Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China

TEST REPORT

FCC Rules and Regulations Part 15 Subpart C (Section 15.209),

Report Reference No.....:	**GTS20231204009-1-20**
FCC ID.....:	**2AYA5-M5**
Compiled by (position+printed name+signature)..:	File administrators Peter Xiao
Supervised by (position+printed name+signature)..:	Test Engineer Evan Ouyang
Approved by (position+printed name+signature)..:	Manager Jason Hu
Date of issue.....:	Jan. 03, 2024

Representative Laboratory Name .:	**Shenzhen Global Test Service Co.,Ltd.**
Address.....:	No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China
Applicant's name.....:	**Shenzhen ICHECKEY Technology Co.,Ltd**
Address .....:	B302, Building 4, TianYanXuan, No.1 Lane14, Bantian East Village, Bantian Street, LongGang District, Shenzhen China.
Test specification .....**:**	
Standard .....:	FCC Rules and Regulations Part 15 Subpart C (Section 15.209)

Test item description .....:	**M5 Magnetic Car Mount Wireless Charger**
Trade Mark .....:	ICHECKEY
Manufacturer .....:	Shenzhen ICHECKEY Technology Co.,Ltd
Model/Type reference.....:	M5
List Model .....:	M5 PRO
Modulation Type .....:	ASK
Operation Frequency.....:	110-205KHz
Ratings .....:	Input: DC 5.0V/DC 9.0V/ DC 12.0V, 2.0A(Max) Wireless Output 1: 5W/10W/15W(Max)
Result.....:	**PASS**

T E S T R E P O R T

Test Report No. :	**GTS20231204009-1-20**	Jan. 03, 2024 Date of issue

Equipment under Test	:	M5 Magnetic Car Mount Wireless Charger
Model /Type	:	M5
Listed Models	:	M5 PRO
Applicant	:	**Shenzhen ICHECKEY Technology Co.,Ltd**
Address	:	B302, Building 4, TianYanXuan, No.1 Lane14, Bantian East Village, Bantian Street, LongGang District, Shenzhen China.
Manufacturer		**Shenzhen ICHECKEY Technology Co.,Ltd**
Address	:	B302, Building 4, TianYanXuan, No.1 Lane14, Bantian East Village, Bantian Street, LongGang District, Shenzhen China.

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C (Section 15.209): Radiated emission limits; general requirements.

ANSI C63.10: 2020: American National Standard for Testing Unlicensed Wireless Devices

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Dec. 12, 2023
Testing commenced on	:	Dec. 12, 2023
Testing concluded on	:	Jan. 02, 2024

2.2. Product Description

Product Name:	M5 Magnetic Car Mount Wireless Charger
Trade Mark:	ICHECKEY
Model/Type reference:	M5
List Model:	M5 PRO
Model Declaration	PCB board, structure and internal of these model(s) are the same, Only the model name different , So no additional models were tested.
Power supply:	Input: DC 5.0V/DC 9.0V/ DC 12.0V, 2.0A(Max) Wireless Output 1: 5W/10W/15W(Max)
Hardware Version	N/A
Software Version	N/A
WPT	
Frequency Range	110.0~205.0KHz
Modulation Type	ASK (Continuous Wave)
Load Sensing	Contact transmission
Antenna Type	Coil Antenna
Antenna gain	0dBi

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		●	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

DC 12.0V

Description of the test mode

Operation Frequency each of channel	
Channel	Frequency
1	127.7KHz

Mode	AC mode
Mode 1	Wireless Charging 15W
Mode 2	Wireless Charging 10W
Mode 3	Wireless Charging 5W

Note :1.EUT has one Type-C port, The Type-C supports wireless charging in AC mode.
2. All the modes have been tested and recorded worst mode in the report(Mode 1).
3. All modes were tested for load states less than 1%, less than 50%, and less than 99%.

2.4. EUT Exercise Software

N/A

2.5. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
--	Battery	--	--	--

Note: The Battery is only used for auxiliary testing.

2.6. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	1.0M, Unscreened Cable

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China

3.2. Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.
Industry Canada Registration Number. is 24189.
FCC Designation Number is CN1234.
FCC Registered Test Site Number is165725.
CAB identifier is CN0082.

3.3. Test Description

Description Of Test	Result
Conducted Emissions Test	N/A
Radiated Emission Test	Compliant
Occupied Bandwidth Measurement	Compliant
Antenna Requirement	Compliant

3.4. Statement of the measurement uncertainty

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

3.5. Equipments Used during the Test

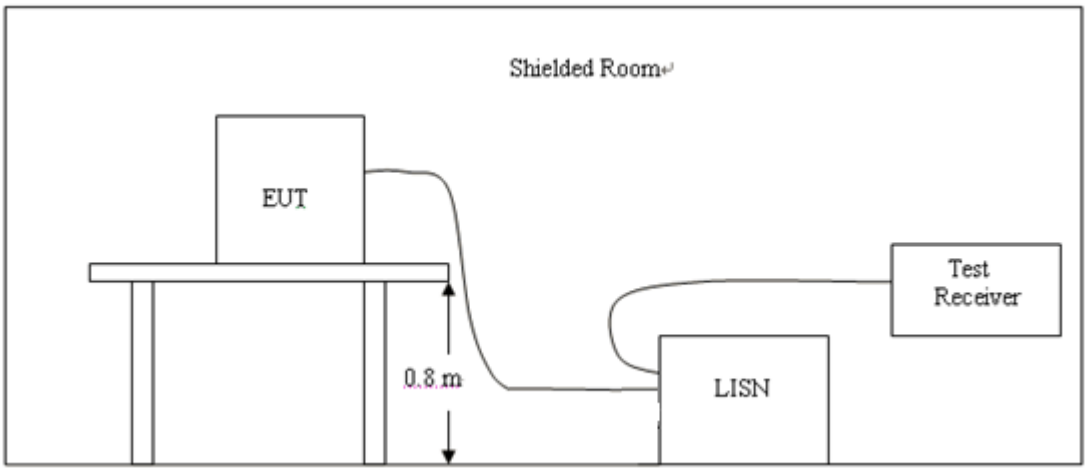
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	CYBERTEK	EM5040A	E1850400105	2023/07/13	2024/07/12
LISN	R&S	ESH2-Z5	893606/008	2023/07/13	2024/07/12
EMI Test Receiver	R&S	ESPI3	101841-cd	2023/07/14	2024/07/13
EMI Test Receiver	R&S	ESCI7	101102	2023/07/13	2024/07/12
Spectrum Analyzer	Agilent	N9020A	MY48010425	2023/08/28	2024/08/27
Spectrum Analyzer	R&S	FSV40	100019	2023/07/13	2024/07/12
Vector Signal generator	Agilent	N5181A	MY49060502	2023/07/13	2024/07/12
Signal generator	Agilent	N5182A	3610AO1069	2023/07/13	2024/07/12
Climate Chamber	ESPEC	EL-10KA	A20120523	2023/07/13	2024/07/12
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2023/07/13	2024/07/12
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2023/07/13	2024/07/12
Bilog Antenna	Schwarzbeck	VULB9163	000976	2023/07/13	2024/07/12
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2023/07/13	2024/07/12
Amplifier	Schwarzbeck	BBV 9743	#202	2023/07/14	2024/07/13
Amplifier	Schwarzbeck	BBV9179	9719-025	2023/07/14	2024/07/13
Amplifier	EMCI	EMC051845B	980355	2023/07/14	2024/07/13
Temperature/Humidity Meter	Gangxing	CTH-608	02	2023/07/13	2024/07/12
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2023/08/30	2024/08/29
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2023/08/30	2024/08/29
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2023/07/13	2024/07/12
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2023/07/13	2024/07/12
Data acquisition card	Agilent	U2531A	TW53323507	2023/07/13	2024/07/12
Power Sensor	Agilent	U2021XA	MY5365004	2023/07/13	2024/07/12
Test Control Unit	Tonscend	JS0806-1	178060067	2023/07/13	2024/07/12
Automated filter bank	Tonscend	JS0806-F	19F8060177	2023/07/13	2024/07/12
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, The EUT received DC 12V power, the adapter received AC120V/60Hz or AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5, All support equipments received AC power from a second LISN, if any.
6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

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.		

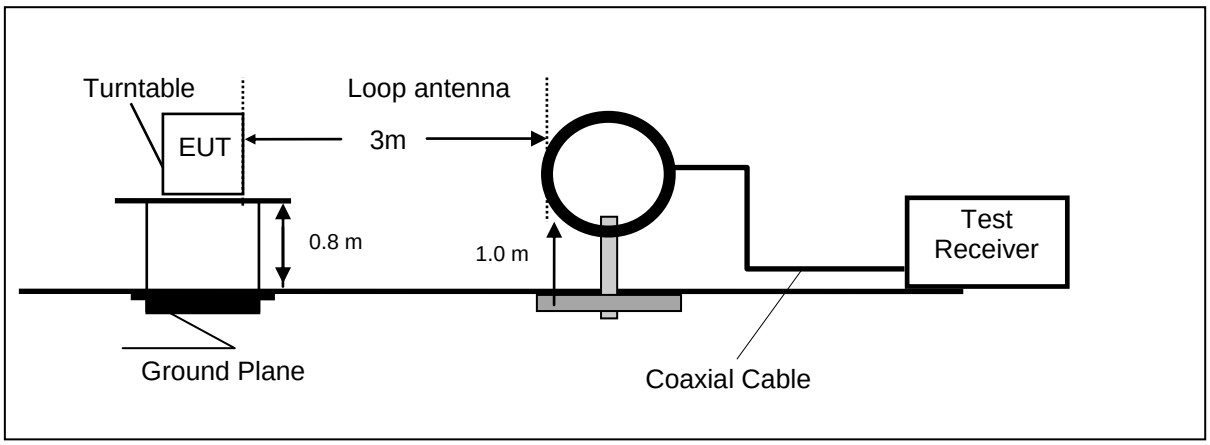
TEST RESULTS

Not Applicable.

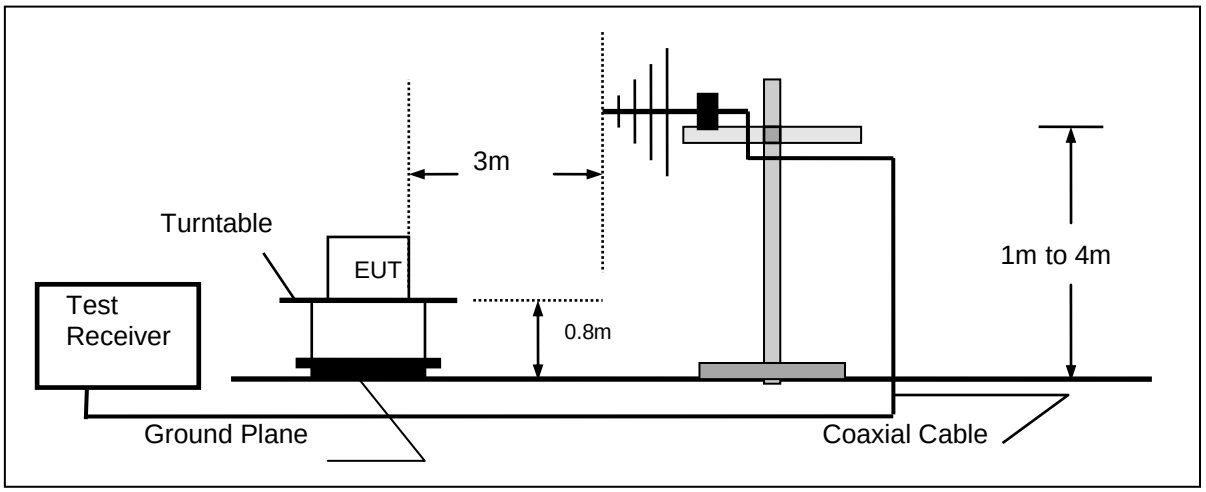
4.2. Radiated Emission

TEST CONFIGURATION

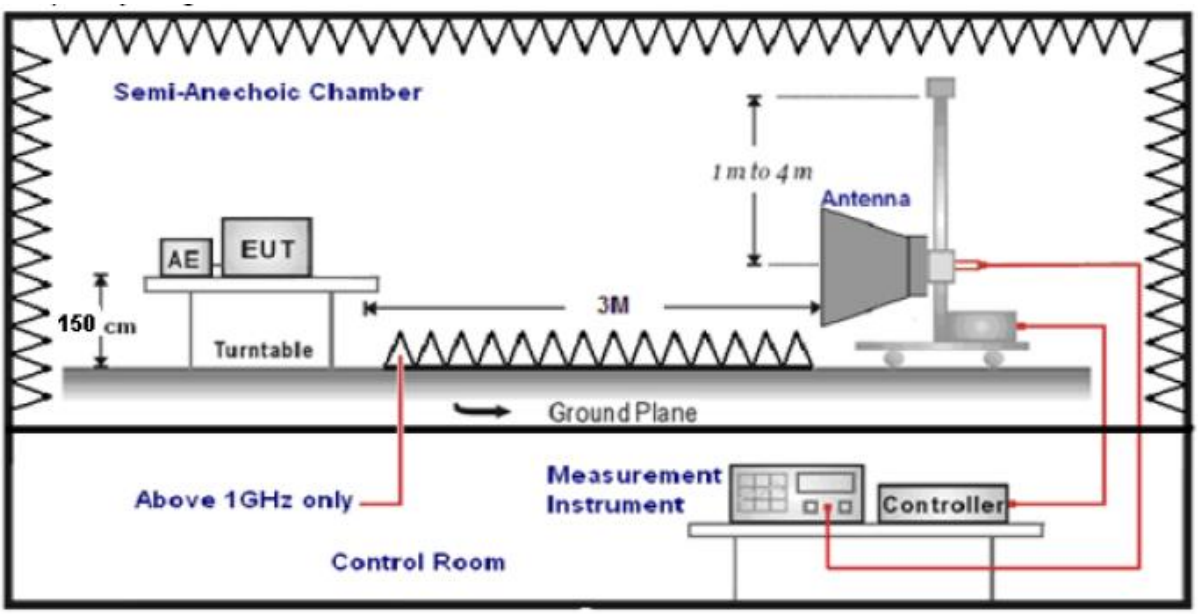
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1.The EUT was placed on a turn table which is 12mm above ground plane when testing frequency range 9 KHz –25GHz.
2.Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT.
3.And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4.Repeat above procedures until all frequency measurements have been completed.
5.The EUT minimum operation frequency was 32.768KHz and maximum operation frequency was 205KHz.so radiated emission test frequency band from 9KHz to 1GHz.
6.The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7.Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

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 = RA + AF + CL - AG

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

Transd=AF +CL-AG

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.
The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

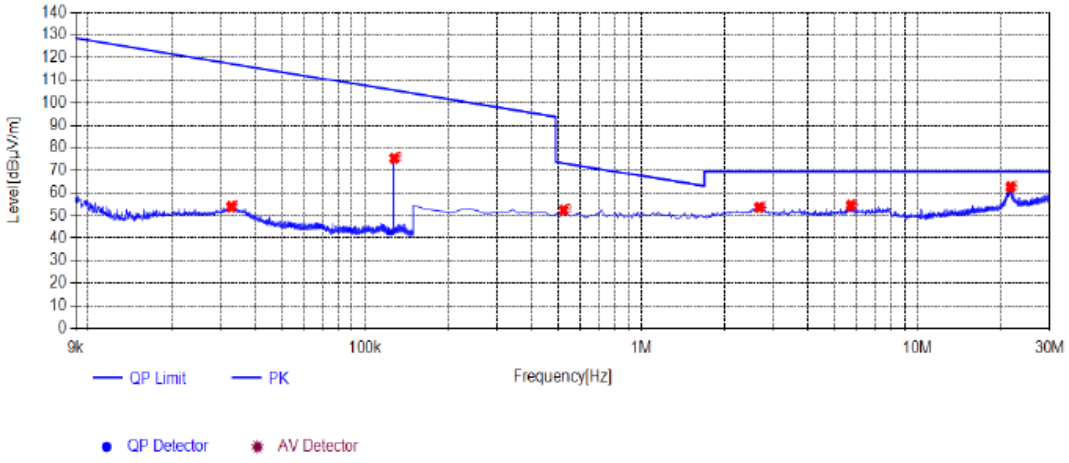
TEST RESULTS

Temperature	25℃	Humidity	58%
Test Engineer	Evan Ouyang	Configurations	WPT

For 9 KHz-30MHz

Coplanar

Test Graph



Suspected List

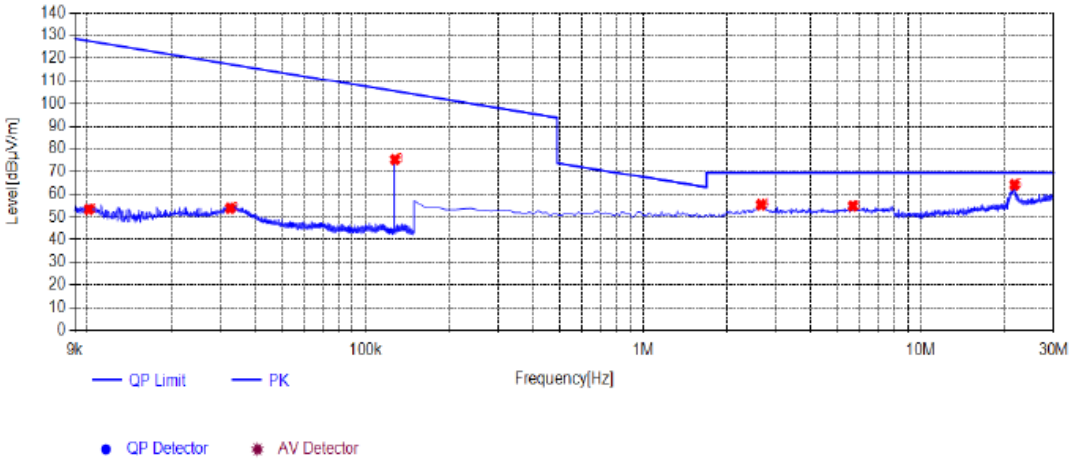
NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	0.0329	53.81	0.14	53.95	117.26	63.31	100	35	PK	Coplanar	PASS
2	0.1277	75.08	0.32	75.40	105.48	30.08	100	124	PK	Coplanar	PASS
3	0.5231	51.95	0.51	52.46	73.23	20.77	100	359	PK	Coplanar	PASS
4	2.6723	52.28	1.38	53.66	69.54	15.88	100	195	PK	Coplanar	PASS
5	5.732	51.87	2.61	54.48	69.54	15.06	100	333	PK	Coplanar	PASS
6	21.6569	53.77	8.80	62.57	69.54	6.97	100	278	PK	Coplanar	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Coaxial

Test Graph



Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	0.0101	53.25	0.10	53.35	127.52	72.17	100	34	PK	Coaxial	PASS
2	0.0326	53.73	0.14	53.87	117.33	61.19	100	60	PK	Coaxial	PASS
3	0.1277	75.00	0.32	75.32	105.48	30.16	100	360	PK	Coaxial	PASS
4	2.6574	54.03	1.37	55.40	69.54	14.14	100	228	PK	Coaxial	PASS
5	5.6872	52.23	2.60	54.83	69.54	14.71	100	0	PK	Coaxial	PASS
6	21.7166	55.25	8.83	64.08	69.54	5.46	100	354	PK	Coaxial	PASS

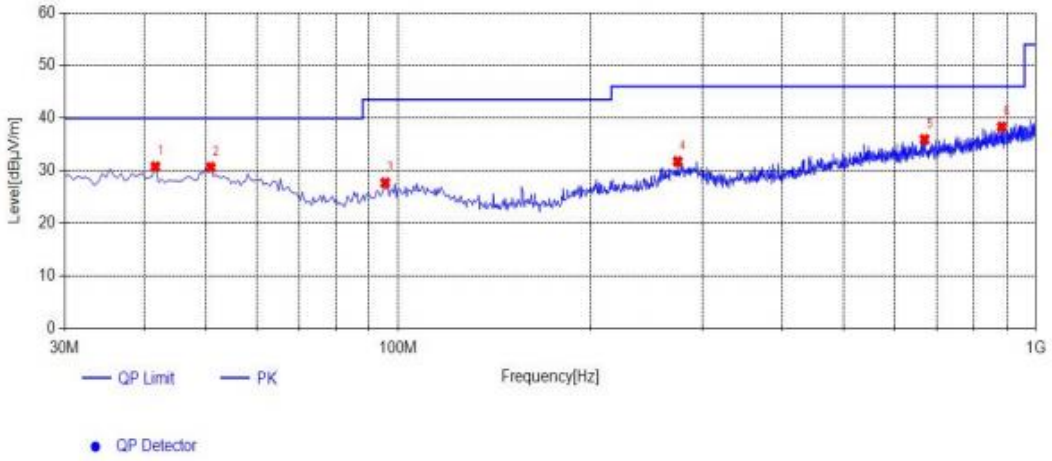
Note: 1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

For 30MHz-1GHz

Horizontal

Test Graph



Suspected List

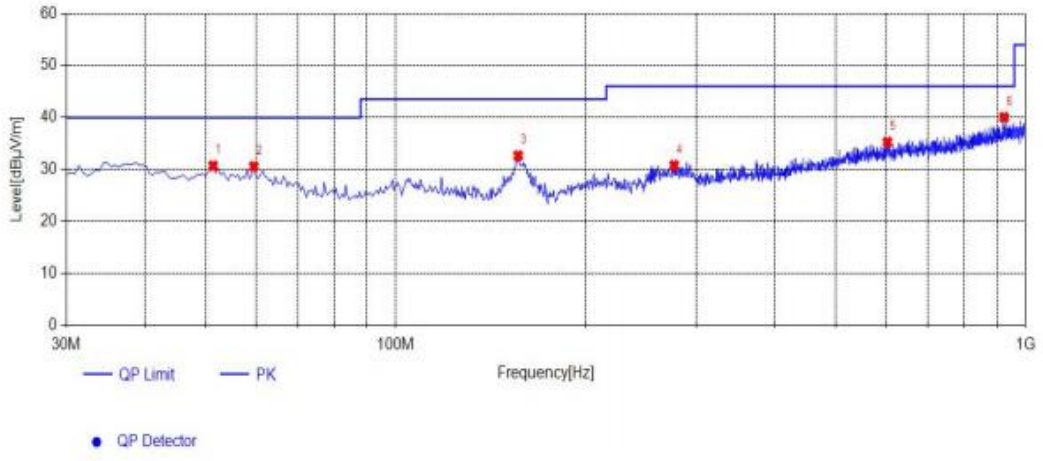
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	41.64	45.68	-14.93	30.75	40.00	9.25	100	118	PK	Horizonta	PASS
2	50.855	44.39	-13.75	30.64	40.00	9.36	100	98	PK	Horizonta	PASS
3	95.475	43.01	-15.33	27.68	43.50	15.82	100	45	PK	Horizonta	PASS
4	274.44	42.68	-10.93	31.75	46.00	14.25	100	131	PK	Horizonta	PASS
5	669.23	37.96	-2.02	35.94	46.00	10.06	100	262	PK	Horizonta	PASS
6	884.57	36.94	1.39	38.33	46.00	7.67	100	111	PK	Horizonta	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	51.34	44.33	-13.64	30.69	40.00	9.31	100	236	PK	Vertical	PASS
2	59.585	45.07	-14.50	30.57	40.00	9.43	100	131	PK	Vertical	PASS
3	156.585	49.24	-16.60	32.64	43.50	10.86	100	354	PK	Vertical	PASS
4	276.865	41.59	-10.81	30.78	46.00	15.22	100	137	PK	Vertical	PASS
5	603.755	38.32	-3.06	35.26	46.00	10.74	100	78	PK	Vertical	PASS
6	924.825	38.16	1.88	40.04	46.00	5.96	100	72	PK	Vertical	PASS

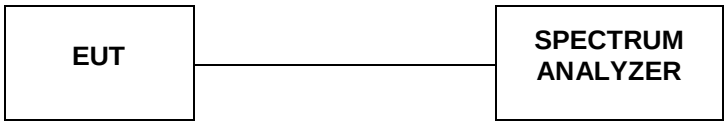
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Note: All the modes have been tested and recorded worst mode in the report.

4.3. Occupied Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be.deomonstrated by measuring the radiated emissions.

LIMIT

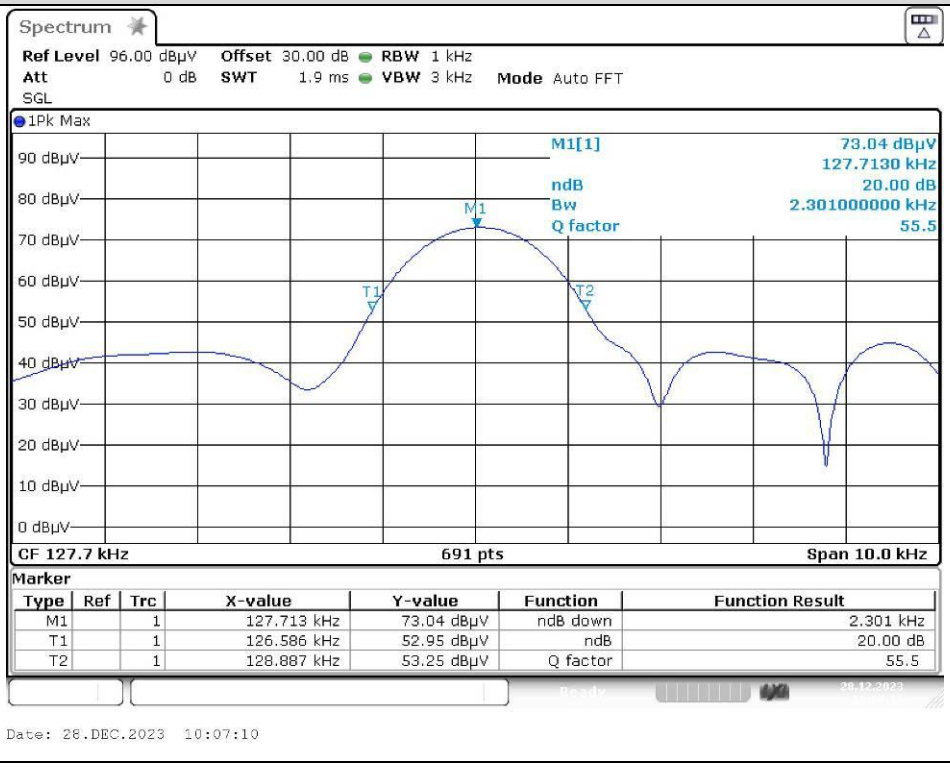
/

TEST RESULTS

Temperature	24.5℃	Humidity	53.9%
Test Engineer	Evan Ouyang	Configurations	WPT

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
Tx Mode	127.71	2.301	/	PASS

20dB Bandwidth



4.4. Antenna Requirement

Standard Applicable

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

Antenna Information

The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.

Reference to the **Internal photos**.

5. Test Setup Photos of the EUT

Photo of Radiated Emissions Measurement

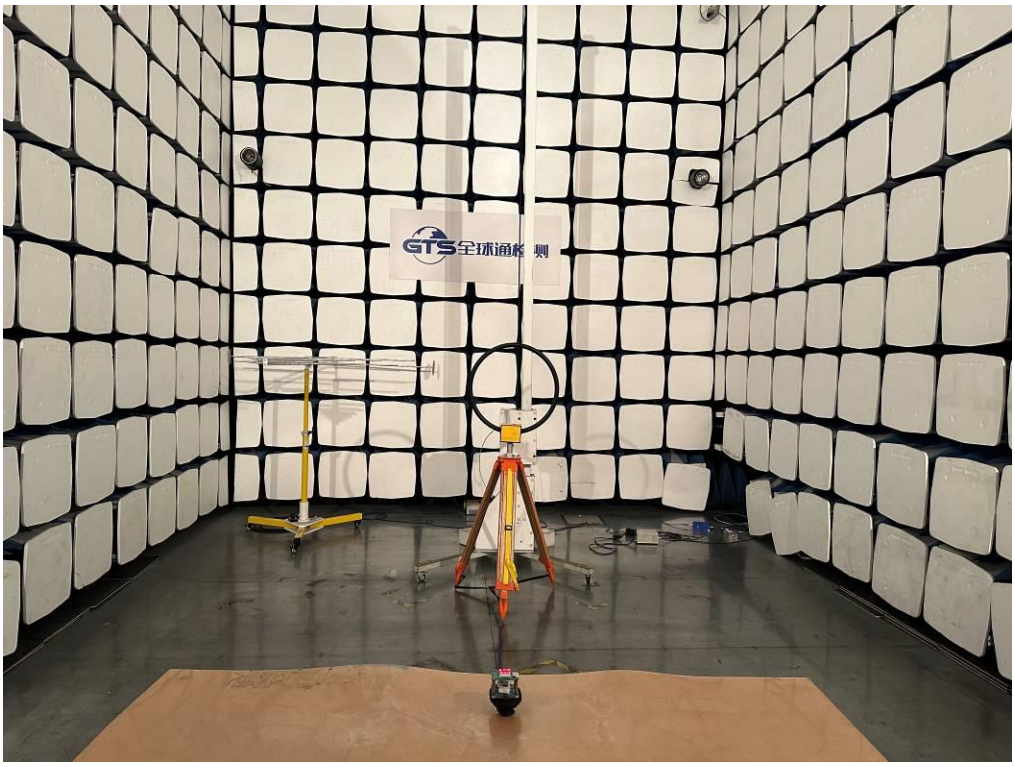


Fig. 1

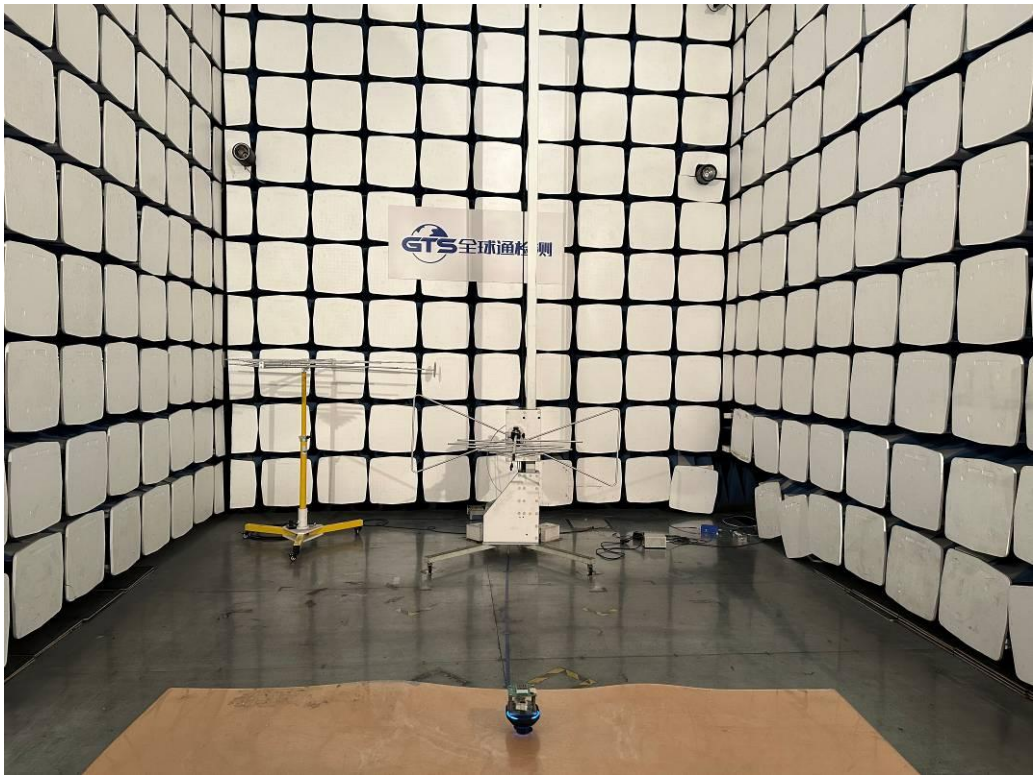


Fig. 2

6. External and Internal Photos of the EUT

Fig. 1

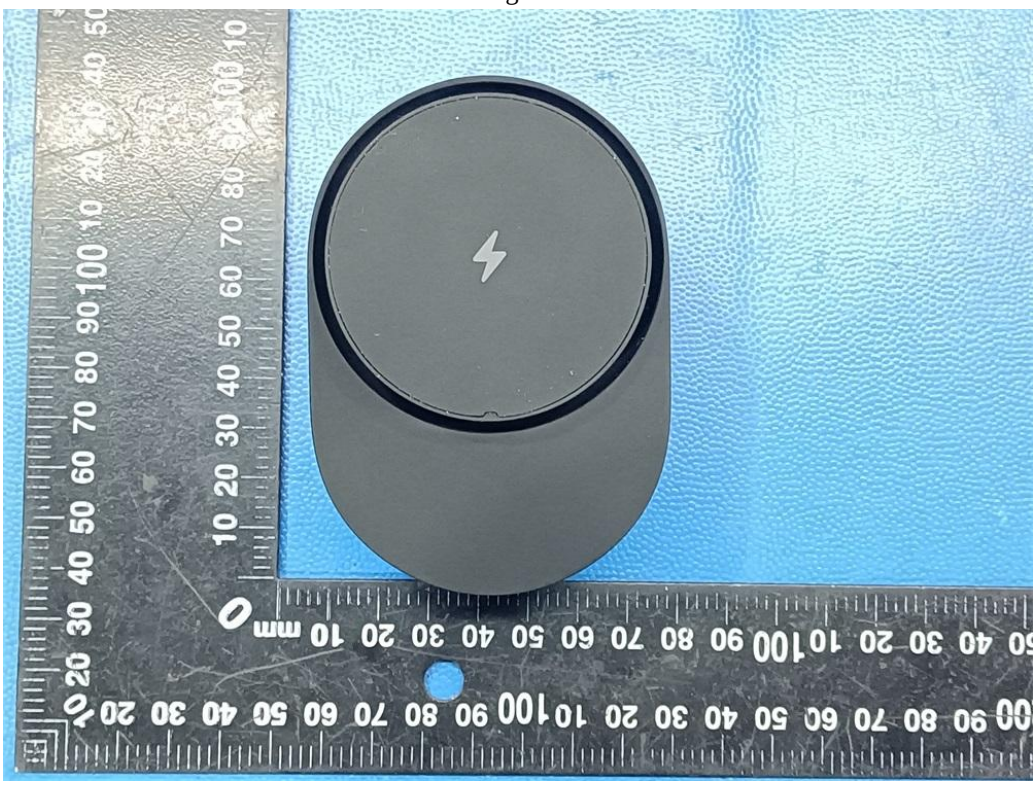


Fig. 2


AIR COOLED WIRELESS CHARGING
Model: M5 Output:15W(Max)
Input:5V 9V 12V/2A(Max)

Fig. 3


AIR COOLED WIRELESS CHARGING
Model: M5 Output:15W(Max)
Input:5V 9V 12V/2A(Max)

Fig. 4

Fig. 5

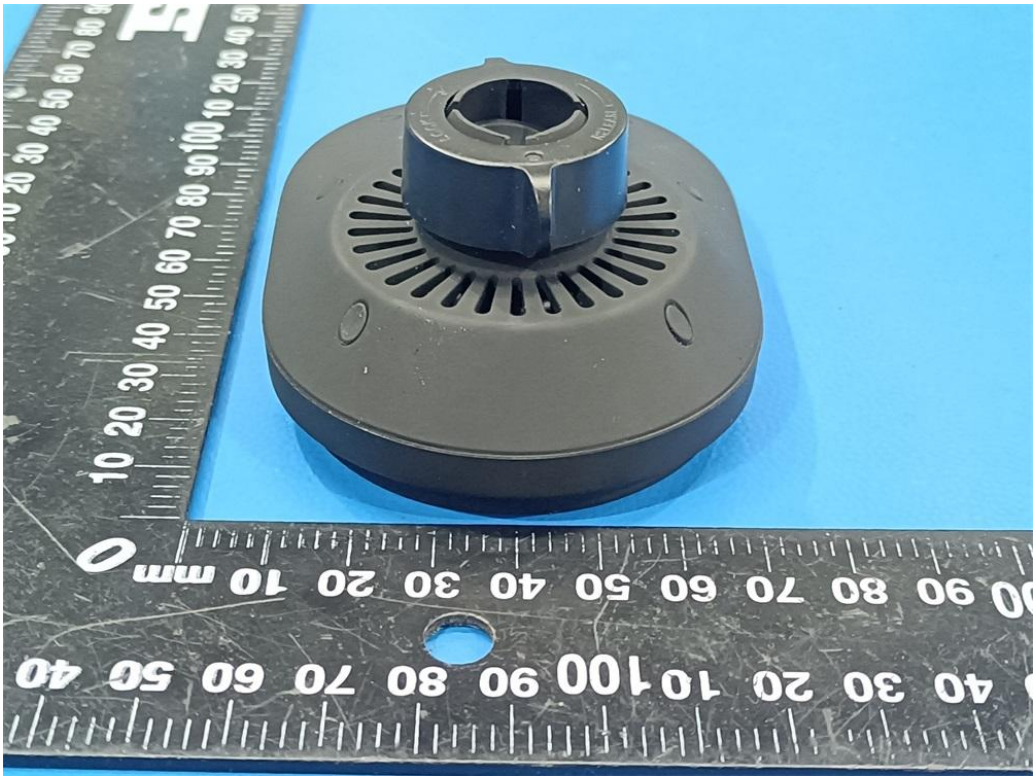


Fig. 6

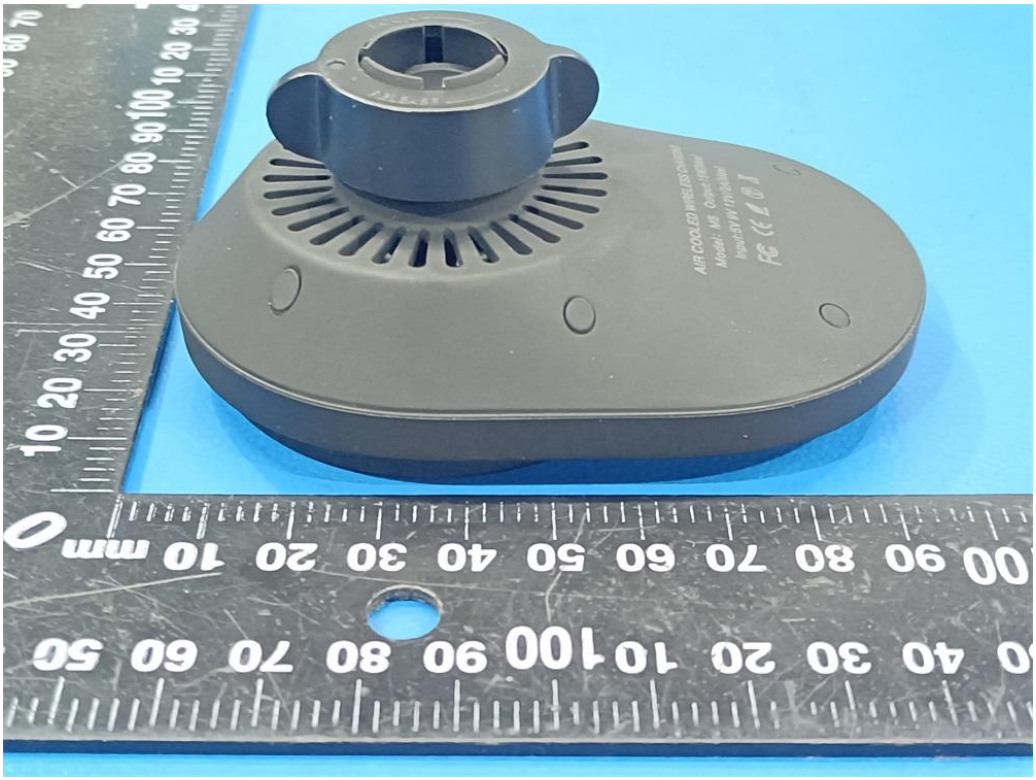


Fig. 7

Fig. 8

Fig. 9

Fig. 10

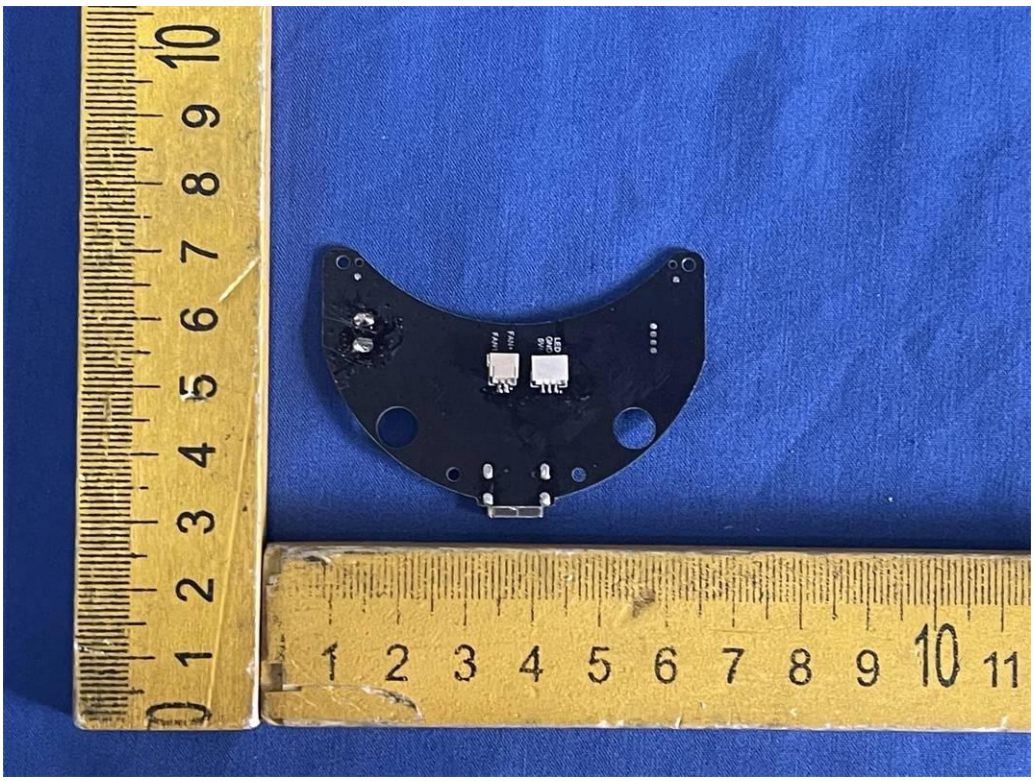


Fig. 11

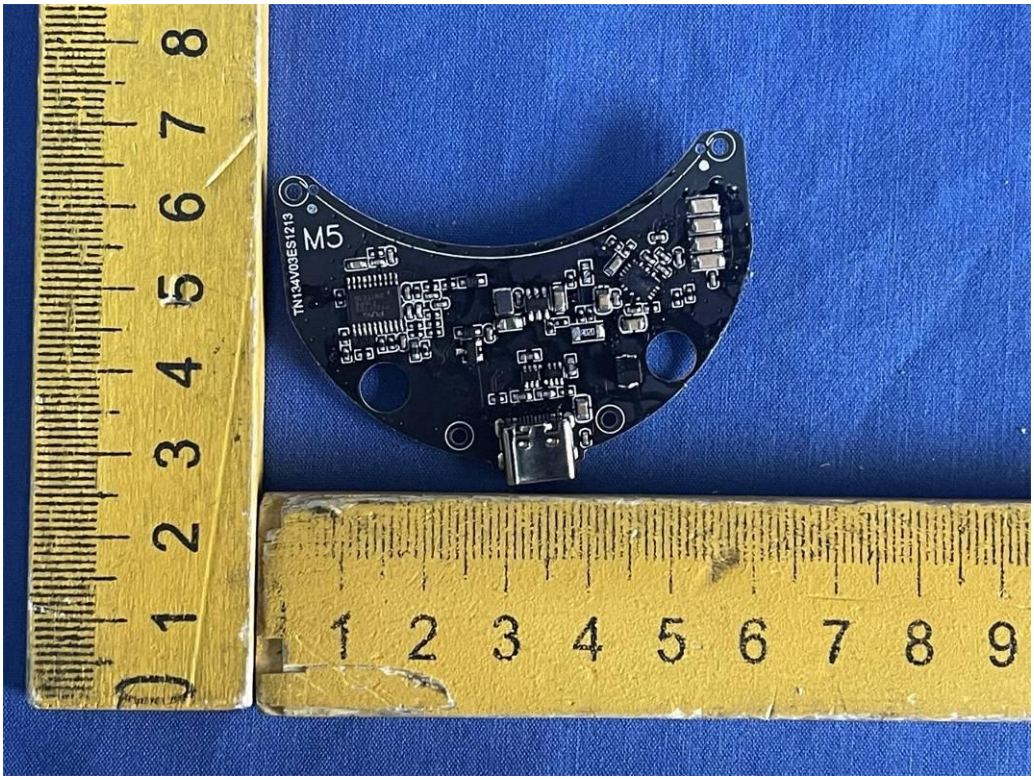


Fig. 12

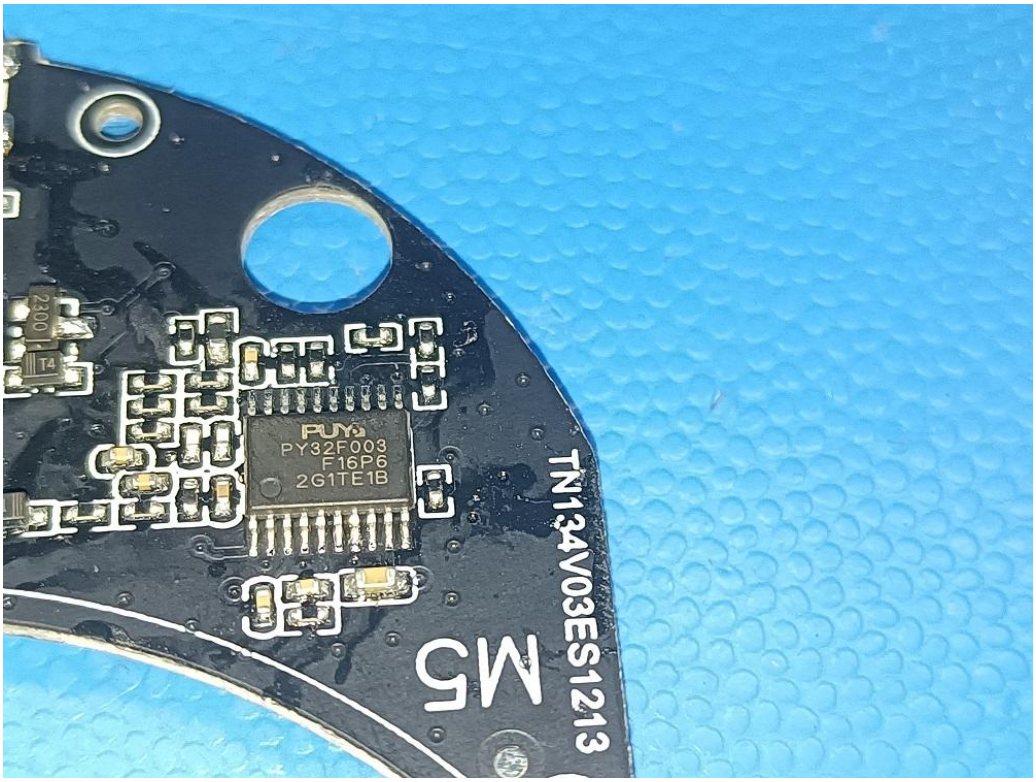

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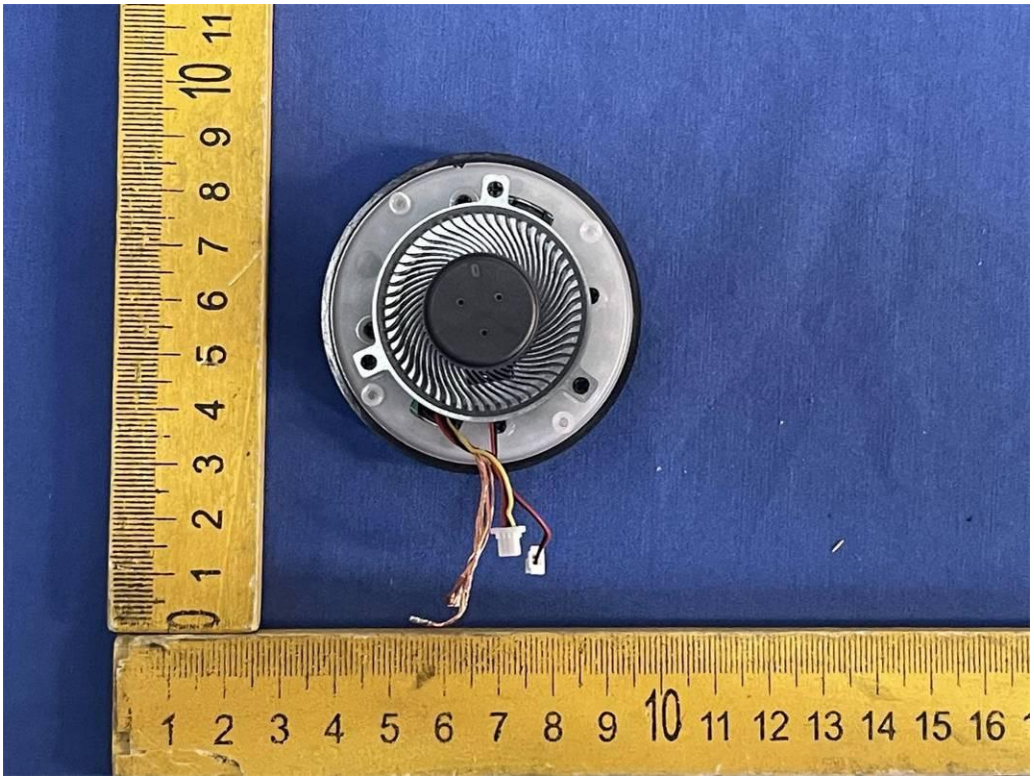
Fig. 13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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Fig. 14

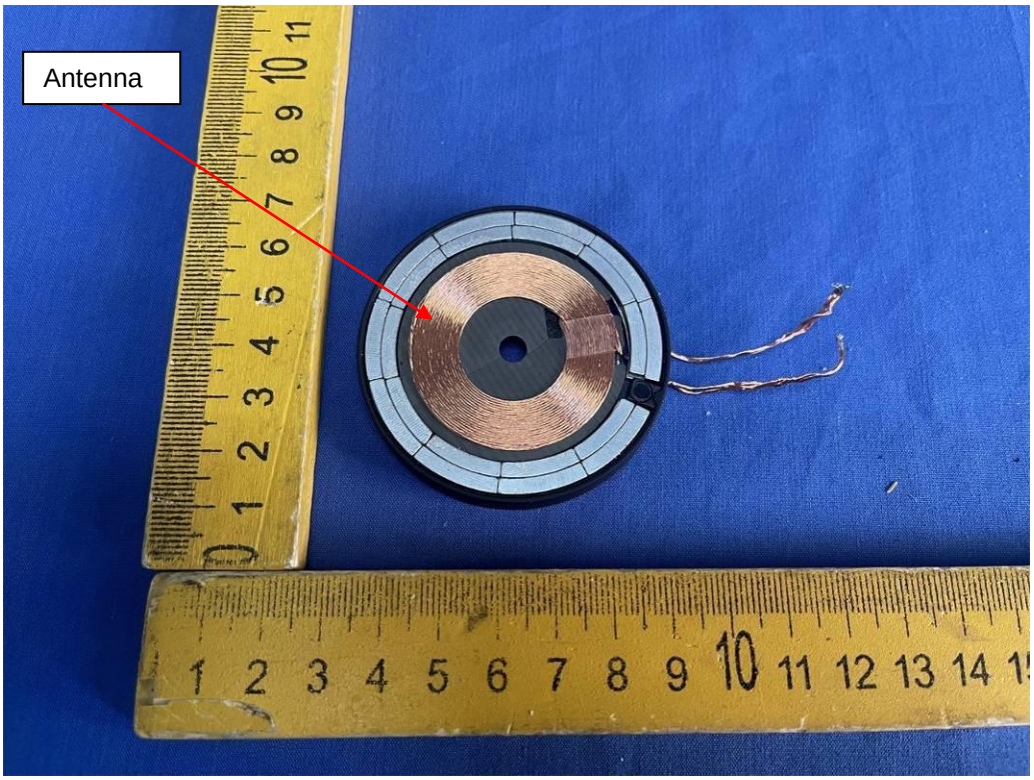

Fig. 15

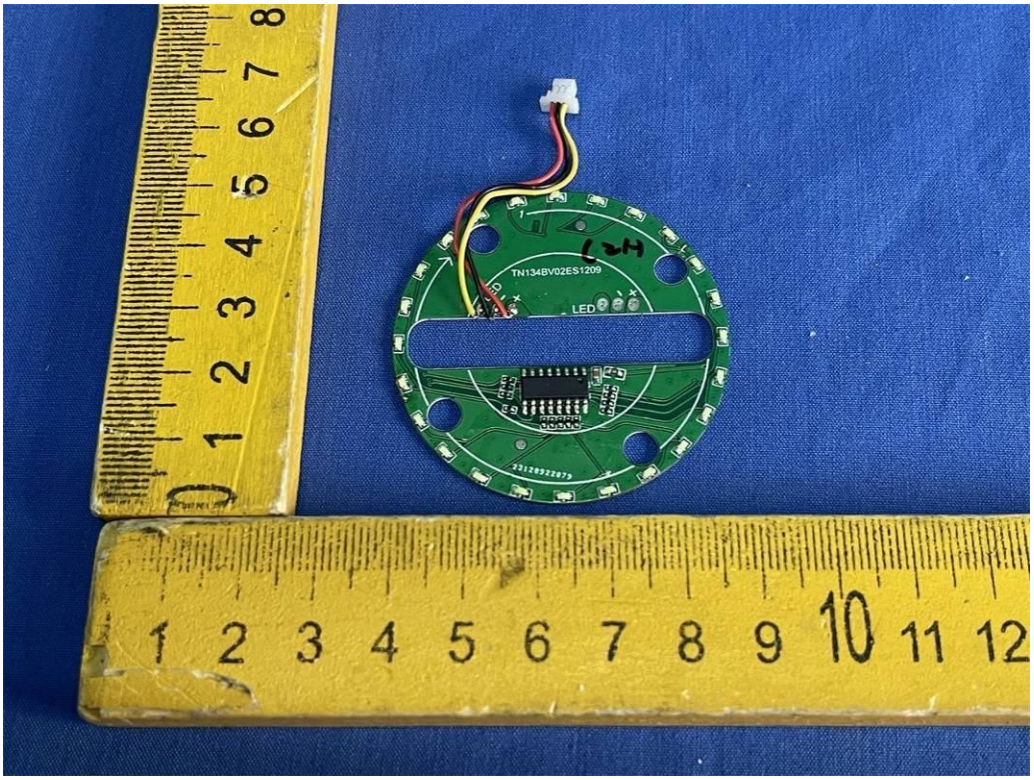

Fig. 16

Fig. 17

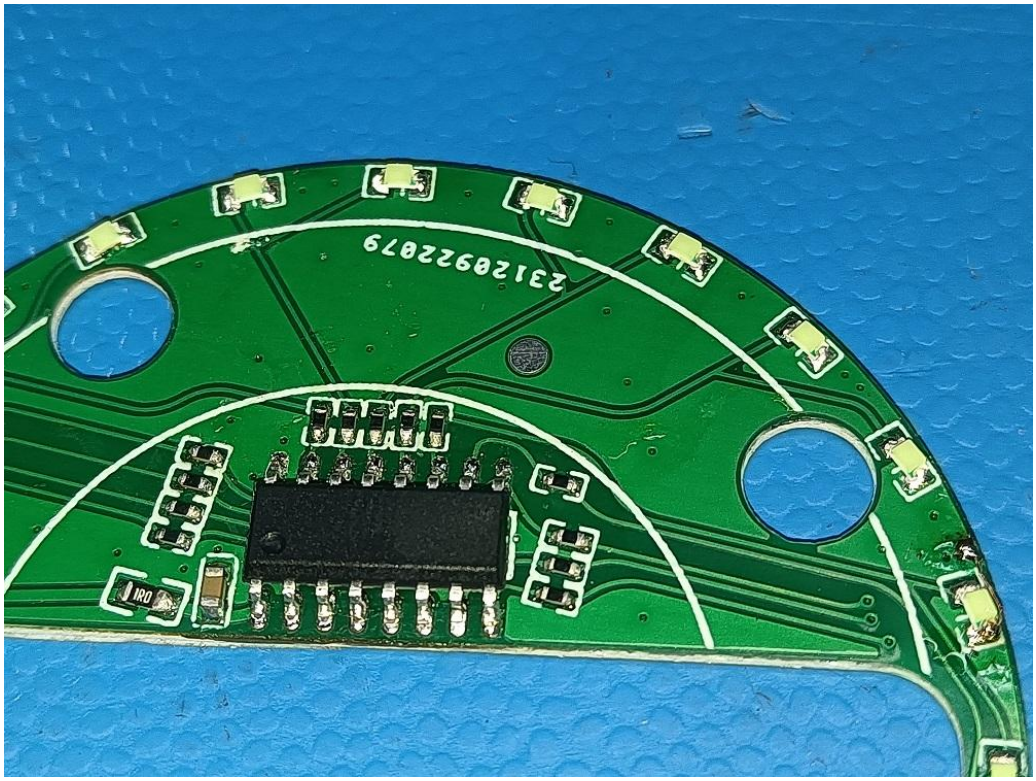

Fig. 18

.....End of Report.....