



Shenzhen Huaxia Testing Technology Co., Ltd.

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TEST REPORT

Report No.: CQASZ20220901709E
Applicant: Shenzhen Inkbird Technology Co., Ltd.
Address of Applicant: Room 1803, Guowei Building, NO.68 Guowei Road, Xianhu Community, Liantang, Luohu District, Shenzhen, China
Equipment Under Test (EUT):
EUT Name: WATER LEAK SENSOR
Model No.: IWS-WD1, IWS-WD2, IWS-WD3, IWS-WD4, IWS-WD5
Test Model No.: IWS-WD1
Brand Name: INKBIRD
FCC ID: 2AYZD-IWSWD1
Standards: 47 CFR Part 15, Subpart B, Class B
Date of Receipt: 2022-09-29
Date of Test: 2022-09-29 to 2022-10-13
Date of Issue: 2022-11-14
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



1 Version

Revision History of Report

Report No.	Version	Description	Issue Date
CQASZ20220901709E	Rev.01	Initial report	2022-11-14

2 Test Summary

Test Item	Test Requirement	Test method	Result
Radiated Emission	47 CFR Part 15B	ANSI C63.4-2014	PASS
Conducted Emission (150kHz to 30MHz)	47 CFR Part 15B	ANSI C63.4-2014	N/A

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower

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4 General Information

4.1 Client Information

Applicant:	Shenzhen Inkbird Technology Co., Ltd.
Address of Applicant:	Room 1803, Guowei Building, NO.68 Guowei Road, Xianhu Community, Liantang, Luohu District, Shenzhen, China
Manufacturer:	Shenzhen Inkbird Technology Co., Ltd.
Address of Manufacturer:	Room 1803, Guowei Building, NO.68 Guowei Road, Xianhu Community, Liantang, Luohu District, Shenzhen, China
Factory:	INKBIRD TECH.C.L.
Address of Factory:	6th Floor, Building 713, Pengji Liantang Industrial Area, NO.2 Pengxing Road, Luohu District, Shenzhen, China

4.2 General Description of EUT

Product Name:	WATER LEAK SENSOR
Model No.:	IWS-WD1, IWS-WD2, IWS-WD3, IWS-WD4, IWS-WD5
Test Model No.:	IWS-WD1
Trade Mark:	INKBIRD
EUT Power Supply:	Dry battery:2*AAA DC 3V

4.3 Product Specification subjective to this standard

Test Mode:	
Standby mode:	Keep the EUT in Standby mode

4.4 Test Environment and Mode

Operating Environment:	
Radiated Emission	
Temperature:	25.5 °C
Humidity:	53 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emission	
Temperature:	25.5 °C
Humidity:	55% RH
Atmospheric Pressure:	1009 mbar

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

4.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

No tests were sub-contracted.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Conduction emission	3.74dB (9kHz to 150kHz)
		3.34dB (150kHz to 30MHz)
2	Radiated emission	5.12dB (Below 1GHz)
		4.60dB (Above 1GHz)
3	Temperature	0.8°C
4	Humidity	2.0%

5 Equipment List

Conducted Emissions (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver	R&S	ESPI3	CQA-013	2022/9/9	2023/9/8
LISN	R&S	ENV216	CQA-003	2022/9/9	2023/9/8
Coaxial cable (9kHz~300MHz)	CQA	N/A	C021	2022/9/9	2023/9/8

Radiated Emissions					
Equipment	Manufacturer	Model No	Inventory No.	Cal Date	Cal Due Date
Loop Antenna	SCHWARZBECK	FMZB 1516	CQA-060	2021/9/16	2024/9/15
Horn Antenna	R&S	BBHA 9170	CQA-088	2021/9/16	2024/9/15
Horn Antenna	R&S	HF906	CQA-012	2021/9/16	2024/9/15
Bilog Antenna	R&S	HL562	CQA-011	2021/9/16	2024/9/15
EMI Test Receiver	R&S	ESR7	CQA-005	2022/9/9	2023/9/8
Spectrum analyzer	R&S	FSU26	CQA-038	2022/9/9	2023/9/8
Preamplifier	MITEQ	AMF-6D- 02001800- 29-20P	CQA-036	2022/9/9	2023/9/8
Coaxial cable (1GHz~40GHz)	CQA	N/A	C007	2022/9/9	2023/9/8
Coaxial cable (9kHz~1GHz)	CQA	N/A	C013	2022/9/9	2023/9/8

6 Test results and Measurement Data

6.1 Radiated Emission

Test Requirement: 47 CFR Part 15B

Test Method: ANSI C63.4

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value

Limit:

Frequency	Limit (dB μ V/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Procedure:

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber (Above 18GHz the distance is 1 meter).
- h. Repeat above procedures until all frequencies measured was complete.

Test Setup:

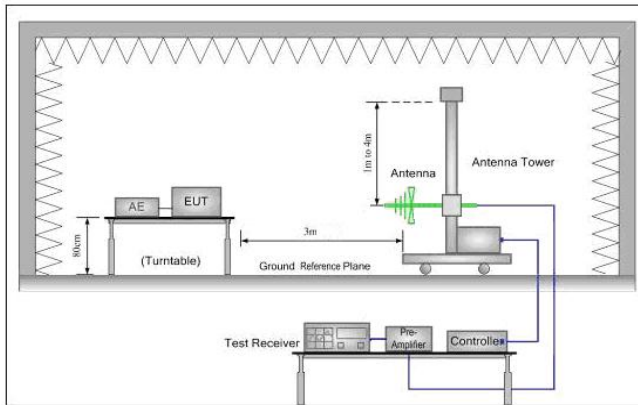


Figure 1. 30MHz to 1GHz

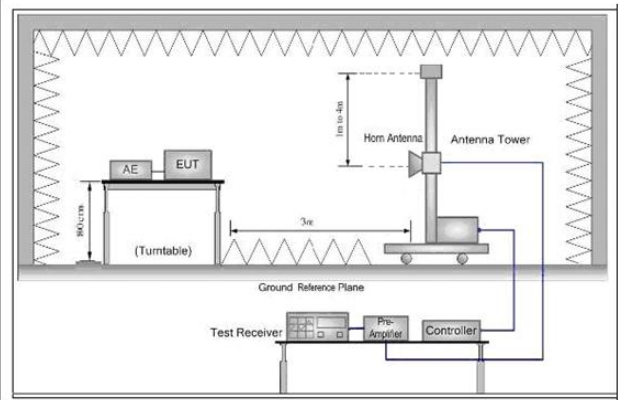


Figure 2. Above 1 GHz

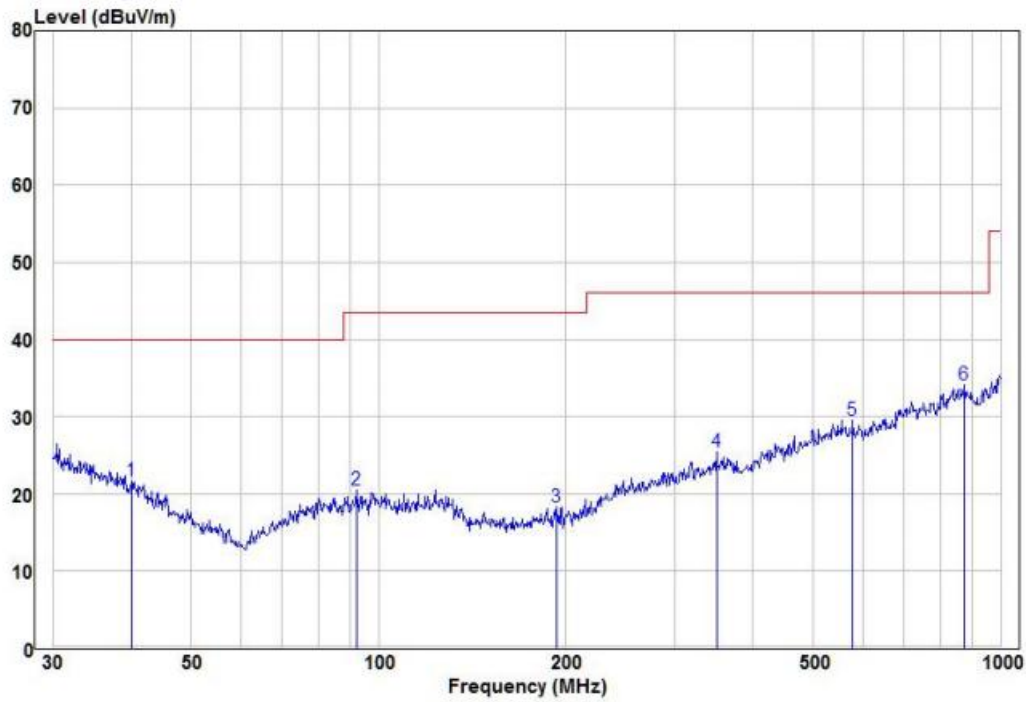
Instruments Used: Refer to section 5 for details

Test Mode: Standby mode

Test Results: Pass

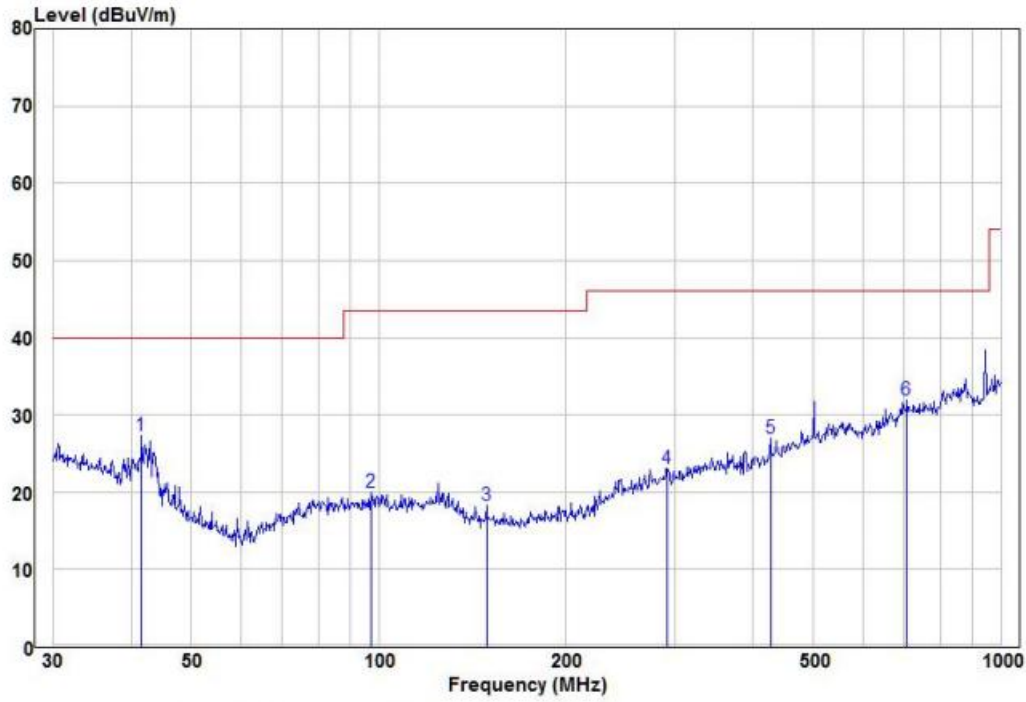
Below 1GHz

Horizontal



	Read Freq	Read Level	Factor	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	39.99	8.88	12.80	21.68	40.00	-18.32	Peak	HORIZONTAL
2	92.14	10.32	10.15	20.47	43.50	-23.03	Peak	HORIZONTAL
3	193.09	10.17	8.12	18.29	43.50	-25.21	Peak	HORIZONTAL
4	349.25	10.53	14.93	25.46	46.00	-20.54	Peak	HORIZONTAL
5	578.67	10.86	18.72	29.58	46.00	-16.42	Peak	HORIZONTAL
6 pp	875.25	10.15	23.95	34.10	46.00	-11.90	Peak	HORIZONTAL

Vertical



	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB			
1	pp	41.57	15.18	12.07	27.25	40.00	-12.75	Peak	VERTICAL
2		97.11	9.55	10.47	20.02	43.50	-23.48	Peak	VERTICAL
3		148.96	9.80	8.43	18.23	43.50	-25.27	Peak	VERTICAL
4		291.04	9.60	13.43	23.03	46.00	-22.97	Peak	VERTICAL
5		426.52	10.91	15.99	26.90	46.00	-19.10	Peak	VERTICAL
6		706.70	10.86	21.13	31.99	46.00	-14.01	Peak	VERTICAL

Above 1GHz

Class B: Above 1GHz: at 3M							
Ant.Pol.	Frequency	Measurement (dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
	MHz	PK	AV	PK	AV	PK	AV
Horizontal	1722.29	51.05	37.42	74	54	-22.95	-16.58
	2071.42	53.34	35.57	74	54	-20.66	-18.43
	4349.50	55.72	37.41	74	54	-18.28	-16.59
Vertical	1650.73	50.34	36.05	74	54	-23.66	-17.95
	2367.12	55.05	36.62	74	54	-18.95	-17.38
	4847.28	55.03	39.93	74	54	-18.97	-14.07

Remark:

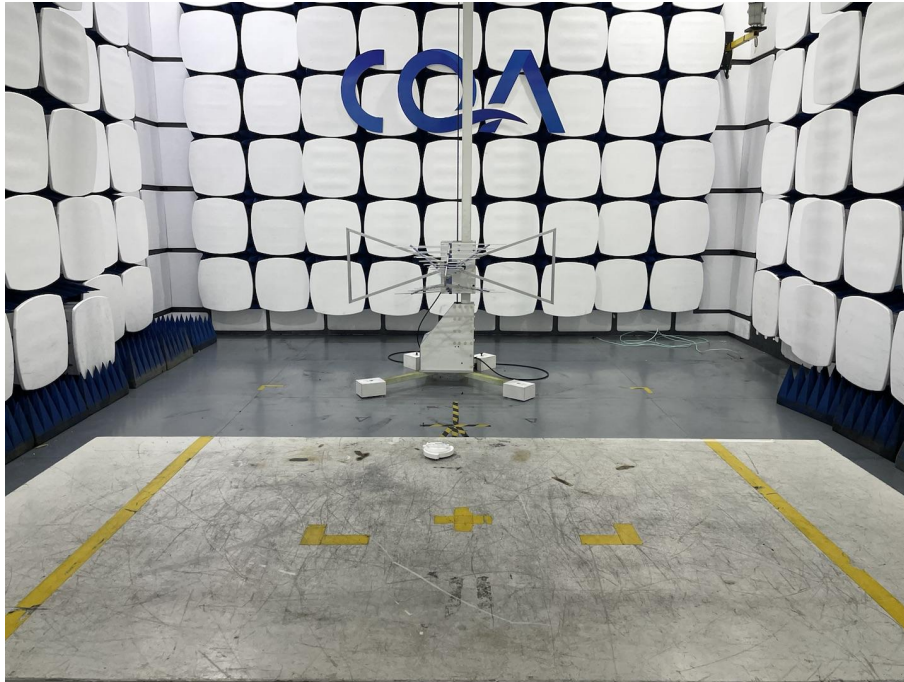
- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

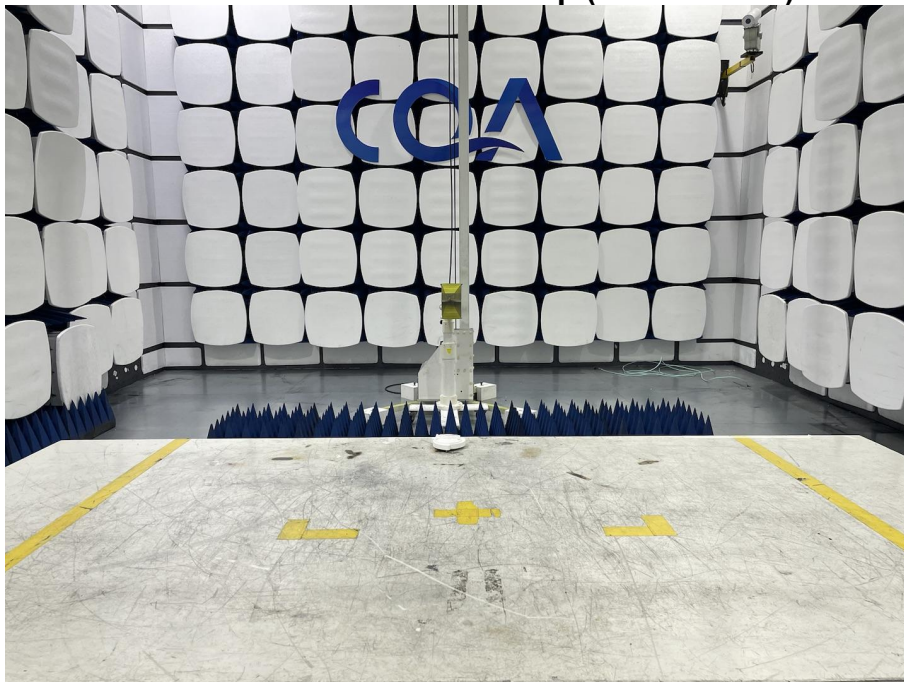
Correct Factor = Pre-amplifier Factor - Antenna Factor - Cable Factor .

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

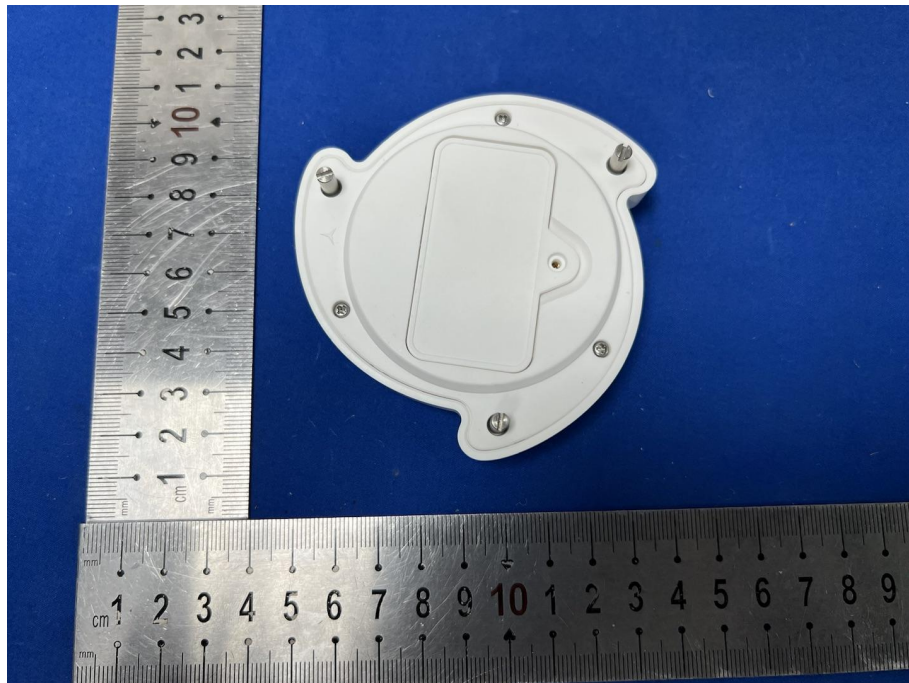
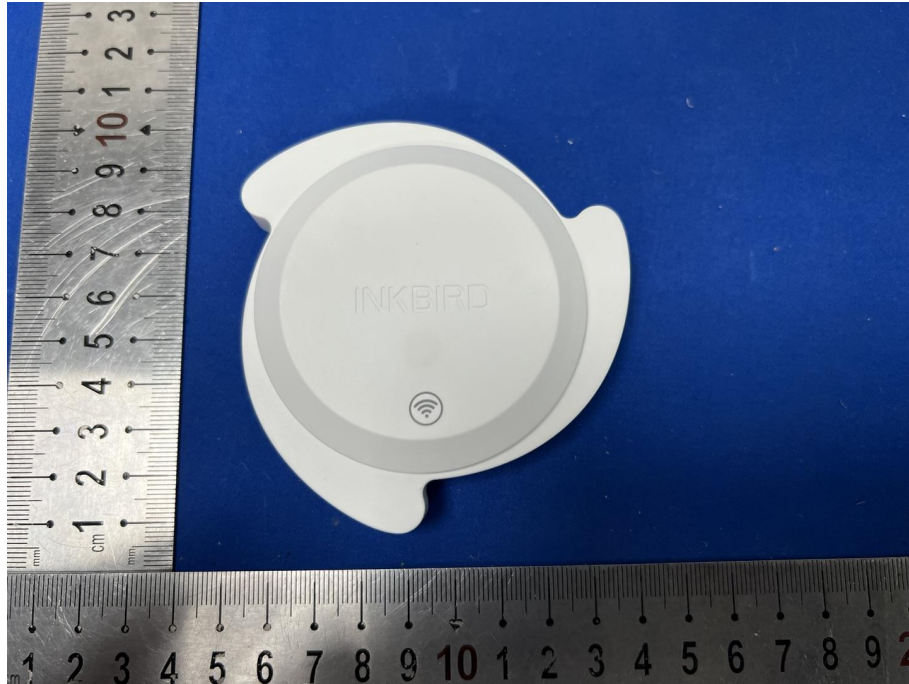
Radiated emission Test Setup (30MHz~1GHz)

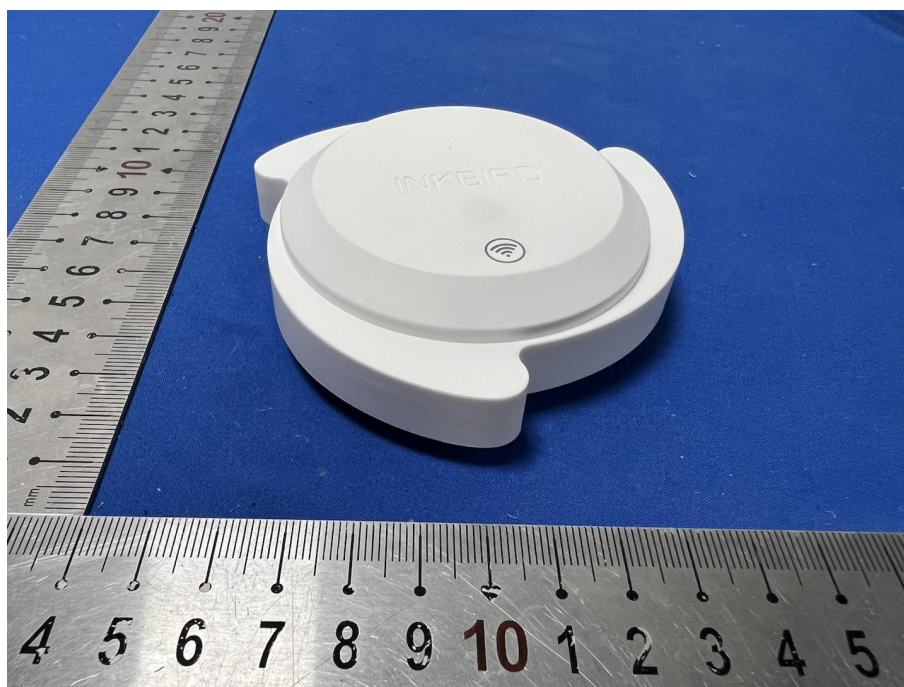


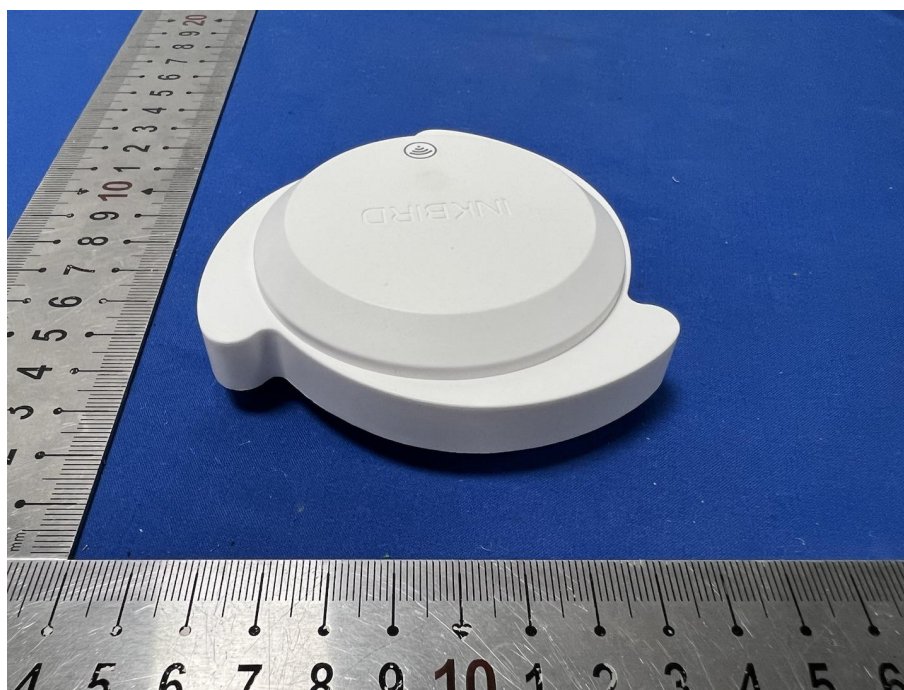
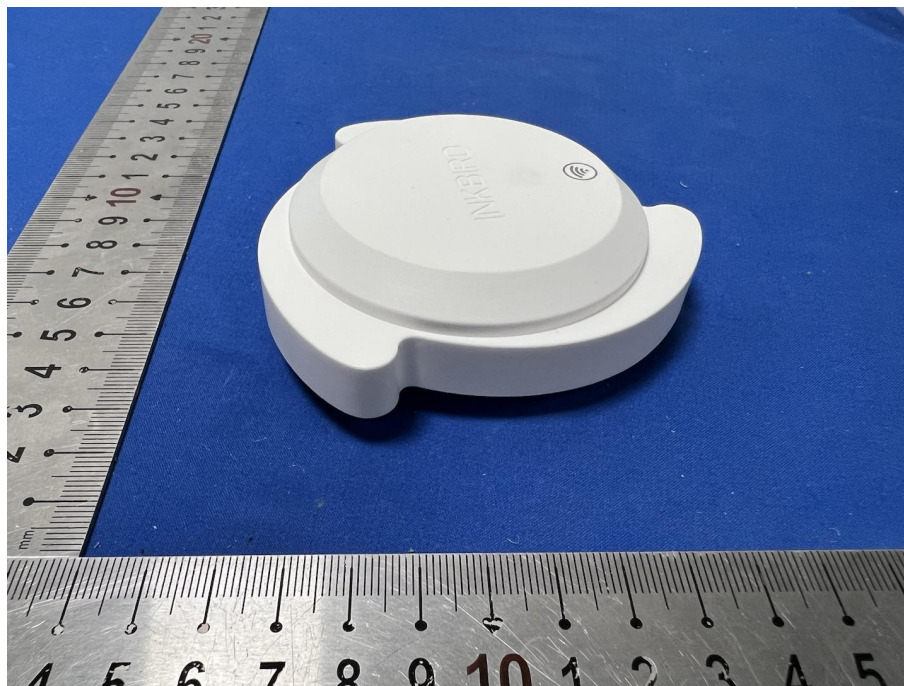
Radiated emission Test Setup (Above 1GHz)

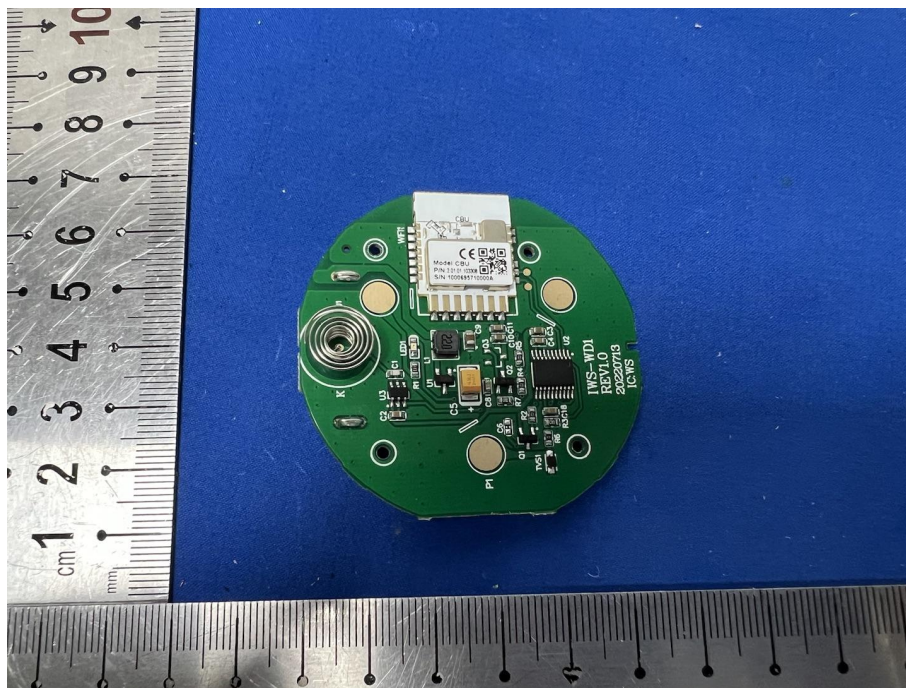
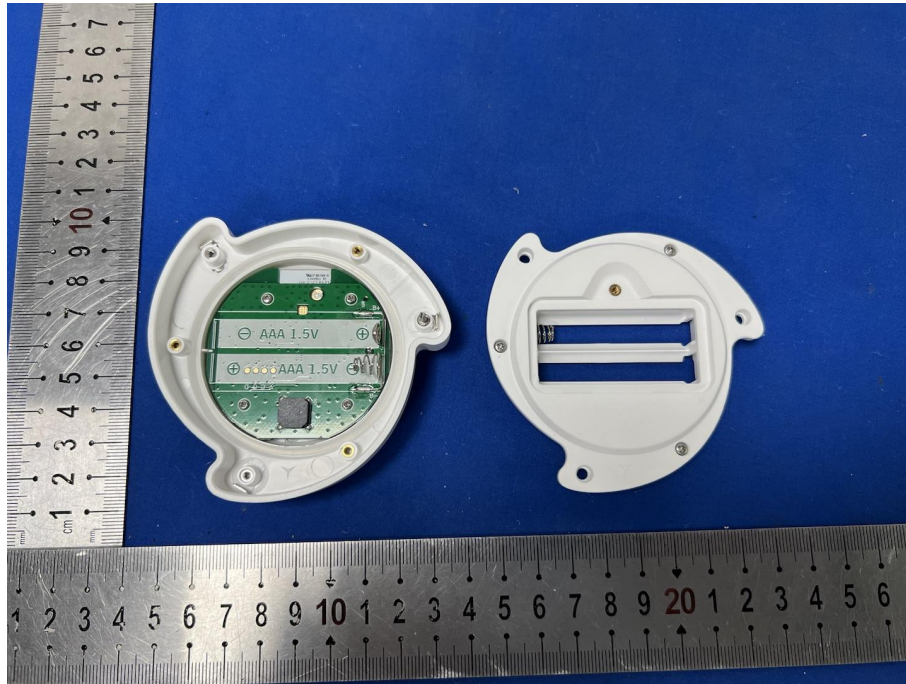


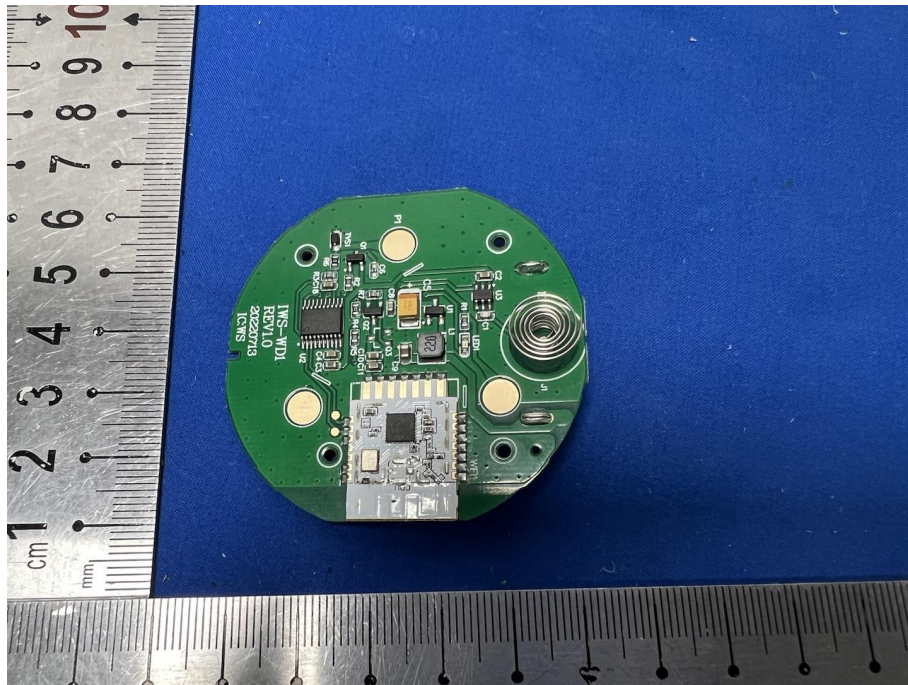
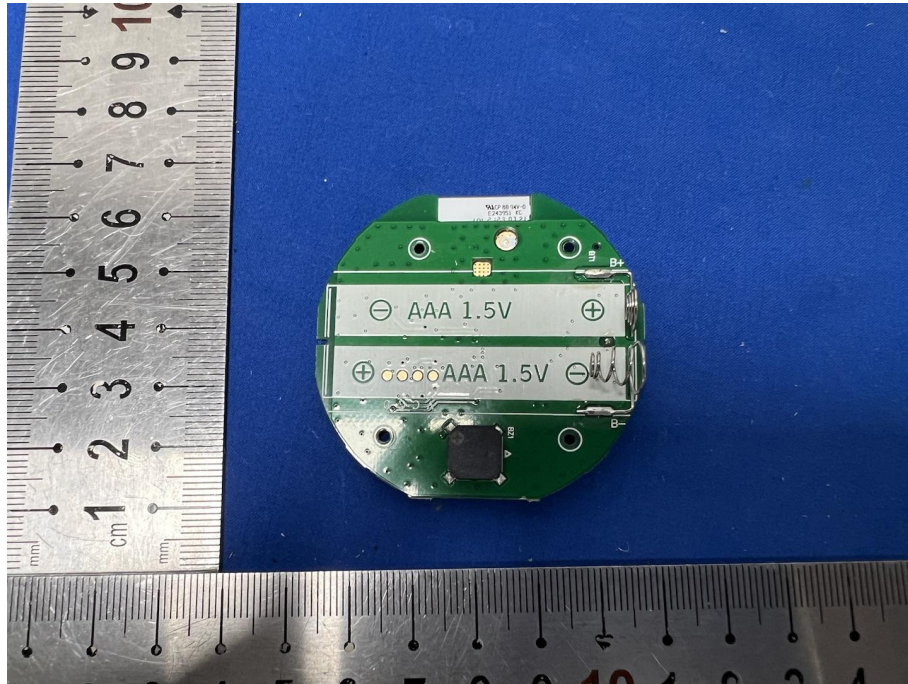
APPENDIX 2 PHOTOGRAPHS OF EUT











*** END OF REPORT ***