

ICES-003

Measurement and Test Report

For

GlobTek, Inc.

186 Veterans Dr. Northvale, NJ 07647 USA

Test Standards:	<u>ICES-003 Issue 6 (2016-06)</u>
Product Description:	<u>ITE / Medical Power Supply</u>
Tested Model:	<u>GTM96600-4005-T3</u>
Report No.:	<u>STR16098113C</u>
Tested Date:	<u>2016-09-12 to 2016-09-20</u>
Issued Date:	<u>2016-09-20</u>
Tested By:	<u>Jeffry Zhang / Engineer</u> <i>Jeffry Zhang</i>
Reviewed By:	<u>Silin Chen / EMC Manager</u> <i>Silin Chen</i>
Approved & Authorized By:	<u>Jandy So / PSQ Manager</u> <i>Jandy So</i>
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	20

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.
Address of manufacturer 1: 186 Veterans Dr. Northvale, NJ 07647 USA
Manufacturer 2: GlobTek (Suzhou) Co., Ltd
Address of manufacturer 2: Building 4, No. 76, Jin Ling East Rd., Suzhou Industrial Park, Suzhou, JiangSu 215021, China

General Description of EUT

Product Name:	ITE / Medical Power Supply
Trade Name:	
Model No.:	GTM96600-4005-T3
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:	Max.40W
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.: 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	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Cable	1.2	Shielded	With Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1.0	Unshielded	Without Core

1.6 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1121	Horn Antenna	ETS	3116B	00088203	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

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

N/A: not applicable

3. Conducted Disturbance

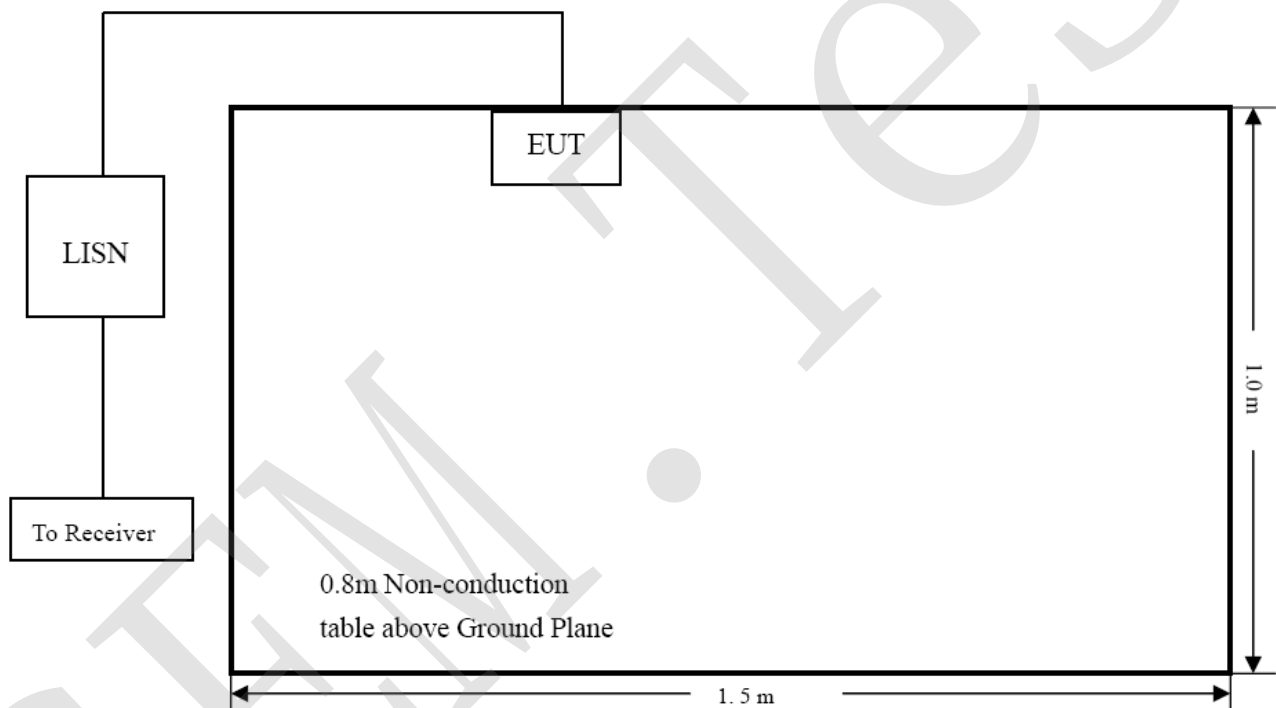
3.1 Measurement Uncertainty

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



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:

-3.58 dB at 8.2660 MHz in the Line mode, QP detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

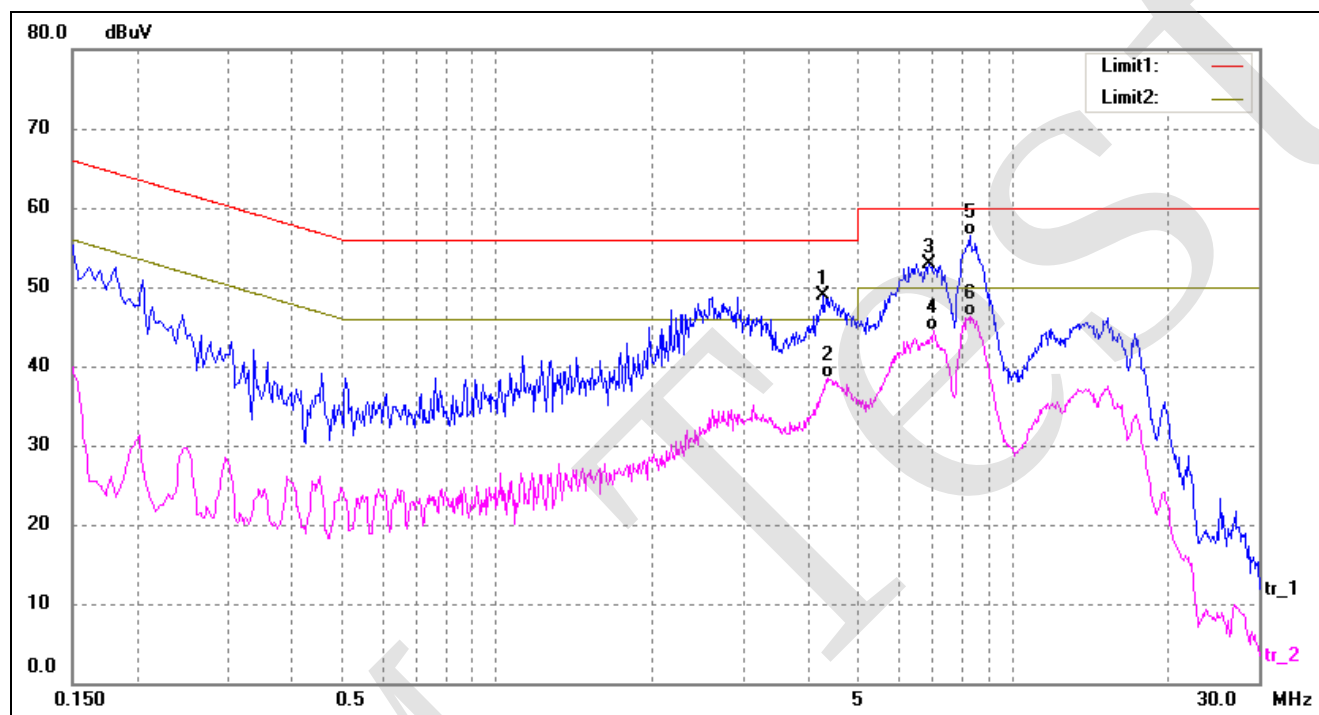
EUT: ITE / Medical Power Supply

Tested Model: GTM96600-4005-T3

Operating Condition: TM1

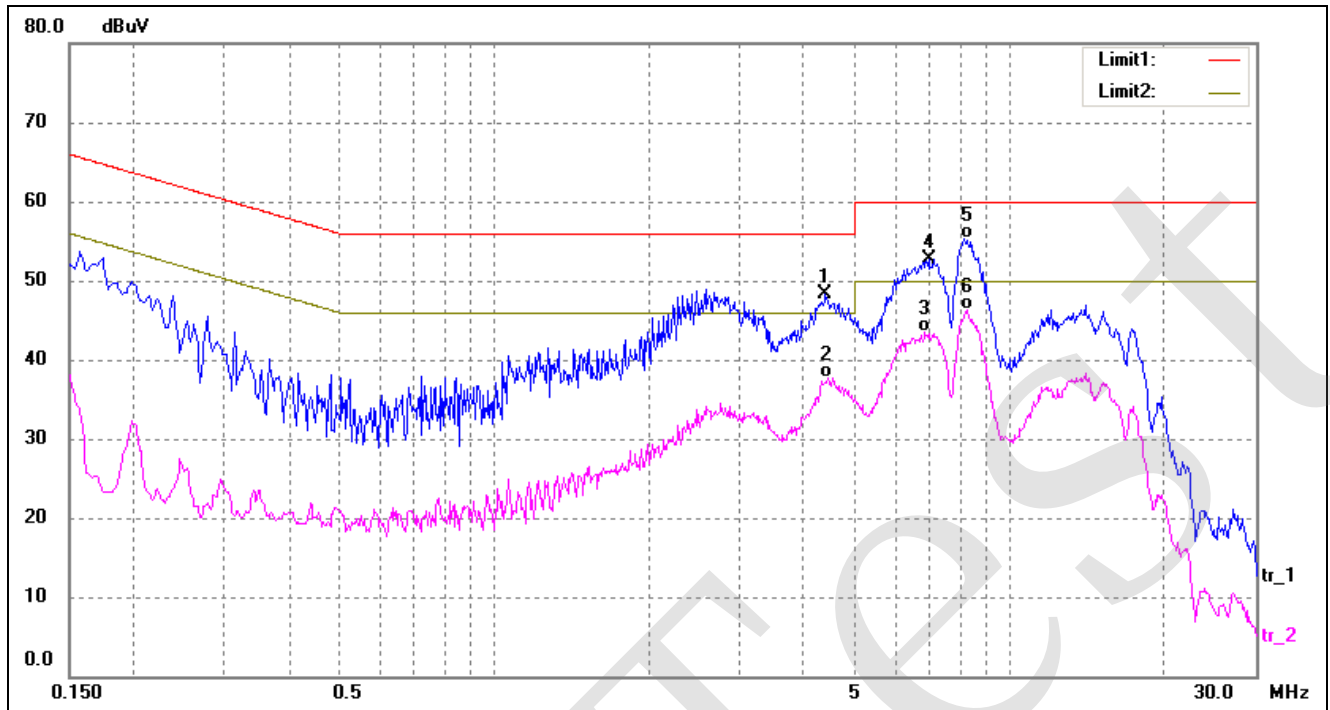
Comment: AC 120V/60Hz

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	4.3020	43.22	5.68	48.90	56.00	-7.10	peak
2	4.3860	32.78	5.68	38.46	46.00	-7.54	AVG
3	6.8900	47.33	5.61	52.94	60.00	-7.06	peak
4	7.0300	38.81	5.60	44.41	50.00	-5.59	AVG
5*	8.2660	50.85	5.57	56.42	60.00	-3.58	QP
6	8.2660	40.78	5.57	46.35	50.00	-3.65	AVG

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	4.3980	42.59	5.68	48.27	56.00	-7.73	peak
2	4.4420	32.03	5.67	37.70	46.00	-8.30	AVG
3	6.8460	37.93	5.61	43.54	50.00	-6.46	AVG
4	6.9780	47.09	5.60	52.69	60.00	-7.31	peak
5	8.1820	49.81	5.57	55.38	60.00	-4.62	QP
6*	8.2460	40.73	5.57	46.30	50.00	-3.70	AVG

4. Radiated Disturbance

4.1 Measurement Uncertainty

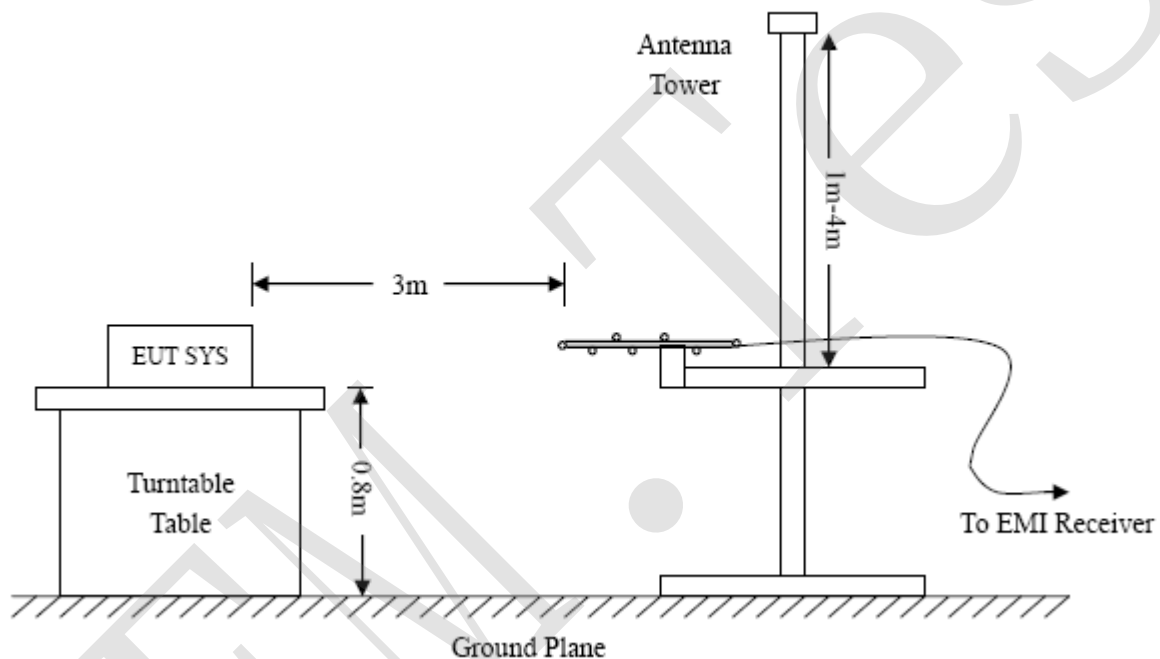
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

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.



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:

-5.82 dB at 154.2786 MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

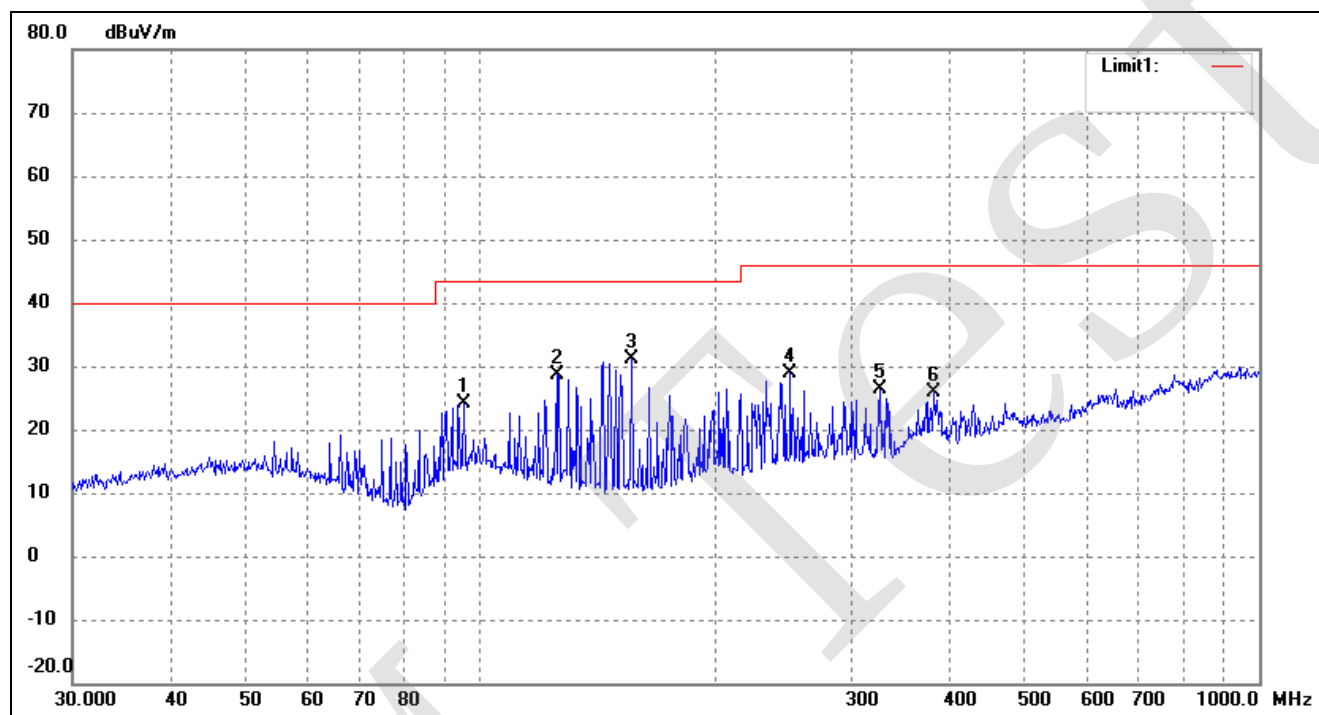
EUT: ITE / Medical Power Supply

Tested Model: GTM96600-4005-T3

Operating Condition: TM1

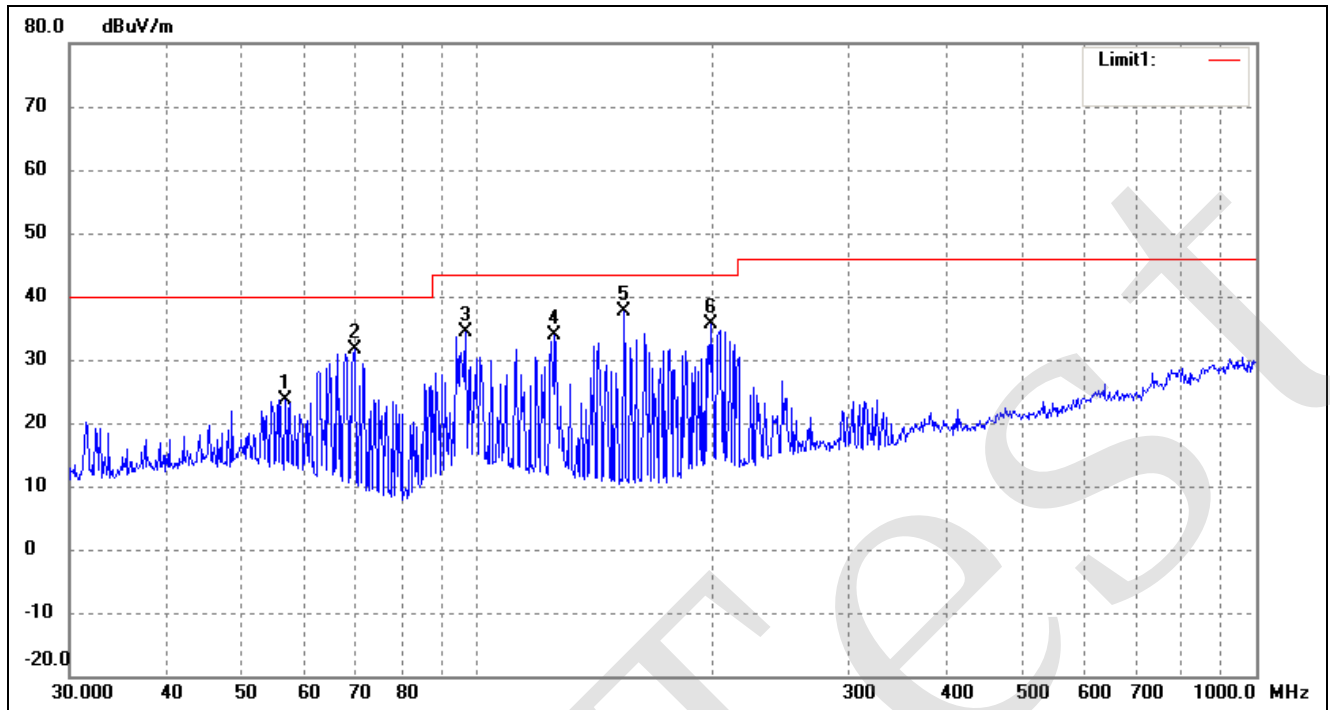
Comment: AC 120V/60Hz

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	95.4270	36.60	-12.42	24.18	43.50	-19.32			peak
2	125.4457	42.74	-14.00	28.74	43.50	-14.76			peak
3	156.4578	46.21	-15.01	31.20	43.50	-12.30			peak
4	250.3012	39.46	-10.49	28.97	46.00	-17.03			peak
5	326.7395	36.01	-9.68	26.33	46.00	-19.67			peak
6	382.5879	32.93	-7.07	25.86	46.00	-20.14			peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	56.7917	36.88	-13.18	23.70	40.00	-16.30			peak
2	69.6005	47.78	-16.16	31.62	40.00	-8.38			peak
3	96.7749	46.40	-12.12	34.28	43.50	-9.22			peak
4	125.8864	47.91	-14.02	33.89	43.50	-9.61			peak
5	154.2786	52.67	-14.99	37.68	43.50	-5.82			peak
6	199.2855	47.20	-11.69	35.51	43.50	-7.99			peak

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



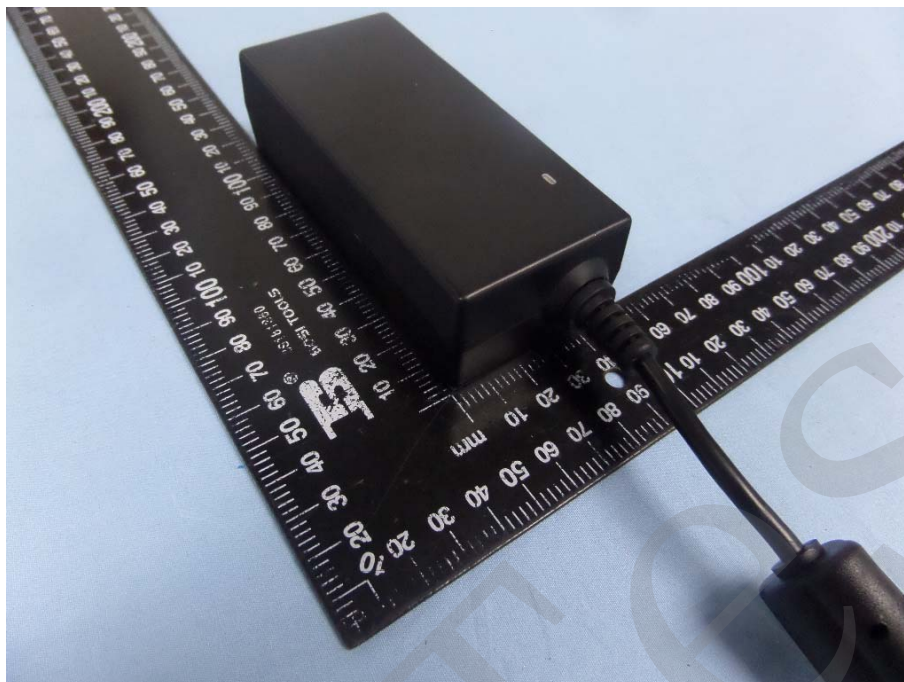
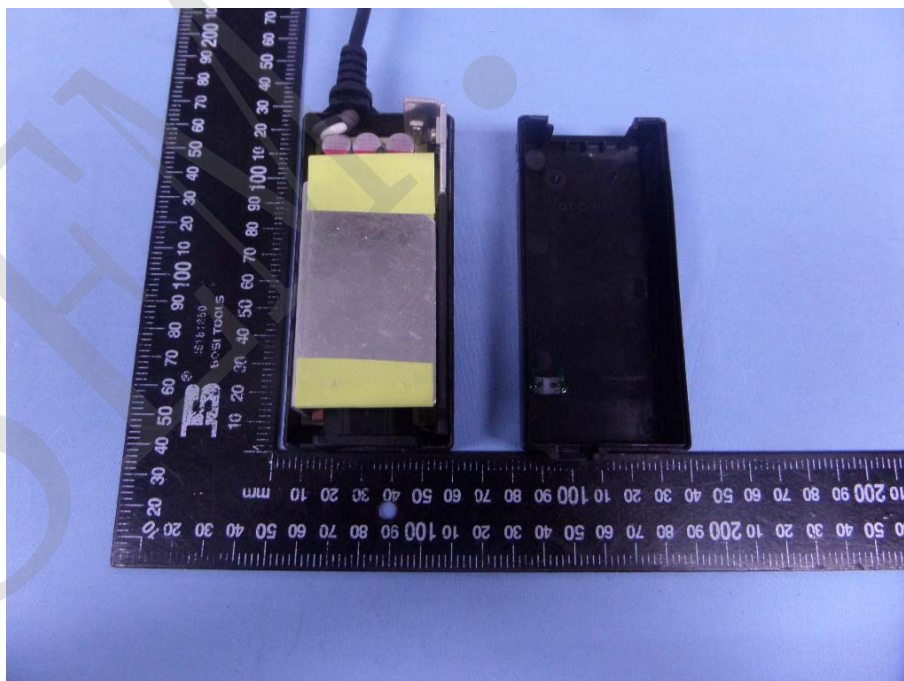
EXHIBIT 2 - EUT PHOTOGRAPHS

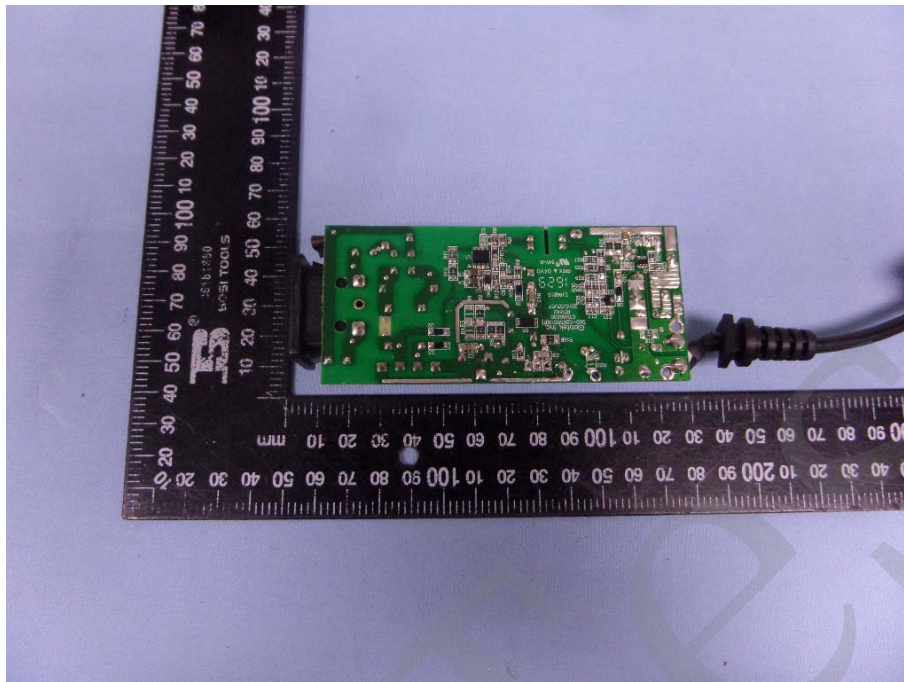
EUT View 1



EUT View 2



EUT View 3**EUT Housing and Board View 1**

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

Solder Board-Component View 3

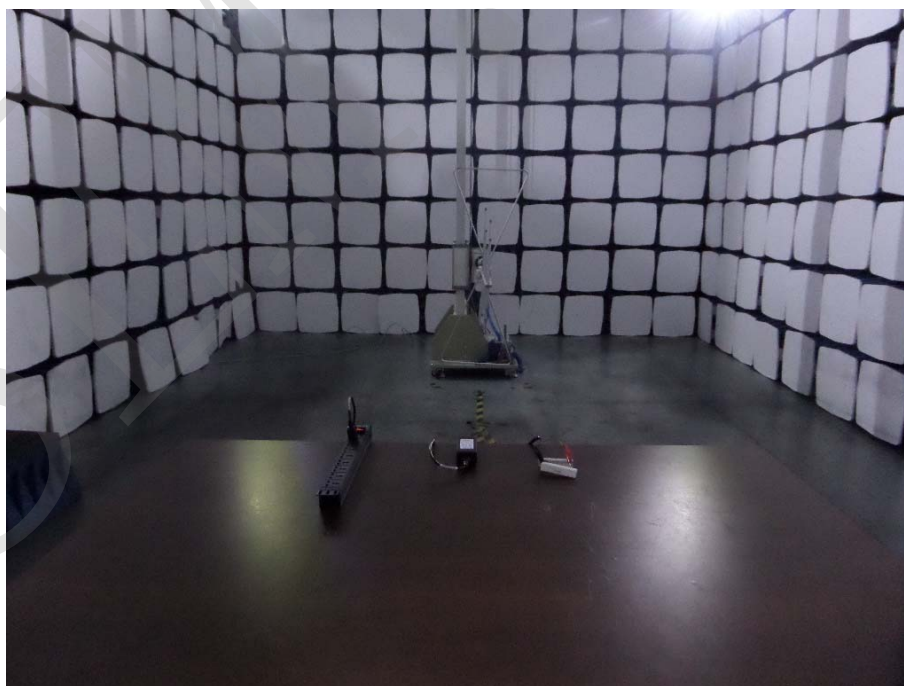
SEM Test

EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conducted Emission Test Setup



Radiation Emission View



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