

TEST REPORT

Applicant: Shenzhen Sulang Technology Co.,Ltd

Address of Applicant: Area C, 18th Floor, Building 12, Lehui Science and Technology Innovation Center, No. 489 Jihua Road, Bantian Community, Longgang District, Shenzhen City,China.

Manufacturer/Factory: Shenzhen Sulang Technology Co.,Ltd

Address of Manufacturer/Factory: Area C, 18th Floor, Building 12, Lehui Science and Technology Innovation Center, No. 489 Jihua Road, Bantian Community, Longgang District, Shenzhen City,China.

Equipment Under Test (EUT)

Product Name: Digital microscope

Model No.: inskam362, inskam362B, inskam362C, inskam362D, inskam362E

Applicable standards: EN 55032:2015+A1:2020
EN 55035:2017+A11:2020

Date of sample receipt: October 29, 2024

Date of Test: October 29- November 01, 2024

Date of report issued: November 04, 2024

Test Result : PASS *

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

Authorized Signature:



Robinson Luo

Laboratory Manager

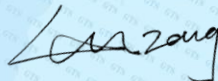
This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.



2 Version

Version No.	Date	Description
00	November 04, 2024	Original

Prepared By:

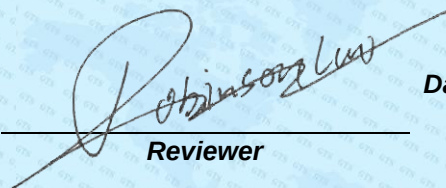


Date:

November 04, 2024

Project Engineer

Check By:



Date:

November 04, 2024

Reviewer

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4 Test Summary

Test item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (up to 1G)	EN 55032	EN 55032	Class B	Pass
Radiated Emission (Above 1G) #	EN 55032	EN 55032	Class B	N/A
Conducted Emission	EN 55032	EN 55032	Class B	N/A
Asymmetric mode conducted emissions	EN 55032	EN 55032	Class B	N/A
Disturbance voltage at antenna terminal	EN 55032	EN 55032	Class B	N/A
Harmonic Emission	EN IEC 61000-3-2	EN IEC 61000-3-2	Class A	N/A
Flicker Emission	EN 61000-3-3	EN 61000-3-3	Clause 5	N/A
Electrostatic discharge	EN 55035	EN 61000-4-2	Contact ± 4 kV Air $\pm 2, \pm 4, \pm 8$ kV	Pass
Continuous RF electromagnetic field disturbances	EN 55035	EN 61000-4-3	3V/m 80%, 1kHz, AM	Pass
Electrical fast transients	EN 55035	EN 61000-4-4	± 1.0 kV for AC port; ± 0.5 kV for signal ports	N/A
Surges	EN 55035	EN 61000-4-5	± 1 kV D.M. for AC port; ± 1 kV for signal port	N/A
Continuous induced RF disturbance	EN 55035	EN 61000-4-6	0.15MHz to 10MHz:3V 10MHz to 30MHz:3V to 1V 30MHz to 80MHz:1V 80%, 1kHz Amp. Mod.	N/A
Voltage dips and Voltage interruptions	EN 55035	EN 61000-4-11	0 % U_T^* for 0.5per 0 % U_T^* for 250per 70 % U_T^* for 25per	N/A

Remark:

1. Pass: Comply with the essential requirements in the standard.
2. N/A: Not applicable
3. U_T : the nominal supply voltage; D.M: Differential Mode; C.M: Common Mode.
4. # Refer to EN55032 clause 8 conditional testing procedure :

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108$ MHz	1GHz
108 MHz $< F_x \leq 500$ MHz	2GHz
500 MHz $< F_x \leq 1$ GHz	5GHz
$F_x > 1$ GHz	5 x F_x up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.	
NOTE 2 F_x is defined in 3.1.18.	
NOTE 3 For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.	

The highest frequency of the internal sources of the EUT is less than 108MHz.

5 General Information

5.1 General Description of EUT

Product Name:	Digital microscope
Model No.:	inskam362, inskam362B, inskam362C, inskam362D, inskam362E
Test Model No.:	inskam362
Remark:	All above models are identical in the same PCB layout, interior structure and electrical circuits. The difference is model name for commercial purpose.
Power Supply:	USBinput: DC5V Li-battery: DC 3.7V, 600mAh

Remark: The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.

5.2 Test mode and Test Voltage

Test mode:	
Operation mode	Keep the EUT in the operation status.
PC mode	Keep the EUT in the operation status by PC.
Charge mode	Keep the EUT charging.
Test voltage:	
USB input: DC5V & battery: DC 3.7V	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Notebook PC	E40-80	N/A
GTS	Accumulator	DC 5V	N/A

5.4 Monitoring of EUT for All Immunity Test

Visual:	Monitor the display and lights of the EUT.
Audio:	N/A

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Test Facility

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

- **FCC —Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen 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 files.

- **ISED —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.8 Test Location

All test items were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480; Fax: 075527798960

6 Test Instruments List

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Jun. 22, 2024	Jun. 21, 2027
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Apr. 11, 2024	Apr. 10, 2025
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	Mar. 19, 2023	Mar. 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	Apr. 17, 2023	Apr. 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	Apr. 11, 2024	Apr. 10, 2025
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	Apr. 11, 2024	Apr. 10, 2025
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	Apr. 11, 2024	Apr. 10, 2025
11	Horn Antenna (15GH-40GHz)	SCHWARZBECK	01296	GTS691	Mar. 07, 2024	Mar. 06, 2025
12	FSV-Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	Mar. 12, 2024	Mar. 11, 2025
13	Amplifier	/	LNA-1000-30S	GTS650	Apr. 11, 2024	Apr. 10, 2025
14	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov. 07, 2024
15	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	Apr. 11, 2024	Apr. 10, 2025
16	Thermo meter	JINCHUANG	GSP-8A	GTS643	Apr. 18, 2024	Apr. 17, 2025
17	RE cable 1	GTS	N/A	GTS675	Jul. 02, 2024	Jul. 01, 2025
18	RE cable 2	GTS	N/A	GTS676	Jul. 02, 2024	Jul. 01, 2025
19	RE cable 3	GTS	N/A	GTS677	Jul. 02, 2024	Jul. 01, 2025
20	RE cable 4	GTS	N/A	GTS678	Jul. 02, 2024	Jul. 01, 2025
21	RE cable 5	GTS	N/A	GTS679	Jul. 02, 2024	Jul. 01, 2025
22	RE cable 6	GTS	N/A	GTS680	Jul. 02, 2024	Jul. 01, 2025
23	RE cable 7	GTS	N/A	GTS681	Jul. 05, 2024	Jul. 04, 2025
24	RE cable 8	GTS	N/A	GTS682	Jul. 05, 2024	Jul. 04, 2025

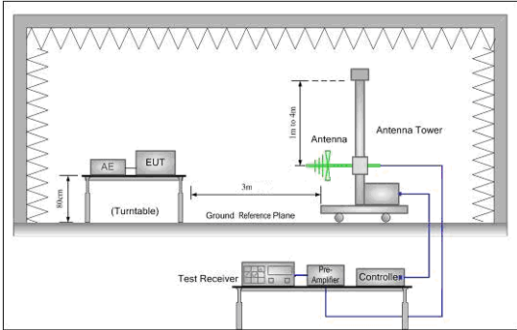
ESD						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	LINCEL	ESD-203B	GTS645	Apr. 16, 2024	Apr. 15, 2025
2	Thermo meter	KTJ	TA328	GTS243	Apr. 17, 2024	Apr. 16, 2025

Radiated Immunity						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Probe	STT	SEM-600	GTS648	Apr. 16, 2024	Apr. 15, 2025
2	Stacked Log.-Per.-Broadband Antenna	SCHWARZBECK	STLP 9129	GTS658	Aug. 03, 2024	Aug. 02, 2025
3	MXG vector Signal Generator	Agilent	N5181A	GTS659	Nov. 08, 2023	Nov.07, 2024
4	Power amplifier	Micotop	MPA-20-1000-250	GTS660	Aug.03, 2024	Aug.02, 2025
5	Power amplifier	Micotop	MPA-1000-6000-100	GTS661	Aug.03, 2024	Aug.02, 2025
6	EPM SSERIES POWER METER	Agilent	E4419B	GTS662	Nov. 08, 2023	Nov.07, 2024
7	E-SERIES AVG POWER SENSOR	HP	E9301A	GTS670	Nov. 08, 2023	Nov.07, 2024
8	Thermo meter	JINCHUANG	GSP-8A	GTS643	Apr. 18, 2024	Apr. 17, 2025

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	KUMAO	SF132	GTS647	Apr. 18, 2024	Apr. 17, 2025

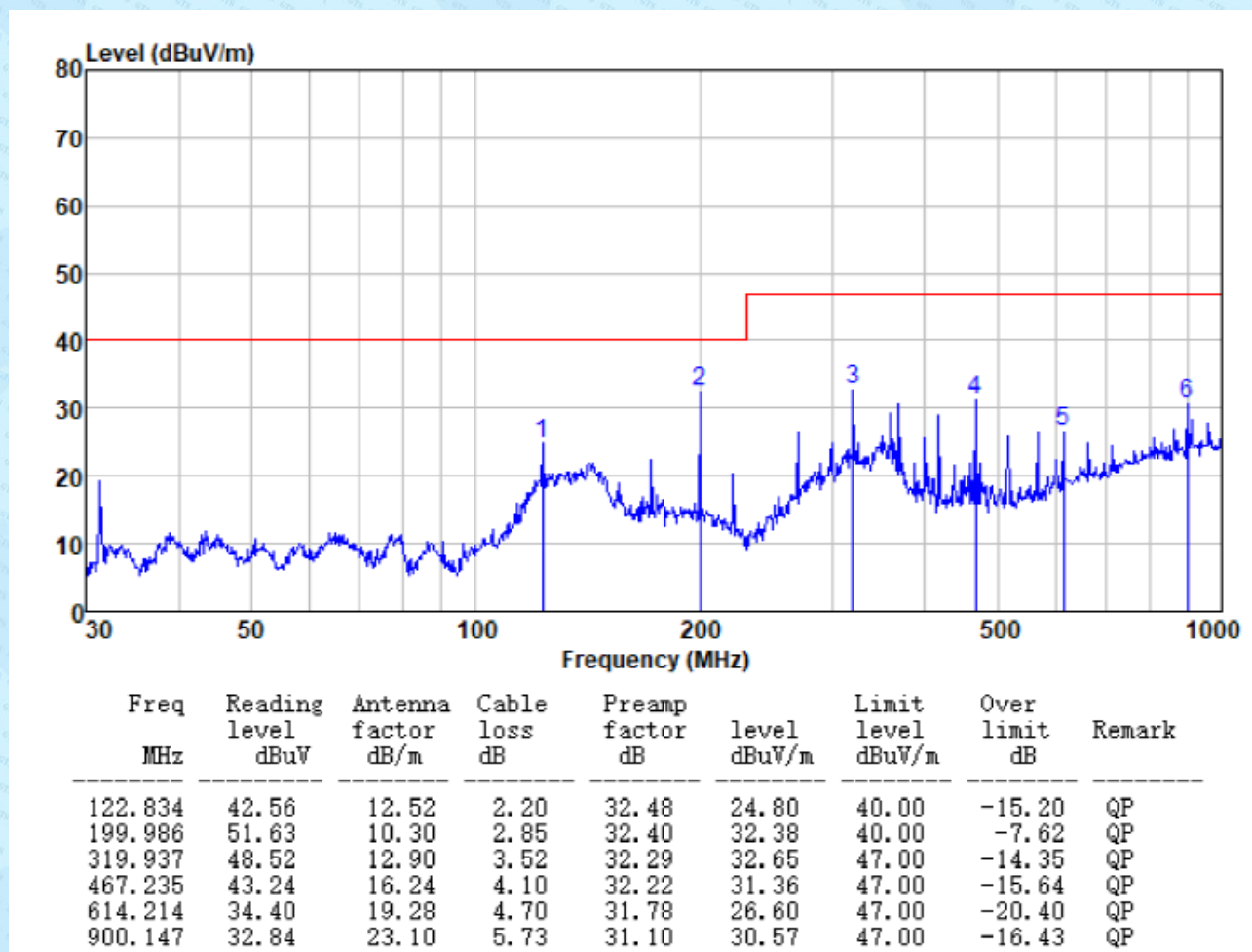
7 Emission Test Results

7.1 Radiated Emission

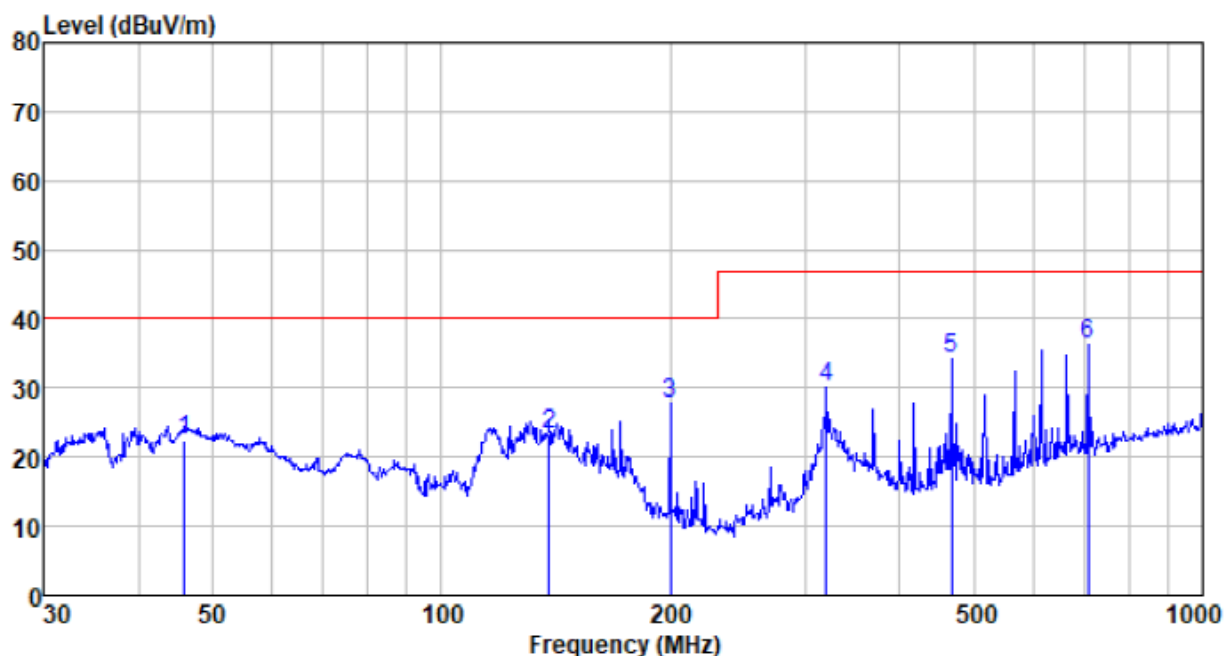
Test Requirement:	EN 55032													
Test Method:	EN 55032													
Test Frequency Range:	30MHz to 1GHz													
Class / Severity:	Class B													
Test site:	Measurement Distance: 3m													
Receiver setup:	<table><tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak</td></tr></table>				Frequency	Detector	RBW	VBW	Value	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Frequency	Detector	RBW	VBW	Value										
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak										
Limit:	<table><tr><th>Frequency</th><th>Limit (dBμV/m @3m)</th><th>Value</th></tr><tr><td>30MHz-230MHz</td><td>40.00</td><td>Quasi-peak</td></tr><tr><td>230MHz-1GHz</td><td>47.00</td><td>Quasi-peak</td></tr></table>				Frequency	Limit (dBμV/m @3m)	Value	30MHz-230MHz	40.00	Quasi-peak	230MHz-1GHz	47.00	Quasi-peak	
Frequency	Limit (dBμV/m @3m)	Value												
30MHz-230MHz	40.00	Quasi-peak												
230MHz-1GHz	47.00	Quasi-peak												
Test setup:														
Test Procedure:	1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. 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. 3. 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. 4. 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.													
Test environment:	Temp.:	25 °C	Humid.:	52% Press.: 1 012mbar										
Measurement Record:	Uncertainty: 3.8039dB (30MHz-200MHz) 3.9679dB (200MHz-1GHz)													
Test Instruments:	Refer to section 6 for details													
Test mode:	Refer to section 5.2 for details, and only show the worst case.													
Test results:	Pass													

Measurement Data

Test mode:	Charge mode	Antenna Polarity:	Horizontal
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Test mode:	Charge mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
46.016	40.05	13.40	1.34	32.30	22.49	40.00	-17.51	QP
138.387	39.96	13.54	2.36	32.46	23.40	40.00	-16.60	QP
199.986	47.07	10.30	2.85	32.40	27.82	40.00	-12.18	QP
319.937	46.12	12.90	3.52	32.29	30.25	47.00	-16.75	QP
467.235	46.08	16.24	4.10	32.22	34.20	47.00	-12.80	QP
706.700	42.10	20.63	5.11	31.44	36.40	47.00	-10.60	QP

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

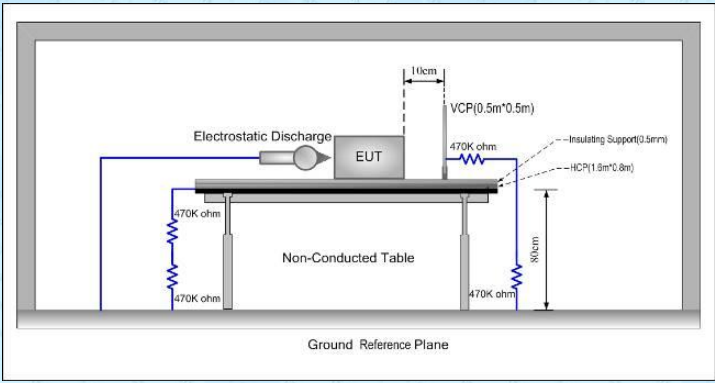
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

8 Immunity Test Results

8.1 Performance Criteria Description in Clause 8 of EN 55035

Criterion A:	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B:	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion C:	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

8.2 Electrostatic discharge

Test Requirement:	EN 55035
Test Method:	EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ HCP/VCP: $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Contact Discharge: Minimum 10 times at each test point, Air Discharge: Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Performance Criterion:	Criterion B
Test setup:	
Test Procedure:	Air discharge: The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed Contact Discharge: The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 25 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. Indirect discharge for horizontal coupling plane At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT. Indirect discharge for vertical coupling plane At least 10 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in

	sufficient different positions that the four faces of the EUT are completely illuminated.
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

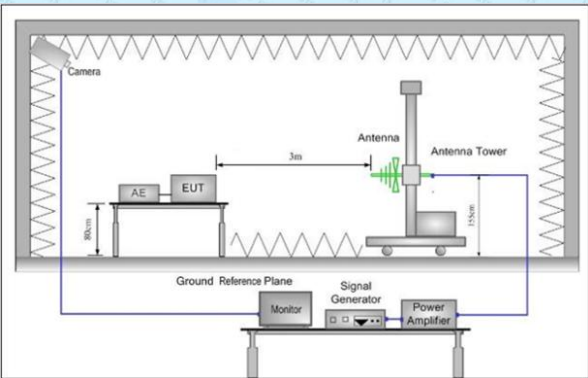
Measurement Record:

Test points:	I: Metal			
	II: All plastic seams			
Direct discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations Performance	Result
± 4	Contact	I	A	Pass
± 2,± 4,± 8	Air	II	A	Pass
Indirect discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
± 4	VCP-Bottom/Top/ Front/Back/Left/Right	Center of the VCP	A	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.3 Continuous RF electromagnetic field disturbances

Test Requirement:	EN 55035
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 5GHz
Test Level:	3V/m
Performance Criterion:	Criterion A
Test setup:	
Test Procedure:	1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details

Test mode:	Refer to section 5.2 for details
Test results:	Pass

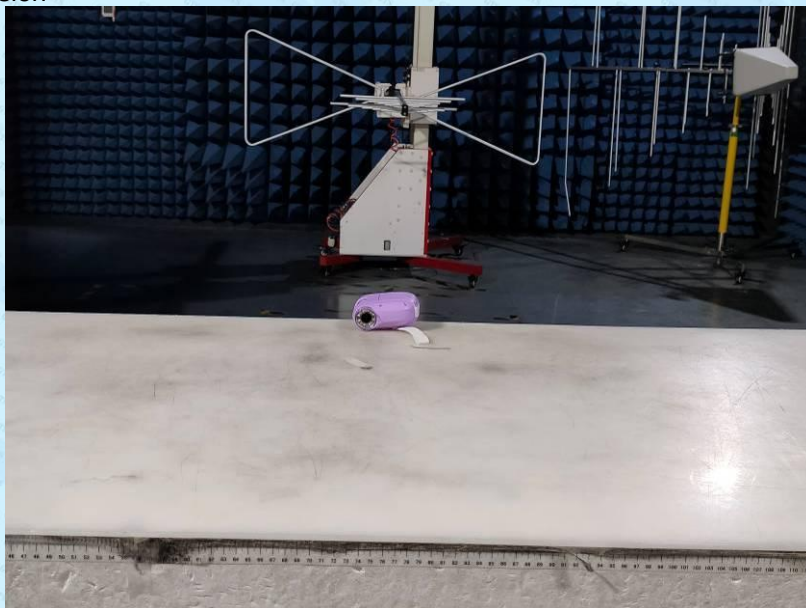
Measurement Record:

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80 MHz-1 GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass
1800MHz, 2600MHz 3500MHz 5000MHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=2seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

Remark: Performance Criteria: A, B, C: Refer to section 8.1 for details

9 Test Setup Photo

Radiated Emission

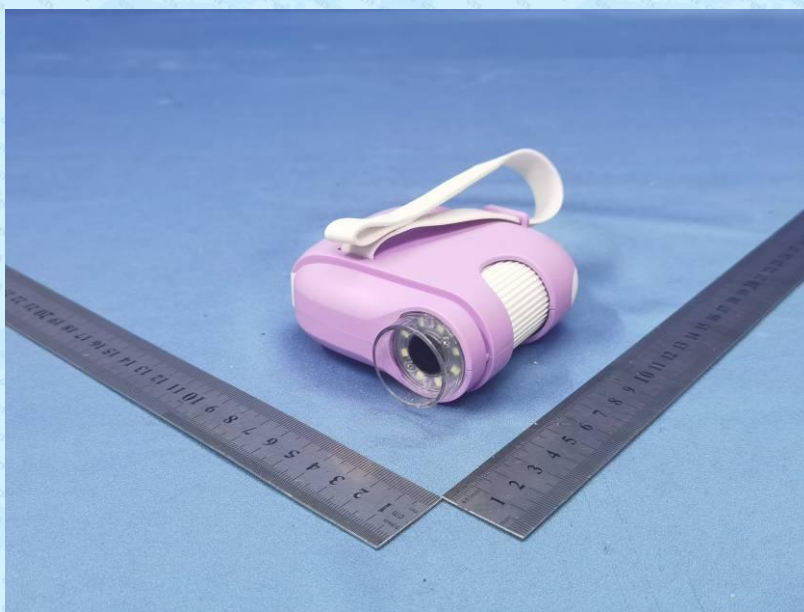
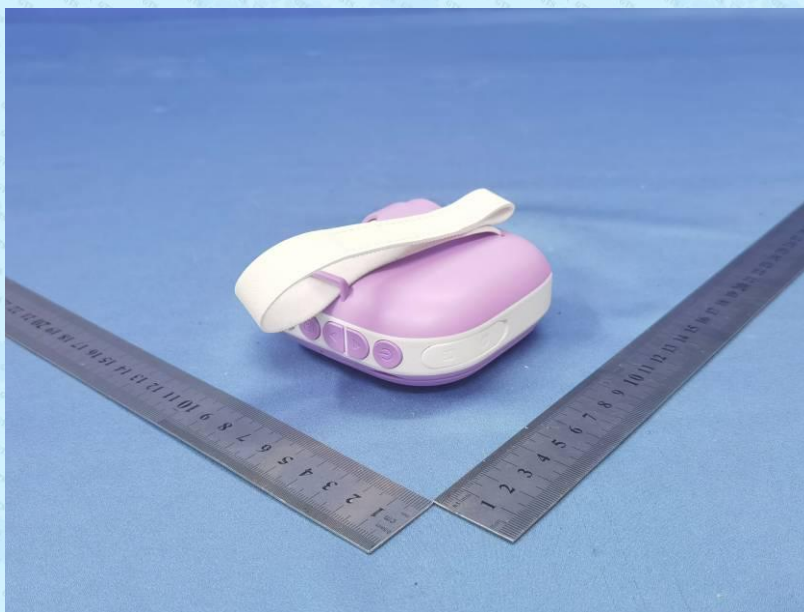


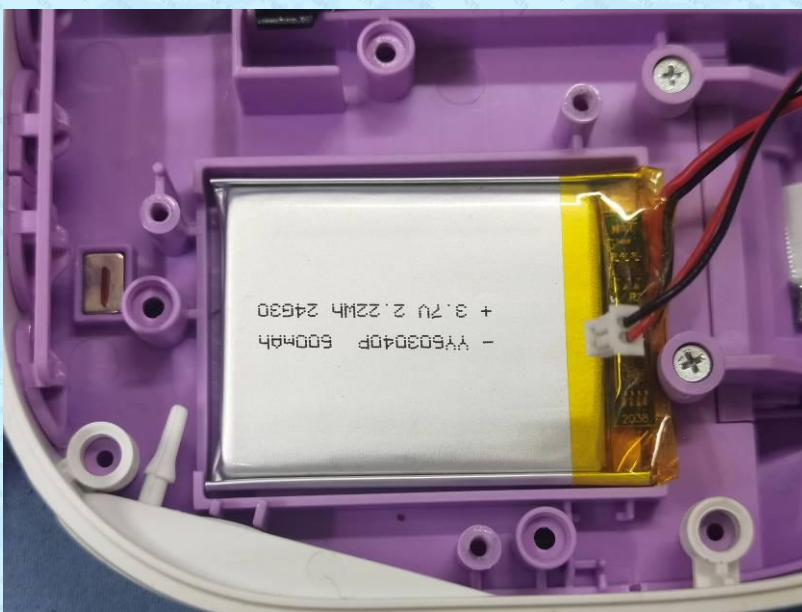
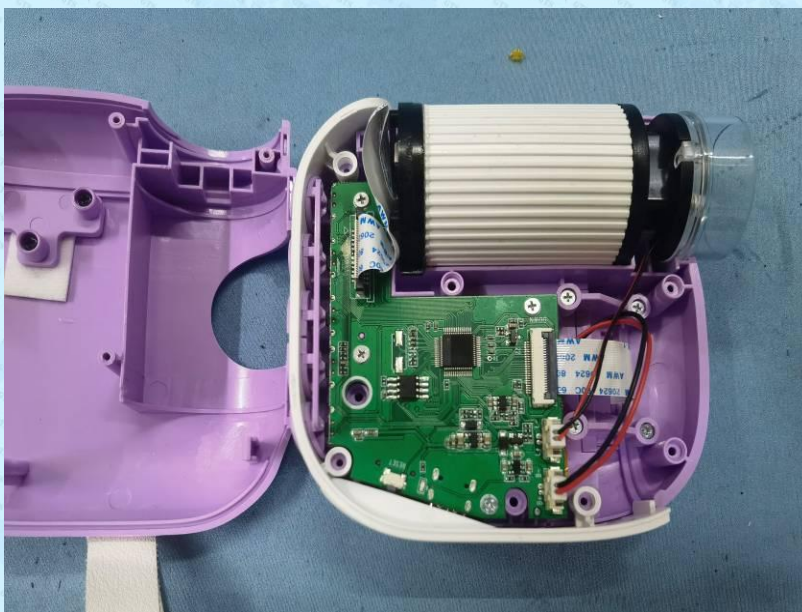
Electrostatic discharge

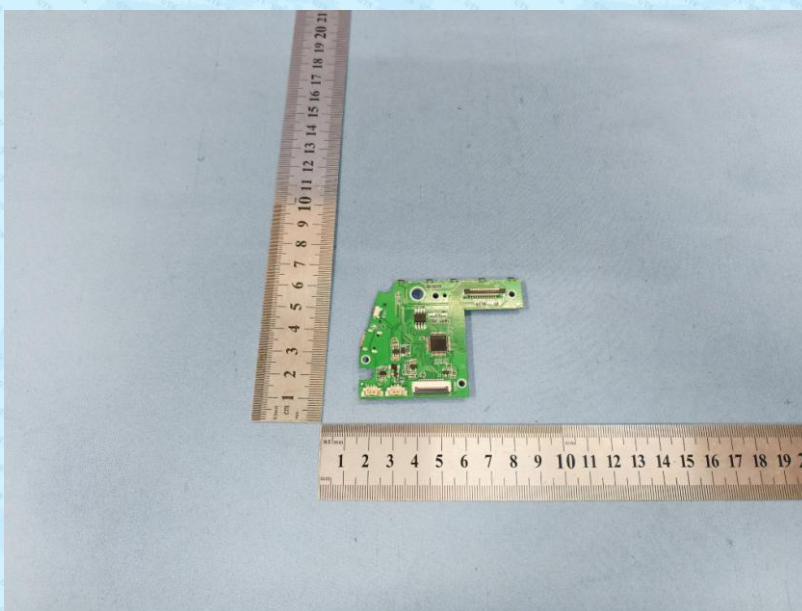
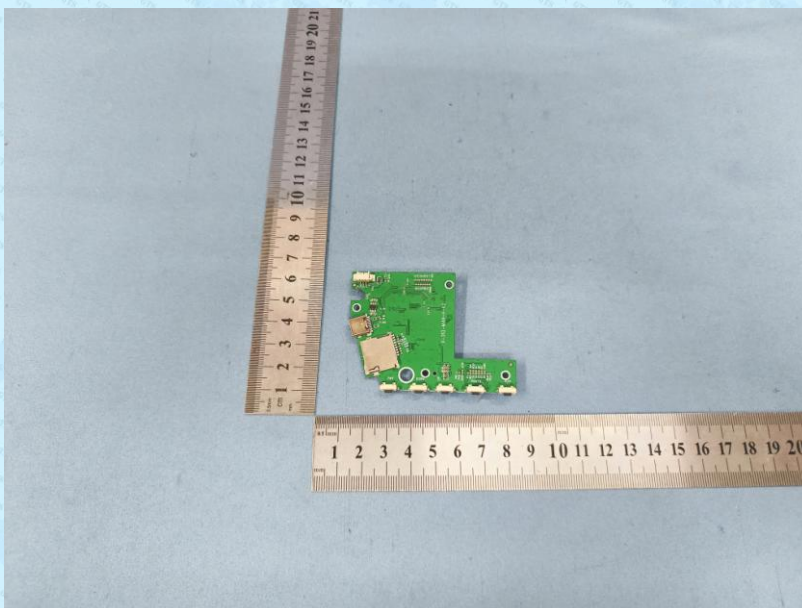


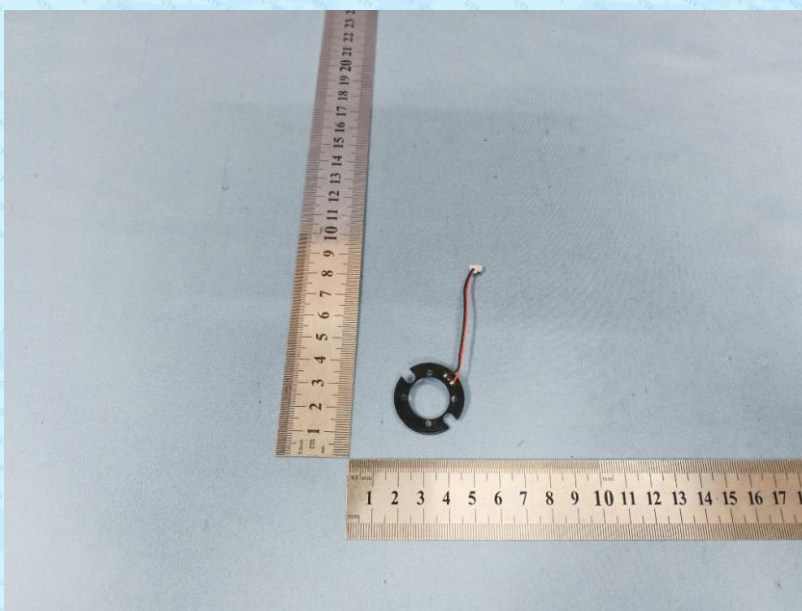
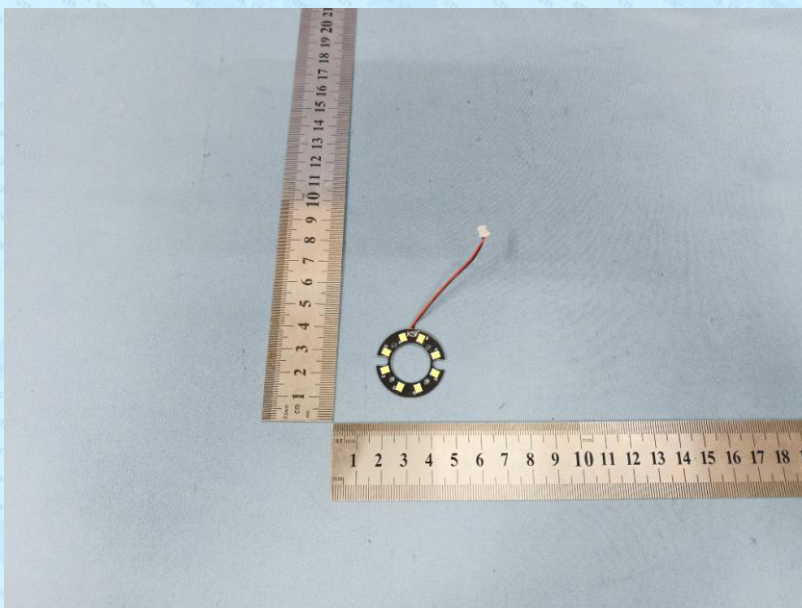
10 EUT Constructional Details













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