

EMC TEST REPORT

For

Shenzhen Xiaofeida Electronics Co., Ltd.

MOIS Display

Model No.:

MOIS DSP 00, D222-V7, D222-V8, D222-V9, D222-10

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	MOIS Display
Model Number	:	MOIS DSP 00, D222-V7, D222-V8, D222-V9, D222-10
Test Model Number	:	MOIS DSP 00

Remark:

All models are identical in PCB layout, interior structure and electrical circuits. The differences are the model name and appearance. The model MOIS DSP 00 was chosen as a representative model to perform the tests.

Brand	:	/
Ratings	:	12V/24VDC, 3W
Test Voltage	:	12VDC
Applicant	:	Shenzhen Xiaofeida Electronics Co., Ltd.
Address	:	Room 901, Unit 1, Fucheng Digital Innovation Park, 15-5, Shijing Road, Fumin Community, Fucheng Street, Longhua District, Shenzhen City, Guangdong Province, China
Manufacturer	:	Shenzhen Xiaofeida Electronics Co., Ltd.
Address	:	Room 901, Unit 1, Fucheng Digital Innovation Park, 15-5, Shijing Road, Fumin Community, Fucheng Street, Longhua District, Shenzhen City, Guangdong Province, China

Measurement Procedure Used:

EN 55032:2015+A11:2020+A1:2020
EN 55035:2017+A11:2020
(EN 61000-4-2, EN 61000-4-3)

The device described above is tested by Shenzhen PTSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels that the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen PTSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is technically compliant with the EN 55032 and EN 55035 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen PTSI Testing Co., Ltd.

1.2 Measurement Uncertainty

Radiation Emission Uncertainty	:	Ur = 3.3
Conduction Emission Uncertainty	:	Uc = 2.8
Power clamp Emission Uncertainty	:	Uc = 2.6

1.3 Performance Criteria

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonable expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual operating state or stored data is allowed to persist after test. 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 from what the user may reasonable expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instruction for use.

2. MEASURING DEVICES AND TEST EQUIPMENT

2.1 Test Equipment List and Details

Item	Equipment	Manufacturer	Model No.	Last Cal	Cal. Interval
1	EMI Test Receiver	R&S	ESCI	2023-05-18	1 Year
2	EMI Test Receiver	R&S	ESPI	2023-05-18	1 Year
3	Amplifier	HP	8447D	2023-05-18	1 Year
4	Single Power Conductor Module	R&S	NNBM 8124	2023-05-18	1 Year
5	Single Power Conductor Module	R&S	NNBM 8124	2023-05-18	1 Year
6	Power Clamp	SCHWARZBECK	MDS-21	2023-05-18	1 Year
7	Positioning Controller	C&C	CC-C-1F	N/A	N/A
8	Electrostatic Discharge Simulator	TESEQ	NSG438	2023-05-18	1 Year
9	Fast Transient Burst Generator	SCHAFFNER	MODULA61 50	2023-05-18	1 Year
10	Fast Transient Noise Simulator	Noiseken	FNS-105AX	2023-05-18	1 Year
11	Color TV Pattern Generator	PHILIPS	PM5418	N/A	N/A
12	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8 K	2023-05-18	1 Year
14	Capacitive Coupling Clamp	TESEQ	CDN8014	2023-05-18	1 Year
15	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	2023-05-18	1 Year
16	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2023-05-18	1 Year
17	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	2023-05-18	1 Year
18	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	2023-05-18	1 Year
19	Horn Antenna	SCHWARZBECK	BBHA9120A	2023-05-18	1 Year
20	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	2023-05-18	1 Year
21	Triple-Loop Antenna	EVERFINE	LLA-2	2023-05-18	1 Year
22	Electric bridge	Jhai	JK2812C	N/A	N/A
23	RF POWER AMPLIFIER	FRANKONIA	FLL-75	2023-05-18	1 Year
24	CDN	FRANKONIA	CDN M2+M3	2023-05-18	1 Year
25	6DB Attenuator	FRANKONIA	N/A	2023-05-18	1 Year
26	EM Injection clamp	FCC	F-203I-23m m	2023-05-18	1 Year

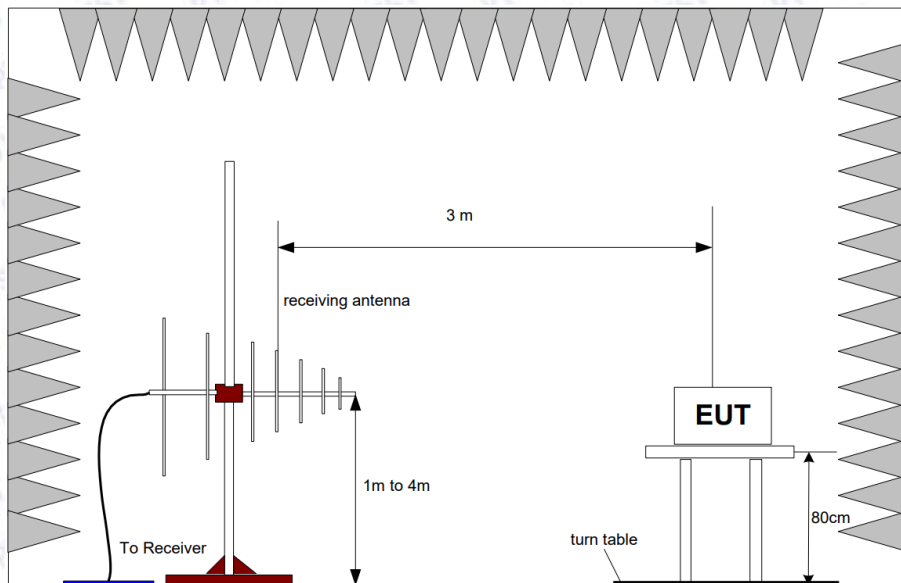
27	9kHz-2.4GHz signal generator 2024	MARCONI	10S/6625-99-457-8730	2023-05-18	1 Year
28	10dB attenuator	ELECTRO-METRICS	EM-7600	2023-05-18	1 Year
29	ISN	TESEQ	ISN-T800	2023-05-18	1 Year
30	10KV surge generator	SANKI	SKS-0510M	2023-05-18	1 Year
31	HRMONICS&FLICKRE ANALYSER	SCHAFFNER	CCN 1000-1	2023-05-18	1 Year
32	Spectrum Analyzer	R&S	FSP	2023-05-18	1 Year
33	Broadband preamplifier	SCHWARZBECK	BBV9718	2023-05-18	1 Year

2.2 Test Summary

For the EUT described above, The standards used were EN 55032 Class B for Emissions & EN 55035 for Immunity		
Standard	Test Items	Result
Test Carried Out Under EN 55032:2015+A11:2020+A1:2020		
EN 55032	Conducted Emissions	N/A
	Radiated Emissions	PASS
Test Carried Out Under EN IEC 61000-3-2:2019+A1:2021 / EN 61000-3-3:2013+A1:2019+A2:2021		
EN IEC 61000-3-2	Harmonic Current Measurement *	N/A
EN 61000-3-3	Voltage Fluctuations & Flicker Measurement	N/A
Test Carried Out Under EN 55035:2017+A11:2020		
EN 61000-4-2	Electrostatic Discharge Measurement	PASS
EN 61000-4-3	RF Field Strength Susceptibility Measurement	PASS
EN 61000-4-4	Electrical Fast Transient/Burst Measurement	N/A
EN 61000-4-5	Surge Immunity Measurement	N/A
EN 61000-4-6	Conducted Susceptibility Measurement	N/A
EN 61000-4-8	Power Frequency Magnetic Field Immunity	N/A
EN 61000-4-11	Voltage Dips and Interruptions Measurement	N/A
N/A: Not applicable.		
*: This test is only applicable to product have a rated power more than 75W, other than lighting equipment.		

3. RADIATED EMISSIONS

3.1 Block Diagram of Test Setup



3.2 Test Standard and Limits

3.2.1 Standard:

EN 55032:2015+A11:2020+A1:2020

3.2.2 Limits

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Frequency (MHz)	Distance (Meters)	Field Strengths Limits AV(dB μ V/m)	Field Strengths Limits PK(dB μ V/m)
1000~3000	3	50	70
3000-6000	3	54	74

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
 (2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

3.3 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 5.10 dB.

3.4 Test Procedure

Test is conducting under the description of EN 55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.

3.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B device. The equation for margin calculation is as follows:

Margin = EN 55032 Class B Limit – Corr. Ampl.

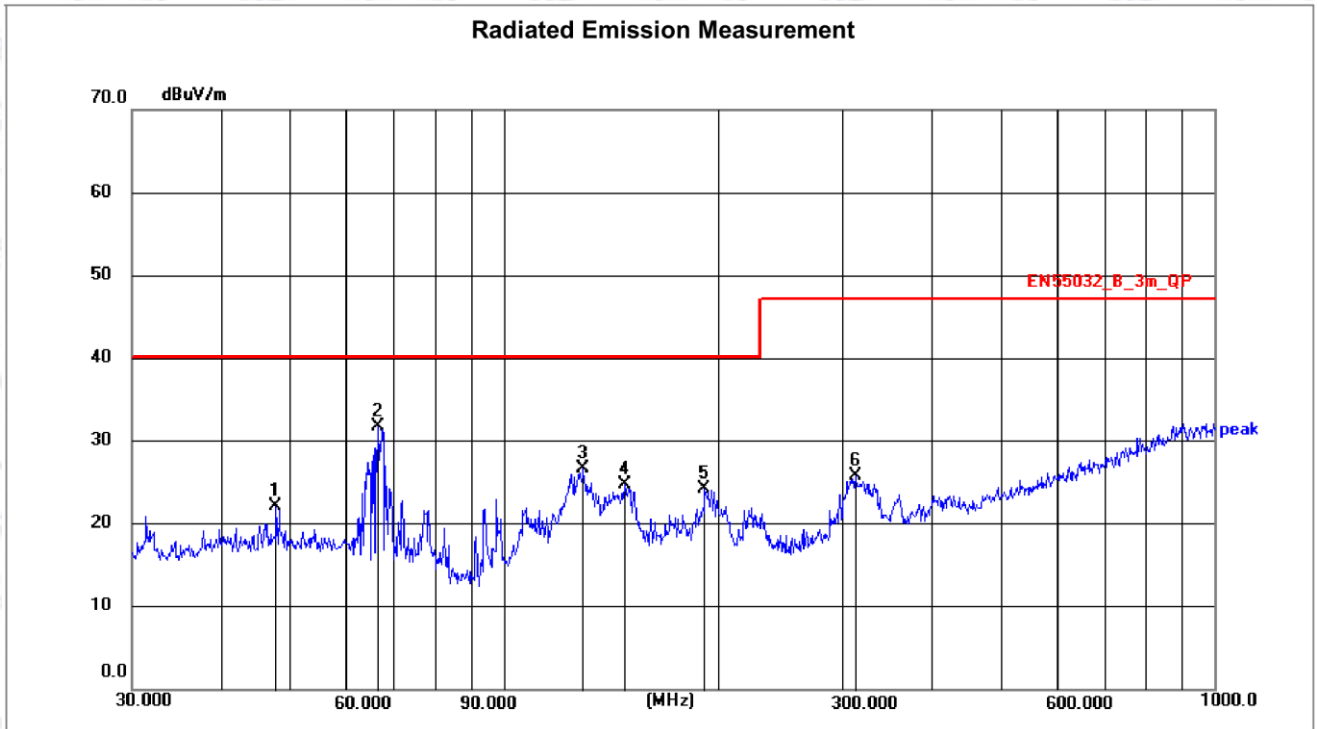
3.6 Test Results

PASS.

Please refer to the following pages.

Test Item : Radiated Emission
 Mode : ON
 Test Spec. : Horizontal

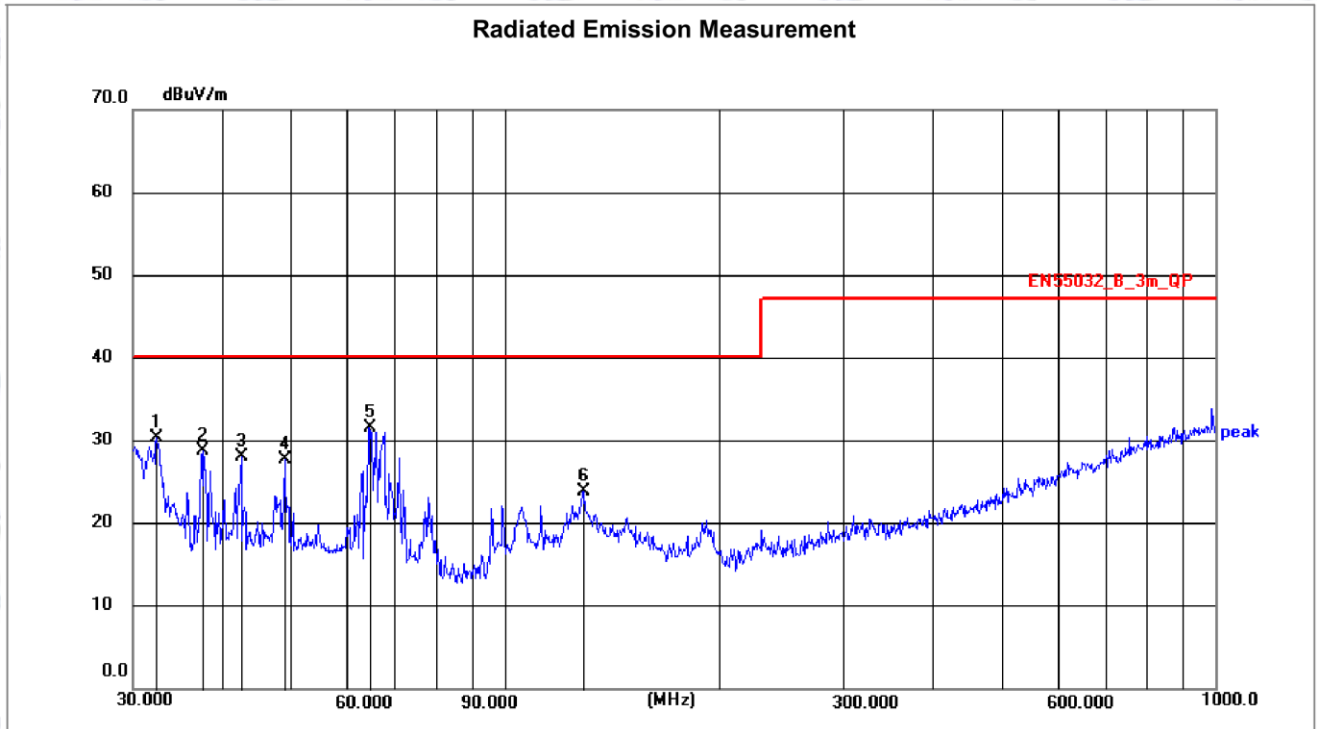
Ambient Temperature : 25°C
 Relative Humidity : 53%
 Atmospheric Pressure : 101kPa



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	47.8260	7.39	14.68	22.07	40.00	17.93	peak			P	
2 *	66.4989	18.82	12.89	31.71	40.00	8.29	peak			P	
3	129.4677	12.79	13.94	26.73	40.00	13.27	peak			P	
4	147.9214	10.15	14.53	24.68	40.00	15.32	peak			P	
5	191.7450	12.43	11.78	24.21	40.00	15.79	peak			P	
6	312.1794	10.77	14.96	25.73	47.00	21.27	peak			P	

Test Item : Radiated Emission
 Mode : ON
 Test Spec. : Vertical

Ambient Temperature : 25°C
 Relative Humidity : 53%
 Atmospheric Pressure : 101kPa

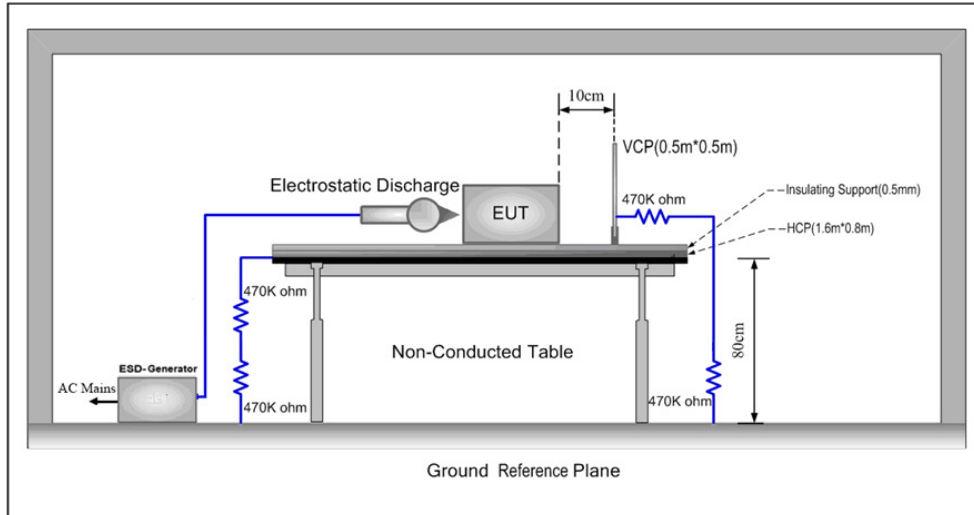


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.4059	17.41	12.91	30.32	40.00	9.68	peak			P	
2	37.5479	14.71	14.01	28.72	40.00	11.28	peak			P	
3	42.6000	13.55	14.55	28.10	40.00	11.90	peak			P	
4	49.0145	13.24	14.46	27.70	40.00	12.30	peak			P	
5 *	64.4331	18.76	12.82	31.58	40.00	8.42	peak			P	
6	129.4677	10.16	13.68	23.84	40.00	16.16	peak			P	

4. ELECTROSTATIC DISCHARGE TEST

4.1 Block Diagram of Test Setup

Block Diagram of connection between the EUT and simulators



4.2 Test Standard

EN 55035:2017+A11:2020 (EN 61000-4-2)

4.3 Severity Levels and Performance Criterion

4.3.1 Severity Level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

4.3.2 Performance Criterion: B

4.4 Test Results

PASS

Please refer to the following page.

Test Item : Electrostatic Discharge
 Mode : ON
 Criterion : B

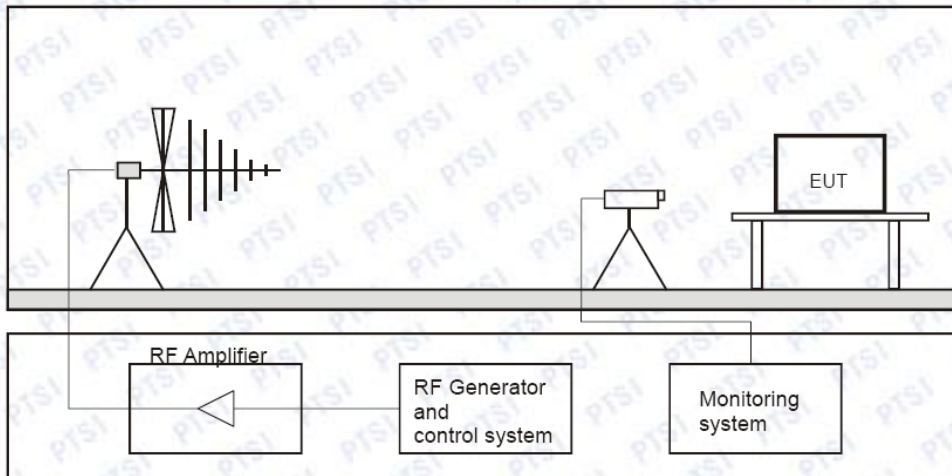
Ambient Temperature : 25°C
 Relative Humidity : 53%
 Atmospheric Pressure : 101kPa

Tabulated Results for Electrostatic Discharge Immunity

Test Points	Discharge Type	2kV		4kV		6kV		8kV		15kV	
		+	-	+	-	+	-	+	-	+	-
HCP	Contact	N/A	N/A	B	B	N/A	N/A	N/A	N/A	N/A	N/A
VCP	Contact	N/A	N/A	B	B	N/A	N/A	N/A	N/A	N/A	N/A
Port	Contact	N/A	N/A	B	B	N/A	N/A	N/A	N/A	N/A	N/A
Each conductive location touchable by hand	Contact	N/A	N/A	B	B	N/A	N/A	N/A	N/A	N/A	N/A
Each nonconductive location touchable by hand	Air	N/A	N/A	N/A	N/A	N/A	N/A	B	B	N/A	N/A

5. RADIO FREQUENCY ELECTROMAGNETIC FIELD TEST

5.1 Block Diagram of Test Setup



5.2 Test Standard

EN 55035:2017+A11:2020 (EN 61000-4-3)

5.3 Severity Levels and Performance Criterion

5.3.1 Severity Level

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

5.3.2 Performance Criterion: A

5.4 Test Results

PASS.

Please refer to the following page.

Test Item : Radio Frequency
Electromagnetic Field

Ambient Temperature : 25°C

Mode : ON

Relative Humidity : 53%

Criterion : A

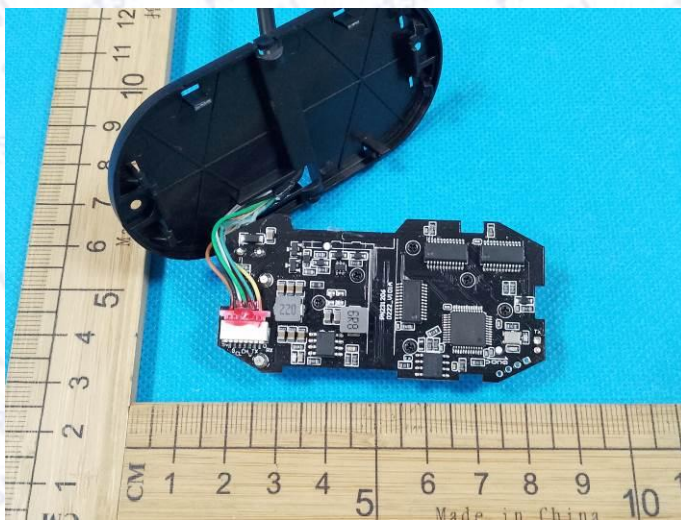
Atmospheric Pressure : 101kPa

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori
80-1000	3	A	A	A	A	A	A	A	A
1400-2700	3	A	A	A	A	A	A	A	A

Note: /

6. PHOTOS OF EUT





*****End of Report*****