Test Report No.:
GJW2022-6151-RF1

RF Test Report

EUT	**:**	**Wireless Charging Battery**
MODEL	**:**	**A1614**
BRAND NAME	**:**	**anker**
APPLICANT	**:**	**Anker Innovations Limited**
Classification Of Test	**:**	**N/A**

CVC Testing Technology Co., Ltd.

Client	**Name :Anker Innovations Limited** **Address :Room 1318-19, Hollywood Plaza, 610 Nathan Road,Mongkok, Kowloon, Hongkong**
Manufacturer	**Name :Shenzhen Joway Power Supply Co., Ltd. .** **Address : 1-5/F of No.10 & No.11 Workshop of AnTuoShan High-Tech Industrial Park, Sha'Er Community, ShaJing Street, Bao'An District, Shenzhen, Guangdong, P. R. China.**
Equipment Under Test	**Name :Wireless Charging Battery** **Model/Type:A1614** **Trade mark :anker** **SerialNO.:N/A** **Sampe NO.:3-1**

Date of Receipt.	**2022.07.14**	Date of Testing	**2022.07.14-2022.07.22**

Test Specification	**Test Result**
FCC Part 15, Subpart C, Section 15.207, Section 15.209	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. **Issue Date: 2022.07.22**

Tested by:	Reviewed by:	Approved by:
Xu ZhenFei	Liu YongHai	Chen HuaWen
Name Signature	Name Signature	Name Signature

Other Aspects: NONE.

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
GJW2022-6151-RF1	Original release	2022.07.22

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
FCC STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.203	Antenna Requirement	PASS	No antenna connector is used.
15.207	AC Power Conducted Emission	PASS	Power form adapter
15.209,15.205,	Radiated Emissions	PASS	Meet the requirement of limit.
15.215 (c)	20dB Bandwidth Measurement	PASS	Meet the requirement of limit.

1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
WIFI & Bluetooth Test System 1					/
Communication Shielded Room 1	4m*3m*3m	CRTDSWKSR44301	VGDS-0699	CRT	2024/04/24
Spectrum Analyzer	FSV30	104337	DZ-000235	R&S	2022/11/03
Programmable DC Power Supply	E3642A	MY59108106	DZ-000242-2	KEYSIGHT	2022/08/05
Test Equipment	**Type/Mode**	**SERIAL NO.**	**Equipment No.**	**Manufacturer**	**Cal. Due**
Radiation emission					/
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2023-03-03
EMI Test Receiver	ESR7	102235	VGDY-0956	R&S	2023-03-03
EMI Test Receiver	N9038A-508	MY53290078	EM-000396	Agilent	2023-03-03
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2023-03-03
Radio Communication Test	CMW500	156686	EM-000623	R&S	2022-12-08
Broadband Antenna(3m)	VULB 9163	9163-530	EM-000342	SCHWARZBECK	2023-06-26
Loop Antenna	FMZB1513	1513-170	EM-000384	SCHWARZBECK	2023-03-04
Monopole antenna	HFH2-Z6E	101317	EM-000613	R&S	2023-03-04
Waveguide Horn Antenna	BBHA9120B	602	EM-000383	SCHWARZBECK	2023-02-20
Waveguide Horn Antenna	HF906	360306/008	WKNA-0024-8	R&S	2023-03-04
Semi-Anechoic Chamber(3m)	FACT-4	ST08035	WKNA-0024	ETS	2024-12-12
Conducted emission					/
EMI Test Receiver	ESCI	100857	WKNB-0081	R&S	2022-12-08
EMI Test Receiver	ESR3	102394	VGDY-0705	R&S	2023-03-04
LISN	NSLK 8127	8127644	VGDY-0150	SCHWARZBECK	2022-09-01
DC LISN	PVDC8301-017	PVDC8301#17	VGDY-0692	SCHWARZBECK	2022-06-07
LISN	NSLK 8129	8129-268	EM-000388	SCHWARZBECK	2023-03-03
Plus Limiter（#1）	VTSD 9561 F-N	00515	VGDY-0808	SCHWARZBECK	2023-03-04
Impedance Stabilization Network	ISN T800	27095	WKNE-0195	TESEQ	2022-09-01
Impedance Stabilization Network	NTFM8158	8158-0092	VGDY-0356	SCHWARZBECK	2023-06-07
ImpedanceStabilizationNetwork	NTFM8131	#184	EM-000498	SCHWARZBECK	2023-06-07
Voltage Probe	TK9420	9420-499	VGDY-0128	SCHWARZBECK	2023-03-04
Power Divider	4901.17.B	22643830	DB-0016	HUBER+SUHNER	2023-09-01
Video Signal Generator	GV-798+	151064920001	VGDS-0215	PROMAX	2023-05-30
AudioSignalGenerator	GAG-810	EK871591	EM-000309	GW	2022-12-08
Shielding Room(#1)	GP1A	001	WKNF-0001	LEINING	2024-08-08

1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	ITEM	FREQUENCY	UNCERTAINTY
1	Conducted Emissions	9kHz~30MHz	±2.66dB
2	Radiated Spurious Emissions	9KHz ~ 30MHz	±0.769dB
		30MHz ~ 1GMHz	±0.877dB
		1GHz ~ 18GHz	±0.777dB
		18GHz ~ 40GHz	±1.315dB

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
Post Code：510663 Tel：020-32293888
FAX：020-32293889 E-mail：office@cvc.org.cn
Test Firm Registration Number: 937273

2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	Wireless Charging Battery
BRAND	anker
MODEL	A1614
ADDITIONAL MODEL	N/A
FCC ID	2AOKB-A1614
POWER SUPPLY	DC 5V From USB Host Unit
MODULATION TYPE	ASK
OPERATING FREQUENCY	111KHz ~ 149KHz
ANTENNA TYPE	Coil Antenna
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

Remark:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document for detailed EUT photo (GJW2022-6151-E).

2.2 DESCRIPTION OF TEST MODE

The EUT were tested under the following modes, the final worst mode was marked in boldface and recorded in this repor

EMISSION Test Modes		
ForConducted Emission Tests		
Test Mode		Test Voltage
1	charging + wireless charging(7.5W)	**DC 5V From Adapter input AC 110V/50Hz**
2	**charging + wireless charging (5W)**	
For Radiated Emission Tests(9kHz~30MHz)		
Test Mode		Test Voltage
1	charging + wireless charging(7.5W)	DC 5V From Adapter input AC 110V/50Hz
2	charging + wireless charging(5W)	
3	wireless charging(7.5W)	**DC 5V From Battery**
4	**wireless charging (5W)**	
For Radiated Emission Tests(30MHz~1GHz)		
Test Mode		Test Voltage
1	**charging + wireless charging (7.5W)**	**DC 5V From Adapter input AC 110V/50Hz**
2	charging + wireless charging(5W)	
3	wireless charging(7.5W)	**DC 5V From Battery**
4	wireless charging (5W)	

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.209
ANSI C63.10-2020

All test items have been performed and recorded as per the above standards

2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment					
NO	**Description**	**Brand**	**Model No.**	**Serial Number**	**Supplied by**
1	Wireless charging load	/	15W	/	Lab

Support Cable							
NO	**Description**	**Quantity (Number)**	**Length (m)**	**Detachable (Yes/ No)**	**Shielded (Yes/ No)**	**Cores (Number)**	**Supplied by**
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 Limit

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
NOTE: 1. The lower limit shall apply at the transition frequencies. NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

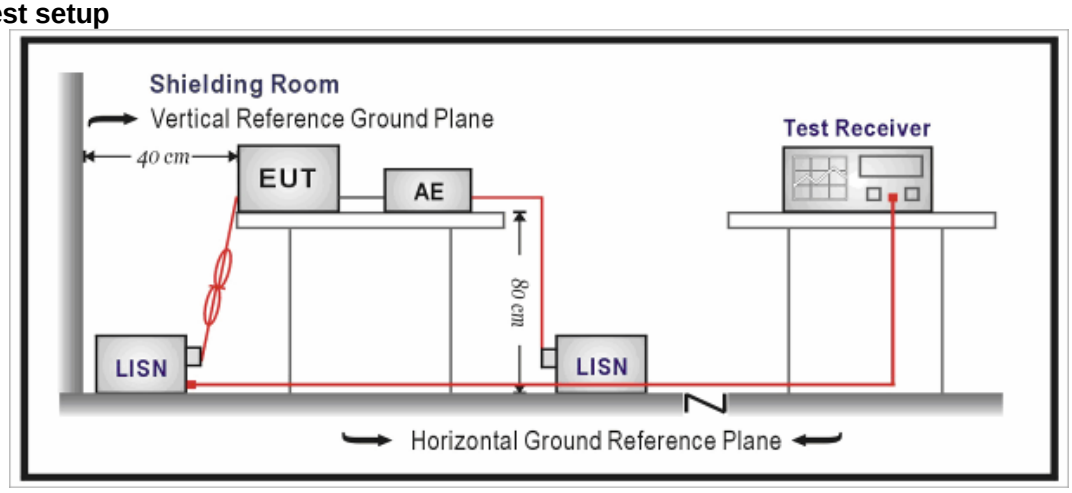
3.1.2 Measurement procedure

a. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the Test photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.The equipment under test shall be placed on a support of non-metallic material, the height of which shall be1.5m above the ground,

b. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

c. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

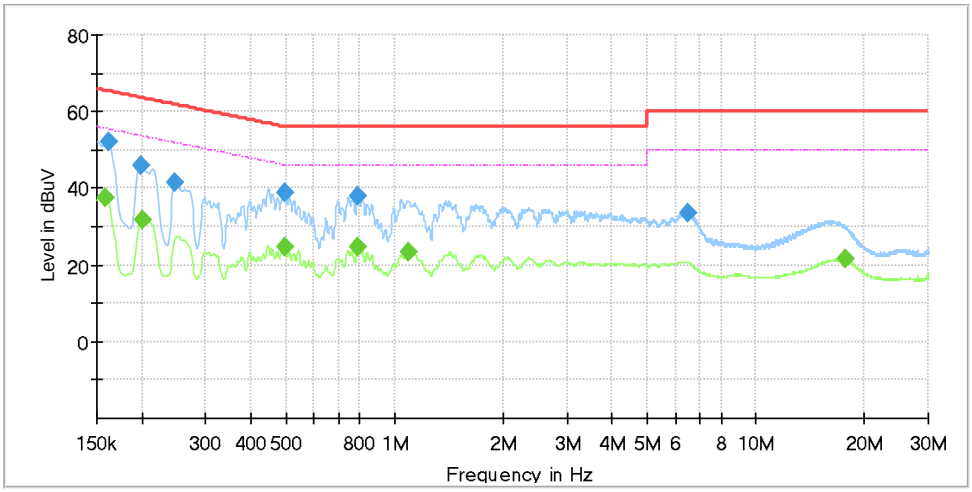
3.1.3 Test setup



3.1.4 Test results

CONDUCTED WORST-CASE DATA:

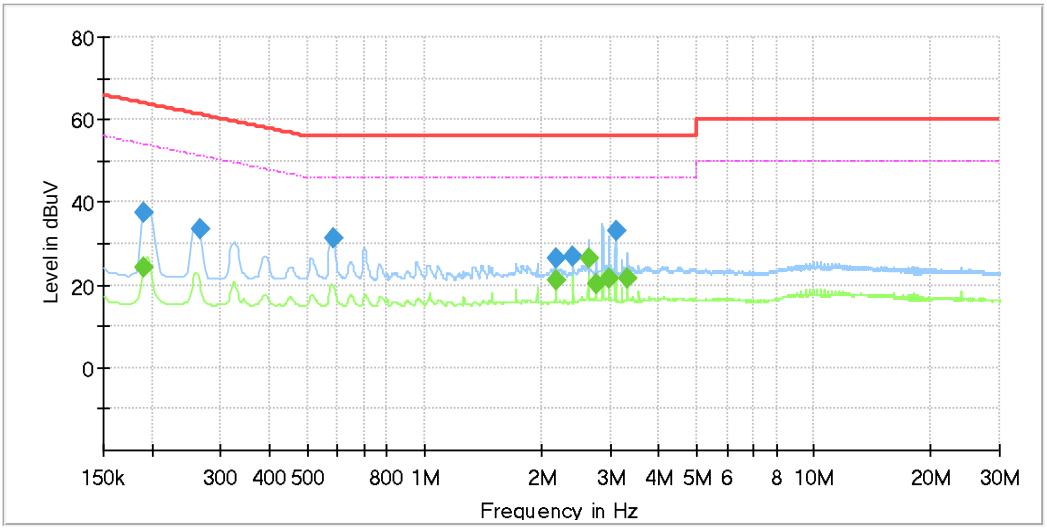
Test Mode	Mode2	**Frequency Range**	150KHz ~ 30MHz
Test Voltage	See section 2.2	**PHASE**	Line (L)
Environmental Conditions	26deg. C,51% RH	**Tested By**	Liu shiwei



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.159	---	37.5	55.5	18.0	L1	19.5
2	**0.161**	**52.1**	**---**	**65.4**	**13.3**	**L1**	**19.5**
3	0.200	46.0	---	63.6	17.7	L1	19.5
4	0.202	---	31.9	53.5	21.6	L1	19.5
5	0.247	41.4	---	61.9	20.4	L1	19.5
6	0.494	---	24.9	46.1	21.2	L1	19.5
7	0.497	39.0	---	56.1	17.1	L1	19.5
8	0.791	---	24.7	46.0	21.3	L1	19.6
9	0.794	37.9	---	56.0	18.1	L1	19.6
10	1.091	---	23.6	46.0	22.4	L1	19.5
11	6.500	33.8	---	60.0	26.2	L1	19.7
12	17.592	---	21.4	50.0	28.6	L1	19.9

Remark: The emission levels of other frequencies were very low against the limit.

Test Mode	Mode2	Frequency Range	150KHz ~ 30MHz
Test Voltage	See section 2.2	PHASE	Line (L)
Environmental Conditions	26deg. C,51% RH	Tested By	Liu shiwei



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.191	---	24.1	54.0	30.0	N	19.5
2	0.191	37.7	---	64.0	26.3	N	19.5
3	0.265	33.4	---	61.3	27.9	N	19.6
4	0.582	31.4	---	56.0	24.6	N	19.6
5	2.180	---	21.0	46.0	25.0	N	19.6
6	2.180	26.6	---	56.0	29.4	N	19.6
7	2.407	26.7	---	56.0	29.3	N	19.6
8	2.639	---	26.6	46.0	19.4	N	19.6
9	2.753	---	20.2	46.0	25.8	N	19.6
10	2.978	---	21.4	46.0	24.6	N	19.6
11	3.098	32.9	---	56.0	23.1	N	19.6
12	3.325	---	21.5	46.0	24.5	N	19.6

Remark: The emission levels of other frequencies were very low against the limit.

3.2 RADIATED EMISSIONS

3.2.1 Limits

Test Standard: Part 15C

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

FREQUENCIES (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 lower limit shall apply at the transition frequencies.
NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
NOTE: 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 Measurement procedure

Test Standard: Part 15C

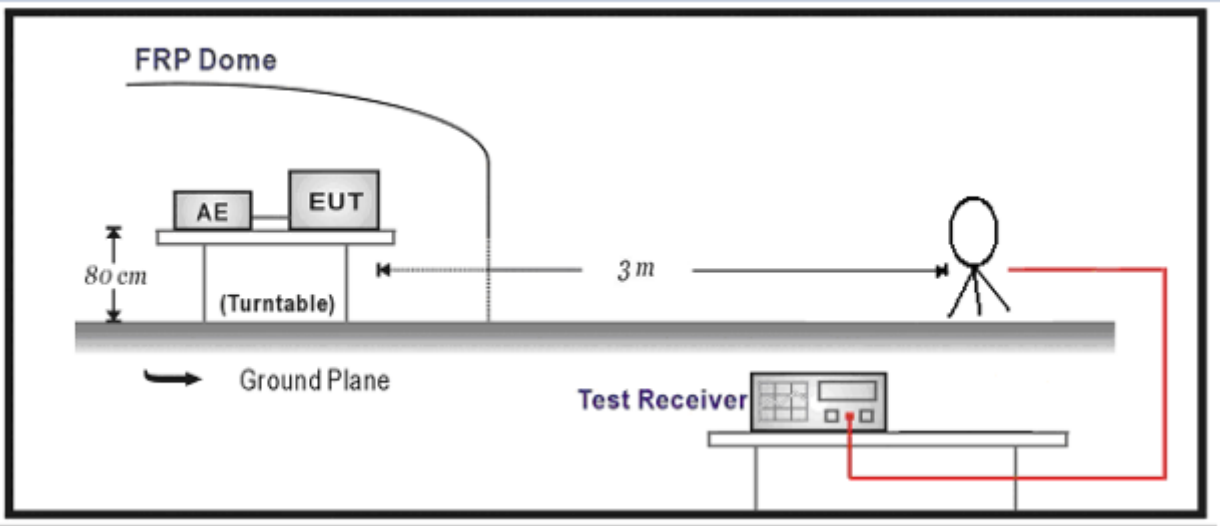
a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its 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.
d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

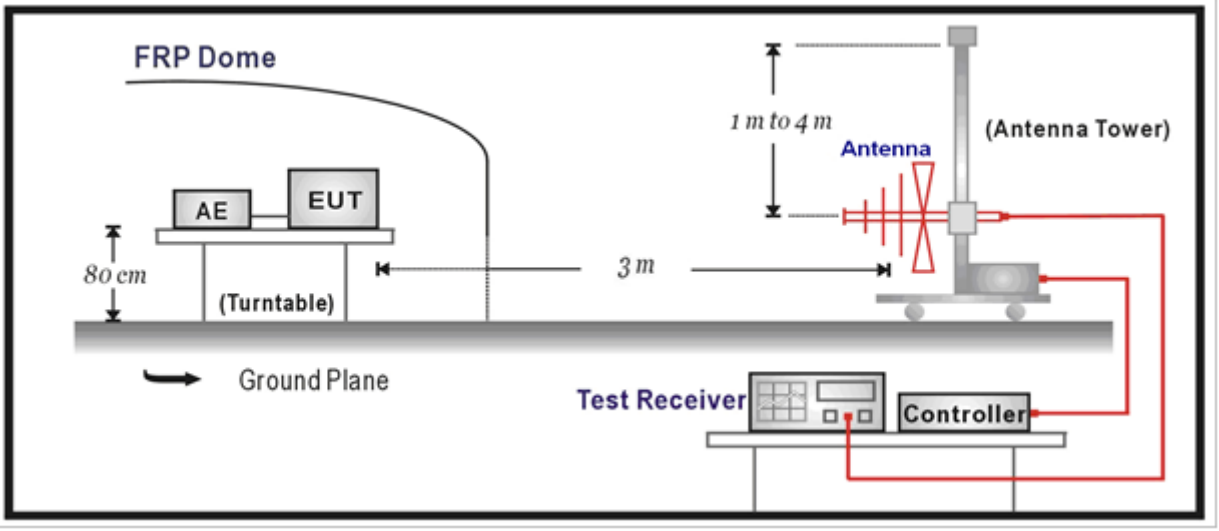
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geqslant$ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

Below 30MHz Test Setup:



Below 1GHz Test Setup:

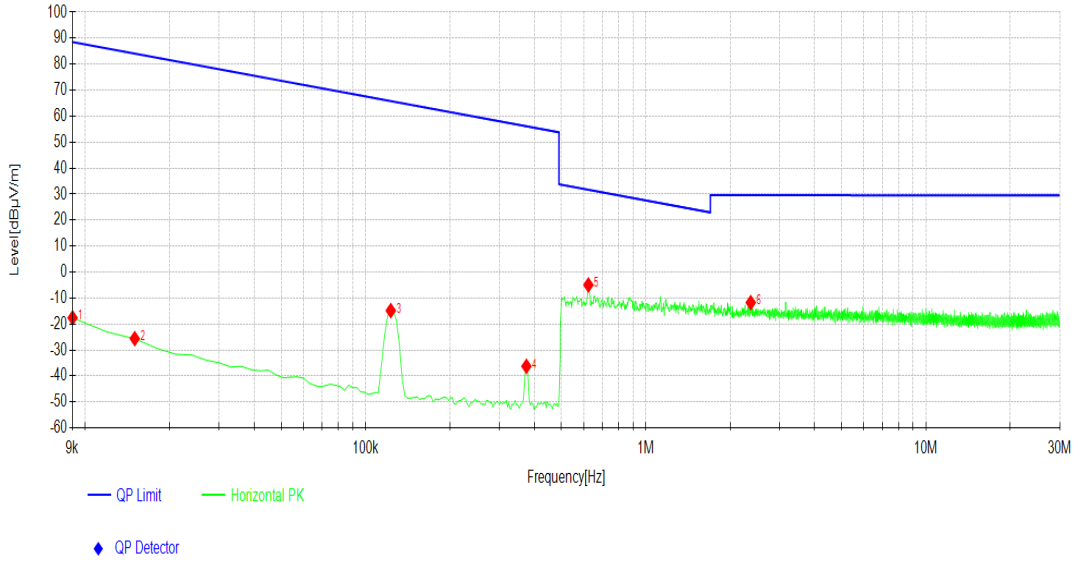


3.2.4 Test results

Results under test standard PART 15C：
9KHz ~ 30MHz WORST-CASE DATA:

Worst Test Mode	Mode 4	**Channel**	/
Frequency Range	9KHz ~ 30MHz	**Detector Function**	Quasi-Peak (QP)

Horizational

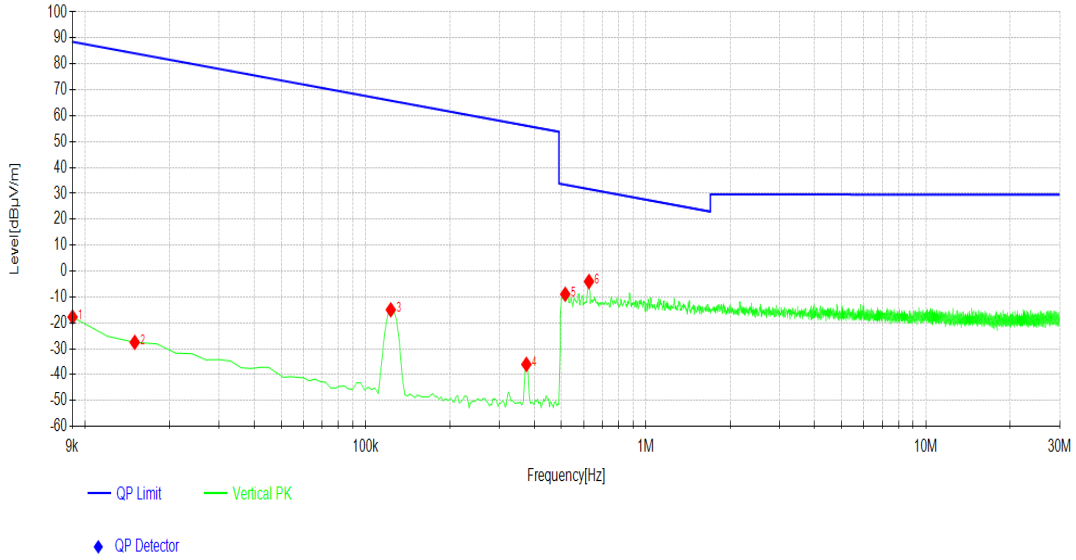


NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	0.0090	41.88	-59.48	-17.60	88.52	106.12	100	52
2	0.0150	33.79	-59.39	-25.60	84.08	109.68	100	196
3	0.1230	44.62	-59.43	-14.81	65.81	80.62	100	70
4	0.3749	22.82	-59.05	-36.23	56.13	92.36	100	70
5	0.6239	13.90	-18.85	-4.95	31.70	36.65	100	276
6	2.3695	7.32	-19.06	-11.74	29.57	41.31	100	230

Remark:1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Worst Test Mode	Mode 4	**Channel**	/
Frequency Range	9KHz ~ 30MHz	**Detector Function**	Quasi-Peak (QP)

Vertical



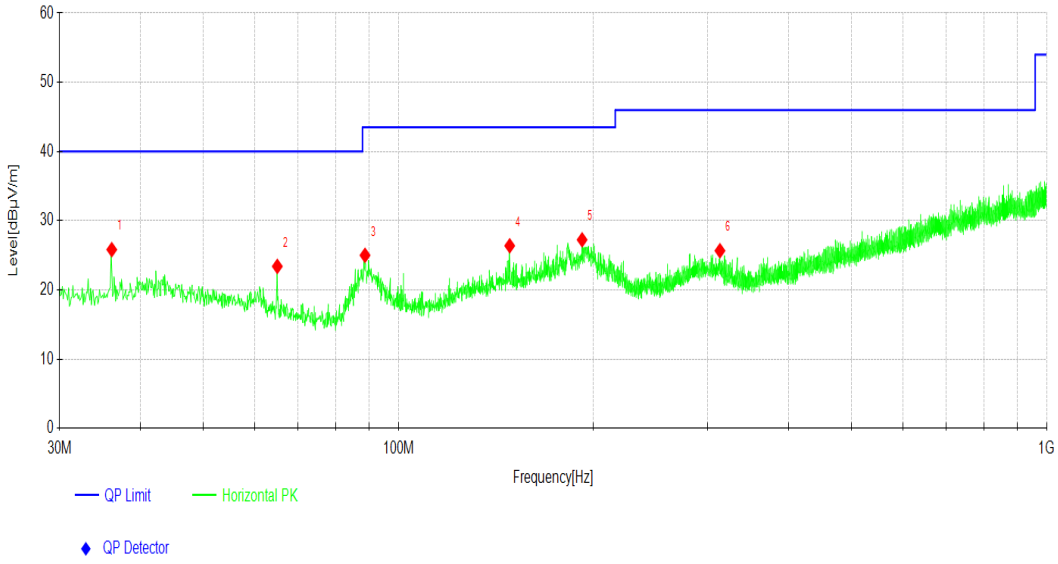
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	0.0090	41.73	-59.48	-17.75	88.52	106.27	100	2
2	0.0150	31.89	-59.39	-27.50	84.08	111.58	100	2
3	0.1230	44.49	-59.43	-14.94	65.81	80.75	100	81
4	0.3749	23.03	-59.05	-36.02	56.13	92.15	100	264
5	0.5159	9.82	-18.74	-8.92	33.35	42.27	100	234
6	0.6269	14.84	-18.86	-4.02	31.66	35.68	100	234

Remark:1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

30MHz ~ 1GHz WORST-CASE DATA:

Worst Test Mode	Mode 1	**Channel**	/
Frequency Range	30MHz ~ 1GHz	**Detector Function**	Quasi-Peak (QP)

Horizontal

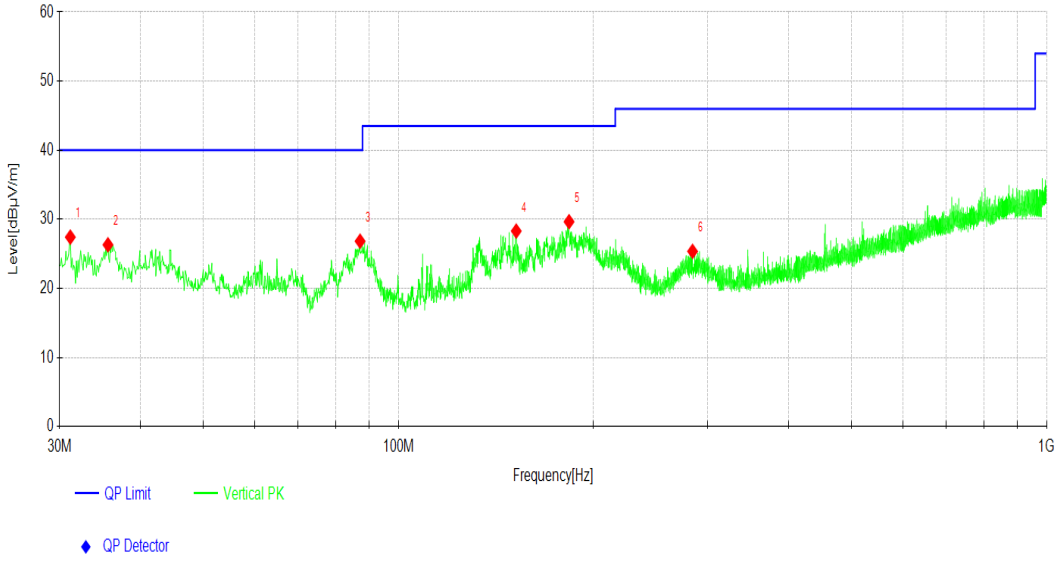


NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	36.1116	6.71	19.11	25.82	40.00	14.18	100	103
2	65.0205	5.44	17.96	23.40	40.00	16.60	100	263
3	88.7879	9.45	15.55	25.00	43.50	18.50	200	31
4	148.4488	6.02	20.36	26.38	43.50	17.12	200	181
5	192.0062	10.09	17.15	27.24	43.50	16.26	200	128
6	313.2683	5.50	20.16	25.66	46.00	20.34	100	131

Remark:1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Worst Test Mode	Mode 1	**Channel**	/
Frequency Range	30MHz ~ 1GHz	**Detector Function**	Quasi-Peak (QP)

Vertical



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	31.1641	8.34	19.08	27.42	40.00	12.58	100	80
2	35.6266	7.26	19.05	26.31	40.00	13.69	100	187
3	87.2357	11.34	15.49	26.83	40.00	13.17	100	187
4	151.9412	7.74	20.56	28.30	43.50	15.20	100	125
5	183.2753	11.65	18.00	29.65	43.50	13.85	100	29
6	284.2624	5.92	19.44	25.36	46.00	20.64	200	69

Remark:1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

3.3 20dB Bandwidth Measurement

3.3.1 Limits of 20dB Bandwidth Measurement

The field strength of any emissions appearing between the band edges and out of band shall be attenuated at least 20 dB below the level of the unmodulated carrier or to the general limits in Section 15.209.

3.3.2 Measurement procedure

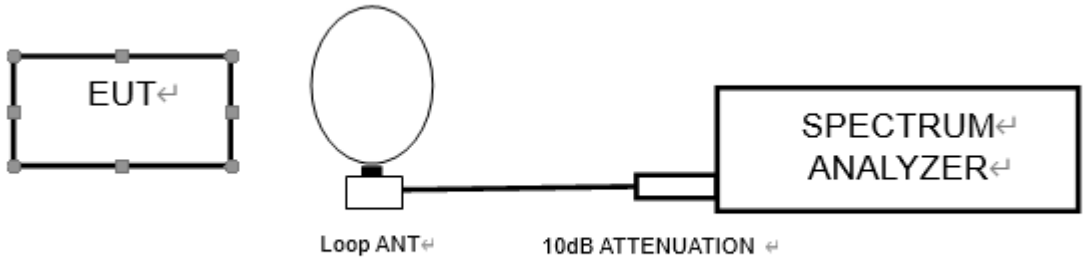
a. . Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT, then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

3.3.3 Test setup

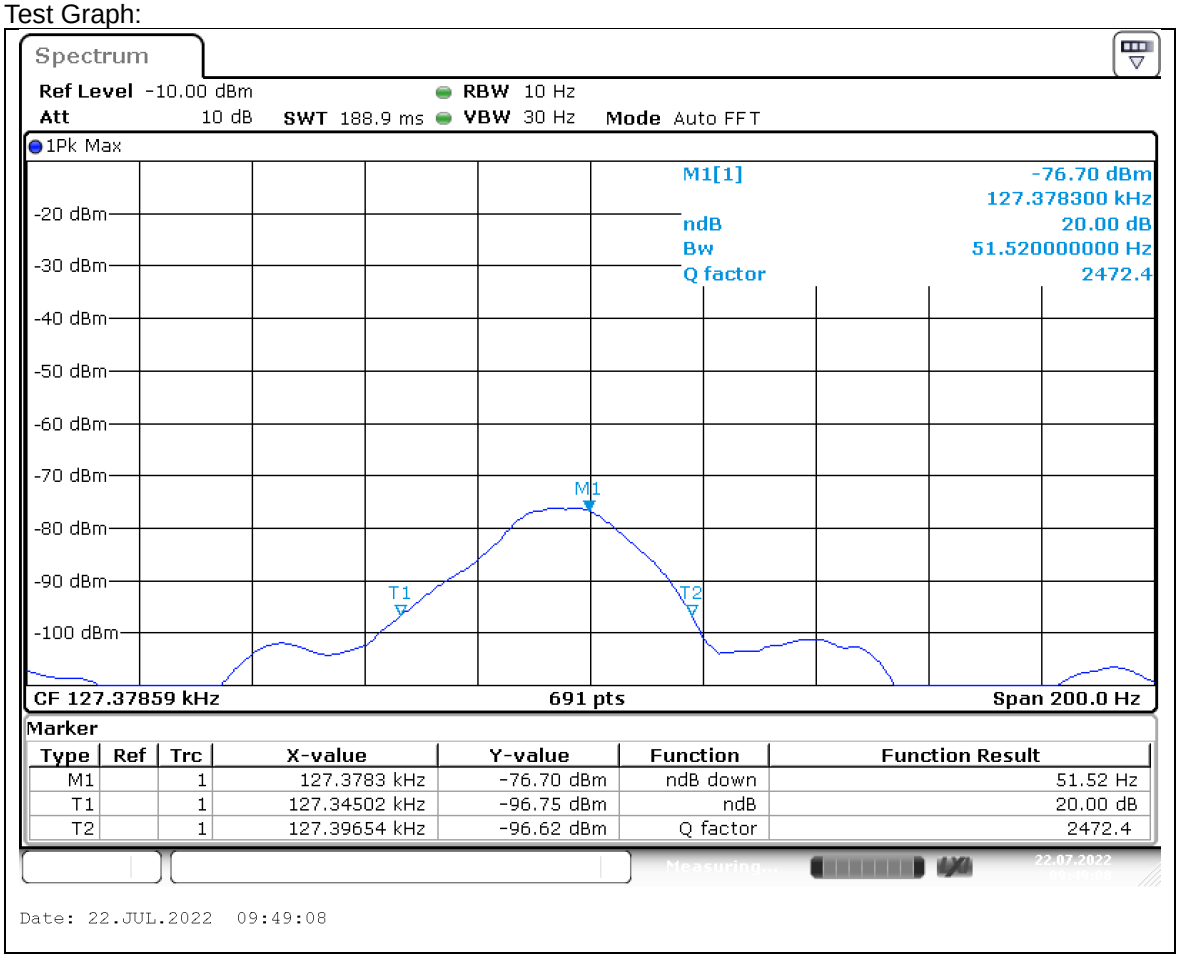


3.3.4 Test results

TEST MODE	CHANNEL FREQUENCY(KHz)	20dB BANDWIDTH(Hz)
Wireless Charging(7.5W) + Charging from Adapter	127.378	51.52

Lower & Upper Test Frequency Point (MHz)	Test Frequency (KHz)	P/F
Lower	127.345	PASS
Upper	127.396	PASS

Test Graph:



4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Photos).

5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).

Important

(1) The test report is valid with the official seal of the laboratory and the signatures of Test engineer, Author and Reviewer simultaneously.

(2) The test report is invalid if altered.

(3) Any photocopies or part photocopies in the test report are forbidden without the written permission from the laboratory.

(4) Objections to the test report must be submitted to the laboratory within 15 days.

(5) Generally, commission test is responsible for the tested samples only.

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