



TEST REPORT

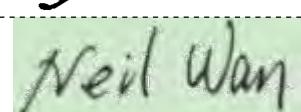
Report No. :	KS2206S2667E01
FCC ID:	2A7SL-ZORDAI7PROMAX
Applicant :	Shenzhen Zhongdai e-commerce Co., Ltd
Address :	14, block C, electronic technology building, No. 2070, Shennan Middle Road, Fuqiang community, Huaqiang North Street, Futian District, Shenzhen
Manufacturer.....:	Shenzhen Zhongdai e-commerce Co., Ltd
Address.....:	14, block C, electronic technology building, No. 2070, Shennan Middle Road, Fuqiang community, Huaqiang North Street, Futian District, Shenzhen
Product Name :	ZORDAI Smart wear
Trade Mark :	ZORDAI
Model/Type reference :	ZORDAI 7promax
Listed Model(s) :	7pro,7promax,ZORDAI 7,ZORDAI 7pro,ZORDAI 7max
Standard :	FCC 15.247 ANSI C63.10: 2013
Date of Receipt :	June 22, 2022
Date of Test Date :	June 22, 2022~June 27, 2022
Date of issue :	June 27, 2022
Test result :	Pass
Prepared by: (Printed Name + Signature)	Sky Dong 
Approved by: (Printed Name + Signature)	Neil Wan 
Testing Laboratory Name :	KSIGN(Guangdong) Testing Co., Ltd.
Address :	West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB558074 D01 V05r02](#): Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

TRF No. FCC Part 15.247 R1

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2. SUMMARY

2.1 Product Description

Product Description:	ZORDAI Smart wear
Model/Type reference:	ZORDAI 7promax
Listed Model(s):	7pro,7promax,ZORDAI 7,ZORDAI 7pro,ZORDAI 7max
Model Difference:	The only difference between product models is the color . Different model names are available to meet market demands. Other power supply methods, internal structures, circuits, appearance and key components are the same, and do not affect safety and electromagnetic compatibility performance.
Power supply:	DC 3.7V From Battery
Adapter information (Auxiliary test supplied by test Lab)	N/A
Testing sample ID:	KS2206S2667E-1# (Engineer sample), KS2206S2667E-2# (Normal sample)
Hardware version:	V1.0
Software version:	V1.0.0
Bluetooth	
Modulation:	GFSK
Operation frequency:	2402MHz to 2480MHz
Channel number:	40
Channel separation:	2 MHz
Antenna type:	Internal Antenna
Antenna gain:	-0.7dBi

2.2 Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/>	230V / 50 Hz	<input type="radio"/>	120V / 60Hz
		<input checked="" type="radio"/>	3 .7V DC	<input type="radio"/>	24 V DC
		<input type="radio"/>	Other (specified in blank below)		

DC 3.7V From Battery

2.3 Short description of the Equipment under Test (EUT)

This is a ZORDAI Smart wear.

For more details, refer to the user's manual of the EUT.

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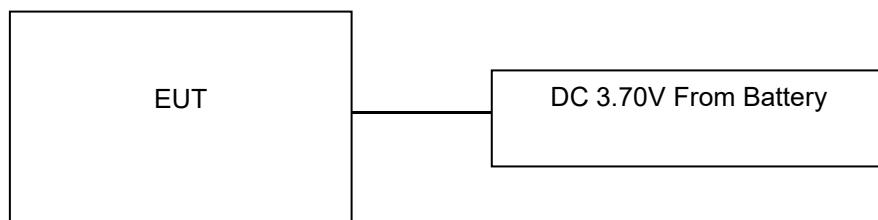
2.4 EUT operation mode

The Applicant provides communication tools software(Engineer mode) to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing .There are 40 channels provided to the EUT and Channel 00/19/39 were selected to test.

Operation Frequency:

Channel	Frequency (MHz)
00	2402
01	2404
02	2406
:	:
19	2440
:	:
37	2476
38	2478
39	2480

2.5 Block Diagram of Test Setup



2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for the device filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1 Address of the test laboratory

KSIGN(Guangdong) Testing Co., Ltd.

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical Competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED#: 25693 CAB identifier.: CN0096

KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

FCC-Registration No.: 294912 Designation Number: CN1328

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

AC Main Conducted testing:

Temperature:	25 ° C
Humidity:	46 %
Atmospheric pressure:	950-1050mbar

Conducted testing:

Temperature:	25 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

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3.4 Summary of measurement results

Test Specification clause	Test case	Test Mode	Test Channel	Recorded In Report		Test result
§15.247(e)	Power spectral density	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	complies
§15.247(a)(2)	Spectrum bandwidth – 6 dB bandwidth	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	complies
§15.247(b)(1)	Maximum output power	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	complies
§15.247(d)	Band edge compliance conducted	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Highest	complies
§15.205	Band edge compliance radiated	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Highest	complies
§15.247(d)	TX spurious emissions conducted	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	complies
§15.247(d)	TX spurious emissions radiated	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	BLE 1Mpbs 2 Mpbs	<input checked="" type="checkbox"/> Lowest <input checked="" type="checkbox"/> Middle <input checked="" type="checkbox"/> Highest	complies
§15.209(a)	TX spurious Emissions radiated Below 1GHz	BLE 1Mpbs 2 Mpbs	-/-	BLE 1Mpbs	-/-	complies
§15.107(a) §15.207	Conducted Emissions < 30 MHz	BLE 1Mpbs 2 Mpbs	-/-	BLE 1Mpbs	-/-	complies

Remark:

1. The measurement uncertainty is not included in the test result.
2. We tested all test mode and recorded worst case in report

3.5 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 CTA Testing Technology Co., Ltd. quality 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 Shenzhen CTA Testing Technology Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Maximum transmit power	±1.5dB	(1)
Power Spectral Density	±1.5dB	(1)
Duty Cycle, Tx-sequence, Tx-gap	±5%	(1)
Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	±5%	(1)
Hopping Frequency Separation	±5%	(1)

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Medium Utilisation (MU) factor	±5%	(1)
Adaptively	±5%	(1)
Occupied Channel Bandwidth	±5%	(1)
Transmitter unwanted emissions in the out-of-band domain	±2.8dB	(1)
Transmitter unwanted emissions in the spurious domain	±2.8dB	(1)
Receiver spurious emissions	±2.8dB	(1)
Receiver Blocking	±2.8dB	(1)

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

3.6 Equipments Used during the Test

Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	Spectrum Analyzer	R&S	FSV40-N	101798	03/04/2023
2	Vector Signal Generator	Agilent	N5182A	MY50142520	03/04/2023
3	Analog Signal Generator	HP	83752A	3344A00337	03/04/2023
4	Power Sensor	Agilent	E9304A	MY50390009	03/04/2023
5	Power Sensor	Agilent	E9300A	MY41498315	03/04/2023
6	Wideband Radio Communication Tester	R&S	CMW500	157282	03/04/2023
7	Climate Chamber	Angul	AGNH80L	1903042120	03/04/2023
8	Dual Output DC Power Supply	Agilent	E3646A	MY40009992	03/04/2023
9	RF Control Unit	Tonscend	JS0806-2	/	03/04/2023

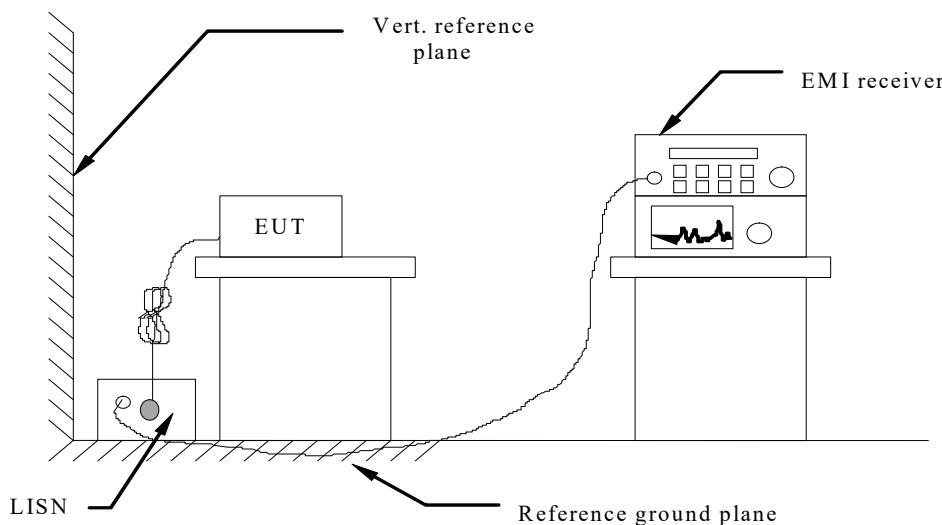
Transmitter spurious emissions & Receiver spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	EMI Test Receiver	R&S	ESR	102525	03/04/2023
2	High Pass Filter	Chengdu E-Microwave	OHF-3-18-S	0E01901038	03/04/2023
3	High Pass Filter	Chengdu E-Microwave	OHF-6.5-18-S	0E01901039	03/04/2023
4	Spectrum Analyzer	HP	8593E	3831U02087	03/04/2023
5	Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	01230	12/04/2023
6	Loop Antenna	Beijin ZHINAN	ZN30900C	18050	03/04/2023
7	Spectrum Analyzer	R&S	FSV40-N	101798	03/04/2023
8	Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	03/29/2023
9	Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	03/04/2023
10	Pre-Amplifier	EMCI	EMC051835SE	980662	03/04/2023

Note: The Cal.Interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 The EUT received DC 12V power from adapter, the adapter received AC120V/60Hz and AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Frequency range (MHz)	Limit (dBuV)	
	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 of the frequency.

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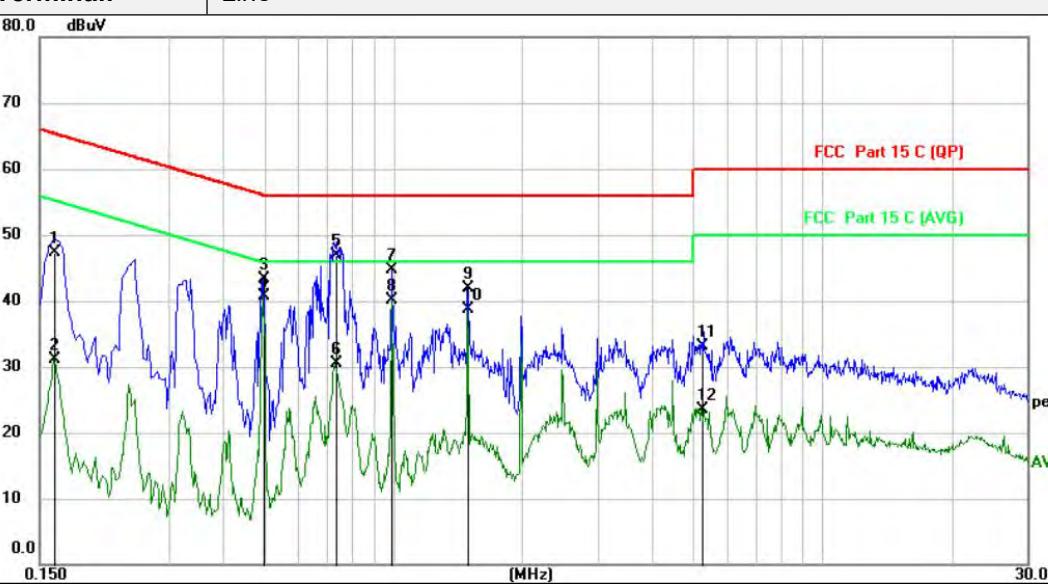
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TEST RESULTS

Remark:

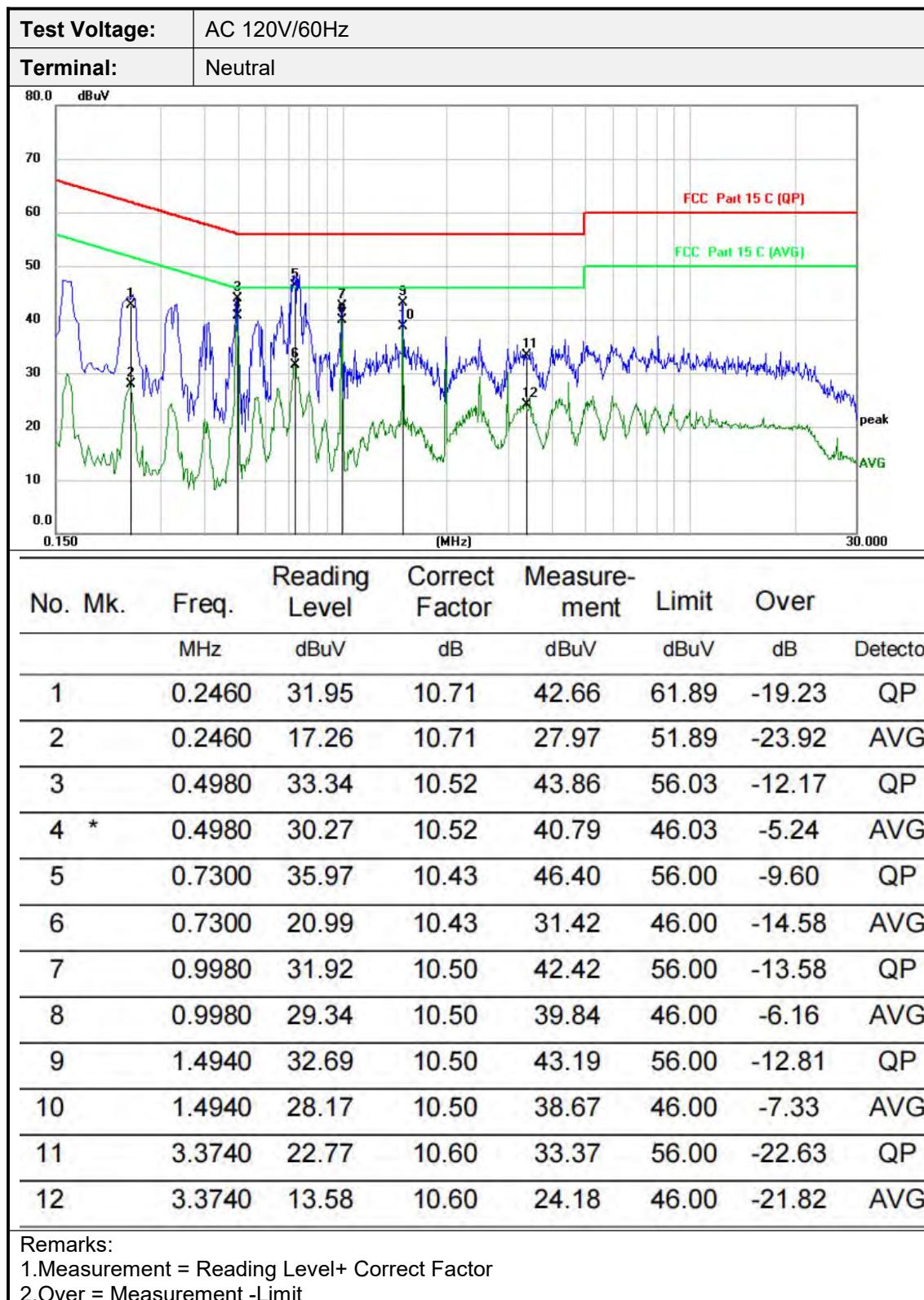
- Both modes of BLE 1Mpbs and 2Mpbs were tested at Low, Middle, and High channel; only the worst result of BLE 1Mpbs was reported as below:

Test Voltage:	AC 120V/60Hz						
Terminal:	Line						
							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV	dBuV	dB
1		0.1620	36.67	10.72	47.39	65.36	-17.97
2		0.1620	20.40	10.72	31.12	55.36	-24.24
3		0.4980	32.96	10.38	43.34	56.03	-12.69
4 *		0.4980	30.35	10.38	40.73	46.03	-5.30
5		0.7340	36.56	10.44	47.00	56.00	-9.00
6		0.7340	19.98	10.44	30.42	46.00	-15.58
7		0.9940	34.23	10.51	44.74	56.00	-11.26
8		0.9940	29.68	10.51	40.19	46.00	-5.81
9		1.4940	31.43	10.42	41.85	56.00	-14.15
10		1.4940	28.20	10.42	38.62	46.00	-7.38
11		5.2340	22.57	10.63	33.20	60.00	-26.80
12		5.2340	12.92	10.63	23.55	50.00	-26.45
Remarks: 1.Measurement = Reading Level+ Correct Factor 2.Over = Measurement -Limit							

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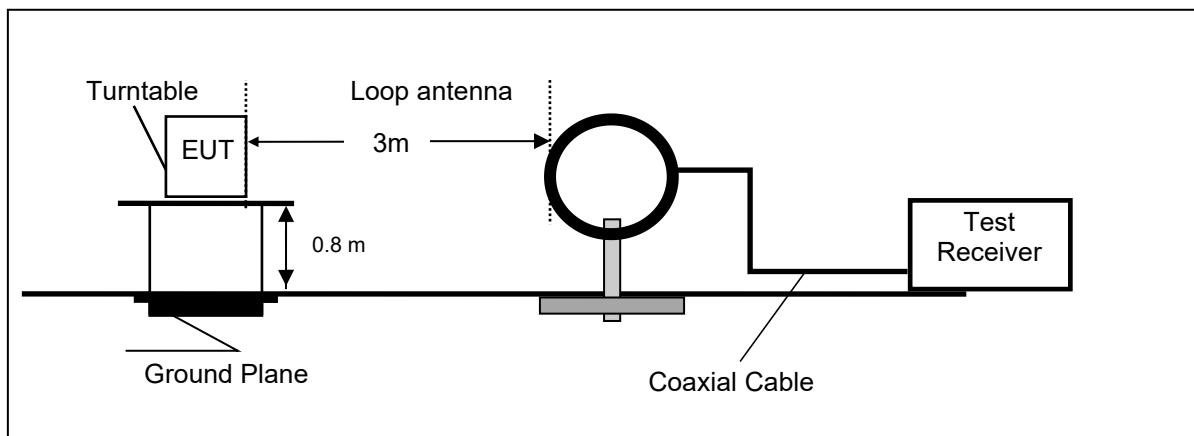
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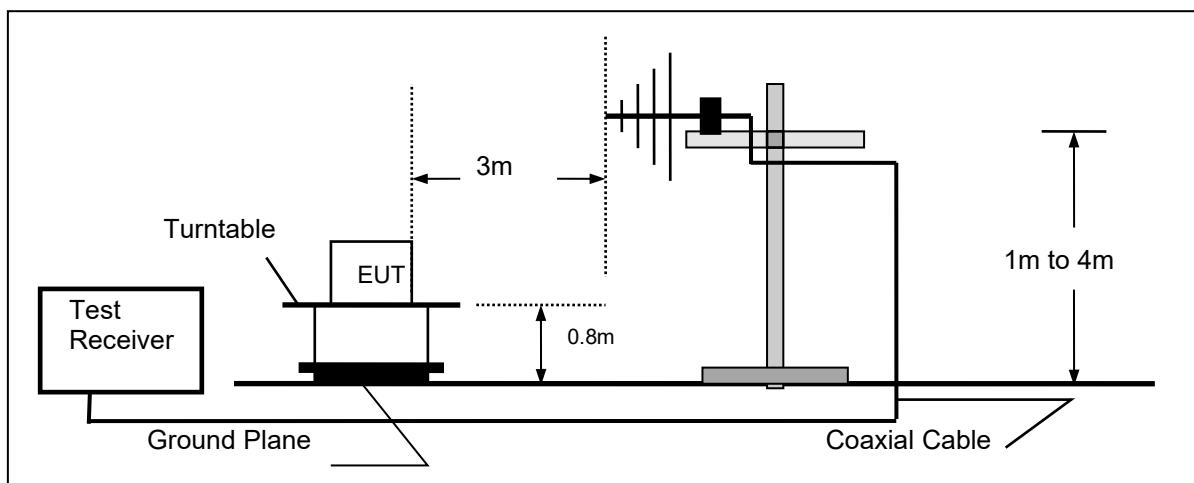
4.2 Radiated Emissions and Band Edge

TEST CONFIGURATION

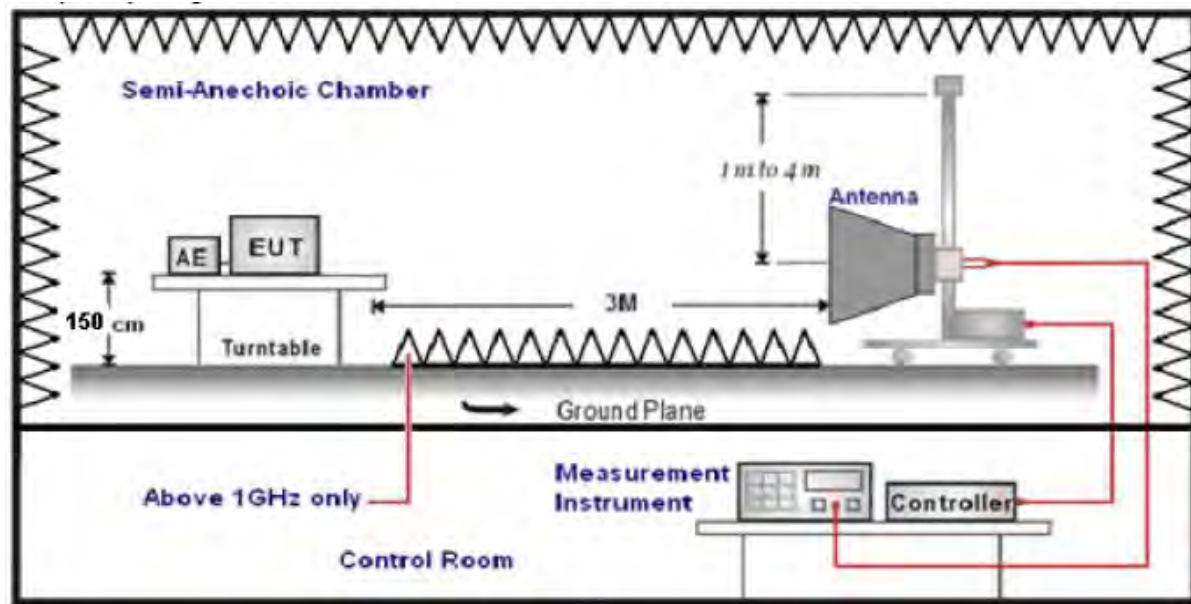
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –1GHz; the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The EUT minimum operation frequency was 32.768KHz and maximum operation frequency was 2480MHz. so radiated emission test frequency band from 9KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz, Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz, Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz, Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain

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AF = Antenna Factor

Transd=AF +CL-AG

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
0.009-0.49	3	$20\log(2400/F(\text{kHz}))+40\log(300/3)$	$2400/F(\text{kHz})$
0.49-1.705	3	$20\log(24000/F(\text{kHz}))+40\log(30/3)$	$24000/F(\text{kHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

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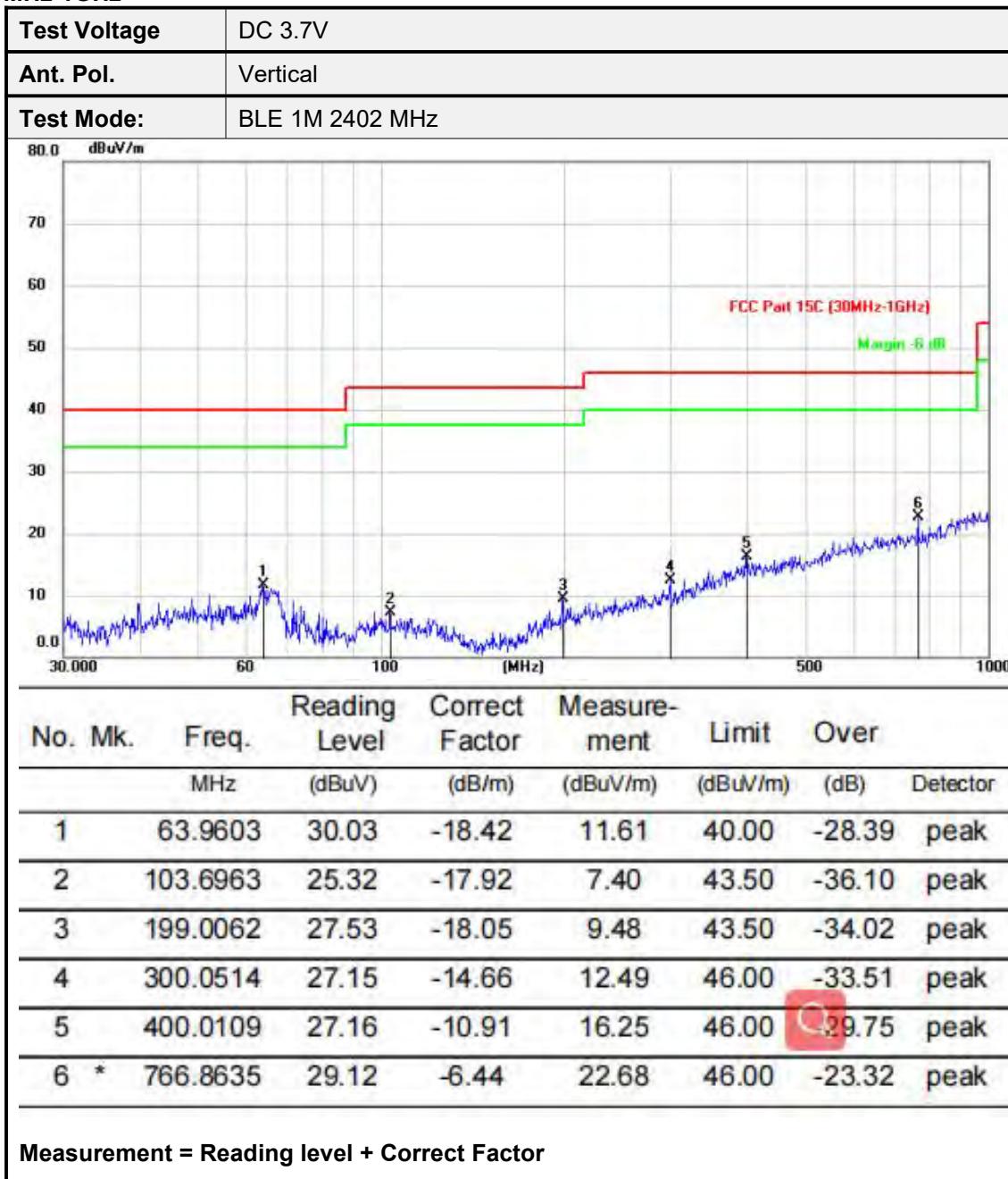
1. This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.
2. Both modes of BLE 1Mbps and 2Mbps were tested at Low, Middle, and High channel and recorded worst mode at BLE 1Mbps.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

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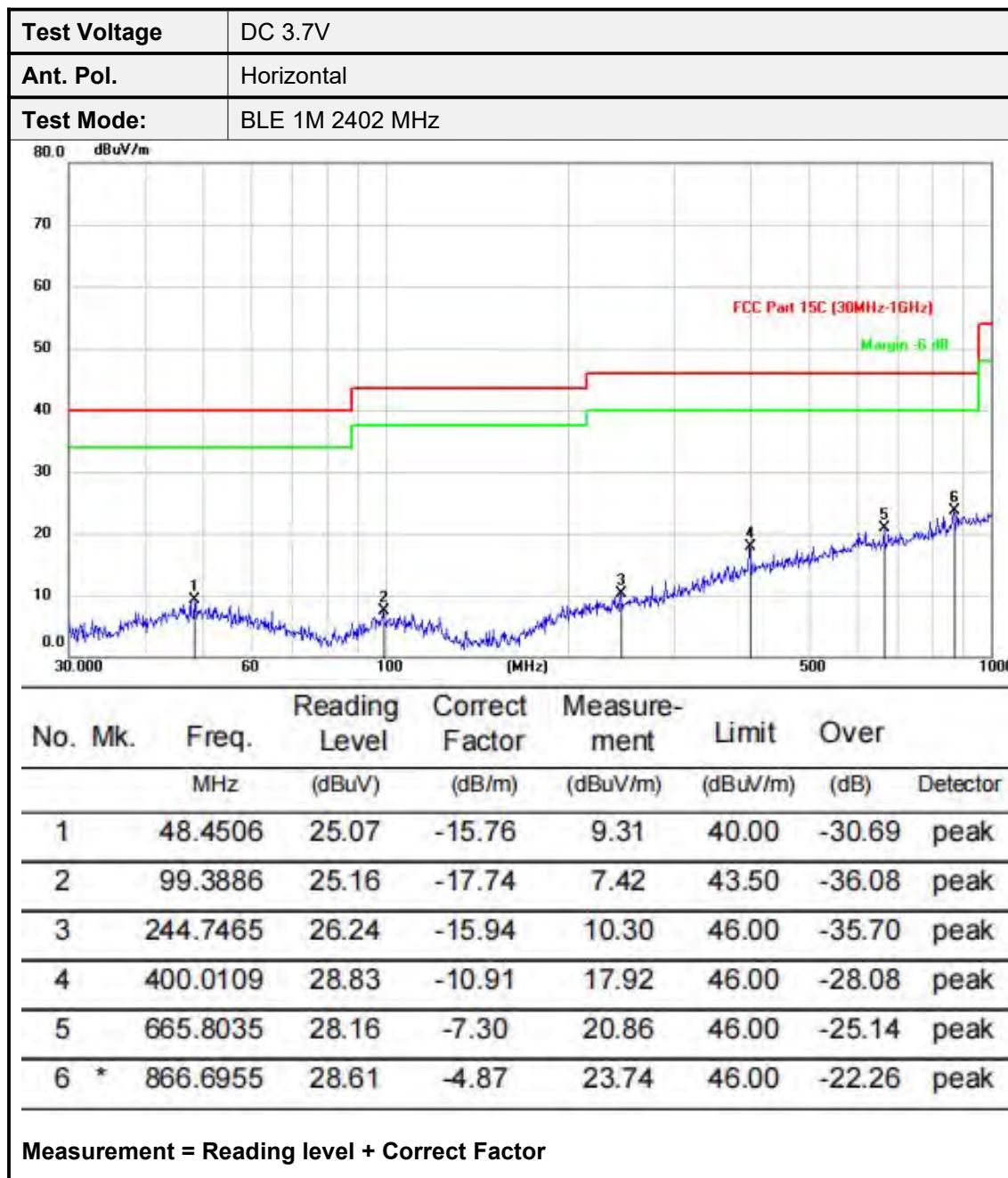
For 30MHz-1GHz



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Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

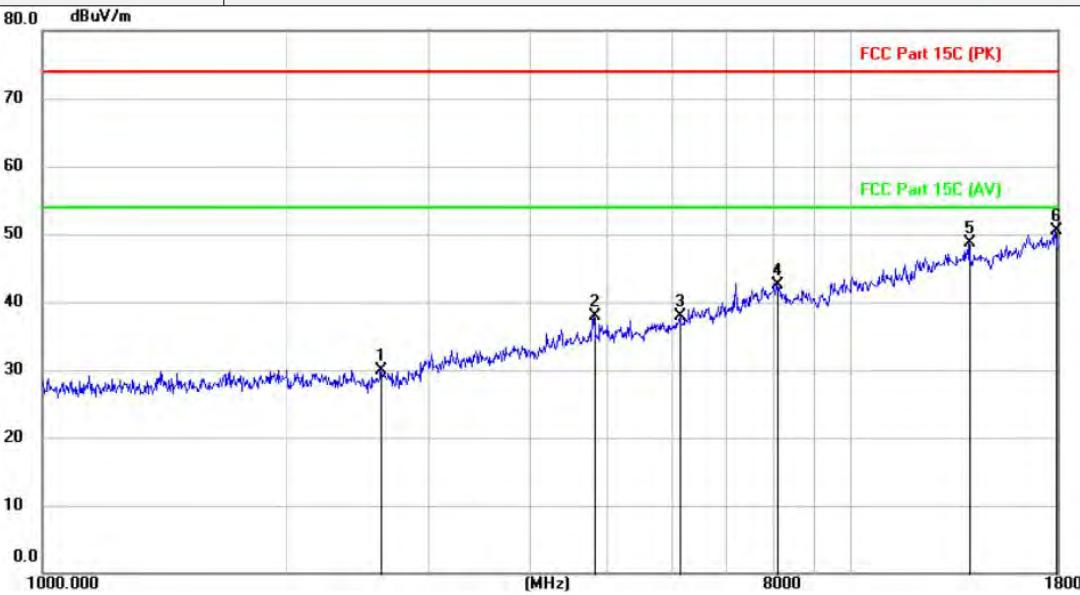


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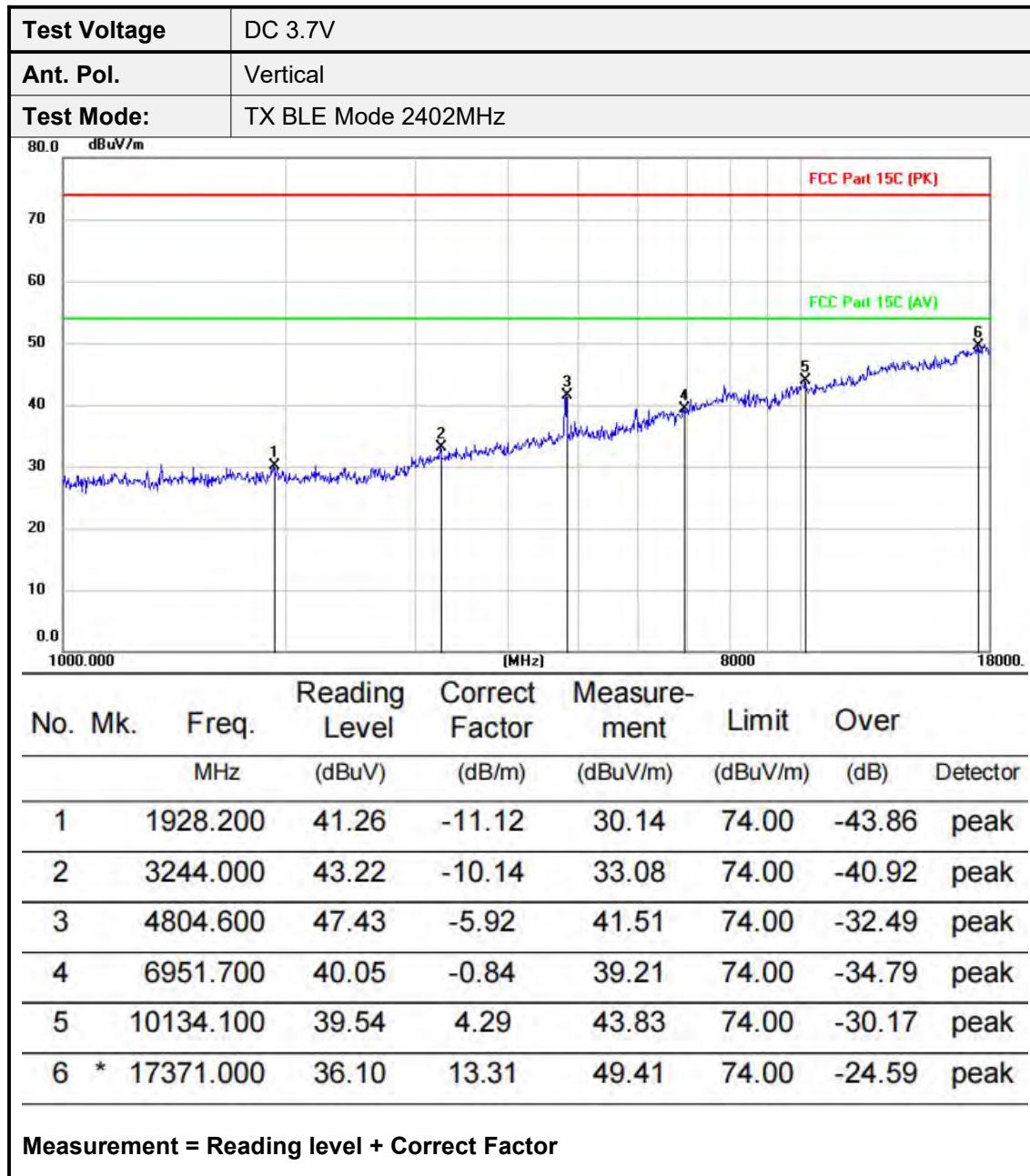
Above 1GHz

Test Voltage	DC 3.7V						
Ant. Pol.	Horizontal						
Test Mode:	TX BLE Modee 2402MHz						
							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)
1		2618.400	40.73	-10.81	29.92	74.00	-44.08
2		4804.600	43.81	-5.92	37.89	74.00	-36.11
3		6151.000	41.25	-3.29	37.96	74.00	-36.04
4		8092.400	40.47	2.05	42.52	74.00	-31.48
5		14035.600	37.55	11.18	48.73	74.00	-25.27
6	*	17923.500	36.87	13.58	50.45	74.00	-23.55
Measurement = Reading level + Correct Factor							

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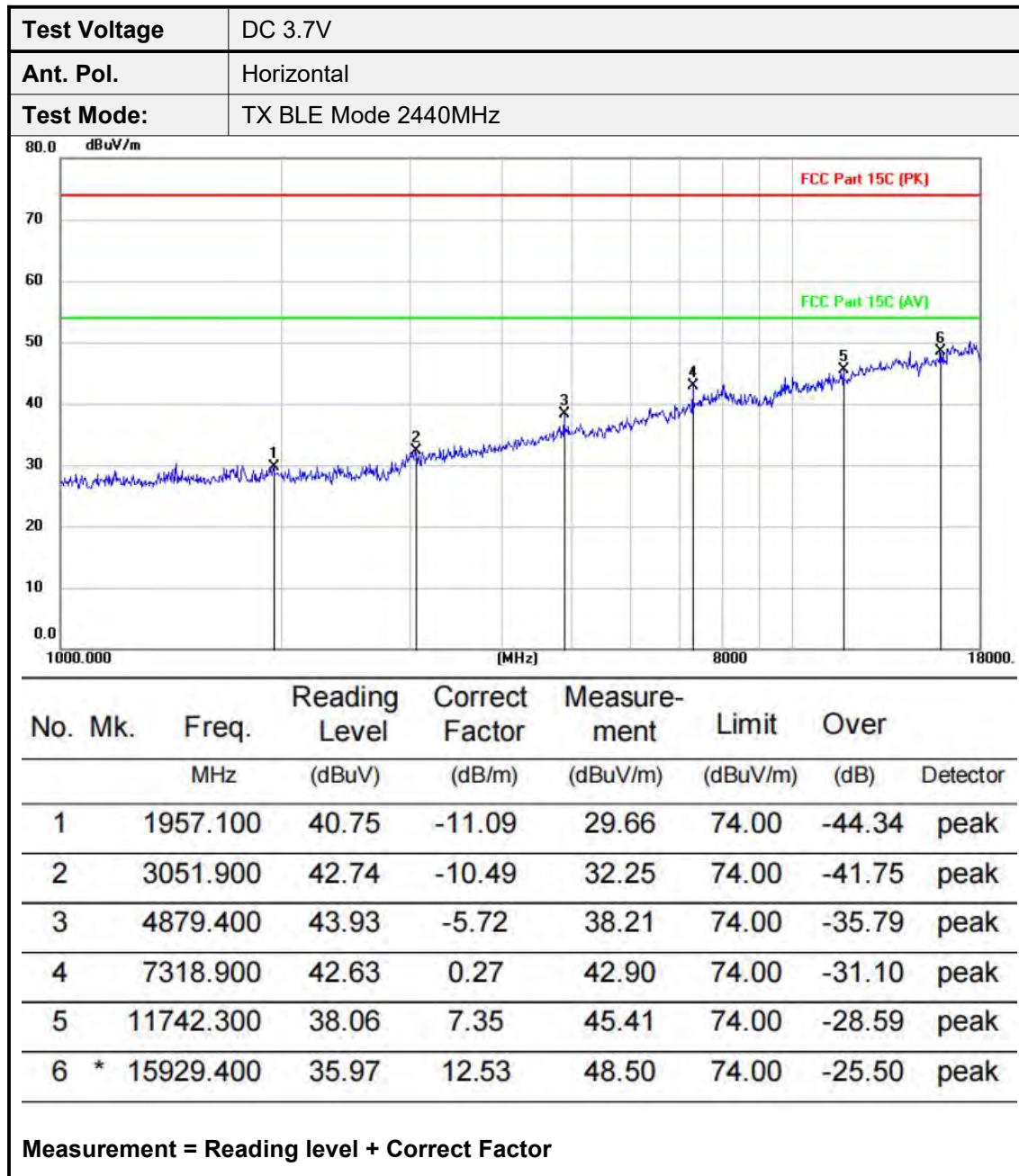
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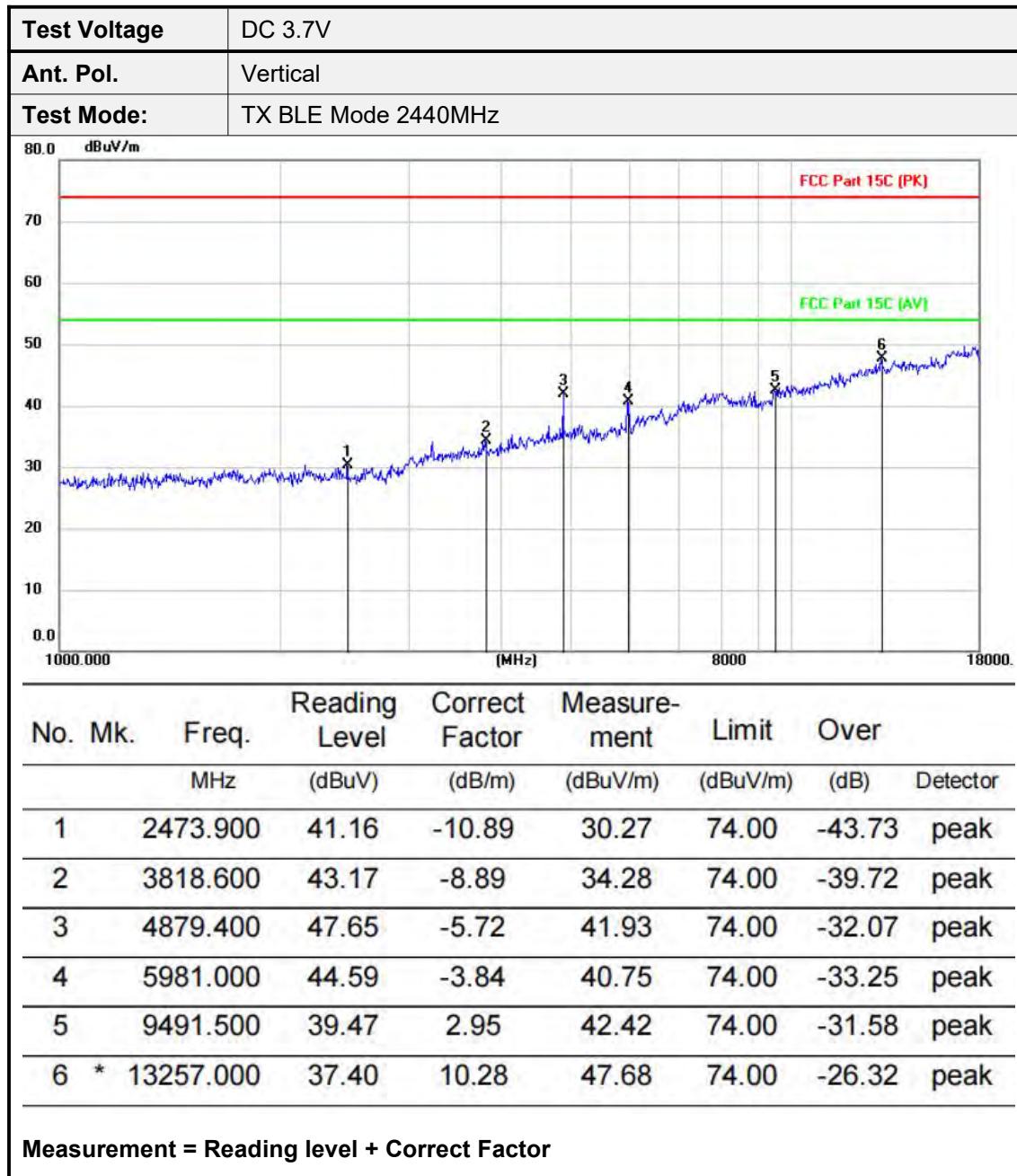
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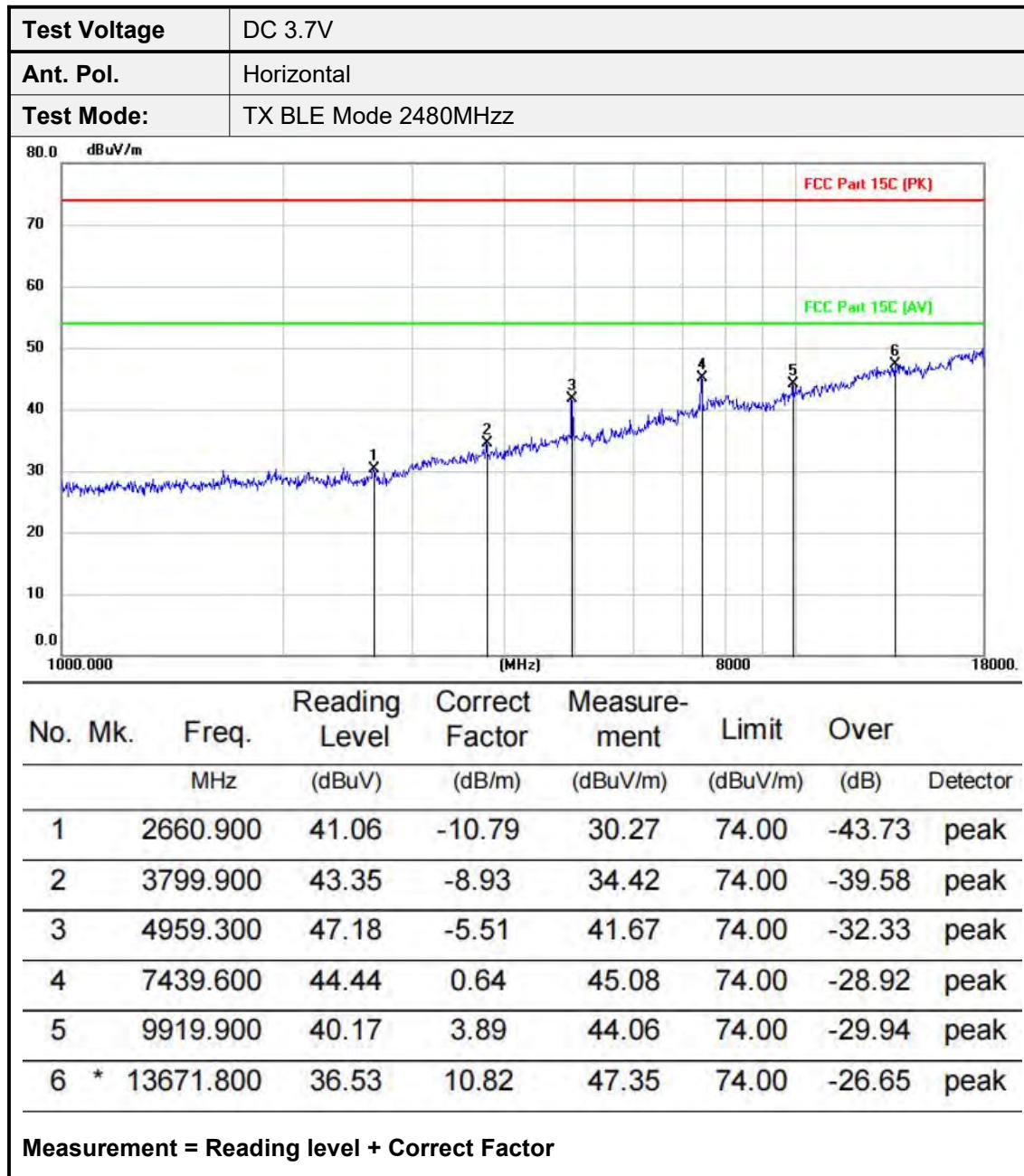
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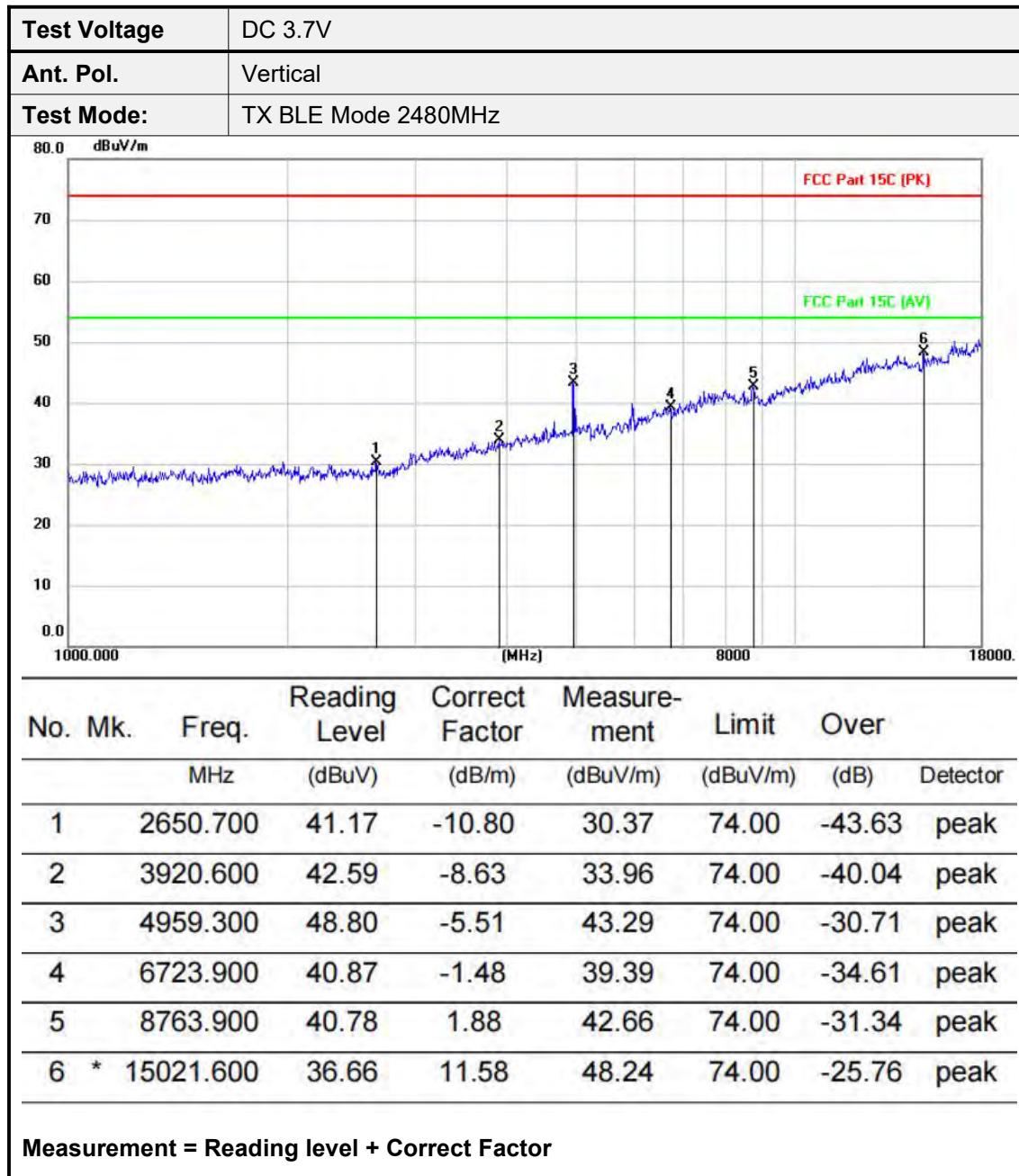
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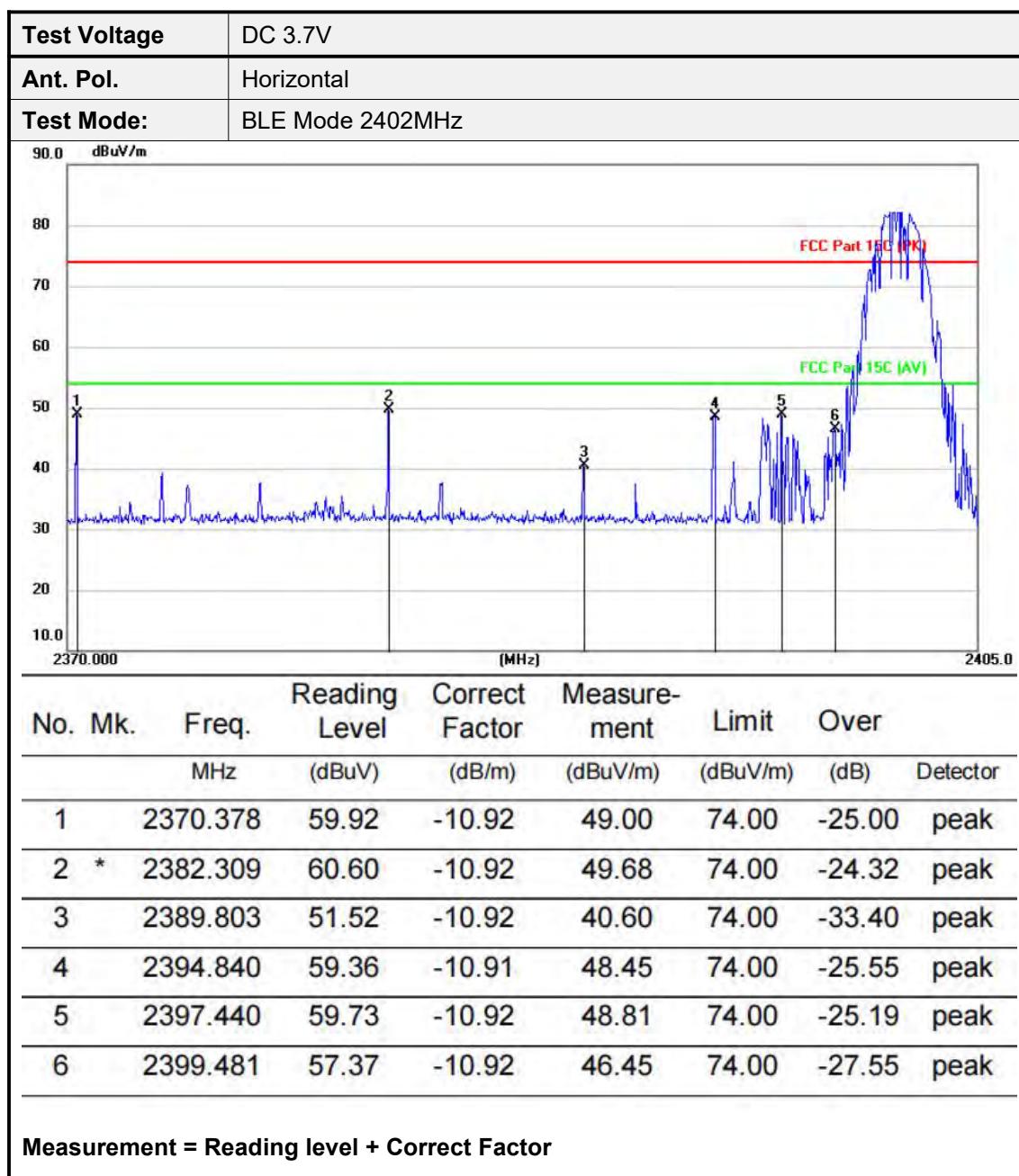
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Note:

1. All test modes had been tested. The BLE 1Mbps modulation is the worst case and recorded in the report.
2. 18GHz-26.5GHz is the background of the site, there is no radiated spurious.

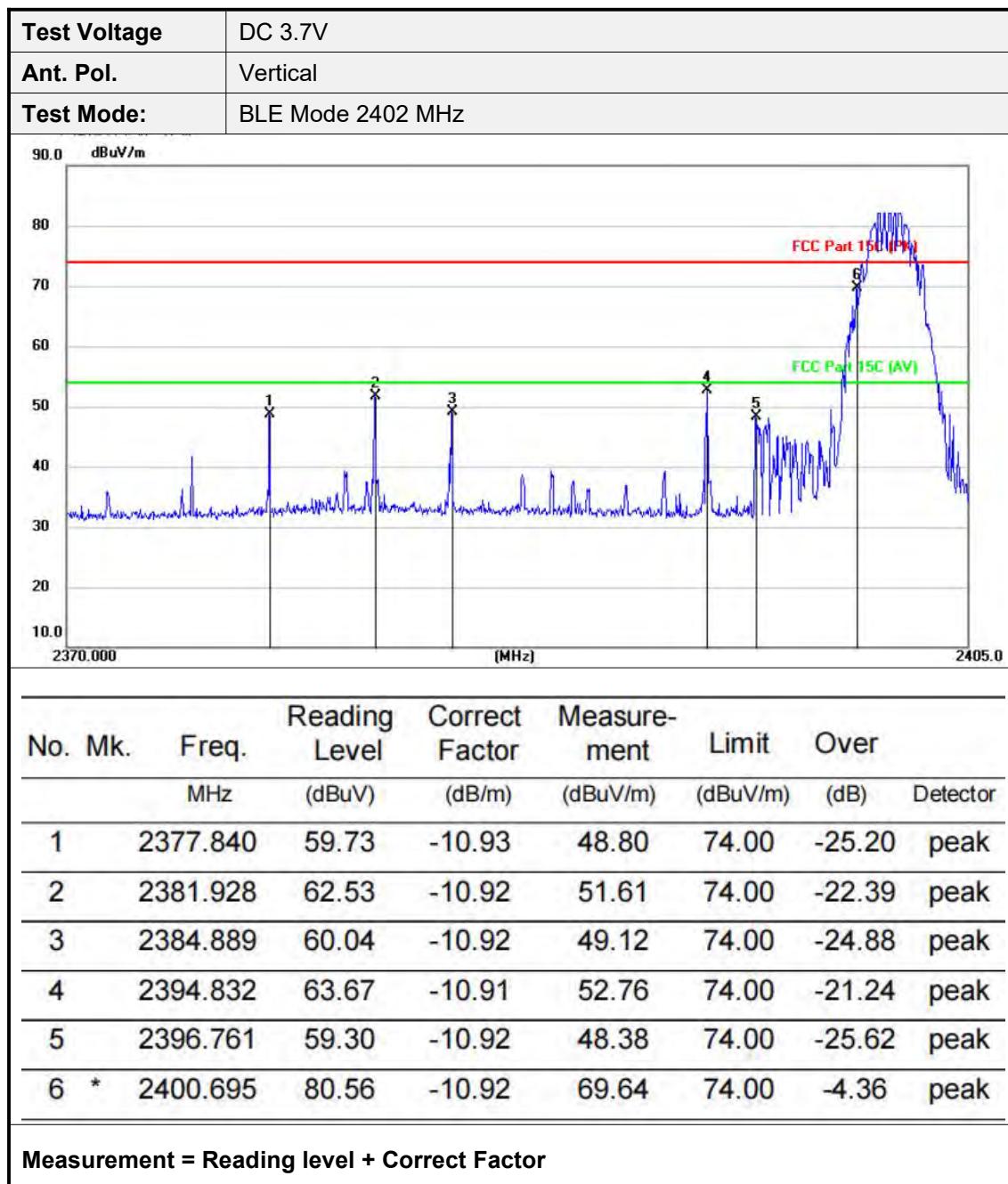
Band Edge



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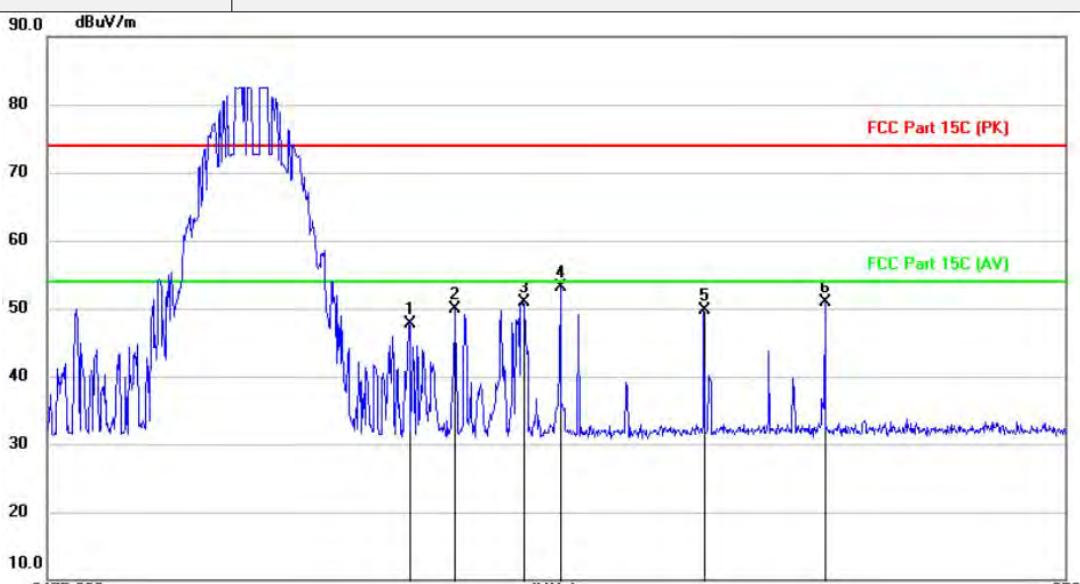
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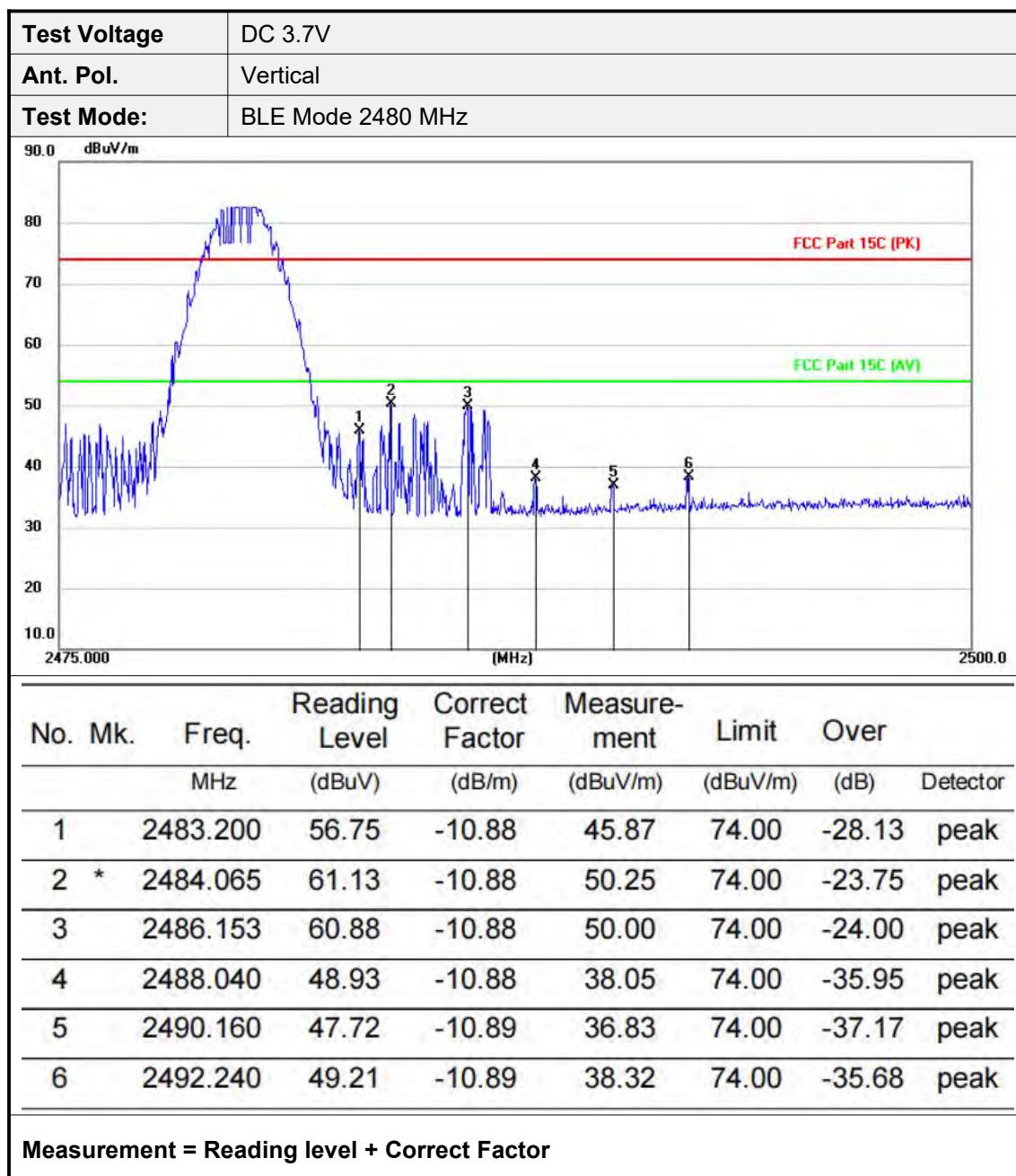
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Test Voltage	DC 3.7V						
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode 2480MHz						
							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)
1		2483.852	58.55	-10.88	47.67	74.00	-26.33
2		2484.988	60.84	-10.88	49.96	74.00	-24.04
3		2486.665	61.73	-10.88	50.85	74.00	-23.15
4	*	2487.588	63.97	-10.88	53.09	74.00	-20.91
5		2491.113	60.58	-10.89	49.69	74.00	-24.31
6		2494.080	61.84	-10.88	50.96	74.00	-23.04
Measurement = Reading level + Correct Factor							

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4.3 Maximum Peak Output Power

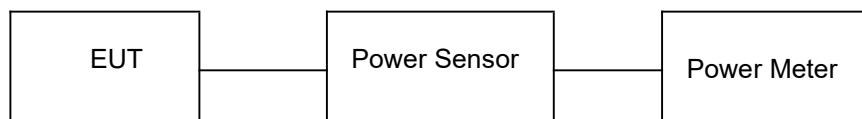
Limit

The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration



Test Results

Type	Channel	Output power (dBm)	Limit (dBm)	Result
GFSK 1Mbps	00	4.82	30.00	Pass
	19	4.15		
	39	3.14		
GFSK 2Mbps	00	4.79	30.00	Pass
	19	4.12		
	39	3.06		

Note: 1.The test results including the cable lose.

4.4 Power Spectral Density

Limit

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

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW \geq 3 kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

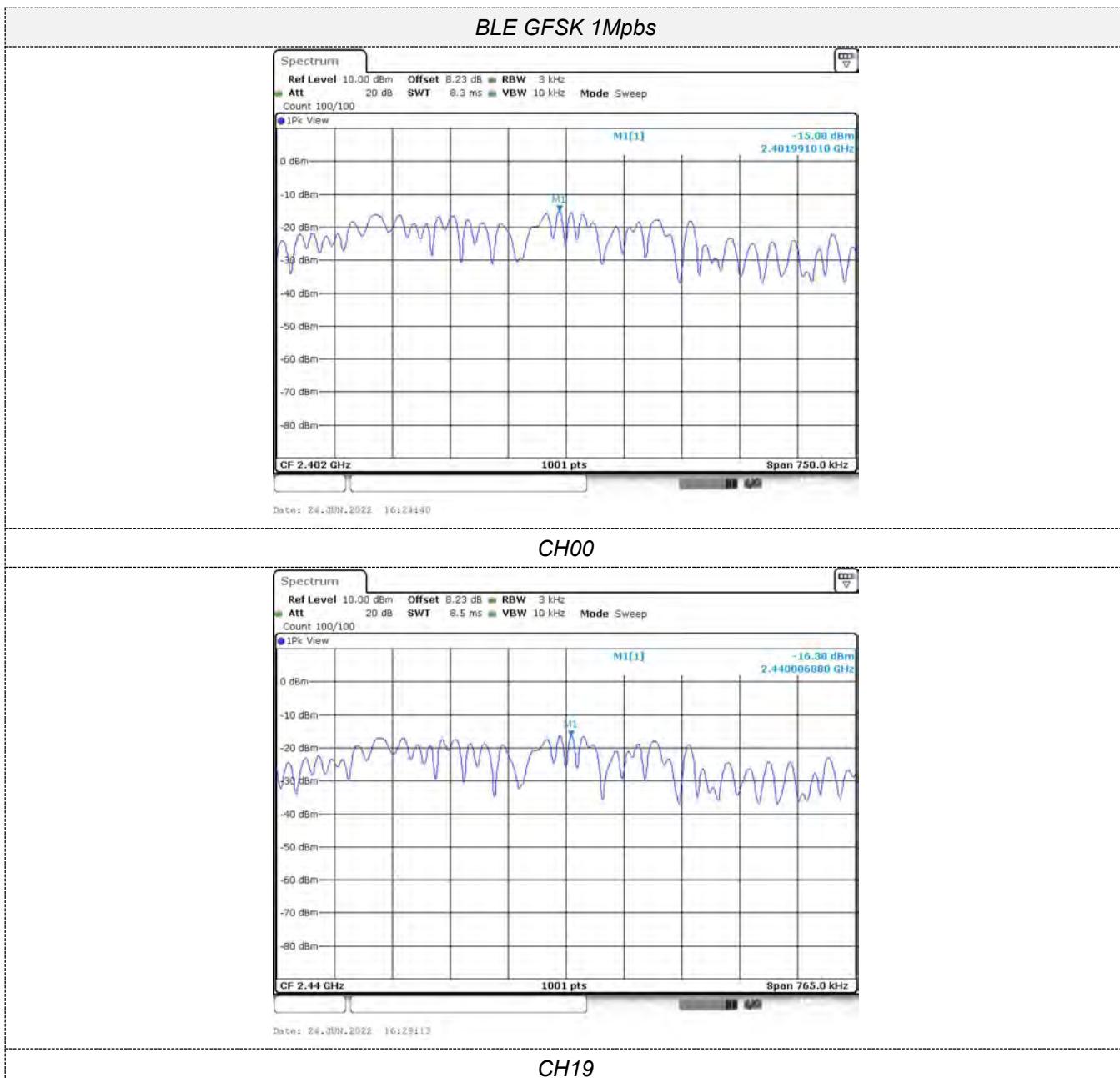
Test Configuration



Test Results

Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
GFSK 1Mbps	00	-15.08	8.00	Pass
	19	-16.38		
	39	-16.83		
GFSK 2Mbps	00	-17.78	8.00	Pass
	19	-18.36		
	39	-19.34		

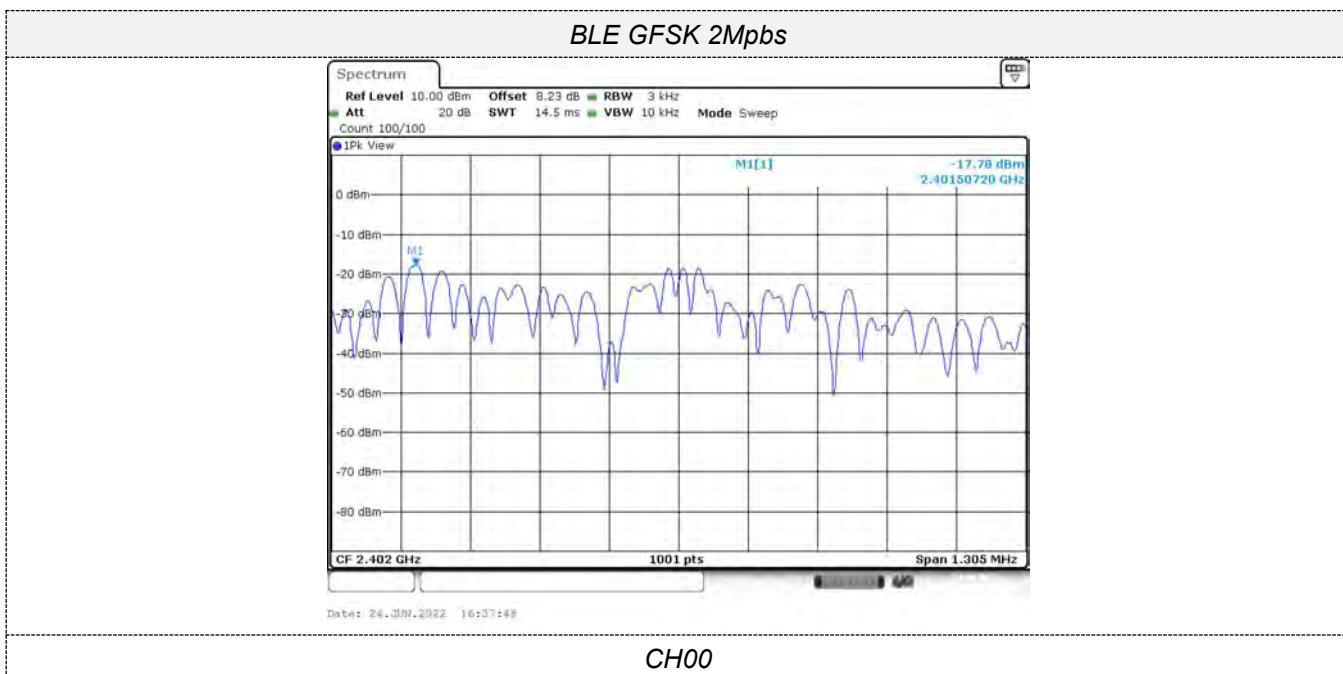
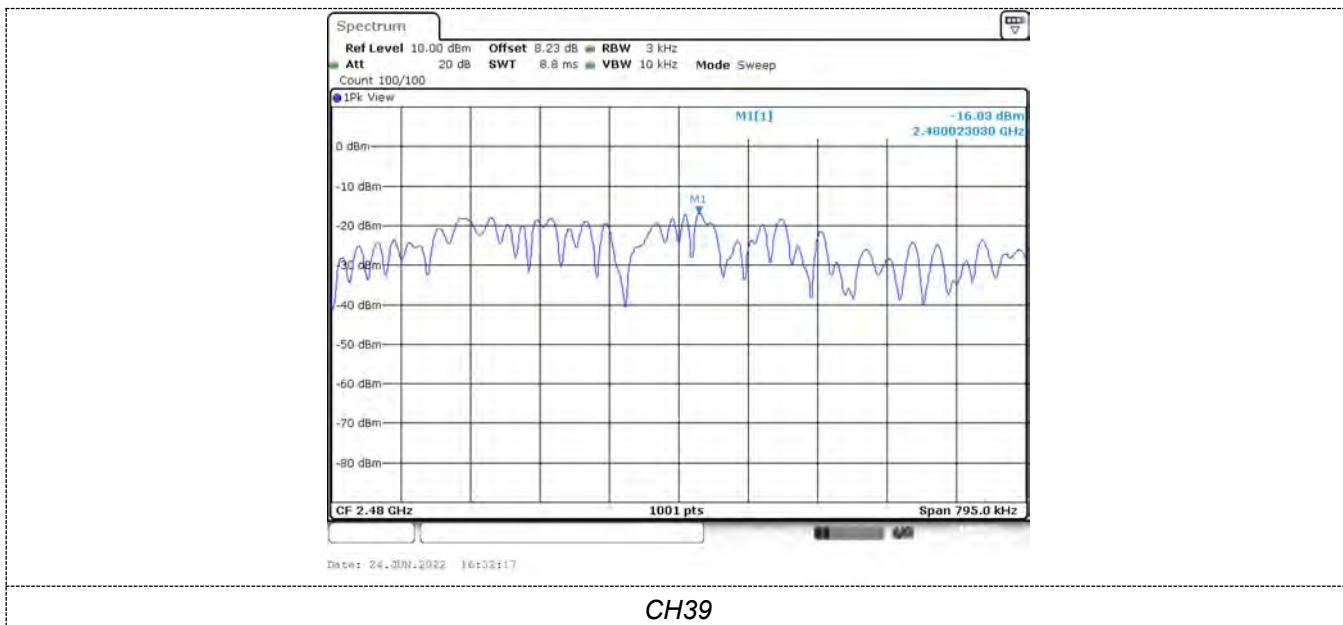
Test plot as follows:

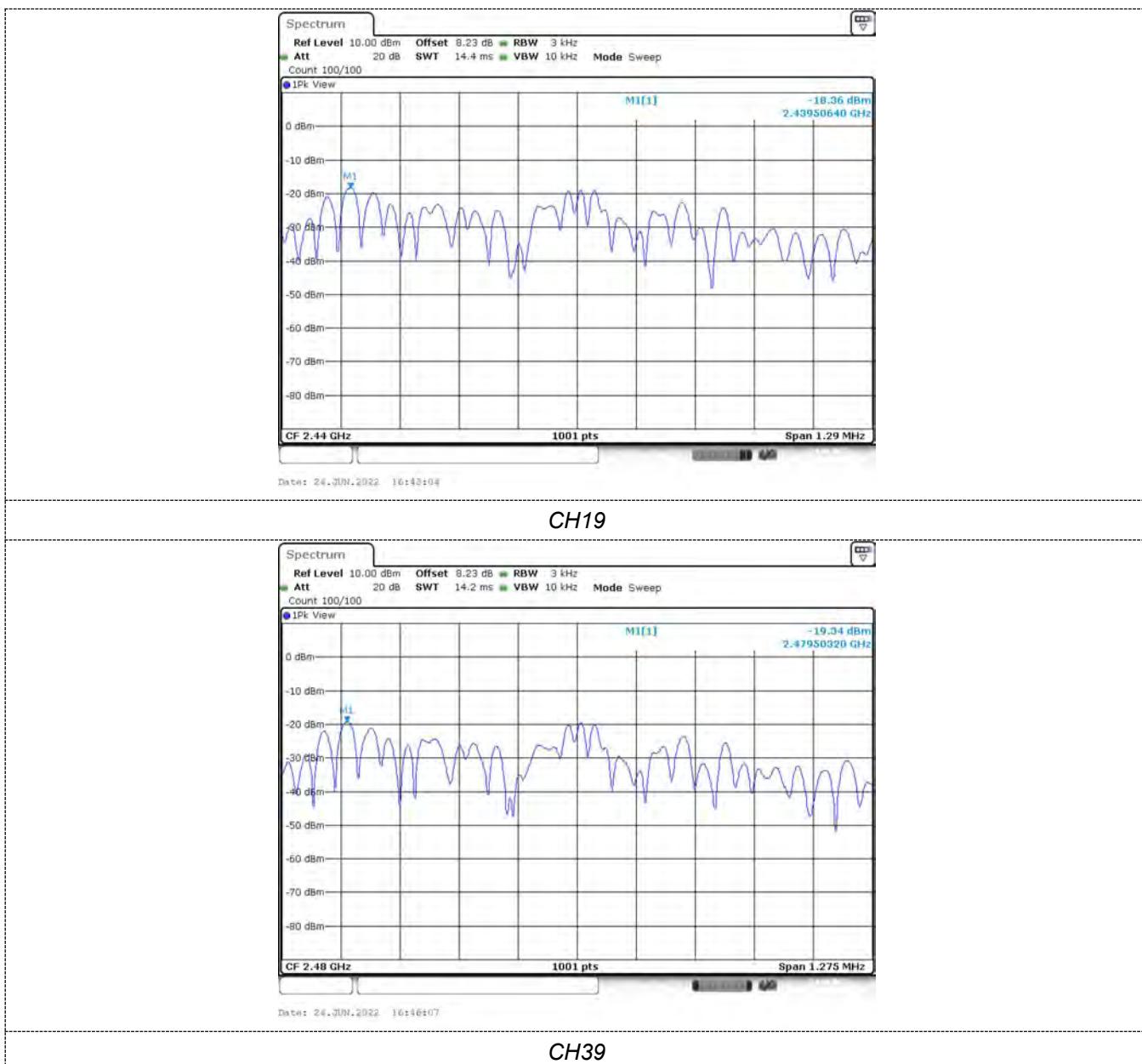


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4.5 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

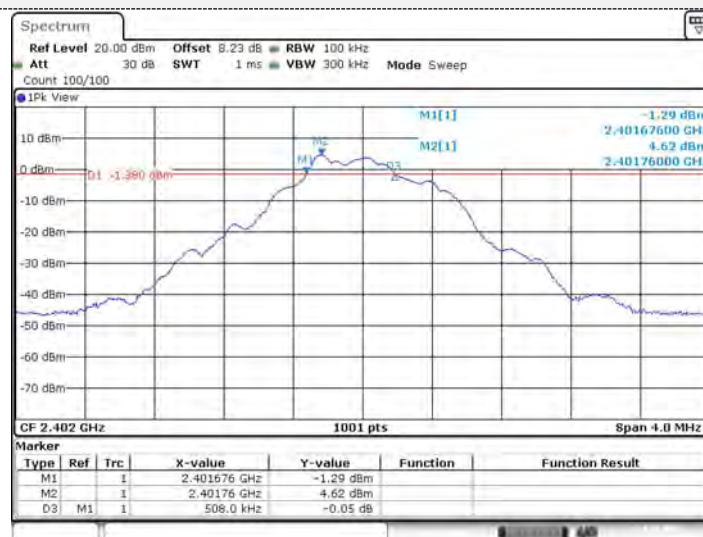
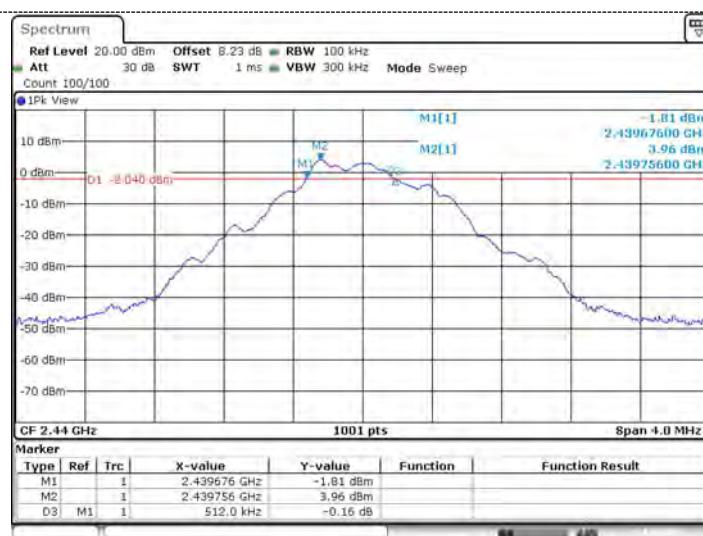
Test Configuration



Test Results

Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
GFSK 1Mbps	00	0.508	≥500	Pass
	19	0.512		
	39	0.528		
GFSK 2Mbps	00	0.868	≥500	Pass
	19	0.860		
	39	0.852		

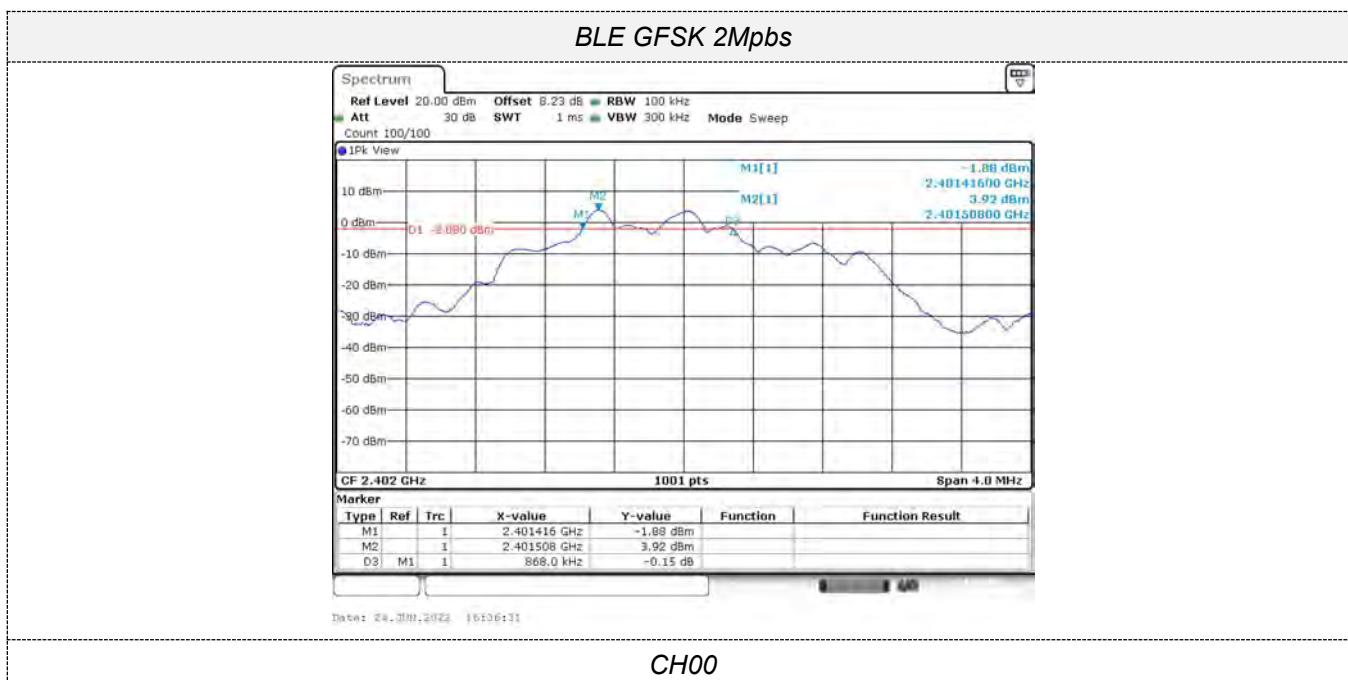
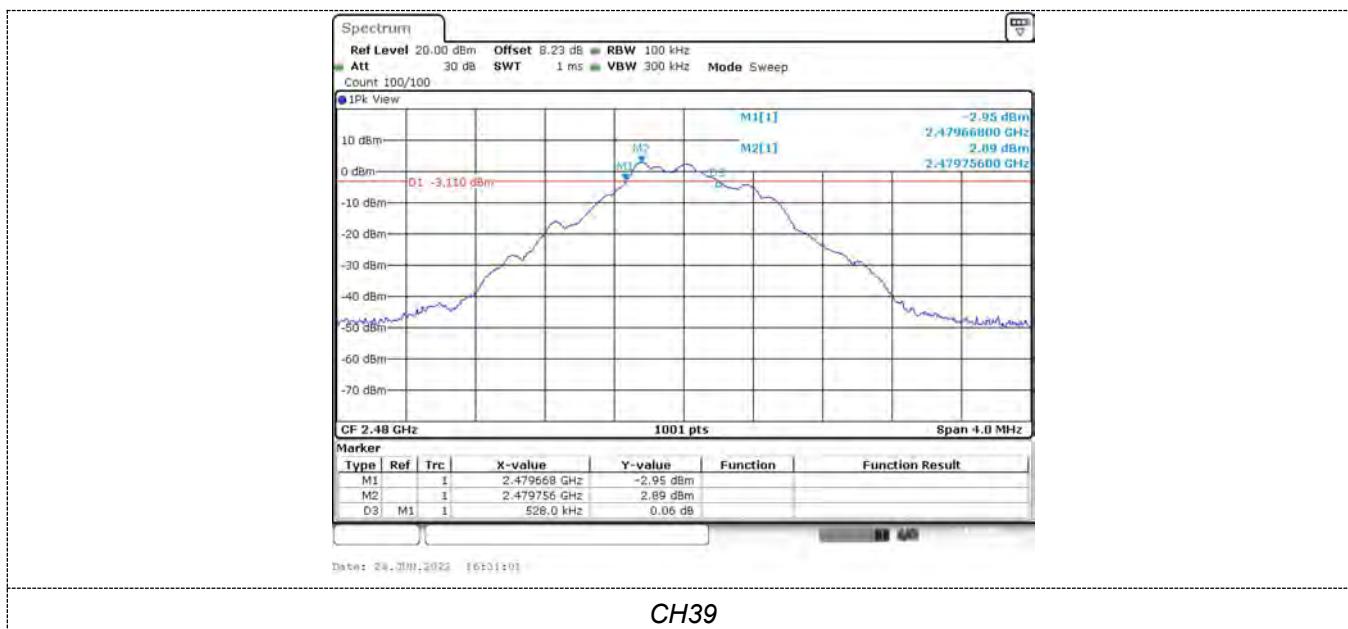
Test plot as follows:

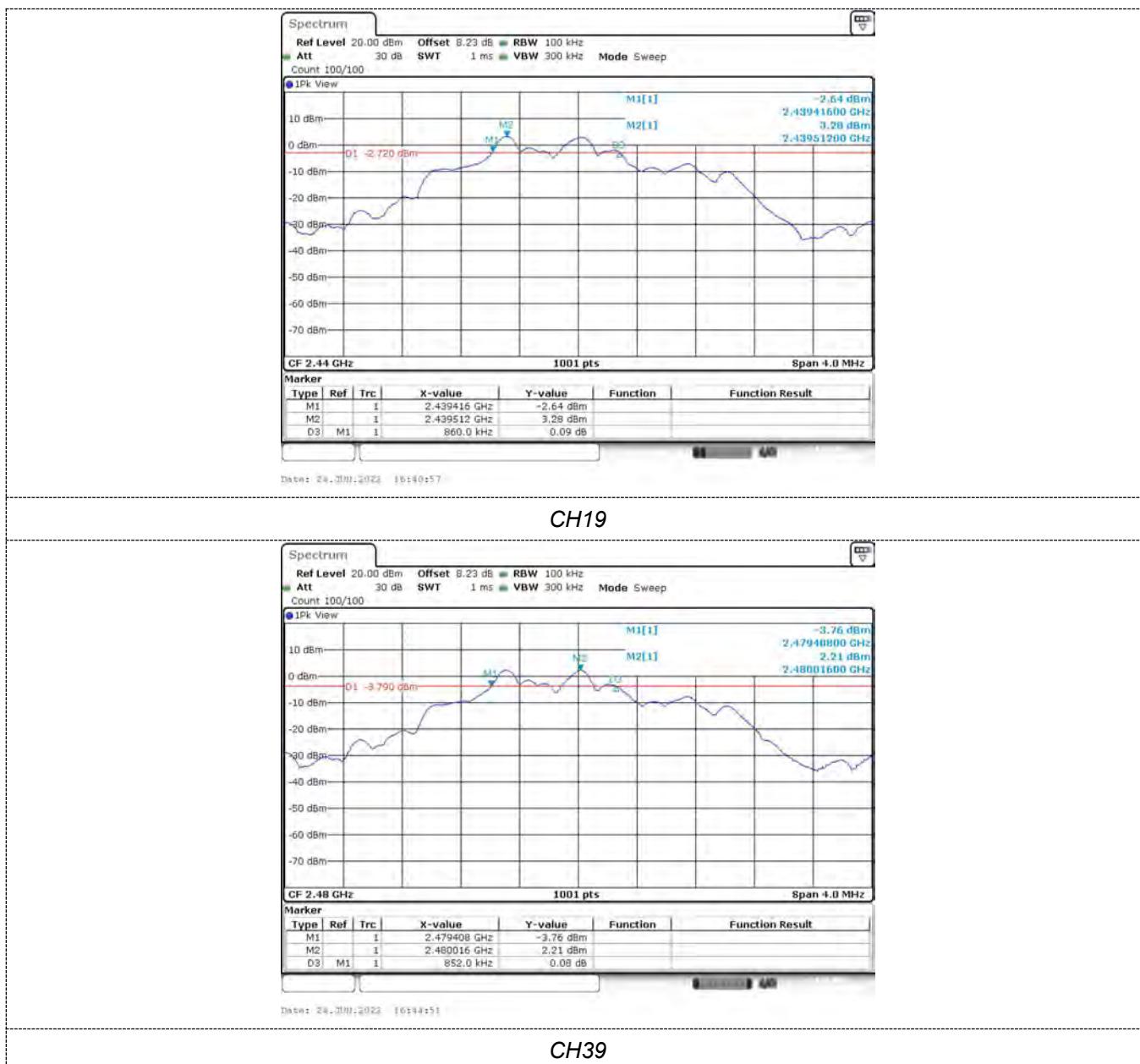
BLE GFSK 1Mbps

CH00

CH19

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4.6 Out-of-band Emissions

Limit

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.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

Test Configuration



Test Results

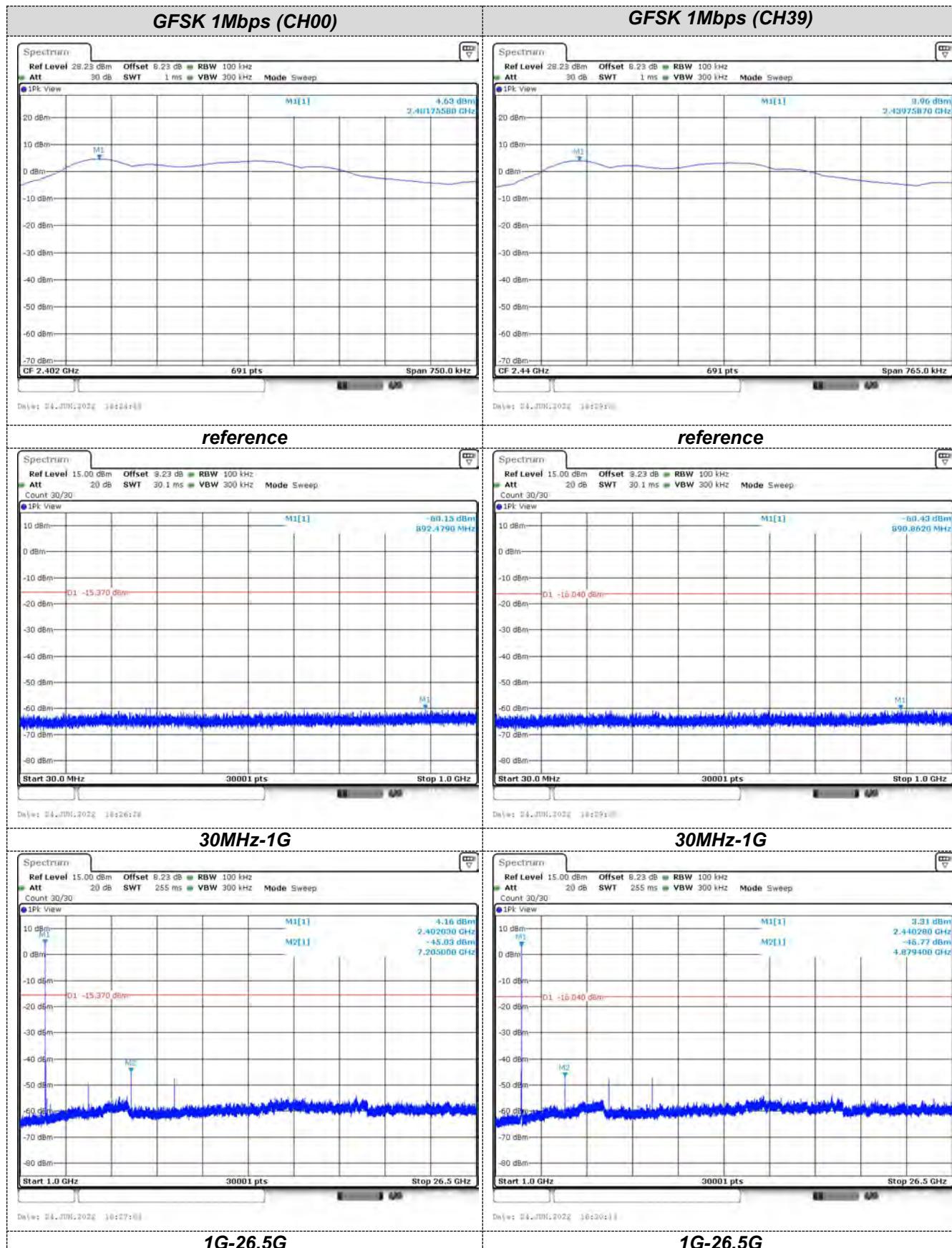
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data.

Test plot as follows:

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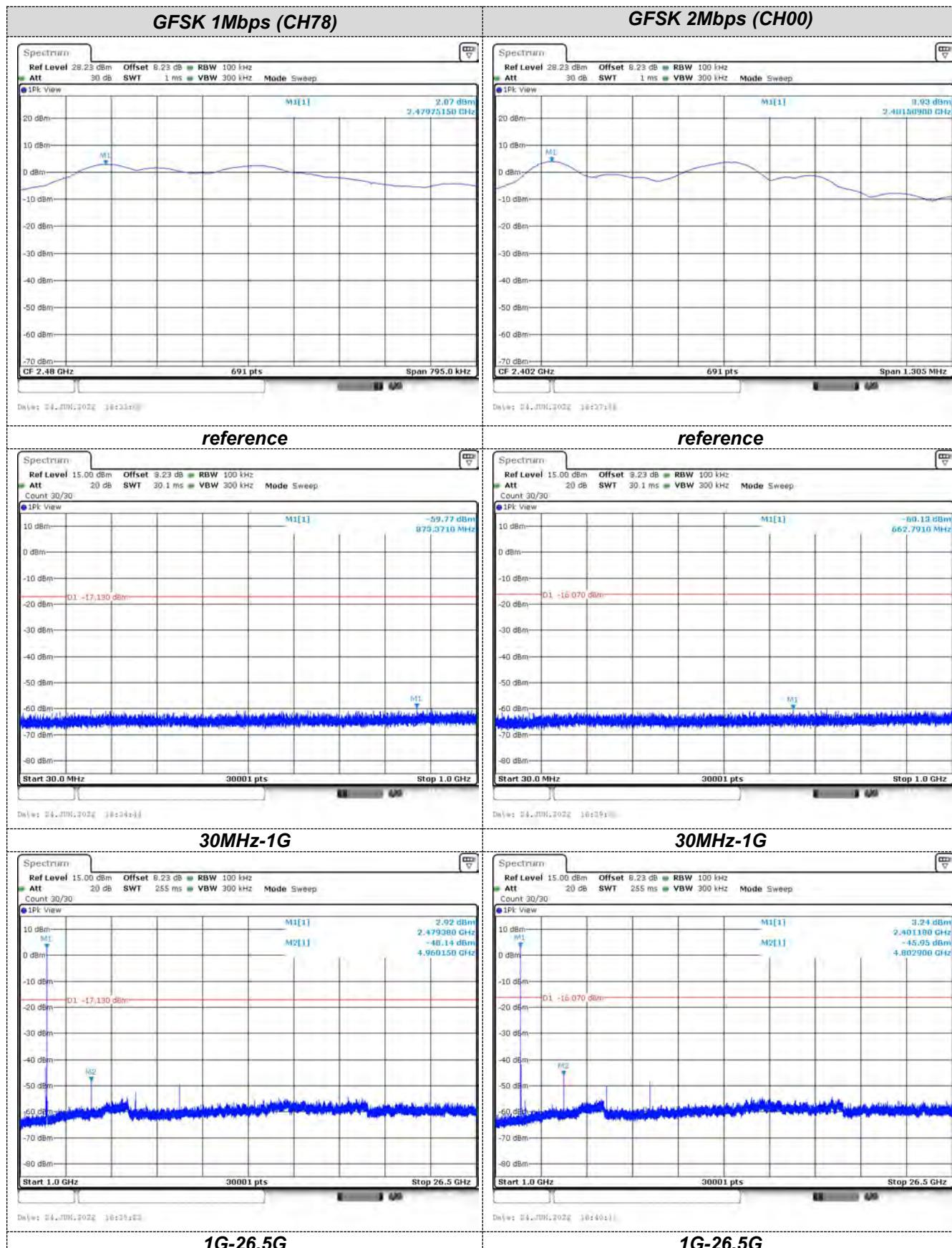
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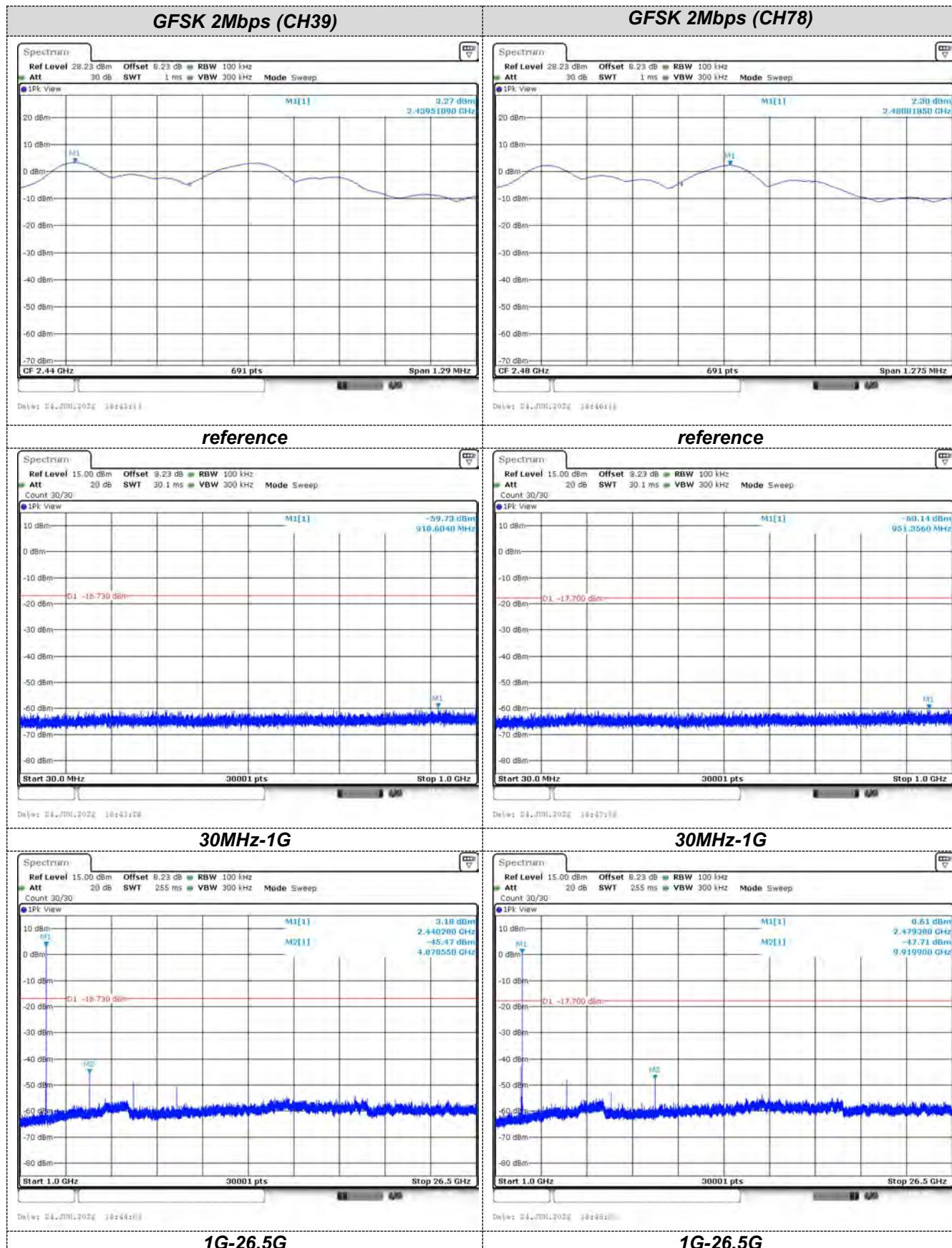
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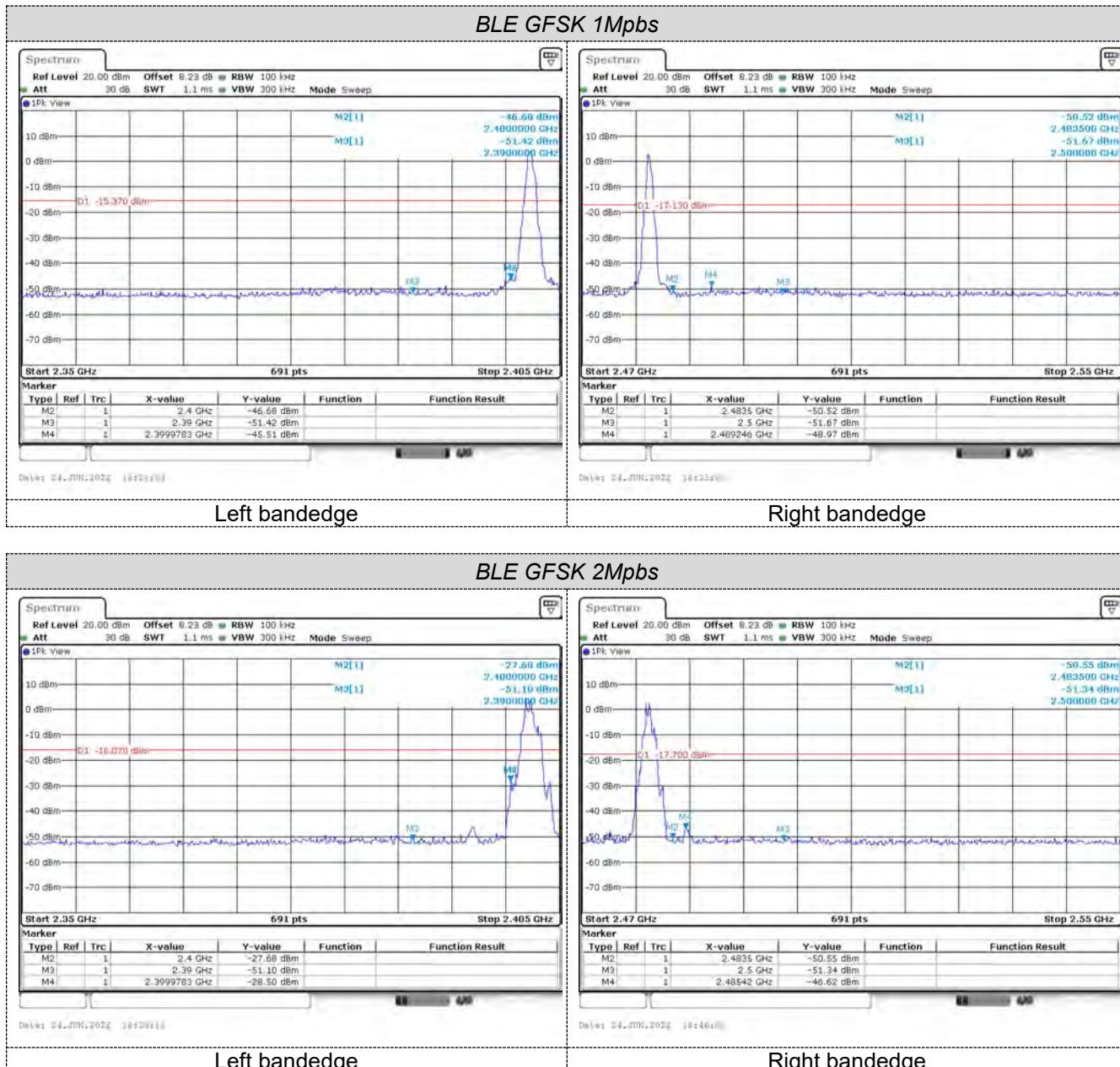
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Band-edge Measurements for RF Conducted Emissions:


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4.7 Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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. 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

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1) (I):

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Antenna Connected Construction

The maximum gain of antenna was -0.7 dBi.

5. Test Setup Photos of the EUT

Radiated Measurement (Below 1GHz)



Radiated Measurement (Above 1GHz)

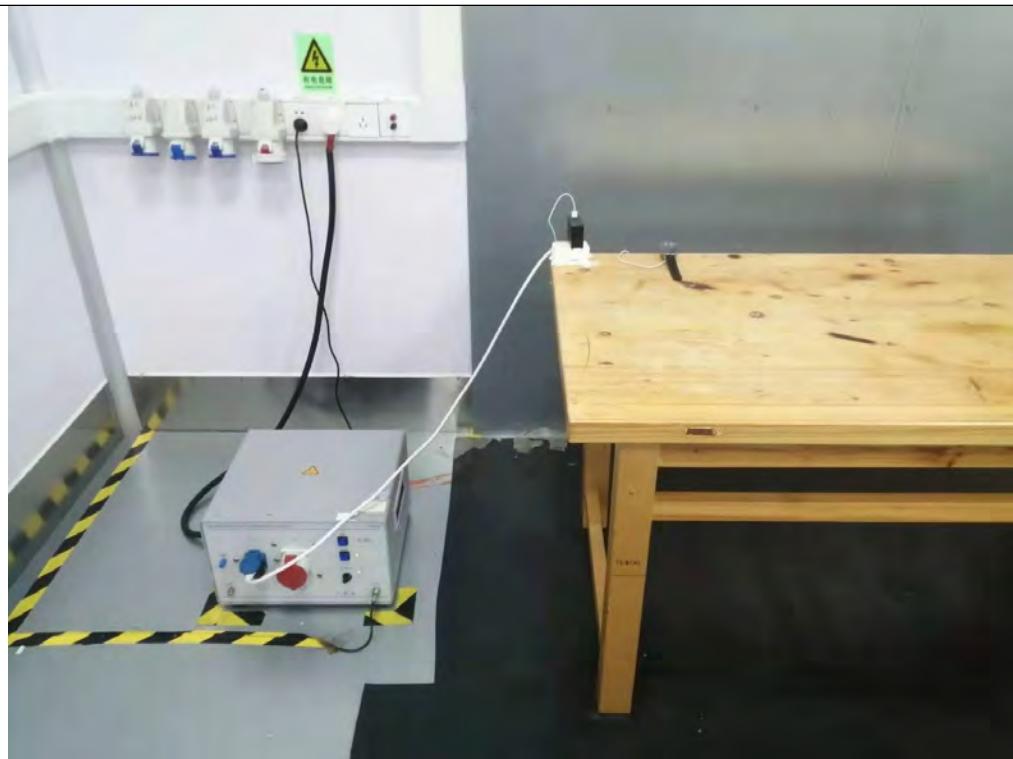


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Conducted Emission



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6. Photos of the EUT

External Photographs

Photo 1



Photo 2



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Photo 3



Photo 4



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Photo 5



Photo 6



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Photo 7



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Internal Photographs

Photo 1



Photo 2



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Photo 3

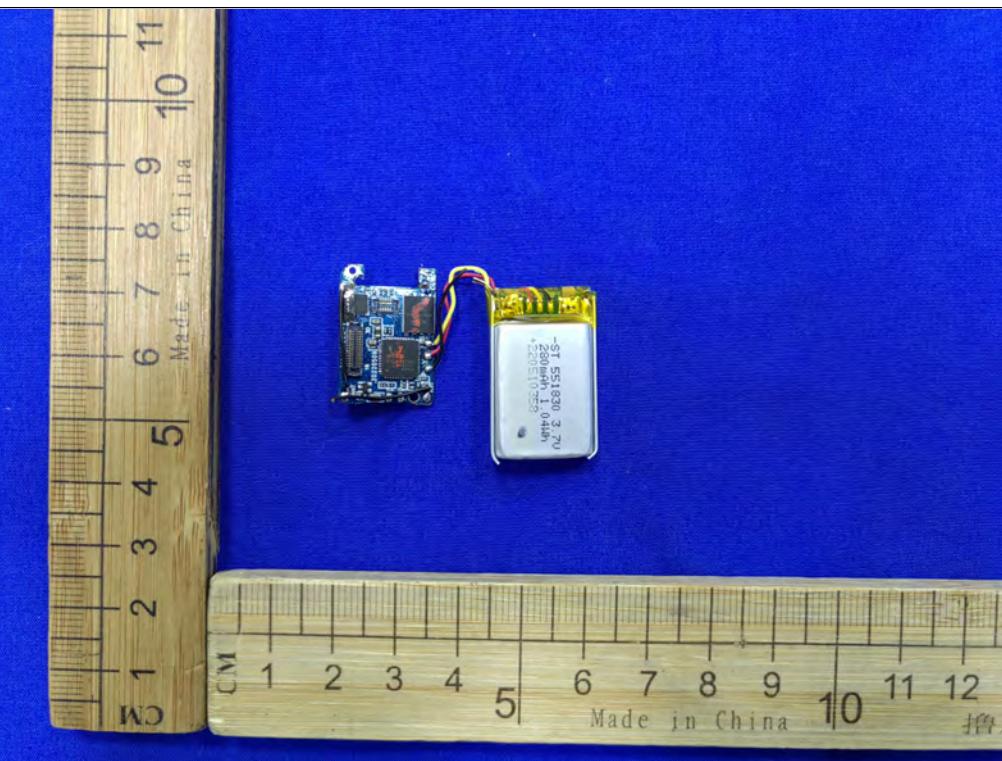
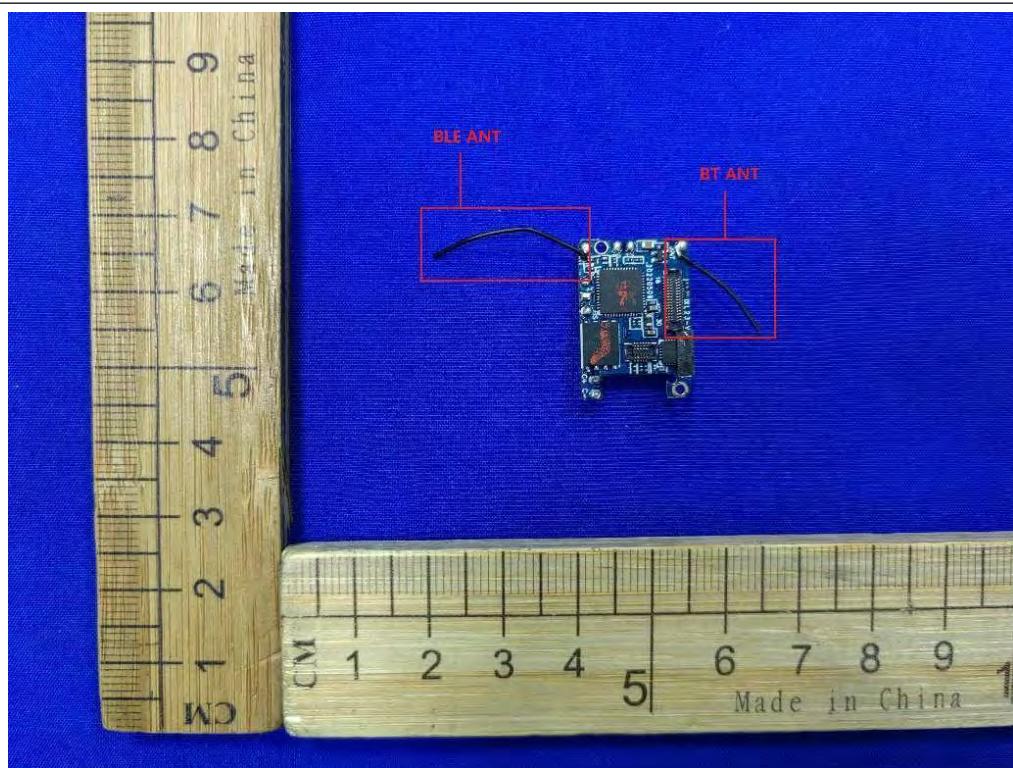


Photo 4



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Photo 5

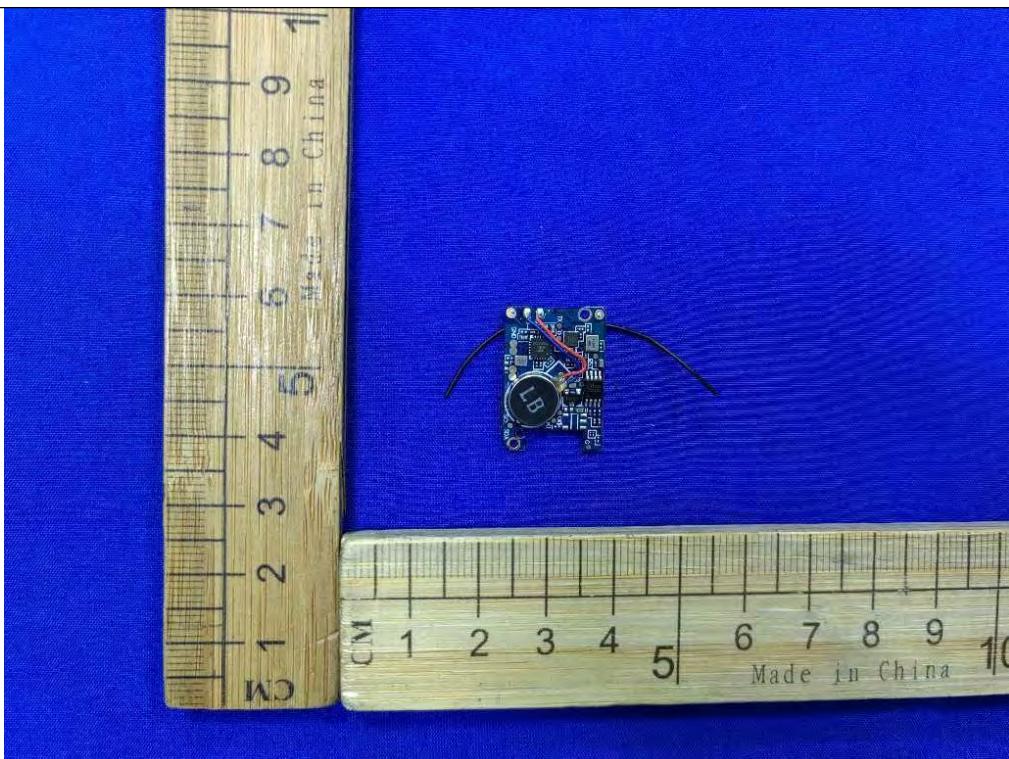
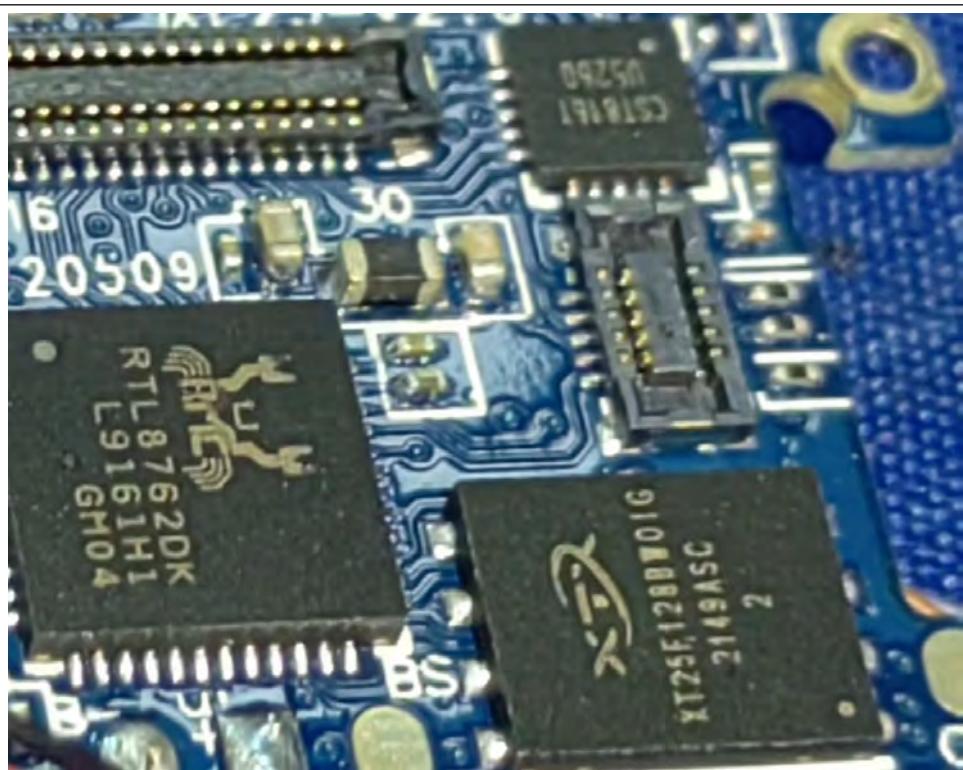


Photo 6



***** **End of Report** *****

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