



FCC RADIO TEST REPORT

FCC ID : TVE-111T17A
Equipment : Network Security Gateway
Brand Name : FORTINET **FORTINET**
Model Name : FortiGate 120Gxxxxxxxxxx, FG-120Gxxxxxxxxxx,
FORTIGATE-120Gxxxxxxxxxx, FortiGate
121Gxxxxxxxxxx, FG-121Gxxxxxxxxxx,
FORTIGATE-121Gxxxxxxxxxx
(where "x" can be "A-Z", or "0-9", or "-", or blank for
software changes or marketing purposes only)
Marketing Name : FortiGate 120G, FortiGate 121G
Applicant : Fortinet, Inc.
899 KIFER RD
SUNNYVALE CA 94086
UNITED STATES
Manufacturer : Fortinet, Inc.
899 KIFER RD
SUNNYVALE CA 94086
UNITED STATES
Standard : FCC Part 15 Subpart C §15.247

The product was received on Aug. 09, 2023 and testing was performed from Aug. 21, 2023 to Sep. 20, 2023. We, Sporton International Inc. EMC & Wireless Communications 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR380838	01	Initial issue of report	Oct. 18, 2023
FR380838	02	Revise Section 1.1 and Appendix D This report is an updated version, replacing the report issued on Oct. 18, 2023.	Oct. 20, 2023

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) 15.247(b)(4)	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	0.42 dB under the limit at 4960.00 MHz
3.6	15.207	AC Conducted Emission	Pass	19.52 dB under the limit at 0.52 MHz
3.7	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

1. The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.
2. The purpose of different model name can be referred to Product Equality Declaration.

Reviewed by: Yun Huang

Report Producer: Michelle Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature		
General Specs Bluetooth-LE		
Antenna Type Bluetooth-LE: Dipole Antenna		
Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	2.44

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

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH02-HY, CO05-HY, 03CH07-HY

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

FCC designation No.: TW1190

1.4 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 15.247 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

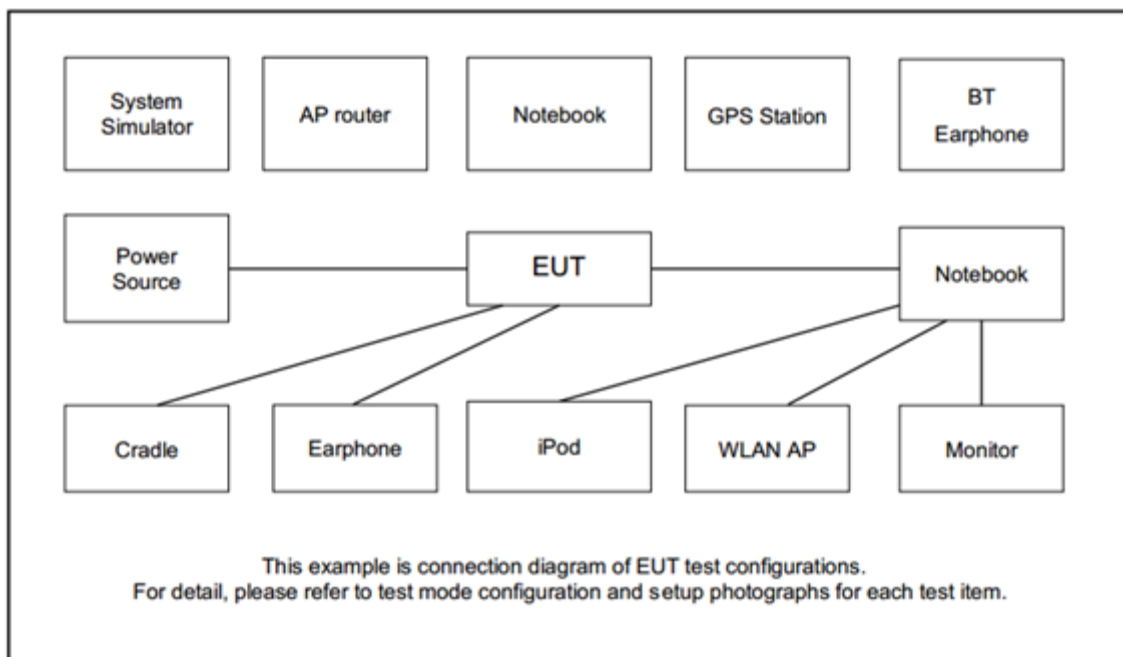
- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental 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_125kbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_125kbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_125kbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_500kbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_500kbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_500kbps
	Mode 7: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 8: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 9: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 10: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 11: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 12: Bluetooth Tx CH39_2480 MHz_2Mbps
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_125kbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_125kbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_125kbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_500kbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_500kbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_500kbps
	Mode 7: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 8: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 9: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 10: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 11: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 12: Bluetooth Tx CH39_2480 MHz_2Mbps

Summary table of Test Cases	
Test Item	Data Rate / Modulation
AC Conducted Emission	Mode 1: Bluetooth-LE Link + Notebook (Console Port) + USB Drive (USB Port) + Notebook(Console Port) + Loopback (HA, MGMT Port) + Loopback (LAN1~16 Port) + Loopback(X1~X4 Port) + Loopback (LAN17~24 Port) + Adapter*2
Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.	

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.	Notebook	Dell	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Mobile Phone	Apple	A1586	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “SmartRF Studio Version 8.0.0.12” 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.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

3.1.2 Measuring Instruments

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) $\geq 3 * RBW$.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

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.

3.4 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 30 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

Please refer to Appendix A.

3.4.6 Test Result of Conducted Spurious Emission Plots

Please refer to Appendix A.

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.

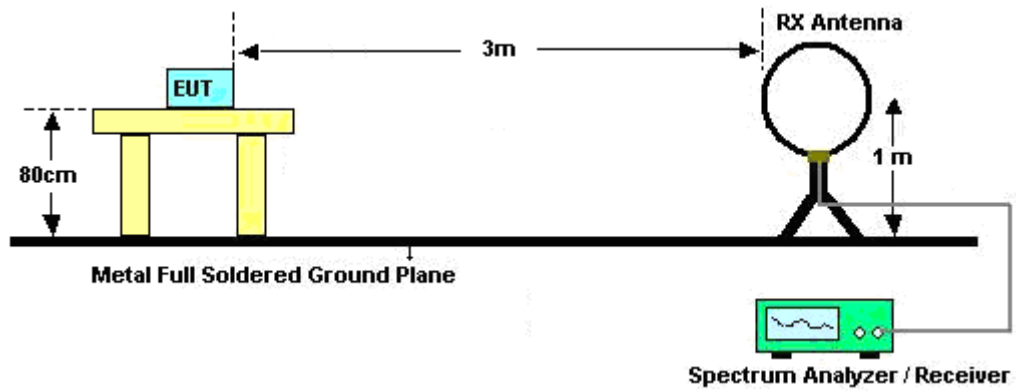


3.5.3 Test Procedures

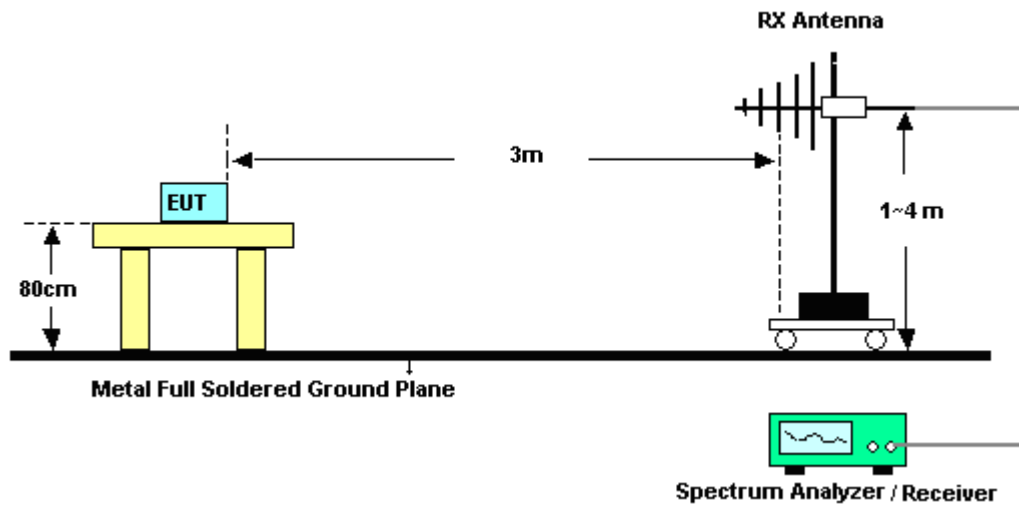
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW = 3 MHz for $f \geq 1$ GHz for peak measurement.For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

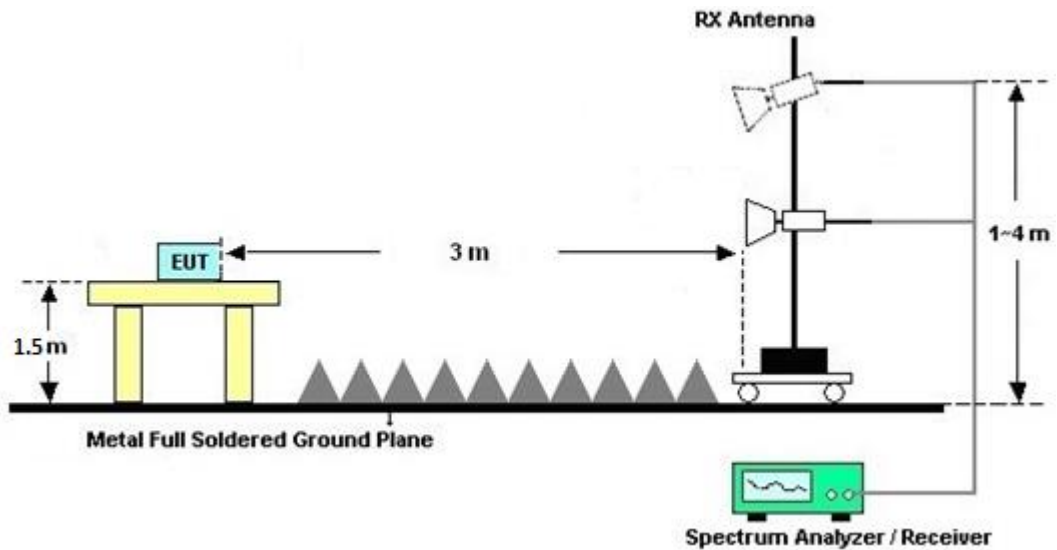
For radiated test below 30MHz



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 (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

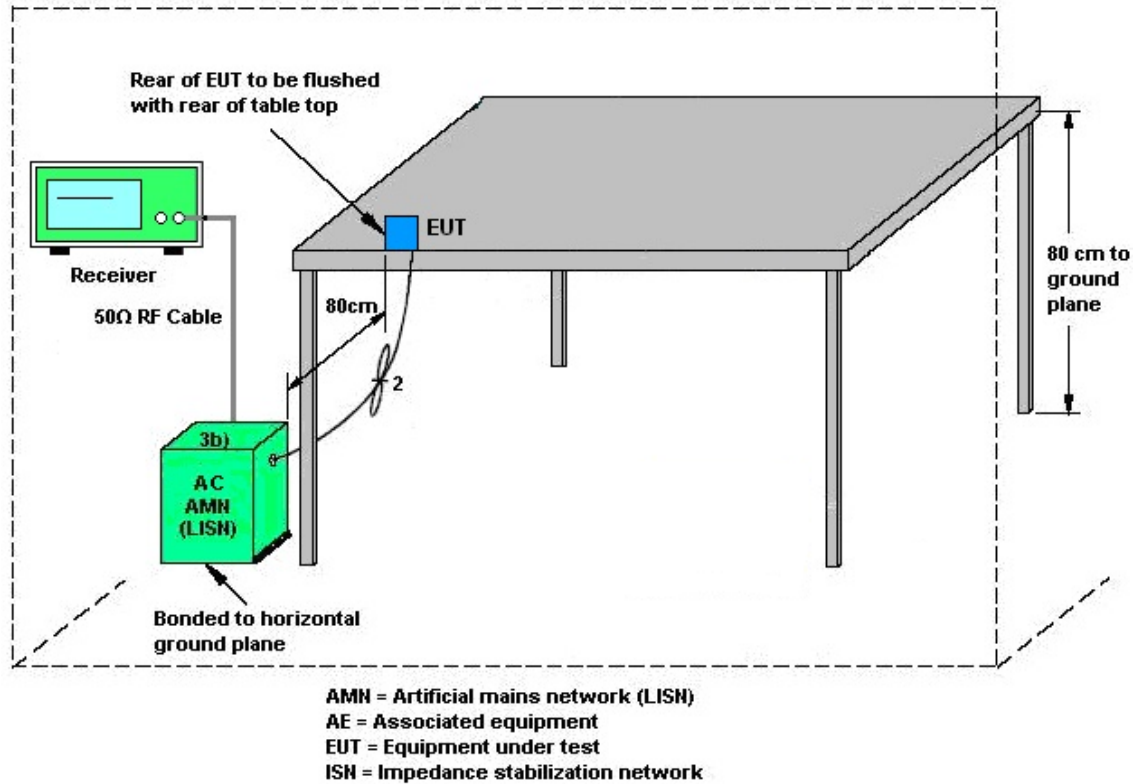
3.6.2 Measuring Instruments

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



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.7 Antenna Requirements

3.7.1 Standard Applicable

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.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECEPIL	DTM-303A	TP201996	N/A	Nov. 17. 2021	Aug. 21. 2023 Sep. 20. 2023	Nov. 16. 2023	Conducted (TH02-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Jan. 05, 2023	Aug. 21. 2023 Sep. 20. 2023	Jan. 04, 2024	Conducted (TH02-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101565	10Hz ~ 40GHz	Dec. 26, 2022	Aug. 21. 2023 Sep. 20. 2023	Dec. 25, 2023	Conducted (TH02-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	35419 & 03	30MHz~1GHz	Apr. 23, 2023	Aug. 23, 2023~ Sep. 07, 2023	Apr. 22, 2024	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 01, 2022	Aug. 23, 2023~ Sep. 07, 2023	Nov. 30, 2023	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 28, 2023	Aug. 23, 2023~ Sep. 07, 2023	Feb. 27, 2024	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 20, 2023	Aug. 23, 2023~ Sep. 07, 2023	Apr. 19, 2024	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 03, 2022	Aug. 23, 2023~ Sep. 07, 2023	Oct. 02, 2023	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Mar. 24, 2023	Aug. 23, 2023~ Sep. 07, 2023	Mar. 23, 2024	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 25, 2023	Aug. 23, 2023~ Sep. 07, 2023	Jul. 24, 2024	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 28, 2023	Aug. 23, 2023~ Sep. 07, 2023	Mar. 27, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	30MHz to 18GHz	Feb. 22, 2023	Aug. 23, 2023~ Sep. 07, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4	9kHz to 18GHz	Feb. 22, 2023	Aug. 23, 2023~ Sep. 07, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4	9kHz to 18GHz	Feb. 22, 2023	Aug. 23, 2023~ Sep. 07, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 16, 2022	Aug. 23, 2023~ Sep. 07, 2023	Sep. 15, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 22, 2023	Aug. 23, 2023~ Sep. 07, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	Apr. 20, 2023	Aug. 23, 2023~ Sep. 07, 2023	Apr. 19, 2024	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Aug. 23, 2023~ Sep. 07, 2023	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Aug. 23, 2023~ Sep. 07, 2023	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Aug. 23, 2023~ Sep. 07, 2023	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Aug. 23, 2023~ Sep. 07, 2023	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	Aug. 23, 2023~ Sep. 07, 2023	N/A	Radiation (03CH07-HY)
USB Data Logger	TECEPIL	TR-32	HE17XB2495	N/A	Mar. 14, 2023	Aug. 23, 2023~ Sep. 07, 2023	Mar. 13, 2024	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 24, 2022	Aug. 23, 2023~ Sep. 07, 2023	Nov. 23, 2023	Radiation (03CH07-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 31, 2023	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2022	Aug. 31, 2023	Nov. 30, 2023	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2022	Aug. 31, 2023	Nov. 16, 2023	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 17, 2022	Aug. 31, 2023	Nov. 16, 2023	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Aug. 31, 2023	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	9kHz-200MHz	Jul. 28, 2023	Aug. 31, 2023	Jul. 27, 2024	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 29, 2022	Aug. 31, 2023	Dec. 28, 2023	Conduction (CO05-HY)

5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.5 dB
---	--------

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

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

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
---	--------

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3 dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3 dB
---	--------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2023/8/21~2023/9/20	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	125kbps	1	0	2402	-	0.734	0.50	Pass
BLE	125kbps	1	19	2440	-	0.718	0.50	Pass
BLE	125kbps	1	39	2480	-	0.692	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	125kbps	1	0	2402	7.00	30.00	2.44	9.44	36.00	Pass
BLE	125kbps	1	19	2440	7.00	30.00	2.44	9.44	36.00	Pass
BLE	125kbps	1	39	2480	5.50	30.00	2.44	7.94	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	125kbps	1	0	2402	-	1.09	2.44	8.00	Pass
BLE	125kbps	1	19	2440	-	1.25	2.44	8.00	Pass
BLE	125kbps	1	39	2480	-	-0.67	2.44	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	500kbps	1	0	2402	-	0.732	0.50	Pass
BLE	500kbps	1	19	2440	-	0.720	0.50	Pass
BLE	500kbps	1	39	2480	-	0.716	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	500kbps	1	0	2402	7.00	30.00	2.44	9.44	36.00	Pass
BLE	500kbps	1	19	2440	7.00	30.00	2.44	9.44	36.00	Pass
BLE	500kbps	1	39	2480	5.50	30.00	2.44	7.94	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	500kbps	1	0	2402	-	-4.93	2.44	8.00	Pass
BLE	500kbps	1	19	2440	-	-4.67	2.44	8.00	Pass
BLE	500kbps	1	39	2480	-	-5.76	2.44	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	1Mbps	1	0	2402	1.077	0.714	0.50	Pass
BLE	1Mbps	1	19	2440	1.077	0.708	0.50	Pass
BLE	1Mbps	1	39	2480	1.065	0.718	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	7.10	30.00	2.44	9.54	36.00	Pass
BLE	1Mbps	1	19	2440	7.10	30.00	2.44	9.54	36.00	Pass
BLE	1Mbps	1	39	2480	6.20	30.00	2.44	8.64	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	6.39	-5.48	2.44	8.00	Pass
BLE	1Mbps	1	19	2440	6.50	-5.04	2.44	8.00	Pass
BLE	1Mbps	1	39	2480	5.93	-6.24	2.44	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	2.062	1.332	0.50	Pass
BLE	2Mbps	1	19	2440	2.078	1.412	0.50	Pass
BLE	2Mbps	1	39	2480	2.070	1.336	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	7.10	30.00	2.44	9.54	36.00	Pass
BLE	2Mbps	1	19	2440	7.10	30.00	2.44	9.54	36.00	Pass
BLE	2Mbps	1	39	2480	7.00	30.00	2.44	9.44	36.00	Pass

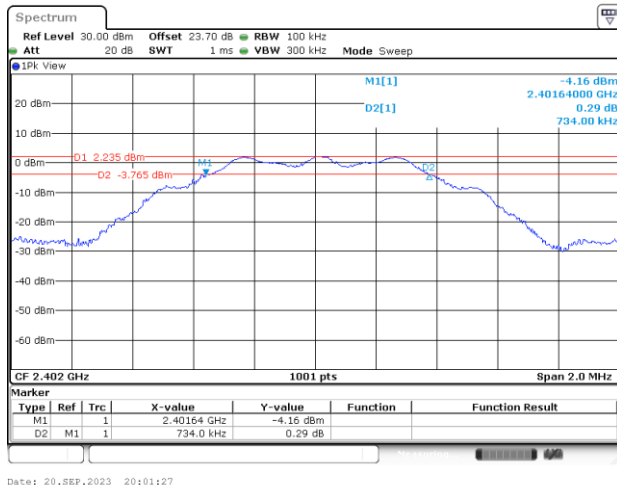
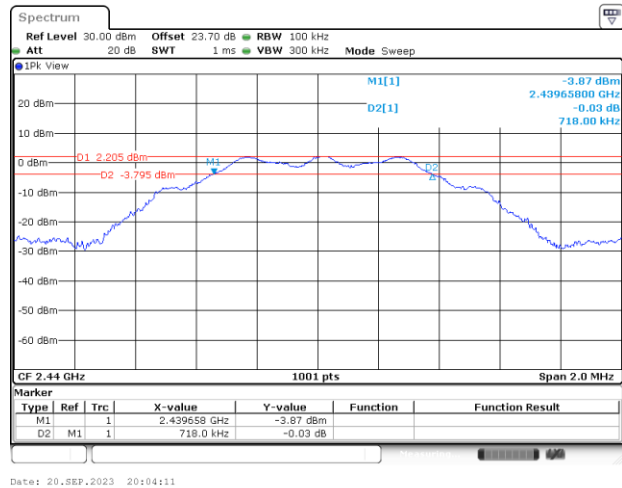
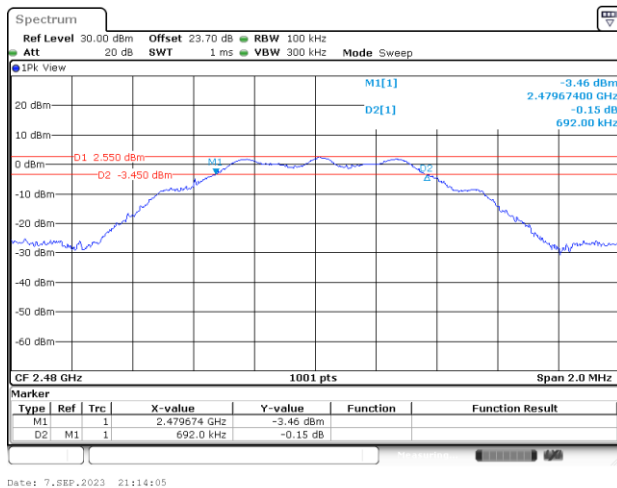
TEST RESULTS DATA
Peak Power Density

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	5.23	-8.36	2.44	8.00	Pass
BLE	2Mbps	1	19	2440	5.77	-8.47	2.44	8.00	Pass
BLE	2Mbps	1	39	2480	5.46	-8.10	2.44	8.00	Pass

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

**6dB Bandwidth**

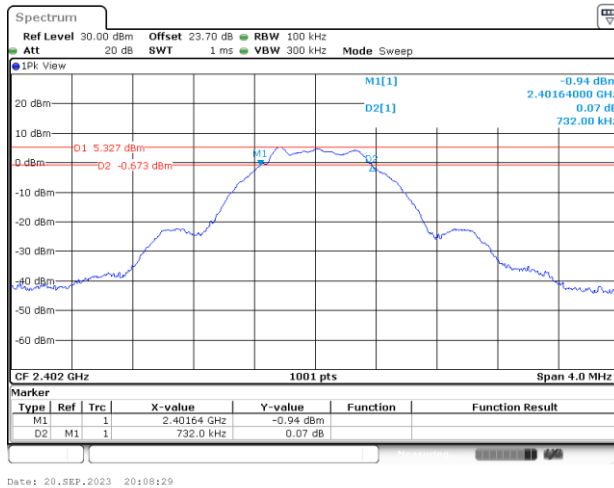
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6 dB Bandwidth Plot on Channel 00**6 dB Bandwidth Plot on Channel 19****6 dB Bandwidth Plot on Channel 39**

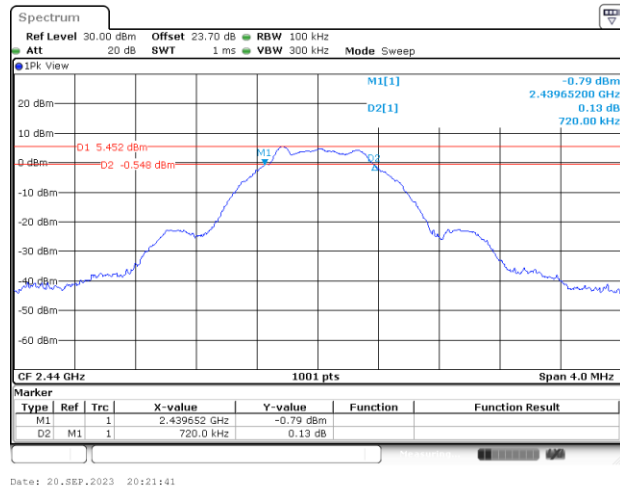


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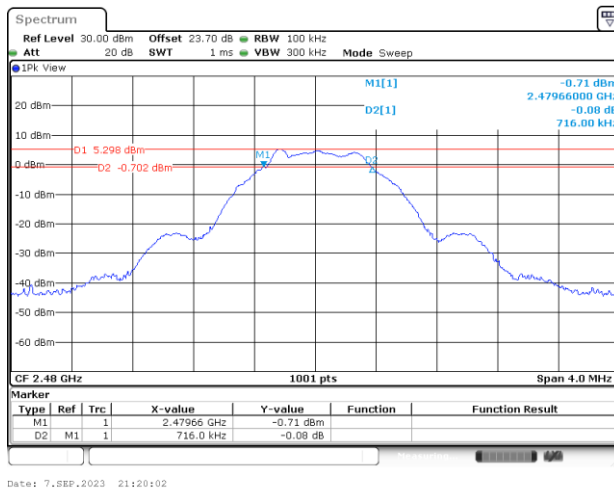
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



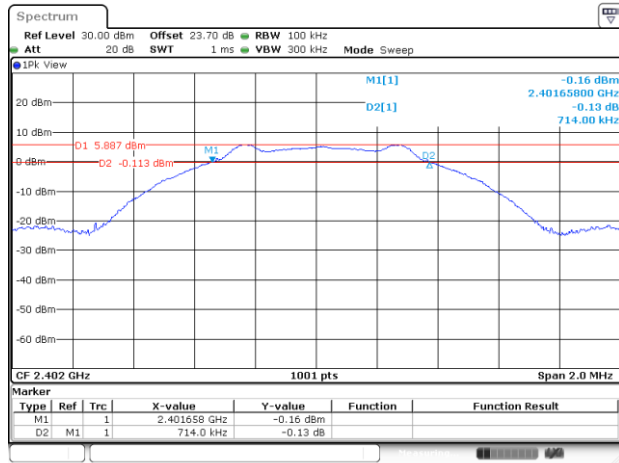
6 dB Bandwidth Plot on Channel 39



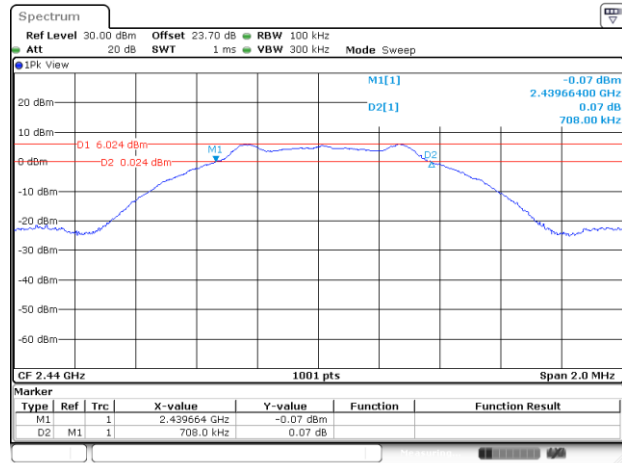


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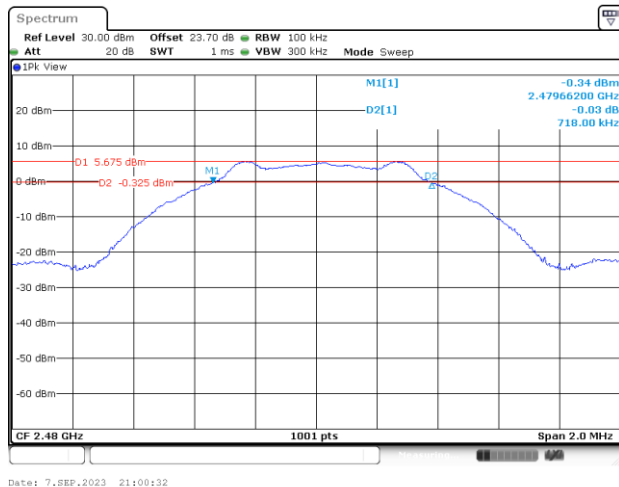
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



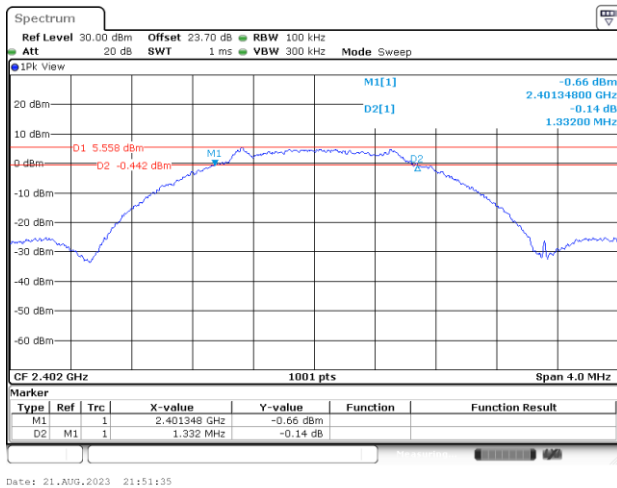
6 dB Bandwidth Plot on Channel 39



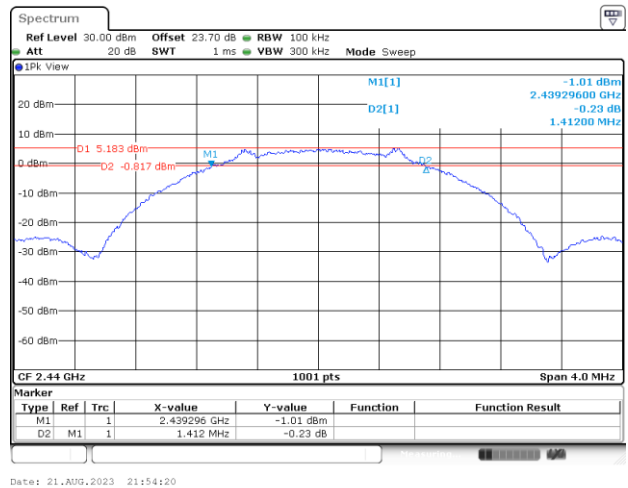


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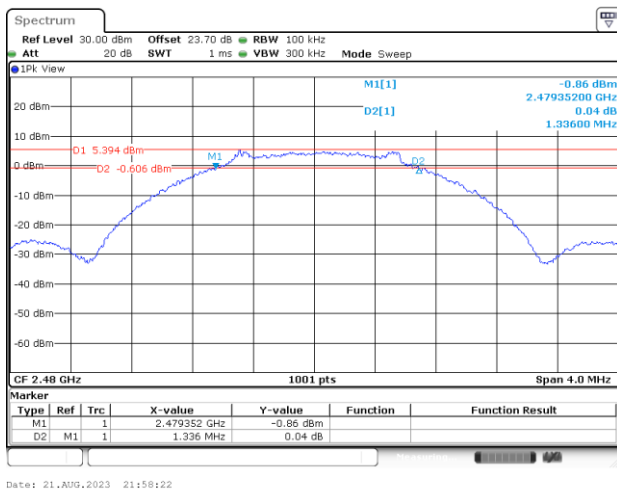
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19

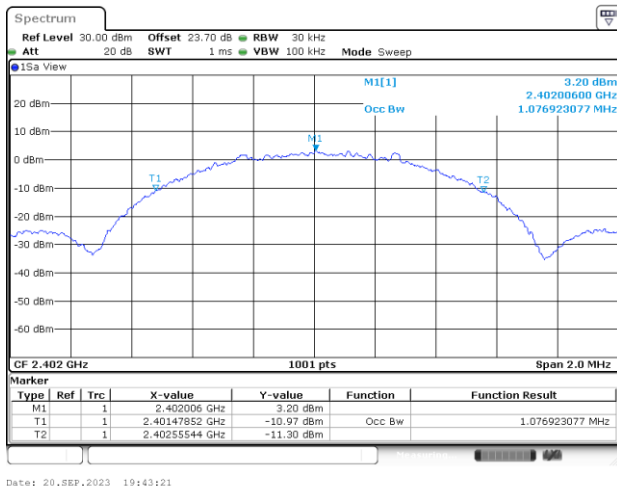
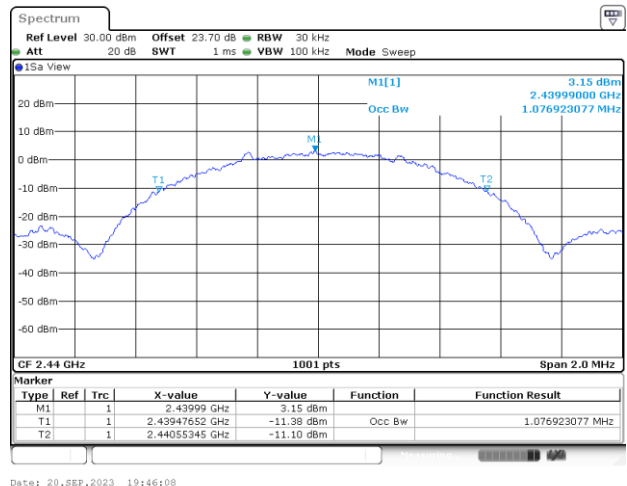
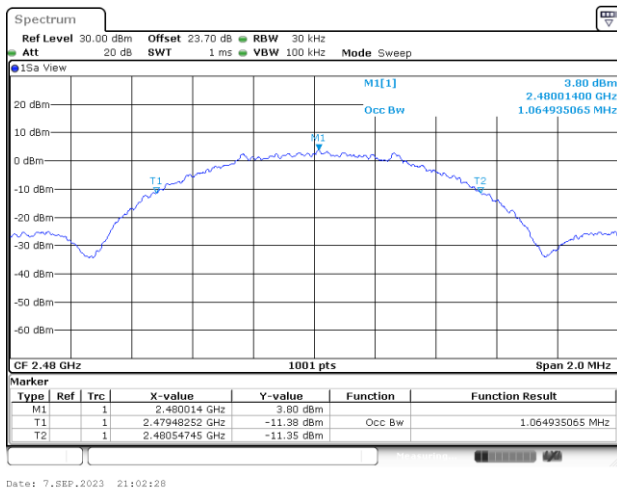


6 dB Bandwidth Plot on Channel 39



**99% Occupied Bandwidth**

<1Mbps>

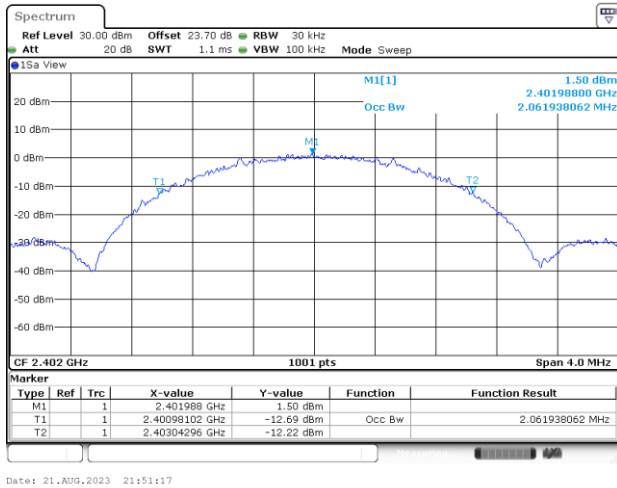
99% Occupied Bandwidth Plot on Channel 00**99% Occupied Plot Bandwidth on Channel 19****99% Occupied Bandwidth Plot on Channel 39**

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

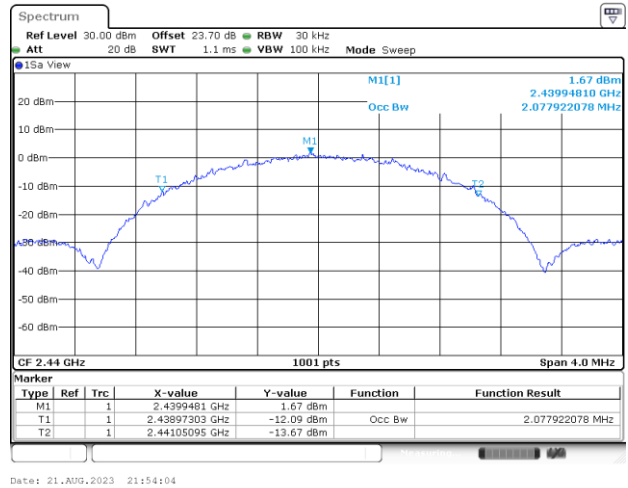


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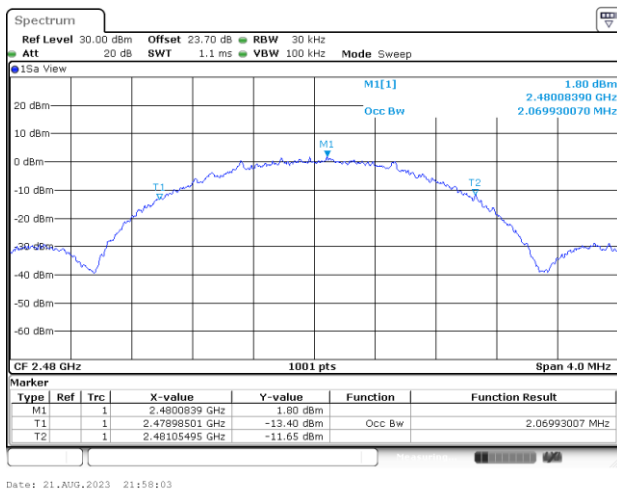
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Plot Bandwidth on Channel 19

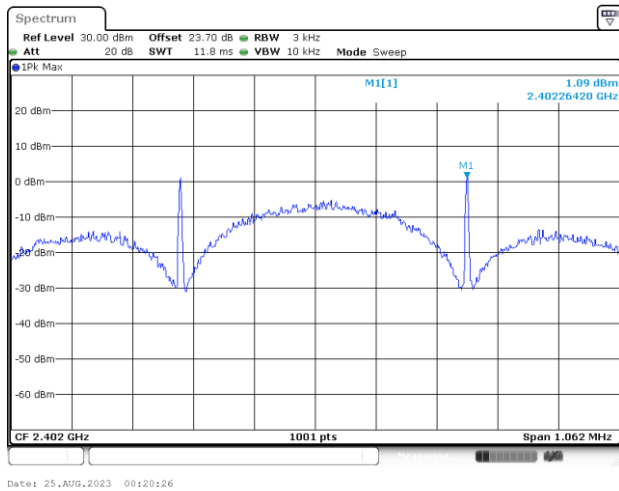
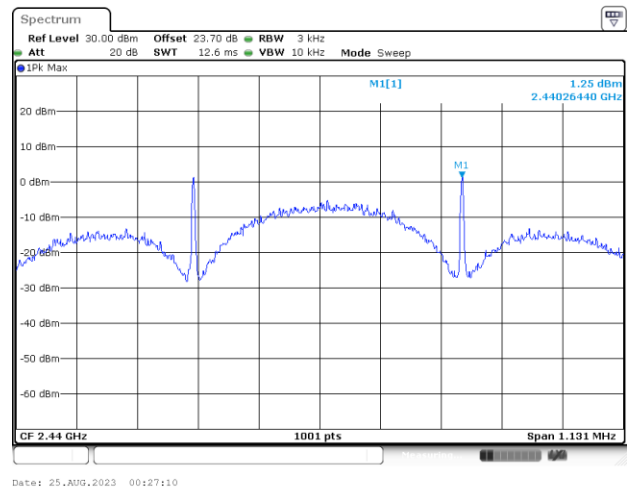
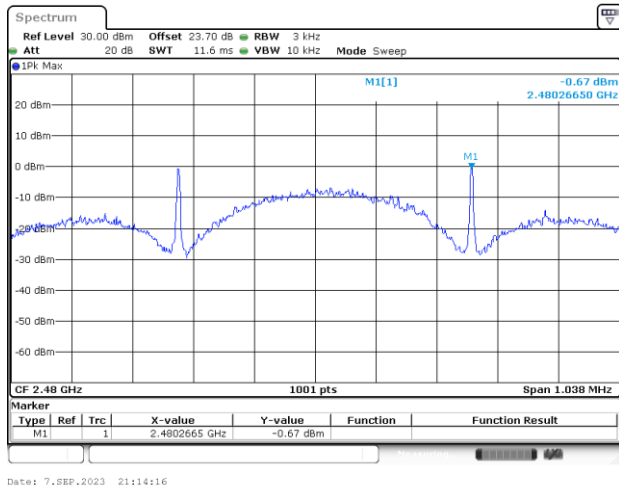


99% Occupied Bandwidth Plot on Channel 39



**Power Spectral Density (dBm/3kHz)**

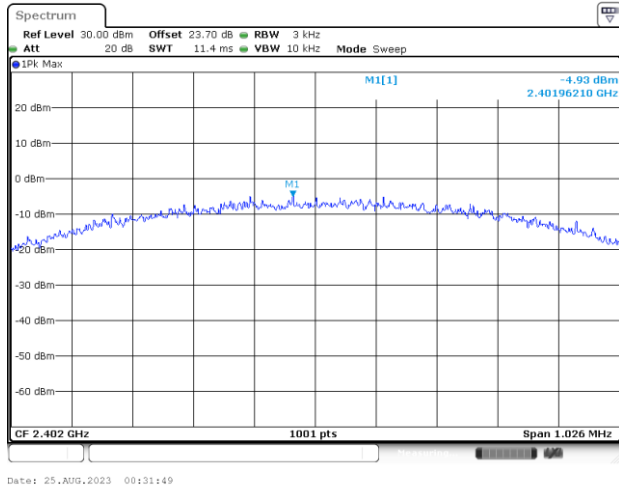
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Power Density (dBm/3kHz) Plot Channel 00**Power Density (dBm/3kHz) Plot Channel 19****Power Density (dBm/3kHz) Plot Channel 39**

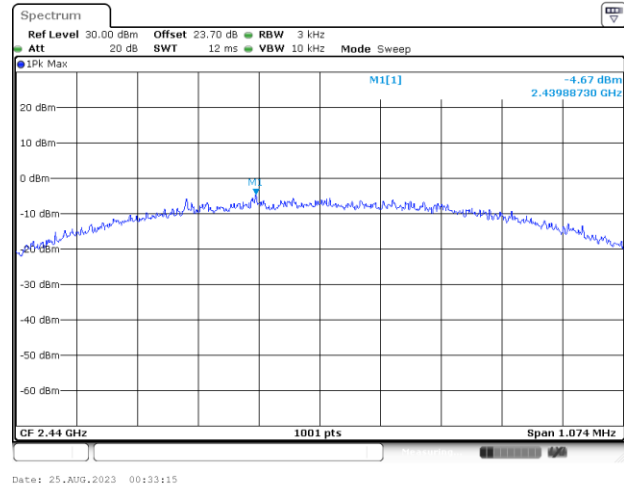


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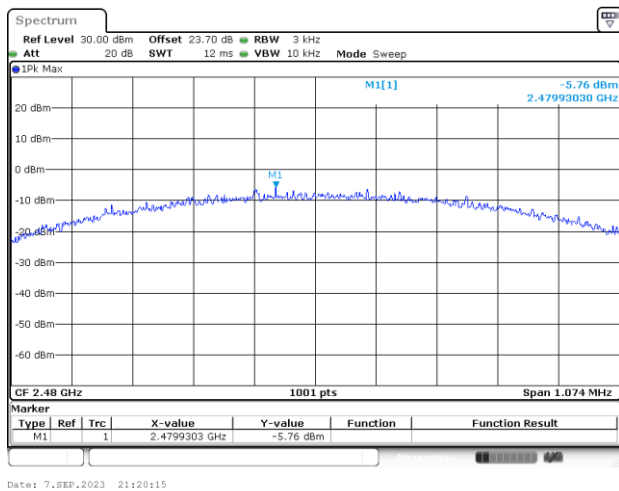
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19



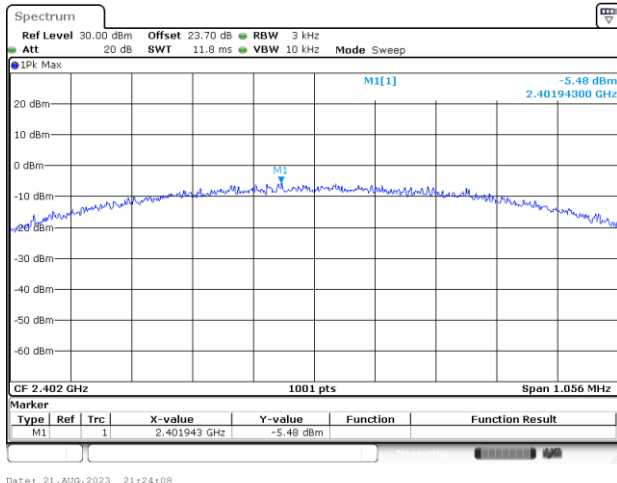
Power Density (dBm/3kHz) Plot Channel 39



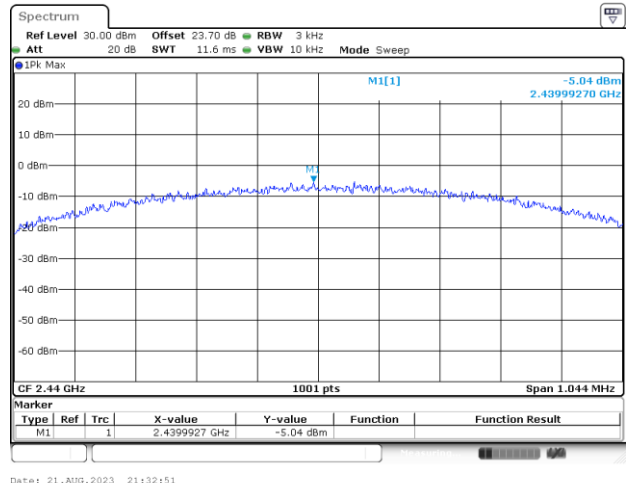


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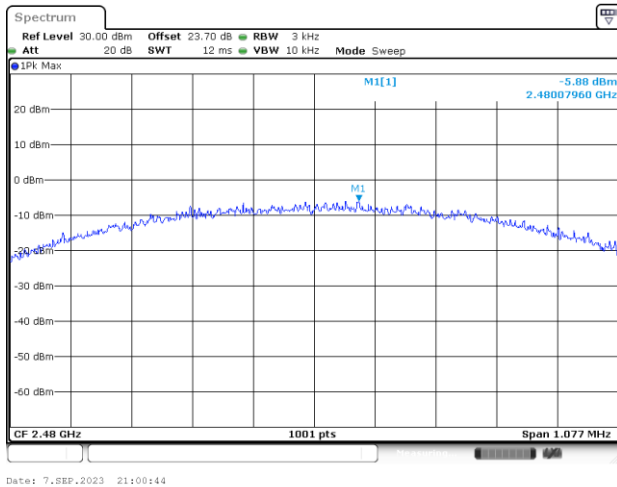
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19



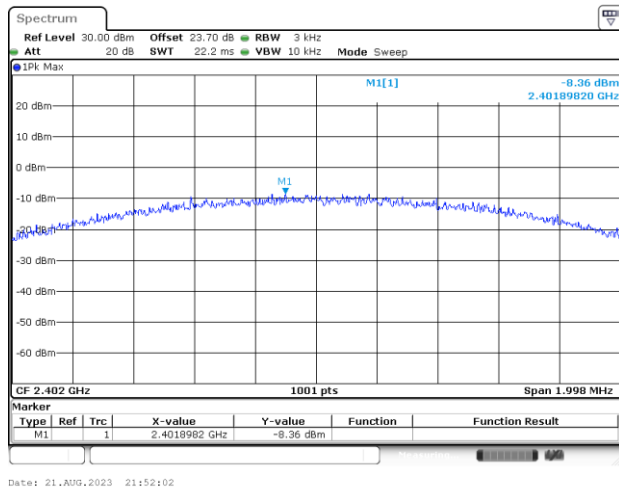
Power Density (dBm/3kHz) Plot Channel 39



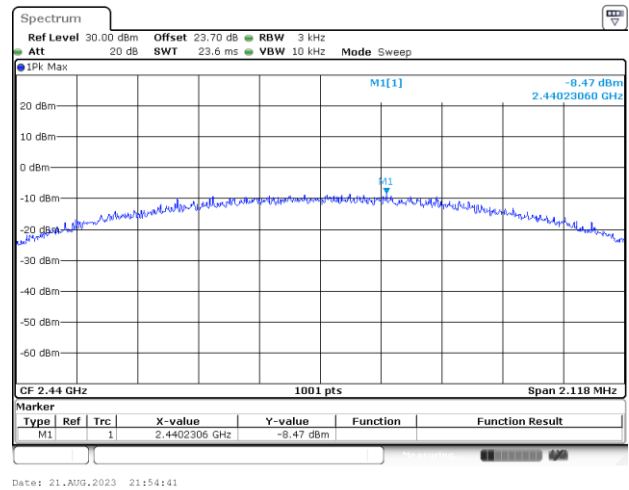


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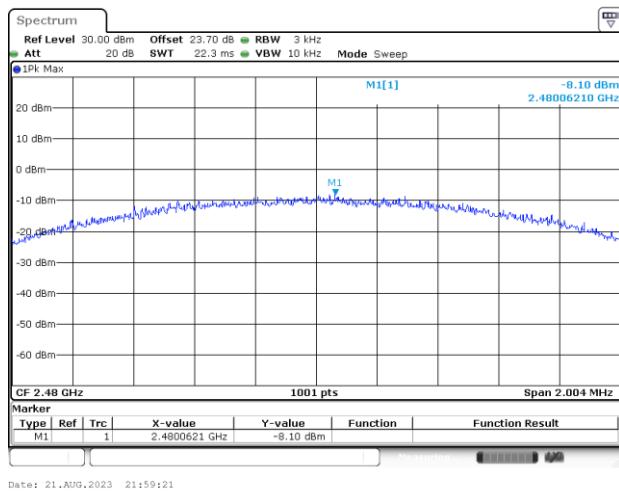
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19

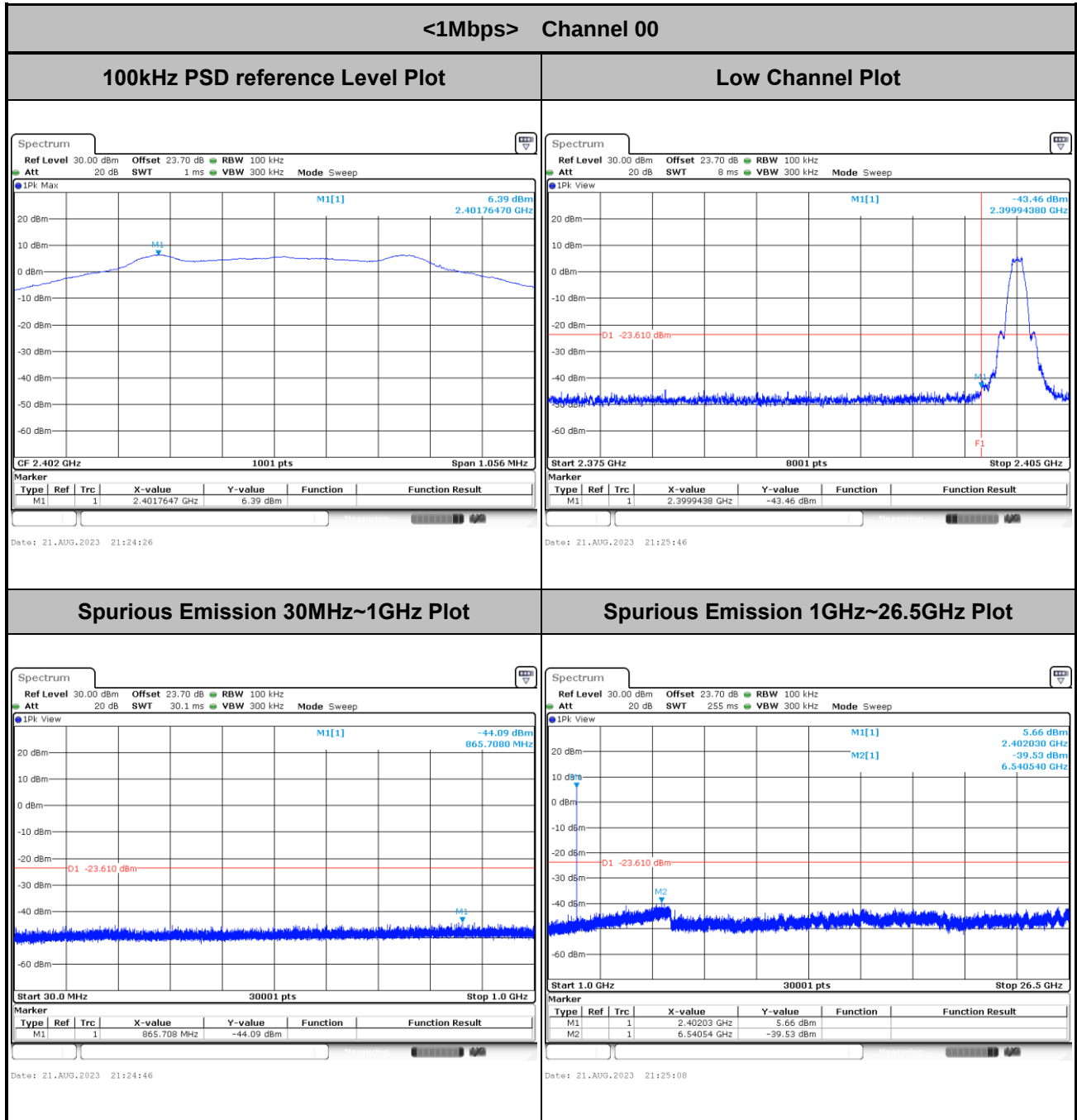


Power Density (dBm/3kHz) Plot Channel 39





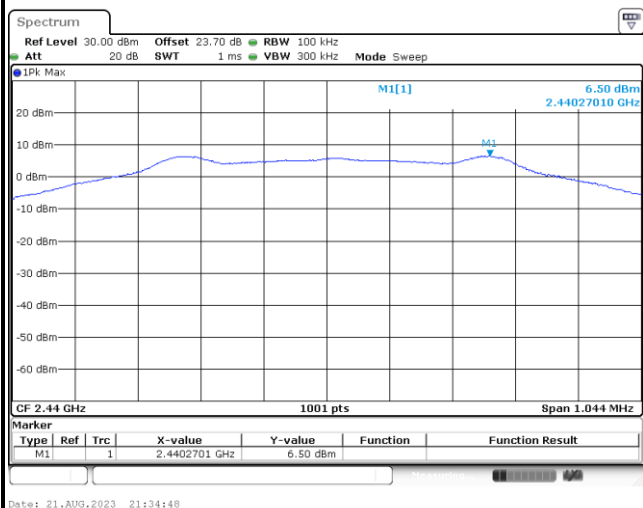
Band Edge and Spurious Emission





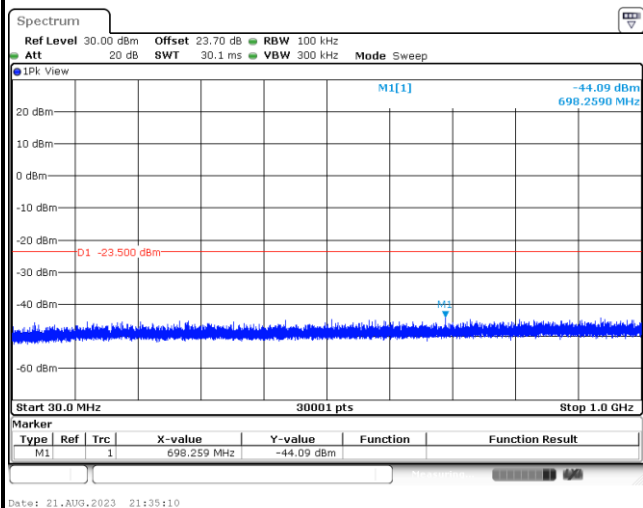
<1Mbps> Channel 19

100kHz PSD reference Level Plot

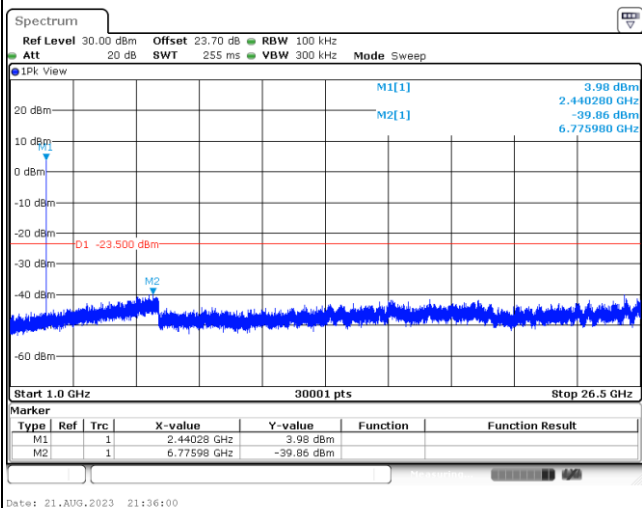


Low Channel Plot

Spurious Emission 30MHz~1GHz Plot



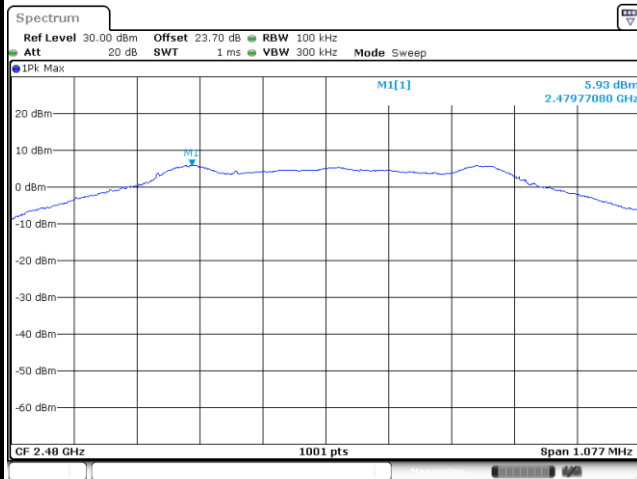
Spurious Emission 1GHz~26.5GHz Plot





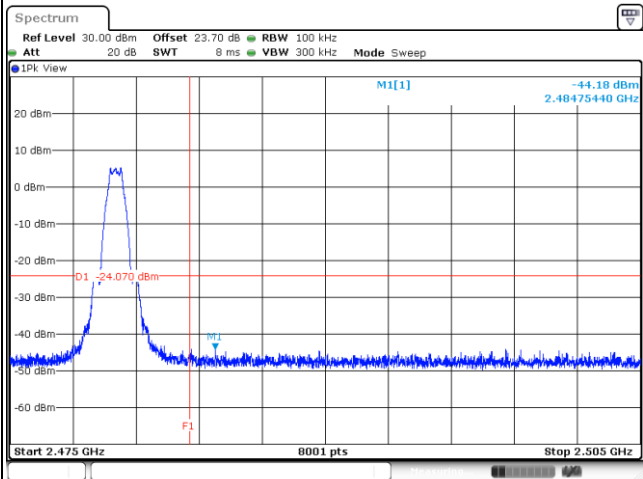
<1Mbps> Channel 39

100kHz PSD reference Level Plot



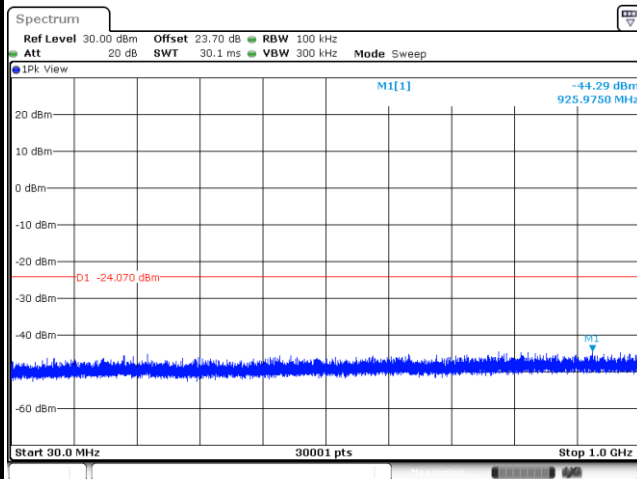
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Low Channel Plot



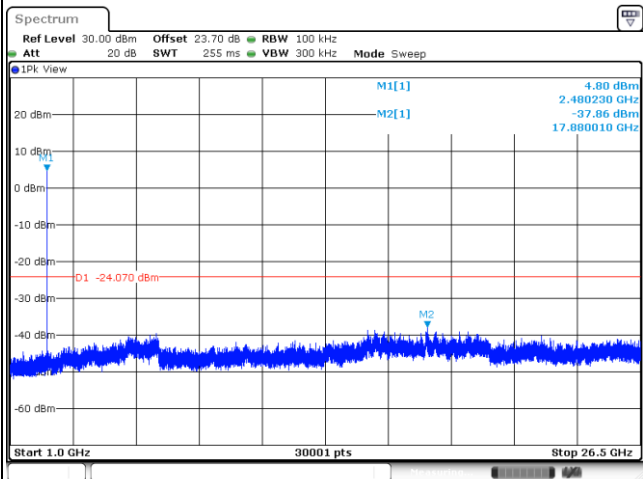
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Spurious Emission 30MHz~1GHz Plot



Date: 7.SEP.2023 21:01:19

Spurious Emission 1GHz~26.5GHz Plot

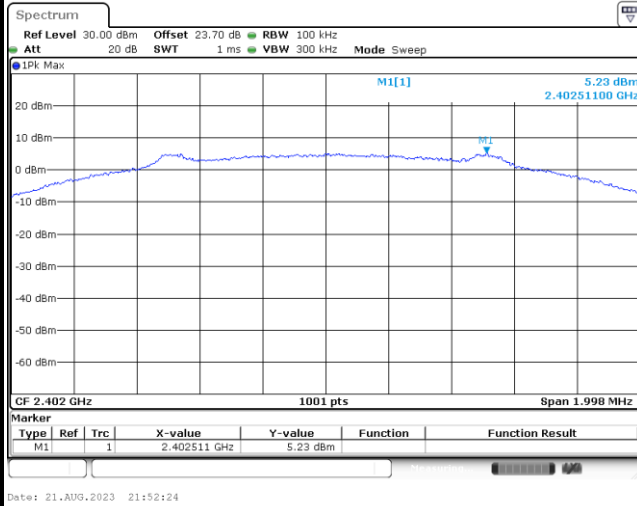


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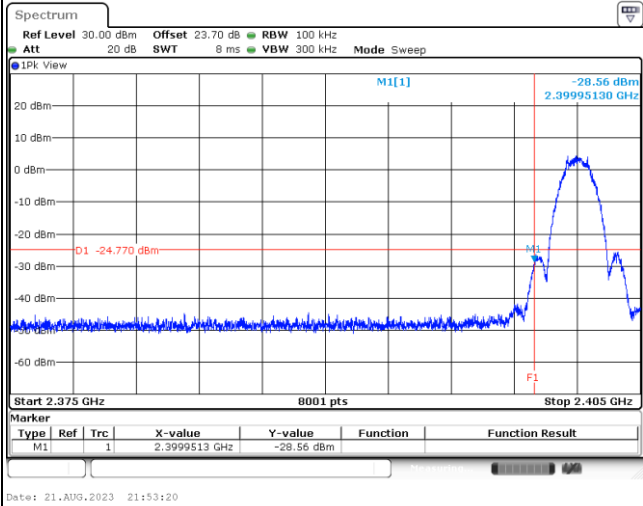


<2Mbps> Channel 00

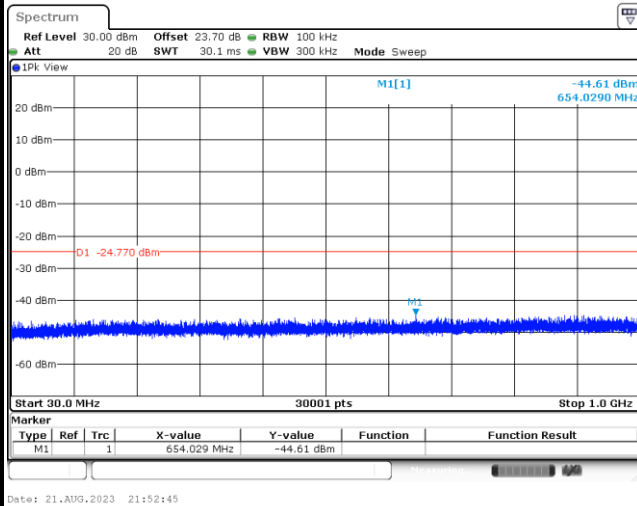
100kHz PSD reference Level Plot



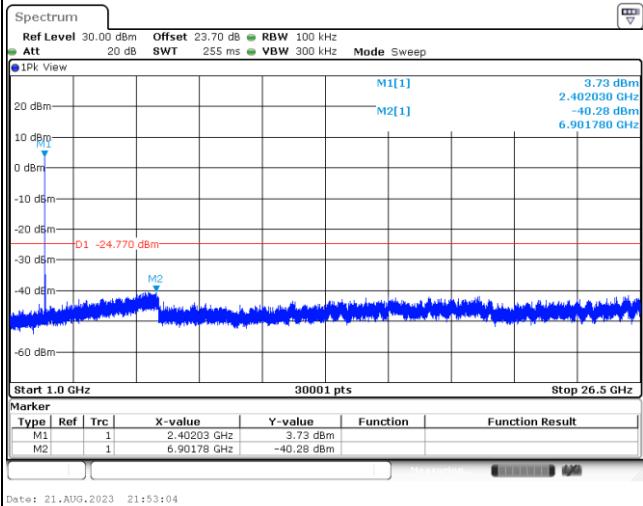
Low Channel Plot



Spurious Emission 30MHz~1GHz Plot



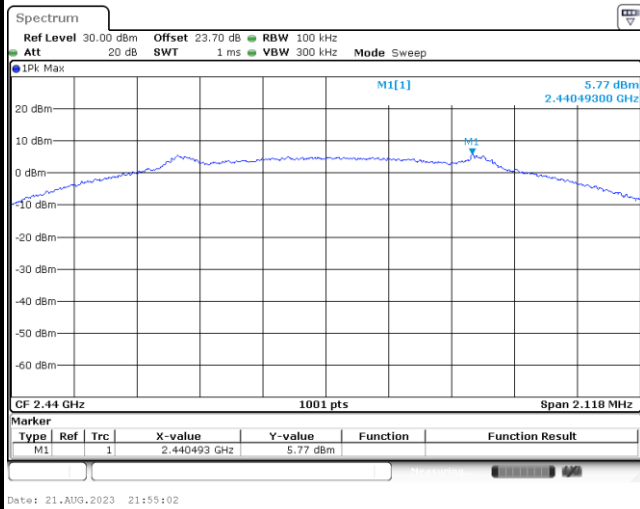
Spurious Emission 1GHz~26.5GHz Plot





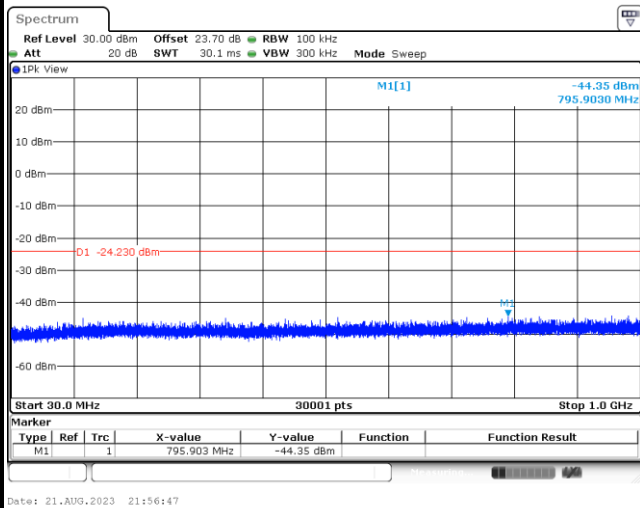
<2Mbps> Channel 19

100kHz PSD reference Level Plot

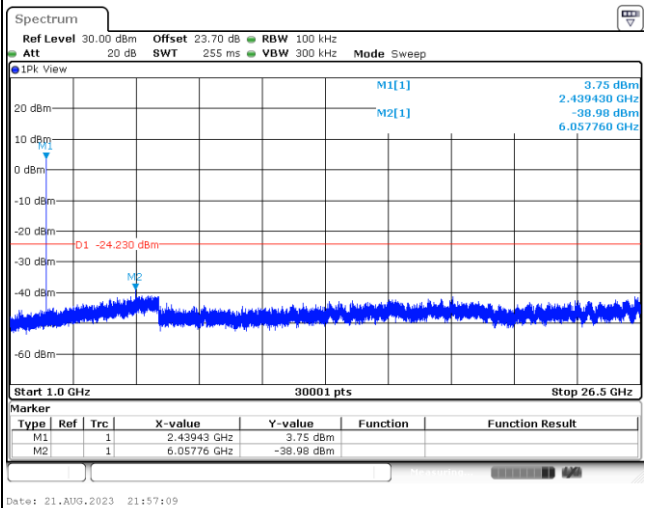


Low Channel Plot

Spurious Emission 30MHz~1GHz Plot



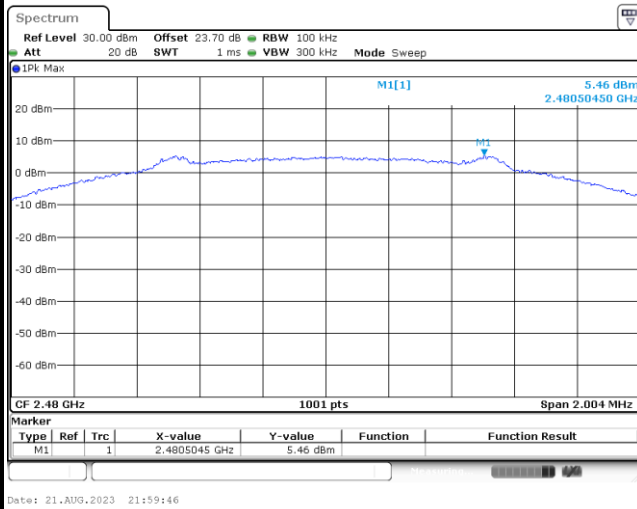
Spurious Emission 1GHz~26.5GHz Plot



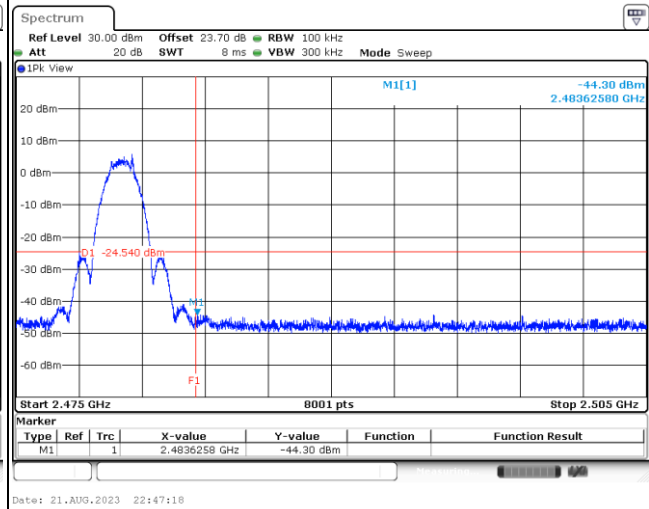


<2Mbps> Channel 39

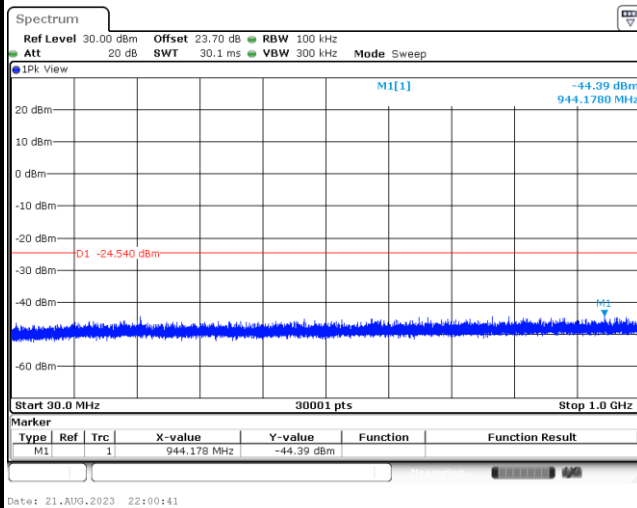
100kHz PSD reference Level Plot



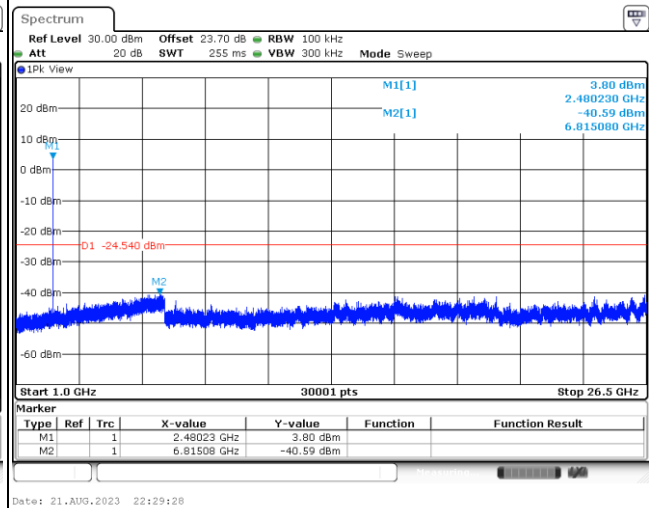
Low Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot





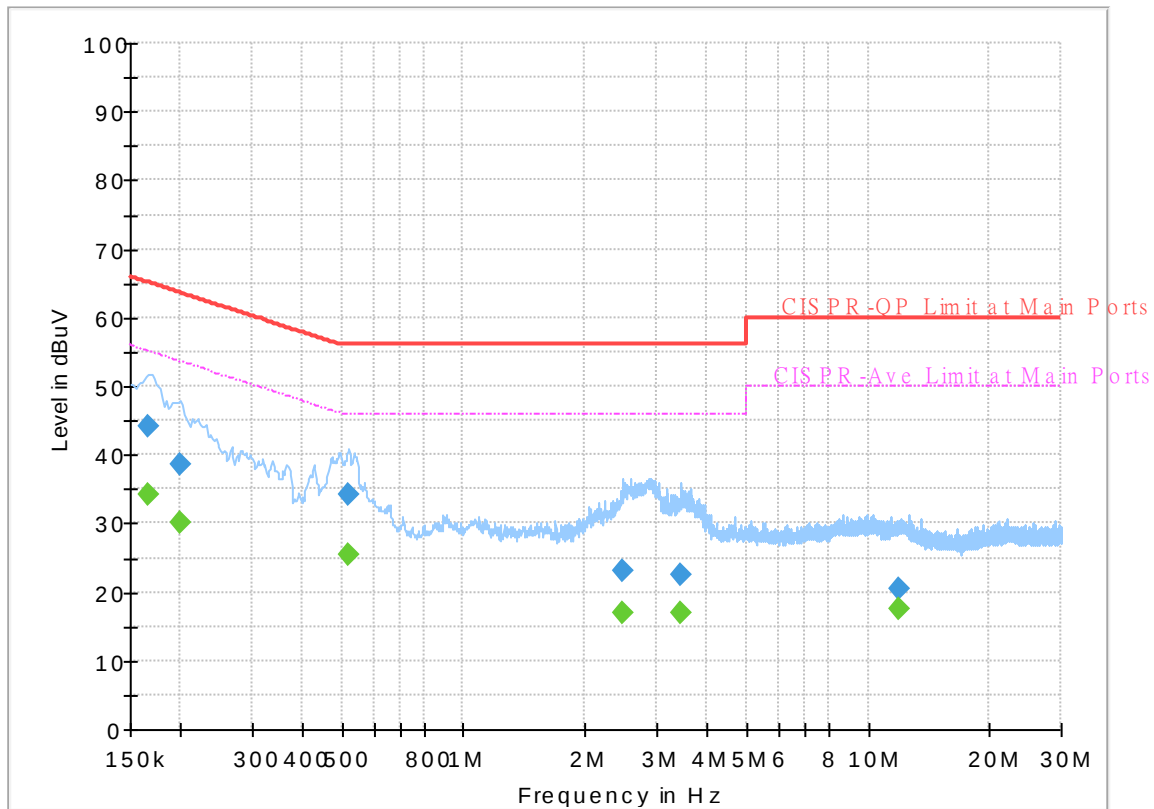
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 380838
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



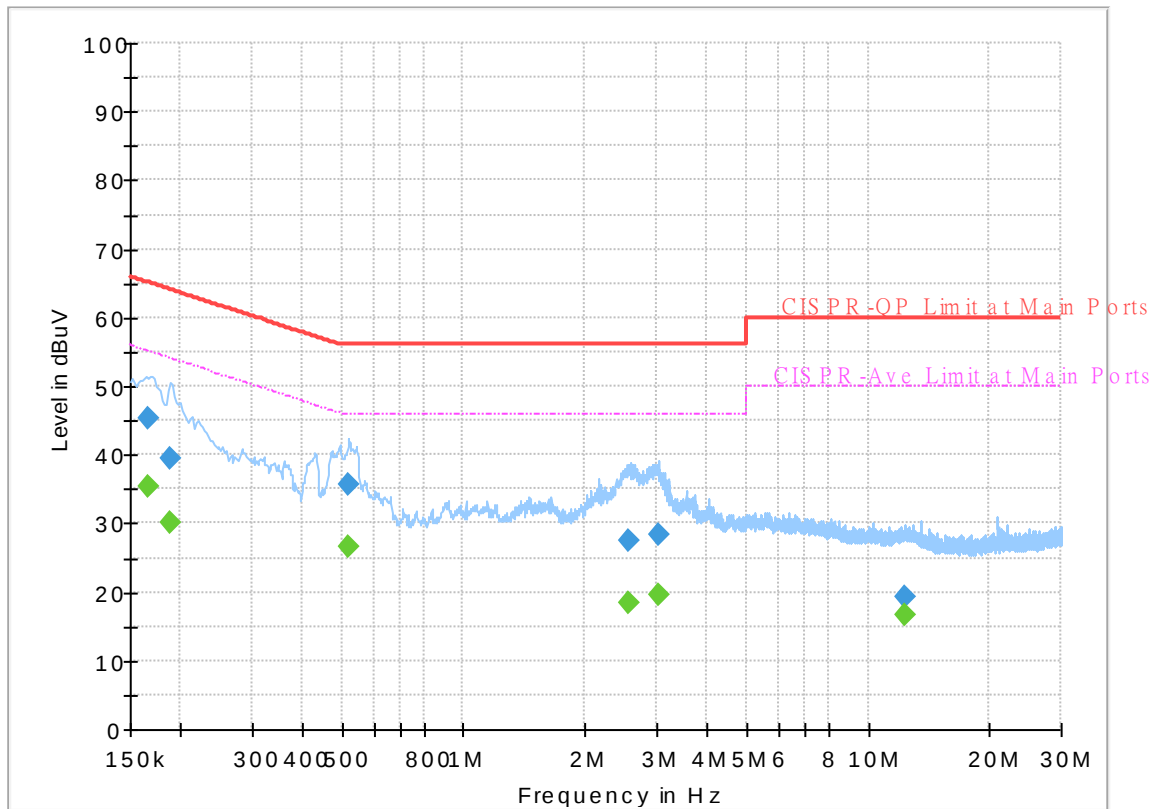
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.165750	---	34.24	55.17	20.93	L1	OFF	19.8
0.165750	44.18	---	65.17	20.99	L1	OFF	19.8
0.199500	---	30.11	53.63	23.52	L1	OFF	19.8
0.199500	38.64	---	63.63	24.99	L1	OFF	19.8
0.519000	---	25.37	46.00	20.63	L1	OFF	19.8
0.519000	34.08	---	56.00	21.92	L1	OFF	19.8
2.469750	---	16.92	46.00	29.08	L1	OFF	19.9
2.469750	23.00	---	56.00	33.00	L1	OFF	19.9
3.455250	---	16.96	46.00	29.04	L1	OFF	19.9
3.455250	22.56	---	56.00	33.44	L1	OFF	19.9
11.973750	---	17.52	50.00	32.48	L1	OFF	19.9
11.973750	20.54	---	60.00	39.46	L1	OFF	19.9

EUT Information

Report NO : 380838
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.165750	---	35.41	55.17	19.76	N	OFF	19.8
0.165750	45.20	---	65.17	19.97	N	OFF	19.8
0.188250	---	30.13	54.11	23.98	N	OFF	19.8
0.188250	39.61	---	64.11	24.50	N	OFF	19.8
0.519000	---	26.48	46.00	19.52	N	OFF	19.8
0.519000	35.54	---	56.00	20.46	N	OFF	19.8
2.557500	---	18.38	46.00	27.62	N	OFF	19.8
2.557500	27.40	---	56.00	28.60	N	OFF	19.8
3.023250	---	19.69	46.00	26.31	N	OFF	19.9
3.023250	28.26	---	56.00	27.74	N	OFF	19.9
12.279750	---	16.73	50.00	33.27	N	OFF	20.0
12.279750	19.24	---	60.00	40.76	N	OFF	20.0



Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	18.1~23.5°C
		Relative Humidity :	55.8~70.3%

<125kbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 39 2480MHz	*	2480	76.47	-	-	60.29	32	18.4	34.22	293	137	P	H
	*	2480	75.41	-	-	59.23	32	18.4	34.22	293	137	A	H
		2489.4	55.03	-18.97	74	38.86	32	18.39	34.22	293	137	P	H
		2494	44.31	-9.69	54	28.14	32	18.39	34.22	293	137	A	H
													H
													H
	*	2480	82.16	-	-	65.98	32	18.4	34.22	100	183	P	V
	*	2480	81.42	-	-	65.24	32	18.4	34.22	100	183	A	V
		2487.16	54.66	-19.34	74	38.49	32	18.39	34.22	100	183	P	V
		2494.12	44.3	-9.7	54	28.13	32	18.39	34.22	100	183	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)	Margin (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	50.09	-23.91	74	62.1	34.02	13.01	59.04	291	212	P	H
		4804	45.59	-8.41	54	57.6	34.02	13.01	59.04	291	212	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	51.01	-22.99	74	63.02	34.02	13.01	59.04	100	162	P	V
		4804	46.08	-7.92	54	58.09	34.02	13.01	59.04	100	162	A	V
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													V
													V
													V
													V
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													V
													V
													V
													V



BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 19 2440MHz		4880	51	-23	74	62.74	34.14	13.03	58.91	275	214	P	H
		4880	46.95	-7.05	54	58.69	34.14	13.03	58.91	275	214	A	H
		7320	53.15	-20.85	74	59.66	35.7	15.36	57.57	100	179	P	H
		7320	48.34	-5.66	54	54.85	35.7	15.36	57.57	100	179	A	H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	54.32	-19.68	74	66.06	34.14	13.03	58.91	103	181	P	V
		4880	50.98	-3.02	54	62.72	34.14	13.03	58.91	103	181	A	V
		7320	52.66	-21.34	74	59.17	35.7	15.36	57.57	100	168	P	V
		7320	47.41	-6.59	54	53.92	35.7	15.36	57.57	100	168	A	V
													V
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BLE	Note	Frequency	Level	Margin	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 39 2480MHz		4960	50.16	-23.84	74	61.6	34.3	13.04	58.78	104	201	P	H
		4960	45.86	-8.14	54	57.3	34.3	13.04	58.78	104	201	A	H
		7440	55.68	-18.32	74	62.4	35.6	15.38	57.7	100	185	P	H
		7440	51.38	-2.62	54	58.1	35.6	15.38	57.7	100	185	A	H
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													H
													H
		4960	55.16	-18.84	74	66.6	34.3	13.04	58.78	113	196	P	V
		4960	51.76	-2.24	54	63.2	34.3	13.04	58.78	113	196	A	V
		7440	50.78	-23.22	74	57.5	35.6	15.38	57.7	100	173	P	V
		7440	45.18	-8.82	54	51.9	35.6	15.38	57.7	100	173	A	V
													V
													V
													V
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												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

2.4GHz BLE (SHF)

[illegible]

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		30.54	22.24	-17.76	40	27.31	23.98	1.02	30.07	-	-	P	H
		140.7	21.76	-21.74	43.5	32.37	17.41	1.94	29.96	-	-	P	H
		265.98	30.7	-15.3	46	38.32	19.68	2.62	29.92	-	-	P	H
		750.1	33.23	-12.77	46	30.64	27.78	4.56	29.75	-	-	P	H
		856.5	32.35	-13.65	46	27.75	28.97	4.88	29.25	-	-	P	H
		959.4	33.5	-12.5	46	26.43	30.68	5.17	28.78	-	-	P	H
													H
													H
													H
													H
													H
													H
		30	29.2	-10.8	40	34.16	24.11	1.01	30.08	-	-	P	V
		42.96	23.25	-16.75	40	34.01	18	1.2	29.96	-	-	P	V
		69.42	18.03	-21.97	40	34.23	12.21	1.46	29.87	-	-	P	V
		750.1	32.38	-13.62	46	29.79	27.78	4.56	29.75	-	-	P	V
		911.1	32.41	-13.59	46	27.58	28.76	5.05	28.98	-	-	P	V
		956.6	33.45	-12.55	46	26.63	30.46	5.16	28.8	-	-	P	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 emission is noise floor only.												



<500kbps>

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

BLE	Note	Frequency	Level	Margin	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 39 2480MHz	*	2480	76.36	-	-	60.18	32	18.4	34.22	293	138	P	H
	*	2480	75.61	-	-	59.43	32	18.4	34.22	293	138	A	H
		2497.56	54.49	-19.51	74	38.32	32	18.39	34.22	293	138	P	H
		2492.36	44.27	-9.73	54	28.1	32	18.39	34.22	293	138	A	H
													H
													H
	*	2480	82.23	-	-	66.05	32	18.4	34.22	100	183	P	V
	*	2480	81.44	-	-	65.26	32	18.4	34.22	100	183	A	V
		2493.72	54.88	-19.12	74	38.71	32	18.39	34.22	100	183	P	V
		2499.8	44.27	-9.73	54	28.1	32	18.39	34.22	100	183	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)	Margin (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	50.37	-23.63	74	62.38	34.02	13.01	59.04	291	212	P	H
		4804	46.21	-7.79	54	58.22	34.02	13.01	59.04	291	212	A	H
													H
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													H
													H
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													H
													H
													H
													H
		4804	51.11	-22.89	74	63.12	34.02	13.01	59.04	100	162	P	V
		4804	46.78	-7.22	54	58.79	34.02	13.01	59.04	100	162	A	V
													V
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BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 19 2440MHz		4880	51.33	-22.67	74	63.07	34.14	13.03	58.91	295	216	P	H
		4880	47.47	-6.53	54	59.21	34.14	13.03	58.91	295	216	A	H
		7320	53.73	-20.27	74	60.24	35.7	15.36	57.57	100	180	P	H
		7320	48.79	-5.21	54	55.3	35.7	15.36	57.57	100	180	A	H
													H
													H
													H
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													H
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													H
													H
		4880	54.58	-19.42	74	66.32	34.14	13.03	58.91	100	181	P	V
		4880	51.43	-2.57	54	63.17	34.14	13.03	58.91	100	181	A	V
		7320	52.79	-21.21	74	59.3	35.7	15.36	57.57	100	173	P	V
		7320	47.63	-6.37	54	54.14	35.7	15.36	57.57	100	173	A	V
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BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 39 2480MHz		4960	50.06	-23.94	74	61.5	34.3	13.04	58.78	105	202	P	H	
		4960	46.26	-7.74	54	57.7	34.3	13.04	58.78	105	202	A	H	
		7440	55.68	-18.32	74	62.4	35.6	15.38	57.7	100	185	P	H	
		7440	51.88	-2.12	54	58.6	35.6	15.38	57.7	100	185	A	H	
													H	
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													H	
		4960	55.6	-18.4	74	67.04	34.3	13.04	58.78	113	195	P	V	
		4960	52.62	-1.38	54	64.06	34.3	13.04	58.78	113	195	A	V	
		7440	50.88	-23.12	74	57.6	35.6	15.38	57.7	100	173	P	V	
		7440	45.68	-8.32	54	52.4	35.6	15.38	57.7	100	173	A	V	
														V
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Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													

Emission above 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		24755	39	-35	74	48.78	39.1	8.72	57.6	-	-	P	H
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Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		30	22.55	-17.45	40	27.51	24.11	1.01	30.08	-	-	P	H
		141.78	20.94	-22.56	43.5	31.57	17.38	1.95	29.96	-	-	P	H
		265.44	31.78	-14.22	46	39.32	19.76	2.62	29.92	-	-	P	H
		752.9	31.44	-14.56	46	28.76	27.85	4.57	29.74	-	-	P	H
		880.3	32.79	-13.21	46	28.1	28.86	4.96	29.13	-	-	P	H
		956.6	33.69	-12.31	46	26.87	30.46	5.16	28.8	-	-	P	H
													H
													H
													H
													H
													H
													H
		30	29.54	-10.46	40	34.5	24.11	1.01	30.08	-	-	P	V
		37.02	21.48	-18.52	40	29.34	20.98	1.13	29.97	-	-	P	V
		267.33	24.52	-21.48	46	32.32	19.49	2.63	29.92	-	-	P	V
		750.1	31.66	-14.34	46	29.07	27.78	4.56	29.75	-	-	P	V
		845.3	32.27	-13.73	46	27.97	28.77	4.85	29.32	-	-	P	V
		946.8	34.37	-11.63	46	27.98	30.1	5.13	28.84	-	-	P	V
													V
													V
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													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.												



<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	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		2375.835	55.4	-18.6	74	39.33	32.1	18.17	34.2	272	186	P	H
		2387.49	44.19	-9.81	54	28.02	32.1	18.27	34.2	272	186	A	H
	*	2402	82.9	-	-	66.72	32.1	18.28	34.2	272	186	P	H
	*	2402	82.23	-	-	66.05	32.1	18.28	34.2	272	186	A	H
													H
													H
		2369.43	54.79	-19.21	74	38.72	32.1	18.16	34.19	105	183	P	V
		2343.705	44.77	-9.23	54	28.75	32.06	18.15	34.19	105	183	A	V
	*	2402	85.88	-	-	69.7	32.1	18.28	34.2	105	183	P	V
	*	2402	85.39	-	-	69.21	32.1	18.28	34.2	105	181	A	V
													V
													V
BLE CH 19 2440MHz		2361.38	54.6	-19.4	74	38.53	32.1	18.16	34.19	208	237	P	H
		2386.44	44.27	-9.73	54	28.1	32.1	18.27	34.2	208	237	A	H
	*	2440	78.37	-	-	62.22	32.02	18.34	34.21	208	237	P	H
	*	2440	77.59	-	-	61.44	32.02	18.34	34.21	208	237	A	H
		2487.47	54.97	-19.03	74	38.8	32	18.39	34.22	208	237	P	H
		2493.49	44.45	-9.55	54	28.28	32	18.39	34.22	208	237	A	H
		2377.9	55.49	-18.51	74	39.42	32.1	18.17	34.2	246	174	P	V
		2343.74	44.56	-9.44	54	28.54	32.06	18.15	34.19	246	174	A	V
	*	2440	83.76	-	-	67.61	32.02	18.34	34.21	246	174	P	V
	*	2440	82.99	-	-	66.84	32.02	18.34	34.21	246	174	A	V
		2483.62	55.22	-18.78	74	39.05	32	18.39	34.22	246	174	P	V
		2492.23	44.38	-9.62	54	28.21	32	18.39	34.22	246	174	A	V



BLE CH 39 2480MHz	*	2480	77.81	-	-	61.63	32	18.4	34.22	291	138	P	H
	*	2480	77.01	-	-	60.83	32	18.4	34.22	291	138	A	H
		2498.44	54.29	-19.71	74	38.12	32	18.39	34.22	291	138	P	H
		2492	44.41	-9.59	54	28.24	32	18.39	34.22	291	138	A	H
													H
													H
	*	2480	83.42	-	-	67.24	32	18.4	34.22	102	167	P	V
	*	2480	82.78	-	-	66.6	32	18.4	34.22	102	167	A	V
		2493.76	54.95	-19.05	74	38.78	32	18.39	34.22	102	167	P	V
		2486.68	44.38	-9.62	54	28.21	32	18.39	34.22	102	167	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)	Margin (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	46.45	-27.55	74	58.46	34.02	13.01	59.04	115	156	P	H
		4804	41.32	-12.68	54	53.33	34.02	13.01	59.04	115	156	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	51.16	-22.84	74	63.17	34.02	13.01	59.04	100	201	P	V
		4804	46.97	-7.03	54	58.98	34.02	13.01	59.04	100	201	A	V
													V
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BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 19 2440MHz		4880	48.22	-25.78	74	59.96	34.14	13.03	58.91	100	159	P	H
		4880	45.26	-8.74	54	57	34.14	13.03	58.91	100	159	A	H
		7320	53.32	-20.68	74	59.83	35.7	15.36	57.57	100	180	P	H
		7320	51.35	-2.65	54	57.86	35.7	15.36	57.57	100	180	A	H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	53.89	-20.11	74	65.63	34.14	13.03	58.91	100	176	P	V
		4880	52.39	-1.61	54	64.13	34.14	13.03	58.91	100	176	A	V
		7320	52.59	-21.41	74	59.1	35.7	15.36	57.57	100	170	P	V
		7320	50.51	-3.49	54	57.02	35.7	15.36	57.57	100	170	A	V
													V
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													V
													V
													V

BLE	Note	Frequency	Level	Margin	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 39 2480MHz		4960	50.38	-23.62	74	61.82	34.3	13.04	58.78	305	212	P	H
		4960	46.82	-7.18	54	58.26	34.3	13.04	58.78	305	212	A	H
		7440	54.44	-19.56	74	61.16	35.6	15.38	57.7	100	190	P	H
		7440	50.1	-3.9	54	56.82	35.6	15.38	57.7	100	190	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	55.98	-18.02	74	67.42	34.3	13.04	58.78	100	199	P	V
		4960	53.56	-0.44	54	65	34.3	13.04	58.78	100	199	A	V
		7440	50.45	-23.55	74	57.17	35.6	15.38	57.7	100	178	P	V
		7440	44.74	-9.26	54	51.46	35.6	15.38	57.7	100	178	A	V
													V
													V
													V
													V
													V
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												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

2.4GHz BLE (SHF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		24867	38.92	-35.08	74	48.53	39.15	8.75	57.51	-	-	P	H
													H
													H
													H
													H
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Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		30	22.81	-17.19	40	27.77	24.11	1.01	30.08	-	-	P	H
		140.16	22.55	-20.95	43.5	33.14	17.43	1.94	29.96	-	-	P	H
		266.52	30.45	-15.55	46	38.15	19.6	2.62	29.92	-	-	P	H
		562.5	28.61	-17.39	46	28.87	25.86	3.89	30.01	-	-	P	H
		874.7	32.33	-13.67	46	27.62	28.93	4.94	29.16	-	-	P	H
		934.9	33.94	-12.06	46	28.3	29.42	5.11	28.89	-	-	P	H
													H
													H
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													H
													H
													H
													H
		30	29.77	-10.23	40	34.73	24.11	1.01	30.08	-	-	P	V
		42.96	22.01	-17.99	40	32.77	18	1.2	29.96	-	-	P	V
		52.41	22.01	-17.99	40	37.65	13.21	1.29	30.14	-	-	P	V
		750.1	33.17	-12.83	46	30.58	27.78	4.56	29.75	-	-	P	V
		872.6	32.45	-13.55	46	27.69	28.99	4.94	29.17	-	-	P	V
		951	34.03	-11.97	46	27.42	30.3	5.14	28.83	-	-	P	V
													V
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													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.												



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	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		2369.22	53.92	-20.08	74	37.85	32.1	18.16	34.19	398	49	P	H
		2343.705	44.84	-9.16	54	28.82	32.06	18.15	34.19	398	49	A	H
	*	2402	85.54	-	-	69.36	32.1	18.28	34.2	398	49	P	H
	*	2402	84.02	-	-	67.84	32.1	18.28	34.2	398	49	A	H
													H
													H
		2368.275	54.51	-19.49	74	38.44	32.1	18.16	34.19	400	164	P	V
		2343.705	44.42	-9.58	54	28.4	32.06	18.15	34.19	400	164	A	V
	*	2402	89.03	-	-	72.85	32.1	18.28	34.2	400	164	P	V
	*	2402	87.51	-	-	71.33	32.1	18.28	34.2	400	164	A	V
													V
													V
BLE CH 19 2440MHz		2369.22	55.6	-18.4	74	39.53	32.1	18.16	34.19	117	240	P	H
		2389.8	44.24	-9.76	54	28.07	32.1	18.27	34.2	117	240	A	H
	*	2440	78.91	-	-	62.76	32.02	18.34	34.21	117	240	P	H
	*	2440	77.15	-	-	61	32.02	18.34	34.21	117	240	A	H
		2487.75	55.26	-18.74	74	39.09	32	18.39	34.22	117	240	P	H
		2493	44.37	-9.63	54	28.2	32	18.39	34.22	117	240	A	H
		2314.62	55.07	-18.93	74	39.33	31.89	18.03	34.18	152	174	P	V
		2343.74	44.68	-9.32	54	28.66	32.06	18.15	34.19	152	174	A	V
	*	2440	83.41	-	-	67.26	32.02	18.34	34.21	152	174	P	V
	*	2440	81.92	-	-	65.77	32.02	18.34	34.21	152	174	A	V
		2484.18	54.83	-19.17	74	38.66	32	18.39	34.22	152	174	P	V
		2493.35	44.36	-9.64	54	28.19	32	18.39	34.22	152	174	A	V



BLE CH 39 2480MHz	*	2480	77.52	-	-	61.34	32	18.4	34.22	291	138	P	H
	*	2480	75.85	-	-	59.67	32	18.4	34.22	291	138	A	H
		2491.4	54.89	-19.11	74	38.72	32	18.39	34.22	291	138	P	H
		2484.64	44.32	-9.68	54	28.15	32	18.39	34.22	291	138	A	H
													H
													H
	*	2480	82.58	-	-	66.4	32	18.4	34.22	100	183	P	V
	*	2480	81.16	-	-	64.98	32	18.4	34.22	100	183	A	V
		2485.6	54.85	-19.15	74	38.68	32	18.39	34.22	100	183	P	V
		2491.88	44.35	-9.65	54	28.18	32	18.39	34.22	100	183	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)	Margin (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	49.07	-24.93	74	61.08	34.02	13.01	59.04	100	336	P	H
		4804	43.58	-10.42	54	55.59	34.02	13.01	59.04	100	336	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	50.28	-23.72	74	62.29	34.02	13.01	59.04	103	189	P	V
		4804	44.48	-9.52	54	56.49	34.02	13.01	59.04	103	189	A	V
													V
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													V
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													V



BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 19 2440MHz		4880	48.35	-25.65	74	60.09	34.14	13.03	58.91	100	160	P	H
		4880	41.61	-12.39	54	53.35	34.14	13.03	58.91	100	160	A	H
		7320	53.76	-20.24	74	60.27	35.7	15.36	57.57	100	187	P	H
		7320	47.39	-6.61	54	53.9	35.7	15.36	57.57	100	187	A	H
													H
													H
													H
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													H
		4880	54.36	-19.64	74	66.1	34.14	13.03	58.91	100	175	P	V
		4880	48.75	-5.25	54	60.49	34.14	13.03	58.91	100	175	A	V
		7320	52.81	-21.19	74	59.32	35.7	15.36	57.57	100	169	P	V
		7320	46.71	-7.29	54	53.22	35.7	15.36	57.57	100	169	A	V
													V
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BLE	Note	Frequency	Level	Margin	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 39 2480MHz		4960	51.64	-22.36	74	63.08	34.3	13.04	58.78	279	201	P	H
		4960	45.62	-8.38	54	57.06	34.3	13.04	58.78	279	201	A	H
		7440	57.55	-16.45	74	64.27	35.6	15.38	57.7	100	184	P	H
		7440	52.34	-1.66	54	59.06	35.6	15.38	57.7	100	184	A	H
													H
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													H
													H
		4960	58.39	-15.61	74	69.83	34.3	13.04	58.78	100	182	P	V
		4960	53.58	-0.42	54	65.02	34.3	13.04	58.78	100	182	A	V
		7440	51.57	-22.43	74	58.29	35.6	15.38	57.7	100	174	P	V
		7440	45.19	-8.81	54	51.91	35.6	15.38	57.7	100	174	A	V
													V
													V
													V
													V
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												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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		21031	38.52	-35.48	74	53.27	37.84	7.49	60.08	-	-	P	H
													H
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2.4GHz BLE SHF		24853	38.18	-35.82	74	47.81	39.14	8.75	57.52	-	-	P	V
													V
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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)

[illegible]



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 Margin line.
P/A	Peak or Average
H/V	Horizontal or Vertical

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

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					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. Margin(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. Margin(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. Margin(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 :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	18.1~23.5°C
		Relative Humidity :	55.8~70.3%

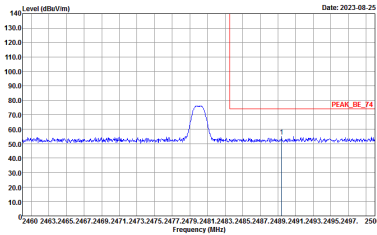
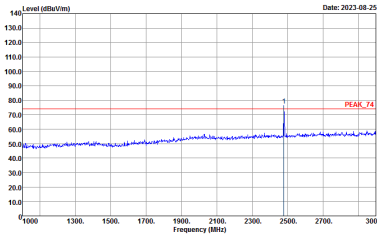
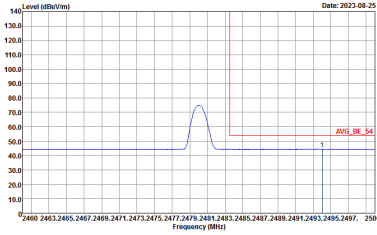
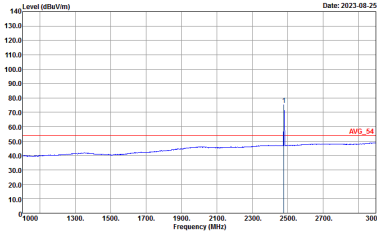
Note symbol

-L	Low channel location
-R	High channel location

<125kbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto

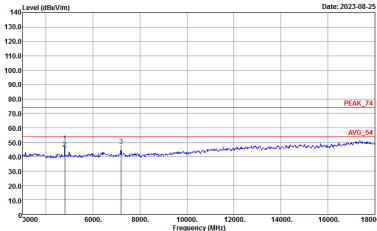
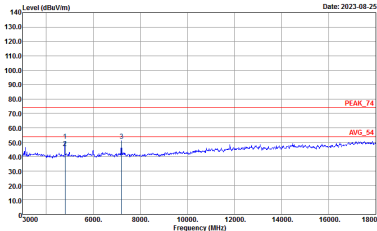


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg.	Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

Remark: The unwanted signal of mark #3 in plot falls within the non-restricted band and meet the requirements of 15.247 (d).

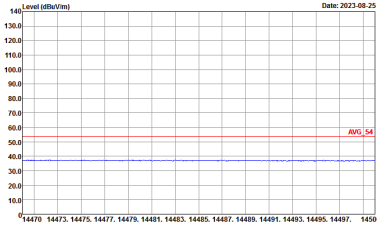
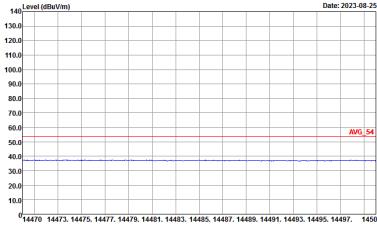
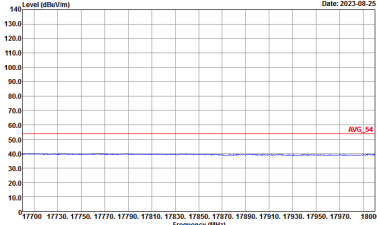
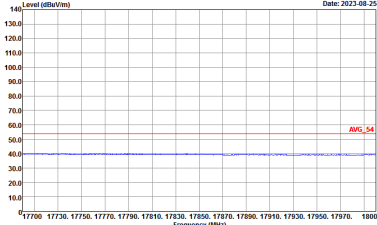


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

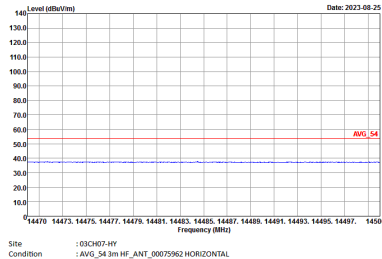
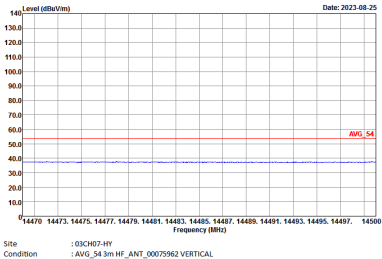
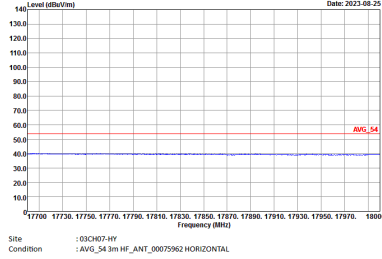
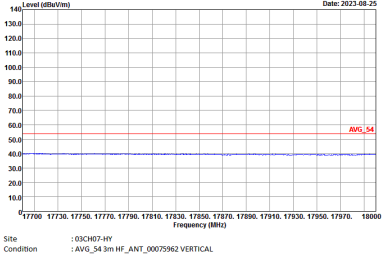


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		



Emission above 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 HORIZONTAL	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 VERTICAL



Emission below 1GHz

2.4GHz BLE (LF)

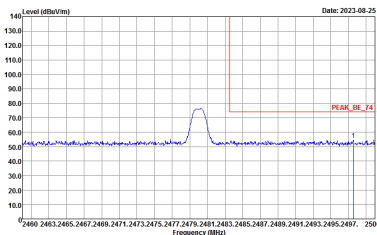
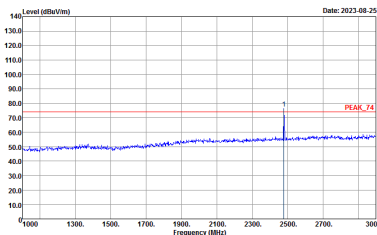
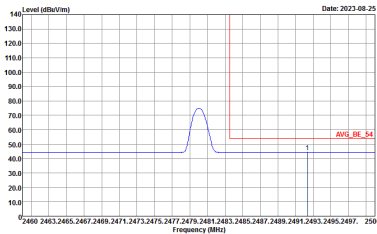
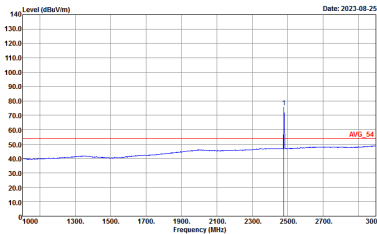
BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H HORIZONTAL	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H VERTICAL



<500kbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_F4 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto	 Site : 03CH07-HY Condition : AVG_F4 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto

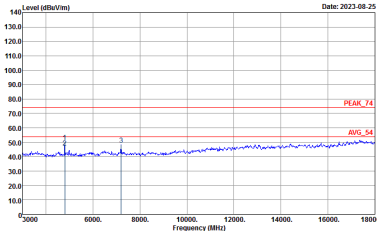
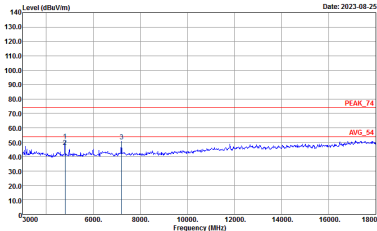


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg.	Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto



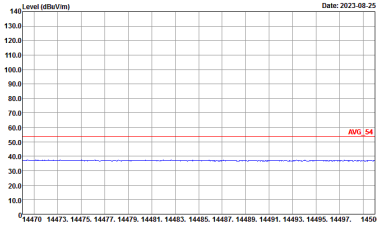
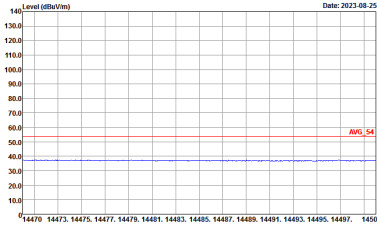
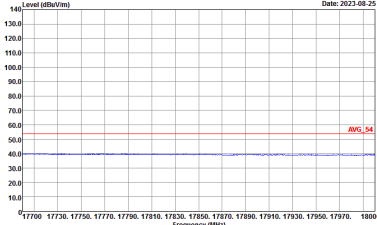
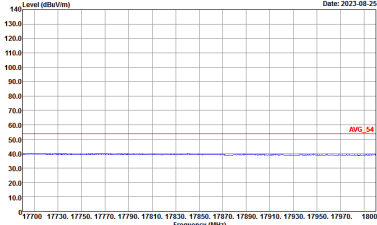
2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

Remark: The unwanted signal of mark #3 in plot falls within the non-restricted band and meet the requirements of 15.247 (d).

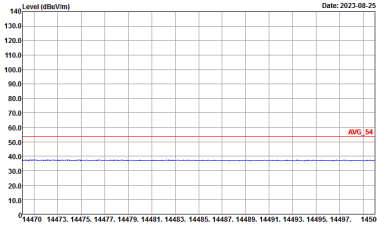
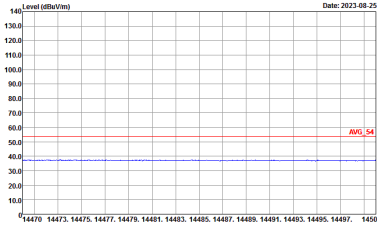
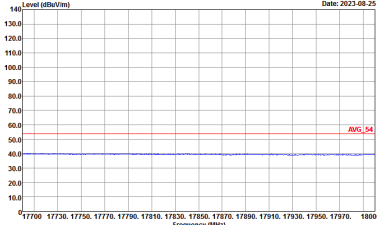
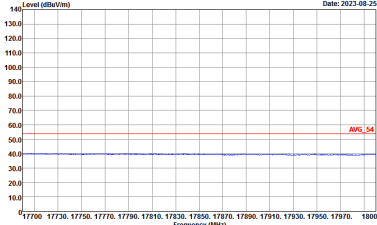


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

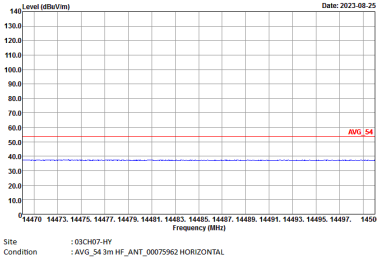
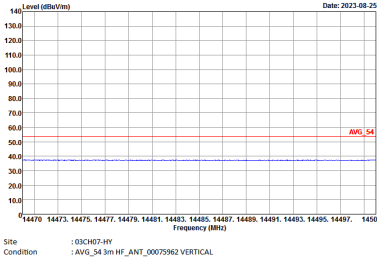
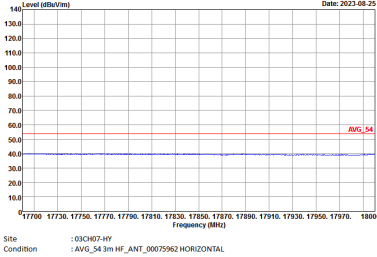
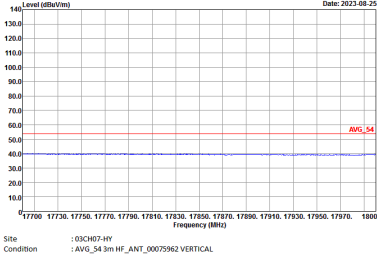


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		



Emission above 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 HORIZONTAL	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 VERTICAL



Emission below 1GHz

2.4GHz BLE (LF)

BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H HORIZONTAL	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H VERTICAL



<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	Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 1	Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 1
Avg.	Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VBW:0.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 1	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VBW:0.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 1

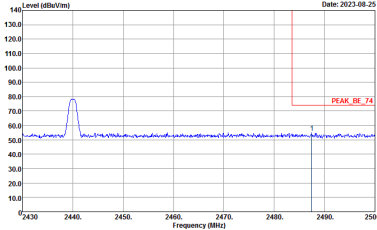
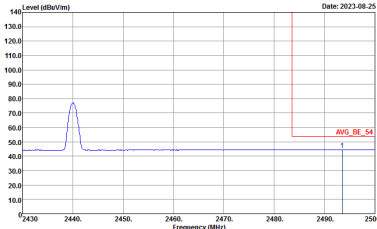


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 380838 Mode : 1	Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 380838 Mode : 1
Avg	Site : 03CH07-HY Condition : AVG_BE_34 3m HF_ANT_00075962 VERTICAL RBW:1000.000KHz VBW:0.000KHz SWT:Auto Detector : Peak Project : 380838 Mode : 1	Site : 03CH07-HY Condition : AVG_34 3m HF_ANT_00075962 VERTICAL RBW:1000.000KHz VBW:0.000KHz SWT:Auto Detector : Peak Project : 380838 Mode : 1

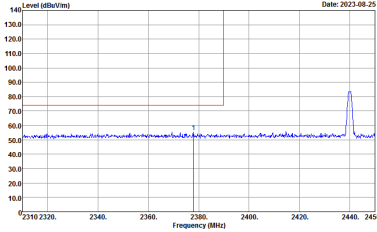
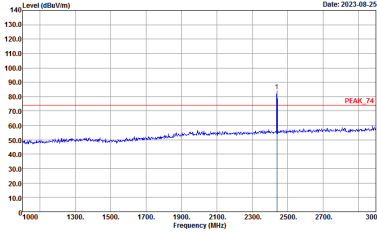
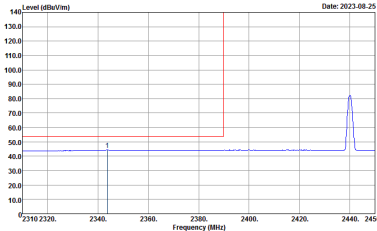
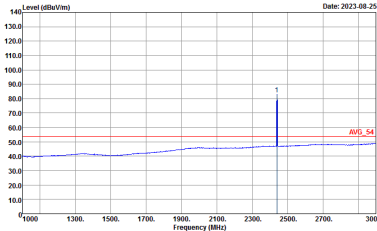


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto : : Detector : Peak Project : 380838 Mode : 2	Site : 03CH07-HY Condition : PEAK_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto : : Detector : Peak Project : 380838 Mode : 2
Avg.	Site : 03CH07-HY Condition : AVG_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto : : Detector : Peak Project : 380838 Mode : 2	Site : 03CH07-HY Condition : AVG_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto : : Detector : Peak Project : 380838 Mode : 2

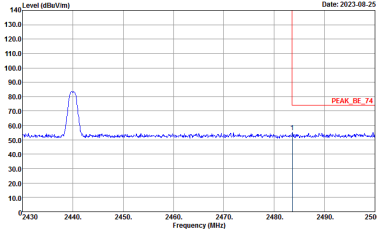
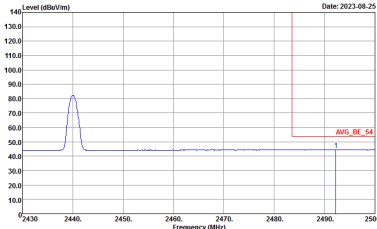


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00070962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : : Detector : Peak Project : 380838 Mode : 2	Left blank
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00070962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : : Detector : Peak Project : 380838 Mode : 2	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2
Avg.	 Site : 03CH07-HY Condition : AVG_BE_34 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:0.030kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2	 Site : 03CH07-HY Condition : AVG_34 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:0.030kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2

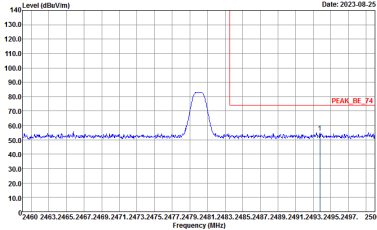
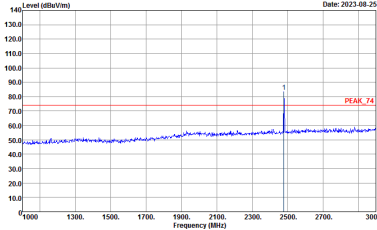
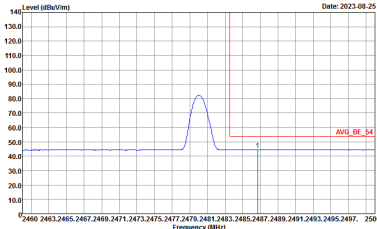
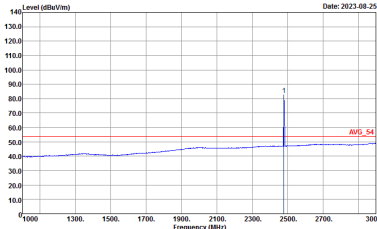


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2 Date: 2023-08-25	Left blank
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 2 Date: 2023-08-25	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 3	Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 3
Avg.	Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.000kHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 3	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.000kHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 3

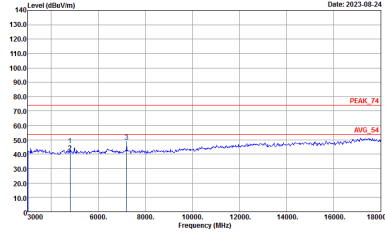
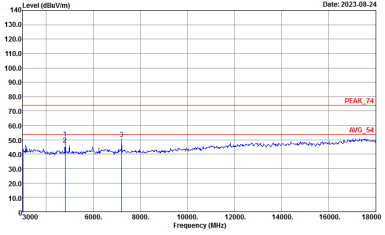


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 3	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 380838 Mode : 3
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:0.030kHz SWT:Auto Detector : Peak Project : 380838 Mode : 3	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:0.030kHz SWT:Auto Detector : Peak Project : 380838 Mode : 3



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-4Y Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 1 Setting : 0	 Site : 03CH07-4Y Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 1 Setting : 0

Remark: The unwanted signal of mark #3 in plot falls within the non-restricted band and meet the requirements of 15.247 (d).



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 1 Setting : 8	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 1 Setting : 8
17.7G ~18G Avg	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 1 Setting : 8	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : - Detector : Peak Project : 380838 Mode : 1 Setting : 8



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-08-24 Frequency (MHz) Site : 03CH07-011 Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 2 Setting : 8	Level (dBuV/m) Date: 2023-08-24 Frequency (MHz) Site : 03CH07-011 Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 2 Setting : 8



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 2 Setting : 8	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 2 Setting : 8
17.7G ~18G Avg	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 2 Setting : 8	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 2 Setting : 8



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-08-23 PEAK_74 AVG_54 Site : 03CH07-011 Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 3 Setting : 7	Level (dBuV/m) Date: 2023-08-23 PEAK_74 AVG_54 Site : 03CH07-011 Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 3 Setting : 7



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 3 Setting : 7	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 3 Setting : 7
17.7G ~18G Avg	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 380838 Mode : 3 Setting : 7	Level (dBuV/m) Date: 2023-08-24 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 380838 Mode : 3 Setting : 7



Emission above 18GHz

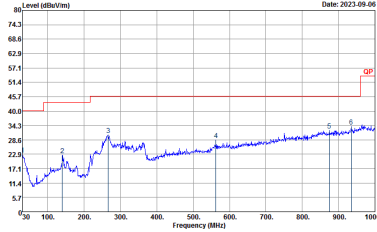
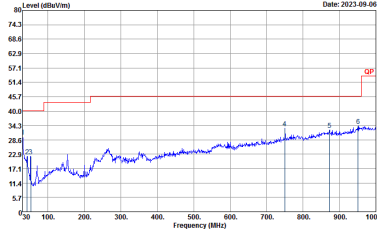
2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-08-25 Frequency (MHz) Site : 03CH07-4H Condition : PEAK_74 1m SHF-EHF_9170251 HORIZONTAL Detector : Peak Project : 380838 Mode : 4 Setting : 7	Level (dBuV/m) Date: 2023-08-25 Frequency (MHz) Site : 03CH07-4H Condition : PEAK_74 1m SHF-EHF_9170251 VERTICAL Detector : Peak Project : 380838 Mode : 4 Setting : 7



Emission below 1GHz

2.4GHz BLE (LF)

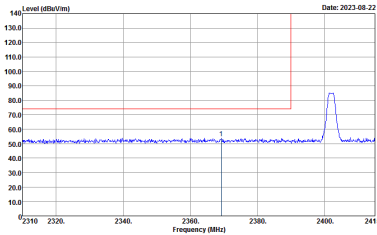
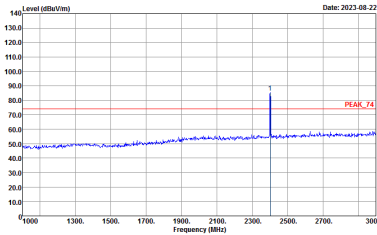
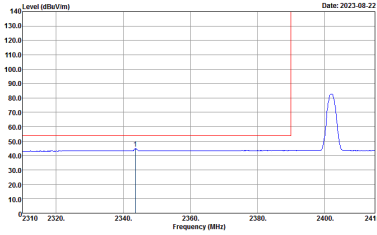
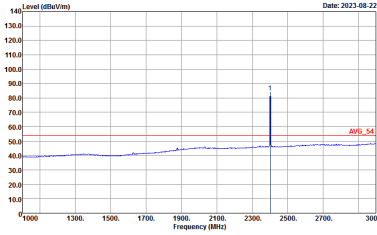
BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH07-HY Condition : QP 3m LF-ANT-15419(6)_H HORIZONTAL Detector : Peak Project : 380838 Mode : 15	 Site : 03CH07-HY Condition : QP 3m LF-ANT-15419(6)_H VERTICAL Detector : Peak Project : 380838 Mode : 15



<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	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto

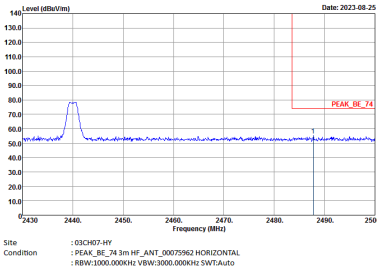
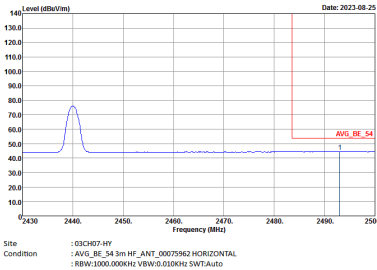


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : : PEAK_RE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg	Site : 03CH07-HY Condition : : AVG_RE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.000kHz SWT:Auto	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.000kHz 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	Site : 03CH07-HY Condition : : PEAK_RE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg.	Site : 03CH07-HY Condition : : AVG_RE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00070962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank
Avg.	Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00070962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg.	Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto

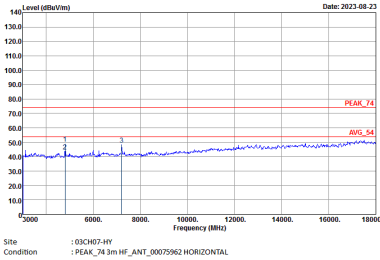
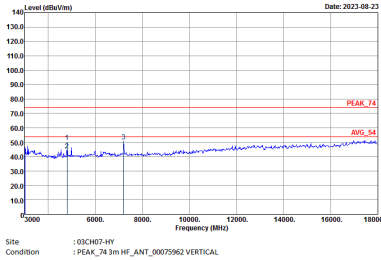


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Site : 03CH07-HY Condition : : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Avg.	Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto	Site : 03CH07-HY Condition : : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTAuto



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

Remark: The unwanted signal of mark #3 in plot falls within the non-restricted band and meet the requirements of 15.247 (d).



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL

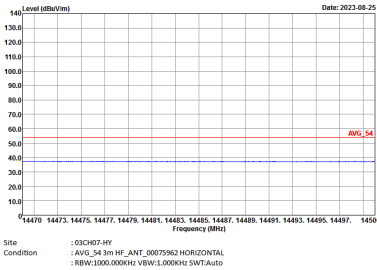
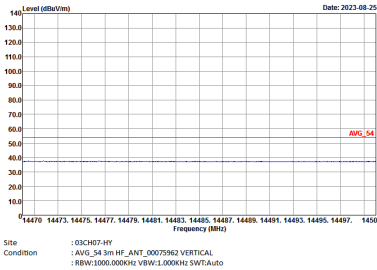
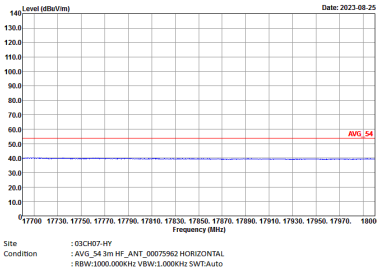
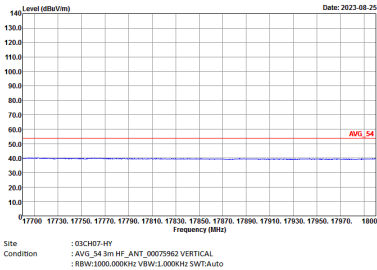


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL
17.7G ~18G Avg	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL	Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL	Level (dBuV/m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		



Emission above 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 HORIZONTAL	Level (dBu/1m) Date: 2023-08-25 Site : 03CH07-HY Condition : PEAK_74 1m SHF-EHF_9170251 VERTICAL



Emission below 1GHz

2.4GHz BLE (LF)

BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H HORIZONTAL	Level (dBuV/m) Date: 2023-09-06 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(S)_H VERTICAL



Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth - LE for 125kbps	100.00	-	-	10Hz
Bluetooth - LE for 500kbps	100.00	-	-	10Hz
Bluetooth - LE for 1Mbps	100.00	-	-	10Hz
Bluetooth - LE for 2Mbps	100.00	-	-	10Hz

