

TEST REPORT

Product Name : DMX512APP

Model Number : GFC007

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TEST REPORT DESCRIPTION

Applicant : Shenzhen Greatfavian Electronic CO., LTD
5F, Tongfuyu Industrial Park, Lezhujiao, Zhoushi Road, Baoan District,
Shenzhen, China 518126

Manufacturer : Shenzhen Greatfavian Electronic CO., LTD
5F, Tongfuyu Industrial Park, Lezhujiao, Zhoushi Road, Baoan District,
Shenzhen, China 518126

Factory : Shenzhen Greatfavian Electronic CO., LTD
5F, Tongfuyu Industrial Park, Lezhujiao, Zhoushi Road, Baoan District,
Shenzhen, China 518126

Trade Mark : GFLAI

EUT : DMX512APP

Model Number : GFC007

Rating : DC 6V from adapter
Adapter: Model: ZF-0601000
INPUT: 100-240V~50/60Hz 0.65A Max
OUTPUT: 6V/1000mA

Measurement Procedure Used:

EN 55032:2015+A1:2020

EN IEC 61000-3-2: 2019+A1:2021

EN 61000-3-3:2013+A2:2021


EN 55035:2017+A11:2020

The device described above is tested by EMTEK (DONGGUAN) CO., LTD. and EMTEK (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (DONGGUAN) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN 55032, EN IEC 61000-3-2, EN 61000-3-3, EN 55035 requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (DONGGUAN) CO., LTD.

Date of Test :

Jul 04, 2024 to Oct 08, 2024

Prepared by :


Jessica Zhang /Editor

Reviewer :


Warren Deng /Supervisor

Approve & Authorized Signer :

Sam Lv / Manager

Modified Information

Version	Report No.	Revision Date	Summary
	EDG2408190171E00301R	/	Original Report



1. DESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION				
Description of Test Item		Standard	Limits	Results
Conducted Emissions From the AC Mains Power Ports		EN 55032	Class B	Pass
Asymmetric mode conducted emissions	Wired network ports		Class B	N/A
	Optical fibre ports		Class B	N/A
	Broadcast receiver tuner ports		Class B	N/A
	Antenna ports		Class B	N/A
Conducted differential voltage emissions	TV broadcast receiver tuner ports		Class B	N/A
	RF modulator output ports		Class B	N/A
	FM broadcast receiver tuner ports		Class B	N/A
Radiated emissions at frequencies up to 1 GHz			Class B	Pass
Radiated emissions at frequencies above 1 GHz			Class B	Pass
Radiated emissions from FM receivers			Table A.6	N/A
Outdoor units of home satellite receiving systems			Table A.7	N/A
Harmonic Current Emissions		EN IEC 61000-3-2	Class A	N/A
Voltage Fluctuation and Flicker		EN 61000-3-3	Section 5	Pass
IMMUNITY				
Description of Test Item		Basic Standard	Performance Criteria	Results
Electrostatic Discharge	Enclosure ports	IEC 61000-4-2:2008	B	Pass
Continuous RF electromagnetic field disturbances	Enclosure ports	IEC 61000-4-3: 2020	A	Pass
Electrical fast transients/burst	AC mains power ports	IEC61000-4-4:2012	B	Pass
	Analogue/digital data ports		B	N/A
	DC network power ports		B	N/A
Surges	AC mains power ports	IEC 61000-4-5: 2014+AMD1:2017	B	Pass
	Analogue/digital data ports		B,C	N/A
	DC network power ports		B	N/A
Continuous induced RF disturbances	AC mains power ports	IEC 61000-4-6:2013/COR 1:2015	A	Pass
	Analogue/digital data ports		A	N/A
	DC network power ports		A	N/A
Power frequency magnetic field	Enclosure ports	IEC 61000-4-8:2009	A	N/A
Voltage dips and interruptions	AC mains power ports	IEC 61000-4-11: 2020	B,C	Pass
Broadband impulsive conducted disturbances	Analogue/digital data ports	\	N/A	N/A
Note: N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : DMX512APP

Model Number : GFC007

Hardware Version : N/A

Test Voltage : AC 230V 50Hz, AC 120V 60Hz

Date of Received : Aug 19, 2024

Date of Test : Aug 19, 2024 to Oct 11, 2024

2.2. Independent Operation Modes

- A. BT
- B. 433

2.3. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted disturbance at mains Terminals	AC 230V 50Hz AC 120V 60Hz	Mode A&B	Mode A
Radiated emissions at frequencies up to 1 GHz	AC 230V 50Hz AC 120V 60Hz	Mode A&B	Mode A
Radiated emissions at frequencies above to 1 GHz	AC 230V 50Hz AC 120V 60Hz	Mode A&B	Mode A
Voltage Fluctuation and Flicker	AC 230V 50Hz	Mode A&B	Mode A
Electrostatic Discharge	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/
Continuous RF electromagnetic field disturbances	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/
Electrical fast transients/burst	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/
Surges	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/
Continuous induced RF disturbances	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/
Voltage dips and interruptions	AC 230V 50Hz AC 120V 60Hz	Mode A&B	/

2.4. Description of Support Device

Kind of Equipment	Manufacturer	Type	SN
/	/	/	/
/	/	/	/
/	/	/	/

2.5. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2024.07.06
The certificate is valid until 2030.07.05
The Laboratory has been assessed and proved to be in compliance with
CNAS/CL01:2018
The Certificate Registration Number is L3150

Recognized by FCC
Designation Number: CN1300
Test Firm Registration Number: 945551

Accredited by A2LA, April 05, 2021
The Certificate Registration Number is 4321.02

Recognized by Industry Canada
The Certificate Registration Number is CN0113

Name of Firm : EMTEK (DONGGUAN) Co., Ltd.
Site Location : Room 111&112, Building 8, -1&2/F., Office Building2, Zone A, Zhongda Marine
Biotechnology Research and Development Base, No.9, Xincheng Avenue,
Songshan Lake High-Tech Industrial Development Zone, Dongguan,
Guangdong, China

2.6. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 2.08dB(9k~150kHz Conduction 1#) 2.42dB(150k-30MHz Conduction 1#)
Radiated Emission Uncertainty (3m Chamber)	: 3.32dB (30M~1GHz Polarize: H) 3.34dB (30M~1GHz Polarize: V) 4.98dB (1~6GHz) 5.20dB (6~18GHz)
Uncertainty for Flicker test	: 0.07%
Uncertainty for Harmonic test	: 1.8%
Uncertainty for C/S Test	: 1.45(Using CDN Test)
Uncertainty for R/S Test	: 2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	: 0.6°C 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Disturbances at the AC mains port

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde&Schwarz	ESCI	100137	2024/4/29	1 Year
2.	AMN	Rohde&Schwarz	ENV216	101209	2024/4/28	1 Year
3.	Test Software	Farad	Ver. CON-03A1	--	N/A	N/A

3.2. For Radiated Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde&Schwarz	ESCI	101415	2024/4/28	1 Year
2.	Bi-log Hybrid Antenna	Schwarzbeck	VULB9163	141	2024/5/5	1 Year
3.	Pre-Amplifier	HP	8447F	OPH64	2024/4/28	1 Year
4.	Signal Analyzer	R&S	FSV30	103039	2024/4/28	1 Year
5.	Horn Antenna	Schwarzbeck	BBHA9120D	1272	2024/5/5	1 Year
6.	Pre-Amplifier	LUNAR EM	PM1-18-40	J1010000008 1	2024/4/28	1 Year
7.	Test Software	Farad	Ver. RA-03A1	--	N/A	N/A

3.3. For Harmonic / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	AC variable frequency power supply	Teseq	100-CTS-230-TESQ	1804A03259	2024/4/29	1 Year
2.	Harmonic current and voltage fluctuation analyzer	Teseq	50011X-CTS-400-SCH	1805A03008	2024/4/29	1 Year

3.4. For Electrostatic Discharge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQ	NSG 437	409	2024/5/7	1 Year

3.5. For Continuous RF Electromagnetic Field Disturbances Immunity

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Amplifier	MILMEGA	AS0102-55	1018770	2024/5/10	1 Year
2.	50ohm Diode Power Sensor	BOONTON	51011EMC	34236	2024/5/10	1 Year
3.	RF Power Meter. Dual	BOONTON	4232A	10539	2024/5/10	1 Year

	Channel					
4.	Log.-Per. Antenna	SCHWARZBECK	STLP 9129-7/16	3050	N/A	N/A
5.	Signal Generator	Agilent	N5181A	MY50145187	2024/5/10	1 Year
6.	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	N/A	N/A
7.	Field Strength Meter	DARE	RSS1006A	10I00037SN02 2	2024/5/10	1 Year
8.	Multi-function interface system	DARE	CTR1009B	12I00250SN07 2	N/A	N/A
9.	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A
10.	Power Amplifier	MILMEGA	AS1860-50	1059346	2024/5/10	1 Year
11.	Power Amplifier	Vectawave	VBA 1000-600C	133627	2023/10/23	1 Year
12.	Directional Coupler	BONN	BDC 0810-50/1500	2229689	2023/10/23	1 Year
13.	Audio Analyzer	R&S	UPV	101473	2024/5/10	1 Year
14.	Audio Test System	AUDIO PRECISION	ATS-1	41100	2024/5/10	1 Year

3.6. For Fast Transients Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMS comprehensive tester	HTEC	HCOMPACT7	190305	2024/4/29	1 Year
2.	Capacitive Coupling Clamp	RMTEST	HFK	0605-10	2024/4/29	1 Year

3.7. For Surge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMS comprehensive tester	HTEC	HCOMPACT7	190305	2024/4/29	1 Year
2	Communication waves surge generator	HTEC	HTSG 70	223001	2024/1/17	1 Year
3	Coupling Module	HTEC	HCN 8	232403	2024/1/17	1 Year
4	Coupling Module	HTEC	HDEC 8	224705	2024/1/17	1 Year

3.8. For Injected Currents Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal generator	Rohde& Schwarz	SMB100A	103042	2024/4/28	1 Year
2.	Single channel power meter	Rohde& Schwarz	NRVS	101761	2024/4/28	1 Year
3.	6 db attenuator	AR-WORLDWIDE	6dB/50FH-006-100	324011	2024/4/28	1 Year
4.	CDN	SKET	CDN M2+M3	204303	2024/4/28	1 Year
5.	Power amplifier	BONN Elektronik	BSA 1515-25	97483	2024/4/28	1 Year
6.	CDN	SKET	CDN 150K80M-T8	212309	2024/4/28	1 Year
7.	CDN	SKET	CDN 150K80M-T8	212310	2024/4/28	1 Year

3.9. For Power Frequency Magnetic Field Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	2024/1/17	1 Year

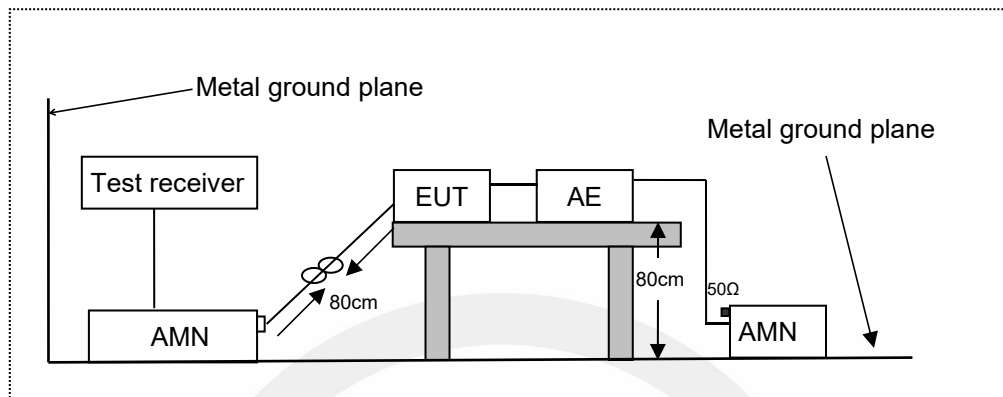
3.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMS comprehensive tester	HTEC	HCOMPACT7	190305	2024/4/29	1 Year
2.	Dips module	HTEC	HV1P16T	190302	2024/4/29	1 Year



4. CONDUCTED EMISSIONS FROM THE AC MAINS POWER PORTS

4.1. Block Diagram of Test Setup



AMN: Artificial Mains Network
AE: Associated equipment
EUT: Equipment under test

4.2. Limits

EN 55032, Class B, Table A.10

Frequency range MHz	Coupling device (see Table A.10)	Detector type / bandwidth	Class B limits dB(μV)
0.15 to 0.5	AMN	Quasi Peak / 9 kHz	66 to 56
0.5 to 5			56
5 to 30			60
0.15 to 0.5	AMN	Average / 9 kHz	56 to 46
0.5 to 5			46
5 to 30			50

4.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle

no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 50 microhenry should be used.

Both sides of AC line were checked for maximum conducted interference.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation:

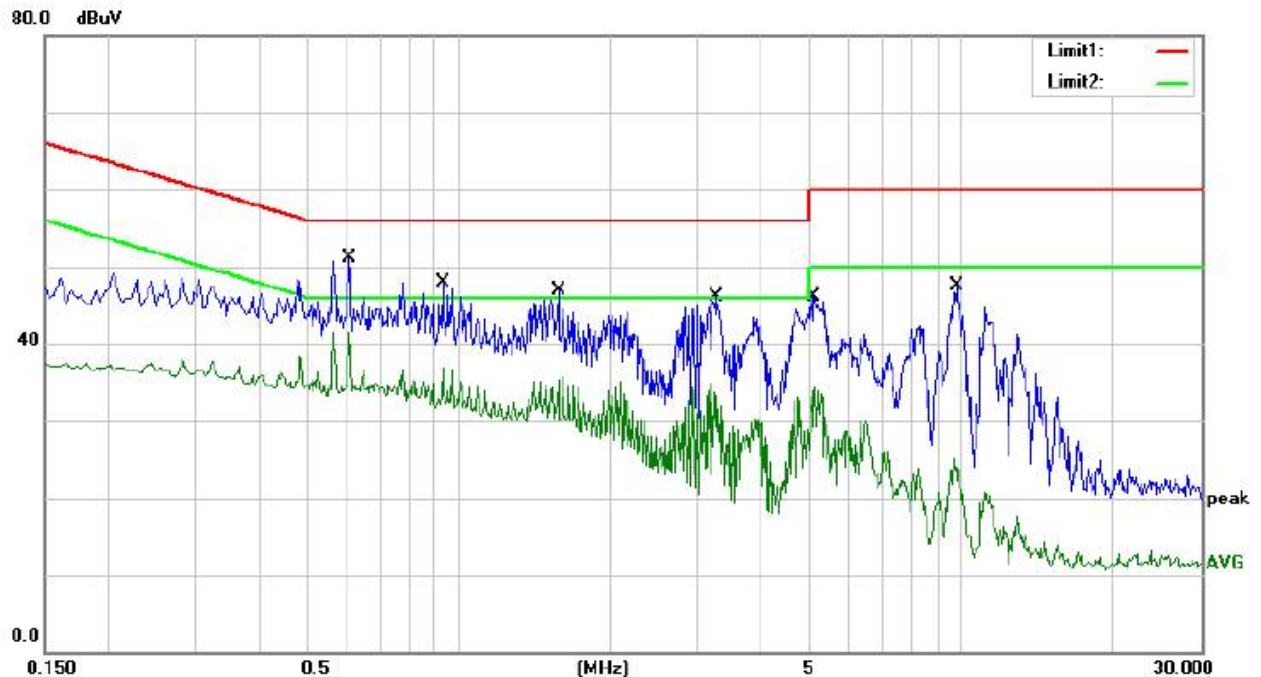
Emission Level (dBμV) = AMN Factor (dB) + Cable Loss (dB) + Reading (dBμV)

Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

4.4. Measuring Results

PASS.

All the modes were tested and the worst data are attached the following pages.

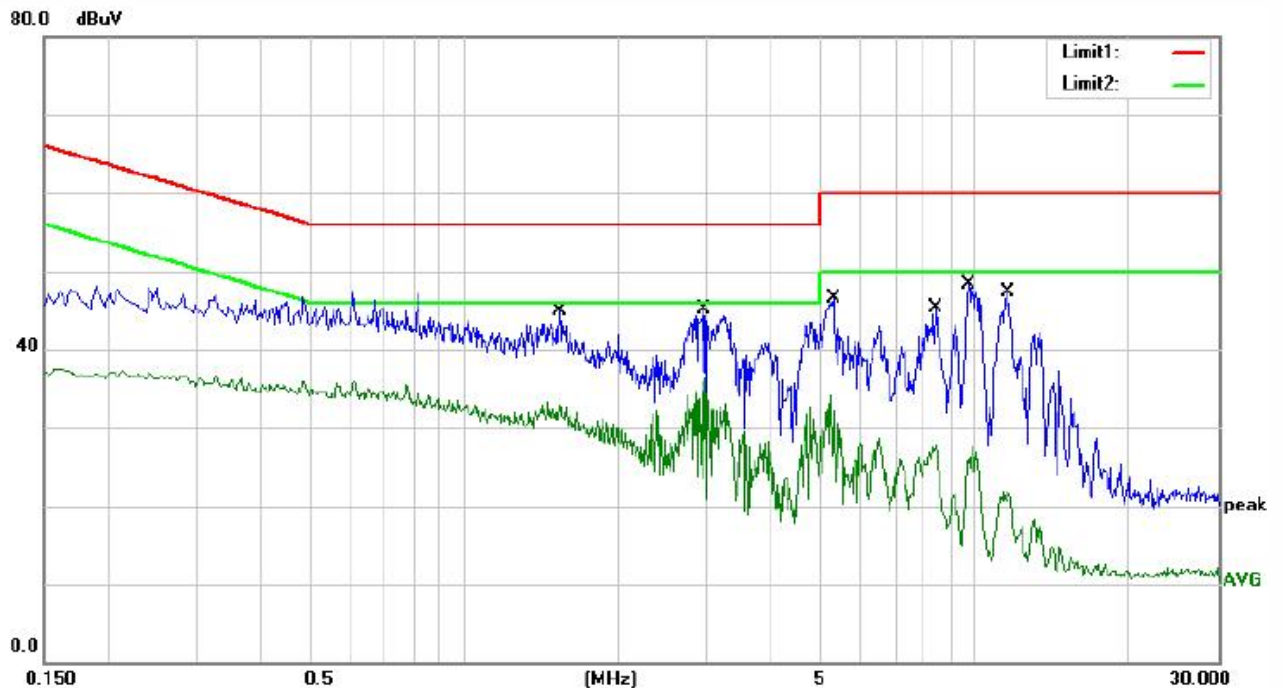


Site site #1			Phase: L1				Temperature: 22.5		
No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.6060	34.01	17.06	51.07	56.00	-4.93	QP	
2	*	0.6060	24.53	17.06	41.59	46.00	-4.41	AVG	
3		0.9300	30.97	17.03	48.00	56.00	-8.00	QP	
4		0.9300	19.84	17.03	36.87	46.00	-9.13	AVG	
5		1.5780	29.78	17.08	46.86	56.00	-9.14	QP	
6		1.5780	18.64	17.08	35.72	46.00	-10.28	AVG	
7		3.2540	29.19	17.01	46.20	56.00	-9.80	QP	
8		3.2540	17.83	17.01	34.84	46.00	-11.16	AVG	
9		5.0980	29.07	16.96	46.03	60.00	-13.97	QP	
10		5.0980	17.27	16.96	34.23	50.00	-15.77	AVG	
11		9.7940	30.50	16.99	47.49	60.00	-12.51	QP	
12		9.7940	8.17	16.99	25.16	50.00	-24.84	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: Jian

Remark:

1. Measurement (dBμV) = AMN Factor (dB) + Cable Loss (dB) + Reading (dBμV)
2. Over (dB) = Measurement (dBμV) - Limit (dBμV)



Site site #1

Phase:

N

Temperature: 22.5

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		1.5420	27.73	17.07	44.80	56.00	-11.20	QP	
2		1.5420	16.17	17.07	33.24	46.00	-12.76	AVG	
3		2.9580	28.01	17.02	45.03	56.00	-10.97	QP	
4	*	2.9580	19.19	17.02	36.21	46.00	-9.79	AVG	
5		5.2780	29.59	16.97	46.56	60.00	-13.44	QP	
6		5.2780	17.21	16.97	34.18	50.00	-15.82	AVG	
7		8.3740	28.21	17.02	45.23	60.00	-14.77	QP	
8		8.3740	10.68	17.02	27.70	50.00	-22.30	AVG	
9		9.7500	31.32	16.99	48.31	60.00	-11.69	QP	
10		9.7500	10.58	16.99	27.57	50.00	-22.43	AVG	
11		11.6460	30.39	16.95	47.34	60.00	-12.66	QP	
12		11.6460	5.03	16.95	21.98	50.00	-28.02	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: Jian

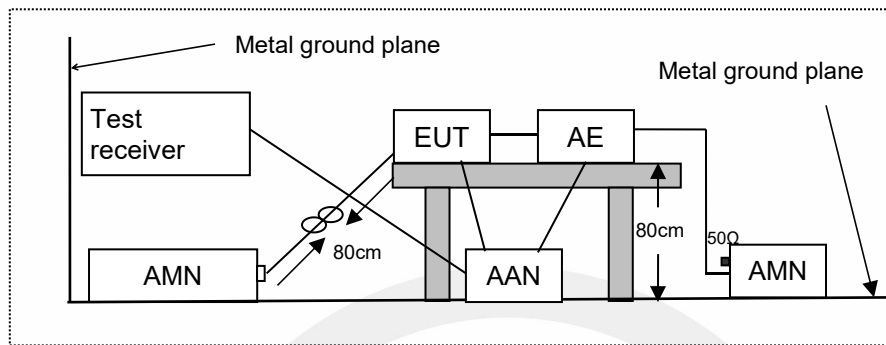
Remark:

1. Measurement (dB μ V) = AMN Factor (dB) + Cable Loss (dB) + Reading (dB μ V)

2. Over (dB) = Measurement (dB μ V) - Limit (dB μ V)

5. ASYMMETRIC MODE CONDUCTED EMISSIONS AT WIRED NETWORK PORTS

5.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test
AAN: Asymmetric artificial network

5.2. Limits

EN 55032, Class B, Table A.12

Frequency range (MHz)	Coupling device (see Table A.12)	Detector type / bandwidth	Class B voltage limits dB(μV)	Class B current limits dB(μA)	
0.15 to 0.5	AAN	Quasi Peak / 9 kHz	84 to 74	N/A	
0.5 to 30			74		
0.15 to 0.5	AAN	Average / 9 kHz	74 to 64		N/A
0.5 to 30			64		
0.15 to 0.5	CVP and current probe	Quasi Peak / 9 kHz	84 to 74	40 to 30	
0.5 to 30			74	30	
0.15 to 0.5	CVP and current probe	Average / 9 kHz	74 to 64	30 to 20	
0.5 to 30			64	20	
0.15 to 0.5	Current Probe	Quasi Peak / 9 kHz	N/A	40 to 30	
0.5 to 30				30	
0.15 to 0.5	Current Probe	Average / 9 kHz		30 to 20	
0.5 to 30				20	

5.3. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through artificial mains network(AMN) or connected to the wired network port through an asymmetric artificial network(ANN). AMN provided a 50ohm coupling impedance for the tested equipment AC mains port, ANN provided a common mode (asymmetric mode) impedance of 150 Ω to

the wired network port under test. Both sides of AC line and the wired network line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the receiver is set at 9kHz in 150kHz~30MHz. The frequency range from 150kHz to 30MHz is investigated.

Test results were obtained from the following equation:

Emission Level (dBμV) = ANN Factor (dB) + Cable Loss (dB) + Reading (dBμV)

Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

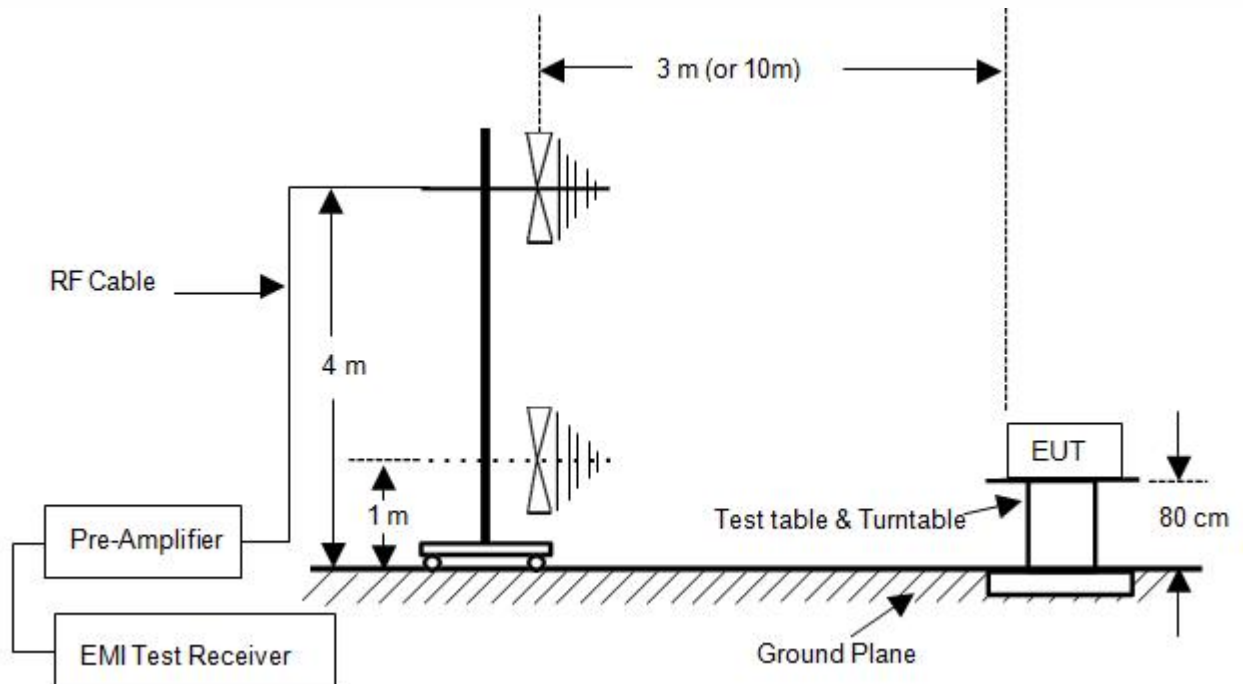
5.4. Measuring Results

Not Applicable



6. RADIATED EMISSION MEASUREMENT (UP TO 1GHz)

6.1. Block Diagram of Test Setup



6.2. Radiated Limit

EN 55032, Class B, Table A.4

Frequency range MHz	Measurement			Class B limits dB(μV/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
230 to 1 000				37
30 to 230	OATS/SAC	3		40
230 to 1 000				47

6.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters (or 10 meters) away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

Test results were obtained from the following equation:

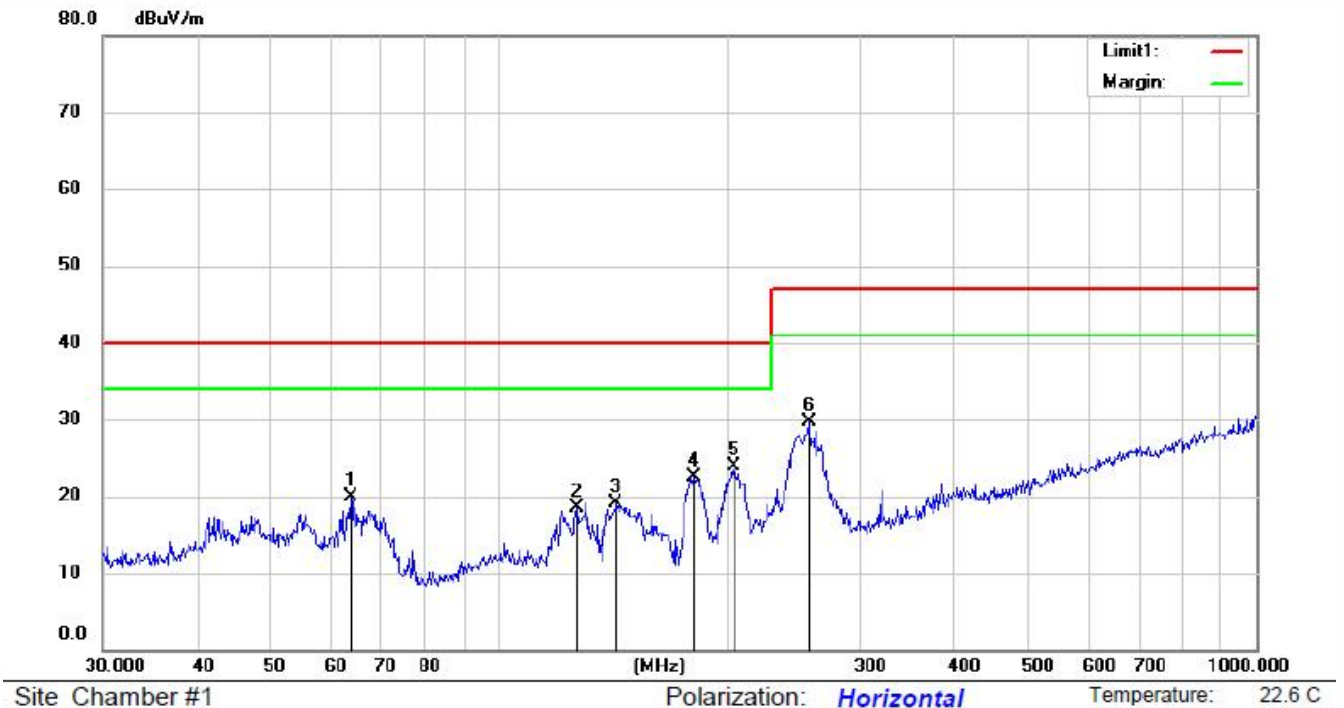
Emission level (dB μ V/m) = Antenna Factor - Amp Factor + Cable Loss + Reading

Margin (dB) = Emission Level (dB μ V/m) - Limit (dB μ V/m)

6.4. Measuring Results

PASS.

All the modes were tested and the worst data are attached the following pages.



No.	Mk.	Freq. MHz	Reading Level dBuV	Ant. Factor dB/m	Pre Amp Gain dB	Cable loss dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	HI cm	Degree deg.	Comment
1		63.7588	38.16	11.25	30.53	1.07	19.95	40.00	-20.05	QP			
2		126.7723	39.13	8.85	30.75	1.27	18.50	40.00	-21.50	QP			
3		142.8243	40.13	8.27	30.66	1.39	19.13	40.00	-20.87	QP			
4		180.6488	41.67	9.78	30.46	1.6	22.59	40.00	-17.41	QP			
5	*	204.2377	40.83	11.72	30.34	1.74	23.95	40.00	-16.05	QP			
6		256.5211	44.45	13.12	30.06	2.13	29.64	47.00	-17.36	QP			

*:Maximum data x:Over limit !:over margin

Operator: Ccyf

Remark:

1. Measurement (dBμV/m) = Antenna Factor(dB) -Amp Factor(dB) +Cable Loss(dB) + Reading(dBμV/m)

2. Over (dB) = Measurement (dBμV/m) - Limit (dBμV/m)



Site Chamber #1						Polarization: <i>Vertical</i>				Temperature: 22.6 C			
No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over	HI	Degree		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		42.1542	43.99	13.29	30.52	0.65	27.41	40.00	-12.59	QP			
2		46.8303	44.63	13.87	30.49	0.73	28.74	40.00	-11.26	QP			
3	*	63.9828	49.95	11.18	30.53	1.07	31.67	40.00	-8.33	QP			
4		147.4036	44.85	8.45	30.64	1.42	24.08	40.00	-15.92	QP			
5		180.0165	43.86	9.7	30.47	1.6	24.69	40.00	-15.31	QP			
6		248.5520	43.40	12.96	30.1	2.12	28.38	47.00	-18.62	QP			

*:Maximum data x:Over limit !:over margin

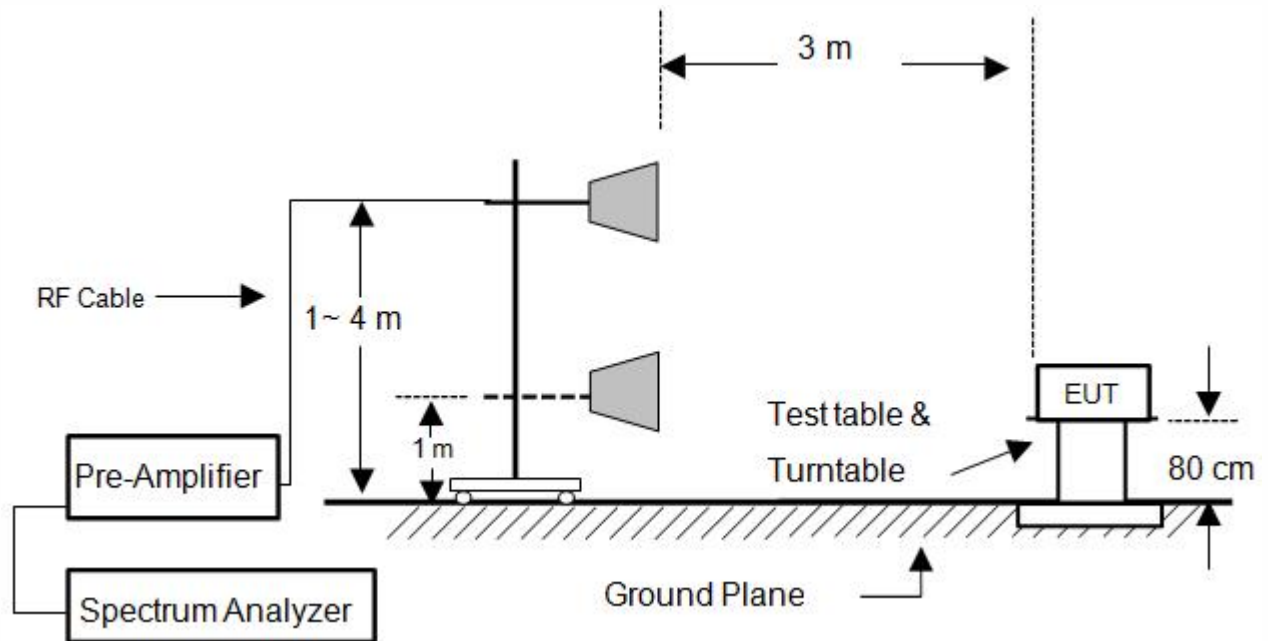
Operator: Ccyf

Remark:

1. Measurement (dB μ V/m) = Antenna Factor(dB) -Amp Factor(dB) +Cable Loss(dB) + Reading(dB μ V/m)
2. Over (dB) = Measurement (dB μ V/m) - Limit (dB μ V/m)

7. RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

7.1. Block Diagram of Test Setup



7.2. Radiated Limit

EN 55032, Class B, Table A.5

Frequency range (MHz)	Measurement			Class B limits dB(μ V/m)
	Facility	Distance (m)	Detector type/ bandwidth	
1000 to 6000	FSOATS	3	Average / 1 MHz	54
1000 to 6000			Peak / 1 MHz	74

Note: The highest internal source of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

7.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz.

Test results were obtained from the following equation:

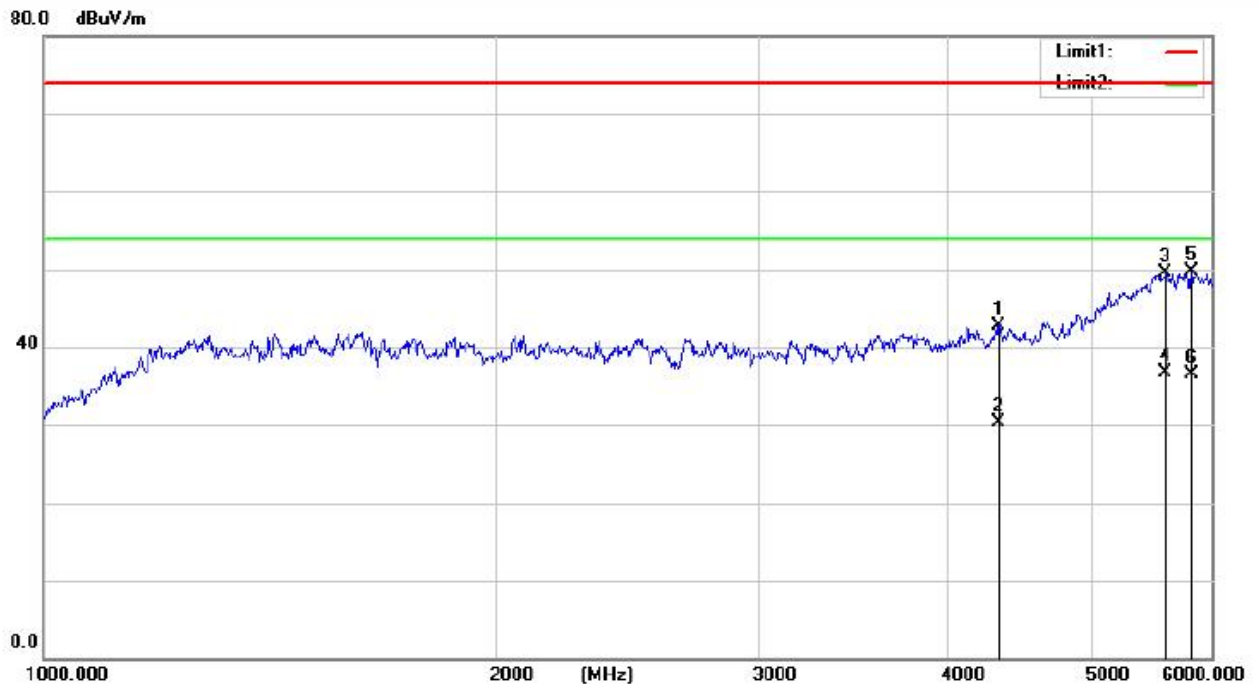
Emission level (dB μ V/m) = Antenna Factor -Amp Factor +Cable Loss + Reading

Margin (dB) = Emission Level (dB μ V/m) - Limit (dB μ V/m)

7.4. Measuring Results

PASS.

All the modes were tested and the worst data are attached the following pages.



Site site #1 Polarization: **Horizontal** Temperature: 23.4

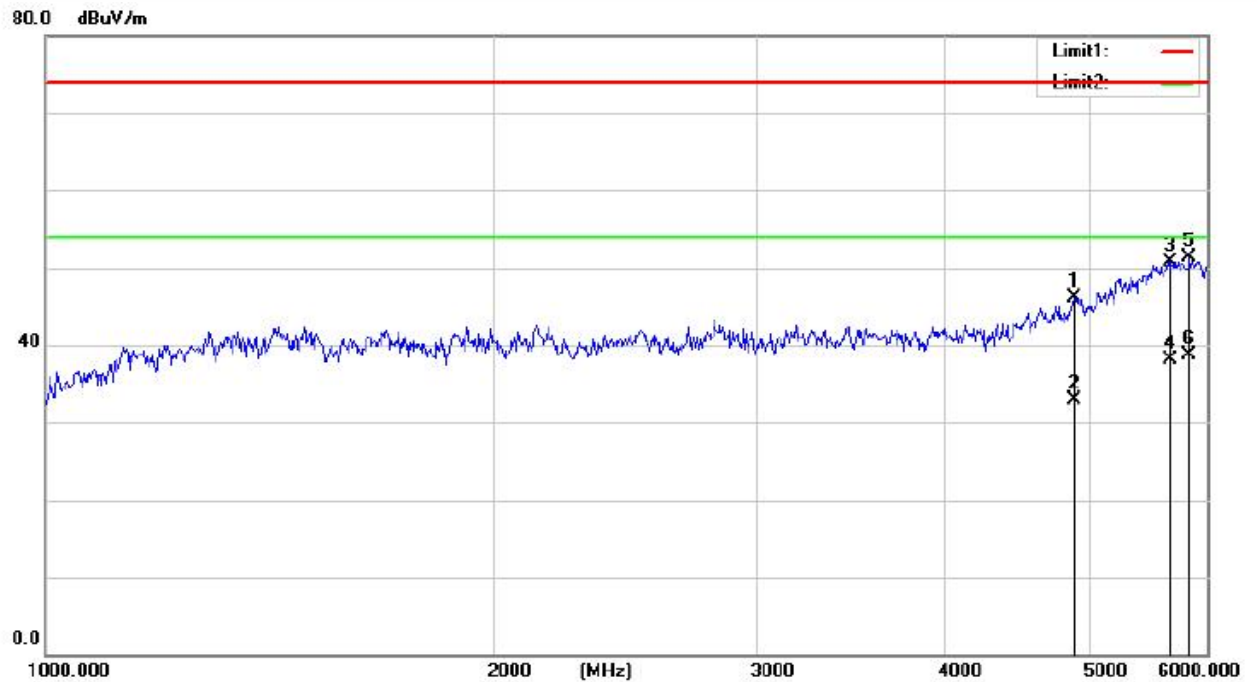
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		4330.397	47.16	-4.36	42.80	74.00	-31.20	peak		
2		4330.397	34.68	-4.36	30.32	54.00	-23.68	AVG		
3		5595.042	48.80	0.78	49.58	74.00	-24.42	peak		
4	*	5595.042	35.93	0.78	36.71	54.00	-17.29	AVG		
5		5819.996	47.67	2.01	49.68	74.00	-24.32	peak		
6		5819.996	34.58	2.01	36.59	54.00	-17.41	AVG		

*:Maximum data x:Over limit !:over margin

Operator: Ccyf

Remark:

1. Measurement (dBμV/m) = Antenna Factor(dB) -Amp Factor(dB) +Cable Loss(dB) + Reading(dBμV/m)
2. Over (dB) = Measurement (dBμV/m) - Limit (dBμV/m)



Site site #1		Polarization: Vertical						Temperature: 23.4		
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		4891.499	47.95	-1.82	46.13	74.00	-27.87	peak		
2		4891.499	34.74	-1.82	32.92	54.00	-21.08	AVG		
3		5675.819	49.56	1.22	50.78	74.00	-23.22	peak		
4		5675.819	36.90	1.22	38.12	54.00	-15.88	AVG		
5		5840.889	49.23	2.05	51.28	74.00	-22.72	peak		
6	*	5840.889	36.57	2.05	38.62	54.00	-15.38	AVG		

*:Maximum data x:Over limit !:over margin

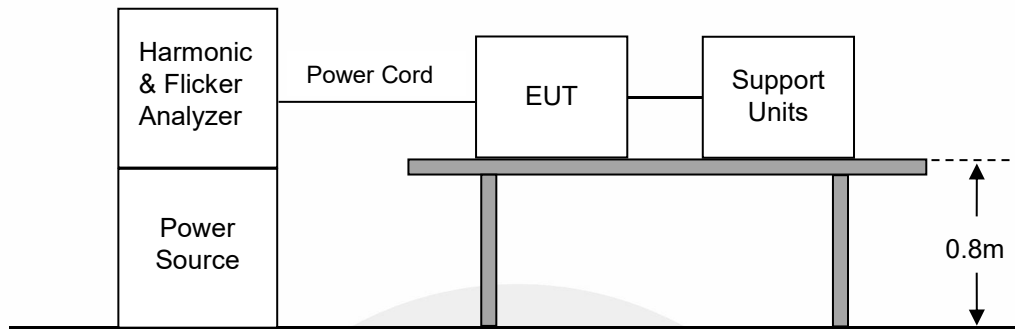
Operator: Ccyf

Remark:

1. Measurement (dB μ V/m) = Antenna Factor(dB) -Amp Factor(dB) +Cable Loss(dB) + Reading(dB μ V/m)
2. Over (dB) = Measurement (dB μ V/m) - Limit (dB μ V/m)

8. HARMONIC CURRENT EMISSION MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Standard Limits

EN IEC 61000-3-2, CLASS A

Harmonic current emissions evaluate the potential for the EUT to cause distortion on the AC power lines. It is applicable to electrical and electronic equipment having an input current ≤ 16 A per phase, and intended to be connected to public low-voltage distribution systems

Table 1 - Limits for Class A equipment

Harmonic order n	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \frac{0.15}{n}$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \frac{8}{n}$

8.3. Test Procedure

The measurement of harmonic currents shall be performed as follows: i. For each harmonic order, measure the 1.5 s smoothed r.m.s. harmonic current in each DFT time window as defined in EN / IEC 61000-4-7:2009. ii. Calculate the arithmetic average of the measured values from the DFT time windows, over the entire observation period Short cyclic (T cycle \leq 2.5 min). Because of synchronisation to meet the requirements for repeatability in 5%.

8.4. Test Results

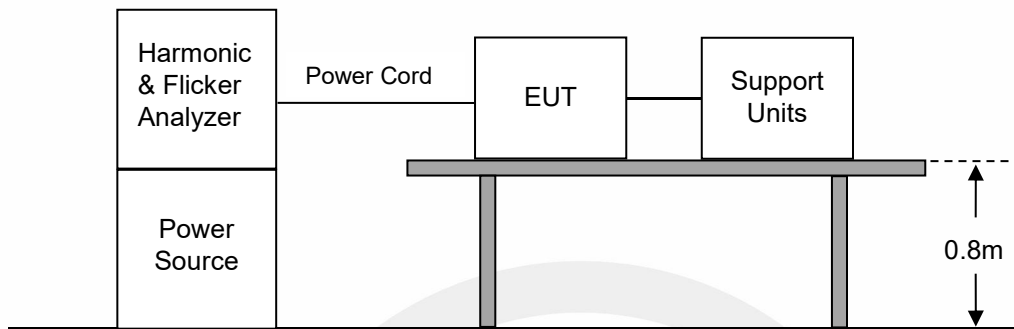
N/A.

As specified on section 7 and above figure of EN IEC 61000-3-2, the limits are not specified for equipment with a rated power of 75W or less. The EUT meets the above condition, so it conforms to EN IEC 61000-3-2.



9. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. Standard Limits

EN 61000-3-3 Limits

The objective of voltage changes, voltage fluctuations and flicker in public low voltage supply systems during equipment with rated current ≤ 16 A per phase, ensures that home appliances and certain other electrical equipment do not adversely affect lighting equipment when connected to the same power system.

Voltage Fluctuation and Flicker Limits:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the value of $d(t)$ during a voltage change shall not exceed 3.3 % for more than 500 ms;
- the relative steady-state voltage change, d_c , shall not exceed 3.3 %;
- the maximum relative voltage change, d_{max} , shall not exceed 4.0 %;

9.3. Test Procedure

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of 8% is achieved during the whole assessment procedure.

9.4. Test Results

PASS.

Please see the attached page.

Flicker Test Summary per IEC61000-3-3:2013/AMD1:2017 (Run time)

EUT: GFC007
Test category: All parameters (European limits)
Test date: 2024/9/2
Test duration (min): 10
Comment: ON
Customer: Customer

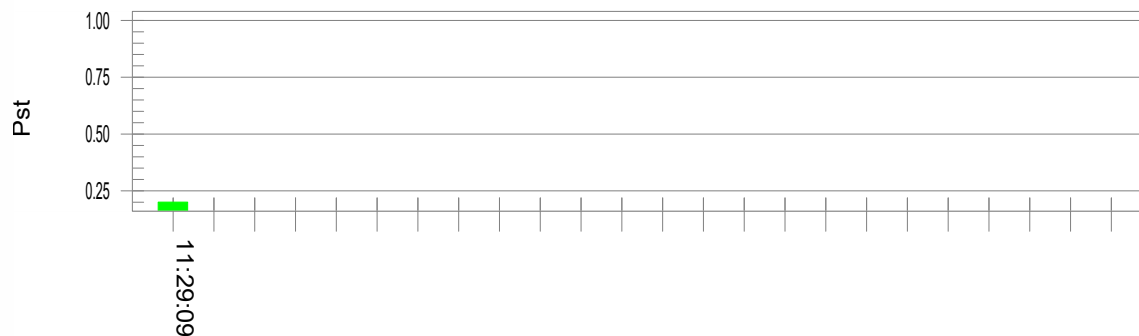
Tested by: CHENLI
Test Margin: 100
Start time: 11:18:55
End time: 11:29:15
Data file name: F-000803.cts_data

Test Result: Pass

Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.90		
Highest dt (%):		Test limit (%):	
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.200	Test limit:	1.000 Pass

Immunity General performance criteria Description

General performance criteria are defined in EN 55035 clause 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.

EN 55035:

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

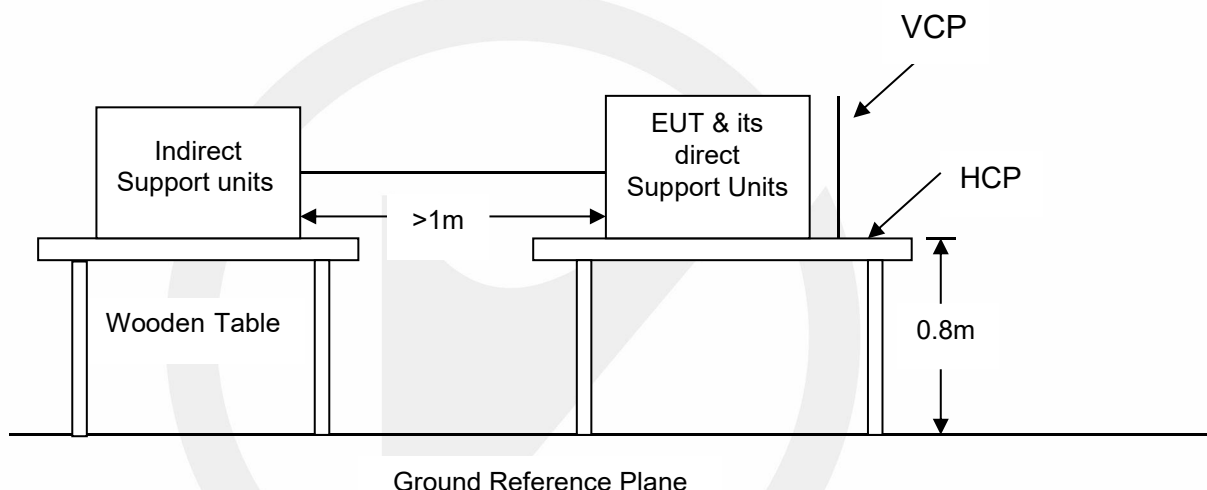
Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

10. ELECTROSTATIC DISCHARGE

10.1. Test Specification

Test standard	: EN 55035
Basic standard	: IEC 61000-4-2
Performance criterion	: B
Test level	: $\pm 8.0\text{kV}$ (Air discharge)
	: $\pm 4.0\text{kV}$ (Contact discharge)

10.2. Block Diagram of Test Setup



10.3. Test Procedure

- In the case of air discharge testing, the climatic conditions shall be within the following ranges:
 - ambient temperature: 15°C to 35°C;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)
- Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - The contact discharge test shall not be applied to such surfaces.
- In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.

- f. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.
- g. The test shall be performed with both air discharge and contact discharge. The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied. For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
- h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.

10.4. Test Results

PASS

Temperature : 25.6° C
Humidity : 56.3%
Atmospheric Pressure : 101kpa
Test Engineer : Chenli
Test Date : 2024-10-08

Air Discharge:

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4; 8 kV	Gap	B	B	Pass
±2; 4; 8 kV	Non-Metal part	B	B	Pass

Contact Discharge

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4kV	Metal part	B	B	Pass

Indirect Discharge

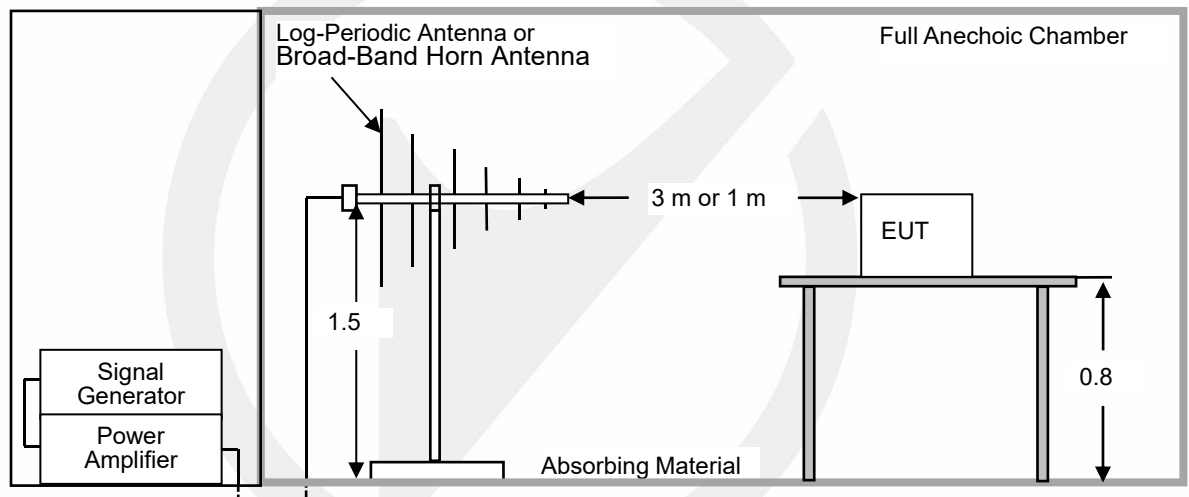
Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4 kV	HCP	A	B	Pass
±2; 4kV	VCP	A	B	Pass

11. CONTINUOUS RF ELECTROMAGNETIC FIELD DISTURBANCES

11.1. Test Specification

Test standard	: EN 55035	
Basic standard	: IEC 61000-4-3	
Performance criterion	: A	
Frequency range &	: <input checked="" type="checkbox"/> 80M-1000MHz	3V/m
Test level	: <input checked="" type="checkbox"/> Spot frequency	3V/m
	: <input type="checkbox"/> Additional spot frequency	3V/m
Modulation	: AM, 80%, 1kHz sine-wave	

11.2. Block Diagram of Test Setup



11.3. Test procedure

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

- The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m (or 1m) away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
- The test is performed with the antenna facing the front and back sides of the EUT with. Both vertical and horizontal polarizations from antenna are tested.

11.4. Test results

These test result outsourced to EMTEK(SHENZHEN) CO., LTD.

PASS

Temperature : 24.8° C
Humidity : 58.4%
Atmospheric Pressure : 101kpa
Test Engineer : CSL
Test Date : 2024-09-20

☒ 80M-1000MHz:

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	3V/m	AM, 80%	H / V	0, 90, 180, 270	A	A	Pass

☒ Spot frequency:

Freq (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
1800, 2600, 3500, 5000	3V/m	AM, 80%	H / V	0, 90, 180, 270	A	A	Pass

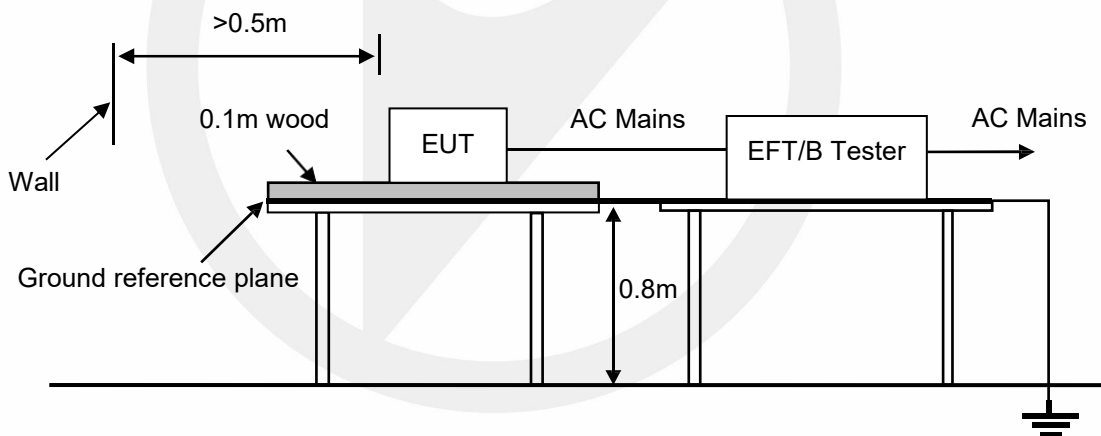
12. ELECTRICAL FAST TRANSIENTS/BURST

12.1. Test Specification

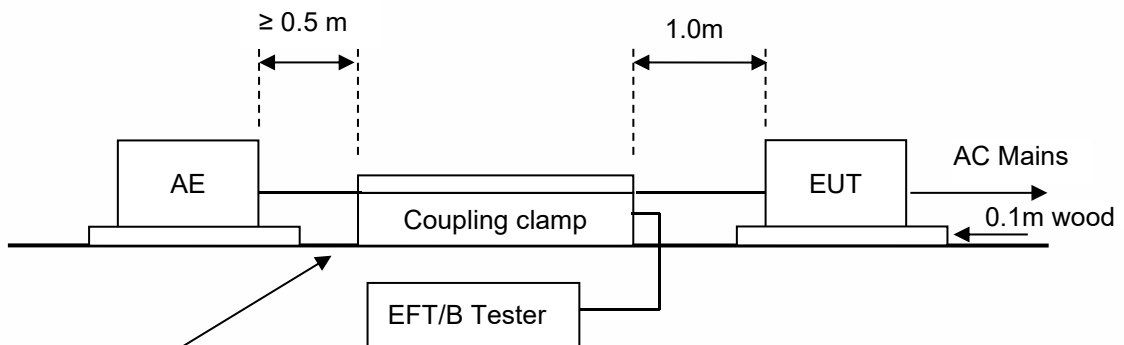
Test standard	: EN 55035
Basic standard	: IEC 61000-4-4
Performance criterion	: B
Test level	: <input checked="" type="checkbox"/> 1kV, AC mains power ports <input type="checkbox"/> 0.5kV, DC network power ports <input checked="" type="checkbox"/> 0.5kV, Analogue/digital data ports
Repetition frequency	: <input checked="" type="checkbox"/> 5kHz, <input type="checkbox"/> 100kHz(Only xDSL ports)
Tr/Th:	: 5/50ns
Burst period	: 300ms
Test time	: 120s

12.2. Block Diagram of Test Setup

AC Lines:



Signal lines:



Ground reference Surge Immunity Tester plan

12.3.Test Procedure

The EUT is put on the table that is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

12.4.Test Results

PASS

Temperature : 26.2° C
Humidity : 58.4%
Atmospheric Pressure : 101kpa
Test Engineer : Chen Li
Test Date : 2024-09-02

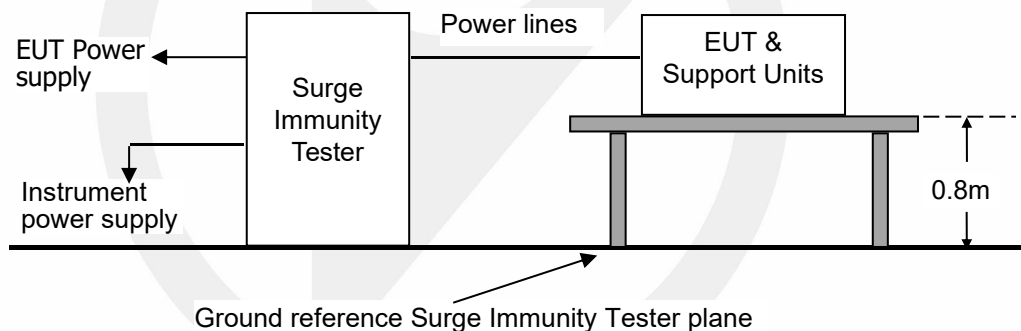
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
<input checked="" type="checkbox"/> AC mains power ports	± 1	<input checked="" type="checkbox"/> CDN <input type="checkbox"/> Direct injection <input type="checkbox"/> Capacitive coupling clamp	A	B	Pass
<input type="checkbox"/> DC network power ports	± 0.5	<input type="checkbox"/> CDN <input type="checkbox"/> Direct injection <input type="checkbox"/> Capacitive coupling clamp	N/A	N/A	N/A
<input type="checkbox"/> Analogue/digital data ports (Wired network port)	± 0.5	<input type="checkbox"/> CDN <input type="checkbox"/> Direct injection <input type="checkbox"/> Capacitive coupling clamp	N/A	N/A	N/A
<input type="checkbox"/> Analogue/digital data ports (Broadcast receiver tuner port)	± 0.5	<input type="checkbox"/> CDN <input type="checkbox"/> Direct injection <input type="checkbox"/> Capacitive coupling clamp	N/A	N/A	N/A

13. SURGES

13.1. Test Specification

Test standard	: EN 55035
Basic standard	: IEC 61000-4-5
Test level	: <input checked="" type="checkbox"/> 1kV, Line to Line, AC mains power ports, Criterion B <input type="checkbox"/> 2kV, Line to Earth, AC mains power ports, Criterion B <input type="checkbox"/> 0.5kV, Line to Reference ground, DC network power ports, Criterion B <input checked="" type="checkbox"/> 1.0kV, Lines to Ground, Unshielded symmetrical, Criterion C <input type="checkbox"/> 4.0kV, Lines to Ground, Unshielded symmetrical, Criterion C <input type="checkbox"/> 0.5kV, Shield to ground, Coaxial or shielded port, Criterion B
Number of surges	: 5 (for each combination of parameters)
Repetition rate	: 1 minute / time
Polarity:	: Positive / Negative
Phase angle:	: 90°, 270° (Only AC mains power ports)

13.2. Block Diagram of Test Setup



13.3. Test Procedure

This test simulates a lightning event by inducing transients onto the AC/DC power supply lines in common mode (Line to Ground) and differential mode (Line to Line). Each device was tested in a total of two surge configurations: Line to Ground (L-G): Combination Wave, Line to Protective Earth with 9uF and 10Ohm and Neutral to Protective Earth with 9uF and 10Ohm, common mode, generator earthed.

Line to Line (L-L): Combination Wave,

Line to Neutral with 18uF, differential mode, generator floated.

2 ohm : the source impedance of the low-voltage power supply network.

12 ohm : the source impedance of the low-voltage power supply network and ground.

- If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).
- The surges have to be applied line to line and line to earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
- The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan. All lower levels including the selected test level shall be satisfied.
- For testing the secondary protection, the output voltage of the generator shall be increased up to the

- worst-case voltage breakdown level (let-through level) of the primary protection.
e. Testing shall be performed according to a Test Plan, which shall be included in the test report.
f. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied.

13.4. Test results

PASS

Temperature : 26.2° C
Humidity : 58.4%
Atmospheric Pressure : 101kpa
Test Engineer : Chen Li
Test Date : 2024-09-02

☒ AC mains power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
<input checked="" type="checkbox"/> Line to line	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
<input type="checkbox"/> Line to earth	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

☐ DC network power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
Line to Reference ground	0.5	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

☐ Analogue/digital data ports:

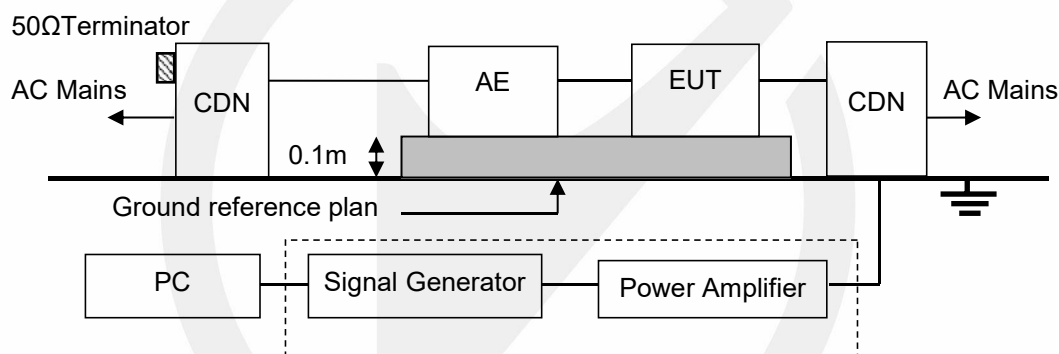
Port type	Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
<input type="checkbox"/> Unshielded symmetrical (Wired network port)	Lines to ground	0.5, 1.0	10/700 (5/320)	Pos./ Neg.	N/A	C	N/A

14. CONTINUOUS INDUCED RF DISTURBANCES

14.1. Test Specification

Test standard	: EN 55035
Basic standard	: IEC 61000-4-6
Performance criterion	: A
Frequency range &	: 0.15M to 10MHz, 3V
Test level	: 10M to 30MHz, 3V to 1V 30M to 80MHz, 1V
Modulation	: AM 80%, 1kHz sine-wave
Frequency Step	: 1% of fundamental

14.2. Block Diagram of Test Setup



14.3. Test Procedure

- The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- The EUT is placed on a 0.1m high test table, and a well grounded cable is connected to metallic plane above the test table.
- All cables/wires must be laid out on test plate (3cm in thickness), and the EUT is set up on test plate (10 cm in thickness) as shown in test setup photo, and the cables/wires must not be in mid-air, they should be touching the surface of test plate. Ensure that the EUT is properly connected to the accessory equipment.
- The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
- The frequency range is swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise

modes selected for susceptibility

h. Testing shall be performed according to a Test Plan, which shall be included in the test report.

14.4. Test results

PASS

Temperature : 26.2° C
Humidity : 58.4%
Atmospheric Pressure : 101kpa
Test Engineer : Chen Li
Test Date : 2024-09-02

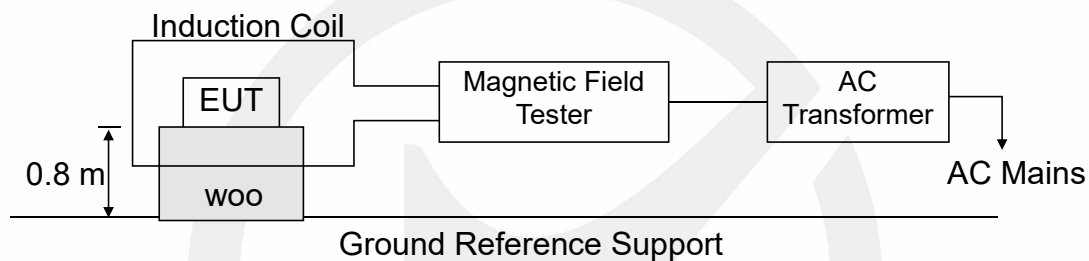
Range (MHz)	Level (V)	Injection port	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
0.15-10	3	<input checked="" type="checkbox"/> AC mains power ports	<input checked="" type="checkbox"/> CDN <input type="checkbox"/> EM Clamp <input type="checkbox"/> Current Clamp <input type="checkbox"/> Direct injection	A	A	Pass
10-30	3-1					
30-80	1					
0.15-10	3	<input type="checkbox"/> DC network power ports	<input type="checkbox"/> CDN <input type="checkbox"/> EM Clamp <input type="checkbox"/> Current Clamp <input type="checkbox"/> Direct injection	N/A	N/A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	<input type="checkbox"/> Analogue/digital data ports (Wired network port)	<input type="checkbox"/> CDN <input type="checkbox"/> EM Clamp <input type="checkbox"/> Current Clamp <input type="checkbox"/> Direct injection	N/A	N/A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	<input type="checkbox"/> Analogue/digital data ports (Broadcast receiver tuner port)	<input type="checkbox"/> CDN <input type="checkbox"/> EM Clamp <input type="checkbox"/> Current Clamp <input type="checkbox"/> Direct injection	N/A	N/A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	<input type="checkbox"/> Analogue/digital data ports (.....)	<input type="checkbox"/> CDN <input type="checkbox"/> EM Clamp <input type="checkbox"/> Current Clamp <input type="checkbox"/> Direct injection	N/A	N/A	N/A
10-30	3-1					
30-80	1					

15. POWER FREQUENCY MAGNETIC FIELD

15.1. Test Specification

Test standard	: EN 55035
Basic standard	: IEC 61000-4-8
Performance criterion	: A
Field strength	: <input checked="" type="checkbox"/> 1A/m <input type="checkbox"/> _A/m
Frequency	: 50Hz or 60Hz

15.2. Block Diagram of Test Setup



15.3. Test Procedure

The EUT is placed in the middle of an induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. X, Y and Z of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

15.4. Test Results

N/A.

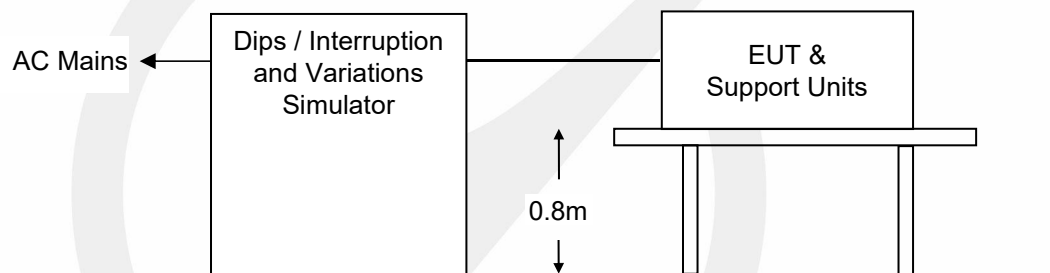
Applicable only to equipment containing devices intrinsically susceptible to magnetic fields.

16. VOLTAGE DIPS AND INTERRUPTIONS

16.1. Test Specification

Test standard	: EN 55035
Basic standard	: IEC 61000-4-11
Test level	: 0%, 0.5 period, Criterion B
	<input checked="" type="checkbox"/> 70%, 25 periods for 50Hz, Criterion C
	<input checked="" type="checkbox"/> 70%, 30 periods for 60Hz, Criterion C
	<input checked="" type="checkbox"/> 0%, 250 periods for 50Hz, Criterion C
	<input checked="" type="checkbox"/> 0%, 300 periods for 60Hz, Criterion C

16.2. Block Diagram of Test Setup



16.3. Test Procedure

- a. Where the equipment has a rated voltage the following shall apply - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for test level specification.
 - In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.
- b. Test Conditions
 - Select operated voltage and frequency of EUT - Test of interval : 10 sec.
 - Level and duration : Sequence of 3 dips/interrupts.
 - Voltage rise (and fall) time : 1.5 μ s.

16.4. Test results

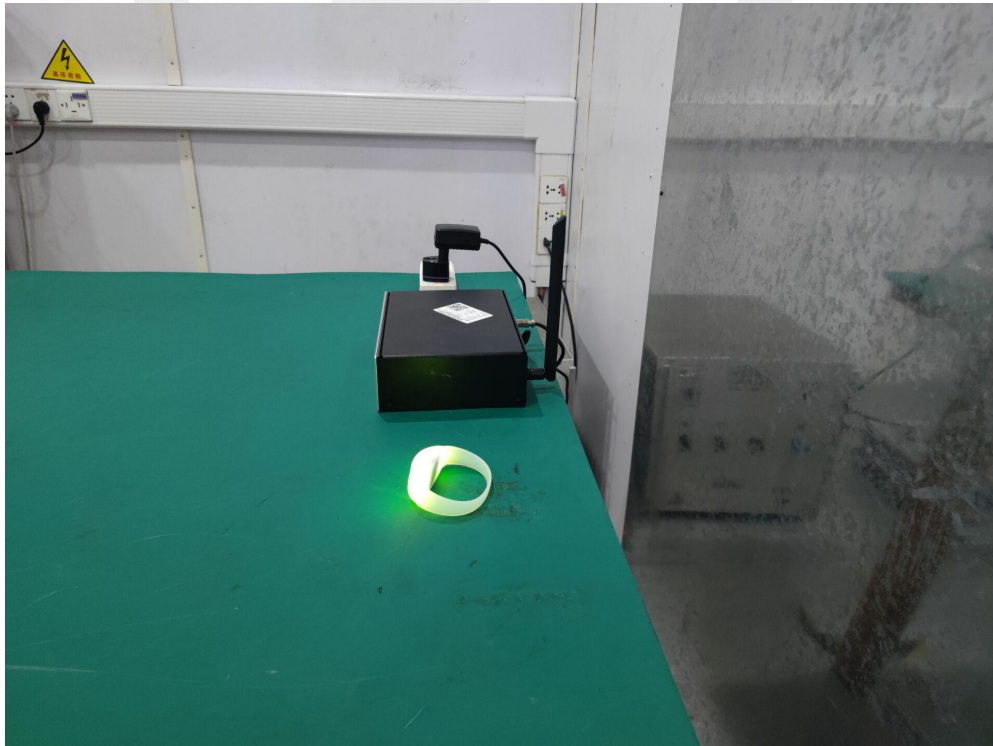
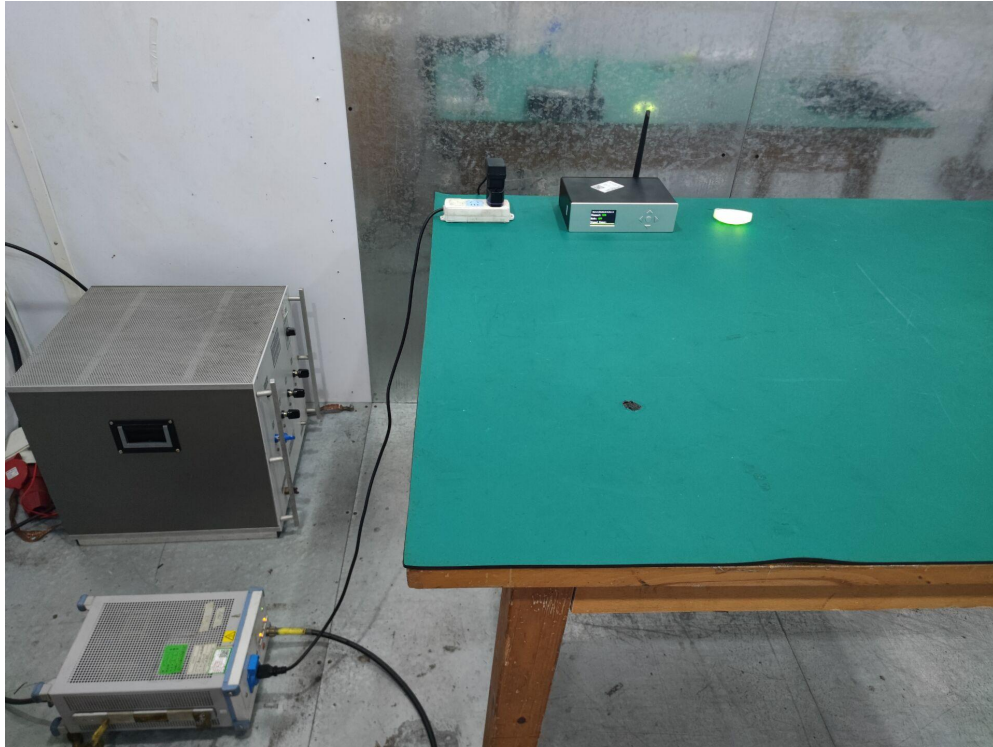
PASS

Temperature : 26.2° C
Humidity : 58.8%
Atmospheric Pressure : 101kpa
Test Engineer : Chen Li
Test Date : 2024-09-02

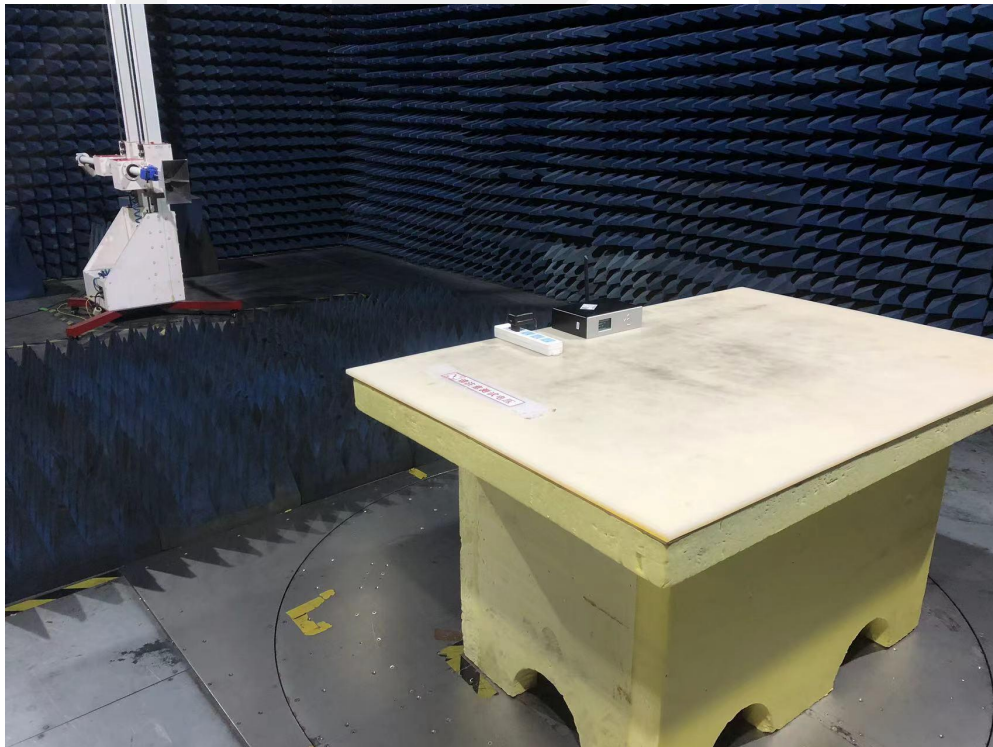
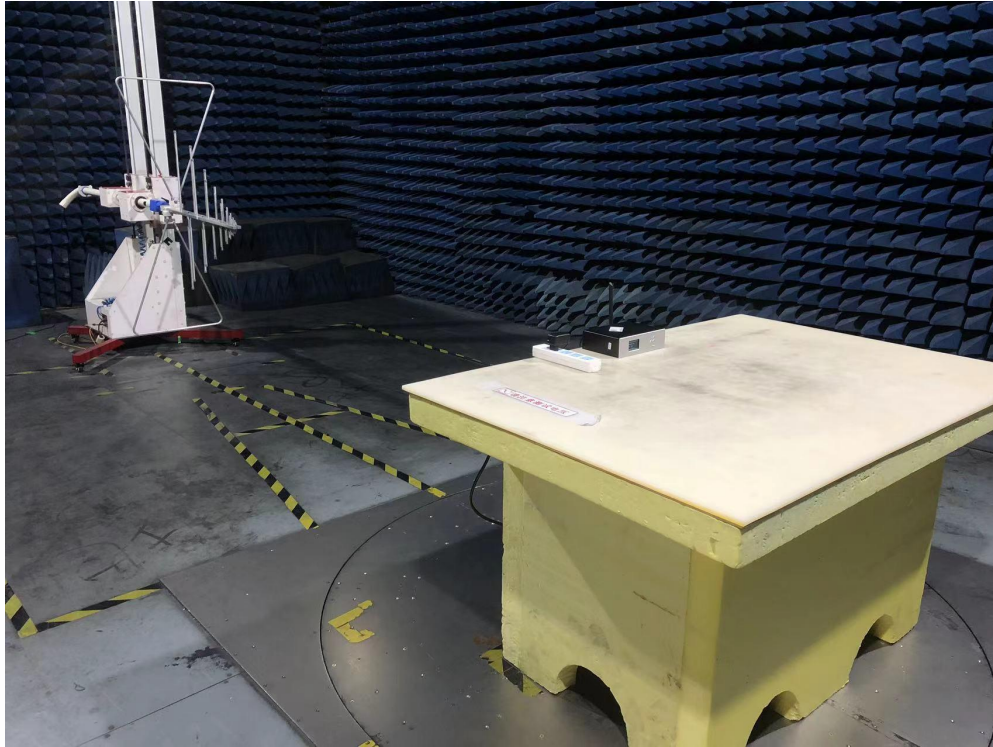
	Test Level (% UT)	Phase angle (°)	Input Voltage (V)	Freq (Hz)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass /Fail)
<input checked="" type="checkbox"/> Voltage dips	0%	0°, 180°	AC 100V	50	0.5	A	B	Pass
<input checked="" type="checkbox"/> Voltage dips	0%	0°, 180°	AC 240V	50	0.5	A	B	Pass
<input checked="" type="checkbox"/> Voltage dips	70%	0°, 180°	AC 100V	50	25	A	C	Pass
<input checked="" type="checkbox"/> Voltage dips	70%	0°, 180°	AC 240V	50	25	A	C	Pass
<input checked="" type="checkbox"/> Voltage dips	70%	0°, 180°	AC 100V	60	30	A	C	Pass
<input checked="" type="checkbox"/> Voltage dips	70%	0°, 180°	AC 240V	60	30	A	C	Pass
<input checked="" type="checkbox"/> Voltage interruptions	0%	0°, 180°	AC 100V	50	250	B	C	Pass
<input checked="" type="checkbox"/> Voltage interruptions	0%	0°, 180°	AC 240V	50	250	B	C	Pass
<input checked="" type="checkbox"/> Voltage interruptions	0%	0°, 180°	AC 100V	60	300	B	C	Pass
<input checked="" type="checkbox"/> Voltage interruptions	0%	0°, 180°	AC 240V	60	300	B	C	Pass

17. PHOTOGRAPHS

17.1. Photos of Conducted Emissions Measurement



17.2.Photos of Radiation Emission Measurement





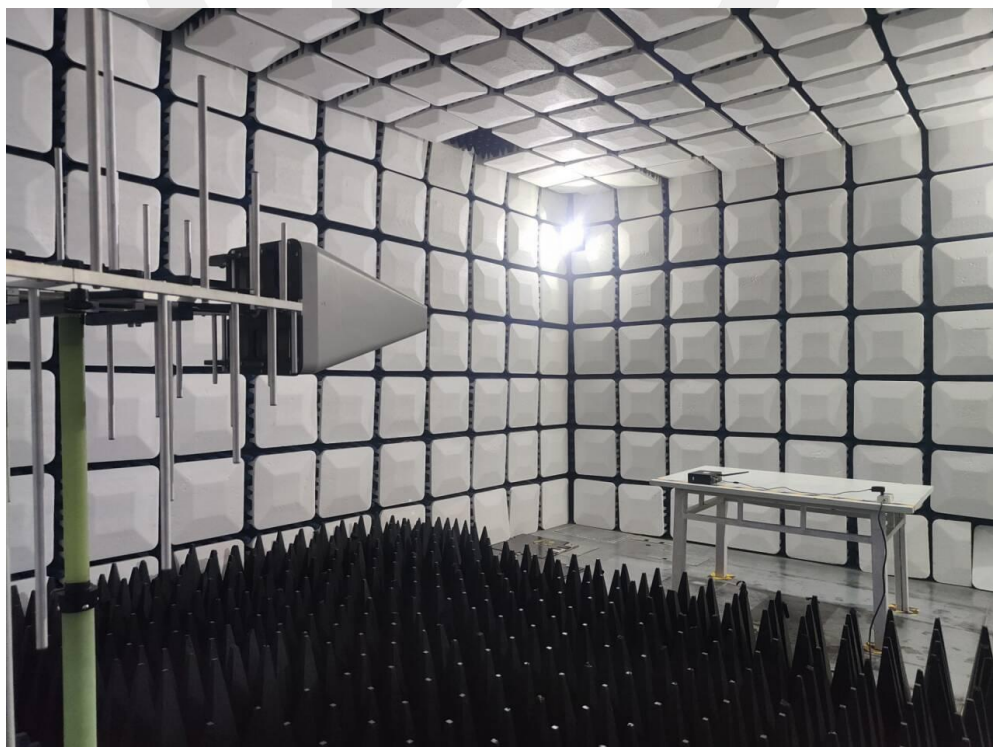
17.3.Photo of Harmonic / Flicker Measurement



17.4.Photo of Electrostatic Discharges



17.5.Photo of Continuous RF Electromagnetic Field Disturbances



17.6.Photo of Electrical Fast Transients/Burst



17.7.Photo of Surges




17.8.Photo of Continuous Induced RF Disturbances



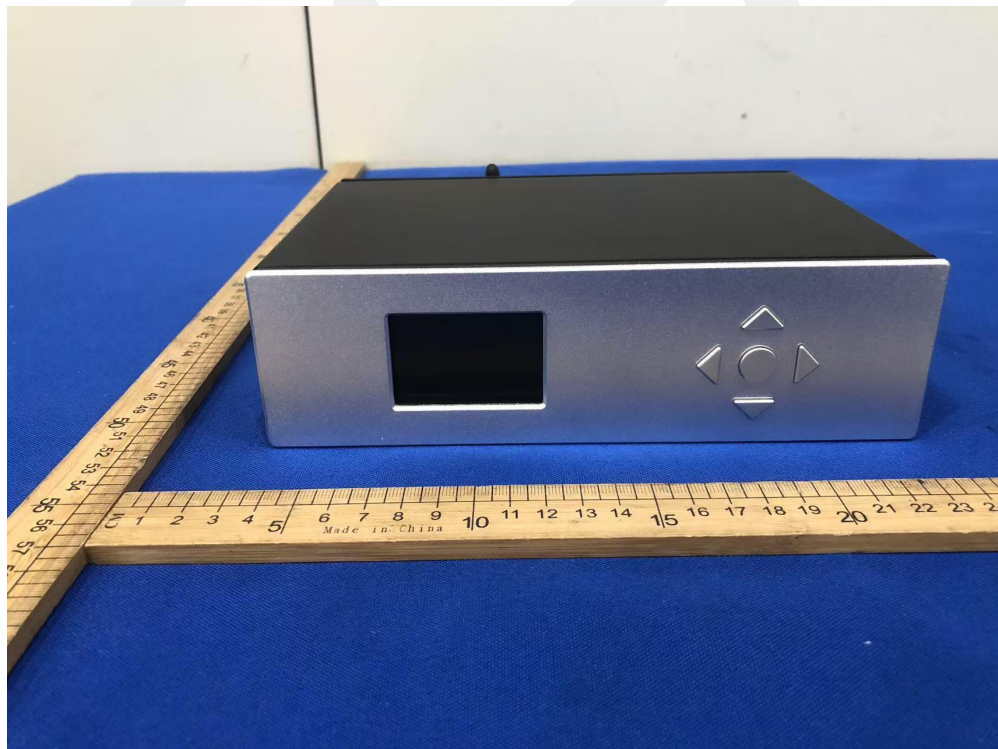
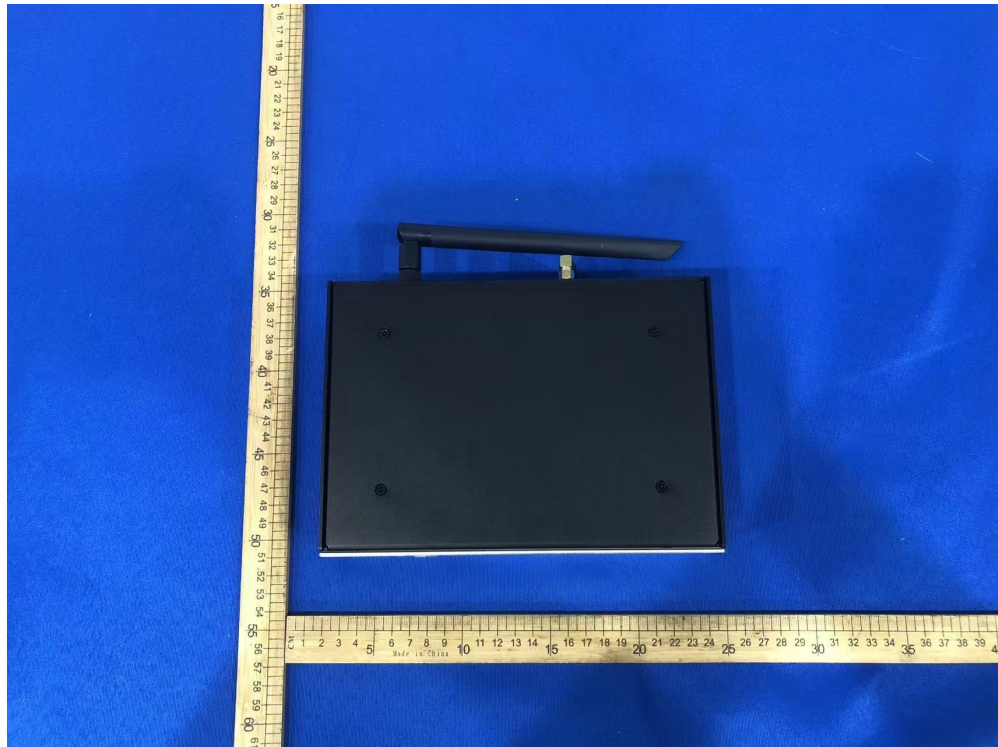
17.9.Photo of Voltage dips and interruptions

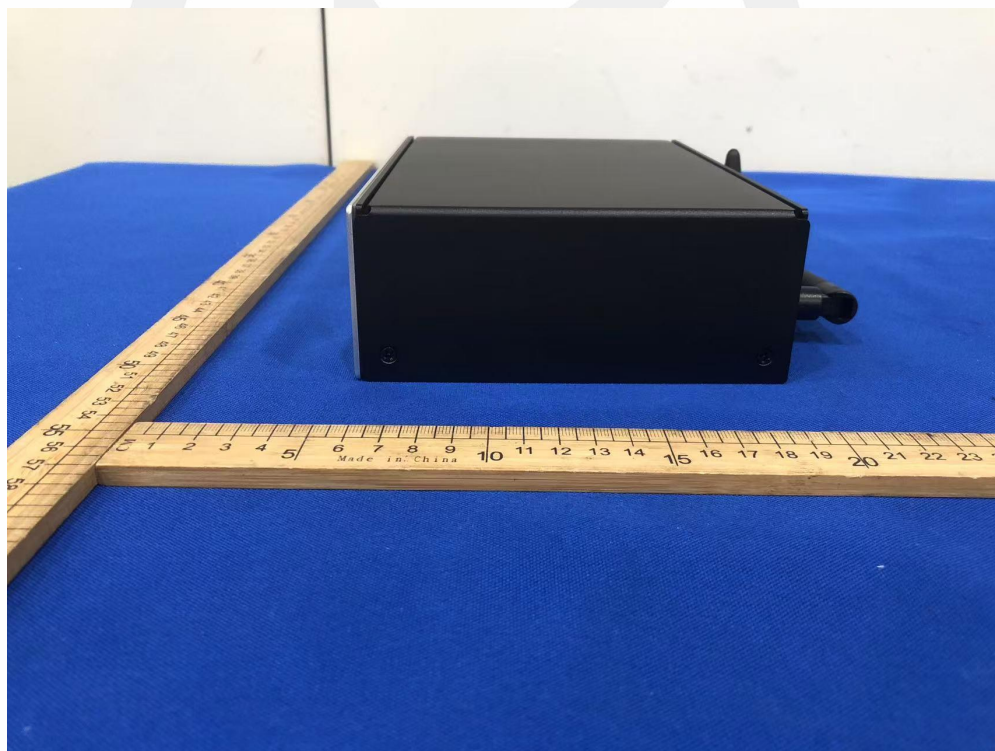




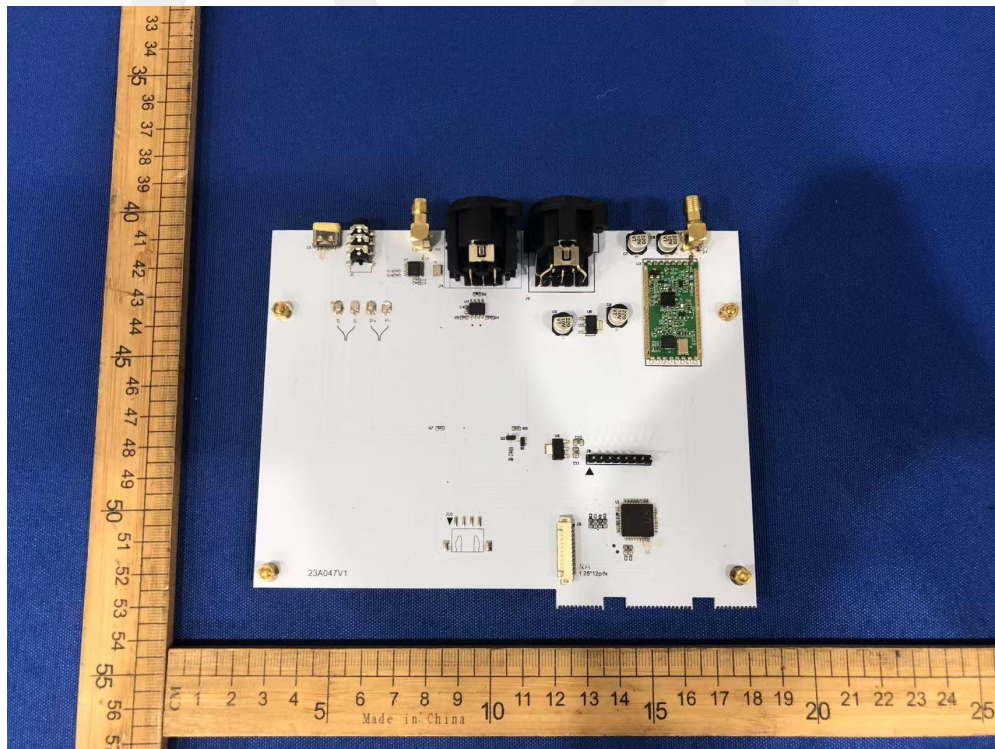
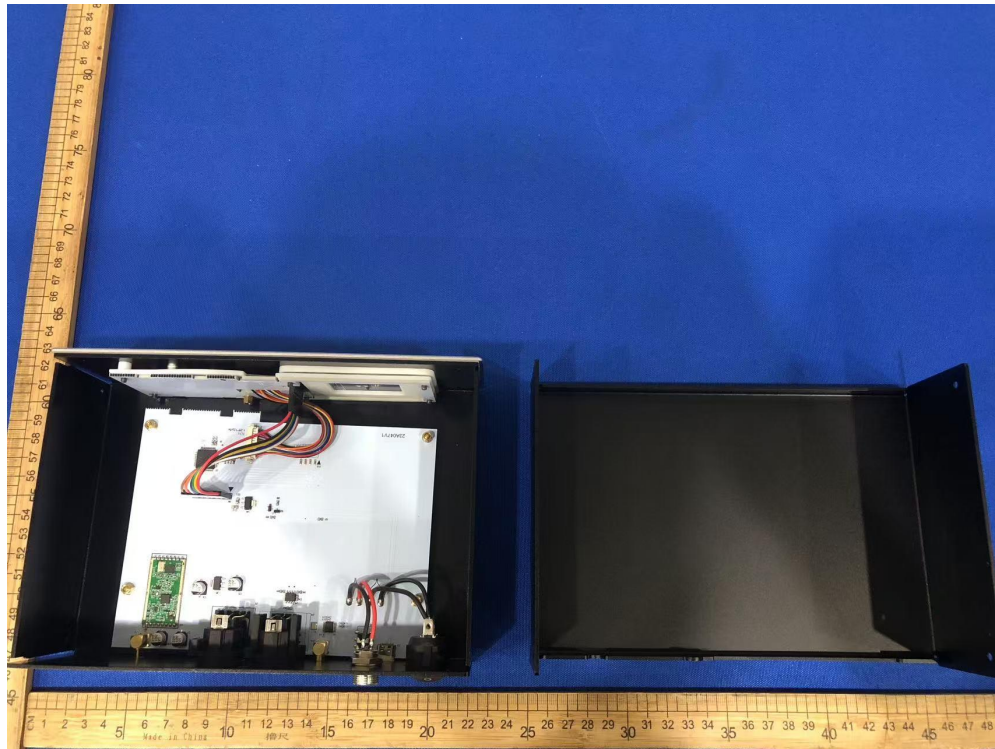
APPENDIX (PHOTOS OF EUT)

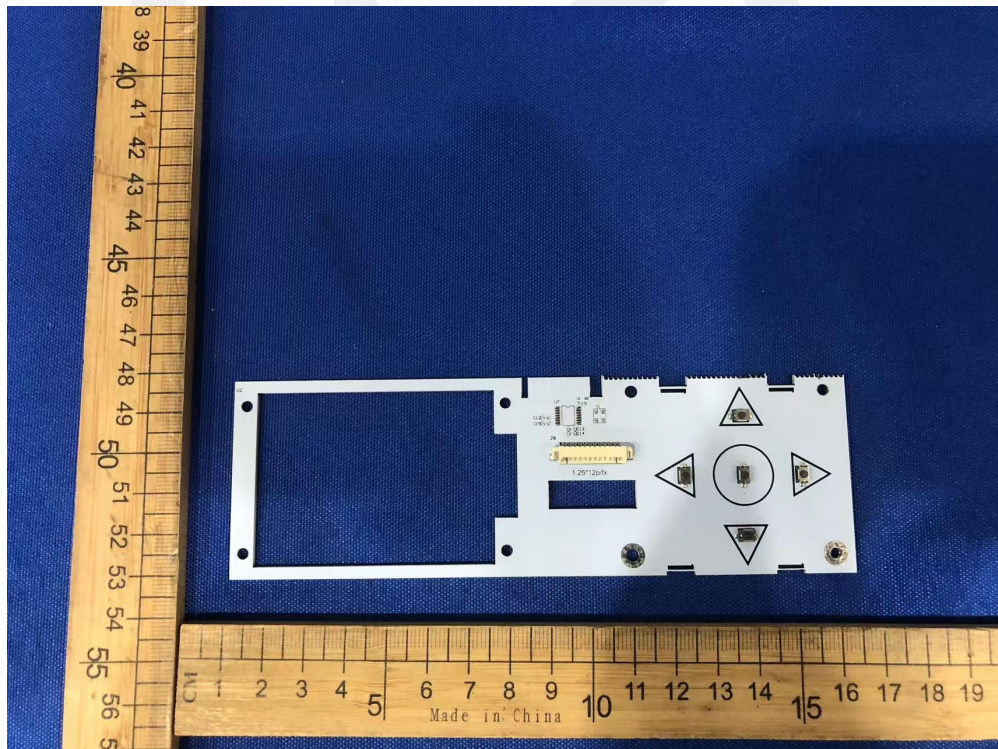
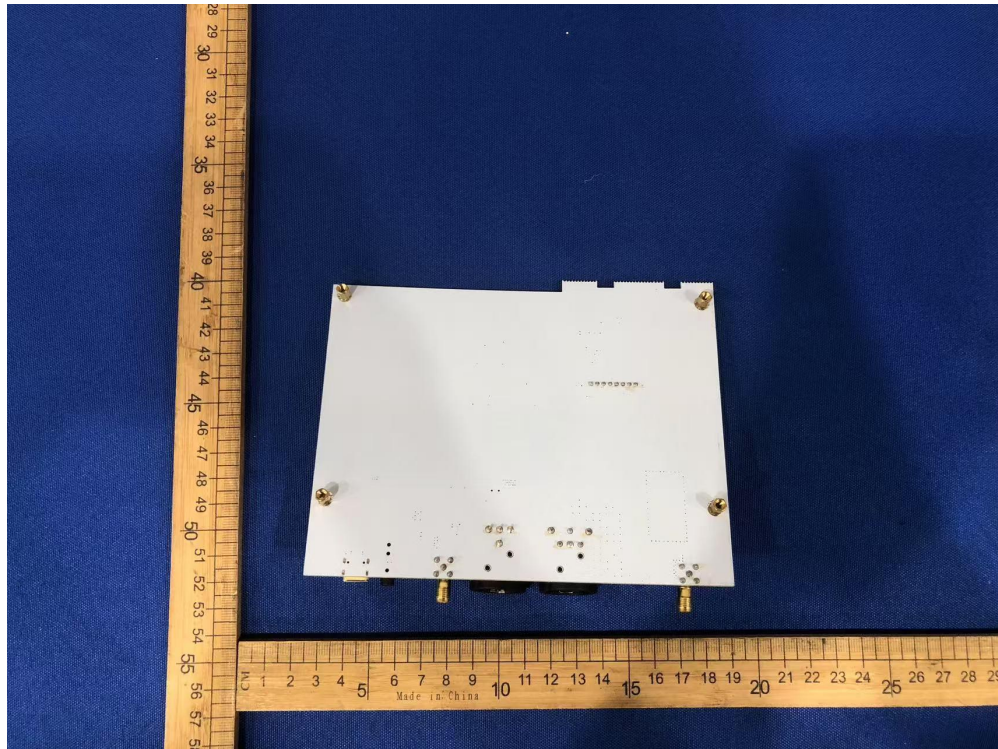


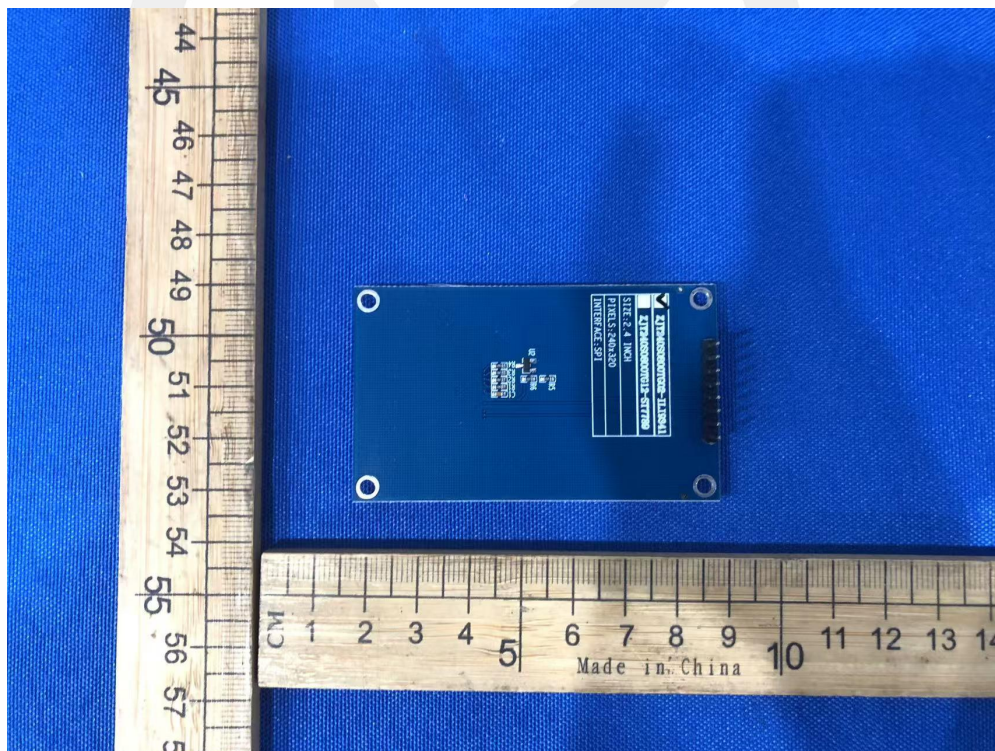
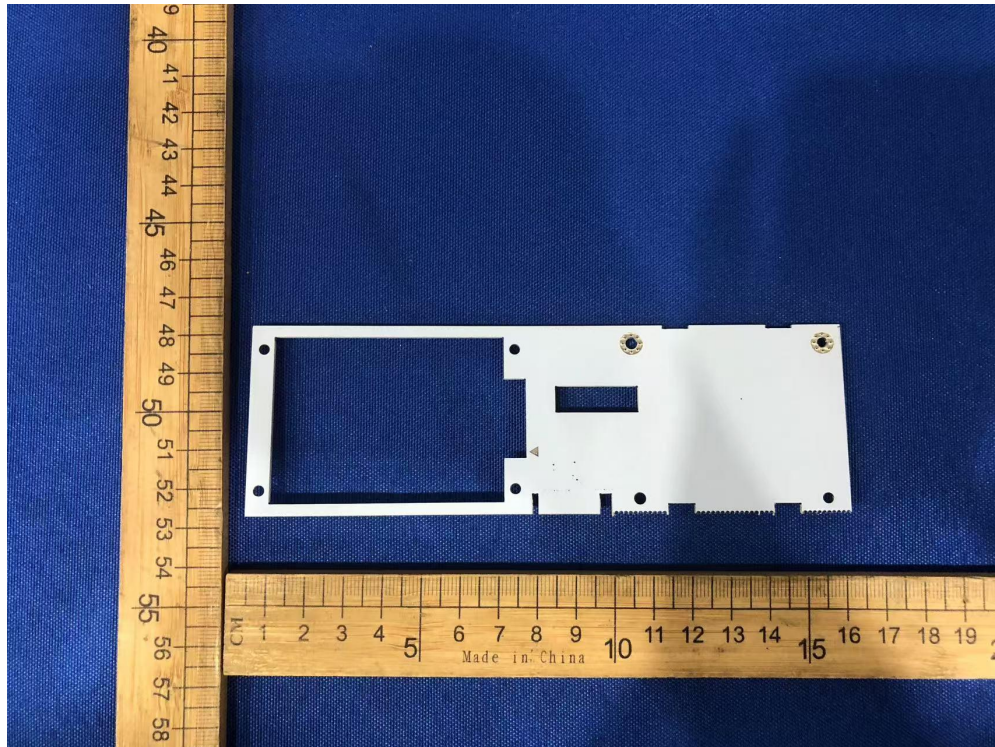


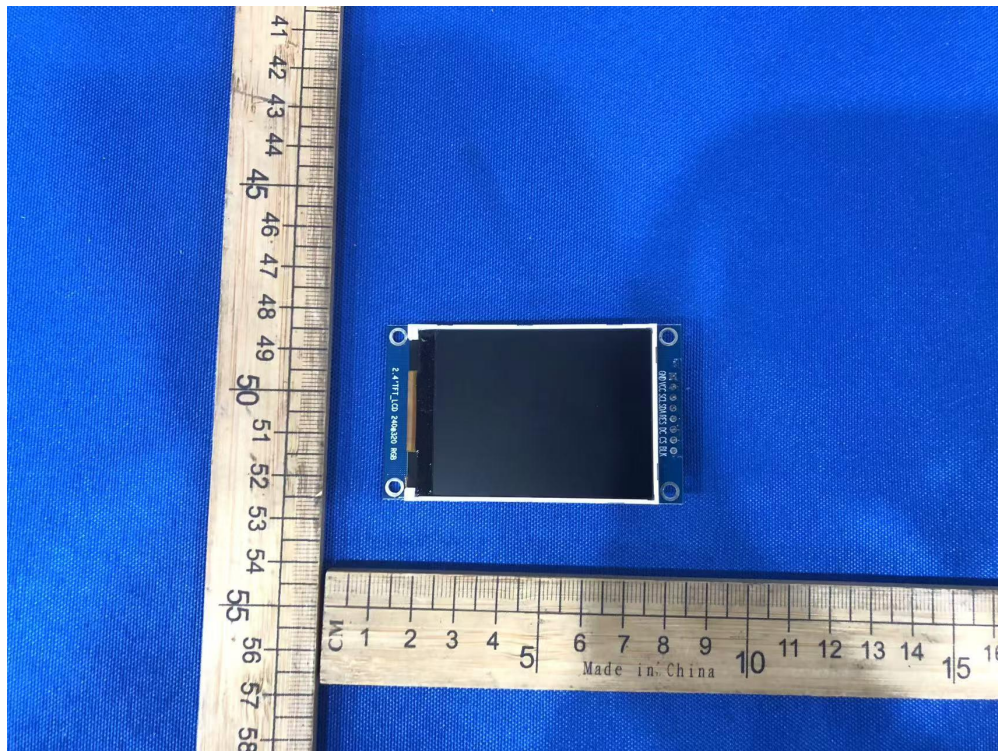












*** End of Report ***

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