TEST REPORT

Report No.	CISRR241127188
Project No.	CISR241127188
FCC ID	2BMHD-LFX-178S
Applicant	Shenzhen Chuangyujie Technology Co., Ltd.
Address	Room 201, Building 3, No. 171 Ping'an Avenue, Pinghu Community, Pinghu Street, Longgang District, Shenzhen, China
Manufacturer	Shenzhen Chuangyujie Technology Co., Ltd.
Address	Room 201, Building 3, No. 171 Ping'an Avenue, Pinghu Community, Pinghu Street, Longgang District, Shenzhen, China
Product Name	wireless charger
Trade Mark	N/A
Model/Type reference	LFX-178S
Listed Model(s)	N/A
Standard	FCC Part 15 Subpart C
Test date	November 27, 2024 to December 3, 2024
Issue date	December 5, 2024
Test result	**Complied**

Rory Huang

Prepared by: Rory Huang

Genry Long

Approved by: Genry Long

The test results relate only to the tested samples.

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Contents

1. REPORT VERSION

Version No.	Issue date	Description
00	December 5, 2024	Original

2. SUMMARY OF TEST RESULT

Report clause	Test Item	Standard Requirement	Result
5.2	AC Conducted Emission	15.207	PASS
5.4	20 dB Bandwidth	15.215	PASS
5.13	Radiated Spurious Emission	15.209	PASS

Note:

– The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Product Description

Main unit information:	
Product Name:	wireless charger
Trade Mark:	N/A
Model No.:	LFX-178S
Listed Model(s):	N/A
Power supply:	Input:5V⎓4A, 9V⎓4A
Hardware version:	V1.0
Software version:	V1.0

3.2. Radio Specification Description

Technology:	Wireless Charging
Modulation:	Continuous Wave
Operation frequency:	110.1kHz-205kHz
Antenna type:	PCB Antenna
Antenna gain:	0dBi

3.3. Modification of EUT

No modifications are made to the EUT during all test items.

3.4. Testing Site

Laboratory Name	Shenzhen Bangce Testing Technology Co., Ltd.
Laboratory Location	101, building 10, Yunli Intelligent Park, Shutianpu community, Matian Street, Guangming District, Shenzhen, Guangdong, China
FCC registration number	736346

3.5. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS (dBuV/m) = RA (dBuV) + AF (dB/m) + CL (dB) – AG (dB)

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

3.6. DISTURBANCE Calculation

The AC mains conducted disturbance is calculated by adding the 10dB Pulse Limiter and Cable Factor and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

CD (dBuV) = RA (dBuV) + PL (dB) + CL (dB)

Where CD = Conducted Disturbance	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	PL = 10 dB Pulse Limiter Factor

4. TEST CONFIGURATION

4.1. Test mode

Test Mode:	
Mode 1	AC/DC Adapter (9V/4A) + EUT + iPhone+ Watch + TWS Earphone + Type-C (Battery Status: <1%)
Mode 2	AC/DC Adapter (9V/4A)+ EUT + iPhone+ Watch + TWS Earphone + Type-C (Battery Status: <50%)
Mode 3	AC/DC Adapter (9V/4A) + EUT + iPhone+ Watch + TWS Earphone + Type-C (Battery Status: 100%)
Mode 4	AC/DC Adapter (9V/4A) + EUT + iPhone (Battery Status: <1%)
Mode 5	AC/DC Adapter (9V/4A) + EUT + iPhone (Battery Status: <50%)
Mode 6	AC/DC Adapter (9V/4A) + EUT + iPhone (Battery Status: <100%)
Mode 7	AC/DC Adapter (9V/4A) + EUT + Watch (Battery Status: <1%)
Mode 8	AC/DC Adapter (9V/4A) + EUT + Watch (Battery Status: <50%)
Mode 9	AC/DC Adapter (9V/4A) + EUT + Watch (Battery Status: <100%)
Mode 10	AC/DC Adapter (9V/4A) + EUT + TWS Earphone (Battery Status: <1%)
Mode 11	AC/DC Adapter (9V/4A) + EUT + TWS Earphone (Battery Status: <50%)
Mode 12	AC/DC Adapter (9V/4A) + EUT + TWS Earphone (Battery Status: <100%)
Mode 13	AC/DC Adapter (9V/4A) + EUT + Type-C
Mode 14	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch(Battery Status: <1%)
Mode 15	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch(Battery Status: <50%)
Mode 16	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch(Battery Status: <100%)
Mode 17	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone (Battery Status: <1%)
Mode 18	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone (Battery Status: <50%)
Mode 19	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone (Battery Status: <100%)
Mode 20	AC/DC Adapter (9V/4A) + EUT + iPhone + Type-C (Battery Status: <1%)
Mode 21	AC/DC Adapter (9V/4A) + EUT + iPhone + Type-C (Battery Status: <50%)
Mode 22	AC/DC Adapter (9V/4A) + EUT + iPhone + Type-C (Battery Status: <100%)
Mode 23	AC/DC Adapter (9V/4A) + EUT + Watch + TWS Earphone (Battery Status: <1%)
Mode 24	AC/DC Adapter (9V/4A) + EUT + Watch + TWS Earphone (Battery Status: <50%)
Mode 25	AC/DC Adapter (9V/4A) + EUT + Watch + TWS Earphone (Battery Status: <100%)
Mode 26	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Type-C (Battery Status: <1%)
Mode 27	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Type-C (Battery Status: <50%)
Mode 28	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Type-C (Battery Status: <100%)
Mode 29	AC/DC Adapter (9V/4A) + EUT + Watch + Type-C (Battery Status: <1%)
Mode 30	AC/DC Adapter (9V/4A) + EUT + Watch + Type-C (Battery Status: <50%)
Mode 31	AC/DC Adapter (9V/4A) + EUT + Watch + Type-C (Battery Status: <100%)
Mode 32	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + TWS Earphone(Battery Status: <1%)
Mode 33	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + TWS Earphone(Battery Status: <50%)
Mode 34	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + TWS Earphone(Battery Status: <100%)
Mode 35	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone + Type-C(Battery Status: <1%)
Mode 36	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone + Type-C(Battery Status: <50%)
Mode 37	AC/DC Adapter (9V/4A) + EUT + iPhone + TWS Earphone + Type-C(Battery Status: <100%)
Mode 38	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + Type-C(Battery Status: <1%)
Mode 39	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + Type-C(Battery Status: <50%)
Mode 40	AC/DC Adapter (9V/4A) + EUT + iPhone + Watch + Type-C(Battery Status: <100%)
Mode 41	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Watch + Type-C(Battery Status: <1%)
Mode 42	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Watch + Type-C(Battery Status: <50%)

Mode 43	AC/DC Adapter (9V/4A) + EUT + TWS Earphone + Watch + Type-C(Battery Status: <100%)

Remark:
– All test modes were pre-tested, but we only recorded the worst case in this report.

4.2. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Item	Equipment name	Trade Name	Model No.
1	Adapter	Guangdong Sangu Technology Co. ltd	SG-0501000AU
2	Phone	Huawei	Mate 60
3	TWS Earphone	iPhone	airPodspro2
4	Watch	Huawei	WatchGT4

4.3. Test sample information

Type	Sample no.
Engineer sample	CISR241127188-1#
Normal sample	CISR241127188-2#

4.4. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

4.5. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	1.63dB
2	99% Occupied Bandwidth	0.002%
3	Radiated Spurious Emission	3.76dB for 30MHz-1GHz 3.80dB for above 1GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.6. Equipment Used during the Test

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	SKET	9.3*6.3*6	N/A	2024.09.01	3Year
Spectrum analyzer	Agilent	N9020A	MY50530263	2024.01.08	1Year
Receiver	ROHDE&SCHWARZ	ESCI	100853	2024.01.08	1Year
Spectrum analyzer	R&S	FSV-40N	/	2024.01.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9163	1463	2023.01.09	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2487	2023.01.09	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	2023.01.09	2Year
RF Cable	Tonscend	Cable 1	/	2024.01.08	1Year
RF Cable	Tonscend	Cable 2	/	2024.01.08	1Year
RF Cable	SKET	Cable 3	/	2024.01.08	1Year
Pre-amplifier	Tonscend	TAP9K3G32	AP21G806153	2024.01.08	1Year
Pre-amplifier	Tonscend	TAP01018050	AP22E806229	2024.01.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8127	/	2024.01.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	2024.01.08	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	1130	2023.01.09	2 Year
Preamplifier	Tonscend	TAP18040048	AP21C806126	2024.01.08	1 Year
Antenna tower	SKET	Bk-4AT-BS	AT2021040101-V1	N/A	N/A
variable-frequency power source	Pinhong	PH1110	/	2024.01.08	1 Year
6dB Attenuator	SKET	DC-6G	/	N/A	N/A
Artificial power network	Schwarzbeck	NSLK8127	8127-01096	2024.01.08	1 Year
EMI Test Receiver	Rohde&schwarz	ESCI7	100853	2024.01.08	1 Year
8-wire Impedance Stabilization Network	Schwarzbeck	NTFM 8158	8158-00337	2024.01.08	1 Year
Antenna tower	SKET	Bk-4AT-BS	AT2021040101-V1	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. AC Conducted Emission

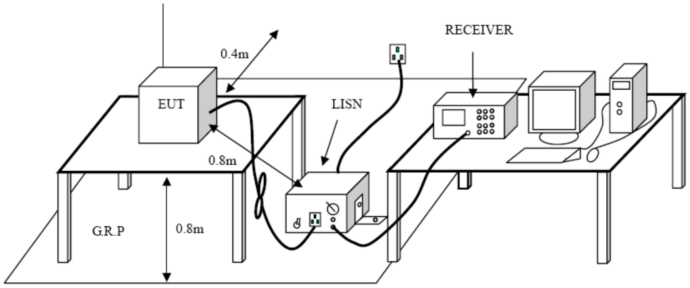
Limit:

FCC CFR Title 47 Part 15 Subpart C Section 15.207

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 configuration:



Test procedure:

1. The EUT was setup according to ANSI C63.10 requirements.
2. 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.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Refer to the block diagram of the test setup and photographs)
5. 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.
6. 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.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

Test mode:

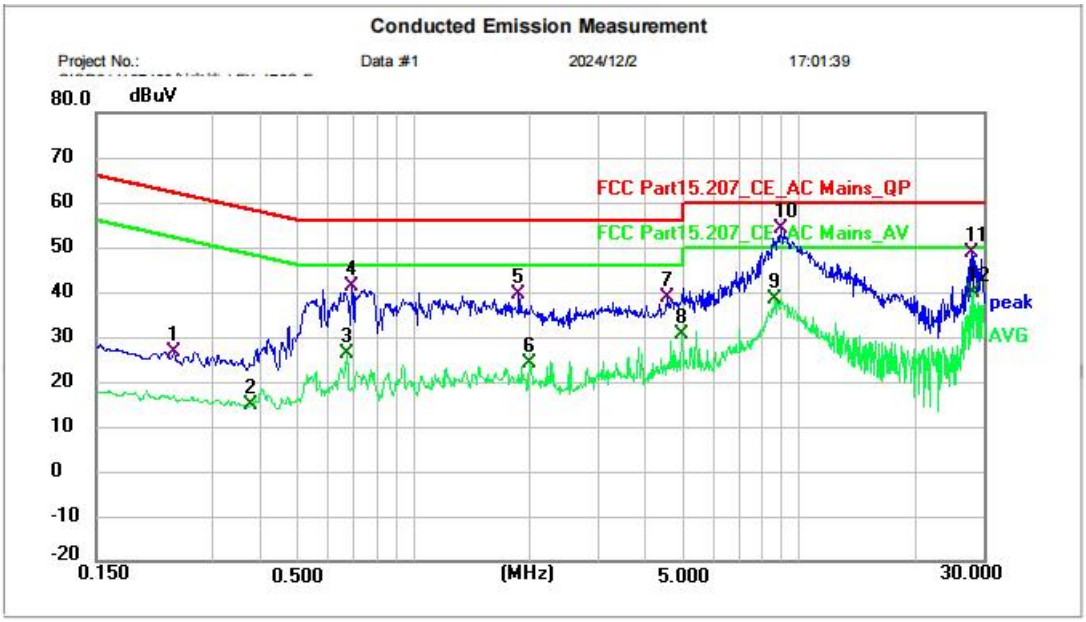
Refer to the clause 4.1

Result:

Passed

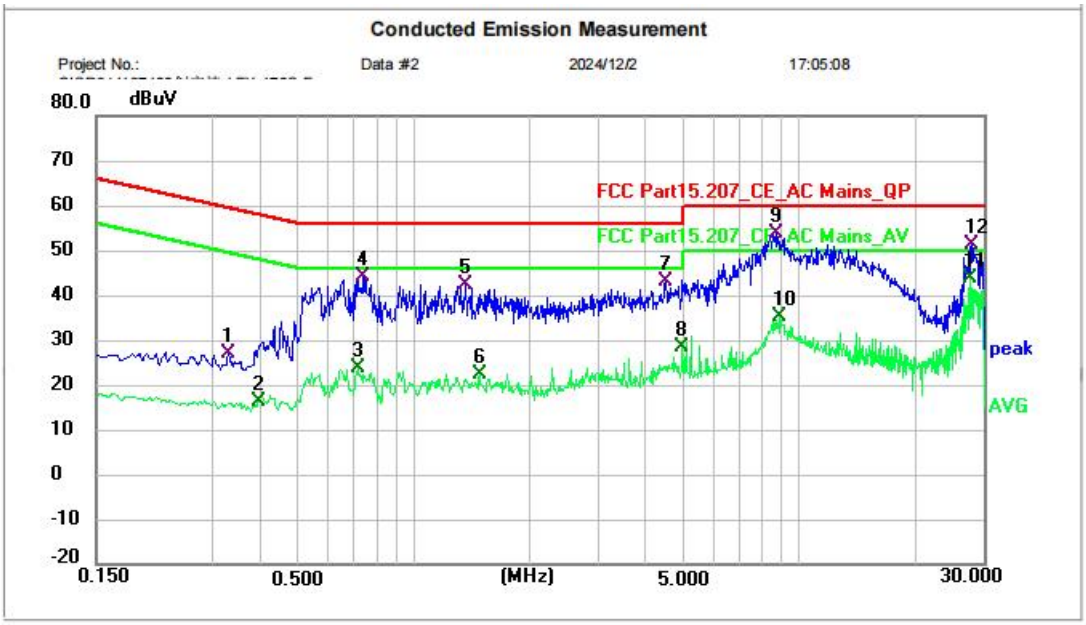
Have pre-scan all test channel, found Mode 1 which it was worst case, so only show the worst case's data on this report.

Test Line:	L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.238	26.12	0.33	26.45	62.17	-35.72	QP	P	
2	0.378	14.45	0.32	14.77	48.32	-33.55	AVG	P	
3	0.674	25.96	0.40	26.36	46.00	-19.64	AVG	P	
4	0.690	40.99	0.41	41.40	56.00	-14.60	QP	P	
5	1.870	38.77	0.67	39.44	56.00	-16.56	QP	P	
6	1.998	23.39	0.70	24.09	46.00	-21.91	AVG	P	
7	4.538	37.24	1.58	38.82	56.00	-17.18	QP	P	
8	4.934	28.70	1.74	30.44	46.00	-15.56	AVG	P	
9	8.674	35.06	3.23	38.29	50.00	-11.71	AVG	P	
10 *	9.006	50.83	3.32	54.15	60.00	-5.85	QP	P	
11	28.006	43.82	4.88	48.70	60.00	-11.30	QP	P	
12	28.274	35.02	4.86	39.88	50.00	-10.12	AVG	P	

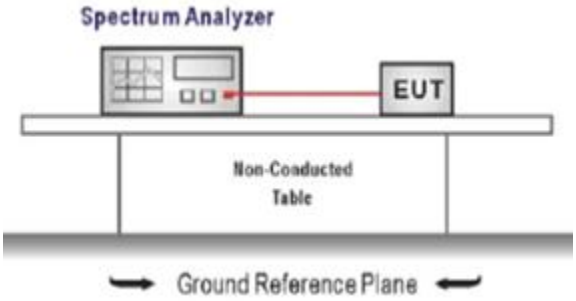
Test Line:	N



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.330	26.50	0.34	26.84	59.45	-32.61	QP	P	
2	0.394	15.93	0.33	16.26	47.98	-31.72	AVG	P	
3	0.718	23.22	0.40	23.62	46.00	-22.38	AVG	P	
4	0.742	43.87	0.41	44.28	56.00	-11.72	QP	P	
5	1.366	41.83	0.54	42.37	56.00	-13.63	QP	P	
6	1.482	21.74	0.57	22.31	46.00	-23.69	AVG	P	
7	4.478	41.35	1.58	42.93	56.00	-13.07	QP	P	
8	4.974	26.56	1.78	28.34	46.00	-17.66	AVG	P	
9 *	8.754	50.63	3.26	53.89	60.00	-6.11	QP	P	
10	8.886	32.02	3.30	35.32	50.00	-14.68	AVG	P	
11	27.686	38.60	5.04	43.64	50.00	-6.36	AVG	P	
12	28.038	46.23	5.01	51.24	60.00	-8.76	QP	P	

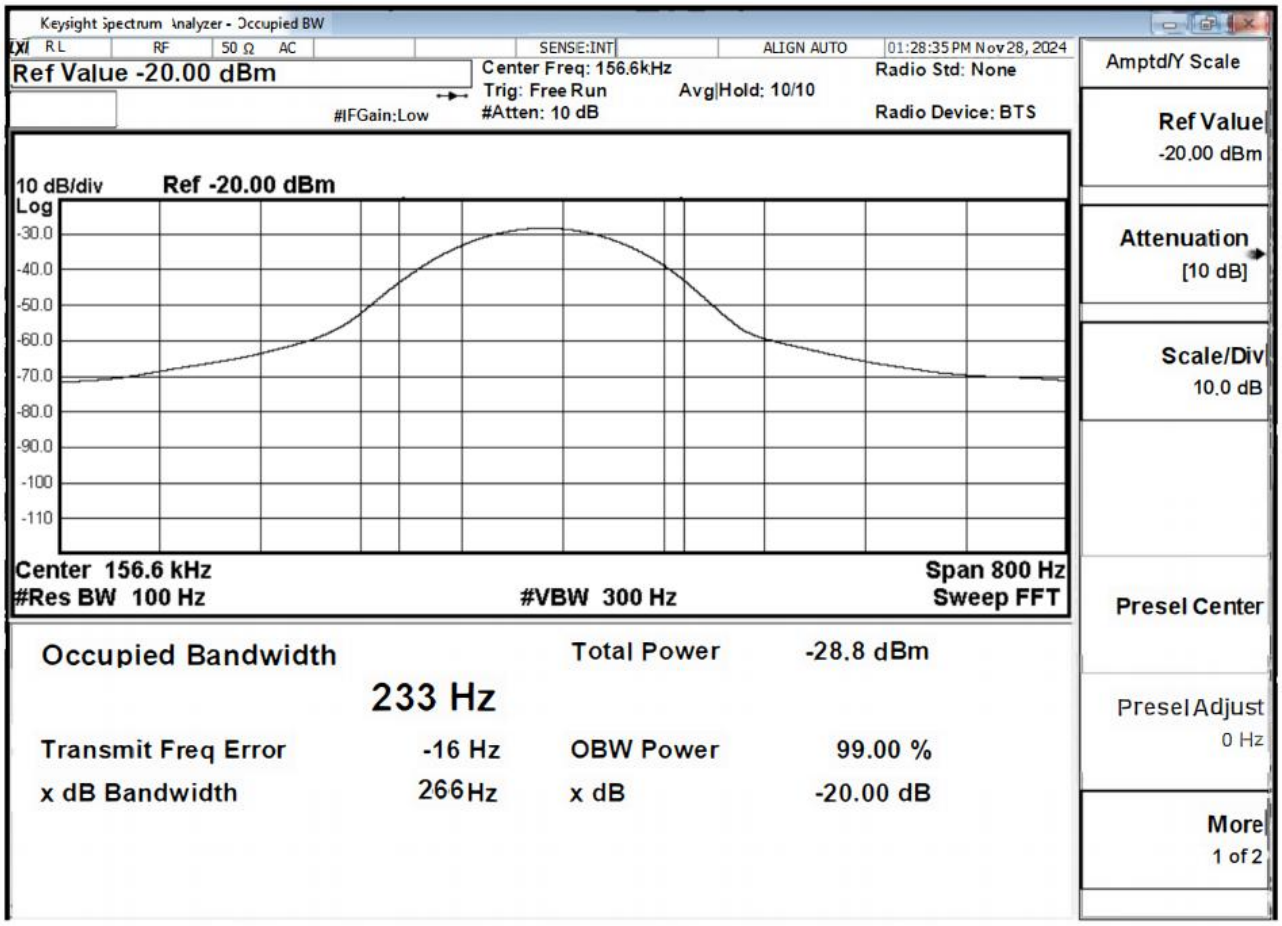
Note:
1. Factor = LISN Factor + Cable Factor
2. Level= Reading + Factor
3. Margin= Level – Limit

5.2. 20 dB Bandwidth

Limit:	--
Test configuration:	
Test procedure:	1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously 3. Use the following spectrum analyzer settings: 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 4. Measure and record the results in the test report.
Test mode:	Refer to the clause 4.1
Result:	**Passed**

Test Result :

20dB Bandwidth		
Test Frequency (kHz)	20dB Bandwidth (kHz)	Limit (kHz)
156.6	0.266	Non-Specified



5.3. Radiated Spurious Emission

Limit:

FCC CFR Title 47 Part 15 Subpart C Section 15.209

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

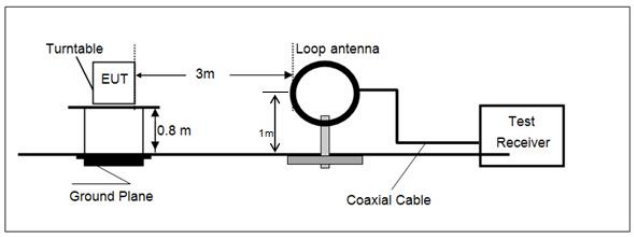
Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)

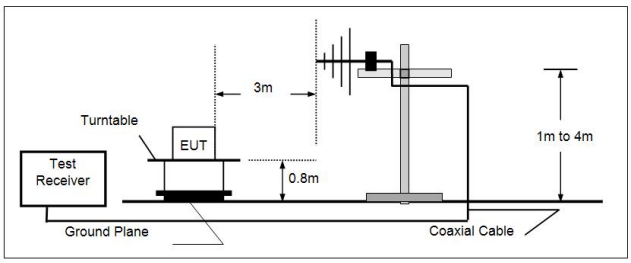
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak

Test configuration:

9kHz~30MHz



30 MHz ~ 1 GHz



Test procedure:	1. The EUT was setup and tested according to ANSI C63.10. 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower. 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines. 5. Set to the maximum power setting and enable the EUT transmit continuously. 6. Use the following spectrum analyzer settings a) Span shall wide enough to fully capture the emission being measured; b) Below 1 GHz: RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
Test mode:	Refer to the clause 4.1
Result:	**Passed**

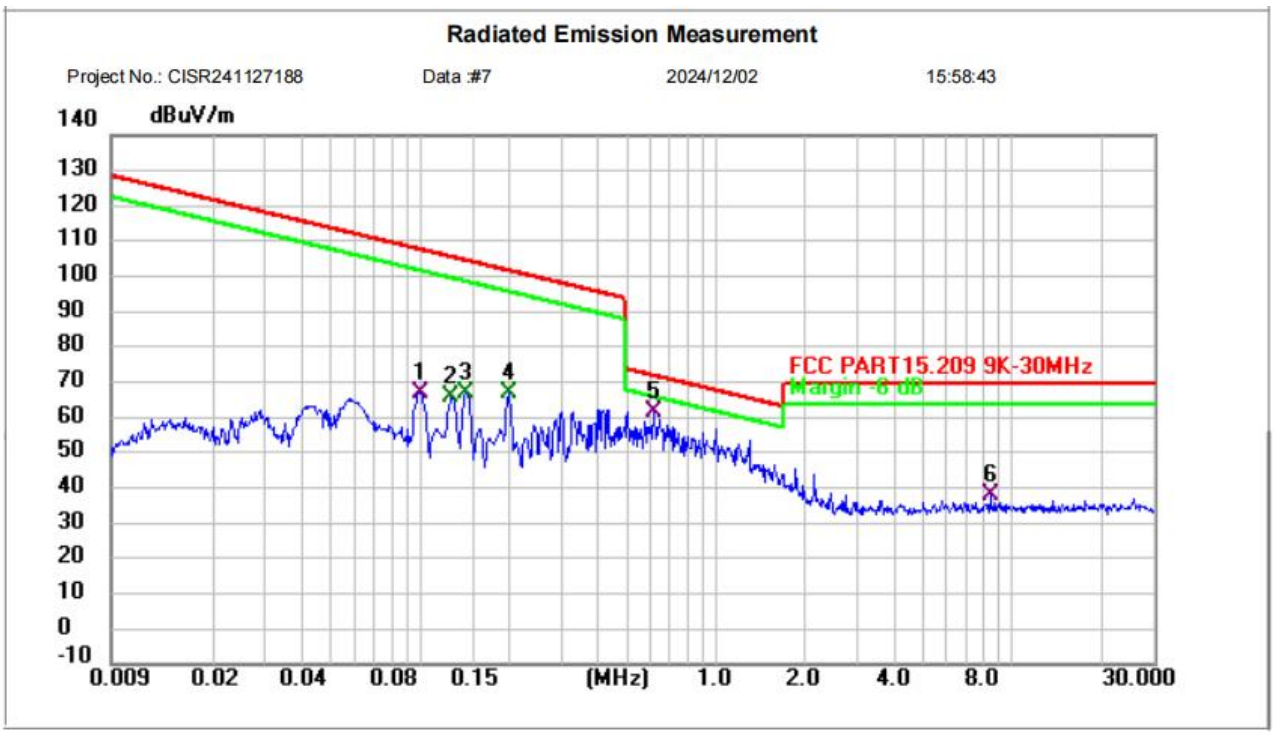
Note:

1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level
3) The other emission levels were very low against the limit.
4) This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

For 9 kHz ~ 30 MHz

Have pre-scan all test channel, found Mode 1 which it was worst case, so only show the worst case's data on this report.

0°

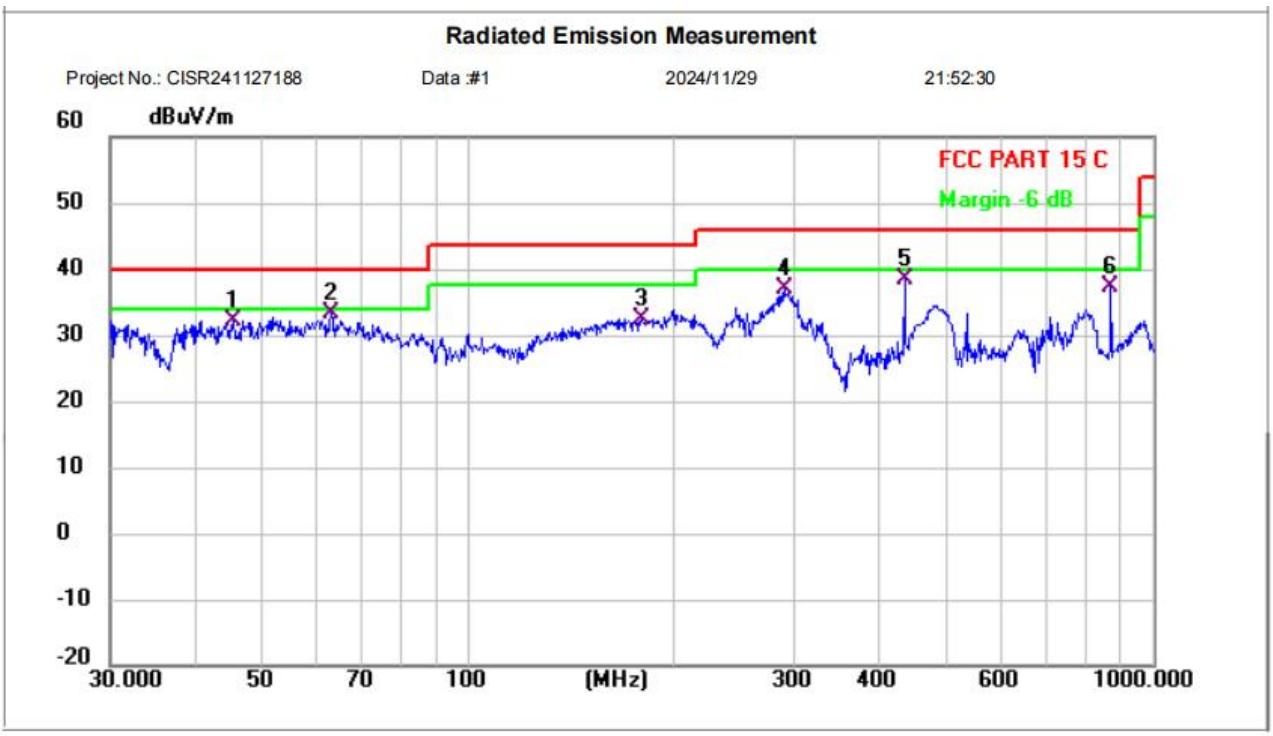


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.100	89.30	-22.39	66.91	107.60	-40.69	QP	100	0	P	
2	0.127	87.99	-22.44	65.55	105.53	-39.98	AVG	100	0	P	
3	0.143	89.11	-22.36	66.75	104.50	-37.75	AVG	100	0	P	
4	0.200	89.31	-22.29	67.02	101.58	-34.56	AVG	100	0	P	
5 *	0.616	83.59	-21.88	61.71	71.81	-10.10	QP	100	0	P	
6	8.395	59.93	-22.06	37.87	69.54	-31.67	QP	100	0	P	

For 30 MHz ~ 1000 MHz

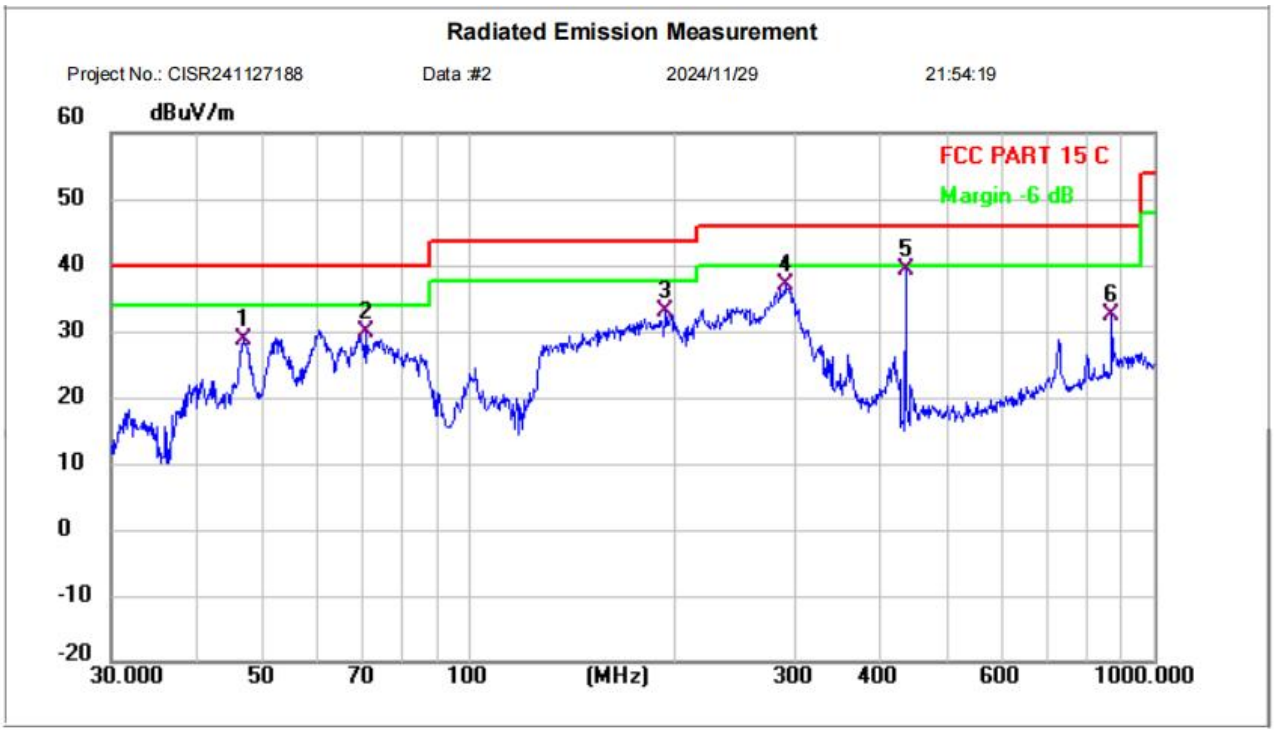
Have pre-scan all test channel, found Mode 1 which it was worst case, so only show the worst case's data on this report.

Polarization:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	45.535	61.58	-29.31	32.27	40.00	-7.73	QP	100	296	P	
2 *	63.092	64.60	-31.33	33.27	40.00	-6.73	QP	100	282	P	
3	179.386	64.23	-31.74	32.49	43.50	-11.01	QP	100	125	P	
4	290.017	64.49	-27.43	37.06	46.00	-8.94	QP	100	282	P	
5	434.065	62.43	-23.88	38.55	46.00	-7.45	QP	100	111	P	
6	869.130	52.60	-15.25	37.35	46.00	-8.65	QP	100	356	P	

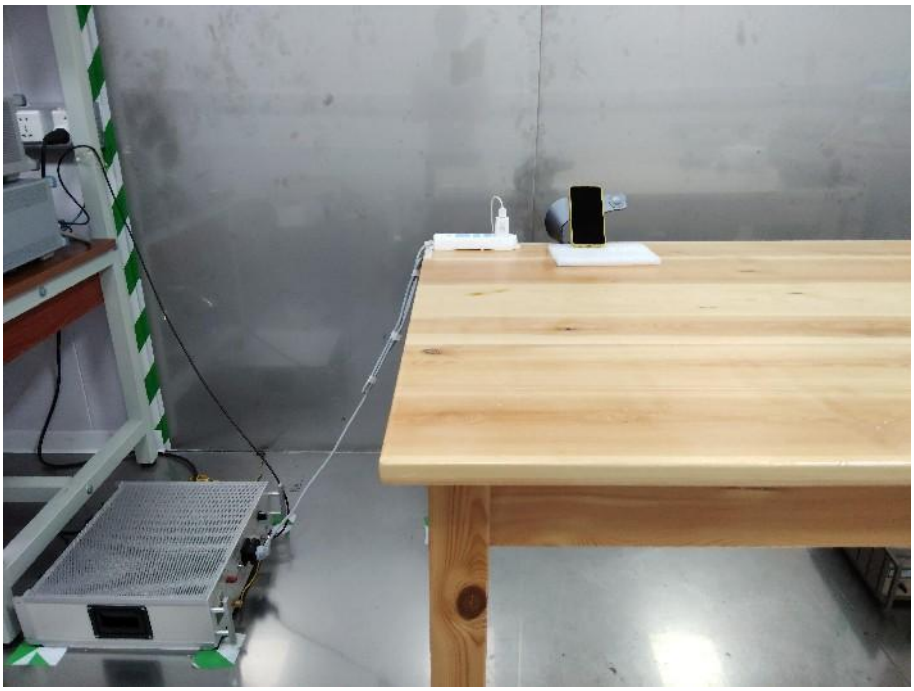
Polarization:	Vertical



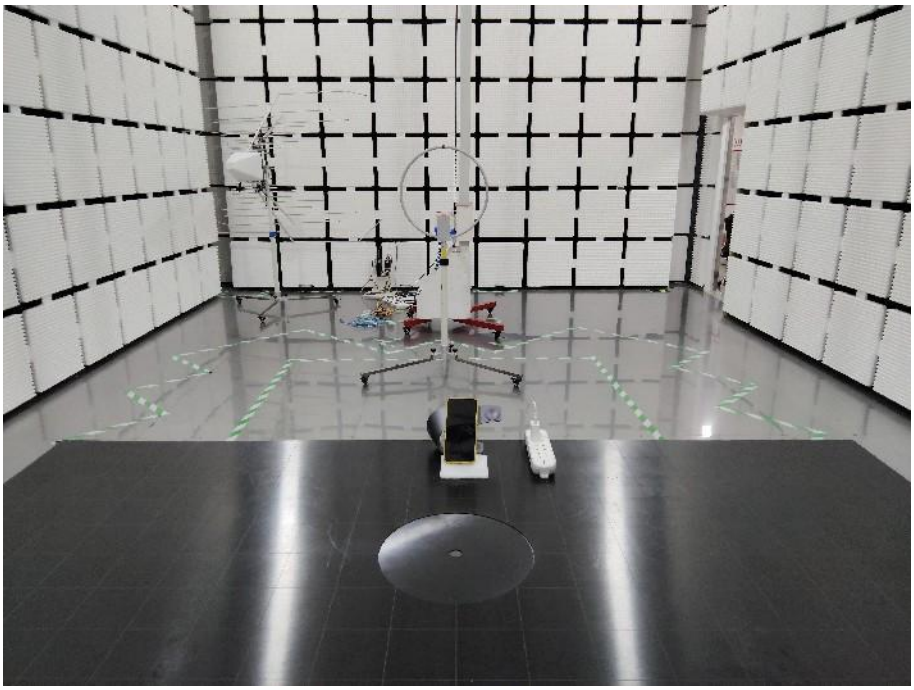
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	46.830	57.87	-29.25	28.62	40.00	-11.38	QP	100	177	P	
2	70.584	62.91	-33.16	29.75	40.00	-10.25	QP	100	204	P	
3	193.773	63.42	-30.41	33.01	43.50	-10.49	QP	100	170	P	
4	290.017	64.47	-27.43	37.04	46.00	-8.96	QP	100	177	P	
5 *	434.065	63.06	-23.88	39.18	46.00	-6.82	QP	100	116	P	
6	869.130	47.77	-15.25	32.52	46.00	-13.48	QP	100	40	P	

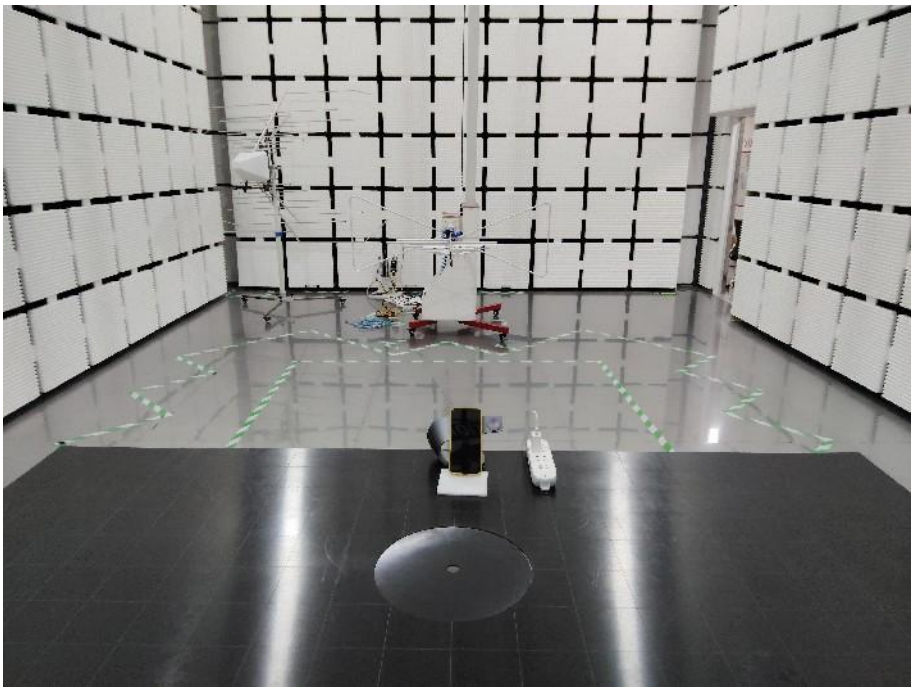
6. TEST SETUP PHOTOS

Conducted Emission at AC power line

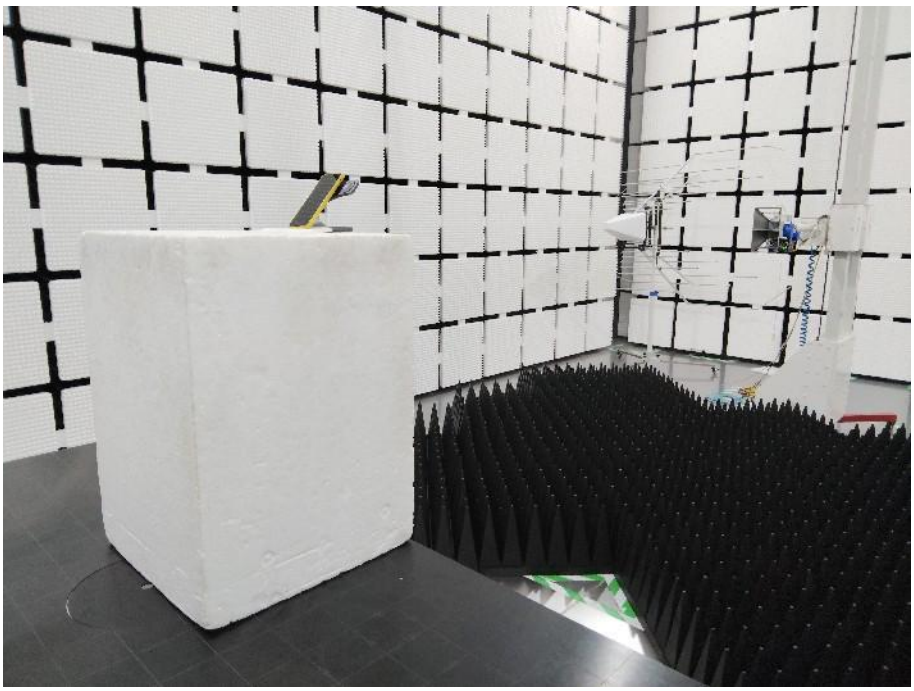


Radiated Spurious Emission (below 1GHz)



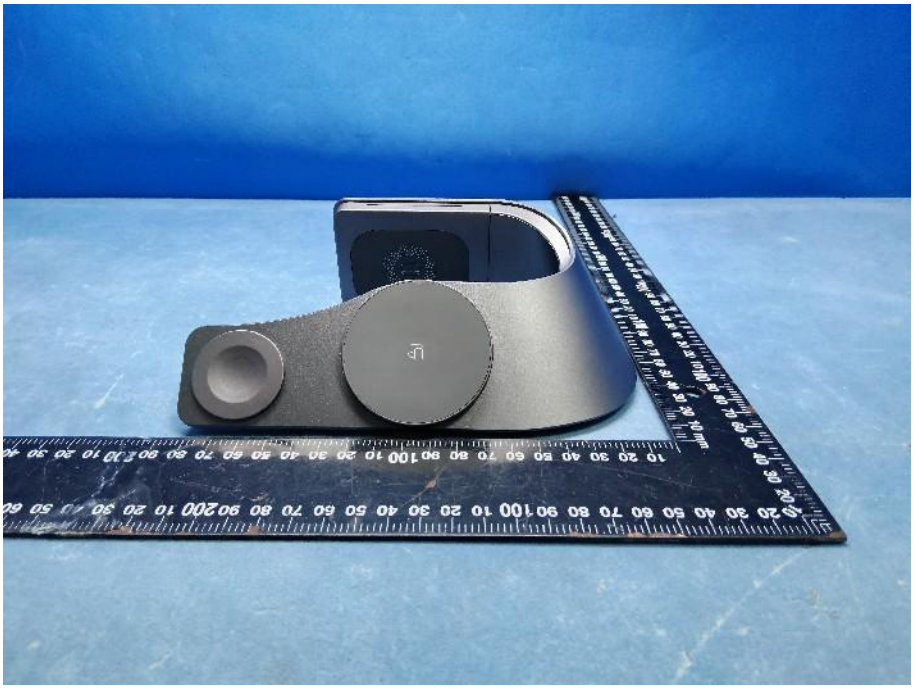


Radiated Spurious Emission (Above 1GHz)

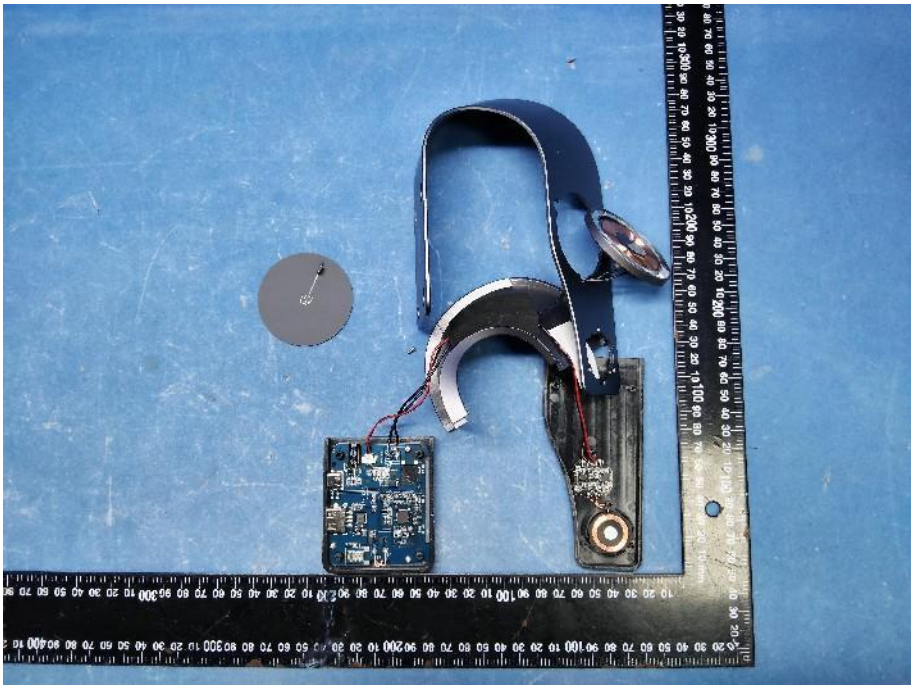


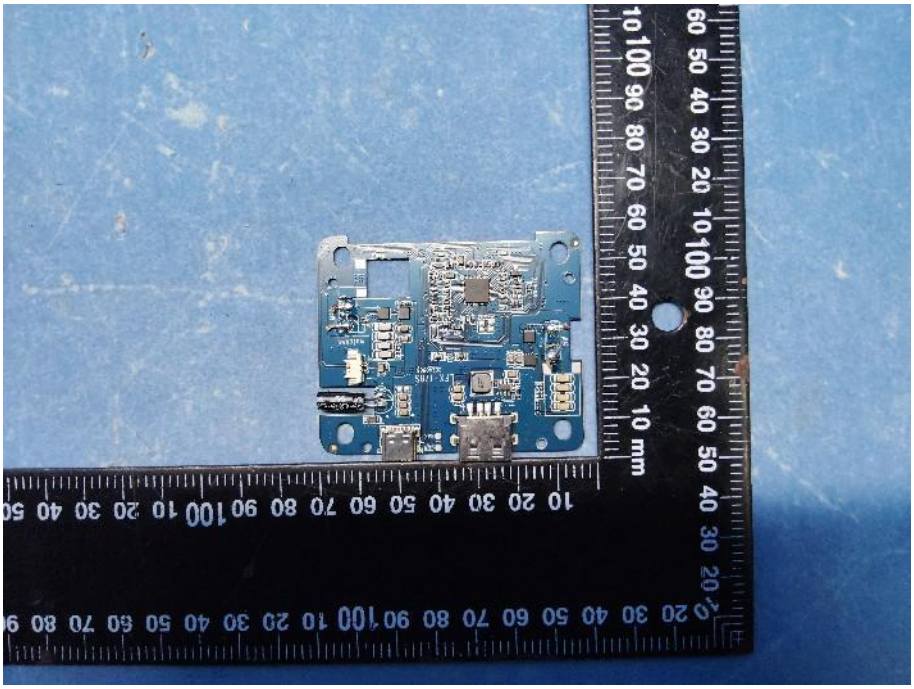
7. EXTERNAL AND INTERNAL PHOTOS

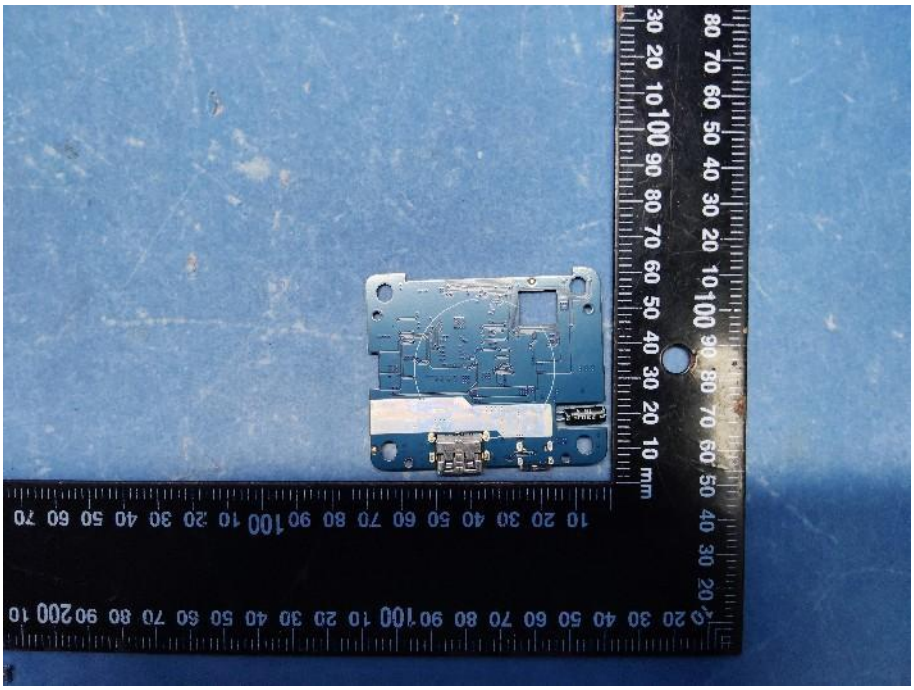
7.1 External photos

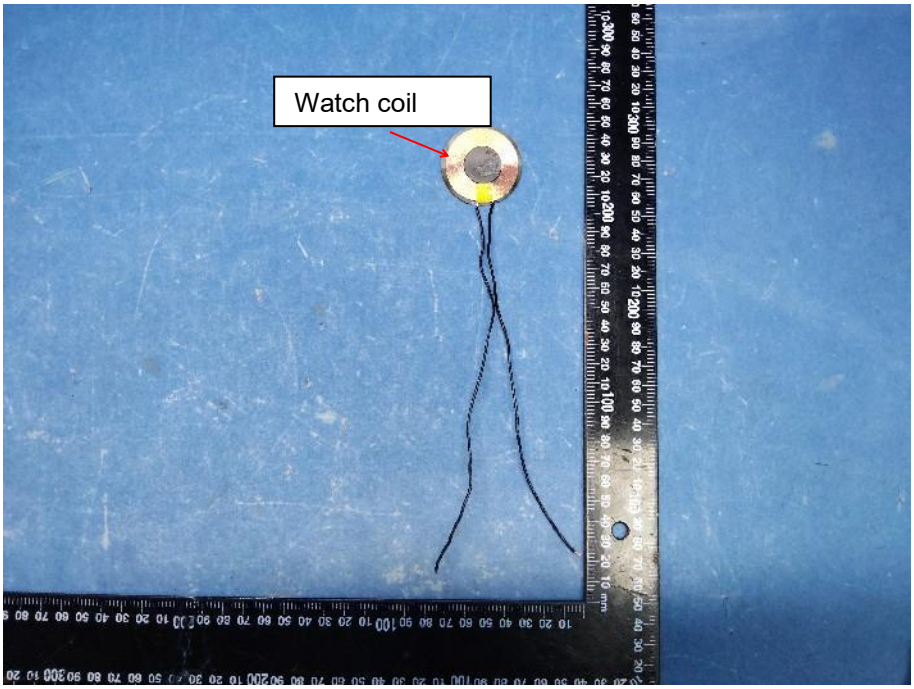


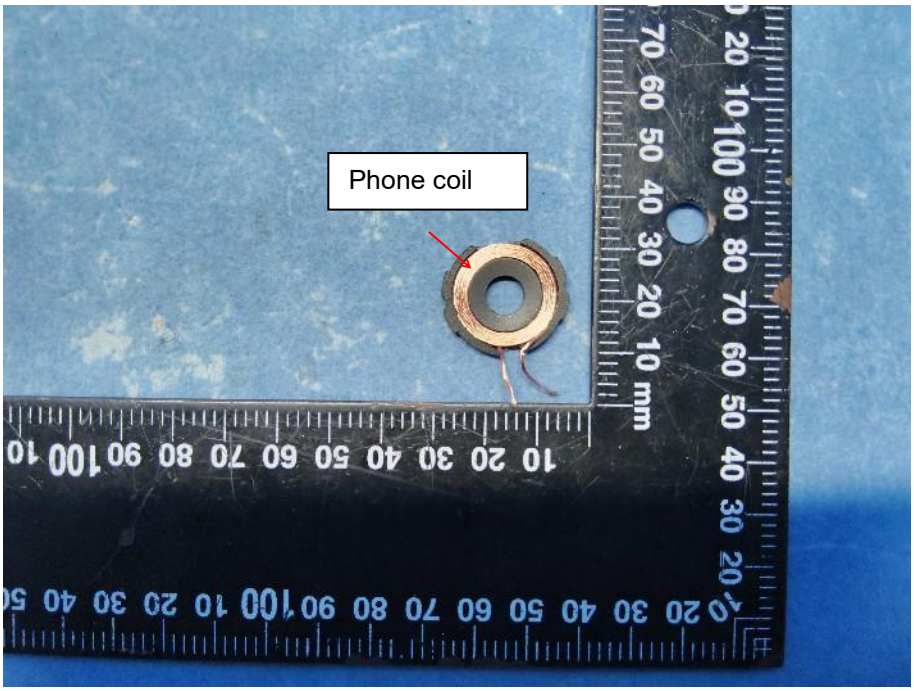
7.2 Internal photos

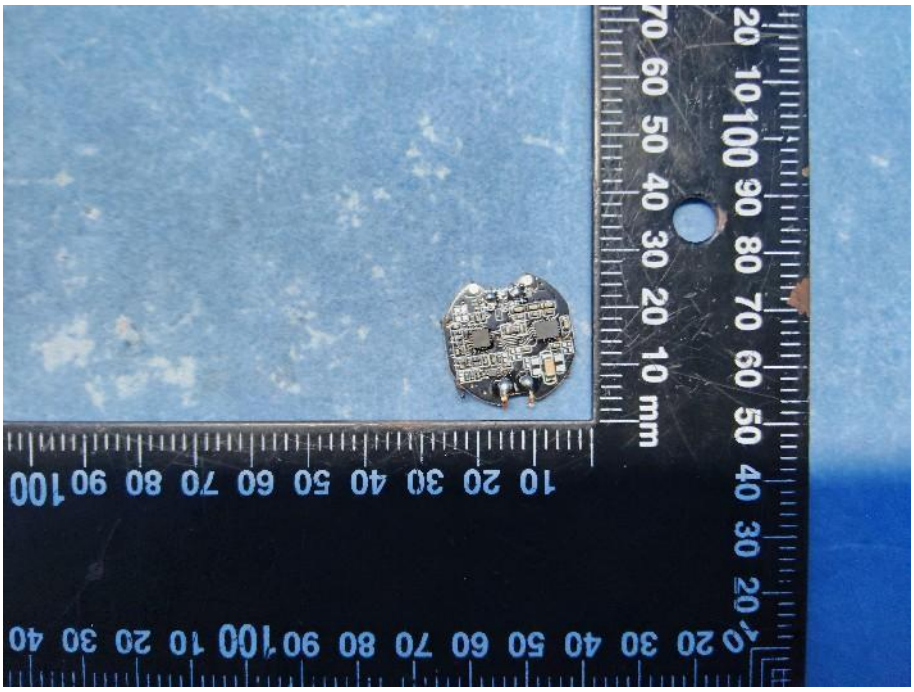




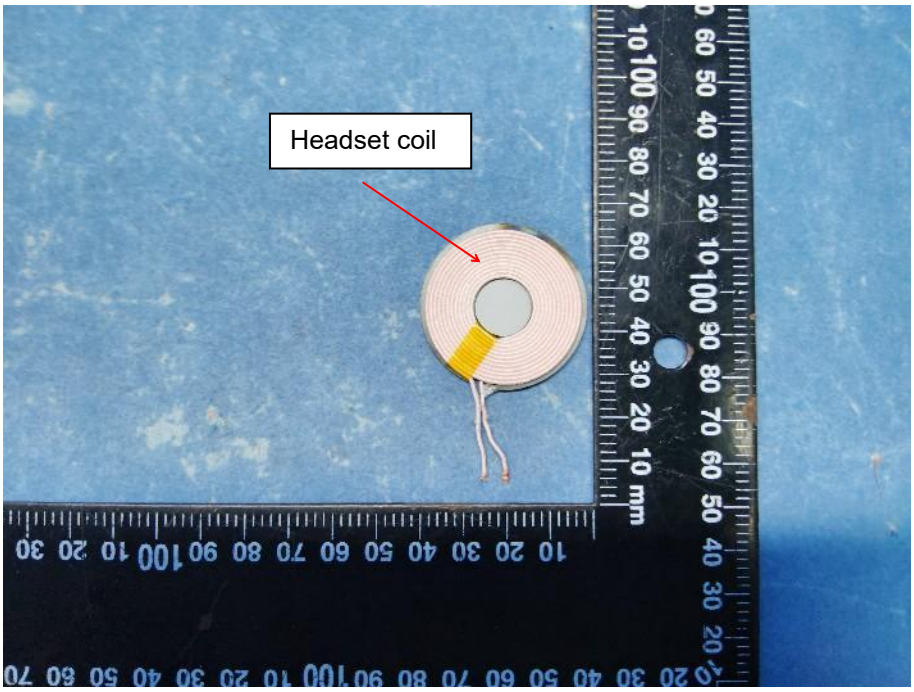


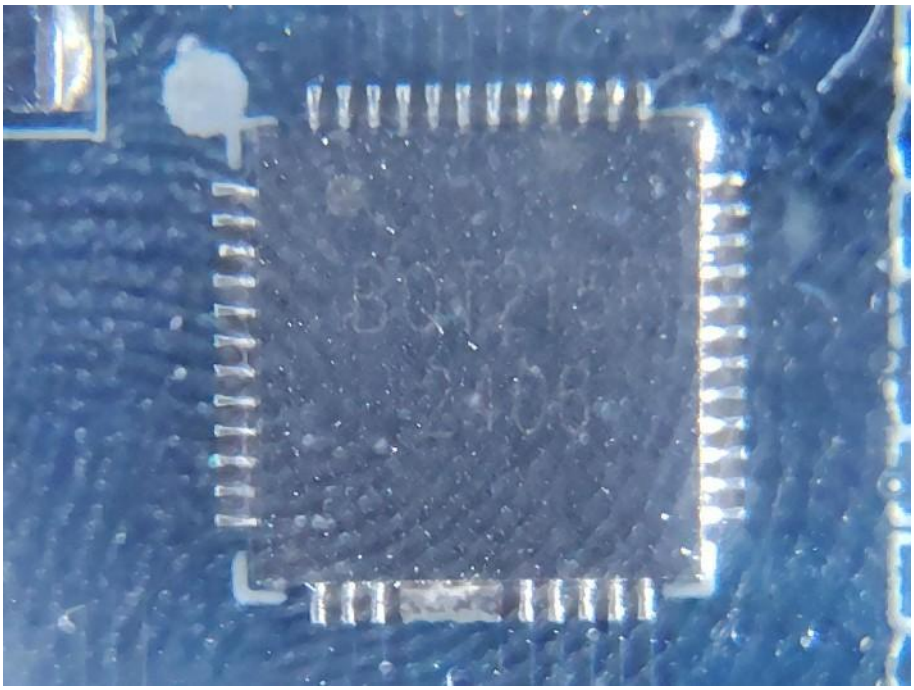

Watch coil


Phone coil




LH-WXC-B007-V2





------End of the report-----