FCC TEST REPORT

Applicant:	STONKAM CO., LTD
Address of Applicant:	101, Building 6, No.1 Ruihua Road, Tianhe District, Guangzhou Guangdong. P.R. China
Manufacturer:	STONKAM CO., LTD
Address of Manufacturer:	101, Building 6, No.1 Ruihua Road, Tianhe District, Guangzhou Guangdong. P.R. China
Product name:	Ultrasonic Blind Spot Detection System
Model:	BS-A09, BSA09, 6 sensors
FCC ID:	2ATW7-BS-A09
Rating(s):	DC 12V
Trademark:	STONKAM
Standards:	FCC Part18：2020
Date of Receipt:	2021-07-28
Date of Test:	2021-07-28~2021-08-04
Date of Issue:	2021-08-04
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:

Aug. 04, 2021 Chivas Tsang Chivas
Project Engineer
Date *Name/Position* *Signature*

Reviewed by:

Aug. 04, 2021 Victor Meng Victor Meng
Project Manager
Date *Name/Position* *Signature*

Testing Laboratory information:

Testing Laboratory Name ..... :	ITL Co., Ltd
Address ..... :	No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, China.
Testing location ..... :	Same as above
Tel..... :	0086-769-39001678
Fax ..... :	0086-20-62824387
E-mail ..... :	itl@i-testlab.com

Possible test case verdicts:

- test case does not apply to the test object.. : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement . : F (Fail)

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

All models are identical to each other except for the name and whether equipped with slave +12 sensors to sale, all tests were performed on the model BS-A09 as representative.

Test Summary:

The following standards have been applied to ensure the product conforms with the protection requirements of the council directive FCC part 18.

Electromagnetic Emissions				
Test Item	**Test Standard**	**Test Method**	**Class/Severity**	**Result**
Conducted Emission (0.15-30MHz)	FCC part 18.307	FCC part 18.307/ FCC OST/MP-05	/	PASS
Radiated Emission(30-1000MHz)	FCC part 18.305	FCC part 18.307/ FCC OST/MP-05	/	PASS

Test Location:

All the tests were performed in ITL Co., Ltd. Which is located at No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, China.

Tel: 0086-769-39001678, Fax: 0086-20-62824387

No test is subcontracted

Test Facility

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

- **CNAS Lab code: L9342**
- **FCC Designation No.:CN5035**
- **IC Registration NO.: 12593A**
- **NVLAP LAB CODE: 600199-0**

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Section 1 General Information and Equipment Used

1.1 Client Information

Applicant: STONKAM CO., LTD

Address of Applicant: 101, Building 6, No.1 Ruihua Road, Tianhe District, Guangzhou Guangdong. P.R. China

1.2 EUT General and Technical Descriptions

EUT Name: Ultrasonic Blind Spot Detection System

EUT Model: BS-A09

EUT Trademark: STONKAM

Input Voltage: DC 12V

Center Frequency(kHz): 40kHz±1.5kHz

Function: Transmitter/Receive

Output rated: /

Power Cable Description: /

Other Cables Description: /

I/O Ports: /

Function(s) Description: /

Accessories information: /

1.3 Support Equipment(s) and Test Configuration

1.3.1 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state
Monitor	/	/	/	Normal
Camera	/	/	/	Mormal

1.3.2 Working State of EUT

Power Supply of EUT: DC 12V

EUT Status: Normal working

1.3.3 Block Diagram of Test Configuration

/

1.4 Equipment Used during Test

Conducted Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
DGITL-303a	EMI Test receiver	R&S	ESCI	100910	2021.05.11	2022.05.11
DGITL-304	L.I.S.N.#1	R&S	ESH3-Z5	100272	2021.05.11	2022.05.11
DGITL-302	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2020.08.03	2022.08.03
DGITL-316	Pulse Limiter	R&S	ESH3-Z2	100327	2021.05.11	2022.05.11

Radiated Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
DGITL- 301	Semi-Anechoic chamber	ETS•Lindgren	9*6*6	CT000874-1181	2020.08.03	2022.08.03
DGITL- 307	EMI test receiver	R&S	ESVS10	833616/003	2021.05.11	2022.05.11
DGITL- 306	Spectrum Analyzer	Agilent Technologies	N9010A	MY54200334	2021.05.11	2022.05.11
DGITL- 308	Bilog Antenna	ETS•Lindgren	3142E	156975	2020.06.20	2022.06.20
DGITL- 352	Pre Amplifier	Mlnl-CIrcuits	ZFC-1000HX	SN292801110	2021.05.11	2022.05.11

Section 2 Emission Test Results

2.1 Conducted Emission at Mains Terminals, 150 kHz to 30MHz

Test Requirement:	FCC part 18.307/ FCC OST/MP-05
Test Method:	FCC part 18.307/ FCC OST/MP-05
Test Voltage:	DC 12V
Test Date:	2021-07-30
Frequency Range:	9 kHz to 30MHz
Detector:	Peak for pre-scan Quasi-Peak and Average for final test 200 Hz resolution bandwidth between 9 kHz & 150 kHz 9 kHz resolution bandwidth between 150 kHz & 30 MHz
Uncertainty:	U=2uc(V) = 2.85dB (For 9kHz-150kHz) 2Uc（V）= 2.3dB (For 150kHz~30MHz)
Class / Limit:	/

Frequency range MHz	Limits dB (μV) [a]	
	Quasi-peak	Average
0.009 to 0.05	110	---
0.05 to 0.150	90 to 80	---
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

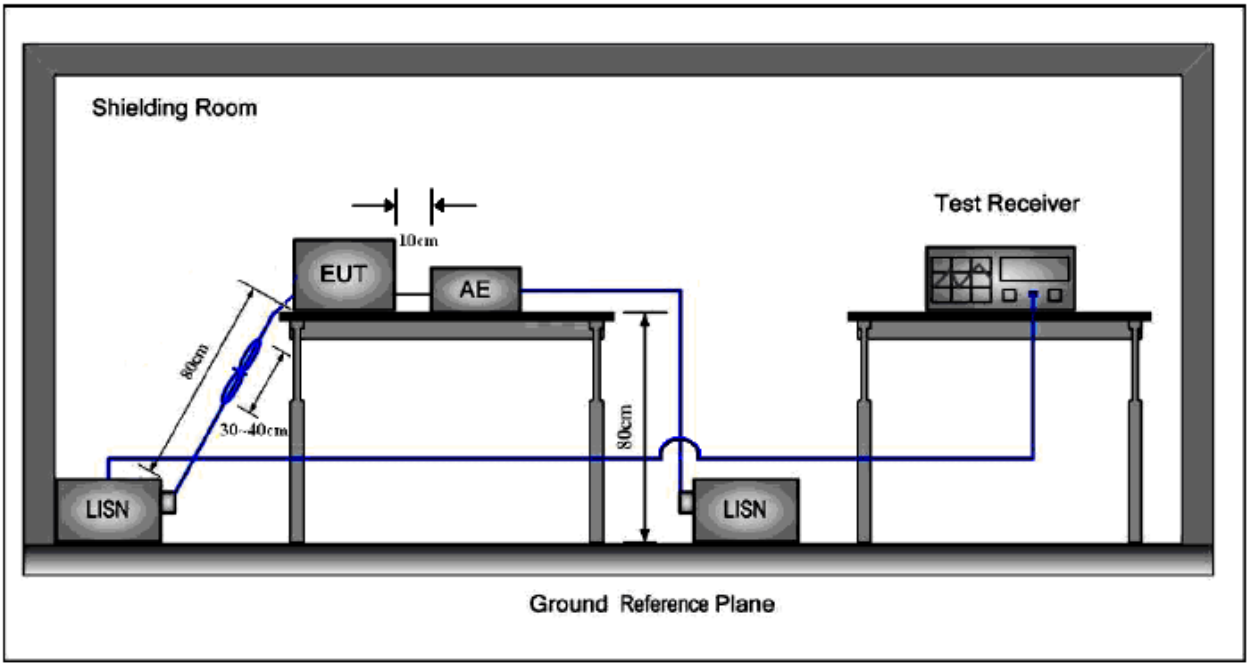
2.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 45 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Normal working.

2.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH+5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

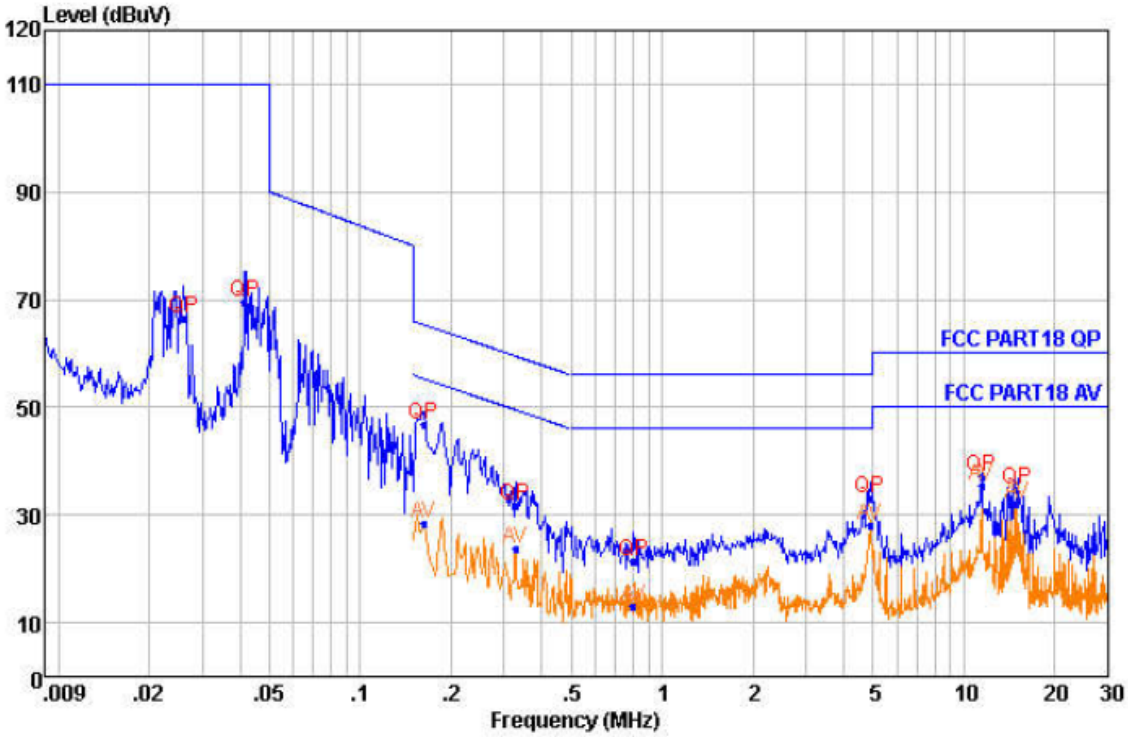
2.1.3 Measurement Data

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.

Live Line:

Peak Scan:

Level (dBμV)



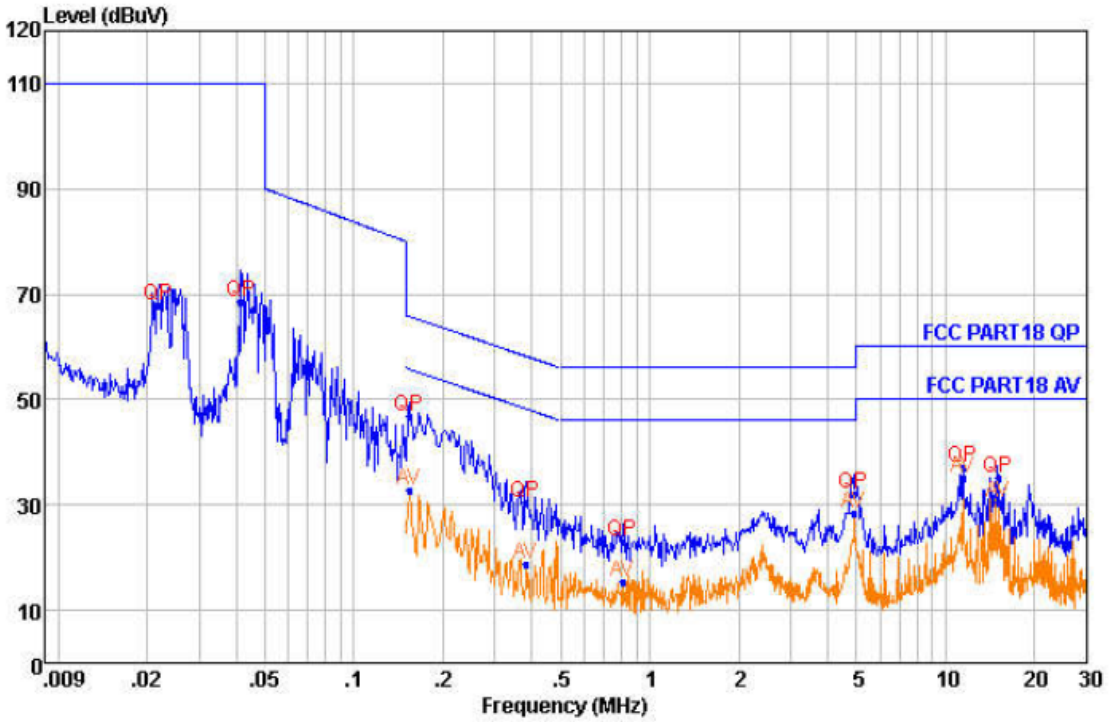
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.026	66.52	QP	9.63	0.14	110.00	-43.48
2	0.041	69.36	QP	9.64	0.15	110.00	-40.64
3	0.162	46.71	QP	9.69	0.20	65.36	-18.65
4	0.162	28.35	Average	9.69	0.20	55.34	-26.99
5	0.326	31.88	QP	9.66	0.24	59.55	-27.67
6	0.326	23.73	Average	9.66	0.24	49.55	-25.82
7	0.803	21.44	QP	9.69	0.29	56.00	-34.56
8	0.803	12.95	Average	9.69	0.29	46.00	-33.05
9	4.887	32.94	QP	9.60	0.40	56.00	-23.06
10	4.887	28.02	Average	9.60	0.40	46.00	-17.98
11	11.410	37.02	QP	9.67	0.45	60.00	-22.98
12	11.410	35.44	Average	9.67	0.45	50.00	-14.56
13	15.000	34.83	QP	9.71	0.46	60.00	-25.17
14	15.000	31.95	Average	9.71	0.46	50.00	-18.05

Neutral Line:

Peak Scan:

Level (dB μ V)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.022	67.92	QP	9.62	0.13	110.00	-42.08
2	0.041	68.69	QP	9.64	0.15	110.00	-41.31
3	0.154	46.77	QP	9.70	0.20	65.80	-19.03
4	0.154	32.76	Average	9.70	0.20	55.78	-23.02
5	0.380	30.53	QP	9.66	0.25	58.27	-27.74
6	0.380	18.81	Average	9.66	0.25	48.27	-29.46
7	0.811	23.18	QP	9.62	0.30	56.00	-32.82
8	0.811	15.27	Average	9.62	0.30	46.00	-30.73
9	4.887	32.18	QP	9.62	0.40	56.00	-23.82
10	4.887	28.53	Average	9.62	0.40	46.00	-17.47
11	11.410	37.06	QP	9.62	0.45	60.00	-22.94
12	11.410	35.19	Average	9.62	0.45	50.00	-14.81
13	15.031	35.09	QP	9.63	0.46	60.00	-24.91
14	15.031	30.51	Average	9.63	0.46	50.00	-19.49

2.2 Radiated Emissions

Test Requirement:	FCC part 18.305/ FCC OST/MP-05
Test Method:	FCC part 18.305/ FCC OST/MP-05
Test Voltage:	DC 12V
Test Date:	2021-08-02
Frequency Range:	30MHz to 1GHz
Measurement Distance	3m
Detector:	Peak for pre-scan Quasi-Peak if maximised peak within 6dB of limit (120 kHz resolution bandwidth)
Uncertainty:	2Uc（V）= 3.35dB
Class / Limit:	/

Frequency range MHz	**Quasi-peak limits** dB (μV/m)
30 to 1000	75.56
Remark: 18.307 (f) For ultrasonic equipment, compliance with the conducted limits shall preclude the need to show compliance with the field strength limits below 30 MHz unless requested by the Commission.	

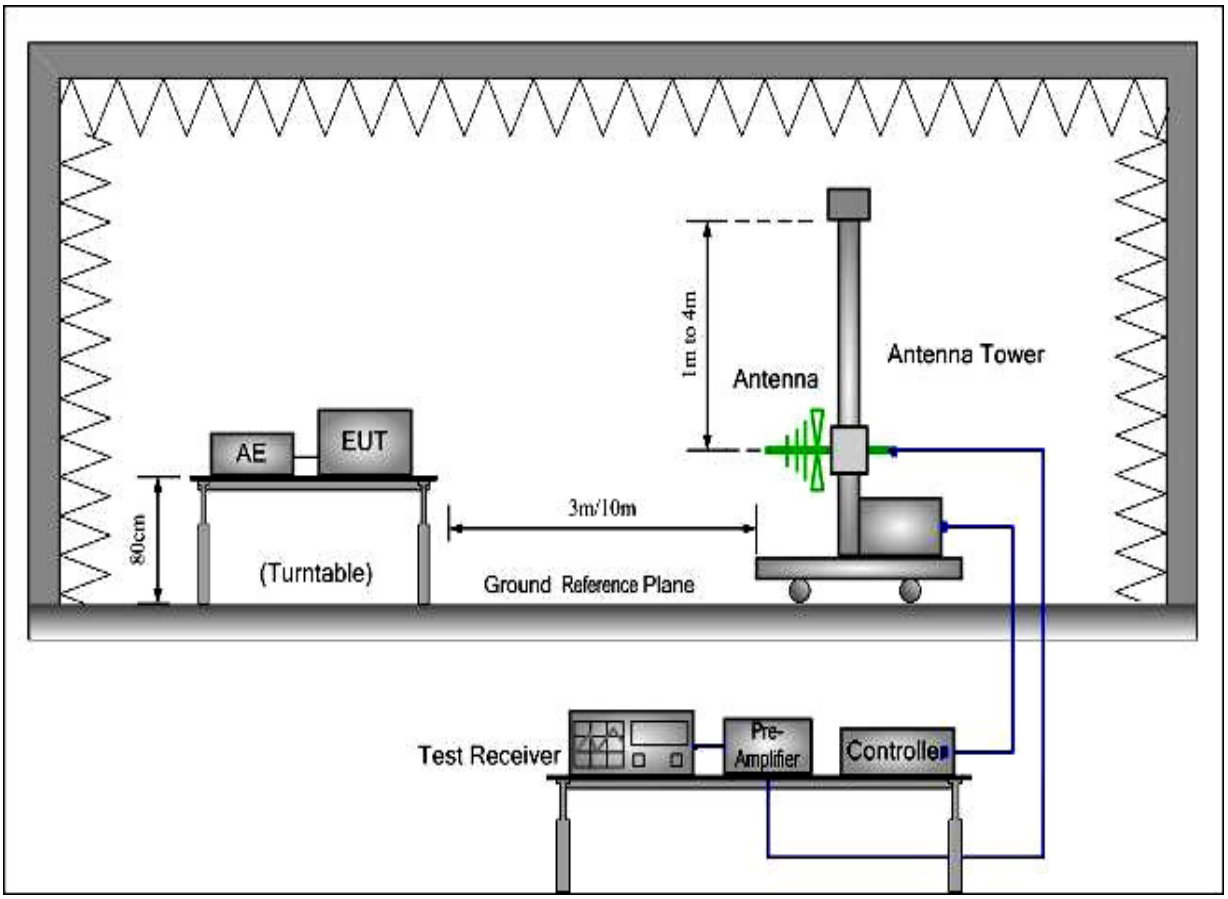
2.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 45 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Normal working.

2.2.2 Test Setup and Procedure



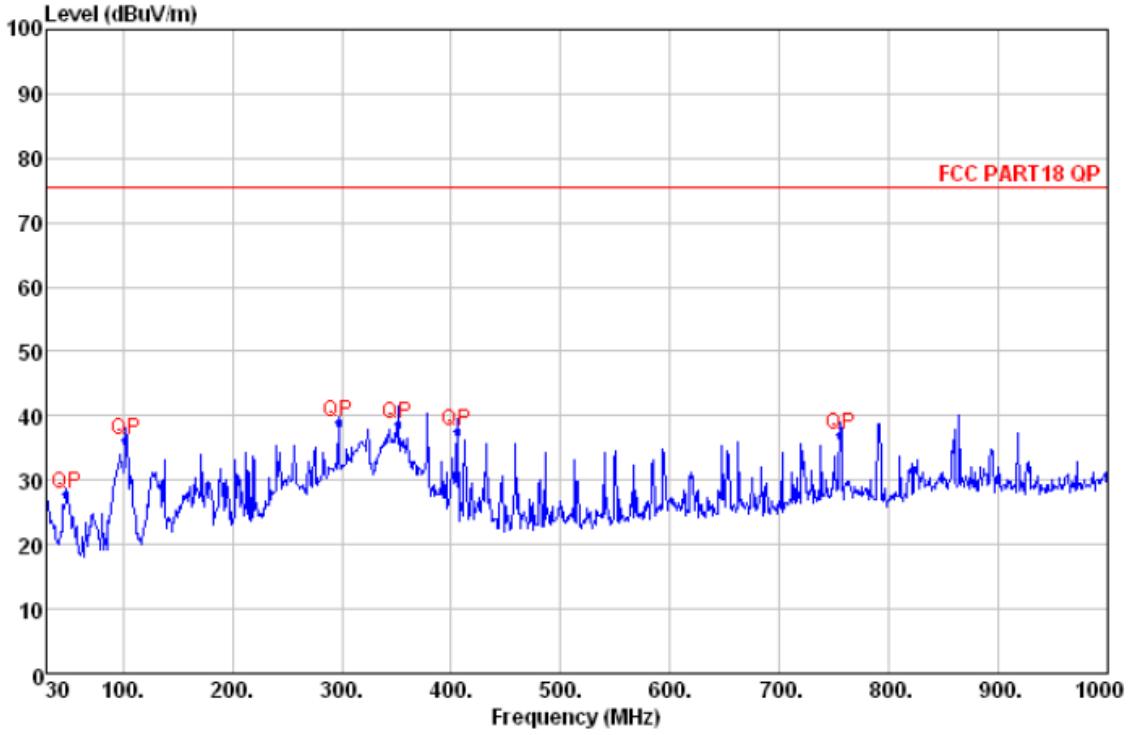
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

2.2.3 Measurement Data

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

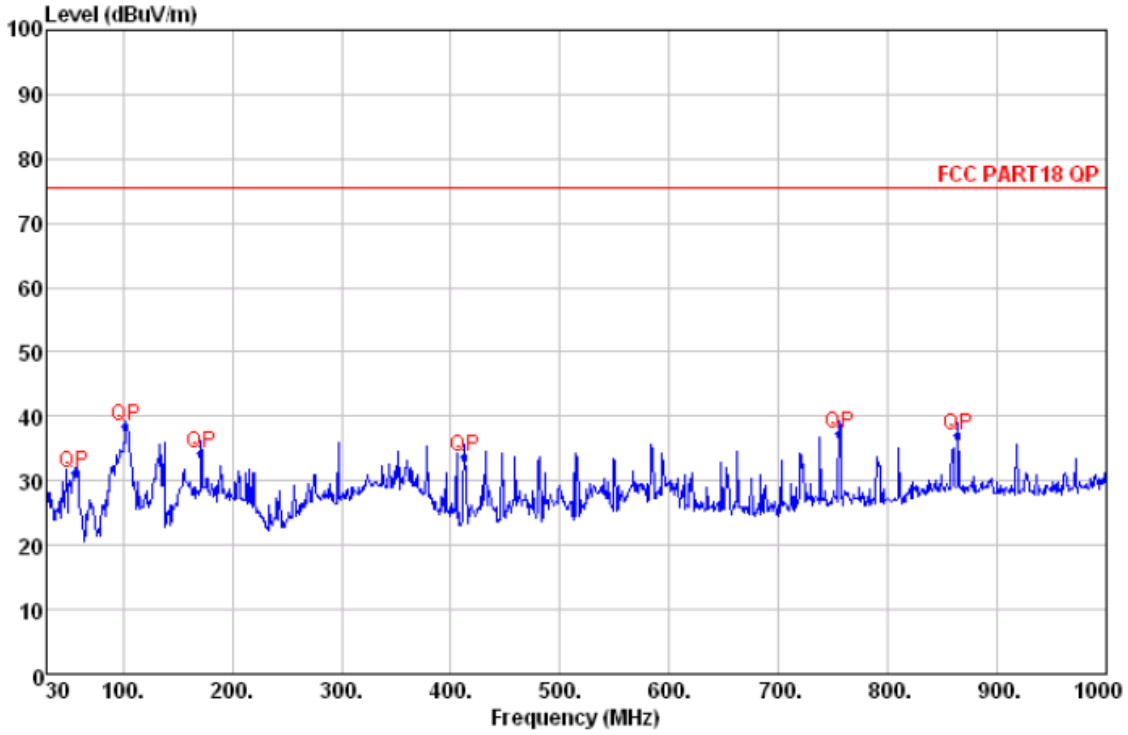
No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	48.430	42.84	12.69	0.79	28.57	27.75	75.56	-47.81	HORIZONTAL	QP
2	102.750	51.10	12.71	1.19	28.74	36.26	75.56	-39.30	HORIZONTAL	QP
3	296.750	48.37	15.96	2.11	27.57	38.87	75.56	-36.69	HORIZONTAL	QP
4	351.070	46.66	17.03	2.28	27.35	38.62	75.56	-36.94	HORIZONTAL	QP
5	405.390	45.01	18.18	2.47	28.18	37.48	75.56	-38.08	HORIZONTAL	QP
6	755.560	38.23	22.74	3.46	27.48	36.95	75.56	-38.61	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/ Phase	Remark
1	56.190	50.30	8.33	0.86	28.34	31.15	75.56	-44.41	VERTICAL	QP
2	102.750	53.21	12.71	1.19	28.74	38.37	75.56	-37.19	VERTICAL	QP
3	171.620	49.12	12.00	1.57	28.38	34.31	75.56	-41.25	VERTICAL	QP
4	413.150	40.97	18.28	2.50	28.15	33.60	75.56	-41.96	VERTICAL	QP
5	755.560	38.53	22.74	3.46	27.48	37.25	75.56	-38.31	VERTICAL	QP
6	864.200	36.01	24.72	3.71	27.37	37.07	75.56	-38.49	VERTICAL	QP

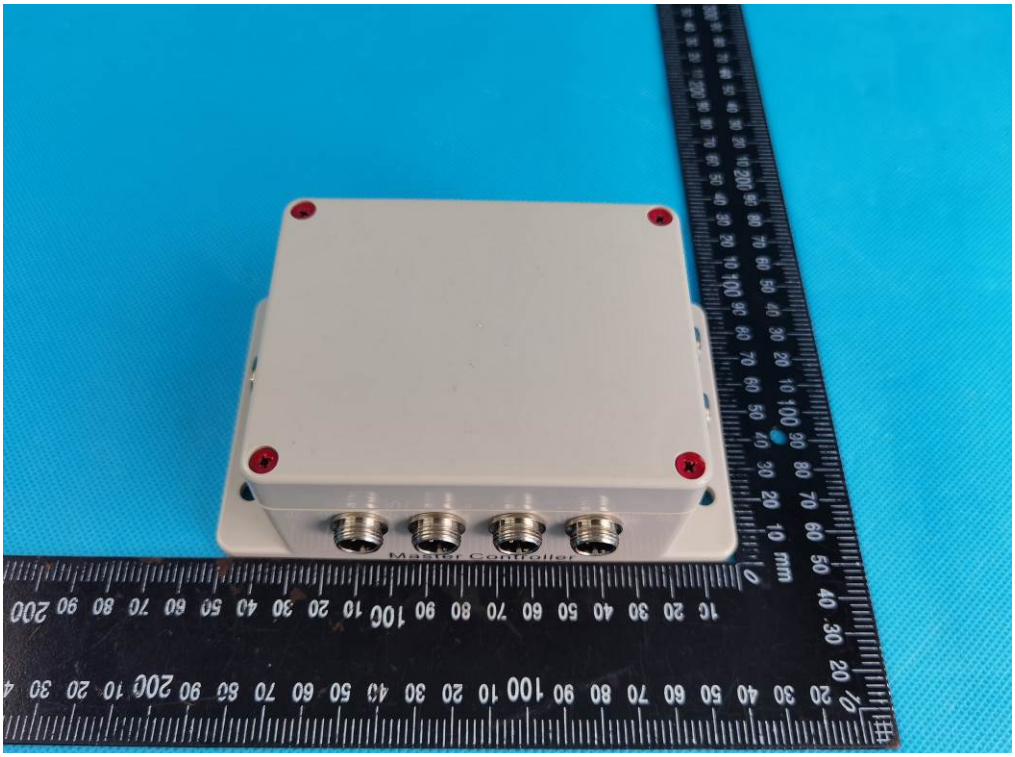
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

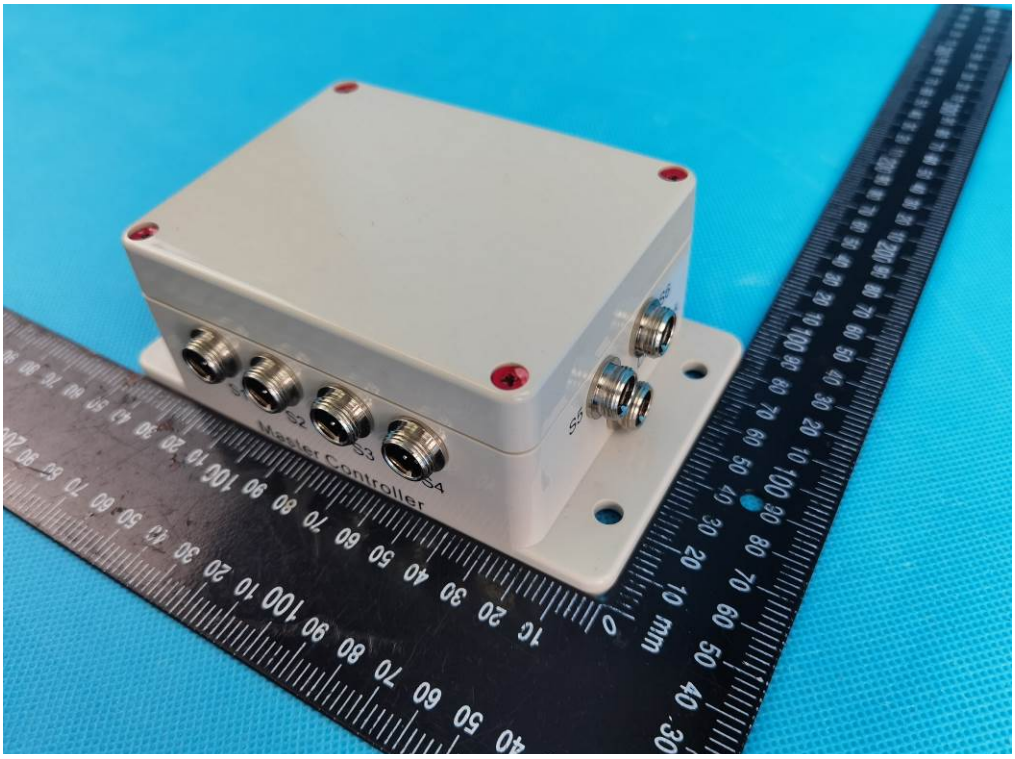
Section 3 Photographs

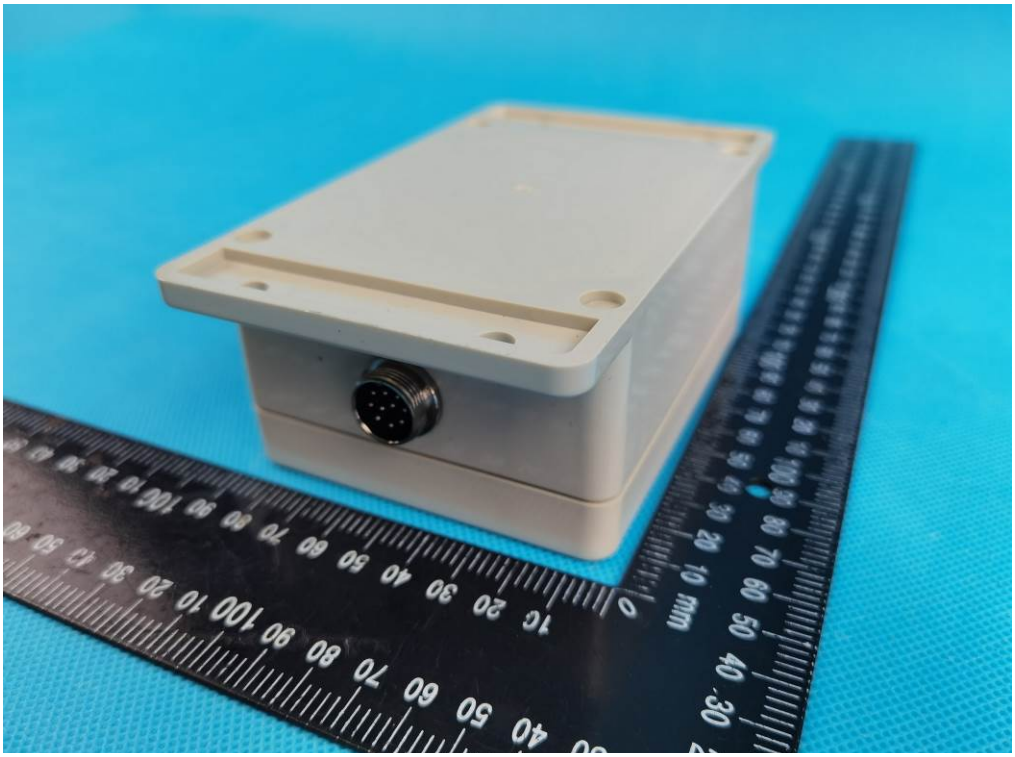
3.1 Conducted Emissions Mains Terminals Test Setup

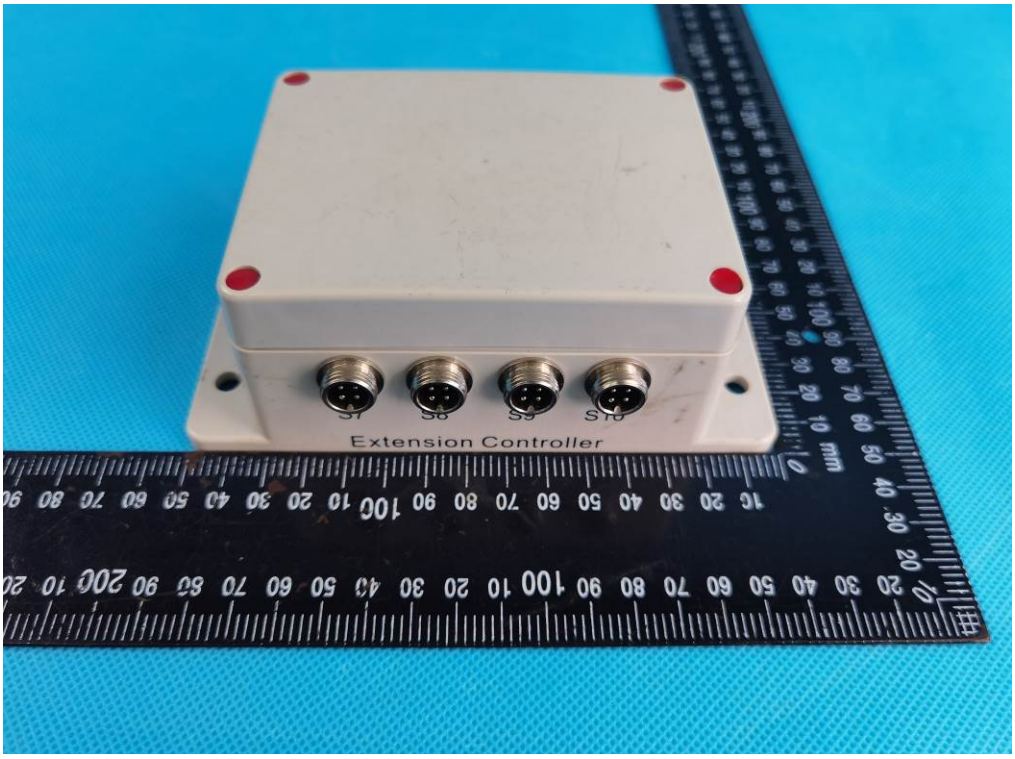
3.2 Radiated Emissions, 30MHz to 1GHz Test Setup

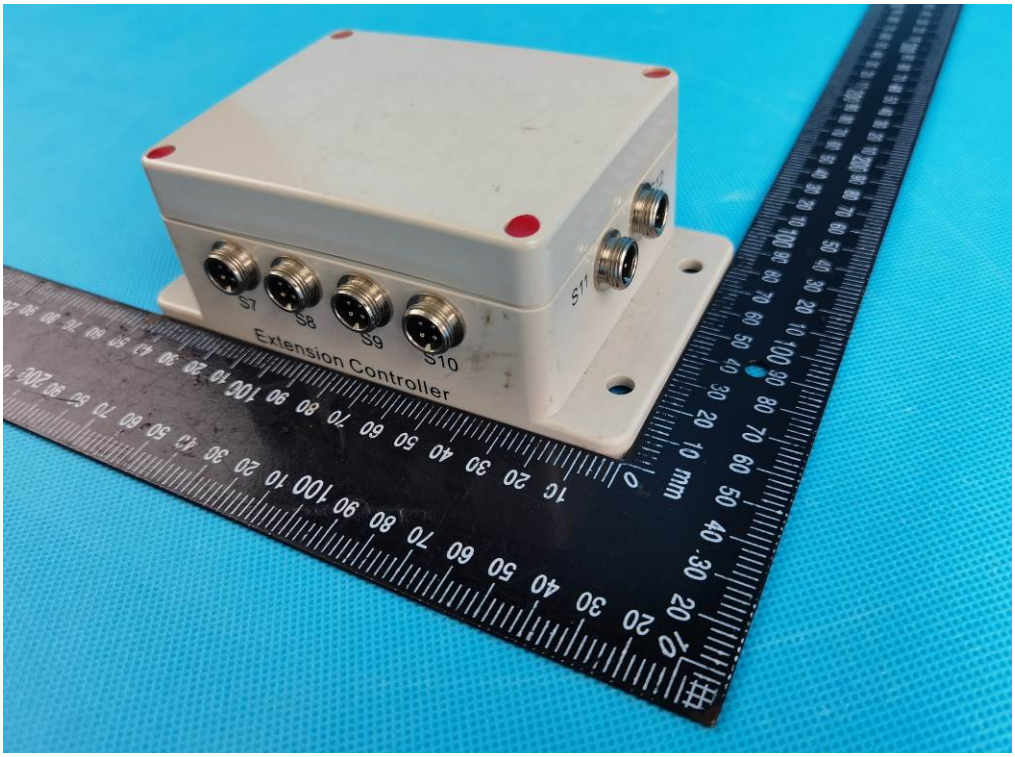
3.3 EUT Constructional Details

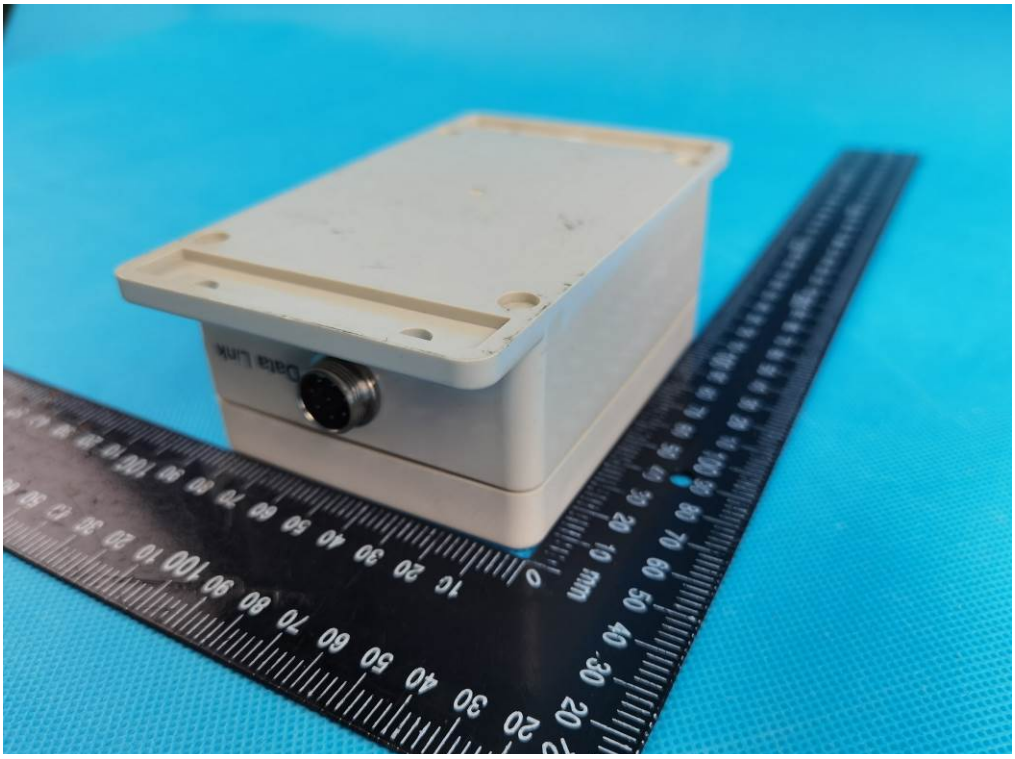


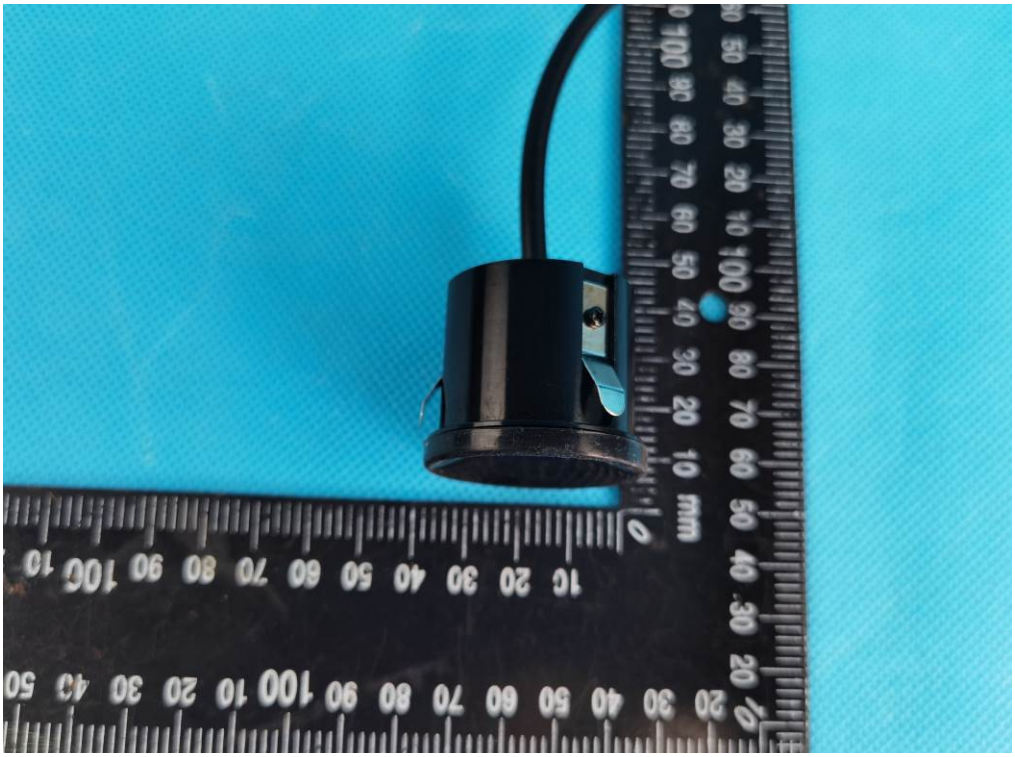


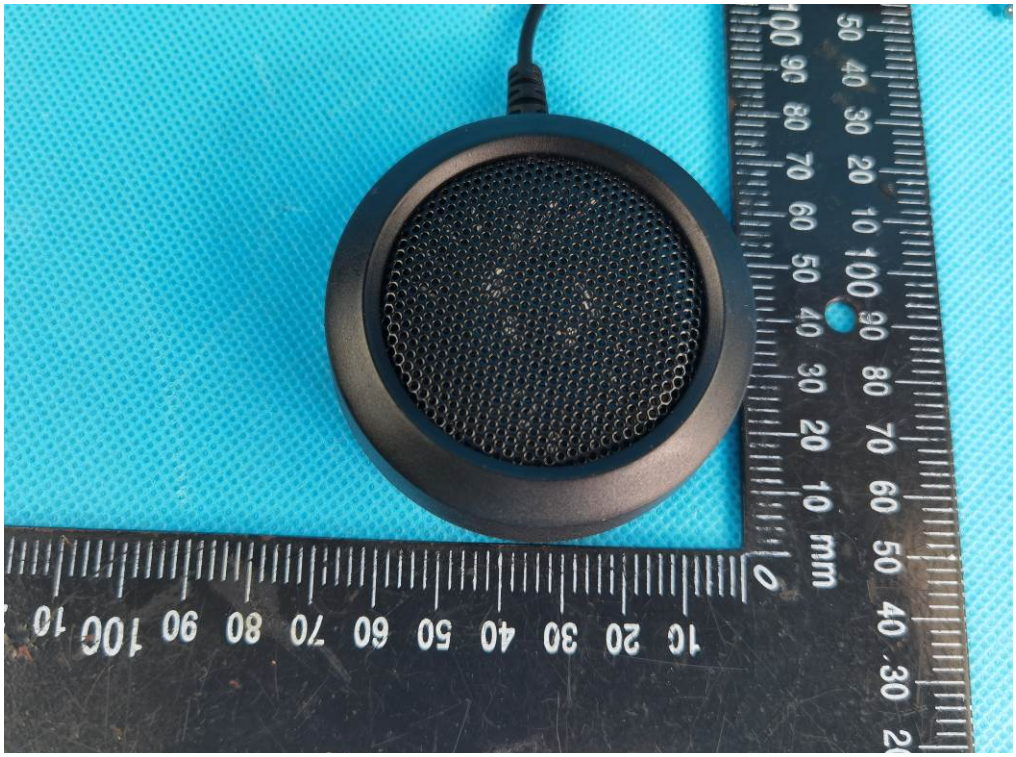


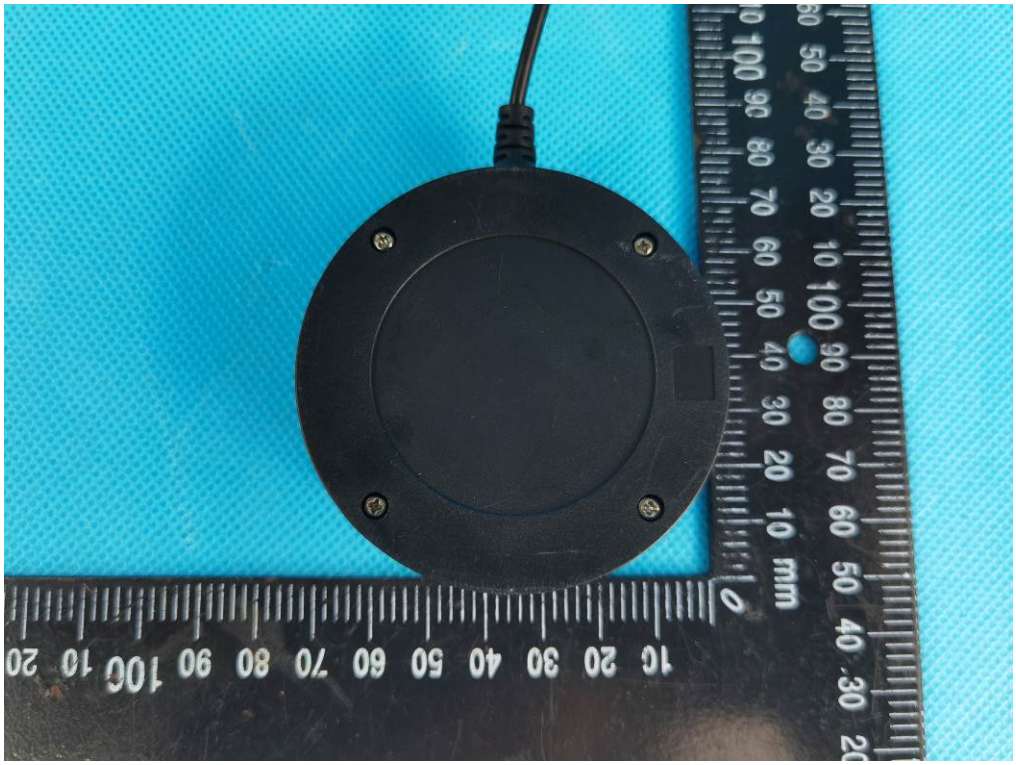












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