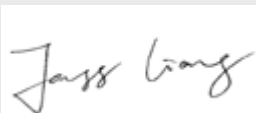
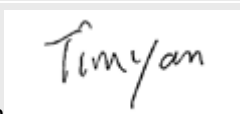


Test report No: 4961425.54

TEST REPORT

Radio Spectrum Matters (RF)

Identification of item tested	Permanent Outdoor Lights H1
Trademark	
Model and /or type reference	LB-L15E, LB-L16E, LB-L17E, LB-L15D, LB-L16D, LB-L17D
FCC ID	2AKIT-LBL17
IC	22635-LBL17
Features	LED driver: XY48SR-240200VQ-UP Input: 100-120 Vac, 50/60 Hz, 1.2A Max ; Output: 24 Vdc, 2.0A
Applicant's name / address	Lumi United Technology Co., Ltd. B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China.
Test method requested, standard	FCC CFR Title 47 Part15 Subpart C Section 15.247; KDB558074 D01v05r02; RSS-Gen Issue 5; RSS-247 Issue 4
Verdict Summary	COMPLIANCE
Tested by (name & signature)	 Jazz Liang
Approved by (name & signature)	 Tim Yan
Date of issue	2026-08-14
Report template No	TRF EMC 2017-06- other

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GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not tested	N/T

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.			
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.			
Decimal separator used in this report	☒	Comma (,)	☐ Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
U_N	: Nominal voltage
Tx	: Transmitter
Rx	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
4961425.54	2026-08-14	First release.

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item	Permanent Outdoor Lights H1
Trademark.....	
Model / Type number	LB-L15E, LB-L16E, LB-L17E, LB-L15D, LB-L16D, LB-L17D
FCC ID	2AKIT-LBL17
IC	22635-LBL17
Hardware	N/A
Software	N/A
Firmware	N/A
Ratings	LED driver: XY48SR-240200VQ-UP Input: 100-120 Vac, 50/60 Hz, 1.2A Max ; Output: 24 Vdc, 2.0A
Manufacturer	Same as Applicant
Factory1	Dongguan ZOYO Electronics Technology Co., LTD. Building 1, No. 6, Songshan Lake Section, Kehai Road, Songshan Lake Hi-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China.
Factory2	SILVER AGE VIETNAM TECHNOLOGY COMPANY LIMITED. Lot A4, GiaLe Industrial Zone, Nam Dong Hung Commune, Hung Yen province, Vietnam.

Rated power supply :	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 100-120 V, 50/60 Hz	☒	☐	☐	☒	☐
	☐	AC:	☐	☐	☐	☐	☐
	☐	DC:					
	☐	Battery for remote:					
Mounting position :	☐	Table top equipment					
	☒	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					

According to customer description, the characteristics of wireless module:

Operating frequency range(s) :	BLE: 2402 MHz – 2480 MHz Thread/Zigbee: 2405 MHz – 2480 MHz
Type of Modulation :	BLE: GFSK Thread/Zigbee: O-QPSK
Antenna type :	FPC-Antenna
Operating Temperature Range:	-20– 40 °C
Antenna gain :	1 dBi
Adaptive/ non-adaptive equipment	Adaptive

Antenna List

Antenna Model No.		N/A	
Antenna Manufacturer		N/A	
Antenna Delivery		☒ 1*TX+1*RX	☐ 2*TX+2*RX ☐ 3*TX+3*RX
Antenna Technology		☒ SISO ☐ MIMO ☐ Basic methodology ☐ Sectorized antenna systems ☐ Cross-polarized antennas ☐ Unequal antenna gains, with equal transmit powers ☐ Spatial Multiplexing ☐ Cyclic Delay Diversity (CDD)	
Antenna Type		FPC-antenna	
Antenna Gain			
Antenna Technology		Ant Gain(eth1) (dBi)	
☒	SISO	☒ Ant1	1
		☐ Ant2	-

The radio module operating channels are---

BLE:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454	-	-
13	2428	27	2456	-	-

Zigbee/Thread:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

Intended use of the Equipment Under Test (EUT)

The apparatus as supplied for the test is Permanent Outdoor Lights H1 which intended for residential use, the product contains electronic control circuitry and without earth connection.

The products covered in this report are Class III LED lighting chains for indoor or outdoor use and equipped with approved SELV LED driver.

All Lighting chains have similar construction, the main differences are quantity of LED bulbs, length, power and LED driver.

Model Number	Sales channel	String length	LED driver	National deviations considered
LB-L15E	Online	50ft	XY48SR-240200VQ-UP	US
LB-L15D	Offline			
LB-L16E	Online	100ft		
LB-L16D	Offline			
LB-L17E	Online	150ft		
LB-L17D	Offline			

Models suffix with D and E are identical accordingly except for the sales channel.

After technical evaluation, model LB-L17D was chosen for full testing, model LB-L15D was chosen to repeat conducted emission, radiated emission(30M-1GHz) test for compliance verification.

model LB-L17D with alternative control PCB was chosen to repeat conducted emission, radiated emission(30M-1GHz) test for compliance verification.

Copy of marking plate:

Refer to document label.

1.2 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China FCC Designation Number: CN1324; ISED CAB identifier: CN0130
Date of receipt of test item	2026-07-21
Date (s) of performance of tests	2026-07-21 to 2026-08-13
Test sample	Normal sample: LB-L17D(Lab no.4961425-01), LB-L15D(Lab no.4961425-04), RF conducted sample: LB-L17D(Lab no. 4961425-02), RF radiated sample: LB-L17D(Lab no. 4961425-03)

1.3 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for methods	
		Conducted	Radiated
1	Transmitting	☒	☒
2	On mode (lighting in 4000K/R/G/B Supply power by AC/DC adaptor)	☒	☒
3			
4			
Supplemental information: ---			

2.2 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Laptop	Latitude 5488	DELL	DEKRA
Software	QCOM_V1.0	-	Client
Supplemental information: ---			

2.3 Test Configuration / Block diagram used for tests

Refer to Annex 3.

2.4 Measurement procedure

The EUT was controlled by a serial PCB(Serial port tool) which provided by manufacturer which connected to laptop through the com port. After connected, run the software "QCOM_V1.0" supplied by manufacturer to control the EUT work in required test mode as below table.

RF Mode	Set_channel(MHz)	Set_power in software
BLE_1M/2M	2402	80
	2440	80
	2480	80
Thread/Zigbee	2405	80
	2440	80
	2480	80

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2022	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
KDB 558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
RSS-Gen Issue 5 Amendment 1	2019	General Requirements for Compliance of Radio Apparatus
RSS-247 Issue 4	2025	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
ANSI C63.10	2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

FCC measurement			
Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	FCC 15.207	PASS	---
Emissions in non-restricted frequency bands	FCC 15.247(d), FCC 15.209	PASS	---
Emissions in restricted frequency bands	FCC 15.247(d)	PASS	---
Duty cycle	ANSI C63.10:2020	PASS	---
Band Edge	FCC 15.247(d)	PASS	---
Fundamental emission output power	FCC 15.247(b)	PASS	---
DTS Bandwidth	FCC 15.247(a)(2)	PASS	---
Power Spectral Density	FCC 15.247(e)	PASS	---
Antenna Requirement	FCC 15.203	PASS	---
Supplementary information: ---			

ISED measurement			
Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	RSS-Gen Issue 5 Section 8.8	PASS	---
Emissions in restricted frequency bands	RSS-Gen Issue 5 Section 8.9&8.10	PASS	---
Emissions in non-restricted frequency bands	RSS-247 Issue 4 Section 5.5 RSS-Gen Issue 5 Section 8.9	PASS	---
Duty cycle	ANSI C63.10:2020	PASS	---
Band Edge	RSS-Gen Issue 5 Section 8.10	PASS	---
Fundamental emission output power	RSS-247 Issue 4 Section 5.4(d)	PASS	---
DTS Bandwidth	RSS-Gen Issue 5 Section 6.7 RSS-247 Issue 4 section 5.2 a)	PASS	---
Power Spectral Density	RSS-247 Issue 4 Section 5.2(b)	PASS	---
Antenna Requirement	RSS-Gen Issue 5 Section 6.8	PASS	---
Supplementary information: ---			

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

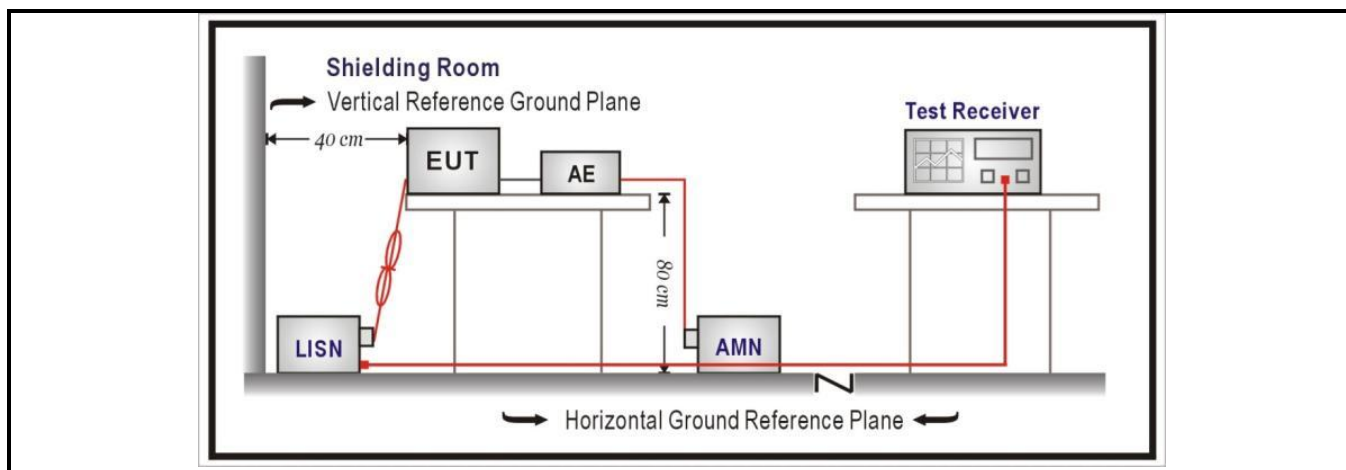
4 TRANSMITTER TEST RESULTS

4.1 AC Power Line Conducted Emission	VERDICT: PASS
---	----------------------

Limits

FCC Part 15 Subpart C Paragraph 15.207 RSS-Gen Issue 5 Section 8.8				
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾]	Limit: AV [dB(μV) ¹⁾]	IF BW	Detector(s)
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾	9 KHz	QP, AV
0,50 - 5,0	56	46	9 KHz	QP, AV
5,0 - 30	60	50	9 KHz	QP, AV
¹⁾ At the transition frequency, the lower limit applies.				
²⁾ The limit decreases linearly with the logarithm of the frequency.				

Test Configuration



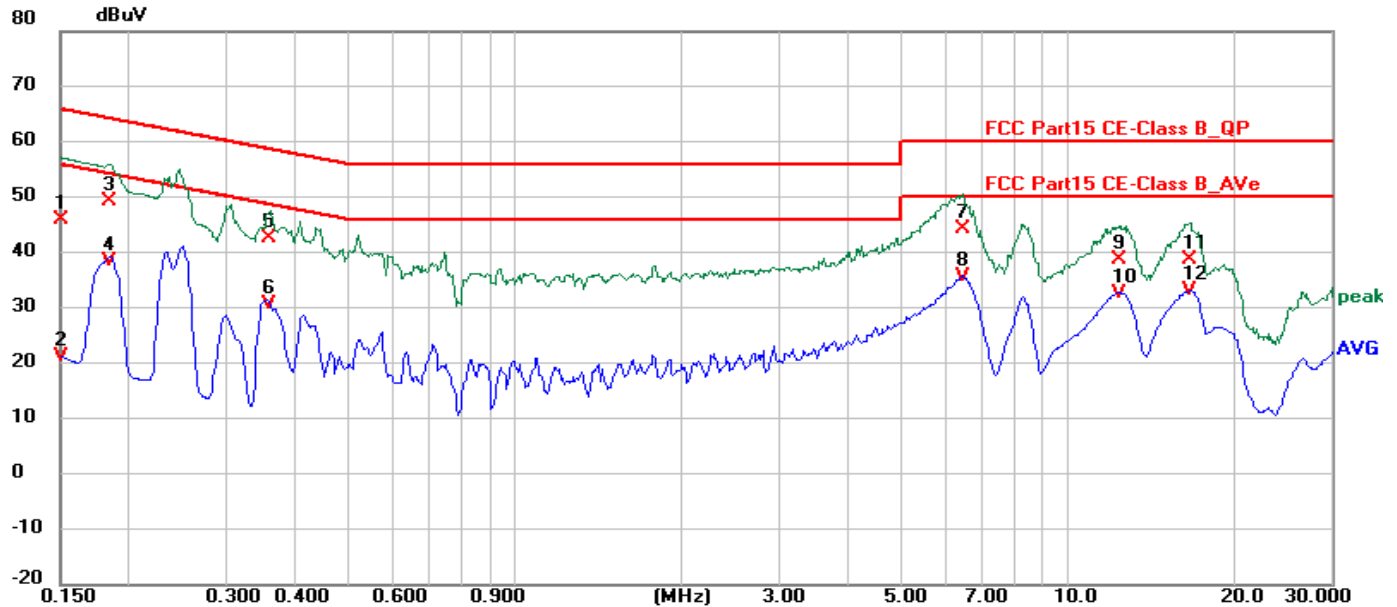
Performed measurements

Port under test		Terminal							
☒	AC mains input power	☐	N	☒	L1	☐	L2	☐	L3
☐	DC input power	☐	Positive (+)			☐	Negative (-)		
Test method applied		☒	Artificial mains network						
		☐	Voltage probe						
Test setup		☒	Table top	☐	Artificial hand applied				
		☐	Floor standing	☐	Other:				
		Refer to the Annex 2 for test setup photo(s).							
Operating mode(s) used		Mode 2							
Envirment condition (temperature; humidiry)		23,0 °C; 45,0 %							
Remark		---							

Model	LB-L17D
Operation Mode (max power is worst case)	Mode 2 (BLE mode)
Test voltage	120 Vac

Results

Live



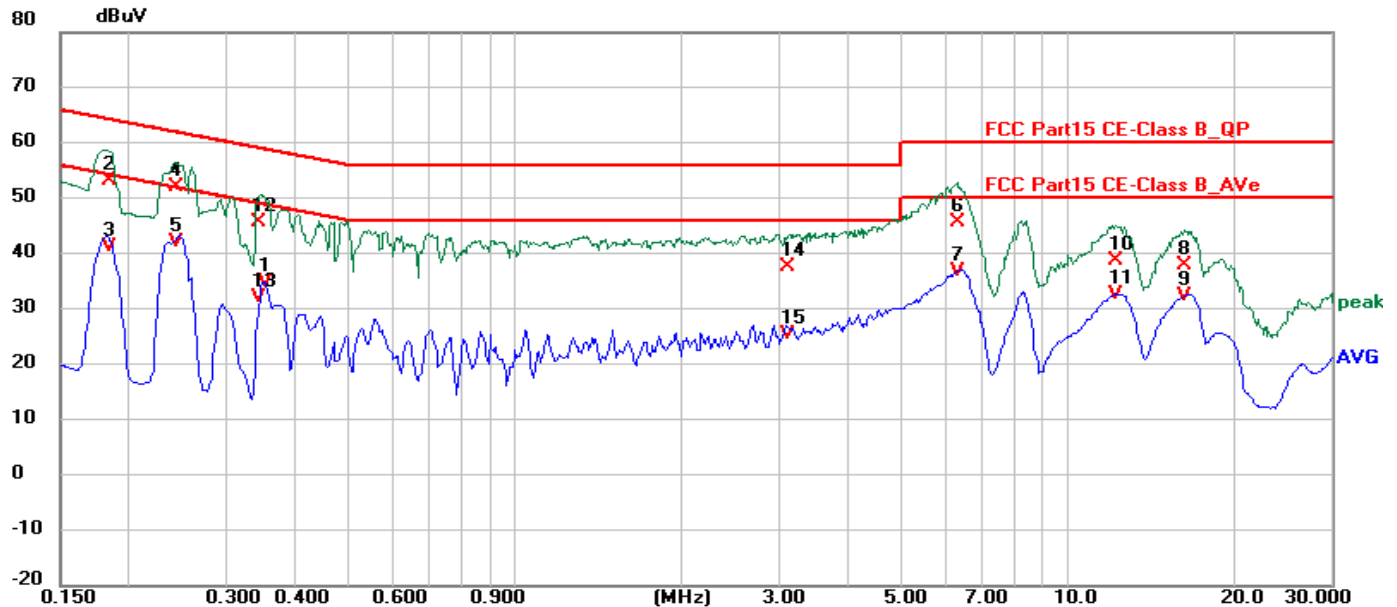
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	36.31	9.58	45.89	66.00	-20.11	QP	Pass
2	0.1500	11.72	9.58	21.30	56.00	-34.70	AVG	Pass
3	0.1837	39.84	9.57	49.41	64.32	-14.91	QP	Pass
4	0.1837	28.77	9.57	38.34	54.32	-15.98	AVG	Pass
5	0.3593	33.20	9.56	42.76	58.74	-15.98	QP	Pass
6	0.3593	21.03	9.56	30.59	48.74	-18.15	AVG	Pass
7	6.4432	34.57	9.62	44.19	60.00	-15.81	QP	Pass
8 *	6.4432	26.07	9.62	35.69	50.00	-14.31	AVG	Pass
9	12.3697	28.91	9.73	38.64	60.00	-21.36	QP	Pass
10	12.3697	22.81	9.73	32.54	50.00	-17.46	AVG	Pass
11	16.5502	29.14	9.74	38.88	60.00	-21.12	QP	Pass
12	16.5502	23.35	9.74	33.09	50.00	-16.91	AVG	Pass

Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.3502	25.36	9.55	34.91	48.96	-14.05	AVG	Pass
2	0.1837	43.69	9.56	53.25	64.32	-11.07	QP	Pass
3	0.1837	31.75	9.56	41.31	54.32	-13.01	AVG	Pass
4	0.2422	42.40	9.56	51.96	62.02	-10.06	QP	Pass
5 *	0.2422	32.59	9.56	42.15	52.02	-9.87	AVG	Pass
6	6.2970	36.09	9.62	45.71	60.00	-14.29	QP	Pass
7	6.2970	27.08	9.62	36.70	50.00	-13.30	AVG	Pass
8	16.2060	28.21	9.84	38.05	60.00	-21.95	QP	Pass
9	16.2060	22.47	9.84	32.31	50.00	-17.69	AVG	Pass
10	12.1717	28.84	9.78	38.62	60.00	-21.38	QP	Pass
11	12.1717	22.77	9.78	32.55	50.00	-17.45	AVG	Pass
12	0.3435	36.25	9.55	45.80	59.12	-13.32	QP	Pass
13	0.3435	22.53	9.55	32.08	49.12	-17.04	AVG	Pass
14	3.1088	27.94	9.58	37.52	56.00	-18.48	QP	Pass
15	3.1088	15.93	9.58	25.51	46.00	-20.49	AVG	Pass

Remarks:

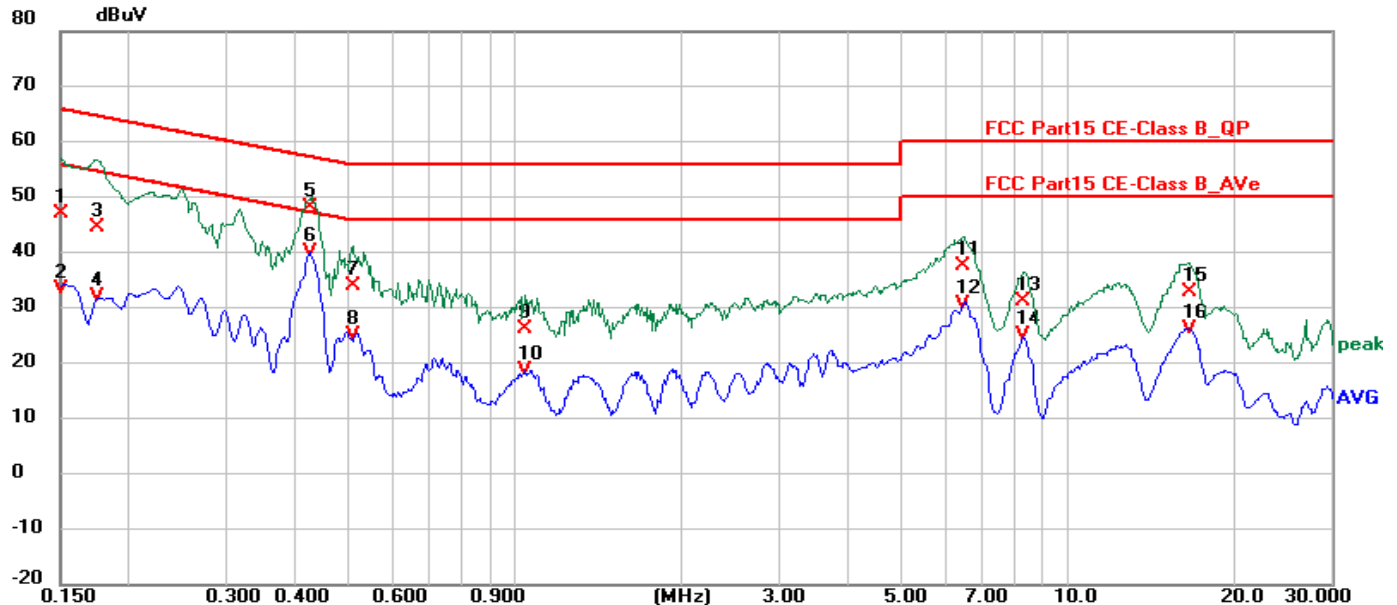
- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Model	LB-L17D
Operation Mode (max power is worst case)	Mode 2 (Zigbee/Thread mode)
Test voltage	120 Vac

Results

Live



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	37.56	9.58	47.14	66.00	-18.86	QP	Pass
2	0.1500	24.03	9.58	33.61	56.00	-22.39	AVG	Pass
3	0.1747	34.90	9.57	44.47	64.73	-20.26	QP	Pass
4	0.1747	22.63	9.57	32.20	54.73	-22.53	AVG	Pass
5	0.4268	38.59	9.56	48.15	57.31	-9.16	QP	Pass
6 *	0.4268	30.49	9.56	40.05	47.31	-7.26	AVG	Pass
7	0.5078	24.44	9.57	34.01	56.00	-21.99	QP	Pass
8	0.5078	15.52	9.57	25.09	46.00	-20.91	AVG	Pass
9	1.0388	16.58	9.57	26.15	56.00	-29.85	QP	Pass
10	1.0388	9.08	9.57	18.65	46.00	-27.35	AVG	Pass
11	6.4478	27.99	9.62	37.61	60.00	-22.39	QP	Pass
12	6.4478	21.11	9.62	30.73	50.00	-19.27	AVG	Pass
13	8.3085	21.63	9.66	31.29	60.00	-28.71	QP	Pass
14	8.3085	15.38	9.66	25.04	50.00	-24.96	AVG	Pass
15	16.5682	23.07	9.74	32.81	60.00	-27.19	QP	Pass
16	16.5682	16.53	9.74	26.27	50.00	-23.73	AVG	Pass

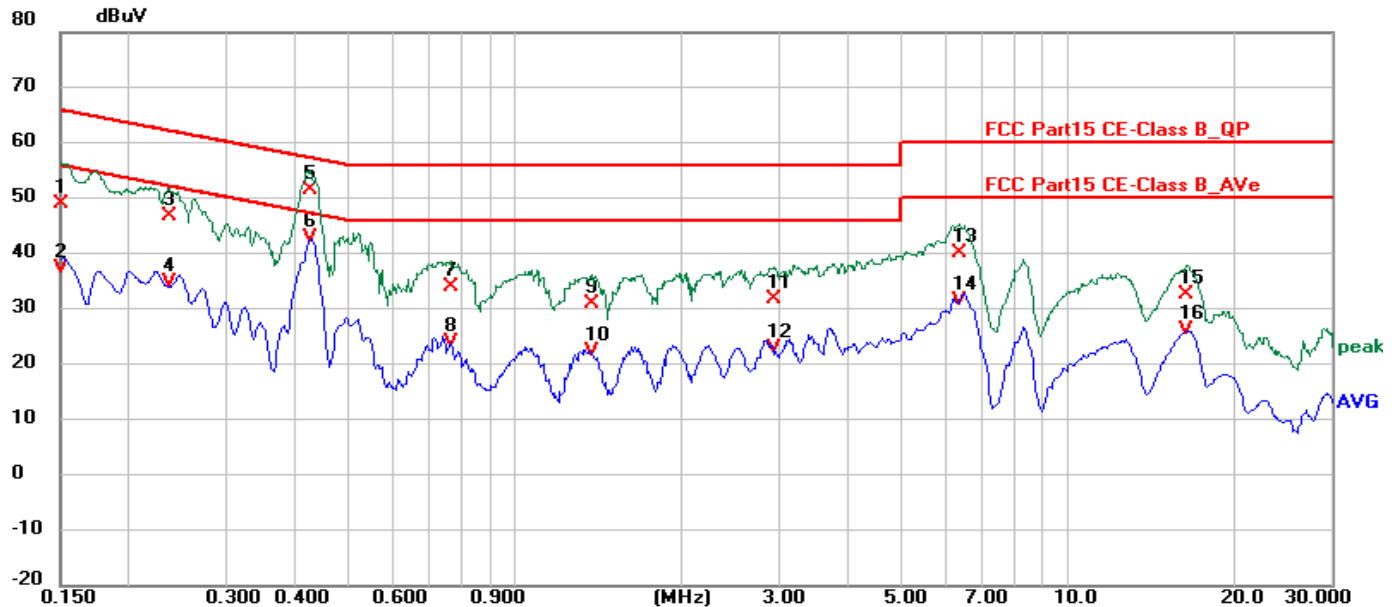
Note: Level=Reading+Factor. Margin=Level-Limit.

1) *:Maximum data x:Over limit !:over margin

2) Delta = Level - Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	39.58	9.56	49.14	66.00	-16.86	QP	Pass
2	0.1500	27.93	9.56	37.49	56.00	-18.51	AVG	Pass
3	0.2355	37.19	9.56	46.75	62.25	-15.50	QP	Pass
4	0.2355	25.23	9.56	34.79	52.25	-17.46	AVG	Pass
5	0.4222	42.01	9.56	51.57	57.40	-5.83	QP	Pass
6 *	0.4222	33.48	9.56	43.04	47.40	-4.36	AVG	Pass
7	0.7597	24.36	9.56	33.92	56.00	-22.08	QP	Pass
8	0.7597	14.58	9.56	24.14	46.00	-21.86	AVG	Pass
9	1.3695	21.44	9.56	31.00	56.00	-25.00	QP	Pass
10	1.3695	12.76	9.56	22.32	46.00	-23.68	AVG	Pass
11	2.9265	22.31	9.58	31.89	56.00	-24.11	QP	Pass
12	2.9265	13.46	9.58	23.04	46.00	-22.96	AVG	Pass
13	6.3443	30.58	9.62	40.20	60.00	-19.80	QP	Pass
14	6.3443	22.00	9.62	31.62	50.00	-18.38	AVG	Pass
15	16.3590	22.82	9.83	32.65	60.00	-27.35	QP	Pass
16	16.3590	16.42	9.83	26.25	50.00	-23.75	AVG	Pass

Remarks:

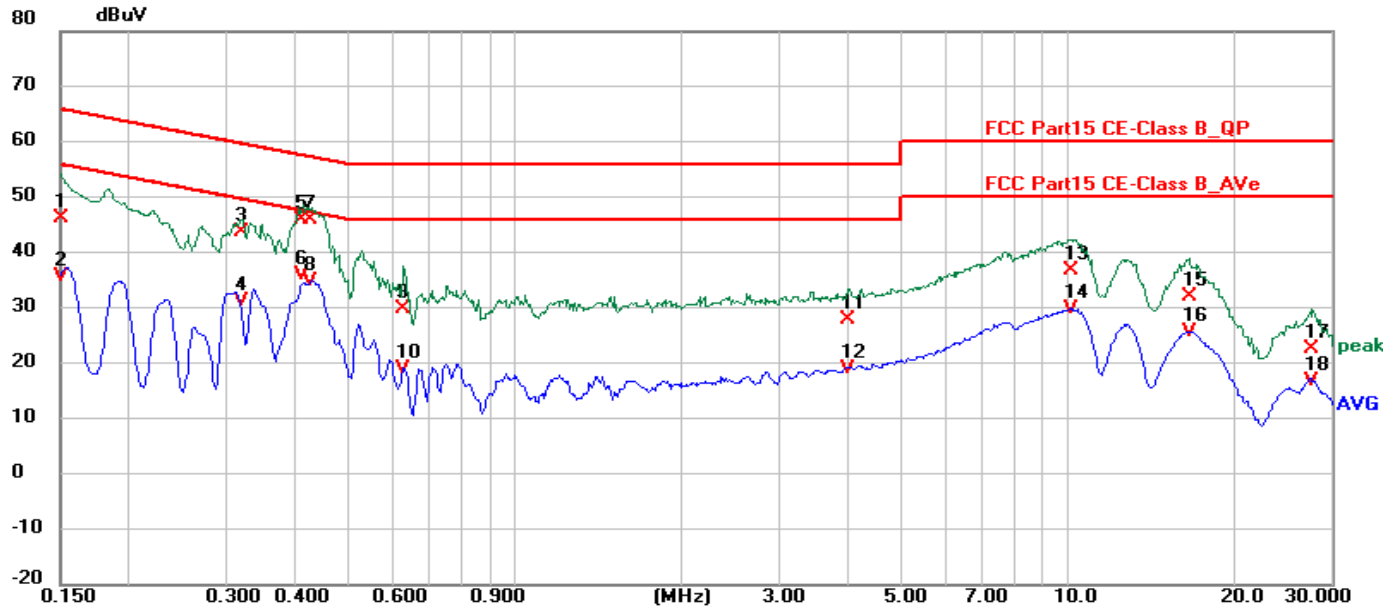
- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Model	LB-L15D
Operation Mode (max power is worst case)	Mode 2(BLE mode)
Test voltage	120 Vac

Results

Live



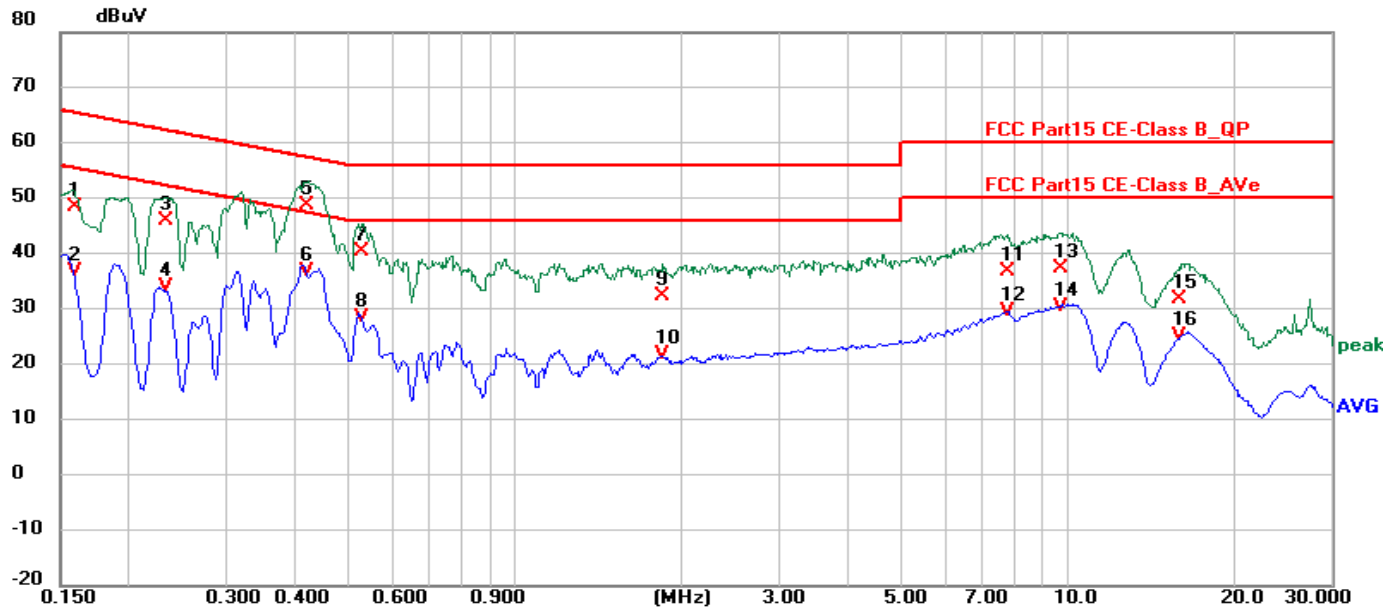
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	36.72	9.58	46.30	66.00	-19.70	QP	Pass
2	0.1500	26.01	9.58	35.59	56.00	-20.41	AVG	Pass
3	0.3187	34.11	9.57	43.68	59.74	-16.06	QP	Pass
4	0.3187	21.63	9.57	31.20	49.74	-18.54	AVG	Pass
5	0.4110	36.40	9.56	45.96	57.63	-11.67	QP	Pass
6	0.4110	26.38	9.56	35.94	47.63	-11.69	AVG	Pass
7 *	0.4268	36.30	9.56	45.86	57.31	-11.45	QP	Pass
8	0.4268	25.30	9.56	34.86	47.31	-12.45	AVG	Pass
9	0.6270	20.34	9.56	29.90	56.00	-26.10	QP	Pass
10	0.6270	9.51	9.56	19.07	46.00	-26.93	AVG	Pass
11	3.9885	18.32	9.60	27.92	56.00	-28.08	QP	Pass
12	3.9885	9.53	9.60	19.13	46.00	-26.87	AVG	Pass
13	10.1130	27.00	9.70	36.70	60.00	-23.30	QP	Pass
14	10.1130	20.17	9.70	29.87	50.00	-20.13	AVG	Pass
15	16.5053	22.46	9.74	32.20	60.00	-27.80	QP	Pass
16	16.5053	15.88	9.74	25.62	50.00	-24.38	AVG	Pass
17	27.5753	12.89	9.68	22.57	60.00	-37.43	QP	Pass
18	27.5753	7.18	9.68	16.86	50.00	-33.14	AVG	Pass

Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1590	38.95	9.56	48.51	65.52	-17.01	QP	Pass
2	0.1590	27.28	9.56	36.84	55.52	-18.68	AVG	Pass
3	0.2333	36.30	9.56	45.86	62.33	-16.47	QP	Pass
4	0.2333	24.42	9.56	33.98	52.33	-18.35	AVG	Pass
5 *	0.4200	39.16	9.56	48.72	57.45	-8.73	QP	Pass
6	0.4200	27.34	9.56	36.90	47.45	-10.55	AVG	Pass
7	0.5280	30.97	9.55	40.52	56.00	-15.48	QP	Pass
8	0.5280	18.95	9.55	28.50	46.00	-17.50	AVG	Pass
9	1.8398	22.84	9.57	32.41	56.00	-23.59	QP	Pass
10	1.8398	12.16	9.57	21.73	46.00	-24.27	AVG	Pass
11	7.7302	27.17	9.65	36.82	60.00	-23.18	QP	Pass
12	7.7302	19.88	9.65	29.53	50.00	-20.47	AVG	Pass
13	9.6765	27.62	9.70	37.32	60.00	-22.68	QP	Pass
14	9.6765	20.69	9.70	30.39	50.00	-19.61	AVG	Pass
15	16.0373	21.87	9.84	31.71	60.00	-28.29	QP	Pass
16	16.0373	15.25	9.84	25.09	50.00	-24.91	AVG	Pass

Remarks:

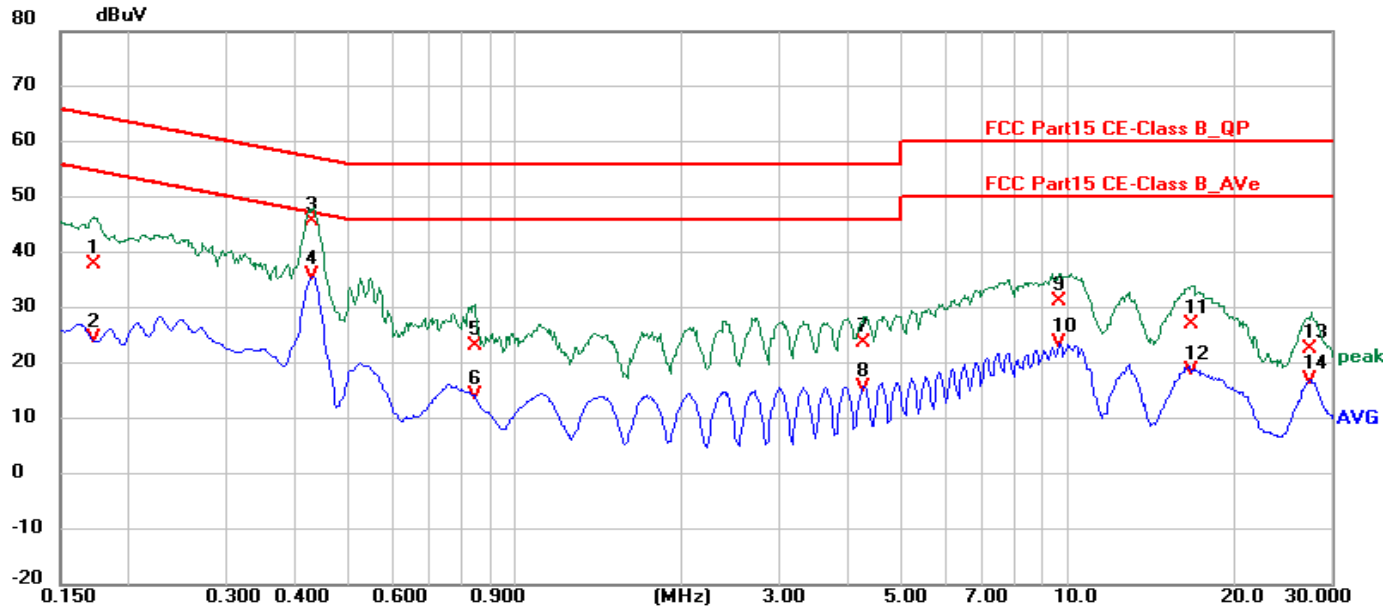
- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Model	LB-L15D
Operation Mode (max power is worst case)	Mode 2(Zigbee/Thread mode)
Test voltage	120 Vac

Results

Live



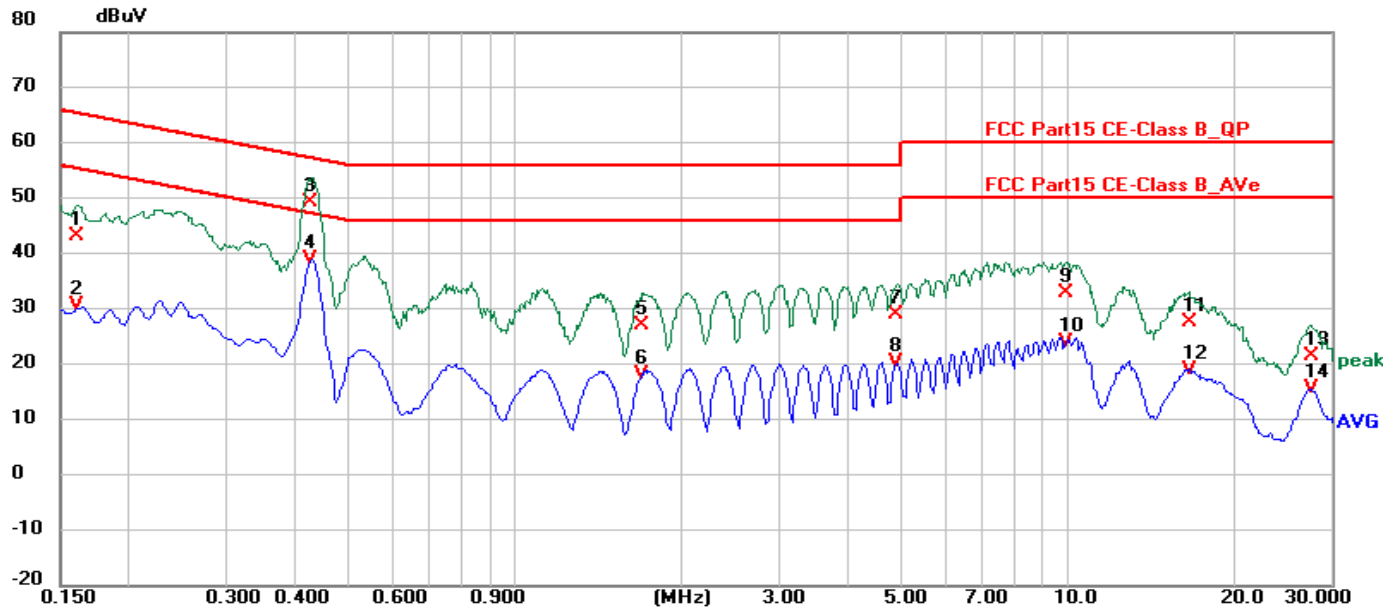
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1725	28.43	9.57	38.00	64.84	-26.84	QP	Pass
2	0.1725	14.89	9.57	24.46	54.84	-30.38	AVG	Pass
3	0.4290	36.04	9.56	45.60	57.27	-11.67	QP	Pass
4 *	0.4290	26.47	9.56	36.03	47.27	-11.24	AVG	Pass
5	0.8407	13.50	9.57	23.07	56.00	-32.93	QP	Pass
6	0.8407	4.86	9.57	14.43	46.00	-31.57	AVG	Pass
7	4.2495	14.08	9.60	23.68	56.00	-32.32	QP	Pass
8	4.2495	6.23	9.60	15.83	46.00	-30.17	AVG	Pass
9	9.6472	21.43	9.69	31.12	60.00	-28.88	QP	Pass
10	9.6472	14.06	9.69	23.75	50.00	-26.25	AVG	Pass
11	16.6627	17.36	9.74	27.10	60.00	-32.90	QP	Pass
12	16.6627	9.05	9.74	18.79	50.00	-31.21	AVG	Pass
13	27.4178	13.08	9.68	22.76	60.00	-37.24	QP	Pass
14	27.4178	7.44	9.68	17.12	50.00	-32.88	AVG	Pass

Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	35.57	9.58	45.15	66.00	-20.85	QP	Pass
2	0.1500	11.49	9.58	21.07	56.00	-34.93	AVG	Pass
3	0.1747	40.71	9.57	50.28	64.73	-14.45	QP	Pass
4	0.1747	27.27	9.57	36.84	54.73	-17.89	AVG	Pass
5	0.1905	39.69	9.57	49.26	64.01	-14.75	QP	Pass
6	0.1905	28.44	9.57	38.01	54.01	-16.00	AVG	Pass
7 *	0.2513	30.39	9.57	39.96	51.71	-11.75	AVG	Pass
8	0.5595	27.90	9.56	37.46	56.00	-18.54	QP	Pass
9	0.5595	13.71	9.56	23.27	46.00	-22.73	AVG	Pass
10	0.5775	16.13	9.56	25.69	46.00	-20.31	AVG	Pass
11	2.5147	26.28	9.59	35.87	56.00	-20.13	QP	Pass
12	2.5147	13.87	9.59	23.46	46.00	-22.54	AVG	Pass
13	6.1710	35.20	9.62	44.82	60.00	-15.18	QP	Pass
14	6.1710	26.56	9.62	36.18	50.00	-13.82	AVG	Pass
15	7.4603	35.27	9.64	44.91	60.00	-15.09	QP	Pass
16	7.4603	27.59	9.64	37.23	50.00	-12.77	AVG	Pass
17	12.4507	28.48	9.73	38.21	60.00	-21.79	QP	Pass
18	12.4507	22.56	9.73	32.29	50.00	-17.71	AVG	Pass
19	16.5345	29.07	9.74	38.81	60.00	-21.19	QP	Pass
20	16.5345	23.45	9.74	33.19	50.00	-16.81	AVG	Pass

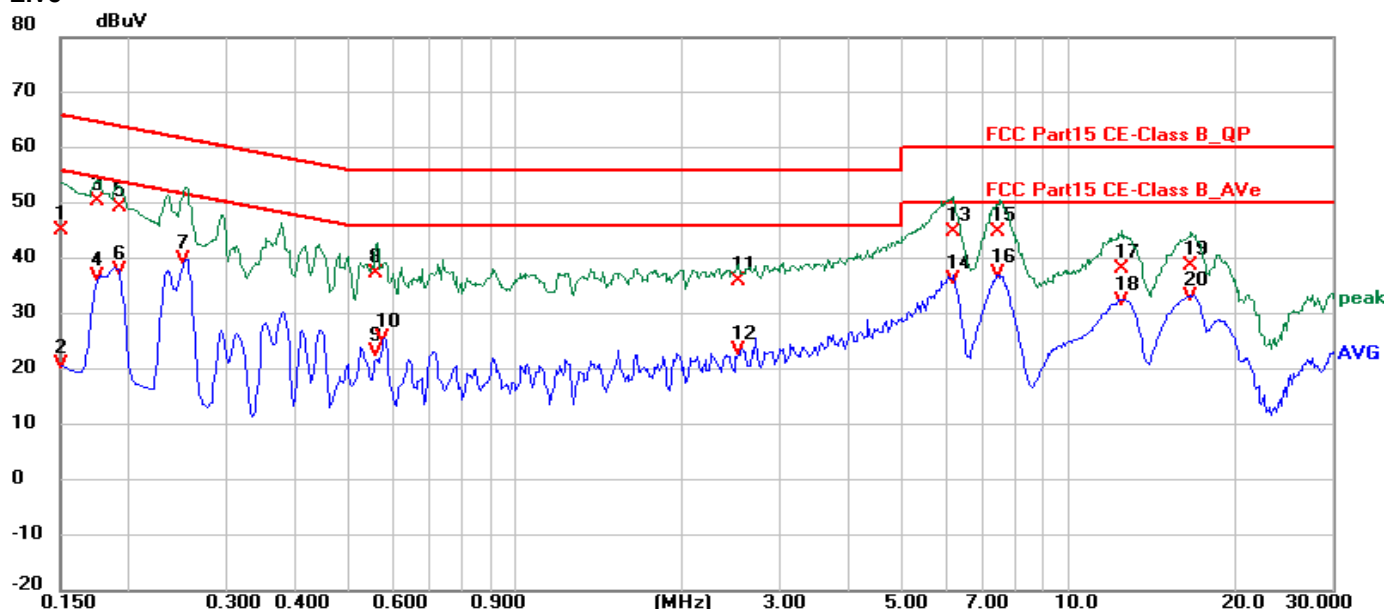
Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Model	LB-L17D with alternative control PCB
Operation Mode (max power is worst case)	Mode 2(BLE mode)
Test voltage	120 Vac

Live



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	35.57	9.58	45.15	66.00	-20.85	QP	Pass
2	0.1500	11.49	9.58	21.07	56.00	-34.93	AVG	Pass
3	0.1747	40.71	9.57	50.28	64.73	-14.45	QP	Pass
4	0.1747	27.27	9.57	36.84	54.73	-17.89	AVG	Pass
5	0.1905	39.69	9.57	49.26	64.01	-14.75	QP	Pass
6	0.1905	28.44	9.57	38.01	54.01	-16.00	AVG	Pass
7 *	0.2513	30.39	9.57	39.96	51.71	-11.75	AVG	Pass
8	0.5595	27.90	9.56	37.46	56.00	-18.54	QP	Pass
9	0.5595	13.71	9.56	23.27	46.00	-22.73	AVG	Pass
10	0.5775	16.13	9.56	25.69	46.00	-20.31	AVG	Pass
11	2.5147	26.28	9.59	35.87	56.00	-20.13	QP	Pass
12	2.5147	13.87	9.59	23.46	46.00	-22.54	AVG	Pass
13	6.1710	35.20	9.62	44.82	60.00	-15.18	QP	Pass
14	6.1710	26.56	9.62	36.18	50.00	-13.82	AVG	Pass
15	7.4603	35.27	9.64	44.91	60.00	-15.09	QP	Pass
16	7.4603	27.59	9.64	37.23	50.00	-12.77	AVG	Pass
17	12.4507	28.48	9.73	38.21	60.00	-21.79	QP	Pass
18	12.4507	22.56	9.73	32.29	50.00	-17.71	AVG	Pass
19	16.5345	29.07	9.74	38.81	60.00	-21.19	QP	Pass
20	16.5345	23.45	9.74	33.19	50.00	-16.81	AVG	Pass

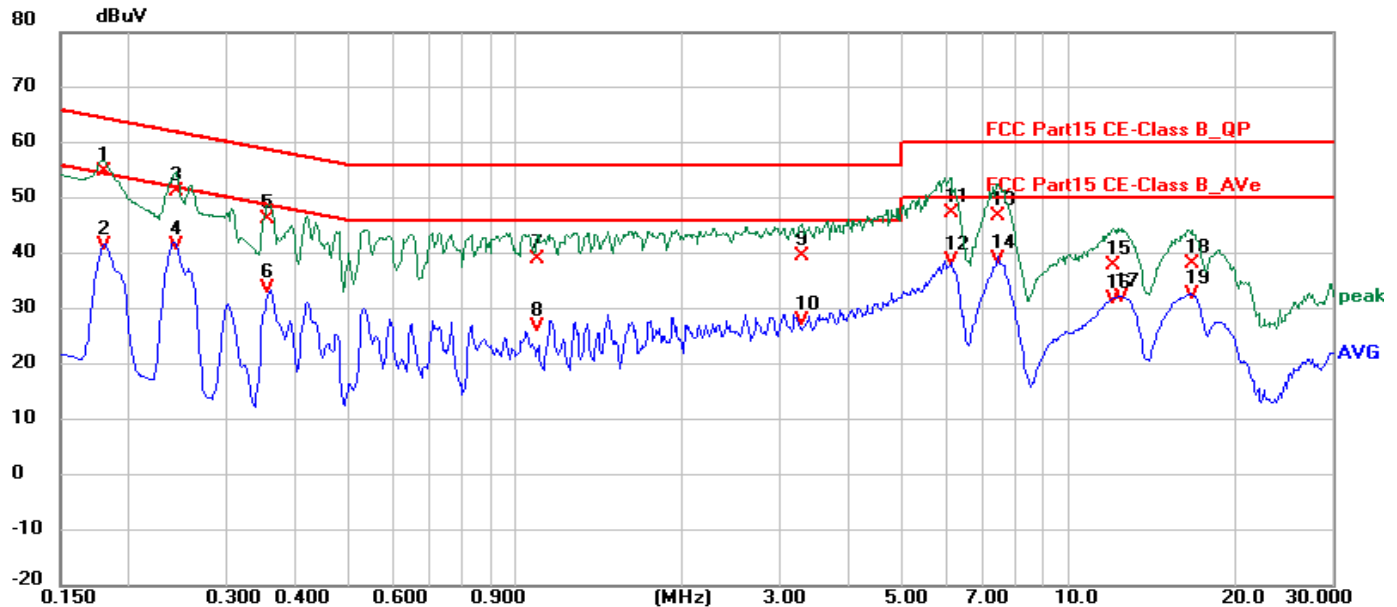
Remarks:

1) Level (final measurement) = received value + transducer (Lisn+cable)

2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1 *	0.1792	45.19	9.56	54.75	64.52	-9.77	QP	Pass
2	0.1792	31.85	9.56	41.41	54.52	-13.11	AVG	Pass
3	0.2422	41.77	9.56	51.33	62.02	-10.69	QP	Pass
4	0.2422	31.97	9.56	41.53	52.02	-10.49	AVG	Pass
5	0.3570	36.66	9.55	46.21	58.80	-12.59	QP	Pass
6	0.3570	24.28	9.55	33.83	48.80	-14.97	AVG	Pass
7	1.0950	29.54	9.56	39.10	56.00	-16.90	QP	Pass
8	1.0950	17.33	9.56	26.89	46.00	-19.11	AVG	Pass
9	3.2887	30.04	9.58	39.62	56.00	-16.38	QP	Pass
10	3.2887	18.25	9.58	27.83	46.00	-18.17	AVG	Pass
11	6.1170	37.67	9.62	47.29	60.00	-12.71	QP	Pass
12	6.1170	29.09	9.62	38.71	50.00	-11.29	AVG	Pass
13	7.4175	37.28	9.64	46.92	60.00	-13.08	QP	Pass
14	7.4175	29.27	9.64	38.91	50.00	-11.09	AVG	Pass
15	12.0233	28.12	9.78	37.90	60.00	-22.10	QP	Pass
16	12.0233	22.07	9.78	31.85	50.00	-18.15	AVG	Pass
17	12.5273	22.42	9.80	32.22	50.00	-17.78	AVG	Pass
18	16.6717	28.38	9.82	38.20	60.00	-21.80	QP	Pass
19	16.6717	22.81	9.82	32.63	50.00	-17.37	AVG	Pass

Remarks:

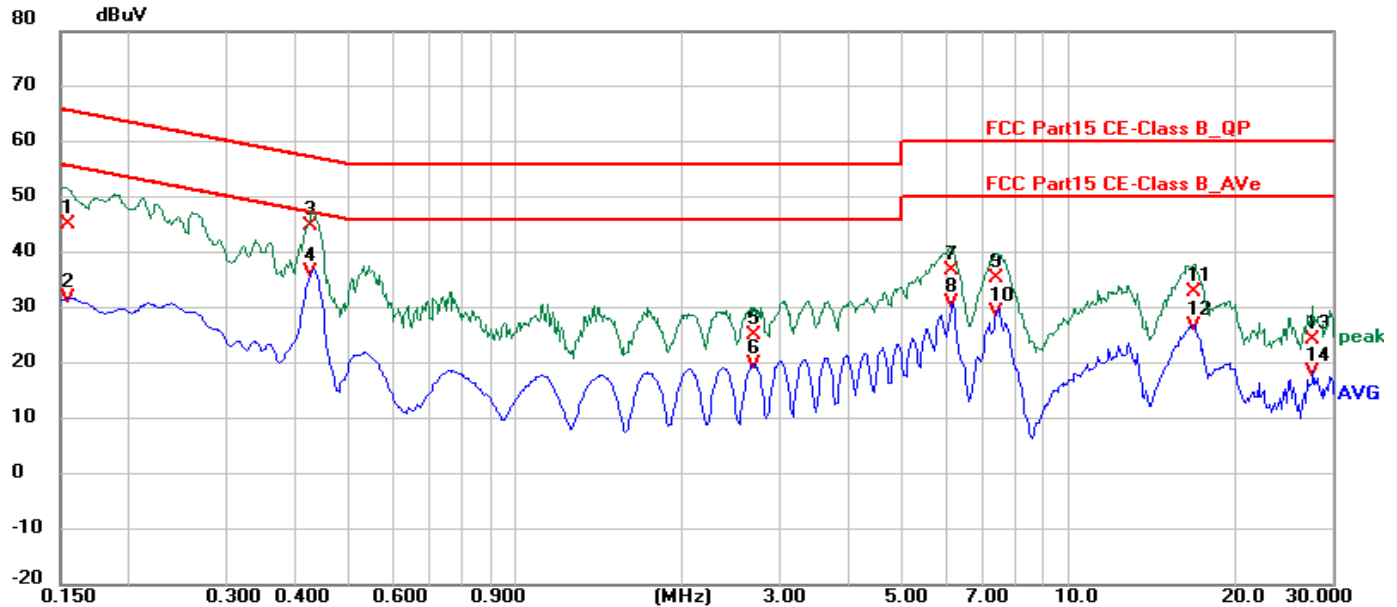
- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Model	LB-L17D with alternative control PCB
Operation Mode (max power is worst case)	Mode 2(Zigbee/Thread mode)
Test voltage	120 Vac

Results

Live



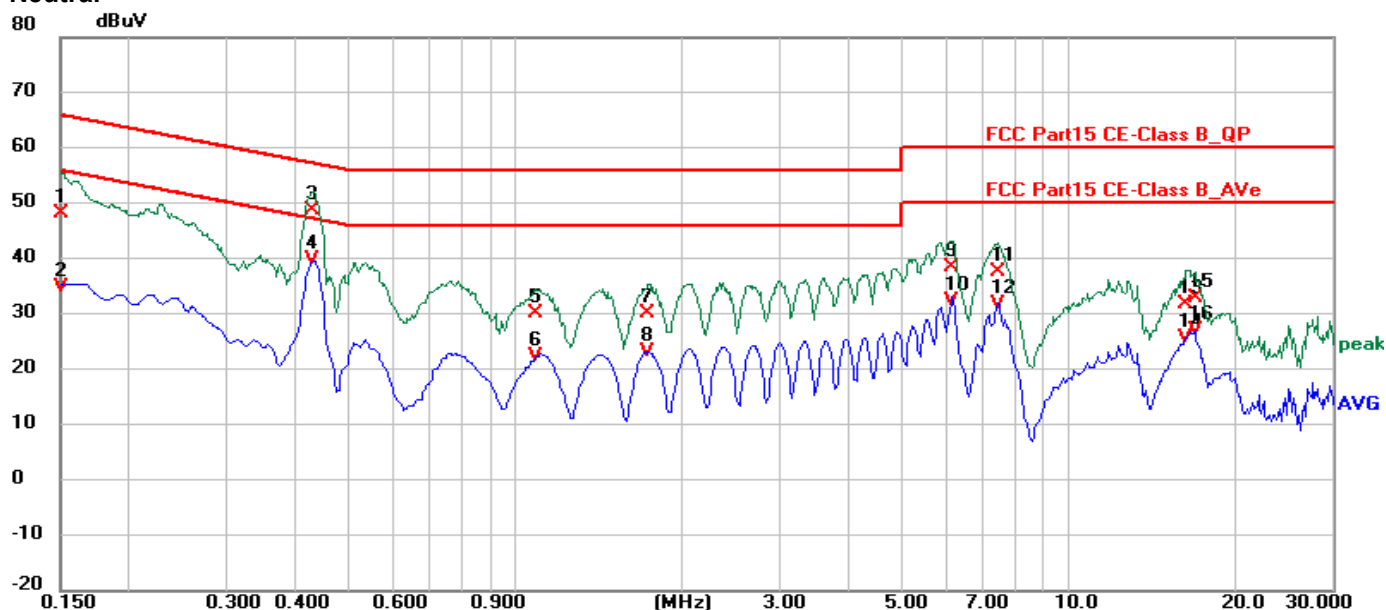
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1545	35.56	9.58	45.14	65.75	-20.61	QP	Pass
2	0.1545	22.36	9.58	31.94	55.75	-23.81	AVG	Pass
3	0.4245	35.24	9.56	44.80	57.36	-12.56	QP	Pass
4 *	0.4245	27.10	9.56	36.66	47.36	-10.70	AVG	Pass
5	2.6790	15.67	9.59	25.26	56.00	-30.74	QP	Pass
6	2.6790	10.38	9.59	19.97	46.00	-26.03	AVG	Pass
7	6.1395	27.05	9.62	36.67	60.00	-23.33	QP	Pass
8	6.1395	21.34	9.62	30.96	50.00	-19.04	AVG	Pass
9	7.4040	25.89	9.64	35.53	60.00	-24.47	QP	Pass
10	7.4040	19.69	9.64	29.33	50.00	-20.67	AVG	Pass
11	16.8270	23.23	9.73	32.96	60.00	-27.04	QP	Pass
12	16.8270	17.01	9.73	26.74	50.00	-23.26	AVG	Pass
13	27.6000	14.69	9.68	24.37	60.00	-35.63	QP	Pass
14	27.6000	8.88	9.68	18.56	50.00	-31.44	AVG	Pass

Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Pass/Fail
1	0.1500	38.54	9.56	48.10	66.00	-17.90	QP	Pass
2	0.1500	25.35	9.56	34.91	56.00	-21.09	AVG	Pass
3	0.4290	39.10	9.56	48.66	57.27	-8.61	QP	Pass
4 *	0.4290	30.44	9.56	40.00	47.27	-7.27	AVG	Pass
5	1.0793	20.47	9.56	30.03	56.00	-25.97	QP	Pass
6	1.0793	12.80	9.56	22.36	46.00	-23.64	AVG	Pass
7	1.7295	20.56	9.56	30.12	56.00	-25.88	QP	Pass
8	1.7295	13.76	9.56	23.32	46.00	-22.68	AVG	Pass
9	6.1170	28.79	9.62	38.41	60.00	-21.59	QP	Pass
10	6.1170	22.67	9.62	32.29	50.00	-17.71	AVG	Pass
11	7.4355	28.12	9.64	37.76	60.00	-22.24	QP	Pass
12	7.4355	22.13	9.64	31.77	50.00	-18.23	AVG	Pass
13	16.2420	21.95	9.84	31.79	60.00	-28.21	QP	Pass
14	16.2420	15.88	9.84	25.72	50.00	-24.28	AVG	Pass
15	16.8765	23.23	9.82	33.05	60.00	-26.95	QP	Pass
16	16.8765	17.30	9.82	27.12	50.00	-22.88	AVG	Pass

Remarks:

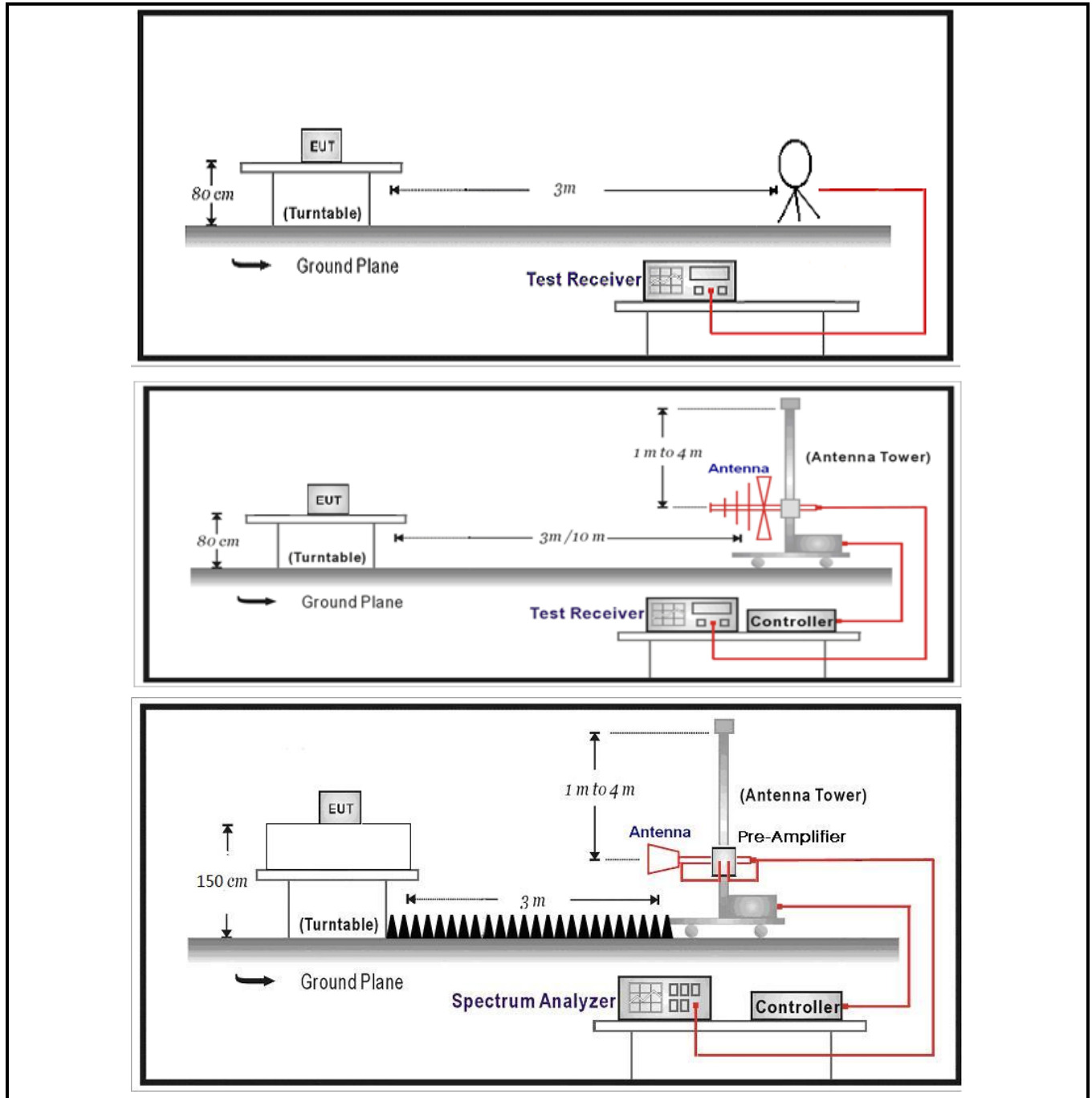
- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

4.2	Emissions in non-restricted frequency bands	VERDICT: PASS
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Emissions Limit 15.209(a)			
Emissions Limit: RSS-Gen Issue 5 Section 8.9			
Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Field strength (dB $\mu\text{V/m}$)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).			

Test Configuration



Performed measurements

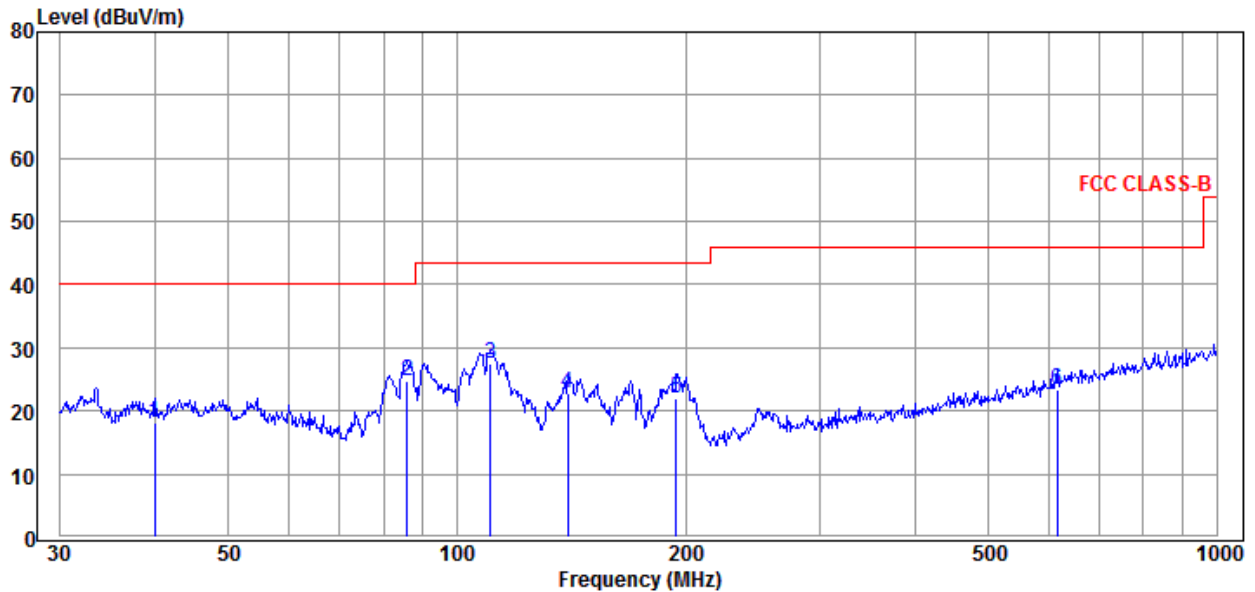
Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	1)The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report. 2)The EUT are tested in three orientations. The record is the worst orientation which refer to the Annex 3 for test setup photo(s).	

Results of 30 – 1000 MHz

Model	LB-L17D
Operation Mode	Mode 1 (BLE mode)
Test voltage	120Vac

Results

Horizontal



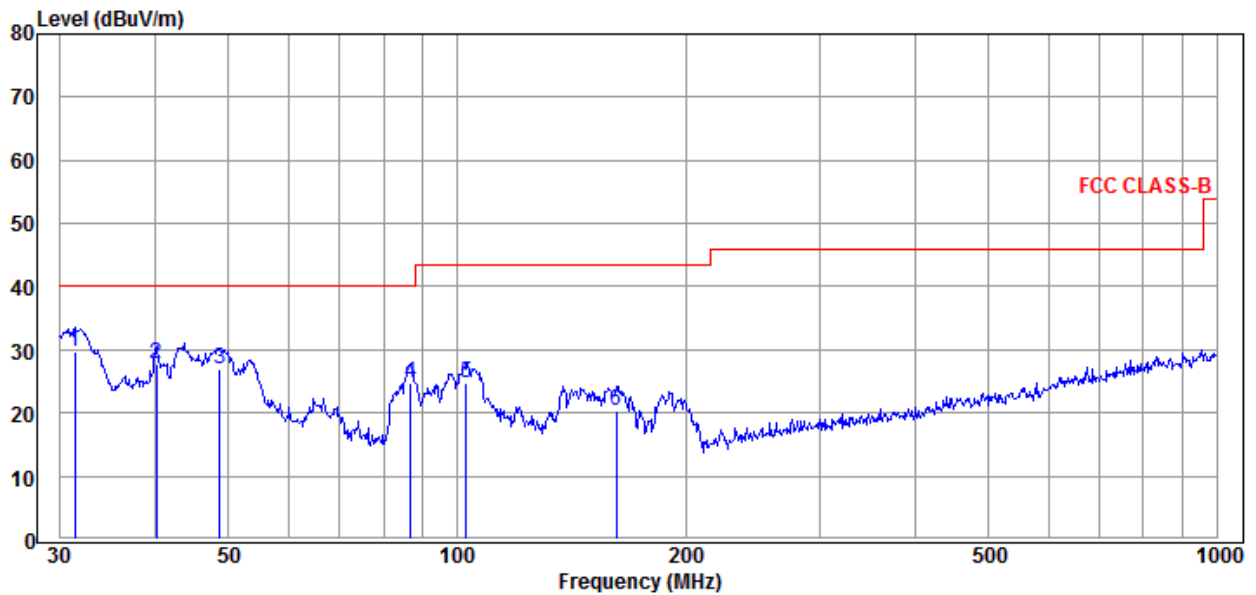
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
39.99	17.50	0.51	18.01	40.00	21.99
85.90	32.19	-7.33	24.86	40.00	15.14
110.57	32.84	-5.37	27.47	43.50	16.03
139.85	25.46	-2.64	22.82	43.50	20.68
194.45	26.90	-4.99	21.91	43.50	21.59
616.37	16.89	6.42	23.31	46.00	22.69

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
31.40	29.30	0.34	29.64	40.00	10.36
40.14	27.14	0.51	27.65	40.00	12.35
48.67	26.58	0.49	27.07	40.00	12.93
86.81	32.16	-7.40	24.76	40.00	15.24
102.72	31.13	-6.25	24.88	43.50	18.62
162.04	22.48	-2.26	20.22	43.50	23.28

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

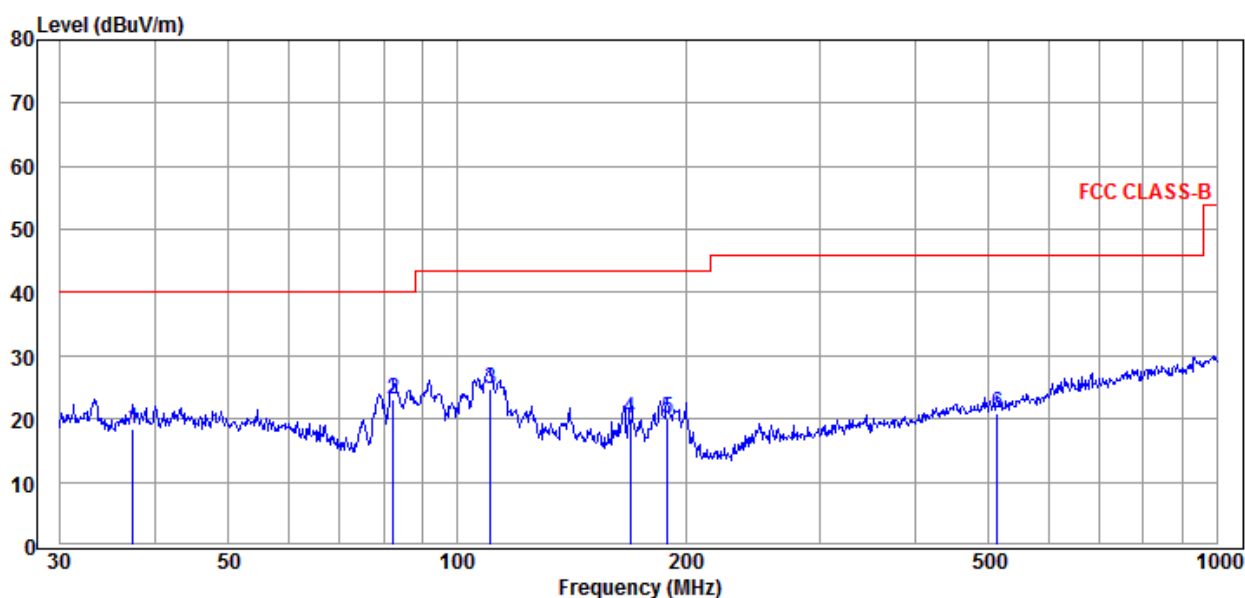
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 30 – 1000 MHz

Model	LB-L17D
Operation Mode	Mode 1 (thread/zigbee mode)
Test voltage	120 Vac

Results

Horizontal



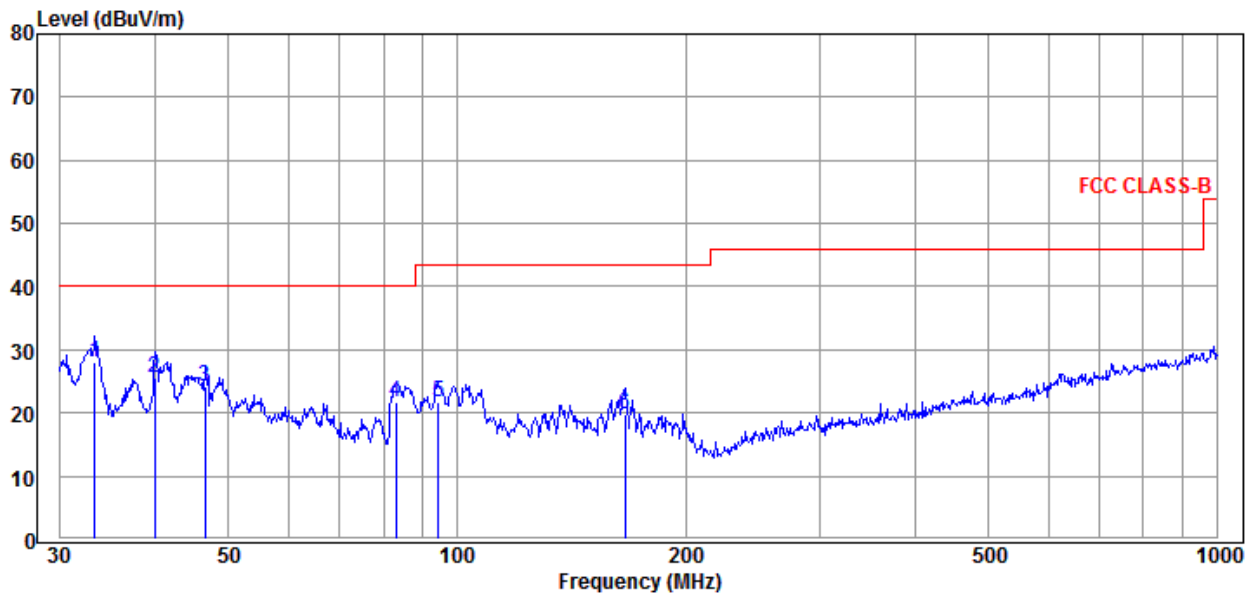
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
37.42	18.03	0.36	18.39	40.00	21.61
82.36	29.76	-6.62	23.14	40.00	16.86
110.57	30.12	-5.37	24.75	43.50	18.75
169.01	22.63	-2.58	20.05	43.50	23.45
189.07	24.68	-4.64	20.04	43.50	23.46
513.63	17.00	3.77	20.77	46.00	25.23

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.33	27.87	0.23	28.10	40.00	11.90
39.99	25.10	0.51	25.61	40.00	14.39
46.50	23.54	0.57	24.11	40.00	15.89
82.94	28.48	-6.79	21.69	40.00	18.31
94.43	28.87	-7.16	21.71	43.50	21.79
166.07	22.27	-2.46	19.81	43.50	23.69

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

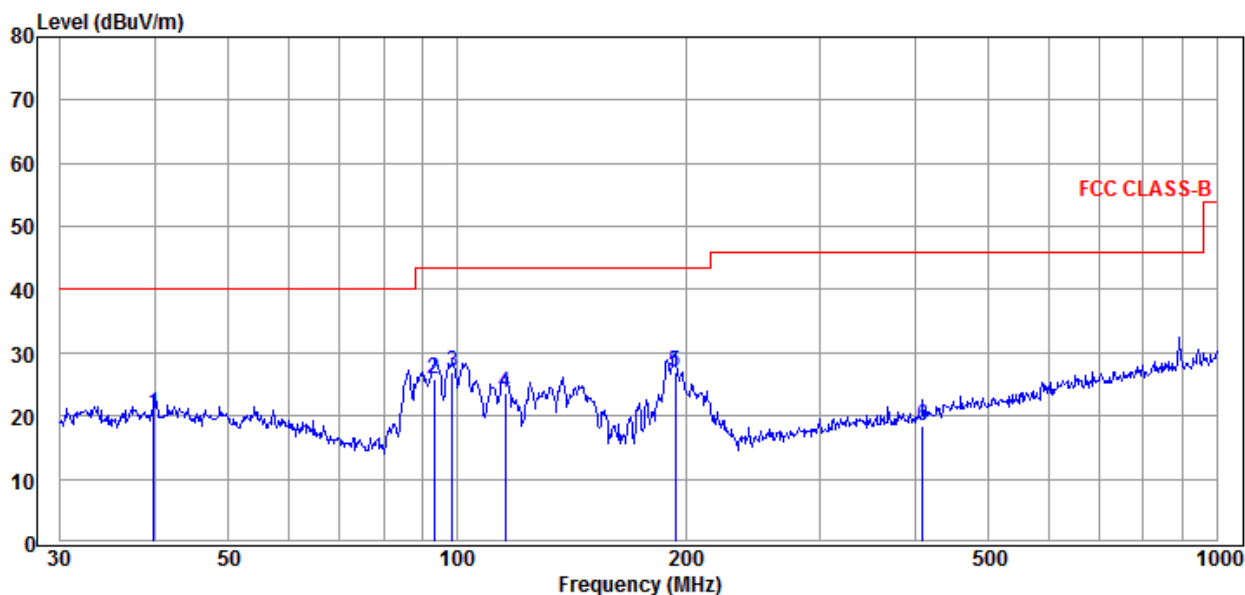
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 30 – 1000 MHz

Model	LB-L15D
Operation Mode	Mode 1 (BLE mode)
Test voltage	120Vac

Results

Horizontal



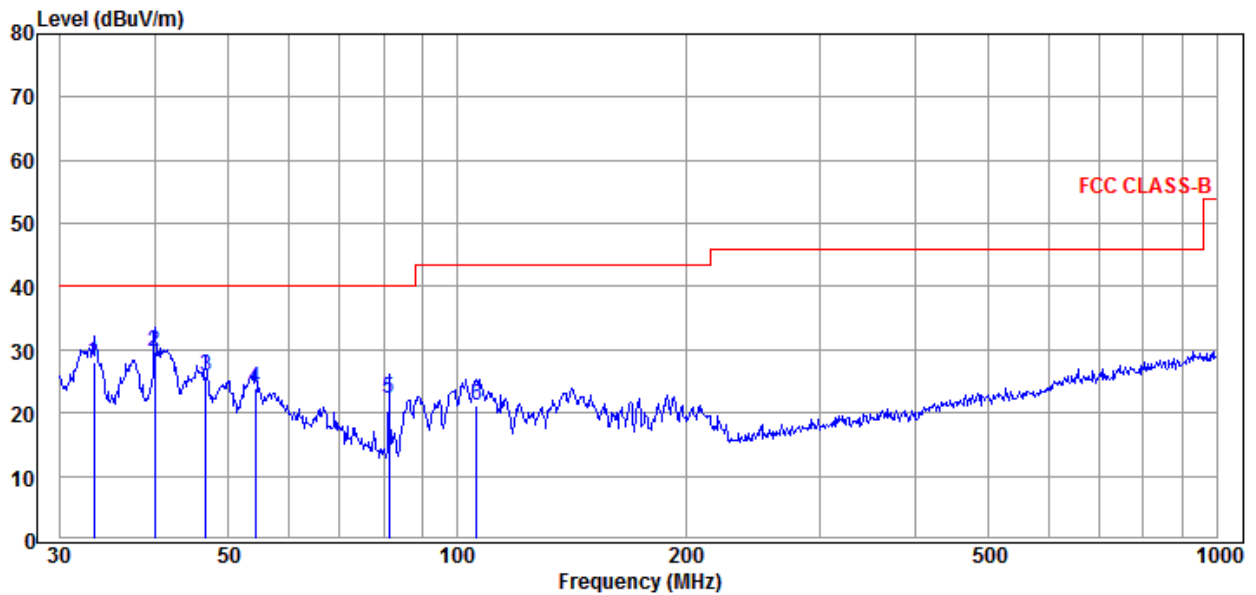
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
39.85	19.87	0.51	20.38	40.00	19.62
93.11	33.04	-7.31	25.73	43.50	17.77
98.49	33.71	-6.80	26.91	43.50	16.59
115.73	28.65	-5.04	23.61	43.50	19.89
193.77	32.02	-4.95	27.07	43.50	16.43
410.38	17.12	1.33	18.45	46.00	27.55

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.21	27.87	0.24	28.11	40.00	11.89
39.99	29.12	0.51	29.63	40.00	10.37
46.67	25.31	0.57	25.88	40.00	14.12
54.26	23.79	0.07	23.86	40.00	16.14
81.21	28.49	-6.32	22.17	40.00	17.83
106.01	27.18	-5.87	21.31	43.50	22.19

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

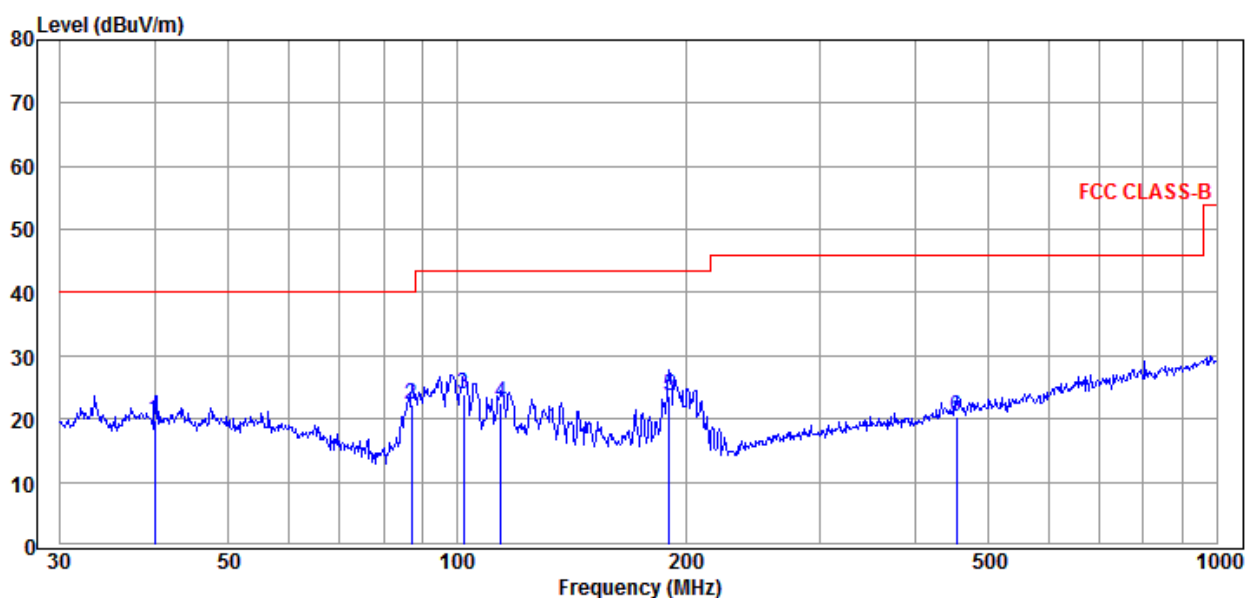
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 30 – 1000 MHz

Model	LB-L15D
Operation Mode	Mode 1 (thread/zigbee mode)
Test voltage	120 Vac

Results

Horizontal



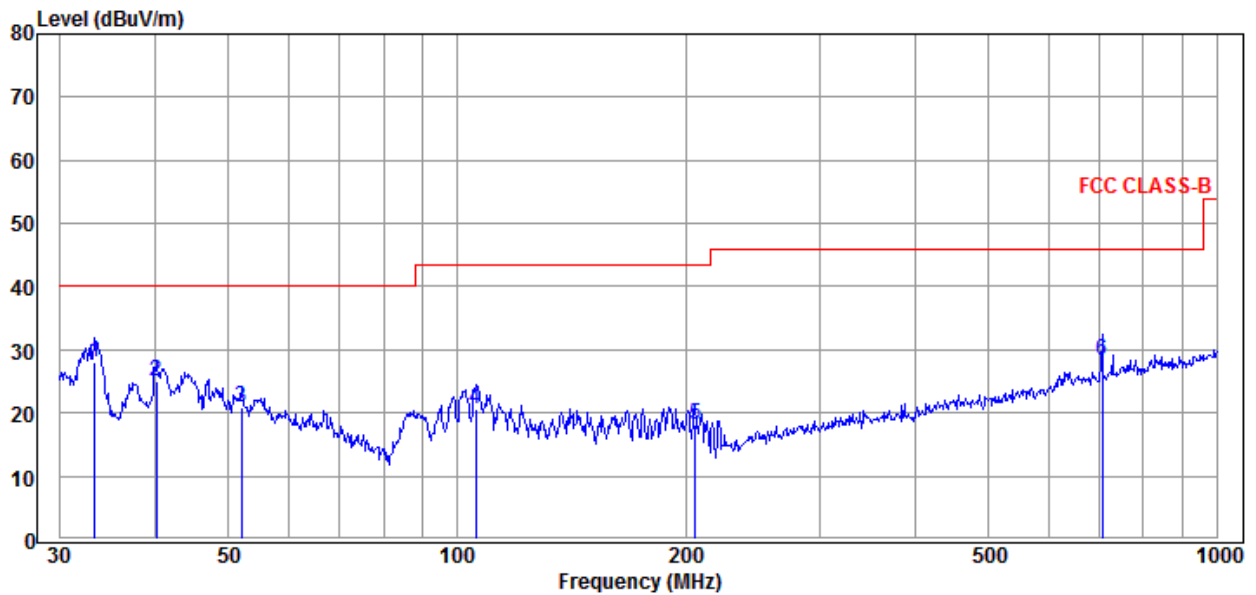
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
39.99	19.23	0.51	19.74	40.00	20.26
87.11	29.81	-7.44	22.37	40.00	17.63
102.00	30.31	-6.35	23.96	43.50	19.54
114.11	27.60	-5.13	22.47	43.50	21.03
190.41	28.41	-4.75	23.66	43.50	19.84
454.31	17.60	2.71	20.31	46.00	25.69

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.33	27.71	0.23	27.94	40.00	12.06
40.14	24.41	0.51	24.92	40.00	15.08
52.03	20.57	0.29	20.86	40.00	19.14
105.64	26.47	-5.91	20.56	43.50	22.94
205.68	23.63	-5.35	18.28	43.50	25.22
706.70	20.74	7.59	28.33	46.00	17.67

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

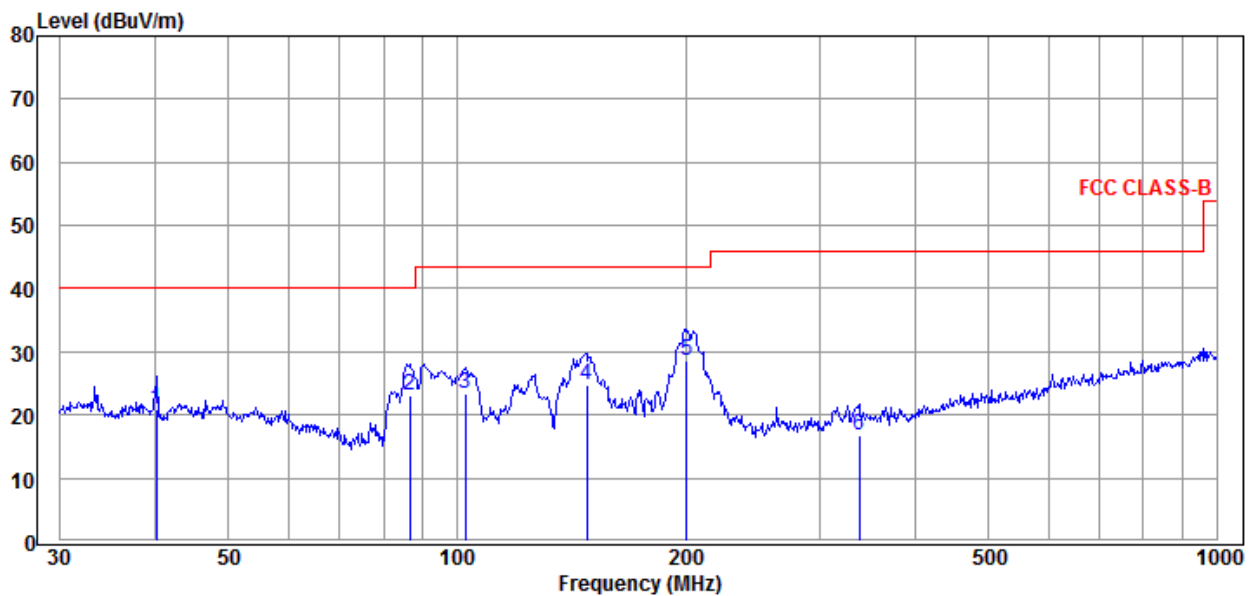
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 30 – 1000 MHz

Model	LB-L17D with alternative control PCB
Operation Mode (max power is worst case)	Mode 2(BLE mode)
Test voltage	120 Vac

Results

Horizontal



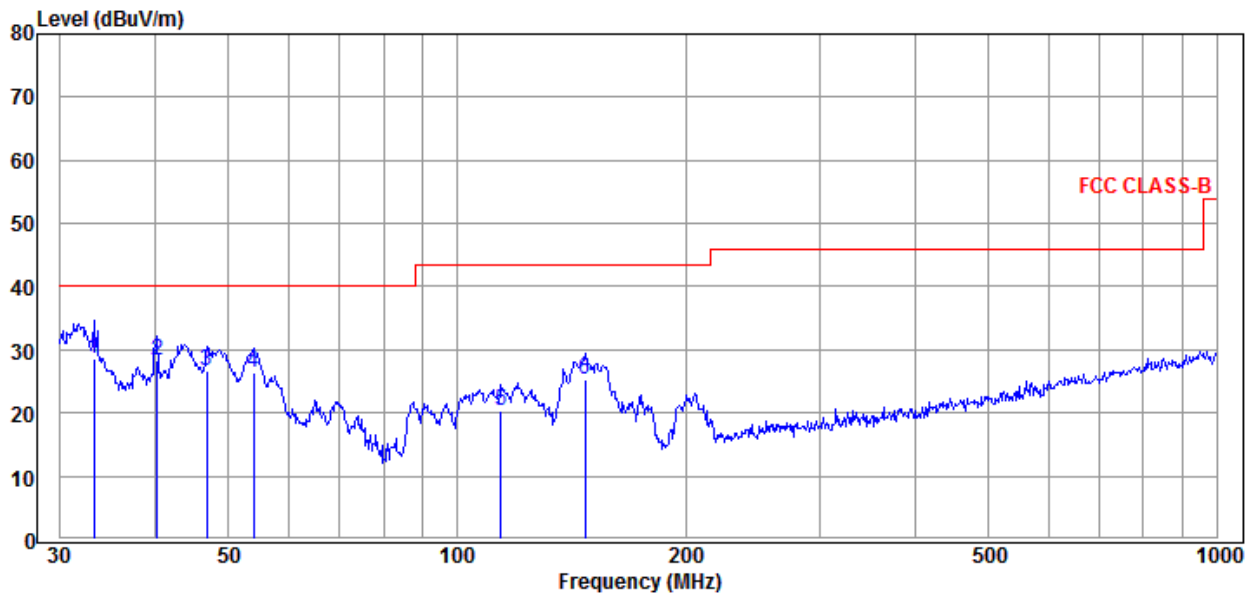
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
40.14	20.51	0.51	21.02	40.00	18.98
86.50	30.38	-7.38	23.00	40.00	17.00
102.36	29.76	-6.31	23.45	43.50	20.05
147.92	26.91	-2.14	24.77	43.50	18.73
200.69	33.92	-5.31	28.61	43.50	14.89
338.40	17.15	-0.37	16.78	46.00	29.22

Remarks:

- 3) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 4) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.21	28.33	0.24	28.57	40.00	11.43
40.28	27.74	0.51	28.25	40.00	11.75
46.83	25.98	0.56	26.54	40.00	13.46
53.88	26.16	0.11	26.27	40.00	13.73
114.11	25.53	-5.13	20.40	43.50	23.10
147.40	27.48	-2.17	25.31	43.50	18.19

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

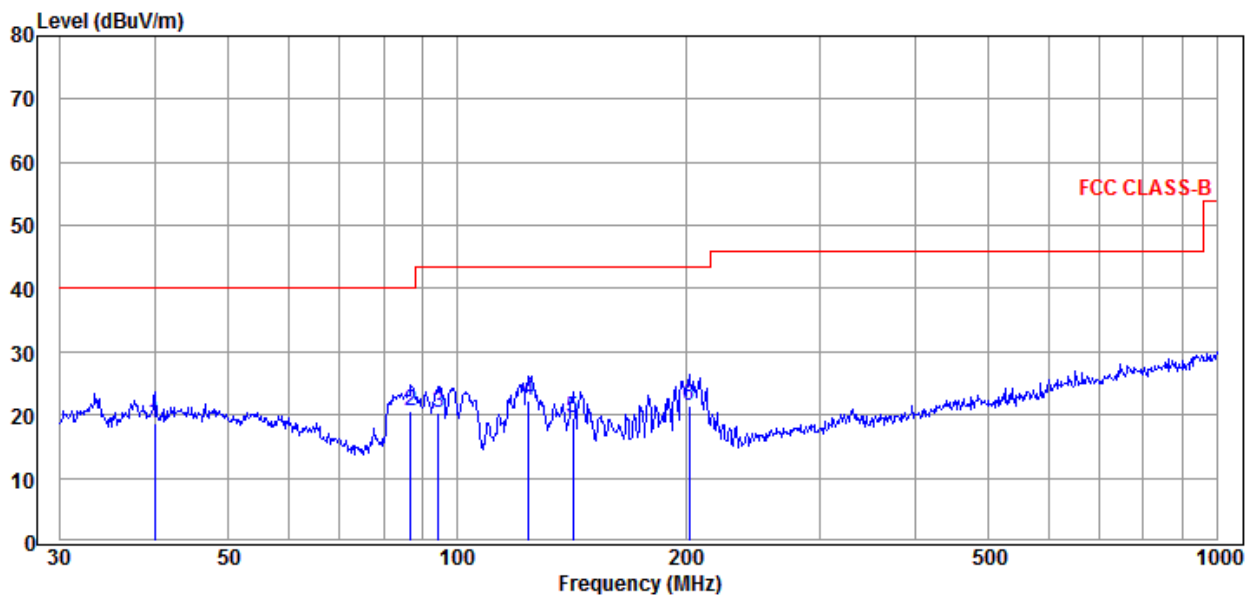
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 30 – 1000 MHz

Model	LB-L17D with alternative control PCB
Operation Mode (max power is worst case)	Mode 2(Zigbee/Thread mode)
Test voltage	120 Vac

Results

Horizontal



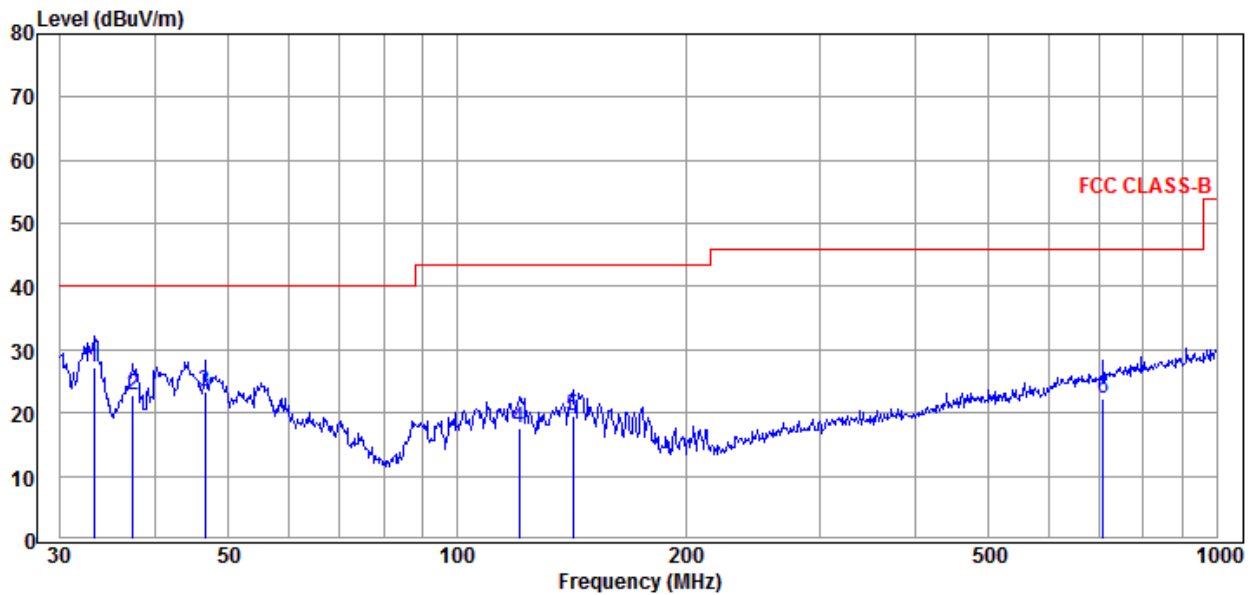
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
39.99	18.25	0.51	18.76	40.00	21.24
86.81	28.02	-7.40	20.62	40.00	19.38
94.43	27.55	-7.16	20.39	43.50	23.11
124.13	26.56	-4.33	22.23	43.50	21.27
141.83	22.13	-2.51	19.62	43.50	23.88
202.10	26.63	-5.32	21.31	43.50	22.19

Remarks:

- 5) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 6) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.21	27.02	0.24	27.26	40.00	12.74
37.42	22.35	0.36	22.71	40.00	17.29
46.50	22.85	0.57	23.42	40.00	16.58
120.70	22.15	-4.69	17.46	43.50	26.04
141.83	22.05	-2.51	19.54	43.50	23.96
709.18	14.61	7.63	22.24	46.00	23.76

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

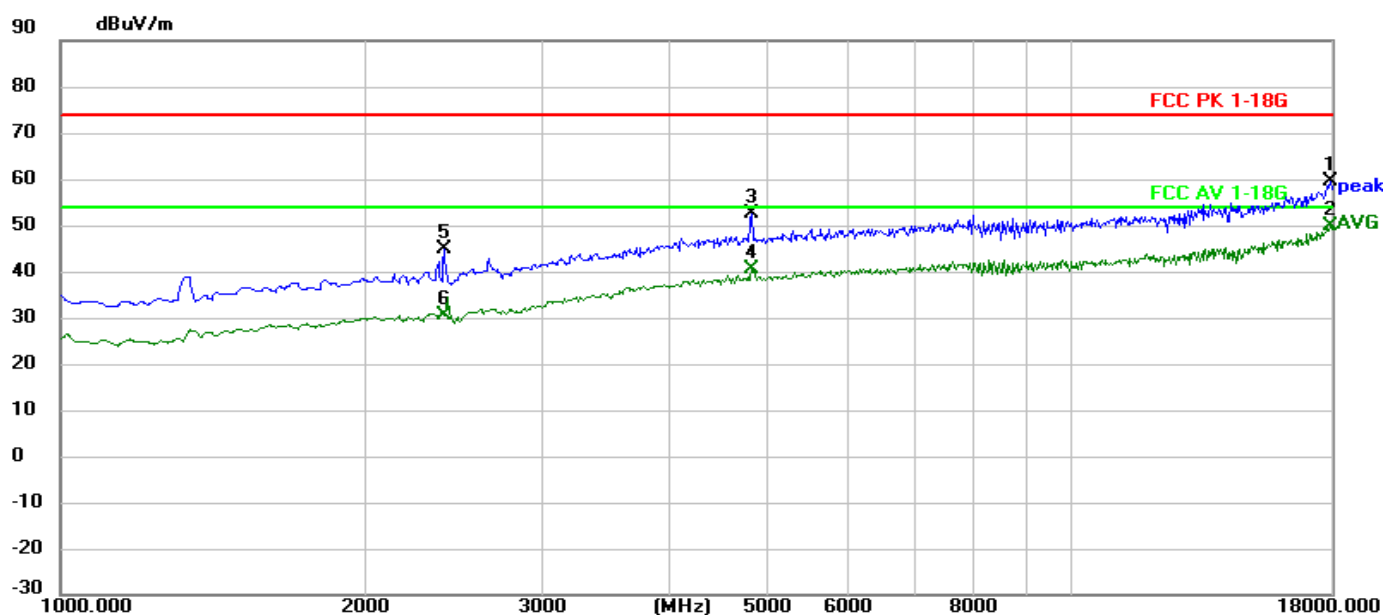
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 1 – 18 GHz

Model	LB-L17D
Operation Mode	Mode 1 @2402 MHz BLE 1M
Test voltage	3.3 Vdc

Results

Horizontal

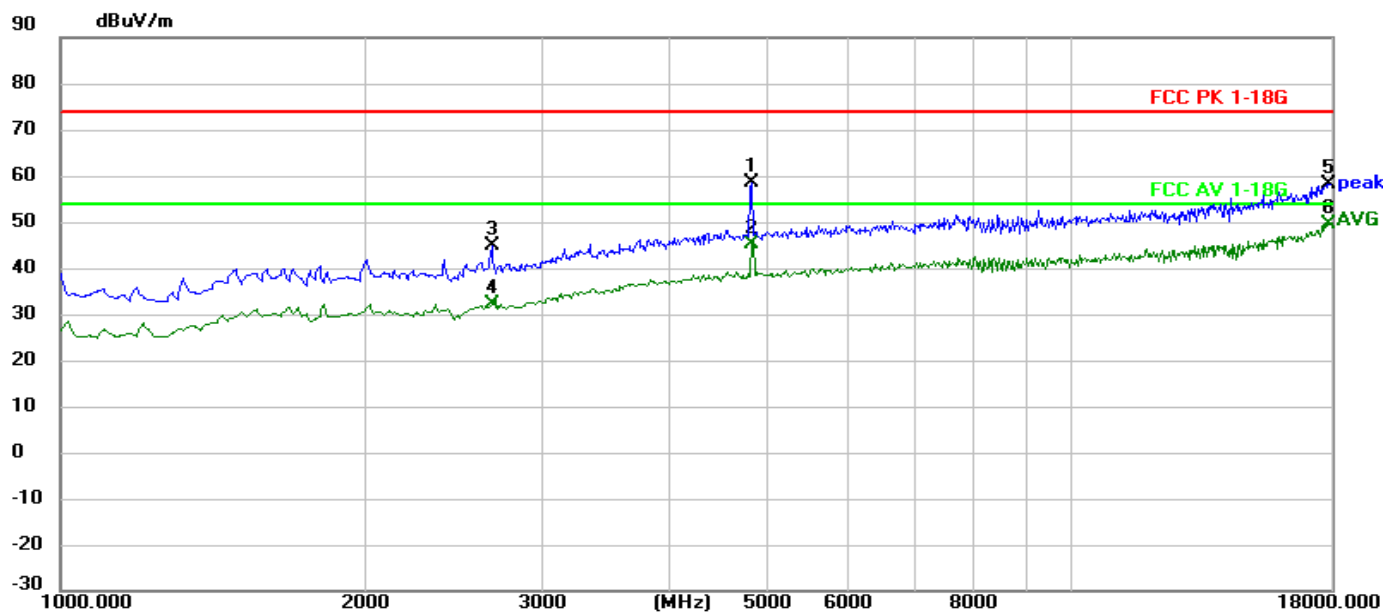


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	17914.9149	49.78	9.84	59.62	74.00	-14.38	peak	Pass
2 *	17914.9149	39.89	9.84	49.73	54.00	-4.27	AVG	Pass
3	4811.8118	61.63	-8.98	52.65	74.00	-21.35	peak	Pass
4	4811.8118	49.62	-8.98	40.64	54.00	-13.36	AVG	Pass
5	2395.3954	64.42	-19.56	44.86	74.00	-29.14	peak	Pass
6	2395.3954	50.09	-19.56	30.53	54.00	-23.47	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4811.8118	67.44	-8.98	58.46	74.00	-15.54	peak	Pass
2	4811.8118	54.12	-8.98	45.14	54.00	-8.86	AVG	Pass
3	2667.6677	62.92	-18.15	44.77	74.00	-29.23	peak	Pass
4	2667.6677	50.20	-18.15	32.05	54.00	-21.95	AVG	Pass
5	17880.8809	48.58	9.73	58.31	74.00	-15.69	peak	Pass
6 *	17880.8809	39.64	9.73	49.37	54.00	-4.63	AVG	Pass

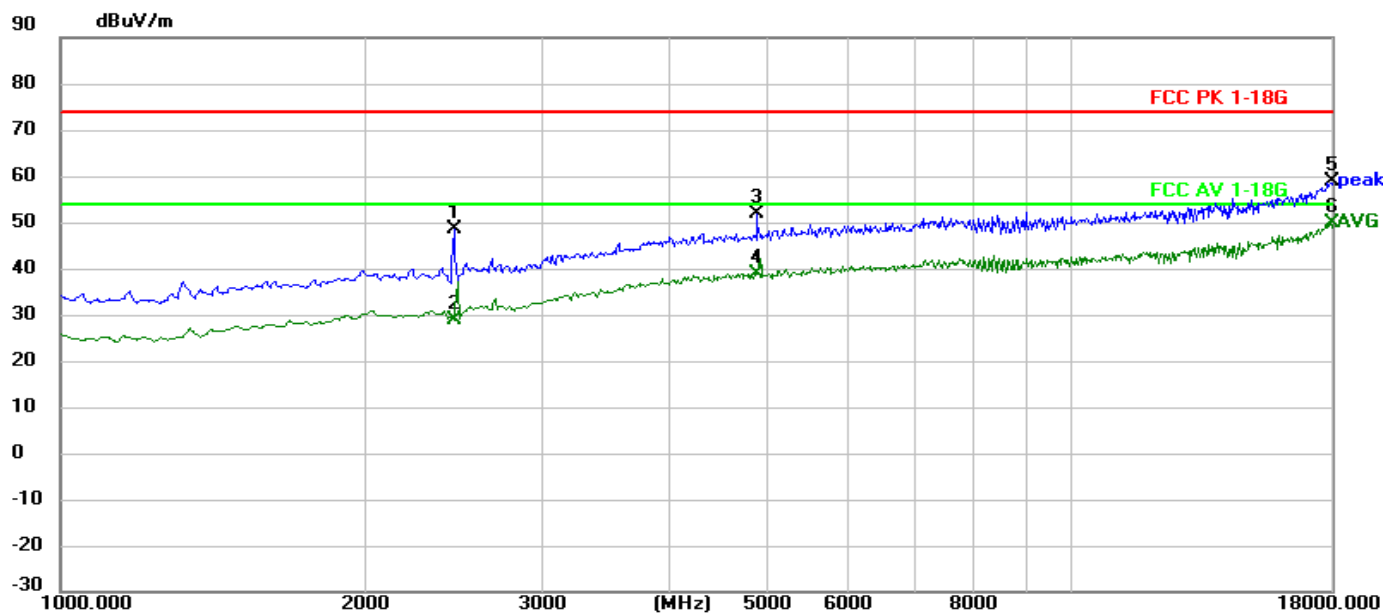
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2440 MHz BLE 1M
Test voltage	3.3 Vdc

Results

Horizontal

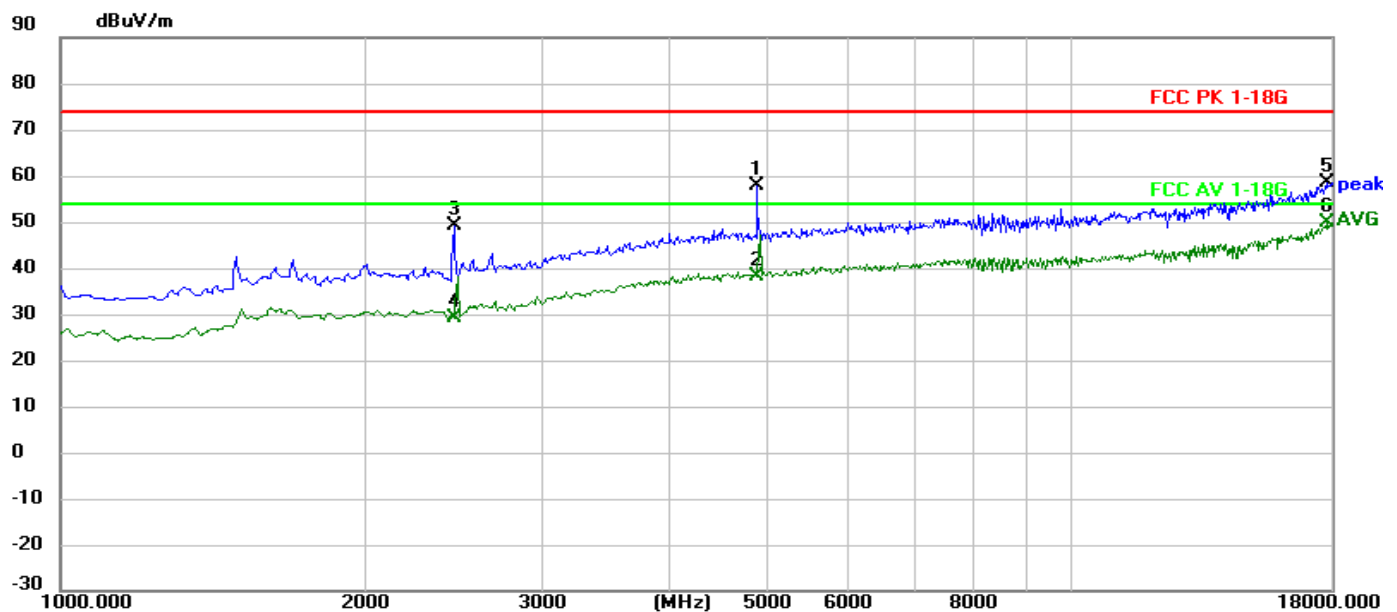


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2446.4464	67.82	-19.29	48.53	74.00	-25.47	peak	Pass
2	2446.4464	48.18	-19.29	28.89	54.00	-25.11	AVG	Pass
3	4879.8799	60.58	-8.85	51.73	74.00	-22.27	peak	Pass
4	4879.8799	47.53	-8.85	38.68	54.00	-15.32	AVG	Pass
5	18000.0000	48.81	10.01	58.82	74.00	-15.18	peak	Pass
6 *	18000.0000	39.66	10.01	49.67	54.00	-4.33	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4879.8799	66.58	-8.85	57.73	74.00	-16.27	peak	Pass
2	4879.8799	47.15	-8.85	38.30	54.00	-15.70	AVG	Pass
3	2446.4464	68.51	-19.29	49.22	74.00	-24.78	peak	Pass
4	2446.4464	48.41	-19.29	29.12	54.00	-24.88	AVG	Pass
5	17812.8128	49.06	9.50	58.56	74.00	-15.44	peak	Pass
6 *	17812.8128	40.27	9.50	49.77	54.00	-4.23	AVG	Pass

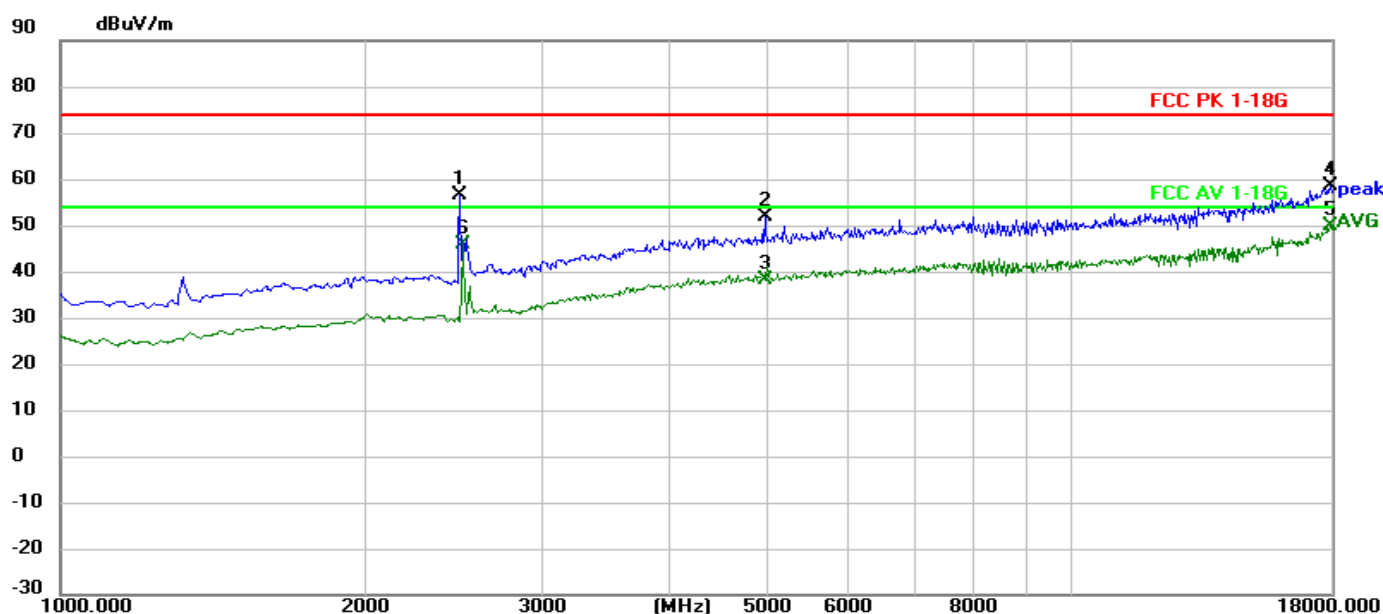
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz BLE 1M
Test voltage	3.3 Vdc

Results

Horizontal

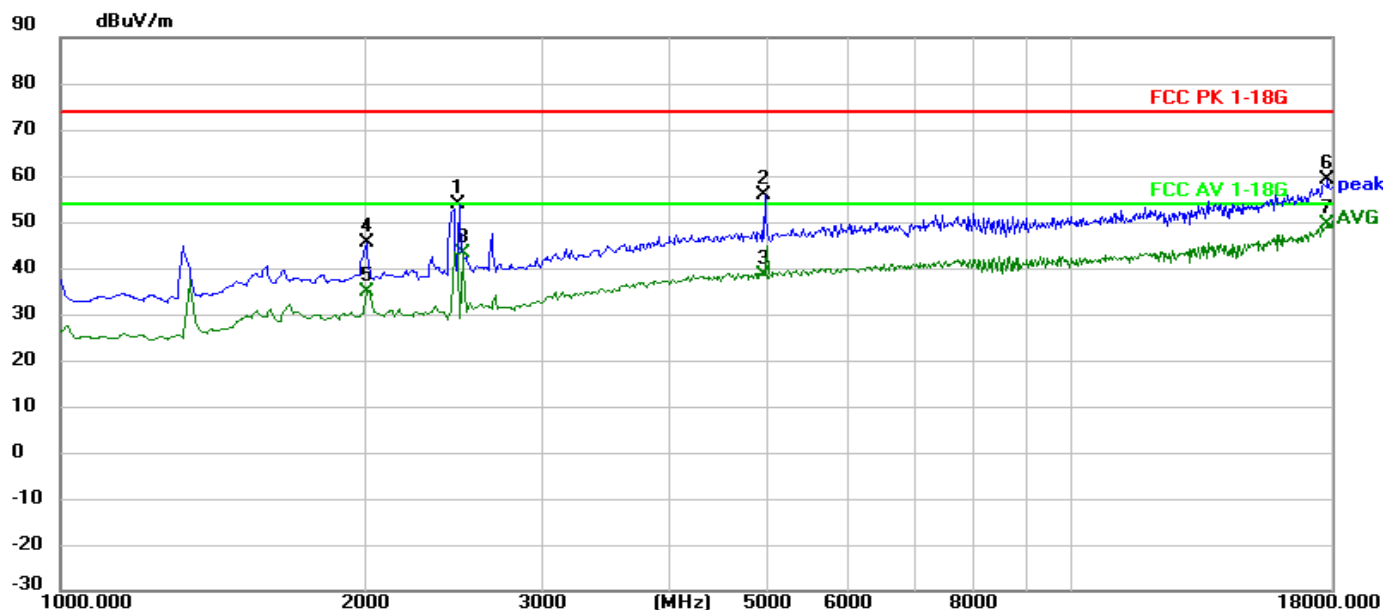


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2480.4805	75.62	-19.07	56.55	74.00	-17.45	peak	Pass
2	4964.9650	60.41	-8.69	51.72	74.00	-22.28	peak	Pass
3	4964.9650	46.97	-8.69	38.28	54.00	-15.72	AVG	Pass
4	17914.9149	48.65	9.84	58.49	74.00	-15.51	peak	Pass
5 *	17914.9149	39.94	9.84	49.78	54.00	-4.22	AVG	Pass
6	2497.4975	64.64	-18.94	45.70	54.00	-8.30	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2480.4805	73.06	-19.07	53.99	74.00	-20.01	peak	Pass
2	4964.9650	64.52	-8.69	55.83	74.00	-18.17	peak	Pass
3	4964.9650	47.21	-8.69	38.52	54.00	-15.48	AVG	Pass
4	2004.0040	66.17	-20.55	45.62	74.00	-28.38	peak	Pass
5	2004.0040	55.46	-20.55	34.91	54.00	-19.09	AVG	Pass
6	17812.8128	49.57	9.50	59.07	74.00	-14.93	peak	Pass
7 *	17812.8128	40.12	9.50	49.62	54.00	-4.38	AVG	Pass
8	2497.4975	62.27	-18.94	43.33	54.00	-10.67	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

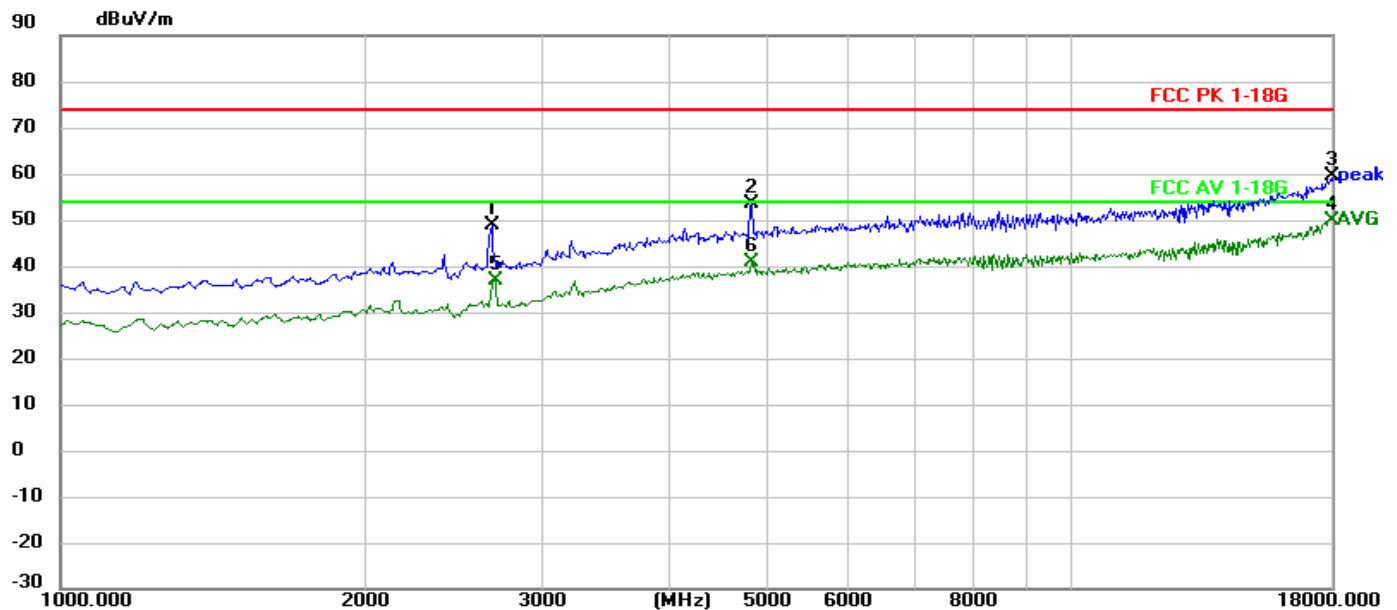
No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Results of 1 – 18 GHz

Model	LB-L17D
Operation Mode	Mode 1 @2402 MHz BLE 2M
Test voltage	3.3 Vdc

Results

Horizontal

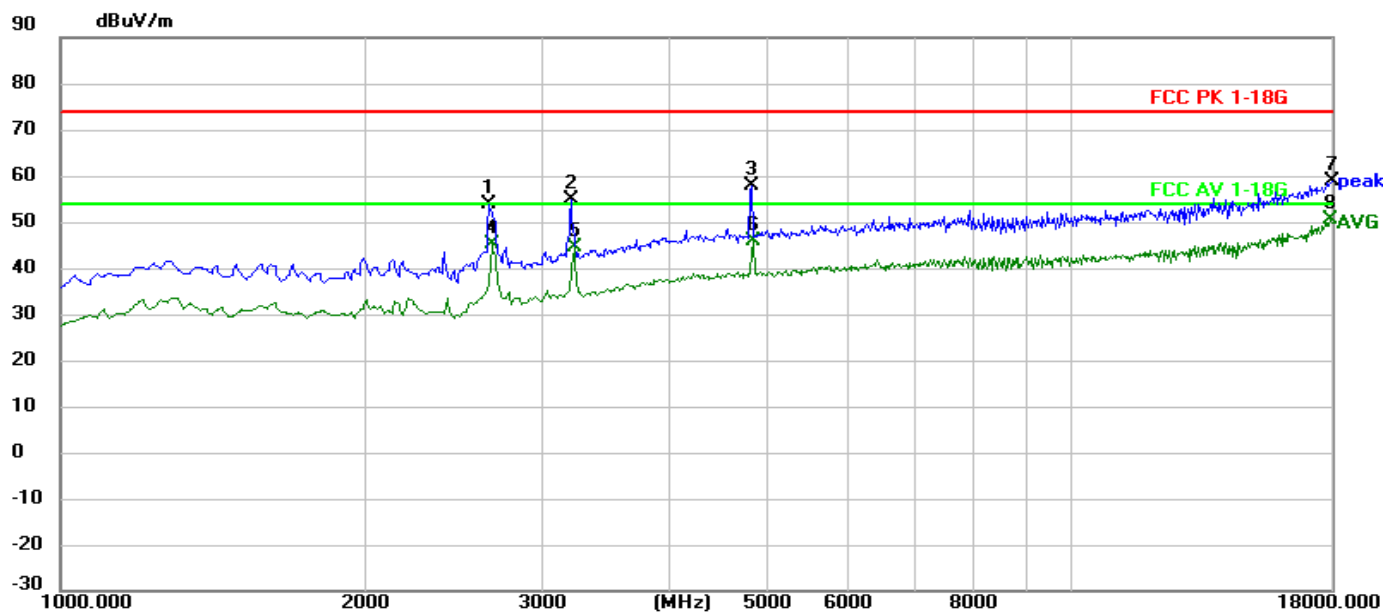


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2667.6677	66.84	-18.15	48.69	74.00	-25.31	peak	Pass
2	4811.8118	62.35	-8.98	53.37	74.00	-20.63	AVG	Pass
3	18000.0000	49.53	10.01	59.54	74.00	-14.46	peak	Pass
4	18000.0000	39.90	10.01	49.91	54.00	-4.09	AVG	Pass
5	2684.6847	54.86	-18.13	36.73	54.00	-17.27	peak	Pass
6	4811.8118	49.91	-8.98	40.93	54.00	-13.07	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2650.6507	72.02	-18.16	53.86	74.00	-20.14	peak	Pass
2	3195.1952	69.91	-15.00	54.91	74.00	-19.09	peak	Pass
3	4811.8118	66.77	-8.98	57.79	74.00	-16.21	peak	Pass
4	2667.6677	63.30	-18.15	45.15	54.00	-8.85	AVG	Pass
5	3212.2122	59.25	-14.91	44.34	54.00	-9.66	AVG	Pass
6	4828.8288	54.94	-8.96	45.98	54.00	-8.02	AVG	Pass
7	17982.9830	48.70	9.99	58.69	74.00	-15.31	peak	Pass
8 *	17931.9319	40.49	9.89	50.38	54.00	-3.62	AVG	Pass

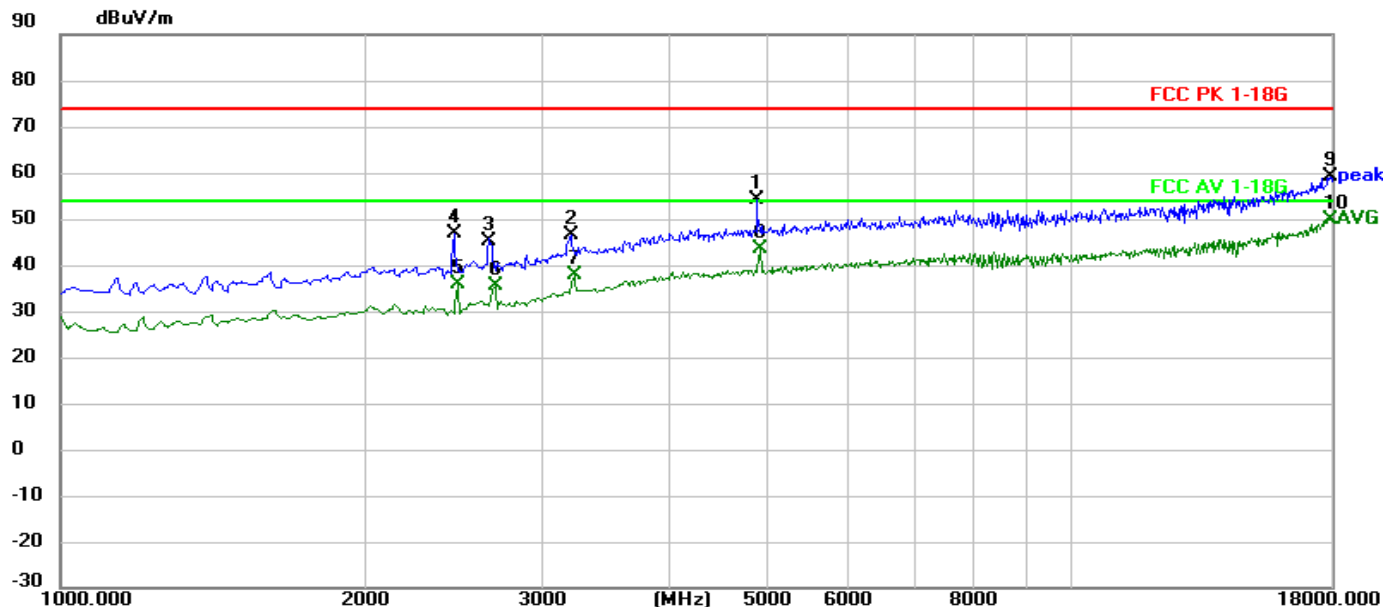
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2440 MHz BLE 2M
Test voltage	3.3 Vdc

Results

Horizontal

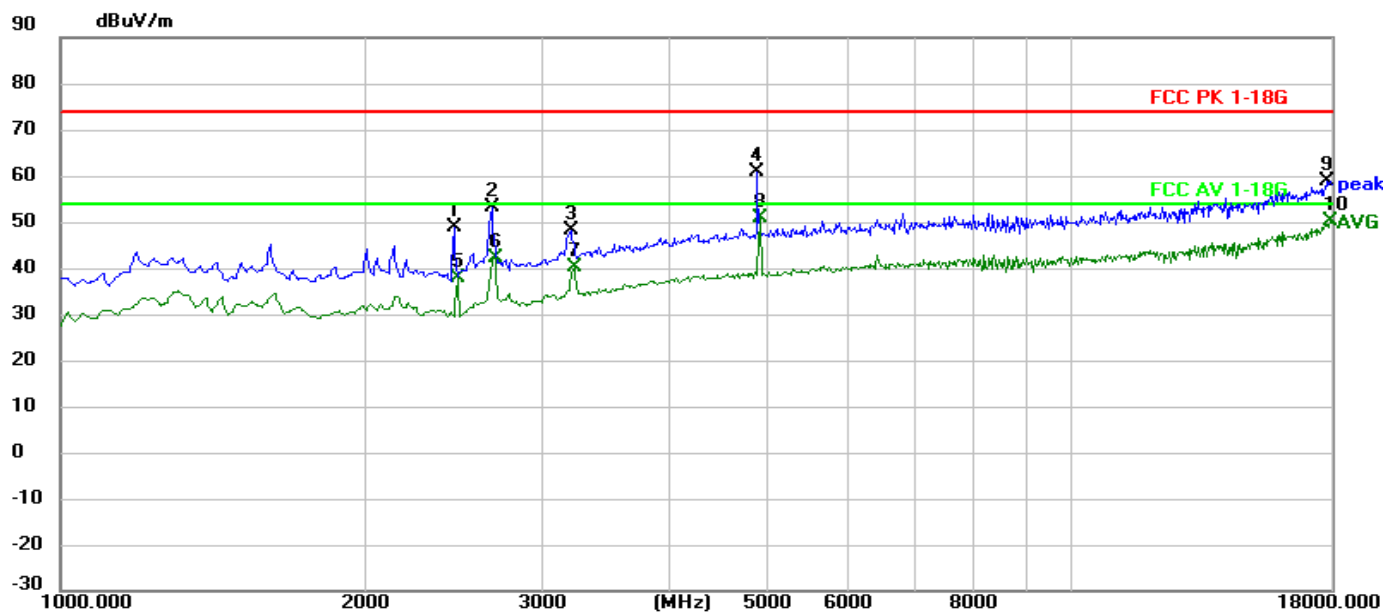


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4879.8799	62.95	-8.85	54.10	74.00	-19.90	peak	Pass
2	3195.1952	61.66	-15.00	46.66	74.00	-27.34	peak	Pass
3	2651.2476	63.42	-18.16	45.26	74.00	-28.74	peak	Pass
4	2446.4464	66.26	-19.29	46.97	74.00	-27.03	peak	Pass
5	2463.4635	54.88	-19.18	35.70	54.00	-18.30	AVG	Pass
6	2684.6847	53.79	-18.13	35.66	54.00	-18.34	AVG	Pass
7	3212.2122	52.60	-14.91	37.69	54.00	-16.31	AVG	Pass
8	4896.8969	52.45	-8.82	43.63	54.00	-10.37	AVG	Pass
9	17931.9319	49.22	9.89	59.11	74.00	-14.89	peak	Pass
10 *	17931.9319	39.94	9.89	49.83	54.00	-4.17	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2446.4464	68.14	-19.29	48.85	74.00	-25.15	peak	Pass
2	2667.6677	71.48	-18.15	53.33	74.00	-20.67	peak	Pass
3	3195.1952	63.10	-15.00	48.10	74.00	-25.90	peak	Pass
4	4879.8799	69.62	-8.85	60.77	74.00	-13.23	peak	Pass
5	2463.4635	57.12	-19.18	37.94	54.00	-16.06	AVG	Pass
6	2684.6847	60.23	-18.13	42.10	54.00	-11.90	AVG	Pass
7	3212.2122	54.97	-14.91	40.06	54.00	-13.94	AVG	Pass
8 *	4896.8969	59.52	-8.82	50.70	54.00	-3.30	AVG	Pass
9	17812.8128	49.38	9.50	58.88	74.00	-15.12	peak	Pass
10	17914.9149	40.17	9.84	50.01	54.00	-3.99	AVG	Pass

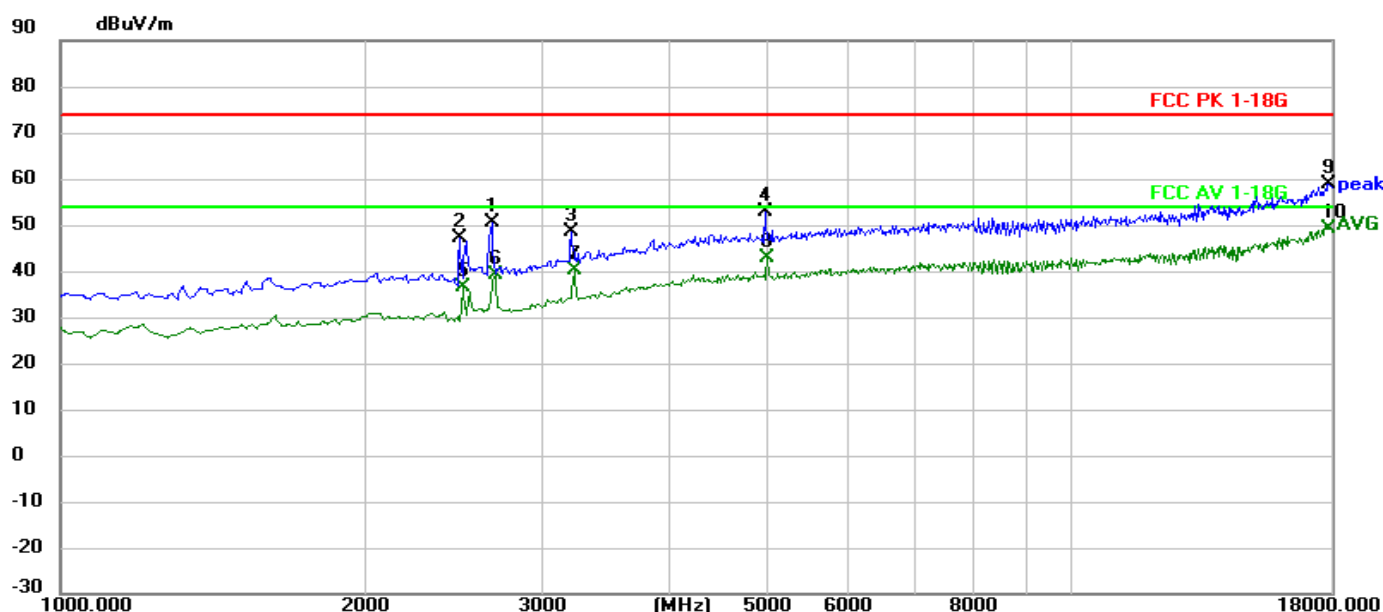
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz BLE 2M
Test voltage	3.3 Vdc

Results

Horizontal

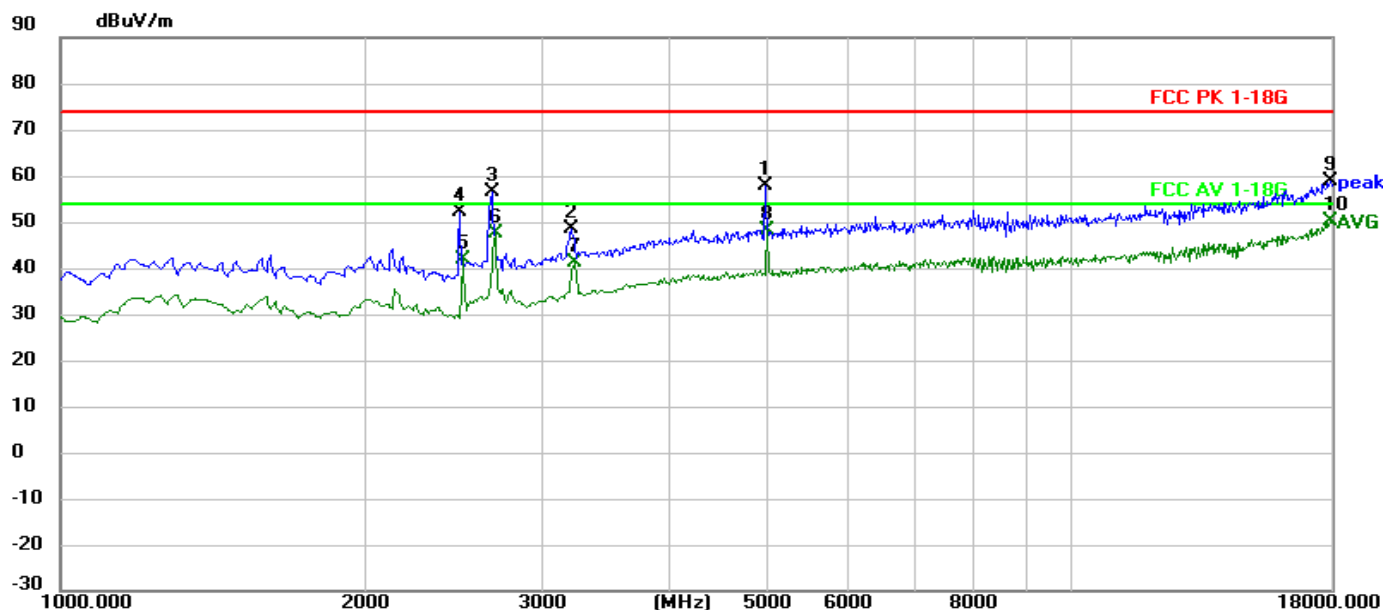


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2667.6677	68.58	-18.15	50.43	74.00	-23.57	peak	Pass
2	2480.4805	66.15	-19.07	47.08	74.00	-26.92	peak	Pass
3	3195.1952	63.65	-15.00	48.65	74.00	-25.35	peak	Pass
4	4964.9650	61.65	-8.69	52.96	74.00	-21.04	peak	Pass
5	2497.4975	55.38	-18.94	36.44	54.00	-17.56	AVG	Pass
6	2684.6847	57.31	-18.13	39.18	54.00	-14.82	AVG	Pass
7	3212.2122	55.02	-14.91	40.11	54.00	-13.89	AVG	Pass
8	4981.9820	51.42	-8.66	42.76	54.00	-11.24	AVG	Pass
9	17880.8809	49.13	9.73	58.86	74.00	-15.14	peak	Pass
10 *	17880.8809	39.48	9.73	49.21	54.00	-4.79	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4964.9650	66.69	-8.69	58.00	74.00	-16.00	peak	Pass
2	3195.1952	63.55	-15.00	48.55	74.00	-25.45	peak	Pass
3	2667.6677	74.52	-18.15	56.37	74.00	-17.63	peak	Pass
4	2480.4805	71.30	-19.07	52.23	74.00	-21.77	peak	Pass
5	2497.4975	60.76	-18.94	41.82	54.00	-12.18	AVG	Pass
6	2684.6847	65.60	-18.13	47.47	54.00	-6.53	AVG	Pass
7	3212.2122	56.21	-14.91	41.30	54.00	-12.70	AVG	Pass
8	4981.9820	56.96	-8.66	48.30	54.00	-5.70	AVG	Pass
9	17931.9319	49.01	9.89	58.90	74.00	-15.10	peak	Pass
10 *	17931.9319	40.19	9.89	50.08	54.00	-3.92	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

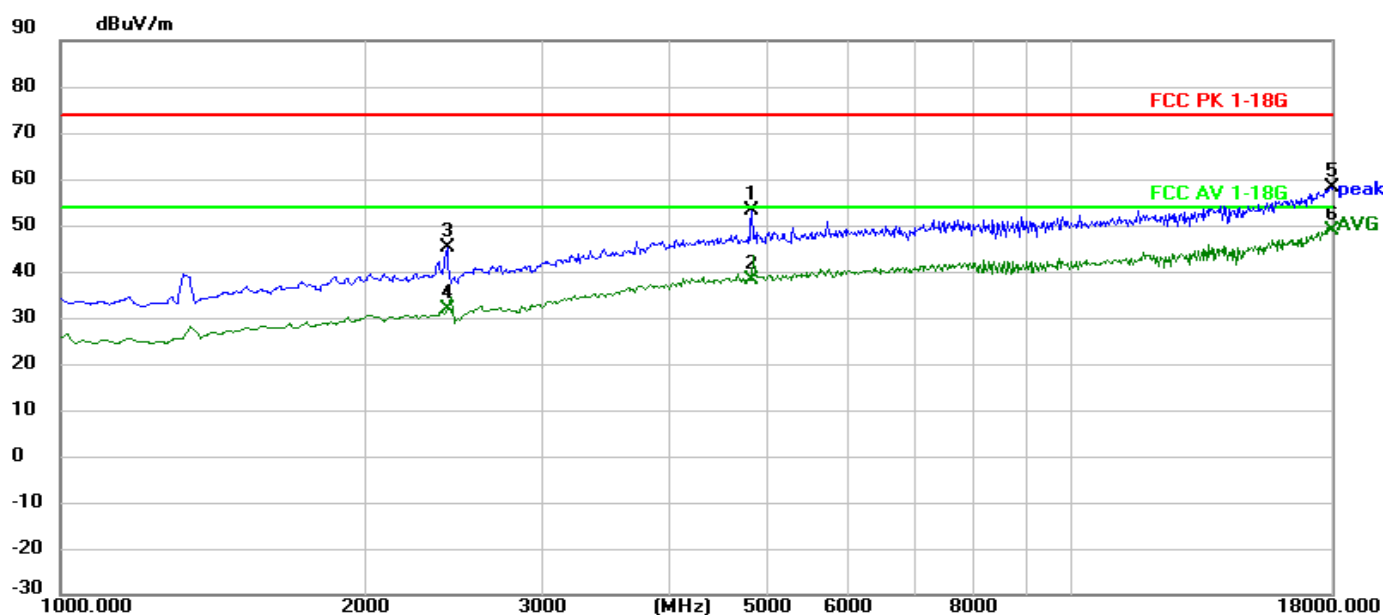
No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Results of 1 – 18 GHz

Model	LB-L17D
Operation Mode	Mode 1 @2405 MHz thread/zigbee
Test voltage	3.3 Vdc

Results

Horizontal

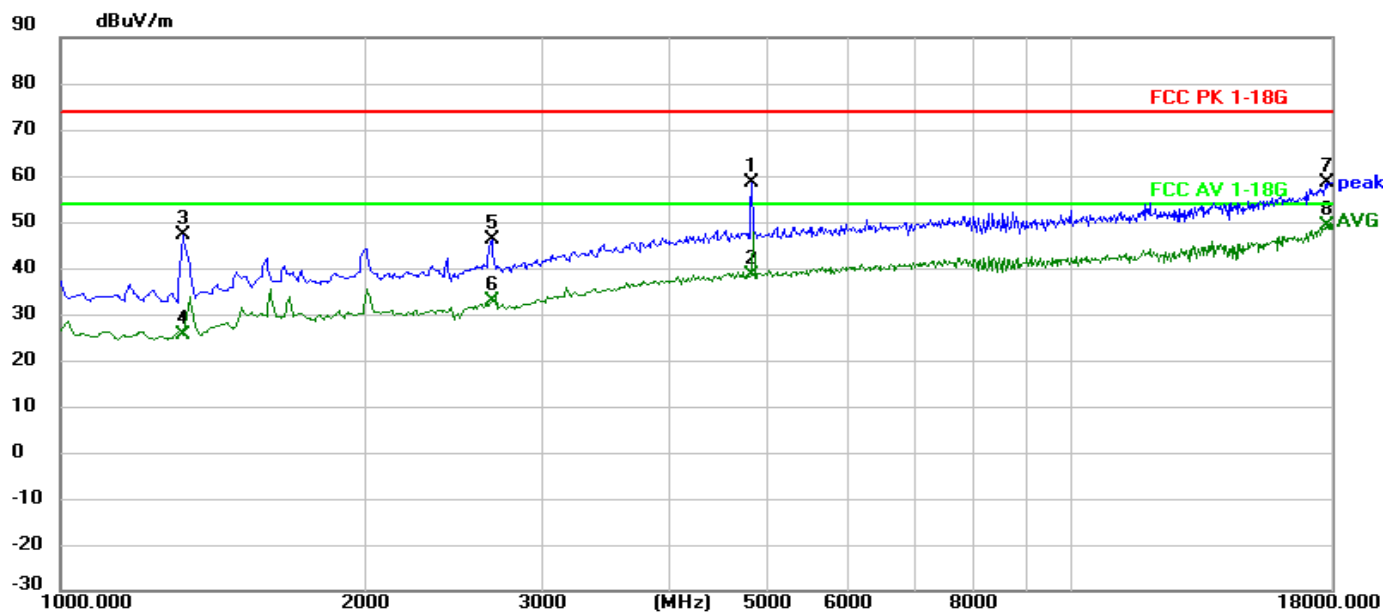


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4811.8118	62.19	-8.98	53.21	74.00	-20.79	peak	Pass
2	4811.8118	47.27	-8.98	38.29	54.00	-15.71	AVG	Pass
3	2412.4124	64.50	-19.46	45.04	74.00	-28.96	peak	Pass
4	2412.4124	51.26	-19.46	31.80	54.00	-22.20	AVG	Pass
5	17982.9830	48.22	9.99	58.21	74.00	-15.79	peak	Pass
6 *	17982.9830	38.88	9.99	48.87	54.00	-5.13	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	4811.8118	67.49	-8.98	58.51	74.00	-15.49	peak	Pass
2	4811.8118	47.61	-8.98	38.63	54.00	-15.37	AVG	Pass
3	1323.3233	72.78	-25.52	47.26	74.00	-26.74	peak	Pass
4	1323.3233	50.95	-25.52	25.43	54.00	-28.57	AVG	Pass
5	2667.6677	64.28	-18.15	46.13	74.00	-27.87	peak	Pass
6	2667.6677	51.08	-18.15	32.93	54.00	-21.07	AVG	Pass
7	17812.8128	48.99	9.50	58.49	74.00	-15.51	peak	Pass
8 *	17812.8128	39.78	9.50	49.28	54.00	-4.72	AVG	Pass

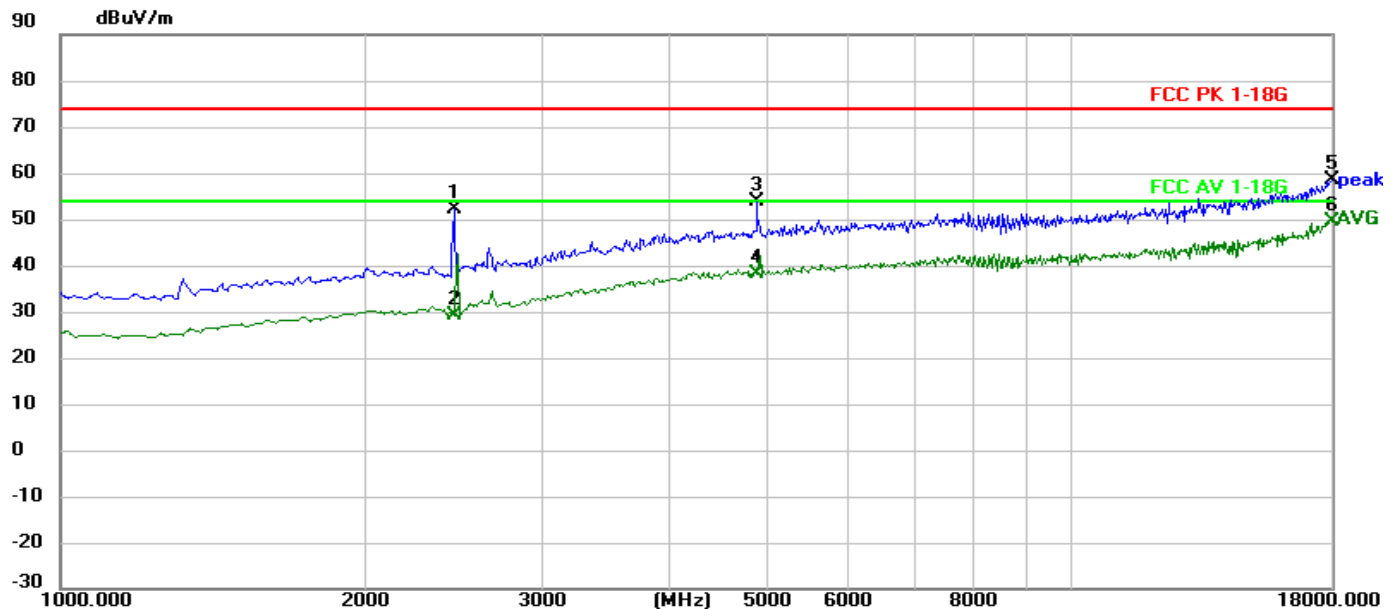
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2440 MHz thread/zigbee
Test voltage	3.3 Vdc

Results

Horizontal

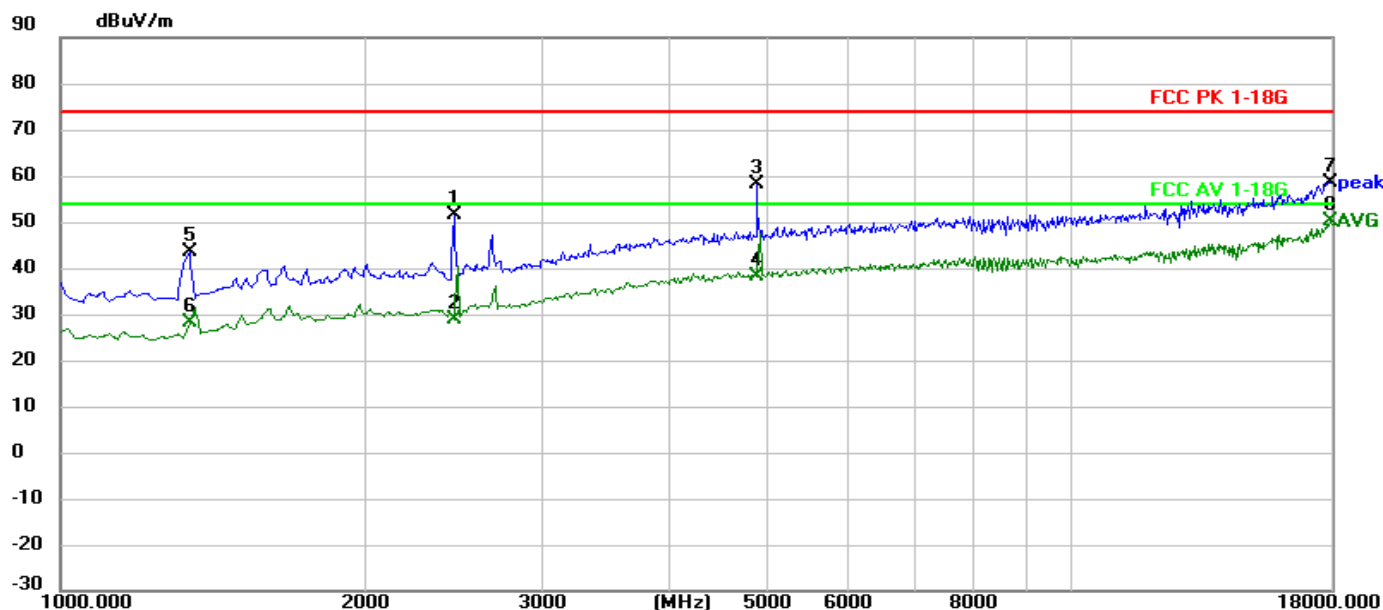


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2446.4464	71.41	-19.29	52.12	74.00	-21.88	peak	Pass
2	2446.4464	48.59	-19.29	29.30	54.00	-24.70	AVG	Pass
3	4879.8799	62.63	-8.85	53.78	74.00	-20.22	peak	Pass
4	4879.8799	47.13	-8.85	38.28	54.00	-15.72	AVG	Pass
5	17982.9830	48.51	9.99	58.50	74.00	-15.50	peak	Pass
6 *	17982.9830	39.49	9.99	49.48	54.00	-4.52	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2446.4464	70.79	-19.29	51.50	74.00	-22.50	peak	Pass
2	2446.4464	48.26	-19.29	28.97	54.00	-25.03	AVG	Pass
3	4879.8799	67.15	-8.85	58.30	74.00	-15.70	peak	Pass
4	4879.8799	47.05	-8.85	38.20	54.00	-15.80	AVG	Pass
5	1340.3403	68.71	-25.37	43.34	74.00	-30.66	peak	Pass
6	1340.3403	53.46	-25.37	28.09	54.00	-25.91	AVG	Pass
7	17914.9149	48.74	9.84	58.58	74.00	-15.42	peak	Pass
8 *	17914.9149	40.17	9.84	50.01	54.00	-3.99	AVG	Pass

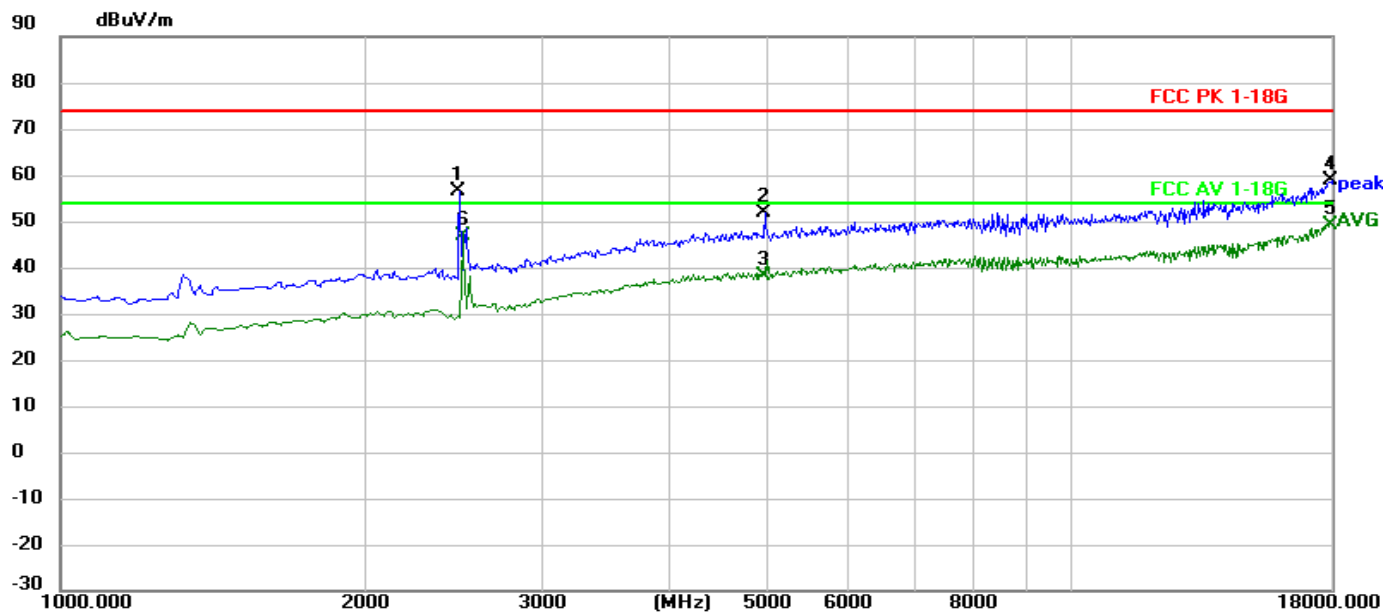
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz thread/zigbee
Test voltage	3.3 Vdc

Results

Horizontal

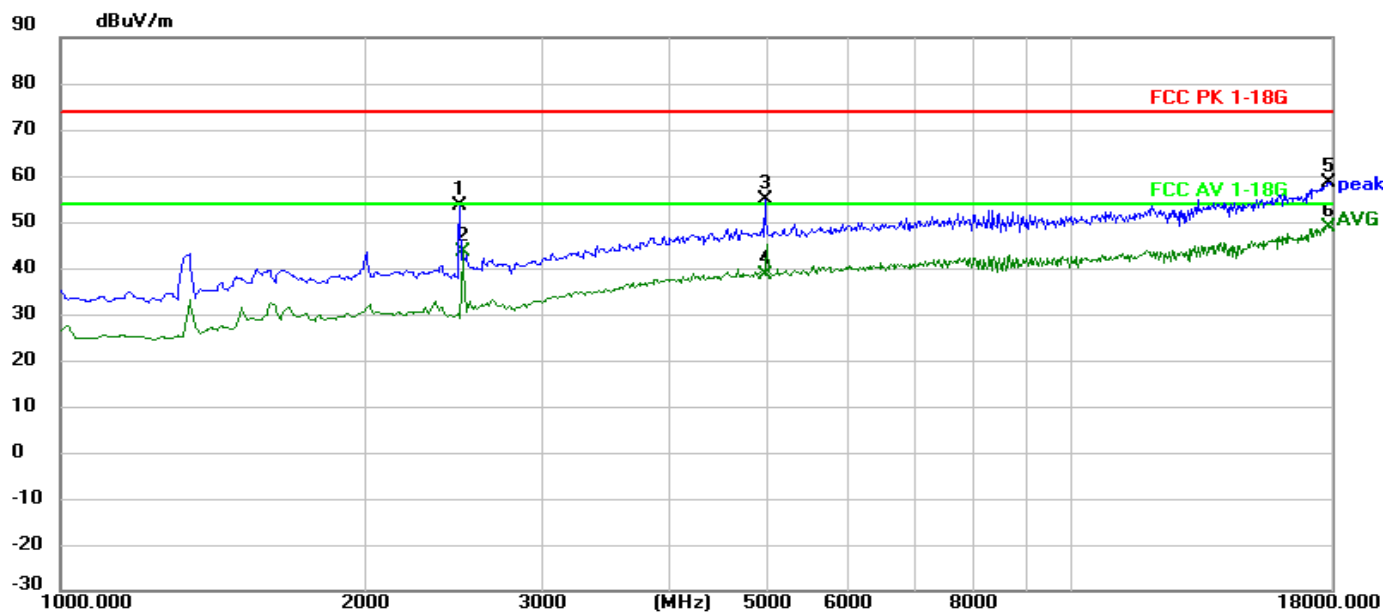


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2480.4805	75.60	-19.07	56.53	74.00	-17.47	peak	Pass
2	4964.9650	60.47	-8.69	51.78	74.00	-22.22	peak	Pass
3	4964.9650	46.92	-8.69	38.23	54.00	-15.77	AVG	Pass
4	17982.9830	48.82	9.99	58.81	74.00	-15.19	peak	Pass
5 *	17982.9830	39.05	9.99	49.04	54.00	-4.96	AVG	Pass
6	2497.4975	65.64	-18.94	46.70	54.00	-7.30	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2480.4805	72.59	-19.07	53.52	74.00	-20.48	peak	Pass
2	2497.4975	62.28	-18.94	43.34	54.00	-10.66	AVG	Pass
3	4964.9650	63.56	-8.69	54.87	74.00	-19.13	peak	Pass
4	4964.9650	47.19	-8.69	38.50	54.00	-15.50	AVG	Pass
5	17880.8809	48.75	9.73	58.48	74.00	-15.52	peak	Pass
6 *	17880.8809	39.19	9.73	48.92	54.00	-5.08	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

4.3	Emissions in restricted frequency bands	VERDICT: PASS
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Restricted Bands of operation of FCC			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
156 – 13.41			
Restricted Bands of operation for IC			
0.090 - 0.110	156 - 13.41	960 - 1427	9.0 - 9.2
0.495 - 0.505	16.42 - 16.423	1435 - 1626.5	9.3 - 9.5
2.1735 - 2.1905	16.69475 - 16.69525	1645.5 - 1646.5	10.6 - 12.7
3.020 - 3.026	16.80425 - 16.80475	1660 - 1710	13.25 - 13.4
4.125 - 4.128	25.5 - 25.67	1718.8 - 1722.2	14.47 - 14.5
4.17725 - 4.17775	37.5 - 38.25	2200 - 2300	15.35 - 16.2
4.20725 - 4.20775	73 - 74.6	2310 - 2390	17.7 - 21.4
5.677 - 5.683	74.8 - 75.2	2483.5 - 2500	22.01 - 23.12
6.215 - 6.218	108 - 138	2655 - 2900	23.6 - 24.0
6.26775 - 6.26825	149.9 - 150.05	3260 - 3267	31.2 - 31.8
6.31175 - 6.31225	156.52475 - 156.52525	3332 - 3339	36.43 - 36.5
8.291 - 8.294	156.7 - 156.9	3345.8 - 3358	Above 38.6
8.362 - 8.366	162.0125 - 167.17	3500 - 4400	
8.37625 - 8.38675	167.72 - 173.2	4500 - 5150	
8.41425 - 8.41475	240 - 285	5350 - 5460	
12.29 - 12.293	322 - 335.4	7250 - 7750	
12.51975 - 12.52025	399.9 - 410	8025 - 8500	
12.57675 - 12.57725	608 - 614	--	

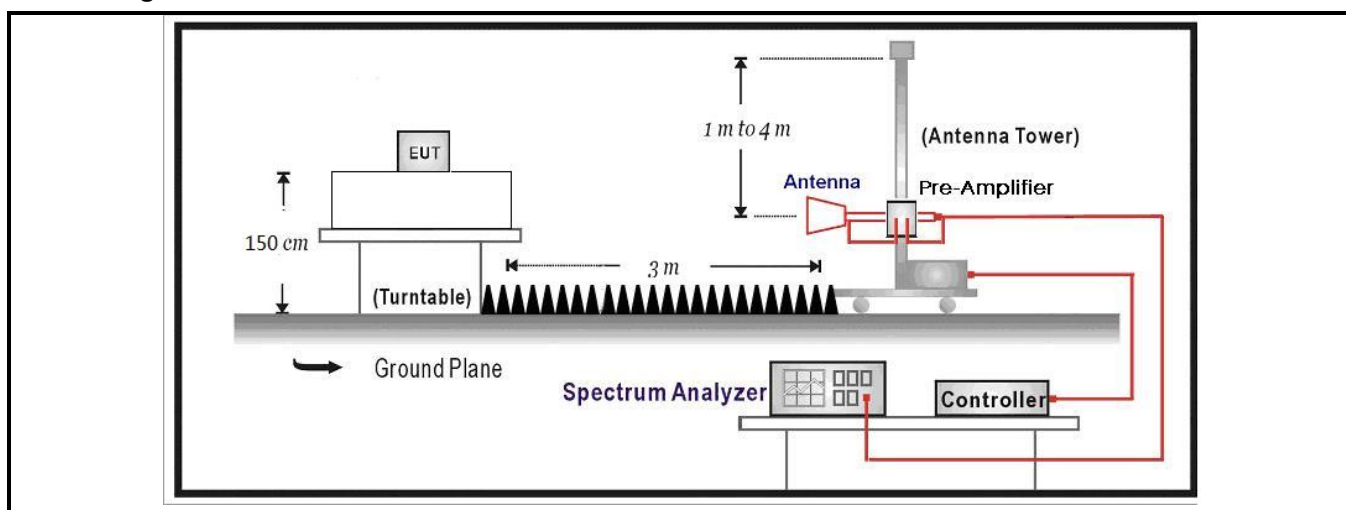
Restricted Band Emissions Limit

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
0.009 - 0.49	$2400/F(\text{kHz})$	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	$24000/F(\text{kHz})$	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

Test Configuration



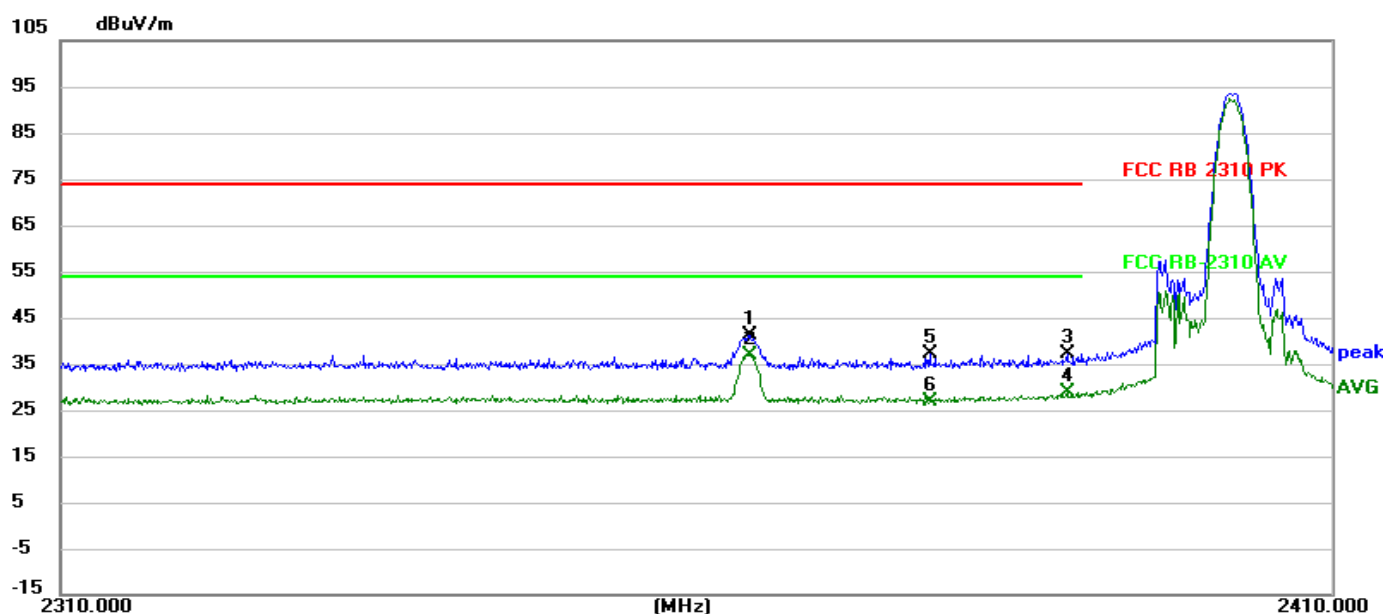
Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2402 MHz BLE 1M
Test voltage	3.3 Vdc

Results

Horizontal

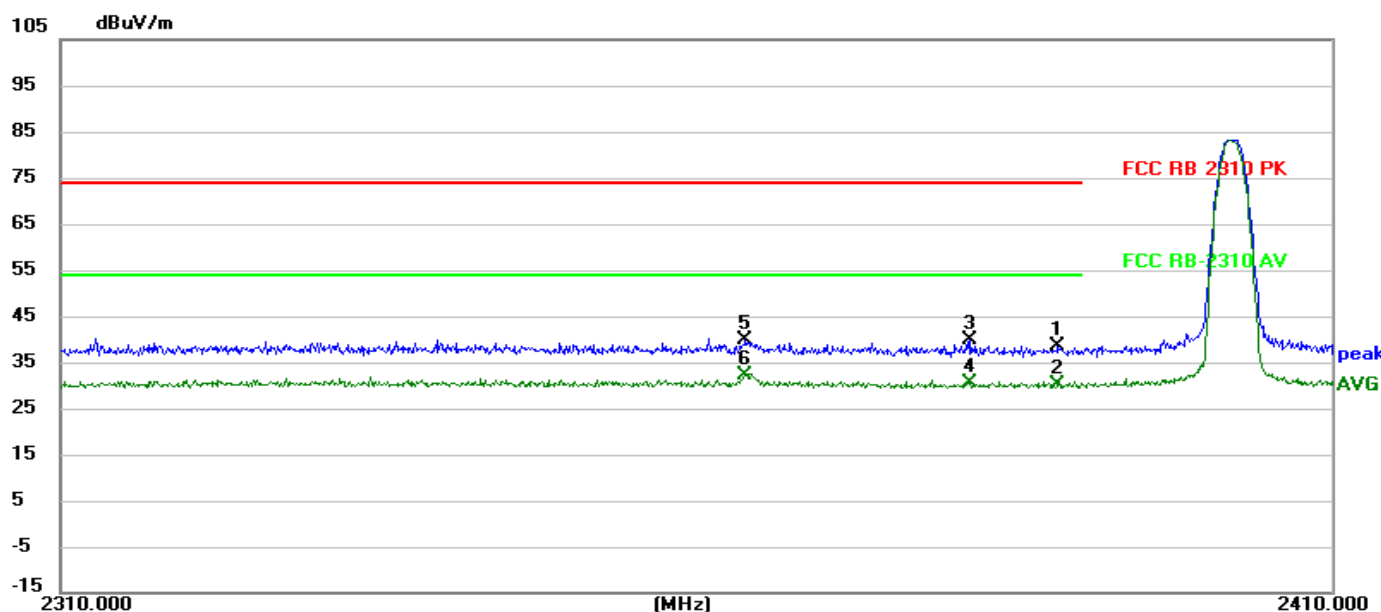


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2363.6236	61.97	-20.73	41.24	74.00	-32.76	peak	Pass
2 *	2363.6236	57.71	-20.73	36.98	54.00	-17.02	AVG	Pass
3	2388.7948	57.65	-20.64	37.01	74.00	-36.99	peak	Pass
4	2388.7948	49.38	-20.64	28.74	54.00	-25.26	AVG	Pass
5	2377.8540	57.70	-20.67	37.03	74.00	-36.97	peak	Pass
6	2377.8540	47.63	-20.67	26.96	54.00	-27.04	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2388.0459	58.99	-20.64	38.35	74.00	-35.65	peak	Pass
2	2388.0459	50.68	-20.64	30.04	54.00	-23.96	AVG	Pass
3	2381.1137	60.33	-20.66	39.67	74.00	-34.33	peak	Pass
4	2381.1137	51.29	-20.66	30.63	54.00	-23.37	AVG	Pass
5	2363.3725	60.43	-20.73	39.70	74.00	-34.30	peak	Pass
6 *	2363.3725	53.04	-20.73	32.31	54.00	-21.69	AVG	Pass

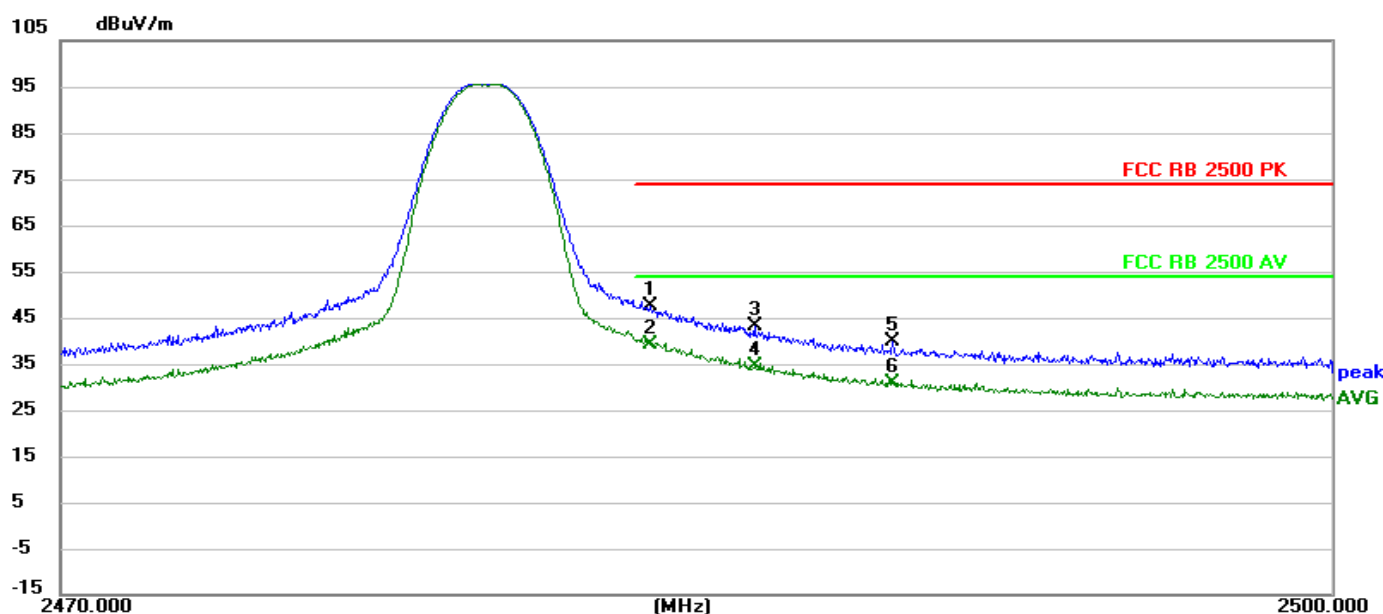
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz BLE 1M
Test voltage	3.3 Vdc

Results

Horizontal

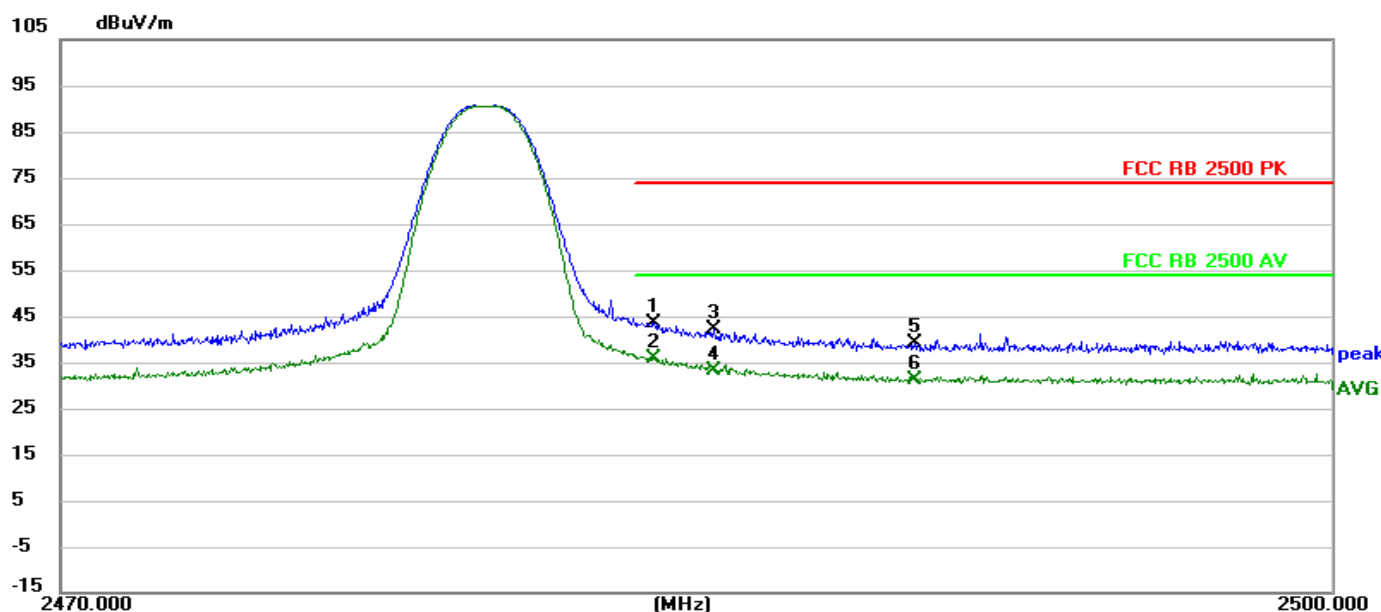


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.8689	67.72	-20.16	47.56	74.00	-26.44	peak	Pass
2 *	2483.8689	59.45	-20.16	39.29	54.00	-14.71	AVG	Pass
3	2486.3093	63.30	-20.14	43.16	74.00	-30.84	peak	Pass
4	2486.3093	54.74	-20.14	34.60	54.00	-19.40	AVG	Pass
5	2489.5981	59.85	-20.13	39.72	74.00	-34.28	peak	Pass
6	2489.5981	51.02	-20.13	30.89	54.00	-23.11	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.9429	63.80	-20.16	43.64	74.00	-30.36	peak	Pass
2 *	2483.9429	55.90	-20.16	35.74	54.00	-18.26	AVG	Pass
3	2485.3520	62.17	-20.15	42.02	74.00	-31.98	peak	Pass
4	2485.3520	53.38	-20.15	33.23	54.00	-20.77	AVG	Pass
5	2490.1166	59.14	-20.12	39.02	74.00	-34.98	peak	Pass
6	2490.1166	51.19	-20.12	31.07	54.00	-22.93	AVG	Pass

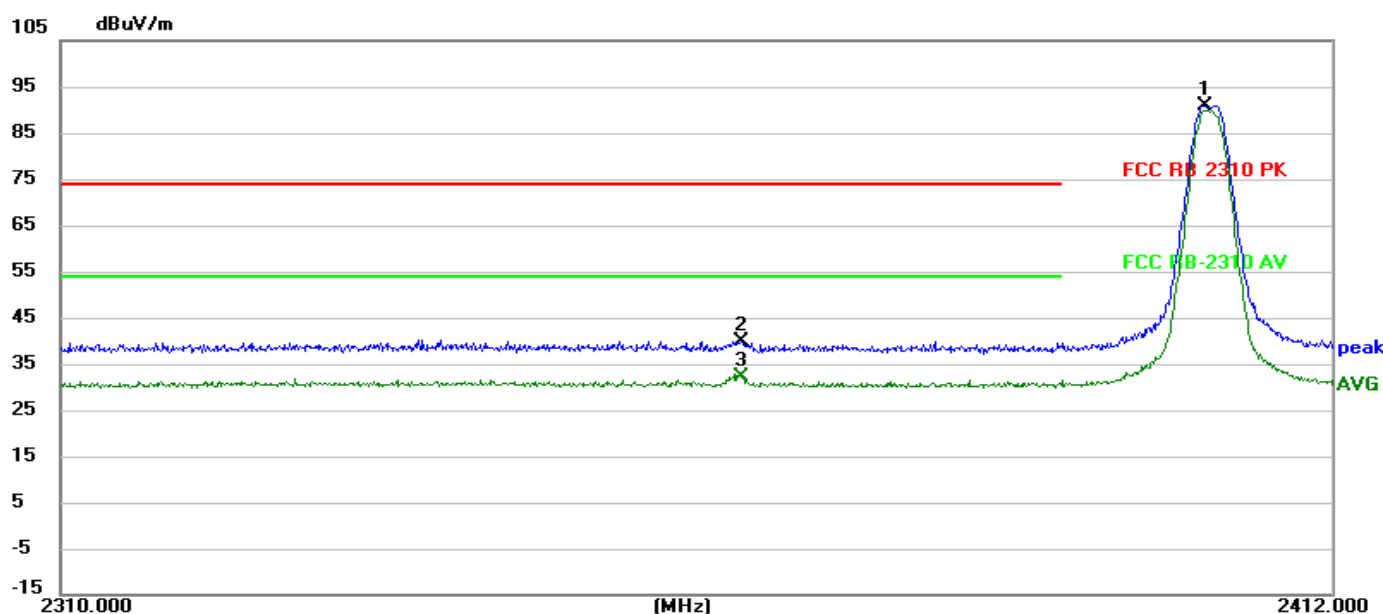
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2402 MHz BLE 2M
Test voltage	3.3 Vdc

Results

Horizontal

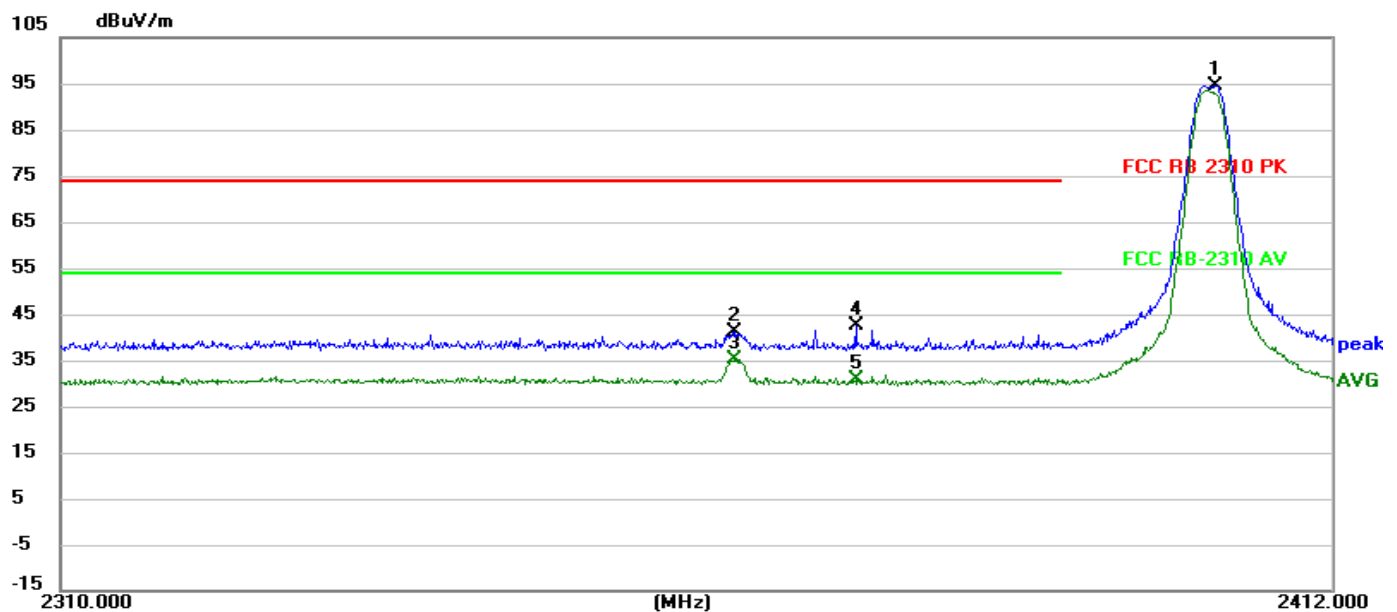


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2401.5565	111.46	-20.57	90.89			peak	Pass
2	2364.0883	60.65	-20.73	39.92	74.00	-34.08	peak	Pass
3 *	2364.0883	52.87	-20.73	32.14	54.00	-21.86	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2402.4680	115.01	-20.57	94.44			peak	Pass
2	2363.5284	61.84	-20.73	41.11	74.00	-32.89	peak	Pass
3 *	2363.5284	55.89	-20.73	35.16	54.00	-18.84	AVG	Pass
4	2373.3121	63.02	-20.68	42.34	74.00	-31.66	peak	Pass
5	2373.3121	51.57	-20.68	30.89	54.00	-23.11	AVG	Pass

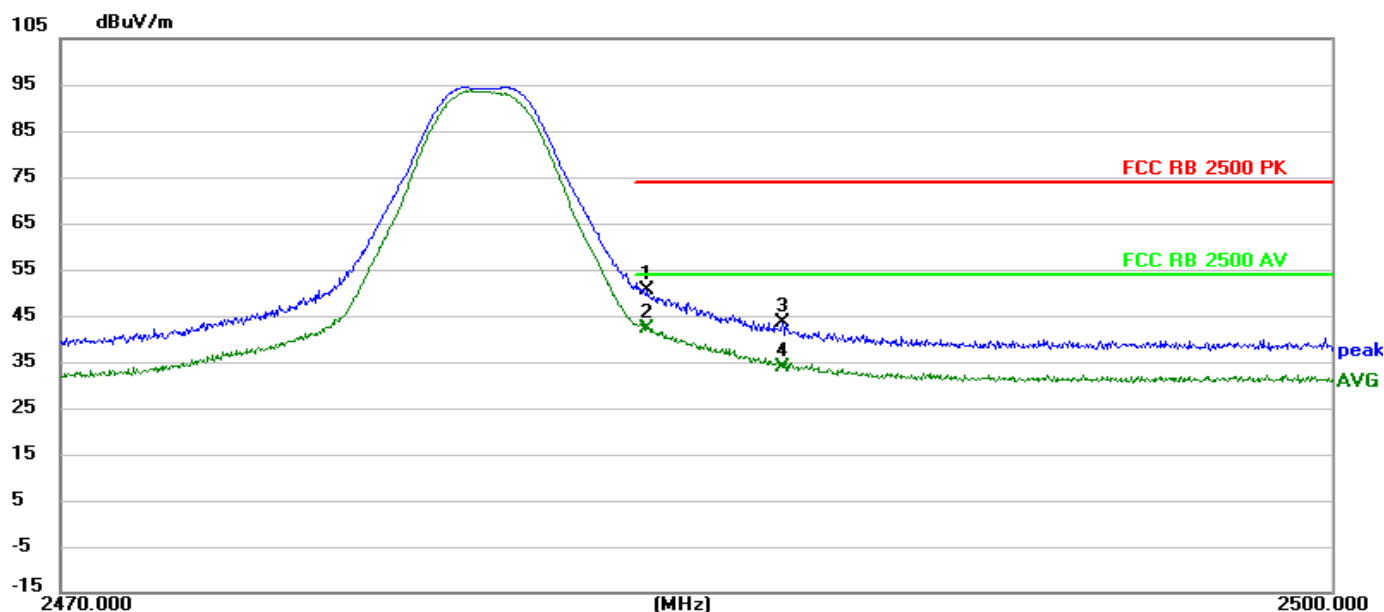
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz BLE 2M
Test voltage	3.3 Vdc

Results

Horizontal

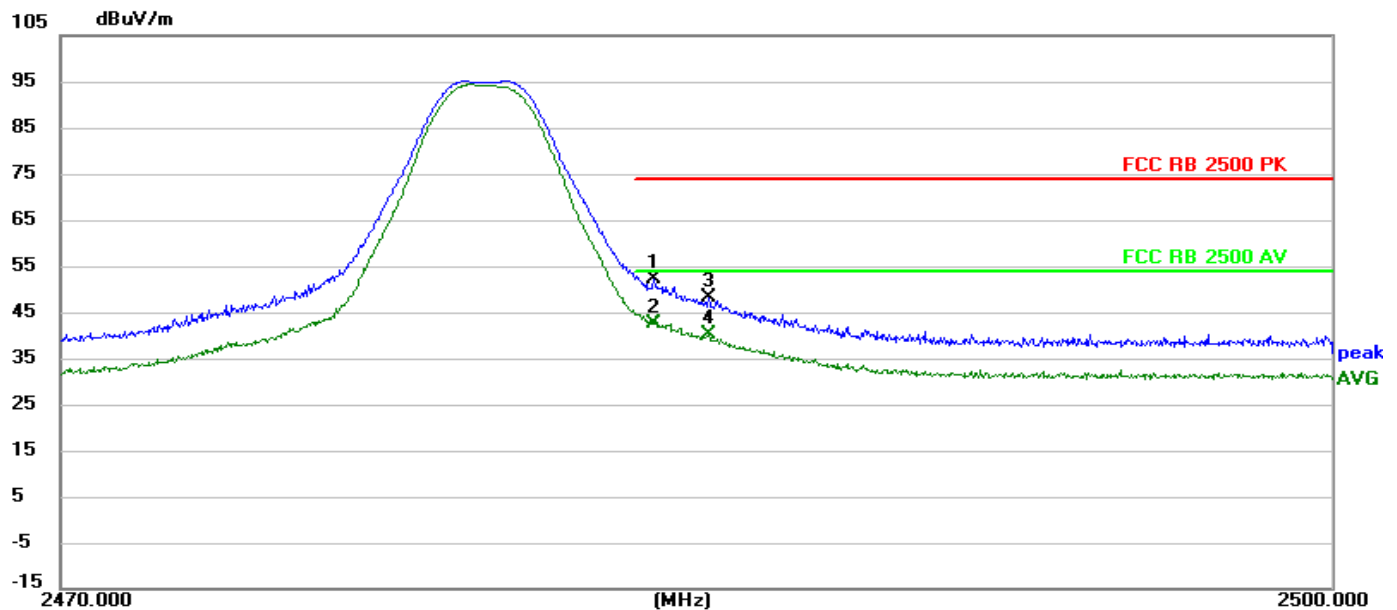


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.7995	70.79	-20.16	50.63	74.00	-23.37	peak	Pass
2 *	2483.7995	62.42	-20.16	42.26	54.00	-11.74	AVG	Pass
3	2486.9702	63.64	-20.14	43.50	74.00	-30.50	peak	Pass
4	2486.9702	54.09	-20.14	33.95	54.00	-20.05	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.9401	72.22	-20.16	52.06	74.00	-21.94	peak	Pass
2 *	2483.9401	62.68	-20.16	42.52	54.00	-11.48	AVG	Pass
3	2485.2320	68.30	-20.15	48.15	74.00	-25.85	peak	Pass
4	2485.2320	60.27	-20.15	40.12	54.00	-13.88	AVG	Pass

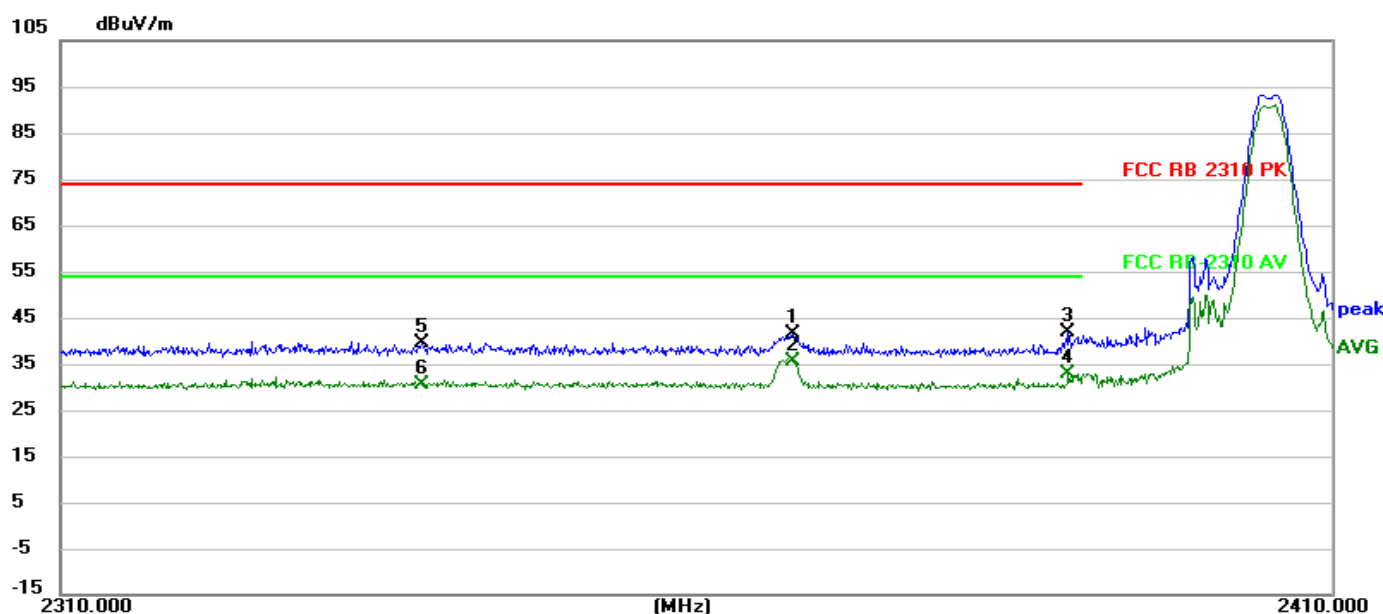
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2405 MHz thread/zigbee
Test voltage	3.3 Vdc

Results

Horizontal

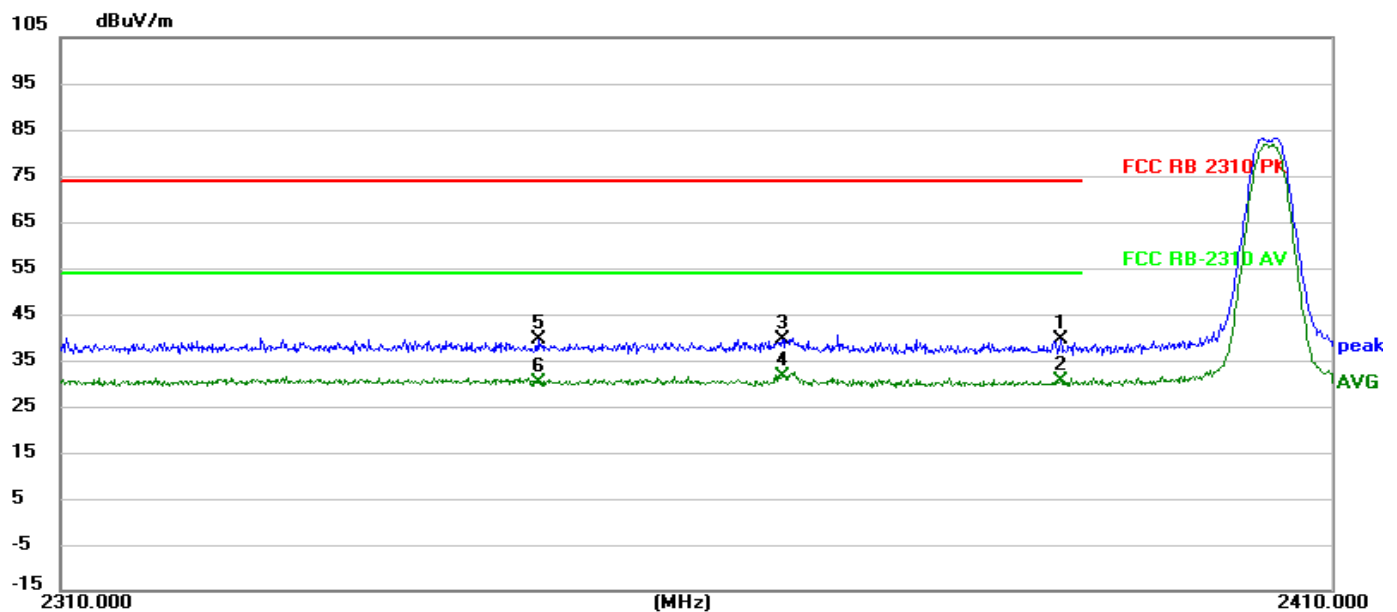


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2367.1088	62.34	-20.72	41.62	74.00	-32.38	peak	Pass
2 *	2367.1088	56.20	-20.72	35.48	54.00	-18.52	AVG	Pass
3	2388.9438	62.54	-20.63	41.91	74.00	-32.09	peak	Pass
4	2388.9438	53.45	-20.63	32.82	54.00	-21.18	AVG	Pass
5	2337.9118	60.25	-20.80	39.45	74.00	-34.55	peak	Pass
6	2337.9118	51.44	-20.80	30.64	54.00	-23.36	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2388.2586	60.03	-20.64	39.39	74.00	-34.61	peak	Pass
2	2388.2586	51.05	-20.64	30.41	54.00	-23.59	AVG	Pass
3	2366.1811	60.23	-20.72	39.51	74.00	-34.49	peak	Pass
4 *	2366.1811	52.37	-20.72	31.65	54.00	-22.35	AVG	Pass
5	2347.0484	60.39	-20.78	39.61	74.00	-34.39	peak	Pass
6	2347.0484	50.99	-20.78	30.21	54.00	-23.79	AVG	Pass

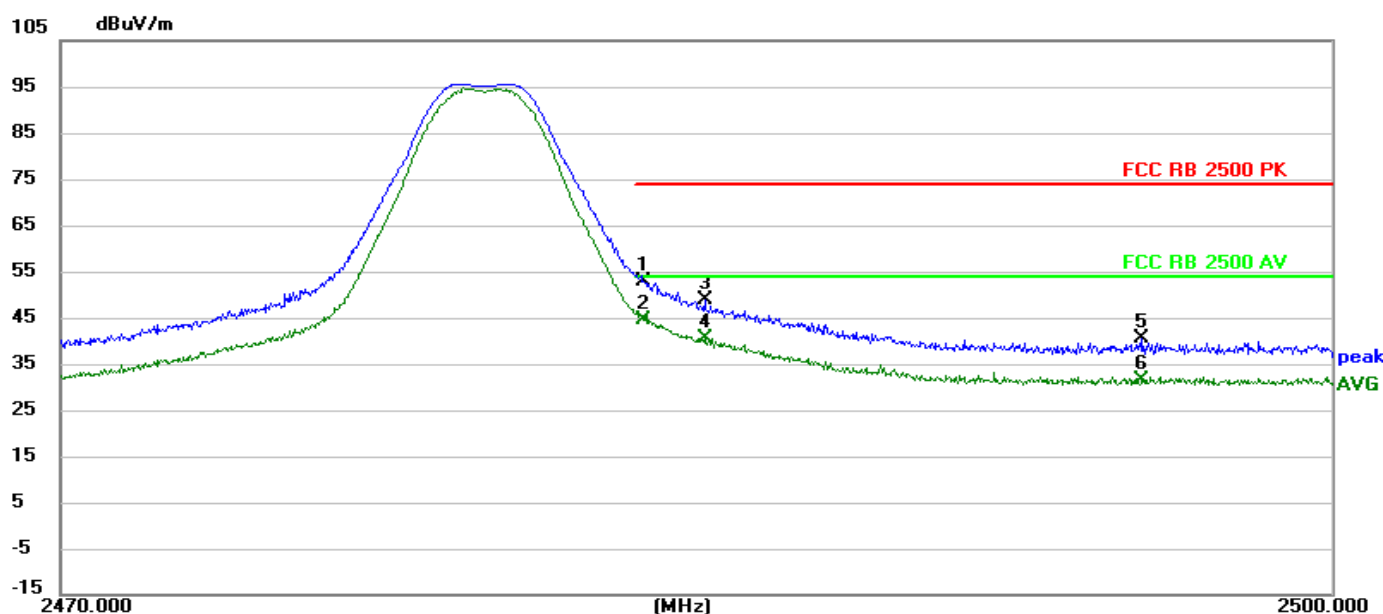
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	LB-L17D
Operation Mode (worst case)	Mode 1 @2480 MHz thread/zigbee
Test voltage	3.3 Vdc

Results

Horizontal

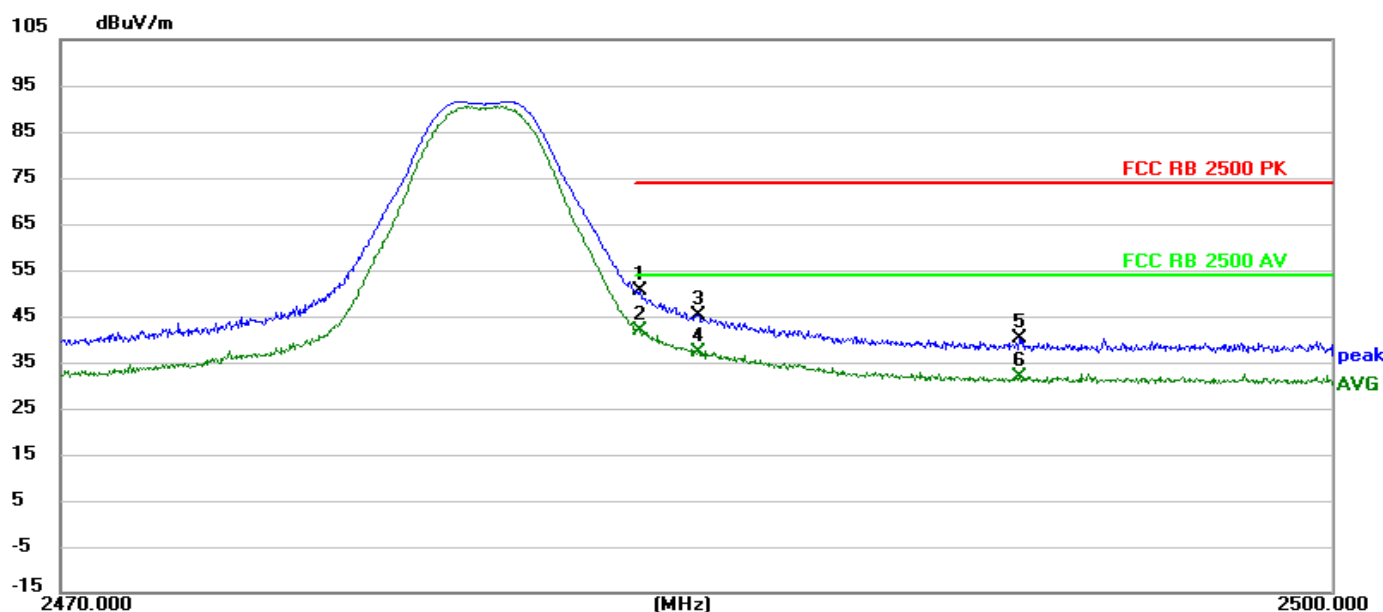


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.6992	73.03	-20.16	52.87	74.00	-21.13	peak	Pass
2 *	2483.6992	64.78	-20.16	44.62	54.00	-9.38	AVG	Pass
3	2485.1570	69.13	-20.15	48.98	74.00	-25.02	peak	Pass
4	2485.1570	60.66	-20.15	40.51	54.00	-13.49	AVG	Pass
5	2495.4895	60.64	-20.09	40.55	74.00	-33.45	peak	Pass
6	2495.4895	51.53	-20.09	31.44	54.00	-22.56	AVG	Pass

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Pass/Fail
1	2483.6110	70.55	-20.16	50.39	74.00	-23.61	peak	Pass
2 *	2483.6110	62.00	-20.16	41.84	54.00	-12.16	AVG	Pass
3	2484.9873	65.48	-20.15	45.33	74.00	-28.67	peak	Pass
4	2484.9873	57.21	-20.15	37.06	54.00	-16.94	AVG	Pass
5	2492.5926	60.13	-20.11	40.02	74.00	-33.98	peak	Pass
6	2492.5926	51.80	-20.11	31.69	54.00	-22.31	AVG	Pass

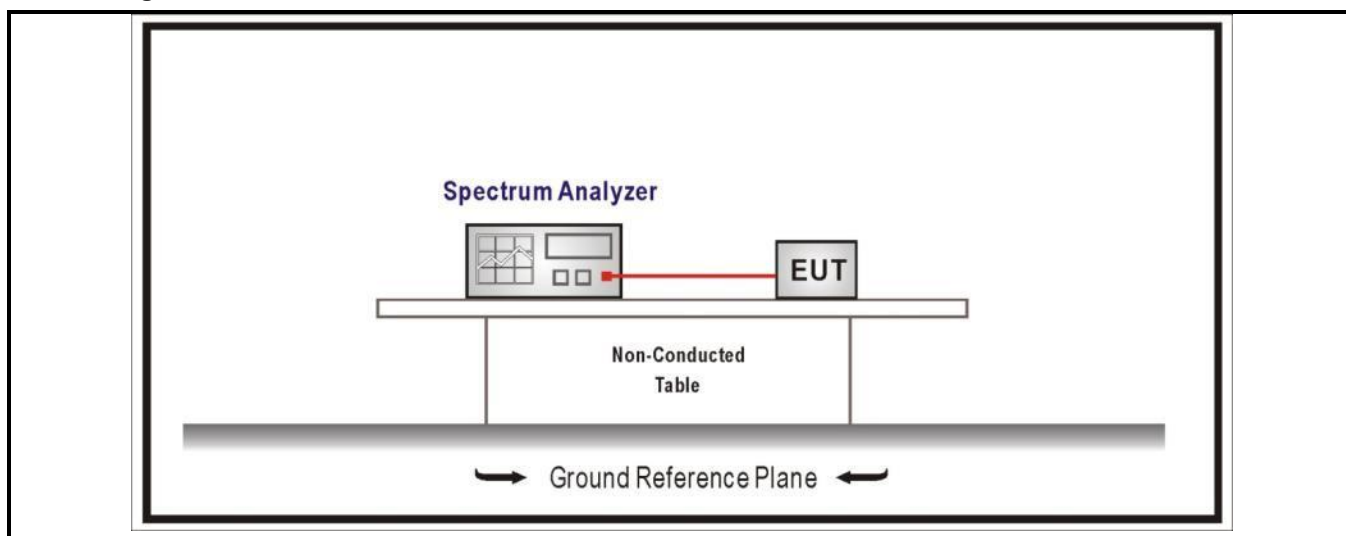
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

4.4 Band Edge	VERDICT: PASS
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Standard	FCC Part 15 Subpart C Paragraph 15.247(d) RSS-Gen Issue 5 Section 8.10
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30dBc(Note1)
RF Output power(PK detector)	20dBc(Note2)
Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD by level in 100 kHz (i.e., 30 dBc). Note 2: If the maximum peak conducted output power procedure was used, then 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 by level in 100 kHz (i.e., 20 dBc).	

Test Configuration

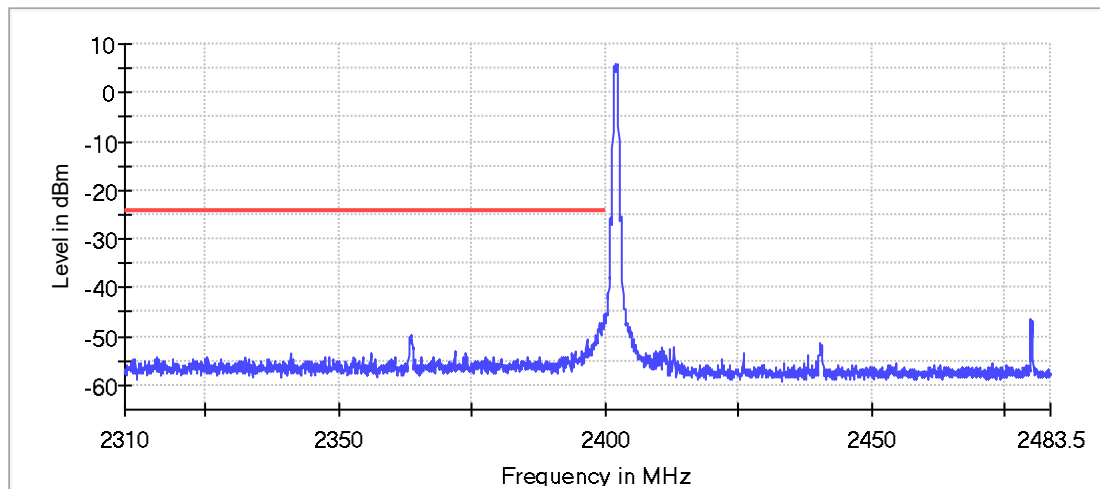


Performed measurements

Port under test	Antenna port
Test method applied	☒ Conducted measurement
	☐ Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).
Operating mode(s) used	Mode 1
Remark	---

Results of mode 1 @2402 MHz BLE 1M

Band Edge



— Limit — Sum Level × Fail

Inband Peak

Frequency (MHz)	Level (dBm)
2402.0000	5.8

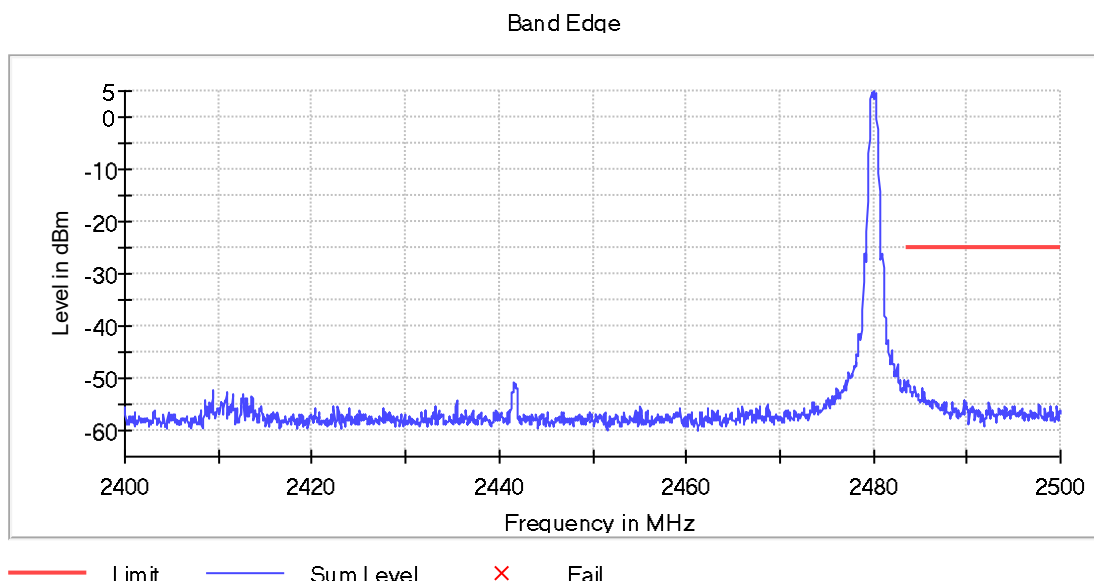
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-45.1	20.9	-24.2	PASS
2399.925000	-45.8	21.6	-24.2	PASS
2399.825000	-45.9	21.7	-24.2	PASS
2399.875000	-46.0	21.8	-24.2	PASS
2399.775000	-46.6	22.4	-24.2	PASS
2399.725000	-46.7	22.5	-24.2	PASS
2398.925000	-47.1	22.9	-24.2	PASS
2399.425000	-47.2	22.9	-24.2	PASS
2399.375000	-47.3	23.1	-24.2	PASS
2399.475000	-47.4	23.2	-24.2	PASS
2399.025000	-47.6	23.3	-24.2	PASS
2399.625000	-47.6	23.4	-24.2	PASS
2399.075000	-48.0	23.8	-24.2	PASS
2399.675000	-48.1	23.9	-24.2	PASS
2398.975000	-48.1	23.9	-24.2	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

Results of mode 1 @2480 MHz BLE 1M



Inband Peak

Frequency (MHz)	Level (dBm)
2480.0000	4.9

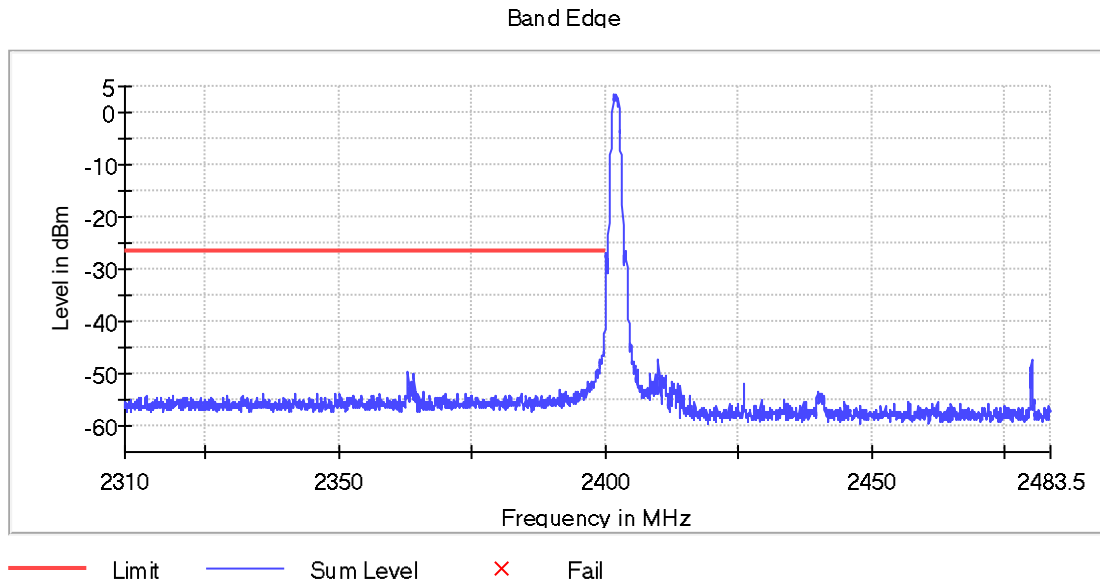
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.625000	-50.5	25.4	-25.1	PASS
2483.575000	-50.9	25.8	-25.1	PASS
2483.525000	-50.9	25.9	-25.1	PASS
2483.725000	-51.1	26.0	-25.1	PASS
2483.675000	-51.2	26.1	-25.1	PASS
2483.825000	-51.2	26.1	-25.1	PASS
2484.425000	-51.5	26.4	-25.1	PASS
2484.475000	-51.6	26.5	-25.1	PASS
2483.875000	-51.7	26.6	-25.1	PASS
2483.775000	-51.7	26.6	-25.1	PASS
2485.225000	-51.9	26.8	-25.1	PASS
2485.275000	-51.9	26.8	-25.1	PASS
2483.925000	-52.0	26.9	-25.1	PASS
2484.375000	-52.2	27.1	-25.1	PASS
2484.025000	-52.6	27.5	-25.1	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

Results of mode 1 @2402 MHz BLE 2M



Inband Peak

Frequency (MHz)	Level (dBm)
2402.0000	3.4

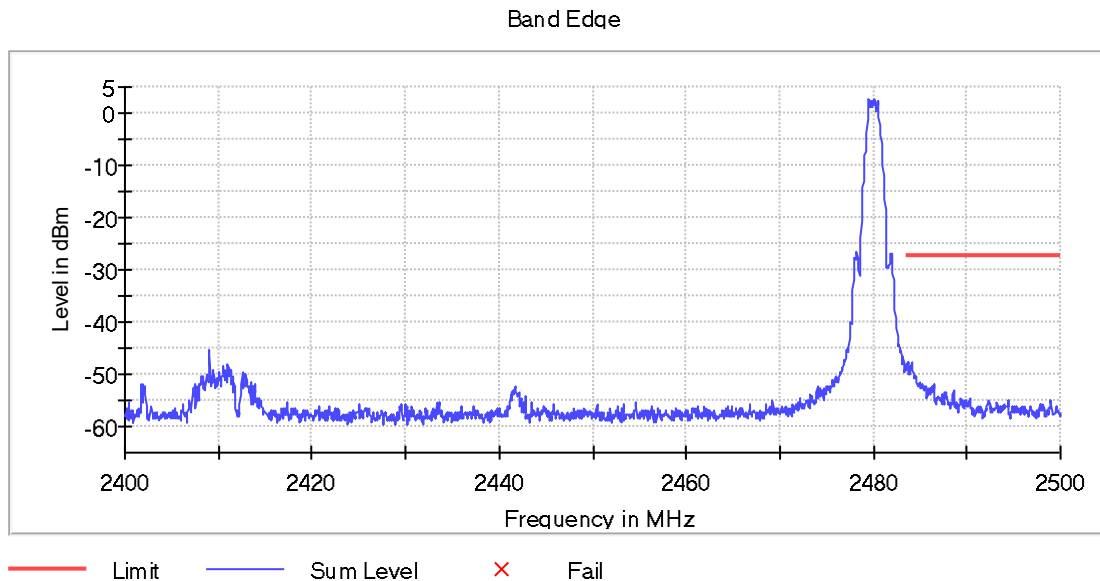
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-41.4	14.8	-26.6	PASS
2399.925000	-42.4	15.8	-26.6	PASS
2399.875000	-42.4	15.8	-26.6	PASS
2399.825000	-44.1	17.5	-26.6	PASS
2399.775000	-45.4	18.7	-26.6	PASS
2399.625000	-45.7	19.1	-26.6	PASS
2399.675000	-45.9	19.3	-26.6	PASS
2399.725000	-46.6	20.0	-26.6	PASS
2399.525000	-46.7	20.1	-26.6	PASS
2399.475000	-46.7	20.1	-26.6	PASS
2399.575000	-46.7	20.1	-26.6	PASS
2399.325000	-47.3	20.6	-26.6	PASS
2399.025000	-47.4	20.8	-26.6	PASS
2398.975000	-47.5	20.9	-26.6	PASS
2399.225000	-47.6	21.0	-26.6	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

Results of mode 1 @2480 MHz BLE 2M



Inband Peak

Frequency (MHz)	Level (dBm)
2480.0000	2.6

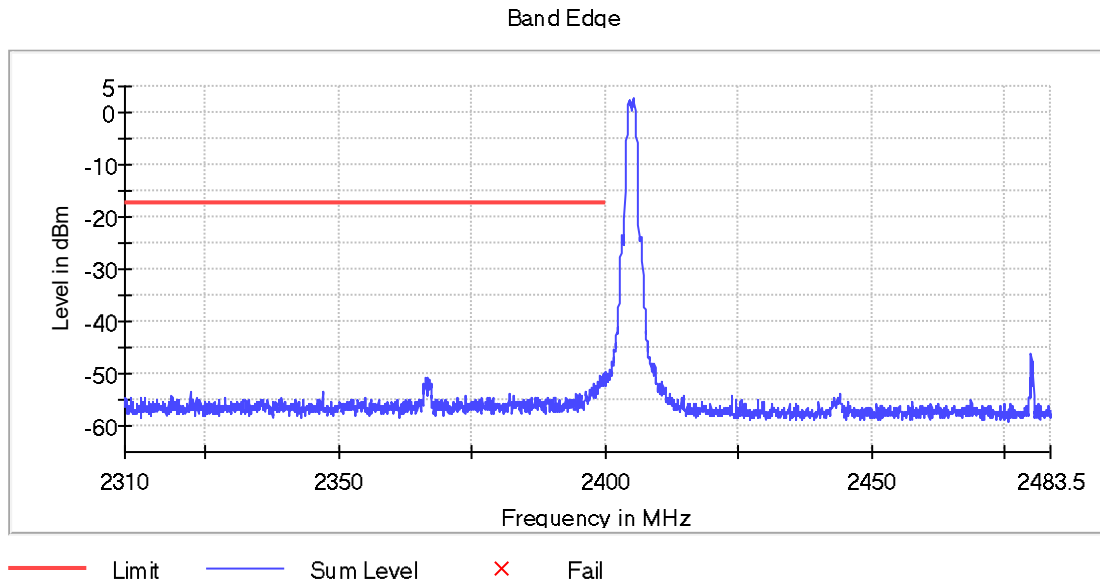
Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.725000	-47.6	20.3	-27.4	PASS
2483.775000	-47.7	20.4	-27.4	PASS
2483.625000	-47.8	20.4	-27.4	PASS
2484.075000	-47.9	20.5	-27.4	PASS
2484.125000	-47.9	20.6	-27.4	PASS
2483.675000	-48.0	20.6	-27.4	PASS
2483.525000	-48.1	20.7	-27.4	PASS
2483.575000	-48.1	20.7	-27.4	PASS
2483.975000	-48.5	21.2	-27.4	PASS
2484.025000	-48.7	21.3	-27.4	PASS
2484.175000	-49.0	21.6	-27.4	PASS
2484.225000	-49.1	21.7	-27.4	PASS
2483.925000	-49.7	22.3	-27.4	PASS
2483.875000	-49.9	22.5	-27.4	PASS
2483.825000	-49.9	22.5	-27.4	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

Results of mode 1 @2405 MHz thread/zigbee



Inband Peak

Frequency (MHz)	Level (dBm)
2405.0000	2.9

Measurements

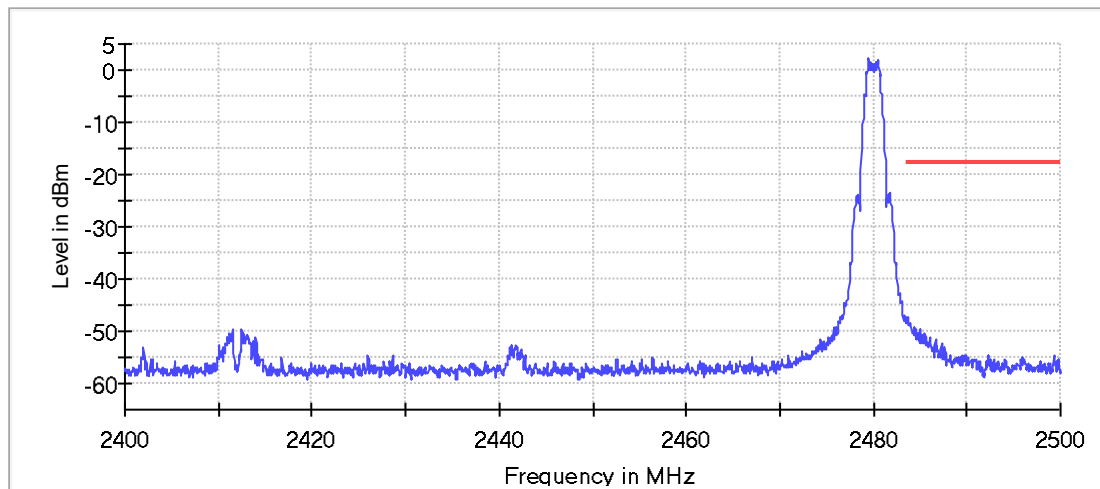
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-49.6	32.5	-17.1	PASS
2399.875000	-49.9	32.8	-17.1	PASS
2399.575000	-50.1	32.9	-17.1	PASS
2399.175000	-50.3	33.2	-17.1	PASS
2399.925000	-50.5	33.3	-17.1	PASS
2399.625000	-50.6	33.5	-17.1	PASS
2366.475000	-50.7	33.6	-17.1	PASS
2399.225000	-50.7	33.6	-17.1	PASS
2366.825000	-50.7	33.6	-17.1	PASS
2399.125000	-50.8	33.7	-17.1	PASS
2399.475000	-50.8	33.7	-17.1	PASS
2366.525000	-51.0	33.9	-17.1	PASS
2367.125000	-51.2	34.0	-17.1	PASS
2399.425000	-51.2	34.1	-17.1	PASS
2366.675000	-51.2	34.1	-17.1	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

Results of mode 1 @2480 MHz thread/zigbee

Band Edge



— Limit — Sum Level × Fail

Inband Peak

Frequency (MHz)	Level (dBm)
2480.0000	2.2

Measurements

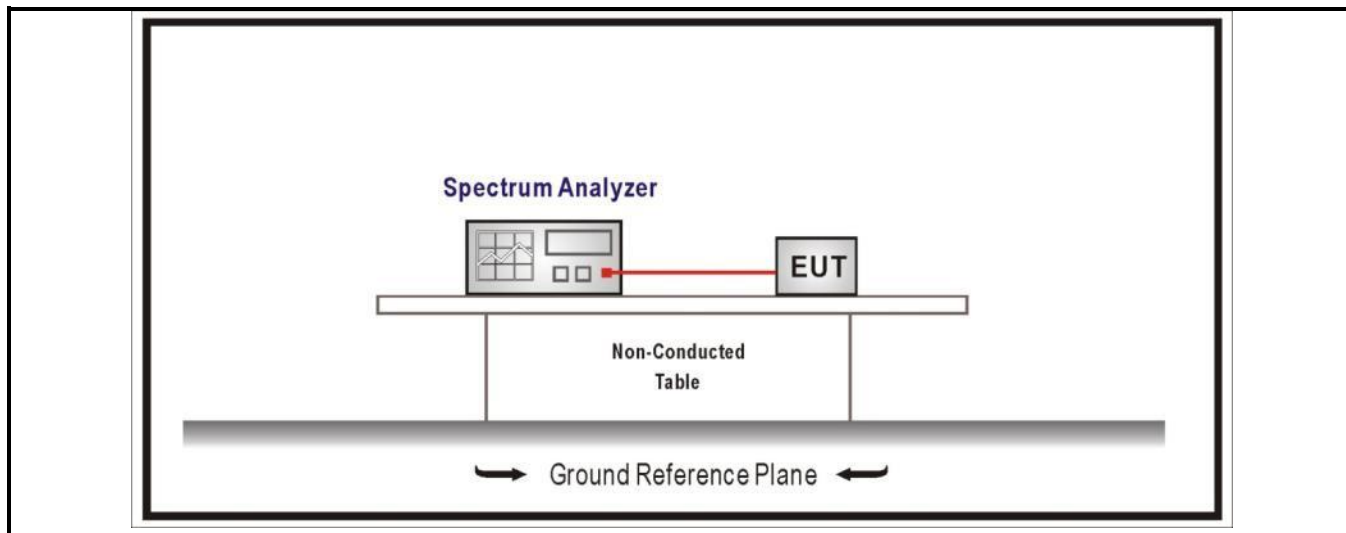
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.525000	-47.3	29.5	-17.8	PASS
2483.575000	-47.3	29.5	-17.8	PASS
2483.625000	-47.3	29.5	-17.8	PASS
2483.725000	-48.2	30.5	-17.8	PASS
2483.675000	-48.3	30.5	-17.8	PASS
2483.975000	-48.4	30.6	-17.8	PASS
2483.825000	-48.8	31.0	-17.8	PASS
2484.025000	-48.8	31.0	-17.8	PASS
2483.875000	-48.8	31.0	-17.8	PASS
2483.775000	-49.0	31.2	-17.8	PASS
2483.925000	-49.0	31.2	-17.8	PASS
2484.375000	-49.4	31.6	-17.8	PASS
2484.525000	-49.5	31.8	-17.8	PASS
2484.475000	-49.6	31.8	-17.8	PASS
2485.025000	-49.6	31.9	-17.8	PASS

Remark:

RBW	100.000 kHz
VBW	300.000 kHz
Detector	MaxPeak

4.5	Duty cycle	VERDICT: PASS
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Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

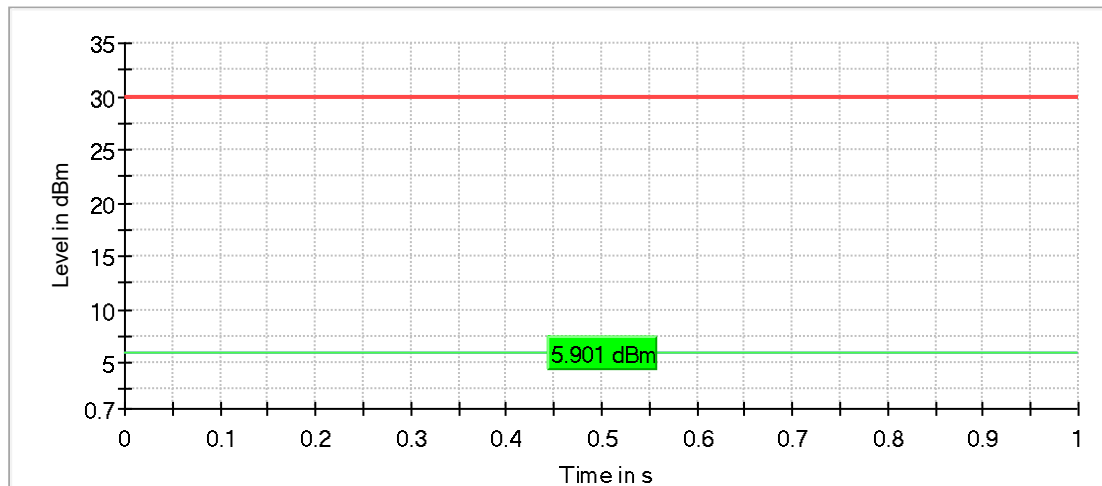
Results of BLE 1M

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	100%

Note 1: T means 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.

Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW $\geq 1/T$ will be used.

Gated Trace



— Gated Trace — Overall — Limit

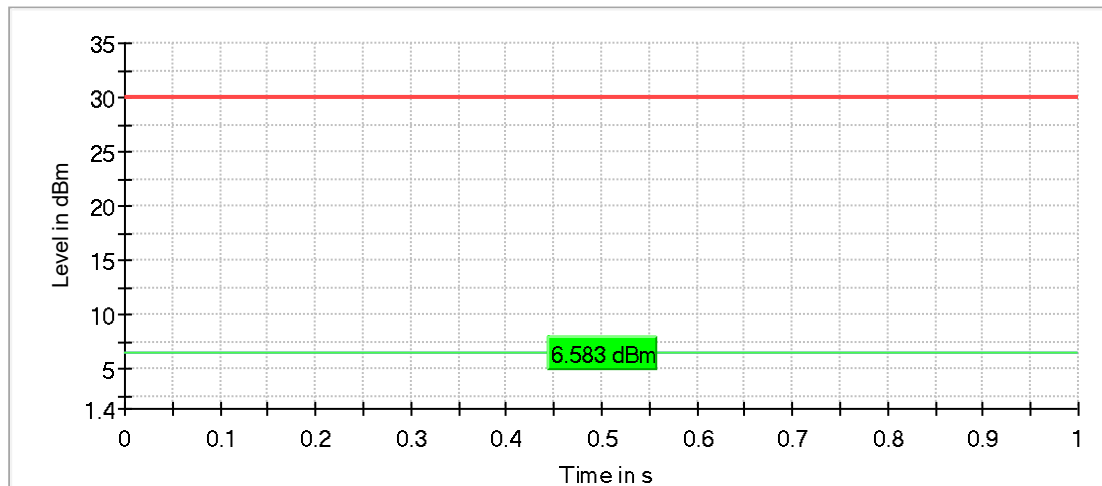
Results of BLE 2M

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	100%

Note 1: T means 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.

Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW $\geq 1/T$ will be used.

Gated Trace



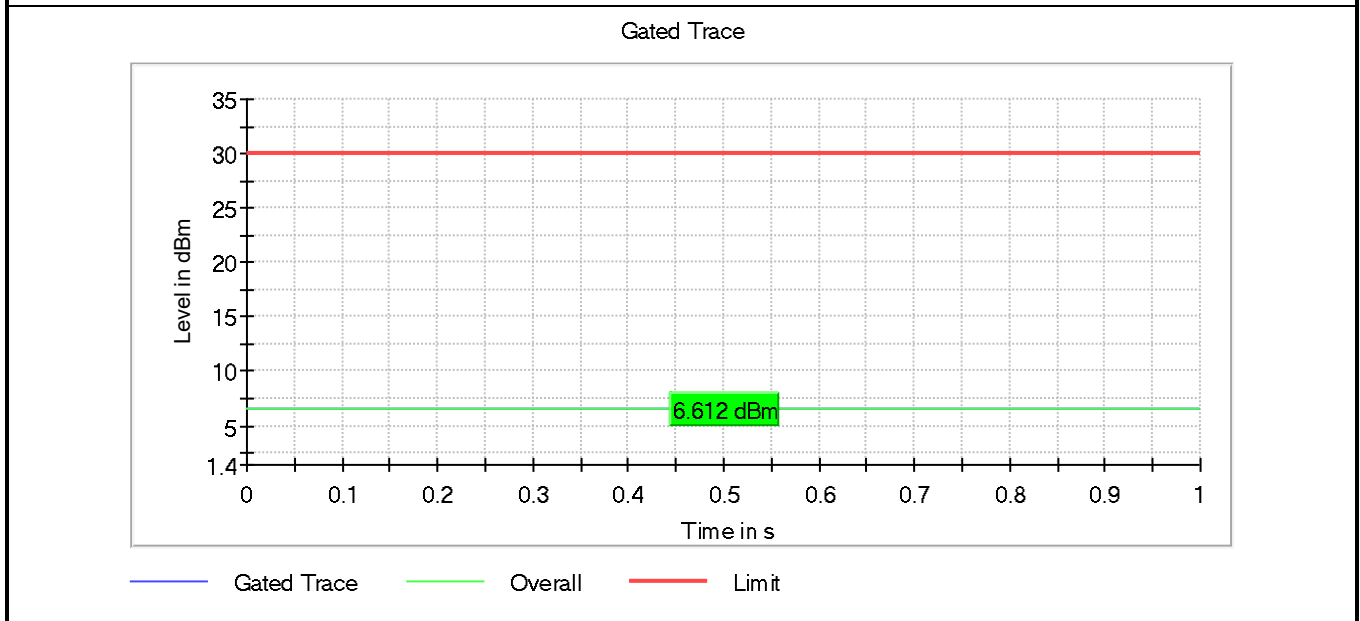
— Gated Trace — Overall — Limit

Results of thread/zigbee

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	100%

Note 1: T means 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.

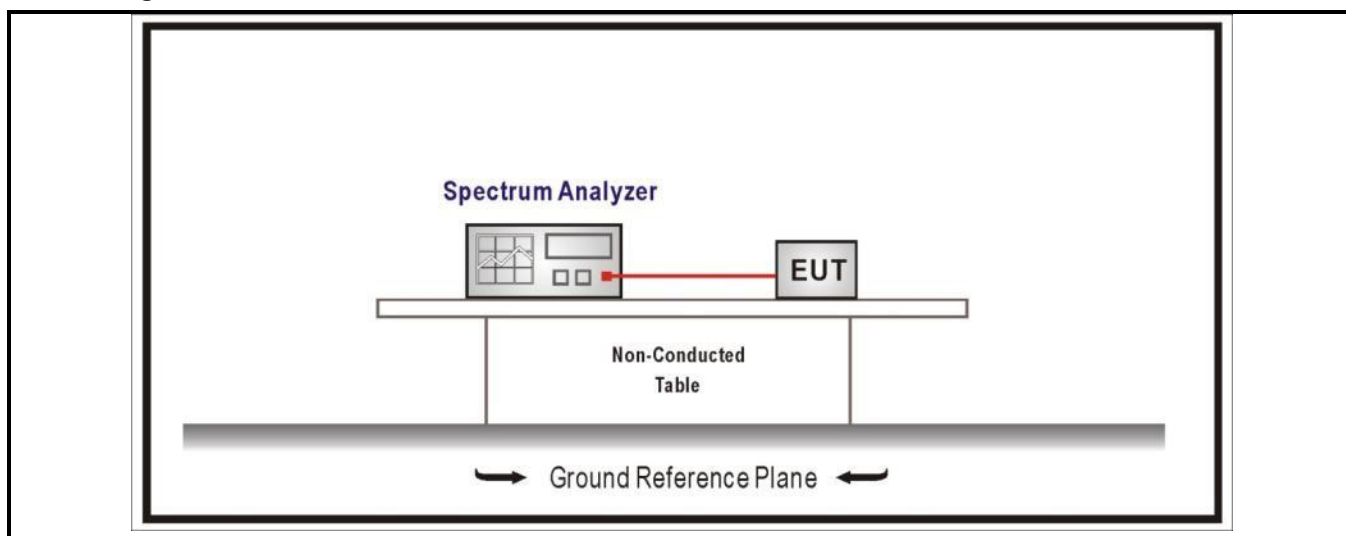
Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW $\geq 1/T$ will be used.



4.6 DTS Bandwidth	VERDICT: PASS
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Standard	FCC Part 15 Subpart C Paragraph 15.247 (a)(2) RSS-Gen Issue 5 Section 6.7 RSS-247 Issue 4 section 5.2 a)
Systems using digital modulation techniques operate in the 2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at by least 500 kHz	

Test Configuration



Performed measurements

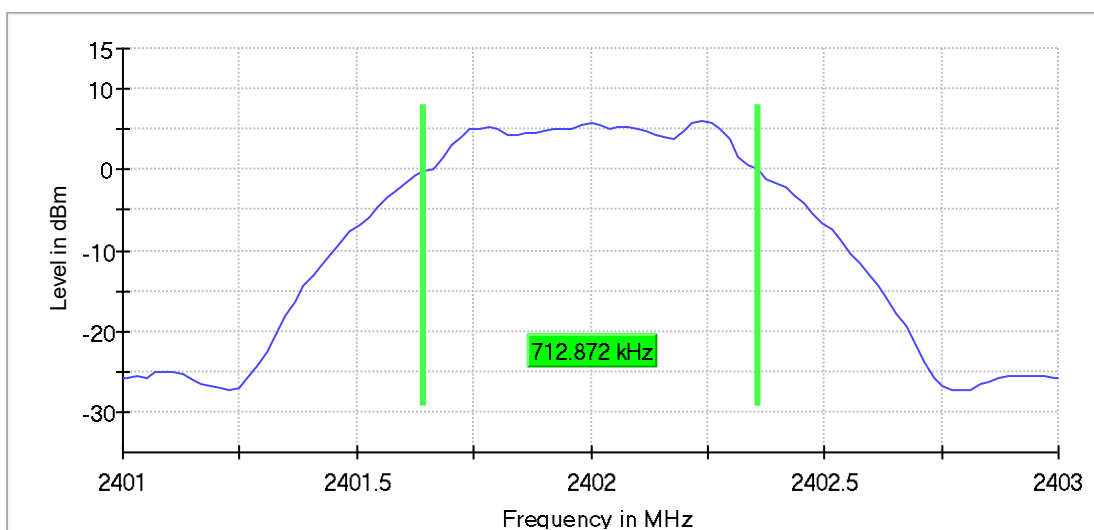
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results of BLE 1M

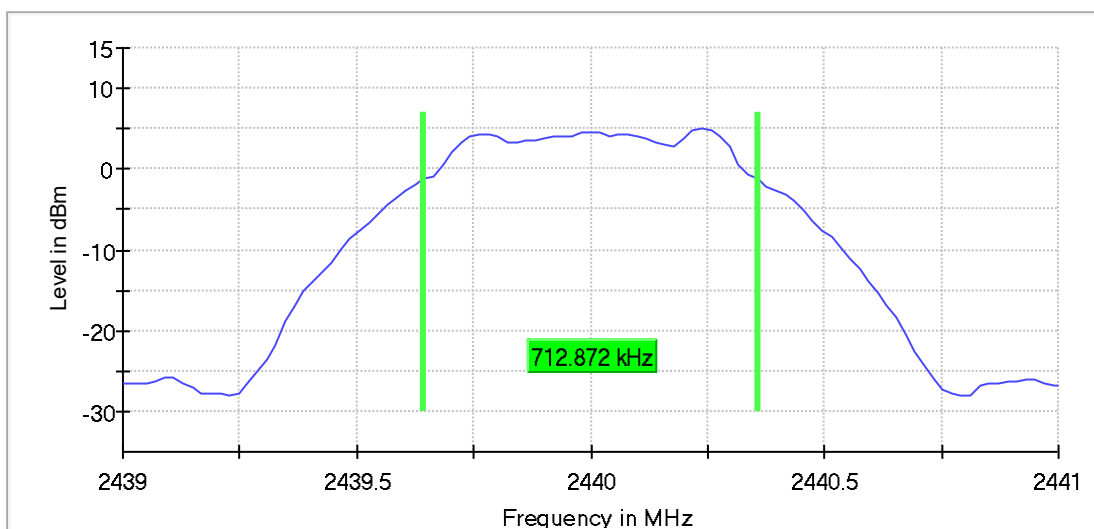
Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth(kHz)	RBW(kHz)/VBW(kHz)	Limit (kHz)	Result
1	0	2402	712.87	100/300	>500	Pass
	19	2440	712.87		>500	Pass
	39	2480	712.87		>500	Pass

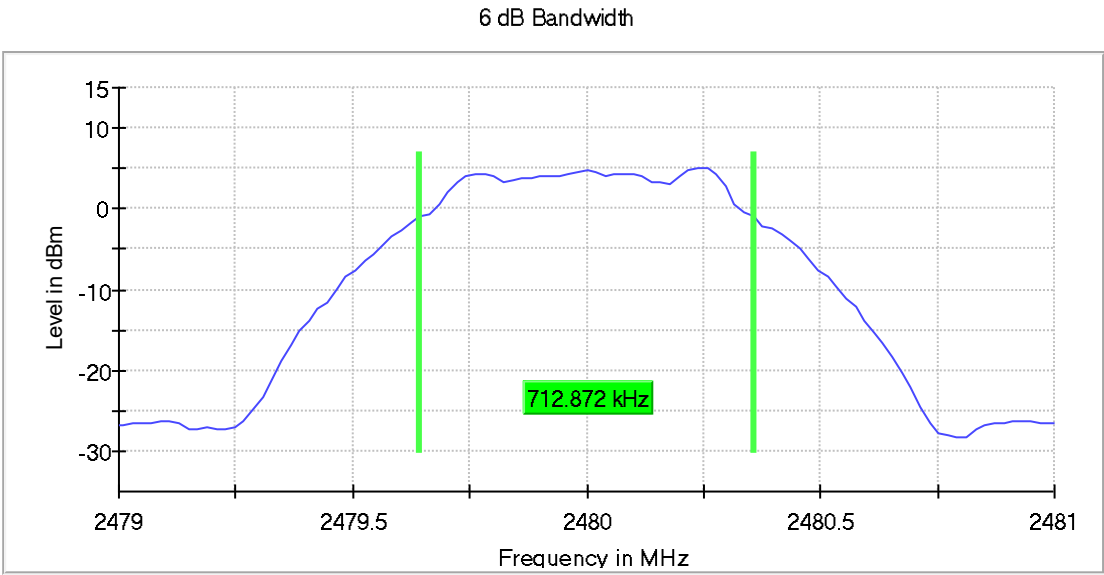
6dB Occupied Bandwidth

6 dB Bandwidth



6 dB Bandwidth

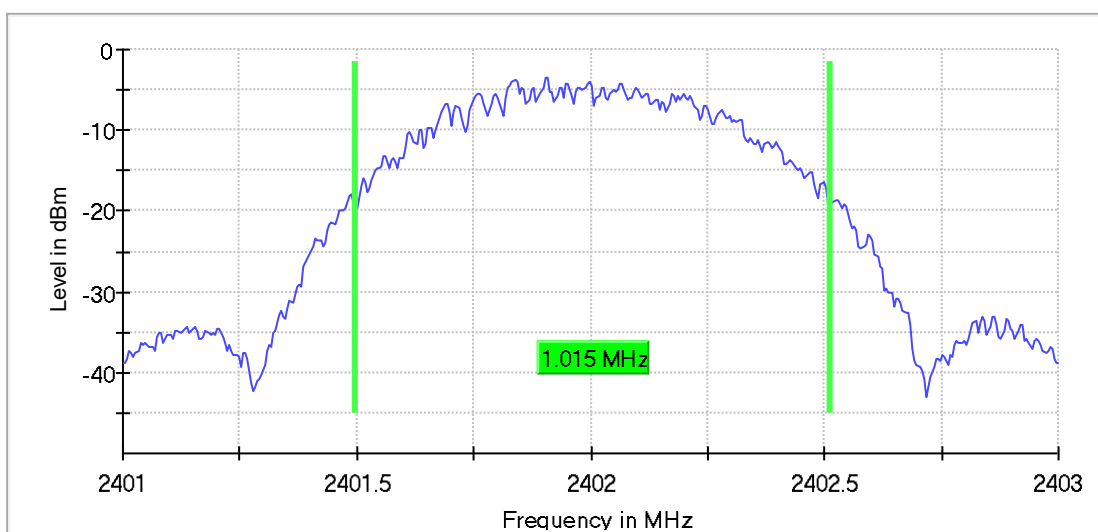




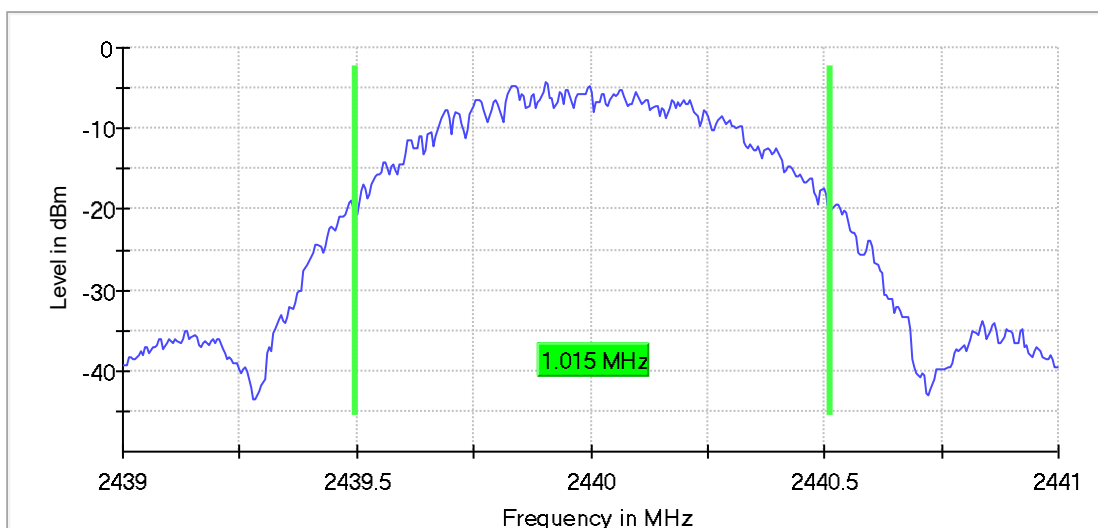
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	RBW(kHz)/VBW(kHz)	Limit	Result
1	0	2402	1.015	10/30	Within frequency range	Pass
	19	2440	1.015		Within frequency range	Pass
	39	2480	1.015		Within frequency range	Pass

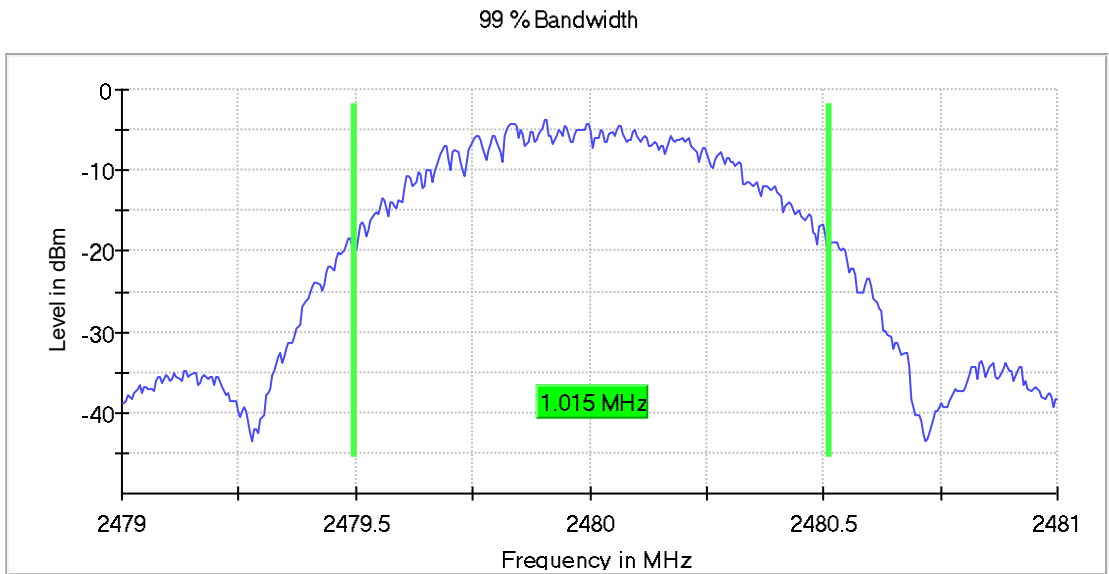
99% Occupied Bandwidth

99 % Bandwidth



99 % Bandwidth



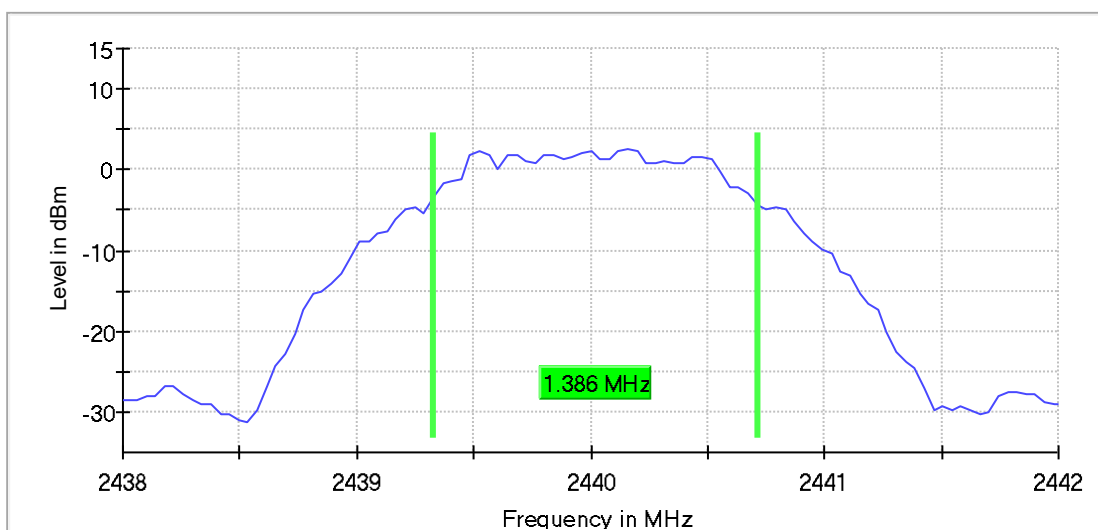


Results of BLE 2M

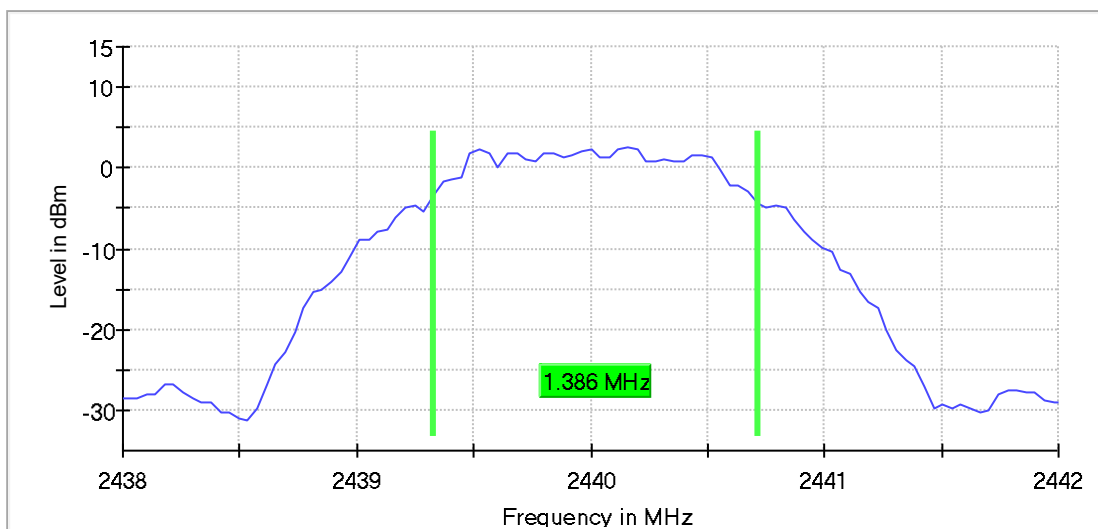
Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth(kHz)	RBW(kHz)/VBW(kHz)	Limit (kHz)	Result
1	0	2402	1386	100/300	>500	Pass
	19	2440	1386		>500	Pass
	39	2480	1386		>500	Pass

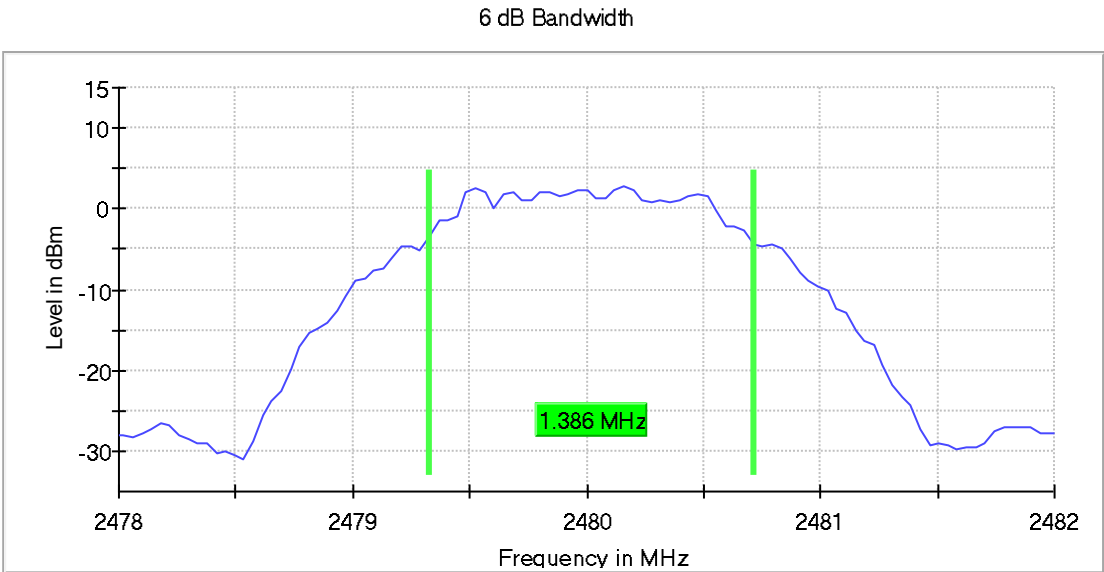
6dB Occupied Bandwidth

6 dB Bandwidth



6 dB Bandwidth

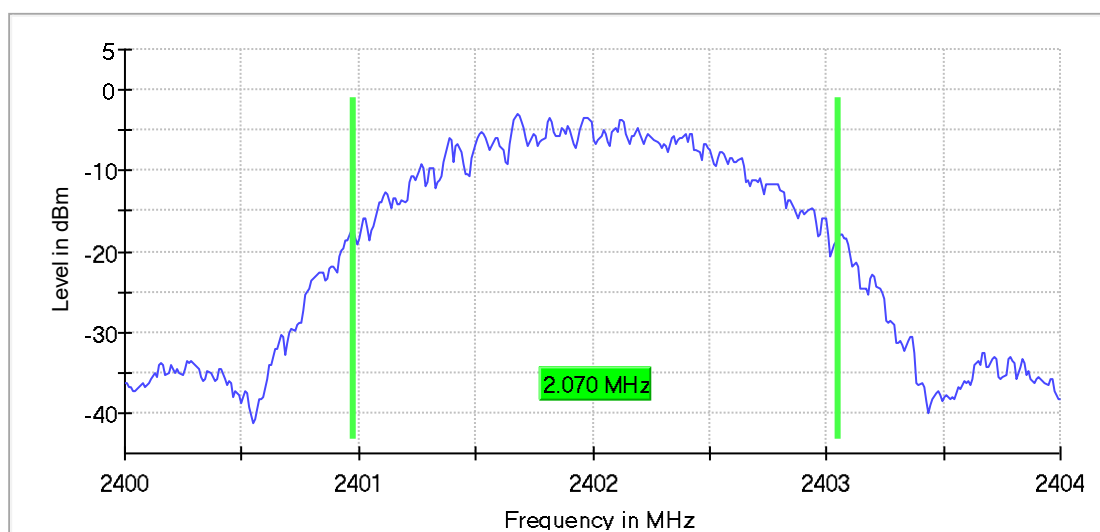




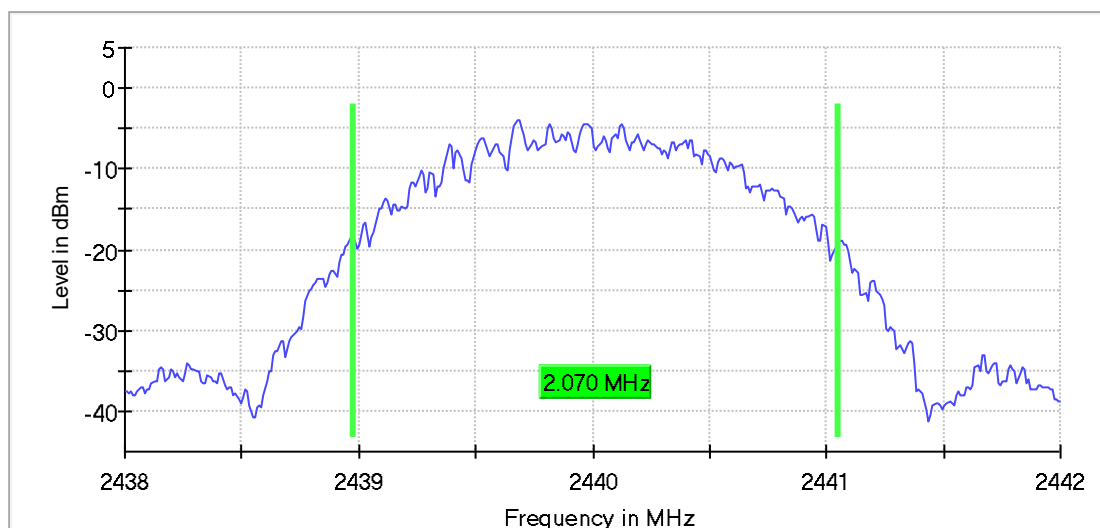
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	RBW(kHz)/VBW(kHz)	Limit	Result
1	0	2402	2.070	100/300	Within frequency range	Pass
	19	2440	2.070		Within frequency range	Pass
	39	2480	2.080		Within frequency range	Pass

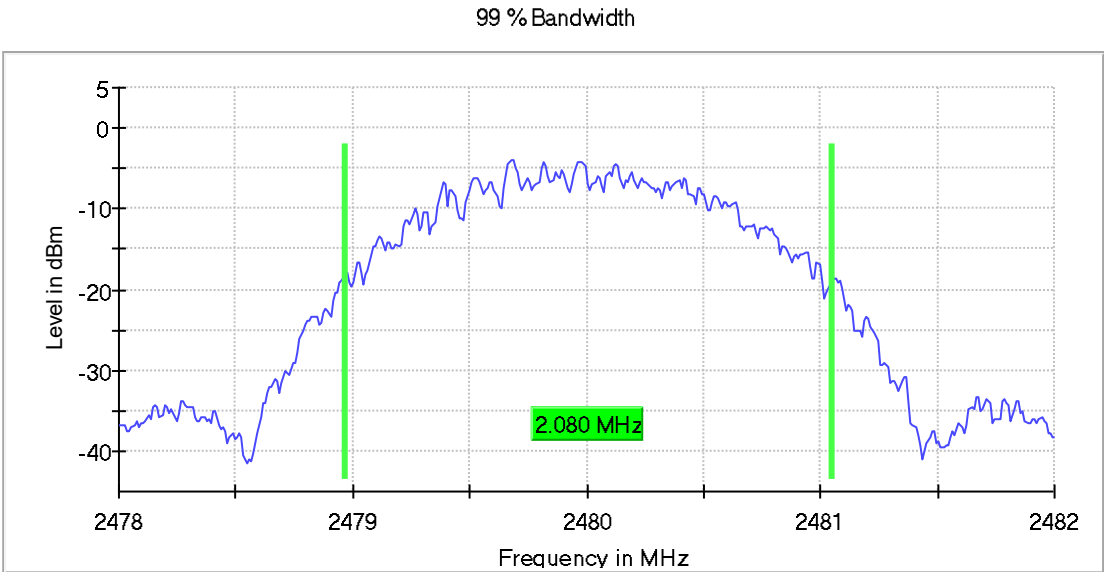
99% Occupied Bandwidth

99 % Bandwidth



99 % Bandwidth



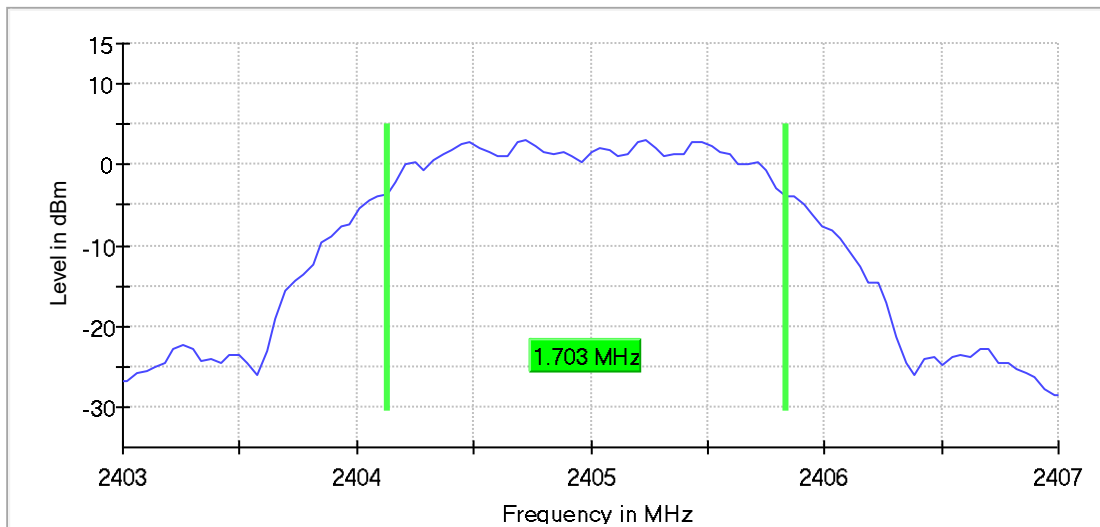


Results of thread/zigbee

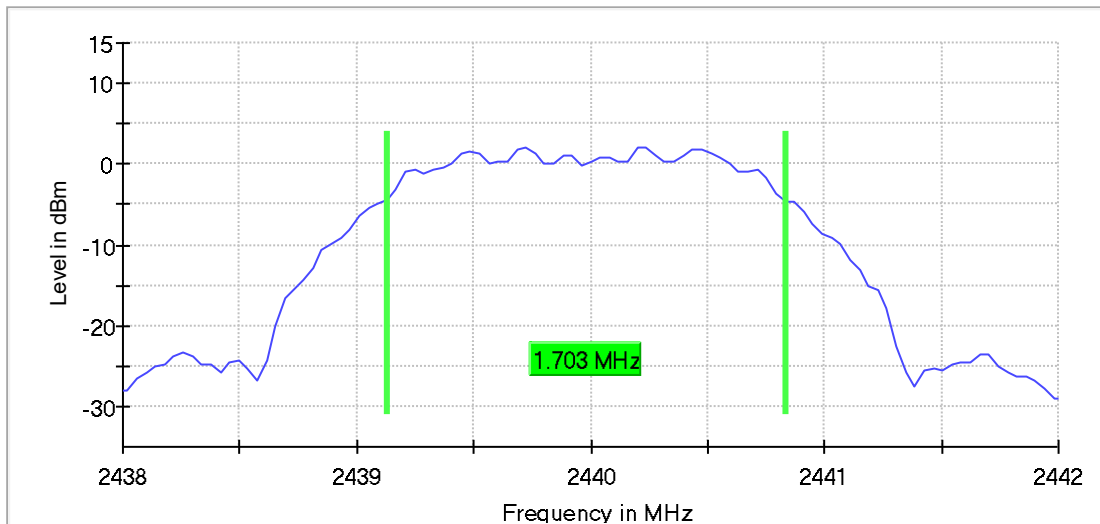
Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth(kHz)	RBW(kHz)/VBW(kHz)	Limit (kHz)	Result
1	11	2405	1703	100/300	>500	Pass
	18	2440	1703		>500	Pass
	26	2480	1703		>500	Pass

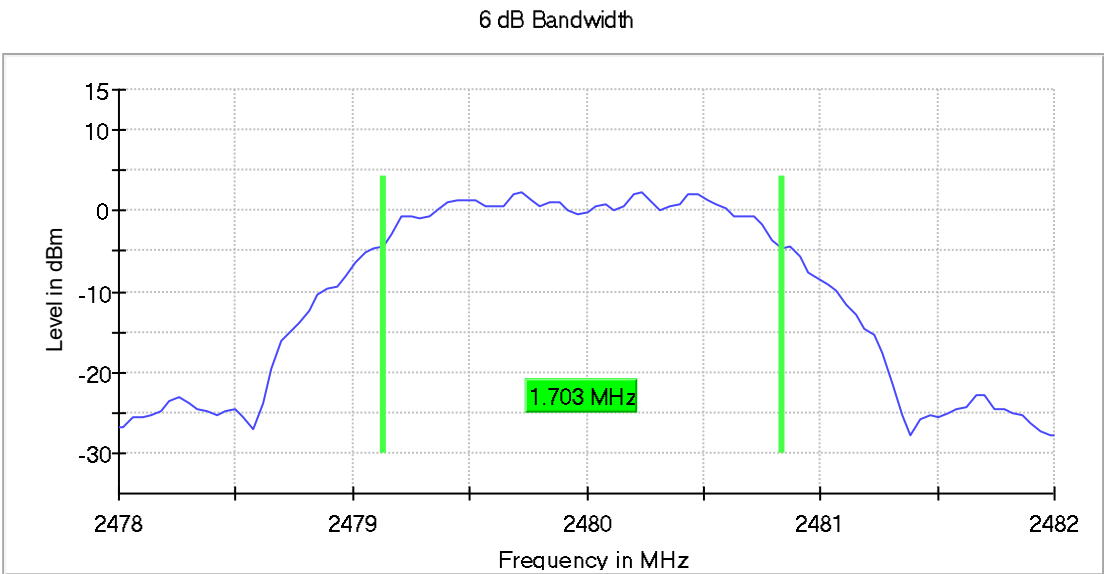
6dB Occupied Bandwidth

6 dB Bandwidth



6 dB Bandwidth

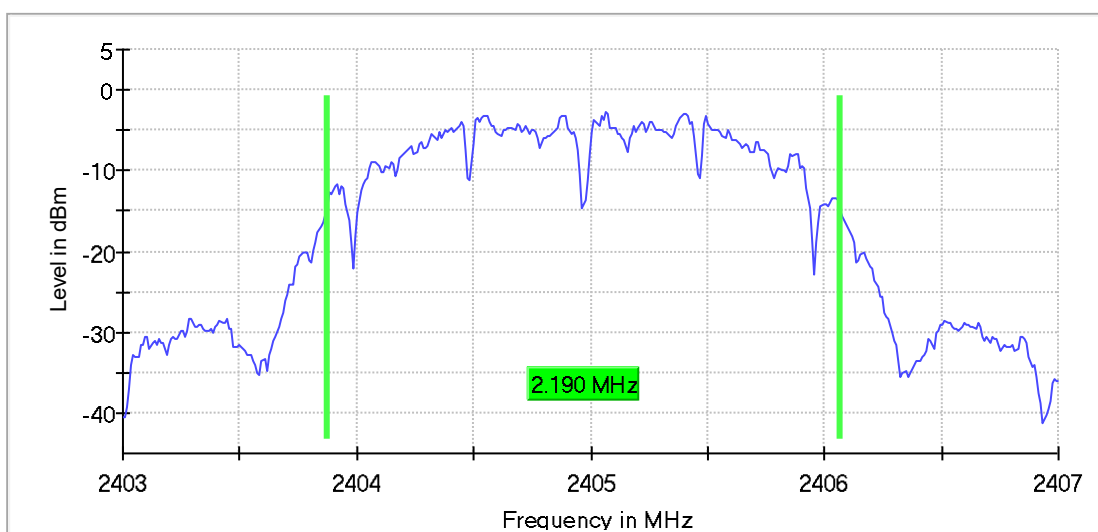




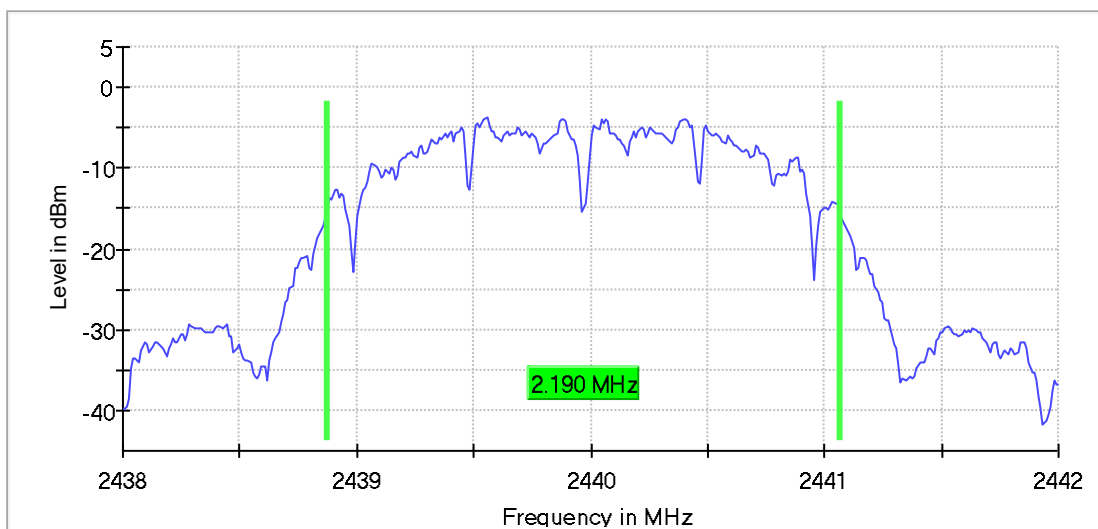
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	RBW(kHz)/VBW(kHz)	Limit	Result
1	11	2405	2.190	100/300	Within frequency range	Pass
	18	2440	2.190		Within frequency range	Pass
	26	2480	2.190		Within frequency range	Pass

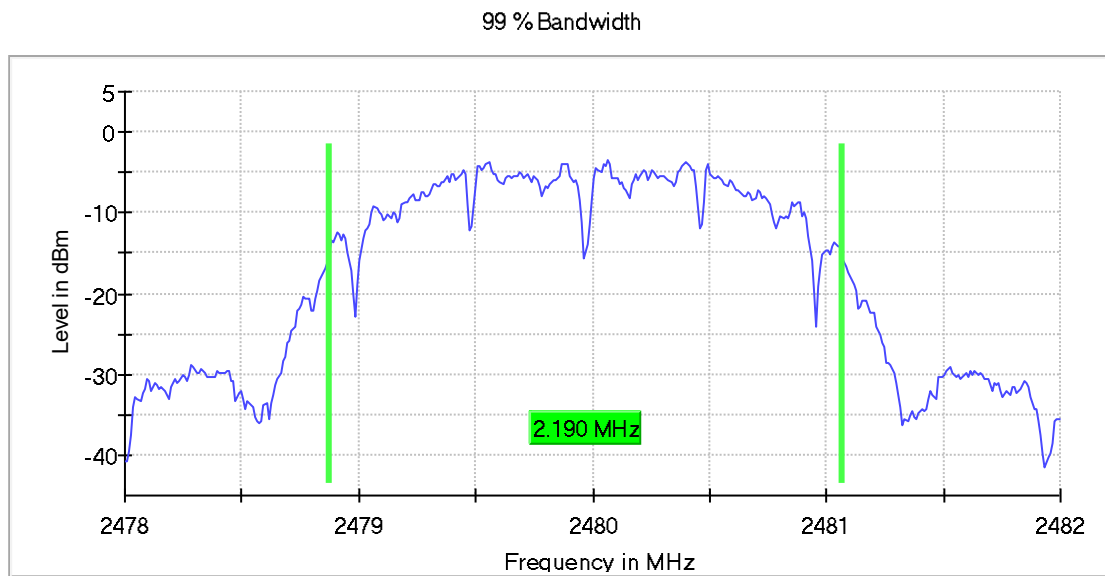
99% Occupied Bandwidth

99 % Bandwidth



99 % Bandwidth

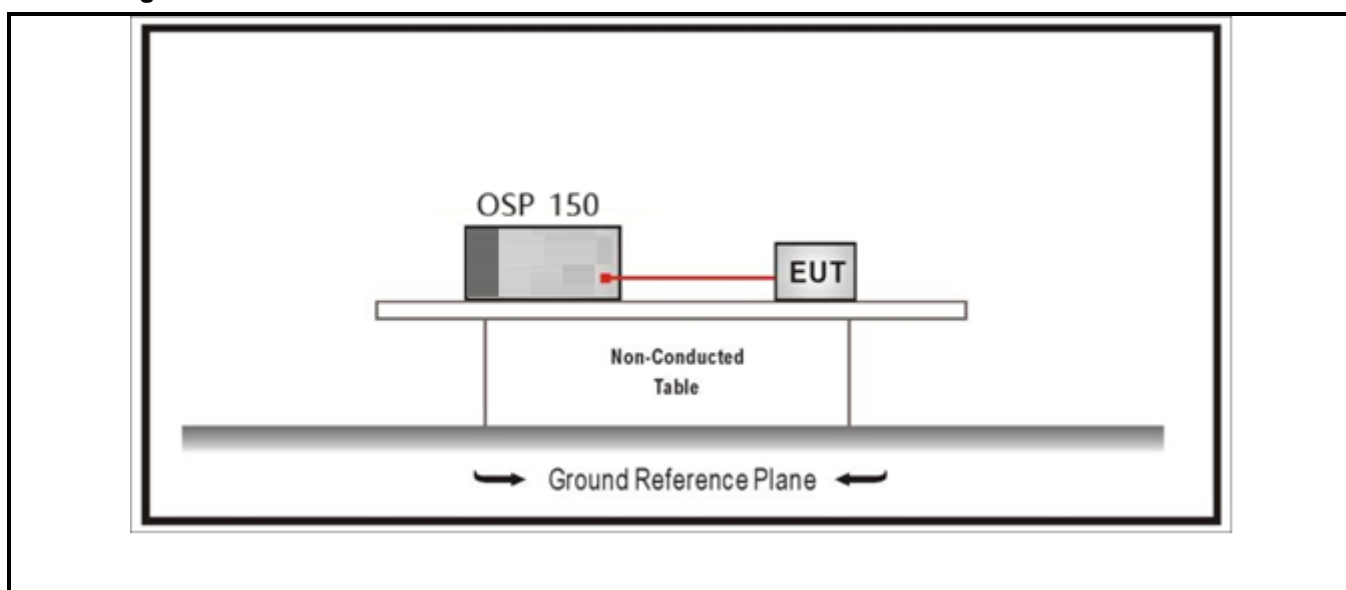




4.7	Fundamental emission output power	VERDICT: PASS
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Standard		FCC Part 15 Subpart C Paragraph 15.247 (b)(3) RSS-247 Issue 4 Section 5.4(d)
☒	GTX < 6dBi	Pout ≤ 30dBm
☐	GTX > 6dBi	
☐	Non-Fix point-point	Pout ≤ 30 - (GTX - 6)
☐	Fix point-point	Pout ≤ 30 - [(GTX - 6)]/3
☐	Point-to-multipoint	Pout ≤ 30 - (GTX - 6)
☐	Overlap Beams	Pout ≤ 30 - [(GTX - 6)]/3
☐	Aggregate power transmitted simultaneously on all beams	Pout ≤ 30 - [(GTX - 6)]/3
☐	single LE directional beam	Pout ≤ 30 - [(GTX - 6)]/3 + 8dB
Note 1 : GTX directional gain of transmitting antennas.		
Note 2 : Pout is maximum peak conducted output power .		

Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

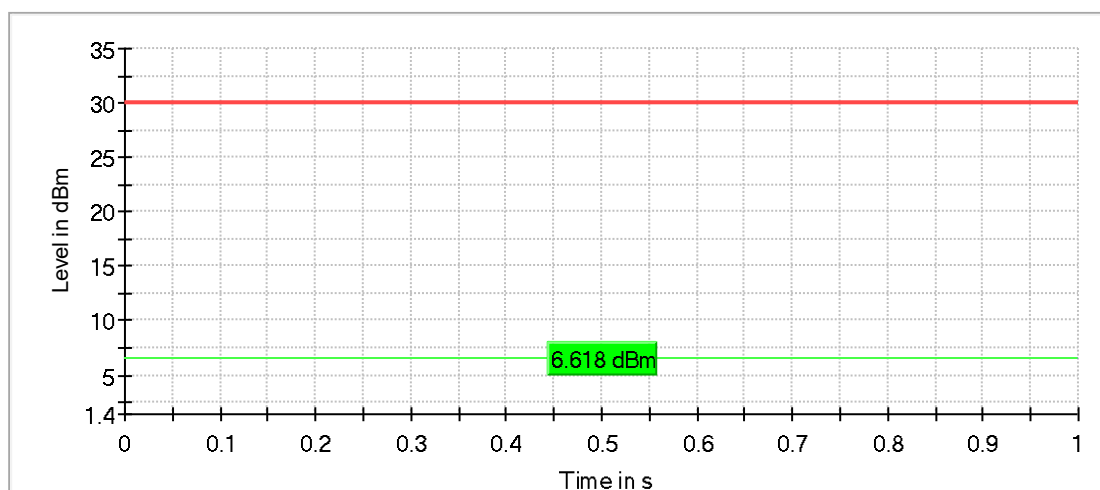
Results

Mode	Channel	Test Frequency (MHz)	Power Output (dBm)	Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE 1M	0	2402	6.618	≤30	7.618	≤36	Pass
	19	2440	5.901	≤30	6.901	≤36	Pass
	39	2480	5.812	≤30	6.812	≤36	Pass
BLE 2M	0	2402	6.583	≤30	7.583	≤36	Pass
	19	2440	5.862	≤30	6.862	≤36	Pass
	39	2480	5.781	≤30	6.781	≤36	Pass
Thread/ zigbee	11	2405	6.612	≤30	7.612	≤36	Pass
	18	2440	5.899	≤30	6.899	≤36	Pass
	26	2480	5.807	≤30	6.807	≤36	Pass

Remark: 1 dBi

Data of BLE 1M

Gated Trace

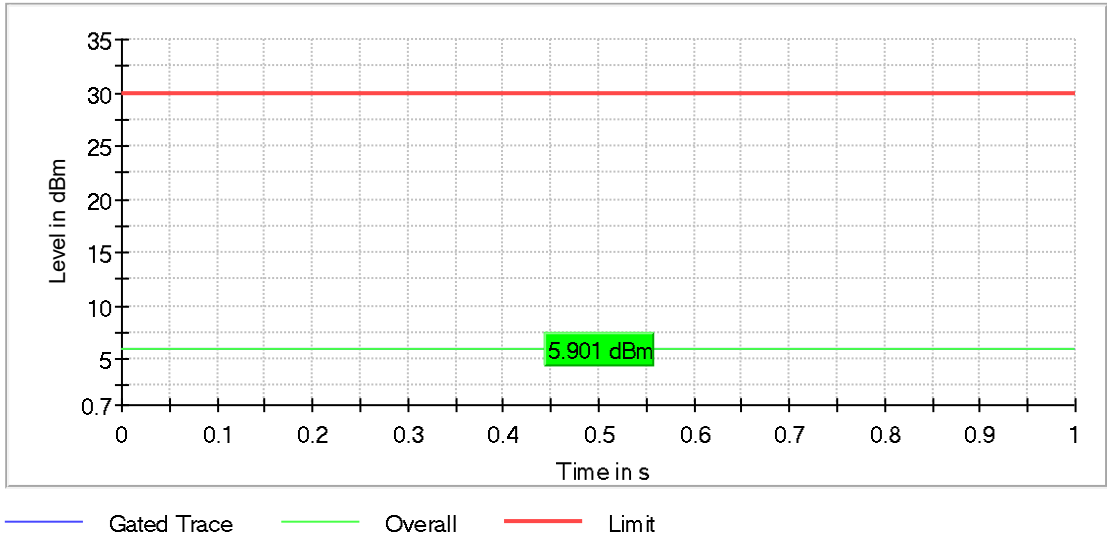


— Gated Trace — Overall — Limit

OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000μs	1.000μs

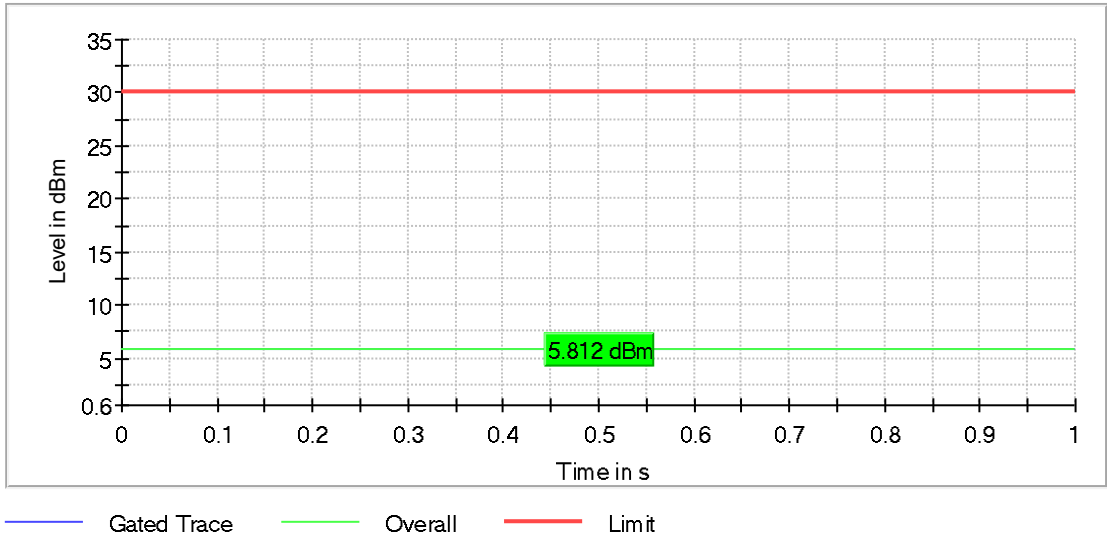
Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

Gated Trace

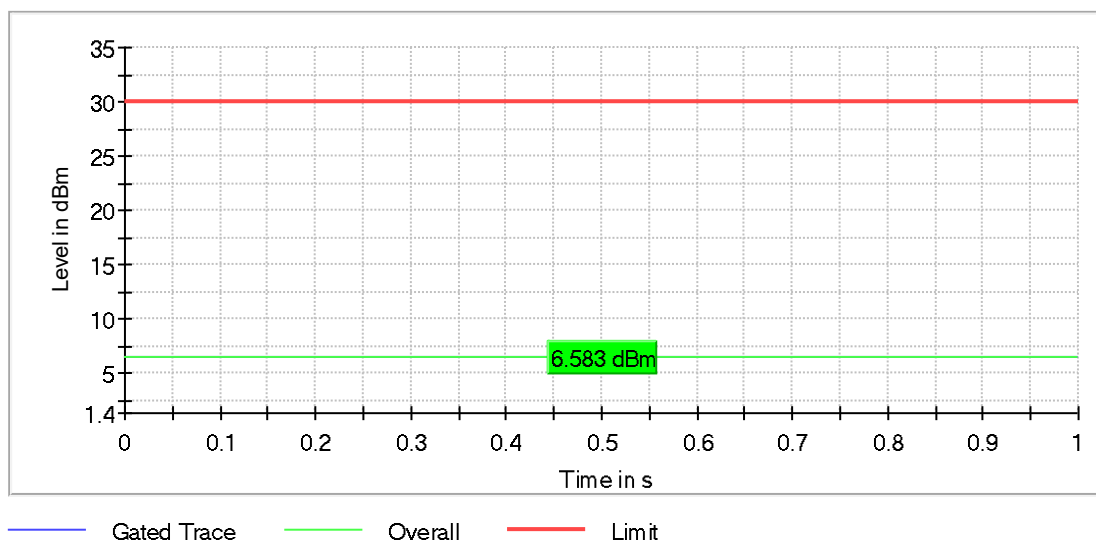


OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

Data of BLE 2M

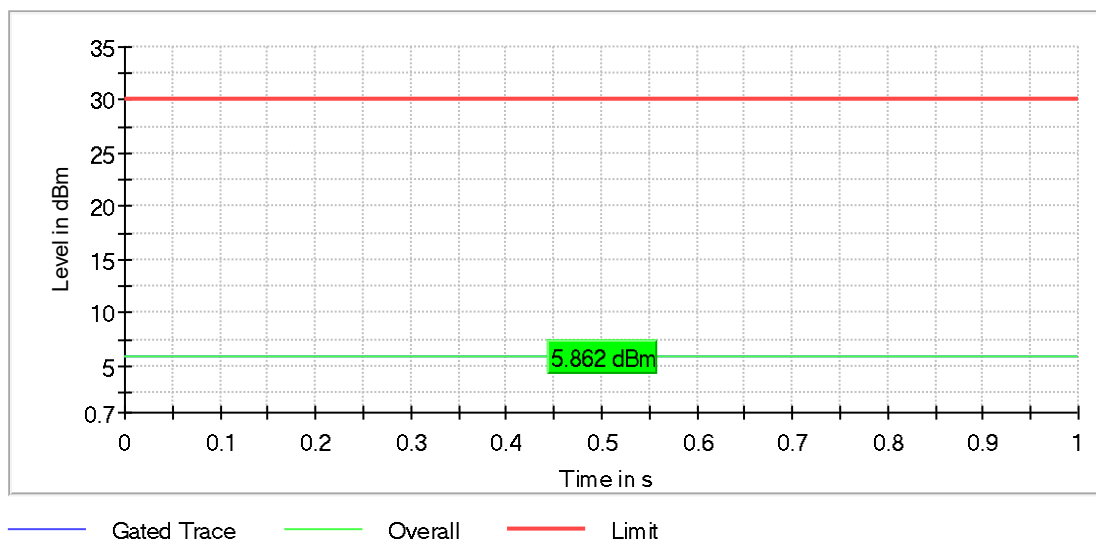
Gated Trace



OSP PowerMeter settings

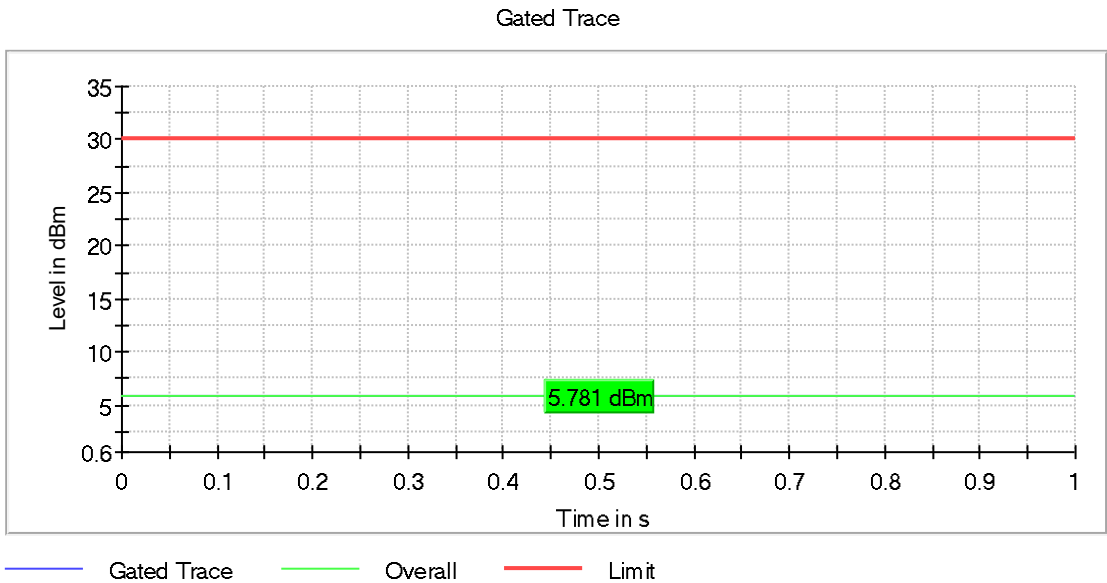
Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

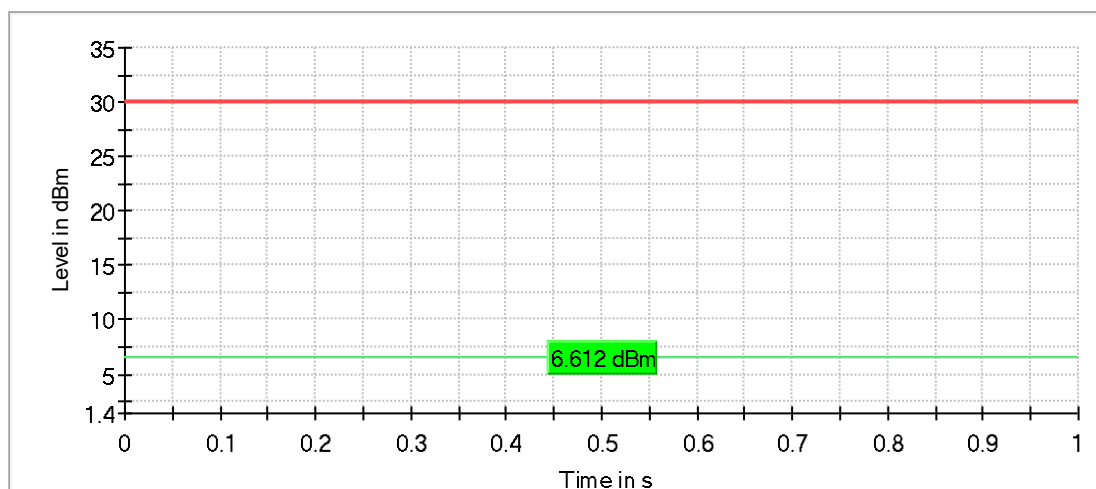


OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

Data of Thread/zigbee

Gated Trace

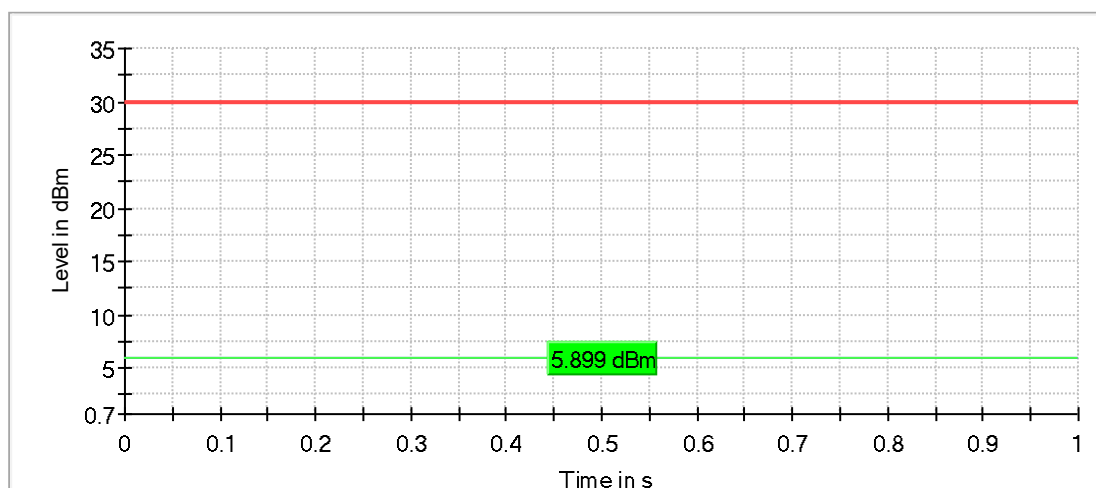


— Gated Trace — Overall — Limit

OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

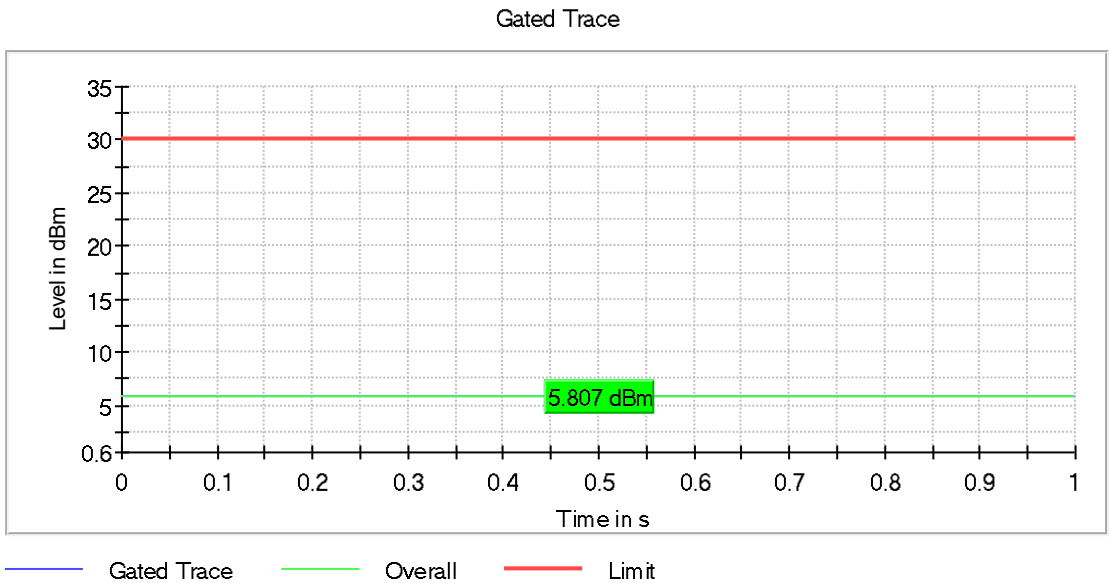
Gated Trace



— Gated Trace — Overall — Limit

OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs



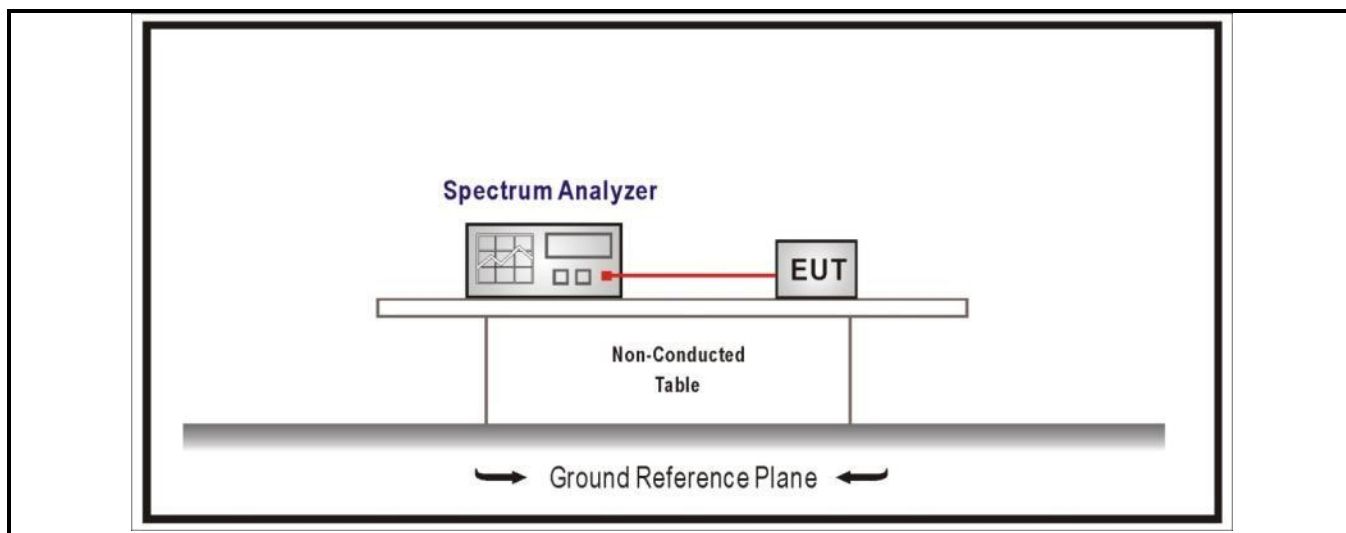
OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000µs	1.000µs

4.8 Power spectral density	VERDICT: PASS
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Standard	FCC Part 15 Subpart C Paragraph 15.247 (b)(3) RSS-247 Issue 4 Section 5.2(b)
Power Spectral Density ≤ 8 dBm/3kHz	

Test Configuration



Performed measurements

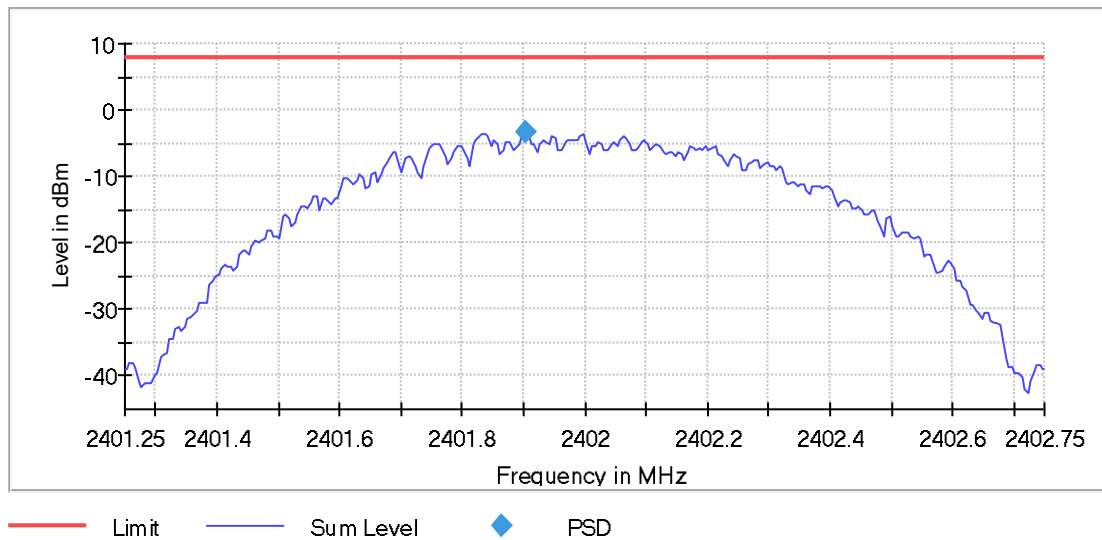
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

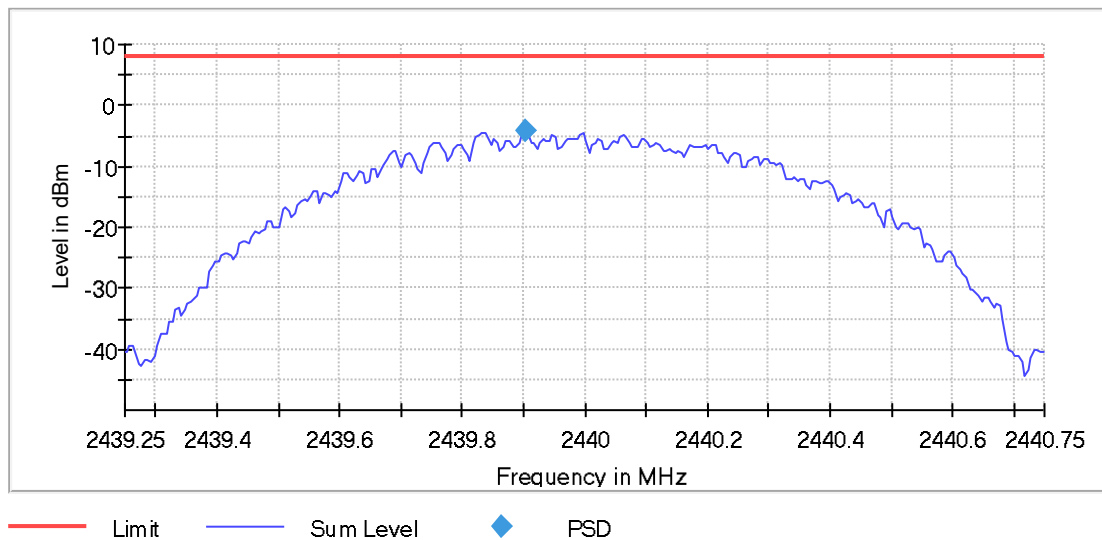
Mode	Channel	Test Frequency (MHz)	Power Output (dBm/3kHz)	Limit (dBm/3kHz)	Result
BLE 1M	0	2402	-3.304	≤ 8	Pass
	19	2440	-4.254	≤ 8	Pass
	39	2480	-4.055	≤ 8	Pass
BLE 2M	0	2402	-6.492	≤ 8	Pass
	19	2440	-7.469	≤ 8	Pass
	39	2480	-7.303	≤ 8	Pass
Thread/zigbee	11	2405	-4.306	≤ 8	Pass
	18	2440	-5.246	≤ 8	Pass
	26	2480	-5.131	≤ 8	Pass

Remark: RBW(kHz)/VBW(kHz):10/30

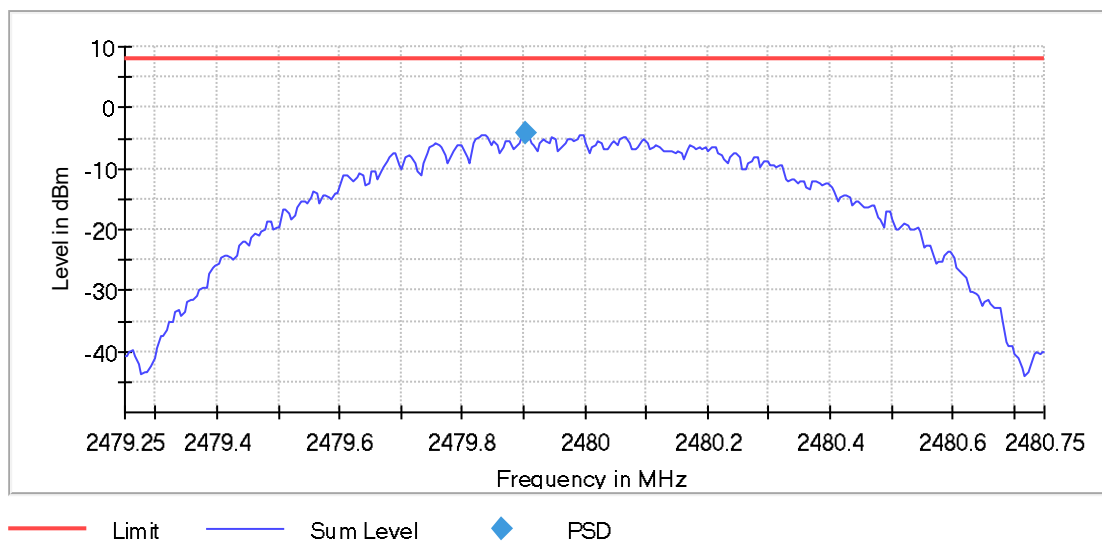
Data of BLE 1M
 Peak Power Spectral Density



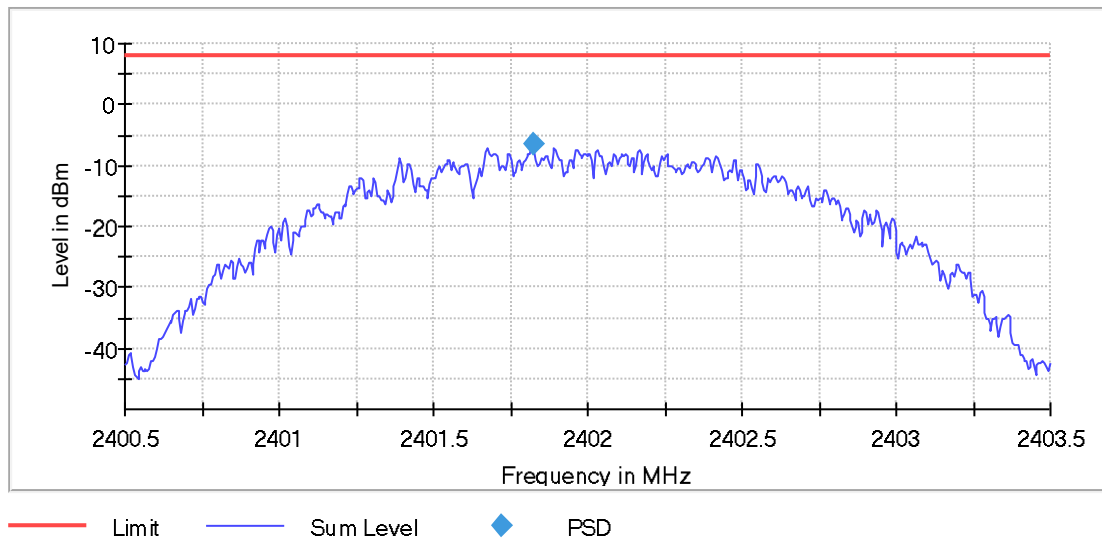
Peak Power Spectral Density



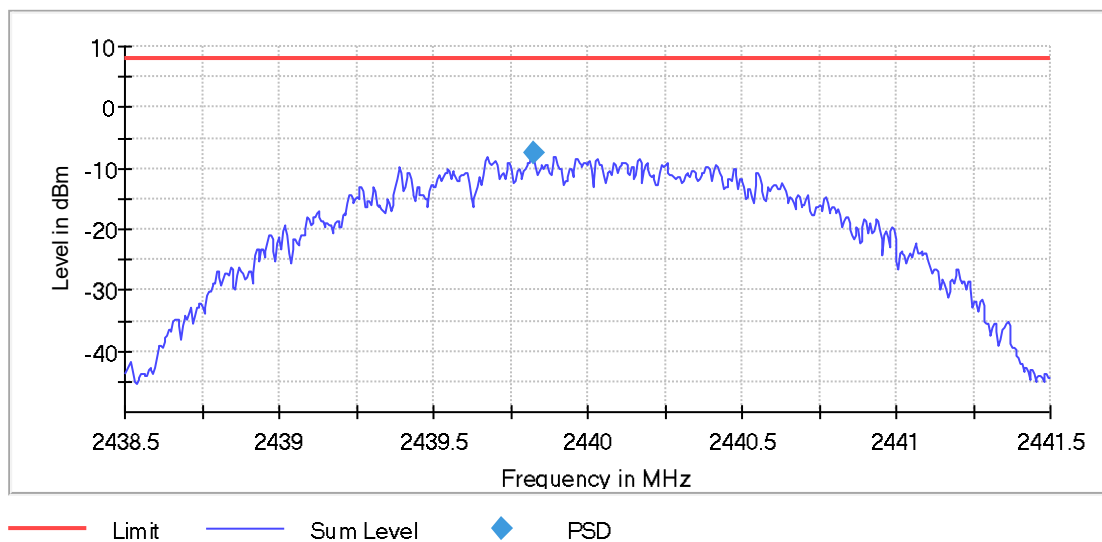
Peak Power Spectral Density



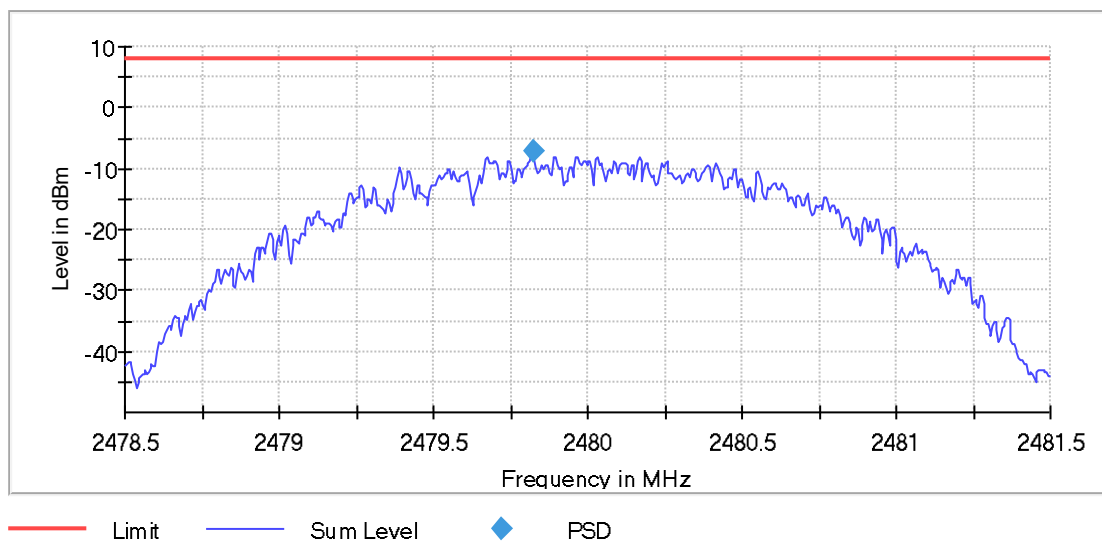
Data of BLE 2M
 Peak Power Spectral Density



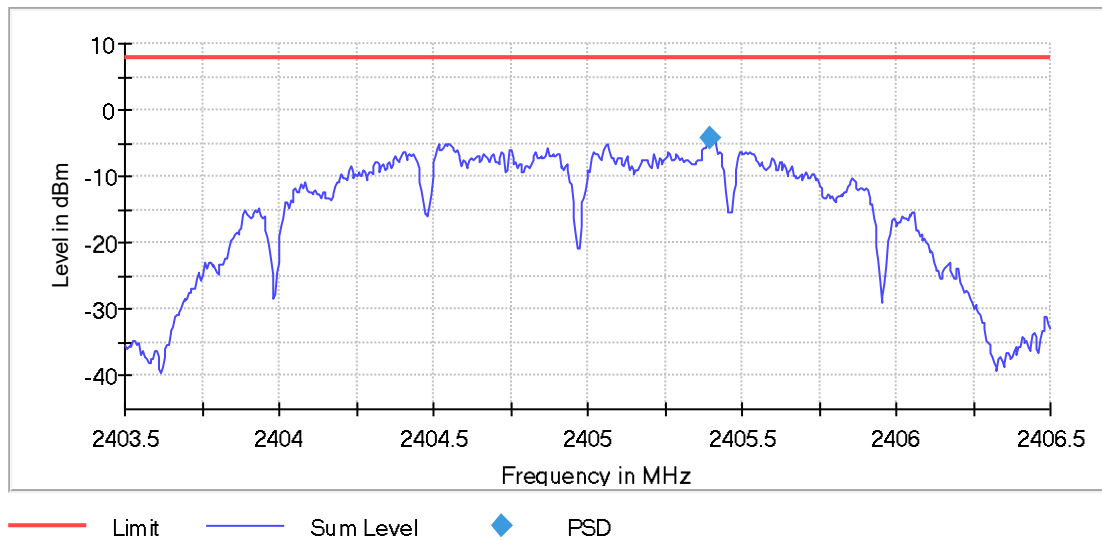
Peak Power Spectral Density



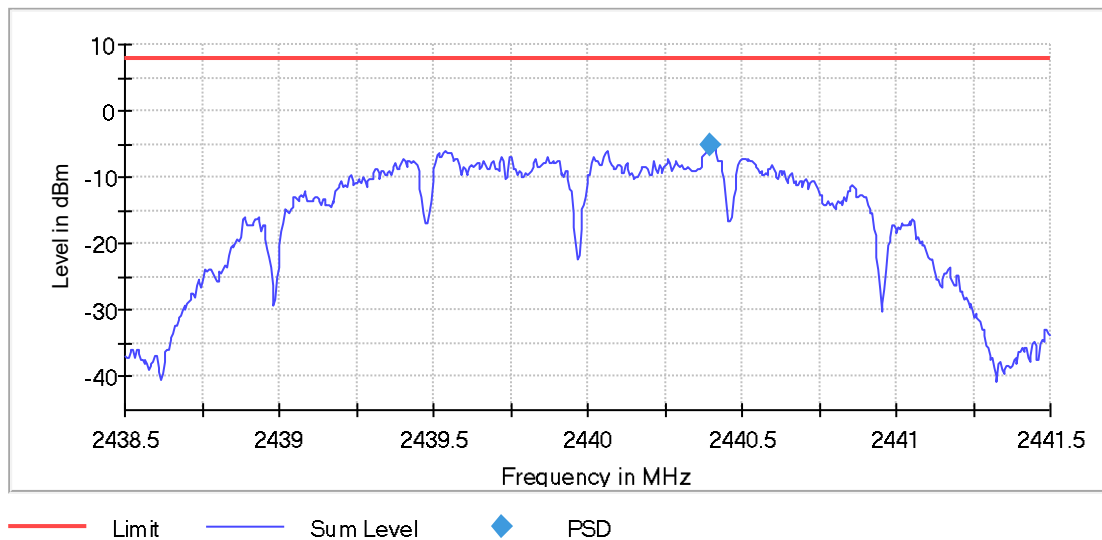
Peak Power Spectral Density



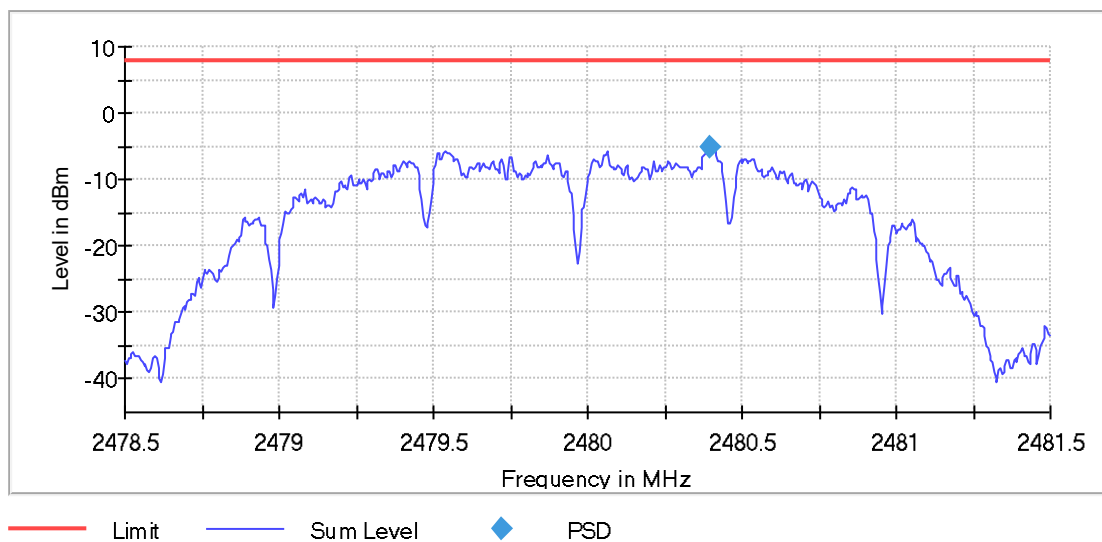
Data of Thread/zigbee
 Peak Power Spectral Density



Peak Power Spectral Density



Peak Power Spectral Density



5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Refer to documents External photo and Internal photo.

ANNEX 1 – MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Occupied Channel Bandwidth	$\pm 0,7\%$
RF Output power, conducted	$\pm 0,6\text{dB}$
Power Spectral Density, Conducted	$\pm 0,6\text{dB}$
Unwanted Emissions, Conducted	$\pm 0.7\text{dB}$
Spurious (30-1000MHz)	$\pm 4,4\text{dB}$
Spurious (1-18GHz)	$\pm 4,4\text{dB}$

ANNEX 2 - USED EQUIPMENT

For Conducted emission :

Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Last date	Cal. Due date
Shielding Room	Changzhou Feite	/	/	G/L861	2024/03/25	2027/03/24
EMI Receiver	R&S	ESCI	101206	G/L857	2026/05/19	2027/05/18
LISN	R&S	ENV216	101337	G/L859	2026/05/13	2027/05/12
High Voltage Probe	SCHWARZBECK	TK9421	9421-170	G/L865	2026/05/13	2027/05/12
Current probe	R&S	CSP9160A	77504	GZ1904	2026/03/09	2027/03/08
Impedance Stabilization Network	TESEQ	INS T800	46672	GZ1760	2025/07/04	2026/07/03
					2026/07/02	2027/07/01

For RF

Instrumentation	Manufacturer	Model	Serial no.	DEKRA No.	Cal. Last date	Cal Due date
Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2025/11/18	2026/11/17
Chamber	ETS	/	/	G/L856	2025/03/12	2027/03/11
Horn antenna (1GHz-18GHz)	R&S	HF907	102306	G/L1236	2026/06/11	2027/06/10
Horn antenna preamplifier	Schwarzbeek	SCU-18	102234	G/L1236-1	2026/01/06	2027/01/05
Horn antenna (18GHz-26.5GHz)	ETS	3160-09	00164643	G/L1237	2026/01/16	2027/01/15
Horn antenna preamplifier	/	SCU-26D	1879064	G/L1237-1	2026/01/12	2027/01/11
EMI receiver	R&S	ESCI	101205	G/L857	2026/05/19	2027/05/18
Antenna (30MHz-2GHz)	SCHWARZBECK	VULB9168	01229	GZ2018	2026/03/11	2027/03/10
OSP	R&S	OSP 150	101907	GZ1893	2026/01/07	2027/01/06
Signal generator	R&S	SMB 100A	181317	GZ1895	2026/01/07	2027/01/06
Vector signal generator	R&S	SMBV100A	263671	GZ1896	2026/01/07	2027/01/06
Wireless connectivity tester	R&S	CMW 270	100990	GZ1894	2026/01/07	2027/01/06
Manual step attenuator (11dB)	Keysight	8494B	TH60074118	GZ2086	2025/09/03	2026/09/02
Manual step attenuator (70dB)	Keysight	8495D	TH60074471	GZ2087	2025/09/03	2026/09/02
Band filter	HX Microwave	HXLBQ-DZA118	23110101-2	GZ2540	2025/11/11	2026/11/10
Test software	R&S	EMC32	Version 11.30.00	---	-	-

For Radiated electromagnetic disturbances (9 kHz to 30 MHz)

Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Last date	Cal. Due date
Shielding Room	Changzhou Feite	/	/	G/L861	2024/03/25	2027/03/24
EMI Receiver	R&S	ESCI	101206	G/L857	2026/05/19	2027/05/18
Dimensional Loop ANTENNA	SCHWARZBECK	HXY9170	9170-206	G/L866	2026/05/13	2027/05/12

ANNEX 3 - TEST PHOTOS

Refer to document Test setup.

--- END ---