

TEST REPORT

Report No...... : **ATA0126090161**

FCC ID..... : **2BX9J-WS369-01A**

Applicant..... : **Dongguan Cado Electronic Technology Co.,Ltd**

Address..... : 209, Building 1, No.6 Beiyuan Street, Chang'an Town,Dongguan City,Guangdong Province, China

Manufacturer..... : **Dongguan Cado Electronic Technology Co.,Ltd**

Address..... : 209, Building 1, No.6 Beiyuan Street, Chang'an Town,Dongguan City,Guangdong Province, China

Product Name..... : **Vibrator**

Trade Mark..... : N/A

Test Model..... : WS369-01A

Series Model(s)..... : N/A

Standard..... : **FCC CFR Title 47 Part 15 Subpart C Section 15.247**

Test procedure..... : **ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024**

Date of Receipt..... : Sep. 05, 2026

Date of Test Date..... : Sep. 05, 2026~Sep. 10, 2026

Date of issue..... : Sep. 10, 2026

Test result..... : **Pass**

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Testing Laboratory Name..... : **Shenzhen ATA Testing Lab. Inc**

Address..... : 4th Floor, Building 10, No.60 Nanchang Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen City, China

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Sep. 10, 2026	Original



1.3. Test Description

FCC Part 15 Subpart C(15.247)			
Test Item	Standard Section	Result	Remark
	FCC		
Antenna Requirement	15.203	Pass	
Conducted Emission	15.207	Pass	
Restricted Bands	15.205	Pass	
Peak Output Power	15.247(b)	Pass	
Band Edge Emissions	15.247(d)	Pass	
Power Spectral Density	15.247(e)	Pass	
Radiated Emission	15.205&15.209	Pass	
6dB Bandwidth	15.247(a)(1)(i)(2)	Pass	
Spurious RF Conducted Emission	15.247(d)	Pass	

Note:(1) "N/A" denotes test is not applicable to this device.



1.4. Test Facility

Test Site	Shenzhen ATA Testing Lab. Inc
Test Site Location	4th Floor, Building 10, No.60 Nanchang Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen City, China
Telephone:	+86 0755-2783-0095
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The test facility is recognized, certified, or accredited by the organizations:	A2LA Accreditation Lab Certificate Number: 839205
	FCC Accreditation Lab Designation Number: CN1455
	ISED Accreditation Lab Designation Number: CN0201



1.5. 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 TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen ATA Testing Lab. Inc. 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. Below is the best measurement capability for Shenzhen ATA Testing Lab. Inc.

Test Items	Measurement Uncertainty	U(k=2)
Radiated Emissions 9K-30MHz	± 2.70 dB	1.96
Radiated Emissions 30~1000MHz	± 5.432 dB	1.96
Radiated Emissions 1~18GHz	± 3.88 dB	1.96
Radiated Emissions 18~40GHz	± 5.32 dB	1.96
Conducted Emissions 9kHz~150KHz	± 3.90 dB	1.96
Conducted Emissions 150Hz~30MHz	± 3.52 dB	1.96
Conducted spurious emissions	± 1.60 dB	1.96
RF Output Power Conducted	± 0.58 dB	1.96
Power Spectral Density Conducted	± 1.52 dB	1.96
Occupied Bandwidth	$\pm 0.463\%$	1.96
Humidity uncertainty	$\pm 2.0\%$ RH	1.96
Temperature uncertainty	$\pm 0.6^{\circ}\text{C}$	1.96
Barometric pressure uncertainty	0.5hPa	1.96

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

1.6. Environmental conditions

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

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050hPa

2. GENERAL INFORMATION

2.1. General Description of EUT

Product Name:	Vibrator
Trade Mark:	N/A
Test Model:	WS369-01A
Series Model(s):	N/A
Model Difference:	N/A
Power Source:	Rating Voltag: DC 5V $\pm$ 1A
Battery	DC 3.7V 350mAh 1.295Wh
Hardware version:	V1.0
Software version:	V1.0
Bluetooth 5.0+BLE	
Modulation type:	GFSK
Operation frequency:	2402MHz~2480MHz
Max Peak Output Power:	3.92Bm
Channel number:	40
Bit Rate of transmitter:	1 Mbps
Antenna type:	Internal antenna
Antenna gain:	0dBi
Note:(1)All antenna information is provided by the manufacturer, test laboratory will not be responsible if any error. (2) The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity. (3) "N/A" Indicates inapplicability	

2.2. DESCRIPTION OF THE TEST MODES

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BLE, 40 channels are provided to the EUT. Channels 00/19/39 were selected for testing.

Operation Frequency List:

Channel	Frequency (MHz)
00	2402
01	2404
⋮	⋮
19	2440
20	2442
21	2444
⋮	⋮
38	2478
39	2480

Following channel(s) was (were) selected for the test as listed below.

TESTED CHANNEL	TESTED FREQUENCY
Low	2402
Middle	2440
High	2480

2.3. BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Emission Test



RF Conducted Test



2.4. DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Mode/Type	Note
E-1	Adapter	ShenzhenBeiShi DaElectronics Co.,Ltd	K01	Test Use

Item	Equipment	Mfr/Brand	Length	Note

Note : (1) For detachable type I/O cable should be specified the length in cm in Length a column.

(2) "YES" means "with core"; "NO" means "without core".

2.5. Measurement Instruments List

Radiation emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	ATA-E-001	966 chamber	CRT	9*6*6M	CRTNDCR966	2025-03-21	2028-03-20
2	ATA-E-011	AC Power Source	XINOUEHUA	APW-1300N	202504292663	2026-05-07	2027-05-06
3	ATA-E-013	DC Power Source	XINOUEHUA	ADC250-32D	202504292667	2026-05-07	2027-05-06
4	ATA-E-033	Receiver	R&S	ESPI7	100092	2026-05-07	2027-05-06
5	ATA-E-034	Broadband antenna	Schwarzbeck	VULB9168	01839	2025-07-17	2027-07-17
6	ATA-E-035	High Frequency Horn Antenna	Schwarzbeck	BBHA 9120D	03169	2025-07-17	2027-07-17
7	ATA-E-038	Cable	Times	0-18GHz	/	2026-05-07	2027-05-06
8	ATA-E-040	6dB attenuator	Zhengchang Liubo	6dB	/	2026-05-07	2027-05-06
9	ATA-E-039	Cable	Times	0-1GHz	/	2026-05-07	2027-05-06
10	ATA-E-041	Preamplifier	COM MV	DLNA8-1-18G-2705	10241234	2026-05-07	2027-05-06
11	ATA-E-042	Preamplifier	COM MV	DLNA8-0.09-1000-1034	5252881	2026-05-07	2027-05-06
12	ATA-E-044	Filter	MWRFTesT	ZHPF6-C3 000-18000-3129	08252098	2026-05-07	2027-05-06
13	ATA-E-045	Filter	MWRFTesT	ZHPF6-C6 500-18000-175	08252097	2026-05-07	2027-05-06
14	ATA-E-046	Filter	MWRFTesT	ZBSF6-C2 400-2483.5-543	08252096	2026-05-07	2027-05-06
15	ATA-E-047	Filter	MWRFTesT	ZBSF6-C5 100-5900-5713	08252095	2026-05-07	2027-05-06
16	ATA-E-051	Spectrum Analyzer	R&S	FSV40-N	101779	2026-05-07	2027-05-06
17	ATA-E-052	Cable	HELPLIGHT	2.92J/2.92J 10M	/	2026-01-19	2027-01-18
18	ATA-E-054	Cable	HELPLIGHT	2.92J/2.92J 0.8M	/	2026-01-19	2027-01-18
19	ATA-E-059	Antenna Tower	CRT	AT-1	/	/	/
20	ATA-E-005	Temperature and humidity meter	deli	LE502-WH	/	2026-05-07	2027-05-06
21	ATA-E-064	Barometer	Qingping	CGP23W	/	2026-01-28	2027-01-27
22	ATA-E-048	Loop Antenna	ZHINA	ZN30900C	21104CCUT SE019	2026-05-07	2027-05-06
23	ATA-E-049	Horn Antenna	ECHO MICrowave.,Ltd.	OBH100400	12221225	2026-05-07	2027-05-06
24	ATA-E-051	Spectrum Analyzer	R&S	FSV40-N	101779	2026-05-07	2027-05-06

Conduction emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	ATA-E-032	EMI TEST RECEIVER	Schwarzbeck	ESCI3	1009300	2026-05-07	2027-05-06
2	ATA-E-037	Pulse Limiter	Schwarzbeck	VTSD 9561 F-N	/	2026-05-07	2027-05-06
3	ATA-E-069	Conductive test cable	Schwarzbeck	2.5m	N/A	2026-01-28	2027-01-27
4	ATA-E-036	Artificial Mains Network	Schwarzbeck	NSLK 8127	01169	2026-05-07	2027-05-06
5	ATA-E-072	Three-Line V-Network	ZHINAN	2N33770A	13003	2026-01-26	2027-01-27
6	ATA-E-009	Temperature and humidity meter	deli	LE502-WH	/	2026-05-07	2027-05-06
7	ATA-E-010	Barometer	Qingping	CGP23W	/	2026-05-07	2027-05-06

RF Conducted Test							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	ATA-E-029	Spectrum Analyzer	Keysight	N9020A	MY50530404	2026-05-07	2027-05-06
2	ATA-E-030	MXG Analog Signal Generator	Agilent	N5181A	MY47420598	2026-05-07	2027-05-06
3	ATA-E-031	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	161163	2026-05-07	2027-05-06
4	ATA-E-043	Radio Control Unit	MWRFTest	MW100-RFCB	MW250428A TA-55	2026-05-07	2027-05-06

Note:

1)The Cal. Interval was one year.

2)The cable loss has calculated in test result which connection between each test instruments.

2.5. Test Software

Software name	Model	Version
Conducted emission Measurement Software	EZ-EMC	FARAD-3A1.1+
Radiated emission Measurement Software	EZ-EMC	FARAD-3A1.1+
Bluetooth and WIFI Test System	MWRF8310	2.0.0.0

3. TEST ITEM AND RESULTS

3.1. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C 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 Information

The maximum gain of antenna was 0dBi. Antenna type: Internal antenna

Note: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, SHENZHEN ATA TESTING LAB. INC. does not assume any responsibility.



3.2. Conducted Emission

Limit

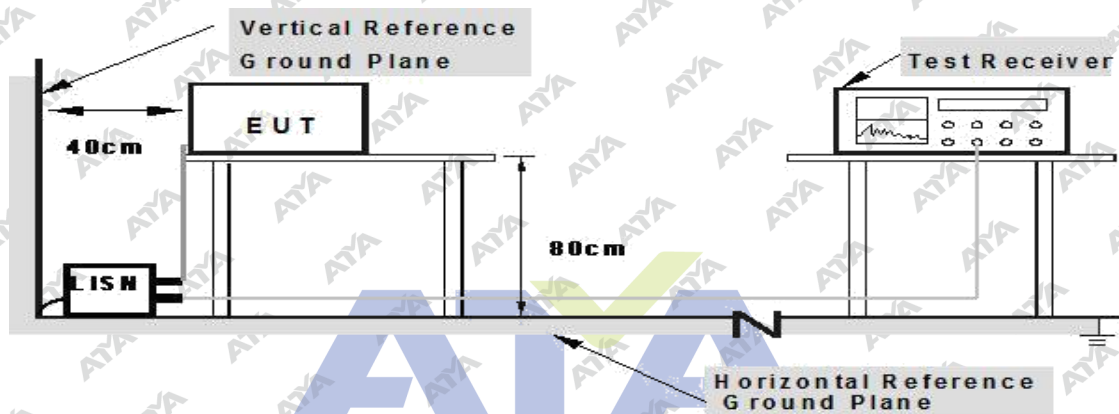
Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

Test Configuration



Test Procedure

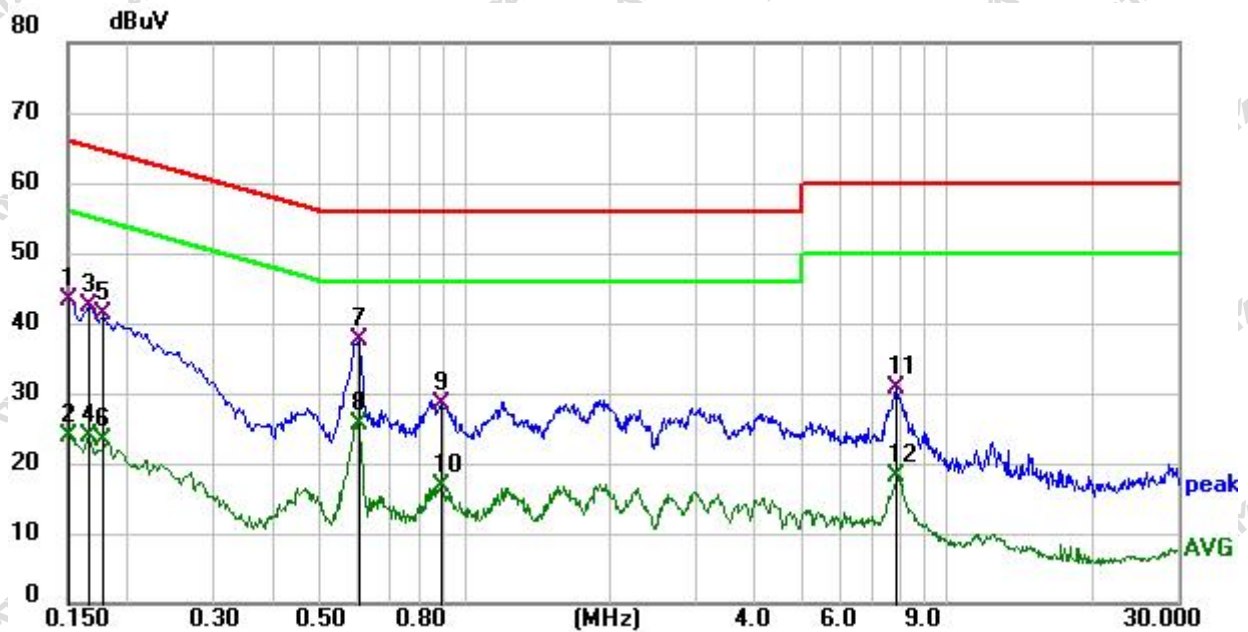
1. The EUT was setup according to ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 requirements.
2. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
3. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
4. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
5. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
6. During the above scans, the emissions were maximized by cable manipulation.

Test Mode:

Please refer to the clause 2.3.

Test Results

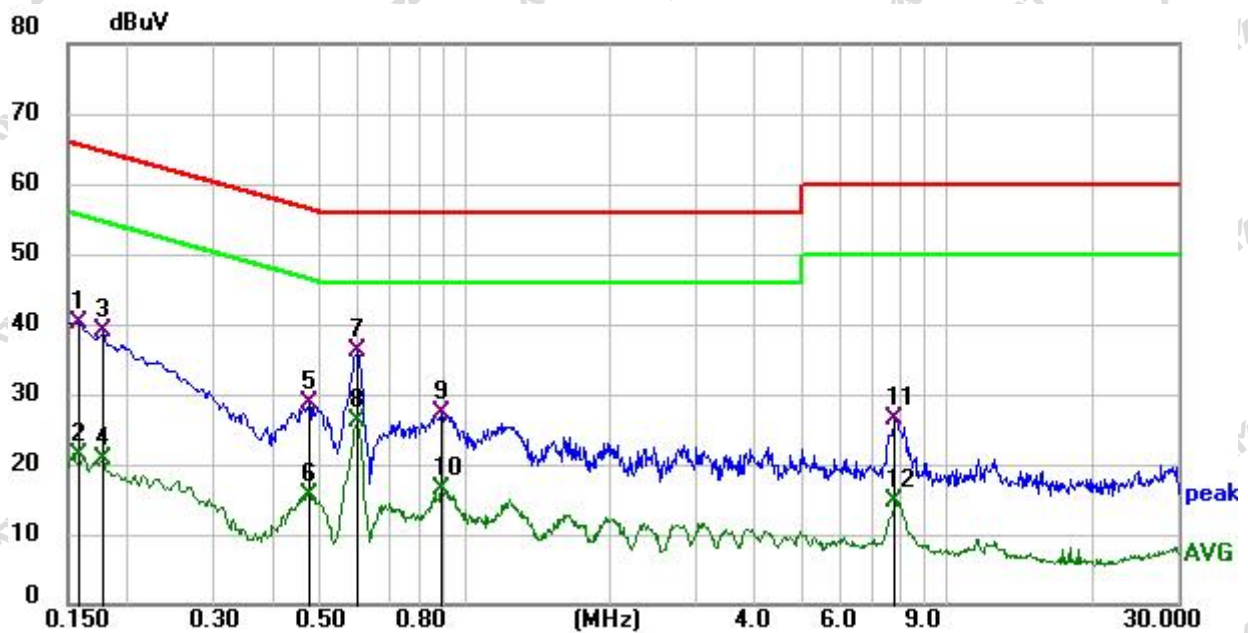
EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	L
Temperature	24.8°C	Humidity	52.1%
Test Mode:	Charging+TX	Test Voltage:	DC 5V from USB Port AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	33.28	10.11	43.39	66.00	-22.61	QP
2	0.1500	13.83	10.11	23.94	56.00	-32.06	AVG
3	0.1660	32.20	10.11	42.31	65.16	-22.85	QP
4	0.1660	13.85	10.11	23.96	55.16	-31.20	AVG
5*	0.1780	31.09	10.10	41.19	64.58	-23.39	QP
6	0.1780	13.13	10.10	23.23	54.58	-31.35	AVG
7	0.6020	27.39	10.15	37.54	56.00	-18.46	QP
8	0.6020	15.39	10.15	25.54	46.00	-20.46	AVG
9	0.8980	18.27	10.14	28.41	56.00	-27.59	QP
10	0.8980	6.64	10.14	16.78	46.00	-29.22	AVG
11	7.8300	20.61	10.21	30.82	60.00	-29.18	QP
12	7.8300	7.80	10.21	18.01	50.00	-31.99	AVG

Remark: 1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) - Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	N
Temperature	24.8°C	Humidity	52.1%
Test Mode:	Charging+TX	Test Voltage:	DC 5V from USB Port AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	30.06	10.11	40.17	65.57	-25.40	QP
2	0.1580	11.16	10.11	21.27	55.57	-34.30	AVG
3	0.1780	28.77	10.10	38.87	64.58	-25.71	QP
4	0.1780	10.65	10.10	20.75	54.58	-33.83	AVG
5*	0.4740	18.56	10.13	28.69	56.44	-27.75	QP
6	0.4740	5.38	10.13	15.51	46.44	-30.93	AVG
7	0.5980	26.05	10.14	36.19	56.00	-19.81	QP
8	0.5980	15.89	10.14	26.03	46.00	-19.97	AVG
9	0.8980	17.20	10.14	27.34	56.00	-28.66	QP
10	0.8980	6.16	10.14	16.30	46.00	-29.70	AVG
11	7.8100	16.29	10.21	26.50	60.00	-33.50	QP
12	7.8100	4.53	10.21	14.74	50.00	-35.26	AVG

Remark: 1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) - Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

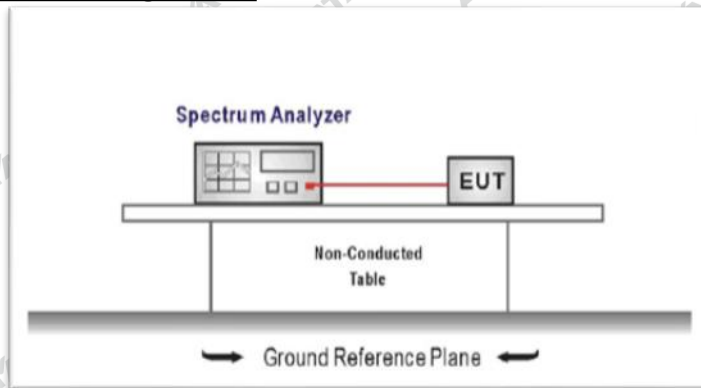
3.3. Band edge and Spurious Emission (conducted)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

Test Configuration



Test Procedure

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Establish a reference level by using the following procedure
Center frequency=DTS channel center frequency
The span = 1.5 times the DTS bandwidth.
RBW = 100 kHz, VBW $\geq 3 \times$ RBW
Detector = peak, Sweep time = auto couple, Trace mode = max hold
Allow trace to fully stabilize
Use the peak marker function to determine the maximum PSD level

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

3. Emission level measurement
Set the center frequency and span to encompass frequency range to be measured
RBW = 100 kHz, VBW $\geq 3 \times$ RBW
Detector = peak, Sweep time = auto couple, Trace mode = max hold
Allow trace to fully stabilize
Use the peak marker function to determine the maximum amplitude level.
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
5. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band excluding restricted frequency bands) are attenuated by at least the minimum requirements specified (at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz). Report the three highest emissions relative to the limit.

Test Mode

Please refer to the clause 2.3.

Test Results

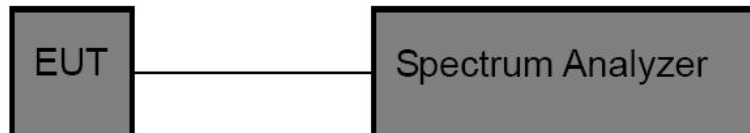
Please refer to the appendix.

3.4. 6dB Bandwidth

Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	≥ 500 KHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
3. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
4. Spectrum Setting:
6dB bandwidth:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) ≥ 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.
 - (6) Allow the trace to stabilize.
- (7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.3.

Test Results

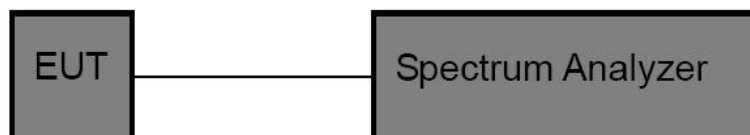
Please refer to the appendix.

3.5. Peak Output Power

Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
Peak Detector: $RBW \geq DTS \text{ Bandwidth}$, $VBW \geq 3 * RBW$.
Sweep time=Auto.
Detector= Peak.
Trace mode= Maxhold.
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.3.

Test Result

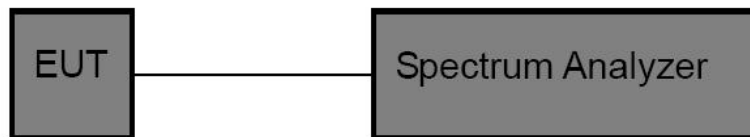
Please refer to the appendix.

3.6. Power Spectral Density

Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v04.
3. Spectrum Setting:
 - Set analyser center frequency to DTS channel center frequency.
 - Set the span to 1.5 times the DTS bandwidth.
 - Set the RBW to: 3 kHz
 - Set the VBW to: 10 kHz
 - Detector: peak
 - Sweep time: auto
 - Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.3.

Test Result

Please refer to the appendix.

Note:

Power Density(dBm/3kHz)=Power Density(dBm/10kHz)-10*Log(10/3)

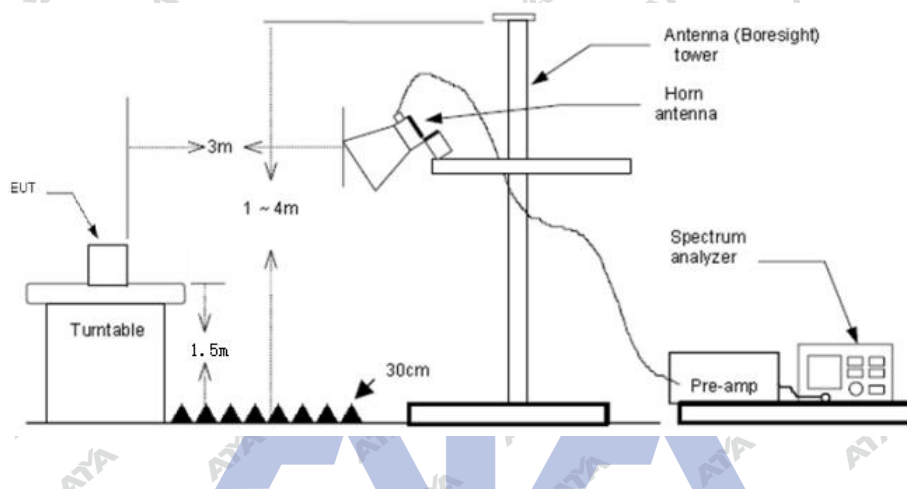
3.7. Band Edge Emissions(Radiated)

Limit

Restricted Frequency Band (MHz)	(dBuV/m)(at 3m)	
	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

Note: All restriction bands have been tested, only the worst case is reported.

Test Configuration



Test Procedure

1. The EUT was setup and tested according to ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 requirements.
2. The EUT is placed on a turn table which is 12mm meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 on radiated measurement.
5. The receiver set as follow:
RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
RBW=1MHz, VBW=10Hz with PEAK Detector for Average Value.

Test Mode

Please refer to the clause 2.3.

Test Results

Note:

Measurement = Reading level + Correct Factor

Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	L
Temperature	24.8℃	Humidity	52.1%
Test Mode:	TX	Test Voltage:	DC 5V from USB Port AC 120V/60Hz

Frequency (MHz)	Meter Reading (dBμV)	Cable Loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detect or Type	Polar
GFSK- 2402MHz									
2310	60.34	3.71	27.7	55.9	35.85	74	-38.15	Pk	Horizontal
2310	37.2	3.71	27.7	55.9	12.71	54	-41.29	AV	Horizontal
2310	59.34	3.71	27.7	55.9	34.85	74	-39.15	Pk	Vertical
2310	36.64	3.71	27.7	55.9	12.15	54	-41.85	AV	Vertical
2390	57.24	3.84	27.8	55.8	33.08	74	-40.92	Pk	Vertical
2390	36.2	3.84	27.8	55.8	12.04	54	-41.96	AV	Vertical
2390	58.14	3.84	27.8	55.8	33.98	74	-40.02	Pk	Horizontal
2390	35.91	3.84	27.8	55.8	11.75	54	-42.25	AV	Horizontal
GFSK- 2480MHz									
2483.5	62.15	3.88	27.9	55.7	38.23	74	-35.77	Pk	Vertical
2483.5	39.61	3.88	27.9	55.7	15.69	54	-38.31	AV	Vertical
2483.5	61.01	3.88	27.9	55.7	37.09	74	-36.91	Pk	Horizontal
2483.5	37.65	3.88	27.9	55.7	13.73	54	-40.27	AV	Horizontal
2500	58.75	4.00	28.2	55.6	35.35	74	-38.65	Pk	Vertical
2500	38.65	4.00	28.2	55.6	15.25	54	-38.75	AV	Vertical
2500	58.75	4.00	28.2	55.6	35.35	74	-38.65	Pk	Horizontal
2500	37.55	4.00	28.2	55.6	14.15	54	-39.85	AV	Horizontal

Note:

1. All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
2. All the modulation modes have been tested, and only the worst results are reflected in the report.

3.8. Spurious Emission (Radiated)

Limit

Radiated Emission Limits (9 kHz~1000 MHz)

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

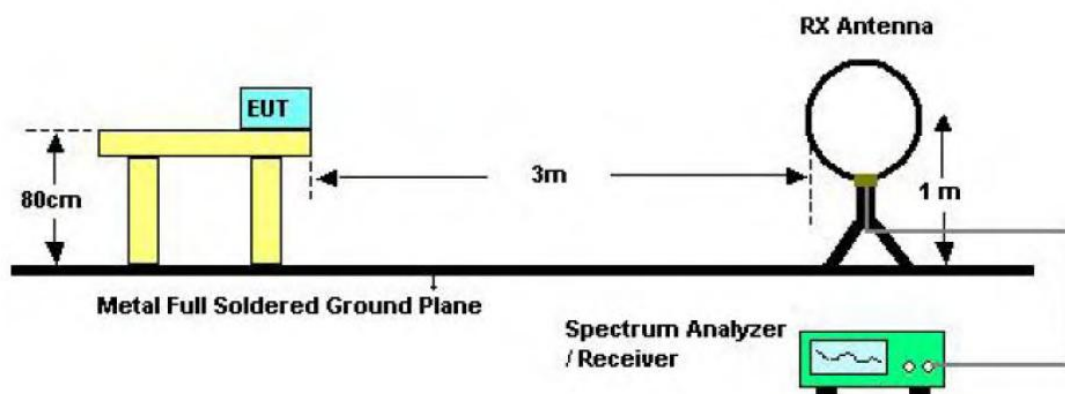
Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	Distance Meters(at 3m)	
	Peak	Average
Above 1000	74	54

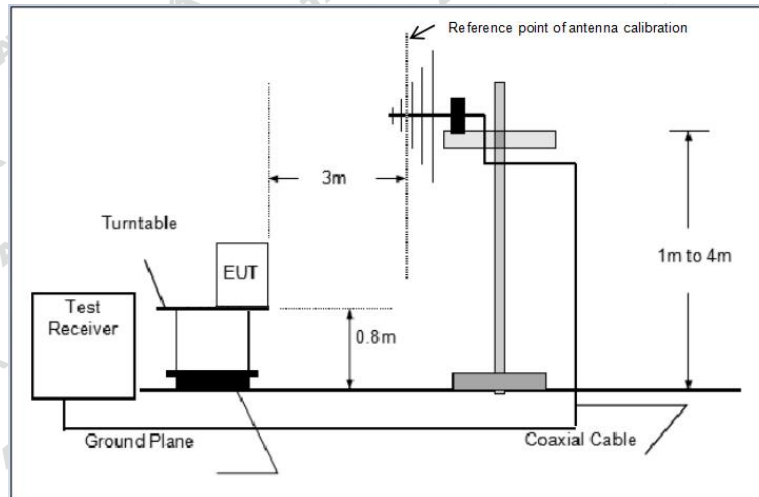
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

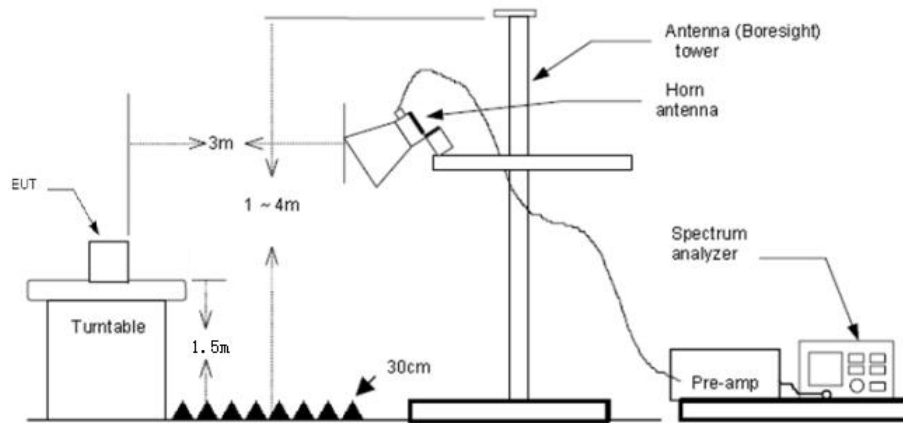
Test Configuration



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

Test Procedure

1. The EUT was setup and tested according to ANSI C63.10-2020 + Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024
2. The EUT was placed on a turntable with 12 mm above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Below 1 GHz:
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - (3) From 1 GHz to 10th harmonic:
RBW=1MHz, VBW=3MHz Peak detector for Peak value.
RBW=1MHz, VBW=10Hz RMS detector for Average value.

Test Mode

Please refer to the clause 2.2.

Test Result**9 KHz~30 MHz**

From 9 KHz~30 MHz : Conclusion: PASS

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	H/V
Temperature	24.8℃	Humidity	52.1%
Test Mode:	Normal Link	Test Voltage:	DC 3.7V

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	--
--	--	--	--	--

Note:

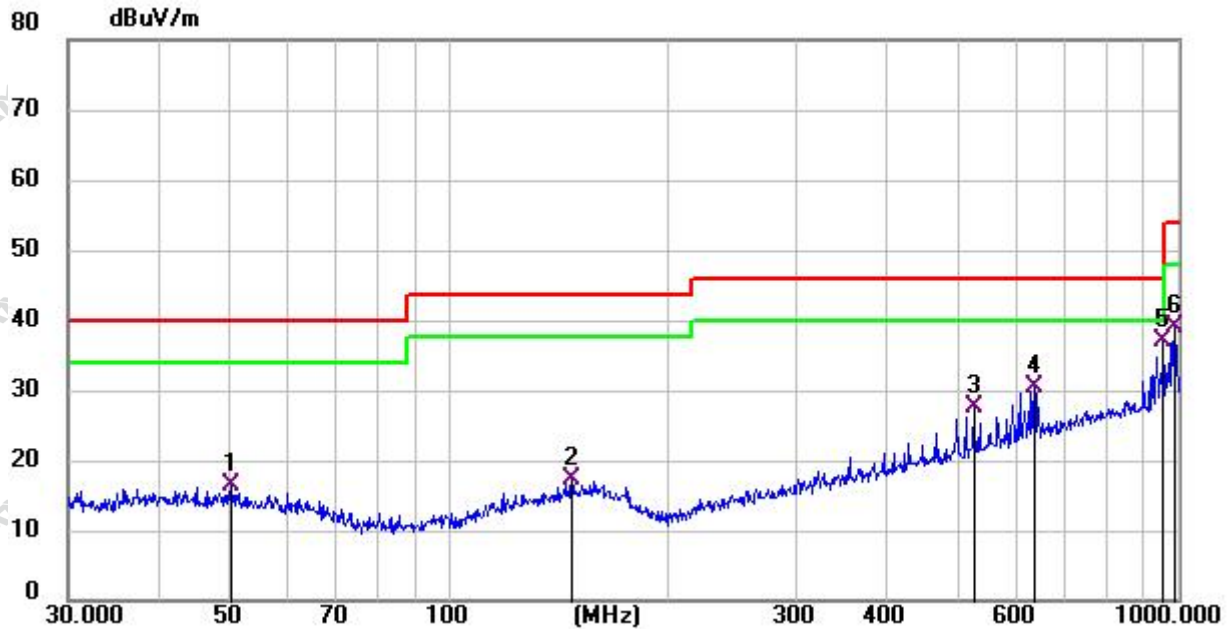
1. For 9kHz-30MHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor = 40 log (specific distance/test distance)(dB);
3. Limit line = specific limits (dBuV) + distance extrapolation factor.

Note:

- 1) Measurement = Reading level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Preamplifier Factor
- 2) The peak level is lower than average limit (54 dBuV/m), this data is too weak, instrument of signal is unable to test.
- 3) The emission levels of other frequencies are very lower than the limit and not show in test report.
- 4) The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
- 5) Pre-scan CH00, CH19 and CH39 modulation, and found the CH39 which is worse case for 30MHz-1GHz, so only show the test data for worse case.

Results of Radiated Emissions (30MHz~ 1000MHz)

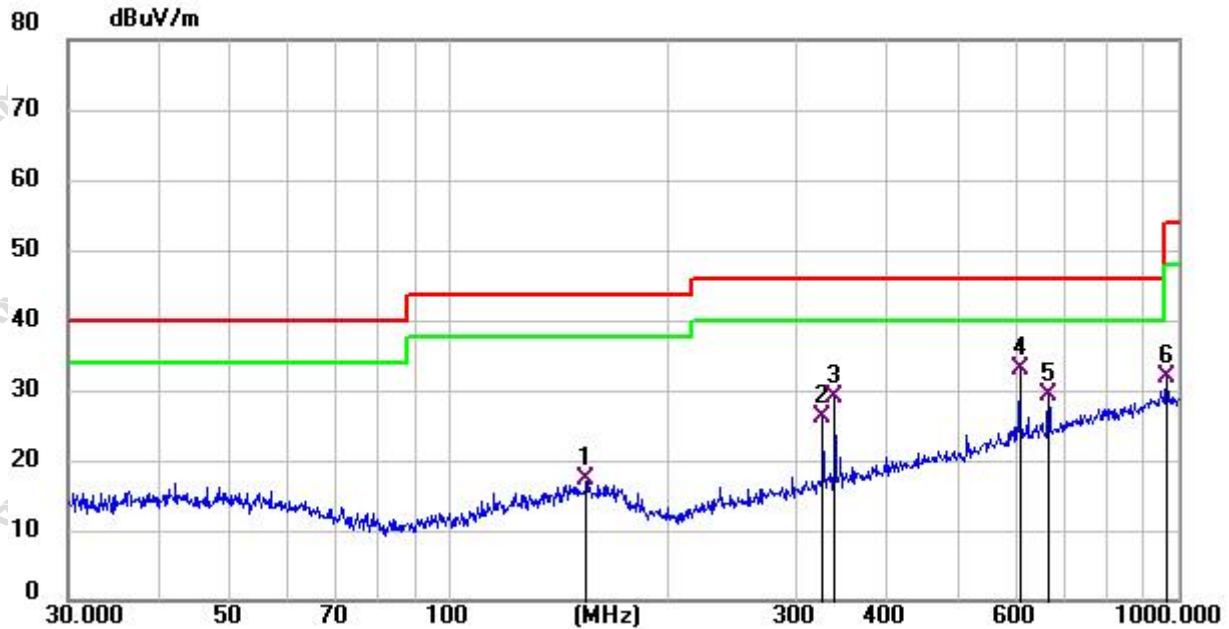
EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	Horizontal
Temperature	24.8℃	Humidity	52.1%
Test Mode:	TX	Test Voltage:	DC 5V from USB Port AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.4090	29.41	-13.10	16.31	40.00	-23.69	QP
2	147.4036	28.96	-11.65	17.31	43.50	-26.19	QP
3	524.5541	33.82	-6.33	27.49	46.00	-18.51	QP
4	636.1340	34.25	-3.77	30.48	46.00	-15.52	QP
5	955.4381	36.21	0.68	36.89	46.00	-9.11	QP
6*	993.0114	38.28	0.79	39.07	54.00	-14.93	QP

Emission Level= Read Level+ Correct Factor

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Phase:	Vertical
Temperature	24.8 °C	Humidity	52.1%
Test Mode:	TX	Test Voltage:	DC 5V from USB Port AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	154.8204	28.75	-11.51	17.24	43.50	-26.26	QP
2	325.5958	36.97	-10.80	26.17	46.00	-19.83	QP
3	338.4000	39.62	-10.60	29.02	46.00	-16.98	QP
4	607.7867	37.28	-4.39	32.89	46.00	-13.11	QP
5	663.4728	32.65	-3.37	29.28	46.00	-16.72	QP
6*	965.5420	31.06	0.71	31.77	54.00	-22.23	QP

Emission Level= Read Level+ Correct Factor

Results of Radiated Emissions (Above 1GHz)

Add:4th Floor, Building 10, No. 60 Nanchang Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen City, Guangdong, People's Republic of China

Tel: +86 0755-82828582

Mobile phone: +86 13728818899

E-mail: ata@certata.com

Web: www.certata.com

Frequency (MHz)	Reading Level (dBμV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2402 MHz)(GFSK)--Above 1G									
4804.31	49.77	4.36	32.92	45.53	41.52	74.00	-32.48	Pk	Horizontal
4804.31	28.98	4.36	32.92	45.53	20.73	54.00	-33.27	AV	Horizontal
7206.24	48.4	5.02	37.63	45.56	45.49	74.00	-28.51	Pk	Horizontal
7206.24	27.32	5.02	37.63	45.56	24.41	54.00	-29.59	AV	Horizontal
9608.32	49.37	4.36	32.92	45.53	41.12	74.00	-32.88	Pk	Horizontal
9608.32	29.37	4.36	32.92	45.53	21.12	54.00	-32.88	AV	Horizontal
12010.11	48.91	5.02	37.13	45.56	45.5	74.00	-28.50	Pk	Horizontal
12010.11	27.86	5.02	37.13	45.56	24.45	54.00	-29.55	AV	Horizontal
14412.10	51.93	5.70	38.15	45.56	50.22	74.00	-23.78	Pk	Horizontal
14412.10	33.32	5.70	38.15	45.56	31.61	54.00	-22.39	AV	Horizontal
16814.00	50.76	5.77	38.16	45.56	49.13	74.00	-24.87	Pk	Horizontal
16814.00	29.84	5.77	38.16	45.56	28.21	54.00	-25.79	AV	Horizontal
4804.31	50.12	4.41	33.01	45.76	41.78	74.00	-32.22	Pk	Vertical
4804.31	29.57	4.41	33.01	45.76	21.23	54.00	-32.77	AV	Vertical
7206.24	50.92	5.02	37.68	45.59	48.03	74.00	-25.97	Pk	Vertical
7206.24	27.4	5.02	37.68	45.59	24.51	54.00	-29.49	AV	Vertical
9608.32	49.59	4.41	33.01	45.76	41.25	74.00	-32.75	Pk	Vertical
9608.32	27.21	4.41	33.01	45.76	18.87	54.00	-35.13	AV	Vertical
12010.11	47.69	5.02	37.68	45.60	44.79	74.00	-29.21	Pk	Vertical
12010.11	30.84	5.02	37.68	45.60	27.94	54.00	-26.06	AV	Vertical
14412.10	52.49	5.70	38.16	45.62	50.73	74.00	-23.27	Pk	Vertical
14412.10	32.93	5.70	38.16	45.62	31.17	54.00	-22.83	AV	Vertical
16814.00	49.59	5.77	38.17	45.64	47.89	74.00	-26.11	Pk	Vertical
16814.00	32.83	5.77	38.17	45.64	31.13	54.00	-22.87	AV	Vertical

Mid Channel (2440 MHz)(GFSK)--Above 1G									
4880.41	51.31	4.50	33.26	46.07	43	74.00	-31.00	Pk	Horizontal
4880.41	34.64	4.50	33.26	46.07	26.33	54.00	-27.67	AV	Horizontal
7320.25	49.63	5.02	37.78	45.77	46.66	74.00	-27.34	Pk	Horizontal
7320.25	31.84	5.02	37.78	45.77	28.87	54.00	-25.13	AV	Horizontal
9760.10	51.89	4.50	33.26	46.07	43.58	74.00	-30.42	Pk	Horizontal
9760.10	32.21	4.50	33.26	46.07	23.9	54.00	-30.1	AV	Horizontal
12200.09	50.43	5.02	37.78	45.77	47.46	74.00	-26.54	Pk	Horizontal
12200.09	28.3	5.02	37.78	45.77	25.33	54.00	-28.67	AV	Horizontal
14640.12	51.31	5.70	38.27	45.79	49.49	74.00	-24.51	Pk	Horizontal
14640.12	34.64	5.70	38.27	45.79	32.82	54.00	-21.18	AV	Horizontal
17080.08	49.63	5.77	38.32	45.81	47.91	74.00	-26.09	Pk	Horizontal
17080.08	31.84	5.77	33.32	45.81	25.12	54.00	-28.88	AV	Horizontal
4880.41	51.89	4.50	33.26	46.07	43.58	74.00	-30.42	Pk	Vertical
4880.41	32.21	4.50	33.26	46.07	23.9	54.00	-30.10	AV	Vertical
7320.25	50.43	5.02	37.78	45.77	47.46	74.00	-26.54	Pk	Vertical
7320.25	28.3	5.02	37.78	45.77	25.33	54.00	-28.67	AV	Vertical
9760.10	51.31	4.50	33.26	46.07	43	74.00	-31.00	Pk	Vertical
9760.10	34.64	4.50	33.26	46.07	26.33	54.00	-27.67	AV	Vertical
12200.09	49.63	5.02	37.78	45.77	46.66	74.00	-27.34	Pk	Vertical
12200.09	31.84	5.02	37.78	45.77	28.87	54.00	-25.13	AV	Vertical
14640.12	51.89	5.70	38.27	45.79	50.07	74.00	-23.93	Pk	Vertical
14640.12	32.21	5.70	38.27	45.79	30.39	54.00	-23.61	AV	Vertical
17080.08	49.59	5.77	38.32	45.81	47.87	74.00	-26.13	Pk	Vertical
17080.08	32.83	5.77	38.32	45.81	31.11	54.00	-22.89	AV	Vertical

High Channel (2480 MHz)(GFSK)-- Above 1G									
4960.42	48.76	4.50	33.26	46.07	40.45	74.00	-33.55	Pk	Horizontal
4960.42	32.07	4.50	33.26	46.07	23.76	54.00	-30.24	AV	Horizontal
7440.16	47.08	5.02	37.78	45.77	44.11	74.00	-29.89	Pk	Horizontal
7440.16	29.29	5.02	37.78	45.77	26.32	54.00	-27.68	AV	Horizontal
9920.1	49.34	4.50	33.26	46.07	41.03	74.00	-32.97	Pk	Horizontal
9920.1	29.66	4.50	33.26	46.07	21.35	54.00	-32.65	AV	Horizontal
12400.08	48.78	5.02	37.78	45.77	45.81	74.00	-28.19	Pk	Horizontal
12400.08	26.95	5.02	37.78	45.77	23.98	54.00	-30.02	AV	Horizontal
14880.07	50.15	5.70	38.33	45.78	48.4	74.00	-25.6	Pk	Horizontal
14880.07	28.05	5.70	38.33	45.78	26.3	54.00	-27.7	AV	Horizontal
17360.09	46.65	5.77	38.35	45.80	44.97	74.00	-29.03	Pk	Horizontal
17360.09	24.52	5.77	38.35	45.80	22.84	54.00	-31.16	AV	Horizontal
4960.42	47.53	4.50	33.26	46.07	39.22	74.00	-34.78	Pk	Vertical
4960.42	30.86	4.50	33.26	46.07	22.55	54.00	-31.45	AV	Vertical
7440.16	45.85	5.02	37.78	45.77	42.88	74.00	-31.12	Pk	Vertical
7440.16	28.06	5.02	37.78	45.77	25.09	54.00	-28.91	AV	Vertical
9920.10	48.11	4.50	33.26	46.07	39.8	74.00	-34.2	Pk	Vertical
9920.10	28.43	4.50	33.26	46.07	20.12	54.00	-33.88	AV	Vertical
12400.08	47.55	5.02	37.78	45.77	44.58	74.00	-29.42	Pk	Vertical
12400.08	25.72	5.02	37.78	45.77	22.75	54.00	-31.25	AV	Vertical
14880.07	48.92	5.70	38.33	45.78	47.17	74.00	-26.83	Pk	Vertical
14880.07	26.82	5.70	38.33	45.78	25.07	54.00	-28.93	AV	Vertical
17360.09	47.04	5.77	38.35	45.80	45.36	74.00	-28.64	Pk	Vertical
17360.09	30.28	5.77	38.35	45.80	28.6	54.00	-25.40	AV	Vertical

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. All the modulation modes have been tested, and only the worst results are reflected in the report.

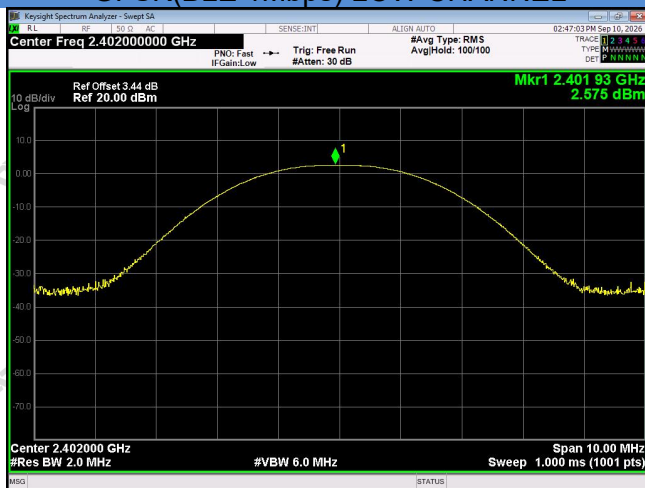
3.9. Maximum Peak Conducted Output Power

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Temperature	24.8°C
Humidity	52.1%	Test Mode:	TX
Test Voltage:	DC 5V from USB Port AC 120V/60Hz		

Channel	Measured Output Peak Power		Limit		Verdict
	GFSK(BLE 1Mbps)		dBm	mW	
	dBm	mW			
Low Channel	2.58	1.81	30	1000	Pass
Middle Channel	3.17	2.07			Pass
High Channel	3.92	2.47			Pass

Test Graphs:

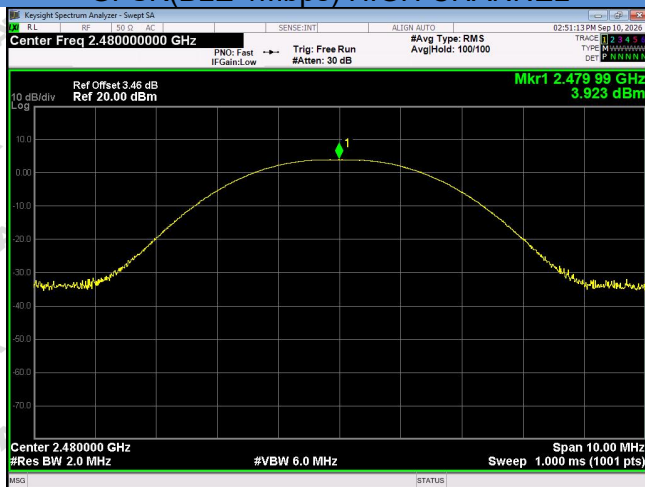
GFSK(BLE 1Mbps) LOW CHANNEL



GFSK (BLE 1Mbps) MIDDLE CHANNEL



GFSK(BLE 1Mbps) HIGH CHANNEL



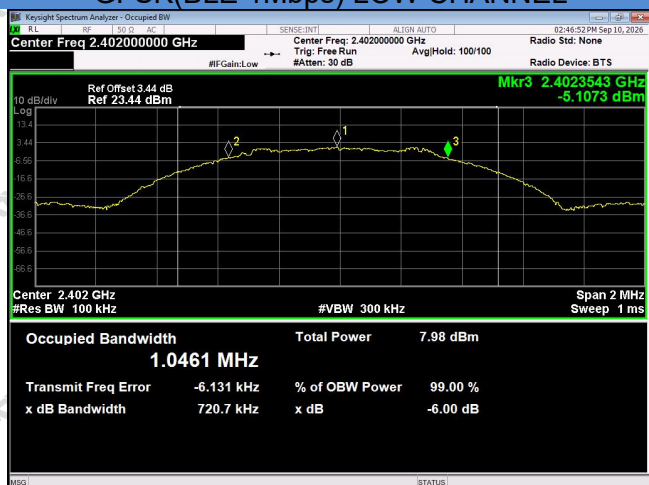
3.10. -6dB Bandwidth

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Temperature	24.8°C
Humidity	52.1%	Test Mode:	TX
Test Voltage:	DC 5V from USB Port AC 120V/60Hz		

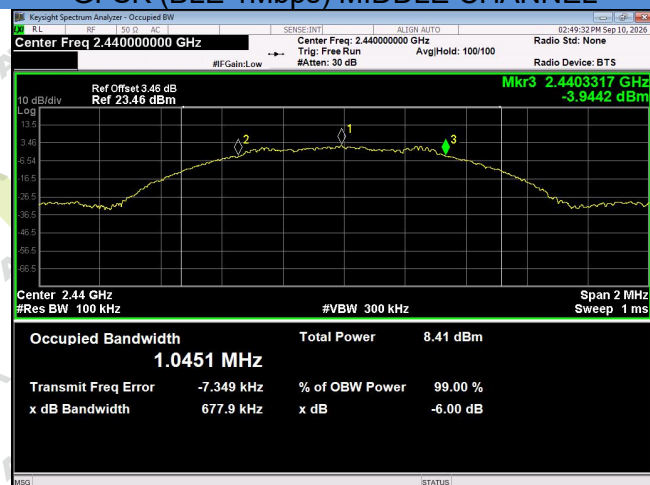
Channel	6dB Bandwidth (KHz)	6dB Bandwidth Limits(kHz)
Low	720.7	≥500
Middle	677.9	≥500
High	734.7	≥500

Test Graphs:

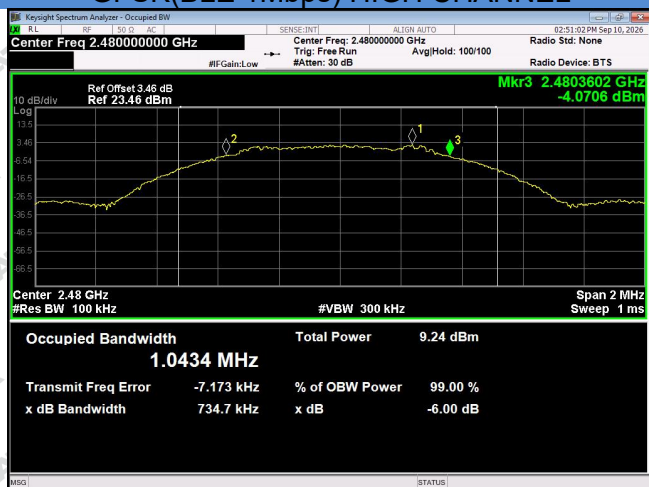
GFSK(BLE 1Mbps) LOW CHANNEL



GFSK (BLE 1Mbps) MIDDLE CHANNEL



GFSK(BLE 1Mbps) HIGH CHANNEL



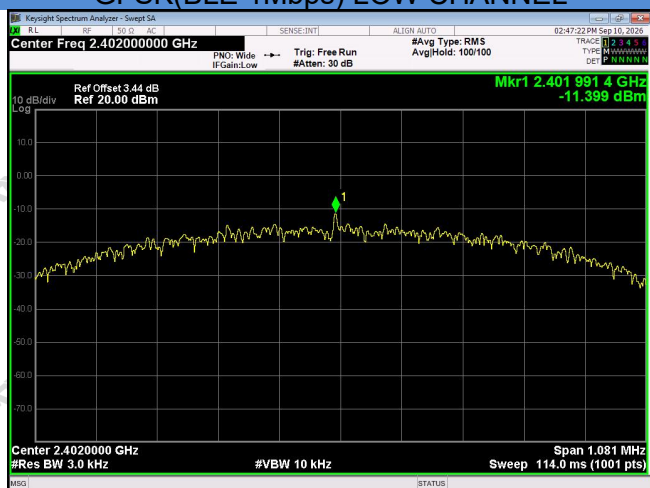
3.11. Maximum Power Spectral Density Level

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Temperature	24.8°C
Humidity	52.1%	Test Mode:	TX
Test Voltage:	DC 5V from USB Port AC 120V/60Hz		

Channel	Spectral Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-11.40	8	PASS
Middle	-10.91	8	PASS
High	-10.13	8	PASS

Test Graphs:

GFSK(BLE 1Mbps) LOW CHANNEL



GFSK (BLE 1Mbps) MIDDLE CHANNEL



GFSK(BLE 1Mbps) HIGH CHANNEL



3.12. Band Edge

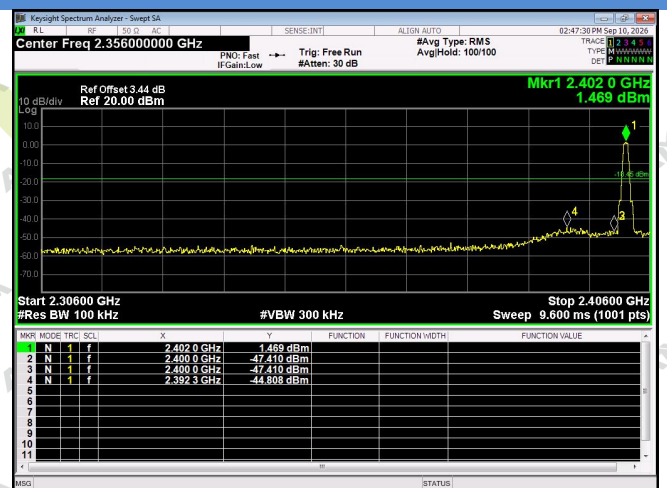
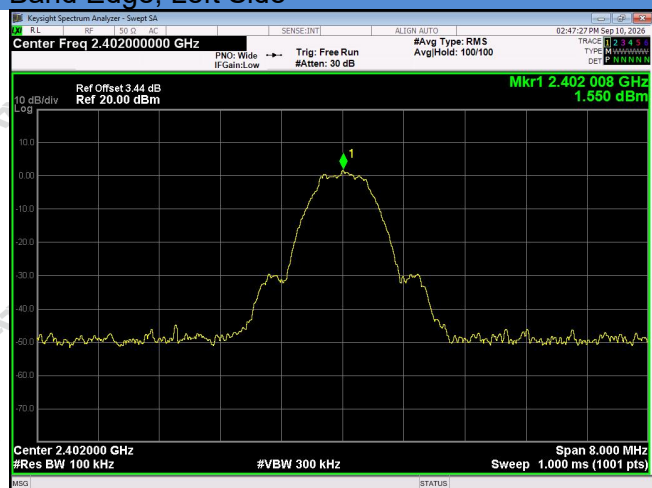
EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Temperature	24.8°C
Humidity	52.1%	Test Mode:	TX
Test Voltage:	DC 5V from USB Port AC 120V/60Hz		

Channel	Measured Max. Band Edge Emission(dBc)	Limit(dBc) Carrier Level	Verdict
Low Channel	-46.35	-20	Pass
High Channel	-46.50	-20	Pass

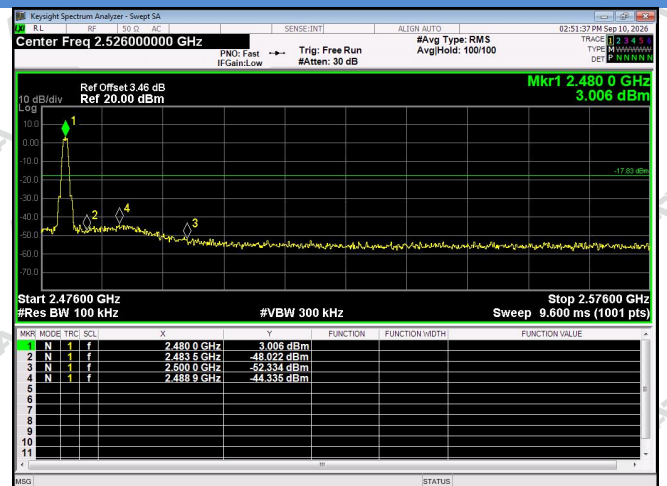
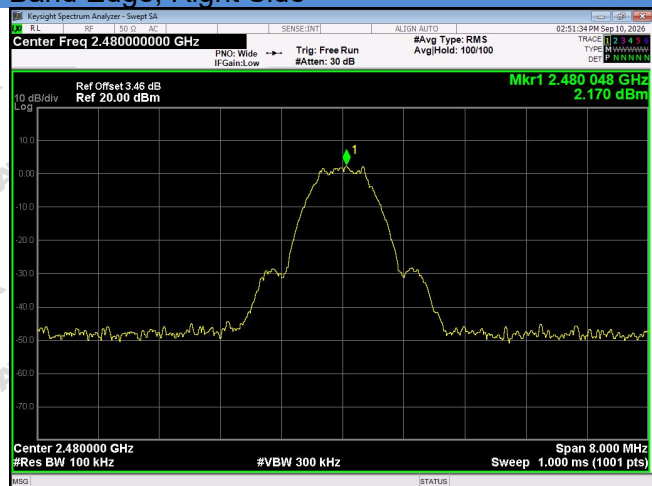
Note: Calculation Note: The limit of this item is -20 dBc. Criterion: measured maximum spurious emission $\leq$ -20 dBc. Margin(dB)=Limit - Measured Value.

Test Graphs:

Band Edge, Left Side



Band Edge, Right Side



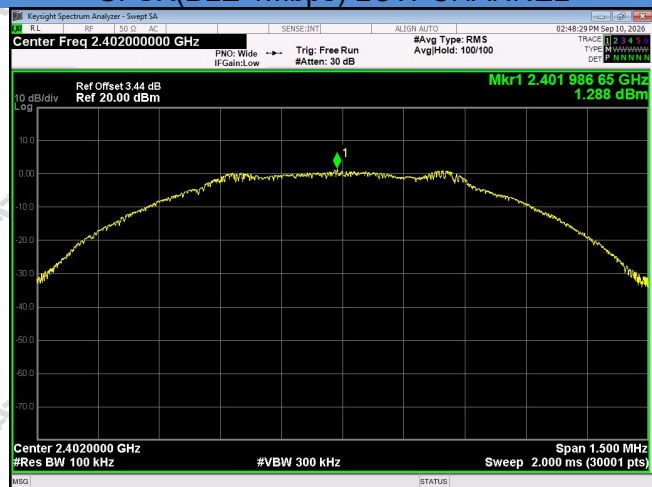
3.13. Conducted RF Spurious Emission

EUT:	Vibrator	Model Name:	WS369-01A
Pressure:	1010 hPa	Temperature	24.8°C
Humidity	52.1%	Test Mode:	TX
Test Voltage:	DC 5V from USB Port AC 120V/60Hz		

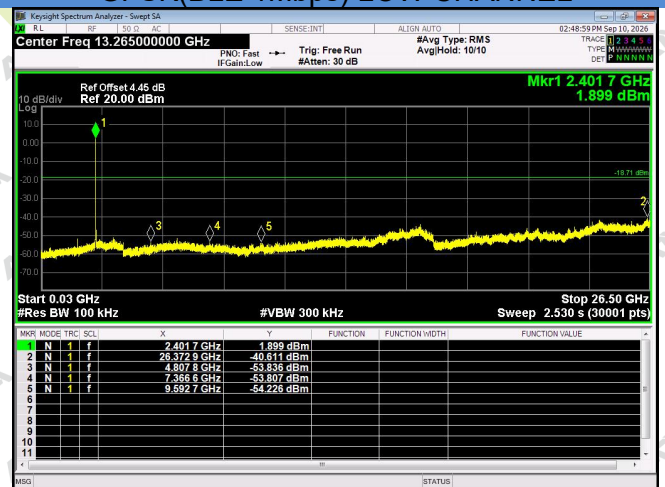
GFSK(BLE 1Mbps)			
Channel	Measured Max. Out of Band Emission(dBc)	Limit(dBm)	Verdict
		Calculated 20 dBc Limit	
Low Channel	-41.9	-20	Pass
Middle Channel	-42.75	-20	Pass
High Channel	-43.05	-20	Pass

Note: Calculation Note: The limit of this item is -20 dBc. Criterion: measured maximum spurious emission $\leq$ -20 dBc. Margin(dB)=Limit - Measured Value.
Test Graphs:

GFSK(BLE 1Mbps) LOW CHANNEL



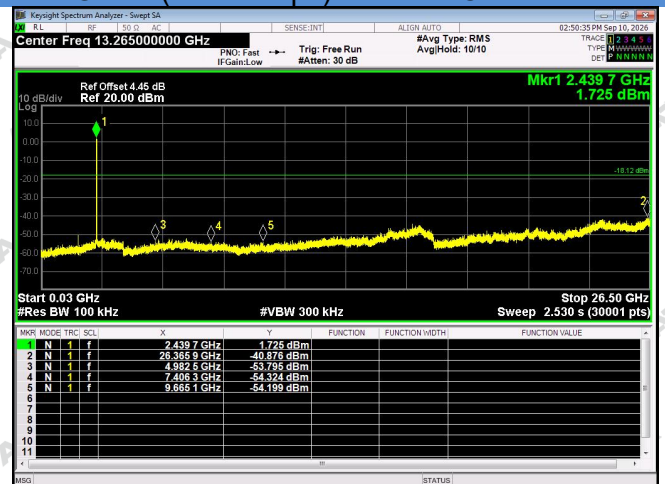
GFSK(BLE 1Mbps) LOW CHANNEL



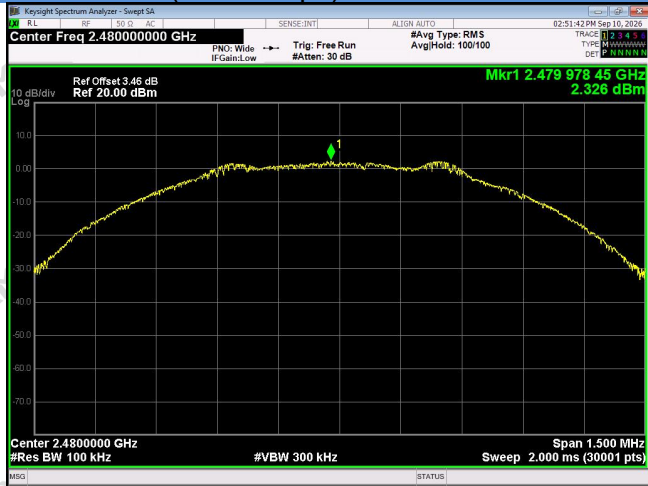
GFSK (BLE 1Mbps) MIDDLE CHANNEL



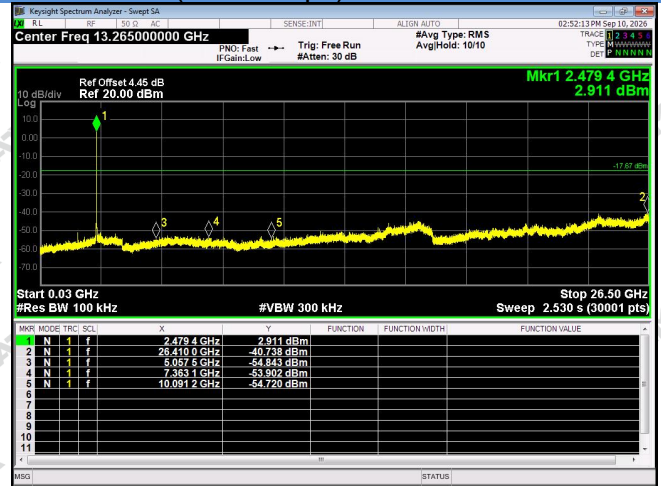
GFSK (BLE 1Mbps) MIDDLE CHANNEL



GFSK(BLE 1Mbps) HIGH CHANNEL



GFSK(BLE 1Mbps) HIGH CHANNEL



4. EUT TEST PHOTOS

Note: Refer to the attached test photos

5. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Note: Refer to the attached exterior and interior photos



*****THE END*****