FCC RADIO TEST REPORT

FCC ID	:	**2AEM4-71213573**
Equipment	:	**Wireless router/access point**
Brand Name	:	**eero**
Model Name	:	**S010001**
Applicant	:	**eero LLC** **660 3rd Street, 4th Floor, San Francisco, CA 94107**
Manufacturer	:	**eero LLC** **660 3rd Street, 4th Floor, San Francisco, CA 94107**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Aug. 10, 2021 and testing was started from Aug. 11, 2021 and completed on Oct. 19, 2021. 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 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: Neil Kao

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

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FR210727001A	01	Initial issue of report	Nov. 17, 2021
FR210727001A	02	Revise some content of descriptions	Dec. 16, 2021

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)	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 0.14 dB at 2483.500 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 10.48 dB at 0.492 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

The EUT is an indoor AP with radios including Bluetooth - LE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac/ax, 802.15.4 (Zigbee), equipped with integrated antennas configured below:

Antenna configuration	
Antenna Type	**WLAN 2.4GHz** <Ant. 6>: Flexible PCB Antenna <Ant. 3>: Flexible PCB Antenna **WLAN 5GHz** <Ant. 4>: Flexible PCB Antenna <Ant. 5>: Flexible PCB Antenna **Bluetooth - LE:** Flexible PCB Antenna **Zigbee:** Flexible PCB Antenna

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	3.24

Remark: The above EUT's information is declared by the manufacturer. Please refer to Comments and Explanations in report summary.

Specification of Accessories				
Adapter 1	**Brand Name**	**eero**	**Model Name**	C210001
Adapter 2	**Brand Name**	**eero**	**Model Name**	C210003
Adapter 3	**Brand Name**	**eero**	**Model Name**	C210004
Adapter 4	**Brand Name**	**eero**	**Model Name**	C210005

Remark: The manufacturer declares that all the power supplies listed are electrically identical from one another, the only difference between all the models are the plugs designed for use in different countries. All the test is performed with only one power supply, model C210001 as shown in this report.

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.**
	CO01-CA, 03CH02-CA, TH01-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:

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

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

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).

Radiated measurements are performed in one orientation which is plane X according to the prescribed placement of the device in normal operation declared by the manufacturer.

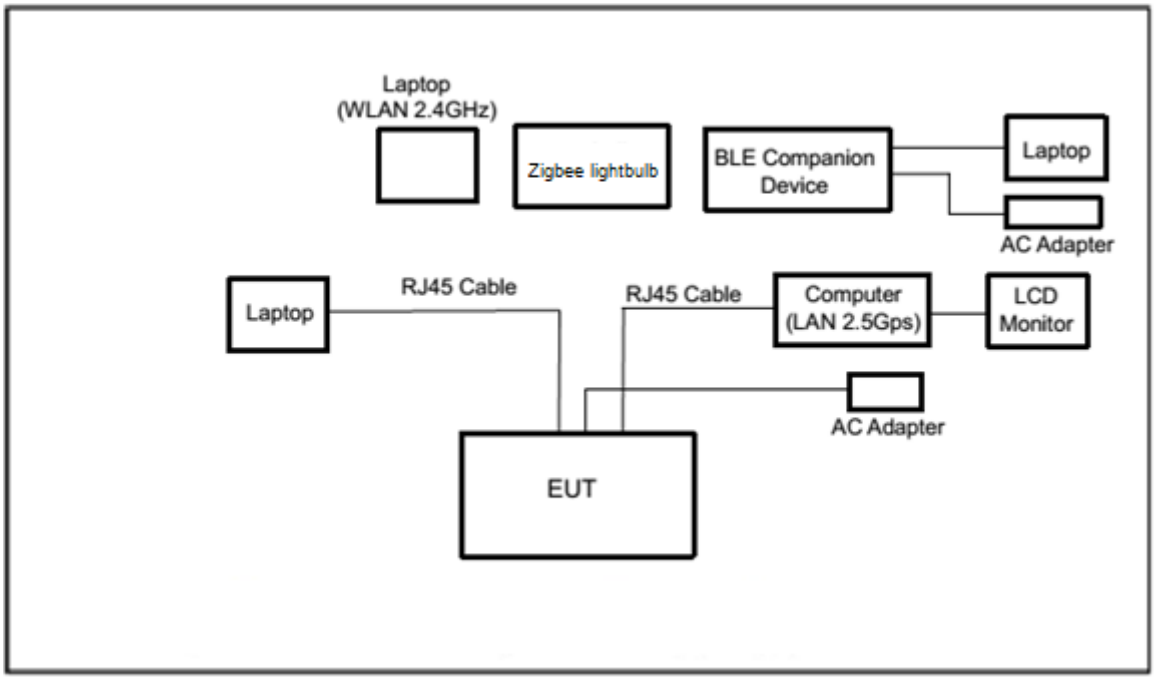
b. AC power line Conducted Emission was tested under maximum output power.

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

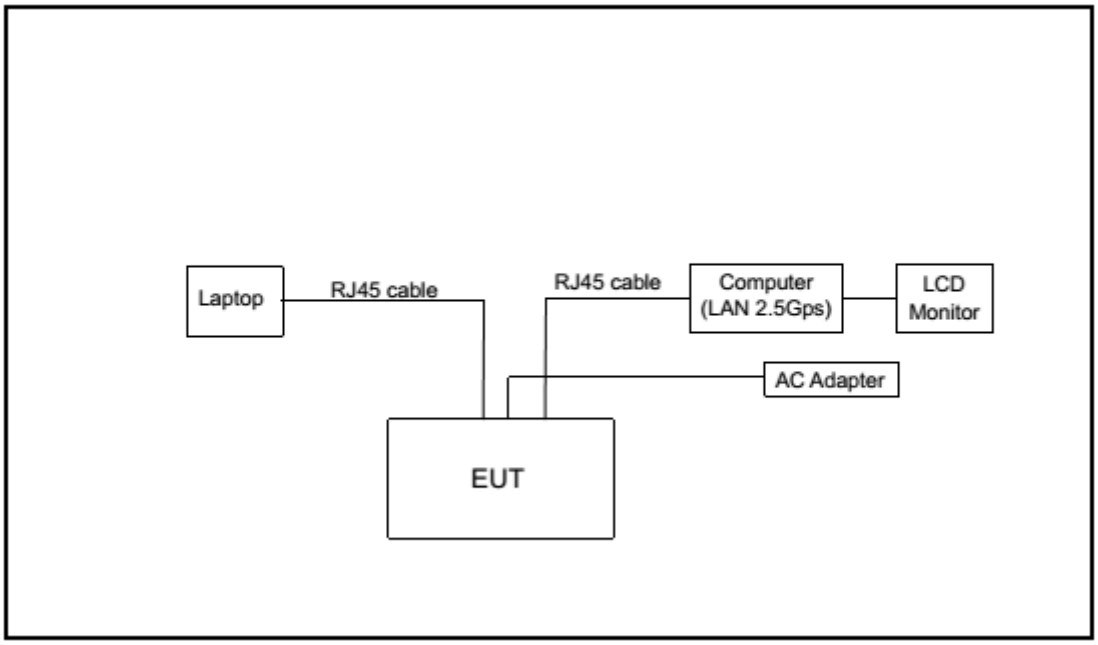
Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Conducted Test Cases	**Bluetooth – LE / GFSK**
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH38_2478 MHz_2Mbps
	Mode 7: Bluetooth Tx CH39_2480 MHz_2Mbps
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH38_2478 MHz_2Mbps
	Mode 7: Bluetooth Tx CH39_2480 MHz_2Mbps
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Zigbee Link + LAN 1 Link + LAN 2 Link + Adapter
	Mode 2: WLAN (2.4GHz) Link + Bluetooth Link + LAN 1 Link + LAN 2 Link + Adapter
Remark: The worst case of conducted emission is mode 1; only the test data of it was reported.	

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<Radiated Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Acer	PS548 G1	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	HP	14-dq1043cl	TX2-RTL8822 CE	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Computer	Fractal	FD-C-DEF7A-01 (NETINTX550TR Intel X550T2BLK)	FCC DoC	N/A	Unshielded, 1.2 m
4.	LCD Monitor	Samsung	LS27E310HZG/ZA	FCC DoC	N/A	Unshielded, 1.2 m
5.	BLE Companion Device	eero	S010001	N/A	N/A	N/A
6.	Light Bulb for Zigbee	Philips	Hue	N/A	N/A	N/A
7.	Notebook	ThinkPad	ThinkPad X1 Carbon Gen 8	FCC DoC	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 “Radio Control Console V4.0.0.0” 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 10 dB 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.

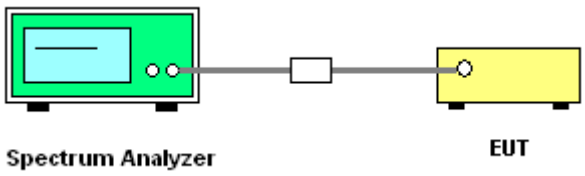
3.1.2 Measuring Instruments

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 the maximum power setting and enable the EUT to 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 6dB 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) ≥ 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.

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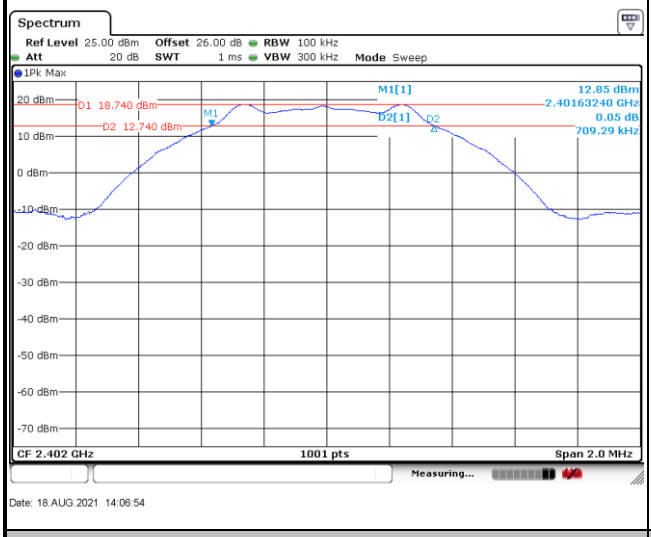
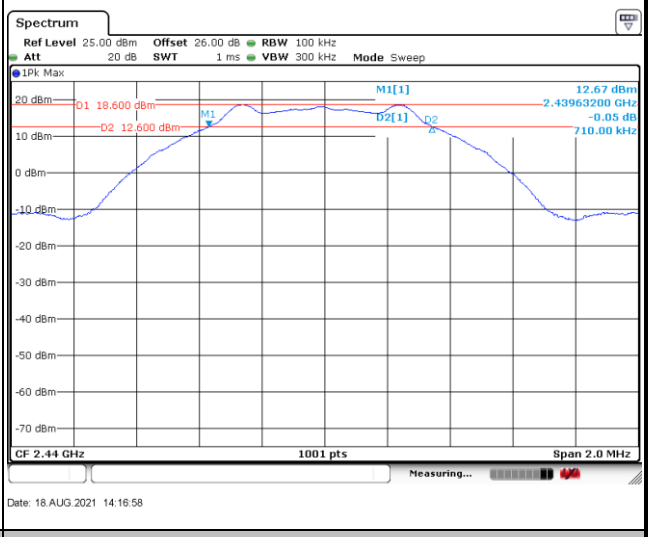
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
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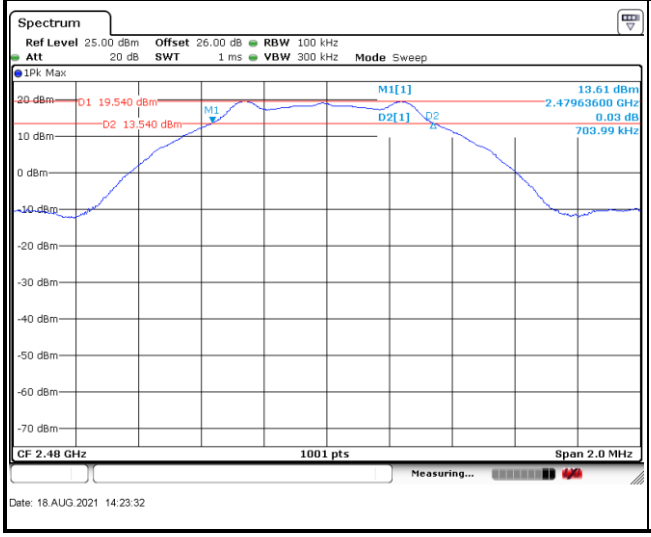	

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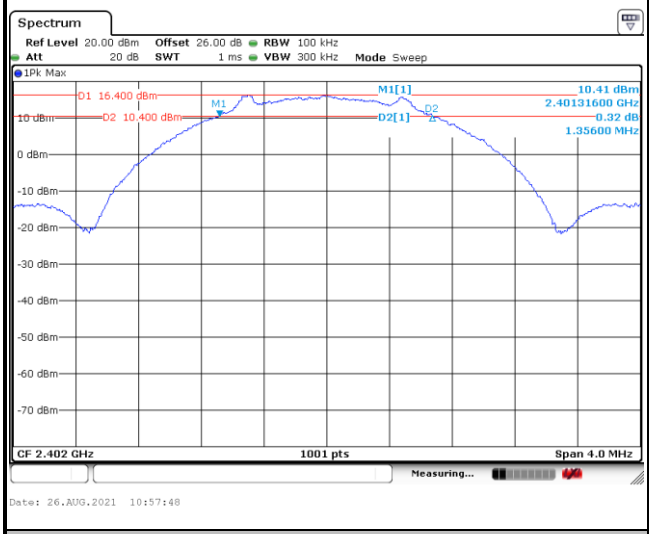
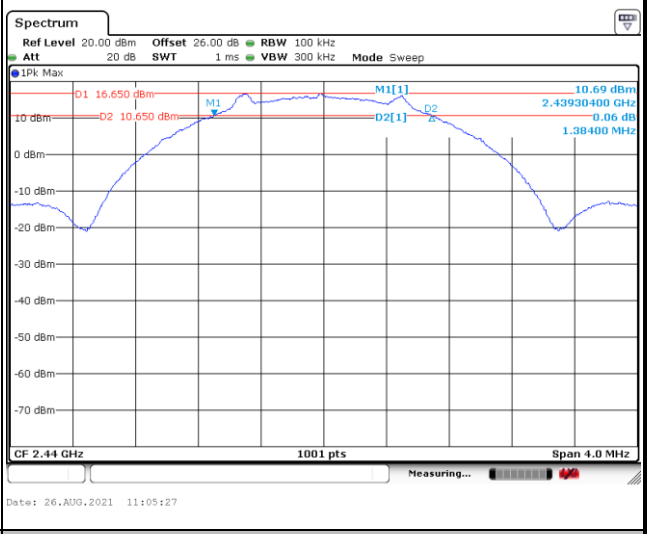
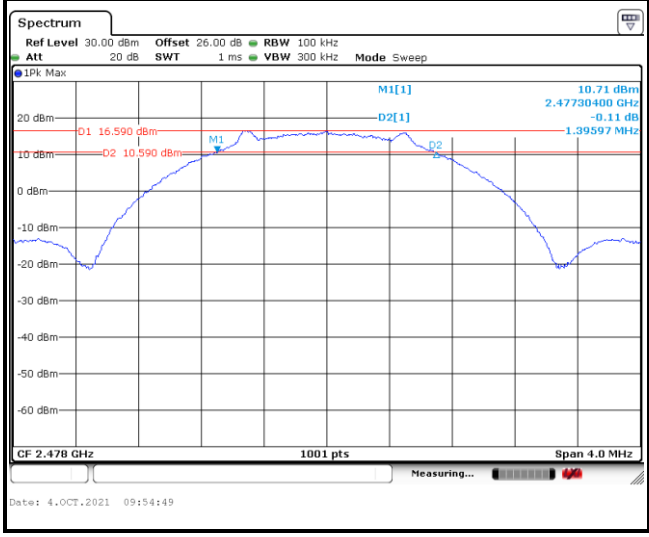
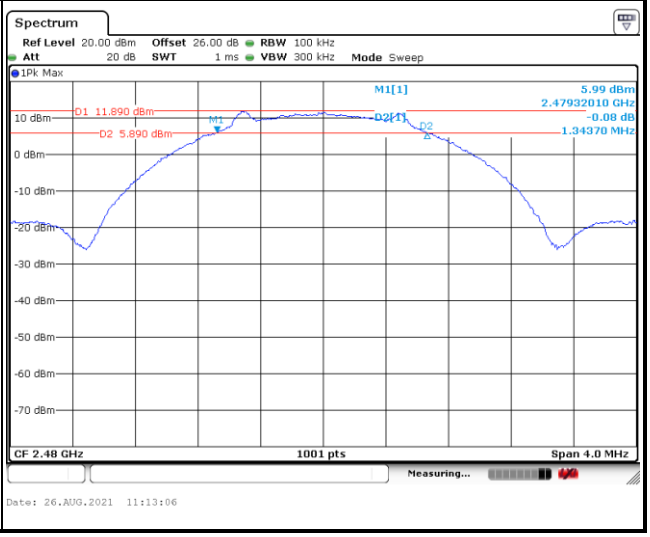
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
6 dB Bandwidth Plot on Channel 38	**6 dB Bandwidth Plot on Channel 39**
	

3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

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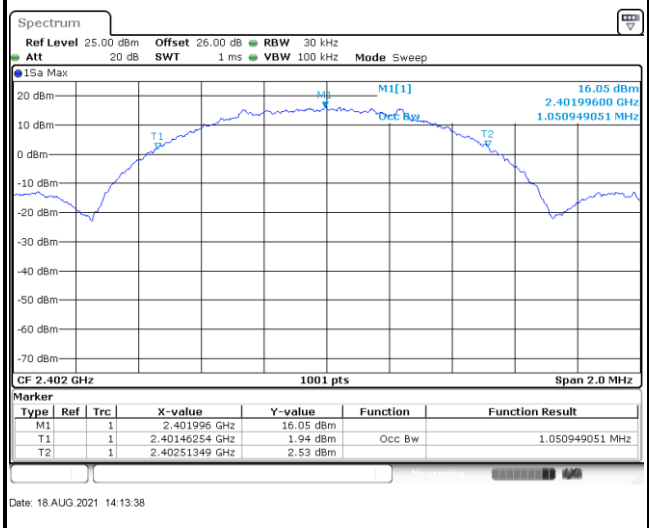
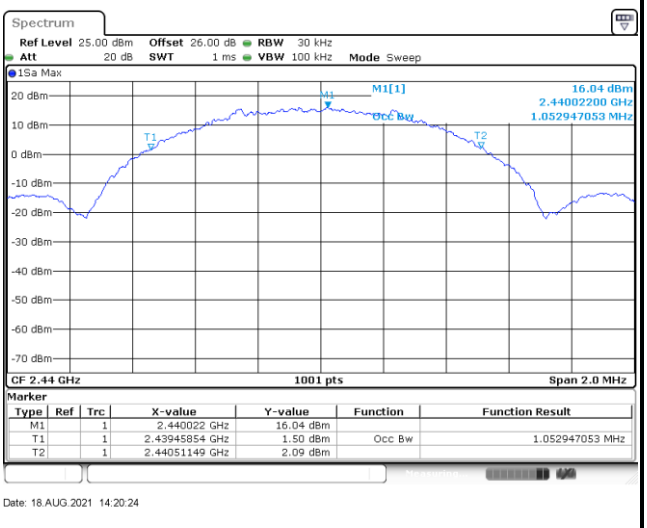
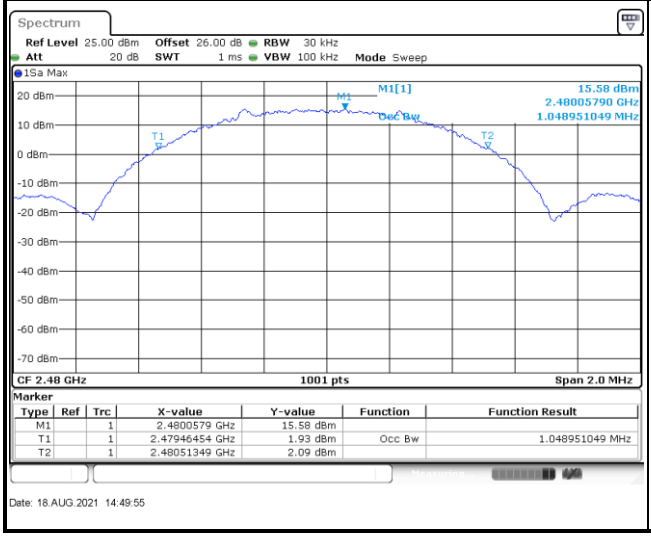
99% Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
	
99% Occupied Bandwidth Plot on Channel 39	**N/A**
	

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

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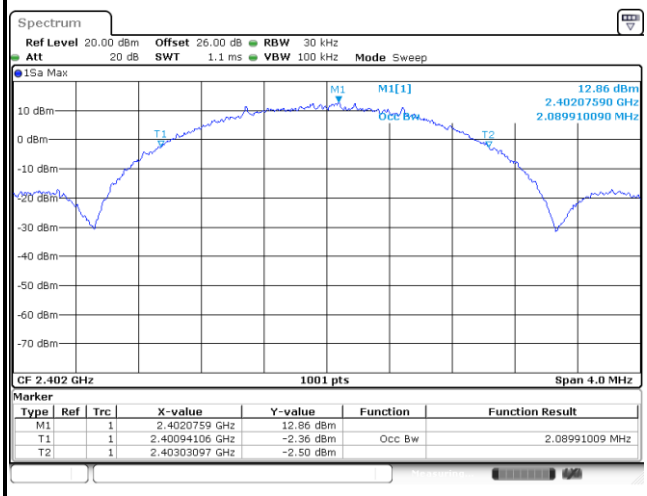
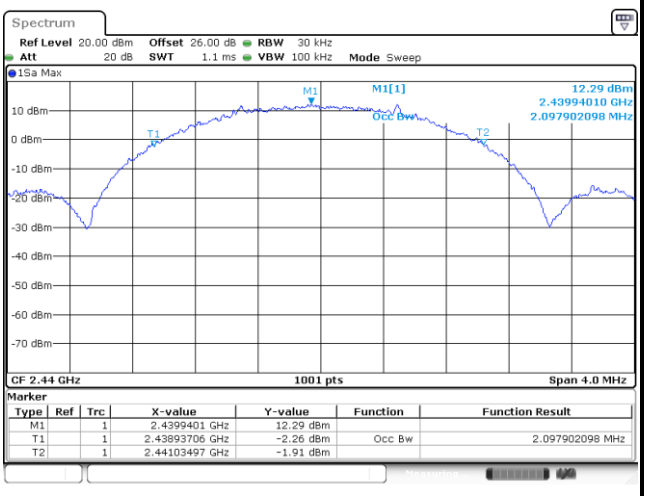
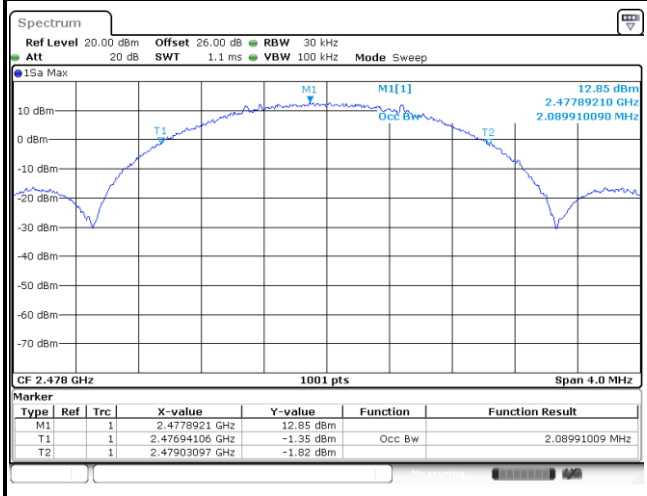
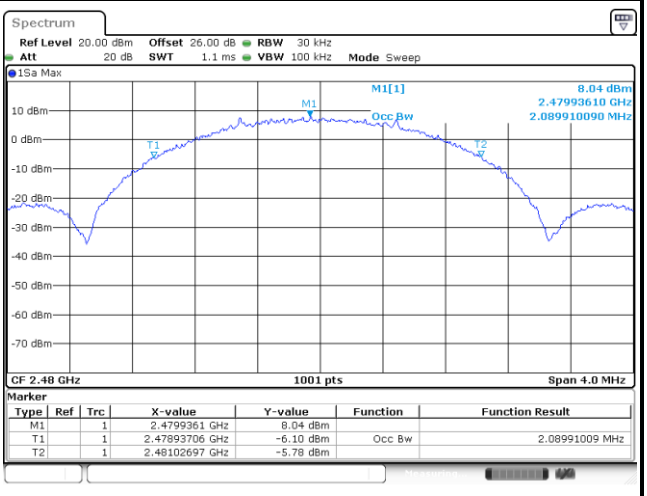
99% Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
	
99% Occupied Bandwidth Plot on Channel 38	**99% Occupied Bandwidth Plot on Channel 39**
	

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

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi 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 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

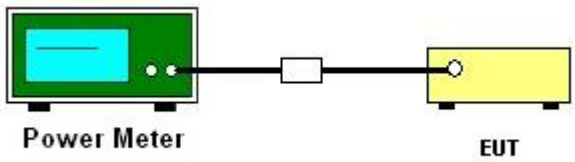
3.2.2 Measuring Instruments

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 the maximum power setting and enable the EUT to 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 8 dBm in any 3 kHz 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 the maximum power setting and enable the EUT to 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)/ 100 kHz is a reference level and is used as 20 dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

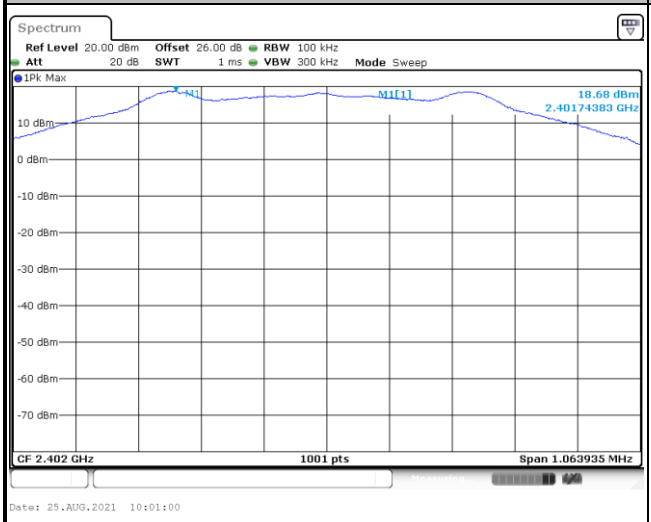
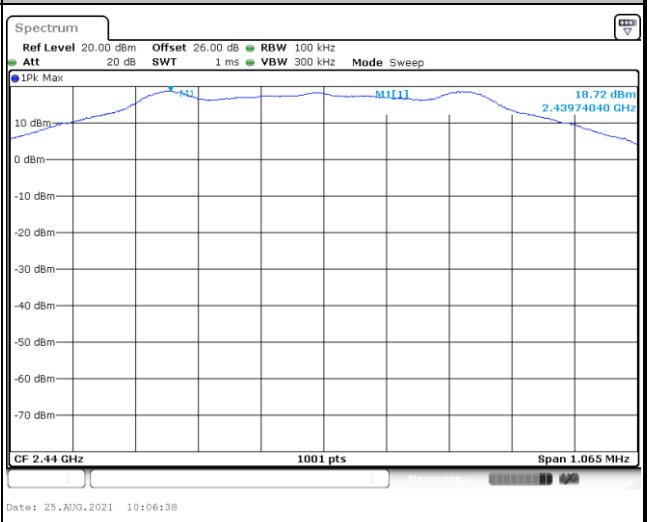
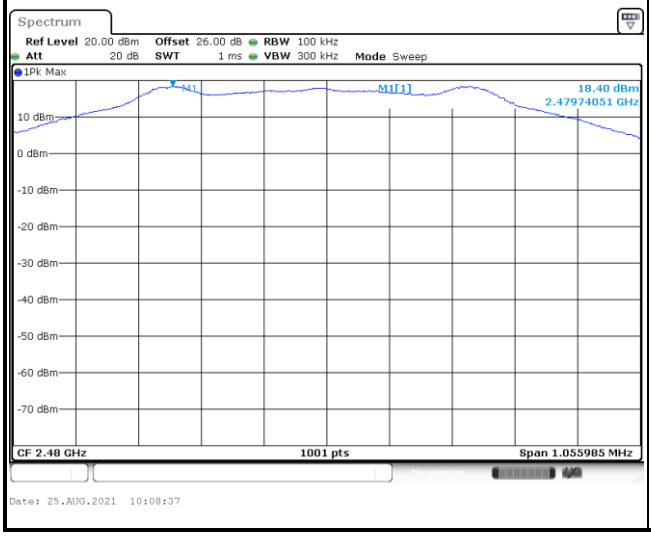
3.3.4 Test Setup

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)

<1Mbps>

PSD 100kHz Plot on Channel 00	PSD 100kHz Plot on Channel 19
	
PSD 100kHz Plot on Channel 39	**N/A**
	

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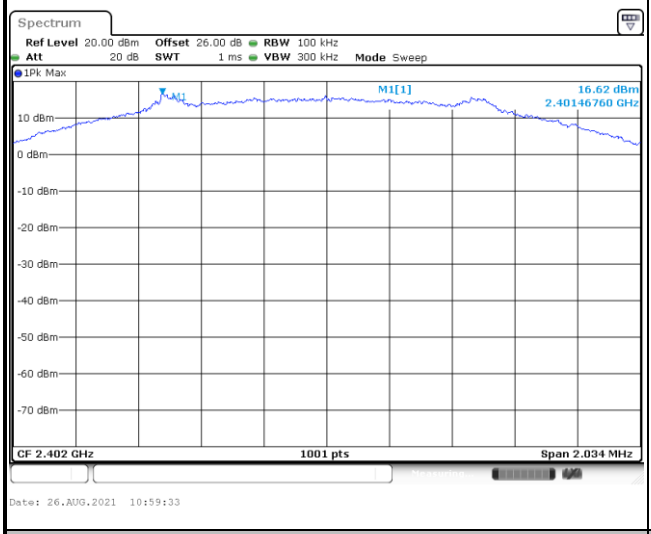
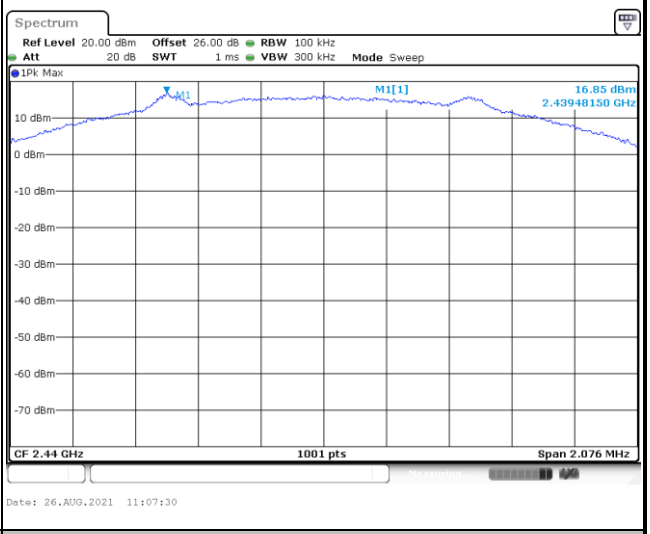
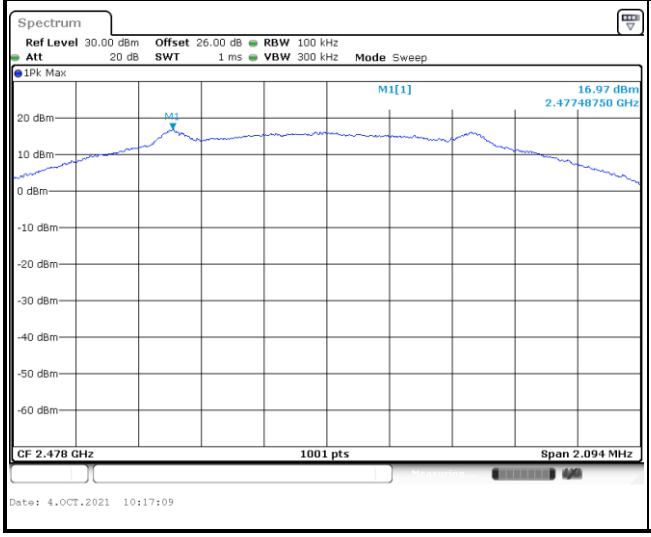
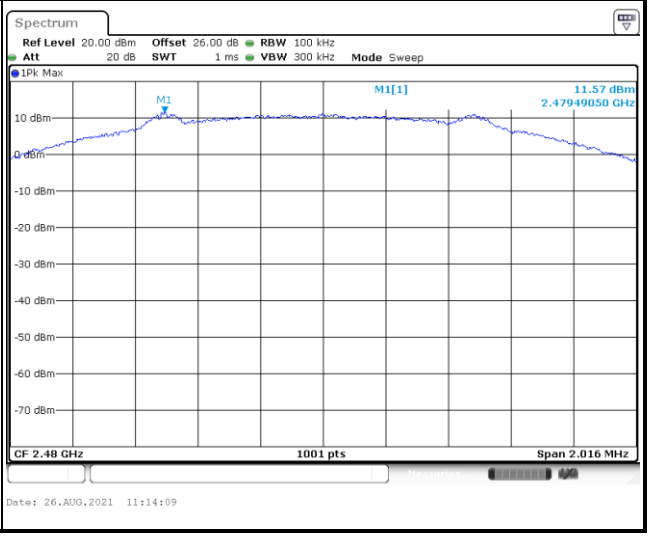
PSD 100kHz Plot on Channel 00	PSD 100kHz Plot on Channel 19
	
PSD 100kHz Plot on Channel 38	**PSD 100kHz Plot on Channel 39**
	

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

<1Mbps>

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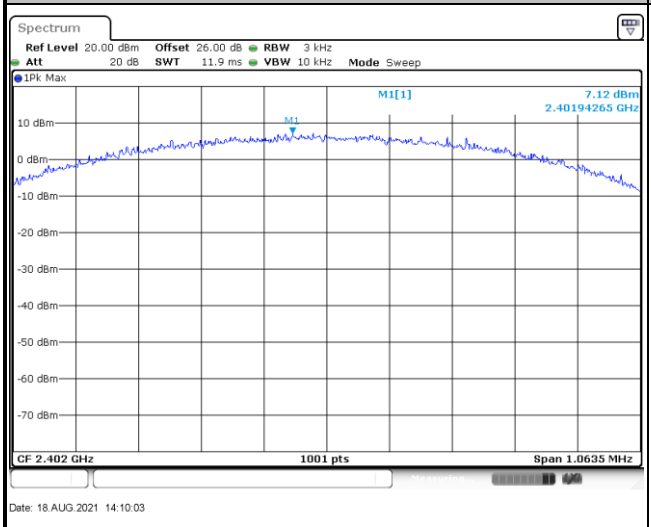
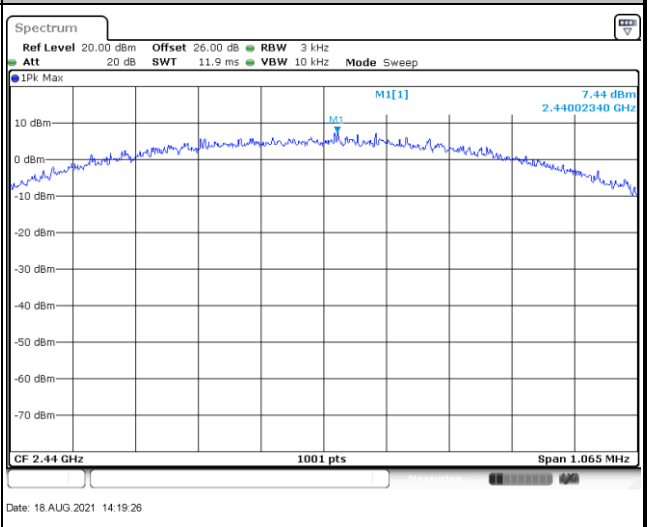
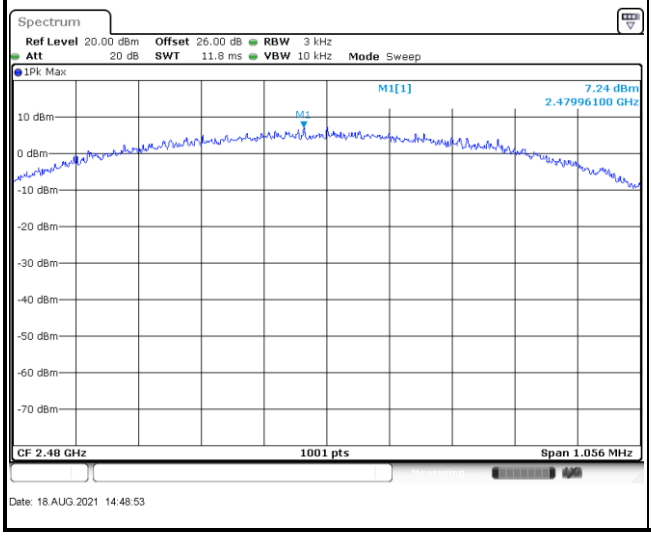
	
PSD 3kHz Plot on Channel 39	**N/A**
	

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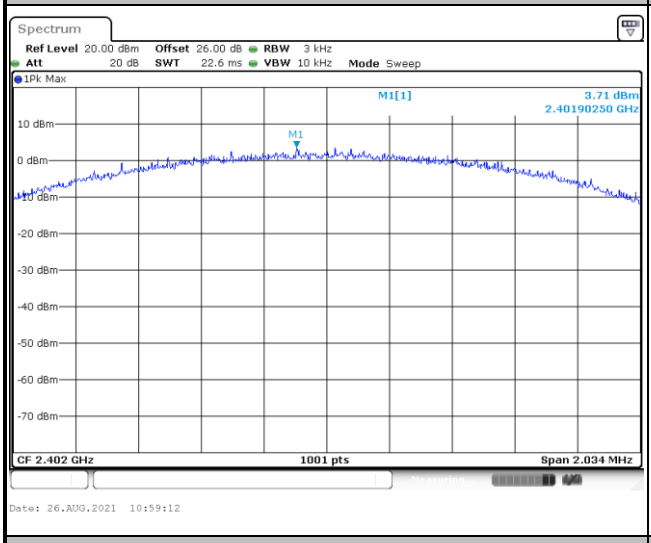
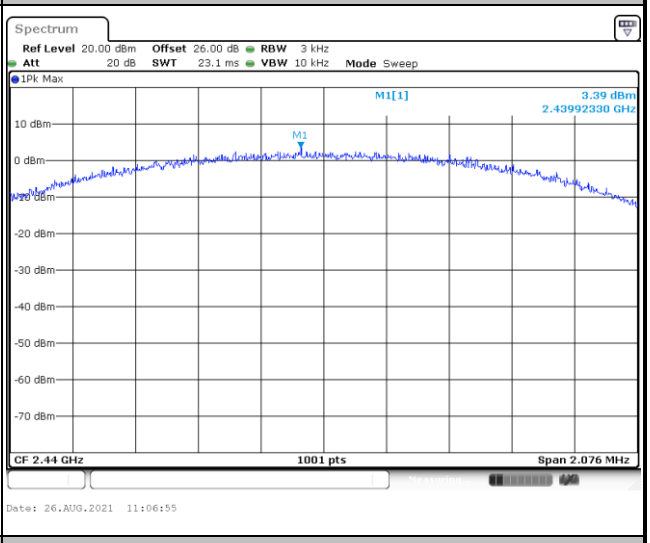
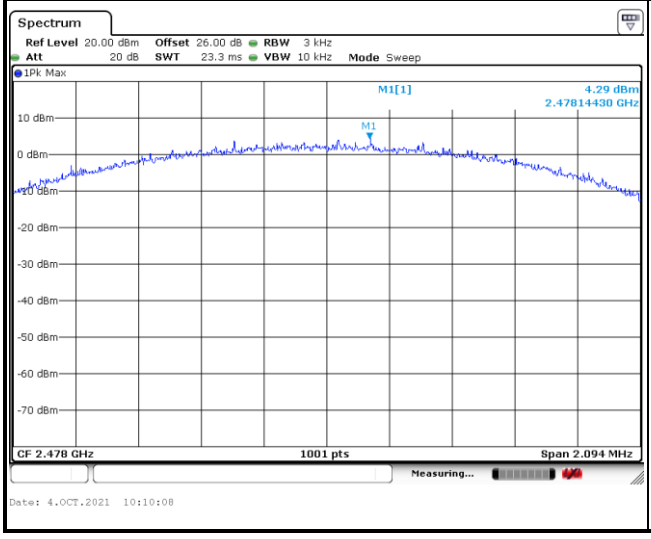
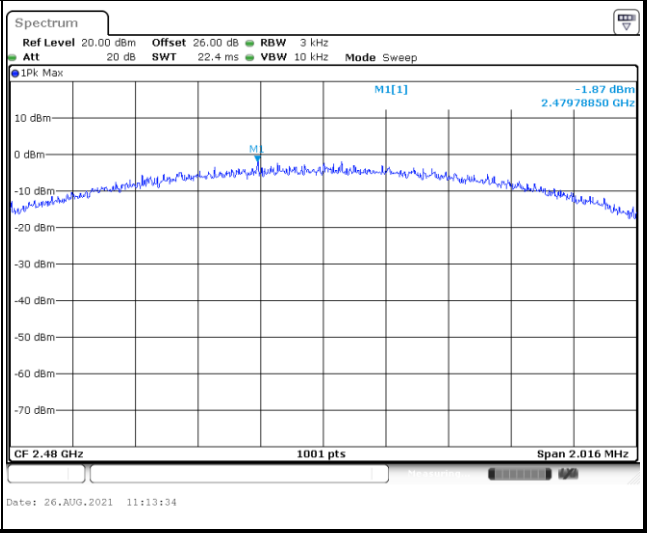
PSD 3kHz Plot on Channel 00	PSD 3kHz Plot on Channel 19
	
PSD 3kHz Plot on Channel 38	**PSD 3kHz Plot on Channel 39**
	

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.

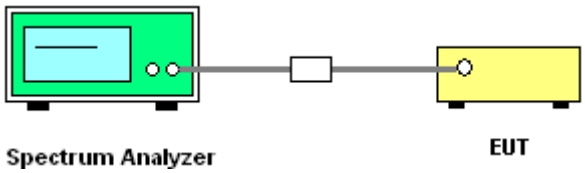
3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedure

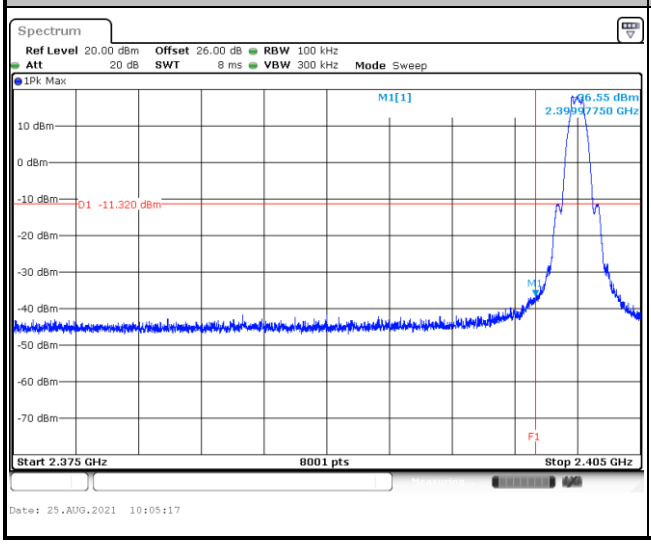
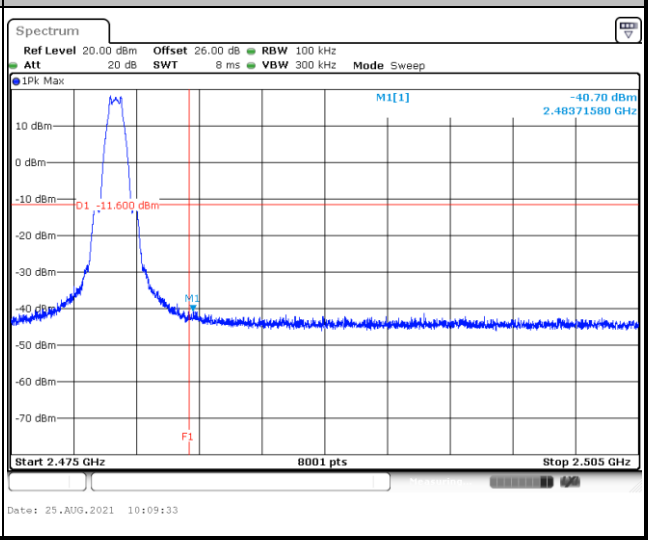
1. The testing follows the ANSI C63.10 Section 11.11.1 General and 11.11.3 Emission level measurement.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to 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

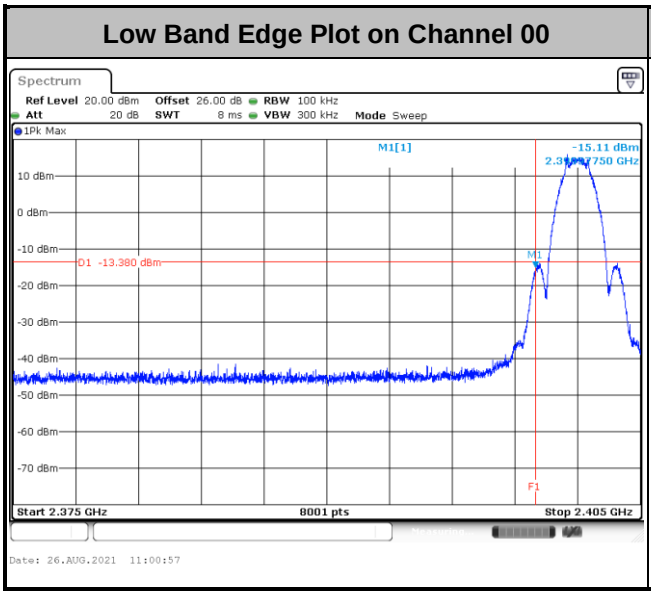
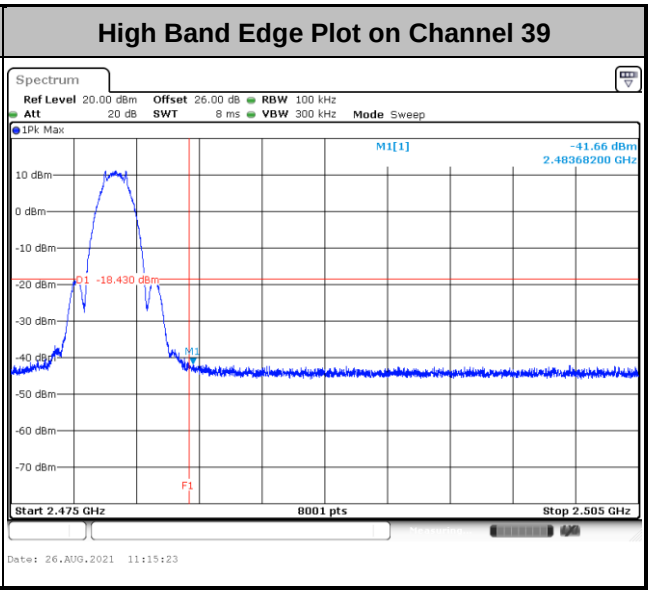


3.4.5 Test Result of Conducted Band Edges Plots

<1Mbps>

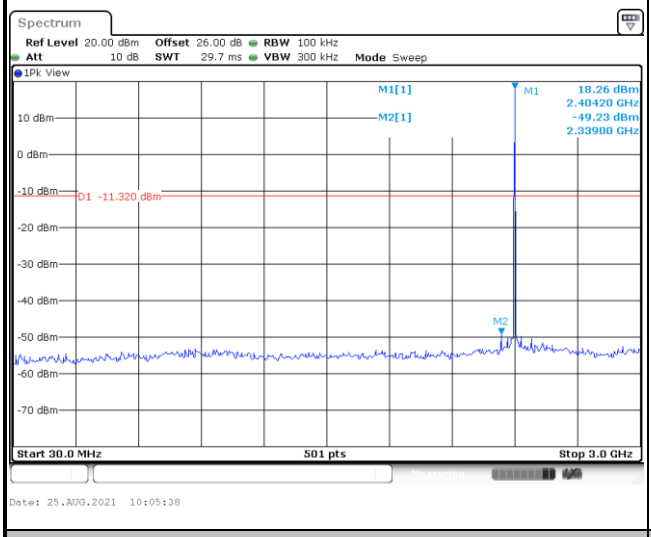
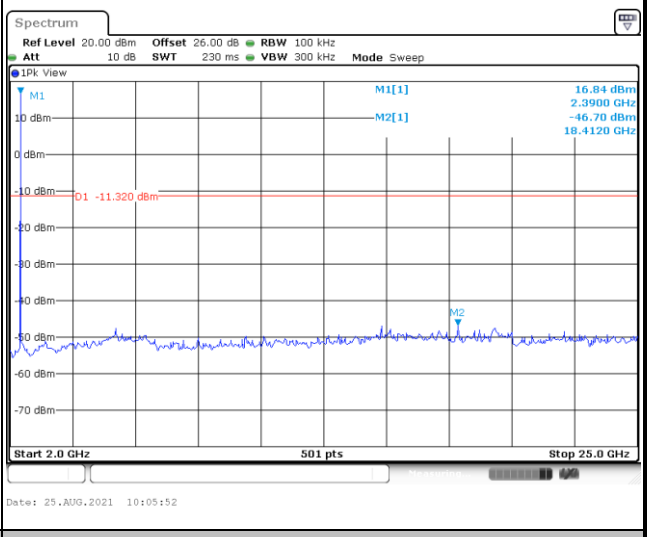
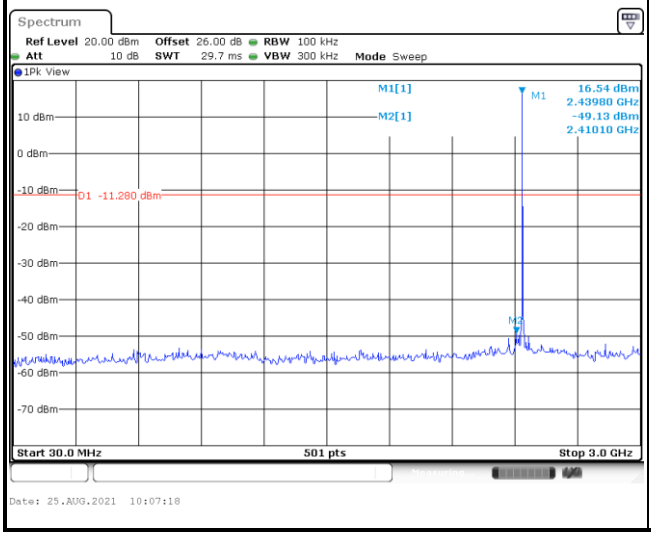
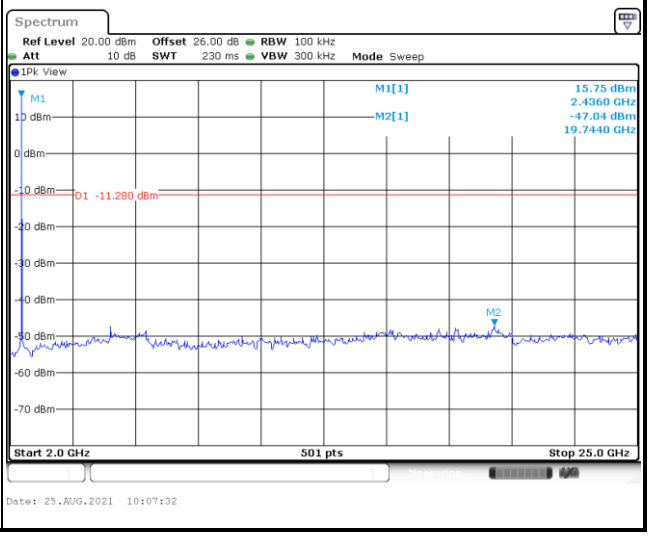
Low Band Edge Plot on Channel 00	High Band Edge Plot on Channel 39
	

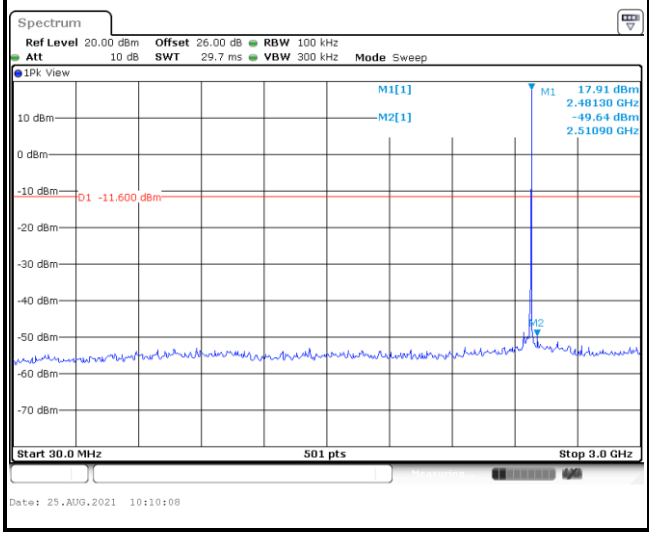
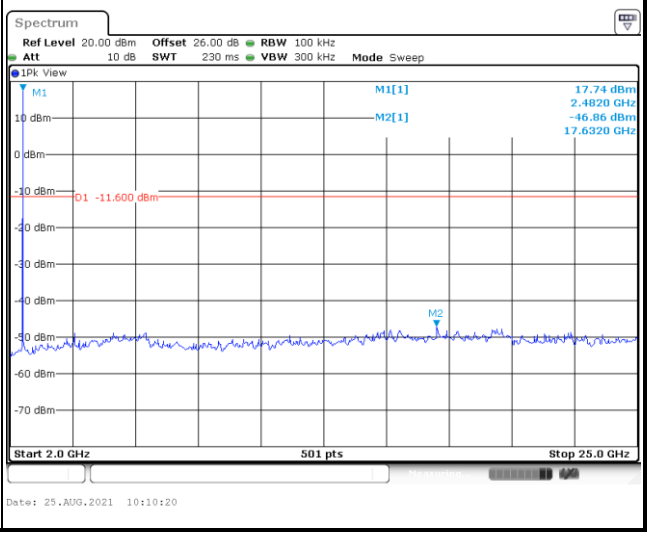
<2Mbps>

Low Band Edge Plot on Channel 00	High Band Edge Plot on Channel 39
	

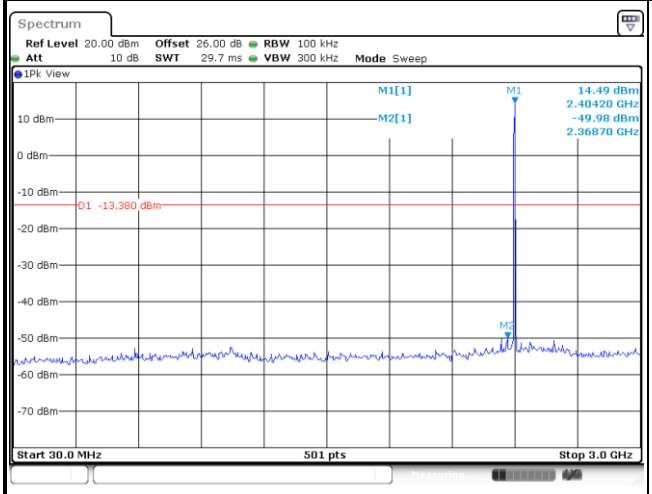
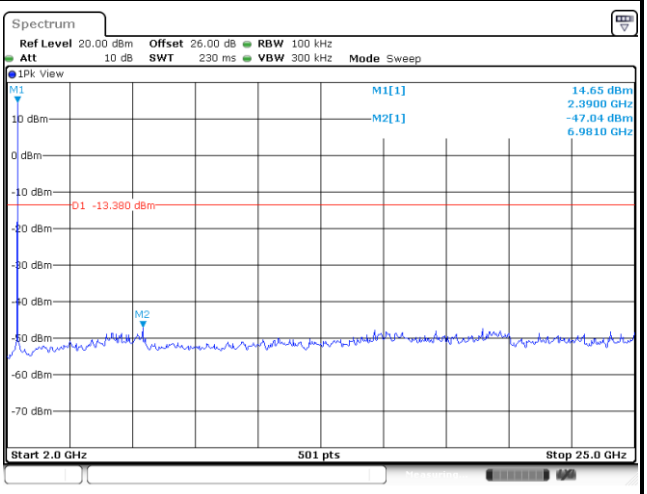
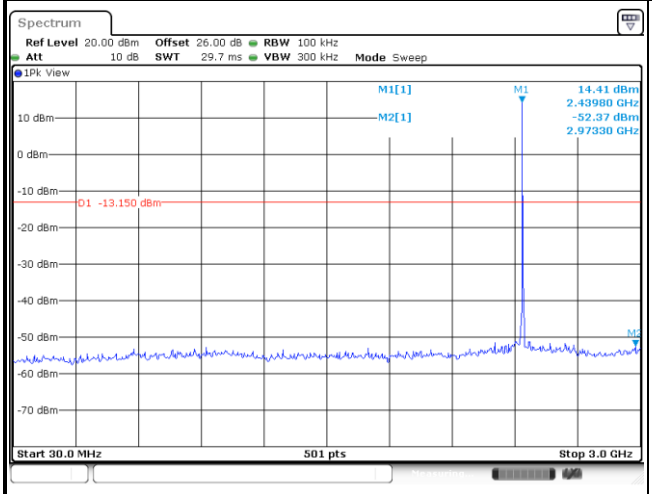
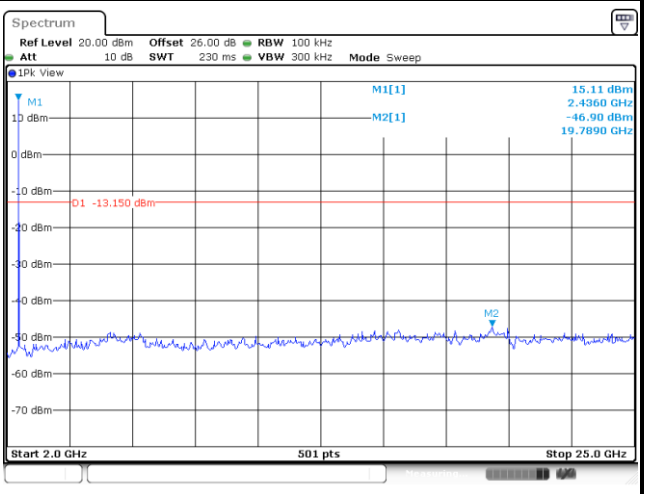
3.4.6 Test Result of Conducted Spurious Emission Plots

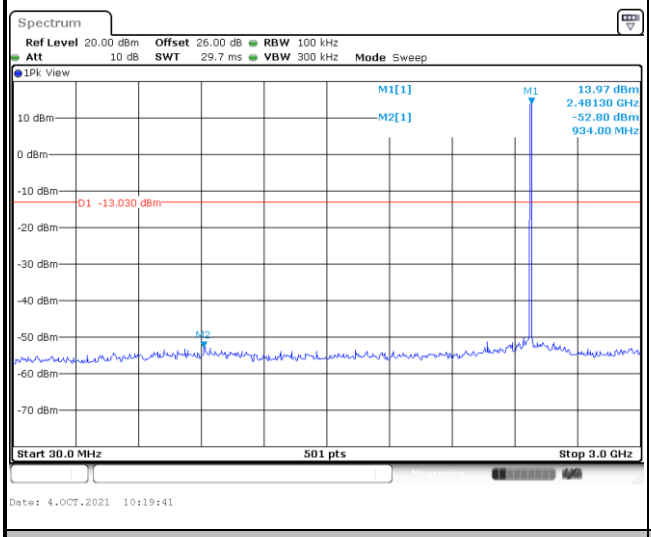
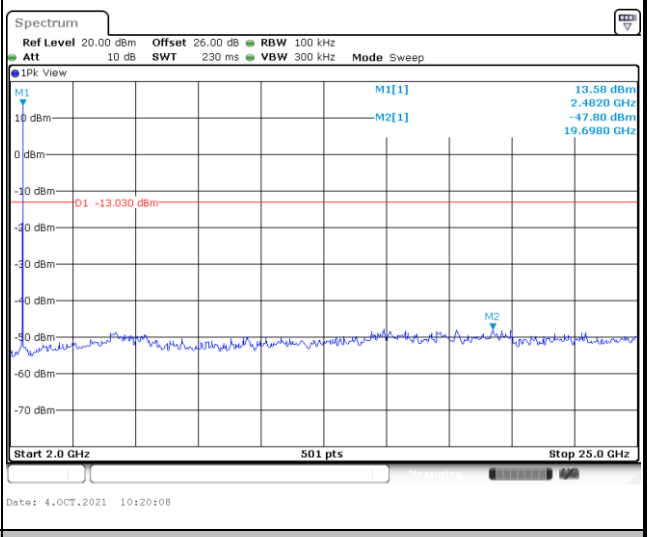
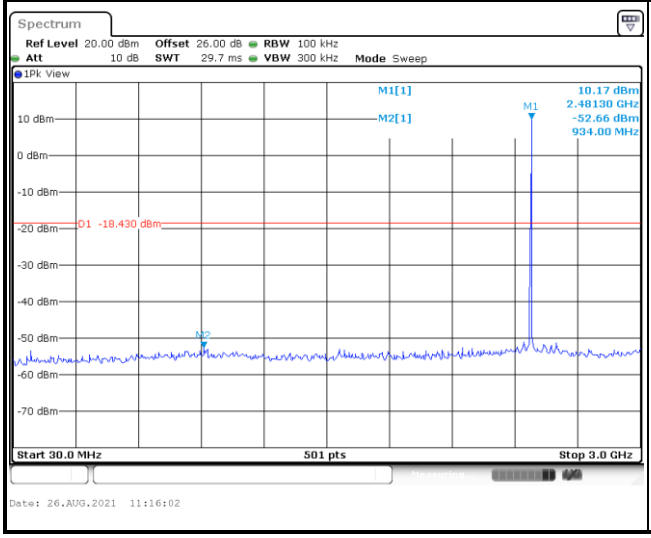
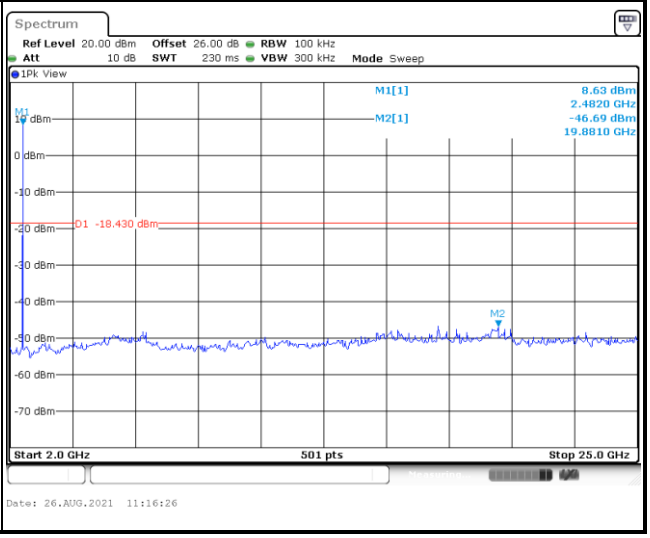
<1Mbps>

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 00	Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 00
	
Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 19	**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 19**
	

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 39	Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 39
	

<2Mbps>

Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 00	Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 00
	
Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 19	**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 19**
	

Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 38	Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 38
	
Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 39	**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 39**
	

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 shall comply with the general field strength limits as following table:

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

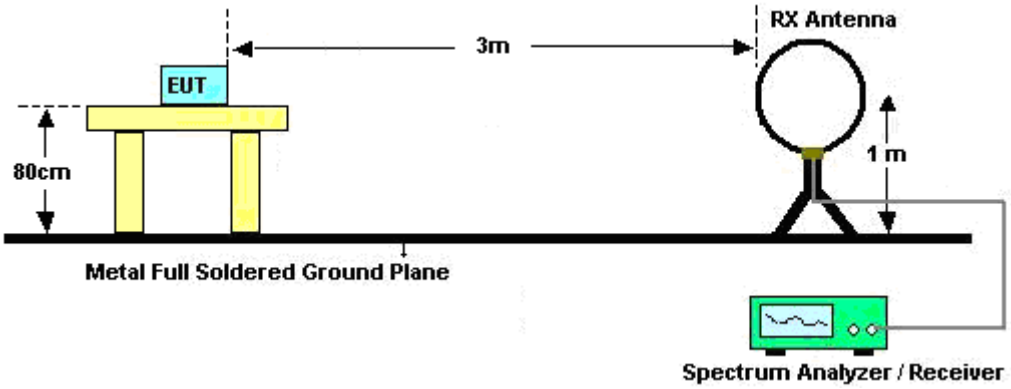
See list of measuring equipment of this test report.

3.5.3 Test Procedures

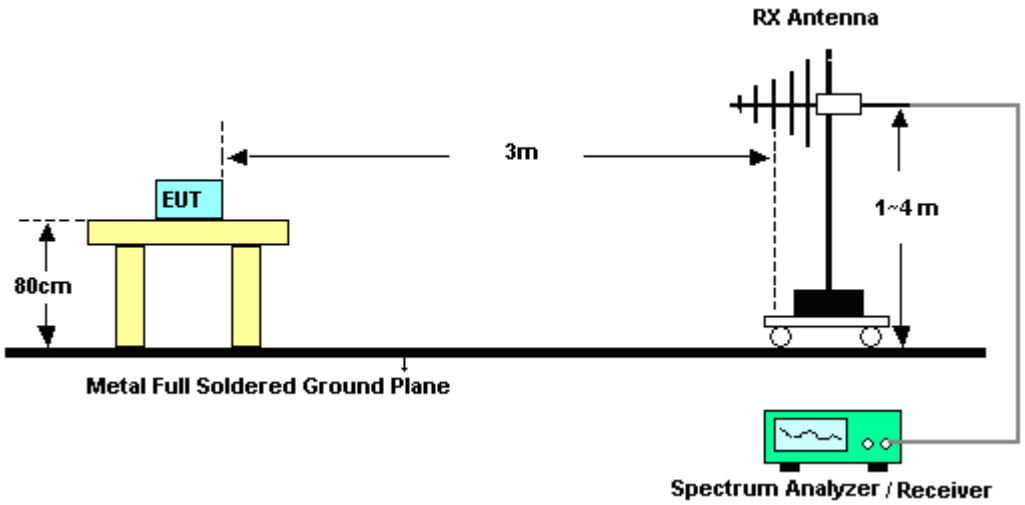
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT was placed at distance 3 meter from measurement 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. Radiated testing below 1GHz was performed by adjusting the antenna tower from 1m to 4m and by rotating the turn table from 0degree to 360 degree to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1GHz was performed by adjusting the antenna tower from 1m to 4m and by rotating the turn table from 0 degree to 360 degree to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6dB margin against average limit line, the position is marked as "-".
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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW = 3 MHz 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

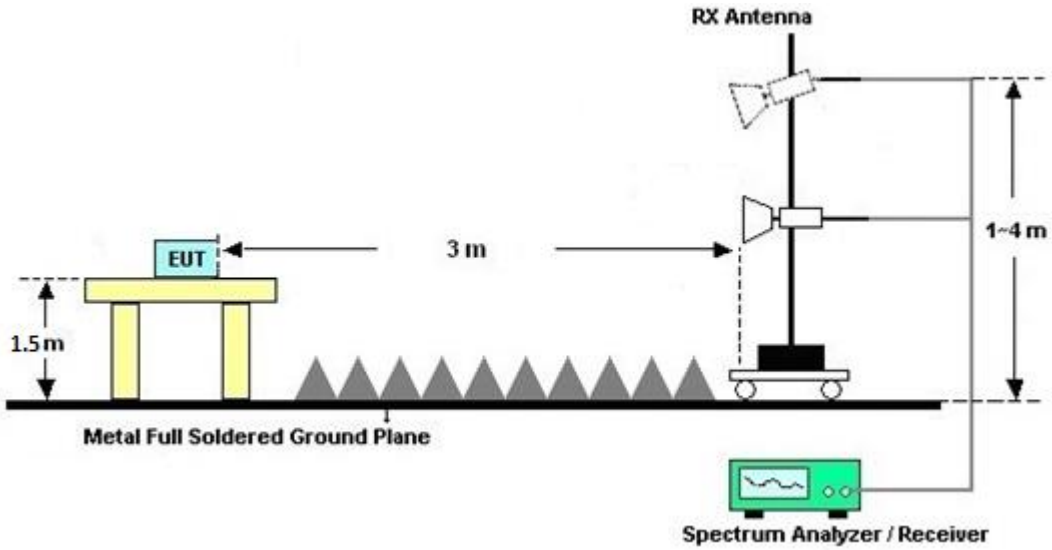
For radiated test below 30MHz



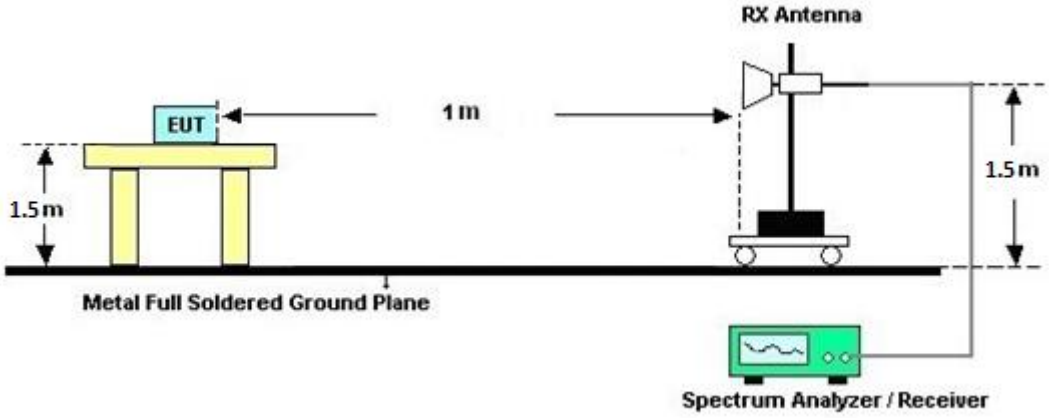
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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 adequate comparison measurement 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 (30 MHz ~ 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 (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.

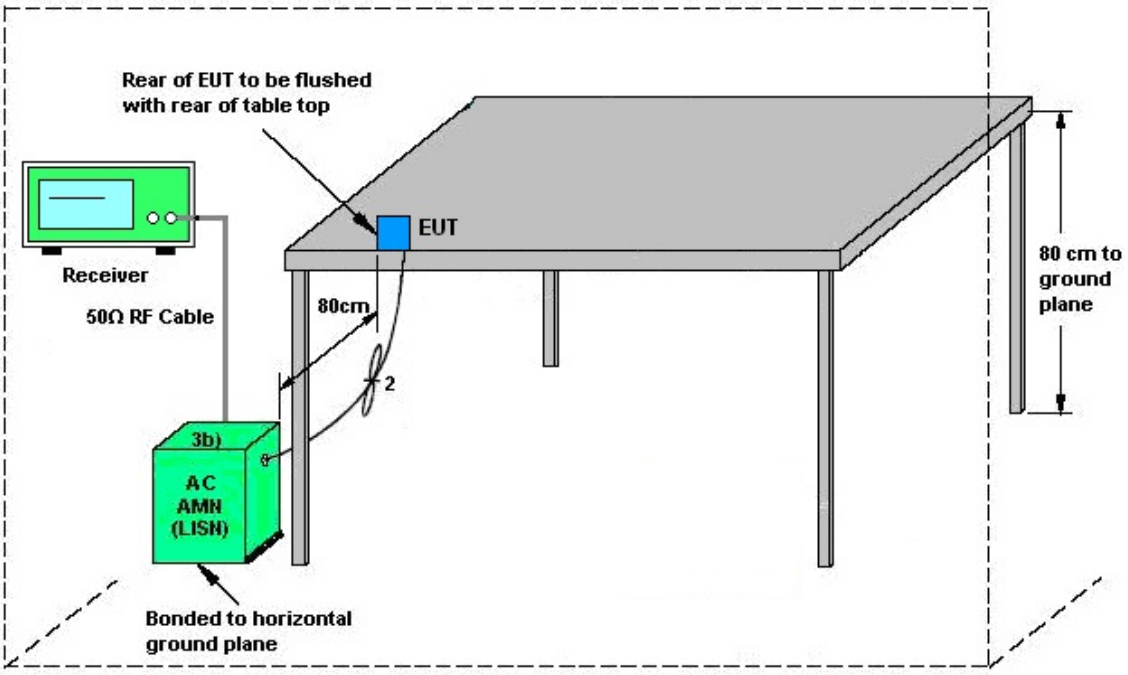
3.6.2 Measuring Instruments

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 shall 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

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6 dBi, the power and power spectral density limit shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the 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	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LISN	TESEQ	NNB51	47407	N/A	Jul. 21, 2021	Aug. 16, 2021~ Oct. 19, 2021	Jul. 20, 2022	Conduction (CO01-CA)
LISN	TESEQ	NNB51	47415	N/A	Jun. 30, 2021	Aug. 16, 2021~ Oct. 19, 2021	Jun. 29, 2022	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9KHz~7GHz	Jun. 02, 2021	Aug. 16, 2021~ Oct. 19, 2021	Jun. 01, 2022	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F-N00412	N/A	Jul. 07, 2021	Aug. 16, 2021~ Oct. 19, 2021	Jul. 06, 2022	Conduction (CO01-CA)
Test Software	R&S	EMC32 V10.30.0	N/A	N/A	N/A	Aug. 16, 2021~ Oct. 19, 2021	N/A	Conduction (CO01-CA)
Loop Antenna	R&S	HFH2-Z2E	100840	9kHz~30MHz	Jun. 21, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jun. 20, 2022	Radiation (03CH02-CA)
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	Aug. 10, 2021	Aug. 11, 2021~ Oct. 18, 2021	Aug. 09, 2022	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02113	1GHz~18GHz	Jul. 08, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 07, 2022	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9170D	00842	18GHz~40GHz	Jul. 20, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 19, 2022	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372240	N/A	Aug. 09, 2021	Aug. 11, 2021~ Oct. 18, 2021	Aug. 08, 2022	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY53270323	1GHz~26.5GHz	Jul. 27, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 26, 2022	Radiation (03CH02-CA)
Preamplifier	E-instrument	ERA-100M-18G-56-01-A70	EC1900251	1GHz~18GHz	Mar. 30, 2021	Aug. 11, 2021~ Oct. 18, 2021	Mar. 29, 2022	Radiation (03CH02-CA)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055004	1GHz~18GHz	Jul. 21, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 20, 2022	Radiation (03CH02-CA)
Preamplifier	EMEC	EMC18G40G	60725	18GHz-40GHz	Jul. 21, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 20, 2022	Radiation (03CH02-CA)
Spectrum Analyzer	Keysight	N9010A	MY542004845	10Hz~44GHz	Mar. 05, 2021	Aug. 11, 2021~ Oct. 18, 2021	Mar. 04, 2022	Radiation (03CH02-CA)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN10	3G Highpass	Jul. 23, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 22, 2022	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200-1272-11000-40SS	SN1	1.2G Low Pass	Jul. 23, 2021	Aug. 11, 2021~ Oct. 18, 2021	Jul. 22, 2022	Radiation (03CH02-CA)
Hygrometer	TESEO	608-H1	45142602	N/A	Aug. 04, 2021	Aug. 11, 2021~ Oct. 18, 2021	Aug. 03, 2022	Radiation (03CH02-CA)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Aug. 11, 2021~ Oct. 18, 2021	N/A	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Aug. 11, 2021~ Oct. 18, 2021	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Aug. 11, 2021~ Oct. 18, 2021	N/A	Radiation (03CH02-CA)
Software	Audix	E3	N/A	N/A	N/A	Aug. 11, 2021~ Oct. 18, 2021	N/A	Radiation (03CH02-CA)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	45141354	N/A	Jul. 30. 2021	Aug. 18, 2021~ Oct. 04, 2021	Jul. 29, 2022	Conducted (TH01-CA)
Power Sensor	DARE!!	RPR3006W	RPR6W-190 1024	10MHz-6GHz	Jul. 13, 2021	Aug. 18, 2021~ Oct. 04, 2021	Jul. 12, 2022	Conducted (TH01-CA)
Switch	EM Electronics	EMSW18	SW1070902	N/A	Aug. 03, 2021	Aug. 18, 2021~ Oct. 04, 2021	Aug. 02, 2022	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101545	10Hz-40GHz	Jun. 01, 2021	Aug. 18, 2021~ Oct. 04, 2021	May 31, 2022	Conducted (TH01-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))	**2.0 dB**

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.2 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.4 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Steve Chen	Temperature:	20.3~24	°C
Test Date:	2021/8/18~2021/10/4	Relative Humidity:	34.1~45.6	%

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
BLE	1Mbps	1	0	2402	1.051	0.709	0.50	Pass
BLE	1Mbps	1	19	2440	1.053	0.710	0.50	Pass
BLE	1Mbps	1	39	2480	1.049	0.704	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
BLE	1Mbps	1	0	2402	18.70	30.00	3.24	21.94	36.00	Pass
BLE	1Mbps	1	19	2440	18.70	30.00	3.24	21.94	36.00	Pass
BLE	1Mbps	1	39	2480	18.40	30.00	3.24	21.64	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
BLE	1Mbps	1	0	2402	18.68	7.12	3.24	8.00	Pass
BLE	1Mbps	1	19	2440	18.72	7.44	3.24	8.00	Pass
BLE	1Mbps	1	39	2480	18.40	7.24	3.24	8.00	Pass

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

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
BLE	2Mbps	1	0	2402	2.090	1.356	0.50	Pass
BLE	2Mbps	1	19	2440	2.098	1.384	0.50	Pass
BLE	2Mbps	1	38	2478	2.090	1.396	0.50	Pass
BLE	2Mbps	1	39	2480	2.090	1.344	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
BLE	2Mbps	1	0	2402	17.20	30.00	3.24	20.44	36.00	Pass
BLE	2Mbps	1	19	2440	17.30	30.00	3.24	20.54	36.00	Pass
BLE	2Mbps	1	38	2478	17.90	30.00	3.24	21.14	36.00	Pass
BLE	2Mbps	1	39	2480	12.50	30.00	3.24	15.74	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
BLE	2Mbps	1	0	2402	16.62	3.71	3.24	8.00	Pass
BLE	2Mbps	1	19	2440	16.85	3.39	3.24	8.00	Pass
BLE	2Mbps	1	38	2478	16.97	4.29	3.24	8.00	Pass
BLE	2Mbps	1	39	2480	11.57	-1.87	3.24	8.00	Pass

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

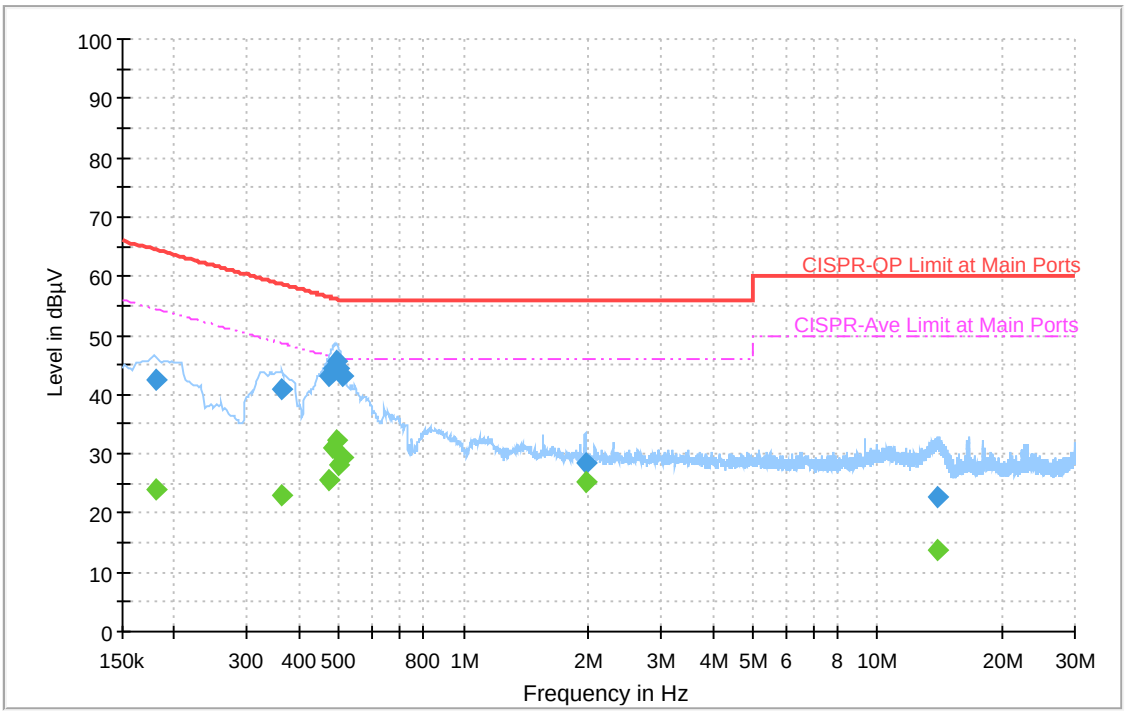
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Jordan Huang	**Temperature :**	24~46℃
		Relative Humidity :	43~47%

EUT Information

Site:	CO01-CA
Power:	120Vac/60Hz
Mode:	1

Full Spectrum



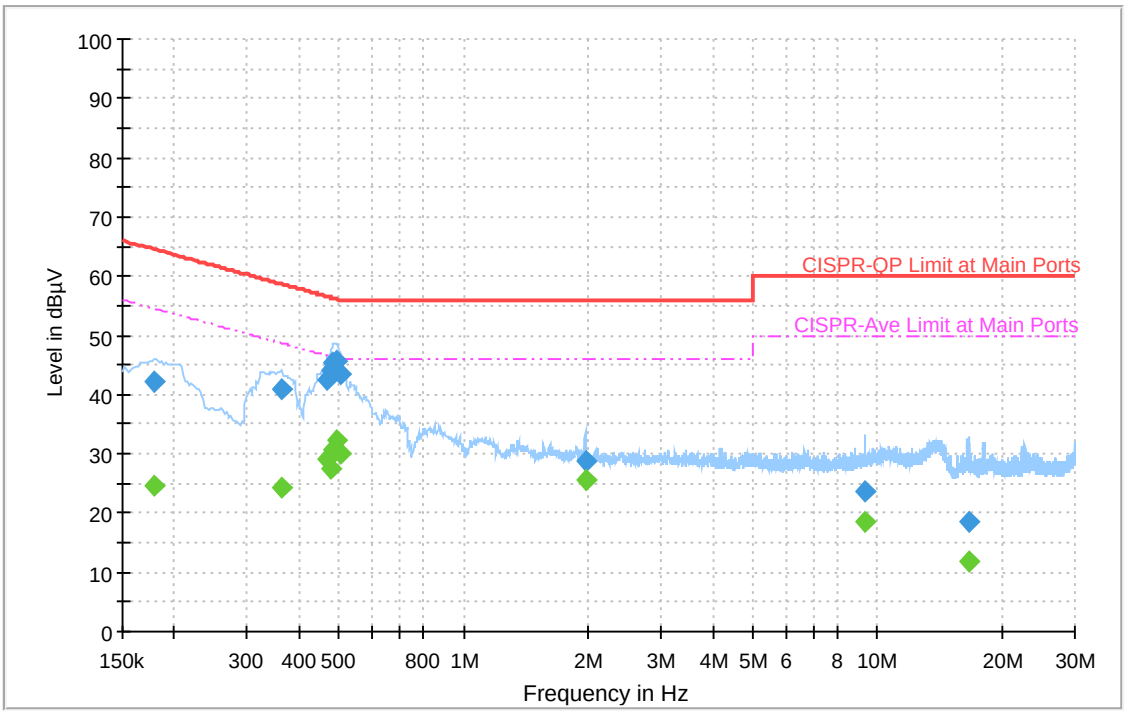
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.181500	---	23.90	54.42	30.52	L1	OFF	20.3
0.181500	42.44	---	64.42	21.98	L1	OFF	20.3
0.363750	---	22.91	48.64	25.73	L1	OFF	20.3
0.363750	40.88	---	58.64	17.76	L1	OFF	20.3
0.474000	---	25.51	46.44	20.93	L1	OFF	20.3
0.474000	42.99	---	56.44	13.45	L1	OFF	20.3
0.480750	---	31.12	46.33	15.21	L1	OFF	20.3
0.480750	44.35	---	56.33	11.98	L1	OFF	20.3
0.492000	---	32.29	46.13	13.84	L1	OFF	20.3
0.492000	45.65	---	56.13	10.48	L1	OFF	20.3
0.501000	---	28.02	46.00	17.98	L1	OFF	20.3
0.501000	44.53	---	56.00	11.47	L1	OFF	20.3
0.507750	---	29.42	46.00	16.58	L1	OFF	20.3
0.507750	43.27	---	56.00	12.73	L1	OFF	20.3
1.965750	---	25.20	46.00	20.80	L1	OFF	20.3
1.965750	28.42	---	56.00	27.58	L1	OFF	20.3
13.933500	---	13.65	50.00	36.35	L1	OFF	20.5
13.933500	22.72	---	60.00	37.28	L1	OFF	20.5

EUT Information

Site:	CO01-CA
Power:	120Vac/60Hz
Mode:	1

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.179250	---	24.53	54.52	29.99	N	OFF	20.2
0.179250	42.25	---	64.52	22.27	N	OFF	20.2
0.361500	---	24.29	48.69	24.40	N	OFF	20.3
0.361500	40.79	---	58.69	17.90	N	OFF	20.3
0.469500	---	29.05	46.52	17.47	N	OFF	20.3
0.469500	42.63	---	56.52	13.89	N	OFF	20.3
0.476250	---	27.58	46.40	18.82	N	OFF	20.3
0.476250	43.99	---	56.40	12.41	N	OFF	20.3
0.485250	---	30.64	46.25	15.61	N	OFF	20.3
0.485250	45.51	---	56.25	10.74	N	OFF	20.3
0.492000	---	32.38	46.13	13.75	N	OFF	20.3
0.492000	45.64	---	56.13	10.49	N	OFF	20.3
0.505500	---	30.04	46.00	15.96	N	OFF	20.3
0.505500	43.46	---	56.00	12.54	N	OFF	20.3
1.965750	---	25.40	46.00	20.60	N	OFF	20.3
1.965750	28.62	---	56.00	27.38	N	OFF	20.3
9.350250	---	18.54	50.00	31.46	N	OFF	20.4
9.350250	23.80	---	60.00	36.20	N	OFF	20.4
16.651500	---	11.90	50.00	38.10	N	OFF	20.5
16.651500	18.62	---	60.00	41.38	N	OFF	20.5

Appendix C. Radiated Spurious Emission

Test Engineer :	Michael Bui and Daniel Lee	Temperature :	20~24°C
		Relative Humidity :	42~48%

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
BLE CH 00 2402MHz		2338.035	55.83	-18.17	74	41.68	28.01	17.45	31.31	400	58	P	H
		2369.955	45.55	-8.45	54	31.51	27.82	17.52	31.3	400	58	A	H
	*	2402	112.63	-	-	98.71	27.62	17.57	31.27	400	58	P	H
	*	2402	112.35	-	-	98.43	27.62	17.57	31.27	400	58	A	H
													H
													H
		2369.85	59.36	-14.64	74	45.1	28.04	17.52	31.3	205	19	P	V
		2369.955	52.65	-1.35	54	38.39	28.04	17.52	31.3	205	19	A	V
	*	2402	117.19	-	-	102.91	27.98	17.57	31.27	164	339	P	V
	*	2402	116.91	-	-	102.63	27.98	17.57	31.27	164	339	A	V
													V
													V
BLE CH 19 2440MHz		2384.4	55.78	-18.22	74	41.81	27.72	17.54	31.29	394	55	P	H
		2375.92	44.63	-9.37	54	30.61	27.78	17.53	31.29	394	55	A	H
	*	2440	113.61	-	-	99.72	27.5	17.65	31.26	394	55	P	H
	*	2440	113.3	-	-	99.41	27.5	17.65	31.26	394	55	A	H
		2485.52	55.82	-18.18	74	41.83	27.48	17.75	31.24	394	55	P	H
		2497.44	44.36	-9.64	54	30.34	27.48	17.77	31.23	394	55	A	H
		2376.24	56.89	-17.11	74	42.58	28.07	17.53	31.29	164	339	P	V
		2376.08	49.07	-4.93	54	34.76	28.07	17.53	31.29	164	339	A	V
	*	2440	118.35	-	-	104.26	27.7	17.65	31.26	164	339	P	V
	*	2440	118.07	-	-	103.98	27.7	17.65	31.26	164	339	A	V
		2497.36	56.16	-17.84	74	42.11	27.51	17.77	31.23	164	339	P	V
		2488.16	45.18	-8.82	54	31.14	27.52	17.76	31.24	164	339	A	V

BLE CH 39 2480MHz	*	2480	112.51	-	-	98.53	27.48	17.74	31.24	381	57	P	H
	*	2480	112.19	-	-	98.21	27.48	17.74	31.24	381	57	A	H
		2483.6	58.79	-15.21	74	44.8	27.48	17.75	31.24	381	57	P	H
		2483.52	49.24	-4.76	54	35.25	27.48	17.75	31.24	381	57	A	H
													H
													H
	*	2480	117.94	-	-	103.91	27.53	17.74	31.24	271	330	P	V
	*	2480	117.67	-	-	103.64	27.53	17.74	31.24	271	330	A	V
		2483.56	63.43	-10.57	74	49.4	27.52	17.75	31.24	271	330	P	V
		2483.5	53.86	-0.14	54	39.83	27.52	17.75	31.24	271	330	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4804	53.6	-20.4	74	78.9	31.43	11.48	68.21	100	301	P	H
		4804	48.98	-5.02	54	74.28	31.43	11.48	68.21	100	301	A	H
		11355	50.35	-23.65	74	60.79	39.94	17.33	67.71	-	-	P	H
		11355	38.45	-15.55	54	48.89	39.94	17.33	67.71	-	-	A	H
		12010	53.74	-20.26	74	64.4	39.25	17.87	67.78	312	289	P	H
		12010	48.24	-5.76	54	58.9	39.25	17.87	67.78	312	289	A	H
		14490	50.79	-23.21	74	56.87	41.76	19.9	67.74	-	-	P	H
		14490	41.45	-12.55	54	47.53	41.76	19.9	67.74	-	-	A	H
		18000	60.58	-13.42	74	58.6	48.43	22.97	69.42	-	-	P	H
		18000	50.08	-3.92	54	48.1	48.43	22.97	69.42	-	-	A	H
													H
BLE													H
CH 00		4804	52.18	-21.82	74	77.5	31.41	11.48	68.21	305	19	P	V
2402MHz		4804	46.88	-7.12	54	72.2	31.41	11.48	68.21	305	19	A	V
		11355	50.07	-23.93	74	60.49	39.96	17.33	67.71	-	-	P	V
		11355	38.79	-15.21	54	49.21	39.96	17.33	67.71	-	-	A	V
		12010	58.66	-15.34	74	69.21	39.36	17.87	67.78	100	24	P	V
		12010	52.83	-1.17	54	63.38	39.36	17.87	67.78	100	24	A	V
		14490	50.87	-23.13	74	57.08	41.63	19.9	67.74	-	-	P	V
		14490	41.62	-12.38	54	47.83	41.63	19.9	67.74	-	-	A	V
		17985	60	-14	74	58.81	47.66	22.95	69.42	-	-	P	V
		17985	49.7	-4.3	54	48.51	47.66	22.95	69.42	-	-	A	V
													V
													V
													V

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4880	47.83	-26.17	74	72.92	31.44	11.62	68.15	-	-	P	H
		7320	47.96	-26.04	74	64.55	36.41	13.82	66.82	-	-	P	H
		11400	50.49	-23.51	74	60.71	40.1	17.36	67.68	-	-	P	H
		11400	39.34	-14.66	54	49.56	40.1	17.36	67.68	-	-	A	H
		12200	53.47	-20.53	74	63.61	39.31	18.03	67.48	300	296	P	H
		12200	47.67	-6.33	54	57.81	39.31	18.03	67.48	300	296	A	H
		14490	51.45	-22.55	74	57.53	41.76	19.9	67.74	-	-	P	H
		14490	41.28	-12.72	54	47.36	41.76	19.9	67.74	-	-	A	H
		17985	60.48	-13.52	74	58.9	48.05	22.95	69.42	-	-	P	H
		17985	50.18	-3.82	54	48.6	48.05	22.95	69.42	-	-	A	H
													H
BLE CH 19 2440MHz													H
		4880	46.16	-27.84	74	71.16	31.53	11.62	68.15	-	-	P	V
		7320	47.65	-26.35	74	64.3	36.35	13.82	66.82	-	-	P	V
		11025	49.65	-24.35	74	60.36	40.24	17.05	68	-	-	P	V
		11025	38.4	-15.6	54	49.11	40.24	17.05	68	-	-	A	V
		12200	59.06	-14.94	74	69.08	39.43	18.03	67.48	100	24	P	V
		12200	53.62	-0.38	54	63.64	39.43	18.03	67.48	100	24	A	V
		14490	51.72	-22.28	74	57.93	41.63	19.9	67.74	-	-	P	V
		14490	41.62	-12.38	54	47.83	41.63	19.9	67.74	-	-	A	V
		17970	59.93	-14.07	74	59.09	47.32	22.94	69.42	-	-	P	V
		17970	49.63	-4.37	54	48.79	47.32	22.94	69.42	-	-	A	V
													V
													V

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4960	46.74	-27.26	74	71.84	31.54	11.46	68.1	-	-	P	H
		7440	47.94	-26.06	74	64.29	36.59	13.9	66.84	-	-	P	H
		10965	50.34	-23.66	74	61.1	40.31	17	68.07	-	-	P	H
		10965	39.2	-14.8	54	49.96	40.31	17	68.07	-	-	A	H
		12400	52.5	-21.5	74	62.7	38.75	18.22	67.17	274	288	P	H
		12400	46.1	-7.9	54	56.3	38.75	18.22	67.17	274	288	A	H
		14490	51.22	-22.78	74	57.3	41.76	19.9	67.74	-	-	P	H
		14490	41.29	-12.71	54	47.37	41.76	19.9	67.74	-	-	A	H
		17940	60.11	-13.89	74	59.71	46.92	22.9	69.42	-	-	P	H
		17940	49.31	-4.69	54	48.91	46.92	22.9	69.42	-	-	A	H
													H
													H
BLE													
CH 39		4960	44.05	-29.95	74	69.22	31.47	11.46	68.1	-	-	P	V
2480MHz		7440	47.93	-26.07	74	64.45	36.42	13.9	66.84	-	-	P	V
		11265	50.04	-23.96	74	60.69	39.89	17.25	67.79	-	-	P	V
		11265	37.94	-16.06	54	48.59	39.89	17.25	67.79	-	-	A	V
		12400	57.5	-16.5	74	67.56	38.89	18.22	67.17	100	24	P	V
		12400	51.91	-2.09	54	61.97	38.89	18.22	67.17	100	24	A	V
		14500	52.11	-21.89	74	58.27	41.66	19.91	67.73	-	-	P	V
		14500	41.77	-12.23	54	47.93	41.66	19.91	67.73	-	-	A	V
		17955	59.77	-14.23	74	59.3	46.97	22.92	69.42	-	-	P	V
		17955	49.67	-4.33	54	49.2	46.97	22.92	69.42	-	-	A	V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Emission after 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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 BLE SHF		24664	44.45	-29.55	74	40.54	39.05	16.36	51.5	-	-	P	H
		26100.5	45.9	-28.1	74	40.83	39.28	17.54	51.75	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24400.5	45.34	-28.66	74	41.73	39	16.04	51.43	-	-	P	V
		25446	46.39	-27.61	74	41.72	39.11	17.13	51.57	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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 BLE LF		70.74	25.36	-14.64	40	43.83	12.47	1.49	32.43	-	-	P	H
		125.06	30.91	-12.59	43.5	43.77	17.7	1.84	32.4	-	-	P	H
		139.61	29.72	-13.78	43.5	42.7	17.44	1.98	32.4	-	-	P	H
		752.65	37.58	-8.42	46	37.36	28	4.59	32.37	-	-	P	H
		874.87	39.06	-6.94	46	36.71	29.1	5.03	31.78	-	-	P	H
		957.32	34.92	-11.08	46	29.93	30.85	5.28	31.14	-	-	P	H
													H
													H
													H
													H
													H
													H
		51.34	33.03	-6.97	40	50.59	13.63	1.24	32.43	-	-	P	V
		125.06	32.39	-11.11	43.5	45.25	17.7	1.84	32.4	-	-	P	V
		207.51	23.6	-19.9	43.5	38.41	15.2	2.39	32.4	-	-	P	V
		749.74	34.13	-11.87	46	33.94	27.99	4.58	32.38	-	-	P	V
		874.87	36.42	-9.58	46	34.07	29.1	5.03	31.78	-	-	P	V
		956.35	35.04	-10.96	46	30.07	30.83	5.28	31.14	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.

<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		2388.12	56.38	-17.62	74	42.41	27.7	17.55	31.28	400	58	P	H
		2369.535	45.18	-8.82	54	31.14	27.82	17.52	31.3	400	58	A	H
	*	2402	112.77	-	-	98.85	27.62	17.57	31.27	400	58	P	H
	*	2402	111.56	-	-	97.64	27.62	17.57	31.27	400	58	A	H
													H
													H
		2370.585	59	-15	74	44.73	28.04	17.52	31.29	199	19	P	V
		2370.48	48.63	-5.37	54	34.36	28.04	17.52	31.29	199	19	A	V
	*	2402	117.43	-	-	103.15	27.98	17.57	31.27	199	19	P	V
	*	2402	116.2	-	-	101.92	27.98	17.57	31.27	199	19	A	V
													V
													V
BLE CH 19 2440MHz		2341.36	55.17	-18.83	74	41.03	27.99	17.46	31.31	394	58	P	H
		2376.08	44.55	-9.45	54	30.53	27.78	17.53	31.29	394	58	A	H
	*	2440	110.4	-	-	96.51	27.5	17.65	31.26	394	58	P	H
	*	2440	109.15	-	-	95.26	27.5	17.65	31.26	394	58	A	H
		2486.8	55.66	-18.34	74	41.67	27.48	17.75	31.24	394	58	P	H
		2500	44.36	-9.64	54	30.33	27.48	17.78	31.23	394	58	A	H
		2375.44	56.82	-17.18	74	42.51	28.07	17.53	31.29	113	341	P	V
		2375.92	48.09	-5.91	54	33.78	28.07	17.53	31.29	113	341	A	V
	*	2440	117.92	-	-	103.83	27.7	17.65	31.26	113	341	P	V
	*	2440	116.65	-	-	102.56	27.7	17.65	31.26	113	341	A	V
		2488.24	56	-18	74	41.96	27.52	17.76	31.24	113	341	P	V
		2485.04	45.15	-8.85	54	31.12	27.52	17.75	31.24	113	341	A	V

BLE CH 38 2478MHz	*	2478	117.08	-	-	103.1	27.48	17.74	31.24	351	186	P	H
	*	2478	115.84	-	-	101.86	27.48	17.74	31.24	351	186	A	H
		2483.72	58.56	-15.44	74	44.57	27.48	17.75	31.24	351	186	P	H
		2483.52	48.65	-5.35	54	34.66	27.48	17.75	31.24	351	186	A	H
													H
													H
	*	2478	115.24	-	-	101.21	27.53	17.74	31.24	400	264	P	V
	*	2478	113.94	-	-	99.91	27.53	17.74	31.24	400	264	A	V
		2484.44	57.6	-16.4	74	43.57	27.52	17.75	31.24	400	264	P	V
		2483.52	47.71	-6.29	54	33.68	27.52	17.75	31.24	400	264	A	V
													V
													V
BLE CH 39 2480MHz	*	2480	111.35	-	-	97.37	27.48	17.74	31.24	349	195	P	H
	*	2480	110.12	-	-	96.14	27.48	17.74	31.24	349	195	A	H
		2483.56	61.2	-12.8	74	47.21	27.48	17.75	31.24	349	195	P	H
		2483.52	53.07	-0.93	54	39.08	27.48	17.75	31.24	349	195	A	H
													H
													H
	*	2480	111.17	-	-	97.14	27.53	17.74	31.24	400	264	P	V
	*	2480	109.96	-	-	95.93	27.53	17.74	31.24	400	264	A	V
		2483.56	61.98	-12.02	74	47.95	27.52	17.75	31.24	400	264	P	V
		2483.52	52.67	-1.33	54	38.64	27.52	17.75	31.24	400	264	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

BLE (Harmonic @ 3m)

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 00 2402MHz		4804	47.89	-26.11	74	73.19	31.43	11.48	68.21	-	-	P	H
		11025	50	-24	74	60.71	40.24	17.05	68	-	-	P	H
		11025	38.21	-15.79	54	48.92	40.24	17.05	68	-	-	A	H
		12010	54.98	-19.02	74	65.64	39.25	17.87	67.78	291	305	P	H
		12010	47.26	-6.74	54	57.92	39.25	17.87	67.78	291	305	A	H
		14490	50.98	-23.02	74	57.06	41.76	19.9	67.74	-	-	P	H
		14490	41.3	-12.7	54	47.38	41.76	19.9	67.74	-	-	A	H
		17985	60.38	-13.62	74	58.8	48.05	22.95	69.42	-	-	P	H
		17985	60.38	-13.62	74	58.8	48.05	22.95	69.42	-	-	P	H
													H
													H
													H
		4804	47.81	-26.19	74	73.13	31.41	11.48	68.21	-	-	P	V
		10830	50.25	-23.75	74	61.48	40.11	16.9	68.24	-	-	P	V
		10830	38.2	-15.8	54	49.43	40.11	16.9	68.24	-	-	A	V
		12010	58.15	-15.85	74	68.7	39.36	17.87	67.78	100	25	P	V
		12010	51.85	-2.15	54	62.4	39.36	17.87	67.78	100	25	A	V
		14490	51.12	-22.88	74	57.33	41.63	19.9	67.74	-	-	P	V
		14490	41.67	-12.33	54	47.88	41.63	19.9	67.74	-	-	A	V
		17970	60.03	-13.97	74	59.19	47.32	22.94	69.42	-	-	P	V
		17970	50.03	-3.97	54	49.19	47.32	22.94	69.42	-	-	A	V
													V
													V
													V

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4880	47.76	-26.24	74	72.85	31.44	11.62	68.15	-	-	P	H
		7320	47.96	-26.04	74	64.55	36.41	13.82	66.82	-	-	P	H
		11265	49.75	-24.25	74	60.47	39.82	17.25	67.79	-	-	P	H
		11265	39.08	-14.92	54	49.8	39.82	17.25	67.79	-	-	A	H
		12200	55.28	-18.72	74	65.42	39.31	18.03	67.48	286	307	P	H
		12200	47.38	-6.62	54	57.52	39.31	18.03	67.48	286	307	A	H
		14500	52.43	-21.57	74	58.46	41.79	19.91	67.73	-	-	P	H
		14500	41.41	-12.59	54	47.44	41.79	19.91	67.73	-	-	A	H
		17955	60.38	-13.62	74	59.6	47.28	22.92	69.42	-	-	P	H
		17955	49.58	-4.42	54	48.8	47.28	22.92	69.42	-	-	A	H
													H
BLE CH 19 2440MHz													H
		4880	46.11	-27.89	74	71.11	31.53	11.62	68.15	-	-	P	V
		7320	47.58	-26.42	74	64.23	36.35	13.82	66.82	-	-	P	V
		11640	49.89	-24.11	74	60.14	39.84	17.56	67.65	-	-	P	V
		11640	38.93	-15.07	54	49.18	39.84	17.56	67.65	-	-	A	V
		12200	58.99	-15.01	74	69.01	39.43	18.03	67.48	100	22	P	V
		12200	52.44	-1.56	54	62.46	39.43	18.03	67.48	100	22	A	V
		14490	51.68	-22.32	74	57.89	41.63	19.9	67.74	-	-	P	V
		14490	41.67	-12.33	54	47.88	41.63	19.9	67.74	-	-	A	V
		17985	60.4	-13.6	74	59.21	47.66	22.95	69.42	-	-	P	V
		17985	50.3	-3.7	54	49.11	47.66	22.95	69.42	-	-	A	V
													V
													V

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4956	42.75	-31.25	74	67.86	31.52	11.47	68.1	-	-	P	H
		7434	44.35	-29.65	74	60.72	36.58	13.89	66.84	-	-	P	H
		10920	49.9	-24.1	74	60.71	40.34	16.97	68.12	-	-	P	H
		10920	38.8	-15.2	54	49.61	40.34	16.97	68.12	-	-	A	H
		12390	53.5	-20.5	74	63.69	38.78	18.21	67.18	233	210	P	H
		12390	46.47	-7.53	54	56.66	38.78	18.21	67.18	233	210	A	H
		14490	50.33	-23.67	74	56.41	41.76	19.9	67.74	-	-	P	H
		14490	41.28	-12.72	54	47.36	41.76	19.9	67.74	-	-	A	H
		18000	60.18	-13.82	74	58.2	48.43	22.97	69.42	-	-	P	H
		18000	50.28	-3.72	54	48.3	48.43	22.97	69.42	-	-	A	H
													H
BLE CH 38 2478MHz													H
		4956	45.5	-28.5	74	70.67	31.46	11.47	68.1	-	-	P	V
		7434	47.93	-26.07	74	64.47	36.41	13.89	66.84	-	-	P	V
		10920	49.69	-24.31	74	60.53	40.31	16.97	68.12	-	-	P	V
		10920	39.03	-14.97	54	49.87	40.31	16.97	68.12	-	-	A	V
		12390	57.49	-16.51	74	67.54	38.92	18.21	67.18	100	243	P	V
		12390	51.16	-2.84	54	61.21	38.92	18.21	67.18	100	243	A	V
		14490	50.43	-23.57	74	56.64	41.63	19.9	67.74	-	-	P	V
		14490	41.66	-12.34	54	47.87	41.63	19.9	67.74	-	-	A	V
		17955	58.87	-15.13	74	58.4	46.97	22.92	69.42	-	-	P	V
		17955	49.27	-4.73	54	48.8	46.97	22.92	69.42	-	-	A	V
													V
													V

BLE	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)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4960	41.9	-32.1	74	67	31.54	11.46	68.1	-	-	P	H
		7440	44.94	-29.06	74	61.29	36.59	13.9	66.84	-	-	P	H
		11370	50.17	-23.83	74	60.54	39.99	17.34	67.7	-	-	P	H
		11370	39.48	-14.52	54	49.85	39.99	17.34	67.7	-	-	A	H
		14490	50.95	-23.05	74	57.03	41.76	19.9	67.74	-	-	P	H
		14490	41.38	-12.62	54	47.46	41.76	19.9	67.74	-	-	A	H
		17985	59.78	-14.22	74	58.2	48.05	22.95	69.42	-	-	P	H
		17985	49.98	-4.02	54	48.4	48.05	22.95	69.42	-	-	A	H
													H
													H
													H
BLE													H
CH 39		4960	44.2	-29.8	74	69.37	31.47	11.46	68.1	-	-	P	V
2480MHz		7440	44.57	-29.43	74	61.09	36.42	13.9	66.84	-	-	P	V
		11310	50.15	-23.85	74	60.69	39.92	17.29	67.75	-	-	P	V
		11310	38.66	-15.34	54	49.2	39.92	17.29	67.75	-	-	A	V
		14490	50.23	-23.77	74	56.44	41.63	19.9	67.74	-	-	P	V
		14490	41.62	-12.38	54	47.83	41.63	19.9	67.74	-	-	A	V
		17940	58.94	-15.06	74	58.81	46.65	22.9	69.42	-	-	P	V
		17940	49.74	-4.26	54	49.61	46.65	22.9	69.42	-	-	A	V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Emission after 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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 BLE SHF		24443	44.44	-29.56	74	40.83	38.95	16.1	51.44	-	-	P	H
		25386.5	46.34	-27.66	74	41.71	39.09	17.08	51.54	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24757.5	44.83	-29.17	74	40.72	39.16	16.48	51.53	-	-	P	V
		26134.5	46.26	-27.74	74	41.07	39.41	17.53	51.75	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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 BLE LF		125.06	31.24	-12.26	43.5	44.1	17.7	1.84	32.4	-	-	P	H
		140.58	28.15	-15.35	43.5	41.18	17.4	1.98	32.41	-	-	P	H
		749.74	35.8	-10.2	46	35.61	27.99	4.58	32.38	-	-	P	H
		874.87	39.34	-6.66	46	36.99	29.1	5.03	31.78	-	-	P	H
		910.76	33.38	-12.62	46	30.37	29.42	5.11	31.52	-	-	P	H
		954.41	34.71	-11.29	46	29.82	30.79	5.27	31.17	-	-	P	H
													H
													H
													H
													H
													H
													H
		50.37	33.12	-6.88	40	50.22	14.11	1.23	32.44	-	-	P	V
		125.06	32.99	-10.51	43.5	45.85	17.7	1.84	32.4	-	-	P	V
		207.51	23.72	-19.78	43.5	38.53	15.2	2.39	32.4	-	-	P	V
		754.59	35.73	-10.27	46	35.51	28	4.59	32.37	-	-	P	V
		874.87	37.18	-8.82	46	34.83	29.1	5.03	31.78	-	-	P	V
		952.47	34.85	-11.15	46	30.01	30.75	5.27	31.18	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.

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:

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
ANT				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		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. Path Loss(dB) = Cable 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 :	Michael Bui and Daniel Lee	**Temperature :**	20~24°C
		Relative Humidity :	42~48%

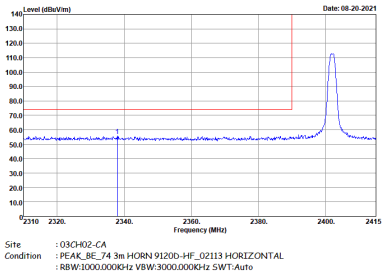
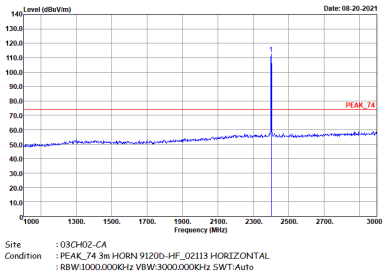
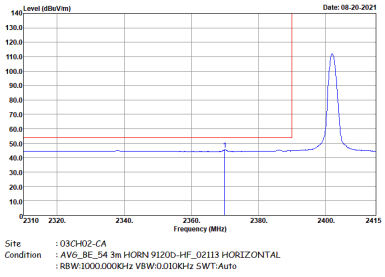
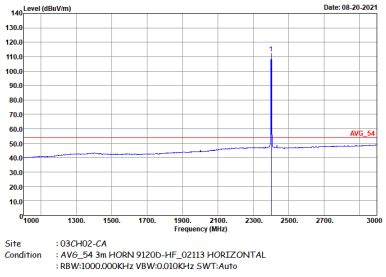
Note symbol

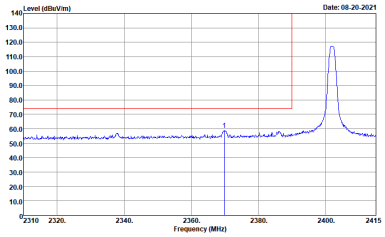
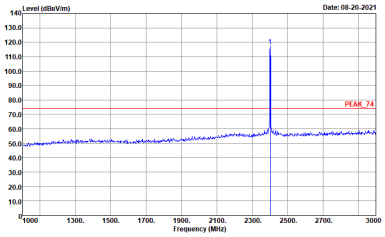
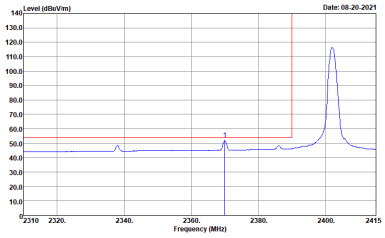
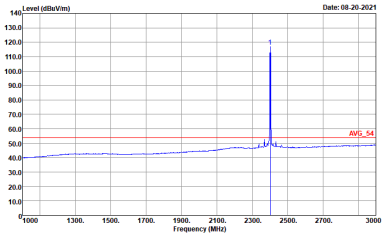
-L	**Low channel location**
-R	**High channel location**

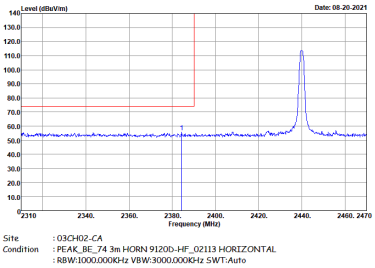
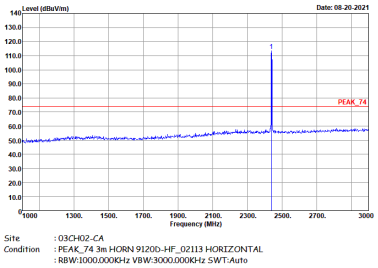
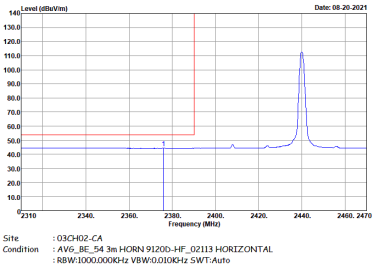
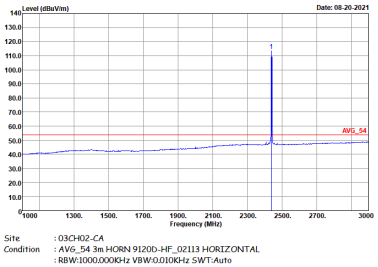
<1Mbps>

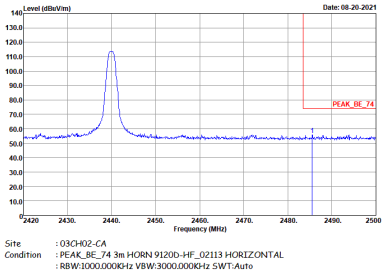
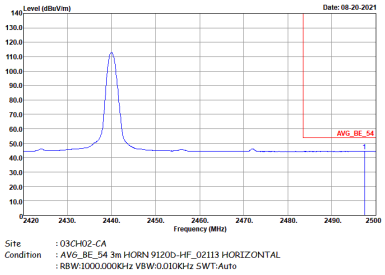
2.4GHz 2400~2483.5MHz

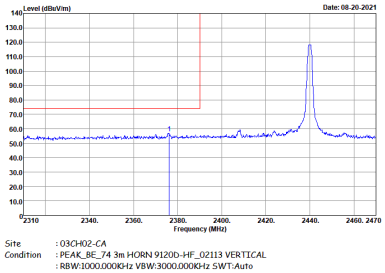
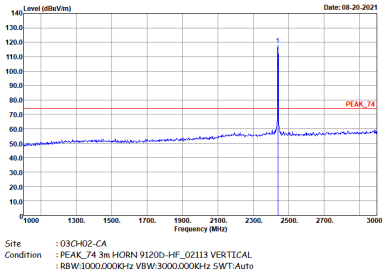
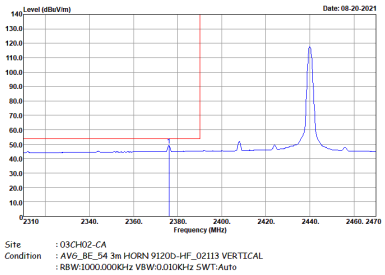
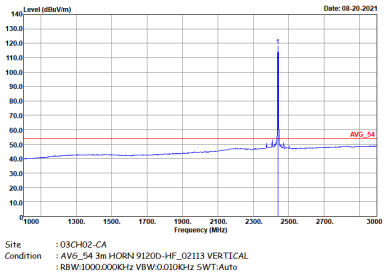
BLE (Band Edge @ 3m)

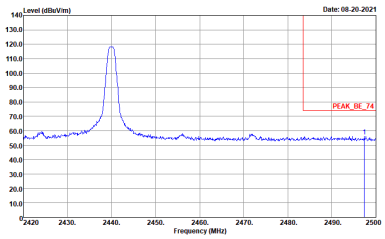
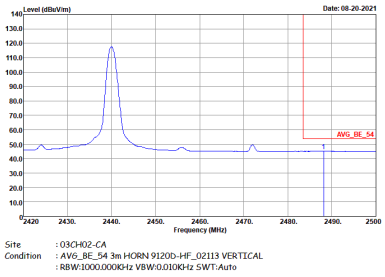
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

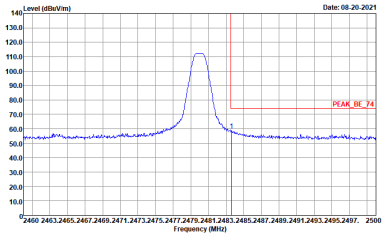
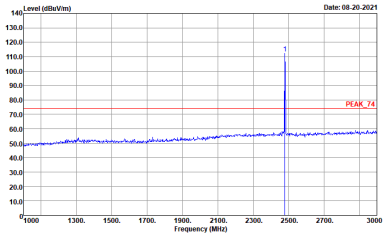
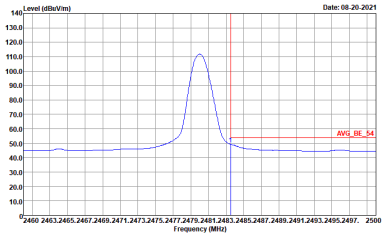
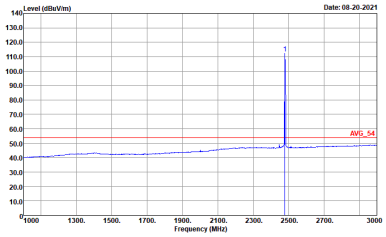
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH02-CA Condition : AV6_BE_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AV6_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

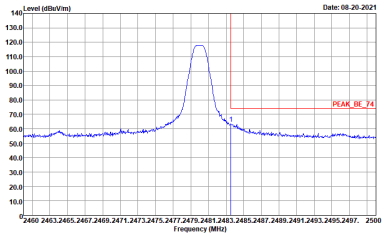
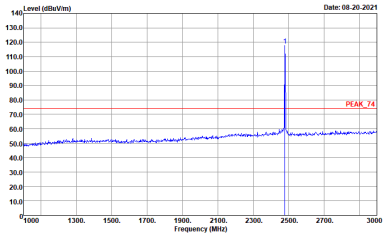
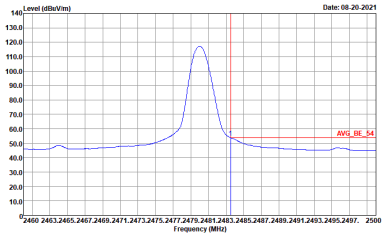
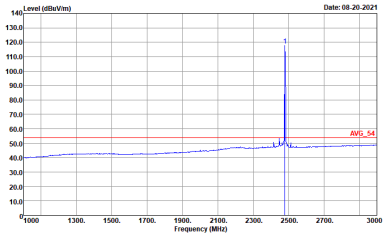
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak		
Avg.		

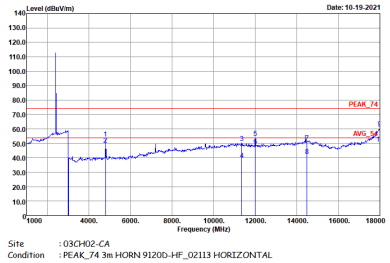
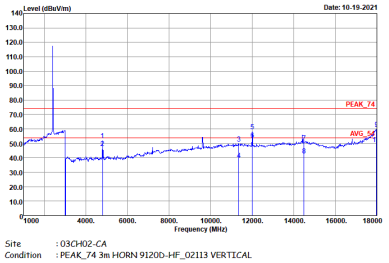
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

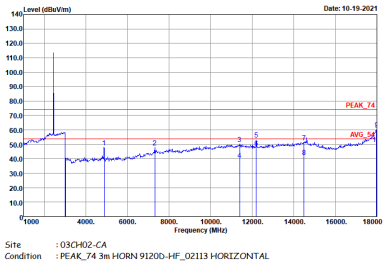
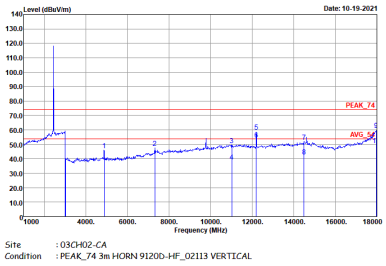
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

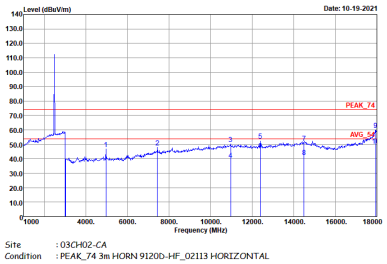
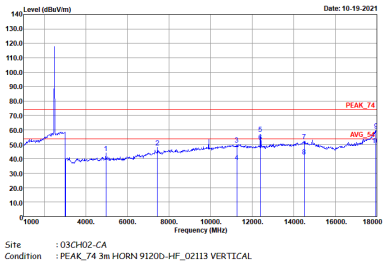
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AV6_BE_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AV6_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

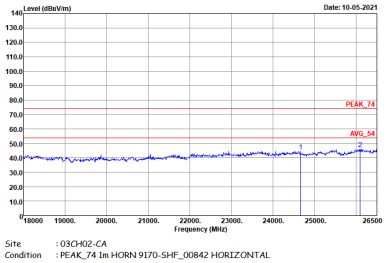
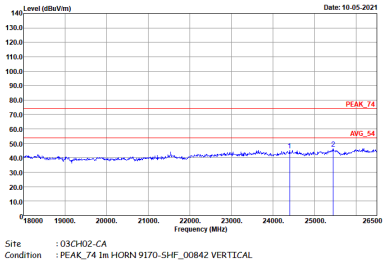
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak		

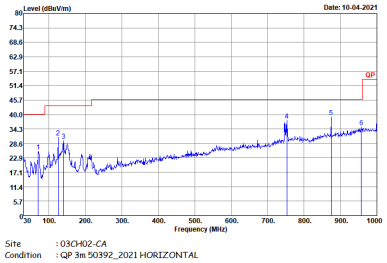
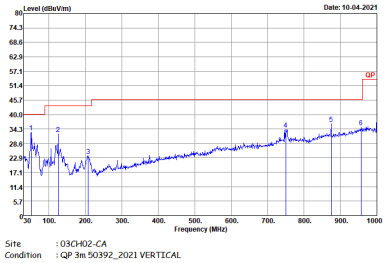
Emission after 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

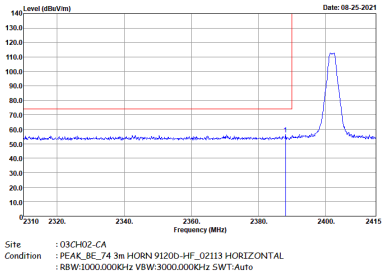
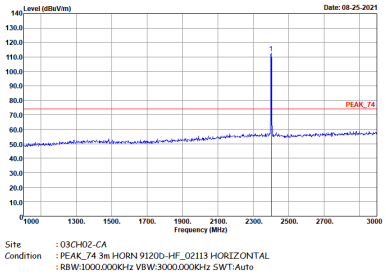
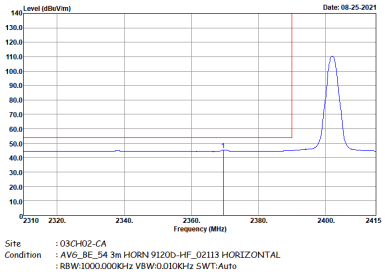
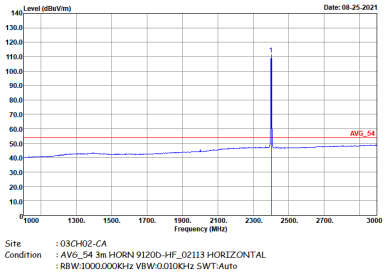
2.4GHz BLE (LF)

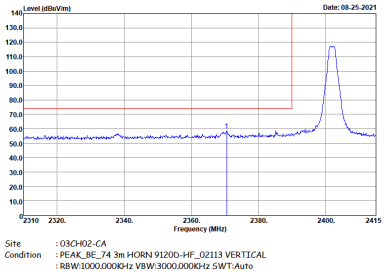
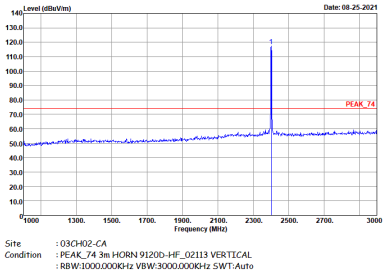
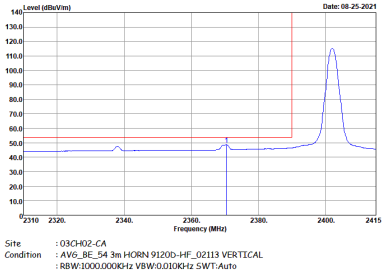
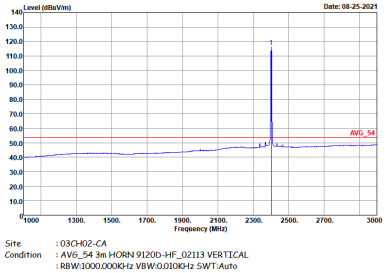
BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak		

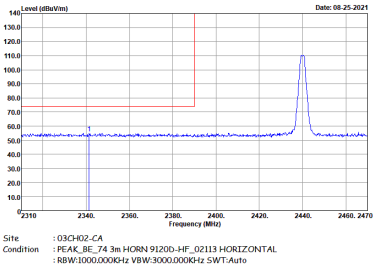
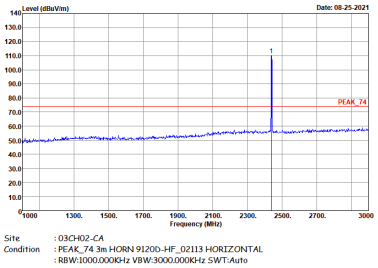
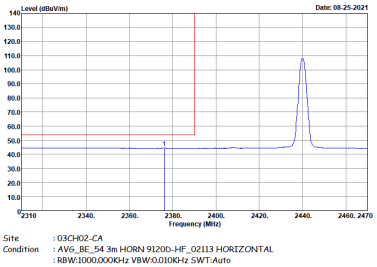
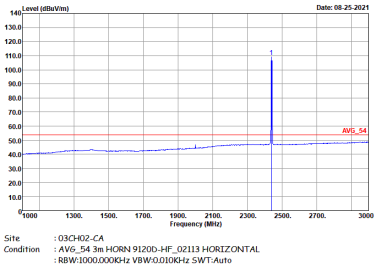
<2Mbps>

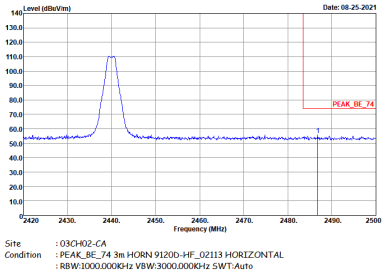
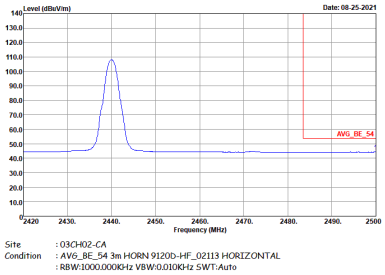
2.4GHz 2400~2483.5MHz

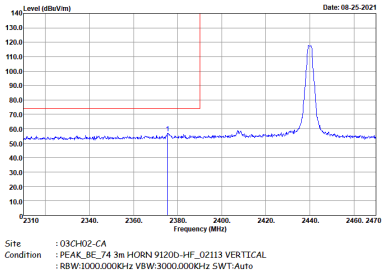
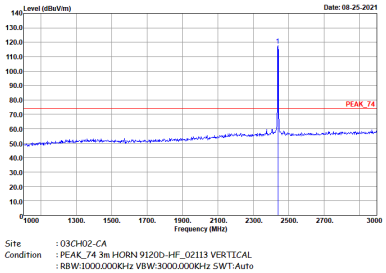
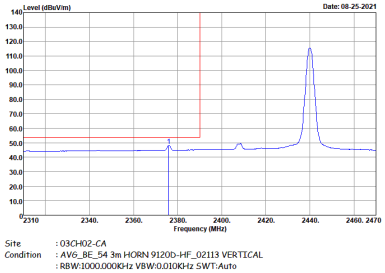
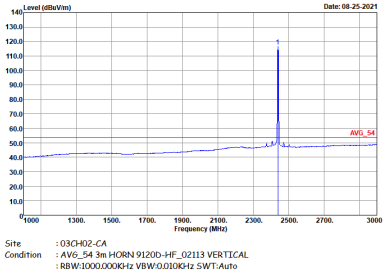
BLE (Band Edge @ 3m)

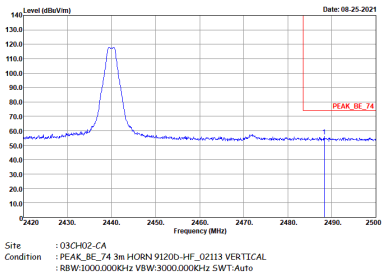
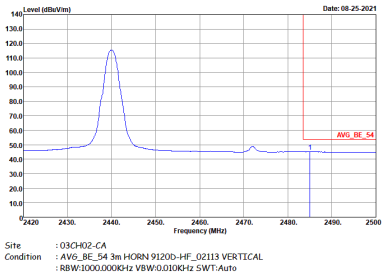
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

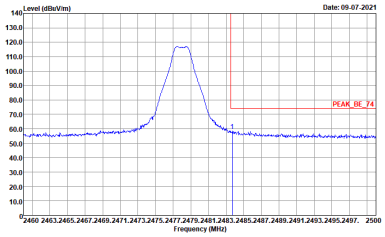
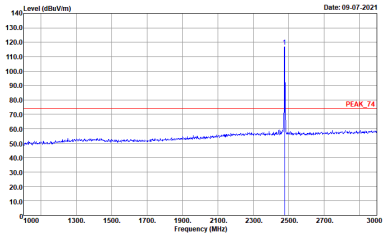
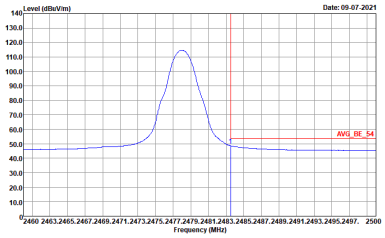
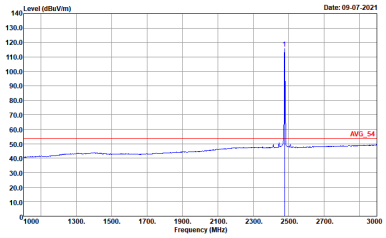
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak		
Avg		

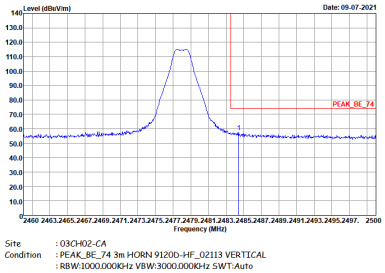
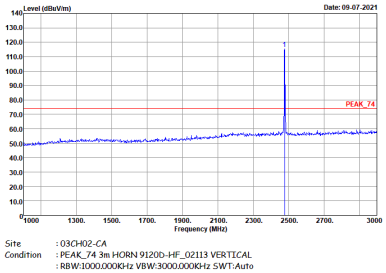
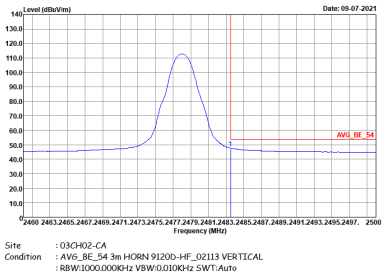
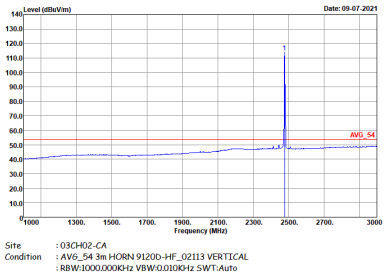
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

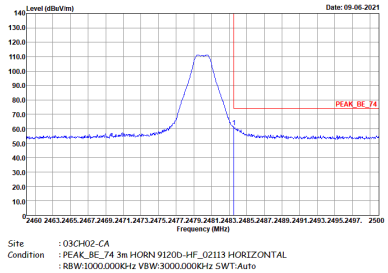
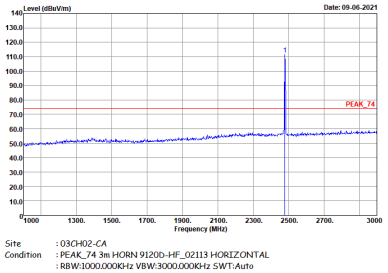
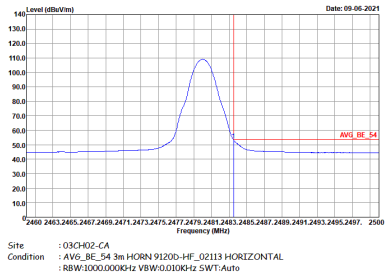
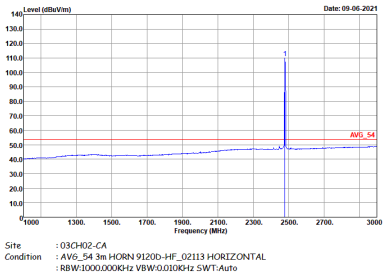
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

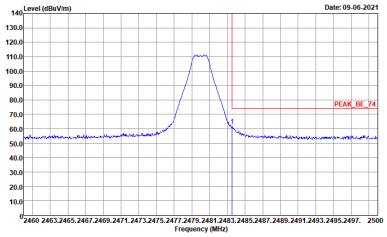
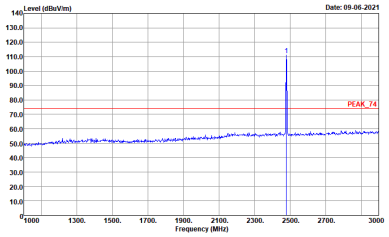
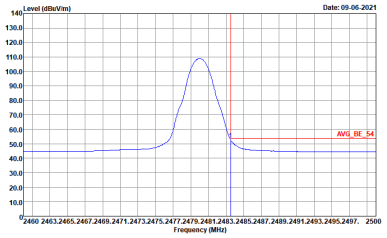
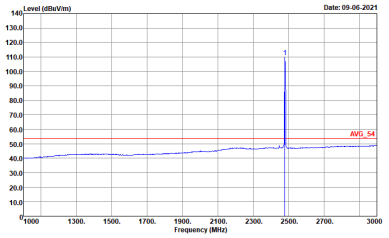
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH38 2478MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

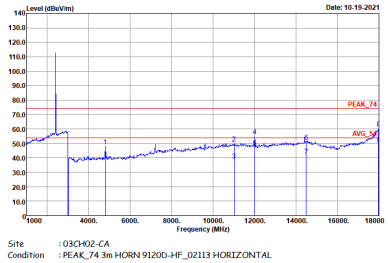
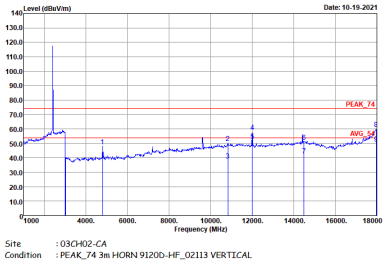
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH38 2478MHz	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AV6_BE_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AV6_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

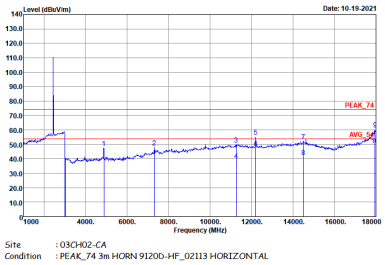
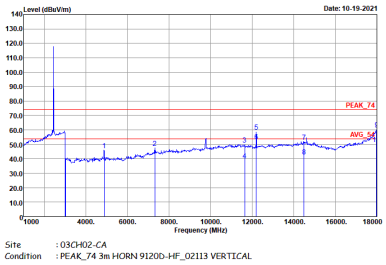
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AV6_BE_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AV6_54 3m HORN 9120D-HF_02113 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

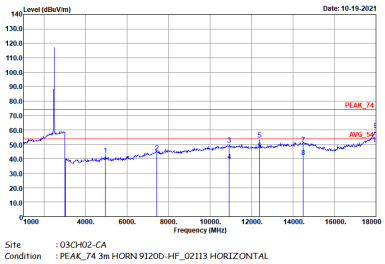
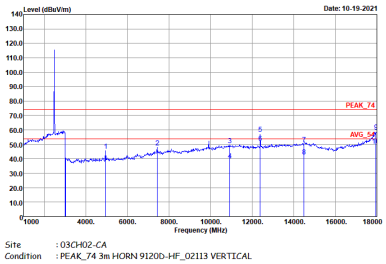
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN 9120D-HF_02113 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

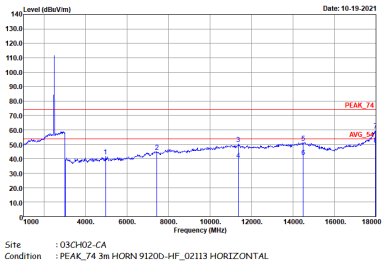
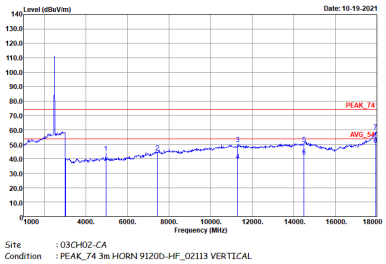
2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

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

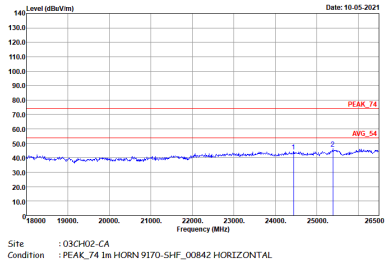
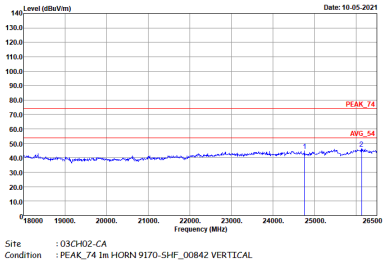
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH38 2478MHz	
	Horizontal	Vertical
Peak		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak		

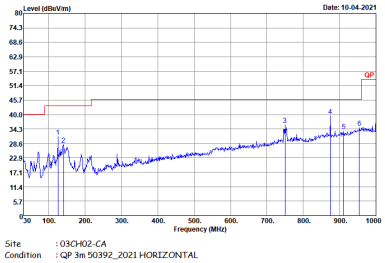
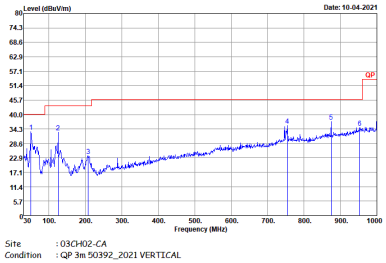
Emission after 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

2.4GHz BLE (LF)

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

Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth - LE for 1Mbps	100	-	-	10Hz
Bluetooth - LE for 2Mbps	100	-	-	10Hz

Bluetooth - LE for 1Mbps	Bluetooth - LE for 2Mbps