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Report Template Version: V05 Website: Report Template Revision Date: 2021-11-03 www.cga-cert.com

# **Test Report**

Report No.: CQASZ20240701477E-02 Shenzhen Buzz Tech CO.,LTD Applicant:

10th Floor, Guang Chang Bldg, 74#, BaoMin 1st Rd, Bao An Shenzhen, **Address of Applicant:** 

Guangdong, China

**Equipment Under Test (EUT):** 

Smart watch Product:

P99, P134, P135, P136, P137, P138, P139, S78, S80, S81, S82, S83, S85, Model No.:

**S86** 

P99 Test Model No.: N/A **Brand Name:** 

FCC ID: 2AGFWP99

Standards: 47 CFR Part 15, Subpart C

KDB558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10:2013

Date of Receipt: 2024-07-25

Date of Test: 2024-07-25 to 2024-08-02

Date of Issue: 2024-08-08 **Test Result:** PASS\*

\*In the configuration tested, the EUT complied with the standards specified above.

Tested By: (Lewis Zhou) Reviewed By: \_\_\_ Approved By:





Report No.: CQASZ20240701477E-02

# 1 Version

# **Revision History Of Report**

Report No.	Version	Description	Issue Date
CQASZ20240701477E-02	Rev.01	Initial report	2024-08-08





# 2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	· ANSI C63.10 2013	
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS



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# 4 General Information

# 4.1 Client Information

Applicant:	Shenzhen Buzz Tech CO.,LTD
Address of Applicant:	10th Floor, Guang Chang Bldg, 74#,BaoMin 1st Rd, Bao An Shenzhen, Guangdong, China
Manufacturer:	Shenzhen Buzz Tech CO.,LTD
Address of Manufacturer:	10th Floor, Guang Chang Bldg, 74#,BaoMin 1st Rd, Bao An Shenzhen, Guangdong, China
Factory:	Shenzhen Buzz Tech CO.,LTD
Address of Factory:	10th Floor, Guang Chang Bldg, 74#,BaoMin 1st Rd, Bao An Shenzhen, Guangdong, China

# 4.2 General Description of EUT

•	
Product Name:	Smart watch
Model No.:	P99, P134, P135, P136, P137, P138, P139, S78, S80, S81, S82, S83, S85, S86
Test Model No.:	P99
Trade Mark:	N/A
Software Version:	V1.0
Hardware Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK
Transfer Rate:	1Mbps, 2Mbps
Number of Channel:	40
Product Type:	☐ Mobile ☐ Portable
Test Software of EUT:	RTLBTAPP
Antenna Type:	FPC antenna
Antenna Gain:	-1.56dBi
EUT Power Supply:	Li-ion battery: DC 3.7V 300mAh, Charge by DC 5V for adapter
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report.
	⊠ Simultaneous TX is not supported.



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

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel (CH0)	2402MHz
The middle channel (CH19)	2440MHz
The highest channel (CH39)	2480MHz

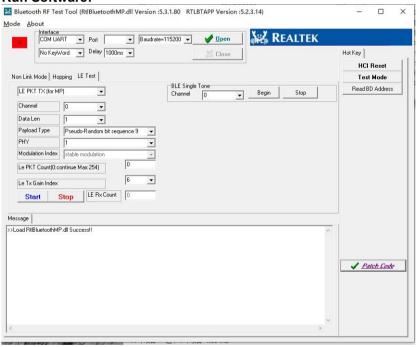


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# 4.3 Additional Instructions

EUT Test Software Settings:						
Mode:	⊠ Special software is used.	⊠ Special software is used.				
		☐ Through engineering command into the engineering mode. engineering command: *#*#3646633#*#*				
EUT Power level:	Class2 (Power level is built-in set para selected)	meters and cannot be changed and				
Use test software to set the lowest frequency, the middle frequency and the highest frequency keep						
transmitting of the EUT.						
Mode	Mode Channel Frequency(MHz)					
	CH0 2402					
GFSK CH19 2440						
	CH39	2480				

#### **Run Software:**





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# 4.4 Test Environment

Operating Environment:	Operating Environment:			
Temperature:	24.5°C			
Humidity:	59% RH			
Atmospheric Pressure:	1009mbar			
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.			

# 4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No. Certification		Supplied by
Adapter	MI	/	1	CQA
2) Cable				
Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
1	,	1	,	1





### 4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** guality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10 <sup>-8</sup>
5	Duty cycle	0.6 %
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8℃
11	Humidity test	2.0%
12	Supply voltages	0.5 %
13	Frequency Error	5.5 Hz



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### 4.7 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

### 4.8 Test Facility

### • A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

#### • FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

### 4.9 Deviation from Standards

None.

## 4.10 Other Information Requested by the Customer

None.



# 4.11 Equipment List

			1 4 4	0-1:1	0-1:14:
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2023/09/08	2024/09/07
Spectrum analyzer	R&S	FSU26	CQA-038	2023/09/08	2024/09/07
Spectrum analyzer	R&S	FSU40	CQA-075	2023/09/08	2024/09/07
Preamplifier	MITEQ	AFS4-00010300-18- 10P-4	CQA-035	2023/09/08	2024/09/07
Preamplifier	MITEQ	AMF-6D-02001800- 29-20P	CQA-036	2023/09/08	2024/09/07
Preamplifier	EMCI	EMC184055SE	CQA-089	2023/09/08	2024/09/07
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2021/09/16	2024/09/15
Bilog Antenna	R&S	HL562	CQA-011	2021/09/16	2024/09/15
Horn Antenna	R&S	HF906	CQA-012	2021/09/16	2024/09/15
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/09/16	2024/09/15
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2023/09/08	2024/09/07
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2023/09/08	2024/09/07
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2023/09/08	2024/09/07
Antenna Connector	CQA	RFC-01	CQA-080	2023/09/08	2024/09/07
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2023/09/08	2024/09/07
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2023/09/08	2024/09/07
Power meter	R&S	NRVD	CQA-029	2023/09/08	2024/09/07
Power divider	MIDWEST	PWD-2533-02-SMA- 79	CQA-067	2023/09/08	2024/09/07
EMI Test Receiver	R&S	ESR7	CQA-005	2023/09/08	2024/09/07
LISN	R&S	ENV216	CQA-003	2023/09/08	2024/09/07
Coaxial cable	CQA	N/A	CQA-C009	2023/09/08	2024/09/07
DC power	KEYSIGHT	E3631A	CQA-028	2023/09/08	2024/09/07

### Note:

The temporary antenna connector is soldered on the pcb board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.





### 5 Test results and Measurement Data

## 5.1 Antenna Requirement

**Standard requirement:** 47 CFR Part 15C Section 15.203 /247(c)

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **EUT Antenna:**



The antenna is FPC antenna.

The connection/connection type between the antenna to the EUT's antenna port is: unique coupling This is either permanently attachment or a unique coupling that satisfies the requirement.

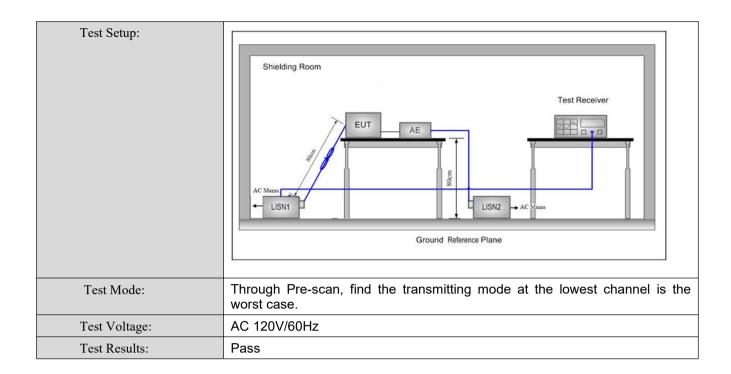


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# 5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	150kHz to 30MHz				
Limit:	E AGIL	Limit (dBuV)			
	Frequency range (MHz)	Quasi-peak	Average		
	0.15-0.5	66 to 56*	56 to 46*		
	0.5-5	56	46		
	5-30	60	50		
	* Decreases with the logarithm o	f the frequency.			
Test Procedure:	The mains terminal disturbance voltage test was conducted in a shielded room.				
	2) The EUT was connected to	AC power source thro	ough a LISN 1 (Line		
	Impedance Stabilization N	etwork) which provides	a $50\Omega/50\mu H$ + $5\Omega$ lin	ear	
	impedance. The power cal	bles of all other units of	the EUT were		
	connected to a second LIS	SN 2, which was bonded	d to the ground		
	reference plane in the sam	ne way as the LISN 1 fo	r the unit being		
	measured. A multiple sock	•	•		
	<ul><li>power cables to a single LISN provided the rating of the LISN was not exceeded.</li><li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was</li></ul>				
	placed on the horizontal gr	=			
	4) The test was performed wi	th a vertical ground refe	erence plane. The rea	ar	
	of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of				
	the EUT and associated equipment was at least 0.8 m from the LISN 2.				
	5) In order to find the maximu				
	equipment and all of the interface cables must be changed according to				
	ANSI C63.10: 2013 on conducted measurement.				

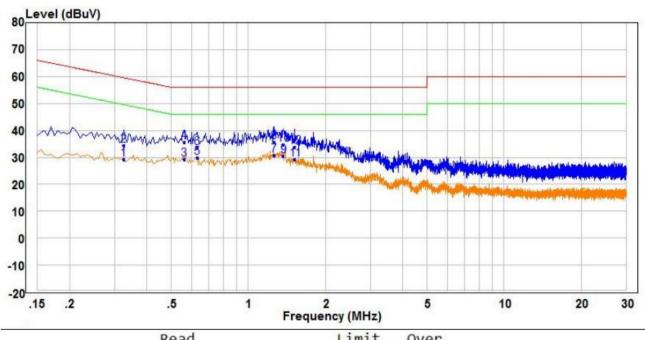






#### **Measurement Data**

Live line:



Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
MHZ	dBuV	dB	dBuV	dBuV	dB		
0.325	19.60	9.52	29.12	49.58	-20.46	Average	Line
0.325	24.82	9.52	34.34	59.58	-25.24	QP	Line
0.560	19.53	9.76	29.29	46.00	-16.71	Average	Line
0.560	25.90	9.76	35.66	56.00	-20.34	QP	Line
0.630	20.14	9.83	29.97	46.00	-16.03	Average	Line
0.630	23.54	9.83	33.37	56.00	-22.63	QP	Line
1.260	20.48	10.34	30.82	46.00	-15.18	Average	Line
1.260	25.41	10.34	35.75	56.00	-20.25	QP	Line
1.370	19.79	10.58	30.37	46.00	-15.63	Average	Line
1.370	24.24	10.58	34.82	56.00	-21.18	QP	Line
1.520	18.27	10.88	29.15	46.00	-16.85	Average	Line
1.520	22.78	10.88	33.66	56.00	-22.34	QP	Line
	MHz  0.325 0.325 0.560 0.560 0.630 1.260 1.260 1.370 1.370 1.520	MHZ dBuV  0.325 19.60 0.325 24.82 0.560 19.53 0.560 25.90 0.630 20.14 0.630 23.54 1.260 20.48 1.260 25.41 1.370 19.79 1.370 24.24 1.520 18.27	MHz dBuV dB  0.325 19.60 9.52  0.325 24.82 9.52  0.560 19.53 9.76  0.560 25.90 9.76  0.630 20.14 9.83  0.630 23.54 9.83  1.260 20.48 10.34  1.260 25.41 10.34  1.370 19.79 10.58  1.370 24.24 10.58  1.520 18.27 10.88	MHz         dBuV         dB dBuV           0.325         19.60         9.52         29.12           0.325         24.82         9.52         34.34           0.560         19.53         9.76         29.29           0.560         25.90         9.76         35.66           0.630         20.14         9.83         29.97           0.630         23.54         9.83         33.37           1.260         20.48         10.34         30.82           1.260         25.41         10.34         35.75           1.370         19.79         10.58         30.37           1.370         24.24         10.58         34.82           1.520         18.27         10.88         29.15	MHz         dBuV         dB dBuV         dBuV           0.325         19.60         9.52         29.12         49.58           0.325         24.82         9.52         34.34         59.58           0.560         19.53         9.76         29.29         46.00           0.560         25.90         9.76         35.66         56.00           0.630         20.14         9.83         29.97         46.00           0.630         23.54         9.83         33.37         56.00           1.260         20.48         10.34         30.82         46.00           1.370         19.79         10.58         30.37         46.00           1.370         24.24         10.58         34.82         56.00           1.520         18.27         10.88         29.15         46.00	Freq         Level         Factor         Level         Line         Limit           MHz         dBuV         dB         dBuV         dBuV         dB           0.325         19.60         9.52         29.12         49.58         -20.46           0.325         24.82         9.52         34.34         59.58         -25.24           0.560         19.53         9.76         29.29         46.00         -16.71           0.560         25.90         9.76         35.66         56.00         -20.34           0.630         20.14         9.83         29.97         46.00         -16.03           0.630         23.54         9.83         33.37         56.00         -22.63           1.260         20.48         10.34         30.82         46.00         -15.18           1.260         25.41         10.34         35.75         56.00         -20.25           1.370         19.79         10.58         30.37         46.00         -15.63           1.370         24.24         10.58         34.82         56.00         -21.18           1.520         18.27         10.88         29.15         46.00         -16.85	Freq         Level         Level         Line         Limit         Remark           MHz         dBuV         dB uV         dB uV         dB           0.325         19.60         9.52         29.12         49.58 -20.46         Average           0.325         24.82         9.52         34.34         59.58 -25.24         QP           0.560         19.53         9.76         29.29         46.00 -16.71         Average           0.560         25.90         9.76         35.66         56.00 -20.34         QP           0.630         20.14         9.83         29.97         46.00 -16.03         Average           0.630         23.54         9.83         33.37         56.00 -22.63         QP           1.260         20.48         10.34         30.82         46.00 -15.18         Average           1.370         19.79         10.58         30.37         46.00 -15.63         Average           1.370         24.24         10.58         34.82         56.00 -21.18         QP           1.520         18.27         10.88         29.15         46.00 -16.85         Average

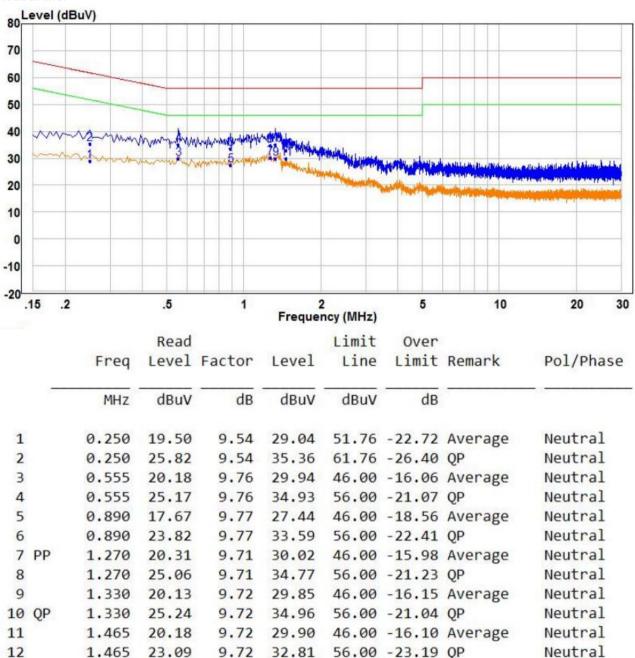
### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.





#### Neutral line:



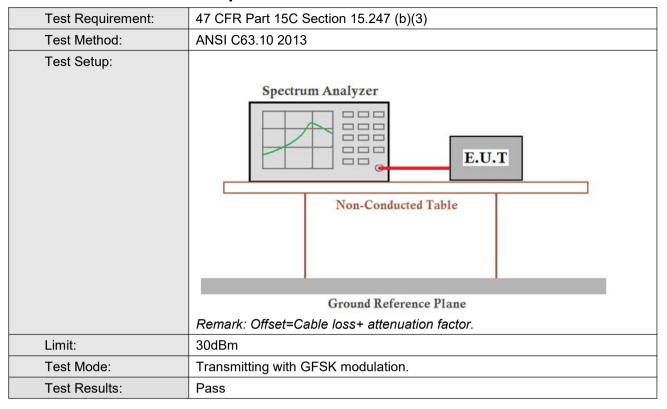
#### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.





# 5.3 Conducted Peak Output Power

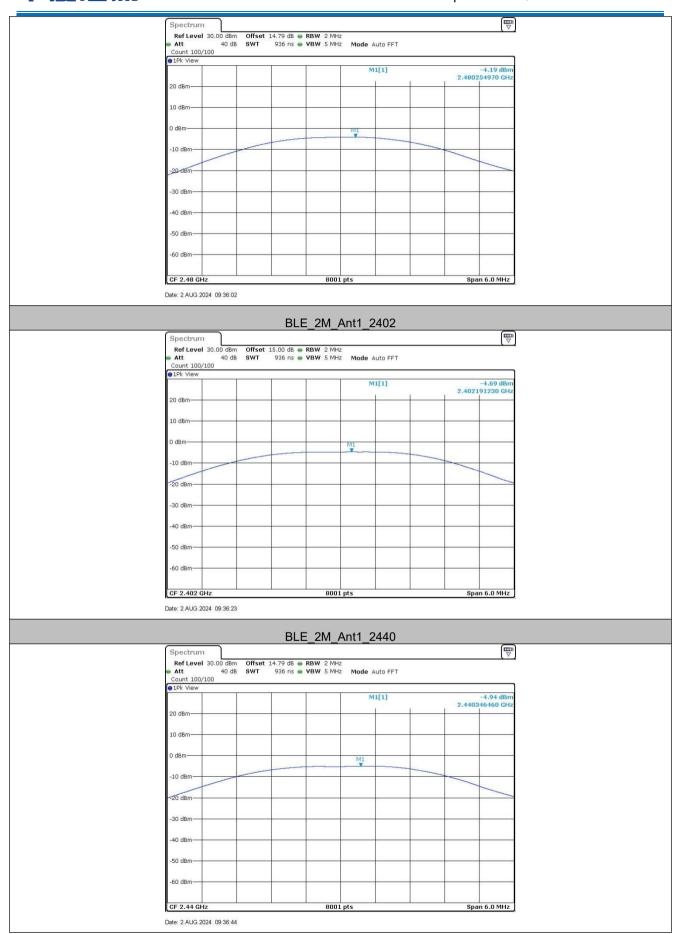


#### **Measurement Data**

acaronioni Bata					
GFSK mode (1Mbps)					
Test channel	Peak Output Power (dBm)	Result			
Lowest	-4.43	30.00	Pass		
Middle	-5.1	30.00	Pass		
Highest	-4.19	30.00	Pass		
GFSK mode (2Mbps)					
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
Lowest	-4.69	30.00	Pass		
Middle	-4.94	30.00	Pass		
Highest	-4	30.00	Pass		





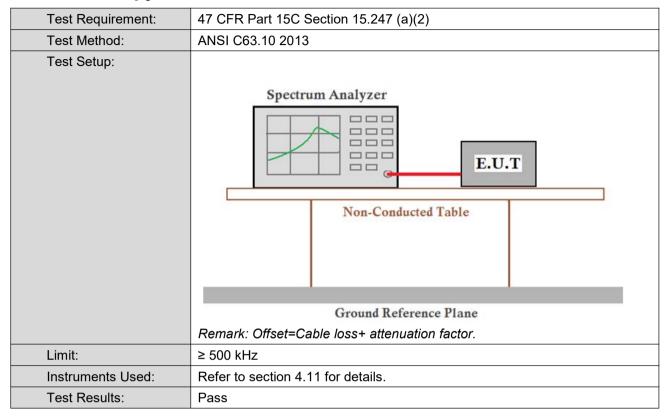








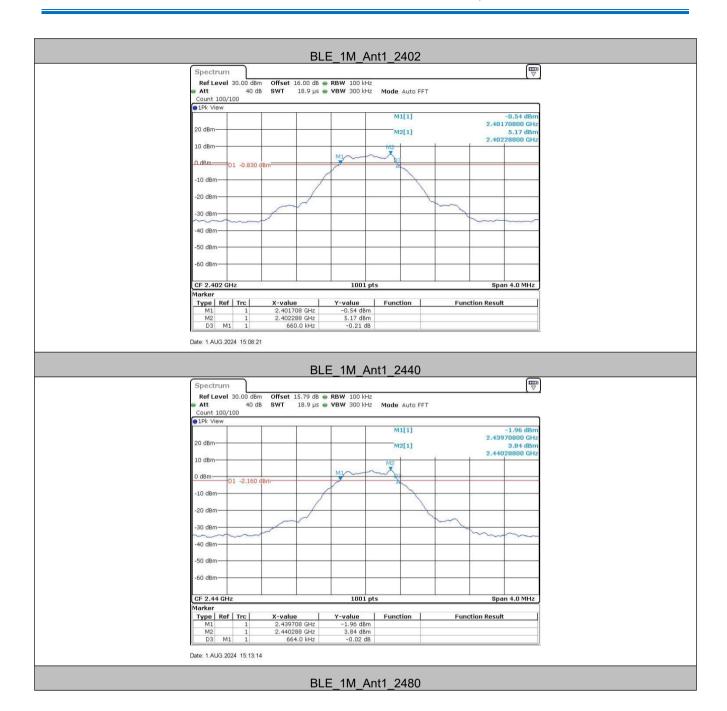
# 5.4 6dB Occupy Bandwidth



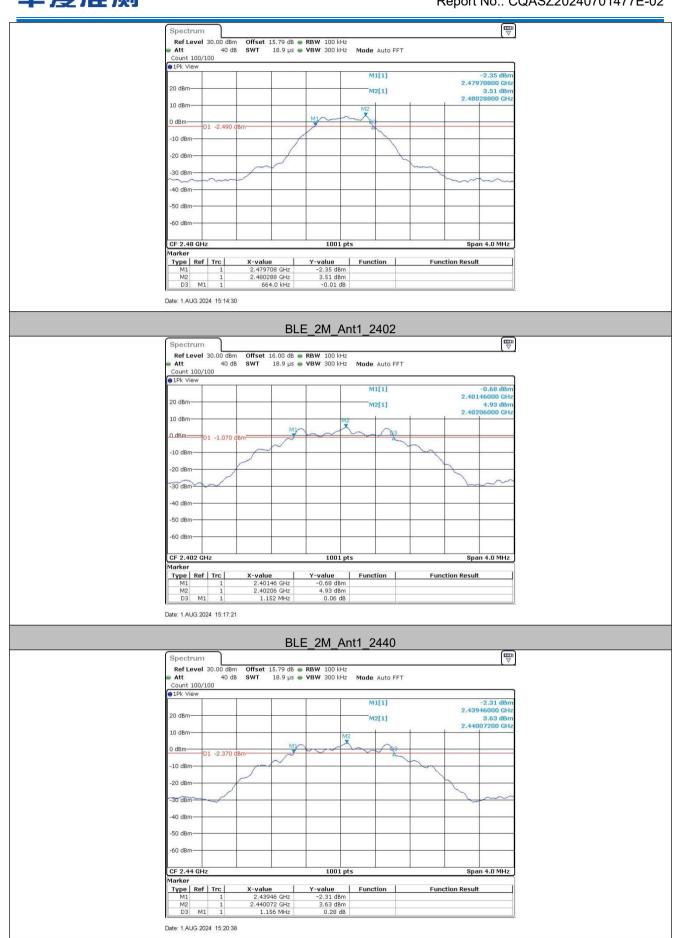
#### **Measurement Data**

	GFSK mode (1Mbps)					
Test channel	6dB Occupy Bandwidth (MHz)	Result				
Lowest	0.66	≥500	Pass			
Middle	0.66	≥500	Pass			
Highest	0.66	≥500	Pass			
	GFSK mode (2Mbps)					
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result			
Lowest	1.15	≥500	Pass			
Middle	1.16	≥500	Pass			
Highest	1.16	≥500	Pass			







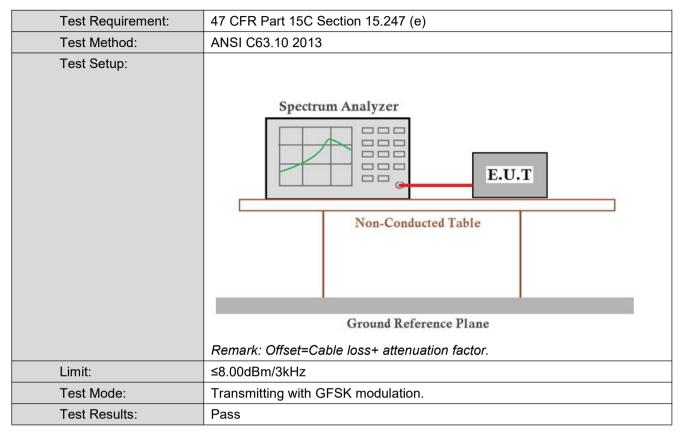








# 5.5 Power Spectral Density

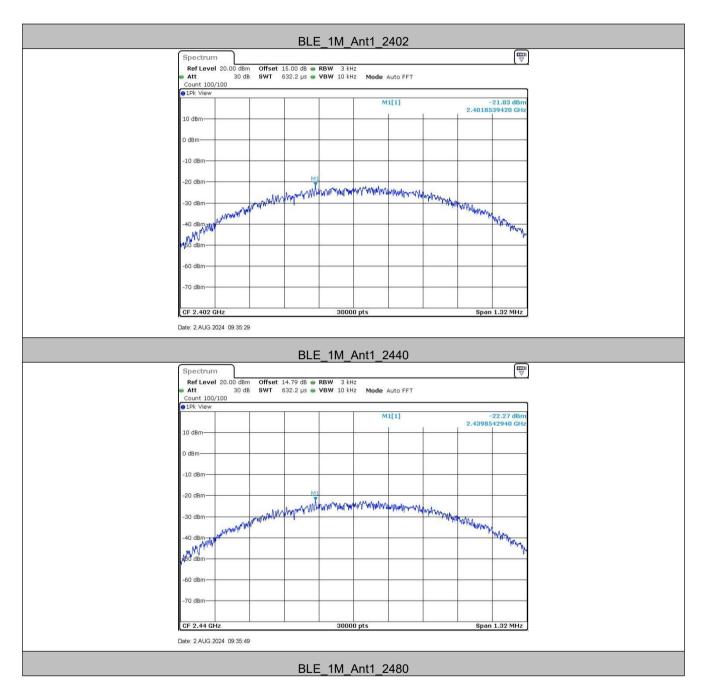


#### **Measurement Data**

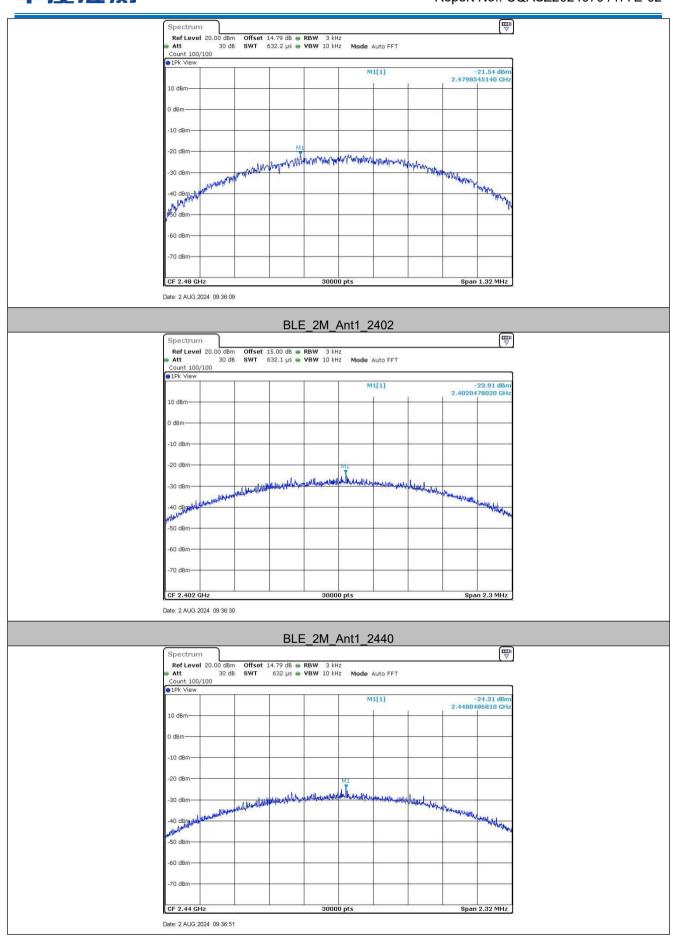
	Additional Butu					
	GFSK mode (1Mbps)					
Test channel	Power Spectral Density (dBm/3kHz)	Result				
Lowest	-21.83	≤8.00	Pass			
Middle	-22.27	≤8.00	Pass			
Highest	-21.54	≤8.00	Pass			
	GFSK mode (2Mbps)					
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result			
Lowest	-23.91	≤8.00	Pass			
Middle	-24.31	≤8.00	Pass			
Highest	-23.58	≤8.00	Pass			



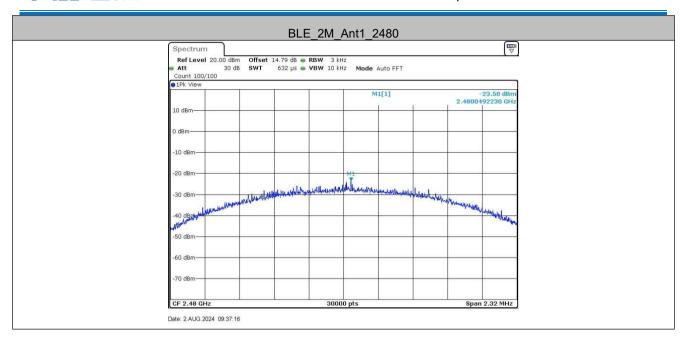
### Test plot as follows:







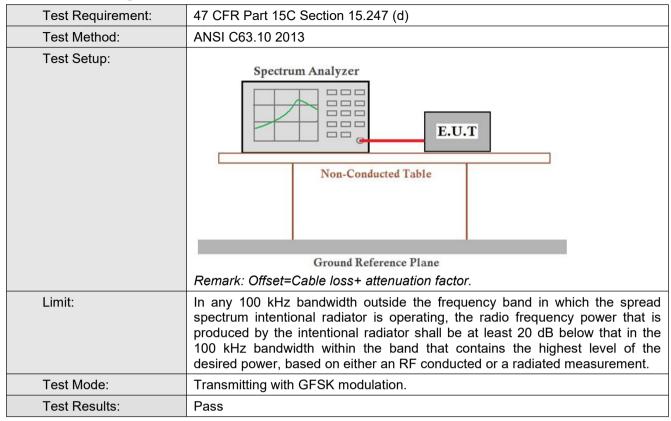






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# 5.6 Band-edge for RF Conducted Emissions

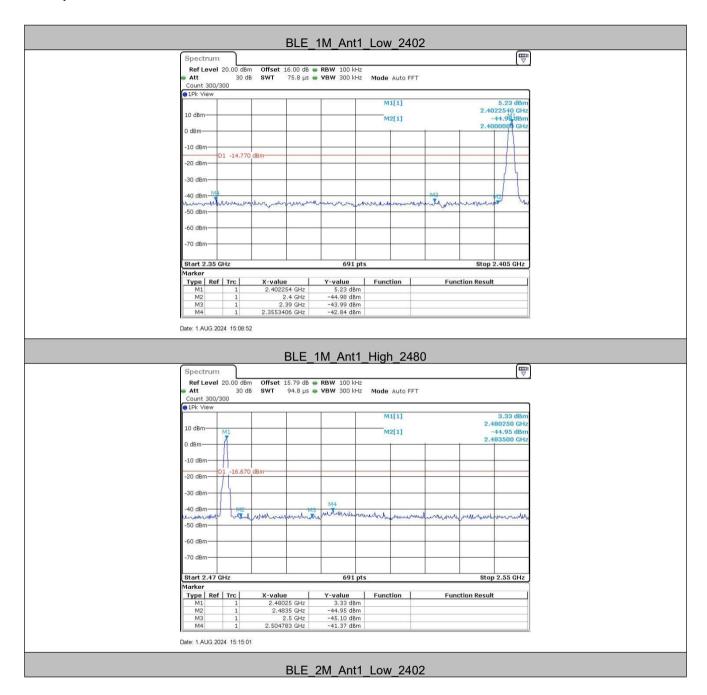


TestMode	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
	Low	2402	5.23	-42.84	≤-14.77	PASS
BLE_1M	High	2480	3.33	-41.37	≤-16.67	PASS
	Low	2402	4.73	-31.23	≤-15.27	PASS
BLE_2M	High	2480	3.26	-40.06	≤-16.74	PASS



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#### Test plot as follows:



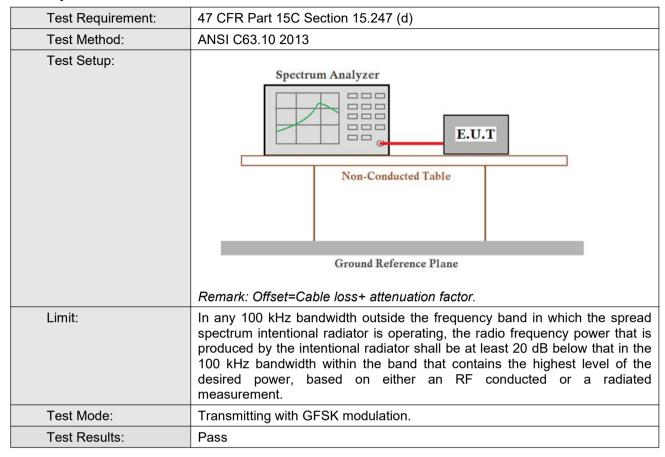






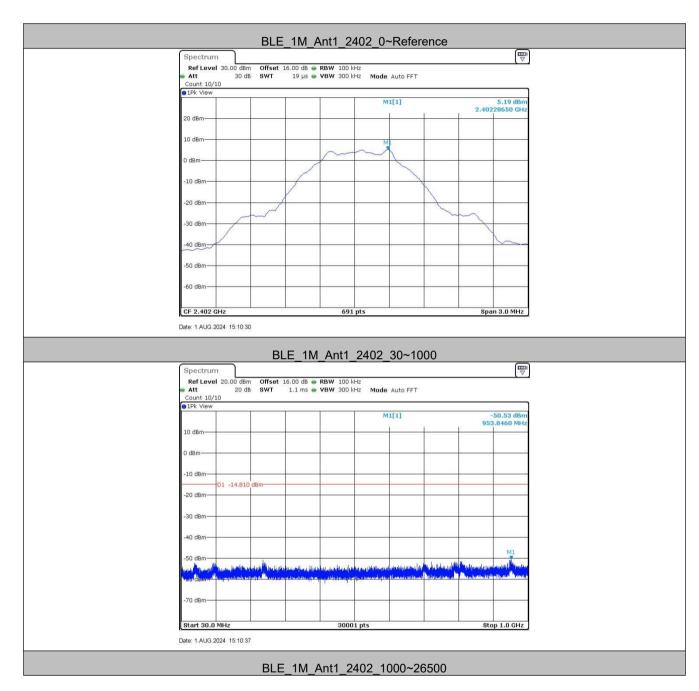


# 5.7 Spurious RF Conducted Emissions

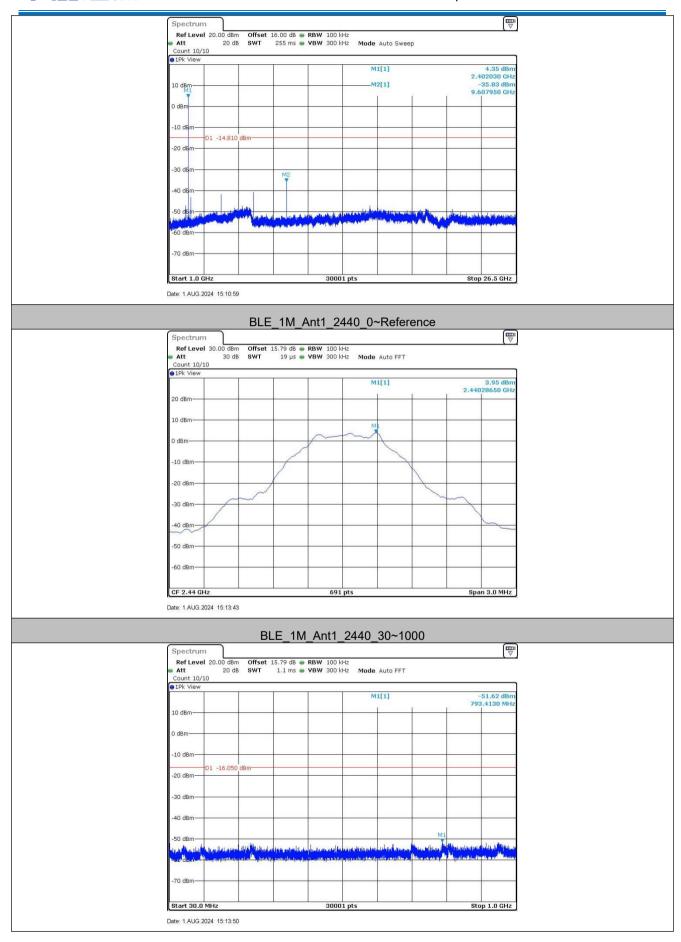




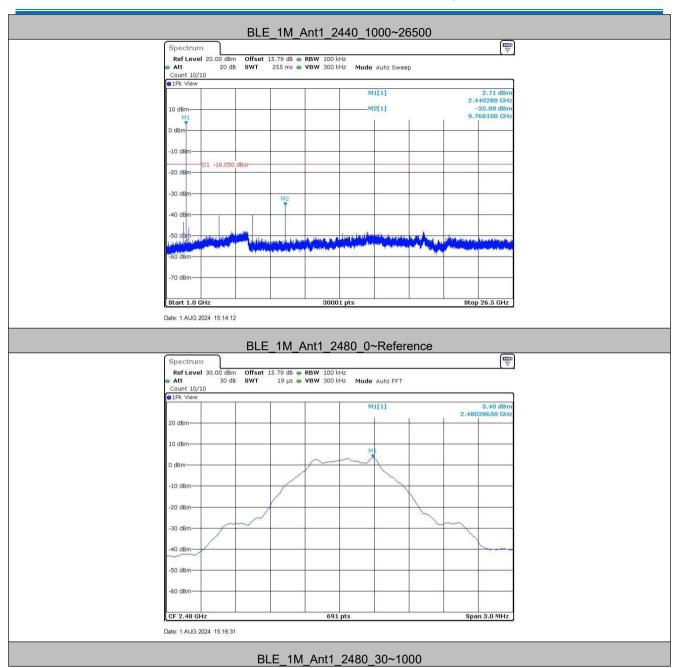
### Test plot as follows:



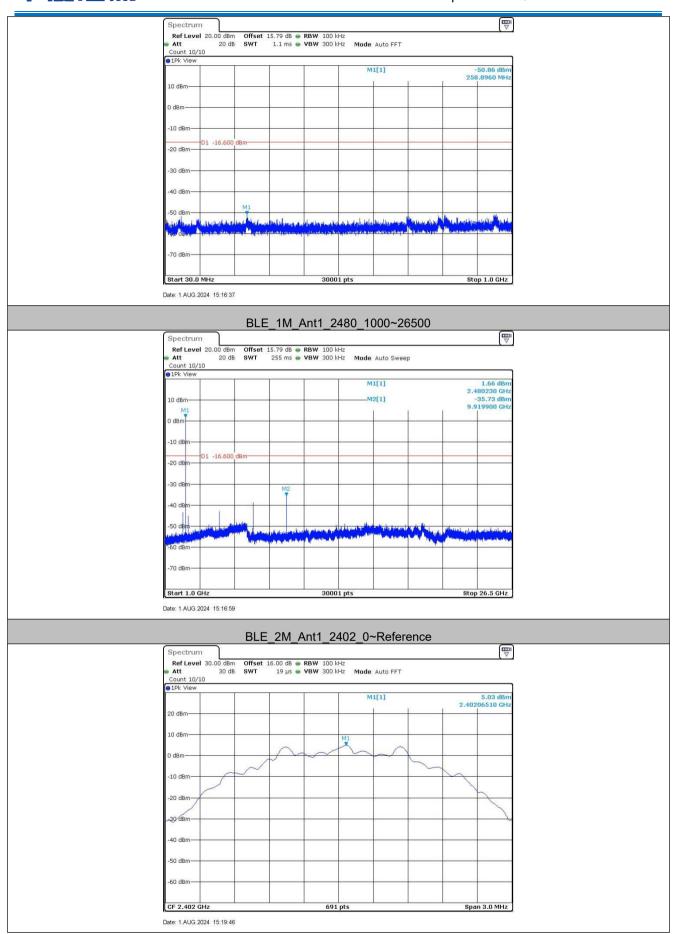




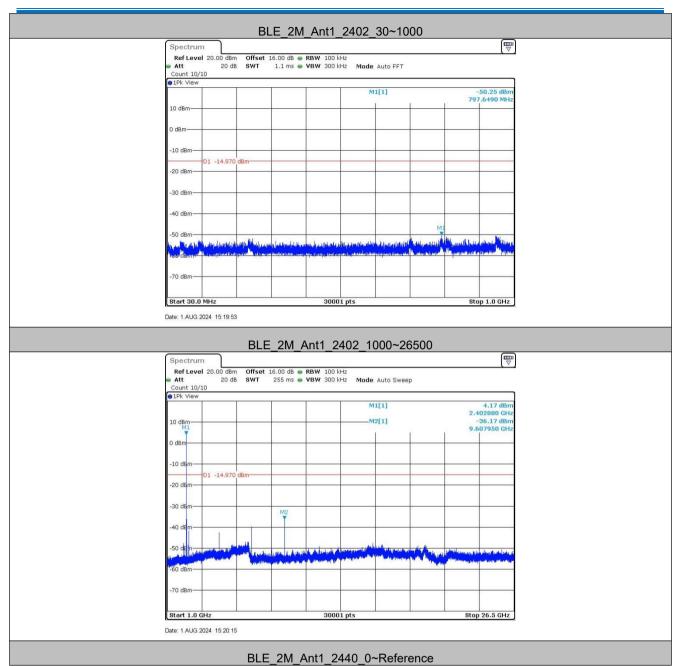




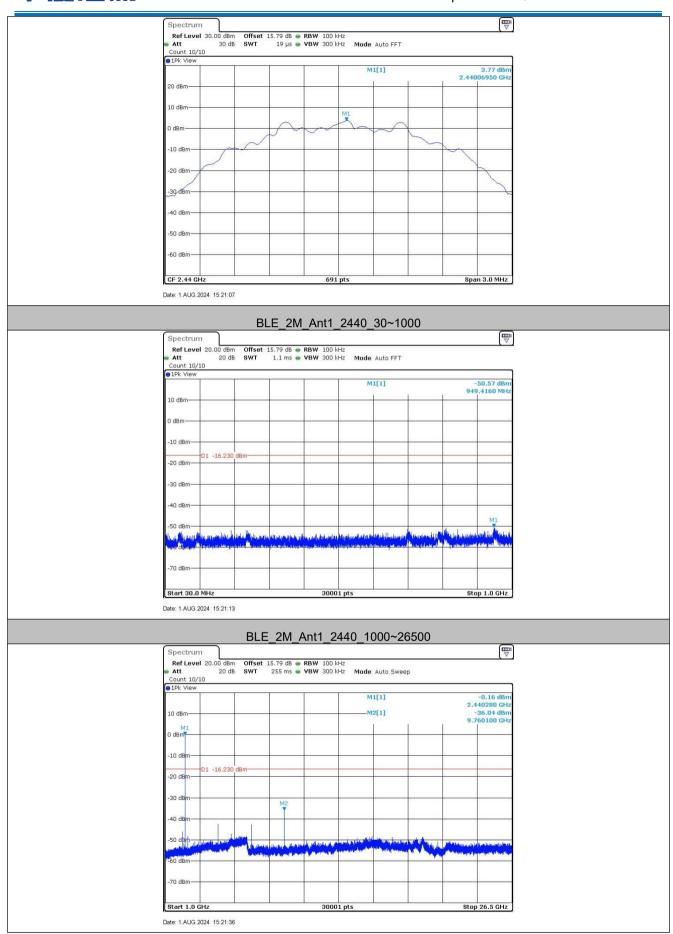




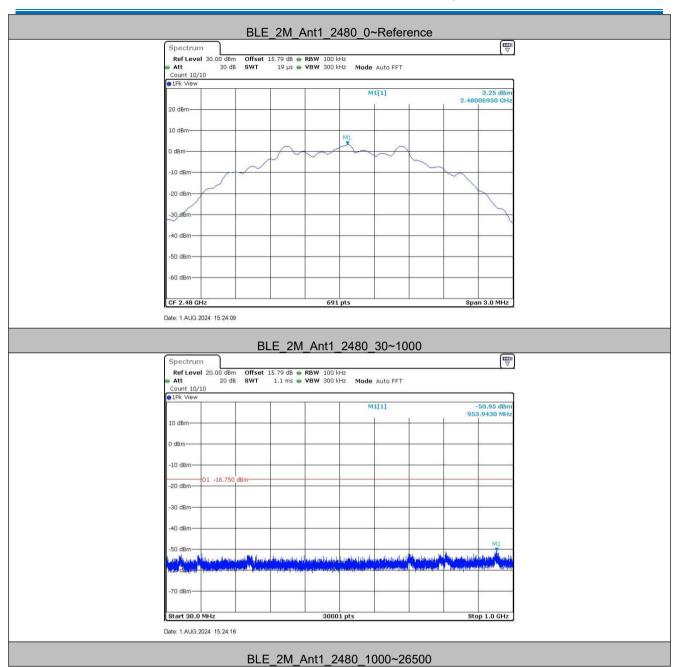






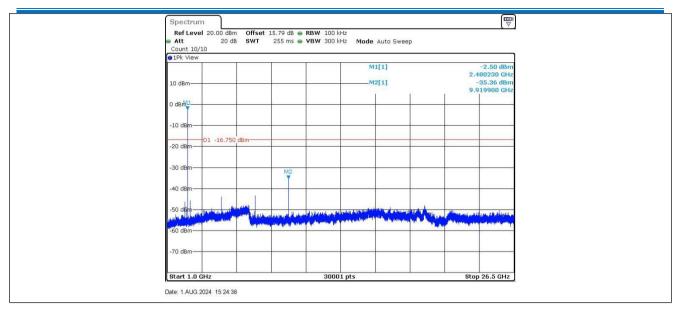








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#### Remark:

Pretest 9kHz to 25GHz, find the highest point when testing, so only the worst data were shown in the test report. Per FCC Part 15.33 (a) and 15.31 (o) ,The amplitude of spurious emissions from intentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.