

EMC Test Report

Certificate No. : TB210528244

Applicant : Shenzhen Yipincheng Technology Co., Ltd

Equipment Under Test (EUT)

EUT Name : microscope

Model No. : inskam303

Series Model No. : inskam301, inskam302, inskam306, inskam307, inskam308, inskam312, inskam314, inskam315, inskam315w, inskam316, inskam317, inskam318, inskam320, inskam322, inskam324, inskam326, inskam328, inskam330, inskam332

Brand Name : ----

Receipt Date : 2021-05-17

Test Date : 2021-05-18 to 2021-05-26

Issue Date : 2021-05-26

Standards : EN 55032:2015
EN 55035:2017

Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above. The EUT technically complies with the 2014/30/EU directive requirements

Test/Witness Engineer :

Rebecca

Rebecca

Engineer Supervisor :

Wan Su

Wan Su

Engineer Manager :

Ray Lai

Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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1. General Information

1.1. Client Information

Applicant	:	Shenzhen Yipincheng Technology Co., Ltd
Address	:	A902-51, Block ABCD, Building 3, Phase I, Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen Guangdong, China
Manufacturer	:	Shenzhen Yipincheng Technology Co., Ltd
Address	:	A902-51, Block ABCD, Building 3, Phase I, Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen Guangdong, China

1.2. General Description of EUT (Equipment Under Test)

EUT Name	:	microscope
Model(s)	:	inskam303, inskam301, inskam302, inskam306, inskam307, inskam308, inskam312, inskam314, inskam315, inskam315w, inskam316, inskam317, inskam318, inskam320, inskam322, inskam324, inskam326, inskam328, inskam330, inskam332
Model Difference	:	All above models are identical in schematic, structure and critical components except for model names.
Brand Name	:	----
Class of EUT	:	<input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B
EUT Type	:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing <input type="checkbox"/> combination
F_x	:	≤108MHz
Power Supply	:	USB Input: DC 5V, 0.5A, 0.25W or DC 3.7V, 800mAh by Li-ion Battery
F_x : Highest internal frequency.		

1.3. Description of Operating Mode

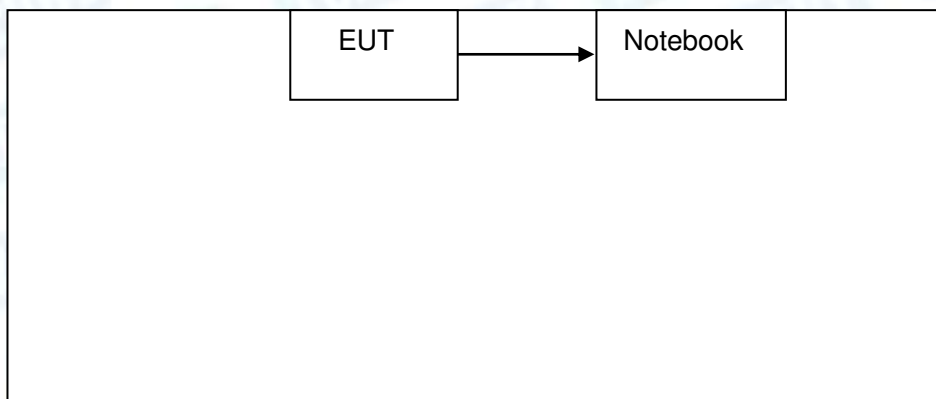
To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Working Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as Following:

For EMI Test	
Final Test Mode	Description
Mode 1	Working Mode
For EMS Test	
Final Test Mode	Description
Mode 1	Working Mode

1.4. Block Diagram Showing the Configuration of System Tested



1.5. Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
Notebook	161301-CN	15987/00203076	Xiaomi	√
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1.6. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test	Parameters	Expanded Uncertainty (U_{Lab})	Expanded Uncertainty (U_{Cispr})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB	± 4.0 dB ± 3.6 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB	N/A
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB	± 5.2 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB	N/A
Mains Harmonic	Voltage	$\pm 3.11\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 3.25\%$	N/A

1.7. General Performance Criterion

General

General performance criteria are defined in 8.2, 8.3 and 8.4. These criteria shall be used during the testing of primary functions where no relevant annex is applicable.

When assessing the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

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.

1.8. Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at: 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

2. TEST Results Summary

EMISSION (<input checked="" type="checkbox"/> EN 55032: 2015)			
Description of test items	Standards	Class	Results
Conducted disturbance at mains terminals	EN 55032: 2015	<input type="checkbox"/> Class A <input type="checkbox"/> Class B	N/A
Conducted disturbance for asymmetric mode	EN 55032: 2015	<input type="checkbox"/> Class A <input type="checkbox"/> Class B	N/A ₍₂₎
Conducted differential voltage emission	EN 55032: 2015	Class B	N/A ₍₂₎
Radiated Disturbance	EN 55032: 2015	<input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B	Pass
Harmonic current emissions	EN 61000-3-2: 2014	<input type="checkbox"/> Class A <input type="checkbox"/> Class D	N/A
Voltage fluctuation and flicker	EN 61000-3-3: 2013		N/A
Note: (1) Class A/Class B: Applicable to AC mains power ports (2) Class A: Applicable to wired network ports, optical fibre ports with metallic shield or tension members and antenna ports. Class B: Applicable to wired network ports, optical fibre ports with metallic shield or tension members, broadcast receiver tuner ports and antenna ports. Applicable to ports listed above and intended to connect to cables longer than 3 m. (3) Class B: Applicable to TV broadcast receiver tuner ports with an accessible connector, RF modulator output ports and FM broadcast receiver tuner ports with an accessible connector. (4) Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes. Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.			

IMMUNITY (<input checked="" type="checkbox"/> EN 55035: 2017)		
Description of test items	Standards	Results
Electrostatic Discharge (ESD)	EN 61000-4-2: 2009	Pass
Continuous RF Electromagnetic Field Disturbances	EN 61000-4-3: 2006+A2:2008+A2: 2010	Pass
EFT/B Immunity	EN 61000-4-4: 2012	N/A
Surge Immunity	EN 61000-4-5: 2014	N/A
Continuous RF Disturbances	EN 61000-4-6: 2014	N/A
Power frequency magnetic field	EN 61000-4-8: 2010	N/A ⁽¹⁾
Voltage dips, >95% reduction	EN 61000-4-11: 2004	N/A
Voltage dips, 30% reduction		
Voltage interruptions		
Broadband impulse noise disturbances, repetitive	EN 61000-4-6: 2014	N/A ⁽²⁾
Broadband impulse noise disturbances, isolated		
Note: N/A is an abbreviation for Not Applicable. (1) Not applicable, Applicable only to equipment containing devices intrinsically susceptible to magnetic fields, the EUT is not containing devices susceptible to magnetic fields. (2) Not applicable, Applicable only to CPE xDSL ports.		

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Magnetic Emission	EZ-EMC	EZ	CDI-03A2
Disturbance Power	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
Harmonic Current	CTS4	CI	4.24.0
Voltage Fluctuation and Flicker	CTS4	CI	4.24.0
Conducted Immunity	IEC/EN 61000-6-4 Application	FRANKONIA	1.1.1
Electrical Fast Transient	lec.control	Nemtest	5.1.1.0
Surge	lec.control	Nemtest	5.1.1.0
Voltage Dip and Interruption	lec.control	Nemtest	5.1.1.0

4. Test Equipment Used

Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 01, 2020	Feb.28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 01, 2020	Feb.28, 2022
Pre-amplifier	HP	11909A	185903	Feb. 25, 2021	Feb.24, 2022
Pre-amplifier	HP	8449B	3008A00849	Feb. 25, 2021	Feb.24, 2022
Cable	HUBER+SUHNER	100	SUCOFLEX	Feb. 25, 2021	Feb.24, 2022
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Discharge Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
ESD Tester	TESEQ	NSG437	304	Jul. 07, 2020	Jul. 06, 2021
Radiated Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Vector Signal Generator	Agilent	E4438C	US44271917	Jul. 07, 2020	Jul. 06, 2021
Power meter	Agilent	E4419B	GB40202122	Jul. 07, 2020	Jul. 06, 2021
Power Sensor	Agilent	E9300A	MY41496625	Jul. 07, 2020	Jul. 06, 2021
Power Sensor	Agilent	E9300A	MY41496628	Jul. 07, 2020	Jul. 06, 2021
RF power Amplifier	OPHIR	5225R	1045	Jul. 07, 2020	Jul. 06, 2021
RF power Amplifier	OPHIR	5273R	1018	Jul. 07, 2020	Jul. 06, 2021
Antenna	SCHWARZBECK	STLP9128E-special	STLP9128Es#139	Jul. 07, 2020	Jul. 06, 2021
Antenna	SCHWARZBECK	STLP 9149	STLP 9149#456	Jul. 07, 2020	Jul. 06, 2021

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1. Test Standard

EN 55032: 2015

5.1.2. Test Limit

Bellow 1GHz

Frequency	Limit (dB μ V/m) (3m)	
	Quasi-peak Level	
	Class A	Class B
30MHz~230MHz	50	40
230MHz~1000MHz	57	47

Remark: 1. The lower limit shall apply at the transition frequency.
2. The test distance is 3m.

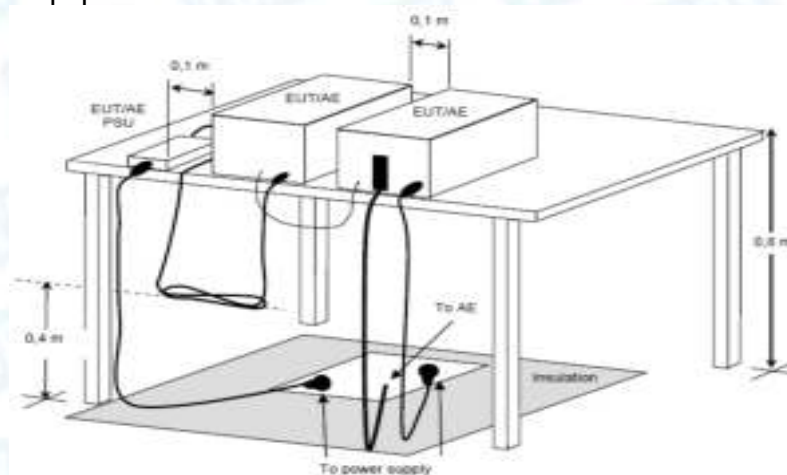
Above 1GHz

Frequency (GHz)	Limit (dB μ V/m) (3m)			
	Class A		Class B	
	Peak	Average	Peak	Average
1~3	76	56	70	50
3~6	80	60	74	54

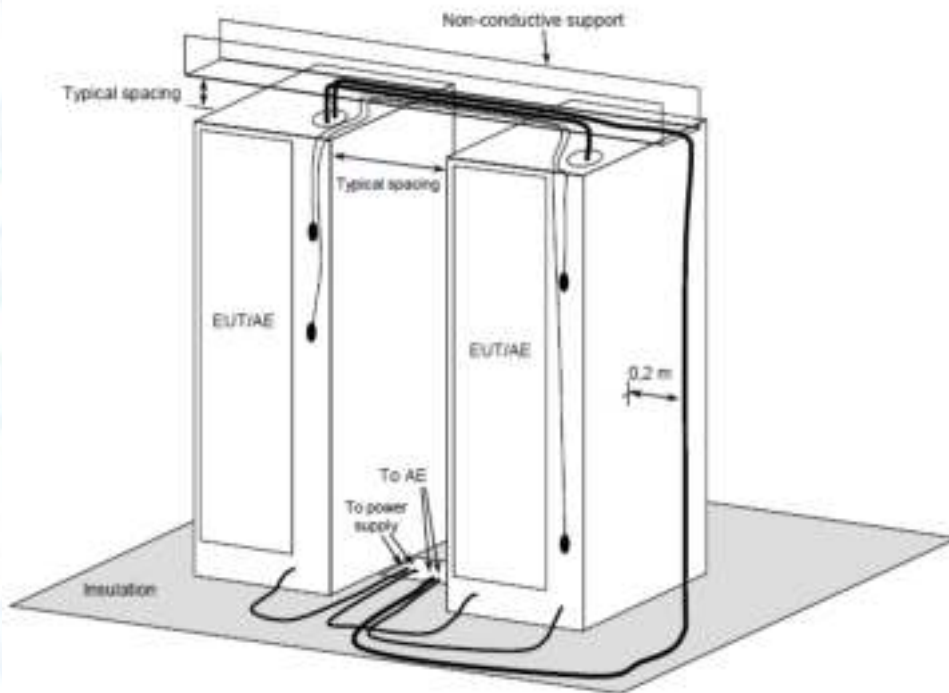
Remark: 1. The lower limit shall apply at the transition frequency.
2. The test distance is 3m.

5.2. Test Setup

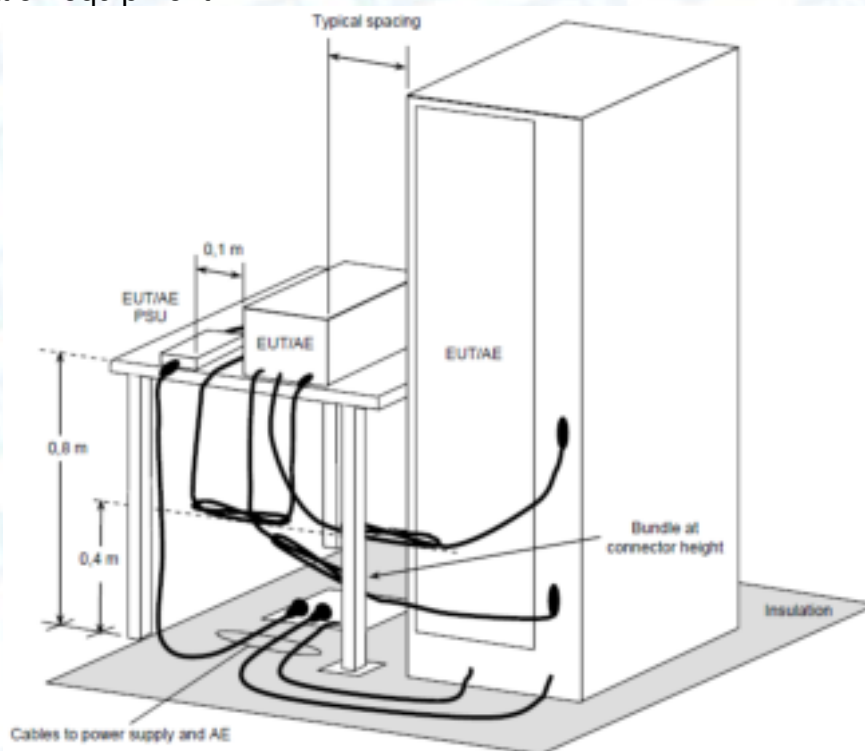
- For table top equipment



For floor standing equipment



For combination equipment



5.3. Test Procedure

Measurement was performed according to clause 7.3 of CISPR 16-2-3.

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m. The table was rotated 360 degrees to determine the position of the highest radiation. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

Highest internal frequency (Fx)	Highest measured frequency for radiated measurement	Measured Bandwidth
$F_x \leq 108 \text{ MHz}$	1 GHz	120kHz
$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	2 GHz	1MHz
$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	5 GHz	1MHz
$F_x > 1 \text{ GHz}$	5*Fx up to a maximum of 6 GHz	1MHz

NOTE 1: For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.
NOTE 2: For outdoor units of home satellite Equipment receiving systems highest measured frequency shall be 18GHz.

5.4. Deviation From Test Standard

No deviation

5.5. Test Data

Please refer to the Attachment A.

6. Electrostatic Discharge Immunity Test

6.1 Test Requirements

6.1.1. Test Standard

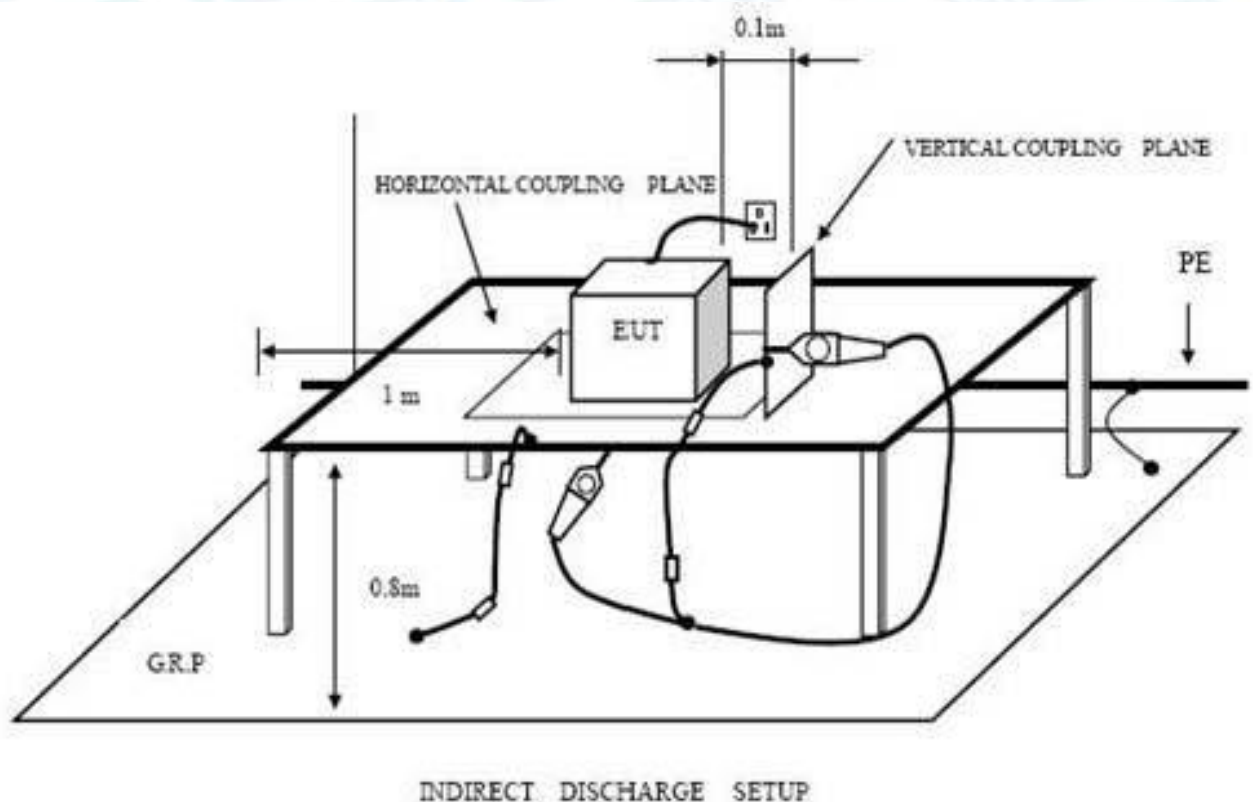
EN 55035:2017 (EN 61000-4-2:2009)

6.1.2. Test Level

Discharge Impedance:	330 ohm/ 150pF
Discharge Voltage:	Air Discharge: 2kV/4kV/8Kv (Direct) Contact Discharge: 2kV/4kV (Direct /Indirect)
Polarity:	Positive& Negative
Number of Discharge:	Air Discharge: min.20 times at each test point Contact Discharge: min.200 times in total
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

6.1.3. Performance criterion: **B**

6.2. Test Setup



6.3. Test Procedure

6.3.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

6.3.2. Contact Discharge:

All the procedure shall be same as air discharge. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.3.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) 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.

6.3.4. Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.4. Deviation From Test Standard

No deviation

6.5. Test Data

Please refer to the Attachment B.

7. Radiated Electromagnetic Field Immunity Test

7.1. Test Requirements

7.1.1. Test Standard

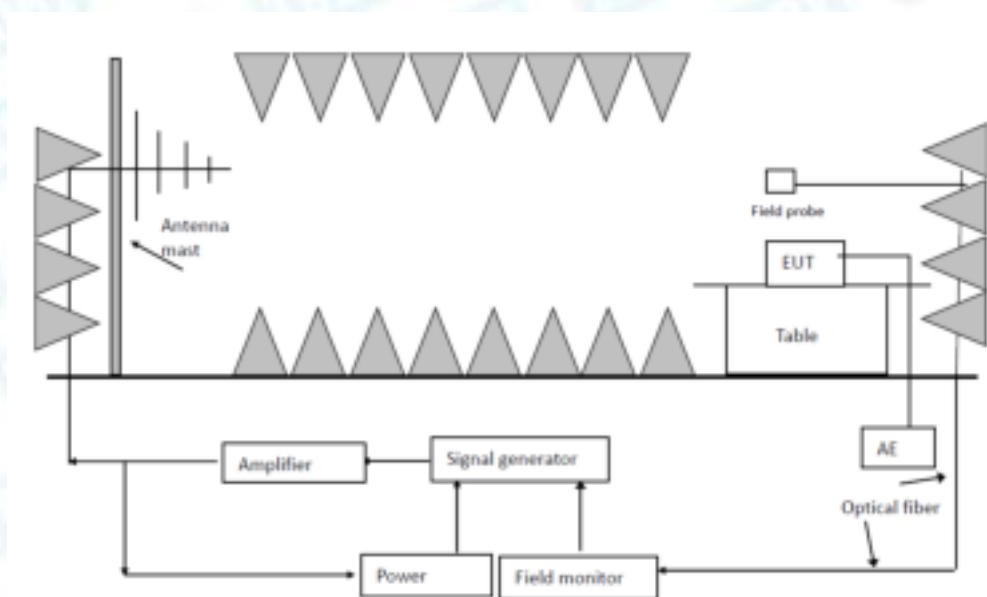
EN 55035:2017 (EN 61000-4-3)

7.1.2 Test Level

Level	Field Strength V/m
1	1
2	3
3	10
X	Special

Performance criterion: **A**

7.2. Test Setup



7.3. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a camera is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
Fielded strength	3V/m (Severity Level 2)
Radiated signal	Modulated
Scanning frequency	80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz
Sweep time of radiated	0.0015 Decade/s
Dwell time	1 Sec.

7.4. Deviation From Test Standard

No deviation

7.5. Test Data

Please refer to the Attachment C.

8. Photographs - Constructional Details

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



Photo 3 Appearance of EUT

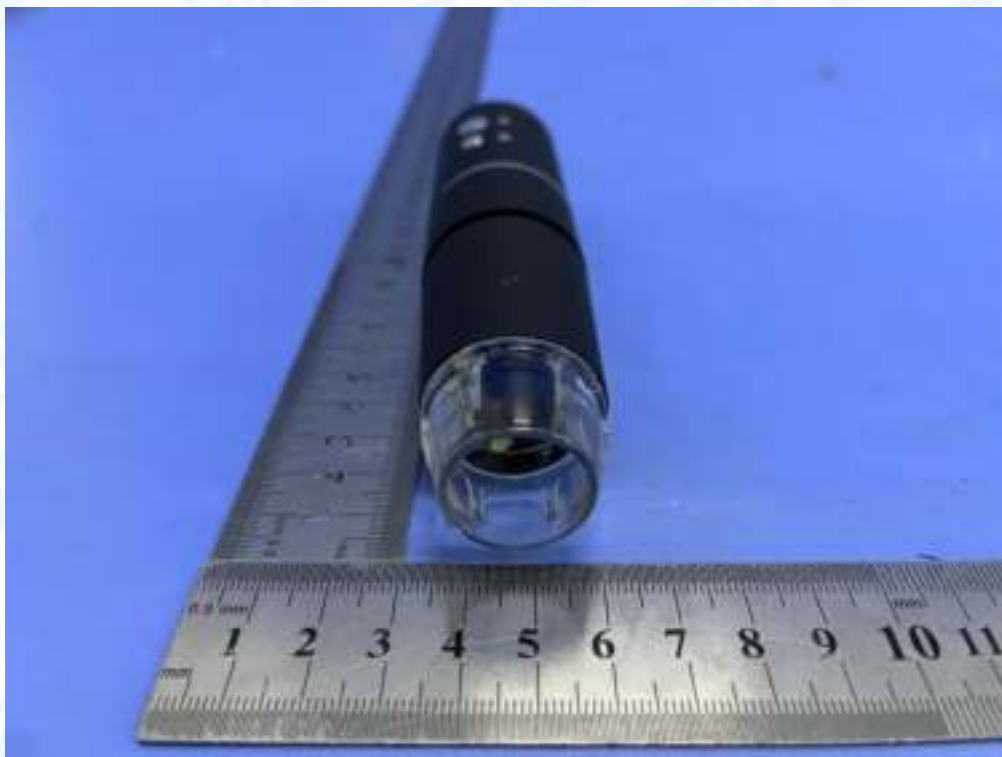


Photo 4 Internal of EUT



Photo 5 Appearance of PCB

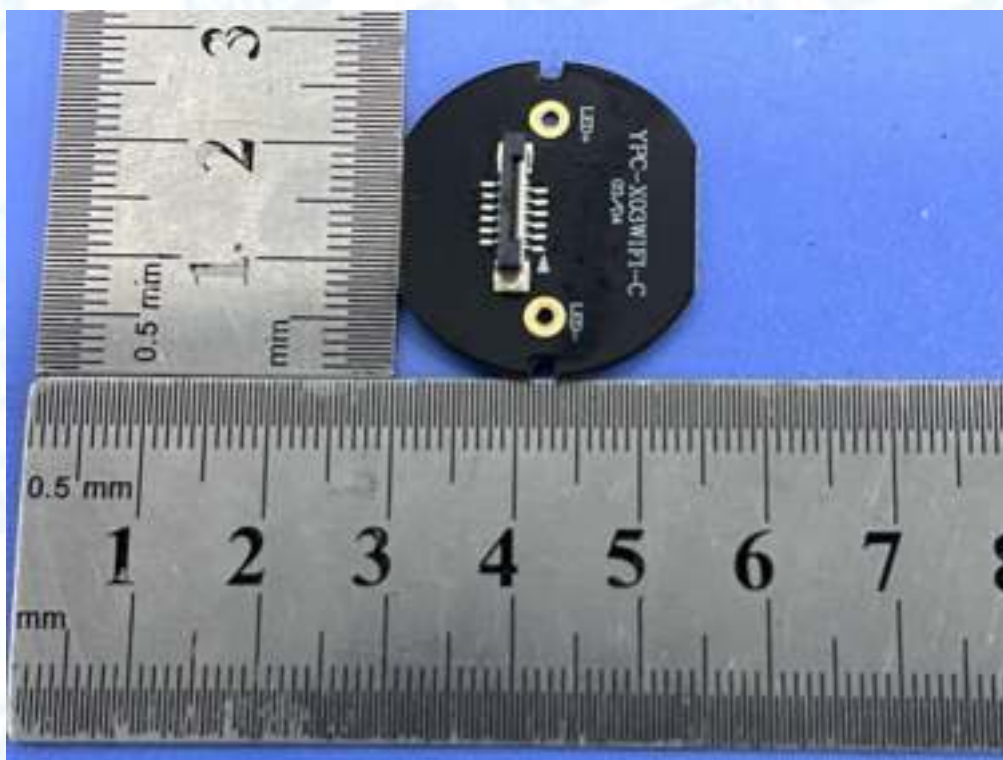


Photo 6 Appearance of PCB

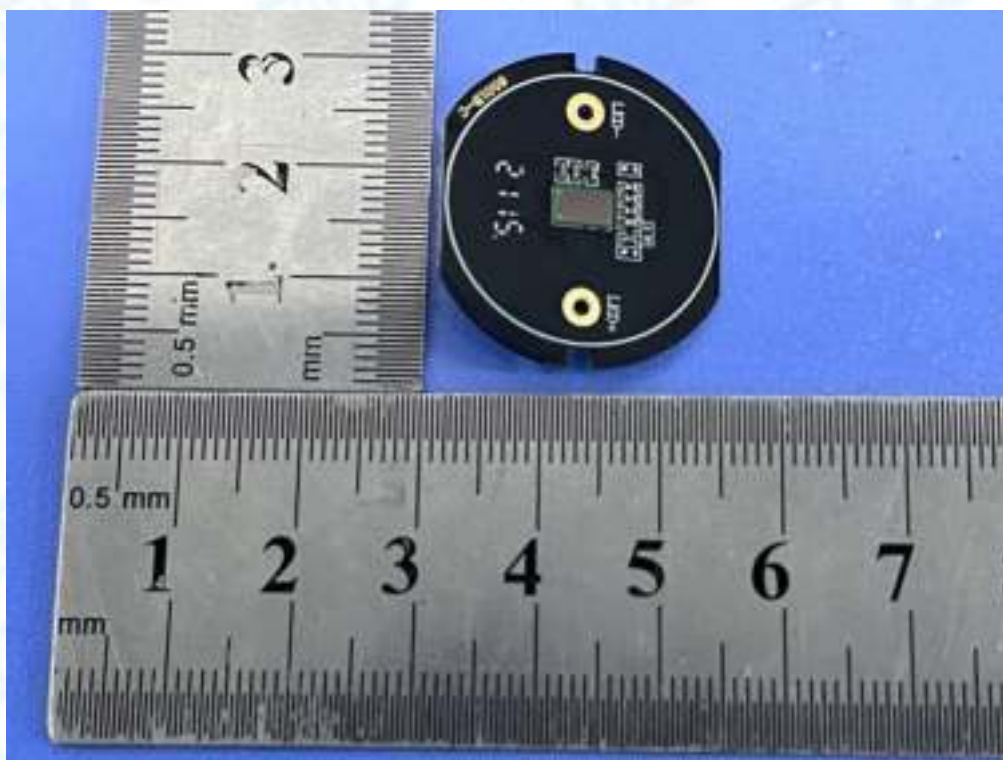


Photo 7 Appearance of PCB

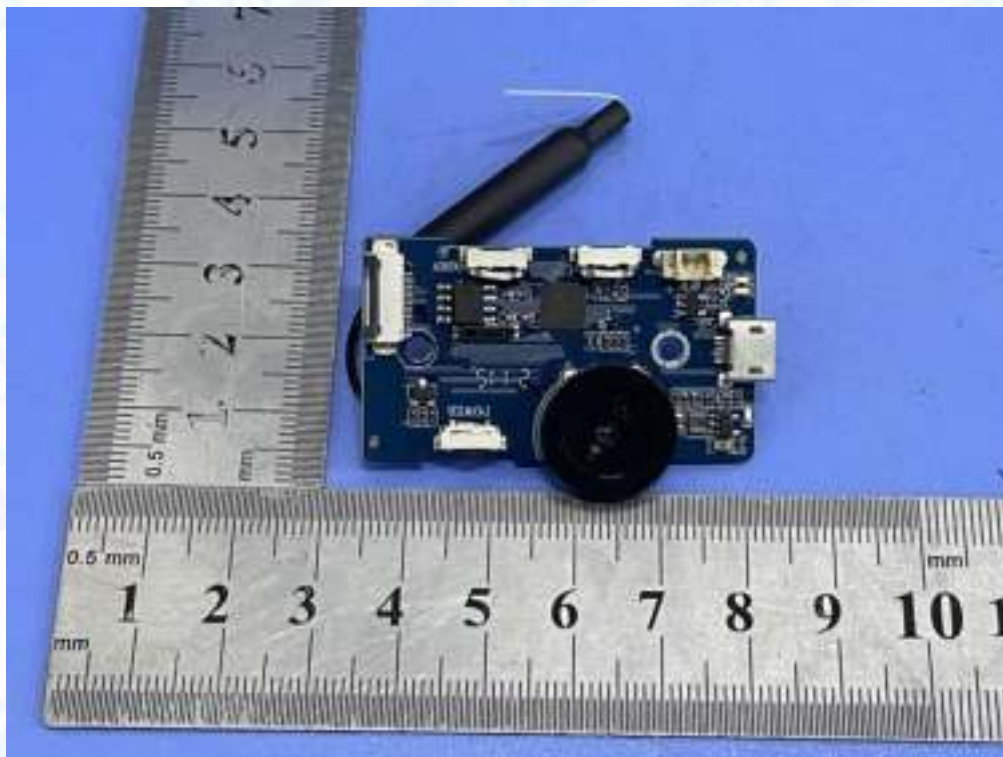
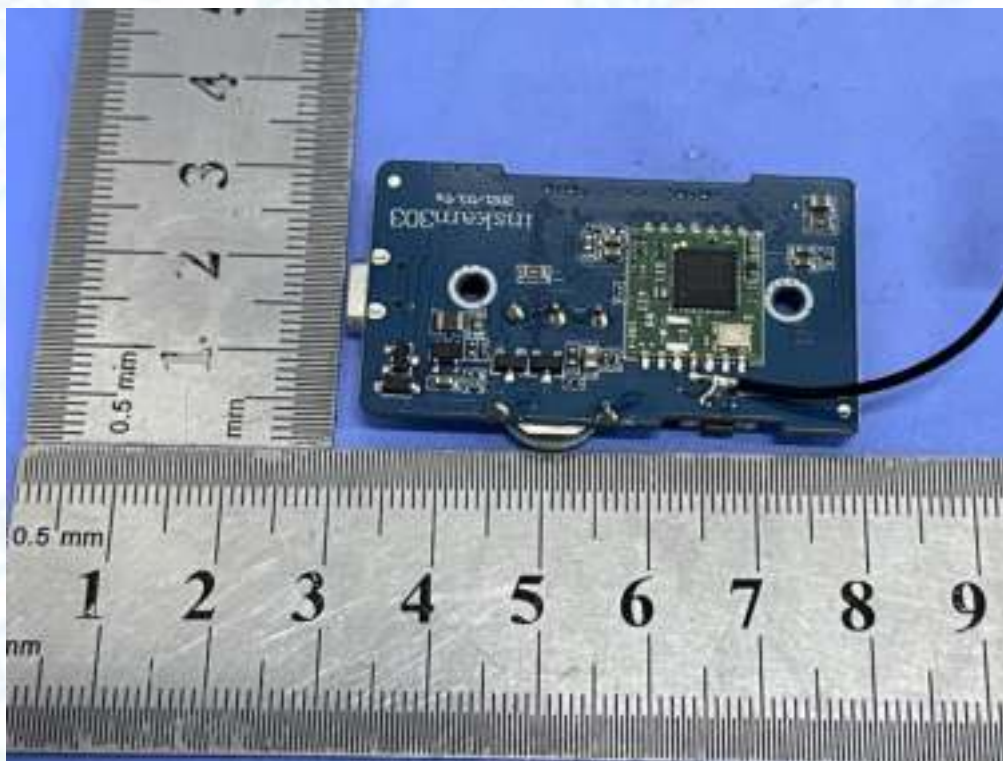


Photo 8 Appearance of PCB



9. Photographs - Test Setup

Radiated Emission Test Setup

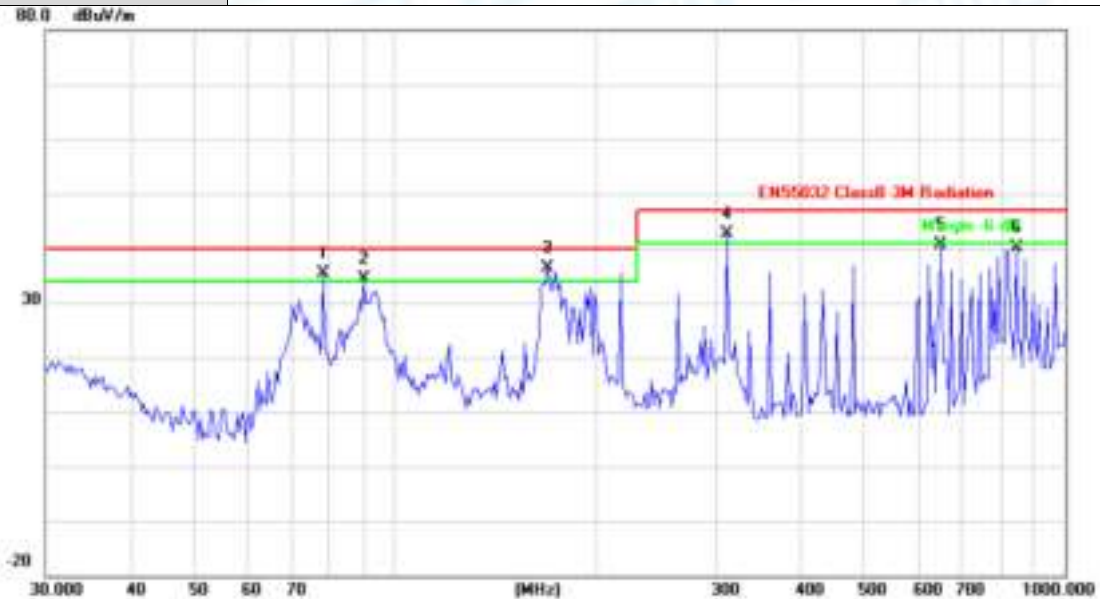


Electrostatic Discharge Test Setup



Attachment A--Radiated Emission Test Data

Temperature:	23.9°C	Relative Humidity:	44%
Pressure:	1010 hPa		
Test Voltage:	DC 5V		
Ant. Pol.	Horizontal		
Test Mode:	Mode 1		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	!	77.8653	58.14	-22.66	35.48	40.00	-4.52	peak
2	!	89.5899	56.27	-21.88	34.39	40.00	-5.61	peak
3	*	168.4138	56.81	-20.52	36.29	40.00	-3.71	peak
4	!	312.1792	58.41	-15.88	42.53	47.00	-4.47	peak
5		651.9416	48.61	-7.94	40.67	47.00	-6.33	peak
6		845.0878	45.91	-5.87	40.04	47.00	-6.96	peak

Emission Level= Read Level+ Correct Factor

Temperature:	23.9°C	Relative Humidity:	44%
Pressure:	1010 hPa		
Test Voltage:	DC 5V		
Ant. Pol.	Vertical		
Test Mode:	Mode 1		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		31.0705	38.06	-13.74	24.32	40.00	-15.68	peak
2		70.0902	53.55	-23.39	30.16	40.00	-9.84	peak
3	!	168.4138	55.89	-20.52	35.37	40.00	-4.63	peak
4		407.5144	48.83	-12.24	36.59	47.00	-10.41	peak
5	*	482.2155	54.56	-10.99	43.57	47.00	-3.43	peak
6	!	965.5421	45.93	-4.16	41.77	47.00	-5.23	peak

Emission Level= Read Level+ Correct Factor

Attachment B--Electrostatic Discharge Test Data

Temperature : 23.7°C	Humidity : 44%		
Power supply : DC 5V	Test Mode : Mode 1		
Required Performance Criteria: B			
Air Discharge: $\pm 2/\pm 4/\pm 8$ kV Contact Discharge: $\pm 2/\pm 4$ kV			
Location	Test Level (kV)	Judgment	Result
A1	± 2 kV ± 4 kV ± 8 kV	A	PASS
A2		A	
A3		A	
A4		A	
A5		A	
A6		A	
HCP		± 4 kV	
VCP	± 4 kV	A	

Test Location Photos**Note:**

- 1) Criteria A: There was no change operated with initial operating during the test.
- 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 3) Criteria C: The system shut down during the test.

Attachment C--RF Field Strength Susceptibility Test Data

Temperature : 23.8°C	Humidity : 46%								
Power supply : DC 5V	Test Mode : Mode 1								
Required Performance Criteria: A									
Modulation: AM 80% , Field strength: 3V/m, Pulse: 1 kHz.									
Antenna Polarity	Actual Performance Criteria				Result				
	Frequency Range: 80~1000MHz								
	EUT Position								
	Front	Right	Rear	Left					
H	A	A	A	A	PASS				
V	A	A	A	A	PASS				
EUT Position	Frequency								Result
	1800MHz		2600MHz		3500MHz		5000MHz		
	Antenna Polarity								
	H	V	H	V	H	V	H	V	
Front	A	A	A	A	A	A	A	A	PASS
Right	A	A	A	A	A	A	A	A	PASS
Rear	A	A	A	A	A	A	A	A	PASS
Left	A	A	A	A	A	A	A	A	PASS
Remark:									
1) Criteria A: There was no change operated with initial operating during the test.									
2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.									
3) Criteria C: The system shut down during the test.									

-----END OF REPORT-----