FCC RADIO TEST REPORT

FCC ID	:	**TVE-240603**
Equipment	:	**Network Security Gateway**
Brand Name	:	**FORTINET**
Model Name	:	**FortiGate 70Gxxxxxxxxxx, FORTIGATE-70Gxxxxxxxxxx, FG-70Gxxxxxxxxxx, FortiGate 71Gxxxxxxxxxx, FORTIGATE-71Gxxxxxxxxxx, FG-71Gxxxxxxxxxx (where "x" can be used as "0-9", or "A-Z", or "-", or blank for software changes or marketing purposes only)**
Applicant	:	**Fortinet Inc. 909 Kifer Rd., Sunnyvale, CA 94086, United States**
Manufacturer	:	**Fortinet Inc. 909 Kifer Rd., Sunnyvale, CA 94086, United States**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Jun. 15, 2024 and testing was performed from Jul. 04, 2024 to Jul. 14, 2024. 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
FR461510A	01	Initial issue of report	Sep. 23, 2024
FR461510A	02	Revise Appendix C This report is an updated version, replacing the report issued on Sep. 23, 2024.	Sep. 27, 2024
FR461510A	03	Revise Appendix C This report is an updated version, replacing the report issued on Sep. 27, 2024.	Oct. 11, 2024

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	Pass	-
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	3.64 dB under the limit at 7440.00 MHz
3.6	15.207	AC Conducted Emission	Pass	9.98 dB under the limit at 0.50 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: 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	Monopole

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	1.53

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

Model differences description		
Model Feature	**FG-71G**	**FG-70G**
M.2 SSD	V	X

Remark: All the tests were performed with Model: FG-71G

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, 03CH11-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

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). 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 adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

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

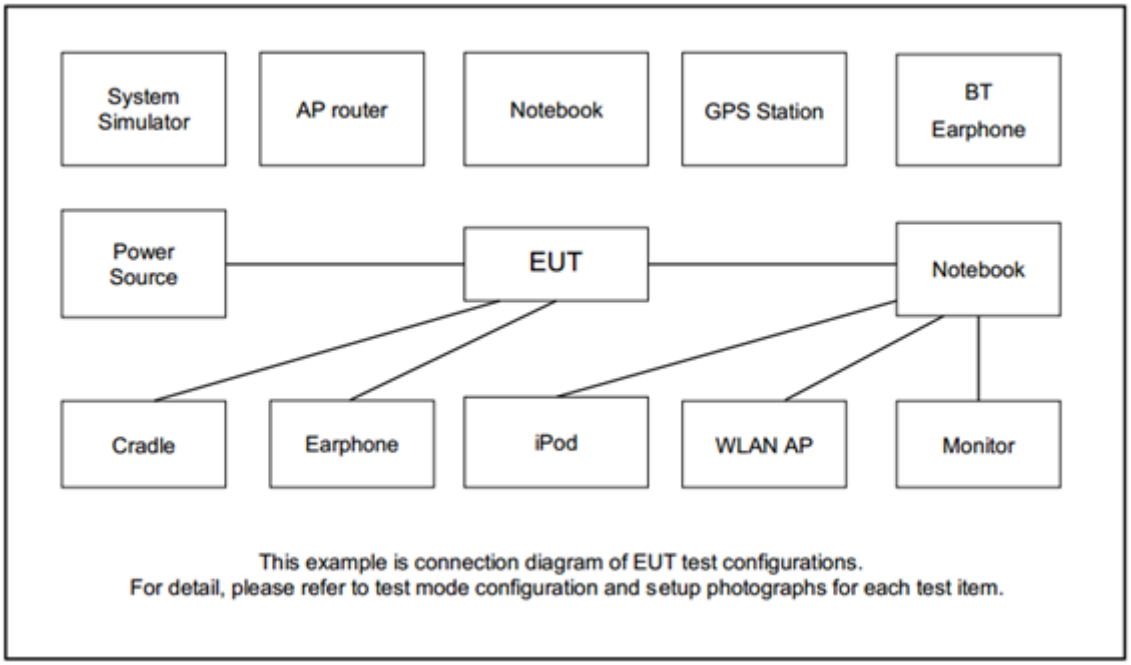
The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Conducted Test Cases	**Bluetooth – LE / 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

Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps Mode 7: Bluetooth Tx CH00_2402 MHz_125Kbps Mode 8: Bluetooth Tx CH19_2440 MHz_125Kbps Mode 9: Bluetooth Tx CH39_2480 MHz_125Kbps Mode 10: Bluetooth Tx CH00_2402 MHz_500Kbps Mode 11: Bluetooth Tx CH19_2440 MHz_500Kbps Mode 12: Bluetooth Tx CH39_2480 MHz_500Kbps Mode 13: Bluetooth Tx CH39_2480 MHz_1Mbps Mode 14: Bluetooth Tx CH39_2480 MHz_1Mbps
AC Conducted Emission	Mode 1: Bluetooth-LE Link + AC/DC Adapter 1

Remark:
1. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.
2. For Radiated Spurious Emission above 18GHz and below 1GHz, the modulation and the data rate picked for testing are determined by the worst from Remark 1.
3. For Radiated Test Cases, the tests were performed with AC/DC Adapter 1.

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.	Mobile Phone	ASUS	Zenfone5	MSQX00QSA	N/A	N/A
2.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P： Unshielded, 1.2m DC O/P： Shielded, 1.8m

2.5 EUT Operation Test Setup

The RF test items, utility “Tera Term Version 4.95” 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.

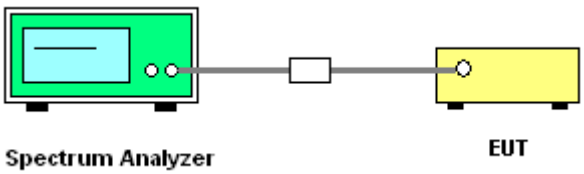
3.1.2 Measuring Instruments

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.

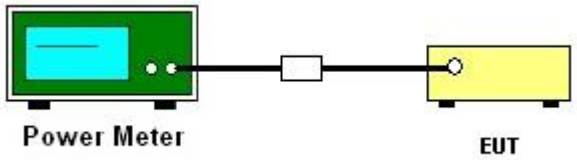
3.2.2 Measuring Instruments

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.

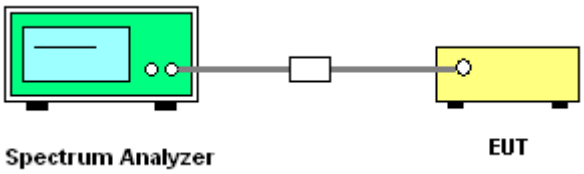
3.3.2 Measuring Instruments

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.

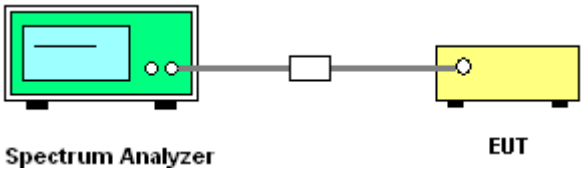
3.4.2 Measuring Instruments

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

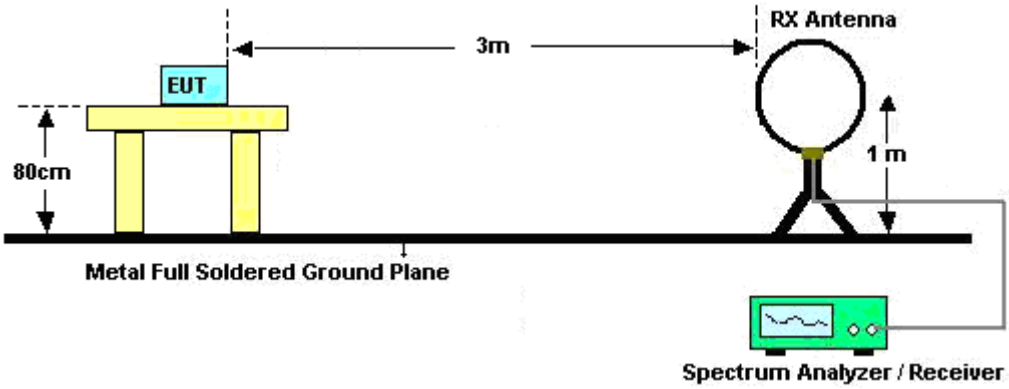
Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

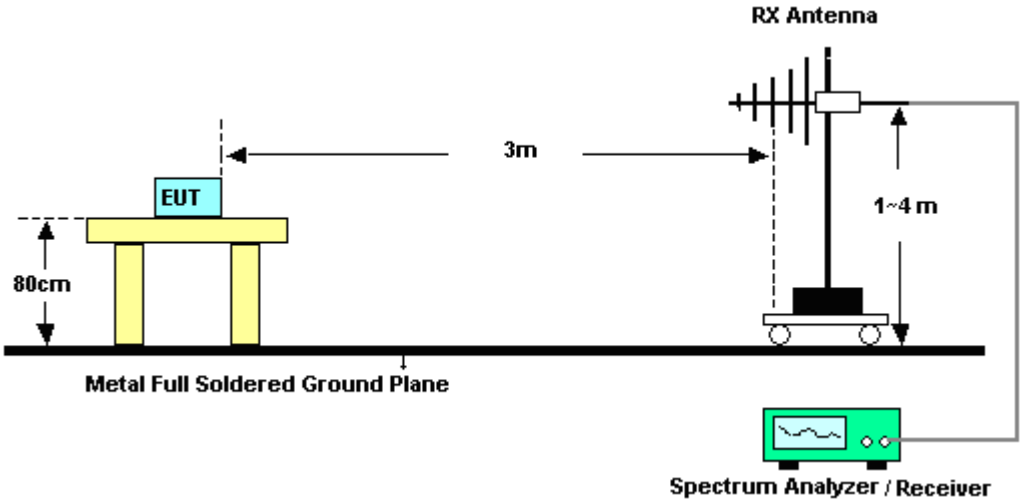
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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

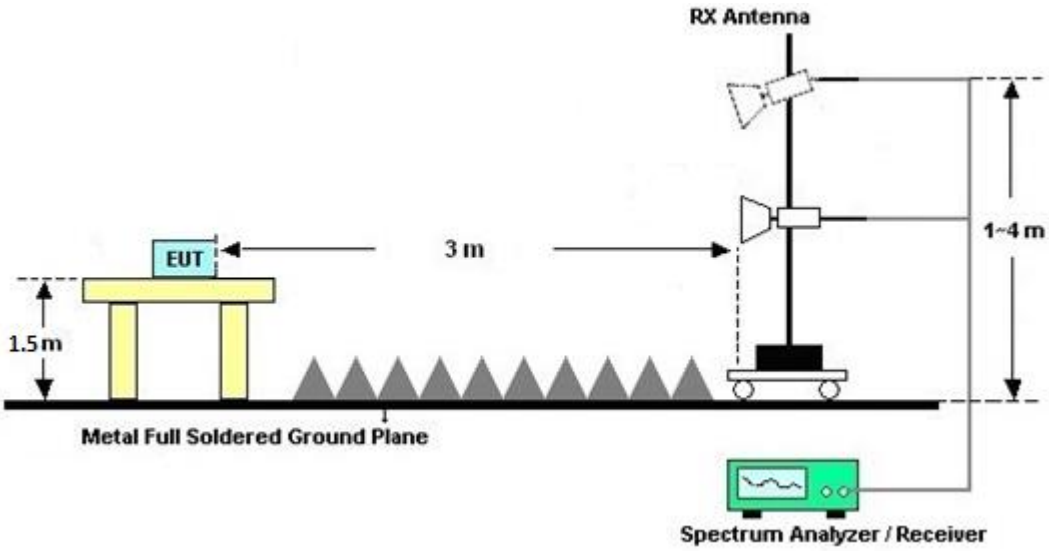
For radiated test below 30MHz



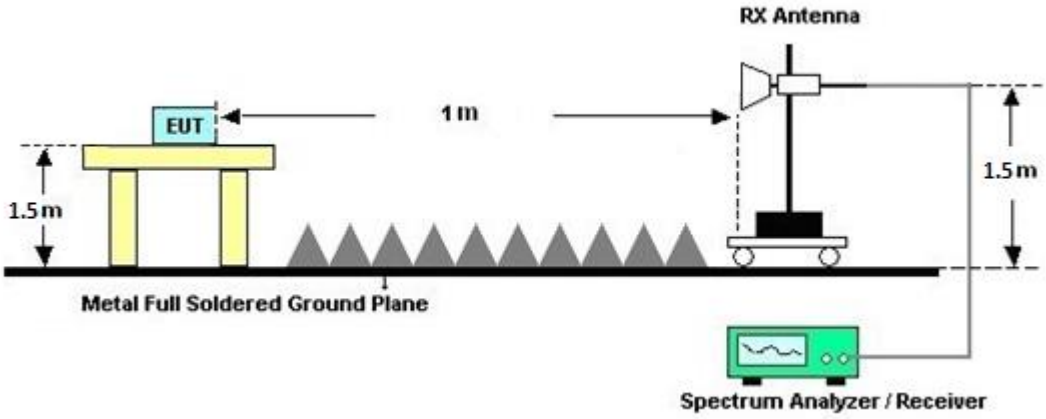
For radiated test from 30MHz to 1GHz



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.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

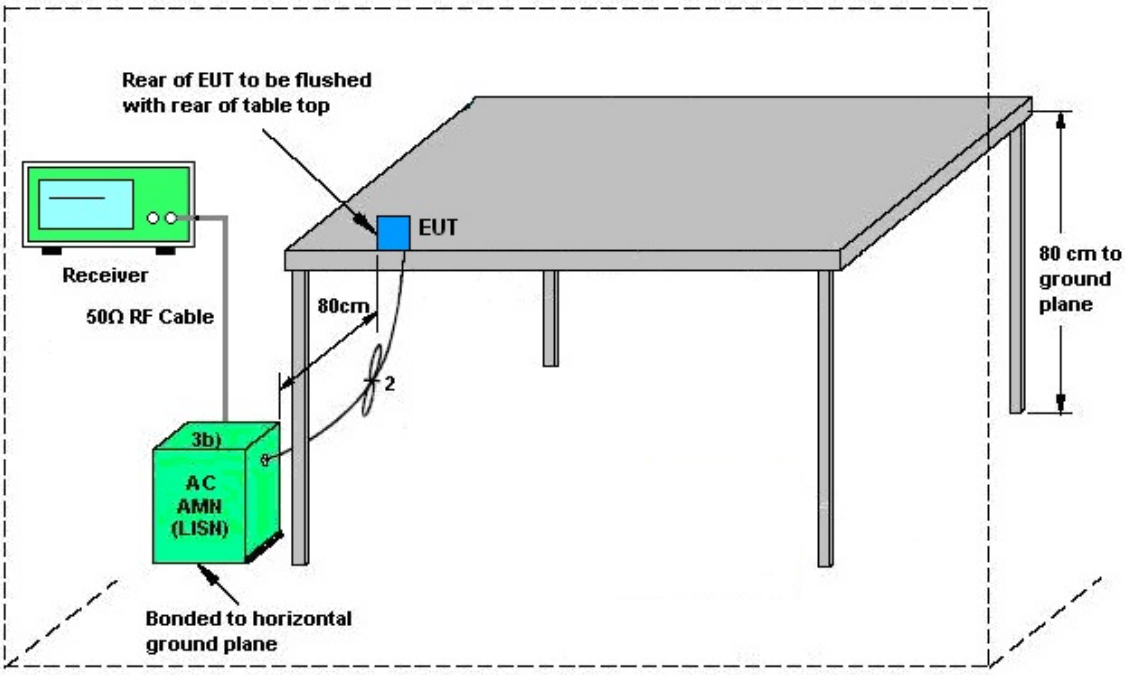
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

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
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 07, 2023	Jul. 05, 2024~ Jul. 14, 2024	Oct. 06, 2024	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 12, 2023	Jul. 05, 2024~ Jul. 14, 2024	Sep. 11, 2024	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Aug. 17, 2023	Jul. 05, 2024~ Jul. 14, 2024	Aug. 16, 2024	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00993	18GHz~40GHz	Nov. 24, 2023	Jul. 05, 2024~ Jul. 14, 2024	Nov. 23, 2024	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 08, 2023	Jul. 05, 2024~ Jul. 14, 2024	Dec. 07, 2024	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Mar. 25, 2024	Jul. 05, 2024~ Jul. 14, 2024	Mar. 24, 2025	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	171000180005 5007	1GHz~18GHz	Jun. 13, 2024	Jul. 05, 2024~ Jul. 14, 2024	Jun. 12, 2025	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	May 27, 2024	Jul. 05, 2024~ Jul. 14, 2024	May 26, 2025	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 05, 2023	Jul. 05, 2024~ Jul. 14, 2024	Oct. 04, 2024	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Aug. 02, 2023	Jul. 05, 2024~ Jul. 14, 2024	Aug. 01, 2024	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 05, 2024~ Jul. 14, 2024	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jul. 05, 2024~ Jul. 14, 2024	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jul. 05, 2024~ Jul. 14, 2024	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jul. 05, 2024~ Jul. 14, 2024	N/A	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Dec. 08, 2023	Jul. 05, 2024~ Jul. 14, 2024	Dec. 07, 2024	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804013/2	30M~40G	May 23, 2024	Jul. 05, 2024~ Jul. 14, 2024	May 22, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz~40GHz	Mar. 06, 2024	Jul. 05, 2024~ Jul. 14, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 06, 2024	Jul. 05, 2024~ Jul. 14, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar. 06, 2024	Jul. 05, 2024~ Jul. 14, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	3GHz High Pass Filter	Sep. 11, 2023	Jul. 05, 2024~ Jul. 14, 2024	Sep. 10, 2024	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN11	1.53GHz Low Pass Filter	Sep. 11, 2023	Jul. 05, 2024~ Jul. 14, 2024	Sep. 10, 2024	Radiation (03CH11-HY)
Attenuator	HONOVA	5910 SMA-50-005	0028	N/A	Jul. 10, 2023	Jul. 05, 2024~ Jul. 08, 2024	Jul. 09, 2024	Radiation (03CH11-HY)
Attenuator	HONOVA	5910 SMA-50-005	0028	N/A	Jul. 09, 2024	Jul. 09, 2024~ Jul. 14, 2024	Jul. 08, 2025	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jul. 06, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO35 (NO:109)	10MHz~6GHz	Jan. 15, 2024	Jul. 06, 2024	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Jul. 06, 2024	Aug. 22, 2024	Conducted (TH05-HY)
Switch Control Mainframe	EM Electronics	EMSW18SE	SW191204 (BOX8)	N/A	Jan. 02, 2024	Jul. 06, 2024	Jan. 01, 2025	Conducted (TH05-HY)
Software1	Sporton	BTWIFI_Final_version:1.0 (2024-04-11)	N/A	Conducted Items	N/A	Jul. 06, 2024	N/A	Conducted (TH05-HY)
Software2	Raditeq	RadiMation 2021.1.8	N/A	Conducted Power	N/A	Jul. 06, 2024	N/A	Conducted (TH05-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	Jul. 04, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 04, 2024	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2023	Jul. 04, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Jul. 04, 2024	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Jul. 04, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Jul. 04, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Jul. 04, 2024	Sep. 19, 2024	Conduction (CO07-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))	3.44 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.10 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.30 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.30 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.30 dB

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Junyu Jhou	Temperature:	21~25	°C
Test Date:	2024/7/6	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	1.095	0.736	0.50	Pass
BLE	125kbps	1	19	2440	1.085	0.708	0.50	Pass
BLE	125kbps	1	39	2480	1.087	0.708	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	7.20	30.00	1.53	8.73	36.00	Pass
BLE	125kbps	1	19	2440	7.20	30.00	1.53	8.73	36.00	Pass
BLE	125kbps	1	39	2480	7.00	30.00	1.53	8.53	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	4.12	1.50	1.53	8.00	Pass
BLE	125kbps	1	19	2440	4.18	1.40	1.53	8.00	Pass
BLE	125kbps	1	39	2480	4.05	1.25	1.53	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	1.063	0.695	0.50	Pass
BLE	500kbps	1	19	2440	1.053	0.686	0.50	Pass
BLE	500kbps	1	39	2480	1.047	0.681	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	7.20	30.00	1.53	8.73	36.00	Pass
BLE	500kbps	1	19	2440	7.10	30.00	1.53	8.63	36.00	Pass
BLE	500kbps	1	39	2480	7.00	30.00	1.53	8.53	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	7.31	-3.87	1.53	8.00	Pass
BLE	500kbps	1	19	2440	7.32	-2.53	1.53	8.00	Pass
BLE	500kbps	1	39	2480	7.16	-1.83	1.53	8.00	Pass

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

Report Number : FR461510A

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	1.079	0.702	0.50	Pass
BLE	1Mbps	1	19	2440	1.069	0.693	0.50	Pass
BLE	1Mbps	1	39	2480	1.073	0.712	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	7.20	30.00	1.53	8.73	36.00	Pass
BLE	1Mbps	1	19	2440	7.20	30.00	1.53	8.73	36.00	Pass
BLE	1Mbps	1	39	2480	7.00	30.00	1.53	8.53	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	7.39	-2.32	1.53	8.00	Pass
BLE	1Mbps	1	19	2440	7.37	-2.32	1.53	8.00	Pass
BLE	1Mbps	1	39	2480	7.24	-2.48	1.53	8.00	Pass

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

Report Number : FR461510A

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	1.366	0.50	Pass
BLE	2Mbps	1	19	2440	2.058	1.343	0.50	Pass
BLE	2Mbps	1	39	2480	2.074	1.376	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	7.20	30.00	1.53	8.73	36.00	Pass
BLE	2Mbps	1	19	2440	7.20	30.00	1.53	8.73	36.00	Pass
BLE	2Mbps	1	39	2480	7.00	30.00	1.53	8.53	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	6.08	-5.81	1.53	8.00	Pass
BLE	2Mbps	1	19	2440	6.18	-5.92	1.53	8.00	Pass
BLE	2Mbps	1	39	2480	5.96	-6.30	1.53	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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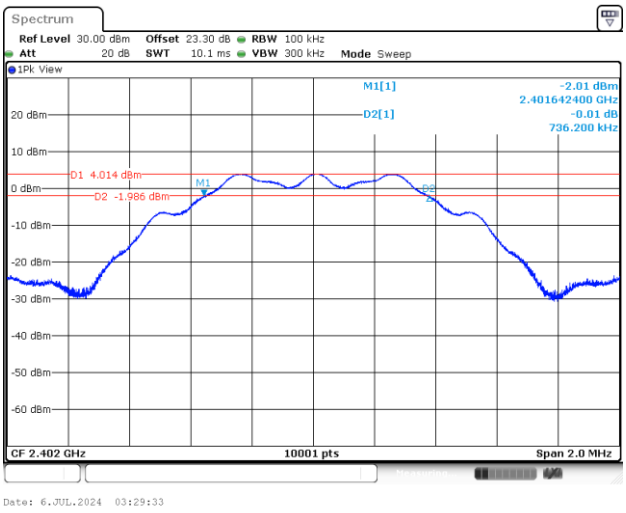
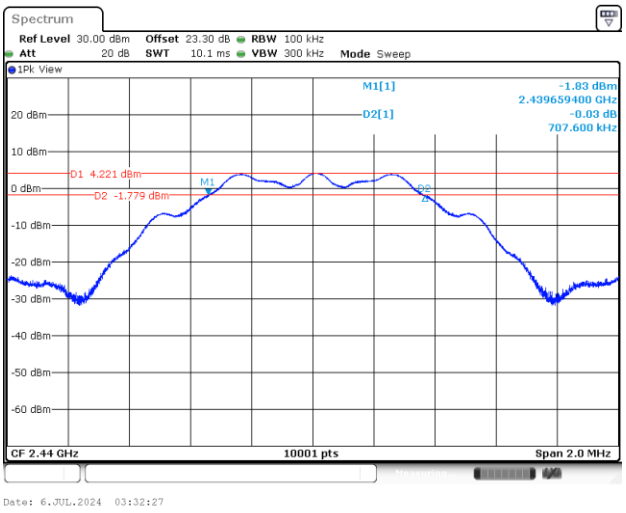
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
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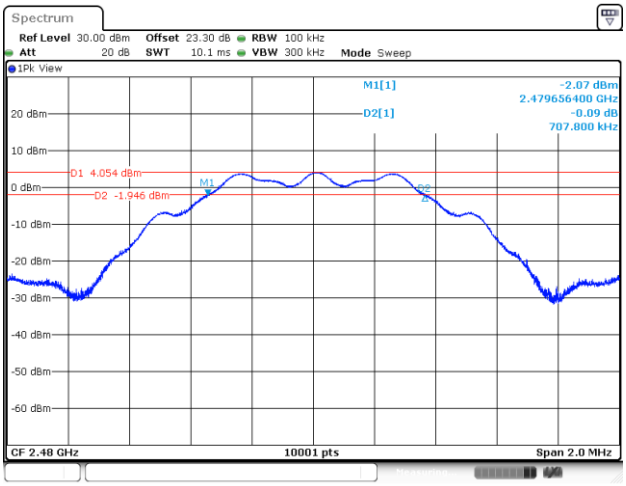	

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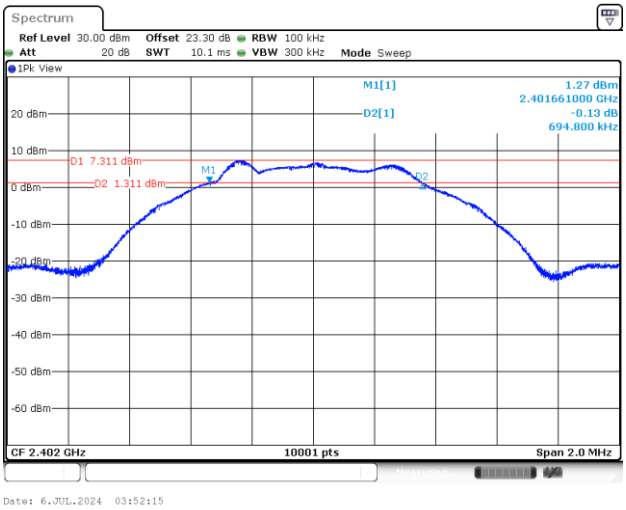
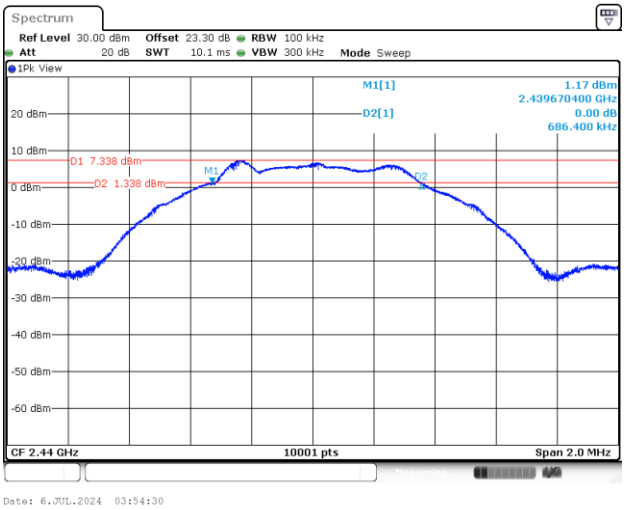
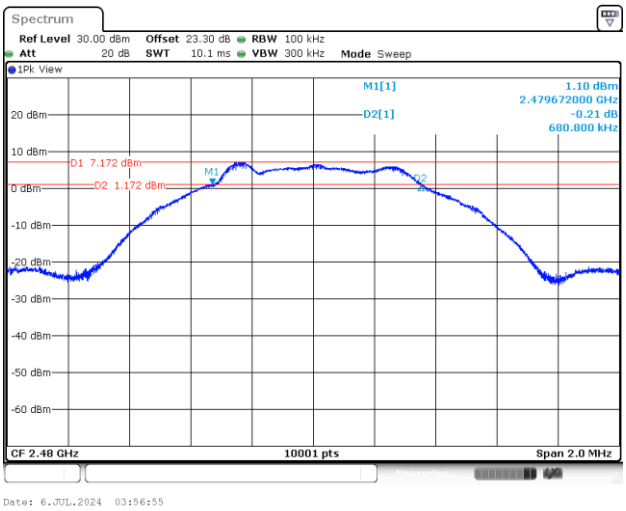
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
6 dB Bandwidth Plot on Channel 39	
	

99% Occupied Bandwidth

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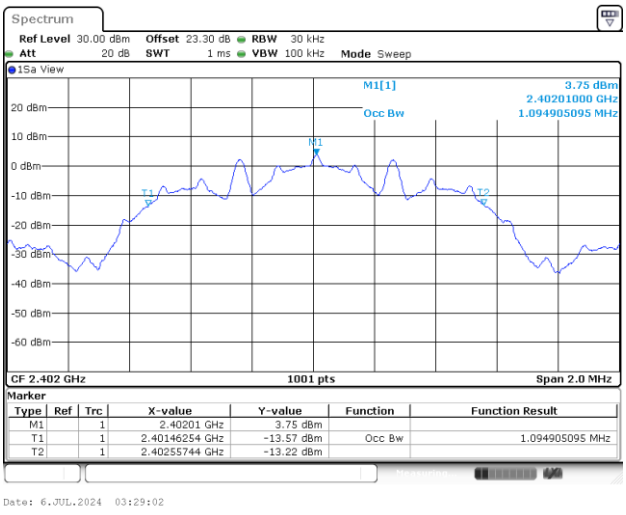
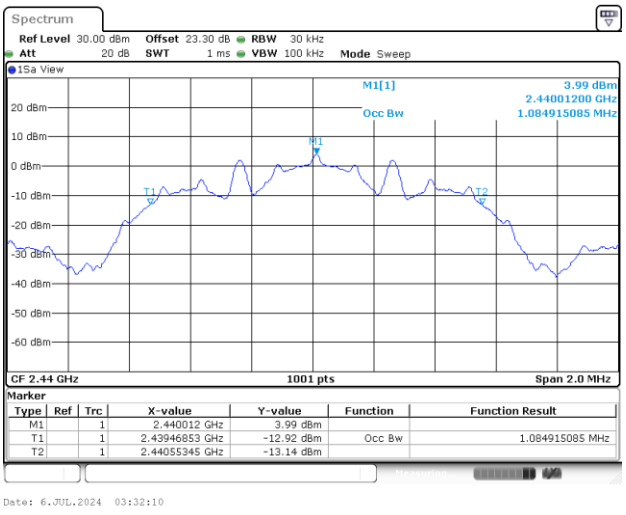
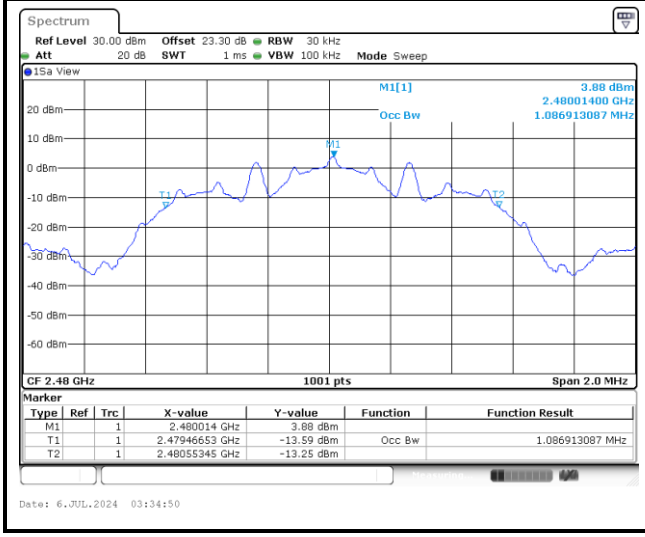
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 19



99% Occupied Bandwidth Plot on Channel 39



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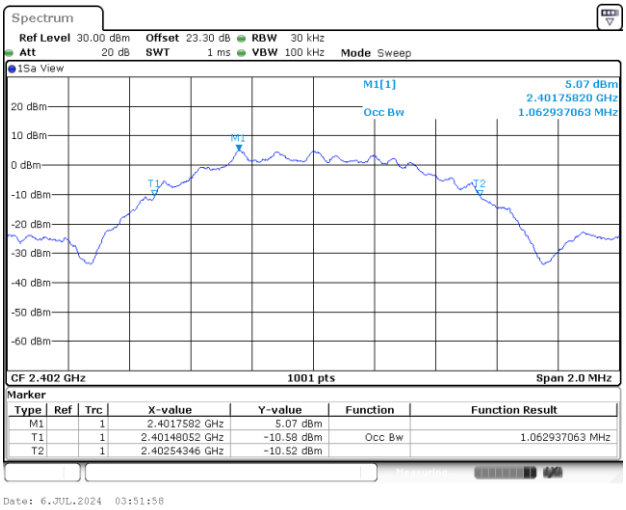
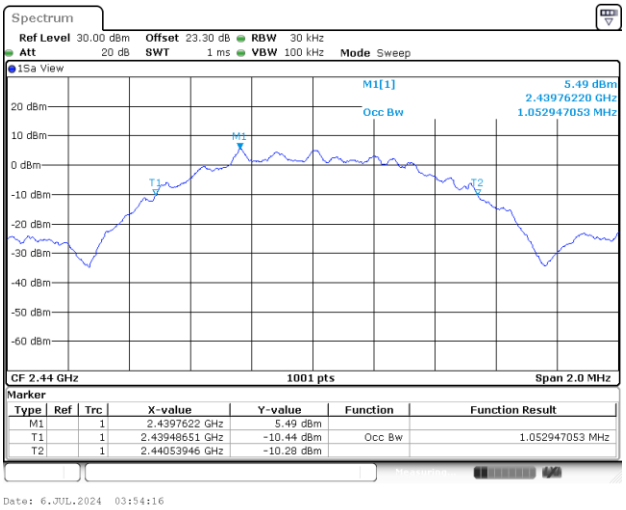
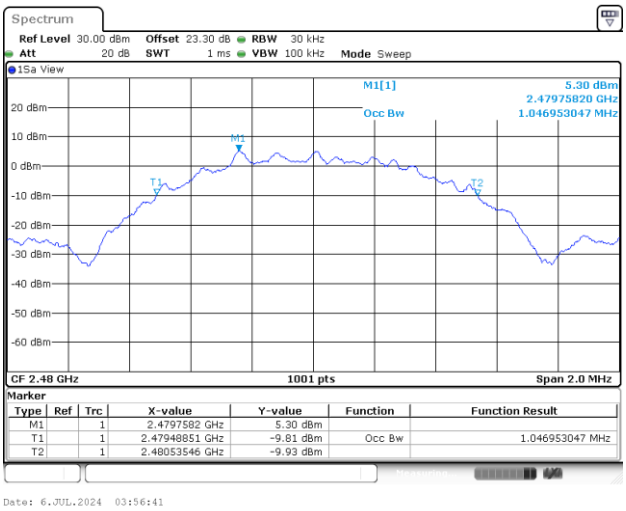
99% Occupied Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
	
99% Occupied Bandwidth Plot on Channel 39	
	

Power Spectral Density (dBm/3kHz)

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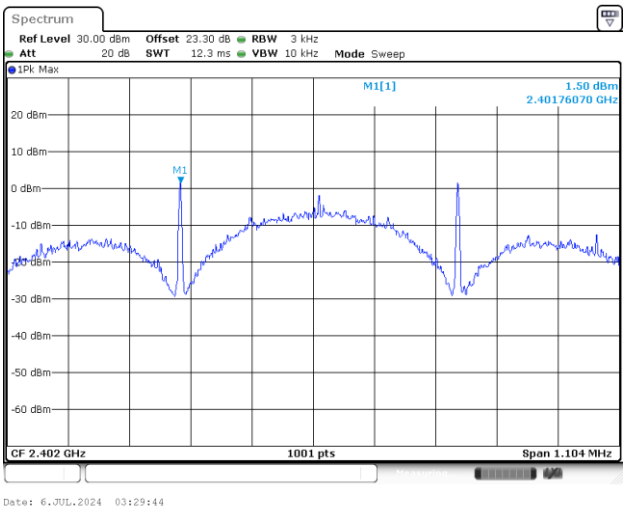
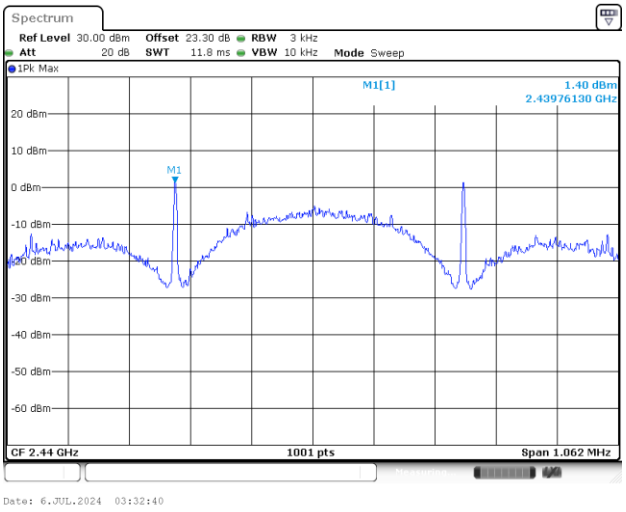
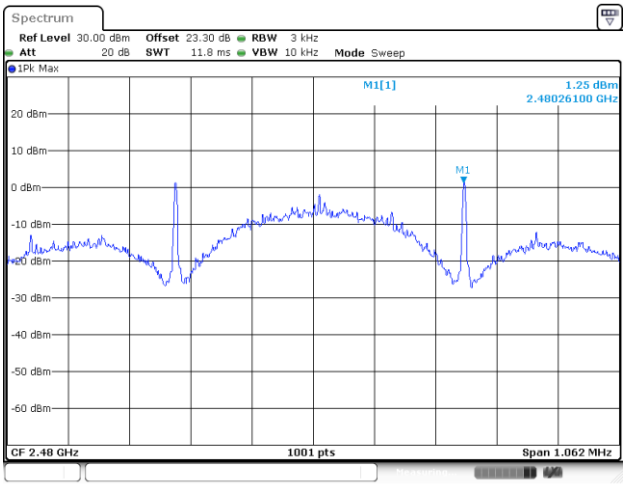
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
	
Power Density (dBm/3kHz) Plot Channel 39	
	

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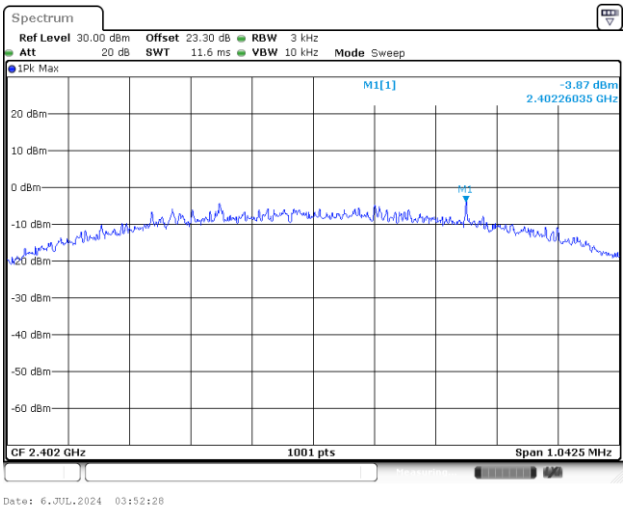
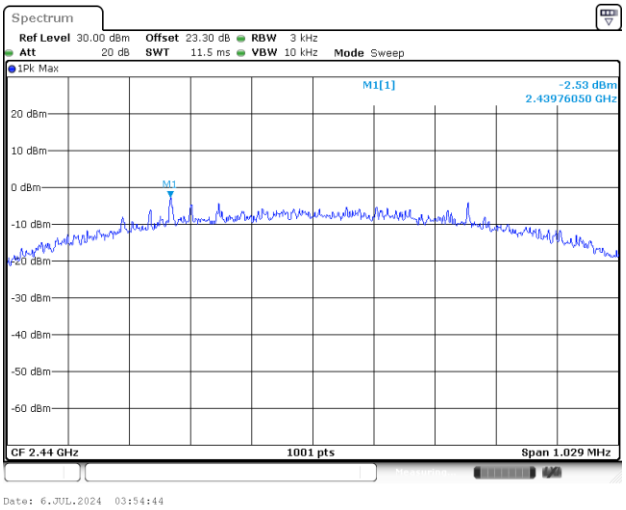
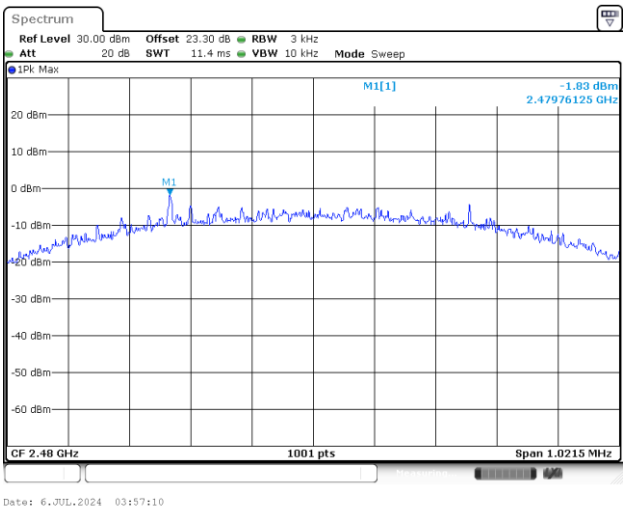
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
	
Power Density (dBm/3kHz) Plot Channel 39	
	

Band Edge and Conducted Spurious Emission

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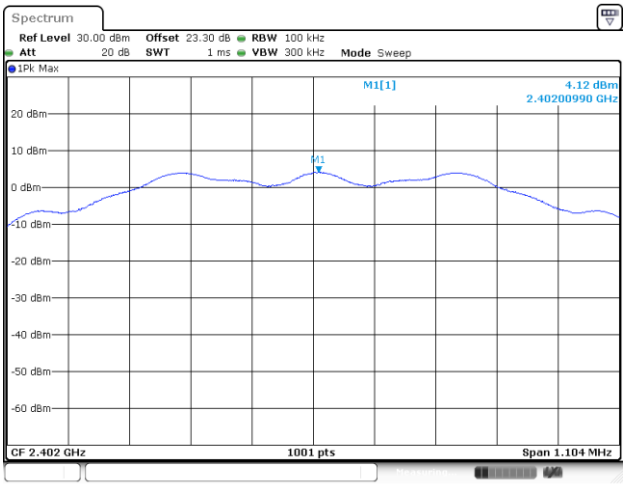
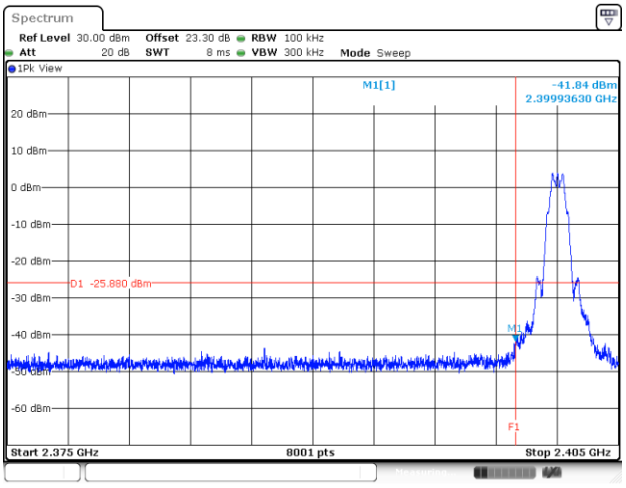
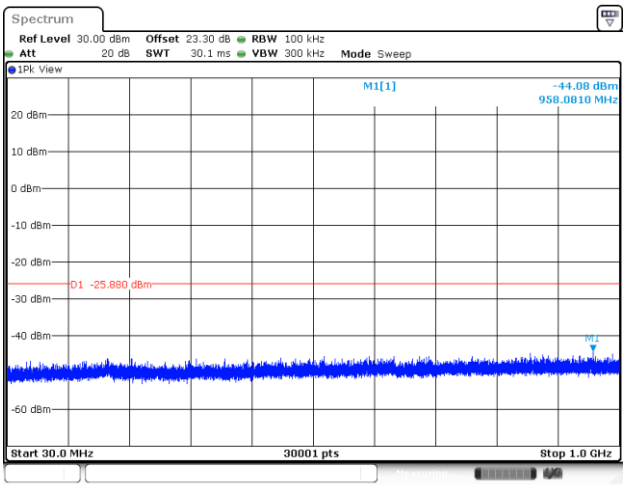
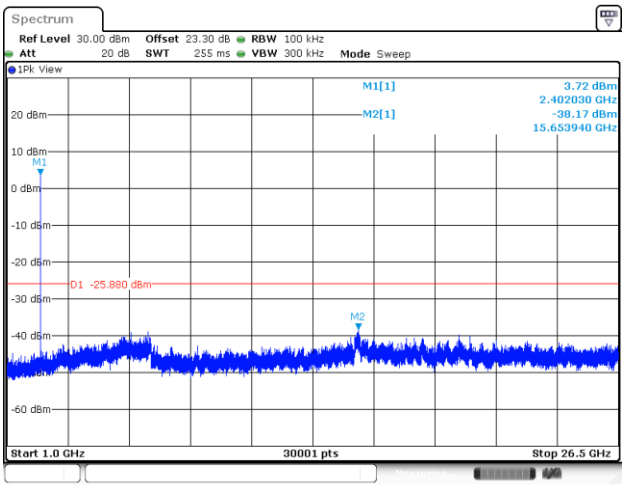
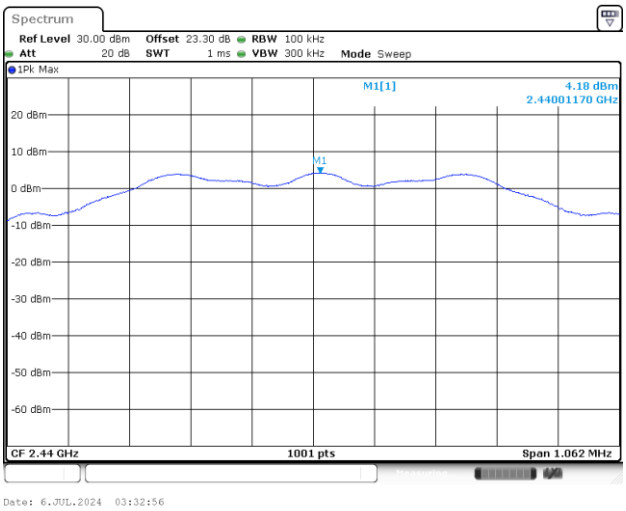
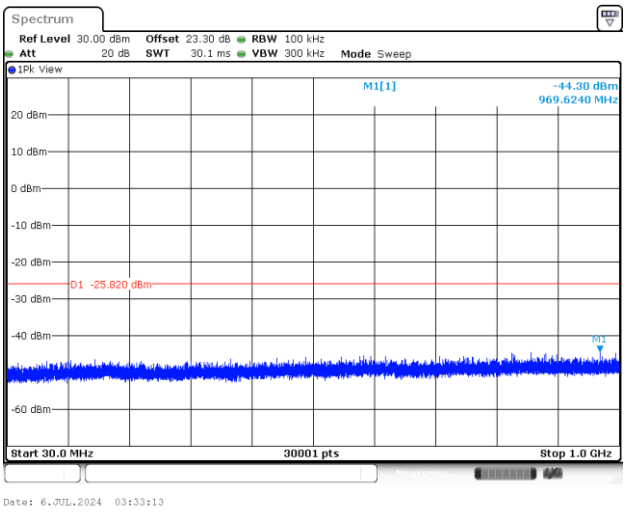
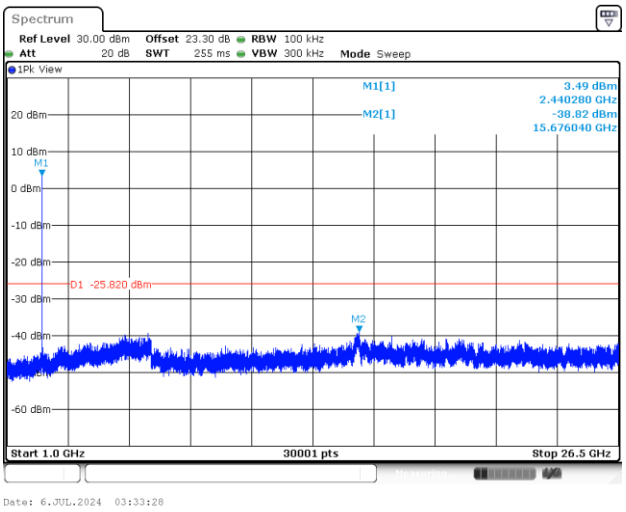
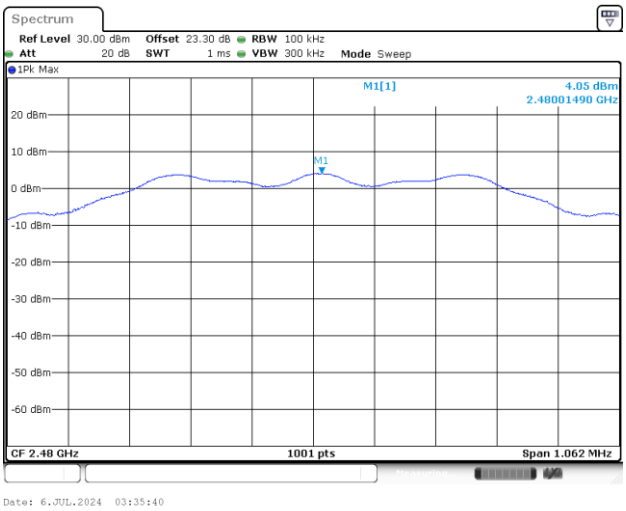
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

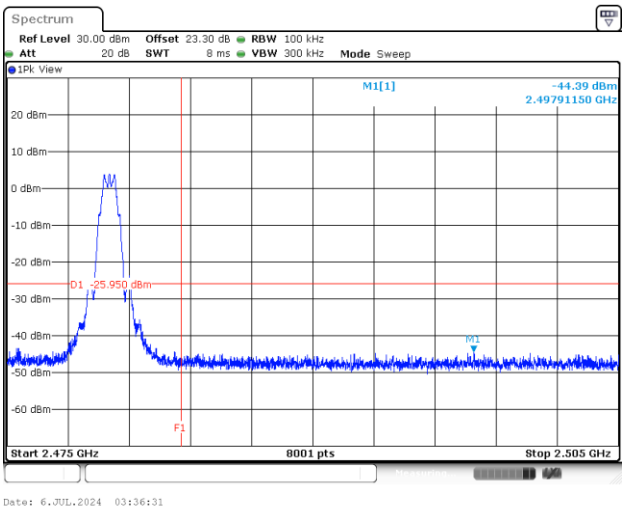
Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39

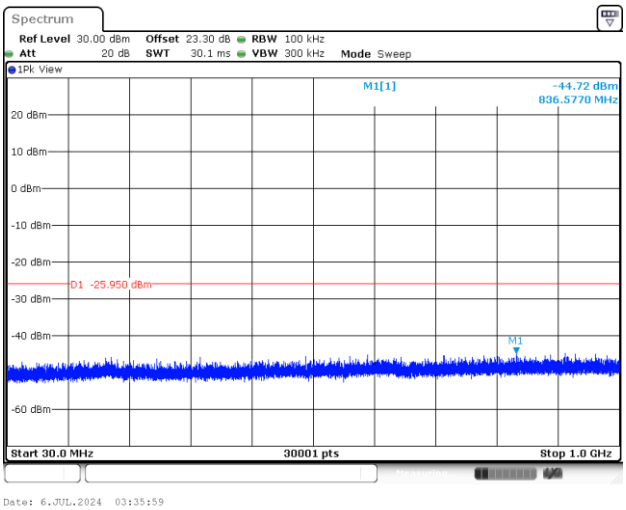
100kHz PSD reference Level Plot



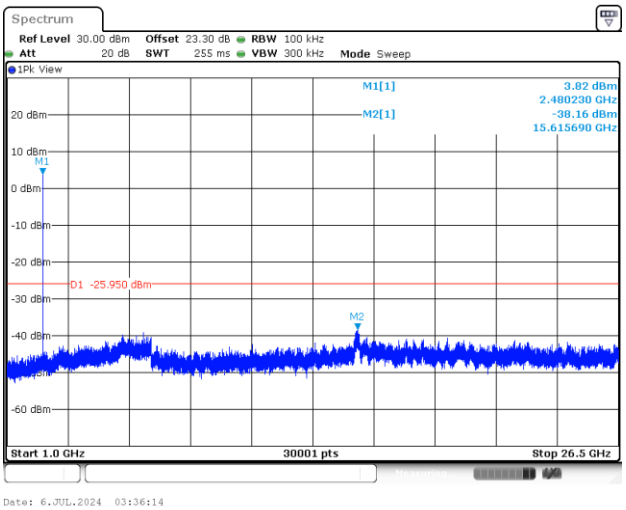
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot



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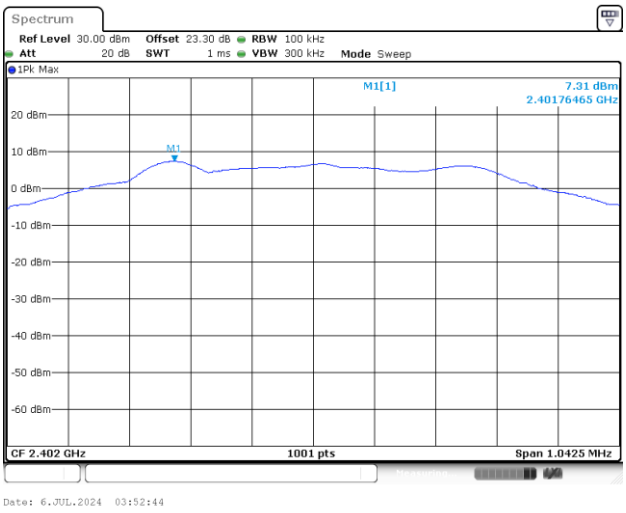
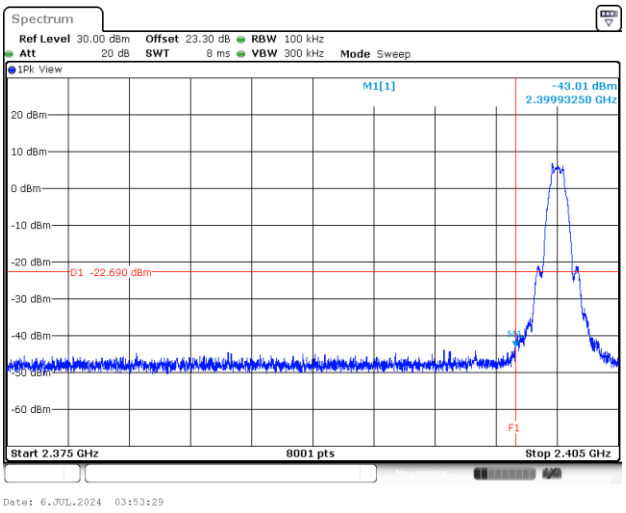
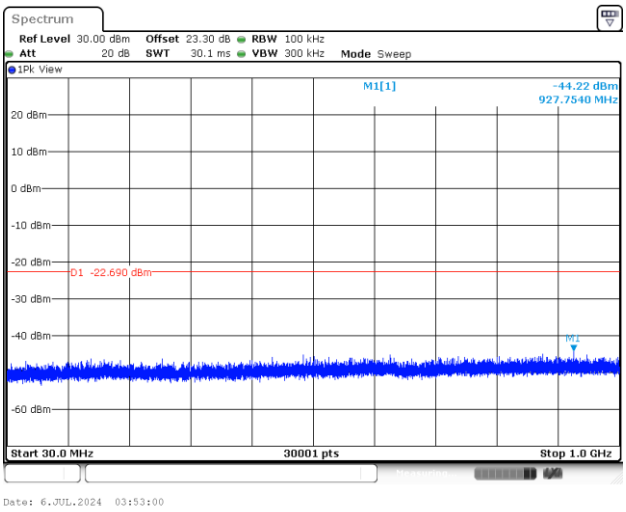
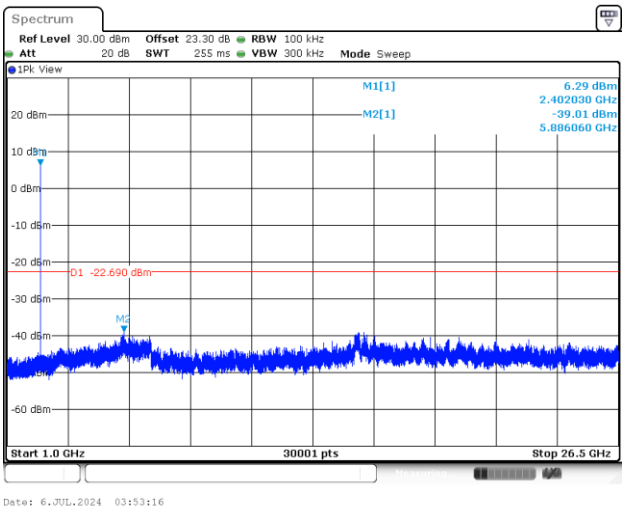
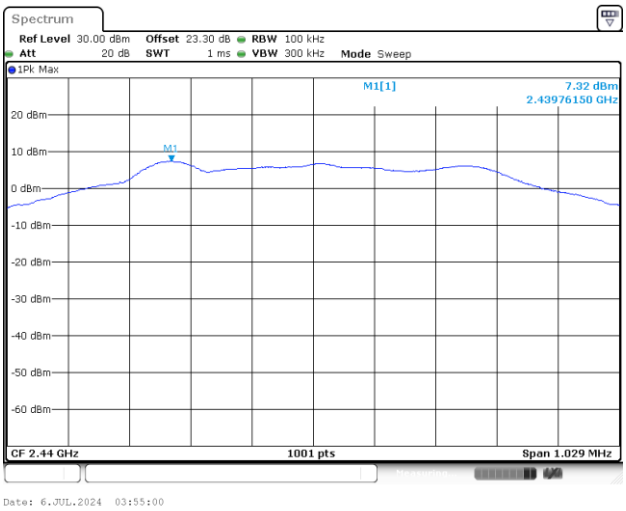
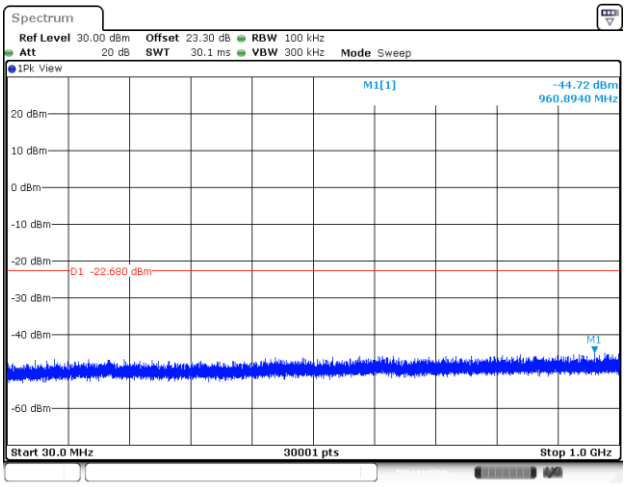
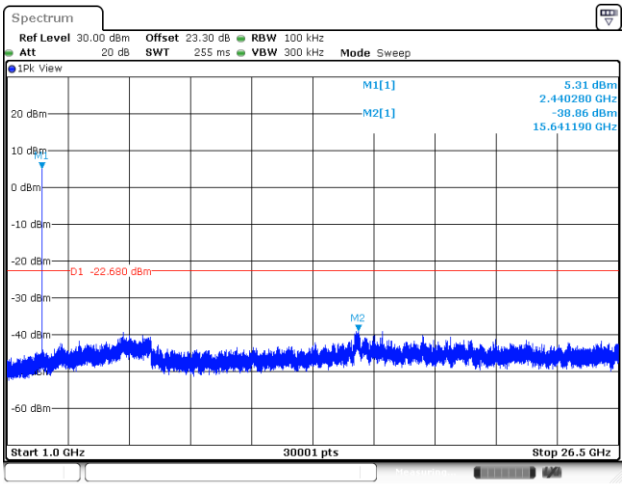
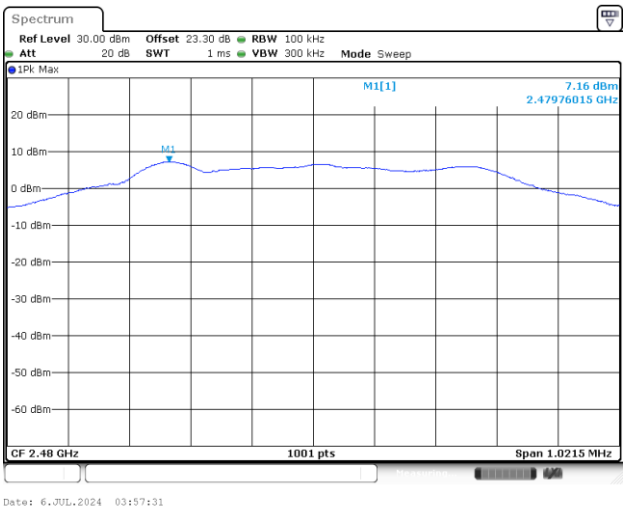
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

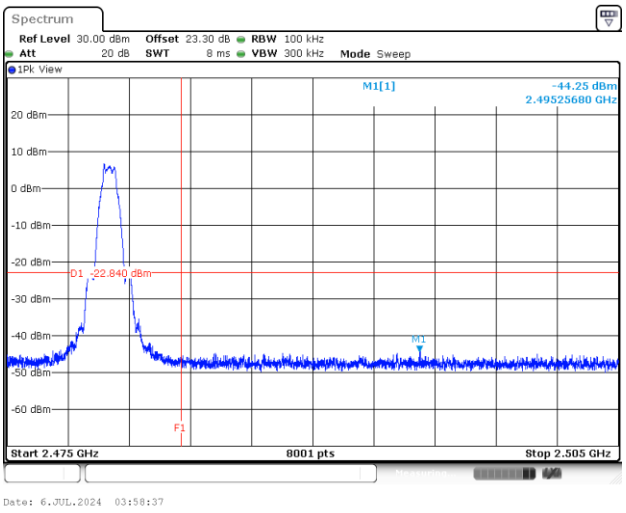
Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39

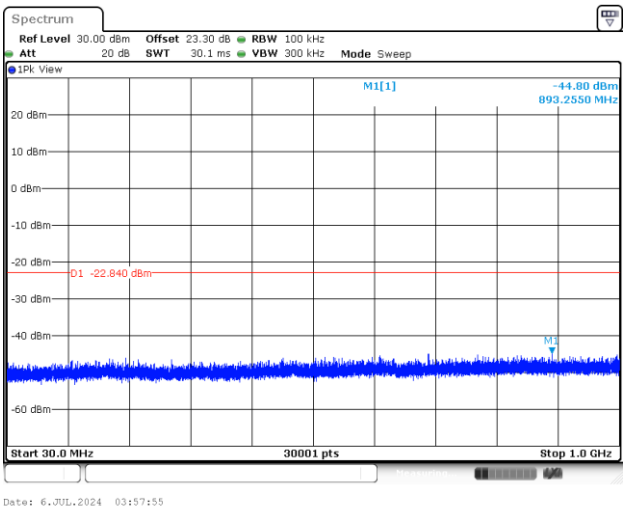
100kHz PSD reference Level Plot



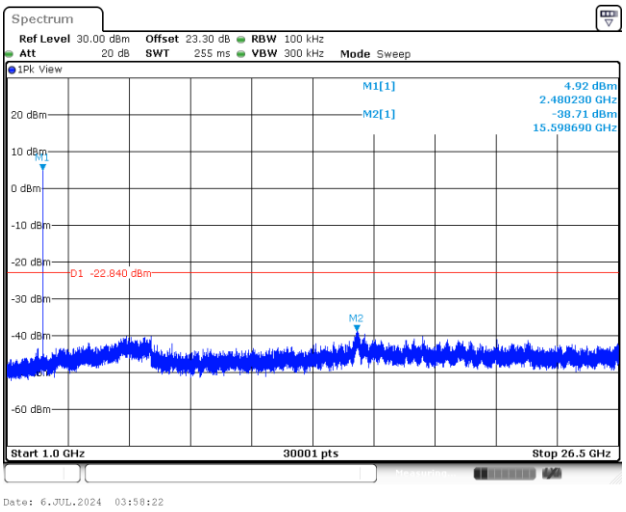
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot



6dB Bandwidth

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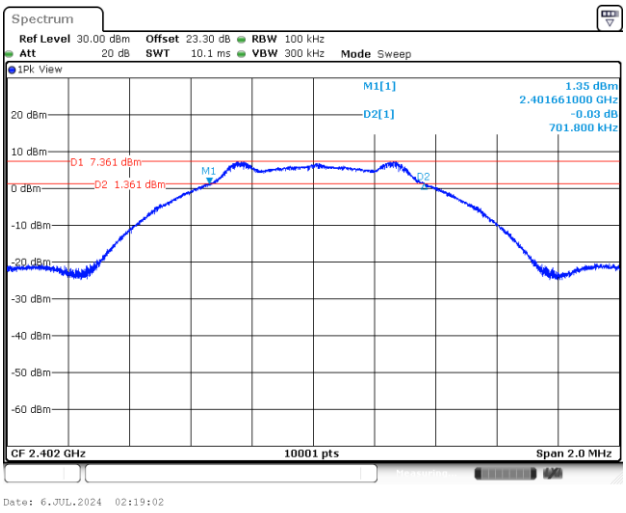
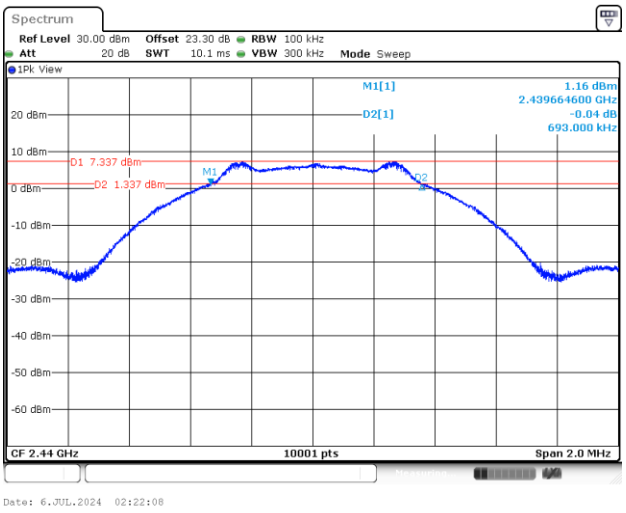
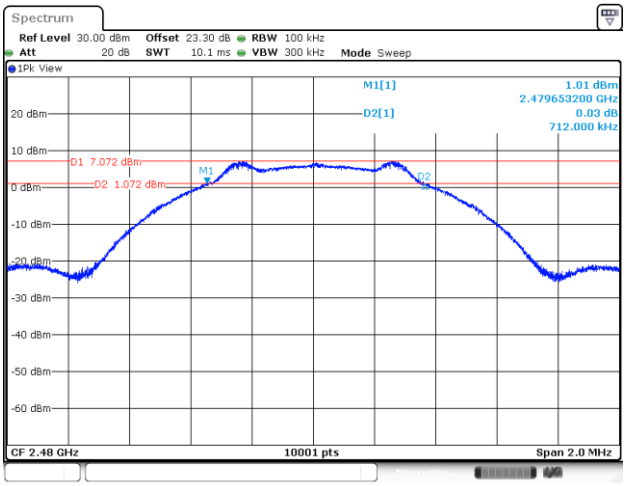
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
6 dB Bandwidth Plot on Channel 39	
	

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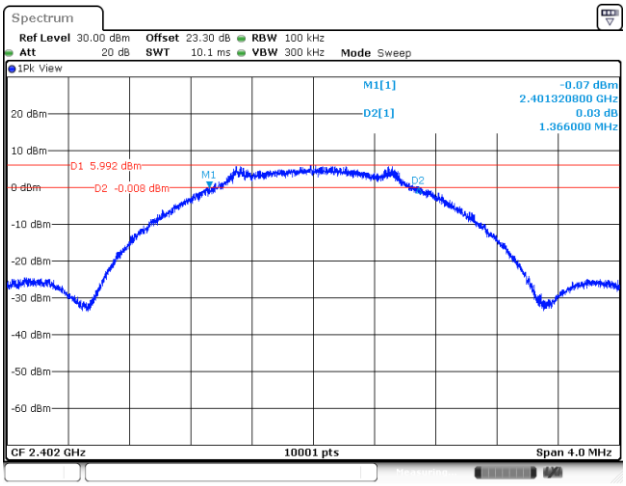
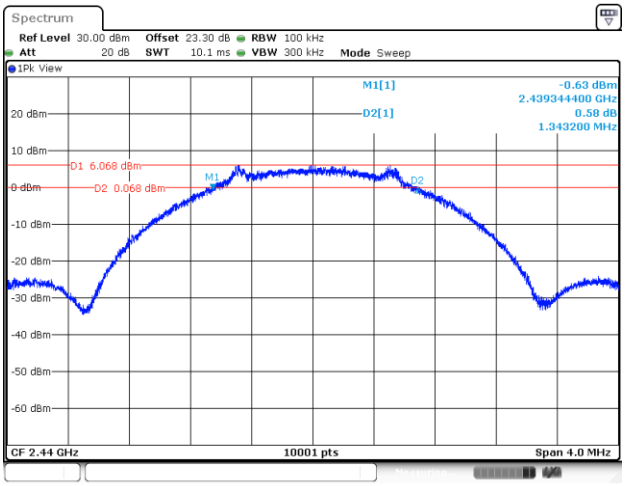
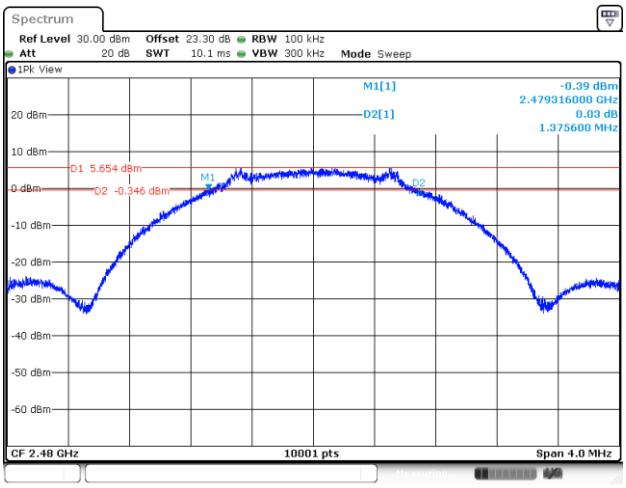
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
6 dB Bandwidth Plot on Channel 39	
	

99% Occupied Bandwidth

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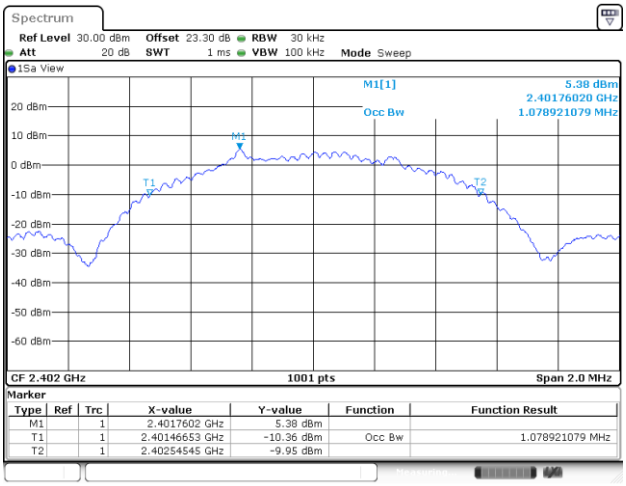
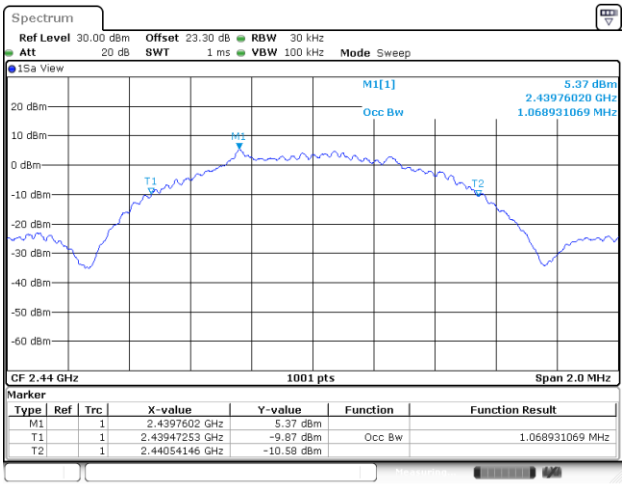
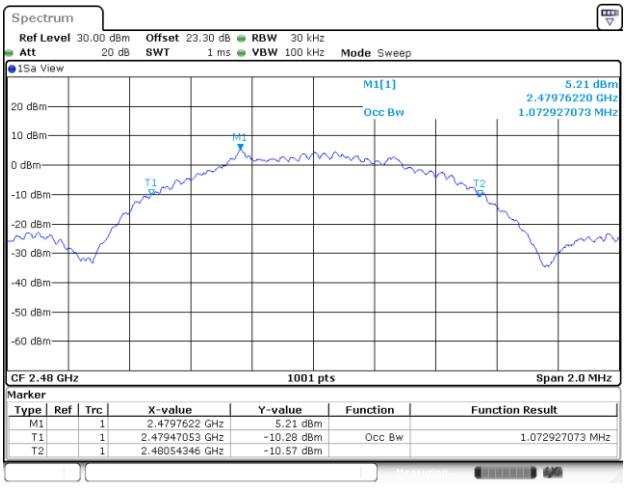
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 19



99% Occupied Bandwidth Plot on Channel 39



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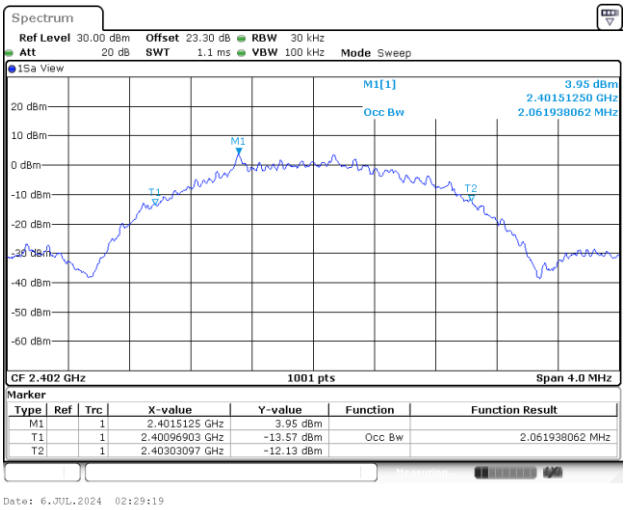
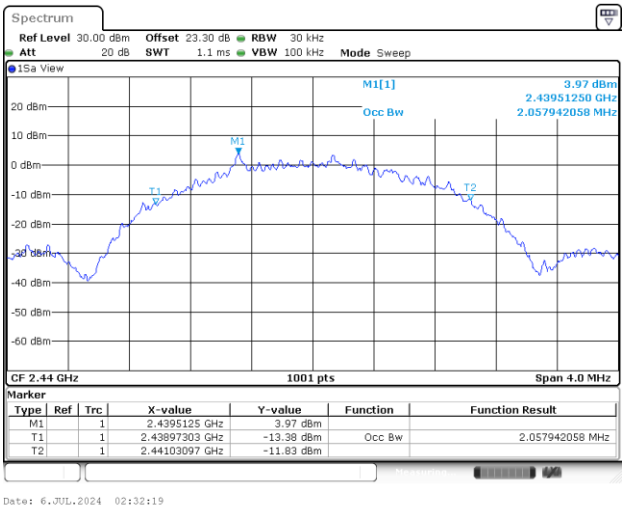
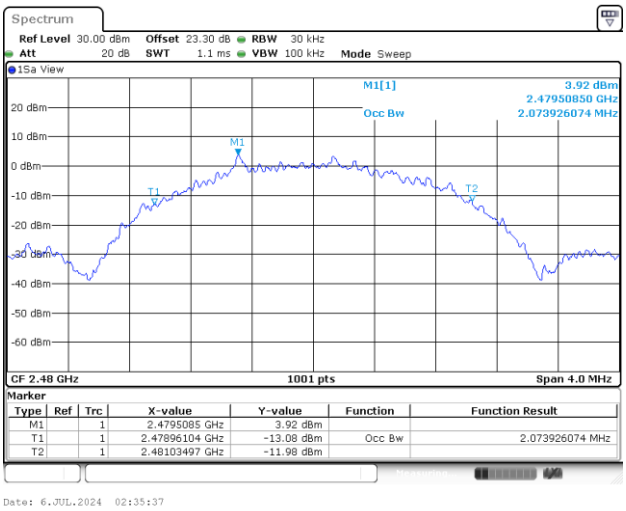
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 19



99% Occupied Bandwidth Plot on Channel 39



Power Spectral Density (dBm/3kHz)

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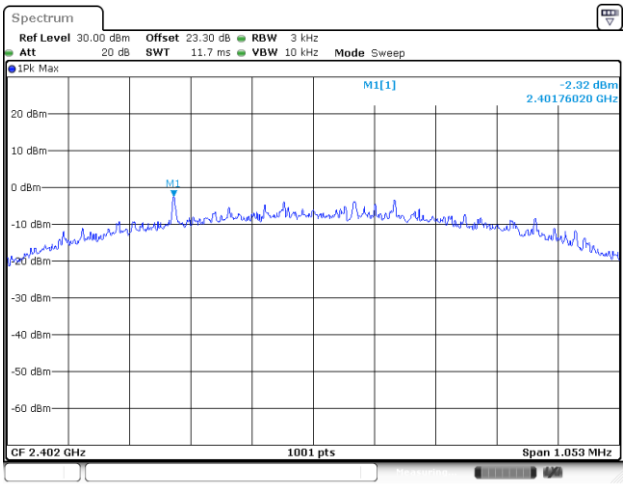
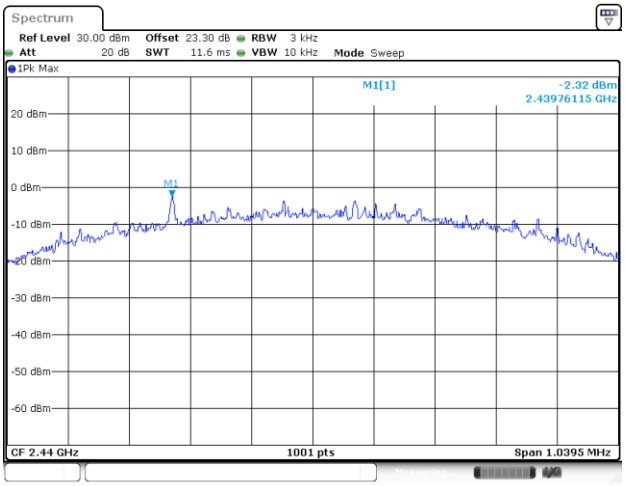
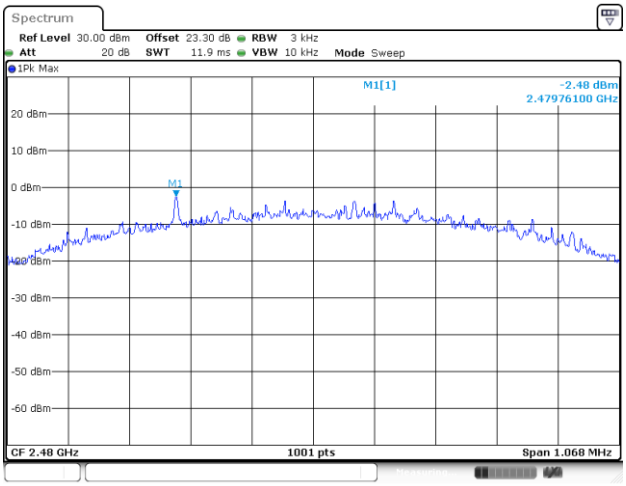
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
	
Power Density (dBm/3kHz) Plot Channel 39	
	

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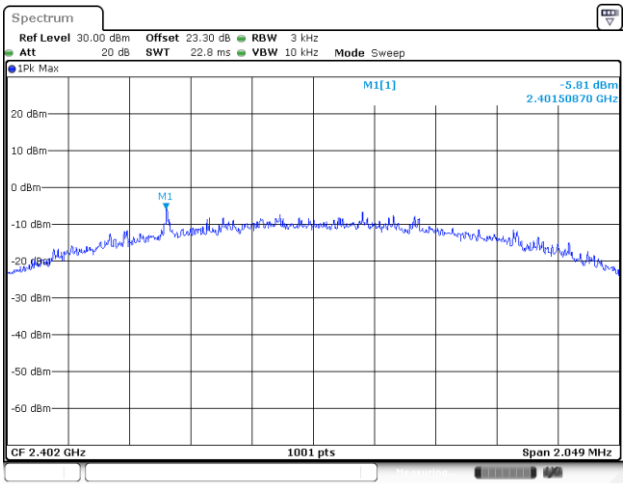
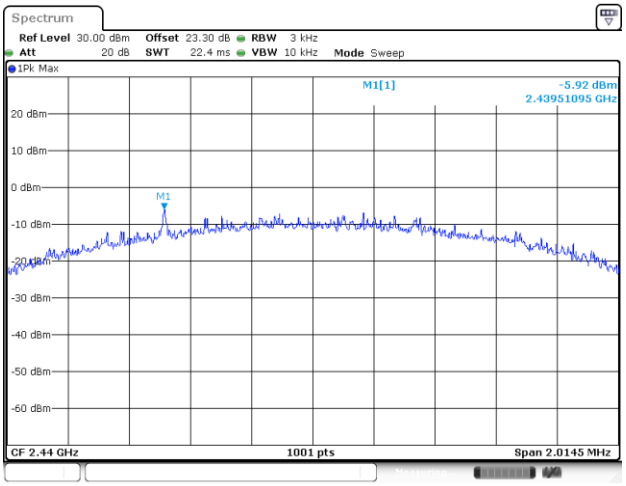
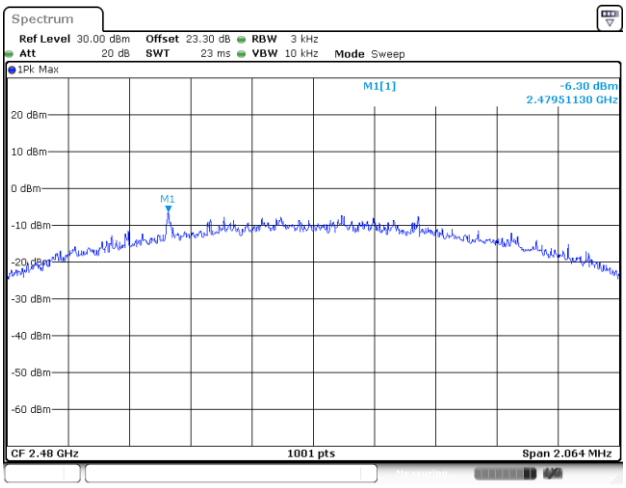
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
	
Power Density (dBm/3kHz) Plot Channel 39	
	

Band Edge and Conducted Spurious Emission

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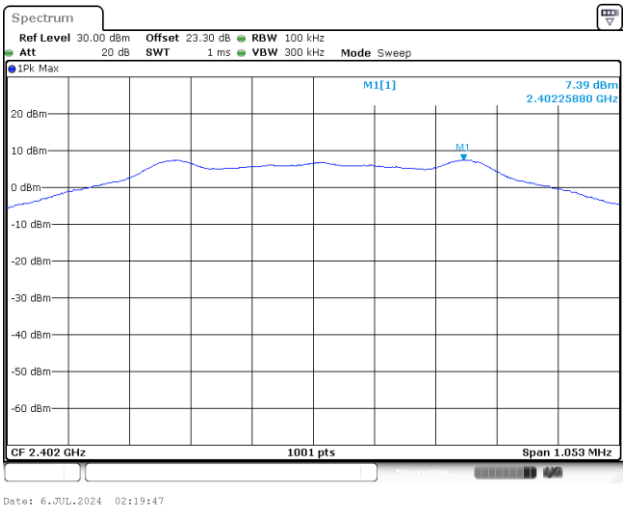
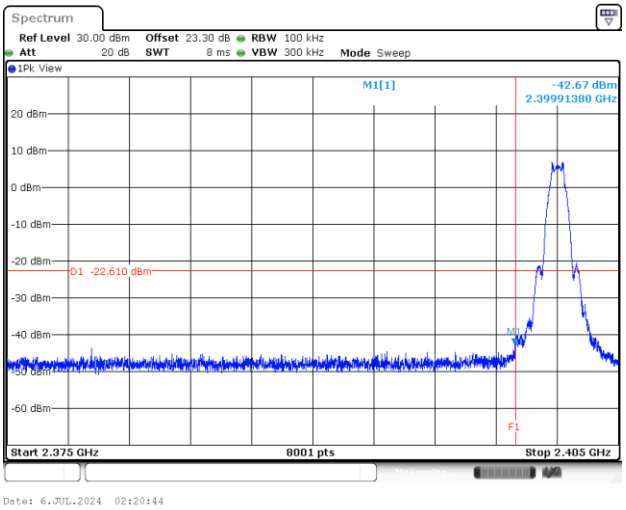
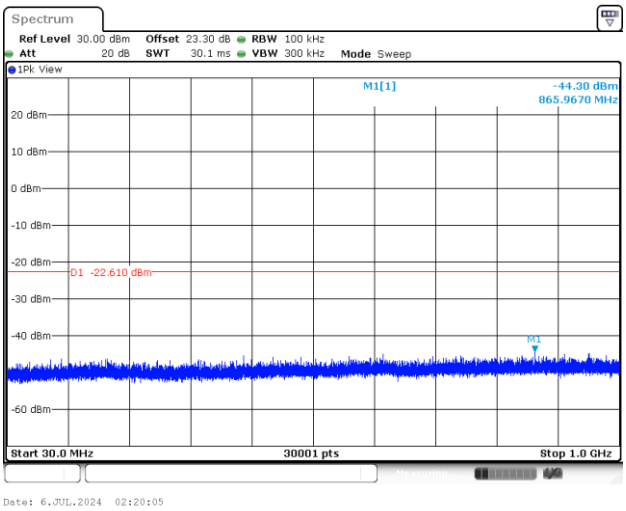
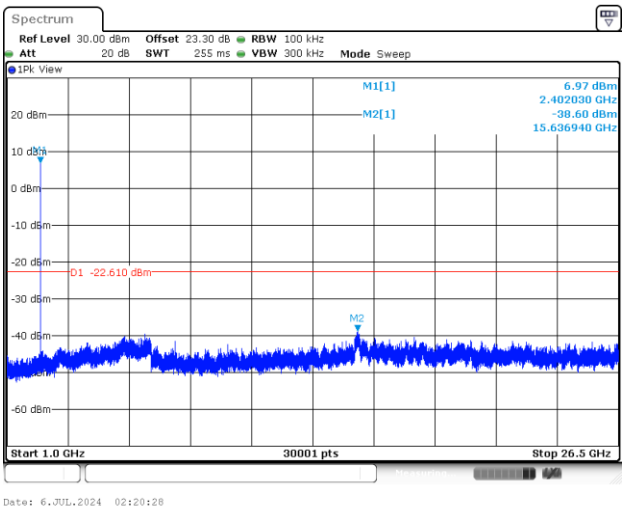
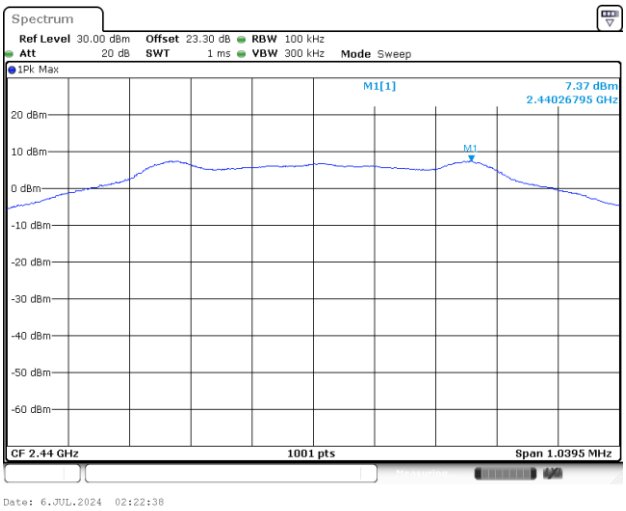
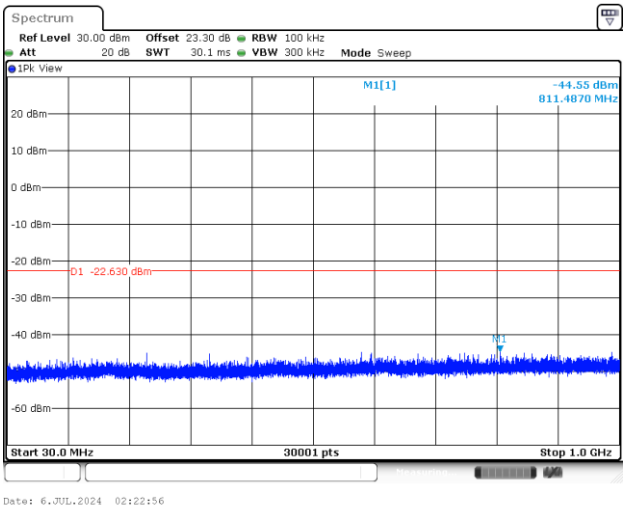
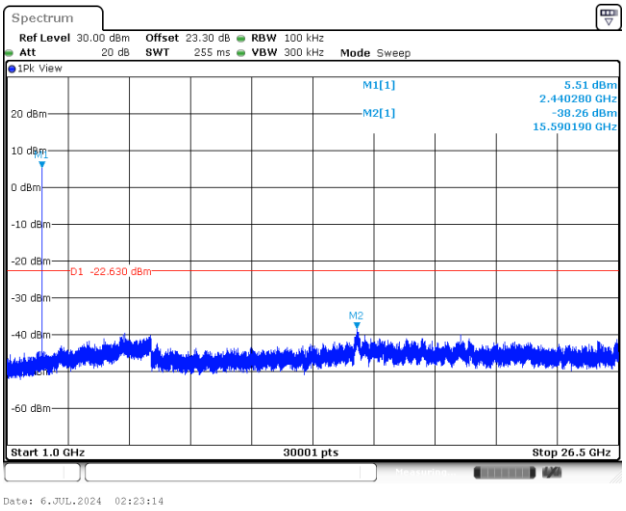
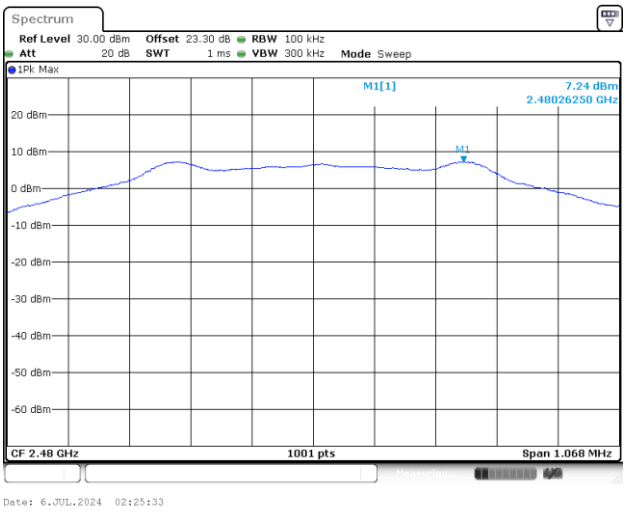
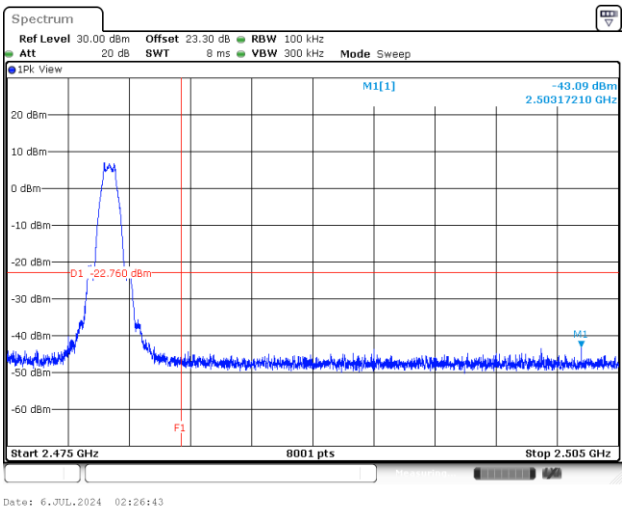
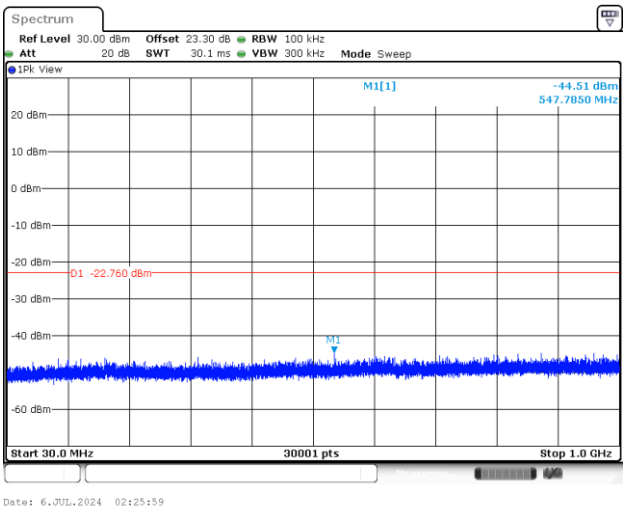
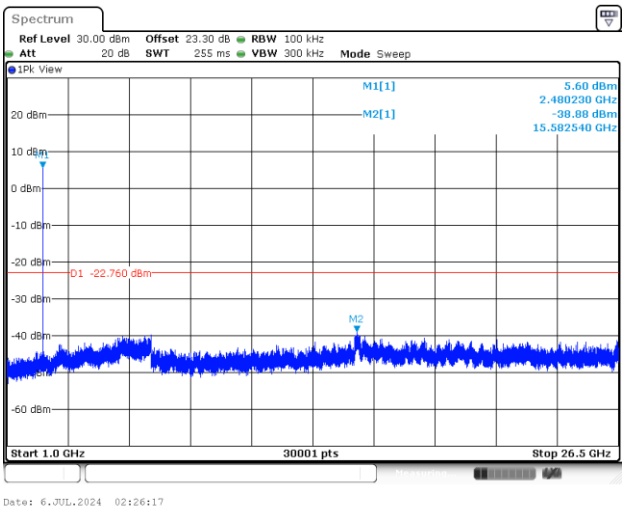
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

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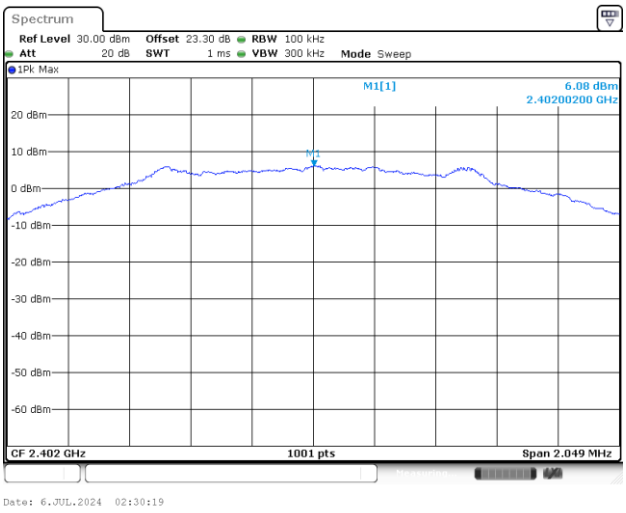
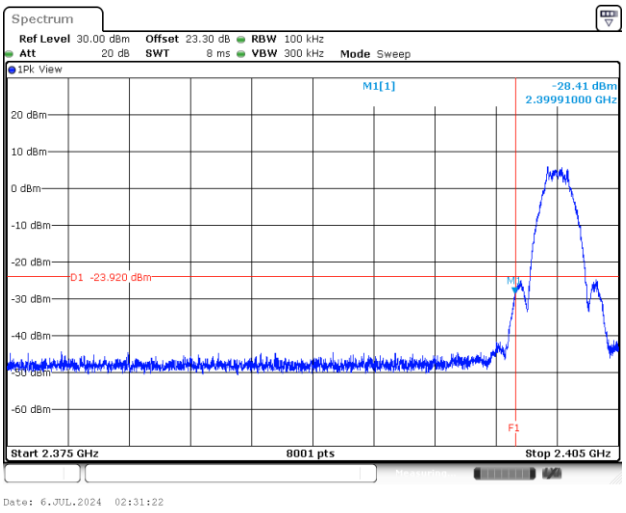
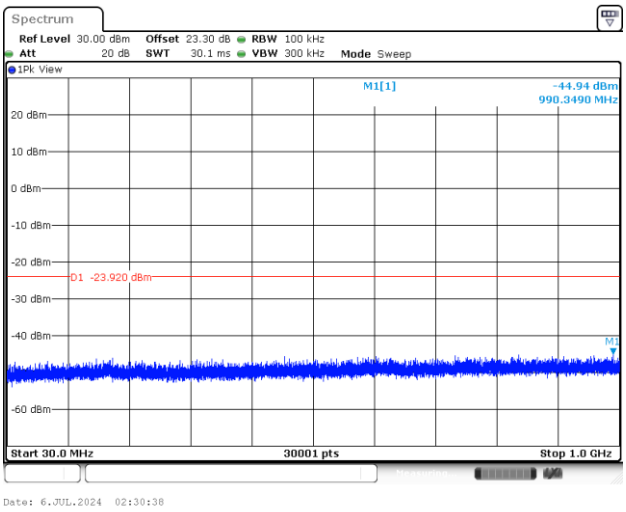
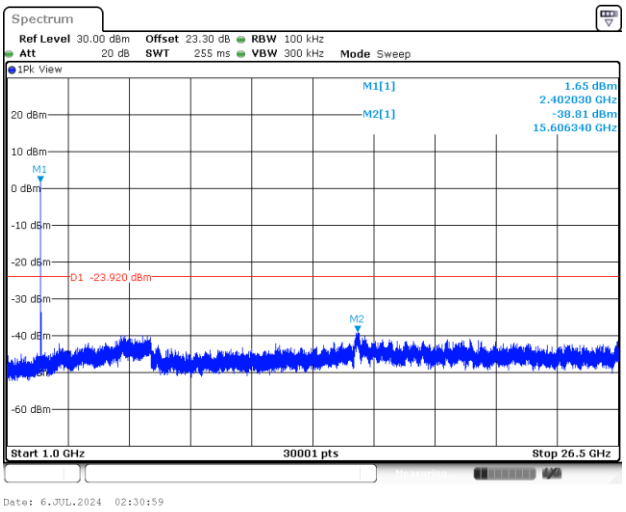
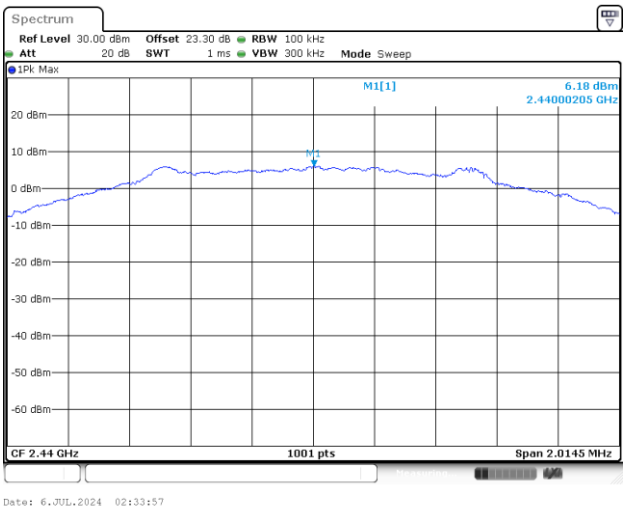
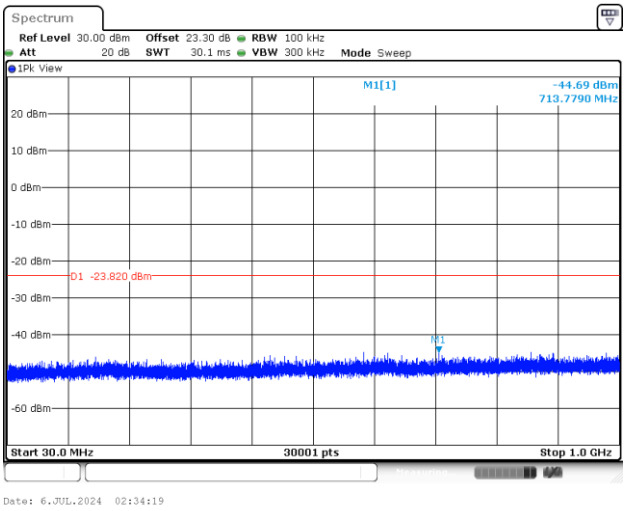
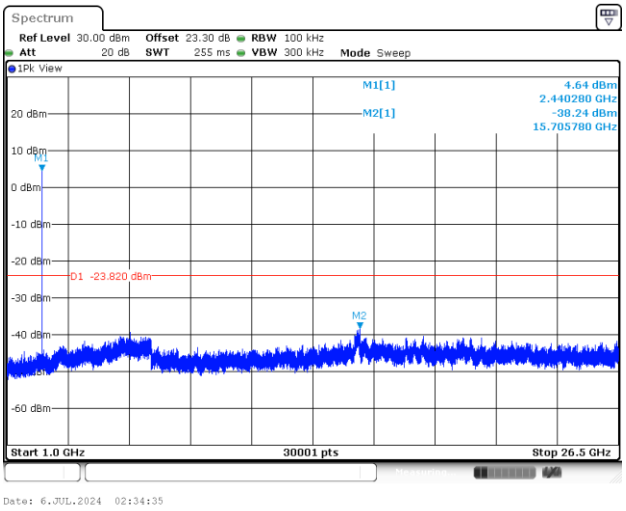
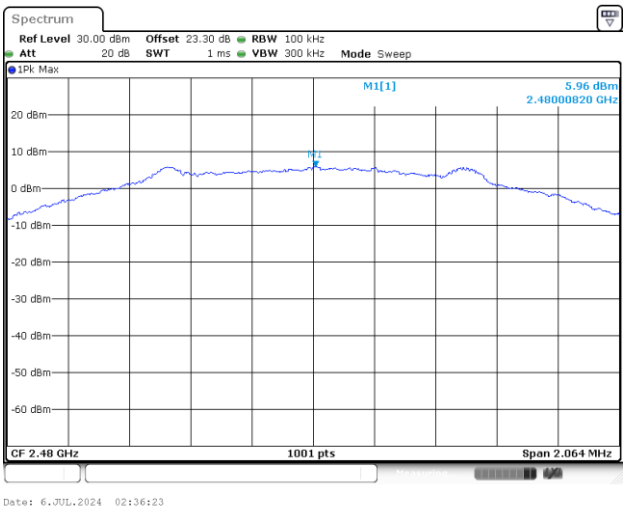
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

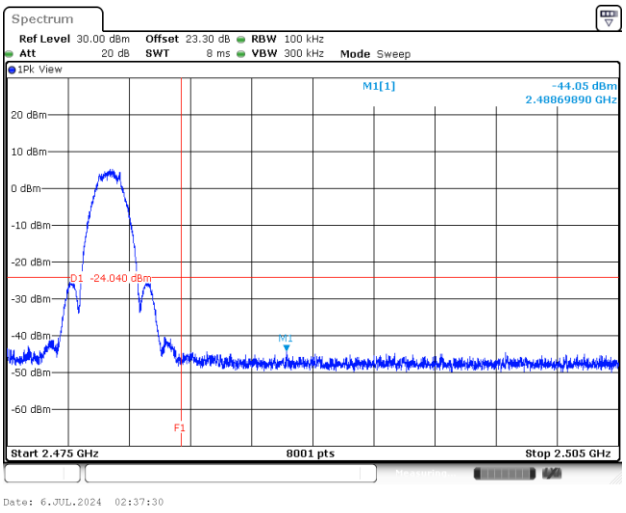
Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39

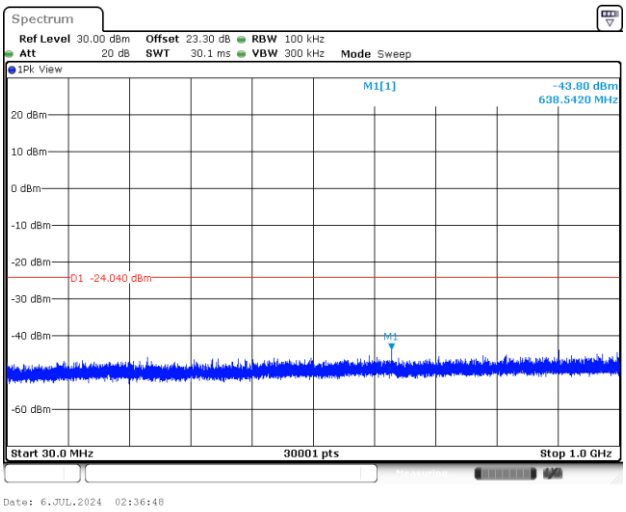
100kHz PSD reference Level Plot



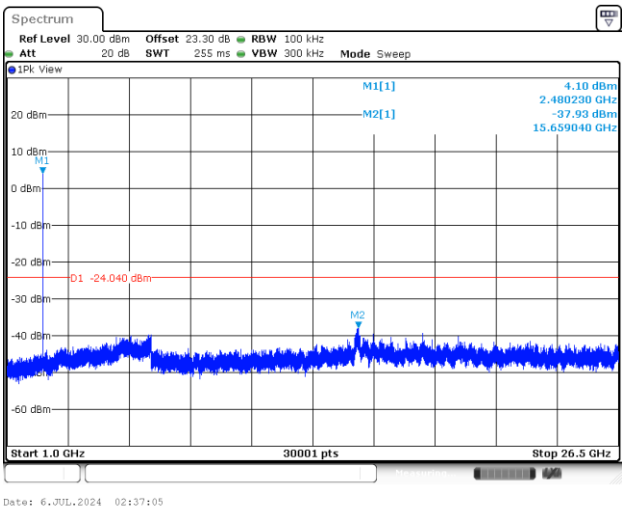
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot

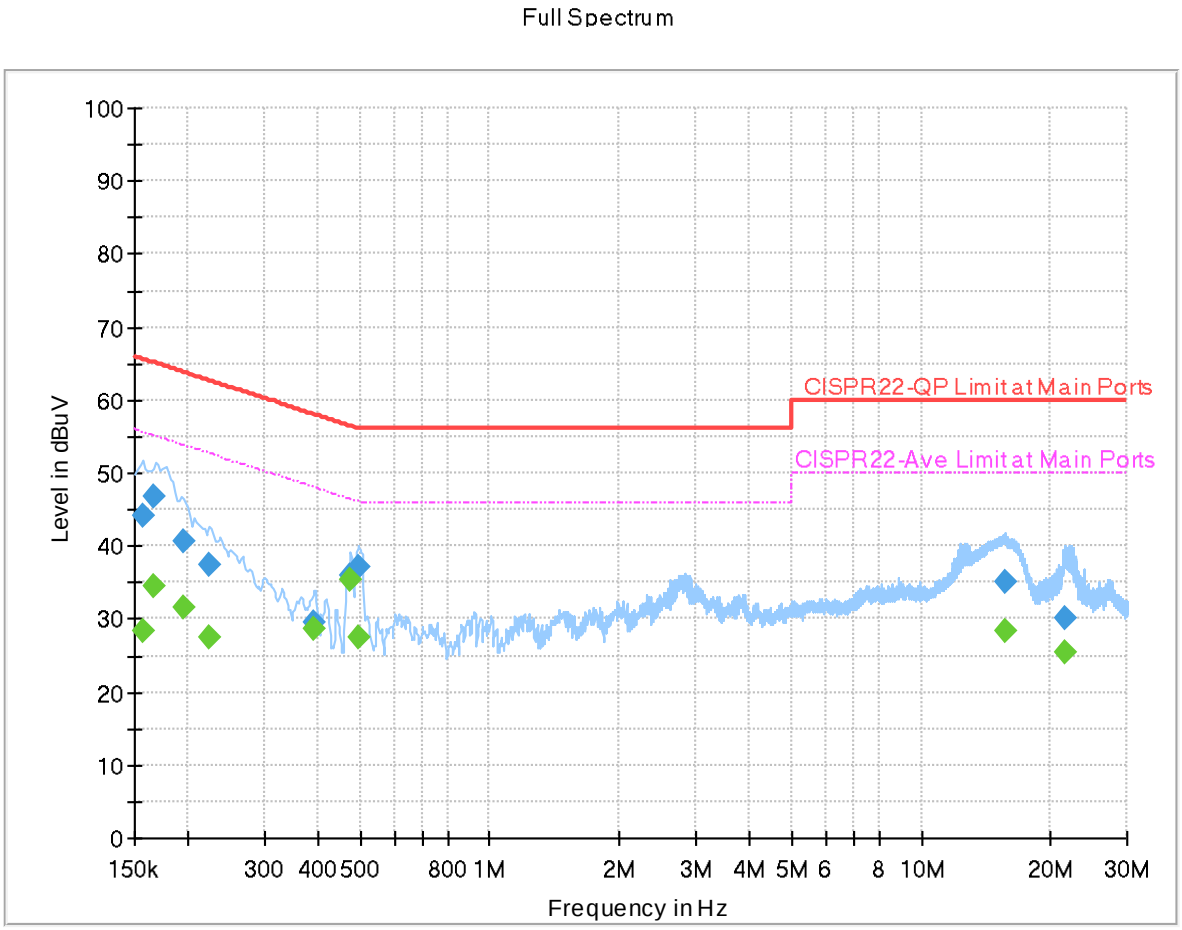


Appendix B. AC Conducted Emission Test Results

Test Engineer :	Louis Chung	**Temperature :**	23.8~26.7℃
		Relative Humidity :	43.6~55.5%

EUT Information

Report NO :	461510
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

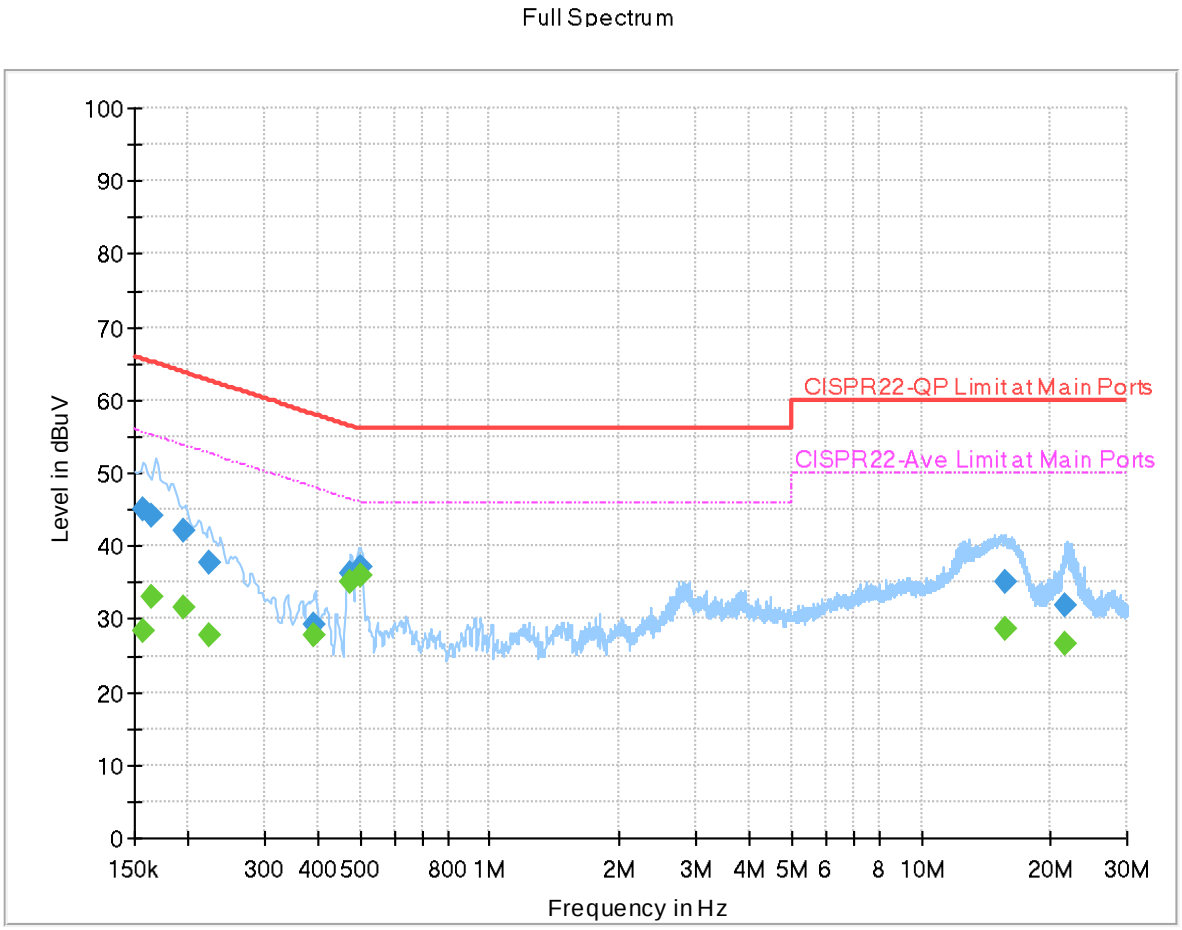


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.157380	44.13	---	65.60	21.47	L1	OFF	19.9
0.157380	---	28.38	55.60	27.22	L1	OFF	19.9
0.166650	46.77	---	65.13	18.36	L1	OFF	19.9
0.166650	---	34.50	55.13	20.63	L1	OFF	19.9
0.195720	40.59	---	63.79	23.20	L1	OFF	19.9
0.195720	---	31.49	53.79	22.30	L1	OFF	19.9
0.224340	37.33	---	62.66	25.33	L1	OFF	19.9
0.224340	---	27.52	52.66	25.14	L1	OFF	19.9
0.390660	29.67	---	58.05	28.38	L1	OFF	19.9
0.390660	---	28.53	48.05	19.52	L1	OFF	19.9
0.473550	36.00	---	56.45	20.45	L1	OFF	19.9
0.473550	---	35.24	46.45	11.21	L1	OFF	19.9
0.495420	37.00	---	56.08	19.08	L1	OFF	19.9
0.495420	---	27.46	46.08	18.62	L1	OFF	19.9
15.630990	35.06	---	60.00	24.94	L1	OFF	20.1
15.630990	---	28.50	50.00	21.50	L1	OFF	20.1
21.509250	30.16	---	60.00	29.84	L1	OFF	20.1
21.509250	---	25.54	50.00	24.46	L1	OFF	20.1

EUT Information

Report NO :	461510
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.157200	---	28.49	55.61	27.12	N	OFF	19.9
0.157200	44.88	---	65.61	20.73	N	OFF	19.9
0.163500	---	33.14	55.28	22.14	N	OFF	19.9
0.163500	44.18	---	65.28	21.10	N	OFF	19.9
0.195450	---	31.63	53.80	22.17	N	OFF	19.9
0.195450	42.21	---	63.80	21.59	N	OFF	19.9
0.222720	---	27.64	52.72	25.08	N	OFF	19.9
0.222720	37.62	---	62.72	25.10	N	OFF	19.9
0.390120	---	27.83	48.06	20.23	N	OFF	19.9
0.390120	29.16	---	58.06	28.90	N	OFF	19.9
0.474450	---	35.19	46.44	11.25	N	OFF	19.9
0.474450	36.25	---	56.44	20.19	N	OFF	19.9
0.502980	---	36.02	46.00	9.98	N	OFF	19.9
0.502980	37.27	---	56.00	18.73	N	OFF	19.9
15.691650	---	28.61	50.00	21.39	N	OFF	20.2
15.691650	34.98	---	60.00	25.02	N	OFF	20.2
21.657750	---	26.73	50.00	23.27	N	OFF	20.2
21.657750	31.75	---	60.00	28.25	N	OFF	20.2

Appendix C. Radiated Spurious Emission Test Data

Test Engineer :	Yuan Lee, Fu Chen and Troye Hsieh	**Temperature :**	20.0~20.9°C
		Relative Humidity :	53.2~67.2%

Note symbol

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

C1. Radiated Spurious Emission Test Modes

Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	1	Bluetooth-LE_GSFK	00	2402	1Mbps	-	-
Mode 2	2400-2483.5	1	Bluetooth-LE_GSFK	19	2440	1Mbps	-	-
Mode 3	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	1Mbps	-	-
Mode 4	2400-2483.5	1	Bluetooth-LE_GSFK	00	2402	2Mbps	-	-
Mode 5	2400-2483.5	1	Bluetooth-LE_GSFK	19	2440	2Mbps	-	-
Mode 6	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	2Mbps	-	-
Mode 7	2400-2483.5	1	Bluetooth-LE_GSFK	00	2402	125kbps	-	-
Mode 8	2400-2483.5	1	Bluetooth-LE_GSFK	19	2440	125kbps	-	-
Mode 9	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	125kbps	-	-
Mode 10	2400-2483.5	1	Bluetooth-LE_GSFK	00	2402	500kbps	-	-
Mode 11	2400-2483.5	1	Bluetooth-LE_GSFK	19	2440	500kbps	-	-

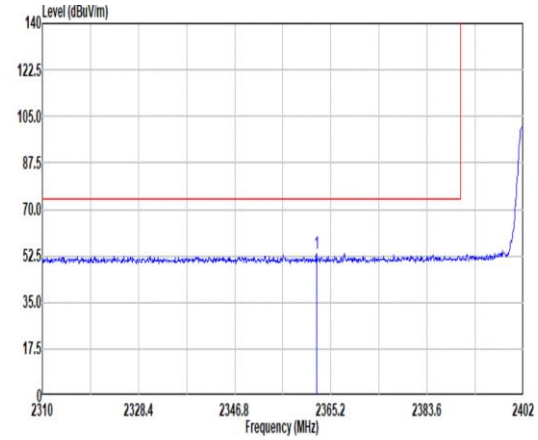
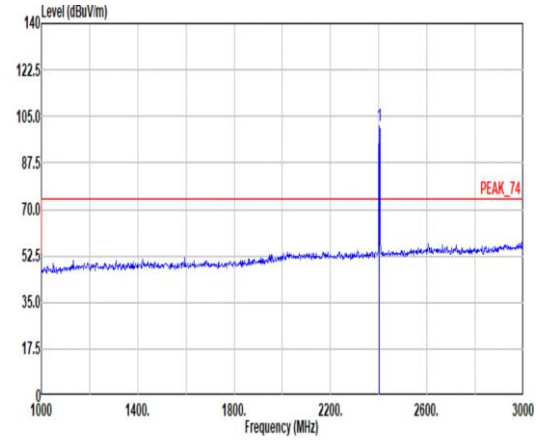
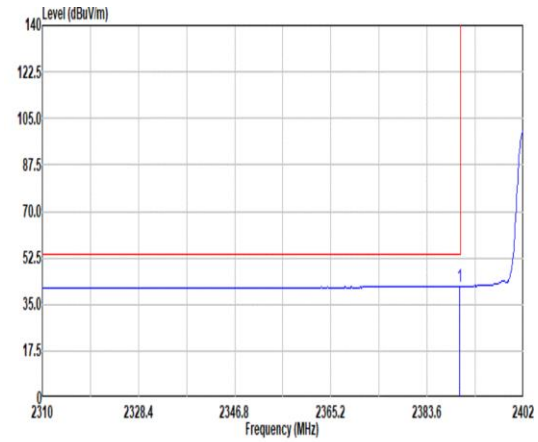
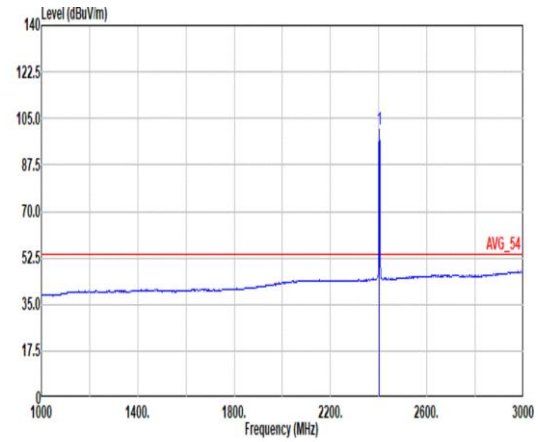
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 12	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	500kbps	-	-
Mode 13	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	1Mbps	-	SHF
Mode 14	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	1Mbps	-	LF

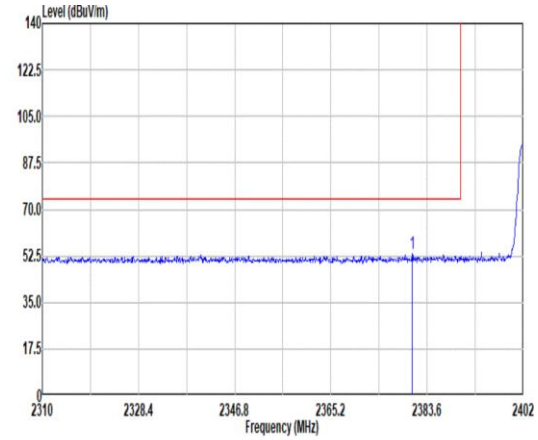
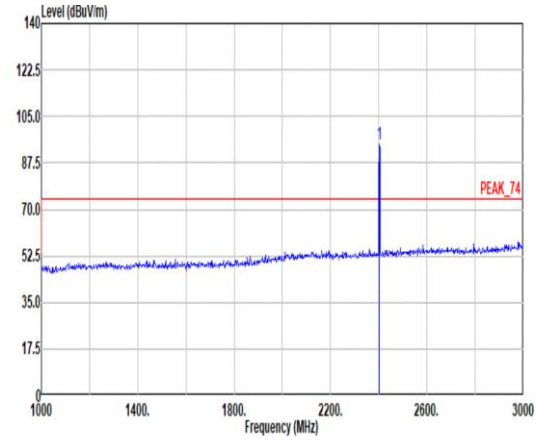
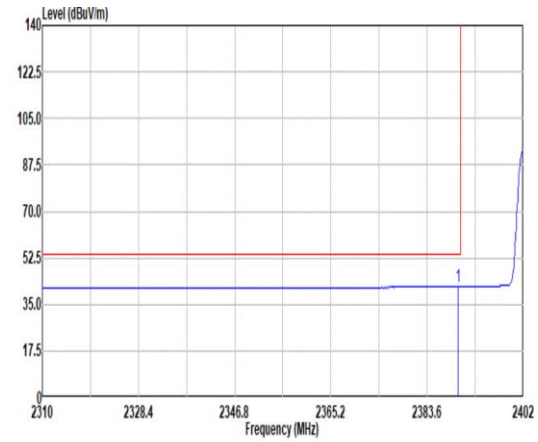
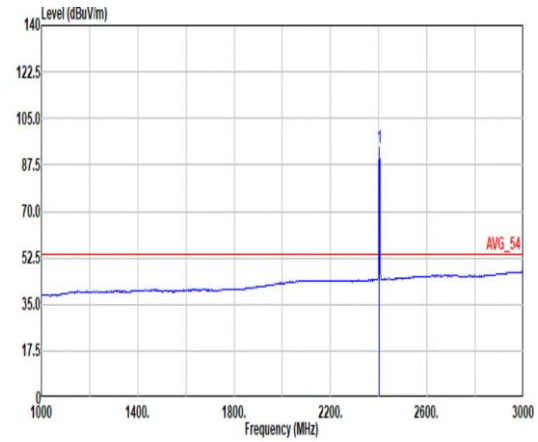
C2. Summary of each worse mode

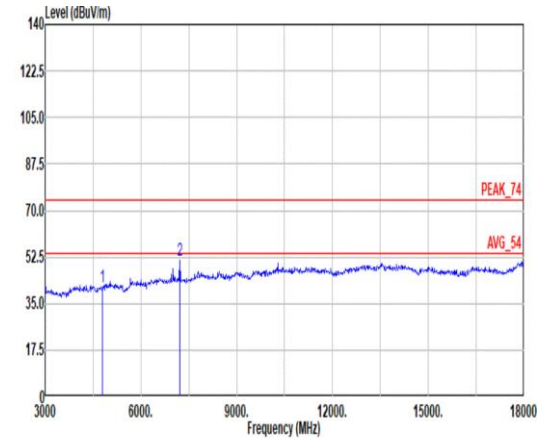
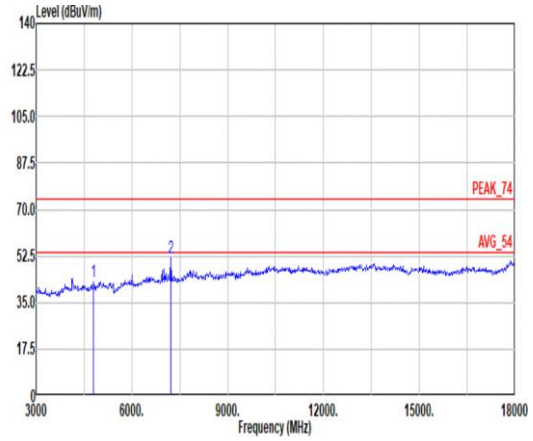
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
1	Bluetooth-LE_GSFK	00	2389.86	41.91	54.00	-12.09	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	00	4804.00	42.78	74.00	-31.22	V	Peak	Pass	-	Harmonic
2	Bluetooth-LE_GSFK	19	2499.82	42.15	54.00	-11.85	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	19	7320.00	48.47	54.00	-5.53	H	Avg.	Pass	-	Harmonic
3	Bluetooth-LE_GSFK	39	2483.52	43.59	54.00	-10.41	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	39	7440.00	50.36	54.00	-3.64	V	Avg.	Pass	-	Harmonic
4	Bluetooth-LE_GSFK	00	2389.30	41.93	54.00	-12.07	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	00	4804.00	34.59	54.00	-19.41	V	Avg.	Pass	-	Harmonic
5	Bluetooth-LE_GSFK	19	2485.24	42.22	54.00	-11.78	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	19	7320.00	47.09	54.00	-6.91	H	Avg.	Pass	-	Harmonic
6	Bluetooth-LE_GSFK	39	2483.52	46.73	54.00	-7.27	H	Avg.	Pass	-	Band Edge

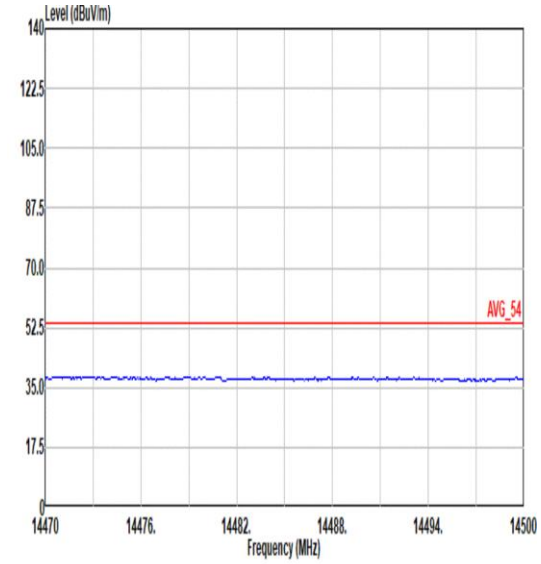
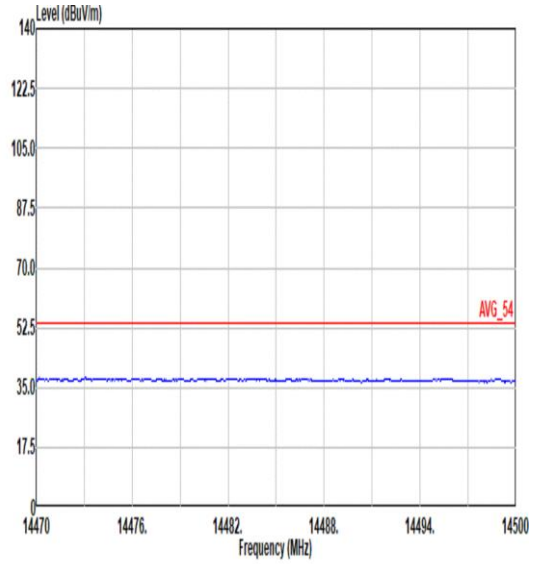
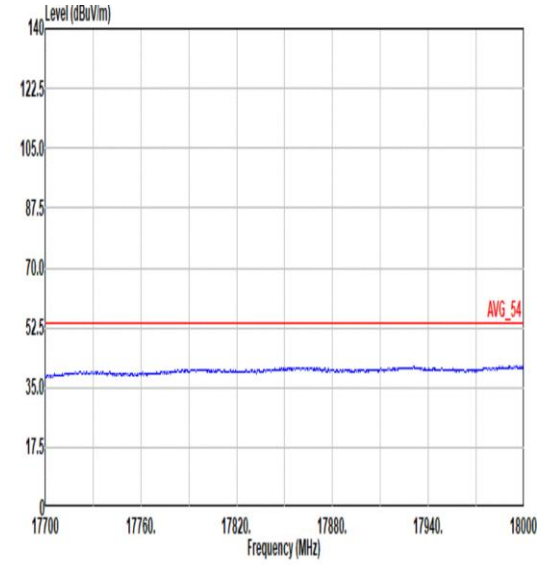
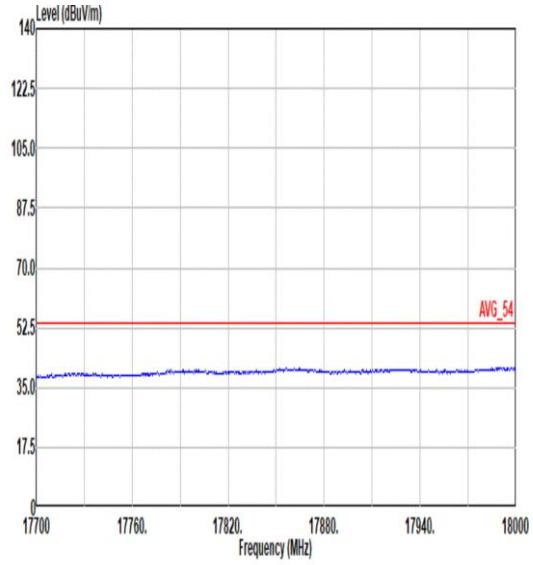
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
6	Bluetooth-LE_GSFK	39	7440.00	49.15	54.00	-4.85	V	Avg.	Pass	-	Harmonic
7	Bluetooth-LE_GSFK	00	2389.76	41.88	54.00	-12.12	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	00	4804.00	36.16	54.00	-17.84	V	Avg.	Pass	-	Harmonic
8	Bluetooth-LE_GSFK	19	2497.24	42.06	54.00	-11.94	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	19	7320.00	47.96	54.00	-6.04	H	Avg.	Pass	-	Harmonic
9	Bluetooth-LE_GSFK	39	2483.52	43.53	54.00	-10.47	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	39	7440.00	50.09	54.00	-3.91	V	Avg.	Pass	-	Harmonic
10	Bluetooth-LE_GSFK	00	2388.94	41.86	54.00	-12.14	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	00	4804.00	36.33	54.00	-17.67	V	Avg.	Pass	-	Harmonic
11	Bluetooth-LE_GSFK	19	2485.42	42.17	54.00	-11.83	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	19	7320.00	47.98	54.00	-6.02	H	Avg.	Pass	-	Harmonic

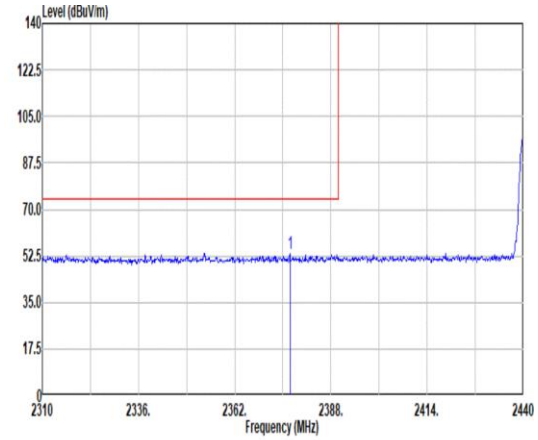
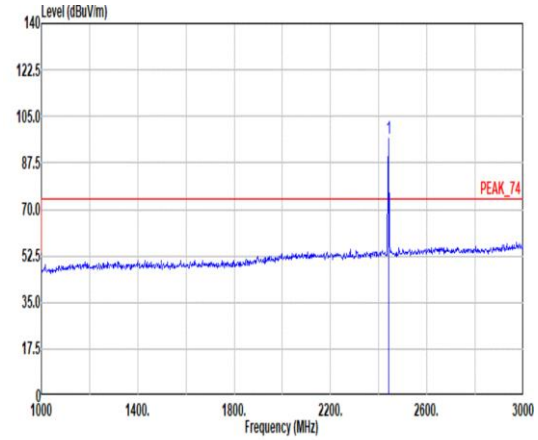
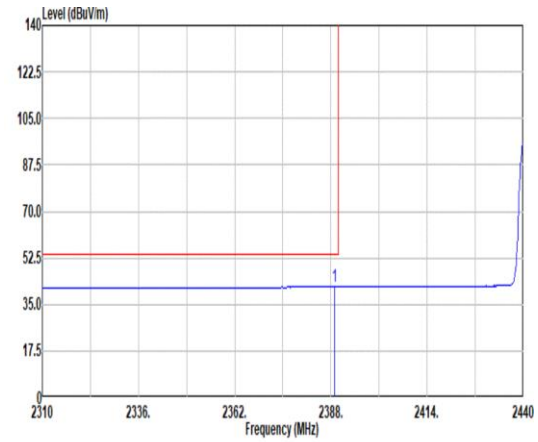
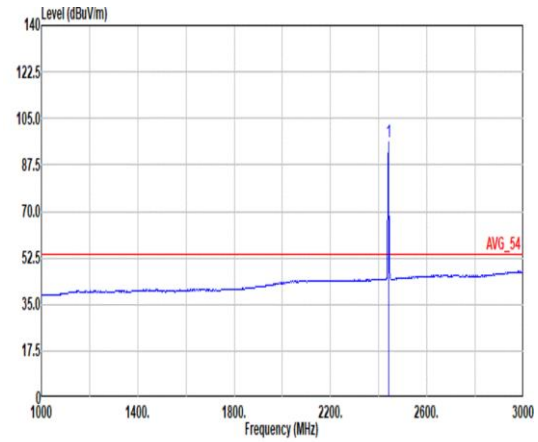
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
12	Bluetooth-LE_GSFK	39	2483.52	43.72	54.00	-10.28	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GSFK	39	7440.00	49.81	54.00	-4.19	V	Avg.	Pass	-	Harmonic
13	Bluetooth-LE_GSFK_SHF	39	25623.00	40.83	74.00	-33.17	V	Peak	Pass	-	SHF
14	Bluetooth-LE_GSFK_LF	39	30.97	32.92	40.00	-7.08	V	-	Pass	-	LF

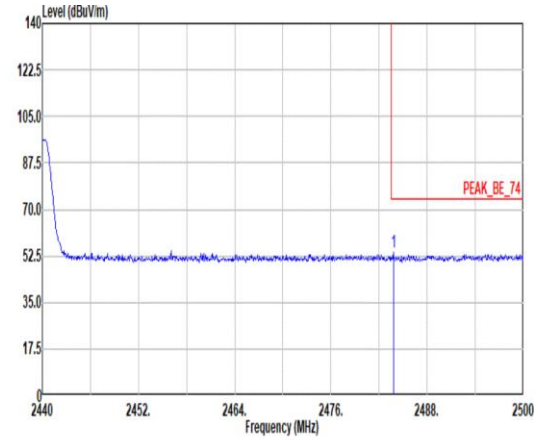
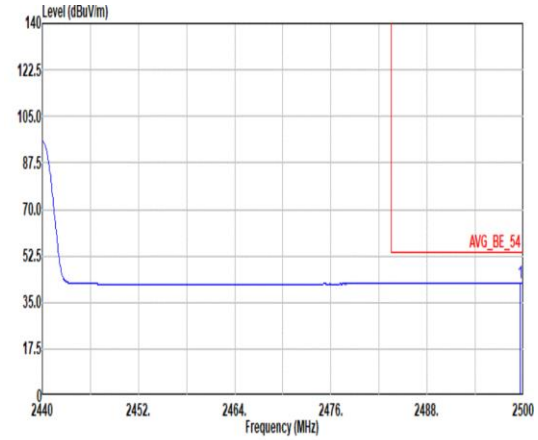
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GSFK _CH00_2402MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2362.44 53.24 74.00 -20.76 42.61 27.30 6.76 33.36 9.93 100 317 PEAK	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 101.37 ------ ------ 90.48 27.50 6.79 33.33 9.93 100 317 PEAK
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2389.86 41.91 54.00 -12.09 31.04 27.50 6.78 33.34 9.93 100 317 AVERAGE	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 100.80 ------ ------ 89.91 27.50 6.79 33.33 9.93 100 317 AVERAGE

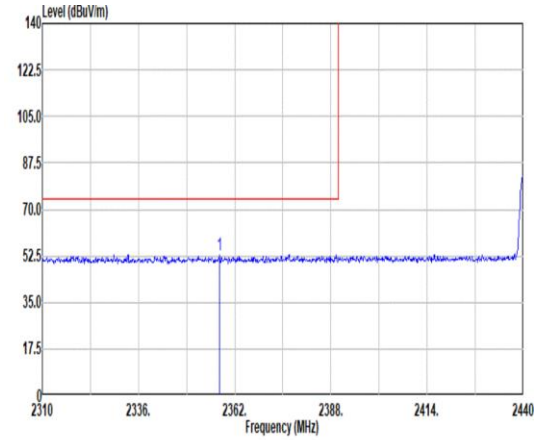
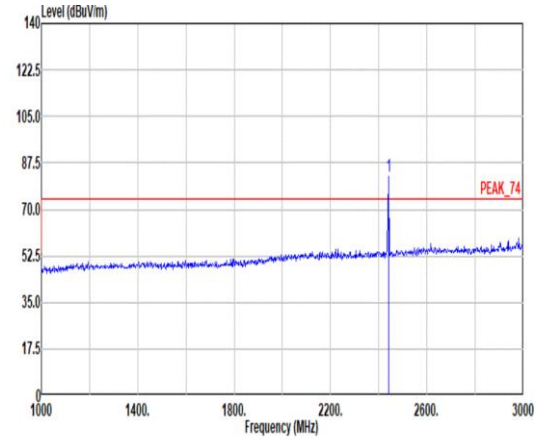
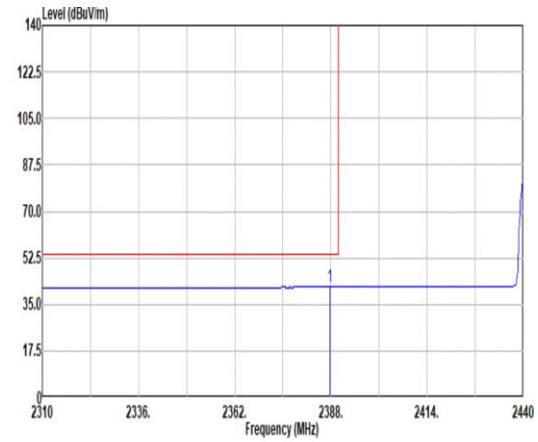
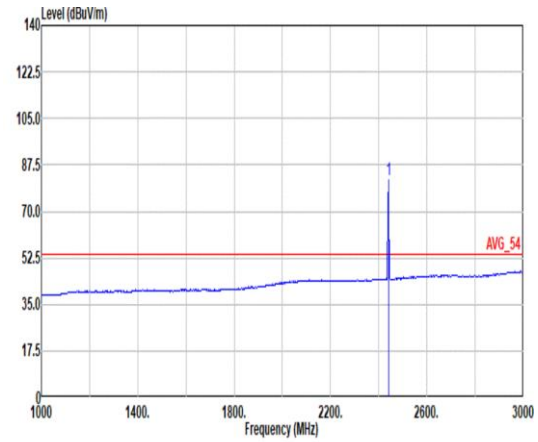
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GSFK _CH00_2402MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2380.75 53.42 74.00 -20.58 42.64 27.41 6.78 33.34 9.93 400 75 PEAK	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 94.57 ------ ------ 83.68 27.50 6.79 33.33 9.93 400 75 PEAK
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2389.49 41.74 54.00 -12.26 30.88 27.49 6.78 33.34 9.93 400 75 AVERAGE	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 94.05 ------ ------ 83.16 27.50 6.79 33.33 9.93 400 75 AVERAGE

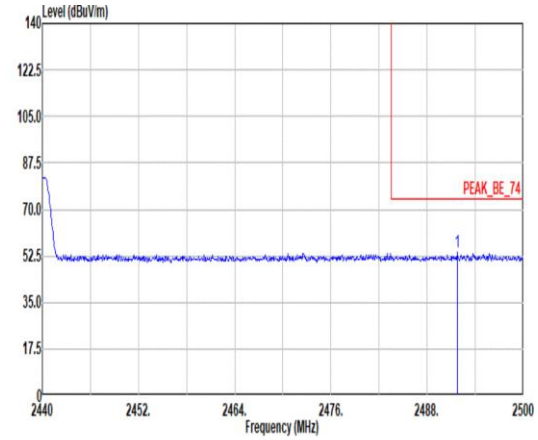
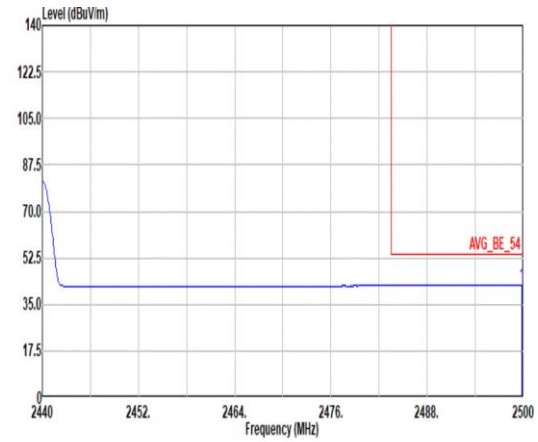
Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GSFK _CH00_2402MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4804.00 41.14 74.00 -32.86 55.13 32.42 11.33 58.53 0.79 -- -- Peak	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4804.00 42.78 74.00 -31.22 56.77 32.42 11.33 58.53 0.79 -- -- Peak
Remark :#2 can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).		

Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GSFK _CH00_2402MHz	
ANT	1	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 VERTICAL
17.7G ~18G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 VERTICAL

Mode	2	
	Band Edge - L	
	2400-2483.5_Bluetooth-LE_GSFK _CH19_2440MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2376.95 53.27 74.00 -20.73 42.55 27.37 6.77 33.35 9.93 400 234 PEAK	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 96.62 ------ ------ 85.55 27.60 6.85 33.31 9.93 400 234 PEAK
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2389.04 41.67 54.00 -12.33 30.81 27.49 6.78 33.34 9.93 400 234 AVERAGE	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 96.03 ------ ------ 84.96 27.60 6.85 33.31 9.93 400 234 AVERAGE

Mode	2	
	Band Edge - R	
	2400-2483.5_Bluetooth-LE_GSFK _CH19_2440MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.80 53.98 74.00 -20.02 42.72 27.70 6.91 33.28 9.93 400 234 PEAK	Blank
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2499.64 42.14 54.00 -11.86 30.85 27.70 6.93 33.27 9.93 400 234 AVERAGE	Blank

Mode	2	
	Band Edge - L	
	2400-2483.5_Bluetooth-LE_GSFK _CH19_2440MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2357.84 52.78 74.00 -21.22 42.15 27.30 6.76 33.36 9.93 200 183 PEAK	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 82.49 ------ ------ 71.42 27.60 6.85 33.31 9.93 200 183 PEAK
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2387.74 41.66 54.00 -12.34 30.81 27.48 6.78 33.34 9.93 200 183 AVERAGE	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 81.74 ------ ------ 70.67 27.60 6.85 33.31 9.93 200 183 AVERAGE

Mode	2	
	Band Edge - R	
	2400-2483.5_Bluetooth-LE_GSFK _CH19_2440MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2491.78 53.92 74.00 -20.08 42.65 27.70 6.92 33.28 9.93 200 183 PEAK	Blank
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_230817 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2499.82 42.15 54.00 -11.85 30.86 27.70 6.93 33.27 9.93 200 183 AVERAGE	Blank