FCC RF Test Report

APPLICANT	:	Delphian Systems LLC
EQUIPMENT	:	BLE/ANT MODULE
BRAND NAME	:	Delphian
MODEL NAME	:	SRU532
MARKETING NAME	:	SRU532
FCC ID	:	2AEHJSRU532
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jan. 05, 2016 and testing was completed on Apr. 21, 2016. 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

Testing Laboratory
1190

TABLE OF CONTENTS

REVISION HISTORY **3**

SUMMARY OF TEST RESULT **4**

1 GENERAL DESCRIPTION **5**

1.1 Applicant 5
1.2 Manufacturer 5
1.3 Product Feature of Equipment Under Test 5
1.4 Product Specification of Equipment Under Test 5
1.5 Modification of EUT 5
1.6 Testing Location 6
1.7 Applicable Standards 6

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST **7**

2.1 Descriptions of Test Mode 7
2.2 Test Mode 8
2.3 Connection Diagram of Test System 9
2.4 EUT Operation Test Setup 11
2.5 Measurement Results Explanation Example 11

3 TEST RESULT **12**

3.1 6dB and 99% Bandwidth Measurement 12
3.2 Peak Output Power Measurement 17
3.3 Power Spectral Density Measurement 18
3.4 Conducted Band Edges and Spurious Emission Measurement 23
3.5 Radiated Band Edges and Spurious Emission Measurement 28
3.6 AC Conducted Emission Measurement 32
3.7 Antenna Requirements 36

4 LIST OF MEASURING EQUIPMENT **37**

5 UNCERTAINTY OF EVALUATION **38**

APPENDIX A. CONDUCTED TEST RESULTS

APPENDIX B. RADIATED TEST RESULTS

APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS

APPENDIX D. DUTY CYCLE

APPENDIX E. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR610515B	Rev. 01	Initial issue of report	May 09, 2016
FR610515B	Rev. 02	Adding the description in section 2.1	May 12, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)(1)	Peak Output Power	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.43 dB at 4805.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 25.20 dB at 0.454 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Delphian Systems LLC
975, Weiland Rd #150, Buffalo Grove, IL 60089, United States

1.2 Manufacturer

Delphian Systems LLC
975, Weiland Rd #150, Buffalo Grove, IL 60089, United States

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	BLE/ANT MODULE
Brand Name	Delphian
Model Name	SRU532
Marketing Name	SRU532
FCC ID	2AEHJSRU532
EUT supports Radios application	Bluetooth v4.1 LE ANT
EUT Stage	Production Unit

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

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Maximum Output Power to Antenna	16.71 dBm (0.0469 W)
99% Occupied Bandwidth	0.95MHz
Antenna Type	Ant. 1: Chip Antenna type with gain -0.71 dBi Ant. 2: SMA Antenna type with gain 0.00 dBi
Type of Modulation	GFSK

1.5 Modification of EUT

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

1.6 Testing Location

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

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

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.**
	03CH10-HY

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
- ANSI C63.10-2013

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

The RF output power was recorded in the following table:

Channel	Frequency	ANT RF Output Power
		Modulation
		GFSK
Low	2402 MHz	16.71 dBm
Middle	2441 MHz	16.43 dBm
High	2480 MHz	15.16 dBm

a. 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: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report. X plane as worst plane for Ant. 1 and Ant. 2.

b. AC power line Conducted Emission was tested under maximum output power.

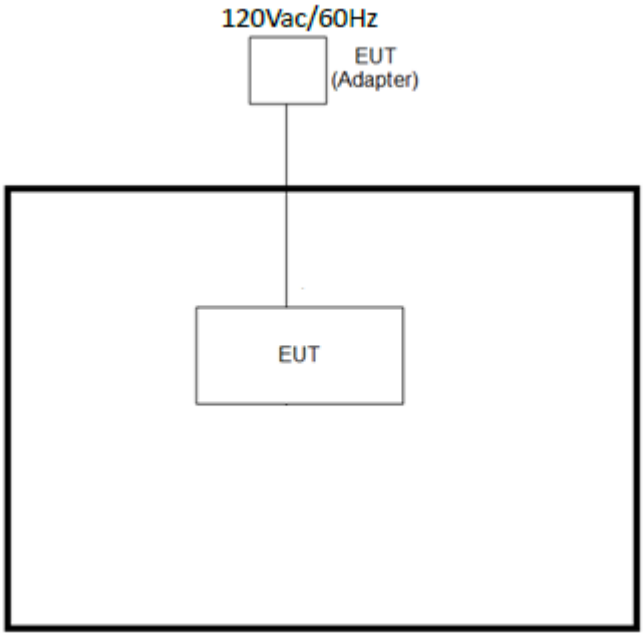
2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

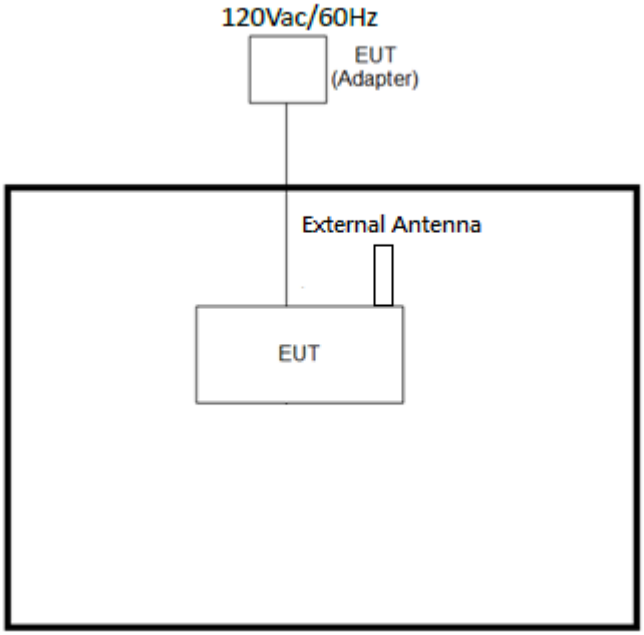
Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
	ANT / GFSK
Conducted TCs	Mode 1: ANT Tx 2402 MHz Mode 2: ANT Tx 2441 MHz Mode 3: ANT Tx 2480 MHz
Radiated TCs	Mode 1: ANT Tx 2402 MHz for Ant. 1 Mode 2: ANT Tx 2441 MHz for Ant. 1 Mode 3: ANT Tx 2480 MHz for Ant. 1 Mode 4: ANT Tx 2402 MHz for Ant. 2 Mode 5: ANT Tx 2441 MHz for Ant. 2 Mode 6: ANT Tx 2480 MHz for Ant. 2
AC Conducted Emission	Mode 1: ANT Tx + Adapter for Ant. 1 Mode 2: ANT Tx + Adapter for Ant. 2
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

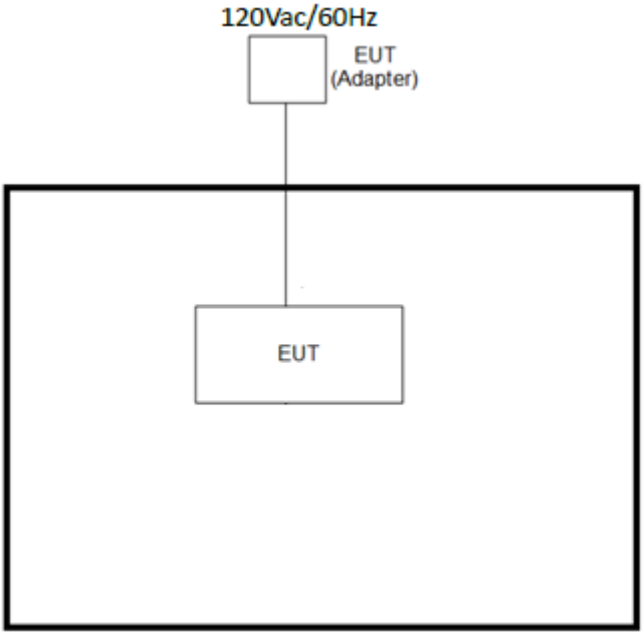
<AC Conducted Emission Mode for Ant. 1>



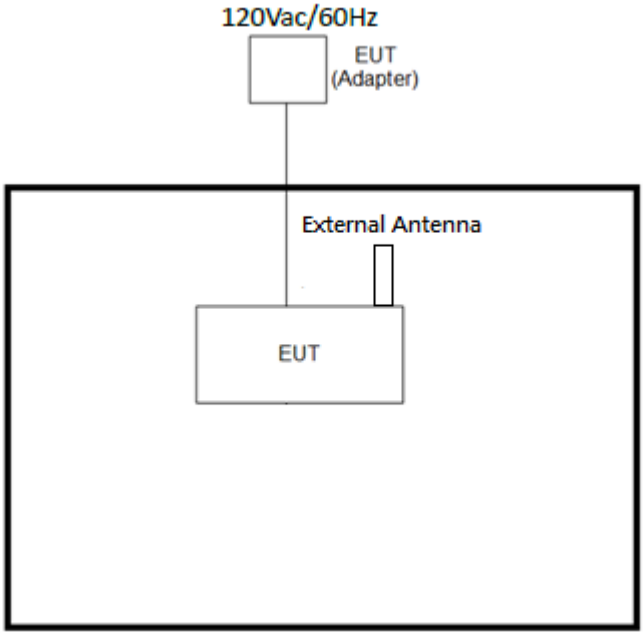
<AC Conducted Emission Mode for Ant. 2>



<ANT Tx Mode for Ant. 1>



<ANT Tx Mode for Ant. 2>



2.4 EUT Operation Test Setup

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

2.5 Measurement Results Explanation Example

For all conducted test items:

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

Example :
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

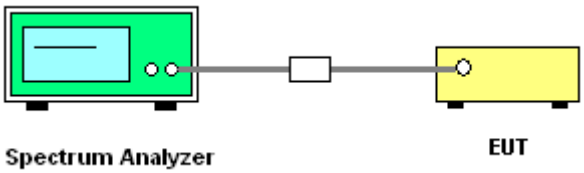
3.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.1.3 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 30kHz and set the Video bandwidth (VBW) = 100kHz.
6. Measure and record the results in the test report.

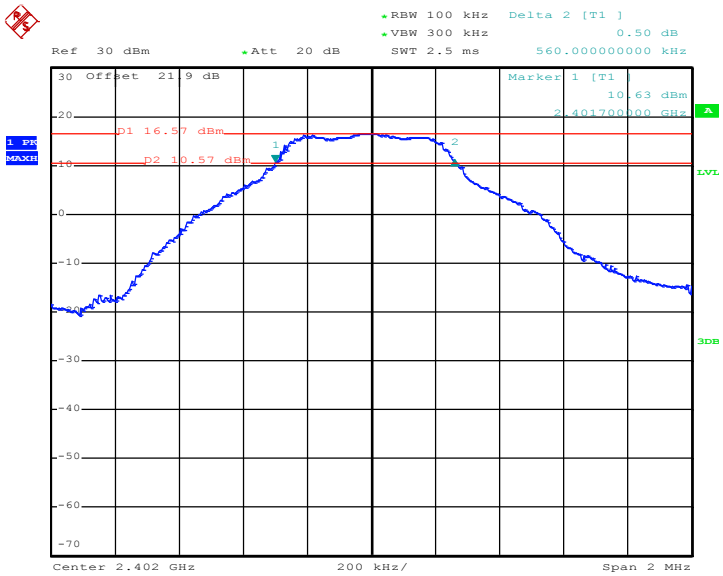
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

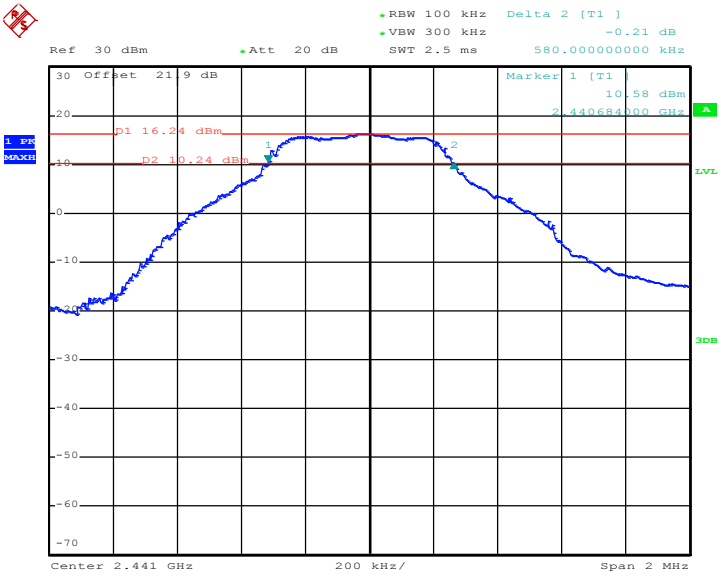
Test data refer to Appendix A.

6 dB Bandwidth Plot on 2402MHz



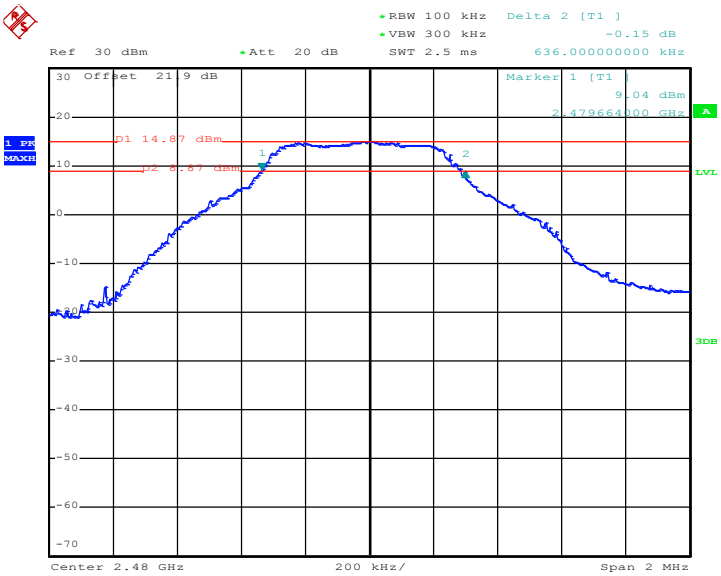
Date: 21.APR.2016 00:09:55

6 dB Bandwidth Plot on 2441MHz



Date: 21.APR.2016 00:23:52

6 dB Bandwidth Plot on 2480MHz

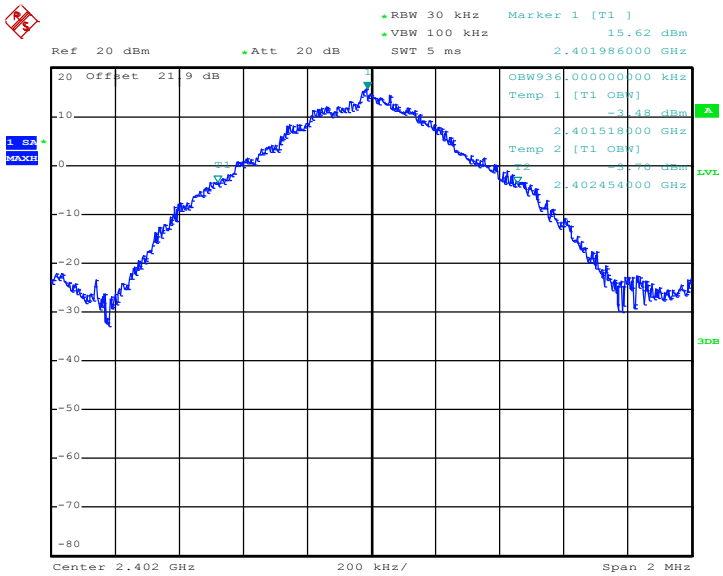


Date: 21.APR.2016 01:06:40

3.1.6 Test Result of 99% Occupied Bandwidth

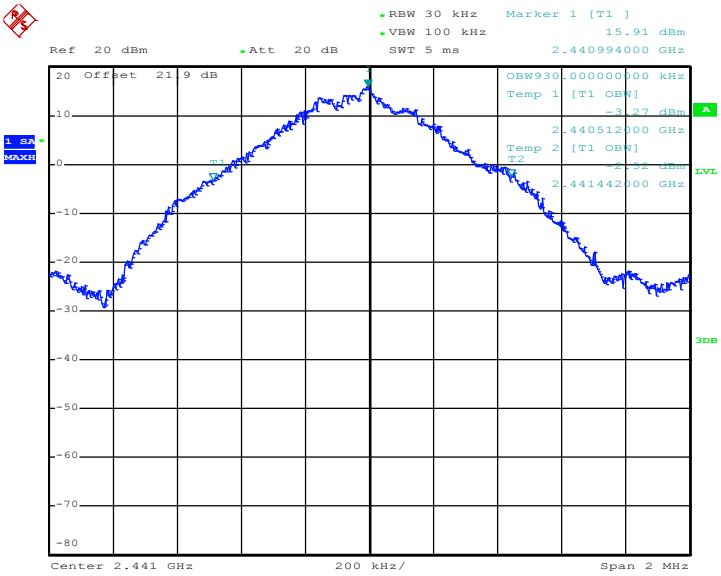
Test data refer to Appendix A.

99% Bandwidth Plot on 2402MHz



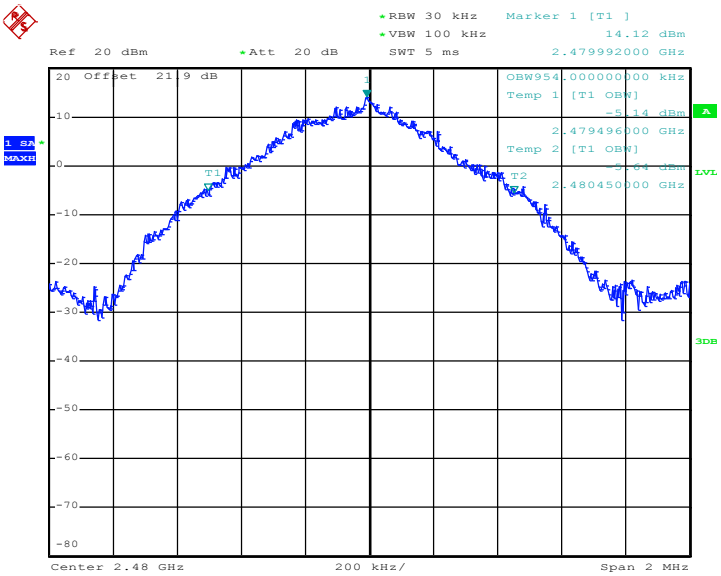
Date: 21.APR.2016 00:22:07

99% Occupied Bandwidth Plot on 2441MHz



Date: 21.APR.2016 00:39:32

99% Occupied Bandwidth Plot on 2480MHz



Date: 21.APR.2016 01:10:26

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 of 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.

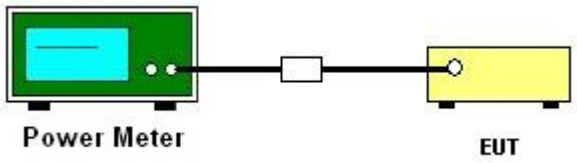
3.2.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

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

Test data refers 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.

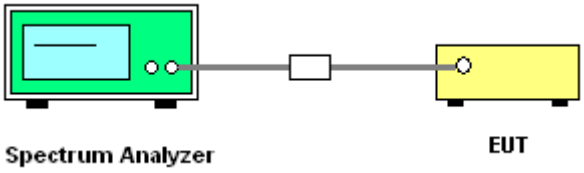
3.3.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

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.
7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup

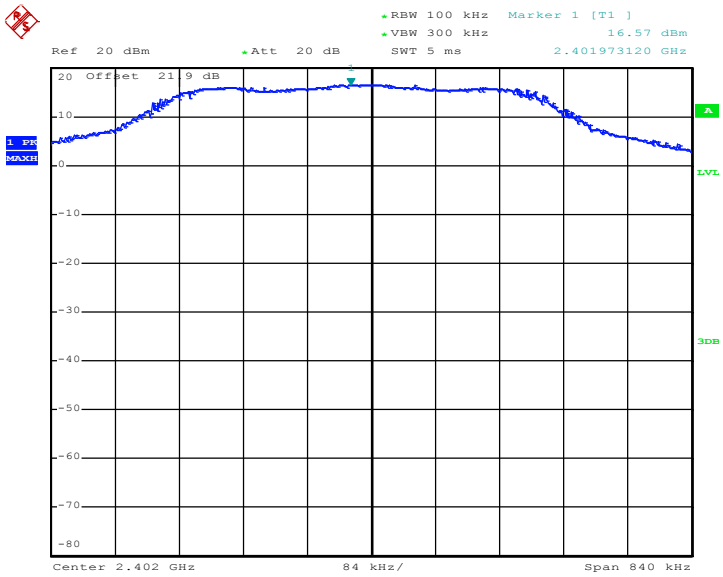


3.3.5 Test Result of Power Spectral Density

Test data refers to Appendix A.

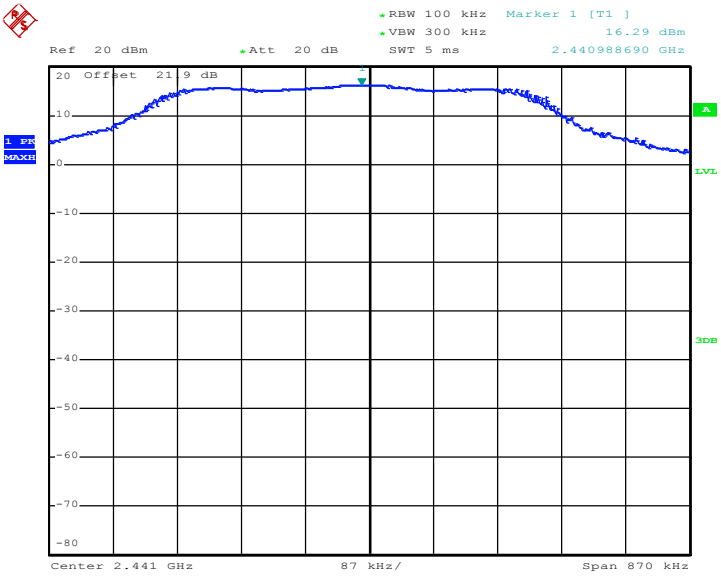
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 2402MHz



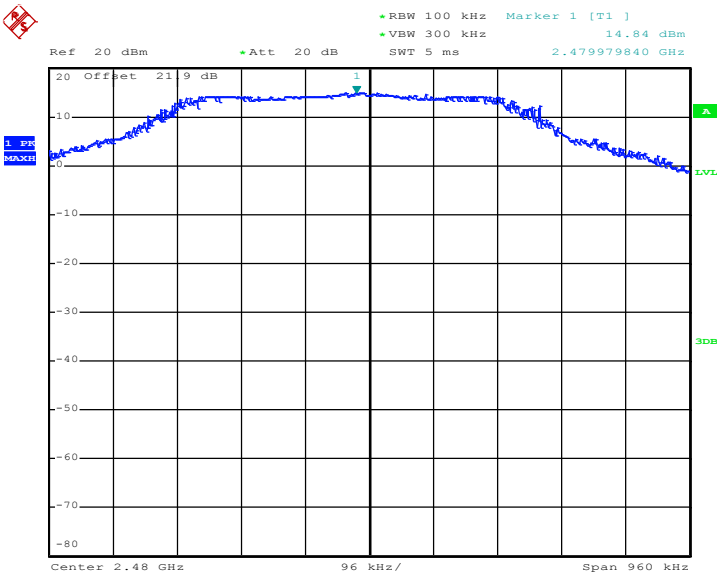
Date: 21.APR.2016 00:10:55

PSD 100kHz Plot on 2441MHz



Date: 21.APR.2016 00:27:07

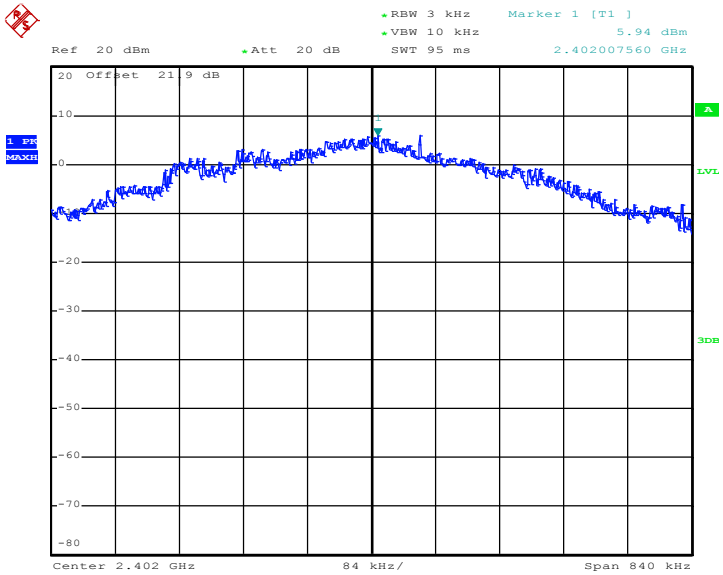
PSD 100kHz Plot on 2480MHz



Date: 21.APR.2016 01:07:15

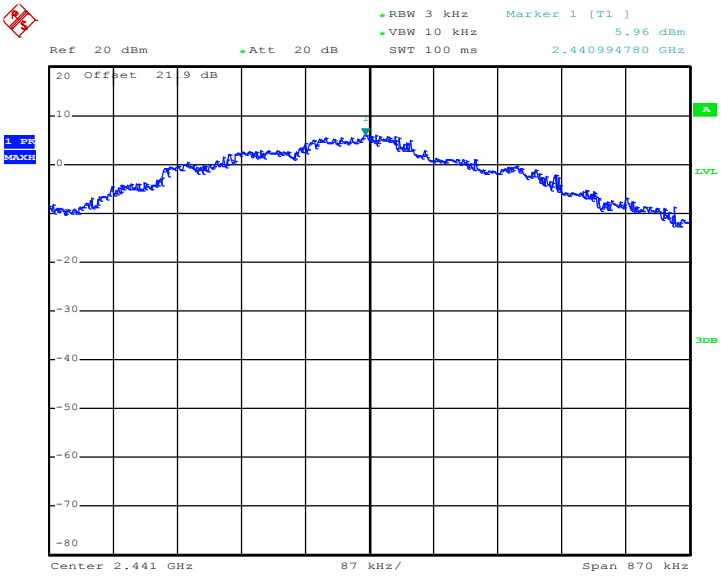
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 2402MHz



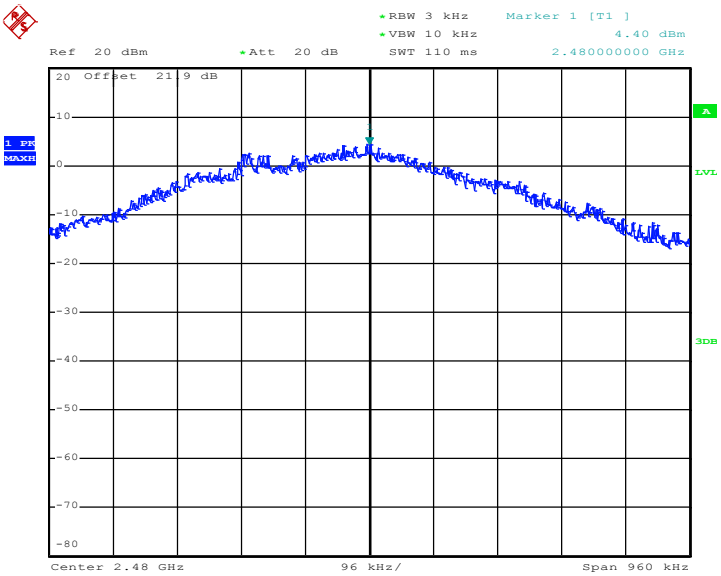
Date: 21.APR.2016 01:30:18

PSD 3kHz Plot on 2441MHz



Date: 21.APR.2016 00:25:38

PSD 3kHz Plot on 2480MHz



Date: 21.APR.2016 01:07:01

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

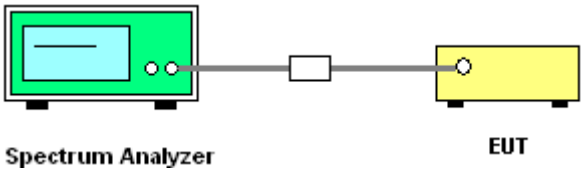
3.4.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.4.3 Test Procedure

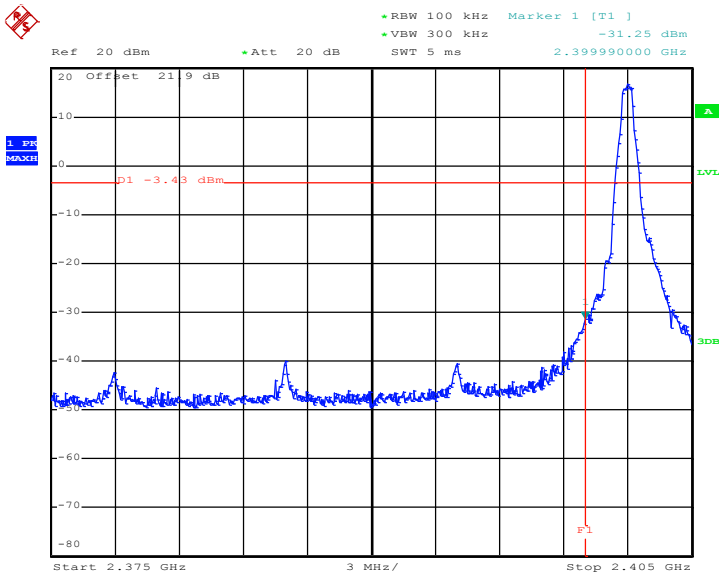
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit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



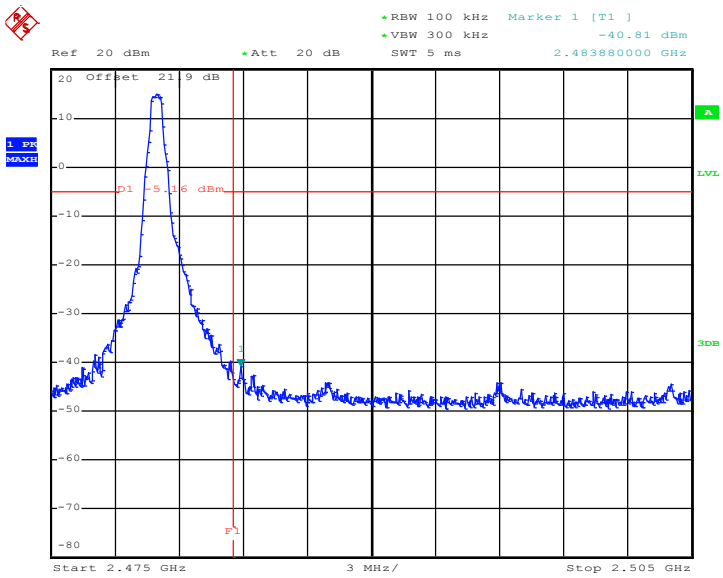
3.4.5 Test Result of Conducted Band Edges Plots

Low Band Edge Plot on 2402MHz



Date: 21.APR.2016 00:11:33

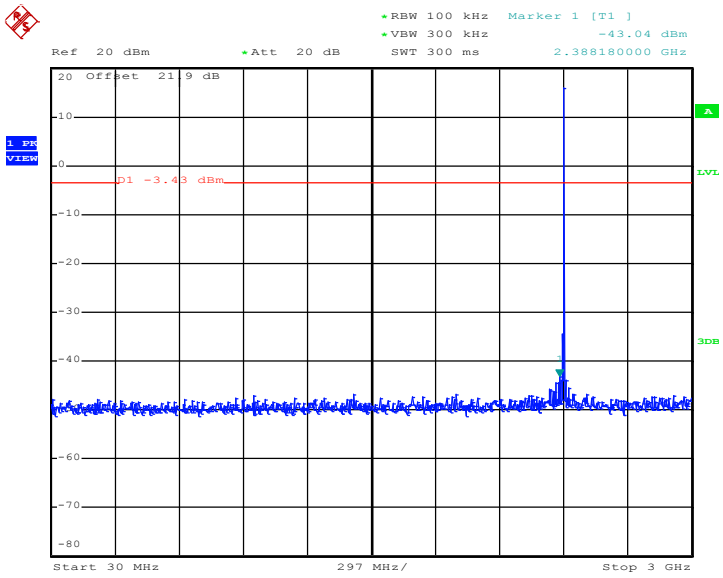
High Band Edge Plot on 2480MHz



Date: 21.APR.2016 01:08:33

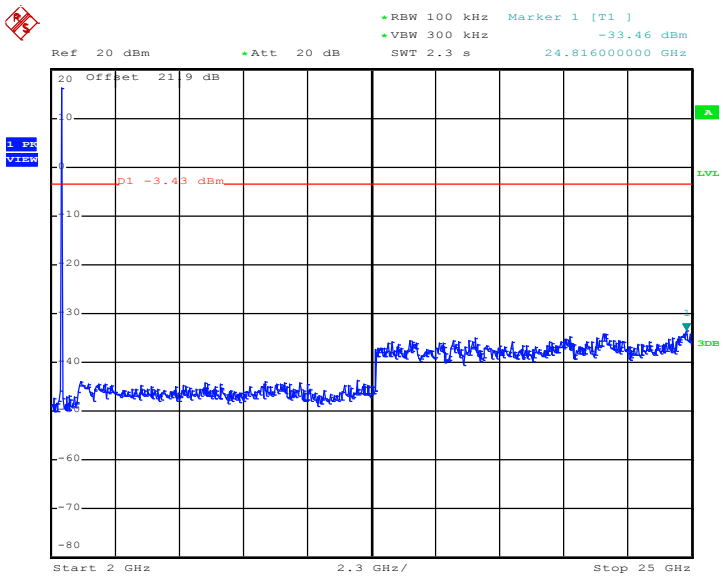
3.4.6 Test Result of Conducted Spurious Emission Plots

Conducted Spurious Emission Plot on ANT GFSK 2402MHz



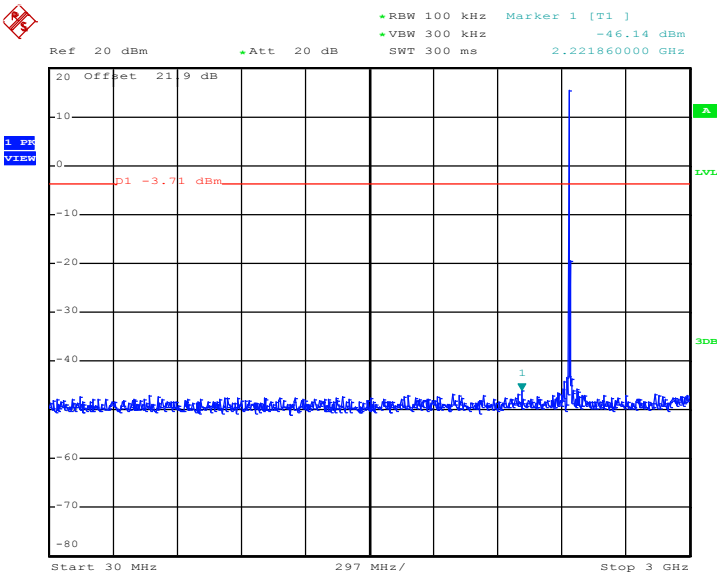
Date: 21.APR.2016 00:12:11

Conducted Spurious Emission Plot on ANT GFSK 2402MHz



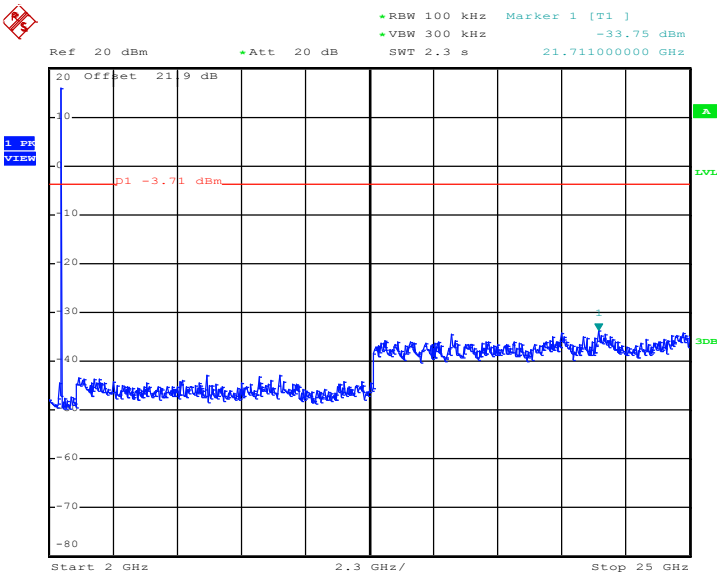
Date: 21.APR.2016 00:12:20

Conducted Spurious Emission Plot on ANT GFSK 2441MHz



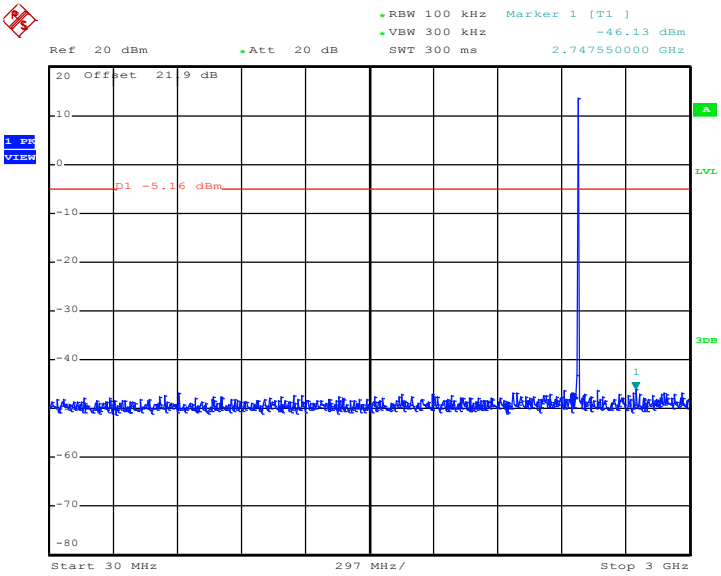
Date: 21.APR.2016 01:16:16

Conducted Spurious Emission Plot on ANT GFSK 2441MHz



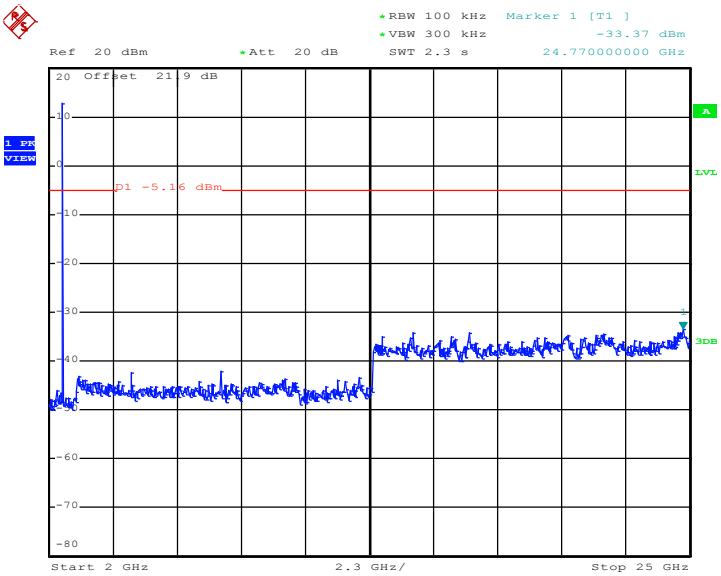
Date: 21.APR.2016 01:15:51

Conducted Spurious Emission Plot on ANT GFSK 2480MHz



Date: 21.APR.2016 01:09:41

Conducted Spurious Emission Plot on ANT GFSK 2480MHz



Date: 21.APR.2016 01:09:50

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

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

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

3.5.2 Measuring Instruments

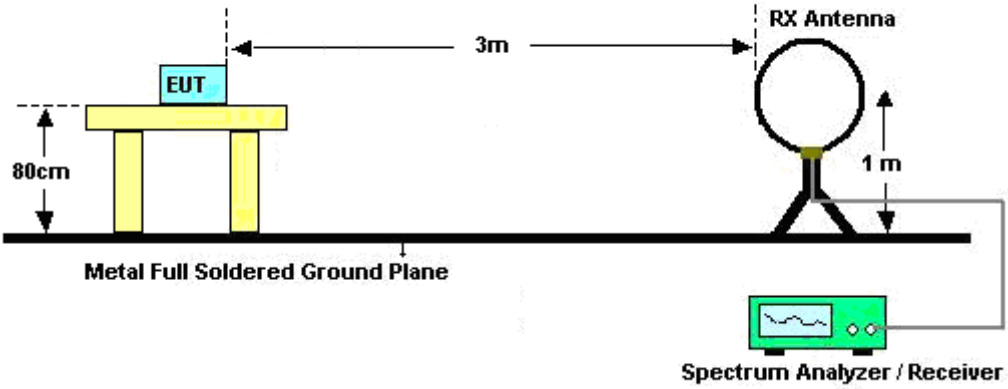
The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.5.3 Test Procedures

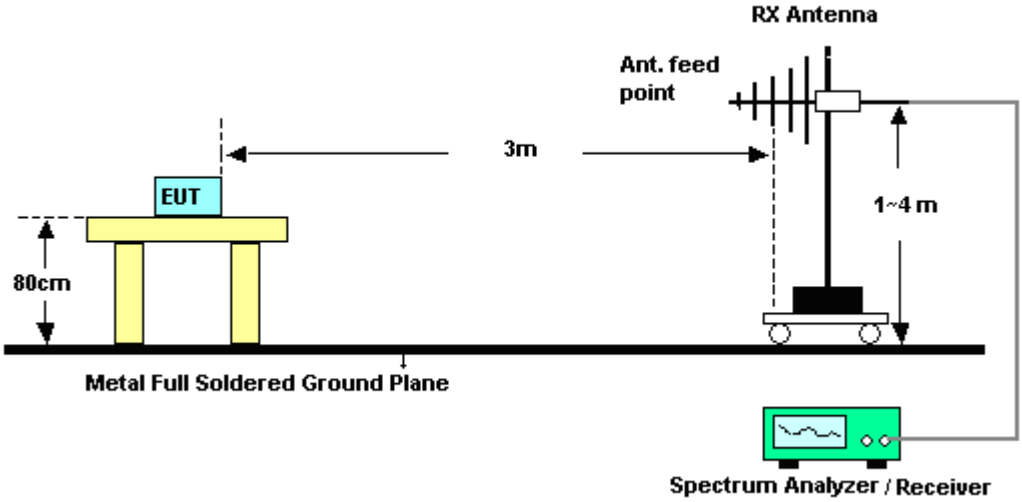
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the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

3.5.4 Test Setup

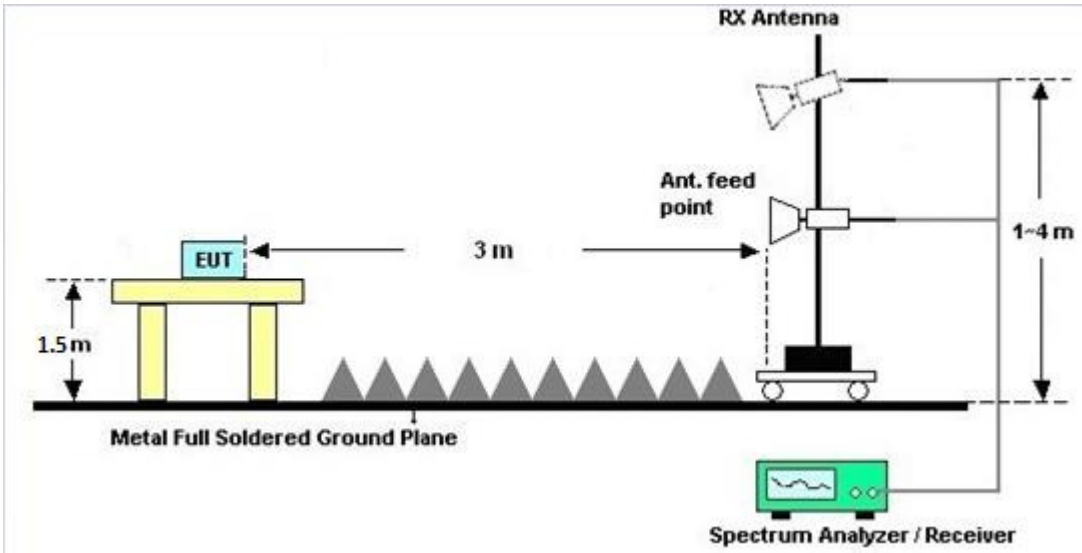
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

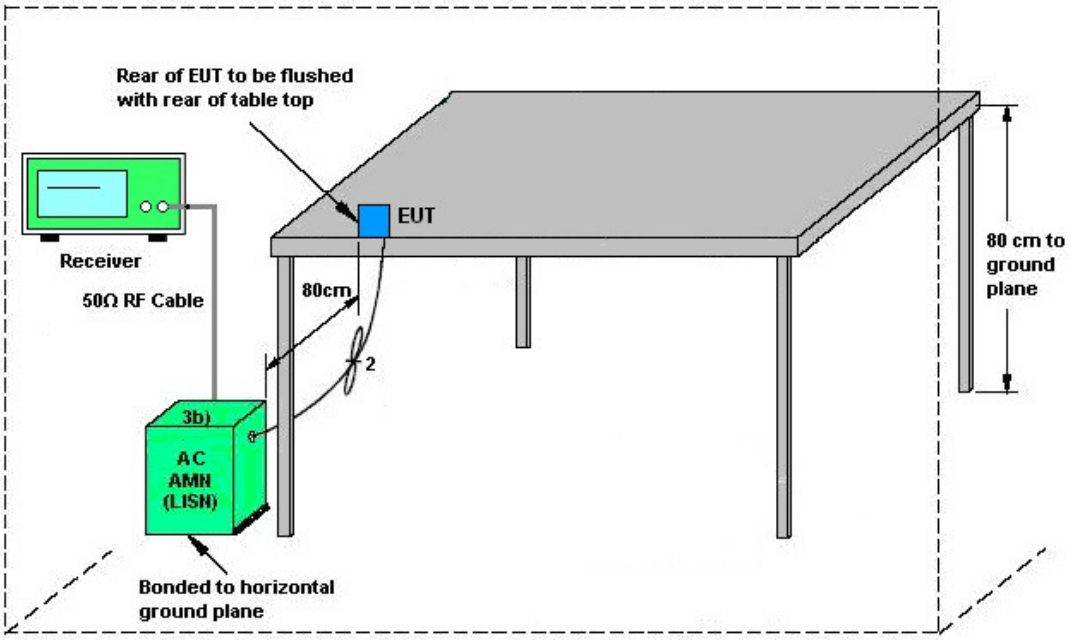
3.6.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room 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. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

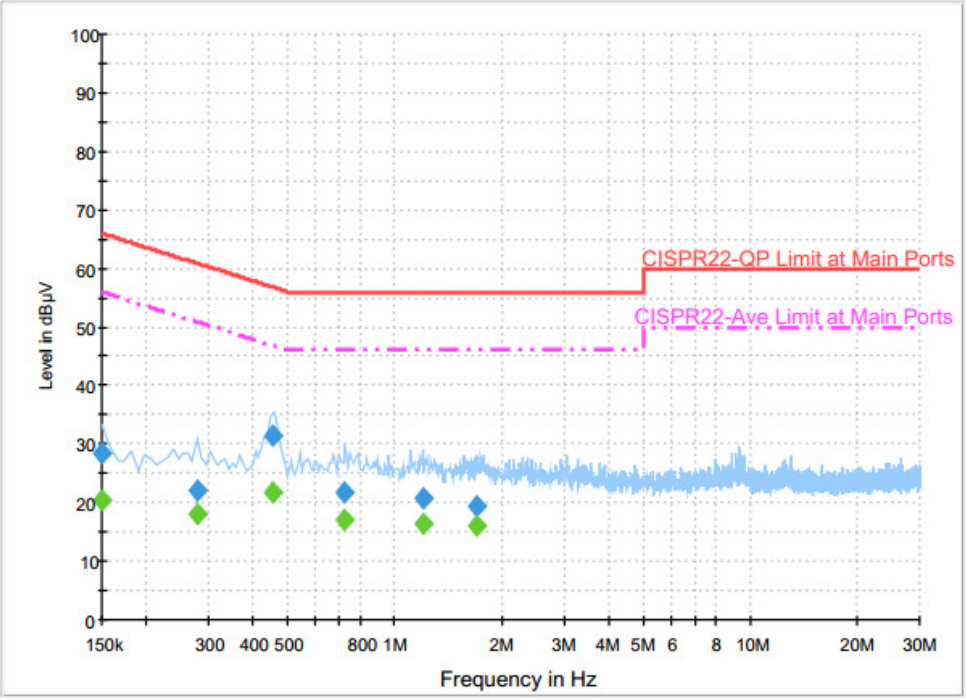
3.6.4 Test Setup



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

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	**Temperature :**	22~23℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	53~54%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	ANT Tx + Adapter for Ant. 2		



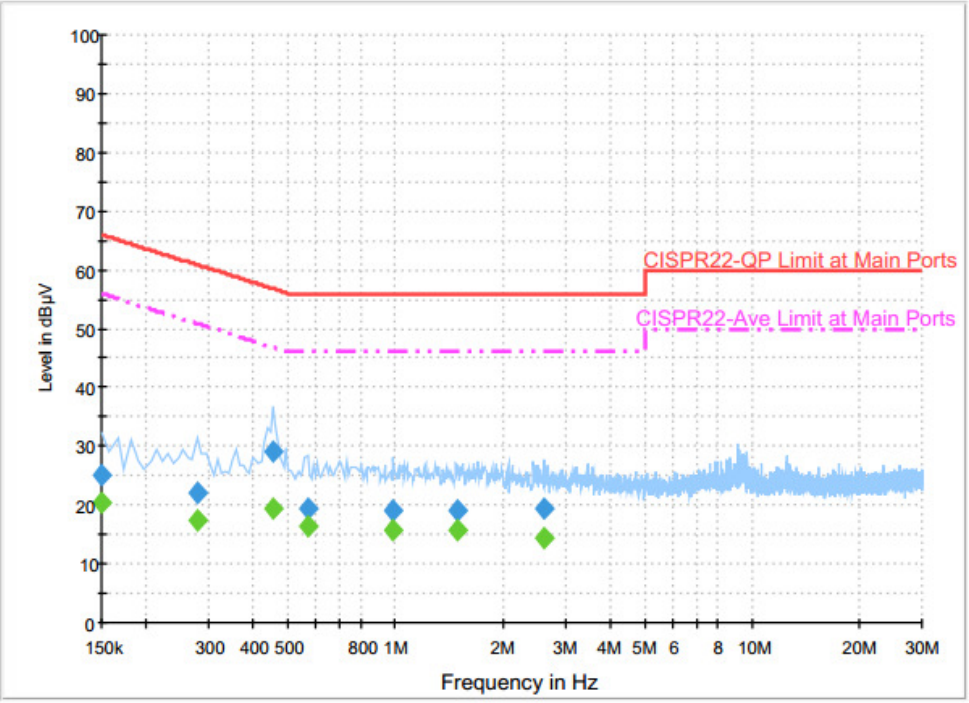
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	28.3	Off	L1	19.6	37.7	66.0
0.278000	22.1	Off	L1	19.6	38.8	60.9
0.454000	31.3	Off	L1	19.6	25.5	56.8
0.726000	21.6	Off	L1	19.6	34.4	56.0
1.198000	20.6	Off	L1	19.6	35.4	56.0
1.710000	19.5	Off	L1	19.6	36.5	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	20.4	Off	L1	19.6	35.6	56.0
0.278000	17.9	Off	L1	19.6	33.0	50.9
0.454000	21.6	Off	L1	19.6	25.2	46.8
0.726000	17.0	Off	L1	19.6	29.0	46.0
1.198000	16.5	Off	L1	19.6	29.5	46.0
1.710000	16.1	Off	L1	19.6	29.9	46.0

Test Mode :	Mode 2	**Temperature :**	22~23℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	53~54%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	ANT Tx + Adapter for Ant. 2		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	25.0	Off	N	19.6	41.0	66.0
0.278000	22.1	Off	N	19.6	38.8	60.9
0.454000	29.0	Off	N	19.6	27.8	56.8
0.566000	19.5	Off	N	19.6	36.5	56.0
0.990000	19.0	Off	N	19.6	37.0	56.0
1.486000	19.1	Off	N	19.6	36.9	56.0
2.614000	19.3	Off	N	19.6	36.7	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	20.3	Off	N	19.6	35.7	56.0
0.278000	17.5	Off	N	19.6	33.4	50.9
0.454000	19.5	Off	N	19.6	27.3	46.8
0.566000	16.4	Off	N	19.6	29.6	46.0
0.990000	15.7	Off	N	19.6	30.3	46.0
1.486000	15.8	Off	N	19.6	30.2	46.0
2.614000	14.3	Off	N	19.6	31.7	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. 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

Non-standard antenna connector 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	Agilent	E4416A	GB41292344	300MHz~40GHz	Jan. 08, 2016	Apr. 21, 2016	Jan. 07, 2017	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	300MHz~40GHz	Jan. 07, 2016	Apr. 21, 2016	Jan. 06, 2017	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 18, 2015	Apr. 21, 2016	Jun. 17, 2016	Conducted (TH02-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 20, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Apr. 20, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Apr. 20, 2016	Dec. 01, 2016	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Sep. 01, 2016	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D	35413	30MHz~1GHz	Jan. 13, 2016	Apr. 19, 2016 ~ Apr. 20, 2016	Jan. 12, 2017	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz ~ 18GHz	Sep. 30, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Sep. 29, 2016	Radiation (03CH10-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 02, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Nov. 01, 2016	Radiation (03CH10-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Nov. 16, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Nov. 15, 2016	Radiation (03CH10-HY)
Preamplifier	Keysight	83017A	MY53270078	1GHz~26.5GHz	Nov. 13, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Nov. 12, 2016	Radiation (03CH10-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1902246	1GHz~18GHz	Nov. 16, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Nov. 15, 2016	Radiation (03CH10-HY)
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Jun. 01, 2016	Radiation (03CH10-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz to 26.5GHz	Jan. 20, 2016	Apr. 19, 2016 ~ Apr. 20, 2016	Jan. 19, 2017	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz ~ 44GHz	Oct. 15, 2015	Apr. 19, 2016 ~ Apr. 20, 2016	Oct. 14, 2016	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Apr. 19, 2016 ~ Apr. 20, 2016	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Apr. 19, 2016 ~ Apr. 20, 2016	N/A	Radiation (03CH10-HY)

5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9**

Appendix A. Conducted Test Results

Report Number : FR610515B

Bluetooth Low Energy

Test Engineer:	Bill Kuo	Temperature:	21~25	°C
Test Date:	2016/4/21	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	-	NTx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
ANT		1	Low	2402	0.94	0.56	0.50	Pass
ANT		1	Middle	2441	0.93	0.58	0.50	Pass
ANT		1	High	2480	0.95	0.64	0.50	Pass

TEST RESULTS DATA
Peak Power Table

Mod.	-	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	Low	2402	16.71	30.00	0.00	16.71	36.00	Pass
ANT		1	Middle	2441	16.43	30.00	0.00	16.43	36.00	Pass
ANT		1	High	2480	15.16	30.00	0.00	15.16	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

Mod.	-	NTx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
ANT		1	Low	2402	0.24	16.69
ANT		1	Middle	2441	0.24	16.42
ANT		1	High	2480	0.24	15.15

TEST RESULTS DATA
Peak Power Density

Mod.	-	NTx	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
ANT		1	Low	2402	16.57	5.94	0.00	8.00	Pass
ANT		1	Middle	2441	16.29	5.96	0.00	8.00	Pass
ANT		1	High	2480	14.84	4.40	0.00	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

Appendix B. Radiated Spurious Emission

Test Engineer :	Tsung Lee	Temperature :	22~24°C
		Relative Humidity :	46~49%

<Ant. 1>

2.4GHz 2400~2483.5MHz

ANT (Band Edge @ 3m)

ANT	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)
ANT 2402MHz		2386.05	53.52	-20.48	74	54.14	27.23	5.39	33.24	100	159	P	H
		2385.96	47.48	-6.52	54	48.1	27.23	5.39	33.24	100	159	A	H
	*	2401.92	109.14	-	-	109.74	27.23	5.39	33.22	100	159	P	H
	*	2402.004	109	-	-	109.6	27.23	5.39	33.22	100	159	A	H
													H
													H
		2386.14	46.59	-27.41	74	47.21	27.23	5.39	33.24	100	98	P	V
		2386.05	39.2	-14.8	54	39.82	27.23	5.39	33.24	100	98	A	V
	*	2402.171	102.27	-	-	102.87	27.23	5.39	33.22	100	98	P	V
	*	2402.004	102.15	-	-	102.75	27.23	5.39	33.22	100	98	A	V
													V
ANT 2441MHz		2377.05	47.87	-26.13	74	48.53	27.19	5.39	33.24	120	155	P	H
		2384.97	41.58	-12.42	54	42.24	27.19	5.39	33.24	120	155	A	H
	*	2441.166	108.36	-	-	108.77	27.37	5.42	33.2	120	155	P	H
	*	2440.999	108.27	-	-	108.68	27.37	5.42	33.2	120	155	A	H
		2489	46.31	-27.69	74	46.53	27.5	5.46	33.18	120	155	P	H
		2489	38.99	-15.01	54	39.21	27.5	5.46	33.18	120	155	A	H
		2376.69	42.7	-31.3	74	43.36	27.19	5.39	33.24	100	97	P	V
		2384.88	34.48	-19.52	54	35.14	27.19	5.39	33.24	100	97	A	V
	*	2441.166	101.43	-	-	101.84	27.37	5.42	33.2	100	97	P	V
	*	2441.082	101.32	-	-	101.73	27.37	5.42	33.2	100	97	A	V
		2489.08	42.14	-31.86	74	42.36	27.5	5.46	33.18	100	97	P	V
		2489	32.31	-21.69	54	32.53	27.5	5.46	33.18	100	97	A	V

ANT 2480MHz	*	2479.826	103.98	-	-	104.26	27.46	5.44	33.18	116	107	P	H
	*	2479.993	103.84	-	-	104.12	27.46	5.44	33.18	116	107	A	H
		2483.52	64.83	-9.17	74	65.09	27.46	5.46	33.18	116	107	P	H
		2483.56	41.65	-12.35	54	41.91	27.46	5.46	33.18	116	107	A	H
													H
													H
	*	2479.826	101.75	-	-	102.03	27.46	5.44	33.18	100	192	P	V
	*	2479.993	101.61	-	-	101.89	27.46	5.44	33.18	100	192	A	V
		2483.6	60.75	-13.25	74	61.01	27.46	5.46	33.18	100	192	P	V
		2483.52	39.7	-14.3	54	39.96	27.46	5.46	33.18	100	192	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

ANT (Harmonic @ 3m)

ANT	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)
ANT 2402MHz		4805	53.98	-20.02	74	75.62	31.42	7.58	60.64	107	65	P	H
		4805	51.57	-2.43	54	73.21	31.42	7.58	60.64	107	65	A	H
													H
													H
		4805	50.21	-23.79	74	71.85	31.42	7.58	60.64	100	0	P	V
													V
													V
													V
ANT 2440MHz		4883	53.49	-20.51	74	74.63	31.56	7.82	60.52	103	76	P	H
		4883	50.99	-3.01	54	72.13	31.56	7.82	60.52	103	76	A	H
		7322	47.11	-26.89	74	62.36	36.22	9.51	60.98	100	0	P	H
													H
		4883	49.88	-24.12	74	71.02	31.56	7.82	60.52	100	0	P	V
		7324	50.23	-23.77	74	65.48	36.22	9.51	60.98	100	0	P	V
													V
													V
ANT 2480MHz		4961	45.84	-28.16	74	66.54	31.73	7.93	60.36	100	0	P	H
		7440	46.65	-27.35	74	61.89	36.49	9.61	61.34	100	0	P	H
													H
													H
		4961	46.21	-27.79	74	66.91	31.73	7.93	60.36	100	0	P	V
		7440	47.95	-26.05	74	63.19	36.49	9.61	61.34	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 ANT (LF)

ANT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz ANT LF		32.43	23.42	-16.58	40	31.17	24.42	0.65	32.82			P	H
		140.43	32.62	-10.88	43.5	45.99	17.97	1.33	32.67	100	73	P	H
		199.29	20.95	-22.55	43.5	36.2	16	1.48	32.73			P	H
		304.2	24.97	-21.03	46	35.98	19.84	1.88	32.73			P	H
		731.2	28.11	-17.89	46	31.11	27.05	2.91	32.96			P	H
		911.8	31.16	-14.84	46	31.13	29.01	3.2	32.18			P	H
													H
													H
													H
													H
													H
													H
		39.45	32.53	-7.47	40	44.18	20.5	0.65	32.8	100	14	P	V
		70.5	26.09	-13.91	40	45.16	12.72	0.93	32.72			P	V
		103.17	21.41	-22.09	43.5	36.23	16.67	1.14	32.63			P	V
		462.4	23.11	-22.89	46	30.25	23.45	2.3	32.89			P	V
		679.4	26.7	-19.3	46	30.86	26.17	2.67	33			P	V
		949.6	31.54	-14.46	46	30.01	30	3.29	31.76			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

<Ant. 2>

2.4GHz 2400~2483.5MHz

ANT (Band Edge @ 3m)

ANT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
ANT 2402MHz		2386.05	54.4	-19.6	74	55.02	27.23	5.39	33.24	129	336	P	H
		2385.96	48.18	-5.82	54	48.8	27.23	5.39	33.24	129	336	A	H
	*	2401.837	111.9	-	-	112.5	27.23	5.39	33.22	129	336	P	H
	*	2402.004	110.73	-	-	111.33	27.23	5.39	33.22	129	336	A	H
													H
													H
		2385.87	52.12	-21.88	74	52.74	27.23	5.39	33.24	385	314	P	V
		2385.96	46.69	-7.31	54	47.31	27.23	5.39	33.24	385	314	A	V
	*	2401.837	109.83	-	-	110.43	27.23	5.39	33.22	385	314	P	V
	*	2402.004	109.66	-	-	110.26	27.23	5.39	33.22	385	314	A	V
													V
													V
ANT 2441MHz		2377.14	48.55	-25.45	74	49.21	27.19	5.39	33.24	103	338	P	H
		2376.96	41.89	-12.11	54	42.55	27.19	5.39	33.24	103	338	A	H
	*	2440.915	109.91	-	-	110.32	27.37	5.42	33.2	103	338	P	H
	*	2440.999	109.77	-	-	110.18	27.37	5.42	33.2	103	338	A	H
		2489.16	46.88	-27.12	74	47.1	27.5	5.46	33.18	103	338	P	H
		2488.96	38.06	-15.94	54	38.28	27.5	5.46	33.18	103	338	A	H
		2384.97	46.93	-27.07	74	47.59	27.19	5.39	33.24	378	318	P	V
		2384.97	39.53	-14.47	54	40.19	27.19	5.39	33.24	378	318	A	V
	*	2440.832	108.55	-	-	108.96	27.37	5.42	33.2	378	318	P	V
	*	2440.999	108.43	-	-	108.84	27.37	5.42	33.2	378	318	A	V
		2488.92	44.73	-29.27	74	44.95	27.5	5.46	33.18	378	318	P	V
		2489.08	37.3	-16.7	54	37.52	27.5	5.46	33.18	378	318	A	V

ANT 2480MHz	*	2479.742	108.68	-	-	108.96	27.46	5.44	33.18	106	345	P	H
	*	2479.993	108.55	-	-	108.83	27.46	5.44	33.18	106	345	A	H
		2483.68	65.57	-8.43	74	65.83	27.46	5.46	33.18	106	345	P	H
		2483.68	44.91	-9.09	54	45.17	27.46	5.46	33.18	106	345	A	H
													H
													H
	*	2480.16	108.2	-	-	108.48	27.46	5.44	33.18	133	229	P	V
	*	2480.076	108.11	-	-	108.39	27.46	5.44	33.18	133	229	A	V
		2483.56	65.37	-8.63	74	65.63	27.46	5.46	33.18	133	229	P	V
		2483.5	45.12	-8.88	54	45.38	27.46	5.46	33.18	133	229	A	V
													V
													V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

ANT (Harmonic @ 3m)

ANT	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)
ANT 2402MHz		4805	49.22	-24.78	74	70.86	31.42	7.58	60.64	100	0	P	H
													H
													H
													H
		4805	49.53	-24.47	74	71.17	31.42	7.58	60.64	100	0	P	V
													V
													V
													V
ANT 2440MHz		4884	50.22	-23.78	74	71.36	31.56	7.82	60.52	100	0	P	H
		7322	45.91	-28.09	74	61.16	36.22	9.51	60.98	100	0	P	H
													H
													H
		4884	50.1	-23.9	74	71.24	31.56	7.82	60.52	100	0	P	V
		7322	48.85	-25.15	74	64.1	36.22	9.51	60.98	100	0	P	V
													V
													V
ANT 2480MHz		4961	50.68	-23.32	74	71.38	31.73	7.93	60.36	100	0	P	H
		7440	42.39	-31.61	74	57.63	36.49	9.61	61.34	100	0	P	H
													H
													H
		4962	52.93	-21.07	74	73.51	31.73	8.05	60.36	100	258	P	V
		4962	50.16	-3.84	54	70.74	31.73	8.05	60.36	100	258	A	V
		7440	45.34	-28.66	74	60.58	36.49	9.61	61.34	100	0	P	V
													V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz ANT (LF)

ANT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz ANT LF		39.18	33.06	-6.94	40	44.15	21.06	0.65	32.8	100	57	P	H
		81.84	21.63	-18.37	40	39.36	14.02	0.93	32.68			P	H
		121.8	23.7	-19.8	43.5	37.37	17.84	1.14	32.65			P	H
		597.5	25.45	-20.55	46	30.47	25.44	2.57	33.03			P	H
		760.6	28.52	-17.48	46	30.95	27.58	2.91	32.92			P	H
		939.8	31.53	-14.47	46	30.36	29.75	3.29	31.87			P	H
													H
													H
													H
													H
													H
													H
		32.43	32.51	-7.49	40	40.26	24.42	0.65	32.82	100	67	P	V
		81.57	21.64	-18.36	40	39.38	14.02	0.93	32.69			P	V
		173.1	20.46	-23.04	43.5	35.73	15.95	1.48	32.7			P	V
		594.7	25.77	-20.23	46	30.84	25.38	2.57	33.02			P	V
		775.3	29	-17	46	31.24	27.7	2.97	32.91			P	V
		951.7	31.67	-14.33	46	30.12	30	3.29	31.74			P	V
													V
													V
													V
													V
													V
													V
Remark	3. No other spurious found. 4. 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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix C. Radiated Spurious Emission

Test Engineer :	Tsung Lee	Temperature :	22~24°C
		Relative Humidity :	46~49%

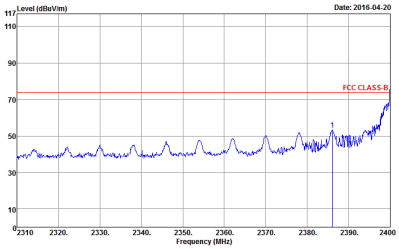
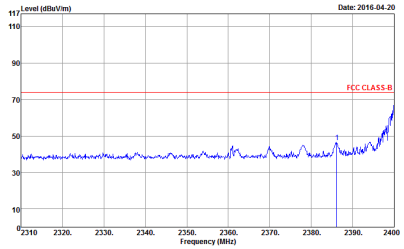
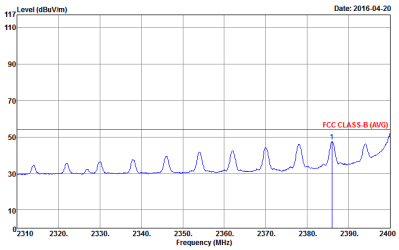
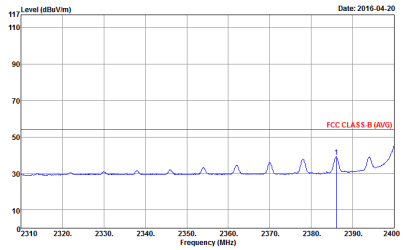
Note symbol

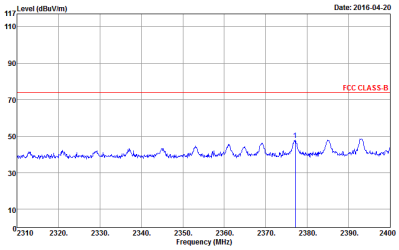
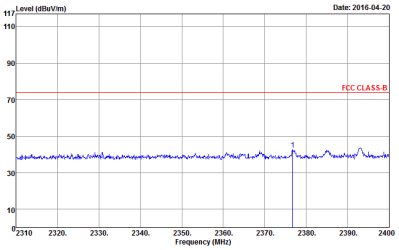
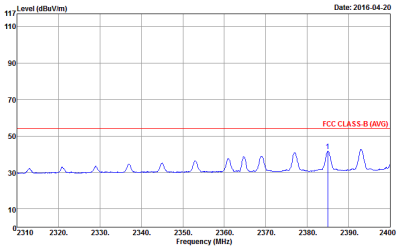
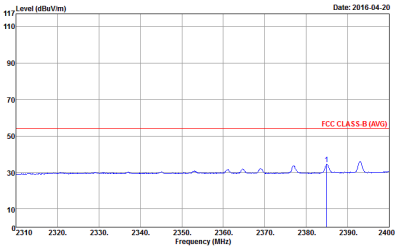
-L	**Low channel location**
-R	**High channel location**

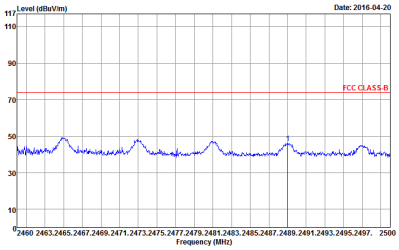
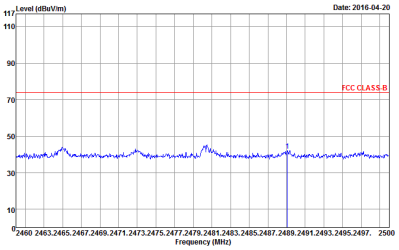
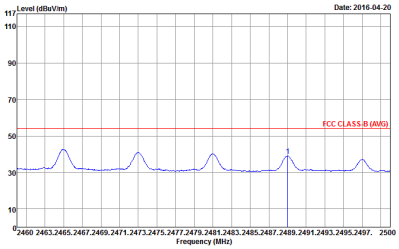
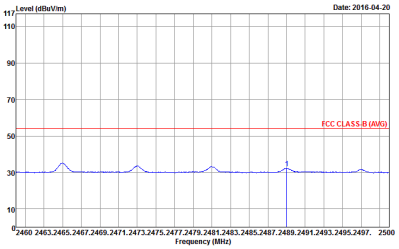
<Ant. 1>

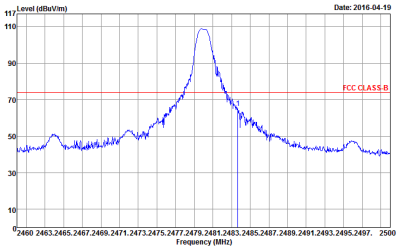
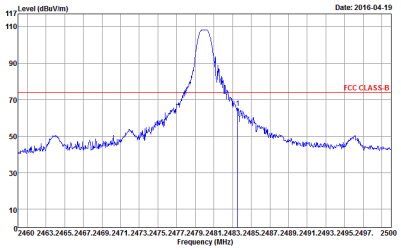
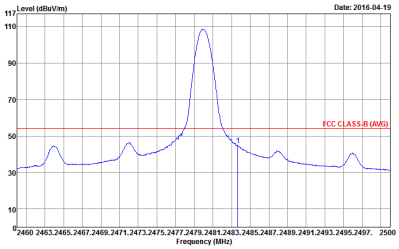
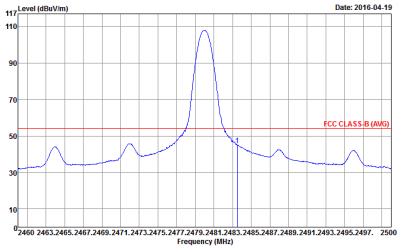
2.4GHz 2400~2483.5MHz

ANT (Band Edge @ 3m)

ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT CH00 2402MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 1	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 1
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 1	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 1

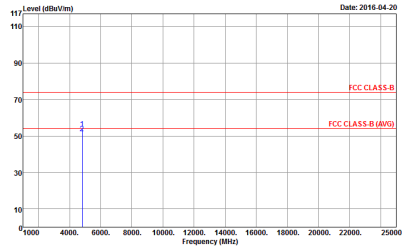
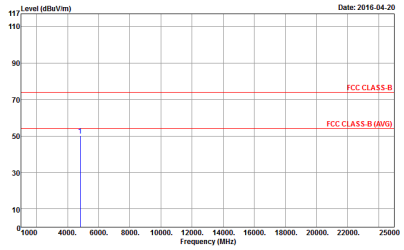
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2441MHz - L	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2

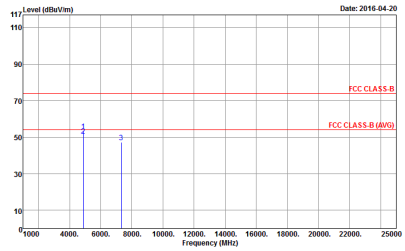
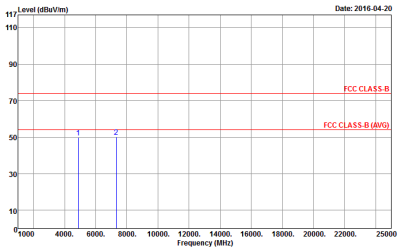
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2441MHz - R	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 2

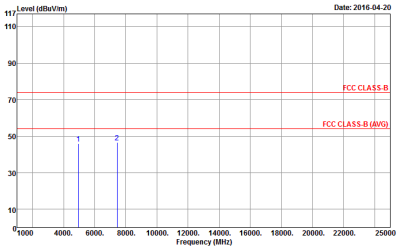
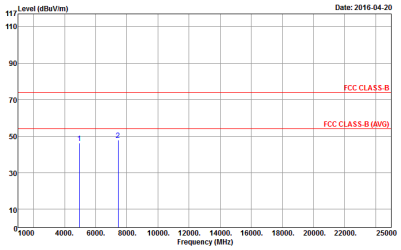
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2480MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7

2.4GHz 2400~2483.5MHz

ANT (Harmonic @ 3m)

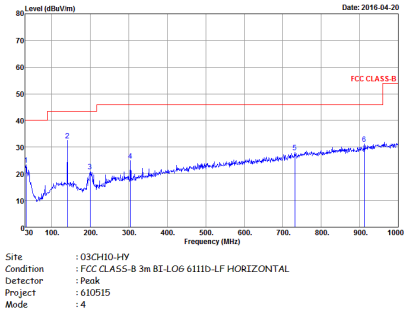
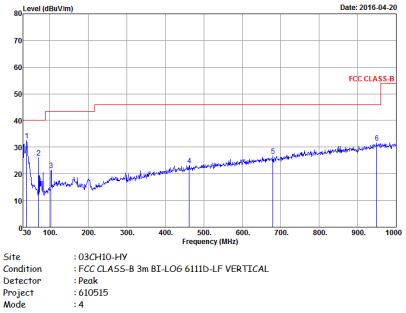
ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT CH00 2402MHz	
1	Horizontal	Vertical
Peak Avg.		

ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT CH 2441MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 610515 Mode : 2	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 610515 Mode : 2

ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT 2480MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 610515 Mode : 3	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 610515 Mode : 3

Emission below 1GHz

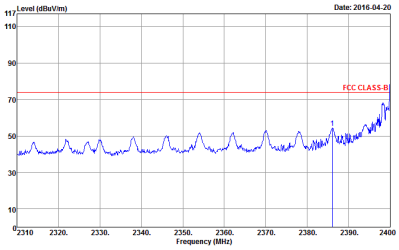
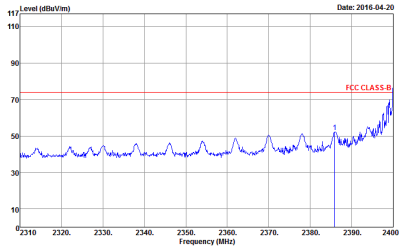
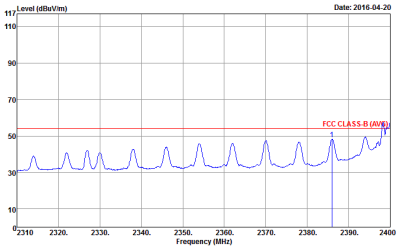
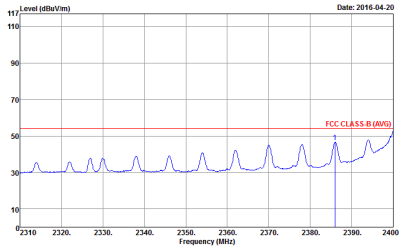
2.4GHz ANT (LF)

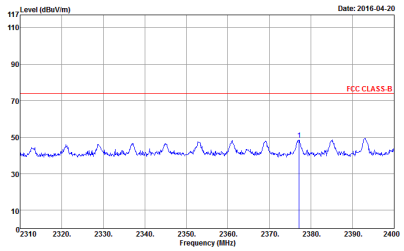
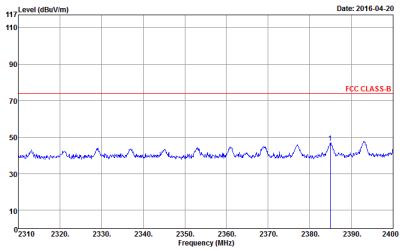
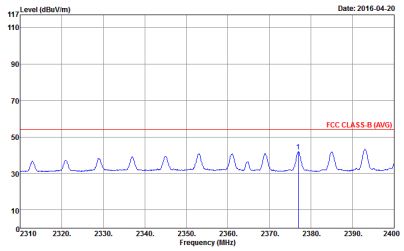
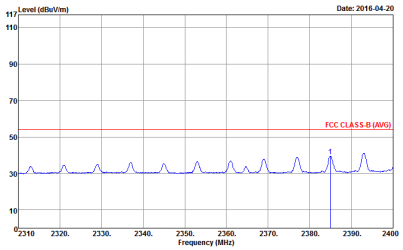
ANT	2.4GHz 2400~2483.5MHz	
ANT	ANT LF	
1	Horizontal	Vertical
QP / Peak		

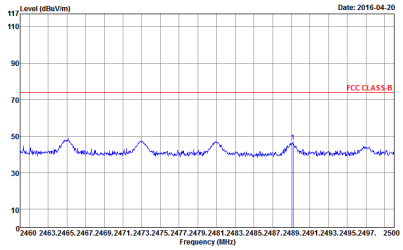
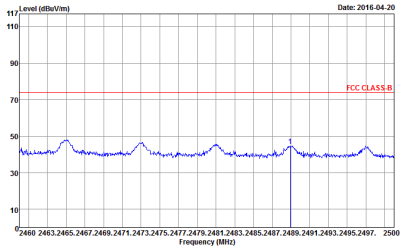
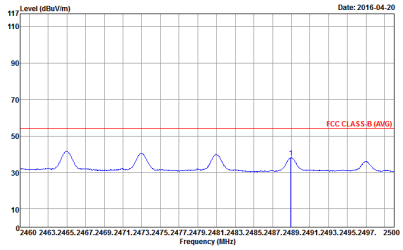
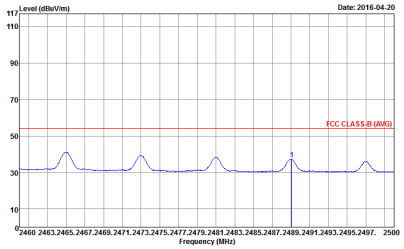
<Ant. 2>

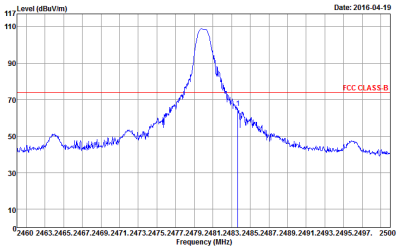
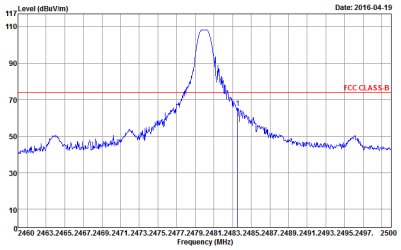
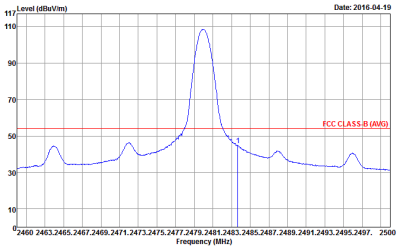
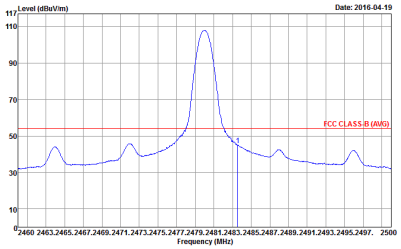
2.4GHz 2400~2483.5MHz

ANT (Band Edge @ 3m)

ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT CH00 2402MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 5	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 5
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 5	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 5

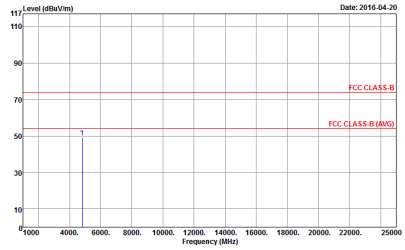
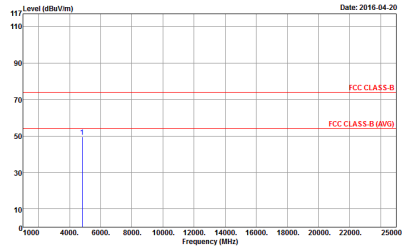
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2441MHz - L	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AV6) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6	 Site : 03CH10-HY Condition : FCC CLASS-B (AV6) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6

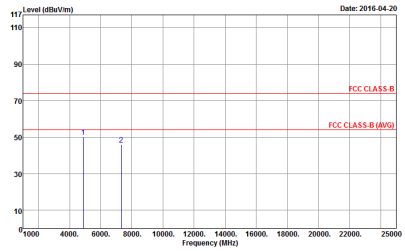
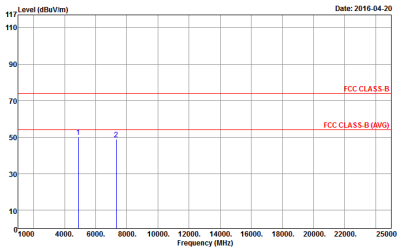
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2441MHz - R	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 6

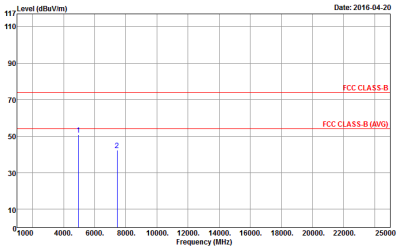
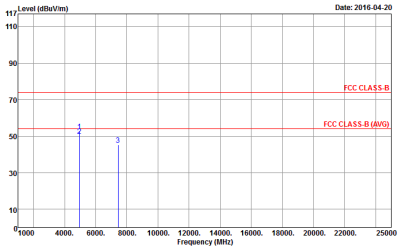
ANT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	ANT 2480MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7
Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7	 Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 610515 Mode : 7

2.4GHz 2400~2483.5MHz

ANT (Harmonic @ 3m)

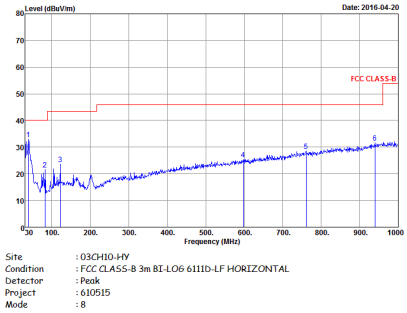
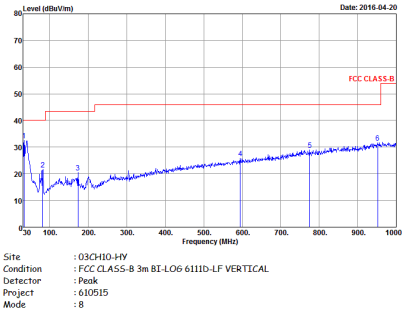
ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT CH00 2402MHz	
1	Horizontal	Vertical
Peak Avg.		

ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT CH 2441MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 610515 Mode : 6	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 610515 Mode : 6

ANT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	ANT 2480MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 610515 Mode : 7	 Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 610515 Mode : 7

Emission below 1GHz

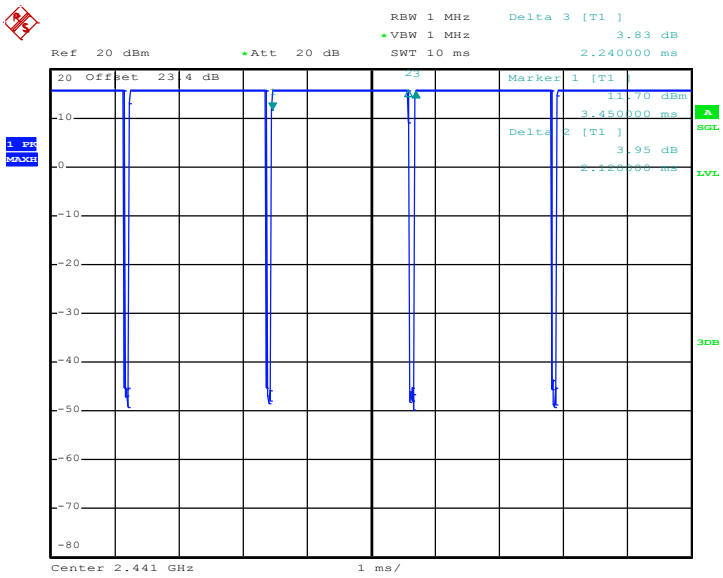
2.4GHz ANT (LF)

ANT	2.4GHz 2400~2483.5MHz	
ANT	ANT LF	
1	Horizontal	Vertical
QP / Peak		

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	ANT	94.64	2120	0.47	1kHz

ANT



Date: 18.APR.2016 23:59:31