

FCC TEST REPORT FCC ID: 2AP2N-MAGQOOA

On Behalf of

Shenzhen Esorun Technology Co., LTD

Magnetic Wireless Charger

Model No.: MagQoo A

Prepared for Address	:	Shenzhen Esorun Technology Co., LTD 101, Dormitory Building, No. 1215, Guihua Community Guanguang Road, Guanlan Street, Longhua District, Shenzhen, China
Prepared By	:	Shenzhen Alpha Product Testing Co., Ltd.
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Applicant	:	Shenzhen Esorun Technology Co., LTD			
Address	:	101, Dormitory Building, No. 1215, Guihua Community Guanguang Road, Guanlan Street, Longhua District, Shenzhen, China			
Manufacturer	:	Shenzhen Esorun Technology Co., LTD			
Address	:	101, Dormitory Building, No. 1215, Guihua Community Guanguang Road, Guanlan Street, Longhua District, Shenzhen, China			
EUT Description	:	Magnetic Wireless Charger			
		(A) Model No. : MagQoo A			
		(B) Trademark : ESORUN			

TEST REPORT DECLARATION

Measurement Standard Used:

FCC CFR Title 47 Part 15 Subpart C Section 15.209

The device described above is tested by Shenzhen Alpha Product Testing 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 test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC CFR Title 47 Part 15 Subpart C Section 15.209 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:

Lucas Pang **Project Engineer**

Lucas Poung

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Approved by (name + signature).....:

Simple Guan **Project Manager**

Date of issue.....

March 29, 2021

Revision History

Revision	Issue Date	Revisions	Revised By	
V0	March 29, 2021	Initial released Issue	Lucas Pang	

1. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS
Occupied Bandwidth	§15.215 (c)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

2. General Information

2.1. Description of Device (EUT)

EUT Name	:	Magnetic Wireless Charger
Model No.	:	MagQoo A
DIFF.	:	/
Trademark	:	ESORUN
Power supply	:	Type-C Input : DC 5V/2A, DC 9V/1.34A, DC 9V/2A, DC 12V/2A Wireless Output : DC 5V/1A(5W), 9V/0.83A(7.5W), 9V/1.12A(10W), 9V/1.67A(15W)
Operation frequency	:	125~205KHz
Modulation	:	MSK
Antenna Type	:	Coil Antenna, Maximum Gain is 0dBi(This value is supplied by applicant).
Connector cable loss	:	0.5dB (This value is supplied by applicant).
Software version	:	V3.3
Hardware version	:	V1.0

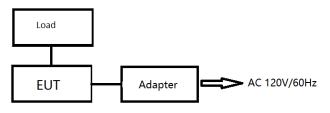
2.2. Accessories of Device (EUT)

Accessories1	:	/
Manufacturer	:	/
Model	:	/
Ratings	:	/

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Adapter				
2	Load				

2.4. Block Diagram of connection between EUT and simulators



2.5. Description of Test Modes

Channel	Frequency (KHz)	
1	147	

2.6. Test Conditions

Items	Required	Actual	
Temperature range:	15-35 ℃	24 ℃	
Humidity range:	25-75%	56%	
Pressure range:	86-106kPa	98kPa	

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission Registration Number: 293961

July 15, 2019 Certificated by IC Registration Number: CN0085

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Conducted Emission Test	2.74dB	
Uncertainty for Radiation Emission test in 3m chamber	2.13dB	Polarize: V
(below 30MHz)	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber	3.77dB	Polarize: V
(30MHz to 1GHz)	3.80dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber	4.13dB	Polarize: H
(1GHz to 25GHz)	4.16dB	Polarize: V
Uncertainty for radio frequency	5.4×10 ⁻⁸	
Uncertainty for conducted RF Power	0.37dB	

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	2019.09.06	3Year
Spectrum analyzer	ROHDE&SCH WARZ	FSV40-N	102137	2020.09.02	1Year
Spectrum analyzer	Agilent	N9020A	MY499100060	2020.09.02	1Year
Receiver	ROHDE&SCH WARZ	ESR	1316.3003K03-1020 82-Wa	2020.09.02	1Year
Receiver	R&S	ESCI	101165	2020.09.02	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2020.04.12	2Year
Horn Antenna	SCHWARZBEC K	BBHA 9120 D	BBHA 9120 D(1201)	2020.04.12	2Year
Active Loop Antenna			00059	2019.09.07	2Year
Cable	Resenberger	N/A	No.1	2020.09.02	1Year
Cable	Resenberger	N/A	No.2	2020.09.02	1Year
Cable	Resenberger	N/A	No.3	2020.09.02	1Year
Pre-amplifier	HP	HP8347A	2834A00455	2020.09.02	1Year
Pre-amplifier	Agilent	8449B	3008A02664	2020.09.02	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126466	2020.09.02	1Year
L.I.S.N.#2	ROHDE&SCH WARZ	ENV216	101043	2020.09.02	1 Year
20db Attenuator	ICPROBING	IATS1	82347	2020.09.02	1 Year
Horn Antenna	SCHWARZBEC K	BBHA9170	00946	2019.09.07	2 Year
Preamplifier	SKET	LNPA_1840-50	SK2018101801	2020.09.02	1 Year
Power Meter	Agilent	gilent E9300A MY41496625		2020.09.02	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000-40- 880	100631	2020.09.02	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	20140927-6	2020.09.02	1 Year

Software Information								
Test Item	Software Name	Manufacturer	Version					
RE	EZ-EMC	EZ	Alpha-3A1					
CE	E EZ-EMC EZ		Alpha-3A1					
RF-CE	MTS 8310	MW	V2.0.0.0					

3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

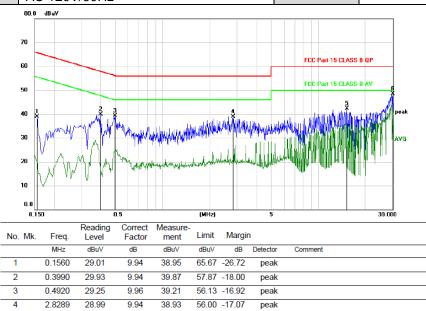
Test Requirement:	FCC Part15 C Section	15.207			
Test Method:	ANSI C63.10:2013				
Frequency Range:	150 kHz to 30 MHz				
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto				
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	Limit (c Quasi-peak 66 to 56* 56 60	BuV) Average 56 to 46* 46 50		
Test Setup:	Reference Plane				
Test Mode:	Transmitting Mode				
Test Procedure:	 The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 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). 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 Result:	PASS				

3.1.2. Test data

Please refer to following diagram for individual

Test Mo	Test Mode : Full Load(15W)					
Test Re	Test Results : PASS					
Note:	Note: The test results are listed in next pages.					
 Note: The test results are listed in next pages. All test modes has been tested, this report only reflected the worst mode. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out. 						

EUT Description	Magnetic Wireless Charger	Model No.	MagQoo A
Temperature	24 °C	Humidity	56%
Pol	Line	Test mode	Full Load(15W)
Test Voltage	AC 120V/60Hz		



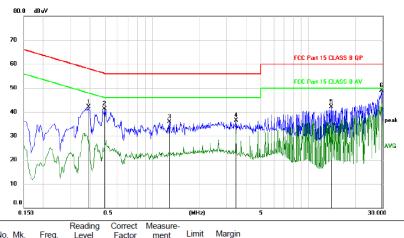
60.00 -17.73

60.00 -11.54

peak

peak

Pol



No. Mk	Freq.	Level	Factor	ment	Limit	Margir	ı	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.3930	32.14	9.94	42.08	58.00	-15.92	peak	
2	0.4950	31.36	9.96	41.32	56.08	-14.76	peak	
3	1.2960	25.92	9.89	35.81	56.00	-20.19	peak	
4	3.4500	26.54	9.96	36.50	56.00	-19.50	peak	
5	14.0190	31.89	10.31	42.20	60.00	-17.80	peak	
6 *	29.5740	38.28	10.65	48.93	60.00	-11.07	peak	

*:Maximum data x:Over limit !:over margin

15.1980

29.9910

Neutral

5

6

*

31.93

37.79

10.34

10.67

42.27

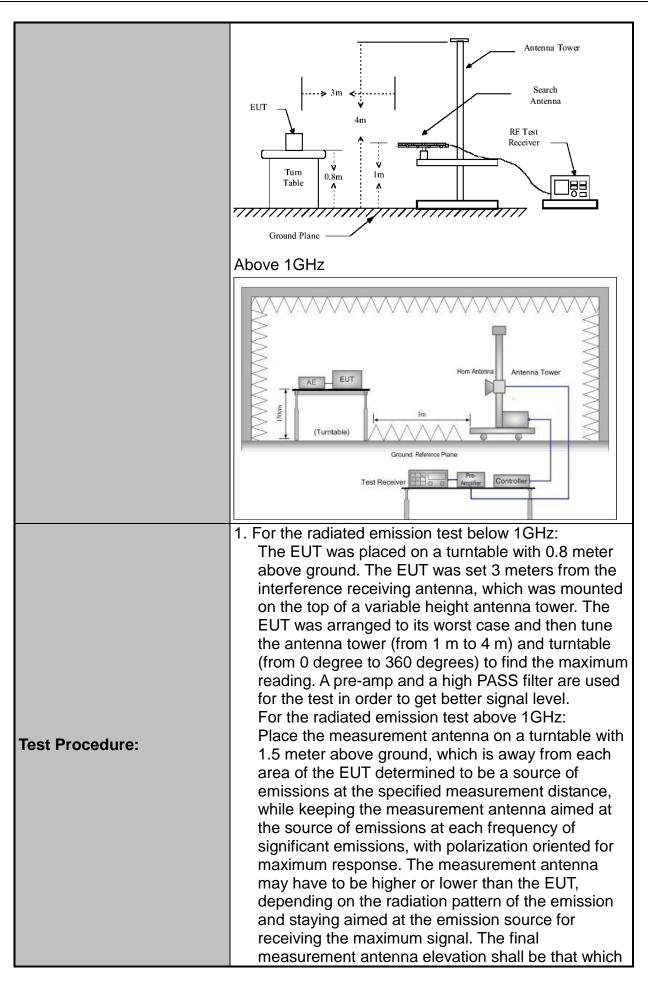
48.46

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

3.2. Radiated Spurious Emission Measurement

3.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209						
Test Method:	ANSI C63.10): 20)13				
Frequency Range:	9 kHz to 25 (GHz					
Measurement Distance:	3 m						
Antenna Polarization:	Horizontal & Vertical						
Operation mode:	Refer to item 4.1						
	Frequency 9kHz- 150kHz		etector asi-pea		VBW 1kHz		Remark si-peak Value
Receiver Setup:	150kHz- 30MHz	Qua	asi-pea	ak 9kHz	30kHz	Qua	si-peak Value
	30MHz-1GHz		asi-pea			1	si-peak Value
	Above 1GHz		Peak Peak	1MHz 1MHz	3MHz 10Hz	-	eak Value erage Value
				Field St			asurement
	Frequen	су		(microvol	-		ance (meters)
	0.009-0.4			2400/F		300	
	0.490-1.7			24000/1	· · · ·	30	
	1.705-30 30-88			<u> </u>		30 3	
	88-216			150		3	
Limit:	216-960			200		3	
	Above 960			500 3			
	Frequency		eld Strength rovolts/meter	Measure Distar (mete	ice	Detector	
	Above 1GHz		500		3		Average
				5000	3		Peak
	For radiated	emi	ssior	ns below 3	0MHz		
	Distance = 3m						
Test setup:	EUT Turn table Receiver						
			G	round Plane			
	30MHz to 10	iΗz					

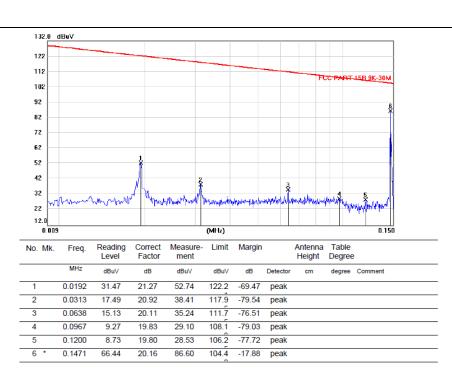


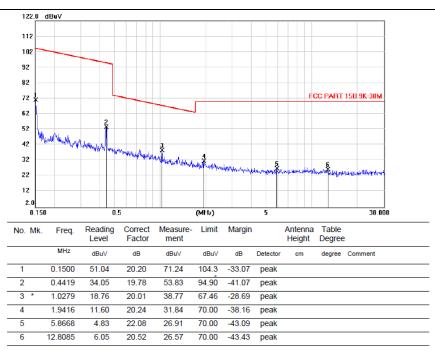
	 maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, 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. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured;
	 (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f □ 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 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.
Test mode:	Refer to section 4.1 for details
Test results:	PASS

3.2.2. Test Data

Please refer to following diagram for individual

Freque Range	quency : 9KHz~30MHz nge					
Test Mode : TX: 147KHz, Full Load (15W)						
Test R	esults	:	PASS			
Note:	te: 1. The test results are listed in next pages.					
	2. This mode is worst case mode, so this report only reflected the worst mode.					
	3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.					





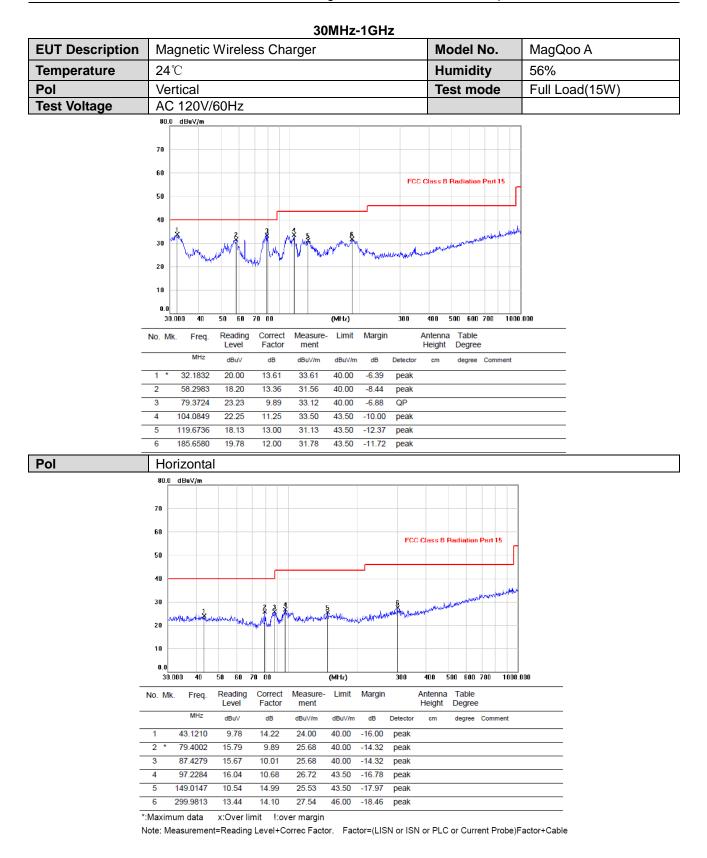
*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

X

Freque Range	•	: 30MHz~1000MHz				
Test Mode : TX: 147KHz, Full Load (15W)						
Test R	esults	: PASS				
Note:	ote: 1. The test results are listed in next pages.					
	2. All test modes has been tested, this report only reflected the worst mode.					
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.						

Freque Range	ncy	:	Above 1GHz			
EUT		:	/	Test Date	:	/
M/N		:	/	Temperature	:	/
Test Er	ngineer	:	/	Humidity	:	/
Test M	ode	:	/			
Test Re	esults	:	N/A			
 The highest frequency of the internal sources of the EUT is less than 108 MHz, Note: the measurement shall only be made up to 1 GHz. So the frequency rang above 1GHz radiation test not applicable. 						



3.3. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(c)		
Test Method:	ANSI C63.10: 2013		
Limit:	N/A		
Test Procedure:	 According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. 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. Measure and record the results in the test report. 		
Test setup:	Spectrum Analyzer EUT		
Test Mode:	Refer to section 4.1 for details		
Test results:	PASS		

3.3.1. Test data

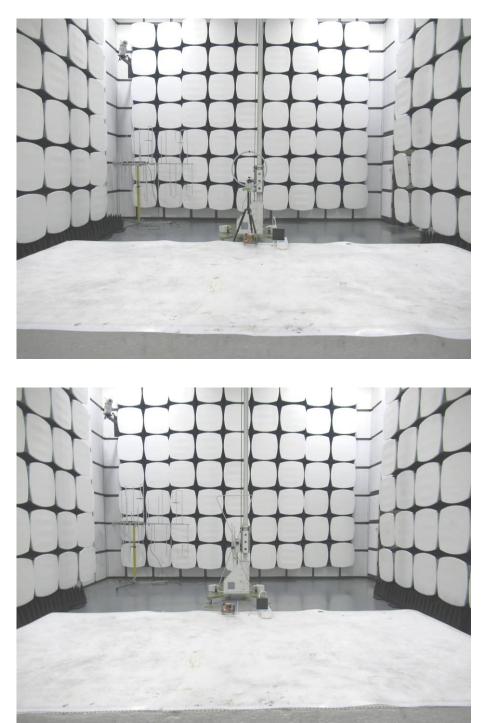
Frequency(kHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion	
147	3.552		Pass	

Test plots as follows:

Agilent Spectrum Analyzer - Occupi IXI RF 50Ω A X dB -20.00 dB		SENSE:INT Center Freq: 147.000 Trig: Free Run	ALIGNAUTO) kHz Avg Hold:>10/10	11:39:41 AM Mar 29, 2021 Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 10 dB	Avginola.> lono	Radio Device: BTS	
Ref Offset 2 d 10 dB/div Ref 5.00 dE					
-5.00					Clear Write
-25.0		month			
-45.0					Average
-65.0	nonnon		Mar	mmmm mmmmm	
-75.0					Max Hold
enter 147 kHz Span 20 kHz Span 20 kHz Sweep FFT					
Occupied Bandwi	idth	Total P		ö dBm	Min Hold
	3.154 kH	Z			Detector
Transmit Freq Error	-41	Hz OBW P	ower 99	9.00 %	Peak▶ Auto <u>Man</u>
x dB Bandwidth	3.552 kł	Hz x dB	-20.	00 dB	
MSG			STATU:	5	

4. Photos of test setup

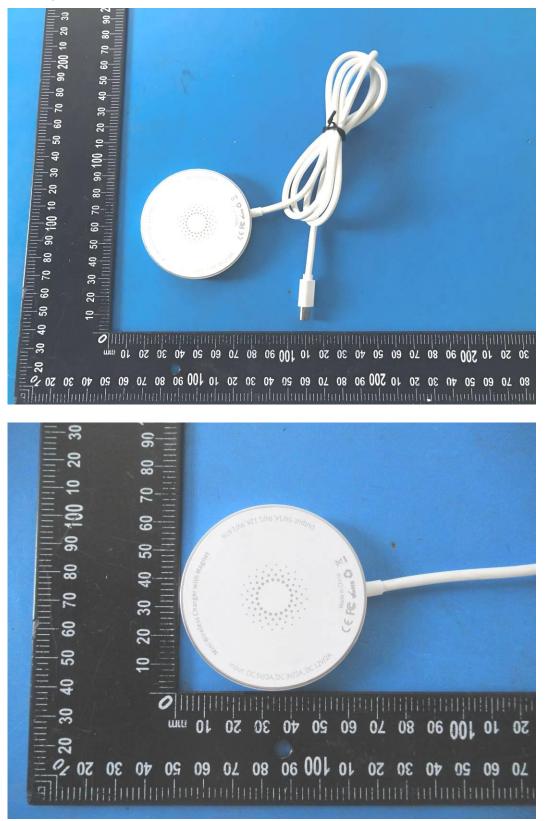
Radiated Emission

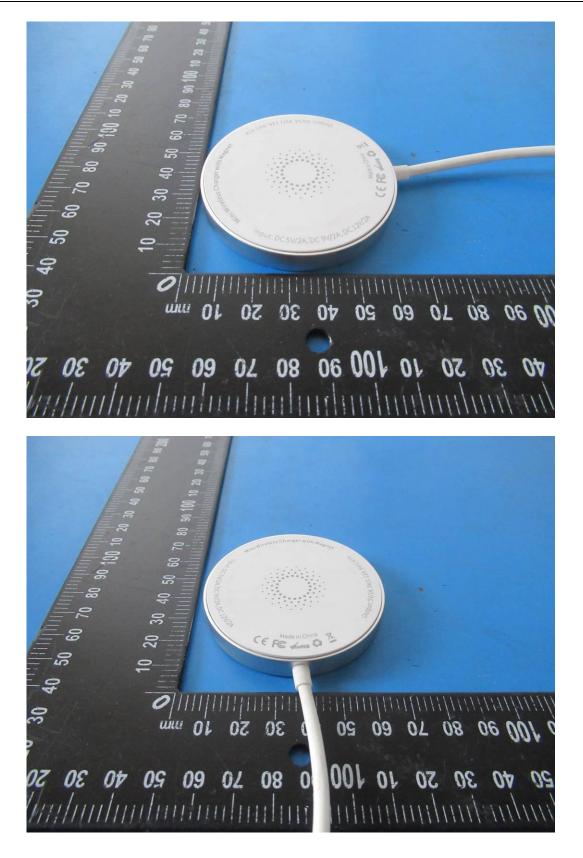


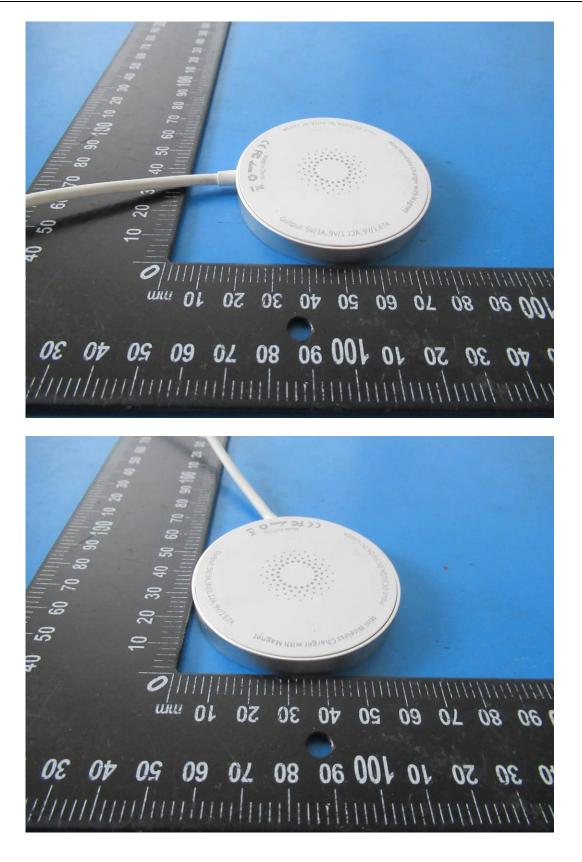
Conducted Emission

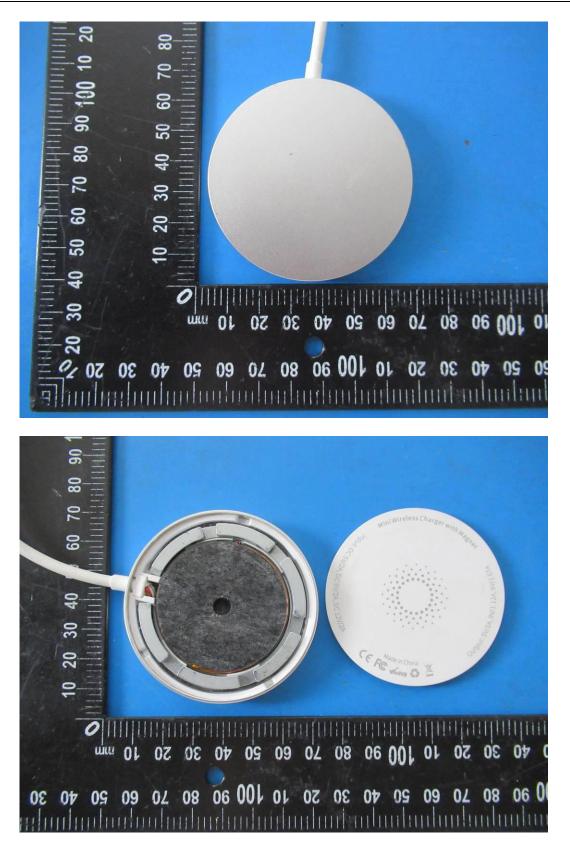


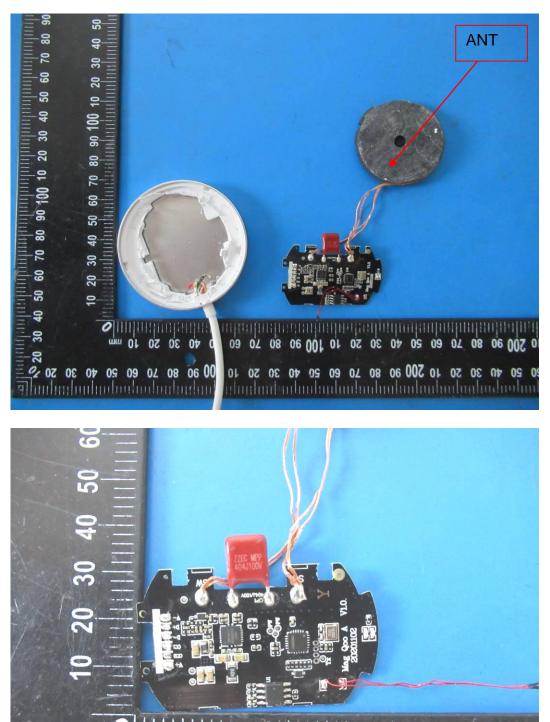
5. Photographs of EUT



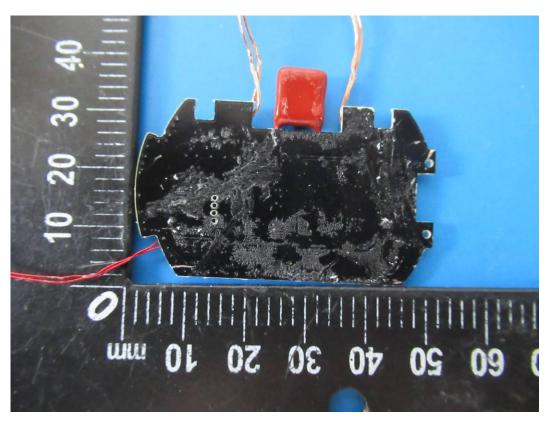








80 20 60 20 40 30 20 10 mm



-----End-----