FCC Test Report

Client Name	:	Shenzhen Jinzhi Technology Co., Ltd.
Client Address	:	609, No. 106 Yongfu Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Product Name	:	Wireless Charger
Report Date	:	10. 21, 2024

Shenzhen Tian Hai Test Technology Co., Ltd.

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TEST REPORT

Applicant	:	Shenzhen Jinzhi Technology Co., Ltd.
Manufacturer	:	Shenzhen Jinzhi Technology Co., Ltd.
Product Name	:	Wireless Charger
Model No.	:	TB-002, TB-002-W, TB-002-B, TB-002-G, TB-002-R, TB-002-P, TB-002-O, OT-002
Trade Mark	:	TRIBONE
Rating(s)	:	Input: 5.0V⎓3.0A, 9.0V⎓2.22A, 12.0V⎓1.67A Output 1: Phone 5W/7.5W/10W/15W (Max) Output 2: TWS 5W (Max) Output 3: Watch 3W (Max)

Test Standard(s)	:	**FCC Part15 Subpart C, Paragraph 15.209**
Test Method(s)	:	**ANSI C63.10: 2020**

The device described above is tested by Shenzhen Tian Hai Test Technology Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Tian Hai Test Technology Co., Ltd. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Tian Hai Test Technology Co., Ltd.

Date of Receipt	:	Oct, 11. 2024
Date of Test	:	Oct, 11 ~ 21. 2024
Tested by	:	(Suny Zhuo)
Reviewed by	:	(Blue Hu)
Approved & Authorized Signer	:	(Binglee)

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Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Oct, 21. 2024

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1. General Information

1.1. Client Information

Applicant	:	Shenzhen Jinzhi Technology Co., Ltd.
Address	:	609, No. 106 Yongfu Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Manufacturer	:	Shenzhen Jinzhi Technology Co., Ltd.
Address	:	609, No. 106 Yongfu Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Factory	:	Shenzhen Jinzhi Technology Co., Ltd.
Address	:	609, No. 106 Yongfu Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	Wireless Charger
Model No.	:	TB-002, TB-002-W, TB-002-B, TB-002-G, TB-002-R, TB-002-P, TB-002-O, OT-002 (All models have same circuits diagram, PCB Layout, construction and rated power, only different was the model name.)
Trade Mark	:	TRIBONE
Test Power Supply	:	DC 9V/2.22A from Adapter Input AC 120V/60Hz
Test Sample No.	:	1-2-1(Normal Sample)
Adapter By Lab	:	Model: CA-15T Input: AC 100-240V, 50/60Hz 0.5A Output: DC 5V/3A, DC 9V/2.22A, DC 12V/1.67A
RF Specification		
Operating Frequency	:	110-205kHz Watch: 325kHz
Modulation Type	:	ASK
Antenna Type	:	Inductive loop coil Antenna
Remark: 1) All of the RF specification are provided by customer. 2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

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1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
Phone	Apple	13 Pro	/
Apple Watch	Apple	Iwatch Ultra	/
Apple AirPods	Apple	AirPods Pro	/

1.4. Description of Test Configuration

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Modes	Descriptions
TM1	Charging+Wireless (Phone 15W)
TM2	Charging+Wireless (Phone 10W)
TM3	Charging+Wireless (Phone 7.5W)
TM4	Charging+Wireless (Phone 5W)
TM5	Charging+Wireless (Watch 3W)
TM6	Charging+Wireless (TWS 5W)
TM7	Charging+Wireless (Phone 5W+TWS 5W+ Watch 3W)
TM8	Charging+Wireless (Phone 7.5W+TWS 5W)
TM9	Charging+Wireless (Phone 7.5W+Watch 3W)
TM10	Charging+Wireless (Phone 10W+ TWS 5W)
TM11	Charging+Wireless (Phone 10W+ Watch 3W)
TM12	Charging+Wireless (Watch 3W+TWS 5W)
TM13	Charging+Wireless (Phone 15W+TWS 5W+ Watch 3W)
TM14	Charging+Wireless (Phone 10W+TWS 5W+ Watch 3W)
TM15	Charging+Wireless (Phone 7.5W+TWS 5W+ Watch 3W)
TM16	Charging+Wireless (Phone 5W+TWS 5W+ Watch 3W)

Note: 1. TM Indicates the Test Mode.
2. All test modes were pre-tested, but we only recorded the worst Mode 13 case in this report.

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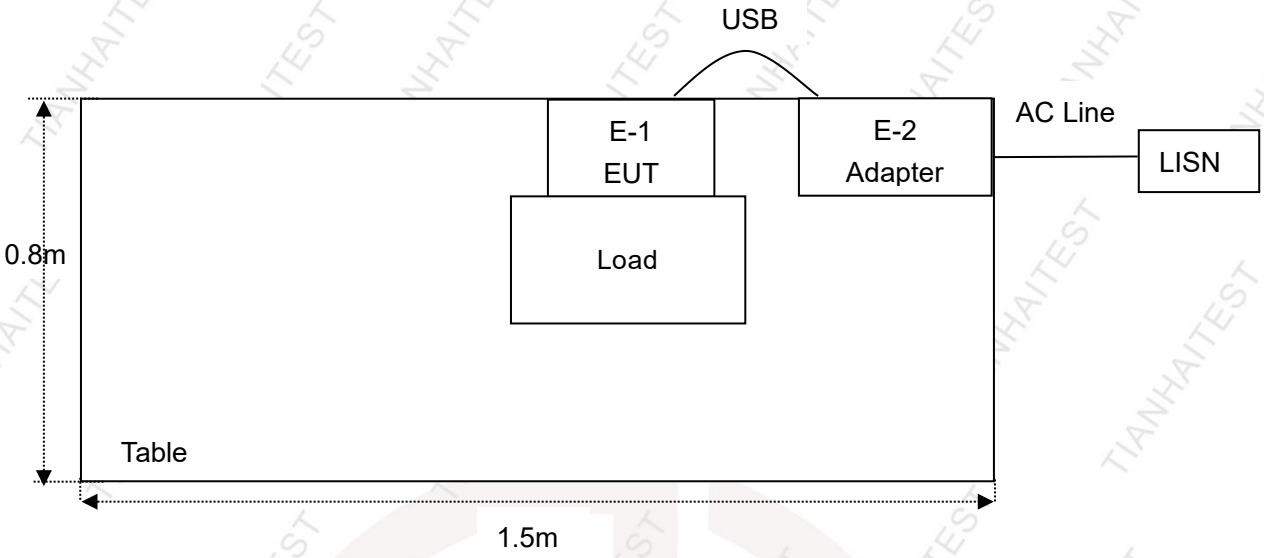
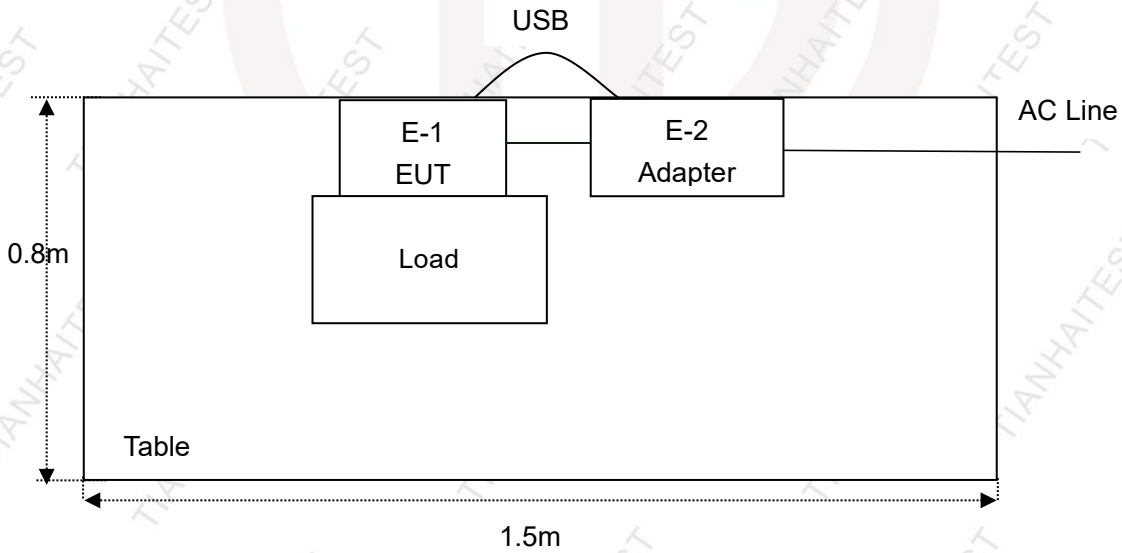
2.1. Description Of Test Setup

CE



RE



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2.2. Test Equipment List

Conducted Emission					
Kind of Equipment	Manufacturer	Type	S/N	Calibration	Calibrate until
EMI Test Receiver	R&S	ESR7	102333	2023-11-14	2024-11-13
L.I.S.N	Schwarzbeck	NNLK 8128	5089	2023-11-14	2024-11-13
8-Wire ISN CAT6	Schwarzbeck	NTFM 8158	231	2023-11-14	2024-11-13
Pulse Limiter	Schwarzbeck	VTSD 9561-F	847	2023-11-14	2024-11-13
Test software	FALA	/	EMC-CON 3A1.1	/	/
Radiated Emission (3m)					
EMI Test Receiver	R&S	ESR7	102333	2023-11-14	2024-11-13
MXA Signal Analyzer	Keysight	N9020A	MY51281805	2024-04-23	2025-04-22
Bilog Antenna	Schwarzbeck	VULB 9168	01148	2023-11-16	2024-11-15
Loop Antenna	Schwarzbeck	FMZB1519B	00053	2023-11-16	2024-11-15
Pre-Amplifier	Schwarzbeck	BBV 9718 B	00109	2023-11-14	2024-11-13
Pre-Amplifier	Schwarzbeck	BBV 9743 B	00253	2023-11-14	2024-11-13
Pre-Amplifier	GUANGGU ELECTRONIC	GLNA18-40G K-5372	20210331001	2023-11-19	2024-11-20
Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00148	2023-11-19	2024-11-20
Horn Antenna	Schwarzbeck	BBHA 9120	02379	2023-11-15	2024-11-14
Horn Antenna	A-INFO	LB-180400-KF	J258792	2023-11-21	2024-11-20
Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	014	2024-06-04	2025-06-03
Test software	FALA	/	FA-03A2 RE		/

2.3. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz)	±2.52 dB	±3.80 dB
	Level accuracy (150kHz to 30MHz)	±2.36 dB	±3.40 dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	±5.78 dB	±6.3 dB
	Level accuracy (above 1000MHz)	±4.62 dB	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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2.4. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 173438

Shenzhen Tian Hai Test Technology Co,.Ltd, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 173438

Test Location

Shenzhen Tian Hai Test Technology Co., Ltd.125-126, No.66, Zhangge Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen, Guangdong, China

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3. Summary of Test Results

Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS

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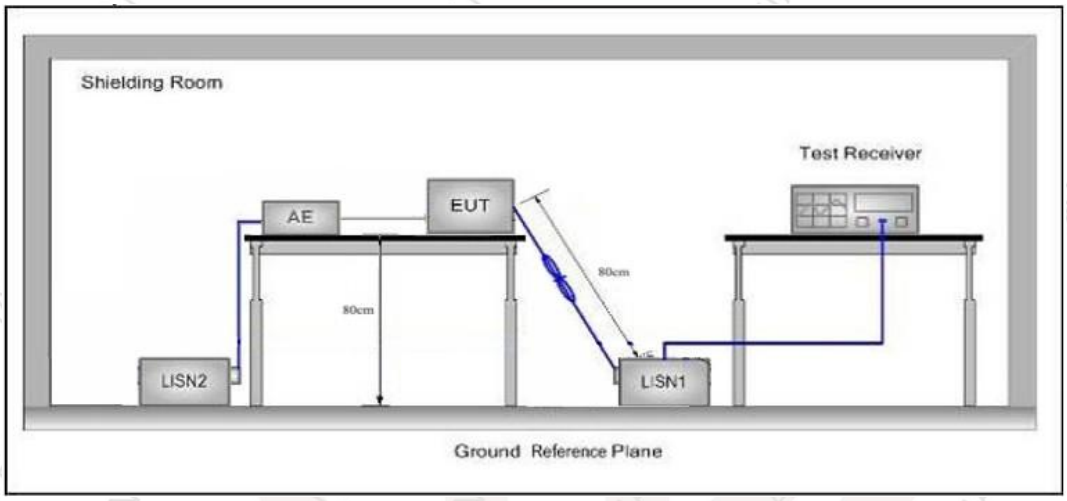
4. Conducted Emission Test

4.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark:(1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

4.2. Test Setup



4.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10: 2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

4.4. Test Data

During the test, pre-scan all modes, only the worst case is recorded in the report.

AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.

Please to see the following pages.

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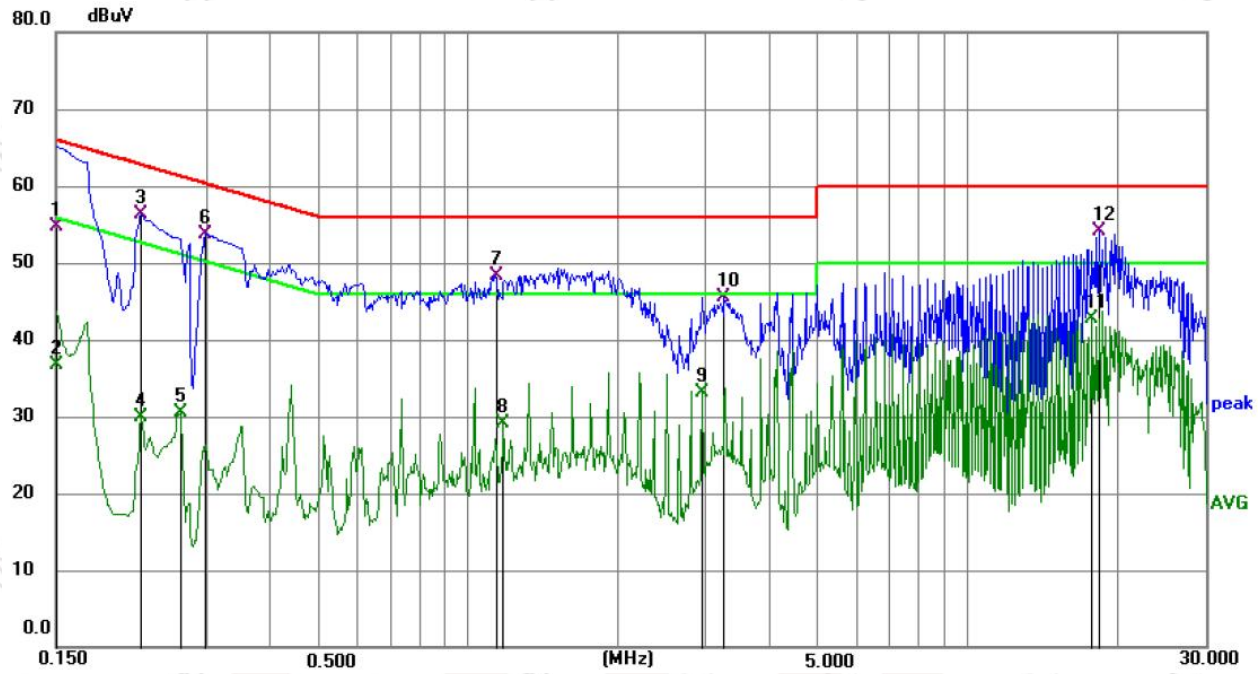
Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: TM13
Test Specification: DC 9V/2.22A from Adapter Input AC 120V/60Hz
Comment: Live Line
Temp.(℃)/Hum.(%RH): 22℃/54%RH



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	44.04	10.59	54.63	66.00	-11.37	QP
2	0.1500	26.02	10.59	36.61	56.00	-19.39	AVG
3	0.2220	45.74	10.56	56.30	62.74	-6.44	QP
4	0.2220	19.34	10.56	29.90	52.74	-22.84	AVG
5	0.2670	20.02	10.58	30.60	51.21	-20.61	AVG
6	0.2983	43.03	10.59	53.62	60.29	-6.67	QP
7	1.1354	37.75	10.64	48.39	56.00	-7.61	QP
8	1.1805	18.49	10.65	29.14	46.00	-16.86	AVG
9	2.9534	22.45	10.70	33.15	46.00	-12.85	AVG
10	3.2730	34.74	10.71	45.45	56.00	-10.55	QP
11	17.7759	31.58	11.05	42.63	50.00	-7.37	AVG
12 *	18.3700	43.01	11.07	54.08	60.00	-5.92	QP

Note: Result = Reading + Factor Over Limit = Result - Limit

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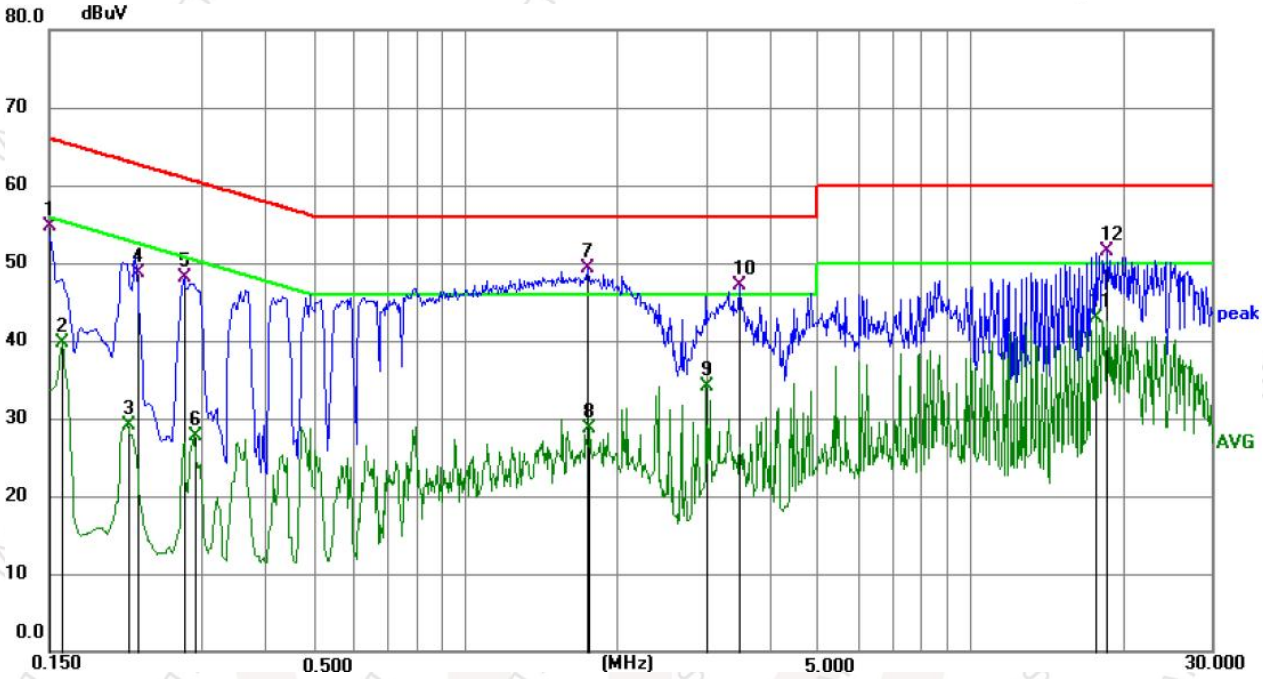
Conducted Emission Test Data

Test Site:	1# Shielded Room
Operating Condition:	TM13
Test Specification:	DC 9V/2.22A from Adapter Input AC 120V/60Hz
Comment:	Neutral Line
Temp.(℃)/Hum.(%RH):	22℃/54%RH



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	44.20	10.59	54.79	66.00	-11.21	QP
2	0.1590	29.16	10.58	39.74	55.52	-15.78	AVG
3	0.2130	18.55	10.56	29.11	53.09	-23.98	AVG
4	0.2232	38.21	10.56	48.77	62.70	-13.93	QP
5	0.2760	37.45	10.59	48.04	60.94	-12.90	QP
6	0.2895	17.12	10.59	27.71	50.54	-22.83	AVG
7 *	1.7520	38.58	10.67	49.25	56.00	-6.75	QP
8	1.7655	17.95	10.67	28.62	46.00	-17.38	AVG
9	2.9985	23.21	10.80	34.01	46.00	-11.99	AVG
10	3.5070	36.34	10.81	47.15	56.00	-8.85	QP
11	17.6860	31.58	11.25	42.83	50.00	-7.17	AVG
12	18.6400	40.17	11.32	51.49	60.00	-8.51	QP

Note: Result = Reading + Factor Over Limit = Result - Limit

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5. Radiation Spurious Emission and Band Edge

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:
(1)The lower limit shall apply at the transition frequency.
(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

5.2. Test Setup

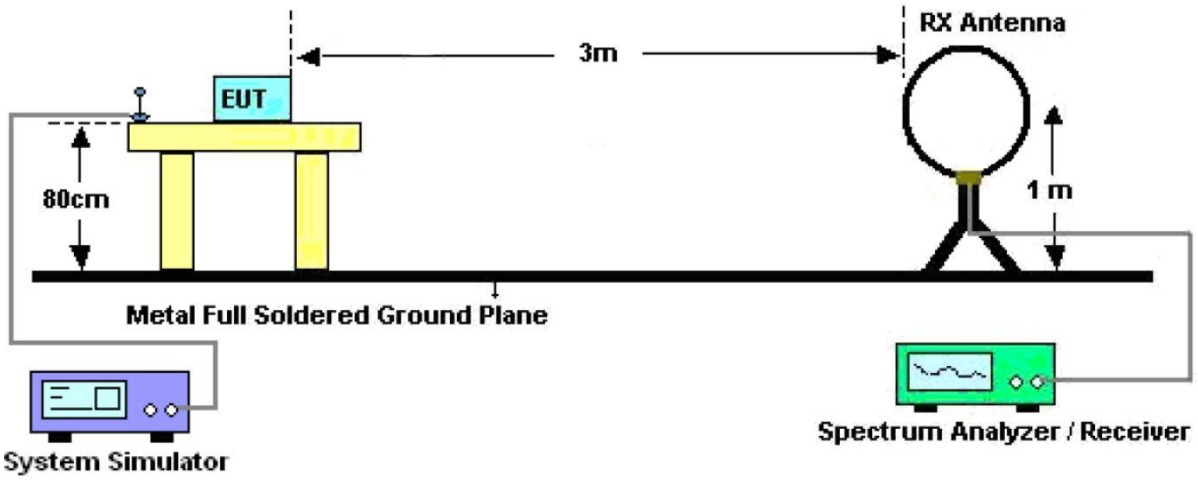

Figure 1. Below 30MHz

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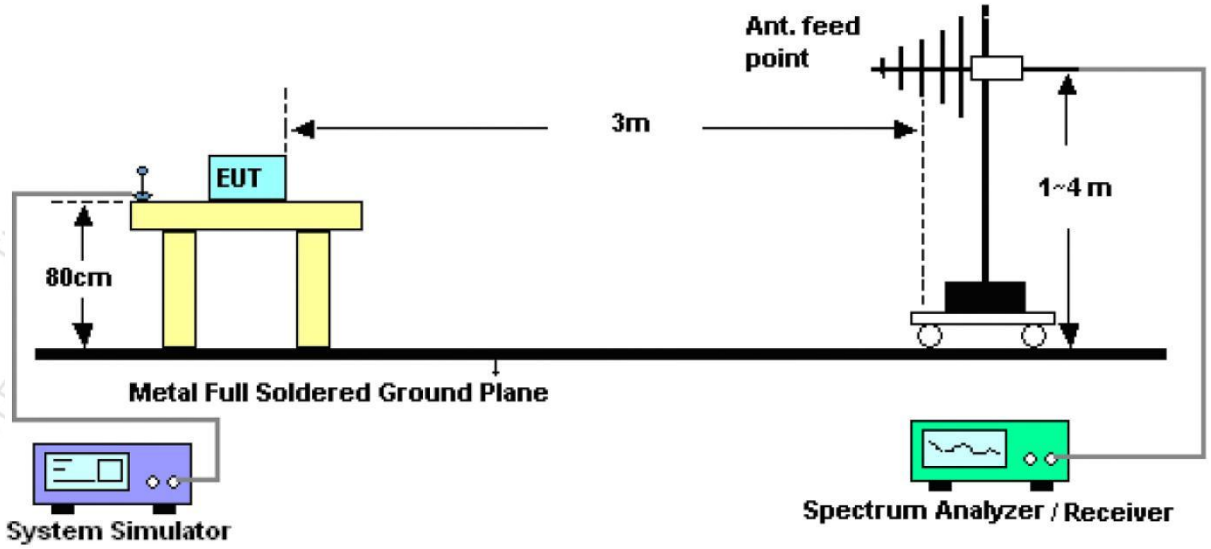

Figure 2. 30MHz to 1GHz

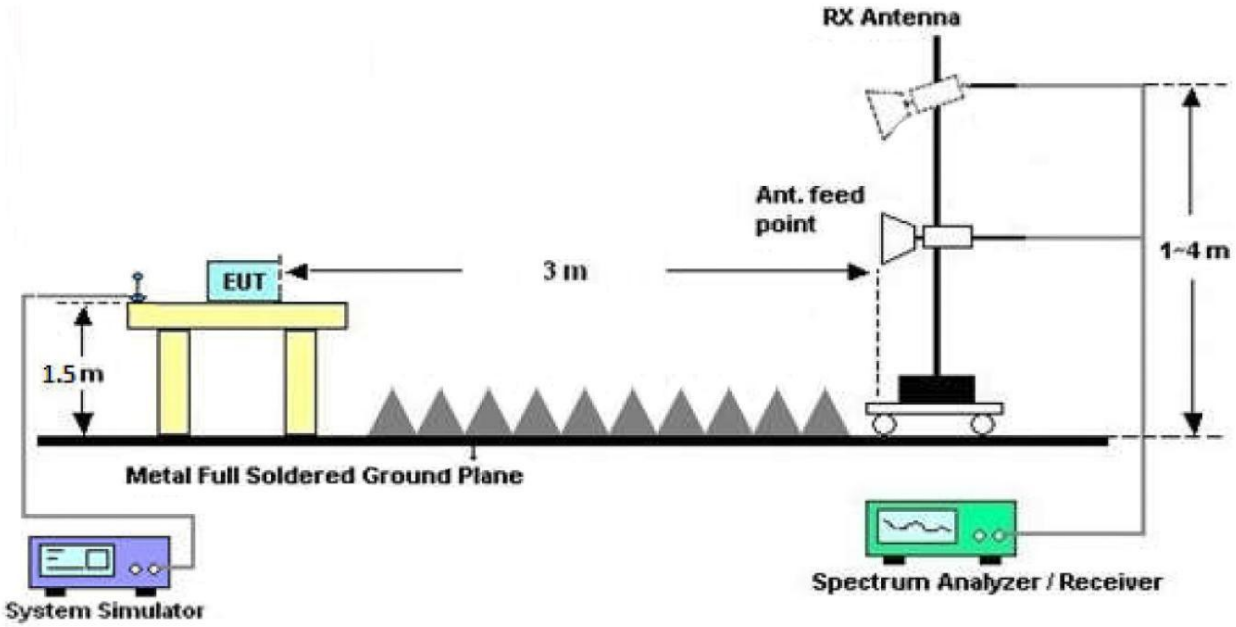

Figure 3. Above 1 GHz

5.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

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For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz,Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz,Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

For average measurement:

–VBW=10Hz, When duty cycle is no less than 98 percent

–VBW $\geqslant$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clause 5.4 duty cycle.

5.4. Test Data

PASS

During the test, pre-scan all modes, only the worst case is recorded in the report. Please to see the following pages.

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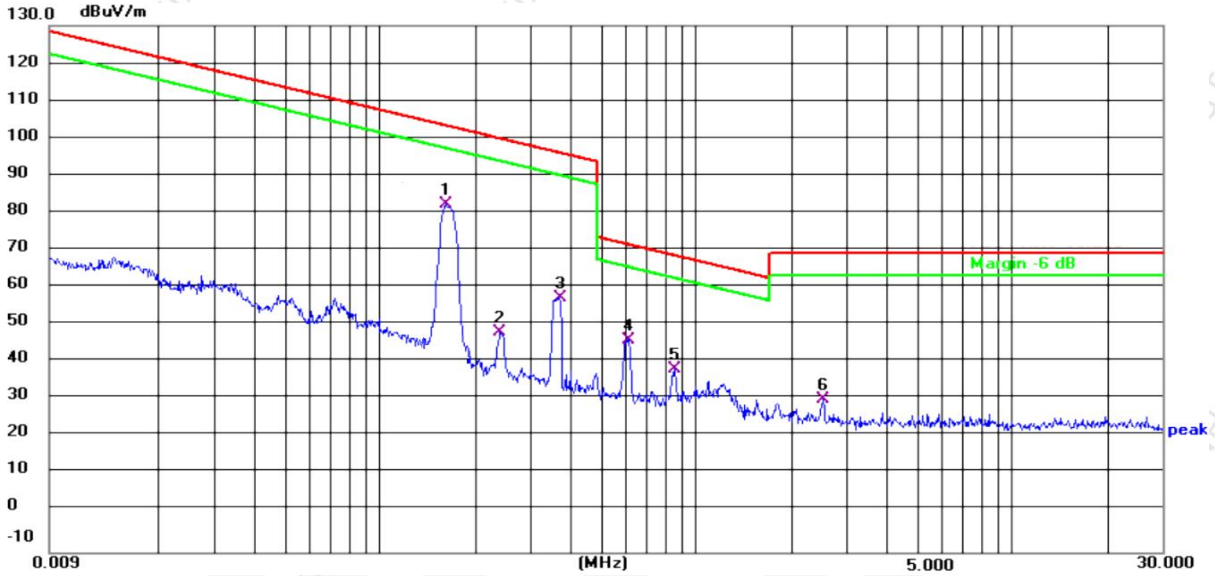
Test Results (9kHz – 30MHz)

Test Mode: TM13

Power Source: DC 9V/2.22A from Adapter Input AC 120V/60Hz

Distance:: 3M

Temp.(℃)/Hum.(%RH): 22.1℃/52%RH



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(kHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
158.6	91.72	-9.44	82.28	103.60	-21.32	PK
158.6	70.83	-9.44	61.39	83.60	-22.21	AV
243.3	57.54	-9.02	48.52	99.88	-51.36	PK
243.3	36.85	-9.02	27.83	79.88	-52.05	AV
374.3	66.50	-8.78	57.72	96.14	-38.42	PK
374.3	45.82	-8.78	37.04	76.14	-39.10	AV
610.14	54.73	-8.25	46.48	71.90	-25.42	QP
856.11	46.37	-7.62	38.75	68.95	-30.20	QP
2527.7	35.19	-4.36	30.83	69.54	-38.71	QP

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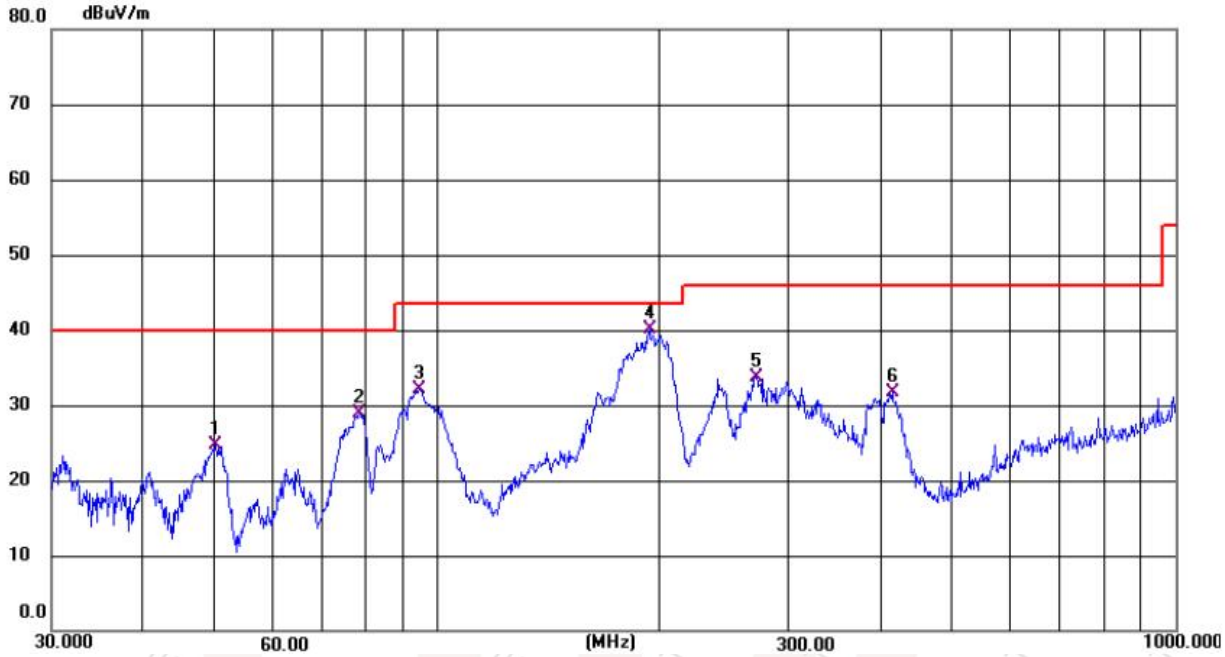
Test Results (30~1000MHz)

Test Mode:	TM13
Power Source:	DC 9V/2.22A from Adapter Input AC 120V/60Hz
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	22.1℃/52%RH



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.1181	39.92	-15.22	24.70	40.00	-15.30	QP
2	78.6474	48.25	-19.32	28.93	40.00	-11.07	QP
3	94.7435	51.17	-19.01	32.16	43.50	-11.34	QP
4 *	193.8067	58.47	-18.39	40.08	43.50	-3.42	QP
5	270.4696	49.47	-15.75	33.72	46.00	-12.28	QP
6	414.5769	43.81	-12.07	31.74	46.00	-14.26	QP

Note: Result = Reading + Factor Over Limit = Result - Limit

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Test Results (30~1000MHz)

Test Mode:	TM13
Power Source:	DC 9V/2.22A from Adapter Input AC 120V/60Hz
Polarization:	Vertical
Temp.(℃)/Hum.(%RH):	22.1℃/52%RH

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	39.8263	49.62	-14.44	35.18	40.00	-4.82	QP
2	80.5453	54.31	-19.38	34.93	40.00	-5.07	QP
3	177.1671	54.90	-16.61	38.29	43.50	-5.21	QP
4	190.9734	56.15	-17.99	38.16	43.50	-5.34	QP
5	387.3802	43.38	-12.97	30.41	46.00	-15.59	QP
6	783.5808	34.19	-4.20	29.99	46.00	-16.01	QP

Note: Result = Reading + Factor Over Limit = Result - Limit

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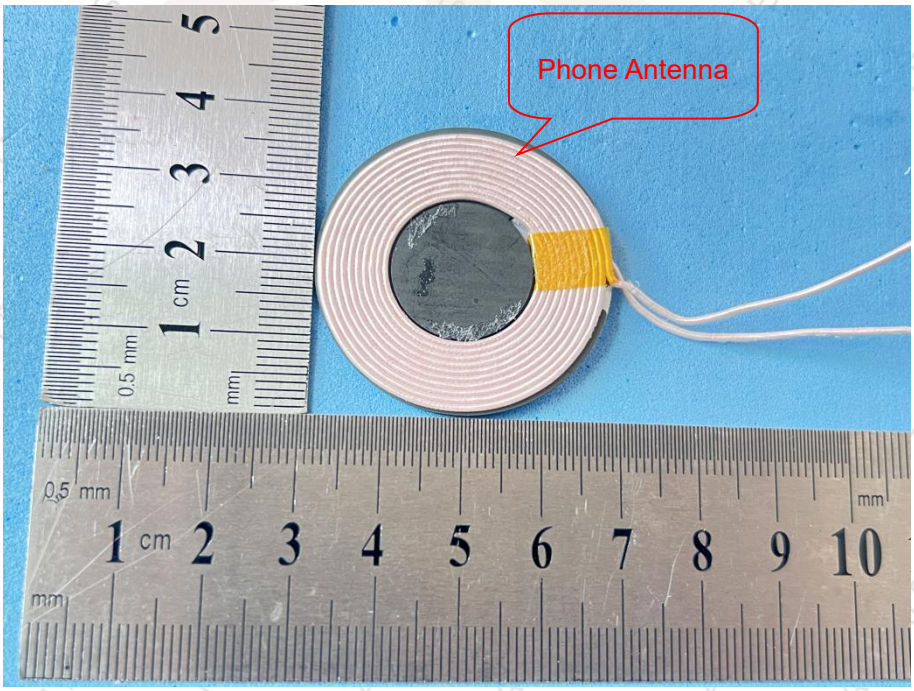
6. Antenna Requirement

6.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	1) 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.

6.2. Antenna Connected Construction

The antenna is a Inductive loop coil Antenna which permanently attached. It complies with the standard requirement.



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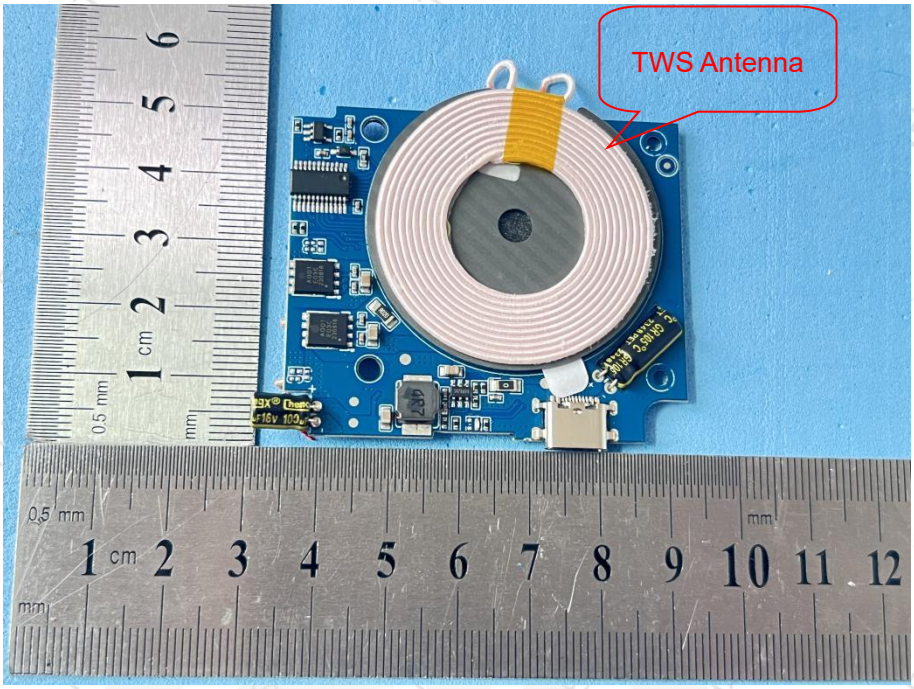

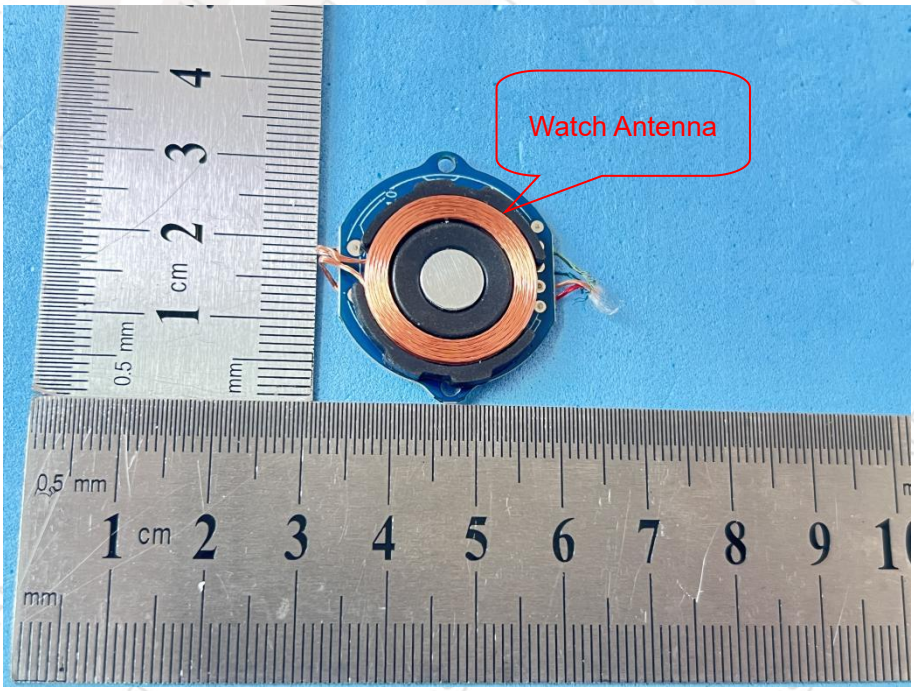

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APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

---------- End of Report ----------

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