TEST REPORT

Applicant:	Shenzhen Maono Technology Co., Ltd.
Address:	No. 1307, 13th Floor, Building 4, Phase II of Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China
Manufacturer:	Shenzhen Maono Technology Co., Ltd.
Address:	No. 1307, 13th Floor, Building 4, Phase II of Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China
Product Name:	Podcast Console
Trade Mark:	maono
Model Number:	AU-AM200 AU-AM200-S0, AU-AM200-S1, AU-AM200-S2, AU-AM200-S3, AU-AM200-S4, AU-AM200-S5, AU-AM200-S6, AU-AM100, AM200
Date of Receipt:	Jul. 25, 2025
Test Date:	Jul. 25, 2025 - Aug. 06, 2025
Date of Report:	Aug. 06, 2025
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China
Applicable Standards:	ETSI EN 301 489-1 V2.2.3 (2019-11), ETSI EN 301 489-17 V3.3.1 (2024-09) EN 55032:2015+A1:2020, EN 55035:2017+A11:2020
Test Result:	Pass
Report Number:	DLE-250725030-2R

Prepared (Engineer):	Randy Xie
Reviewer (Supervisor):	Jack Bu
Approved (Manager):	Jade Yang

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

TABLE OF CONTENT

1. VERSION

Version No.	Date	Description
00	Aug. 06, 2025	Original

2. TEST SUMMARY

EMC Emission				
Standard	Test Item	Limit	Result	Remark
ETSI EN 301 489-1 V2.2.3 (2019-11), EN 55032:2015+A1:2020	Conducted Emission at power ports	Class B	N/A	
	Conducted Emission at LAN port	Class B	N/A	
	Radiated Emission below 1GHz	Class B	PASS	
	Radiated Emission above 1GHz	Class B	PASS	
EN IEC 61000-3-2:2019 +A1:2021+A2:2024	Harmonic Current Emission	Class A or D	N/A	NOTE (2)
EN 61000-3-3:2013 +A1:2019+A2:2021	Voltage Fluctuations & Flicker	------	N/A	
EMC Immunity				
Section ETSI EN 301 489-17 V3.3.1 (2024-09), EN 55035:2017+A11:2020	Test Item	Performance Criteria	Result	Remark
EN 61000-4-2:2009	Electrostatic Discharge	B	PASS	
EN IEC 61000-4-3:2020	RF electromagnetic field	A	PASS	
EN 61000-4-4:2012	Fast transients	B	N/A	
EN 61000-4-5:2014 +A1:2017	Surges	B	N/A	
EN IEC 61000-4-6:2023	Injected Current	A	N/A	
EN IEC61000-4-11:2020 +AC:2022	Volt. Interruptions Volt. Dips	B / C / C	N/A	NOTE (3)

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) The power consumption of EUT is less than 75W and no Limits apply.

(3) Voltage dip: 100% reduction – Performance Criteria B

Voltage dip: 100% reduction – Performance Criteria B

Voltage dip: 70% reduction – Performance Criteria C

Voltage Interruption: 100% Interruption – Performance Criteria C

(4) Test Facility: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

3. GENERAL INFORMATION

3.1 Description of Device (EUT)

Product Name:	Podcast Console
Trade Mark:	maono
Model Number:	AU-AM200 AU-AM200-S0, AU-AM200-S1, AU-AM200-S2, AU-AM200-S3, AU-AM200-S4, AU-AM200-S5, AU-AM200-S6, AU-AM100, AM200
Test Model:	AU-AM200
Model difference:	All models are same as the samples except model name and appearance color, they have the same structure and circuit.
Power Supply:	DC 5V from charger DC 3.7V from battery
Work Frequency:	Above 108MHz

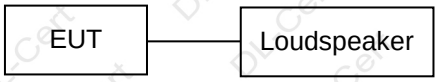
Note1: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

Note2: The EUT's all information provided by client.

3.2 Tested System Details

None.

3.3 Block Diagram of Test Set-up



3.4 Test Mode Description

Mode1.: On Mode

3.5 Test Auxiliary Equipment

The loudspeaker is provided by the laboratory and are only used for testing.

3.6 Test Uncertainty

Conducted Emission Uncertainty : ±2.56dB

Radiated Emission Uncertainty : ±3.24dB

4. TEST INSTRUMENT USED

For Conducted Emission Test (843 Shielded Room)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
EMI Receiver	R&S	ESR	101421	Nov. 01, 2024	Oct. 31, 2025
LISN	R&S	ENV216	102417	Nov. 01, 2024	Oct. 31, 2025
Clamp	COM-POWER	CLA-050	431072	Nov. 02, 2024	Nov. 01, 2025
3-Loop Antenna	DAZE	ZN30401	13021	Nov. 02, 2024	Nov. 01, 2025
ISN T8	Schwarzbeck	NTFM 8158	101135	Nov. 01, 2024	Oct. 31, 2025
ISN T5	Schwarzbeck	NTFM 8158	101136	Nov. 01, 2024	Oct. 31, 2025
843 Cable 1#	ChengYu	CE Cable	001	Nov. 01, 2024	Oct. 31, 2025
843 Cable 1#	ChengYu	CL Cable	002	Nov. 01, 2024	Oct. 31, 2025

For Radiated Emission Test (966 chamber)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
966 chamber	YIHENG	966 Room	966	Nov. 06, 2023	Nov. 05, 2026
Spectrum Analyzer	Agilent	E4408B	MY50140780	Nov. 01, 2024	Oct. 31, 2025
EMI Receiver	R&S	ESRP7	101393	Nov. 01, 2024	Oct. 31, 2025
Amplifier	Schwarzbeck	BBV9743B	00153	Nov. 01, 2024	Oct. 31, 2025
Amplifier	EMEC	EM01G8GA	00270	Nov. 01, 2024	Oct. 31, 2025
Broadband Trilog Antenna	Schwarzbeck	VULB9162	00306	Nov. 02, 2024	Nov. 01, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	02139	Nov. 02, 2024	Nov. 01, 2025
966 Cable 1#	ChengYu	966	004	Nov. 01, 2024	Oct. 31, 2025
966 Cable 2#	ChengYu	966	003	Nov. 01, 2024	Oct. 31, 2025

For Harmonic & Flicker Test (EMS --- site)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
Harmonics, Flicker & power Analyser	LAPLACE INSTRUMENTS	AC2000A	311370	Nov. 01, 2024	Oct. 31, 2025
AC Power Supply	MToni	HPF5010	633659	Nov. 01, 2024	Oct. 31, 2025

For Electrostatic Discharge Immunity Test (EMS --- site)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
ESD Tester	SCHLODER	SESD 230	17352	Nov. 02, 2024	Nov. 01, 2025

For RF Field Strength Susceptibility Test (Other RS site)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
Signal Generator	HP	SMB100A	1406600K02	Oct. 15, 2024	Oct. 14, 2025
Amplifier	BONN ELEKTRONIK	BLWAO810-250/100D	066454	Oct. 15, 2024	Oct. 14, 2025
Amplifier	BONN ELEKTRONIK	BLWA0840-5030D	066453	Oct. 15, 2024	Oct. 14, 2025
RS Test Antenna	SKET	STLP 9129 Plus	202301/428	Oct. 15, 2024	Oct. 14, 2025
audio analyzer	R&S	UPL	16755	Oct. 15, 2024	Oct. 14, 2025
Antenna	EMCO	3108	9507-2534	Oct. 15, 2024	Oct. 14, 2025
Log-periodic Antenna	A&R	AT1080	16812	Oct. 15, 2024	Oct. 14, 2025
Power Sensor	R&S	Z11	116655	Oct. 15, 2024	Oct. 14, 2025
Power Sensor	R&S	Z11	121896	Oct. 15, 2024	Oct. 14, 2025
Horn Antenna	AINFO	JXTXLB-10180-SF	J2031090903006	Oct. 15, 2024	Oct. 14, 2025

For EFT /B, Surge, Voltage Dips Interruptions Test (EMS --- site)

Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
Transient Comprehensive Immunity Test System	Graphtec	HVIP16T+HCOMPACT 5	192501+192202	Nov. 01, 2024	Oct. 31, 2025
Coupling Clamp	HTEC	001	0001	Nov. 01, 2024	Oct. 31, 2025

For Injected Currents Susceptibility Test (EMS --- site)

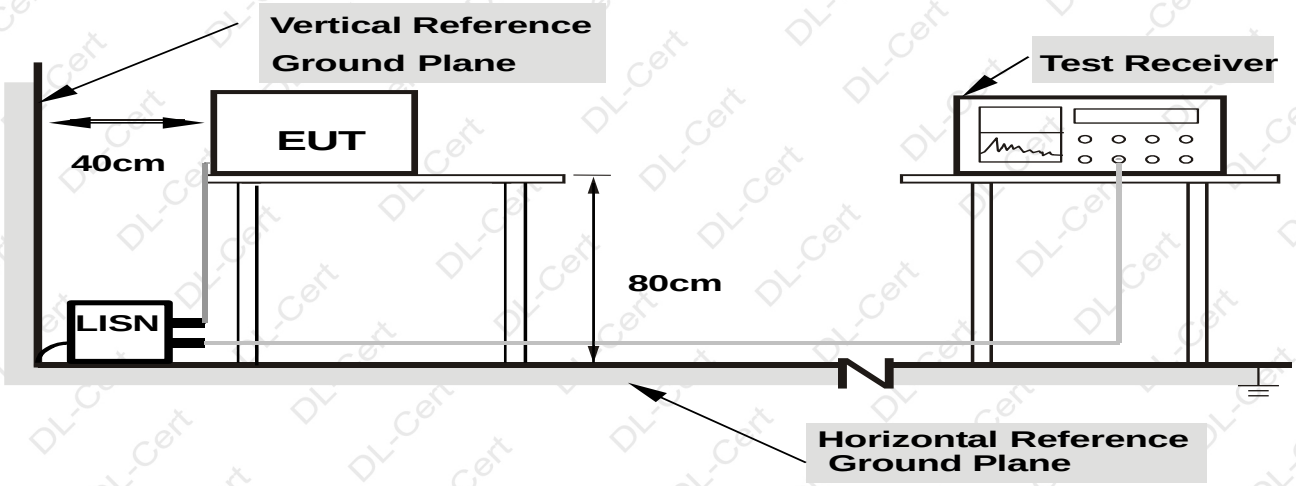
Equipment	Manufacturer	Model	Serial	Last Cal.	Next Cal.
C/S Test System	LIONCEL	RIS-6091-85	0191101	Nov. 01, 2024	Oct. 31, 2025
CDN	LIONCEL	CDN-M2-16	0191001	Nov. 01, 2024	Oct. 31, 2025
CDN	LIONCEL	CDN-M3-16	0191002	Nov. 01, 2024	Oct. 31, 2025
Injection Clamp	Frankonia	EMCL-20	18101728-0108	Nov. 01, 2024	Oct. 31, 2025
Attenuator	LIONCEL	100W 6dB DC-3GHz	0191003	Nov. 01, 2024	Oct. 31, 2025

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ_EMC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMC	FA-03A2
3	Harmonic test system	LAPLACE INSTRUMENTS	Harmonic	1.0.0.0
4	RF Immunity test system	LIONCEL	RF Immunity	1.8.0

5. CONDUCTED EMISSION TEST

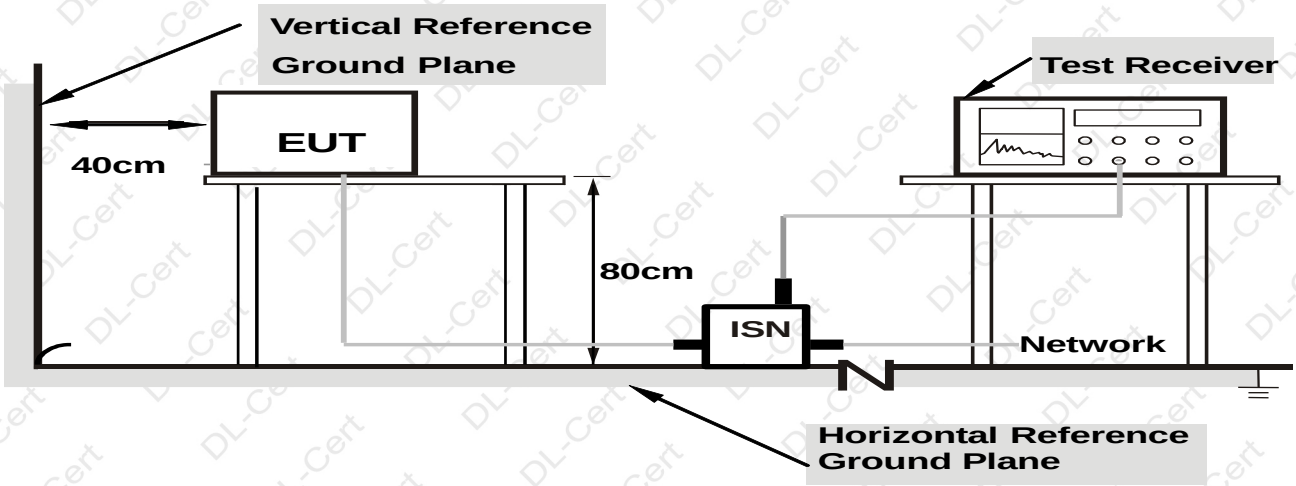
5.1 Block Diagram of Test Setup

For Mains Terminals Test



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For Telecom Port Test



Note: 1.Support units were connected to second LISN.
2.Both of ISNs are 80 cm from EUT and at least 80 cm from other units and other metal planes

5.2 Test Standard and Limit

EN 55032

For Mains Terminals Test			For Telecom Port Test		
Frequency MHz	Limits dB(μV)		Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level		Quasi-peak Level	Average Level
0.15~0.50	66 ~ 56*	56 ~ 46*	0.15~0.50	84 ~ 74*	74 ~ 64*
0.50~5.00	56	46	0.50~30.00	74	64
5.00~30.00	60	50	/	/	/

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

5.3 EUT Configuration on Test

The following equipment's are installed on conducted emission test to meet EN 55032 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

5.4 Operating Condition of EUT

5.4.1 Setup the EUT and simulators as shown in Section 5.1.

5.4.2 Turn on the power of all equipment.

5.4.3 Let the EUT work in test modes and test it.

5.5 Test Procedure

The EUT is put on the table and connected to the AC mains through a Artificial Mains Network (AMN) or ISN. This provided a 50ohm coupling impedance for the tested equipment's. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **EN 55032** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESR) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

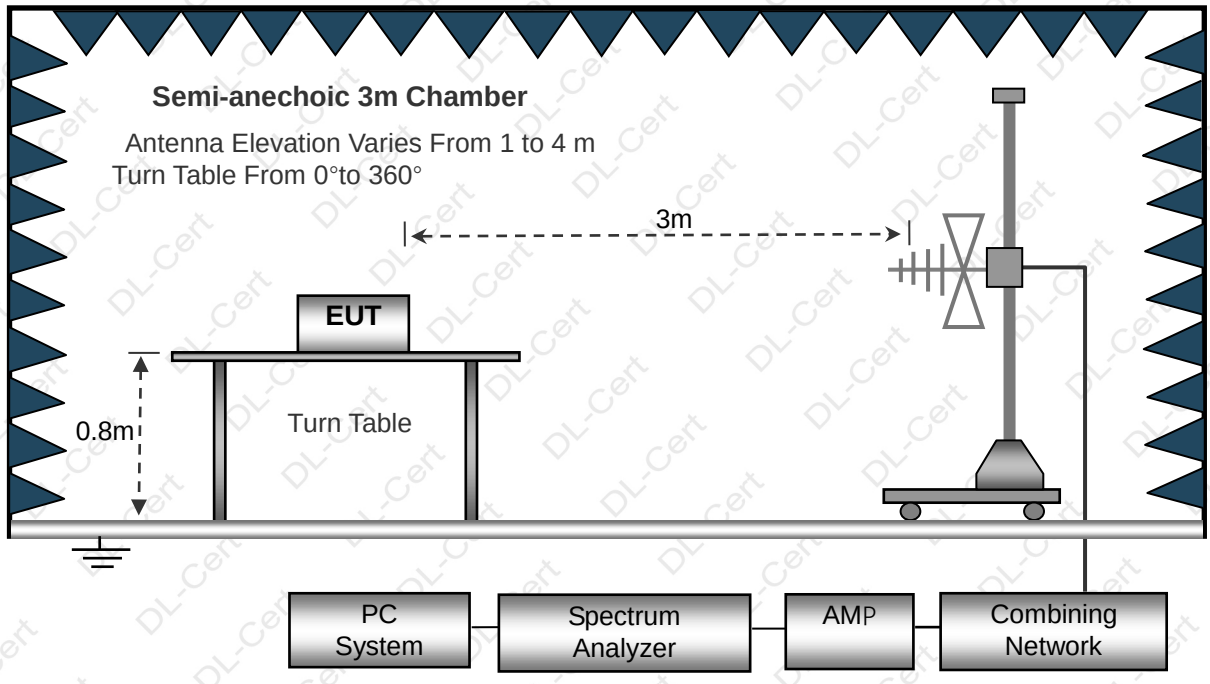
5.6 Test Result

The EUT is powered by DC, no requirements for this item.

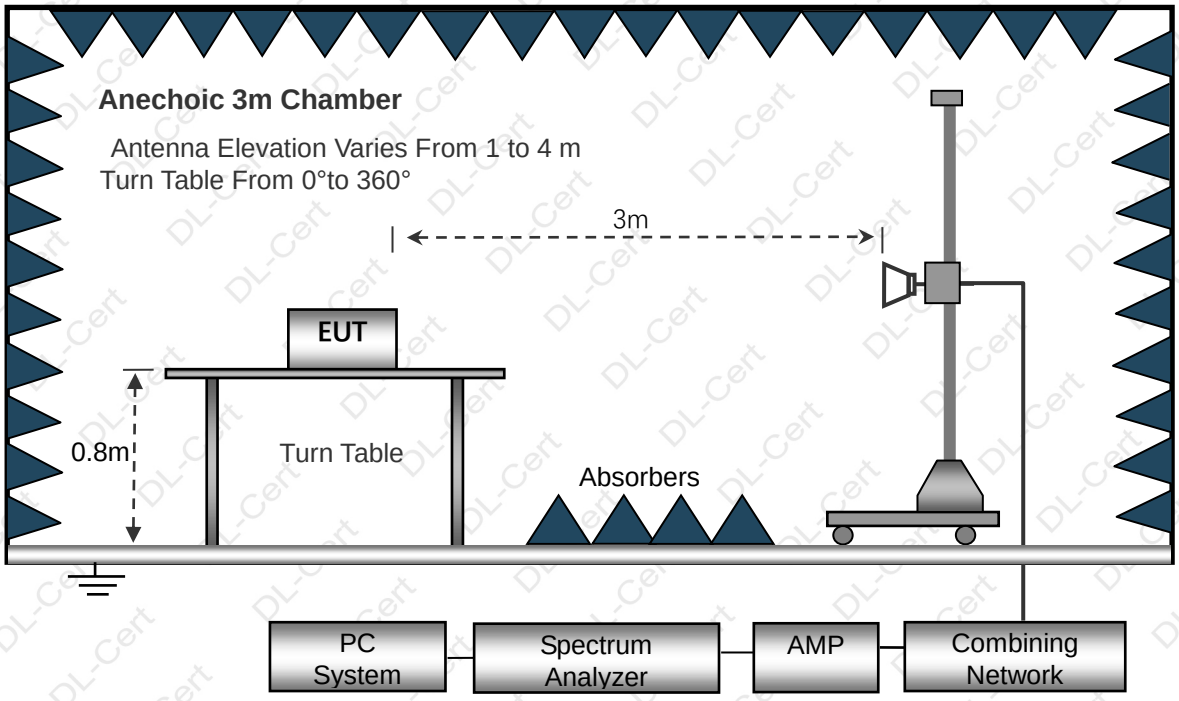
6. RADIATION EMISSION TEST

6.1 Block Diagram of Test Setup

Below 1GHz



Above 1GHz



6.2 Test Standard and Limit

EN 55032

Below 1GHz

Equipment Type	Distance (Meters)	Frequency MHz	Limit values dB(μV/m) Quasi-peak	
FM receivers	3	≤1 000	Fundamental	60
		30 to 230	Harmonics	52
		230 to 300	Harmonics	52
		300 to 1000	Harmonics	56
Other		30 to 230	40	
		230 to 1000	47	

Above 1GHz

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μV)/m	Detector
1000～3000	3	76.0	PEAK
1000～3000	3	56.0	AVERAGE
3000～6000	3	80.0	PEAK
3000～6000	3	60.0	AVERAGE

Remark:

(1) The smaller limit shall apply at the cross point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

6.3 EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 5.3.

6.4 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 5.4 except the test set up replaced as Section 6.2.

6.5 Test Procedure

1) The radiated emissions test was conducted in a semi-anechoic chamber.

2) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

3) Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.

4) The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

5) The bandwidth setting on the receiver (R&S Test Receiver ESR) is set at 120KHz. (above 1GHz set at 1MHz)

6) The frequency range from 30MHz to 6000MHz is checked.

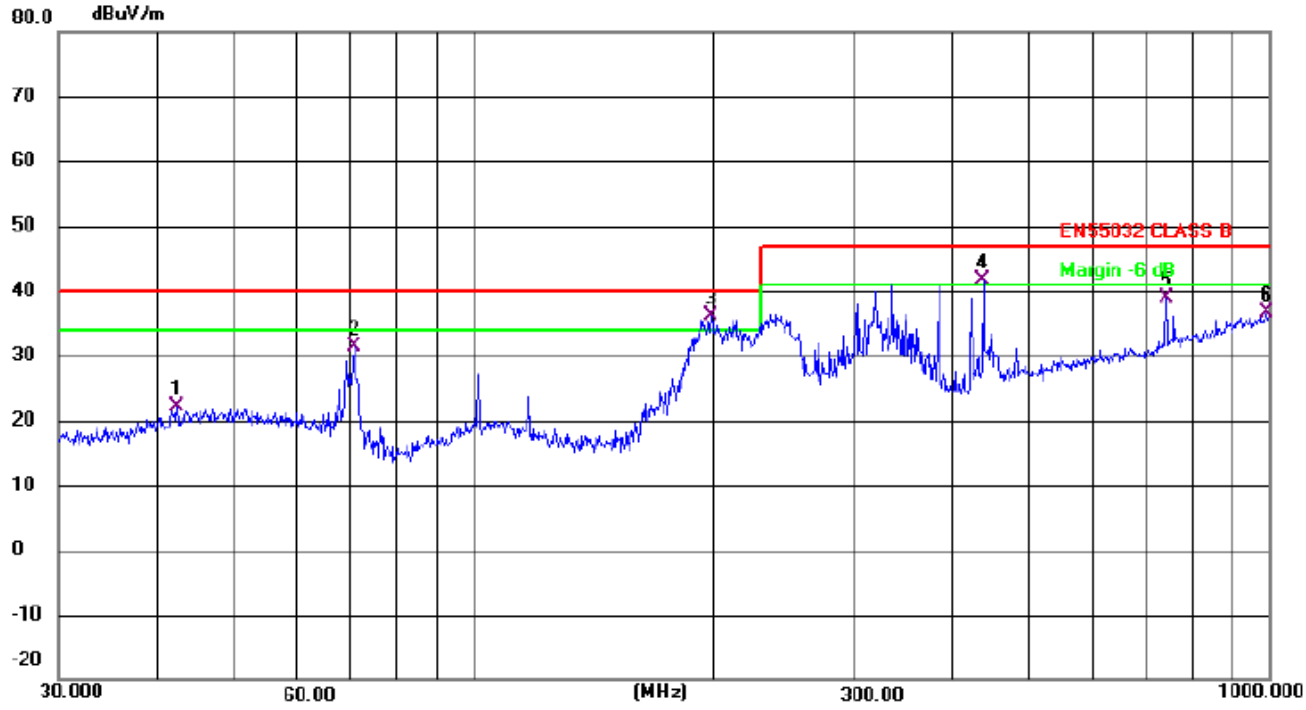
7) For above 1GHz, the peak emission below the average's limit, so the average's result no recoring.

6.6 Test Result

PASS

Please refer to the following page.

Radiation Emission Test Data (Below 1GHz)			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Test Mode:	Mode 1



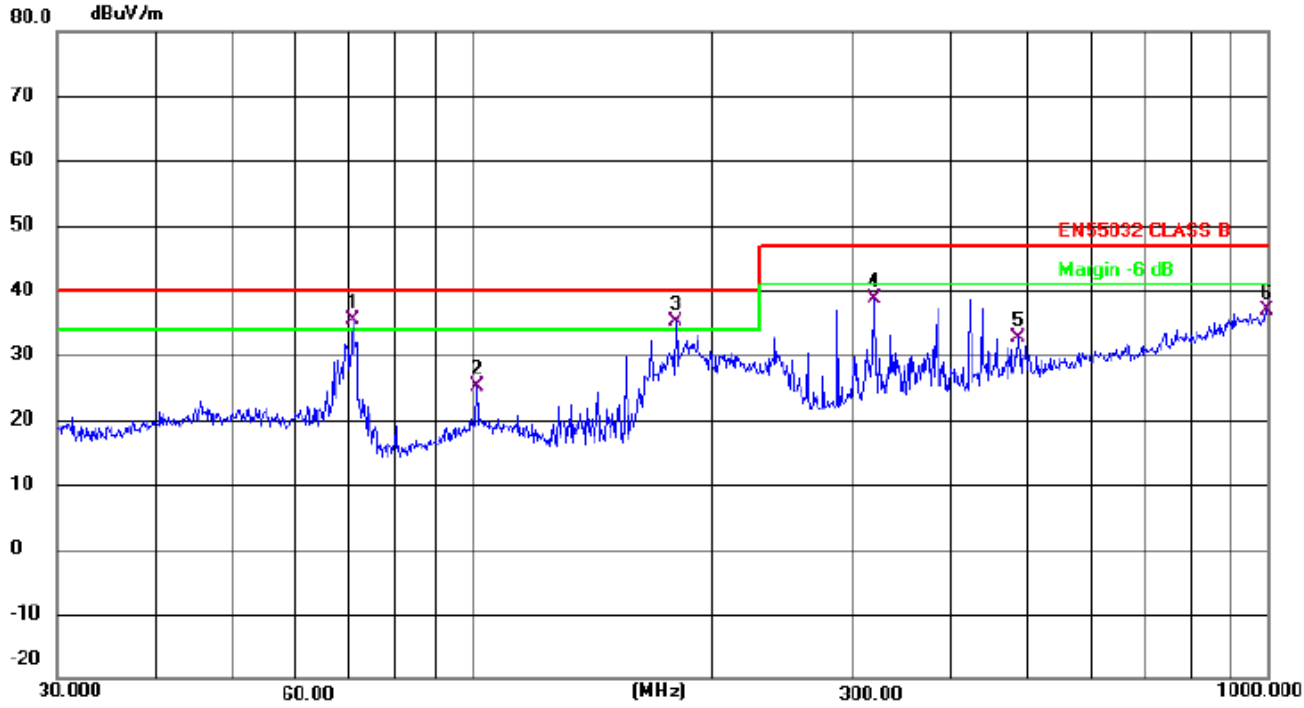
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.3022	29.72	-7.59	22.13	40.00	-17.87	QP
2		70.5836	42.64	-11.14	31.50	40.00	-8.50	QP
3	*	198.5880	44.98	-8.90	36.08	40.00	-3.92	QP
4	!	437.1199	44.35	-2.84	41.51	47.00	-5.49	QP
5		742.2587	35.95	2.94	38.89	47.00	-8.11	QP
6		993.0114	29.93	6.75	36.68	47.00	-10.32	QP

Remark:

Correct Factor=Cable loss+Antenna factor-Preamplifier

Measurement Level = Reading Level + Correct Factor; Margin = Measurement Level- Limit;

Radiation Emission Test Data (Below 1GHz)			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Vertical
Test Voltage:	DC 3.7V	Test Mode:	Mode 1



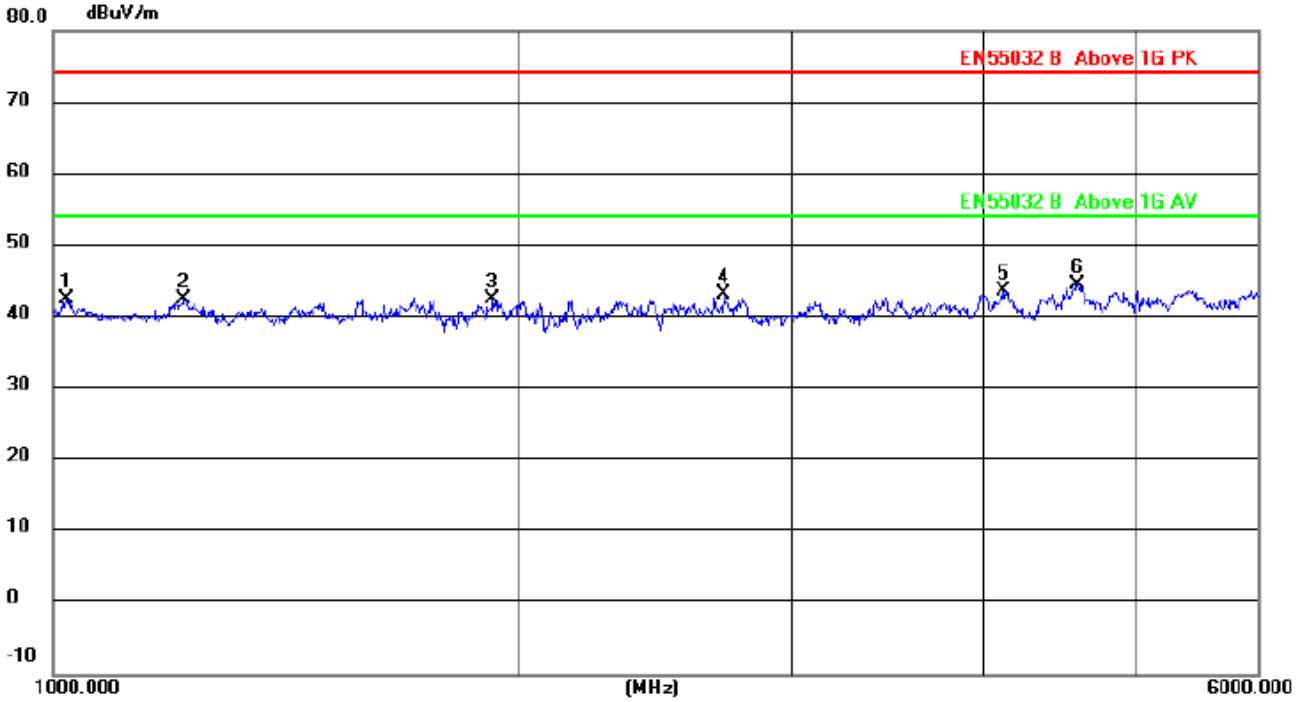
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	70.5835	46.60	-11.14	35.46	40.00	-4.54	QP
2		101.2885	33.81	-8.80	25.01	40.00	-14.99	QP
3	!	180.0164	45.43	-10.28	35.15	40.00	-4.85	QP
4		319.9369	44.59	-5.85	38.74	47.00	-8.26	QP
5		485.6092	34.24	-1.51	32.73	47.00	-14.27	QP
6		996.4995	29.93	6.94	36.87	47.00	-10.13	QP

Remark:

Correct Factor=Cable loss+Antenna factor-Preamplifier

Measurement Level = Reading Level + Correct Factor; Margin = Measurement Level- Limit;

Radiation Emission Test Data (Above 1GHz)			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Test Mode:	Mode 1



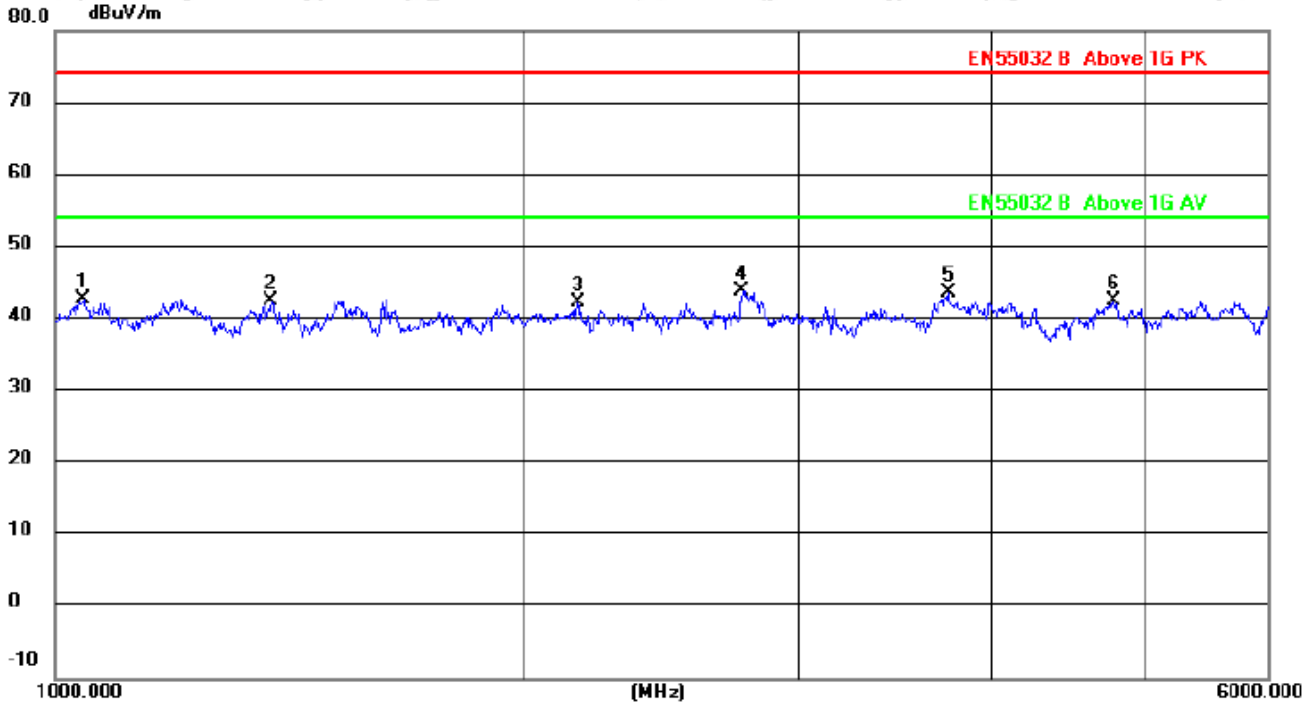
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1019.905	63.52	-20.89	42.63	74.00	-31.37	peak
2		1215.678	62.27	-19.76	42.51	74.00	-31.49	peak
3		1923.203	59.06	-16.54	42.52	74.00	-31.48	peak
4		2712.878	58.16	-15.04	43.12	74.00	-30.88	peak
5		4103.772	52.14	-8.54	43.60	74.00	-30.40	peak
6	*	4585.942	50.74	-6.16	44.58	74.00	-29.42	peak

Remark:

Correct Factor=Cable loss+Antenna factor-Preamplifier

Measurement Level = Reading Level + Correct Factor; Margin = Measurement Level- Limit;

Radiation Emission Test Data (Above 1GHz)			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Polarization:	Vertical
Test Voltage:	DC 3.7V	Test Mode:	Mode 1

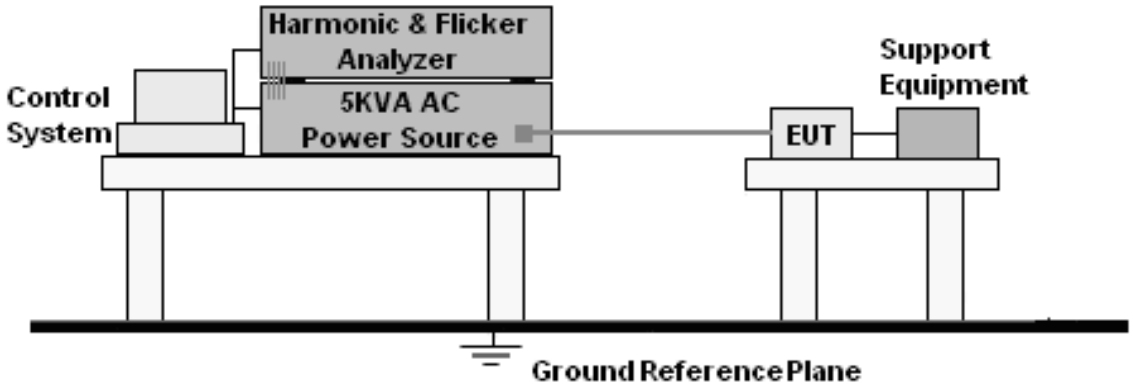


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1043.940	63.64	-20.86	42.78	74.00	-31.22	peak
2		1378.126	61.79	-19.28	42.51	74.00	-31.49	peak
3		2164.628	57.18	-14.78	42.40	74.00	-31.60	peak
4	*	2761.924	58.77	-14.91	43.86	74.00	-30.14	peak
5		3738.689	53.10	-9.43	43.67	74.00	-30.33	peak
6		4770.324	47.50	-5.02	42.48	74.00	-31.52	peak

Remark:
Correct Factor=Cable loss+Antenna factor-Preamplifier
Measurement Level = Reading Level + Correct Factor; Margin = Measurement Level- Limit;

7. HARMONIC CURRENT EMISSION TEST

7.1 Block Diagram of Test Setup



7.2 Test Standard

EN IEC 61000-3-2

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
	8≤n≤40	0.23 · 8/n		DC	0.05

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A)	(mA/w)
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

7.3 Operating Condition of EUT

Setup the EUT as shown in Section 7.1.

Turn on the power of all equipment.

Let the EUT work in test mode and test it.

7.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

7.5 Test Results

The EUT is powered by DC, no requirements for this item.

8. VOLTAGE FLUCTUATIONS & FLICKER TEST

8.1 Block Diagram of Test Setup

Same as Section 7.1.

8.2 Test Standard

EN 61000-3-3

8.3 Operating Condition of EUT

Same as Section 7.3. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
Tmax	4.0%
dt	Not exceed 3.3% for 500ms

8.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

8.5 Test Results

The EUT is powered by DC, no requirements for this item.

9. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

Product Standard	EN 55035, ETSI EN 301 489-17	
Criteria	**During the test**	**After the test**
A	Shall operate as intended. (see note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of critical stored data.
B	May be loss of function.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function.	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no loss of critical stored data.

NOTE: Operate as intended during the test allows a level of degradation in accordance with clause 6.2.2.

6.2.2 Minimum performance level

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

PERFORMANCE FOR TT

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

PERFORMANCE FOR TR

The performance criteria B shall apply, except for voltage dips of 100ms and voltage interruptions of 5 000ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

PERFORMANCE FOR CT

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

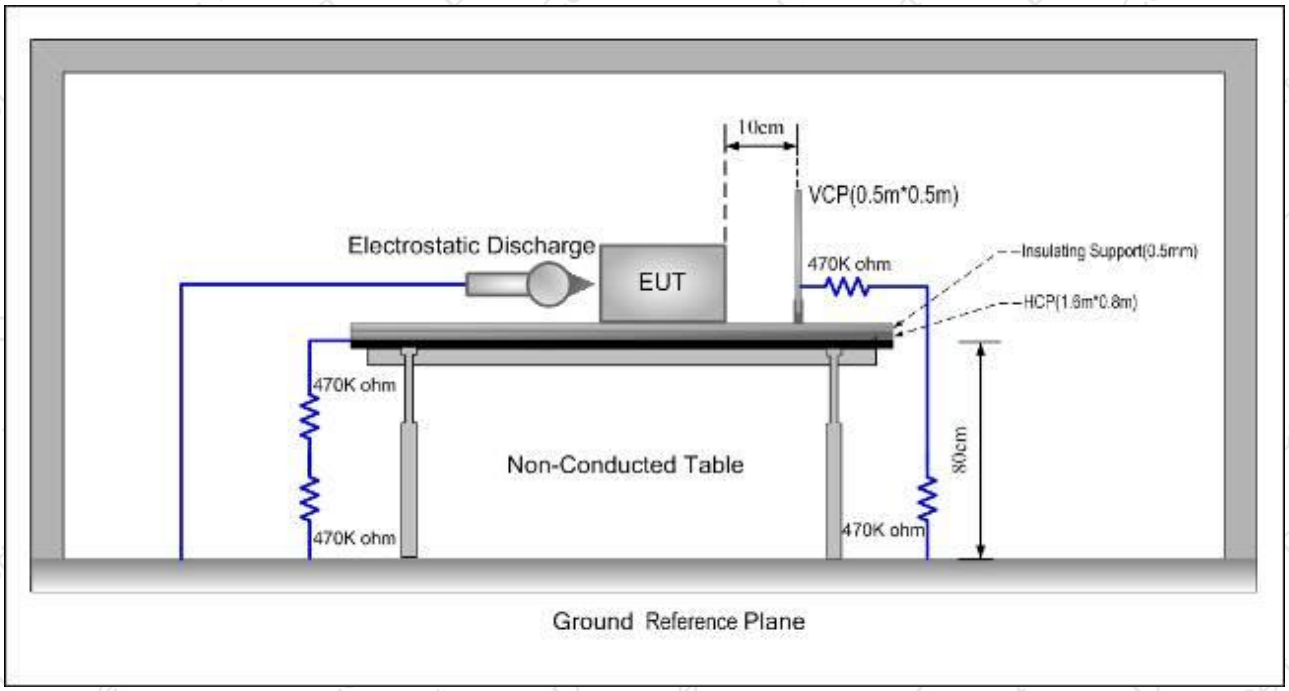
PERFORMANCE FOR CR

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

10. ELECTROSTATIC DISCHARGE IMMUNITY TEST

10.1 Block Diagram of Test Setup



10.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN 61000-4-2

10.3 Severity Levels and Performance Criterion

Severity Level: 3 / Air Discharge: ±8KV

Level: 2 / Contact Discharge: ±4KV

Performance criterion: B

10.4 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.

e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical

edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

10.5 Test Results

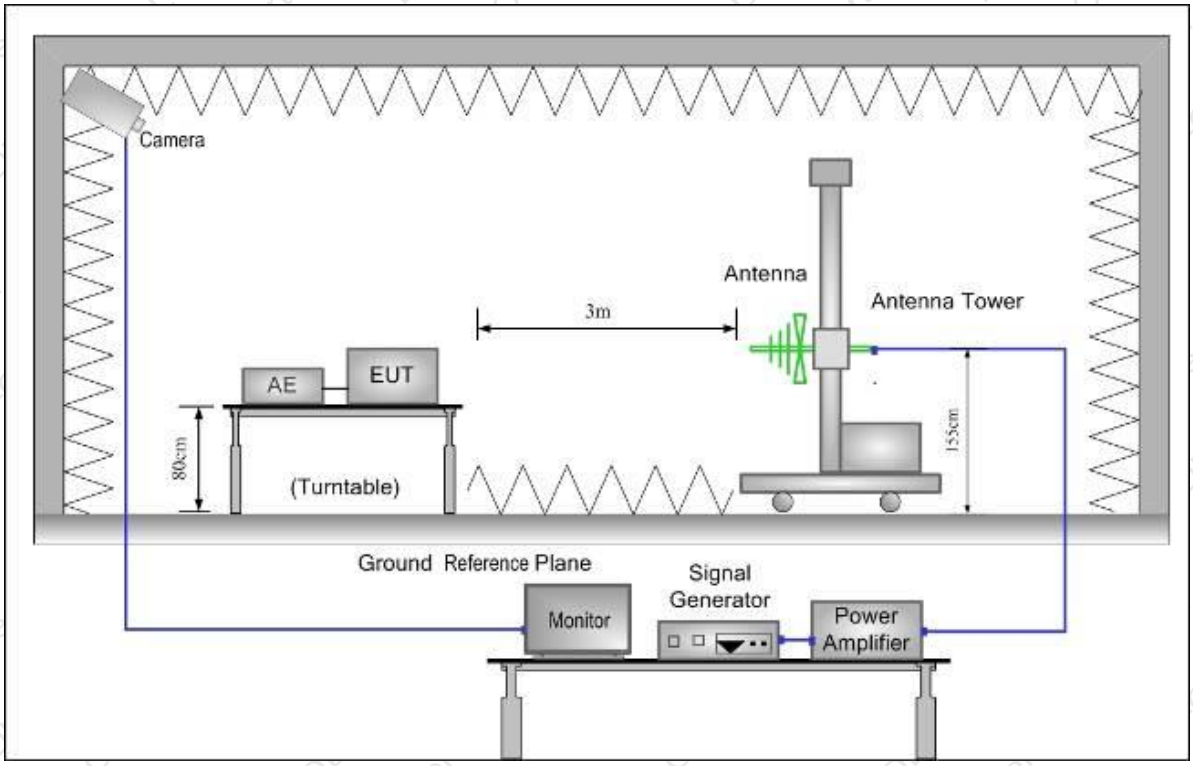
PASS

Please refer to the following page.

Electrostatic Discharge Test Data					
Temperature:	25.1℃		Humidity:	55%	
Power Supply:	DC 3.7V		Test Mode:	Mode 1	
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Result
Contact Discharge	Conductive Surfaces	4	10	B	Pass
	Indirect Discharge HCP	4	10	B	Pass
	Indirect Discharge VCP	4	10	B	Pass
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	Pass
Note: N/A					

11. RF FIELD STRENGTH SUSCEPTIBILITY TEST

11.1 Block Diagram of Test Setup



11.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN IEC 61000-4-3

11.3 Severity Levels and Performance Criterion

Severity Level 2, 3V / m

Performance criterion: A

11.4 Test Procedure

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

All the scanning conditions are as follows:

Condition of Test	Remarks
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Modulated
Scanning Frequency	80 – 6000 MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	1 Sec.

11.5 Test Results

PASS

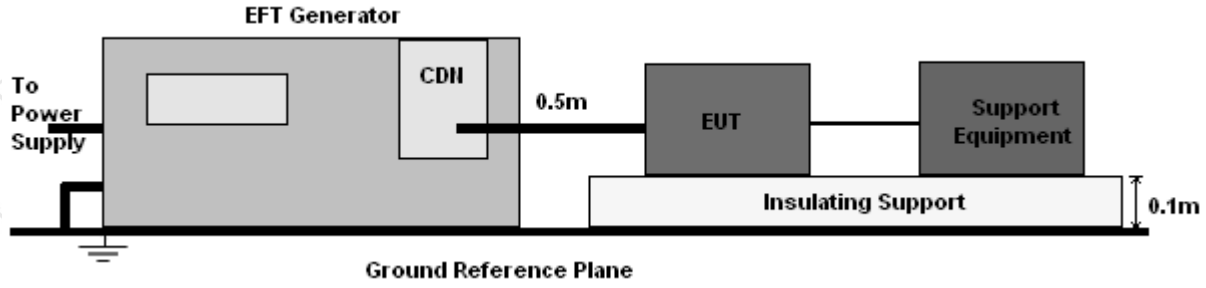
Please refer to the following page.

R/S Test Data				
Temperature:	25.1℃	Humidity:	55%	
Power Supply:	DC 3.7V	Test Mode:	Mode 1	
Criterion:	A	Steps	1 %	
Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Result
80 – 6000	Front, Right, Back, Left	3	A	Pass
Note: N/A				

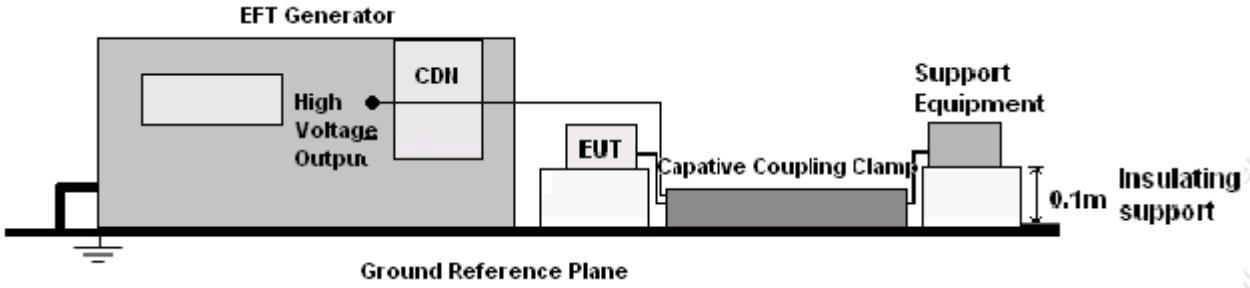
12. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

12.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



12.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN 61000-4-4

12.3 Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS

Performance criterion: B

12.4 Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a min.1m*1m metallic sheet with 0.65mm minimum thickness. 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

For input and output AC power ports:

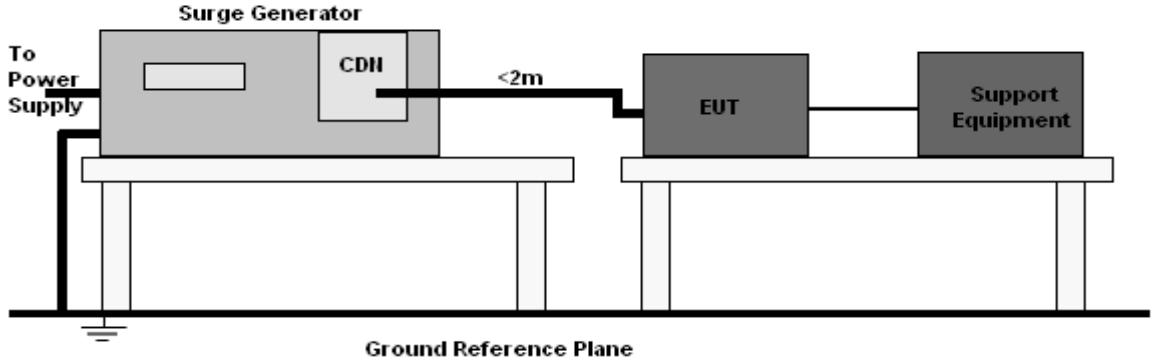
The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

12.5 Test Results

The EUT is powered by DC, no requirements for this item.

13. SURGE TEST

13.1 Block Diagram of EUT Test Setup



13.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN 61000-4-5

13.3 Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;

Severity Level: Line to Earth, Level 3 at 2KV.

Performance criterion: B

13.4 Test Procedure

1) Set up the EUT and test generator as shown on section 11.1

2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.

3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

4) Different phase angles are done individually.

5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.

6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

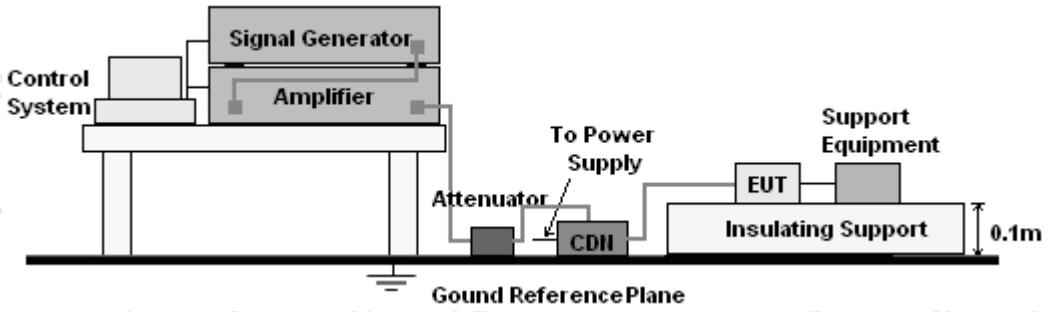
13.5 Test Result

The EUT is powered by DC, no requirements for this item.

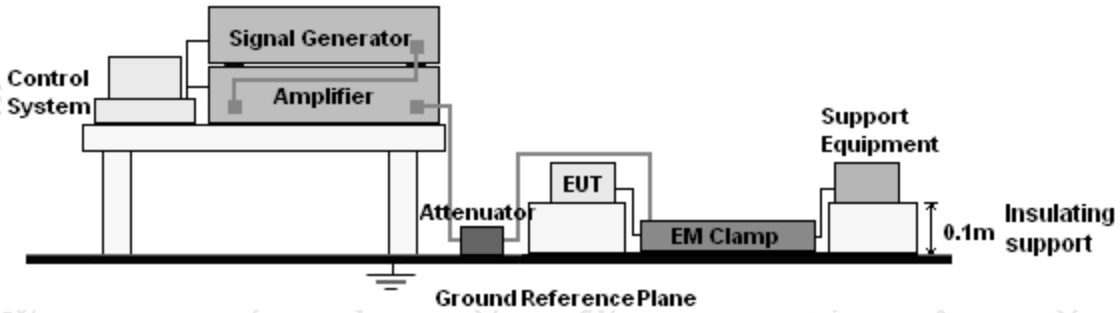
14. INJECTED CURRENTS SUSCEPTIBILITY TEST

14.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



14.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN IEC 61000-4-6

14.3 Severity Levels and Performance Criterion

Severity Level 2: 3V(rms), 150KHz ～ 80MHz

Performance criterion: A

14.4 Test Procedure

1) Set up the EUT, CDN and test generator as shown on section 12.1

2) Let EUT work in test mode and measure.

3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

4) The disturbance signal described below is injected to EUT through CDN.

5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.

6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave

7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

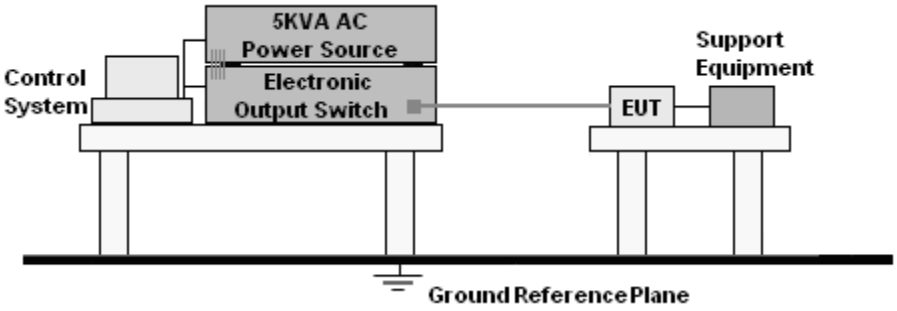
8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

14.5 Test Result

The EUT is powered by DC, no requirements for this item.

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1 Block Diagram of EUT Test Setup



15.2 Test Standard

ETSI EN 301 489-17, EN 55035, EN IEC 61000-4-11

15.3 Severity Levels and Performance Criterion

Input and Output AC Power Ports.

☑ Voltage Dips.

☑ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	100 0.5	% Reduction period	B
	100 1	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	100 250	% Reduction period	C

15.4 Test Procedure

1) Set up the EUT and test generator as shown on section 14.1

2) The interruption is introduced at selected phase angles with specified duration. There is a 3mins minimum interval between each test event.

3) After each test a full functional check is performed before the next test.

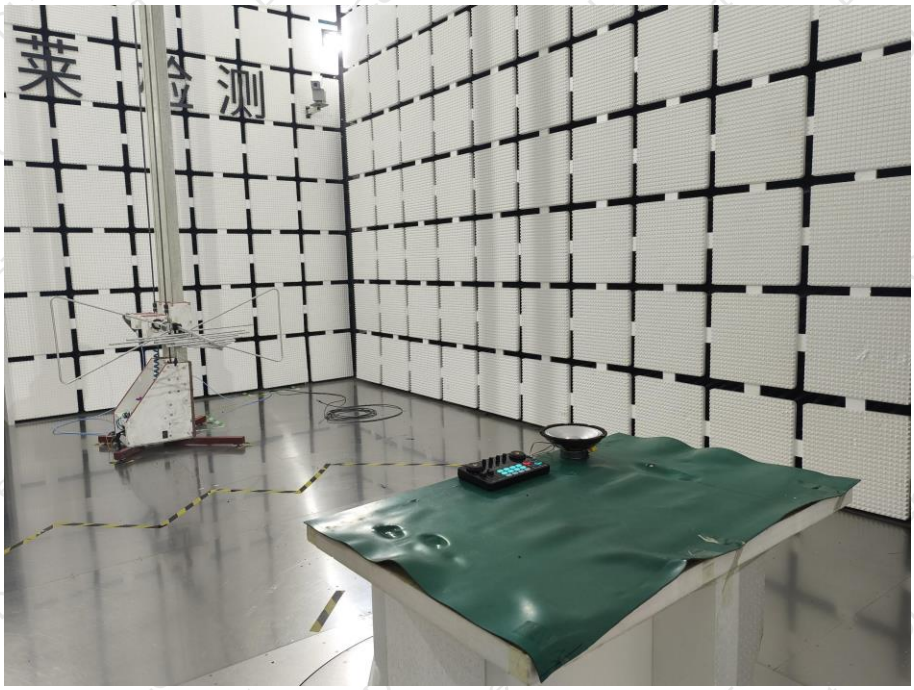
4) Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.

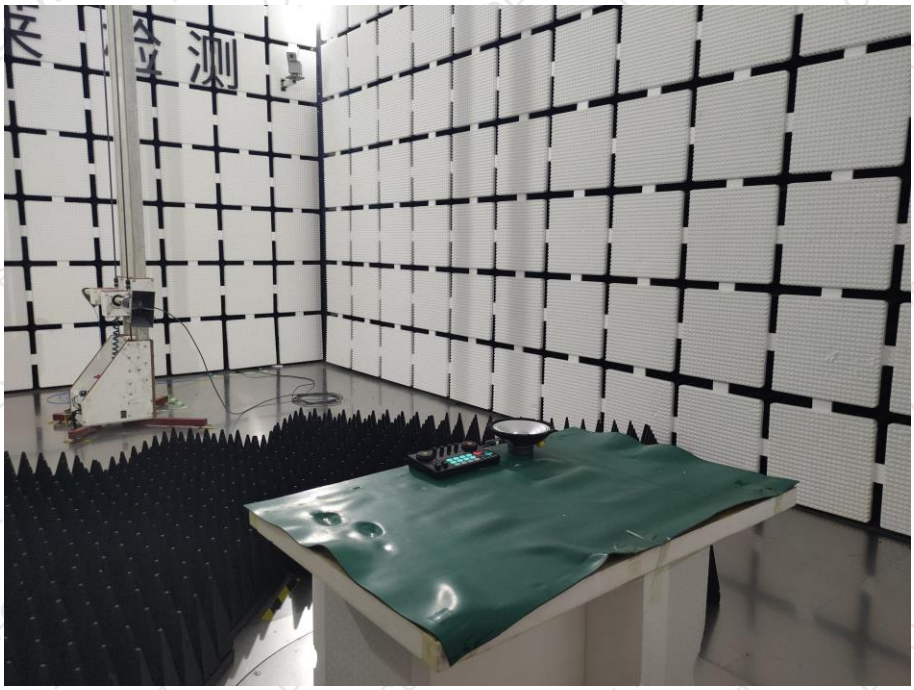
5) Record any degradation of performance.

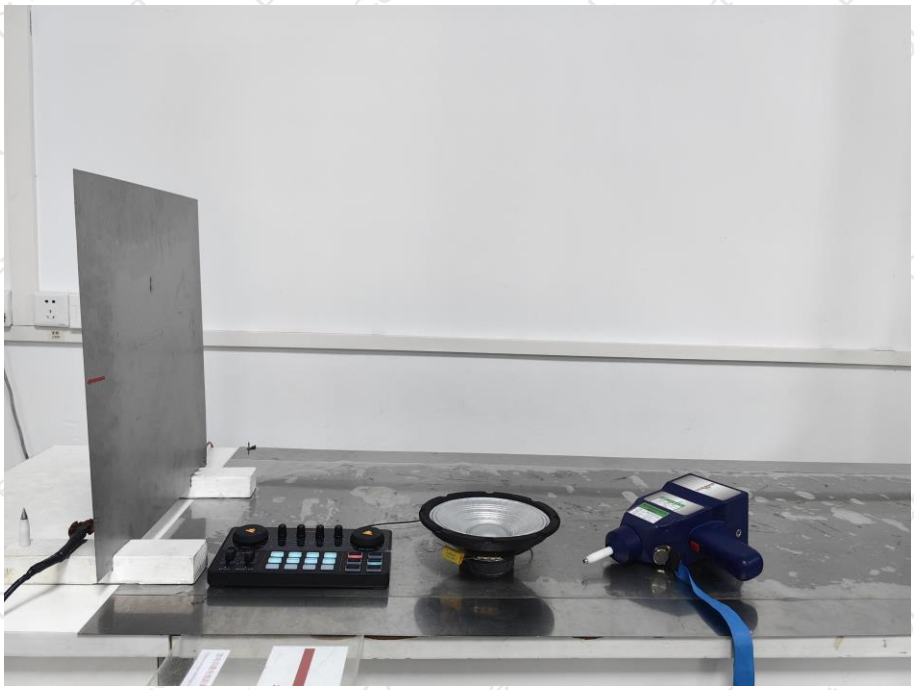
15.5 Test Result

The EUT is powered by DC, no requirements for this item.

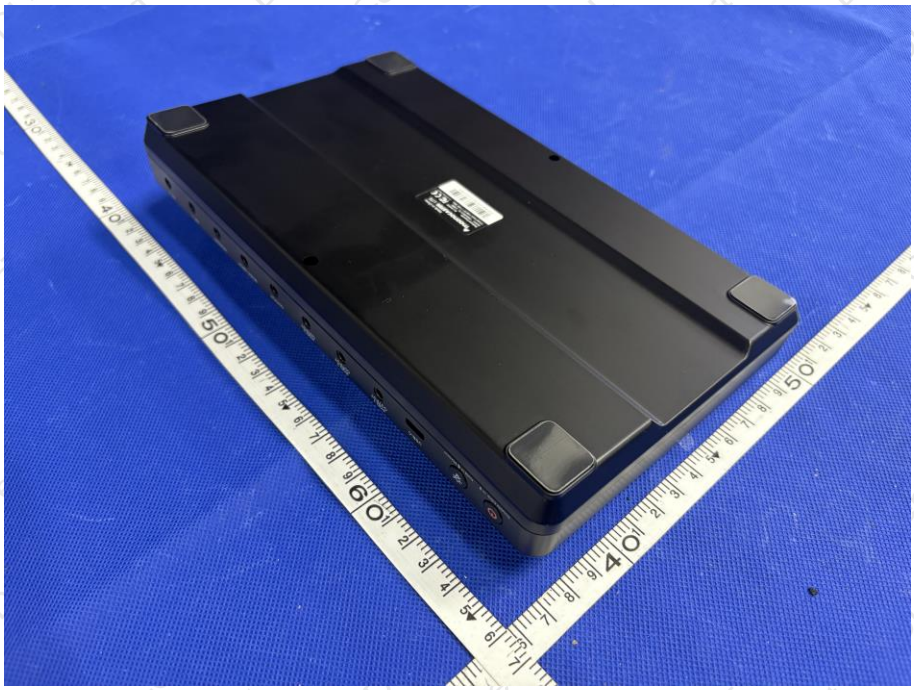
16. SETUP PHOTOGRAPHS

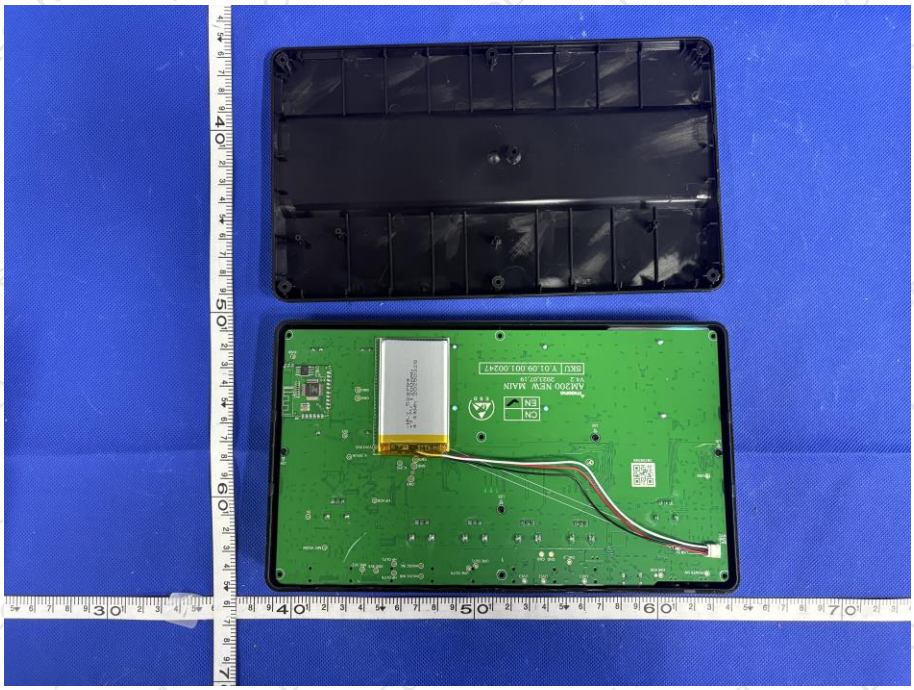


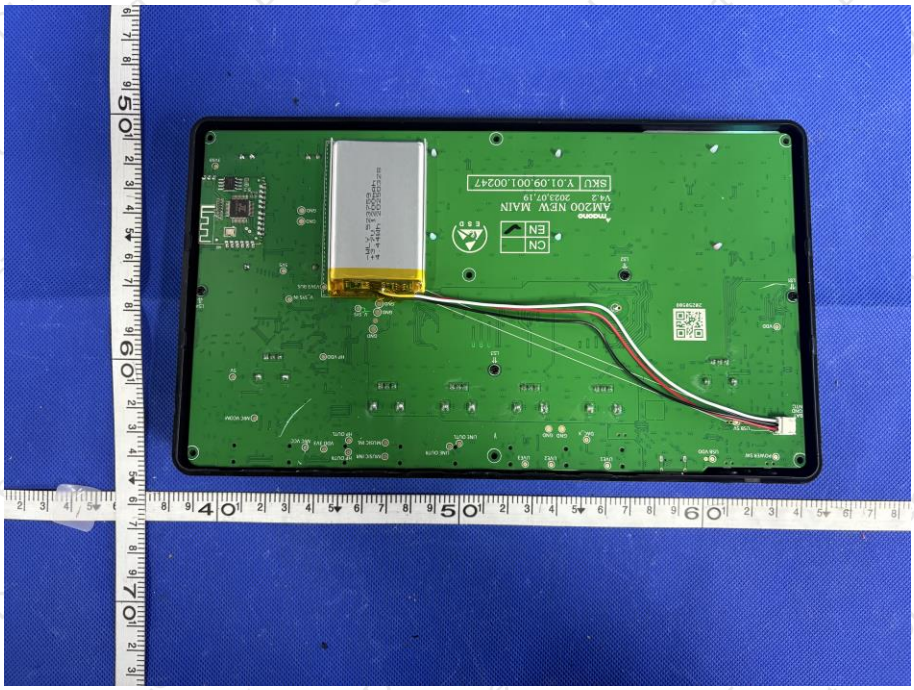




17. EUT PHOTOGRAPHS



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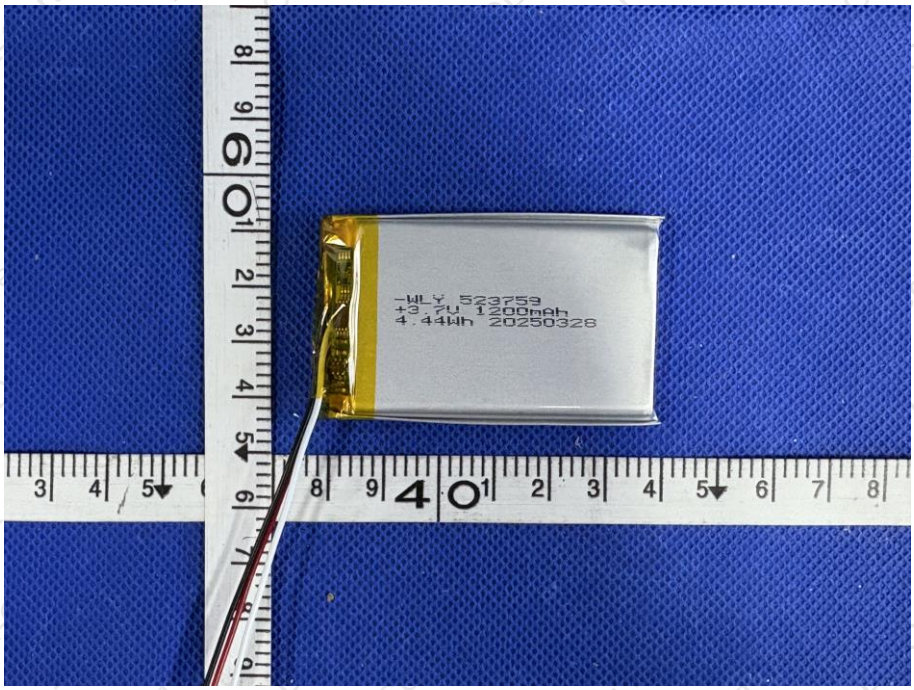
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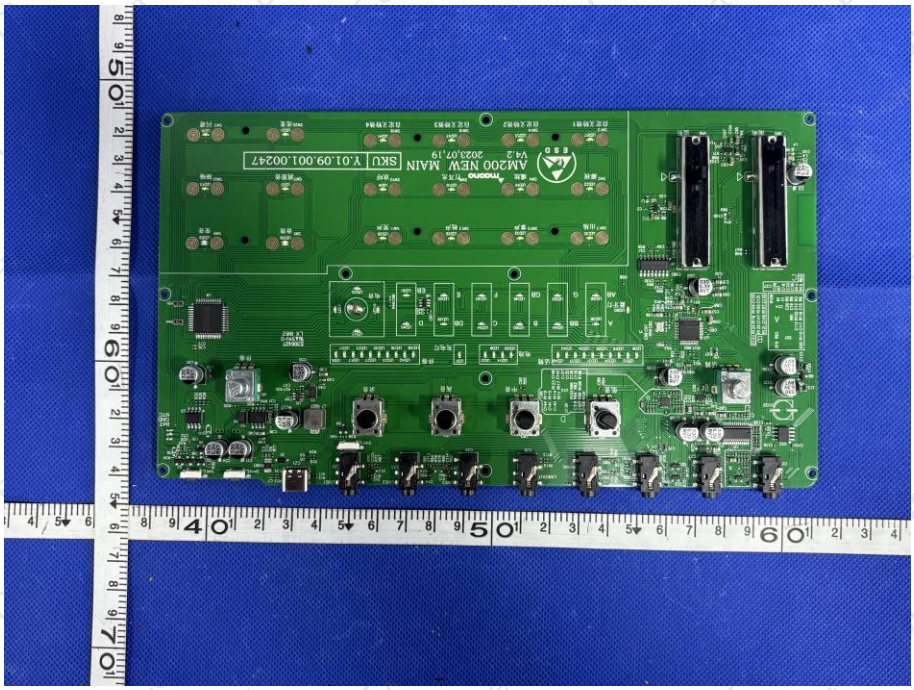
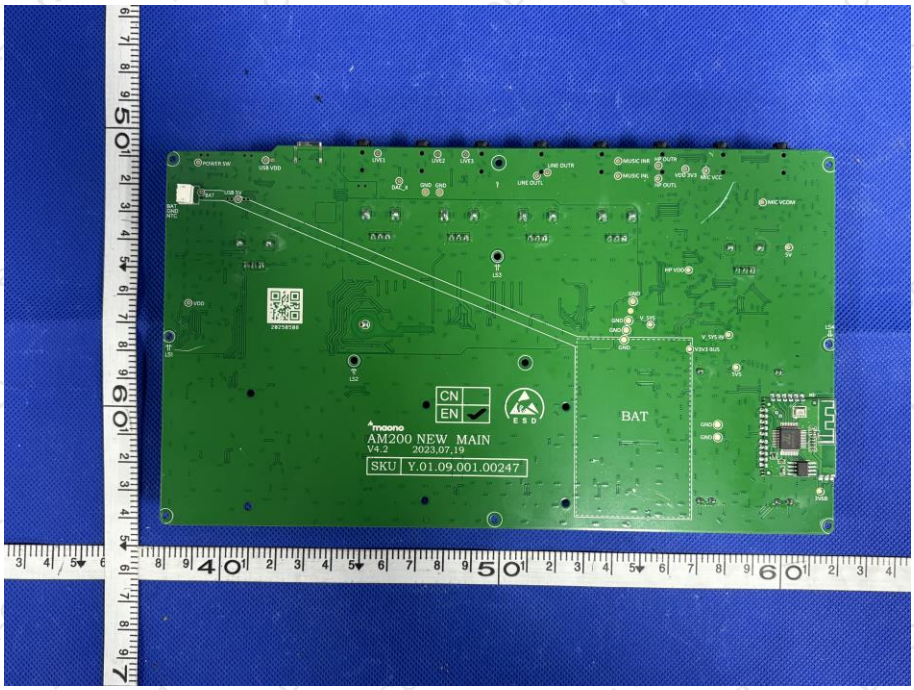
4.44Wh 20250328





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