TEST REPORT

Report No.: TW2311303-01E

Applicant: Dongguan Zengyang Electronic Technology Co., Ltd.

Product: Wireless Karaoke Speakers

Model No.: Y1, Y3, Y5, Z6, SL6, A1, A2, A5, Q2, Q5, Q6, I2, I5, I9

Trademark: N/A

Test Standards: FCC Part 15.249

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10 & FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of electromagnetic compatibility

Approved By

Terry Tang

Manager

Dated: December 14, 2023

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Special Statement:

FCC-Registration No.: 744189

The 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.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

CAB identifier: CN0033

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688

Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 744189

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Dongguan Zengyang Electronic Technology Co., Ltd.

Address: B607, Brilliant Building, Kangli Road, Dalang Town, Dongguan City, Guangdong Province, China.

Telephone: --

Fax: --

1.3 Description of EUT

Product:	Wireless Karaoke Speakers
Manufacturer:	Shenzhen Quality Sound Technology Electronic Co., Ltd.
Address:	Plant 401, B2 Zone B, Tianrui Industrial Park, Fuyuan Road, Xinhe Community, Fuhai Street, Baoan District, Shenzhen City, Guangdong Province, China.
Factory:	Shenzhen Quality Sound Technology Electronic Co., Ltd.
Address:	Plant 401, B2 Zone B, Tianrui Industrial Park, Fuyuan Road, Xinhe Community, Fuhai Street, Baoan District, Shenzhen City, Guangdong Province, China.
Trademark:	N/A
Model Number:	Y1
Additional Model Name	Y3, Y5, Z6, SL6, A1, A2, A5, Q2, Q5, Q6, I2, I5, I9
Rating:	DC5V, 1A
Battery:	DC3.7V, 1200mAh Li-ion battery
Modulation Type:	GFSK, JI/4DQPSK for Bluetooth
Operation Frequency:	2402-2480MHz
Channel Number:	79
Channel Separation:	1MHz
Hardware Version:	V2.0
Software Version:	V1.7

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Serial No.: N/A

Antenna Designation PCB antenna with gain -0.58dBi Max (Get from the antenna specification)

1.4 Submitted Sample: 3 Samples

1.5 Test Duration

2023-11-27 to 2023-12-14

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Conducted Emissions Uncertainty =3.6dB

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by Andy

Print Name: Andy King

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100294	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100253	2023-07-14	2024-07-13
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2023-07-14	2024-07-13
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2023-07-14	2024-07-13
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2023-07-14	2024-07-13
Power sensor	Anritsu	MA2491A	32263	2023-07-14	2024-07-13
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic	--	--	N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2023-07-14	2024-07-13
EMI Test Receiver	RS	ESCS 30	834115/006	2023-07-14	2024-07-13
Spectrum	HP/Agilent	E4407B	MY50441392	2023-07-14	2024-07-13
Spectrum	RS	FSP	1164.4391.38	2023-07-14	2024-07-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2023-07-14	2024-07-13
RF Cable	Zhengdi	7m	--	2023-07-14	2024-07-13
Pre-Amplifier	Schwarebeck	BBV9743	#218	2023-07-14	2024-07-13
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2023-07-14	2024-07-13
LISN	SCHAFFNER	NNB42	00012	2023-07-14	2024-07-13
ESPI Test Receiver	R&S	ESPI 3	100379	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100294	2023-07-14	2024-07-13

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna Requirement	Pass	Complies
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	Pass	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge Test	Pass	Complies
FCC Part 15.215(c)	20dB bandwidth	Pass	Complies

Remark: there are two Bluetooth modular in the EUT, one is AC6965E that is used to communication with mobile phone etc for playing music, the other is AD6976D4 that is used to connected Bluetooth microphone.
This test report is for AC6965E.

3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.4 :2014 and ANSI C63.10 :2013

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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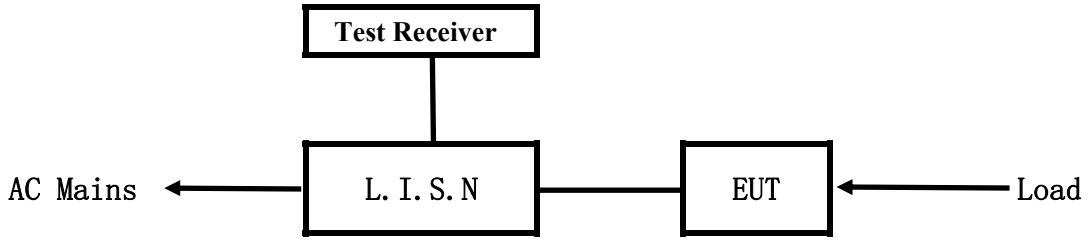
5.0 Power Line Conducted Emission Test

5.1 Schematics of the test



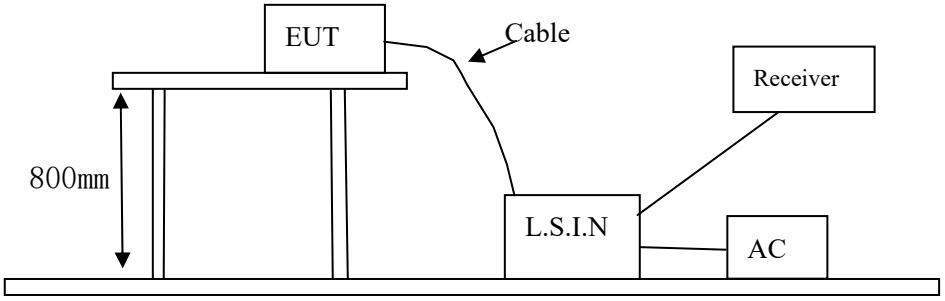
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013.The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10–2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

79 channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
Wireless Karaoke Speakers	Shenzhen Quality Sound Technology Electronic Co., Ltd.	Y1, Y3, Y5, Z6, SL6, A1, A2, A5, Q2, Q5, Q6, I2, I5, I9	2BB9C-Y1

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A; Output: DC5V, 2A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ～ 0.50	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	56.0	46.0
5.00 ～ 30.00	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results:

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

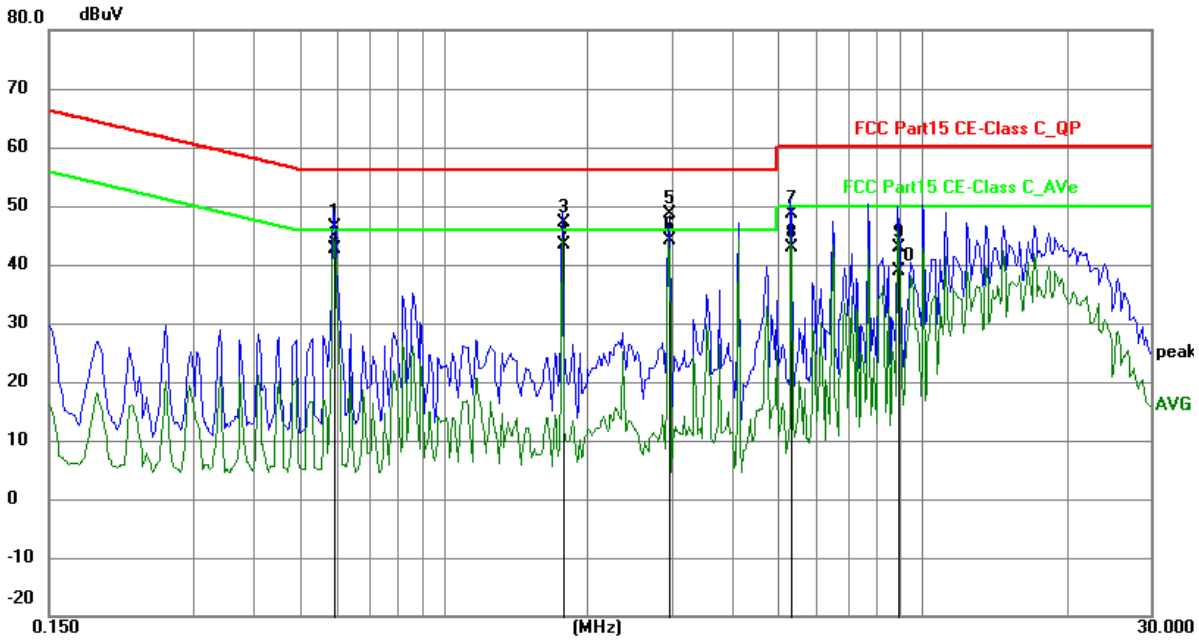
EUT Operating Environment

Temperature: 25℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging + Communication by BT

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.5907	36.65	9.77	46.42	56.00	-9.58	QP	P
2	0.5907	32.82	9.77	42.59	46.00	-3.41	AVG	P
3	1.7762	37.34	9.80	47.14	56.00	-8.86	QP	P
4	1.7762	33.52	9.80	43.32	46.00	-2.68	AVG	P
5	2.9580	38.74	9.84	48.58	56.00	-7.42	QP	P
6	2.9580	34.38	9.84	44.22	46.00	-1.78	AVG	P
7	5.3282	38.62	9.94	48.56	60.00	-11.44	QP	P
8	5.3282	32.84	9.94	42.78	50.00	-7.22	AVG	P
9	8.8811	32.82	10.10	42.92	60.00	-17.08	QP	P
10	8.8811	28.82	10.10	38.92	50.00	-11.08	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

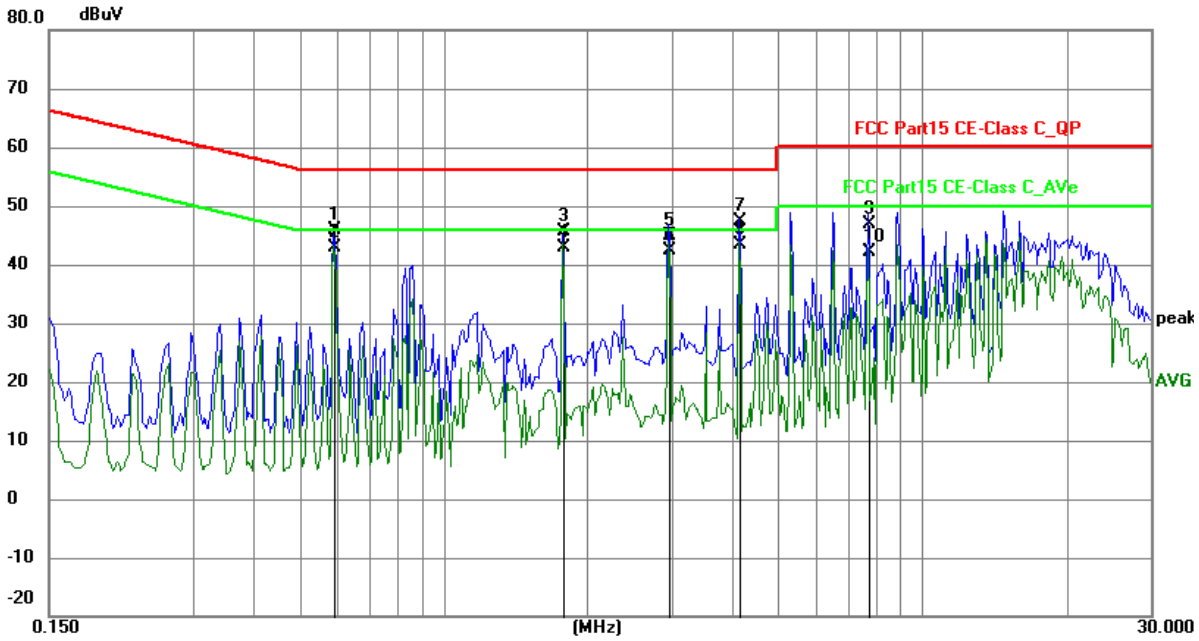
EUT Operating Environment

Temperature: 25℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging + Communication by BT

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.5907	36.20	9.77	45.97	56.00	-10.03	QP	P
2	0.5907	33.01	9.77	42.78	46.00	-3.22	AVG	P
3	1.7763	35.87	9.80	45.67	56.00	-10.33	QP	P
4	1.7763	33.20	9.80	43.00	46.00	-3.00	AVG	P
5	2.9580	34.95	9.84	44.79	56.00	-11.21	QP	P
6	2.9580	32.66	9.84	42.50	46.00	-3.50	AVG	P
7	4.1427	37.39	9.89	47.28	56.00	-8.72	QP	P
8	4.1427	33.49	9.89	43.38	46.00	-2.62	AVG	P
9	7.6917	36.81	10.04	46.85	60.00	-13.15	QP	P
10	7.6917	32.10	10.04	42.14	50.00	-7.86	AVG	P

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6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

(3) The frequency spectrum from 9kHz to 25 GHz was investigated. The frequency spectrum is set as follows:

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

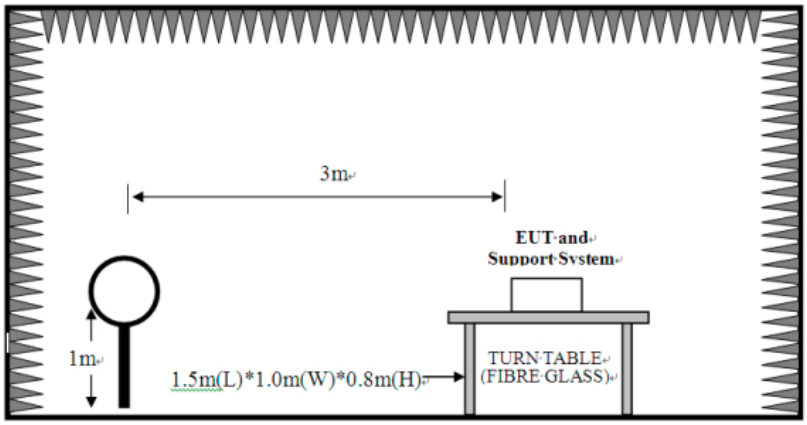
(Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz).
Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



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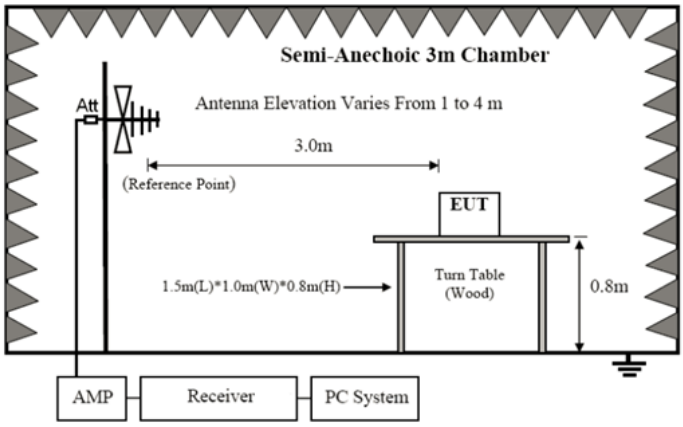
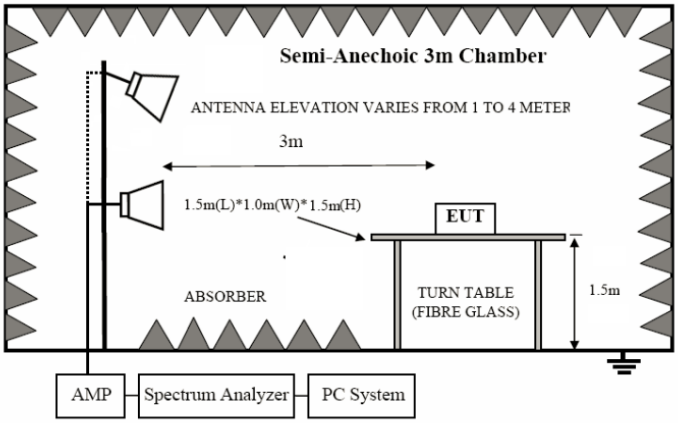
For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



6.2 Configuration of the EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)		Field Strength of Harmonics (3m)	
	mV/m	**dBuV/m**	**uV/m**	**dBuV/m**

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2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-80	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.

5. The two modulation modes of GFSK and Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

6. This is a portable device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

7. Battery fully charged was used during the test.

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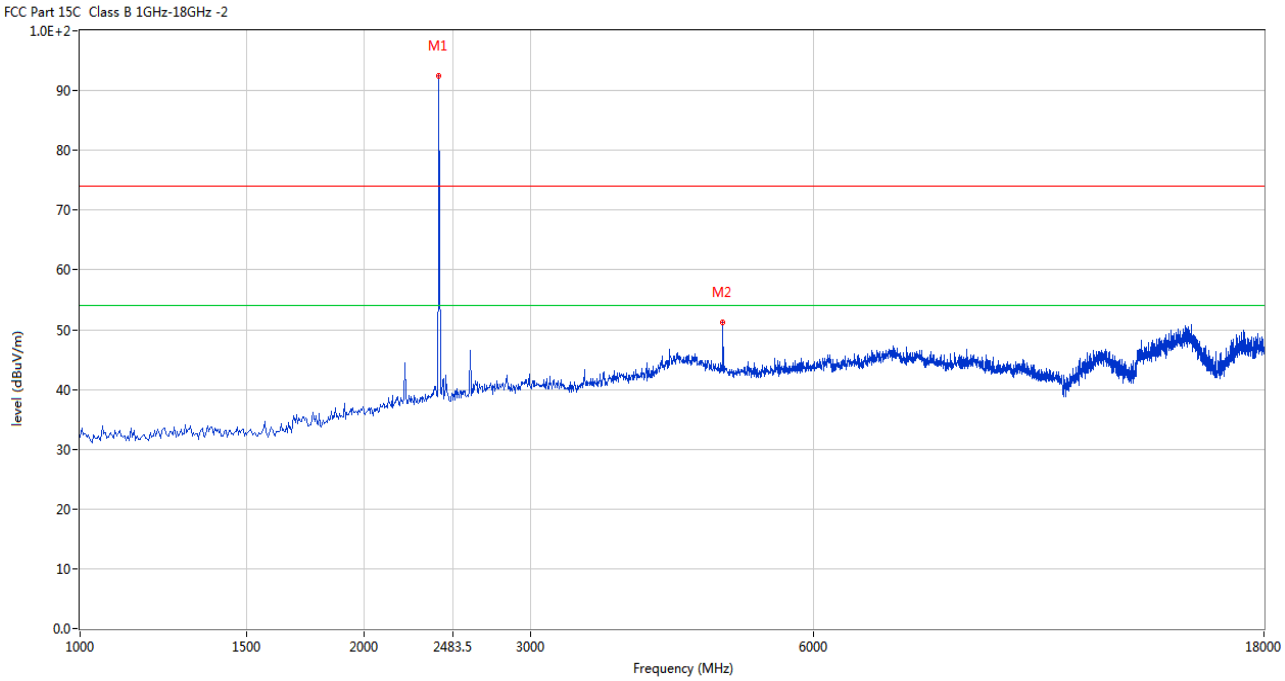
6.5 Test result

A Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2402MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	92.49	-3.57	114.0	-21.51	Peak	275.00	100	Horizontal	Pass
2	4802.799	51.24	3.12	74.0	-22.76	Peak	261.00	100	Horizontal	Pass

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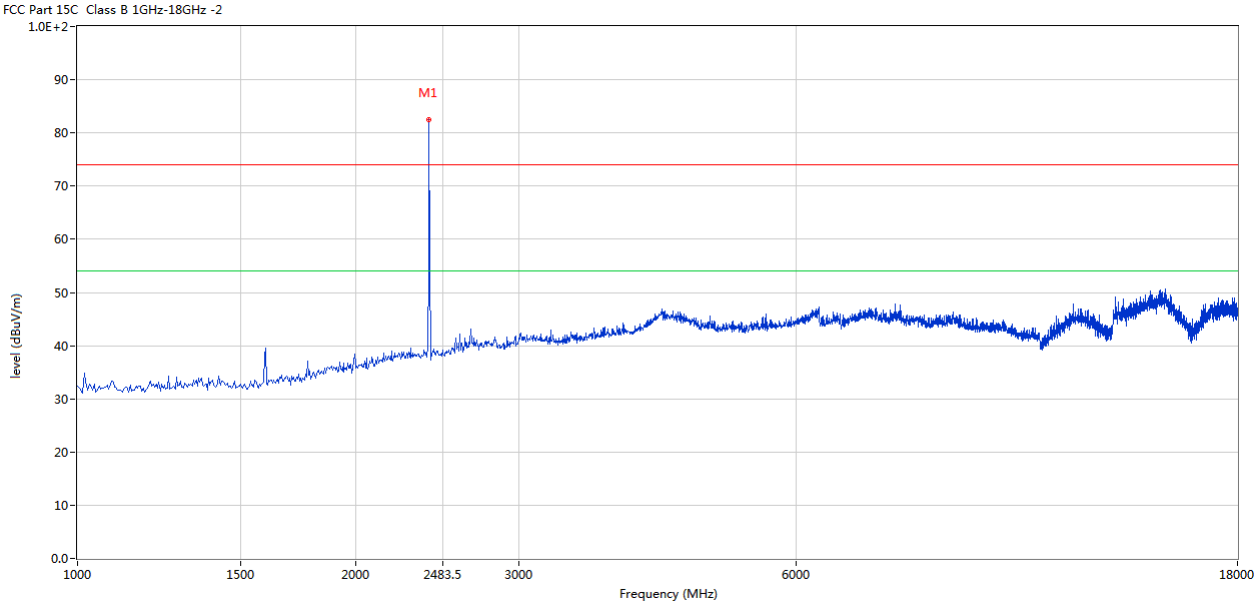
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	82.58	-3.57	114.0	-31.42	Peak	169.00	100	Vertical	Pass

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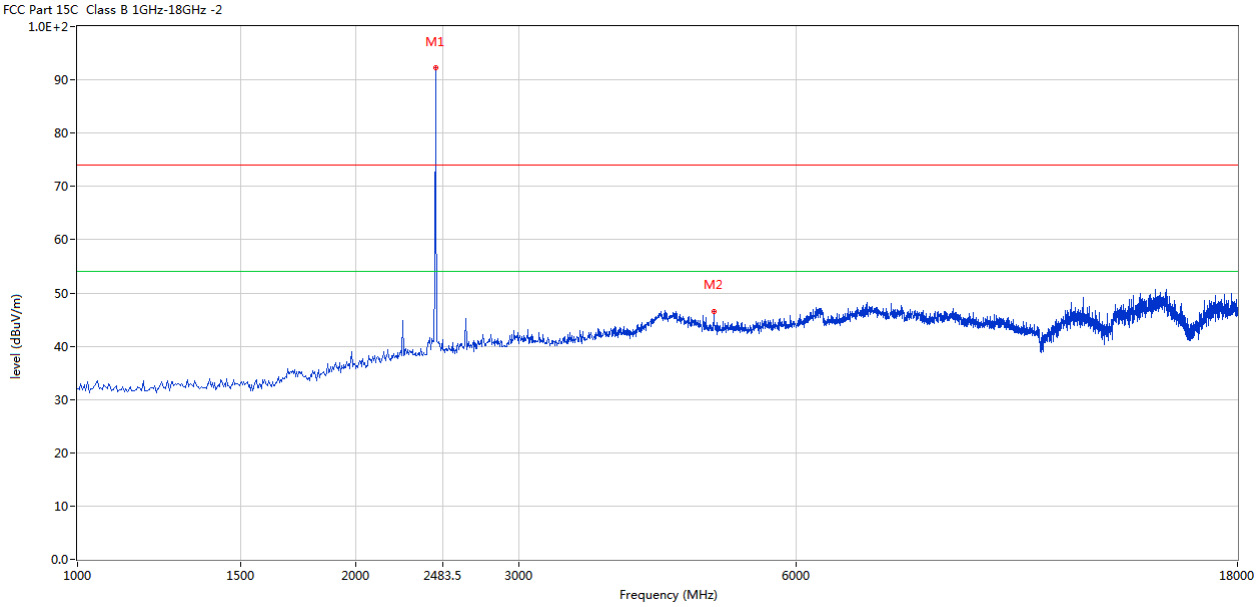
Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	92.35	-3.57	114.0	-21.65	Peak	268.00	100	Horizontal	Pass
2	4883.529	46.60	3.20	74.0	-27.40	Peak	243.00	100	Horizontal	Pass

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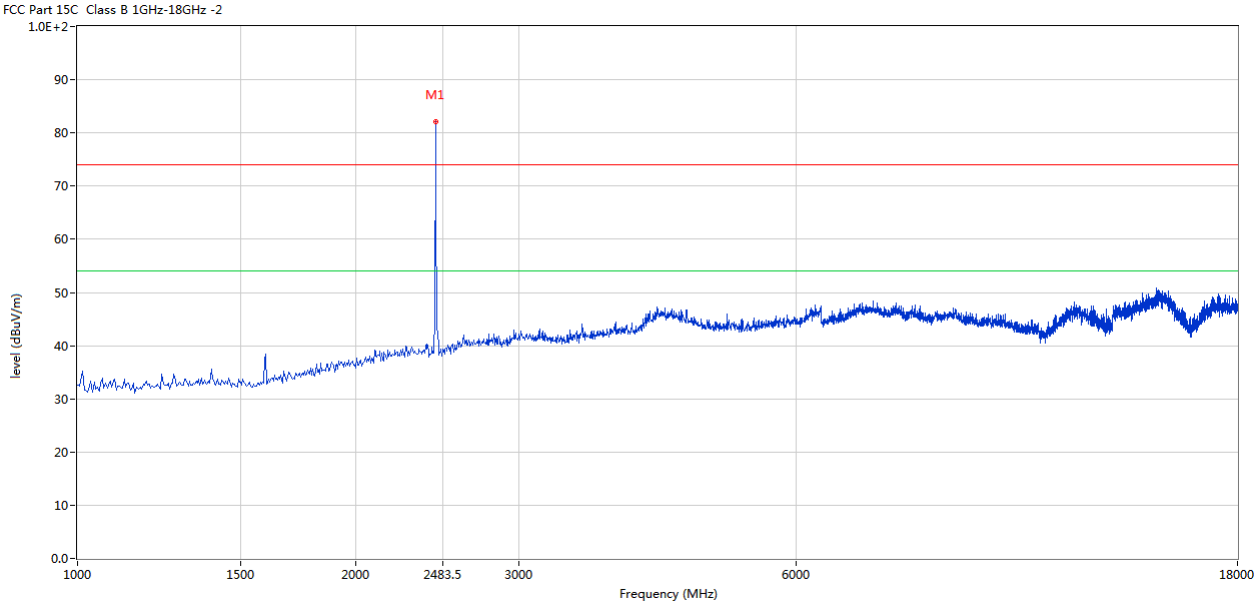
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	82.16	-3.57	114.0	-31.84	Peak	161.00	100	Vertical	Pass

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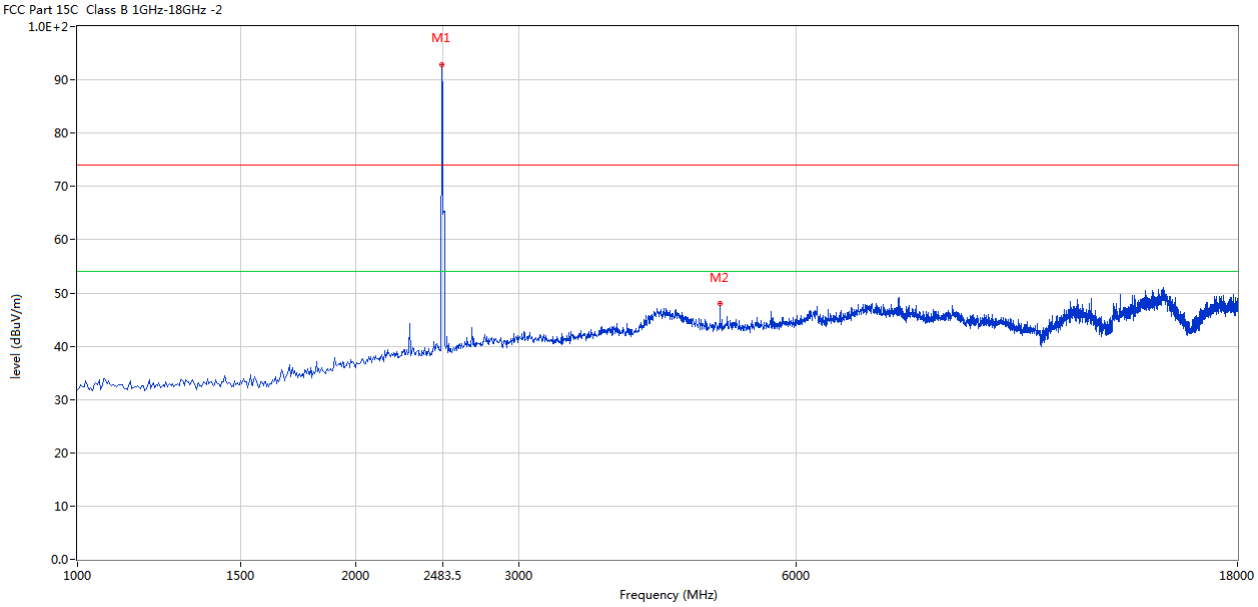
Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	92.84	-3.57	114.0	-21.16	Peak	249.00	100	Horizontal	Pass
2	4960.010	47.95	3.36	74.0	-26.05	Peak	238.00	100	Horizontal	Pass

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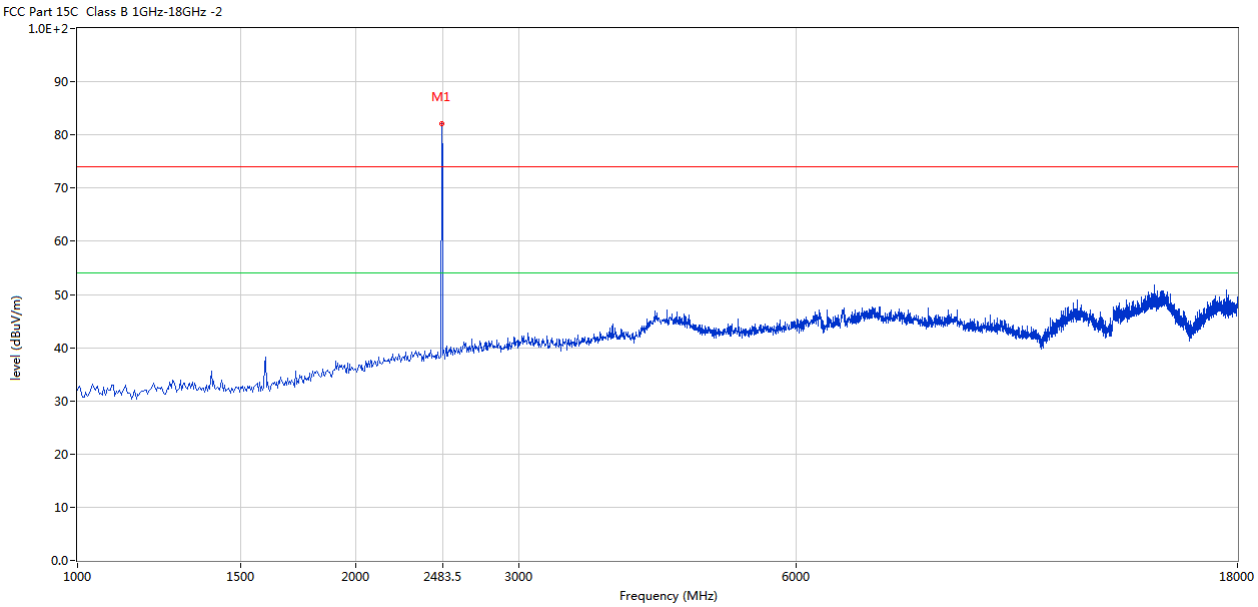
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	82.15	-3.57	114.0	-31.85	Peak	65.00	100	Vertical	Pass

Note: (1) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier
(2) Margin=Emission-Limits
(3) According to section 15.35(b), the peak limit is 20dB higher than the average limit
(4) For test purpose, keep EUT continuous transmitting
(5) For emission above 18GHz and Below 30MHz, It is only the floor noise and less than the limit for more than 20dB. No necessary to take down.
(6) the measured PK value less than the AV limit.

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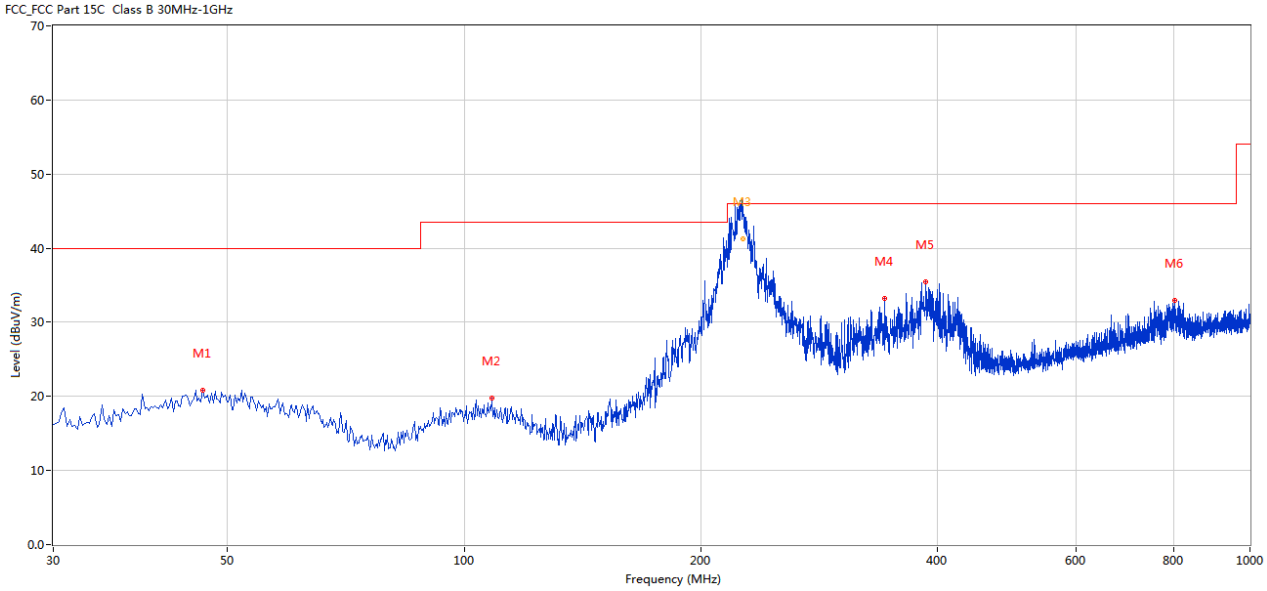
B. **General Radiated Emission Data**

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	46.486	20.88	-11.43	40.0	19.12	Peak	311.00	100	Horizontal	Pass
2	108.550	19.74	-13.46	43.5	23.76	Peak	151.00	100	Horizontal	Pass
3	226.574	47.26	-12.81	46.0	-1.26	Peak	64.00	157	Horizontal	N/A
3*	226.574	41.23	-12.81	46.0	4.77	QP	64.00	157	Horizontal	Pass
4	343.232	33.22	-9.65	46.0	12.78	Peak	76.00	100	Horizontal	Pass
5	387.113	35.45	-9.01	46.0	10.55	Peak	291.00	100	Horizontal	Pass
6	801.927	32.91	-2.90	46.0	13.09	Peak	259.00	100	Horizontal	Pass

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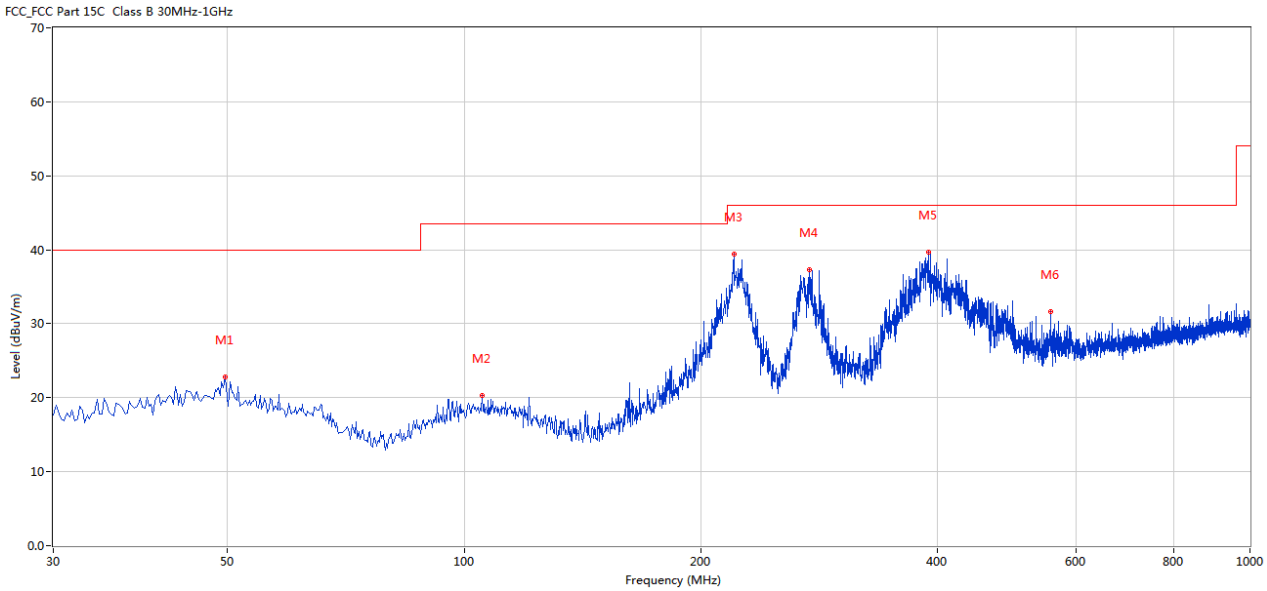
Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	49.638	22.83	-11.32	40.0	17.17	Peak	21.00	100	Vertical	Pass
2	105.399	20.26	-13.25	43.5	23.24	Peak	43.00	100	Vertical	Pass
3	220.315	39.38	-13.31	46.0	6.62	Peak	176.00	100	Vertical	Pass
4	275.349	37.25	-11.66	46.0	8.75	Peak	156.00	100	Vertical	Pass
5	389.538	39.68	-8.90	46.0	6.32	Peak	0.00	100	Vertical	Pass
6	557.306	31.59	-6.19	46.0	14.41	Peak	303.00	100	Vertical	Pass

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7. Band Edge

7.1 Test Method and test Procedure:

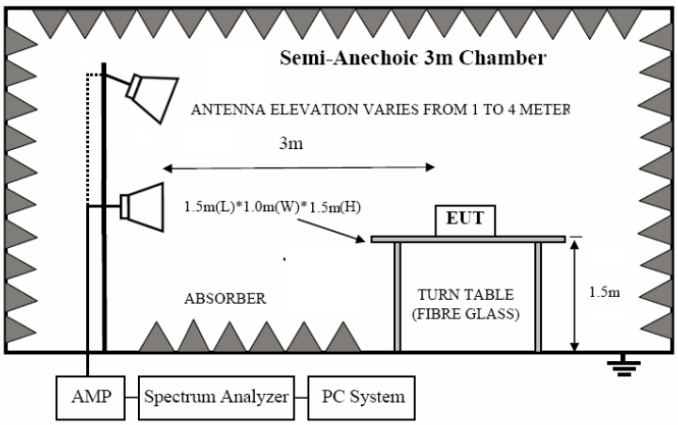
(1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(2) Set Spectrum as RBW=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.

(3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(4) The antenna polarization: Vertical polarization and Horizontal polarization.

7. 2 Radiated Test Setup



For the actual test configuration, please refer to the related items – Photos of Testing

7.3 Configuration of the EUT

Same as section 5.3 of this report

7.4 EUT Operating Condition

Same as section 5.4 of this report.

7.5 Band Edge Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

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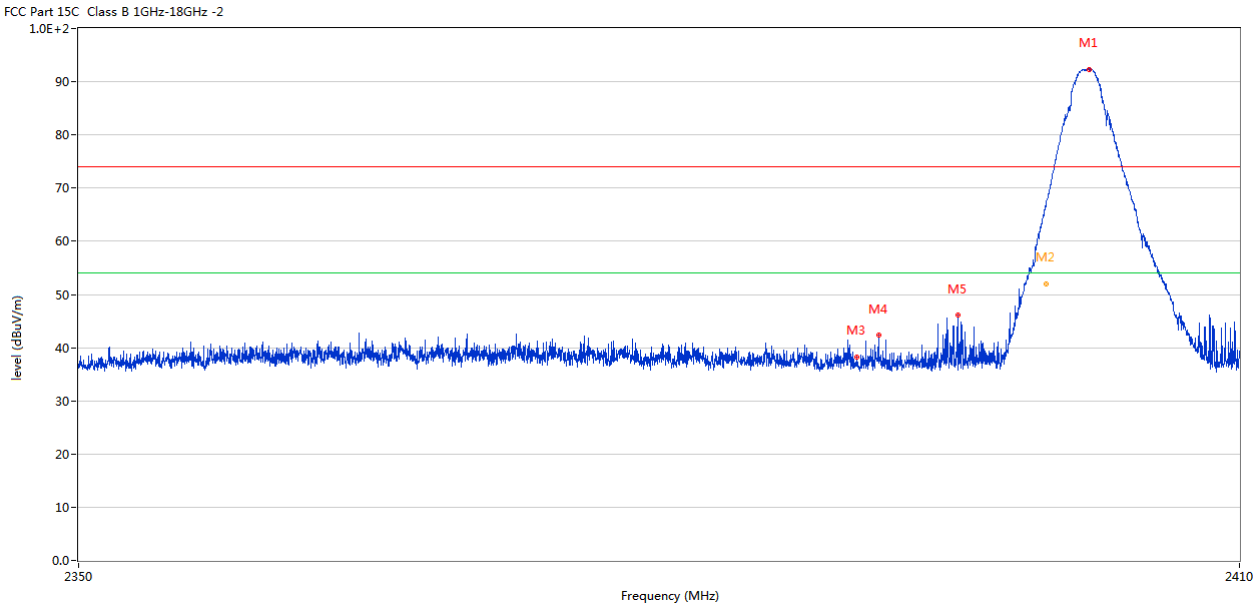
7.6 Test Result

Product:	Wireless Karaoke Speakers	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.142	92.42	-3.57	74.0	18.42	Peak	265.00	100	Horizontal	N/A
2	2399.893	67.05	-3.57	74.0	-6.95	Peak	275.00	100	Horizontal	Pass
2**	2399.893	51.94	-3.57	54.0	-2.06	AV	275.00	100	Horizontal	Pass
3	2390.070	38.32	-3.53	74.0	-35.68	Peak	112.00	100	Horizontal	Pass
4	2391.180	42.29	-3.53	74.0	-31.71	Peak	180.00	100	Horizontal	Pass
5	2395.304	46.07	-3.55	74.0	-27.93	Peak	270.00	100	Horizontal	Pass

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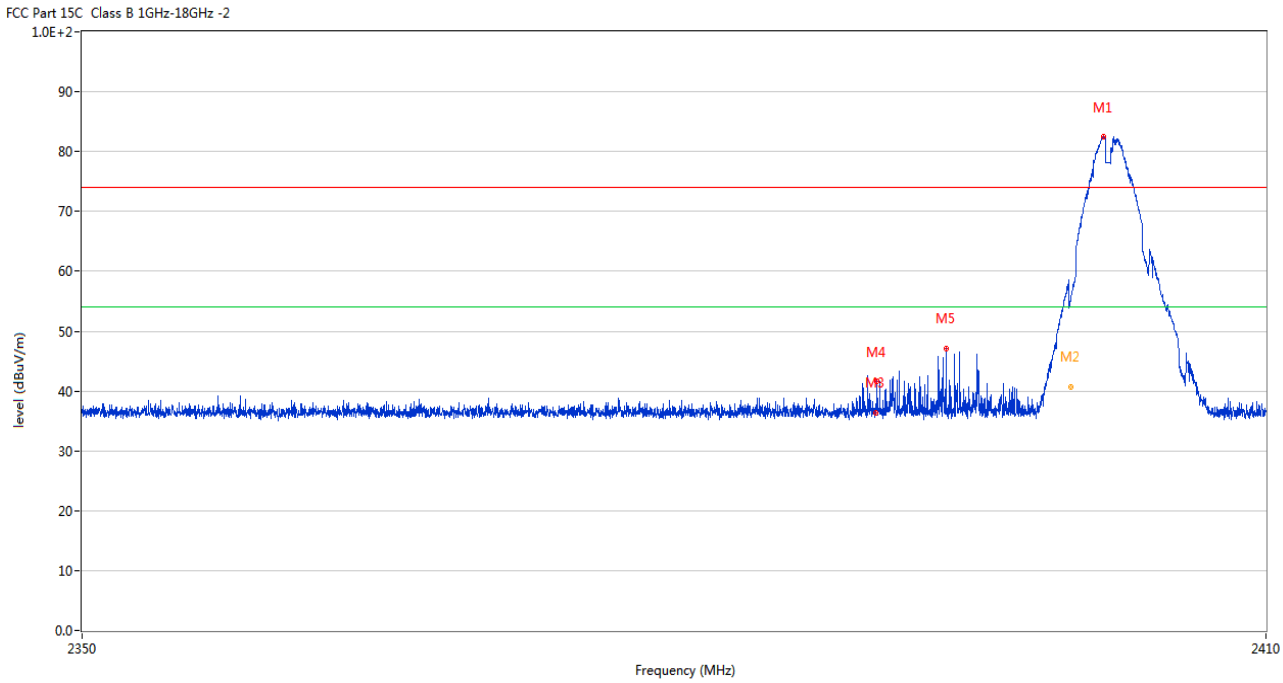
Product:	Wireless Karaoke Speakers	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2401.692	82.40	-3.57	74.0	8.40	Peak	179.00	100	Vertical	N/A
2	2400.027	55.80	-3.57	74.0	-18.20	Peak	306.00	100	Vertical	Pass
2**	2400.027	40.76	-3.57	54.0	-13.24	AV	306.00	100	Vertical	Pass
3	2390.040	36.35	-3.53	74.0	-37.65	Peak	134.00	100	Vertical	Pass
4	2390.130	41.59	-3.53	74.0	-32.41	Peak	31.00	100	Vertical	Pass
5	2393.639	47.08	-3.54	74.0	-26.92	Peak	118.00	100	Vertical	Pass

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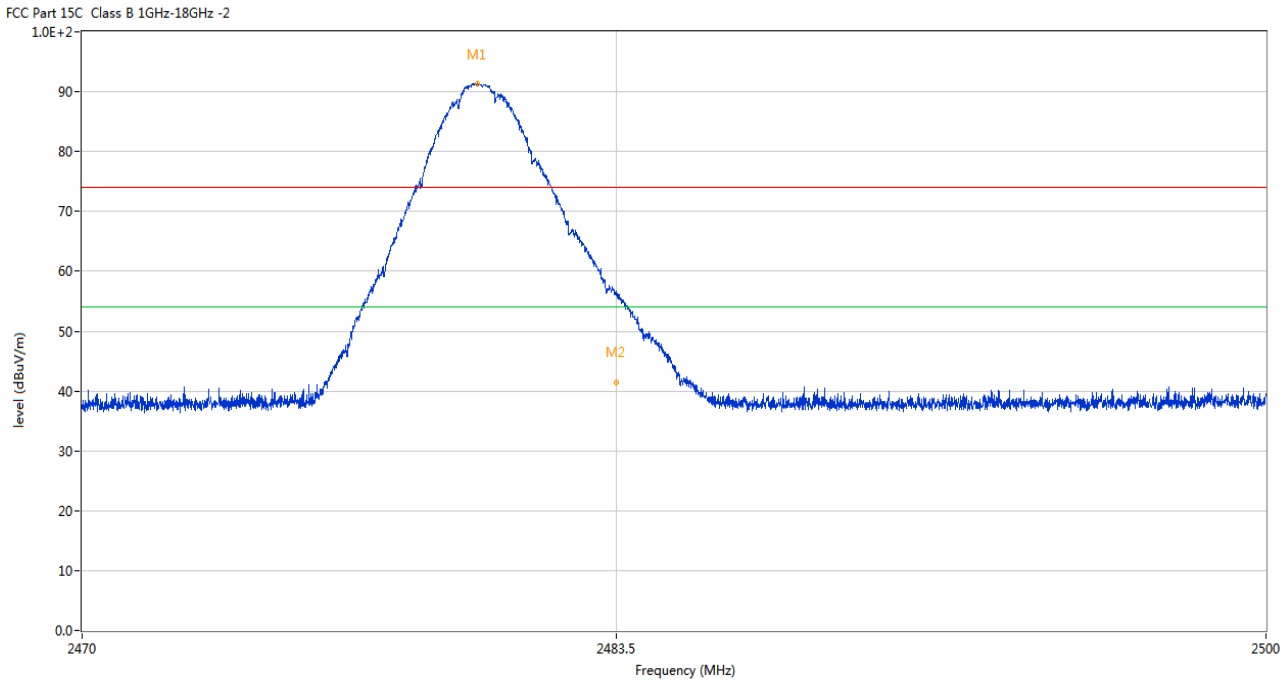
Product:	Wireless Karaoke Speakers	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.980	91.30	-3.57	74.0	17.30	Peak	251.00	100	Horizontal	N/A
2	2483.500	56.47	-3.57	74.0	-17.53	Peak	246.00	100	Horizontal	Pass
2**	2483.500	41.02	-3.57	54.0	-12.98	AV	246.00	100	Horizontal	Pass

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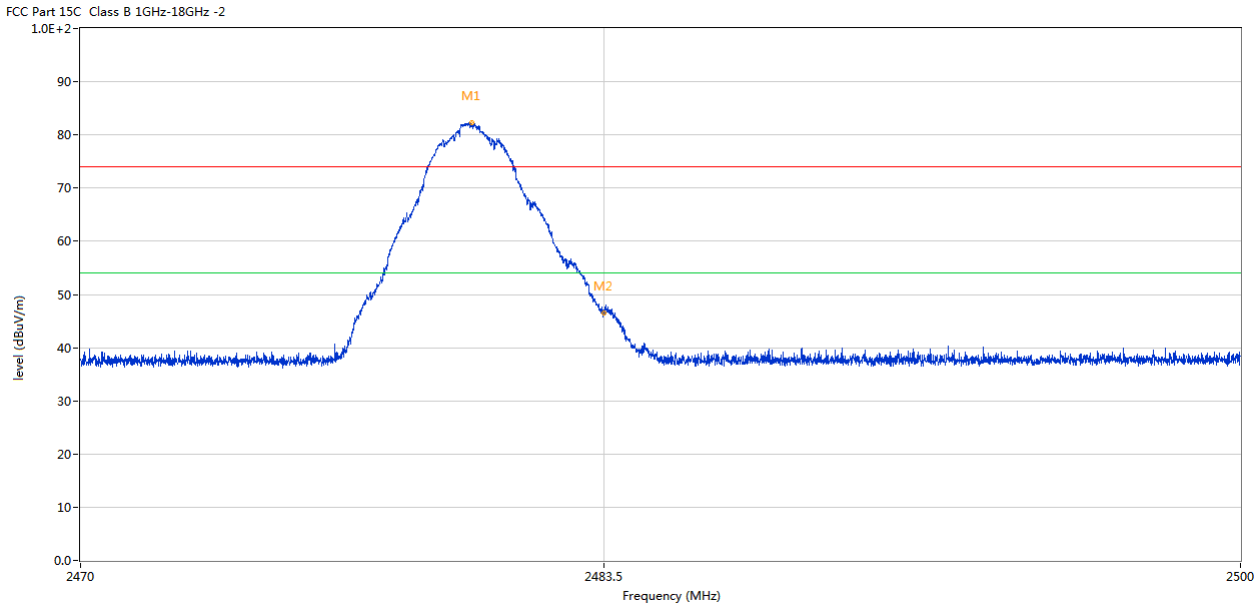
Product:	Wireless Karaoke Speakers	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480.077	82.23	-3.57	74.0	8.23	Peak	62.00	100	Vertical	N/A
2	2483.500	46.60	-3.57	74.0	-27.40	Peak	51.00	100	Vertical	Pass

Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.

2. For Restricted band test, the two modulation modes of GFSK and Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

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8.0 Antenna Requirement

Applicable Standard

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 shall be considered sufficient to comply with the provisions of this section.

This product has a PCB antenna. The antenna gain is -0.58dBi Max. It fulfills the requirement of this section.

Test Result: Pass

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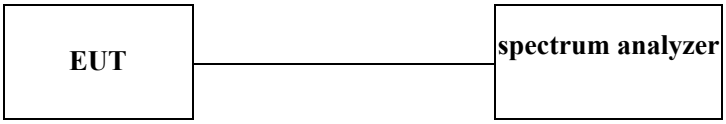
9.0 20dB Bandwidth Measurement

Test Configuration



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 30kHz RBW and 100kHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Limit

N/A

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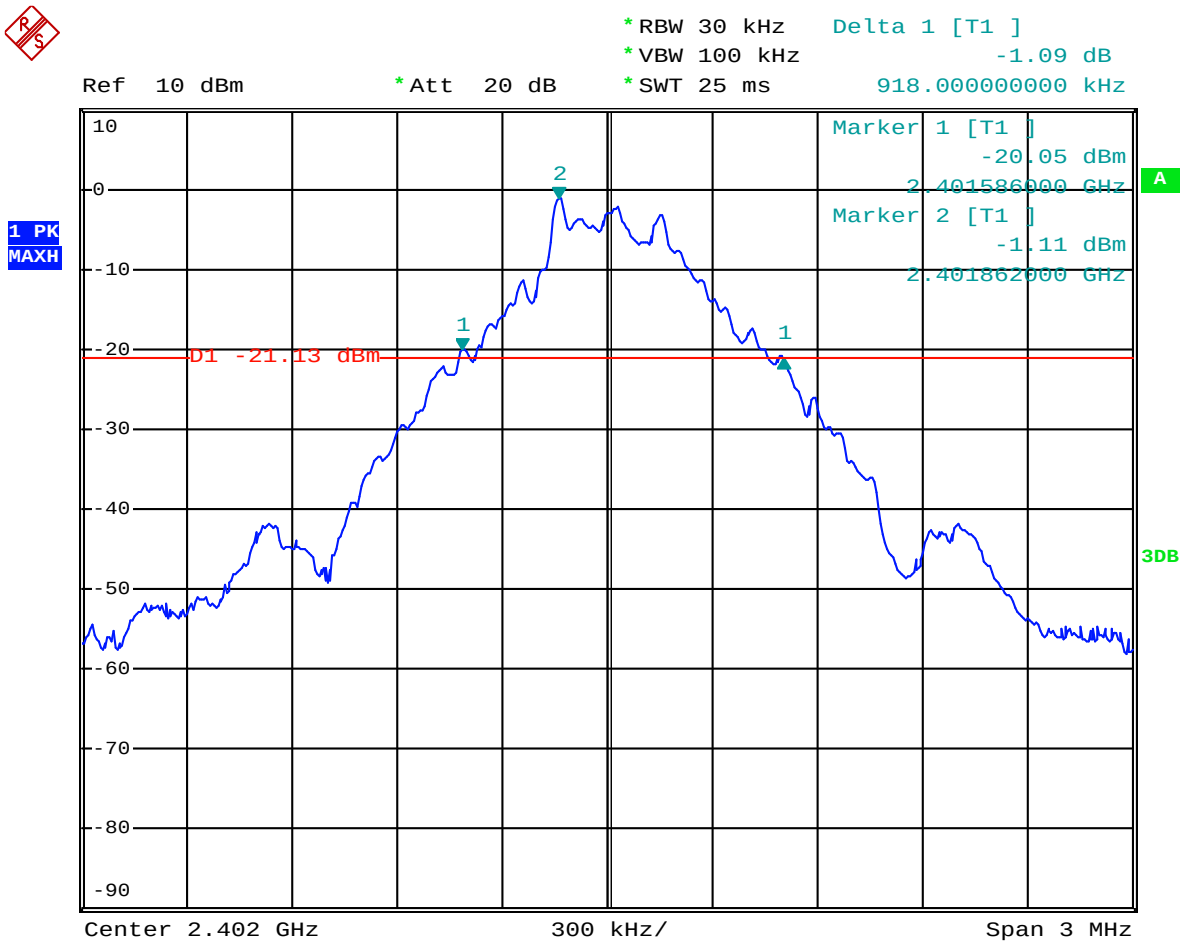
Test Result

GFSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	918.00kHz	--	--



Date: 12.DEC.2023 13:35:05

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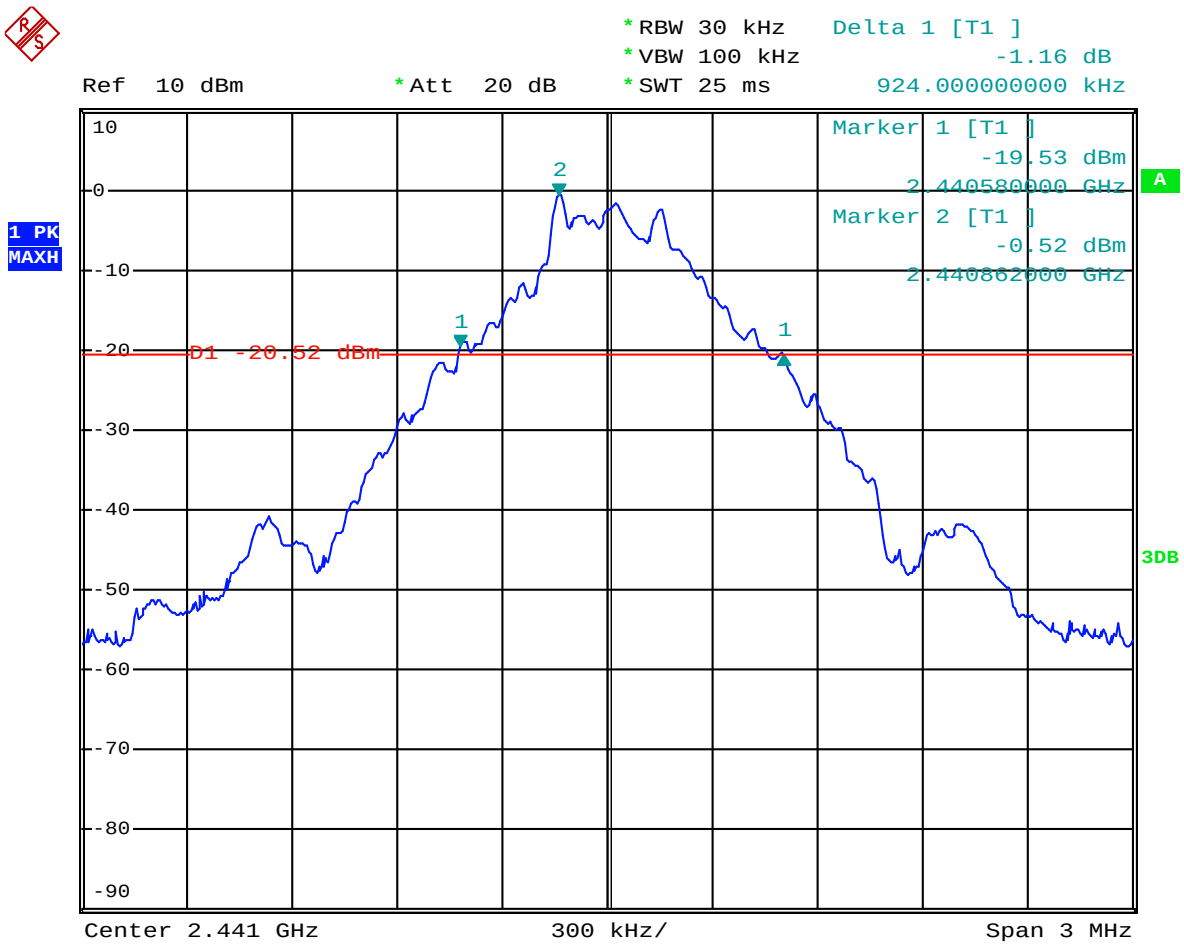
GFSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	924.00kHz	--	--



Date: 12.DEC.2023 13:39:52

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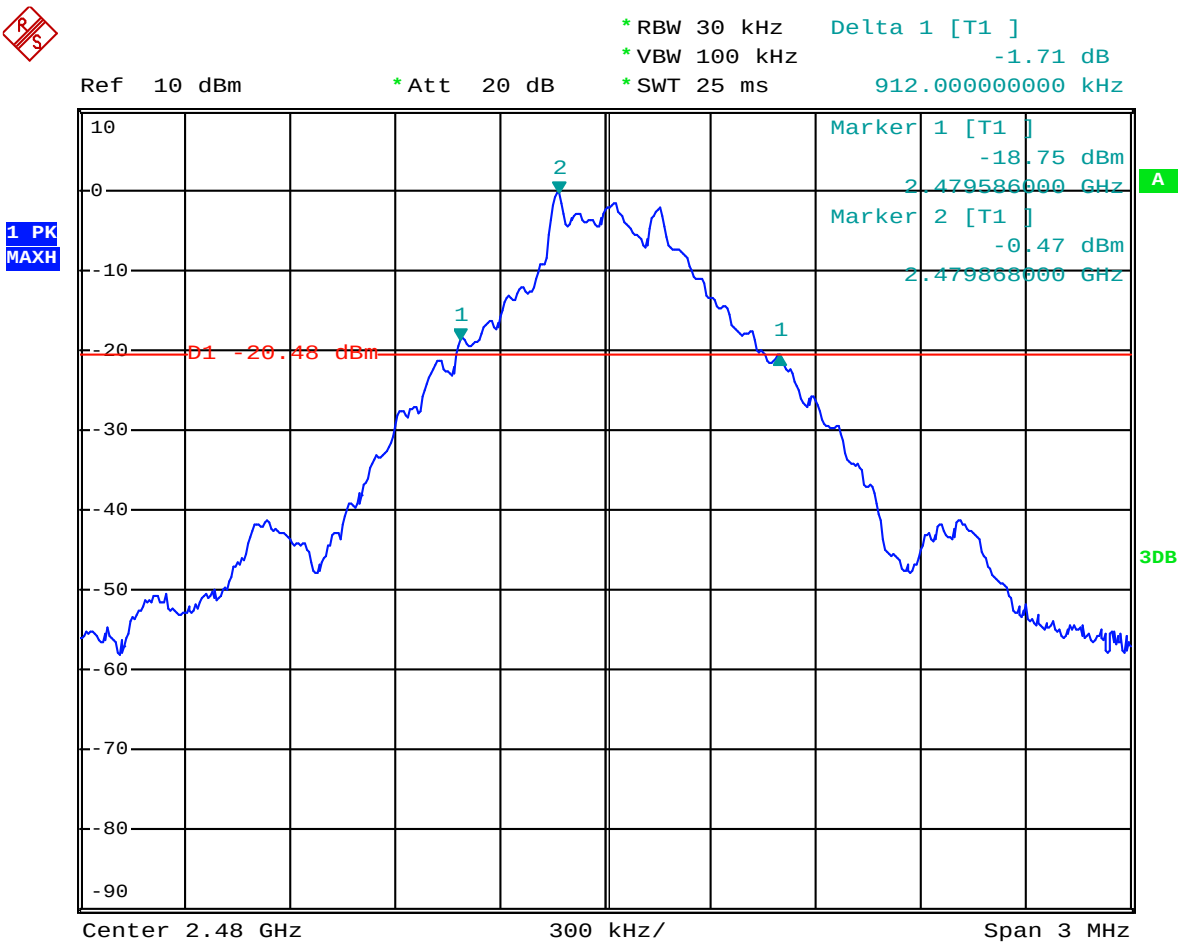
GFSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	912.00kHz	--	--



Date: 12.DEC.2023 13:41:20

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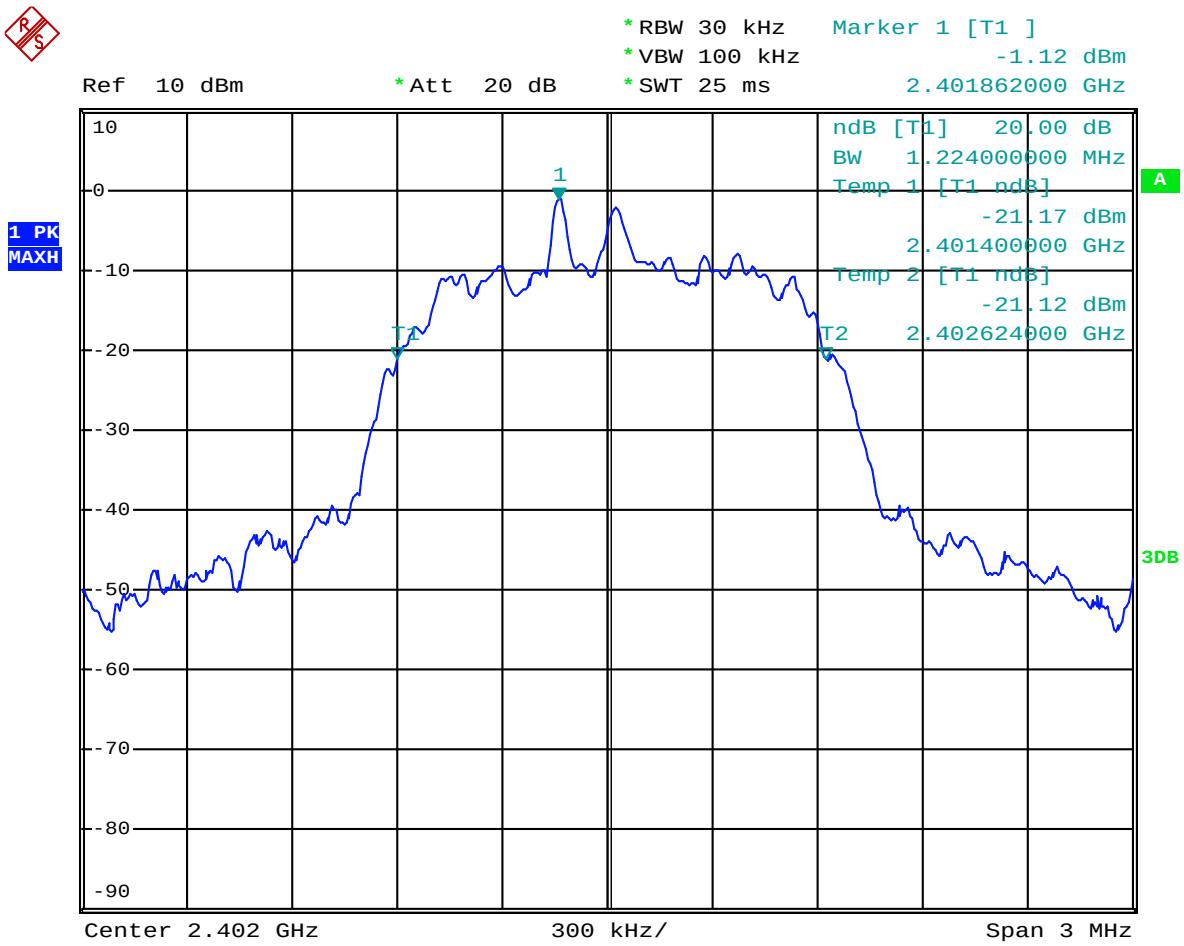
Л/4DQPSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.224MHz	--	--



Date: 12.DEC.2023 13:55:16

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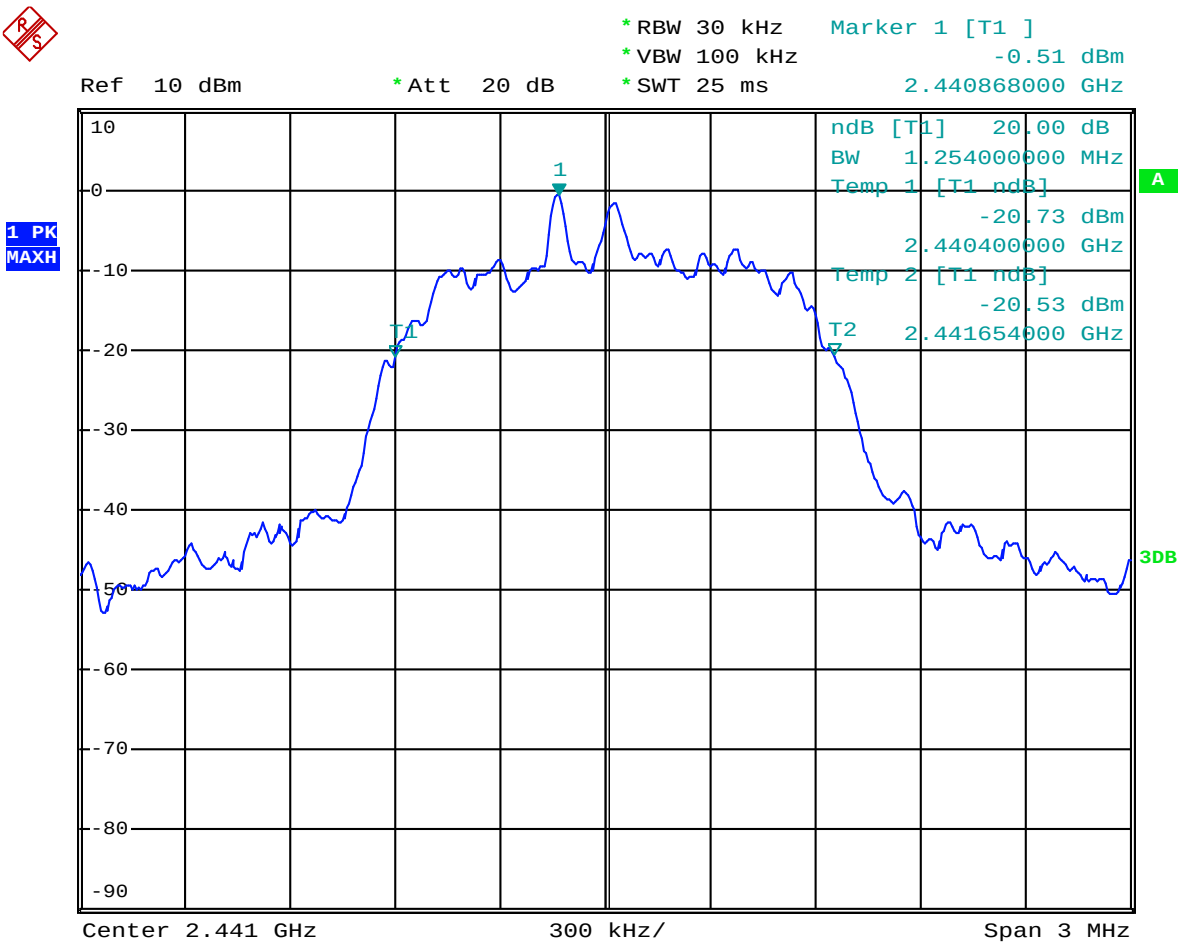
Л/4DQPSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.254MHz	--	--



Date: 12.DEC.2023 13:52:07

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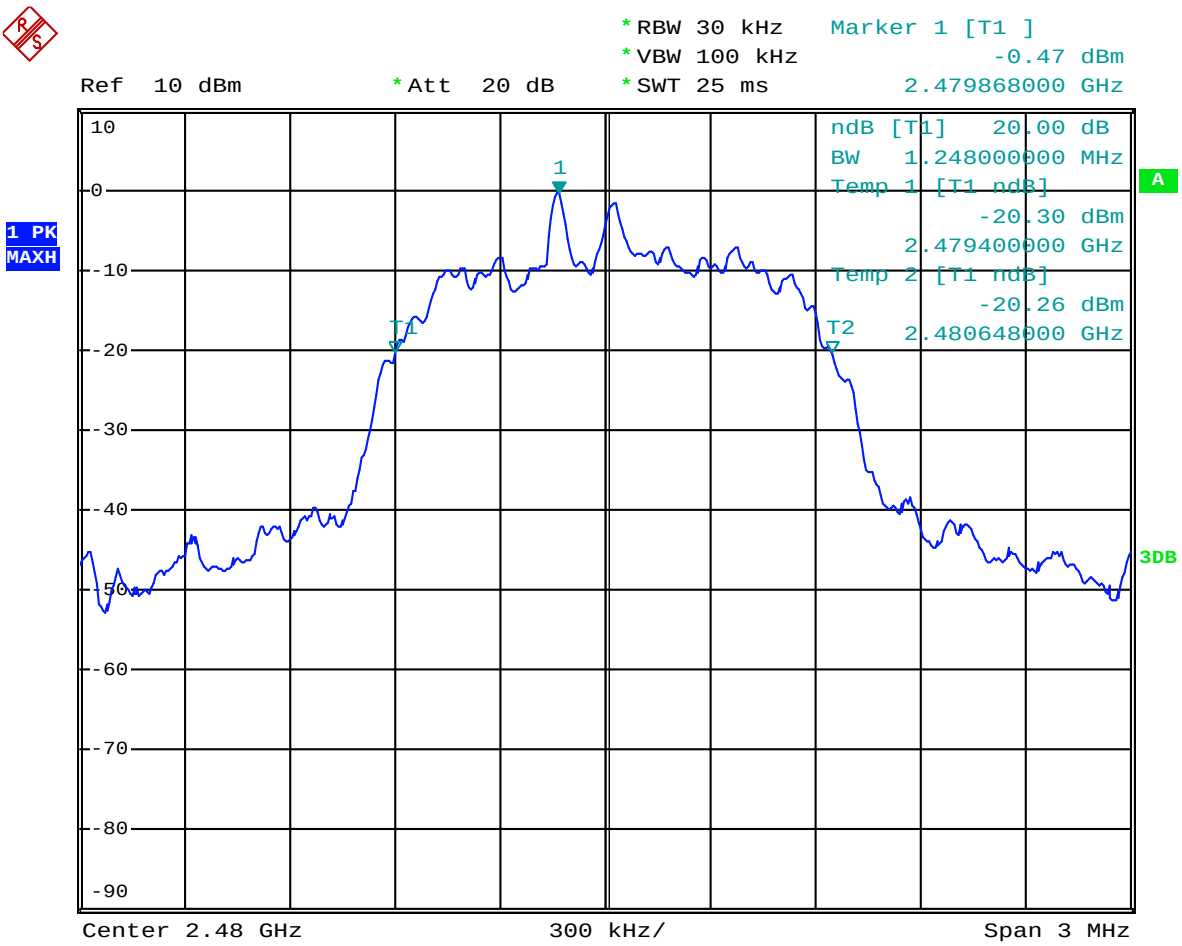
Л/4DQPSK			
Product:	Wireless Karaoke Speakers	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC5V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.248MHz	--	--



Date: 12.DEC.2023 13:46:38

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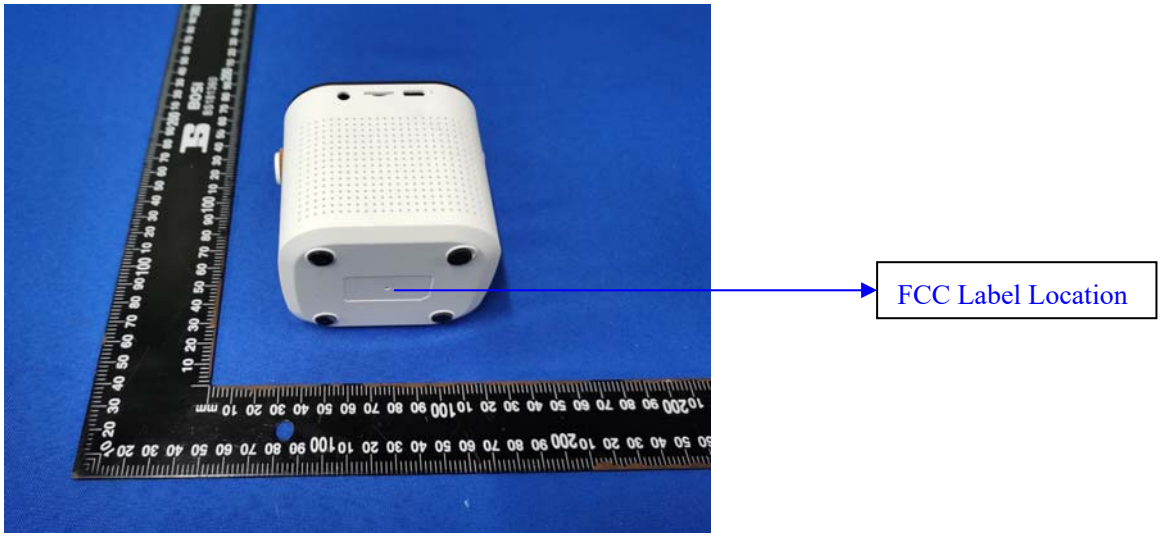
10.0 FCC ID Label

FCC ID: 2BB9C-Y1

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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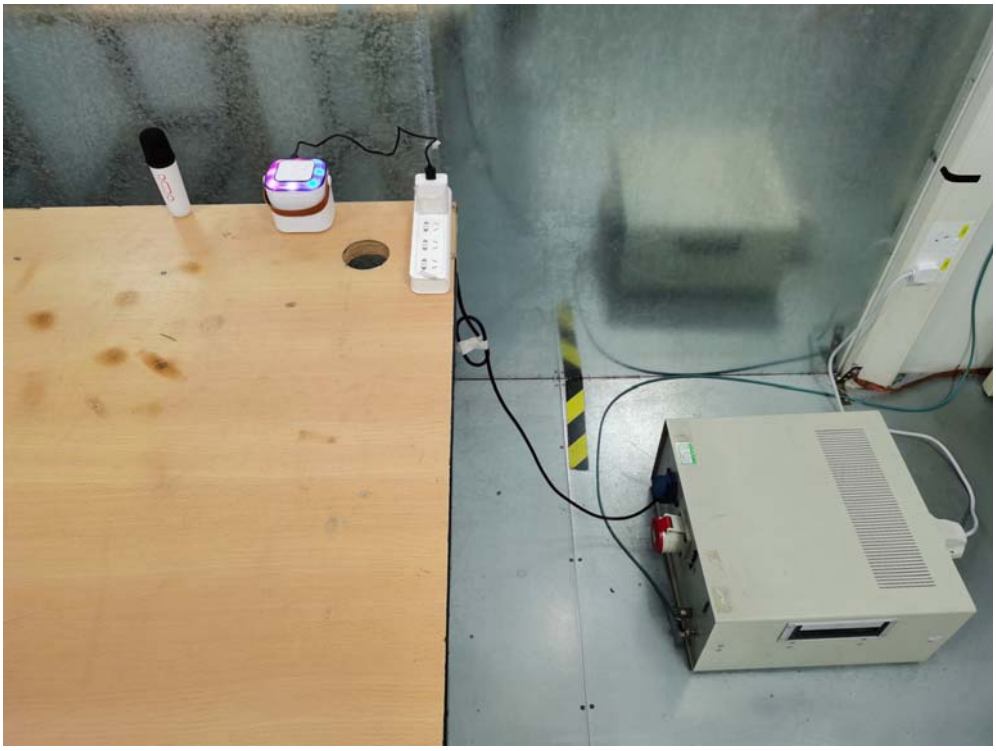
11.0 Photo of testing

11.1 Conducted test View



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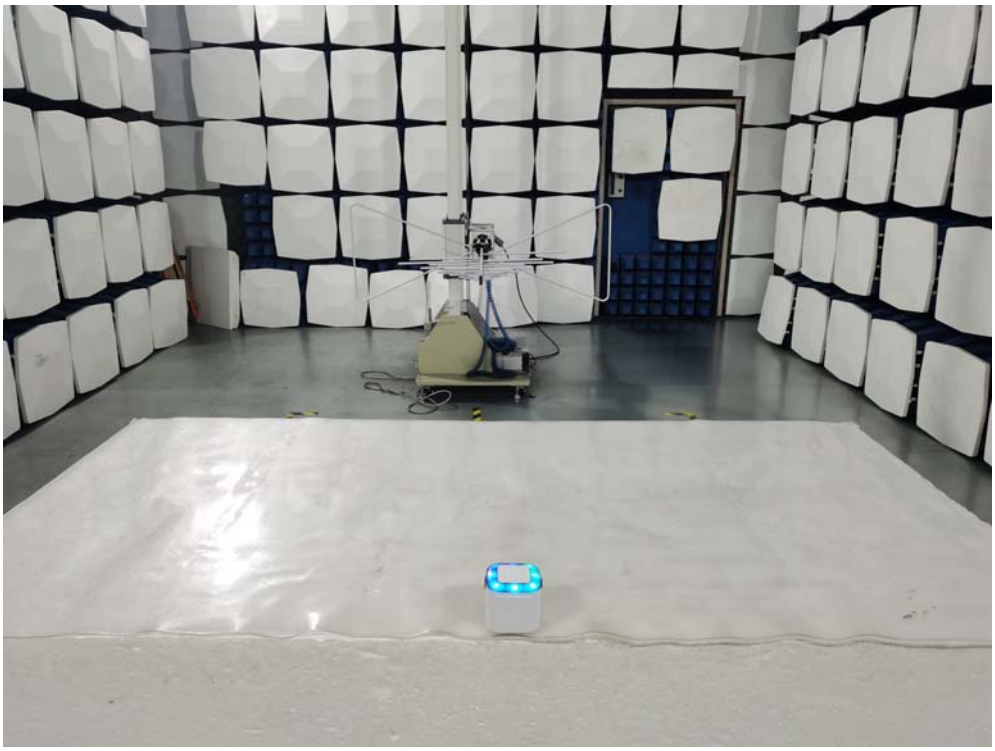
Radiated emission test view



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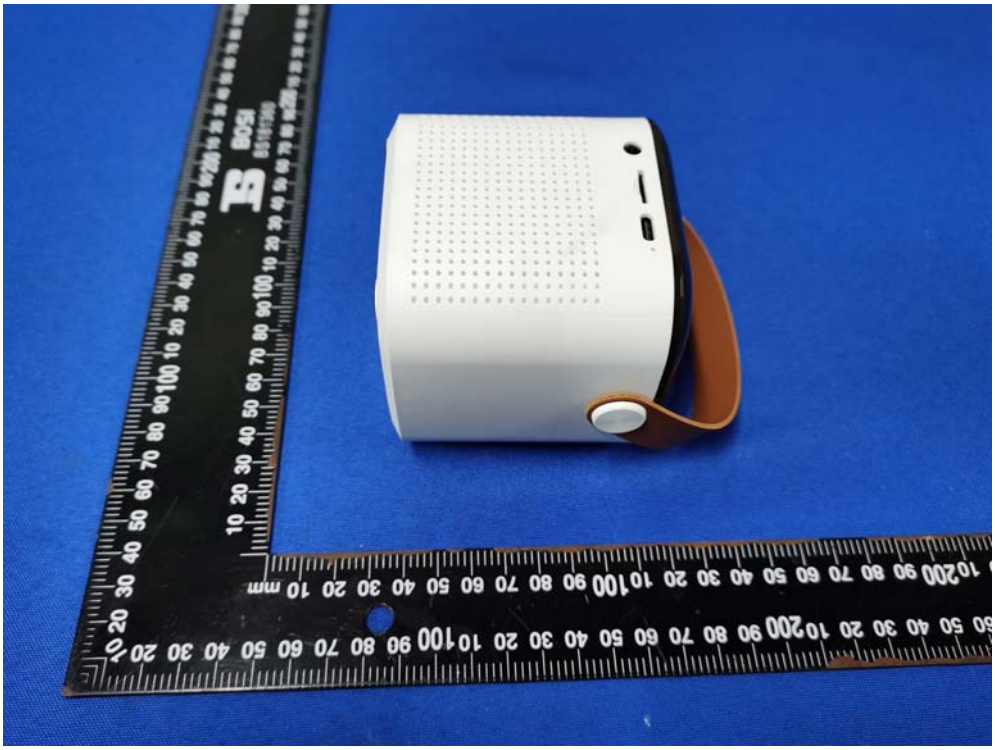
11.2 Photographs – EUT

Outside View



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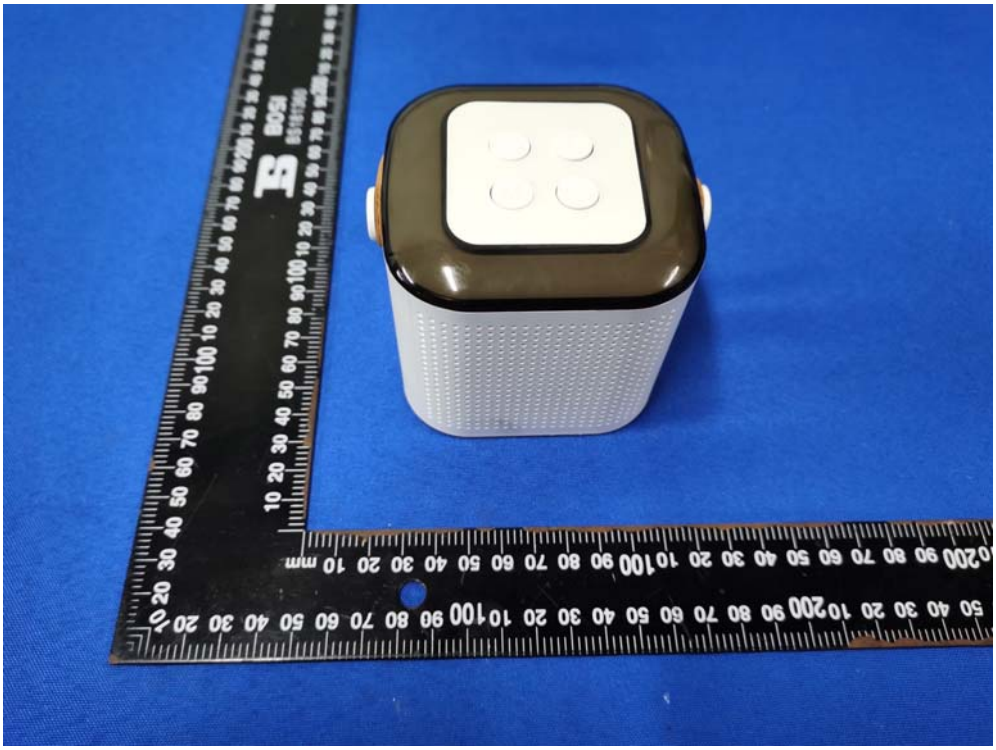
Outside View



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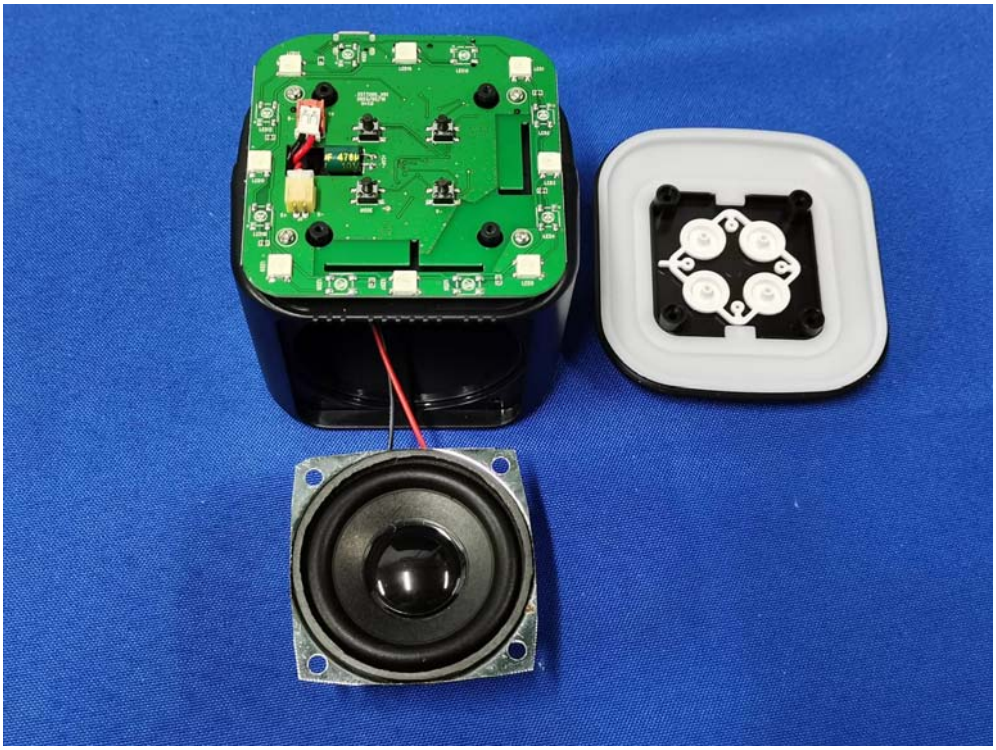
Inside View



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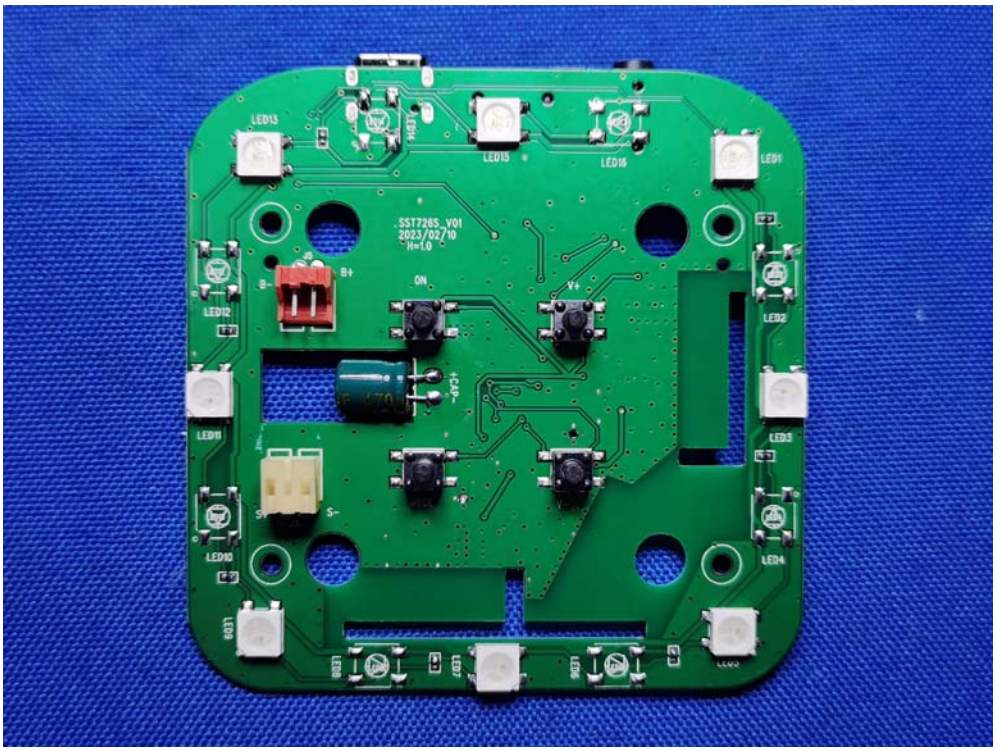
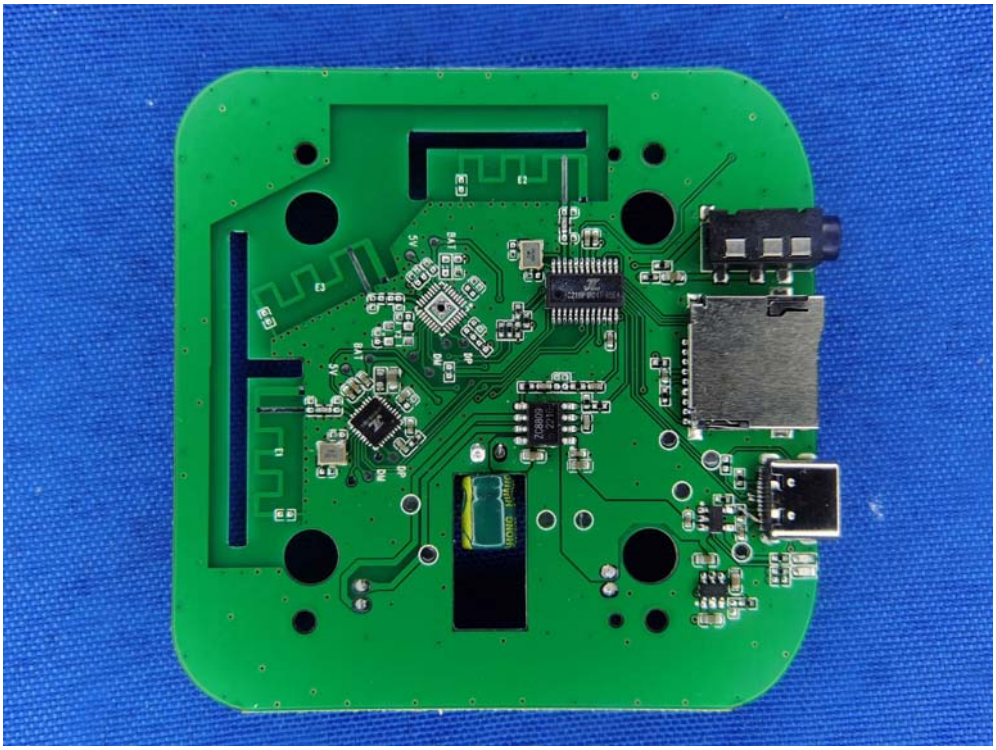
Inside View





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Inside View

--End of the report--

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