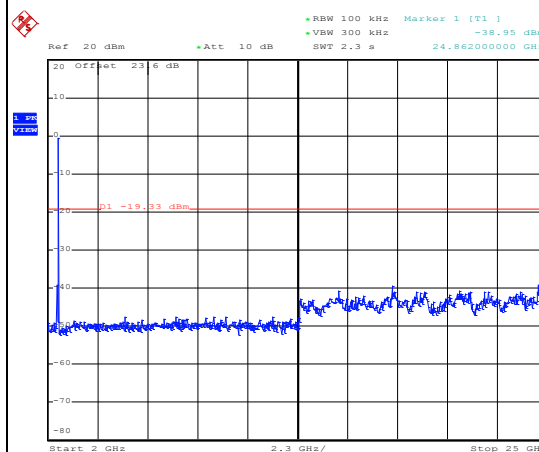
Date: 25.JAN.2017 23:09:30

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:09:44

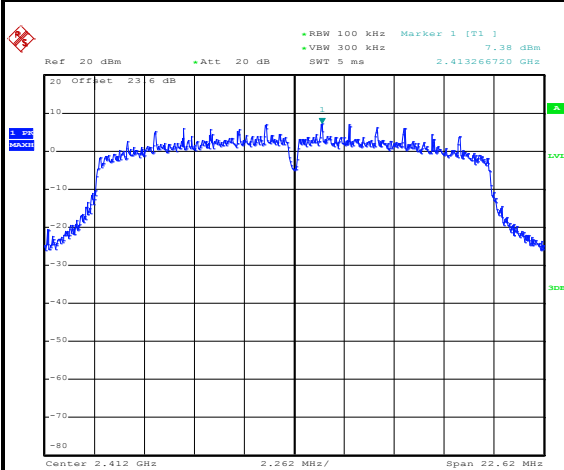
Spurious Emission 2GHz~25GHz



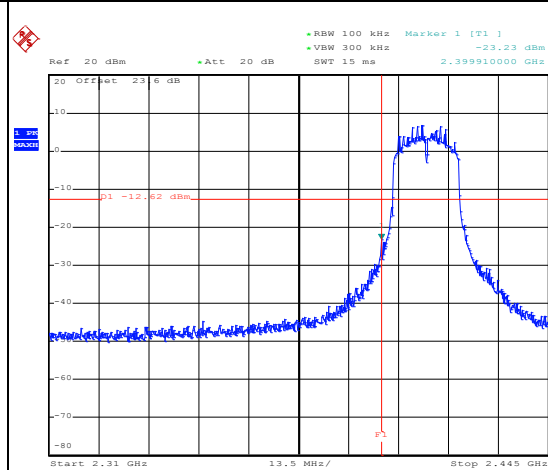
Date: 25.JAN.2017 23:09:52



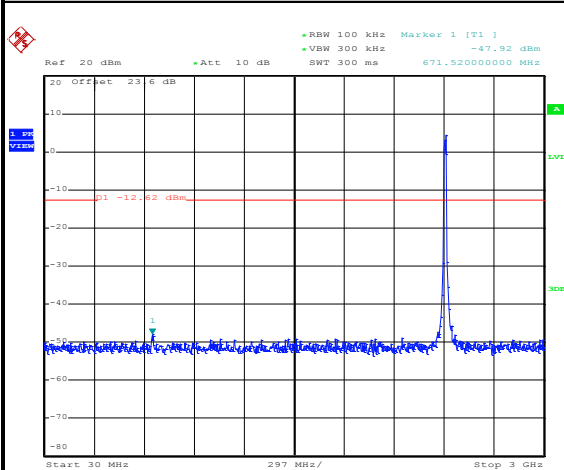
Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

WLAN 802.11n HT20 Channel 01**100kHz PSD reference Level**

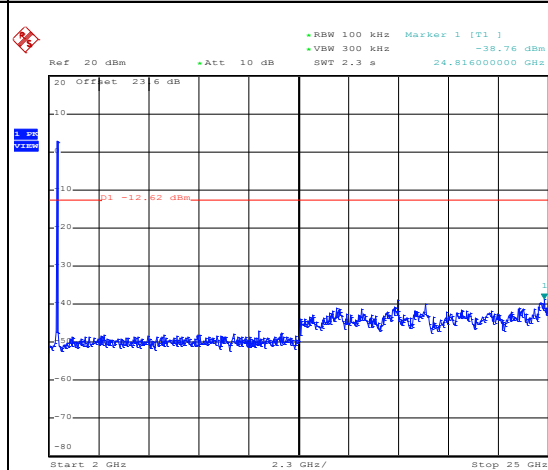
Date: 25.JAN.2017 23:33:32

Low Channel Plot

Date: 25.JAN.2017 23:33:53

Spurious Emission 30MHz~3GHz

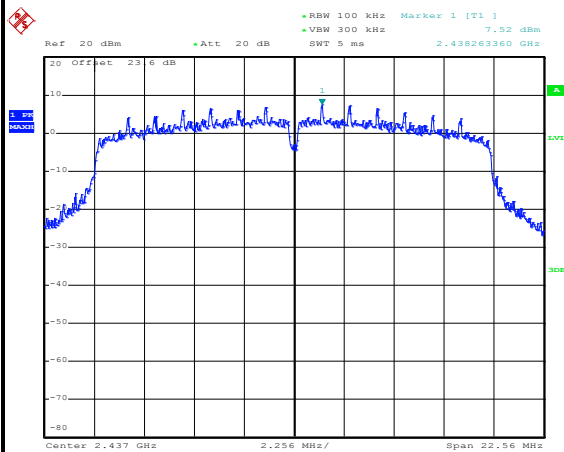
Date: 25.JAN.2017 23:34:06

Spurious Emission 2GHz~25GHz

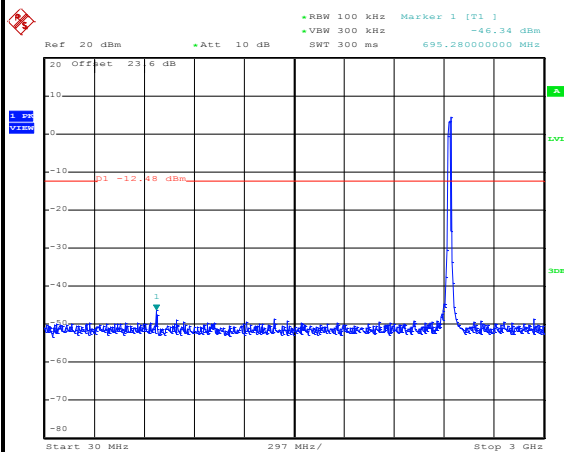
Date: 25.JAN.2017 23:34:14



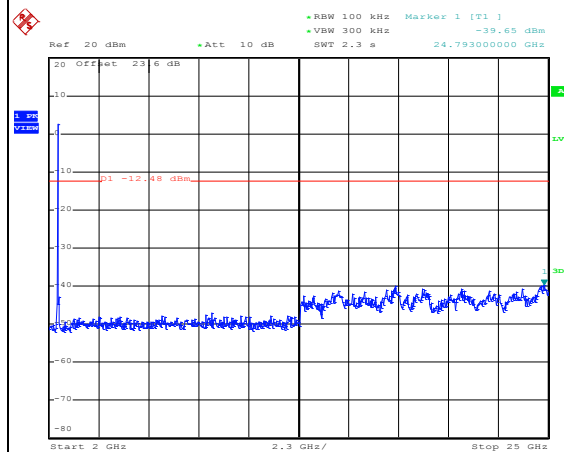
Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

WLAN 802.11n HT20 Channel 06**100kHz PSD reference Level**

Date: 25.JAN.2017 23:35:54

Spurious Emission 30MHz~3GHz

Date: 25.JAN.2017 23:36:10

Spurious Emission 2GHz~25GHz

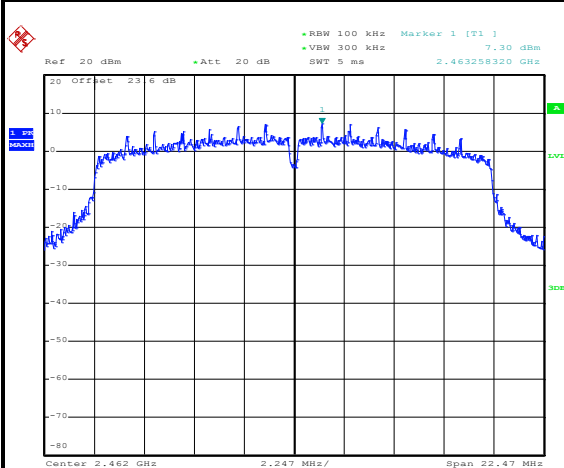
Date: 25.JAN.2017 23:36:18



Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

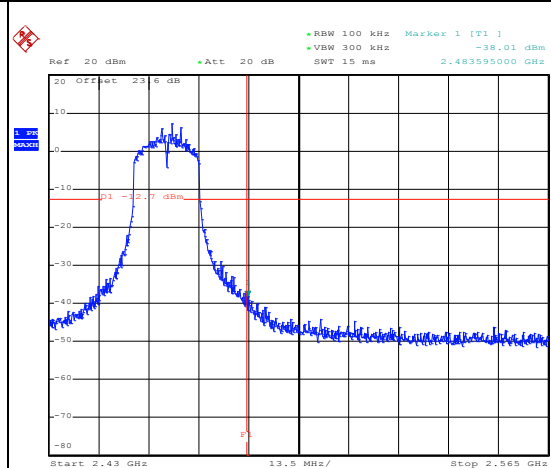
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



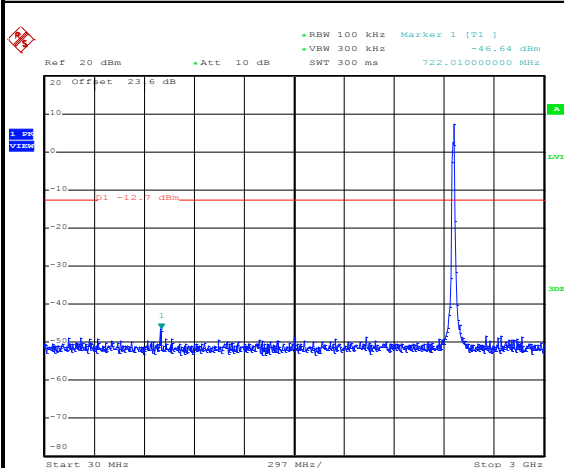
Date: 25.JAN.2017 23:38:18

High Channel Plot



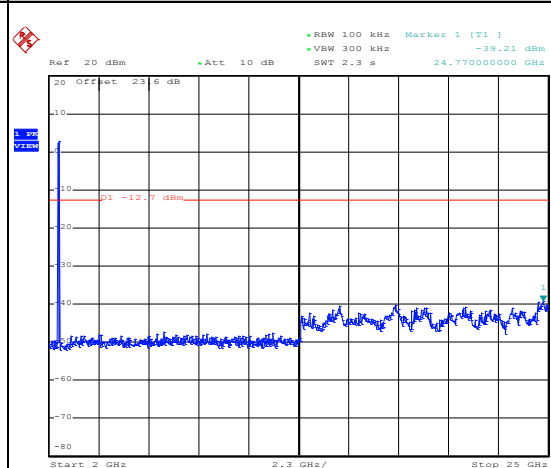
Date: 25.JAN.2017 23:38:50

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:39:06

Spurious Emission 2GHz~25GHz



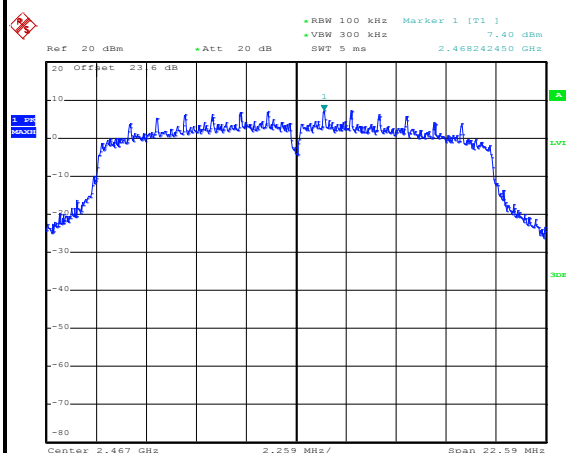
Date: 25.JAN.2017 23:39:15



Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	12	Test Engineer :	Derek Hsu

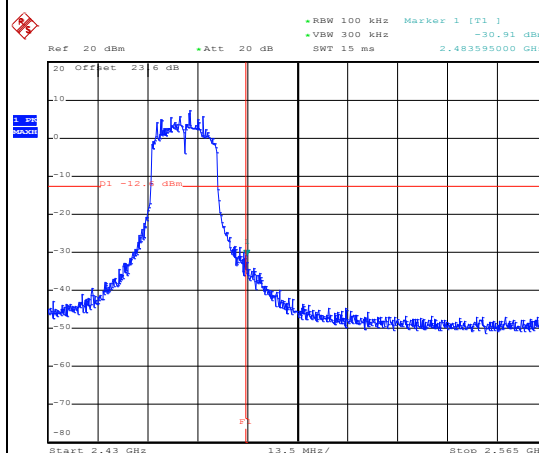
WLAN 802.11n HT20 Channel 12

100kHz PSD reference Level



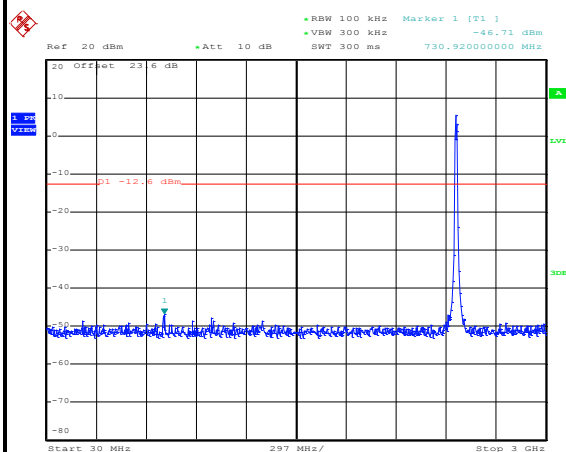
Date: 25.JAN.2017 23:41:07

High Channel Plot



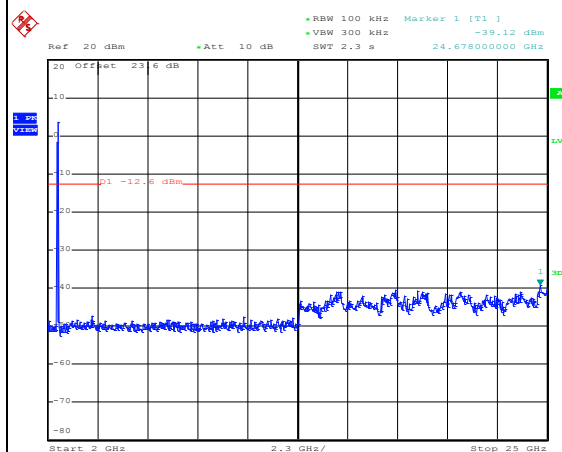
Date: 25.JAN.2017 23:41:19

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:41:34

Spurious Emission 2GHz~25GHz



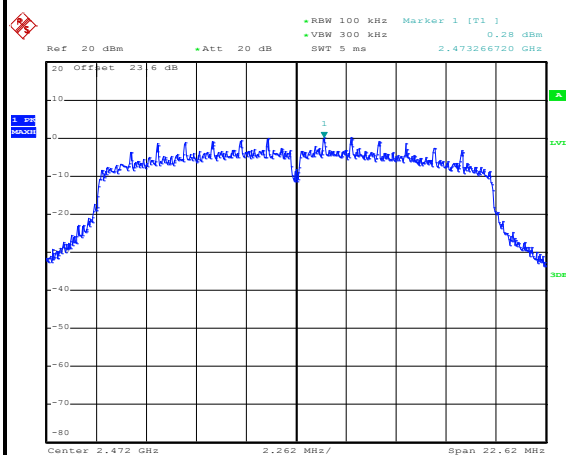
Date: 25.JAN.2017 23:41:43



Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	13	Test Engineer :	Derek Hsu

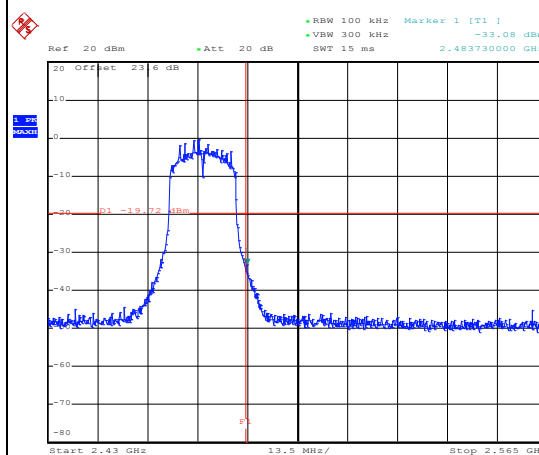
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



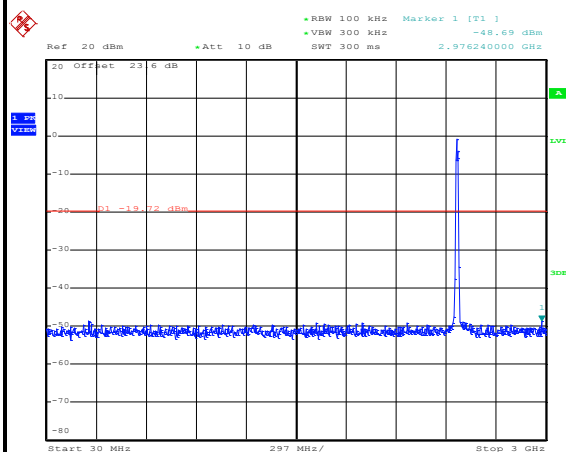
Date: 25.JAN.2017 23:44:30

High Channel Plot



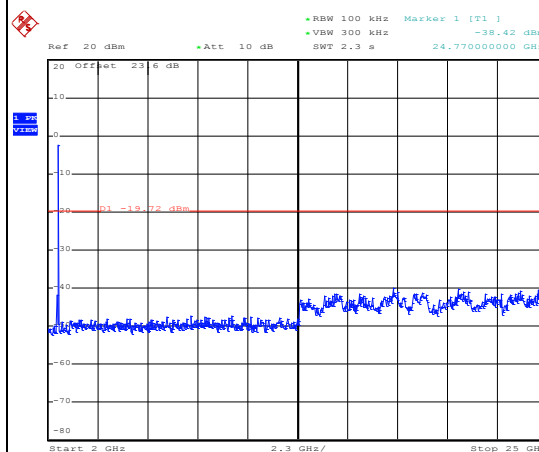
Date: 25.JAN.2017 23:44:40

Spurious Emission 30MHz~3GHz



Date: 25.JAN.2017 23:44:58

Spurious Emission 2GHz~25GHz



Date: 25.JAN.2017 23:45:06



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

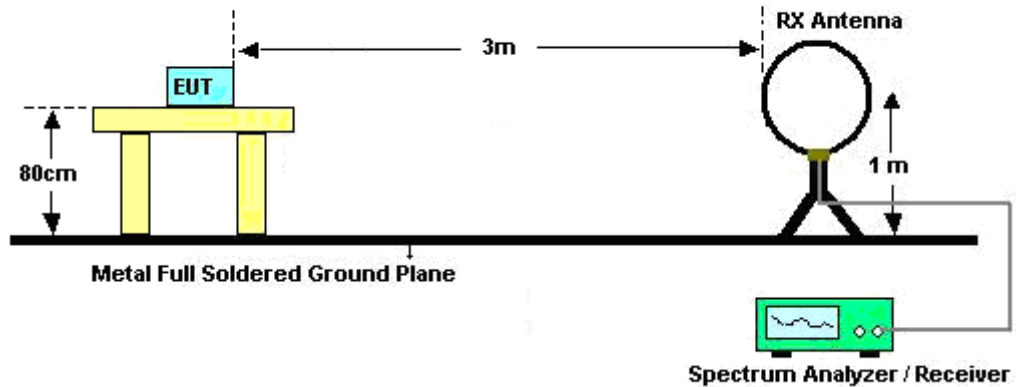
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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:

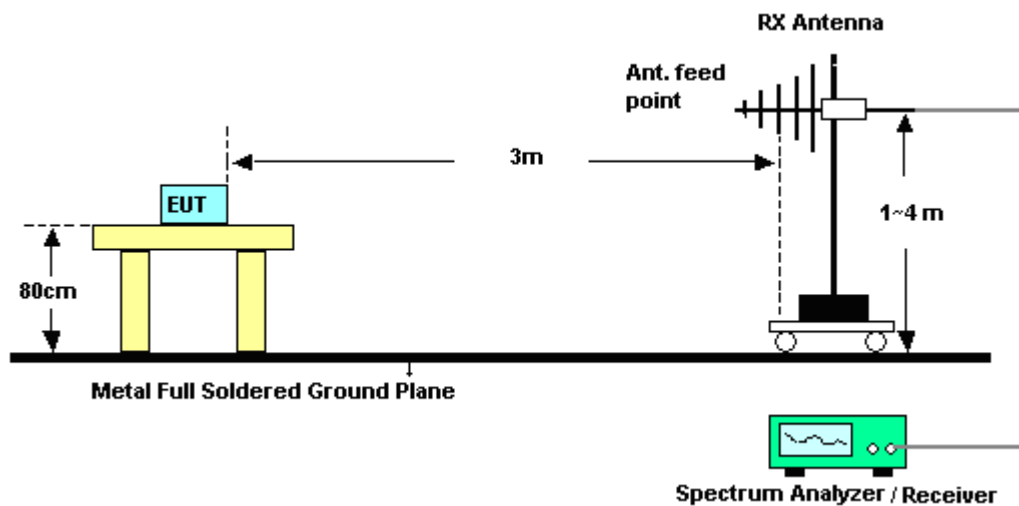
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

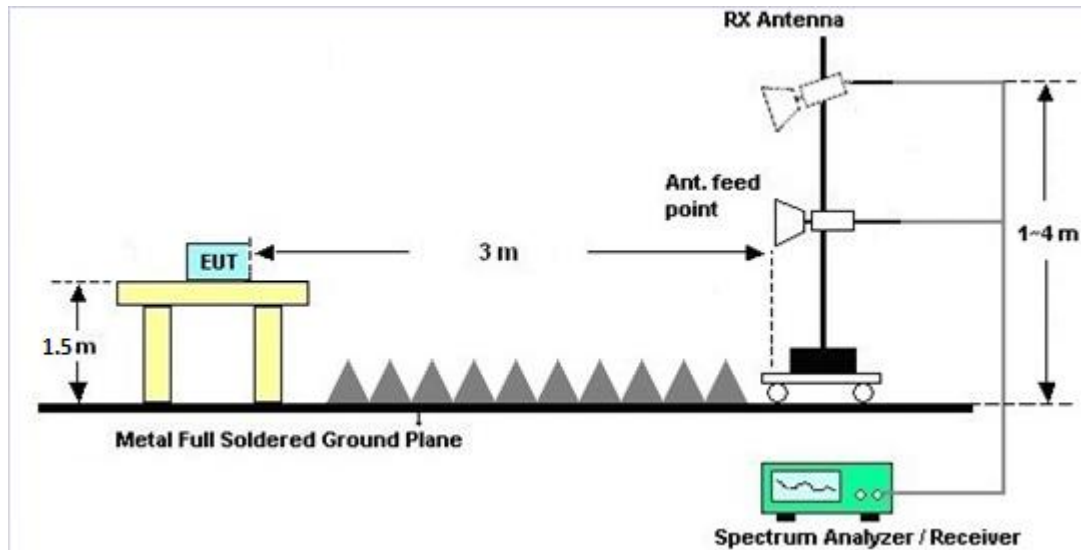
For radiated emissions below 30MHz



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.

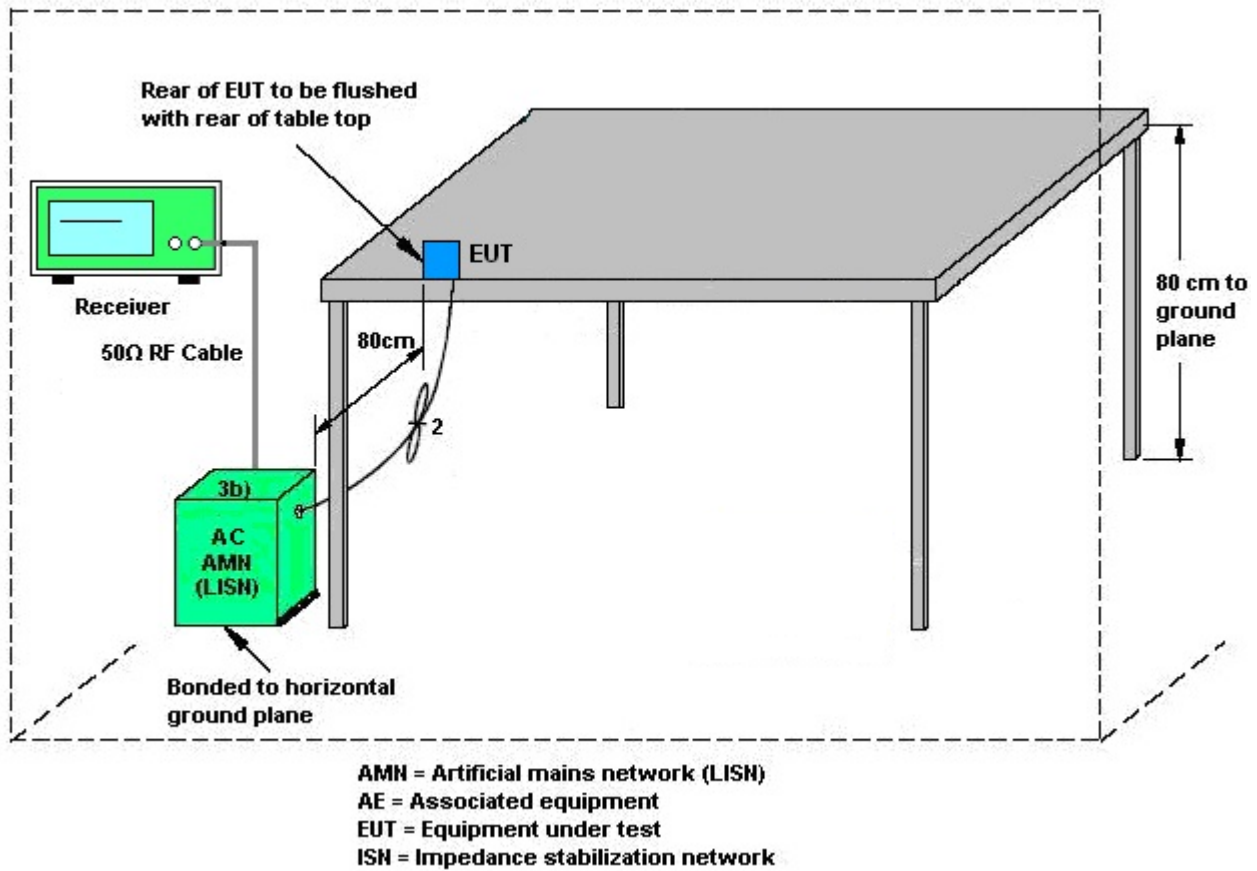
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

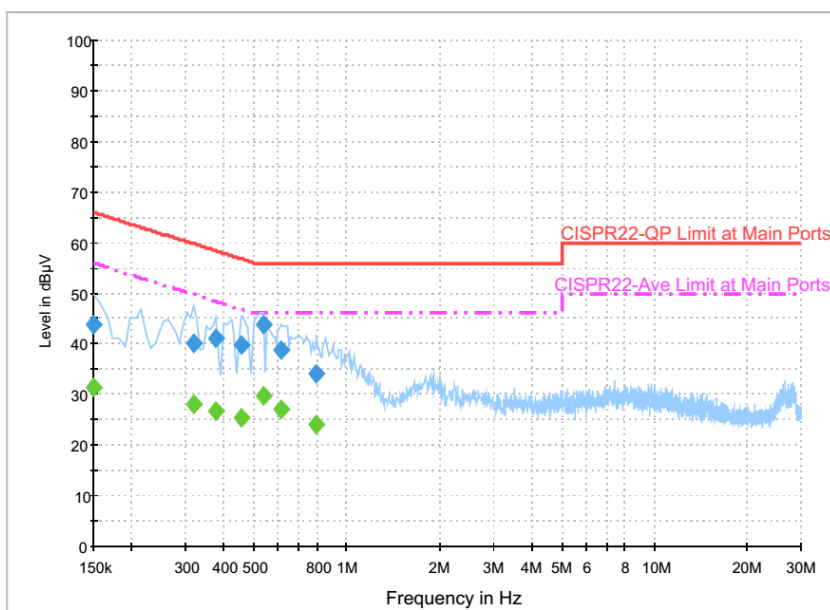
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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 :	22~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + USB Cable (Charging from Adapter)		



Final Result : QuasiPeak

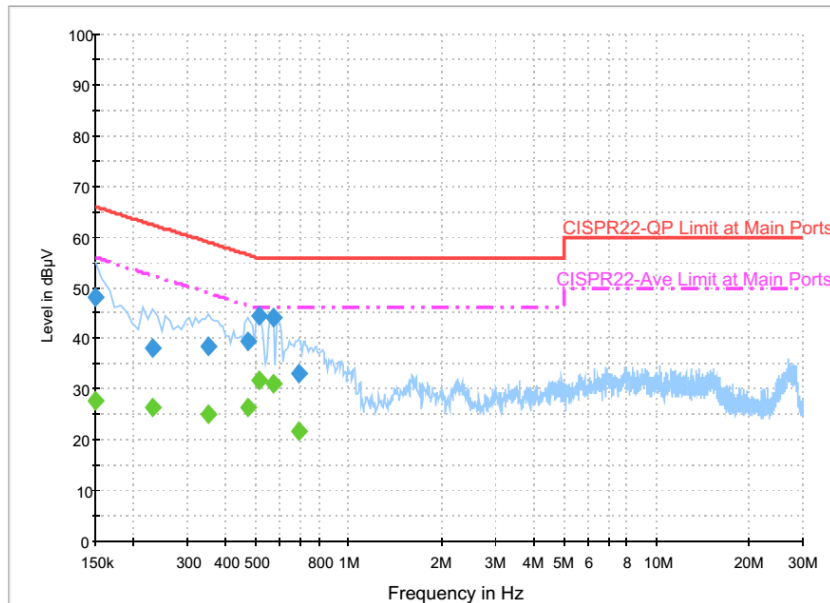
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	43.9	Off	L1	19.6	22.1	66.0
0.318000	40.1	Off	L1	19.6	19.7	59.8
0.374000	41.2	Off	L1	19.6	17.2	58.4
0.454000	39.8	Off	L1	19.6	17.0	56.8
0.534000	43.7	Off	L1	19.6	12.3	56.0
0.614000	38.8	Off	L1	19.6	17.2	56.0
0.798000	34.2	Off	L1	19.6	21.8	56.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	31.6	Off	L1	19.6	24.4	56.0
0.318000	28.0	Off	L1	19.6	21.8	49.8
0.374000	26.7	Off	L1	19.6	21.7	48.4
0.454000	25.3	Off	L1	19.6	21.5	46.8
0.534000	29.6	Off	L1	19.6	16.4	46.0
0.614000	27.2	Off	L1	19.6	18.8	46.0
0.798000	24.1	Off	L1	19.6	21.9	46.0



Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + USB Cable (Charging from Adapter)		

**Final Result : QuasiPeak**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	48.1	Off	N	19.6	17.9	66.0
0.230000	38.0	Off	N	19.6	24.4	62.4
0.350000	38.3	Off	N	19.6	20.7	59.0
0.470000	39.4	Off	N	19.6	17.1	56.5
0.510000	44.6	Off	N	19.6	11.4	56.0
0.566000	44.3	Off	N	19.6	11.7	56.0
0.686000	33.0	Off	N	19.6	23.0	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	27.7	Off	N	19.6	28.3	56.0
0.230000	26.3	Off	N	19.6	26.1	52.4
0.350000	25.1	Off	N	19.6	23.9	49.0
0.470000	26.5	Off	N	19.6	20.0	46.5
0.510000	31.8	Off	N	19.6	14.2	46.0
0.566000	31.2	Off	N	19.6	14.8	46.0
0.686000	21.9	Off	N	19.6	24.1	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	Jan. 17, 2017 ~ Jan. 26, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Jan. 17, 2017 ~ Jan. 26, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jul. 17, 2016	Jan. 17, 2017 ~ Jan. 26, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Jan. 19, 2017 ~ Jan. 25, 2017	Sep. 01, 2017	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Nov. 09, 2017	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	37059&01	30MHz~1GHz	Oct. 15, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Oct. 14, 2017	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 23, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Dec. 22, 2017	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Oct. 25, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Oct. 24, 2017	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1815698	1GHz~18GHz	Dec. 01, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Nov. 30, 2017	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 12, 2017	Jan. 19, 2017 ~ Jan. 25, 2017	Jan. 11, 2018	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jan. 19, 2017 ~ Jan. 25, 2017	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jan. 19, 2017 ~ Jan. 25, 2017	N/A	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 15, 2016	Jan. 19, 2017 ~ Jan. 25, 2017	Apr. 14, 2017	Radiation (03CH12-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 27, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Jan. 27, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Jan. 27, 2017	Nov. 28, 2017	Conduction (CO05-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
---	-----

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
---	-----

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7
---	-----



Appendix A. Conducted Test Results

Report Number : FR662707-01B

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2017/1/17~2017/01/26	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	14.25	14.20	8.50	9.00	0.50	Pass
11b	1Mbps	1	6	2437	14.20	14.20	9.02	8.98	0.50	Pass
11b	1Mbps	1	11	2462	14.20	14.20	8.04	8.98	0.50	Pass
11b	1Mbps	1	12	2467	14.20	14.20	9.00	8.52	0.50	Pass
11b	1Mbps	1	13	2472	14.20	14.20	9.00	8.50	0.50	Pass
11g	6Mbps	1	1	2412	17.10	17.20	15.06	15.06	0.50	Pass
11g	6Mbps	1	6	2437	17.40	17.15	15.02	14.98	0.50	Pass
11g	6Mbps	1	11	2462	17.15	17.20	15.00	15.04	0.50	Pass
11g	6Mbps	1	12	2467	17.50	17.45	15.04	15.04	0.50	Pass
11g	6Mbps	1	13	2472	17.30	17.20	15.00	15.04	0.50	Pass
HT20	MCS0	1	1	2412	18.35	18.15	15.02	15.08	0.50	Pass
HT20	MCS0	1	6	2437	18.25	18.50	15.04	15.04	0.50	Pass
HT20	MCS0	1	11	2462	18.30	18.15	15.02	14.98	0.50	Pass
HT20	MCS0	1	12	2467	18.20	18.15	15.00	15.06	0.50	Pass
HT20	MCS0	1	13	2472	18.20	18.35	15.02	15.08	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	20.33	20.01		30.00	30.00	-0.30	-4.90	20.03	15.11	36.00	36.00	Pass
11b	1Mbps	1	6	2437	20.12	20.38		30.00	30.00	-0.30	-4.90	19.82	15.48	36.00	36.00	Pass
11b	1Mbps	1	11	2462	20.18	20.50		30.00	30.00	-0.30	-4.90	19.88	15.60	36.00	36.00	Pass
11b	1Mbps	1	12	2467	20.12	20.42		30.00	30.00	-0.30	-4.90	19.82	15.52	36.00	36.00	Pass
11b	1Mbps	1	13	2472	18.41	19.90		30.00	30.00	-0.30	-4.90	18.11	15.00	36.00	36.00	Pass
11g	6Mbps	1	1	2412	26.09	26.45		30.00	30.00	-0.30	-4.90	25.79	21.55	36.00	36.00	Pass
11g	6Mbps	1	6	2437	26.14	26.43		30.00	30.00	-0.30	-4.90	25.84	21.53	36.00	36.00	Pass
11g	6Mbps	1	11	2462	26.10	26.37		30.00	30.00	-0.30	-4.90	25.80	21.47	36.00	36.00	Pass
11g	6Mbps	1	12	2467	25.80	26.31		30.00	30.00	-0.30	-4.90	25.50	21.41	36.00	36.00	Pass
11g	6Mbps	1	13	2472	21.60	24.32		30.00	30.00	-0.30	-4.90	21.30	19.42	36.00	36.00	Pass
HT20	MCS0	1	1	2412	26.09	26.50		30.00	30.00	-0.30	-4.90	25.79	21.60	36.00	36.00	Pass
HT20	MCS0	1	6	2437	26.11	26.45		30.00	30.00	-0.30	-4.90	25.81	21.55	36.00	36.00	Pass
HT20	MCS0	1	11	2462	26.03	23.34		30.00	30.00	-0.30	-4.90	25.73	18.44	36.00	36.00	Pass
HT20	MCS0	1	12	2467	25.58	23.30		30.00	30.00	-0.30	-4.90	25.28	18.40	36.00	36.00	Pass
HT20	MCS0	1	13	2472	18.95	22.87		30.00	30.00	-0.30	-4.90	18.65	17.97	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)		SUM
					Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	0.06	0.06	17.84	17.66	
11b	1Mbps	1	6	2437	0.06	0.06	17.78	17.91	
11b	1Mbps	1	11	2462	0.06	0.06	17.80	17.99	
11b	1Mbps	1	12	2467	0.06	0.06	17.77	17.96	
11b	1Mbps	1	13	2472	0.06	0.06	16.06	17.53	
11g	6Mbps	1	1	2412	0.32	0.32	17.70	17.99	
11g	6Mbps	1	6	2437	0.32	0.32	17.82	17.94	
11g	6Mbps	1	11	2462	0.32	0.32	17.76	17.92	
11g	6Mbps	1	12	2467	0.32	0.32	17.08	17.88	
11g	6Mbps	1	13	2472	0.32	0.32	8.17	11.01	
HT20	MCS0	1	1	2412	0.34	0.35	17.60	17.96	
HT20	MCS0	1	6	2437	0.34	0.35	17.98	17.87	
HT20	MCS0	1	11	2462	0.34	0.35	17.96	17.80	
HT20	MCS0	1	12	2467	0.34	0.35	16.49	17.79	
HT20	MCS0	1	13	2472	0.34	0.35	6.64	10.81	

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	-3.86	-4.02	-	-0.30	-4.90	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-4.31	-5.23		-0.30	-4.90	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-4.00	-4.30		-0.30	-4.90	8.00	8.00	Pass
11b	1Mbps	1	12	2467	-4.42	-4.44		-0.30	-4.90	8.00	8.00	Pass
11b	1Mbps	1	13	2472	-5.45	-4.33		-0.30	-4.90	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-8.04	-7.25		-0.30	-4.90	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-7.35	-7.14		-0.30	-4.90	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-7.09	-7.40		-0.30	-4.90	8.00	8.00	Pass
11g	6Mbps	1	12	2467	-8.93	-7.30		-0.30	-4.90	8.00	8.00	Pass
11g	6Mbps	1	13	2472	-17.21	-13.85		-0.30	-4.90	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-7.84	-7.42		-0.30	-4.90	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-6.27	-7.69		-0.30	-4.90	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-7.92	-8.06		-0.30	-4.90	8.00	8.00	Pass
HT20	MCS0	1	12	2467	-8.46	-7.47		-0.30	-4.90	8.00	8.00	Pass
HT20	MCS0	1	13	2472	-18.20	-13.40		-0.30	-4.90	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 :	22~25°C
		Relative Humidity :	54~46%

<EUT with Ant. 1>

2.4GHz 2400~2483.5MHz

WIFI 802.11b (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)
802.11b CH 01 2412MHz		2373.945	56.13	-17.87	74	53.23	27.02	7.37	31.49	176	127	P	H
		2383.815	44.25	-9.75	54	41.24	27.05	7.45	31.49	176	127	A	H
	*	2412	104.5	-	-	101.4	27.14	7.45	31.49	176	127	P	H
	*	2412	100.26	-	-	97.16	27.14	7.45	31.49	176	127	A	H
													H
													H
		2374.89	55.92	-18.08	74	53.02	27.02	7.37	31.49	100	90	P	V
		2389.17	43.94	-10.06	54	40.91	27.07	7.45	31.49	100	90	A	V
	*	2412	101.77	-	-	98.67	27.14	7.45	31.49	100	90	P	V
	*	2412	97.46	-	-	94.36	27.14	7.45	31.49	100	90	A	V
													V
													V
802.11b CH 06 2437MHz		2377.62	56.28	-17.72	74	53.37	27.03	7.37	31.49	292	132	P	H
		2389.52	44.03	-9.97	54	41	27.07	7.45	31.49	292	132	A	H
	*	2437	106.72	-	-	103.5	27.21	7.49	31.48	292	132	P	H
	*	2437	102.17	-	-	98.95	27.21	7.49	31.48	292	132	A	H
		2496.22	56.47	-17.53	74	53.01	27.39	7.53	31.46	292	132	P	H
		2484.18	44.43	-9.57	54	41.02	27.35	7.53	31.47	292	132	A	H
		2362.22	55.9	-18.1	74	53.04	26.99	7.37	31.5	100	89	P	V
		2389.1	43.86	-10.14	54	40.83	27.07	7.45	31.49	100	89	A	V
	*	2437	103.58	-	-	100.36	27.21	7.49	31.48	100	89	P	V
	*	2437	98.92	-	-	95.7	27.21	7.49	31.48	100	89	A	V
		2497.48	56.25	-17.75	74	52.79	27.39	7.53	31.46	100	89	P	V
		2484.74	44.26	-9.74	54	40.85	27.35	7.53	31.47	100	89	A	V



802.11b CH 11 2462MHz	*	2462	105.2	-	-	101.85	27.29	7.53	31.47	221	134	P	H
	*	2462	100.91	-	-	97.56	27.29	7.53	31.47	221	134	A	H
		2490.16	57.04	-16.96	74	53.61	27.37	7.53	31.47	221	134	P	H
		2488.36	45.14	-8.86	54	41.71	27.37	7.53	31.47	221	134	A	H
													H
													H
	*	2462	101.85	-	-	98.5	27.29	7.53	31.47	100	88	P	V
	*	2462	97.46	-	-	94.11	27.29	7.53	31.47	100	88	A	V
		2493.4	56.16	-17.84	74	52.71	27.38	7.53	31.46	100	88	P	V
		2488.48	44.58	-9.42	54	41.15	27.37	7.53	31.47	100	88	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	105.67	-	-	102.31	27.3	7.53	31.47	317	130	P	H
	*	2467	101.65	-	-	98.29	27.3	7.53	31.47	317	130	A	H
		2486.08	56.66	-17.34	74	53.24	27.36	7.53	31.47	317	130	P	H
		2485.92	45.45	-8.55	54	42.03	27.36	7.53	31.47	317	130	A	H
													H
													H
	*	2467	101.34	-	-	97.98	27.3	7.53	31.47	100	87	P	V
	*	2467	97.4	-	-	94.04	27.3	7.53	31.47	100	87	A	V
		2485.64	57.12	-16.88	74	53.7	27.36	7.53	31.47	100	87	P	V
		2486	44.59	-9.41	54	41.17	27.36	7.53	31.47	100	87	A	V
													V
													V
802.11b CH 13 2472MHz	*	2472	104.33	-	-	100.95	27.32	7.53	31.47	173	124	P	H
	*	2472	100.46	-	-	97.08	27.32	7.53	31.47	173	124	A	H
		2483.6	60.62	-13.38	74	57.21	27.35	7.53	31.47	173	124	P	H
		2483.52	53.41	-0.59	54	50	27.35	7.53	31.47	173	124	A	H
													H
													H
	*	2472	99.82	-	-	96.44	27.32	7.53	31.47	100	92	P	V
	*	2472	95.92	-	-	92.54	27.32	7.53	31.47	100	92	A	V
		2483.68	57.61	-16.39	74	54.2	27.35	7.53	31.47	100	92	P	V
		2483.52	49.73	-4.27	54	46.32	27.35	7.53	31.47	100	92	A	V
													V
													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	50.39	-23.61	74	65.61	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	42.61	-31.39	74	57.83	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	45.62	-28.38	74	60.56	32.27	10.89	58.1	100	0	P	H
		7311	43.22	-30.78	74	51.16	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	40.2	-33.8	74	55.14	32.27	10.89	58.1	100	0	P	V
		7311	44	-30	74	51.94	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	46.95	-27.05	74	61.61	32.36	11.04	58.06	100	0	P	H
		7386	44.54	-29.46	74	52.23	37.18	14.27	59.14	100	0	P	H
													H
													H
		4924	40.97	-33.03	74	55.63	32.36	11.04	58.06	100	0	P	V
		7386	45.74	-28.26	74	53.43	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	46.68	-27.32	74	61.32	32.38	11.04	58.06	100	0	P	H
		7401	44.47	-29.53	74	52.13	37.22	14.27	59.15	100	0	P	H
													H
													H
		4934	41.68	-32.32	74	56.32	32.38	11.04	58.06	100	0	P	V
		7401	46.2	-27.8	74	53.86	37.22	14.27	59.15	100	0	P	V
													V
													V
802.11b CH 13 2472MHz		4944	45.55	-28.45	74	60	32.4	11.19	58.04	100	0	P	H
		7416	43.92	-30.08	74	51.54	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	40.28	-33.72	74	54.73	32.4	11.19	58.04	100	0	P	V
		7416	44.95	-29.05	74	52.57	37.26	14.27	59.15	100	0	P	V
													V
													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		2384.235	58.89	-15.11	74	55.88	27.05	7.45	31.49	229	122	P	H
		2389.905	48.2	-5.8	54	45.17	27.07	7.45	31.49	229	122	A	H
	*	2412	106.38	-	-	103.28	27.14	7.45	31.49	229	122	P	H
	*	2412	96.82	-	-	93.72	27.14	7.45	31.49	229	122	A	H
													H
													H
		2389.905	57.78	-16.22	74	54.75	27.07	7.45	31.49	100	88	P	V
		2389.905	46.16	-7.84	54	43.13	27.07	7.45	31.49	100	88	A	V
	*	2412	103.94	-	-	100.84	27.14	7.45	31.49	100	88	P	V
	*	2412	93.95	-	-	90.85	27.14	7.45	31.49	100	88	A	V
													V
													V
802.11g CH 06 2437MHz		2351.3	55.5	-18.5	74	52.68	26.95	7.37	31.5	292	130	P	H
		2384.06	44.9	-9.1	54	41.89	27.05	7.45	31.49	292	130	A	H
	*	2437	108.43	-	-	105.21	27.21	7.49	31.48	292	130	P	H
	*	2437	98.36	-	-	95.14	27.21	7.49	31.48	292	130	A	H
		2491.04	56.38	-17.62	74	52.95	27.37	7.53	31.47	292	130	P	H
		2485.72	45.32	-8.68	54	41.9	27.36	7.53	31.47	292	130	A	H
		2364.04	55.94	-18.06	74	53.08	26.99	7.37	31.5	100	88	P	V
		2377.76	44.64	-9.36	54	41.73	27.03	7.37	31.49	100	88	A	V
	*	2437	102.86	-	-	99.64	27.21	7.49	31.48	100	88	P	V
	*	2437	93.15	-	-	89.93	27.21	7.49	31.48	100	88	A	V
		2499.09	56.38	-17.62	74	52.91	27.4	7.53	31.46	100	88	P	V
		2496.43	45.38	-8.62	54	41.92	27.39	7.53	31.46	100	88	A	V



802.11g CH 11 2462MHz	*	2462	109.12	-	-	105.77	27.29	7.53	31.47	172	126	P	H
	*	2462	99.3	-	-	95.95	27.29	7.53	31.47	172	126	A	H
		2483.68	68.81	-5.19	74	65.4	27.35	7.53	31.47	172	126	P	H
		2483.52	49.87	-4.13	54	46.46	27.35	7.53	31.47	172	126	A	H
													H
													H
	*	2462	104.44	-	-	101.09	27.29	7.53	31.47	100	91	P	V
	*	2462	94.74	-	-	91.39	27.29	7.53	31.47	100	91	A	V
		2484.16	64.42	-9.58	74	61.01	27.35	7.53	31.47	100	91	P	V
		2483.64	47.43	-6.57	54	44.02	27.35	7.53	31.47	100	91	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	108.21	-	-	104.85	27.3	7.53	31.47	137	123	P	H
	*	2467	97.65	-	-	94.29	27.3	7.53	31.47	137	123	A	H
		2483.72	72.83	-1.17	74	69.42	27.35	7.53	31.47	137	123	P	H
		2483.64	52.71	-1.29	54	49.3	27.35	7.53	31.47	137	123	A	H
													H
													H
	*	2467	103.75	-	-	100.39	27.3	7.53	31.47	100	94	P	V
	*	2467	93.59	-	-	90.23	27.3	7.53	31.47	100	94	A	V
		2483.92	69.47	-4.53	74	66.06	27.35	7.53	31.47	100	94	P	V
		2483.56	48.63	-5.37	54	45.22	27.35	7.53	31.47	100	94	A	V
													V
													V
802.11g CH 13 2472MHz	*	2472	98.71	-	-	95.33	27.32	7.53	31.47	194	133	P	H
	*	2472	88.74	-	-	85.36	27.32	7.53	31.47	194	133	A	H
		2483.52	70.77	-3.23	74	67.36	27.35	7.53	31.47	194	133	P	H
		2483.6	53.2	-0.8	54	49.79	27.35	7.53	31.47	194	133	A	H
													H
													H
	*	2472	93.46	-	-	90.08	27.32	7.53	31.47	100	115	P	V
	*	2472	83.19	-	-	79.81	27.32	7.53	31.47	100	115	A	V
		2483.56	66.17	-7.83	74	62.76	27.35	7.53	31.47	100	115	P	V
		2483.52	49.42	-4.58	54	46.01	27.35	7.53	31.47	100	115	A	V
													V
													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	48.45	-25.55	74	63.67	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	39.79	-34.21	74	55.01	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	49.56	-24.44	74	64.5	32.27	10.89	58.1	100	0	P	H
		7311	46.15	-27.85	74	54.09	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	41.99	-32.01	74	56.93	32.27	10.89	58.1	100	0	P	V
		7311	48.23	-25.77	74	56.17	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4924	58.88	-15.12	74	73.54	32.36	11.04	58.06	100	186	P	H
		4924	39.47	-14.53	54	54.13	32.36	11.04	58.06	100	186	A	H
		7386	46.3	-27.7	74	53.99	37.18	14.27	59.14	100	0	P	H
													H
		4924	45.14	-28.86	74	59.8	32.36	11.04	58.06	100	0	P	V
		7386	48.09	-25.91	74	55.78	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	60.25	-13.75	74	74.89	32.38	11.04	58.06	100	188	P	H
		4934	39.78	-14.22	54	54.42	32.38	11.04	58.06	100	188	A	H
		7401	44.03	-29.97	74	51.69	37.22	14.27	59.15	100	0	P	H
													H
		4934	45.88	-28.12	74	60.52	32.38	11.04	58.06	100	0	P	V
		7401	49.5	-24.5	74	57.16	37.22	14.27	59.15	100	0	P	V
													V
													V
802.11g CH 13 2472MHz		4944	50.6	-23.4	74	65.05	32.4	11.19	58.04	100	0	P	H
		7416	43.71	-30.29	74	51.33	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	39.47	-34.53	74	53.92	32.4	11.19	58.04	100	0	P	V
		7416	43.8	-30.2	74	51.42	37.26	14.27	59.15	100	0	P	V
													V
													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		2389.275	60.38	-13.62	74	57.35	27.07	7.45	31.49	332	130	P	H
		2390	47.94	-6.06	54	44.91	27.07	7.45	31.49	332	130	A	H
	*	2412	106.42	-	-	103.32	27.14	7.45	31.49	332	130	P	H
	*	2412	96.56	-	-	93.46	27.14	7.45	31.49	332	130	A	H
													H
													H
		2389.8	57.46	-16.54	74	54.43	27.07	7.45	31.49	100	57	P	V
		2389.695	46.03	-7.97	54	43	27.07	7.45	31.49	100	57	A	V
	*	2412	101.55	-	-	98.45	27.14	7.45	31.49	100	57	P	V
	*	2412	91.91	-	-	88.81	27.14	7.45	31.49	100	57	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2388.26	55.86	-18.14	74	52.84	27.06	7.45	31.49	254	131	P	H
		2389.24	44.98	-9.02	54	41.95	27.07	7.45	31.49	254	131	A	H
	*	2437	107.65	-	-	104.43	27.21	7.49	31.48	254	131	P	H
	*	2437	98.17	-	-	94.95	27.21	7.49	31.48	254	131	A	H
		2488.17	56.9	-17.1	74	53.48	27.36	7.53	31.47	254	131	P	H
		2483.9	45.57	-8.43	54	42.16	27.35	7.53	31.47	254	131	A	H
		2355.22	55.7	-18.3	74	52.86	26.97	7.37	31.5	100	57	P	V
		2379.02	44.66	-9.34	54	41.74	27.04	7.37	31.49	100	57	A	V
	*	2437	103.27	-	-	100.05	27.21	7.49	31.48	100	57	P	V
	*	2437	93.16	-	-	89.94	27.21	7.49	31.48	100	57	A	V
		2484.18	55.91	-18.09	74	52.5	27.35	7.53	31.47	100	57	P	V
		2497.2	45.1	-8.9	54	41.64	27.39	7.53	31.46	100	57	A	V



802.11n HT20 CH 11 2462MHz	*	2462	107.94	-	-	104.59	27.29	7.53	31.47	286	128	P	H
	*	2462	98.3	-	-	94.95	27.29	7.53	31.47	286	128	A	H
		2483.84	70.51	-3.49	74	67.1	27.35	7.53	31.47	286	128	P	H
		2483.52	51.17	-2.83	54	47.76	27.35	7.53	31.47	286	128	A	H
													H
													H
	*	2462	103.49	-	-	100.14	27.29	7.53	31.47	100	55	P	V
	*	2462	93.64	-	-	90.29	27.29	7.53	31.47	100	55	A	V
		2484.28	64.83	-9.17	74	61.42	27.35	7.53	31.47	100	55	P	V
		2483.6	47.93	-6.07	54	44.52	27.35	7.53	31.47	100	55	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	107.02	-	-	103.66	27.3	7.53	31.47	288	134	P	H
	*	2467	97.62	-	-	94.26	27.3	7.53	31.47	288	134	A	H
		2483.52	73.36	-0.64	74	69.95	27.35	7.53	31.47	288	134	P	H
		2483.6	51.5	-2.5	54	48.09	27.35	7.53	31.47	288	134	A	H
													H
													H
	*	2467	101.58	-	-	98.22	27.3	7.53	31.47	100	115	P	V
	*	2467	91.95	-	-	88.59	27.3	7.53	31.47	100	115	A	V
		2483.8	67.45	-6.55	74	64.04	27.35	7.53	31.47	100	115	P	V
		2483.52	47.49	-6.51	54	44.08	27.35	7.53	31.47	100	115	A	V
													V
													V
802.11n HT20 CH 13 2472MHz	*	2472	97.19	-	-	93.81	27.32	7.53	31.47	193	132	P	H
	*	2472	86.91	-	-	83.53	27.32	7.53	31.47	193	132	A	H
		2483.68	70.71	-3.29	74	67.3	27.35	7.53	31.47	193	132	P	H
		2483.52	52.41	-1.59	54	49	27.35	7.53	31.47	193	132	A	H
													H
													H
	*	2472	91.9	-	-	88.52	27.32	7.53	31.47	100	115	P	V
	*	2472	81.87	-	-	78.49	27.32	7.53	31.47	100	115	A	V
		2483.52	66.4	-7.6	74	62.99	27.35	7.53	31.47	100	115	P	V
		2483.52	49.24	-4.76	54	45.83	27.35	7.53	31.47	100	115	A	V
													V
													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	48.28	-25.72	74	63.5	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	40.22	-33.78	74	55.44	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	49.52	-24.48	74	64.46	32.27	10.89	58.1	100	0	P	H
		7311	44.06	-29.94	74	52	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	41.86	-32.14	74	56.8	32.27	10.89	58.1	100	0	P	V
		7311	46.66	-27.34	74	54.6	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4924	57.71	-16.29	74	72.37	32.36	11.04	58.06	100	190	P	H
		4924	38.27	-15.73	54	52.93	32.36	11.04	58.06	100	190	A	H
		7386	46.74	-27.26	74	54.43	37.18	14.27	59.14	100	0	P	H
													H
		4924	43.28	-30.72	74	57.94	32.36	11.04	58.06	100	0	P	V
		7386	46.59	-27.41	74	54.28	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	59.94	-14.06	74	74.58	32.38	11.04	58.06	100	185	P	H
		4934	37.63	-16.37	54	52.27	32.38	11.04	58.06	100	185	A	H
		7401	44.54	-29.46	74	52.2	37.22	14.27	59.15	100	0	P	H
													H
		4934	46.32	-27.68	74	60.96	32.38	11.04	58.06	100	0	P	V
		7401	49.5	-24.5	74	57.16	37.22	14.27	59.15	100	0	P	V
													V
													V
802.11n HT20 CH 13 2472MHz		4944	47.99	-26.01	74	62.44	32.4	11.19	58.04	100	0	P	H
		7416	43.24	-30.76	74	50.86	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	42.17	-31.83	74	56.62	32.4	11.19	58.04	100	0	P	V
		7416	44.05	-29.95	74	51.67	37.26	14.27	59.15	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz WIFI 802.11b (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		30.27	23.11	-16.89	40	28.99	25.8	0.78	32.46	-	-	P	H
		86.97	30.68	-9.32	40	47.59	14.47	1.06	32.44	100	0	P	H
		116.94	21.93	-21.57	43.5	35.47	17.46	1.43	32.43	-	-	P	H
		293.25	24.42	-21.58	46	35.05	19.36	2.25	32.24	-	-	P	H
		696.2	27.93	-18.07	46	30.15	26.37	3.82	32.41	-	-	P	H
		954.5	31.77	-14.23	46	27.87	30.24	4.75	31.09	-	-	P	H
													H
													H
													H
													H
													H
													H
		48.9	30.79	-9.21	40	46.7	15.77	0.78	32.46	100	0	P	V
		88.86	29.46	-14.04	43.5	46.15	14.69	1.06	32.44	-	-	P	V
		199.56	24.34	-19.16	43.5	39.25	15.8	1.7	32.41	-	-	P	V
		498.1	24.16	-21.84	46	29.51	23.97	3.08	32.4	-	-	P	V
		759.9	28.86	-17.14	46	29.53	27.64	3.97	32.28	-	-	P	V
		942.6	32.18	-13.82	46	28.51	30.11	4.75	31.19	-	-	P	V
													V
													V
												V	
												V	
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	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.	
1		(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”.



<EUT with Ant. 2>

2.4GHz 2400~2483.5MHz

WIFI 802.11b (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)
802.11b CH 01 2412MHz		2358.195	57.02	-16.98	74	54.18	26.97	7.37	31.5	331	129	P	H
		2388.54	44.19	-9.81	54	41.16	27.07	7.45	31.49	331	129	A	H
	*	2412	99.44	-	-	96.34	27.14	7.45	31.49	331	129	P	H
	*	2412	95.32	-	-	92.22	27.14	7.45	31.49	331	129	A	H
													H
													H
		2370.48	55.44	-18.56	74	52.55	27.01	7.37	31.49	100	140	P	V
		2388.435	44.19	-9.81	54	41.16	27.07	7.45	31.49	100	140	A	V
	*	2412	97.39	-	-	94.29	27.14	7.45	31.49	100	140	P	V
	*	2412	93.25	-	-	90.15	27.14	7.45	31.49	100	140	A	V
													V
													V
802.11b CH 06 2437MHz		2368.24	56.44	-17.56	74	53.56	27	7.37	31.49	297	144	P	H
		2389.94	43.95	-10.05	54	40.92	27.07	7.45	31.49	297	144	A	H
	*	2437	101.24	-	-	98.02	27.21	7.49	31.48	297	144	P	H
	*	2437	97.05	-	-	93.83	27.21	7.49	31.48	297	144	A	H
		2484.53	56.06	-17.94	74	52.65	27.35	7.53	31.47	297	144	P	H
		2484.25	44.42	-9.58	54	41.01	27.35	7.53	31.47	297	144	A	H
		2337.02	56.01	-17.99	74	53.31	26.91	7.3	31.51	100	138	P	V
		2389.24	43.88	-10.12	54	40.85	27.07	7.45	31.49	100	138	A	V
	*	2437	97.53	-	-	94.31	27.21	7.49	31.48	100	138	P	V
	*	2437	93.33	-	-	90.11	27.21	7.49	31.48	100	138	A	V
		2487.33	56.73	-17.27	74	53.31	27.36	7.53	31.47	100	138	P	V
		2499.86	44.22	-9.78	54	40.75	27.4	7.53	31.46	100	138	A	V



802.11b CH 11 2462MHz	*	2462	101.9	-	-	98.55	27.29	7.53	31.47	289	139	P	H
	*	2462	97.63	-	-	94.28	27.29	7.53	31.47	289	139	A	H
		2487.16	57.35	-16.65	74	53.93	27.36	7.53	31.47	289	139	P	H
		2488.52	46.07	-7.93	54	42.64	27.37	7.53	31.47	289	139	A	H
													H
													H
	*	2462	96.59	-	-	93.24	27.29	7.53	31.47	100	132	P	V
	*	2462	92.62	-	-	89.27	27.29	7.53	31.47	100	132	A	V
		2496.72	56.69	-17.31	74	53.23	27.39	7.53	31.46	100	132	P	V
		2488.52	44.96	-9.04	54	41.53	27.37	7.53	31.47	100	132	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	100.86	-	-	97.5	27.3	7.53	31.47	323	127	P	H
	*	2467	96.71	-	-	93.35	27.3	7.53	31.47	323	127	A	H
		2486.04	57.09	-16.91	74	53.67	27.36	7.53	31.47	323	127	P	H
		2492.64	44.88	-9.12	54	41.43	27.38	7.53	31.46	323	127	A	H
													H
													H
	*	2467	97.04	-	-	93.68	27.3	7.53	31.47	100	132	P	V
	*	2467	93.04	-	-	89.68	27.3	7.53	31.47	100	132	A	V
		2495.84	56.89	-17.11	74	53.43	27.39	7.53	31.46	100	132	P	V
		2492.56	44.48	-9.52	54	41.03	27.38	7.53	31.46	100	132	A	V
													V
													V
802.11b CH 13 2472MHz	*	2472	100.25	-	-	96.87	27.32	7.53	31.47	323	137	P	H
	*	2472	96.19	-	-	92.81	27.32	7.53	31.47	323	137	A	H
		2484.12	60.01	-13.99	74	56.6	27.35	7.53	31.47	323	137	P	H
		2483.52	51.95	-2.05	54	48.54	27.35	7.53	31.47	323	137	A	H
													H
													H
	*	2472	96.46	-	-	93.08	27.32	7.53	31.47	100	130	P	V
	*	2472	92.48	-	-	89.1	27.32	7.53	31.47	100	130	A	V
		2483.84	57.72	-16.28	74	54.31	27.35	7.53	31.47	100	130	P	V
		2483.52	49	-5	54	45.59	27.35	7.53	31.47	100	130	A	V
													V
													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	37.79	-36.21	74	53.01	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	38.15	-35.85	74	53.37	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	37.57	-36.43	74	52.51	32.27	10.89	58.1	100	0	P	H
		7311	44.06	-29.94	74	52	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	38.91	-35.09	74	53.85	32.27	10.89	58.1	100	0	P	V
		7311	44.58	-29.42	74	52.52	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	38.16	-35.84	74	52.82	32.36	11.04	58.06	100	0	P	H
		7386	45.69	-28.31	74	53.38	37.18	14.27	59.14	100	0	P	H
													H
													H
		4924	38.56	-35.44	74	53.22	32.36	11.04	58.06	100	0	P	V
		7386	47.57	-26.43	74	55.26	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	38.02	-35.98	74	52.66	32.38	11.04	58.06	100	0	P	H
		7401	46.91	-27.09	74	54.57	37.22	14.27	59.15	100	0	P	H
													H
													H
		4934	38.83	-35.17	74	53.47	32.38	11.04	58.06	100	0	P	V
		7401	48.11	-25.89	74	55.77	37.22	14.27	59.15	100	0	P	V
													V
													V
802.11b CH 13 2472MHz		4944	38.35	-35.65	74	52.8	32.4	11.19	58.04	100	0	P	H
		7416	47.56	-26.44	74	55.18	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	39.29	-34.71	74	53.74	32.4	11.19	58.04	100	0	P	V
		7416	48.34	-25.66	74	55.96	37.26	14.27	59.15	100	0	P	V
													V
													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		2390	56.61	-17.39	74	53.58	27.07	7.45	31.49	334	129	P	H
		2389.59	45.78	-8.22	54	42.75	27.07	7.45	31.49	334	129	A	H
	*	2412	101.75	-	-	98.65	27.14	7.45	31.49	334	129	P	H
	*	2412	92.32	-	-	89.22	27.14	7.45	31.49	334	129	A	H
													H
													H
		2384.13	57.31	-16.69	74	54.3	27.05	7.45	31.49	100	131	P	V
		2389.38	45.42	-8.58	54	42.39	27.07	7.45	31.49	100	131	A	V
	*	2412	99.53	-	-	96.43	27.14	7.45	31.49	100	131	P	V
	*	2412	89.39	-	-	86.29	27.14	7.45	31.49	100	131	A	V
													V
													V
802.11g CH 06 2437MHz		2386.44	56.88	-17.12	74	53.86	27.06	7.45	31.49	298	130	P	H
		2388.68	44.86	-9.14	54	41.83	27.07	7.45	31.49	298	130	A	H
	*	2437	103.34	-	-	100.12	27.21	7.49	31.48	298	130	P	H
	*	2437	93.66	-	-	90.44	27.21	7.49	31.48	298	130	A	H
		2497.2	56.29	-17.71	74	52.83	27.39	7.53	31.46	298	130	P	H
		2489.99	45.24	-8.76	54	41.81	27.37	7.53	31.47	298	130	A	H
		2338.42	55.38	-18.62	74	52.67	26.92	7.3	31.51	308	137	P	V
		2378.32	44.79	-9.21	54	41.88	27.03	7.37	31.49	308	137	A	V
	*	2437	99.61	-	-	96.39	27.21	7.49	31.48	308	137	P	V
	*	2437	89.47	-	-	86.25	27.21	7.49	31.48	308	137	A	V
		2497.34	56.84	-17.16	74	53.38	27.39	7.53	31.46	308	137	P	V
		2492.72	45.36	-8.64	54	41.91	27.38	7.53	31.46	308	137	A	V



802.11g CH 11 2462MHz	*	2462	104.29	-	-	100.94	27.29	7.53	31.47	289	138	P	H
	*	2462	94.32	-	-	90.97	27.29	7.53	31.47	289	138	A	H
		2485.28	66.58	-7.42	74	63.16	27.36	7.53	31.47	289	138	P	H
		2484.2	47.79	-6.21	54	44.38	27.35	7.53	31.47	289	138	A	H
													H
													H
	*	2462	99.76	-	-	96.41	27.29	7.53	31.47	340	111	P	V
	*	2462	89.87	-	-	86.52	27.29	7.53	31.47	340	111	A	V
		2484.48	59.9	-14.1	74	56.49	27.35	7.53	31.47	340	111	P	V
		2483.76	45.75	-8.25	54	42.34	27.35	7.53	31.47	340	111	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	103.83	-	-	100.47	27.3	7.53	31.47	321	130	P	H
	*	2467	93.75	-	-	90.39	27.3	7.53	31.47	321	130	A	H
		2483.56	72.99	-1.01	74	69.58	27.35	7.53	31.47	321	130	P	H
		2483.68	51.73	-2.27	54	48.32	27.35	7.53	31.47	321	130	A	H
													H
													H
	*	2467	98.36	-	-	95	27.3	7.53	31.47	294	134	P	V
	*	2467	88.8	-	-	85.44	27.3	7.53	31.47	294	134	A	V
		2484.2	69.01	-4.99	74	65.6	27.35	7.53	31.47	294	134	P	V
		2483.68	48.38	-5.62	54	44.97	27.35	7.53	31.47	294	134	A	V
													V
													V
802.11g CH 13 2472MHz	*	2472	96.49	-	-	93.11	27.32	7.53	31.47	321	130	P	H
	*	2472	86.72	-	-	83.34	27.32	7.53	31.47	321	130	A	H
		2483.8	69.72	-4.28	74	66.31	27.35	7.53	31.47	321	130	P	H
		2483.56	52.87	-1.13	54	49.46	27.35	7.53	31.47	321	130	A	H
													H
													H
	*	2472	90.93	-	-	87.55	27.32	7.53	31.47	293	132	P	V
	*	2472	81.54	-	-	78.16	27.32	7.53	31.47	293	132	A	V
		2483.56	66.87	-7.13	74	63.46	27.35	7.53	31.47	293	132	P	V
		2483.52	49.37	-4.63	54	45.96	27.35	7.53	31.47	293	132	A	V
													V
													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	37.21	-36.79	74	52.43	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	37.72	-36.28	74	52.94	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	38.12	-35.88	74	53.06	32.27	10.89	58.1	100	0	P	H
		7311	43.44	-30.56	74	51.38	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	39.83	-34.17	74	54.77	32.27	10.89	58.1	100	0	P	V
		7311	43.04	-30.96	74	50.98	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4924	38.79	-35.21	74	53.45	32.36	11.04	58.06	100	0	P	H
		7386	49.11	-24.89	74	56.8	37.18	14.27	59.14	100	0	P	H
													H
													H
		4924	40.26	-33.74	74	54.92	32.36	11.04	58.06	100	0	P	V
		7386	49.89	-24.11	74	57.58	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	37.88	-36.12	74	52.52	32.38	11.04	58.06	100	0	P	H
		7401	50.89	-23.11	74	58.55	37.22	14.27	59.15	100	0	P	H
													H
													H
		4934	40.34	-33.66	74	54.98	32.38	11.04	58.06	100	0	P	V
		7401	60.81	-13.19	74	68.47	37.22	14.27	59.15	100	195	P	V
		7401	35.59	-18.41	54	43.25	37.22	14.27	59.15	100	195	A	V
													V
802.11g CH 13 2472MHz		4944	39.12	-34.88	74	53.57	32.4	11.19	58.04	100	0	P	H
		7416	44.46	-29.54	74	52.08	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	38.3	-35.7	74	52.75	32.4	11.19	58.04	100	0	P	V
		7416	44.59	-29.41	74	52.21	37.26	14.27	59.15	100	0	P	V
													V
													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		2389.065	57.61	-16.39	74	54.58	27.07	7.45	31.49	344	129	P	H
		2390	46.37	-7.63	54	43.34	27.07	7.45	31.49	344	129	A	H
	*	2412	100.76	-	-	97.66	27.14	7.45	31.49	344	129	P	H
	*	2412	90.82	-	-	87.72	27.14	7.45	31.49	344	129	A	H
													H
													H
		2388.96	59.07	-14.93	74	56.04	27.07	7.45	31.49	100	149	P	V
		2389.8	45.99	-8.01	54	42.96	27.07	7.45	31.49	100	149	A	V
	*	2412	100.16	-	-	97.06	27.14	7.45	31.49	100	149	P	V
	*	2412	90.09	-	-	86.99	27.14	7.45	31.49	100	149	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2323.16	55.77	-18.23	74	53.11	26.87	7.3	31.51	296	125	P	H
		2389.94	44.81	-9.19	54	41.78	27.07	7.45	31.49	296	125	A	H
	*	2437	102.46	-	-	99.24	27.21	7.49	31.48	296	125	P	H
	*	2437	92.48	-	-	89.26	27.21	7.49	31.48	296	125	A	H
		2493.7	56.29	-17.71	74	52.84	27.38	7.53	31.46	296	125	P	H
		2490.06	45.15	-8.85	54	41.72	27.37	7.53	31.47	296	125	A	H
		2382.38	56.05	-17.95	74	53.04	27.05	7.45	31.49	100	130	P	V
		2381.12	44.78	-9.22	54	41.78	27.04	7.45	31.49	100	130	A	V
	*	2437	99.05	-	-	95.83	27.21	7.49	31.48	100	130	P	V
	*	2437	89.51	-	-	86.29	27.21	7.49	31.48	100	130	A	V
		2488.8	56.7	-17.3	74	53.27	27.37	7.53	31.47	100	130	P	V
		2498.67	45.01	-8.99	54	41.54	27.4	7.53	31.46	100	130	A	V



802.11n HT20 CH 11 2462MHz	*	2462	102.98	-	-	99.63	27.29	7.53	31.47	285	124	P	H
	*	2462	93.15	-	-	89.8	27.29	7.53	31.47	285	124	A	H
		2484.24	65.9	-8.1	74	62.49	27.35	7.53	31.47	285	124	P	H
		2483.52	47.77	-6.23	54	44.36	27.35	7.53	31.47	285	124	A	H
													H
													H
	*	2462	99.42	-	-	96.07	27.29	7.53	31.47	100	131	P	V
	*	2462	89.15	-	-	85.8	27.29	7.53	31.47	100	131	A	V
		2484.68	63.83	-10.17	74	60.42	27.35	7.53	31.47	100	131	P	V
		2483.56	46.14	-7.86	54	42.73	27.35	7.53	31.47	100	131	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz	*	2467	103.01	-	-	99.65	27.3	7.53	31.47	285	125	P	H
	*	2467	93.25	-	-	89.89	27.3	7.53	31.47	285	125	A	H
		2483.8	73.27	-0.73	74	69.86	27.35	7.53	31.47	285	125	P	H
		2483.64	51.38	-2.62	54	47.97	27.35	7.53	31.47	285	125	A	H
													H
													H
	*	2467	98.52	-	-	95.16	27.3	7.53	31.47	100	132	P	V
	*	2467	89.01	-	-	85.65	27.3	7.53	31.47	100	132	A	V
		2484.04	69.2	-4.8	74	65.79	27.35	7.53	31.47	100	132	P	V
		2483.92	48.59	-5.41	54	45.18	27.35	7.53	31.47	100	132	A	V
													V
													V
802.11n HT20 CH 13 2472MHz	*	2472	95.71	-	-	92.33	27.32	7.53	31.47	320	137	P	H
	*	2472	85.57	-	-	82.19	27.32	7.53	31.47	320	137	A	H
		2483.52	71	-3	74	67.59	27.35	7.53	31.47	320	137	P	H
		2483.56	52.81	-1.19	54	49.4	27.35	7.53	31.47	320	137	A	H
													H
													H
	*	2472	92.46	-	-	89.08	27.32	7.53	31.47	100	131	P	V
	*	2472	81.49	-	-	78.11	27.32	7.53	31.47	100	131	A	V
		2484.16	66.43	-7.57	74	63.02	27.35	7.53	31.47	100	131	P	V
		2483.52	49.83	-4.17	54	46.42	27.35	7.53	31.47	100	131	A	V
													V
													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	37.22	-36.78	74	52.44	32.18	10.74	58.14	100	0	P	H
													H
													H
													H
		4824	37.68	-36.32	74	52.9	32.18	10.74	58.14	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	37.87	-36.13	74	52.81	32.27	10.89	58.1	100	0	P	H
		7311	43.27	-30.73	74	51.21	36.97	14.18	59.09	100	0	P	H
													H
													H
		4874	38.5	-35.5	74	53.44	32.27	10.89	58.1	100	0	P	V
		7311	43.3	-30.7	74	51.24	36.97	14.18	59.09	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4924	38.14	-35.86	74	52.8	32.36	11.04	58.06	100	0	P	H
		7386	48.74	-25.26	74	56.43	37.18	14.27	59.14	100	0	P	H
													H
													H
		4924	39.34	-34.66	74	54	32.36	11.04	58.06	100	0	P	V
		7386	50.63	-23.37	74	58.32	37.18	14.27	59.14	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 12 2467MHz		4934	38.39	-35.61	74	53.03	32.38	11.04	58.06	100	0	P	H
		7401	49.48	-24.52	74	57.14	37.22	14.27	59.15	100	0	P	H
													H
													H
		4934	41.47	-32.53	74	56.11	32.38	11.04	58.06	100	0	P	V
		7401	61.49	-12.51	74	69.15	37.22	14.27	59.15	100	193	P	V
		7401	35.45	-18.55	54	43.11	37.22	14.27	59.15	100	193	A	V
													V
802.11n HT20 CH 13 2472MHz		4944	38.6	-35.4	74	53.05	32.4	11.19	58.04	100	0	P	H
		7416	43.74	-30.26	74	51.36	37.26	14.27	59.15	100	0	P	H
													H
													H
		4944	38.83	-35.17	74	53.28	32.4	11.19	58.04	100	0	P	V
		7416	43.51	-30.49	74	51.13	37.26	14.27	59.15	100	0	P	V
													V
													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	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)
2.4GHz 802.11n HT20 LF		30.27	22.82	-17.18	40	28.7	25.8	0.78	32.46	-	-	P	H
		102.9	22.71	-20.79	43.5	37.38	16.33	1.43	32.43	-	-	P	H
		162.57	25.44	-18.06	43.5	39.44	16.67	1.75	32.42	-	-	P	H
		304.2	27.93	-18.07	46	38.19	19.64	2.34	32.24	-	-	P	H
		664	26.76	-19.24	46	29.23	26.12	3.82	32.41	-	-	P	H
		952.4	31.9	-14.1	46	27.99	30.27	4.75	31.11	100	0	P	H
													H
													H
													H
													H
													H
													H
		32.7	32.1	-7.9	40	39.6	24.18	0.78	32.46	-	-	P	V
		51.87	34.18	-5.82	40	51.58	14.28	0.78	32.46	100	0	P	V
		116.4	33.02	-10.48	43.5	46.6	17.42	1.43	32.43	-	-	P	V
		353.9	23.83	-22.17	46	32.61	21.09	2.44	32.31	-	-	P	V
		614.3	28.42	-17.58	46	31.76	25.56	3.5	32.4	-	-	P	V
		942.6	32.78	-13.22	46	29.11	30.11	4.75	31.19	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	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”.