

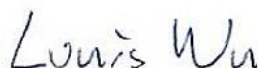


FCC RADIO TEST REPORT

FCC ID : 2AFZZ119DG
Equipment : Mobile Phone
Brand Name : XIAOMI
Model Name : 2109119DG
Applicant : Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi
Middle Road, Haidian District, Beijing,
China, 100085
Manufacturer : Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi
Middle Road, Haidian District, Beijing,
China, 100085
Standard : FCC Part 15 Subpart C §15.247

The product was received on Jun. 30, 2021 and testing was started from Jul. 05, 2021 and completed on Jul. 23, 2021. 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 of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.



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	Issued Date
FR162425B	01	Initial issue of report	Aug. 02, 2021

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)	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	Under limit 7.71 dB at 17970.000 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 11.02 dB at 7.346 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Danny Lee

Report Producer: Amy Chen

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE/5G NR, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, NFC and GNSS

Product Specification subjective to this standard		
Sample 1	6G+128GB with Battery 1	
Sample 2	8G+128GB with Battery 1	
Sample 3	8G+256GB with Battery 1	
Sample 4	6G+128GB with Battery 2	
Antenna Type	WWAN: PIFA Antenna WLAN <Ant. 7>: PIFA Antenna <Ant. 9>: PIFA Antenna Bluetooth <Ant. 7>: PIFA Antenna <Ant. 9>: PIFA Antenna GPS / Glonass / BDS / Galileo: PIFA Antenna NFC: Coil Antenna	
Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	<Ant. 7>: -1.8 <Ant. 9>: -0.9

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY, 03CH20-HY, CO07-HY

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

FCC designation No.: TW3786

1.4 Applicable Standards

According to the specifications of 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 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
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	-	-

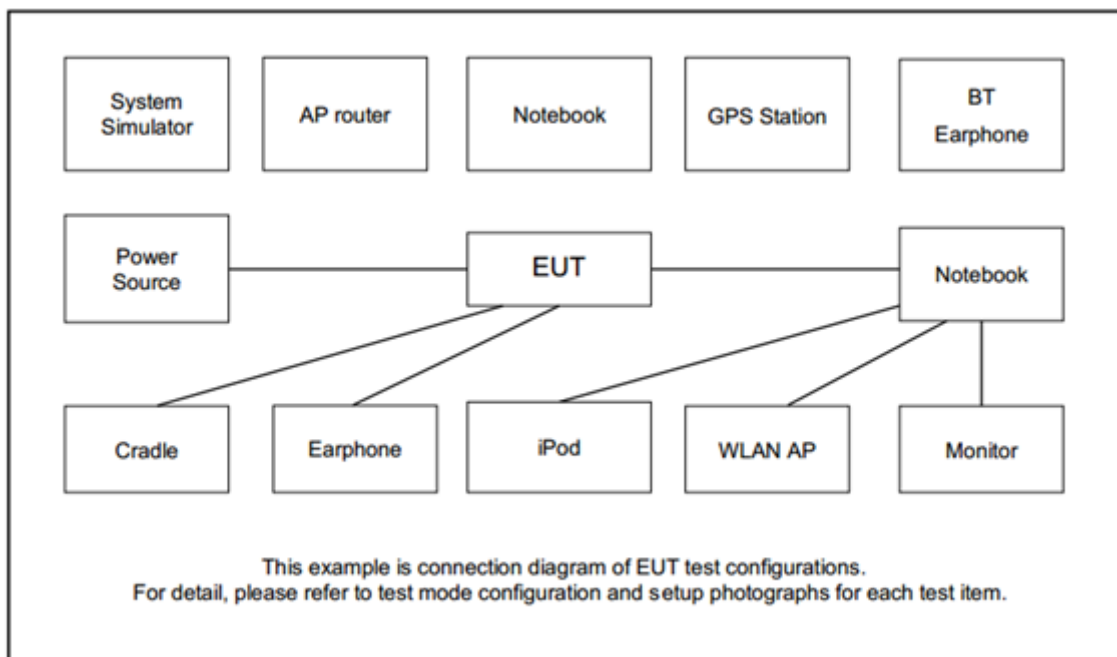
2.2 Test Mode

- 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 find X plane for Ant. 7 ; Z plane for Ant. 9 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 / 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: GSM 850 Idle (Middle Channel) + Bluetooth Link + WLAN (2.4GHz) Link + Camera (Rear) + USB Cable 1 (Charging from Adapter) + SIM 1 for Sample 3
Remark: For Radiated Test Cases, the tests were performed with USB Cable 2 and Sample 1.	

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook	DELL	Latitude5310	PYAHS-107W	N/A	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A



2.5 EUT Operation Test Setup

The RF test items, make the EUT (SW: MIUI 12.5 Global 21.6.11) 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.

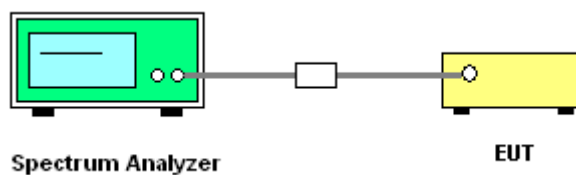
3.1.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the spectrum analyzer by RF cable and attenuator. The path loss was 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

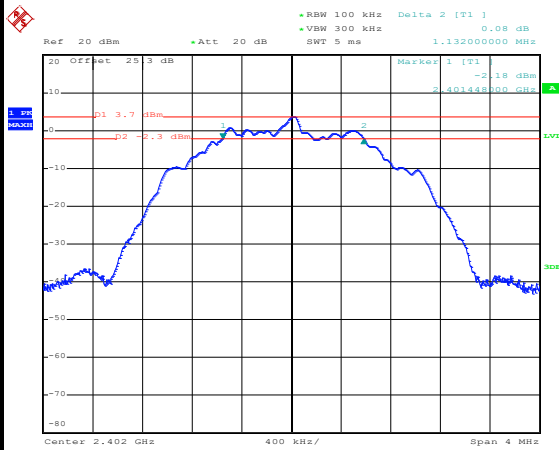






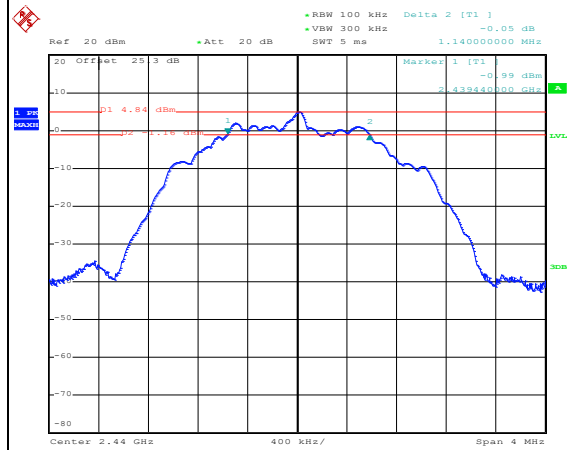
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6 dB Bandwidth Plot on Channel 00



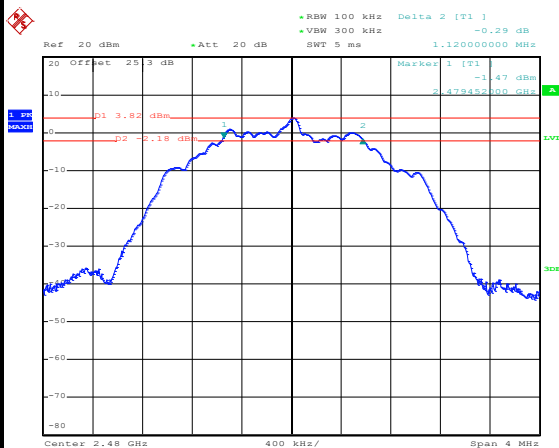
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6 dB Bandwidth Plot on Channel 19



Date: 16.JUL.2021 16:34:49

6 dB Bandwidth Plot on Channel 39



Date: 16.JUL.2021 16:39:22

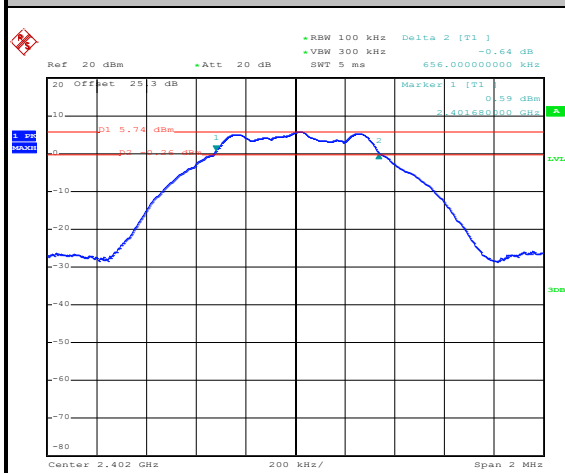
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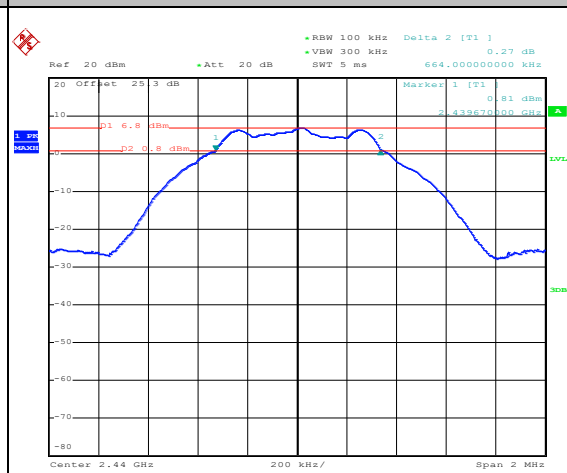
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6 dB Bandwidth Plot on Channel 00



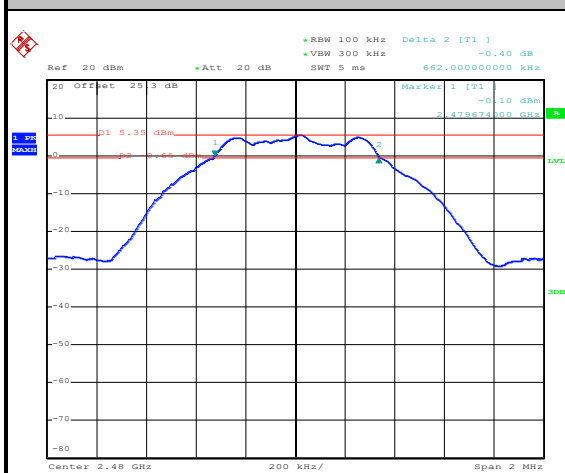
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6 dB Bandwidth Plot on Channel 19



Date: 17.JUL.2021 09:56:26

6 dB Bandwidth Plot on Channel 39

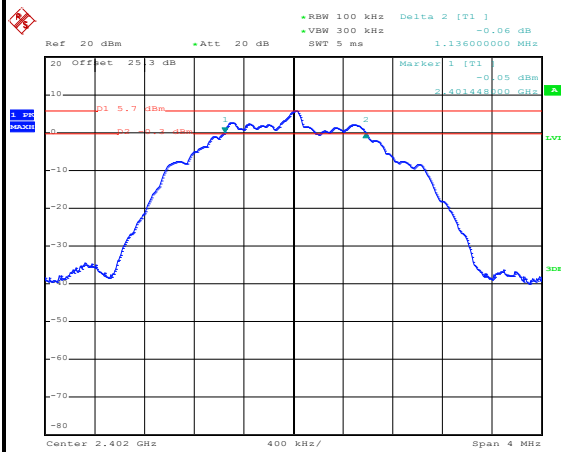


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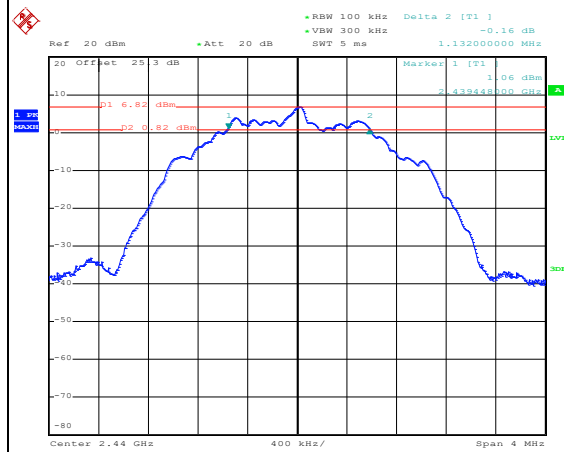
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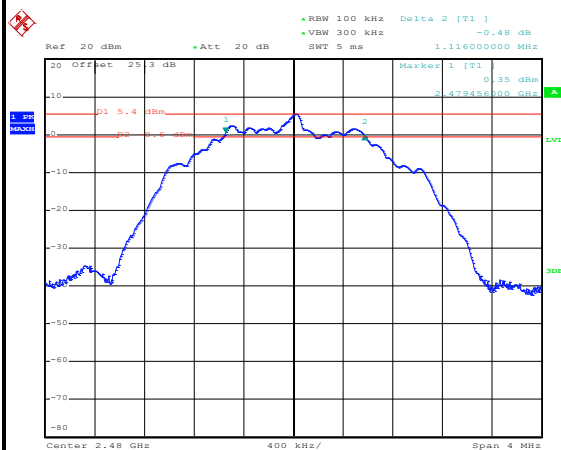
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6 dB Bandwidth Plot on Channel 00

Date: 17.JUL.2021 10:17:32

6 dB Bandwidth Plot on Channel 19

Date: 17.JUL.2021 10:27:34

6 dB Bandwidth Plot on Channel 39

Date: 17.JUL.2021 10:31:20

N/A

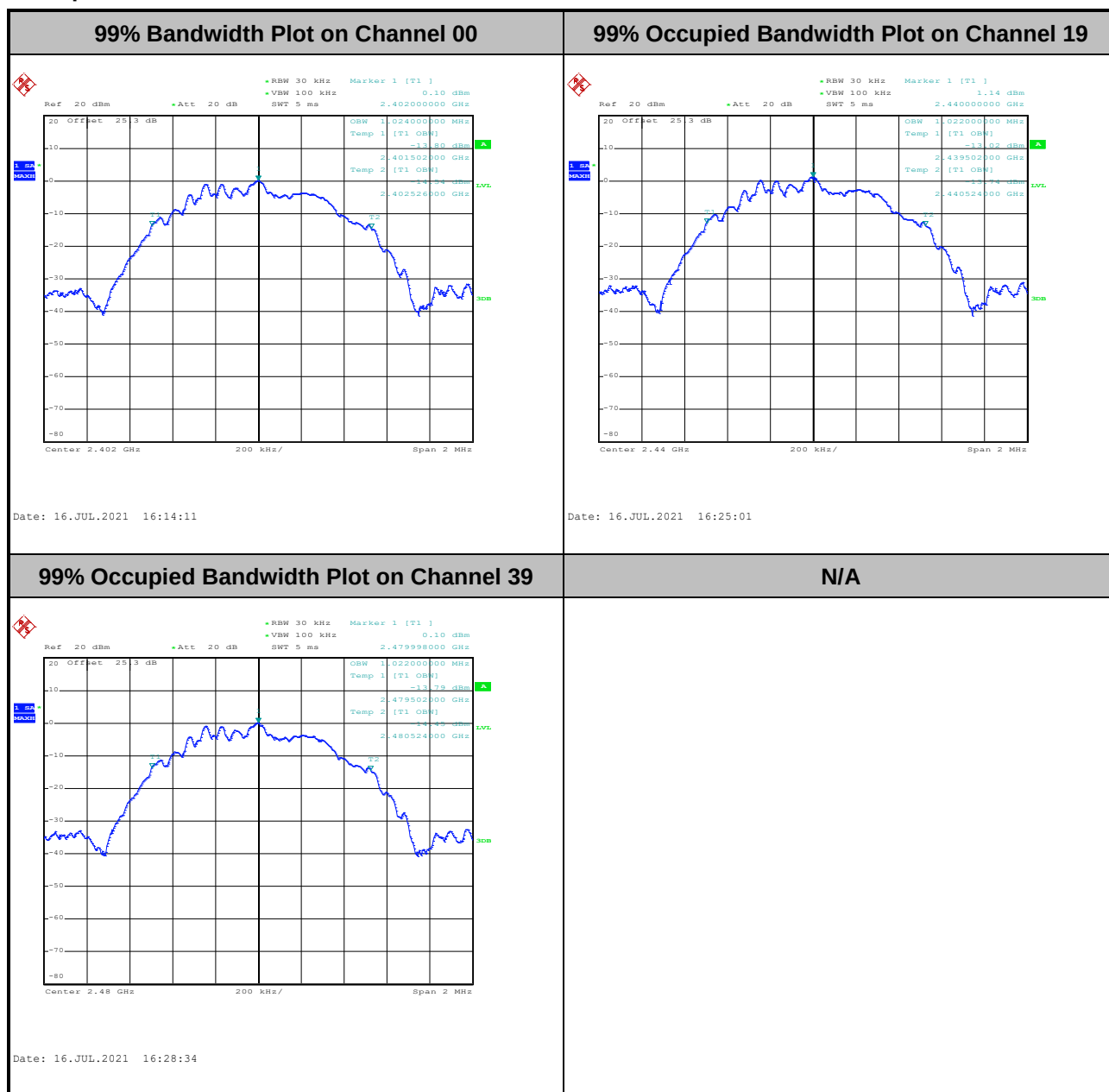


3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

<Ant .7>

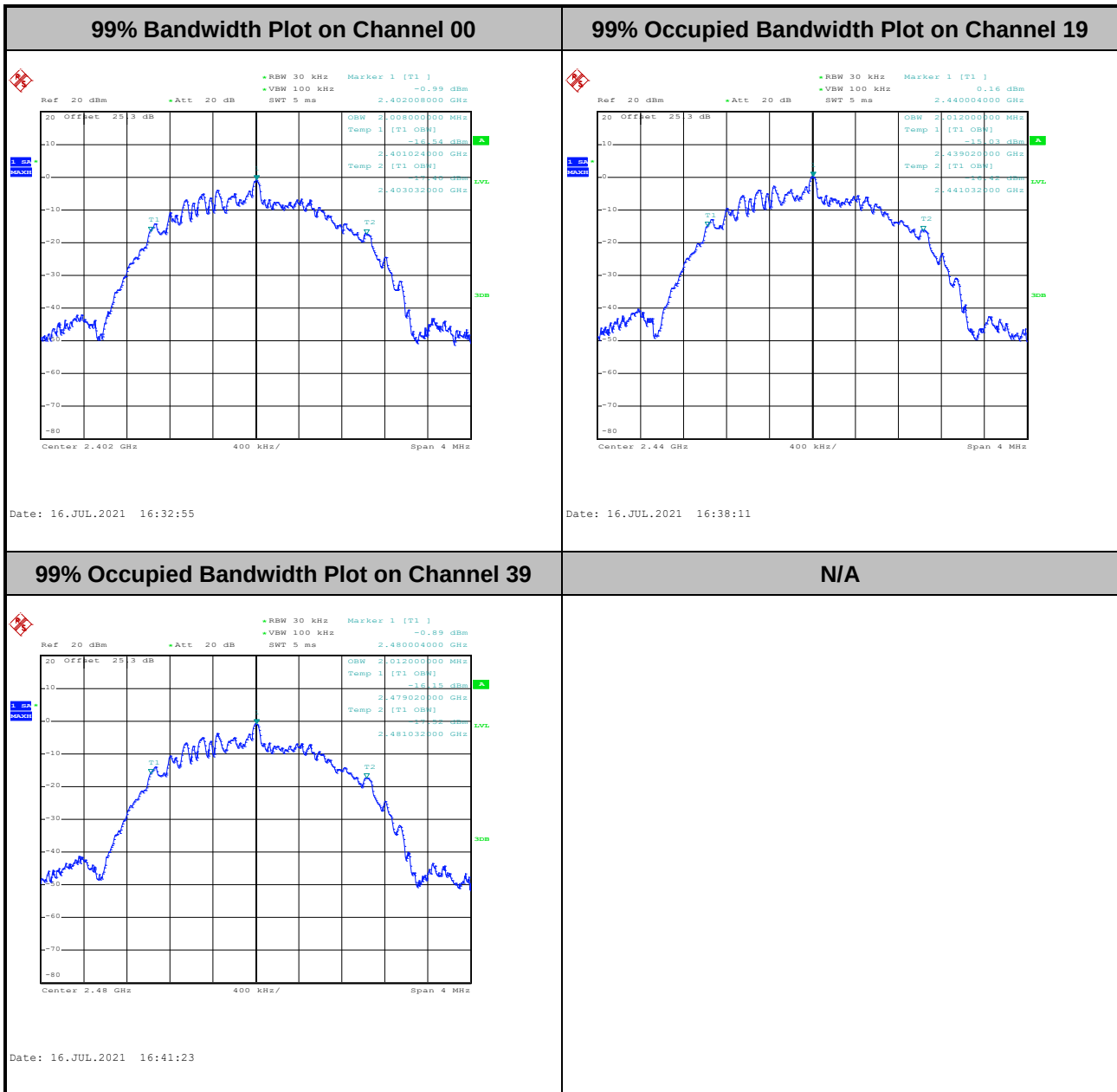
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Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



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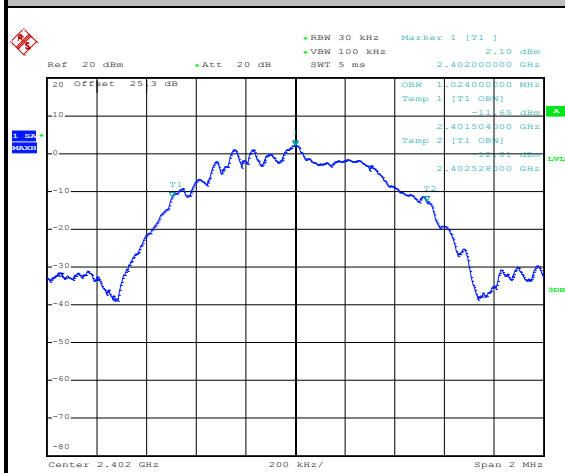
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



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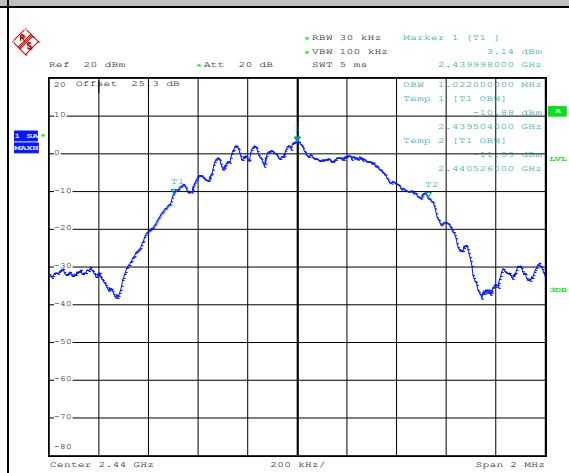
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99% Bandwidth Plot on Channel 00



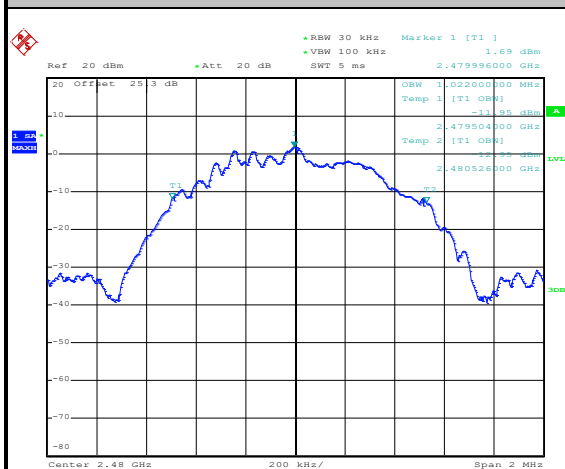
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99% Occupied Bandwidth Plot on Channel 19



Date: 17.JUL.2021 10:00:29

99% Occupied Bandwidth Plot on Channel 39



Date: 17.JUL.2021 10:14:24

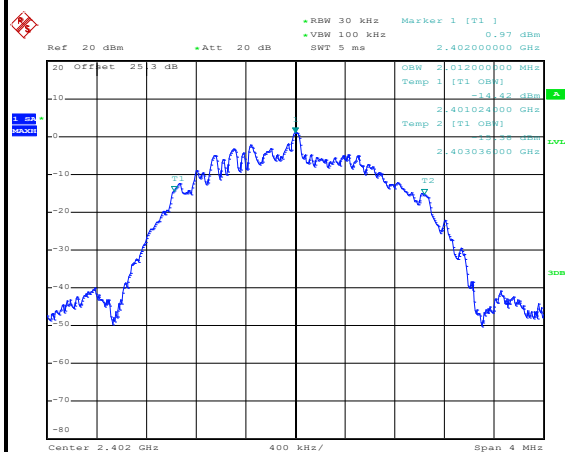
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Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



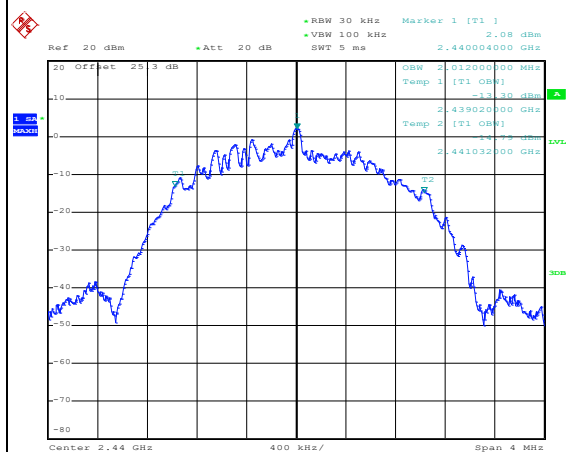
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99% Bandwidth Plot on Channel 00



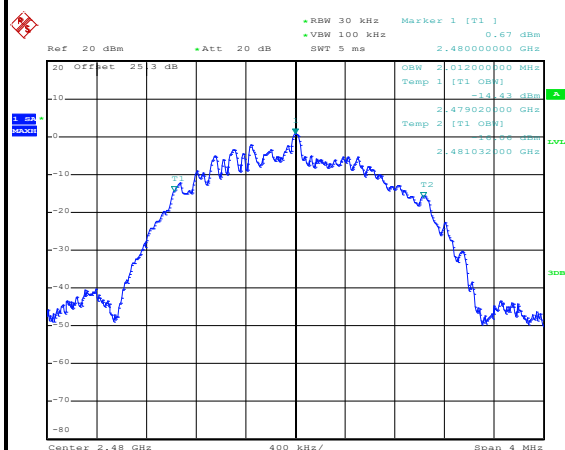
Date: 17.JUL.2021 10:25:31

99% Occupied Bandwidth Plot on Channel 19



Date: 17.JUL.2021 10:29:44

99% Occupied Bandwidth Plot on Channel 39



Date: 17.JUL.2021 10:34:20

N/A

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

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.

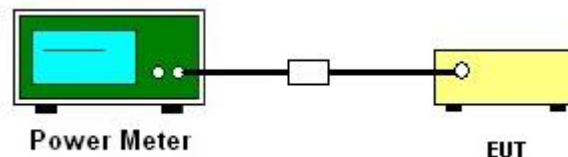
3.2.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the power meter by RF cable and attenuator.
3. The path loss was 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.

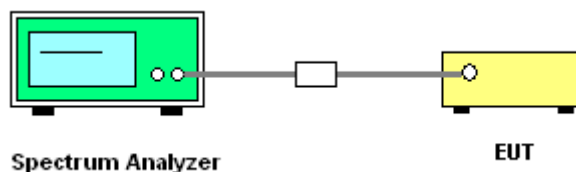
3.3.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the spectrum analyzer by RF cable and attenuator. The path loss was 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. (6dB 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

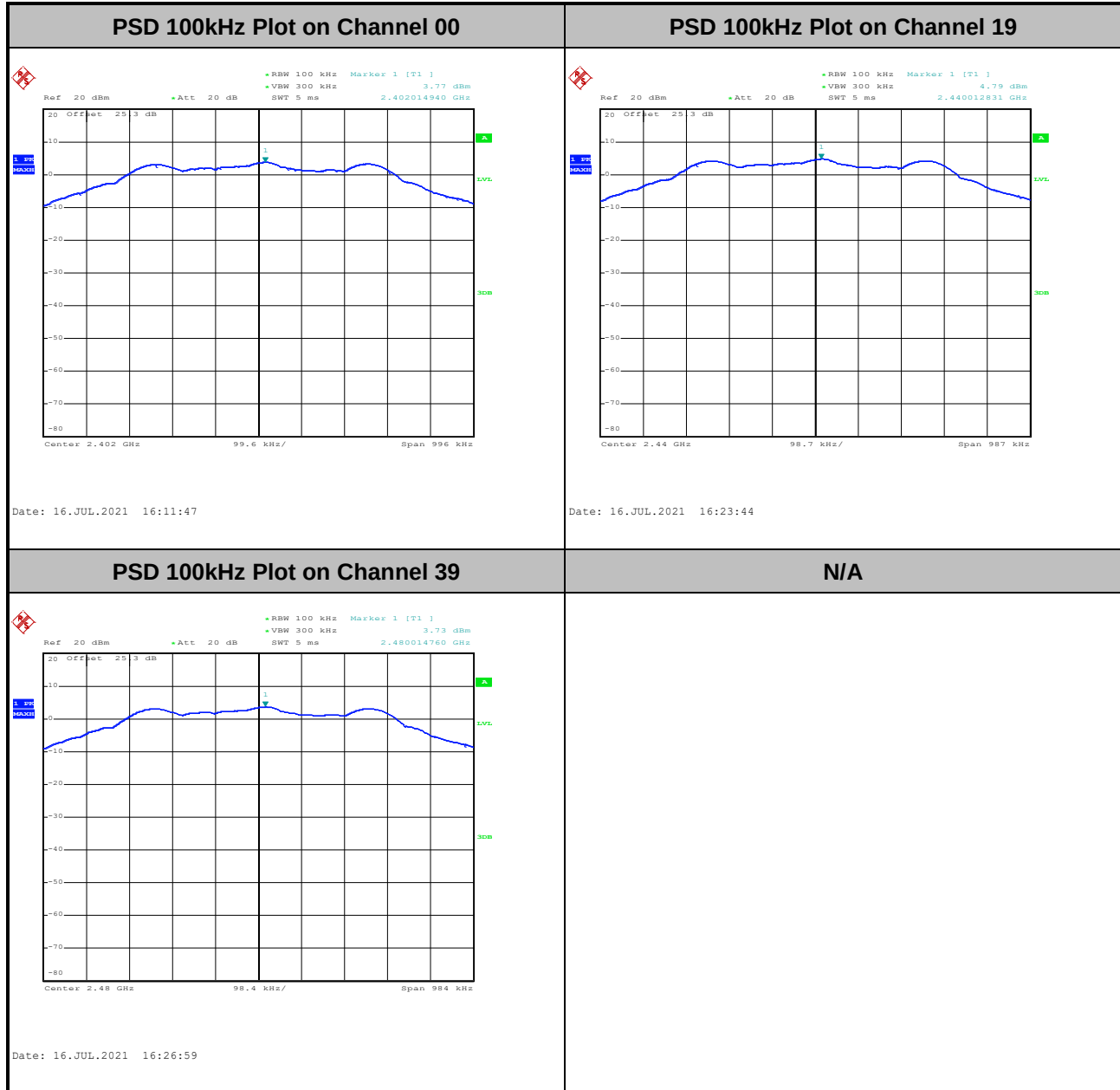
Please refer to Appendix A.



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

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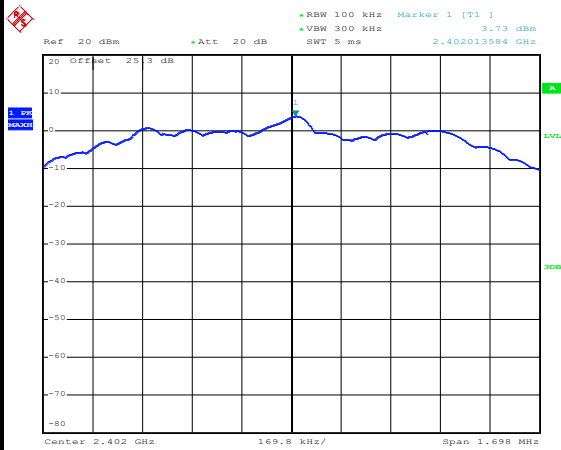
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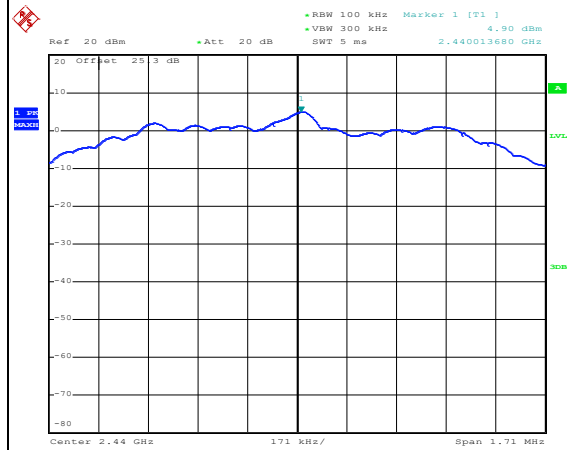
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PSD 100kHz Plot on Channel 00



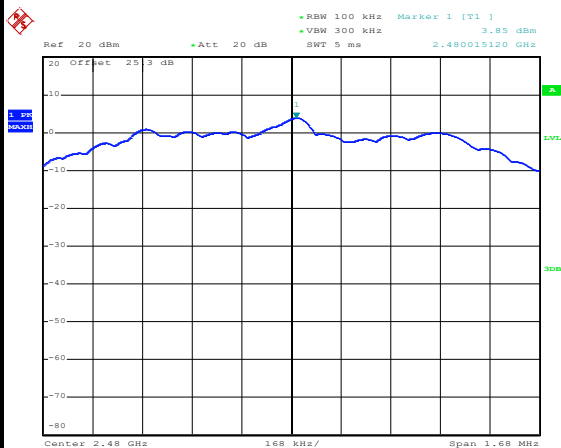
Date: 16.JUL.2021 16:31:02

PSD 100kHz Plot on Channel 19



Date: 16.JUL.2021 16:37:05

PSD 100kHz Plot on Channel 39



Date: 16.JUL.2021 16:40:02

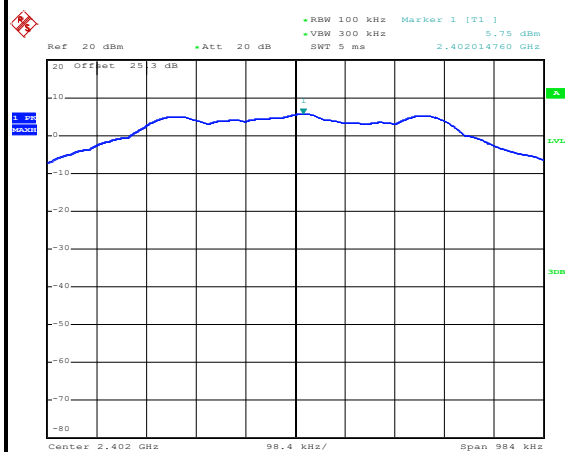
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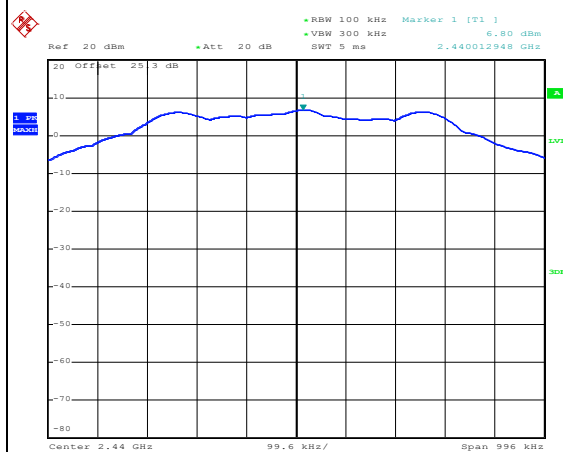
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PSD 100kHz Plot on Channel 00



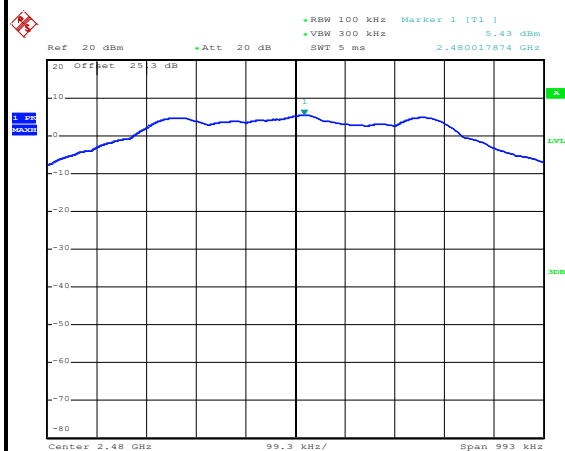
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PSD 100kHz Plot on Channel 19



Date: 17.JUL.2021 09:57:07

PSD 100kHz Plot on Channel 39



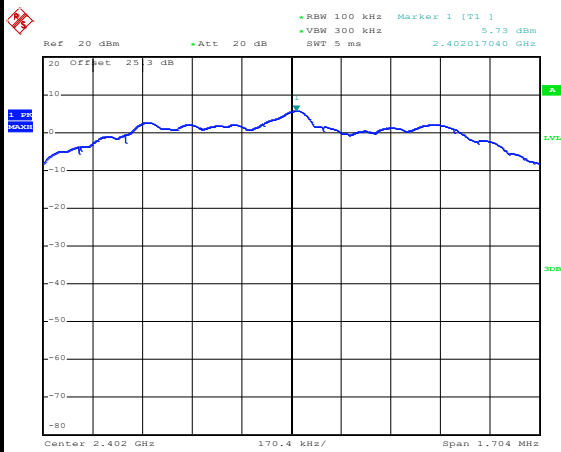
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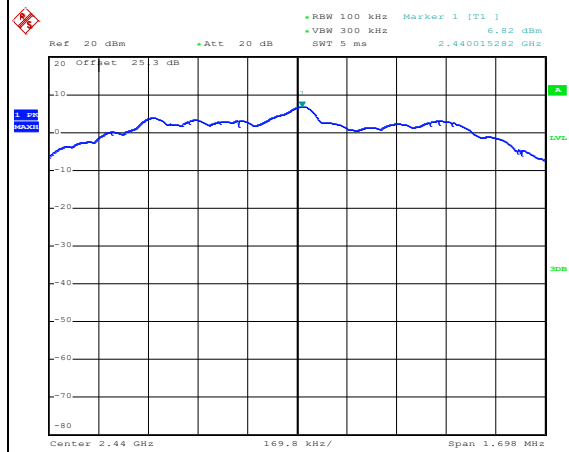
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PSD 100kHz Plot on Channel 00



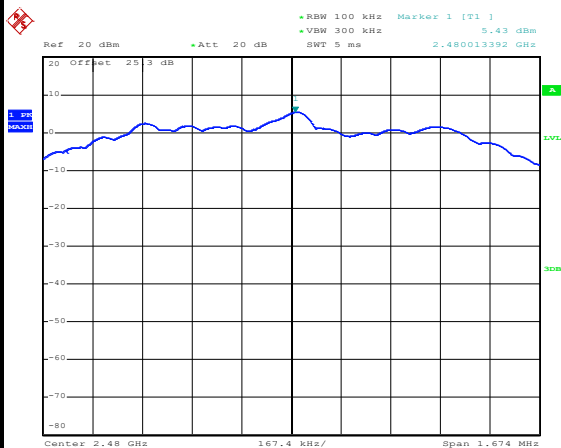
Date: 17.JUL.2021 10:22:20

PSD 100kHz Plot on Channel 19



Date: 17.JUL.2021 10:28:38

PSD 100kHz Plot on Channel 39



Date: 17.JUL.2021 10:32:50

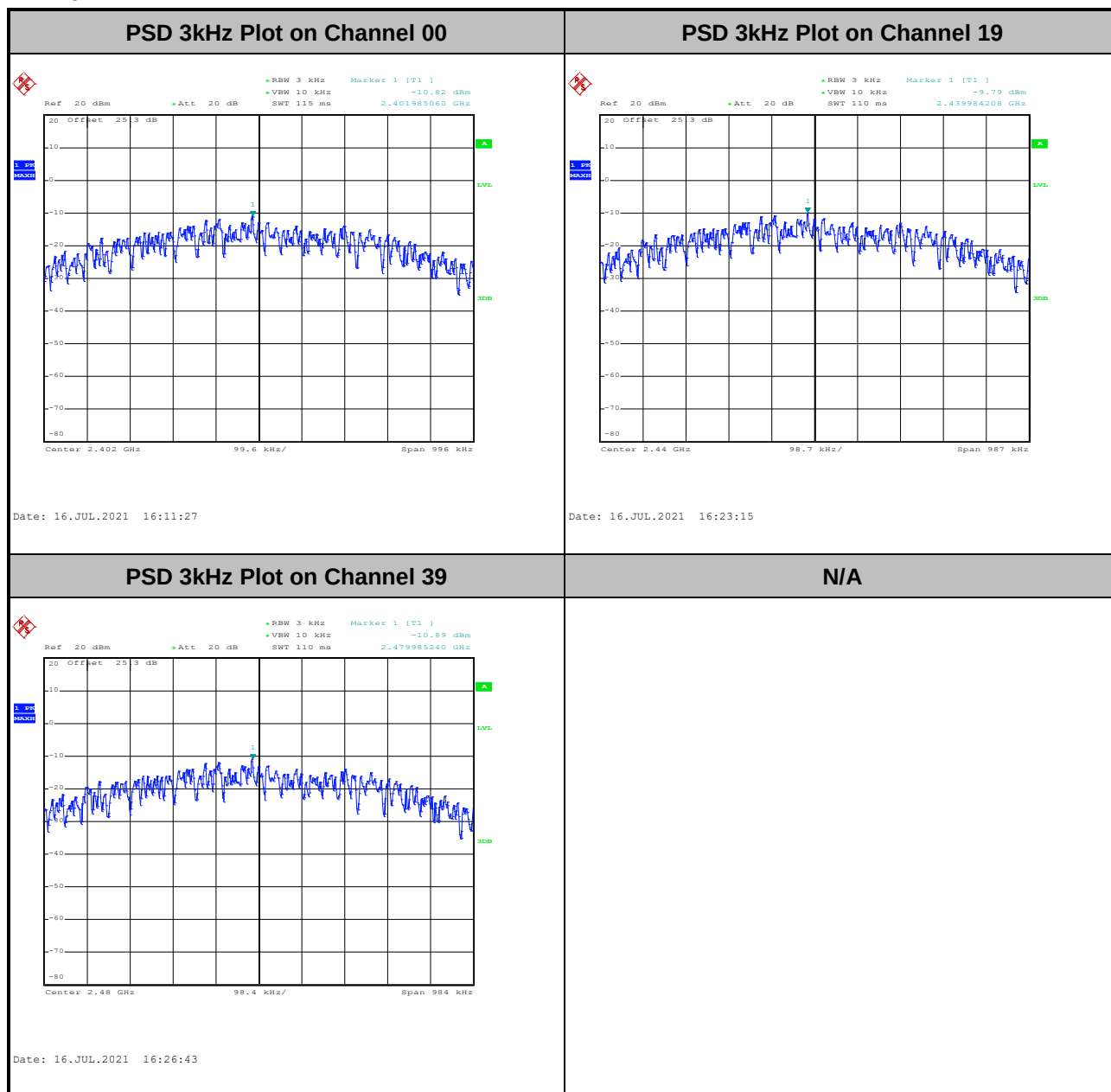
N/A



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

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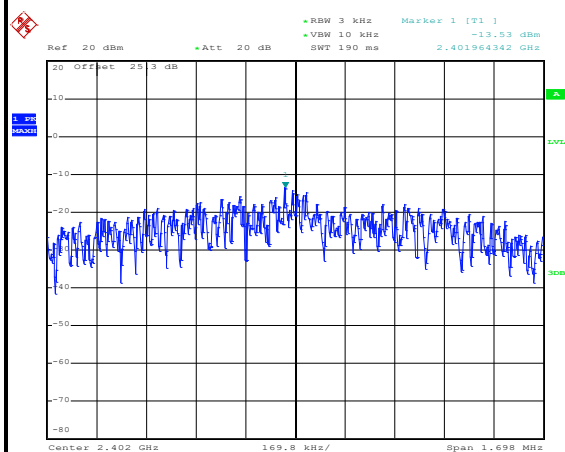
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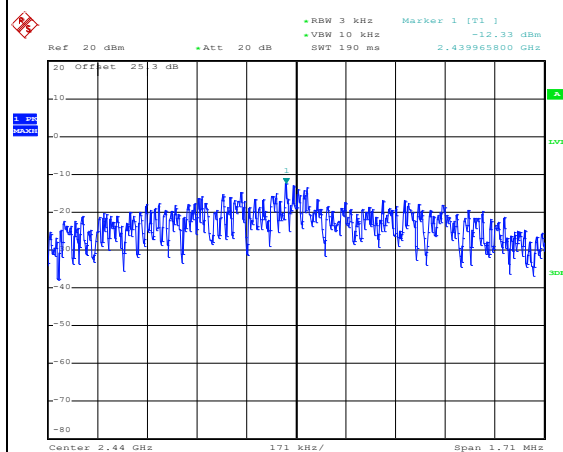
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PSD 3kHz Plot on Channel 00



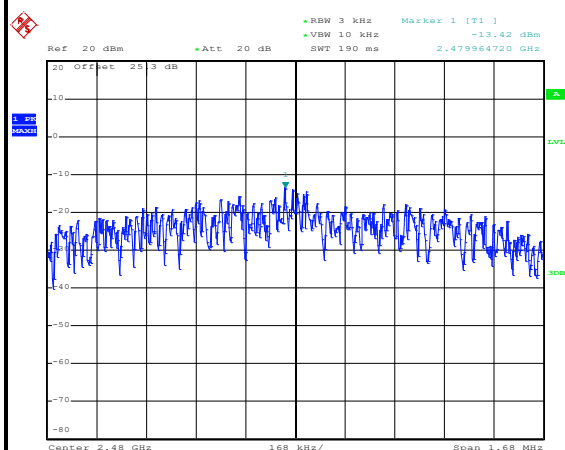
Date: 16.JUL.2021 16:30:25

PSD 3kHz Plot on Channel 19



Date: 16.JUL.2021 16:35:34

PSD 3kHz Plot on Channel 39



Date: 16.JUL.2021 16:39:39

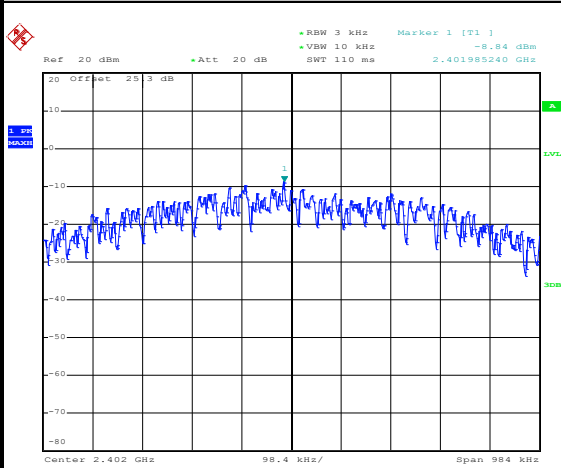
N/A



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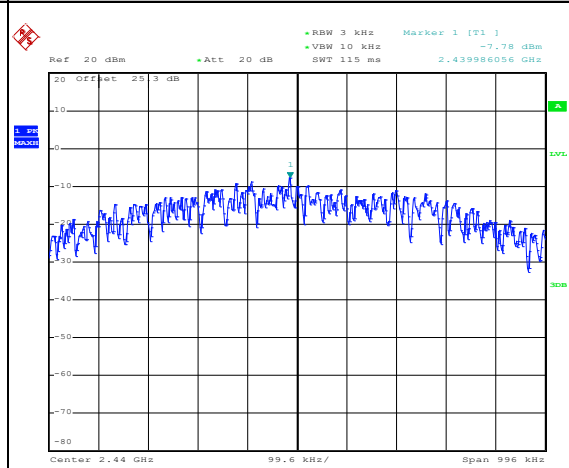
<1Mbps>

PSD 3kHz Plot on Channel 00



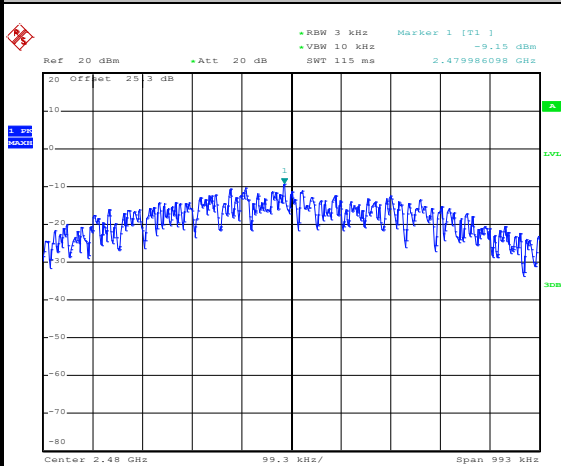
Date: 17.JUL.2021 09:53:01

PSD 3kHz Plot on Channel 19



Date: 17.JUL.2021 09:56:41

PSD 3kHz Plot on Channel 39

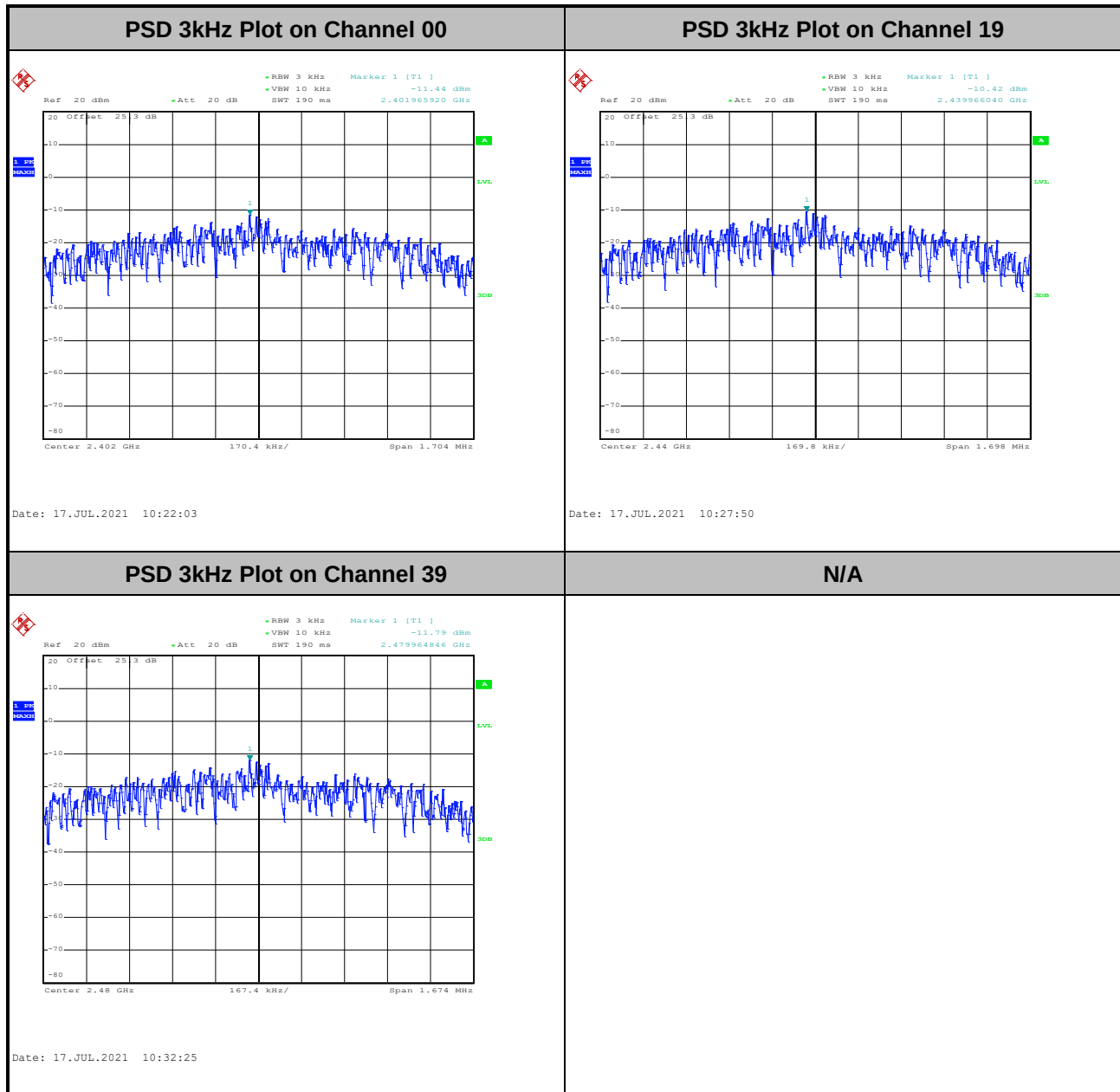


Date: 17.JUL.2021 10:12:20

N/A



<2Mbps>



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 20 dB down from the highest emission level within the authorized band.

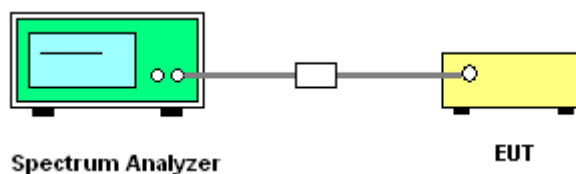
3.4.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the spectrum analyzer by RF cable and attenuator. The path loss was 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

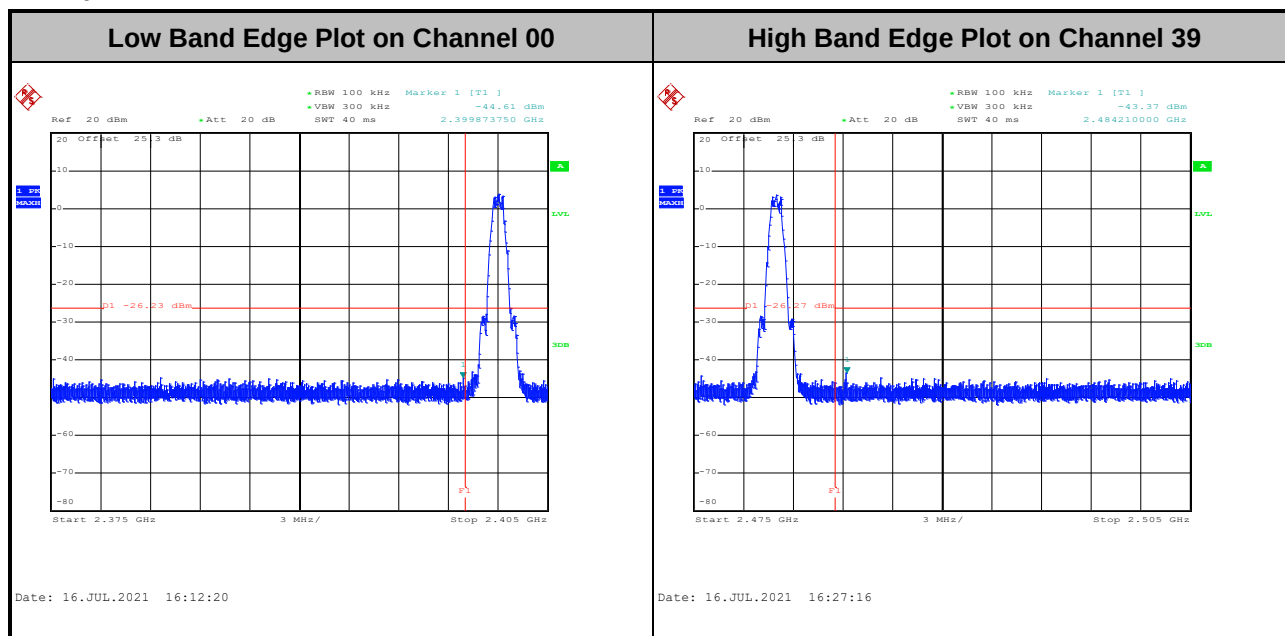




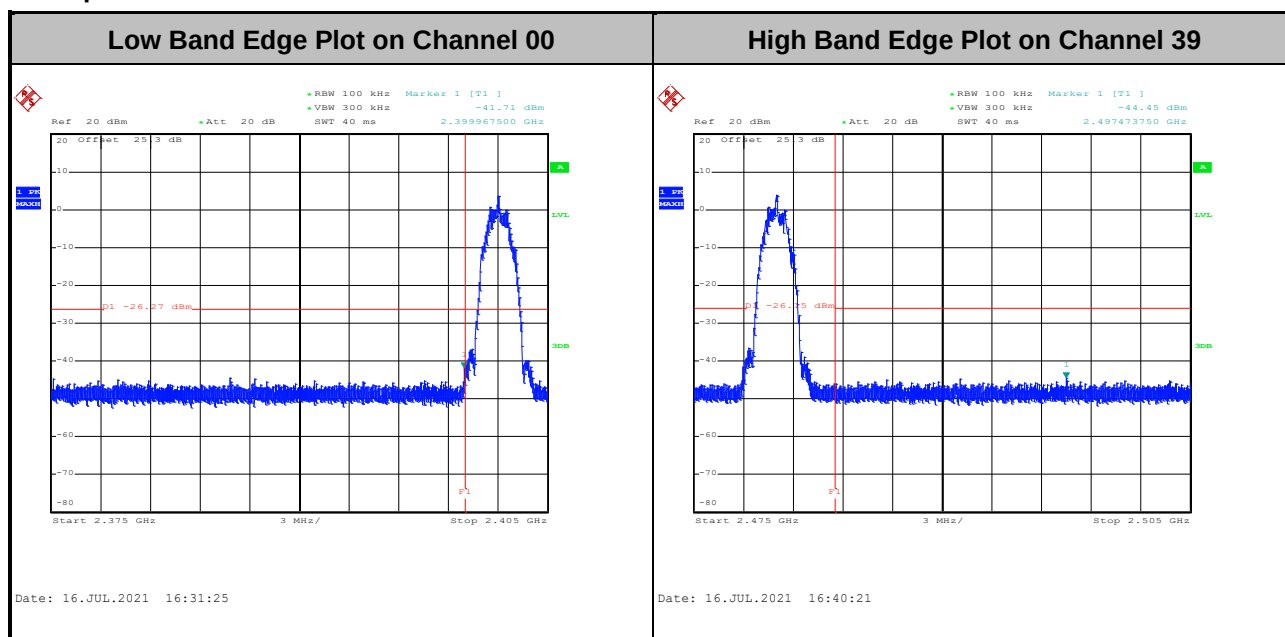
3.4.5 Test Result of Conducted Band Edges Plots

<Ant .7>

<1Mbps>



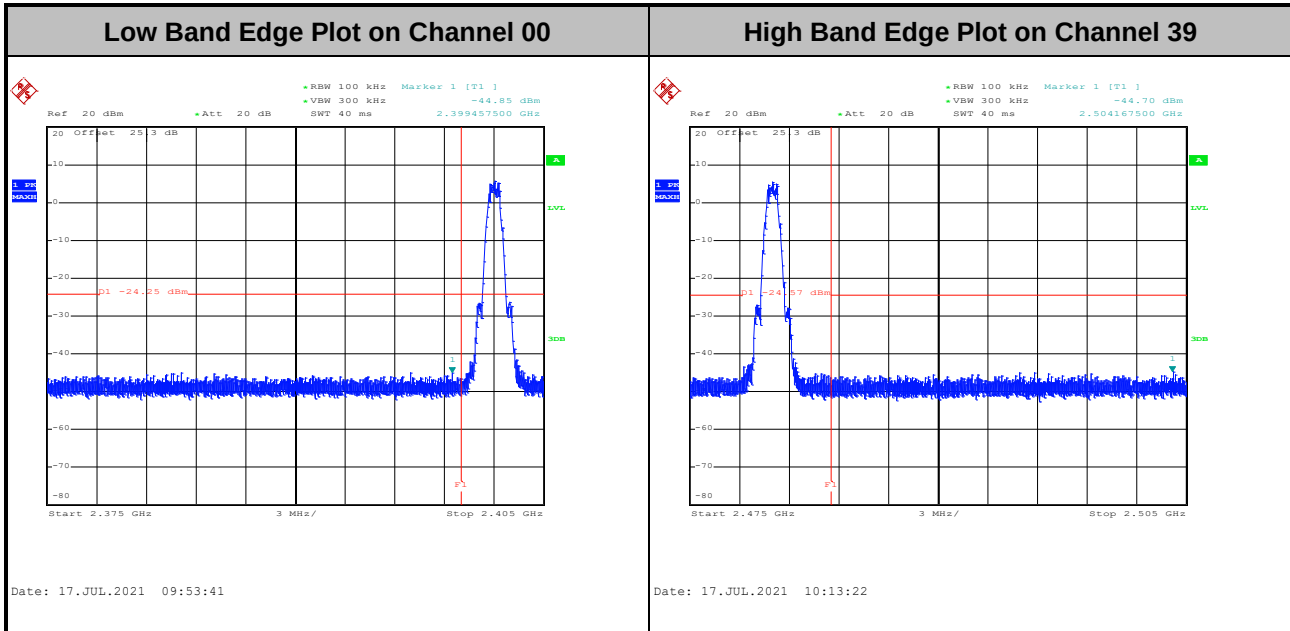
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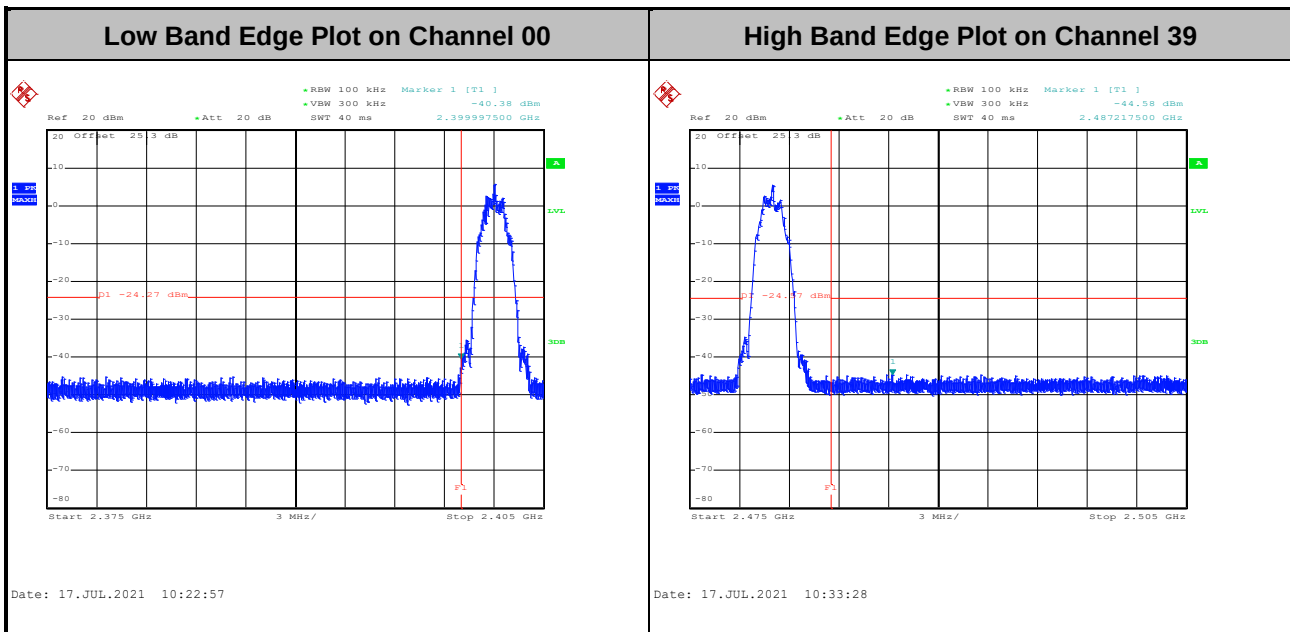


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<2Mbps>

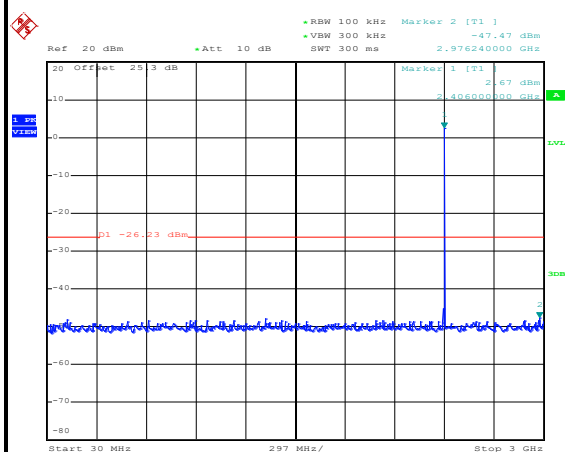




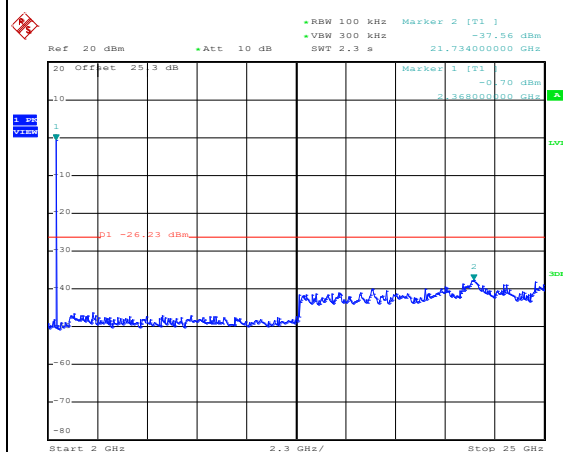
3.4.6 Test Result of Conducted Spurious Emission Plots

<Ant .7>

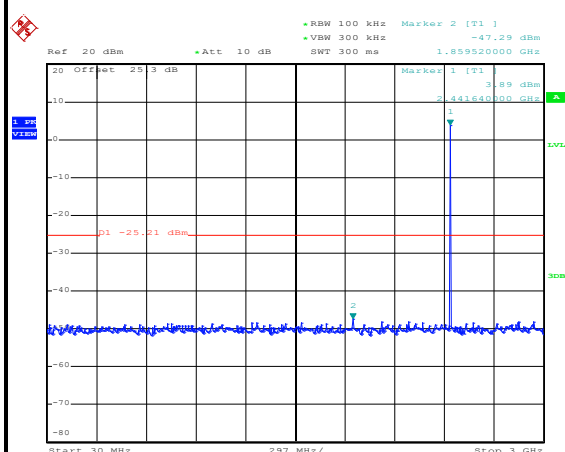
<1Mbps>

Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00

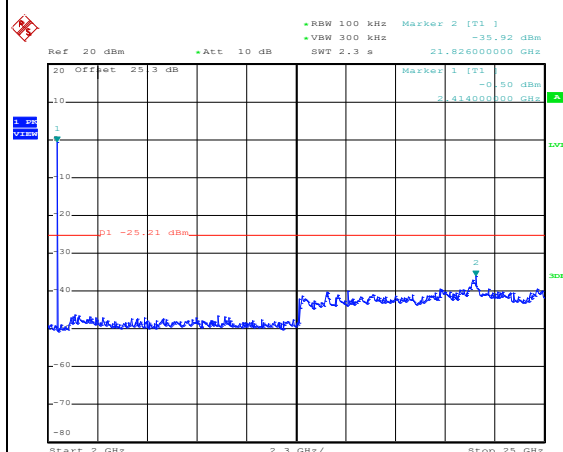
Date: 16.JUL.2021 16:13:29

Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00

Date: 16.JUL.2021 16:13:44

Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19

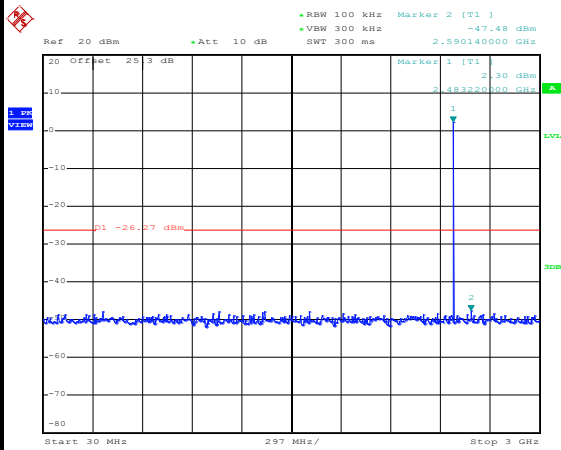
Date: 16.JUL.2021 16:24:06

Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19

Date: 16.JUL.2021 16:24:20

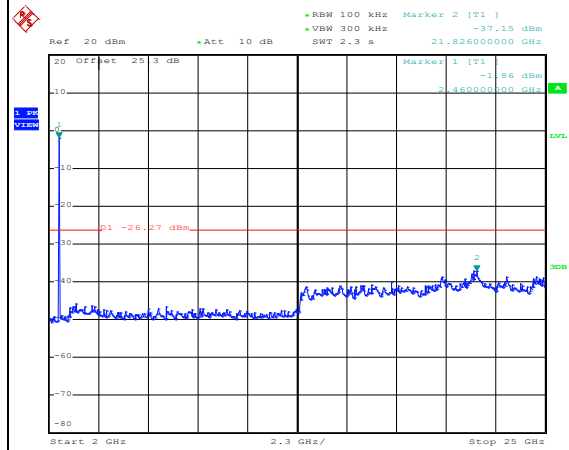


Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39



Date: 16.JUL.2021 16:27:38

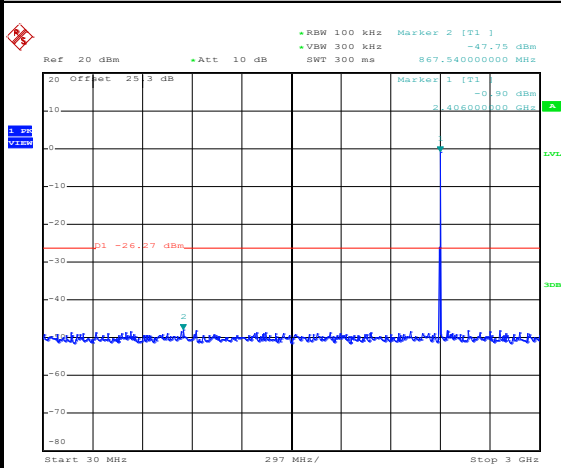
Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39



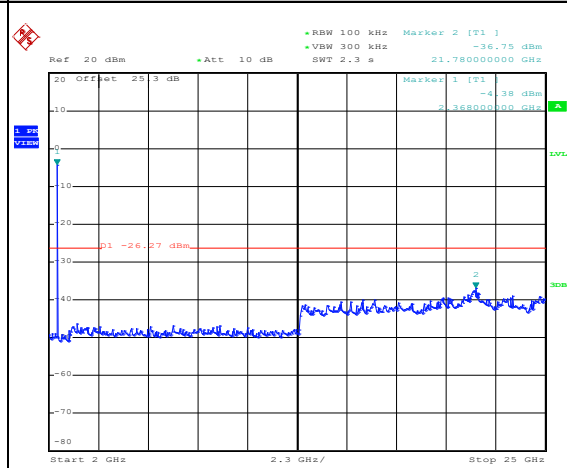
Date: 16.JUL.2021 16:27:55



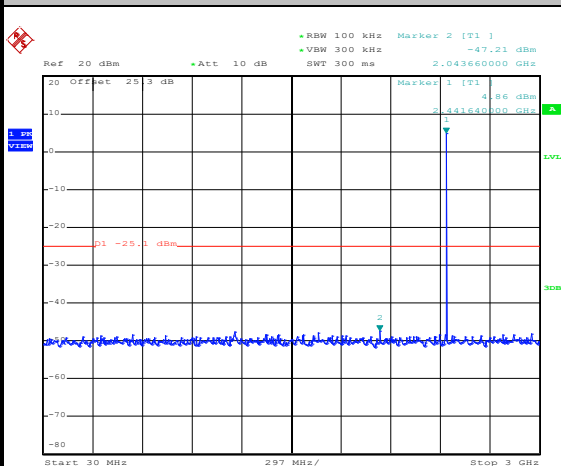
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**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00**

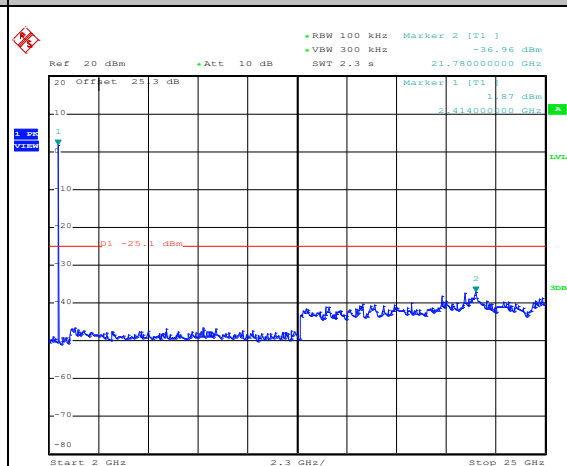
Date: 16.JUL.2021 16:32:01

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00**

Date: 16.JUL.2021 16:32:16

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**

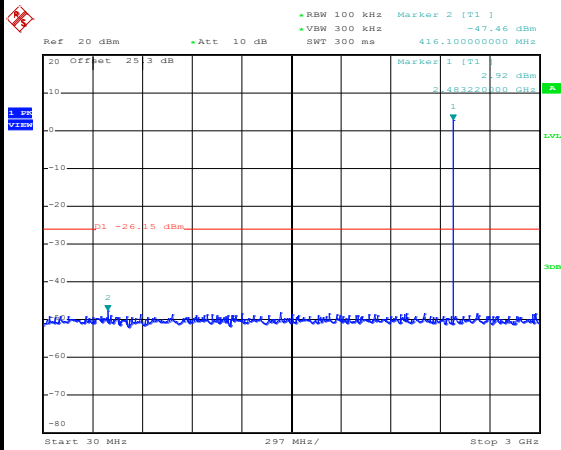
Date: 16.JUL.2021 16:37:27

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**

Date: 16.JUL.2021 16:37:42

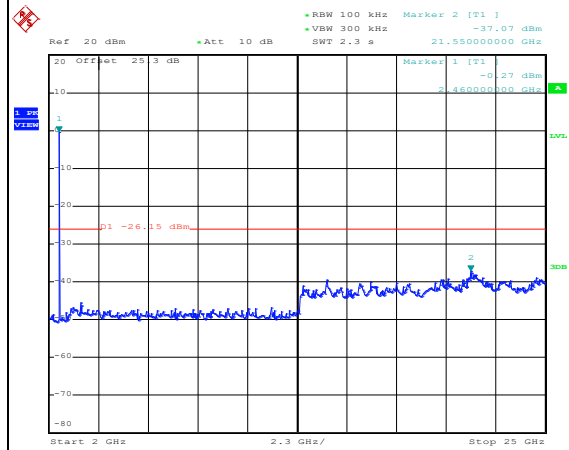


Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39



Date: 16.JUL.2021 16:40:39

Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39

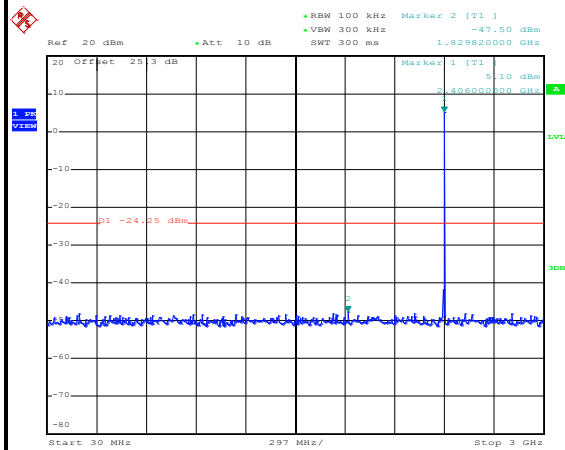


Date: 16.JUL.2021 16:40:57

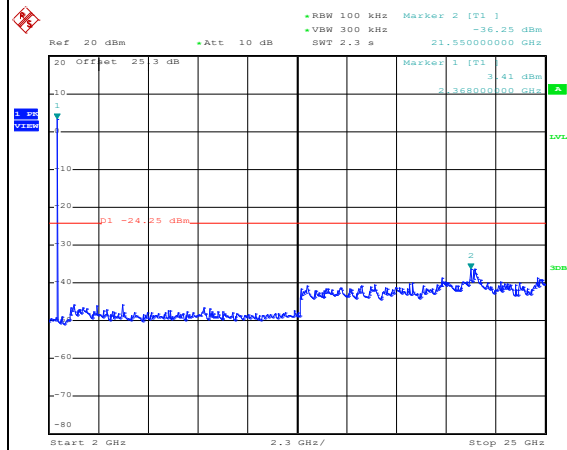


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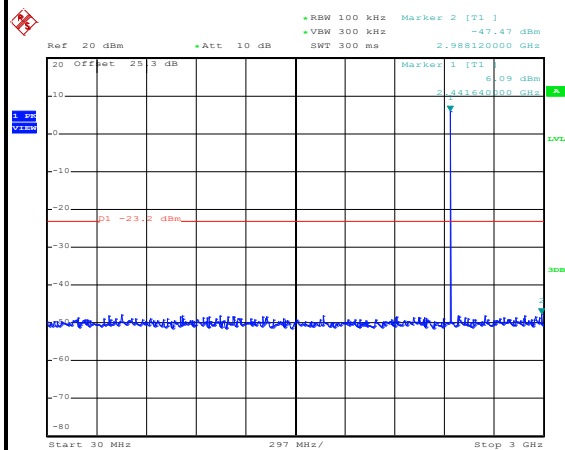
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**Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00**

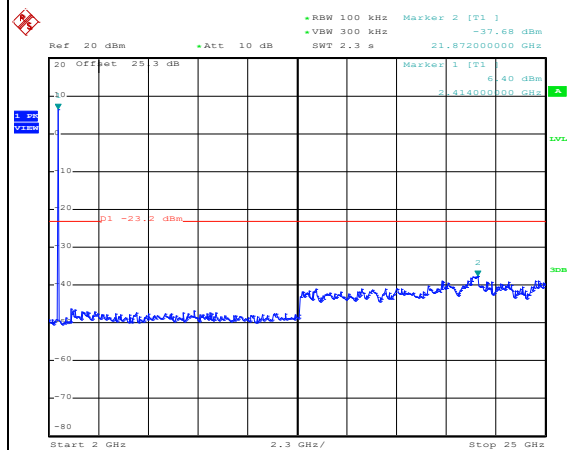
Date: 17.JUL.2021 09:54:31

**Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00**

Date: 17.JUL.2021 09:54:46

**Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19**

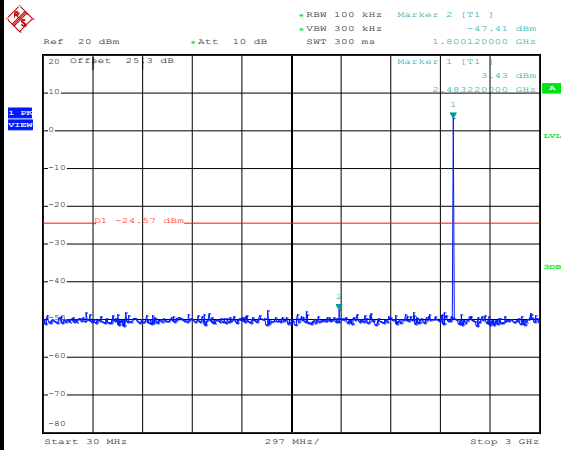
Date: 17.JUL.2021 09:57:27

**Conducted Spurious Emission Plot on
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Date: 17.JUL.2021 09:57:42

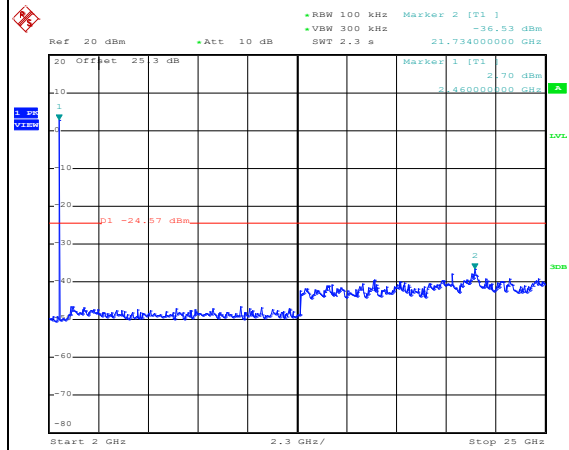


Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39



Date: 17.JUL.2021 10:13:39

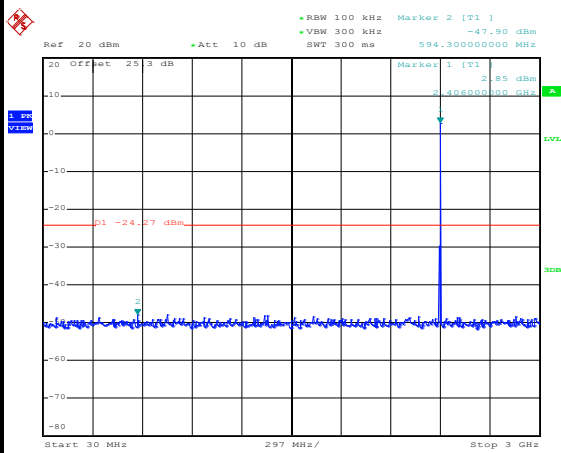
Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39



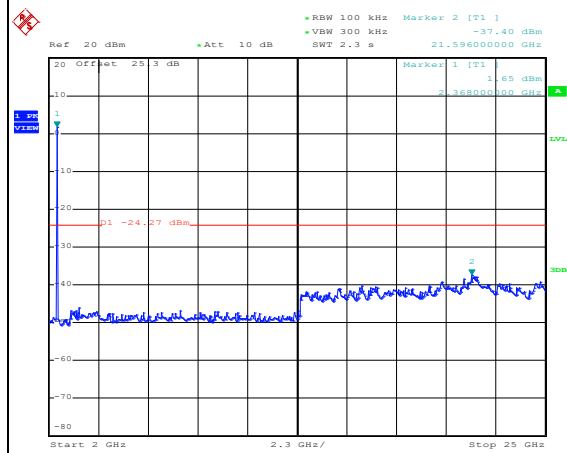
Date: 17.JUL.2021 10:13:55



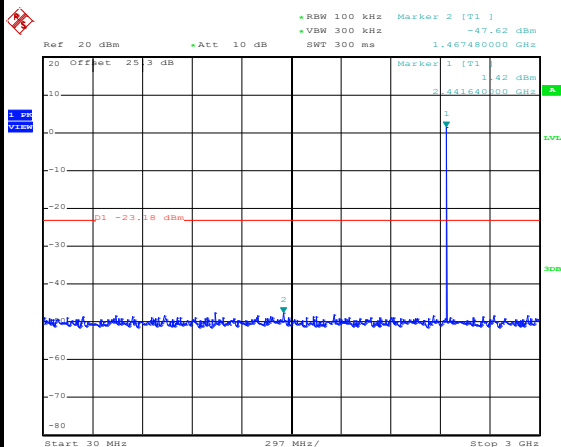
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**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00**

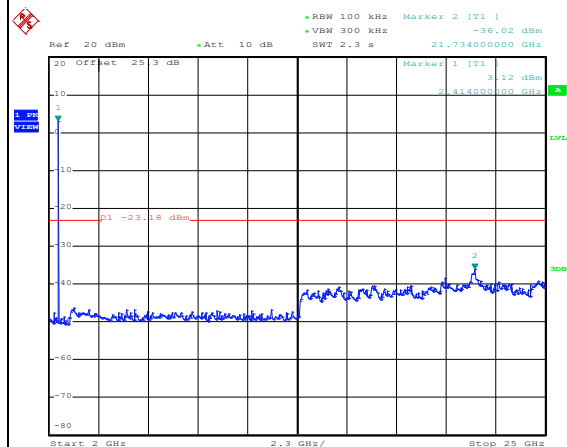
Date: 17.JUL.2021 10:24:27

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00**

Date: 17.JUL.2021 10:25:01

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**

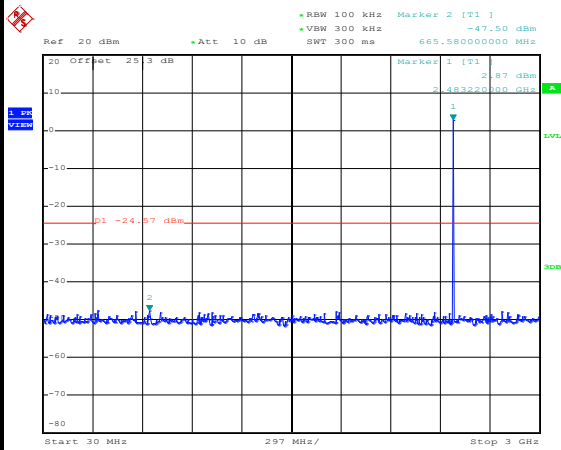
Date: 17.JUL.2021 10:29:04

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**

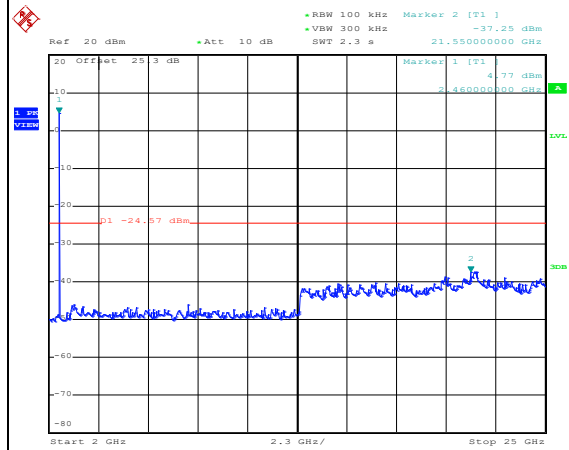
Date: 17.JUL.2021 10:29:20



Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39



Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39





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 was 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

See list of measuring equipment of this test report.

3.5.3 Test Procedures

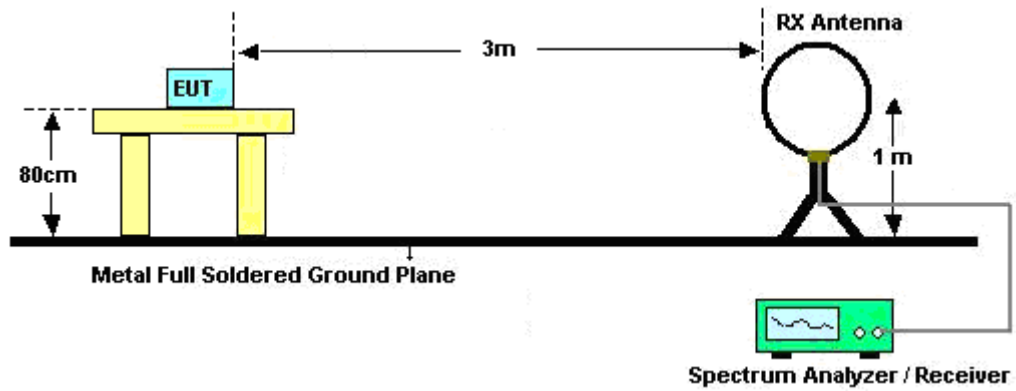
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was 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 was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and be reported.
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and be reported.
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:

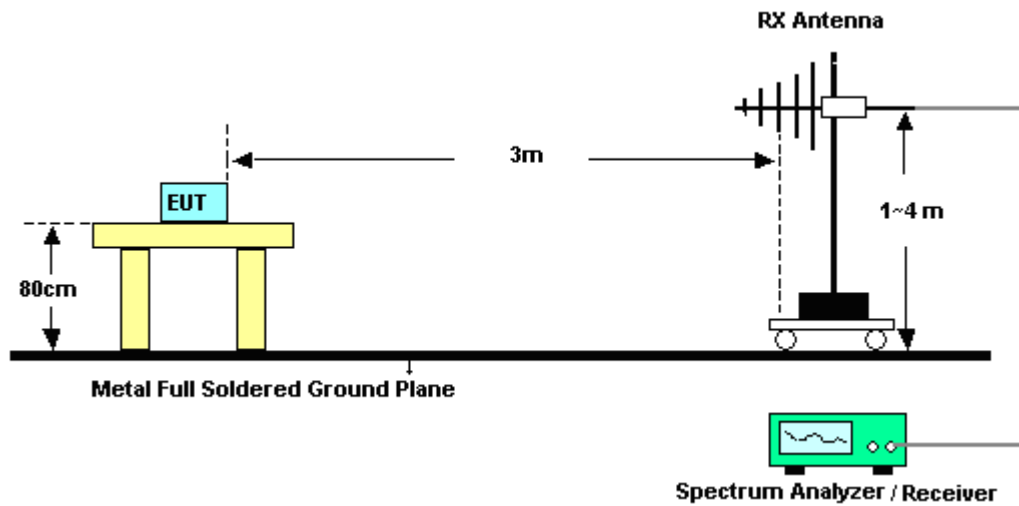
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

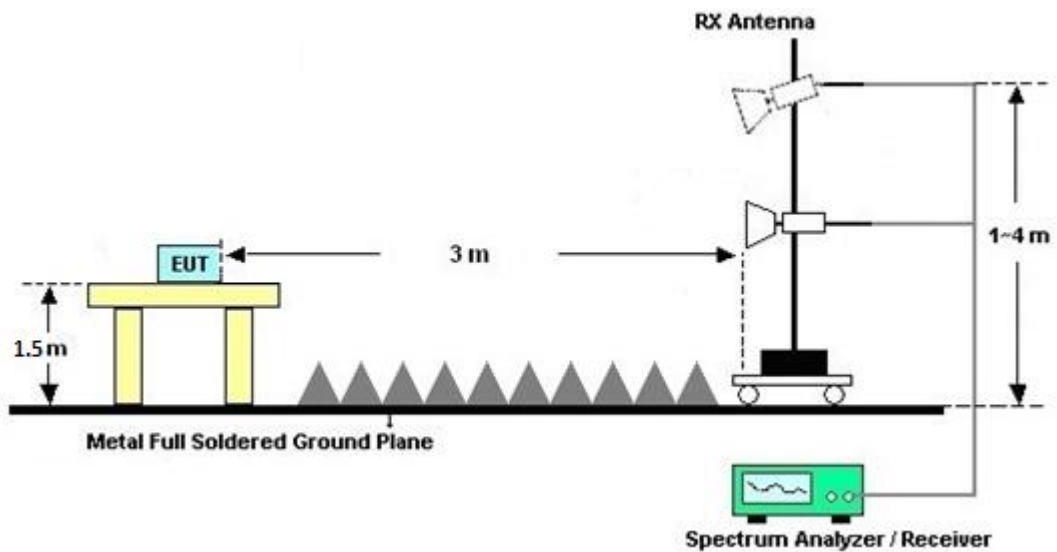
For radiated test below 30MHz



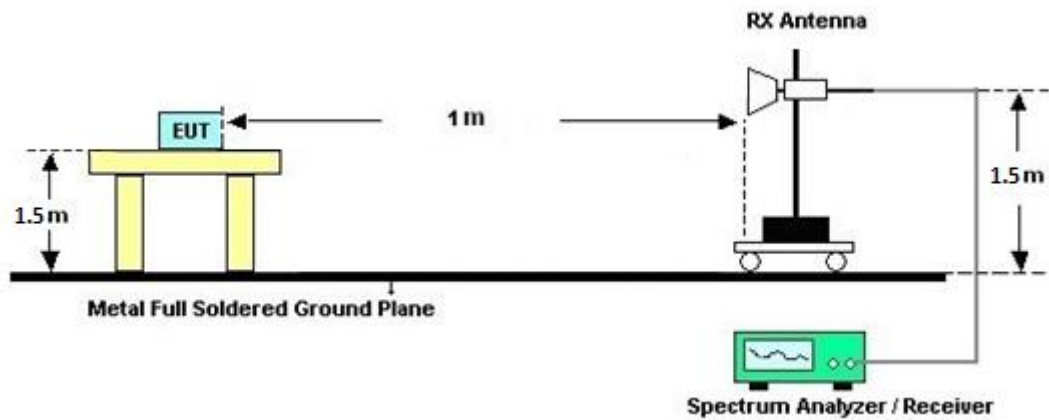
For radiated test from 30MHz to 1GHz



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 started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was 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 came 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.

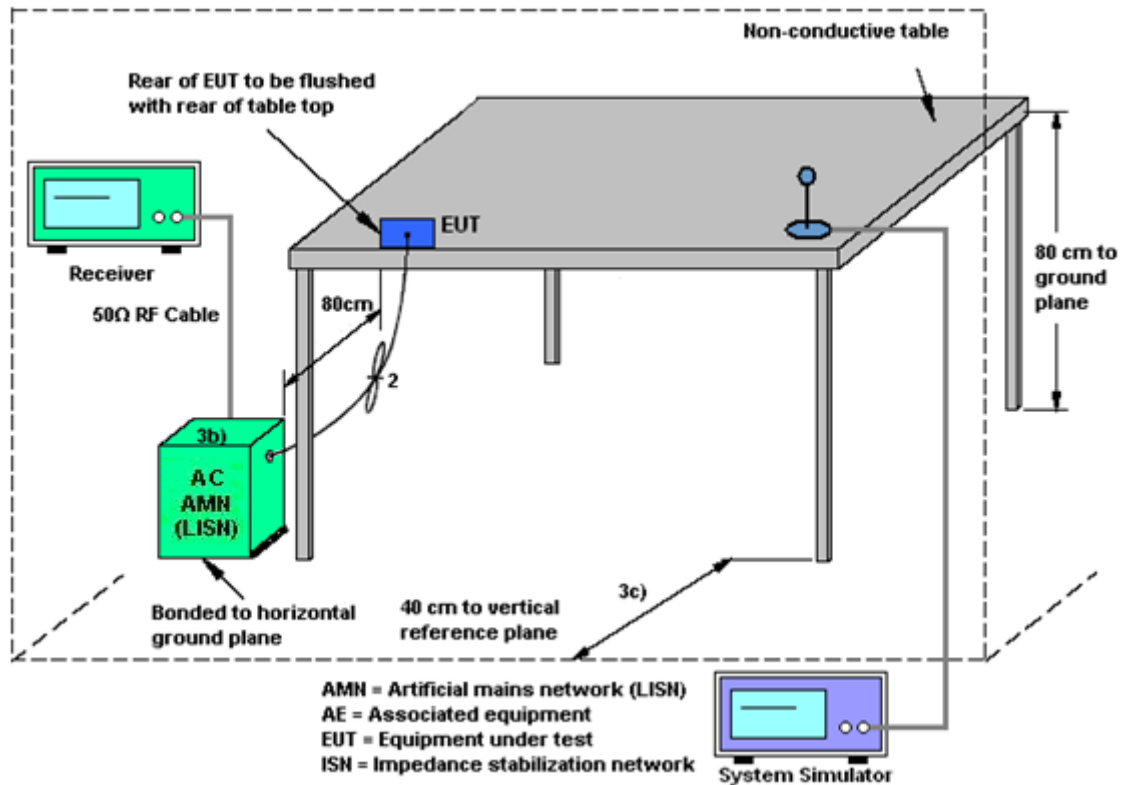
3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was 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 sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) 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

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9010B	MY60240520	10Hz~44GHz	Dec. 02, 2020	Jul. 13, 2021~ Jul. 23, 2021	Dec. 01, 2021	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 04, 2021	Jul. 13, 2021~ Jul. 23, 2021	Jan. 03, 2022	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 16, 2020	Jul. 13, 2021~ Jul. 23, 2021	Nov. 15, 2021	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 11, 2020	Jul. 13, 2021~ Jul. 23, 2021	Dec. 10, 2021	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Jul. 13, 2021~ Jul. 23, 2021	Jan. 03, 2022	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	55606 & 08	30MHz~1GHz	Oct. 22, 2020	Jul. 13, 2021~ Jul. 23, 2021	Oct. 21, 2021	Radiation (03CH20-HY)
Horn Antenna	SCHWARZECK	BBHA 9120 D	002360	1GHz-18GHz	Nov. 03, 2020	Jul. 13, 2021~ Jul. 23, 2021	Nov. 02, 2021	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZECK	BBHA9170	009910	18GHz-40GHz	May 12, 2021	Jul. 13, 2021~ Jul. 23, 2021	May 11, 2022	Radiation (03CH20-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN27	1.53GHz Low Pass Filter	May 25, 2021	Jul. 13, 2021~ Jul. 23, 2021	May 24, 2022	Radiation (03CH20-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0ST	SN8	N/A	Mar. 26, 2021	Jul. 13, 2021~ Jul. 23, 2021	Mar. 25, 2022	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 20, 2021	Jul. 13, 2021~ Jul. 23, 2021	Jan. 19, 2022	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Jul. 13, 2021~ Jul. 23, 2021	N/A	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jul. 13, 2021~ Jul. 23, 2021	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jul. 13, 2021~ Jul. 23, 2021	N/A	Radiation (03CH20-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jul. 15, 2021	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 15, 2021	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 02, 2020	Jul. 15, 2021	Nov. 01, 2021	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	N/A	Jul. 15, 2021	N/A	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Jul. 15, 2021	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Jul. 15, 2021	Sep. 10, 2021	Conduction (CO07-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12	10MHz~6GHz	Dec. 16, 2020	Jul. 05, 2021~ Jul. 17, 2021	Dec. 15, 2021	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jan. 21, 2021	Jul. 05, 2021~ Jul. 17, 2021	Jan. 20, 2022	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2021	Jul. 05, 2021~ Jul. 17, 2021	Mar. 16, 2022	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2 dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9 dB
---	--------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
---	--------

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

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

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Mina Liu	Temperature:	21~25	°C
Test Date:	2021/7/5~2021/07/17	Relative Humidity:	51~54	%

<Ant. 7>

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.024	0.664	0.50	Pass
BLE	1Mbps	1	19	2440	1.022	0.658	0.50	Pass
BLE	1Mbps	1	39	2480	1.022	0.656	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	4.00	30.00	-1.80	2.20	36.00	Pass
BLE	1Mbps	1	19	2440	5.10	30.00	-1.80	3.30	36.00	Pass
BLE	1Mbps	1	39	2480	4.30	30.00	-1.80	2.50	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	1Mbps	1	0	2402	3.77	-10.82	-1.80	8.00	Pass
BLE	1Mbps	1	19	2440	4.79	-9.79	-1.80	8.00	Pass
BLE	1Mbps	1	39	2480	3.73	-10.89	-1.80	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	2.008	1.132	0.50	Pass
BLE	2Mbps	1	19	2440	2.012	1.140	0.50	Pass
BLE	2Mbps	1	39	2480	2.012	1.120	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	4.00	30.00	-1.80	2.20	36.00	Pass
BLE	2Mbps	1	19	2440	5.10	30.00	-1.80	3.30	36.00	Pass
BLE	2Mbps	1	39	2480	4.30	30.00	-1.80	2.50	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	3.73	-13.53	-1.80	8.00	Pass
BLE	2Mbps	1	19	2440	4.90	-12.33	-1.80	8.00	Pass
BLE	2Mbps	1	39	2480	3.85	-13.42	-1.80	8.00	Pass

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

<Ant. 9>

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.024	0.656	0.50	Pass
BLE	1Mbps	1	19	2440	1.022	0.664	0.50	Pass
BLE	1Mbps	1	39	2480	1.022	0.662	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	5.60	30.00	-0.90	4.70	36.00	Pass
BLE	1Mbps	1	19	2440	6.80	30.00	-0.90	5.90	36.00	Pass
BLE	1Mbps	1	39	2480	5.50	30.00	-0.90	4.60	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	1Mbps	1	0	2402	5.75	-8.84	-0.90	8.00	Pass
BLE	1Mbps	1	19	2440	6.80	-7.78	-0.90	8.00	Pass
BLE	1Mbps	1	39	2480	5.43	-9.15	-0.90	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	2.012	1.136	0.50	Pass
BLE	2Mbps	1	19	2440	2.012	1.132	0.50	Pass
BLE	2Mbps	1	39	2480	2.012	1.116	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	5.40	30.00	-0.90	4.50	36.00	Pass
BLE	2Mbps	1	19	2440	6.60	30.00	-0.90	5.70	36.00	Pass
BLE	2Mbps	1	39	2480	5.50	30.00	-0.90	4.60	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	5.73	-11.44	-0.90	8.00	Pass
BLE	2Mbps	1	19	2440	6.82	-10.42	-0.90	8.00	Pass
BLE	2Mbps	1	39	2480	5.43	-11.79	-0.90	8.00	Pass

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



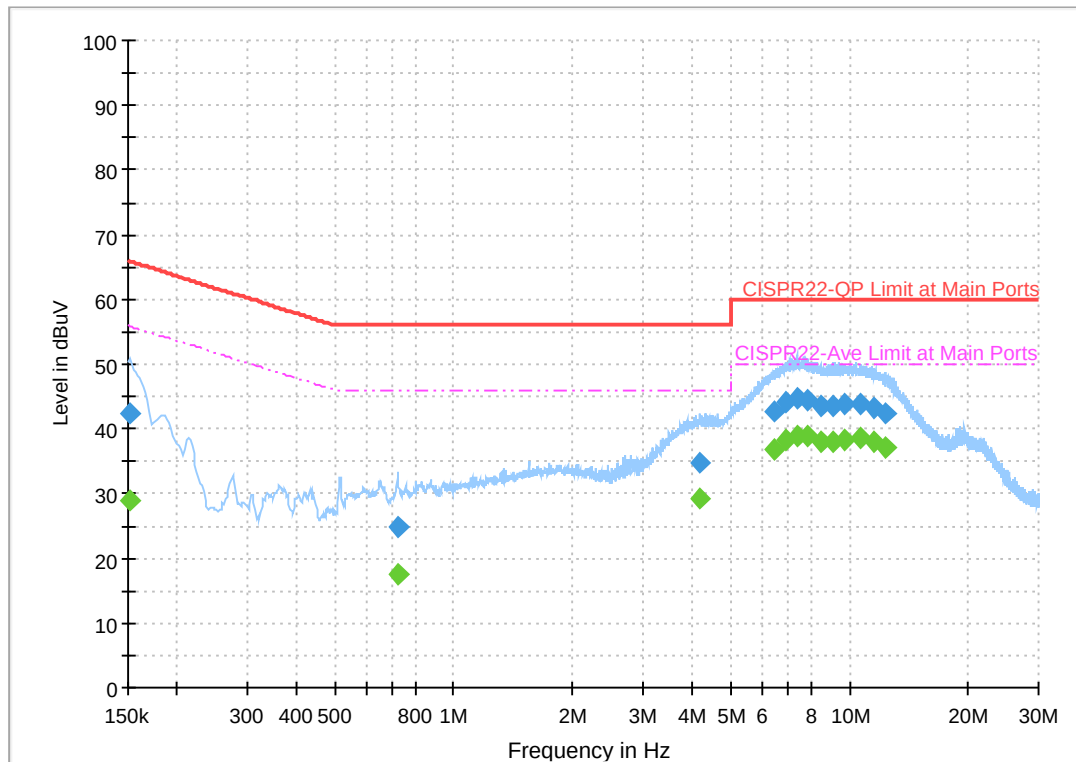
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	23~26℃
		Relative Humidity :	40~50%

EUT Information

Report NO : 162425
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



Final Result

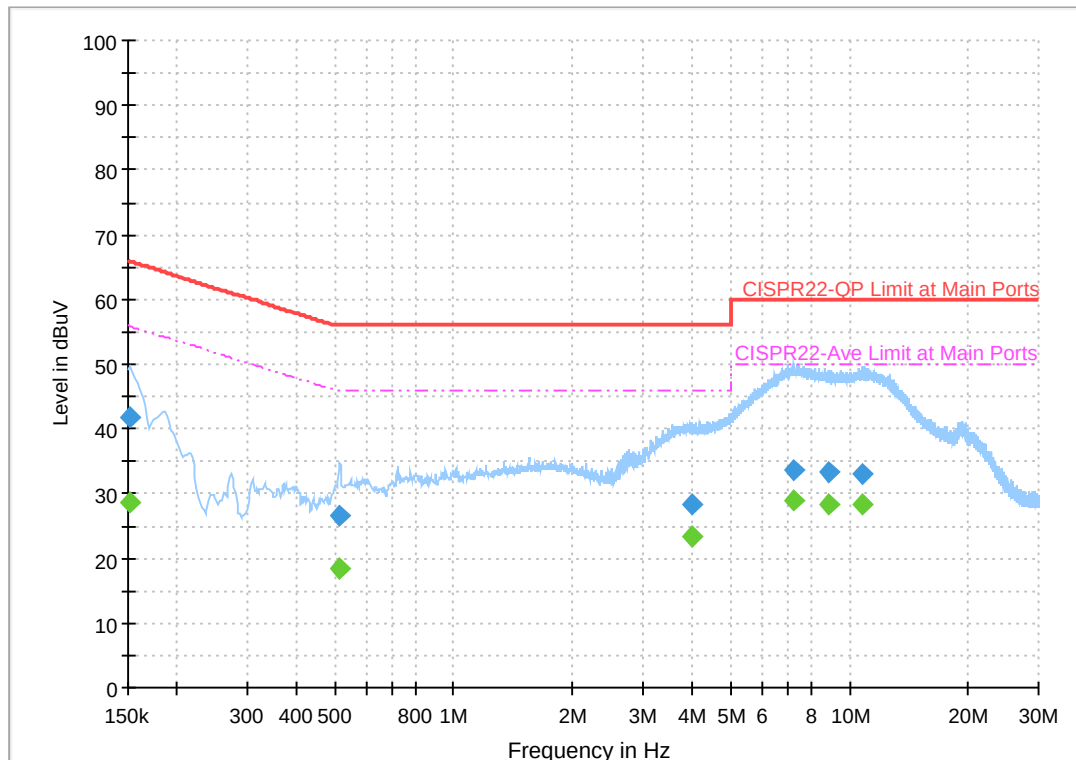
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	28.80	55.88	27.07	L1	OFF	20.0
0.152250	42.48	---	65.88	23.39	L1	OFF	20.0
0.721500	---	17.46	46.00	28.54	L1	OFF	20.0
0.721500	24.97	---	56.00	31.03	L1	OFF	20.0
4.170750	---	29.38	46.00	16.62	L1	OFF	20.1
4.170750	34.73	---	56.00	21.27	L1	OFF	20.1
6.427500	---	36.98	50.00	13.02	L1	OFF	20.1
6.427500	42.71	---	60.00	17.29	L1	OFF	20.1
6.911250	---	38.34	50.00	11.66	L1	OFF	20.1
6.911250	44.09	---	60.00	15.91	L1	OFF	20.1
7.345500	---	38.98	50.00	11.02	L1	OFF	20.1
7.345500	44.69	---	60.00	15.31	L1	OFF	20.1
7.833750	---	38.81	50.00	11.19	L1	OFF	20.1
7.833750	44.42	---	60.00	15.58	L1	OFF	20.1
8.477250	---	38.14	50.00	11.86	L1	OFF	20.1
8.477250	43.66	---	60.00	16.34	L1	OFF	20.1
9.035250	---	38.11	50.00	11.89	L1	OFF	20.1
9.035250	43.57	---	60.00	16.43	L1	OFF	20.1
9.759750	---	38.31	50.00	11.69	L1	OFF	20.1
9.759750	43.88	---	60.00	16.12	L1	OFF	20.1
10.637250	---	38.64	50.00	11.36	L1	OFF	20.2
10.637250	43.96	---	60.00	16.04	L1	OFF	20.2
11.526000	---	38.15	50.00	11.85	L1	OFF	20.2
11.526000	43.39	---	60.00	16.61	L1	OFF	20.2

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
12.387750	---	37.07	50.00	12.93	L1	OFF	20.2
12.387750	42.32	---	60.00	17.68	L1	OFF	20.2

EUT Information

Report NO : 162425
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)
0.152250	41.93	---	65.88	23.94	N	OFF	20.0
0.152250	---	28.62	55.88	27.25	N	OFF	20.0
0.514500	26.60	---	56.00	29.40	N	OFF	20.0
0.514500	---	18.36	46.00	27.64	N	OFF	20.0
3.999750	28.27	---	56.00	27.73	N	OFF	20.1
3.999750	---	23.51	46.00	22.49	N	OFF	20.1
7.208250	33.51	---	60.00	26.49	N	OFF	20.1
7.208250	---	28.81	50.00	21.19	N	OFF	20.1
8.853000	33.45	---	60.00	26.55	N	OFF	20.1
8.853000	---	28.37	50.00	21.63	N	OFF	20.1
10.788000	33.09	---	60.00	26.91	N	OFF	20.2
10.788000	---	28.28	50.00	21.72	N	OFF	20.2



Appendix C. Radiated Spurious Emission

Test Engineer :	JC Liang and Steven Wu	Temperature :	20~23°C
		Relative Humidity :	66~69%



<Ant. 7>

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2342.655	49.07	-24.93	74	39.83	27.09	18.33	36.18	112	307	P	H
		2380.455	39.62	-14.38	54	30.19	27.22	18.4	36.19	112	307	A	H
	*	2402	100.41	-	-	90.86	27.31	18.44	36.2	112	307	P	H
	*	2402	99.76	-	-	90.21	27.31	18.44	36.2	112	307	A	H
													H
													H
		2332.995	49.18	-24.82	74	39.97	27.07	18.32	36.18	400	52	P	V
		2387.91	39.7	-14.3	54	30.22	27.25	18.42	36.19	400	52	A	V
	*	2402	96.01	-	-	86.46	27.31	18.44	36.2	400	52	P	V
	*	2402	95.01	-	-	85.46	27.31	18.44	36.2	400	52	A	V
													V
													V
BLE CH 19 2440MHz		2350.16	48.94	-25.06	74	39.67	27.1	18.35	36.18	111	311	P	H
		2377.52	39.66	-14.34	54	30.24	27.21	18.4	36.19	111	311	A	H
	*	2440	100.49	-	-	90.73	27.46	18.51	36.21	111	311	P	H
	*	2440	99.82	-	-	90.06	27.46	18.51	36.21	111	311	A	H
		2496	49.26	-24.74	74	39.2	27.68	18.61	36.23	111	311	P	H
		2488.96	40.4	-13.6	54	30.37	27.66	18.6	36.23	111	311	A	H
		2389.2	49.1	-24.9	74	39.61	27.26	18.42	36.19	398	55	P	V
		2359.92	39.63	-14.37	54	30.31	27.14	18.37	36.19	398	55	A	V
	*	2440	97.68	-	-	87.92	27.46	18.51	36.21	398	55	P	V
	*	2440	97	-	-	87.24	27.46	18.51	36.21	398	55	A	V
		2491.2	49.96	-24.04	74	39.93	27.66	18.6	36.23	398	55	P	V
		2489.84	40.47	-13.53	54	30.44	27.66	18.6	36.23	398	55	A	V



BLE CH 39 2480MHz	*	2480	98.75	-	-	88.77	27.62	18.58	36.22	134	298	P	H
	*	2480	98.09	-	-	88.11	27.62	18.58	36.22	134	298	A	H
		2494.12	50.02	-23.98	74	39.97	27.68	18.6	36.23	134	298	P	H
		2483.64	40.37	-13.63	54	30.37	27.63	18.59	36.22	134	298	A	H
													H
													H
	*	2480	95.65	-	-	85.67	27.62	18.58	36.22	381	67	P	V
	*	2480	94.78	-	-	84.8	27.62	18.58	36.22	381	67	A	V
		2484.52	50.24	-23.76	74	40.24	27.64	18.59	36.23	381	67	P	V
		2490.28	40.37	-13.63	54	30.34	27.66	18.6	36.23	381	67	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	41.51	-32.49	74	34.2	32.02	12.71	37.42	100	0	P	H
		17970	54.82	-19.18	74	33.5	42.06	24.56	45.3	100	23	P	H
		17970	46.27	-7.73	54	24.95	42.06	24.56	45.3	100	23	A	H
													H
		4804	42.29	-31.71	74	34.98	32.02	12.71	37.42	100	0	P	V
		17970	55.41	-18.59	74	34.09	42.06	24.56	45.3	100	36	P	V
		17970	46.13	-7.87	54	24.81	42.06	24.56	45.3	100	36	A	V
													V
BLE CH 19 2440MHz		4880	43.42	-30.58	74	35.83	32.3	12.77	37.48	100	0	P	H
		7320	46.62	-27.38	74	32.87	36.72	15.39	38.36	100	0	P	H
		17970	54.94	-19.06	74	33.62	42.06	24.56	45.3	100	26	P	H
		17970	45.49	-8.51	54	24.17	42.06	24.56	45.3	100	26	A	H
		4880	42.78	-31.22	74	35.19	32.3	12.77	37.48	100	0	P	V
		7320	46.76	-27.24	74	33.01	36.72	15.39	38.36	100	0	P	V
		17940	55.16	-18.84	74	34.05	41.82	24.55	45.26	100	35	P	V
		17940	45.61	-8.39	54	24.5	41.82	24.55	45.26	100	35	A	V
BLE CH 39 2480MHz		4960	42.73	-31.27	74	34.72	32.74	12.82	37.55	100	0	P	H
		7440	45.78	-28.22	74	32.55	36.32	15.36	38.45	100	0	P	H
		17985	54.78	-19.22	74	33.34	42.18	24.57	45.31	100	22	P	H
		17985	45.96	-8.04	54	24.52	42.18	24.57	45.31	100	22	A	H
		4960	43.66	-30.34	74	35.65	32.74	12.82	37.55	100	0	P	V
		7440	45.74	-28.26	74	32.51	36.32	15.36	38.45	100	0	P	V
		17835	54.95	-19.05	74	34.65	40.92	24.52	45.14	100	37	P	V
		17835	44.97	-9.03	54	24.67	40.92	24.52	45.14	100	37	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2316.195	48.67	-25.33	74	39.53	27.03	18.28	36.17	282	348	P	H
		2331.84	40.98	-13.02	54	31.79	27.06	18.31	36.18	282	348	A	H
	*	2402	98.53	-	-	88.98	27.31	18.44	36.2	282	348	P	H
	*	2402	97.1	-	-	87.55	27.31	18.44	36.2	282	348	A	H
													H
													H
		2353.89	48.74	-25.26	74	39.45	27.12	18.35	36.18	400	7	P	V
		2368.485	40.9	-13.1	54	31.54	27.17	18.38	36.19	400	7	A	V
	*	2402	95.31	-	-	85.76	27.31	18.44	36.2	400	7	P	V
	*	2402	94	-	-	84.45	27.31	18.44	36.2	400	7	A	V
													V
													V
BLE CH 19 2440MHz		2382.94	48.33	-25.67	74	38.88	27.23	18.41	36.19	273	346	P	H
		2371.04	40.86	-13.14	54	31.48	27.18	18.39	36.19	273	346	A	H
	*	2440	99.6	-	-	89.84	27.46	18.51	36.21	273	346	P	H
	*	2440	98.31	-	-	88.55	27.46	18.51	36.21	273	346	A	H
		2492.58	49.1	-24.9	74	39.06	27.67	18.6	36.23	273	346	P	H
		2487.61	41.49	-12.51	54	31.48	27.65	18.59	36.23	273	346	A	H
		2376.5	49.27	-24.73	74	39.85	27.21	18.4	36.19	397	58	P	V
		2349.06	40.95	-13.05	54	31.68	27.1	18.35	36.18	397	58	A	V
	*	2440	96.28	-	-	86.52	27.46	18.51	36.21	397	58	P	V
	*	2440	95.31	-	-	85.55	27.46	18.51	36.21	397	58	A	V
		2494.12	49.84	-24.16	74	39.79	27.68	18.6	36.23	397	58	P	V
		2495.38	41.92	-12.08	54	31.86	27.68	18.61	36.23	397	58	A	V



BLE CH 39 2480MHz	*	2480	98.83	-	-	88.85	27.62	18.58	36.22	264	349	P	H
	*	2480	97.64	-	-	87.66	27.62	18.58	36.22	264	349	A	H
		2493.64	49.65	-24.35	74	39.61	27.67	18.6	36.23	264	349	P	H
		2496.16	41.96	-12.04	54	31.9	27.68	18.61	36.23	264	349	A	H
													H
													H
	*	2480	94.86	-	-	84.88	27.62	18.58	36.22	383	36	P	V
	*	2480	93.61	-	-	83.63	27.62	18.58	36.22	383	36	A	V
		2497.04	50.15	-23.85	74	40.08	27.69	18.61	36.23	383	36	P	V
		2496.36	42.05	-11.95	54	31.98	27.69	18.61	36.23	383	36	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	41.98	-32.02	74	34.67	32.02	12.71	37.42	100	0	P	H
		17955	54.72	-19.28	74	33.5	41.94	24.56	45.28	100	29	P	H
		17955	45.27	-8.73	54	24.05	41.94	24.56	45.28	100	29	A	H
													H
		4804	42.39	-31.61	74	35.08	32.02	12.71	37.42	100	0	P	V
		17955	55.98	-18.02	74	34.76	41.94	24.56	45.28	100	33	P	V
		17955	45.89	-8.11	54	24.67	41.94	24.56	45.28	100	33	A	V
													V
BLE CH 19 2440MHz		4880	42.44	-31.56	74	34.85	32.3	12.77	37.48	100	0	P	H
		7320	47.09	-26.91	74	33.34	36.72	15.39	38.36	100	0	P	H
		17955	54.99	-19.01	74	33.77	41.94	24.56	45.28	100	19	P	H
		17955	45.92	-8.08	54	24.7	41.94	24.56	45.28	100	19	A	H
		4880	42.26	-31.74	74	34.67	32.3	12.77	37.48	100	0	P	V
		7320	47.47	-26.53	74	33.72	36.72	15.39	38.36	100	0	P	V
		17970	55.32	-18.68	74	34	42.06	24.56	45.3	100	31	P	V
		17970	46.29	-7.71	54	24.97	42.06	24.56	45.3	100	31	A	V
BLE CH 39 2480MHz		4960	43.31	-30.69	74	35.3	32.74	12.82	37.55	100	0	P	H
		7440	46.03	-27.97	74	32.8	36.32	15.36	38.45	100	0	P	H
		17970	54.56	-19.44	74	33.24	42.06	24.56	45.3	100	26	P	H
		17970	45.65	-8.35	54	24.33	42.06	24.56	45.3	100	26	A	H
		4960	42.89	-31.11	74	34.88	32.74	12.82	37.55	100	0	P	V
		7440	45.84	-28.16	74	32.61	36.32	15.36	38.45	100	0	P	V
		17910	54.51	-19.49	74	33.62	41.58	24.54	45.23	100	36	P	V
		17910	45.06	-8.94	54	24.17	41.58	24.54	45.23	100	36	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission above 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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)
2.4GHz BLE SHF		38526	52.42	-15.78	68.2	37.93	43.72	26.46	55.69	150	0	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		38526	53.09	-15.11	68.2	38.6	43.72	26.46	55.69	150	0	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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)
2.4GHz BLE LF		30.97	22.99	-17.01	40	33.61	24.13	0.97	35.72	-	-	P	H
		163.86	21.35	-22.15	43.5	38.65	16.01	2.23	35.54	-	-	P	H
		326.82	24.83	-21.17	46	37.13	19.72	3.15	35.17	-	-	P	H
		560.59	29.7	-16.3	46	33.79	26.28	4.17	34.54	-	-	P	H
		770.11	32.17	-13.83	46	32.98	28.09	4.92	33.82	-	-	P	H
		951.5	35.62	-10.38	46	32.33	30.81	5.62	33.14	100	0	P	H
													H
													H
													H
													H
													H
													H
		60.07	23.84	-16.16	40	46.27	11.99	1.29	35.71	-	-	P	V
		188.11	23.05	-20.45	43.5	41.22	14.96	2.37	35.5	-	-	P	V
		420.91	25.12	-20.88	46	33.52	22.93	3.58	34.91	-	-	P	V
		563.5	28.34	-17.66	46	32.4	26.29	4.18	34.53	-	-	P	V
		823.46	32.93	-13.07	46	33.38	28.02	5.16	33.63	-	-	P	V
		954.41	35.4	-10.6	46	31.94	30.97	5.62	33.13	100	0	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



<Ant. 9>

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2328.27	48.69	-25.31	74	39.5	27.06	18.31	36.18	116	38	P	H
		2372.58	39.69	-14.31	54	30.3	27.19	18.39	36.19	116	38	A	H
	*	2402	102.86	-	-	93.31	27.31	18.44	36.2	116	38	P	H
	*	2402	102.08	-	-	92.53	27.31	18.44	36.2	116	38	A	H
													H
													H
		2383.605	49.57	-24.43	74	40.12	27.23	18.41	36.19	100	113	P	V
		2360.4	39.54	-14.46	54	30.22	27.14	18.37	36.19	100	113	A	V
	*	2402	101.1	-	-	91.55	27.31	18.44	36.2	100	113	P	V
	*	2402	100.37	-	-	90.82	27.31	18.44	36.2	100	113	A	V
													V
													V
BLE CH 19 2440MHz		2324.72	48.64	-25.36	74	39.46	27.05	18.3	36.17	117	38	P	H
		2383.28	39.54	-14.46	54	30.09	27.23	18.41	36.19	117	38	A	H
	*	2440	103.7	-	-	93.94	27.46	18.51	36.21	117	38	P	H
	*	2440	103.09	-	-	93.33	27.46	18.51	36.21	117	38	A	H
		2489.84	49.87	-24.13	74	39.84	27.66	18.6	36.23	117	38	P	H
		2491.6	39.97	-14.03	54	29.93	27.67	18.6	36.23	117	38	A	H
		2387.12	48.66	-25.34	74	39.18	27.25	18.42	36.19	100	92	P	V
		2389.36	39.42	-14.58	54	29.93	27.26	18.42	36.19	100	92	A	V
	*	2440	102.4	-	-	92.64	27.46	18.51	36.21	100	92	P	V
	*	2440	101.8	-	-	92.04	27.46	18.51	36.21	100	92	A	V
		2489.6	49.37	-24.63	74	39.34	27.66	18.6	36.23	100	92	P	V
		2483.68	40.1	-13.9	54	30.1	27.63	18.59	36.22	100	92	A	V



BLE CH 39 2480MHz	*	2480	103.56	-	-	93.58	27.62	18.58	36.22	110	37	P	H
	*	2480	102.8	-	-	92.82	27.62	18.58	36.22	110	37	A	H
		2483.64	51.44	-22.56	74	41.44	27.63	18.59	36.22	110	37	P	H
		2491.68	40.08	-13.92	54	30.04	27.67	18.6	36.23	110	37	A	H
													H
													H
	*	2480	103.11	-	-	93.13	27.62	18.58	36.22	101	89	P	V
	*	2480	102.24	-	-	92.26	27.62	18.58	36.22	101	89	A	V
		2483.56	50.82	-23.18	74	40.82	27.63	18.59	36.22	101	89	P	V
		2484.32	39.95	-14.05	54	29.94	27.64	18.59	36.22	101	89	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	41.64	-32.36	74	34.33	32.02	12.71	37.42	100	0	P	H
		17970	55.2	-18.8	74	33.88	42.06	24.56	45.3	100	23	P	H
		17970	46.11	-7.89	54	24.79	42.06	24.56	45.3	100	23	A	H
													H
		4804	41.75	-32.25	74	34.44	32.02	12.71	37.42	100	0	P	V
		17940	55.13	-18.87	74	34.02	41.82	24.55	45.26	100	38	P	V
		17940	45.31	-8.69	54	24.2	41.82	24.55	45.26	100	38	A	V
													V
BLE CH 19 2440MHz		4880	42.5	-31.5	74	34.91	32.3	12.77	37.48	100	0	P	H
		7320	48.09	-25.91	74	34.34	36.72	15.39	38.36	100	0	P	H
		17970	55.63	-18.37	74	34.31	42.06	24.56	45.3	100	25	P	H
		17970	45.93	-8.07	54	24.61	42.06	24.56	45.3	100	25	A	H
		4880	42.87	-31.13	74	35.28	32.3	12.77	37.48	100	0	P	V
		7320	46.61	-27.39	74	32.86	36.72	15.39	38.36	100	0	P	V
		17970	55.5	-18.5	74	34.18	42.06	24.56	45.3	100	31	P	V
		17970	46.04	-7.96	54	24.72	42.06	24.56	45.3	100	31	A	V
BLE CH 39 2480MHz		4960	43.76	-30.24	74	35.75	32.74	12.82	37.55	100	0	P	H
		7440	45.16	-28.84	74	31.93	36.32	15.36	38.45	100	0	P	H
		17985	55.24	-18.76	74	33.8	42.18	24.57	45.31	100	16	P	H
		17985	46.08	-7.92	54	24.64	42.18	24.57	45.31	100	16	A	H
		4960	42.74	-31.26	74	34.73	32.74	12.82	37.55	100	0	P	V
		7440	45.47	-28.53	74	32.24	36.32	15.36	38.45	100	0	P	V
		17985	55.09	-18.91	74	33.65	42.18	24.57	45.31	100	33	P	V
		17985	46.28	-7.72	54	24.84	42.18	24.57	45.31	100	33	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2377.41	49.12	-24.88	74	39.7	27.21	18.4	36.19	182	37	P	H
		2358.51	41.29	-12.71	54	31.98	27.13	18.36	36.18	182	37	A	H
	*	2402	102.54	-	-	92.99	27.31	18.44	36.2	182	37	P	H
	*	2402	101.28	-	-	91.73	27.31	18.44	36.2	182	37	A	H
													H
													H
		2388.33	49.31	-24.69	74	39.83	27.25	18.42	36.19	100	82	P	V
		2317.245	41.04	-12.96	54	31.89	27.03	18.29	36.17	100	82	A	V
	*	2402	101.49	-	-	91.94	27.31	18.44	36.2	100	82	P	V
	*	2402	100.07	-	-	90.52	27.31	18.44	36.2	100	82	A	V
													V
													V
BLE CH 19 2440MHz		2354.8	48.96	-25.04	74	39.66	27.12	18.36	36.18	118	38	P	H
		2384.48	40.73	-13.27	54	31.27	27.24	18.41	36.19	118	38	A	H
	*	2440	102.95	-	-	93.19	27.46	18.51	36.21	118	38	P	H
	*	2440	101.9	-	-	92.14	27.46	18.51	36.21	118	38	A	H
		2498.25	48.88	-25.12	74	38.81	27.69	18.61	36.23	118	38	P	H
		2490.69	41.49	-12.51	54	31.46	27.66	18.6	36.23	118	38	A	H
		2369.22	48.72	-25.28	74	39.35	27.18	18.38	36.19	100	82	P	V
		2364.46	40.98	-13.02	54	31.64	27.16	18.37	36.19	100	82	A	V
	*	2440	102.48	-	-	92.72	27.46	18.51	36.21	100	82	P	V
	*	2440	100.98	-	-	91.22	27.46	18.51	36.21	100	82	A	V
		2494.89	50.13	-23.87	74	40.07	27.68	18.61	36.23	100	82	P	V
		2492.72	41.54	-12.46	54	31.5	27.67	18.6	36.23	100	82	A	V



BLE CH 39 2480MHz	*	2480	102.87	-	-	92.89	27.62	18.58	36.22	117	38	P	H
	*	2480	101.44	-	-	91.46	27.62	18.58	36.22	117	38	A	H
		2483.56	51.18	-22.82	74	41.18	27.63	18.59	36.22	117	38	P	H
		2486.68	41.96	-12.04	54	31.95	27.65	18.59	36.23	117	38	A	H
													H
													H
	*	2480	102.3	-	-	92.32	27.62	18.58	36.22	119	89	P	V
	*	2480	101.12	-	-	91.14	27.62	18.58	36.22	119	89	A	V
		2483.64	50.17	-23.83	74	40.17	27.63	18.59	36.22	119	89	P	V
		2499.84	41.81	-12.19	54	31.73	27.7	18.61	36.23	119	89	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	41.89	-32.11	74	34.58	32.02	12.71	37.42	100	0	P	H
		17985	54.93	-19.07	74	33.49	42.18	24.57	45.31	100	53	P	H
		17985	46.26	-7.74	54	24.82	42.18	24.57	45.31	100	53	A	H
													H
		4804	41.63	-32.37	74	34.32	32.02	12.71	37.42	100	0	P	V
		17940	54.92	-19.08	74	33.81	41.82	24.55	45.26	100	24	P	V
		17940	46.02	-7.98	54	24.91	41.82	24.55	45.26	100	24	A	V
													V
BLE CH 19 2440MHz		4880	42.12	-31.88	74	34.53	32.3	12.77	37.48	100	0	P	H
		7320	46.7	-27.3	74	32.95	36.72	15.39	38.36	100	0	P	H
		17850	54.22	-19.78	74	33.8	41.05	24.53	45.16	100	28	P	H
		17850	45.59	-8.41	54	25.17	41.05	24.53	45.16	100	28	A	H
		4880	42.1	-31.9	74	34.51	32.3	12.77	37.48	100	0	P	V
		7320	46.57	-27.43	74	32.82	36.72	15.39	38.36	100	0	P	V
		17850	54.76	-19.24	74	34.34	41.05	24.53	45.16	100	52	P	V
		17850	45.3	-8.7	54	24.88	41.05	24.53	45.16	100	52	A	V
BLE CH 39 2480MHz		4960	43.84	-30.16	74	35.83	32.74	12.82	37.55	100	0	P	H
		7440	45.21	-28.79	74	31.98	36.32	15.36	38.45	100	0	P	H
		17865	54.57	-19.43	74	34.03	41.18	24.53	45.17	100	32	P	H
		17865	45.47	-8.53	54	24.93	41.18	24.53	45.17	100	32	A	H
		4960	42.97	-31.03	74	34.96	32.74	12.82	37.55	100	0	P	V
		7440	46.6	-27.4	74	33.37	36.32	15.36	38.45	100	0	P	V
		17835	55	-19	74	34.7	40.92	24.52	45.14	100	27	P	V
		17835	45.4	-8.6	54	25.1	40.92	24.52	45.14	100	27	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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	P eak or A verage
H/V	H orizontal or V ertical



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

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
9		(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. Over Limit(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. Over Limit(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. Over Limit(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 :	JC Liang and Steven Wu	Temperature :	20~23°C
		Relative Humidity :	66~69%

Note symbol

-L	Low channel location
-R	High channel location

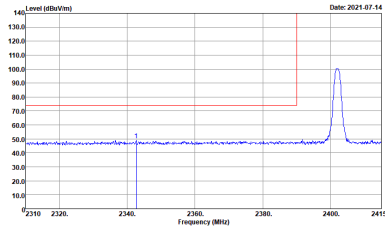
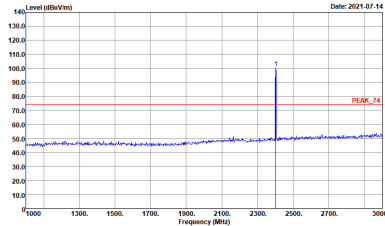
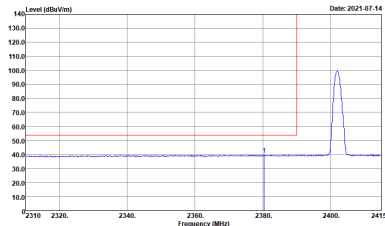
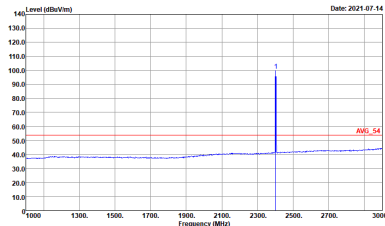


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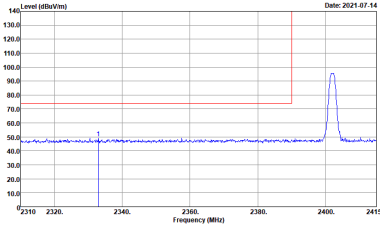
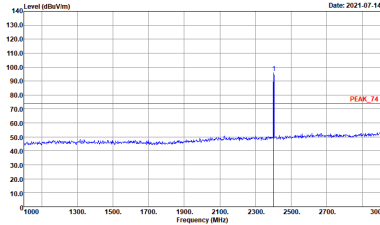
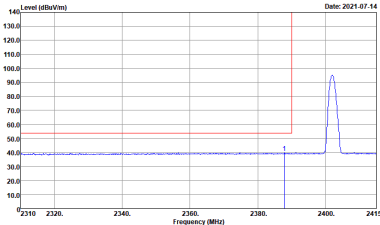
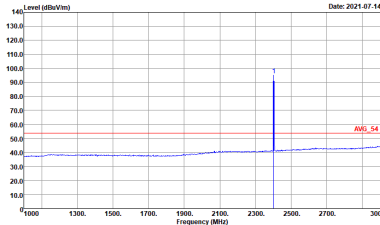
<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-14Y Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SW1:Auto	 Site : 03CH20-14Y Condition : PEAK_T4 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SW1:Auto
Avg.	 Site : 03CH20-14Y Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SW1:Auto	 Site : 03CH20-14Y Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SW1:Auto

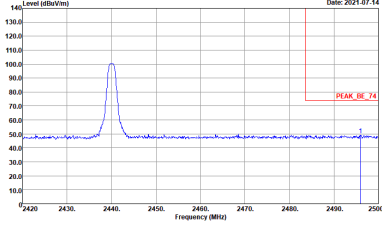
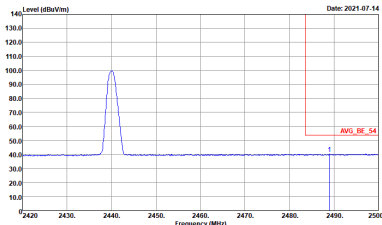


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-1HY Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

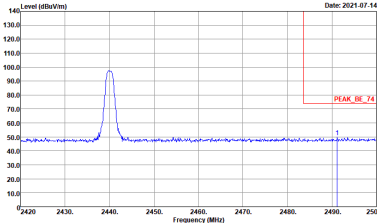
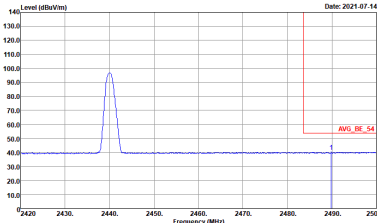


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Level (dBm/100kHz) Date: 2021-07-14 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Level (dBm/100kHz) Date: 2021-07-14 Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Level (dBm/100kHz) Date: 2021-07-14 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	Level (dBm/100kHz) Date: 2021-07-14 Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto

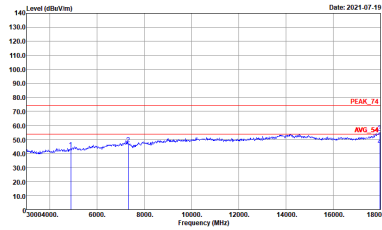
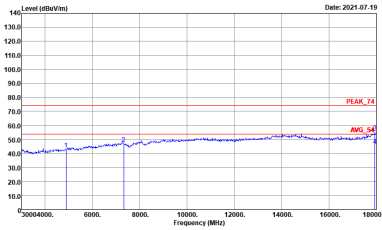


2.4GHz 2400~2483.5MHz

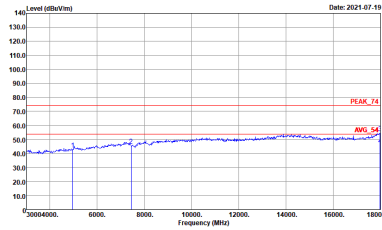
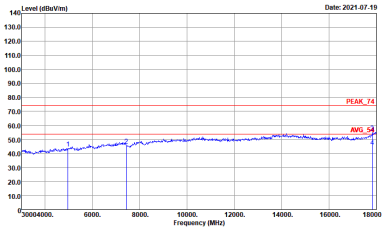
BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2021.07.19 Frequency (MHz) Site : 03CH20-14V Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Level (dBuV/m) Date: 2021.07.19 Frequency (MHz) Site : 03CH20-14V Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH03-1FY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH03-1FY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



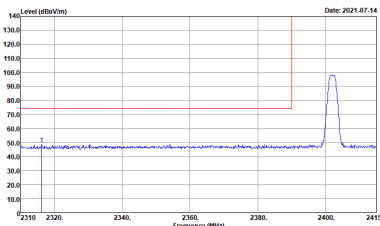
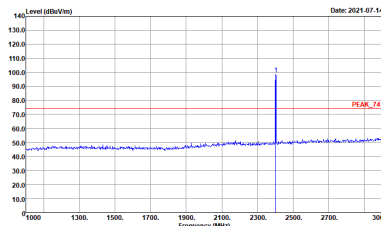
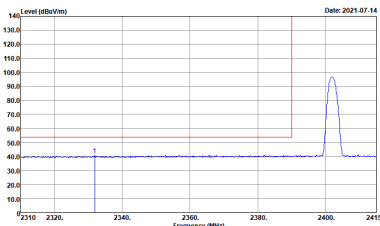
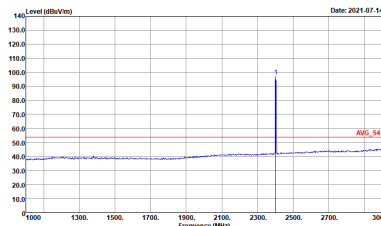
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-1FY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-1FY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto



<2Mbps>

2.4GHz 2400~2483.5MHz

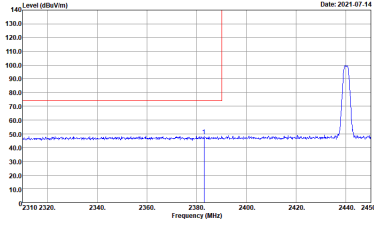
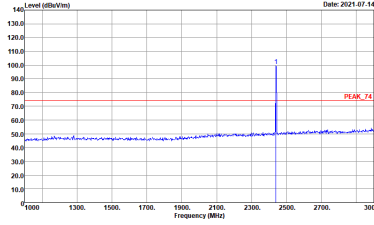
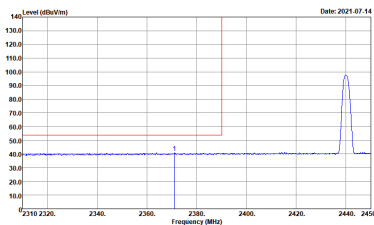
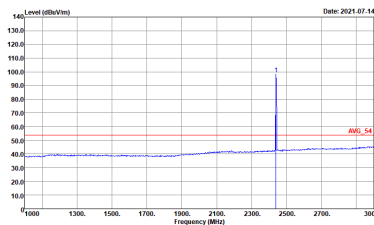
BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:10.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:10.0000Hz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

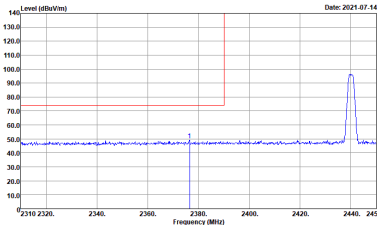
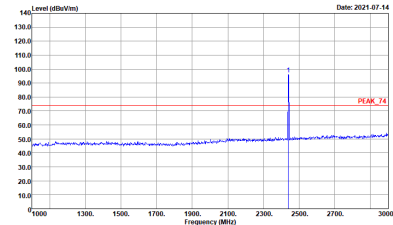
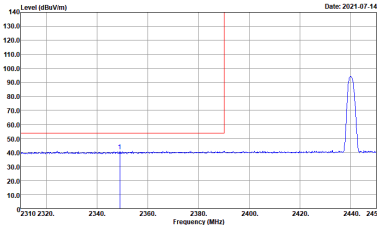
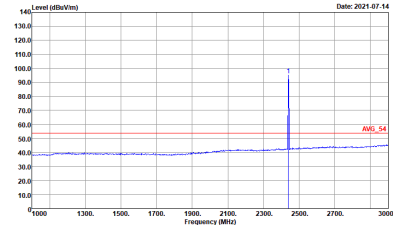


BLE		2.4GHz 2400~2483.5MHz Band Edge @ 3m	
		BLE CH19 2440MHz - L	
		Horizontal	Fundamental
Peak		 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.		 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto

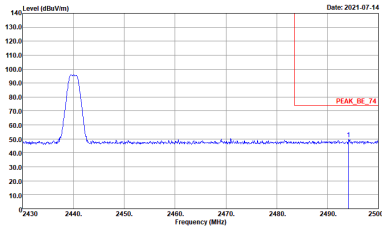
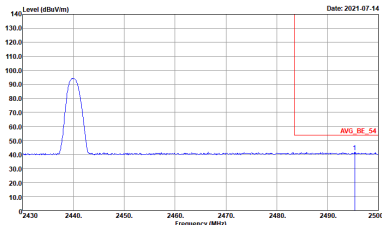


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

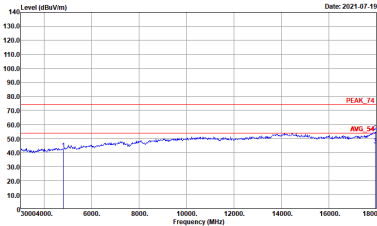
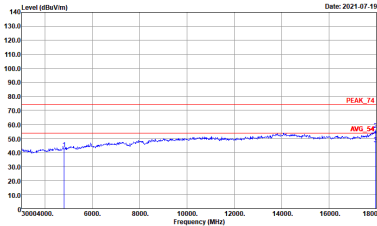


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto



2.4GHz 2400~2483.5MHz

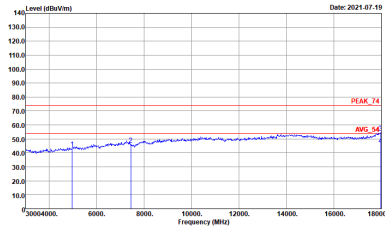
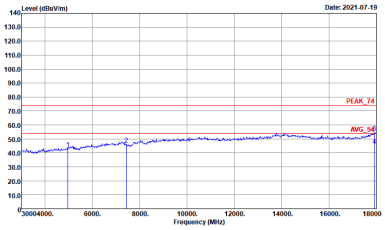
BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-1V Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-1V Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto

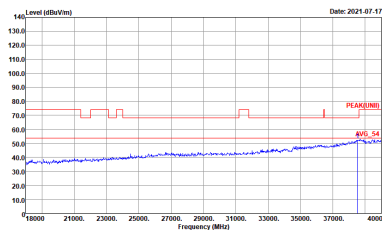
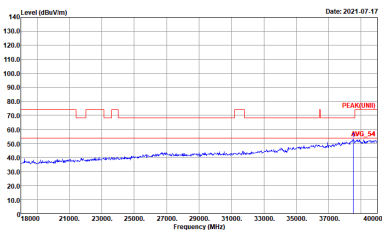


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2021.07.19 Frequency (MHz) Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Level (dBuV/m) Date: 2021.07.19 Frequency (MHz) Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

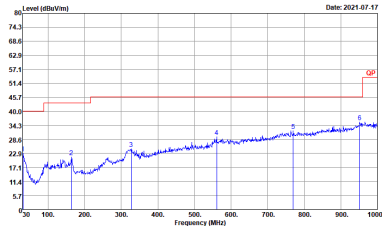
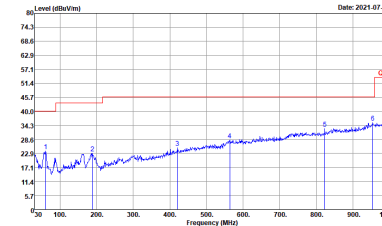


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_T4 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

Emission above 18GHz
2.4GHz BLE (SHF)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK(UNIT) 1m SHF_00991_210512 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK(UNIT) 1m SHF_00991_210512 VERTICAL

Emission below 1GHz
2.4GHz BLE (LF)

BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH20-HY Condition : QP 3m LF_55606408_1091022 HORIZONTAL	 Site : 03CH20-HY Condition : QP 3m LF_55606408_1091022 VERTICAL

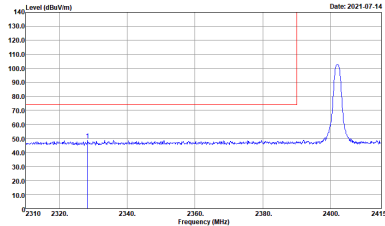
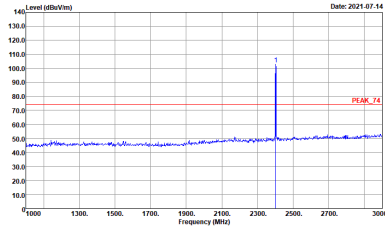
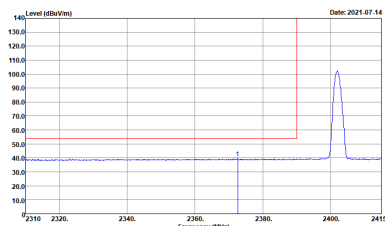
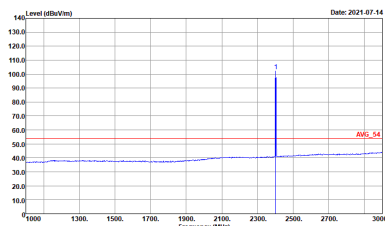


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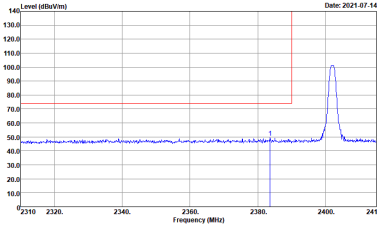
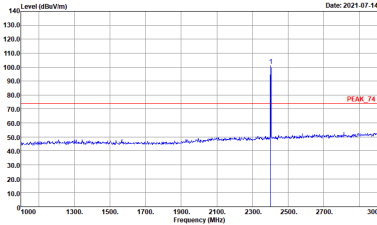
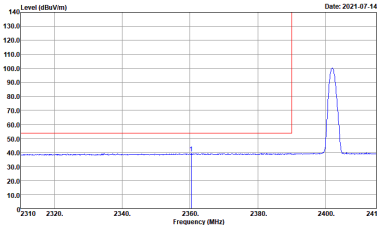
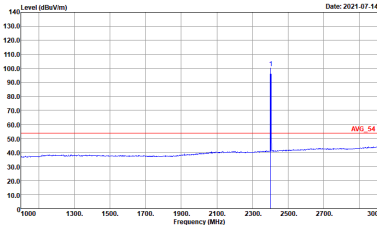
<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site Condition : 03CH20-1HY : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site Condition : 03CH20-1HY : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
Avg.	 Site Condition : 03CH20-1HY : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site Condition : 03CH20-1HY : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto

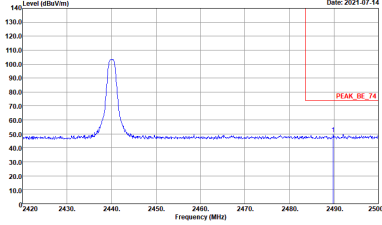
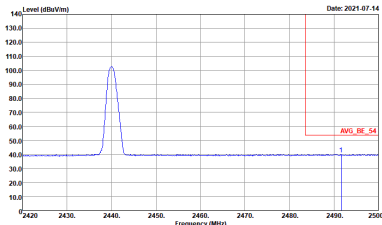


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-1FV Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-1FV Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-1FV Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-1FV Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

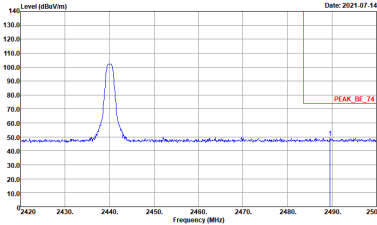
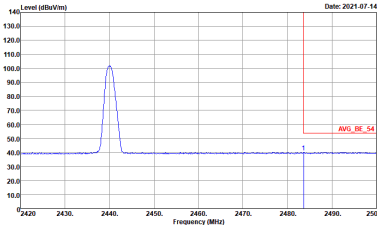


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

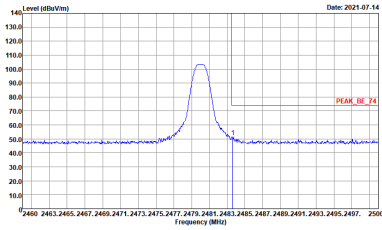
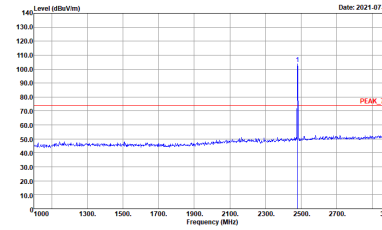
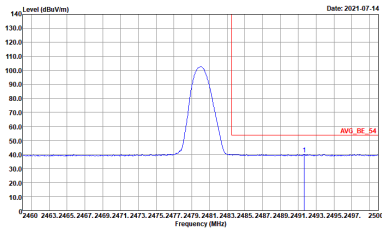
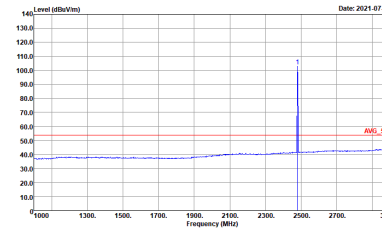


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-1FV Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-1FV Condition : PEAK_T4 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-1FV Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-1FV Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

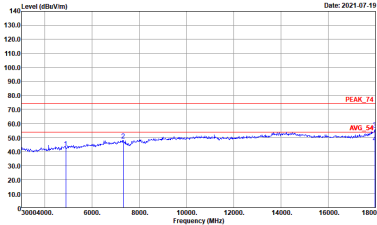
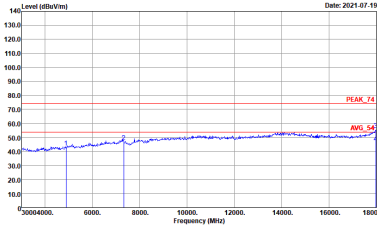


2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBm/100Hz) Date: 2021.07.19 Site : 03CH20-14V Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Level (dBm/100Hz) Date: 2021.07.19 Site : 03CH20-14V Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-1FY Condition : PEAK_T4 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-1FY Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



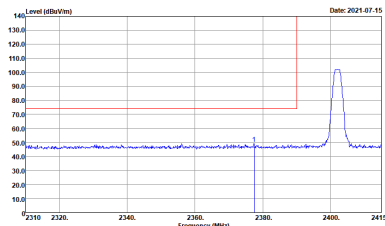
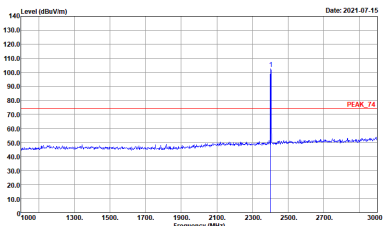
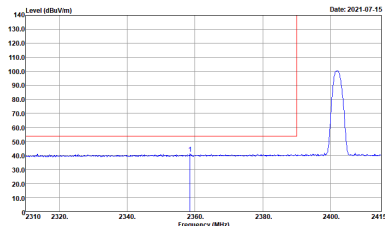
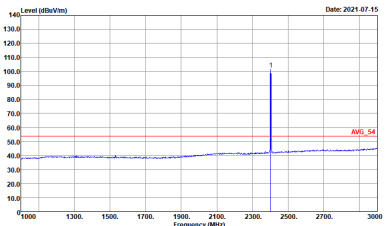
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.	140 Level (dBm/Hz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL	140 Level (dBm/Hz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HV Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-HV Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
Avg.	 Site : 03CH20-HV Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:10.0000Hz SWT:Auto	 Site : 03CH20-HV Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.0000Hz VBW:10.0000Hz SWT:Auto

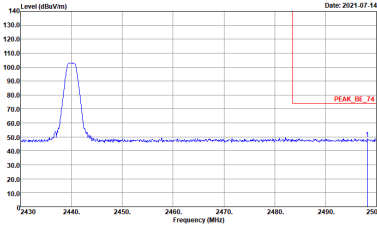
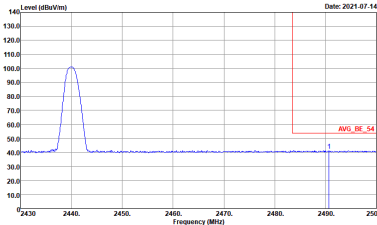


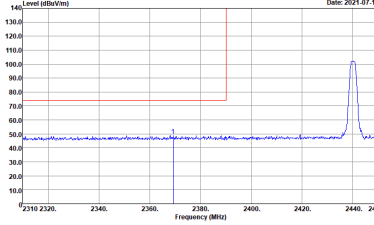
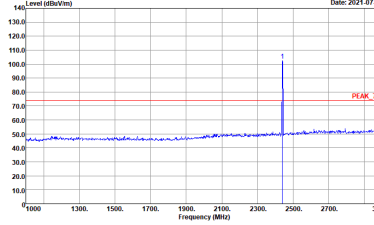
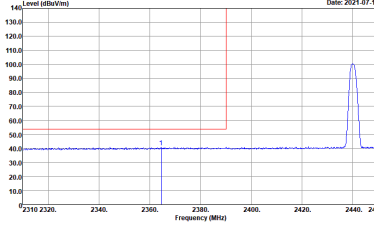
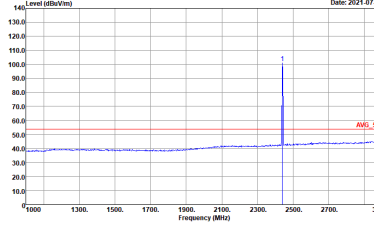
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto



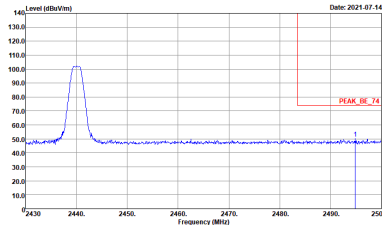
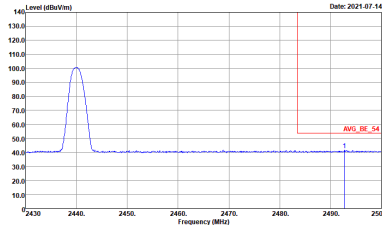
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto	Site : 03CH20-HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH20-1HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto	Site : 03CH20-1HY Condition : AVG_54 3m 91200_002360_1091103 HORIZONTAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto

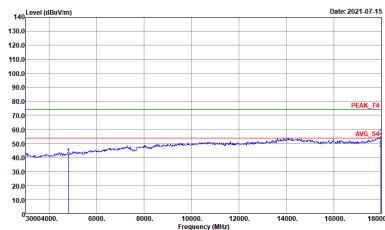
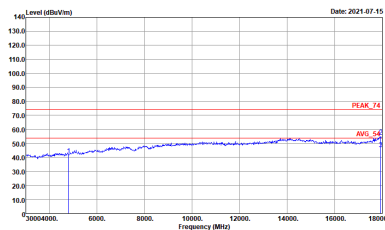


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	Site : 03CH20-1FV Condition : PEAK_BE_74 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-1FV Condition : PEAK_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-1FV Condition : AVG_BE_54 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	Site : 03CH20-1FV Condition : AVG_T4 3m 91200_002360_1091103 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-1FY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL	 Site : 03CH20-1FY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	140 Level (dBm/100kHz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL	140 Level (dBm/100kHz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL

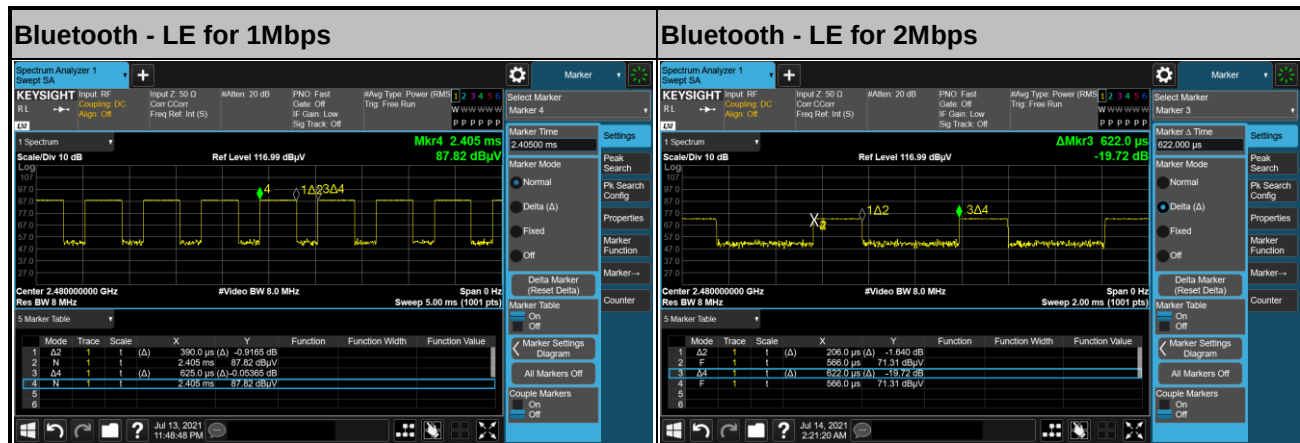


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.	140 Level (dBm/Hz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 HORIZONTAL	140 Level (dBm/Hz) Date: 2021-07-15 Site : 03CH20-HY Condition : PEAK_74 3m 91200_002360_1091103 VERTICAL

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
7	Bluetooth - LE for 1Mbps	62.40	390	2.56	3kHz
7	Bluetooth - LE for 2Mbps	33.12	206	4.85	10kHz
9	Bluetooth - LE for 1Mbps	62.56	391	2.56	3kHz
9	Bluetooth - LE for 2Mbps	32.96	206	4.85	10kHz

<Ant. 7>



<Ant. 9>

