



TEST REPORT

Reference No. : WTX20X08054194E-1

Applicant : GlobTek, Inc.

Address : 186 Veterans Dr. Northvale, NJ 07647 USA

Product : Battery Charger

Test Model. : GTM91128LI1CEL

EN 55032:2015/AC:2016-07

EN 55035:2017

EN 61000-3-2:2014

EN 61000-3-3:2013

Date of Receipt sample : Aug.10, 2020

Date of Test..... : Aug.10, 2020 to Aug.13, 2020

Date of Issue : Aug.13, 2020

Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:

GlobTek, Inc.

Address of applicant:

186 Veterans Dr. Northvale, NJ 07647 USA

Manufacturer:

1. GlobTek, Inc. 2. GlobTek (Suzhou) Co., Ltd

Address of manufacturer:

1.186 Veterans Dr. Northvale, NJ 07647 USA

2. Building 4, No. 76, Jin Ling East Rd., Suzhou Industrial Park, Suzhou, JiangSu 215021, China

General Description of EUT	
Product Name:	Battery Charger
Trade Name:	
Model No.:	GTM91128LI1CEL
Adding Model(s):	GTM91128LI2CEL, GTM91128LI3CEL
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model GTM91128LI1CEL, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Rated Voltage:	AC 100-240V 50-60Hz
Rated Current:	1.5A
Rated Power:	/
Power Adaptor Model:	/
Highest Internal Frequency:	Below 108MHz
Classification of Equipment:	Class B



1.2 Test Standards

The tests were performed according to following standards:

EN 55032:2015/AC:2016-07: Electromagnetic compatibility of multimedia equipment - Emission requirements.

EN 55035:2017: Electromagnetic compatibility of multimedia equipment - Immunity requirements.

EN 61000-3-2:2014: Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).

EN 61000-3-3:2013: Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN 55032, EN 61000-3-2, EN 61000-3-3 and EN 55035 for electromagnetic compatibility of multimedia equipment, and all related testing and measurement techniques intentional standards.



1.4 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	Working	/	AC 230V/50Hz
Note: The product was measured at two nominal voltages of 230V and 110V, using a frequency of 50Hz or 60Hz. This report shows the worst case with 230V/50Hz data.			

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
EUT cable	1.9	Unshielded	With Core

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
AC cable	1.1	Unshielded	Without Core

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.5 Performance Criteria for EMS

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

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacturer. No change in operating state or loss of data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.



1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2020-04-28	2021-04-27
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2019-05-05	2021-05-04
Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2020-04-28	2021-04-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27
AC LISN	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2020-04-28	2021-04-27
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2020-04-28	2021-04-27
PMF Generator	LIONCEL	PMF-801C-C	0171101	2020-04-28	2021-04-27
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2020-04-28	2021-04-27
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2020-04-28	2021-04-27
Digital Power Analyzer	California Instrument	CTS	72831	2020-04-28	2021-04-27
Power Source	California Instrument	5001IX-CTS-400	25965	2020-04-28	2021-04-27
ESD Generator	LIONCEL	ESD-203B	0170901	2020-04-28	2021-04-27
Amplifier	Agilent	8447D	2944A10179	2020-04-28	2021-04-27
Transient 2000	EMC PARTNER	TRA2000	863	2020-04-28	2021-04-27
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2020-04-28	2021-04-27
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2020-01-13	2021-01-12
Attenuator	EMTEST	MA-5100/6BF2	1009	2020-04-28	2021-04-27
CDN	Luthi	L-801M2/M3	2665	2020-04-28	2021-04-27
Signal Generator	HP	8688B	3438A00604	2020-04-28	2021-04-27
Power Meter	KEITHLEY	3500	1162591	2020-04-28	2021-04-27
Power Meter	KEITHLEY	3500	1121428	2020-04-28	2021-04-27
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2020-04-28	2021-04-27
RF Power Amplifier	MicoTop	MPA-80-1000-100	MPA1906238	2020-04-28	2021-04-27
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A



2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN 55032	Conducted Emission	Compliant
	Radiated Emission	Compliant
EN 61000-3-2	Harmonic Current Emission	Compliant
EN 61000-3-3	Voltage Fluctuation and Flicker	Compliant
EN 55035	Electrostatic Discharge Immunity in accordance with EN 61000-4-2	Compliant
	Continuous RF electromagnetic field Disturbances Immunity in accordance with EN 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with EN 61000-4-4	Compliant
	Surges Immunity in accordance with EN 61000-4-5	Compliant
	Continuous induced RF disturbances Immunity in accordance with EN 61000-4-6	Compliant
	Power-frequency Magnetic Fields Immunity in accordance With EN 61000-4-8	Compliant
	Voltage Dips/Interruptions Immunity in accordance with EN 61000-4-11	Compliant
	Broadband impulse noise disturbances, repetitive	N/A
	Broadband impulse noise disturbances, isolated	N/A

N/A: not applicable





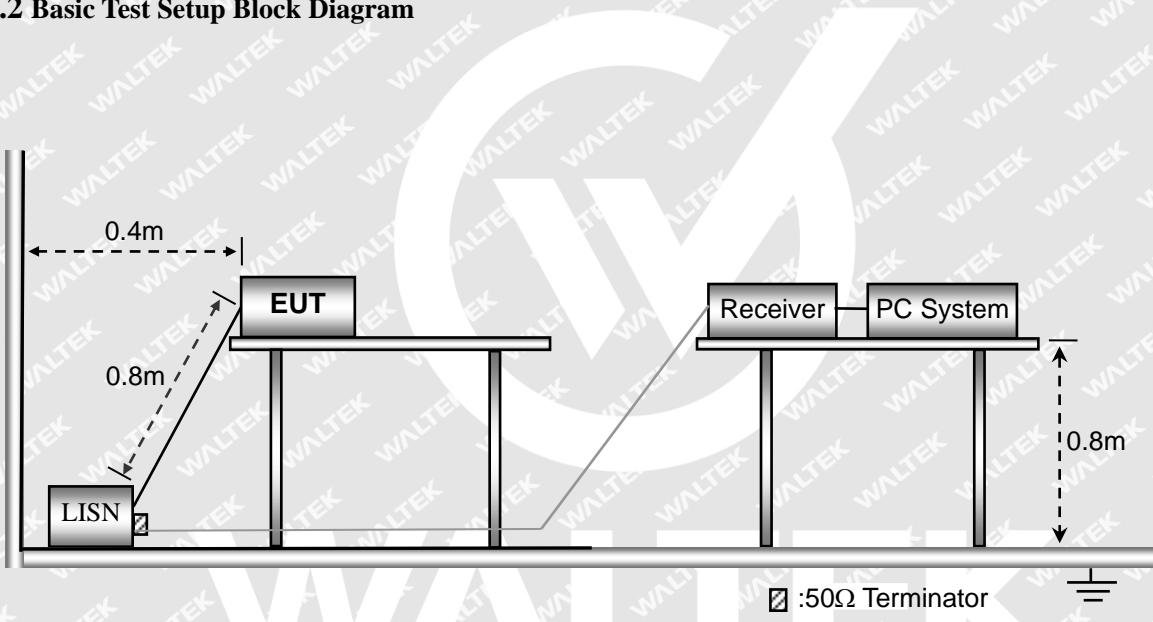
3. Conducted Emission

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement:

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$

3.2 Basic Test Setup Block Diagram





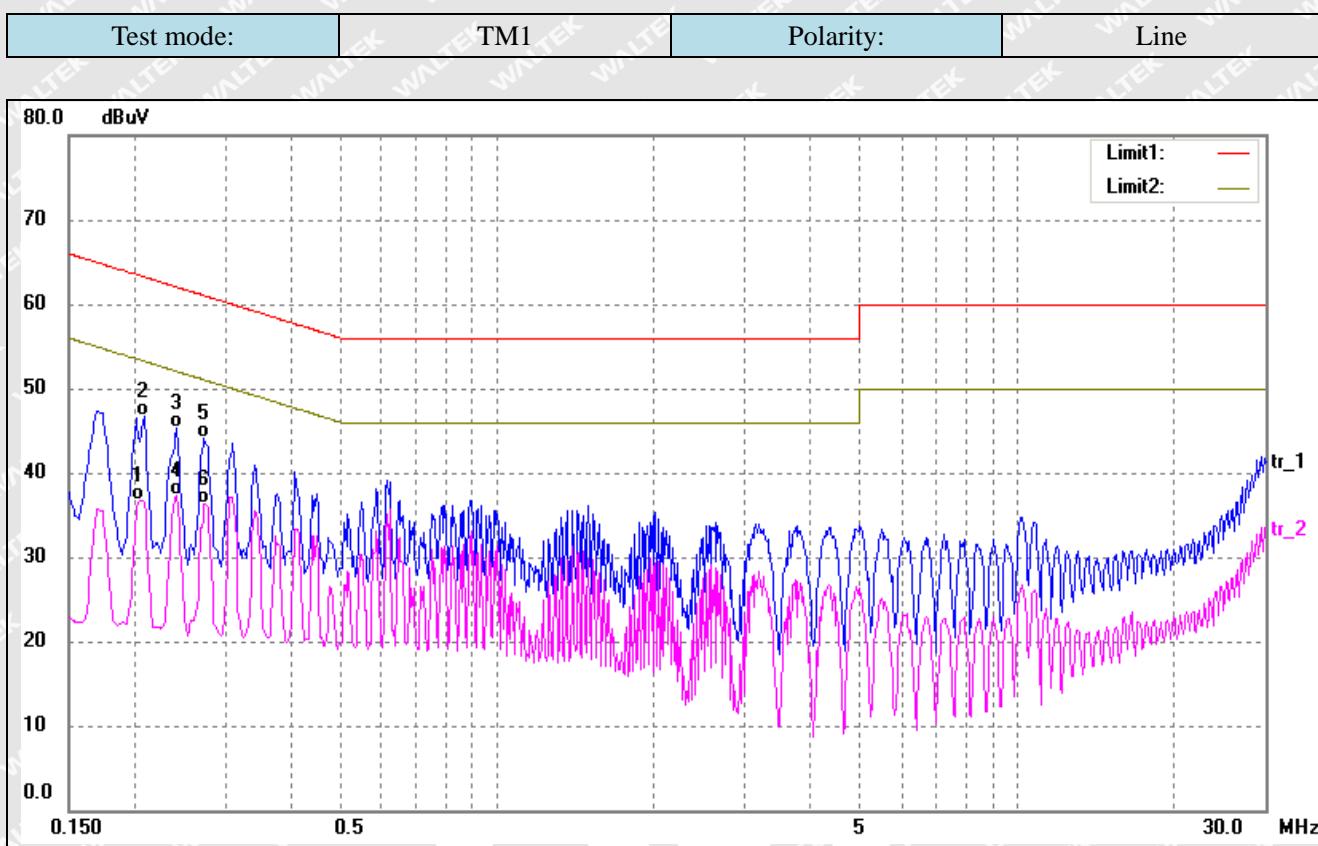
3.3 Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55 %
ATM Pressure:	1015 mbar

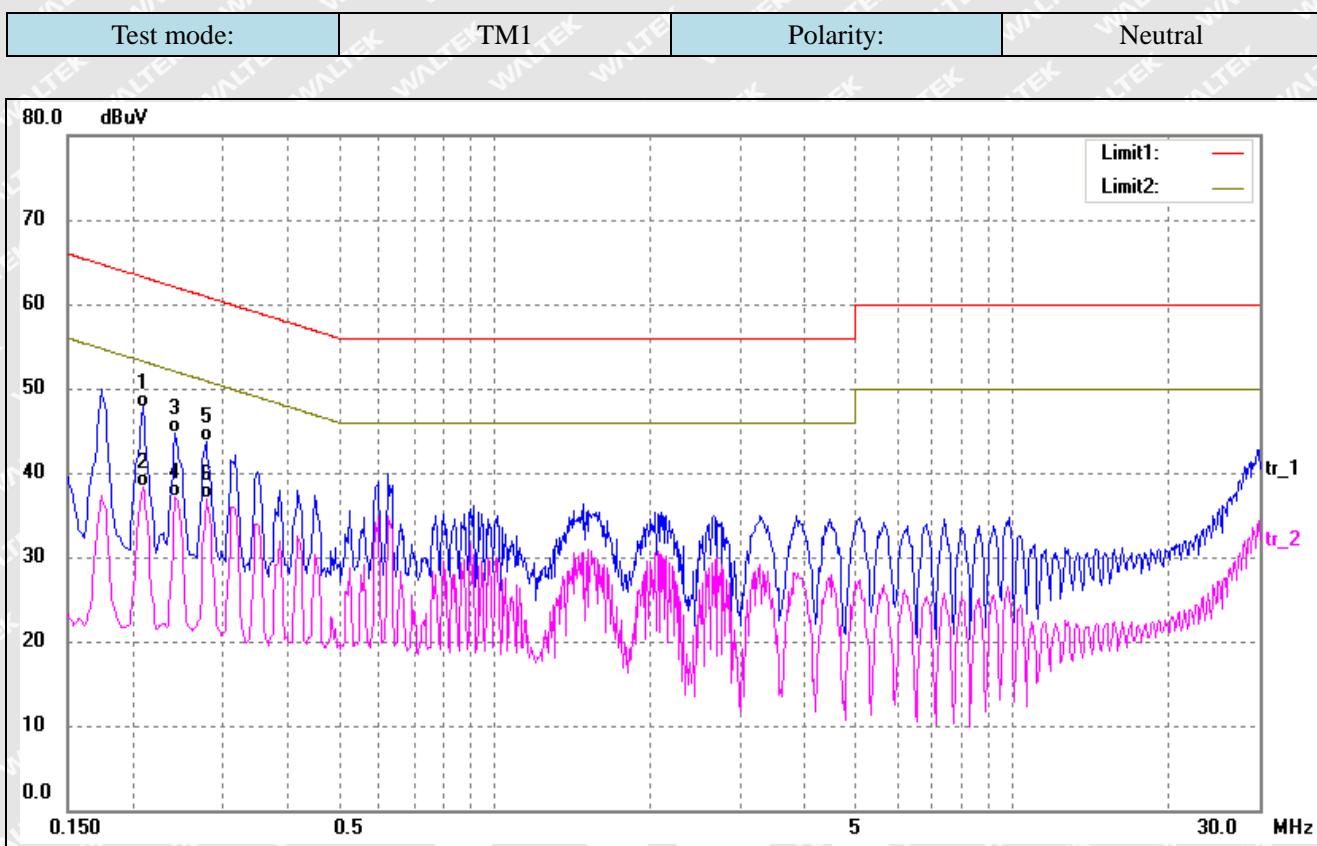
3.4 Summary of Test Results

Look at the graphs and data below:





No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2060	26.51	10.27	36.78	53.36	-16.58	AVG
2	0.2100	36.40	10.27	46.67	63.20	-16.53	QP
3	0.2420	34.99	10.26	45.25	62.02	-16.77	QP
4	0.2420	27.04	10.26	37.30	52.02	-14.72	AVG
5	0.2740	33.77	10.25	44.02	60.99	-16.97	QP
6*	0.2740	26.05	10.25	36.30	50.99	-14.69	AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2100	37.53	10.27	47.80	63.20	-15.40	QP
2	0.2100	28.05	10.27	38.32	53.20	-14.88	AVG
3	0.2420	34.39	10.26	44.65	62.02	-17.37	QP
4	0.2420	26.84	10.26	37.10	52.02	-14.92	AVG
5	0.2779	33.44	10.25	43.69	60.88	-17.19	QP
6*	0.2779	26.62	10.25	36.87	50.88	-14.01	AVG



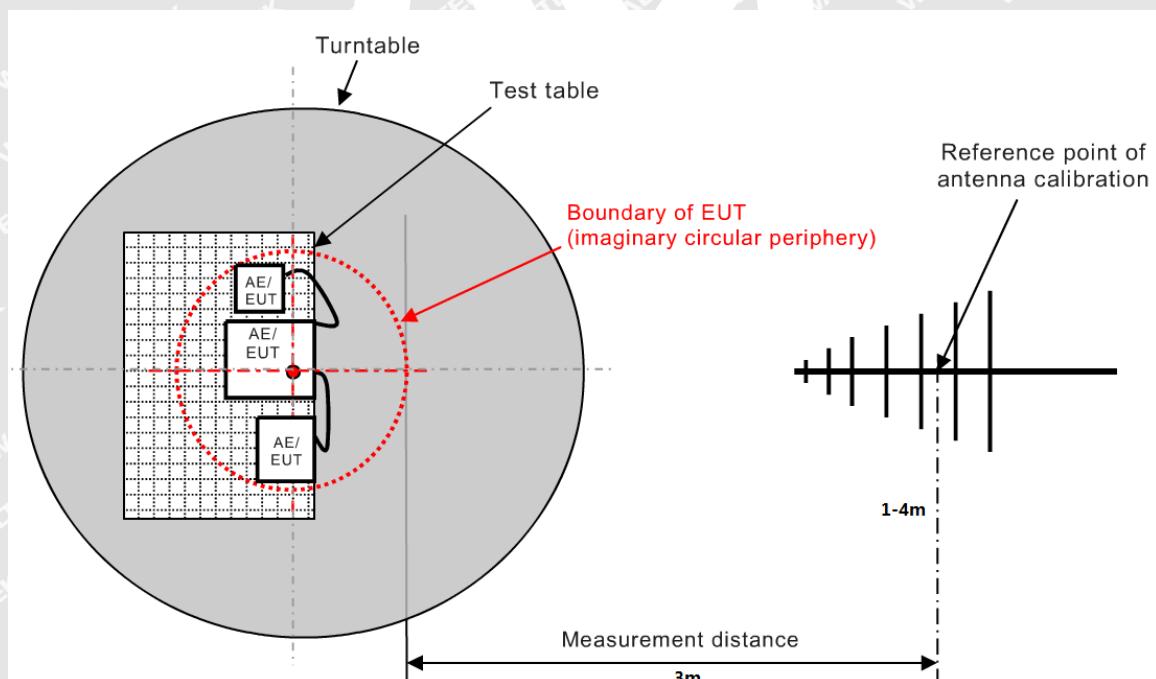
4. Radiated Emission

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement:

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Radiated Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

4.2 Basic Test Setup Block Diagram





4.3 Corrected Amplitude & Margin Calculation

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

$$\begin{aligned}\text{Corr. Ampl.} &= \text{Indicated Reading} + \text{Correct} \\ \text{Correct} &= \text{Ant.Factor} + \text{Cable Loss} - \text{Ampl.Gain}\end{aligned}$$

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

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN 55032 Class B Limit}$$

4.4 Environmental Conditions

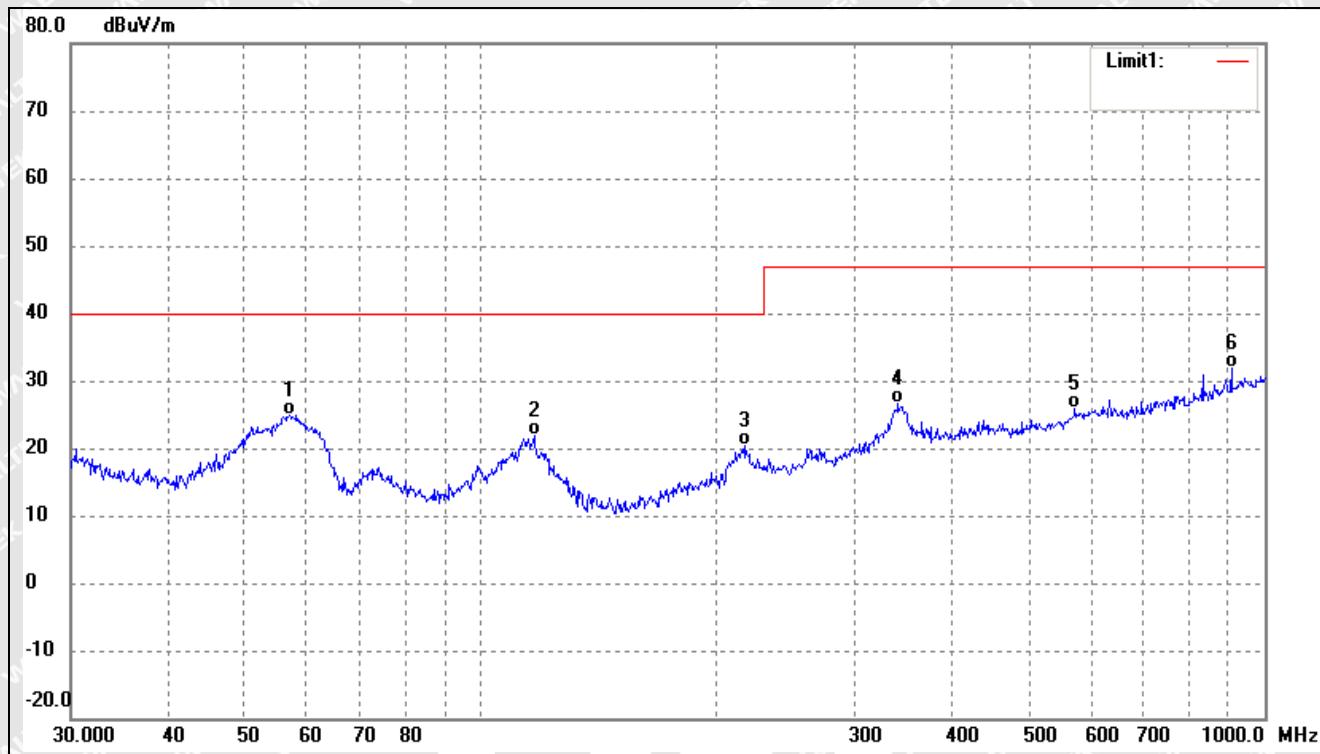
Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

4.5 Summary of Test Results

Look at the graphs and data below:



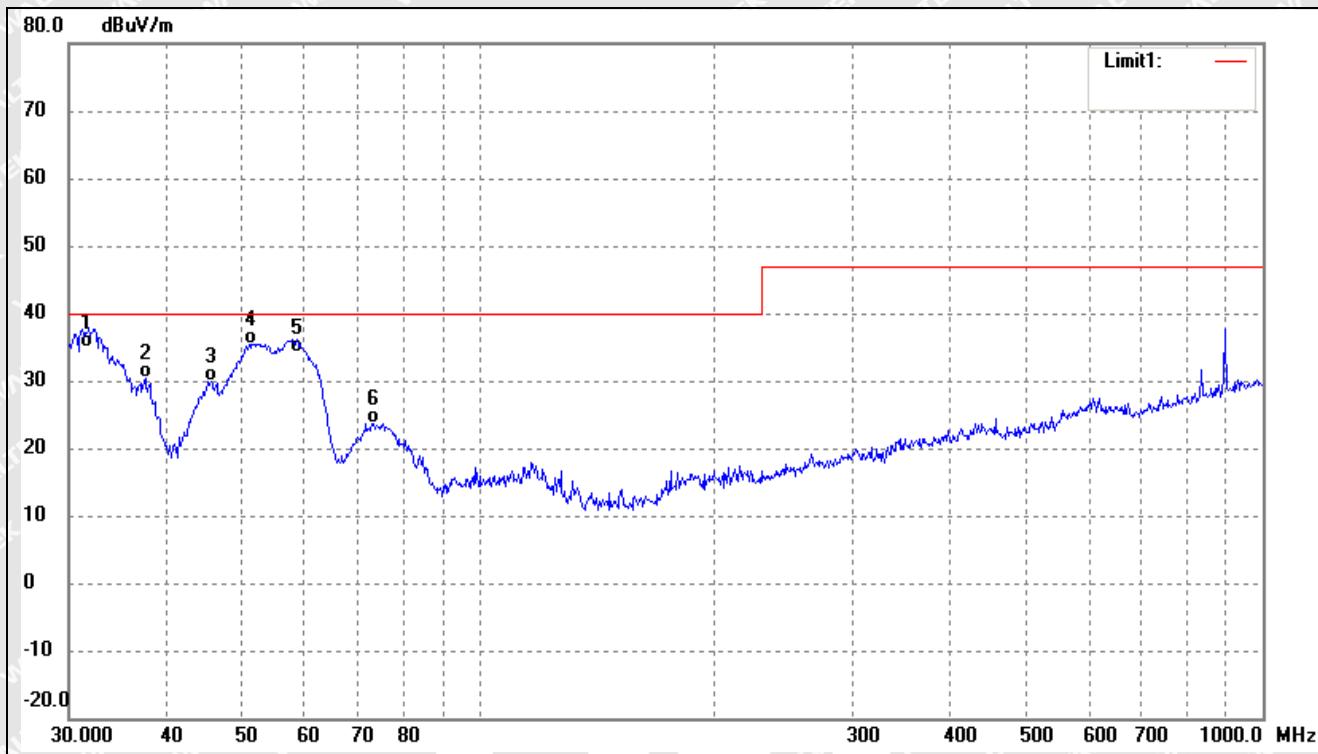
Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	56.9912	36.67	-11.70	24.97	40.00	-15.03	281	100	QP
2	116.9495	34.66	-12.90	21.76	40.00	-18.24	92	100	QP
3	217.5443	31.37	-10.92	20.45	40.00	-19.55	331	100	QP
4	340.7817	33.18	-6.65	26.53	47.00	-20.47	97	100	QP
5	572.6144	28.42	-2.66	25.76	47.00	-21.24	217	100	QP
6	906.4824	30.10	1.70	31.80	47.00	-15.20	115	100	QP



Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.6027	48.48	-13.48	35.00	40.00	-5.00	149	100	QP
2	37.5479	42.53	-12.18	30.35	40.00	-9.65	114	100	QP
3	45.5348	40.46	-10.53	29.93	40.00	-10.07	97	100	QP
4	51.3005	45.94	-10.47	35.47	40.00	-4.53	132	100	QP
5	58.6126	46.21	-12.05	34.16	40.00	-5.84	184	100	QP
6	73.3593	37.57	-13.97	23.60	40.00	-16.40	308	100	QP



5. Harmonic Current Emissions

5.1 Test Procedure

Test is conducting under the description of EN 61000-3-2.

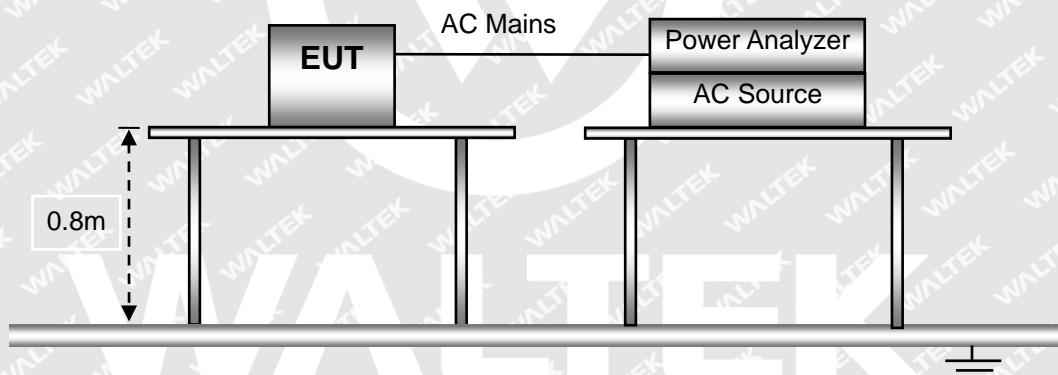
5.2 Test Standards

EN 61000-3-2, Clause 7.1 Limits for Class A equipment.

5.3 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

5.4 Basic Test Setup Block Diagram



5.4 Harmonic Current Emissions Test Data

According to Clause 7 of EN 61000-3-2, the rated power of the EUT is less than 75W, belong to 'equipment with a rated power of 75W or less', therefore 'limits are not specified in this edition of the standards'. It is deemed to fully fit the requirements of the standards.

Result: The EUT is compliant with the requirements of this section.



6. Voltage Fluctuation Flicker

6.1 Test Procedure

Test is conducting under the description of EN 61000-3-3.

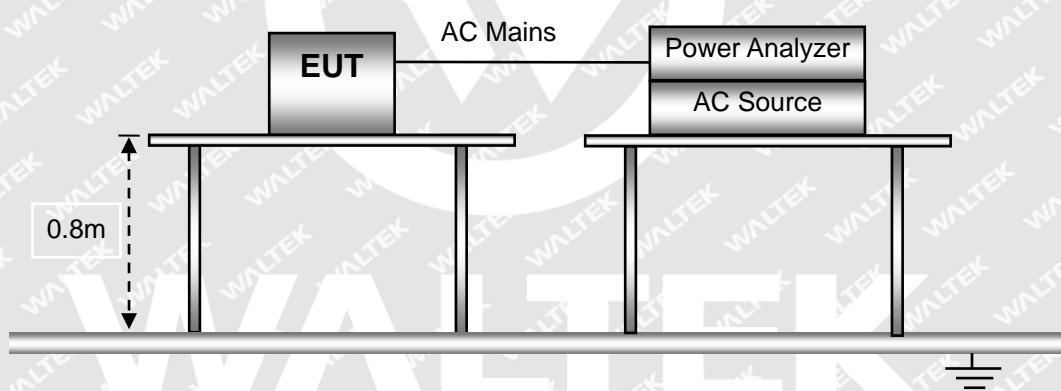
6.2 Test Standards

EN 61000-3-3, Limit: Clause 5.

6.3 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

6.4 Basic Test Setup Block Diagram



6.5 Voltage Fluctuation and Flicker Test Data



Test mode:	TM1
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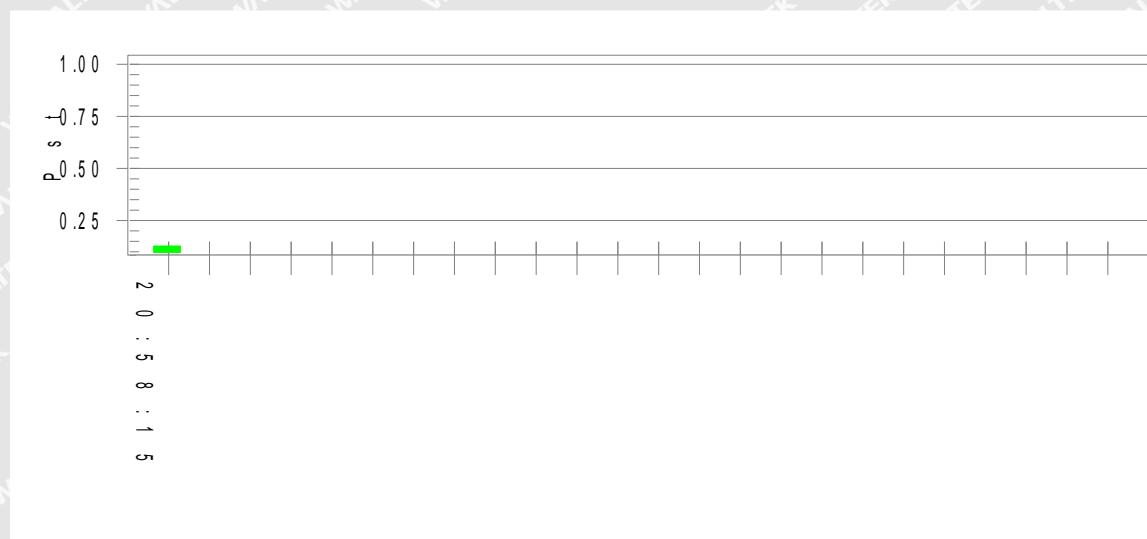
Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.98

T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	-0.81	Test limit (%):	3.30	Pass
Highest dmax (%):	-0.83	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.128	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.056	Test limit:	0.650	Pass

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7. Electrostatic Discharges (ESD)

7.1 Test Procedure

Test is conducting under the description of EN 61000-4-2.

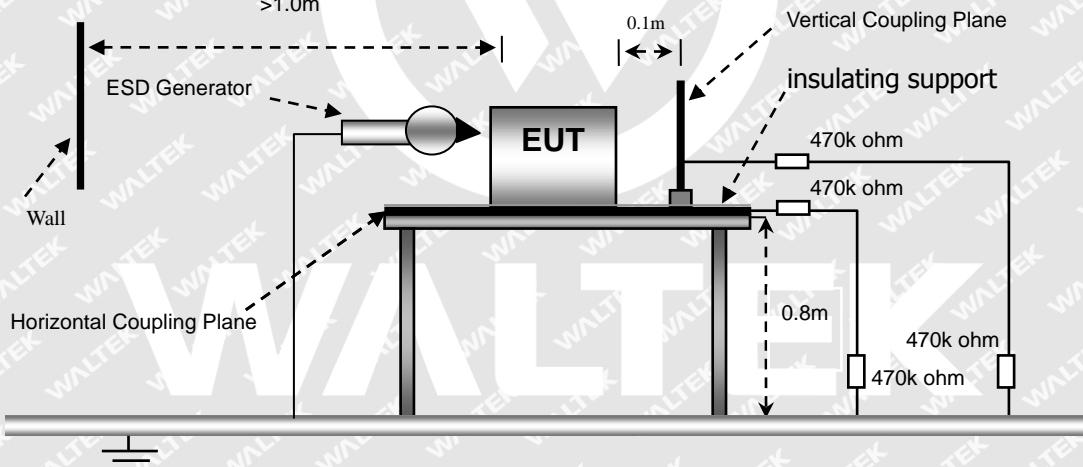
7.2 Test Performance

Performance Criterion: B

7.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.4 Basic Test Setup Block Diagram





7.5 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Shell edge crack	A	A	A	A	A	A	A	B	/	/
AC port	A	A	A	A	A	A	B	B	/	/
DC port	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
/	/	/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP & VCP)

EN 61000-4-2 Test Points	Test Voltage (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
HCP (6 Sides)	A	A	A	A	/	/	/	/	/	/
VCP (4 Sides)	A	A	A	A	/	/	/	/	/	/

Test Result: Pass



8. Continuous RF electromagnetic field Disturbances (RS)

8.1 Test Procedure

Test is conducting under the description of EN 61000-4-3.

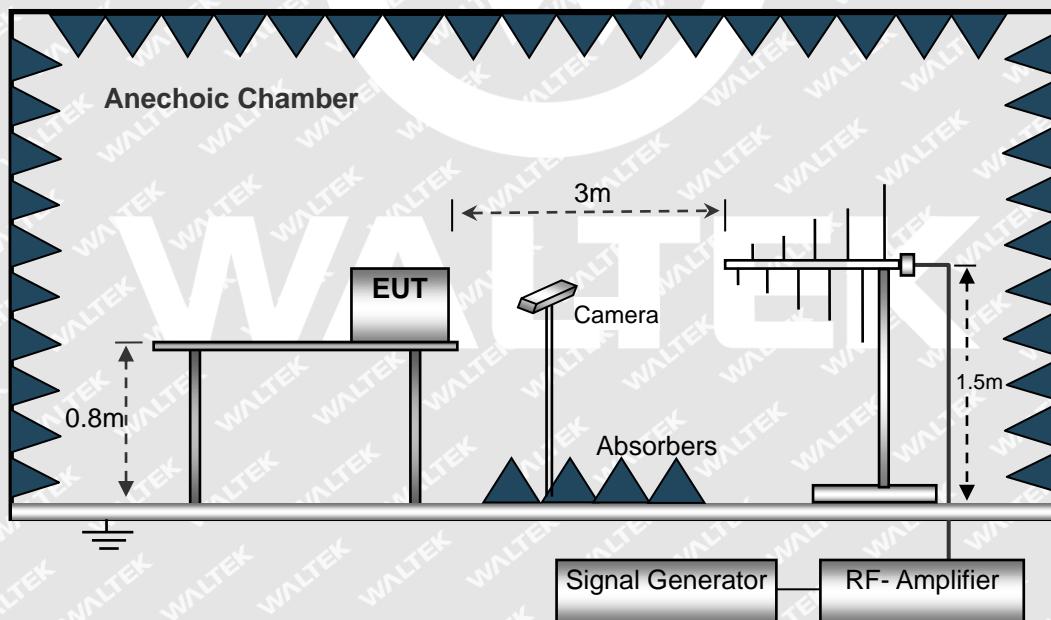
8.2 Test Performance

Performance Criterion: A

8.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.4 Basic Test Setup Block Diagram





8.5 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Spot frequencies (MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
1800	3	A	A	A	A	A	A	A	A
2600	3	A	A	A	A	A	A	A	A
3500	3	A	A	A	A	A	A	A	A
5000	3	A	A	A	A	A	A	A	A

Test Result: Pass



9. Electrical Fast Transients (EFT)

9.1 Test Procedure

Test is conducting under the description of EN 61000-4-4.

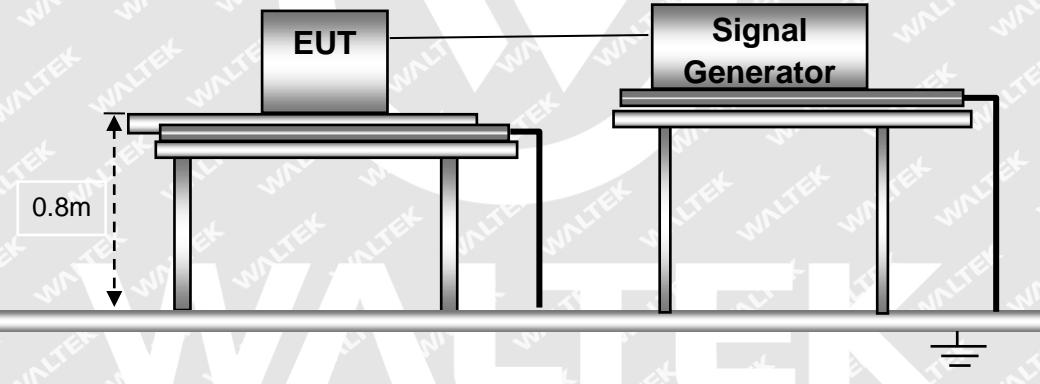
9.2 Test Performance

Performance Criterion: B

9.3 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.4 Basic Test Setup Block Diagram





9.5 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Voltage (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	/	/	B	B	/	/	/	/
	L2	/	/	B	B	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L1+L2	/	/	B	B	/	/	/	/
	L1 + PE	/	/	/	/	/	/	/	/
	L2 + PE	/	/	/	/	/	/	/	/
	L1+L2+PE	/	/	/	/	/	/	/	/
Signal ports	RJ45	/	/	/	/	/	/	/	/

Test Result: Pass



10. Surges

10.1 Test Procedure

Test is conducting under the description of EN 61000-4-5.

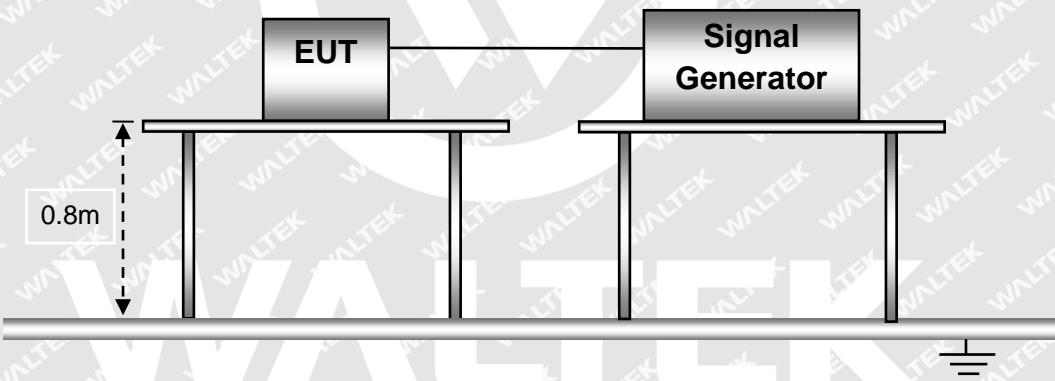
10.2 Test Performance

Performance Criterion: B

10.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.4 Basic Test Setup Block Diagram





10.5 Surge Test Data

AC Port

Test Voltage (kV)	Poll	Path	Pass	Fail
0.5kV	±	L-N	/	/
1kV	±	L-N	B	/
2kV	±	L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass





11. Continuous induced RF disturbances (C/S)

11.1 Test Procedure

Test is conducting under the description of EN 61000-4-6.

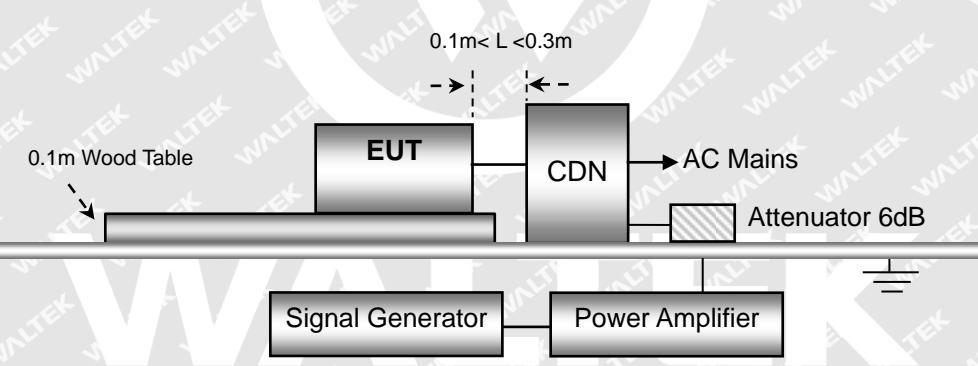
11.2 Test Performance

Performance Criterion: A

11.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.4 Basic Test Setup Block Diagram





11.5 Continuous Conducted Disturbances Test Data

Sweep frequency range: 0.15 MHz to 10 MHz 3 V; 10 MHz to 30 MHz 3 V to 1 V; 30 MHz to 80 MHz 1V

Frequency step: 1% of fundamental

Dwell time: 1 second

AC Port

Frequency MHz	Injected Position	Voltage level (e.m.f.)	Observations (Performance Criterion)	Result
0.15-10	AC Mains	3V	A	Pass
10-30	AC Mains	3-1V	A	Pass
30-80	AC Mains	1V	A	Pass

Test Result: Pass



12. Power-Frequency Magnetic Fields (PFMF)

12.1 Test Procedure

Test is conducting under the description of EN 61000-4-8.

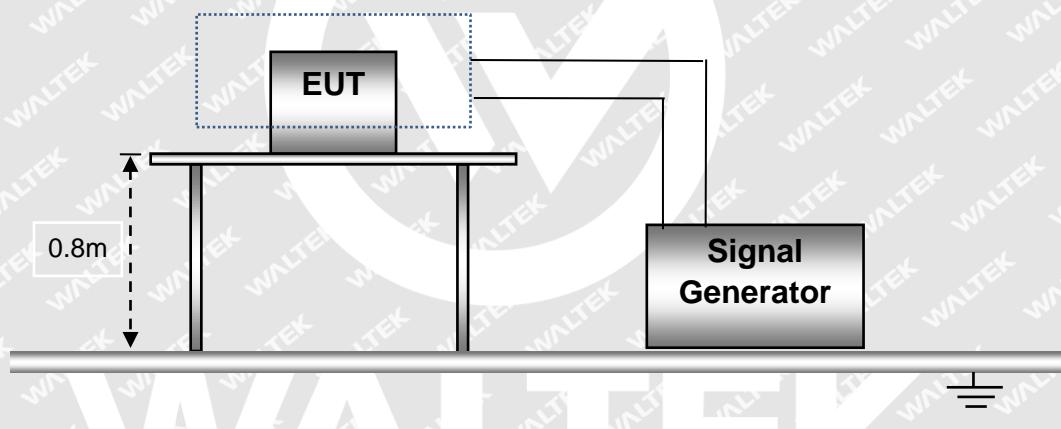
12.2 Test Performance

Performance Criterion: A

12.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

12.4 Basic Test Setup Block Diagram





12.5 Power-Frequency Magnetic Field Test Data

Level	Magnetic Field Strength (r.m.s) A/m	Frequency Hz	Induction Coil Postion	Pass	Fail
1	1	50	X, Y, Z	A	/
2	3	50	X, Y, Z	/	/
3	10	50	X, Y, Z	/	/
X	Special	/	/	/	/

Test Result: Pass





13. Voltage Dips and Interruptions

13.1 Test Procedure

Test is conducting under the description of EN 61000-4-11.

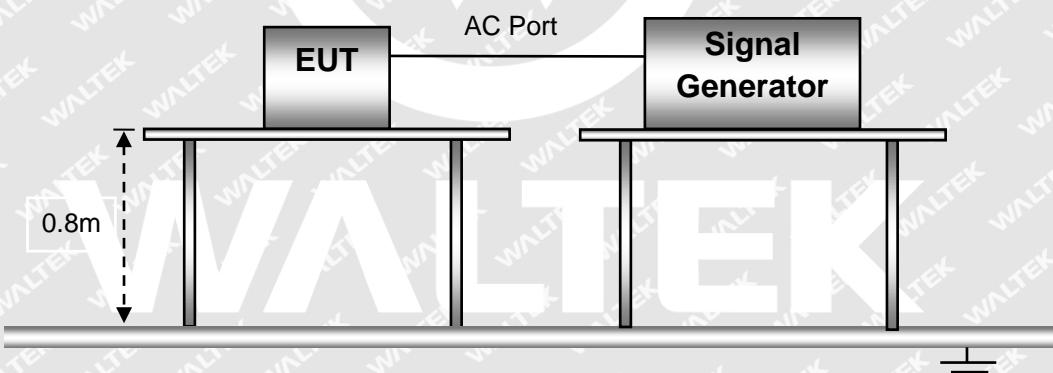
13.2 Test Performance

Performance Criterion: B/C

13.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

13.4 Basic Test Setup Block Diagram





13.5 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	B	/
2	30%	500ms	0/90/180/270	3	B	/
3	100%	5000ms	0/90/180/270	3	B	/

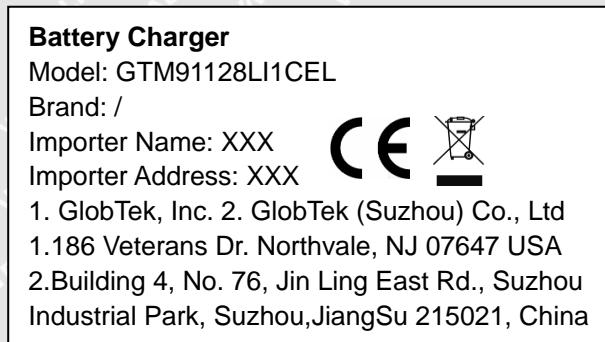
Test Result: Pass





EXHIBIT 1 - PRODUCT LABELING

Proposed CE Label Format



Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking is allowed less than 5 mm but must clear. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected. The Importer name, address and Manufacturer name and address should indicate on marking label or packaging or in a document accompanying

Proposed Label Location on EUT



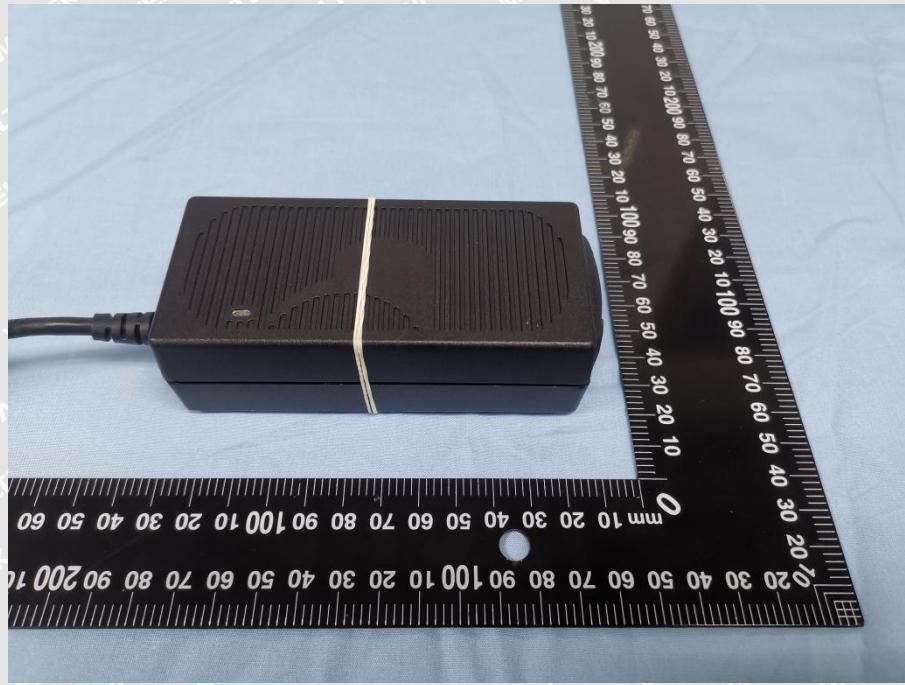


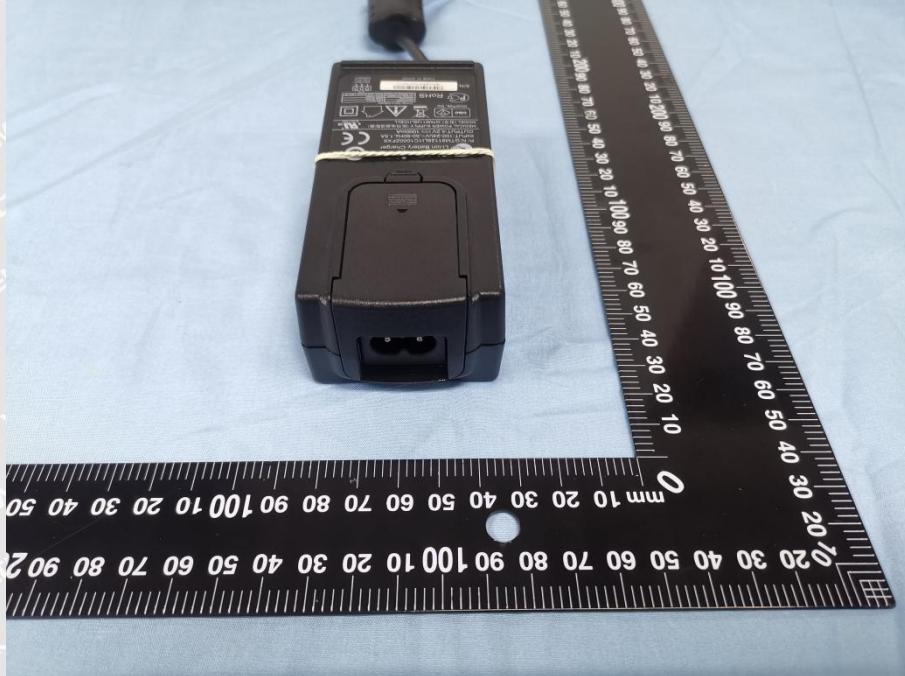
EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



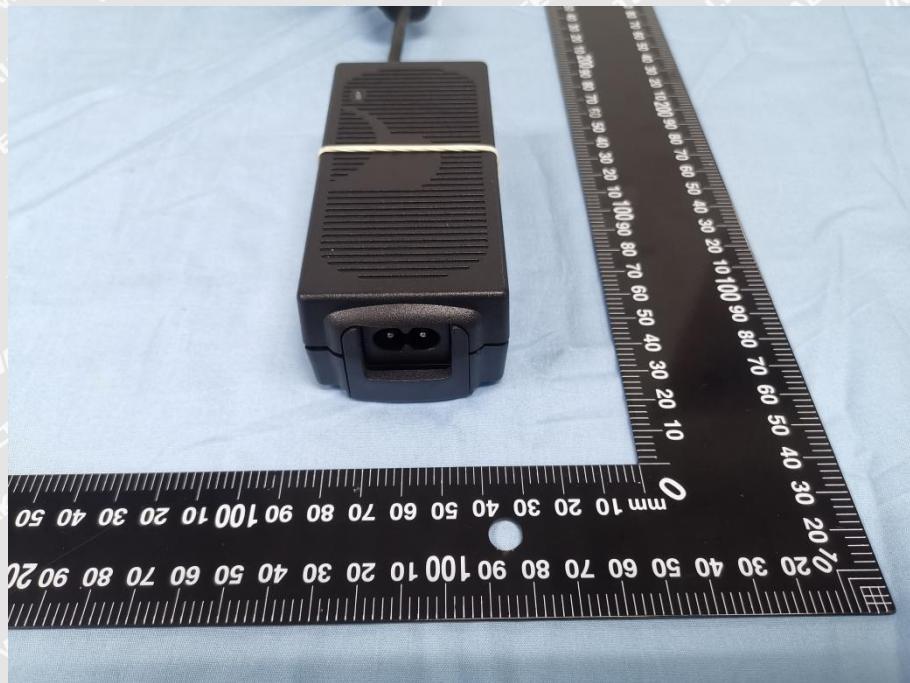
EUT View 2



**EUT View 3****EUT View 4**

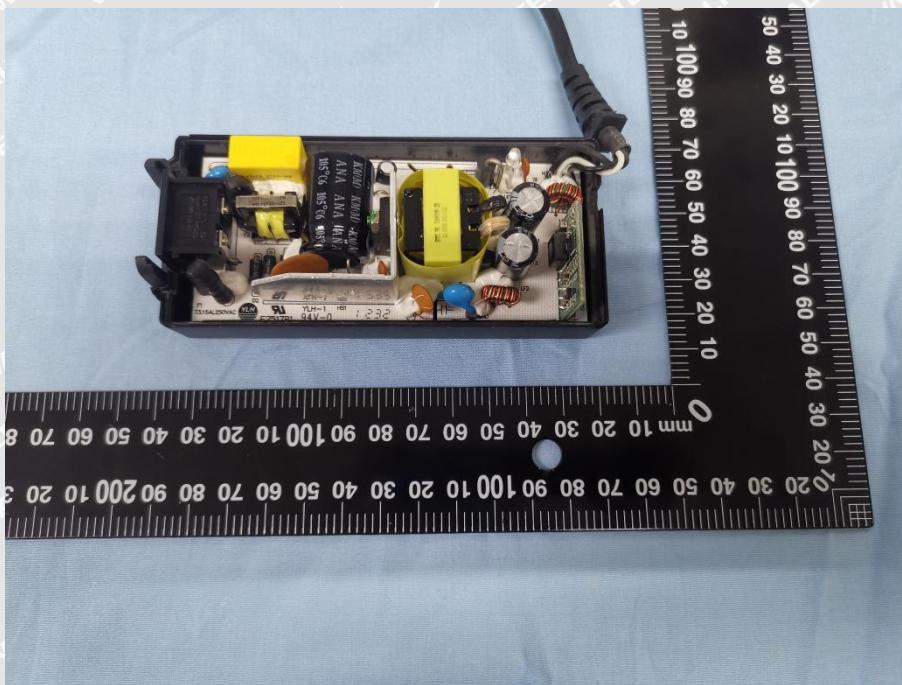


EUT View 5

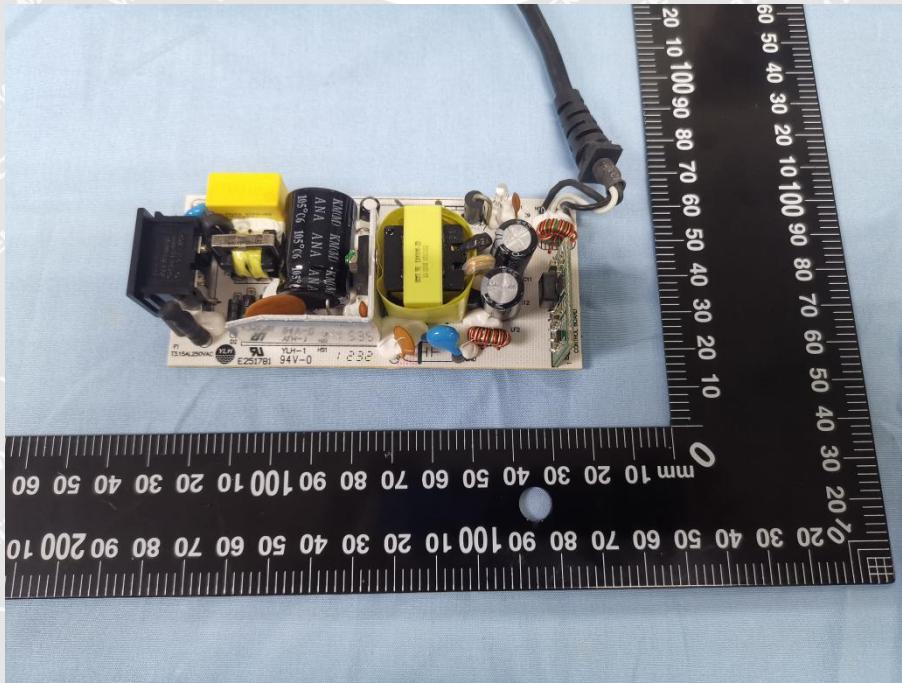




EUT Housing and Board View 1

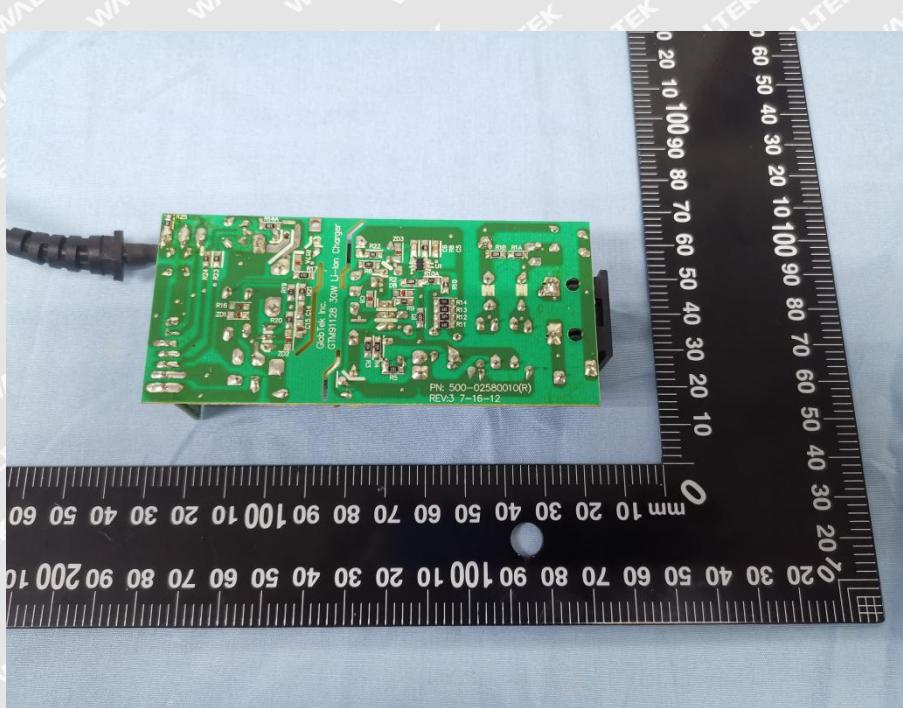


Solder Board-Component View 2





Solder Board-Component View 3



WALTEK

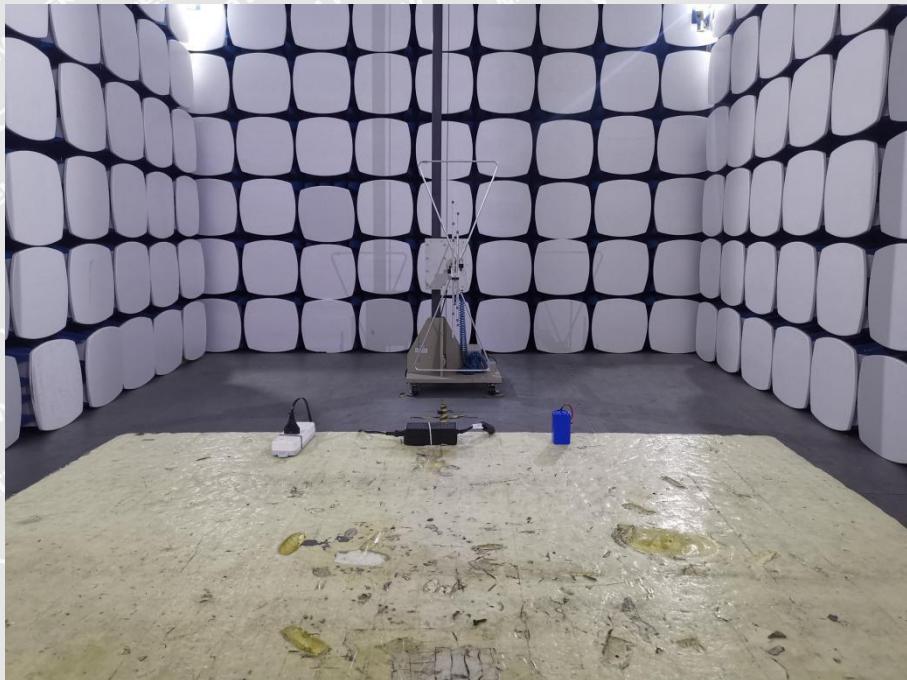


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View

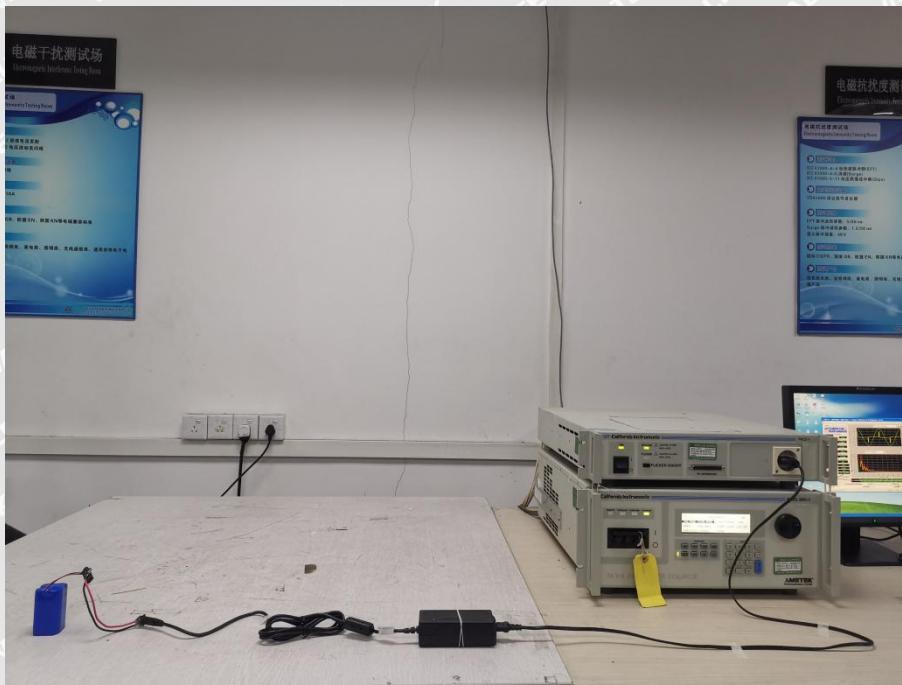


Radiation Emission Test View

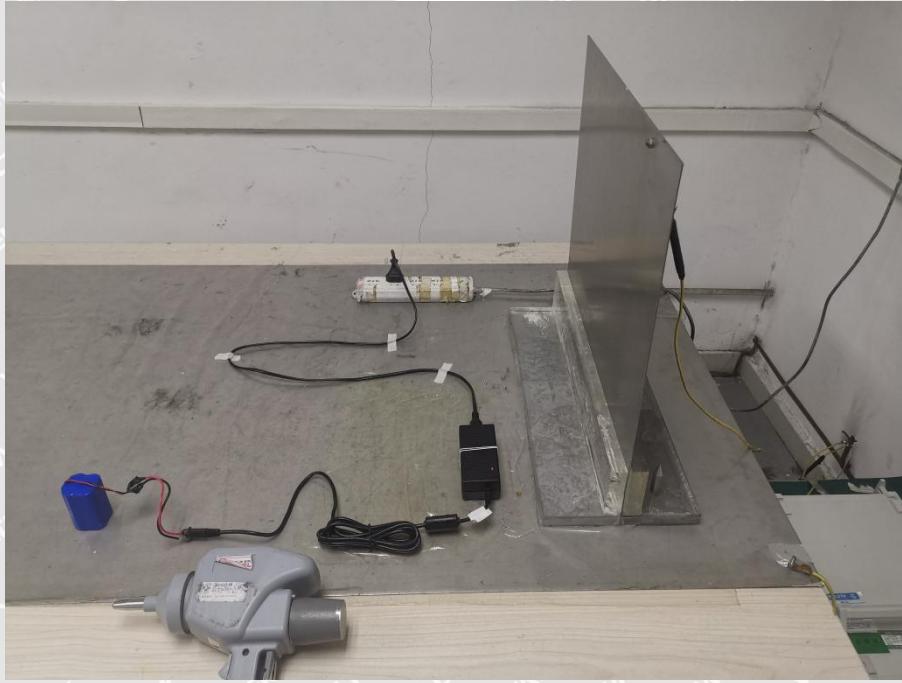


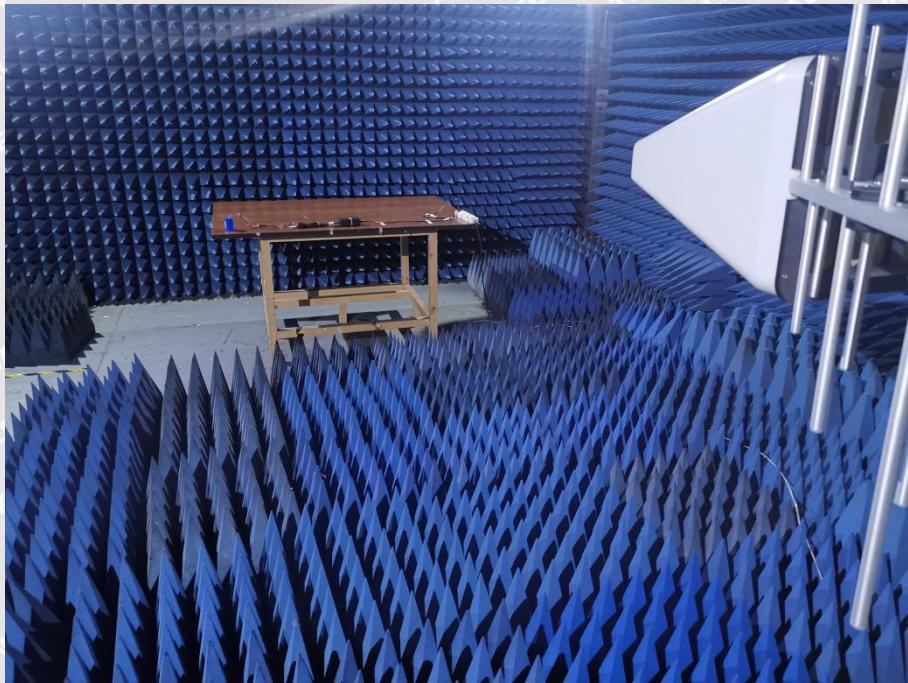


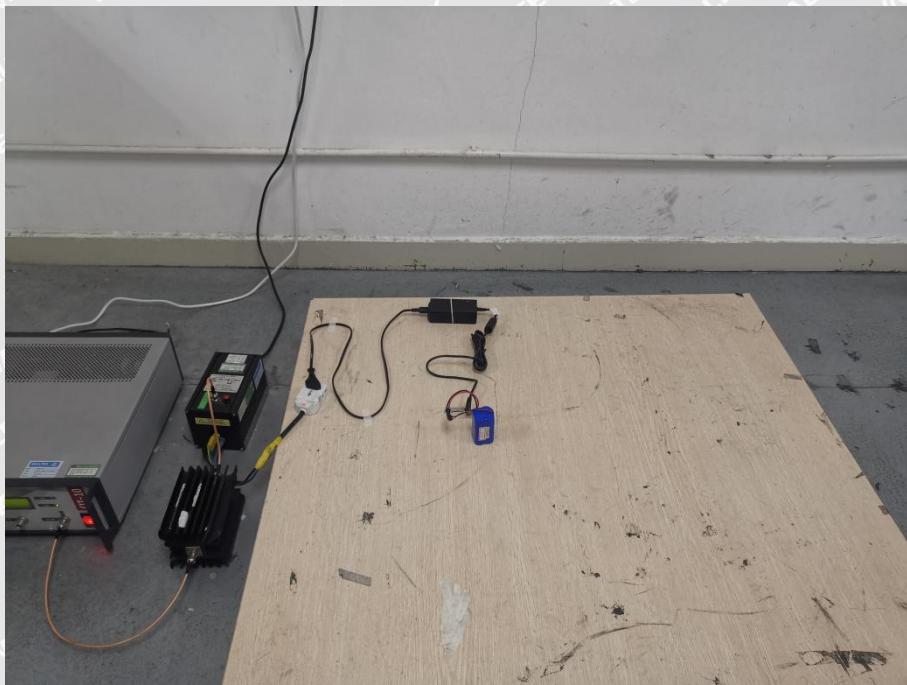
Harmonic/Flicker Test View



EN 61000-4-2 Test View



**EN 61000-4-3 Test View****EN 61000-4-4/5/11 Test View**

**EN 61000-4-6 Test View****EN 61000-4-8 Test View**

***** END OF REPORT *****