

EMC TEST REPORT

Sample : Laser Facial Mask

Trade Mark : N/A

Main Model : TLM300-L

Additional Model : TLM300

Report No. : UNIA25071105ER-11

Prepared for

Shenzhen Idea Light Limited

3rd Floor, Block B, Shengdelan Industry Park, Guanlan , Longhua District, Shenzhen,
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Prepared by

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TEST RESULT CERTIFICATION

Applicant : Shenzhen Idea Light Limited
Address..... : 3rd Floor, Block B, Shengdelan Industry Park, Guanlan, Longhua District, Shenzhen, Guangdong Province, China, 518110

Manufacturer : Shenzhen Idea Light Limited
Address..... : 3rd Floor, Block B, Shengdelan Industry Park, Guanlan, Longhua District, Shenzhen, Guangdong Province, China, 518110

Product description

Product : Laser Facial Mask
Trade Mark..... : N/A
Model Name : TLM300-L, TLM300
Standards : EN IEC 55014-1:2021
 EN IEC 61000-3-2:2019+A2:2024
 EN 61000-3-3:2013+A2:2021+AC:2022-01
 EN IEC 55014-2:2021

Date of Test

Date (s) of performance of tests..... : Jul. 14, 2025
Date of Issue : Aug. 06, 2025
Test Result..... : Pass

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1 TEST SUMMARY

1.1 TEST RESULTS

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Class	Result	Remark
EN IEC 55014-1:2021	Conducted Emission	--	PASS	--
	Disturbance Power(30-300MHz)	--	PASS	--
	Radiated Emission 30MHz to 1000MHz	--	PASS	--
	Radiated Disturbance 1000MHz to 6000MHz	--	PASS	--
EN IEC 61000-3-2:2019+A2:2024	Harmonic Current Emission	--	N/A	--
EN 61000-3-3:2013 +A2:2021+AC:2022-01	Voltage Fluctuations & Flicker	--	PASS	--
EMC Immunity				
Section EN IEC 55014-2:2021	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	PASS	--
EN 61000-4-5:2014 +A1:2017	Surges	B	PASS	--
EN IEC 61000-4-6:2023	Injected Current	A	PASS	--
EN IEC 61000-4-11: 2020+AC:2022-10	Volt. Dips	C / C / C	PASS	NOTE (1)

Note:

- (1) Voltage Dip: 100% reduction – Performance Criteria C
Voltage Dip: 30% reduction – Performance Criteria C
Voltage Dip: 60% reduction – Performance Criteria C
- (2) For client's request and manual description, the test will not be executed.
- (3) "N/A" denotes test is not applicable in this Test Report
- (4) "--" means "no" in this test report.
- (5) 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 1GHz, 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 of the highest frequency or 6 GHz, whichever is less.

1.2 TEST LOCATION

Test Laboratory : Shenzhen United Testing Technology Co., Ltd.
Address : D101&D401, No. 107, Kaicheng High-Tech Park, Taoyuan Community,
Dalang Sub-District, Longhua District, Shenzhen, Guangdong, China

1.3 MEASUREMENT UNCERTAINTY

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

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
UNI	CISPR 16-4-2	9kHz ~ 150kHz	2.96	--
		150kHz ~ 30MHz	2.44	--

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
UNI	CISPR 16-4-2	9kHz ~ 30MHz	2.50	--
		30MHz ~ 1000MHz	4.80	--
		1000MHz ~ 6000MHz	4.13	--

1.4 ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 °C
Relative Humidity:	30~60 %
Air Pressure:	950~1050 hPa

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

The following information of EUT submitted and identified by applicant:

Product:	Laser Facial Mask
Trade Mark:	N/A
Main Model:	TLM300-L
Additional Model:	TLM300
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: TLM300-L
Power Source:	DC 5V by adapter or DC 3.8V by battery
Product Description:	The EUT is a Laser Facial Mask Based on the application, features, or specification exhibited in User's Manual, more details of EUT technical specification, please refer to the User's Manual.

I/O Port Information (☒ Applicable ☐ Not Applicable)

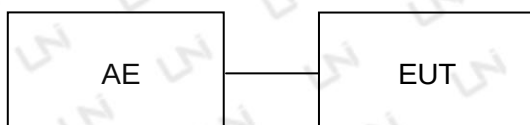
I/O Port Type	Number
Type-C	1

2.2 DESCRIPTION OF THE TEST MODES

No.	Test mode description
1	Charging mode
2	Working mode

Note: The test modes were carried out for all operation modes(include link and idle).

2.3 DESCRIPTION OF TEST SETUP



Note: The EUT tested system was configured as upper figure, unless otherwise a special operating condition is specified in the following during the testing.

2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Power Cable Length	Note
E-1	Laser Facial Mask	N/A	TLM300-L	--	EUT
E-2	Adapter	--	--	--	AE

Note:

1. The support equipment was authorized by Declaration of Confirmation.
2. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Conduction Emissions Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	AMN	Schwarzbeck	NNLK8121	8121370	2026.03.25
3	AAN	TESEQ	T8-Cat6	38888	2026.03.25
4	Pulse Limiter	CYBRTEK	EM5010	E115010056	2026.03.25
5	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2026.03.25
Disturbance Power Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	Clamp	Schwarzbeck	MDS21	3350	2026.03.29
3	Pulse Limiter	CYBRTEK	EM5010	E115010056	2026.03.25
4	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2026.03.25
Radiated Emissions Measurement					
1	Radiated Emission Test Software	EZ-EMC	Ver.CCS-03A1	N/A	N/A
2	Horn Antenna	Sunol	DRH-118	A101415	2027.03.27
3	Broadband Hybrid Antenna	Sunol	JB1	A090215	2027.03.27
4	PREAMP	HP	8449B	3008A00160	2026.03.29
5	PREAMP	HP	8447D	2944A07999	2026.03.25
6	EMI Test Receiver	Rohde&Schwarz	ESR3	101891	2026.03.25
7	MXA Signal Analyzer	Keysight	N9020A	MY51110104	2026.03.25
8	Active Loop Antenna	Com-Power	AL-310R	10160009	2026.05.26
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2026.03.26
10	Horn Antenna	A-INFOMW	LB-180400-KF	J211060660	2026.03.26
11	Loop Antenna	Beijing daze Technology	ZN30401	13015	2026.03.25
12	EM Clamp	Schwarzbeck	MDS21	03350	2026.03.29
Harmonic / Flicker Measurement					
1	Power Analyzer	California Instrumnets	PACS-1	X71719	2026.03.25
2	AC Power Source	California Instrumnets	5001ix	HK53570	2026.03.25
Electrostatic Discharge Test					
1	ESD Generator	EVERFINE	EMS61000-2A	P185811CA837112 1	2026.03.27
Electrical Fast Transient/Burst Immunity Test					
1	EMS Test Control System	Shanghai Lioncel	SCU-614AS	SCU614S0160601	N/A
2	EFT/B Generator	Shanghai Lioncel	EFT-404S	EFT404S0160601	2026.03.25

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
RS Test					
1	Power Meter	Agilent	E4419B	QB4331226	2025.10.10
2	Power Sensor	Agilent	8481A	MY41092622	2025.10.10
3	Power Sensor	Agilent	8481A	US37296783	2025.10.10
4	Signal Generator	Agilent	N5182A	MY46240556	2025.10.10
5	Power Amplifier	MICOTOP	MPA-80-1000-250	1711489	2025.10.10
6	Power Amplifier	MICOTOP	MPA-1000-3000-75	1711488	2025.10.10
7	Power Amplifier	MICOTOP	MPA-3000-6000-50	MPA1706275	2025.10.10
8	Bilog Antenna	TESEQ	CBL6111D	34678	2025.10.10
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2026.05.27
Surge Test					
1	EMS Test Control System	Shanghai Lioncel	SCU-614AS	SCU614S0160601	N/A
2	Surge Generator	Shanghai Lioncel	LSG-506S	LSG506S0160601	2026.03.25
3	CDN	Shanghai Lioncel	CDN-532S	CDN532S0160601	2026.03.25
CS Test					
1	CS	SCHLODER	CDG-6000-25	126A1280/2014	2025.10.10
2	CDN	SCHLODER	CDN-M2+3	A2210275/2014	2025.10.10
3	EM Clamp	SCHLODER	EMCL-20	132A1283	2025.10.10
4	Attenuator	Nemtest	ATT-6DB-100	A100W224	2025.10.10
5	Audio Analyzer	R&S	UPL	100419	2025.10.10
6	Universal Radio Communication Tester	R&S	CMW500	117239	2025.10.10
7	Universal Radio Communication Tester	R&S	CMU200	111764	2025.10.10
8	Audio Analyzer	R&S	UPL	100689	2025.10.10
9	Audio Breakthrough Shielding Box	SKET	SB_ABT/C35	N/A	2025.10.10
10	Ear Simulator	SKET	AE_ABT/C35	N/A	2025.10.10
11	Mouth Simulator	SKET	AM_ABT/C35	N/A	2025.10.10
12	1KHz Standard Source	SKET	MSC_ABT/C35	N/A	2025.10.10
Power-frequency magnetic fields Test					
1	Magnetic Field Test System	Shanghai Lioncel	PMF801C-T	PMF801C-T0160701	2026.03.25
Voltage dips and interruptions Test					
1	Voltage SAG Simulator	Shanghai Lioncel	VDS-1101	VDS11010160601	2026.03.25
2	Adjustable Power Supply	Shanghai Lioncel	RGL-210	RGL2100151001	N/A

3 CONDUCTED DISTURBANCE MEASUREMENT

3.1 CONDUCTED DISTURBANCE LIMIT

3.1.1 POWER LINE CONDUCTED DISTURBANCE

Frequency (MHz)	At mains terminals(dB μ V)		At load terminals and additional terminals(dB μ V)	
	Q.P.	Ave.	Q.P.	Ave.
0.15~0.50	66~56*	59~46*	80	70
0.50~5.00	56	46	74	64
5.00~30.0	60	50	74	64

3.1.2 MAINS TERMINALS OF TOOLS

Frequency (MHz)	Rated motor power not exceeding 700W dB(μ V)		Rated motor power above 700W and not exceeding 1000W dB(μ V)		Rated motor power above 1000W dB(μ V)	
	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.15~0.35	66~59*	59~49*	70~63*	63~53*	76~69*	69~59*
0.35~5.00	59	49	63	53	69	59
5.00~30.0	64	54	68	58	74	64

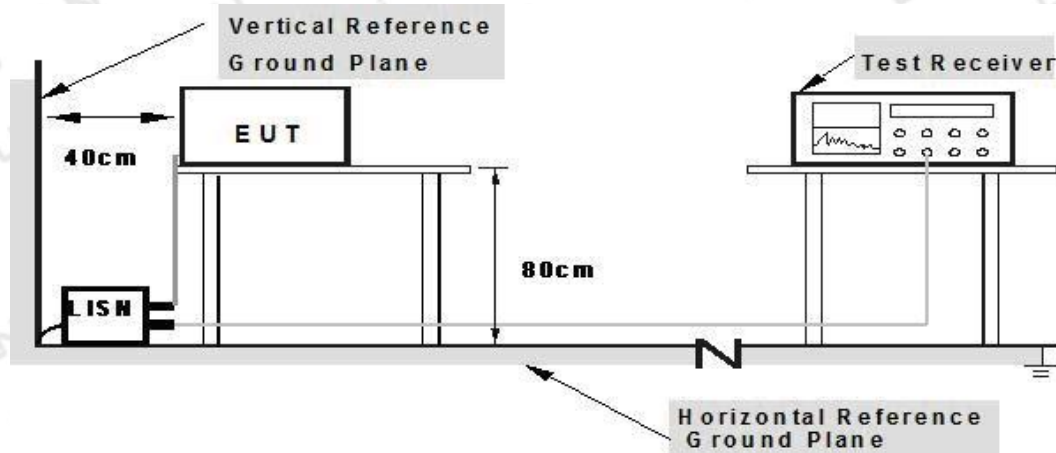
Note:

- 1.The tighter limit applies at the band edges.
- 2.The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver:

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST SETUP



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

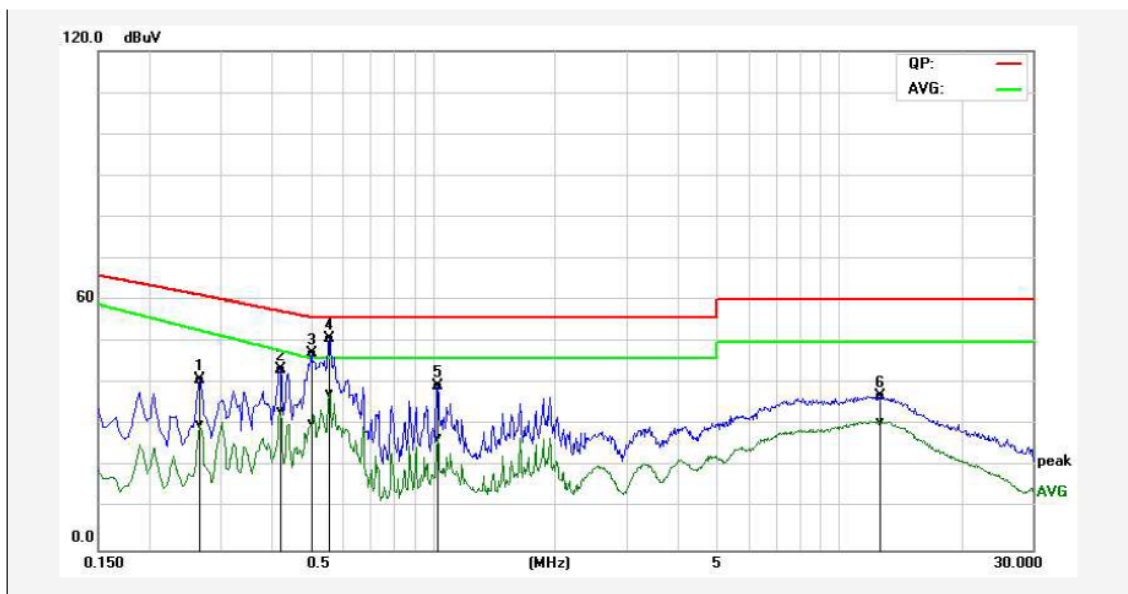
3.3 TEST PROCEDURE

- 1.The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 2.Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- 3.I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
4. LISN at least 80 cm from nearest part of EUT chassis.
- 5.For the actual test configuration, please refer to the related Item EUT Test Photos.

3.4 TEST RESULT

PASS

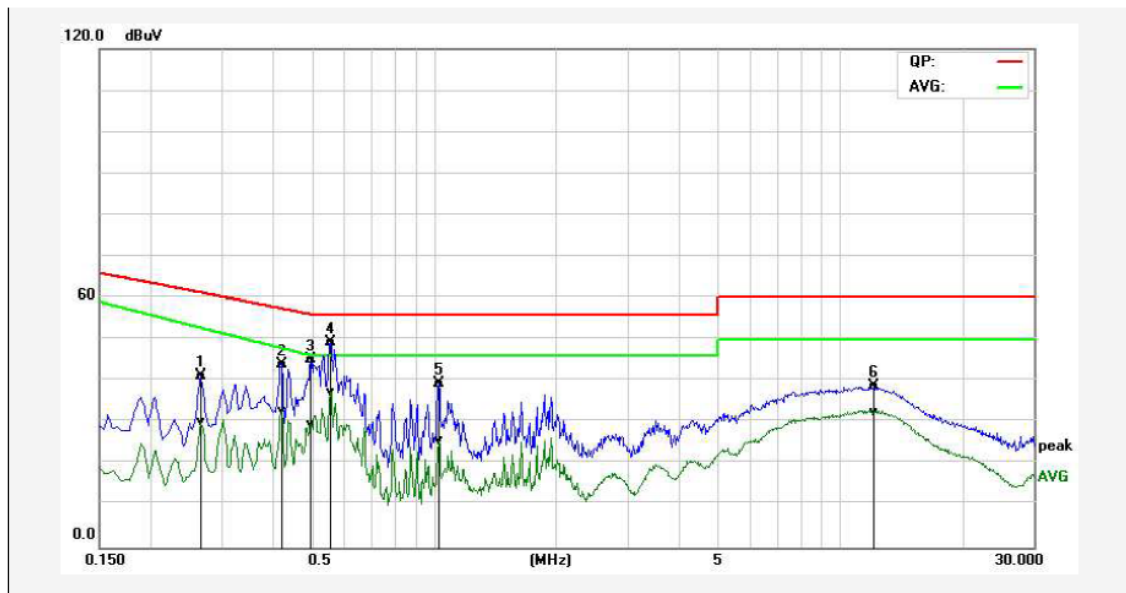
Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1	Phase:	Line



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.2660	30.31	19.25	10.77	41.08	30.02	61.24	52.81	-20.16	-22.79	Pass
2P	0.4220	32.57	22.46	10.88	43.45	33.34	57.41	47.83	-13.96	-14.49	Pass
3P	0.5020	36.25	19.39	10.92	47.17	30.31	56.00	46.00	-8.83	-15.69	Pass
4*	0.5580	39.78	26.72	10.93	50.71	37.65	56.00	46.00	-5.29	-8.35	Pass
5P	1.0300	28.42	15.74	11.02	39.44	26.76	56.00	46.00	-16.56	-19.24	Pass
6P	12.6740	22.04	15.74	14.94	36.98	30.68	60.00	50.00	-23.02	-19.32	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result = Reading + Factor, Margin = Result – Limit.

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1	Phase:	Neutral



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.2660	30.41	19.50	10.77	41.18	30.27	61.24	52.81	-20.06	-22.54	Pass
2P	0.4220	33.20	21.98	10.88	44.08	32.86	57.41	47.83	-13.33	-14.97	Pass
3P	0.4980	34.17	18.62	10.92	45.09	29.54	56.03	46.04	-10.94	-16.50	Pass
4*	0.5580	38.37	26.35	10.93	49.30	37.28	56.00	46.00	-6.70	-8.72	Pass
5P	1.0300	28.29	14.59	11.02	39.31	25.61	56.00	46.00	-16.69	-20.39	Pass
6P	12.1620	24.15	17.96	14.62	38.77	32.58	60.00	50.00	-21.23	-17.42	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result = Reading + Factor, Margin = Result – Limit.

4 DISTURBANCE POWERMEASUREMENT

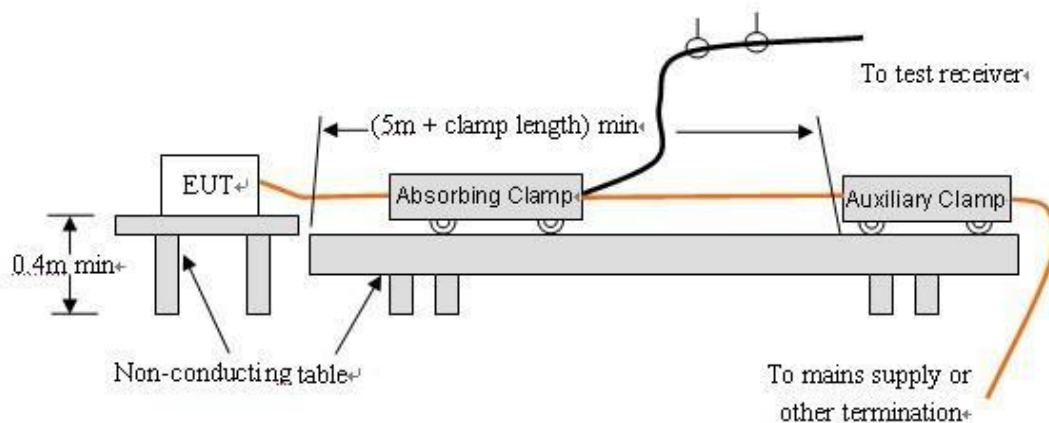
4.1 DISTURBANCE POWER LIMIT

Frequency (MHz)	Household and similar appliances dB(pW)		Tools					
			Rated motor power not exceeding 700W dB(pW)		Rated motor power above 700W and not exceeding 1000W dB(pW)		Rated motor power above 1000W dB(pW)	
	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
30~300	44-55	35-45	44-55	35-45	49-59	39-49	55-65	45-55

Note:

1. The limit for radiated test was performed according to as following: CISPR 14.
2. The tighter limit applies at the band edges.
3. Emission level (dBuV/m)=20log Emission level (uV/m).

4.2 TEST SETUP



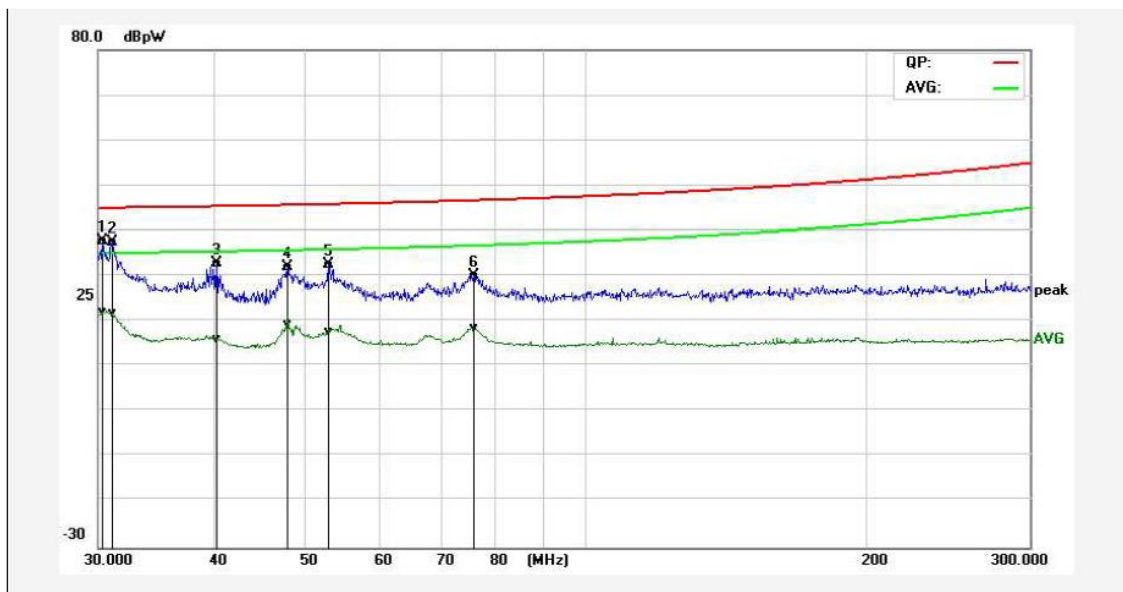
4.3 TEST PROCEDURE

1. The EUT is place on a 0.8 meters height wooden table above the ground plane, and kept at least 0.8 m from other metallic object. The straight portion of main lead would put on 6 m long testing bench (if main lead is shorter than 6 m it should be extended).
2. Any lead connecting the main appliance to an auxiliary apparatus is disconnected if this does not affect the operation of the appliance, or is isolated by means of ferrite rings (or an absorbing clamp) close to the appliance.
3. The EUT received AC power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.
4. The EUT test program was started. Emissions were scanned and measured using a receiver connected to the absorbing clamp.
5. The absorbing clamp is positioned for maximum indication at each test frequency (30MHz to300MHz), that means is clamp moved along the main lead until the maximum emission value is found.
6. For the actual test configuration, please refer to the related Item EUT Test Photos.

4.4 TEST RESULT

PASS

Temperature:	24°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	30.3200	15.02	-0.63	22.84	37.86	22.21	45.01	35.01	-7.15	-12.80	Pass
2P	31.0800	14.36	-1.26	23.03	37.39	21.77	45.04	35.04	-7.65	-13.27	Pass
3P	40.2400	8.85	-8.00	24.07	32.92	16.07	45.38	35.38	-12.46	-19.31	Pass
4P	47.9600	8.59	-4.04	23.47	32.06	19.43	45.67	35.67	-13.61	-16.24	Pass
5P	53.0000	8.25	-6.56	24.21	32.46	17.65	45.85	35.85	-13.39	-18.20	Pass
6P	75.9200	6.75	-4.83	23.46	30.21	18.63	46.70	36.70	-16.49	-18.07	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result = Reading + Factor, Margin = Result – Limit.

5 RADIATED DISTURBANCE MEASUREMENT

5.1 RADIATED EMISSION LIMIT

30-1000MHz

Frequency (MHz)	10m	3m
	dBuV/m	dBuV/m
30~230	30	40
230~1000	37	47

Note:

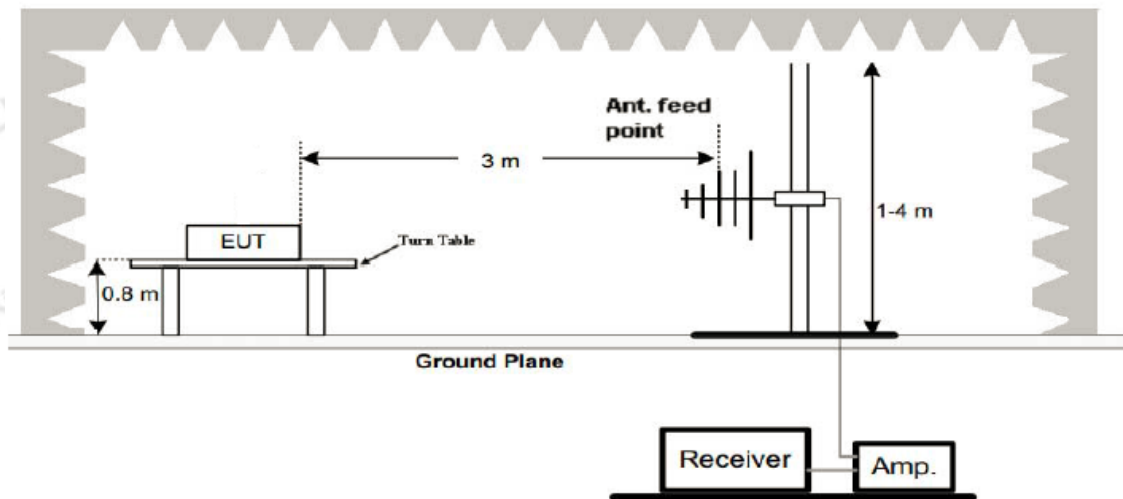
1. The limit for radiated test was performed according to as following: CISPR 14.
2. The tighter limit applies at the band edges.
3. Emission level (dBuV/m)=20log Emission level (uV/m).

1GHz-6GHz

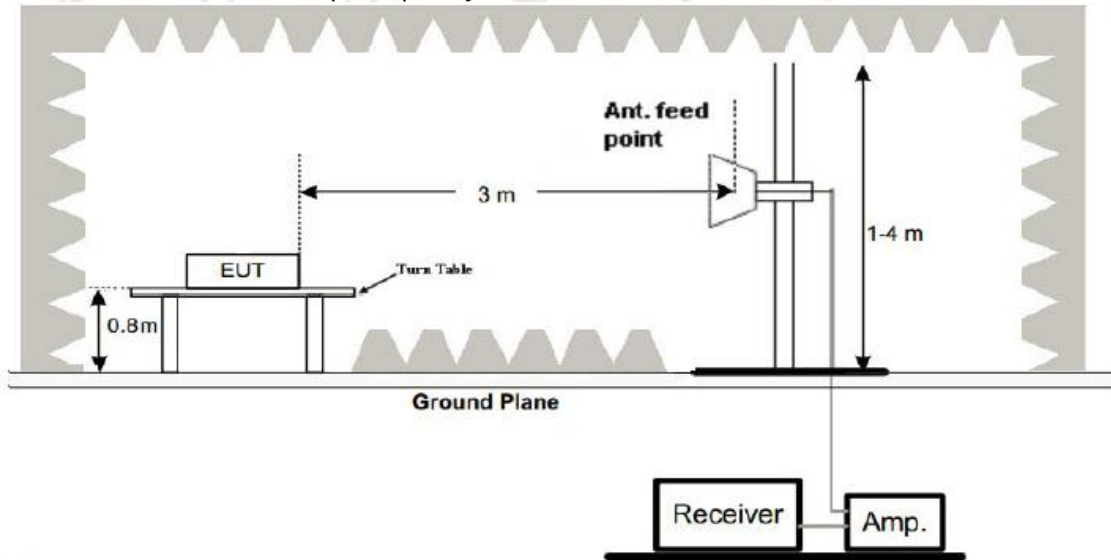
Frequency (MHz)	Peak(3m)	Average(3m)
	dBuV/m	dBuV/m
1000~3000	70	54
3000~6000	74	50

5.2 TEST SETUP

1. Radiated Emission Test-Up Frequency 30-1000MHz



2. Radiated Emission Test-Up Frequency Above 1000MHz



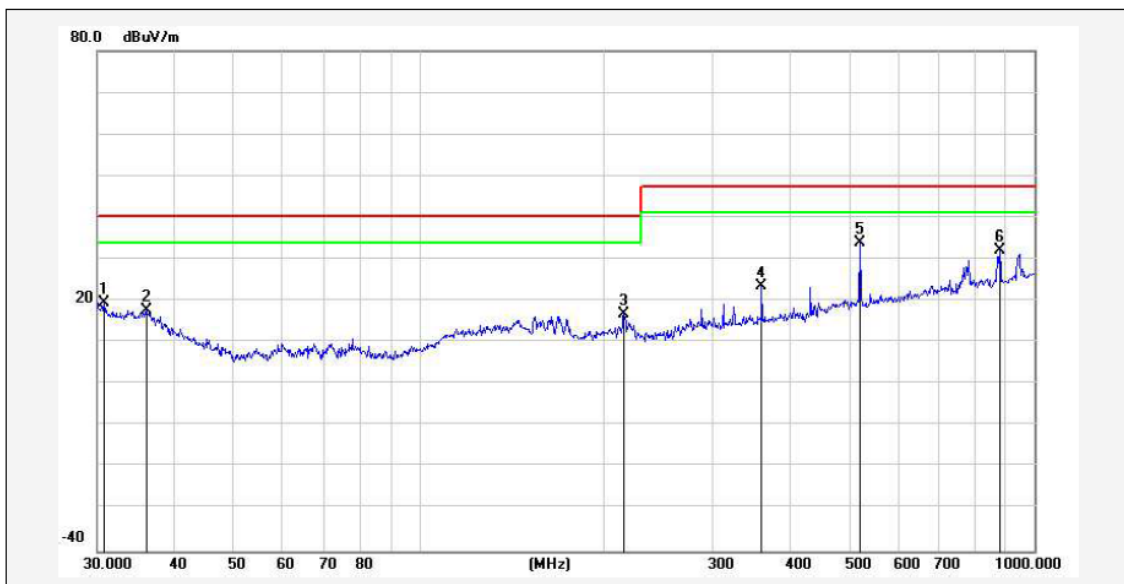
5.3 TEST PROCEDURE

1. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber room test site. The table was rotated 360 degrees to determine the position of the highest radiation.
3. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
5. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
6. For the actual test configuration, please refer to the related Item EUT Test Photos.

5.4 TEST RESULT

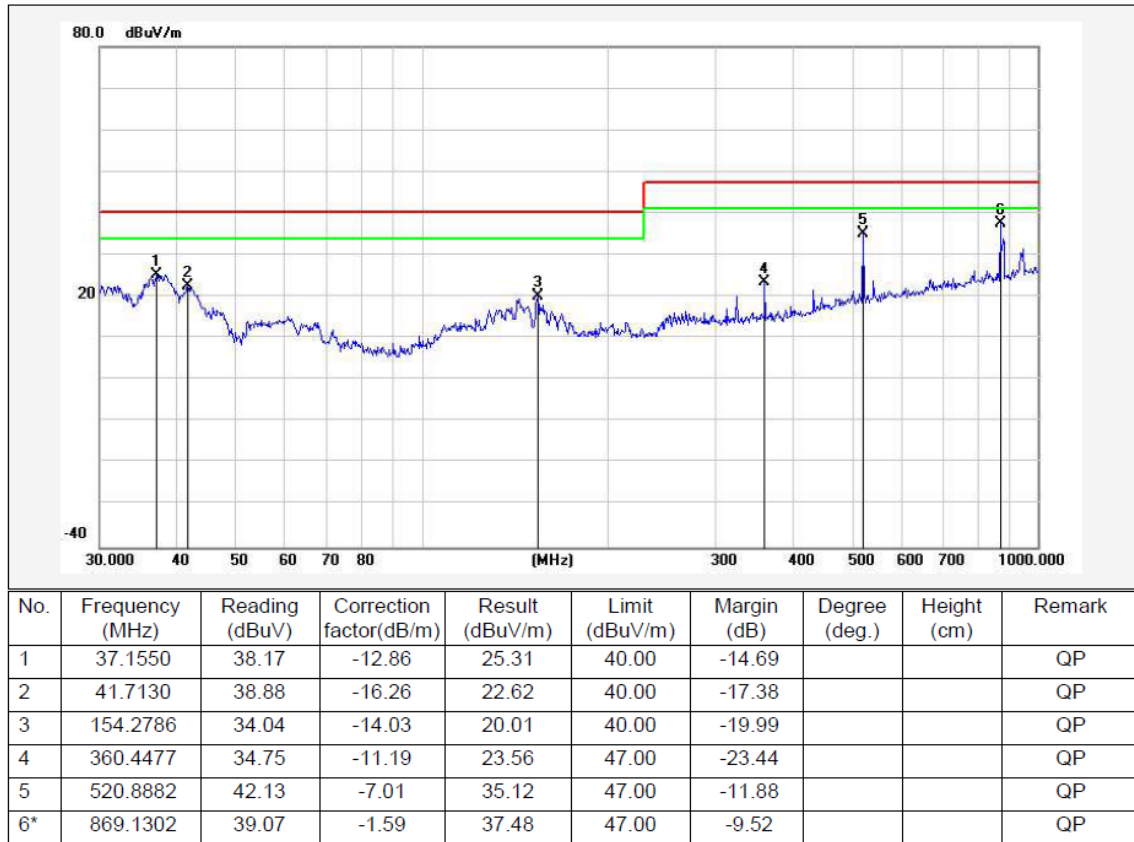
PASS

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1	Polarization:	Horizontal



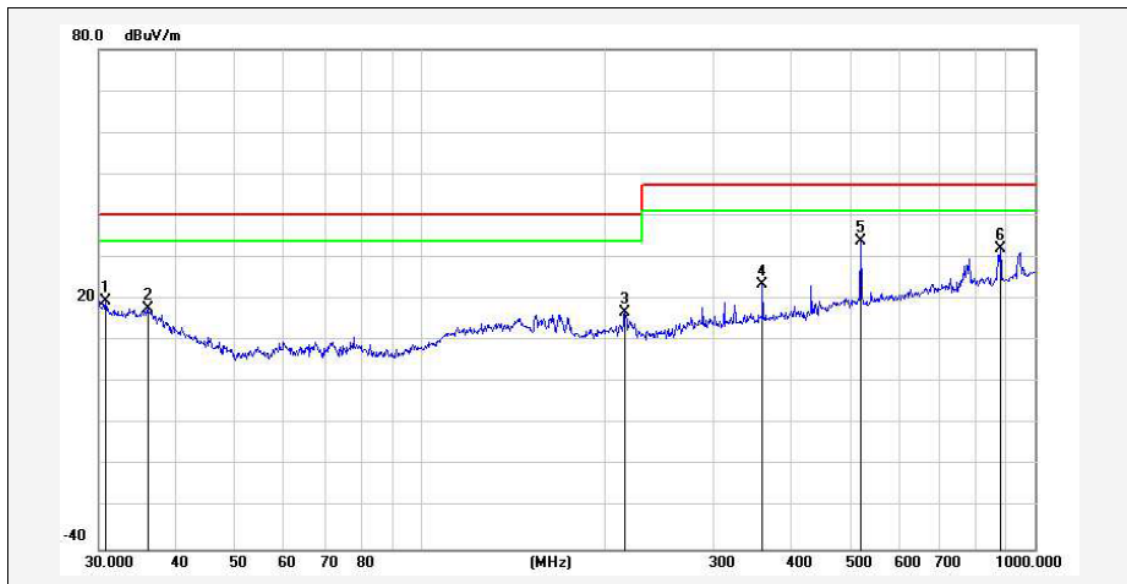
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	30.7455	29.39	-9.75	19.64	40.00	-20.36			QP
2	36.0007	29.58	-11.96	17.62	40.00	-22.38			QP
3	215.2678	32.11	-15.40	16.71	40.00	-23.29			QP
4	360.4477	34.61	-11.19	23.42	47.00	-23.58			QP
5*	520.8882	41.01	-7.01	34.00	47.00	-13.00			QP
6	878.3214	33.48	-1.43	32.05	47.00	-14.95			QP

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1	Polarization:	Vertical



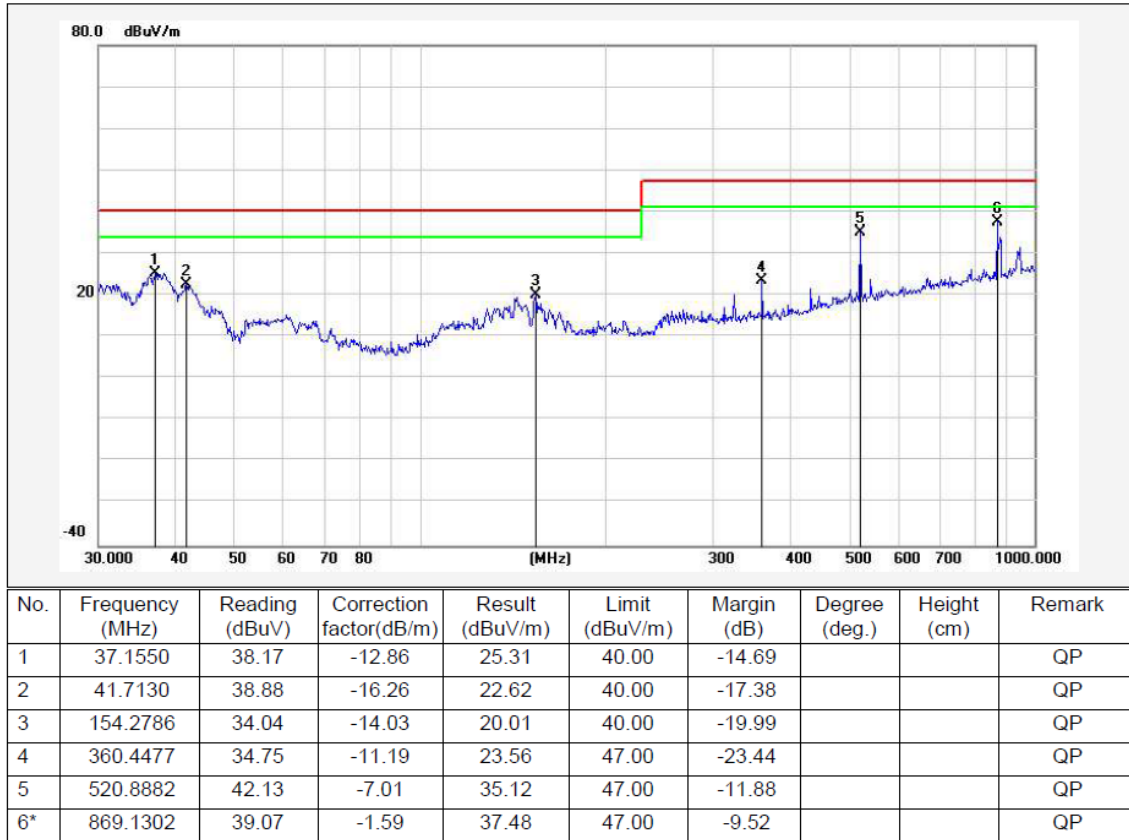
Remark: Result = Reading Level + Factor, Margin = Result – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	DC 3.8V	Pressure:	1010hPa
Test Mode:	Mode 2	Polarization:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	30.7455	29.39	-9.75	19.64	40.00	-20.36			QP
2	36.0007	29.58	-11.96	17.62	40.00	-22.38			QP
3	215.2678	32.11	-15.40	16.71	40.00	-23.29			QP
4	360.4477	34.61	-11.19	23.42	47.00	-23.58			QP
5*	520.8882	41.01	-7.01	34.00	47.00	-13.00			QP
6	878.3214	33.48	-1.43	32.05	47.00	-14.95			QP

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	DC 3.8V	Pressure:	1010hPa
Test Mode:	Mode 2	Polarization:	Vertical



Remark: Result = Reading Level + Factor, Margin = Result – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

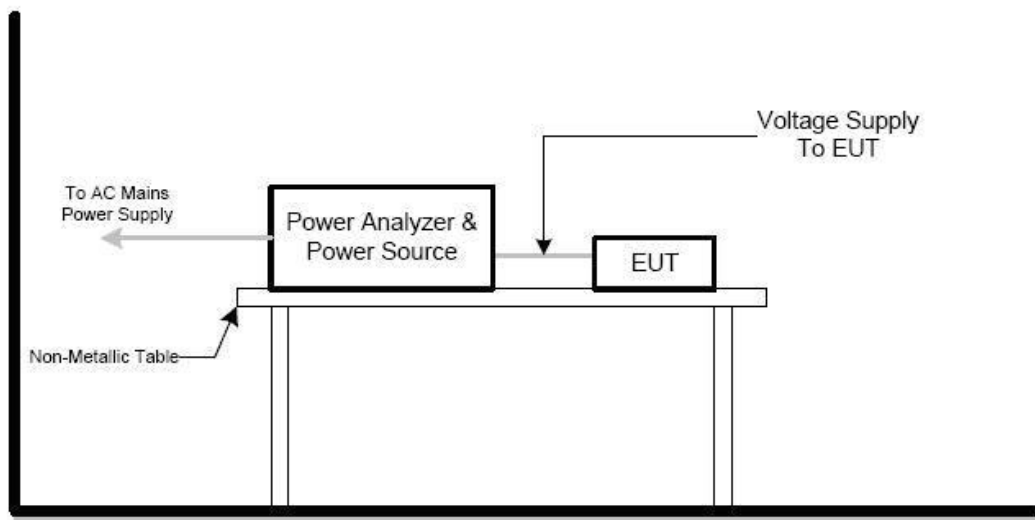
6 HARMONICS CURRENT

6.1 HARMONICS CURRENT LIMIT

Table 1 – Limits for Class A equipment

Harmonic order h	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
$15 \leq h \leq 39$	$0,15 \frac{15}{h}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \leq h \leq 40$	$0,23 \frac{8}{h}$

6.2 TEST SETUP



6.3 TEST PROCEDURE

1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
2. The classification of EUT is according to section 5 of EN IEC 61000-3-2. The EUT is classified as follows:
Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class B, C or D
Class B: Portable tools; Arc welding equipment which is not professional equipment.
Class C: Lighting equipment.
Class D: Equipment having a specified power less than or equal to 600W of the following types: Personal computers and personal computer monitors and television receivers.
3. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

6.4 TEST RESULT

N/A

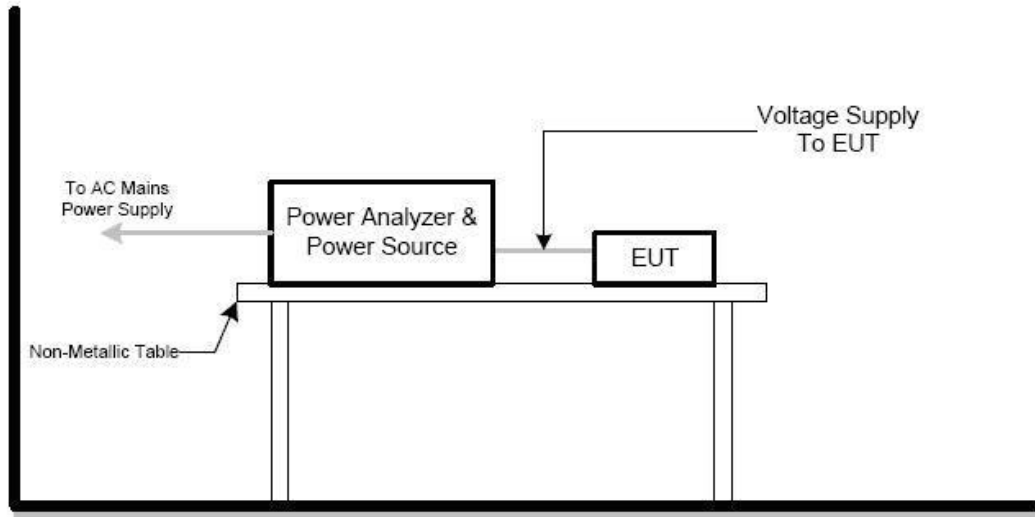
Note: The above limits for all equipment except for lighting equipment having an active input power > 75 W and no limits apply for equipment with an active input power up to and including 75W.

7 VOLTAGE FLUCTUATION AND FLICKERS

7.1 VOLTAGE FLUCTUATION AND FLICKERS LIMIT

Tests	Limit	Descriptions
	EN 61000-3-3	
Pst	$\leq 1.0, T_p = 10 \text{ min.}$	Short Term Flicker Indicator
Plt	$\leq 0.65, T_p = 2 \text{ hr.}$	Long Term Flicker Indicator
Tdt(s)	$\leq 3.3\%$	Relative Steady-State V-Chang
dmax(%)	$\leq 4\%$	Maximum Relative V-Chang
dc(%)	$\leq 3.3\% \text{ for } > 500 \text{ ms}$	Relative V-change Characteristic

7.2 TEST SETUP



7.3 TEST PROCEDURE

1. Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 6.0/4.0 of EN 61000-3-3 depend on which standard adopted for compliance measurement.

2. All types of voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

7.4 TEST RESULT

Temperature:	22°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

Test Parameter	Measurement Value	Limit	Result
Pst	0.028	1.00	Pass
Plt	0.028	0.65	Pass
dc [%]	0.004	3.30	Pass
dmax [%]	0.170	7.00	Pass
dt [s]	0.000	0.50	Pass

8 EMC IMMUNITY TEST

8.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	Test Specification	Test Mode Test Ports	Perform Criteria
ESD EN 61000-4-2	8kV air discharge 4kV contact discharge	Direct Mode	B
	4kV HCP discharge 4kV VCP discharge	Indirect Mode	B
RS EN IEC 61000-4-3	80 MHz to 6000 MHz, 1000Hz, 80%,AM unmodulated	Enclosure	A
EFT/Burst EN 61000-4-4	5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B
	5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B
Surges EN 61000-4-5	1.2/50(8/20) Tr/Th us	L-N	B
	1.2/50(8/20) Tr/Th us	L-PE N-PE	B
Injected Current EN IEC 61000-4-6	0.15 MHz to 230 MHz, 1000Hz 80%, 1V(RMS) AM unmodulated 150Ω source impedance	CTL/Signal Port	A
	0.15 MHz to 230 MHz, 1000Hz 80%, 3V(RMS) AM unmodulated 150Ω source impedance	AC Power Port	A
	0.15 MHz to 230 MHz, 1000Hz 80%, 1V(RMS) AM unmodulated 150Ω source impedance	DC Power Port	A
Volt. Interruptions Volt. Dips EN IEC 61000-4-11	Voltage dip 0% Voltage dip 40% Interruption 70%	AC Power Port	C C C

8.2 GENERAL PERFORMANCE CRITERIA

According to EN IEC 55014-2 standard, the general performance criteria as following:

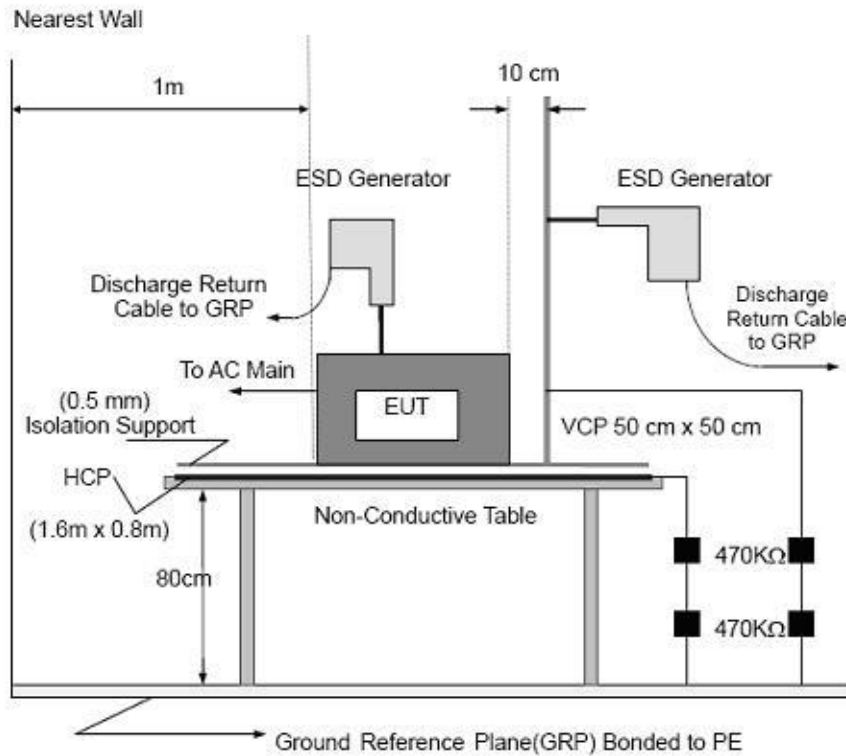
Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level 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.
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.
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.

9 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

9.1 TEST SPECIFICATION

Basic Standard:	EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance:	B
Discharge Voltage:	Air Discharge: 8kV (Direct) Contact Discharge: 4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 20 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

9.2 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k Ω total impedance. The equipment under test, was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 0.8-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1 meter thickness. The GRP was consisted of a sheet of aluminum that is at least 0.25mm thick, and extended at least 0.5 meters from the EUT on all sides.

9.3 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manners:

1. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

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

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 EUT.

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

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

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

2. Air discharges at insulation surfaces of the EUT.

It was at least ten single discharges with positive and negative at the same selected point.

9.4 TEST RESULT

Temperature:	22°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz DC 3.8V	Pressure:	1010hPa
Test Mode:	Mode 1&2		

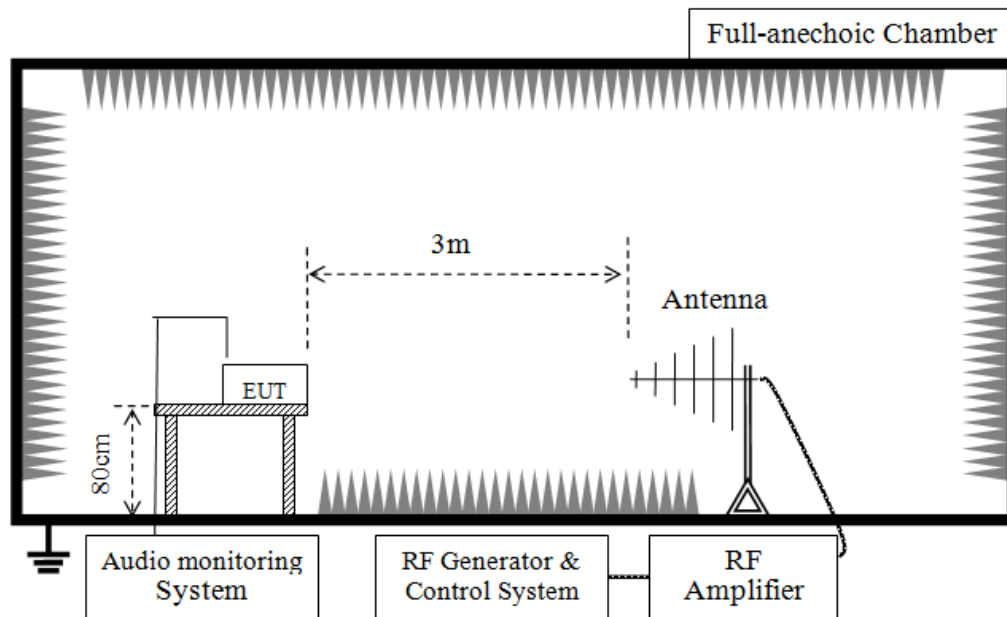
Voltage	Coupling	Test Performance	Performance Result	Result (Pass/Fail)
±4kV	Contact Discharge	No function loss	A	Pass
±4kV	Indirect Discharge HCP (Front)	No function loss	A	Pass
±4kV	Indirect Discharge HCP (Left)	No function loss	A	Pass
±4kV	Indirect Discharge HCP (Back)	No function loss	A	Pass
±4kV	Indirect Discharge HCP (Right)	No function loss	A	Pass
±4kV	Indirect Discharge VCP (Front)	No function loss	A	Pass
±4kV	Indirect Discharge VCP (Left)	No function loss	A	Pass
±4kV	Indirect Discharge VCP (Back)	No function loss	A	Pass
±4kV	Indirect Discharge VCP (Right)	No function loss	A	Pass
±8kV	Air Discharge	No function loss	A	Pass

10 RADIO FREQUENCY ELECTROMAGNETIC FIELDS IMMUNITY TEST (RS)

10.1 TEST SPECIFICATION

Basic Standard:	EN IEC 61000-4-3
Required Performance:	A
Frequency Range:	80~6000MHz
Field Strength:	3 V/m(RMS) (unmodulated)
Modulation:	1kHz Sine Wave, 80%, AM (swept test)
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.55 m
Dwell Time:	at least 3 seconds

10.2 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive wood support 0.1 meter in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

10.3 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meters above ground and the testing was performed in a fully-anechoic chamber.

The testing distance from antenna to the EUT was 3 meters.

The other condition need as following manners:

- 1.The frequency range is swept from 80 MHz to 6000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- 2.The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- 3.The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

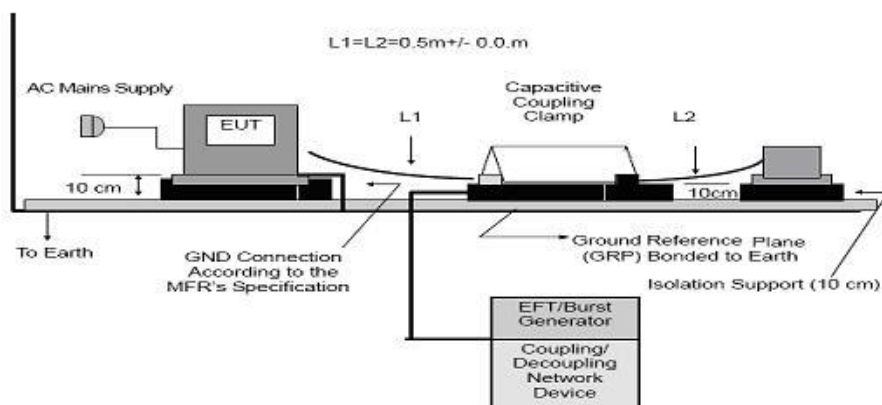
10.4 TEST RESULT

Temperature:	22°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Performance Result	Result (Pass/Fail)
80~6000	H / V	3 V/m (rms) AM unmodulated 1000Hz, 80%	Front	A	PASS
			Rear		
			Left		
			Right		

11.1 TEST SPECIFICATION

11.2 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

Table-top equipment and equipment normally mounted on ceilings or walls as well as built-in equipment shall be tested with the EUT located (0.1±0.01) m above the ground reference plane.

Testing of large table-top equipment or multiple systems can be performed on the floor; maintaining the same distances as for the test setup of table-top equipment.

The test generator and the coupling/decoupling network shall be bonded to the ground reference plane.

The ground reference plane shall be a metallic sheet (copper or aluminium) of 0.25 mm minimum thickness; other metallic materials may be used, but they shall have at least 0.65 mm minimum thickness.

The minimum size of the ground reference plane is 0.8 m x 1 m. The actual size depends on the dimensions of the EUT.

The ground reference plane shall project beyond the EUT by at least 0.1 m on all sides.

The ground reference plane shall be connected to protective earth (PE) for safety reasons.

The EUT shall be arranged and connected to satisfy its functional requirements, according to the equipment installation specifications.

The minimum distance between the EUT and all other conductive structures (including the generator, AE and the walls of a shielded room), except the ground reference plane, shall be more than 0.5 m.

All cables to the EUT shall be placed on the insulation support 0.1 m above the ground reference plane.

Cables not subject to electrical fast transients shall be routed as far as possible from the cable under test to minimize the coupling between the cables.

The EUT shall be connected to the earthing system in accordance with the manufacturer's installation specifications; no additional earthing connections are allowed.

The connection impedance of the coupling/decoupling network earth cables to the ground reference plane and all bondings shall provide a low inductance.

Either a direct coupling network or a capacitive clamp shall be used for the application of the test voltages. The test voltages shall be coupled to all of the EUT ports in turn including those between two units of equipment involved in the test, unless the length of the interconnecting cable makes it impossible to test.

FLOOR-STANDING EQUIPMENT

When using the coupling clamp, the minimum distance between the coupling plates and all other conductive surfaces (including the generator), except the ground reference plane beneath the coupling clamp and beneath the EUT, shall be at least 0.5 m.

The distance between any coupling devices and the EUT shall be (0.5 - 0/+0.1) m for tabletop equipment testing, and (1.0±0.1) m for floor standing equipment, unless otherwise specified in product standards. When it is not physically possible to apply the distances mentioned above, other distances can be used and shall be recorded in the test report.

The cable between the EUT and the coupling device, if detachable, shall be as short as possible to comply with the requirements of this clause. If the manufacturer provides a cable exceeding the distance between the coupling device and the point of entry of the EUT, the excess length of this cable shall be bundled and situated at a distance of 0.1 m above the ground reference plane. When a capacitive clamp is used as a coupling device, the excess cable length shall be bundled at the AE side.

Parts of the EUT with interconnecting cables of a length less than 3 m, which are not tested, shall be placed on the insulating support. The parts of the EUT shall have a distance of 0.5 m between them. Excess cable length shall be bundled.

11.3 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meters above a metal ground plane measured 1m*1m min.

The ground reference plane shall be a metallic sheet (copper or aluminium) of 0.25 mm minimum thickness; other metallic materials may be used, but they shall have at least 0.65 mm minimum thickness.

The other condition need as following manners:

1. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
2. Both positive and negative polarity discharges were applied.
3. The duration time of each test sequential was 2 minute.

11.4 TEST RESULT

Temperature:	22℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

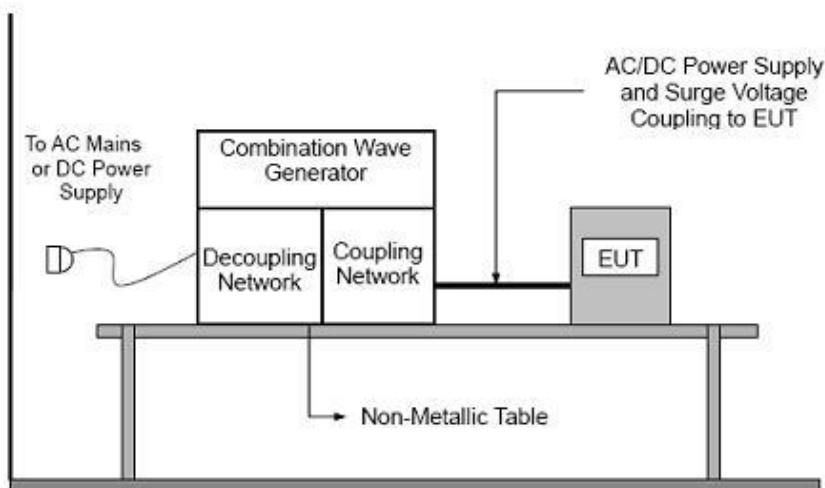
Coupling Line		Test level (kV)								Performance Result	Result (Pass/Fail)
		0.5		1		2		4			
		+	-	+	-	+	-	+	-		
AC line	L			A	A					A	PASS
	N			A	A						PASS
	PE										N/A
	L+N			A	A						PASS
	L+PE										N/A
	N+PE										N/A
	L+N+PE										N/A
DC Line										N/A	
Signal Line										N/A	

12 SURGES IMMUNITY TEST (SURGES)

12.1 TEST SPECIFICATION

Basic Standard:	EN 61000-4-5
Required Performance:	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	AC power line: L-N/L-L: 1 Kv; L-PE/N-PE: 2 Kv; Wired Network ports: L-PE:1 Kv (unshielded) 0.5 Kv (shielded)
Surge Input/Output:	L-N, L-PE, N-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm impedance between line-to-earth 2 ohm impedance between line-to-line
Polarity:	Positive/Negative
Phase Angle:	90°/270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

12.2 TEST SETUP



12.3 TEST PROCEDURE

1. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

2. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

3. The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

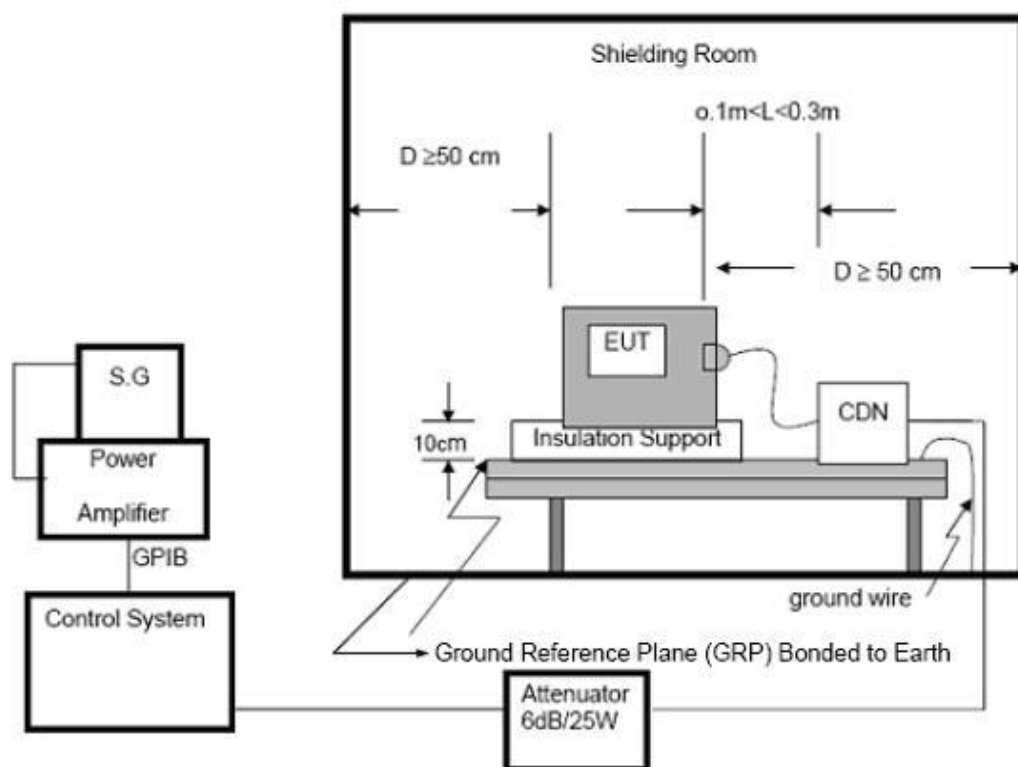
12.4 TEST RESULT

Temperature:	22°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

Coupling Line			Test level								Performance Result	Result (Pass/Fail)
			0.5 kV		1 kV		2 kV		4 kV			
			+	-	+	-	+	-	+	-		
AC line	L-N	90°			A	A					A	PASS
		270°			A	A						
	L-PE	90°										N/A
		270°										
	N-PE	90°										N/A
		270°										
Signal Line											N/A	

13.1 TEST SPECIFICATION

13.2 TEST SETUP



The equipment to be tested is placed on an insulating support of 0.1 meter height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meter and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

13.3 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.1 meter above a metal ground plane measured 1m*1m min.

The other condition need as following manners:

- 1.The EUT shall be tested within its intended operating and climatic conditions.
- 2.An artificial hand was placed on the hand-held accessory and connected to the ground reference plane.
- 3.One of the CDNs not used for injection was terminated with 50Ω, providing only one return path. All other CDNs were coupled as decoupling networks.
4. The frequency range is swept 0.15-230MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. Where the frequency is swept incrementally, the step size shall not exceed 1% of the preceding frequency value.
5. The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5 s. The sensitive frequencies (e.g. clock frequencies) shall be analyzed separately.
6. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

13.4 TEST RESULT

Temperature:	22℃	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	Performance Result	Result (Pass/Fail)
Input/Output AC. Power Port	0.15~230	3V(rms) AM unmodulated 1000Hz, 80%	A	PASS
Input/Output DC. Power Port	0.15~230	1V(rms) AM unmodulated 1000Hz, 80%	N/A	N/A
Signal Line	0.15~230		N/A	N/A

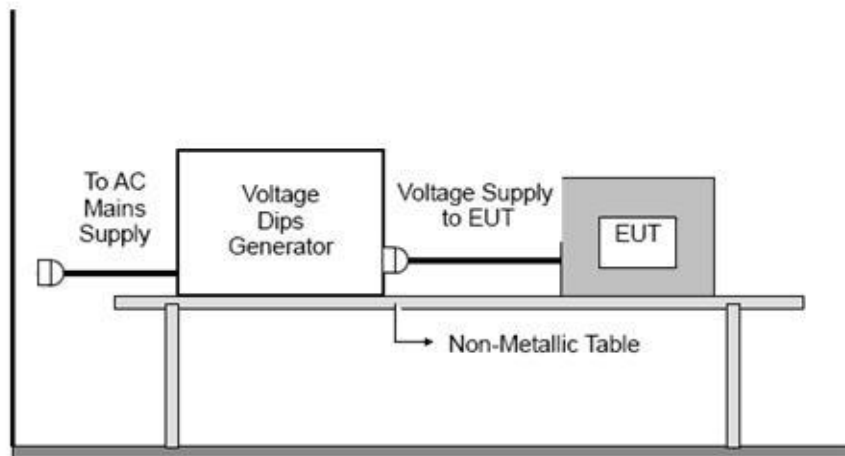
14 VOLTAGE DIPS IMMUNITY TEST (DIPS)

14.1 TEST SPECIFICATION

Basic Standard:	EN IEC 61000-4-11
Required Performance:	C (For 0% Voltage Dips) C (For 40% Voltage Dips) C (For 70% Voltage Dips)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

	Test Level % U _T	Reduction (%)	Duration (periods)		Performance Criteria
			50Hz	60Hz	
Voltage Dips	0	100	0.5 cycle	0.5 cycle	C
	40	60	10.0 cycle	12.0 cycle	C
	70	30	25.0 cycle	30.0 cycle	C

14.2 TEST SETUP



14.3 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

14.4 TEST RESULT

Temperature:	22°C	Relative Humidity:	48%
Test Voltage:	AC 230V, 50Hz	Pressure:	1010hPa
Test Mode:	Mode 1		

Voltage Reduction	Duration (cycle)		Performance Result	Result (Pass/Fail)
	50Hz	60Hz		
Voltage dip 100%	0.5	0.5	C	PASS
Voltage dip 60%	10.0	12.0	C	PASS
Voltage dip 30%	25.0	30.0	C	PASS

15 PHOTO OF EUT



PHOTO 01



PHOTO 02



PHOTO 03



PHOTO 04



PHOTO 05

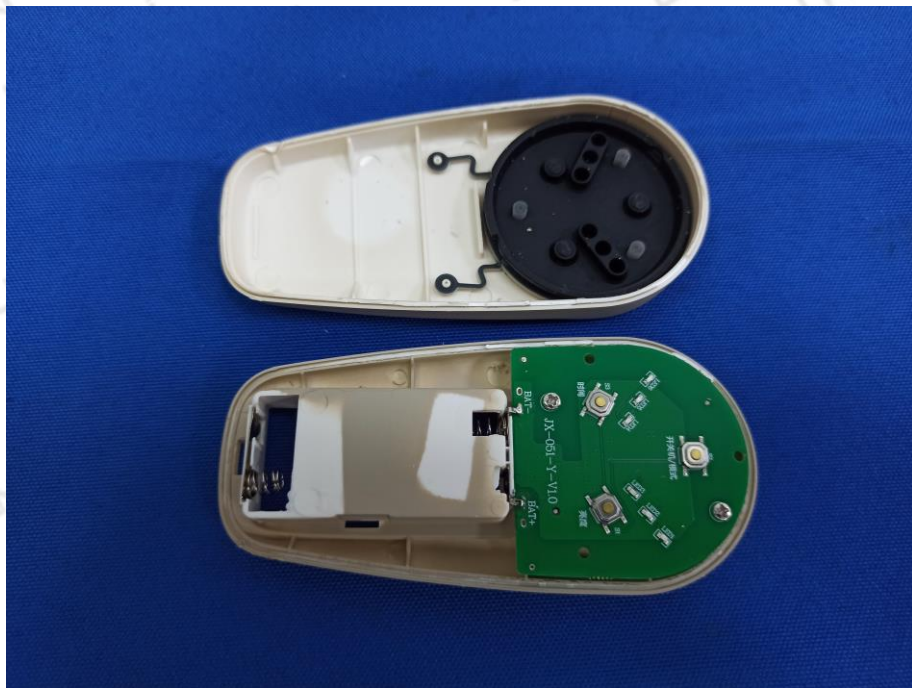


PHOTO 06

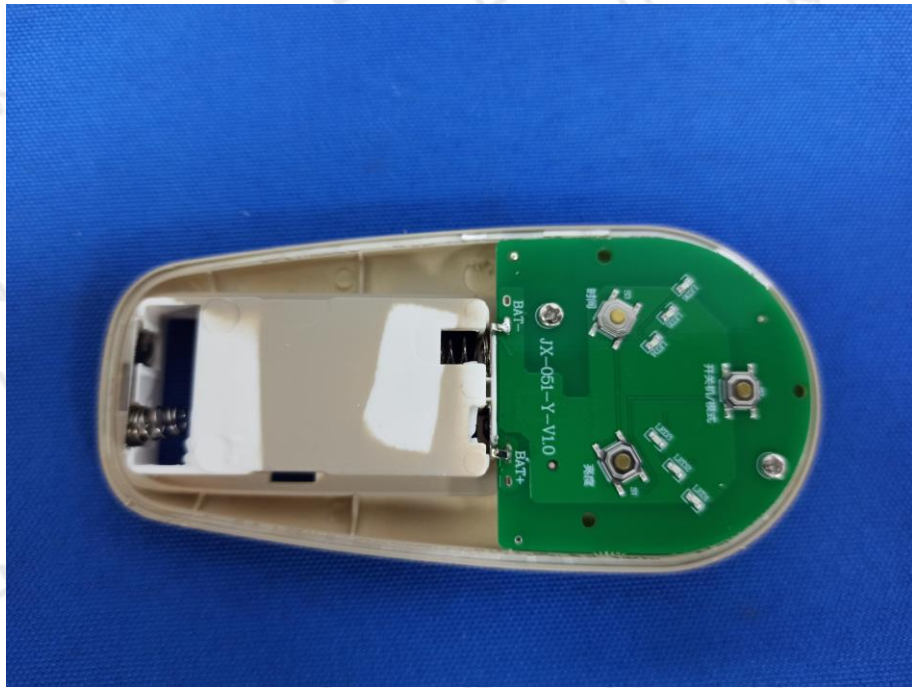


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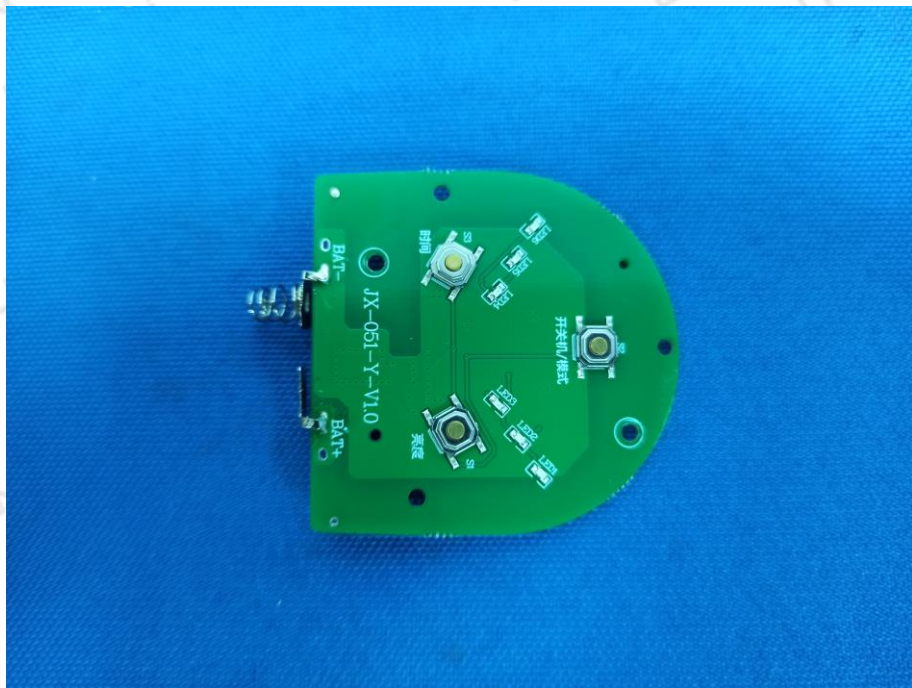


PHOTO 08

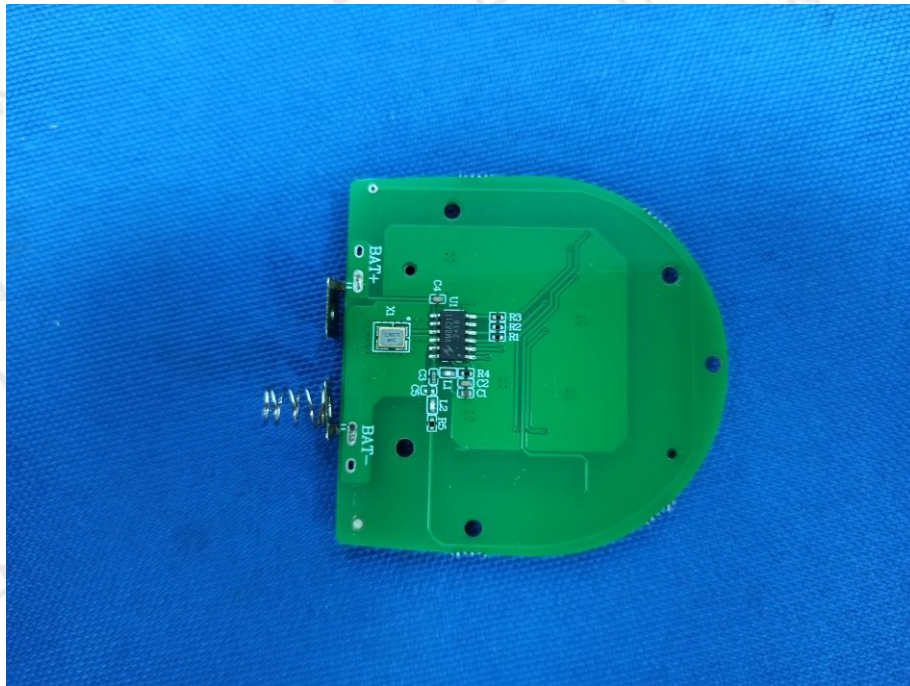


PHOTO 09



PHOTO 10



PHOTO 11



PHOTO 12

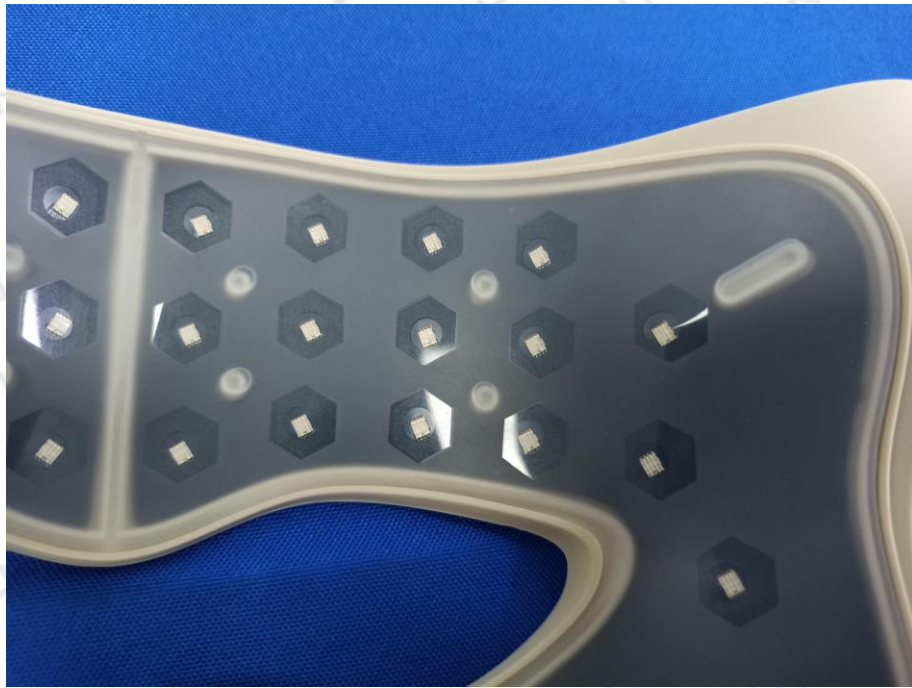


PHOTO 13



PHOTO 14



PHOTO 15



PHOTO 16

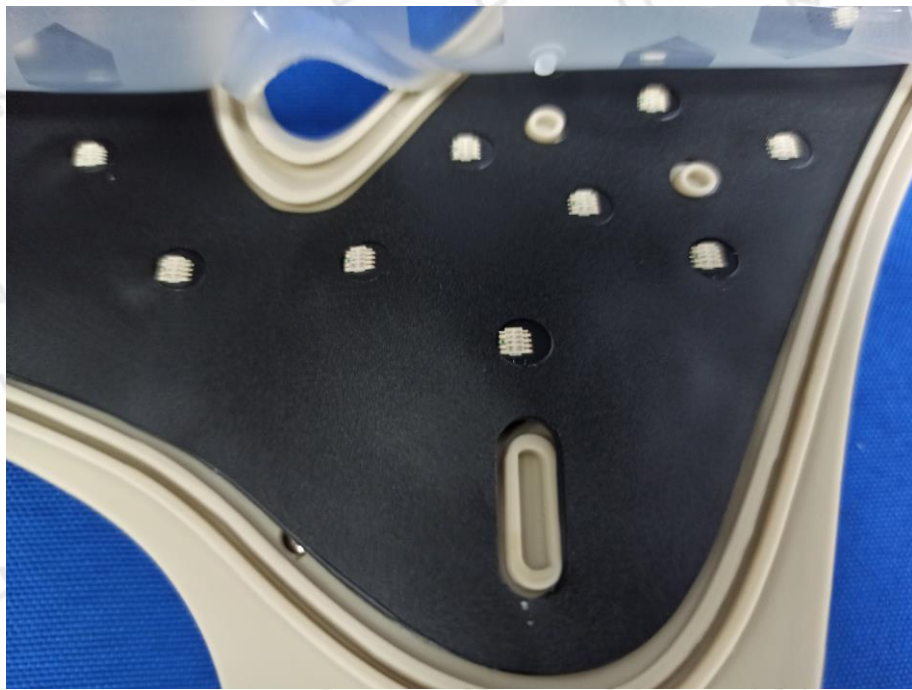


PHOTO 17

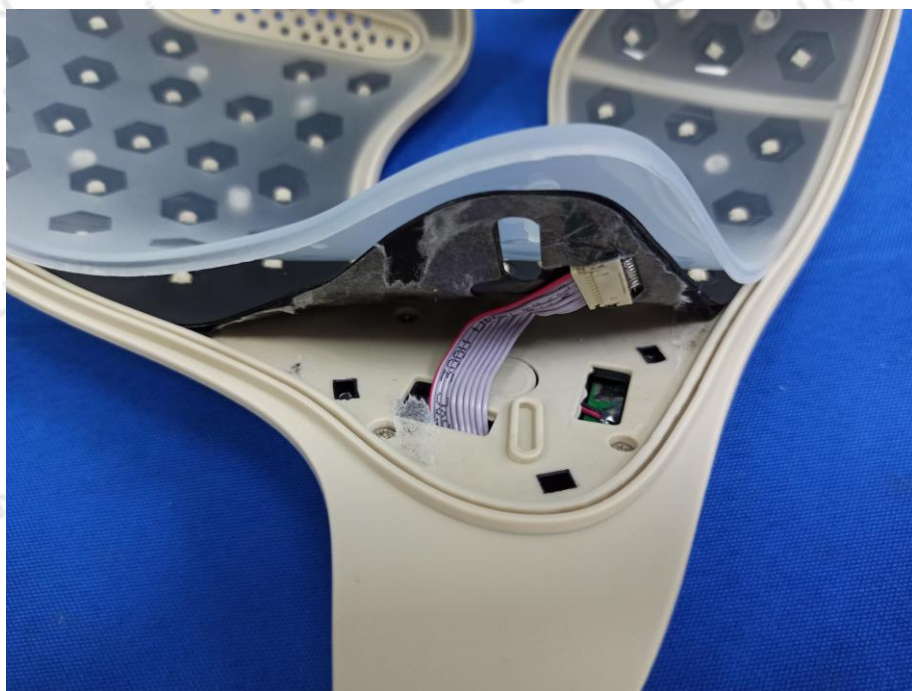


PHOTO 18

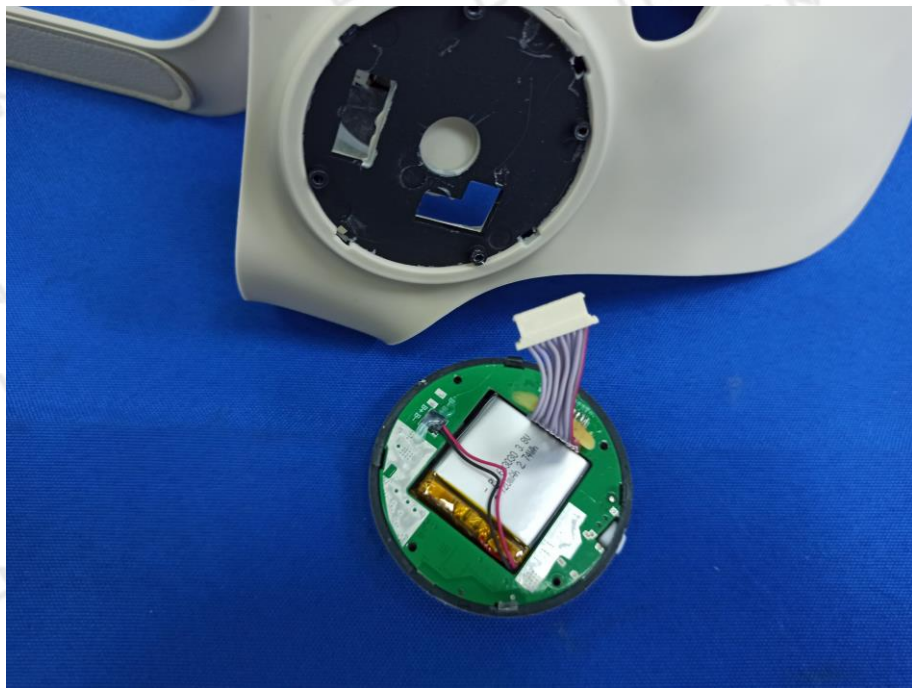


PHOTO 19

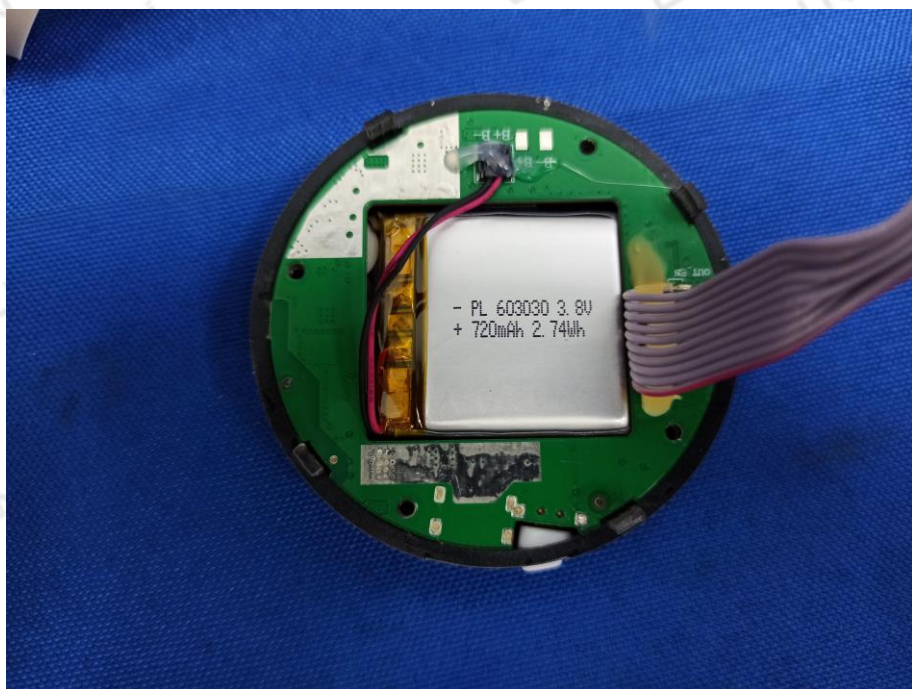


PHOTO 20

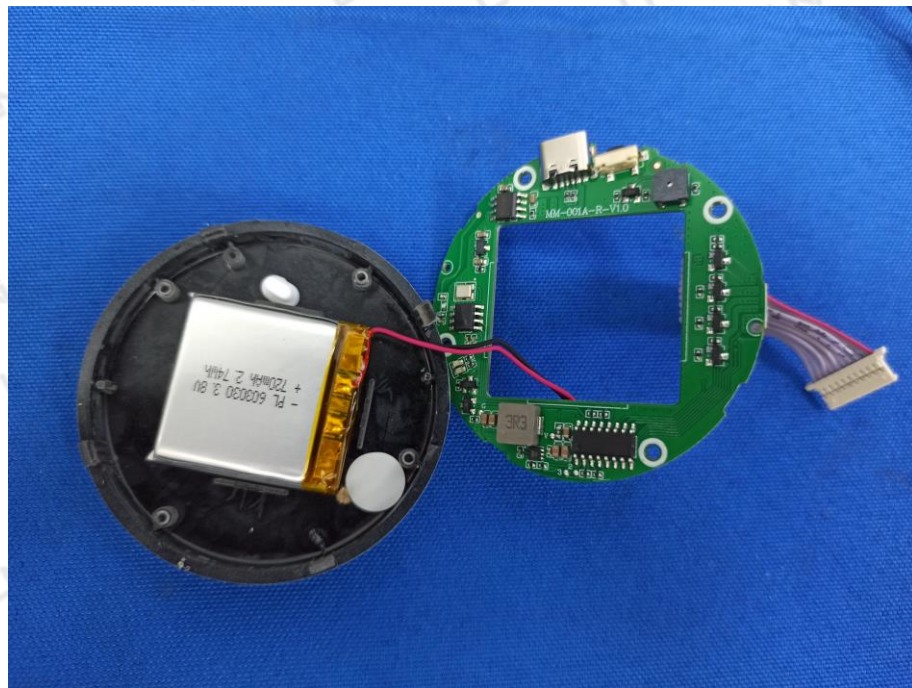


PHOTO 21

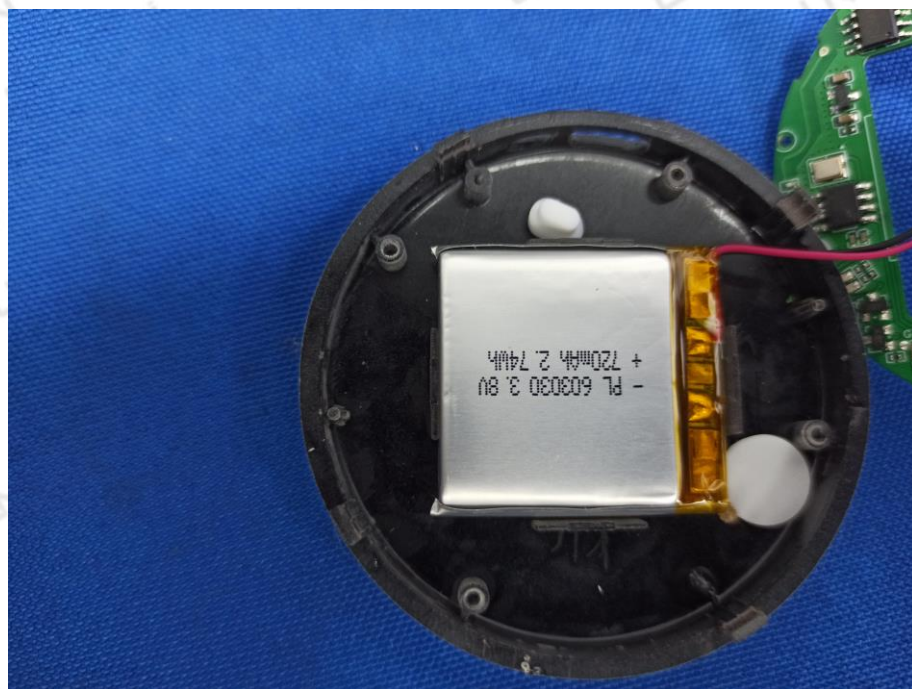


PHOTO 22

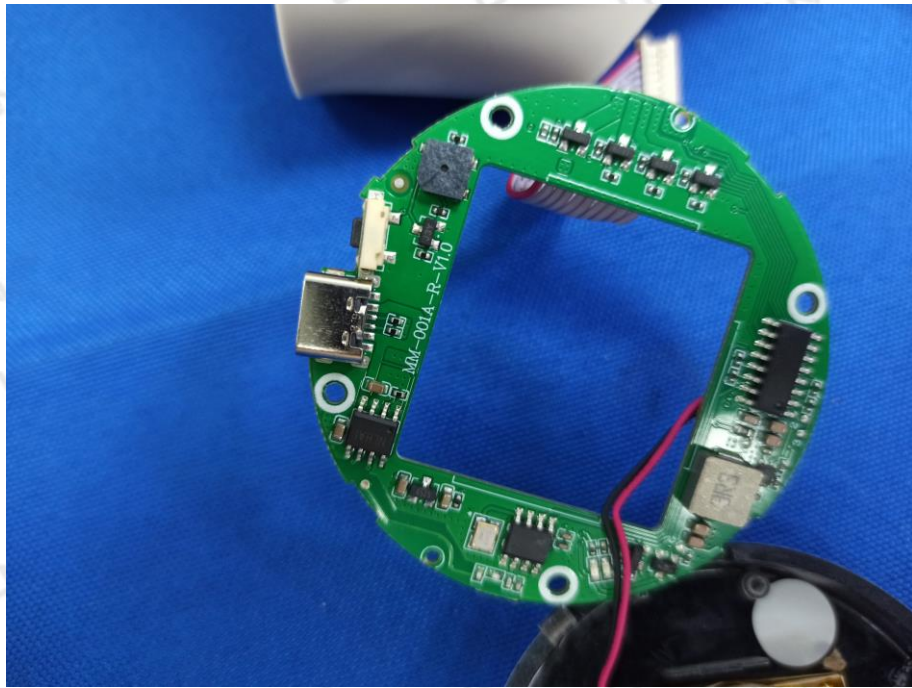


PHOTO 23

16 PHOTO OF TEST



PHOTO 01



PHOTO 02

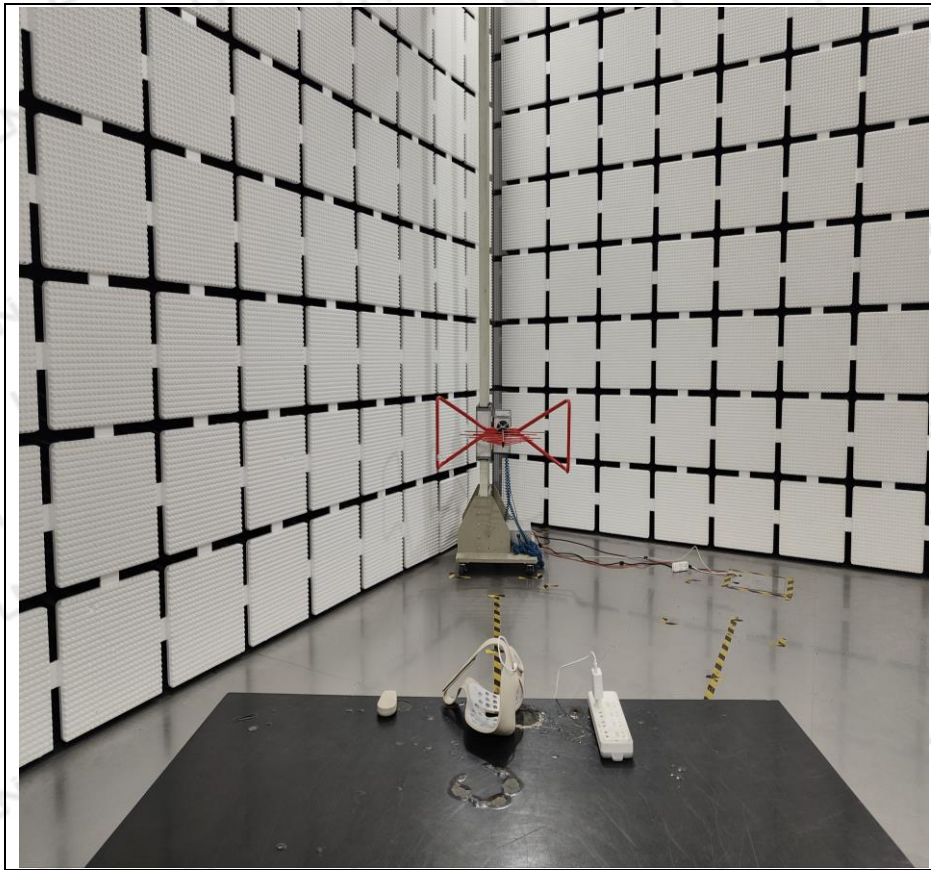


PHOTO 03

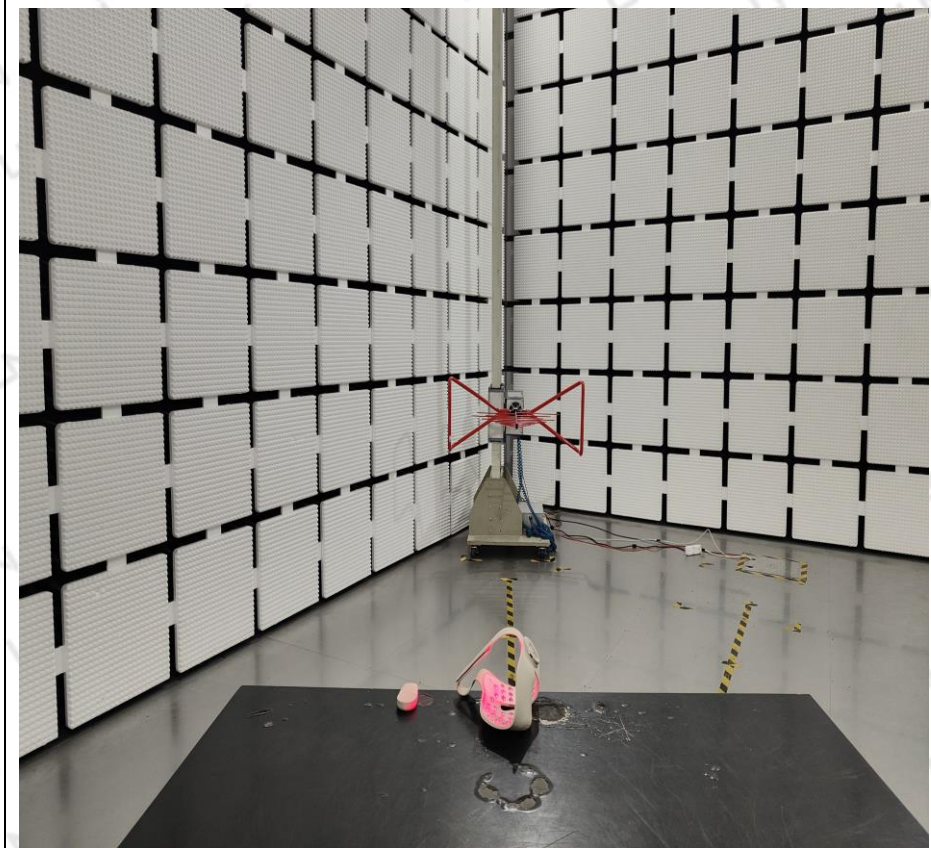


PHOTO 04



PHOTO 05



PHOTO 06



PHOTO 07



PHOTO 08



PHOTO 09

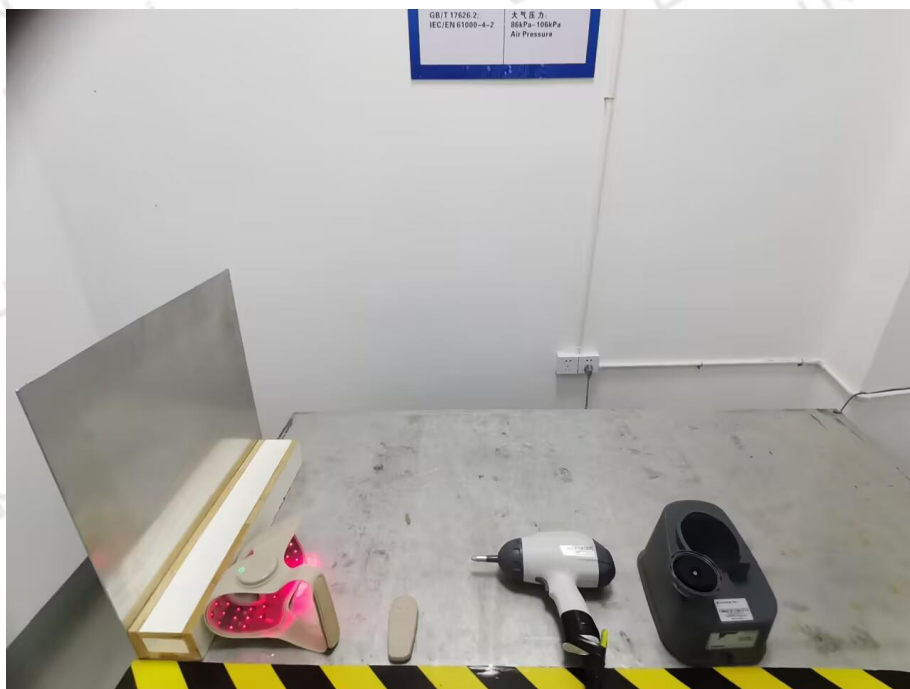


PHOTO 10

Statement

1. This report must have the signature of the authorized signatory and the special seal of the report, otherwise it will be considered invalid. If there is no anti-counterfeiting electronic seal of the laboratory in the report in PDF format or it is displayed as "x", the report is invalid.
2. This report shall not be modified, added or deleted without authorization.
3. The results of this report are only valid for the EUT provided by Applicant to our laboratory for inspection (That is, EUT received by our laboratory. Without special explanation, it refers to the samples presented in the report "PHOTO OF EUT").
4. If there is any objection to the test data and conclusions of this report, please submit it in writing within 10 working days after the date of issuance of the report.
5. Without the written consent of the laboratory, this report shall not be copied (except for full copy), nor shall it be used as publicity materials or advertising.
6. The cover of the report is for decoration only, not included in the body of the report.
7. The paper report issued by our laboratory has the same effect as the electronic report. In case of any difference between the two, the electronic report shall prevail.
8. The Chinese and English reports issued by our laboratory have the same effect. In case of any difference in understanding, the Chinese version shall prevail.
9. Please provide the complete report documents issued by our laboratory when inquiring the report.
10. For cases where compliance is determined based on test values, when relevant specifications, standards, documents, and customers have no relevant requirements and no other special instructions, the test report issued by this laboratory is carried out in full value and adopts ILAC-G8:09 /2019 "Simple Acceptance Rule" for judgment.
11. In the People's Republic of China, when there is no CMA Accredited Symbol in this report, the report is only for scientific research, teaching or internal quality control activities.

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