

FCC TEST REPORT

FCC ID : ZQXCV-1415
Applicant : Suzhou Switek Electronics & Technology Co., Ltd.
Address : No.5 Linggang Industry Zone, Luzhi Town, Wuzhong District, Suzhou
City, Jiangsu, China

Equipment Under Test (EUT) :

Product Name : VGA Video Splitter DC power input
Model No. : CV-1415

Standards : FCC Part 15 Section 15.109:2009

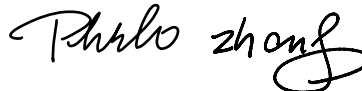
Date of Test : January 16 ~ February 2, 2012

Date of Issue : February 7, 2012

Test Engineer : Hunk yan / Engineer



Reviewed By : Philo zhong / Manager



Test Result	: PASS
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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 Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

2 Test Summary

Test	Test Requirement	Test Method	Result
Radiated Emission (30MHz to 2GHz)	FCC Part 15 Subpart B:2009	ANSI C63.4: 2003	PASS
Conducted Emission (150KHz to 30MHz)	FCC Part 15 Subpart B:2009	ANSI C63.4: 2003	PASS

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4 General Information

4.1 Client Information

Applicant : Suzhou Switek Electronics & Technology Co., Ltd.
Address of Applicant : No.5 Linggang Industry Zone, Luzhi Town, Wuzhong District,
Suzhou City, Jiangsu, China

Manufacturer : Suzhou Switek Electronics & Technology Co., Ltd.
Address of Manufacturer : No.5 Linggang Industry Zone, Luzhi Town, Wuzhong District,
Suzhou City, Jiangsu, China

4.2 General Description of E.U.T.

Product Name : VGA Video Splitter DC power input
Model No. : CV-1415
Operation Frequency : 150MHz max

4.3 Details of E.U.T.

Technical Data : Powered by PC VGA Port

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a VGA Video Splitter DC power input. The standards used were FCC Part 15 Subpart B:2009.

4.6 Test Facility

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

- **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, August 3, 2010.

- **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.

4.7 Test Location

All the tests were performed at:

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

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No.	Internal No.	Specification	Cal. Date	Due Date	Cert. No.	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114 943	W20080 01	9k- 26.5GHz	Aug.2, 2011	Aug.1, 2012	Wws2 00815 96	±1dB
Trilog Broadband Antenne 30- 3000 MHz	SCHWARZB ECK MESS- ELEKTROM / VULB9163	336	W20080 02	30-3000 MHz	Aug.2, 2011	Aug.1, 2012	-	±1dB
Broad-band Horn Antenna 1- 18 GHz	SCHWARZB ECK MESS- ELEKTROM / BBHA9120D	667	W20080 03	1-18GHz	Aug.2, 2011	Aug.1, 2012	-	f < 10 GHz : ±1dB 10GHz < f < 18GHz : ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZB ECK MESS- ELEKTROM / BBV 9718	9718-148	W20080 04	0.5-18GHz	Aug.2, 2011	Aug.1, 2012	-	±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZB ECK MESS- ELEKTROM /AK 9515 H	-	-	-	Aug.2, 2011	Aug.1, 2012	-	-
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connector	SCHWARZB ECK MESS- ELEKTROM /AK 9513	-	-	-	Aug.2, 2011	Aug.1, 2012	-	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	N/A	N/A	-	-
Color Monitor	SUNSPO/ SP-14C	-	-	-	N/A	N/A	-	-
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W20050 01	9k-3GHz	Aug.2, 2011	Aug.1, 2012	Wws2 00809 42	±1dB
Two-Line V- Network	ROHDE&SC HWARZ/ ENV216	100115	W20050 02	50Ω/50μ H	Aug.2, 2011	Aug.1, 2012	Wws2 00809 41	±10%
V-LISN	SCHWARZB ECK MESS- ELEKTROM IK	NSLK 8128	8128- 259	9k-30MHz	Aug.2, 2011	Aug.1, 2012	-	-
PC	Lenovo	T2900D	-	-	Aug.2, 2011	Aug.1, 2012	-	±1dB

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Equipment Name	Manufacturer Model	Equipment No.	Internal No.	Specification	Cal. Date	Due Date	Cert. No.	Uncertainty
Display1	ViewSonic	S27996-1W	-	-	Aug.2, 2011	Aug.1, 2012	-	±0.5dB
Display2	Lenovo	9227-AC6	-	-	Aug.2, 2011	Aug.1, 2012	-	±0.5dB
K/B	Dell	L100	-	-	Aug.2, 2011	Aug.1, 2012	-	±0.5dB
Mouse	Acer	M-UVACR1	-	-	Aug.2, 2011	Aug.1, 2012	-	±0.5dB

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6 Emissions Test Results

6.1 Conducted Emission Data

Test Requirement:	FCC Part 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
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:

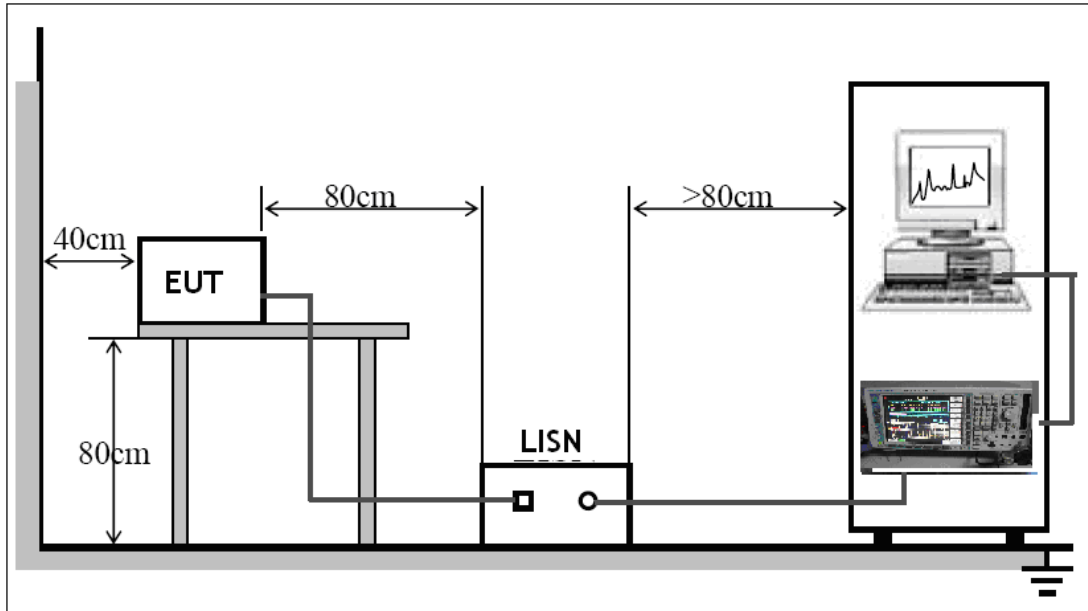
The pre-test found that the worst mode is the EUT connected to two Monitor and scrolled the “H” letter in full screen with 1280*1024 resolution and 60Hz refresh rate. So the data show is that mode’s only.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

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 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B 15.107 limits.

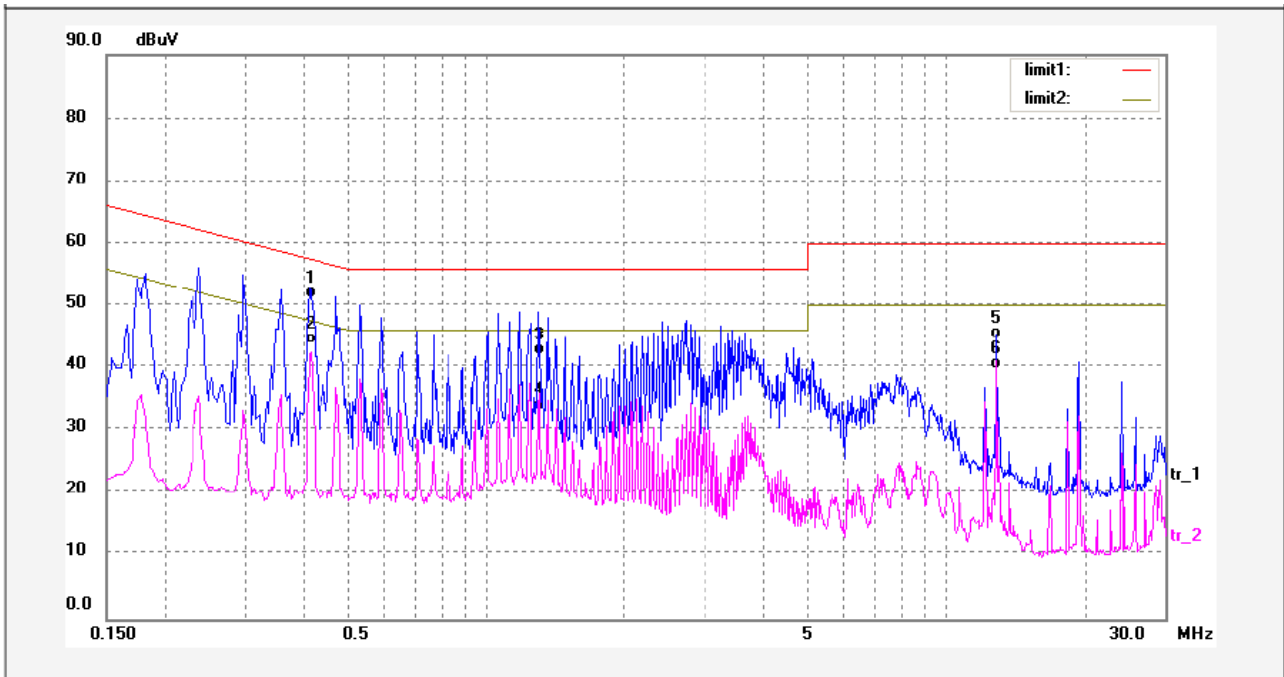


The EUT was placed on the test table in shielding room

6.1.3 Conducted Emission Test Result

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

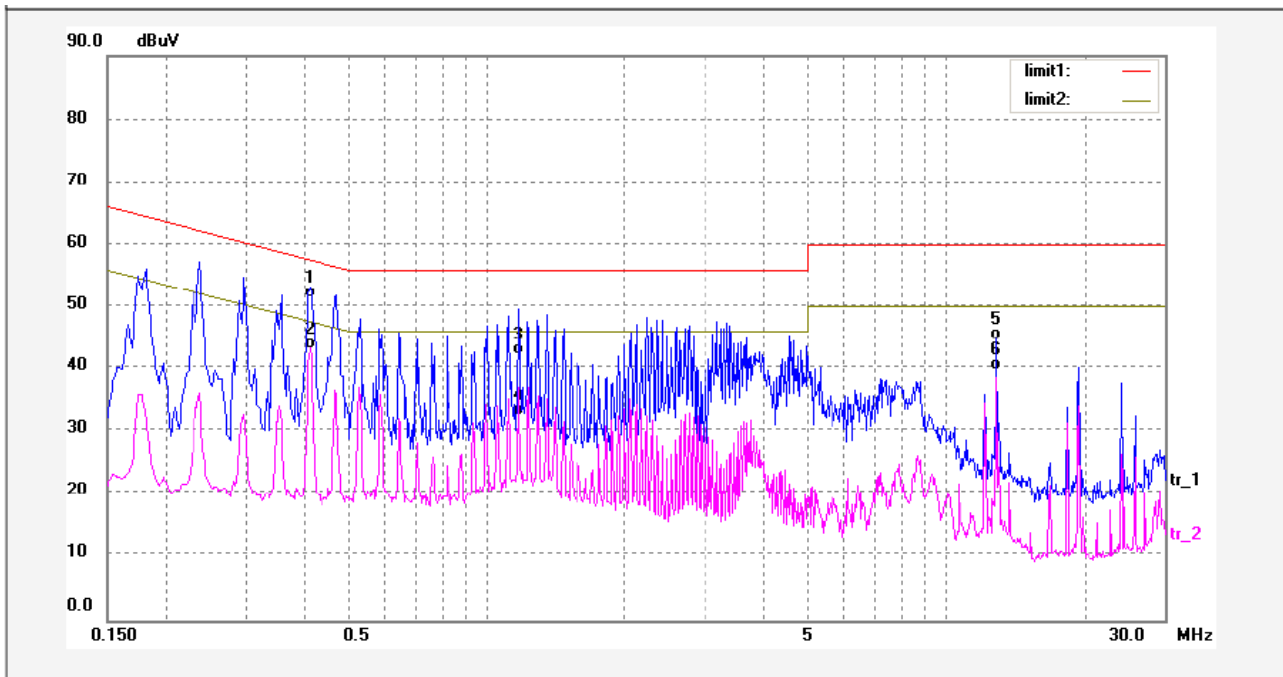
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4140	40.42	10.71	51.13	57.57	-6.44	QP	
2	0.4140	33.02	10.71	43.73	47.57	-3.84	AVG	
3	1.3020	29.69	12.19	41.88	56.00	-14.12	QP	
4	1.3020	20.93	12.19	33.12	46.00	-12.88	AVG	
5	12.9700	32.73	11.96	44.69	60.00	-15.31	QP	
6	12.9700	27.81	11.96	39.77	50.00	-10.23	AVG	

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Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4140	40.69	10.71	51.40	57.57	-6.17	QP	
2	0.4140	32.45	10.71	43.16	47.57	-4.41	AVG	
3	1.1820	30.05	12.19	42.24	56.00	-13.76	QP	
4	1.1820	20.36	12.19	32.55	46.00	-13.45	AVG	
5	12.9700	32.60	11.96	44.56	60.00	-15.44	QP	
6	12.9700	27.70	11.96	39.66	50.00	-10.34	AVG	

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6.1.4 Photograph – Conducted Emission Test Setup

Front View



Back View



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Reference No.: WT11062607-U-E-F

6.2 Radiation Emission Data

Test Requirement:	FCC Part15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 2GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/m above 960MHz 74.0 dB μ V/m between 1GHz ~ 2GHz for peak 54.0 dB μ V/m between 1GHz ~ 2GHz for AVG
Detector:	Peak for pre-scan (120kHz resolution bandwidth)

EUT Operation :

The pre-test found that the worst mode is the EUT connected to two Monitor and scrolled the “H” letter in full screen with 1280*1024 resolution and 60Hz refresh rate. So the data show is that mode’s only.

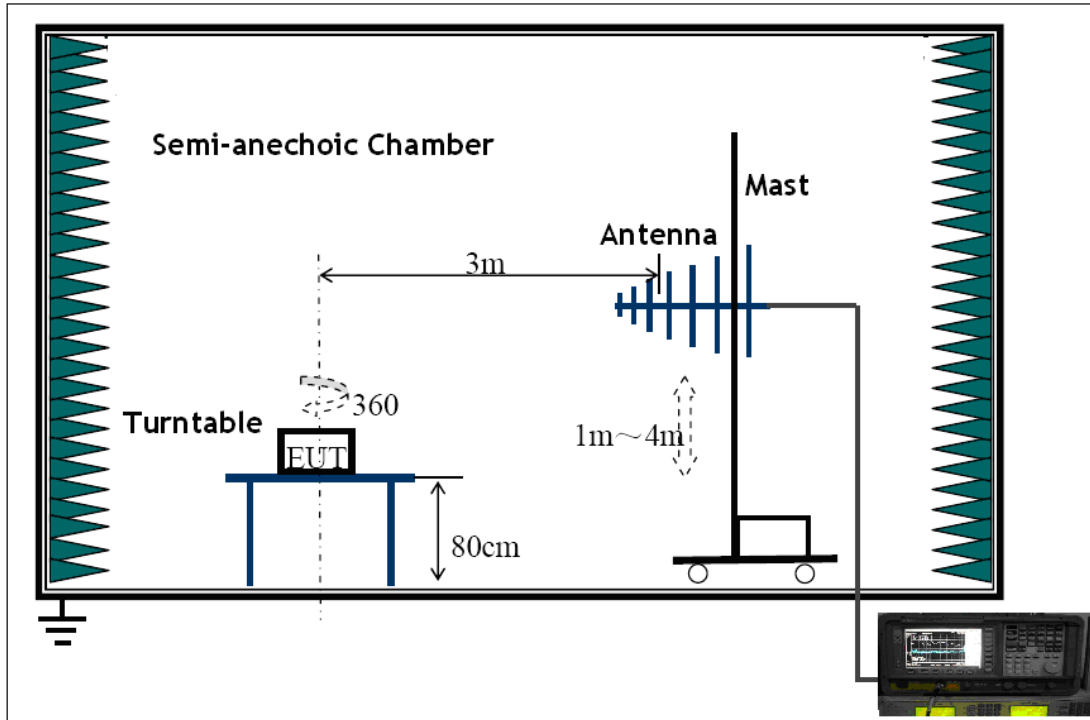
6.2.1 Measurement Uncertainty

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 NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ± 5.03 dB.

6.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B limits.



The EUT was placed on the test table in shielding room.

6.2.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 30 to 2000MHz.

Below 1GHz

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

Above 1GHz

Start Frequency	1000 MHz
Stop Frequency	2000MHz
Sweep Speed	Auto
IF Bandwidth	120 KHz
Video Bandwidth.....	3MHz
Quasi-Peak Adapter Bandwidth	120 KHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	1MHz

6.2.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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

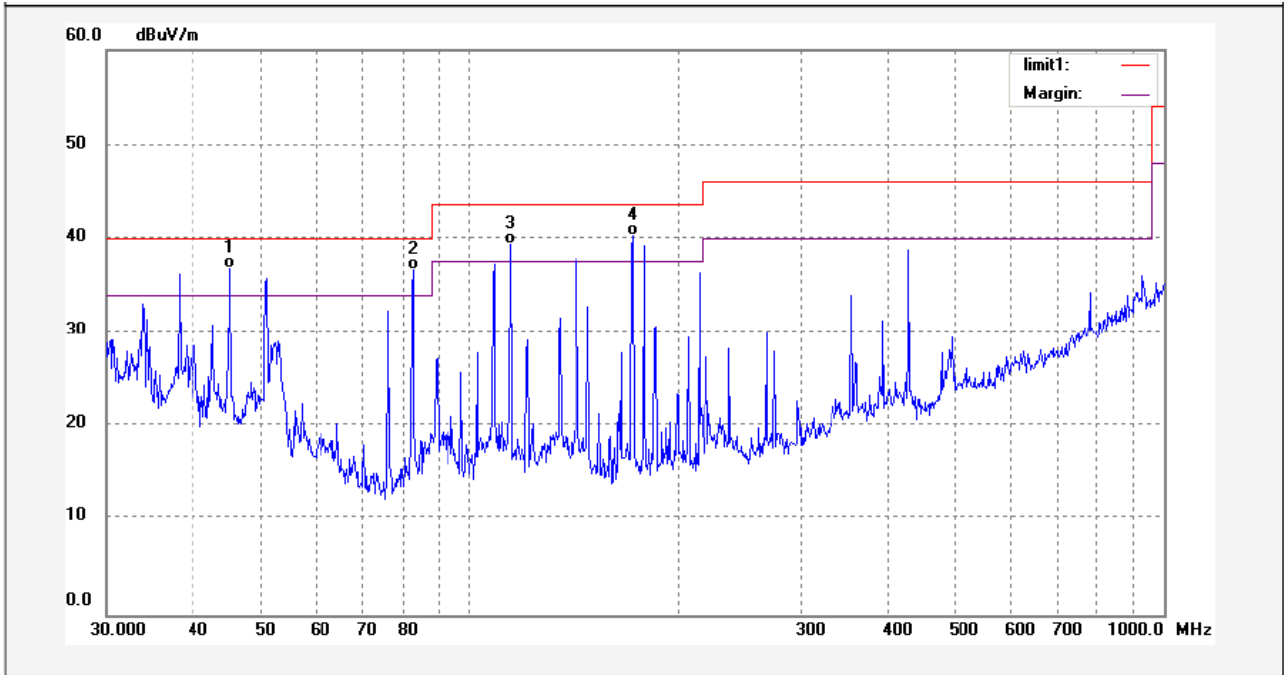
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

6.2.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC Part15 B standards.

Frequency Range: 30MHz ~ 1000MHz

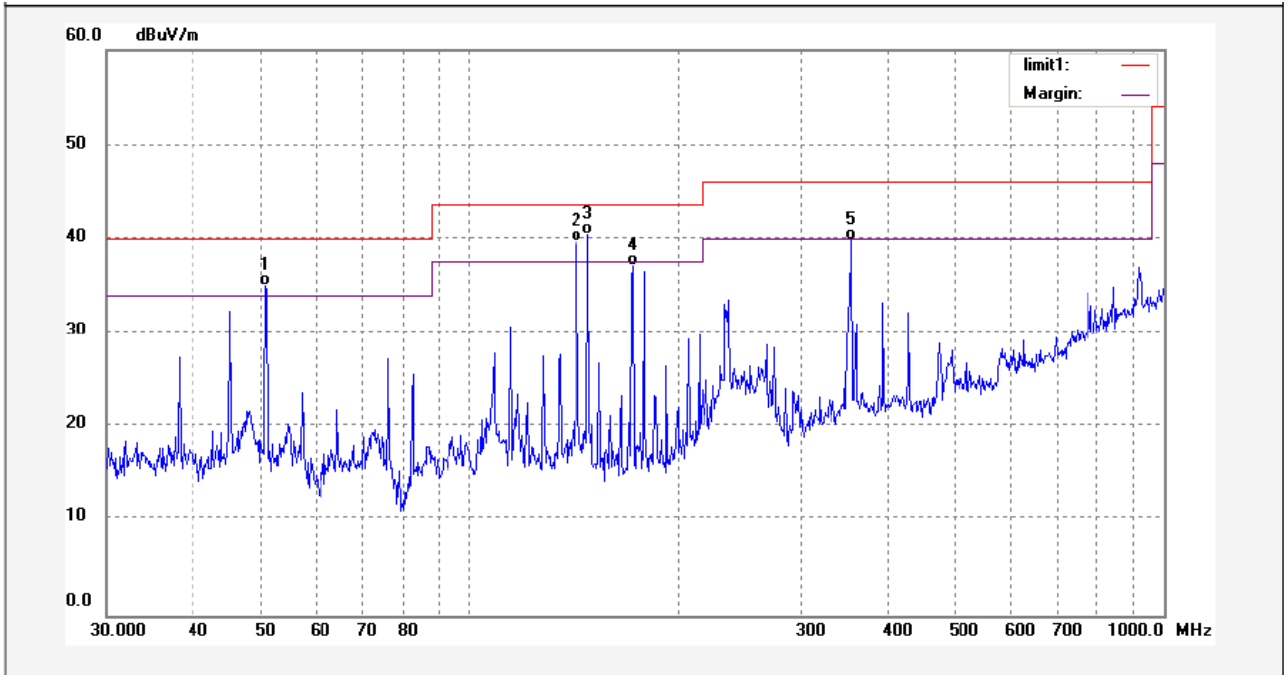
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	45.2538	22.17	14.69	36.86	40.00	-3.14	QP	
2	82.8162	27.06	9.63	36.69	40.00	-3.31	QP	
3	114.4197	26.60	12.74	39.34	43.50	-4.16	QP	
4	171.9922	28.11	12.18	40.29	43.50	-3.21	QP	

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Antenna polarization: Horizontal

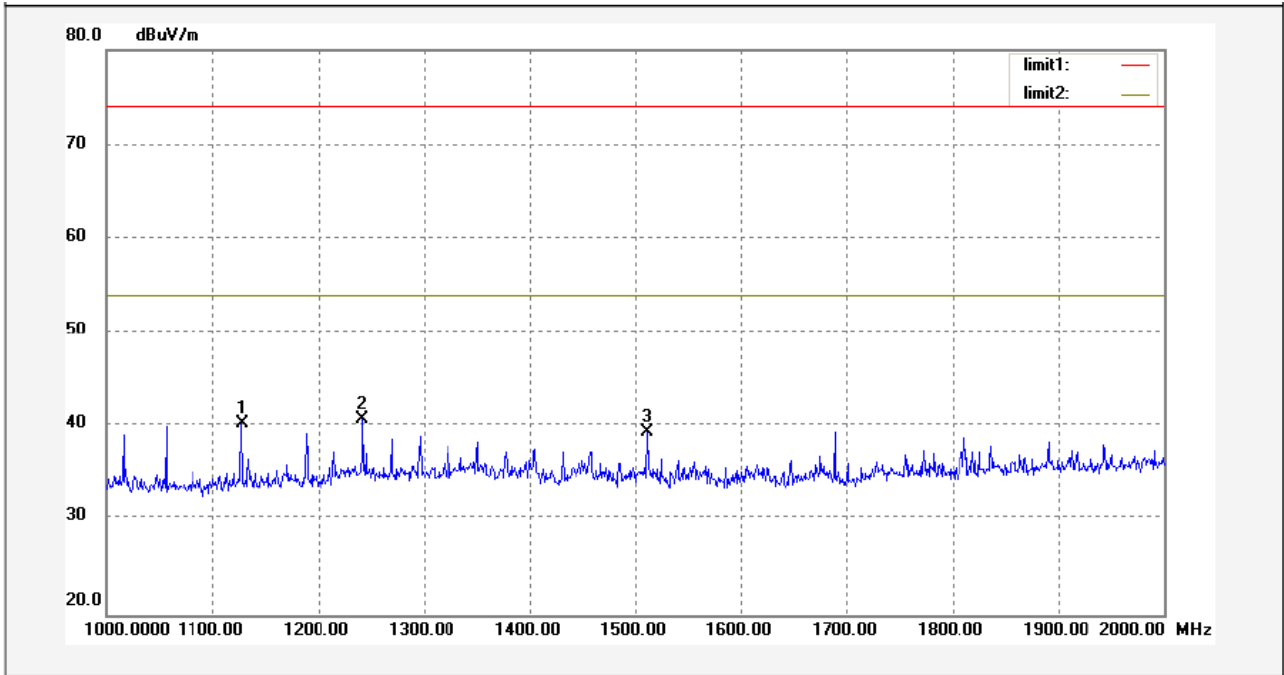


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	50.8172	20.51	14.55	35.06	40.00	-4.94	QP	
2	142.7692	28.15	11.46	39.61	43.50	-3.89	QP	
3	148.3951	29.31	11.15	40.46	43.50	-3.04	QP	
4	171.9922	24.97	12.18	37.15	43.50	-6.35	QP	
5	354.6912	19.35	20.43	39.78	46.00	-6.22	QP	

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Frequency Range: 1GHz ~ 2GHz

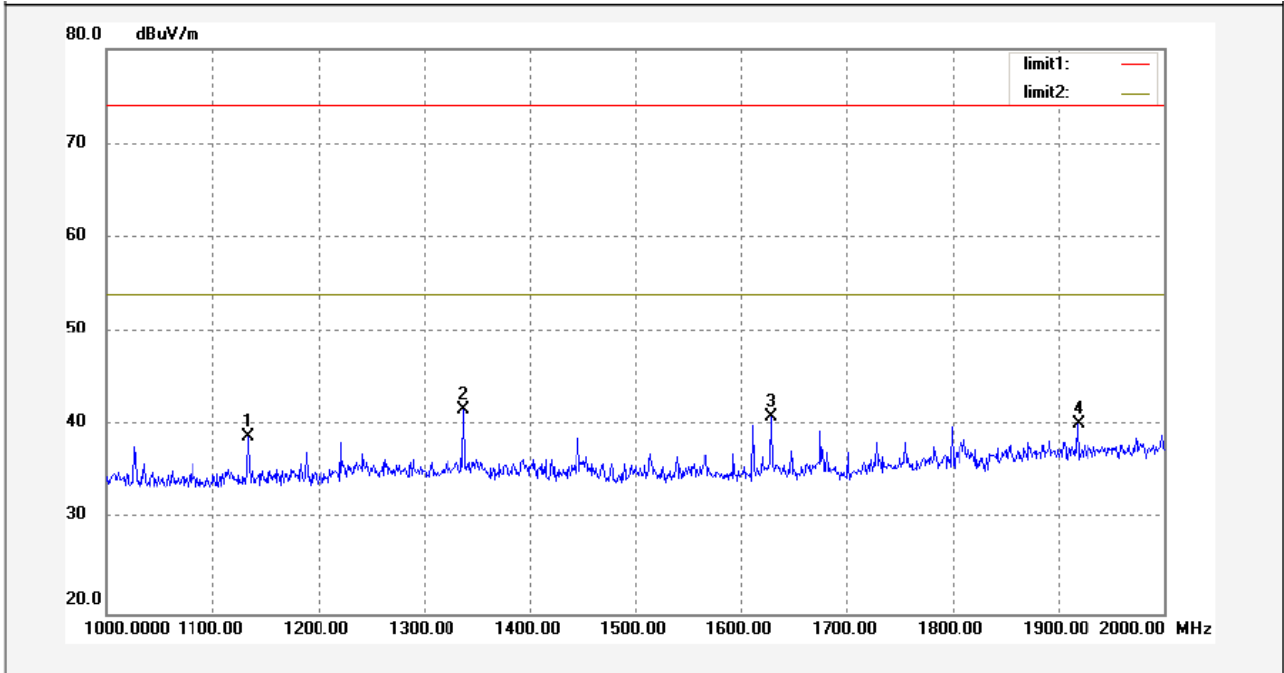
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1127.255	46.69	-6.38	40.31	74.00	-33.69	peak	
2	1242.485	46.08	-5.32	40.76	74.00	-33.24	peak	
3	1511.022	44.63	-5.16	39.47	74.00	-34.53	peak	

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Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1134.268	44.87	-6.03	38.84	74.00	-35.16	peak	
2	1337.675	46.46	-4.77	41.69	74.00	-32.31	peak	
3	1628.256	45.93	-4.98	40.95	74.00	-33.05	peak	
4	1917.836	43.38	-3.15	40.23	74.00	-33.77	peak	

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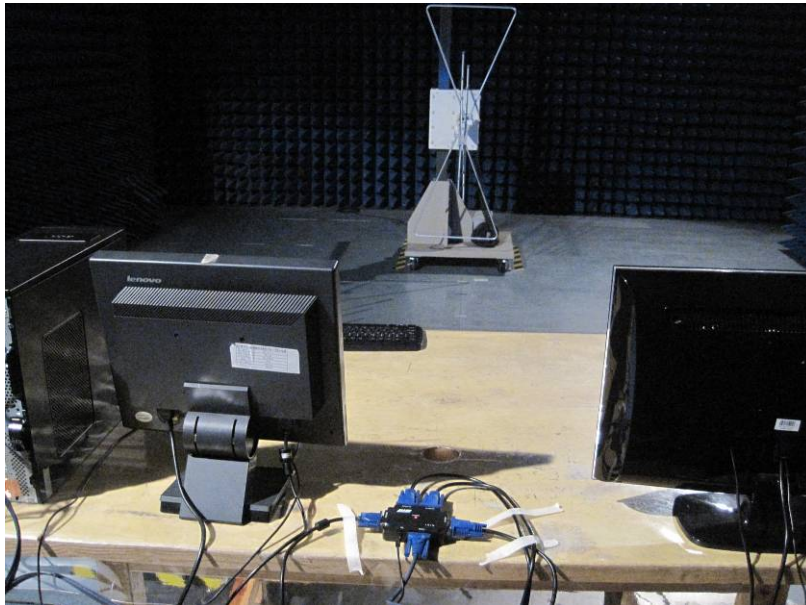
6.2.7 Photograph – Radiation Emission Test Setup

Below 1GHz

Front View



Back View



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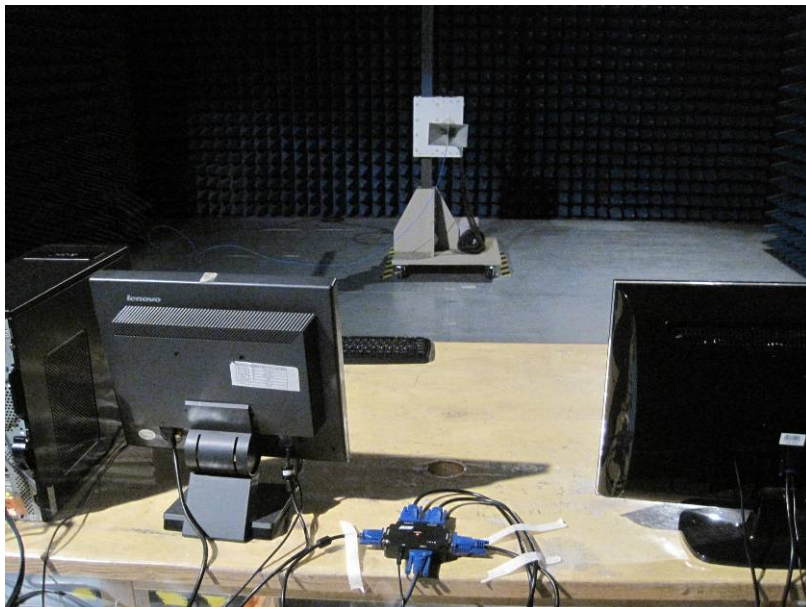
WALTEK SERVICES

Reference No.: WT11062607-U-E-F

**Above 1GHz
Front View**



Back View



7 Photographs - Constructional Details

7.1 Product View



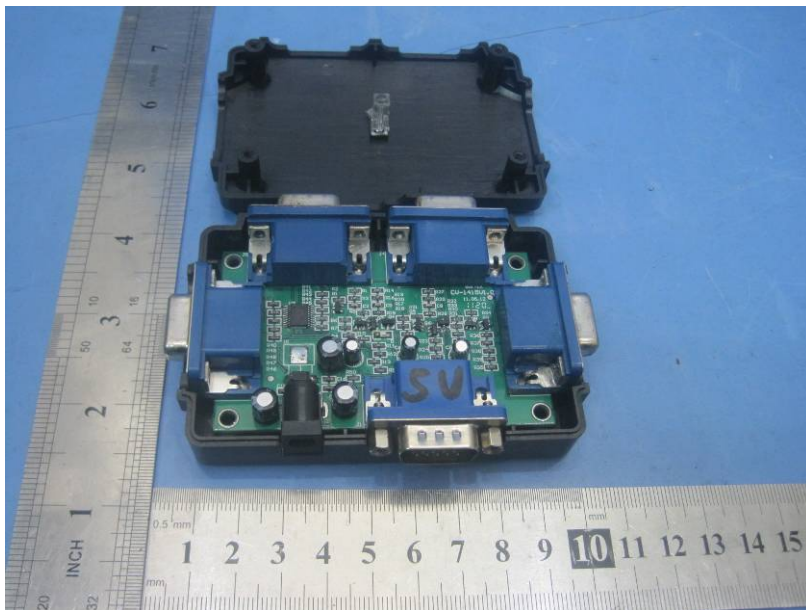
7.2 EUT - Appearance View



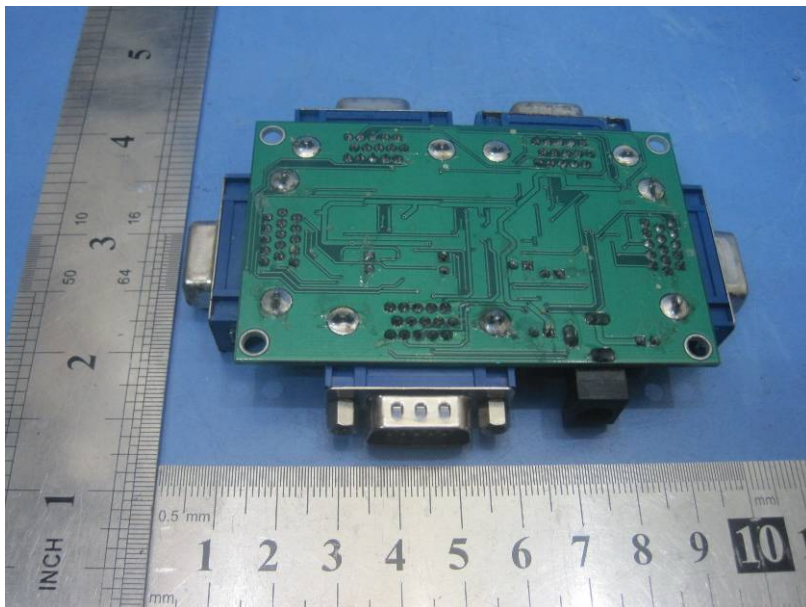
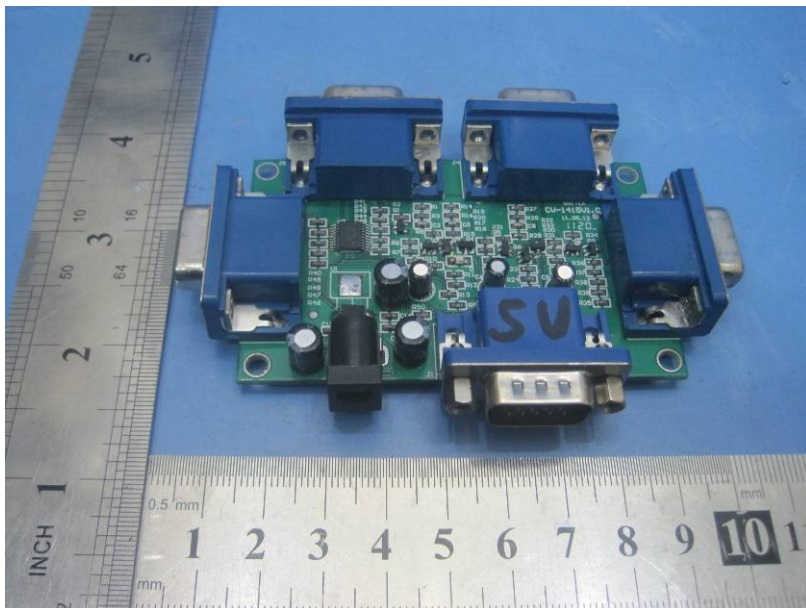
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7.3 EUT - Open View



7.4 EUT - PCB View



8 FCC Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Back View/proposed FCC Label Location



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