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FCC TEST REPORT

FCC ID	: ZQXAS-317191TLG				
Applicant	: Suzhou Switek Electronics & Technology Co., Ltd.				
Address	: No.5 Linggang Industry Zone, Luzhi Town, Wuzhong District,				
	Suzhou City, Jiangsu, China				
Equipment Under T	'est (EUT) :				
Product Name	: CAT5 LCD CONTROL PLATFORM				
Model No.	: AS-3104TLG, AS-3108TLG, AS-3116TLG,				
	AS-7104TLG, AS-7108TLG, AS-7116TLG,				
	AS-9104TLG, AS-9108TLG, AS-9116TLG				
Standards	: FCC CFR47 Part 15 Section 15.109:2009				
Date of Test	: October 24 ~ November 10, 2011				
Date of Issue	: November 18, 2011				
Test Engineer	: Hunk yan / Engineer Junk				
Reviewed By	: Philo zhong / Manager <i>Philo</i> zhong				

Test Result	: PASS

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.

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2 Test Summary

Test Item Test Requirement		Test Method	Class / Severity	Result
Radiated Emission (9kHz to 2GHz)	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	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	: CAT5 LCD CONTROL PLATFORM
Model No.	: AS-3104TLG, AS-3108TLG, AS-3116TLG, AS-7104TLG, AS-7108TLG, AS-7116TLG, AS-9104TLG, AS-9108TLG, AS-9116TLG
Difference Description	 All the models have the same controller circuit and similar appearance, only the size of LCD and the number of RJ45 port are different. On the basis of these we choose the model AS-3116TLG, AS-7116TLG, AS-9116TLG as the test sample. Please refer to the table below for more information. In order to match with the differenct PC's mouse and keyboard interface, there are two type of Dongle you could choose. One is with USP interface and another in with PS/2 interface.

Model No.	Number of VGA port	Size of LCD
AS-3104TLG	4	
AS-3108TLG	8	15''
AS-3116TLG	16	
AS-7104TLG	4	
AS-7108TLG	8	17"
AS-7116TLG	16	
AS-9104TLG	4	
AS-9108TLG	8	19''
AS-9116TLG	16	

4.3 Details of E.U.T.

Technical Data

: Adapter input: 100 ~ 240VAC, 50/60Hz 1.5A MAX Adapter output: 12VDC 4000mA

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 CAT5 LCD CONTROL PLATFORM. 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

Equipment	Manufacturer	Equipment	Internal	Specificatio	Cal.	Due	Uncertaint
Name	Model	No.	No.	n	Date	Date	У
EMC Analyzer	Agilent/ E7405A	MY45114 943	W20080 01	9k- 26.5GHz	Aug.2, 2011	Aug.1, 2012	±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 < 18 GHz : ±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	±1dB
Two-Line V- Network	ROHDE&SC HWARZ/ ENV216	100115	W20050 02	50Ω/50μ Η	Aug.2, 2011	Aug.1, 2012	±10%
V-LISN	SCHWARZB ECK MESS- ELEKTRON IK	NSLK 8128	8128- 259	9k-30MHz	Aug.2, 2011	Aug.1, 2012	-
Active Loop Antenna	Beijing Dazhi / ZN30900A	-	-	-	Aug.2, 2011	Aug.1, 2012	±1dB

5 Equipment Used during Test

Equipment Manufacturer Equipment Internal Specificatio Cal. Due Uncertaint Name Model No. No. Date Date n У Aug.2, Aug.1, PC1 T2900D ±1dB Lenovo --2011 2012 Aug.2, Aug.1, Aspire PC2 ±1dB Acer --AG1720 2011 2012 S27996-Aug.2, Aug.1, ViewSonic Display1 _ _ ± 0.5 dB 1W2011 2012 Aug.2, Aug.1, Display2 Lenovo 9227-AC6 $\pm 0.5 dB$ --2011 2012 Aug.2, Aug.1, K/B Dell L100 $\pm 0.5 dB$ --2011 2012 M-Aug.2, Aug.1, $\pm 0.5 dB$ Mouse Acer --2011 2012 UVACR1

Suzhou Switek Electronics & Technology Co., Ltd.

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6 Conducted Emission Data

Test Requirement:	FCC CFR 47 Part 15 Section 15.107		
Test Method:	ANSI C63.4:2003		
Test Result:	PASS		
Frequency Range:	150kHz to 30MHz		
Class:	Class B		
Limit:	66-56 dBµV between 0.15MHz & 0.5MHz		
	56 dBµV between 0.5MHz & 5MHz		
	60 dBµV between 5MHz & 30MHz		
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)		
	Quasi-Peak & Average if maximised peak within 6dB of		
	Average Limit		

6.1 E.U.T. Operation

Operating Environment:

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

EUT Operation:

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.

6.2 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 Section 15.107 limits.



The EUT was placed on the test table in shielding room

6.3 Conducted Emission Test Result

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

Remark: The pre-test was performance in three models AS-3116TLG, AS-7116TLG, AS-9116TLG, and the worst is AS-9116TLG, when it connected to two PC via the Dongle with USB interface 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.

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FCC ID: ZQXAS-317191TLG

Neutral line:



FCC ID: ZQXAS-317191TLG

6.4 Photograph – Conducted Emission Test Setup

Front View



Back View



7 Radiation Emission Data

FCC CFR 47 Part 15 Section 15.109
ANSI C63.4:2003
PASS
9kHz to 2GHz
3m
Class B

Limit:

Frequency	Field Strength		Field Strength Limit at 3m Measurement Dist		
(MHz)	uV/m	Distance (m)	uV/m	dBuV/m	
$0.009 \sim 0.490$	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$	
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$	
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$	
30 ~ 88	100	3	100	$20\log^{(100)}$	
88~216	150	3	150	20log ⁽¹⁵⁰⁾	
216~960	200	3	200	20log ⁽²⁰⁰⁾	
Above 960	500	3	500	20log ⁽⁵⁰⁰⁾	

Note:

- a) The tighter limit applies at the band edges. For example: F.S limit at 88MHz is 100uV/m
- b) If measurement is made at 3m distance, then F.S Limit at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d2/d1)^2$.

For example:

F.S Limit at 30m(d2) distance is $30uV/m(L_{d2})$, then F.S Limit at 3m(d1) distance is $L_{d1} = 30uV/m * (30/3)^2 = 100 * 30uV/m$

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 diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission Above 1GHz Emissions.



7.3 Spectrum Analyzer Setup

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

$9 kHz \sim 30 MHz$

Start Frequency	9kHz
Stop Frequency	30MHz
Sweep Speed	Auto
IF Bandwidth	10KHz
Video Bandwidth	10KHz
Resolution Bandwidth	10KHz

$30 MHz \sim 1 GHz$

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	.25000MHz
Sweep Speed	. Auto
IF Bandwidth	.120 KHz
Video Bandwidth	.1MHz
Quasi-Peak Adapter Bandwidth	.120 KHz
Quasi-Peak Adapter Mode	.Normal
Resolution Bandwidth	.1MHz

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(normal uses) axis positioning. And all the modes was tested in the report. 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:

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 $-7dB\mu V$ means the emission is $7dB\mu V$ below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – 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.

Remark: The pre-test was performance in three models AS-3116TLG, AS-9116TLG, and the worst is AS-9116TLG, when it connected to two PC via the Dongle with USB interface 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.

Because the emissions below 30MHz are more than 20dB below the limit, the data is not show in the report.

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FCC ID: ZQXAS-317191TLG



Antenna polarization: Horizontal

FCC ID: ZQXAS-317191TLG

Frequency Range: 1000MHz ~ 2000MHz Antenna polarization: Vertical



FCC ID: ZQXAS-317191TLG

Antenna polarization: Horizontal



FCC ID: ZQXAS-317191TLG

7.7 Photograph – Radiation Emission Test Setup

Below 1GHz Front View



Back View



FCC ID: ZQXAS-317191TLG

Above 1GHz Front View



Back View



FCC ID: ZQXAS-317191TLG

8 Photographs - Constructional Details

8.1 **Product View**



8.2 EUT - Appearance View





8.3 EUT - Open View 1





8.4 PCB1 View



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8.5 PCB2 View





8.6 EUT – Open View 2





8.7 PCB3 View



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8.8 PCB4 View





8.9 PCB5 View





8.10 PCB6 View





8.11 Dongle (PS/2) – Appearance View



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8.12 Dongle (PS/2) – Open View



8.13 Dongle (PS/2) – PCB View





8.14 Dongle (USB) – Appearance View



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8.15 Dongle (USB) – Open View



8.16 Dongle (USB) – PCB View



FCC ID: ZQXAS-317191TLG



8.17 Adapter - Appearance View





8.18 Adapter – Open View



8.19 Adapter – PCB 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.

