



EMC TEST REPORT

For

DexForce Technology Co., Ltd.

DexSense 3D industrial camera

Test Model: SPARROW-D-1001

Additional Models : SPARROW-D-1100, SPARROW-D-1200, SPARROW-D-1300,

SPARROW-D-1400, SPARROW-D-1500

Prepared for : DexForce Technology Co., Ltd.
Room 511, Building 4, Software Industry Base, No. 19, 17, 18,
Address : Haitian First Road, Binhai Community, Yuehai Street, Nanshan District, Shenzhen

Prepared by : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Address : 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China

Tel : (+86)755-29871520
Fax : (+86)755-29871521
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : September 22, 2024
Number of tested samples : 1
Serial number : Prototype
Date of Test : September 22, 2024 - September 26, 2024
Date of Report : September 26, 2024



Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

101-201, No. 39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China.

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com.

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**EMC TEST REPORT****EN 55032:2015+A1:2020**

Electromagnetic compatibility of multimedia equipment - Emission requirements

EN 55035:2017+A11:2020

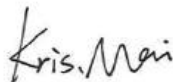
Electromagnetic compatibility of multimedia equipment - Immunity requirements

Report Number..... : LCSB09024168E**Date of Issue..... : September 26, 2024****Testing Laboratory Name..... : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.****Address..... : 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street,Guangming District, Shenzhen, China.****Testing Procedure..... : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐****Applicant's Name..... : DexForce Technology Co., Ltd.****Address..... : Room 511, Building 4, Software Industry Base, No. 19, 17, 18, Haitian First Road, Binhai Community, Yuehai Street, Nanshan District, Shenzhen****Test Specification:****Standard..... : EN 55032:2015+A1:2020
EN 55035:2017+A11:2020****Test Report Form No..... : TRF-4-E-022 Ver. A/0****TRF Originator..... : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.****Master TRF..... : Dated 2016-08****Shenzhen Southern LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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Equipment Under Test..... : DexSense 3D industrial camera**Trademark..... :  跨维智能 DEXFORCE****Test Model/Type..... : SPARROW-D-1001****Rating..... : DC12V, 5A****Results : PASS****Compiled by:**

Aimee Yang / Engineer

Supervised by:

Kris Mai / Technique Director

Approved by:

Dm Gu / Manager



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101-201, No. 39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China.

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com.

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EMC - TEST REPORT

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Room 511, Building 4, Software Industry Base, No. 19, 17, 18,
Address.....: Haitian First Road, Binhai Community, Yuehai Street, Nanshan
District, Shenzhen
Telephone.....: /
Fax.....: /

Manufacturer.....: DexForce Technology Co., Ltd.
Room 511, Building 4, Software Industry Base, No. 19, 17, 18,
Address.....: Haitian First Road, Binhai Community, Yuehai Street, Nanshan
District, Shenzhen
Telephone.....: /
Fax.....: /

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Telephone.....: /
Fax.....: /

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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.



Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

101-201, No. 39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China.

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ENVIRONMENTAL CONDITIONS

The climatic conditions during the test are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. the climatic conditions during the test were in the following Limits:

Ambient temperature	15°C - 35°C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa - 106 kPa

Climate values will be recorded and recorded separately if specifically required in the base standard or application product/product series standard.

POSSIBLE TEST CASE VERDICTS

Test cases does not apply to test object	N/A
Test object does meet requirement	P(Pass) / PASS
Test object does not meet requirement	F(Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicate that the conditions, standards or equipment listed is applicable to this report / test / EUT.
☐ Indicate that the conditions, standards or equipment listed is not applicable to this report / test / EUT.

REVISION HISTORY

Revision	Issue Date	Revision Content	Revised by
000	September 26, 2024	Initial Issue	-

Remark:
000) : “---”





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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF THE ITEM(S)

Equipment Under Test	DexSense 3D industrial camera
Test Model/Type	SPARROW-D-1001
Additional Models/Type	SPARROW-D-1100, SPARROW-D-1200, SPARROW-D-1300, SPARROW-D-1400, SPARROW-D-1500
Description of Model difference	Only the appearance color or shape is different, the circuit
Rating	DC12V, 5A
Classification of equipment	☐ Class A ☒ Class B
Highest internal frequency (Fx)	≤ 108 MHz





1.2. OPERATING MODE(S) USED OF TESTS

During the tests, the following operating mode(s) has(have) been used.

Operating Mode	Operating Mode description	Used for testing	
		Emission	Immunity
1	Normal operation	☒	☒
2	Bluetooth	☐	☐
3	HDMI	☐	☐
4	Full load	☐	☐

1.3. SUPPORT / AUXILIARY EQUIPMENT FOR THE EUT

EUT has been tested using the following auxiliary equipment :

Auxeq	Model/Type	Manufacturer	Supplied by
Portable Computer	ThinkBook 14 G3 ITL	Lenovo	Lab
Power source	EDR-75-12	MW	Applicant

1.4. DESCRIPTION OF TEST FACILITY

Test Location 1	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China. CNAS Registration Number is L10160.
Test Location 2	Shenzhen LCS Compliance Testing Laboratory Ltd. 101, 201 Building A and 301 Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, Guangdong, China. NVLAP Accreditation Code is 600167-0. CNAS Registration Number is L4595.
Date of receipt of test item	September 22, 2024
Date(s) of performance of test	September 22, 2024 - September 26, 2024

Note: Radio-Frequency Electromagnetic Field (RS) Test Subcontract to Shenzhen LCS Compliance Testing Laboratory Ltd for Testing.





2. STATEMENT OF THE MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. the reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. the measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods - Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. the manufacturer has the sole responsibility of continued compliance of the device.

Measurement	Uncertainty (U_{lab})
Conducted disturbance (150kHz - 30MHz)	± 2.80 dB
Radiated disturbance (30MHz - 200MHz)	± 4.66 dB
Radiated disturbance (200MHz - 1GHz)	± 4.64 dB

Supplementary information:

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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3. MEASURING DEVICES AND TEST EQUIPMENT

CONDUCTED DISTURBANCE						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	No. 1 shielded Room	CHENGYU	843	/	2023-04-26	2026-04-25
2	EMI Test Receiver	R&S	ESCI	101142	2024-04-24	2025-04-23
3	10dB Attenuator	SCHWARZBECK	VTSD9561-F	9561-F159	2024-04-24	2025-04-23
4	Artificial Mains Network	SCHWARZBECK	NSLK 8127	8127716	2024-04-24	2025-04-23
5	Artificial Mains Network	SCHWARZBECK	NSLK 8163	00043	2024-04-24	2025-04-23
6	Impedance Stabilization Network	SCHWARZBECK	NTFM 8158	NTFM8158#120	2024-04-24	2025-04-23
7	Current Probe	R&S	EZ-17	101921	2024-03-18	2025-03-17
8	EMI Test Software	EZ	EZ EMC	N/A	/	/

RADIATED DISTURBANCE						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2024-04-28	2027-04-27
2	EMI Test Receiver	R&S	ESCI3	101010	2024-04-24	2025-04-23
3	Log-periodic Antenna	SCHWARZBECK	VULB9163	5094	2024-04-29	2025-04-28
4	EMI Test Software	EZ	EZ EMC	N/A	/	/
5	Controller system	SKET	SKC1000	N/A	/	/

ELECTROSTATIC DISCHARGE						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	TESEQ	NSG 437	1615	2024-02-24	2025-02-23

ELECTRICAL FAST TRANSIENT / BURST						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Electrical Fast Transient Generator	HTEC	HEFT51	162201	2024-04-24	2025-04-23
2	EFT Coupling Clamp	HTEC	H3C	163701	2024-04-24	2025-04-23

INJECTED CURRENTS (RADIO-FREQUENCY COMMON MODE)						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	No. 2 shielded room	CHENGYU	743	/	2023-04-26	2026-04-25
2	Conducted Susceptibility Generator	HTEC	CDG6000	126A140012016	2024-04-24	2025-04-23
3	CDN	HTEC	CDN-M2+M3	A22/0382/2016	2024-04-24	2025-04-23
4	6dB attenuator	HTEC	ATT6	HA1601	2024-04-24	2025-04-23
5	Electromagnetic clamp	LUTHI	EM101	35535	2024-04-24	2025-04-23

POWER FREQUENCY MAGNETIC FIELD						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Power Frequency Mag-Field Generator System	HTEC	HPFMF100	100-2400	2024-04-24	2025-04-23



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**RADIO-FREQUENCY ELECTROMAGNETIC FIELDS**

Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXG Vector Signal Generator	Agilent	E4438C	MY42081396 (6G)	2024-05-06	2025-05-05
2	RF POWER AMPLIFIER	SKET	HAP_0306G-50 W	/	2024-05-06	2025-05-05
3	RF POWER AMPLIFIER	OPHIR	5225R	1052	2024-05-06	2025-05-05
4	RF POWER AMPLIFIER	OPHIR	5273F	1019	2024-05-06	2025-05-05
5	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	NCR	NCR
6	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	NCR	NCR



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4. VERDICT SUMMARY SECTION

This chapter present an overview of the standards and results. Refer the next chapter for details of measured test results and applied test levels.

4.1. STANDARD(S)

EN 55032:2015+A1:2020 - Electromagnetic compatibility of multimedia equipment - Emission requirements.

EN 55035:2017+A11:2020 - Electromagnetic compatibility of multimedia equipment - Immunity requirements.



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4.2. OVERVIEW OF RESULTS

EMISSION TESTS - EN 55032		
Requirement - Test case	Limit	Verdict
Conducted Disturbance - AC mains power ports	Table A.9, Table A.10	PASS
Conducted Disturbance - Asymmetric mode	Table A.11, Table A.12	PASS
Assessment of the enclosure port	---	---
Radiated Disturbance in the frequency range 30 MHz to 1 GHz	Table A.2, Table A.4	PASS
Radiated Disturbance in the frequency range Above 1 GHz	Table A.3, Table A.5	N/A
IMMUNITY TESTS - EN 55035		
Requirement - Test case	Basic Standard(s)	Verdict
Electrostatic Discharge	IEC/EN 61000-4-2	PASS
Radio-Frequency Electromagnetic Fields	IEC/EN 61000-4-3	PASS
Electrical Fast Transient / Burst	IEC/EN 61000-4-4	PASS
Surge ²	IEC/EN 61000-4-5	N/A
Continuous induced RF disturbances	IEC/EN 61000-4-6	PASS
Power Frequency Magnetic Field ¹	IEC/EN 61000-4-8	N/A
Voltage Dips and Short Interruptions	IEC/EN 61000-4-11	N/A

Supplementary information:

- 1) Only need to be applied to equipment containing components susceptible to magnetic fields.
- 2) Applicable only to ports which, according to the manufacturer's specification, may connect directly to outdoor cables that leave the building structure.





5. EMISSION TESTS

5.1. CONDUCTED DISTURBANCE

Standard	EN 55032:2015+A1:2020
Basic Standard(s)	CISPR 16-2-1

Disturbance voltage limits at AC mains power ports of Class B equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(μV)]	Limit: Average[dB(μV)]	IF BW
0,15 - 0,5	66 - 56	56 - 46	9 kHz
0,5 - 5,0	56	46	
5,0 - 30	60	50	
1) At the transition frequency, the lower limit applies.			

Disturbance voltage limits at AC mains power ports of Class A equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(μV)]	Limit: Average[dB(μV)]	IF BW
0,15 - 0,5	79	66	9 kHz
0,5 - 30	73	60	
1) At the transition frequency, the lower limit applies.			

Disturbance voltage / Current limits at Asymmetric mode of Class B equipment

Frequency range [MHz]	Coupling device	Limit: Quasi-peak [dB(μV/A)]	Limit: Average [dB(μV/A)]	IF BW
0,15 - 0,5	ANN	84 - 74	74 - 64	9 kHz
0,5 - 30		74	64	
0,15 - 0,5	CVP	84 - 74	74 - 64	
0,5 - 30		74	64	
0,15 - 0,5	Current Probe	40 - 30	30 - 20	
0,5 - 30		30	20	
1) Applicable to intended to connect to cables longer than 3 m.				

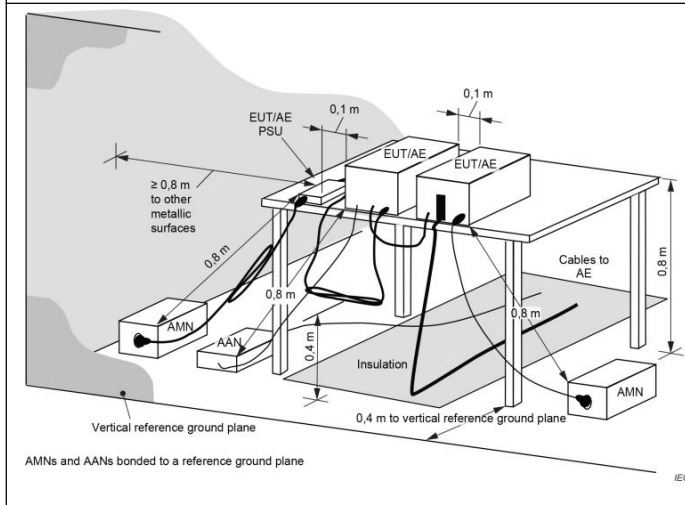
Disturbance voltage / Current limits at Asymmetric mode of Class A equipment

Frequency range [MHz]	Coupling device	Limit: Quasi-peak [dB(μV/A)]	Limit: Average [dB(μV/A)]	IF BW
0,15 - 0,5	ANN	97 - 87	84 - 74	9 kHz
0,5 - 30		87	74	
0,15 - 0,5	CVP	97 - 87	84 - 74	
0,5 - 30		87	74	
0,15 - 0,5	Current Probe	53 - 43	40 - 30	
0,5 - 30		43	30	
1) applicable to intended to connect to cables longer than 3 m.				

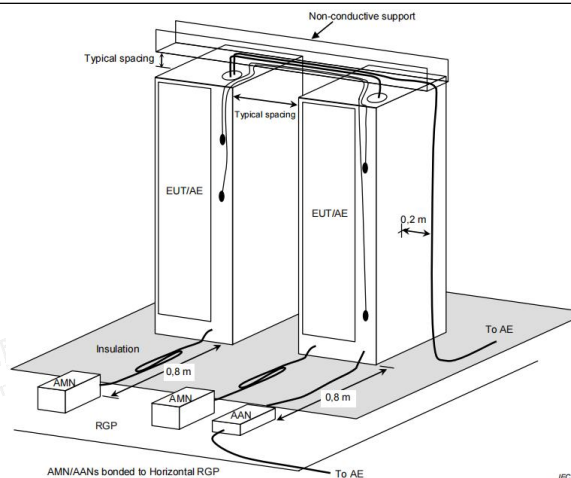


Test configuration

Test Setup for table-top



Test Setup for Floor standing



Test Procedure Description

For Table-top, EUT shall be placed at $(0,8 \pm 0,05)$ m above the reference plane of the test site selected for measurement. for Floor standing, EUT shall be placed at $(0,12 \pm 0,04)$ m above the reference plane of the test site selected for measurement.

and connected to the AC mains through artificial mains network (LISN). EUT is powered by V-type artificial power network, and the distance from LISN or ANN is 0,8m. the part of the EUT power cord exceeding 0,8m folds in parallel to form a 0,3-0,4 m eights harness.

Test Results refer to Annex A.1



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5.2. RADIATED DISTURBANCE

Standard	EN 55032:2015+A1:2020
Basic Standard(s)	CISPR 16-2-3
Test method	Semi Anechoic Chamber (SAC)

SAC Radiated disturbance limit at frequencies up to 1 GHz for class B equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(μV/m)]		IF BW
	3 m distance	10 m distance	
30 - 230	40	30	120 KHz
230 - 1000	47	37	
1) At the transition frequency, the lower limit applies.			

SAC Radiated disturbance limit at frequencies up to 1 GHz for class A equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(µV/m)]		IF BW
	3 m distance	10 m distance	
30 - 230	50	40	120 KHz
230 - 1000	57	47	
1) At the transition frequency, the lower limit applies.			

Radiated disturbance limit at frequencies above 1 GHz for class B equipment

Frequency range [MHz]	Limit (3 m distance)		IF BW
	Peak [dB(μV/m)]	Average [dB(μV/m)]	
1000 - 6000	74	54	1MHz

Radiated disturbance limit at frequencies above 1 GHz for class A equipment

Frequency range [MHz]	Limit (3 m distance)		IF BW
	Peak [dB(μV/m)]	Average [dB(μV/m)]	
1000 - 6000	80	60	1MHz

Required highest frequency for radiated measurement

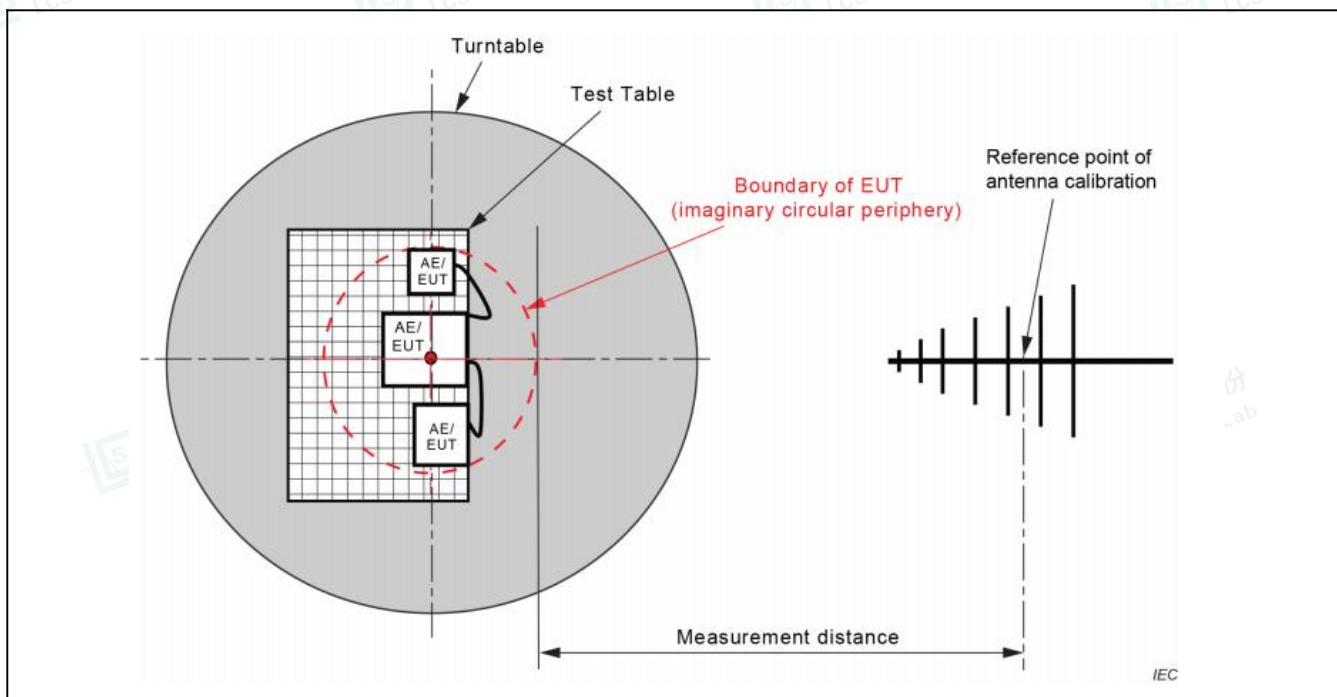
Highest internal frequency (Fx)	Highest measured frequency
$F_x \leq 108 \text{ MHz}$	1 GHz
$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	2 GHz
$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	5 GHz
$F_x > 1 \text{ GHz}$	$5 \times F_x$ up to a maximum of 6 GHz

- 1) F_x is highest fundamental frequency generated or used within the EUT or highest frequency at which it operates.





Test configuration



Test Procedure Description

The radiated disturbance test was conducted in a 3m Semi Anechoic Chamber and conforming to CISPR 16-2-3. the EUT is placed on a turntable, which is 0.8 meter high above the ground. the turntable can rotate 360 degrees to determine the position of the maximum emission level. the EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. the antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Log-periodic antenna or horn antenna is used as a receiving antenna. both horizontal and vertical polarization of the antenna is set on test.

Test Results refer to Annex A.2



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6. IMMUNITY TESTS

6.1. PERFORMANCE CRITERIA

Standard	EN 55035:2017+A11:2020
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Performance 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.

Performance 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.

Performance 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.

Examples of ports		Tests and performance criteria							
		ESD	RS	PFMF	EFT	CS	Surge	Dips	Interruption
☒	Enclosure port	B	A	A	---	---	---	---	---
☐	Analogue/digital data ports ¹	---	---	---	B	A	B	---	---
☒	DC network/power ports ¹	---	---	---	B	A	B	---	---
☐	AC mains power ports	---	---	---	B	A	B	B&C	C
<u>Supplementary information:</u> 1) Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.									





Electrostatic discharge (ESD) is the result of accumulated static electricity from a person or object, for example, walking on a synthetic carpet. ESD can indirectly affect the operation of equipment or damage its electronic components through direct discharge or coupling. both effects were simulated during the test. contact discharge is the preferred test method. twenty discharges (10 with positive and 10 with negative polarity) shall be applied on each accessible metallic part of the enclosure (terminals are excluded). air discharges shall be used where contact discharges cannot be applied. discharges shall be applied on the horizontal or vertical coupling planes.taken into consideration when selecting test points, paying particular attention to keyboards, dialling pads, power switches, mice, drive slots, card slots, the areas around communication ports, etc.

Standard	EN 55035:2017+A11:2020							
Basic standard	EN 61000-4-2							
Port under test	Enclosure							
Contact discharge	☒	± 2 kV	☒	± 4 kV	☐	±8 kV	☐	kV
Air discharge	☒	± 2 kV	☒	± 4 kV	☒	±8 kV	☐	kV
Number of discharges	≥ 10 per polarity with ≥ 1 sec interval							

[illegible]

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6.3. RADIO-FREQUENCY ELECTROMAGNETIC FIELDS

During the test it is verified if the EUT has sufficient immunity against radiated electromagnetic fields.

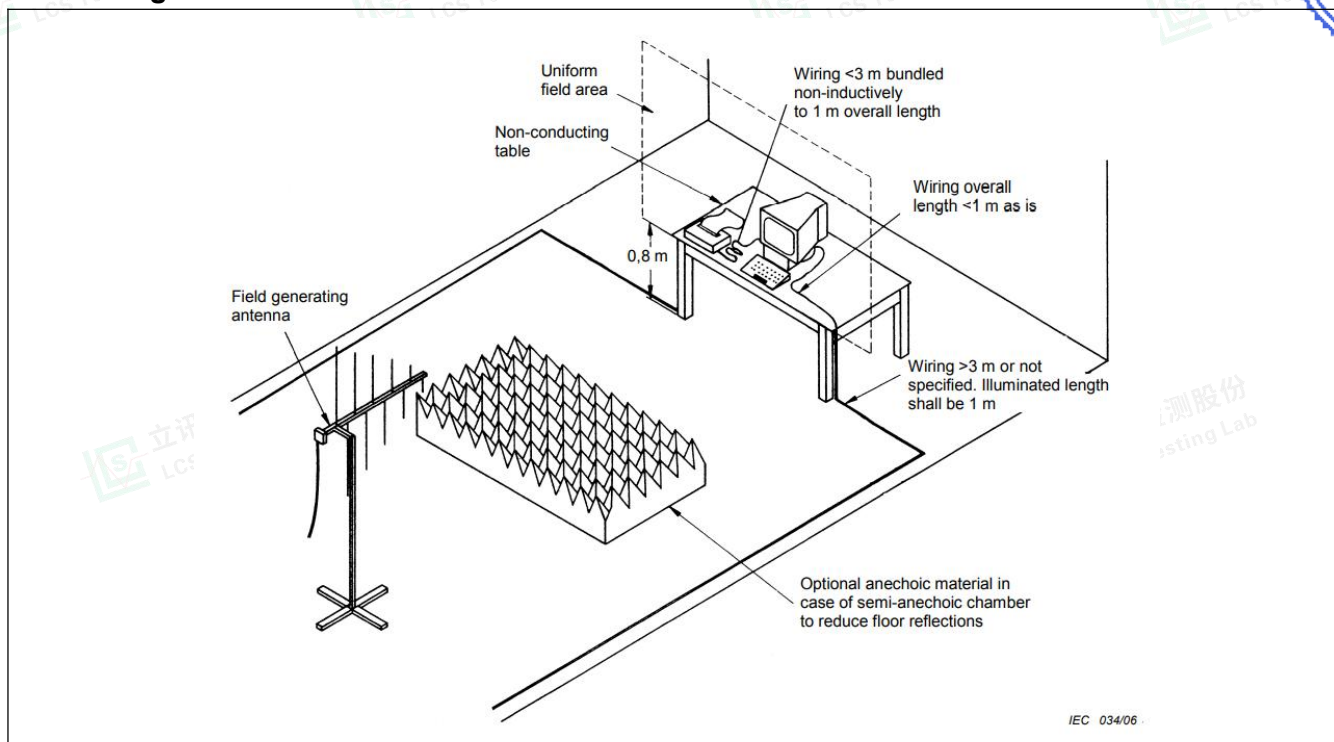
The test was carried out in a half-wave anechoic chamber with absorbent material attached to a reflective ground plate. Before the test, the test field strength needs to be calibrated. during the calibration, the corresponding relationship between the target field strength and the forward power applied to the transmitting antenna is established. during the test, except for EUT, the indoor layout is consistent with the calibration.

The EUT and its simulators are placed on a turn table which is 0,8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. both horizontal and vertical polarization of the antenna are set on test. each of the four sides of EUT must be faced this transmitting antenna and measured individually. in order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

Requirements

Standard	EN 55035:2017+A11:2020			
Basic standard	EN 61000-4-3			
Port under test	Enclosure			
Frequency range	Test level	Modulation	Dwell time	Step size
80 - 1000 MHz	3 V/m	1 kHz, 80 % AM	≥ 0,5 s	≤ 1%
1800MHz, 2600MHz, 3500MHz, 5000MHz	3 V/m	1 kHz, 80 % AM	≥ 0,5 s	≤ 1%

Test configuration



Test Results refer to Annex A.3





6.4. ELECTRICAL FAST TRANSIENT / BURST

The EFT immunity test simulates the disturbances by caused of very short transient bursts.

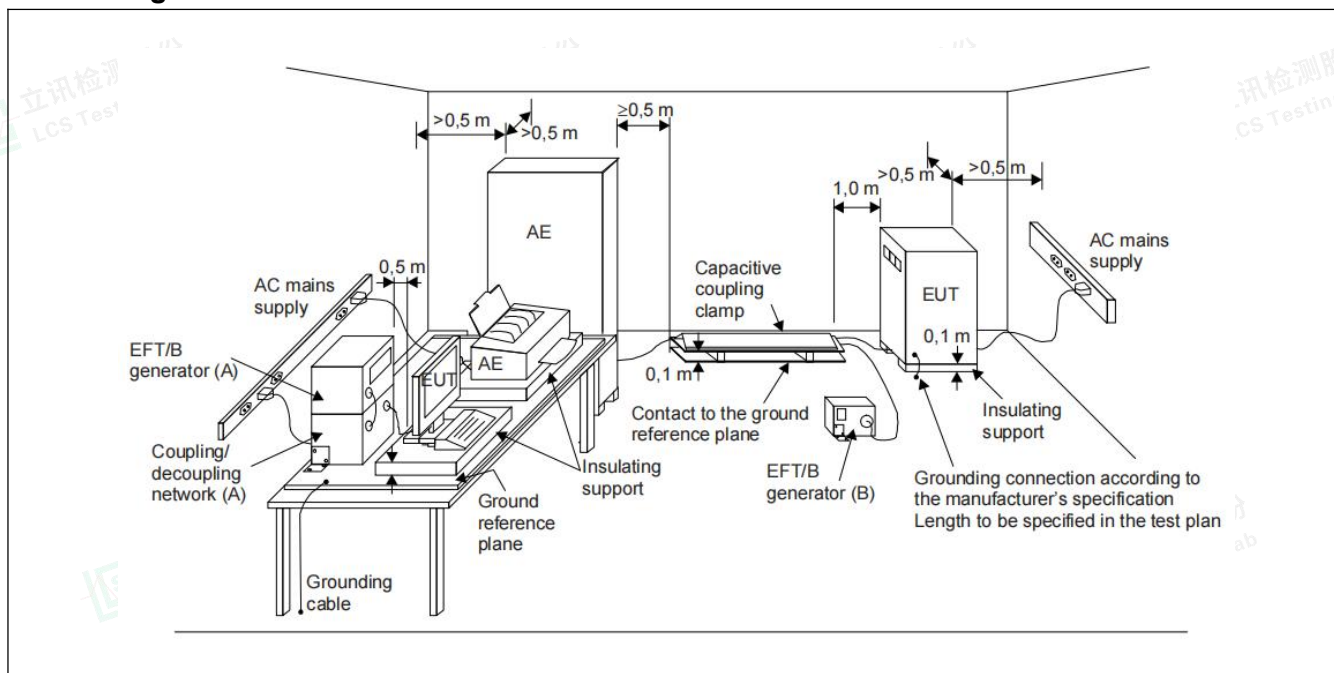
The EUT is put on the Insulating support which is 0.1 meter high above the ground reference plane. the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5 m. both polarities of the test voltage should be applied during test, fast transients are carried out with a minimum duration of 2 min with a positive polarity and a minimum of 2 min with a negative polarity.

Requirements

Standard	EN 55035:2017+A11:2020			
Basic standard	EN 61000-4-4			
Pulse characteristics	5/50ns			
Port under test	Test level	Repetition frequency	Duration	
☐ AC mains power	$\pm 1000 \text{ V}$	5 kHz	2 min / polarity	
☒ DC network/power ¹	$\pm 500 \text{ V}$	5 kHz	2 min / polarity	
☐ Analogue/digital data ¹	$\pm 500 \text{ V}$	5 kHz	2 min / polarity	

1) Only applicable to ports interfacing with cables whose whose total length may exceed 3 m.

Test configuration



Test Results refer to Annex A.3



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6.5. CONTINUOUS INDUCED RF DISTURBANCES

During the test the immunity of the EUT for conducted electromagnetic fields is checked .

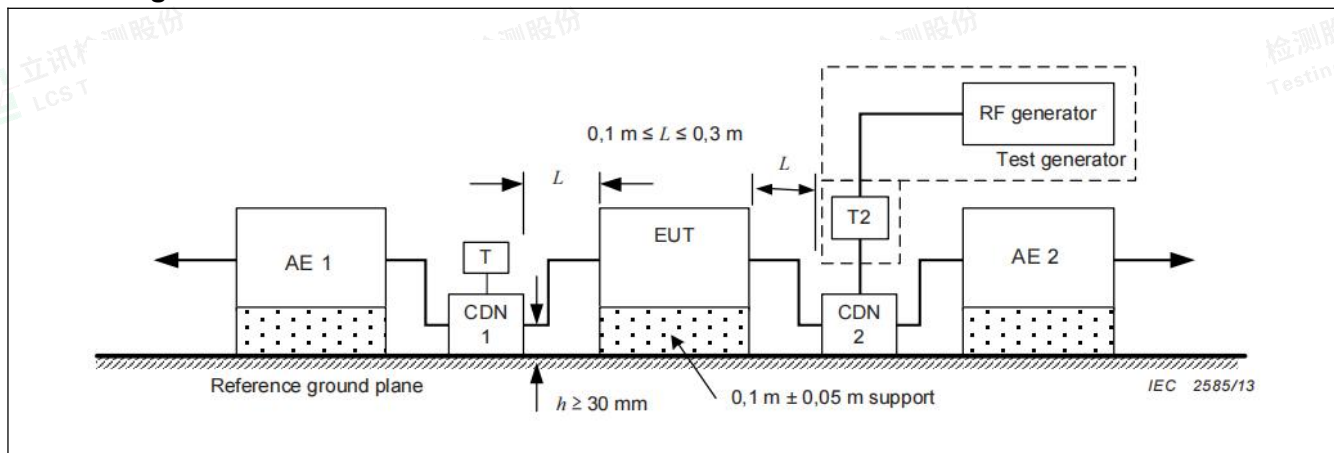
The equipment to be tested is placed on an insulating support of $0,1\text{ m} \pm 0,05\text{ m}$ height above a reference ground plane. a non conductive roller/caster in the range of $0,1\text{ m} \pm 0,05\text{ m}$ above the reference ground plane can be used as an alternative to an insulating support. all cables exiting the EUT shall be supported at a height of at least 30 mm above the reference ground plane. The coupling and decoupling devices shall be placed on the reference ground plane, making direct contact with it at a distance of 0,1 m to 0,3 m from the EUT.

Requirements

Standard		EN 55035:2017+A11:2020			
Basic standard		EN 61000-4-6			
Frequency range		0,15 - 80MHz			
Port under test		Test level	Modulation	Dwell time	Step size
☐	AC mains power	3 - 1 V	1 kHz, 80 % AM	$\geq 0,5\text{ s}$	$\leq 1\%$
☒	DC network/power ¹	3 - 1 V	1 kHz, 80 % AM	$\geq 0,5\text{ s}$	$\leq 1\%$
☐	Analogue/digital data ¹	3 - 1 V	1 kHz, 80 % AM	$\geq 0,5\text{ s}$	$\leq 1\%$

1) Only applicable to ports interfacing with cables whose total length may exceed 3 m.

Test configuration



Test Results refer to Annex A.3



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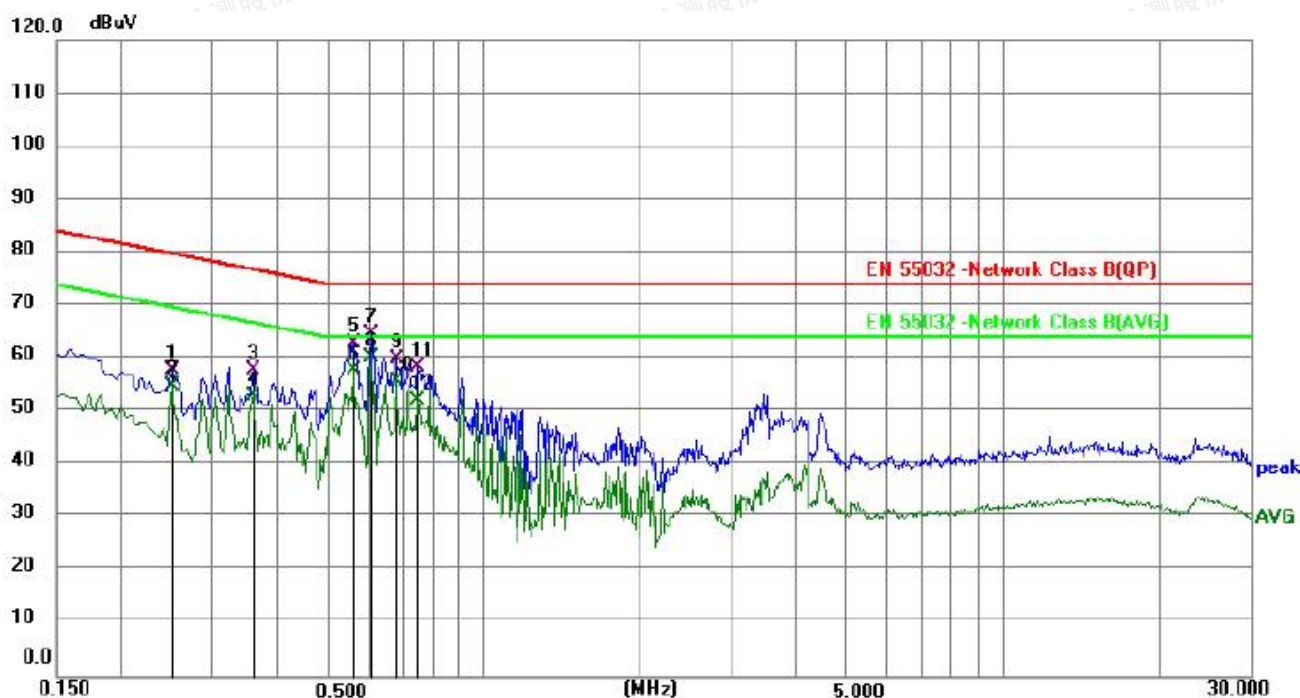
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ANNEX A - TEST RESULTS

A.1. CONDUCTED DISTURBANCE TEST RESULTS

Environmental Conditions	25.9°C, 58% RH
Model	SPARROW-D-1001
Operating mode	Mode 1 (worst case)
Test voltage	DC12V
Test engineer	Aru Yang
Pol	P



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2490	36.88	20.90	57.78	79.79	-22.01	QP	
2		0.2490	33.94	20.90	54.84	69.79	-14.95	AVG	
3		0.3570	37.02	20.67	57.69	76.80	-19.11	QP	
4		0.3570	32.26	20.67	52.93	66.80	-13.87	AVG	
5		0.5595	42.47	20.35	62.82	74.00	-11.18	QP	
6		0.5595	37.49	20.35	57.84	64.00	-6.16	AVG	
7		0.6045	44.33	20.34	64.67	74.00	-9.33	QP	
8	*	0.6045	39.77	20.34	60.11	64.00	-3.89	AVG	
9		0.6765	39.55	20.32	59.87	74.00	-14.13	QP	
10		0.6765	35.20	20.32	55.52	64.00	-8.48	AVG	
11		0.7440	37.93	20.31	58.24	74.00	-15.76	QP	
12		0.7440	31.82	20.31	52.13	64.00	-11.87	AVG	



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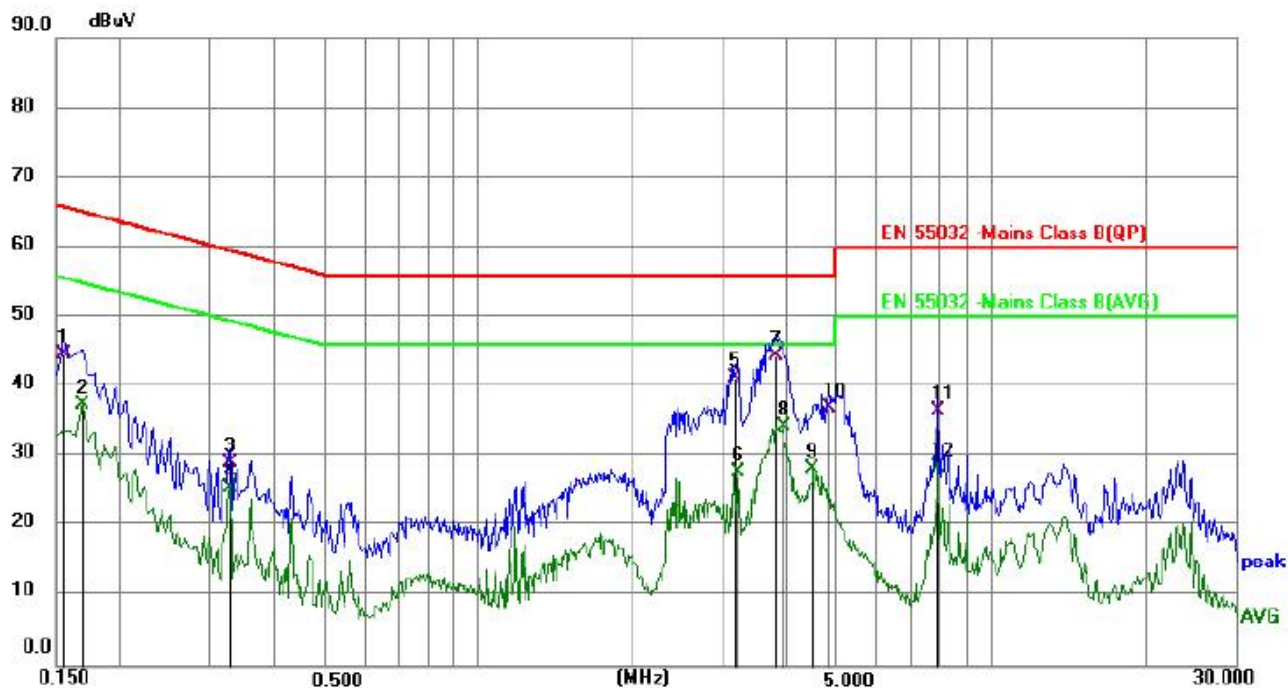
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Environmental Conditions	25.9℃, 58% RH
Model	SPARROW-D-1001
Operating mode	Mode 1 (worst case)
Test voltage	DC12V
Test engineer	Aru Yang
Pol	Line

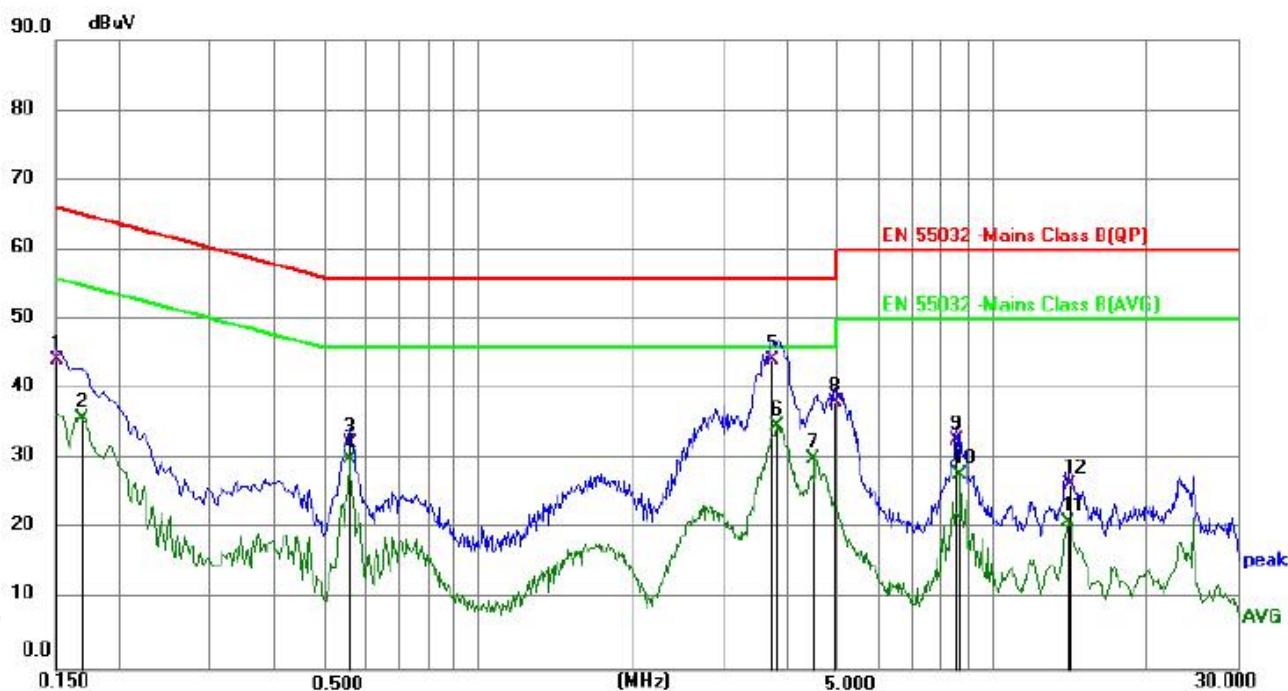


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1545	33.75	10.94	44.69	65.75	-21.06	QP	
2		0.1680	26.50	10.96	37.46	55.06	-17.60	AVG	
3		0.3255	18.12	10.96	29.08	59.57	-30.49	QP	
4		0.3255	14.57	10.96	25.53	49.57	-24.04	AVG	
5		3.1695	30.31	11.03	41.34	56.00	-14.66	QP	
6		3.2190	16.78	11.04	27.82	46.00	-18.18	AVG	
7	*	3.8175	33.46	11.06	44.52	56.00	-11.48	QP	
8		3.9345	23.20	11.07	34.27	46.00	-11.73	AVG	
9		4.4835	17.21	11.10	28.31	46.00	-17.69	AVG	
10		4.8255	25.90	11.11	37.01	56.00	-18.99	QP	
11		7.8765	25.22	11.23	36.45	60.00	-23.55	QP	
12		7.8765	17.15	11.23	28.38	50.00	-21.62	AVG	





Environmental Conditions	25.9℃, 58% RH
Model	SPARROW-D-1001
Operating mode	Mode 1 (worst case)
Test voltage	DC12V
Test engineer	Aru Yang
Pol	Neutral



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1500	33.32	10.83	44.15	66.00	-21.85	QP	
2		0.1680	25.13	10.86	35.99	55.06	-19.07	AVG	
3		0.5595	21.34	10.86	32.20	56.00	-23.80	QP	
4		0.5595	19.24	10.86	30.10	46.00	-15.90	AVG	
5		3.7230	33.11	11.00	44.11	56.00	-11.89	QP	
6	*	3.8130	23.69	11.00	34.69	46.00	-11.31	AVG	
7		4.4790	18.98	11.01	29.99	46.00	-16.01	AVG	
8		4.9380	27.21	11.02	38.23	56.00	-17.77	QP	
9		8.5065	21.45	11.22	32.67	60.00	-27.33	QP	
10		8.6459	16.52	11.23	27.75	50.00	-22.25	AVG	
11		14.1135	10.04	11.11	21.15	50.00	-28.85	AVG	
12		14.1585	15.31	11.11	26.42	60.00	-33.58	QP	





A.2. RADIATED DISTURBANCE TEST RESULTS

Environmental Conditions	24.1℃, 54% RH
Model	SPARROW-D-1001
Operating mode	Mode 1 (worst case)
Test voltage	DC12V
Test engineer	Aru Yang
Pol	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		30.1450	8.73	12.57	21.30	40.00	-18.70	QP		
2		50.1225	13.19	14.81	28.00	40.00	-12.00	QP		
3		79.2773	18.06	9.94	28.00	40.00	-12.00	QP		
4	*	132.4526	22.69	10.91	33.60	40.00	-6.40	QP		
5		143.5147	21.89	10.41	32.30	40.00	-7.70	QP		
6		208.8547	15.00	11.70	26.70	40.00	-13.30	QP		



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Environmental Conditions	24.1℃, 54% RH
Model	SPARROW-D-1001
Operating mode	Mode 1 (worst case)
Test voltage	DC12V
Test engineer	Aru Yang
Pol	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		72.4327	14.27	10.03	24.30	40.00	-15.70	QP		
2		101.8673	16.22	11.98	28.20	40.00	-11.80	QP		
3	*	131.5268	21.95	11.05	33.00	40.00	-7.00	QP		
4		140.2191	20.11	10.89	31.00	40.00	-9.00	QP		
5		191.0738	19.76	11.24	31.00	40.00	-9.00	QP		
6		263.3569	18.79	13.21	32.00	47.00	-15.00	QP		



**A.3. IMMUNITY TEST RESULTS**

ELECTROSTATIC DISCHARGE TEST RESULTS					
Test model	SPARROW-D-1001		Temperature	23.5℃	
Test mode	Mode 1		Humidity	52%	
Input voltage	DC12V		Pressure	1008mbar	
Test engineer	Aru Yang				
Discharge Mode	Test Points	Test Voltage (kV) & polarity	Number of discharges/polarity	Discharge interval (s)	Performance Criteria
Contact Discharge	Conductive surfaces	± 4	10	1	B
Air Discharge	Insulating surfaces	± 2&4&8	10	1	B
VCP	-	± 4	10	1	B
HCP	-	± 4	10	1	B
Note :					

RADIO-FREQUENCY ELECTROMAGNETIC FIELD TEST RESULTS				
Test model	SPARROW-D-1001		Temperature	24.5℃
Test mode	Mode 1		Humidity	53%
Input voltage	DC12V		Pressure	1008mbar
Test engineer	XING MO			
Angle of EUT	Antenna polarization	Frequency Range	Test Level	Performance Criteria
0°	Vertical, Horizontal	Swept Test : 80 - 1000 MHz; Spot Test : 1800MHz,2600MHz 3500MHz,5000MHz	3 V/m	A
90°	Vertical, Horizontal		3 V/m	A
180°	Vertical, Horizontal		3 V/m	A
270°	Vertical, Horizontal		3 V/m	A
Note : (1) Modulation:1kHz, 80% AM.				



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**ELECTRICAL FAST TRANSIENT/BURST TEST RESULTS**

Test model	SPARROW-D-1001		Temperature	24.0℃
Test mode	Mode 1		Humidity	54%
Input voltage	DC12V		Pressure	1008mbar
Test engineer	Aru Yang			
Port under test	Test Level&polarity	Repetition Frequency	Test duration /polarity	Performance Criteria
AC mains power				
DC power	± 0.5 kV	5 kHz	2min	B
Analogue/digital data				
Note :				

CONTINUOUS INDUCED RF DISTURBANCES TEST RESULTS

Test model	SPARROW-D-1001		Temperature	24.0℃
Test mode	Mode 1		Humidity	54%
Input voltage	DC12V		Pressure	1008mbar
Test engineer	Aru Yang			
Port under test	Test Level	Coupling method	Dwell time	Performance Criteria
AC mains power				
DC power	3 - 1 V	CDN	1 seconds	A
Analogue/digital data				
Note: (1) Frequency range:0.15MHz - 80MHz.				



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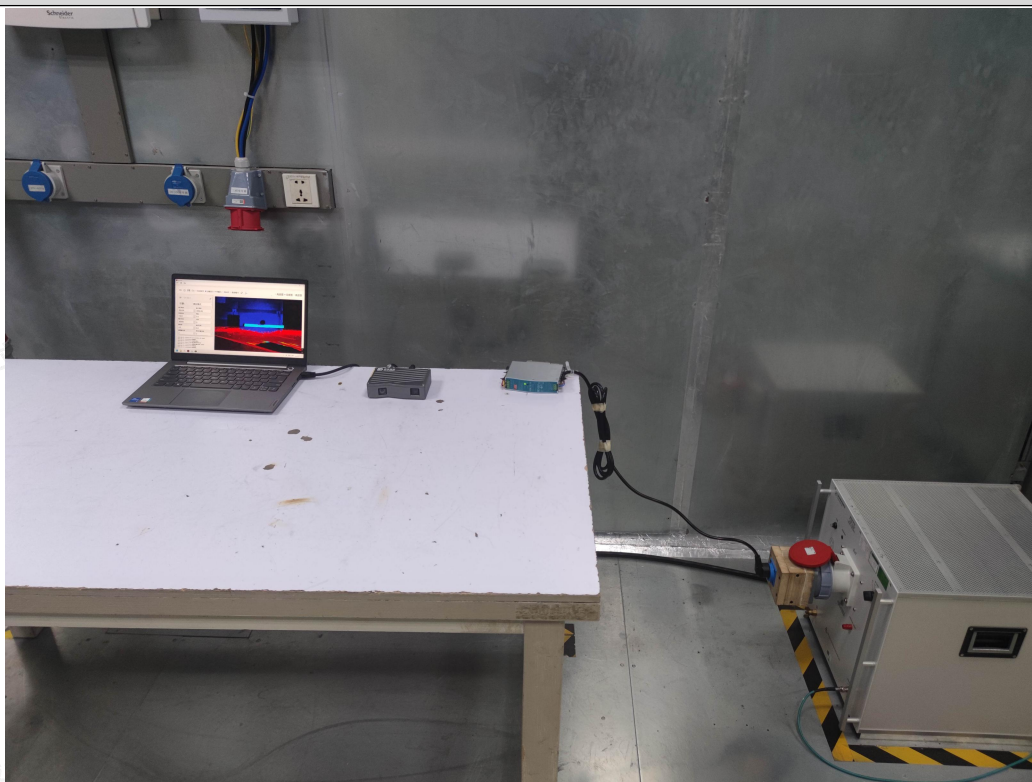
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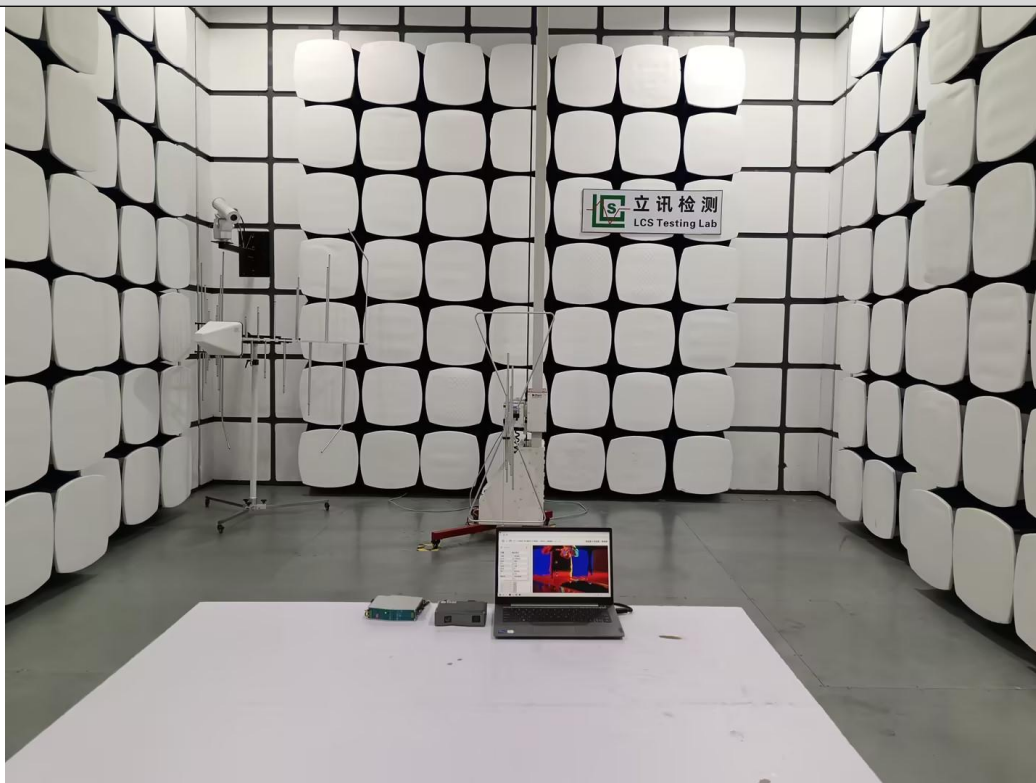


ANNEX B - TEST PHOTOS

B.1. Conducted Disturbance



B.2. Radiated Disturbance



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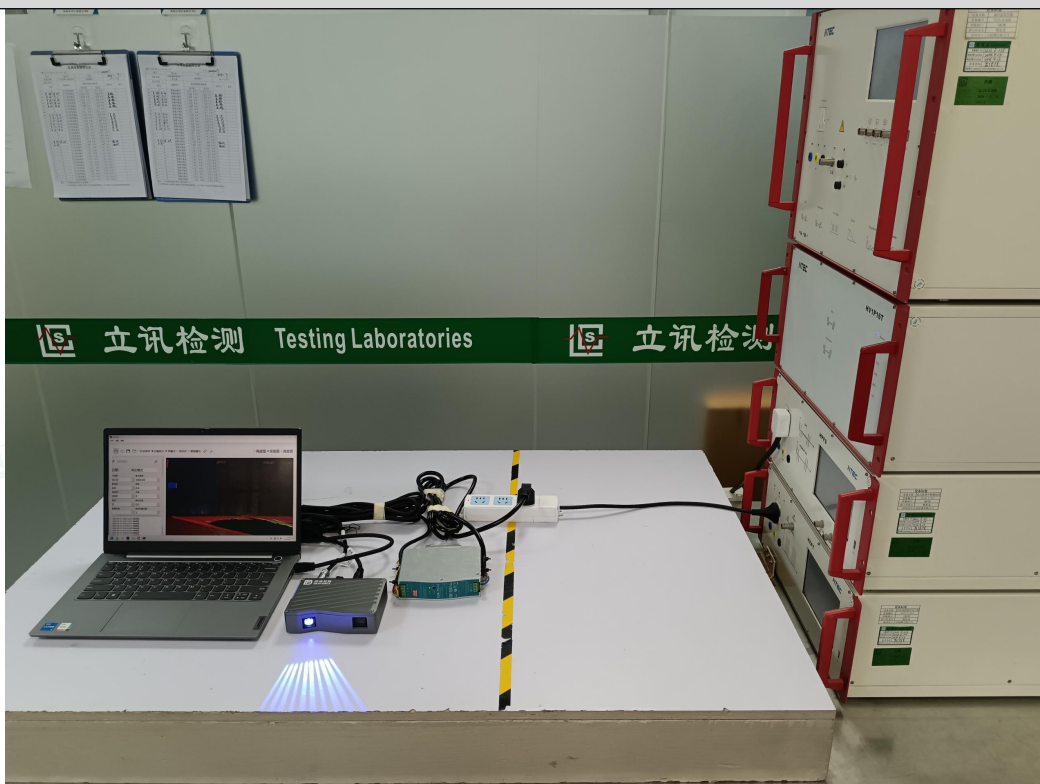
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B.3. Electrostatic Discharge



B.4. Electrical Fast Transient / Burst



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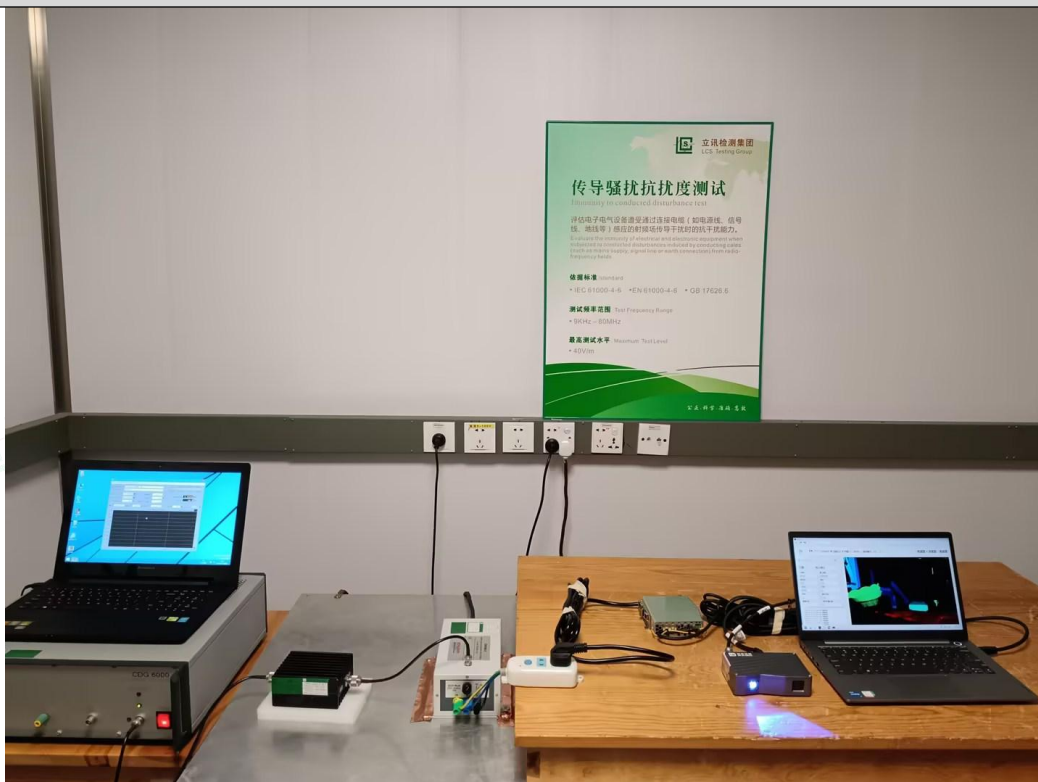
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B.5. Continuous induced RF disturbances



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ANNEX C - EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Photo.1

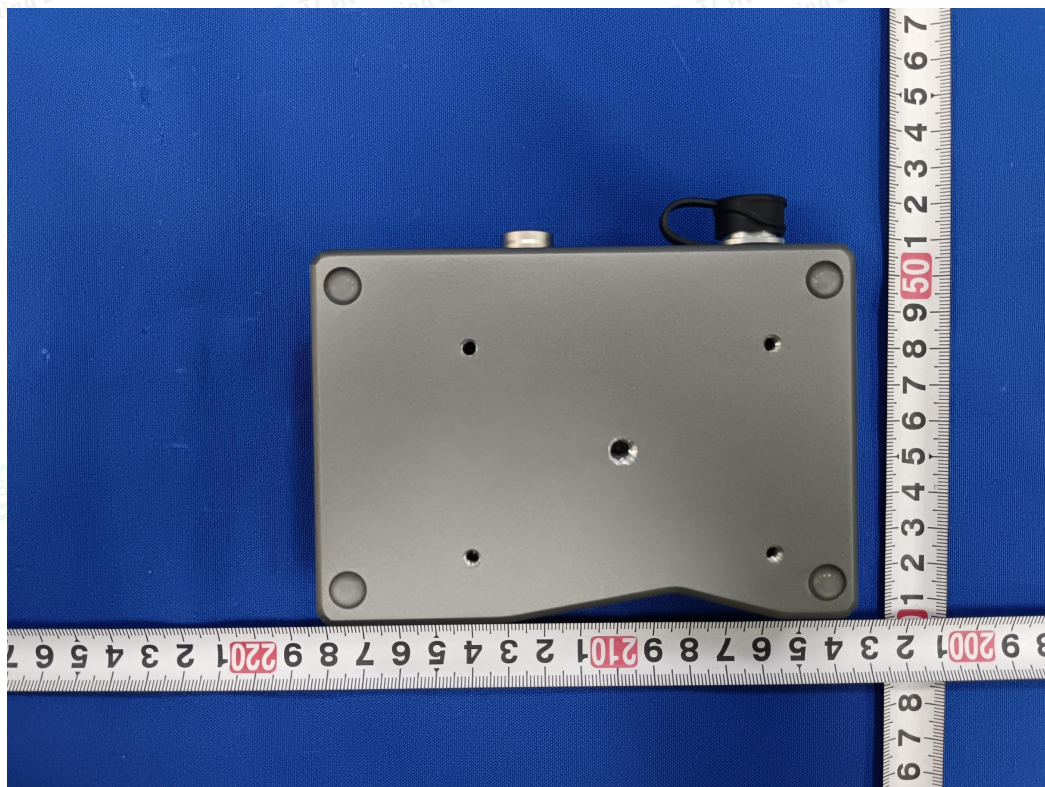


Photo.2





Photo.3

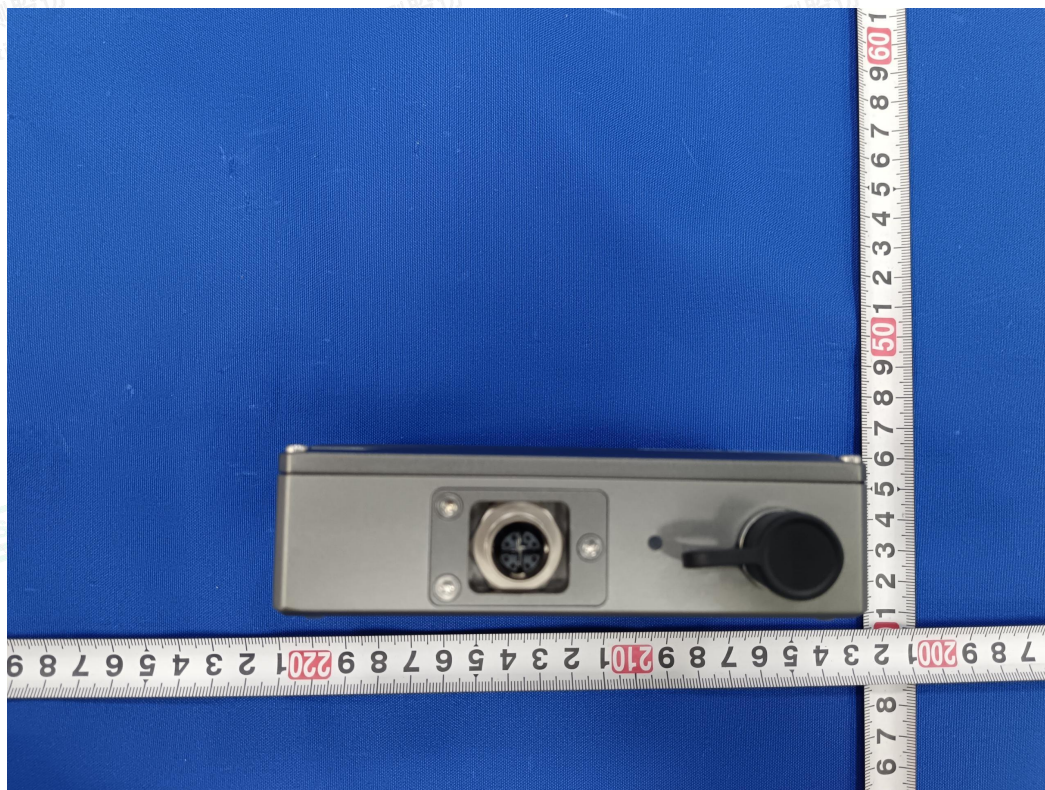


Photo.4



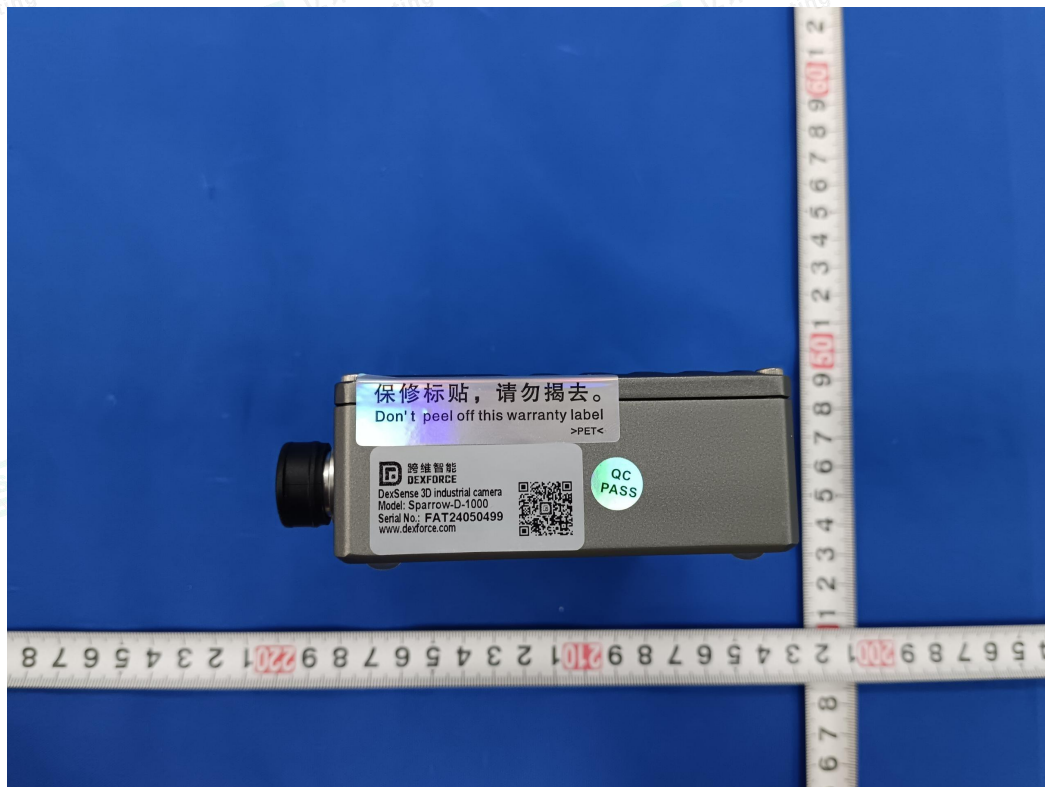


Photo.5

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