

Delta Electronics, Inc.

TEST REPORT

SCOPE OF WORK:

47 CFR FCC Part 15.247 – Radio Spectrum report

Model:

RPI703M260000-C

REPORT NUMBER

211000342THC-001

ISSUE DATE

Feb. 08, 2021

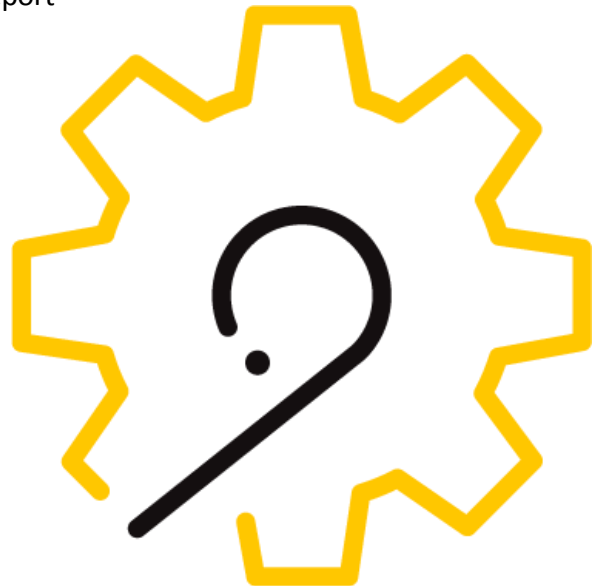
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DOCUMENT CONTROL NUMBER

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Radio Spectrum TEST REPORT

Applicant:	Delta Electronics, Inc. No.39, Sec. 2, Huandong Rd., Shanhua Dist., Tainan City 741, Taiwan
Product:	Sub 1G & BLE module
Model No.:	RPI703M260000-C
FCC ID:	2ARTO-RPI703M26000C
Test Method/ Standard:	47 CFR FCC Part 15.247 & ANSI C63.10 2013 KDB 558074 D01 v05r02
Test By:	Intertek Testing Services Taiwan Ltd., Hsinchu Laboratory No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan



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TEST REPORT**Revision History**

Report No.	Issue Date	Revision Summary
211000342THC-001	Feb. 08, 2022	After engineer judgment and comparing the version the radiation 9kHz-30MHz test considered necessary. Then the other test data in this report are based on Report No.: 210800524THC-001.

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Summary of Test Data

Test Requirement	Applicable Rule (Section 15.247)	Result
Minimum 6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Peak Conducted Output Power	15.247(b)(3)	Pass
Power Spectral Density	15.247(e)	Pass
Emissions In Non-Restricted Frequency Bands	15.247(d)	Pass
Emissions In Restricted Frequency Bands (Radiated emission measurements)	15.247(d), 15.205, 15.209	Pass
Emission On The Band Edge	15.247(d), 15.205	Pass
AC Power Line Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass

Note: Please note that the test results with statement of conformity, the decision rules which are based on: Safety Testing: the specification, standard or IEC Guide 115.

Other Testing: the specification, standard and not taking into account the measurement uncertainty.

1. General Information

1.1 Identification of the EUT

Product:	Sub 1G & BLE module
Model No.:	RPI703M260000-C
Operating Frequency:	2402 MHz ~ 2480 MHz
Channel Number:	40 channels
Frequency of Each Channel:	2402+2 k, k=0 ~ 39
Rated Power:	DC 12V from adapter
Power Cord:	N/A
Sample receiving date:	2021/8/30
Sample condition:	Workable
Test Date(s):	2021/8/31 ~ 2021/11/16

1.2 Antenna description

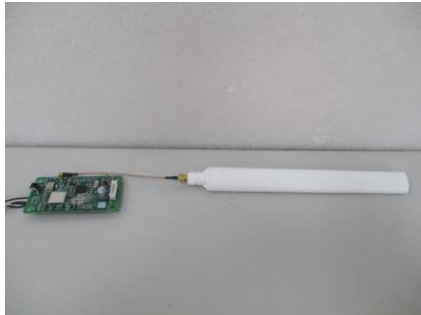
Antenna Gain : 0 dBi
 Antenna Type : Chip antenna
 Connector Type : Fixed

1.3 Operation mode

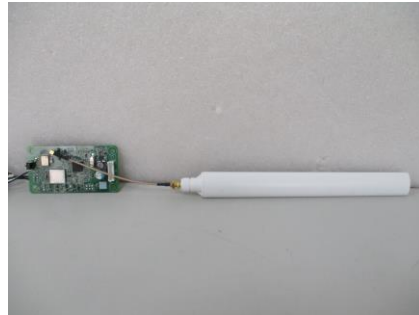
The EUT use 「SmartRF Studio 7 v2.16.0」 entering test mode , and Touchscreen to change different channel.

Mode	Channel	Frequency (MHz)	Signal on time (ms)	Signal on & off time (ms)	Duty cycle	Duty factor (dB)	1/T Minimum VBW (kHz)
BLE 1M	19	2440	10.00	10.00	100.00%	0.00	0.01
BLE 2M	19	2440	10.00	10.00	100.00%	0.00	0.01

The signal is maximized through rotation and placement in the three orthogonal axes.



X axis



Y axis



Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at X axis. The final test data was executed under this configuration.

1.4 Peripherals equipment

Peripherals	Brand	Model No.	Serial No.	Description of Data Cable
Notebook PC	HP	HP Probook 440 G3	5CD8021S9H	Mini USB 1m × 1
Adapter	DELTA	MDS-030AAC12	N/A	N/A
Fixture	N/A	N/A	N/A	N/A

2. Minimum 6 dB Bandwidth

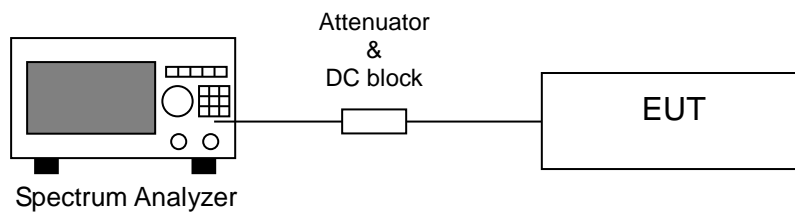
2.1 Instrument Setting

Spectrum Parameter	Setting
Detector	Peak
RBW	100kHz
VBW	$\geq 3 \times \text{RBW}$
Sweep	Auto couple
Trace	Allow the trace to stabilize.
Span	Between two times and five times the occupied bandwidth
Attenuation	Auto

2.2 Test Procedure

Step 1	The transmitter output was connected to the spectrum analyzer.
Step 2	Test was performed accordance with ANSI C63.10.
Step 3	Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

2.3 Test Diagram



2.4 Limit

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

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2.5 Test Results

Temperature (°C) :	26
Relative Humidity (%) :	61
Test date :	2021/10/14

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE 1M	0	2402	0.703	>0.5	Pass
	19	2440	0.681	>0.5	Pass
	39	2480	0.733	>0.5	Pass
BLE 2M	0	2402	1.377	>0.5	Pass
	19	2440	1.410	>0.5	Pass
	39	2480	1.475	>0.5	Pass

Chain 0: 6dB Bandwidth @ BLE 1M Mode Ch 0



Chain 0: 6dB Bandwidth @ BLE 1M Mode Ch 19



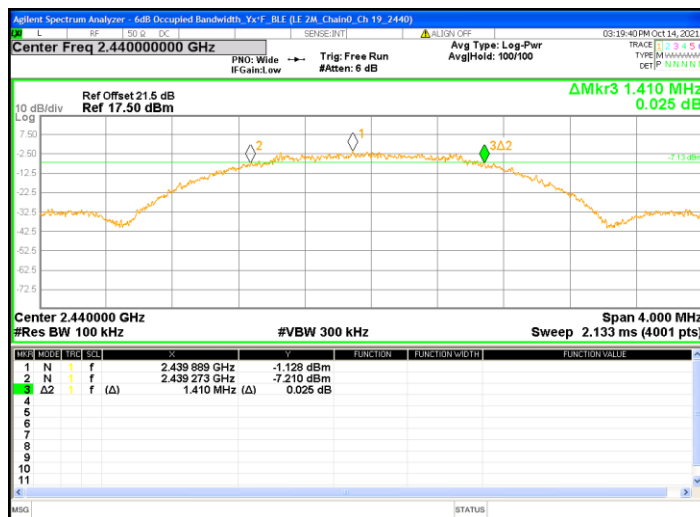
Chain 0: 6dB Bandwidth @ BLE 1M Mode Ch 39



Chain 0: 6dB Bandwidth @ BLE 2M Mode Ch 0



Chain 0: 6dB Bandwidth @ BLE 2M Mode Ch 19



Chain 0: 6dB Bandwidth @ BLE 2M Mode Ch 39



3. Maximum Peak Conducted Output Power

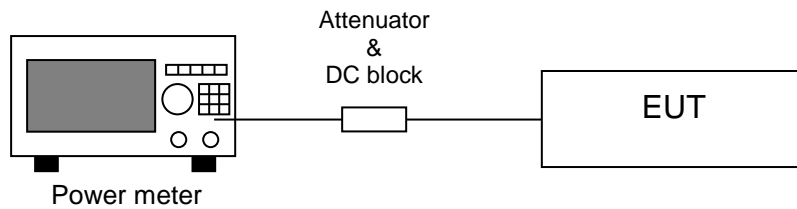
3.1 Instrument Setting

Power Meter Parameter	Setting
Bandwidth	65MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak & Average

3.2 Test Procedure

The preferred methodology is to use integrated average power measurements, as described in 11.9.2 and 11.13.3 of ANSI C63.10. The peak integrated band power methods of 11.9.1.2 and 11.13.3.2 of ANSI C63.10 are not applicable for FCC compliance testing purposes.

3.3 Test Diagram



3.4 Limit

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt (30dBm)

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3.5 Test Results

Temperature (°C) :	29
Relative Humidity (%) :	58
Test date :	2021/8/31

Mode	Channel	Frequency (MHz)	Output Power (AV) (dBm)	Total Power (AV) (mW)	Maximum power (PK) (dBm)	Maximum power (PK) (mW)	Limit (dBm)	Margin (dB)
BLE 1M	0	2402	0.33	1.08	1.80	1.51	30	-28.20
	19	2440	0.67	1.17	2.13	1.63	30	-27.87
	39	2480	0.85	1.22	2.22	1.67	30	-27.78
BLE 2M	0	2402	0.29	1.07	1.92	1.56	30	-28.08
	19	2440	0.66	1.16	2.26	1.68	30	-27.74
	39	2480	0.82	1.21	2.35	1.72	30	-27.65

4. Power Spectral Density

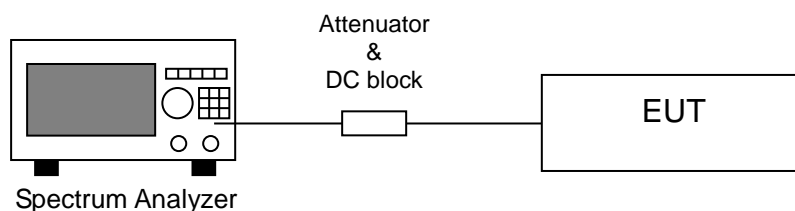
4.1 Instrument Setting

Spectrum Function	Setting
Detector	Peak
RBW	≥ 3 kHz
VBW	$\geq 3 \times$ RBW
Sweep	Auto couple
Trace	Max hold
Span	1.5 times \times 6dB bandwidth
Attenuation	Auto

4.2 Test Procedure

Step 1	Test procedure refer to subclause 11.10 of ANSI C63.10.
Step 2	Using the maximum conducted output power in the fundamental emission demonstrates compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
Step 3	Use the peak marker function to determine the maximum amplitude level within the RBW.

4.3 Test Diagram



4.4 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

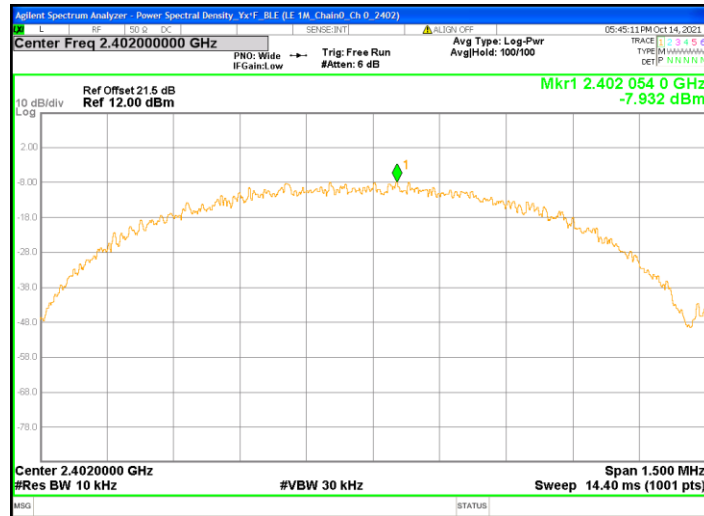
TEST REPORT

4.5 Test Results

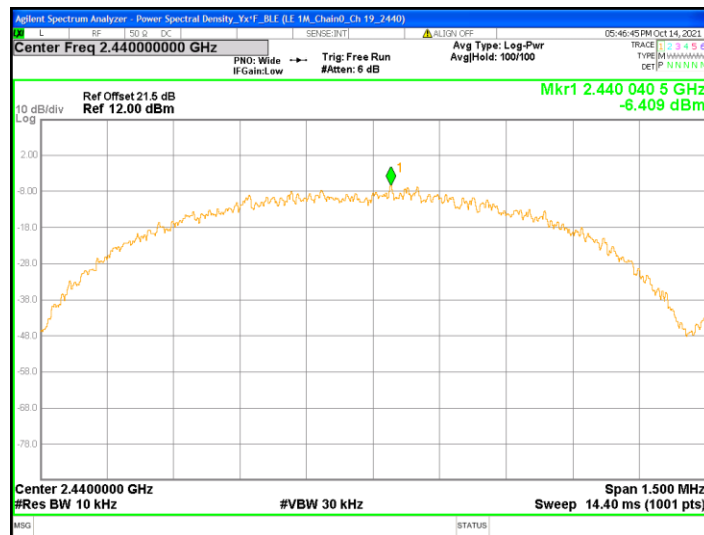
Temperature (°C) :	29
Relative Humidity (%) :	58
Test date :	2021/10/14

Mode	Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
BLE 1M	0	2402	-7.93	8	-15.93
	19	2440	-6.41	8	-14.41
	39	2480	-6.85	8	-14.85
BLE 2M	0	2402	-9.41	8	-17.41
	19	2440	-8.91	8	-16.91
	39	2480	-9.52	8	-17.52

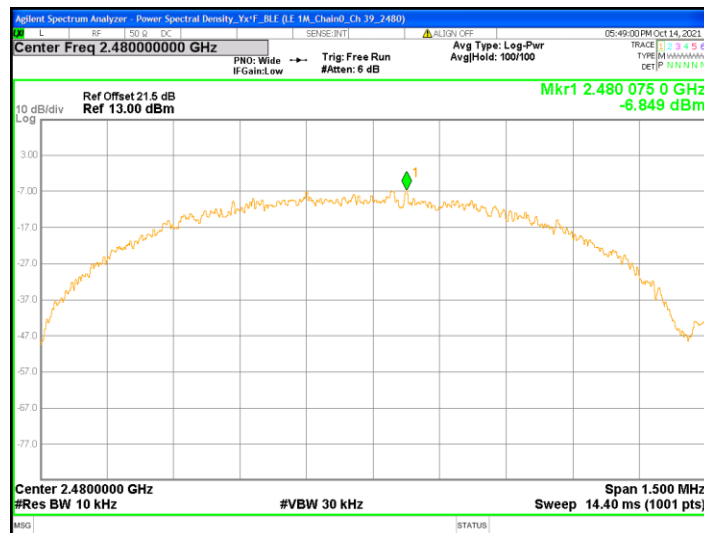
Chain 0: Power Spectral Density @ BLE 1M Mode Ch 0



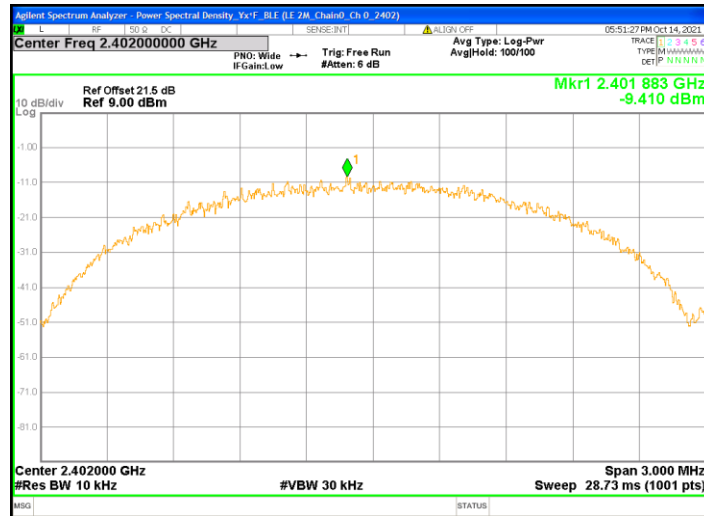
Chain 0: Power Spectral Density @ BLE 1M Mode Ch 19



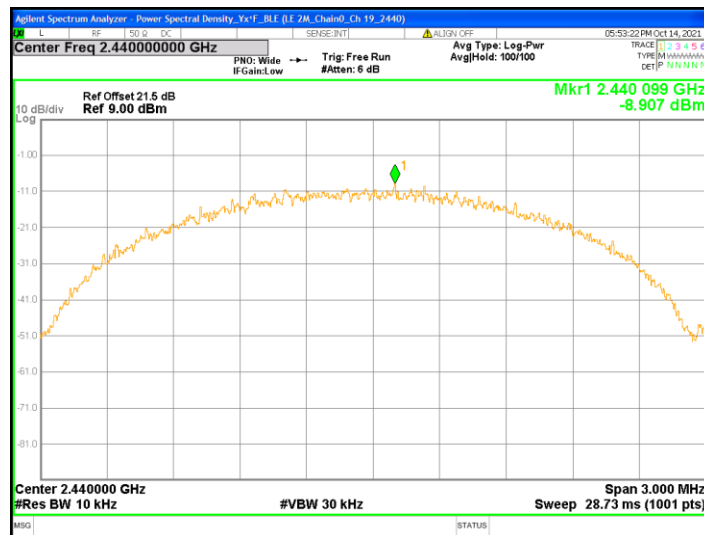
Chain 0: Power Spectral Density @ BLE 1M Mode Ch 39



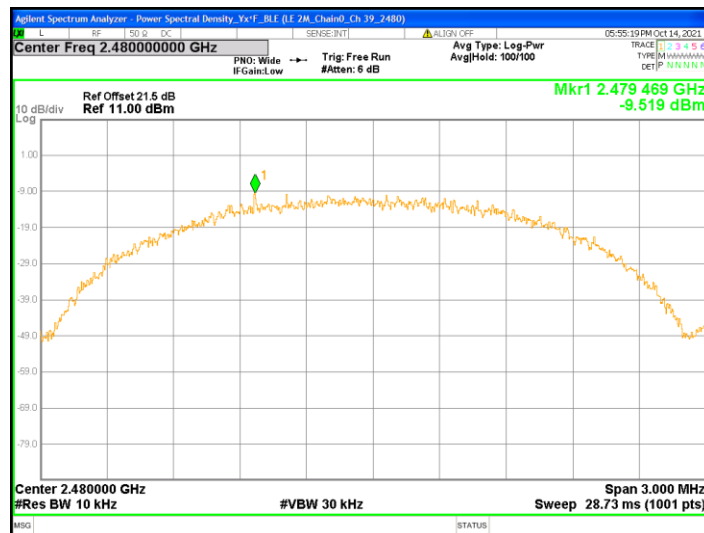
Chain 0: Power Spectral Density @ BLE 2M Mode Ch 0



Chain 0: Power Spectral Density @ BLE 2M Mode Ch 19



Chain 0: Power Spectral Density @ BLE 2M Mode Ch 39



5. Emissions in Non-Restricted Frequency Bands

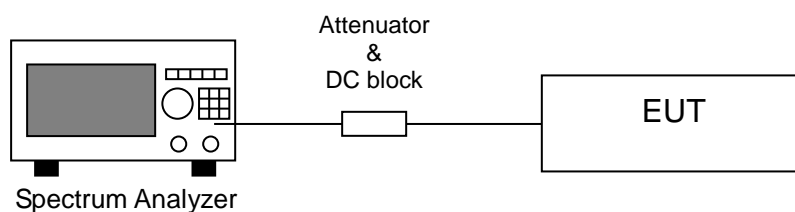
5.1 Instruments Setting

Spectrum Function	Setting (Reference Level)	Setting (Emission Level)
Detector	Peak	Peak
RBW	≥ 100 kHz	≥ 100 kHz
VBW	$\geq 3 \times$ RBW	$\geq 3 \times$ RBW
Sweep	Auto couple	Auto couple
Trace	Max hold	Max hold
Span	≥ 1.5 time 6dB bandwidth	X
Attenuation	Auto	Auto

5.2 Test Procedure

- Step 1 The procedure was used in antenna-port conducted and connected to the spectrum analyzer.
- Step 2 Set instrument center frequency to center frequency.
- Step 3 Use the parameter configured in subclause 11.11 of ANSI C63.10 to measure.
- Step 4 Use the peak marker function to determine the maximum amplitude level.

5.3 Test Diagram



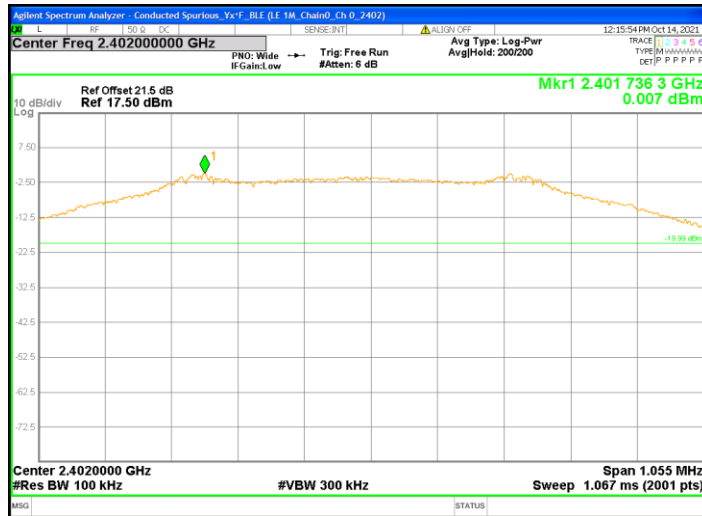
5.4 Limit

The peak output power 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

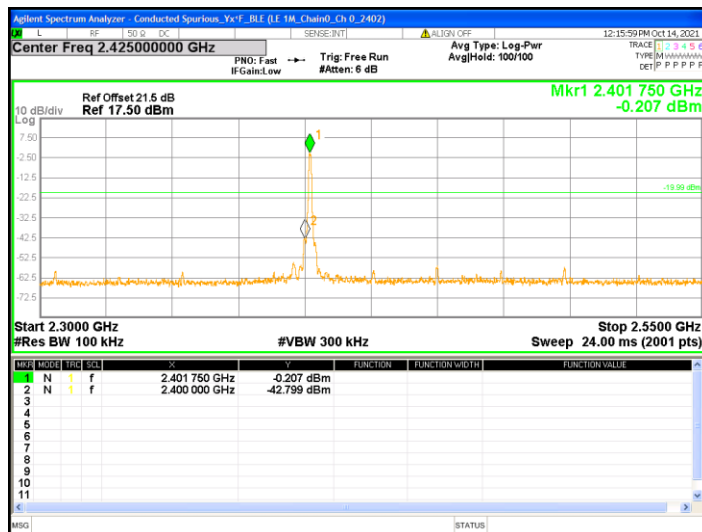
5.5 Test Results

Temperature (°C) :	29
Relative Humidity (%) :	58
Test date :	2021/10/14

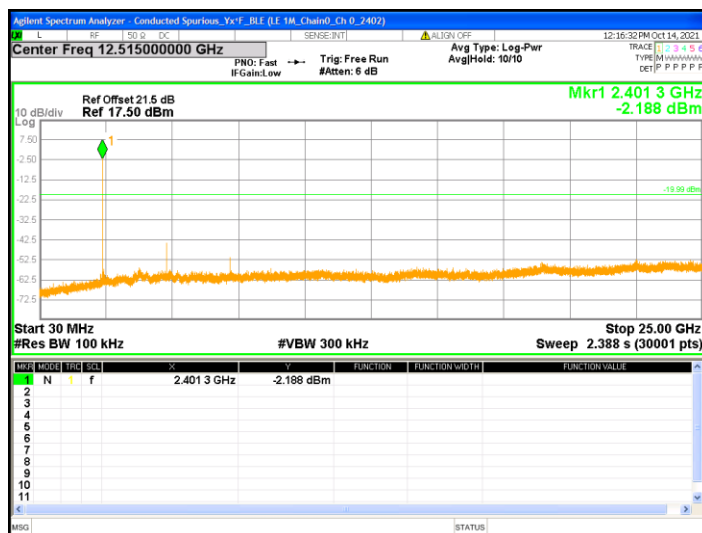
Chain 0: Conducted Spurious @ BLE 1M Mode Ch 0



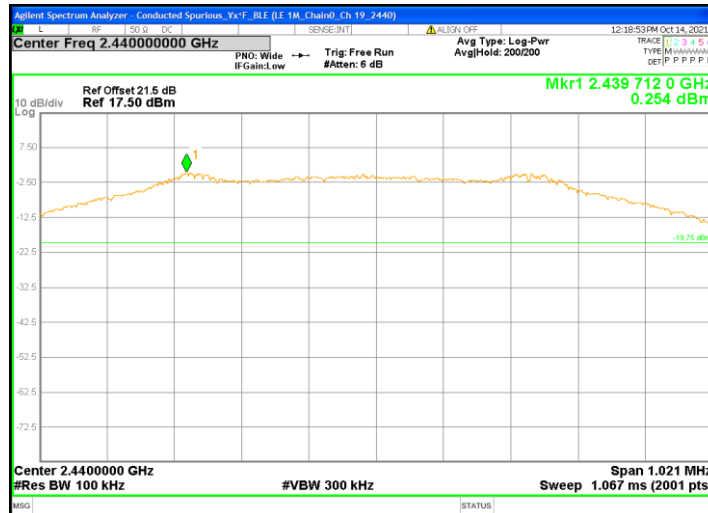
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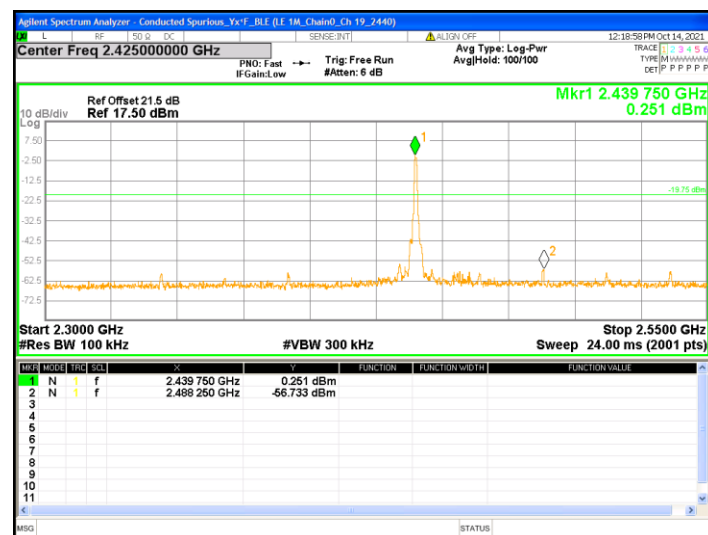
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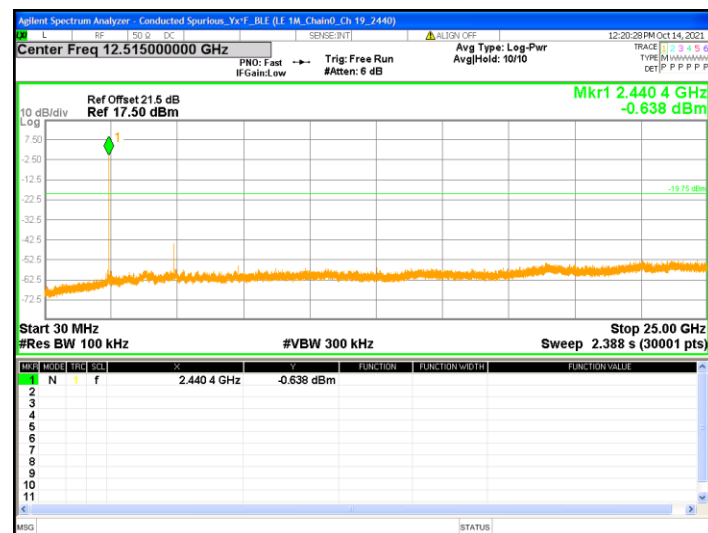
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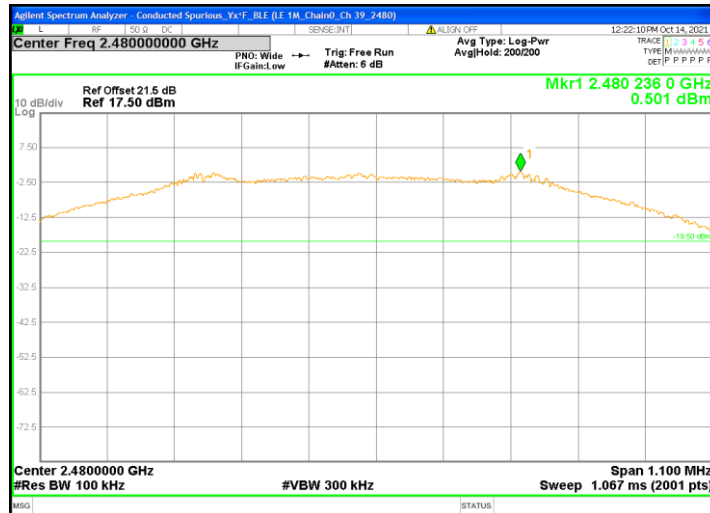
Chain 0: Conducted Spurious @ BLE 1M Mode Ch 19



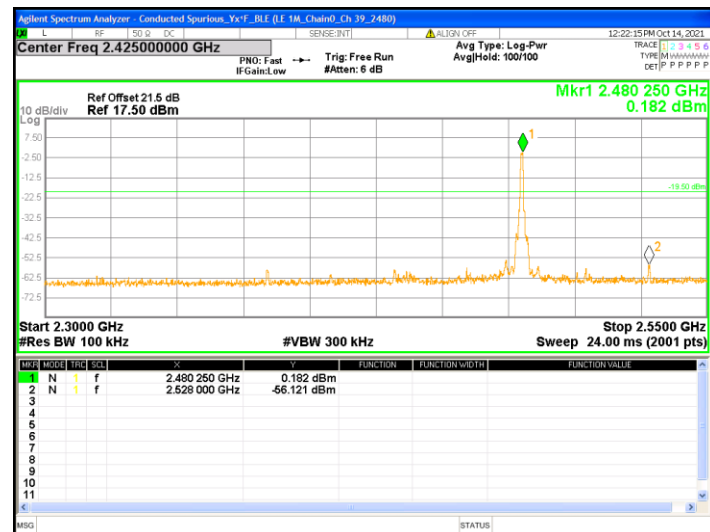
Chain 0: Conducted Spurious @ BLE 1M Mode Ch 19



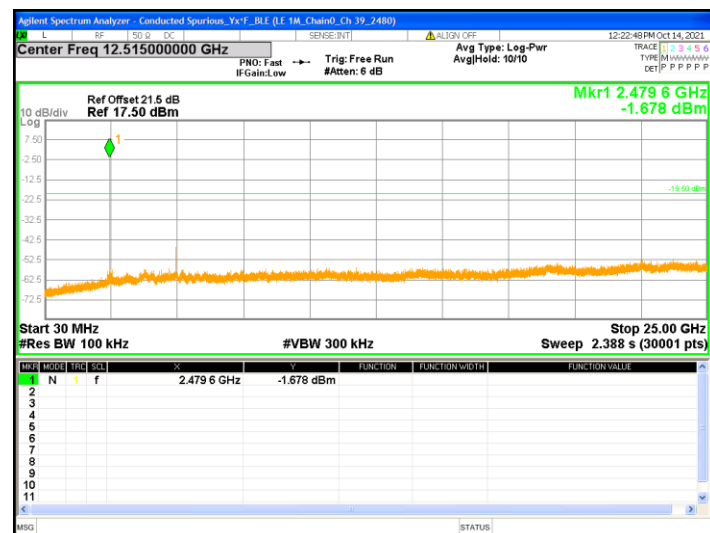
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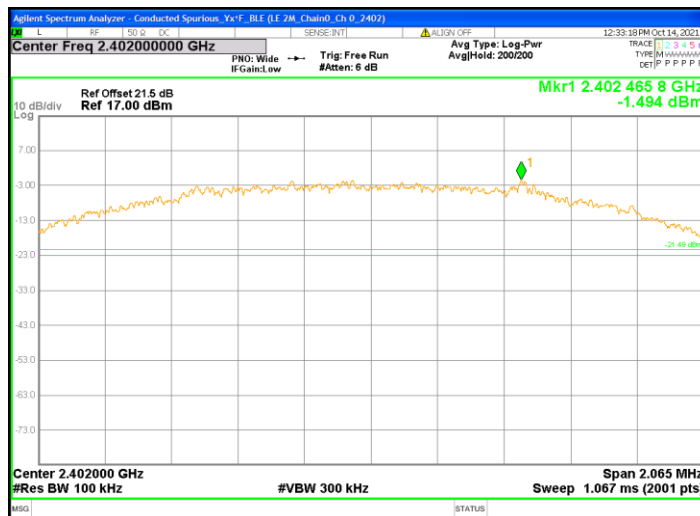
Chain 0: Conducted Spurious @ BLE 1M Mode Ch 39



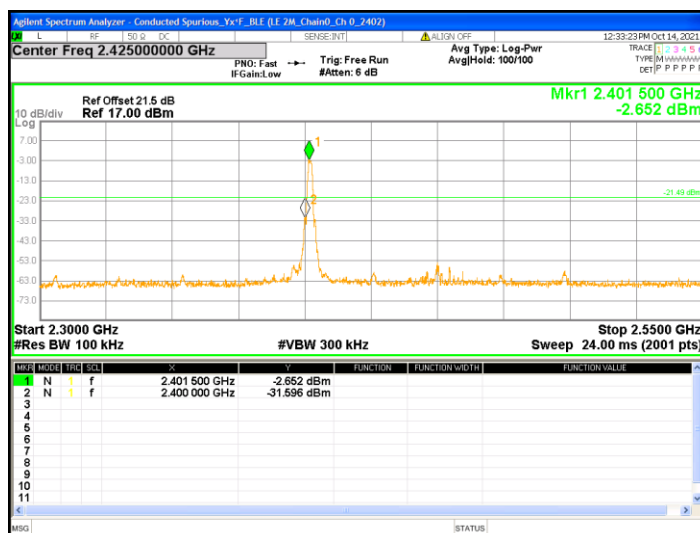
Chain 0: Conducted Spurious @ BLE 1M Mode Ch 39



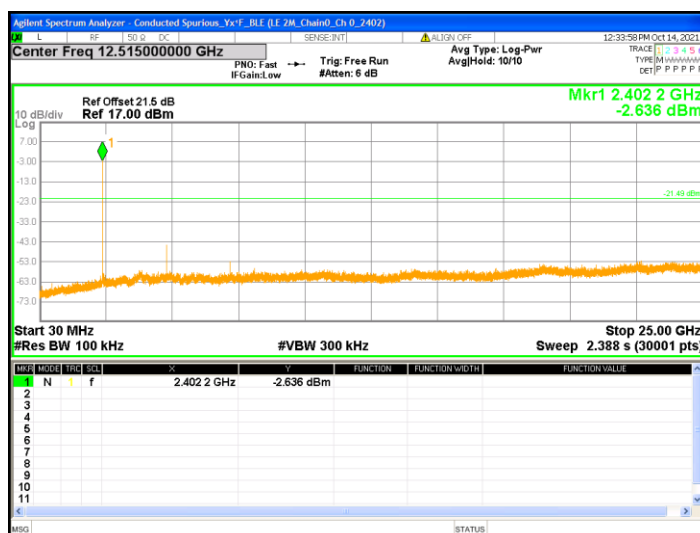
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 0



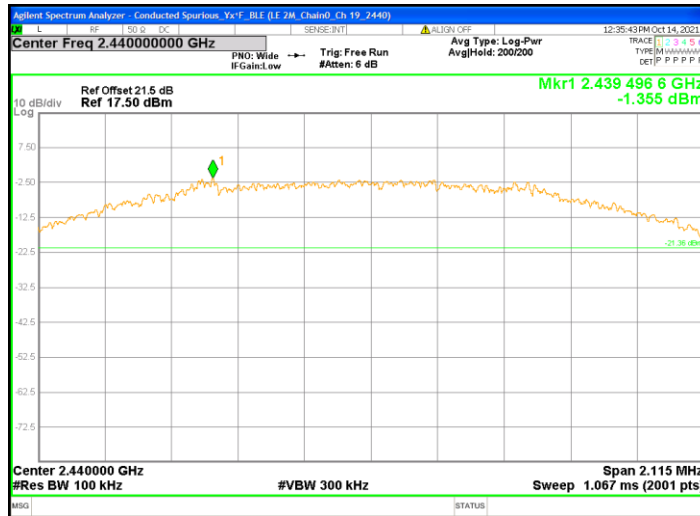
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 0



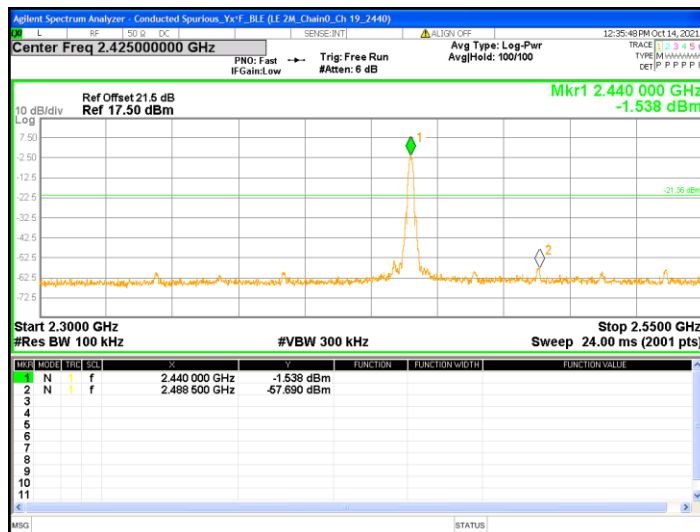
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 0



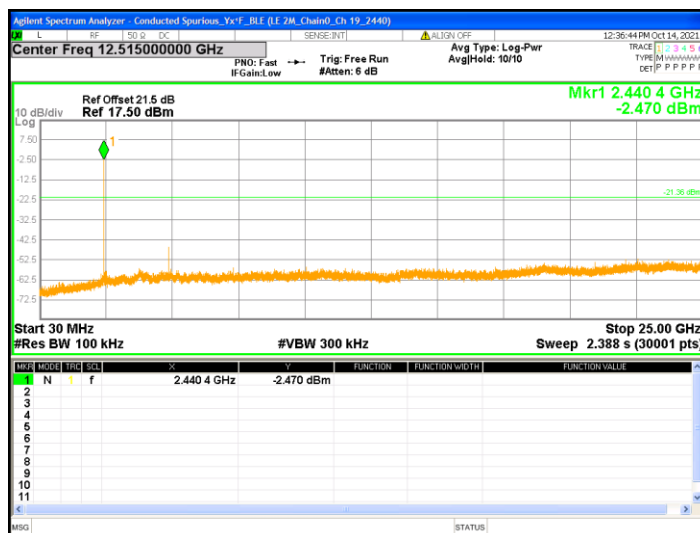
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 19



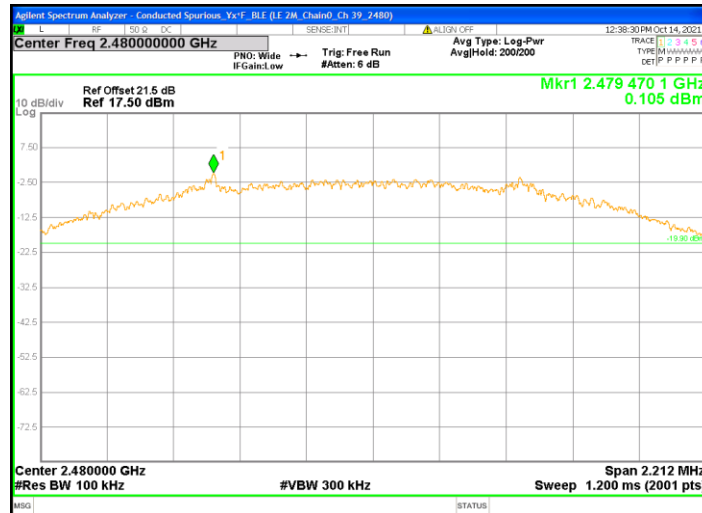
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 19



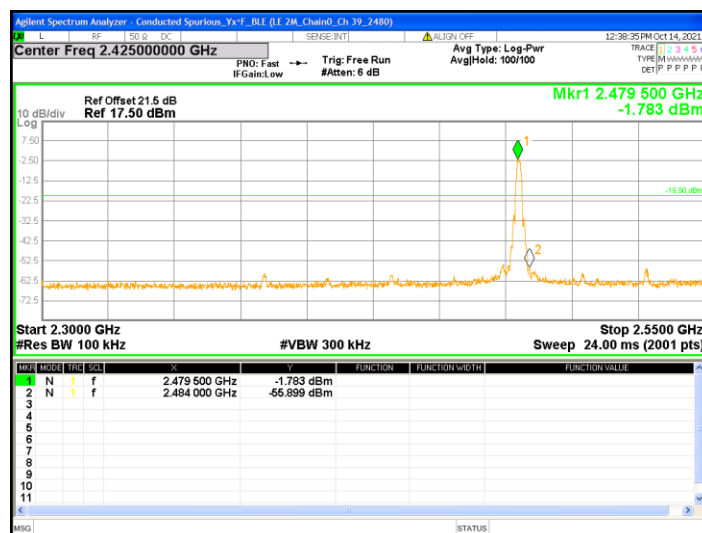
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 19



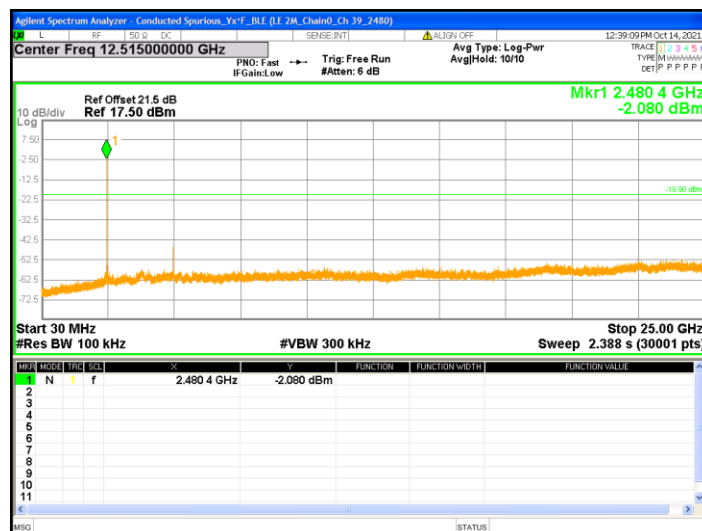
Chain 0: Conducted Spurious @ BLE 2M Mode Ch 39



Chain 0: Conducted Spurious @ BLE 2M Mode Ch 39



Chain 0: Conducted Spurious @ BLE 2M Mode Ch 39



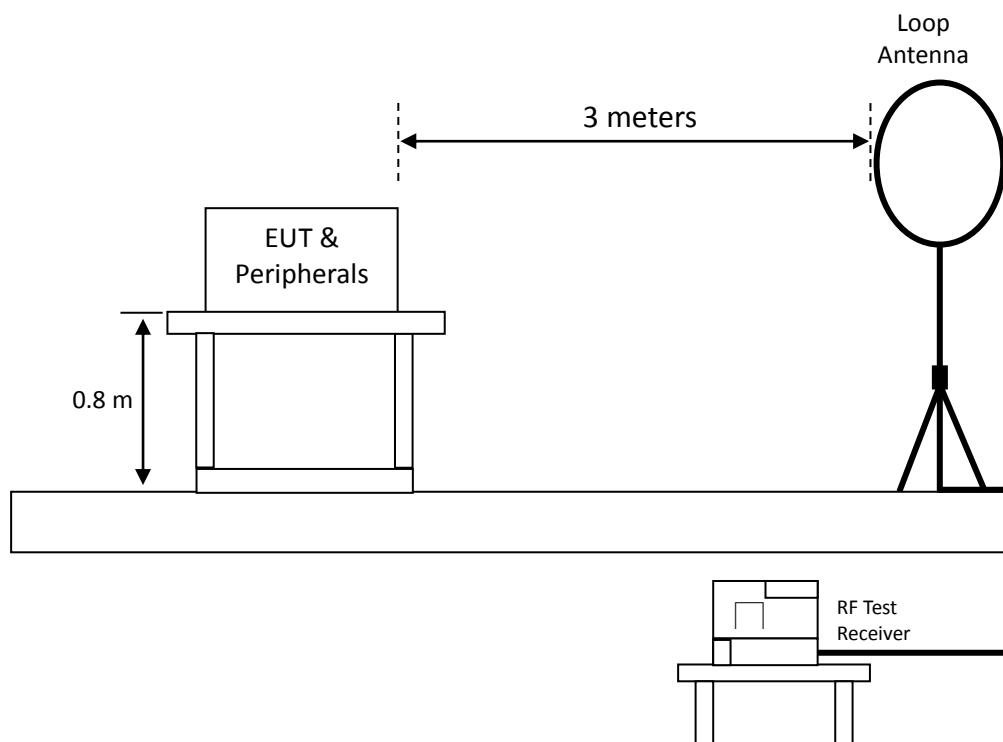
6. Emissions in Restricted Frequency Bands (Radiated emission measurements)

6.1 Instrument Setting

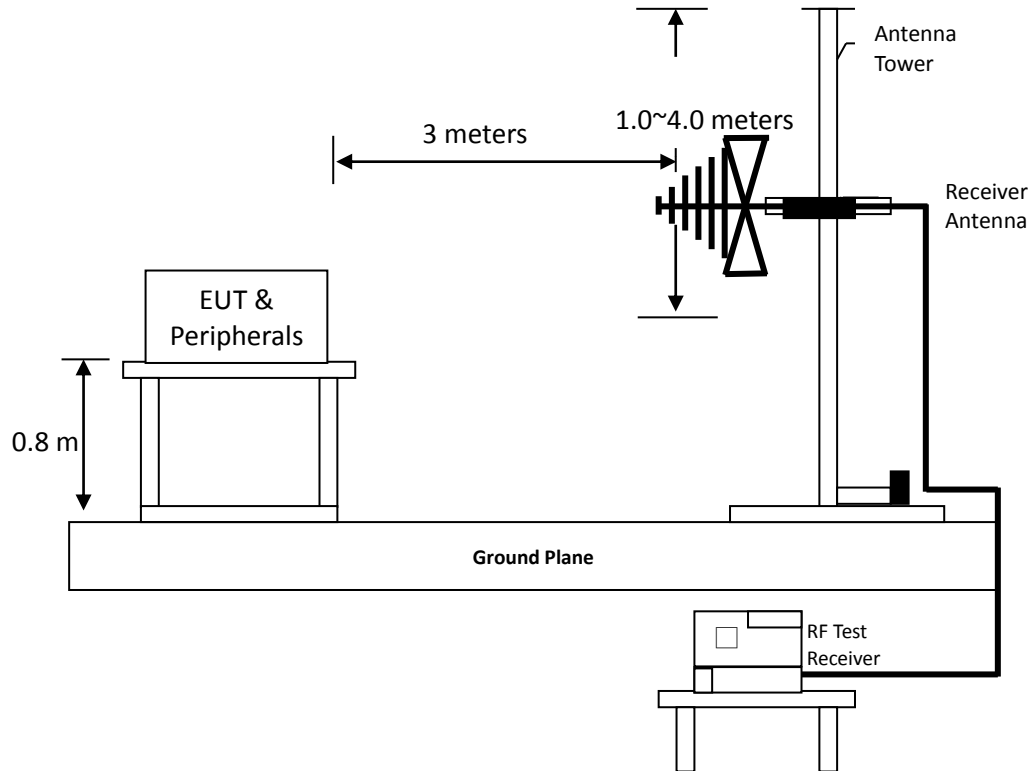
Receiver Function	Setting (Below 1GHz)	Setting (Above 1GHz)
Detector	QP	Peak and Average
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz	1MHz
VBW	$\geq 3 \times \text{RBW}$	3MHz & 1/T Minimum VBW
Sweep	Auto couple	Auto couple
Start Frequency	9 kHz	1GHz
Stop Frequency	1 GHz	Tenth harmonic
Attenuation	Auto	Auto

6.2 Test setup & procedure

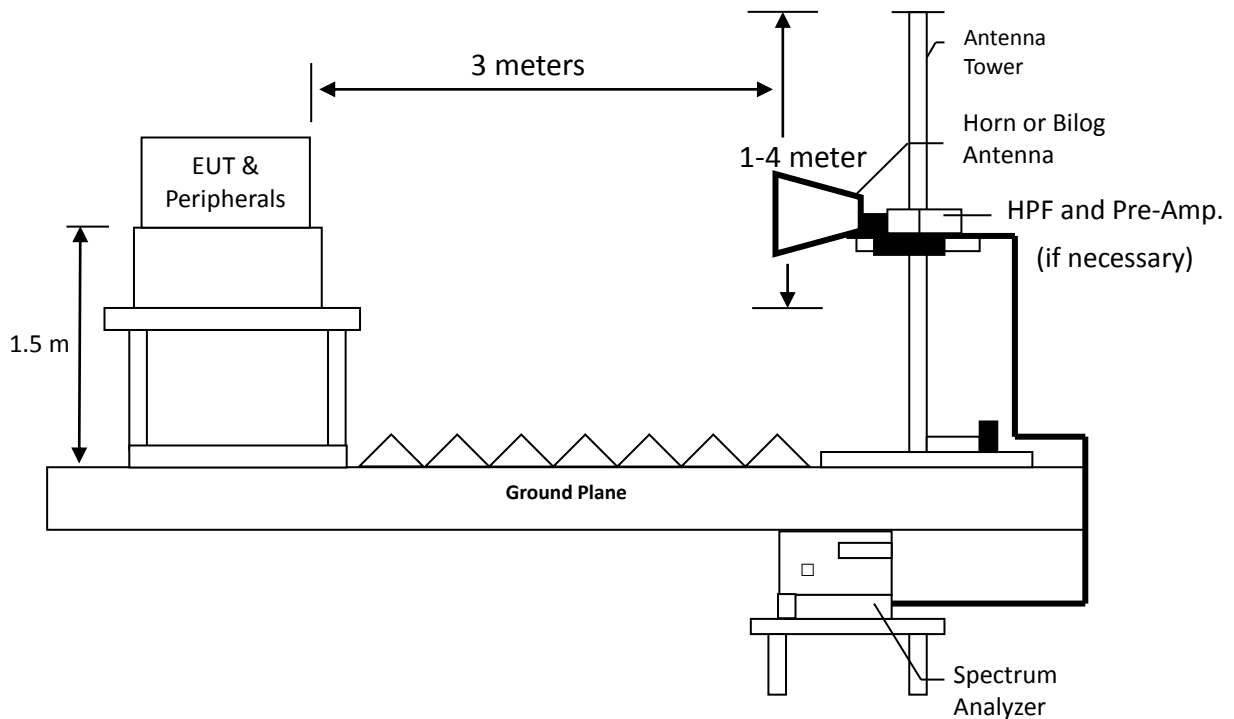
Radiated emission from 9kHz to 30MHz uses Loop Antenna:



Radiated emission below 1GHz using Bilog Antenna



Radiated emission above 1GHz using Horn Antenna



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Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/ 3 MHz VBW) recorded also on the report.

The EUT for testing is arranged on a turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

6.3 Limit

Frequency(MHz)	Field Strength(uV/m)	Measurement distance(m)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

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6.4 Test Result

6.4.1 Measurement results: frequencies 9kHz to 30MHz

Temperature (°C) :	24
Relative Humidity (%) :	62
Test date :	2021/11/16

The test was performed on EUT under continuously transmitting mode. The worst case occurred at BLE 2M, Ch_0.

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Perpendicular	0.159	AV	18.57	54.61	73.18	103.63	-30.45
Perpendicular	0.219	AV	18.75	50.57	69.32	100.85	-31.53
Perpendicular	0.309	AV	18.72	45.10	63.82	97.82	-34.00
Perpendicular	0.489	AV	19.34	41.55	60.89	93.82	-32.93
Perpendicular	0.789	QP	19.64	31.35	50.99	69.68	-18.69
Perpendicular	0.849	QP	19.64	29.13	48.77	69.07	-20.30

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Parallel	0.129	AV	18.43	54.59	73.02	105.56	-32.54
Parallel	0.189	AV	18.70	51.67	70.37	102.13	-31.76
Parallel	0.279	AV	18.72	46.34	65.06	98.73	-33.67
Parallel	0.399	AV	18.85	41.58	60.43	95.59	-35.16
Parallel	0.549	QP	19.37	40.44	59.81	72.86	-13.05
Parallel	0.849	QP	19.64	33.09	52.73	69.07	-16.34

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dB μ V)	Corrected Reading (dB μ V/m)	Limit @ 3 m (dB μ V/m)	Margin (dB)
Ground-parallel	0.129	AV	18.43	51.59	70.02	105.56	-35.54
Ground-parallel	0.189	AV	18.70	47.67	66.37	102.13	-35.76
Ground-parallel	0.279	AV	18.72	44.34	63.06	98.73	-35.67
Ground-parallel	0.339	AV	18.76	39.63	58.39	97.02	-38.63
Ground-parallel	0.549	QP	19.37	37.44	56.81	72.86	-16.05
Ground-parallel	0.849	QP	19.64	29.09	48.73	69.07	-20.34

TEST REPORT

6.4.2 Measurement results: frequencies below 1 GHz

Temperature (°C) :	26
Relative Humidity (%) :	55
Test date :	2021/10/13

The test was performed on EUT under continuously transmitting mode. The worst case occurred at BLE 2M, Ch_0.

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Vertical	39.70	QP	20.27	13.06	33.33	40.00	-6.67
Vertical	141.55	QP	20.62	8.81	29.43	43.50	-14.07
Vertical	315.18	QP	22.54	5.86	28.40	46.00	-17.60
Vertical	463.59	QP	26.26	6.20	32.46	46.00	-13.54
Vertical	589.69	QP	29.12	6.74	35.86	46.00	-10.14
Vertical	732.28	QP	31.36	6.87	38.23	46.00	-7.77

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Horizontal	61.04	QP	20.40	5.63	26.03	40.00	-13.97
Horizontal	168.71	QP	20.90	4.99	25.89	43.50	-17.61
Horizontal	310.33	QP	22.42	7.47	29.89	46.00	-16.11
Horizontal	513.06	QP	27.40	6.72	34.12	46.00	-11.88
Horizontal	633.34	QP	29.96	6.49	36.45	46.00	-9.55
Horizontal	732.28	QP	31.36	7.54	38.90	46.00	-7.10

Remark: Corr. Factor = Antenna Factor + Cable Loss

TEST REPORT

6.4.3 Measurement results: frequency above 1GHz to 25GHz

Temperature (°C) :	26
Relative Humidity (%) :	64
Test date :	2021/10/13

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
BLE 1M_Ch0	4804	PK	V	17.56	35.47	53.03	74	-20.97
	7206	PK	V	24.38	26.34	50.72	74	-23.28
	9608	PK	V	28.66	20.83	49.49	74	-24.51
	4804	PK	H	17.56	36.70	54.26	74	-19.74
	4804	AV	H	17.56	34.35	51.91	54	-2.09
	7206	PK	H	24.38	27.24	51.62	74	-22.38
BLE 1M_Ch19	4880	PK	V	17.68	36.93	54.61	74	-19.39
	4880	AV	V	17.68	35.32	53.00	54	-1.00
	7320	PK	V	24.45	26.28	50.73	74	-23.27
	9760	PK	V	29.50	20.07	49.57	74	-24.43
	4880	PK	H	17.68	35.12	52.80	74	-21.20
	7320	PK	H	24.45	26.69	51.14	74	-22.86
BLE 1M_Ch39	4960	PK	V	17.94	35.22	53.16	74	-20.84
	7440	PK	V	24.65	22.79	47.44	74	-26.56
	4960	PK	H	17.94	36.44	54.38	74	-19.62
	4960	AV	H	17.94	34.22	52.16	54	-1.84
	7440	PK	H	24.65	24.06	48.71	74	-25.29
BLE 2M_Ch0	4804	PK	V	17.56	35.01	52.57	74	-21.43
	7206	PK	V	24.38	26.38	50.76	74	-23.24
	9608	PK	V	28.66	20.55	49.21	74	-24.79
	4804	PK	H	17.56	35.96	53.52	74	-20.48
	7206	PK	H	24.38	27.81	52.19	74	-21.81

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

TEST REPORT

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
BLE 2M_Ch19	4880	PK	V	17.68	37.00	54.68	74	-19.32
	4880	AV	V	17.68	30.87	48.55	54	-5.45
	7320	PK	V	24.45	27.04	51.49	74	-22.51
	4880	PK	H	17.68	34.99	52.67	74	-21.33
	7320	PK	H	24.45	25.48	49.93	74	-24.07
BLE 2M_Ch39	4960	PK	V	17.94	34.92	52.86	74	-21.14
	7440	PK	V	24.65	23.62	48.27	74	-25.73
	4960	PK	H	17.94	36.28	54.22	74	-19.78
	4960	AV	H	17.94	29.57	47.51	54	-6.49
	7440	PK	H	24.65	23.95	48.60	74	-25.40

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

7. Emission on Band Edge

7.1 Instrument Setting

Spectrum Function	Setting
Detector	Peak and Average
RBW	1MHz
VBW	3MHz & 1/T Minimum VBW
Sweep	Auto couple
Restrict bands	2310 MHz ~ 2390 MHz 2483.5 MHz ~ 2500 MHz
Attenuation	Auto

7.2 Test Procedure

The test procedure is the same as Emissions in Restricted Frequency Bands (Radiated emission measurements).

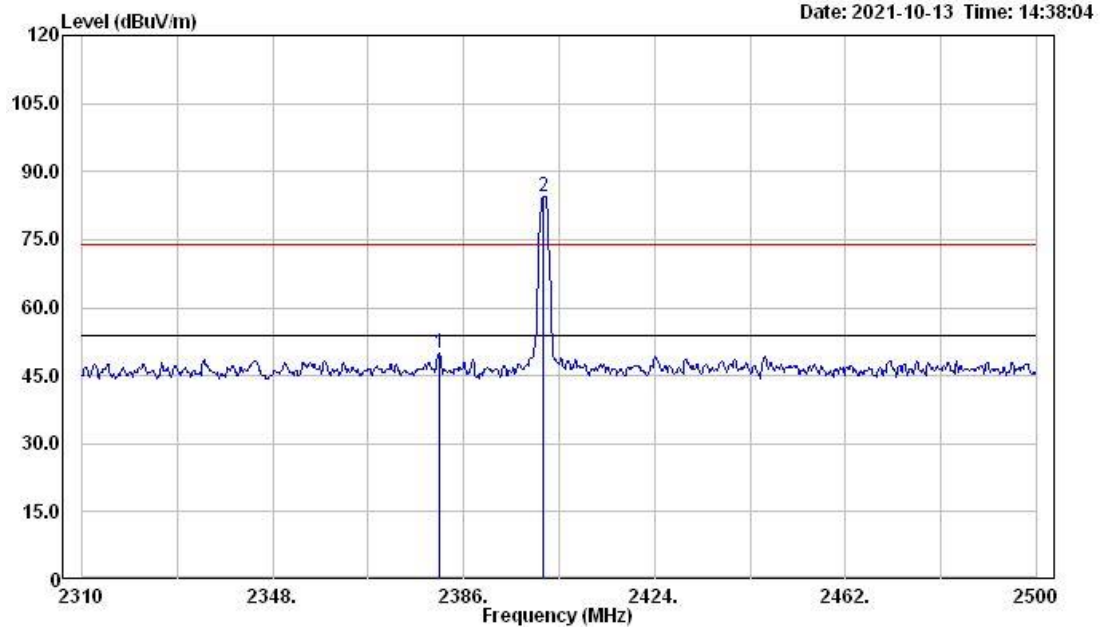
7.3 Test Results

Temperature (°C) :	18
Relative Humidity (%) :	64
Test date :	2021/10/13

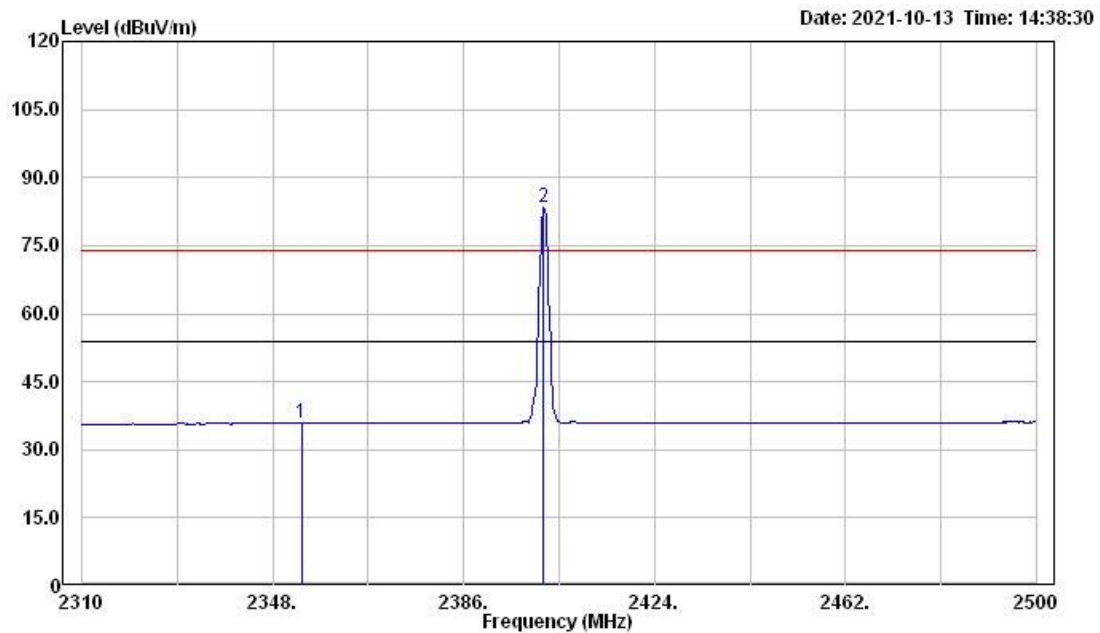
Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)	Restricted band (MHz)
BLE 1M	2381.25	PK	H	34.87	14.94	49.81	74	-24.19	2310~2390
	2353.70	AV	H	34.88	1.19	36.07	54	-17.93	
	2496.77	PK	H	34.80	14.63	49.43	74	-24.57	2483.5~2500
	2485.94	AV	H	34.81	1.38	36.19	54	-17.81	
BLE 2M	2386.95	PK	H	34.86	14.46	49.32	74	-24.68	2310~2390
	2355.60	AV	H	34.88	1.15	36.03	54	-17.97	
	2491.64	PK	H	34.81	13.66	48.47	74	-25.53	2483.5~2500
	2485.56	AV	H	34.81	1.30	36.11	54	-17.89	

Remark: Correction Factor = Antenna Factor + Cable Loss

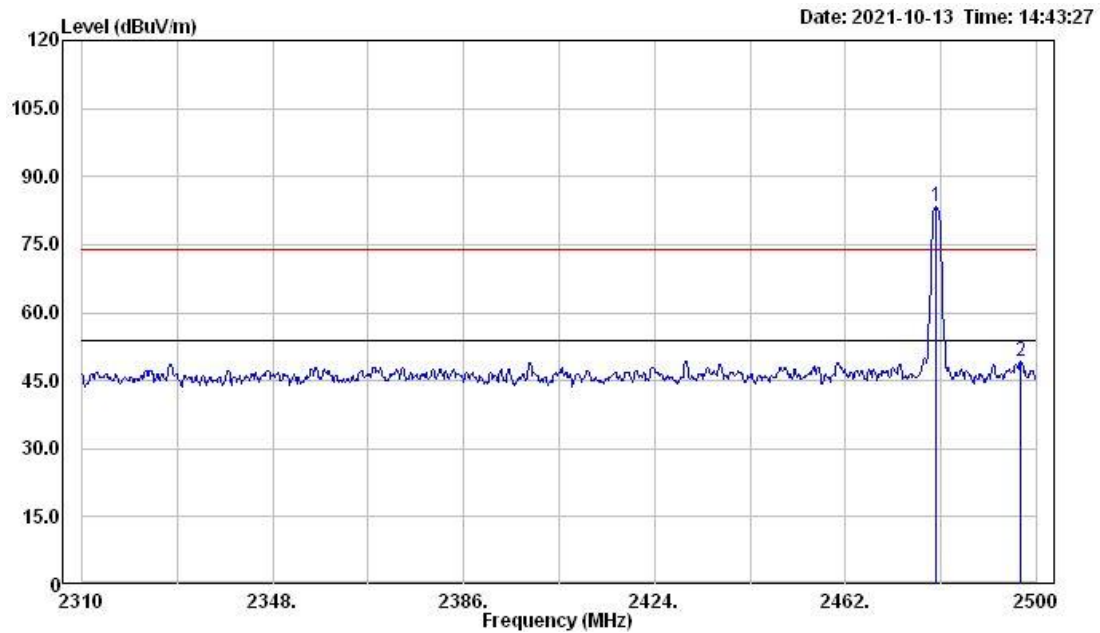
Chain 0: Restricted Band Bandedge @ BLE 1M Mode Ch0 PK



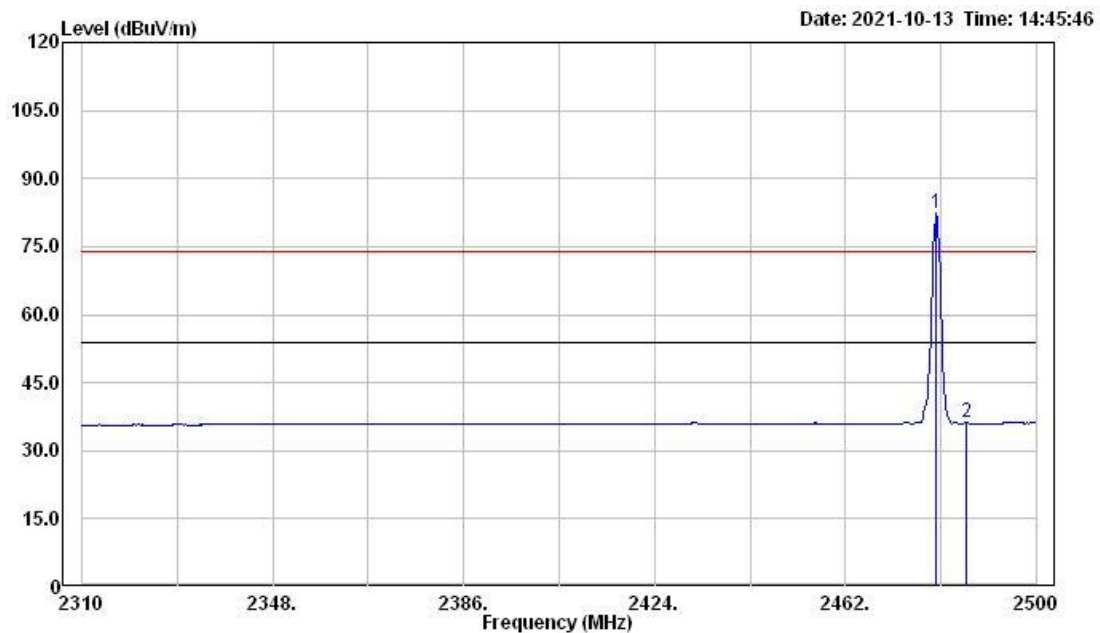
Chain 0: Restricted Band Bandedge @ BLE 1M Mode Ch0 AV



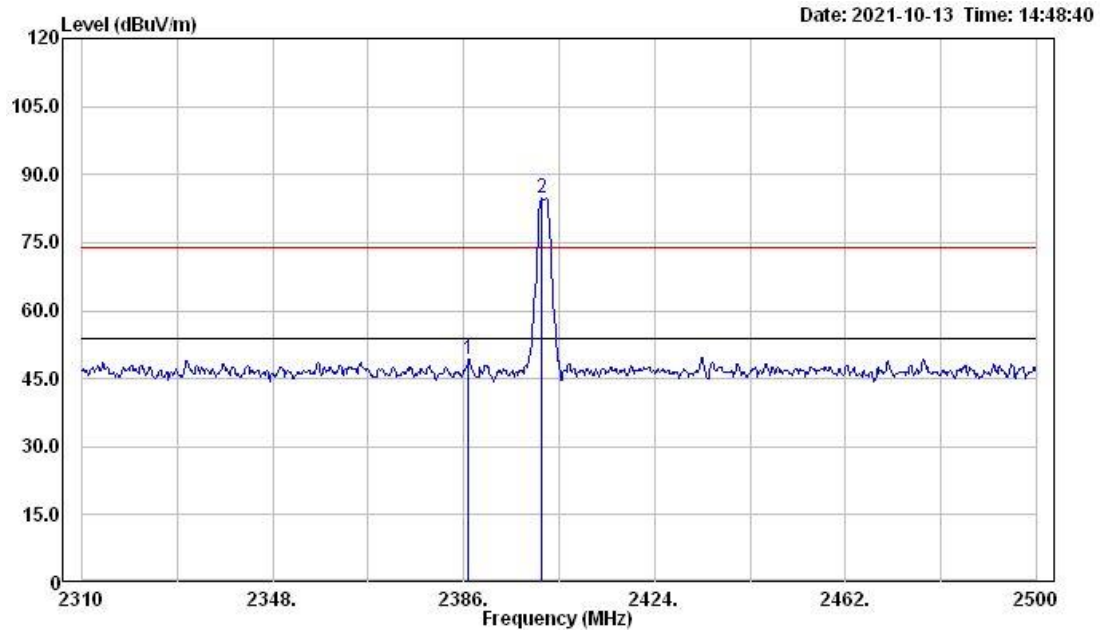
Chain 0: Restricted Band Bandedge @ BLE 1M Mode Ch39 PK



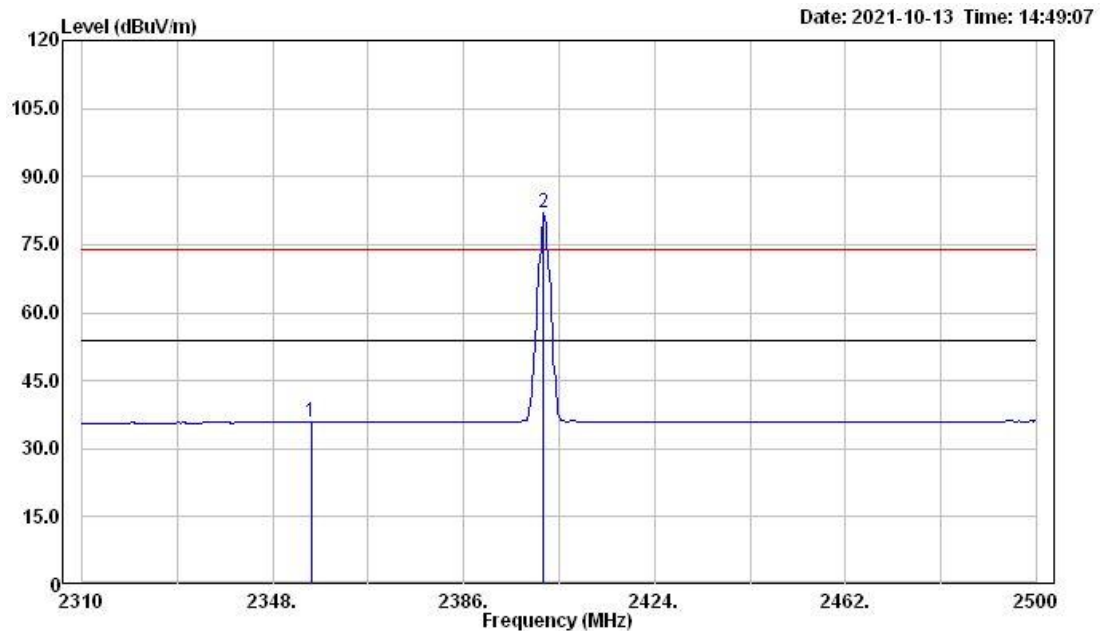
Chain 0: Restricted Band Bandedge @ BLE 1M Mode Ch39 AV



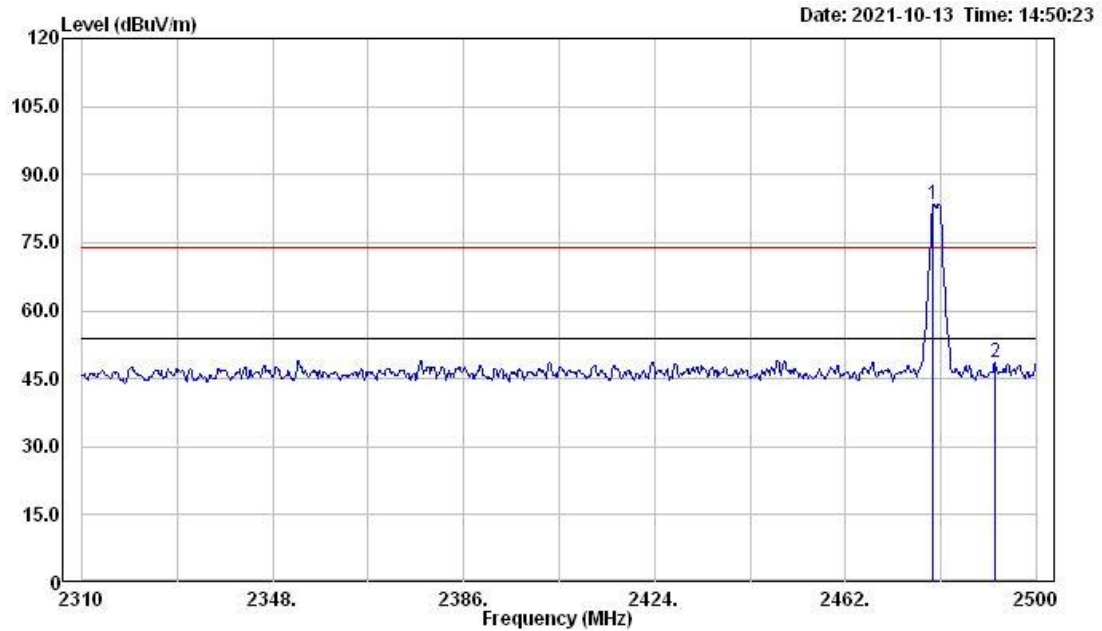
Chain 0: Restricted Band Bandedge @ BLE 2M Mode Ch0 PK



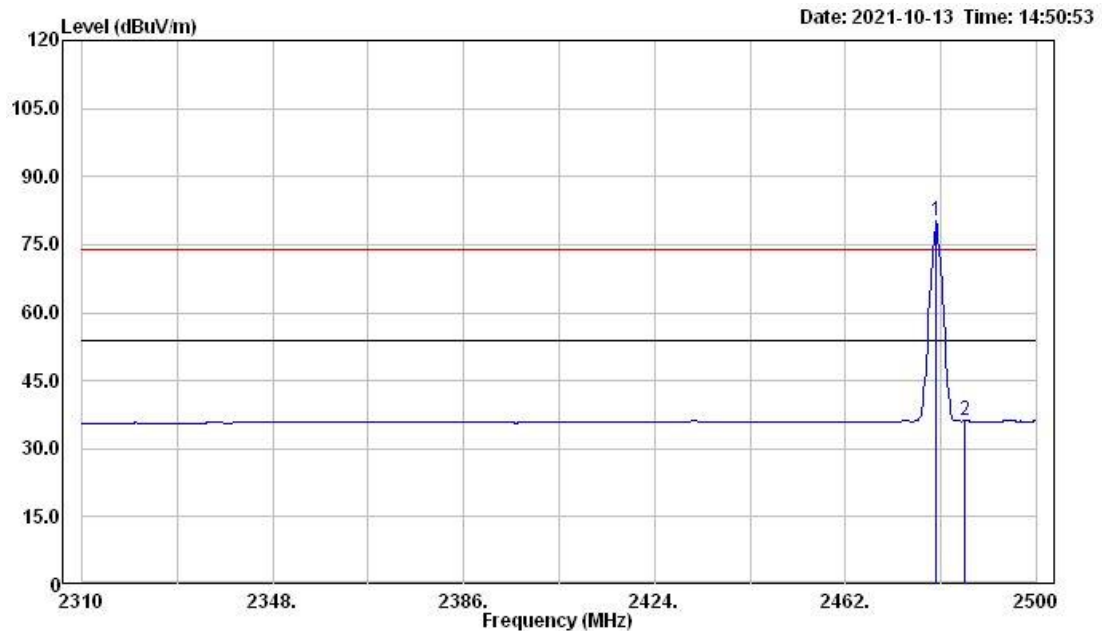
Chain 0: Restricted Band Bandedge @ BLE 2M Mode Ch0 AV



Chain 0: Restricted Band Bandedge @ BLE 2M Mode Ch39 PK



Chain 0: Restricted Band Bandedge @ BLE 2M Mode Ch39 AV



8. AC Power Line Conducted Emission

Since the EUT is not connected to AC source, therefore, the test can be waived.

TEST REPORT

Appendix A: Test equipment list

Test Equipment/ Test site	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	Rohde & Schwarz	ESR7	101822	2021/08/16	2022/08/15
Signal Analyzer	Agilent	N9030A	MY51380492	2021/08/17	2022/08/16
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2021/04/14	2022/04/13
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2021/01/29	2022/01/28
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-456	2021/01/11	2022/01/10
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170159	2020/08/20	2023/08/19
Pre-Amplifier	AML	AML0120L340 1	0419-114	2020/12/16	2021/12/15
Pre-amplifier	SGH	SGH184	20201124-1	2020/12/16	2021/12/15
Power Meter	Anritsu	ML2495A	0844001	2020/10/28	2021/10/27
Power Sensor	Anritsu	MA2411B	0738452	2020/10/28	2021/10/27
966-2(A) Cable	SUHNER	SMA / EX 100	N/A	2021/03/08	2022/03/07
966-2(B) Cable	SUHNER	SUCOFLEX 104P	CB0005	2021/03/08	2022/03/07
RF Cable	SUHNER	SUCOFLEX 104P	CB0006	2021/04/29	2022/04/28
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2021/01/15	2022/01/14
Hight Pass Filter	Reactel	7HS-3G/18G-S 11	N/A	2021/05/26	2022/05/25
20dB Attenuator	Mini-Circuits	BW-S20W5+	N/A	2021/05/26	2022/05/25
Test software	Audix	e3	V9	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.16 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.02 dB
Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	5.17 dB
Vertically polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.39 dB
Horizontally polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.39 dB
Vertically polarized Radiated disturbances from 26.5GHz~40GHz in a semi-anechoic chamber at a distance of 1m	2.39 dB
Horizontally polarized Radiated disturbances from 26.5GHz~40GHz in a semi-anechoic chamber at a distance of 1m	2.39 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.70 dB
Emission on the Band Edge Test	4.32 dB
Minimum Emission Bandwidth	7.78 %
Maximum Conducted Output Power	0.44 dB
Power Spectral Density	1.27 dB
AC Power Line Conducted Emission	3.08 dB