ICES-003
Measurement and Test Report

For

GlobTek, Inc.

186 Veterans Dr. Northvale, NJ 07647 USA

Test Standards:	ICES-003 Issue 5 (2012-08)
Product Description:	Power Adapter
Tested Model:	GT(M or -)21097-X-Y.Y series
Report No.:	STR15128145C
Tested Date:	2015-12-17 to 2015-12-23
Issued Date:	2015-12-23
Tested By:	Grace Chen / Engineer
Reviewed By:	Silin Chen / EMC Manager
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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.

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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:	Power Adapter
Trade Name:	GlobTek
Model No.:	GT(M or -)21097-X-Y.Y series
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer. *GT(M or -)21097-X-Y.Y series* *Where "M" or "-" for market identification and not related to safety.* *"X" denotes the standard output power and voltage, which can be 2003, 3005, 4509, 5012, 5015, 5018, 5024 or 5048, the former two numbers of figures indicate max. output power, 50W max. and the latter two numbers of figures indicate standard model output voltage.* *"-Y.Y" is optional variable or blank for specifying output voltage deviation from standard model; which means subcontracting volts from standard output voltage in 0.1V increments or blank; 0.1min.to 23.9 max., actual voltage range is 3.3-48V only.*	

Technical Characteristics of EUT	
Rated Voltage:	AC 100-240V, 50-60Hz
Rated Current:	Max 1.6A
Rated Power:	Max 50W
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 5 August 2012, Information Technology Equipment (ITE) – Limits and methods of measurement.

The objective is to determine compliance with ICES-003 I Issue 5 August 2012.

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.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

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.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

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	Working	Connected to the load

EUT Cable List and Details

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

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Resistance * 1	/	/	/

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 Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

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2. SUMMARY OF TEST RESULTS

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

N/A: not applicable

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3. Conducted Disturbance

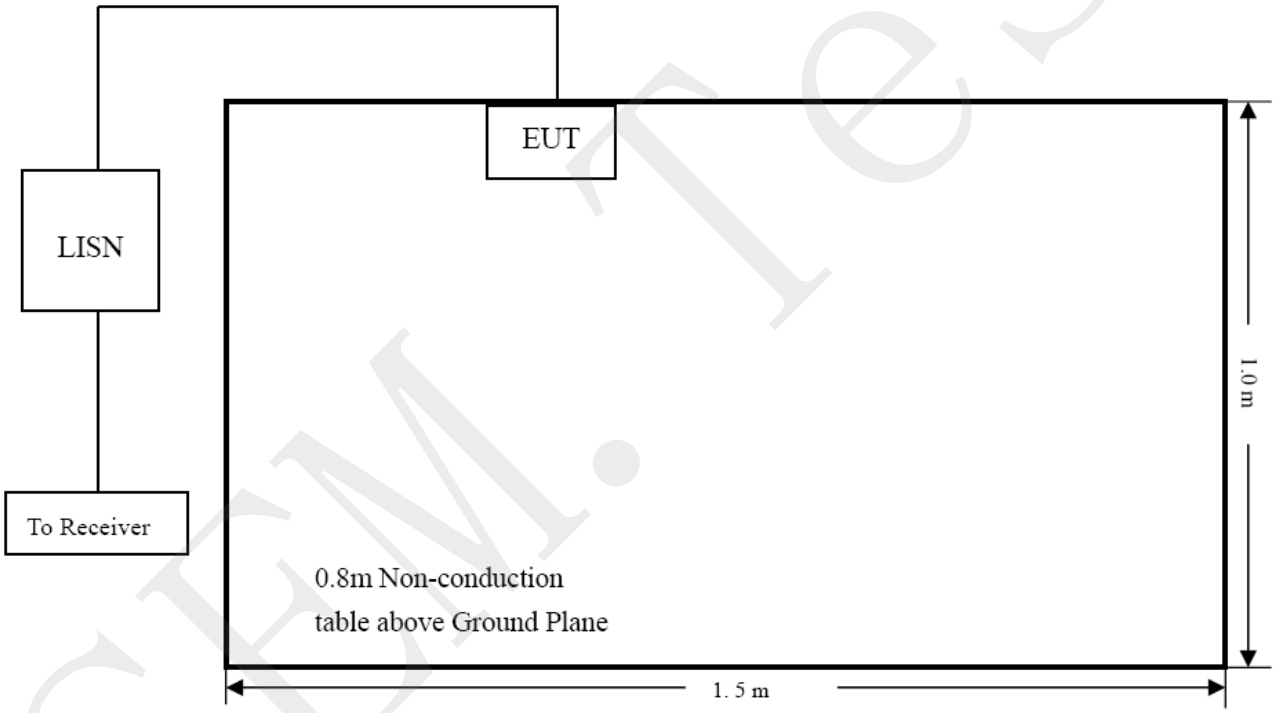
3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 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



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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:

-2.21 dB at **0.2060 MHz** in the **Neutral**, **Average** detector, **GT-21097-3005** Model, 0.15-30MHz

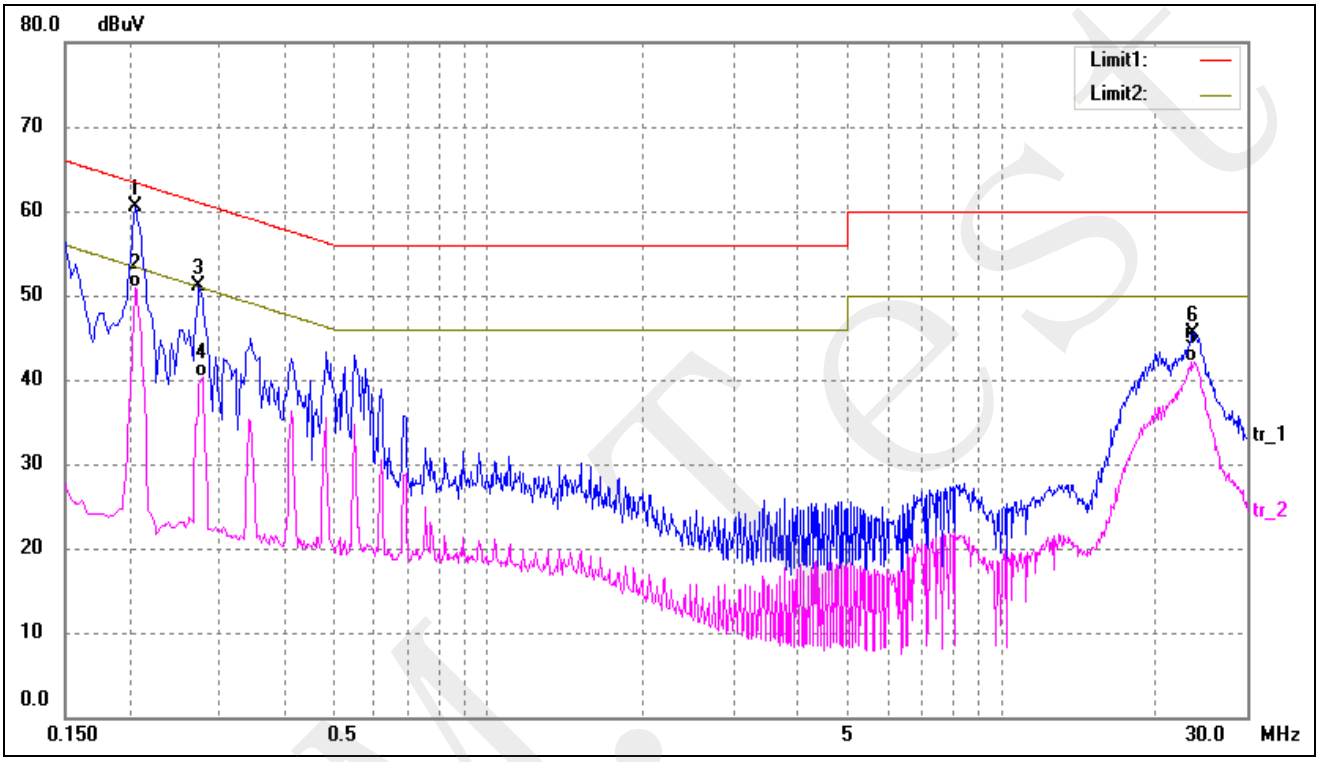
3.6 Conducted Emissions Test Data

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Plot of Conducted Emissions Test Data

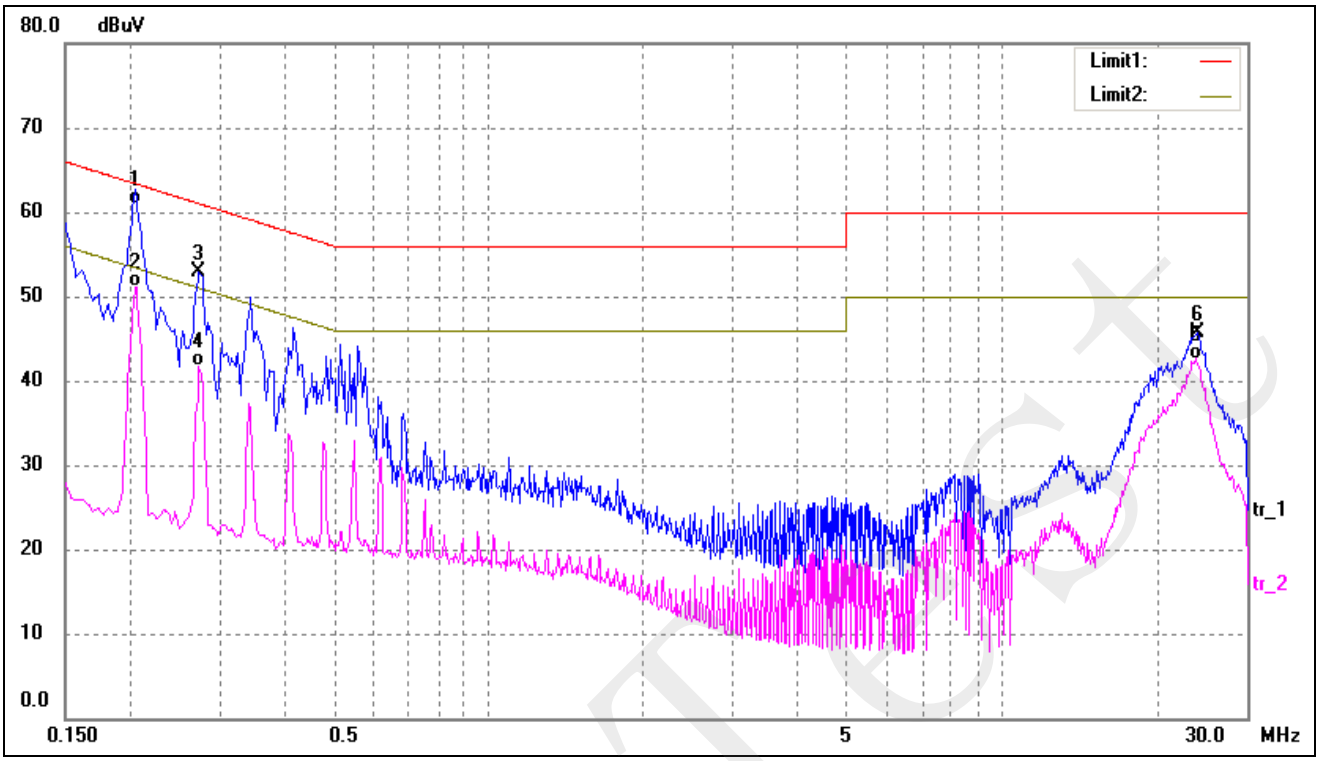
EUT: *Power Adapter*
Tested Model: *GT-21097-3005*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2060	51.04	9.50	60.54	63.37	-2.83	peak
2*	0.2060	41.32	9.50	50.82	53.37	-2.55	AVG
3	0.2740	41.66	9.50	51.16	61.00	-9.84	peak
4	0.2780	30.86	9.50	40.36	50.88	-10.52	AVG
5	23.3900	29.67	12.46	42.13	50.00	-7.87	AVG
6	23.5260	32.98	12.51	45.49	60.00	-14.51	peak

Test Specification: *Neutral*

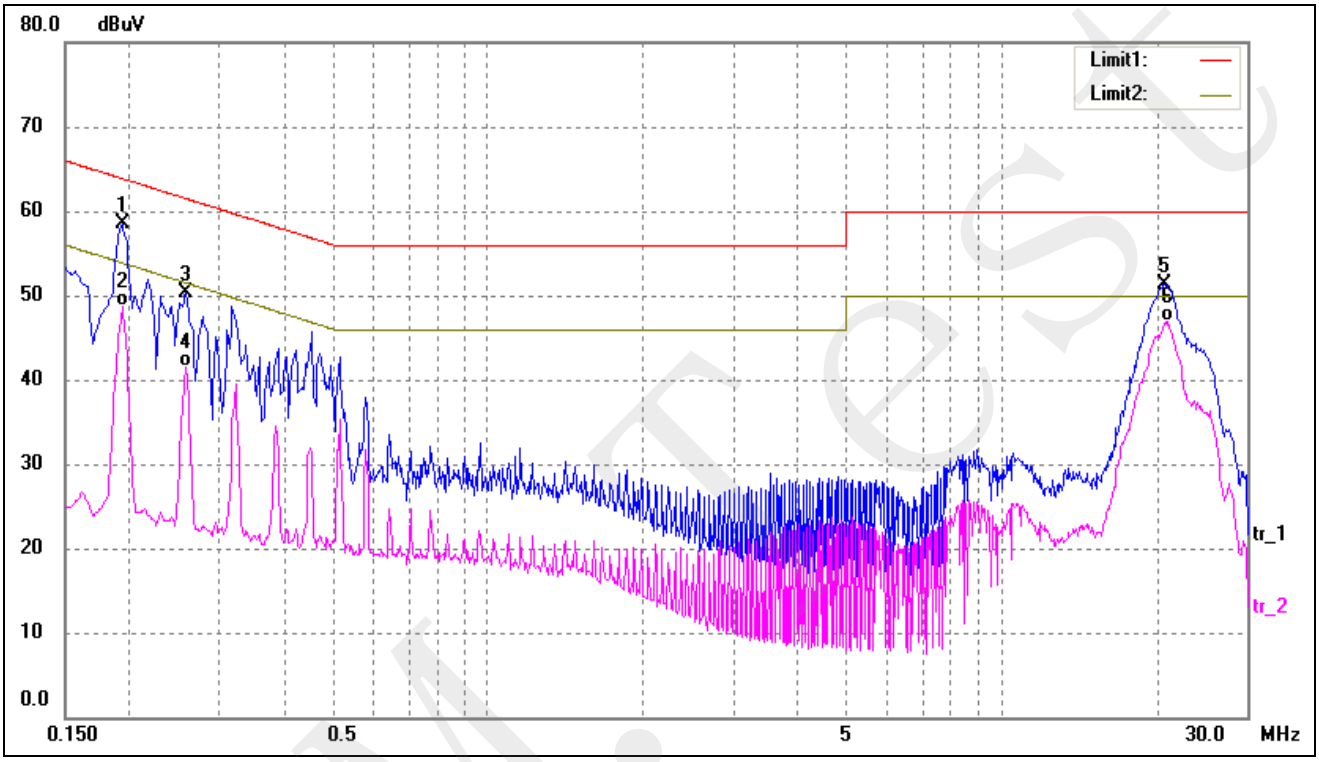


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2060	51.43	9.50	60.93	63.37	-2.44	QP
2*	0.2060	41.66	9.50	51.16	53.37	-2.21	AVG
3	0.2740	43.47	9.50	52.97	61.00	-8.03	peak
4	0.2740	32.11	9.50	41.61	51.00	-9.39	AVG
5	23.8380	29.99	12.61	42.60	50.00	-7.40	AVG
6	24.0420	33.05	12.68	45.73	60.00	-14.27	peak

Plot of Conducted Emissions Test Data

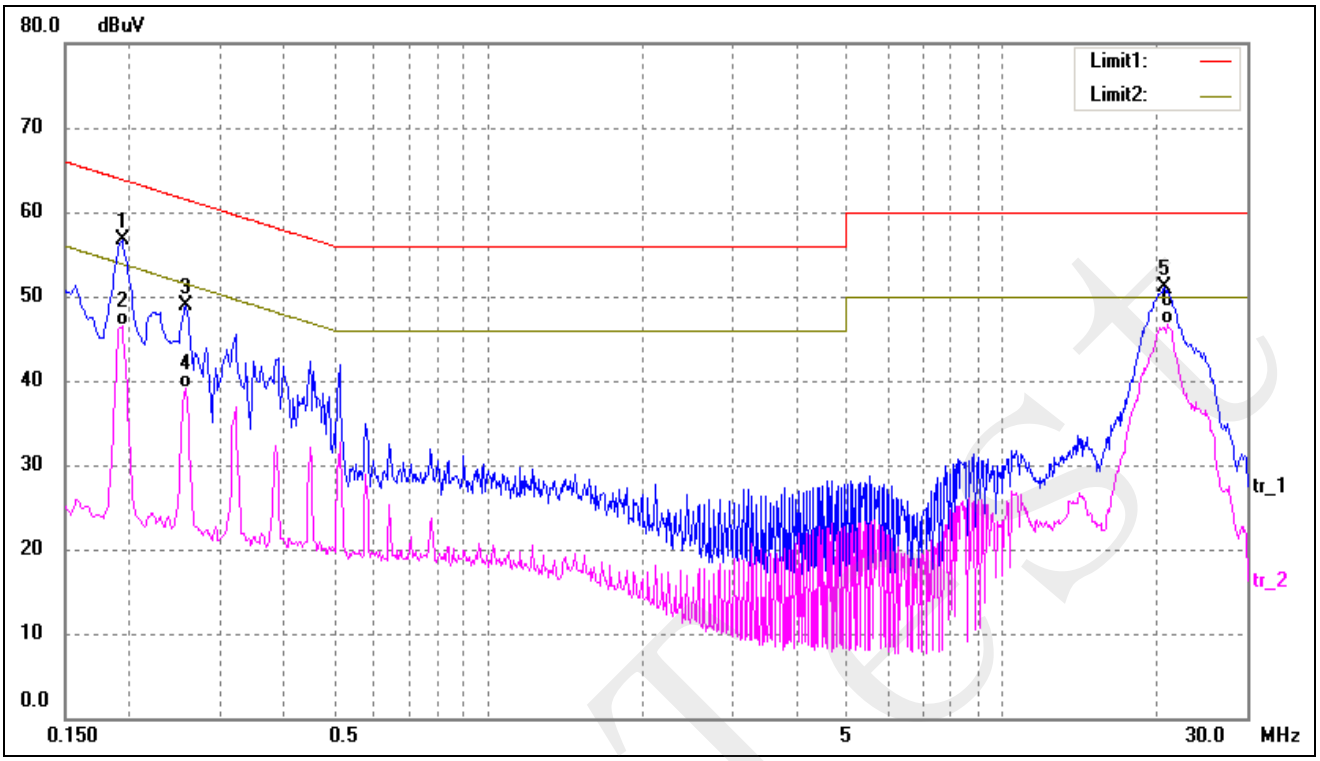
EUT: *Power Adapter*
Tested Model: *GT-21097-5012*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1940	48.98	9.50	58.48	63.86	-5.38	peak
2	0.1940	39.25	9.50	48.75	53.86	-5.11	AVG
3	0.2580	40.90	9.50	50.40	61.50	-11.10	peak
4	0.2580	32.06	9.50	41.56	51.50	-9.94	AVG
5	20.7260	39.31	12.00	51.31	60.00	-8.69	peak
6*	21.0460	34.88	12.00	46.88	50.00	-3.12	AVG

Test Specification: *Neutral*

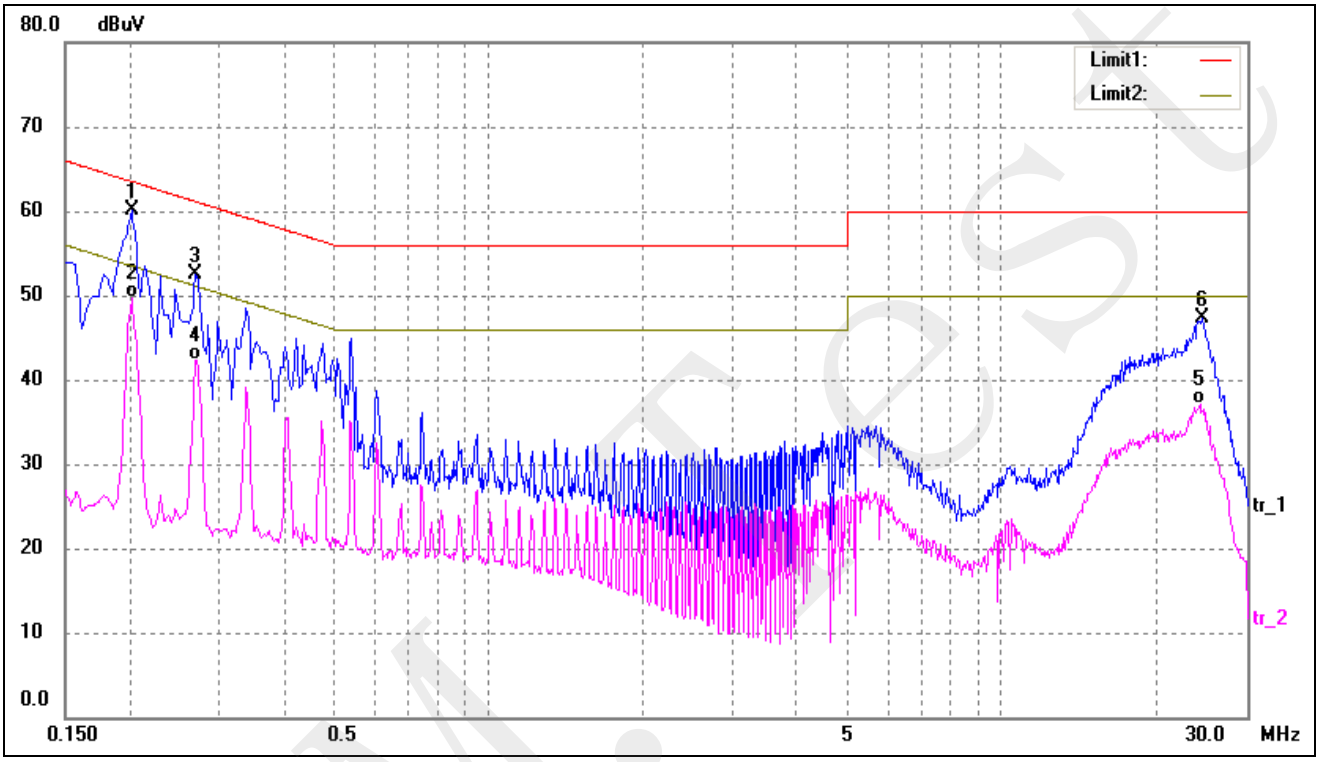


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1940	47.27	9.50	56.77	63.86	-7.09	peak
2	0.1940	37.09	9.50	46.59	53.86	-7.27	AVG
3	0.2580	39.43	9.50	48.93	61.50	-12.57	peak
4	0.2580	29.56	9.50	39.06	51.50	-12.44	AVG
5	20.7380	39.02	12.00	51.02	60.00	-8.98	peak
6*	20.9980	34.64	12.00	46.64	50.00	-3.36	AVG

Plot of Conducted Emissions Test Data

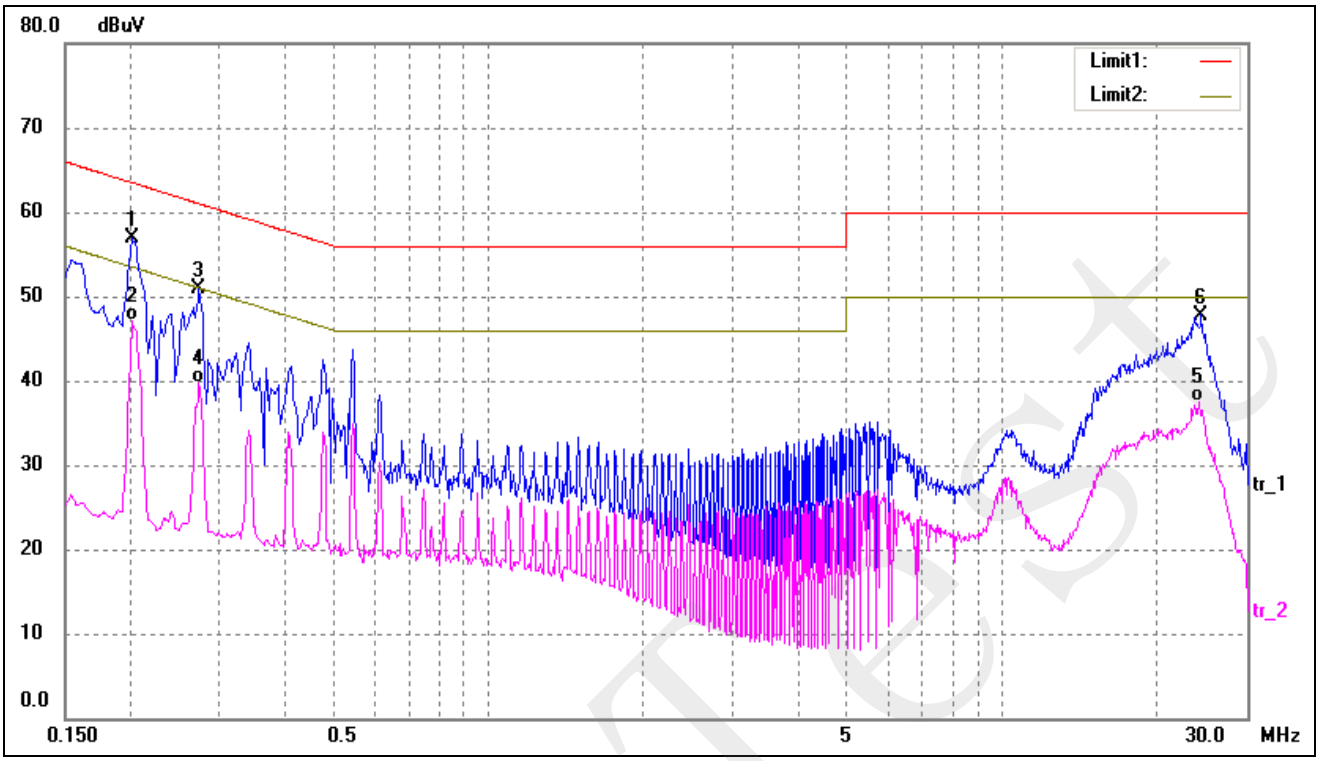
EUT: *Power Adapter*
Tested Model: *GT-21097-5048*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.2020	50.58	9.50	60.08	63.53	-3.45	peak
2	0.2020	40.13	9.50	49.63	53.53	-3.90	AVG
3	0.2700	43.09	9.50	52.59	61.12	-8.53	peak
4	0.2700	32.85	9.50	42.35	51.12	-8.77	AVG
5	24.3900	24.28	12.80	37.08	50.00	-12.92	AVG
6	24.5940	34.36	12.86	47.22	60.00	-12.78	peak

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2020	47.34	9.50	56.84	63.53	-6.69	peak
2*	0.2020	37.52	9.50	47.02	53.53	-6.51	AVG
3	0.2740	41.46	9.50	50.96	61.00	-10.04	peak
4	0.2740	30.12	9.50	39.62	51.00	-11.38	AVG
5	24.1580	24.84	12.72	37.56	50.00	-12.44	AVG
6	24.4980	34.97	12.83	47.80	60.00	-12.20	peak

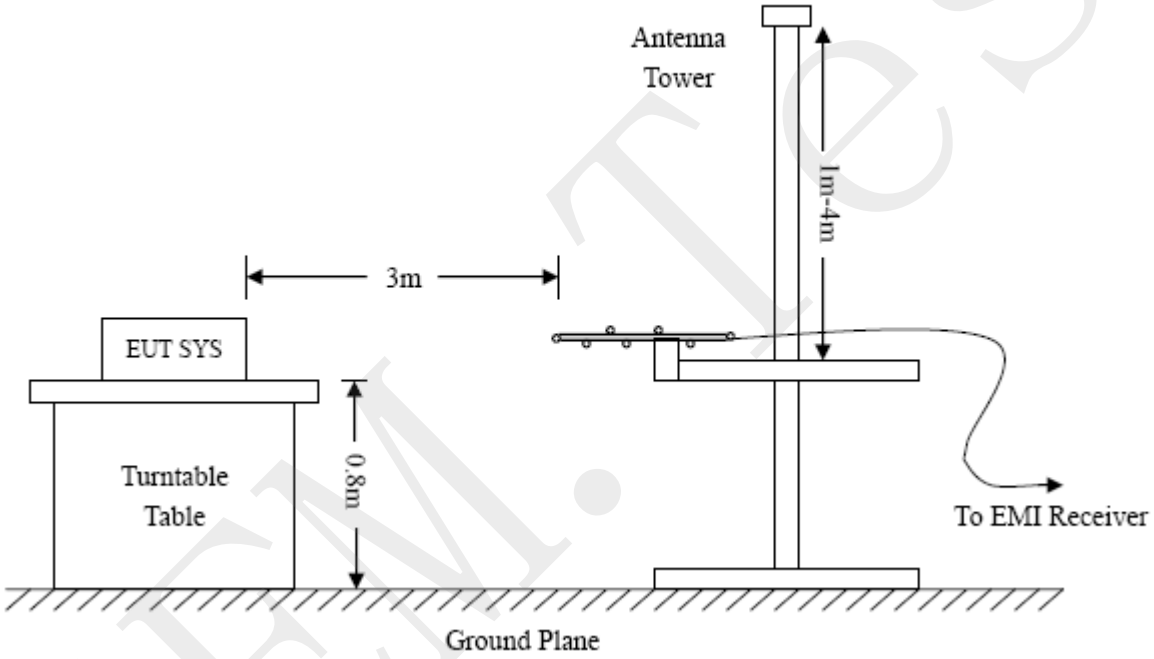
4. Radiated Disturbance

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 is ± 5.10 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.



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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:

Corr. Ampl. = Indicated Reading – 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:

Margin = Corr. Ampl. – 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:

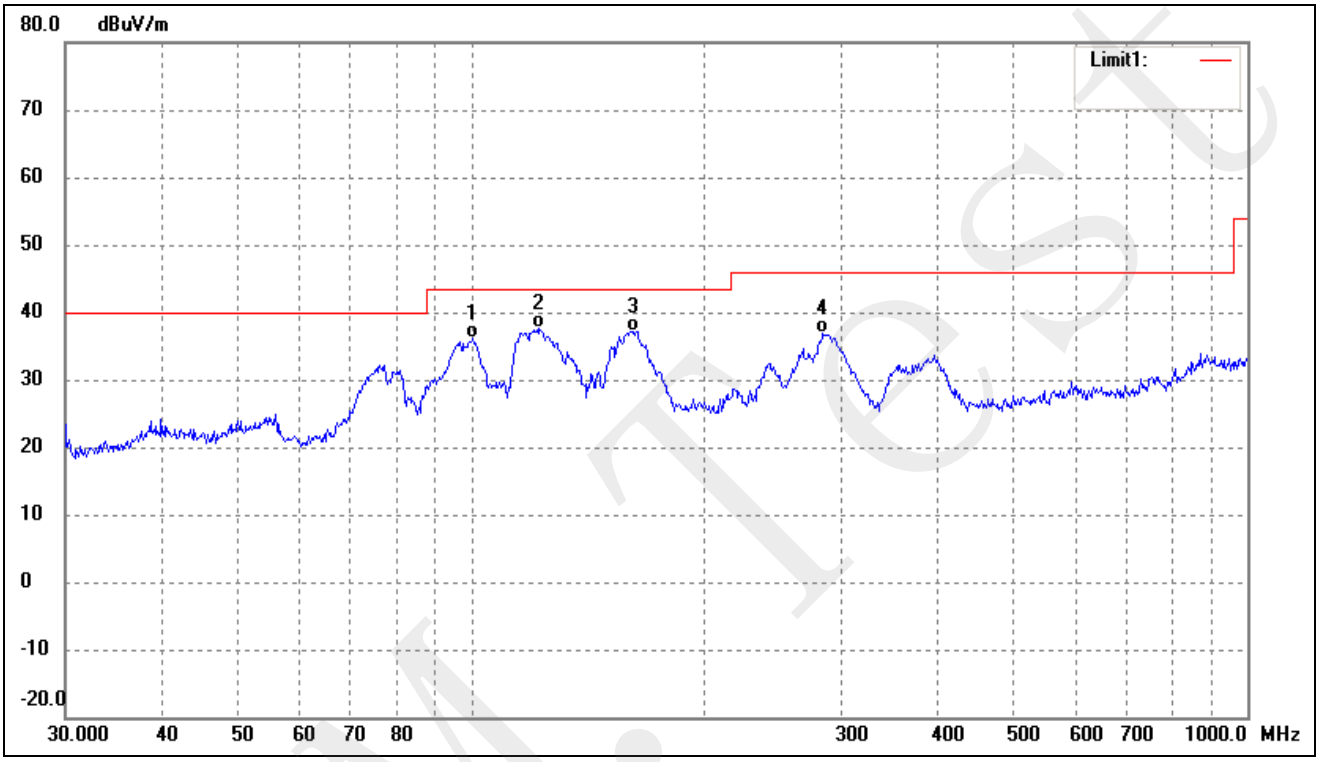
-2.90 dB at **63.0916 MHz** in the **Vertical** polarization, **GT-21097-5012** Model, **30 MHz** to **1 GHz**, **3Meters**

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Plot of Radiated Emissions Test Data

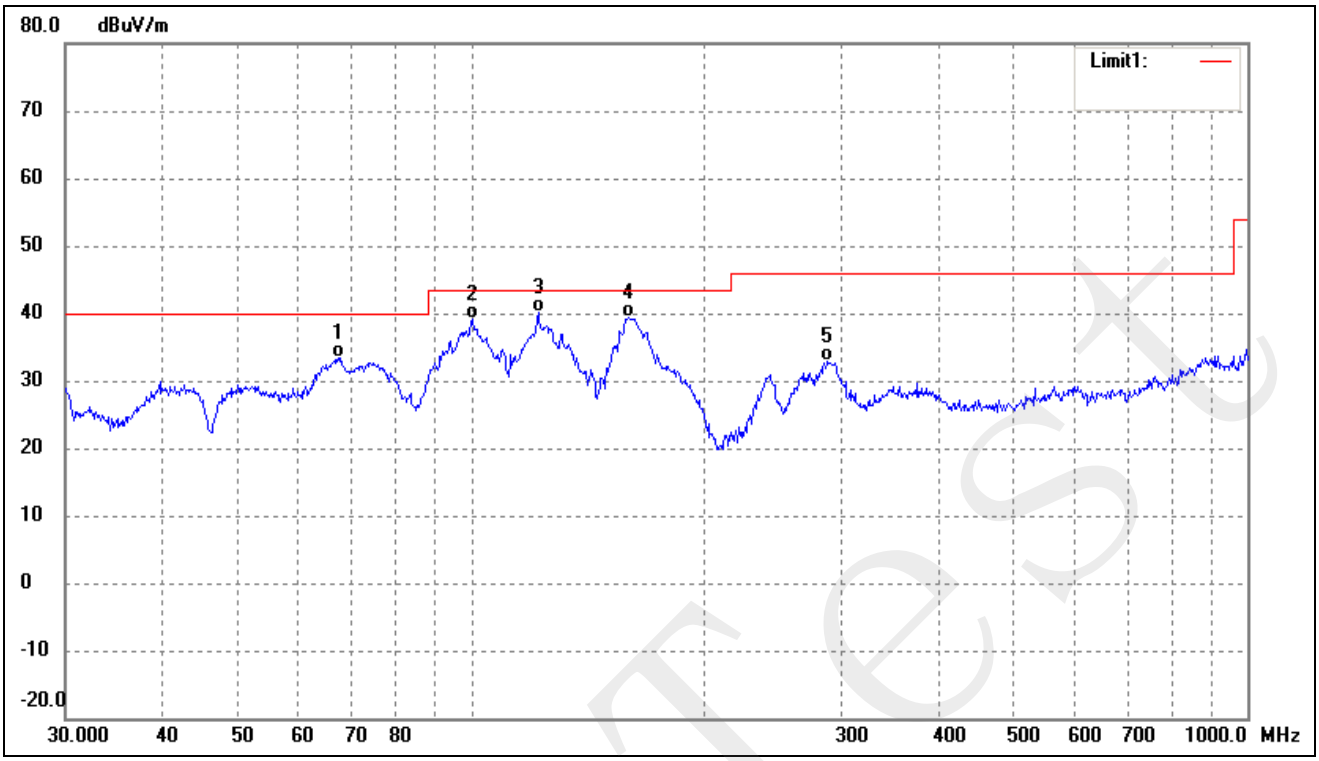
EUT: *Power Adapter*
Tested Model: *GT-21097-3005*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	100.5806	30.13	6.07	36.20	43.50	-7.30	25	100	QP
2	122.4039	33.93	3.82	37.75	43.50	-5.75	87	100	QP
3	161.4742	34.60	2.63	37.23	43.50	-6.27	114	100	QP
4	283.9791	28.21	8.55	36.76	46.00	-9.24	205	100	QP

Test Specification: *Vertical*



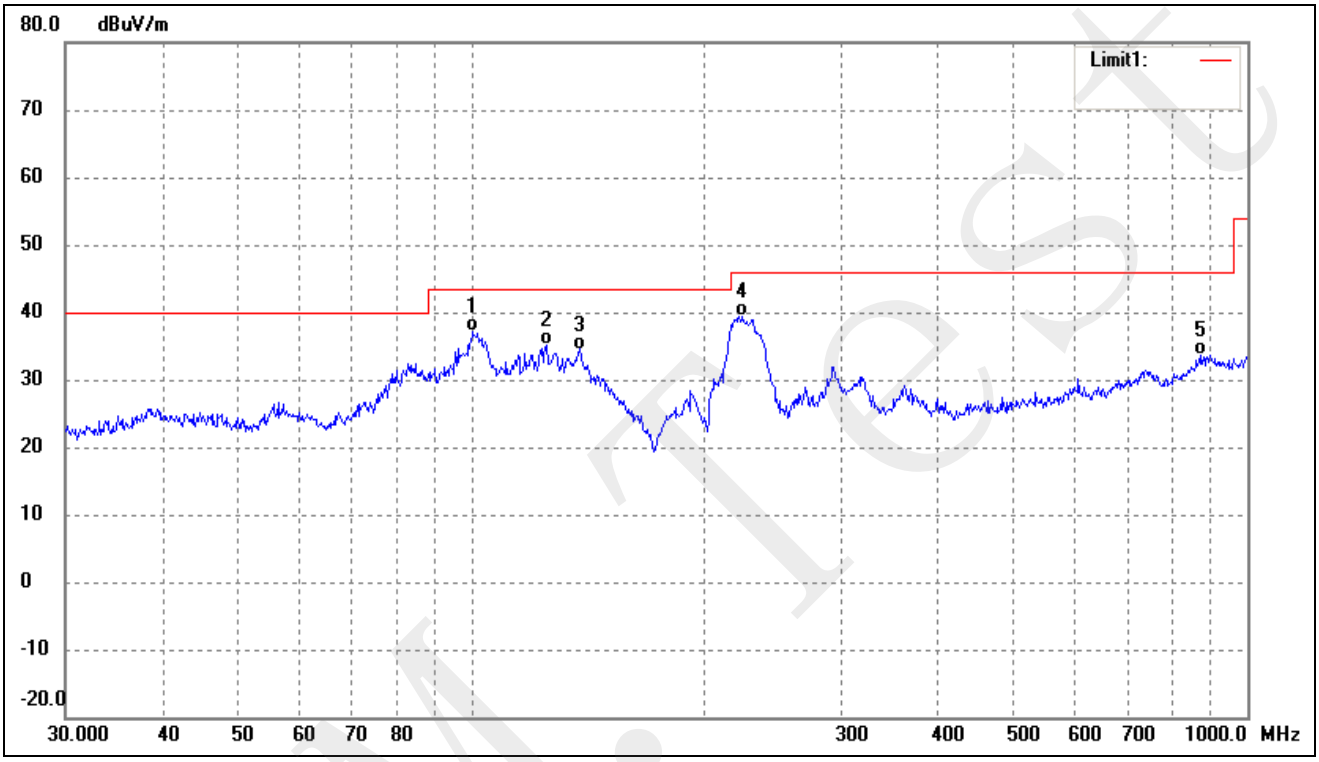
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	67.4381	30.29	3.01	33.30	40.00	-6.70	23	100	QP
2	100.2286	32.99	6.10	39.09	43.50	-4.41	168	100	QP
3	121.9754	36.20	3.85	40.05	43.50	-3.45	144	100	QP
4	159.2250	36.75	2.62	39.37	43.50	-4.13	230	200	QP
5	287.9904	24.17	8.71	32.88	46.00	-13.12	115	200	QP

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Plot of Radiated Emissions Test Data

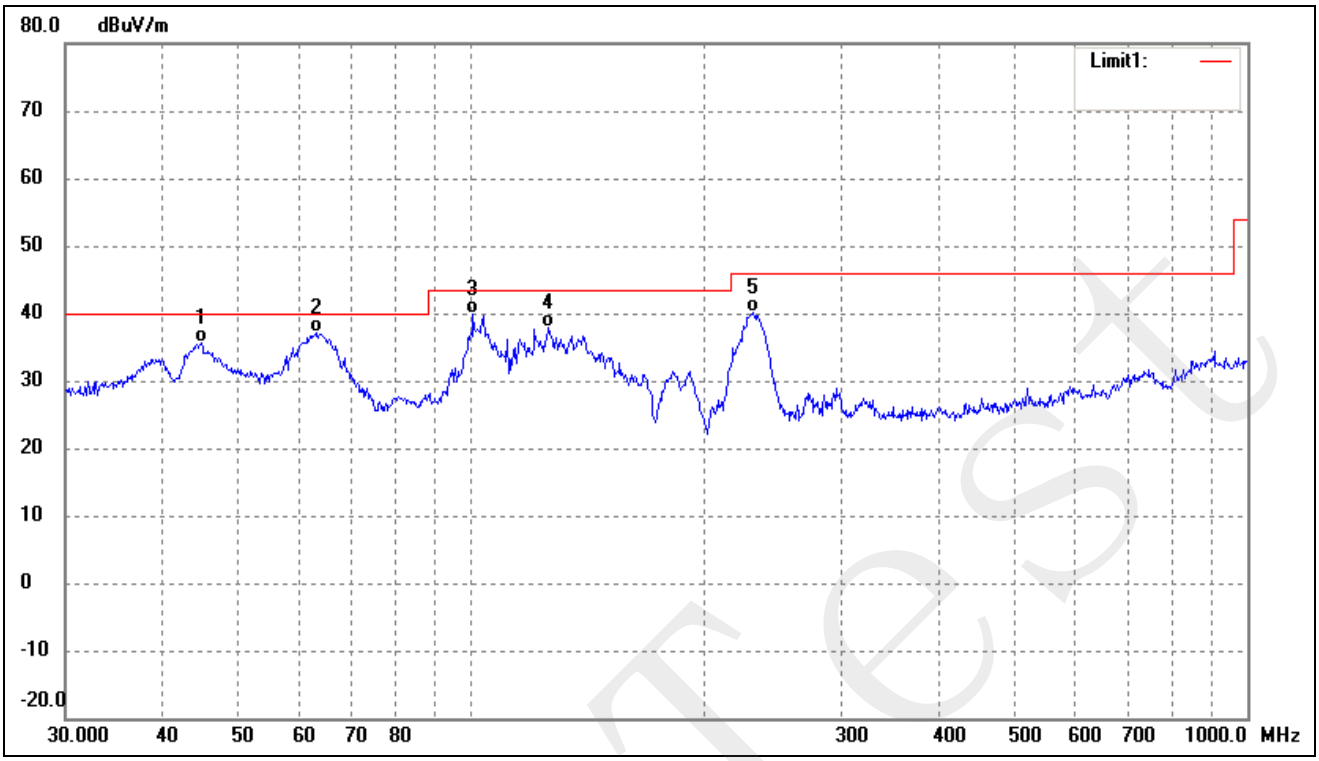
EUT: *Power Adapter*
Tested Model: *GT-21097-5012*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	100.5806	31.09	6.07	37.16	43.50	-6.34	155	100	QP
2	125.0066	31.44	3.61	35.05	43.50	-8.45	42	100	QP
3	137.9028	31.92	2.58	34.50	43.50	-9.00	132	100	QP
4	222.9502	34.08	5.28	39.36	46.00	-6.64	227	200	QP
5	869.1302	17.06	16.54	33.60	46.00	-12.40	0	200	QP

Test Specification: *Vertical*



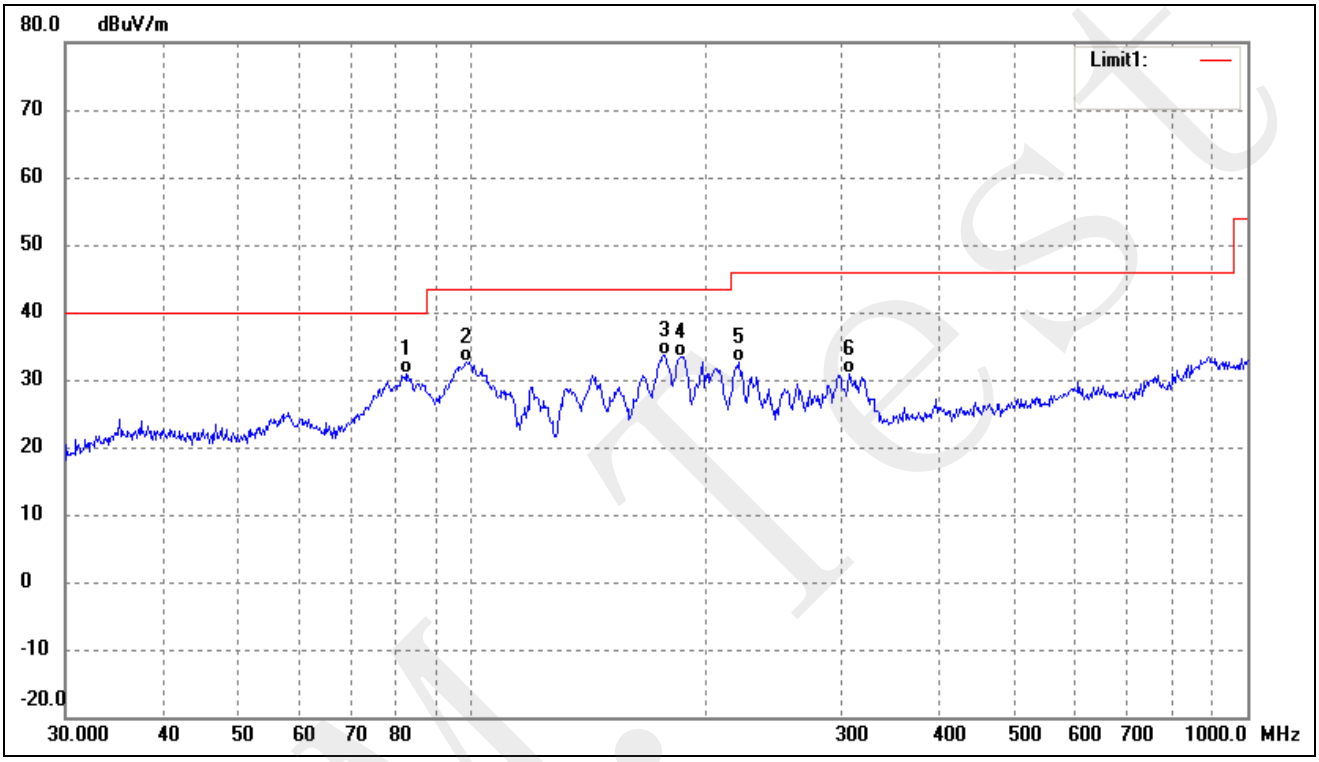
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.9006	27.94	7.79	35.73	40.00	-4.27	25	100	QP
2	63.0916	32.71	4.39	37.10	40.00	-2.90	103	100	QP
3	100.5806	33.86	6.07	39.93	43.50	-3.57	75	100	QP
4	125.8864	34.35	3.54	37.89	43.50	-5.61	195	200	QP
5	230.9068	34.31	5.77	40.08	46.00	-5.92	142	200	QP

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Plot of Radiated Emissions Test Data

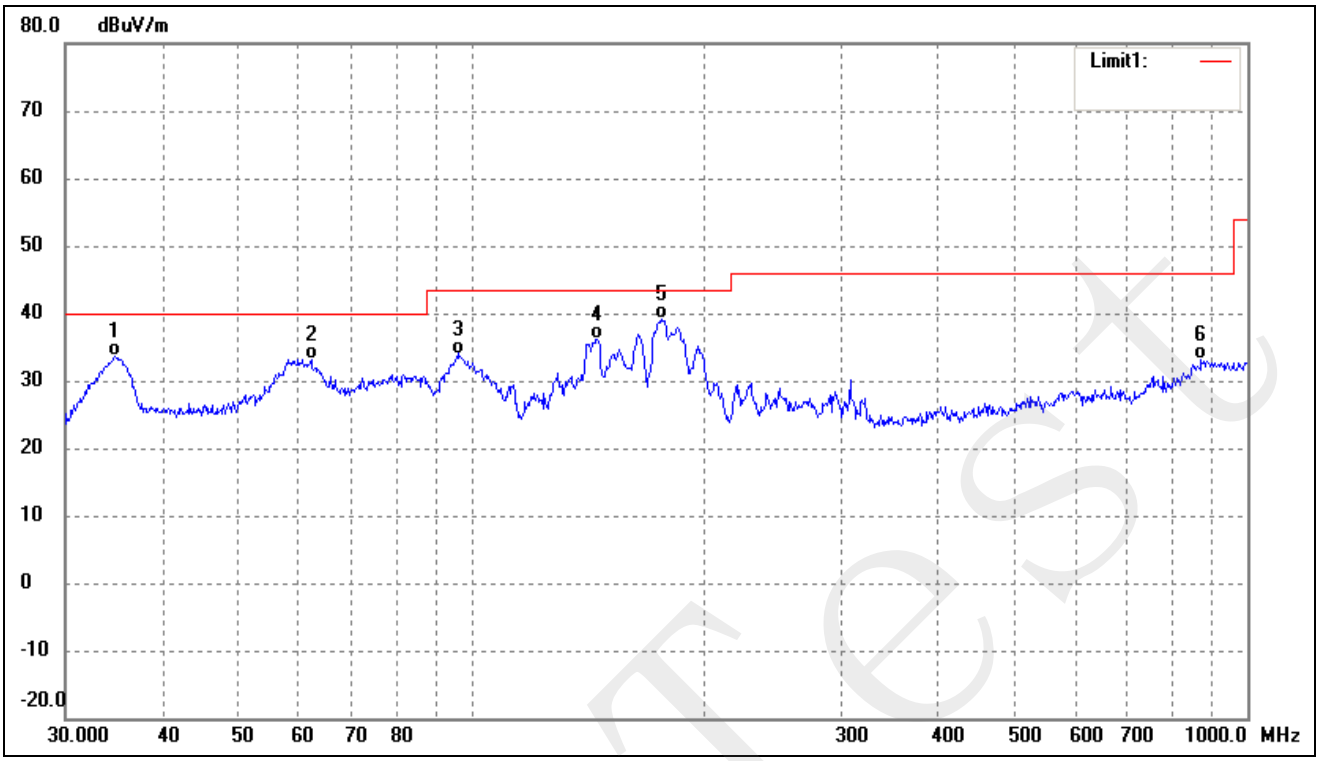
EUT: *Power Adapter*
Tested Model: *GT-21097-5048*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	82.3588	29.26	1.62	30.88	40.00	-9.12	64	100	QP
2	98.4866	26.95	5.75	32.70	43.50	-10.80	172	100	QP
3	177.5092	30.88	2.73	33.61	43.50	-9.89	251	100	QP
4	186.4409	30.41	3.05	33.46	43.50	-10.04	118	100	QP
5	221.3921	27.51	5.20	32.71	46.00	-13.29	203	200	QP
6	306.7537	21.59	9.21	30.80	46.00	-15.20	260	200	QP

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	34.7602	25.24	8.35	33.59	40.00	-6.41	58	100	QP
2	62.2128	28.51	4.67	33.18	40.00	-6.82	135	100	QP
3	96.0986	28.86	5.14	34.00	43.50	-9.50	116	100	QP
4	145.3506	33.60	2.46	36.06	43.50	-7.44	157	100	QP
5	175.6516	36.32	2.72	39.04	43.50	-4.46	207	200	QP
6	872.1832	16.51	16.61	33.12	46.00	-12.88	186	200	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

Tested Model: GT-21097-3005

IC Label Location



Tested Model: GT-21097-5012

IC Label Location



Tested Model: GT-21097-5048

IC Label Location

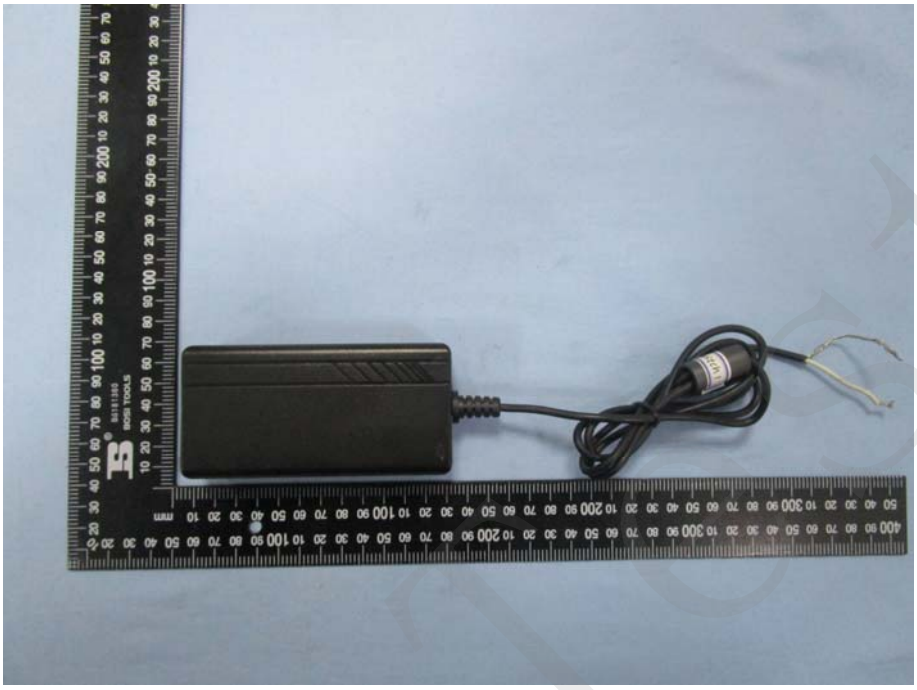


SEM.Test

EXHIBIT 2 - EUT PHOTOGRAPHS

Tested Model: GT-21097-3005

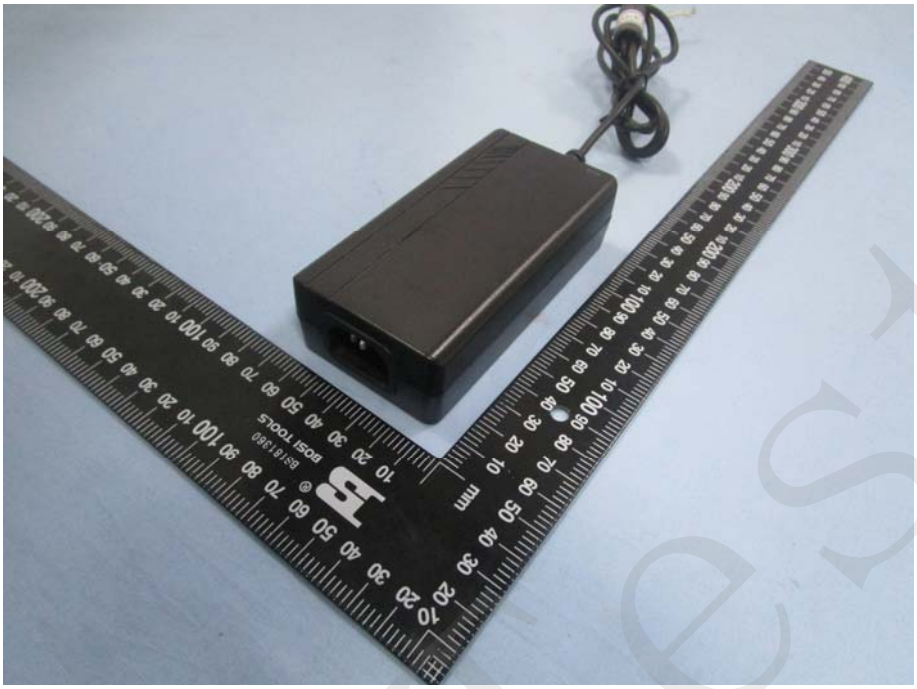
EUT View 1



EUT View 2



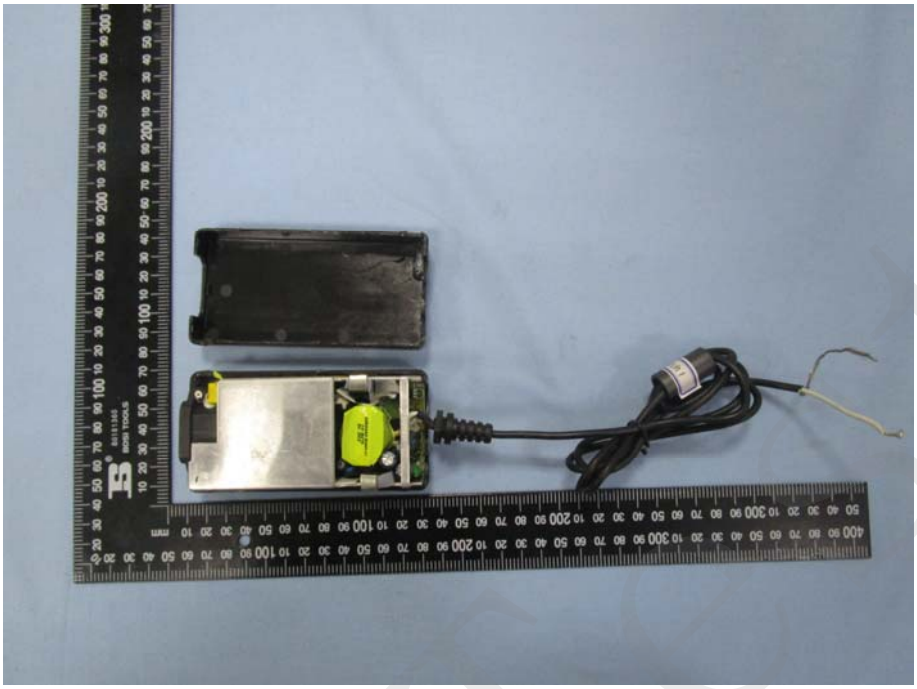
EUT View 3



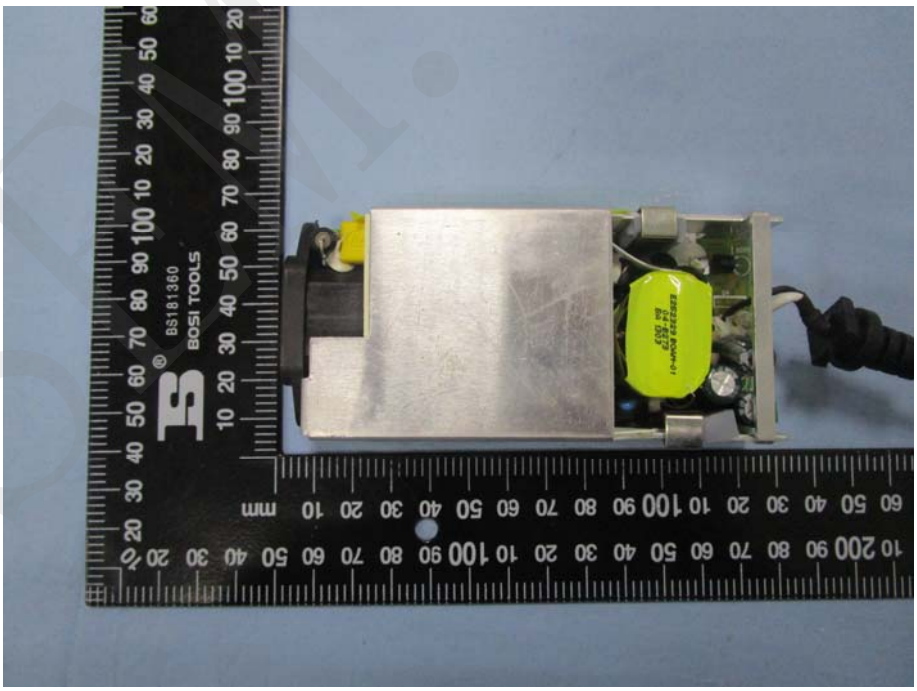
EUT View 4



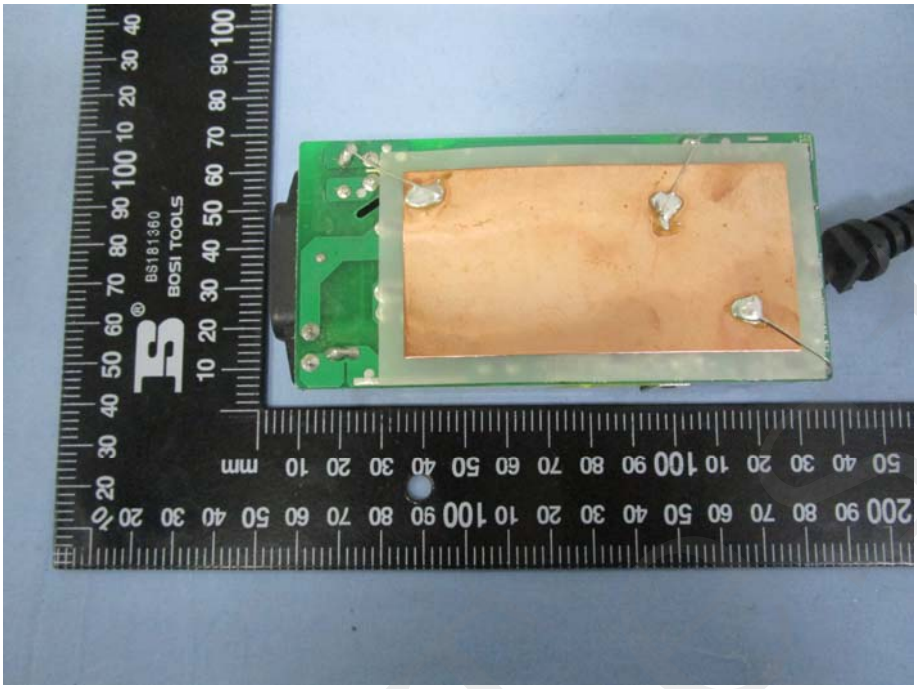
EUT Housing and Board View 1



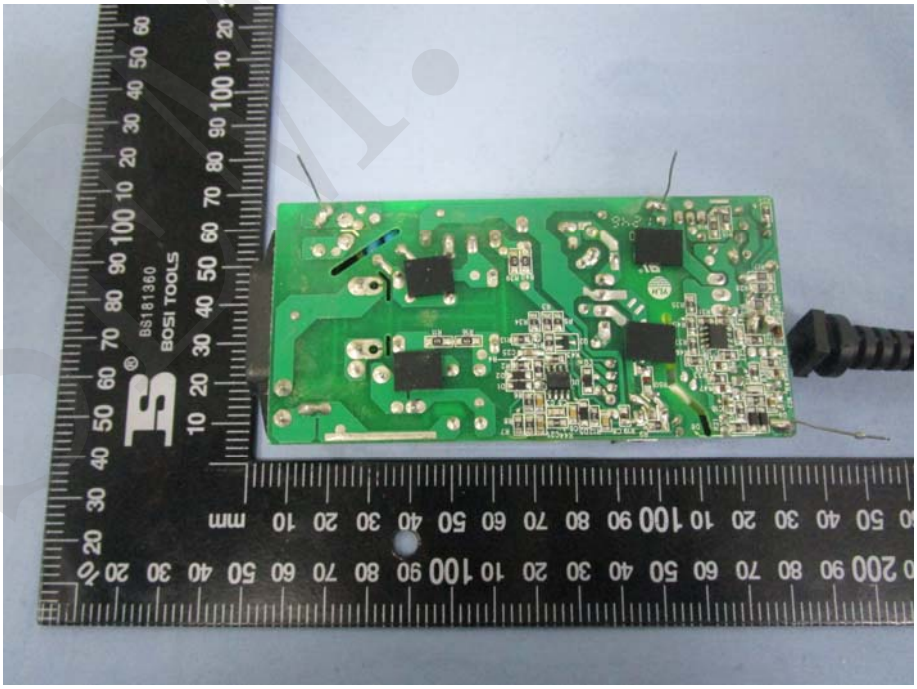
Solder Board-Component View 1



Solder Board-Component View 2



Solder Board-Component View 3

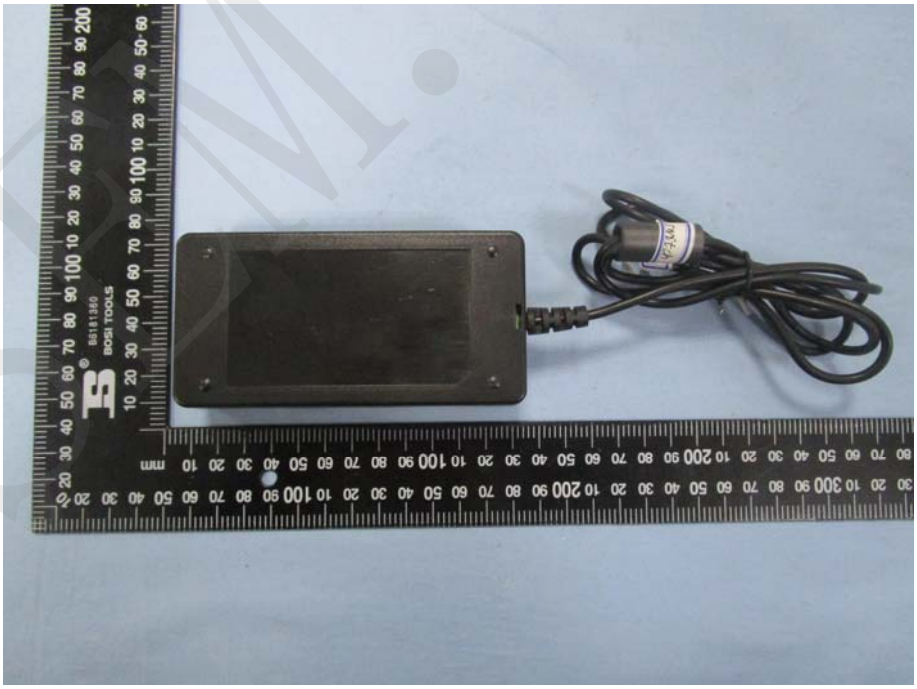


Tested Model: GT-21097-5012

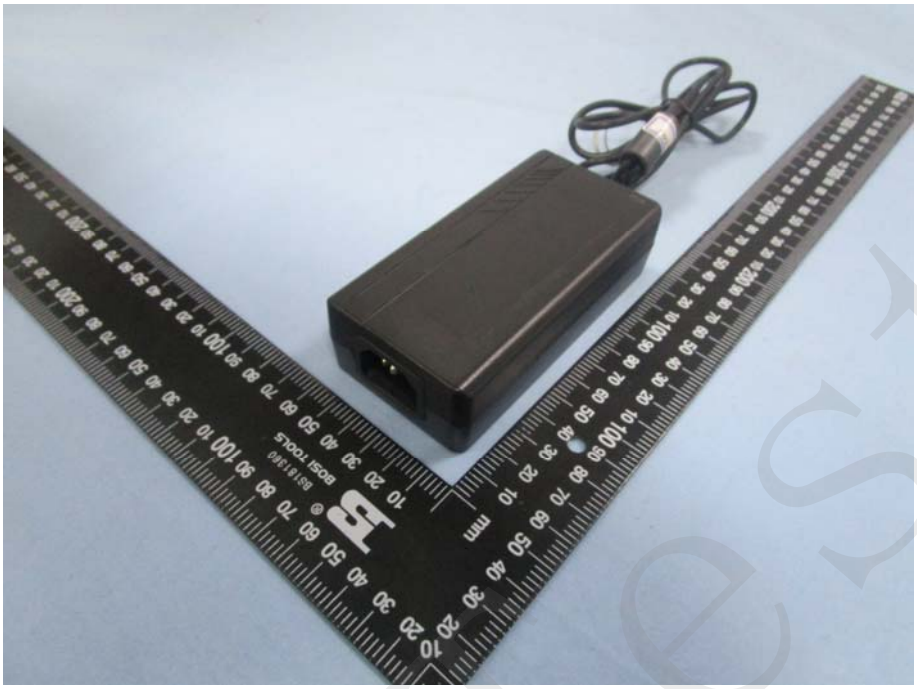
EUT View 1



EUT View 2



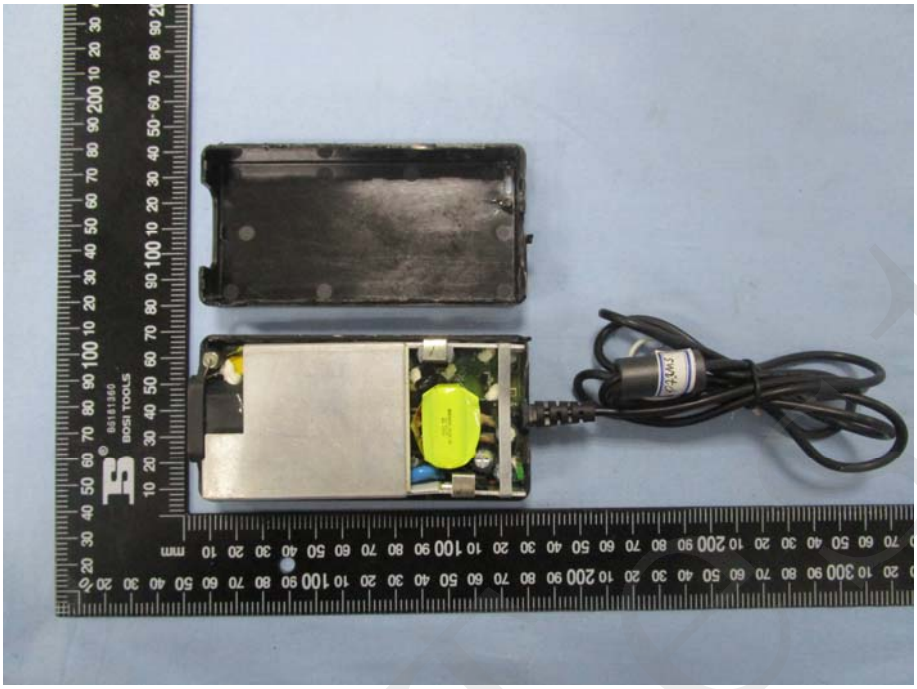
EUT View 3



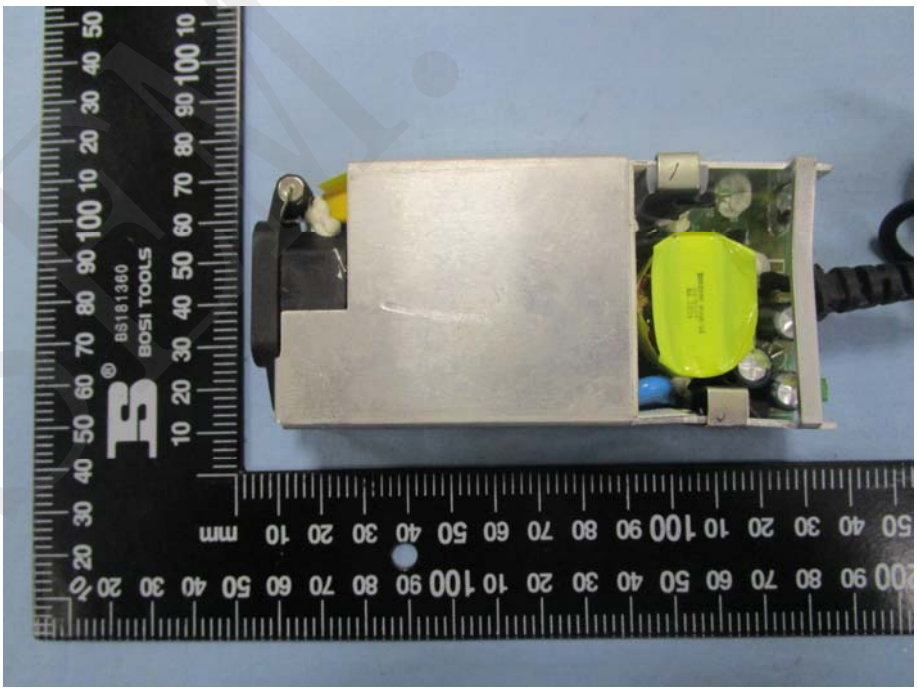
EUT View 4



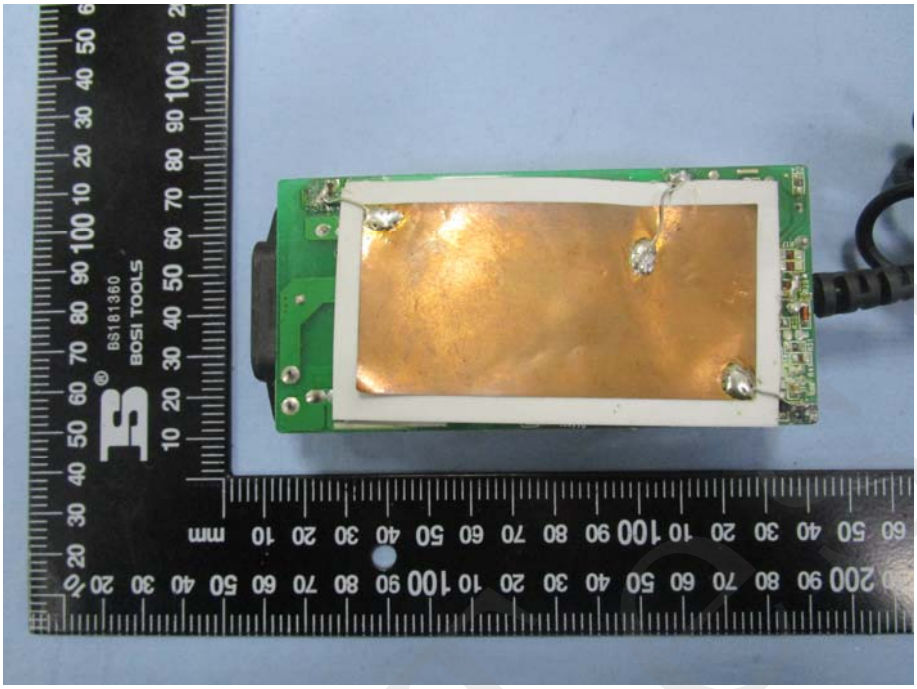
EUT Housing and Board View 1



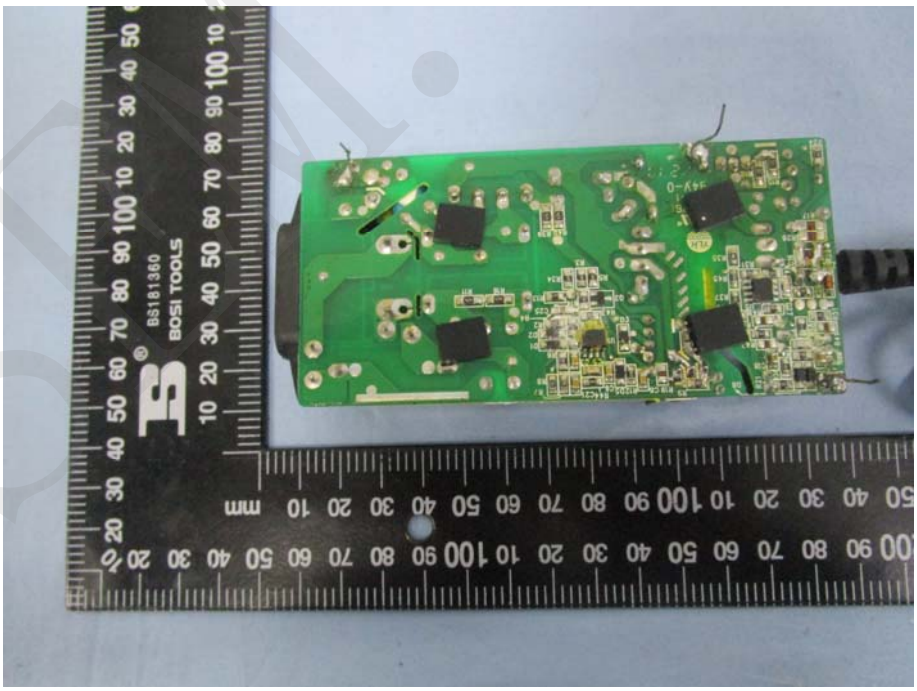
Solder Board-Component View 1



Solder Board-Component View 2

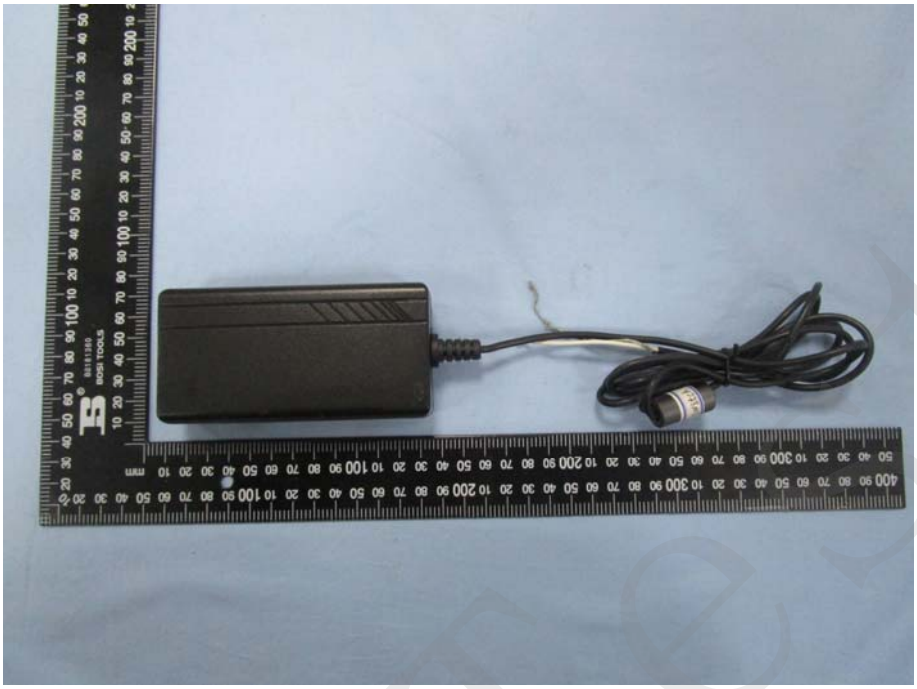


Solder Board-Component View 3

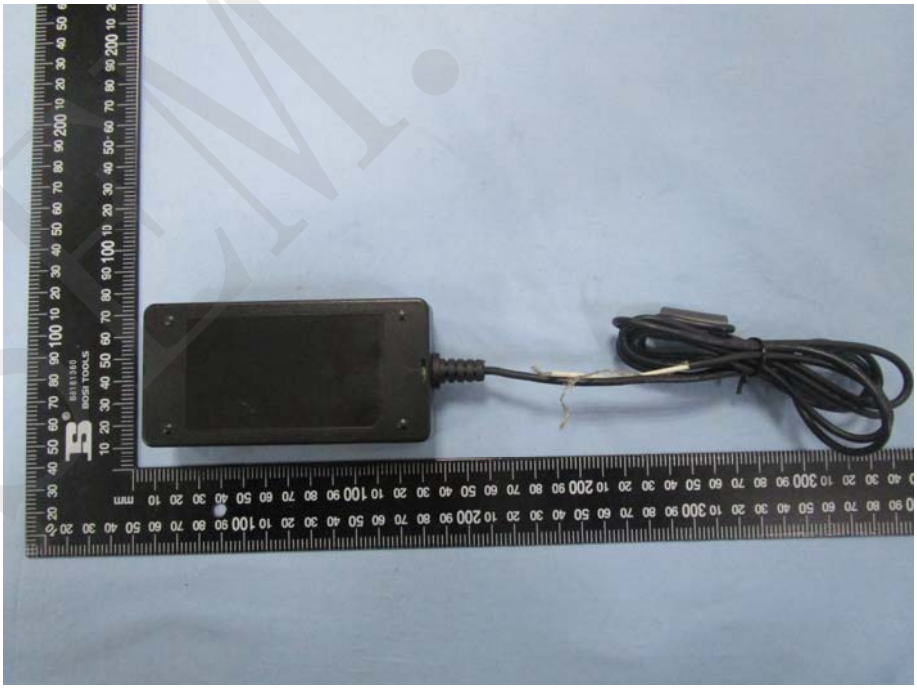


Tested Model: GT-21097-5048

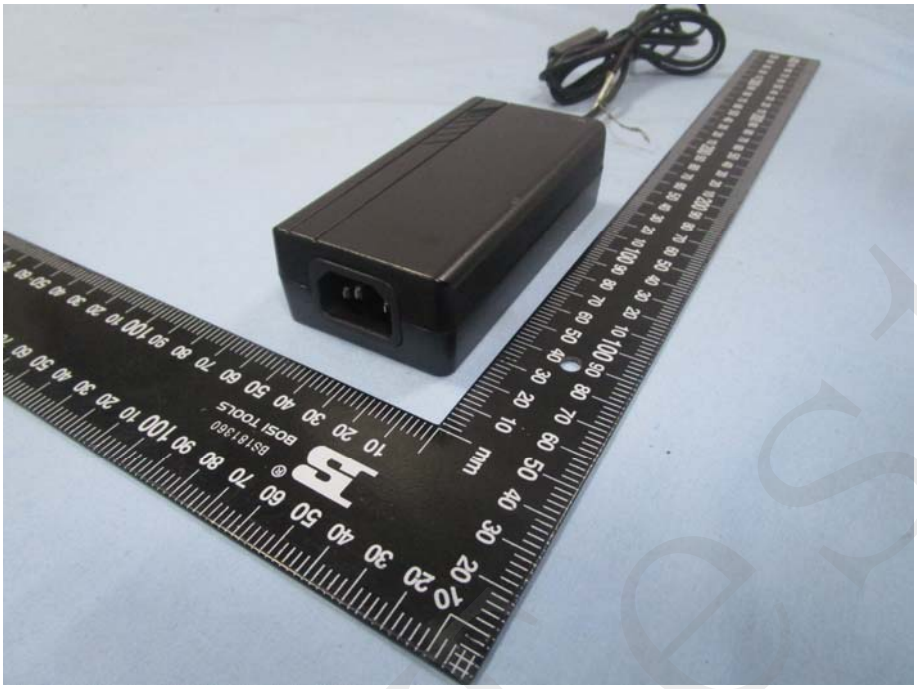
EUT View 1



EUT View 2



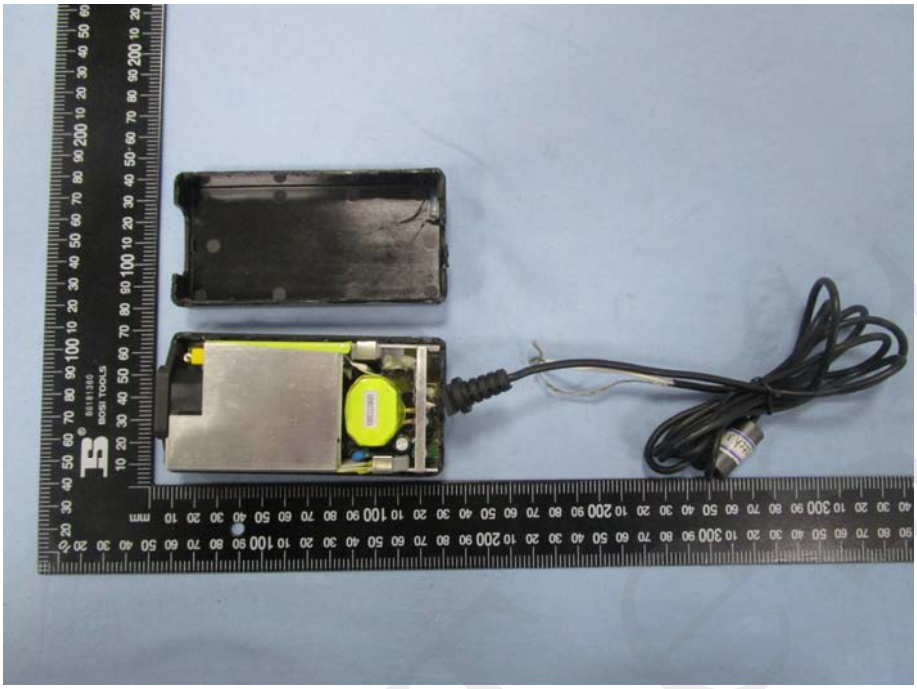
EUT View 3



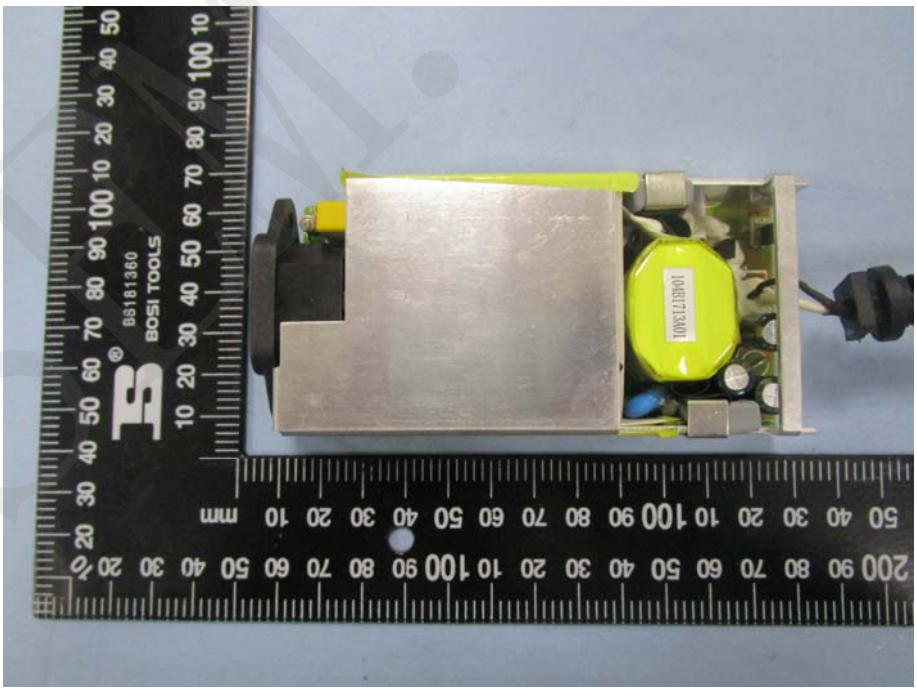
EUT View 4



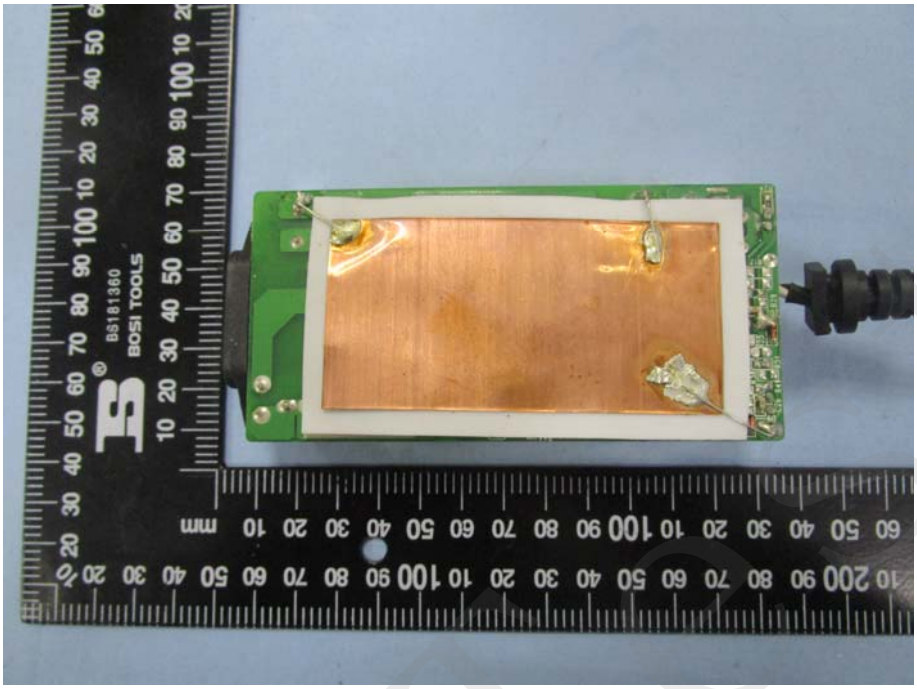
EUT Housing and Board View 1



Solder Board-Component View 1



Solder Board-Component View 2



Solder Board-Component View 3

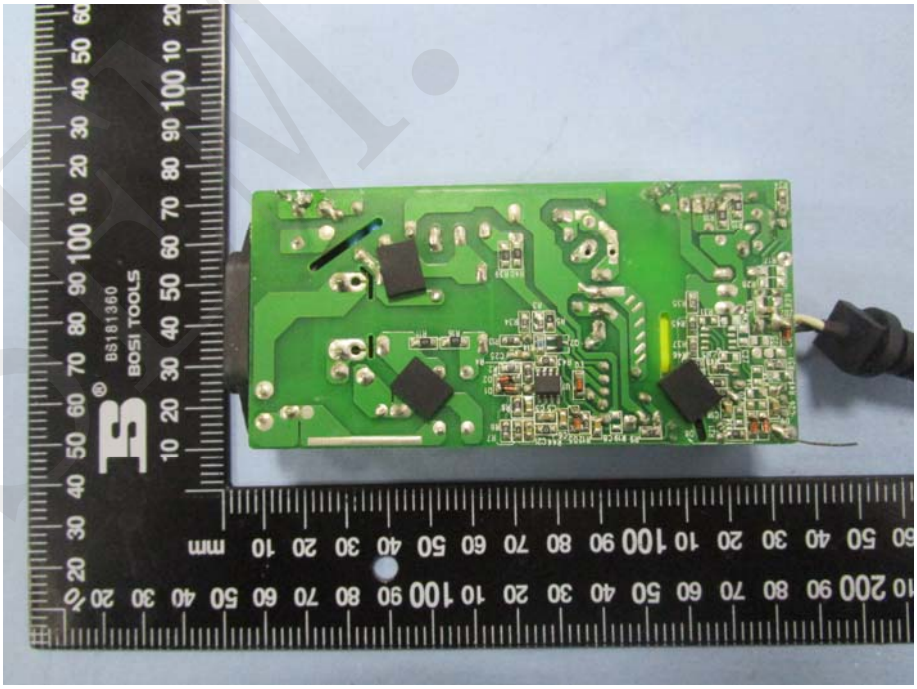


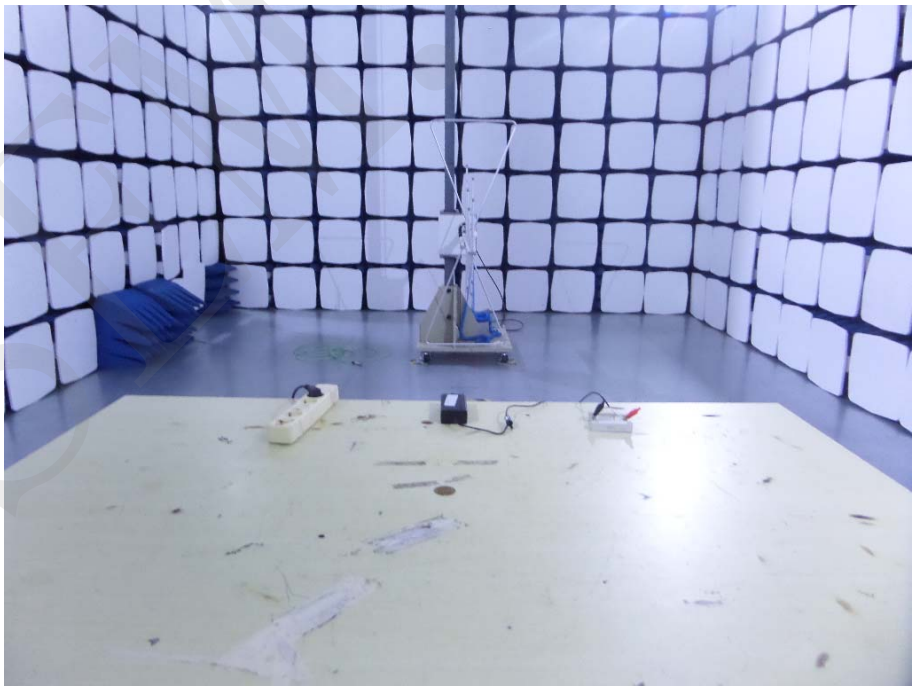
EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Tested Model: GT-21097-3005

Conduction Emission Test View



Radiation Emission Test View

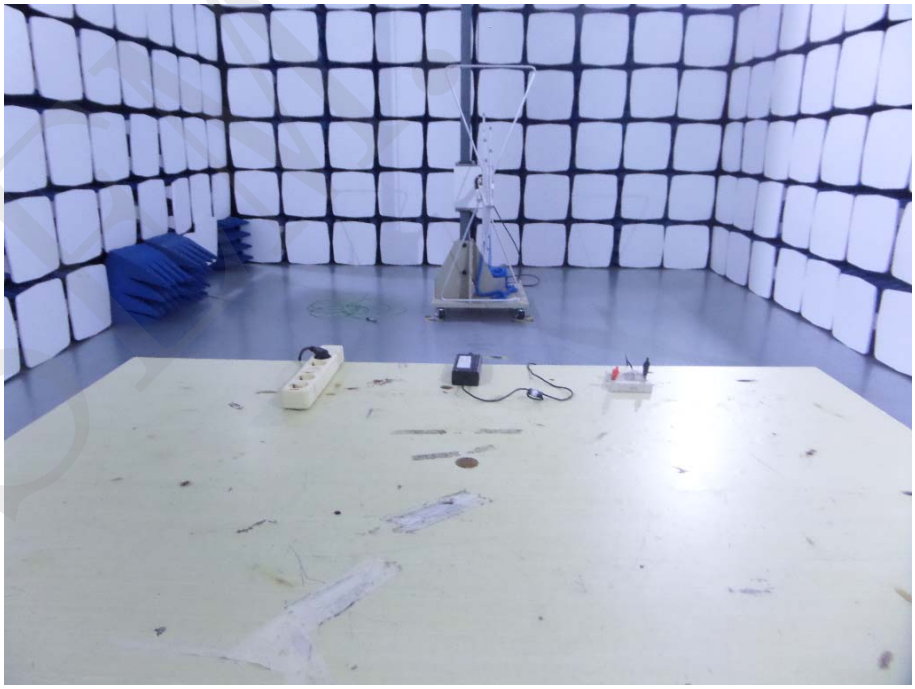


Tested Model: GT-21097-5012

Conduction Emission Test View



Radiation Emission Test View

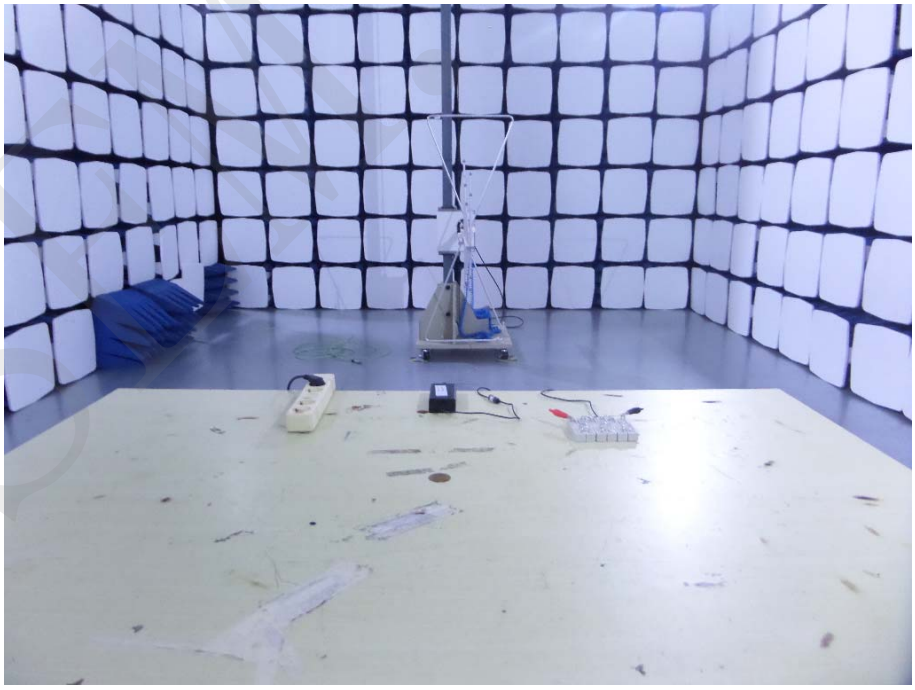


Tested Model: GT-21097-5048

Conduction Emission Test View



Radiation Emission Test View



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