TEST REPORT

Report No.:	TW2608015-01E
Applicant:	TWINTECH INDUSTRY, INC.
Product:	Bluetooth Speaker
Model No.:	P301
Trademark:	N/A
Test Standards:	FCC Part 15.249
FCC ID:	2BHIM-CASTWAVE
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

Terry Tang

Manager

Dated: September 10, 2026

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.

ISED—Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of ISED 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

FCC Designation Number: CN1251

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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: TWINTECH INDUSTRY, INC.

Address: 16401 Berwyn Road, Cerritos, CA 90703, United States

1.3 Description of EUT

Product:	Bluetooth Speaker
Manufacturer:	Glory Star Technology Industrial Co., Ltd.
Address:	Room 2202, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen, China
Trademark:	N/A
Model Number:	P301
Additional Model Name	N/A
Rating:	Input: DC5V
Battery:	DC3.7V, 2000mAh Li-ion battery
Serial No.:	SN260001-SN265000
Hardware Version:	1.0
Software Version:	6.0
Operation Frequency:	2402-2480MHz
Modulation Type:	GFSK, Л/4DQPSK
Number of Channels:	79
Channel Separation:	1MHz
Antenna Designation	PCB antenna with gain -0.61dBi maximum (Get from the antenna specification)

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

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2026-08-18 to 2026-09-10

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

2. The measurement uncertainty is not applied to the test results

1.7 Test Engineer

The sample tested by _____

Print Name: Andy Xing

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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	2026-07-08	2027-07-07
LISN	R&S	EZH3-Z5	100294	2026-07-08	2027-07-07
LISN	R&S	EZH3-Z5	100253	2026-07-08	2027-07-07
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2026-07-08	2027-07-07
Loop Antenna	EMCO	6507	00078608	2026-07-08	2027-07-07
Spectrum	R&S	FSIQ26	100292	2026-07-08	2027-07-07
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2025-07-17	2028-07-16
Horn Antenna	R&S	BBHA 9120D	9120D-631	2025-07-17	2028-07-16
Power meter	Anritsu	ML2487A	6K00003613	2026-07-08	2027-07-07
Power sensor	Anritsu	MA2491A	32263	2026-07-08	2027-07-07
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2025-07-17	2028-07-16
9*6*6 Anechoic	--	--	N/A	2025-07-11	2028-07-10
EMI Test Receiver	RS	ESVB	826156/011	2026-07-08	2027-07-07
EMI Test Receiver	RS	ESCI 3	101496/003	2026-07-08	2027-07-07
Spectrum	HP/Agilent	E4407B	MY50441392	2026-07-08	2027-07-07
Spectrum	RS	FSP	1164.4391.38	2026-07-08	2027-07-07
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2026-07-08	2027-07-07
RF Cable	Zhengdi	7m	--	2026-07-08	2027-07-07
Pre-Amplifier	Schwarebeck	BBV9743	#218	2026-07-08	2027-07-07
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2026-07-08	2027-07-07
LISN	SCHAFFNER	NNB42	00012	2026-07-08	2027-07-07
ESPI Test Receiver	R&S	ESPI 3	100379	2026-07-08	2027-07-07
LISN	R&S	EZH3-Z5	100294	2026-07-08	2027-07-07
6dB Attenuator	Anritsu	MP721B	--	2026-07-08	2027-07-07

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

3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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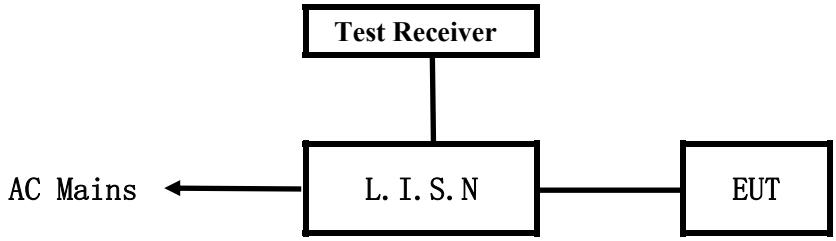
5.0 Power Line Conducted Emission Test

5.1 Schematics of the test



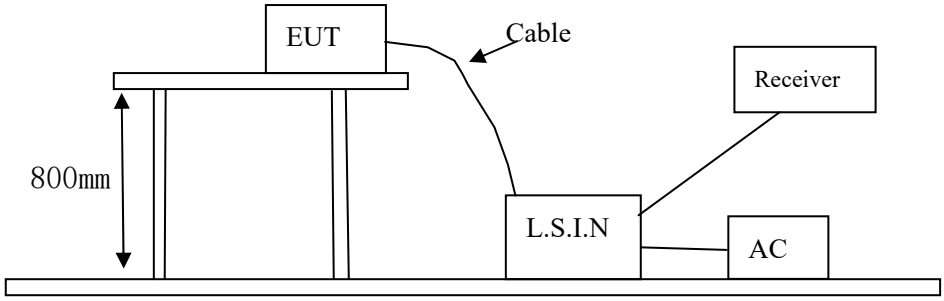
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024.The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024. 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
Bluetooth Speaker	Glory Star Technology Industrial Co., Ltd.	P301	2BHIM-CASTWAVE

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	Xiaomi	CDQ02ZM	Input: 100-240V~, 50/60Hz, 1.2A; Output: DC5V, 3A; DC9V, 3A; DC12V, 3A; DC15V, 3A; DC20V, 2.25A;

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024

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)

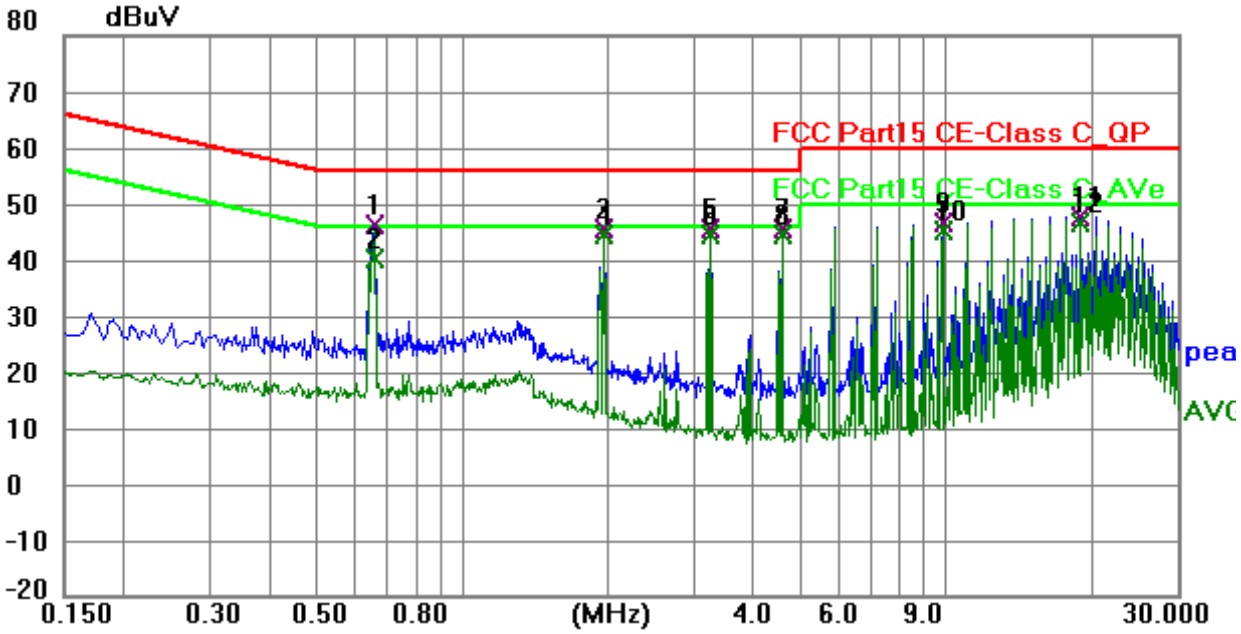
EUT Operating Environment

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

EUT set Condition: Charging and 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	0.6540	35.79	10.38	46.17	56.00	-9.83	QP	P
2	0.6540	29.75	10.38	40.13	46.00	-5.87	AVG	P
3	1.9620	35.48	10.19	45.67	56.00	-10.33	QP	P
4	1.9620	34.18	10.19	44.37	46.00	-1.63	AVG	P
5	3.2700	35.39	10.28	45.67	56.00	-10.33	QP	P
6	3.2700	34.19	10.28	44.47	46.00	-1.53	AVG	P
7	4.5780	35.43	10.25	45.68	56.00	-10.32	QP	P
8	4.5780	34.19	10.25	44.44	46.00	-1.56	AVG	P
9	9.8100	36.18	10.36	46.54	60.00	-13.46	QP	P
10	9.8100	34.80	10.36	45.16	50.00	-4.84	AVG	P
11	18.9660	37.34	10.47	47.81	60.00	-12.19	QP	P
12	18.9660	36.30	10.47	46.77	50.00	-3.23	AVG	P

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

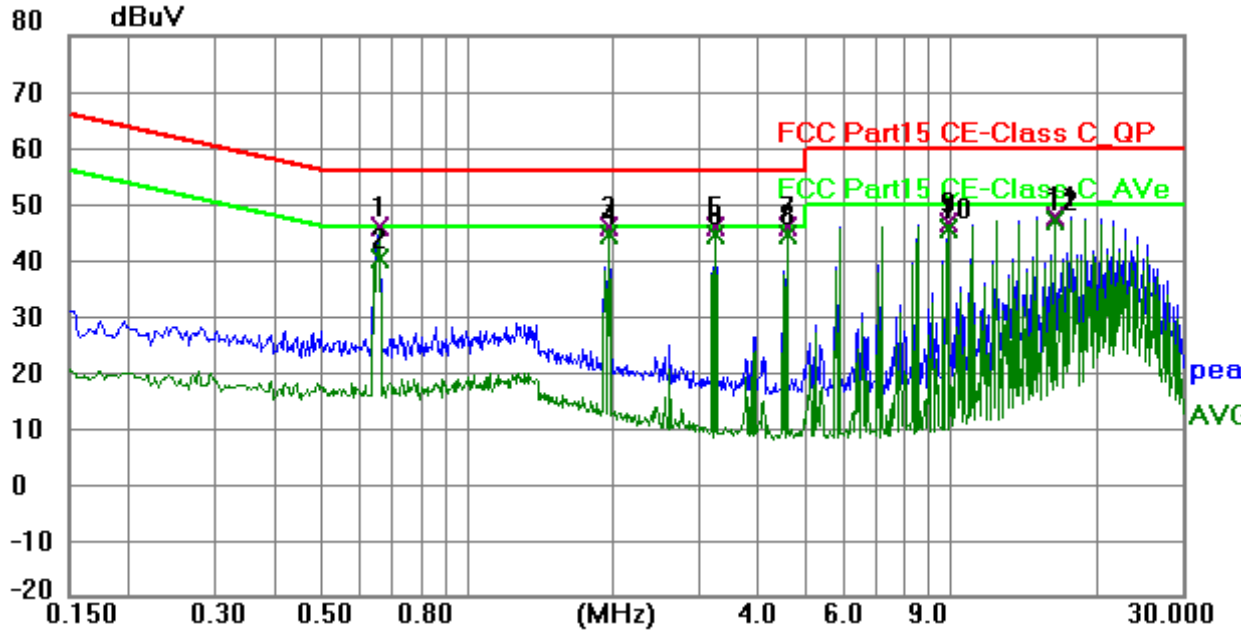
EUT Operating Environment

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

EUT set Condition: Charging and 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	0.6540	35.56	10.38	45.94	56.00	-10.06	QP	P
2	0.6540	29.96	10.38	40.34	46.00	-5.66	AVG	P
3	1.9620	35.57	10.19	45.76	56.00	-10.24	QP	P
4	1.9620	34.21	10.19	44.40	46.00	-1.60	AVG	P
5	3.2700	35.52	10.28	45.80	56.00	-10.20	QP	P
6	3.2700	34.25	10.28	44.53	46.00	-1.47	AVG	P
7	4.5780	35.54	10.25	45.79	56.00	-10.21	QP	P
8	4.5780	34.31	10.25	44.56	46.00	-1.44	AVG	P
9	9.8100	36.27	10.36	46.63	60.00	-13.37	QP	P
10	9.8100	35.00	10.36	45.36	50.00	-4.64	AVG	P
11	16.3500	37.20	10.44	47.64	60.00	-12.36	QP	P
12	16.3500	36.39	10.44	46.83	50.00	-3.17	AVG	P

Note: Margin=Reading level+ Factor–Limit

Factor=LISN Factor + Cable Factor

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6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024. 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 C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024.

(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

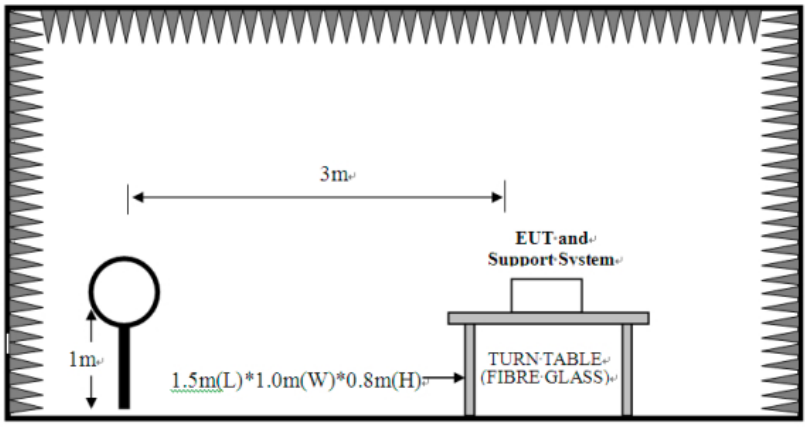
(Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz).
Measurements were made at 3 meters.

(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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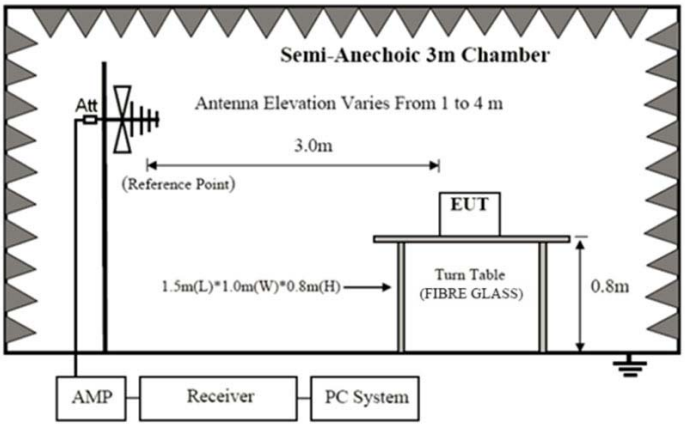
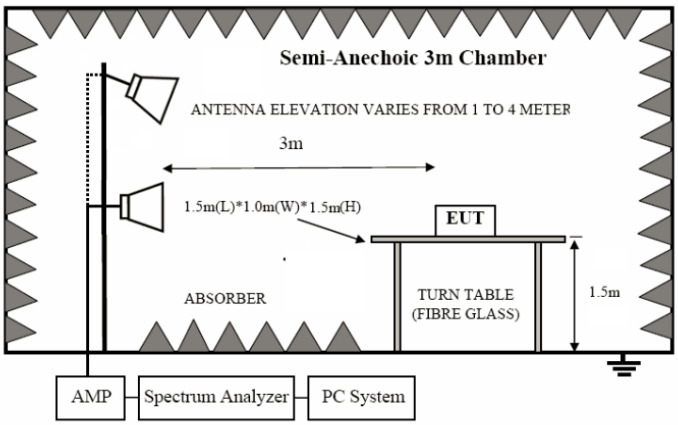
For radiated emissions from 30MHz to1GHz



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:

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 § 15.209, whichever is the lesser attenuation.

The report refers only to the sample tested and does not apply to the bulk.
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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**	
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, Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

6. Battery was fully charged during test

6. For the radiated emissions from 30MHz-1000MHz, only the worst case was recorded and the middle channel (2441MHz) was the worst case.

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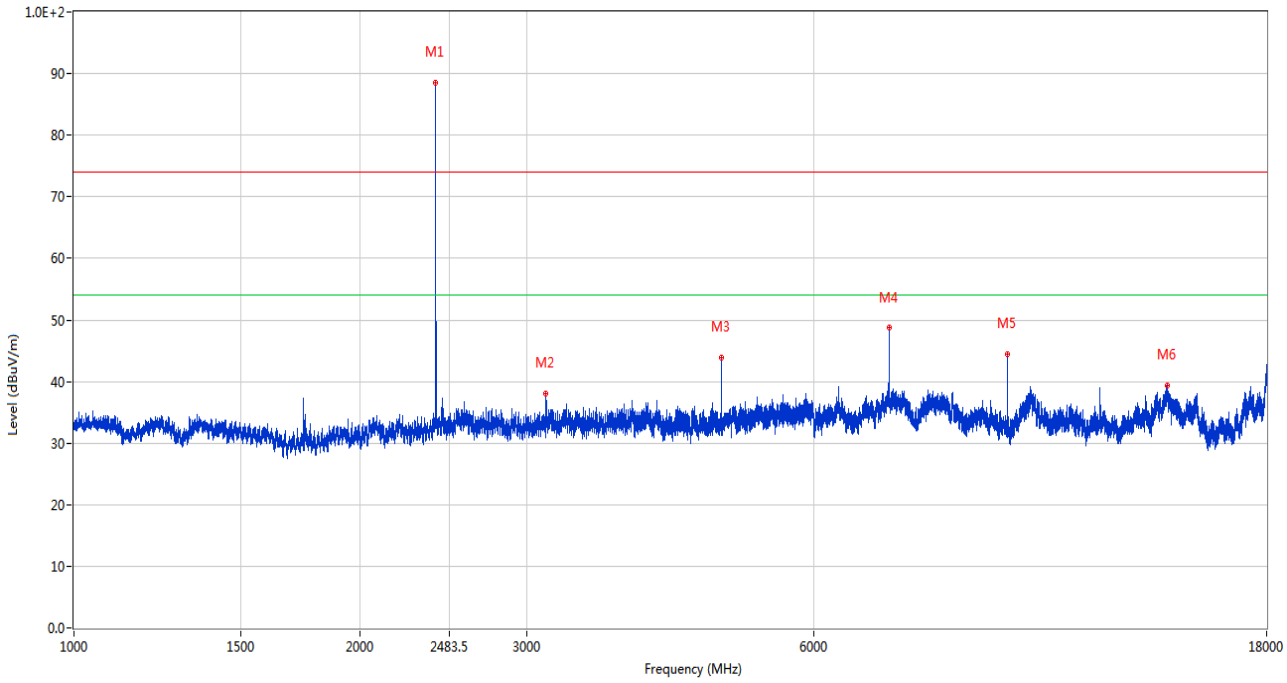
6.5 Test result

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/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2402	88.52	-11.83	114.0	25.48	Peak	17.00	100	Horizontal	Pass
2	3137.750	38.10	-9.64	74.0	35.90	Peak	244.00	100	Horizontal	Pass
3	4804.500	43.88	-5.85	74.0	30.12	Peak	20.00	100	Horizontal	Pass
4	7206.600	48.75	1.78	74.0	25.25	Peak	17.00	100	Horizontal	Pass
5	9607.200	44.45	5.19	74.0	29.55	Peak	17.00	100	Horizontal	Pass
6	14145.000	39.41	13.89	74.0	34.59	Peak	186.00	100	Horizontal	Pass

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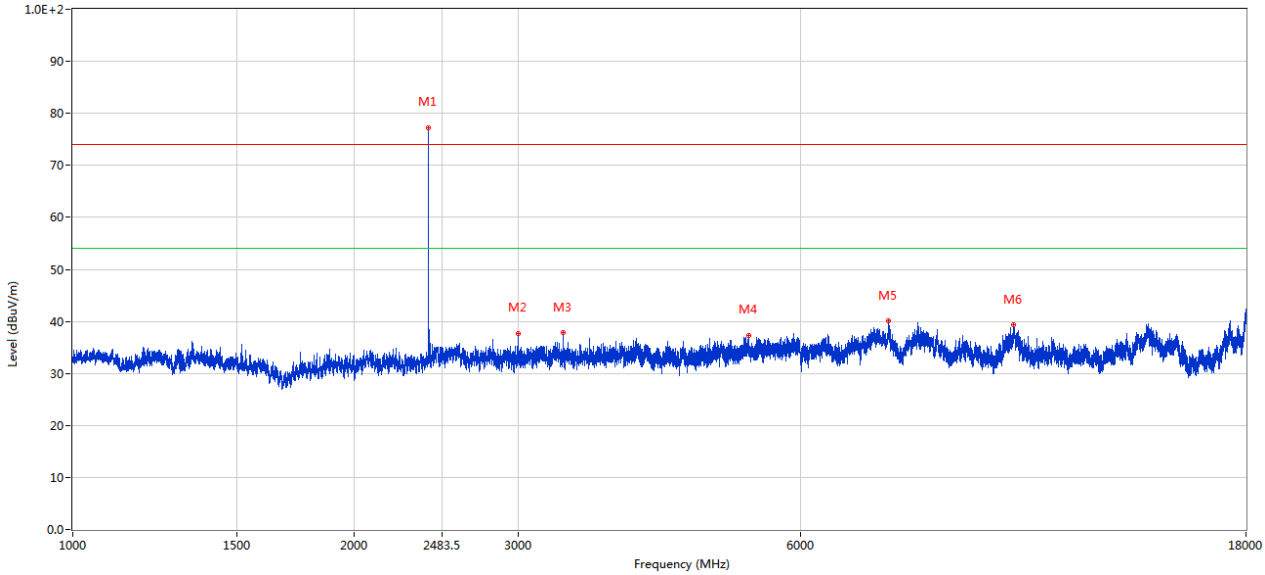
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2402	77.12	-11.83	114.0	36.88	Peak	296.00	100	Vertical	Pass
2	2995.750	37.60	-10.14	74.0	36.40	Peak	0.00	100	Vertical	Pass
3	3350.000	37.89	-9.23	74.0	36.11	Peak	72.00	100	Vertical	Pass
4	5282.750	37.22	-4.13	74.0	36.78	Peak	290.00	100	Vertical	Pass
5	7458.600	40.06	2.95	74.0	33.94	Peak	167.00	100	Vertical	Pass
6	10156.200	39.30	8.46	74.0	34.70	Peak	109.00	100	Vertical	Pass

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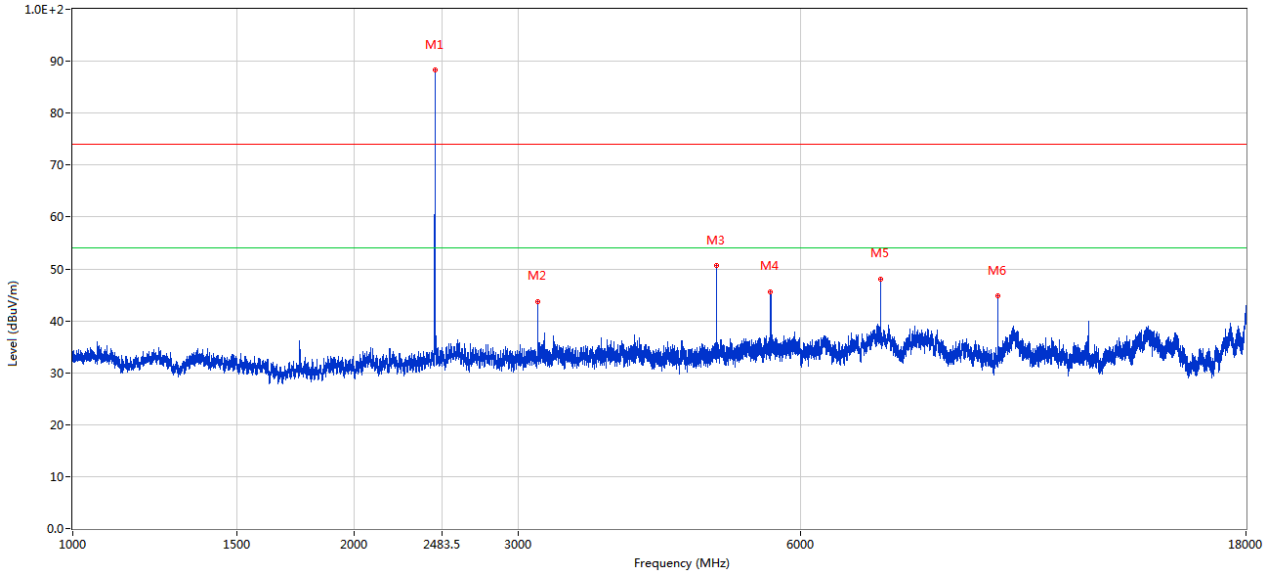
Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2441	88.32	-11.93	114.0	25.68	Peak	15.00	100	Horizontal	Pass
2	3147.000	43.74	-9.64	74.0	30.26	Peak	253.00	100	Horizontal	Pass
3	4881.500	50.58	-5.32	74.0	23.42	Peak	4.00	100	Horizontal	Pass
4	5579.750	45.63	-3.46	74.0	28.37	Peak	54.00	100	Horizontal	Pass
5	7321.800	47.93	1.91	74.0	26.07	Peak	9.00	100	Horizontal	Pass
6	9763.200	44.78	6.18	74.0	29.22	Peak	15.00	100	Horizontal	Pass

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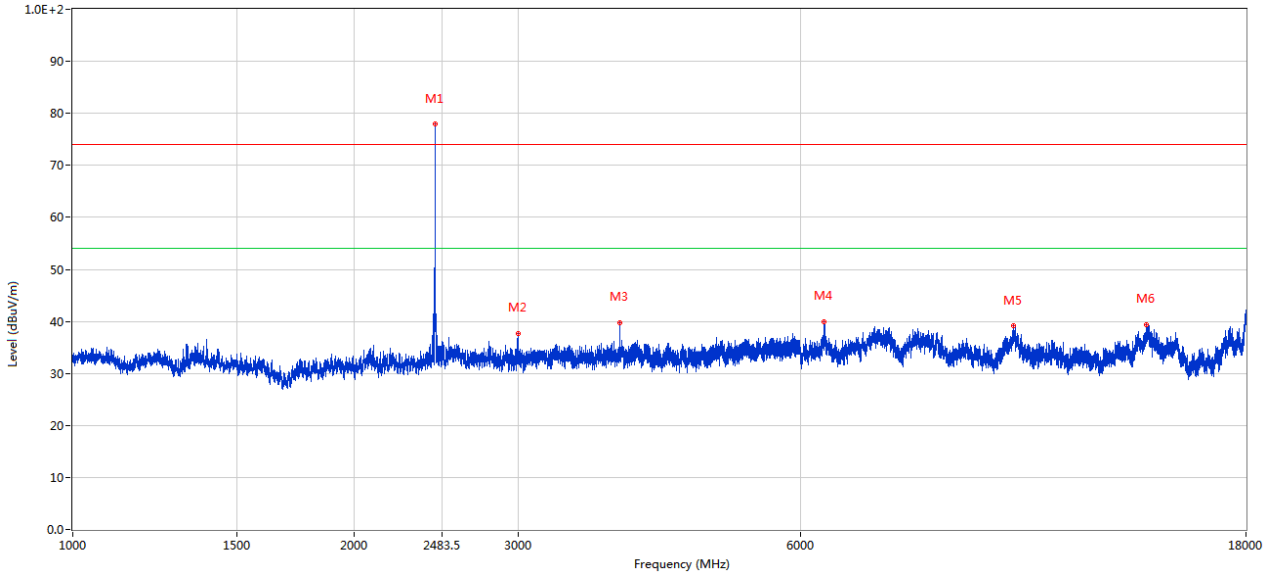
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2441	77.91	-11.93	114.0	36.09	Peak	316.00	100	Vertical	Pass
2	2994.500	37.58	-10.13	74.0	36.42	Peak	180.00	100	Vertical	Pass
3	3847.250	39.82	-6.47	74.0	34.18	Peak	0.00	100	Vertical	Pass
4	6371.400	39.96	-1.63	74.0	34.04	Peak	193.00	100	Vertical	Pass
5	10153.201	39.23	8.53	74.0	34.77	Peak	50.00	100	Vertical	Pass
6	14086.200	39.39	13.82	74.0	34.61	Peak	11.00	100	Vertical	Pass

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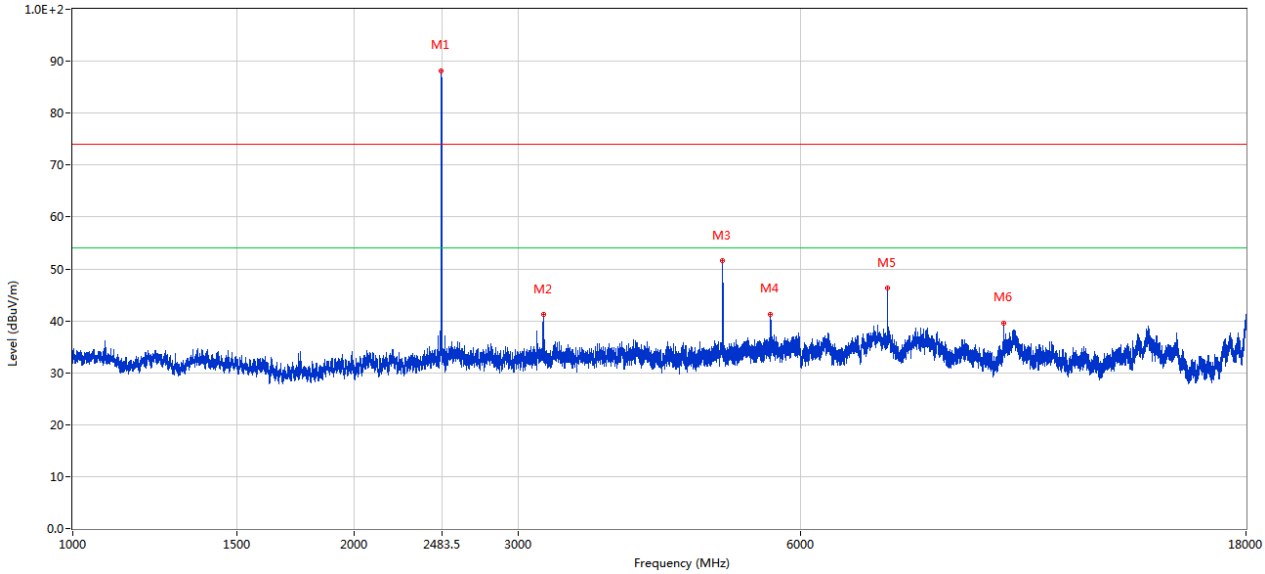
Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480	88.14	-11.34	114.0	25.86	Peak	1.00	100	Horizontal	Pass
2	3187.000	41.17	-9.44	74.0	32.83	Peak	290.00	100	Horizontal	Pass
3	4960.250	51.56	-5.32	74.0	22.44	Peak	0.00	100	Horizontal	Pass
4	5580.750	41.27	-3.46	74.0	32.73	Peak	128.00	100	Horizontal	Pass
5	7440.600	46.25	2.96	74.0	27.75	Peak	4.00	100	Horizontal	Pass
6	9920.400	39.59	5.94	74.0	34.41	Peak	0.00	100	Horizontal	Pass

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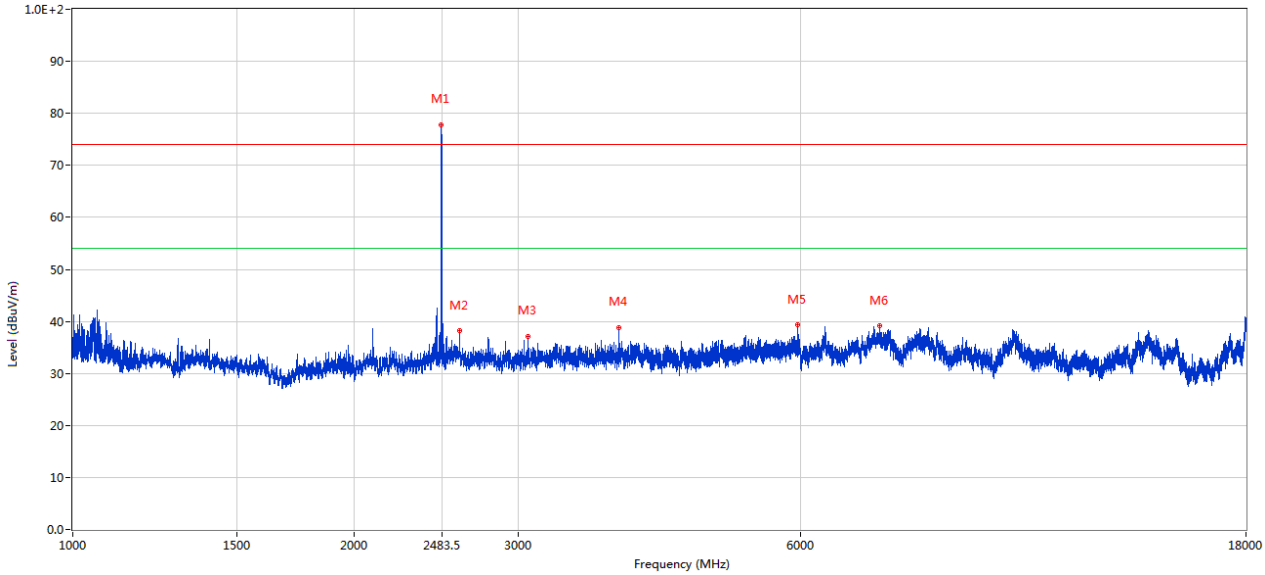
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480	77.84	-11.34	114.0	36.16	Peak	294.00	100	Vertical	Pass
2	2593.250	38.29	-10.57	74.0	35.71	Peak	346.00	100	Vertical	Pass
3	3068.750	37.18	-10.06	74.0	36.82	Peak	348.00	100	Vertical	Pass
4	3841.250	38.81	-6.45	74.0	35.19	Peak	356.00	100	Vertical	Pass
5	5960.500	39.30	-3.50	74.0	34.70	Peak	6.00	100	Vertical	Pass
6	7299.000	39.12	1.99	74.0	34.88	Peak	262.00	100	Vertical	Pass

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B. **General Radiated Emission Data**

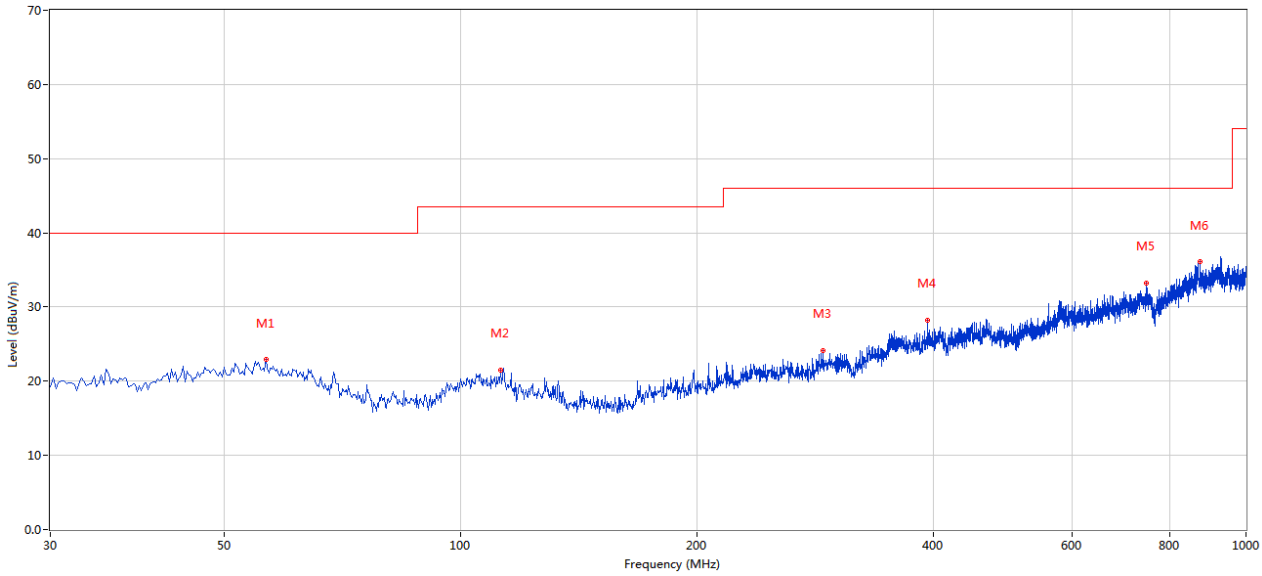
Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Test Channel: Middle (2441MHz)

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	56.432	22.88	-7.95	40.0	17.12	Peak	247.00	100	Horizontal	Pass
2	112.450	21.52	-9.63	43.5	21.98	Peak	235.00	100	Horizontal	Pass
3	289.475	24.11	-7.02	46.0	21.89	Peak	240.00	100	Horizontal	Pass
4	392.780	28.16	-3.52	46.0	17.84	Peak	105.00	100	Horizontal	Pass
5	745.617	33.21	1.40	46.0	12.79	Peak	187.00	100	Horizontal	Pass
6	874.628	36.06	3.46	46.0	9.94	Peak	126.00	100	Horizontal	Pass

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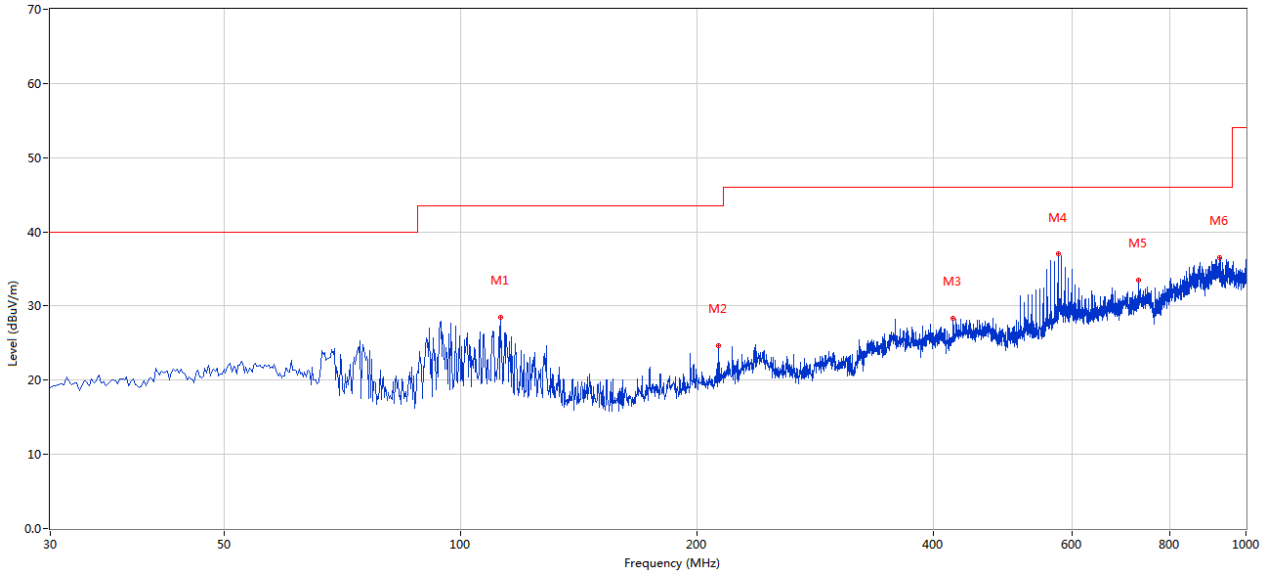
Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Test Channel: Middle (2441MHz)

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	112.450	28.45	-9.63	43.5	15.05	Peak	1.00	100	Vertical	Pass
2	213.087	24.71	-9.37	43.5	18.79	Peak	358.00	100	Vertical	Pass
3	423.820	28.32	-3.78	46.0	17.68	Peak	292.00	100	Vertical	Pass
4	576.110	36.98	-1.17	46.0	9.02	Peak	166.00	100	Vertical	Pass
5	729.612	33.45	1.52	46.0	12.55	Peak	234.00	100	Vertical	Pass
6	926.522	36.52	4.15	46.0	9.48	Peak	82.00	100	Vertical	Pass

Note: (1) Results = Reading Level + Factor (Factor= Antenna Factor + Cable Loss-Amplifier)

(2) Margin= Limits -Results

(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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7. Band Edge

7.1 Test Method and test Procedure:

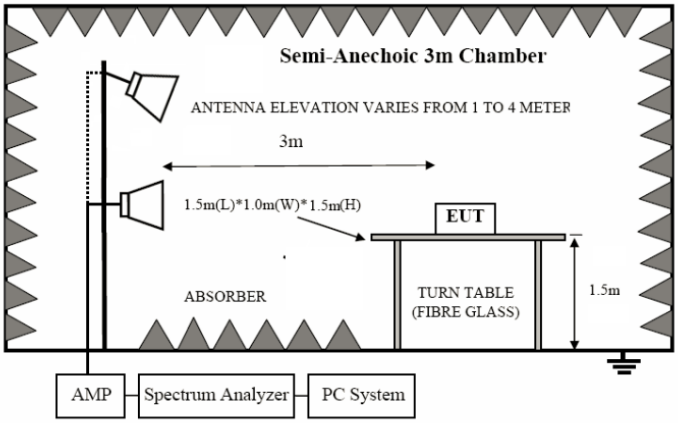
(1) The EUT was tested according to ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(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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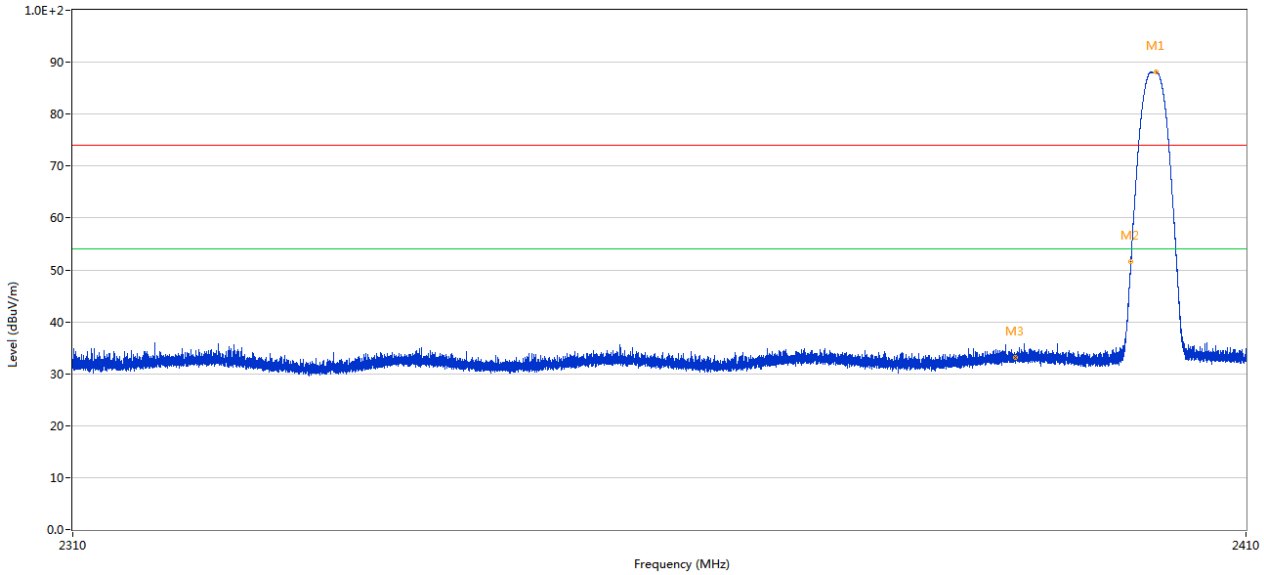
7.6 Test Result

Product:	Bluetooth Speaker	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2402.215	88.16	-11.83	74.0	-14.16	Peak	16.00	100	Horizontal	N/A
2	2400.000	51.65	-11.82	74.0	22.35	Peak	13.00	100	Horizontal	Pass
3	2390.000	33.17	-11.91	74.0	40.83	Peak	76.00	100	Horizontal	Pass

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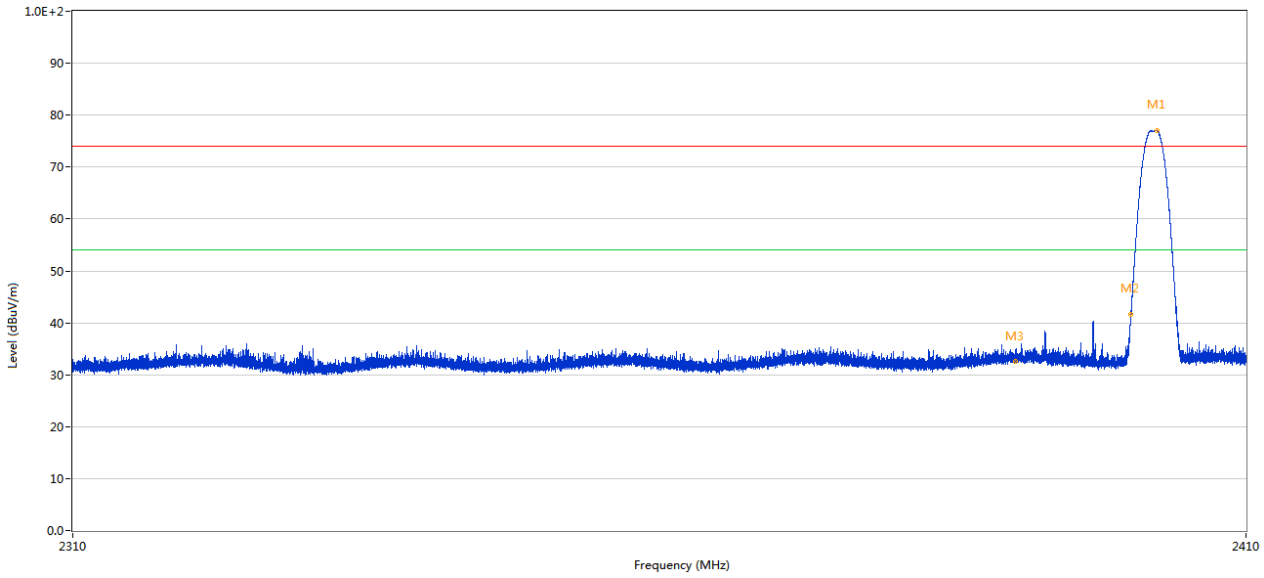
Product:	Bluetooth Speaker	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2402.245	77.05	-11.83	74.0	-3.05	Peak	296.00	100	Vertical	N/A
2	2400.000	41.65	-11.82	74.0	32.35	Peak	296.00	100	Vertical	Pass
3	2390.000	32.53	-11.91	74.0	41.47	Peak	25.00	100	Vertical	Pass

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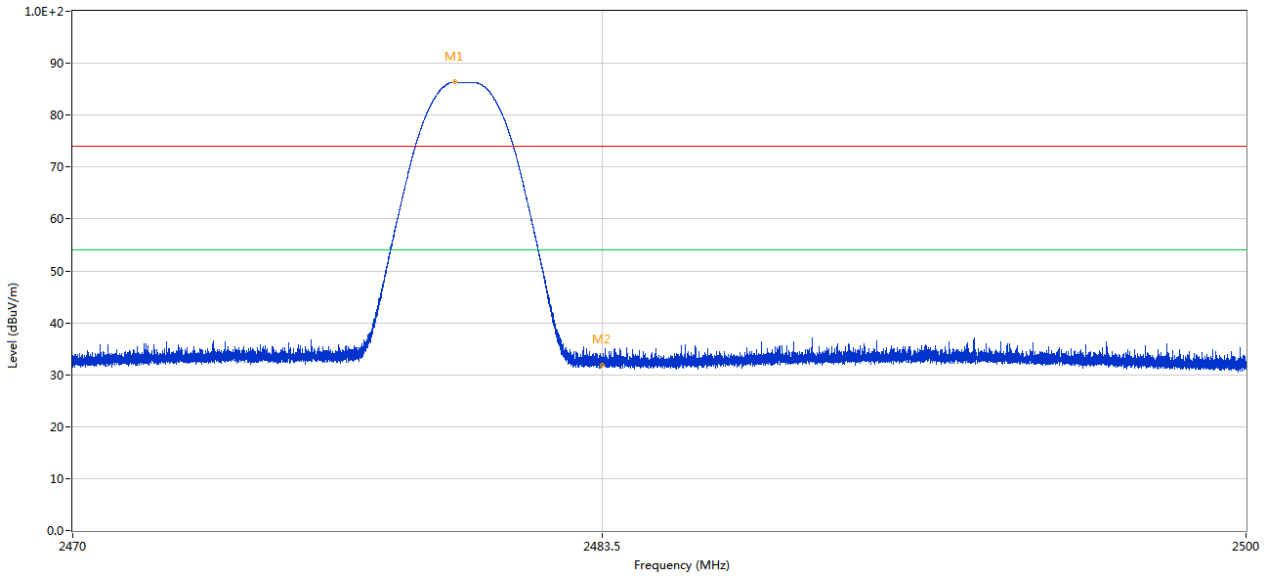
Product:	Bluetooth Speaker	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2479.726	86.38	-11.34	74.0	-12.38	Peak	2.00	100	Horizontal	N/A
2	2483.500	31.82	-11.26	74.0	42.18	Peak	24.00	100	Horizontal	Pass

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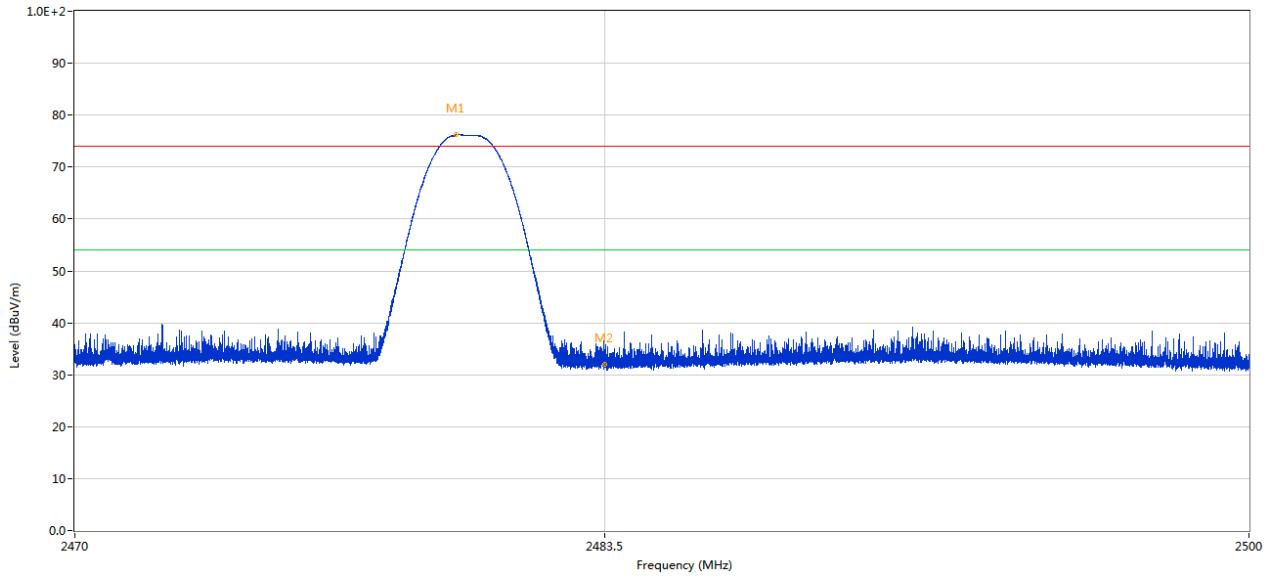
Product:	Bluetooth Speaker	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2479.714	76.29	-11.34	74.0	-2.29	Peak	298.00	100	Vertical	N/A
2	2483.500	32.05	-11.26	74.0	41.95	Peak	190.00	100	Vertical	Pass

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

2. The two modulation modes of GFSK, 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 with gain -0.61dBi maximum. It fulfills the requirement of this section.

Test Result: Pass

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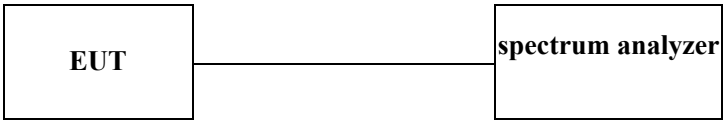
9.0 20dB Bandwidth Measurement

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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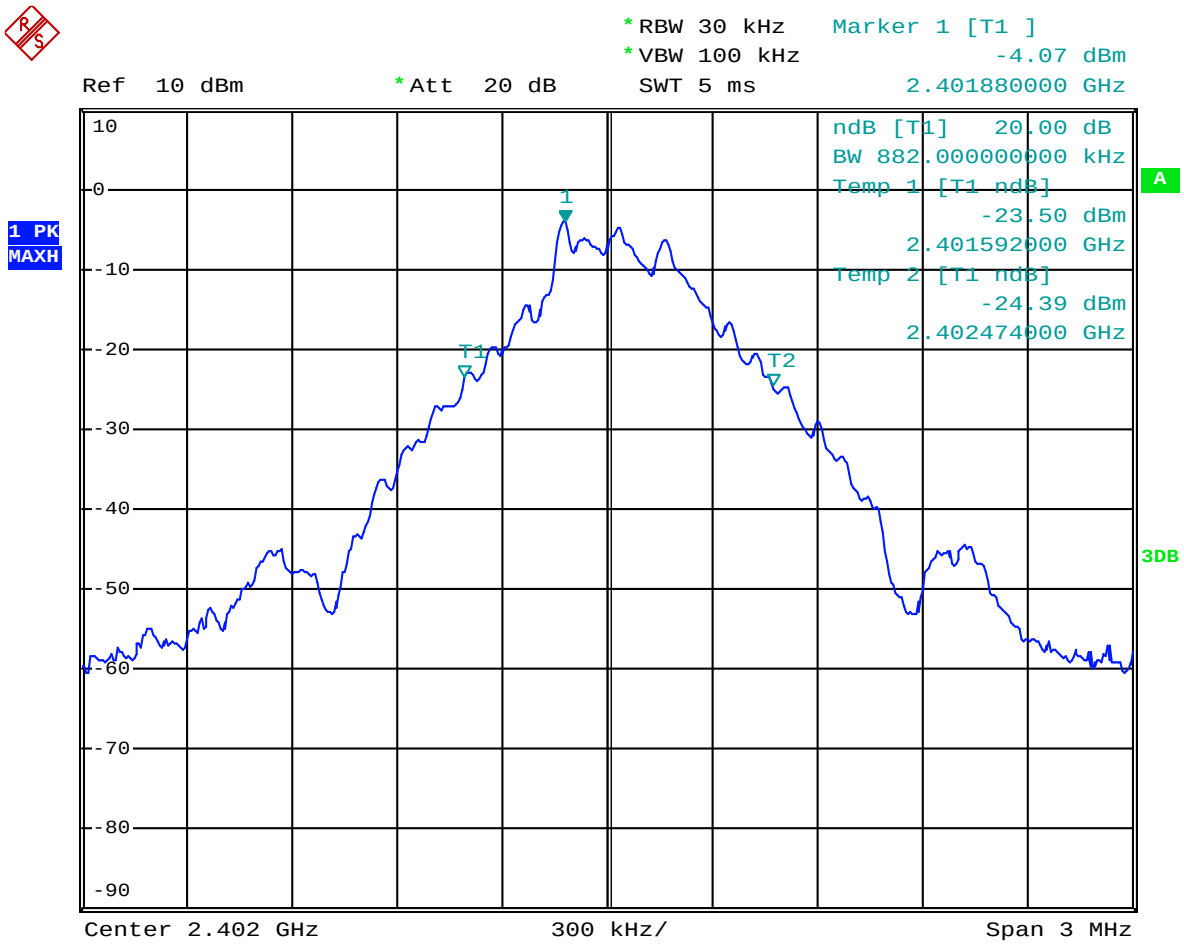
Test Result

GFSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	882kHz	--	--



Date: 4.SEP.2026 09:05:25

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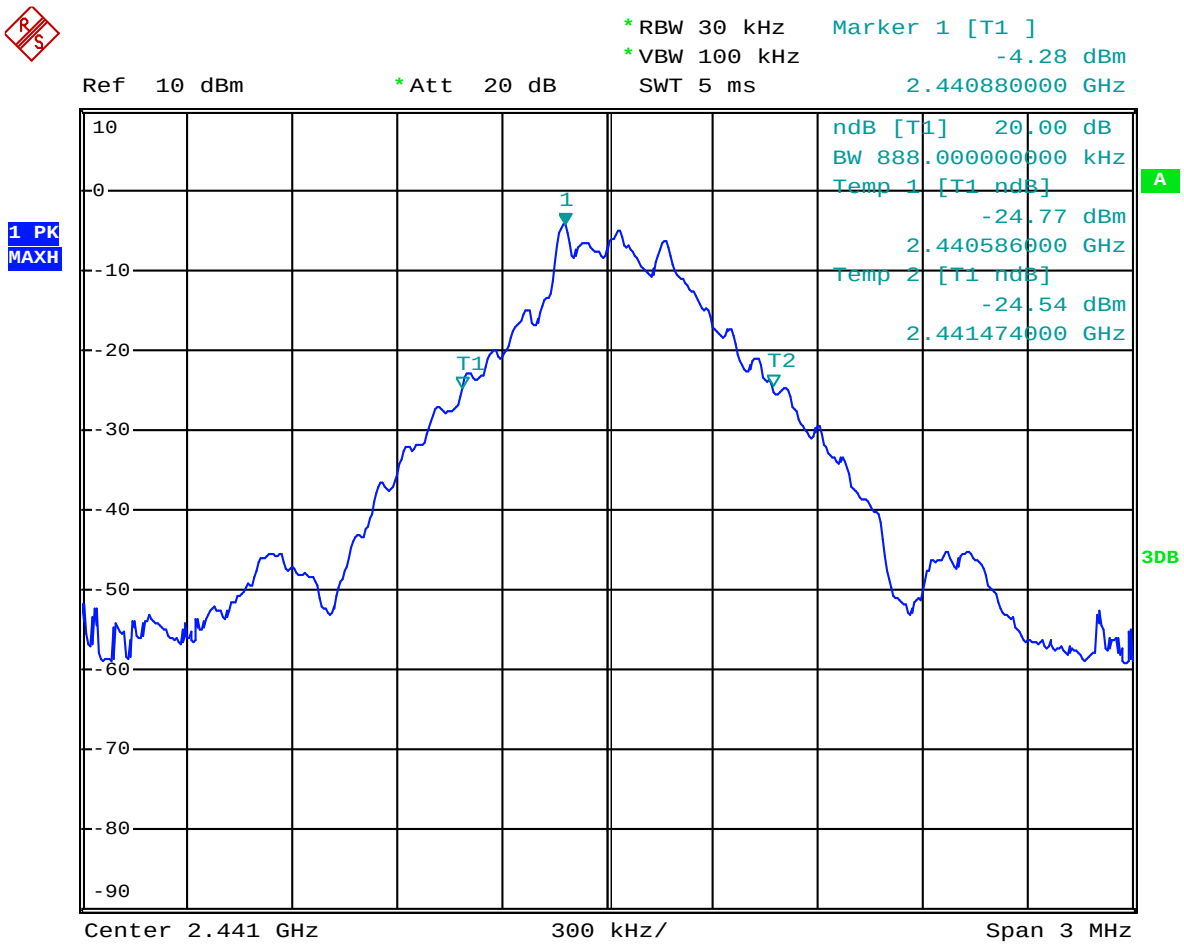
GFSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	888kHz	--	--



Date: 4.SEP.2026 09:22:48

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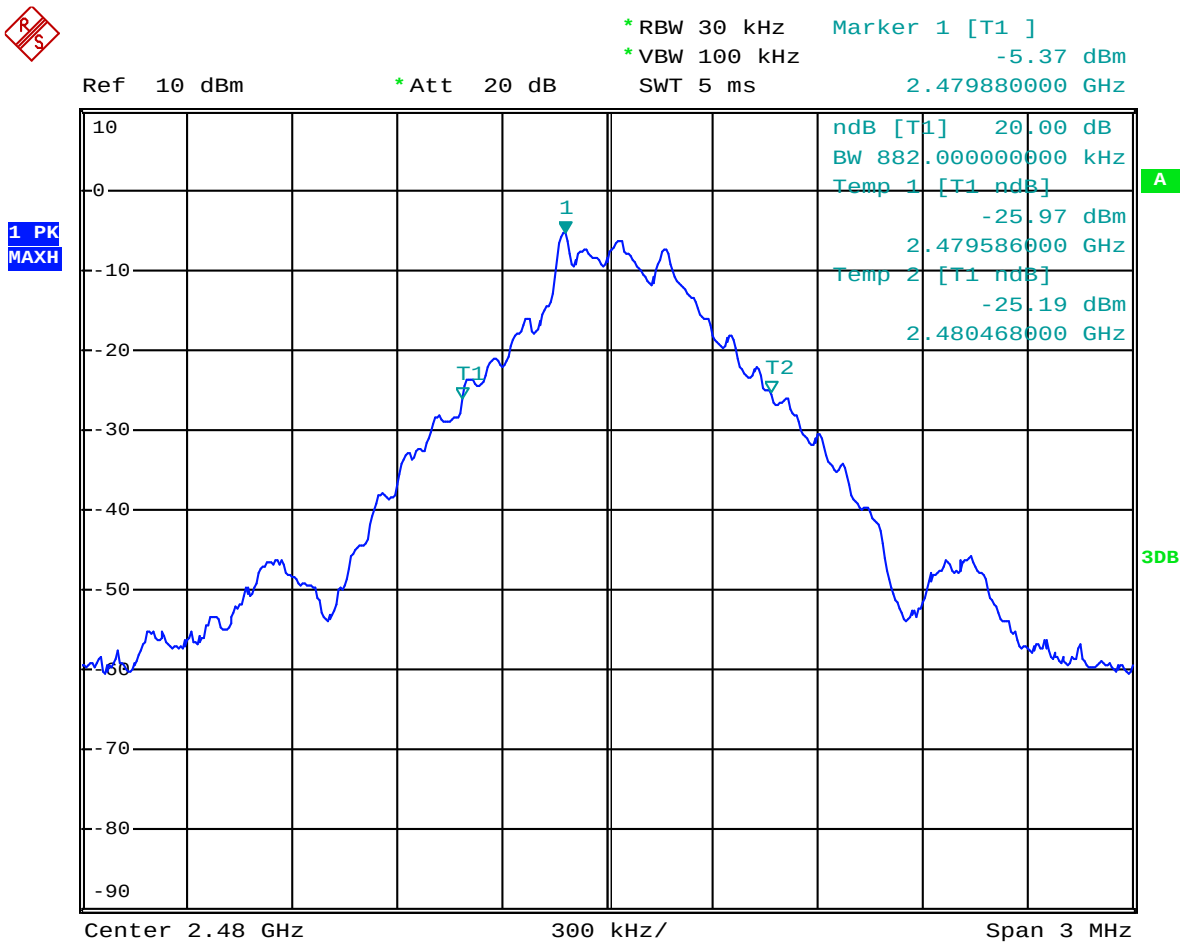
GFSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	882kHz	--	--



Date: 4.SEP.2026 09:26:34

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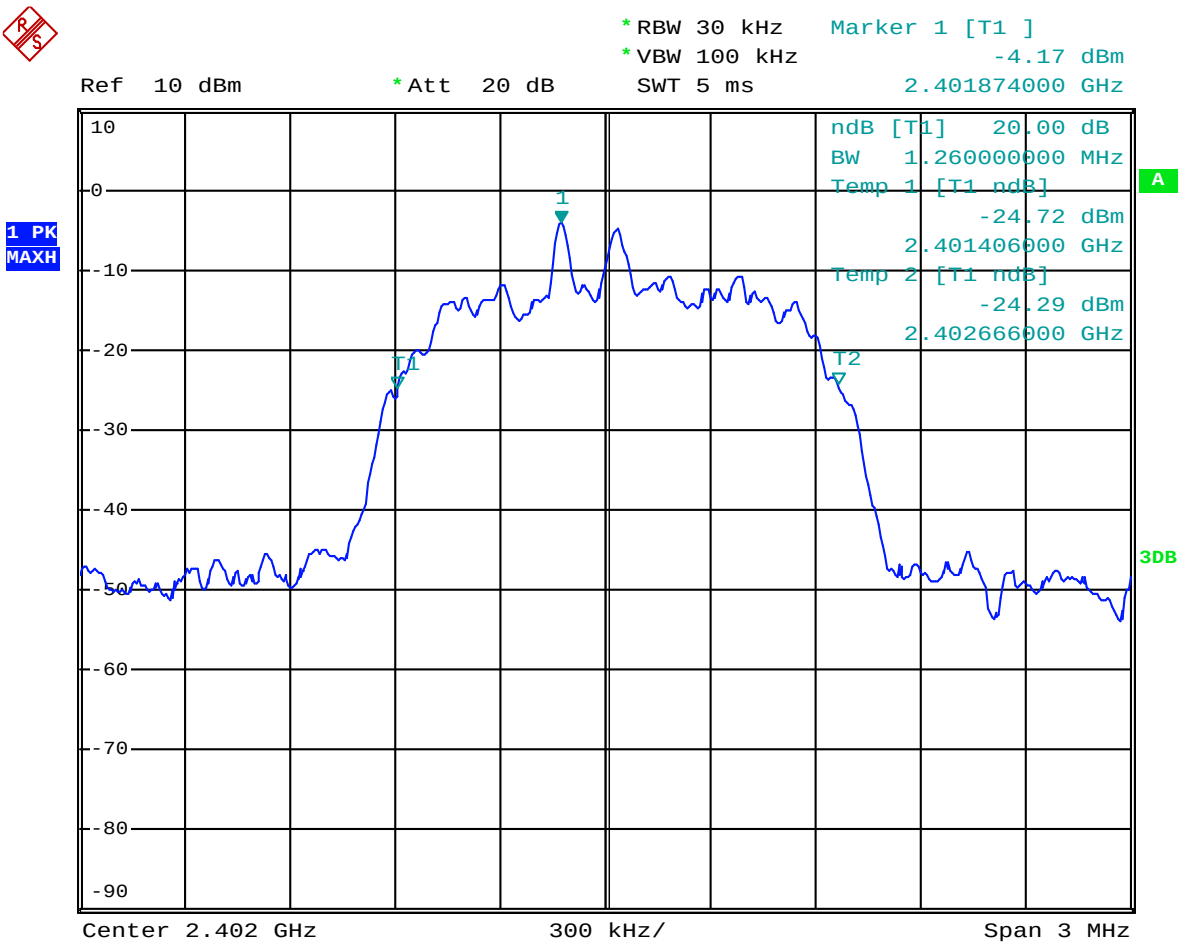
Л/4DQPSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.260MHz	--	--



Date: 4.SEP.2026 09:34:18

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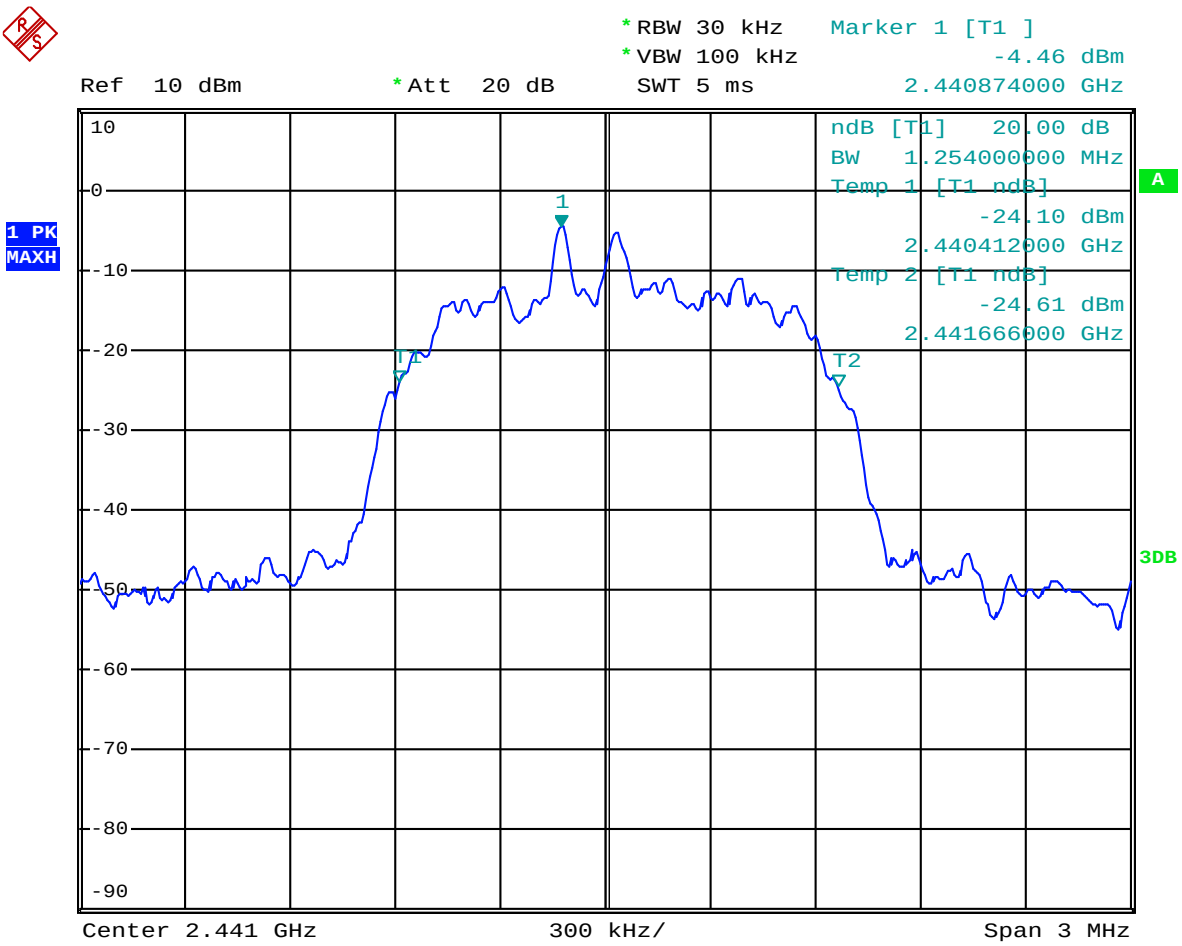
Л/4DQPSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.254MHz	--	--



Date: 4.SEP.2026 09:32:20

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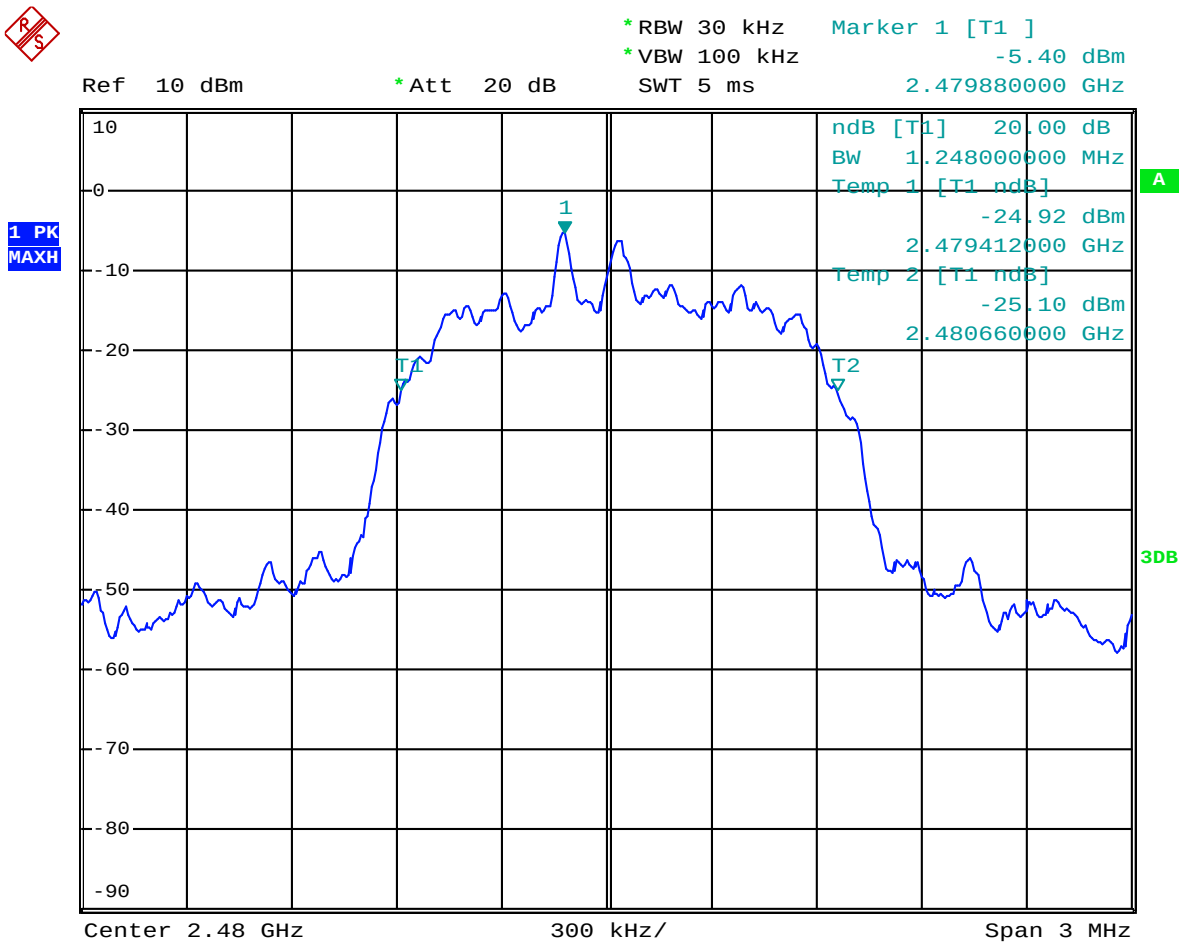
Л/4DQPSK			
Product:	Bluetooth Speaker	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.248MHz	--	--



Date: 4.SEP.2026 09:28:29

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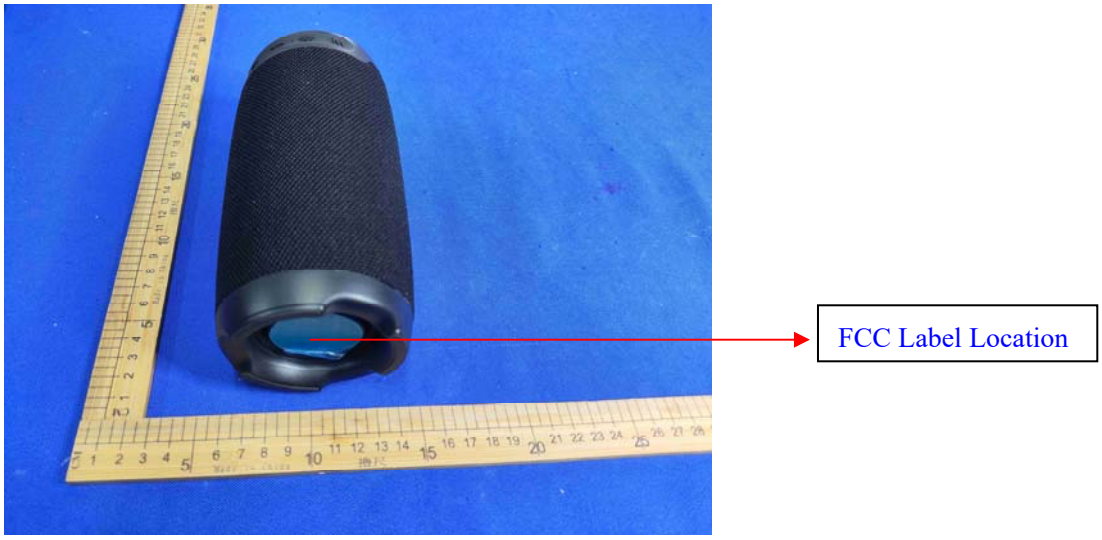
10.0 FCC ID Label

FCC ID: 2BHIM-CASTWAVE

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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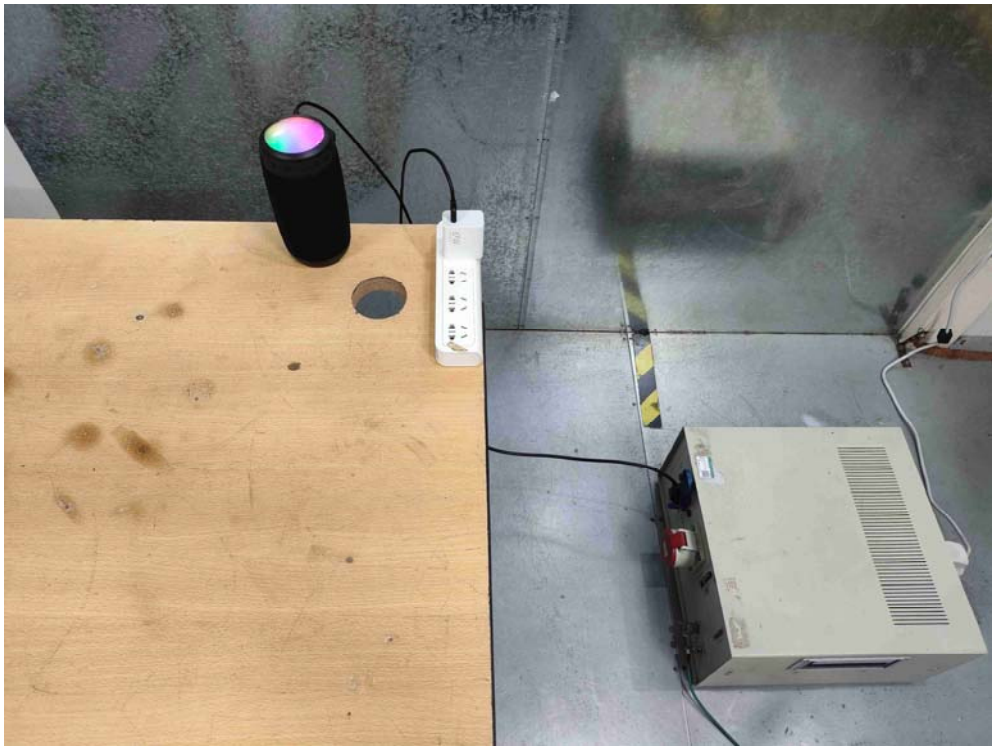
11.0 Photo of testing

11.1 Conducted test View



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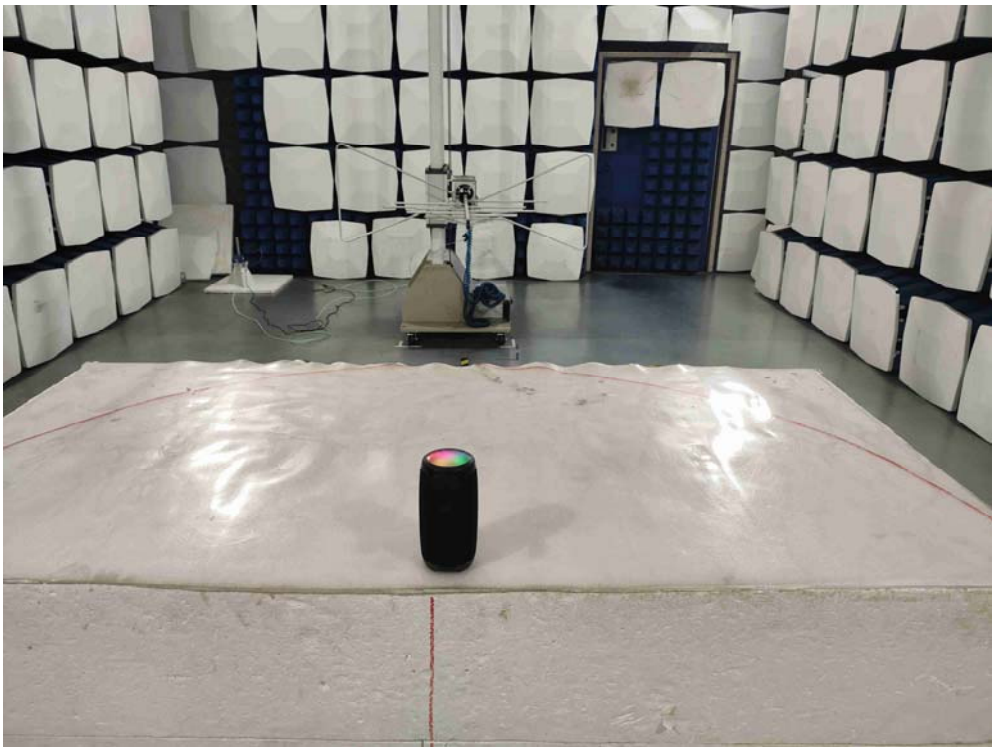
Radiated emission test view



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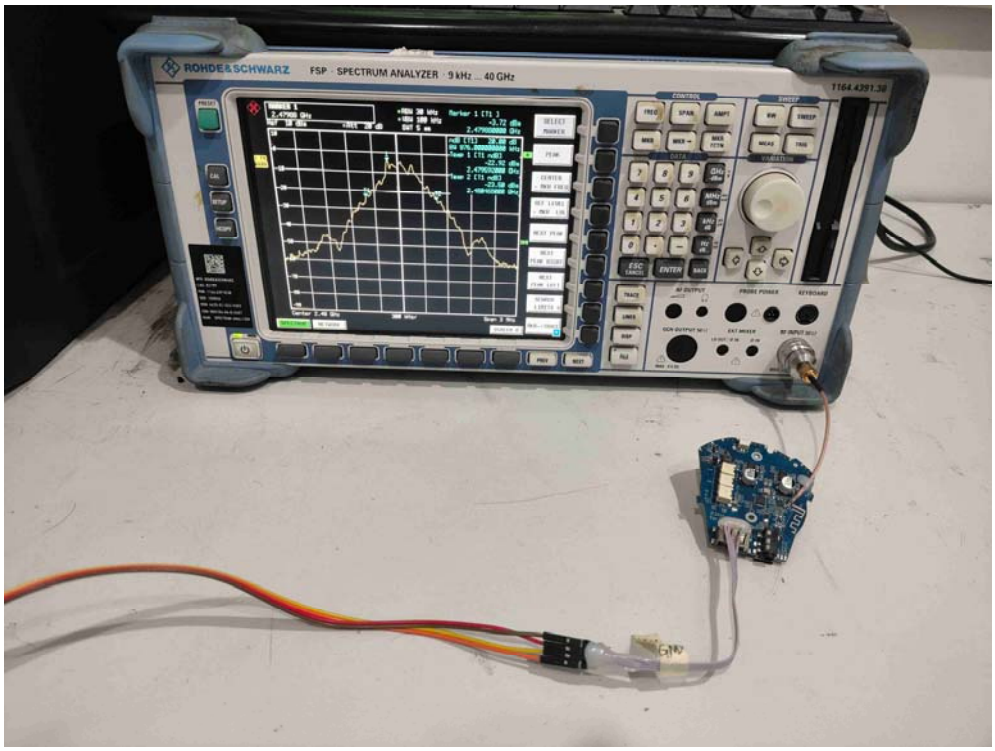
RF test view



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11.2 Photographs – EUT Outside View

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Outside View

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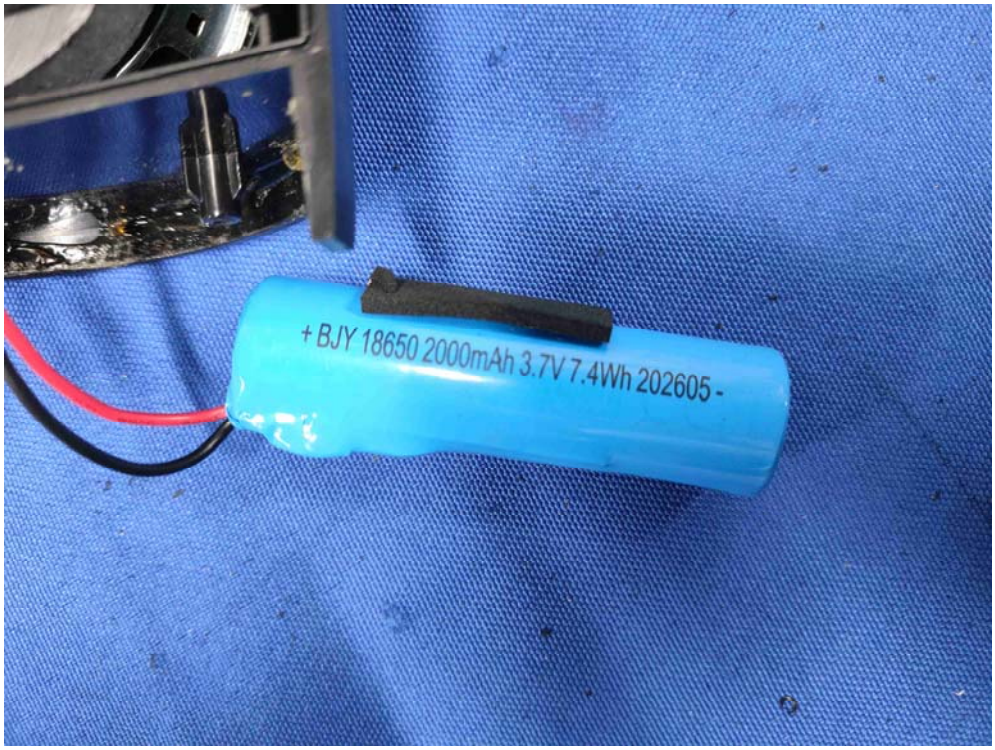
Inside View



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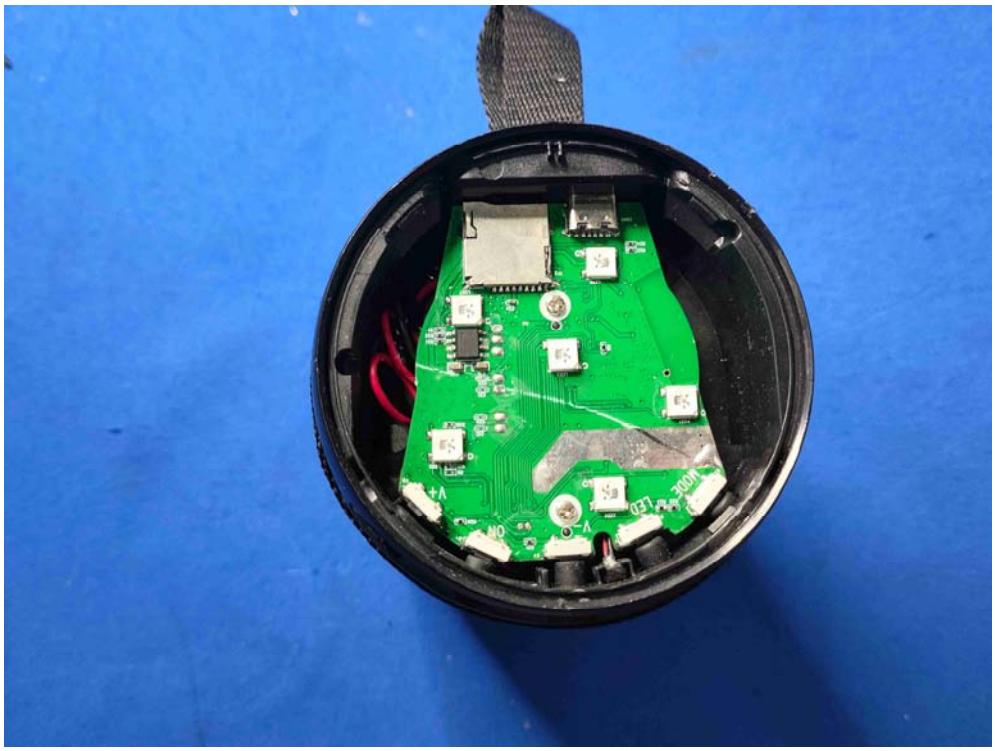
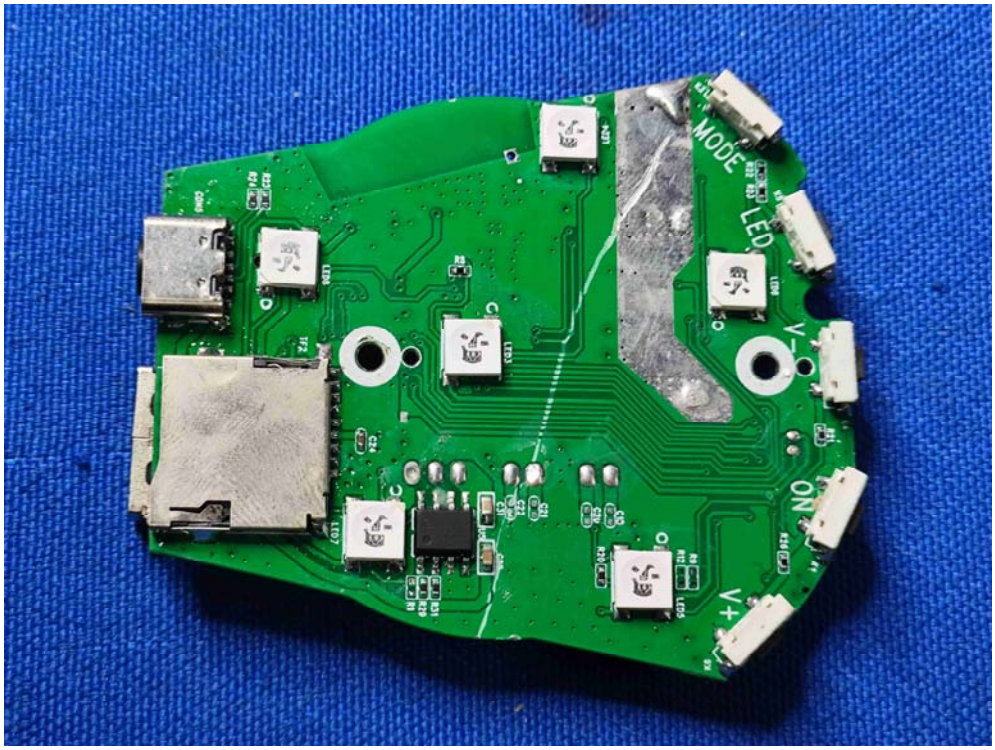
Inside View





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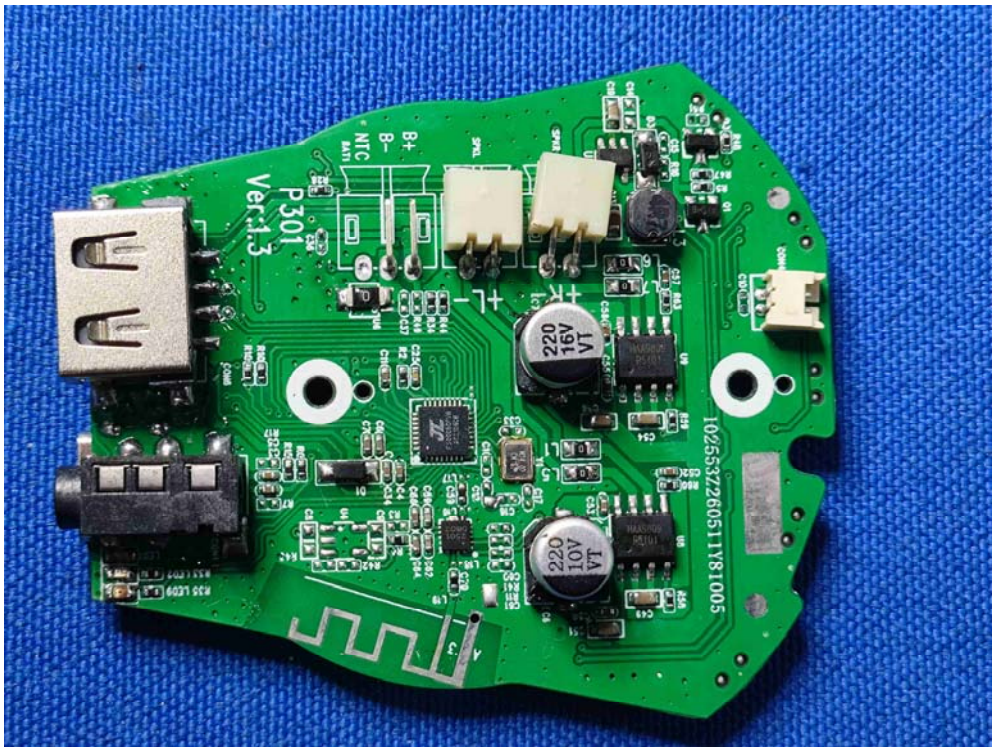
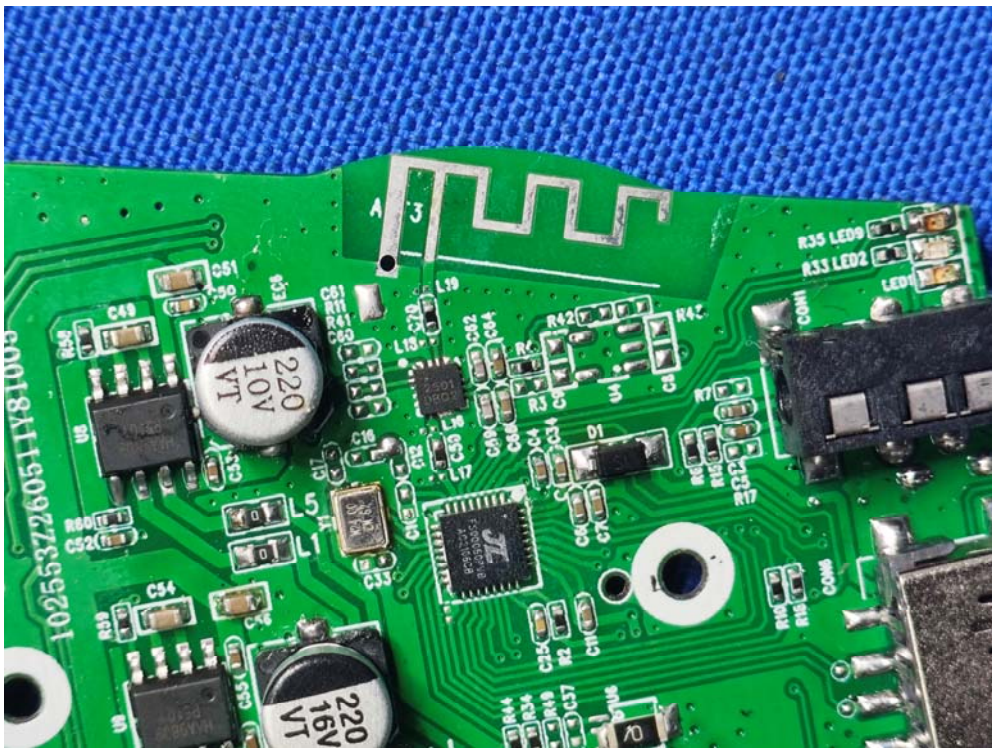
Inside View





--End of the report--

The report refers only to the sample tested and does not apply to the bulk.
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