



FCC RADIO TEST REPORT

FCC ID : APYHRO00327
Equipment : Smart phone
Brand Name : SHARP
Model Name : APYHRO00327
Applicant : SHARP CORPORATION
1 Takumi-Cho, Sakai-Ku, Sakai-Shi, Osaka 590-8522,
Japan
Manufacturer : SHARP CORPORATION
1 Takumi-Cho, Sakai-Ku, Sakai-Shi, Osaka 590-8522,
Japan
Standard : FCC Part 15 Subpart C §15.247

The product was received on Mar. 14, 2023 and testing was performed from Mar. 31, 2023 to Apr. 25, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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



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History of this test report

Report No.	Version	Description	Issue Date
FR322209B	01	Initial issue of report	May 11, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(2)	6dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.247(b)(3) 15.247(b)(4)	Output Power	Pass	-
3.3	15.247(e)	Power Spectral Density	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	Pass	9.55 dB under the limit at 2483.560 MHz
3.6	15.207	AC Conducted Emission	Pass	9.57 dB under the limit at 0.499 MHz
3.7	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:

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

Disclaimer:

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: Keven Cheng

Report Producer: Michelle Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature		
General Specs GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, FM Receiver, NFC, and GNSS.		
Antenna Type WWAN: <Ant. 0>: Monopole Antenna <Ant. 1>: PIFA Antenna <Ant. 2>: Monopole Antenna WLAN: Loop Antenna Bluetooth: Loop Antenna GPS / Glonass / BDS / Galileo: PIFA Antenna NFC: Loop Antenna FM: Using earphone as antenna		
Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	-1.36

Remark:

1. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.
2. All test items were performed with Battery 1 and Main Sample.

SKU List				
Item	Main		2nd Source	
	Main Sample		Sample 2	
	Vendor	Model Number	Vendor	Model Number
Battery	SCUD	BPSX1000010	UTL	BPSX300001S
Main PCB	Wuzhu	SB0SX31BW0C	ZDT	SB0SX31BK0C
CPU	MTK	SA06833V010 (MT6833V_NZA)	MTK	SA06833V010 (MT6833V_NZA)
G- sensor	Bosch	SA0MI320020(BMI320)	TDK	SA042670020(ICM-42670-N)
rear housing	DY	MESX361010A	LF	MESX361011A
FPC_USB	SUNFLEX	MESX114012A	PBH	MESX314004A
FPC_AJ	SUNFLEX	MESX114013A	PBH	MESX314003A
FPC_Main	SUNFLEX	MESX314002A	PBH	MESX314012A
FPC_SPK	AKM	MESX114005A	PBH	MESX314005A
FPC_Side_Key	SUNFLEX	MESX314001A	PBH	MESX314011A
Memory	SAMSUNG	KM5P9001DM-B424	SAMSUNG	KM5P9001DM-B424



SKU List				
Item	2nd Source			
	Sample 3		Sample 4	
	Vendor	Model Number	Vendor	Model Number
Battery	SCUD	BPSX1000010	SCUD	BPSX1000010
Main PCB	Wuzhu	SB0SX31BW0C	Wuzhu	SB0SX31BW0C
CPU	MTK	SA06833V011 (MT6833V_ZA)	MTK	SA06833V010 (MT6833V_NZA)
G- sensor	Bosch	SA0MI320020(BMI320)	Bosch	SA0MI320020(BMI320)
rear housing	DY	MESX361030A	DY	MESX361010A
FPC_USB	PBH	MESX314004A	PBH	MESX314004A
FPC_AJ	PBH	MESX314003A	PBH	MESX314003A
FPC_Main	SUNFLEX	MESX314002A	SUNFLEX	MESX314002A
FPC_SPK	AKM	MESX114005A	AKM	MESX114005A
FPC_Side_Key	SUNFLEX	MESX314001A	SUNFLEX	MESX314001A
Memory	SAMSUNG	KM5P9001DM-B424	Hynix	H9QG9G5AN6X154

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, 03CH23-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.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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	-	-

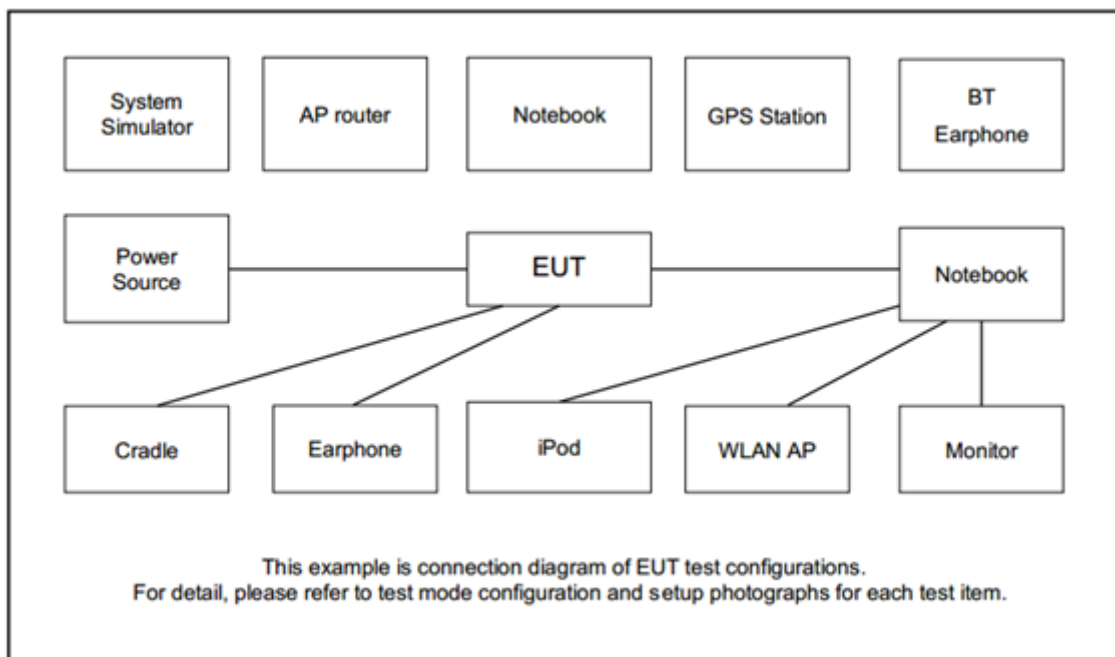
2.2 Test Mode

- 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_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps
AC Conducted Emission	Mode 1: Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Battery 1 + USB Cable (Charging from Adapter)

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “wifi FW version:2022-12-16-112901” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.



2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

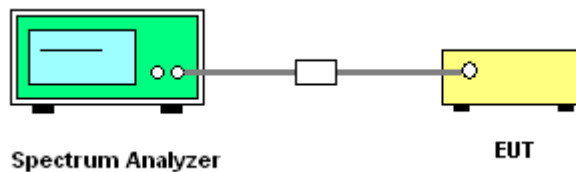
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

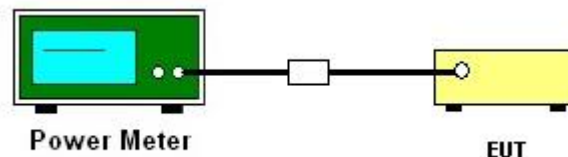
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT is connected to the power meter by RF cable and attenuator.
3. The path loss is compensated to the results for each measurement.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Average Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band at any time interval of continuous transmission.

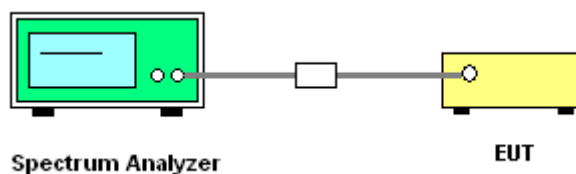
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth (VBW) = 10 kHz. In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6 dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100 kHz is a reference level and is used as 20 dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.3.6 Test Result of Power Spectral Density Plots (100kHz)

Please refer to Appendix A.

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

Please refer to Appendix A.

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 30 dB down from the highest emission level within the authorized band.

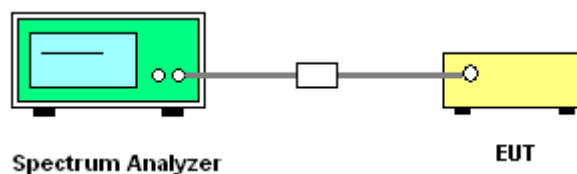
3.4.2 Measuring Instruments

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

3.4.3 Test Procedure

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Set RBW = 100 kHz, VBW = 300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges Plots

Please refer to Appendix A.

3.4.6 Test Result of Conducted Spurious Emission Plots

Please refer to Appendix A.



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

3.5.2 Measuring Instruments

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

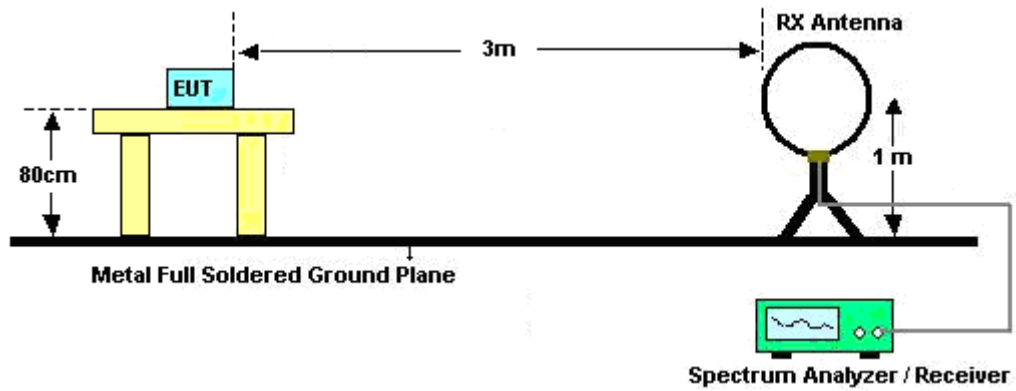


3.5.3 Test Procedures

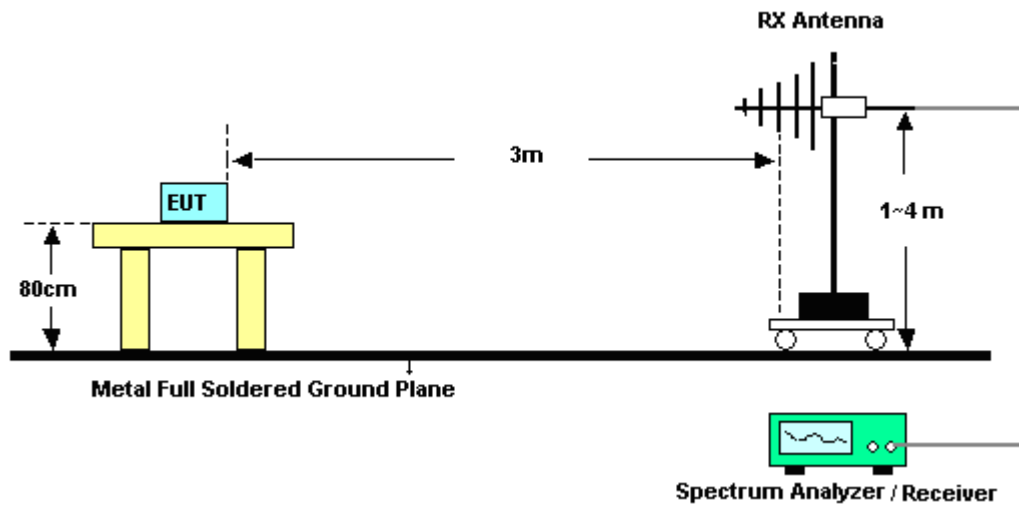
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.
8. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW = 3 MHz for $f \geq 1$ GHz for peak measurement.For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

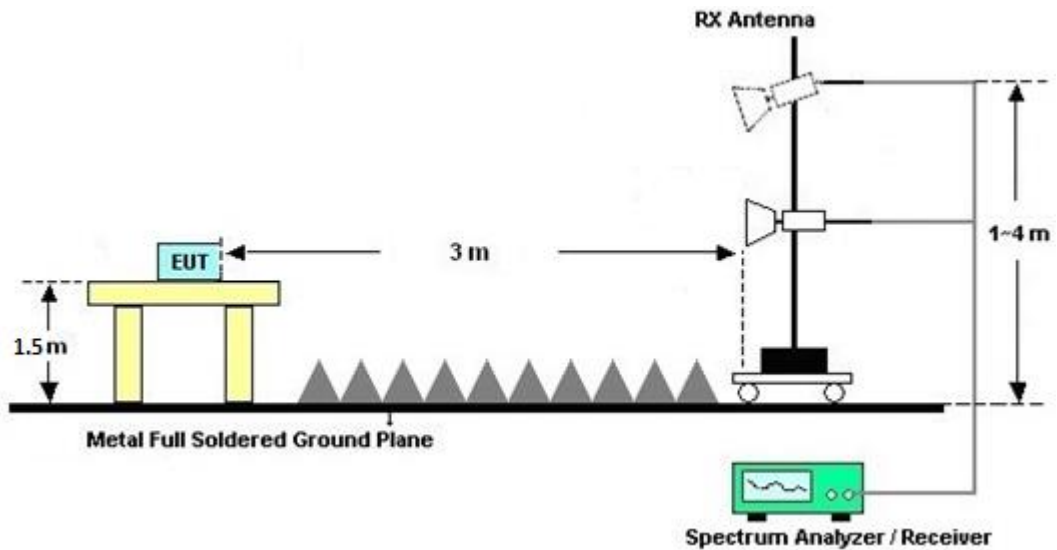
For radiated test below 30MHz



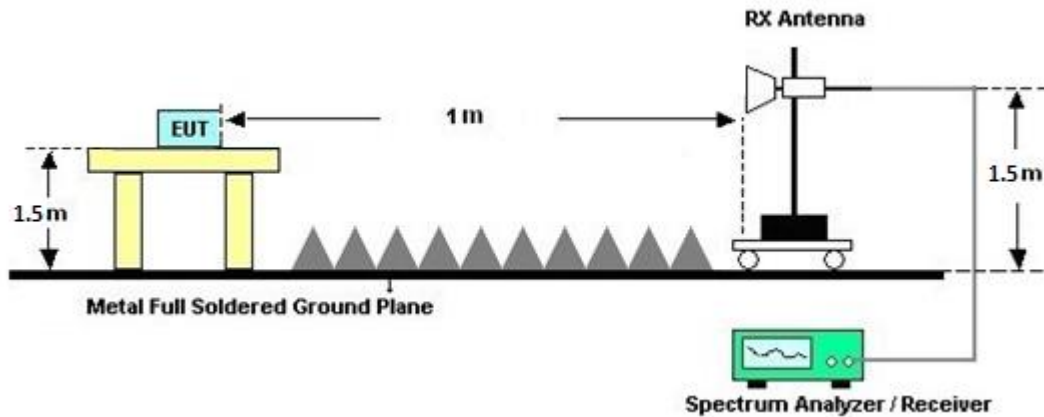
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

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

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

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

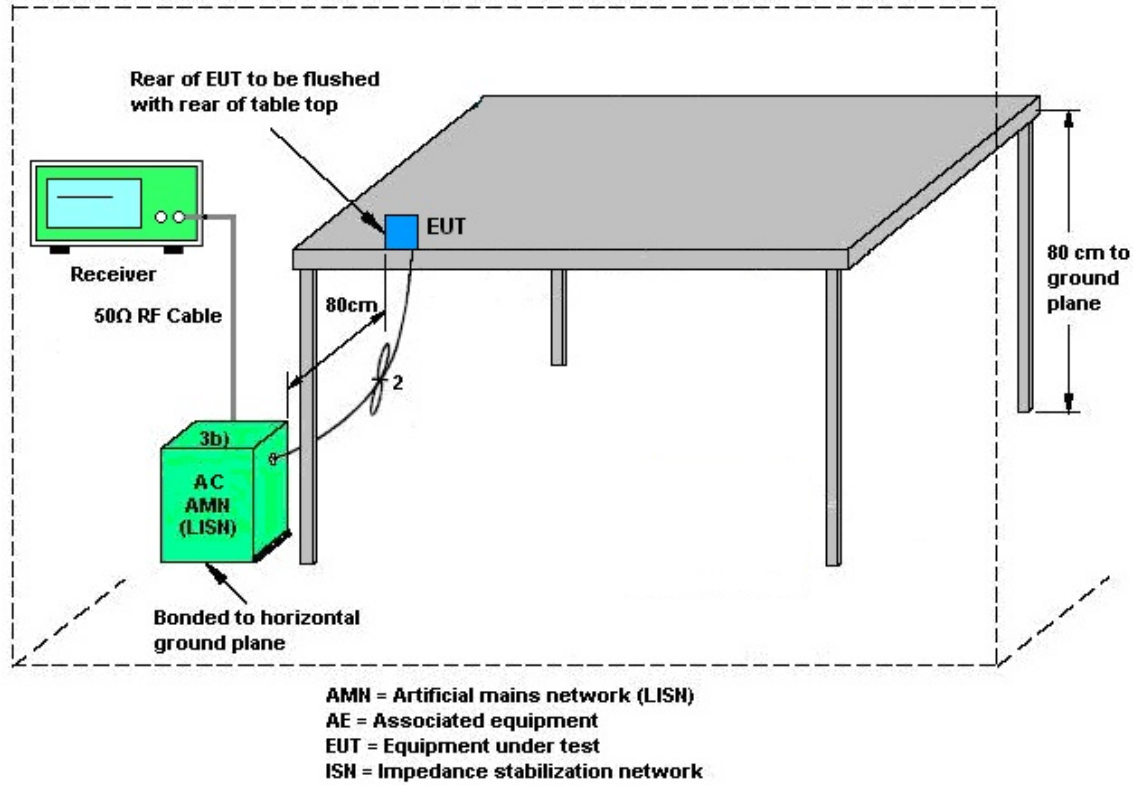
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.7 Antenna Requirements

3.7.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 11, 2023	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2022	Apr. 11, 2023	Nov. 30, 2023	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2022	Apr. 11, 2023	Nov. 16, 2023	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 17, 2022	Apr. 11, 2023	Nov. 16, 2023	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Apr. 11, 2023	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Aug. 01, 2022	Apr. 11, 2023	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 29, 2022	Apr. 11, 2023	Dec. 28, 2023	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17, 2022	Mar. 31, 2023~ Apr. 25, 2023	Nov. 16, 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Mar. 31, 2023~ Apr. 25, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz(内建 amp)	Aug. 03, 2022	Mar. 31, 2023~ Apr. 25, 2023	Aug. 02, 2023	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 20, 2022	Apr. 17, 2023~ Apr. 25, 2023	Sep. 19, 2023	Radiation (03CH23-HY)
Bilog Antenna with 6dB pad	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	62028 & 003	N/A	Oct. 11, 2022	Apr. 17, 2023~ Apr. 25, 2023	Oct. 10, 2023	Radiation (03CH23-HY)
Amplifier	SONOMA	310N	421582	N/A	Jul. 16, 2022	Apr. 17, 2023~ Apr. 25, 2023	Jul. 15, 2023	Radiation (03CH23-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C05A18E N	1GHz~18GHz	Jul. 06, 2022	Apr. 17, 2023~ Apr. 25, 2023	Jul. 05, 2023	Radiation (03CH23-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz~40GHz	May 14, 2022	Apr. 17, 2023~ Apr. 25, 2023	May 13, 2023	Radiation (03CH23-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 29, 2022	Apr. 17, 2023~ Apr. 25, 2023	Sep. 28, 2023	Radiation (03CH23-HY)
Preamplifier	EMEC	EM18G40G	060872	18-40GHz	Sep. 28, 2022	Apr. 17, 2023~ Apr. 25, 2023	Sep. 27, 2023	Radiation (03CH23-HY)
Signal Analyzer	Keysight	N9010B	MY62170337	N/A	Sep. 11, 2022	Apr. 17, 2023~ Apr. 25, 2023	Sep. 10, 2023	Radiation (03CH23-HY)
Hygrometer	TECPEL	DTM-303B	TP211542	N/A	Nov. 17, 2022	Apr. 17, 2023~ Apr. 25, 2023	Nov. 16, 2023	Radiation (03CH23-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 17, 2023~ Apr. 25, 2023	N/A	Radiation (03CH23-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 17, 2023~ Apr. 25, 2023	N/A	Radiation (03CH23-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Apr. 17, 2023~ Apr. 25, 2023	N/A	Radiation (03CH23-HY)
Software	Audix	E3 6.09824_2019 122	RK-002347	N/A	N/A	Apr. 17, 2023~ Apr. 25, 2023	N/A	Radiation (03CH23-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 07, 2023	Apr. 17, 2023~ Apr. 25, 2023	Mar. 06, 2024	Radiation (03CH23-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804392/2,804 610/2,804613 /2	N/A	Oct. 25, 2022	Apr. 17, 2023~ Apr. 25, 2023	Oct. 24, 2023	Radiation (03CH23-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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.8 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	River Tsai / Sylvia Li	Temperature:	21~25	°C
Test Date:	2023/3/31~2023/04/25	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.031	0.702	0.50	Pass
BLE	1Mbps	1	19	2440	1.031	0.704	0.50	Pass
BLE	1Mbps	1	39	2480	1.031	0.696	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	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	5.60	30.00	-1.36	4.24	36.00	Pass
BLE	1Mbps	1	19	2440	6.30	30.00	-1.36	4.94	36.00	Pass
BLE	1Mbps	1	39	2480	5.40	30.00	-1.36	4.04	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	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	5.13	-9.24	-1.36	8.00	Pass
BLE	1Mbps	1	19	2440	5.70	-8.68	-1.36	8.00	Pass
BLE	1Mbps	1	39	2480	5.21	-9.14	-1.36	8.00	Pass

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

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	1	0	2402	2.046	1.180	0.50	Pass
BLE	2Mbps	1	19	2440	2.050	1.188	0.50	Pass
BLE	2Mbps	1	39	2480	2.050	1.188	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	5.60	30.00	-1.36	4.24	36.00	Pass
BLE	2Mbps	1	19	2440	6.30	30.00	-1.36	4.94	36.00	Pass
BLE	2Mbps	1	39	2480	5.40	30.00	-1.36	4.04	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	2Mbps	1	0	2402	5.01	-11.34	-1.36	8.00	Pass
BLE	2Mbps	1	19	2440	5.56	-10.76	-1.36	8.00	Pass
BLE	2Mbps	1	39	2480	5.05	-11.27	-1.36	8.00	Pass

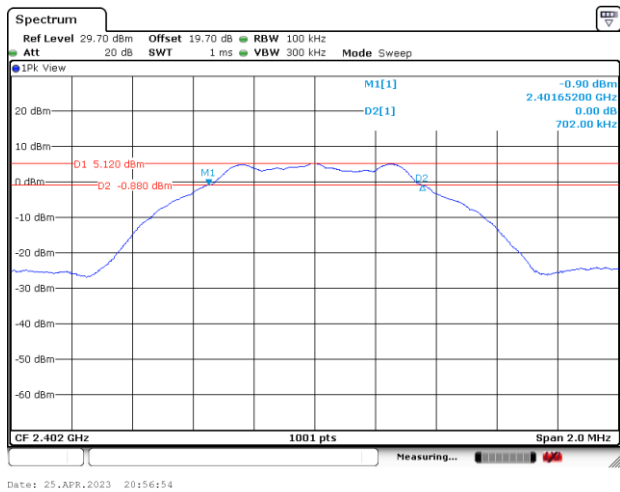
Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.



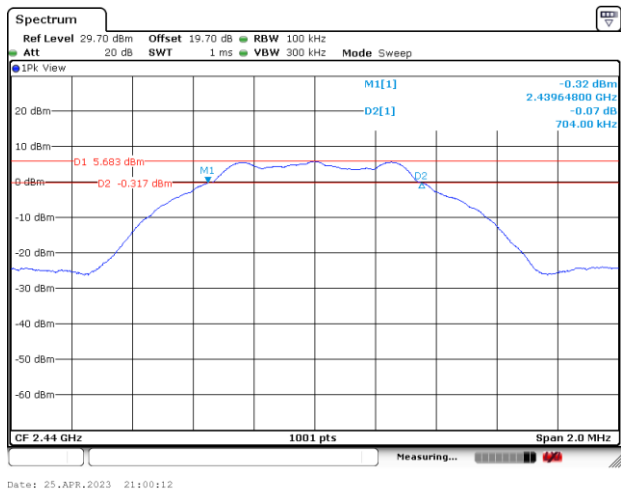
6dB Bandwidth

<1Mbps>

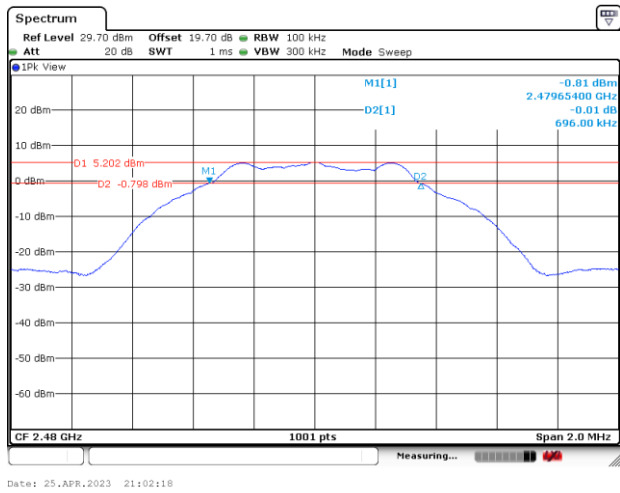
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19

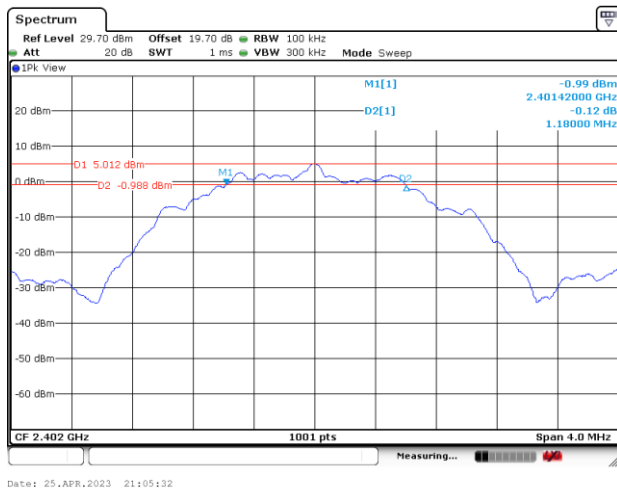


6 dB Bandwidth Plot on Channel 39

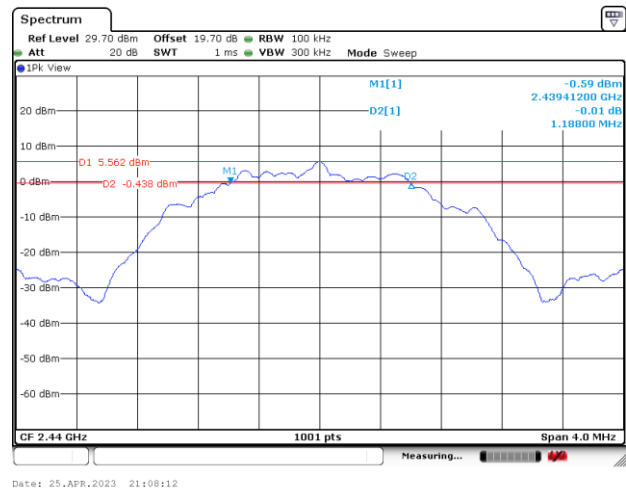


<2Mbps>

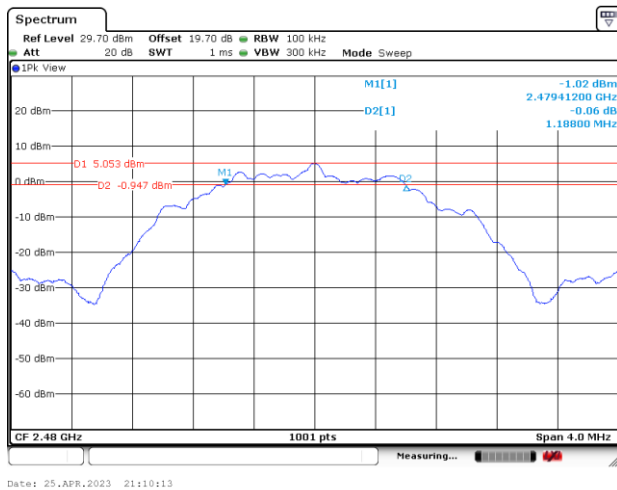
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19

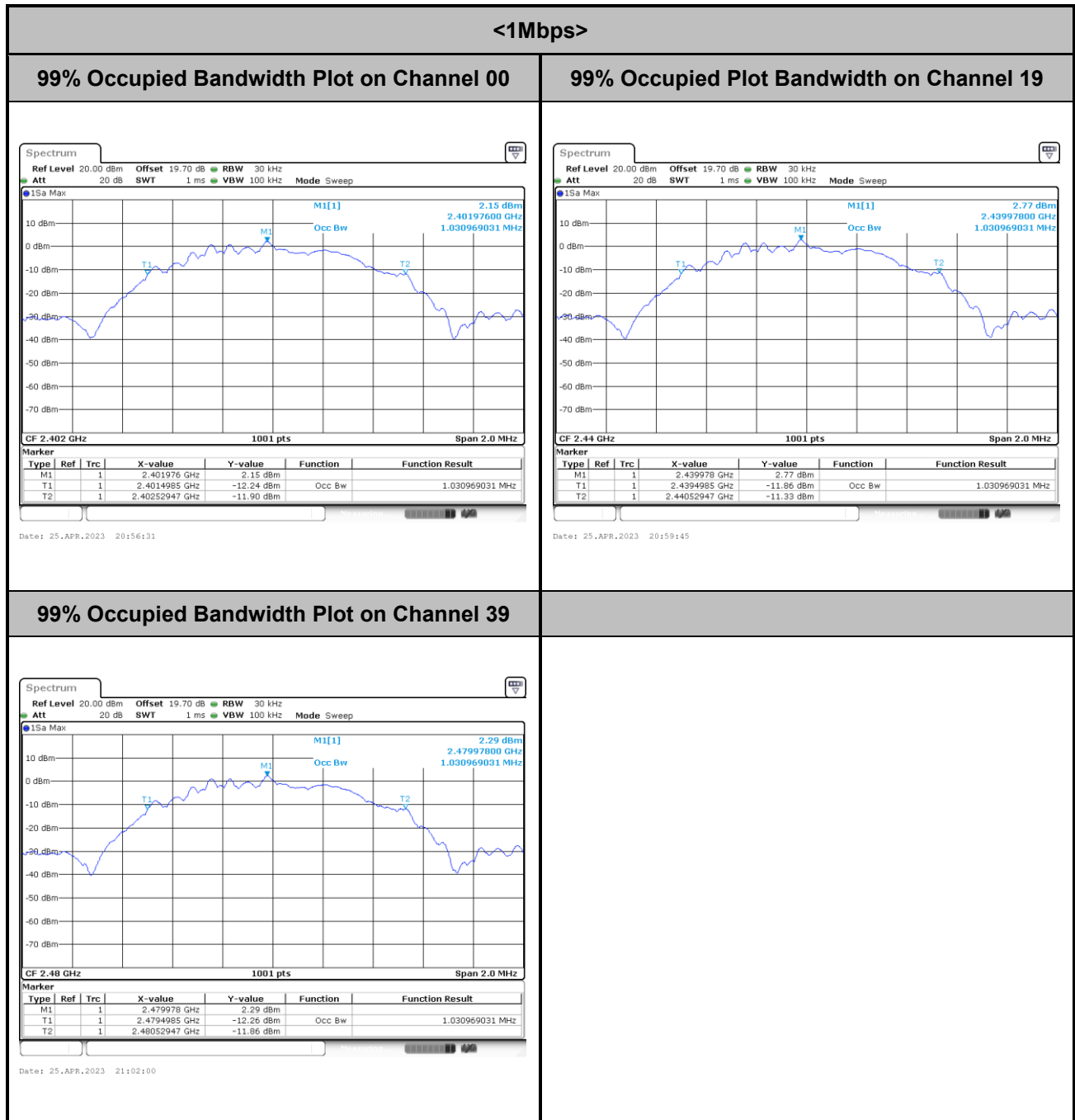


6 dB Bandwidth Plot on Channel 39





99% Occupied Bandwidth

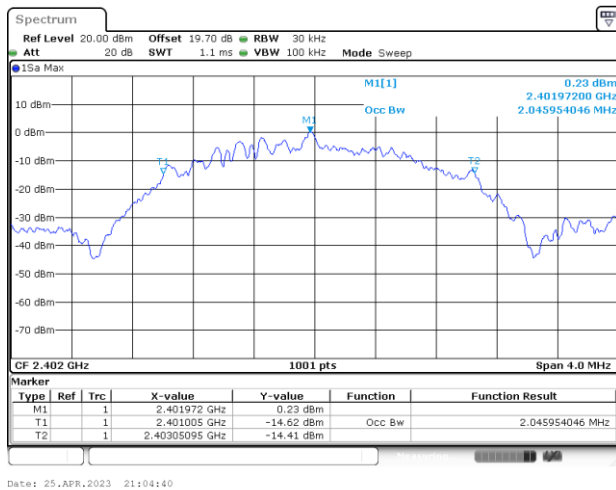


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

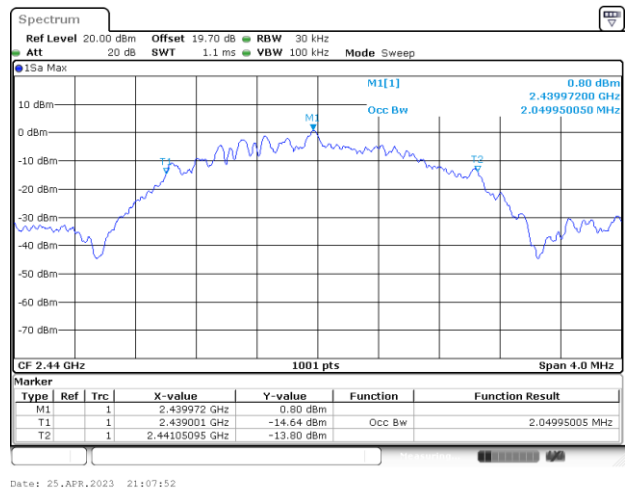


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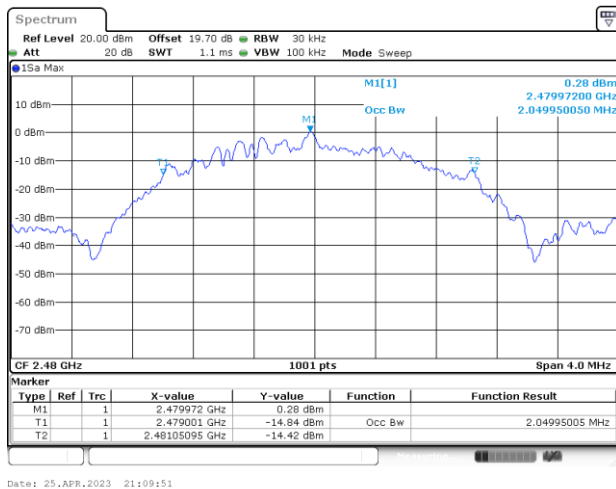
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Plot Bandwidth on Channel 19



99% Occupied Bandwidth Plot on Channel 39

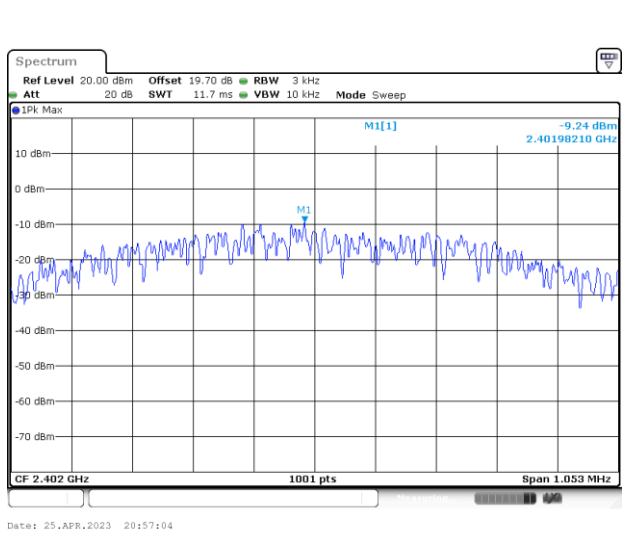




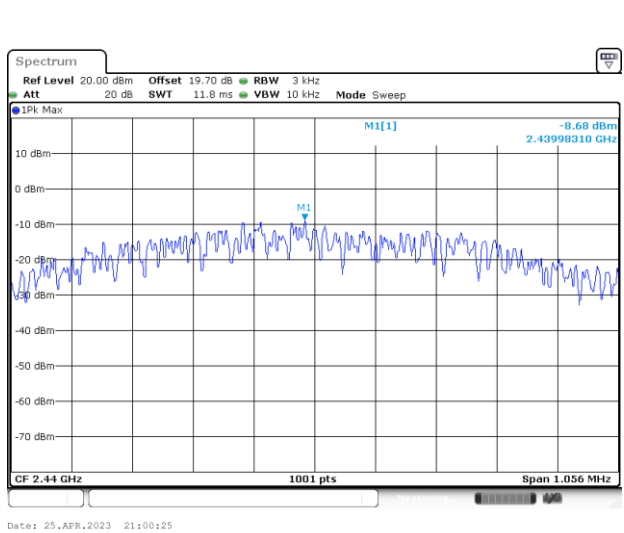
Power Spectral Density (dBm/3kHz)

<1Mbps>

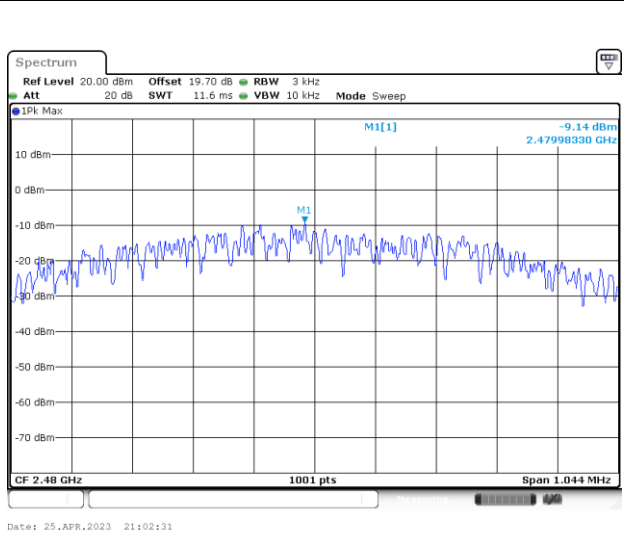
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19



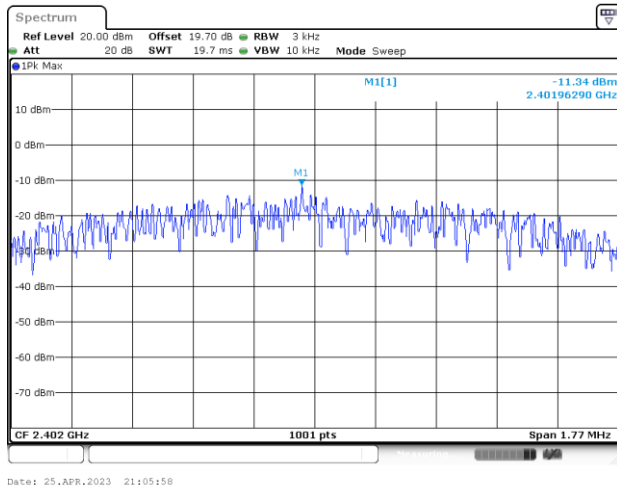
Power Density (dBm/3kHz) Plot Channel 39



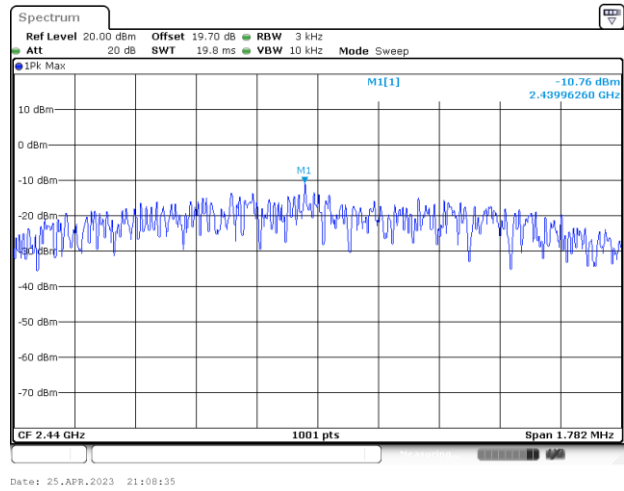


<2Mbps>

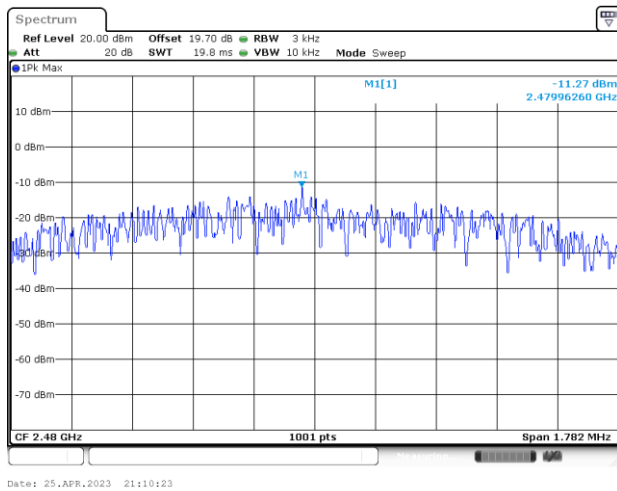
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19

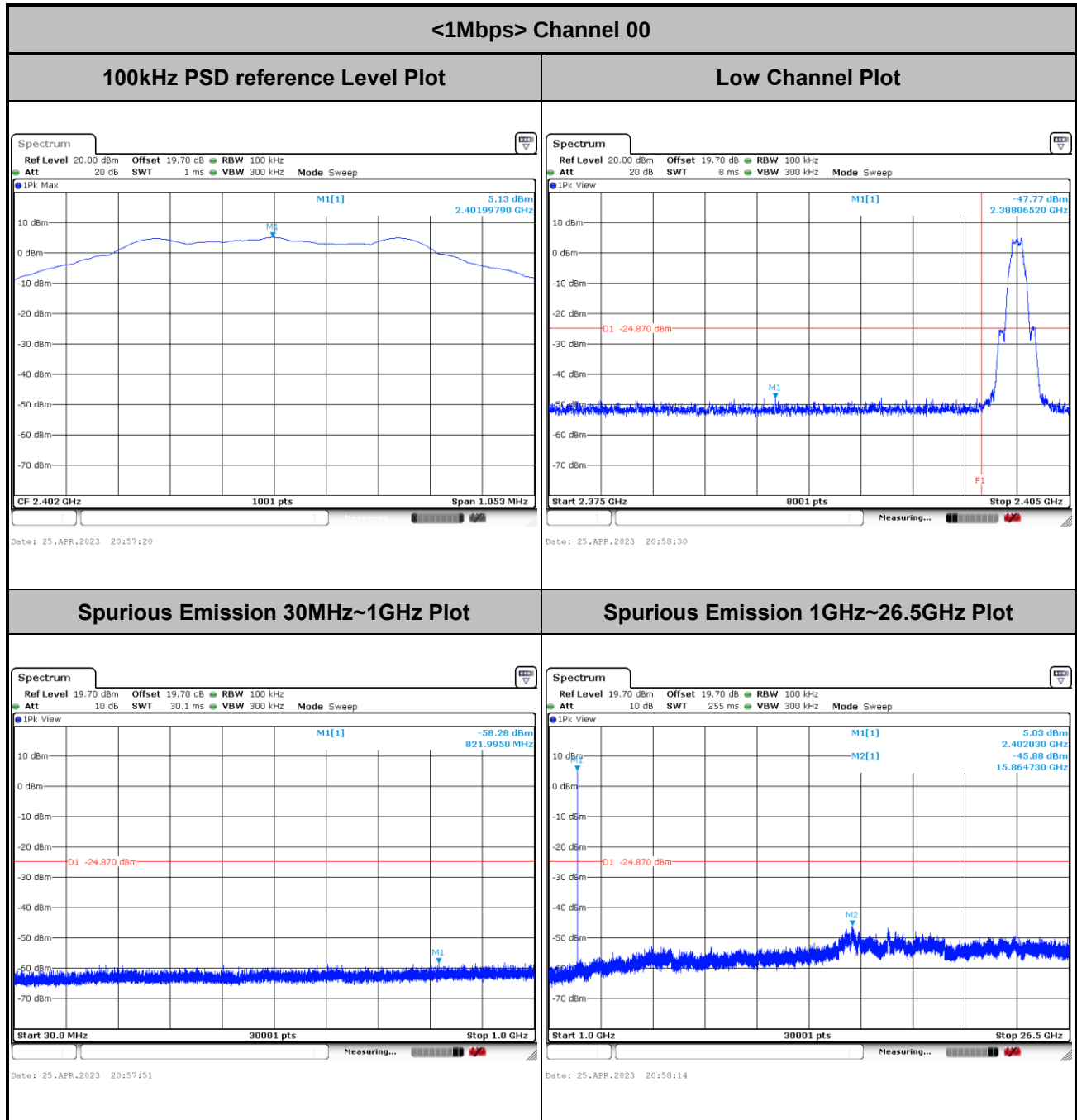


Power Density (dBm/3kHz) Plot Channel 39





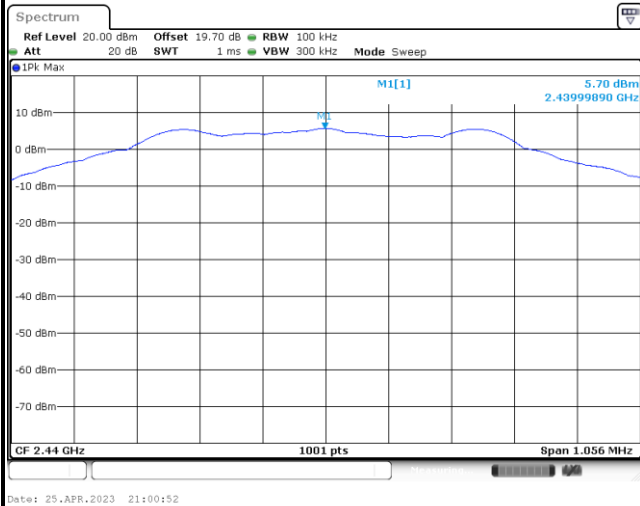
Band Edge and Spurious Emission





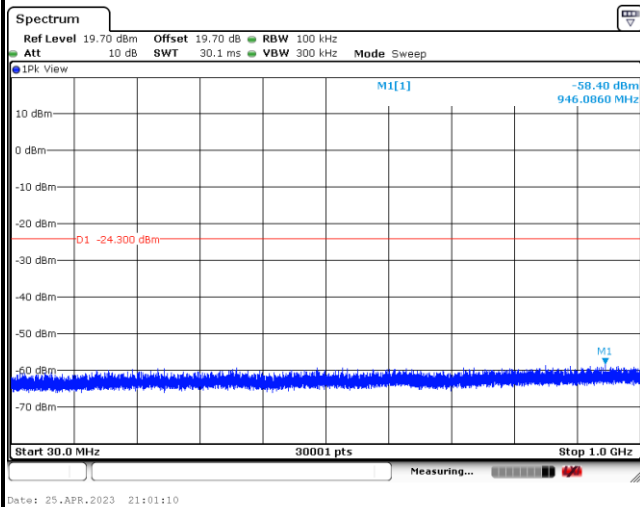
<1Mbps> Channel 19

100kHz PSD reference Level Plot

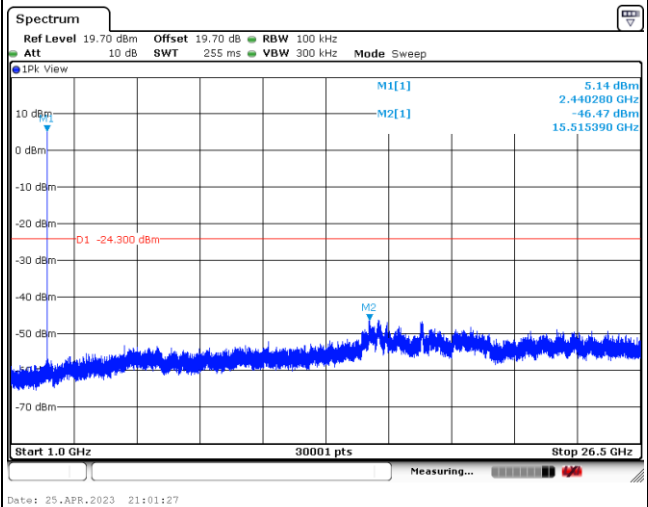


Middle Channel Plot

Spurious Emission 30MHz~1GHz Plot



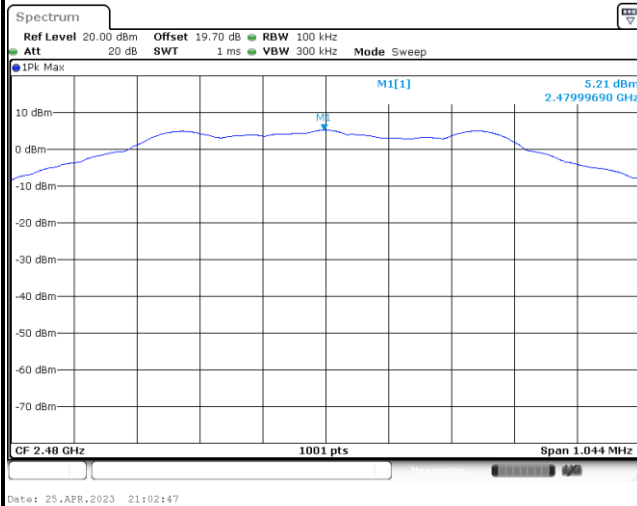
Spurious Emission 1GHz~26.5GHz Plot



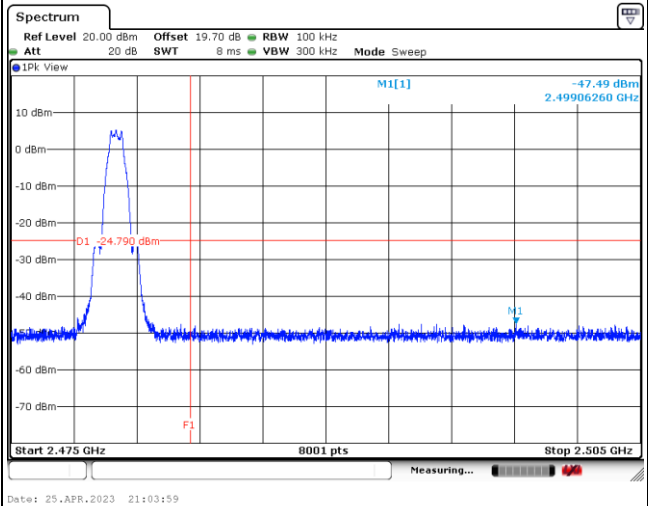


<1Mbps> Channel 39

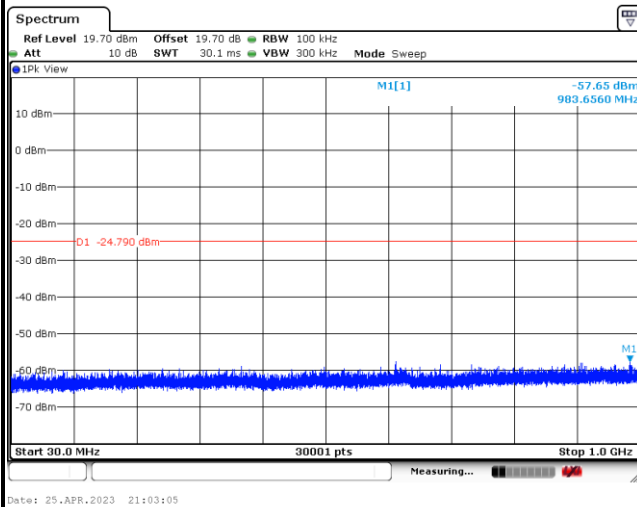
100kHz PSD reference Level Plot



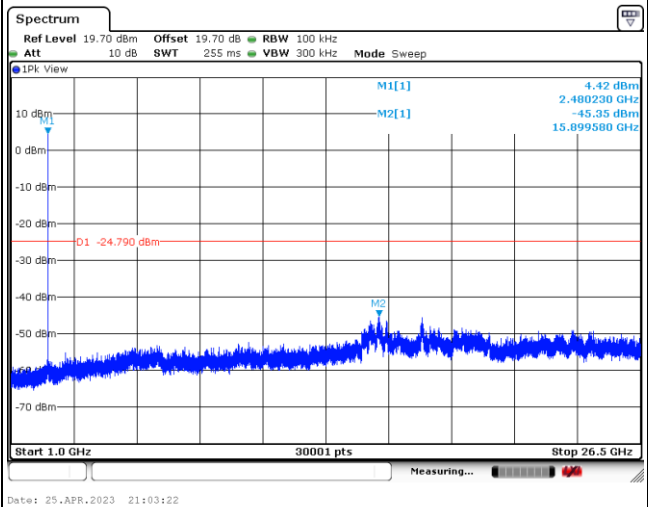
High Channel Plot

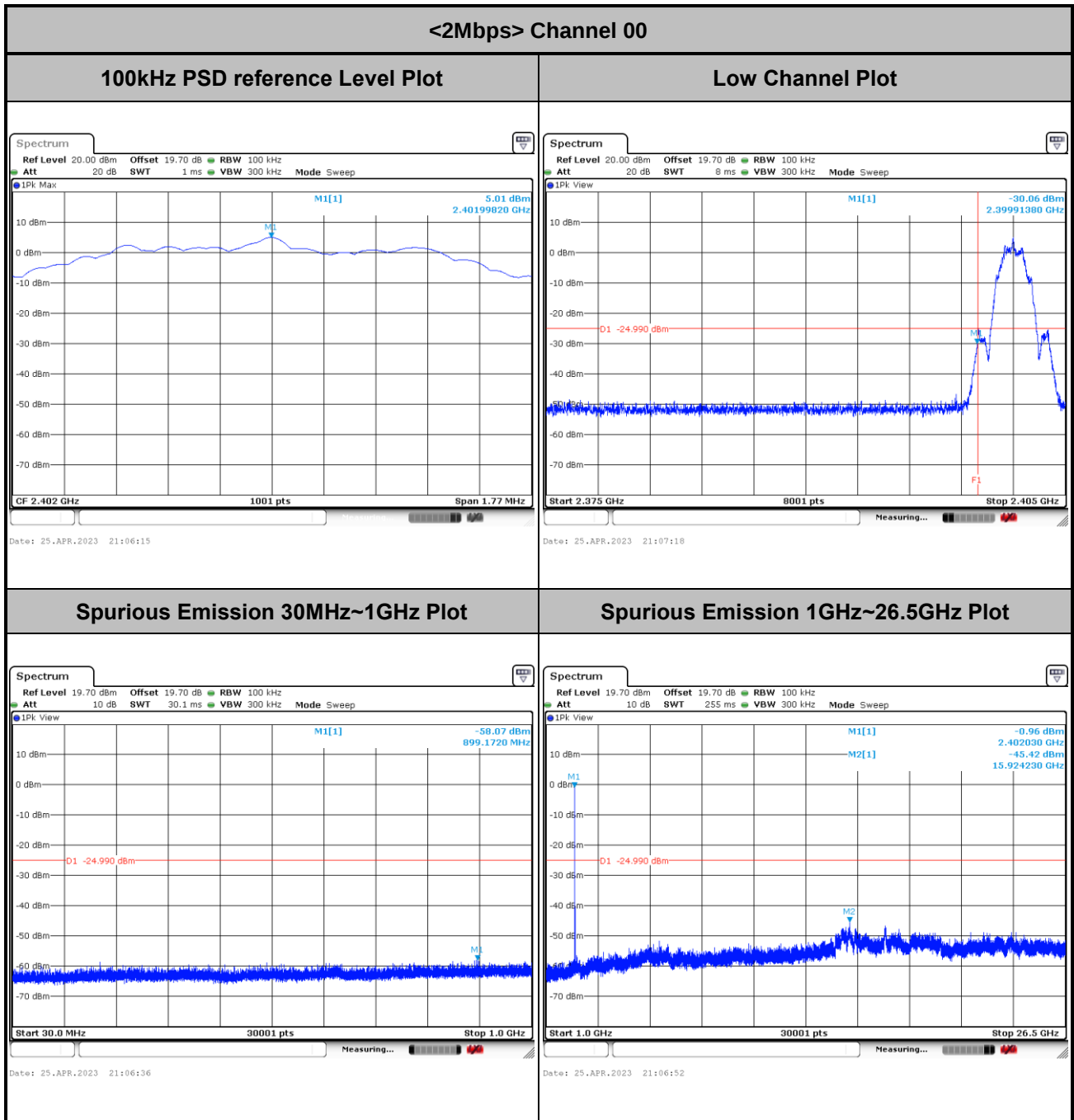


Spurious Emission 30MHz~1GHz Plot



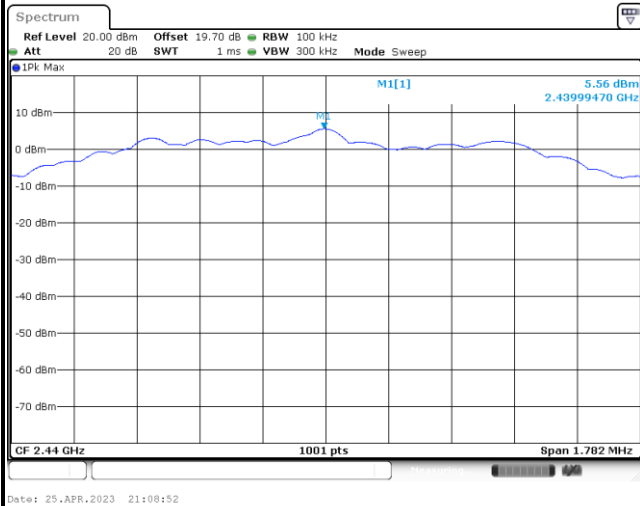
Spurious Emission 1GHz~26.5GHz Plot





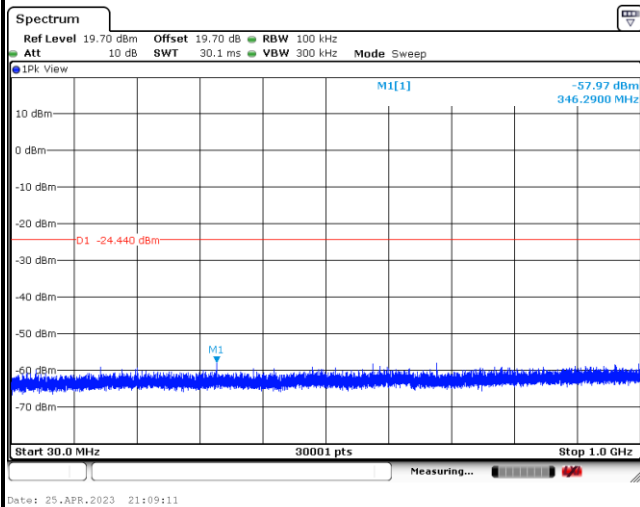
<2Mbps> Channel 19

100kHz PSD reference Level Plot

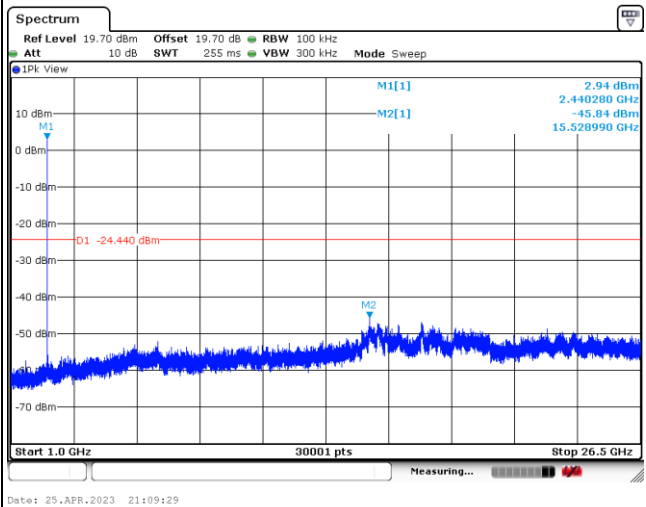


Middle Channel Plot

Spurious Emission 30MHz~1GHz Plot



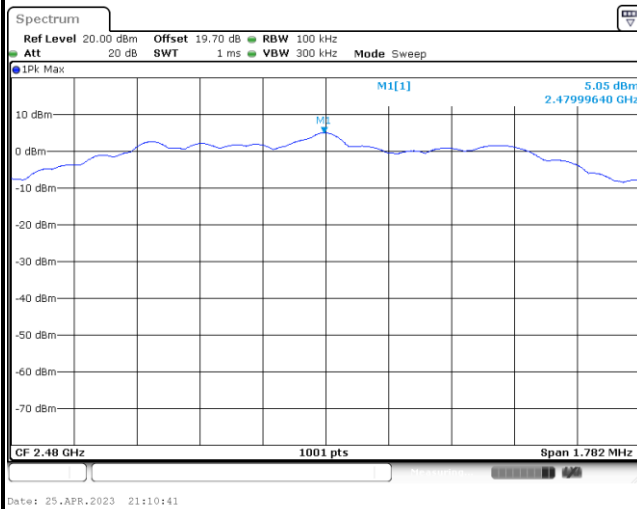
Spurious Emission 1GHz~26.5GHz Plot



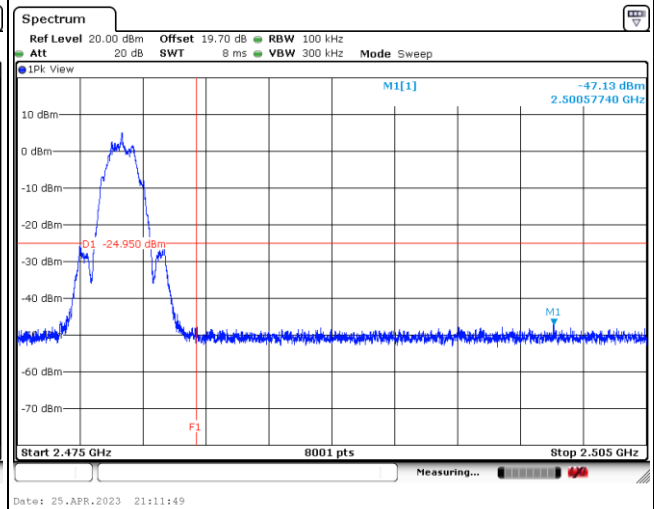


<2Mbps> Channel 39

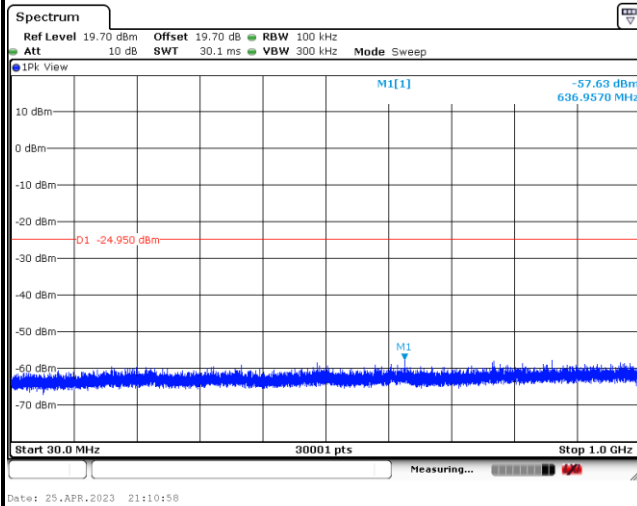
100kHz PSD reference Level Plot



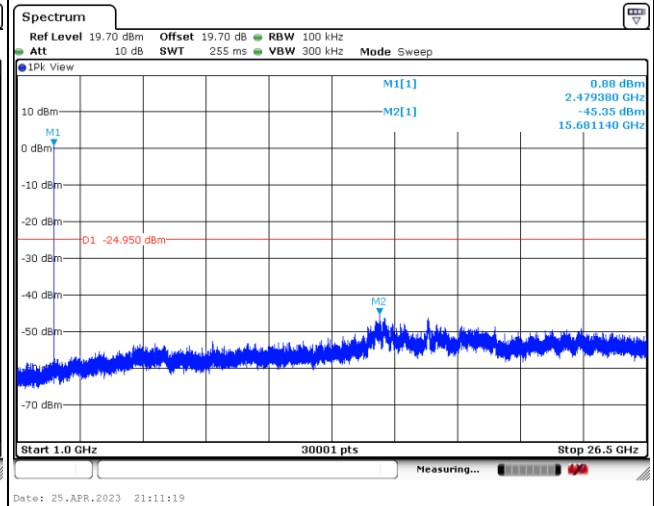
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot





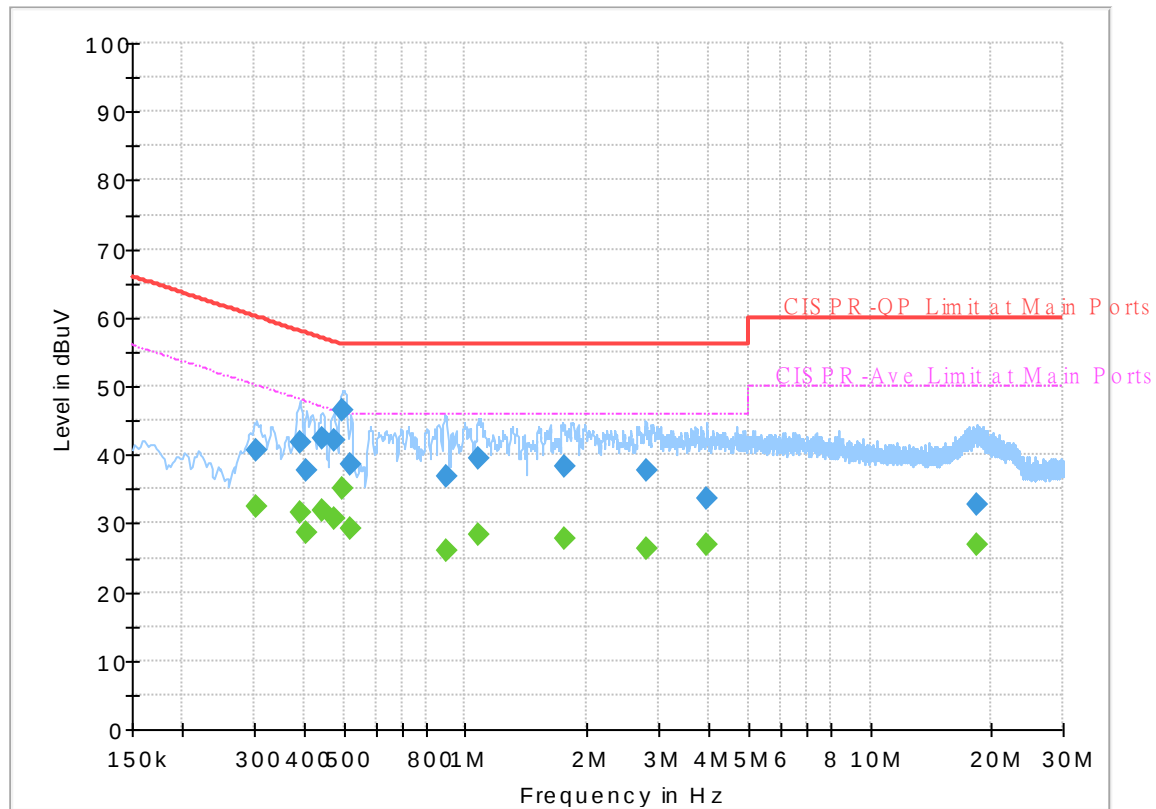
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO : 322209
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



Final_Result

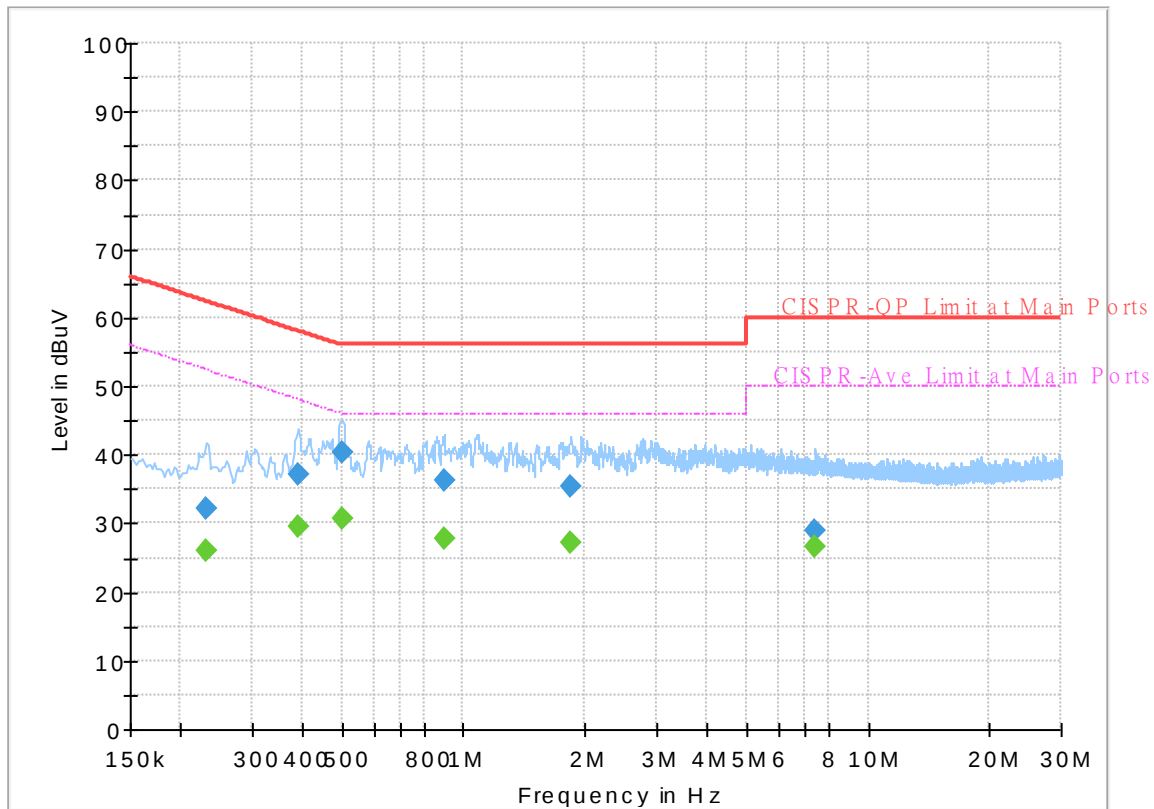
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.305250	---	32.35	50.10	17.75	L1	OFF	19.9
0.305250	40.59	---	60.10	19.51	L1	OFF	19.9
0.388500	---	31.72	48.10	16.38	L1	OFF	19.9
0.388500	41.75	---	58.10	16.35	L1	OFF	19.9
0.406500	---	28.51	47.72	19.21	L1	OFF	19.9
0.406500	37.70	---	57.72	20.02	L1	OFF	19.9
0.442500	---	32.02	47.02	15.00	L1	OFF	19.9
0.442500	42.47	---	57.02	14.55	L1	OFF	19.9
0.474000	---	30.83	46.44	15.61	L1	OFF	19.9
0.474000	42.01	---	56.44	14.43	L1	OFF	19.9
0.498750	---	35.20	46.02	10.82	L1	OFF	19.9
0.498750	46.45	---	56.02	9.57	L1	OFF	19.9
0.521250	---	29.23	46.00	16.77	L1	OFF	19.9
0.521250	38.73	---	56.00	17.27	L1	OFF	19.9
0.897000	---	25.94	46.00	20.06	L1	OFF	19.9
0.897000	36.86	---	56.00	19.14	L1	OFF	19.9
1.079250	---	28.46	46.00	17.54	L1	OFF	19.9
1.079250	39.55	---	56.00	16.45	L1	OFF	19.9
1.749750	---	27.77	46.00	18.23	L1	OFF	19.9
1.749750	38.22	---	56.00	17.78	L1	OFF	19.9
2.789250	---	26.21	46.00	19.79	L1	OFF	19.9

2.789250	37.86	---	56.00	18.14	L1	OFF	19.9
3.930000	---	26.97	46.00	19.03	L1	OFF	20.0
3.930000	33.61	---	56.00	22.39	L1	OFF	20.0
18.397500	---	27.03	50.00	22.97	L1	OFF	20.5
18.397500	32.83	---	60.00	27.17	L1	OFF	20.5

EUT Information

Report NO : 322209
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.231000	---	26.11	52.41	26.30	N	OFF	19.9
0.231000	32.28	---	62.41	30.13	N	OFF	19.9
0.388500	---	29.67	48.10	18.43	N	OFF	19.9
0.388500	37.01	---	58.10	21.09	N	OFF	19.9
0.503250	---	30.76	46.00	15.24	N	OFF	19.9
0.503250	40.30	---	56.00	15.70	N	OFF	19.9
0.894750	---	27.82	46.00	18.18	N	OFF	19.9
0.894750	36.24	---	56.00	19.76	N	OFF	19.9
1.844250	---	27.33	46.00	18.67	N	OFF	19.9
1.844250	35.28	---	56.00	20.72	N	OFF	19.9
7.426500	---	26.54	50.00	23.46	N	OFF	20.1
7.426500	28.89	---	60.00	31.11	N	OFF	20.1



Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Li	Temperature :	18.3~24.5°C
		Relative Humidity :	42.3~68.5%



<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE ANT	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2374.785	51.27	-22.73	74	37.14	27.1	18.84	31.81	144	42	P	H
		2387.385	42.49	-11.51	54	28.34	27.1	18.87	31.82	144	42	A	H
	*	2402	95.98	-	-	81.82	27.1	18.89	31.83	144	42	P	H
	*	2402	95.1	-	-	80.94	27.1	18.89	31.83	144	42	A	H
													H
													H
		2372.79	51.67	-22.33	74	37.54	27.1	18.84	31.81	307	72	P	V
		2367.96	42.2	-11.8	54	28.08	27.1	18.83	31.81	307	72	A	V
	*	2402	91.05	-	-	76.89	27.1	18.89	31.83	307	72	P	V
	*	2402	90.39	-	-	76.23	27.1	18.89	31.83	307	72	A	V
													V
													V
BLE CH 19 2440MHz		2389.36	52.13	-21.87	74	37.98	27.1	18.87	31.82	144	42	P	H
		2353.04	42.19	-11.81	54	28.09	27.1	18.8	31.8	144	42	A	H
	*	2440	97.42	-	-	83.3	27.02	18.96	31.86	144	42	P	H
	*	2440	96.74	-	-	82.62	27.02	18.96	31.86	144	42	A	H
		2486.56	51.39	-22.61	74	37.39	26.85	19.04	31.89	144	42	P	H
		2491.28	41.83	-12.17	54	27.84	26.83	19.05	31.89	144	42	A	H
		2353.68	51.57	-22.43	74	37.47	27.1	18.8	31.8	307	72	P	V
		2362.16	42.14	-11.86	54	28.02	27.1	18.82	31.8	307	72	A	V
	*	2440	93.72	-	-	79.6	27.02	18.96	31.86	307	72	P	V
	*	2440	93.1	-	-	78.98	27.02	18.96	31.86	307	72	A	V
		2490.24	51.14	-22.86	74	37.14	26.84	19.05	31.89	307	72	P	V
		2496.8	41.72	-12.28	54	27.75	26.81	19.06	31.9	307	72	A	V



BLE CH 39 2480MHz	*	2480	98.97	-	-	84.95	26.88	19.03	31.89	122	45	P	H
	*	2480	98.27	-	-	84.25	26.88	19.03	31.89	122	45	A	H
		2488.28	52.01	-21.99	74	38.01	26.85	19.04	31.89	122	45	P	H
		2486.48	41.96	-12.04	54	27.96	26.85	19.04	31.89	122	45	A	H
													H
													H
	*	2480	93.47	-	-	79.45	26.88	19.03	31.89	289	70	P	V
	*	2480	92.87	-	-	78.85	26.88	19.03	31.89	289	70	A	V
		2494.32	51.51	-22.49	74	37.53	26.82	19.06	31.9	289	70	P	V
		2488.32	41.93	-12.07	54	27.93	26.85	19.04	31.89	289	70	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 00 2402MHz		4804	45.53	-28.47	74	33.01	32.61	12.95	33.04	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	45	-29	74	32.48	32.61	12.95	33.04	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V



BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 19 2440MHz		4880	44.95	-29.05	74	32.19	32.76	13.03	33.03	-	-	P	H
		7320	48.77	-25.23	74	31.04	37.44	15.9	35.61	-	-	P	H
		7320	39.65	-14.35	54	21.92	37.44	15.9	35.61	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	45.17	-28.83	74	32.41	32.76	13.03	33.03	-	-	P	V
		7320	50.14	-23.86	74	32.41	37.44	15.9	35.61	-	-	P	V
		7320	41.02	-12.98	54	23.29	37.44	15.9	35.61	-	-	A	V
													V
													V
													V
													V
													V
													V
													V

BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 39 2480MHz		4960	45.54	-28.46	74	32.66	32.78	13.11	33.01	-	-	P	H
		7440	49.43	-24.57	74	31.99	37.12	16.04	35.72	-	-	P	H
		7440	40.31	-13.69	54	22.87	37.12	16.04	35.72	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.79	-29.21	74	31.91	32.78	13.11	33.01	-	-	P	V
		7440	49.72	-24.28	74	32.28	37.12	16.04	35.72	-	-	P	V
		7440	40.6	-13.4	54	23.16	37.12	16.04	35.72	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE ANT	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2353.89	51.42	-22.58	74	37.32	27.1	18.8	31.8	100	352	P	H
		2345.805	44.1	-9.9	54	30.01	27.1	18.78	31.79	100	352	A	H
	*	2402	96.51	-	-	82.35	27.1	18.89	31.83	100	352	P	H
	*	2402	95.06	-	-	80.9	27.1	18.89	31.83	100	352	A	H
													H
													H
		2383.185	51.64	-22.36	74	37.5	27.1	18.86	31.82	268	263	P	V
		2372.79	44.07	-9.93	54	29.94	27.1	18.84	31.81	268	263	A	V
	*	2402	93.15	-	-	78.99	27.1	18.89	31.83	268	263	P	V
	*	2402	91.83	-	-	77.67	27.1	18.89	31.83	268	263	A	V
													V
													V
BLE CH 19 2440MHz		2358.86	51.58	-22.42	74	37.47	27.1	18.81	31.8	100	352	P	H
		2342.06	43.74	-10.26	54	29.65	27.1	18.78	31.79	100	352	A	H
	*	2440	97.8	-	-	83.68	27.02	18.96	31.86	100	352	P	H
	*	2440	96.49	-	-	82.37	27.02	18.96	31.86	100	352	A	H
		2496.92	51.74	-22.26	74	37.77	26.81	19.06	31.9	100	352	P	H
		2487.33	43.19	-10.81	54	29.19	26.85	19.04	31.89	100	352	A	H
		2323.16	51.83	-22.17	74	37.77	27.1	18.74	31.78	400	263	P	V
		2370.06	43.74	-10.26	54	29.62	27.1	18.83	31.81	400	263	A	V
	*	2440	93.37	-	-	79.25	27.02	18.96	31.86	400	263	P	V
	*	2440	91.78	-	-	77.66	27.02	18.96	31.86	400	263	A	V
		2487.4	50.9	-23.1	74	36.9	26.85	19.04	31.89	400	263	P	V
		2495.87	43.21	-10.79	54	29.23	26.82	19.06	31.9	400	263	A	V



BLE CH 39 2480MHz	*	2480	97.92	-	-	83.9	26.88	19.03	31.89	100	355	P	H
	*	2480	96.63	-	-	82.61	26.88	19.03	31.89	100	355	A	H
		2494.56	51.8	-22.2	74	37.82	26.82	19.06	31.9	100	355	P	H
		2483.56	44.45	-9.55	54	30.43	26.87	19.04	31.89	100	355	A	H
													H
													H
	*	2480	94.16	-	-	80.14	26.88	19.03	31.89	400	263	P	V
	*	2480	92.84	-	-	78.82	26.88	19.03	31.89	400	263	A	V
		2485.56	51.65	-22.35	74	37.64	26.86	19.04	31.89	400	263	P	V
		2499.44	43.65	-10.35	54	29.69	26.8	19.06	31.9	400	263	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 00 2402MHz		4804	45.7	-28.3	74	33.18	32.61	12.95	33.04	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	45.75	-28.25	74	33.23	32.61	12.95	33.04	-	-	P	V
													V
													V
													V
													V
													V
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													V



BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 19 2440MHz		4880	44.51	-29.49	74	31.75	32.76	13.03	33.03	-	-	P	H
		7320	49.97	-24.03	74	32.24	37.44	15.9	35.61	-	-	P	H
		7320	40.85	-13.15	54	23.12	37.44	15.9	35.61	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	44.76	-29.24	74	32	32.76	13.03	33.03	-	-	P	V
		7320	50.38	-23.62	74	32.65	37.44	15.9	35.61	-	-	P	V
		7320	41.17	-12.83	54	23.44	37.44	15.9	35.61	-	-	A	V
													V
													V
													V
													V
													V
													V
													V

BLE ANT 4	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 39 2480MHz		4960	46.51	-27.49	74	33.63	32.78	13.11	33.01	-	-	P	H
		7440	49.97	-24.03	74	32.53	37.12	16.04	35.72	-	-	P	H
		7440	40.85	-13.15	54	23.41	37.12	16.04	35.72	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.86	-29.14	74	31.98	32.78	13.11	33.01	-	-	P	V
		7440	49.29	-24.71	74	31.85	37.12	16.04	35.72	-	-	P	V
		7440	40.17	-13.83	54	22.73	37.12	16.04	35.72	-	-	A	V
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Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
ANT					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz BLE LF		30.97	22.55	-17.45	40	29.87	24.42	1.01	32.75	-	-	P	H	
		131.85	21.85	-21.65	43.5	34.99	17.41	2.13	32.68	-	-	P	H	
		247.28	30.71	-15.29	46	42.31	18.17	2.97	32.74	-	-	P	H	
		341.37	25.73	-20.27	46	35.05	20.05	3.44	32.81	-	-	P	H	
		482.99	27.46	-18.54	46	32.8	23.56	4.02	32.92	-	-	P	H	
		957.32	35.46	-10.54	46	29.92	31.25	5.72	31.43	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
		30.97	26.93	-13.07	40	34.25	24.42	1.01	32.75	-	-	P	V	
		179.38	19.66	-23.84	43.5	34.81	14.9	2.64	32.69	-	-	P	V	
		247.28	21.51	-24.49	46	33.11	18.17	2.97	32.74	-	-	P	V	
		266.68	21.53	-24.47	46	31.57	19.63	3.08	32.75	-	-	P	V	
		642.07	29.3	-16.7	46	31.03	26.56	4.7	32.99	-	-	P	V	
		924.34	34.02	-11.98	46	30.44	29.76	5.6	31.78	-	-	P	V	
														V
														V
														V
														V
														V
													V	
Remark	1. No other spurious found.													
	2. All results are PASS against limit line.													
	3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.													



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
ANT					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Margin(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Margin(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Margin(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Leo Li	Temperature :	18.3~24.5°C
		Relative Humidity :	42.3~68.5%

Note symbol

-L	Low channel location
-R	High channel location



<1Mbps>

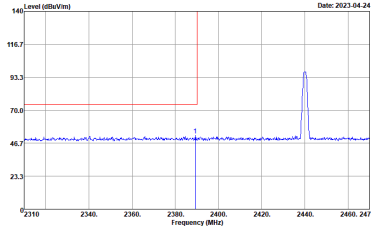
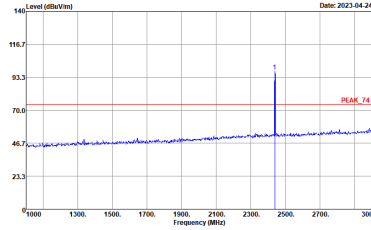
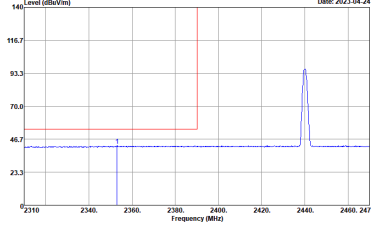
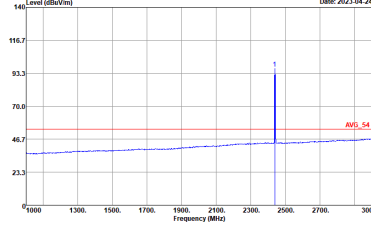
2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

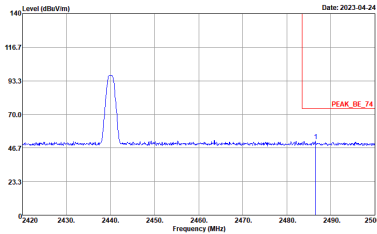
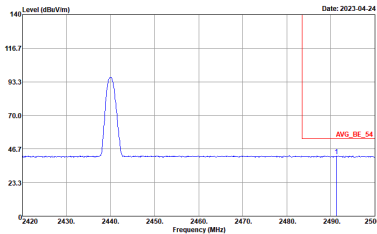
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4	Horizontal	Fundamental
Peak	Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH23-HY Condition : AVG_54 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto



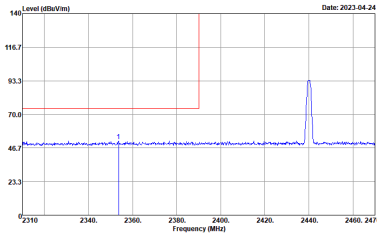
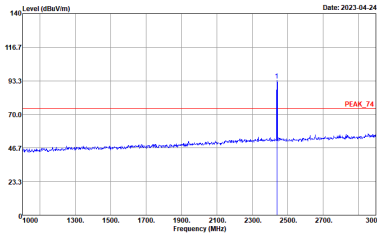
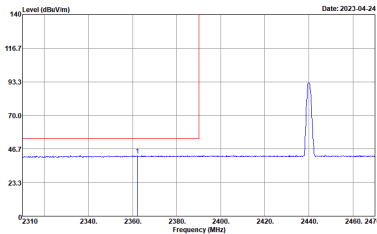
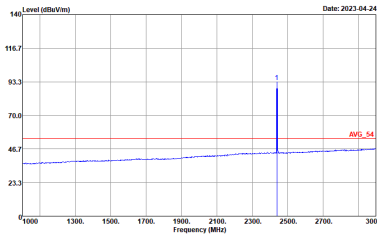
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4	Vertical	Fundamental
Peak	Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	Site : 03CH23-HY Condition : AV6_BE_54 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH23-HY Condition : AV6_54 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Horizontal	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH23-HY Condition : AVG_54 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.		

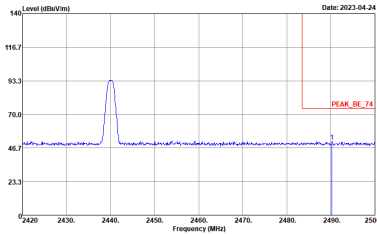
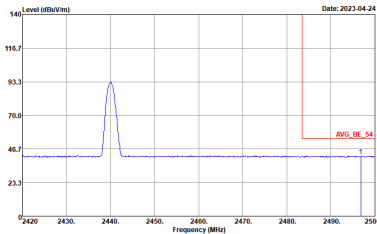


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Horizontal	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



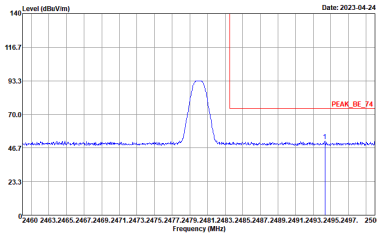
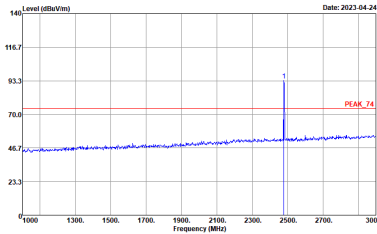
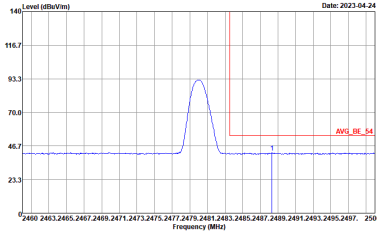
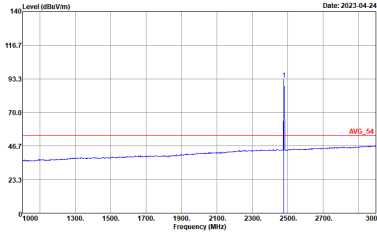
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : AVG_54 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Horizontal	Fundamental
Peak	Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
	Site : 03CH23-HY Condition : AVG_BE_54 3m LEZ005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH23-HY Condition : AVG_54 3m LEZ005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH23-HY Condition : AV6_BE_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : AV6_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.		

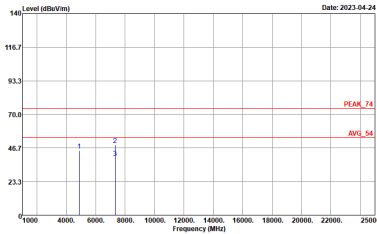
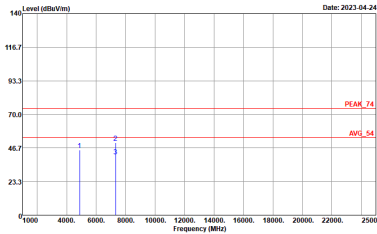


2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
4	Horizontal	Vertical
Peak Avg.	Level (dBu/V/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 HORIZONTAL	Level (dBu/V/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
4	Horizontal	Vertical
Peak Avg.	 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 HORIZONTAL :	 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 VERTICAL :



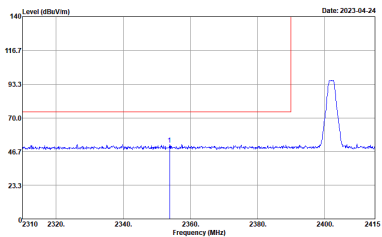
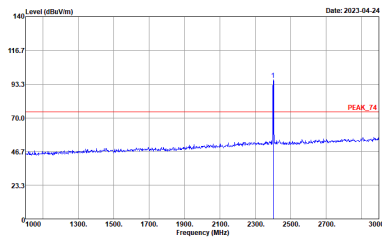
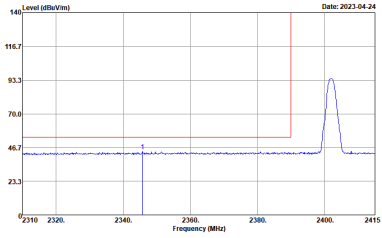
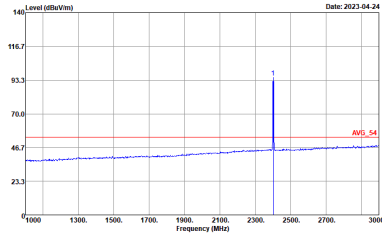
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
4	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 HORIZONTAL :	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 VERTICAL :



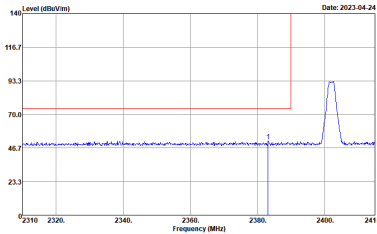
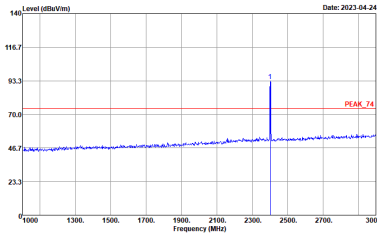
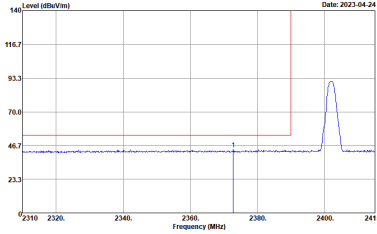
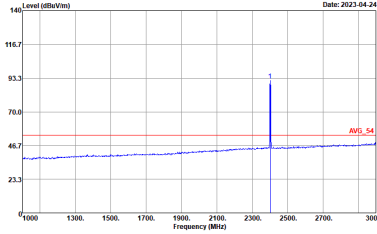
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2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4	Horizontal	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LE2005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto	 Site : 03CH23-HY Condition : AVG_54 3m LE2005A18EN_230705 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto

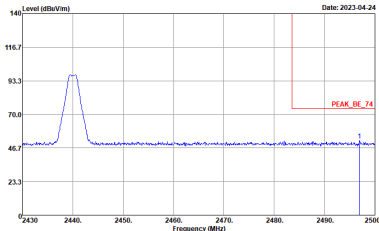
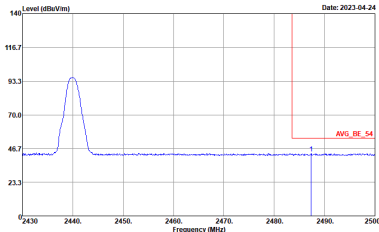


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH23-HY Condition : AV6_BE_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH23-HY Condition : AV6_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto
Avg		

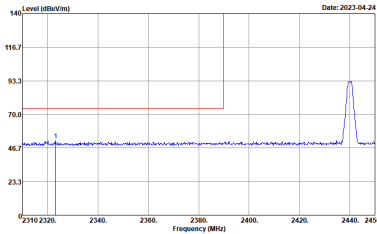
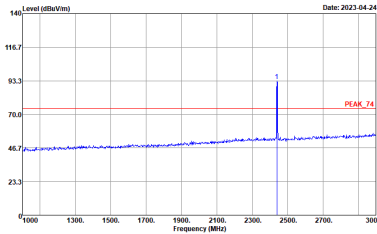
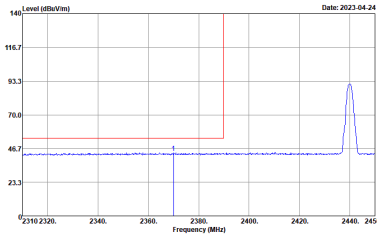
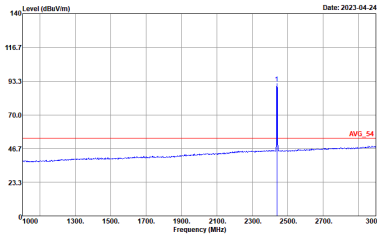


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Horizontal	Fundamental
Peak	Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH23-HY Condition : AVG_BE_54 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH23-HY Condition : AVG_54 3m LE2C05A18EN_230705 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

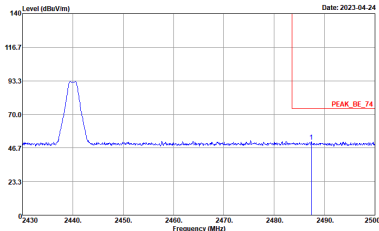
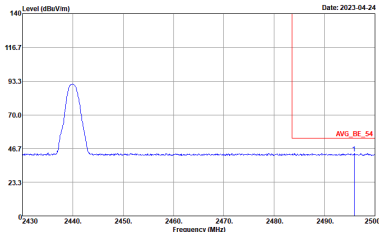


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Horizontal	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank
Avg.	 Site : 03CH23-HY Condition : AVG_BE_54 3m LE2005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:10.000kHz SWT:Auto	Left blank



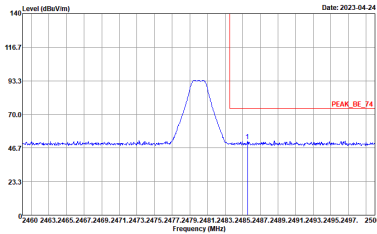
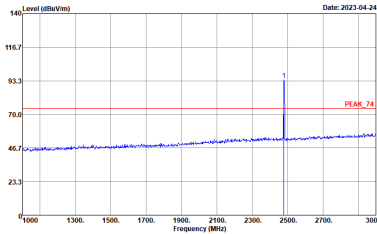
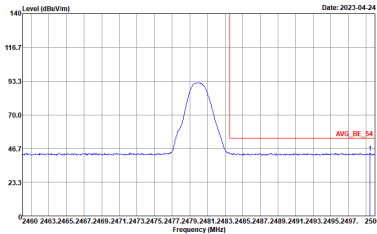
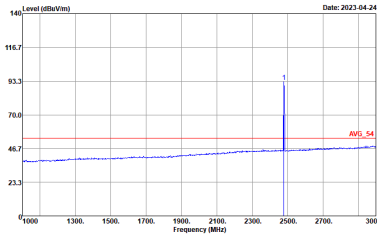
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH23-HY Condition : AV6_BE_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH23-HY Condition : AV6_54 3m LEZ005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto
Avg.		



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : : PEAK_BE_74 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH23-HY Condition : : AVG_BE_54 3m LE2005A18EN_230705 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Horizontal	Fundamental
Peak	Horizontal Peak Spectrum Plot showing Level (dBm/100kHz) vs Frequency (MHz). The plot shows a peak at 2480 MHz. The peak level is approximately 93.3 dBm/100kHz. The plot is dated 2023-04-24. Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Fundamental Peak Spectrum Plot showing Level (dBm/100kHz) vs Frequency (MHz). The plot shows a peak at 2480 MHz. The peak level is approximately 93.3 dBm/100kHz. The plot is dated 2023-04-24. Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
	Horizontal Avg. Spectrum Plot showing Level (dBm/100kHz) vs Frequency (MHz). The plot shows a peak at 2480 MHz. The peak level is approximately 93.3 dBm/100kHz. The plot is dated 2023-04-24. Site : 03CH23-HY Condition : AVG_BE_54 3m LEZ005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:10.000kHz SWT:Auto	Fundamental Avg. Spectrum Plot showing Level (dBm/100kHz) vs Frequency (MHz). The plot shows a peak at 2480 MHz. The peak level is approximately 93.3 dBm/100kHz. The plot is dated 2023-04-24. Site : 03CH23-HY Condition : AVG_54 3m LEZ005A18EN_230705 HORIZONTAL RBW:1000.000kHz VBW:10.000kHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH23-HY Condition : PEAK_BE_74 3m LEZ005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH23-HY Condition : AV6_BE_54 3m LEZ005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH23-HY Condition : AV6_54 3m LEZ005A18EN_230705 VERTICAL RBW:1000.000KHz VBW:10.000KHz SWT:Auto
Avg.		



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
4	Horizontal	Vertical
Peak Avg.	Level (dBm/5m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 HORIZONTAL	Level (dBm/5m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LEZ005A18EN_230705 VERTICAL

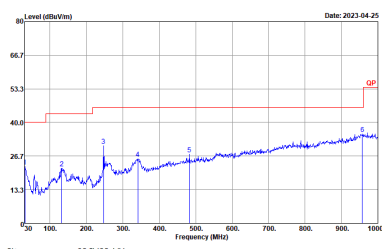
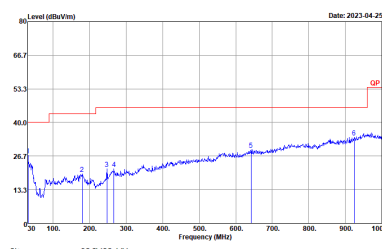


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
4	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 HORIZONTAL	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
4	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 HORIZONTAL	Level (dBuV/m) Date: 2023-04-24 Site : 03CH23-HY Condition : PEAK_74 3m LE2C05A18EN_230705 VERTICAL

Emission below 1GHz
2.4GHz BLE (LF)

BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
4	Horizontal	Vertical
QP / Peak	 Site : 03CH23-HY Condition : QP 3m BIL06_62028_231010 HORIZONTAL	 Site : 03CH23-HY Condition : QP 3m BIL06_62028_231010 VERTICAL



Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth –LE for 1Mbps	60.90	380	2.63	3kHz
Bluetooth –LE for 2Mbps	31.63	198	5.05	10kHz

