FCC RADIO TEST REPORT

FCC ID	:	**PU5-TP00139AS**
Equipment	:	**Notebook Computer**
Brand Name	:	**Lenovo**
Model Name	:	**TP00139A**
Applicant	:	**Wistron Corporation** **21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221,Taiwan**
Manufacturer	:	**Lenovo PC HK Limited.** **23/F, Lincoln House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong, China**
Standard	:	**FCC Part 15 Subpart C §15.247**

Equipment: Murata LBEE5QG2CX tested inside of Lenovo Notebook Computer.

The product was received on Dec. 29, 2021 and testing was performed from Jan. 14, 2022 to Feb. 22, 2022. We, Sporton International Inc. Wensan Laboratory, 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 from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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History of this test report

Report No.	Version	Description	Issue Date
FR1D1645-01B	01	Initial issue of report	Feb. 16, 2022
FR1D1645-01B	02	Revise test data, module information and List of Measuring Equipment	Feb. 24, 2022

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	7.17 dB under the limit at 897.180 MHz
3.6	15.207	AC Conducted Emission	Pass	12.69 dB under the limit at 11.746 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
   It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to this report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Ruby Zou

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00139A
FCC ID	PU5-TP00139AS
Sample 1	EUT with INPAQ Antenna
Sample 2	EUT with WNC Antenna
EUT supports Radios application	WCDMA/HSPA/LTE/5G NR/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE

Remark:

1. The EUT's information above is declared by manufacturer.
2. Equipment: Murata LBEE5QG2CX tested inside of Lenovo Notebook Computer.

Antenna Information			
Antenna 1	**Manufacturer**	INPAQ	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901YK.0011	025.901YL.0011
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (2.4G): 2.48 dBi	Bluetooth: 2.45 dBi WLAN (2.4G): 2.45 dBi
Antenna 2	**Manufacturer**	WNC	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901YK.0001	025.901YL.0001
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (2.4G): 2.62 dBi	Bluetooth: 2.54 dBi WLAN (2.4G): 2.54 dBi

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

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel (37 hopping + 3 advertising channel)
Maximum Output Power to Antenna	Bluetooth – LE (1Mbps): 5.41 dBm / 0.0035 W Bluetooth – LE (2Mbps): 5.45 dBm / 0.0035 W
99% Occupied Bandwidth	Bluetooth – LE (1Mbps): 1.020 MHz Bluetooth – LE (2Mbps): 2.012 MHz
Type of Modulation	Bluetooth LE : GFSK

1.3 Modification of EUT

No modifications made to the EUT during the testing.

1.4 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
Test Site No.	**Sporton Site No.**
	TH05-HY, 03CH20-HY, CO07HY

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

FCC designation No.: TW3786

1.5 Applicable Standards

According to the specifications declared by 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 the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

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

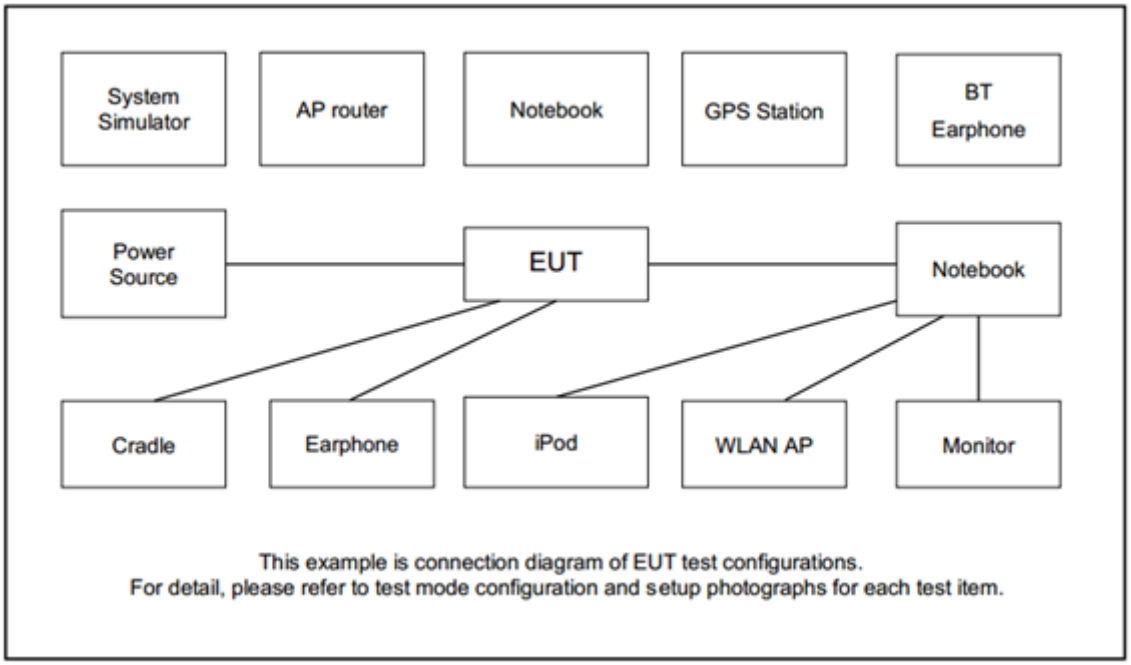
a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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 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 CH39_2480 MHz_2Mbps
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + Earphone + Battery 1 + Adapter + USB Cable (Data Link with HD) for Sample 2
Remark: **1.** For Radiated Test Cases, the tests were performed with Adapter (ADLX45YLC3D), Battery 1 and Sample 2. **2.** Data Link with USB HD means data application transferred mode between EUT and USB HD.	

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	GT-AXE11000	MSQ-RTAXJF00	N/A	Unshielded, 1.8m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	USB HD	WD	WDBGPU0010BBL	FCC DoC	Shielded, 1m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT v4.0.00194.0” was installed in EUT 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.

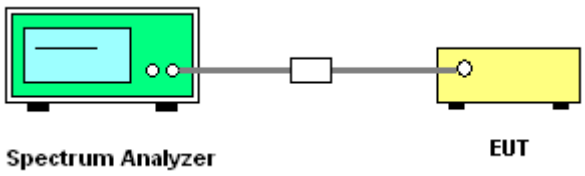
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in 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 is connected to the spectrum analyzer by RF cable and attenuator. The path loss is 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.

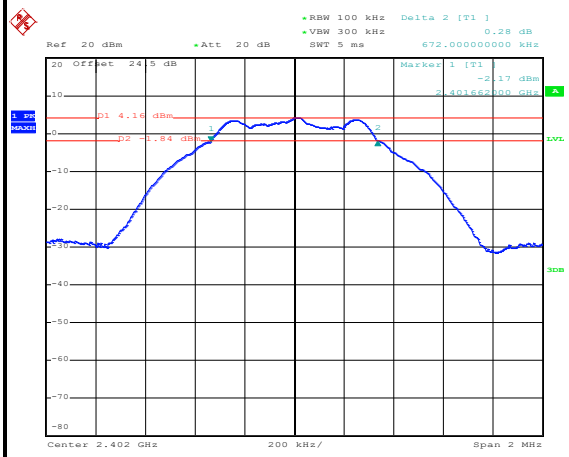
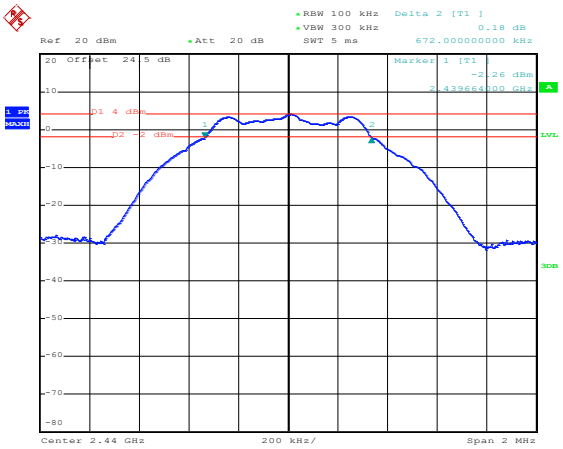
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

<1Mbps>

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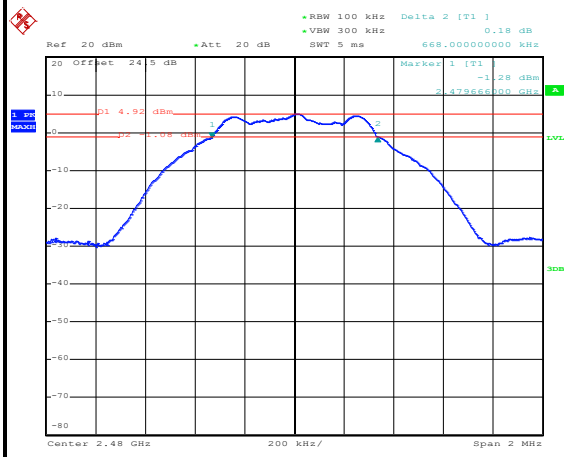	

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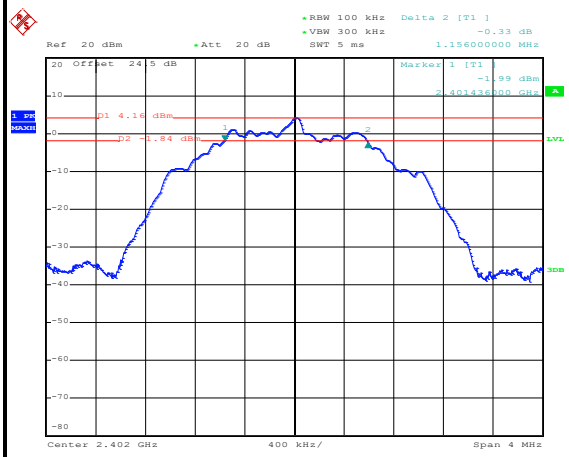
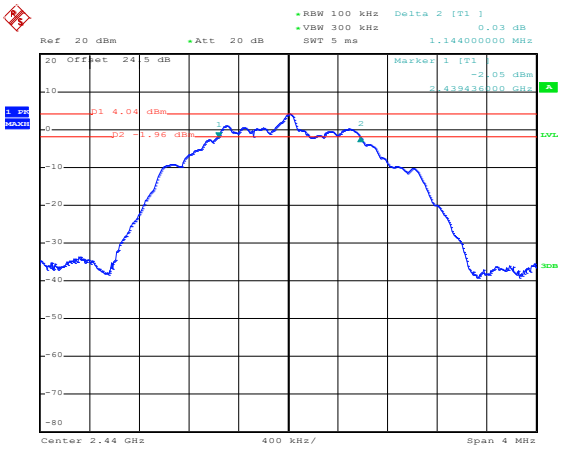
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
 Date: 11.FEB.2022 16:15:11	 Date: 11.FEB.2022 16:12:08
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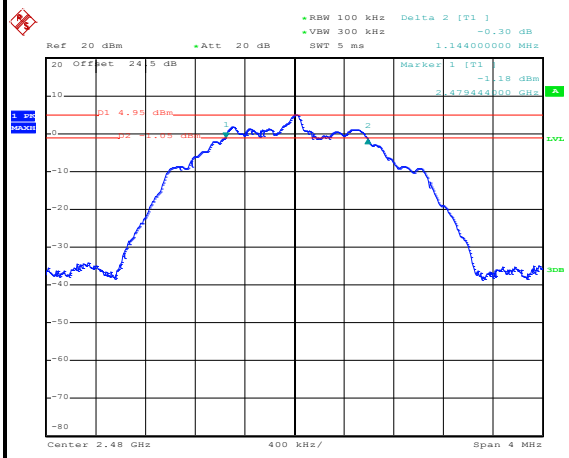
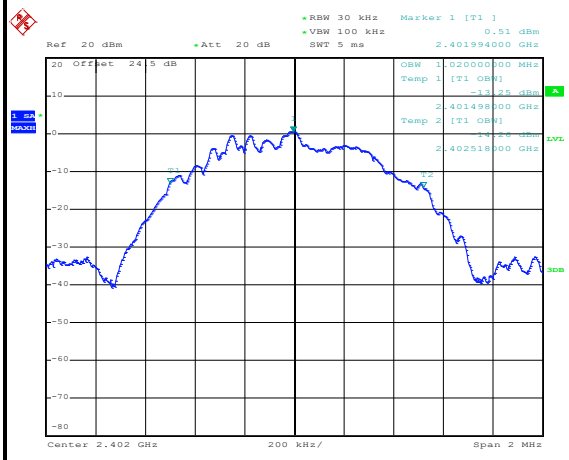
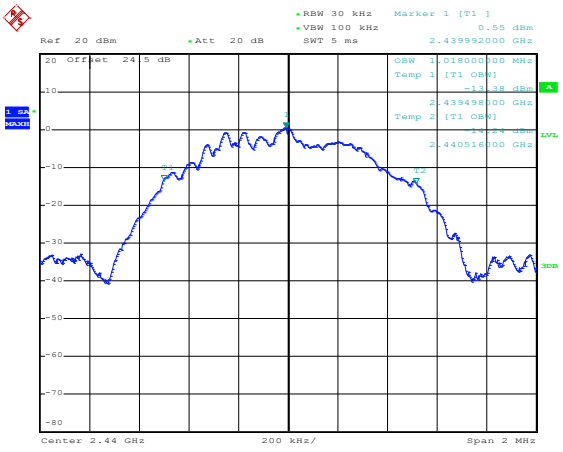
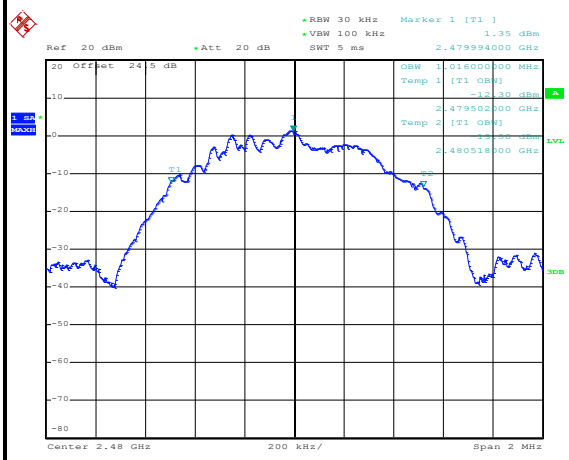
 Date: 11.FEB.2022 16:08:59	

3.1.6 Test Result of 99% Occupied Bandwidth

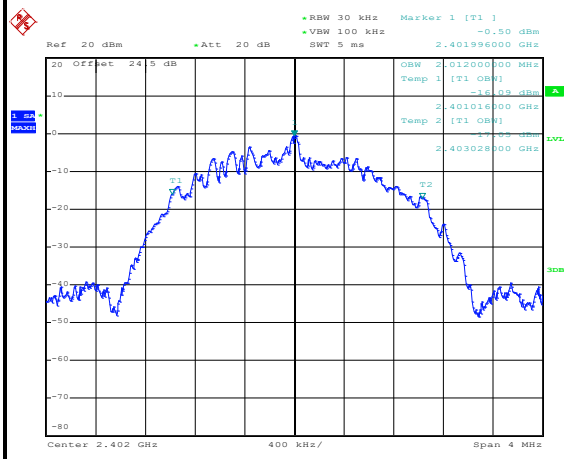
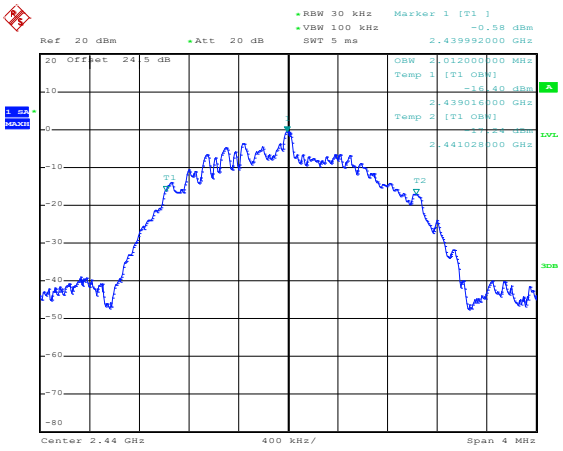
Please refer to Appendix A.

<1Mbps>

99% Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
 Date: 11.FEB.2022 15:57:46	 Date: 11.FEB.2022 16:00:51
99% Occupied Bandwidth Plot on Channel 39	**N/A**
 Date: 11.FEB.2022 16:03:11	

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

<2Mbps>

99% Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
 Date: 11.FEB.2022 16:21:06	 Date: 11.FEB.2022 16:13:56
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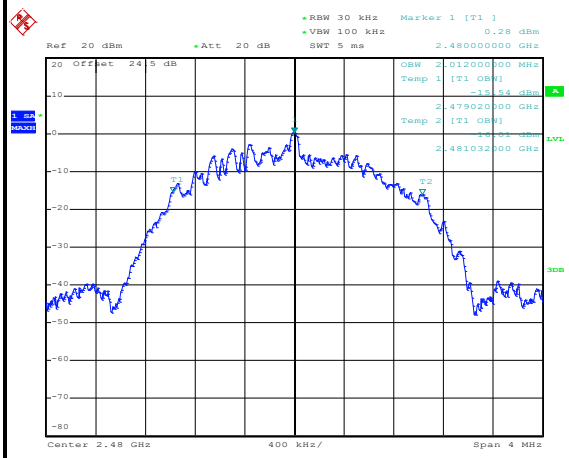
 Date: 11.FEB.2022 16:10:50	

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

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 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.

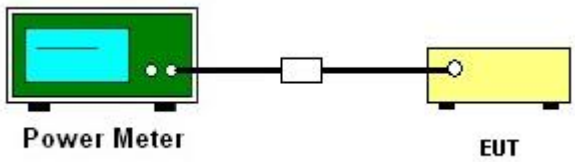
3.2.2 Measuring Instruments

Please refer to the measuring equipment list in 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 is connected to the power meter by RF cable and attenuator.
3. The path loss is 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

Please refer to the measuring equipment list in 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 is connected to the spectrum analyzer by RF cable and attenuator. The path loss is 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. (6 dB 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.

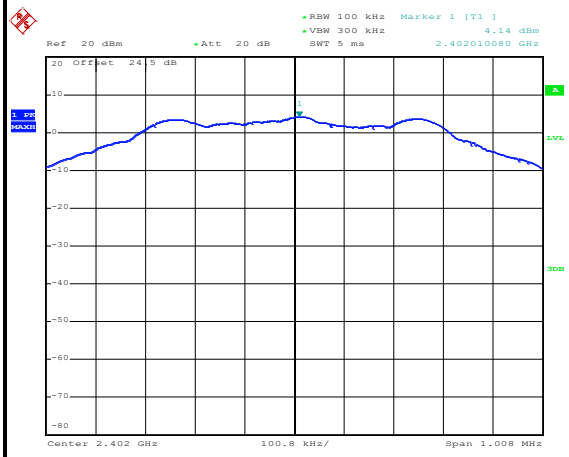
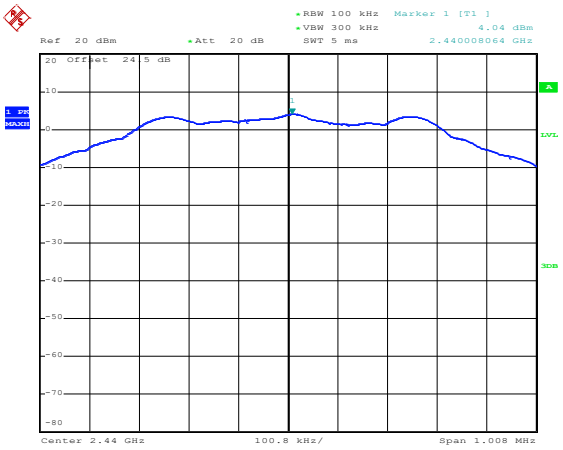
3.3.4 Test Setup

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
 Date: 11.FEB.2022 15:56:35	 Date: 11.FEB.2022 16:00:08
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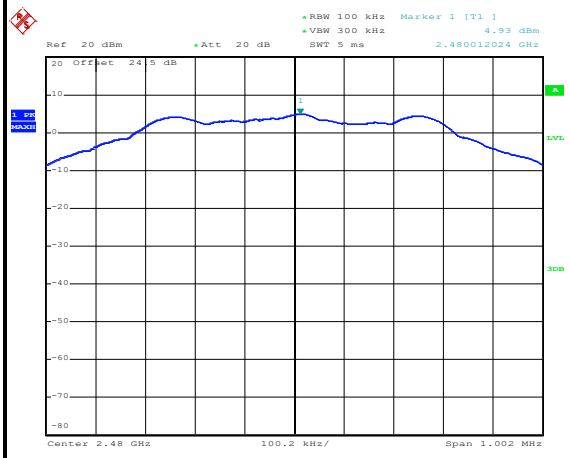 Date: 11.FEB.2022 16:02:19	

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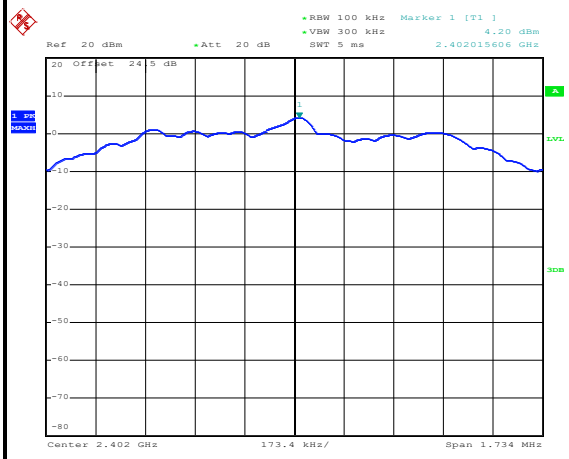
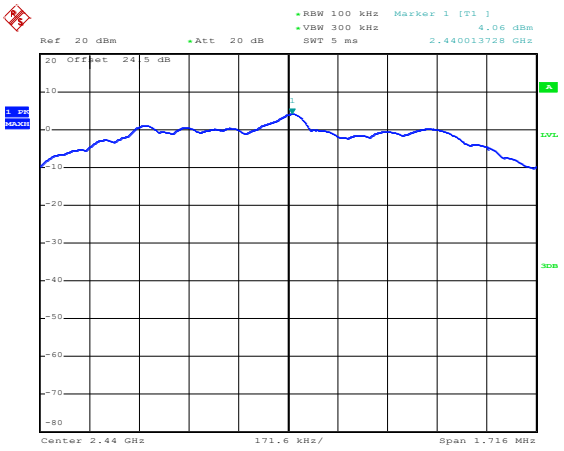
PSD 100kHz Plot on Channel 00	PSD 100kHz Plot on Channel 19
 Date: 11.FEB.2022 16:16:38	 Date: 11.FEB.2022 16:12:41
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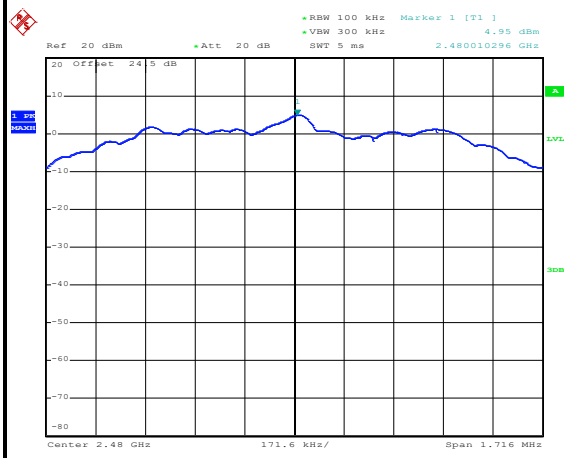 Date: 11.FEB.2022 16:09:47	

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

<1Mbps>

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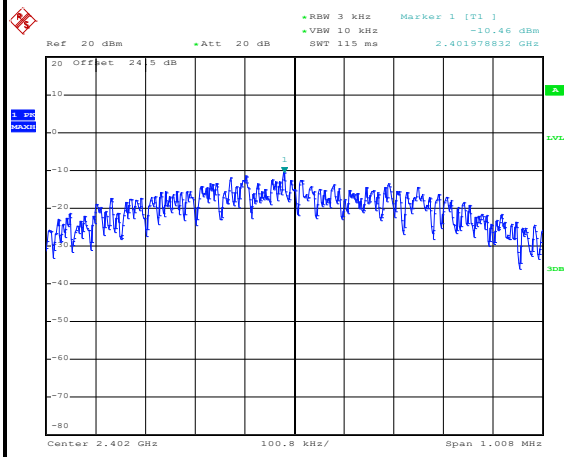
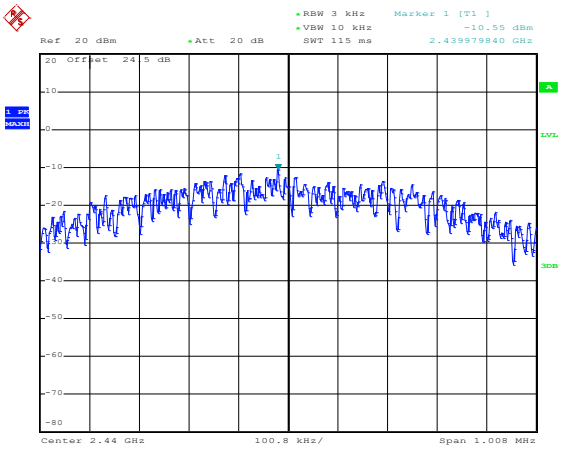
 Date: 11.FEB.2022 15:56:18	 Date: 11.FEB.2022 15:59:54
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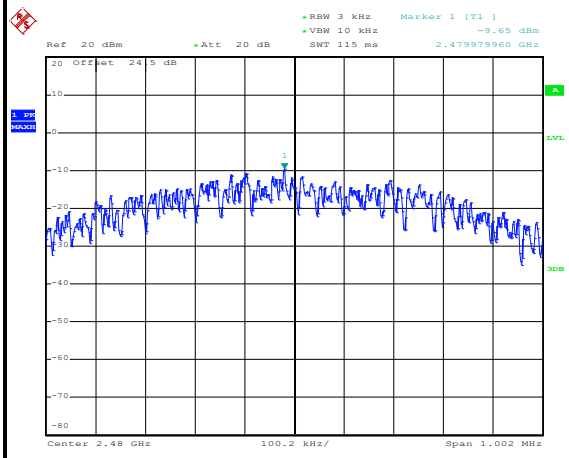
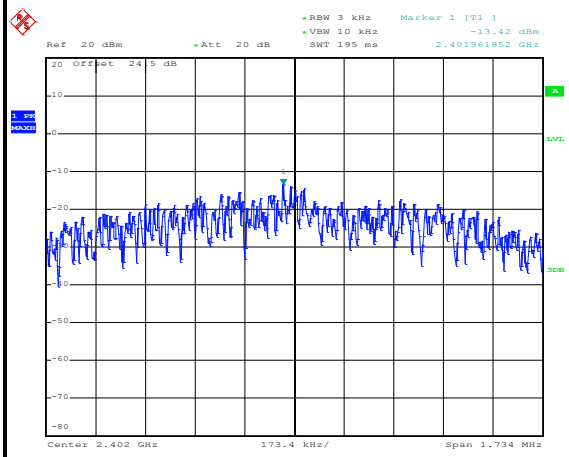
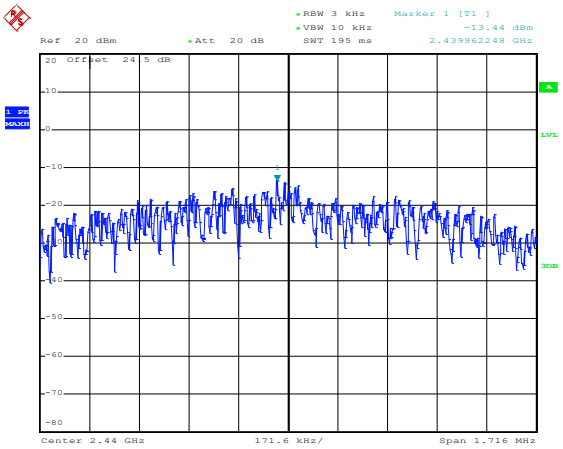
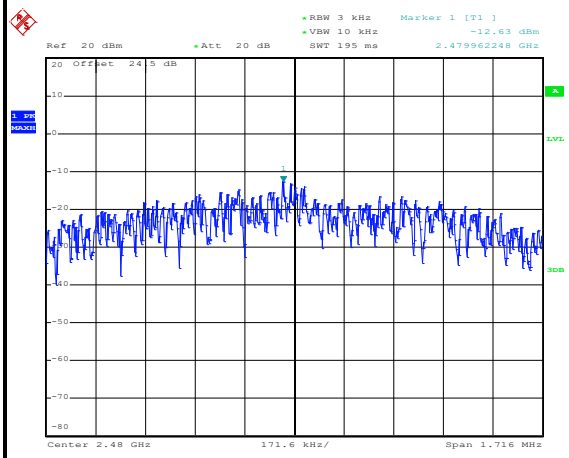
 Date: 11.FEB.2022 16:02:05	

<2Mbps>

PSD 3kHz Plot on Channel 00	PSD 3kHz Plot on Channel 19
 Date: 11.FEB.2022 16:15:37	 Date: 11.FEB.2022 16:12:24
PSD 3kHz Plot on Channel 39	**N/A**
 Date: 11.FEB.2022 16:09:22	

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.

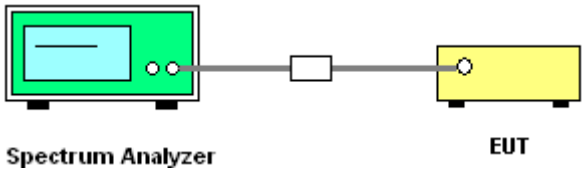
3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedure

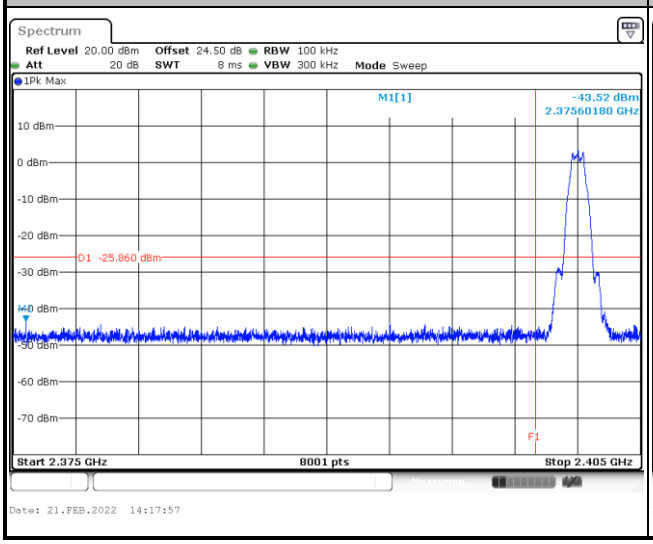
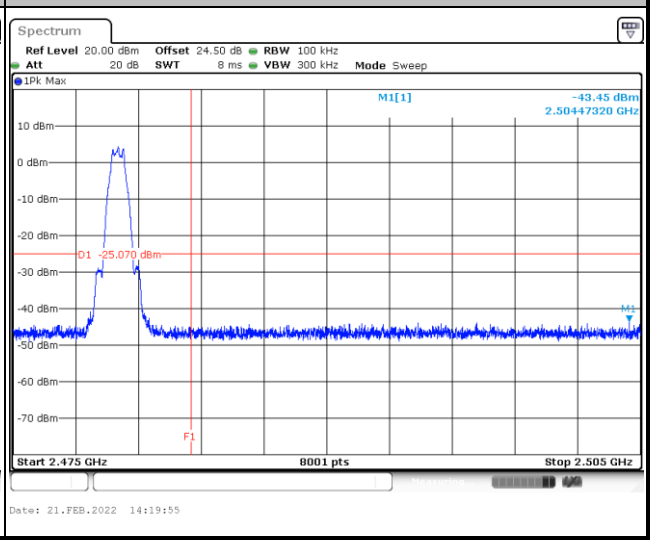
1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit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

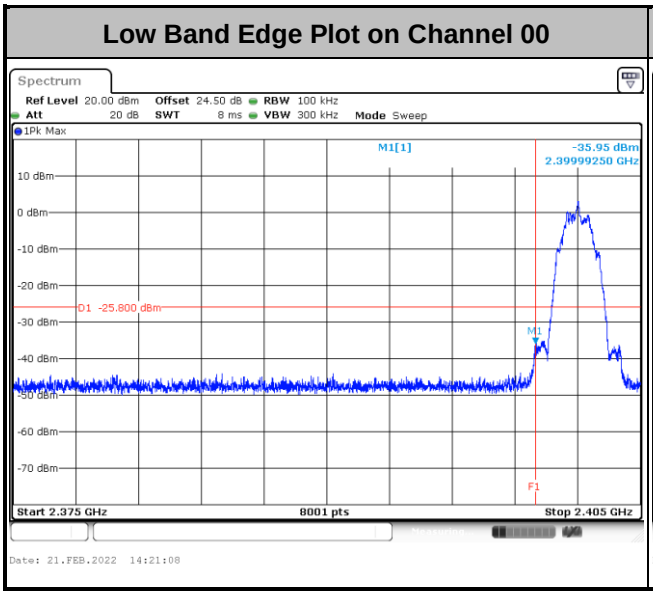
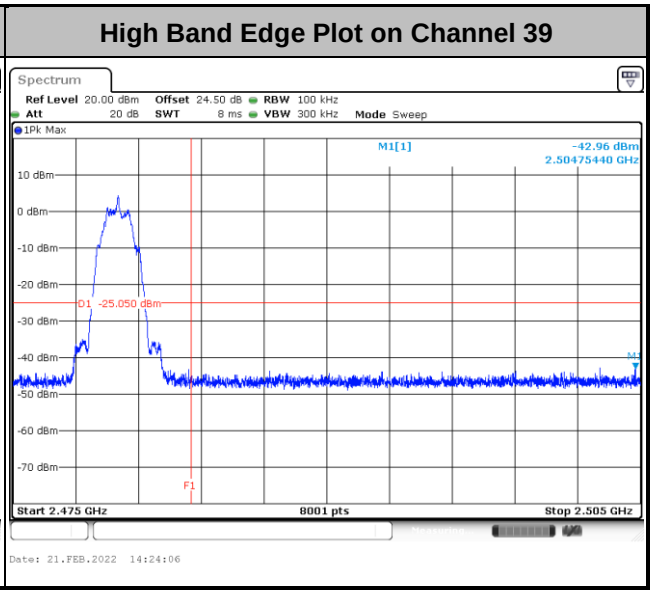


3.4.5 Test Result of Conducted Band Edges Plots

<1Mbps>

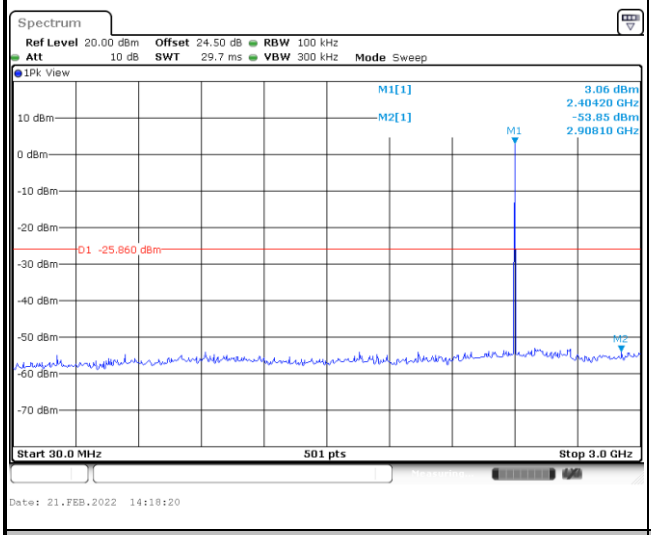
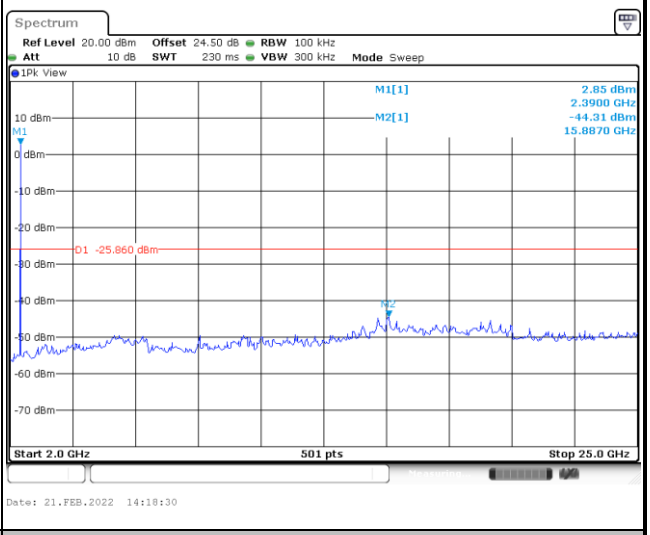
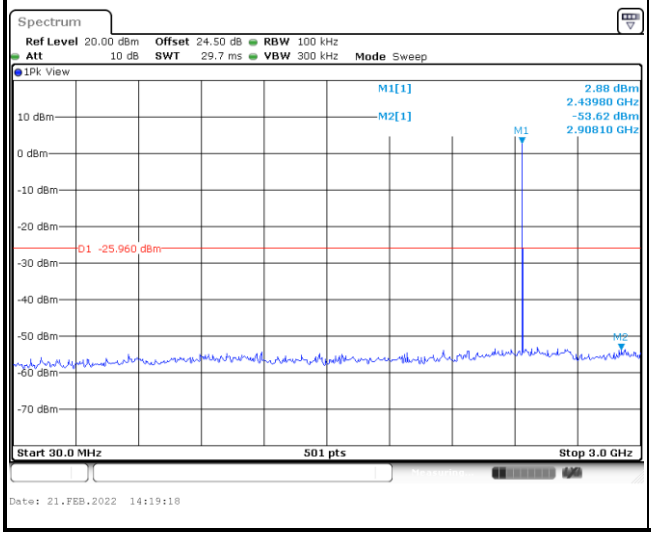
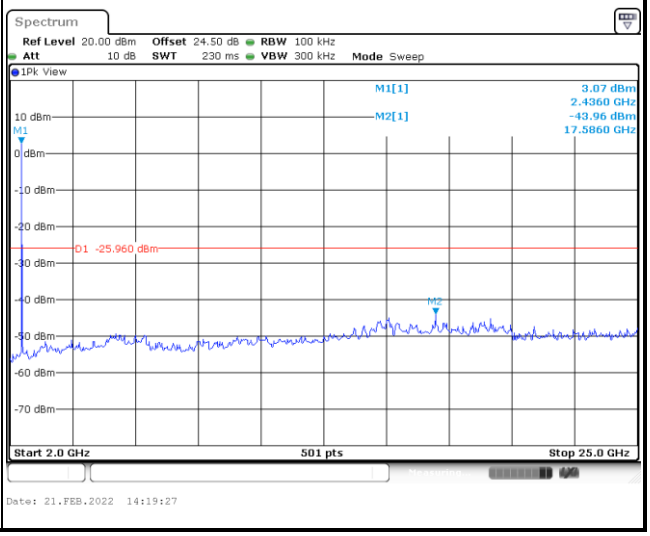
Low Band Edge Plot on Channel 00	High Band Edge Plot on Channel 39
	

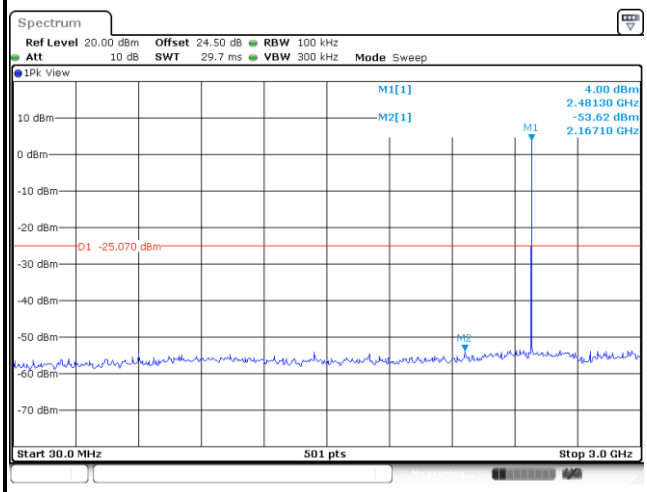
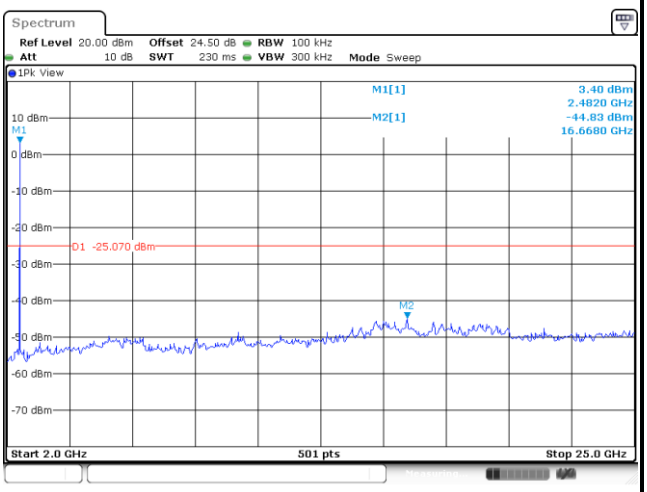
<2Mbps>

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

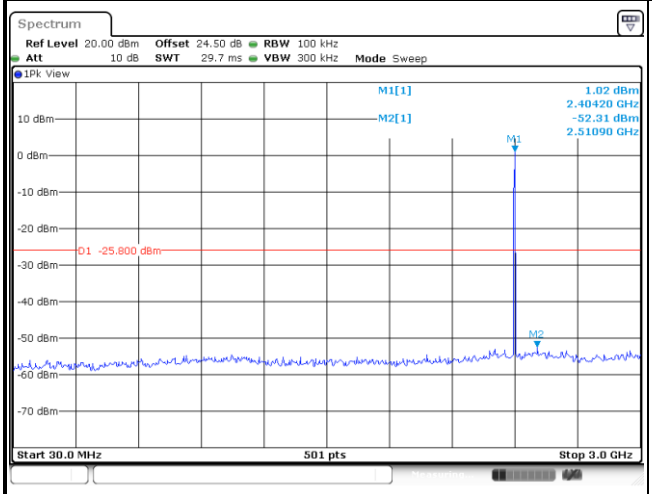
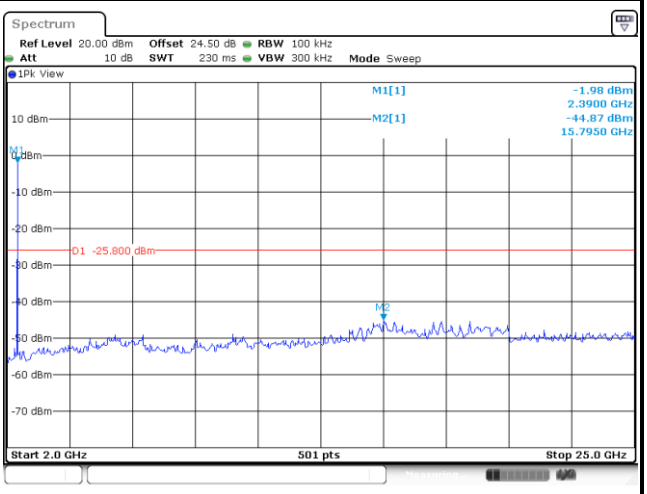
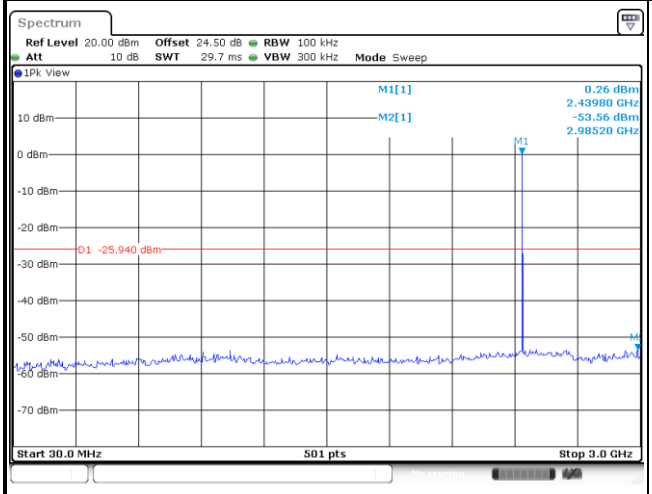
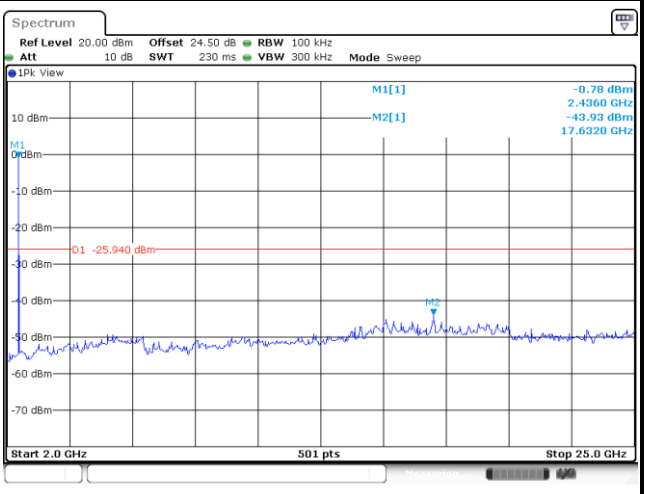
3.4.6 Test Result of Conducted Spurious Emission Plots

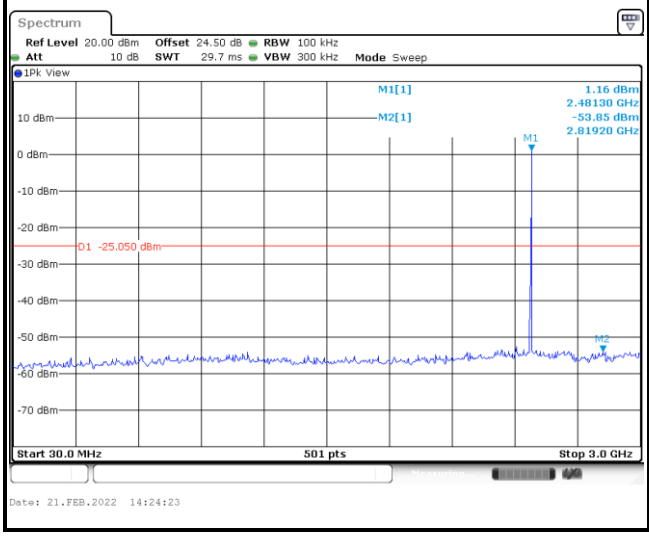
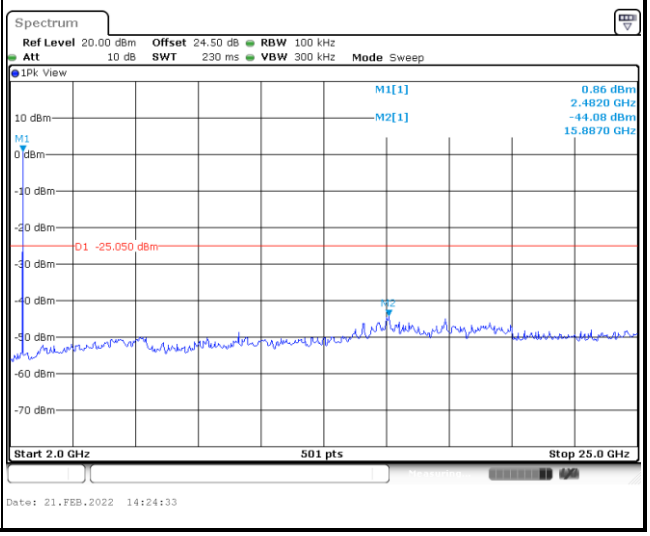
<1Mbps>

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 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 is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

3.5.2 Measuring Instruments

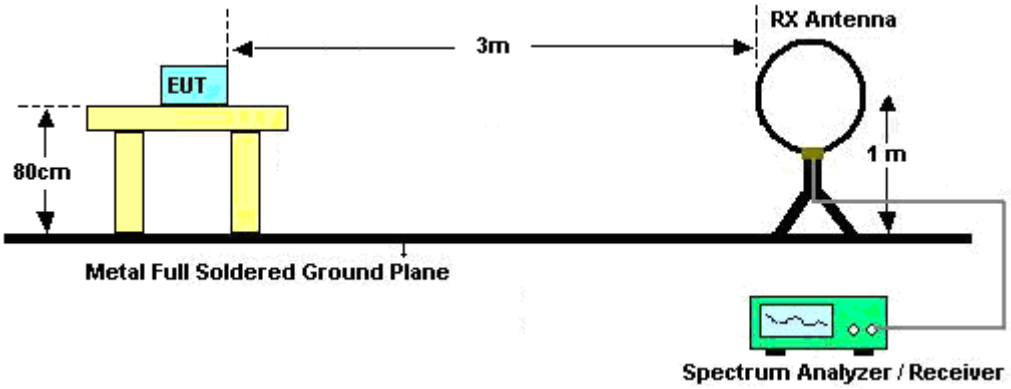
Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

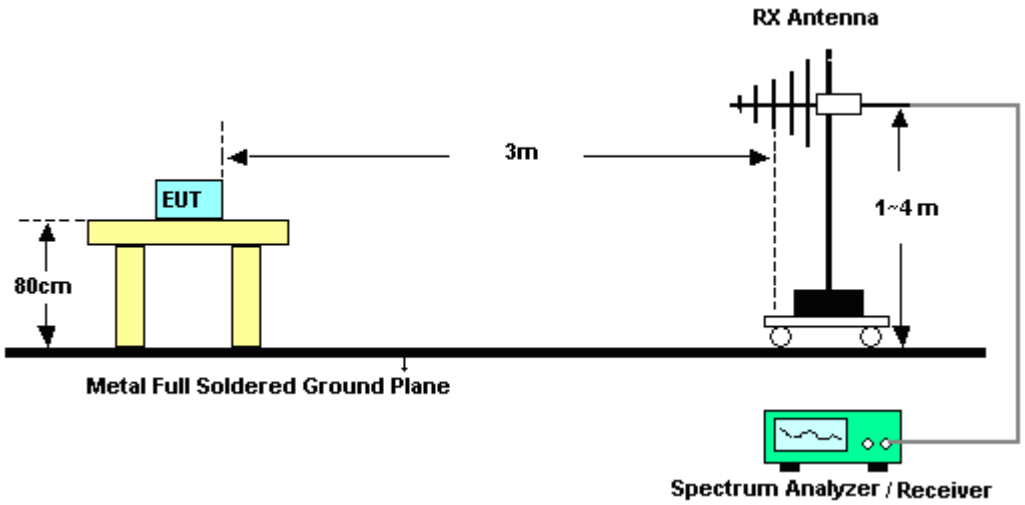
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is 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 is set 3 meters away from the receiving antenna, which is 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 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees 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 6 dB 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

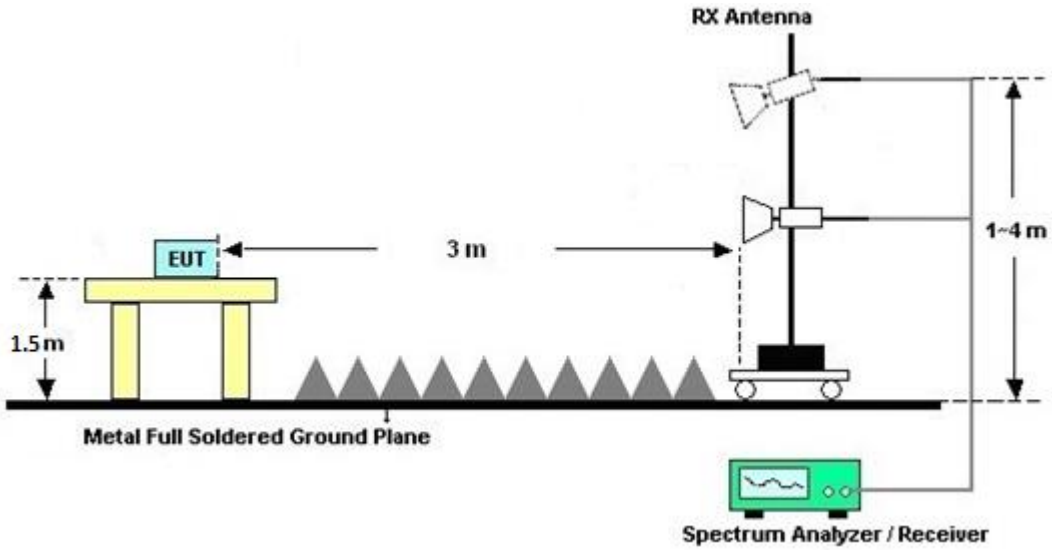
For radiated test below 30MHz



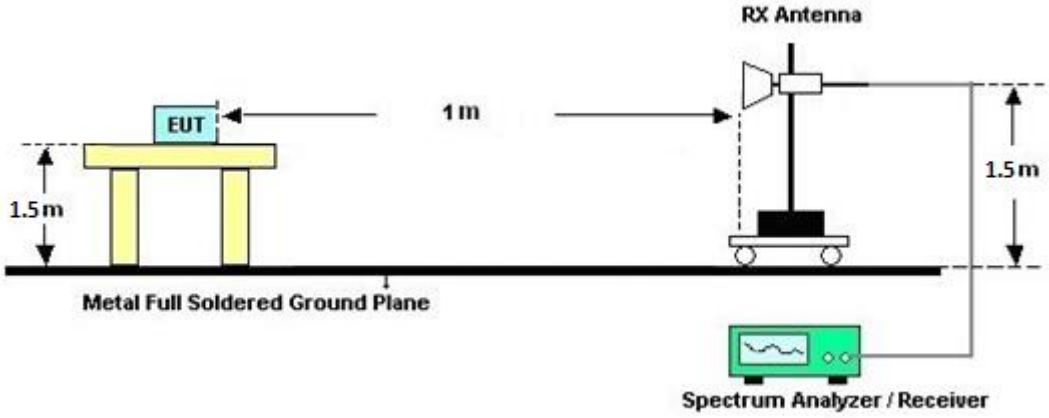
For radiated test from 30MHz to 1GHz



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 starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is 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 comes 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.

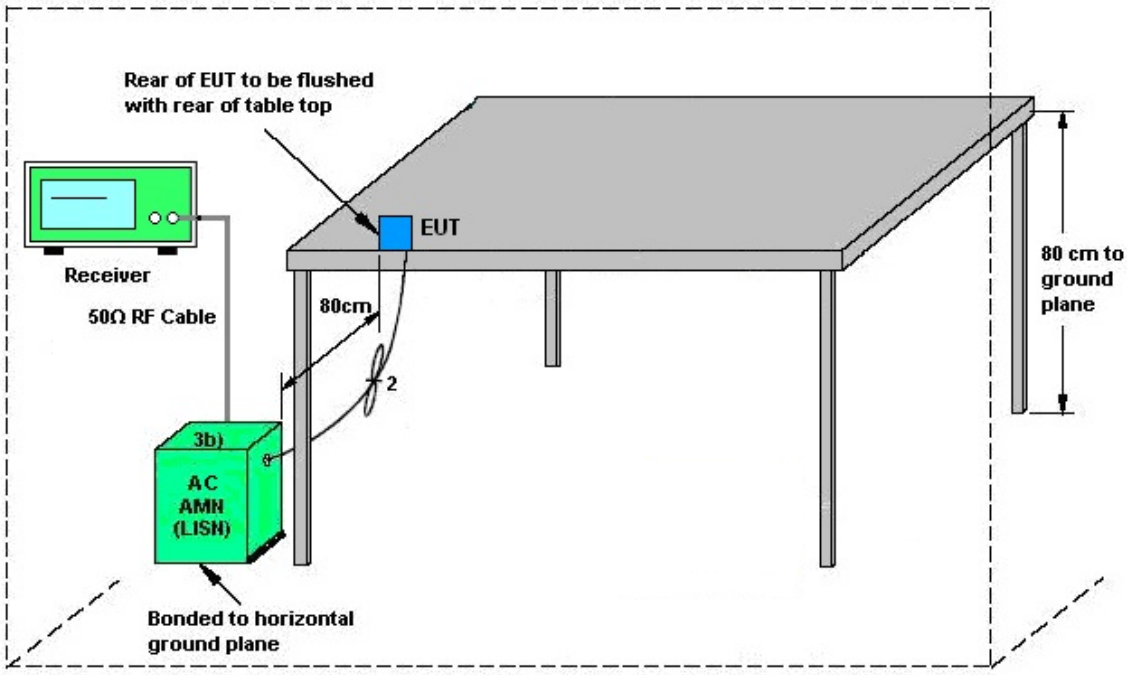
3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.6.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is 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 Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) 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 shall be reduced by the same level in dB comparing to gain minus 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
EMI Test Receicver	Keysight	N9010B	MY60241055	10Hz~44GHz	Jul. 12, 2021	Jan. 18, 2022~ Feb. 22, 2022	Jul. 11, 2022	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 03, 2022	Jan. 18, 2022~ Feb. 22, 2022	Jan. 02, 2023	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 15, 2021	Jan. 18, 2022~ Feb. 22, 2022	Nov. 14, 2022	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 22, 2021	Jan. 18, 2022~ Feb. 22, 2022	Jun. 21, 2022	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Jan. 18, 2022~ Feb. 22, 2022	Jan. 06, 2023	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N 1D01N-06	55606 & 08	30MHz~1GHz	Oct. 17, 2021	Jan. 18, 2022~ Feb. 22, 2022	Oct. 16, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2021	Jan. 18, 2022~ Feb. 22, 2022	Jun. 22, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz-40GHz	May 12, 2021	Jan. 18, 2022~ Feb. 22, 2022	May 11, 2022	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Jan. 18, 2022~ Feb. 22, 2022	Mar. 08, 2022	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804015/2,804027/2	N/A	Jan. 20, 2021	Jan. 18, 2022	Jan. 19, 2022	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804015/2,804027/2	N/A	Jan. 19, 2022	Jan. 19, 2022~ Feb. 22, 2022	Jan. 18, 2023	Radiation (03CH20-HY)
1.53GHz Low Pass Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN27	N/A	May 25, 2021	Jan. 18, 2022~ Feb. 22, 2022	May 24, 2022	Radiation (03CH20-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN8	N/A	Mar. 26, 2021	Jan. 18, 2022~ Feb. 22, 2022	Mar. 25, 2022	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Jan. 18, 2022~ Feb. 22, 2022	N/A	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jan. 18, 2022~ Feb. 22, 2022	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jan. 18, 2022~ Feb. 22, 2022	N/A	Radiation (03CH20-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jan. 18, 2022~ Feb. 22, 2022	N/A	Radiation (03CH20-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jan. 25, 2022	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 25, 2022	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 29, 2021	Jan. 25, 2022	Oct. 28, 2022	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	N/A	Jan. 25, 2022	N/A	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Jan. 25, 2022	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	9kHz~7GHz	Feb. 18, 2021	Jan. 25, 2022	Feb. 17, 2022	Conduction (CO07-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Jan. 25, 2022	Mar. 08, 2022	Conduction (CO07-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Jan. 14, 2022~ Feb. 21, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Dec. 30, 2021	Jan. 14, 2022~ Feb. 21, 2022	Dec. 29, 2022	Conducted (TH05-HY)
Switch Control Manframe	E-IUSTRUMENT	ETF-1405-0	EC1900067 (BOX7)	N/A	Aug. 12, 2021	Jan. 14, 2022~ Feb. 21, 2022	Aug. 11, 2022	Conducted (TH05-HY)
USB Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 16, 2021	Jan. 14, 2022~ Feb. 21, 2022	Dec. 15, 2022	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.3 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.9 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.7 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2022/1/14~2022/2/21	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.020	0.672	0.50	Pass
BLE	1Mbps	1	19	2440	1.018	0.672	0.50	Pass
BLE	1Mbps	1	39	2480	1.016	0.668	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	4.74	30.00	2.54	7.28	36.00	Pass
BLE	1Mbps	1	19	2440	4.61	30.00	2.54	7.15	36.00	Pass
BLE	1Mbps	1	39	2480	5.41	30.00	2.54	7.95	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	4.14	-10.46	2.54	8.00	Pass
BLE	1Mbps	1	19	2440	4.04	-10.55	2.54	8.00	Pass
BLE	1Mbps	1	39	2480	4.93	-9.65	2.54	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	2.012	1.156	0.50	Pass
BLE	2Mbps	1	19	2440	2.012	1.144	0.50	Pass
BLE	2Mbps	1	39	2480	2.012	1.144	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	4.97	30.00	2.54	7.51	36.00	Pass
BLE	2Mbps	1	19	2440	4.95	30.00	2.54	7.49	36.00	Pass
BLE	2Mbps	1	39	2480	5.45	30.00	2.54	7.99	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	4.20	-13.42	2.54	8.00	Pass
BLE	2Mbps	1	19	2440	4.06	-13.44	2.54	8.00	Pass
BLE	2Mbps	1	39	2480	4.95	-12.63	2.54	8.00	Pass

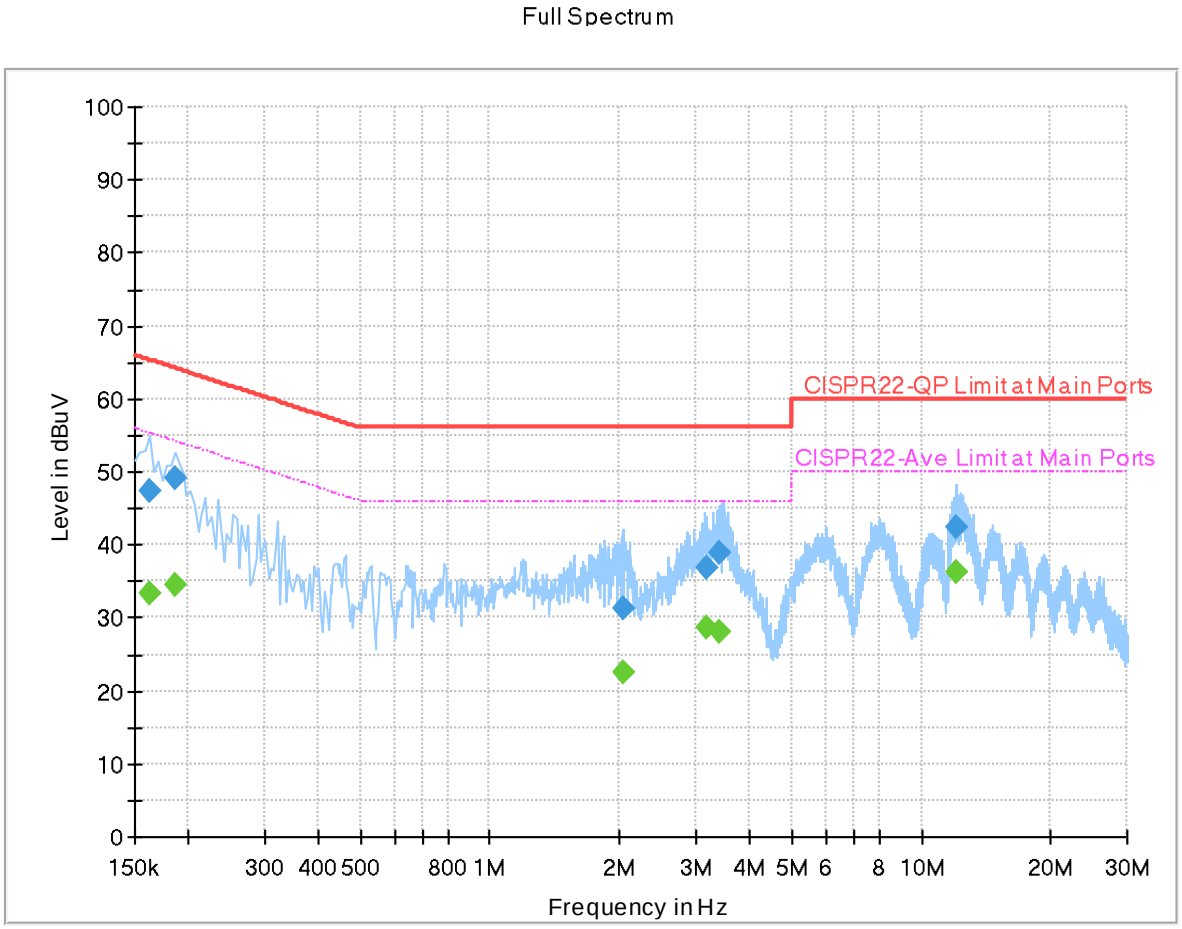
Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Report NO :	1D1645-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

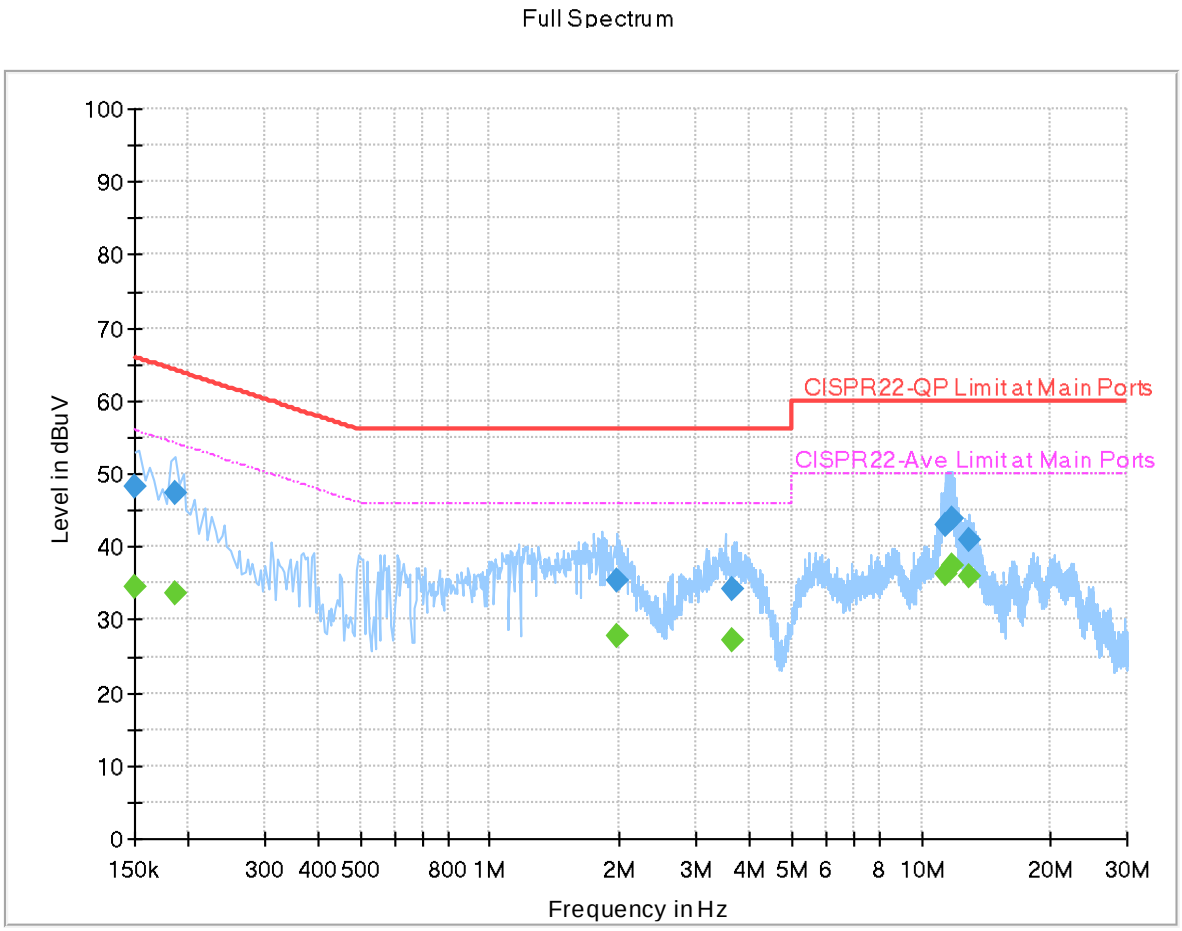


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	33.30	55.36	22.06	L1	OFF	20.1
0.162000	47.33	---	65.36	18.03	L1	OFF	20.1
0.186000	---	34.39	54.21	19.82	L1	OFF	20.0
0.186000	49.25	---	64.21	14.96	L1	OFF	20.0
2.030000	---	22.63	46.00	23.37	L1	OFF	20.1
2.030000	31.30	---	56.00	24.70	L1	OFF	20.1
3.190000	---	28.58	46.00	17.42	L1	OFF	20.1
3.190000	36.70	---	56.00	19.30	L1	OFF	20.1
3.406000	---	28.06	46.00	17.94	L1	OFF	20.1
3.406000	38.92	---	56.00	17.08	L1	OFF	20.1
12.038000	---	36.27	50.00	13.73	L1	OFF	20.3
12.038000	42.35	---	60.00	17.65	L1	OFF	20.3

EUT Information

Report NO :	1D1645-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	34.40	56.00	21.60	N	OFF	20.1
0.150000	48.35	---	66.00	17.65	N	OFF	20.1
0.186000	---	33.49	54.21	20.72	N	OFF	20.1
0.186000	47.37	---	64.21	16.84	N	OFF	20.1
1.970000	---	27.89	46.00	18.11	N	OFF	20.1
1.970000	35.30	---	56.00	20.70	N	OFF	20.1
3.634000	---	27.31	46.00	18.69	N	OFF	20.1
3.634000	34.22	---	56.00	21.78	N	OFF	20.1
11.386000	---	36.32	50.00	13.68	N	OFF	20.2
11.386000	42.93	---	60.00	17.07	N	OFF	20.2
11.746000	---	37.31	50.00	12.69	N	OFF	20.2
11.746000	43.78	---	60.00	16.22	N	OFF	20.2
12.870000	---	35.96	50.00	14.04	N	OFF	20.2
12.870000	40.93	---	60.00	19.07	N	OFF	20.2

Appendix C. Radiated Spurious Emission

Test Engineer :	Bill Chang, JC Liang, Karl Hou and Wilson Wu	Temperature :	20~25°C
		Relative Humidity :	50~60%

<1Mbps>

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		2388.435	49.23	-24.77	74	39.57	27.25	18.68	36.27	293	63	P	H
		2370.48	39.66	-14.34	54	30.09	27.18	18.65	36.26	293	63	A	H
	*	2402	102.57	-	-	92.84	27.31	18.7	36.28	293	63	P	H
	*	2402	101.94	-	-	92.21	27.31	18.7	36.28	293	63	A	H
													H
													H
		2336.985	49.26	-24.74	74	39.82	27.1	18.59	36.25	395	215	P	V
		2381.19	39.63	-14.37	54	30.01	27.22	18.67	36.27	395	215	A	V
	*	2402	104.9	-	-	95.17	27.31	18.7	36.28	395	215	P	V
	*	2402	104.17	-	-	94.44	27.31	18.7	36.28	395	215	A	V
													V
													V
BLE CH 19 2440MHz		2371.44	49.84	-24.16	74	40.26	27.19	18.65	36.26	100	257	P	H
		2386.8	39.69	-14.31	54	30.03	27.25	18.68	36.27	100	257	A	H
	*	2440	102.23	-	-	92.28	27.46	18.78	36.29	100	257	P	H
	*	2440	101.36	-	-	91.41	27.46	18.78	36.29	100	257	A	H
		2494.08	49.01	-24.99	74	38.77	27.68	18.88	36.32	100	257	P	H
		2496	40.37	-13.63	54	30.13	27.68	18.88	36.32	100	257	A	H
		2377.2	48.78	-25.22	74	39.18	27.21	18.66	36.27	284	129	P	V
		2369.04	39.6	-14.4	54	30.04	27.18	18.64	36.26	284	129	A	V
	*	2440	104.28	-	-	94.33	27.46	18.78	36.29	284	129	P	V
	*	2440	103.64	-	-	93.69	27.46	18.78	36.29	284	129	A	V
		2491.2	49.82	-24.18	74	39.61	27.66	18.87	36.32	284	129	P	V
		2490.72	40.13	-13.87	54	29.92	27.66	18.87	36.32	284	129	A	V

BLE CH 39 2480MHz	*	2480	101.01	-	-	90.85	27.62	18.85	36.31	302	66	P	H
	*	2480	100.36	-	-	90.2	27.62	18.85	36.31	302	66	A	H
		2488.8	49.64	-24.36	74	39.43	27.66	18.87	36.32	302	66	P	H
		2485.56	40.28	-13.72	54	30.09	27.64	18.86	36.31	302	66	A	H
													H
													H
	*	2480	102.86	-	-	92.7	27.62	18.85	36.31	300	118	P	V
	*	2480	102.02	-	-	91.86	27.62	18.85	36.31	300	118	A	V
		2483.52	50.28	-23.72	74	40.1	27.63	18.86	36.31	300	118	P	V
		2489.4	40.21	-13.79	54	30	27.66	18.87	36.32	300	118	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	42.28	-31.72	74	34.57	32.22	13.03	37.54	-	-	P	H
		10875	50.61	-23.39	74	33.95	38.88	19.46	41.68	-	-	P	H
		10875	41.28	-12.72	54	24.62	38.88	19.46	41.68	-	-	A	H
		14491	52.22	-21.78	74	33.74	39.89	22.78	44.19	-	-	P	H
		14491	43.69	-10.31	54	25.21	39.89	22.78	44.19	-	-	A	H
		17910	55.5	-18.5	74	34.91	41.17	24.83	45.41	-	-	P	H
		17910	45.34	-8.66	54	24.75	41.17	24.83	45.41	-	-	A	H
													H
													H
													H
													H
													H
		4804	42.44	-31.56	74	34.73	32.22	13.03	37.54	-	-	P	V
		10880	51.17	-22.83	74	34.53	38.86	19.46	41.68	-	-	P	V
		10880	41.35	-12.65	54	24.71	38.86	19.46	41.68	-	-	A	V
		14491	52.39	-21.61	74	33.91	39.89	22.78	44.19	-	-	P	V
		14491	43.29	-10.71	54	24.81	39.89	22.78	44.19	-	-	A	V
		17985	55.83	-18.17	74	34.72	41.69	24.88	45.46	-	-	P	V
		17985	45.63	-8.37	54	24.52	41.69	24.88	45.46	-	-	A	V
													V
													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	42.84	-31.16	74	34.86	32.58	13	37.6	-	-	P	H
		7320	47.96	-26.04	74	33.8	36.76	15.93	38.53	-	-	P	H
		10875	50.52	-23.48	74	33.86	38.88	19.46	41.68	-	-	P	H
		10875	41.52	-12.48	54	24.86	38.88	19.46	41.68	-	-	A	H
		14491	53.41	-20.59	74	34.93	39.89	22.78	44.19	-	-	P	H
		14491	43.21	-10.79	54	24.73	39.89	22.78	44.19	-	-	A	H
		17985	54.73	-19.27	74	33.62	41.69	24.88	45.46	-	-	P	H
		17985	45.63	-8.37	54	24.52	41.69	24.88	45.46	-	-	A	H
													H
													H
													H
BLE													H
CH 19		4880	43.22	-30.78	74	35.24	32.58	13	37.6	-	-	P	V
2440MHz		7320	47.79	-26.21	74	33.63	36.76	15.93	38.53	-	-	P	V
		10880	50.12	-23.88	74	33.48	38.86	19.46	41.68	-	-	P	V
		10880	41.16	-12.84	54	24.52	38.86	19.46	41.68	-	-	A	V
		14491	53.08	-20.92	74	34.6	39.89	22.78	44.19	-	-	P	V
		14491	43.96	-10.04	54	25.48	39.89	22.78	44.19	-	-	A	V
		17940	55.15	-18.85	74	34.35	41.38	24.85	45.43	-	-	P	V
		17940	45.49	-8.51	54	24.69	41.38	24.85	45.43	-	-	A	V
													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)
		4960	43.77	-30.23	74	35.45	33.02	12.96	37.66	-	-	P	H
		7440	47.6	-26.4	74	34.03	36.22	15.98	38.63	-	-	P	H
		10880	51.17	-22.83	74	34.53	38.86	19.46	41.68	-	-	P	H
		10880	41.21	-12.79	54	24.57	38.86	19.46	41.68	-	-	A	H
		14491	52.8	-21.2	74	34.32	39.89	22.78	44.19	-	-	P	H
		14491	43.79	-10.21	54	25.31	39.89	22.78	44.19	-	-	A	H
		17970	55.62	-18.38	74	34.61	41.59	24.87	45.45	-	-	P	H
		17970	45.78	-8.22	54	24.77	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
BLE CH 39 2480MHz		4960	44.34	-29.66	74	36.02	33.02	12.96	37.66	-	-	P	V
		7440	47.34	-26.66	74	33.77	36.22	15.98	38.63	-	-	P	V
		10875	50.7	-23.3	74	34.04	38.88	19.46	41.68	-	-	P	V
		10875	40.8	-13.2	54	24.14	38.88	19.46	41.68	-	-	A	V
		14491	52.45	-21.55	74	33.97	39.89	22.78	44.19	-	-	P	V
		14491	43.82	-10.18	54	25.34	39.89	22.78	44.19	-	-	A	V
		17940	55.74	-18.26	74	34.94	41.38	24.85	45.43	-	-	P	V
		17940	45.42	-8.58	54	24.62	41.38	24.85	45.43	-	-	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 with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	Limit (dB)	Line (dBμV/m)	Level (dBμV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	Avg. (P/A)	(H/V)
BLE CH 00 2402MHz		2335.935	49.62	-24.38	74	40.19	27.1	18.58	36.25	336	67	P	H
		2377.095	41.36	-12.64	54	31.76	27.21	18.66	36.27	336	67	A	H
	*	2402	103.51	-	-	93.78	27.31	18.7	36.28	336	67	P	H
	*	2402	102.2	-	-	92.47	27.31	18.7	36.28	336	67	A	H
													H
													H
		2319.555	49.18	-24.82	74	39.76	27.1	18.56	36.24	299	119	P	V
		2336.46	41.37	-12.63	54	31.93	27.1	18.59	36.25	299	119	A	V
	*	2402	103.7	-	-	93.97	27.31	18.7	36.28	299	119	P	V
	*	2402	102.38	-	-	92.65	27.31	18.7	36.28	299	119	A	V
													V
													V
BLE CH 19 2440MHz		2353.96	49.5	-24.5	74	40.02	27.12	18.62	36.26	322	66	P	H
		2370.9	41.35	-12.65	54	31.78	27.18	18.65	36.26	322	66	A	H
	*	2440	103.44	-	-	93.49	27.46	18.78	36.29	322	66	P	H
	*	2440	102.19	-	-	92.24	27.46	18.78	36.29	322	66	A	H
		2486.14	49.5	-24.5	74	39.31	27.64	18.86	36.31	322	66	P	H
		2498.25	42	-12	54	31.74	27.69	18.89	36.32	322	66	A	H
		2351.02	49.77	-24.23	74	40.31	27.1	18.61	36.25	284	118	P	V
		2379.16	41.66	-12.34	54	32.05	27.22	18.66	36.27	284	118	A	V
	*	2440	104.76	-	-	94.81	27.46	18.78	36.29	284	118	P	V
	*	2440	103.55	-	-	93.6	27.46	18.78	36.29	284	118	A	V
		2484.11	49.9	-24.1	74	39.71	27.64	18.86	36.31	284	118	P	V
		2489.15	41.7	-12.3	54	31.49	27.66	18.87	36.32	284	118	A	V

BLE CH 39 2480MHz	*	2480	102.63	-	-	92.47	27.62	18.85	36.31	355	66	P	H
	*	2480	101.27	-	-	91.11	27.62	18.85	36.31	355	66	A	H
		2495.04	49.71	-24.29	74	39.47	27.68	18.88	36.32	355	66	P	H
		2485.32	42.24	-11.76	54	32.05	27.64	18.86	36.31	355	66	A	H
													H
													H
	*	2480	103.23	-	-	93.07	27.62	18.85	36.31	285	118	P	V
	*	2480	101.88	-	-	91.72	27.62	18.85	36.31	285	118	A	V
		2484.12	50.23	-23.77	74	40.04	27.64	18.86	36.31	285	118	P	V
		2495.08	42.14	-11.86	54	31.9	27.68	18.88	36.32	285	118	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	42.6	-31.4	74	34.89	32.22	13.03	37.54	-	-	P	H
		10875	50.63	-23.37	74	33.97	38.88	19.46	41.68	-	-	P	H
		10875	41.08	-12.92	54	24.42	38.88	19.46	41.68	-	-	A	H
		14491	53.04	-20.96	74	34.56	39.89	22.78	44.19	-	-	P	H
		14491	43.95	-10.05	54	25.47	39.89	22.78	44.19	-	-	A	H
		17925	56.16	-17.84	74	35.47	41.27	24.84	45.42	-	-	P	H
		17925	45.49	-8.51	54	24.8	41.27	24.84	45.42	-	-	A	H
													H
													H
													H
													H
													H
		4804	42.63	-31.37	74	34.92	32.22	13.03	37.54	-	-	P	V
		10880	50.08	-23.92	74	33.44	38.86	19.46	41.68	-	-	P	V
		10880	41.04	-12.96	54	24.4	38.86	19.46	41.68	-	-	A	V
		14491	52.34	-21.66	74	33.86	39.89	22.78	44.19	-	-	P	V
		14491	43.66	-10.34	54	25.18	39.89	22.78	44.19	-	-	A	V
		17985	55.09	-18.91	74	33.98	41.69	24.88	45.46	-	-	P	V
		17985	45.67	-8.33	54	24.56	41.69	24.88	45.46	-	-	A	V
													V
													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	42.64	-31.36	74	34.66	32.58	13	37.6	-	-	P	H
		7320	47.74	-26.26	74	33.58	36.76	15.93	38.53	-	-	P	H
		10880	50.37	-23.63	74	33.73	38.86	19.46	41.68	-	-	P	H
		10880	41.32	-12.68	54	24.68	38.86	19.46	41.68	-	-	A	H
		14491	53.76	-20.24	74	35.28	39.89	22.78	44.19	-	-	P	H
		14491	43.5	-10.5	54	25.02	39.89	22.78	44.19	-	-	A	H
		17895	55.09	-18.91	74	34.6	41.06	24.82	45.39	-	-	P	H
		17895	45.12	-8.88	54	24.63	41.06	24.82	45.39	-	-	A	H
													H
													H
													H
BLE													H
CH 19		4880	42.31	-31.69	74	34.33	32.58	13	37.6	-	-	P	V
2440MHz		7320	47.53	-26.47	74	33.37	36.76	15.93	38.53	-	-	P	V
		10875	50.13	-23.87	74	33.47	38.88	19.46	41.68	-	-	P	V
		10875	41.19	-12.81	54	24.53	38.88	19.46	41.68	-	-	A	V
		14491	52.53	-21.47	74	34.05	39.89	22.78	44.19	-	-	P	V
		14491	43.35	-10.65	54	24.87	39.89	22.78	44.19	-	-	A	V
		18000	55.27	-18.73	74	34.05	41.8	24.89	45.47	-	-	P	V
		18000	45.56	-8.44	54	24.34	41.8	24.89	45.47	-	-	A	V
													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)
		4960	43.09	-30.91	74	34.77	33.02	12.96	37.66	-	-	P	H
		7440	46.42	-27.58	74	32.85	36.22	15.98	38.63	-	-	P	H
		10880	50.06	-23.94	74	33.42	38.86	19.46	41.68	-	-	P	H
		10880	41.91	-12.09	54	25.27	38.86	19.46	41.68	-	-	A	H
		14491	52.19	-21.81	74	33.71	39.89	22.78	44.19	-	-	P	H
		14491	43	-11	54	24.52	39.89	22.78	44.19	-	-	A	H
		17985	55.42	-18.58	74	34.31	41.69	24.88	45.46	-	-	P	H
		17985	45.87	-8.13	54	24.76	41.69	24.88	45.46	-	-	A	H
													H
													H
													H
													H
BLE CH 39 2480MHz		4960	43.61	-30.39	74	35.29	33.02	12.96	37.66	-	-	P	V
		7440	46.8	-27.2	74	33.23	36.22	15.98	38.63	-	-	P	V
		10875	51.33	-22.67	74	34.67	38.88	19.46	41.68	-	-	P	V
		10875	41.99	-12.01	54	25.33	38.88	19.46	41.68	-	-	A	V
		14491	53.28	-20.72	74	34.8	39.89	22.78	44.19	-	-	P	V
		14491	43.86	-10.14	54	25.38	39.89	22.78	44.19	-	-	A	V
		17970	55.31	-18.69	74	34.3	41.59	24.87	45.45	-	-	P	V
		17970	45.46	-8.54	54	24.45	41.59	24.87	45.45	-	-	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 with sufficient margin against limit line or noise floor only.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

Emission above 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		24853	39.65	-34.35	74	34.17	39.08	19.59	53.19	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24335	39.51	-34.49	74	35.04	38.97	19.03	53.53	-	-	P	V
													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 with sufficient margin against limit line 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		123.12	16.26	-27.24	43.5	32.11	17.44	2.23	35.52	-	-	P	H
		264.74	20.64	-25.36	46	32.57	20.18	3.14	35.25	-	-	P	H
		411.21	24.21	-21.79	46	32.81	22.34	3.88	34.82	-	-	P	H
		787.57	31.96	-14.04	46	32.58	27.73	5.35	33.7	-	-	P	H
		851.59	32.68	-13.32	46	31.58	28.79	5.63	33.32	-	-	P	H
		897.18	38.83	-7.17	46	37.37	28.71	5.88	33.13	-	-	P	H
													H
													H
													H
													H
													H
													H
		147.37	17.02	-26.48	43.5	32.69	17.35	2.45	35.47	-	-	P	V
		389.87	23.09	-22.91	46	32.64	21.54	3.78	34.87	-	-	P	V
		629.46	29.38	-16.62	46	32.84	26.02	4.76	34.24	-	-	P	V
		741.98	34.02	-11.98	46	35.02	27.62	5.15	33.77	-	-	P	V
		912.7	32.98	-13.02	46	31.15	29	5.91	33.08	-	-	P	V
		957.32	34.82	-11.18	46	31.12	30.66	6	32.96	-	-	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 emission is 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.
				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		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 :	Bill Chang, JC Liang, Karl Hou and Wilson Wu	**Temperature :**	20~25°C
		Relative Humidity :	50~60%

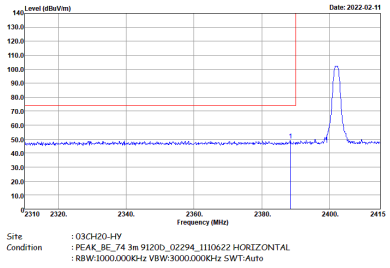
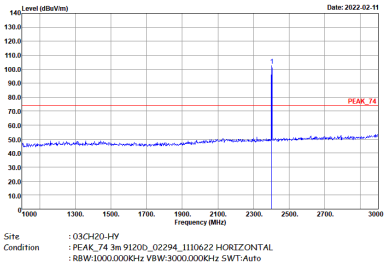
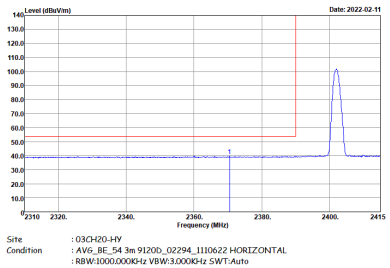
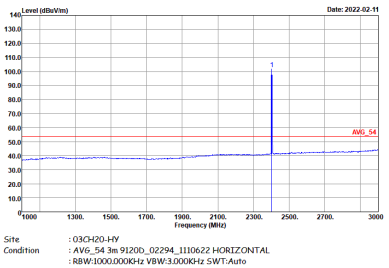
Note symbol

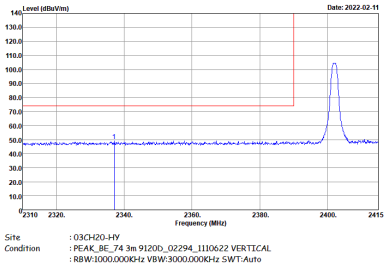
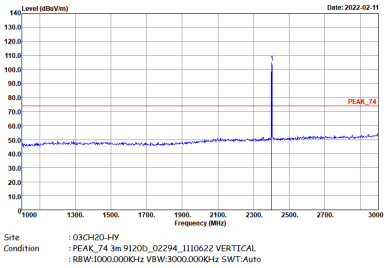
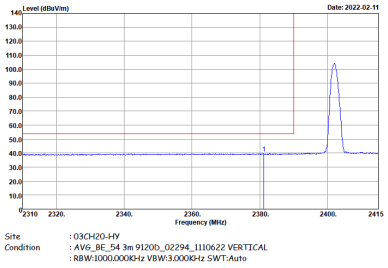
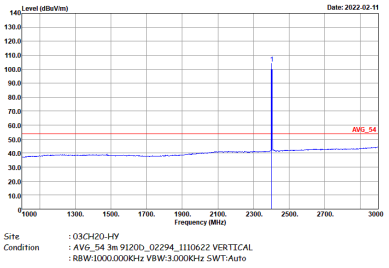
-L	**Low channel location**
-R	**High channel location**

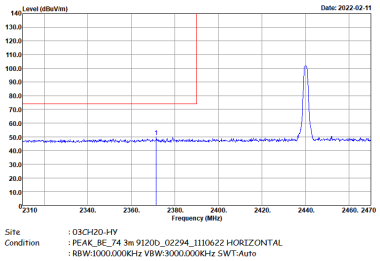
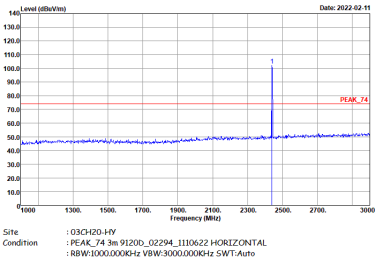
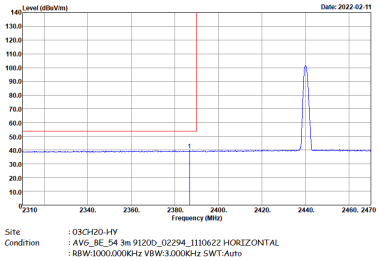
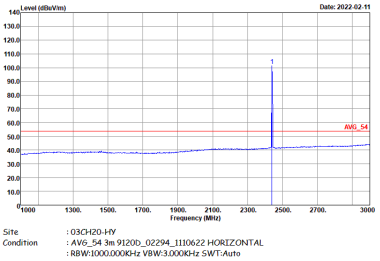
<1Mbps>

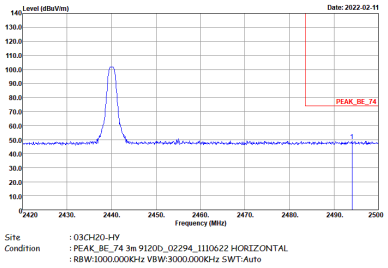
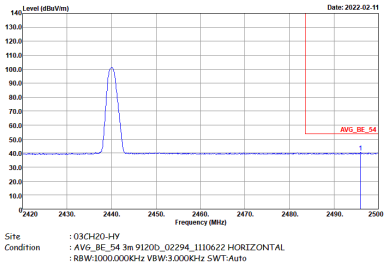
2.4GHz 2400~2483.5MHz

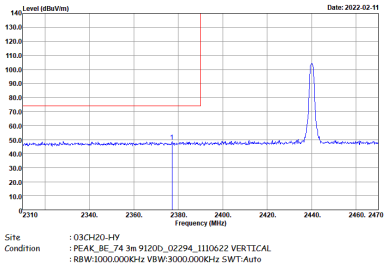
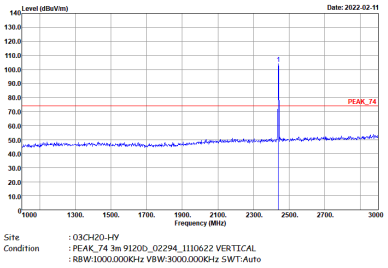
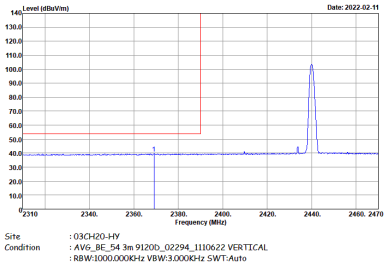
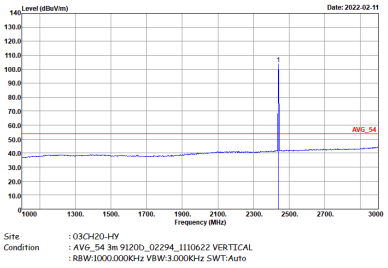
BLE (Band Edge @ 3m)

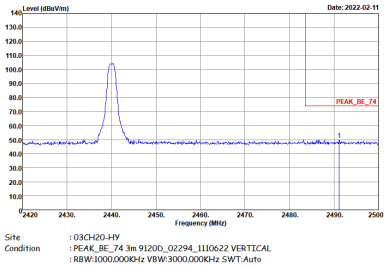
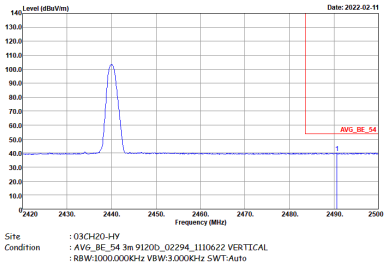
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

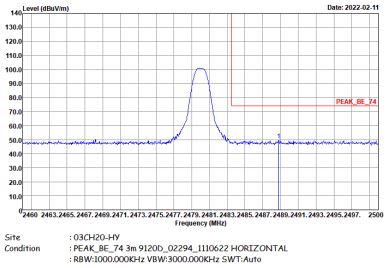
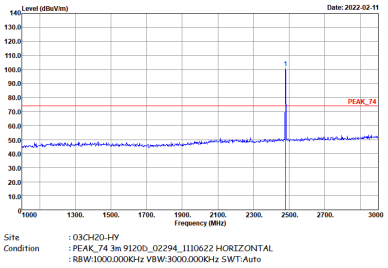
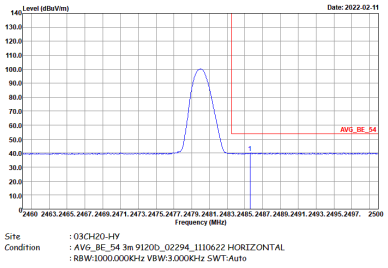
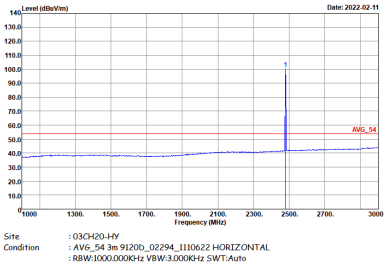
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak		
Avg.		

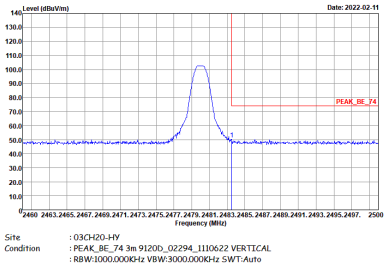
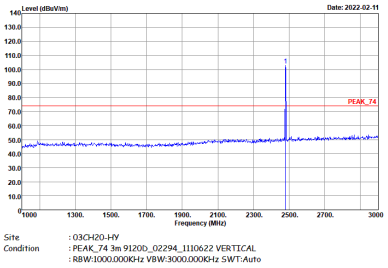
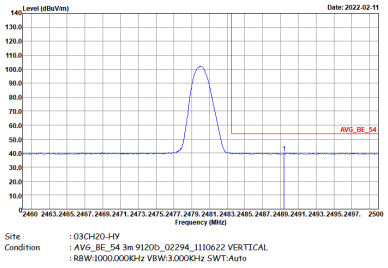
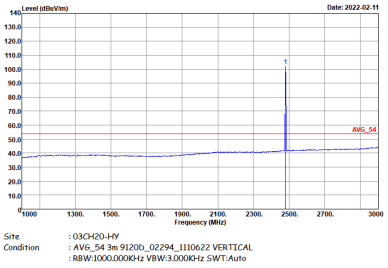
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak		
Avg.		

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.		

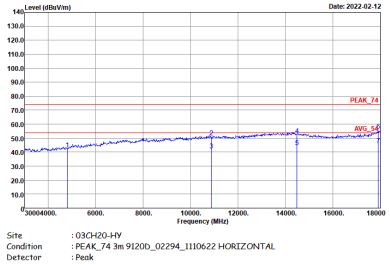
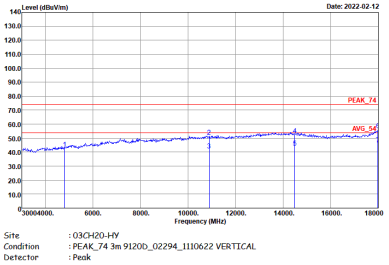
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

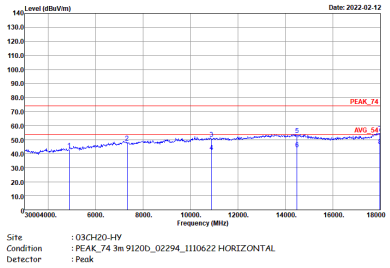
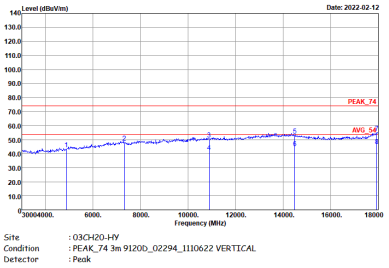
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

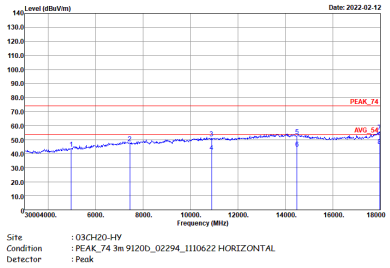
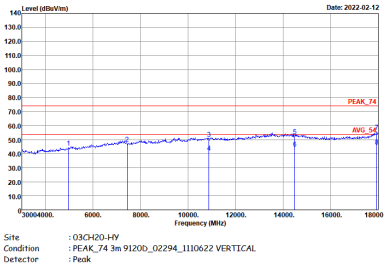
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3.000KHz 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.		

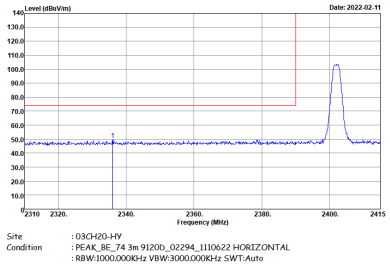
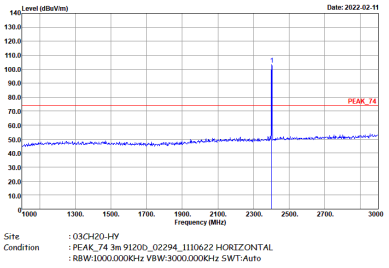
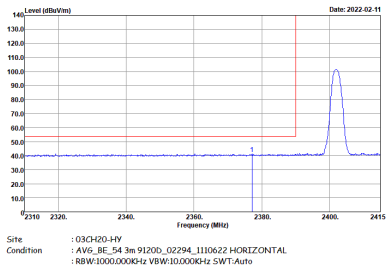
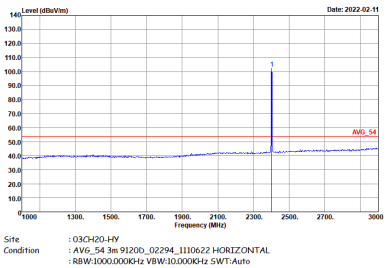
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.		

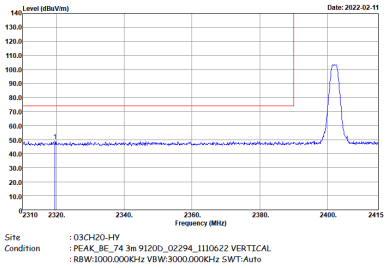
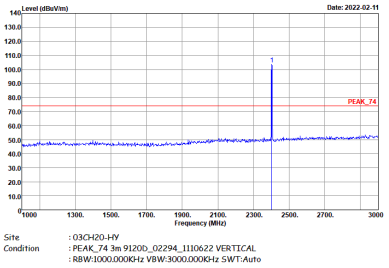
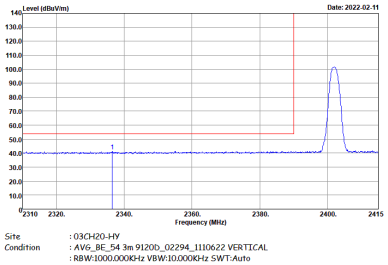
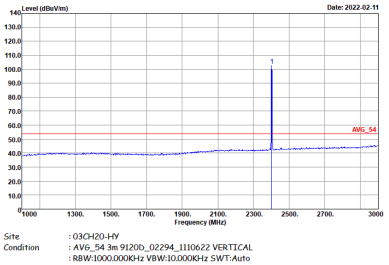
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.		

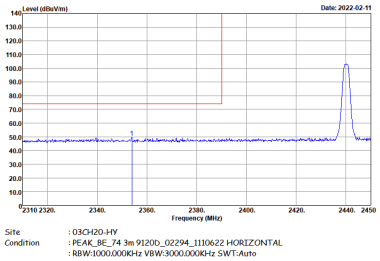
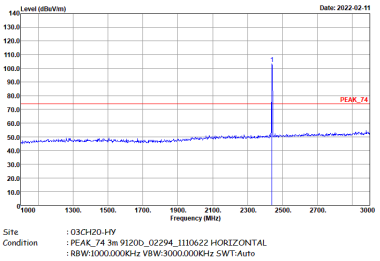
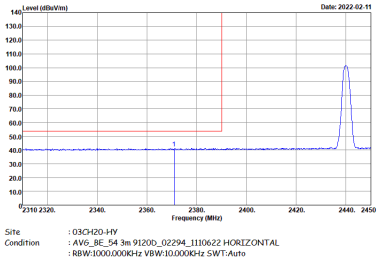
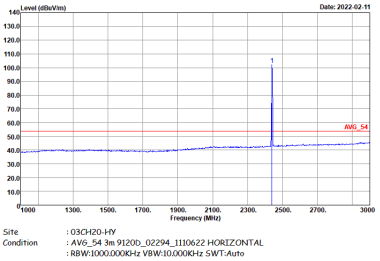
<2Mbps>

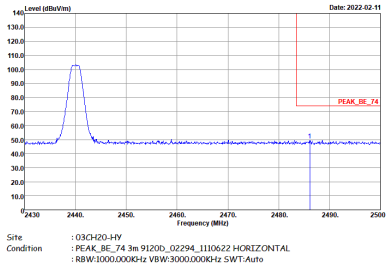
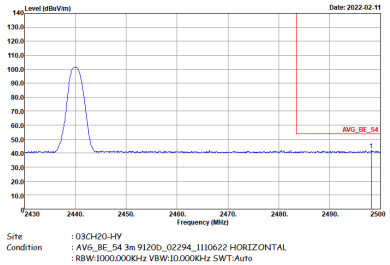
2.4GHz 2400~2483.5MHz

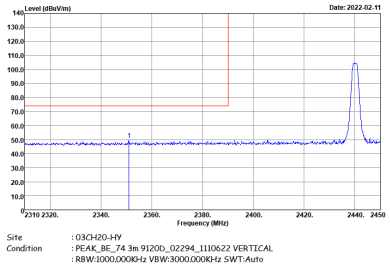
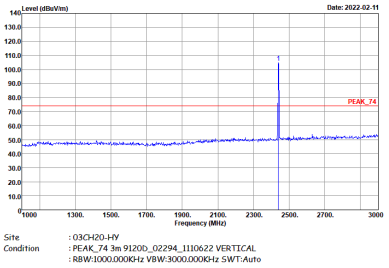
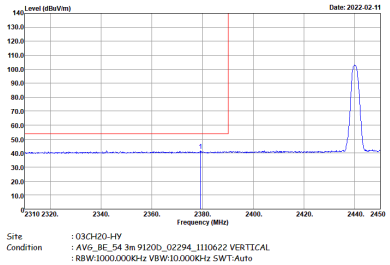
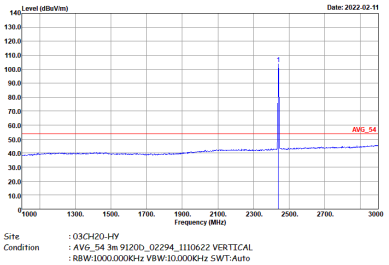
BLE (Band Edge @ 3m)

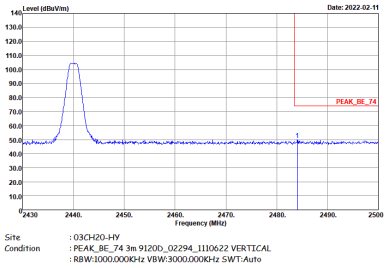
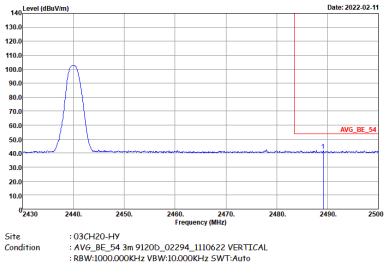
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

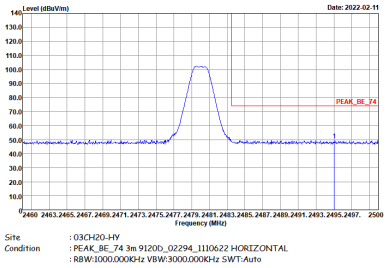
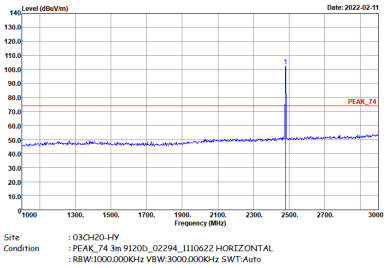
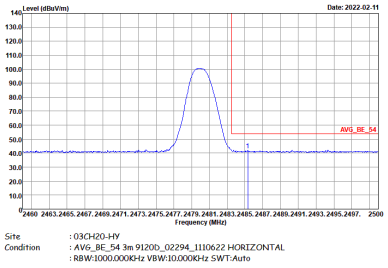
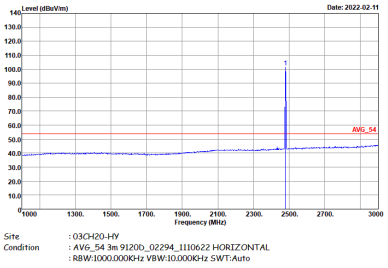
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak		
Avg		

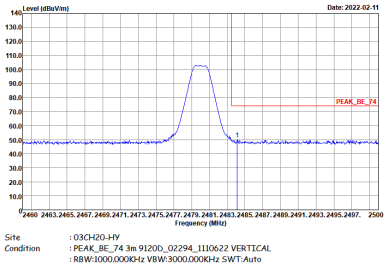
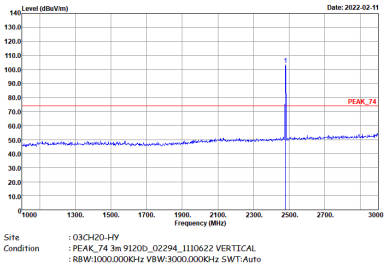
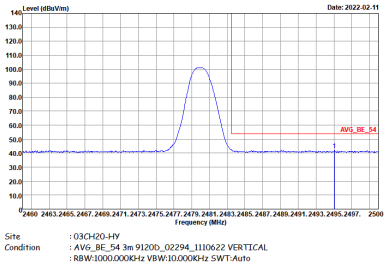
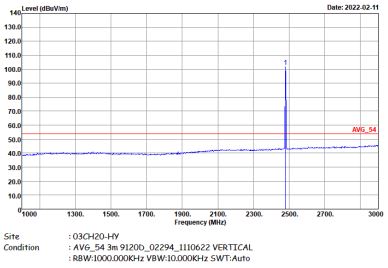
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak		
Avg.		

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.		

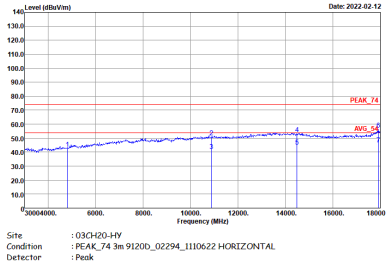
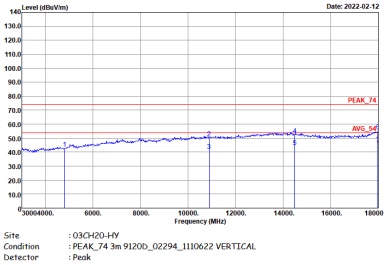
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

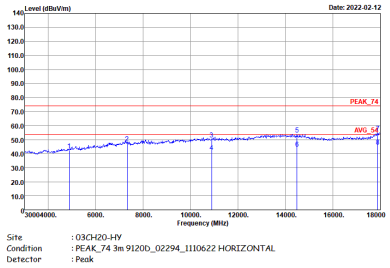
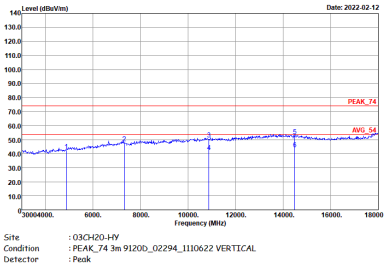
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

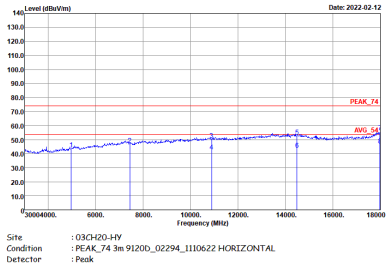
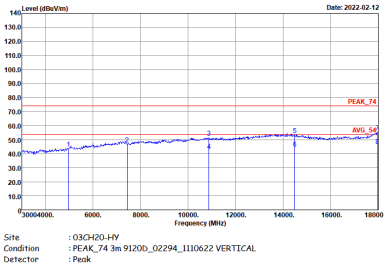
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02294_1110622 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

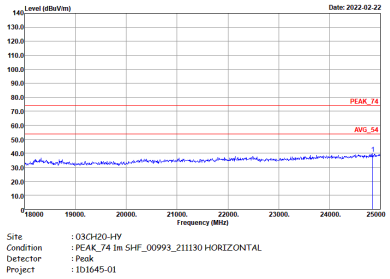
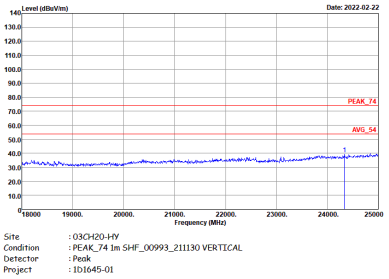
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.		

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 Avg.		

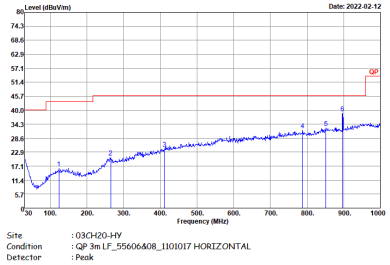
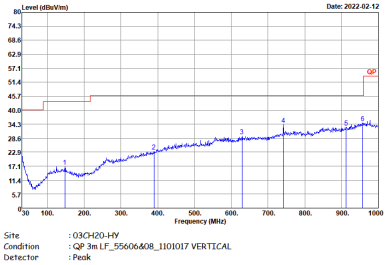
Emission above 18GHz

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	61.98	388	2.58	3kHz
Bluetooth -LE for 2Mbps	32.59	204	4.90	10kHz

Bluetooth – LE for 1Mbps	Bluetooth – LE for 2Mbps