Test Report

FCC ID: 2AKRJ-U1GOS

Date of issue: Jan. 09, 2017

Sample Description:	Wireless Earbuds
Model(s):	HeyGears U1 GO
Applicant:	GuangZhou HeyGears Technology Ltd.
Address:	Apt.4102, Union Town, NO.379, Zhongshan Road Centarl, Tianhe District, Guangzhou City, Guangdong Province, China
Date of Test:	Jan. 03, 2017 to Jan. 07, 2017

Shenzhen Microtest Co., Ltd.
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Address: No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

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Test Result Certification	
Applicant's name:	**GuangZhou HeyGears Technology Ltd.**
Address:	Apt.4102, Union Town, NO.379, Zhongshan Road Centarl, Tianhe District, Guangzhou City, Guangdong Province, China
Manufacture's Name:	**GuangZhou HeyGears Technology Ltd.**
Address:	Apt.4102, Union Town, NO.379, Zhongshan Road Centarl, Tianhe District, Guangzhou City, Guangdong Province, China
Product name:	Wireless Earbuds
Trademark:	**Heygears**
Model name:	HeyGears U1 GO
Standards:	FCC Part 15 subpart C
Test Procedure:	ANSI C63.10-2013

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: David Chen

David Chen Jan. 09, 2017

Reviewed by: Leon Chen

Leon Chen Jan. 09, 2017

Approved by: Ares Liu

Ares Liu Jan. 09, 2017

Summary of Test Result

Item	FCC Part No.	Description of Test	Result
1	15.203	Antenna requirement	Pass
2	15.207	AC power line conducted emission	Pass
3	15.215(c)	20dB bandwidth	Pass
4	15.209	Radiated emission	Pass

1. General description

1.1 Feature of equipment under test (EUT)

Product name:	Wireless Earbuds
Model name:	HeyGears U1 GO
Operating frequency:	10.579MHz
Modulation type:	ASK
Power Source:	DC 3.7V from Li-ion battery
Antenna Designation:	ferrite rod antenna (Antenna Gain: 0dBi)

1.2 EUT operation mode

During testing, the EUT is operated in a continued transmitting mode.

1.3 Test conditions

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

- Temperature: 20ºC~30ºC
- Humidity: 30%~70%
- Atmospheric pressure: 98kPa~101kPa

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
Adapter	HW-050200U01	/	HUAWEI	FCC VOC

1.5 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

RF frequency	1 x 10-7
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

2. Testing site

Test Site	Shenzhen Toby Technology Co., Ltd.
Test Site Location	1 A/F., Bldg.6, Yusheng Industrial Zone The National Road No.107 Xixiang Section 467, Shenzhen, Guangdong, China
FCC Registration No.:	811562
CNAS Registration No.:	CNAS L5813

3. List of test equipment

For AC power line conducted emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
LISN	R&S	ENV216	101313	2017.12.06
LISN	SCHWARZBECK	NNLK 8129	8129245	2017.12.25
Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	2017.12.25
Test Cable	N/A	N/A	C01	2017.12.06
EMI Test Receiver	R&S	ESCI	101160	2017.12.06

For Radiated emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2017.12.11
Horn Antenna	Schwarzbeck	BBHA 9120D	631	2017.12.05
Horn Antenna	Schwarzbeck	BBHA 9170	373	2017.12.05
Test Cable	United Microwave	57793	1m	2017.12.05
Test Cable	United Microwave	A30A30-5006	10m	2017.12.05
Microwave Pre-amplifier	Agilent	8449B	3008A01714	2017.12.05
Pre-Amplifier	Anritsu	MH648A	M09961	2017.12.05
EMI Test Receiver	R&S	ESCI-7	101318	2017.12.05
Spctrum analyzer	Agient	E4470B	MY41441082	2017.06.01

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4. Test Result

4.1 Conducted emission

4.1.1 Limit

Frequency (MHz)	Limit	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 50 46
0.5-5	56	46
5-30	60	50

Note: Decreases with the logarithm of the frequency from 0.15MHz to 0.5MHz.

4.1.2 Test method

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

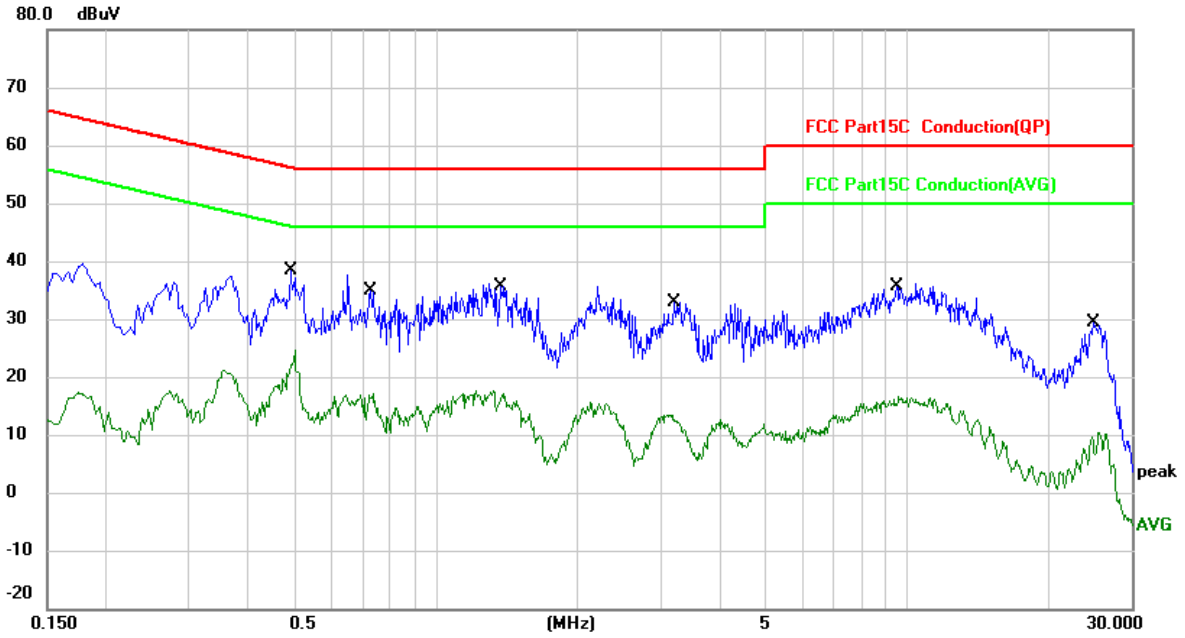
3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

4. LISN is at least 80 cm from nearest part of EUT chassis.

5. The resolution bandwidth of EMI test receiver is set at 9kHz.

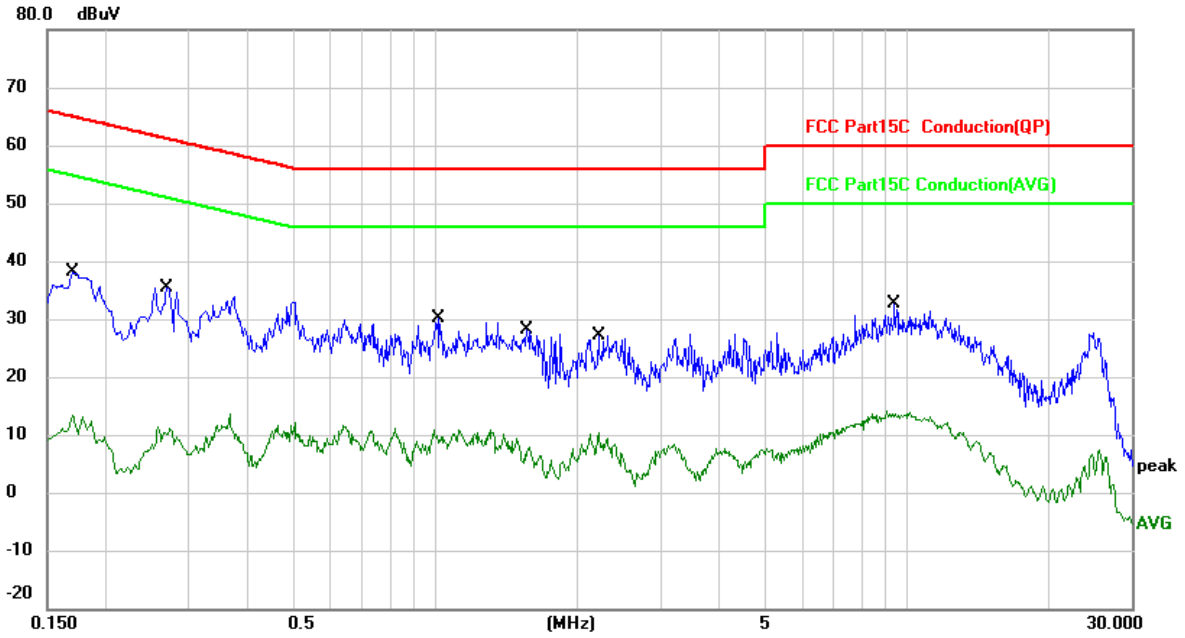
4.1.3 Test Result

Temperature:	27℃	Relative	58%
Pressure:	101kPa	Polarization:	L
Test voltage:	AC 120V/60Hz	Test mode:	Transmitting



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4914	38.45	-0.03	38.42	56.14	-17.72	QP	
2		0.4914	23.87	-0.03	23.84	46.14	-22.30	AVG	
3		0.7273	34.87	-0.03	34.84	56.00	-21.16	QP	
4		0.7273	13.16	-0.03	13.13	46.00	-32.87	AVG	
5		1.3734	35.72	-0.04	35.68	56.00	-20.32	QP	
6		1.3734	12.64	-0.04	12.60	46.00	-33.40	AVG	
7		3.2069	32.92	-0.04	32.88	56.00	-23.12	QP	
8		3.2069	10.14	-0.04	10.10	46.00	-35.90	AVG	
9		9.5014	35.77	-0.08	35.69	60.00	-24.31	QP	
10		9.5014	16.35	-0.08	16.27	50.00	-33.73	AVG	
11		24.7904	29.77	-0.32	29.45	60.00	-30.55	QP	
12		24.7904	10.56	-0.32	10.24	50.00	-39.76	AVG	

Temperature:	27℃	Relative	58%
Pressure:	101kPa	Polarization:	N
Test voltage:	AC 120V/60Hz	Test mode:	Transmitting



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1693	38.05	-0.03	38.02	64.99	-26.97	QP	
2		0.1693	10.30	-0.03	10.27	54.99	-44.72	AVG	
3		0.2686	35.33	-0.03	35.30	61.16	-25.86	QP	
4		0.2686	11.21	-0.03	11.18	51.16	-39.98	AVG	
5	*	1.0100	30.29	-0.04	30.25	56.00	-25.75	QP	
6		1.0100	9.07	-0.04	9.03	46.00	-36.97	AVG	
7		1.5601	28.15	-0.04	28.11	56.00	-27.89	QP	
8		1.5601	9.35	-0.04	9.31	46.00	-36.69	AVG	
9		2.2132	27.07	-0.05	27.02	56.00	-28.98	QP	
10		2.2132	8.06	-0.05	8.01	46.00	-37.99	AVG	
11		9.4015	32.74	-0.08	32.66	60.00	-27.34	QP	
12		9.4015	13.45	-0.08	13.37	50.00	-36.63	AVG	

4.2 Antenna requirement

4.2.1 Requirement defined in FCC 15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator 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, or §15.221. 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.

4.2.2 EUT antenna description

The radio antenna of EUT is an internal permanently attached ferrite rod antenna, the maximum gain is 0dBi. So the antenna meets the requirement of this part.

4.3 20dB emission bandwidth

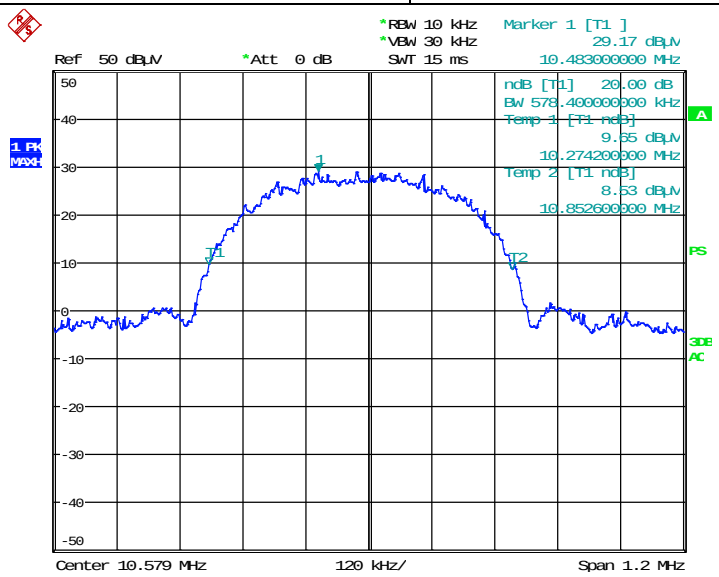
4.3.1 Test method

Set Spectrum Analyzer centre Frequency= Fundamental Frequency, RBW=10 kHz, VBW= 30 kHz, Span= 1200 kHz

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

4.3.2 Test result

Frequency (MHz)	20dB Bandwidth (kHz)
10.579	578.4



4.4 Radiated emission

4.4.1 Limit

The emissions shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength μV/m	Field strength dBμV/m	Measurement distance
0.009-0.49	2400/F(kHz)	67.6/F(kHz)	300
0.49-1.705	24000/F(kHz)	87.6/F(kHz)	30
1.705-30	30	29.54	30
30-88	100	40	3
88-216	150	43.5	
216-960	200	46	
960-1000	500	46	
Above 1000	500	54	

Note 1: In the emission table above, the tighter limit applies at the band edges.

Note 2: The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

Note 3: 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 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

Restricted bands defined in FCC 15.205:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

4.4.2 Test method

1. The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range blew 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.

2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

3. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold

4. Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

5. The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 3MHz, Detector = RMS for AV value, while maintaining all of the other instrument settings.

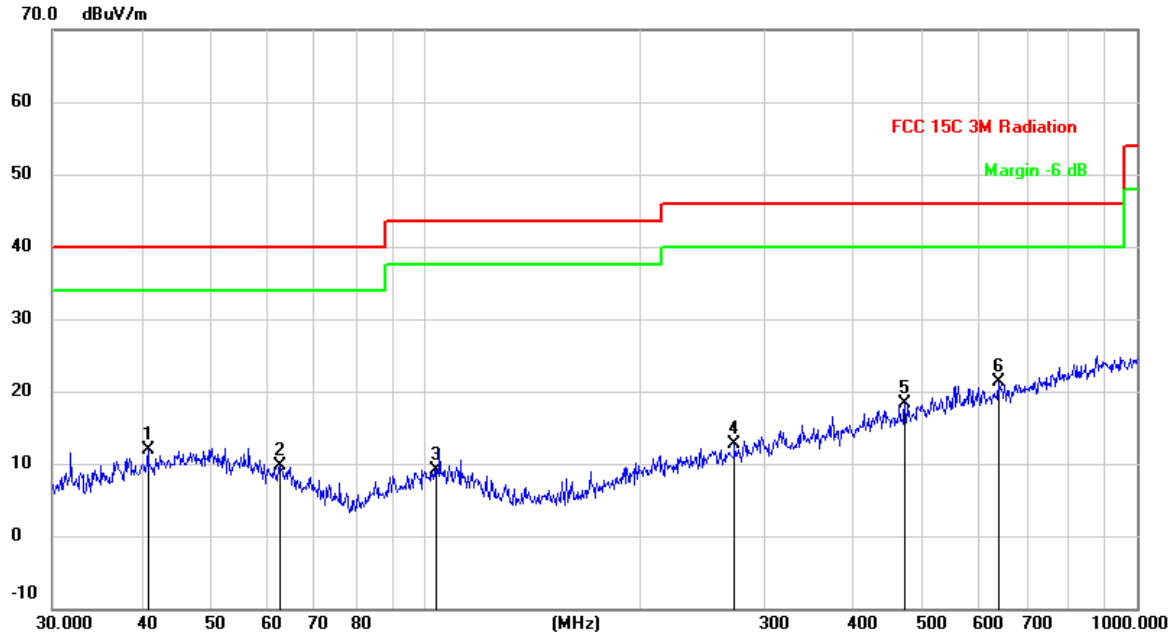
4.4.3 Test Result

Radiated emission (Blew 30MHz)

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
10.579	/	31.34	69.54	QP	Pass
10.579	/	30.5	69.54	QP	
8.41475	/	14.3	69.54	QP	
12.29	/	13.6	69.54	QP	
21.158	/	13.8	69.54	QP	

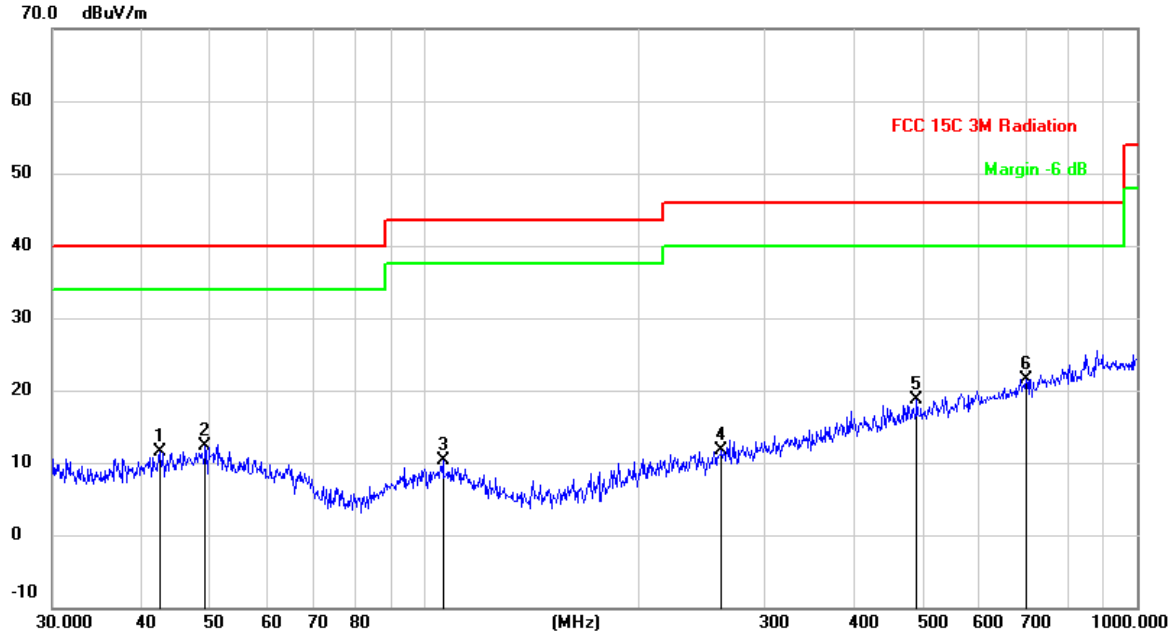
Radiated emission (30MHz~1GHz)

Temperature:	24℃	Relative Humidity:	47%
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	Full charged battery	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		40.8445	25.36	-13.49	11.87	40.00	-28.13	QP			
2		62.6507	24.59	-14.84	9.75	40.00	-30.25	QP			
3		103.8054	23.62	-14.43	9.19	43.50	-34.31	QP			
4		272.2776	24.00	-11.39	12.61	46.00	-33.39	QP			
5		472.1759	25.83	-7.49	18.34	46.00	-27.66	QP			
6	*	638.3686	26.21	-4.91	21.30	46.00	-24.70	QP			

Temperature:	24℃	Relative Humidity:	47%
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	Full charged battery	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		42.4508	24.72	-13.18	11.54	40.00	-28.46	QP			
2		49.1865	24.88	-12.67	12.21	40.00	-27.79	QP			
3		106.0126	24.78	-14.45	10.33	43.50	-33.17	QP			
4		261.0583	23.49	-11.72	11.77	46.00	-34.23	QP			
5		490.7447	25.87	-7.22	18.65	46.00	-27.35	QP			
6	*	699.3046	25.77	-4.23	21.54	46.00	-24.46	QP			

----End of Report----