



FCC RADIO TEST REPORT

FCC ID : S9GT750
Equipment : Access point
Brand Name : RUCKUS
Model Name : T750
Applicant : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Manufacturer : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Standard : FCC Part 15 Subpart C §15.247

The product was received on Jun. 21, 2019 and testing was started from Aug. 17, 2019 and completed on Aug. 26, 2019. We, Sporton International (USA) 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 report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc, the test report shall not be reproduced except in full.

Approved by: Ken Chen

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description.....	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Modification of EUT	5
1.3 Testing Location	5
1.4 Applicable Standards.....	5
2 Test Configuration of Equipment Under Test	6
2.1 Carrier Frequency Channel	6
2.2 Test Mode.....	7
2.3 Connection Diagram of Test System.....	8
2.4 Support Unit used in test configuration and system	8
2.5 EUT Operation Test Setup	8
2.6 Measurement Results Explanation Example.....	9
3 Test Result.....	10
3.1 6dB and 99% Bandwidth Measurement	10
3.2 Output Power Measurement.....	15
3.3 Power Spectral Density Measurement	16
3.4 Conducted Band Edges and Spurious Emission Measurement	21
3.5 Radiated Band Edges and Spurious Emission Measurement	26
3.6 AC Conducted Emission Measurement.....	30
3.7 Antenna Requirements	32
4 List of Measuring Equipment	33
5 Uncertainty of Evaluation.....	34
Appendix A. Conducted Test Results	
Appendix B. AC Conducted Emission Test Result	
Appendix C. Radiated Spurious Emission	
Appendix D. Radiated Spurious Emission Plots	
Appendix E. Duty Cycle Plots	
Appendix F. Setup Photographs	



History of this test report

Report No.	Version	Description	Issued Date
FR190621001C	01	Initial issue of report	Sep. 27, 2019
FR190621001C	02	Revise antenna gain	Dec. 09, 2019



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(2)	6dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.247(b)(3)	Peak Output Power	Pass	-
3.3	15.247(e)	Power Spectral Density	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	Pass	Under limit 4.5 dB at 2483.520 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 1.60 dB at 0.410 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, and Zigbee.

Product Specification subjective to this standard	
Antenna Type	WLAN: <Ant. 1> Omni Antenna <Ant. 2> Omni Antenna <Ant. 3> Omni Antenna <Ant. 4> Omni Antenna Bluetooth: Omni Antenna Zigbee: Omni Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International (USA) Inc.		
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300		
Test Site No.	Sporton Site No.		
	TH01-CA	CO01-CA	03CH02-CA

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

1.4 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 v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ 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

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	11	2405	19	2445
	12	2410	20	2450
	13	2415	21	2455
	14	2420	22	2460
	15	2425	23	2465
	16	2430	24	2470
	17	2435	25	2475
	18	2440	26	2480



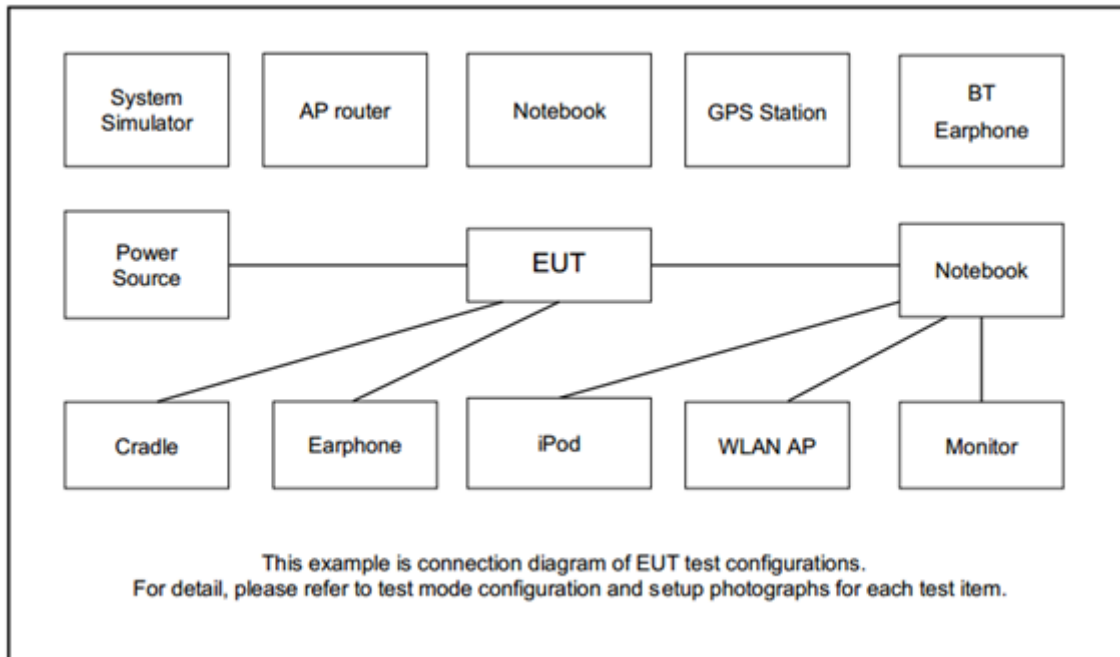
2.2 Test Mode

- 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 emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

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
	250 kbps / OQPSK
Conducted Test Cases	Mode 1: Zigbee Tx CH11_2405 MHz Mode 2: Zigbee Tx CH18_2440 MHz Mode 3: Zigbee Tx CH25_2475 MHz
Radiated Test Cases	Mode 1: Zigbee Tx CH11_2405 MHz Mode 2: Zigbee Tx CH18_2440 MHz Mode 3: Zigbee Tx CH25_2475 MHz
AC Conducted Emission	Mode 1: Bluetooth Link + WLAN (2.4GHz) Link

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Laptop	HP	15t-cu000	PD97265NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “Putty_0.6” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting 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

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
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 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 * RBW$.
6. Measure and record the results in the test report.

3.1.4 Test Setup

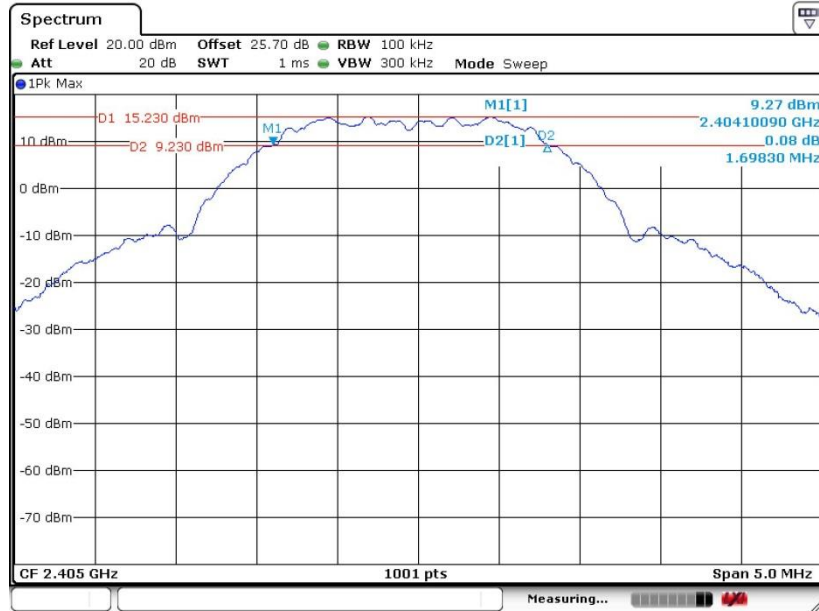




3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

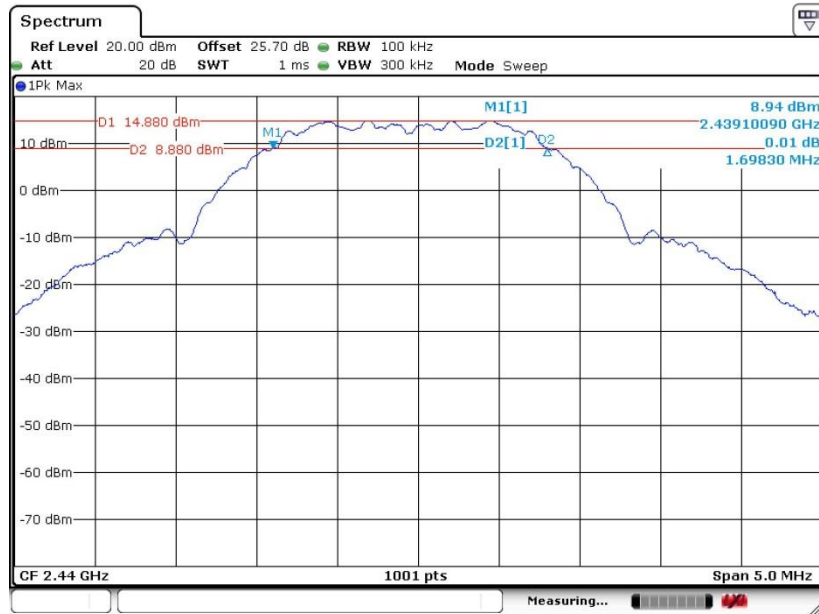
6 dB Bandwidth Plot on Channel 11



Date: 26.AUG.2019 11:37:39

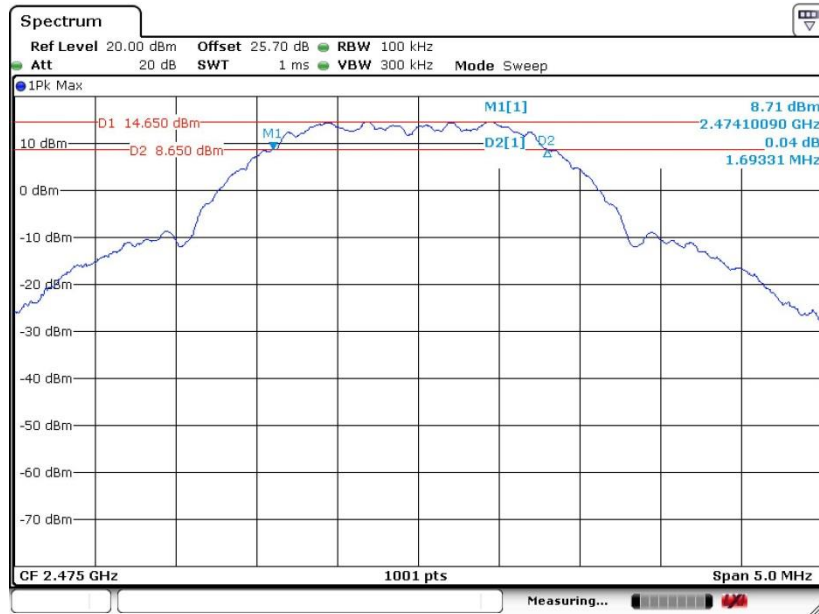


6 dB Bandwidth Plot on Channel 18



Date: 26.AUG.2019 11:47:52

6 dB Bandwidth Plot on Channel 25



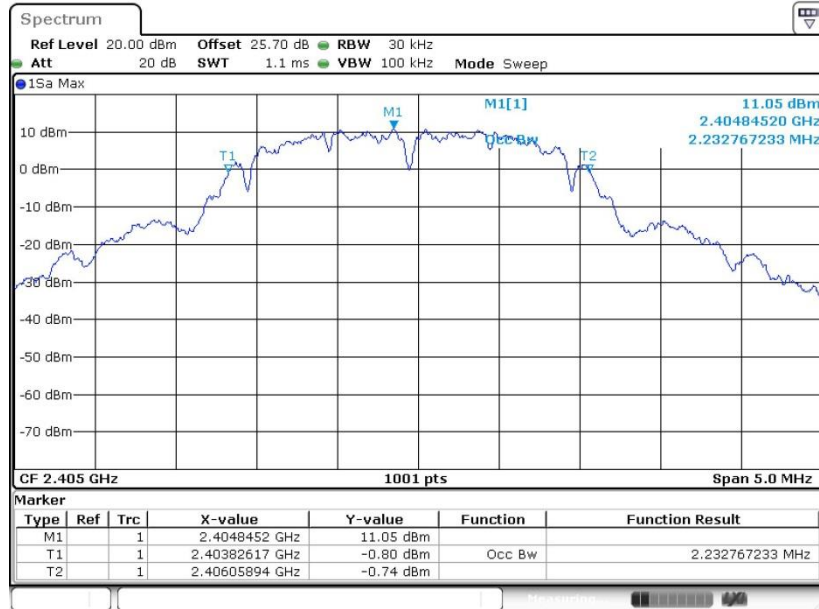
Date: 26.AUG.2019 11:55:24



3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

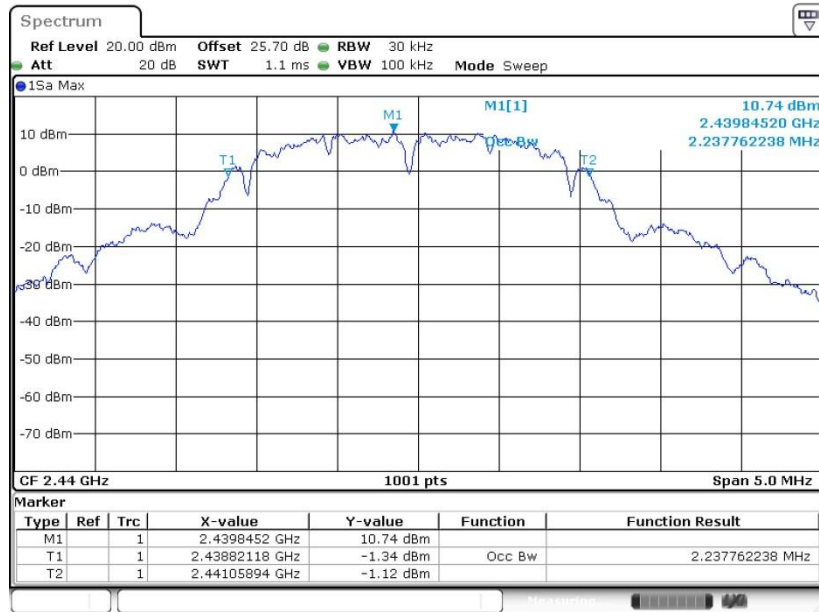
99% Bandwidth Plot on Channel 11



Date: 26.AUG.2019 11:43:57

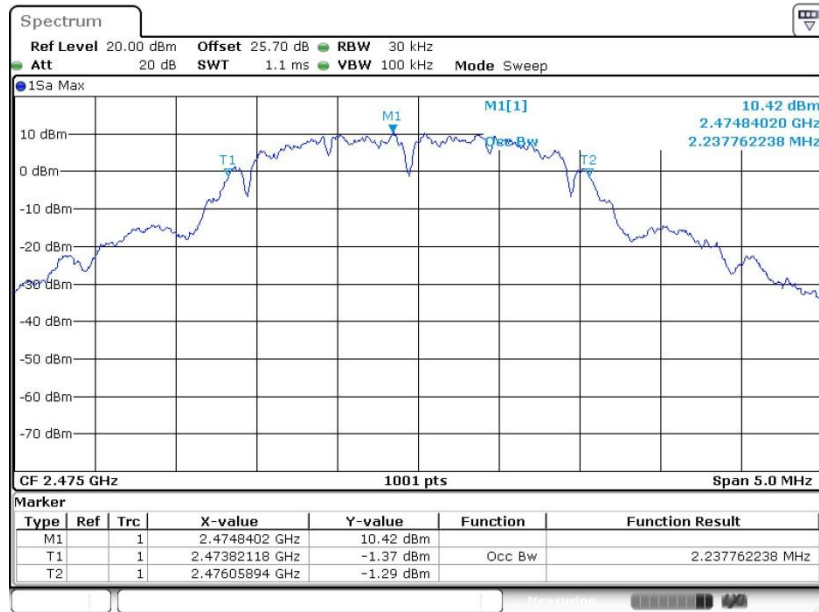


99% Occupied Bandwidth Plot on Channel 18



Date: 26.AUG.2019 11:51:50

99% Occupied Bandwidth Plot on Channel 25



Date: 26.AUG.2019 11:58:34

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

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

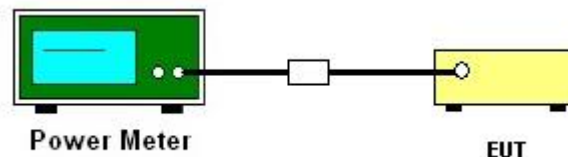
3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT was connected to the power meter by RF cable and attenuator.
3. The path loss was compensated to the results for each measurement.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Average Output Power

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.

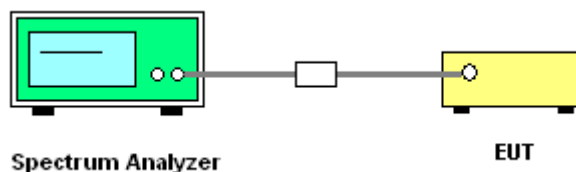
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
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



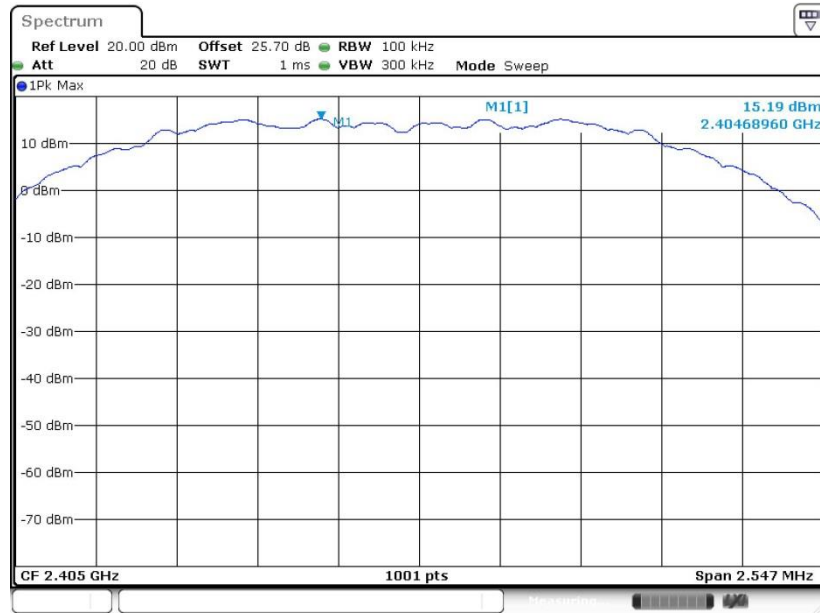
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



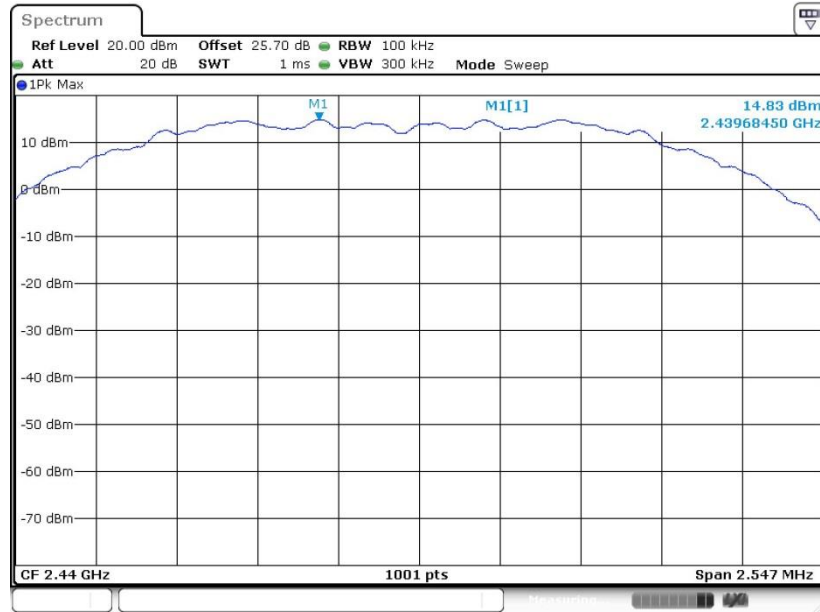
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on Channel 11



Date: 26.AUG.2019 11:41:04

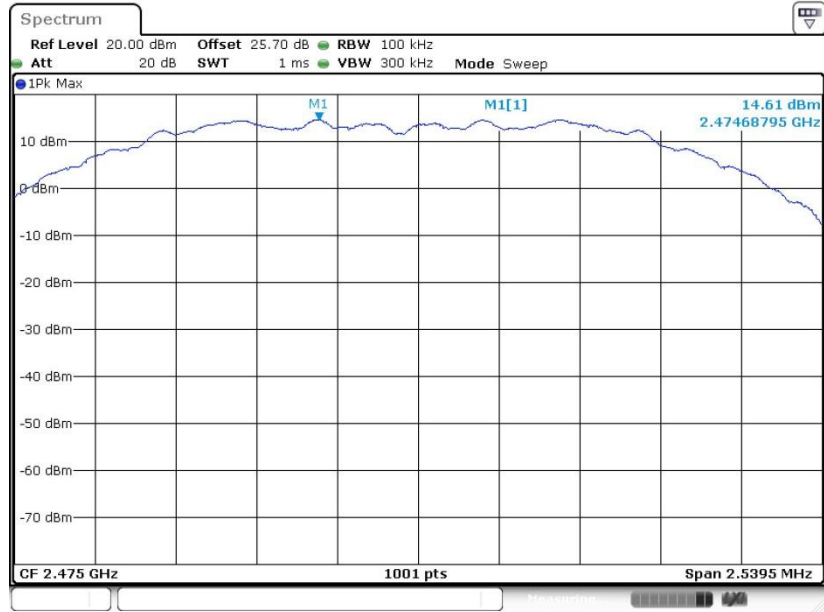
PSD 100kHz Plot on Channel 18



Date: 26.AUG.2019 11:49:50



PSD 100kHz Plot on Channel 25

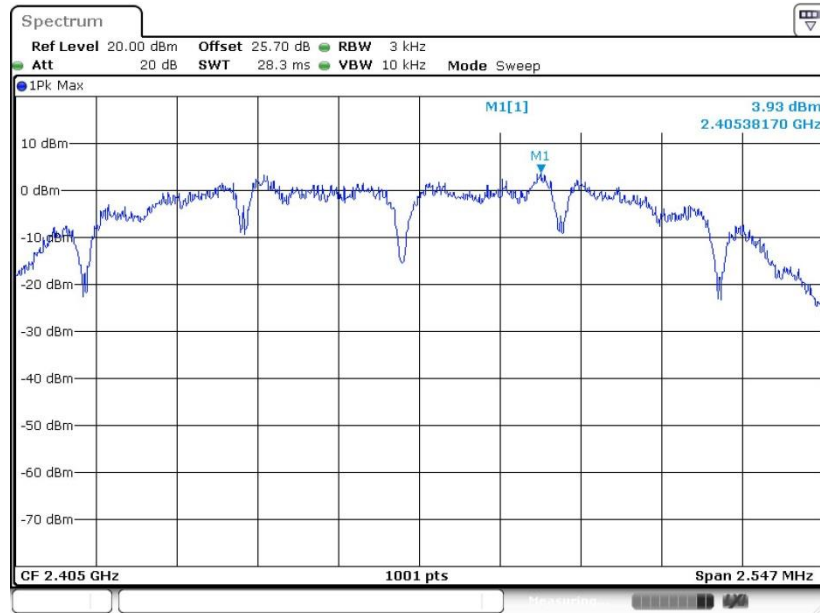


Date: 26.AUG.2019 11:57:16



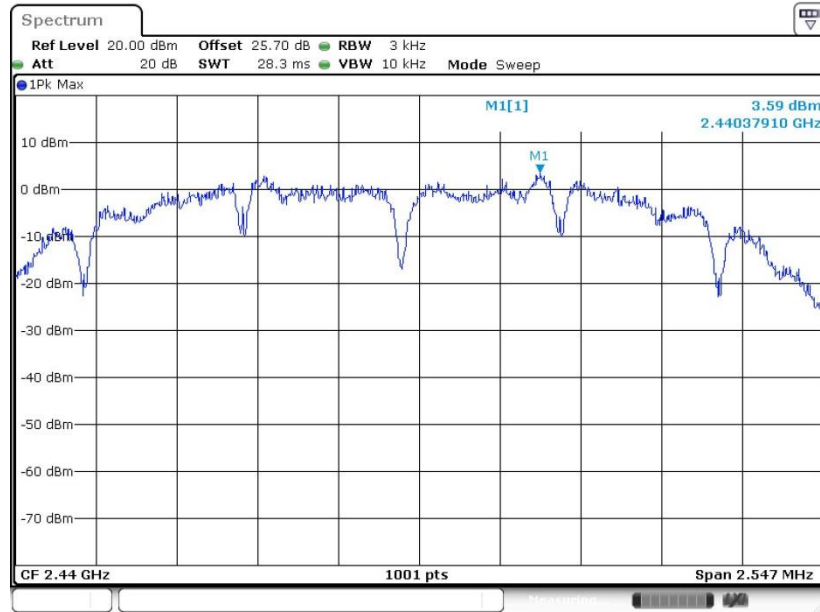
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on Channel 11



Date: 26.AUG.2019 11:38:57

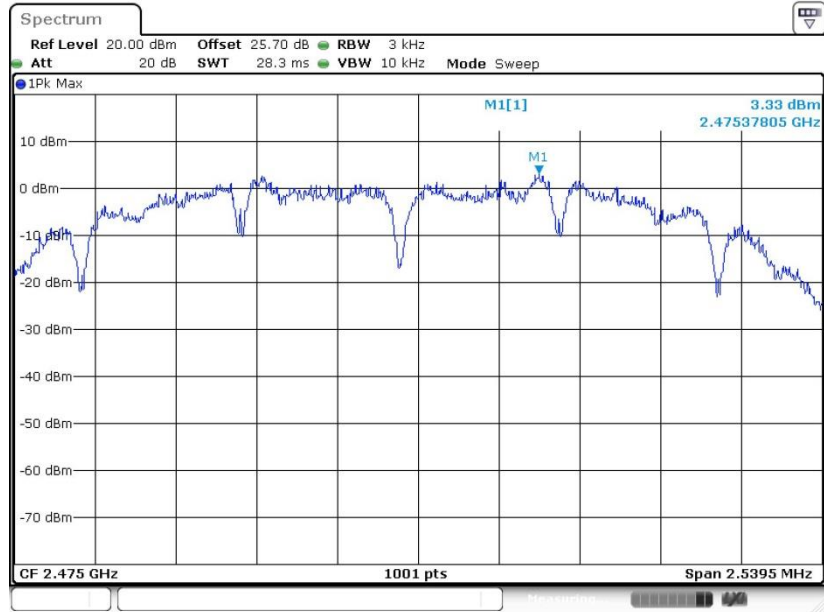
PSD 3kHz Plot on Channel 18



Date: 26.AUG.2019 11:48:43



PSD 3kHz Plot on Channel 25



Date: 26.AUG.2019 11:56:16

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.

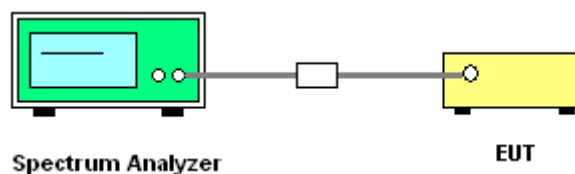
3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedure

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
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.
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.

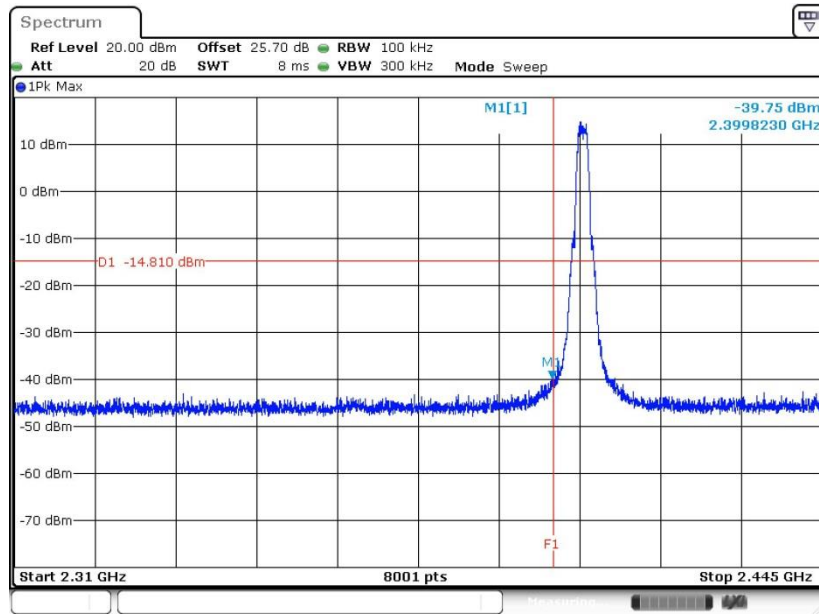
3.4.4 Test Setup





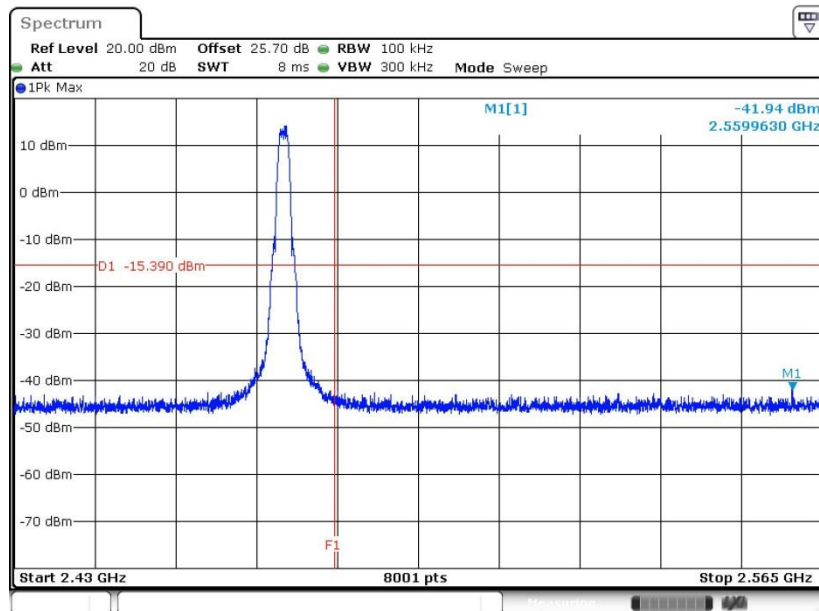
3.4.5 Test Result of Conducted Band Edges Plots

Low Band Edge Plot on Channel 11



Date: 26.AUG.2019 18:05:39

High Band Edge Plot on Channel 25

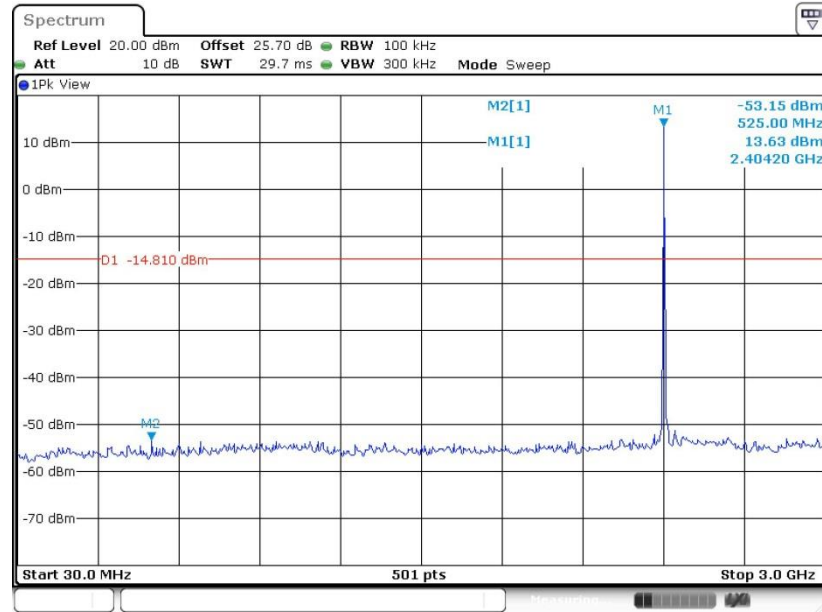


Date: 26.AUG.2019 18:08:56

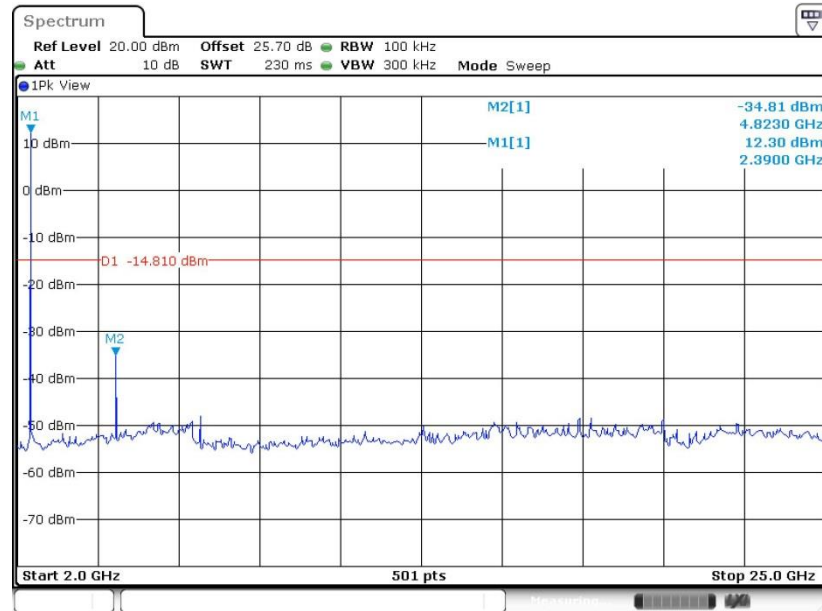


3.4.6 Test Result of Conducted Spurious Emission Plots

Conducted Spurious Emission Plot on Zigbee Channel 11

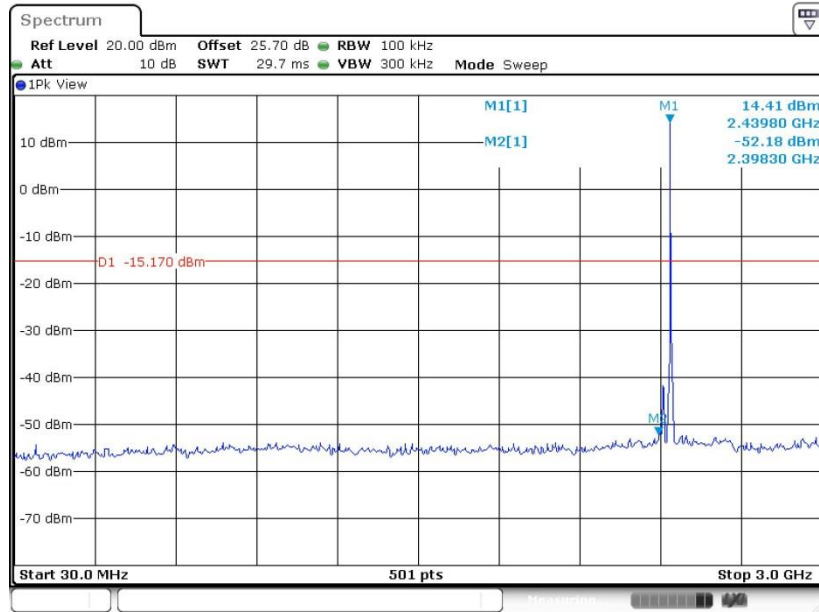


Conducted Spurious Emission Plot on Zigbee Channel 11



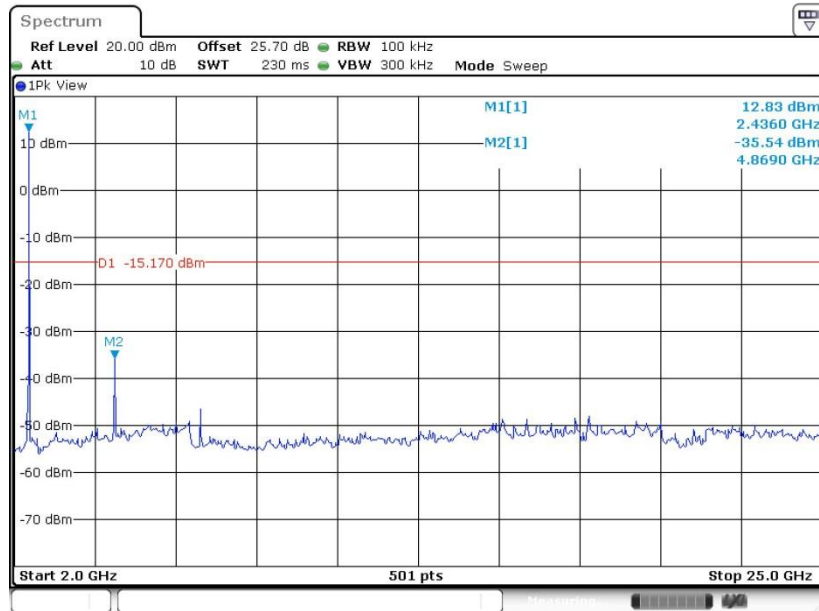


Conducted Spurious Emission Plot on Zigbee Channel 18



Date: 26.AUG.2019 18:10:12

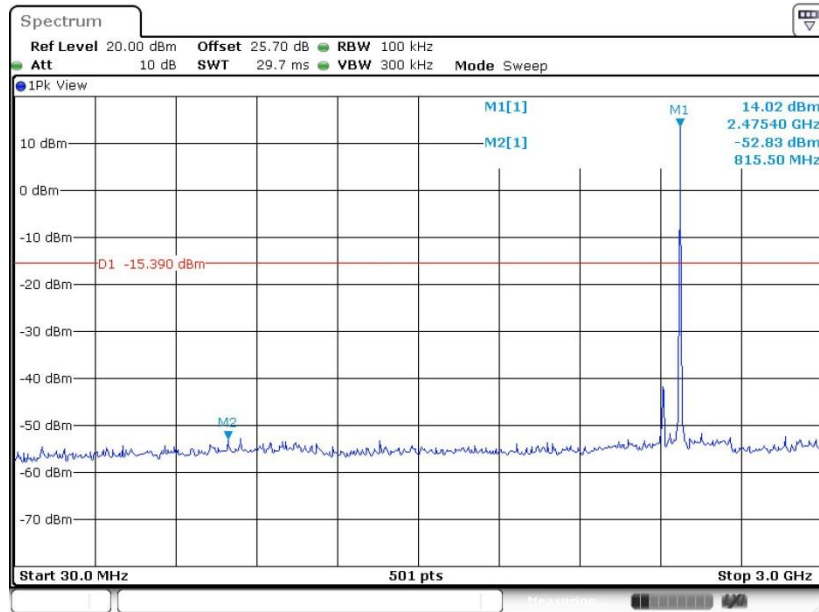
Conducted Spurious Emission Plot on Zigbee Channel 18



Date: 26.AUG.2019 18:10:25

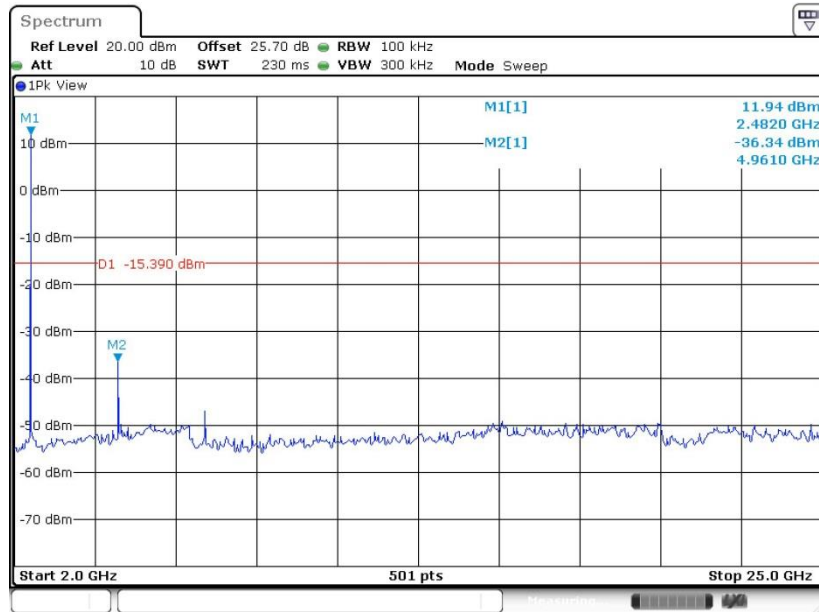


Conducted Spurious Emission Plot on Zigbee Channel 25



Date: 26.AUG.2019 18:09:13

Conducted Spurious Emission Plot on Zigbee Channel 25



Date: 26.AUG.2019 18:09:26



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 limits as below.

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

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

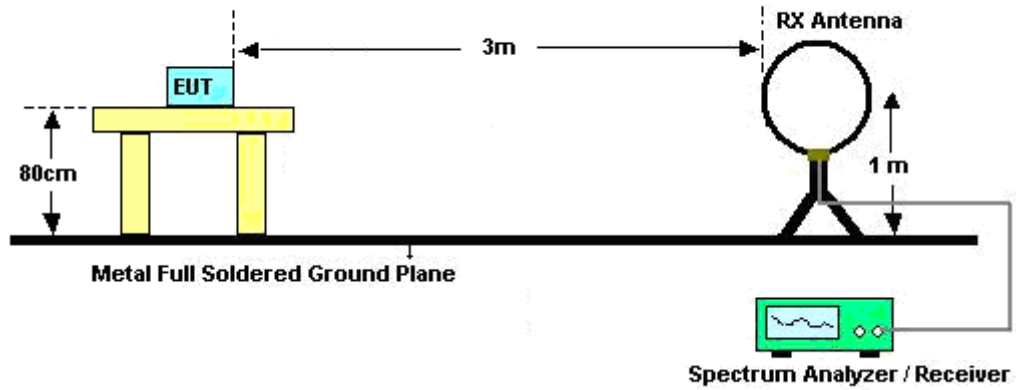


3.5.3 Test Procedures

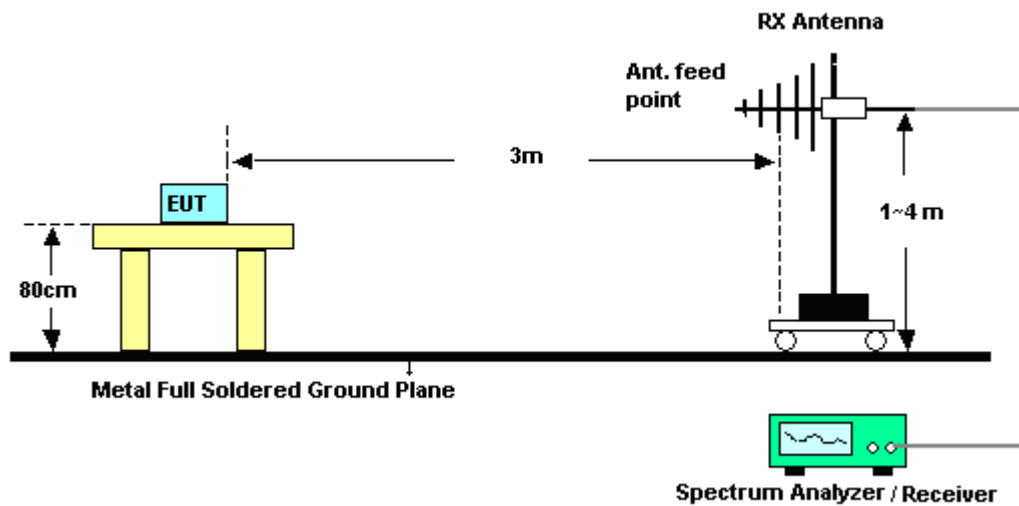
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. 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

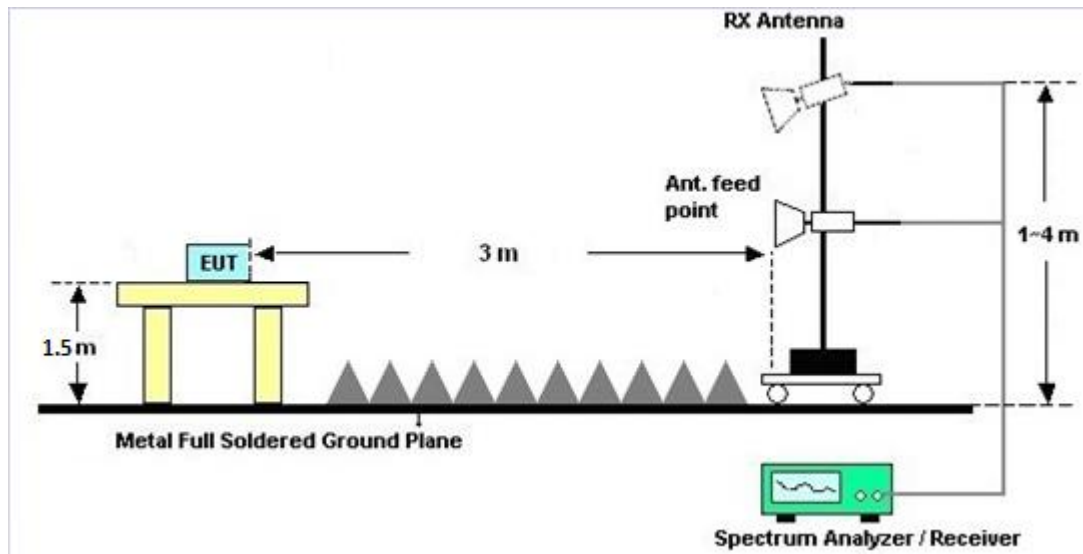
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (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 was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.



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

See list of measuring equipment 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 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



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



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 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 Sensor	DARE	RPR3006W	RPR6W-1 901027	10MHz~6GHz	Jun. 27, 2019	Aug. 22, 2019~ Aug. 26, 2019	Jun. 26, 2020	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV 40	101545	10Hz~40GHz	May 17, 2019	Aug. 22, 2019~ Aug. 26, 2019	May 16, 2020	Conducted (TH01-CA)
Switch Box & RF Cable	EM	EMSW18	SW107090 2	N/A	Apr. 07, 2019	Aug. 22, 2019~ Aug. 26, 2019	Apr. 06, 2020	Conducted (TH01-CA)
LISN	TESEQ	NNB51	47407	N/A	Jun. 26, 2019	Aug. 17, 2019	Jun. 25, 2020	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9KHz~7GHz	Jun. 27, 2019	Aug. 17, 2019	Jun. 26, 2020	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F- N00412	N/A	Jun. 11, 2019	Aug. 17, 2019	Jun. 10, 2020	Conduction (CO01-CA)
Test Software	Audix E3	6.2009-8-24	RK-00209 4	N/A	N/A	Aug. 17, 2019	N/A	Conduction (CO01-CA)
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	May 15, 2019	Aug. 17, 2019~ Aug. 26, 2019	May 14, 2020	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	01894	1GHz~18GHz	Jul. 22, 2019	Aug. 17, 2019~ Aug. 26, 2019	Jul. 21, 2020	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372241	N/A	Jul. 26, 2019	Aug. 17, 2019~ Aug. 26, 2019	Jul. 25, 2020	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY532703 23	1GHz~26.5GHz	Sep. 11, 2018	Aug. 17, 2019~ Aug. 26, 2019	Sep. 10, 2019	Radiation (03CH02-CA)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0055007	1GHz~18GHz	Apr. 01, 2019	Aug. 17, 2019~ Aug. 26, 2019	Mar. 31, 2020	Radiation (03CH02-CA)
EMI Test Receiver	R&S	ESU26	100123	20Hz~26.5GHz	Aug. 28, 2018	Aug. 17, 2019~ Aug. 26, 2019	Aug. 27, 2019	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200- 1272-11000-4 0SS	SN2	1.2G Low Pass	Aug. 02, 2019	Aug. 17, 2019~ Aug. 26, 2019	Aug. 01, 2020	Radiation (03CH02-CA)
Filter	Wainwright	WHKX12-270 0-3000-18000 -60ST	SN10	3G Highpass	Aug. 02, 2019	Aug. 17, 2019~ Aug. 26, 2019	Aug. 01, 2020	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Aug. 17, 2019~ Aug. 26, 2019	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Aug. 17, 2019~ Aug. 26, 2019	N/A	Radiation (03CH02-CA)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	1.7
---	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4
---	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.5
---	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3
---	-----

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Jordan Huang	Temperature:	21~25	°C
Test Date:	8/9/2019~8/22/2019	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
Zigbee	250K	1	11	2405	2.233	1.698	0.50	Pass
Zigbee	250K	1	18	2440	2.238	1.698	0.50	Pass
Zigbee	250K	1	25	2475	2.238	1.693	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
Zigbee	250K	1	11	2405	18.86	30.00	1.00	19.86	36.00	Pass
Zigbee	250K	1	18	2440	18.55	30.00	1.00	19.55	36.00	Pass
Zigbee	250K	1	25	2475	18.30	30.00	1.00	19.30	36.00	Pass

TEST RESULTS DATA
Peak Power Density

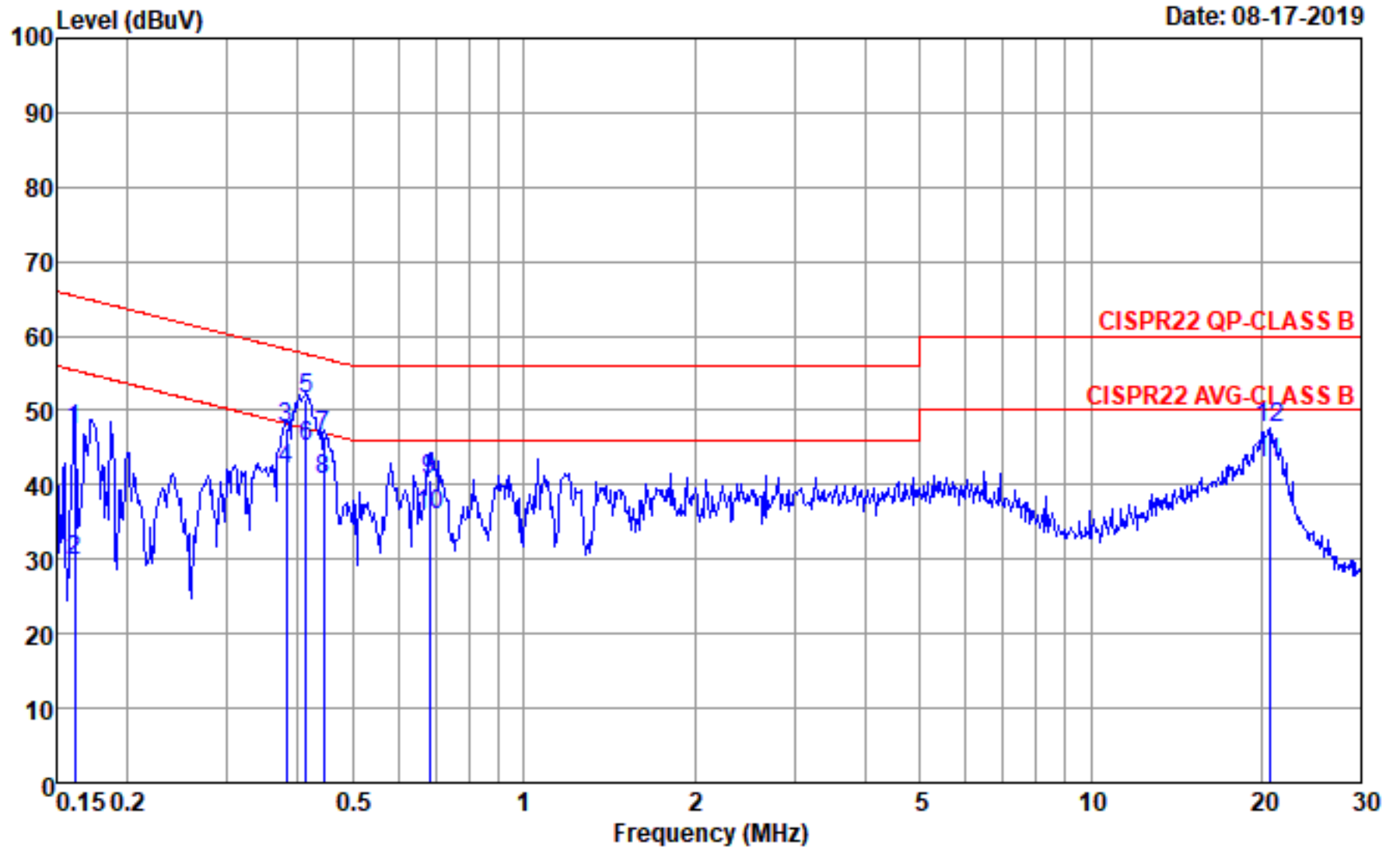
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
Zigbee	250K	1	11	2405	15.19	3.93	1.00	8.00	Pass
Zigbee	250K	1	18	2440	14.83	3.59	1.00	8.00	Pass
Zigbee	250K	1	25	2475	14.61	3.33	1.00	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.



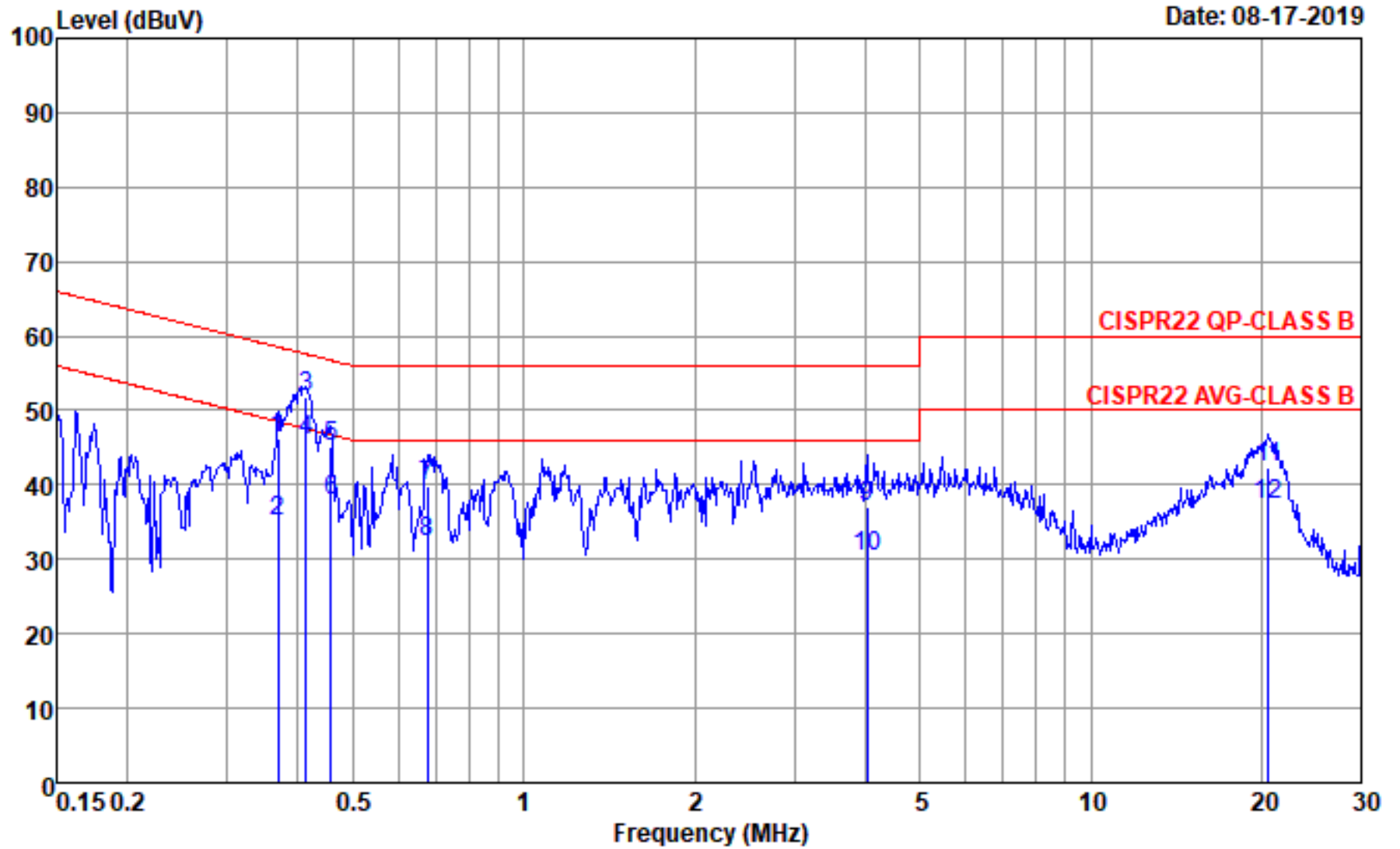
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Eric Jeng	Temperature :	22~25°C
		Relative Humidity :	52~55%



Site : CO01-CA
 Condition : CISPR22 QP-CLASS B NNB51_L1_USA407 LINE
 Project : 190621001
 Power : AVR 120Vac/60Hz
 Mode : 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Aux	Remark	Pol/Phase
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Factor		
			dB	dBuV	dBuV	dB	dB	dB		
1	0.16	47.36	-18.02	65.38	27.40	9.84	0.06	10.06	QP	LINE
2	0.16	29.76	-25.62	55.38	9.80	9.84	0.06	10.06	Average	LINE
3	0.38	47.58	-10.67	58.25	27.58	9.85	0.07	10.08	QP	LINE
4	0.38	42.10	-6.15	48.25	22.10	9.85	0.07	10.08	Average	LINE
5	0.41	51.40	-6.19	57.59	31.40	9.85	0.07	10.08	QP	LINE
6	0.41	45.20	-2.39	47.59	25.20	9.85	0.07	10.08	Average	LINE
7	0.44	46.60	-10.38	56.98	26.60	9.85	0.07	10.08	QP	LINE
8	0.44	40.80	-6.18	46.98	20.80	9.85	0.07	10.08	Average	LINE
9	0.68	40.72	-15.28	56.00	20.71	9.86	0.07	10.08	QP	LINE
10	0.68	35.82	-10.18	46.00	15.81	9.86	0.07	10.08	Average	LINE
11	20.70	42.96	-17.04	60.00	22.61	10.12	0.14	10.09	QP	LINE
12	20.70	47.74	-2.26	50.00	27.39	10.12	0.14	10.09	Average	LINE



Site : CO01-CA
 Condition : CISPR22 QP-CLASS B NNB51_N_USA407 NEUTRAL
 Project : 190621001
 Power : AVR 120Vac/60Hz
 Mode : 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Aux Factor	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB		
1	0.37	46.22	-12.30	58.52	26.21	9.86	0.07	10.08	QP	NEUTRAL
2	0.37	35.00	-13.52	48.52	14.99	9.86	0.07	10.08	Average	NEUTRAL
3	0.41	51.79	-5.80	57.59	31.78	9.86	0.07	10.08	QP	NEUTRAL
4	0.41	45.99	-1.60	47.59	25.98	9.86	0.07	10.08	Average	NEUTRAL
5	0.46	45.01	-11.75	56.76	24.99	9.87	0.07	10.08	QP	NEUTRAL
6	0.46	37.98	-8.78	46.76	17.96	9.87	0.07	10.08	Average	NEUTRAL
7	0.68	39.93	-16.07	56.00	19.91	9.87	0.07	10.08	QP	NEUTRAL
8	0.68	32.33	-13.67	46.00	12.31	9.87	0.07	10.08	Average	NEUTRAL
9	4.03	37.06	-18.94	56.00	16.96	9.92	0.10	10.08	QP	NEUTRAL
10	4.03	30.37	-15.63	46.00	10.27	9.92	0.10	10.08	Average	NEUTRAL
11	20.59	42.22	-17.78	60.00	21.87	10.12	0.14	10.09	QP	NEUTRAL
12	20.59	37.43	-12.57	50.00	17.08	10.12	0.14	10.09	Average	NEUTRAL



Appendix C. Radiated Spurious Emission

Test Engineer :	HAO SYU	Temperature :	22~26°C
		Relative Humidity :	43~50%



2.4GHz 2400~2483.5MHz

ZIGBEE (Band Edge @ 3m)

ZIGBEE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	TaZigbee	Peak	Pol.	
		(MHz)	(dBµV/m)	(dB)	Limit Line	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
ZIGBEE CH 11 2405MHz		2389.695	56.34	-17.66	74	42.9	27.29	17.32	31.17	305	137	P	H	
		2367.015	44	-10	54	30.67	27.22	17.29	31.18	305	137	A	H	
	*	2405	109.2	-	-	95.68	27.33	17.35	31.16	305	137	P	H	
	*	2405	106.75	-	-	93.23	27.33	17.35	31.16	305	137	A	H	
													H	
													H	
			2327.64	56.82	-17.18	74	43.6	27.19	17.23	31.2	306	22	P	V
			2367.225	45.43	-8.57	54	32.03	27.29	17.29	31.18	306	22	A	V
	*		2405	115.42	-	-	101.83	27.4	17.35	31.16	306	22	P	V
	*		2405	112.99	-	-	99.4	27.4	17.35	31.16	306	22	A	V
														V
														V
ZIGBEE CH 18 2440MHz		2382.32	55.31	-18.69	74	41.9	27.27	17.31	31.17	360	140	P	H	
		2389.84	42.71	-11.29	54	29.27	27.29	17.32	31.17	360	140	A	H	
	*	2440	110.72	-	-	97.01	27.44	17.41	31.14	360	140	P	H	
	*	2440	106.22	-	-	92.51	27.44	17.41	31.14	360	140	A	H	
			2497.6	55.39	-18.61	74	41.39	27.61	17.5	31.11	360	140	P	H
			2496.4	43.44	-10.56	54	29.44	27.61	17.5	31.11	360	140	A	H
			2344.4	56.24	-17.76	74	42.94	27.23	17.26	31.19	300	22	P	V
			2388.72	43.88	-10.12	54	30.38	27.35	17.32	31.17	300	22	A	V
	*		2440	115.29	-	-	101.53	27.49	17.41	31.14	300	22	P	V
	*		2440	112.79	-	-	99.03	27.49	17.41	31.14	300	22	A	V
			2489.04	58.1	-15.9	74	44.1	27.63	17.49	31.12	300	22	P	V
			2498.24	44.56	-9.44	54	30.52	27.65	17.5	31.11	300	22	A	V



ZIGBEE CH 25 2475MHz	*	2475	109.68	-	-	95.8	27.54	17.46	31.12	285	143	P	H
	*	2475	107.18	-	-	93.3	27.54	17.46	31.12	285	143	A	H
		2489.48	57.06	-16.94	74	43.1	27.59	17.49	31.12	285	143	P	H
		2483.52	45.91	-8.09	54	31.98	27.57	17.48	31.12	285	143	A	H
													H
													H
	*	2475	116.16	-	-	102.23	27.59	17.46	31.12	287	20	P	V
	*	2475	113.63	-	-	99.7	27.59	17.46	31.12	287	20	A	V
		2483.92	60.71	-13.29	74	46.74	27.61	17.48	31.12	287	20	P	V
		2483.52	49.5	-4.5	54	35.53	27.61	17.48	31.12	287	20	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
ZIGBEE (Harmonic @ 3m)**

ZIGBEE	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	TaZigbee Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
ZIGBEE CH 11 2405MHz		4810	52.58	-21.42	74	68.68	31.22	11.84	59.16	393	143	P	H	
		4810	44.52	-29.48	74	60.62	31.22	11.84	59.16	393	143	A	H	
													H	
													H	
			4810	54.55	-19.45	74	70.5	31.37	11.84	59.16	272	198	P	V
			4810	47.23	-6.77	54	63.18	31.37	11.84	59.16	272	198	A	V
														V
ZIGBEE CH 18 2440MHz		4880	51.48	-22.52	74	67.67	31.33	11.66	59.18	398	145	P	H	
		4880	43.44	-30.56	74	59.63	31.33	11.66	59.18	398	145	A	H	
		7320	53.27	-20.73	74	62.35	35.96	14.13	59.17	400	36	P	H	
		7320	42.21	-31.79	74	51.29	35.96	14.13	59.17	400	36	A	H	
		4880	53.46	-20.54	74	69.47	31.51	11.66	59.18	298	200	P	V	
		4880	45.93	-8.07	54	61.94	31.51	11.66	59.18	298	200	A	V	
		7320	55.85	-18.15	74	64.86	36.03	14.13	59.17	279	168	P	V	
		7320	46.79	-7.21	54	55.8	36.03	14.13	59.17	279	168	A	V	
ZIGBEE CH 25 2475MHz		4950	51.93	-22.07	74	68.22	31.43	11.47	59.19	400	179	P	H	
		4950	44.02	-9.98	54	60.31	31.43	11.47	59.19	400	179	A	H	
		7425	53.7	-20.3	74	62.38	36.23	14.22	59.13	400	35	P	H	
		7425	44.37	-9.63	54	53.05	36.23	14.22	59.13	400	35	A	H	
		4950	55.09	-18.91	74	71.16	31.65	11.47	59.19	269	204	P	V	
		4950	47.6	-6.4	54	63.67	31.65	11.47	59.19	269	204	A	V	
		7425	56.38	-17.62	74	64.99	36.3	14.22	59.13	222	219	P	V	
		7425	47.38	-6.62	54	55.99	36.3	14.22	59.13	222	219	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



Emission below 1GHz

2.4GHz ZIGBEE (LF)

ZIGBEE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	TaZigbee	Peak	Pol.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz ZIGBEE LF		30	21.48	-18.52	40	28.28	24.7	0.93	32.43	-	-	P	H	
		131.85	16.98	-26.52	43.5	29.74	17.7	1.94	32.4	-	-	P	H	
		410.24	23.09	-22.91	46	30.22	22.31	3.17	32.61	-	-	P	H	
		583.87	28.01	-17.99	46	31.36	25.72	3.78	32.85	-	-	P	H	
		779.81	30.58	-15.42	46	30.57	28.1	4.55	32.64	-	-	P	H	
		954.41	33.85	-12.15	46	29.37	30.89	5.04	31.45	100	0	P	H	
														H
														H
														H
														H
														H
														H
			30.97	21.17	-18.83	40	28.34	24.31	0.95	32.43	-	-	P	V
			133.79	17.17	-26.33	43.5	29.9	17.7	1.97	32.4	-	-	P	V
			433.52	23.19	-22.81	46	29.61	22.83	3.39	32.64	-	-	P	V
			676.02	28.61	-17.39	46	30.69	26.48	4.29	32.85	-	-	P	V
			844.8	31.9	-14.1	46	30.51	28.89	4.82	32.32	-	-	P	V
			946.65	34.39	-11.61	46	30.19	30.73	5	31.53	100	0	P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

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

ZIGBEE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	TaZigbee	Peak	Pol.
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
ZIGBEE		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 00		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2402MHz													

1. Path Loss(dB) = CaZigbee loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBµV/m) =
Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBµV/m) – Limit Line(dBµV/m)

For Peak Limit @ 2390MHz:

1. Level(dBµV/m)
= Antenna Factor(dB/m) + Path 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) + Path 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 D. Radiated Spurious Emission Plots

Test Engineer :	HAO SYU	Temperature :	22~26°C
		Relative Humidity :	43~50%

Note symbol

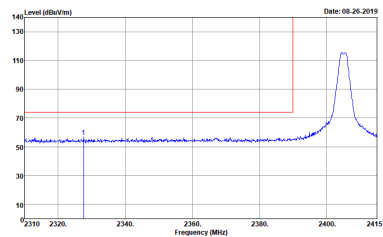
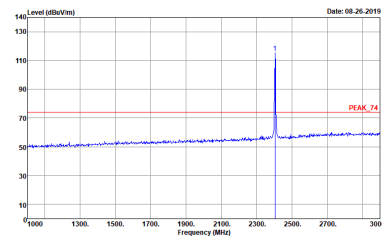
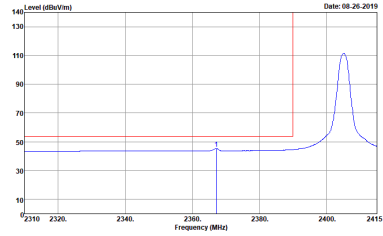
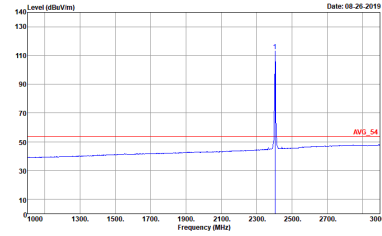
-L	Low channel location
-R	High channel location



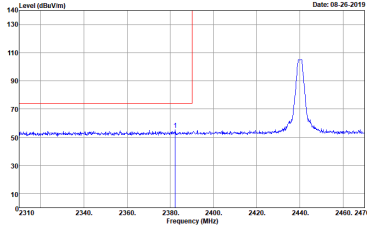
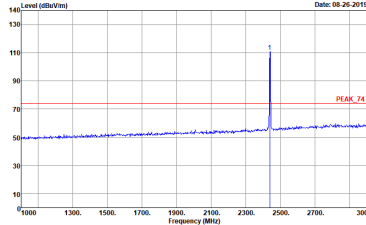
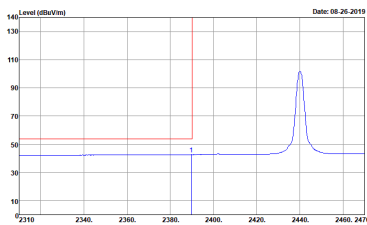
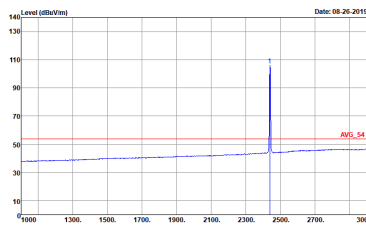
2.4GHz 2400~2483.5MHz
ZIGBEE (Band Edge @ 3m)

ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	ZIGBEE CH11 2405MHz	
	Horizontal	Fundamental
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>
Avg.	<p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>	<p>Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>



ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	ZIGBEE CH11 2405MHz	
	Vertical	Fundamental
Peak	 <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>	 <p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>
Avg	 <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>	 <p>Site : 03CH02-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 20</p>

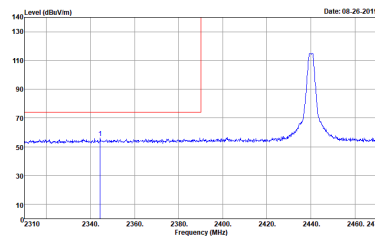
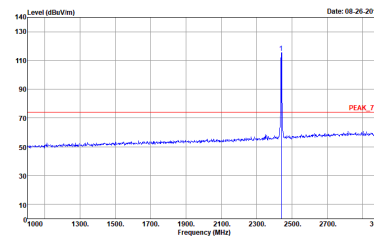
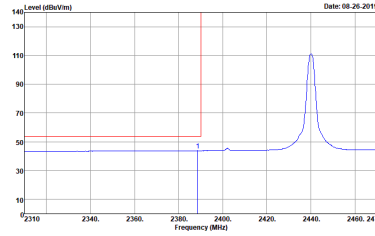
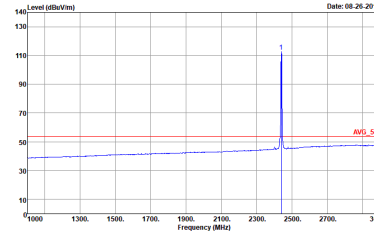


ZIGBEE		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
		ZIGBEE CH18 2440MHz - L	
		Horizontal	Fundamental
Peak	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	
Avg.	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	

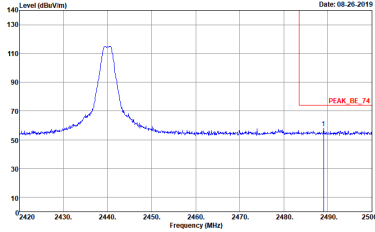
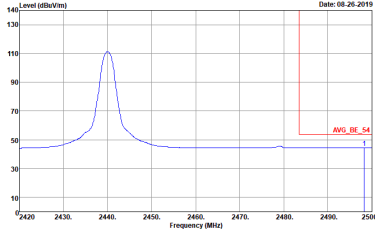


ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	ZIGBEE CH18 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : Z0</p>	Left blank
Avg.	<p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000kHz VBW:3.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : Z0</p>	Left blank



ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ZIGBEE CH18 2440MHz - L		
Vertical		Fundamental
<p>Peak</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>
<p>Avg.</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 20</p>

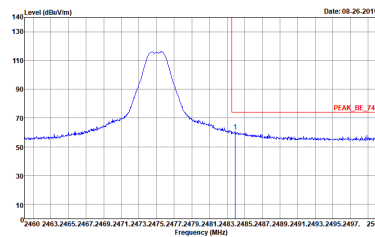
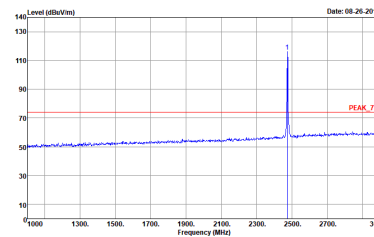
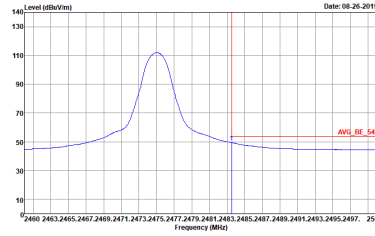
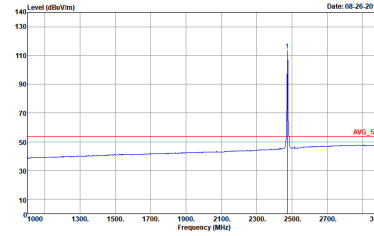


ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ZIGBEE CH18 2440MHz - R		
Vertical		Fundamental
<p>Peak</p>	 <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : Z0</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : Z0</p>	<p>Left blank</p>



ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	ZIGBEE CH25 2475MHz	
	Horizontal	Fundamental
<p>Peak</p>	<p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>	<p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>
<p>Avg.</p>	<p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>	<p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>



ZIGBEE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	ZIGBEE CH25 2475MHz	
	Vertical	Fundamental
<p>Peak</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>
<p>Avg.</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>	 <p>Date: 08-26-2019</p> <p>Site : 03CH02-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 6 Plane : X_With POE Setting : 20</p>



2.4GHz 2400~2483.5MHz

ZIGBEE (Harmonic @ 3m)

ZIGBEE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	ZIGBEE CH11 2405MHz	
	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : -4 Plane : -X_With POE Setting : 20</p>	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : -4 Plane : -X_With POE Setting : 20</p>



ZIGBEE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	ZIGBEE CH18 2440MHz	
	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : 20</p>	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : S Plane : X_With POE Setting : 20</p>



ZIGBEE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	ZIGBEE CH25 2475MHz	
	Horizontal	Vertical
Peak	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 16 Plane : X_With POE Setting : 20</p>	<p>Site : 03CH02-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 16 Plane : X_With POE Setting : 20</p>



Emission below 1GHz

2.4GHz ZIGBEE (LF)

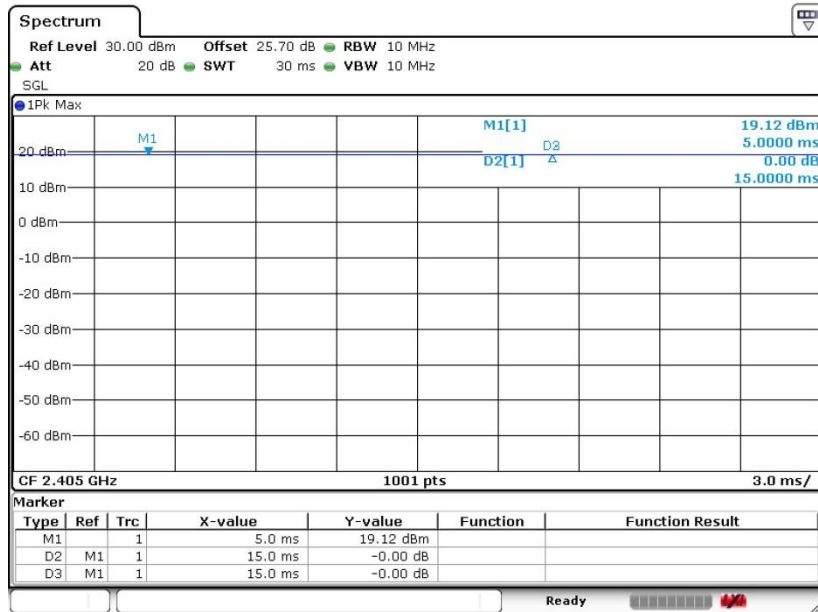
ZIGBEE	2.4GHz 2400~2483.5MHz	
	ZIGBEE LF	
	Horizontal	Vertical
QP / Peak	<p>Site : 03CH02-CA Condition : QP 3m BTL06-6111D-LF_50392 HORIZONTAL Detector : Peak Project : 190621001 Mode : Z1</p>	<p>Site : 03CH02-CA Condition : QP 3m BTL06-6111D-LF_50392 VERTICAL Detector : Peak Project : 190621001 Mode : Z1</p>



Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	Zigbee	100	0	0	10Hz	0.00

Zigbee



Date: 26.AUG.2019 11:10:22