

## ***C-TICK TEST REPORT***

**Reference No.** : WT11084631-S-E-O

**Applicant** : GlobTek, Inc.

**Address** : 186 Veterans Dr. Northvale, NJ 07647 USA.

**Equipment Under Test (EUT) :**

**Product Name** : Switching Mode Power Supply

**Model No.** : GT-41132-WWVV-X.X-T2 Series(more details refer to 4.3 model list)

**Standards** : AS/NZS CISPR22:2009

**Date of Test** : August 24~september 3, 2011

**Test Engineer** : Andy.wu

**Reviewed By** : Philo.Zhong

Andy Wu  
Philo Zhong



<b>Test Result :</b>	<b>PASS *</b>
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**Prepared By:**

**Waltek Services (Shenzhen) Co., Ltd.**

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\* The sample detailed above has been tested to the requirements of c-tick standard. The test results have been reviewed against the standard above and found to meet their essential requirements.

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## 2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	AS/NZS CISPR22:2009	AS/NZS CISPR22:2009	Class B	PASS
Radiation Emission, 30MHz to 1000MHz	AS/NZS CISPR22:2009	AS/NZS CISPR22:2009	Class B	PASS

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## 4 General Information

### 4.1 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.

### 4.2 General Description of E.U.T.

Product Name : Switching Mode Power Supply  
 Model No. : GT-41132-WWVV-X.X-T2 Series (more details refer to 3.3 model list)  
 Remark : The models GT-41132-6013-1.0-T2, GT-41132-6048-T2 are the test samples. The test datas were shown below.

### 4.3 Details of E.U.T.

Remark: GT-41132-WWVV-X.X-T2 series:

WW is the rated output wattage designation, with a maximum value of "60";  
 VV is the standard rated output voltage designation, with a maximum value of "48";  
 -X.X is optional or blank and denotes the output voltage differentiator, subtracting or adding X.X volts from standard output voltage VV in 0.1V increments.

Model list

Model	AC I/P	DC O/P	Transformer
GT-41132-6013-1.0-T2	100-240V~,1.5A,50-60Hz	12V,5A	XF00530
GT-41132-6026-7.0-T2	100-240V~,1.5A,50-60Hz	19V,3.42A	XF00542
GT-41132-6026-2.0-T2	100-240V~,1.5A,50-60Hz	24V,2.7A	
GT-41132-6048-T2	100-240V~,1.5A,50-60Hz	48V,1.25A	XF00543

### 4.4 Description of Support Units

The EUT is the independent unit. All the tests were performed in the condition of AC 240V/50Hz.

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#### 4.5 Standards Applicable for Testing

The customer requested EMC tests for a Switching Mode Power Supply. The standards used was AS/NZS CISPR 22:2009.

**Table 1 : Tests Carried Out AS/NZS CISPR22: 2009**

Standard		Status
AS/NZS CISPR 22:2009	Mains Terminal Disturbance Voltage	√
AS/NZS CISPR 22:2009	Radiation Emission, 30MHz to 1000MHz	√

- √ Indicates that the test is applicable
- × Indicates that the test is not applicable

#### 4.6 Test Facility

The test facility has a test site registered with the following organizations:

- **FCC – Registration No.: 880581**  
Waltek Services(Shenzhen) 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. Registration 880581, May 26, 2011.
- **IC – Registration No.: 7760A**  
Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, Aug.03, 2010.

#### 4.7 Test Location

All Emissions tests tests were performed at:-

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China.

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## 5 Equipment Used during Test

Equipment Name	Model	Equipment No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY4511 4943	9K-26.5GHz	2011-8-14	2012-8-14	WWM20 100587	±1dB
Test Receiver	ROHDE&SCH WARZ/ ESCI	100947	9KHz-3GHz	2011-8-14	2012-8-14	WWM20 100589	±1dB
RF Generator	TESEQ GmbH/NSG40 70	25781	Fraq-range: 9K-1GHz RF voltage: -60dB to 10dB	2011-8-14	2012-8-14	WWM20 100590	Power_freq distinguish: 0.1Hz Rfelectricity distinguish:0.1d B
ALL Modules Generator	SCHAFFNER/ 6150	34579	Voltage:200V- 4.4KV Cuttent:100A- 2.2KA	2011-8-14	2012-8-14	WWM20 100591	Voltage:±10% Pulse Cuttent:±10%
AC Power Supply	Beijing hengyuan/ DTDGC-4	W20080 20	Voltage: 0-250V Current: 0-20A	2011-8-14	2012-8-14	WWM20 100592	ACV:0.06% ACA:0.15%
Trilog Broadband Antenna	SCHWARZBE CK MESS- ELEKTRONI K/VULB9163	336	25-3000MHz	2009-8-20	2012-8-14	XDdj200 9-2658	±1dB
Two-Line V- Network	ROHDE&SCH WARZ/ ENV216	100115	9KHz-3GHz	2011-8-14	2012-8-14	WWC20 100909	±10%
V-LISN	SCHWARZBE CK MESS- ELEKTRONI K/ NSLK 8128	8128-259	9KHz-3GHz	2011-8-14	2012-8-14	WWC20 100903	±10%
Attenuator 6dB	TESEQ GmbH/ ATN6050	25376	Attenuator 6dB	2011-8-14	2012-8-14	WWC20 100904	Attenuation:0.2 dB
Digital Multimeters	FLUKE/15B	9876078 4	Voltage:AC/DC 4mV-1000V Current:AC/DC 40mA-10A Resistor:400Ω- 40MΩ	2011-8-14	2012-8-14	DBS201 0-736	DCV Urel=0.1% ACV Urel=0.2% DCA Urel=0.2% ACA Urel=0.2% OHM Urel=0.2% K=2
Digital Multimeters	FLUKE/15B	9875079 0	Voltage:AC/DC 4mV-1000V Current:AC/DC	2011-8-14	2012-8-14	DBS201 0-735	DCV Urel=0.1% ACV

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Equipment Name	Model	Equipment No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
			40mA-10A Resistor:400Ω-40MΩ				Urel=0.2% DCA Urel=0.2% ACA Urel=0.2% OHM Urel=0.2% K=2
Thermo meter	KTJ/TA218B	TA218B	TemperatureRange: -10°C to 60°C Humidity Range: 25%RH to 98%RH	2011-8-14	2012-8-14	RSD20103126	Humidity: U=3%RH(K=2) Temperature: U=1°C(K=2)
Thermo meter	KTJ/TA218B	TA218B	TemperatureRange: -10°C to 60°C Humidity Range: 25%RH to 98%RH	2011-8-14	2012-8-14	RSD20103127	Humidity: U=3%RH(K=2) Temperature: U=1°C(K=2)
Broad-Band Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK/BBHA 9120D	667	1-18GHz	2011-8-14	2012-8-14	2PB10000125-0001	f<10GHz: ±1dB 10GHz<f<18GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTRONIK/BBV 9718	9718-147	0.5-18GHz	2011-8-14	2012-8-14	2PB10000125-0002	±1.2dB
Oscilloscope	TDS3032B	B401960	0-300MHz	2011-8-14	2012-8-14	DZ2010231523988	Vertical deflection: +0.4% Scanning time: +0.3%

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## 6 Emission Test Results

### 6.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement:	AS/NZS CISPR 22
Test Method:	AS/NZS CISPR 22
Test result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Table 1 of AS/NZS CISPR22
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature:	25.5 °C
Humidity:	51% RH
Atmospheric Pressure:	1012 mbar

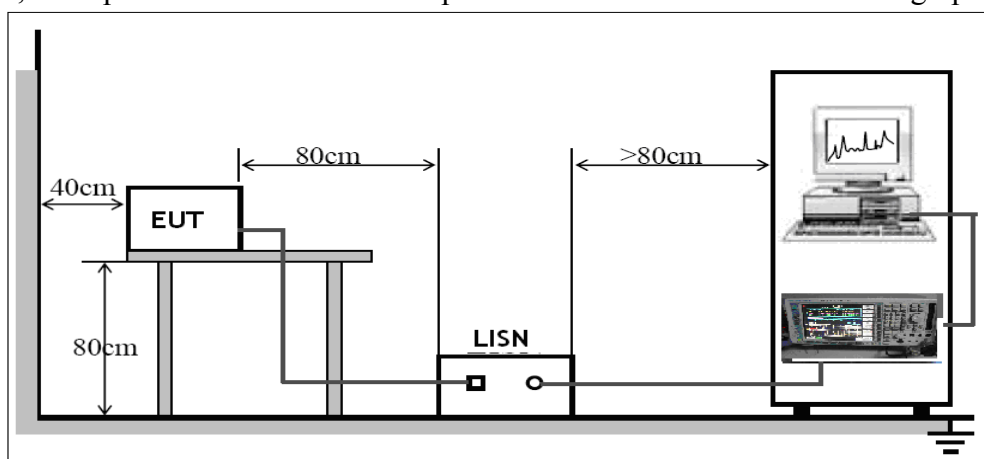
EUT Operation :

Compliance test was performed in full load mode.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

#### 6.1.2 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the AS/NZS CISPR22, The specification used in this report was the AS/NZS CISPR22 Paragraph 5 limits.



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### 6.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines.

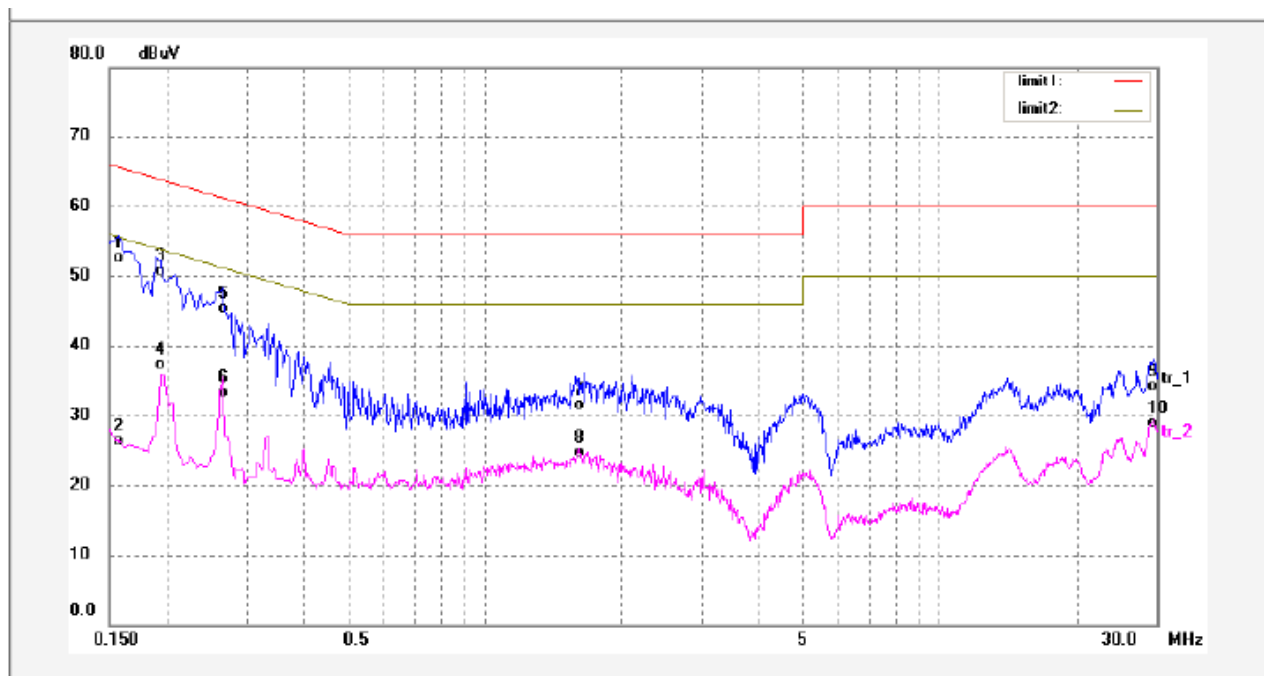
No further quasi-peak or average measurements were performed since no peak emissions were detected within 10dB line below the average limit.

Please refer to the following peak scan graph for reference.

### 6.1.4 Conducted Emissions Test Data

Model: GT-41132-6013-1.0-T2

Live Line:

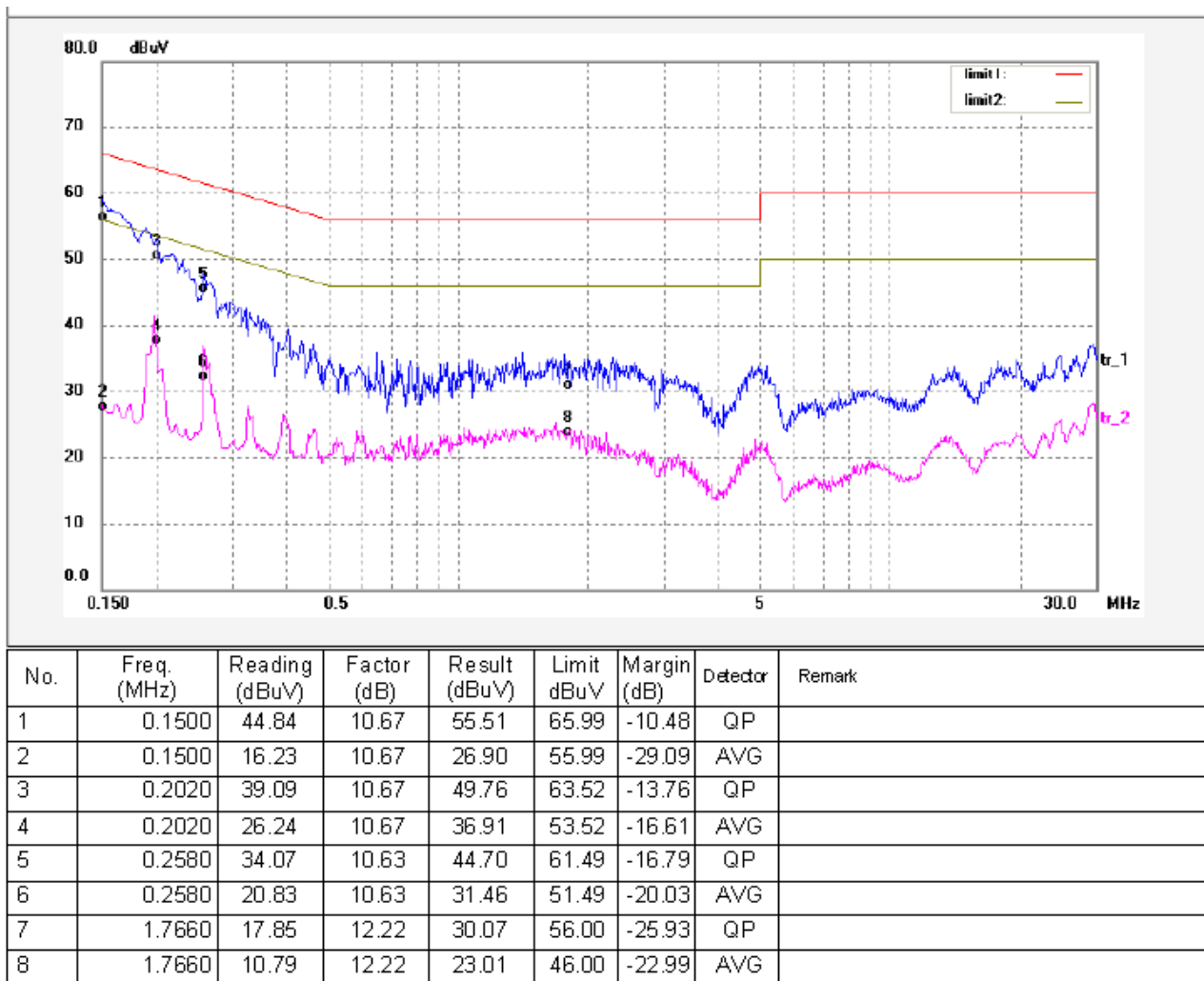


No.	Freq. (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit dBμV	Margin (dB)	Detector	Remark
1	0.1580	41.07	10.61	51.68	65.56	-13.88	QP	
2	0.1580	14.91	10.61	25.52	55.56	-30.04	AVG	
3	0.1945	39.14	10.67	49.81	63.84	-14.03	QP	
4	0.1945	25.76	10.67	36.43	53.84	-17.41	AVG	
5	0.2660	33.90	10.63	44.53	61.24	-16.71	QP	
6	0.2660	21.80	10.63	32.43	51.24	-18.81	AVG	
7	1.5900	18.51	12.20	30.71	56.00	-25.29	QP	
8	1.5900	11.70	12.20	23.90	46.00	-22.10	AVG	
9	29.4740	20.45	12.80	33.25	60.00	-26.75	QP	
10	29.4740	15.37	12.80	28.17	50.00	-21.83	AVG	

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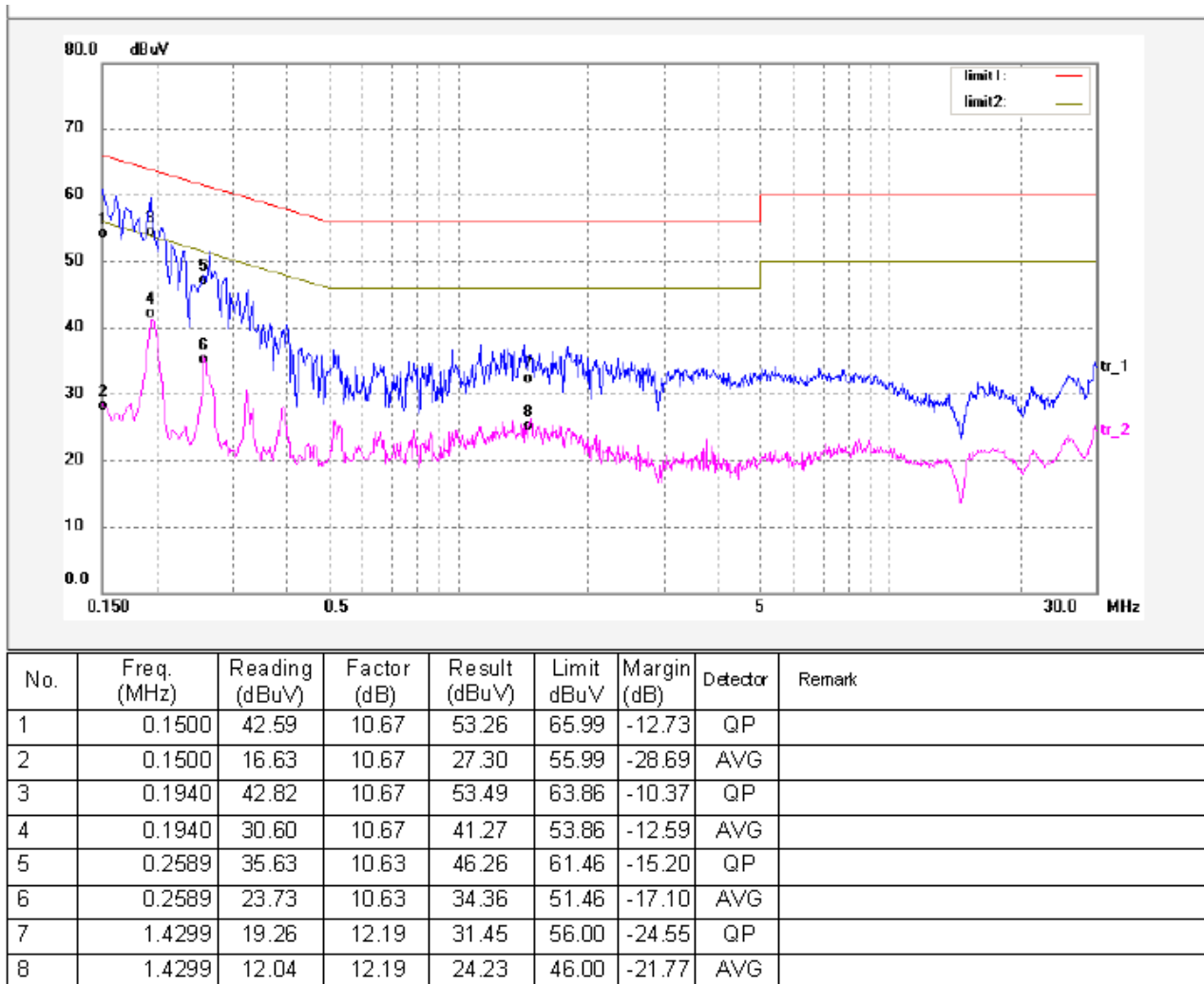
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Model: GT-41132-6048-T2

Live Line:

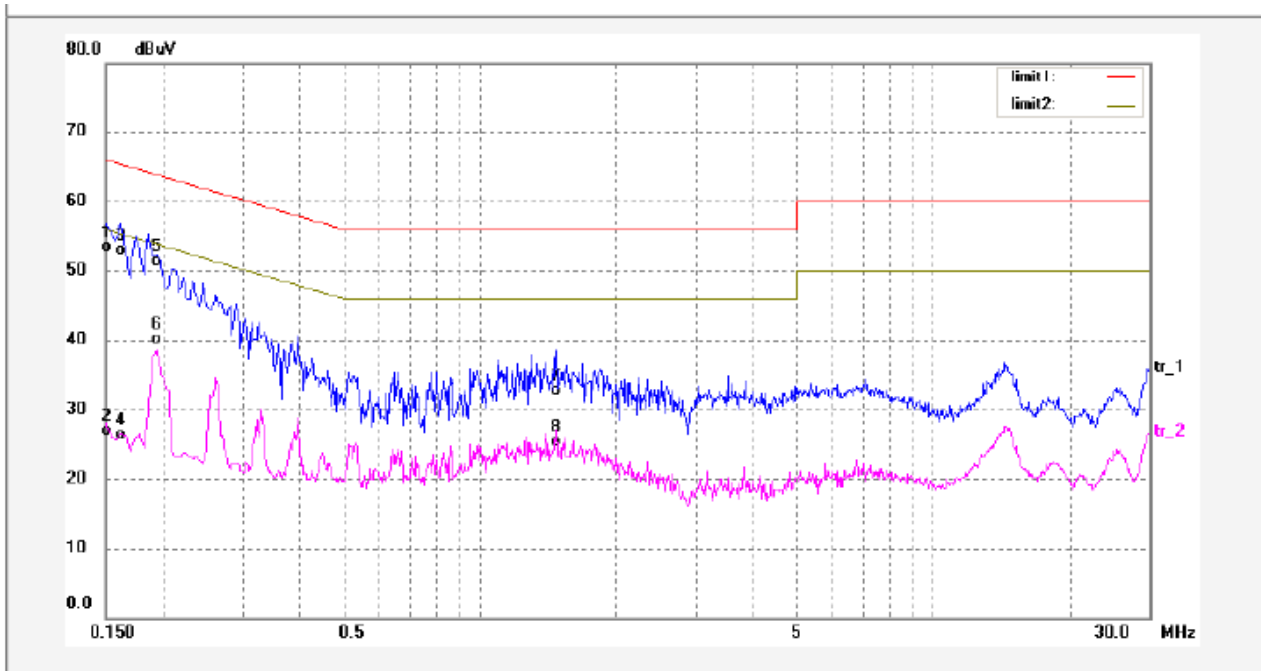


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Neutral Line:



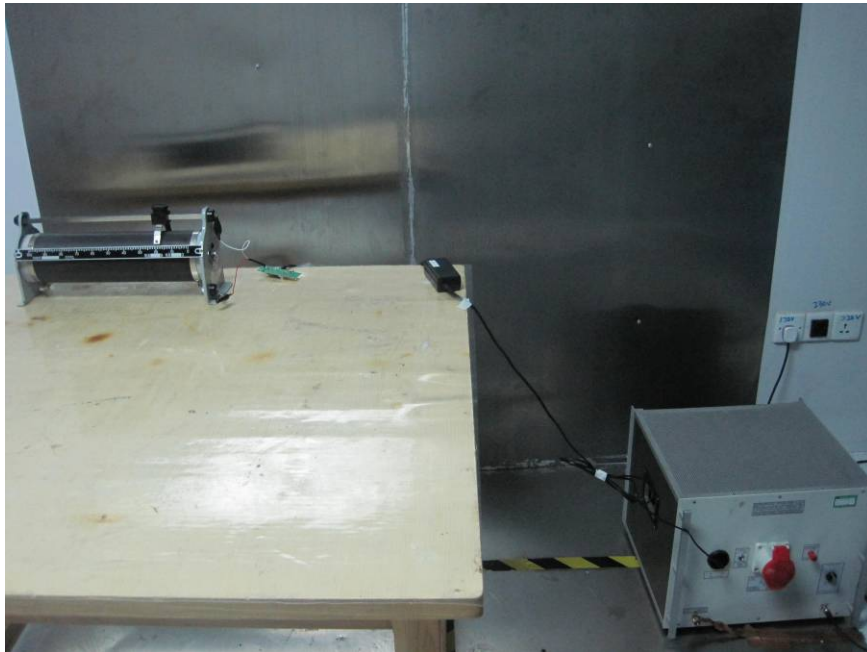
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	41.84	10.67	52.51	65.99	-13.48	QP	
2	0.1500	15.49	10.67	26.16	55.99	-29.83	AVG	
3	0.1620	41.43	10.62	52.05	65.36	-13.31	QP	
4	0.1620	14.87	10.62	25.49	55.36	-29.87	AVG	
5	0.1945	39.88	10.67	50.55	63.84	-13.29	QP	
6	0.1945	28.54	10.67	39.21	53.84	-14.63	AVG	
7	1.4780	19.73	12.19	31.92	56.00	-24.08	QP	
8	1.4780	12.39	12.19	24.58	46.00	-21.42	AVG	

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### 6.1.5 Photographs – Mains Terminal Disturbance Voltage on AC Test Setup



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## 6.2 Radiation Emission Data

Test Requirement:	AS/NZS CISPR22
Test Method:	AS/NZS CISPR22
Frequency Range:	30MHz to 1000MHz
Detector:	Peak for pre-scan (120kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

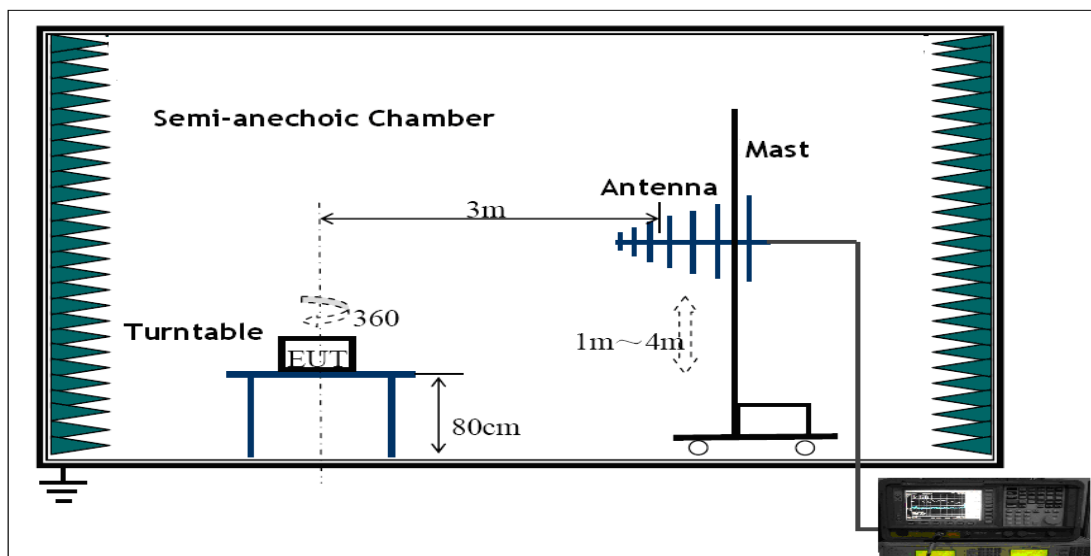
### 6.2.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is  $\pm 5.03$  dB.

### 6.2.2 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the AS/NZS CISPR22, The specification used in this report was the AS/NZS CISPR22 Paragraph 6 limits.



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### 6.2.3 Spectrum Analyzer Setup

According to AS/NZS CISPR22 Class B Rules, the system was tested to 1000 MHz.

Start Frequency..... 30 MHz  
Stop Frequency..... 1000 MHz  
Sweep Speed Auto  
IF Bandwidth..... 120Hz  
Video Bandwidth..... 100kHz  
Quasi-Peak Adapter Bandwidth ..... 120 kHz  
Quasi-Peak Adapter Mode ..... Normal  
Resolution Bandwidth ..... 100kHz

### 6.2.4 Test procedure

For the radiated emissions test, maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within +/-4 dBµV of specification limits), and are distinguished with a "Qp" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

### 6.2.5 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBµV means the emission is 7dBµV below the maximum limit for Class B. The equation for margin calculation is as follows:

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

### 6.2.6 Summary of Test Results

According to the data in section 6.2.7, the EUT complied with the AS/NZS CISPR22 Class B standards, and had the worst margin :

Remarks: No high noise emissions above the floor were detected.

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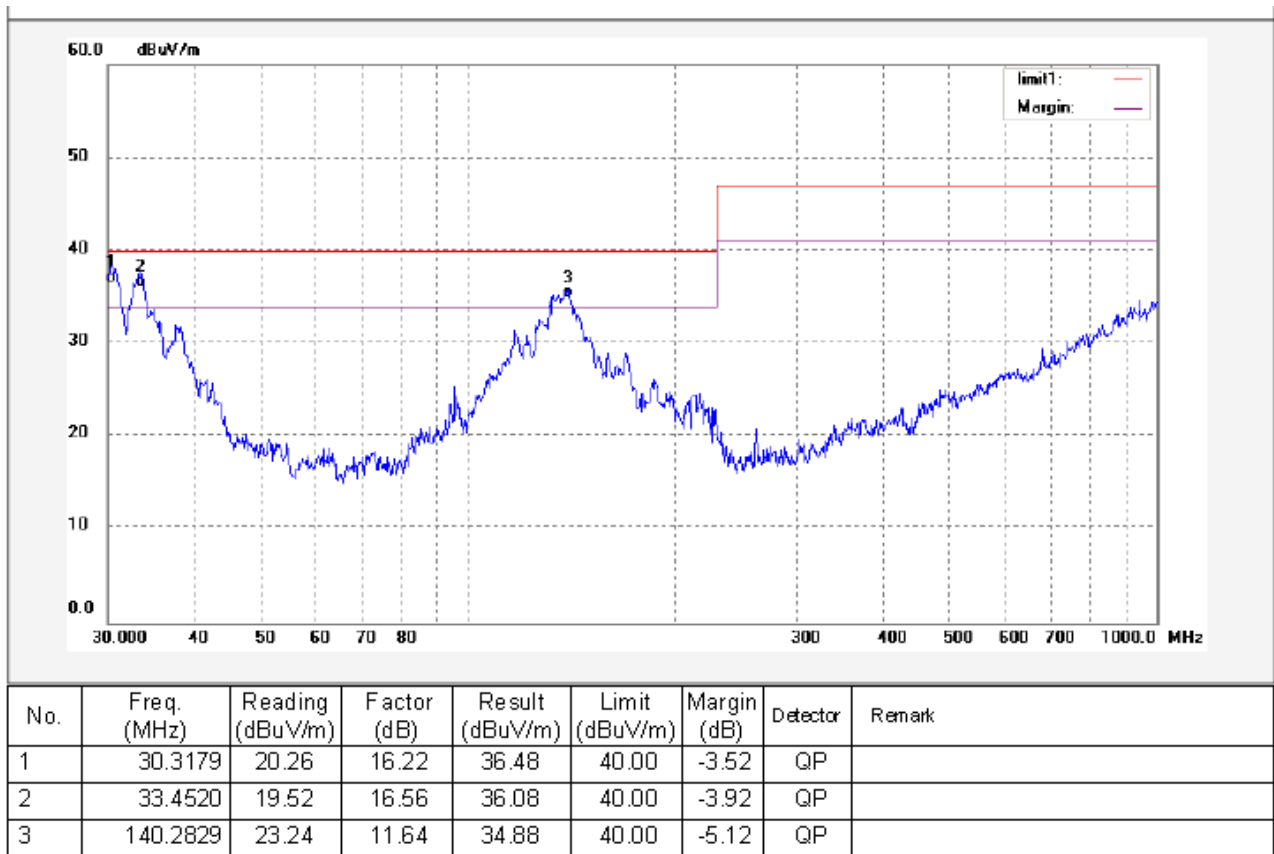
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### 6.2.7 Radiated Emissions Test Data

Model: GT-41132-6013-1.0-T2

Polarization: Vertical



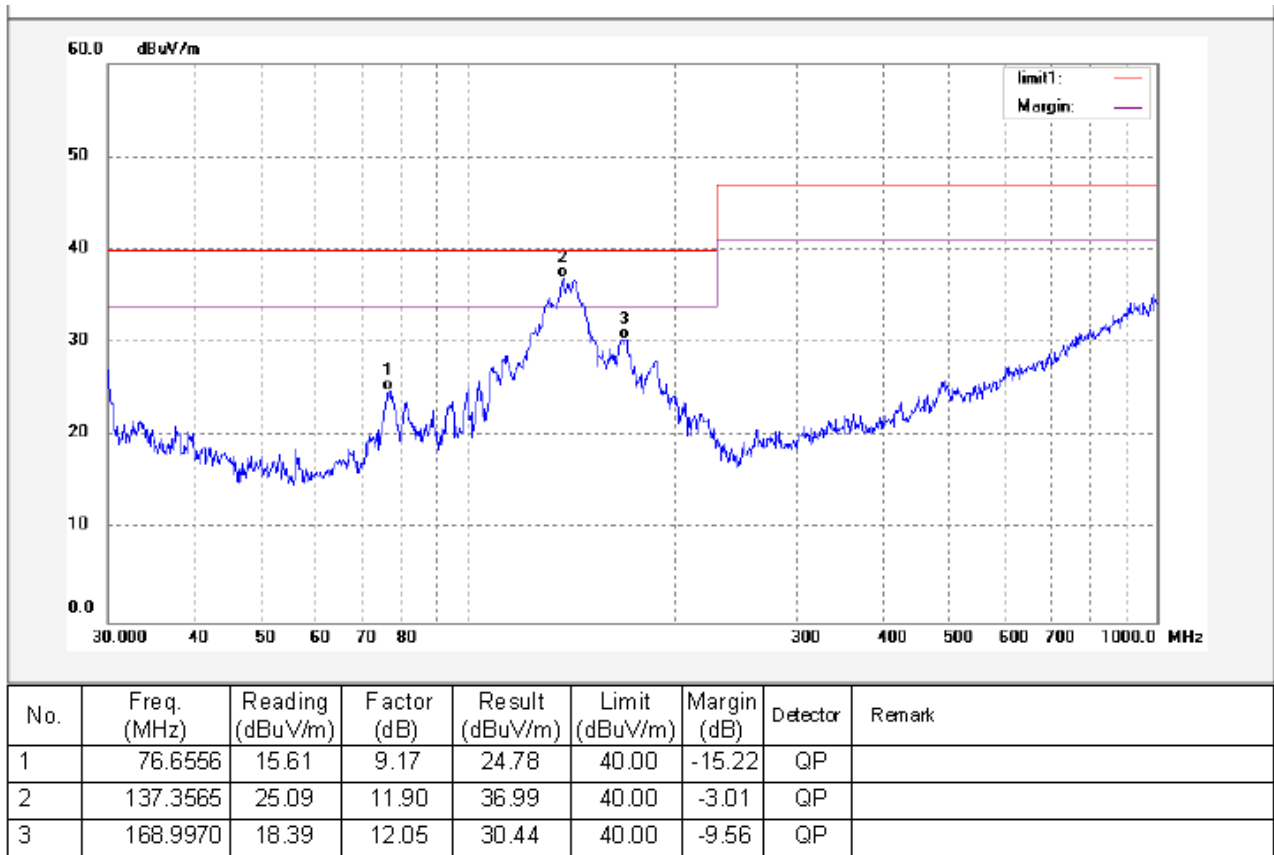
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Polarization: Horizontal



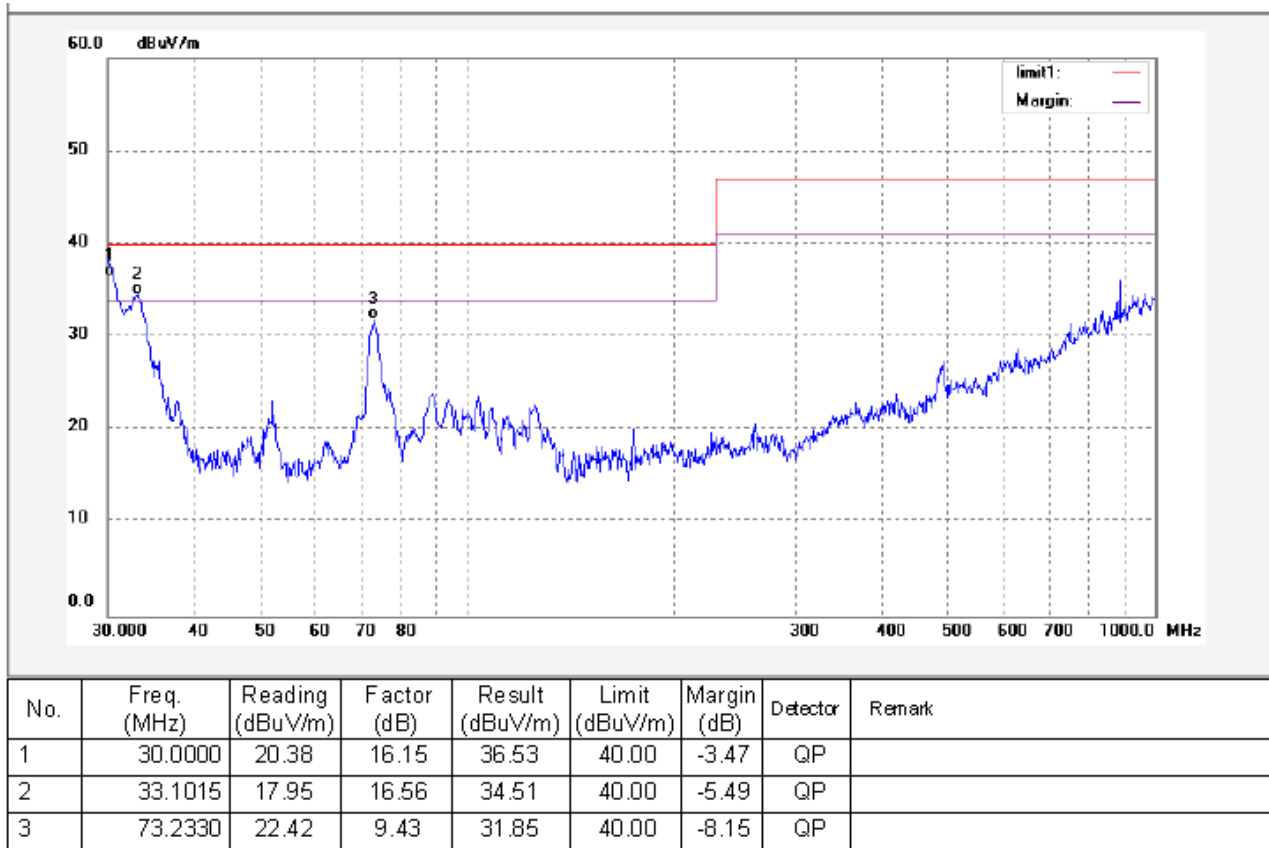
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Model: GT-41132-6048-T2

Polarization: Vertical

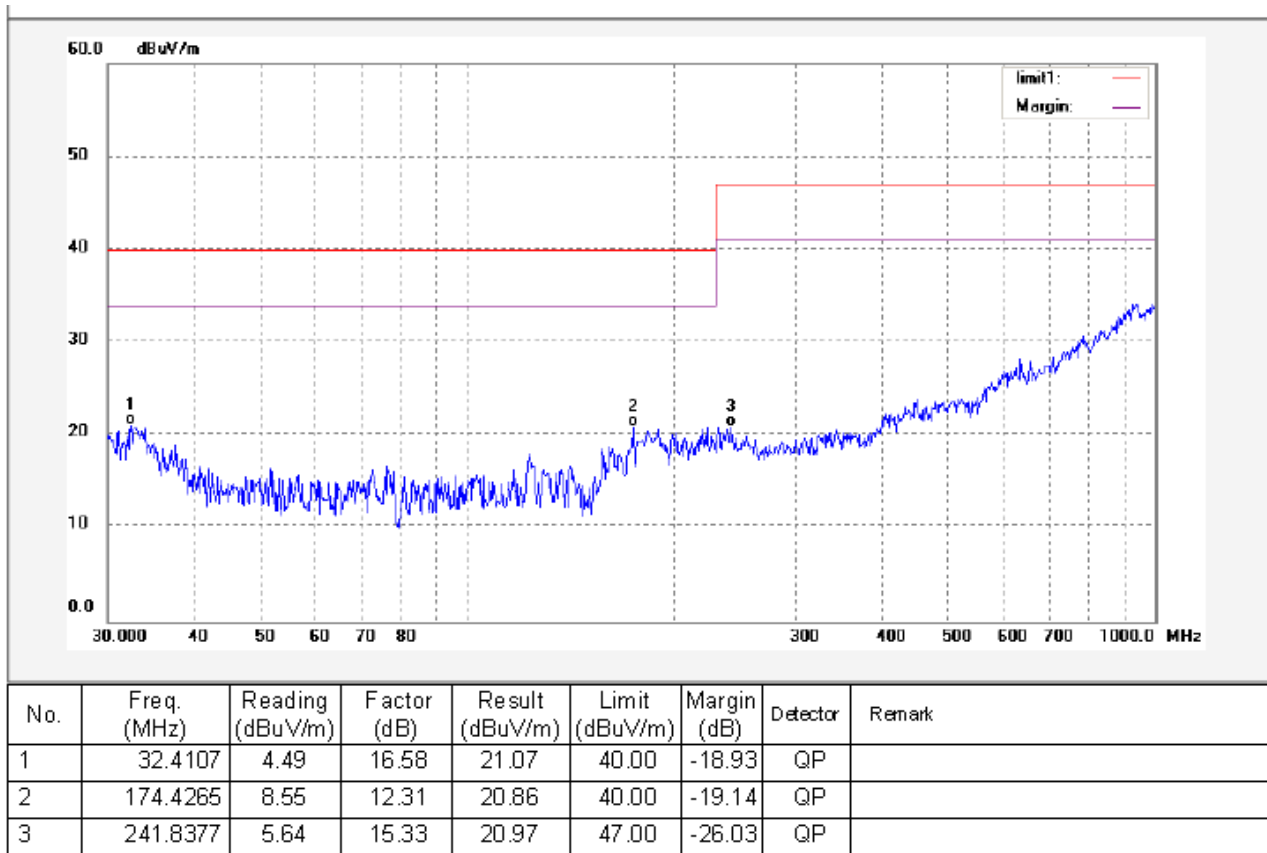


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Reference No.: WT11084631-S-E-O

Polarization: Horizontal

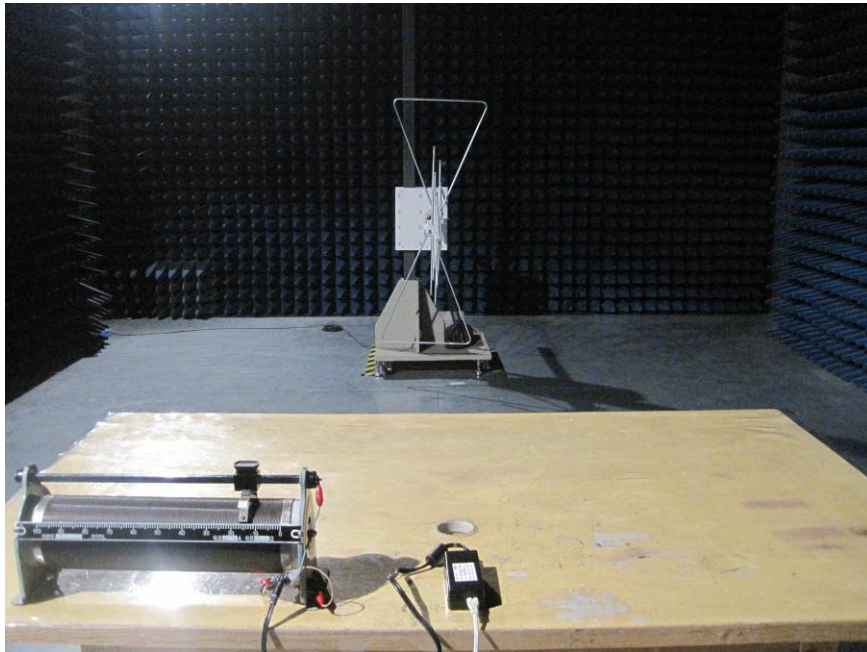


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### 6.2.8 Photographs – Radiation Test Setup



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## **7 Photographs - Constructional Details**

### **7.1 EUT-Top View**



### **7.2 EUT - Bottom View**



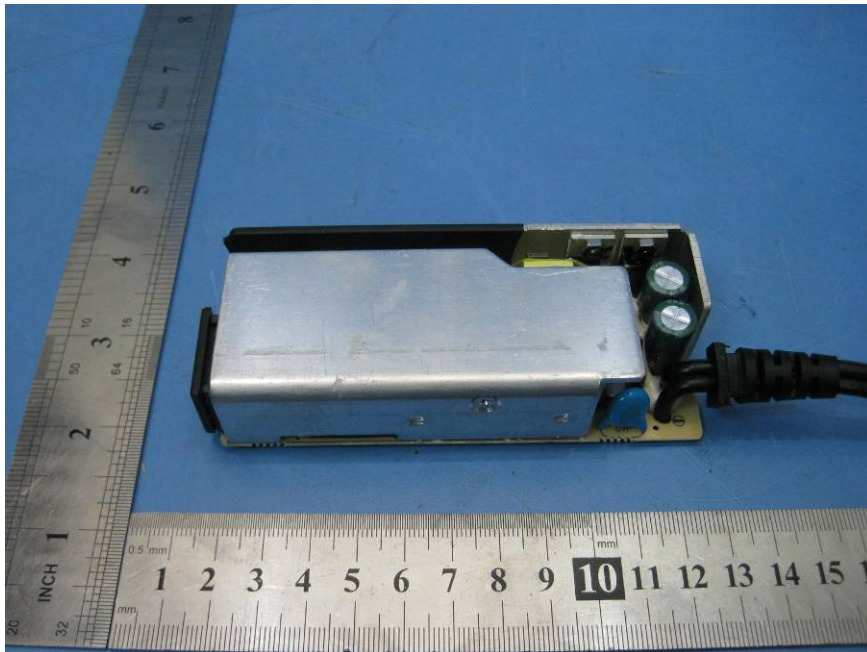
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### 7.3 EUT - Open View



### 7.4 PCB - Top View

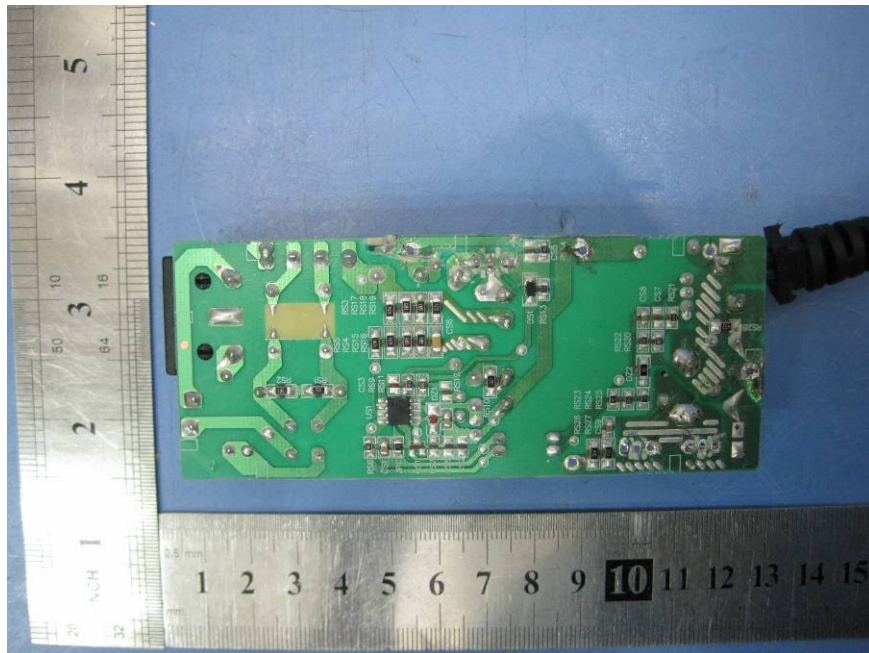


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## 7.5 PCB - Bottom View



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