FCC - TEST REPORT

Report Number	:	**68.950.21.0495.01**	Date of Issue:	**2021-08-09**
Model	:	**MDA6K21-2**		
Product Type	:	2.4G Bluetooth Communication Module		
Applicant	:	GD Midea Air-Conditioning Equipment Co., Ltd.		
Address	:	Lingang Road, Beijiao, Shunde 528311 Foshan, Guangdong PEOPLE'S REPUBLIC OF CHINA		
Manufacturer	:	GD Midea Air-Conditioning Equipment Co., Ltd.		
Address	:	Lingang Road, Beijiao, Shunde 528311 Foshan, Guangdong PEOPLE'S REPUBLIC OF CHINA		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	**35**		

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12 & 13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District Shenzhen 518052 P.R. China
Telephone:	86 755 8828 6998
Fax:	86 755 8828 5299
FCC Registration No.:	514049
FCC Designation Number:	CA5009
IC Registration No.:	10320A

3 Description of the Equipment Under Test

Product:	2.4G Bluetooth Communication Module
Model no.:	MDA6K21-2
FCC ID:	2ADQOMDA6K21-2
Options and accessories:	N/A
Rating:	5Vdc, 50mA
RF Transmission Frequency:	2402MHz-2480MHz
No. of Operated Channel:	40
Modulation:	GFSK
Antenna Type:	Integrated antenna
Antenna Gain:	0.0dBi
Description of the EUT:	The Equipment Under Test (EUT) is a 2.4G Bluetooth Communication Module which support Bluetooth function(BLE 1M only).

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2020 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 and ANSI C63.10 (2013).

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5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	10	Site 1	☒	☐	☐
§15.247 (b) (1)	Conducted peak output power	13	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth	---	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time	---	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth and 99% Occupied Bandwidth	17	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	15	Site 1	☒	☐	☐
§15.247(d)	Spurious RF conducted emissions	20	Site 1	☒	☐	☐
§15.247(d)	Band edge	25	Site 1	☒	☐	☐
§15.247(d)	Spurious radiated emissions for transmitter	27	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 2		☒	☐	☐

Note 1: N/A=Not Applicable.
Note 2: The EUT uses an Integrated antenna, which gain is 0.0dBi. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2ADQOMDA6K21-2 complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules.

This report is for Bluetooth Low Energy only.

SUMMARY:

All tests according to the regulations cited on page 5 were.

■ - Performed

☐ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date:	2021-07-22
Testing Start Date:	2021-07-23
Testing End Date:	2021-08-04

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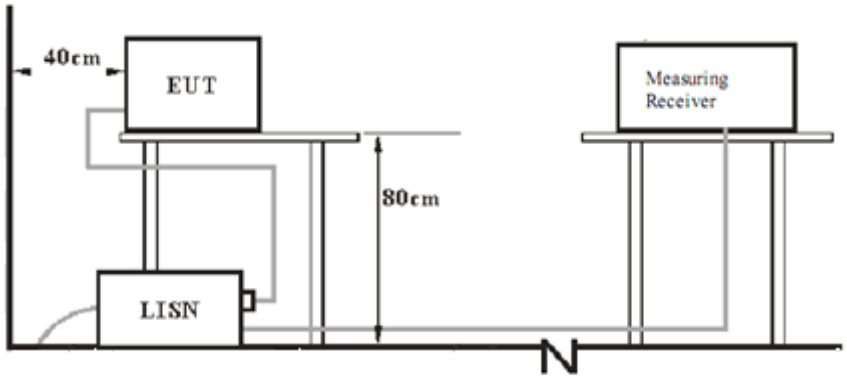
Reviewed by:	Prepared by:	Tested by:
John Zhi	Warlen Song	Carry Cai
Project Manager	Project Engineer	Test Engineer

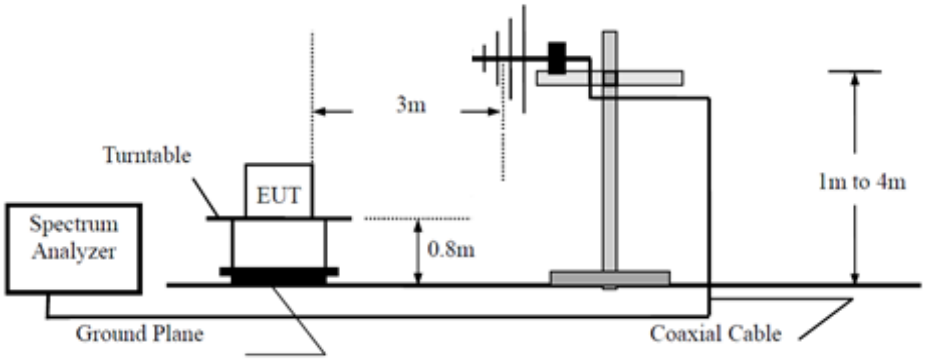
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

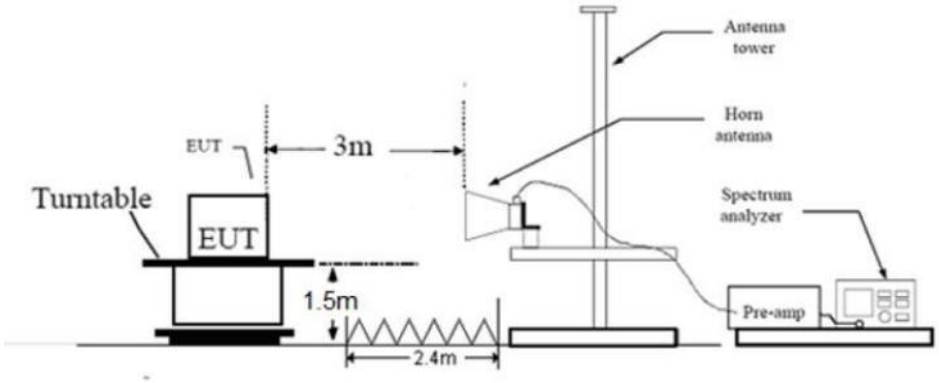


7.2 Radiated test setups

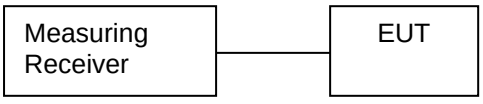
Below 1GHz



Above 1GHz



7.3 Conducted RF test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	S/N
Notebook	Lenovo	X240	---
Adapter	Apple	A1443	---

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9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency

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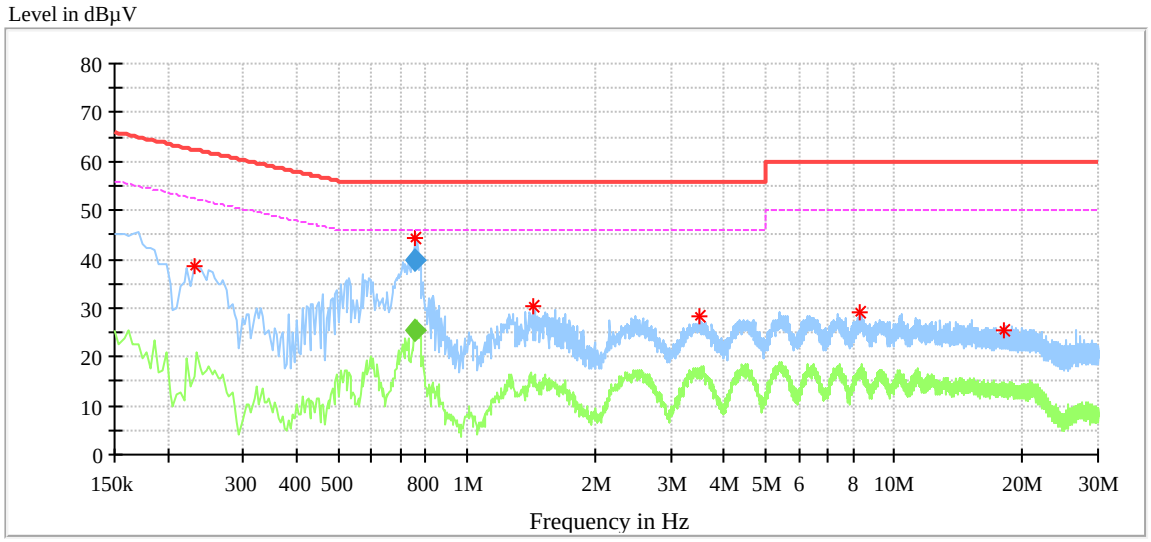
Conducted Emission

Product Type : 2.4G Bluetooth Communication Module
M/N : MDA6K21-2
Operating Condition : Transmit
Test Specification : Power Line, Live
Comment : AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.230000	38.62	---	62.45	23.83	L1	9.64
0.757500	44.39	---	56.00	11.61	L1	9.66
1.434000	30.41	---	56.00	25.59	L1	9.67
3.498000	28.23	---	56.00	27.77	L1	9.73
8.270000	29.07	---	60.00	30.93	L1	9.86
18.070000	25.37	---	60.00	34.63	L1	9.96
Frequency (MHz)	**QuasiPeak (dBµV)**	**Average (dBµV)**	**Limit (dBµV)**	**Margin (dB)**	**Line**	**Corr. (dB)**
0.757500	---	25.40	46.00	20.60	L1	9.66
0.757500	39.85	---	56.00	16.15	L1	9.66

Remark：
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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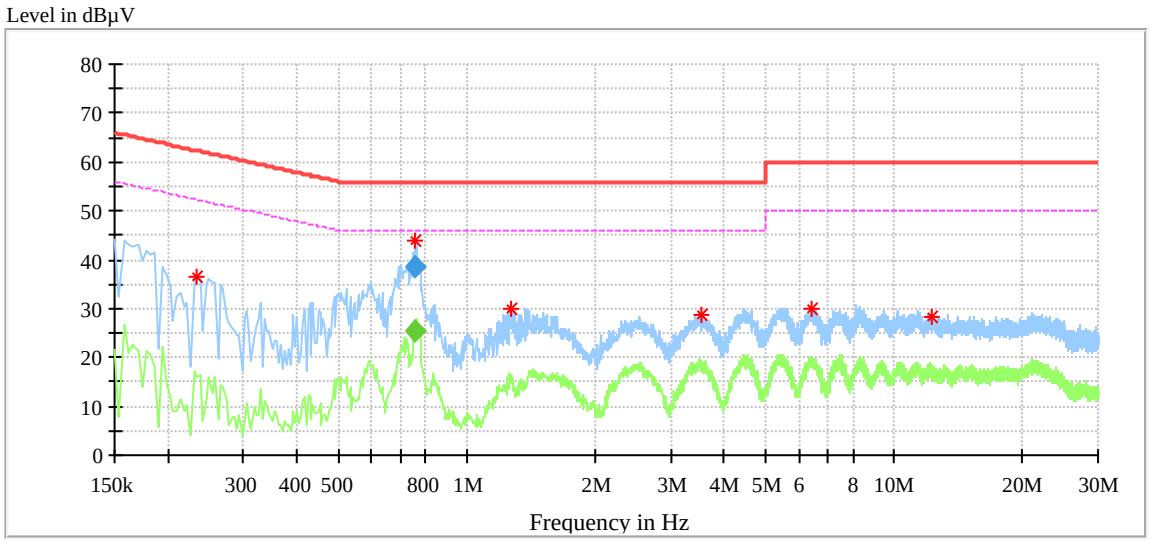
Conducted Emission

Product Type : 2.4G Bluetooth Communication Module
M/N : MDA6K21-2
Operating Condition : Transmit
Test Specification : Power Line, Neutral
Comment : AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.234000	36.71	---	62.31	25.60	N	9.63
0.753500	43.75	---	56.00	12.25	N	9.65
1.270000	30.15	---	56.00	25.85	N	9.66
3.542000	28.71	---	56.00	27.29	N	9.72
6.390000	30.14	---	60.00	29.86	N	9.80
12.270000	28.42	---	60.00	31.58	N	9.88
Frequency	QuasiPea	Average	Limit	Margin	Line	Corr.
0.753500	---	25.26	46.00	20.74	N	9.65
0.753500	38.46	---	56.00	17.54	N	9.65

Remark：
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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9.2 Conducted peak output power

Test Method

1. The RF output of EUT was connected to the power meter by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following test receiver settings:
   Span = approximately 5 times the 6dB bandwidth, centered on a hopping channel
   RBW > the 6dB bandwidth of the emission being measured, VBW≥3RBW,
   Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until all frequencies measured were complete.

Limits

According to §15.247 (b) (1), conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

Test result as below table

Frequency MHz	Data Rate bps	Conducted Peak Output Power dBm	Result
Bottom channel 2402MHz	LE 1M	4.68	Pass
Middle channel 2440MHz	LE 1M	4.72	Pass
Top channel 2480MHz	LE 1M	4.5	Pass

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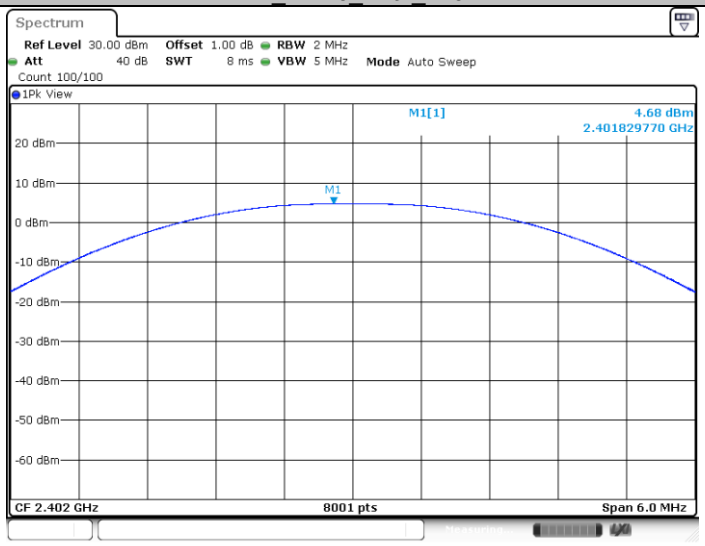
BLE_BT4.0_Ant1_2402



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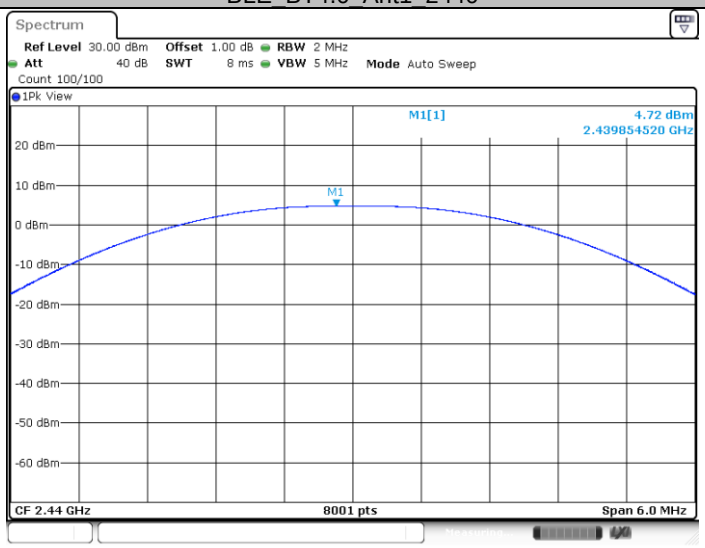

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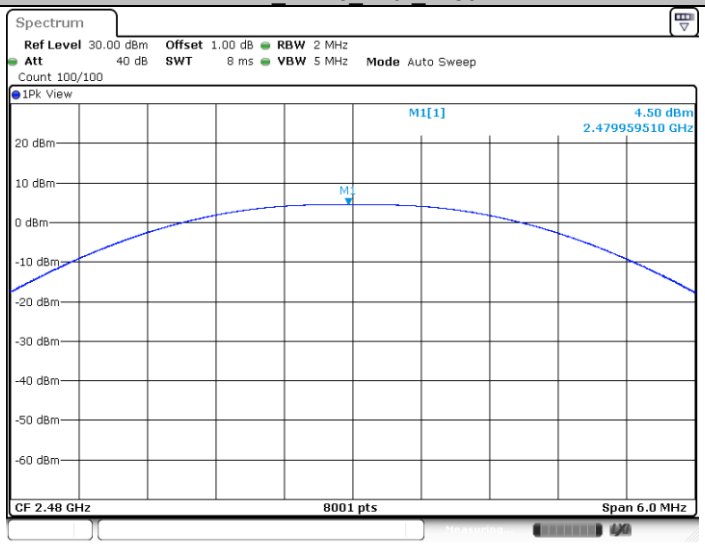

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9.3 Power spectral density

Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW≥3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm/3KHz]
≤8

Test result

Frequency MHz	Data Rate bps	Power spectral density dBm/3KHz	Result
Bottom channel 2402MHz	LE 1M	-9.89	Pass
Middle channel 2440MHz	LE 1M	-9.96	Pass
Top channel 2480MHz	LE 1M	-10.37	Pass

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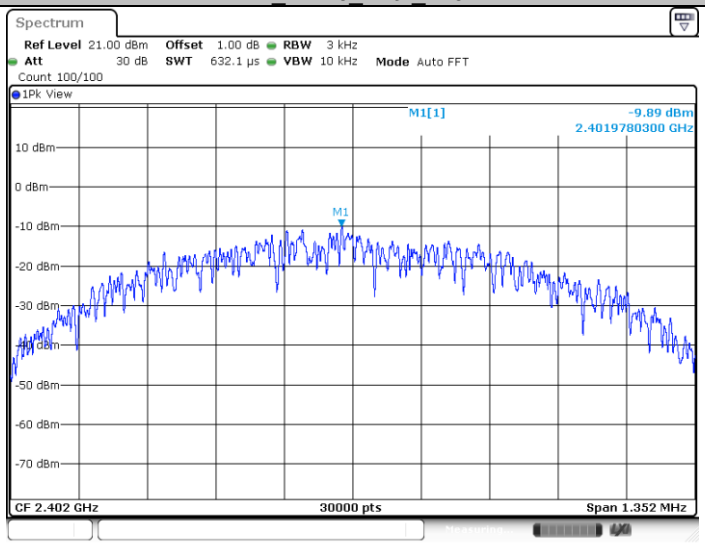
BLE_BT4.0_Ant1_2402



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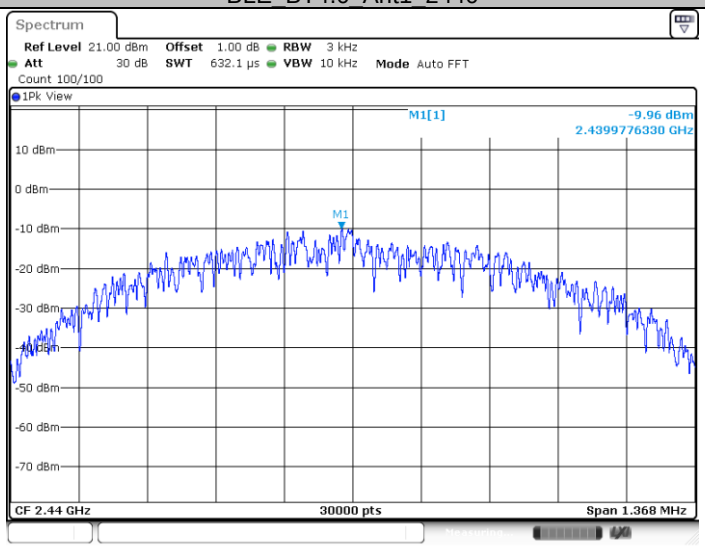

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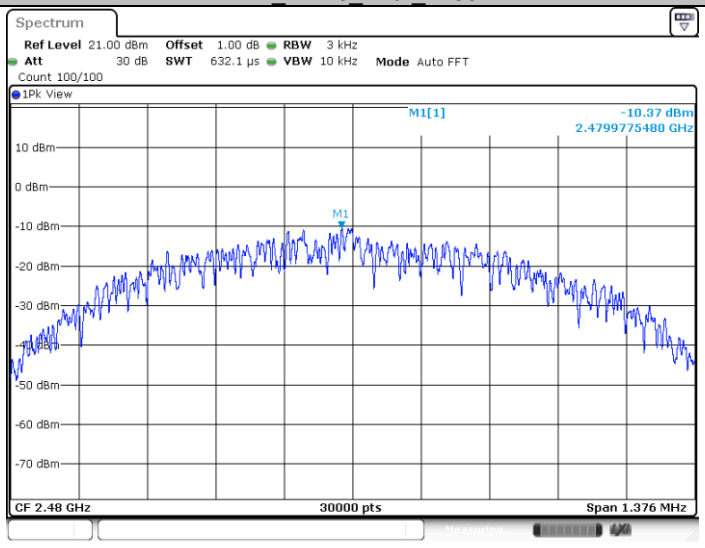

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9.4 6 dB Bandwidth and 99% Occupied Bandwidth

Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
   Span = approximately 5 times the 6dB bandwidth, centered on a hopping channel
   RBW =100KHz, VBW≥3RBW,
   Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.
5. Repeat above procedures until all frequencies measured were complete.

Limit

Limit [kHz]
≥500

Test result

Frequency MHz	Data Rate bps	6dB bandwidth MHz	99% bandwidth MHz	Result
Bottom channel 2402MHz	LE 1M	0.676	1.011	Pass
Middle channel 2440MHz	LE 1M	0.684	1.019	Pass
Top channel 2480MHz	LE 1M	0.688	1.019	Pass

6 dB Bandwidth

BLE_1M_2402

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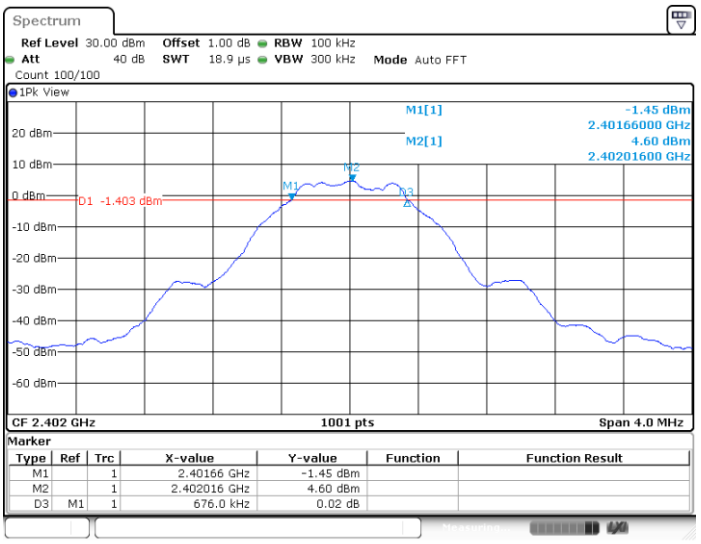

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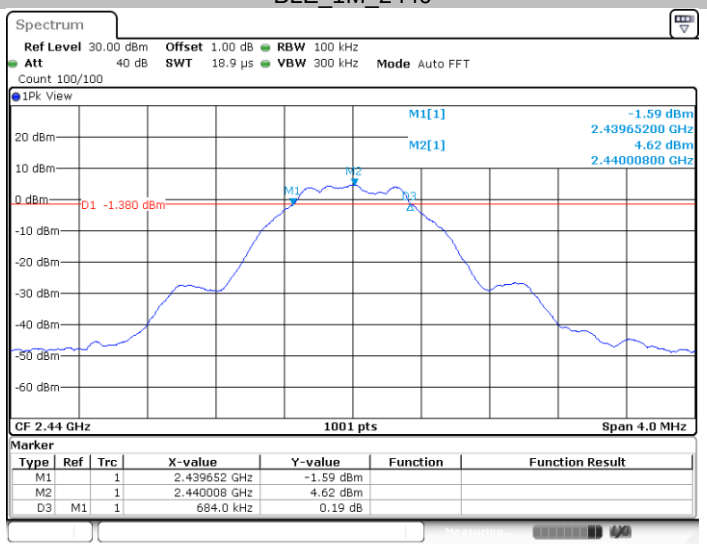

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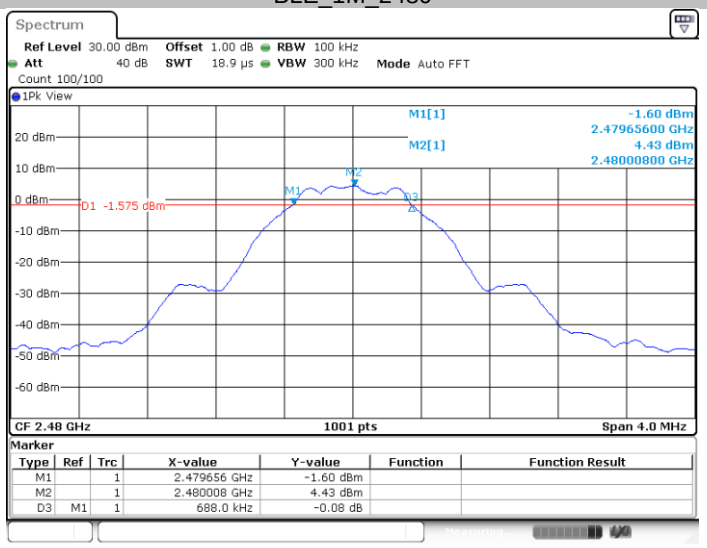
BLE_1M_2480



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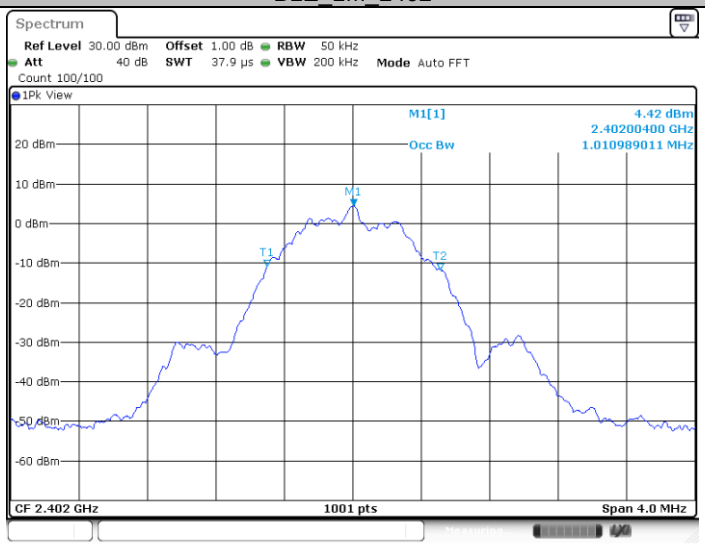
99% Bandwidth

BLE_1M_2402



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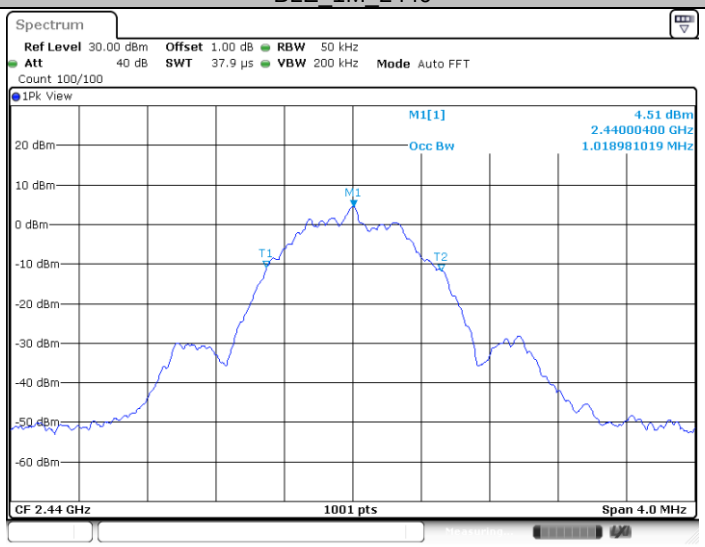

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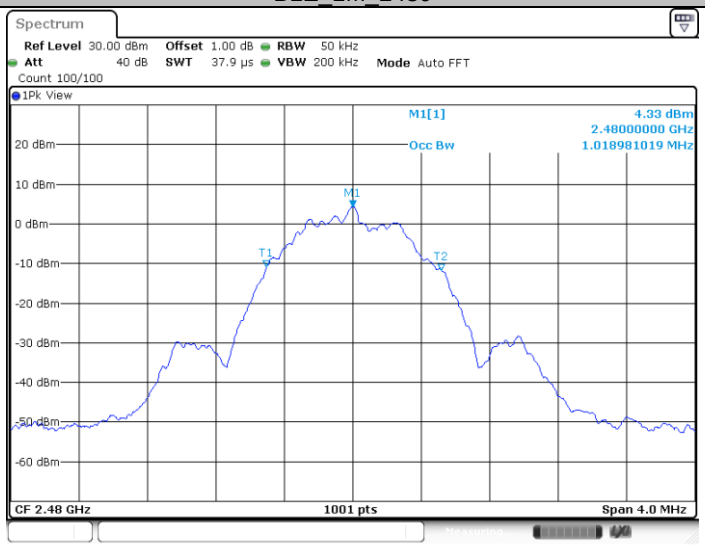

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9.5 Spurious RF conducted emissions

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. 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.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

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Spurious RF conducted emissions

TestMode	Antenna	Channel (MHz)	FreqRange (MHz)	RefLevel	Result (dBm)	Limit (dBm)	Verdict
BLE_1M	Ant1	2402	Reference	4.46 dBm	4.46	---	PASS
		2402	30~1000	30~1000 MHz	-68.34	<=-15.54	PASS
		2402	1000~26500	1000~26500 MHz	-45.63	<=-15.54	PASS
		2440	Reference	4.74 dBm	4.74	---	PASS
		2440	30~1000	30~1000 MHz	-68.47	<=-15.26	PASS
		2440	1000~26500	1000~26500 MHz	-46.47	<=-15.26	PASS
		2480	Reference	4.32 dBm	4.32	---	PASS
		2480	30~1000	30~1000 MHz	-67.83	<=-15.68	PASS
		2480	1000~26500	1000~26500 MHz	-45.08	<=-15.68	PASS

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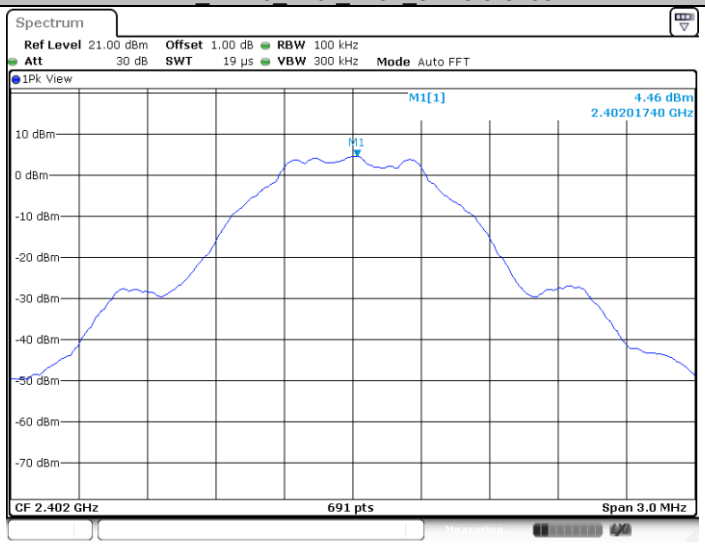
BLE_BT4.0_Ant1_2402_0~Reference



Date: 23.JUL.2021 14:09:08

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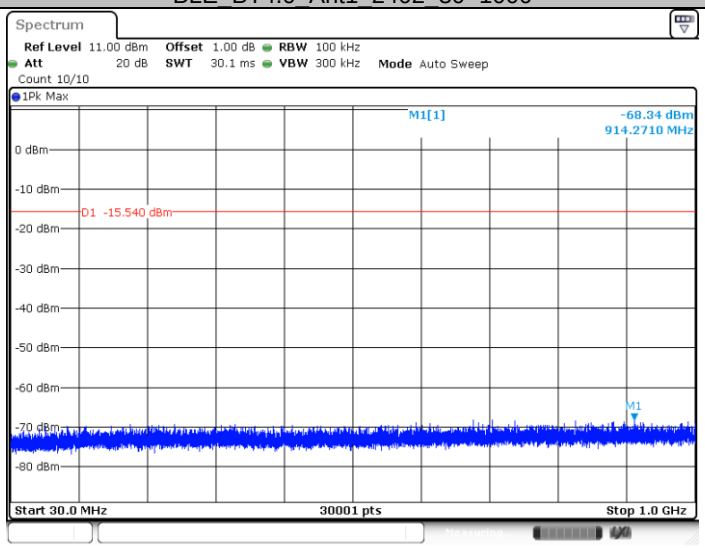

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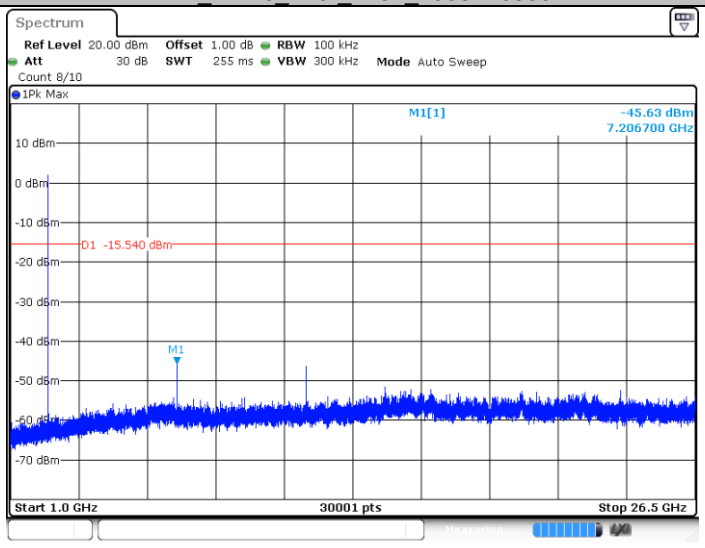
BLE_BT4.0_Ant1_2402_1000~26500



Date: 23.JUL.2021 14:09:22

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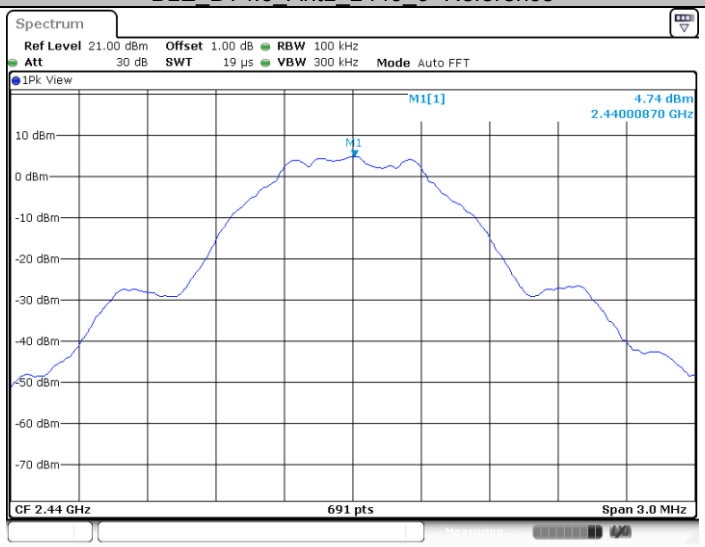
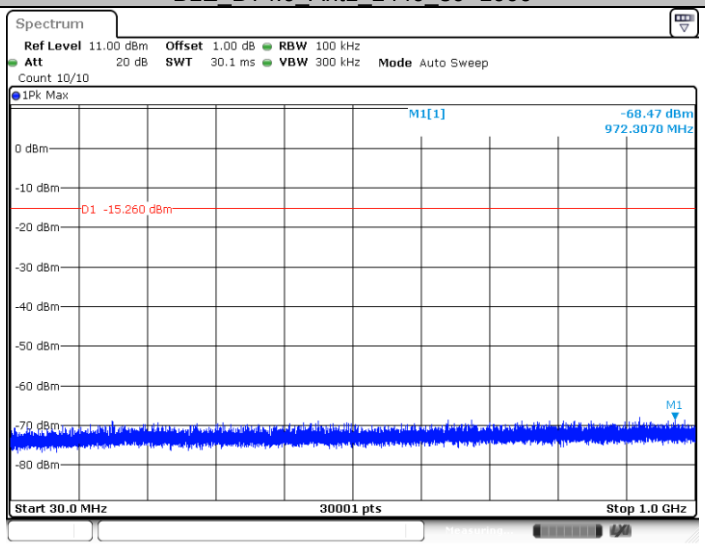
BLE_BT4.0_Ant1_2440_0~Reference



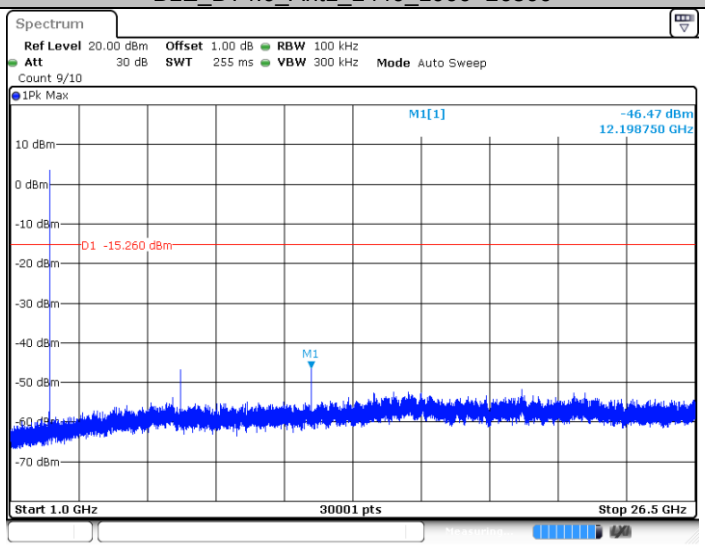
Date: 23.JUL.2021 14:11:44

BLE_BT4.0_Ant1_2440_30~1000



Date: 23.JUL.2021 14:11:50

BLE_BT4.0_Ant1_2440_1000~26500



Date: 23.JUL.2021 14:11:58

BLE_BT4.0_Ant1_2480_0~Reference

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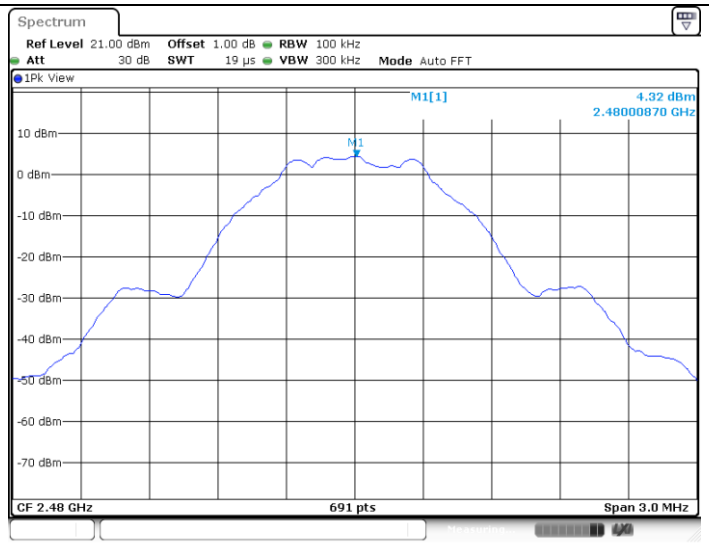
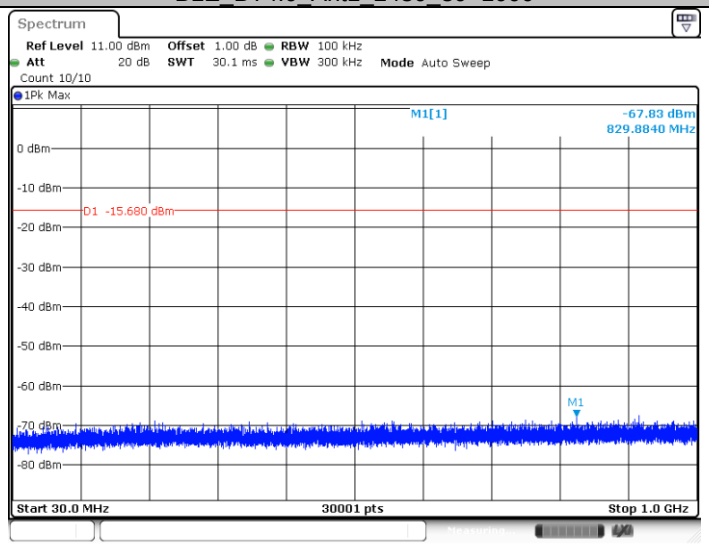
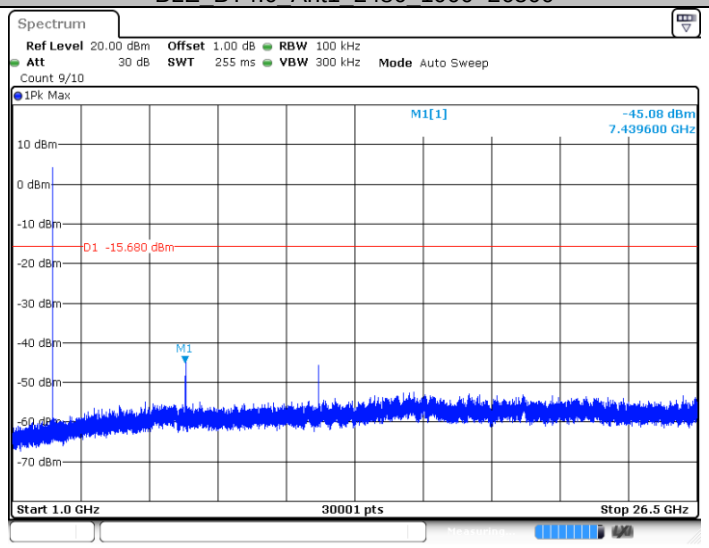


BLE_BT4.0_Ant1_2480_30~1000



BLE_BT4.0_Ant1_2480_1000~26500



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9.6 Band edge

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. 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.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency
6. Set to the maximum power setting and enable the EUT hopping mode, repeat the test.

Limit

Frequency Range MHz	Limit (dBm)
30-25000	-20

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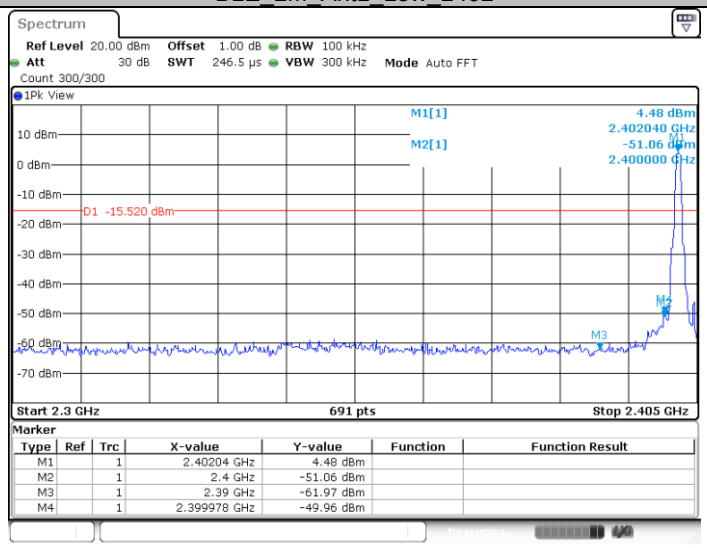
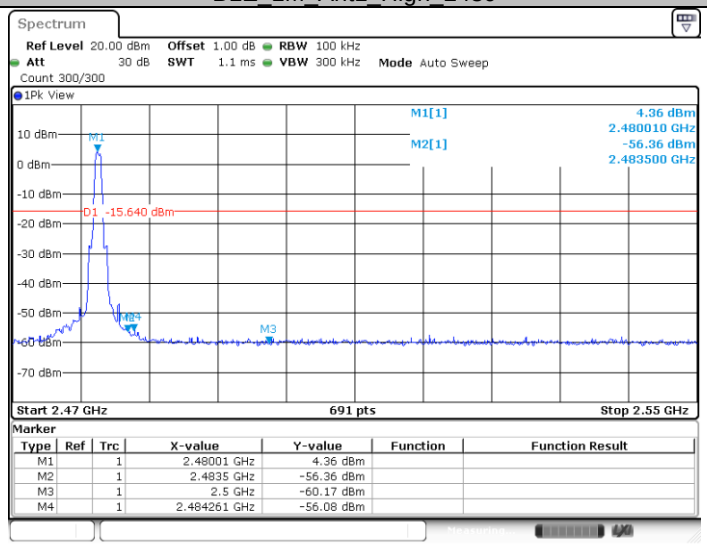
Band edge testing

Test Mode bps	Antenna	ChName	Channel (MHz)	RefLevel (dBm)	Result (dBm)	Limit (dBm)	Verdict
BLE_1M	Ant1	Low	2402	4.48	-49.96	<=-15.52	PASS
		High	2480	4.36	-56.08	<=-15.64	PASS

BLE_2M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



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9.7 Spurious radiated emissions for transmitter

Test Method

1: The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3: The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4: For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5: Use the following spectrum analyzer settings According to C63.10:
For Below 1GHz
Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 100 KHz to 120KHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 1MHz, VBW≥RBW for peak measurement ,Sweep = auto, Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz

a) RBW = 1 MHz.
b) VBW ≥[3 × RBW].
c) Detector = RMS (power averaging), if [span / (# of points in sweep)] \ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D,where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty

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cycle was 50%, then 3 dB shall be added to the measured emission levels.
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBµV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

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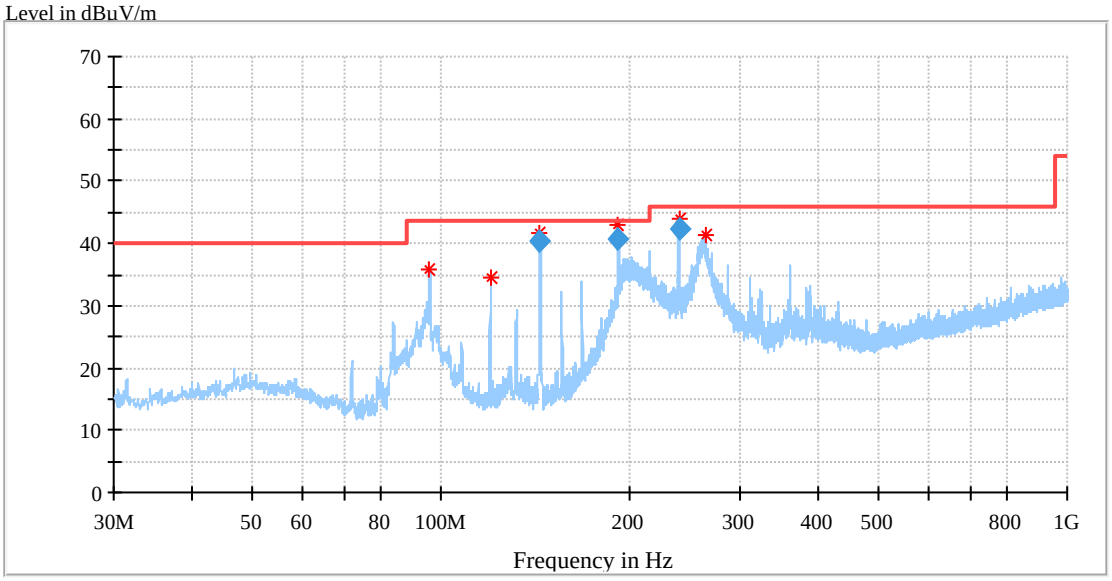
Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Transmitting spurious emission test result as below:
30MHz-1000MHz:



requency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
95.899375	35.96	43.50	7.54	200.0	H	0.0	12.30
119.967500	34.38	43.50	9.12	200.0	H	172.0	11.01
143.914375	41.70	43.50	1.80	200.0	H	339.0	9.76
191.880938	43.02	43.50	0.48	183.0	H	82.0	12.58
239.883750	43.82	46.00	2.18	100.0	H	321.0	14.15
263.891250	41.45	46.00	4.55	100.0	H	313.0	14.70
Frequency	**QuasiPeak**	**Limit**	**Margin**	**Height**	**Pol**	**Azimuth**	**Corr.**
143.914375	40.48	43.50	3.02	200.0	H	339.0	9.76
191.880938	40.69	43.50	2.81	183.0	H	82.0	12.58
239.883750	42.22	46.00	3.78	100.0	H	321.0	14.15

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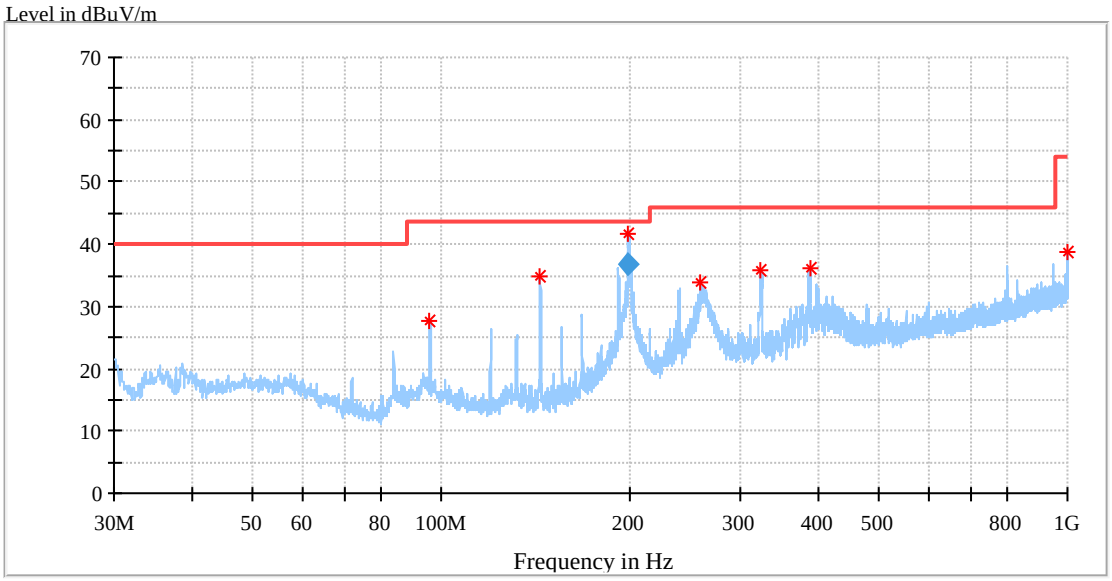

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
95.899375	27.79	43.50	15.71	200.0	V	104.0	12.30
143.853750	34.97	43.50	8.53	100.0	V	248.0	9.76
199.191875	41.71	43.50	1.79	238.0	V	94.0	13.24
259.768750	33.76	46.00	12.24	200.0	V	176.0	14.58
323.364375	35.71	46.00	10.29	200.0	V	192.0	16.21
389.142500	36.05	46.00	9.95	100.0	V	0.0	18.10
996.786875	38.66	54.00	15.34	100.0	V	359.0	27.78
Frequency	**QuasiPeak**	**Limit**	**Margin**	**Height**	**Pol**	**Azimuth**	**Corr.**
199.191875	36.65	43.50	6.85	238.0	V	94.0	13.25

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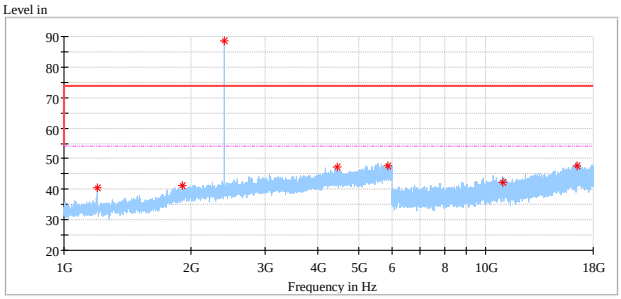
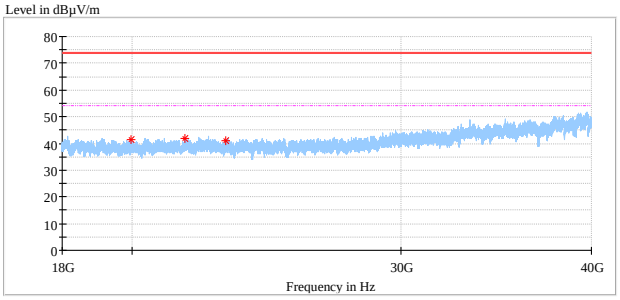
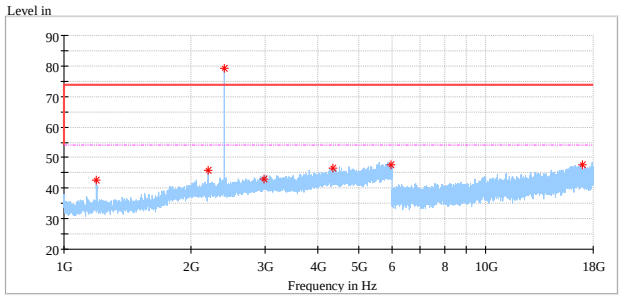
1GHz -40GHz:
BLE_1M-2402MHz
Horizontal:

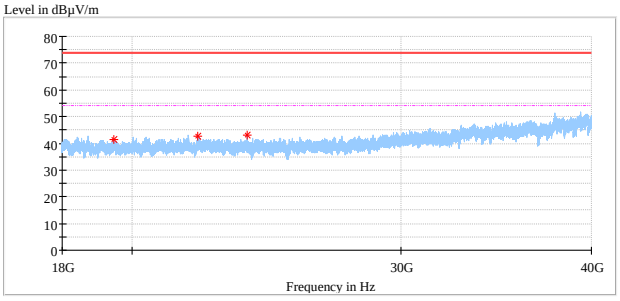




Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.500000	40.41	74.00	33.59	150.0	H	255.0	-9.80
1912.000000	41.29	74.00	32.71	150.0	H	192.0	-4.75
2402.000000	88.53	74.00	-14.53	150.0	H	9.0	-2.99
4437.500000	47.19	74.00	26.81	150.0	H	41.0	1.84
5848.500000	47.67	74.00	26.33	150.0	H	264.0	4.88
10978.000000	42.14	74.00	31.86	150.0	H	213.0	10.54
16499.000000	47.65	74.00	26.35	150.0	H	330.0	17.58
19972.437500	41.57	74.00	32.43	150.0	H	281.0	-1.36
21663.687500	42.00	74.00	32.00	150.0	H	208.0	0.43
23025.625000	41.06	74.00	32.94	150.0	H	0.0	1.05

Vertical





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1195.000000	42.54	74.00	31.46	150.0	V	213.0	-9.81
2197.000000	45.77	74.00	28.23	150.0	V	231.0	-3.66
2402.500000	79.06	74.00	-5.06	150.0	V	196.0	-2.99
2986.000000	43.11	74.00	30.89	150.0	V	204.0	-1.11
4345.500000	46.71	74.00	27.29	150.0	V	50.0	1.74
5948.500000	47.51	74.00	26.49	150.0	V	346.0	4.87
16942.000000	47.70	74.00	26.30	150.0	V	134.0	18.37
19104.125000	42.60	74.00	31.40	150.0	V	263.0	-1.78
22089.250000	42.57	74.00	31.43	150.0	V	60.0	0.64
24309.187500	41.37	74.00	32.63	150.0	V	353.0	1.12

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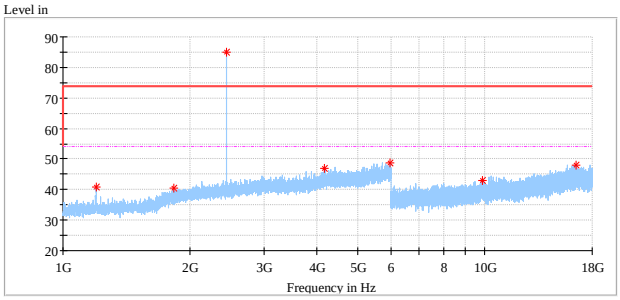
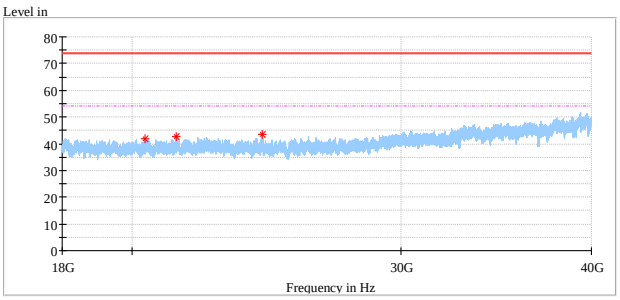
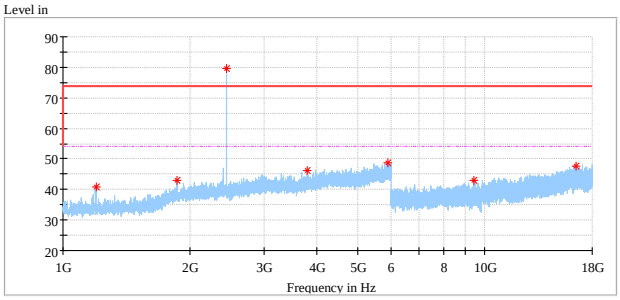
BLE_1M-2440MHz:
Horizontal:

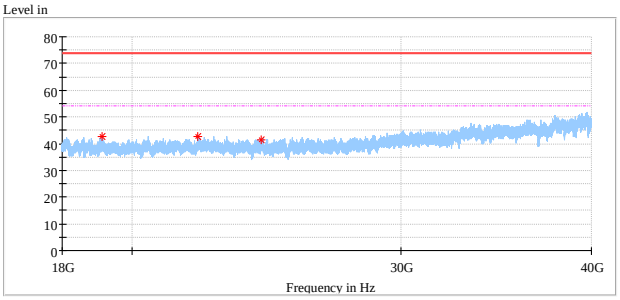




Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.000000	40.81	74.00	33.19	150.0	H	159.0	-9.81
1829.000000	40.58	74.00	33.42	150.0	H	248.0	-5.48
2440.000000	84.87	74.00	-10.87	150.0	H	356.0	-2.90
4173.500000	47.04	74.00	26.96	150.0	H	0.0	1.46
5960.500000	48.57	74.00	25.43	150.0	H	2.0	4.91
9910.500000	43.00	74.00	31.00	150.0	H	310.0	10.53
16508.000000	47.85	74.00	26.15	150.0	H	336.0	17.64
20387.687500	41.93	74.00	32.07	150.0	H	179.0	-0.69
21382.500000	42.82	74.00	31.18	150.0	H	166.0	0.27
24330.500000	43.53	74.00	30.47	150.0	H	192.0	1.15

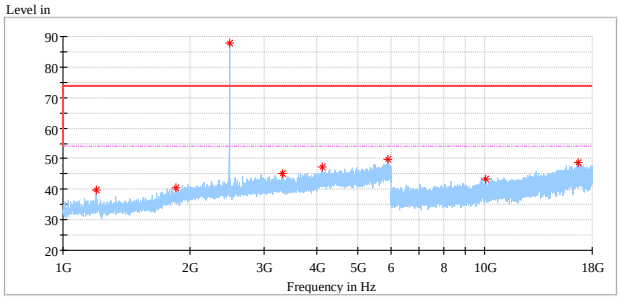
Vertical

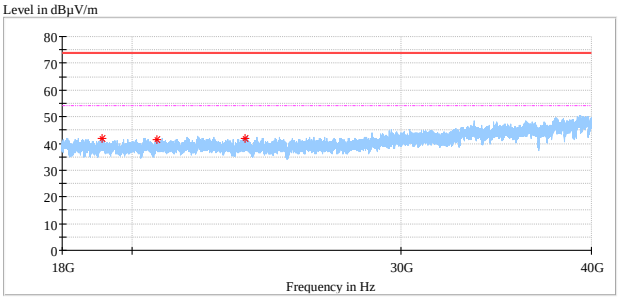




Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.500000	40.82	74.00	33.18	150.0	V	203.0	-9.81
1864.000000	42.98	74.00	31.02	150.0	V	221.0	-5.25
2440.500000	79.50	74.00	-5.50	150.0	V	114.0	-2.90
3800.500000	46.07	74.00	27.93	150.0	V	69.0	0.11
5907.000000	48.68	74.00	25.32	150.0	V	337.0	4.87
9427.500000	43.00	74.00	31.00	150.0	V	116.0	9.20
16499.500000	47.52	74.00	26.48	150.0	V	227.0	17.58
19104.125000	42.60	74.00	31.40	150.0	V	263.0	-1.78
22089.250000	42.57	74.00	31.43	150.0	V	60.0	0.64
24309.187500	41.37	74.00	32.63	150.0	V	353.0	1.12

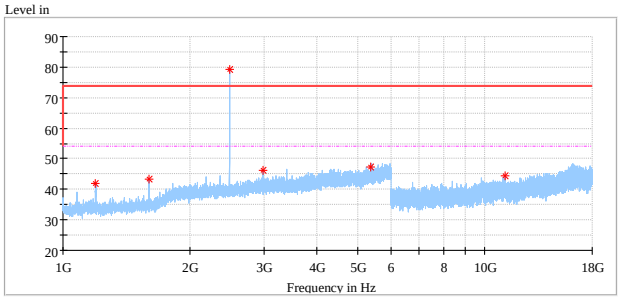
BLE_1M-2480MHz
Horizontal:

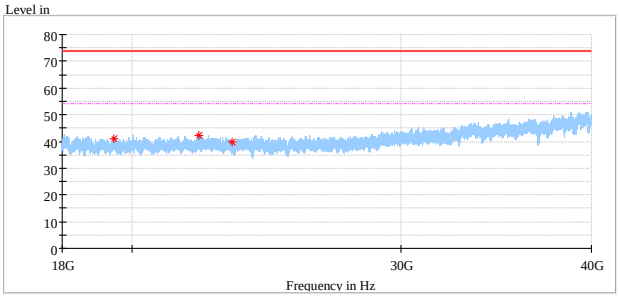




Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.500000	39.77	74.00	34.23	150.0	H	246.0	-9.82
1858.500000	40.31	74.00	33.69	150.0	H	50.0	-5.28
2480.500000	87.94	74.00	-13.94	150.0	H	0.0	-2.69
3319.500000	45.11	74.00	28.89	150.0	H	94.0	-0.84
4129.000000	47.15	74.00	26.85	150.0	H	15.0	1.29
5907.000000	49.66	74.00	24.34	150.0	H	192.0	4.87
10033.500000	43.43	74.00	30.57	150.0	H	185.0	9.84
16642.000000	48.58	74.00	25.42	150.0	H	49.0	17.87
19112.375000	41.73	74.00	32.27	150.0	H	175.0	-1.78
20749.312500	41.39	74.00	32.61	150.0	H	81.0	-0.28
23728.937500	42.04	74.00	31.96	150.0	H	81.0	0.90

Vertical





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.000000	41.73	74.00	32.27	150.0	V	212.0	-9.82
1597.500000	43.28	74.00	30.72	150.0	V	221.0	-7.42
2480.000000	79.21	74.00	-5.21	150.0	V	194.0	-2.69
2981.500000	46.25	74.00	27.75	150.0	V	61.0	-1.12
5373.500000	47.42	74.00	26.58	150.0	V	185.0	3.60
11158.500000	44.44	74.00	29.56	150.0	V	172.0	10.47
19449.250000	41.00	74.00	33.00	150.0	V	166.0	-1.47
22135.312500	42.14	74.00	31.86	150.0	V	113.0	0.72
23267.625000	39.94	74.00	34.06	150.0	V	313.0	0.59

Remark:

(1) Corrected Amplitude = Read level + Corrector factor
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
(The Reading Level is recorded by software which is not shown in the sheet)

10 Test Equipment List

List of Test Instruments

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2022-6-4
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	284	2022-2-2
Wave Guide Antenna	ETS	3117	00218954	2022-5-24
Pre-amplifier	Rohde & Schwarz	SCU 18F	100745	2021-10-25
Pre-amplifier	Rohde & Schwarz	SCU 08F2	08400018	2021-10-25
Attenuator	Agilent	8491A	MY39264334	2022-10-28
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	12827	2022-7-21
3m Semi-anechoic chamber	TDK	9X6X6	----	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	102590	2022-6-4
LISN	Rohde & Schwarz	ENV216	102472	2022-6-5
Test software	Rohde & Schwarz	EMC32	Version10.35.02	N/A

Conducted RF Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2022-6-3
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2022-6-3
Power Splitter	Weinschel	1580	SC319	2022-6-3
10dB Attenuator	Weinschel	4M-10	43152	2022-6-3
Test software	Tonscend	System for BT/WIFI	Version 2.6.77.0518	N/A

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11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 30MHz-1000MHz	Horizontal: 4.70dB; Vertical: 4.67dB;
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 1000MHz-18000MHz	Horizontal: 4.65dB; Vertical: 4.63dB;
Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz	Horizontal: 4.89dB; Vertical: 4.87dB;
Uncertainty for Conducted Emission in shielding room (68-4-90-19-004) 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.21dB
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.16dB Frequency test involved: 0.6×10^{-7} or 1%

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