FCC RADIO TEST REPORT

FCC ID	:	**A4RGXQ96**
Equipment	:	**Phone**
Model Name	:	**GXQ96**
Applicant	:	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on May 21, 2024 and testing was performed from May 28, 2024 to Sep. 02, 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.)

Table of Contents

History of this test report **3**
Summary of Test Result **4**
1 General Description **5**
1.1 Product Feature of Equipment Under Test 5
1.2 Modification of EUT 5
1.3 Testing Location 6
1.4 Applicable Standards 6
2 Test Configuration of Equipment Under Test **7**
2.1 Carrier Frequency Channel 7
2.2 Test Mode 8
2.3 Connection Diagram of Test System 10
2.4 Support Unit used in test configuration and system 11
2.5 EUT Operation Test Setup 11
2.6 Measurement Results Explanation Example 11
3 Test Result **12**
3.1 6dB and 99% Bandwidth Measurement 12
3.2 Output Power Measurement 13
3.3 Power Spectral Density Measurement 14
3.4 Conducted Band Edges and Spurious Emission Measurement 15
3.5 Radiated Band Edges and Spurious Emission Measurement 16
3.6 AC Conducted Emission Measurement 20
3.7 Antenna Requirements 22
4 List of Measuring Equipment **23**
5 Measurement Uncertainty **25**
Appendix A. Conducted Test Results
Appendix B. AC Conducted Emission Test Result
Appendix C. Radiated Spurious Emission Test Data
Appendix D. Duty Cycle Plots
Appendix E. Setup Photographs

History of this test report

Report No.	Version	Description	Issue Date
FR451606L	01	Initial issue of report	Sep. 30, 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	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	1.95 dB under the limit at 52.05 MHz
3.6	15.207	AC Conducted Emission	Pass	13.04 dB under the limit at 0.17 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:

1. The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.
2. The GGH2X and GC15S are 100% identical in Hardware / Software to each other, and only have different model names for marketing segmentation. The test sample are all model GGH2X.

Reviewed by: William Chen
Report Producer: Ming 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 802.11ax, NFC, WPC Rx and GNSS. **Antenna Type** Bluetooth: **<Ant. 4>:** IFA Antenna **<Ant. 3>:** IFA Antenna

EUT Information List	
S/N	**Performed Test Item**
44291JEBF05085	RF Conducted Measurement
46181JEBF10909	Radiated Spurious Emission
44291JEBF05116	Conducted Emission

Antenna information (Open Mode)		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	Ant.3: 0.8 Ant.4: -4.4

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

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	CO05-HY (TAF Code: 1190)
Remark	The AC Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

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

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, 03CH16-HY

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

FCC designation No.: TW1190 and 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 find Z plane with Adapter as worst plane.

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**
	<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

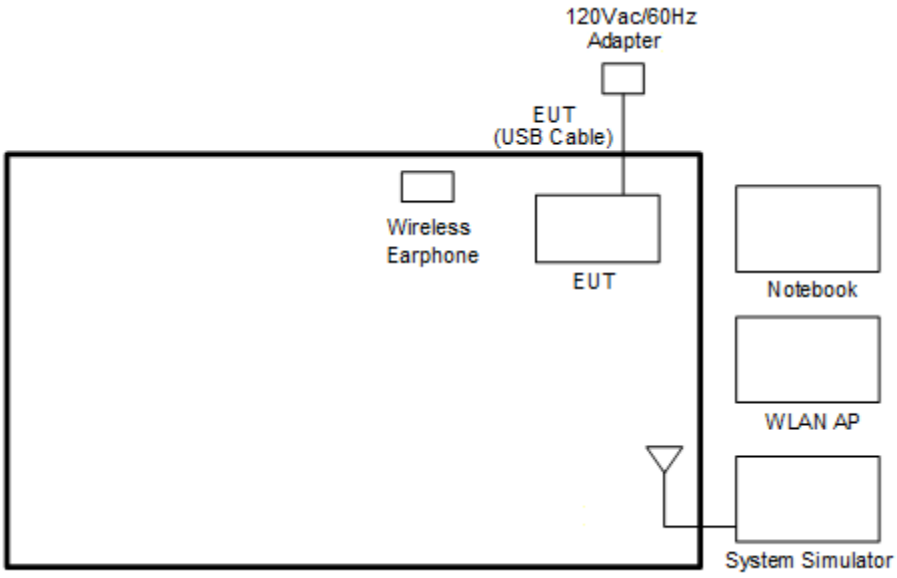
Summary table of Test Cases	
Test Item	**Data Rate / Modulation**
Radiated Test Cases	**<Ant. 3>** Mode 1: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_1Mbps Mode 2: Bluetooth-LE CS GFSK Tx CH38_2440 MHz_1Mbps Mode 3: Bluetooth-LE CS GFSK Tx CH76_2478 MHz_1Mbps Mode 4: Bluetooth-LE CS GFSK Tx CH02_2404 MHz_2Mbps 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: LTE Band 13 Idle + WLAN (2.4GHz) Link + Bluetooth Idle + USB Cable 1 (Charging from AC Adapter) + Battery < 50% + Google Meet (Front Camera)

Remark:

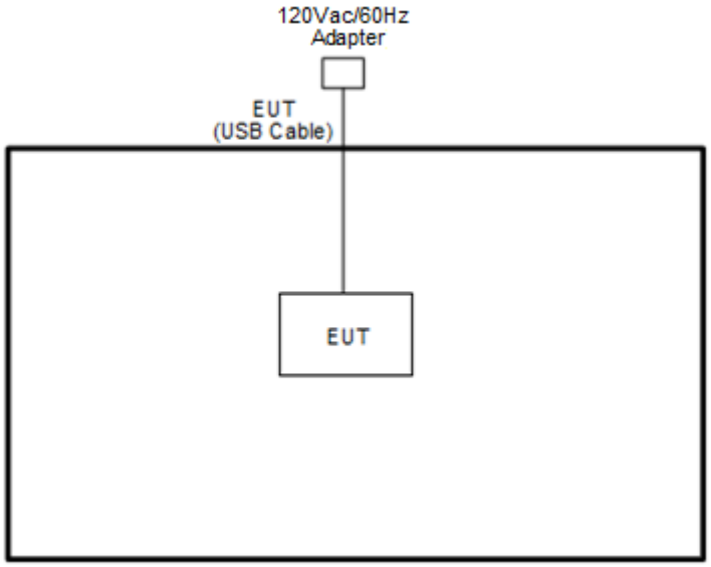
1. For Radiated Test Cases, the worst mode data rate 1Mbps was reported only since the highest RF output power in the preliminary tests. The conducted spurious emissions and conducted band edge measurement for other data rates were not worse than 1Mbps, and no other significantly frequencies found in conducted spurious emission.
2. For Radiated Test Cases, the tests were performed with USB Cable 2.
3. During the preliminary test, both charging modes (Adapter mode and WPC Rx 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,1.8m
2.	WLAN AP	ASUS	GT-AXE11000	FCC DoC	N/A	Unshielded,1.8m
3.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Wireless Earphone	N/A	G1007/G1008	A4RG1007/ A4RG1008	N/A	N/A
5.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded,1.8m
6.	Adapter	N/A	GW8L7	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “BT DUT Ver 03-04-24” 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.

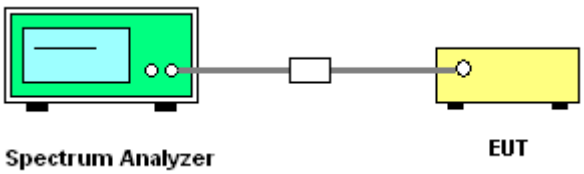
3.1.2 Measuring Instruments

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.

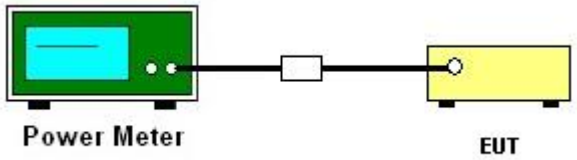
3.2.2 Measuring Instruments

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.

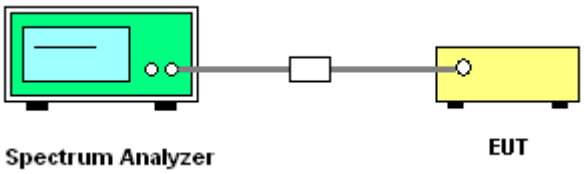
3.3.2 Measuring Instruments

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.

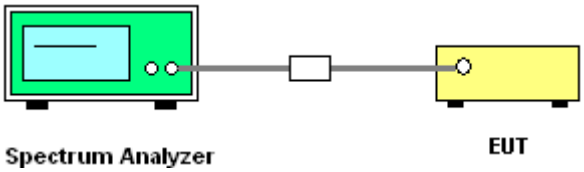
3.4.2 Measuring Instruments

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

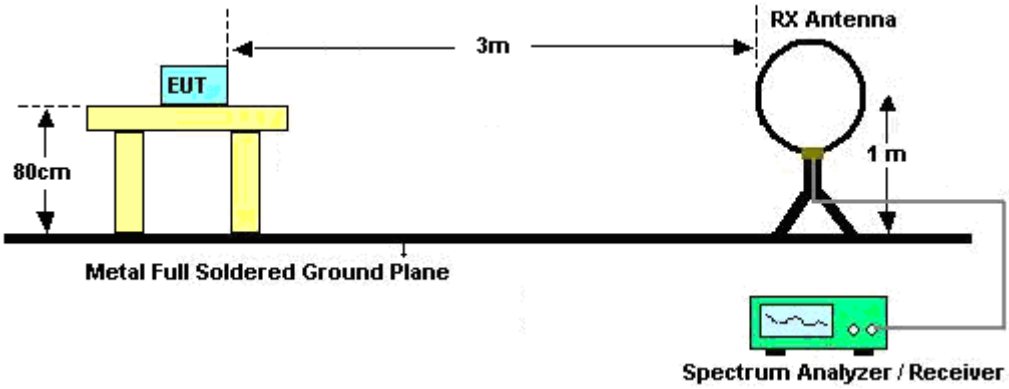
Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

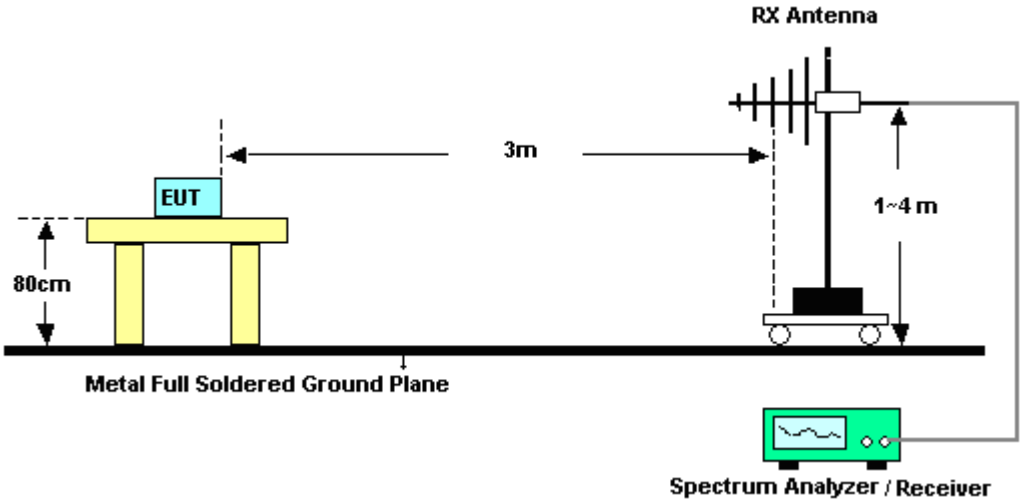
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the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

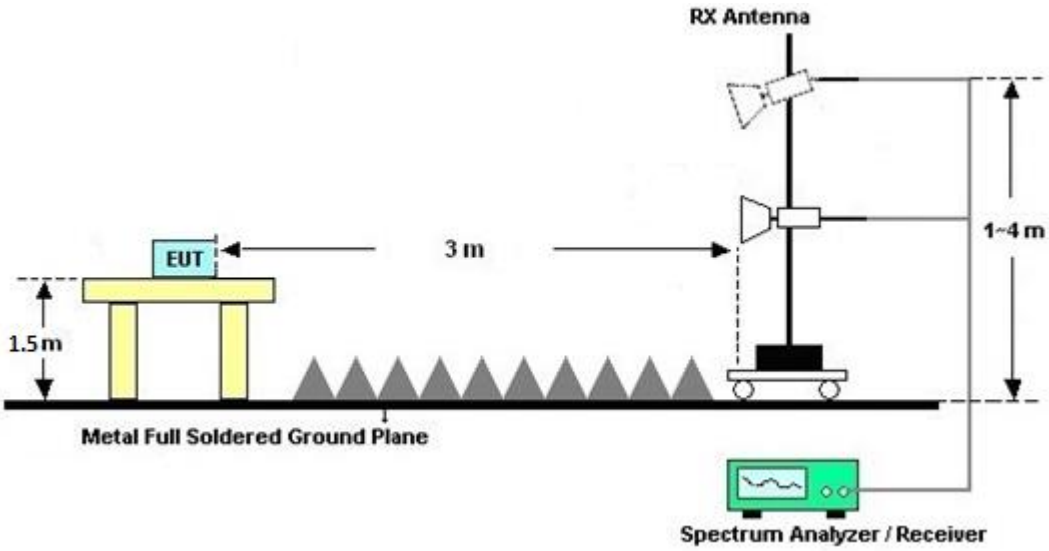
For radiated test below 30MHz



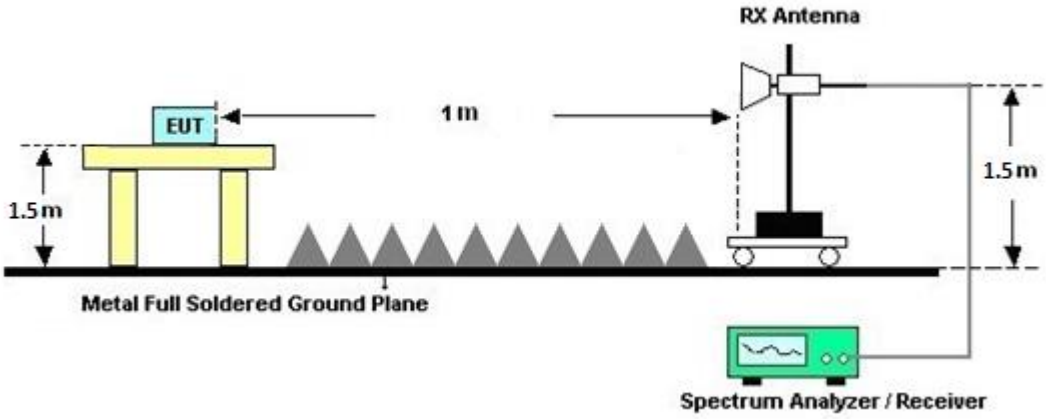
For radiated test from 30MHz to 1GHz



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.

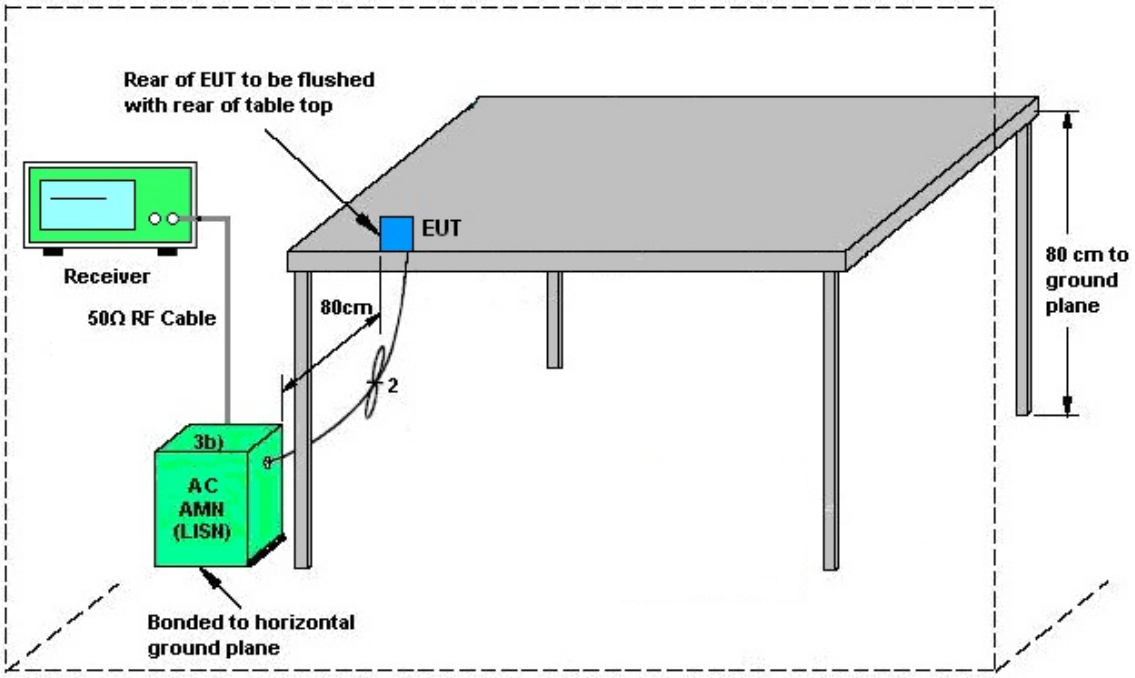
3.6.2 Measuring Instruments

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

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.7.2 Antenna Anti-Replacement Construction

b) Unique (non-standard) antenna connector.

(3) Use of a standard connector is also allowed if the connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter, where such disassembly is not normally required. The user manual must not show that user has access to the connector.

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	100488	9 kHz~30 MHz	Sep. 12, 2023	Jun. 06, 2024~ Aug. 17, 2024	Sep. 11, 2024	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N -06	47020 & 06	30MHz to 1GHz	Oct. 07, 2023	Jun. 06, 2024~ Aug. 17, 2024	Oct. 06, 2024	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Mar. 28, 2024	Jun. 06, 2024~ Aug. 17, 2024	Mar. 27, 2025	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 24, 2023	Jun. 06, 2024~ Aug. 17, 2024	Nov. 23, 2024	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Dec. 04, 2023	Jun. 06, 2024~ Aug. 17, 2024	Dec. 03, 2024	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 03, 2023	Jun. 06, 2024~ Jul. 01, 2024	Jul. 02, 2024	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 02, 2024	Jul. 02, 2024~ Aug. 17, 2024	Jul. 01, 2025	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 07, 2023	Jun. 06, 2024~ Aug. 17, 2024	Dec. 06, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Dec. 25, 2023	Jun. 06, 2024~ Aug. 17, 2024	Dec. 24, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060872	18GHz~40GHz	Sep. 06, 2023	Jun. 06, 2024~ Aug. 17, 2024	Sep. 05, 2024	Radiation (03CH16-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN17	1.53GHz Low Pass Filter	Jan. 15, 2024	Jun. 06, 2024~ Aug. 17, 2024	Jan. 14, 2025	Radiation (03CH16-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN3	3GHz High Pass Filter	Jun. 29, 2023	Jun. 06, 2024~ Jun. 27, 2024	Jun. 28, 2024	Radiation (03CH16-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN3	3GHz High Pass Filter	Jun. 28, 2024	Jun. 28, 2024~ Aug. 17, 2024	Jun. 27, 2025	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Jun. 06, 2024~ Aug. 17, 2024	Mar. 05, 2025	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102/SUCOFLEX 104	EC-A5-300-5757,805935/4,802434/4	30MHz~18GHz	Aug. 08, 2023	Jun. 06, 2024~ Aug. 06, 2024	Aug. 07, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102/SUCOFLEX 104	EC-A5-300-5757,805935/4,802434/4	30MHz~18GHz	Aug. 07, 2024	Aug. 07, 2024~ Aug. 17, 2024	Aug. 06, 2025	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804012/2	18G~40GHz	Jan. 02, 2024	Jun. 06, 2024~ Aug. 17, 2024	Jan. 01, 2025	Radiation (03CH16-HY)
Software	Audix	E3 230621 V9	RK-002393	N/A	N/A	Jun. 06, 2024~ Aug. 17, 2024	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Jun. 06, 2024~ Aug. 17, 2024	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jun. 06, 2024~ Aug. 17, 2024	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jun. 06, 2024~ Aug. 17, 2024	N/A	Radiation (03CH16-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 07, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Aug. 07, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 26, 2023	Aug. 07, 2024	Oct. 25, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 22, 2023	Aug. 07, 2024	Nov. 21, 2024	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Aug. 07, 2024	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 30, 2024	Aug. 07, 2024	Jul. 29, 2025	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 28, 2023	Aug. 07, 2024	Dec. 27, 2024	Conduction (CO05-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	May 28, 2024~ Sep. 02, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO3 5 (NO:109)	10MHz~6GHz	Jan. 15, 2024	May 28, 2024~ Sep. 02, 2024	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	May 28, 2024~ Aug. 21, 2024	Aug. 22, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101564	10Hz~40GHz	Sep. 12, 2023	Aug. 22, 024~ Sep. 02, 2024	Sep. 11, 2024	Conducted (TH05-HY)
Switch Box & RF Cable	E-Instument	ETF-058	EC1208382 (BOX1)	N/A	Apr. 01, 2024	May 28, 2024~ Sep. 02, 2024	Mar. 31, 2025	Conducted (TH05-HY)
Switch Box & RF Cable	E-Instument	ETF-1405-0	EC1900067	N/A	Jul. 10, 2023	May 28, 2024~ Jun. 24, 2024	Jul. 09, 2024	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_version1.0	N/A	N/A	N/A	May 28, 2024~ Sep. 02, 2024	N/A	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))	3.5 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.5 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.5 dB

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2024/5/28~2024/9/2	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	02	2404	1.133	0.761	0.50	Pass
	1Mbps	1	38	2440	1.123	0.758	0.50	Pass
	1Mbps	1	76	2478	1.131	0.758	0.50	Pass
BLE CS GFSK	2Mbps	1	02	2404	2.266	1.372	0.50	Pass
	2Mbps	1	38	2440	2.214	1.320	0.50	Pass
	2Mbps	1	76	2478	2.242	1.361	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	02	2404	18.42	30.00	0.80	19.22	36.00	Pass
	1Mbps	1	38	2440	18.42	30.00	0.80	19.22	36.00	Pass
	1Mbps	1	76	2478	19.82	30.00	0.80	20.62	36.00	Pass
BLE CS GFSK	2Mbps	1	02	2404	18.42	30.00	0.80	19.22	36.00	Pass
	2Mbps	1	38	2440	18.42	30.00	0.80	19.22	36.00	Pass
	2Mbps	1	76	2478	19.42	30.00	0.80	20.22	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	02	2404	18.15	0.52	0.80	8.00	Pass
	1Mbps	1	38	2440	18.27	0.50	0.80	8.00	Pass
	1Mbps	1	76	2478	19.44	1.72	0.80	8.00	Pass
BLE CS GFSK	2Mbps	1	02	2404	17.52	-4.13	0.80	8.00	Pass
	2Mbps	1	38	2440	17.34	-4.37	0.80	8.00	Pass
	2Mbps	1	76	2478	18.36	-3.02	0.80	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	02	2404	1.073	0.696	0.50	Pass
	1Mbps	1	38	2440	1.113	0.761	0.50	Pass
	1Mbps	1	76	2478	1.131	0.719	0.50	Pass
BLE CS GFSK	2Mbps	1	02	2404	2.226	1.230	0.50	Pass
	2Mbps	1	38	2440	2.234	1.296	0.50	Pass
	2Mbps	1	76	2478	2.282	1.393	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	02	2404	20.00	30.00	-4.40	15.60	36.00	Pass
	1Mbps	1	38	2440	20.20	30.00	-4.40	15.80	36.00	Pass
	1Mbps	1	76	2478	19.50	30.00	-4.40	15.10	36.00	Pass
BLE CS GFSK	2Mbps	1	02	2404	20.20	30.00	-4.40	15.80	36.00	Pass
	2Mbps	1	38	2440	20.50	30.00	-4.40	16.10	36.00	Pass
	2Mbps	1	76	2478	19.70	30.00	-4.40	15.30	36.00	Pass

TEST RESULTS DATA
Peak Power Density

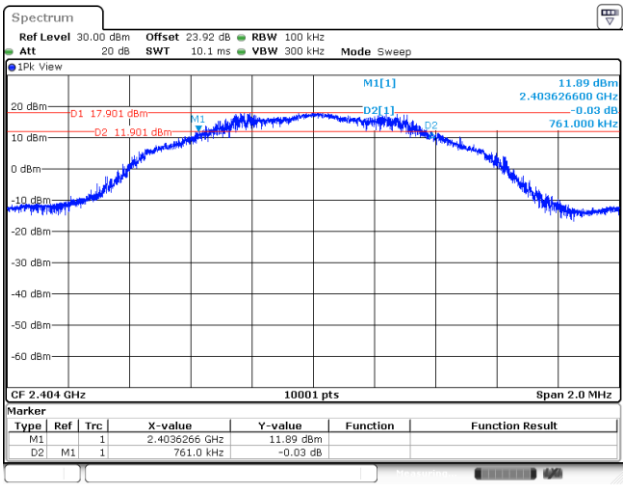
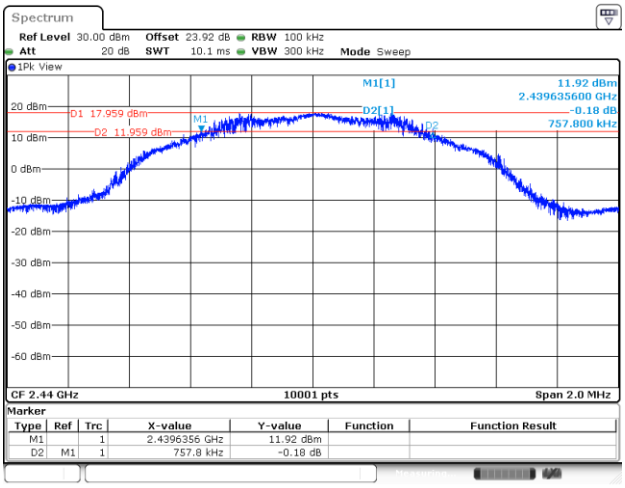
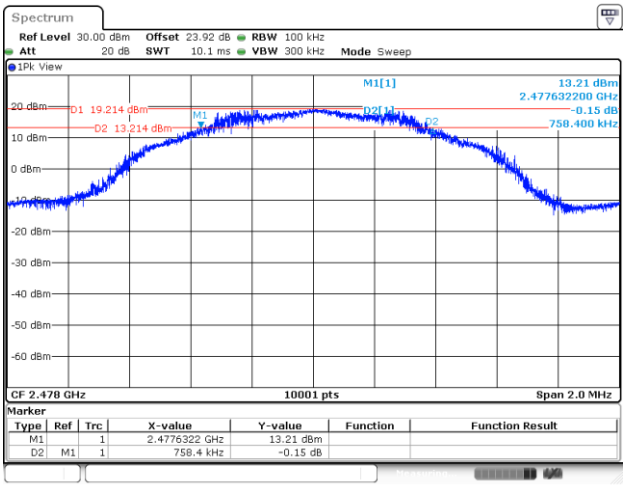
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE CS GFSK	1Mbps	1	02	2404	19.73	1.66	-4.40	8.00	Pass
	1Mbps	1	38	2440	20.01	2.29	-4.40	8.00	Pass
	1Mbps	1	76	2478	19.41	1.15	-4.40	8.00	Pass
BLE CS GFSK	2Mbps	1	02	2404	19.34	-2.45	-4.40	8.00	Pass
	2Mbps	1	38	2440	19.43	-2.10	-4.40	8.00	Pass
	2Mbps	1	76	2478	18.67	-2.87	-4.40	8.00	Pass

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

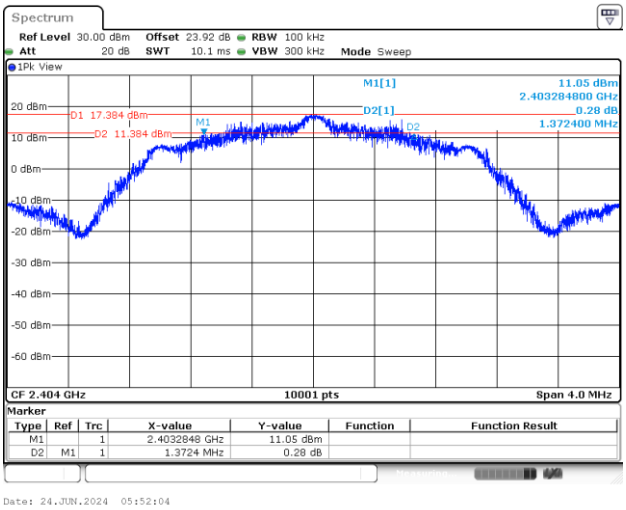
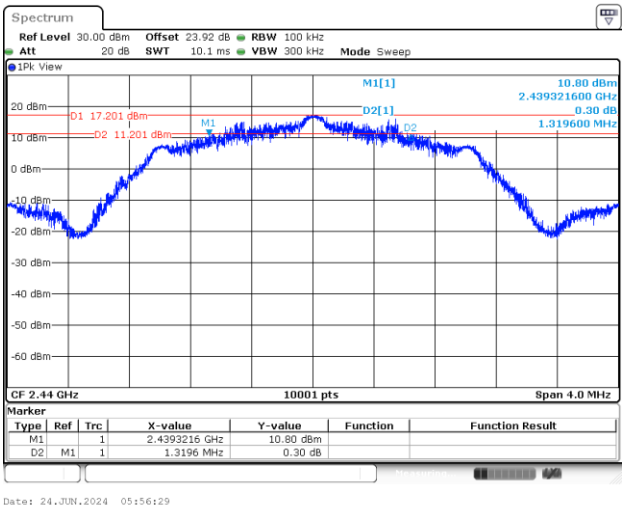
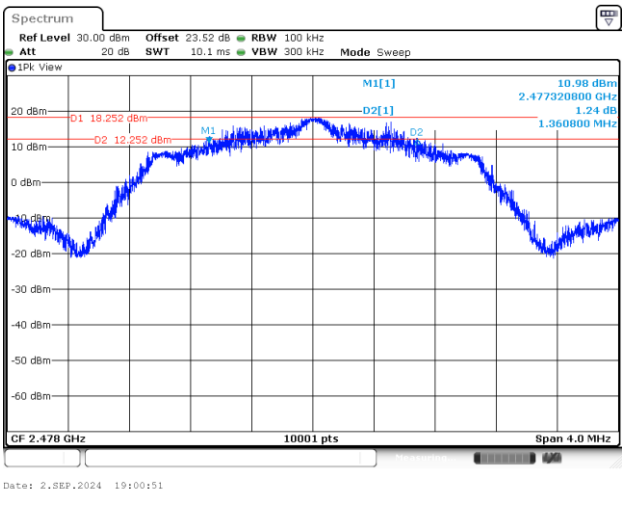
<Ant.3>

6dB Bandwidth

<1Mbps>

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

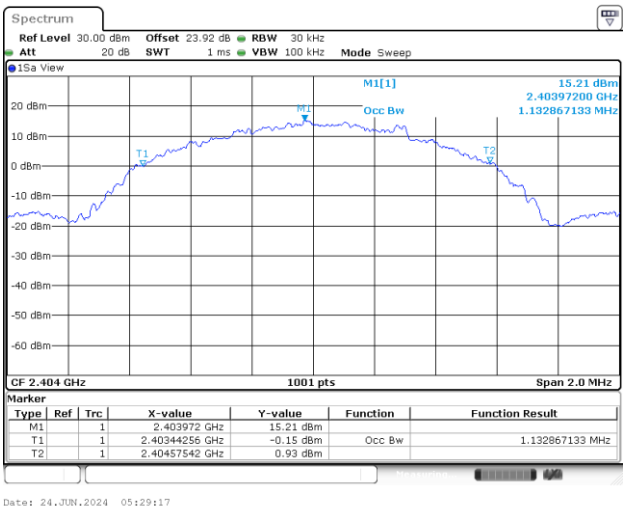
<2Mbps>

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

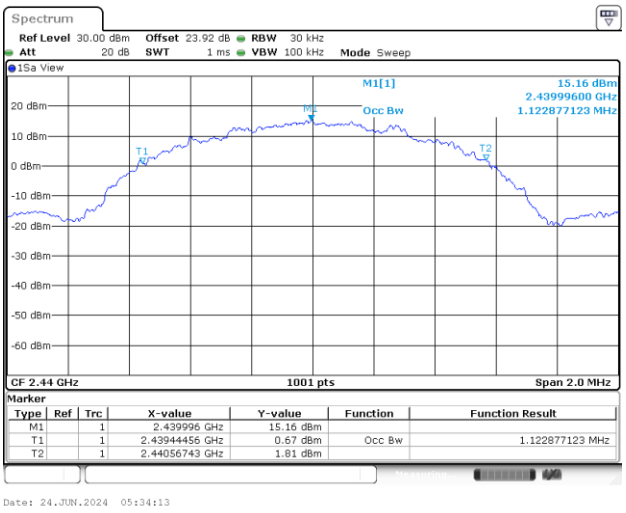
99% Occupied Bandwidth

<1Mbps>

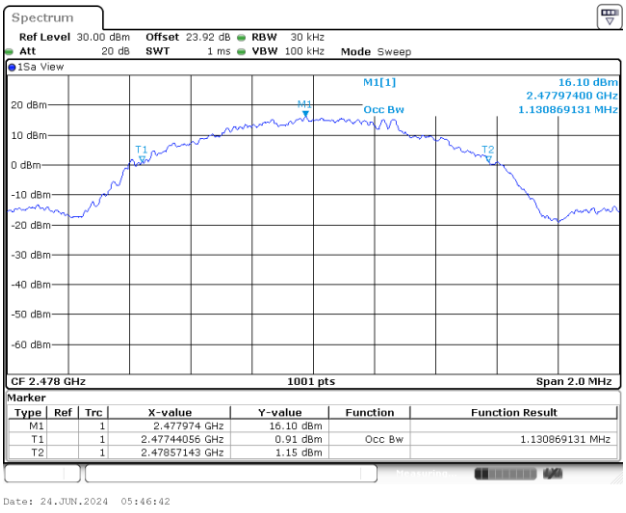
99% Occupied Bandwidth Plot on Channel 02



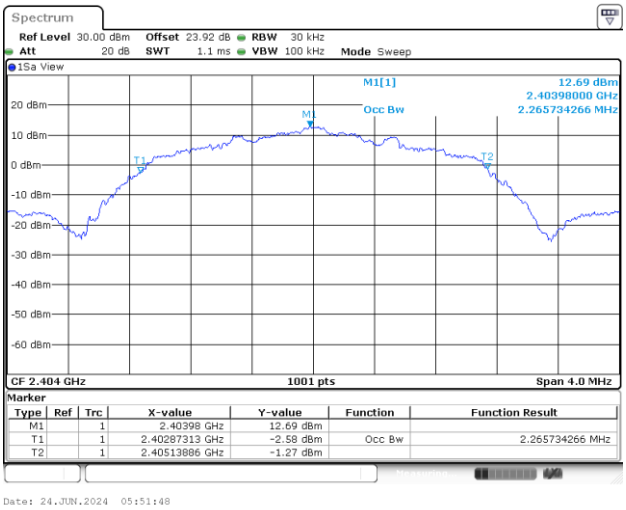
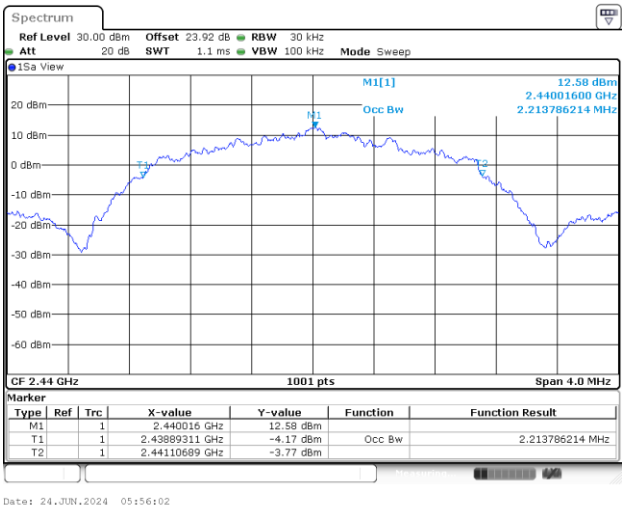
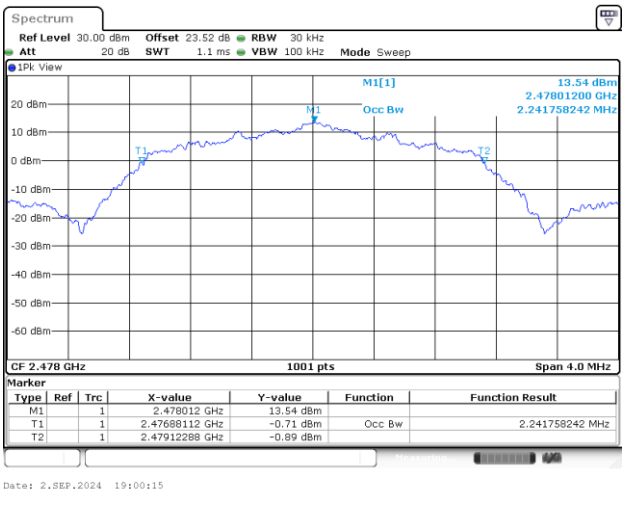
99% Occupied Bandwidth Plot on Channel 38



99% Occupied Bandwidth Plot on Channel 76

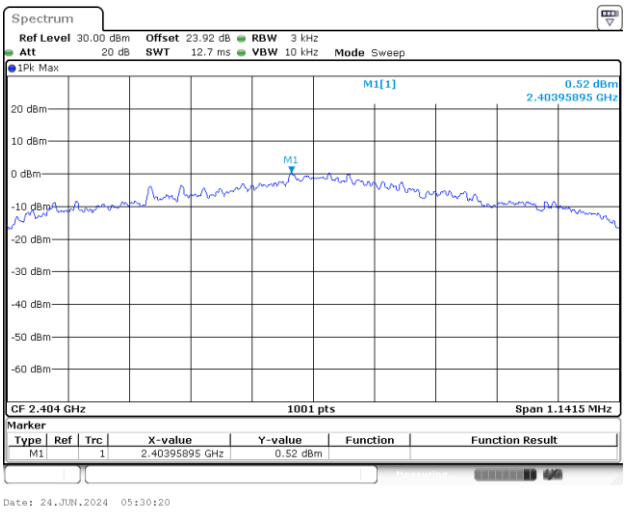
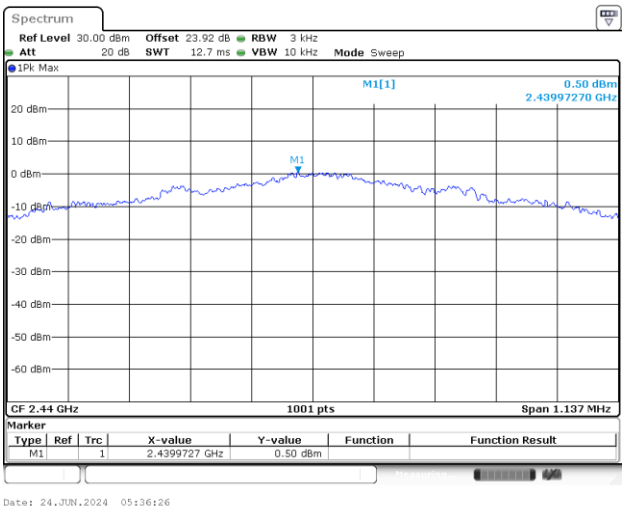
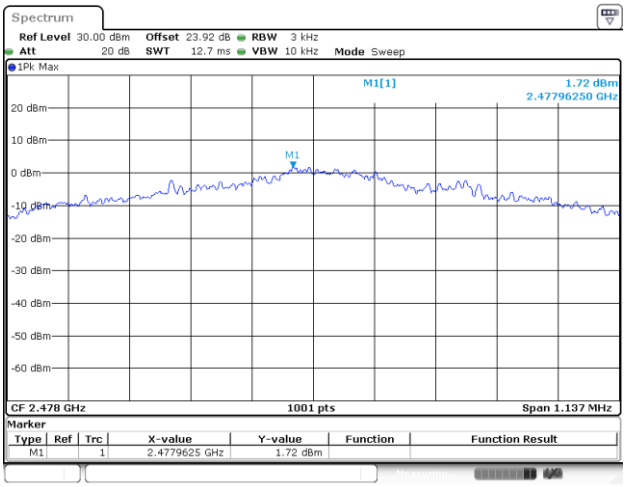


<2Mbps>

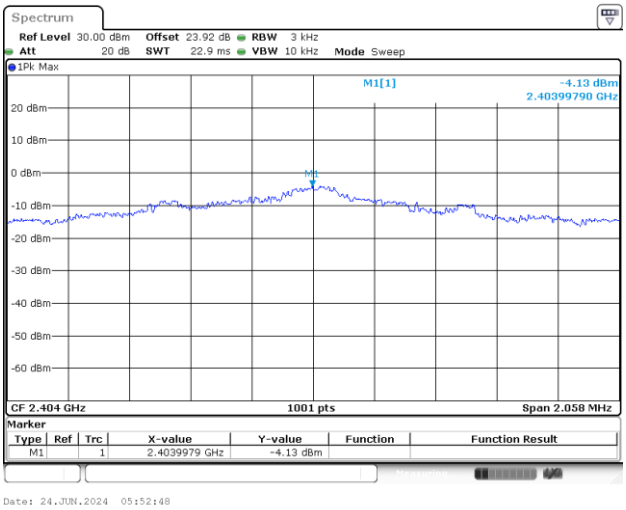
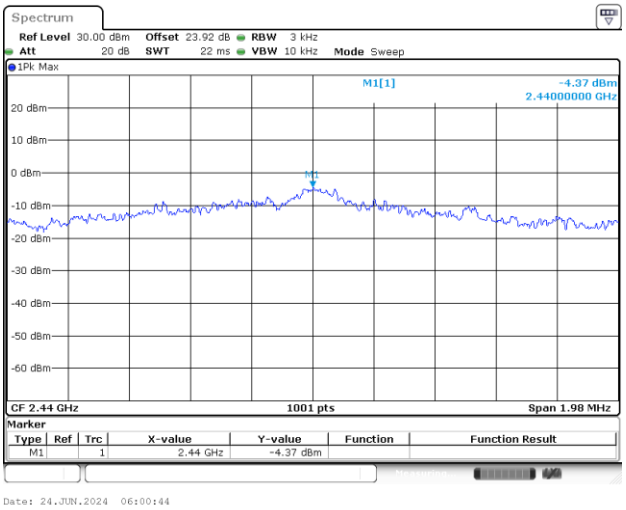
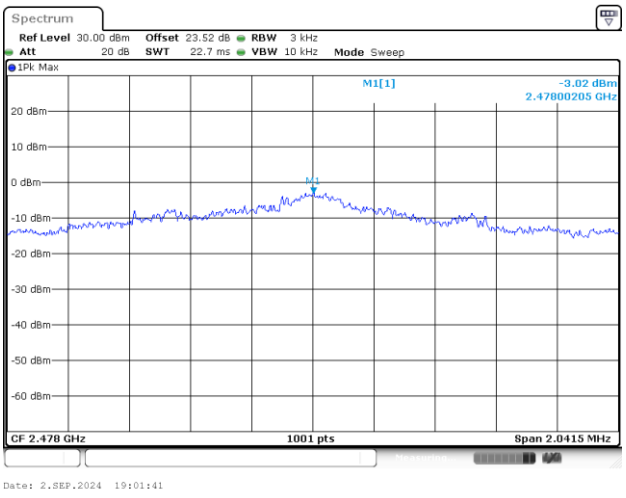
99% Occupied Bandwidth Plot on Channel 02	99% Occupied Bandwidth Plot on Channel 38
	
99% Occupied Bandwidth Plot on Channel 76	
	

Power Spectral Density (dBm/3kHz)

<1Mbps>

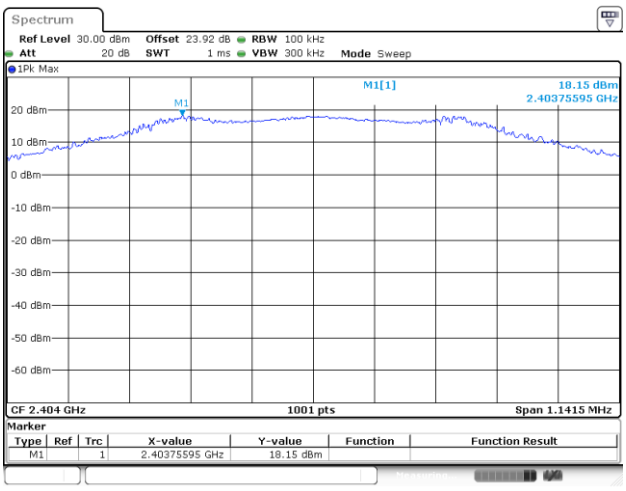
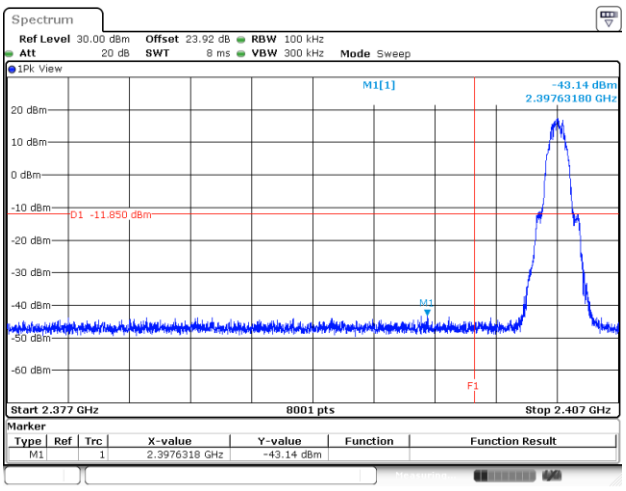
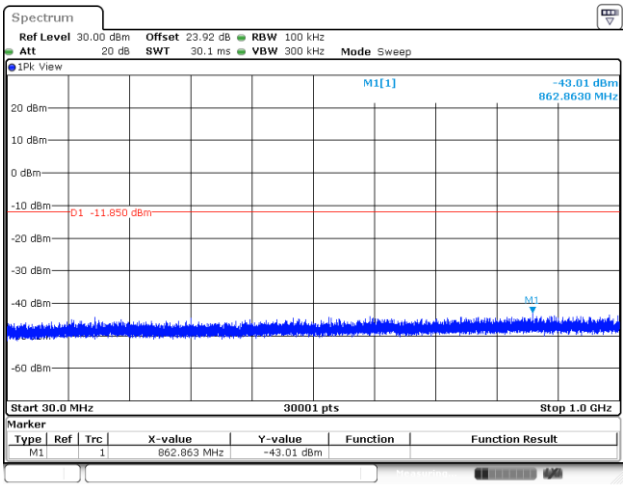
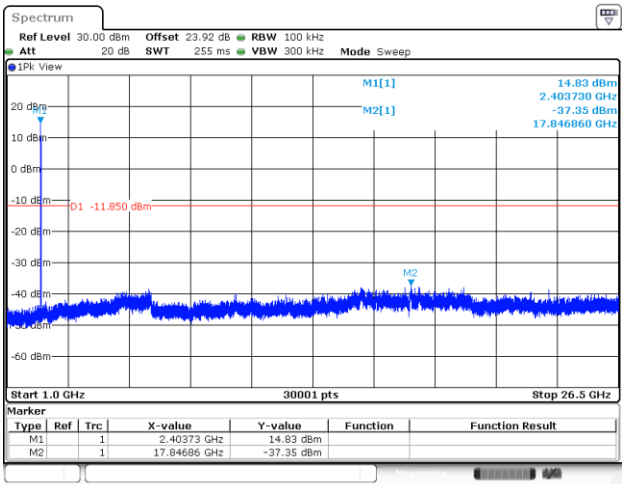
Power Density (dBm/3kHz) Plot Channel 02	Power Density (dBm/3kHz) Plot Channel 38
	
Power Density (dBm/3kHz) Plot Channel 76	
	

<2Mbps>

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

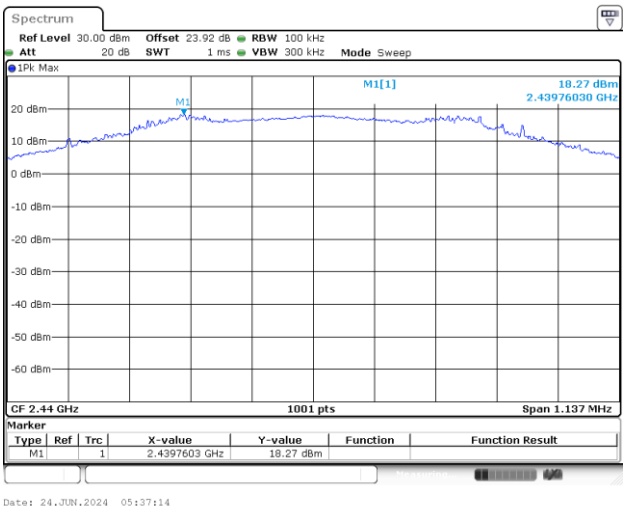
Band Edge and Conducted Spurious Emission

<1Mbps>

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

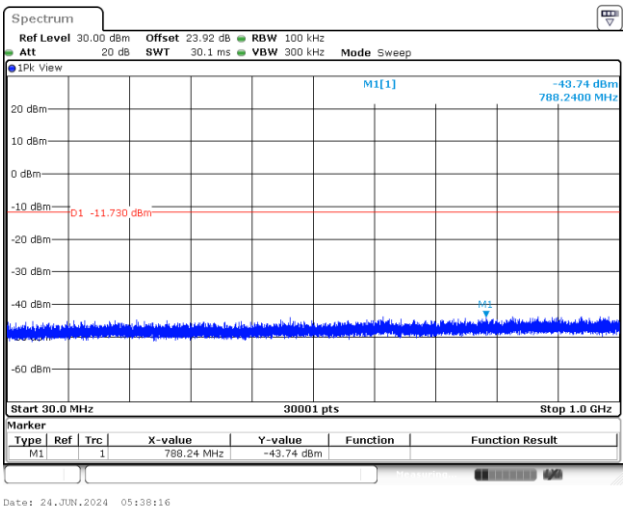
Channel 38

100kHz PSD reference Level Plot

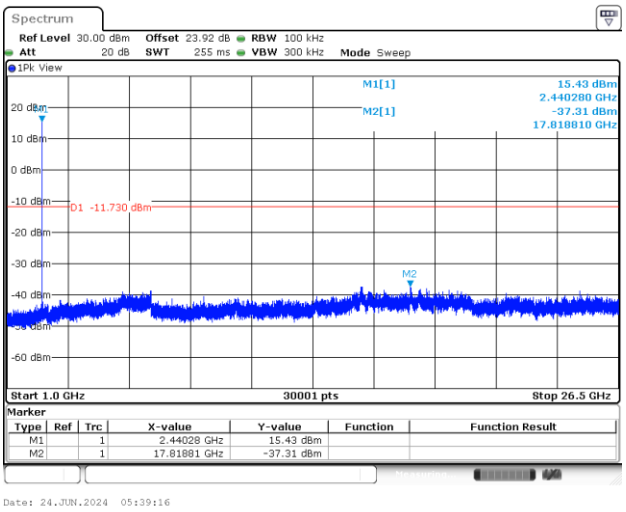


Middle Channel Plot

Spurious Emission 30MHz~1GHz Plot

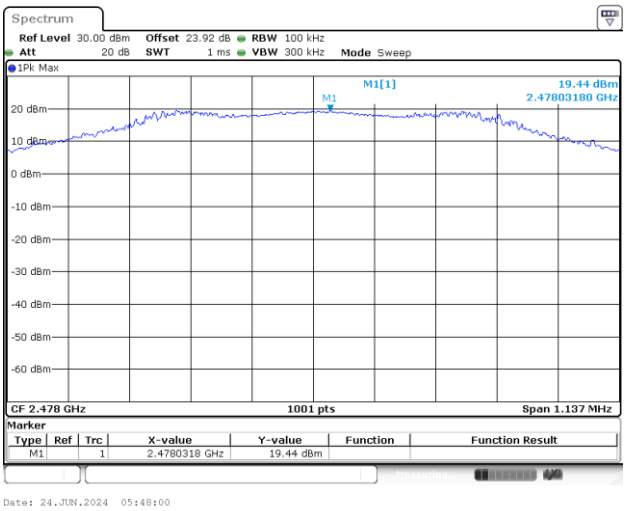


Spurious Emission 1GHz~26.5GHz Plot

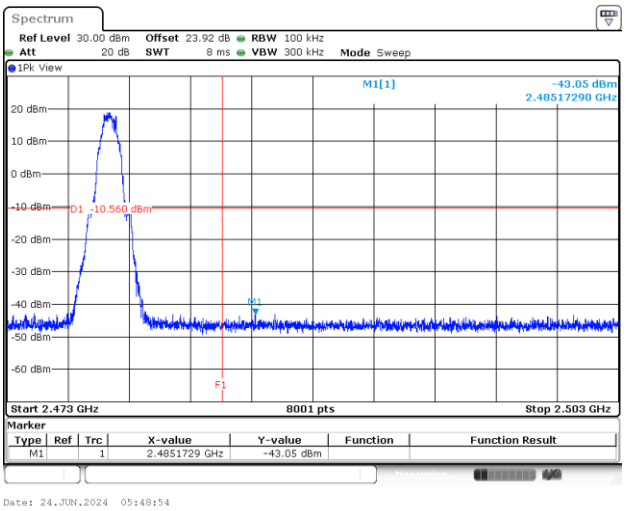


Channel 76

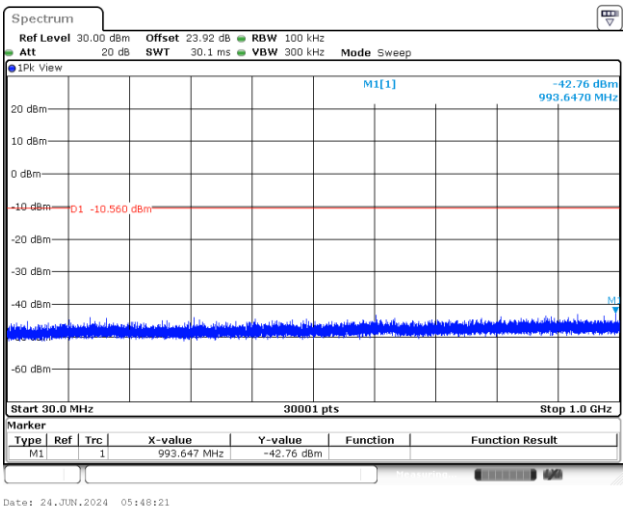
100kHz PSD reference Level Plot



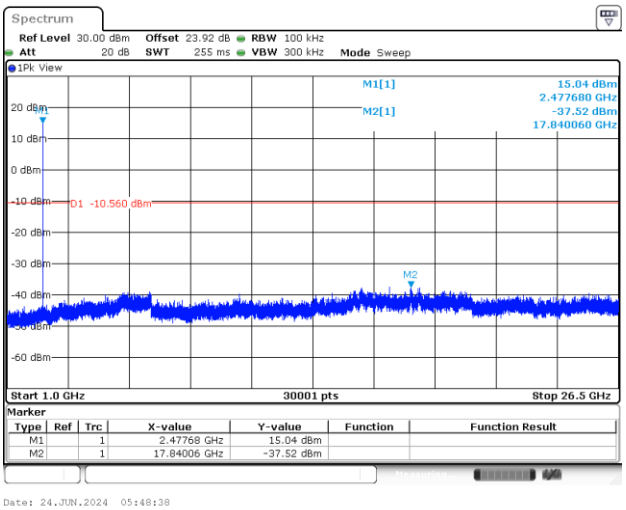
High Channel Plot



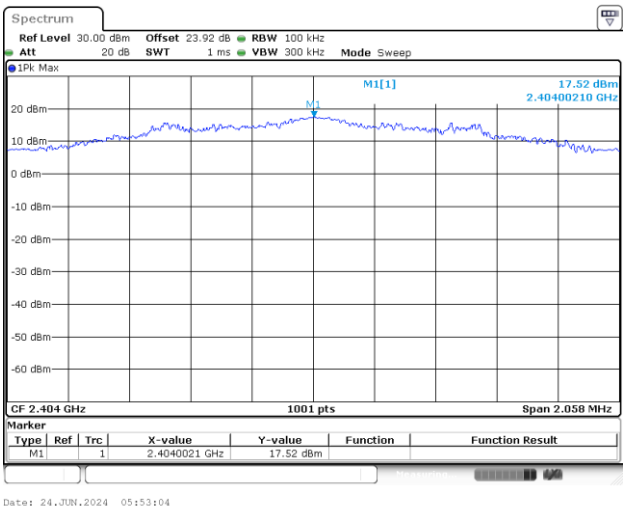
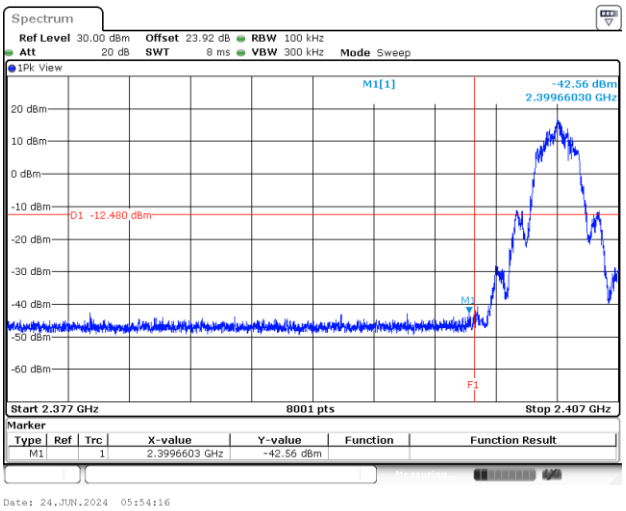
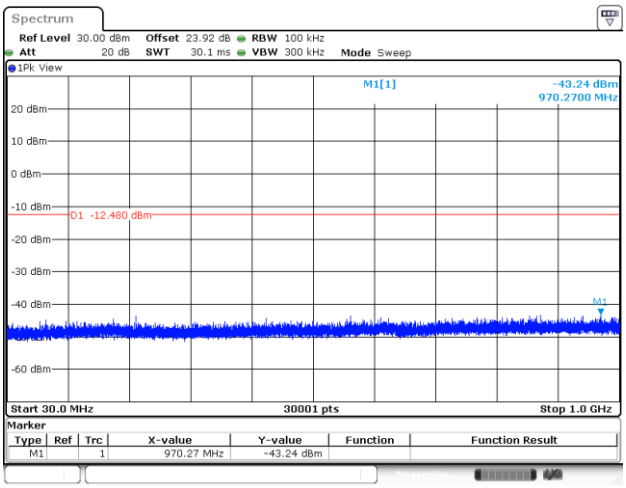
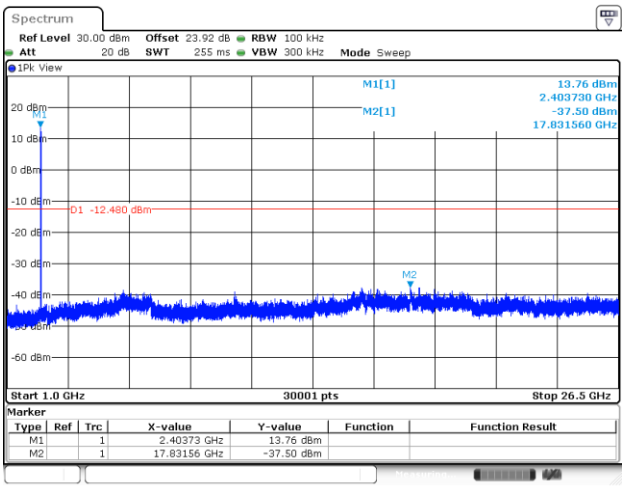
Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot

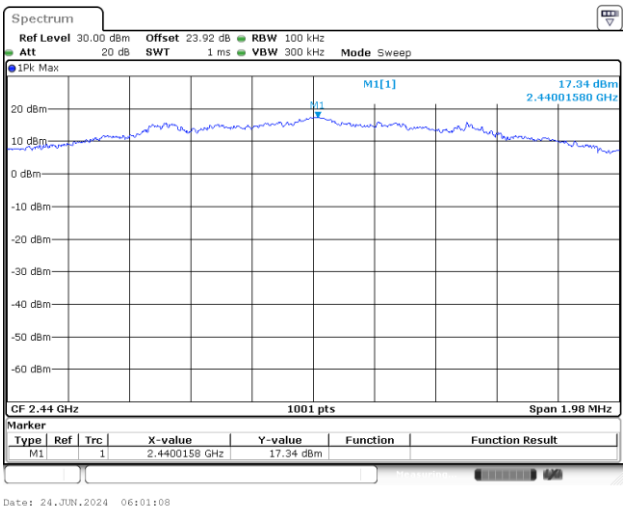


<2Mbps>

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

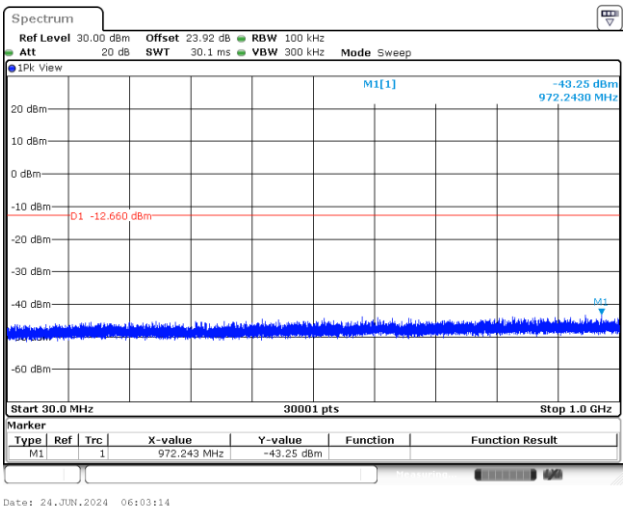
Channel 38

100kHz PSD reference Level Plot

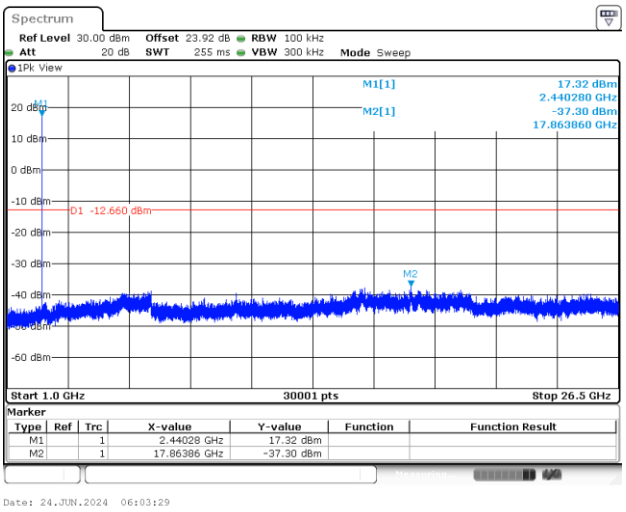


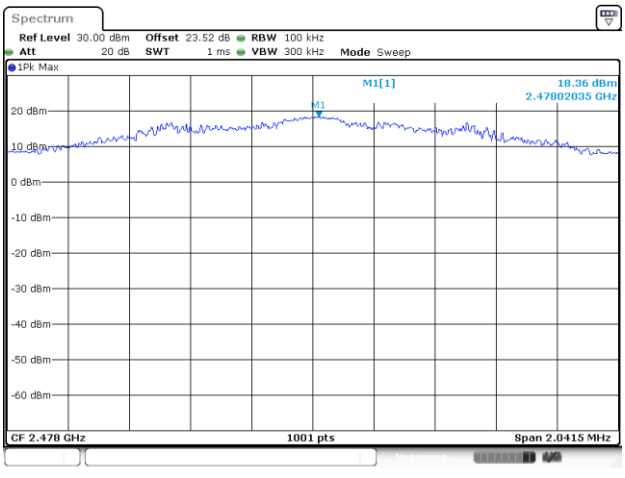
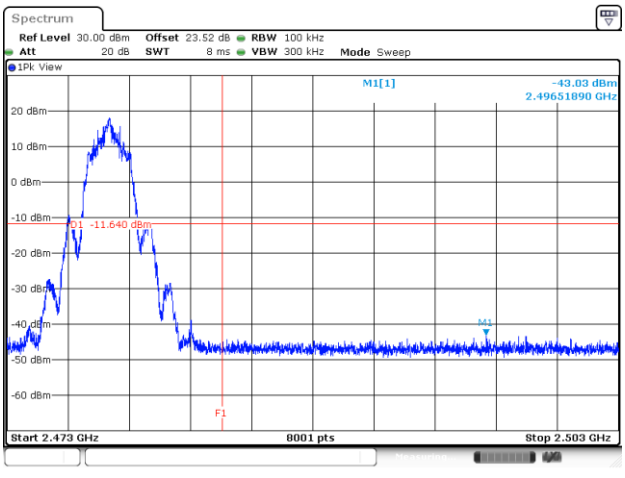
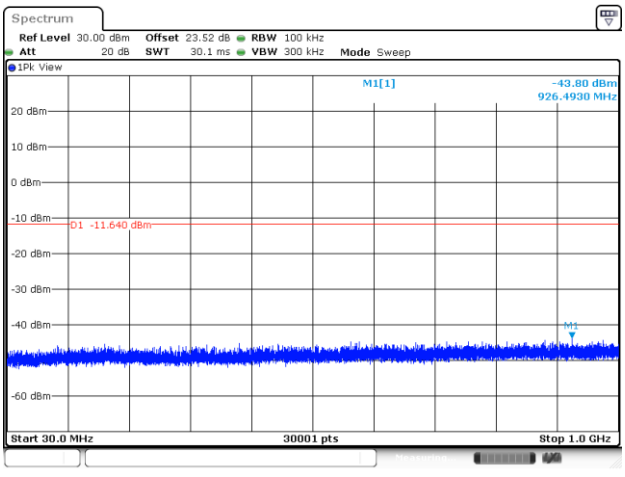
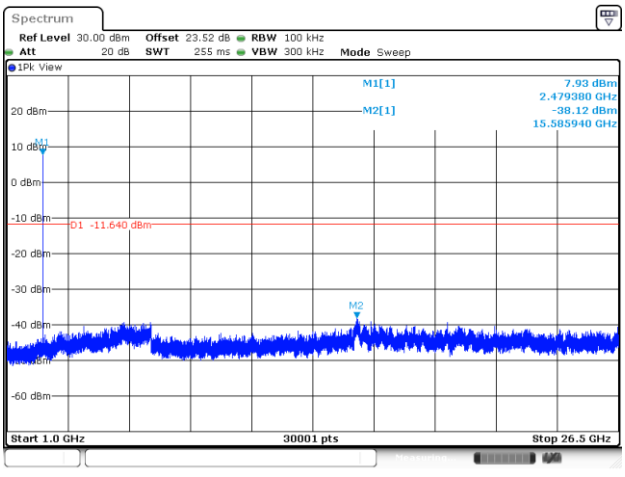
Middle Channel Plot

Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot

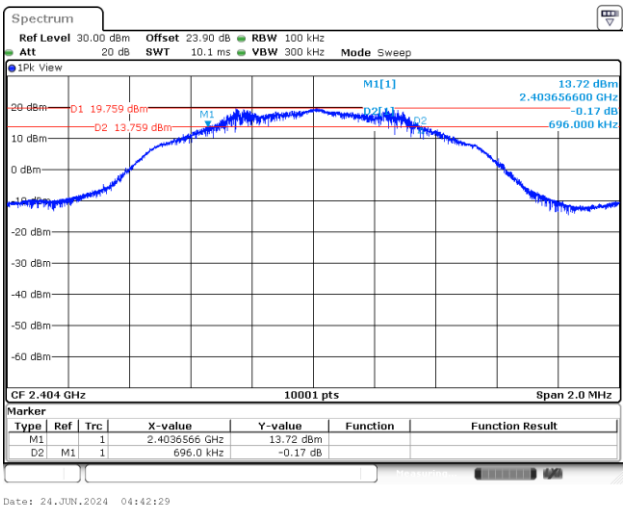
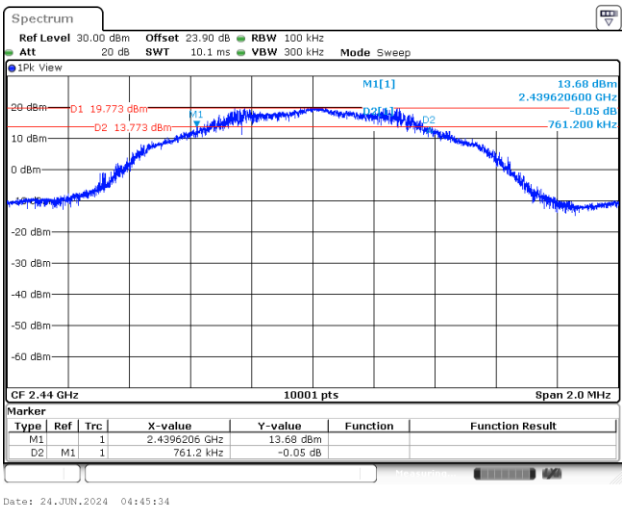
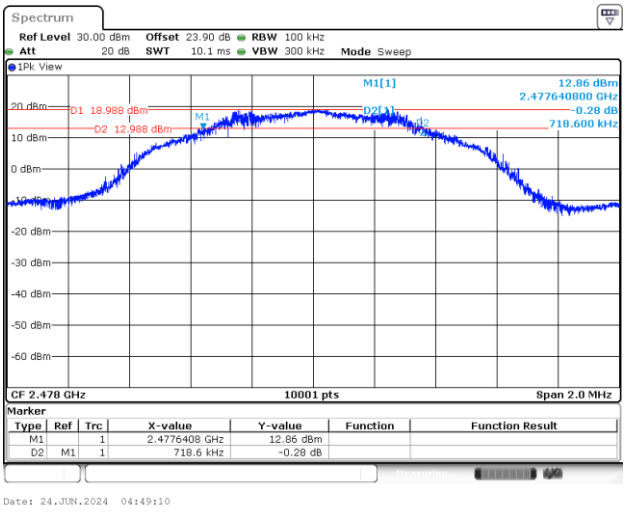


Channel 76	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

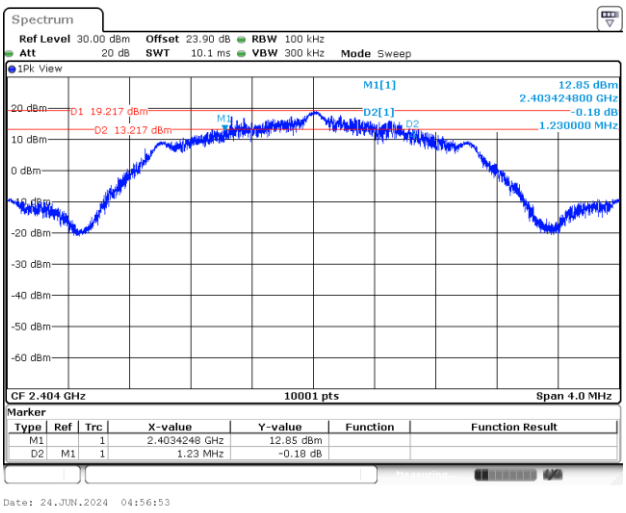
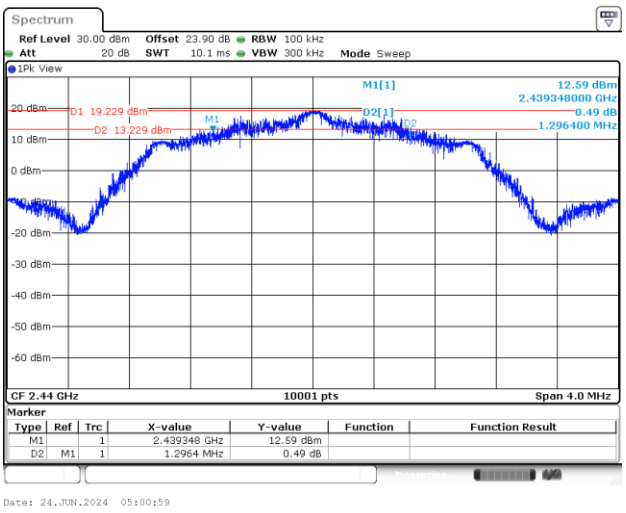
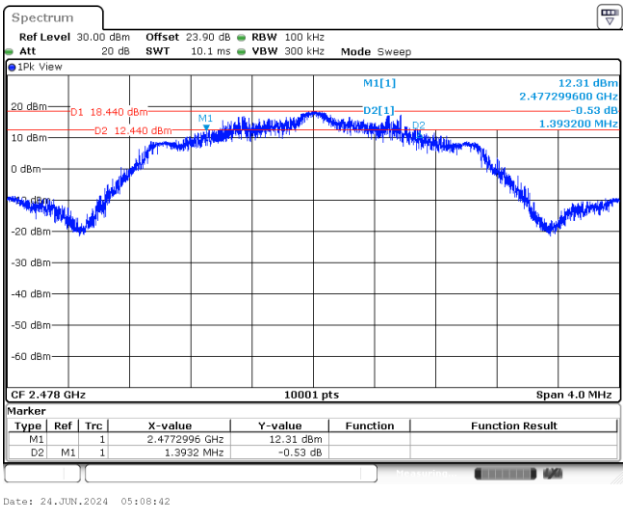
<Ant.4>

6dB Bandwidth

<1Mbps>

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

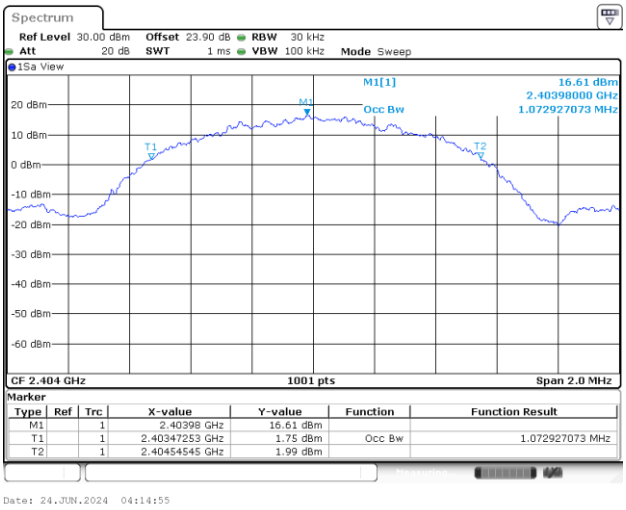
<2Mbps>

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

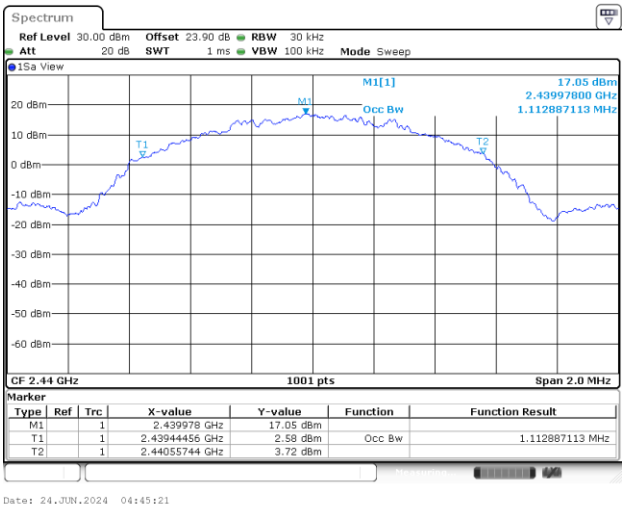
99% Occupied Bandwidth

<1Mbps>

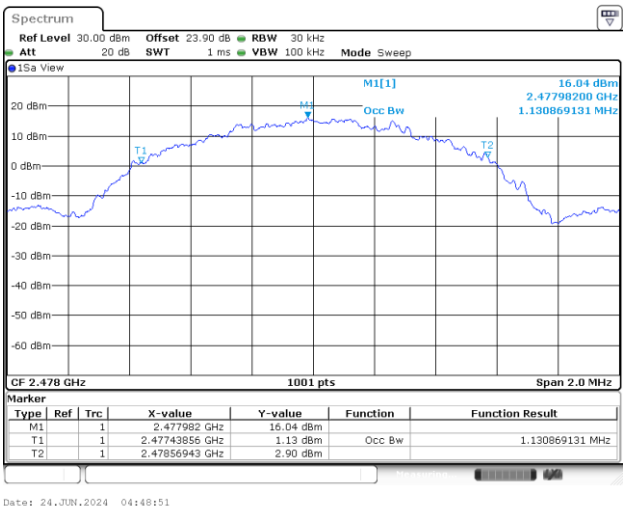
99% Occupied Bandwidth Plot on Channel 02



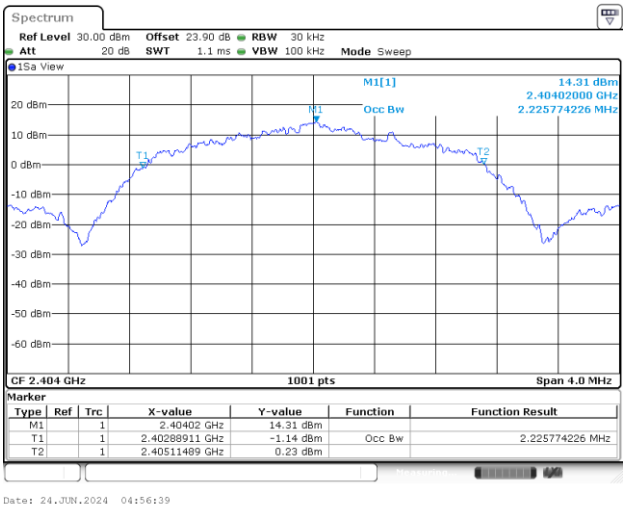
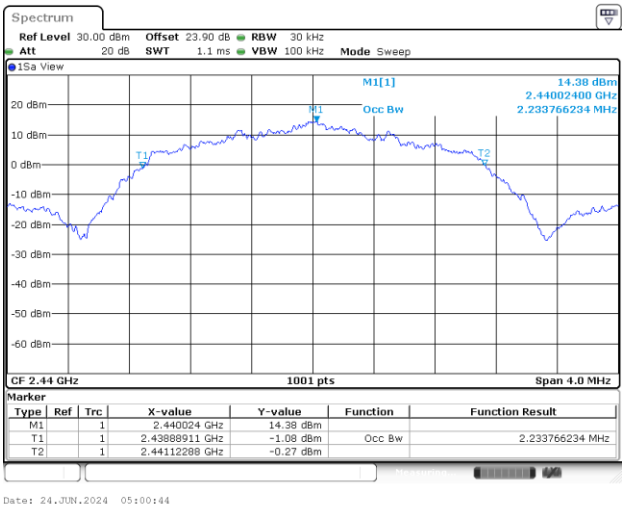
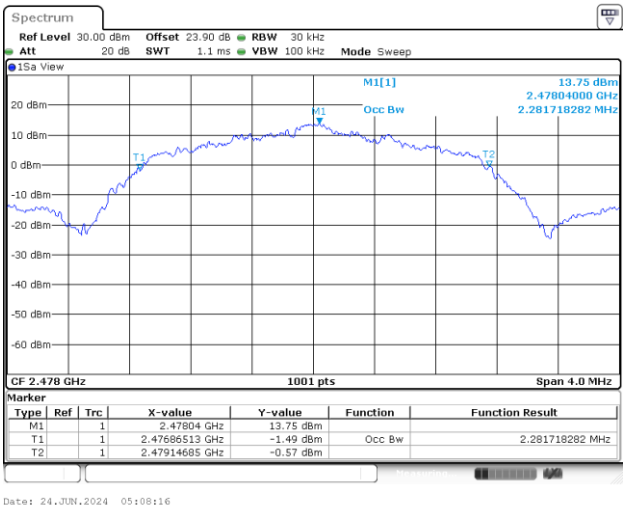
99% Occupied Bandwidth Plot on Channel 38



99% Occupied Bandwidth Plot on Channel 76

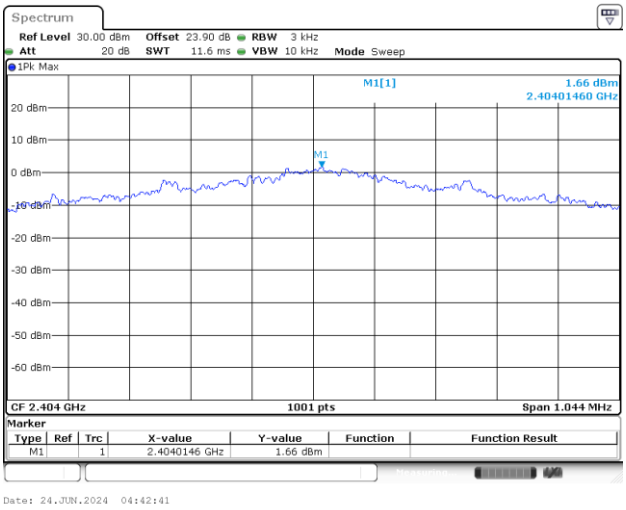
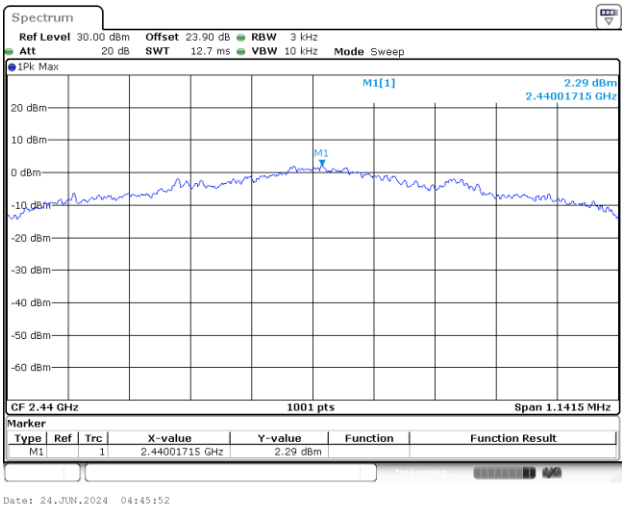
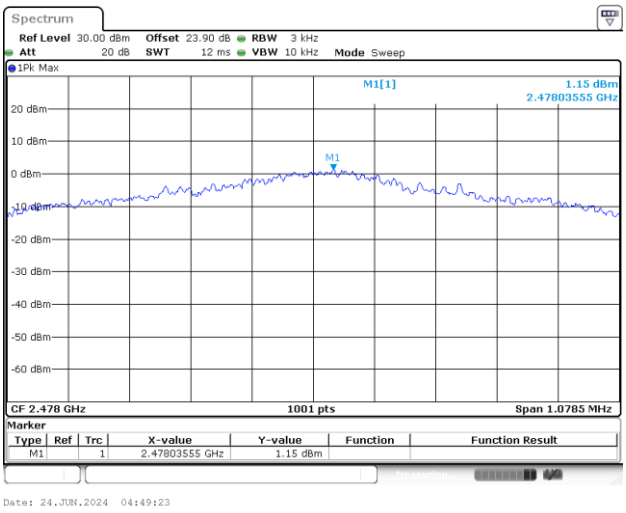


<2Mbps>

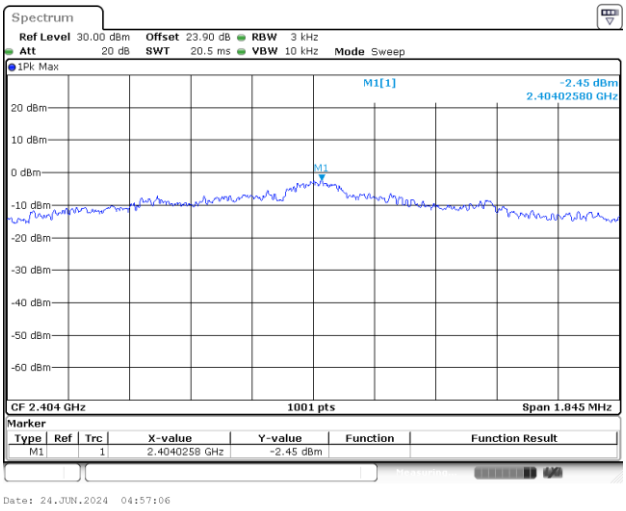
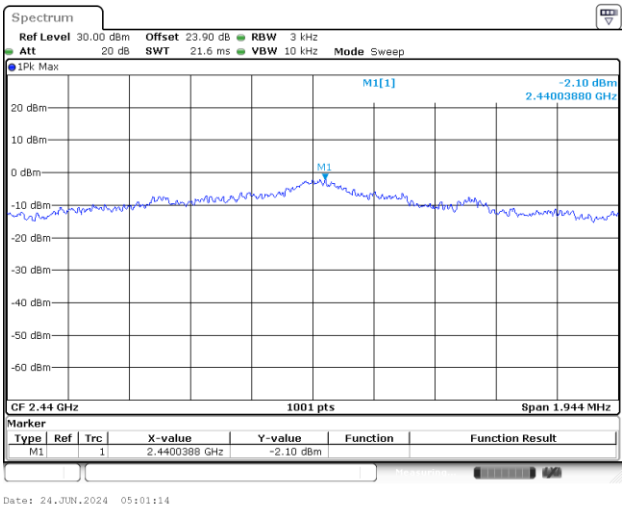
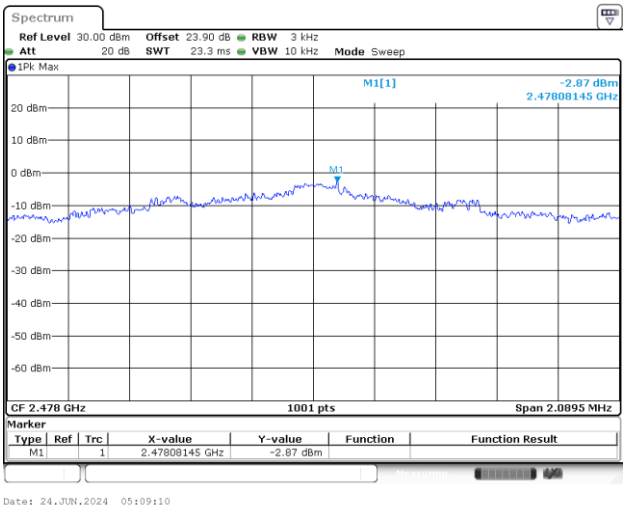
99% Occupied Bandwidth Plot on Channel 02	99% Occupied Bandwidth Plot on Channel 38
	
99% Occupied Bandwidth Plot on Channel 76	
	

Power Spectral Density (dBm/3kHz)

<1Mbps>

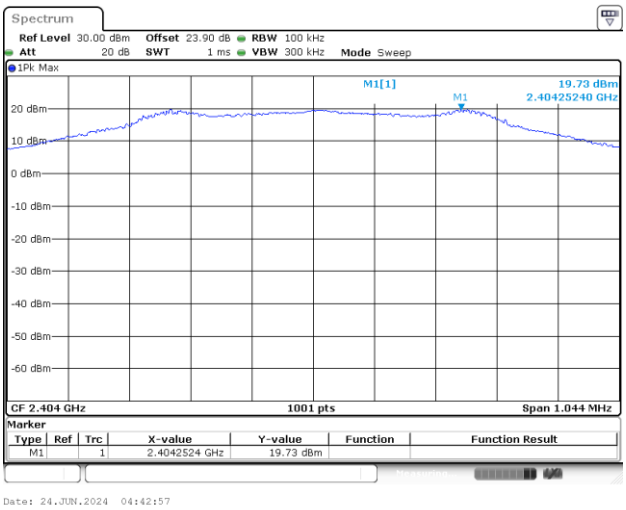
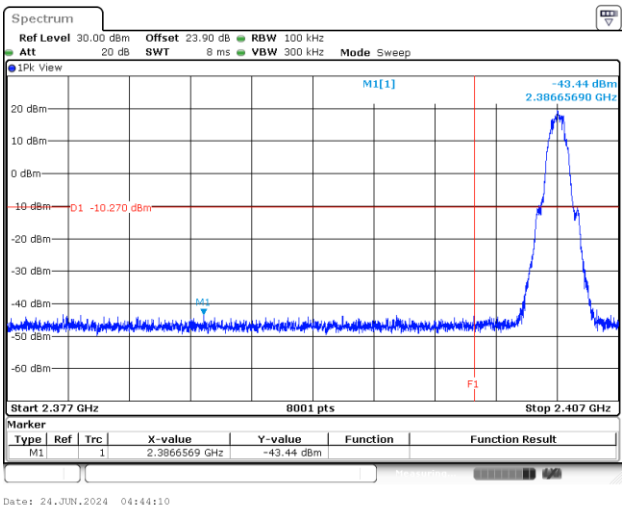
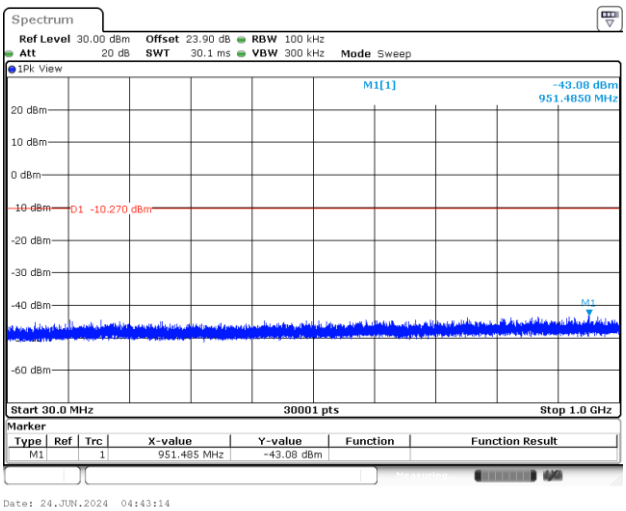
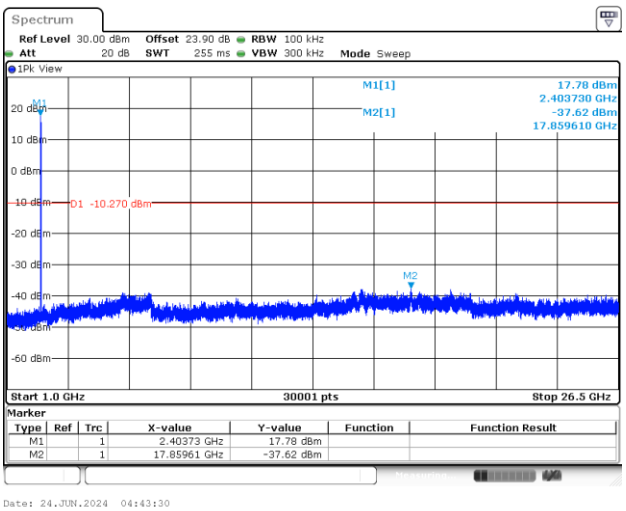
Power Density (dBm/3kHz) Plot Channel 02	Power Density (dBm/3kHz) Plot Channel 38
	
Power Density (dBm/3kHz) Plot Channel 76	
	

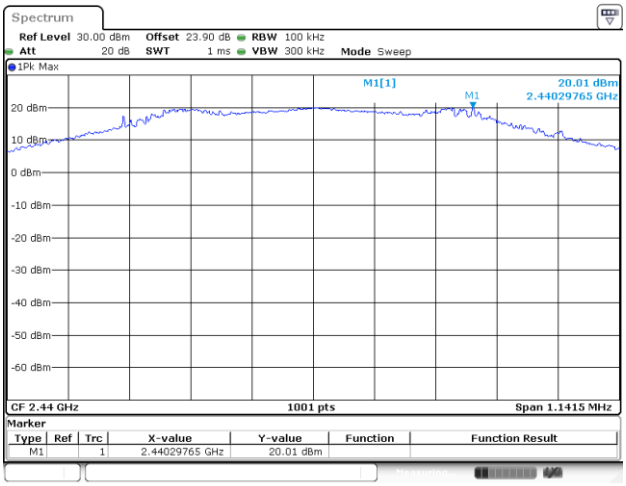
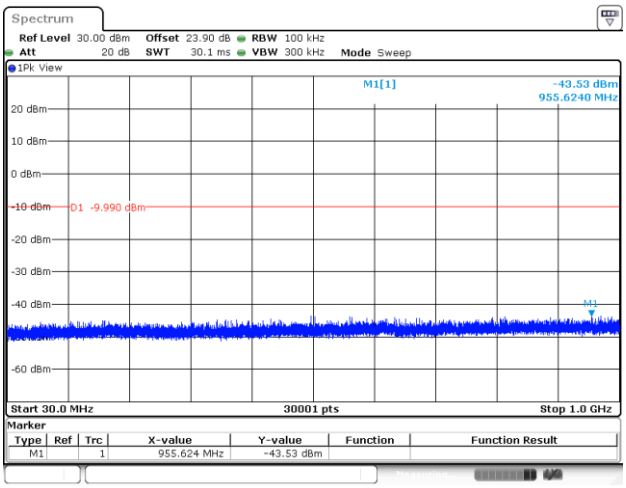
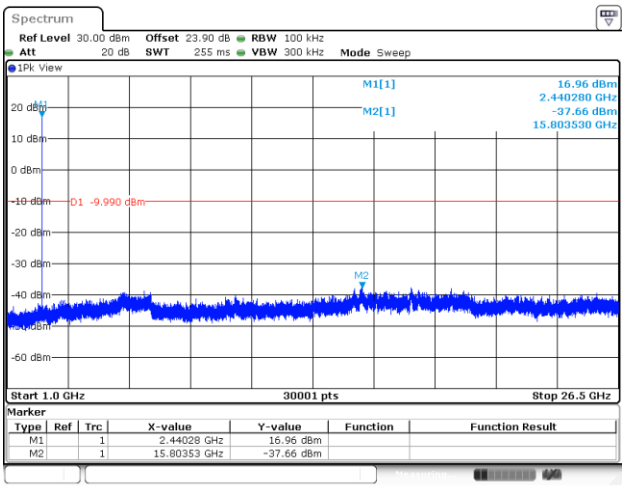
<2Mbps>

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

Band Edge and Conducted Spurious Emission

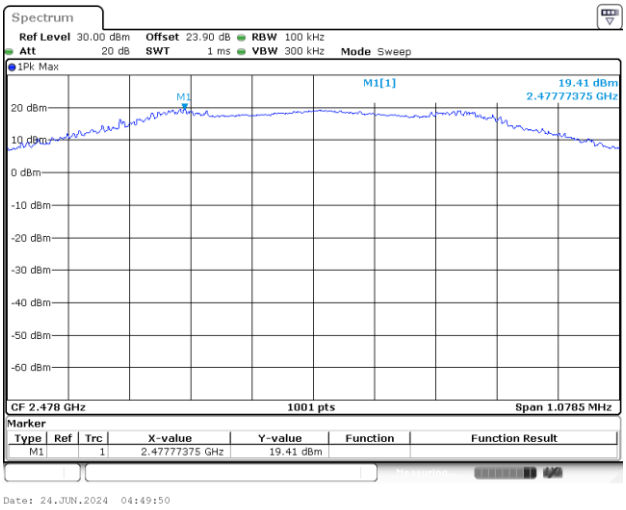
<1Mbps>

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

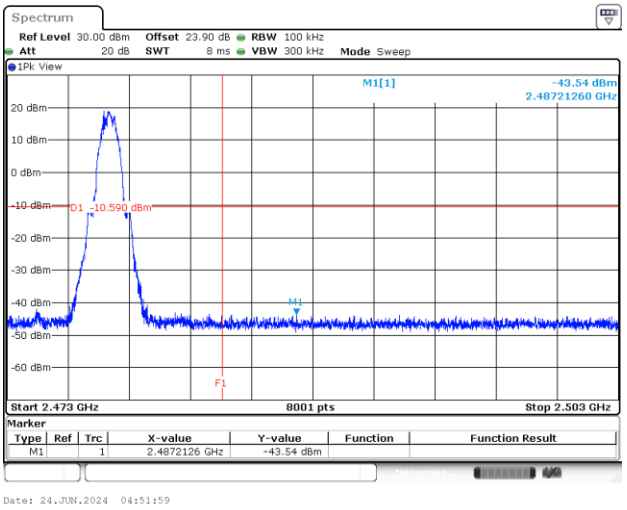
Channel 38	
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 76

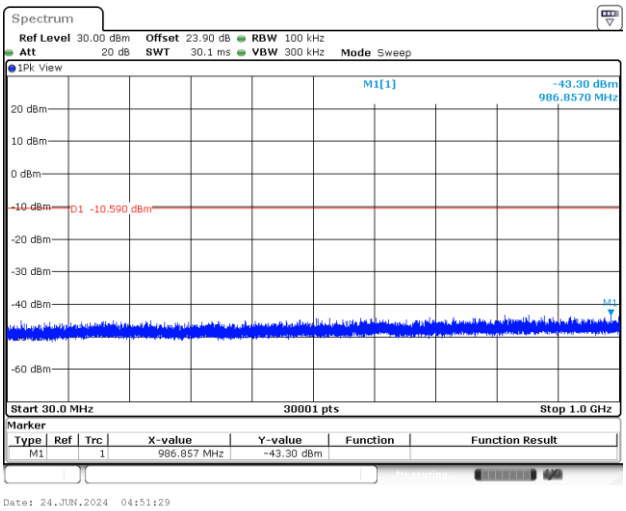
100kHz PSD reference Level Plot



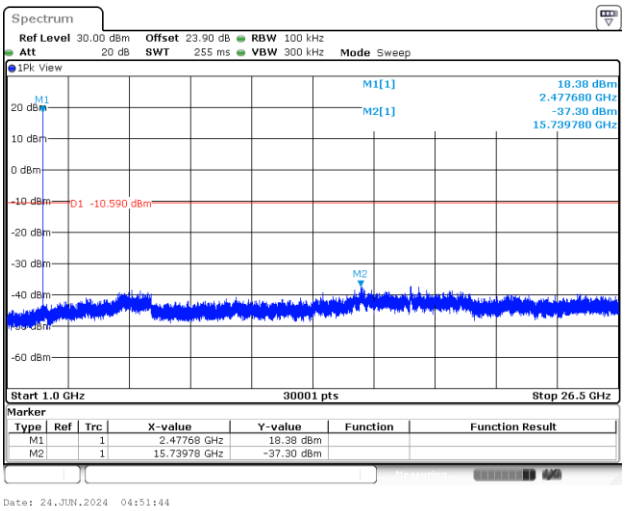
High Channel Plot



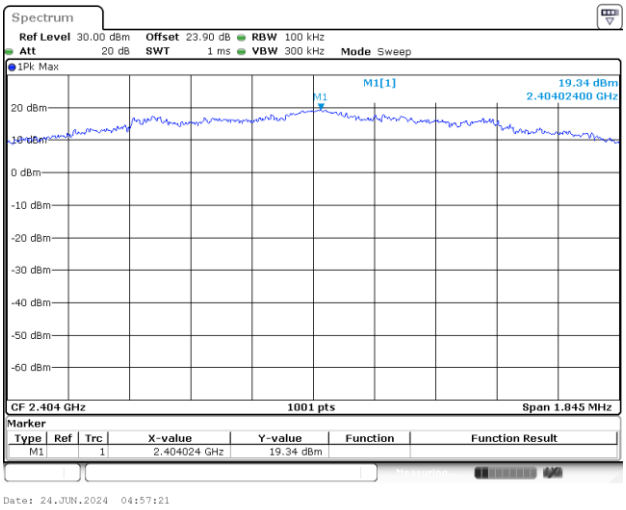
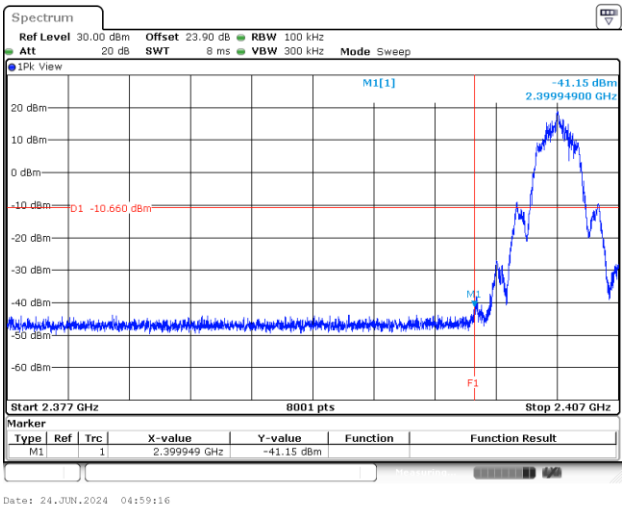
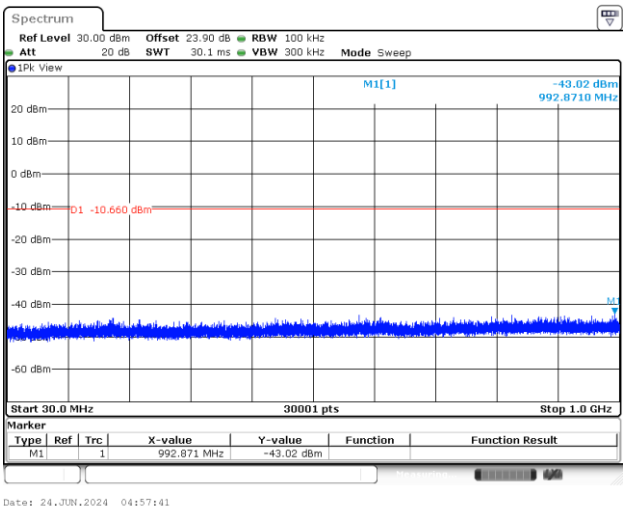
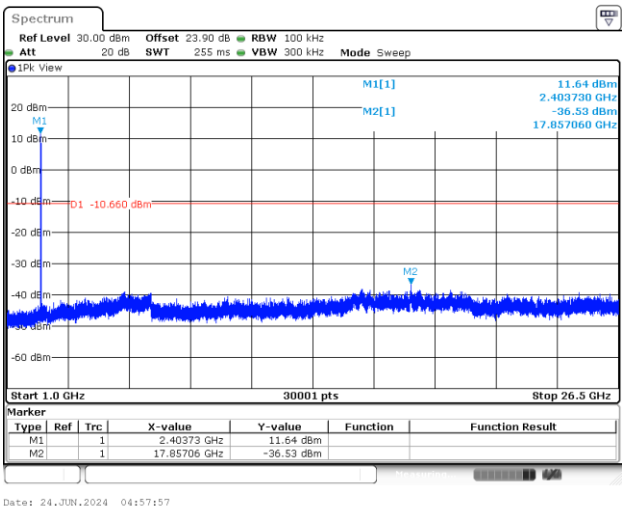
Spurious Emission 30MHz~1GHz Plot

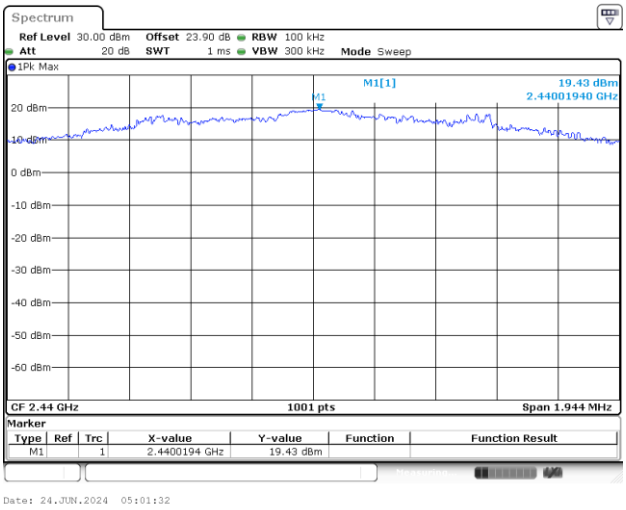
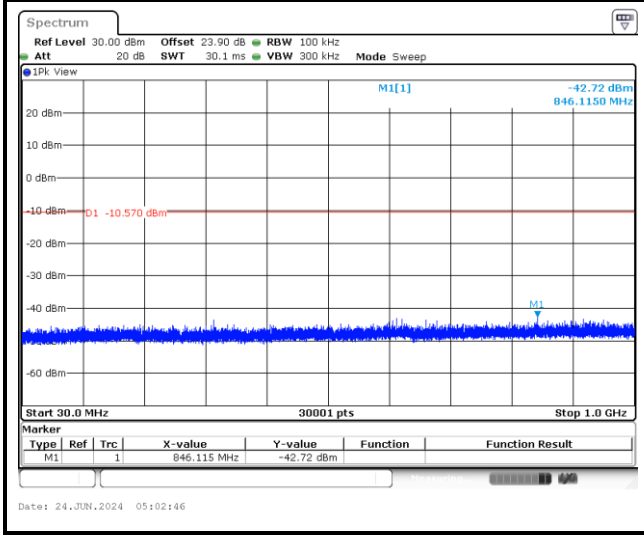
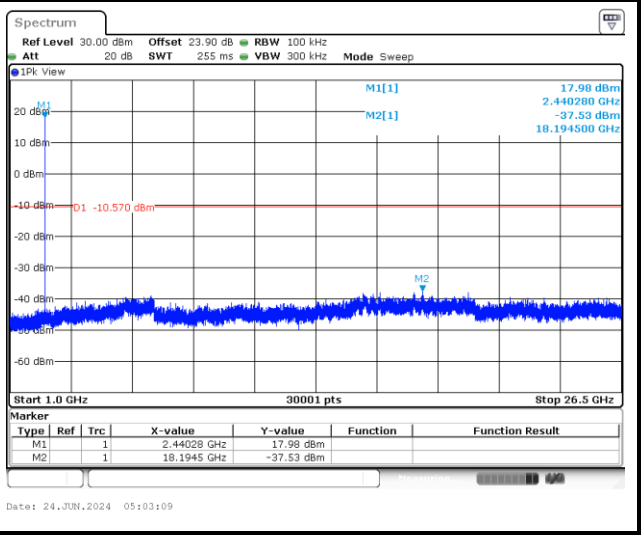


Spurious Emission 1GHz~26.5GHz Plot



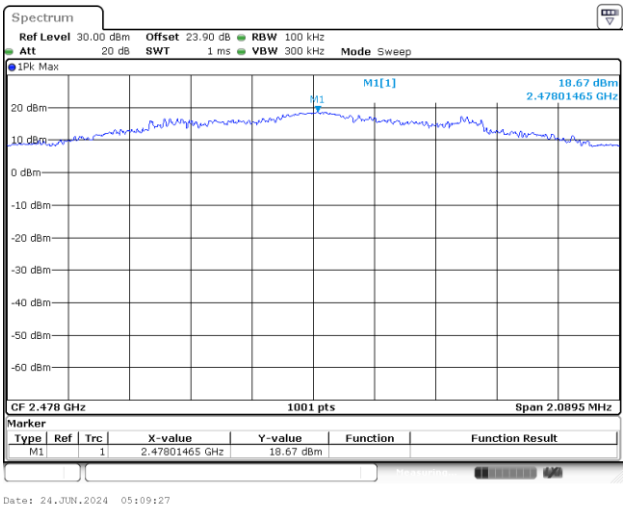
<2Mbps>

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

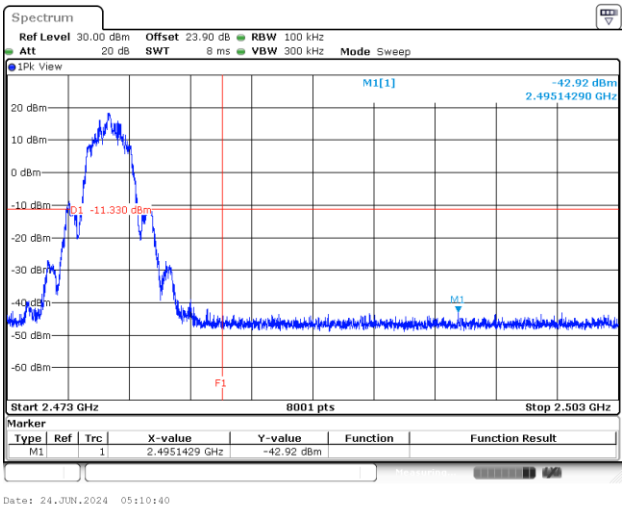
Channel 38	
100kHz PSD reference Level Plot	**Middle Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 76

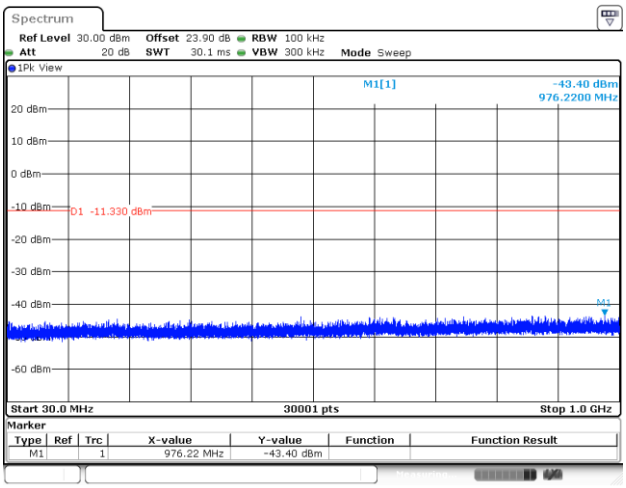
100kHz PSD reference Level Plot



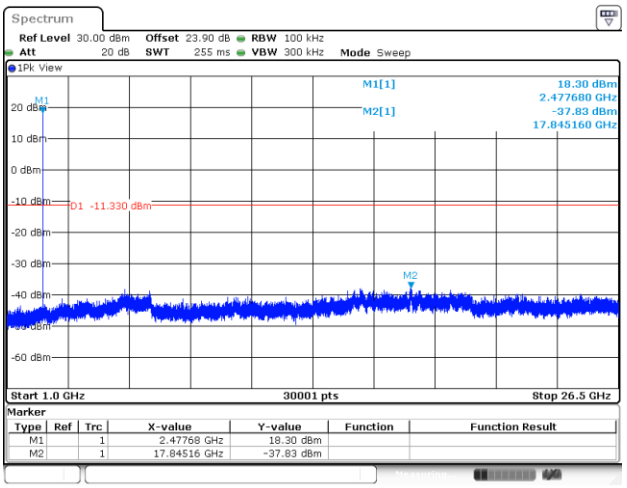
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot



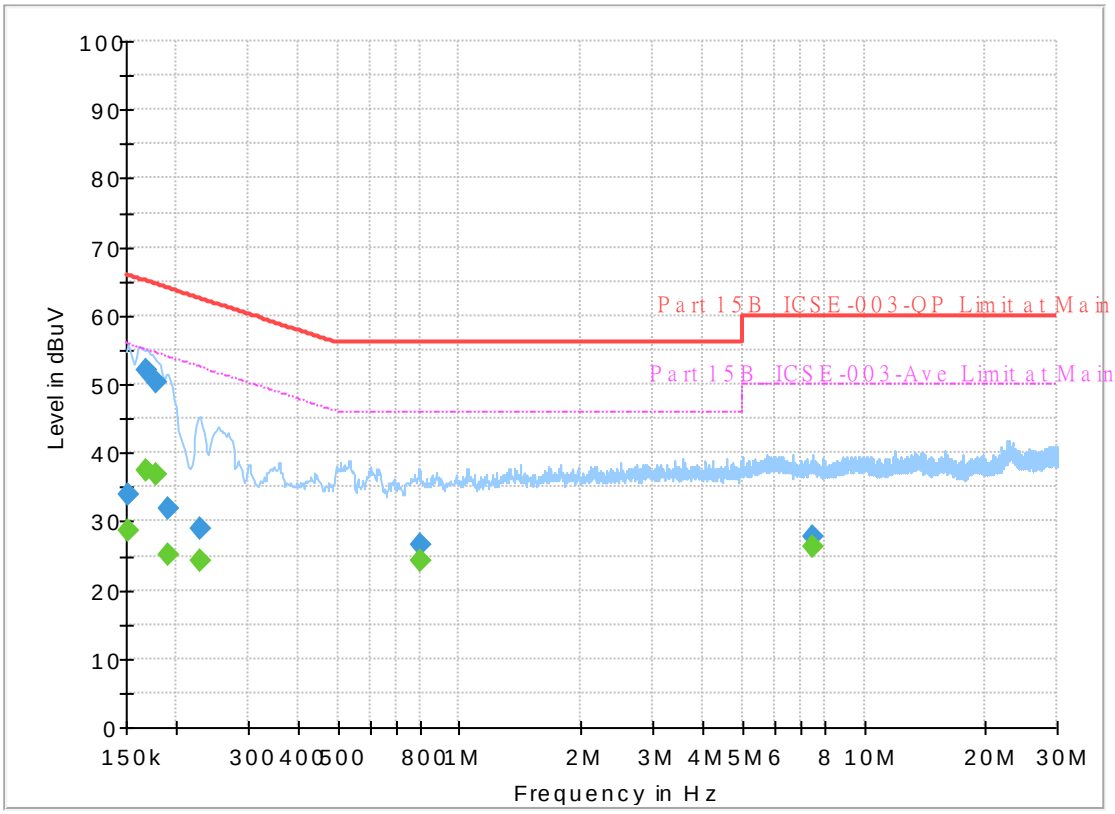
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO :	451606
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum

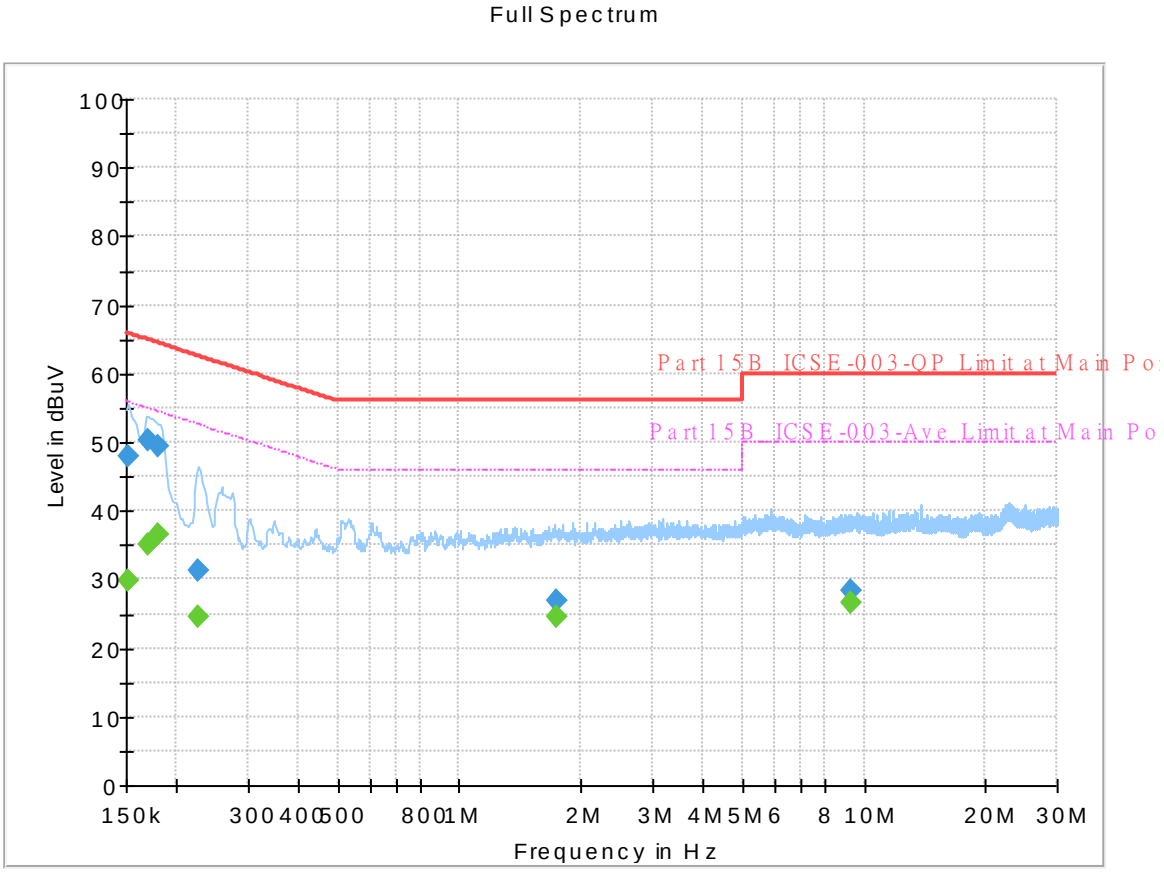


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	28.62	55.88	27.26	L1	OFF	19.8
0.152250	33.80	---	65.88	32.08	L1	OFF	19.8
0.168000	---	37.53	55.06	17.53	L1	OFF	19.8
0.168000	52.02	---	65.06	13.04	L1	OFF	19.8
0.177000	---	36.95	54.63	17.68	L1	OFF	19.8
0.177000	50.40	---	64.63	14.23	L1	OFF	19.8
0.190500	---	25.20	54.02	28.82	L1	OFF	19.8
0.190500	31.74	---	64.02	32.28	L1	OFF	19.8
0.228750	---	24.29	52.50	28.21	L1	OFF	19.8
0.228750	28.90	---	62.50	33.60	L1	OFF	19.8
0.798000	---	24.18	46.00	21.82	L1	OFF	19.8
0.798000	26.55	---	56.00	29.45	L1	OFF	19.8
7.471500	---	26.27	50.00	23.73	L1	OFF	20.1
7.471500	27.76	---	60.00	32.24	L1	OFF	20.1

EUT Information

Report NO :	451606
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)
0.152250	---	29.81	55.88	26.07	N	OFF	19.8
0.152250	47.86	---	65.88	18.02	N	OFF	19.8
0.170250	---	35.01	54.95	19.94	N	OFF	19.8
0.170250	50.30	---	64.95	14.65	N	OFF	19.8
0.179250	---	36.45	54.52	18.07	N	OFF	19.8
0.179250	49.53	---	64.52	14.99	N	OFF	19.8
0.226500	---	24.44	52.58	28.14	N	OFF	19.8
0.226500	31.34	---	62.58	31.24	N	OFF	19.8
1.734000	---	24.70	46.00	21.30	N	OFF	19.9
1.734000	26.92	---	56.00	29.08	N	OFF	19.9
9.289500	---	26.55	50.00	23.45	N	OFF	20.3
9.289500	28.31	---	60.00	31.69	N	OFF	20.3

Appendix C. Radiated Spurious Emission Test Data

Test Engineer :	Bill Chang, Gary Guo, and Steven Wu	Temperature :	18.2~20.2℃
		Relative Humidity :	54.2~56.1%

C1. Radiated Spurious Emission Test Modes

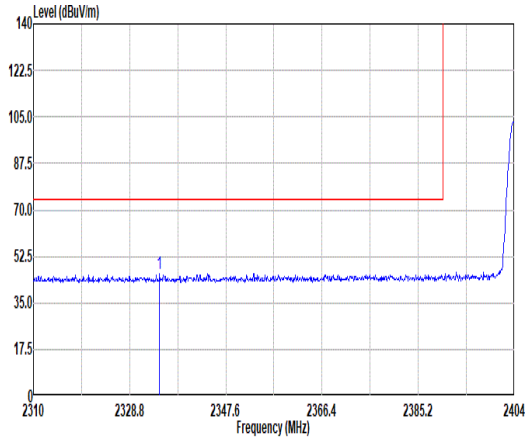
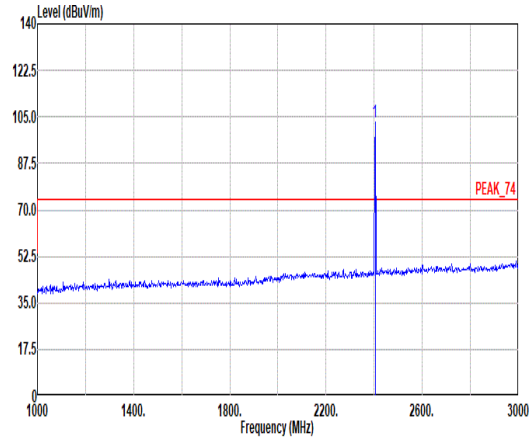
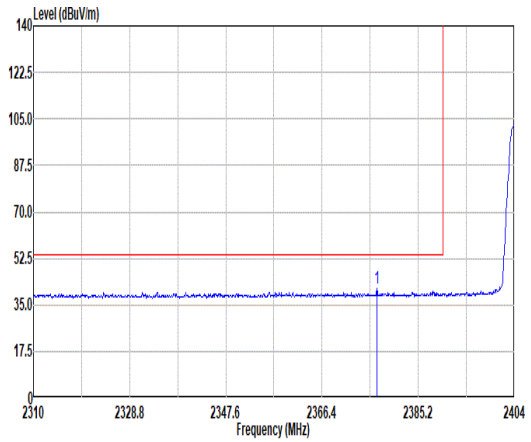
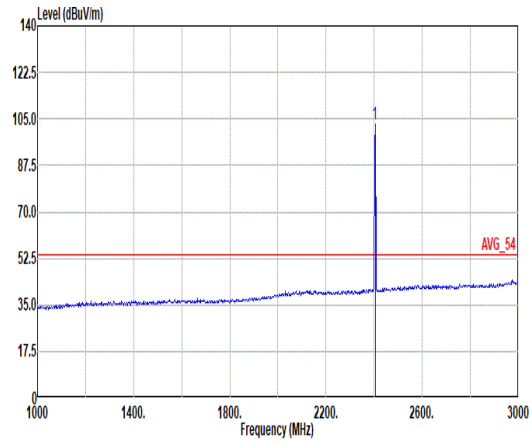
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	3	Bluetooth-LE_GFSK	02	2404	1Mbps	-	-
Mode 2	2400-2483.5	3	Bluetooth-LE_GFSK	38	2440	1Mbps	-	-
Mode 3	2400-2483.5	3	Bluetooth-LE_GFSK	76	2478	1Mbps	-	-
Mode 4	2400-2483.5	3	Bluetooth-LE_GFSK	02	2404	2Mbps	-	-
Mode 5	2400-2483.5	3	Bluetooth-LE_GFSK	38	2440	2Mbps	-	-
Mode 6	2400-2483.5	3	Bluetooth-LE_GFSK	76	2478	2Mbps	-	-
Mode 7	2400-2483.5	4	Bluetooth-LE_GFSK	02	2404	1Mbps	-	-
Mode 8	2400-2483.5	4	Bluetooth-LE_GFSK	38	2440	1Mbps	-	-
Mode 9	2400-2483.5	4	Bluetooth-LE_GFSK	76	2478	1Mbps	-	-
Mode 10	2400-2483.5	4	Bluetooth-LE_GFSK	02	2404	2Mbps	-	-
Mode 11	2400-2483.5	4	Bluetooth-LE_GFSK	38	2440	2Mbps	-	-
Mode 12	2400-2483.5	4	Bluetooth-LE_GFSK	76	2478	2Mbps	-	-
Mode 13	2400-2483.5	3	Bluetooth-LE_GFSK	02	2404	2Mbps	-	LF
Mode 14	2400-2483.5	3	Bluetooth-LE_GFSK	02	2404	2Mbps	-	SHF
Mode 15	2400-2483.5	4	Bluetooth-LE_GFSK	76	2478	2Mbps	-	LF
Mode 16	2400-2483.5	4	Bluetooth-LE_GFSK	76	2478	2Mbps	-	SHF

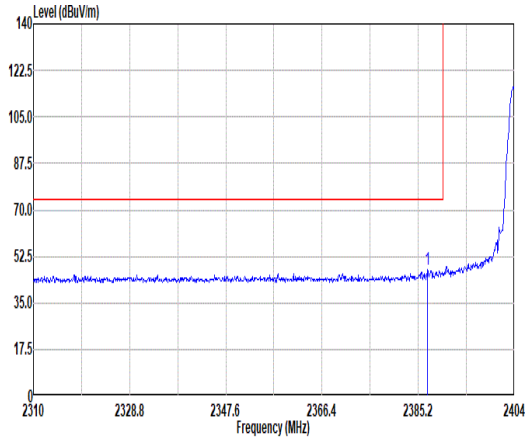
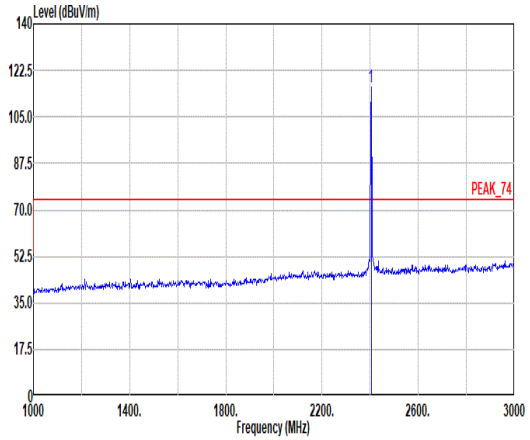
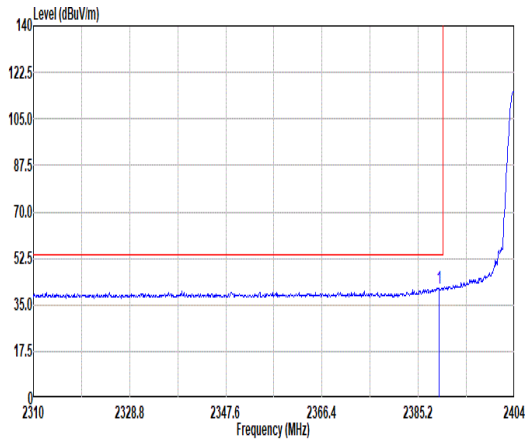
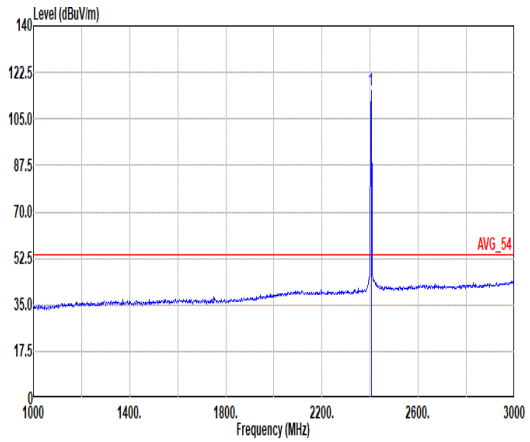
C2. Summary of each worse mode

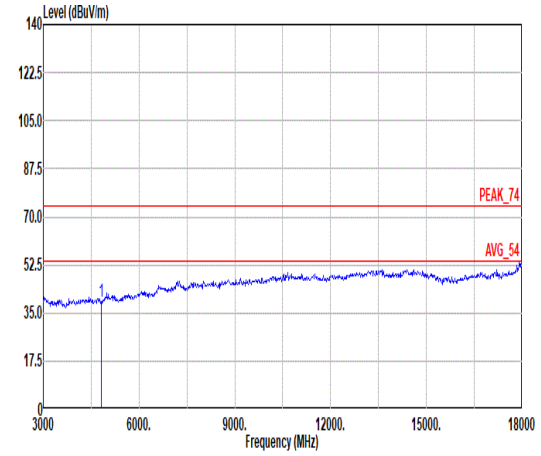
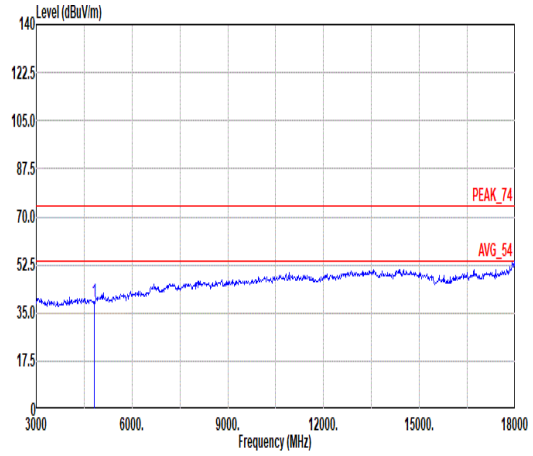
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
1	Bluetooth-LE_GFSK	02	2389.34	41.31	54.00	-12.69	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	02	4808.00	39.12	74.00	-34.88	V	Peak	Pass	-	Harmonic
2	Bluetooth-LE_GFSK	38	2499.04	41.06	54.00	-12.94	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	38	7320.00	45.37	74.00	-28.63	V	Peak	Pass	-	Harmonic
3	Bluetooth-LE_GFSK	76	2483.87	48.72	54.00	-5.28	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	76	7434.00	43.88	74.00	-30.12	V	Peak	Pass	-	Harmonic
4	Bluetooth-LE_GFSK	02	2389.90	46.79	54.00	-7.21	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	02	4808.00	40.08	74.00	-33.92	V	Peak	Pass	-	Harmonic
5	Bluetooth-LE_GFSK	38	2484.88	42.49	54.00	-11.51	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	38	7320.00	44.38	74.00	-29.62	H	Peak	Pass	-	Harmonic
6	Bluetooth-LE_GFSK	76	2483.90	52.05	54.00	-1.95	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	76	7434.00	44.74	74.00	-29.26	H	Peak	Pass	-	Harmonic
7	Bluetooth-LE_GFSK	02	2347.41	39.57	54.00	-14.43	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	02	4808.00	39.50	74.00	-34.50	H	Peak	Pass	-	Harmonic

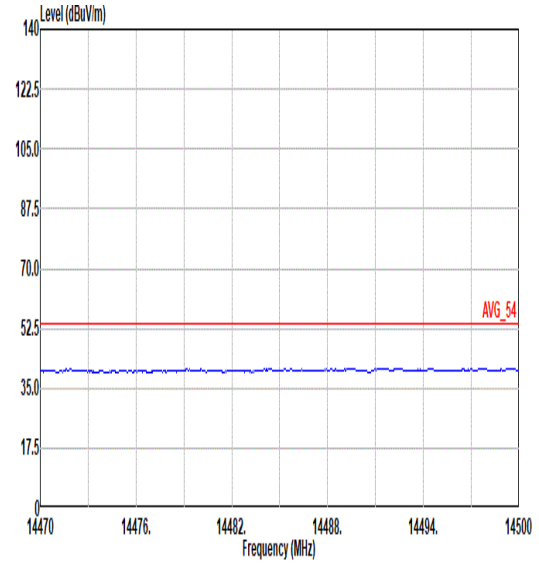
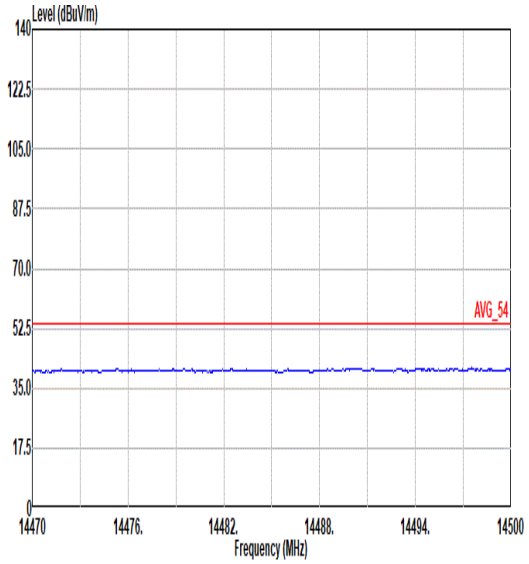
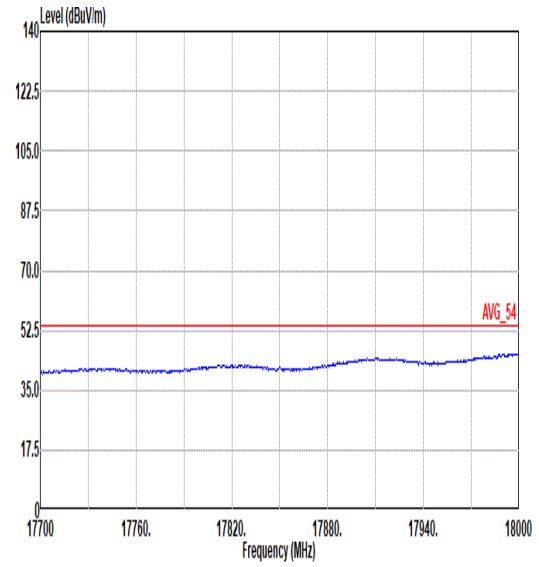
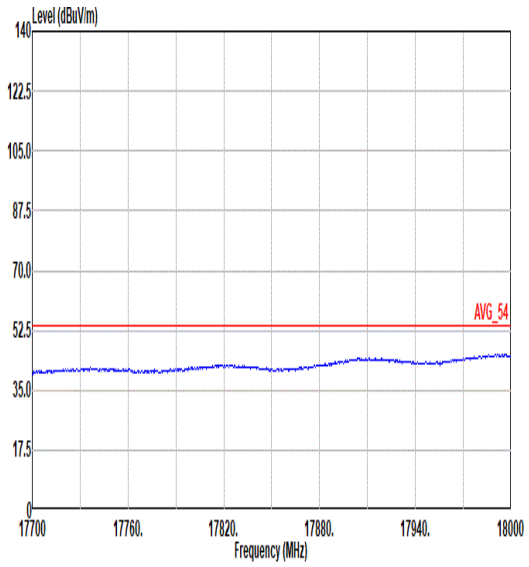
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
8	Bluetooth-LE_GFSK	38	2495.50	40.99	54.00	-13.01	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	38	7320.00	44.95	74.00	-29.05	V	Peak	Pass	-	Harmonic
9	Bluetooth-LE_GFSK	76	2483.63	41.55	54.00	-12.45	H	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	76	7434.00	44.82	74.00	-29.18	H	Peak	Pass	-	Harmonic
10	Bluetooth-LE_GFSK	02	2389.05	40.95	54.00	-13.05	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	02	4808.00	39.48	74.00	-34.52	H	Peak	Pass	-	Harmonic
11	Bluetooth-LE_GFSK	38	2485.12	41.61	54.00	-12.39	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	38	7320.00	45.74	74.00	-28.26	H	Peak	Pass	-	Harmonic
12	Bluetooth-LE_GFSK	76	2483.54	47.79	54.00	-6.21	V	Avg.	Pass	-	Band Edge
	Bluetooth-LE_GFSK	76	7434.00	44.96	74.00	-29.04	V	Peak	Pass	-	Harmonic

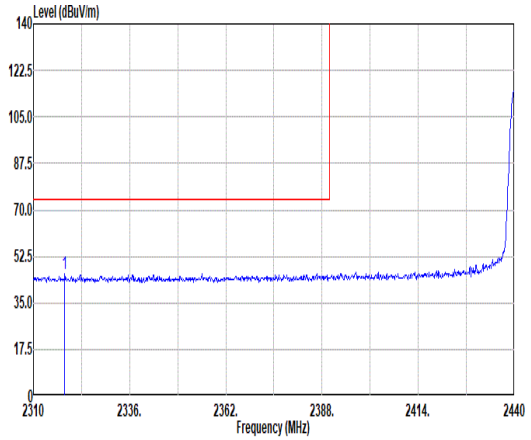
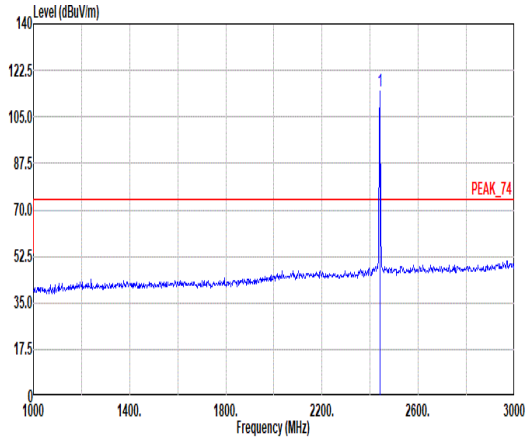
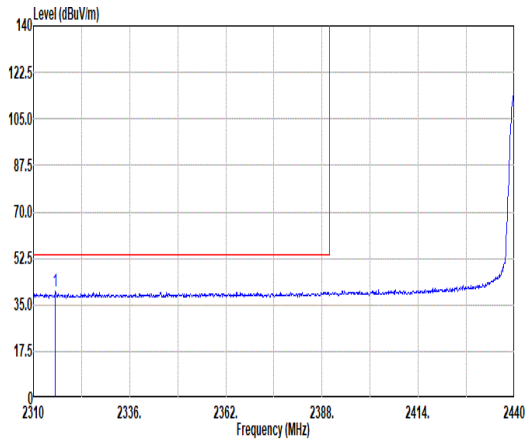
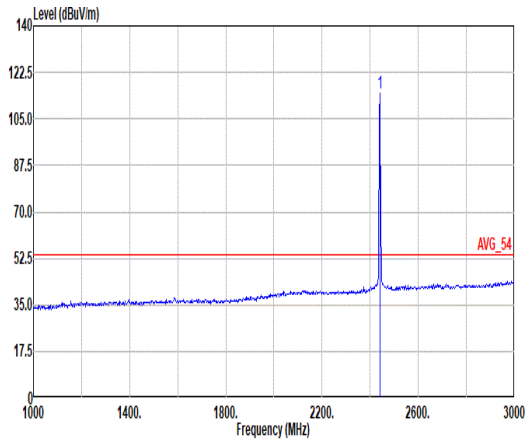
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
13	LF	02	41.64	31.84	40.00	-8.16	V	QP	Pass	-	LF
14	SHF	02	24802.08	38.93	74.00	-35.07	V	Peak	Pass	-	SHF
15	LF	76	34.85	32.57	40.00	-7.43	V	QP	Pass	-	LF
16	SHF	76	24946.82	39.35	74.00	-34.65	H	Peak	Pass	-	SHF

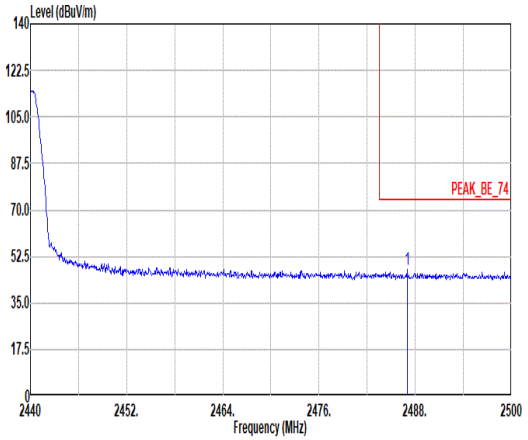
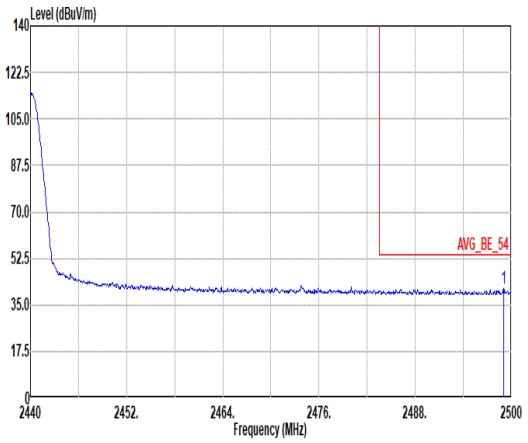
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GFSK _CH02_2404MHz	
ANT	3	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2334.63 46.21 74.00 -27.79 41.42 27.10 7.62 29.93 0.00 328 73 PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 2404.00 103.15 ------ ------ 97.92 27.40 7.74 29.91 0.00 328 73 PEAK
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2377.12 40.97 54.00 -13.03 36.00 27.20 7.69 29.92 0.00 328 73 AVERAGE	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2404.00 102.77 ------ ------ 97.54 27.40 7.74 29.91 0.00 328 73 AVERAGE

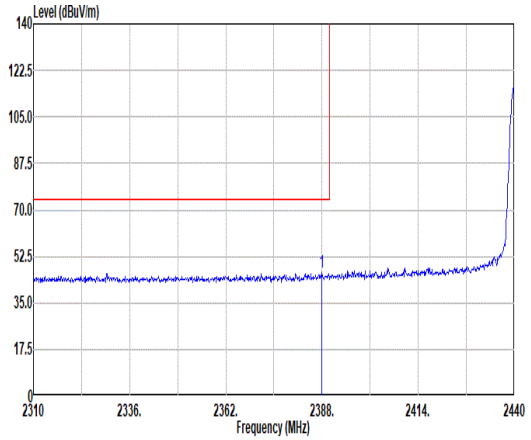
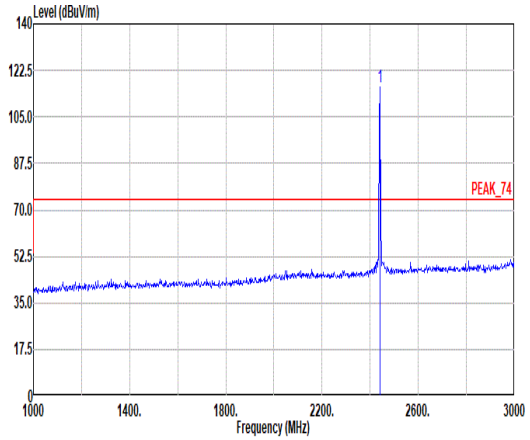
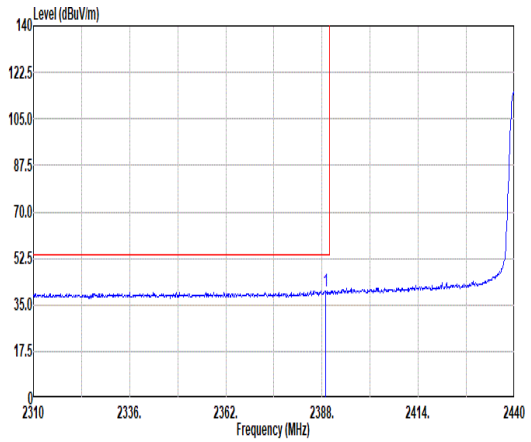
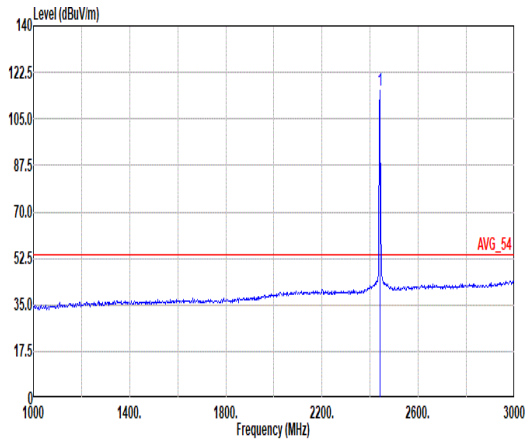
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GFSK _CH02_2404MHz	
ANT	3	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2386.99 47.77 74.00 -26.23 42.70 27.27 7.71 29.91 0.00 100 292 PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 2404.00 116.20 ------ ------ 110.97 27.40 7.74 29.91 0.00 100 292 PEAK
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:24.000kHz 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 2389.34 41.31 54.00 -12.69 36.22 27.29 7.71 29.91 0.00 100 292 AVERAGE	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:24.000kHz 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 2404.00 115.76 ------ ------ 110.53 27.40 7.74 29.91 0.00 100 292 AVERAGE

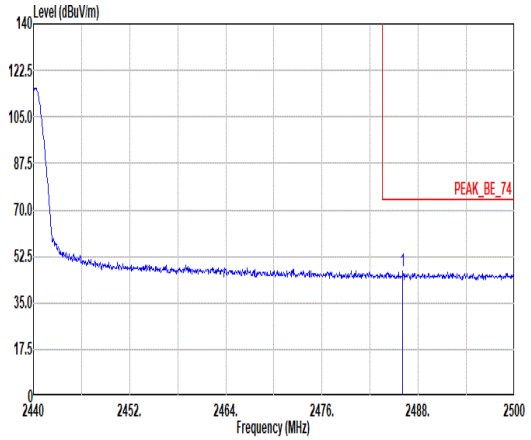
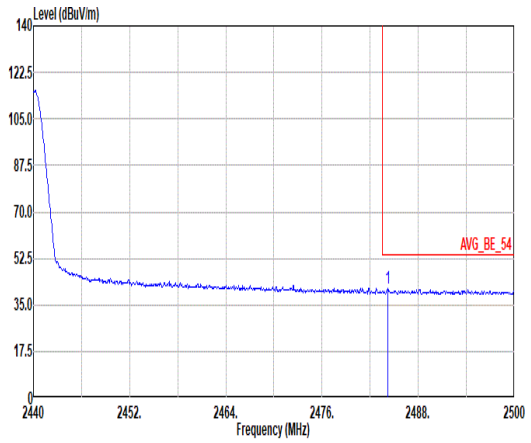
Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GFSK _CH02_2404MHz	
ANT	3	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4808.00 38.88 74.00 -35.12 61.58 32.33 10.69 66.16 0.44 -- -- PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 4808.00 39.12 74.00 -34.88 61.82 32.33 10.69 66.16 0.44 -- -- PEAK

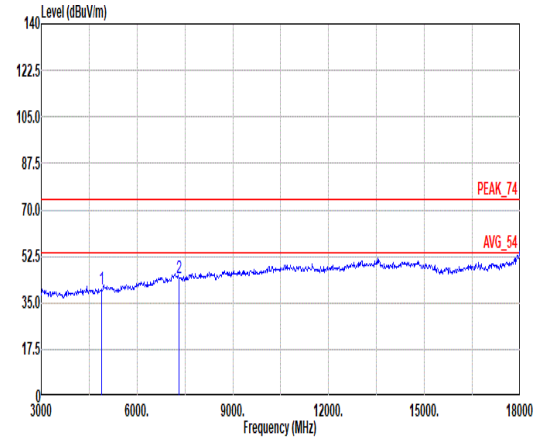
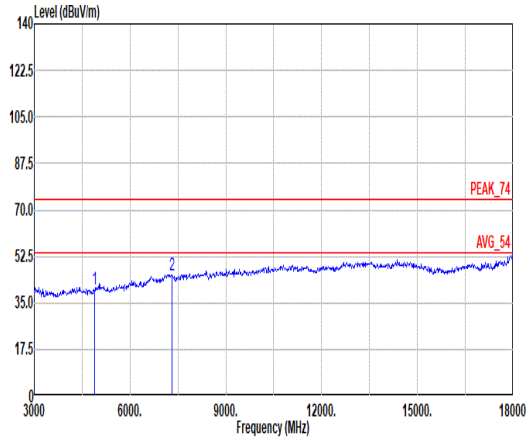
Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GFSK _CH02_2404MHz	
ANT	3	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL
17.7G ~18G Avg	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL

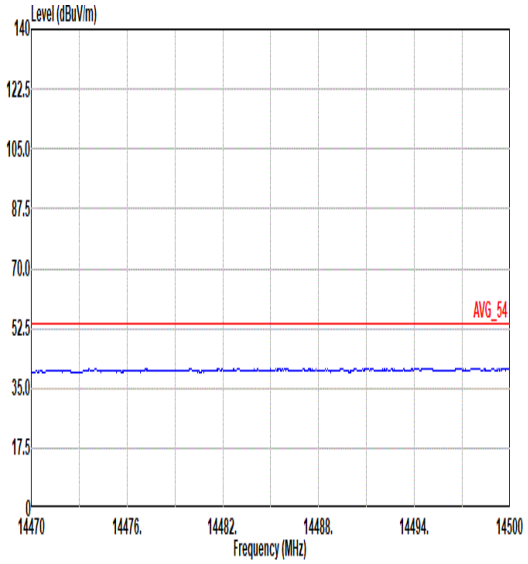
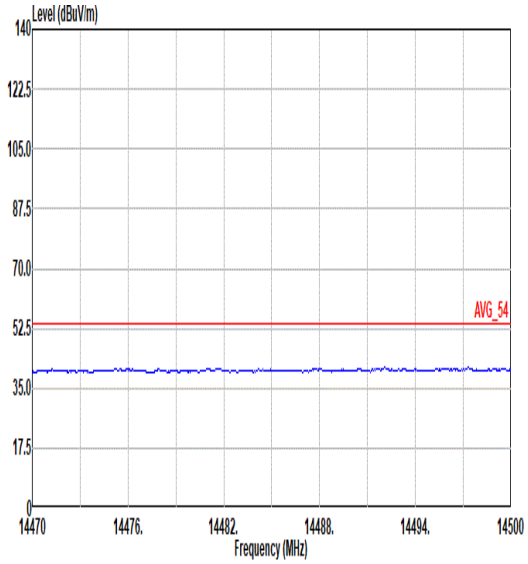
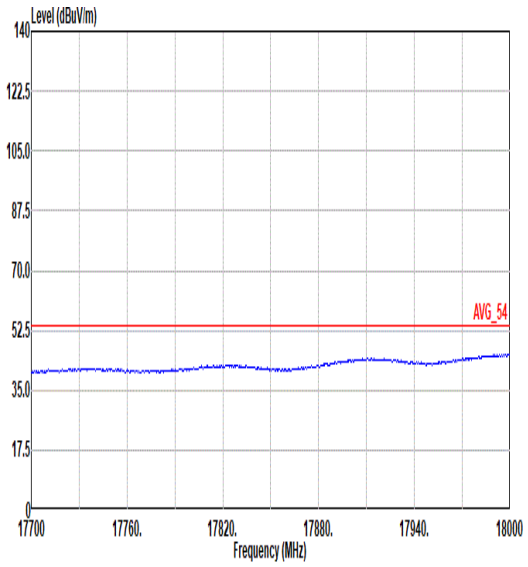
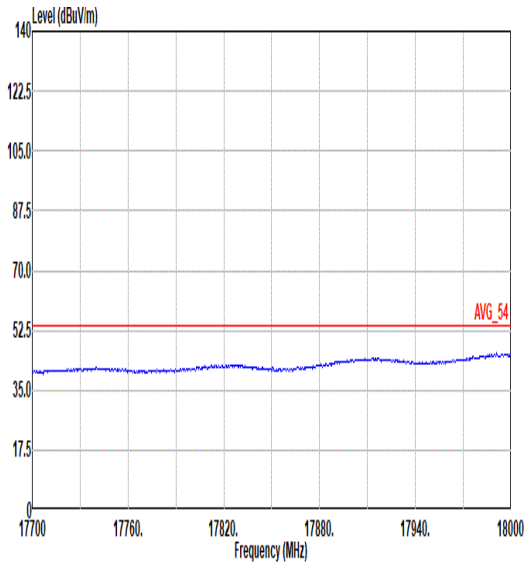
Mode	2	
	Band Edge - L	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2318.45 46.18 74.00 -27.82 41.42 27.10 7.59 29.93 0.00 116 218 PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 2440.00 114.81 ------ ------ 109.32 27.60 7.79 29.90 0.00 116 218 PEAK
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2315.98 40.08 54.00 -13.92 35.33 27.10 7.59 29.94 0.00 116 218 AVERAGE	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2440.00 114.56 ------ ------ 109.07 27.60 7.79 29.90 0.00 116 218 AVERAGE

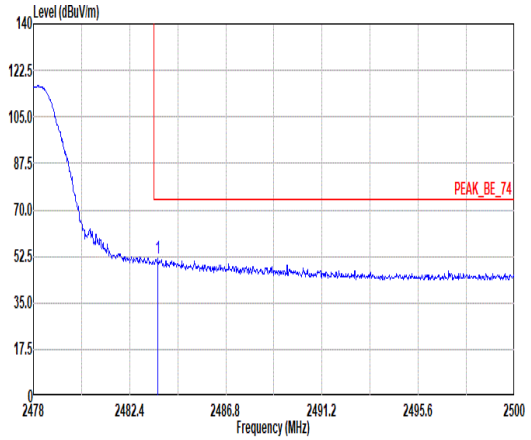
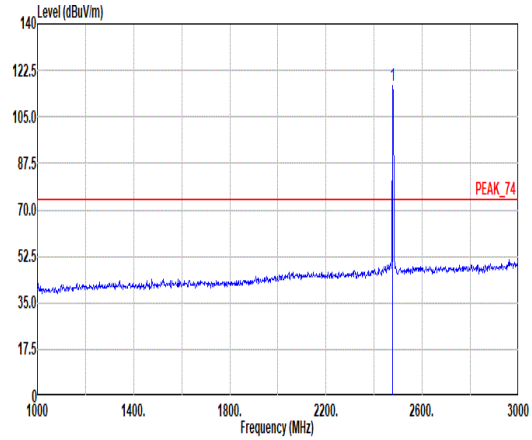
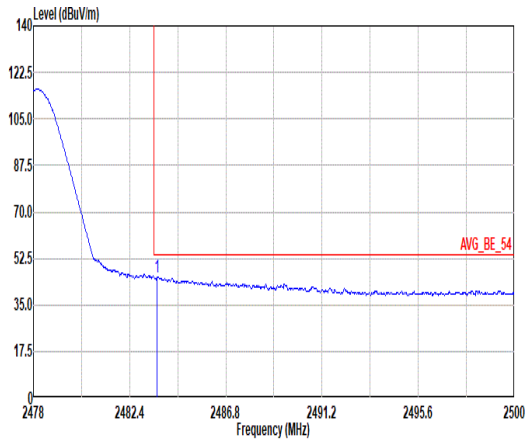
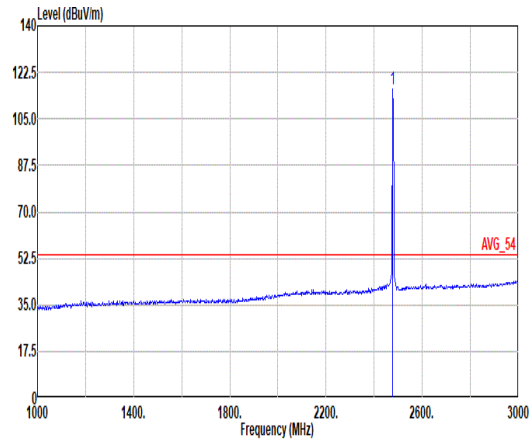
Mode	2	
	Band Edge - R	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2486.98 47.53 74.00 -26.47 41.85 27.70 7.86 29.88 0.00 116 218 PEAK	Blank
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2499.04 41.06 54.00 -12.94 35.36 27.70 7.88 29.88 0.00 116 218 AVERAGE	Blank

Mode	2	
	Band Edge - L	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 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 2388.00 46.34 74.00 -27.66 41.26 27.28 7.71 29.91 0.00 100 291 PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 2440.00 115.98 ------ ------ 110.49 27.60 7.79 29.90 0.00 100 291 PEAK
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:24.000kHz 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 2389.04 40.28 54.00 -13.72 35.19 27.29 7.71 29.91 0.00 100 291 AVERAGE	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:24.000kHz 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 2440.00 115.59 ------ ------ 110.10 27.60 7.79 29.90 0.00 100 291 AVERAGE

Mode	2	
	Band Edge - R	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 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 2486.08 46.79 74.00 -27.21 41.11 27.70 7.86 29.88 0.00 100 291 PEAK	Blank
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 VERTICAL : RBW:1000.000kHz VBW:24.000kHz 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 2484.16 41.01 54.00 -12.99 35.33 27.70 7.86 29.88 0.00 100 291 AVERAGE	Blank

Mode	2	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 4880.00 40.12 74.00 -33.88 62.20 32.62 10.88 66.02 0.44 -- -- PEAK 2 7320.00 44.58 74.00 -29.42 59.46 36.78 13.36 65.46 0.44 -- -- PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 4880.00 40.31 74.00 -33.69 62.39 32.62 10.88 66.02 0.44 -- -- PEAK 2 7320.00 45.37 74.00 -28.63 60.25 36.78 13.36 65.46 0.44 -- -- PEAK

Mode	2	
	Harmonic	
	2400-2483.5_Bluetooth-LE_GFSK _CH38_2440MHz	
ANT	3	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL
17.7G ~18G Avg	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 VERTICAL

Mode	3	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GFSK _CH76_2478MHz	
ANT	3	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition: PEAK_BE_74 3m 9120D-1522_240328 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 2483.70 51.95 74.00 -22.05 46.27 27.70 7.86 29.88 0.00 113 217 PEAK	 Site : 03CH16-HY Condition: PEAK_74 3m 9120D-1522_240328 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 2478.00 116.75 ------ ------ 111.11 27.68 7.85 29.89 0.00 113 217 PEAK
Avg	 Site : 03CH16-HY Condition: AVG_BE_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2483.65 45.34 54.00 -8.66 39.66 27.70 7.86 29.88 0.00 113 217 AVERAGE	 Site : 03CH16-HY Condition: AVG_54 3m 9120D-1522_240328 HORIZONTAL : RBW:1000.000kHz VBW:24.000kHz 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 2478.00 116.13 ------ ------ 110.49 27.68 7.85 29.89 0.00 113 217 AVERAGE