Microtest
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Test Report

Report No.: MTi240718011-04E1

Date of issue: 2024-10-17

Applicant: Dongguan Gongye Electronic Technology Co., Ltd

Product: Wireless Karaoke Speaker

Model(s): K1, SK1, Y1, Y2, Y3, Y4, Y5, Y6, Y11, Y12, Y13, X1, X2, X3, X4, X5, X6, X10, X11

FCC ID: 2BLFW-K1

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Test Result Certification	
Applicant:	Dongguan Gongye Electronic Technology Co., Ltd
Address:	Room 1201, Unit 2, Building 1, No. 2 Baoshi Road, Jiaoyitang, Tangxia Town, Dongguan City, Guangdong Province
Manufacturer:	Dongguan Gongye Electronic Technology Co., Ltd
Address:	Room 1201, Unit 2, Building 1, No. 2 Baoshi Road, Jiaoyitang, Tangxia Town, Dongguan City, Guangdong Province
Product description	
Product name:	Wireless Karaoke Speaker
Trademark:	N/A
Model name:	K1
Series Model:	SK1, Y1, Y2, Y3, Y4, Y5, Y6, Y11, Y12, Y13, X1, X2, X3, X4, X5, X6, X10, X11
Standards:	FCC 47 CFR Part 15.249
Test method:	ANSI C63.10-2013
Date of Test	
Date of test:	2024-08-07 to 2024-10-16
Test result:	Pass

Test Engineer	:	Maleah Deng
		(Maleah Deng)
Reviewed By	:	David. Lee
		(David Lee)
Approved By	:	Leon chen
		(Leon Chen)

1 General Description

1.1 Description of EUT

Product name:	Wireless Karaoke Speaker
Model name:	K1
Series Model:	SK1, Y1, Y2, Y3, Y4, Y5, Y6, Y11, Y12, Y13, X1, X2, X3, X4, X5, X6, X10, X11
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Input: DC 5V/1A Battery: + 18650, 800mAh, 3.7V, 2.96Wh
Accessories:	Cable: USB-A to Type-C cable (0.3m)*1 Microphone*2
Hardware version:	VD
Software version:	V1.0
Test sample(s) number:	MTi240718011-04S1001
RF specification:	
Operation frequency:	2402-2480MHz
Channel number:	79
Modulation type:	GFSK
Antenna designation:	Antenna type: PCB Antenna Antenna gain: 5.65dBi
Max. Field Strength:	89.75dBuV/m

1.2 Description of test modes

No.	Emission test modes
Mode1	TX-GFSK

1.2.1 Operation channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469

8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	-	-

1.2.2 Test channels

Chanel	Frequency
Lowest	2402MHz
Middle	2441MHz
Highest	2480MHz

Note: The test software has been used to control EUT for working in engineering mode, that enables selectable channel, and capable of continuous transmitting mode.

Test Software:
For power setting, refer to below table.

Test Software:	FCC Assist 1.0.2.2		
Mode	2402MHz	2441MHz	2480MHz
GFSK	3	3	3

1.2.3 Description of support units

Support equipment list			
Description	Model	Serial No.	Manufacturer
/	/	/	/

1.3 Measurement uncertainty

Measurement	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	±3.1dB
Occupied channel bandwidth	±3 %
Radiated spurious emissions (above 1GHz)	±5.3dB

Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

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

2 Summary of Test Result

No.	FCC reference	Description of test	Result
1	§ 15.203	Antenna requirement	Pass
2	§ 15.207	AC power line conducted emissions	Pass
3	15.249(d)	Radiated spurious emissions	Pass
4	15.249(a)	Field Strength of the Fundamental signal	Pass
5	15.215	20dB and 99% Bandwidth	Pass

3 Test Facilities and Accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

4 Equipment List

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Conducted Emission at AC power line						
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2024-03-20	2025-03-19
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2024-03-21	2025-03-20
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2024-03-20	2025-03-19
20dB and 99% Bandwidth						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2024-03-20	2025-03-19
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2024-03-21	2025-03-20
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2024-03-21	2025-03-20
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2024-03-21	2025-03-20
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2024-03-21	2025-03-20
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2024-03-21	2025-03-20
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2024-03-20	2025-03-19
9	DC Power Supply	Agilent	E3632A	MY40027695	2024-03-21	2025-03-20
Field Strength of the Fundamental signal Radiated spurious emissions (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2024-03-20	2025-03-19
4	MXA signal analyzer	Agilent	N9020A	MY54440859	2024-03-21	2025-03-20
5	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
6	Horn antenna	Schwarzbeck	BBHA 9170	00987	2023-06-17	2025-06-16
7	Pre-amplifier	Space-Dtronics	EWLAN1840 G	210405001	2024-03-21	2025-03-20
Radiated spurious emissions (below 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Conducted Emission at AC power line						
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2024-03-20	2025-03-19
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2024-03-21	2025-03-20
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2024-03-20	2025-03-19
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19

5 Test Result

5.1 Antenna requirement

15.203 requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Description of the antenna of EUT

The antenna of EUT is PCB antenna (Antenna Gain: 5.65 dBi). which is no consideration of replacement.

5.2 Conducted Emission at AC power line

5.2.1 Limits

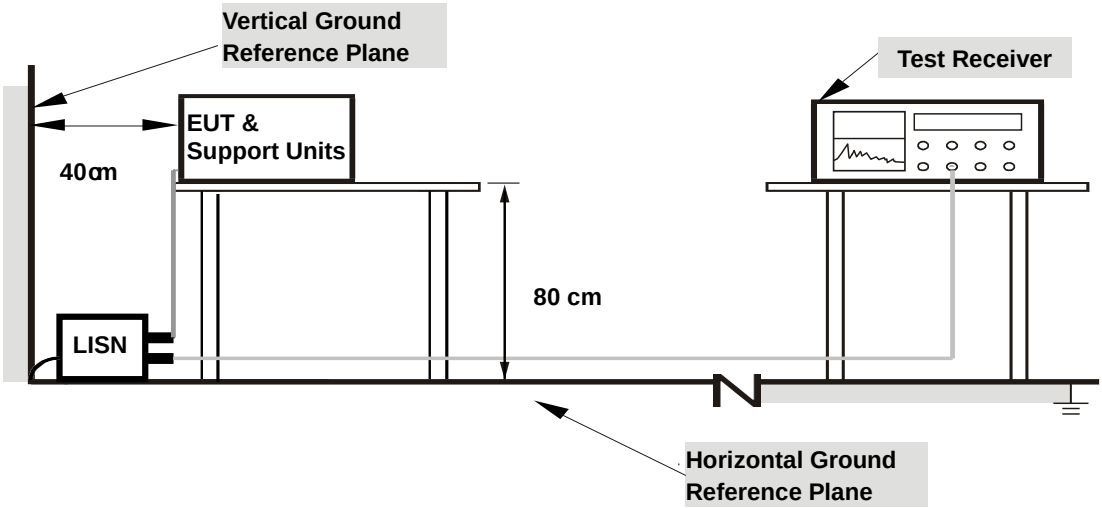
Frequency (MHz)	Detector type / Bandwidth	Limit-Quasi-peak dBμV	Limit-Average dBμV
0.15 -0.5	Average / 9 kHz	66 to 56	56 to 46
0.5 -5		56	46
5 -30		60	50

Note 1: the limit decreases with the logarithm of the frequency in the range of 0.15 MHz to 0.5 MHz.

5.2.2 Test Procedures

a) The test setup is refer to the standard ANSI C63.10-2013.
b) The EUT is connected to the main power through a line impedance stabilization network (LISN). All support equipment is powered from additional LISN(s).
c) Emissions were measured on each current carrying line of the EUT using an EMI test receiver connected to the LISN powering the EUT.
d) The test receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes described in Item 1.2.
e) The test data of the worst-case condition(s) was recorded.

5.2.3 Test setup



For the actual test configuration, please refer to the related item – Photographs of the test setup.

5.2.4 Test Result

Notes:

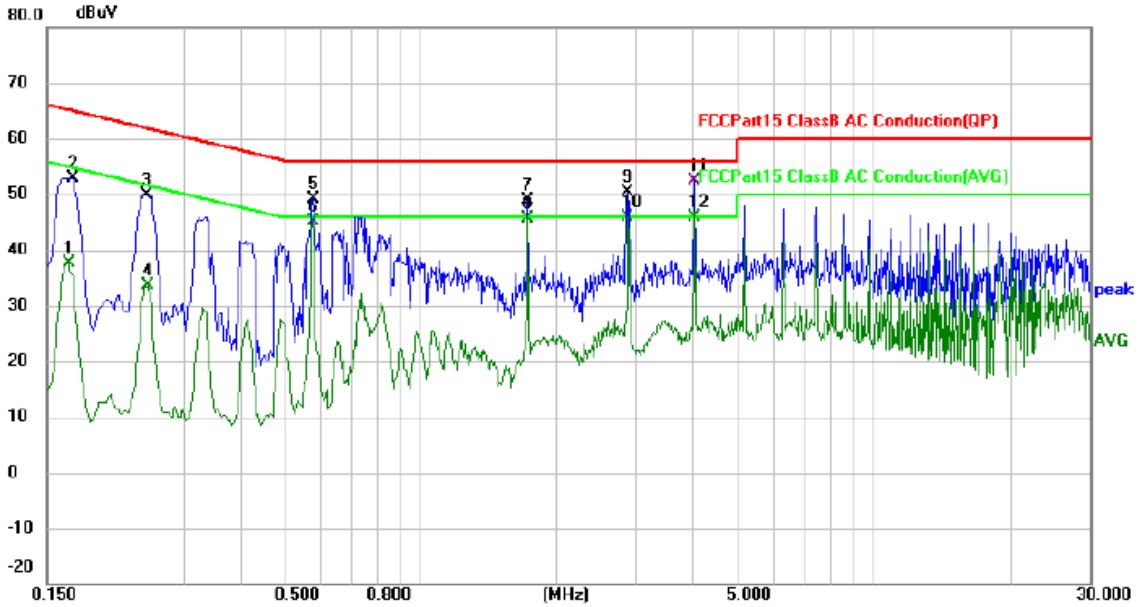
All modes of operation of the EUT were investigated, and only the worst-case results are reported.

Calculation formula:

Measurement (dBμV) = Reading Level (dBμV) + Correct Factor (dB)
Over (dB) = Measurement (dBμV) – Limit (dBμV)

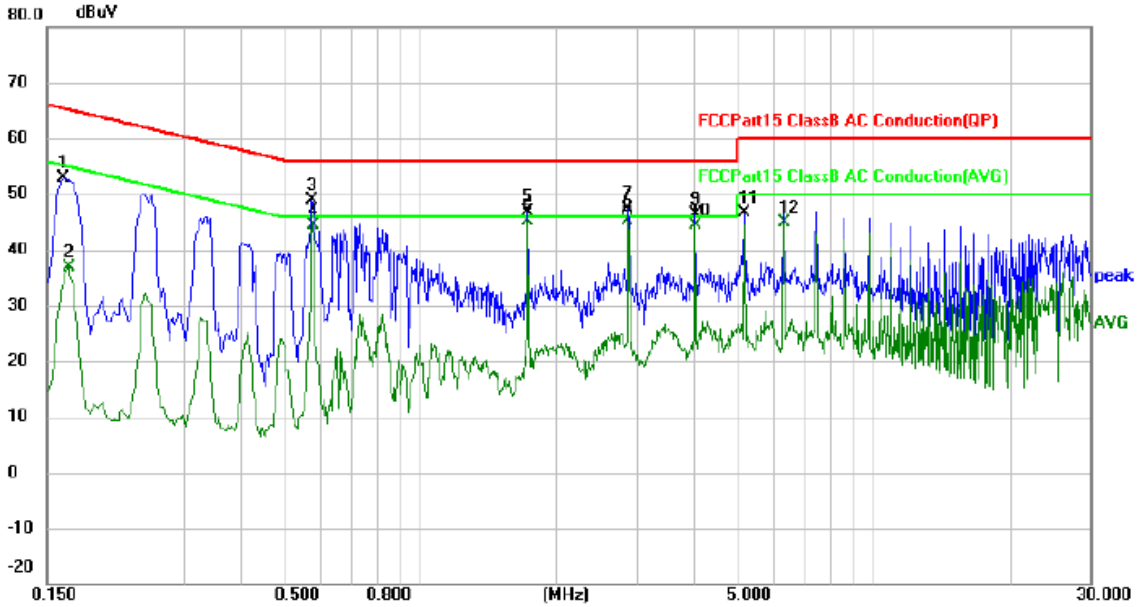
5.2.5 Test Data:

Mode1 / Line: Line / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	27.25	10.38	37.63	55.16	-17.53	AVG	
2		0.1700	42.61	10.38	52.99	64.96	-11.97	QP	
3		0.2460	38.93	10.90	49.83	61.89	-12.06	QP	
4		0.2500	22.69	10.90	33.59	51.76	-18.17	AVG	
5		0.5780	37.56	11.69	49.25	56.00	-6.75	QP	
6		0.5780	33.38	11.69	45.07	46.00	-0.93	AVG	
7		1.7300	34.90	14.09	48.99	56.00	-7.01	QP	
8		1.7300	31.44	14.09	45.53	46.00	-0.47	AVG	
9		2.8780	39.69	10.65	50.34	56.00	-5.66	QP	
10	*	2.8780	35.30	10.65	45.95	46.00	-0.05	AVG	
11		4.0339	41.71	10.65	52.36	56.00	-3.64	QP	
12		4.0339	35.24	10.65	45.89	46.00	-0.11	AVG	

Mode1 / Line: Neutral / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	42.55	10.38	52.93	65.36	-12.43	QP	
2		0.1660	26.58	10.38	36.96	55.16	-18.20	AVG	
3		0.5740	37.12	11.67	48.79	56.00	-7.21	QP	
4		0.5780	32.68	11.69	44.37	46.00	-1.63	AVG	
5		1.7300	32.83	14.09	46.92	56.00	-9.08	QP	
6		1.7300	30.94	14.09	45.03	46.00	-0.97	AVG	
7		2.8820	36.61	10.65	47.26	56.00	-8.74	QP	
8	*	2.8820	34.54	10.65	45.19	46.00	-0.81	AVG	
9		4.0340	35.83	10.65	46.48	56.00	-9.52	QP	
10		4.0340	33.83	10.65	44.48	46.00	-1.52	AVG	
11		5.1900	35.96	10.66	46.62	60.00	-13.38	QP	
12		6.3420	34.28	10.69	44.97	50.00	-5.03	AVG	

5.3 Radiated spurious emission

5.3.1 Limits

FCC PART 15.249(a);
Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500

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.

§ 15.209 Radiated emission limits at restricted bands:

Frequency (MHz)	Field strength (microvolts/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

Note 1: the tighter limit applies at the band edges.
Note 2: the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

§ 15.35 (b) requirements:
When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

According to ANSI C63.10-2013, the tests shall be performed in the frequency range shown in the following table:

Frequency range of measurements for unlicensed wireless device

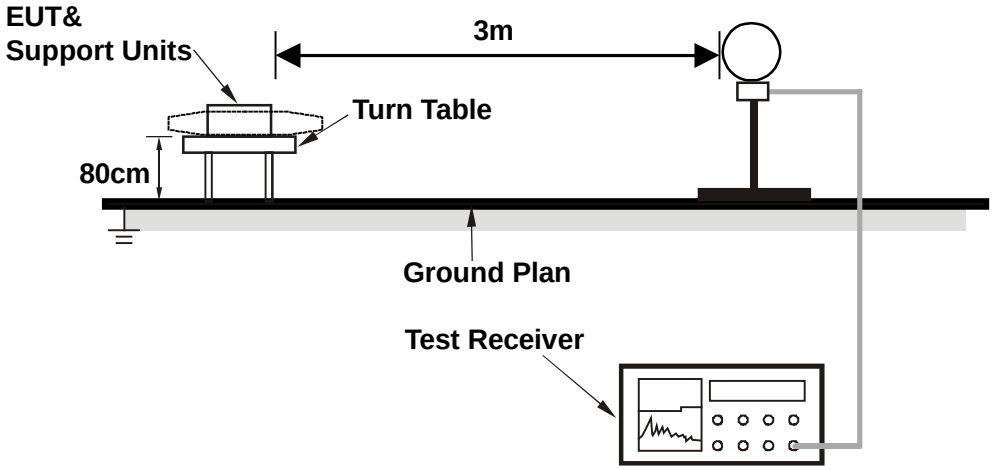
Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

Frequency range of measurements for unlicensed wireless device with digital device

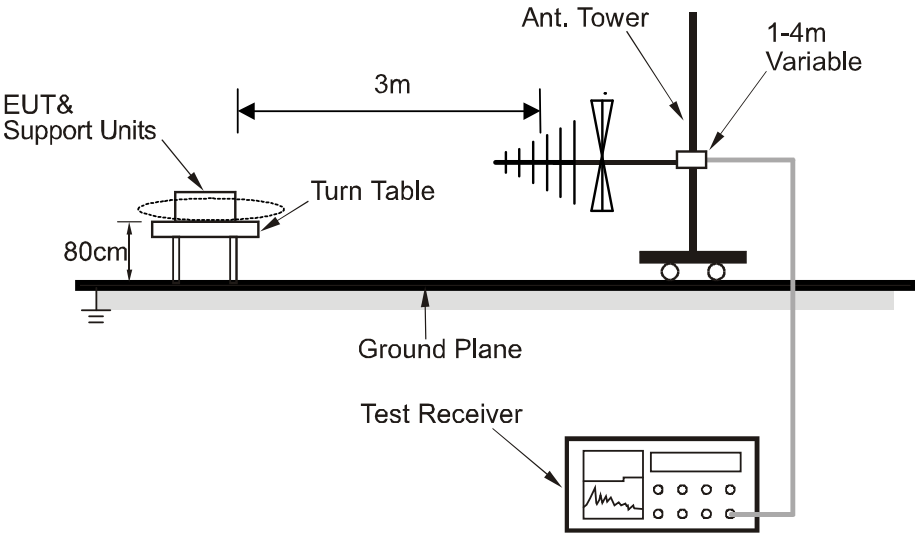
Highest frequency generated or used in the device or on which the device operates or tunes	Upper frequency range of measurement
Below 1.705 MHz	30 MHz
1.705 MHz to 108 MHz	1000 MHz
108 MHz to 500 MHz	2000 MHz
500 MHz to 1000 MHz	5000 MHz
Above 1000 MHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower

5.3.2 Test setup

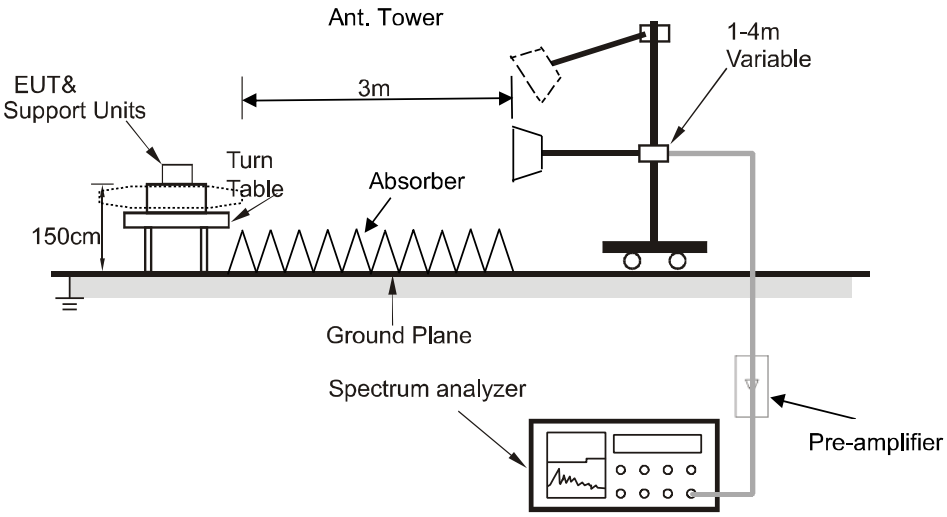
Below 30MHz:



30MHz~1GHz:



Above 1GHz:



For the actual test configuration, please refer to the related item – Photographs of the test setup.

5.3.3 Test procedure

a) Test method: ANSI C63.10-2013 Section 6.3, 6.4, 6.5, 6.6, 11.11, 11.12, 11.13.
b) The EUT is placed on an on-conducting table 0.8 meters above the ground plane for measurement below 1GHz, 1.5 meters above the ground plane for measurement above 1GHz.
c) Emission blew 18 GHz were measured at a 3 meters test distance, above 18 GHz were measured at 1-meter test distance with the application of a distance correction factor
d) The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Test instrument setup

Frequency	Test receiver / Spectrum analyzer setting
9 kHz ~ 150 kHz	Quasi Peak / RBW: 200 Hz
150 kHz ~ 30 MHz	Quasi Peak / RBW: 9 kHz
30 MHz ~ 1 GHz	Quasi Peak / RBW: 120 kHz
Above 1 GHz	Peak / RBW: 1 MHz, VBW: 3MHz, Peak detector AVG / RBW: 1 MHz, VBW: 3MHz, Average detector

5.3.4 Test results

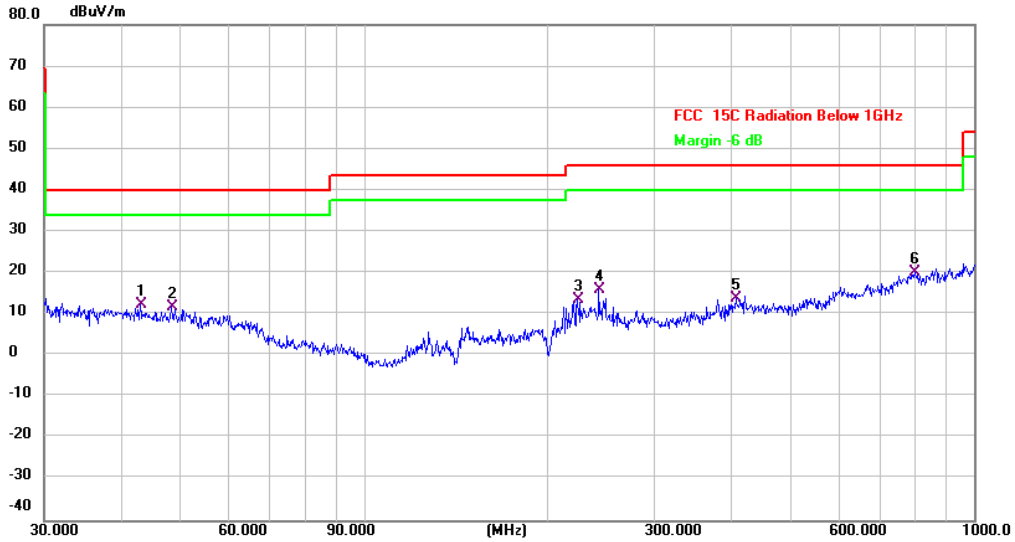
Notes:

The amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.
All modes of operation of the EUT were investigated, and only the worst-case results are reported.
There were no emissions found below 30MHz within 20dB of the limit.

Calculation formula:
Measurement (dBμV/m) = Reading Level (dBμV) + Correct Factor (dB/m)
Over (dB) = Measurement (dBμV/m) – Limit (dBμV/m)

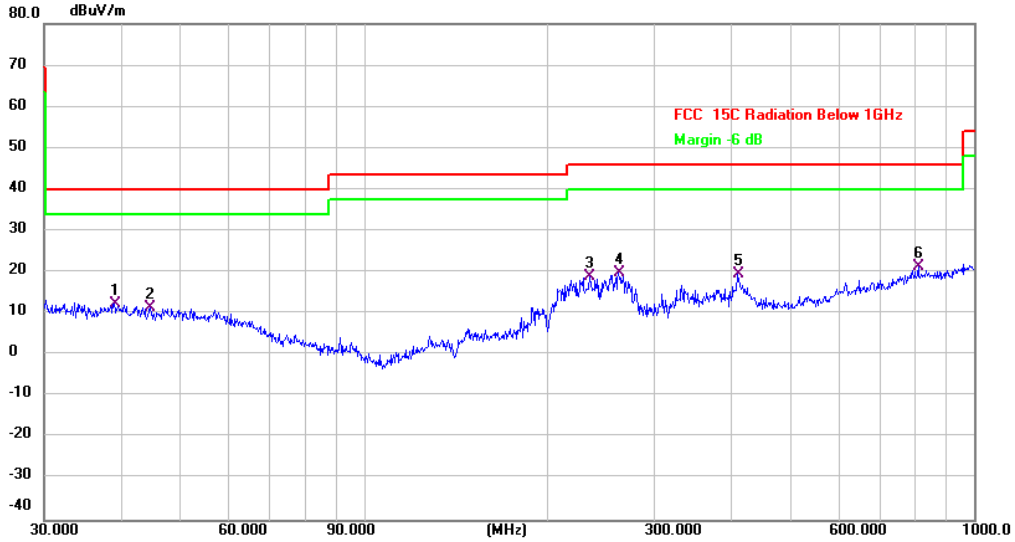
Radiated emissions between 30MHz – 1GHz

Mode1 / Polarization: Horizontal / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		43.0505	27.44	-14.97	12.47	40.00	-27.53	QP	
2		48.5016	27.08	-15.43	11.65	40.00	-28.35	QP	
3		224.5193	30.34	-16.80	13.54	46.00	-32.46	QP	
4		243.3772	31.01	-15.17	15.84	46.00	-30.16	QP	
5		407.5145	27.36	-13.40	13.96	46.00	-32.04	QP	
6	*	798.9797	26.28	-6.05	20.23	46.00	-25.77	QP	

Mode1 / Polarization: Vertical / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		39.0245	37.32	-24.89	12.43	40.00	-27.57	QP	
2		44.7433	34.94	-23.55	11.39	40.00	-28.61	QP	
3		234.9909	38.79	-19.75	19.04	46.00	-26.96	QP	
4		261.9753	36.97	-17.24	19.73	46.00	-26.27	QP	
5		410.3825	33.49	-13.94	19.55	46.00	-26.45	QP	
6	*	810.2654	27.10	-5.76	21.34	46.00	-24.66	QP	

Radiated emissions 1 GHz ~ 25 GHz

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4804.000	54.08	0.53	54.61	74.00	-19.39	peak
2		4804.000	48.72	0.53	49.25	54.00	-4.75	AVG
3		7206.000	48.16	7.90	56.06	74.00	-17.94	peak
4	*	7206.000	42.37	7.90	50.27	54.00	-3.73	AVG
5		9608.000	50.27	8.85	59.12	74.00	-14.88	peak
6		9608.000	40.43	8.85	49.28	54.00	-4.72	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4804.000	49.17	0.53	49.70	74.00	-24.30	peak
2		4804.000	41.62	0.53	42.15	54.00	-11.85	AVG
3		7206.000	43.43	7.90	51.33	74.00	-22.67	peak
4		7206.000	40.36	7.90	48.26	54.00	-5.74	AVG
5		9608.000	49.13	8.85	57.98	74.00	-16.02	peak
6	*	9608.000	41.44	8.85	50.29	54.00	-3.71	AVG

Mode1 / Polarization: Horizontal / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4882.000	55.62	0.57	56.19	74.00	-17.81	peak
2		4882.000	49.61	0.57	50.18	54.00	-3.82	AVG
3		7323.000	48.23	7.57	55.80	74.00	-18.20	peak
4		7323.000	41.69	7.57	49.26	54.00	-4.74	AVG
5		9764.000	50.15	9.33	59.48	74.00	-14.52	peak
6	*	9764.000	41.46	9.33	50.79	54.00	-3.21	AVG

Mode1 / Polarization: Vertical / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4882.000	48.98	0.57	49.55	74.00	-24.45	peak
2		4882.000	41.62	0.57	42.19	54.00	-11.81	AVG
3		7323.000	44.74	7.57	52.31	74.00	-21.69	peak
4		7323.000	37.70	7.57	45.27	54.00	-8.73	AVG
5		9764.000	46.76	9.33	56.09	74.00	-17.91	peak
6	*	9764.000	40.86	9.33	50.19	54.00	-3.81	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4960.000	54.67	0.66	55.33	74.00	-18.67	peak
2		4960.000	49.52	0.66	50.18	54.00	-3.82	AVG
3		7440.000	49.30	7.94	57.24	74.00	-16.76	peak
4		7440.000	41.33	7.94	49.27	54.00	-4.73	AVG
5		9920.000	50.21	9.69	59.90	74.00	-14.10	peak
6	*	9920.000	40.73	9.69	50.42	54.00	-3.58	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4960.000	50.08	0.66	50.74	74.00	-23.26	peak
2		4960.000	44.63	0.66	45.29	54.00	-8.71	AVG
3		7440.000	44.29	7.94	52.23	74.00	-21.77	peak
4		7440.000	39.35	7.94	47.29	54.00	-6.71	AVG
5		9920.000	47.92	9.69	57.61	74.00	-16.39	peak
6	*	9920.000	39.57	9.69	49.26	54.00	-4.74	AVG

Radiated emissions at band edge

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		2310.000	48.49	-4.83	43.66	74.00	-30.34	peak
2		2310.000	38.44	-4.83	33.61	54.00	-20.39	AVG
3		2390.000	48.71	-4.31	44.40	74.00	-29.60	peak
4		2390.000	39.01	-4.31	34.70	54.00	-19.30	AVG
5		2400.000	61.15	-4.25	56.90	74.00	-17.10	peak
6	*	2400.000	54.07	-4.25	49.82	54.00	-4.18	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		2310.000	49.50	-4.83	44.67	74.00	-29.33	peak
2		2310.000	38.47	-4.83	33.64	54.00	-20.36	AVG
3		2390.000	49.59	-4.31	45.28	74.00	-28.72	peak
4		2390.000	38.89	-4.31	34.58	54.00	-19.42	AVG
5		2400.000	60.35	-4.25	56.10	74.00	-17.90	peak
6		2400.000	46.22	-4.25	41.97	54.00	-12.03	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		2483.500	55.06	-4.21	50.85	74.00	-23.15	peak
2	*	2483.500	39.55	-4.21	35.34	54.00	-18.66	AVG
3		2500.000	49.57	-4.10	45.47	74.00	-28.53	peak
4		2500.000	39.01	-4.10	34.91	54.00	-19.09	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		2483.500	51.92	-4.21	47.71	74.00	-26.29	peak
2	*	2483.500	38.77	-4.21	34.56	54.00	-19.44	AVG
3		2500.000	48.66	-4.10	44.56	74.00	-29.44	peak
4		2500.000	38.70	-4.10	34.60	54.00	-19.40	AVG

5.3.5 Band edge–Field strength of fundamental

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
2402	H	88.93	114	Peak	Pass
2402	H	88.67	94	AVG	Pass
2402	V	88.10	114	Peak	Pass
2402	V	87.83	94	AVG	Pass

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
2441	H	89.75	114	Peak	Pass
2441	H	89.48	94	AVG	Pass
2441	V	79.81	114	Peak	Pass
2441	V	79.45	94	AVG	Pass

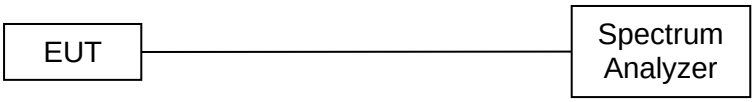
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
2480	H	89.46	114	Peak	Pass
2480	H	89.14	94	AVG	Pass
2480	V	81.32	114	Peak	Pass
2480	V	80.92	94	AVG	Pass

5.4 20dB and 99% bandwidth

5.4.1 Limits

FCC §15.215(c)
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.4.2 Test setup



5.4.3 Test procedures

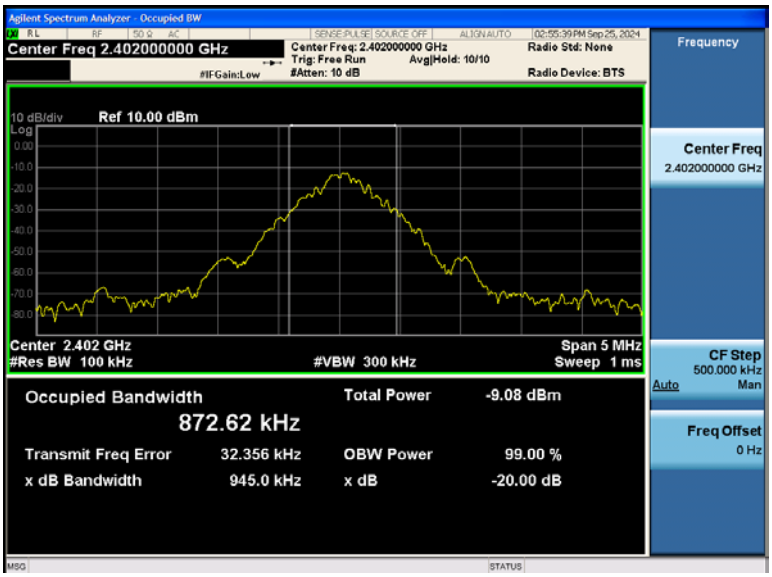
Use the following spectrum analyzer settings:
For 20 dB bandwidth
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW ⩾1% of the 20 dB bandwidth
VBW ⩾RBW
Sweep = auto
Detector function = peak
Trace = max hold
The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth and 99% occupied bandwidth of the emission

5.4.4 Test results

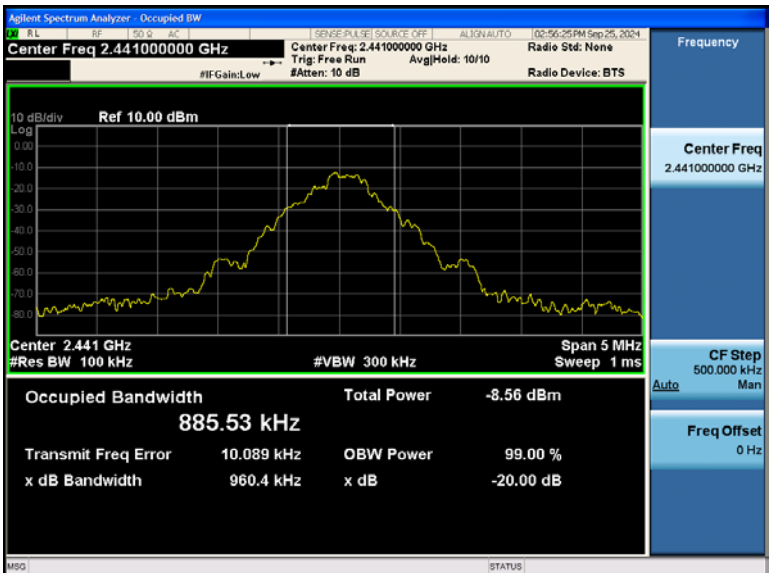
Test channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
CH0	2402	0.9450	0.87262
CH39	2441	0.9604	0.88553
CH78	2480	0.9346	0.86036

20dB occupied bandwidth

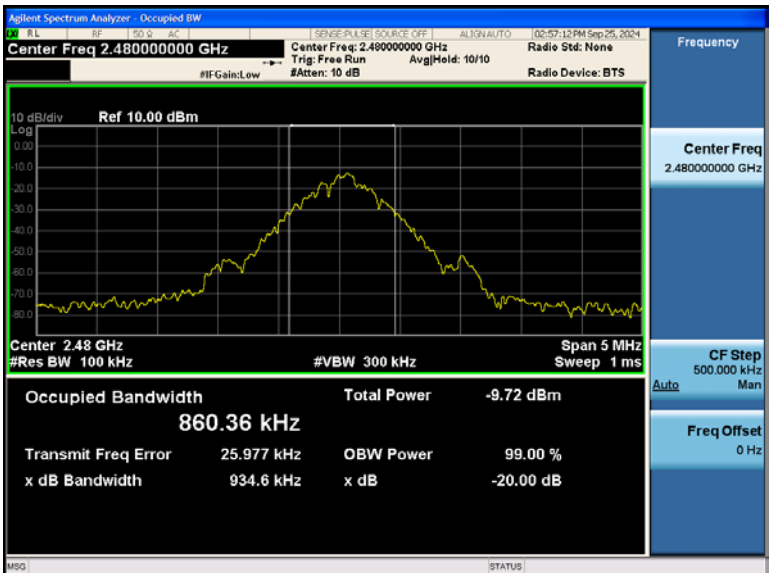
CH0



CH39



CH78



Photographs of the Test Setup

See the appendix – Test Setup Photos.

Photographs of the EUT

See the appendix - EUT Photos.

----End of Report----