FCC RADIO TEST REPORT

FCC ID	:	**A4RG8HHN**
Equipment	:	**Phone**
Model Name	:	**G8HHN**
Applicant	:	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Jul. 12, 2023 and testing was performed from Jul. 26, 2023 to Nov. 08, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory
No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FR380306L	01	Initial issue of report	Nov. 17, 2023
FR380306L	02	Revise Section 2.2 This report is an updated version, replacing the report issued on Nov. 17, 2023.	Dec. 05, 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	6.15 dB under the limit at 56.19 MHz
3.6	15.207	AC Conducted Emission	Pass	18.11 dB under the limit at 0.43 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/manufacturer 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:

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.

Reviewed by: William Chen
Report Producer: Michelle Chen

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs GSM/WCDMA/LTE/5G NR, Bluetooth, BLE, BLE channel sounding, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, Wi-Fi 6GHz 802.11a/ax, NFC, WPC Rx and GNSS Rx. **Antenna Type** Bluetooth: **<Ant.3>**: IFA Antenna **<Ant.4>**: ILA Antenna

EUT Information List	
S/N	**Performed Test Item**
38011JEKB00249	RF Conducted Measurement
39211JEKB02508	Radiated Spurious Emission
38031JEKB01575	Conducted Emission

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	Ant.3: -1.2 Ant.4: -1.2

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. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY, CO07-HY, 03CH22-HY

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

FCC designation No.: TW3786

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

<Bluetooth – LE CS GFSK>

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	-	-	27	2429	54	2456
	-	-	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	-	-	50	2452	-	-
	-	-	51	2453	-	-
	-	-	52	2454	-	-
	26	2428	53	2455	-	-

2.2 Test Mode

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report, and the worst mode of radiated spurious emissions is X plane, and recorded in this report.

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

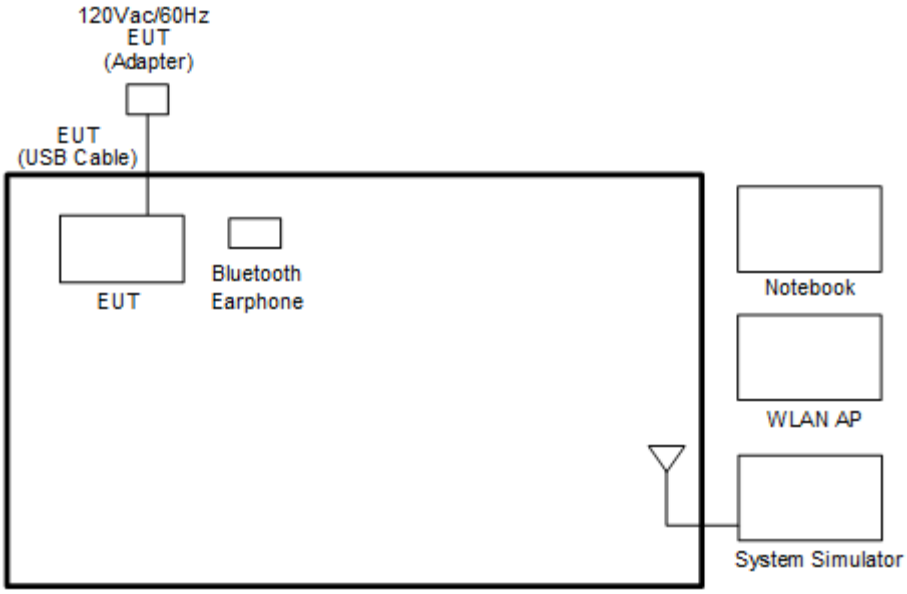
The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Conducted Test Cases	**Bluetooth-LE CS GFSK / GFSK**
	Mode 1: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_1Mbps
	Mode 2: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_1Mbps
	Mode 3: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_1Mbps
	Mode 4: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_2Mbps
	Mode 5: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_2Mbps
	Mode 6: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_2Mbps

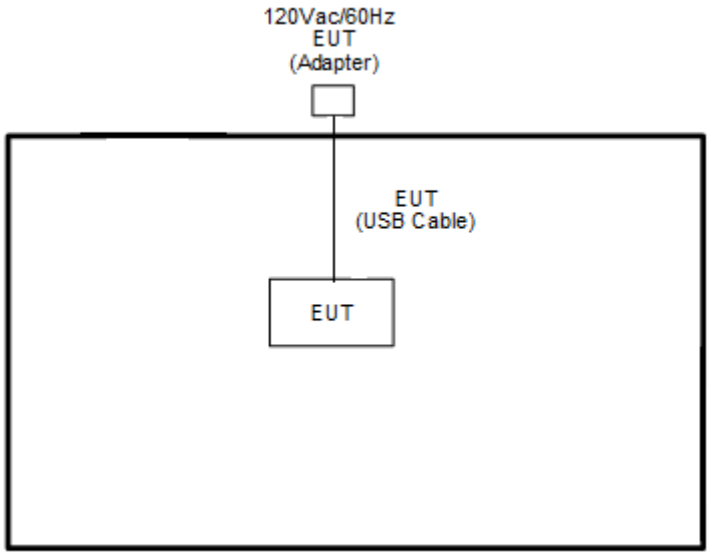
Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Radiated Test Cases	**<Ant. 3>** Mode 1: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_1Mbps Mode 2: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_1Mbps Mode 3: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_1Mbps Mode 4: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_2Mbps Mode 5: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_2Mbps Mode 6: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_2Mbps **<Ant. 4>** Mode 1: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_1Mbps Mode 2: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_1Mbps Mode 3: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_1Mbps Mode 4: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_2Mbps Mode 5: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_2Mbps Mode 6: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_2Mbps
AC Conducted Emission	Mode 1: 5G NR Band 5 Link + WLAN (2.4GHz) Link + Bluetooth on + USB Cable 3 (Charging from AC Adapter 2) + NFC on + Handset mode + Battery < 50%
Remark: 1. For Radiated Test Cases, the tests were performed with AC Adapter 1 and USB Cable 3. 2. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power. 3. During the preliminary test, both charging modes (Adapter mode and WPT Charging mode) were verified. It is determined that the adaptor mode is the worst case for official test.	

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<Bluetooth-LE CS Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
3.	WLAN AP	Netgear	RAXE500	PY320300508	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “CMD v.10.0.18362.1256” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

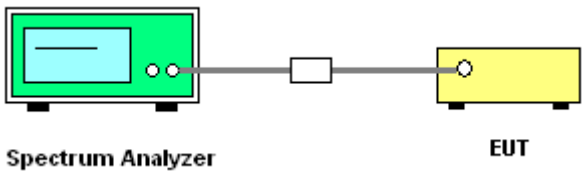
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

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.

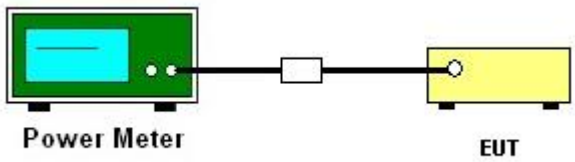
3.2.2 Measuring Instruments

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

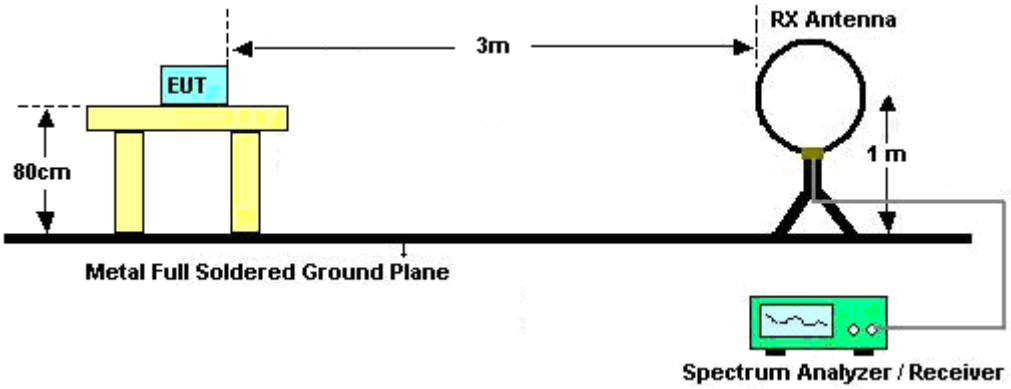
Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

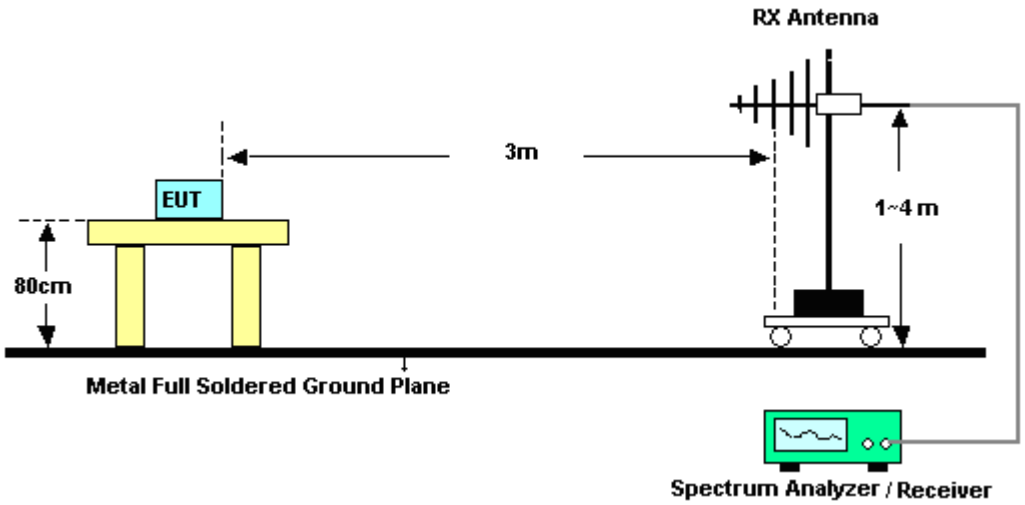
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the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

3.5.4 Test Setup

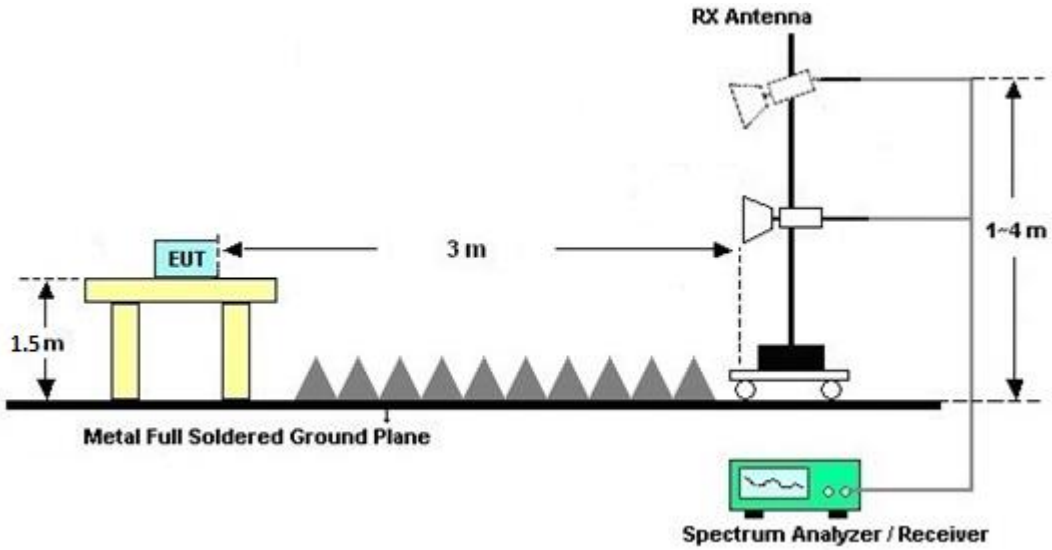
For radiated test below 30MHz



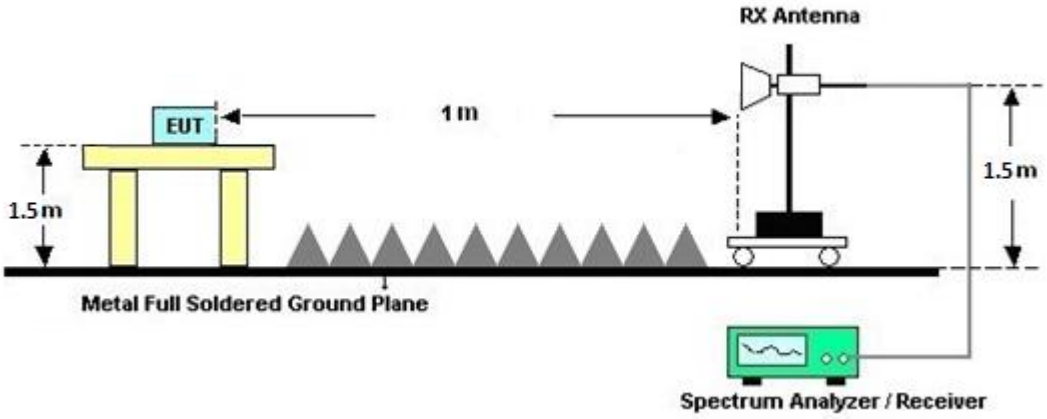
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

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

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

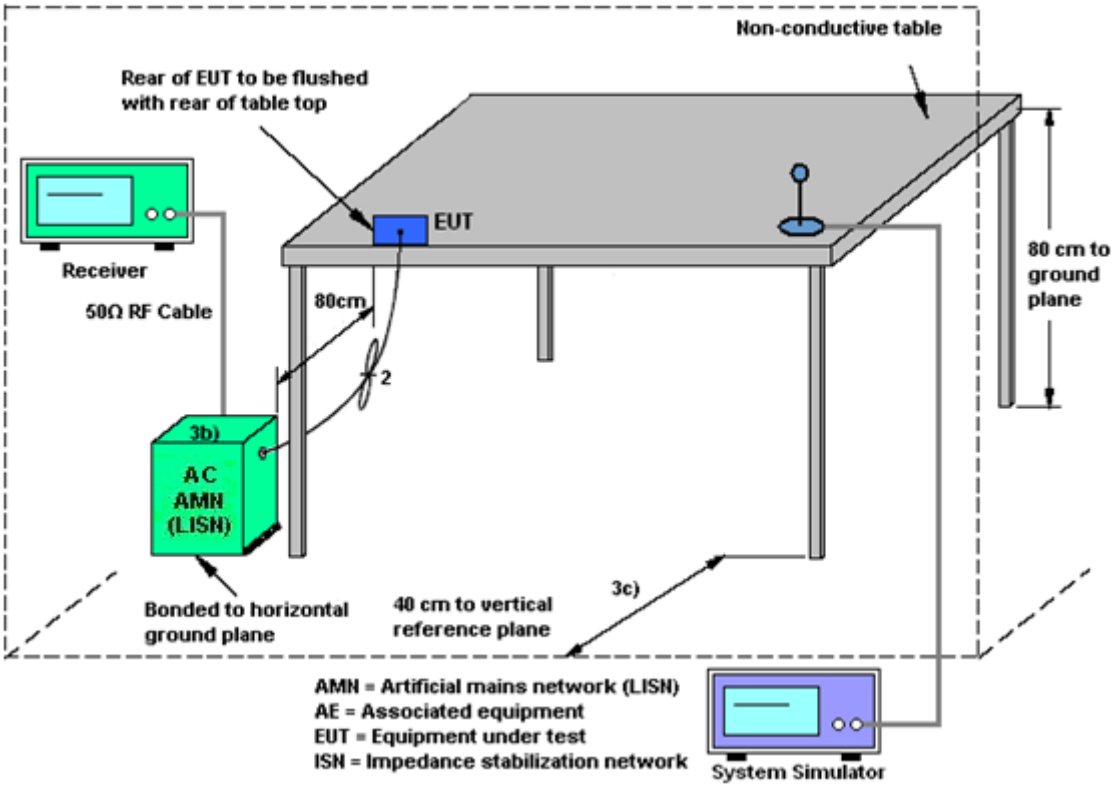
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.6.4 Test Setup



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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9kHz~30MHz	Feb. 28, 2023	Jul. 26, 2023~ Nov. 07, 2023	Feb. 27, 2024	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Oct. 04, 2022	Jul. 26, 2023~ Oct. 02, 2023	Oct. 03, 2023	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 05, 2023	Oct. 03, 2023~ Nov. 07, 2023	Feb. 04, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 15, 2023	Jul. 26, 2023~ Nov. 07, 2023	Jul. 14, 2024	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18EN	1GHz~18GHz	Jul. 12, 2023	Jul. 26, 2023~ Nov. 07, 2023	Jul. 11, 2024	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1223	18GHz-40GHz	Jul. 10, 2023	Jul. 26, 2023~ Nov. 07, 2023	Jul. 09, 2024	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 29, 2022	Jul. 26, 2023~ Sep. 27, 2023	Sep. 28, 2023	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 28, 2023	Sep. 28, 2023~ Nov. 07, 2023	Sep. 27, 2024	Radiation (03CH22-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 27, 2023	Jul. 26, 2023~ Nov. 07, 2023	Jun. 26, 2024	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY60241058	10Hz~44GHz	Jul. 06, 2023	Jul. 26, 2023~ Nov. 07, 2023	Jul. 05, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP211559	N/A	Nov. 17, 2022	Jul. 26, 2023~ Nov. 07, 2023	Nov. 16, 2023	Radiation (03CH22-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 26, 2023~ Nov. 07, 2023	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 26, 2023~ Nov. 07, 2023	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 26, 2023~ Nov. 07, 2023	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019 122	RK-002347	N/A	N/A	Jul. 26, 2023~ Nov. 07, 2023	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 07, 2023	Jul. 26, 2023~ Nov. 07, 2023	Mar. 06, 2024	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,8046 11/2,804615/2	N/A	Oct. 25, 2022	Jul. 26, 2023~ Oct. 23, 2023	Oct. 24, 2023	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,8046 11/2,804615/2	N/A	Oct. 24, 2023	Oct. 24, 2023~ Nov. 07, 2023	Oct. 23, 2024	Radiation (03CH22-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Sep. 28, 2023	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 28, 2023	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 01, 2022	Sep. 28, 2023	Oct. 31, 2023	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 15, 2023	Sep. 28, 2023	Mar. 14, 2024	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 05, 2023	Sep. 28, 2023	Mar. 04, 2024	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 13, 2023	Sep. 28, 2023	Mar. 12, 2024	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	9kHz~7GHz	Feb. 24, 2023	Sep. 28, 2023	Feb. 23, 2024	Conduction (CO07-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17. 2022	Oct. 12, 2023~ Nov. 08, 2023	Nov. 16. 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Oct. 12, 2023~ Nov. 08, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Oct. 12, 2023~ Nov. 08, 2023	Aug. 22, 2024	Conducted (TH05-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))	**3.46 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.92 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.42 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.40 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.38 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2023/10/12~2023/11/08	Relative Humidity:	51~54	%

<Ant. 3>

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 CS GFSK	1Mbps	1	2	2404	1.117	0.520	0.50	Pass
BLE CS GFSK	1Mbps	1	38	2440	1.101	0.518	0.50	Pass
BLE CS GFSK	1Mbps	1	76	2478	1.109	0.516	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 CS GFSK	1Mbps	1	2	2404	9.15	30.00	-1.20	7.95	36.00	Pass
BLE CS GFSK	1Mbps	1	38	2440	9.55	30.00	-1.20	8.35	36.00	Pass
BLE CS GFSK	1Mbps	1	76	2478	7.85	30.00	-1.20	6.65	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 CS GFSK	1Mbps	1	2	2404	8.13	-10.85	-1.20	8.00	Pass
BLE CS GFSK	1Mbps	1	38	2440	8.47	-10.54	-1.20	8.00	Pass
BLE CS GFSK	1Mbps	1	76	2478	6.98	-11.91	-1.20	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 CS GFSK	2Mbps	1	2	2404	2.242	0.568	0.50	Pass
BLE CS GFSK	2Mbps	1	38	2440	2.270	0.504	0.50	Pass
BLE CS GFSK	2Mbps	1	76	2478	2.286	0.596	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 CS GFSK	2Mbps	1	2	2404	9.25	30.00	-1.20	8.05	36.00	Pass
BLE CS GFSK	2Mbps	1	38	2440	9.65	30.00	-1.20	8.45	36.00	Pass
BLE CS GFSK	2Mbps	1	76	2478	8.15	30.00	-1.20	6.95	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE CS GFSK	2Mbps	1	2	2404	7.58	-15.27	-1.20	8.00	Pass
BLE CS GFSK	2Mbps	1	38	2440	7.91	-14.86	-1.20	8.00	Pass
BLE CS GFSK	2Mbps	1	76	2478	5.49	-17.32	-1.20	8.00	Pass

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

<Ant. 4>

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 CS GFSK	1Mbps	1	2	2404	1.143	0.618	0.50	Pass
BLE CS GFSK	1Mbps	1	38	2440	1.189	0.612	0.50	Pass
BLE CS GFSK	1Mbps	1	76	2478	1.121	0.536	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 CS GFSK	1Mbps	1	2	2404	8.30	30.00	-1.20	7.10	36.00	Pass
BLE CS GFSK	1Mbps	1	38	2440	9.90	30.00	-1.20	8.70	36.00	Pass
BLE CS GFSK	1Mbps	1	76	2478	7.90	30.00	-1.20	6.70	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 CS GFSK	1Mbps	1	2	2404	7.14	-11.87	-1.20	8.00	Pass
BLE CS GFSK	1Mbps	1	38	2440	8.63	-10.35	-1.20	8.00	Pass
BLE CS GFSK	1Mbps	1	76	2478	6.83	-12.06	-1.20	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 CS GFSK	2Mbps	1	2	2404	2.270	0.548	0.50	Pass
BLE CS GFSK	2Mbps	1	38	2440	2.222	0.528	0.50	Pass
BLE CS GFSK	2Mbps	1	76	2478	2.234	0.508	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 CS GFSK	2Mbps	1	2	2404	8.50	30.00	-1.20	7.30	36.00	Pass
BLE CS GFSK	2Mbps	1	38	2440	10.00	30.00	-1.20	8.80	36.00	Pass
BLE CS GFSK	2Mbps	1	76	2478	8.00	30.00	-1.20	6.80	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 CS GFSK	2Mbps	1	2	2404	6.70	-16.18	-1.20	8.00	Pass
BLE CS GFSK	2Mbps	1	38	2440	8.03	-14.74	-1.20	8.00	Pass
BLE CS GFSK	2Mbps	1	76	2478	6.33	-16.39	-1.20	8.00	Pass

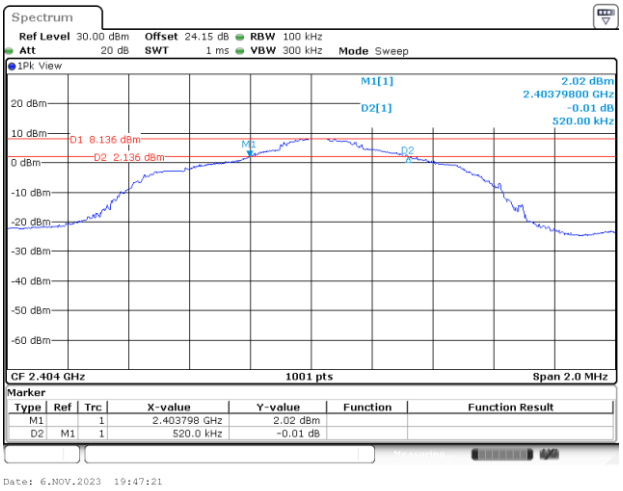
Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

<Ant. 3>

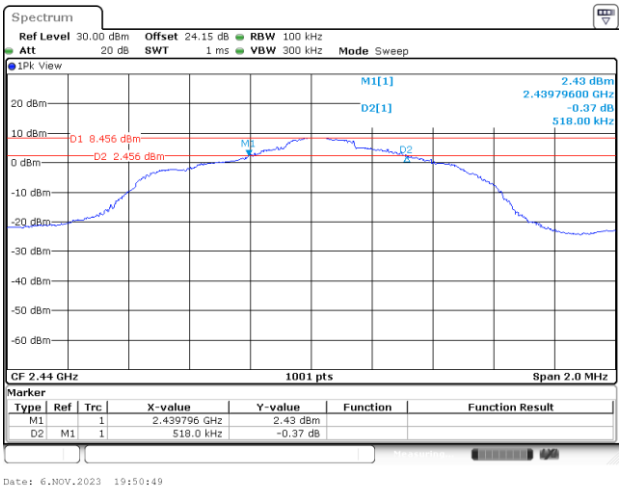
6dB Bandwidth

<1Mbps>

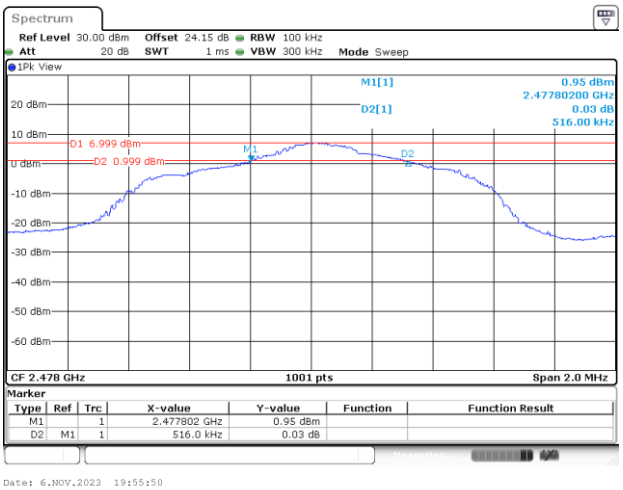
6 dB Bandwidth Plot on Channel 02

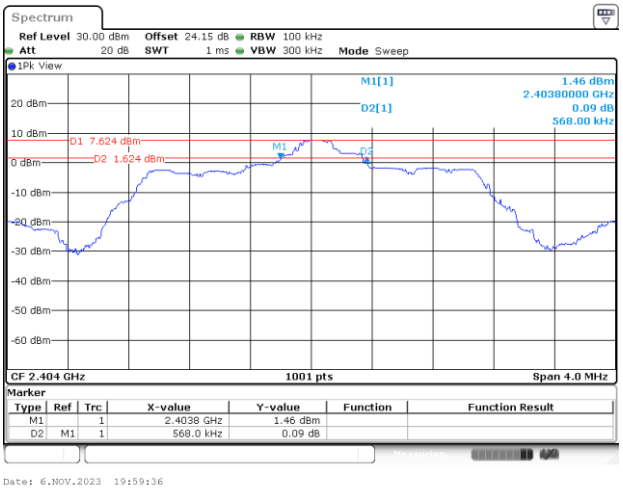
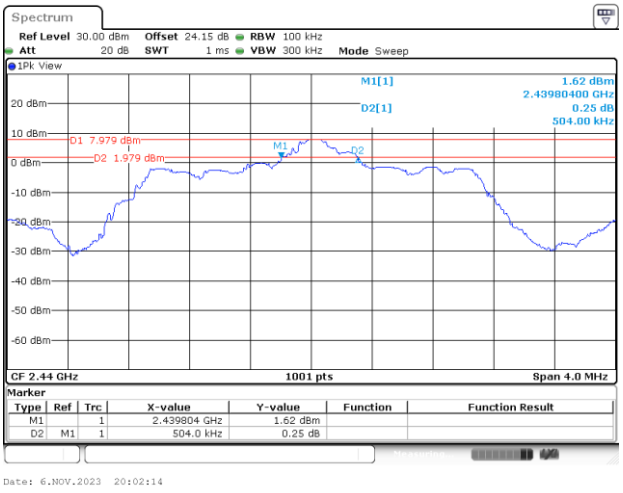
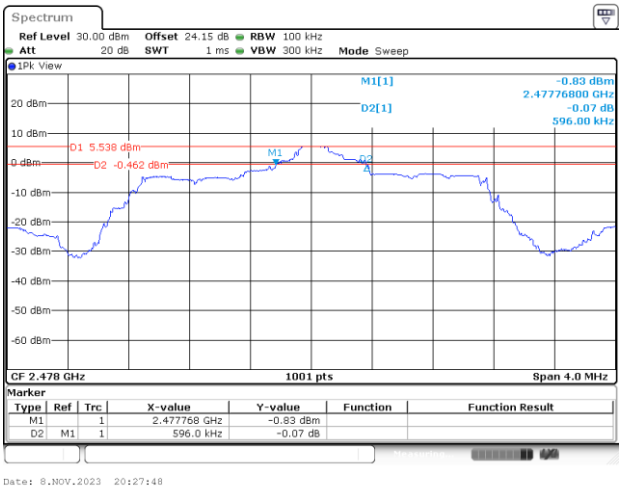


6 dB Bandwidth Plot on Channel 38

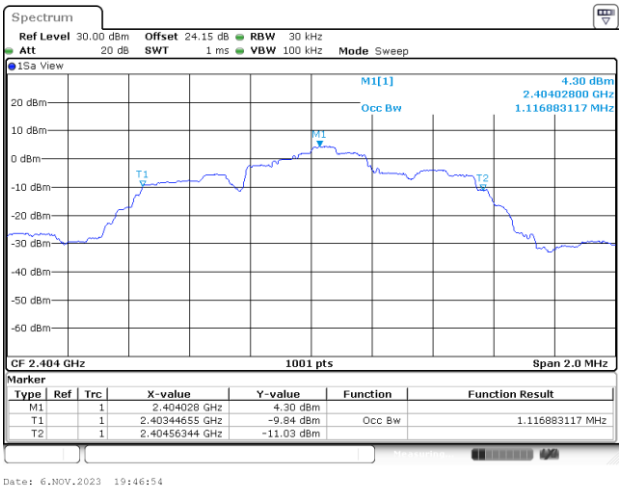
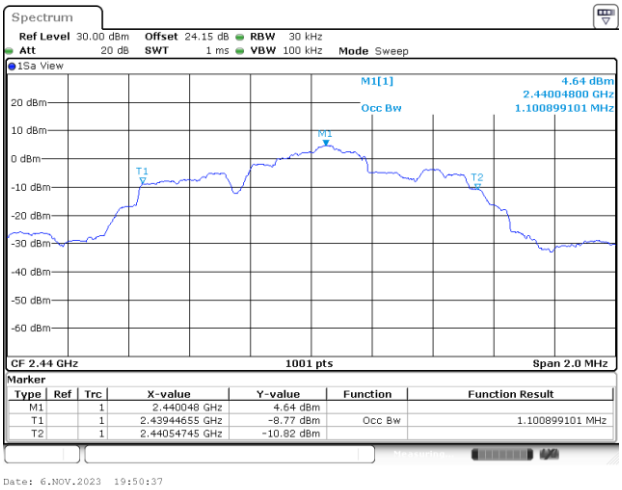
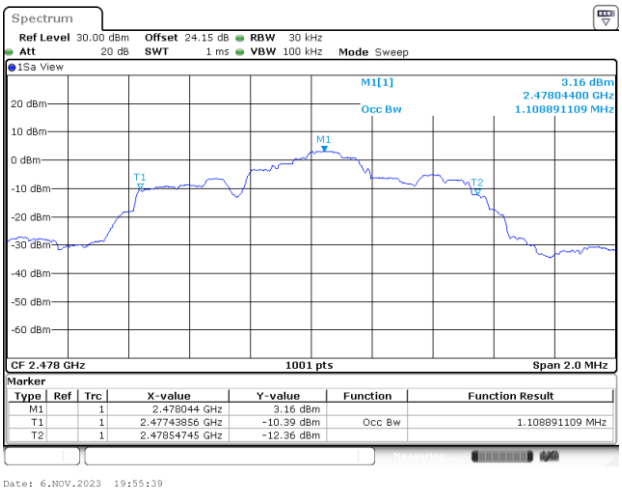


6 dB Bandwidth Plot on Channel 76

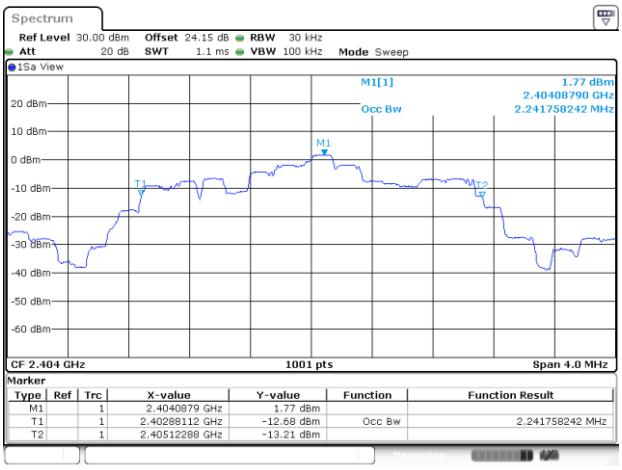
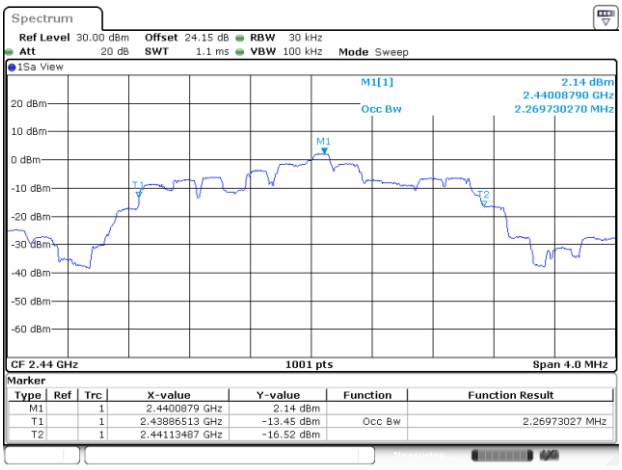
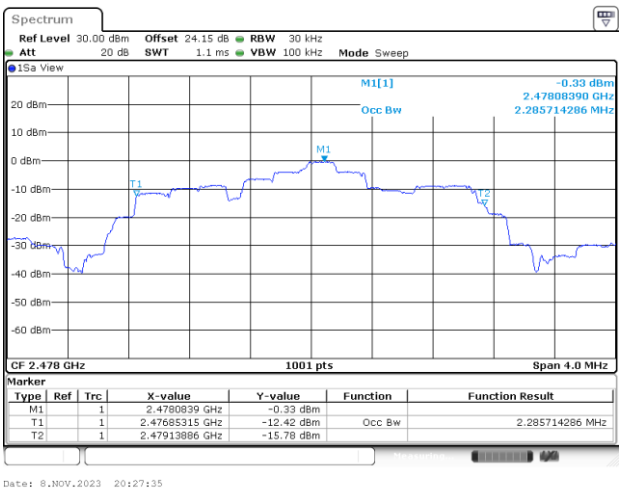


<2Mbps>	
6 dB Bandwidth Plot on Channel 02	**6 dB Bandwidth Plot on Channel 38**
	
6 dB Bandwidth Plot on Channel 76	
	

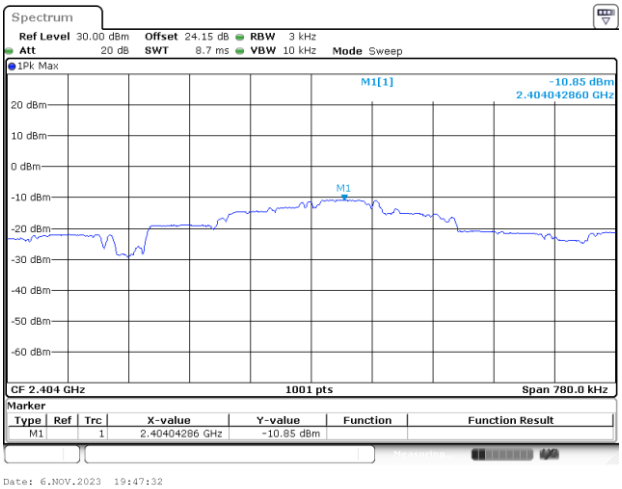
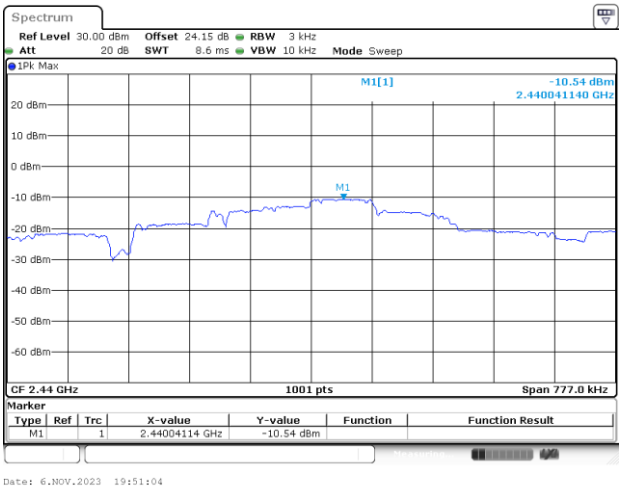
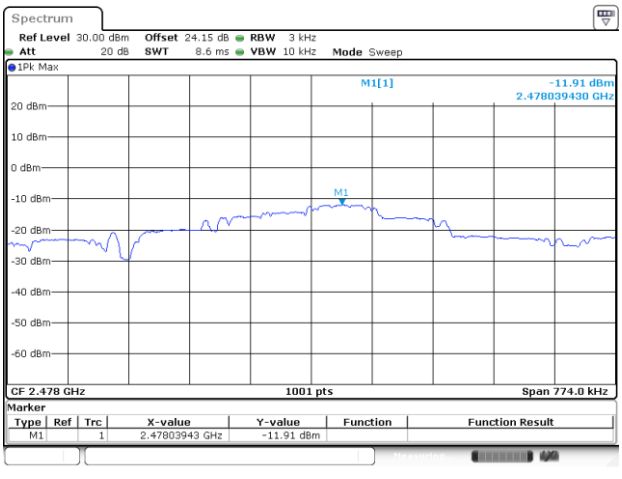
99% Occupied Bandwidth

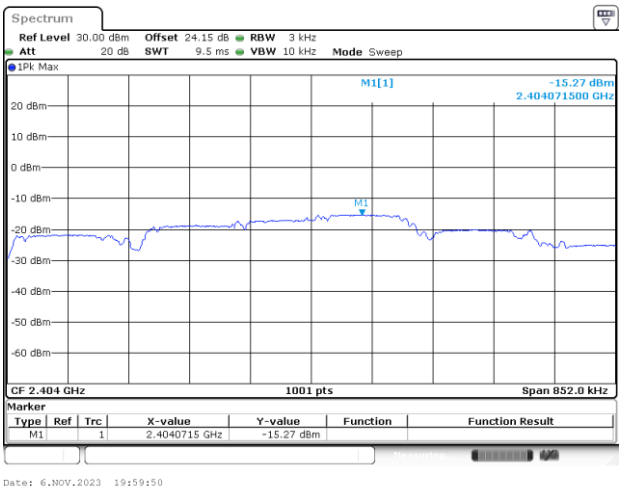
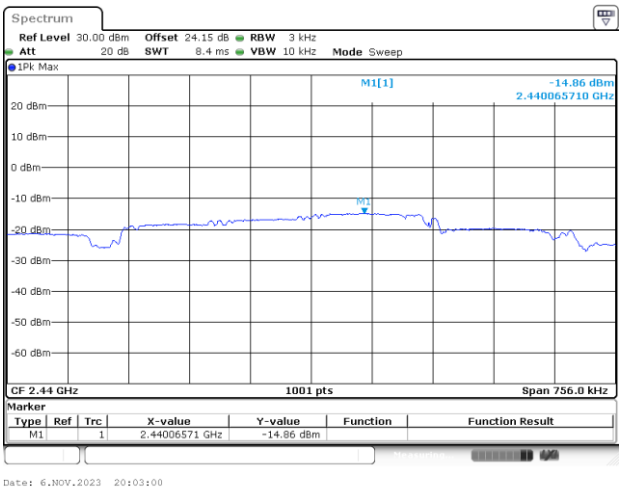
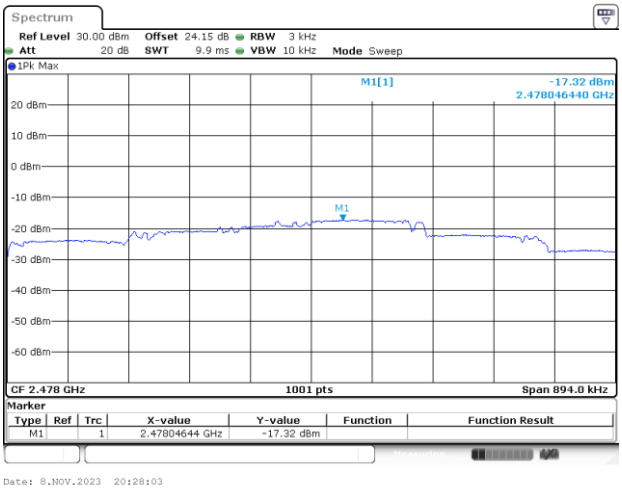
<1Mbps>	
99% Occupied Bandwidth Plot on Channel 02	**99% Occupied Plot Bandwidth on Channel 38**
	
99% Occupied Bandwidth Plot on Channel 76	
	

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

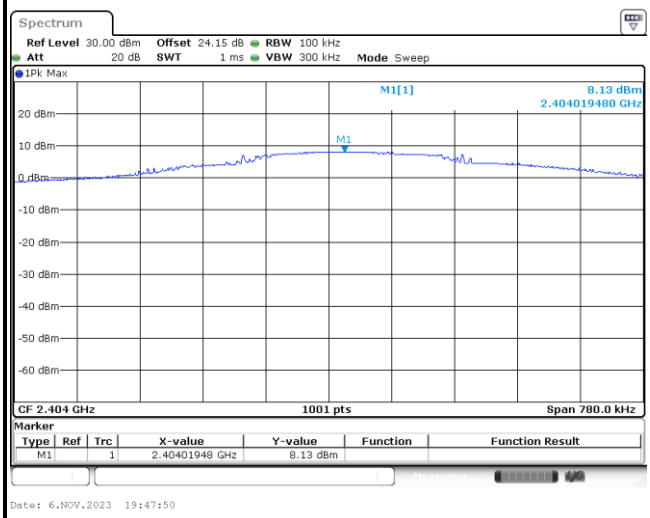
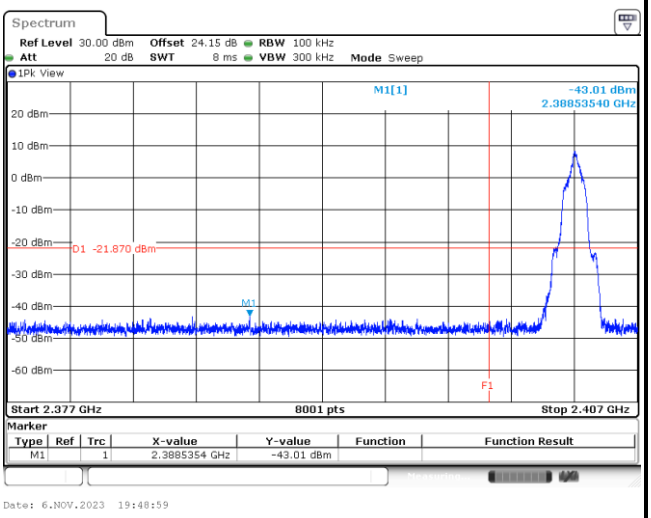
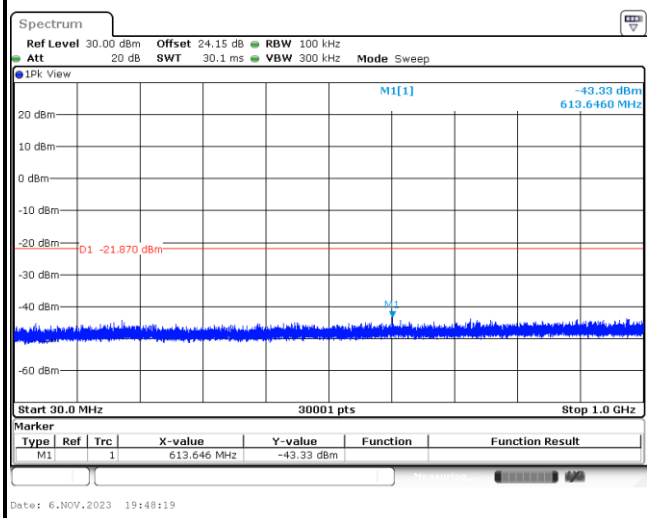
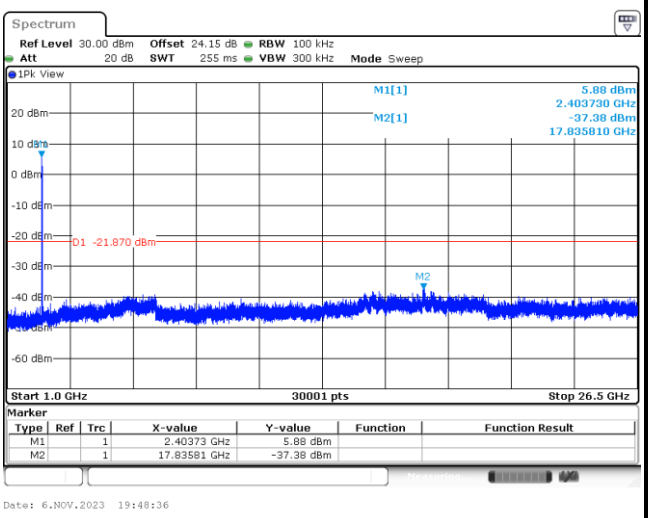
<2Mbps>	
99% Occupied Bandwidth Plot on Channel 02	**99% Occupied Plot Bandwidth on Channel 38**
	
99% Occupied Bandwidth Plot on Channel 76	
	

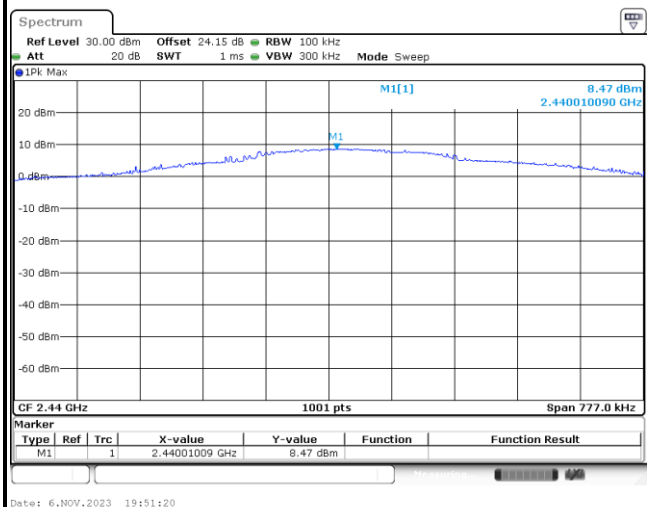
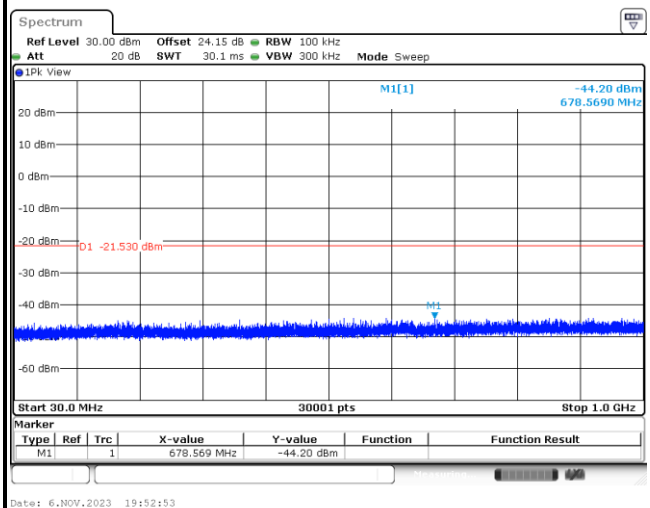
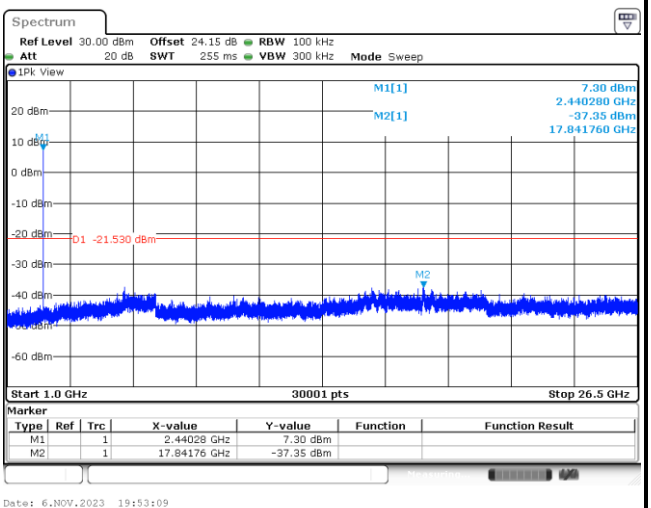
Power Spectral Density (dBm/3kHz)

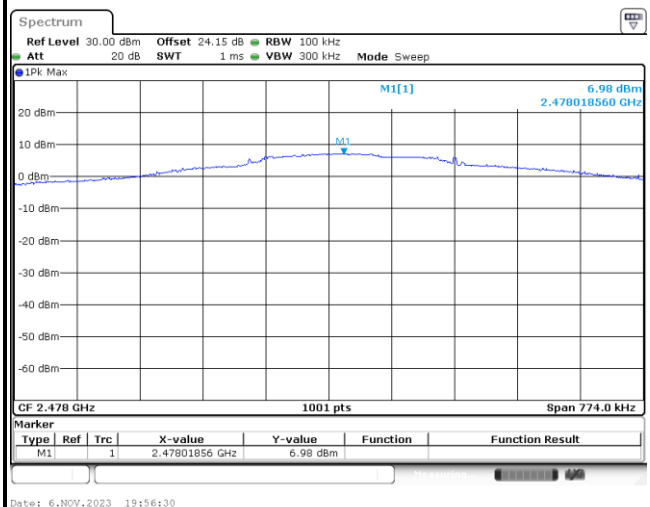
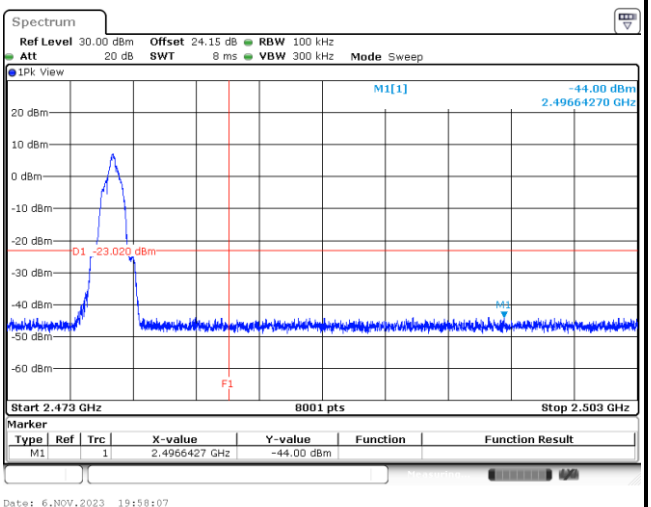
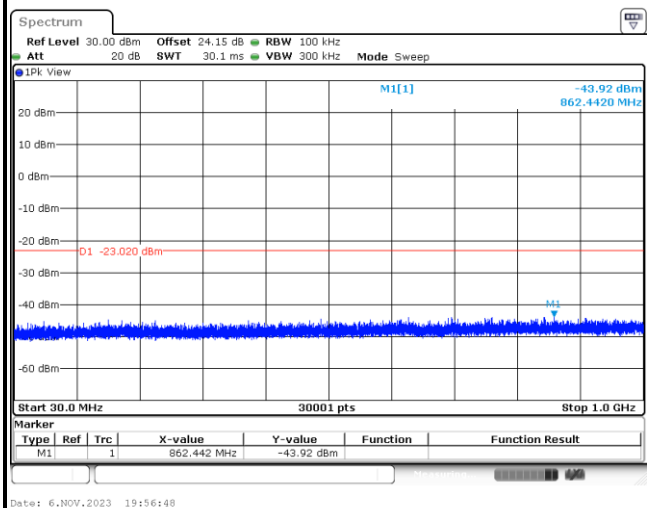
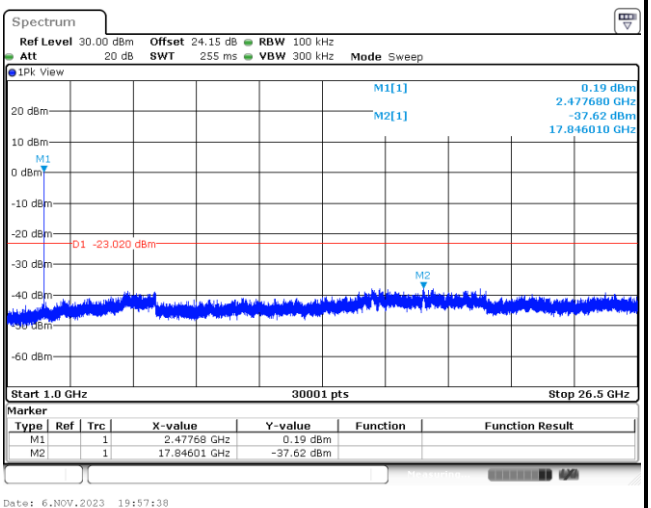
<1Mbps>	
Power Density (dBm/3kHz) Plot Channel 02	**Power Density (dBm/3kHz) Plot Channel 38**
	
Power Density (dBm/3kHz Plot Channel 76	
	

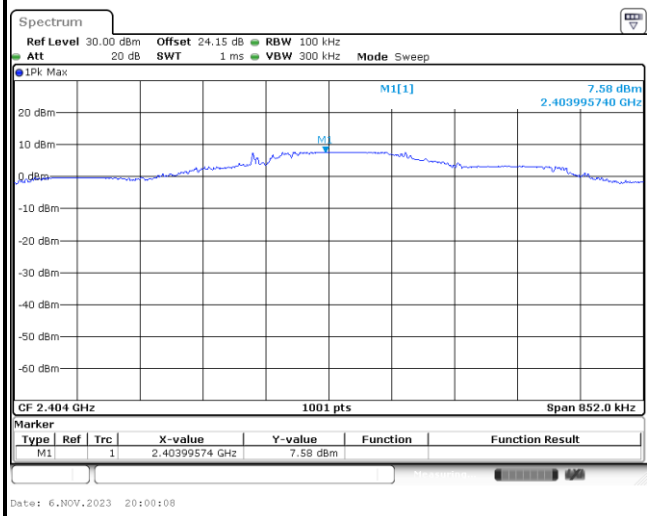
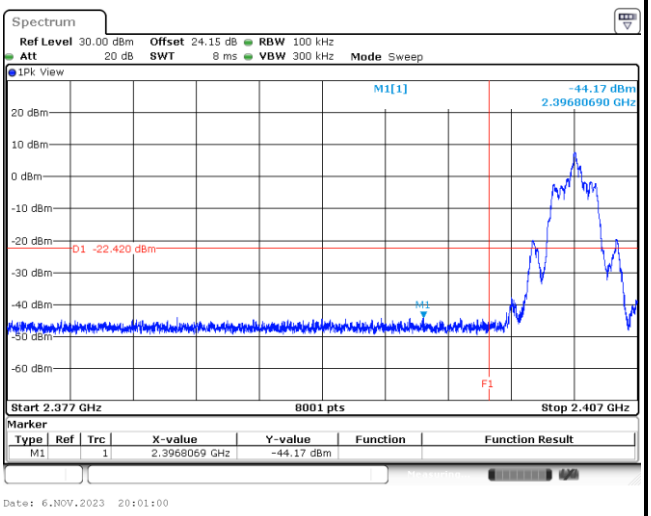
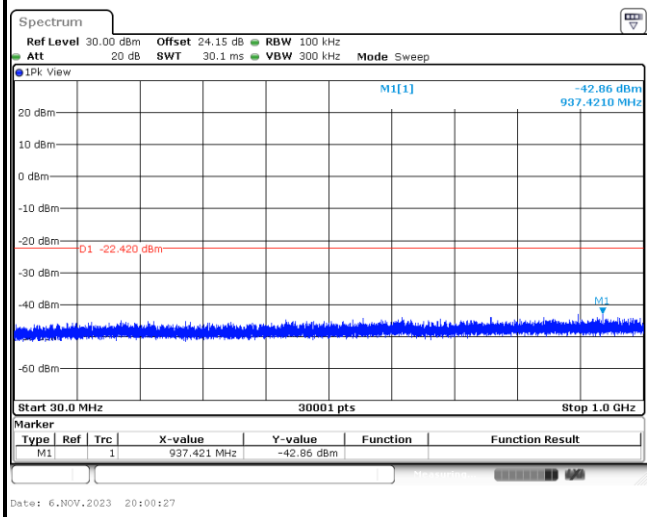
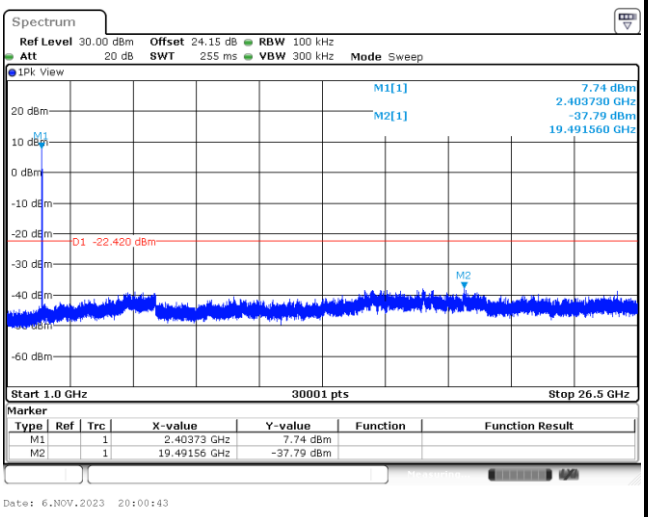
<2Mbps>	
Power Density (dBm/3kHz) Plot Channel 02	**Power Density (dBm/3kHz) Plot Channel 38**
	
Power Density (dBm/3kHz Plot Channel 76	
	

Band Edge and Spurious Emission

<1Mbps> Channel 02	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<1Mbps> Channel 38	
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<1Mbps> Channel 76	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<2Mbps> Channel 02	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

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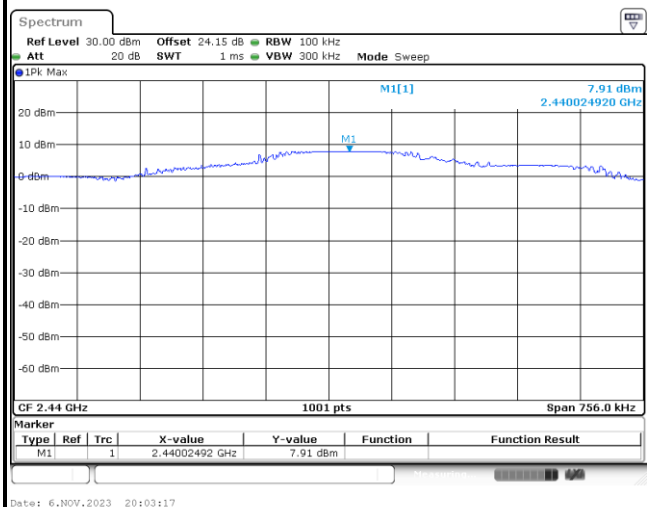
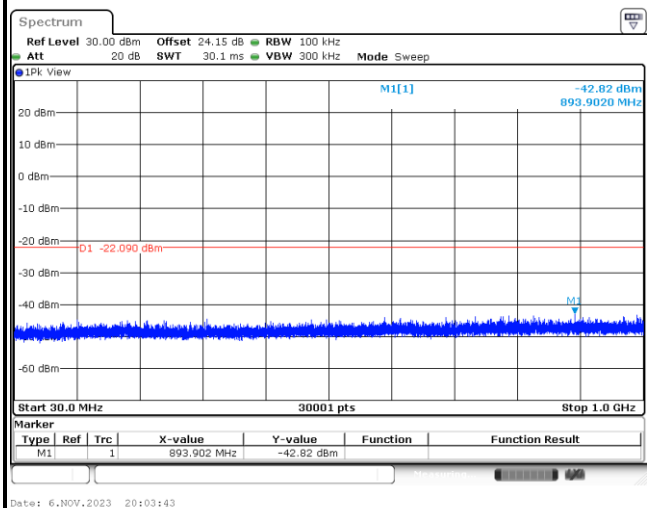
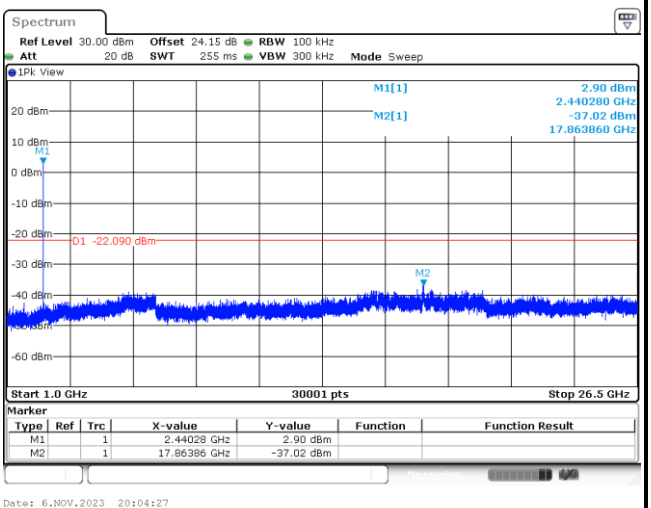
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

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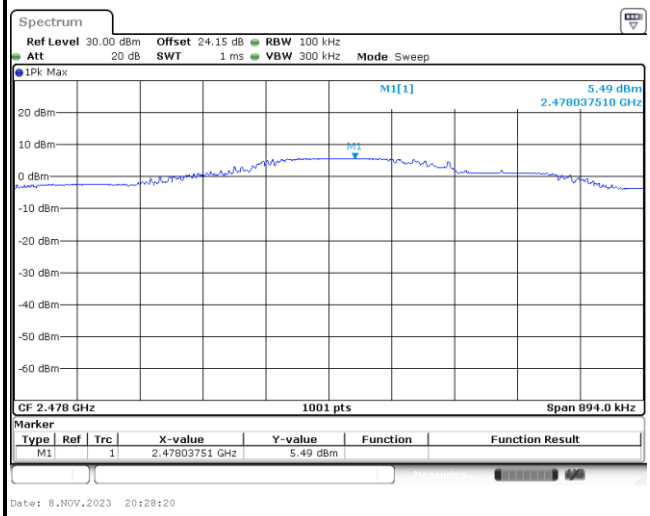
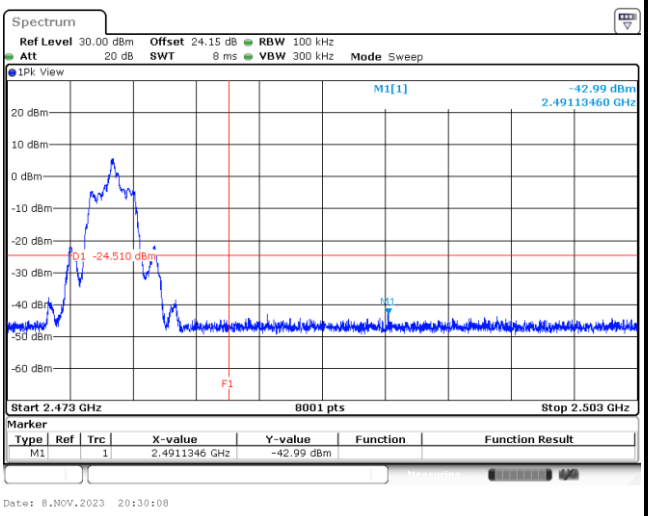
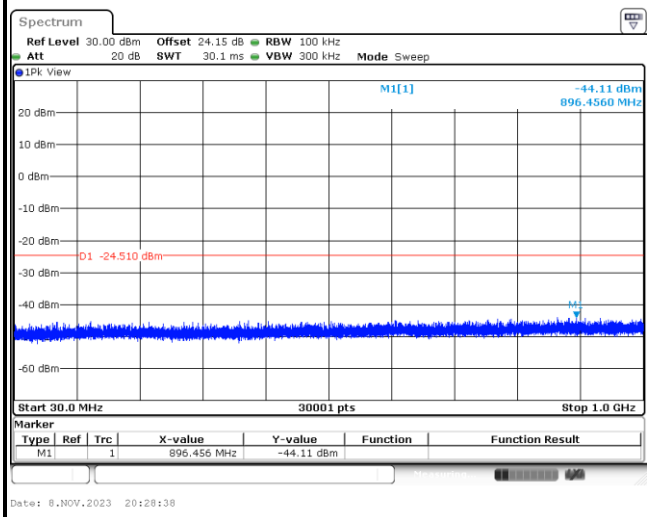
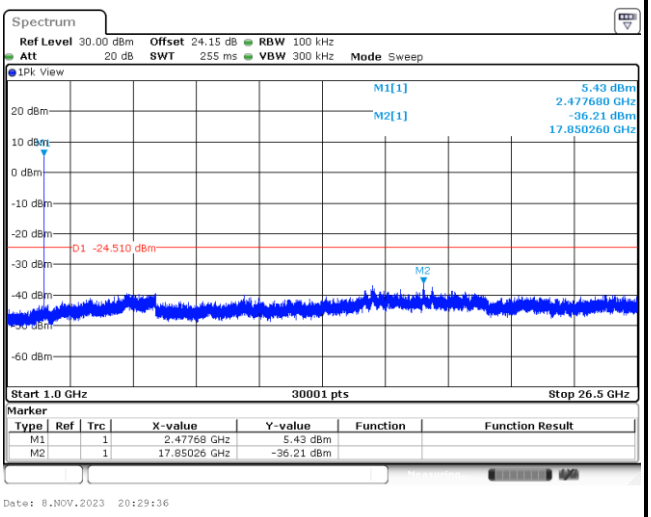
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<Ant. 4>

6dB Bandwidth

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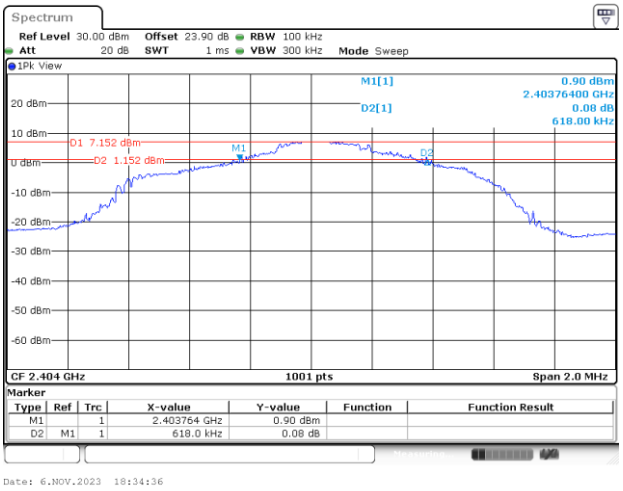
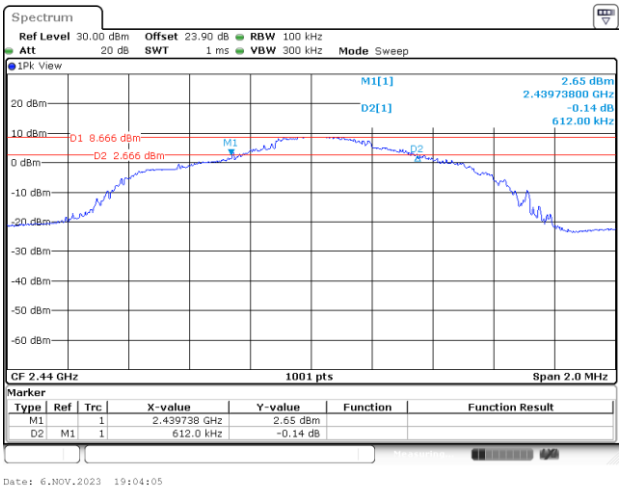
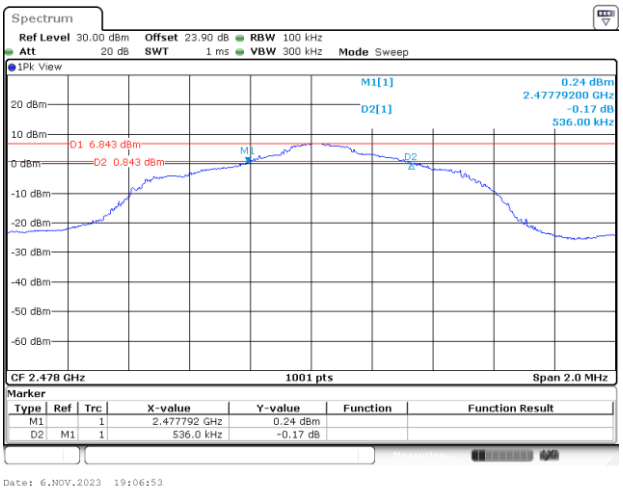
6 dB Bandwidth Plot on Channel 02



6 dB Bandwidth Plot on Channel 38



6 dB Bandwidth Plot on Channel 76



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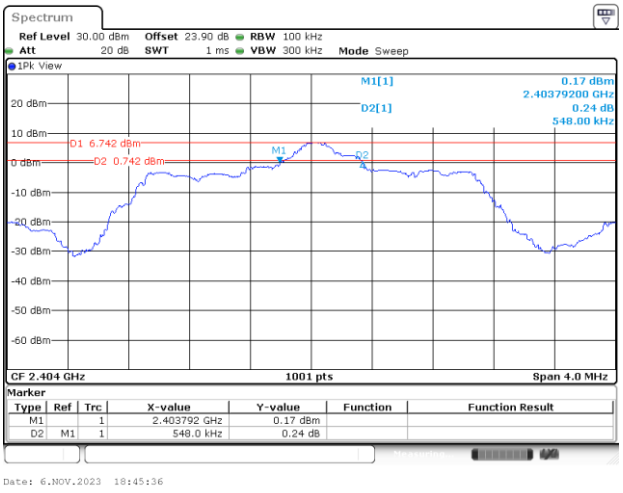
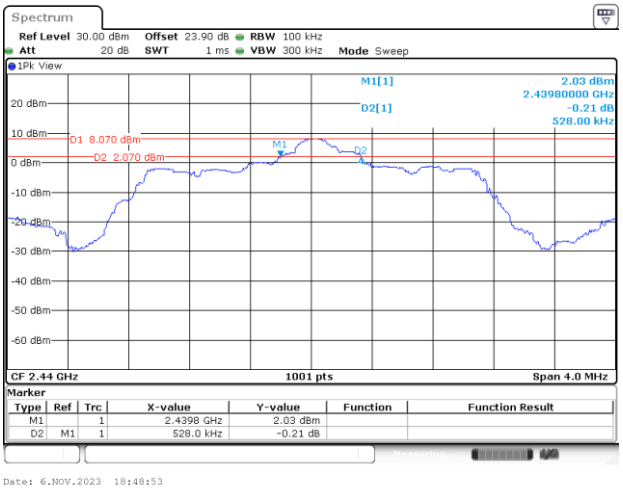
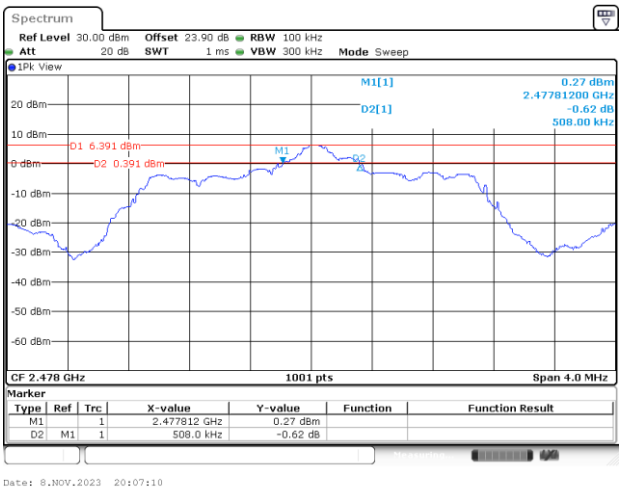
6 dB Bandwidth Plot on Channel 02	**6 dB Bandwidth Plot on Channel 38**
	
6 dB Bandwidth Plot on Channel 76	
	

99% Occupied Bandwidth

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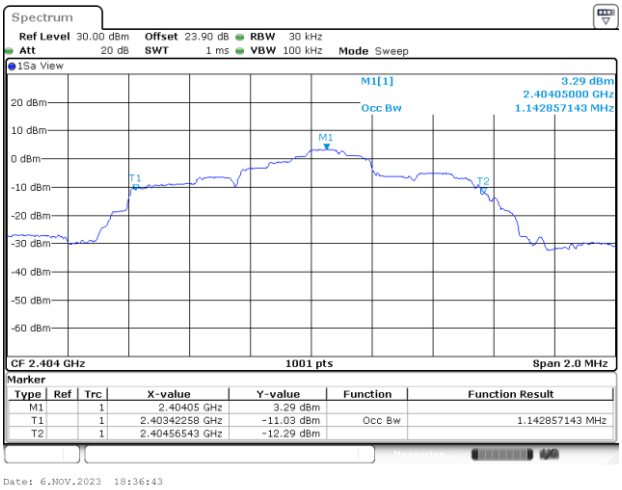
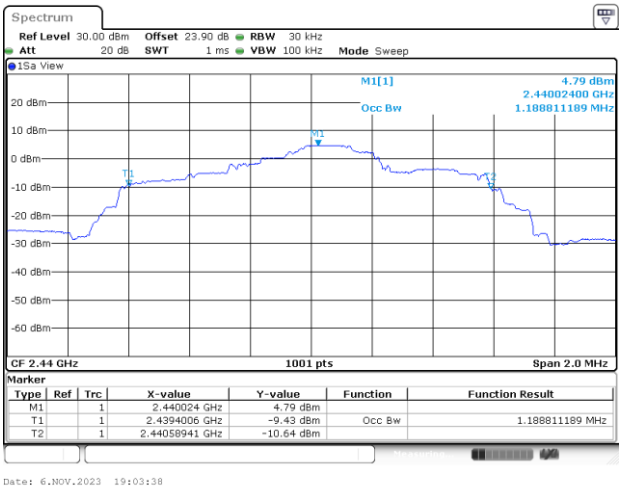
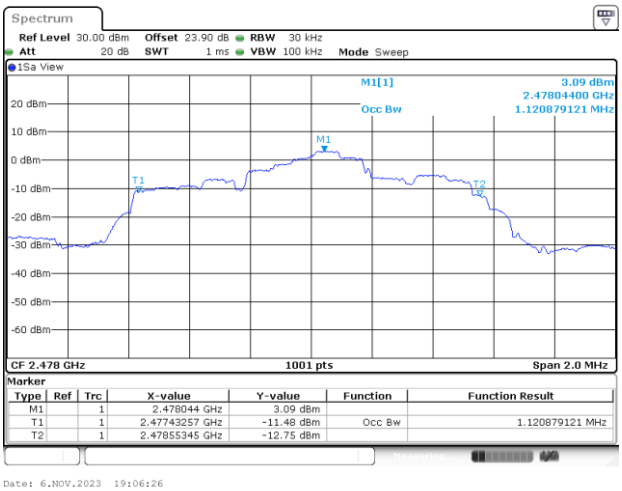
99% Occupied Bandwidth Plot on Channel 02



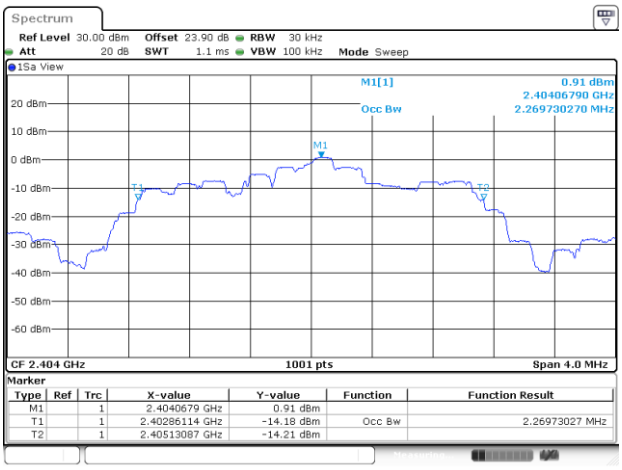
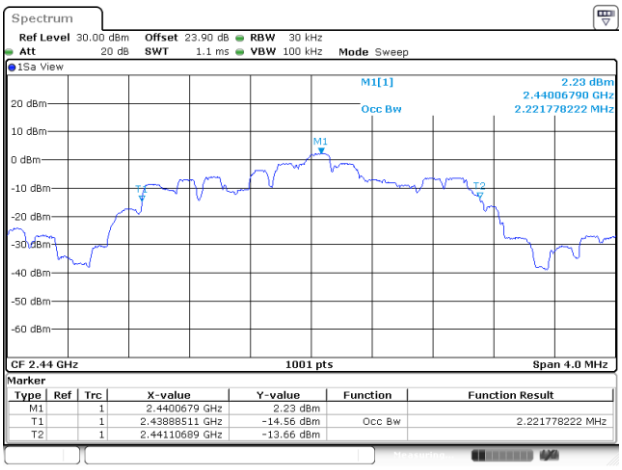
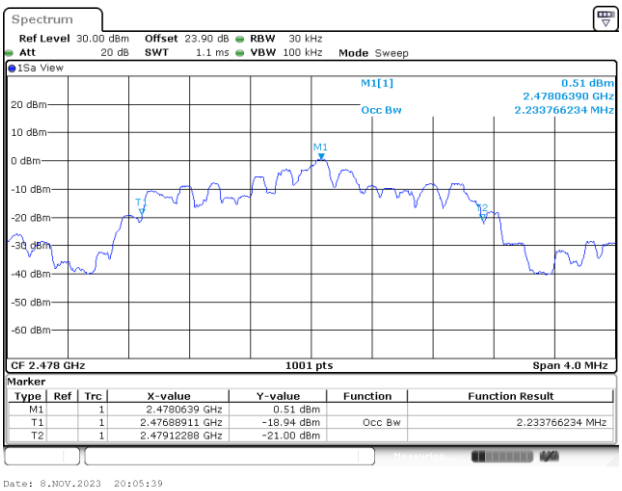
99% Occupied Plot Bandwidth on Channel 38



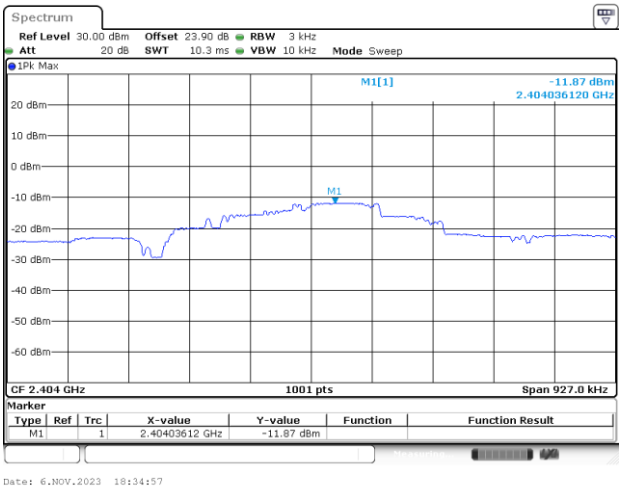
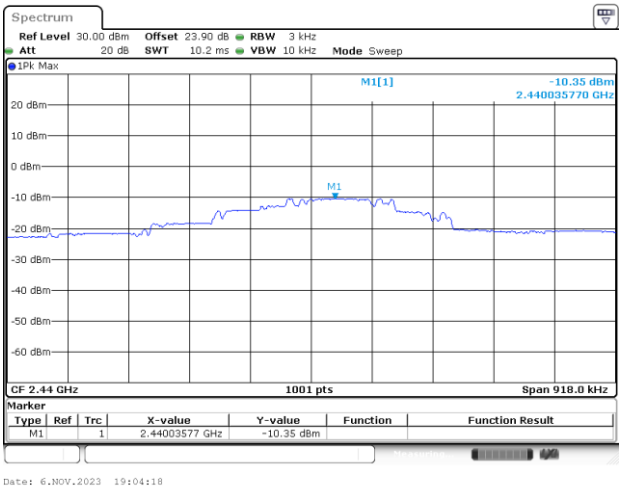
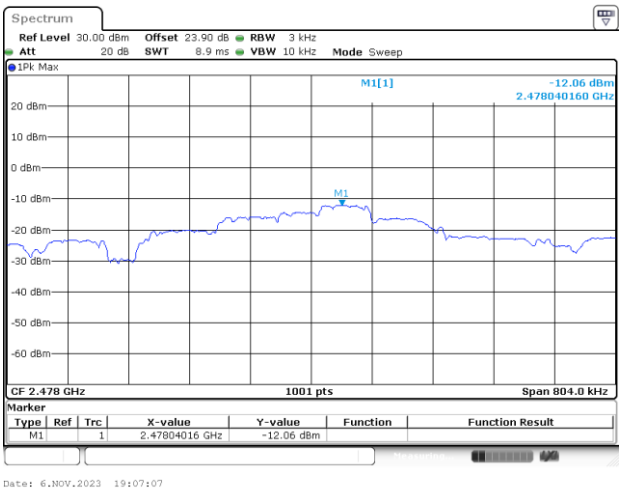
99% Occupied Bandwidth Plot on Channel 76



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

<2Mbps>	
99% Occupied Bandwidth Plot on Channel 02	**99% Occupied Plot Bandwidth on Channel 38**
	
99% Occupied Bandwidth Plot on Channel 76	
	

Power Spectral Density (dBm/3kHz)

<1Mbps>	
Power Density (dBm/3kHz) Plot Channel 02	**Power Density (dBm/3kHz) Plot Channel 38**
	
Power Density (dBm/3kHz Plot Channel 76	
	

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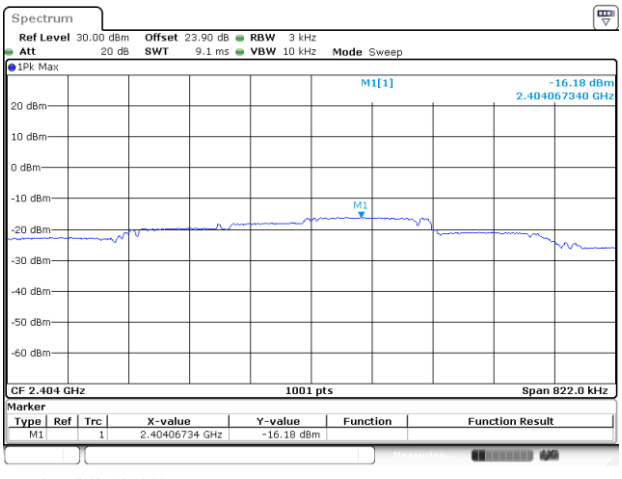
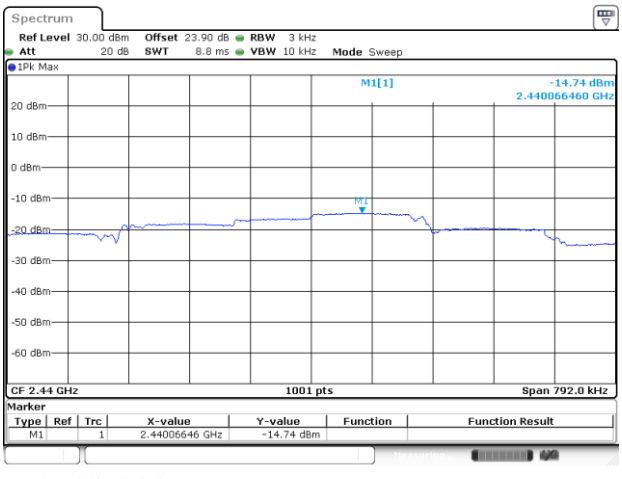
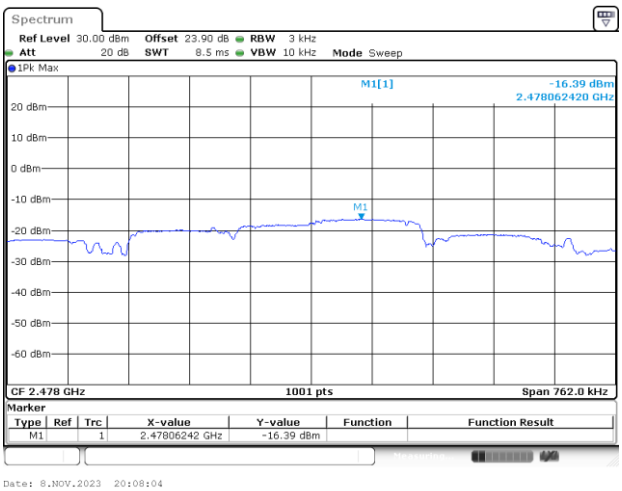
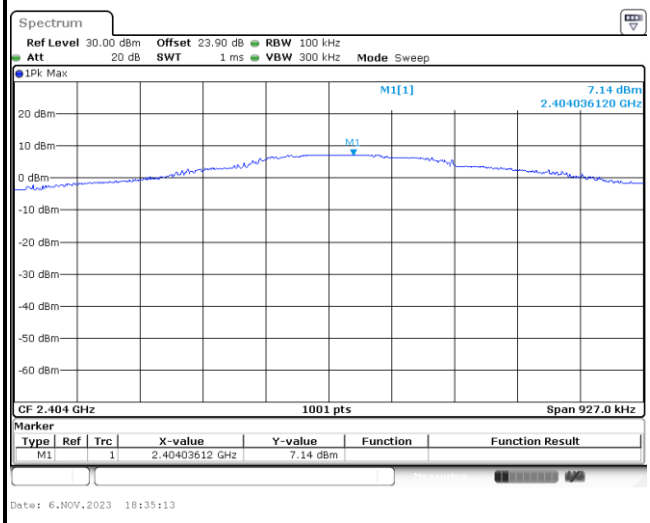
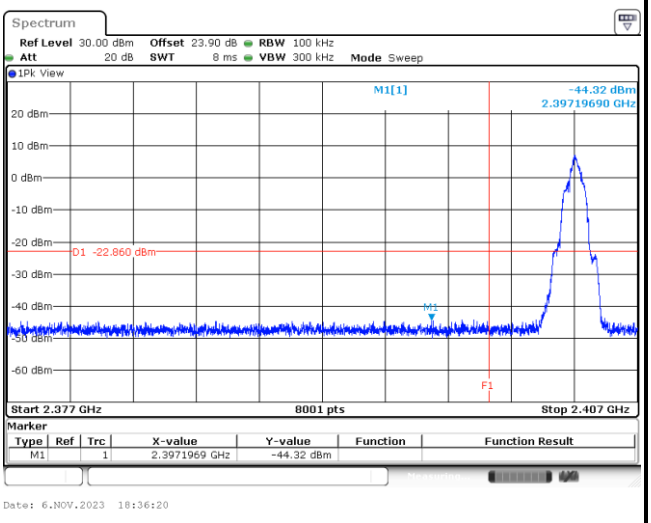
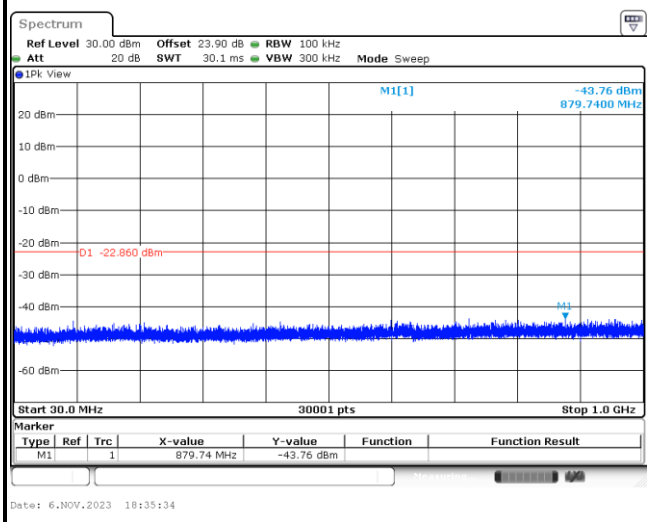
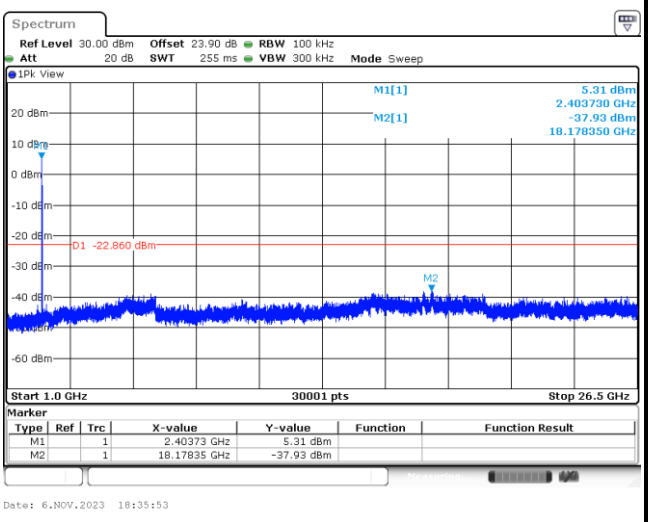
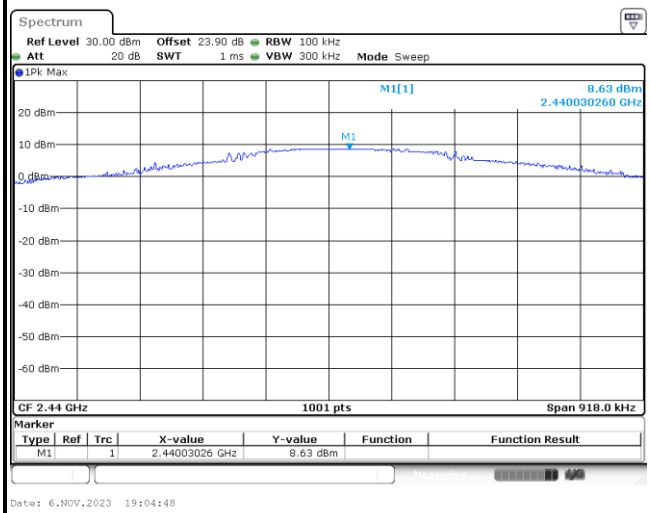
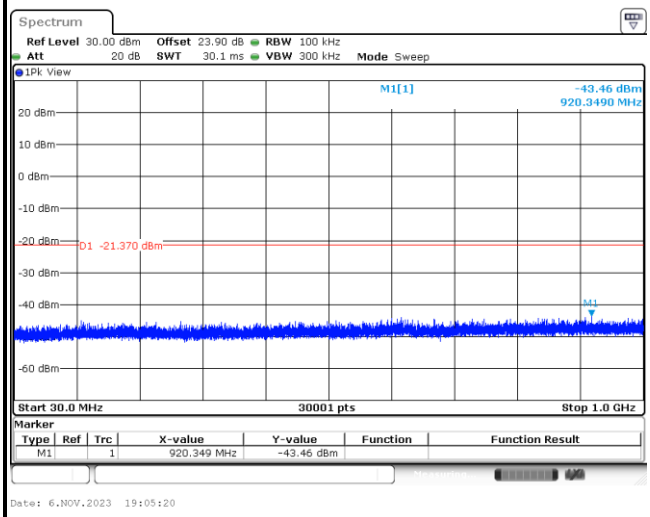
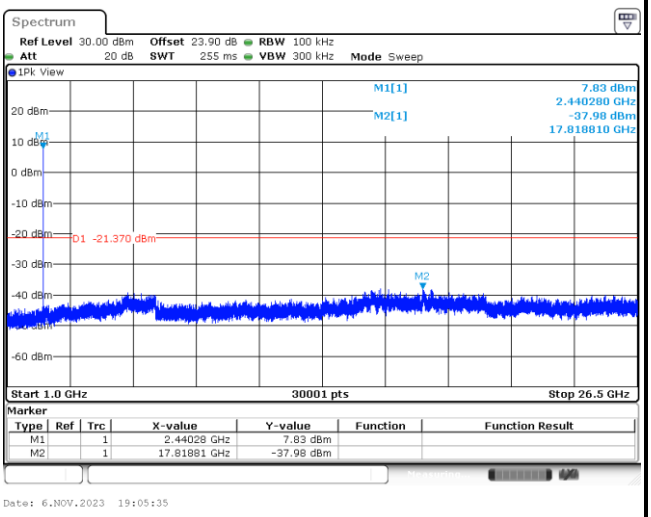
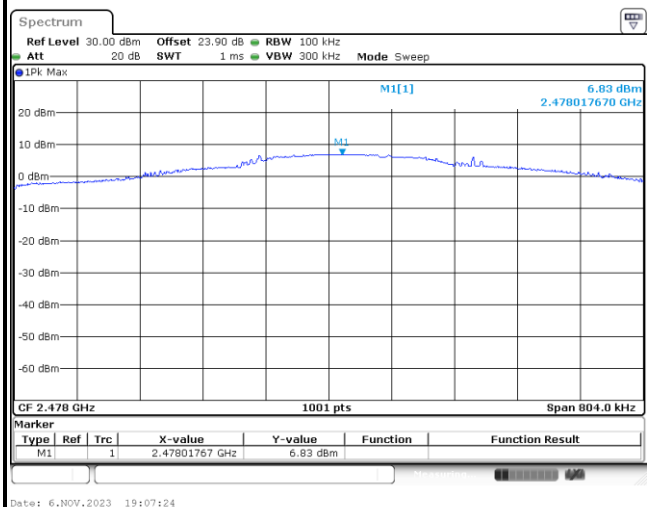
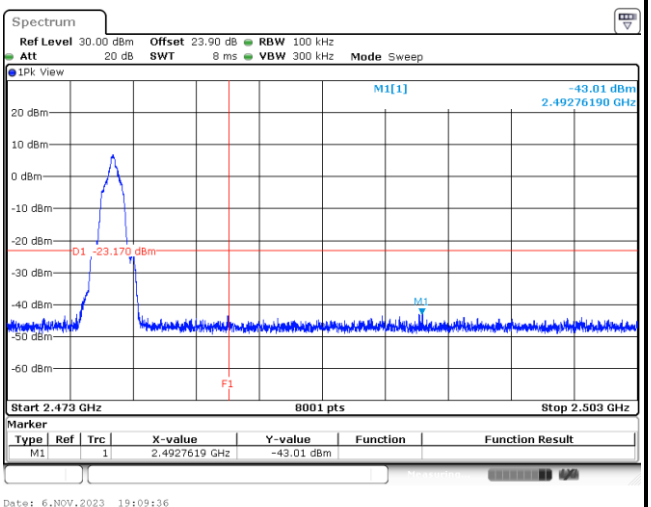
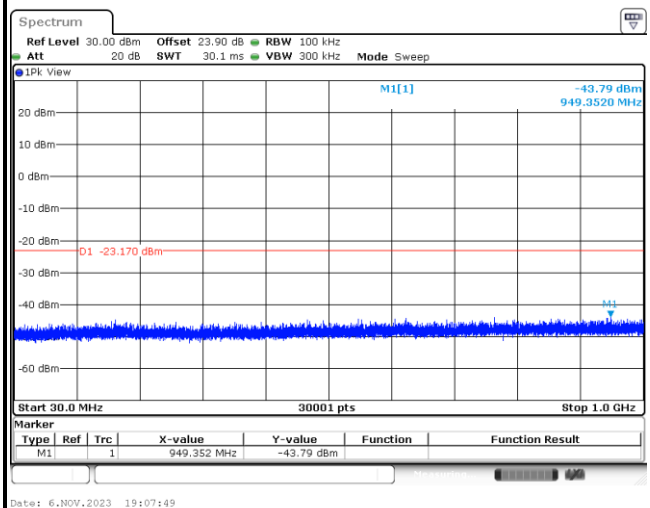
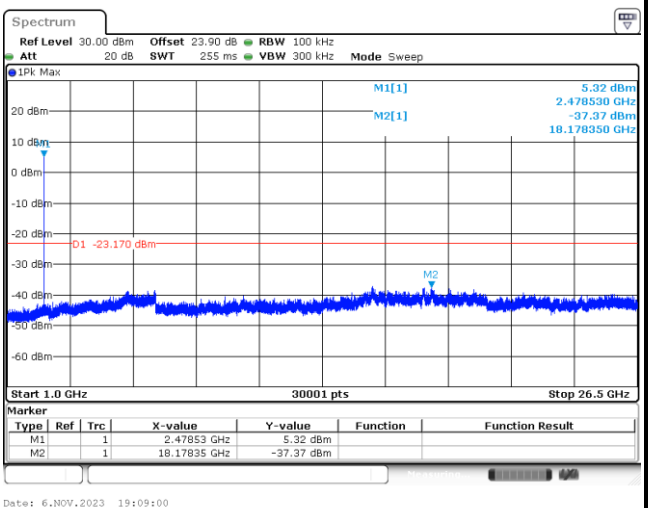
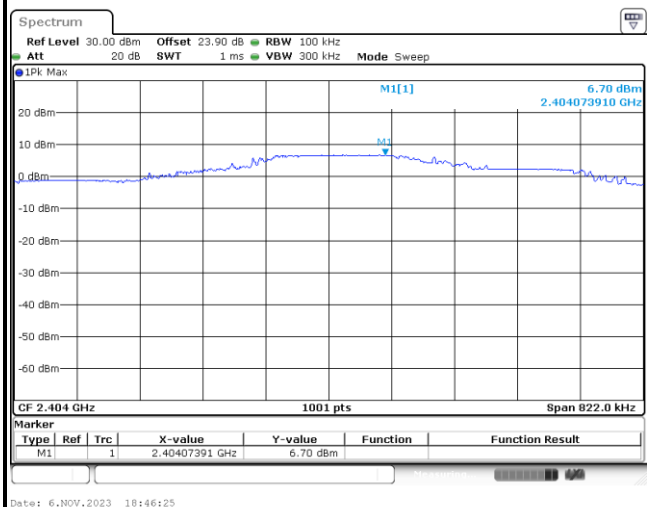
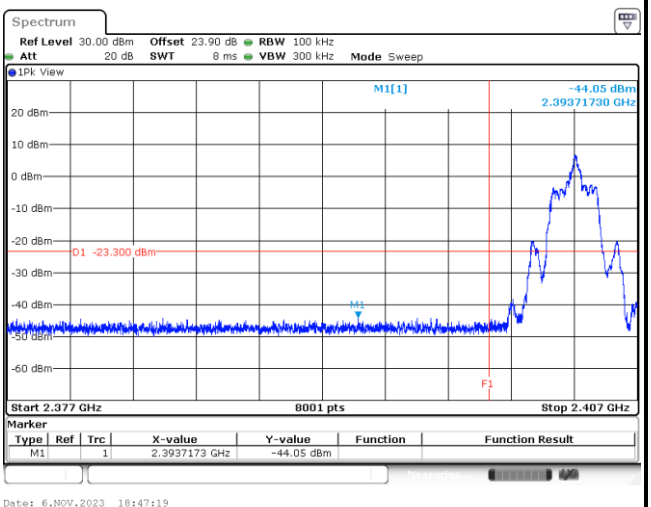
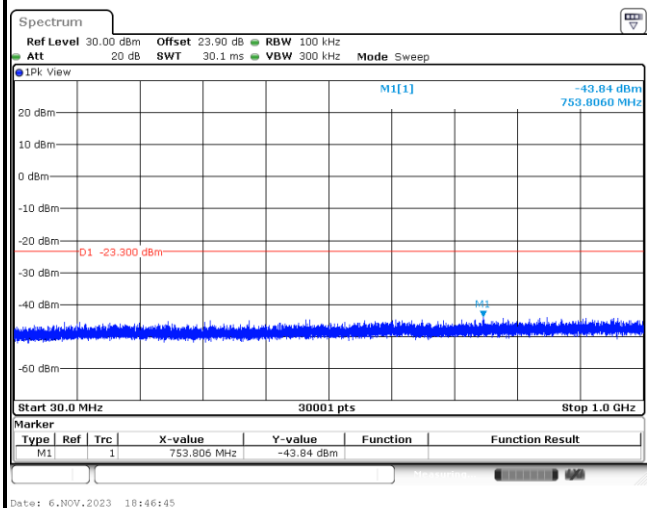
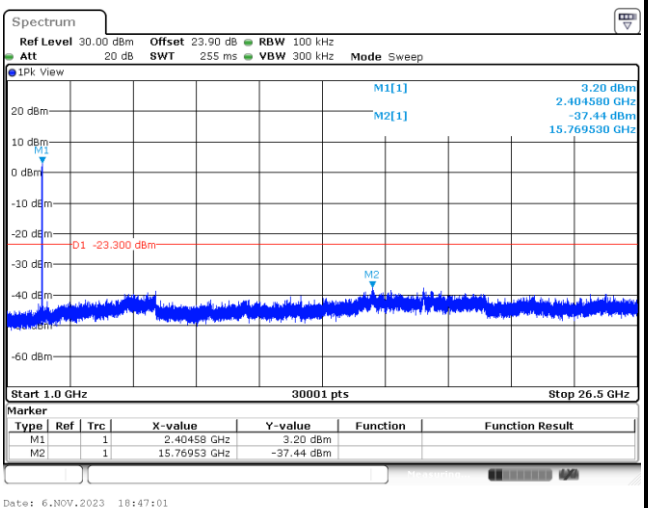
Power Density (dBm/3kHz) Plot Channel 02	**Power Density (dBm/3kHz) Plot Channel 38**
	
Power Density (dBm/3kHz Plot Channel 76	
	

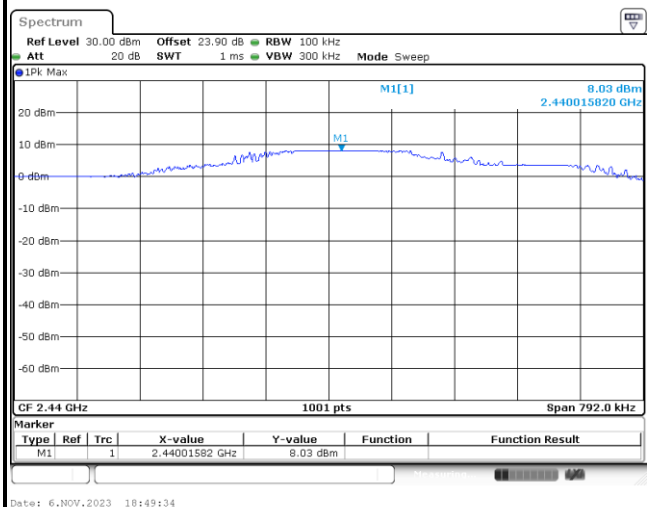
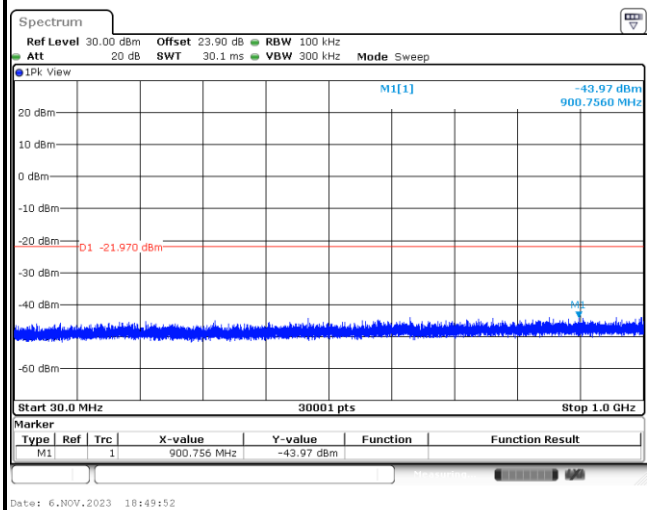
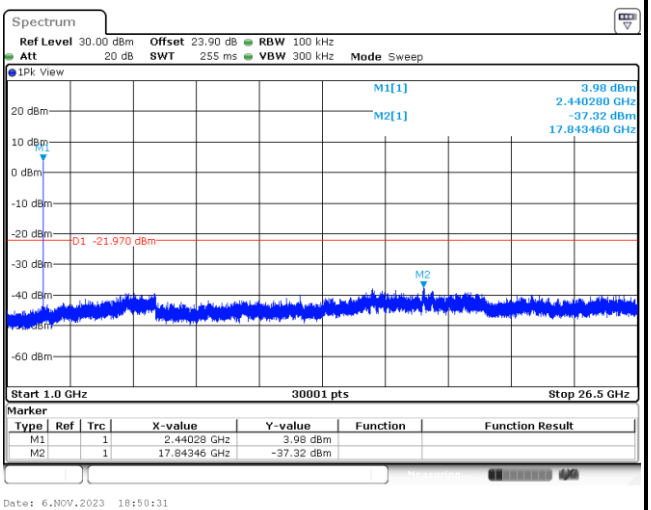
Band Edge and Spurious Emission

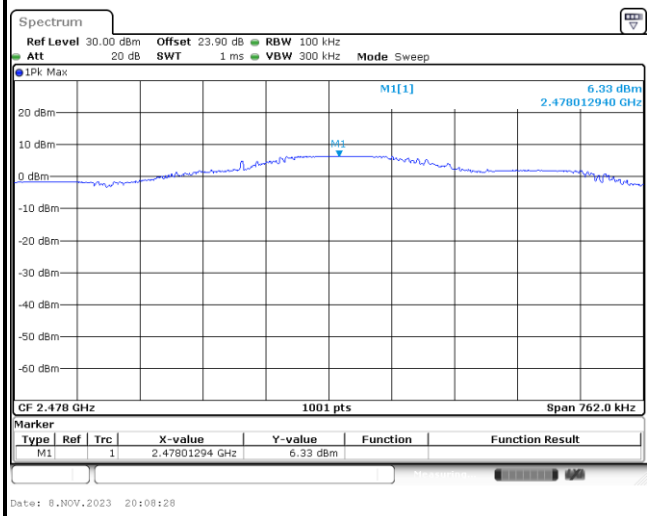
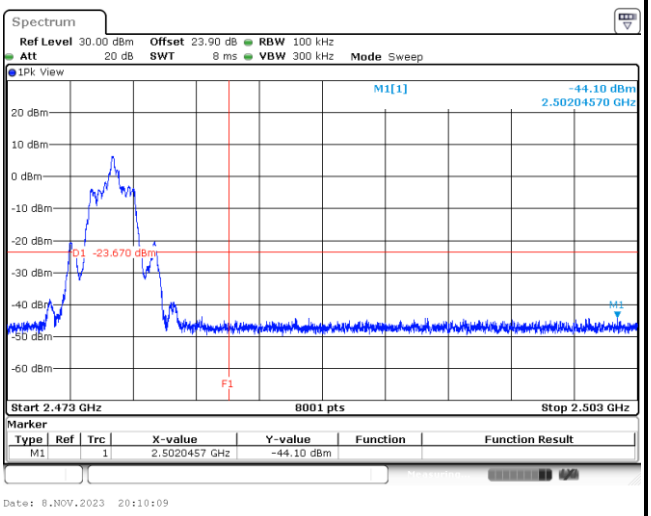
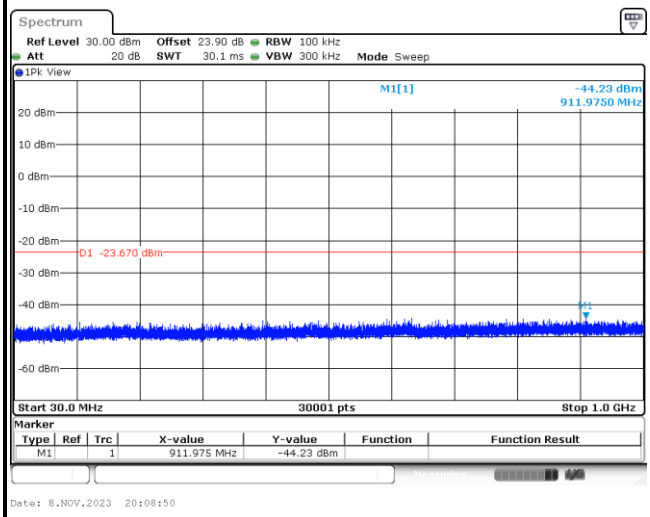
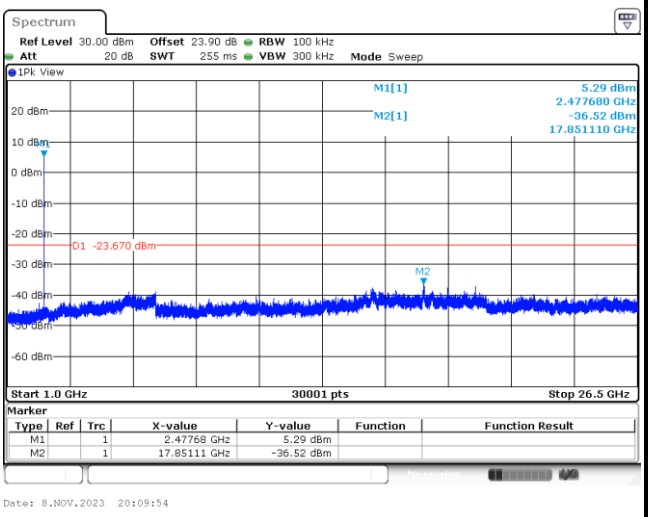
<1Mbps> Channel 02	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<1Mbps> Channel 38	
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<1Mbps> Channel 76	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<2Mbps> Channel 02	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

<2Mbps> Channel 38	
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

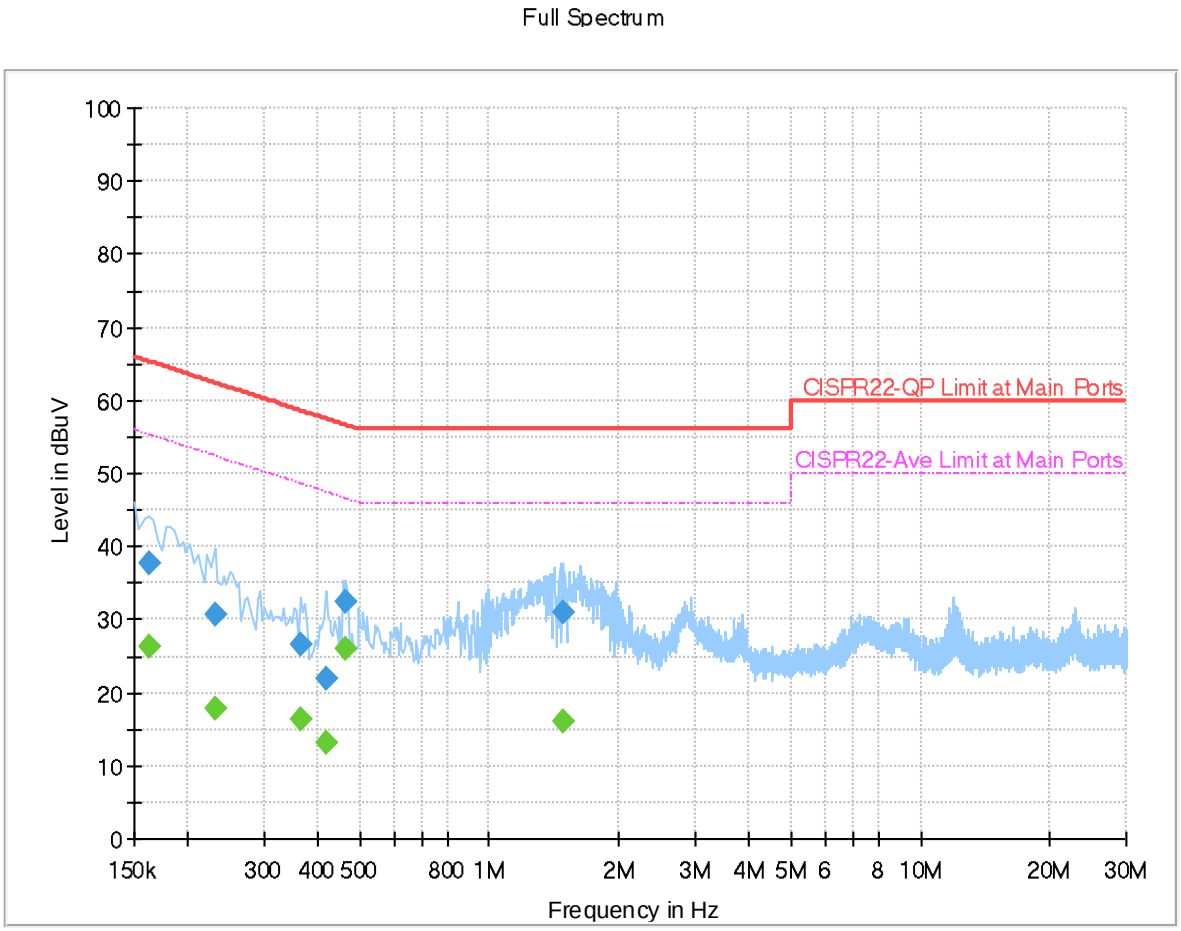
<2Mbps> Channel 76	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Louis Chung	**Temperature :**	23.4~26.7℃
		Relative Humidity :	62.3~67.1%

EUT Information

Report NO :	380306
Test Mode :	Mode 1
Test Voltage :	110Vac/60Hz
Phase :	Line

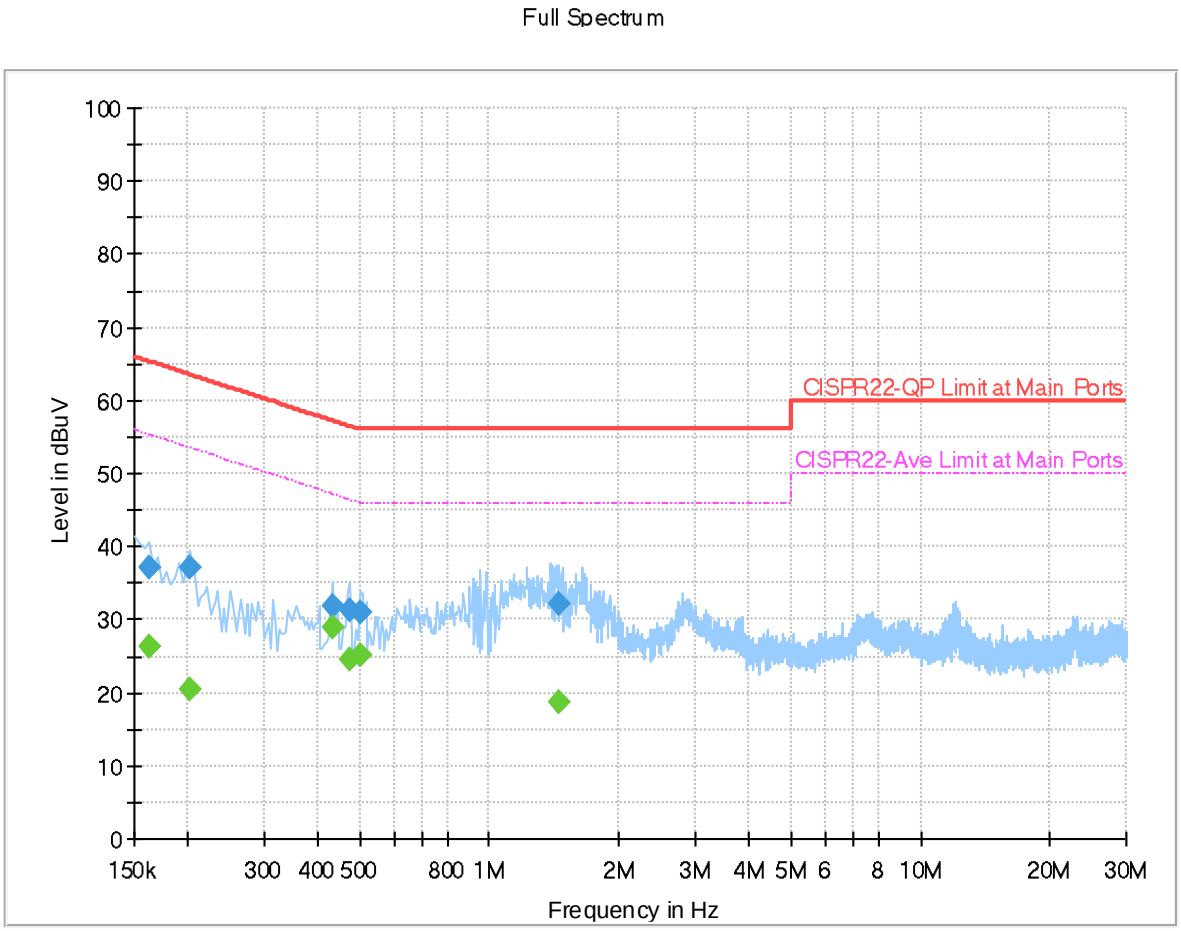


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	26.30	55.36	29.06	L1	OFF	19.9
0.162000	37.83	---	65.36	27.53	L1	OFF	19.9
0.230000	---	17.71	52.45	34.74	L1	OFF	19.9
0.230000	30.65	---	62.45	31.80	L1	OFF	19.9
0.366000	---	16.49	48.59	32.10	L1	OFF	19.9
0.366000	26.61	---	58.59	31.98	L1	OFF	19.9
0.418000	---	13.15	47.49	34.34	L1	OFF	20.0
0.418000	22.01	---	57.49	35.48	L1	OFF	20.0
0.466000	---	25.96	46.59	20.63	L1	OFF	20.0
0.466000	32.58	---	56.59	24.01	L1	OFF	20.0
1.474000	---	16.11	46.00	29.89	L1	OFF	20.0
1.474000	30.99	---	56.00	25.01	L1	OFF	20.0

EUT Information

Report NO :	380306
Test Mode :	Mode 1
Test Voltage :	110Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	26.22	55.36	29.14	N	OFF	19.9
0.162000	37.12	---	65.36	28.24	N	OFF	19.9
0.202000	---	20.38	53.53	33.15	N	OFF	19.9
0.202000	37.10	---	63.53	26.43	N	OFF	19.9
0.434000	---	29.07	47.18	18.11	N	OFF	20.0
0.434000	31.96	---	57.18	25.22	N	OFF	20.0
0.474000	---	24.55	46.44	21.89	N	OFF	20.0
0.474000	31.19	---	56.44	25.25	N	OFF	20.0
0.502000	---	25.05	46.00	20.95	N	OFF	20.0
0.502000	30.94	---	56.00	25.06	N	OFF	20.0
1.446000	---	18.75	46.00	27.25	N	OFF	20.0
1.446000	32.22	---	56.00	23.78	N	OFF	20.0

Appendix C. Radiated Spurious Emission

Test Engineer :	Bank Lin and Lu Wen-Kai	Temperature :	20~25°C
		Relative Humidity :	55~65%

<GFSK 1Mbps>
<Ant. 3>

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

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 02 2404MHz		2375.835	50.12	-23.88	74	37.13	27	18.34	32.35	127	30	P	H
		2373.735	42.53	-11.47	54	29.54	27	18.33	32.34	127	30	A	H
	*	2404	105.83	-	-	92.8	27	18.39	32.36	127	30	P	H
	*	2404	104.66	-	-	91.63	27	18.39	32.36	127	30	A	H
													H
													H
		2359.665	51.01	-22.99	74	38.04	27	18.31	32.34	397	113	P	V
		2340.03	42.68	-11.32	54	29.73	27	18.27	32.32	397	113	A	V
	*	2404	102.5	-	-	89.47	27	18.39	32.36	397	113	P	V
	*	2404	101.38	-	-	88.35	27	18.39	32.36	397	113	A	V
													V
													V
BLE CH 38 2440MHz		2347.38	50.53	-23.47	74	37.58	27	18.28	32.33	201	29	P	H
		2315.74	43.14	-10.86	54	30.17	27.06	18.22	32.31	201	29	A	H
	*	2440	105.28	-	-	92.41	26.8	18.45	32.38	201	29	P	H
	*	2440	104.16	-	-	91.29	26.8	18.45	32.38	201	29	A	H
		2487.96	50.76	-23.24	74	37.73	26.9	18.54	32.41	201	29	P	H
		2497.13	42.97	-11.03	54	29.87	26.97	18.55	32.42	201	29	A	H
		2362.5	50.34	-23.66	74	37.37	27	18.31	32.34	386	110	P	V
		2311.12	43.04	-10.96	54	30.12	27.01	18.22	32.31	386	110	A	V
	*	2440	103.06	-	-	90.19	26.8	18.45	32.38	386	110	P	V
	*	2440	101.9	-	-	89.03	26.8	18.45	32.38	386	110	A	V
		2497.13	50.63	-23.37	74	37.53	26.97	18.55	32.42	386	110	P	V
		2487.47	42.82	-11.18	54	29.79	26.9	18.54	32.41	386	110	A	V

BLE CH 76 2478MHz	*	2478	103.46	-	-	90.47	26.88	18.52	32.41	200	27	P	H
	*	2478	102.32	-	-	89.33	26.88	18.52	32.41	200	27	A	H
		2499.32	51.45	-22.55	74	38.32	26.99	18.56	32.42	200	27	P	H
		2497.32	42.74	-11.26	54	29.63	26.97	18.56	32.42	200	27	A	H
													H
													H
	*	2478	101.13	-	-	88.14	26.88	18.52	32.41	370	122	P	V
	*	2478	100.02	-	-	87.03	26.88	18.52	32.41	370	122	A	V
		2485.28	50.59	-23.41	74	37.57	26.9	18.53	32.41	370	122	P	V
		2490.68	42.92	-11.08	54	29.88	26.91	18.54	32.41	370	122	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 02 2404MHz		4808	44.77	-29.23	74	33.12	32.33	12.82	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4808	44.47	-29.53	74	32.82	32.33	12.82	33.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													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)
		4880	46.12	-27.88	74	34.19	32.56	12.86	33.49	-	-	P	H
		7320	51.37	-22.63	74	33.9	37.5	15.82	35.85	-	-	P	H
		7320	42.8	-11.2	54	25.33	37.5	15.82	35.85	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 38 2440MHz		4880	44.67	-29.33	74	32.74	32.56	12.86	33.49	-	-	P	V
		7320	51.47	-22.53	74	34	37.5	15.82	35.85	-	-	P	V
		7320	42.2	-11.8	54	24.73	37.5	15.82	35.85	-	-	A	V
													V
													V
													V
													V
													V
													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 76 2478MHz		4956	45.08	-28.92	74	32.95	32.7	12.9	33.47	-	-	P	H
		7434	50.83	-23.17	74	33.43	37.33	16	35.93	-	-	P	H
		7434	41.59	-12.41	54	24.19	37.33	16	35.93	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
		4956	45.92	-28.08	74	33.79	32.7	12.9	33.47	-	-	P	V
		7434	51.19	-22.81	74	33.79	37.33	16	35.93	-	-	P	V
		7434	41.78	-12.22	54	24.38	37.33	16	35.93	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

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		24832	44.5	-29.5	74	42.05	39.66	22.63	59.84	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24860	44.49	-29.51	74	41.83	39.76	22.68	59.78	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	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		30.27	22.96	-17.04	40	30.23	24.61	0.88	32.76	-	-	P	H
		99.66	28.67	-14.83	43.5	43.61	15.98	1.8	32.72	-	-	P	H
		136.92	25.36	-18.14	43.5	38.4	17.6	2.06	32.7	-	-	P	H
		734.7	31.36	-14.64	46	31.3	27.99	4.84	32.77	-	-	P	H
		846.7	32.82	-13.18	46	30.83	29.09	5.24	32.34	-	-	P	H
		964.3	34.92	-19.08	54	29.77	30.93	5.6	31.38	-	-	P	H
													H
													H
													H
													H
													H
													H
		32.43	24.71	-15.29	40	32.72	23.84	0.92	32.77	-	-	P	V
		98.85	24.65	-18.85	43.5	39.63	15.92	1.79	32.69	-	-	P	V
		145.56	25.13	-18.37	43.5	38.4	17.3	2.13	32.7	-	-	P	V
		759.2	31.53	-14.47	46	31.02	28.3	4.92	32.71	-	-	P	V
		931.4	33.4	-12.6	46	29.75	29.86	5.49	31.7	-	-	P	V
		969.2	35.91	-18.09	54	30.71	30.9	5.63	31.33	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

<Ant. 4>

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 02 2404MHz		2372.37	50.93	-23.07	74	37.94	27	18.33	32.34	115	257	P	H
		2330.895	42.72	-11.28	54	29.7	27.09	18.25	32.32	115	257	A	H
	*	2404	101.78	-	-	88.75	27	18.39	32.36	115	257	P	H
	*	2404	100.82	-	-	87.79	27	18.39	32.36	115	257	A	H
													H
													H
		2361.66	50.71	-23.29	74	37.74	27	18.31	32.34	389	99	P	V
		2350.425	42.76	-11.24	54	29.8	27	18.29	32.33	389	99	A	V
	*	2404	96.18	-	-	83.15	27	18.39	32.36	389	99	P	V
	*	2404	95.22	-	-	82.19	27	18.39	32.36	389	99	A	V
													V
													V
BLE CH 38 2440MHz		2350.74	50.29	-23.71	74	37.33	27	18.29	32.33	118	248	P	H
		2321.34	42.8	-11.2	54	29.78	27.1	18.23	32.31	118	248	A	H
	*	2440	104.25	-	-	91.38	26.8	18.45	32.38	118	248	P	H
	*	2440	103.28	-	-	90.41	26.8	18.45	32.38	118	248	A	H
		2499.86	51.03	-22.97	74	37.89	27	18.56	32.42	118	248	P	H
		2493.28	43.07	-10.93	54	30.01	26.93	18.55	32.42	118	248	A	H
		2352.98	50.11	-23.89	74	37.15	27	18.29	32.33	375	95	P	V
		2370.48	42.64	-11.36	54	29.65	27	18.33	32.34	375	95	A	V
	*	2440	99.74	-	-	86.87	26.8	18.45	32.38	375	95	P	V
	*	2440	98.75	-	-	85.88	26.8	18.45	32.38	375	95	A	V
		2486.42	50.55	-23.45	74	37.52	26.9	18.54	32.41	375	95	P	V
		2496.36	42.94	-11.06	54	29.85	26.96	18.55	32.42	375	95	A	V

BLE CH 76 2478MHz	*	2478	104.14	-	-	91.15	26.88	18.52	32.41	115	265	P	H
	*	2478	103.08	-	-	90.09	26.88	18.52	32.41	115	265	A	H
		2489.08	49.99	-24.01	74	36.96	26.9	18.54	32.41	115	265	P	H
		2495.04	42.94	-11.06	54	29.86	26.95	18.55	32.42	115	265	A	H
													H
													H
	*	2478	97.6	-	-	84.61	26.88	18.52	32.41	368	86	P	V
	*	2478	96.58	-	-	83.59	26.88	18.52	32.41	368	86	A	V
		2495.56	50.39	-23.61	74	37.3	26.96	18.55	32.42	368	86	P	V
		2499.52	43.16	-10.84	54	30.02	27	18.56	32.42	368	86	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 02 2404MHz		4808	44.9	-29.1	74	33.25	32.33	12.82	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4808	45.36	-28.64	74	33.71	32.33	12.82	33.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													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)
		4880	45.93	-28.07	74	34	32.56	12.86	33.49	-	-	P	H
		7320	51.22	-22.78	74	33.75	37.5	15.82	35.85	-	-	P	H
		7320	41.88	-12.12	54	24.41	37.5	15.82	35.85	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 38 2440MHz		4880	45.11	-28.89	74	33.18	32.56	12.86	33.49	-	-	P	V
		7320	51	-23	74	33.53	37.5	15.82	35.85	-	-	P	V
		7320	42.63	-11.37	54	25.16	37.5	15.82	35.85	-	-	A	V
													V
													V
													V
													V
													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 76 2478MHz		4956	45.34	-28.66	74	33.21	32.7	12.9	33.47	-	-	P	H
		7434	50.82	-23.18	74	33.42	37.33	16	35.93	-	-	P	H
		7434	41.94	-12.06	54	24.54	37.33	16	35.93	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4956	45.36	-28.64	74	33.23	32.7	12.9	33.47	-	-	P	V
		7434	50.56	-23.44	74	33.16	37.33	16	35.93	-	-	P	V
		7434	41.93	-12.07	54	24.53	37.33	16	35.93	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

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		24706	46.22	-27.78	74	44.32	39.59	22.4	60.09	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24916	44.8	-29.2	74	42.19	39.5	22.78	59.67	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	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		97.23	29.23	-14.27	43.5	44.45	15.74	1.77	32.73	-	-	P	H
		137.19	25.46	-18.04	43.5	38.52	17.58	2.06	32.7	-	-	P	H
		182.55	22.21	-21.29	43.5	37.56	14.85	2.47	32.67	-	-	P	H
		655.6	29.27	-16.73	46	31.11	26.49	4.57	32.9	-	-	P	H
		783	31.93	-14.07	46	31.48	28.08	5.03	32.66	-	-	P	H
		896.4	36.35	-9.65	46	33.98	29.01	5.39	32.03	-	-	P	H
													H
													H
													H
													H
													H
													H
		32.16	25.02	-14.98	40	32.86	24.02	0.91	32.77	-	-	P	V
		56.19	33.85	-6.15	40	52.86	12.42	1.31	32.74	-	-	P	V
		70.23	33.2	-6.8	40	51.86	12.6	1.47	32.73	-	-	P	V
		845.3	32.02	-13.98	46	30.09	29.03	5.24	32.34	-	-	P	V
		907.6	33.12	-12.88	46	30.57	29.07	5.42	31.94	-	-	P	V
		953.8	34.84	-11.16	46	29.79	30.97	5.56	31.48	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

<GFSK 2Mbps>

<Ant. 3>

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 02 2404MHz		2361.555	51.05	-22.95	74	38.08	27	18.31	32.34	203	30	P	H
		2341.71	42.91	-11.09	54	29.97	27	18.27	32.33	203	30	A	H
	*	2404	105.86	-	-	92.83	27	18.39	32.36	203	30	P	H
	*	2404	103.5	-	-	90.47	27	18.39	32.36	203	30	A	H
													H
													H
		2331.42	50.79	-23.21	74	37.77	27.09	18.25	32.32	392	114	P	V
		2389.38	42.77	-11.23	54	29.85	26.91	18.36	32.35	392	114	A	V
	*	2404	103.27	-	-	90.24	27	18.39	32.36	392	114	P	V
	*	2404	100.93	-	-	87.9	27	18.39	32.36	392	114	A	V
													V
													V
BLE CH 38 2440MHz		2363.2	50.77	-23.23	74	37.8	27	18.31	32.34	206	29	P	H
		2374.68	42.7	-11.3	54	29.71	27	18.33	32.34	206	29	A	H
	*	2440	105.22	-	-	92.35	26.8	18.45	32.38	206	29	P	H
	*	2440	102.81	-	-	89.94	26.8	18.45	32.38	206	29	A	H
		2489.08	50.58	-23.42	74	37.55	26.9	18.54	32.41	206	29	P	H
		2488.66	43.22	-10.78	54	30.19	26.9	18.54	32.41	206	29	A	H
		2367.68	50.4	-23.6	74	37.42	27	18.32	32.34	386	114	P	V
		2384.06	43.13	-10.87	54	30.17	26.96	18.35	32.35	386	114	A	V
	*	2440	103.3	-	-	90.43	26.8	18.45	32.38	386	114	P	V
	*	2440	100.92	-	-	88.05	26.8	18.45	32.38	386	114	A	V
		2488.8	50.66	-23.34	74	37.63	26.9	18.54	32.41	386	114	P	V
		2491.18	43.17	-10.83	54	30.13	26.91	18.54	32.41	386	114	A	V

BLE CH 76 2478MHz	*	2478	102.63	-	-	89.64	26.88	18.52	32.41	197	15	P	H
	*	2478	100.34	-	-	87.35	26.88	18.52	32.41	197	15	A	H
		2484.24	51.16	-22.84	74	38.14	26.9	18.53	32.41	197	15	P	H
		2489.48	42.93	-11.07	54	29.9	26.9	18.54	32.41	197	15	A	H
													H
													H
	*	2478	100.62	-	-	87.63	26.88	18.52	32.41	369	117	P	V
	*	2478	98.56	-	-	85.57	26.88	18.52	32.41	369	117	A	V
		2484.12	50.45	-23.55	74	37.43	26.9	18.53	32.41	369	117	P	V
		2498.96	43	-11	54	29.87	26.99	18.56	32.42	369	117	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 02 2404MHz		4808	45.96	-28.04	74	34.31	32.33	12.82	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4808	46.43	-27.57	74	34.78	32.33	12.82	33.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													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)
		4880	45.19	-28.81	74	33.26	32.56	12.86	33.49	-	-	P	H
		7320	51.98	-22.02	74	34.51	37.5	15.82	35.85	-	-	P	H
		7320	42.33	-11.67	54	24.86	37.5	15.82	35.85	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 38 2440MHz		4880	45.81	-28.19	74	33.88	32.56	12.86	33.49	-	-	P	V
		7320	51.5	-22.5	74	34.03	37.5	15.82	35.85	-	-	P	V
		7320	42.02	-11.98	54	24.55	37.5	15.82	35.85	-	-	A	V
													V
													V
													V
													V
													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 76 2478MHz		4956	45.87	-28.13	74	33.74	32.7	12.9	33.47	-	-	P	H
		7434	50.5	-23.5	74	33.1	37.33	16	35.93	-	-	P	H
		7434	41.52	-12.48	54	24.12	37.33	16	35.93	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4956	45.96	-28.04	74	33.83	32.7	12.9	33.47	-	-	P	V
		7434	50.59	-23.41	74	33.19	37.33	16	35.93	-	-	P	V
		7434	41.94	-12.06	54	24.54	37.33	16	35.93	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

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		24601	44.95	-29.05	74	43.43	39.6	22.22	60.3	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24916	45.01	-28.99	74	42.4	39.5	22.78	59.67	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	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		30.27	22.13	-17.87	40	29.4	24.61	0.88	32.76	-	-	P	H
		98.58	28.97	-14.53	43.5	44.02	15.89	1.78	32.72	-	-	P	H
		136.92	26.19	-17.31	43.5	39.23	17.6	2.06	32.7	-	-	P	H
		693.4	28.83	-17.17	46	30.39	26.6	4.7	32.86	-	-	P	H
		846	33.34	-12.66	46	31.38	29.06	5.24	32.34	-	-	P	H
		960.8	35.33	-18.67	54	30.12	31.03	5.59	31.41	-	-	P	H
													H
													H
													H
													H
													H
													H
		31.35	28.13	-11.87	40	35.81	24.19	0.9	32.77	-	-	P	V
		99.66	26.02	-17.48	43.5	40.93	15.98	1.8	32.69	-	-	P	V
		146.1	25.11	-18.39	43.5	38.39	17.29	2.13	32.7	-	-	P	V
		781.6	31	-15	46	30.54	28.1	5.02	32.66	-	-	P	V
		950.3	34.86	-11.14	46	29.96	30.88	5.54	31.52	-	-	P	V
		996.5	35.33	-18.67	54	30.19	30.45	5.75	31.06	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

<Ant. 4>

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 02 2405MHz		2310	49.97	-24.03	74	37.07	27	18.21	32.31	115	259	P	H
		2387.805	42.6	-11.4	54	29.67	26.92	18.36	32.35	115	259	A	H
	*	2404	101.65	-	-	88.62	27	18.39	32.36	115	259	P	H
	*	2404	99.39	-	-	86.36	27	18.39	32.36	115	259	A	H
													H
													H
		2376.36	50.53	-23.47	74	37.54	27	18.34	32.35	396	98	P	V
		2358.09	42.61	-11.39	54	29.64	27	18.3	32.33	396	98	A	V
	*	2404	96.45	-	-	83.42	27	18.39	32.36	396	98	P	V
	*	2404	94.33	-	-	81.3	27	18.39	32.36	396	98	A	V
													V
													V
BLE CH 38 2440MHz		2370.06	50.04	-23.96	74	37.06	27	18.32	32.34	119	257	P	H
		2374.12	42.88	-11.12	54	29.89	27	18.33	32.34	119	257	A	H
	*	2440	103.98	-	-	91.11	26.8	18.45	32.38	119	257	P	H
	*	2440	101.79	-	-	88.92	26.8	18.45	32.38	119	257	A	H
		2493.42	50.51	-23.49	74	37.45	26.93	18.55	32.42	119	257	P	H
		2493.07	42.43	-11.57	54	29.37	26.93	18.55	32.42	119	257	A	H
		2344.58	50.3	-23.7	74	37.35	27	18.28	32.33	385	96	P	V
		2356.48	42.68	-11.32	54	29.71	27	18.3	32.33	385	96	A	V
	*	2440	99.92	-	-	87.05	26.8	18.45	32.38	385	96	P	V
	*	2440	97.69	-	-	84.82	26.8	18.45	32.38	385	96	A	V
		2484.95	50.23	-23.77	74	37.21	26.9	18.53	32.41	385	96	P	V
		2498.95	42.68	-11.32	54	29.55	26.99	18.56	32.42	385	96	A	V

BLE CH 76 2478MHz	*	2478	103.96	-	-	90.97	26.88	18.52	32.41	187	258	P	H
	*	2478	101.7	-	-	88.71	26.88	18.52	32.41	187	258	A	H
		2485.76	50.76	-23.24	74	37.74	26.9	18.53	32.41	187	258	P	H
		2496.88	42.78	-11.22	54	29.68	26.97	18.55	32.42	187	258	A	H
													H
													H
	*	2478	99.56	-	-	86.57	26.88	18.52	32.41	328	93	P	V
	*	2478	97.42	-	-	84.43	26.88	18.52	32.41	328	93	A	V
		2496	50.65	-23.35	74	37.56	26.96	18.55	32.42	328	93	P	V
		2495.72	42.95	-11.05	54	29.86	26.96	18.55	32.42	328	93	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 02 2404MHz		4808	46.02	-27.98	74	34.37	32.33	12.82	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4808	45.25	-28.75	74	33.6	32.33	12.82	33.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													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)
		4880	45.37	-28.63	74	33.44	32.56	12.86	33.49	-	-	P	H
		7320	51.22	-22.78	74	33.75	37.5	15.82	35.85	-	-	P	H
		7320	42.13	-11.87	54	24.66	37.5	15.82	35.85	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 38 2440MHz		4880	45.42	-28.58	74	33.49	32.56	12.86	33.49	-	-	P	V
		7320	51.14	-22.86	74	33.67	37.5	15.82	35.85	-	-	P	V
		7320	42.24	-11.76	54	24.77	37.5	15.82	35.85	-	-	A	V
													V
													V
													V
													V
													V
													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 76 2478MHz		4956	45.24	-28.76	74	33.11	32.7	12.9	33.47	-	-	P	H
		7434	49	-25	74	31.6	37.33	16	35.93	-	-	P	H
		7434	41.21	-12.79	54	23.81	37.33	16	35.93	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
		4956	45.13	-28.87	74	33	32.7	12.9	33.47	-	-	P	V
		7434	48.82	-25.18	74	31.42	37.33	16	35.93	-	-	P	V
		7434	41.22	-12.78	54	23.82	37.33	16	35.93	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

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		24930	45.35	-28.65	74	42.77	39.42	22.8	59.64	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24594	44.49	-29.51	74	43.05	39.55	22.2	60.31	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	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		32.16	22.52	-17.48	40	30.34	24.02	0.91	32.75	-	-	P	H
		97.77	28.74	-14.76	43.5	43.88	15.81	1.77	32.72	-	-	P	H
		139.62	25.28	-18.22	43.5	38.46	17.44	2.08	32.7	-	-	P	H
		756.4	31.01	-14.99	46	30.48	28.33	4.92	32.72	-	-	P	H
		892.2	33.45	-12.55	46	31.12	29.02	5.37	32.06	-	-	P	H
		943.3	35.42	-10.58	46	30.97	30.52	5.52	31.59	-	-	P	H
													H
													H
													H
													H
													H
													H
		32.97	24.51	-15.49	40	32.87	23.48	0.93	32.77	-	-	P	V
		98.04	24.6	-18.9	43.5	39.67	15.84	1.78	32.69	-	-	P	V
		145.83	24.87	-18.63	43.5	38.14	17.3	2.13	32.7	-	-	P	V
		777.4	31.32	-14.68	46	30.88	28.11	5	32.67	-	-	P	V
		933.5	35.05	-10.95	46	31.23	30	5.5	31.68	-	-	P	V
		969.9	36.11	-17.89	54	30.92	30.88	5.63	31.32	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **Margin** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

BLE	Note	Frequency	Level	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 :	Bank Lin and Lu Wen-Kai	**Temperature :**	20~25°C
		Relative Humidity :	55~65%

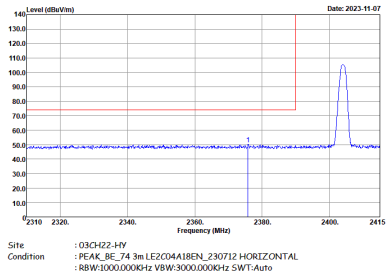
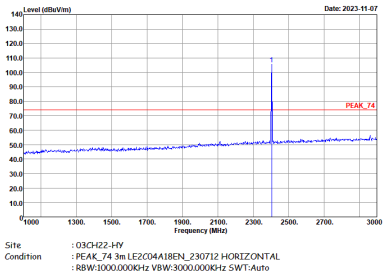
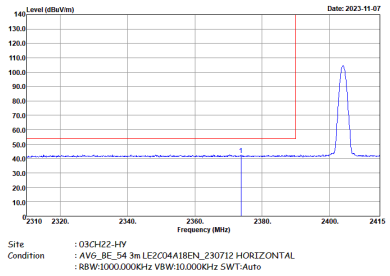
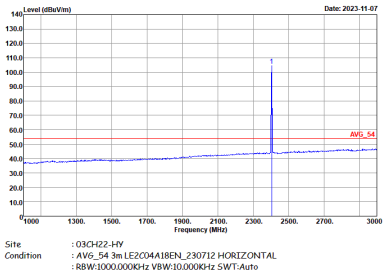
Note symbol

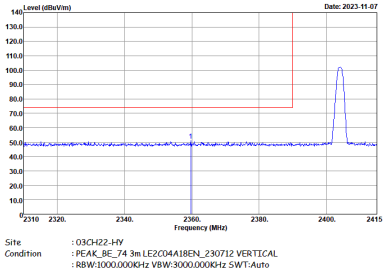
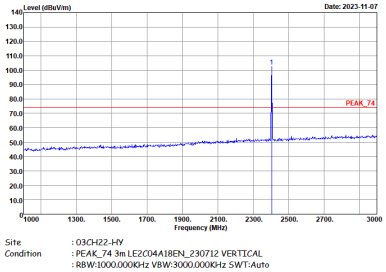
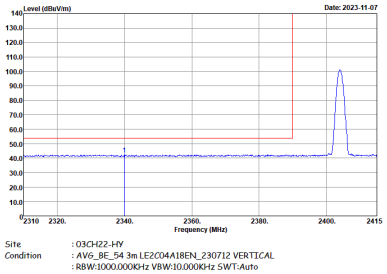
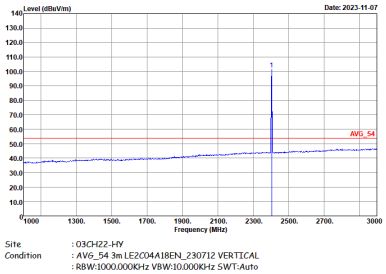
-L	**Low channel location**
-R	**High channel location**

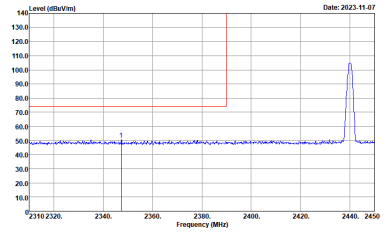
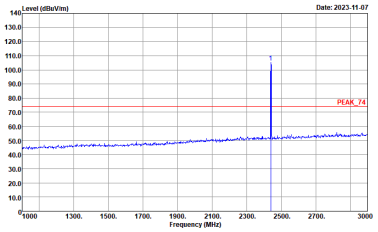
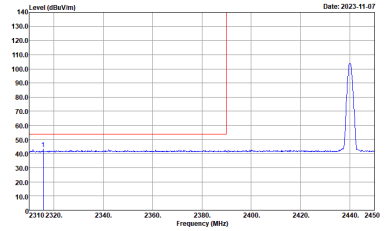
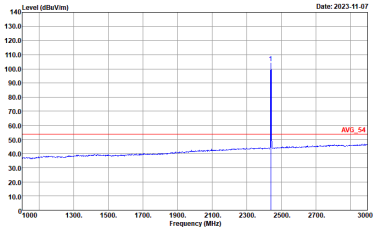
<GFSK 1Mbps>

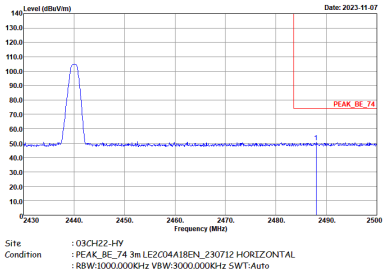
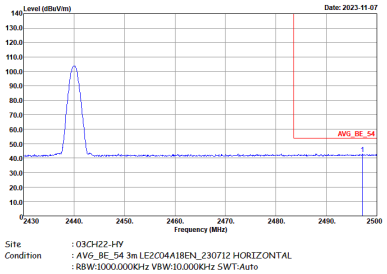
2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH02 2404MHz	
3	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH02 2404MHz	
3	Vertical	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH38 2440MHz - L	
3	Horizontal	Fundamental
Peak	 Site : 03CH22-HY Condition : PEAK_8E_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH22-HY Condition : AVG_8E_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH38 2440MHz - R	
3	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank