



TEST REPORT

Applicant: Shenzhen Shi Aiker Electronic Technology Co., Ltd.

Address of Applicant: 6th Floor,Building C,No.9 East,Shangxue Technology Industrial City,Xinxue Community,Bantian Street,Longgang District,shenzhen,China

Manufacturer/Factory: Shenzhen Shi Aiker Electronic Technology Co., Ltd.

Address of Manufacturer/Factory: 6th Floor,Building C,No.9 East,Shangxue Technology Industrial City,Xinxue Community,Bantian Street,Longgang District,shenzhen,China

Product Name: 3 in 1 foldable magnetic wireless charger

Model No.: AK09, AK10,AK20,AK30,AK40,AK50

Trade Mark: N/A

FCC ID: 2AVG2-AK09

Applicable standards: FCC CFR Title 47 Part 15 Subpart C

Date of Test: Jun.16, 2023-Jul.28, 2023

Date of report issued: Jul.28, 2023

Test Result : PASS

Remark:

* In the configuration tested, the EUT complied with the standards specified above.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

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Project Engineer

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Authorized Signature



Report Revision History

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ET-23060610E01	Original	Jul.28, 2023

Contents

Page

1	TEST SUMMARY	4
2	GENERAL INFORMATION	5
2.1	GENERAL DESCRIPTION OF EUT	5
2.2	TEST MODE	6
2.3	DESCRIPTION OF SUPPORT UNITS	6
2.4	DEVIATION FROM STANDARDS.....	6
2.5	TEST FACILITY.....	6
2.6	TEST LOCATION.....	7
2.7	ADDITIONAL INSTRUCTIONS.....	7
3	TEST INSTRUMENTS LIST	8
4	TEST RESULTS AND MEASUREMENT DATA	9
4.1	ANTENNA REQUIREMENT	9
4.2	CONDUCTED EMISSIONS	10
4.3	RADIATED EMISSION MEASUREMENT	13
4.4	20dB BANDWIDTH	20
5	TEST SETUP PHOTO	22
6	EUT CONSTRUCTIONAL DETAILS.....	22

1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	Pass	Qiao Li
Radiated Emission	15.209	Pass	Qiao Li
20dB Occupied Bandwidth	2.1049&15.215	Pass	Yvan Fan

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz-30MHz	±3.98 dB	(1)
Radiated Emission	30MHz-1000MHz	±4.30 dB	
Radiated Emission	1GHz-18GHz	±4.35 dB	(1)
Radiated Emission	18GHz-40GHz	±4.59 dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.02 dB	(1)
Occupied Channel Bandwidth	/	±0.55%	(1)

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

2 General Information

2.1 General Description of EUT

Product Name:	3 in 1 foldable magnetic wireless charger
Model No.:	AK09, AK10,AK20,AK30,AK40,AK50
Model of difference:	All the model are the same circuit and module, except the model names and colors.
Test model:	AK09
Sample(s) Status:	Engineer sample
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	Earbuds and Phone:115~205KHz Watch:318.6KHz
Modulation type:	ASK
Antenna Type:	Induction coil Antenna
Power supply:	Input: DC 5V/9V from adapter, Output: 15W(MAX) Watch charging :3W(MAX) Earbuds charging:5W(MAX) Phone charging:5W/7.5W/10W/15W(MAX)

Test channel

ANT	Channel	Frequency
ANT1-Watch charging	00	318.6
ANT2-Earbuds charging	Middle channel	149.7
ANT3-Phone charging	Middle channel	127.5

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.	
Pretest mode	Description	
Mode 1	ANT1-Watch charging : empty load	
Mode 2	ANT1-Watch charging: half load	
Mode 3	ANT1-Watch charging: full load	
Mode 4	ANT2-Earbuds charging : empty load	
Mode 5	ANT2-Earbuds charging :half load	
Mode 6	ANT2-Earbuds charging : full load	
Mode 7	ANT3-Phone charging: empty load	
Mode 8	ANT3-Phone charging: half load	
Mode 9	ANT3-Phone charging: full load	
Mode 10	ANT1-Watch charging(full load)+ ANT2-Earbuds charging : (full load)+ ANT3-Phone charging(full load)	
For conducted emission		
Final test mode	ANT1-Watch charging(full load)+ ANT2-Earbuds charging (full load)+ ANT3-Phone charging(full load)	
For Radiated emission		
Final test mode	ANT1-Watch charging(full load)+ ANT2-Earbuds charging (full load)+ ANT3-Phone charging(full load)	

2.3 Description of Support Units

Equipment	Model	S/N	Manufacturer
Adapter	YG65	/	Lenovo
Load(15W Max)	/	/	/
Load(15W Max)	/	/	/
Load(5W Max)	/	/	/

2.4 Deviation from Standards

None.

2.5 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064

2.6 Test Location

All tests were performed at:

Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392
Fax:	+86 755 27219460

2.7 Additional Instructions

Test Software	/
Power level setup	Default

3 Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESC17	100605	2023.3.02	2024.3.01
2	EMI Test Receiver	Rohde&schwarz	ESC13	102696	2023.3.02	2024.3.01
3	Loop Antenna	schwarabeck	FMZB 1519 B	FMZB 1519 B	2022.3.11	2024.3.10
4	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
5	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2022.3.11	2024.3.10
6	amplifier	EMtrace	RP01A	50117	2023.3.02	2024.3.01
7	Artificial power network	schwarabeck	NSLK8127	8127483	2023.3.02	2024.3.01
8	Artificial power network	ETS	3186/2NM	1132	2023.3.02	2024.3.01
9	10dB attenuator	HUBER+SUHNER	10dB	/	2023.3.02	2024.3.01
10	amplifier	Space-Dtronics	EWLAN0118 G-P40	19113001	2023.3.02	2024.3.01
11	Filter	Xingbo	XBLBQ-GTA19	210410-3-1	2023.3.06	2024.3.05
12	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2023.3.02	2024.3.01
13	Power detector box	MWRFtest	MW100-PSB	MW201020JYT	2022.11.18	2023.11.17

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

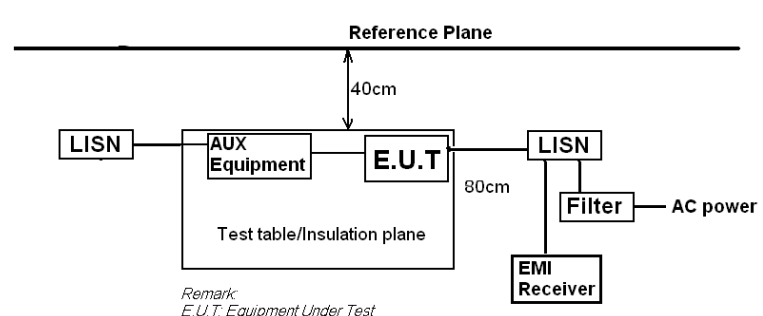
Software Name	Manufacturer	Model	Version
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

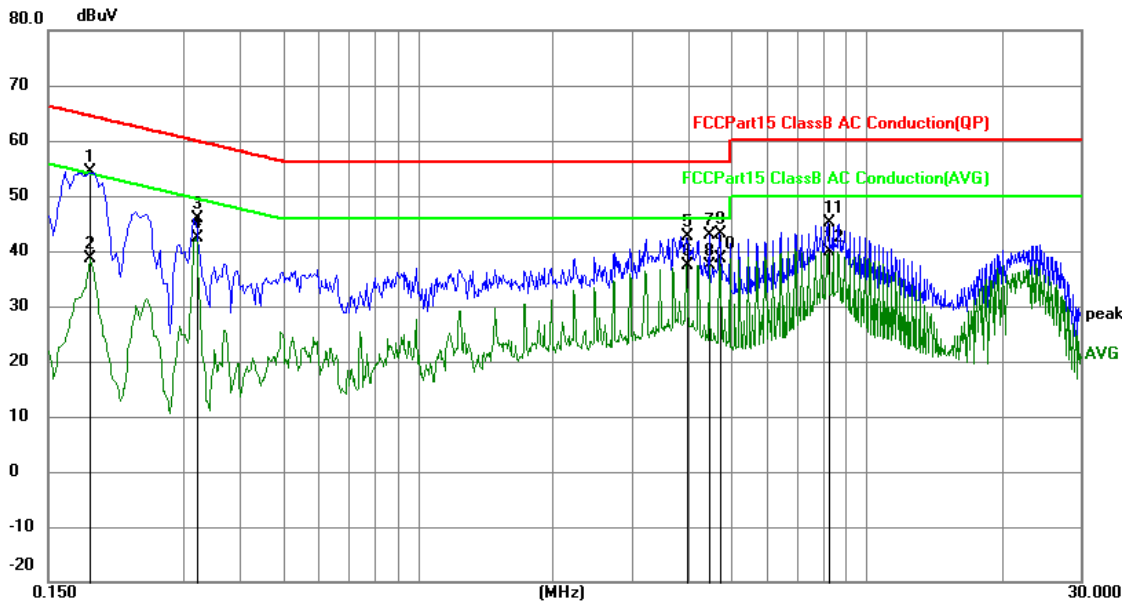
Standard requirement:
FCC part 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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.
EUT Antenna:
The EUT antenna is Coil Antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207,					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)	Limit (dBuV)				
		Quasi-peak		Average		
	0.15-0.5	66 to 56*		56 to 46*		
	0.5-5	56		46		
	5-30	60		50		
* Decreases with the logarithm of the frequency.						
Test setup:	 <p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>					
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. 					
Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	23.5 °C	Humid.:	55%	Press.:	1012mbar
Test voltage:	AC 120V/60Hz					

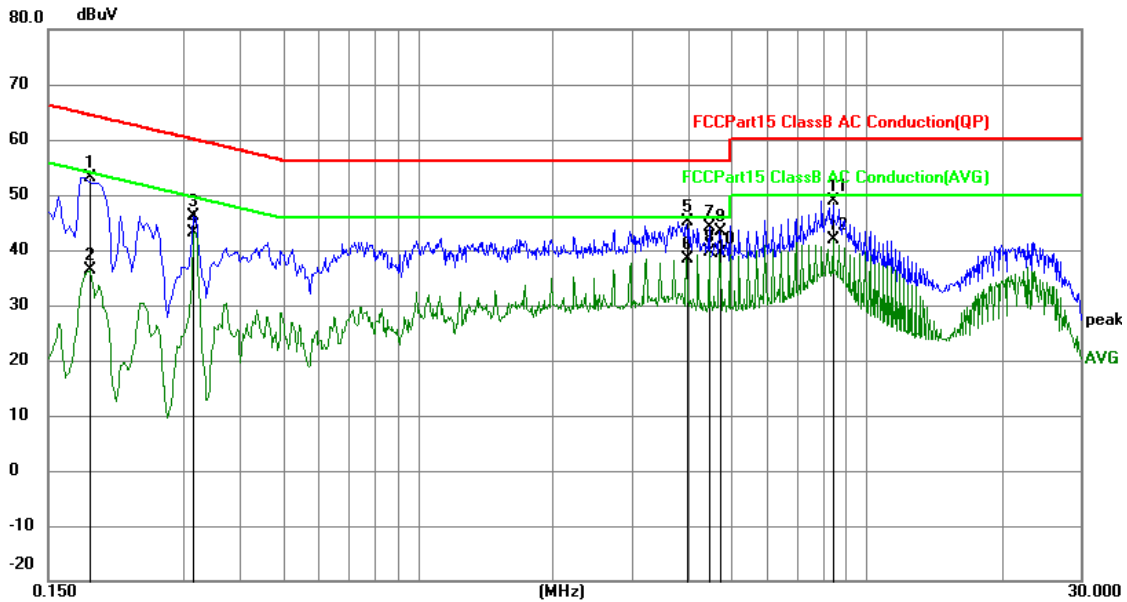
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1860	44.49	9.81	54.30	64.21	-9.91	QP
2	0.1860	28.87	9.81	38.68	54.21	-15.53	AVG
3	0.3209	36.01	9.87	45.88	59.68	-13.80	QP
4	0.3209	32.59	9.87	42.46	49.68	-7.22	AVG
5	3.9750	32.86	9.84	42.70	56.00	-13.30	QP
6	3.9750	27.60	9.84	37.44	46.00	-8.56	AVG
7	4.4655	33.07	9.83	42.90	56.00	-13.10	QP
8	4.4655	27.55	9.83	37.38	46.00	-8.62	AVG
9	4.7130	33.20	9.83	43.03	56.00	-12.97	QP
10	4.7130	28.76	9.83	38.59	46.00	-7.41	AVG
11	8.1960	35.27	9.83	45.10	60.00	-14.90	QP
12	8.1960	30.11	9.83	39.94	50.00	-10.06	AVG

Neutral:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1859	43.29	9.81	53.10	64.22	-11.12	QP
2	0.1859	26.64	9.81	36.45	54.22	-17.77	AVG
3	0.3165	36.26	9.87	46.13	59.80	-13.67	QP
4	0.3165	33.29	9.87	43.16	49.80	-6.64	AVG
5	3.9750	35.20	9.84	45.04	56.00	-10.96	QP
6	3.9750	28.51	9.84	38.35	46.00	-7.65	AVG
7	4.4699	34.42	9.83	44.25	56.00	-11.75	QP
8	4.4699	29.68	9.83	39.51	46.00	-6.49	AVG
9	4.7175	33.66	9.83	43.49	56.00	-12.51	QP
10	4.7175	29.55	9.83	39.38	46.00	-6.62	AVG
11	8.4435	39.05	9.83	48.88	60.00	-11.12	QP
12	8.4435	32.06	9.83	41.89	50.00	-8.11	AVG

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

4.3 Radiated Emission measurement

Test Requirement:	FCC Part15 C Section 15.209 & 15.249 (a) &(d). RSS-210 B10(a)& RSS-210 B10(b)& RSS-Gen Clause 8.9&8.10				
Test Method:	ANSI C63.10: 2013 & RSS-Gen				
Test Frequency Range:	9kHz to 30MHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Limit:	Frequency	Limit (uV/m)		Remark	
	0.009MHz-0.490MHz	2400/F(kHz) @300m		Quasi-peak Value	
	0.490MHz-1.705MHz	24000/F(kHz) @30m		Quasi-peak Value	
	1.705MHz-30.0MHz	30 @30m		Quasi-peak Value	
	30MHz-88MHz	100 @3m		Quasi-peak Value	
	88MHz-216MHz	150 @3m		Quasi-peak Value	
	216MHz-960MHz	200 @3m		Quasi-peak Value	
Test setup:	For radiated emissions from 9kHz to 30MHz				
Test setup:	For radiated emissions from 30MHz to1GHz				

<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 						
<p>Test Instruments:</p>	<p>Refer to section 3.0 for details</p>						
<p>Test mode:</p>	<p>Refer to section 2.2 for details</p>						
<p>Test environment:</p>	<table border="1"> <tr> <td>Temp.:</td> <td>25.6 °C</td> <td>Humid.:</td> <td>55%</td> <td>Press.:</td> <td>1012mbar</td> </tr> </table>	Temp.:	25.6 °C	Humid.:	55%	Press.:	1012mbar
Temp.:	25.6 °C	Humid.:	55%	Press.:	1012mbar		
<p>Test voltage:</p>	<p>DC 9V</p>						
<p>Test results:</p>	<p>Pass</p>						

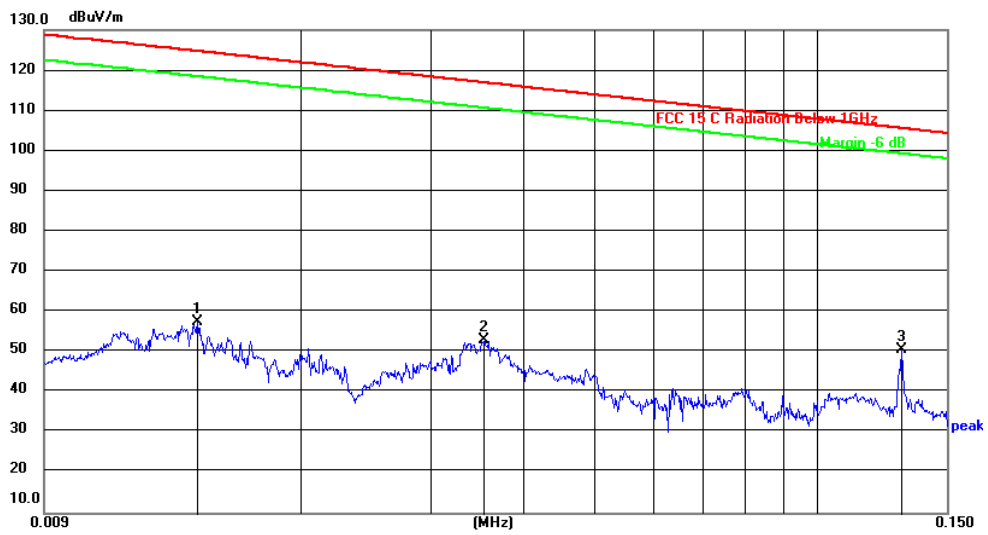
■ **Measurement data:**

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

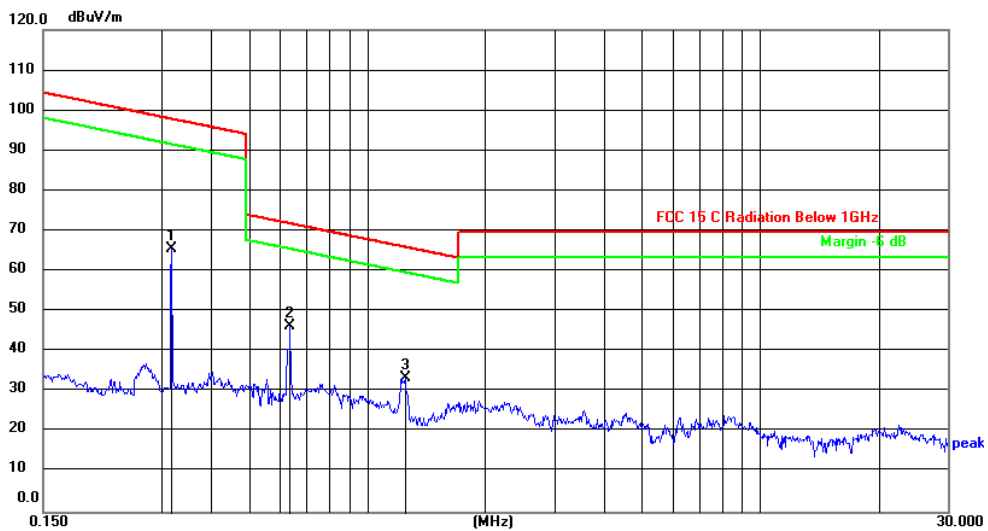
Limit dBuV/m @3m = Limit dBuV/m @30m + 40

Below 30MHz

ANT1-Watch charging

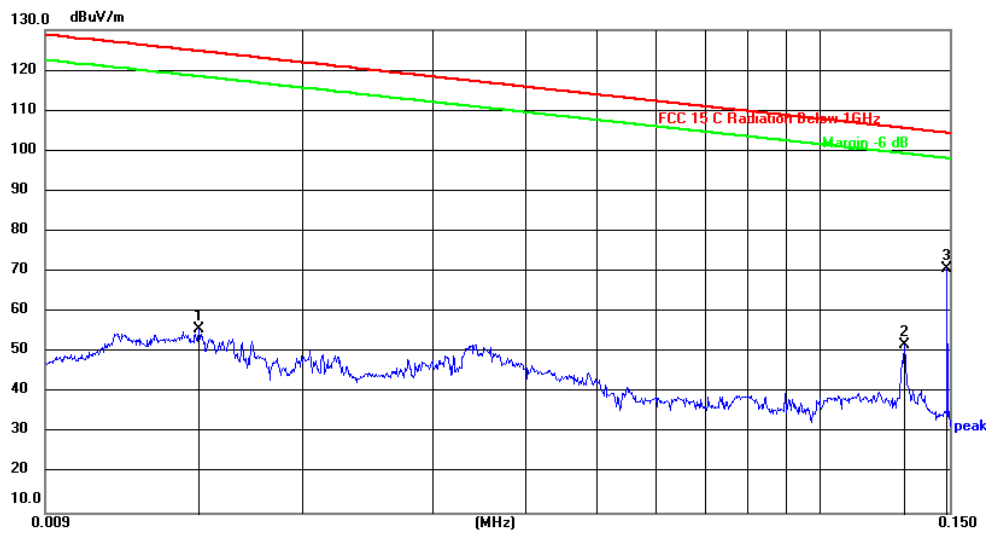


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0145	83.57	-25.88	57.69	124.38	-66.69	peak
2	0.0354	78.85	-25.88	52.97	116.62	-63.65	peak
3	0.1302	76.64	-25.91	50.73	105.31	-54.58	peak

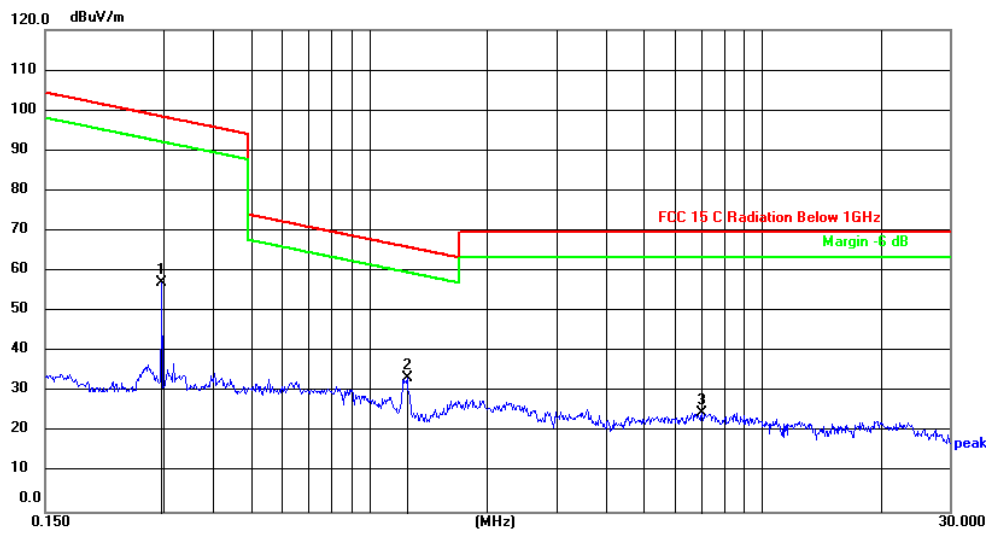


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.3183	45.88	19.78	65.66	97.55	-31.89	peak
2	0.6370	26.47	19.88	46.35	71.53	-25.18	peak
3	1.2479	13.20	20.20	33.40	65.70	-32.30	peak

ANT2-Earbuds charging

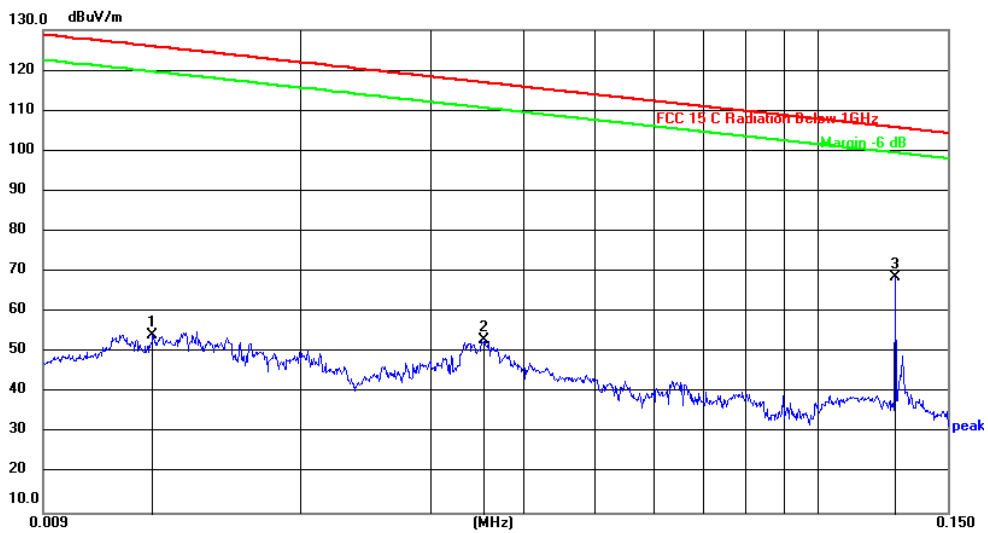


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0145	81.57	-25.88	55.69	124.38	-68.69	peak
2	0.1302	77.64	-25.91	51.73	105.31	-53.58	peak
3	0.1486	96.62	-25.93	70.69	104.16	-33.47	peak

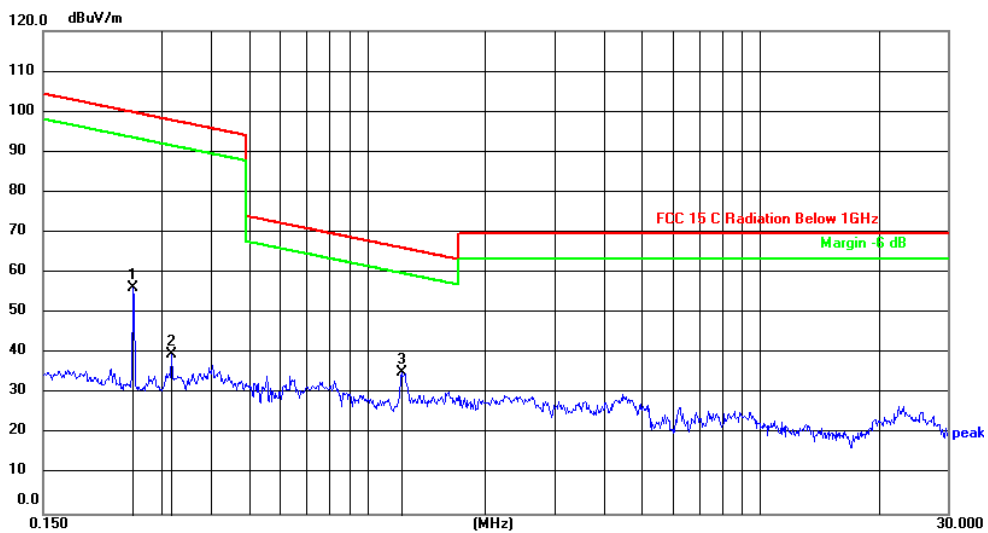


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2968	37.37	19.79	57.16	98.15	-40.99	peak
2	1.2479	13.20	20.20	33.40	65.70	-32.30	peak
3	7.0247	4.17	20.56	24.73	69.50	-44.77	peak

ANT3-Phone charging



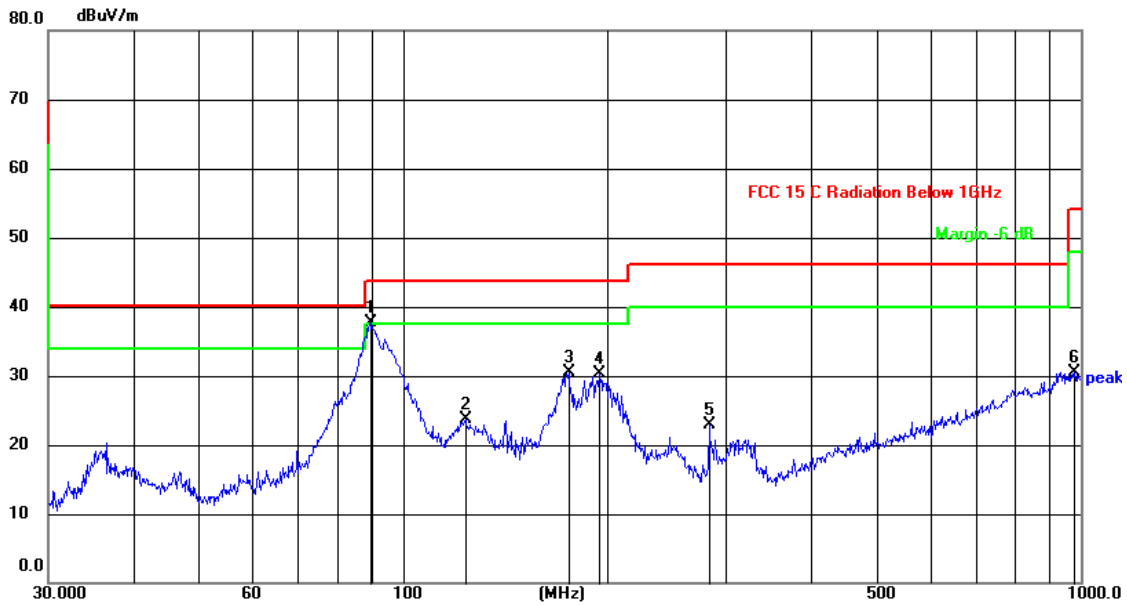
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0126	80.19	-25.88	54.31	125.60	-71.29	peak
2	0.0354	78.85	-25.88	52.97	116.62	-63.65	peak
3	0.1274	94.54	-25.90	68.64	105.50	-36.86	peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2534	36.58	19.80	56.38	99.53	-43.15	peak
2	0.3183	19.88	19.78	39.66	97.55	-57.89	peak
3	1.2217	14.90	20.21	35.11	65.89	-30.78	peak

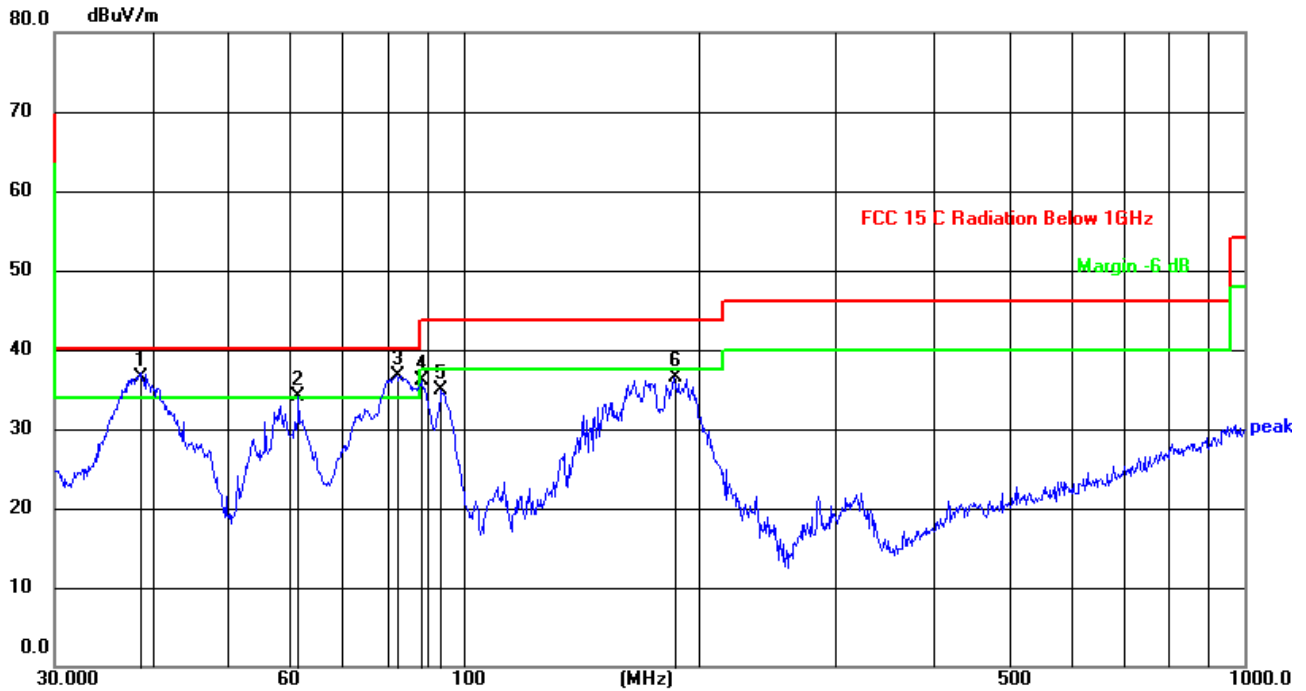
Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	89.5899	63.06	-25.42	37.64	43.50	-5.86	QP
2	123.6984	46.57	-22.95	23.62	43.50	-19.88	QP
3	175.6516	52.28	-21.84	30.44	43.50	-13.06	QP
4	195.1363	53.51	-23.25	30.26	43.50	-13.24	QP
5	282.9849	44.09	-21.19	22.90	46.00	-23.10	QP
6	979.1802	34.12	-3.54	30.58	54.00	-23.42	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	38.6160	57.66	-21.16	36.50	40.00	-3.50	QP
2	61.5617	56.80	-22.79	34.01	40.00	-5.99	QP
3	82.0706	62.74	-25.95	36.79	40.00	-3.21	QP
4	88.3421	61.53	-25.52	36.01	43.50	-7.49	QP
5	93.7681	60.16	-25.33	34.83	43.50	-8.67	QP
6	186.4409	59.42	-22.90	36.52	43.50	-6.98	QP

Remark:

1. Final Level = Receiver Read level + Correction Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. The emission levels of other frequencies are more than 20 dB below the limit and not show in test report.
3. “*”, means this data is the too weak instrument of signal is unable to test.

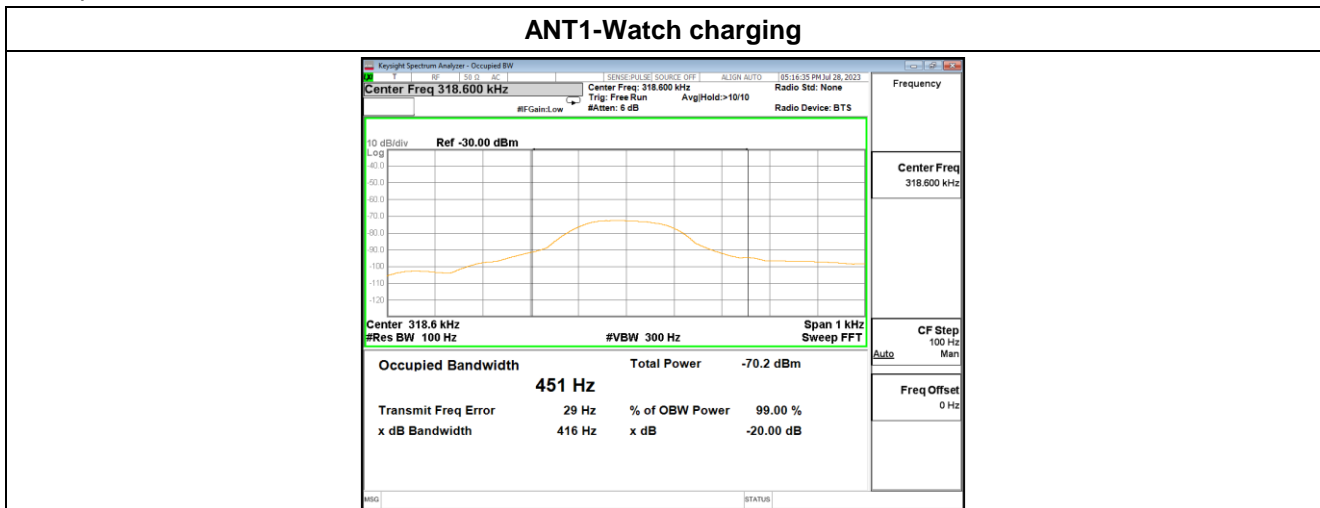
4.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 RSS-Gen Section 6.7					
Test Method:	ANSI C63.10:2013 and RSS-Gen					
Limit:	Only appliance report					
Test setup:						
Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	25.6 °C	Humid.:	55%	Press.:	1012mbar
Test voltage:	DC 9V					
Test Mode:	TX					

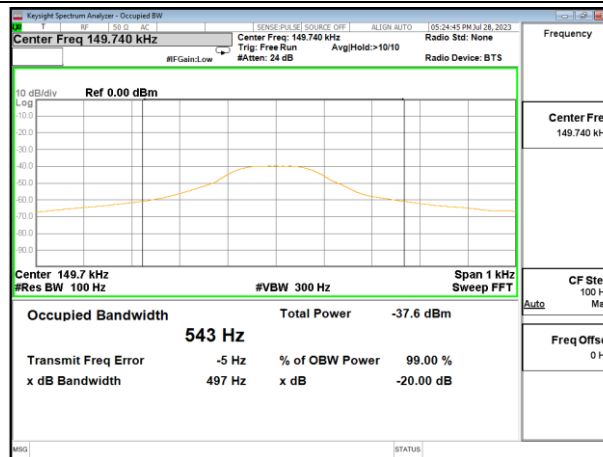
Measurement Data

ANT	Test frequency (KHz)	20dB Bandwidth (KHz)
ANT1-Watch charging	318.6	0.416
ANT2-Earbuds charging	149.7	0.497
ANT3-Phone charging	127.5	0.312

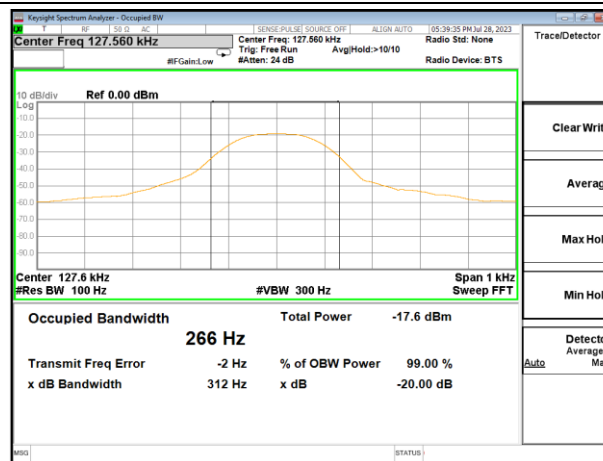
Test plot as follows:



ANT2-Earbuds charging



ANT3-Phone charging



5 Test Setup Photo

Reference to the **appendix I** for details.

6 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----