

FCC TEST REPORT

FCC ID : ZQXAS-X1XX
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) :

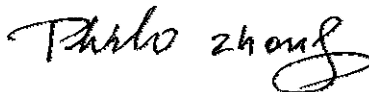
Product Name : KVM SWITCH
Model No. : AS-21P(CS-21CA), AS-41P(CS-41CA), AS-21UA(CS-21UA), AS-41UA(CS-41UA)

Standards : FCC CFR47 Part 15 Section 15.109:2009

Date of Test : July 2, 2011 ~ August 19, 2011

Date of Issue : August 26, 2011

Test Engineer : Hunk yan 

Reviewed By : Philo zhong 

Test Result	: PASS
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Prepared By:

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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 Item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC Part 15.109	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC Part 15.107	ANSI C63.4: 2003	Class B	N/A

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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 : KVM SWITCH
Model No. : AS-21P(CS-21CA), AS-41P(CS-41CA), AS-21UA(CS-21UA), AS-41UA(CS-41UA)
Difference Description : All the models have the same controller circuit and similar appearance, only the number of VGA port and type of mouse and key board interface are different. On the basis of these we choose the model AS-41UA as the test sample, and the data showing in the report is that model's only, but this report is also applicable to the other models. Please refer to the table below for more information.

Model No.	Number of VGA port	Type of mouse and key board interface
AS-21P(CS-21CA)	2	PS/2
AS-41P(CS-41CA)	4	
AS-21UA(CS-21UA)	2	USB
AS-41UA(CS-41UA)	4	

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 KVM SWITCH. The standards used were FCC CFR47 Part 15 Section 15.107 and Section 15.109.

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	MY45114943	W2008001	9k-26.5GHz	Aug.2, 2011	Aug.1, 2012	Wws20081596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZECK MESS-ELEKTROM / VULB9163	336	W2008002	30-3000 MHz	Aug.2, 2011	Aug.1, 2012	-	±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZECK MESS-ELEKTROM / BBHA9120D	667	W2008003	1-18GHz	Aug.2, 2011	Aug.1, 2012	-	f<10 GHz: ±1dB 10GHz<f<18 GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	0.5-18GHz	Aug.2, 2011	Aug.1, 2012	-	±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZECK 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	SCHWARZECK MESS-ELEKTROM /AK 9513	-	-	-	Aug.2, 2011	Aug.1, 2012	-	-
Positioning Controller	C&C LAB/CC-C-IF	-	-	-	N/A	N/A	-	-
Color Monitor	SUNSP/SP-14C	-	-	-	N/A	N/A	-	-
Test Receiver	ROHDE&SCHWARZ/ESPI	101155	W2005001	9k-3GHz	Aug.2, 2011	Aug.1, 2012	Wws20080942	±1dB
EMI Receiver	Beijingkehua	KH3931	-	9k-1GHz	Aug.2, 2011	Aug.1, 2012	-	-
Two-Line V-Network	ROHDE&SCHWARZ/ENV216	100115	W2005002	50Ω/50μH	Aug.2, 2011	Aug.1, 2012	Wws20080941	±10%

WALTEK SERVICES

Reference No.: WT11062602-U-E-F

Equipment Name	Manufacturer Model	Equipment No.	Internal No.	Specification	Cal. Date	Due Date	Cert. No.	Uncertainty
V-LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8128	8128-259	9k-30MHz	Aug.2, 2011	Aug.1, 2012	-	-
PC1	Lenovo	T2900D	-	-	Aug.2, 2011	Aug.1, 2012	-	±1dB
PC2	Acer	Aspire AG1720	-	-	Aug.2, 2011	Aug.1, 2012	-	±1dB
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

6 Conducted Emission Data

Test Requirement: FCC CFR47 Part 15 Section 15.107

Test Method: ANSI C63.4:2003

Test Result: N/A

Remark: There is no adapter for the EUT, it is powered by PC VGA port, so this test is not applicable.

7 Radiation Emission Data

Test Requirement:	FCC CFR 47 Part 15 Section 15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 1GHz
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
Detector:	Peak for pre-scan (120kHz resolution bandwidth)

EUT Operation :

The pre-test was performance in four mode: connect to 1 PC mode, connect to 2 PC mode , connect to 3 PC mode, and connect to 4 PC mode, in the meantime, scrolling the “H” letter in full screen with 1024*768 resolution and 60Hz refresh rate for each mode. The worst case is connect to 2 PC and scrolling the “H” letter in full screen with 1024*768 resolution and 60Hz refresh rate mode, so the data showing in the report is that mode only.

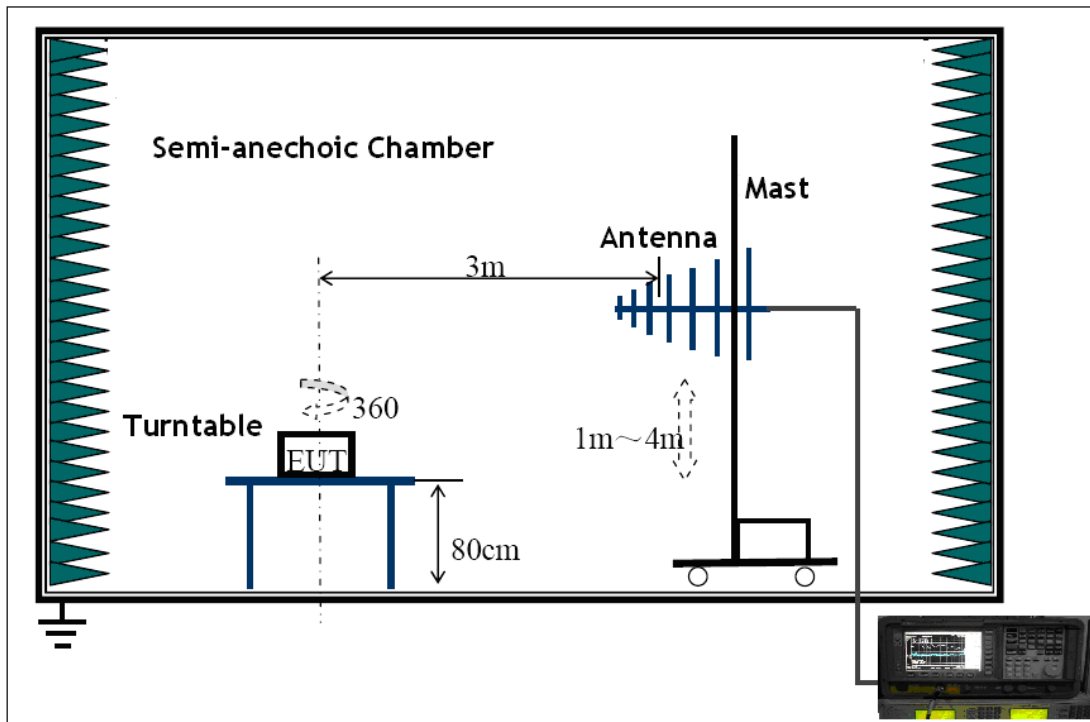
7.1 Measurement Uncertainty

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.

7.2 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 CFR 47 Part 15 Section 15.109 limits.



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

7.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 30 to 1000MHz.

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

7.4 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.

7.5 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:

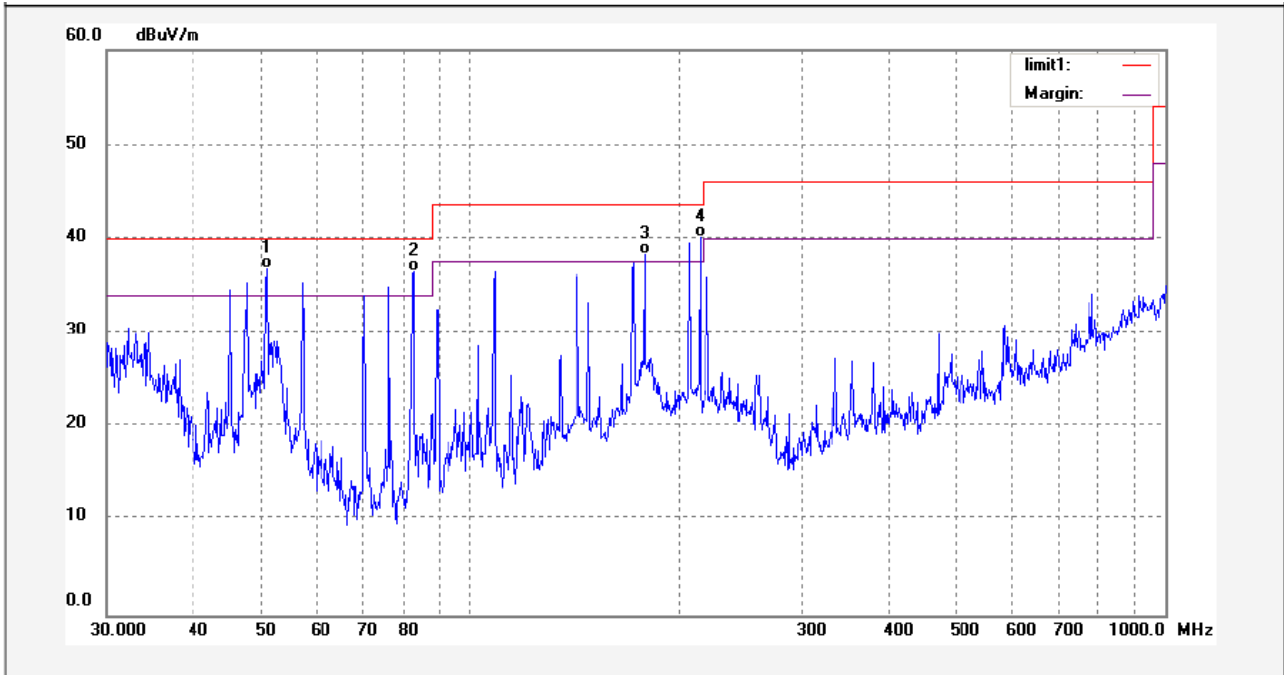
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC CFR47 Part 15 Section 15.109 standards.

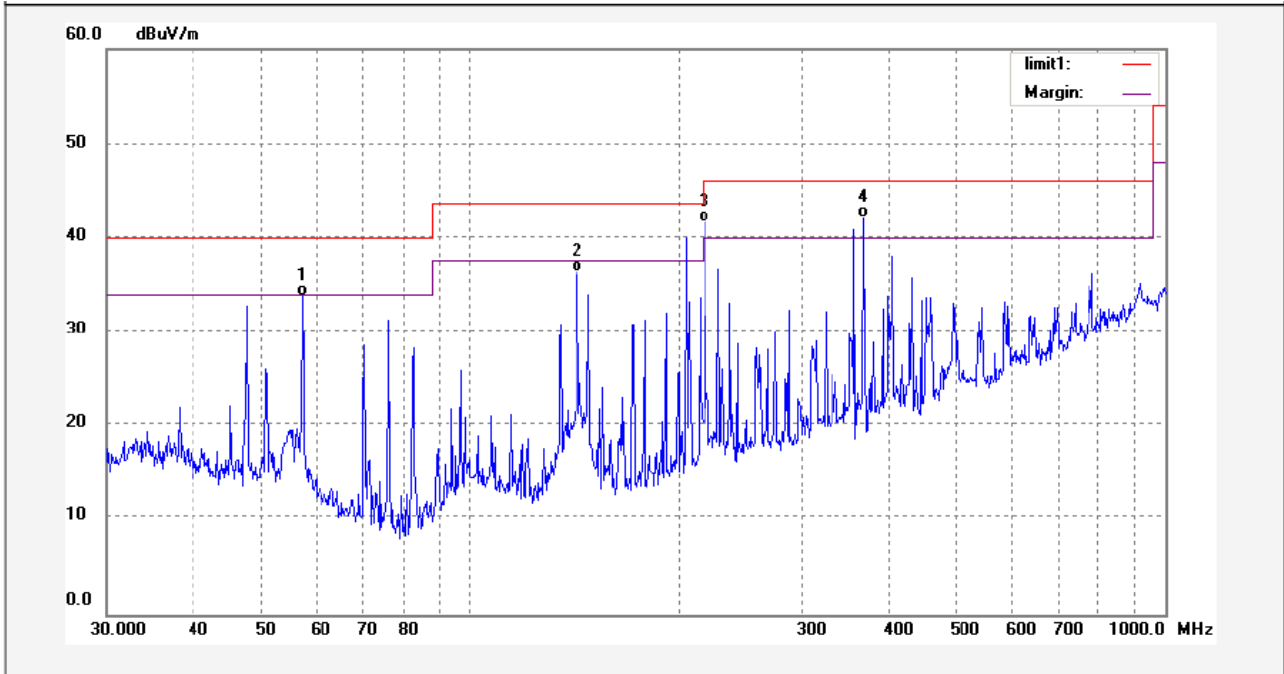
Frequency Range: 30MHz ~ 1000MHz

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	50.9960	22.25	14.54	36.79	40.00	-3.21	QP	
2	82.8161	26.86	9.63	36.49	40.00	-3.51	QP	
3	178.1425	25.57	12.78	38.35	43.50	-5.15	QP	
4	213.8533	25.16	15.03	40.19	43.50	-3.31	QP	

Antenna polarization: Horizontal



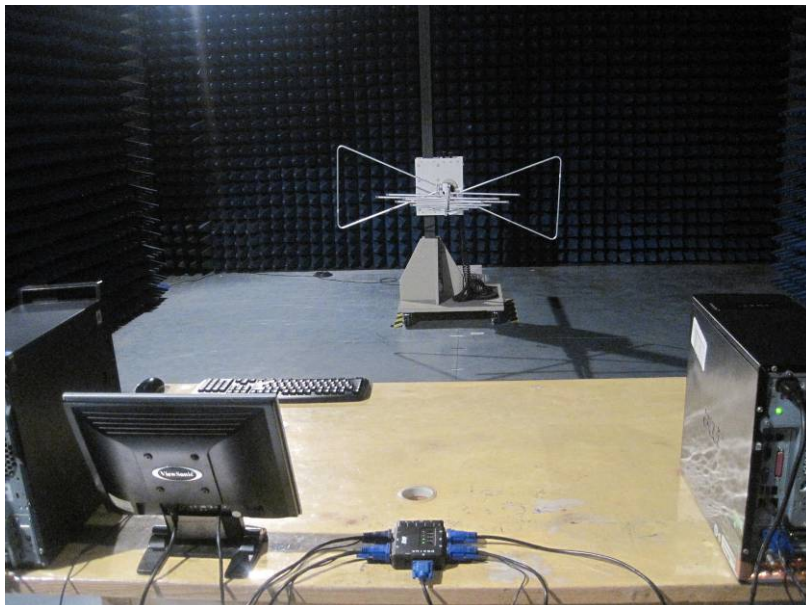
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	57.2654	20.69	13.19	33.88	40.00	-6.12	QP	
2	142.7692	24.91	11.46	36.37	43.50	-7.13	QP	
3	217.6437	25.93	15.65	41.58	46.00	-4.42	QP	
4	368.6681	21.52	20.57	42.09	46.00	-3.91	QP	

7.7 Photograph – Radiation Emission Test Setup

Front View



Back View



8 Photographs - Constructional Details

8.1 Product View



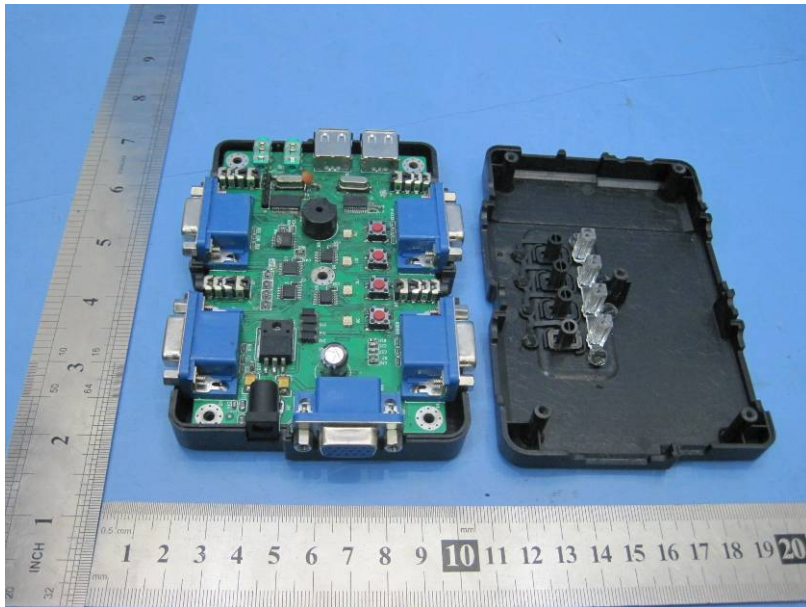
8.2 EUT – Front View



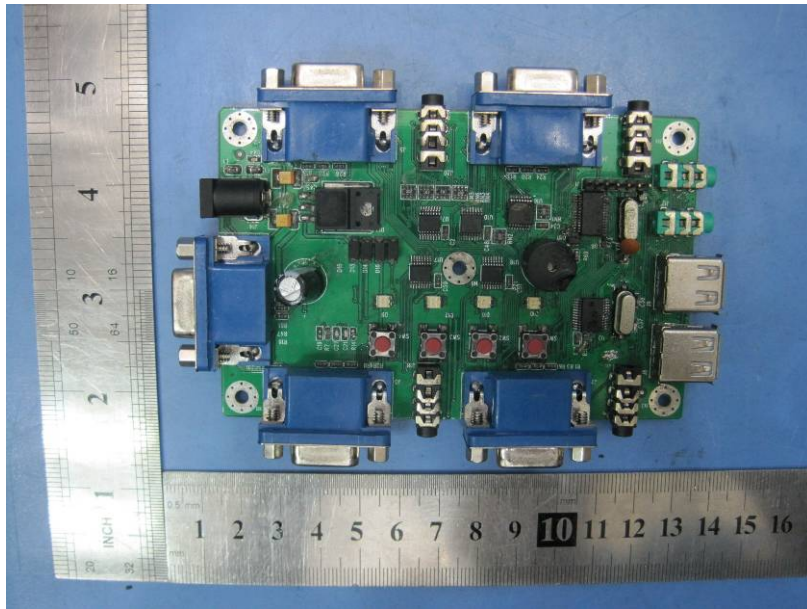
8.3 EUT – Back View



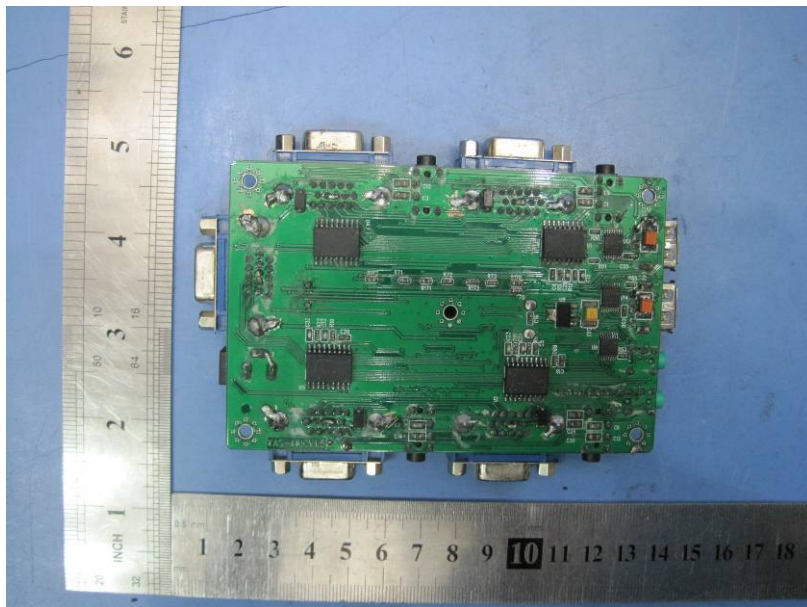
8.4 EUT – Open View



8.5 PCB – Front View



8.6 PCB – Back View



9 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.

