

TEST REPORT

On behalf of

Signify North America Corporation

Product Name	Model Number
EXIT SIGN WITH FIRSTLINK	BXBWFL1
COMBO EXIT SIGN WITH FIRSTLINK	BCB4WFL1

FCC ID: 2AF2NBCB4WFL1

Prepared For: Signify North America Corporation
10275 W. Higgins Rd. Rosemont IL 60018, USA.

Prepared By: Audix Technology (Shanghai) Co., Ltd.
3F, Building 34, No. 680 Guiping Rd.,
Caohejing, Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500



File No. : C1D2507054
Report No. : ACI-F25103
Date of Test : 2025.02.25-06.30
Date of Report : 2025.08.19

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS	5
1.1 Description of Standards and Results	5
2 GENERAL INFORMATION	6
2.1 Description of Equipment Under Test	6
2.2 EUT Specifications Assessed in Current Report	7
2.3 Test Information	7
2.4 Duty Cycle Check	8
2.5 Sample Description	9
2.6 Supported equipment	9
2.7 Description of Test Facility	9
3 CONDUCTED EMISSION TEST	10
3.1 Test Equipment	10
3.2 Block Diagram of Test Setup	10
3.3 Conducted Emission Limits	11
3.4 Test Configuration	11
3.5 Operating Condition of EUT	11
3.6 Test Procedures	11
3.7 Test Results	12
4 RADIATED EMISSION TEST	17
4.1 Test Equipment	17
4.2 Block Diagram of Test Setup	18
4.3 Radiated Emission Limit	20
4.4 Test Configuration	20
4.5 Operating Condition of EUT	21
4.6 Test Procedures	21
4.7 Test Results	22
5 6 DB BANDWIDTH MEASUREMENT	56
5.1 Test Equipment	56
5.2 Block Diagram of Test Setup	56
5.3 Specification Limits (§15.247(a)(2))	56
5.4 Operating Condition of EUT	56
5.5 Test Procedure	56
5.6 Test Results	57
6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT	60
6.1 Test Equipment	60
6.2 Block Diagram of Test Setup	60
6.3 Specification Limits (§15.247(b)(3))	60
6.4 Operating Condition of EUT	60
6.5 Test Procedure	60
6.6 Test Results	61
7 EMISSION LIMITATIONS MEASUREMENT	64
7.1 Test Equipment	64
7.2 Block Diagram of Test Setup	64
7.3 Specification Limits (§15.247(d))	64

7.4	Operating Condition of EUT	64
7.5	Test Procedure	64
7.6	Test Results	66
8	POWER SPECTRAL DENSITY MEASUREMENT	73
8.1	Test Equipment.....	73
8.2	Block Diagram of Test Setup	73
8.3	Specification Limits (§15.247(e))	73
8.4	Operating Condition of EUT	73
8.5	Test Procedure	73
8.6	Test Results	74
9	ANTENNA REQUIREMENT.....	77
9.1	Specification Limits (§15.203).....	77
9.2	Result.....	77
10	DEVIATION TO TEST SPECIFICATIONS	78
11	MEASUREMENT UNCERTAINTY LIST	79
APPENDIX I PHOTOGRAPHS OF TEST		TOTAL 4 PAGES
APPENDIX II PHOTOGRAPHS OF EUT		TOTAL 17 PAGES

TEST REPORT

Applicant : Signify North America Corporation
EUT Description : Refer to Sec.2.1
(A) Model No. : Refer to Sec.2.1
(B) Power Supply : 120 to 277V AC
(C) Test Voltage : AC 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C
AND ANSI C63.10-2020*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested is technically compliance with the FCC limits.

This report applies to above tested Sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

The test results for EUT's ZigBee function are contained in No.ACI-F25104 report.

Date of Test : 2025.02.25-06.30 Date of Report : 2025.08.19

Producer : Huimin Yan
HUIMIN YAN / Assistant

Review : LVY LV
LVY LV / Deputy Assistant Manager

 For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Kamp Chen
Authorized Signature(s) KAMP CHEN/Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The result is determined according to the decision rules of customer selection in the ASC-403 application service form.

1. According to IEC GUIDE 115 Procedure 2 and ILAC-G8, the uncertainties value is not used in determining the PASS/FAIL results.

2. If the required specification or standard already contains the decision rules, it will be carried out in accordance with the regulations or standard documents or the requirements of the competent units. If the required specification or standard does not contain a decision rule, the same paragraph 1.

3. If your company has a required decision rule, it will be implemented in accordance with the requirements and ISO/IEC Guide 98-4 specifications.

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass*	15.207 15.107(b)
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass*	15.209(a) 15.109(b) 15.205(a)(c)
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.247(a)(2)
Maximum Peak Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.247(b)(3)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.247(e)
Antenna Requirement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2020	Pass	15.203
N/A is an abbreviation for Not Applicable. * The EUT was a Class A product, the Class A limit applied for the Spurious Emission which not within the special band (like restricted band in FCC section 15.205(a)(c)).			

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Type of EUT : ☒ Production ☐ Pre-product ☐ Pro-type

Product Name	Model Number
EXIT SIGN WITH FIRSTLINK	BXBWFL1
COMBO EXIT SIGN WITH FIRSTLINK	BCB4WFL1

Note#1 : main board PCB layout and RF module is the same, but the BCB4WFL1 with circuit of drive additional Bug-eye (2LED) on main board and the BXBWFL1 without this circuit.

Note#2 : According to the difference, the test performed on the model “BCB4WFL1” for main test and model “BXBWFL1” for differential test in current report.

Test Model : BCB4WFL1, BXBWFL1

Radio Tech : BLE 5.0;
Zigbee.

Channel Freq. : BLE: 2402MHz-2480MHz; total 40 channels;
Zigbee: 2405MHz, 2450MHz, 2475MHz; total 3 channels.

Modulation : BLE: GFSK;
Zigbee: QPSK;

Test Tech. in current report : BLE.

Antenna Info. : Antenna Type: PCB Antenna
Antenna Gain: 2.85 dBi

Note : The Antenna information was provided by the customer.

Applicant : Signify North America Corporation
10275 W. Higgins Rd. Rosemont IL 60018, USA.

2.2 EUT Specifications Assessed in Current Report

Mode	Modulation	Data Rate(Mbps)
BLE	GFSK	Up to 2

Channel List			
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
...	...	...	...
...	...	...	...
...	...	...	...
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

2.3 Test Information

The test software “BLEtest_FCCRED.exe” was used to control EUT work in TX mode, Power Setting and select test channel.

Mode	data rate (Mbps)	Power Setting	Test Channel		Frequency (MHz)
BLE 1M	1	Default	Low:	00	2402
		Default	Middle:	20	2442
		Default	High:	39	2480
BLE 2M	2	Default	Low:	00	2402
		Default	Middle:	20	2442
		Default	High:	39	2480

Note: The setting information was provided by the customer.

2.4 Duty Cycle Check

Mode	Transmission Duration (ms)	Transmission Period (ms)	Duty Cycle (%)
BLE 1M	5	5	100

Mode	Ton	Ton+off
BLE 1M		

2.5 Sample Description

Test Item	Model Number	Sample Number	Date of receipted
Conducted Emission	BXBWFL1	E20250211047-01/01	2025.02.11
	BCB4WFL1	E20250211048-01/01	2025.02.11
Radiated Emission	BXBWFL1	E20250211047-01/01	2025.02.11
	BCB4WFL1	E20250211048-01/01	2025.02.11
Conducted RF Test	BCB4WFL1	E20250211048-01/01	2025.02.11

2.6 Supported equipment

Brand : Acer
Product Name: : Notebook PC
Model Name : TravelMate P238 series
Model Number : N15W8

Product Name : Test Dongle
Mode Number : BLEUIO

2.7 Description of Test Facility

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F, Building 34, No. 680 Guiping Rd.,
Caohejing, Hi-Tech Park,
Shanghai 200233, China

Accredited by NVLAP, Lab Code : 200371-0

FCC Designation Number : CN5027

Test Firm Registration Number : 954668

3 CONDUCTED EMISSION TEST

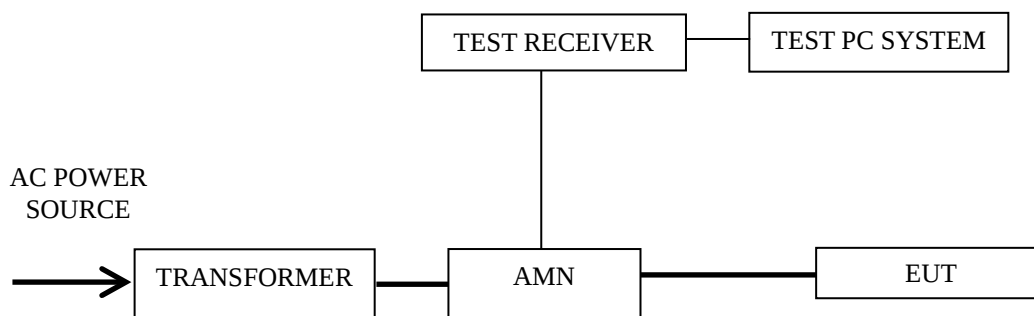
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	AMN	R&S	ESH2-Z5	843890/011	2025/7/3	1 Year
2.	Fixed Attenuator	SHYL	TTS-1	001	2025/2/22	1 Year
3.	Test Receiver	R&S	ESCI	101302	2025/2/22	1 Year
4.	CE Cable+Coaxial Switch (0.09-300MHz)	Audix+ ANRITSU	CE Cable+ MP59B	CE-SH1-001+ 6200655085	2025/2/22	1 Year
5.	Software	Audix	e3	e3.v9.210616	-----	-----

3.2 Block Diagram of Test Setup

3.2.1 Conducted Disturbance Test Setup



— : Signal Line
 — : Power Line

3.3 Conducted Emission Limits

§15.107(b)(Class A)

Frequency Range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60
NOTE 1 – The lower limit shall apply at the transition frequencies.		

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipment.

3.5.3 Turn the EUT on the test mode, and then test.

3.6 Test Procedures

The EUT was placed upon a non-metallic table, which is 0.8 m above the horizontal conducting ground plane and 0.4 m from a vertical reference plane. The EUT was connected to the power mains through an Artificial Mains Network (AMN) to provide a 50 Ω coupling impedance for the measuring equipment. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission according to FCC Part 15 Subpart C and ANSI C63.10-2020 requirements during conducted disturbance test.

The I.F. bandwidth of Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

Test with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. (According to KDB 174176 D01 Line Conducted FAQ)

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7

3.7 Test Results

< **PASS** >

The frequency and amplitude of the highest conducted emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Worst case emission:

(Model: BCB4WFL1)

No.	Operation	Mode	Channel	Frequency (MHz)	Data Page
1.	Transmitting	BLE 1M	00	2402	P13-14

(Model: BXBWFL1)

No.	Operation	Mode	Channel	Frequency (MHz)	Data Page
1.	Transmitting	BLE 1M	00	2402	P15-16

NOTE 1 –Emission Level (dBμV/m) = Read Level (dBμV) + AMN Factor (dB) +
+ Cable Loss (dB)

Margin (dB) = Limits (dBμV) - Emission Level (dBμV)

NOTE 2 – “QP” means “Quasi-Peak” values

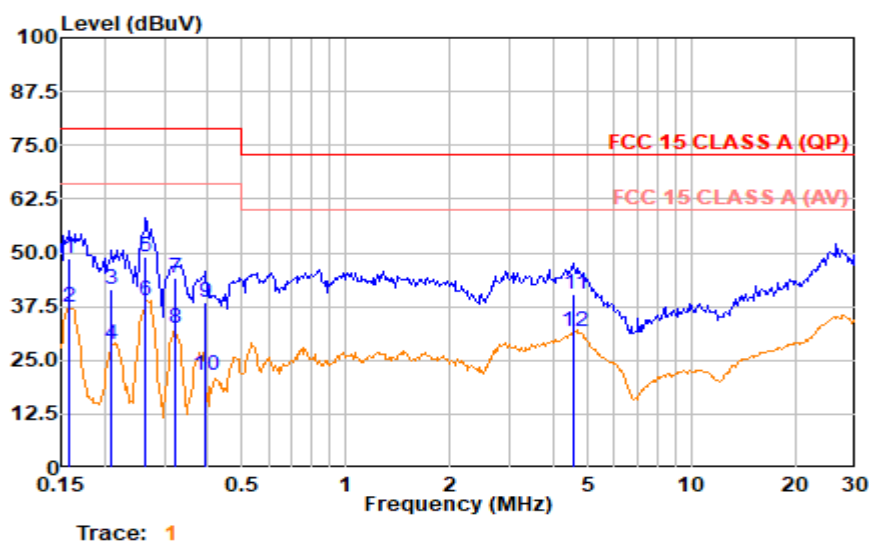
NOTE 3 – The emission levels which not reported are too low against the official limit.

Worst case emission

Test Date:	2025.02.25	Temp./Hum.:	22°C/51%RH	Test By:	JareyLu
------------	------------	-------------	------------	----------	---------

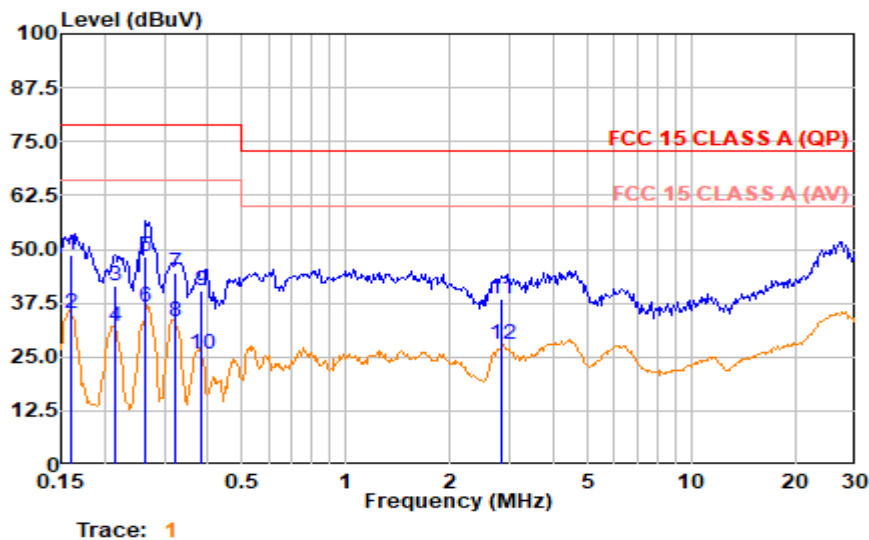
Mode: BLE1M CH2402MHZ

Model: BCB4WFL1



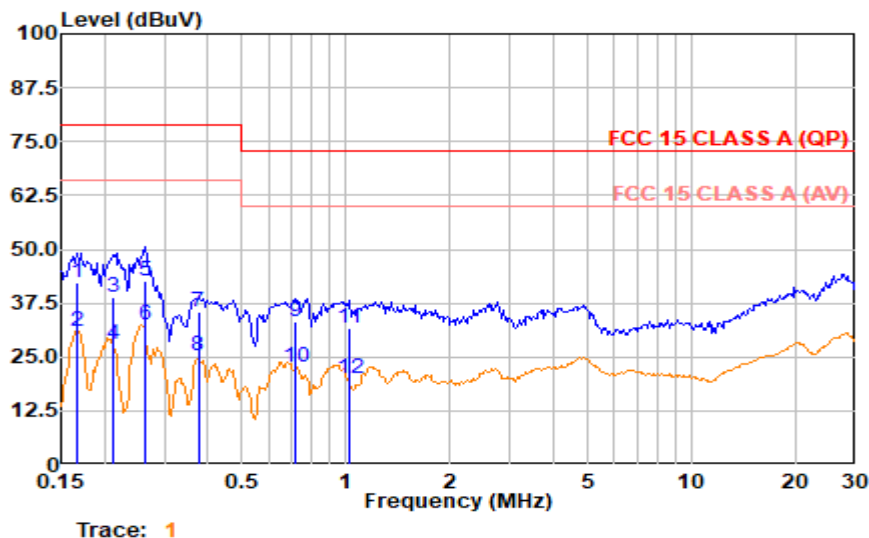
Polarization at Line

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.159	38.87	0.10	9.49	0.10	48.56	79.00	30.44	QP
0.159	27.54	0.10	9.49	0.10	37.23	66.00	28.77	Average
0.210	31.87	0.10	9.49	0.10	41.56	79.00	37.44	QP
0.210	18.90	0.10	9.49	0.10	28.59	66.00	37.41	Average
0.264	39.33	0.10	9.49	0.10	49.02	79.00	29.98	QP
0.264	29.05	0.10	9.49	0.10	38.74	66.00	27.26	Average
0.319	34.58	0.10	9.49	0.10	44.27	79.00	34.73	QP
0.319	22.77	0.10	9.49	0.10	32.46	66.00	33.54	Average
0.393	28.63	0.10	9.49	0.11	38.32	79.00	40.68	QP
0.393	11.76	0.10	9.49	0.11	21.45	66.00	44.55	Average
4.583	30.37	0.30	9.49	0.16	40.31	73.00	32.69	QP
4.583	21.69	0.30	9.49	0.16	31.63	60.00	28.37	Average

Mode: BLE1M CH2402MHZ**Model: BCB4WFL1**

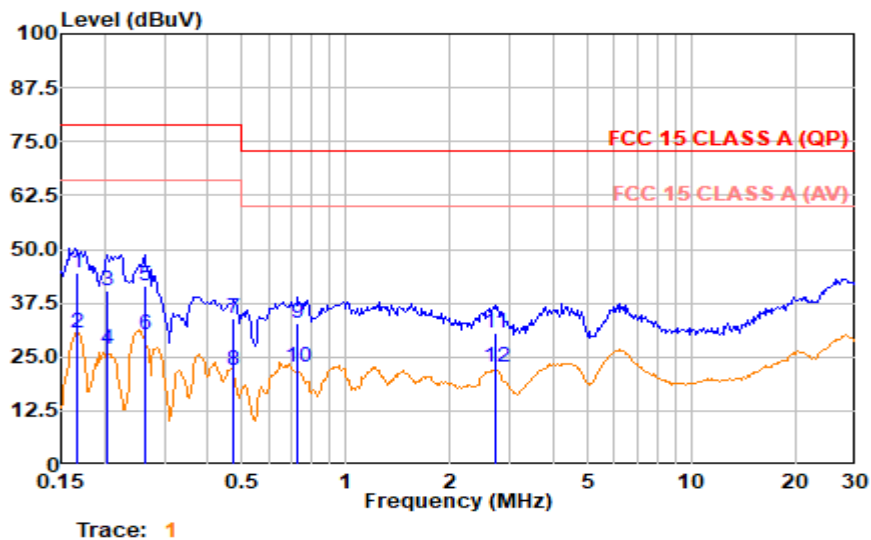
Polarization at Neutral

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.161	39.02	0.10	9.49	0.10	48.71	79.00	30.29	QP
0.161	25.57	0.10	9.49	0.10	35.26	66.00	30.74	Average
0.215	31.79	0.10	9.49	0.10	41.48	79.00	37.52	QP
0.215	22.33	0.10	9.49	0.10	32.02	66.00	33.98	Average
0.264	38.54	0.10	9.49	0.10	48.23	79.00	30.77	QP
0.264	27.07	0.10	9.49	0.10	36.76	66.00	29.24	Average
0.322	34.73	0.10	9.49	0.10	44.42	79.00	34.58	QP
0.322	23.52	0.10	9.49	0.10	33.21	66.00	32.79	Average
0.382	30.77	0.10	9.49	0.10	40.47	79.00	38.53	QP
0.382	15.90	0.10	9.49	0.10	25.59	66.00	40.41	Average
2.816	28.47	0.20	9.49	0.14	38.30	73.00	34.70	QP
2.816	18.21	0.20	9.49	0.14	28.04	60.00	31.96	Average

Mode: BLE1M CH2402MHZ**Model: BXBWFL1**

Polarization at Line

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.167	32.56	0.10	9.49	0.10	42.25	79.00	36.75	QP
0.167	21.38	0.10	9.49	0.10	31.07	66.00	34.93	Average
0.212	29.11	0.10	9.49	0.10	38.80	79.00	40.20	QP
0.212	18.16	0.10	9.49	0.10	27.85	66.00	38.15	Average
0.262	32.95	0.10	9.49	0.10	42.64	79.00	36.36	QP
0.262	22.80	0.10	9.49	0.10	32.49	66.00	33.51	Average
0.374	25.77	0.10	9.49	0.10	35.46	79.00	43.54	QP
0.374	15.49	0.10	9.49	0.10	25.19	66.00	40.81	Average
0.714	23.40	0.20	9.49	0.13	33.21	73.00	39.79	QP
0.714	12.71	0.20	9.49	0.13	22.52	60.00	37.48	Average
1.022	21.97	0.20	9.49	0.14	31.80	73.00	41.20	QP
1.022	10.18	0.20	9.49	0.14	20.01	60.00	39.99	Average

Mode: BLE1M CH2402MHZ**Model: BXBWFL1**

Polarization at Neutral

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.167	34.86	0.10	9.49	0.10	44.55	79.00	34.45	QP
0.167	21.06	0.10	9.49	0.10	30.75	66.00	35.25	Average
0.204	30.84	0.10	9.49	0.10	40.53	79.00	38.47	QP
0.204	16.97	0.10	9.49	0.10	26.66	66.00	39.34	Average
0.262	31.98	0.10	9.49	0.10	41.67	79.00	37.33	QP
0.262	20.47	0.10	9.49	0.10	30.16	66.00	35.84	Average
0.475	24.14	0.10	9.49	0.11	33.84	79.00	45.16	QP
0.475	12.12	0.10	9.49	0.11	21.82	66.00	44.18	Average
0.729	23.27	0.10	9.49	0.13	32.99	73.00	40.01	QP
0.729	12.82	0.10	9.49	0.13	22.54	60.00	37.46	Average
2.706	20.83	0.20	9.49	0.14	30.66	73.00	42.34	QP
2.706	12.75	0.20	9.49	0.14	22.58	60.00	37.42	Average

4 RADIATED EMISSION TEST

4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

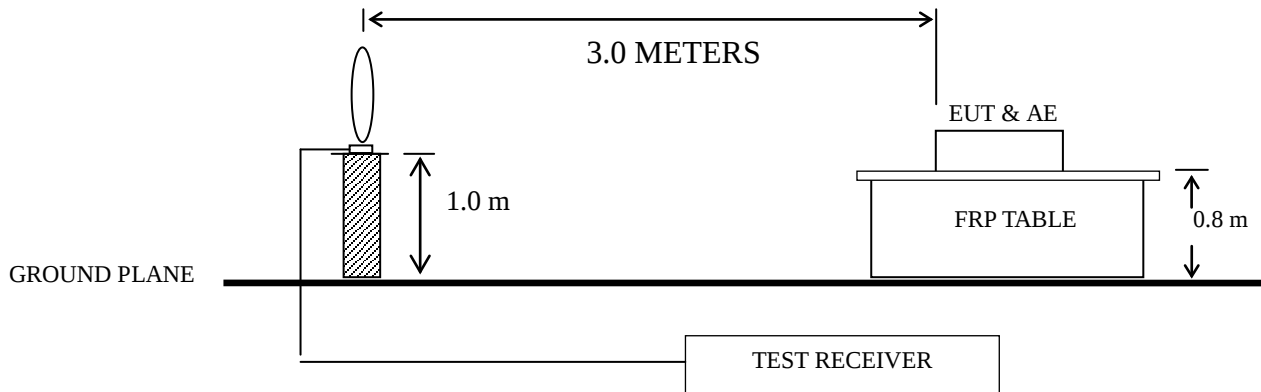
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Preamplifier	Agilent	8447D	2944A10548	2025.02.22	1 Year
2.	Preamplifier	HP	8449B	3008A00864	2025.02.22	1 Year
3.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	2024.08.09	1 Year
4.	Test Receiver	R&S	ESCI	101303	2025.02.22	1 Year
5.	Loop Antenna	Schaffner	HLA6120	1193	2024.07.10	1 Year
6.	Bilog Antenna+6dB Attenuator	Schwarzbeck	VULB 9168+EMCI-N-6-06	708+AT-N0638	2025.01.15	1 Year
7.	Horn Antenna	EMCO	3115	96074878	2024.07.25	1 Year
8.	Horn Antenna	EMCO	3116	00062643	2025.01.21	2 Year
9.	Coaxial Cable(CH.3)	Mini-Circuits	FLC-2FT-SMSM+	21112086	2025.02.22	1 Year
10.	RE Cable-1m+Coaxial Switch	HARBOUR+ANRITSU	RE Cable-1m+MP59B	RE-1m-00x+6200655086	2025.02.22	1 Year
11.	RE Cable-5m	TIMES	SFT205-SMNM-5.0M	20250211-0001	2025.02.22	1 Year
12.	RE Cable-3m+RE Cable-10m	TIMES+SCHAFFNER	LMR400-NMNM-3.0M+RG212U-MIL C 17	20250211-0001+RE-10m-001	2025.02.22	1 Year
13.	Software	Audix	e3	e3.v9.210616	--	--

4.2 Block Diagram of Test Setup

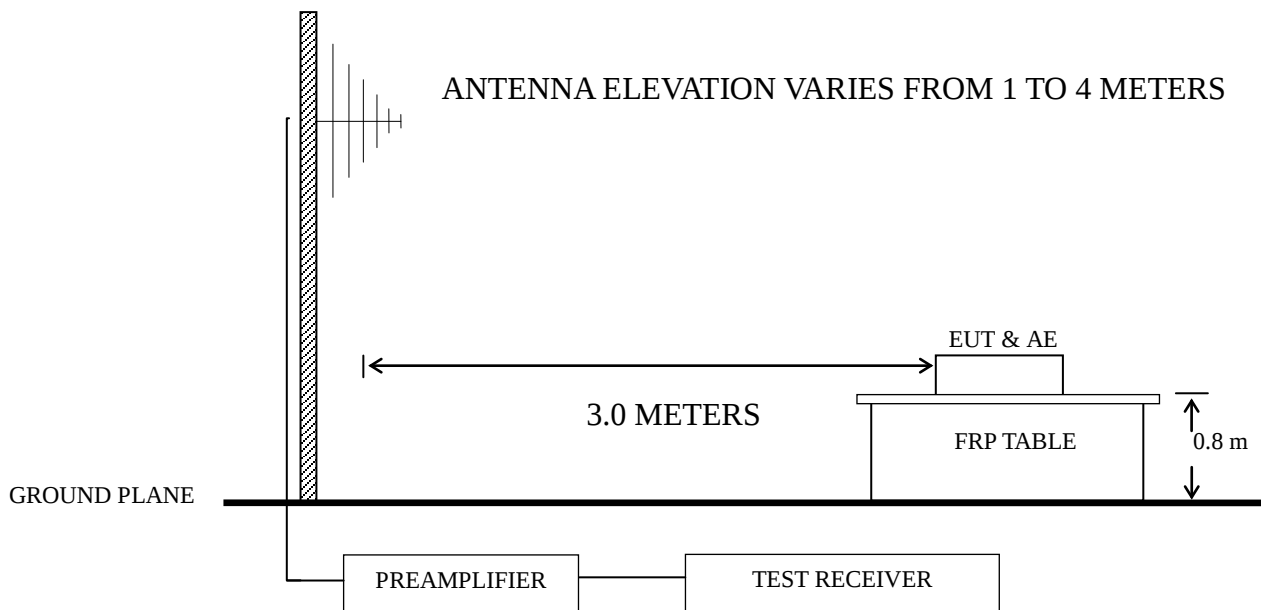
4.2.1 EUT & Peripherals



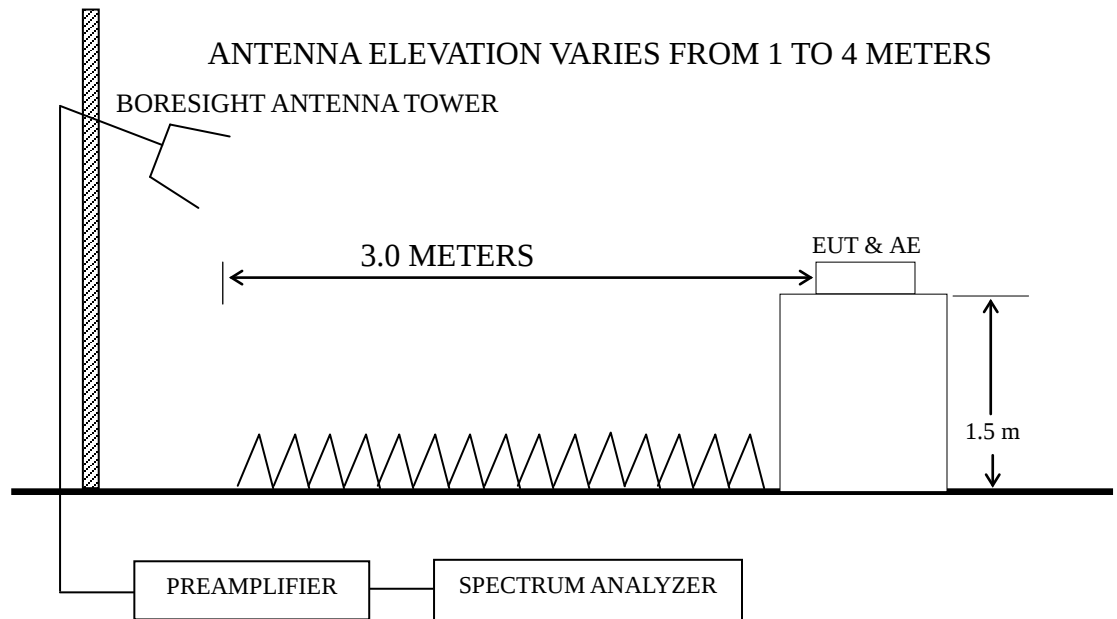
4.2.2 9kHz to 30MHz



4.2.3 Below 1GHz



4.2.4 Above 1GHz



4.3 Radiated Emission Limit

§15.109(b)(Class A)

Frequency (MHz)	Distance (m)	Field strength limits		Converted Field Strength Limits By 3 Meters Measuring Distance
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	10	90	39.00	49.50
88 ~ 216	10	150	43.50	54.00
216 ~ 960	10	210	46.50	57.00
Above 960	10	300	49.50	60.00
NOTE 1 – The lower limit shall apply at the transition frequency. NOTE 2 – Measuring distance of 10 m is a primary requirement. In this case, the limits with measuring distance of 3 m shall be the above limit value increased $20\lg(10/3)=10.5$. NOTE 3 – 1 $\mu\text{V/m}$ is regarded as 0 dB ($\mu\text{V/m}$).				

§15.209:

Frequency (MHz)	Distance (m)	Field strength limits ($\mu\text{V/m}$)	
		($\mu\text{V/m}$)	dB($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$) NOTE 2 - The tighter limit applies at the band edges. NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz. NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT			

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn EUT on.

4.5.3 Plug Test Dongle to Notebook PC.

4.5.4 Use the software as section 2.3 to select the test mode, remove the Test Dongle and Notebook PC, then test.

4.5.5 Repeat step 3.5.2 and 3.5.4, until the test of all modes finished.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable. Below 1 GHz, the table height is 80 cm above the reference ground plane. Above 1 GHz, the table height is 1.5 m. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10-2020 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of Agilent N9010A was set at 1MHz for above 1GHz.

The frequency range from 30 MHz to 25 GHz (Up to 10th harmonics from fundamental frequency) was checked.

All the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Frequency range: below 1GHz (Worst case emission)

(Model: BCB4WFL1)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	BLE 1M	00	2402 MHz	P24-25

(Model: BXBWFL1)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	BLE 1M	00	2402 MHz	P26-27

Frequency range: above 1GHz (Worst case emission)

(Model: BCB4WFL1)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	BLE 1M	00	2402 MHz	P28-31
2.			20	2442 MHz	P32-35
3.			39	2480 MHz	P36-39
4.		BLE 2M	39	2480 MHz	P40-43

(Model: BXBWFL1)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	BLE 1M	00	2402 MHz	P44-47

Band-Edge and Restricted bands:

(Model: BCB4WFL1)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	BLE 1M	00	2402 MHz	P48-49
2.			39	2480 MHz	P50-51
3.		BLE 2M	00	2402 MHz	P52-53
4.			39	2480 MHz	P54-55

NOTE 1 – Emission Level (dBμV/m) = Read Level (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB)

Margin (dB) = Limits (dBμV/m) - Emission Level (dBμV/m).

NOTE 2 – “QP” means “Quasi-Peak” values.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 – The emission levels which not reported are too low against the official limit.

NOTE 5 – The emission levels recorded below is data of EUT configured in Lying direction, for this direction was the maximum emission direction during the test. The data of Side & Standing direction are too low against the official limit to be reported.

NOTE 6 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

For above 1GHz test, if the peak measured value complies with the

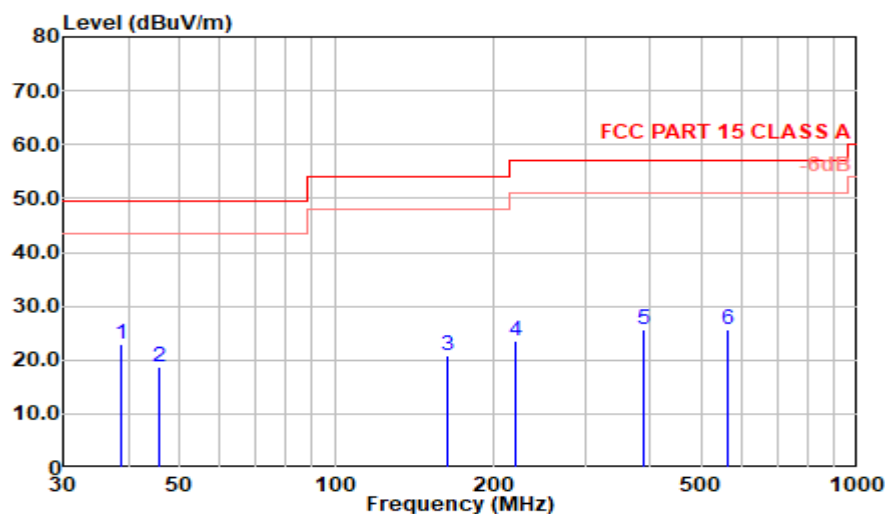
average limit, it is unnecessary to perform an average measurement.

NOTE 7 – The frequency range 2310-2390MHz & 2483.5-2500MHz were tested for Restricted bands.

NOTE 8 – For the Emission 9kHz to 30MHz, the emissions were too low against to the limit.

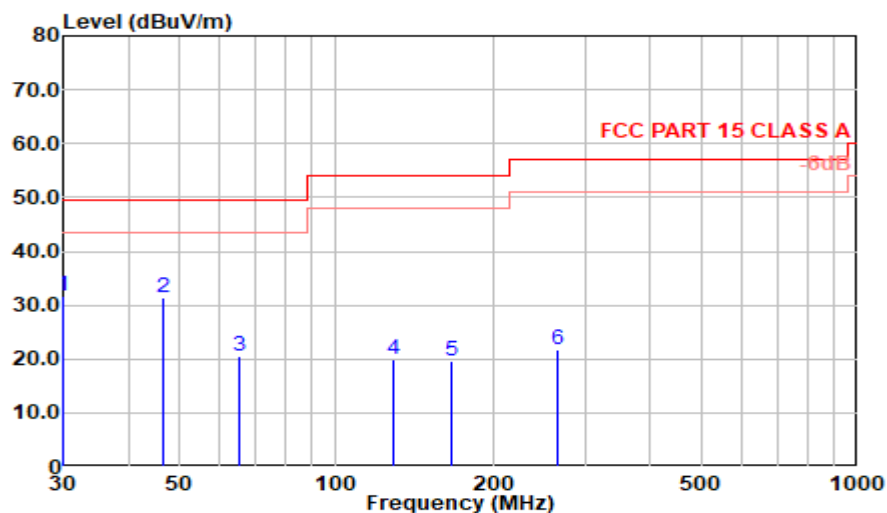
Radiated emission < 1GHz

Test Date:	2025.06.30	Temp./Hum.:	22°C/51%RH	Test By:	JareyLu
------------	------------	-------------	------------	----------	---------

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

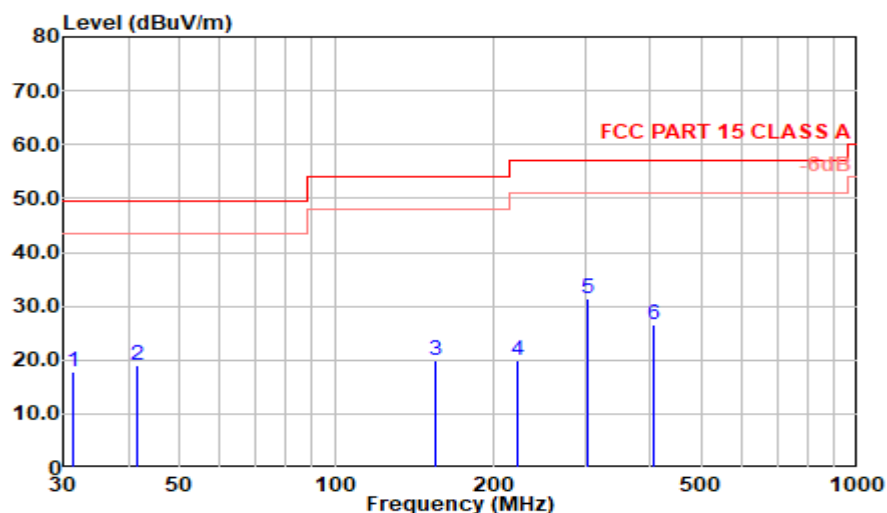
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
38.730	32.80	18.90	0.75	29.55	22.90	49.50	26.60	QP
46.005	27.93	19.50	0.82	29.52	18.73	49.50	30.77	QP
162.890	29.48	19.01	1.43	29.00	20.92	54.00	33.08	QP
221.090	35.27	15.52	1.68	28.99	23.48	57.00	33.52	QP
387.930	30.84	21.16	2.29	28.78	25.51	57.00	31.49	QP
565.440	27.12	24.51	2.82	28.70	25.75	57.00	31.25	QP

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

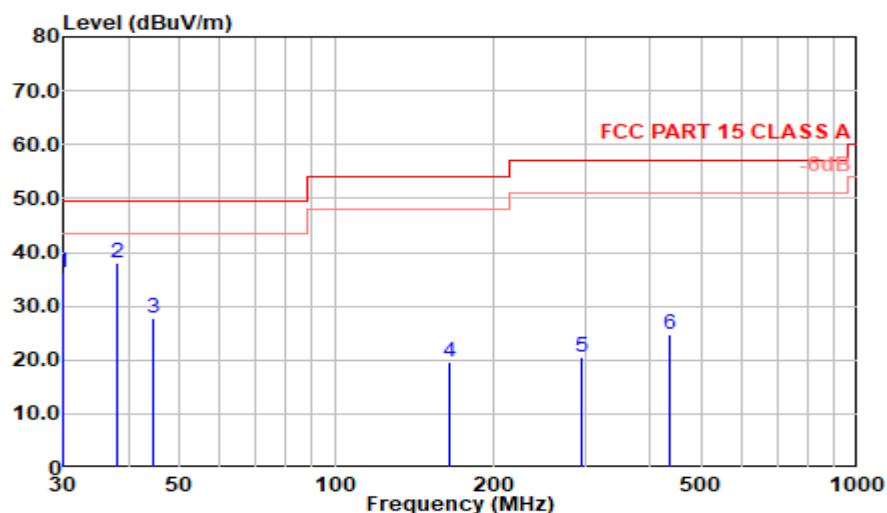
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
30.000	42.63	18.10	0.68	29.60	31.81	49.50	17.69	QP
46.490	40.61	19.50	0.82	29.51	31.42	49.50	18.08	QP
65.405	30.51	18.42	0.94	29.44	20.43	49.50	29.07	QP
128.940	30.66	17.29	1.29	29.27	19.97	54.00	34.03	QP
165.800	28.27	18.90	1.45	29.00	19.62	54.00	34.38	QP
265.400	30.43	18.12	1.91	28.72	21.74	57.00	35.26	QP

Mode: BLE1M CH2402MHz**Model: BXBWFL1**

Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
31.455	28.51	18.15	0.69	29.59	17.76	49.50	31.74	QP
41.640	28.57	19.23	0.78	29.54	19.04	49.50	30.46	QP
154.645	28.27	19.20	1.39	29.00	19.86	54.00	34.14	QP
222.060	31.72	15.54	1.69	28.99	19.97	57.00	37.03	QP
304.025	38.18	19.28	2.06	28.24	31.27	57.00	25.73	QP
404.905	31.64	21.40	2.35	28.83	26.56	57.00	30.44	QP

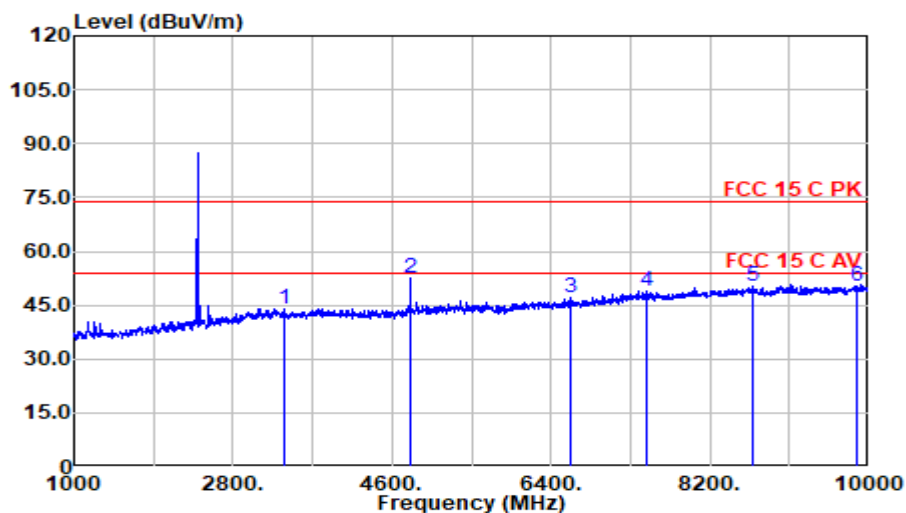
Mode: BLE1M CH2402MHz**Model: BXBWFL1**

Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
30.000	47.13	18.10	0.68	29.60	36.31	49.50	13.19	QP
38.245	48.08	18.90	0.75	29.55	38.17	49.50	11.33	QP
44.550	37.11	19.40	0.80	29.52	27.79	49.50	21.71	QP
164.345	28.27	18.97	1.44	29.00	19.67	54.00	34.33	QP
296.750	27.55	19.14	2.04	28.25	20.47	57.00	36.53	QP
436.915	28.67	22.54	2.44	29.02	24.63	57.00	32.37	QP

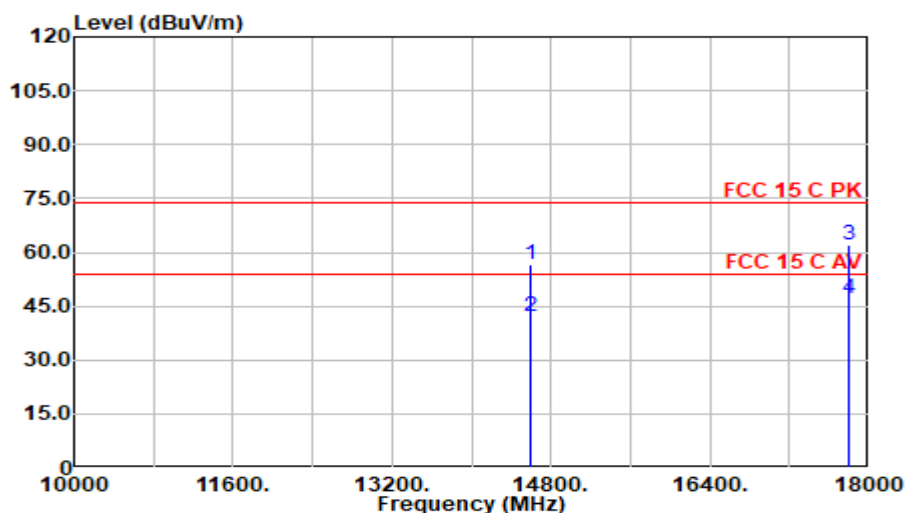
Radiated Emission > 1GHz

Test Date:	2025.06.29	Temp./Hum.:	22°C/51%RH	Test By:	JareyLu
------------	------------	-------------	------------	----------	---------

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

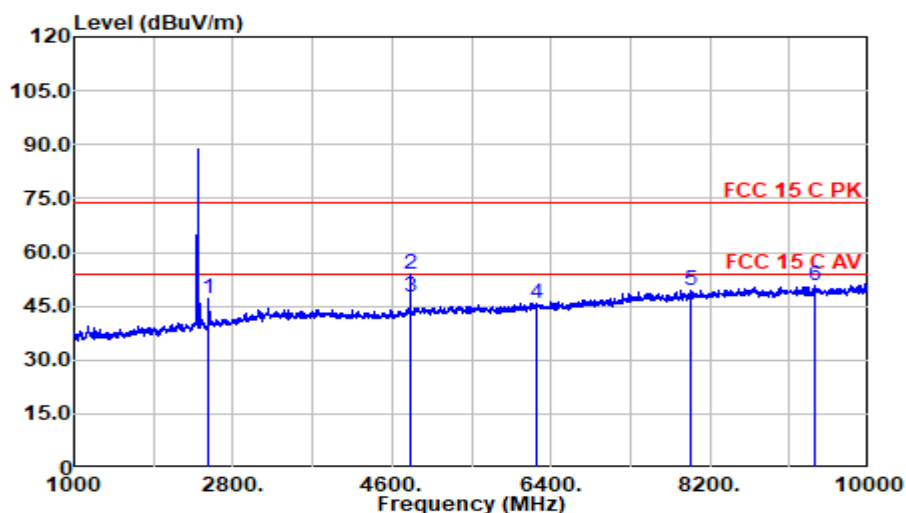
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3380.000	44.96	31.34	3.53	35.69	44.14	74.00	29.86	Peak
4803.750	51.19	33.29	4.49	36.43	52.54	74.00	21.46	Peak
6631.250	43.56	34.95	5.37	36.86	47.02	74.00	26.98	Peak
7485.500	43.14	37.07	5.61	37.10	48.72	74.00	25.28	Peak
8679.750	43.14	38.52	5.83	37.30	50.19	74.00	23.81	Peak
9869.750	42.98	38.34	6.13	37.04	50.42	74.00	23.58	Peak

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

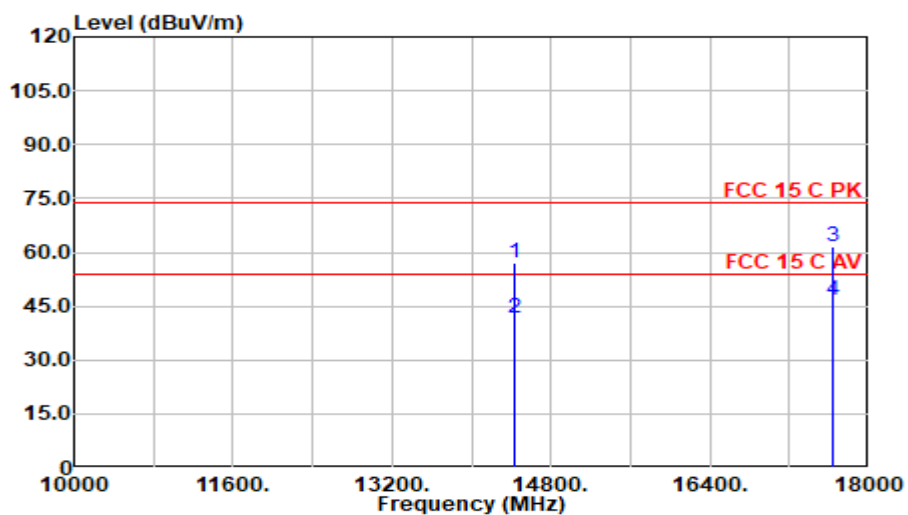
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14591.500	42.00	42.23	7.74	35.38	56.59	74.00	17.41	Peak
14591.500	27.43	42.23	7.74	35.38	42.01	54.00	11.99	Average
17804.500	42.30	45.51	8.61	34.48	61.95	74.00	12.05	Peak
17804.500	27.43	45.51	8.61	34.48	47.08	54.00	6.92	Average

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

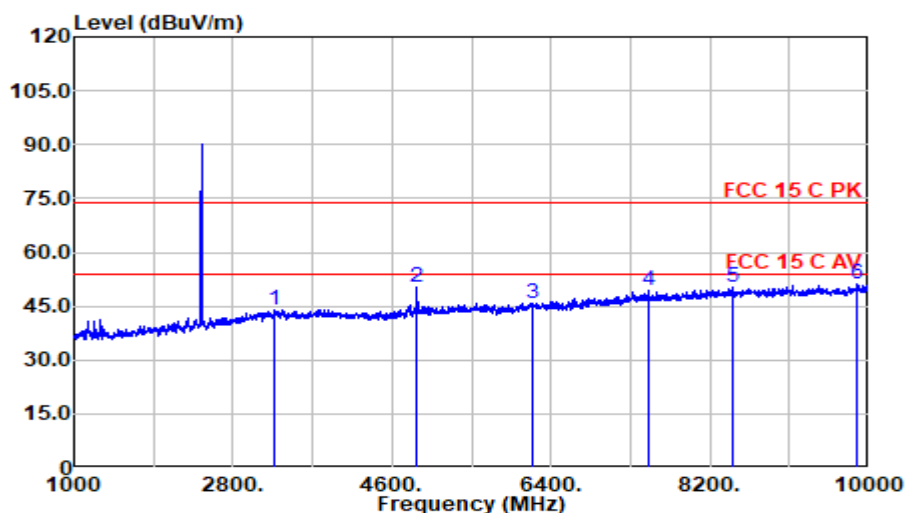
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2530.000	51.22	28.68	2.99	35.95	46.94	74.00	27.06	Peak
4803.750	52.52	33.29	4.49	36.43	53.87	74.00	20.13	Peak
4803.750	46.25	33.29	4.49	36.43	47.60	54.00	6.40	Average
6231.750	42.96	34.54	5.25	36.82	45.92	74.00	28.08	Peak
7991.250	43.29	37.60	5.73	37.30	49.32	74.00	24.68	Peak
9398.000	43.37	38.39	6.00	37.18	50.58	74.00	23.42	Peak

Mode: BLE1M CH2402MHz**Model: BCB4WFL1**

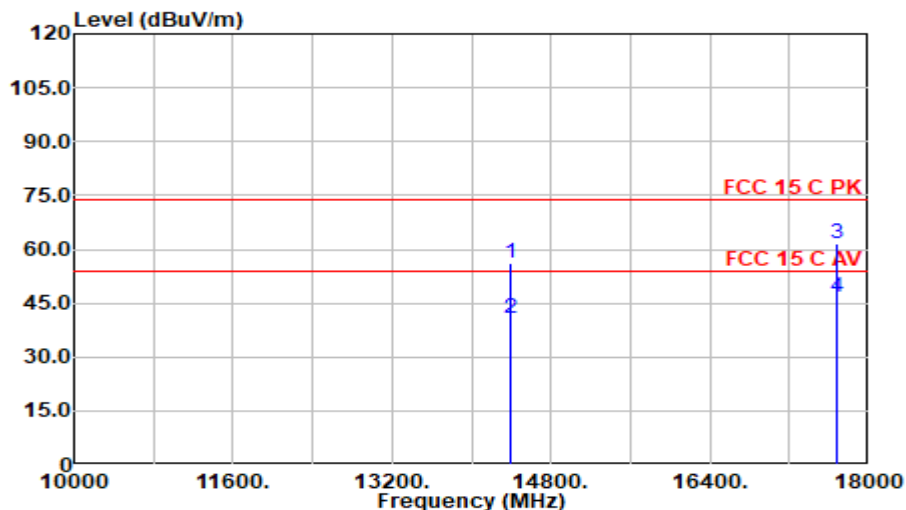
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14434.250	42.31	42.30	7.73	35.49	56.85	74.00	17.15	Peak
14434.250	27.23	42.30	7.73	35.49	41.77	54.00	12.23	Average
17647.250	42.85	44.88	8.58	34.54	61.78	74.00	12.22	Peak
17647.250	27.58	44.88	8.58	34.54	46.51	54.00	7.49	Average

Mode: BLE1M CH2442MHz**Model: BCB4WFL1**

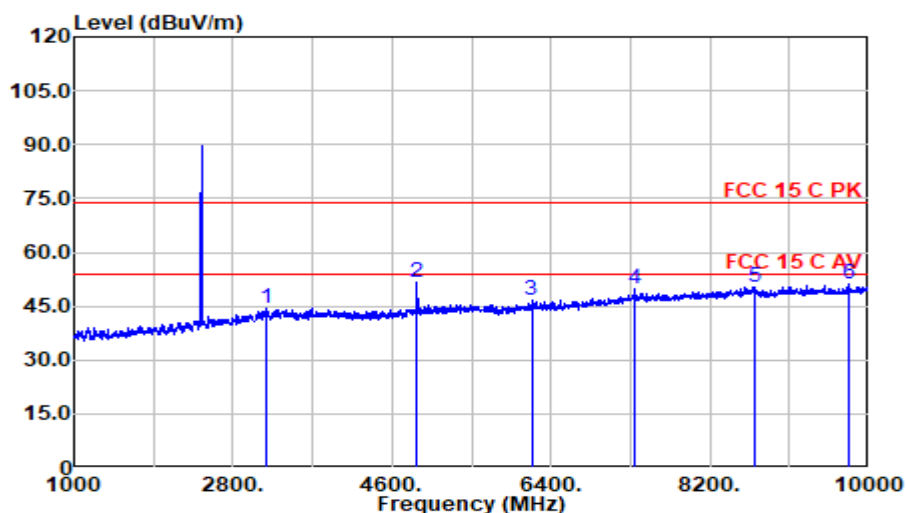
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3273.750	44.85	31.30	3.45	35.61	44.00	74.00	30.00	Peak
4884.500	49.09	33.27	4.54	36.46	50.44	74.00	23.56	Peak
6193.500	42.85	34.57	5.24	36.82	45.85	74.00	28.15	Peak
7502.500	43.64	37.09	5.61	37.11	49.23	74.00	24.77	Peak
8463.000	43.52	38.25	5.80	37.30	50.28	74.00	23.72	Peak
9865.500	43.49	38.38	6.13	37.04	50.96	74.00	23.04	Peak

Mode: BLE1M CH2442MHz**Model: BCB4WFL1**

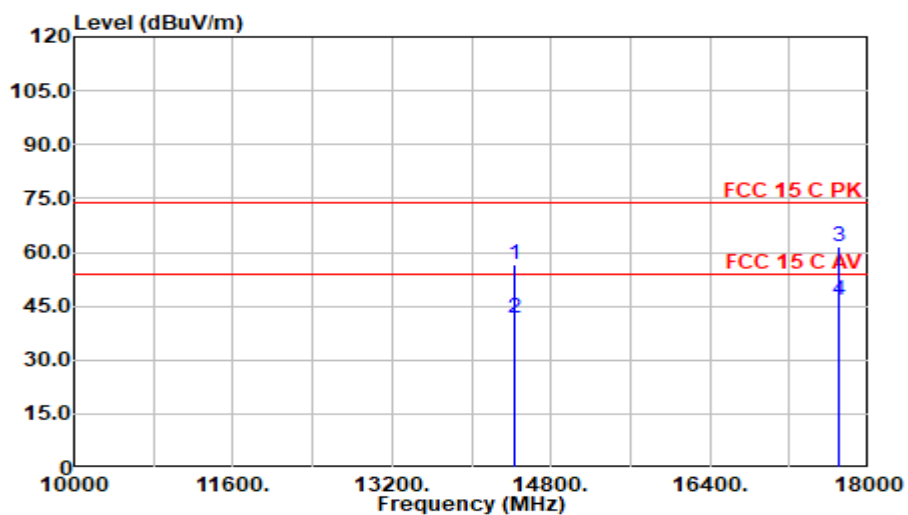
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14387.500	41.74	42.19	7.72	35.52	56.13	74.00	17.87	Peak
14387.500	26.37	42.19	7.72	35.52	40.76	54.00	13.24	Average
17681.250	42.60	45.09	8.59	34.53	61.75	74.00	12.25	Peak
17681.250	27.46	45.09	8.59	34.53	46.61	54.00	7.39	Average

Mode: BLE1M CH2442MHz**Model: BCB4WFL1**

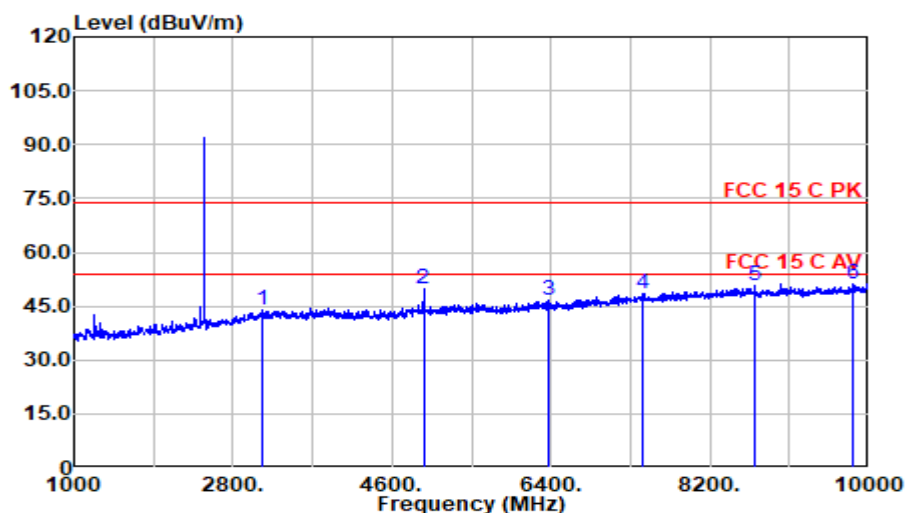
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3184.500	45.35	31.10	3.39	35.55	44.30	74.00	29.70	Peak
4884.500	50.32	33.27	4.54	36.46	51.67	74.00	22.33	Peak
6180.750	43.74	34.52	5.24	36.82	46.68	74.00	27.32	Peak
7358.000	44.22	36.92	5.57	37.05	49.66	74.00	24.34	Peak
8713.750	43.27	38.46	5.84	37.30	50.27	74.00	23.73	Peak
9780.500	43.66	38.24	6.11	37.06	50.95	74.00	23.05	Peak

Mode: BLE1M CH2442MHz**Model: BCB4WFL1**

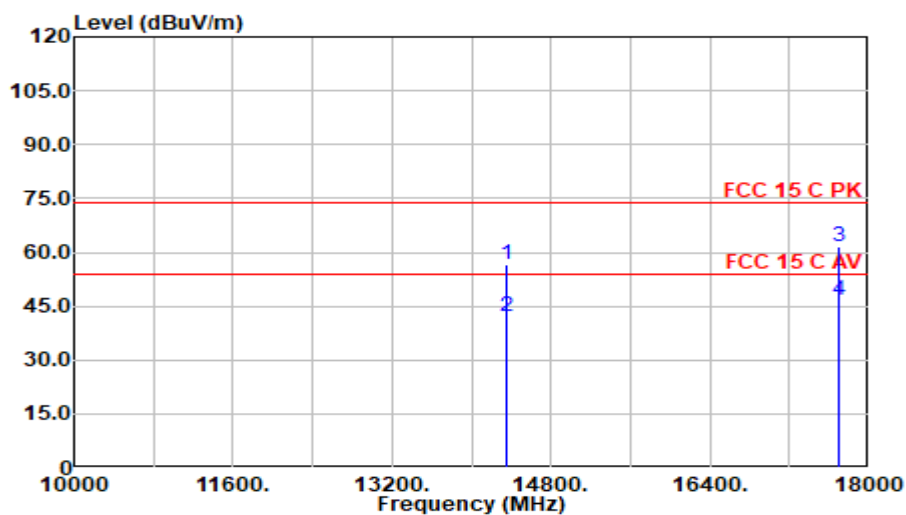
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14434.250	42.08	42.30	7.73	35.49	56.62	74.00	17.38	Peak
14434.250	27.31	42.30	7.73	35.49	41.85	54.00	12.15	Average
17706.750	42.39	45.22	8.60	34.51	61.69	74.00	12.31	Peak
17706.750	27.54	45.22	8.60	34.51	46.84	54.00	7.16	Average

Mode: BLE1M CH2480MHz**Model: BCB4WFL1**

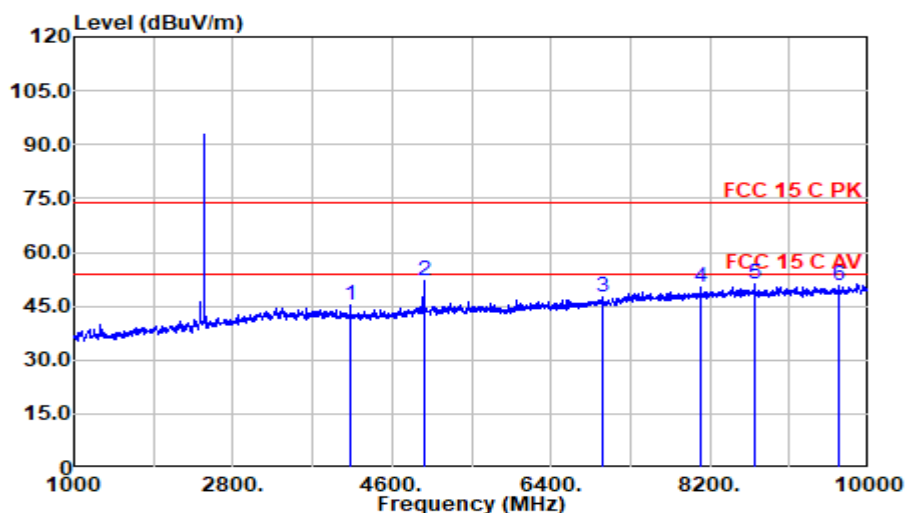
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3133.500	45.03	31.00	3.35	35.51	43.88	74.00	30.12	Peak
4956.750	48.16	33.49	4.58	36.48	49.75	74.00	24.25	Peak
6363.500	43.57	34.60	5.29	36.84	46.62	74.00	27.38	Peak
7438.750	43.10	37.00	5.59	37.08	48.61	74.00	25.39	Peak
8705.250	43.50	38.55	5.84	37.30	50.59	74.00	23.41	Peak
9823.000	43.45	38.45	6.12	37.05	50.97	74.00	23.03	Peak

Mode: BLE1M CH2480MHz**Model: BCB4WFL1**

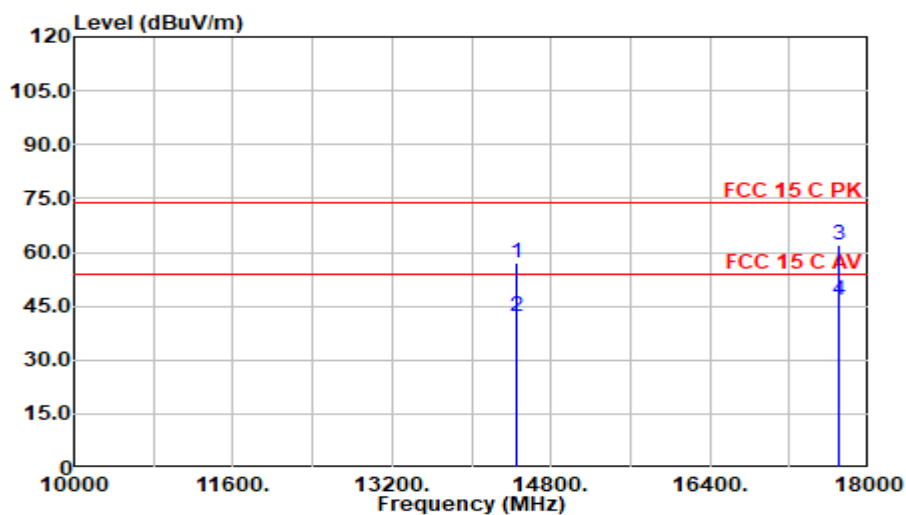
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14353.500	42.38	42.15	7.72	35.55	56.71	74.00	17.29	Peak
14353.500	27.64	42.15	7.72	35.55	41.97	54.00	12.03	Average
17702.500	42.39	45.21	8.59	34.52	61.67	74.00	12.33	Peak
17702.500	27.54	45.21	8.59	34.52	46.82	54.00	7.18	Average

Mode: BLE1M CH2480MHz**Model: BCB4WFL1**

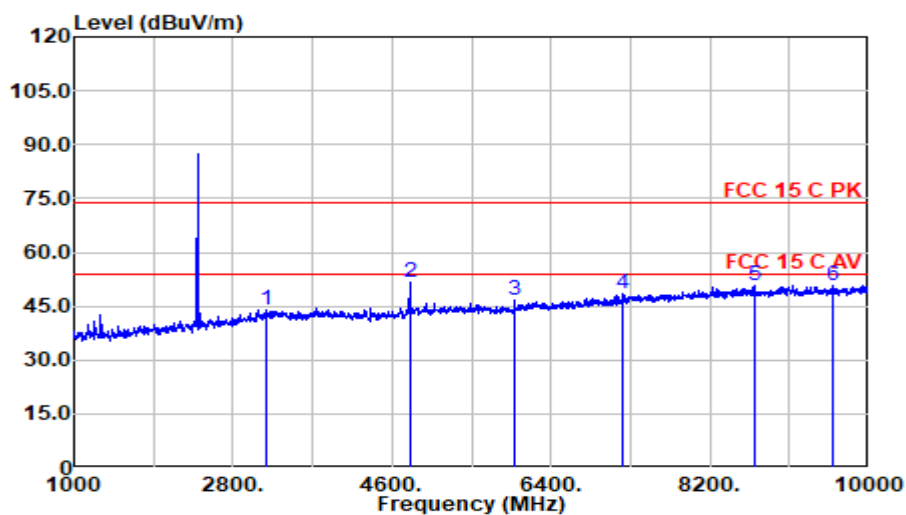
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4123.750	44.83	32.50	4.01	36.15	45.19	74.00	28.81	Peak
4961.000	50.67	33.48	4.59	36.49	52.25	74.00	21.75	Peak
6988.250	43.45	35.55	5.48	36.90	47.58	74.00	26.42	Peak
8093.250	44.17	37.60	5.74	37.30	50.21	74.00	23.79	Peak
8705.250	43.90	38.55	5.84	37.30	50.99	74.00	23.01	Peak
9670.000	43.54	38.20	6.08	37.10	50.72	74.00	23.28	Peak

Mode: BLE1M CH2480MHz**Model: BCB4WFL1**

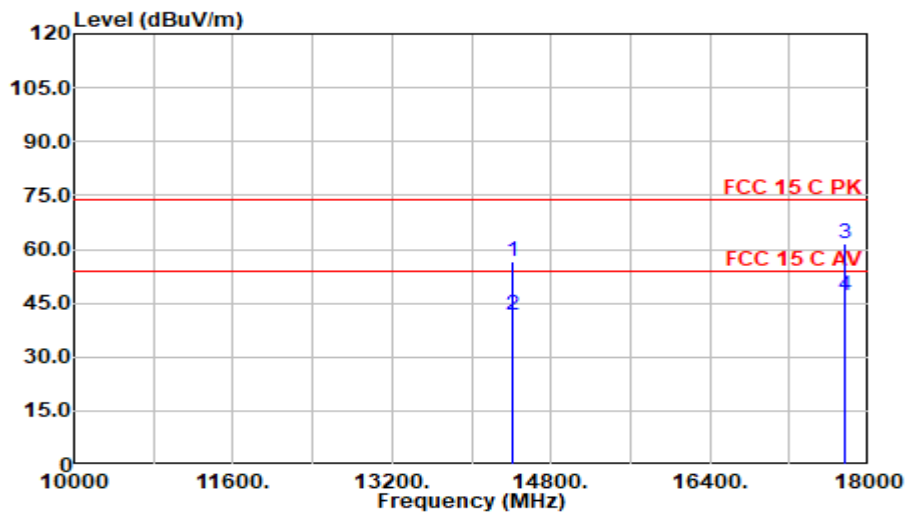
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14447.000	42.35	42.34	7.73	35.48	56.94	74.00	17.06	Peak
14447.000	27.54	42.34	7.73	35.48	42.12	54.00	11.88	Average
17694.000	42.69	45.16	8.59	34.52	61.93	74.00	12.07	Peak
17694.000	27.27	45.16	8.59	34.52	46.51	54.00	7.49	Average

Mode: BLE2M CH2402MHz**Model: BCB4WFL1**

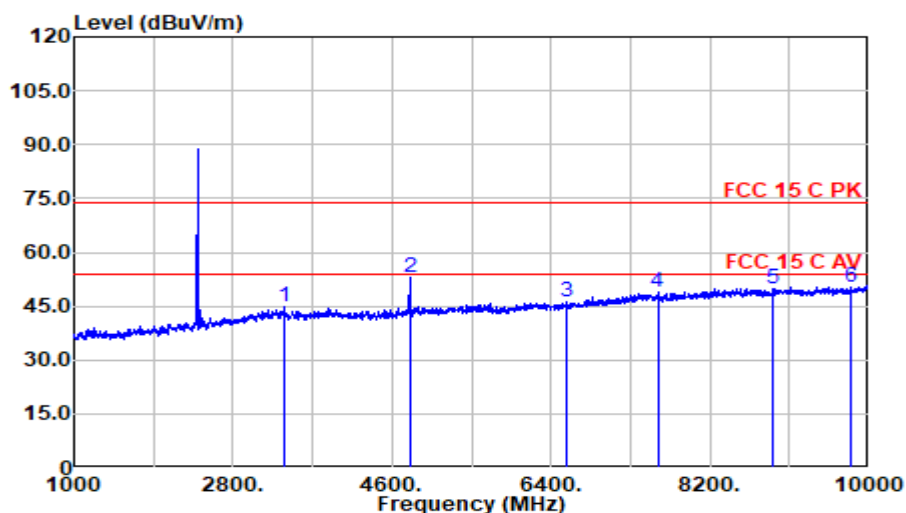
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3176.000	44.90	31.10	3.38	35.54	43.85	74.00	30.15	Peak
4803.750	50.47	33.29	4.49	36.43	51.82	74.00	22.18	Peak
5989.500	44.00	34.16	5.17	36.80	46.53	74.00	27.47	Peak
7205.000	43.75	36.24	5.53	36.99	48.54	74.00	25.46	Peak
8705.250	43.58	38.55	5.84	37.30	50.66	74.00	23.34	Peak
9597.750	43.51	38.10	6.06	37.12	50.55	74.00	23.45	Peak

Mode: BLE2M CH2402MHz**Model: BCB4WFL1**

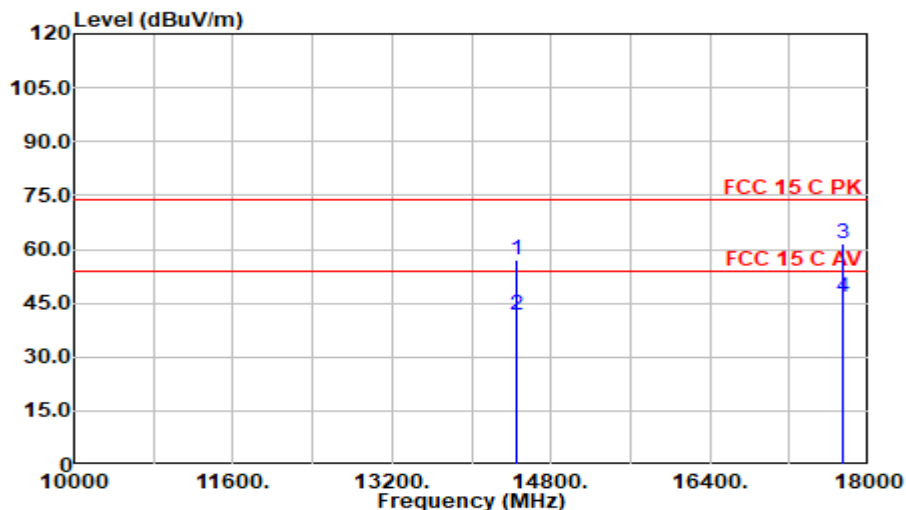
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14417.250	42.10	42.25	7.73	35.50	56.58	74.00	17.42	Peak
14417.250	27.31	42.25	7.73	35.50	41.79	54.00	12.21	Average
17753.500	42.19	45.36	8.60	34.50	61.66	74.00	12.34	Peak
17753.500	27.52	45.36	8.60	34.50	46.99	54.00	7.01	Average

Mode: BLE2M CH2402MHz**Model: BCB4WFL1**

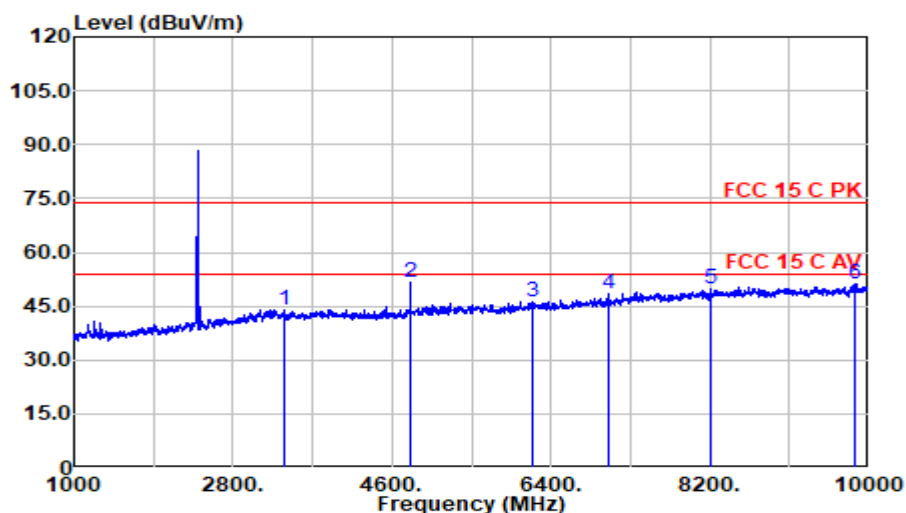
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3371.500	45.57	31.36	3.52	35.68	44.76	74.00	29.24	Peak
4803.750	51.53	33.29	4.49	36.43	52.88	74.00	21.12	Peak
6576.000	43.12	34.70	5.36	36.86	46.32	74.00	27.68	Peak
7608.750	43.56	37.00	5.64	37.15	49.05	74.00	24.95	Peak
8922.000	43.12	38.20	5.87	37.30	49.89	74.00	24.11	Peak
9797.500	42.86	38.38	6.11	37.06	50.30	74.00	23.70	Peak

Mode: BLE2M CH2402MHz**Model: BCB4WFL1**

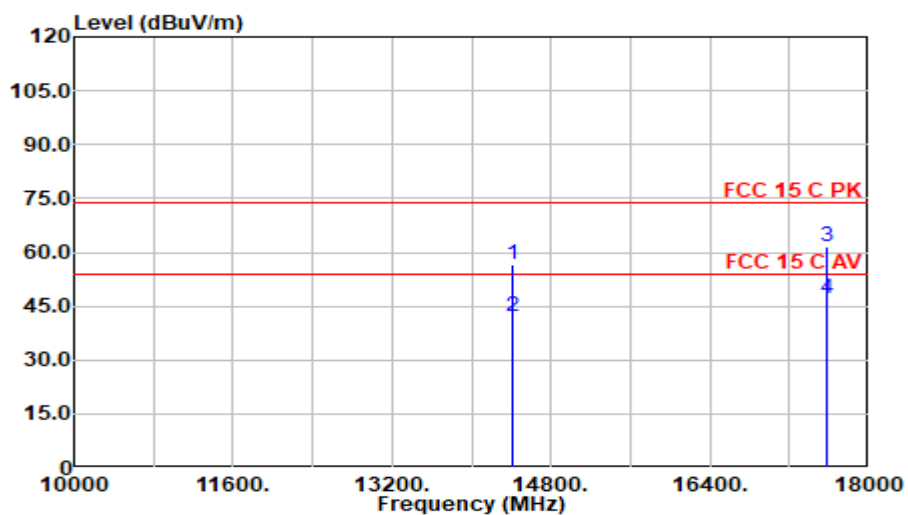
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14455.500	42.47	42.37	7.73	35.48	57.09	74.00	16.91	Peak
14455.500	27.15	42.37	7.73	35.48	41.77	54.00	12.23	Average
17740.750	42.28	45.32	8.60	34.50	61.70	74.00	12.30	Peak
17740.750	27.43	45.32	8.60	34.50	46.85	54.00	7.15	Average

Mode: BLE1M CH2402MHz**Model: BXBWFL1**

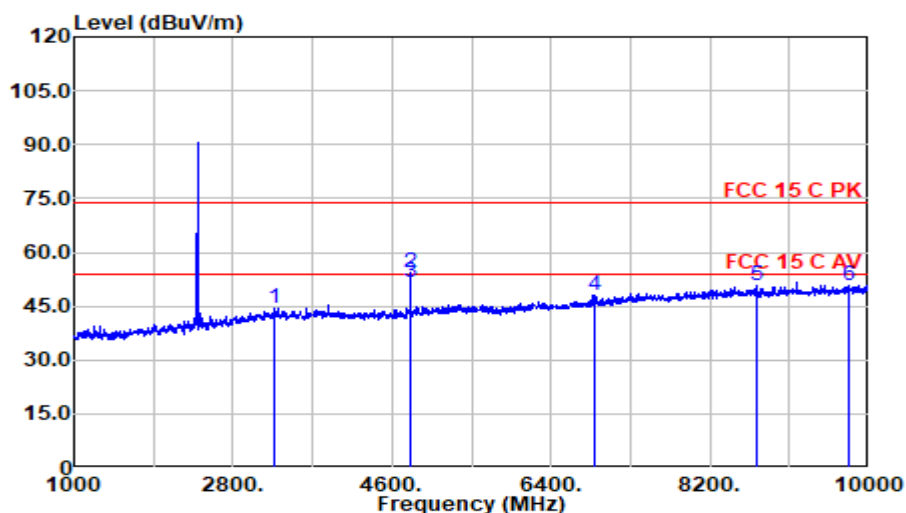
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3380.000	44.87	31.34	3.53	35.69	44.05	74.00	29.95	Peak
4803.750	50.13	33.29	4.49	36.43	51.48	74.00	22.52	Peak
6202.000	43.30	34.60	5.24	36.82	46.32	74.00	27.68	Peak
7043.500	44.33	35.59	5.49	36.92	48.49	74.00	25.51	Peak
8208.000	43.37	37.83	5.76	37.30	49.66	74.00	24.34	Peak
9848.500	43.48	38.50	6.13	37.04	51.06	74.00	22.94	Peak

Mode: BLE1M CH2402MHz**Model: BXBWFL1**

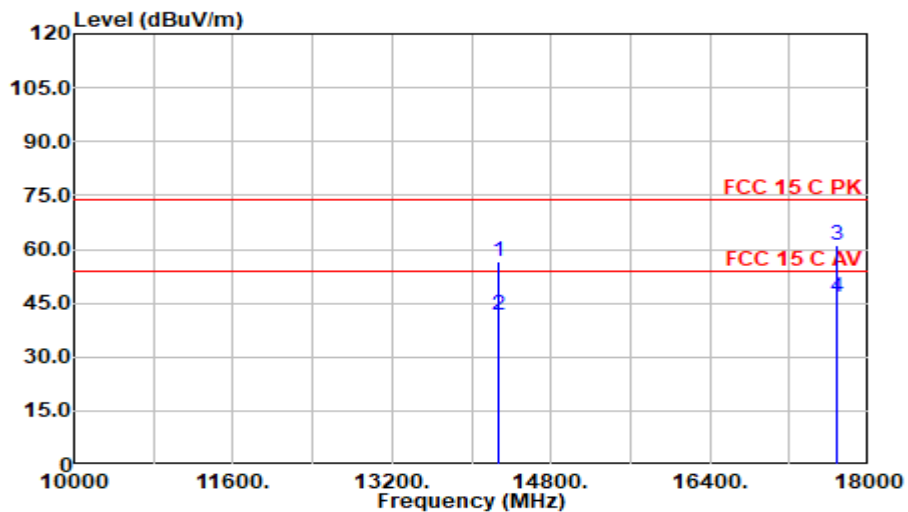
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14408.750	42.38	42.23	7.73	35.51	56.83	74.00	17.17	Peak
14408.750	27.54	42.23	7.73	35.51	41.98	54.00	12.02	Average
17570.750	43.27	44.48	8.57	34.57	61.75	74.00	12.25	Peak
17570.750	28.53	44.48	8.57	34.57	47.01	54.00	6.99	Average

Mode: BLE1M CH2402MHz**Model: BXBWFL1**

Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3265.250	45.36	31.30	3.45	35.61	44.51	74.00	29.49	Peak
4803.750	52.87	33.29	4.49	36.43	54.22	74.00	19.78	Peak
4804.010	50.07	33.29	4.49	36.43	51.42	54.00	2.58	Average
6903.250	43.91	35.61	5.45	36.89	48.08	74.00	25.92	Peak
8730.750	43.97	38.29	5.84	37.30	50.80	74.00	23.20	Peak
9767.750	43.54	38.14	6.11	37.07	50.72	74.00	23.28	Peak

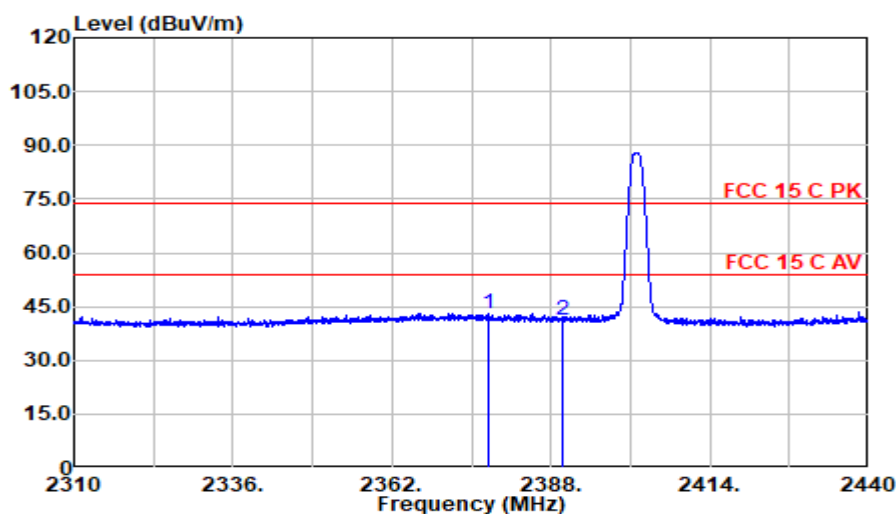
Mode: BLE1M CH2402MHz**Model: BXBWFL1**

Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
14268.500	42.52	42.07	7.72	35.61	56.70	74.00	17.30	Peak
14268.500	27.35	42.07	7.72	35.61	41.53	54.00	12.47	Average
17681.250	42.17	45.09	8.59	34.53	61.32	74.00	12.68	Peak
17681.250	27.52	45.09	8.59	34.53	46.67	54.00	7.33	Average

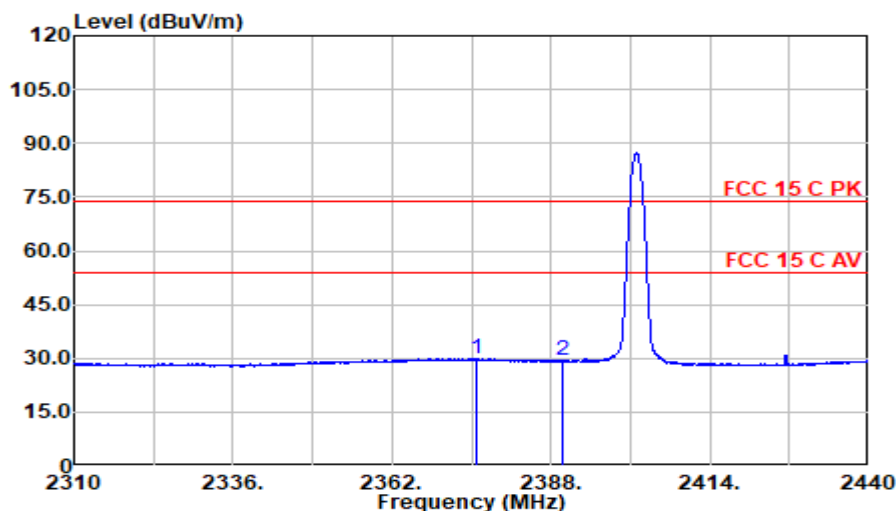
Band-Edge and Restricted bands:

Test Date:	2025.06.29	Temp./Hum.:	22°C/51%RH	Test By:	JareyLu
------------	------------	-------------	------------	----------	---------

Mode: BLE1M CH2402MHz

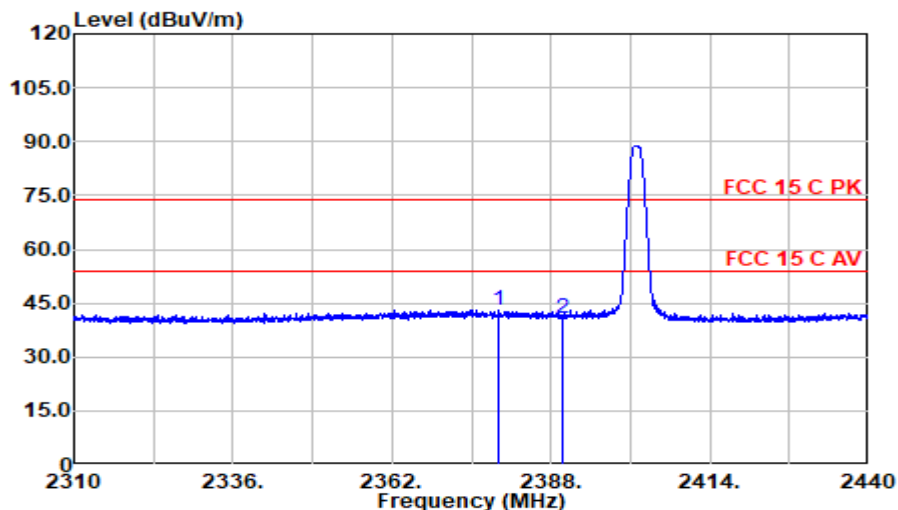
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2377.860	47.82	28.56	2.89	36.15	43.12	74.00	30.88	Peak
2390.000	45.76	28.58	2.90	36.13	41.11	74.00	32.89	Peak

Mode: BLE1M CH2402MHz

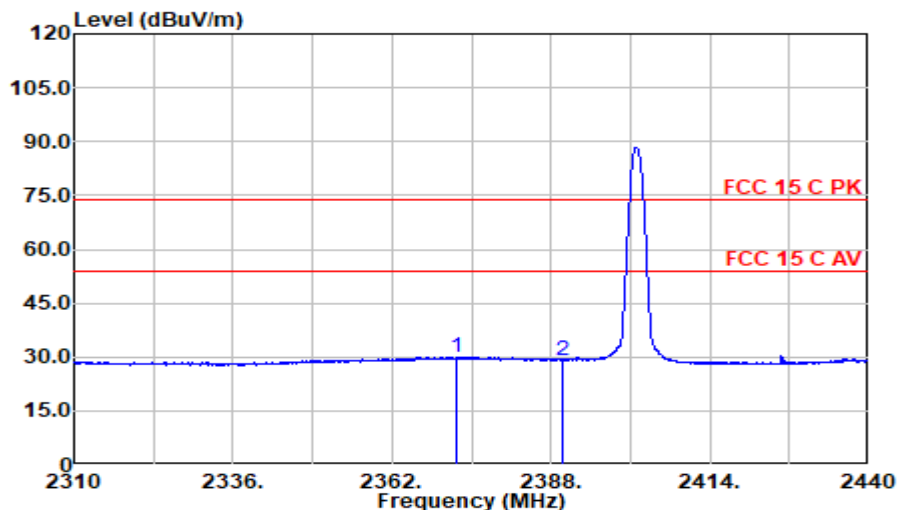
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2375.975	34.51	28.55	2.89	36.15	29.80	54.00	24.20	Average
2390.000	33.92	28.58	2.90	36.13	29.27	54.00	24.73	Average

Mode: BLE1M CH2402MHz

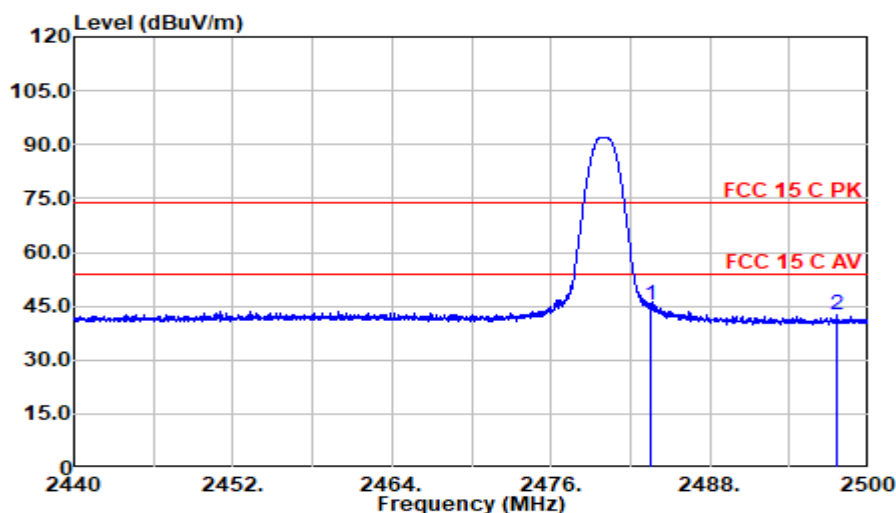
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2379.420	47.68	28.56	2.89	36.14	42.99	74.00	31.01	Peak
2390.000	45.56	28.58	2.90	36.13	40.90	74.00	33.10	Peak

Mode: BLE1M CH2402MHz

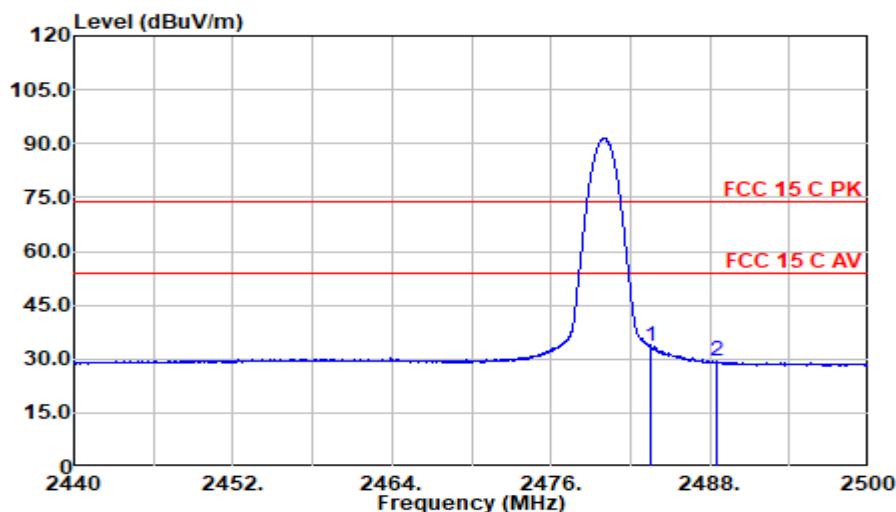
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2372.530	34.66	28.55	2.89	36.15	29.94	54.00	24.06	Average
2390.000	33.75	28.58	2.90	36.13	29.10	54.00	24.90	Average

Mode: BLE1M CH2480MHz

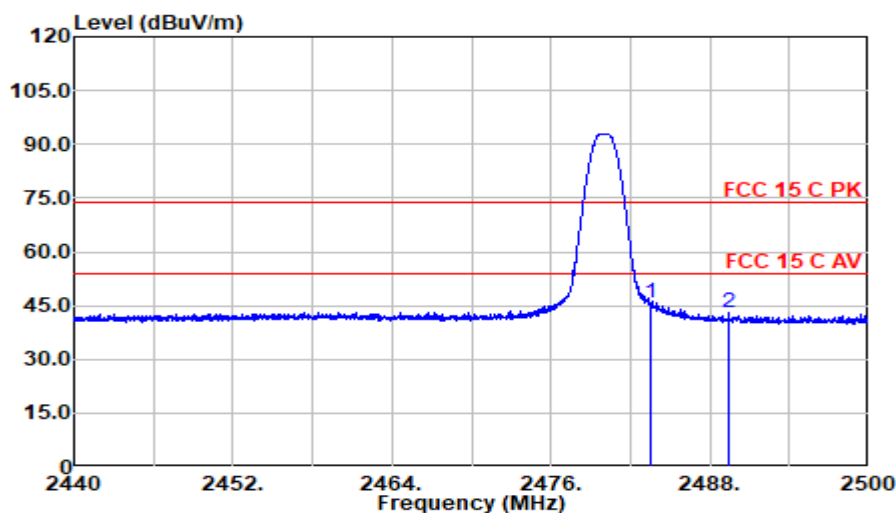
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	49.72	28.50	2.96	36.01	45.17	74.00	28.83	Peak
2497.540	47.12	28.50	2.97	35.99	42.59	74.00	31.41	Peak

Mode: BLE1M CH2480MHz

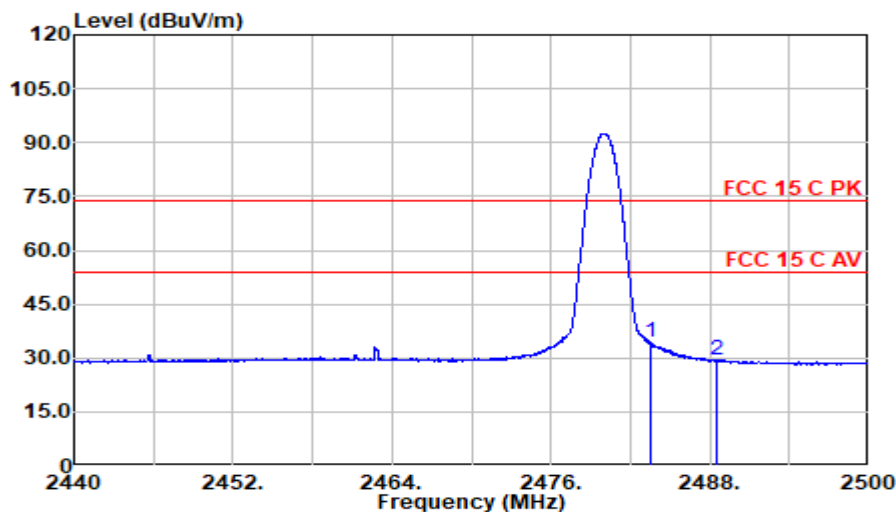
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	38.09	28.50	2.96	36.01	33.55	54.00	20.45	Average
2488.510	33.86	28.50	2.96	36.00	29.32	54.00	24.68	Average

Mode: BLE1M CH2480MHz

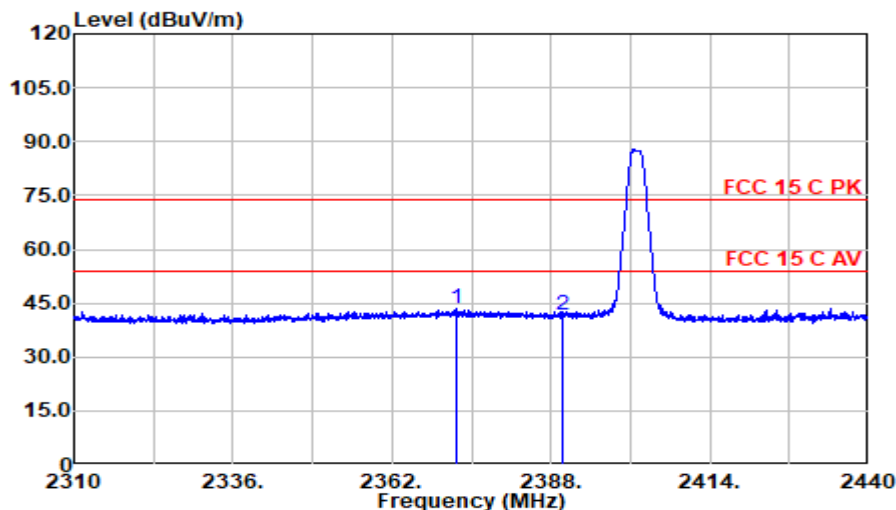
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	50.21	28.50	2.96	36.01	45.66	74.00	28.34	Peak
2489.410	47.71	28.50	2.96	36.00	43.17	74.00	30.83	Peak

Mode: BLE1M CH2480MHz

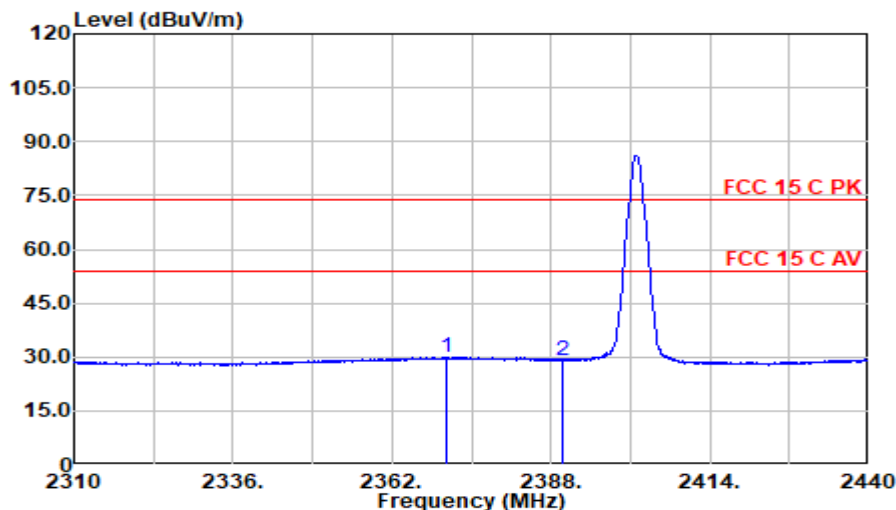
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	38.83	28.50	2.96	36.01	34.28	54.00	19.72	Average
2488.570	34.14	28.50	2.96	36.00	29.60	54.00	24.40	Average

Mode: BLE2M CH2402MHz

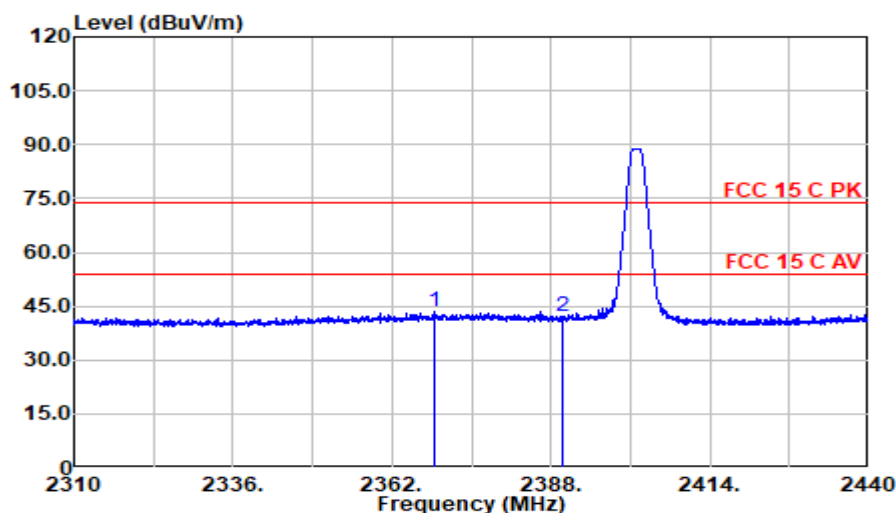
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2372.530	48.26	28.55	2.89	36.15	43.54	74.00	30.46	Peak
2390.000	46.48	28.58	2.90	36.13	41.83	74.00	32.17	Peak

Mode: BLE2M CH2402MHz

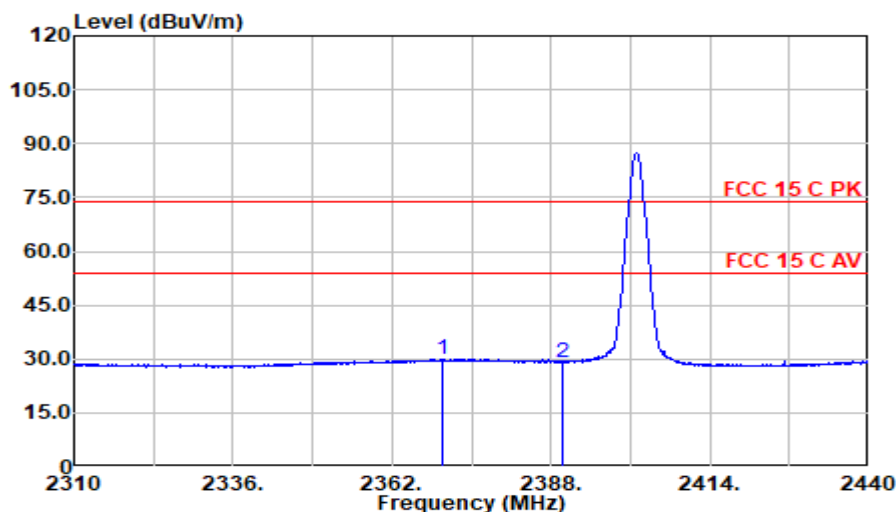
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2370.775	34.73	28.54	2.88	36.15	30.00	54.00	24.00	Average
2390.000	33.77	28.58	2.90	36.13	29.12	54.00	24.88	Average

Mode: BLE2M CH2402MHz

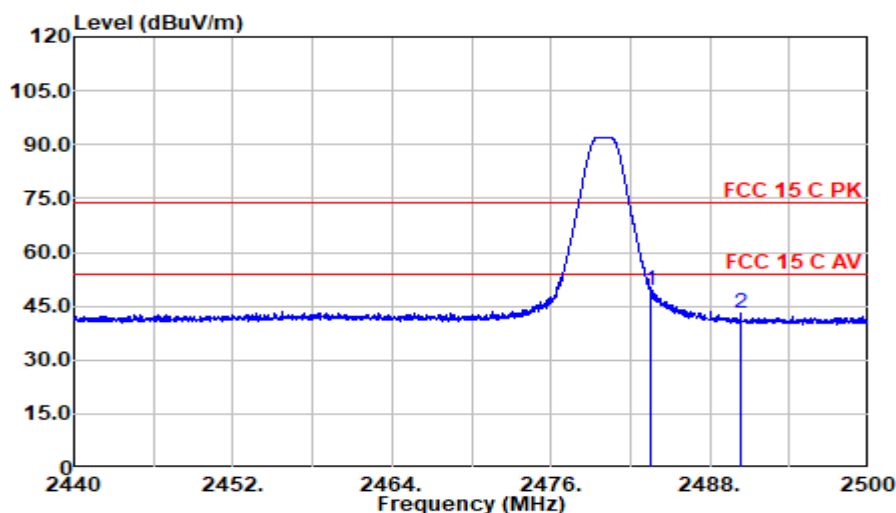
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2369.085	48.00	28.54	2.88	36.16	43.26	74.00	30.74	Peak
2390.000	46.56	28.58	2.90	36.13	41.91	74.00	32.09	Peak

Mode: BLE2M CH2402MHz

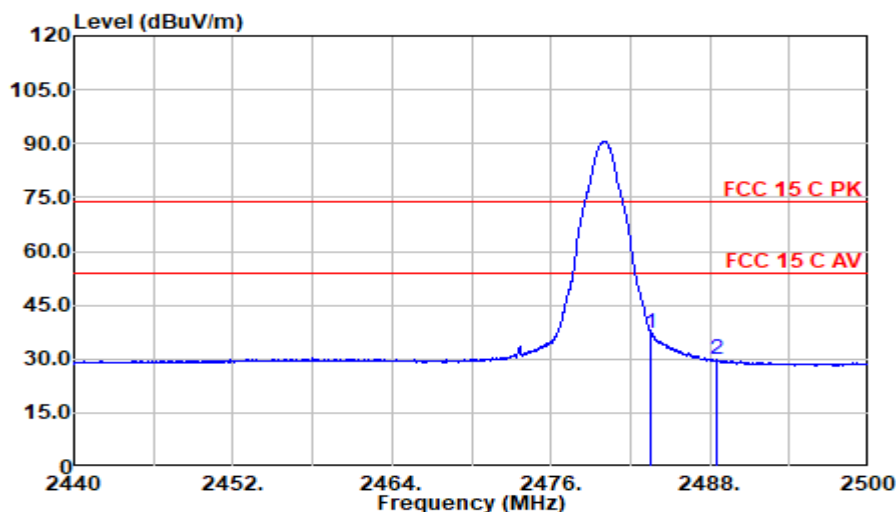
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2370.190	34.83	28.54	2.88	36.16	30.10	54.00	23.90	Average
2390.000	33.83	28.58	2.90	36.13	29.18	54.00	24.82	Average

Mode: BLE2M CH2480MHz

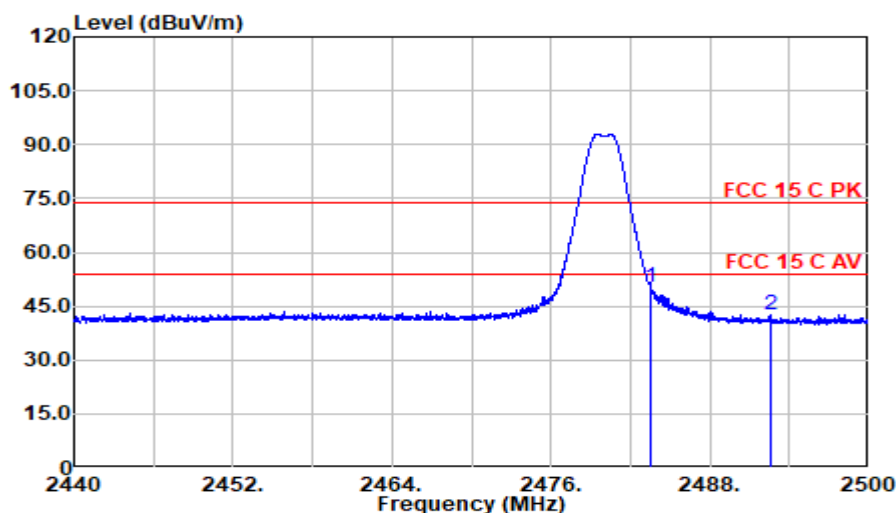
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	54.01	28.50	2.96	36.01	49.46	74.00	24.54	Peak
2490.310	47.42	28.50	2.96	36.00	42.88	74.00	31.12	Peak

Mode: BLE2M CH2480MHz

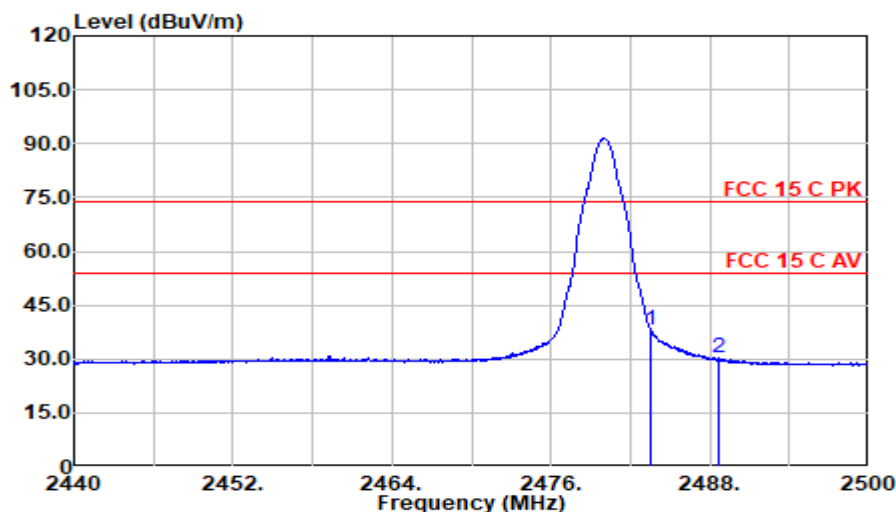
Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	41.83	28.50	2.96	36.01	37.28	54.00	16.72	Average
2488.570	34.39	28.50	2.96	36.00	29.85	54.00	24.15	Average

Mode: BLE2M CH2480MHz

Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	55.00	28.50	2.96	36.01	50.45	74.00	23.55	Peak
2492.530	47.23	28.50	2.96	35.99	42.69	74.00	31.31	Peak

Mode: BLE2M CH2480MHz

Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	42.63	28.50	2.96	36.01	38.08	54.00	15.92	Average
2488.600	34.85	28.50	2.96	36.00	30.31	54.00	23.69	Average

5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2024.08.09	1 Year
2.	RF Cable	Mini-Circuits	FLC-3FT-SM SM+	22022838	2024.08.09	1 Year
3.	10 dB Attenuator	Mini-Circuits	BW-S10W2+	2123	2025.02.22	1 Year

5.2 Block Diagram of Test Setup



5.3 Specification Limits (§15.247(a)(2))

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

5.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with settings: RBW = 100kHz, VBW $\geq 3 \times$ RBW.

The 6 dB bandwidth is defined as the total spectrum the power of which is lower than peak power minus 6 dB .

The test procedure is defined in ANSI C63.10-2020 (the 11.8.2 Measurement Procedure “Option 2” was used).

5.6 Test Results

PASSED.

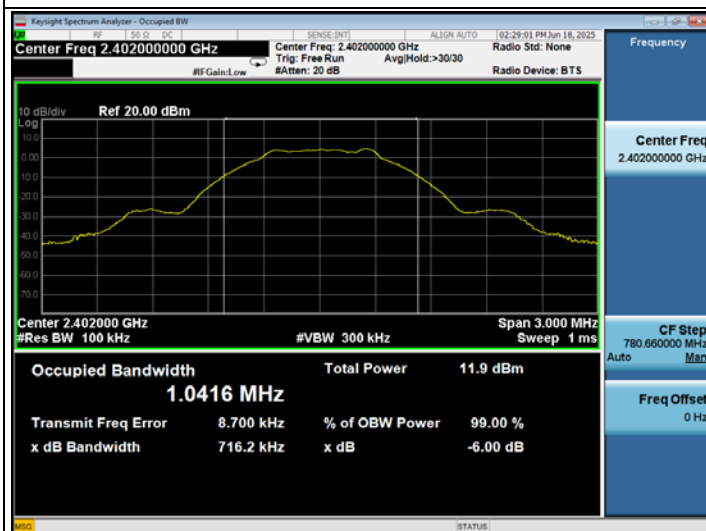
All the test results are attached in next pages.

Test Date:	2025.06.18	Temp./Hum.:	23°C/51%RH	Test By:	DoraMa
------------	------------	-------------	------------	----------	--------

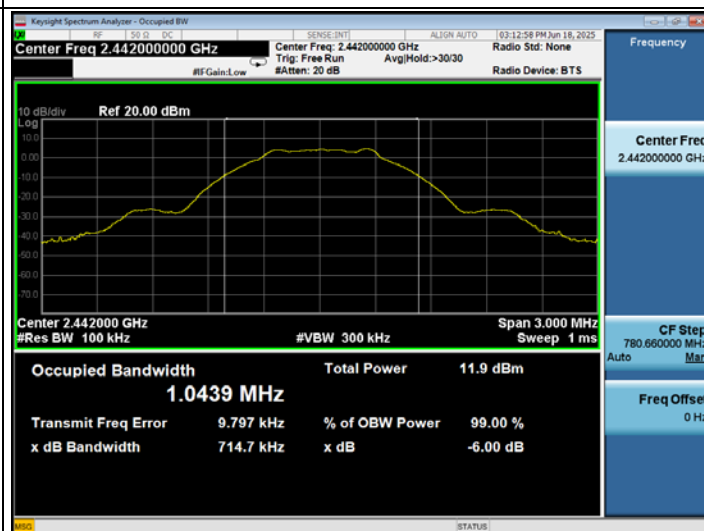
Mode	Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit
BLE 1M	00	2402	716.2	500 kHz
	20	2442	714.7	500 kHz
	39	2480	711.4	500 kHz
BLE 2M	00	2402	1352	500 kHz
	20	2442	1352	500 kHz
	39	2480	1351	500 kHz

BLE 1M

CH2402



CH2442

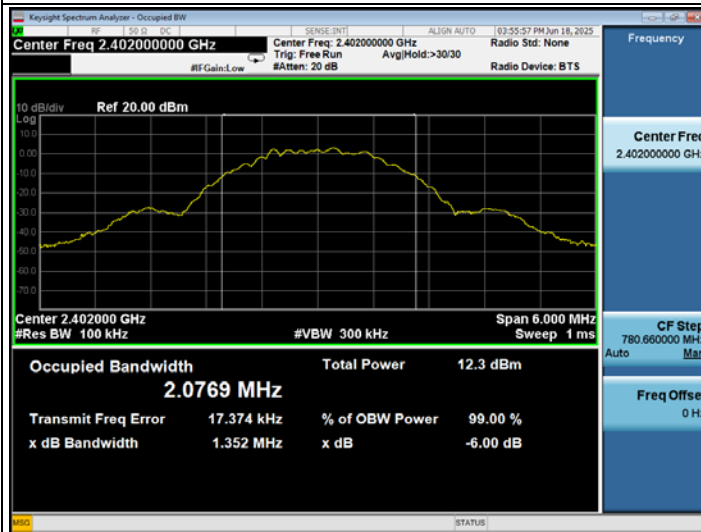


CH2480

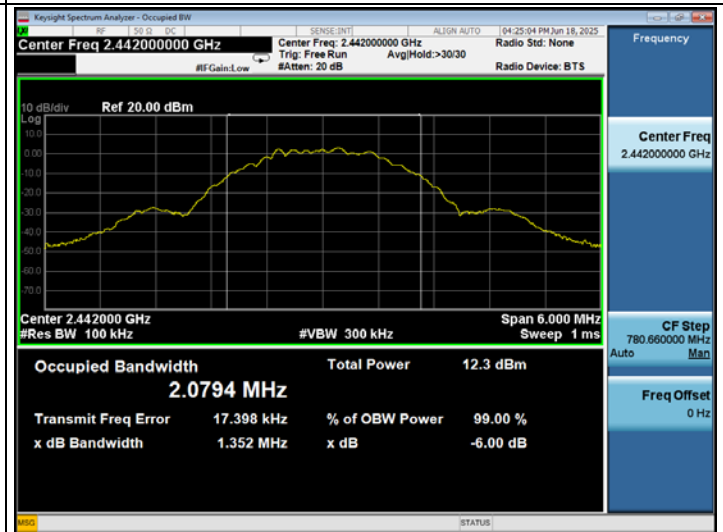


BLE 2M

CH2402



CH2442



CH2480



6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The Same as Section. 5.1.

6.2 Block Diagram of Test Setup

The Same as Section. 5.2.

6.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

6.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

6.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a) $RBW \geq DTS \text{ Bandwidth}$.
- b) $VBW \geq [3 \times RBW]$.
- c) $Span \geq [3 \times RBW]$.
- d) Sweep time = auto.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

The test procedure is defined in ANSI C63.10-2020 (11.9.1.1 Measurement Procedure “ $RBW \geq DTS \text{ bandwidth}$ ” was used).

6.6 Test Results

PASSED.

All the test results are listed below.

Test Date:	2025.06.18	Temp./Hum.:	23°C/51%RH	Test By:	DoraMa
------------	------------	-------------	------------	----------	--------

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit
BLE 1M	00	2402	5.386	30 dBm
	20	2442	5.406	30 dBm
	39	2480	5.381	30 dBm
BLE 2M	00	2402	5.426	30 dBm
	20	2442	5.422	30 dBm
	39	2480	5.407	30 dBm

BLE 1M

CH2402



CH2442



CH2480



BLE 2M

CH2402



CH2442



CH2480



7 EMISSION LIMITATIONS MEASUREMENT

7.1 Test Equipment

The Same as Section. 5.1.

7.2 Block Diagram of Test Setup

The Same as Section. 5.2.

7.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). (※ This test result attaching to Section. 3.7)

7.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

7.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.

- e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the peak marker function to determine the maximum amplitude level.
- Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

Scan up through 10th harmonic.

The test procedure is defined in ANSI C63.10-2020 (11.11.2 Reference level measurement and 11.11.3 Emission level measurement was used).

7.6 Test Results

PASSED.

The test data was attached in the next pages.

Test Date:	2025.06.18	Temp./Hum.:	23°C/51%RH	Test By:	DoraMa
------------	------------	-------------	------------	----------	--------

Mode	Channel	Frequency (MHz)	Data Page
BLE 1M	00	2402	P67
	20	2442	P68
	39	2480	P69
BLE 2M	00	2402	P70
	20	2442	P71
	39	2480	P72

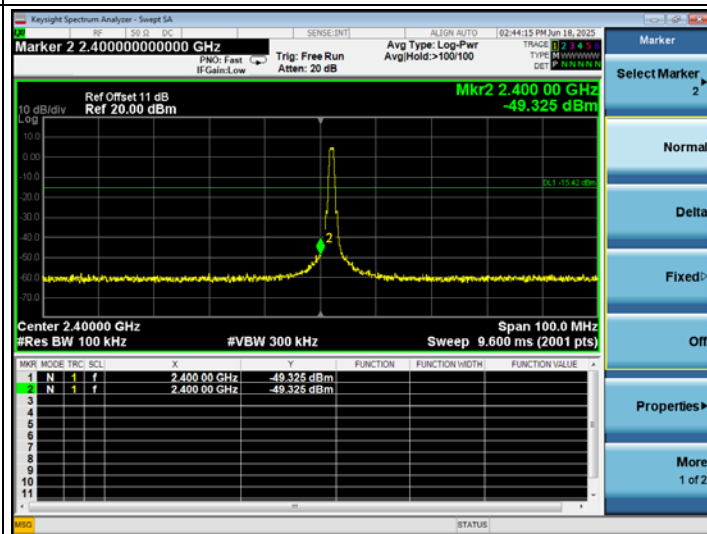
BLE 1M

CH2402

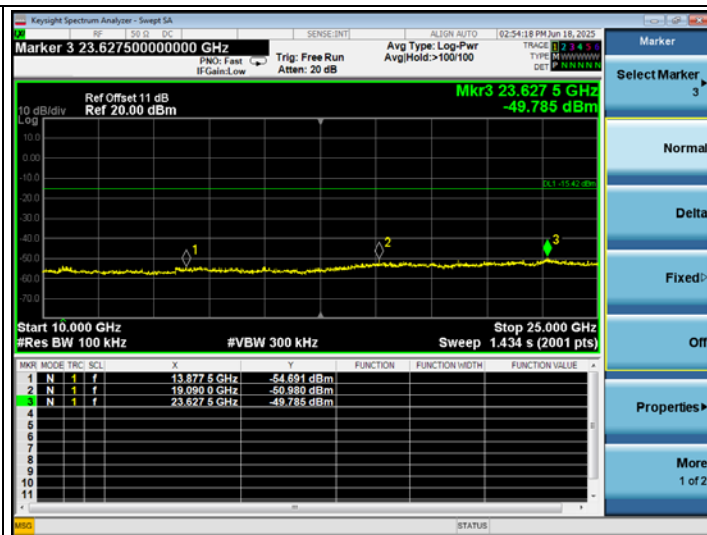
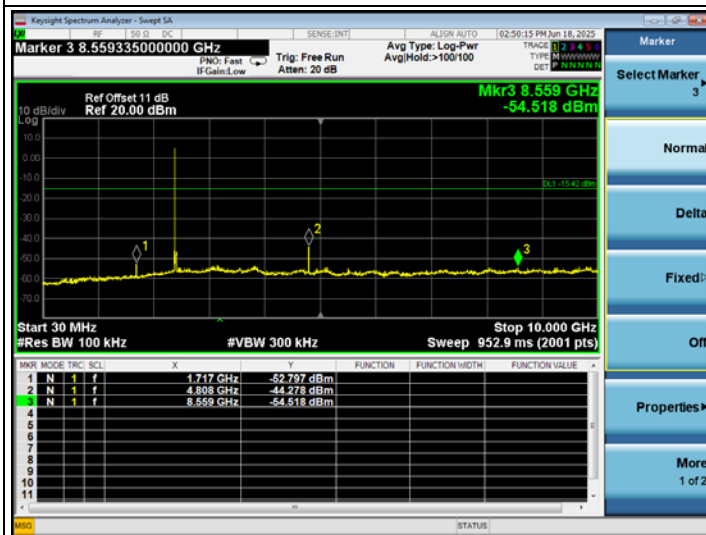
Reference Level



Lower Edge



Emission Level



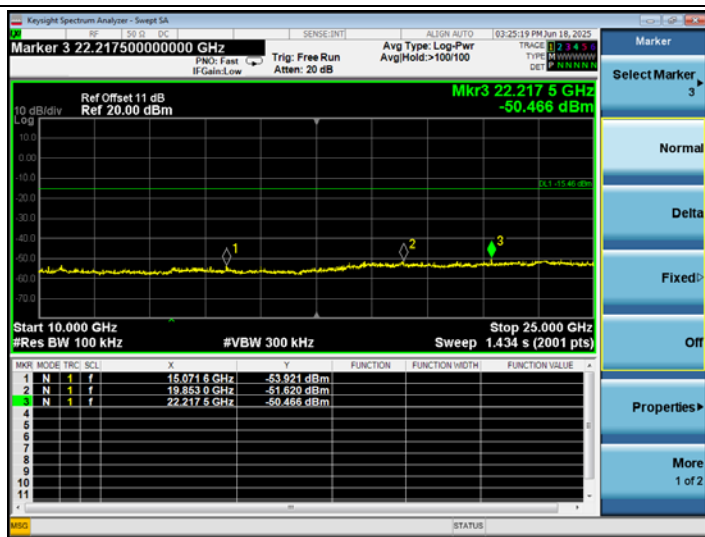
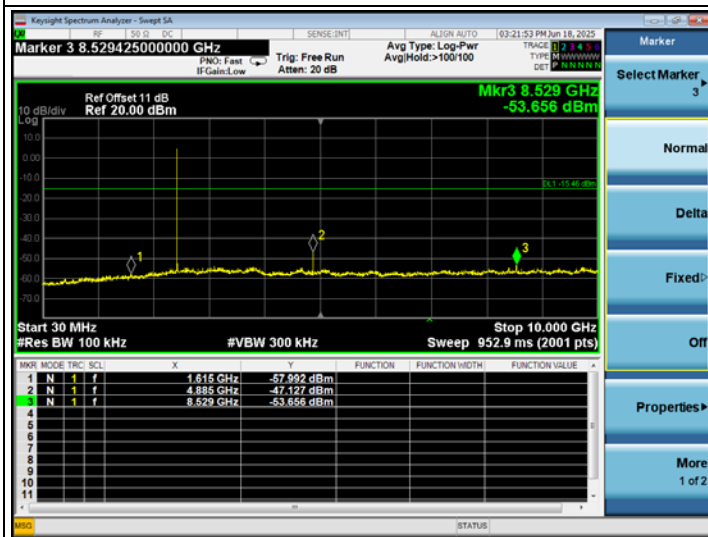
BLE 1M

CH2442

Reference Level



Emission Level



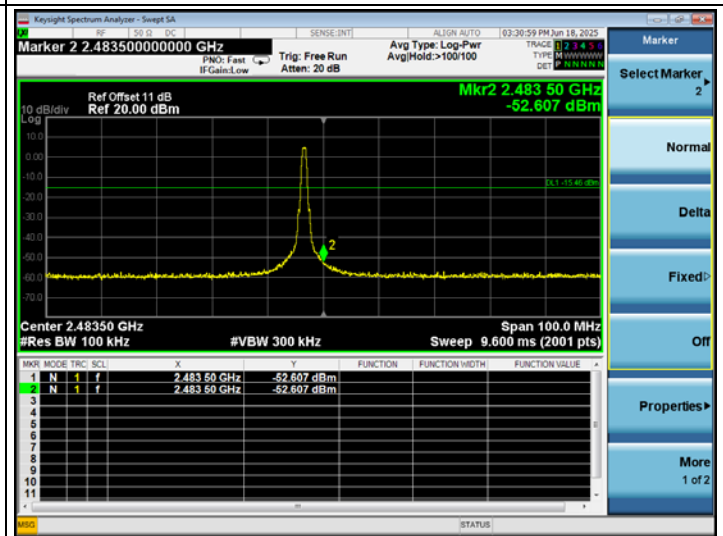
BLE 1M

CH2480

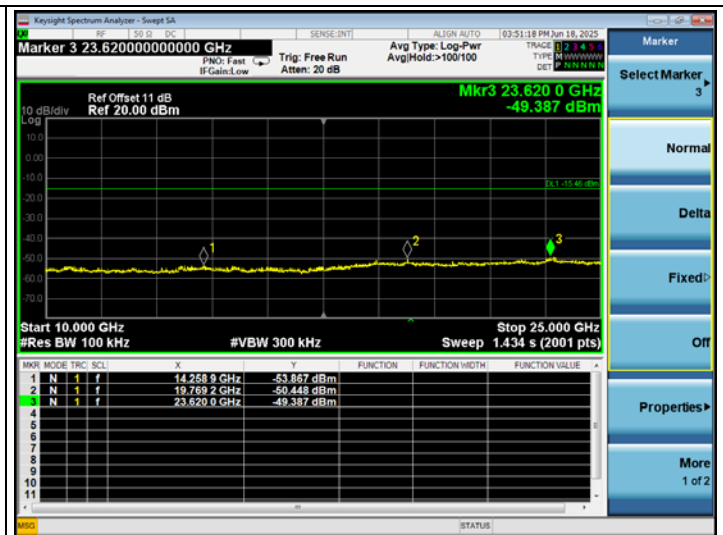
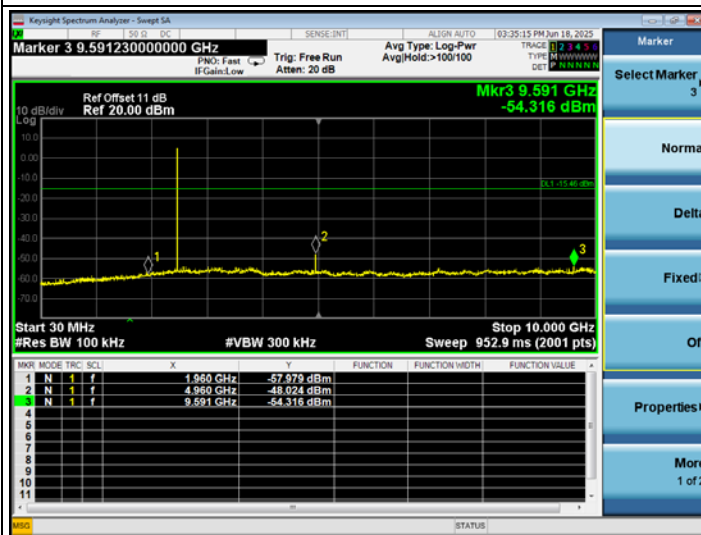
Reference Level



Higher Edge



Emission Level



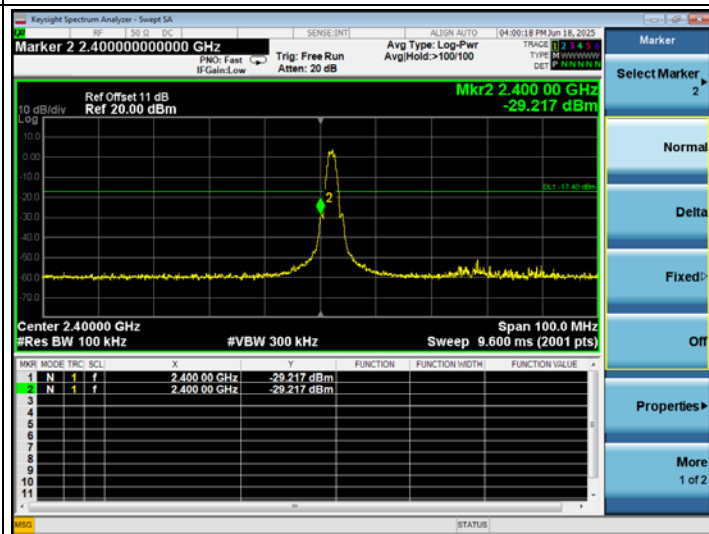
BLE 2M

CH2402

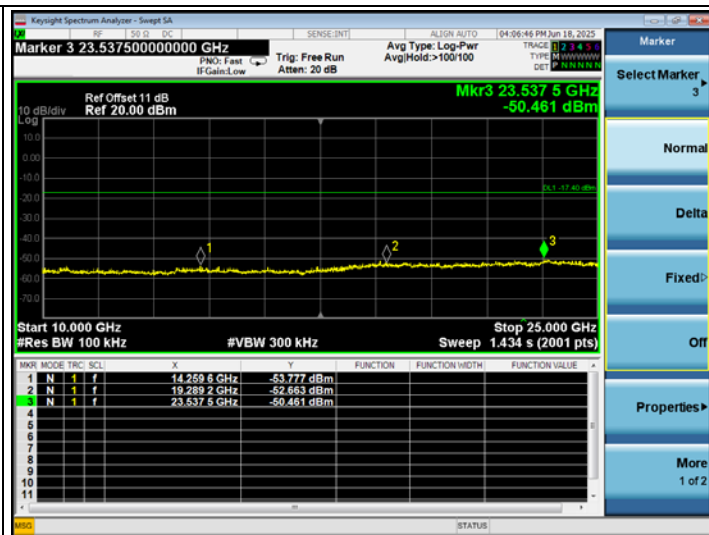
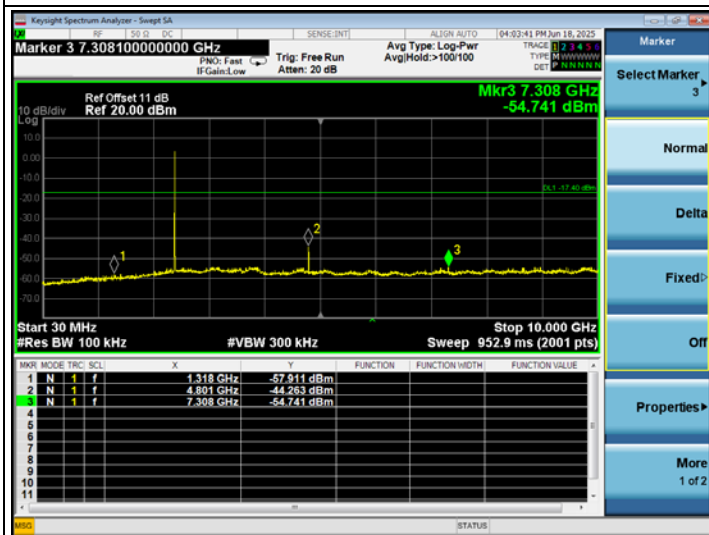
Reference Level



Lower Edge



Emission Level



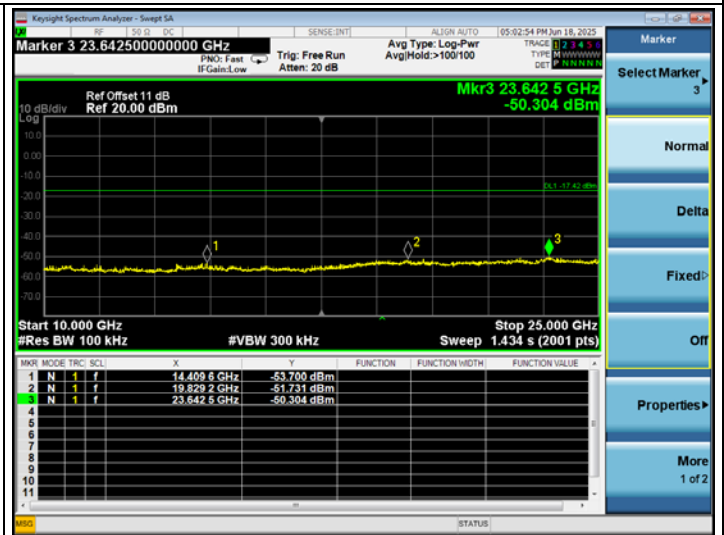
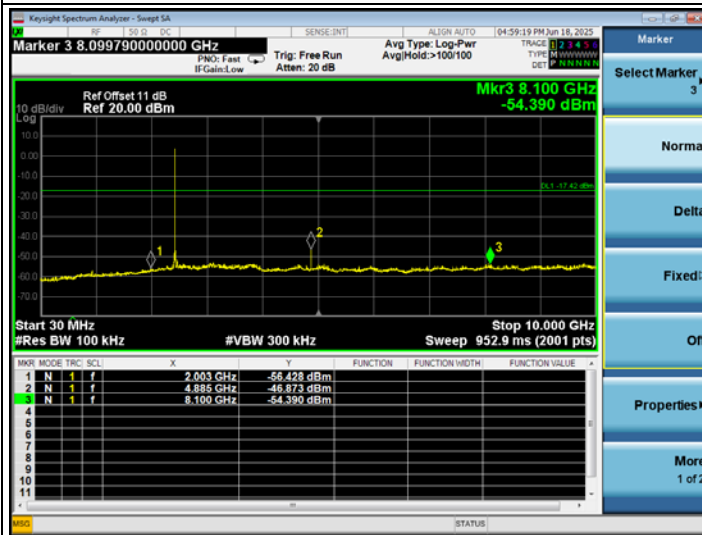
BLE 2M

CH2442

Reference Level



Emission Level



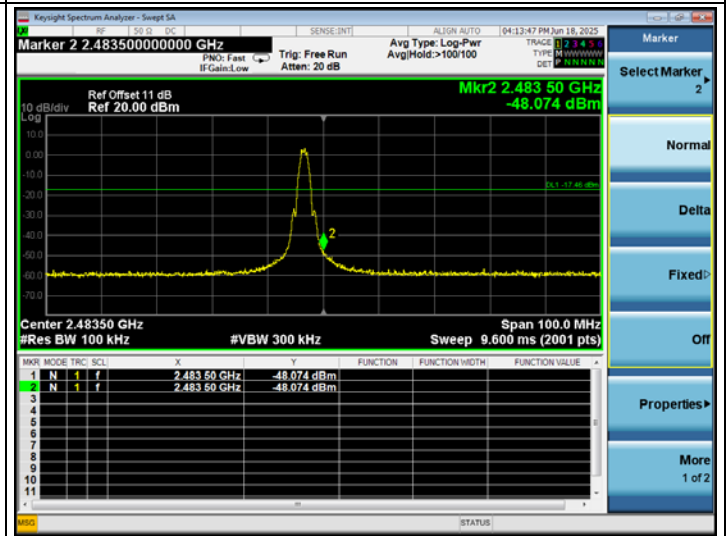
BLE 2M

CH2480

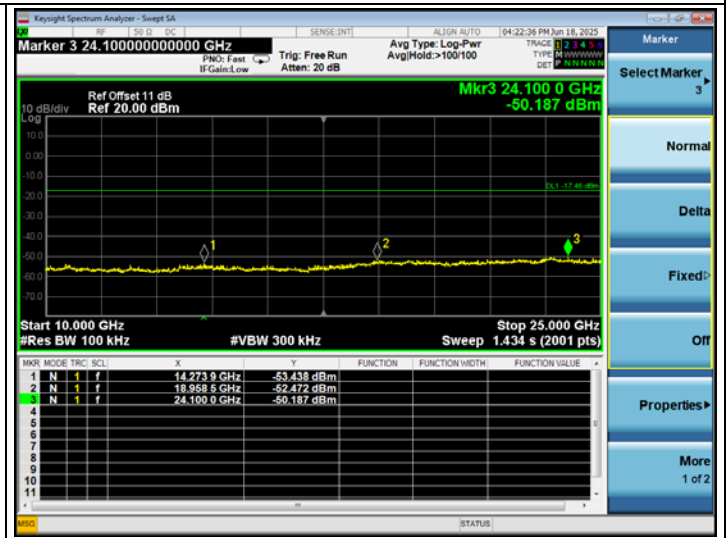
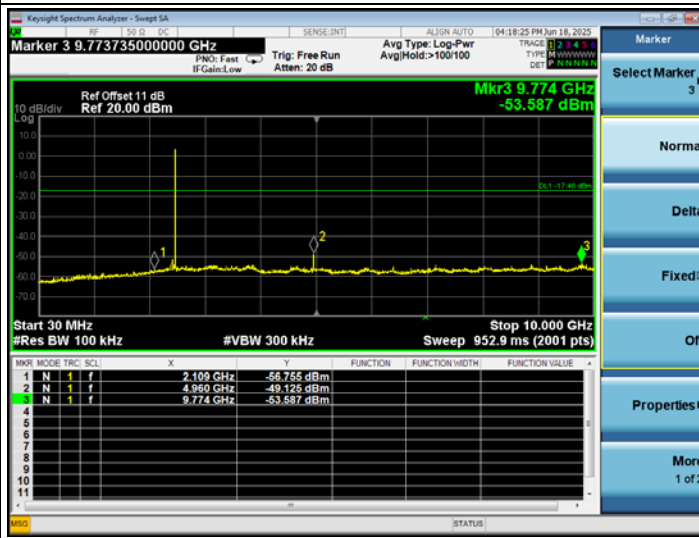
Reference Level



Higher Edge



Emission Level



8 POWER SPECTRAL DENSITY MEASUREMENT

8.1 Test Equipment

The Same as Section. 5.1.

8.2 Block Diagram of Test Setup

The Same as section 5.2.

8.3 Specification Limits (§15.247(e))

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

8.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

The test procedure is defined in ANSI C63.10-2020 (11.10.2 Measurement Procedure “Method PKPSD (peak PSD)” was used).

8.6 Test Results

PASSED.

All the test results are attached in next pages.

Test Date:	2025.06.18	Temp./Hum.:	23°C/51%RH	Test By:	DoraMa
------------	------------	-------------	------------	----------	--------

Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit
BLE 1M	00	2402	-10.499	8 dBm
	20	2442	-10.462	8 dBm
	39	2480	-10.485	8 dBm
BLE 2M	00	2402	-12.237	8 dBm
	20	2442	-12.183	8 dBm
	39	2480	-12.221	8 dBm

BLE 1M

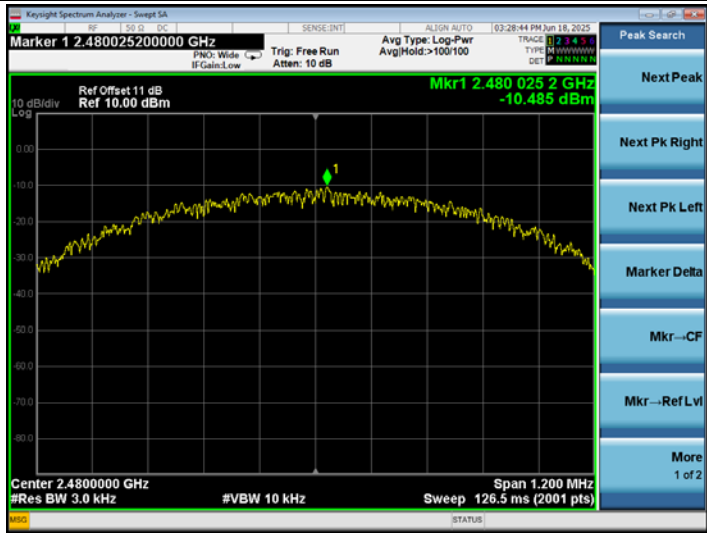
CH2402



CH2442

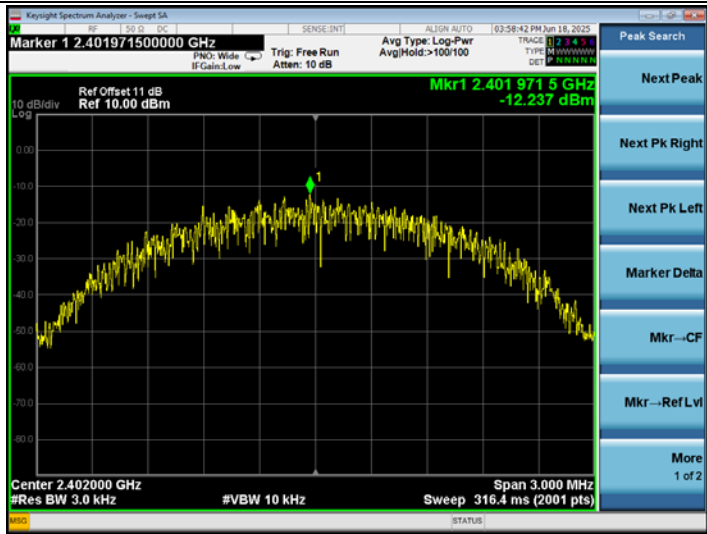


CH2480

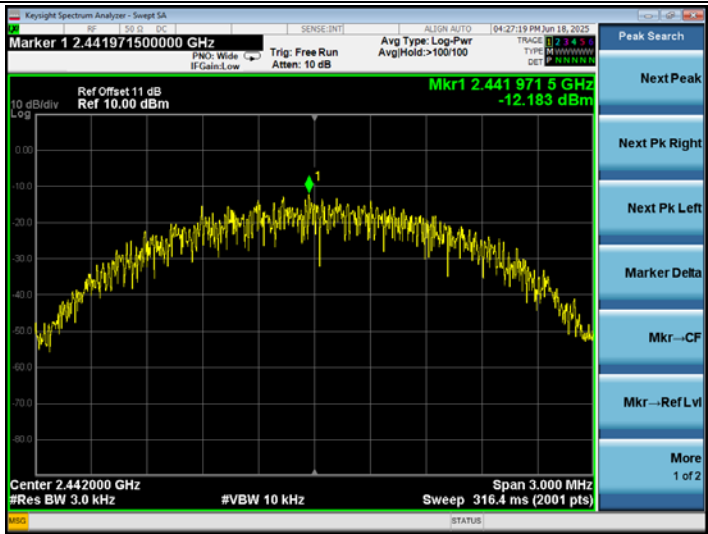


BLE 2M

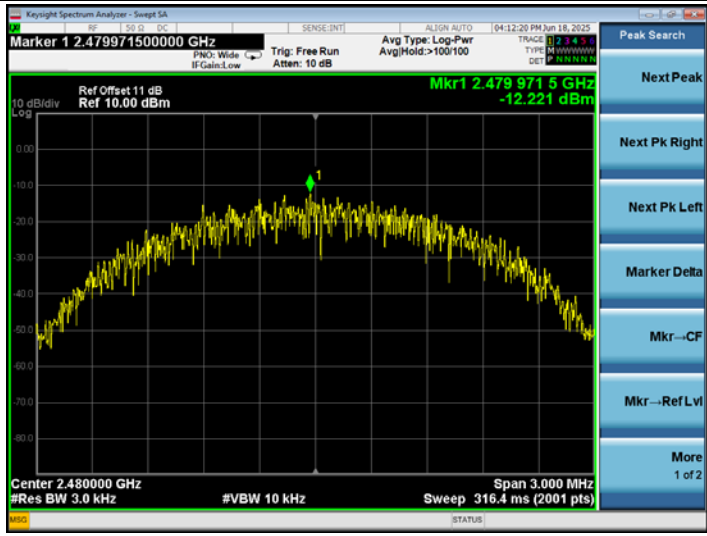
CH2402



CH2442



CH2480



9 ANTENNA REQUIREMENT

9.1 Specification Limits (§15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

9.2 Result

According to KDB 353028 D1, the following describes the three ways that can be used to demonstrate compliance to Section 15.203:

- a) Antenna permanently attached.
- b) Unique (non-standard) antenna connector.
- c) Professional installation.

For this product, the antenna is:

- ☒ Antenna permanently attached
- ☐ Unique (non-standard) antenna connector
- ☐ Professional installation
- ☐ not meet any of ways list above

that

- ☒ compliant
- ☐ not compliant

with the requirement of Section 15.203.

10 DEVIATION TO TEST SPECIFICATIONS

None.

11 MEASUREMENT UNCERTAINTY LIST

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2.

The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted Emission No.1 Shielded Room	9kHz~150kHz	±3.1 dB
	150kHz~30MHz	±2.6 dB
Conducted Emission No.3 Shielded Room	9kHz~150kHz	±3.1 dB
	150kHz~30MHz	±2.6 dB
Radiated Emission	30MHz~200MHz, Horizontal	±3.8 dB
	30MHz~200MHz, Vertical	±4.1 dB
	200MHz~1000MHz, Horizontal	±3.6 dB
	200MHz~1000MHz, Vertical	±5.1 dB
	1GHz~6GHz	±5.3 dB
	6GHz~18GHz	±5.3 dB
	18GHz~40GHz	±3.5 dB
Output Power Test	50MHz~18GHz	0.77 dB
Power Density Test	9kHz~6GHz	1.08 dB
RF Frequency Test	9kHz~40GHz	6×10^{-4}
Bandwidth Test	9kHz~6GHz	1.5×10^{-3}
RF Radiated Power Test	30MHz~1000MHz	3.06 dB
Conducted Output Power Test	50MHz~18GHz	0.83 dB
AC Voltage(<10kHz) Test	120V~230V	0.04 %
DC Power Test	0V~30V	0.4 %
Temperature	-40°C~+100°C	0.52 °C
Humidity	30%~95%	2.6 %