

ICES-003
Measurement and Test Report
For
GlobTek, Inc.
186 Veterans Dr. Northvale, NJ 07647 USA

Test Standards: ICES-003 Issue 6 (2016-06)

Product Description: X-plore 8000 Multi-Unit Charger

Tested Model: GT-93600SHG3050

Report No.: STR18048060C

Sample Receipt Date: 2018-04-08

Tested Date: 2018-04-09 to 2018-04-13

Issued Date: 2018-04-13

Tested By: Gan Li / Engineer

Reviewed By: Silin Chen / EMC Manager

Approved & Authorized By: Jandy So / PSQ Manager

Prepared By:

Shenzhen SEM.Test Technology Co., Ltd.

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY	4
1.4 TEST FACILITY	4
1.5 EUT SETUP AND OPERATION MODE	5
1.6 TEST EQUIPMENT LIST AND DETAILS	5
2. SUMMARY OF TEST RESULTS	6
3. CONDUCTED DISTURBANCE.....	7
3.1 MEASUREMENT UNCERTAINTY	7
3.2 TEST PROCEDURE.....	7
3.3 BASIC TEST SETUP BLOCK DIAGRAM.....	7
3.4 ENVIRONMENTAL CONDITIONS	8
3.5 SUMMARY OF TEST RESULTS/PLOTS	8
3.6 CONDUCTED EMISSIONS TEST DATA.....	8
4. RADIATED DISTURBANCE	11
4.1 MEASUREMENT UNCERTAINTY	11
4.2 TEST PROCEDURE.....	11
4.3 TEST RECEIVER SETUP	12
4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.5 ENVIRONMENTAL CONDITIONS	12
4.6 SUMMARY OF TEST RESULTS/PLOTS	12
EXHIBIT 1 - PRODUCT LABELING	15
PROPOSED IC LABEL FORMAT	15
PROPOSED LABEL LOCATION ON EUT	15
EXHIBIT 2 - EUT PHOTOGRAPHS.....	16
EXHIBIT 3 - TEST SETUP PHOTOGRAPHS	22

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:	X-plore 8000 Multi-Unit Charger
Trade Name:	
Model No.:	GT-93600SHG3050
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

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

1.2 Test Standards

The following report is prepared on behalf of the GlobTek, Inc. in accordance with ICES-003 Issue 6 June 2016, Information Technology Equipment (ITE) – Limits and methods of measurement.

The objective is to determine compliance with ICES-003 Issue 6 June 2016.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, 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 ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 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
TM1	Charging	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1	Shielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Battery	Drager	X-plore 8000	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2017-06-12	2018-06-11
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2017-06-12	2018-06-11
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2017-06-12	2018-06-11
Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
Amplifier	C&D	PAP-1G18	2002	2017-06-12	2018-06-11
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2018-06-07
Horn Antenna	ETS	3117	00086197	2017-06-08	2018-06-07
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2018-06-07
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2017-06-12	2018-06-11
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2017-06-12	2018-06-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2017-06-12	2018-06-11

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
ICES-003	Conducted Disturbance	Compliant
	Radiated Disturbance	Compliant

3. Conducted Disturbance

3.1 Measurement Uncertainty

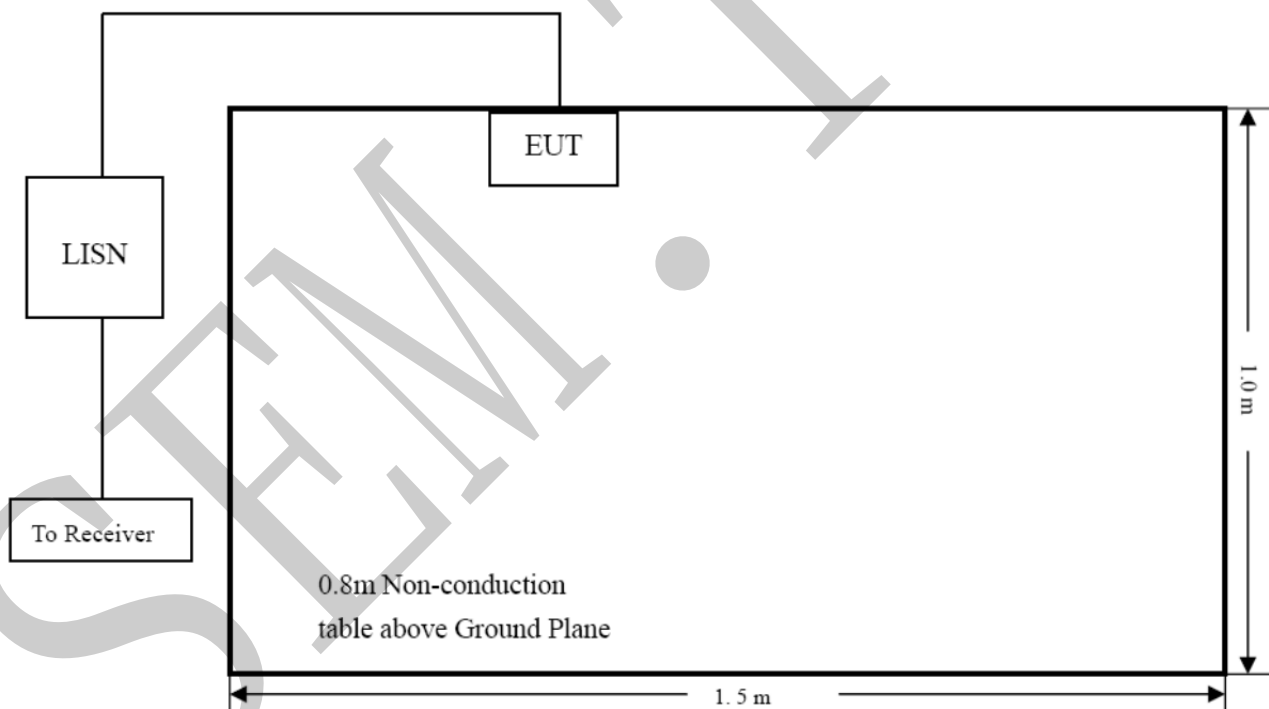
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement

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 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

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

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the ICES-003 Conducted margin for a Class B device, with the *worst* margin reading of:

-11.80 dB at 0.2100 MHz in the Line mode, QP detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

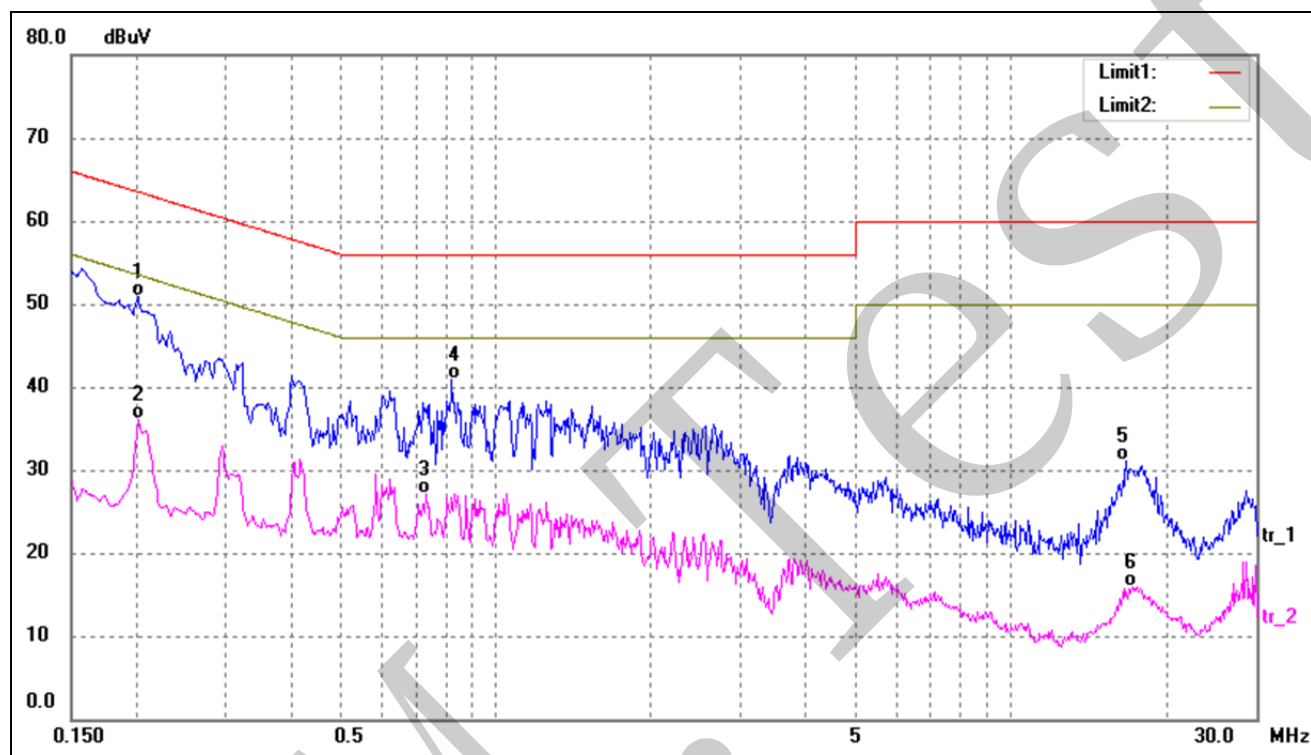
EUT: X-plore 8000 Multi-Unit Charger

Tested Model: GT-93600SHG3050

Operating Condition: TM1

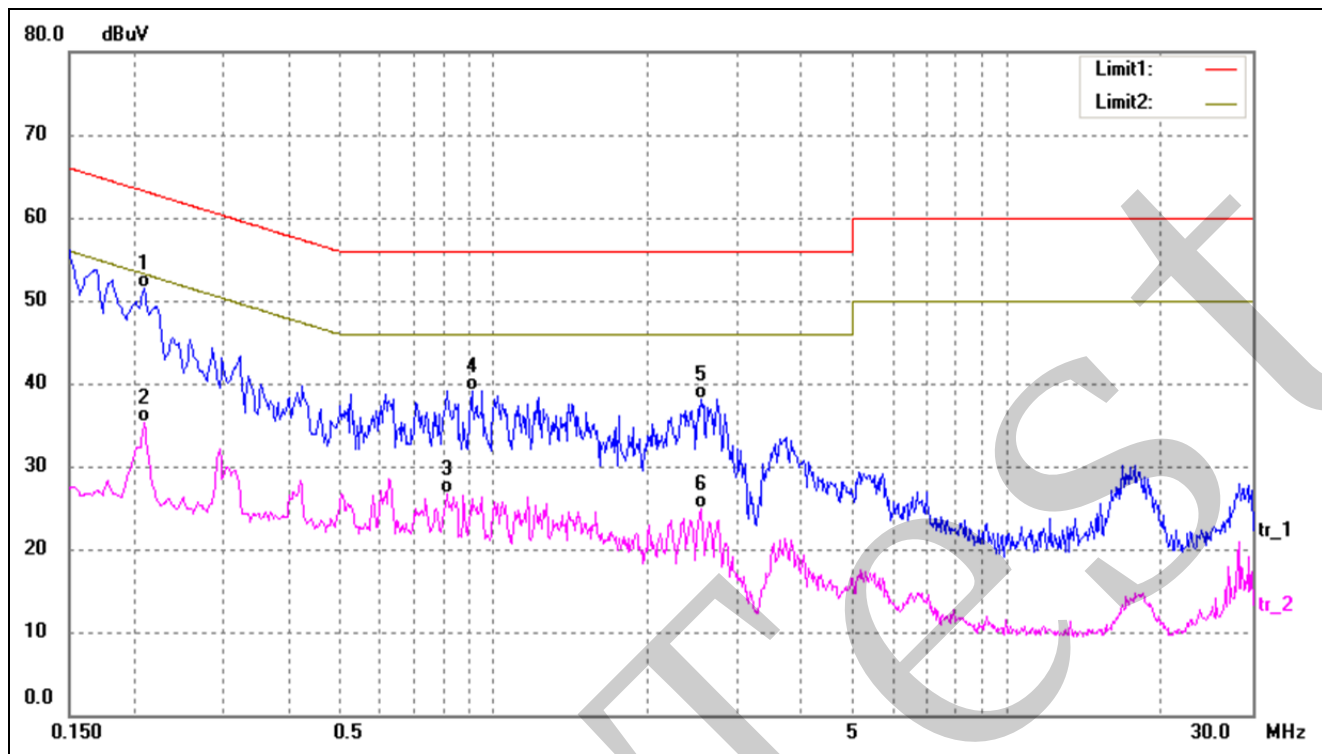
Comment: AC 120V/60Hz

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2020	31.03	19.90	50.93	63.53	-12.60	QP
2	0.2020	16.29	19.90	36.19	53.53	-17.34	AVG
3	0.7340	7.52	19.59	27.11	46.00	-18.89	AVG
4	0.8220	21.36	19.57	40.93	56.00	-15.07	QP
5	16.7500	11.89	19.27	31.16	60.00	-28.84	QP
6	17.2460	-3.41	19.28	15.87	50.00	-34.13	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2100	31.52	19.89	51.41	63.21	-11.80	QP
2	0.2100	15.36	19.89	35.25	53.21	-17.96	AVG
3	0.8140	7.14	19.57	26.71	46.00	-19.29	AVG
4	0.9100	19.62	19.55	39.17	56.00	-16.83	QP
5	2.5500	18.82	19.38	38.20	56.00	-17.80	QP
6	2.5500	5.45	19.38	24.83	46.00	-21.17	AVG

4. Radiated Disturbance

4.1 Measurement Uncertainty

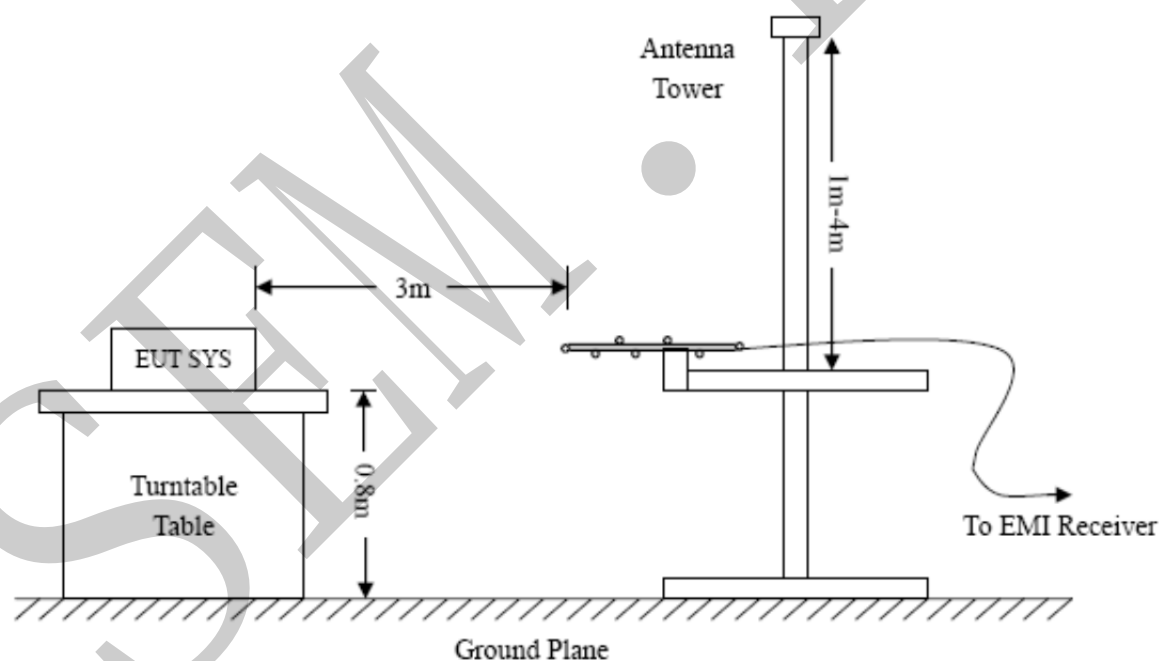
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement

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 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the ICES-003 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



4.3 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

4.4 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

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

$$\text{Margin} = \text{Corr. Ampl.} - \text{ICES-003 Limit}$$

4.5 Environmental Conditions

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

4.6 Summary of Test Results/Plots

According to the data in section 4.6, the EUT complied with the ICES-003 Class B standards, and had the worst margin is:

-14.92 dB at 64.6594 MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

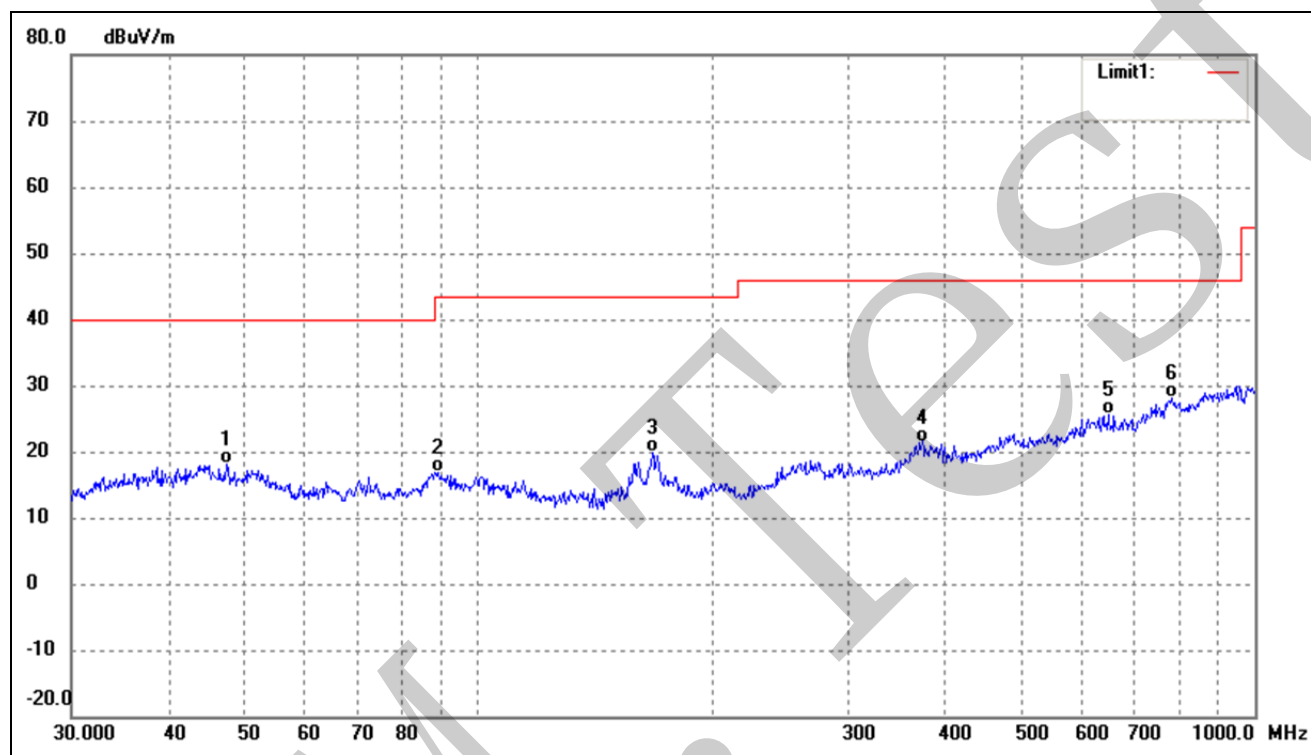
EUT: X-plore 8000 Multi-Unit Charger

Tested Model: GT-93600SHG3050

Operating Condition: TM1

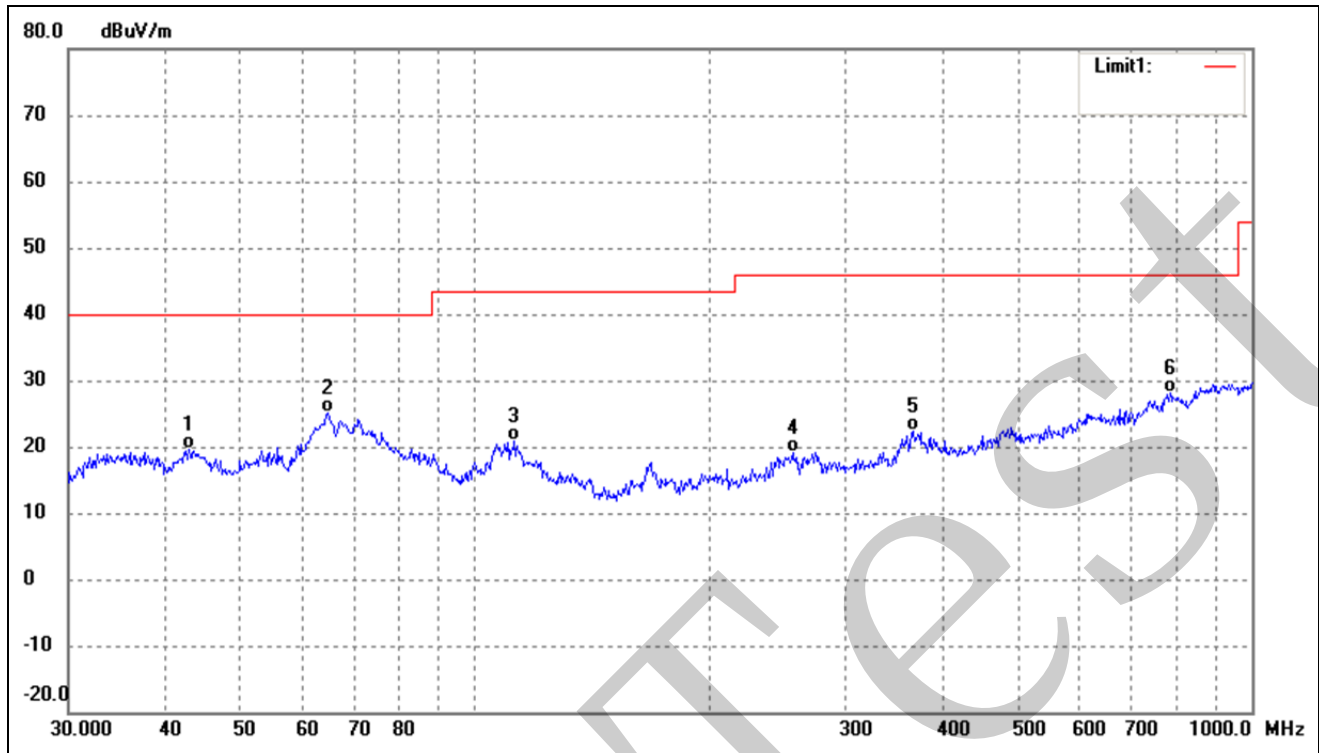
Comment: AC 120V/60Hz

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	47.4918	28.69	-10.65	18.04	40.00	-21.96	355	100	QP
2	88.9639	30.71	-13.92	16.79	43.50	-26.71	129	100	QP
3	167.8243	34.47	-14.71	19.76	43.50	-23.74	205	100	QP
4	373.3112	28.80	-7.30	21.50	46.00	-24.50	162	100	QP
5	647.3856	28.91	-3.39	25.52	46.00	-20.48	341	100	QP
6	782.3453	27.67	0.50	28.17	46.00	-17.83	195	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	42.8998	29.99	-10.43	19.56	40.00	-20.44	155	100	QP
2	64.6594	39.96	-14.88	25.08	40.00	-14.92	321	100	QP
3	112.5244	33.71	-12.84	20.87	43.50	-22.63	16	100	QP
4	256.5211	29.43	-10.22	19.21	46.00	-26.79	213	100	QP
5	366.8231	30.09	-7.59	22.50	46.00	-23.50	299	100	QP
6	785.0935	27.67	0.40	28.07	46.00	-17.93	352	100	QP

EXHIBIT 1 - PRODUCT LABELING

Proposed IC Label Format

CAN ICES-3 (B) / NMB-3 (B)

Specifications: Text is Black in color and is justified. The label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. When the dimension of the device is too small or it is otherwise not practical to place the label on the ITE, the label shall be placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Proposed Label Location on EUT

IC Label Location



EXHIBIT 2 - EUT PHOTOGRAPHS

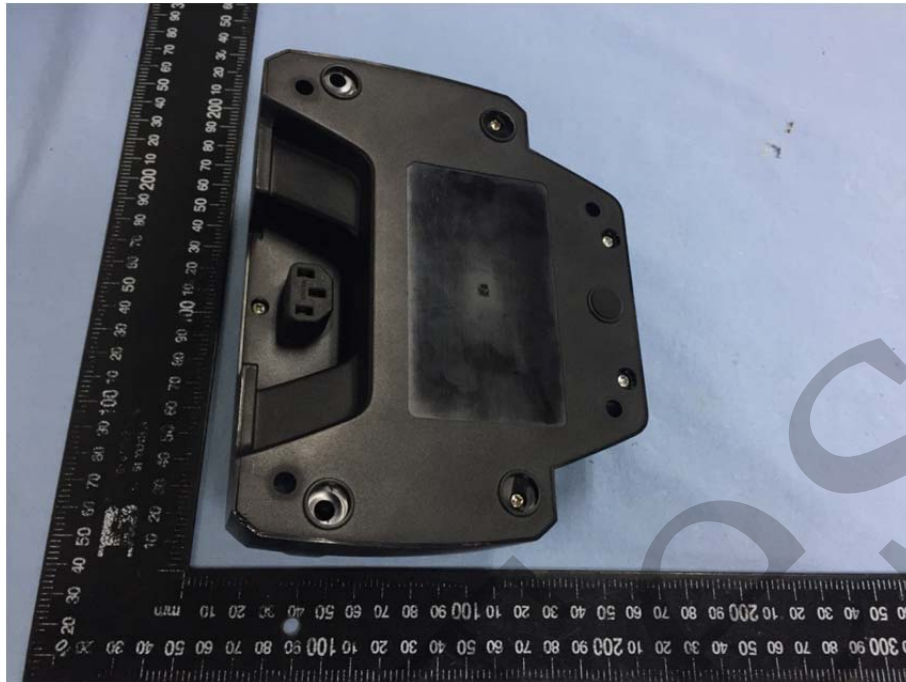
EUT View 1



EUT View 2



EUT View 3



EUT View 4

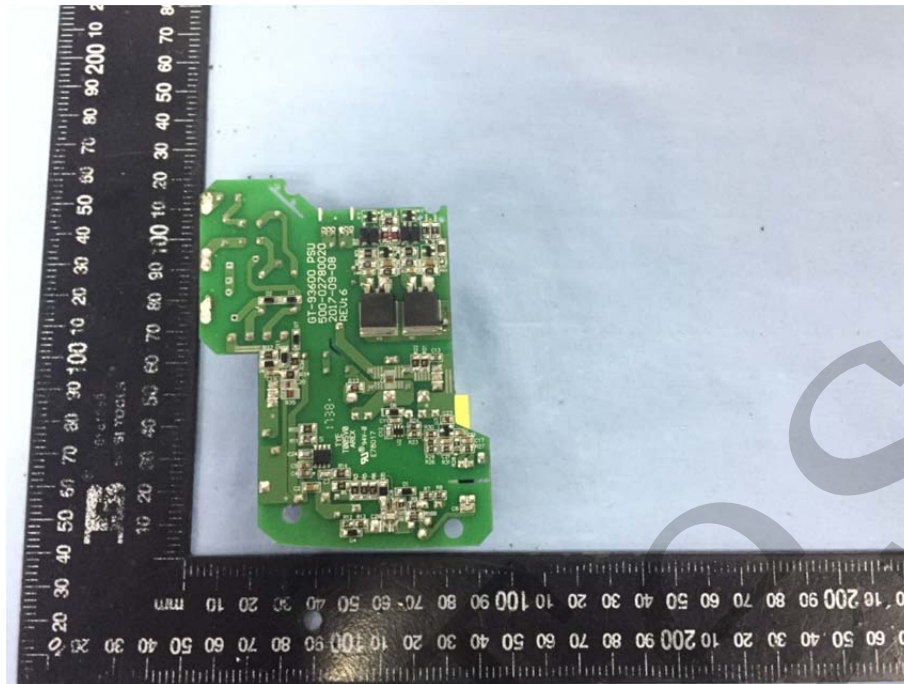
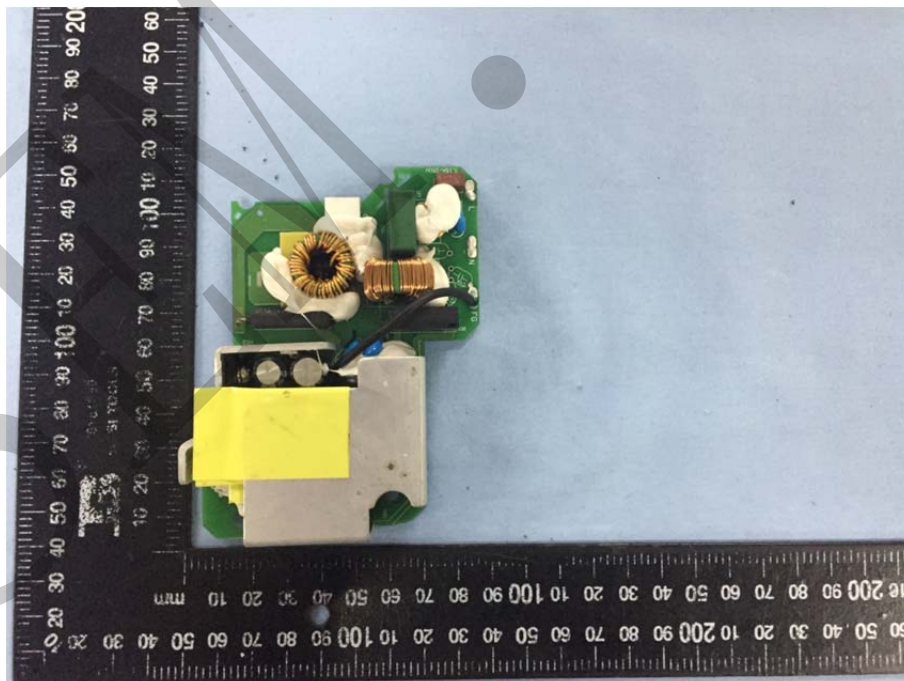


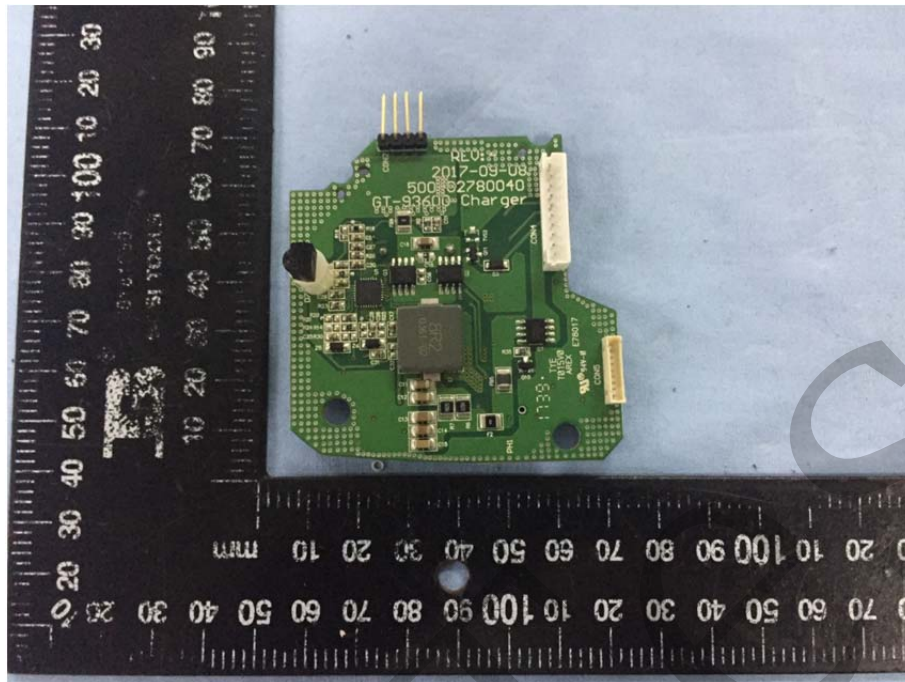
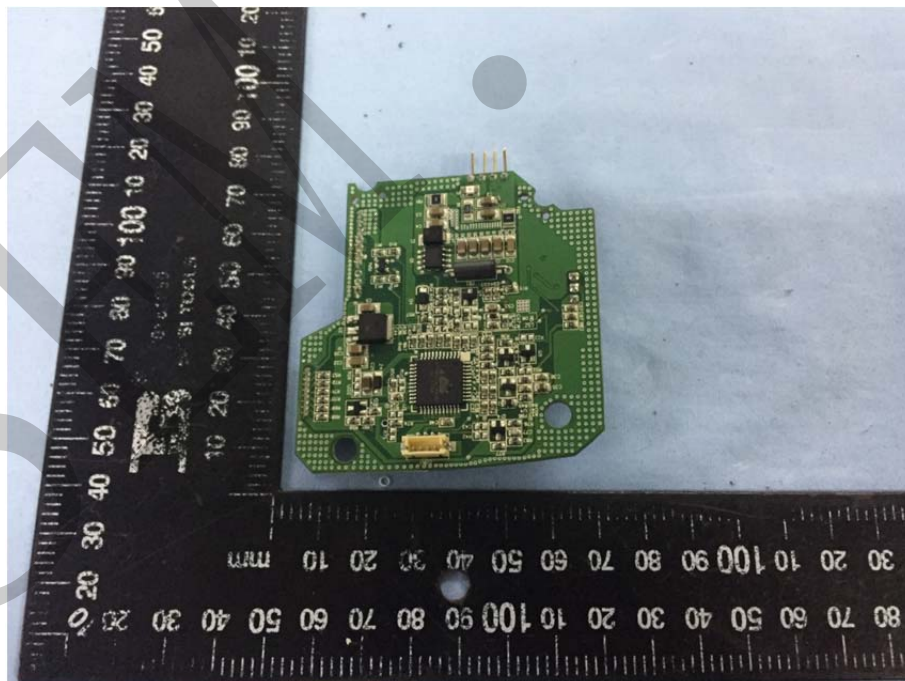
EUT View 5



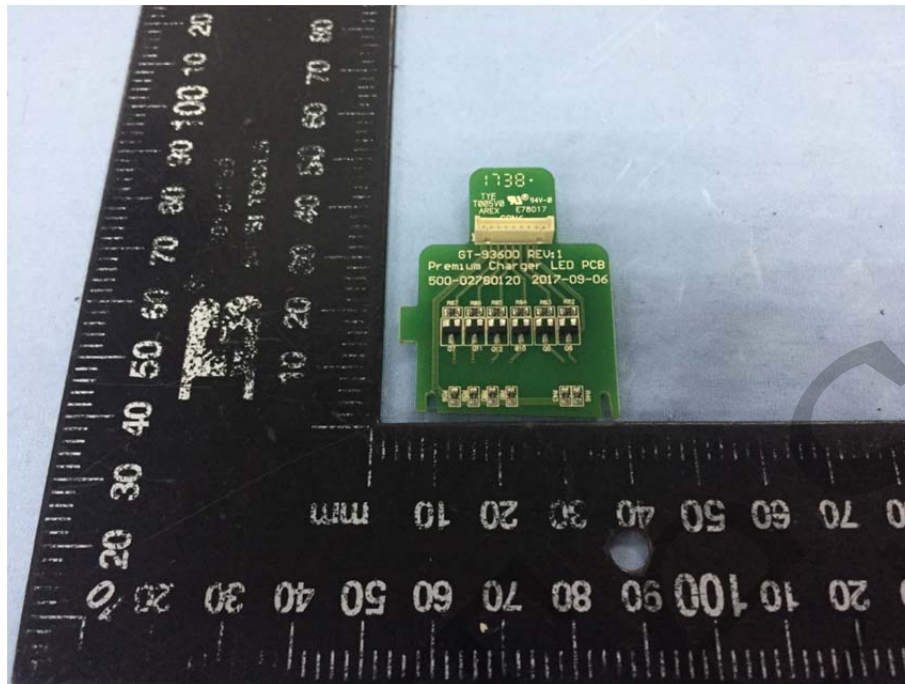
EUT Housing and Board View 1



Solder Board-Component View 1**Solder Board-Component View 2**

Solder Board-Component View 3**Solder Board-Component View 4**

Solder Board-Component View 5



Solder Board-Component View 6

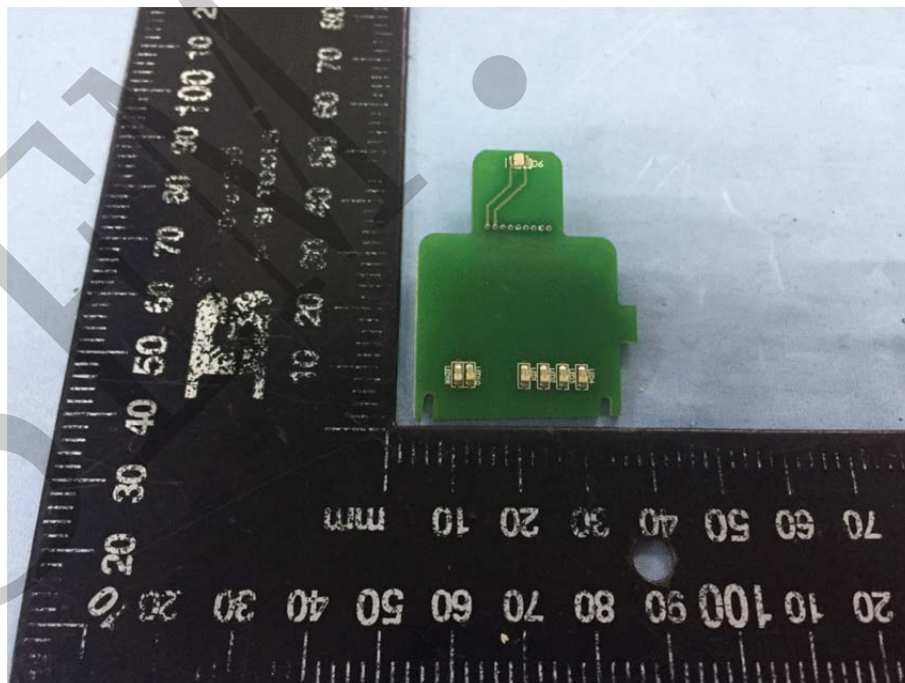
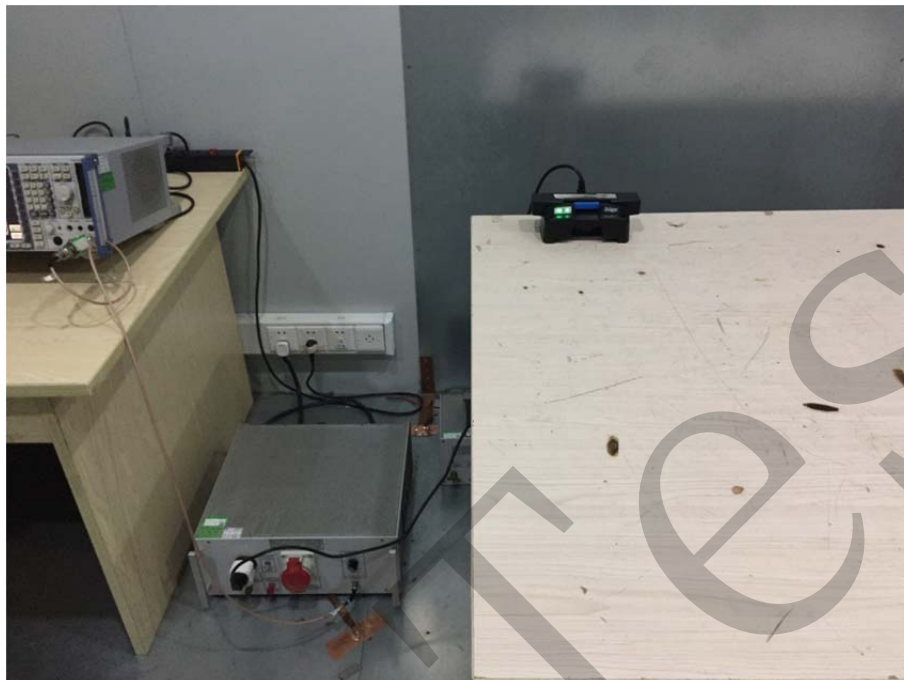
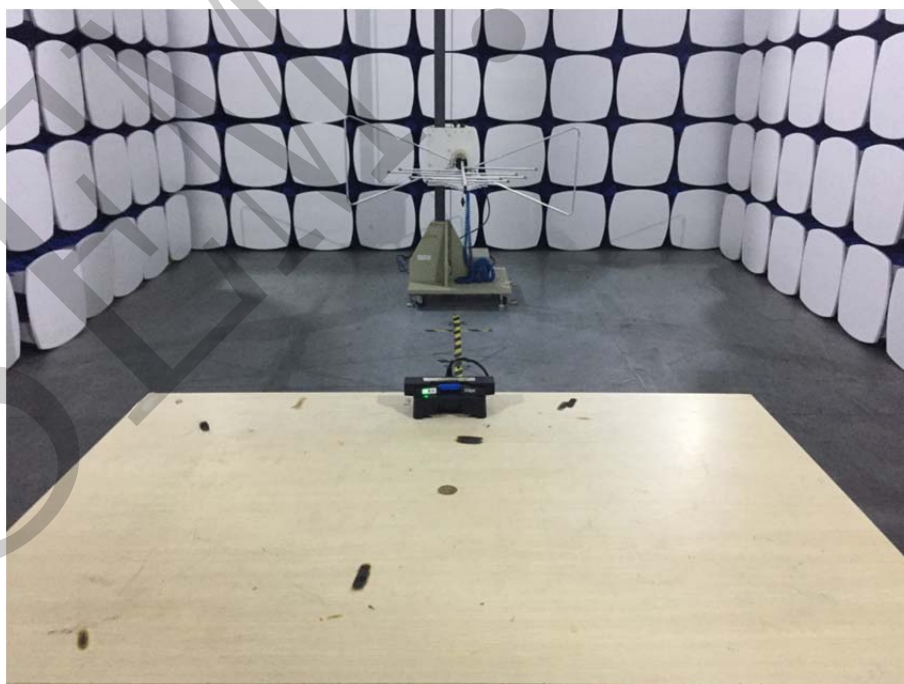


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View



Radiation Emission Test View



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