

APPLICATION FOR CERTIFICATION  
On Behalf of

Wacom Co Ltd

LCD SIGNATURE TABLET

Model Number: STU-500

Prepared for : Wacom Co Ltd  
2-510-1 Toyonodai, Otone-cho, Kitasaitama-gun, Saitama  
349-1148, Japan.

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Report Number : ACS-F07462  
Date of Test : Oct.23~27, 2007  
Date of Report : Oct.31, 2007

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## TEST REPORT CERTIFICATION

Applicant : Wacom Co Ltd  
 Manufacturer : Totton SANYO Electric (Guangzhou) Co., Ltd  
 EUT Description : LCD SIGNATURE TABLET  
 (A) MODEL NO. : STU-500  
 (B) SERIAL NO. : N/A  
 (C) POWER SUPPLY : DC 5V Adaptor From AC 120V/60Hz

## Test Procedure Used:

## FCC Rules and Regulations Part 15 Subpart B Class B 2007

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits for radiated and conducted emissions. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Oct.23~27, 2007

Prepared by : YoYo Wang  
YoYo Wang / Assistant

Reviewer : Iceman Hu  
Iceman Hu / Supervisor

Approved & Authorized Signer: Ken Lu / Deputy Manager



## 1. SUMMARY OF STANDARDS AND RESULTS

### 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Power Line Conducted Emission Test	FCC Part 15: 2007 ANSI C63.4: 2003	Class B	PASS
Radiated Emission Test	FCC Part 15: 2007 ANSI C63.4: 2003	Class B	PASS

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Description : LCD SIGNATURE TABLET

Model Number : STU-500

Applicant : Wacom Co Ltd  
2-510-1 Toyonodai, Otono-cho, Kitasaitama-gun, Saitama  
349-1148, Japan.

Manufacturer : Totton SANYO Electric (Guangzhou) Co., Ltd  
3 Xingda Road, Huangpu, Guangzhou, Guangdong, P.R. China

List Name : SUMITRONICS HONG KONG LTD.  
Unit 803A, East Ocean Centre, 98 Granville Road, Tsim Sha  
Tsui East, Kowloon, Hongkong

Power Adaptor : Manufacturer: UNIFIUE, M/N: U1312-0520  
Cable: Unshielded Detachable, 4.0m

RS232 Cable : Unshielded, Detachable, 1.8m

USB Cable : Unshielded, Detachable, 1.8m

Date of Test : Oct.23~27, 2007

Date of Receipt : Oct.23, 2007

Sample Type : Series production

## 2.2. Tested Supporting System Details

### 2.2.1. PERSONAL COMPUTER

EMC CODE	:	Test PC E
M/N	:	HP Pavilion W1000
S/N	:	THT504101L
Manufacturer	:	HP
Power Cord	:	Unshielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R31001

### 2.2.2. MONITOR

EMC CODE	:	ACS-EMC-LM03R
M/N	:	1907FPt
S/N	:	CN-009759-71618-6AP-ACPP
Manufacturer	:	DELL
Data Cable (VGA)	:	Shielded, Detachable, 2.0m
Data Cable (DVI)	:	Shielded, Detachable, 2.0m
Power Cord	:	Unshielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R3A002

### 2.2.3. PS/2 KEYBOARD

EMC CODE	:	ACS-EMC-K09R
M/N	:	5219
S/N	:	BN43300914
Manufacturer	:	HP
Data Cable	:	Shielded, Undetachable, 1.8m
FCC ID	:	E5XKB5209
BSMI ID	:	R31213

### 2.2.4. HDD

EMC CODE	:	ACS-EMC-HDD04
M/N	:	F12-UF
S/N	:	A0100215-5390002
Manufacturer	:	Terasys
Data Cable	:	Shielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	4912A022

### 2.2.5.PRINTER

EMC CODE	:	ACS-EMC-PT03
M/N	:	EN8060A
S/N	:	908A1001201
Manufacturer	:	OKIPAGE
Data Cable	:	Shielded, Detachable, 1.5m
Power Cord	:	Unshielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	3882A463

### 2.2.6.PS/2 MOUSE

EMC CODE	:	ACS-EMC-M06R
M/N	:	N3+ Optical
S/N	:	K043801559
Manufacturer	:	HP
Data Cable	:	Shielded, Undetachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R31258

### 2.3. Test Facility

#### Site Description

3m Anechoic Chamber	:	Jun. 13, 2006 File on Federal Communication Commission Registration Number: 90454
3m & 10m Anechoic Chamber	:	Jan.31, 2007 File on Federal Communication Commission Registration Number: 794232
EMC Lab.	:	Accredited by DATech, German Registration Number: DAT-P-091/99-01 Feb. 02, 2004
		Accredited by NVLAP, USA NVLAP Code: 200372-0 Apr.01, 2006

### 2.4. Measurement Uncertainty

No.	Item	Uncertainty	Remark
1.	Uncertainty for Conducted Emission Test	1.22dB	
2.	Uncertainty for Radiated Emission Test	3.14dB	3m Chamber
3.	Uncertainty for Radiated Emission Test	3.18dB	10m Chamber
4.	Uncertainty for Power Clamp Test	1.38dB	

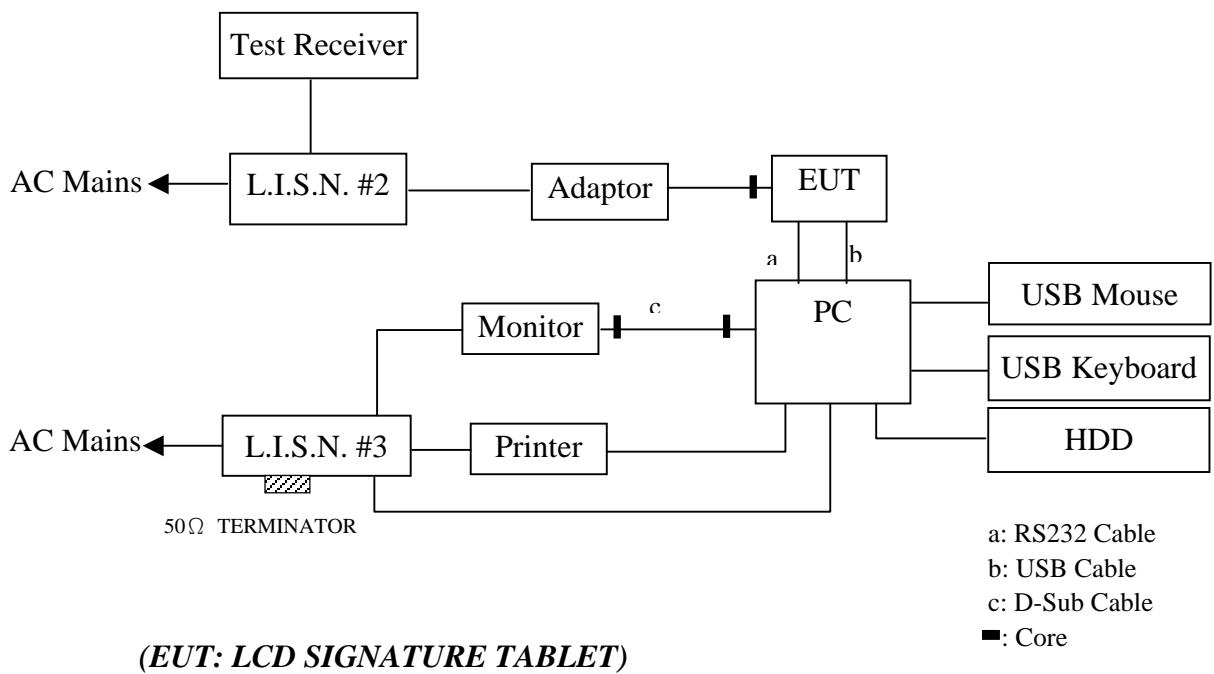
### 3. POWER LINE CONDUCTED EMISSION TEST

#### 3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	May 11, 07	1 Year
2.	L.I.S.N.#2	Kyoritsu	KNW-407	8-1636-1	May 11, 07	1 Year
3.	L.I.S.N.#3	EMCO	3825/2	9006-1660	May 11, 07	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May 11, 07	1 Year
5.	RF Cable	MIYAZAKI	5D-2W	LISN Cable 1#	Aug.11, 07	1/2 Year
6.	Coaxial Switch	Anritsu	MP59B	M55367	Aug.11, 07	1/2 Year
7.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	Aug.11, 07	1/2 Year

#### 3.2. Block Diagram of Test Setup

##### 3.2.1. Block diagram of connection between the EUT and simulators



#### 3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(µV)	Average Level dB(µV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

### 3.4.Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

#### 3.4.1.LCD SIGNATURE TABLET (EUT)

Model Number : STU-500  
Serial Number : N/A

3.4.2.Support Equipment : As Tested Supporting System Detail, in Section 2.2..

### 3.5.Operating Condition of EUT

3.5.1.Setup the EUT and simulator as shown as Section 3.2.

3.5.2.Turn on the power of all equipment.

3.5.3.Let the EUT work in test modes (Running) and test it.

### 3.6.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #2). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2003 on conducted Emission test.

The bandwidth of the R&S Test Receiver ESHS10 was set at 10kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported and all the scanning waveforms on Section 3.7.

### 3.7.Conducted Disturbance at Mains Terminals Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes was tested and selected (mode 1) to read Q.P values and average values, all the test results are listed in next pages.

EUT: LCD SIGNATURE TABLET Model No. : STU-500

Test Date: Oct.23, 2007 Temperature: 23°C Humidity: 54%

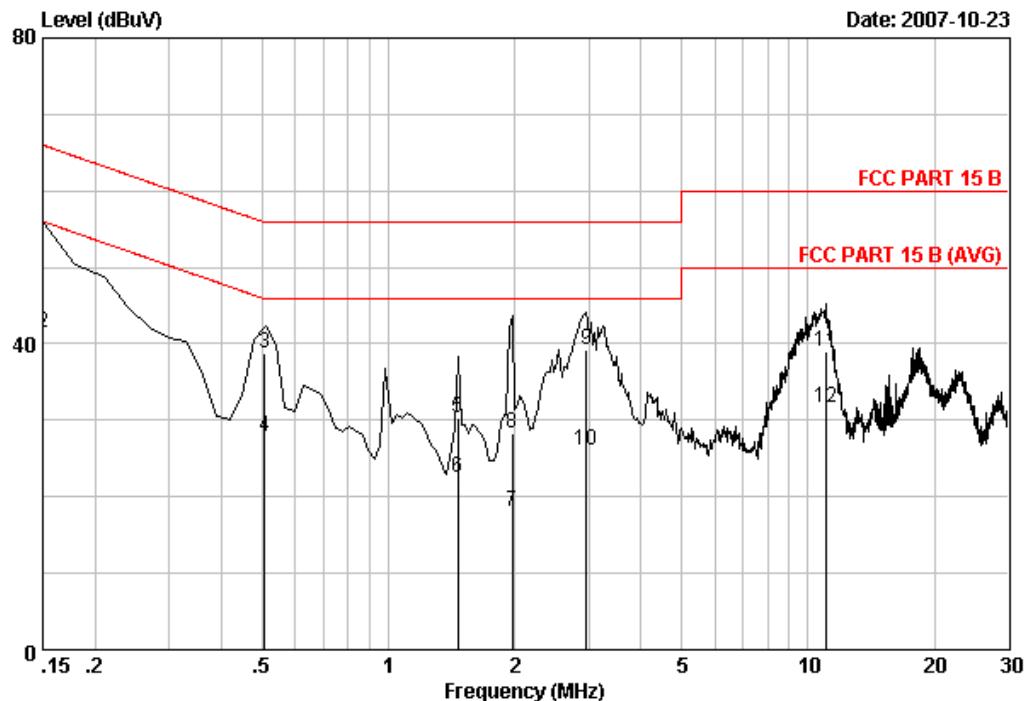
The details of test modes are as follows :

No.	Test Mode	Reference Test Data No.	
		VA	VB
1.	Running	# 29	# 30



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Data: 29 File: D:\DATA\2007 Report\S\SUMITRONICS\ACS7Q1376.EMI (30)



Site no. : Audix 1# Conduction Data no. : 29  
Dis. / Ant. : -- KNW407 VA (1#) LISN Phase :  
Limit : FCC PART 15 B  
Env. / Ins. : Temp:23' Humi:54% ESHS10 Engineer : Realmyu  
EUT : LCD SIGNATURE TABLET M/N:STU-500  
Power Rating : DC 5V Adaptor From AC 120V/60Hz  
Test Mode : Running  
Memo :

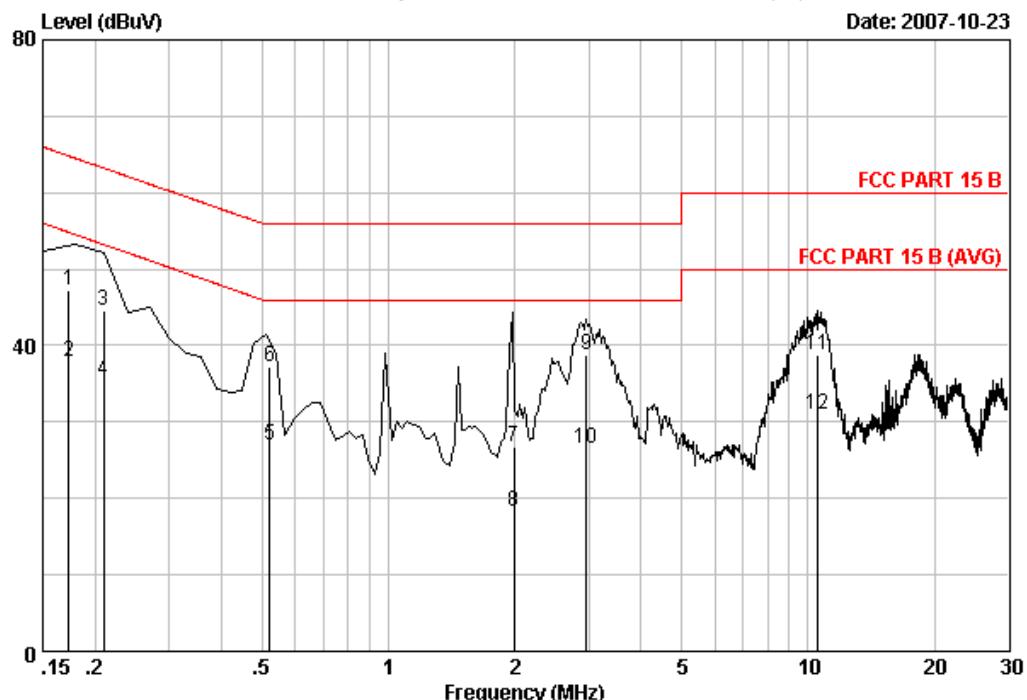
Freq. (MHz)	LISN. Factor (dB)	Cable Loss (dB)	Emission				
			Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	0.22	10.15	39.22	49.59	16.39	QP
2	0.15	0.22	10.15	31.15	41.52	14.46	Average
3	0.51	0.05	10.14	28.63	38.82	17.18	QP
4	0.51	0.05	10.14	17.59	27.78	18.22	Average
5	1.46	0.04	10.15	20.05	30.24	25.76	QP
6	1.46	0.04	10.15	12.30	22.49	23.51	Average
7	1.97	0.05	10.15	7.90	18.10	27.90	Average
8	1.97	0.05	10.15	18.00	28.20	27.80	QP
9	2.96	0.08	10.17	29.00	39.25	16.75	QP
10	2.96	0.08	10.17	15.80	26.05	19.95	Average
11	11.02	0.21	10.26	28.62	39.09	20.91	QP
12	11.02	0.21	10.26	21.10	31.57	18.43	Average

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
2. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.



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Data: 30 File: D:\DATA\2007 Report\S\SUMITRONICS\ACS7Q1376.EMI (30)



Site no. : Audix 1# Conduction Data no. : 30  
Dis. / Ant. : -- KNW407 VB (1#) LISN Phase :  
Limit : FCC PART 15 B  
Env. / Ins. : Temp:23' Humi:54% ESHS10 Engineer : Realmyu  
EUT : LCD SIGNATURE TABLET M/N:STU-500  
Power Rating : DC 5V Adaptor From AC 120V/60Hz  
Test Mode : Running  
Memo :

Freq. (MHz)	LISN. Factor (dB)	Cable Loss (dB)	Reading (dBuW)	Emission			
				Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	0.19	10.15	36.80	47.14	17.69	QP
2	0.17	0.19	10.15	27.50	37.84	16.99	Average
3	0.21	0.15	10.15	34.26	44.56	18.66	QP
4	0.21	0.15	10.15	25.05	35.35	17.87	Average
5	0.52	0.05	10.14	16.80	26.99	19.01	Average
6	0.52	0.05	10.14	27.00	37.19	18.81	QP
7	2.00	0.05	10.15	16.50	26.70	29.30	QP
8	2.00	0.05	10.15	8.10	18.30	27.70	Average
9	2.96	0.08	10.17	28.60	38.85	17.15	QP
10	2.96	0.08	10.17	16.20	26.45	19.55	Average
11	10.51	0.19	10.25	28.26	38.70	21.30	QP
12	10.51	0.19	10.25	20.52	30.96	19.04	Average

Remarks: 1. Emission Level = LISN Factor + Cable Loss + Reading.  
2. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

## 4. RADIATED EMISSION TEST

### 4.1. Test Equipment

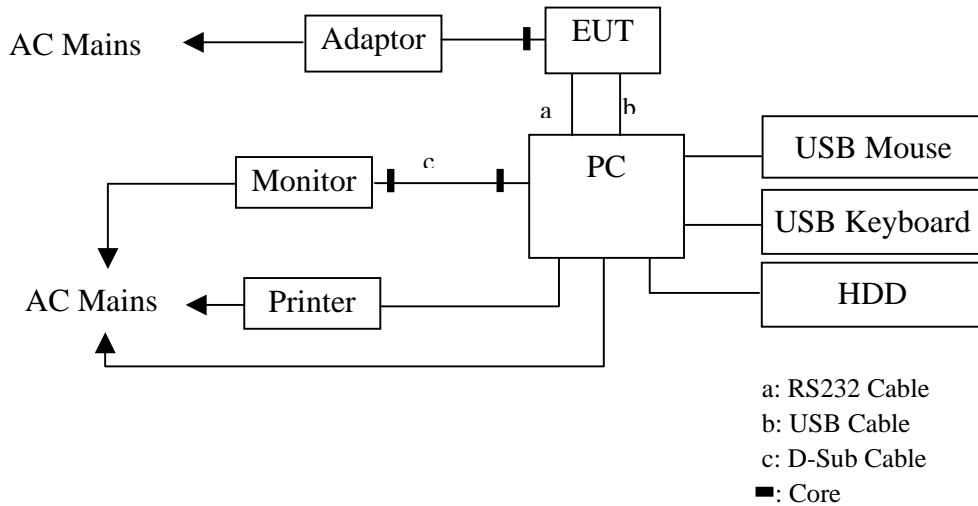
The following test equipments are used during the radiated emission Test :

#### 4.1.1. For frequency range 30MHz~1000MHz (At Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	June.25.07	1/2 Year
2.	EMI Spectrum	Agilent	E7403A	MY42000106	May 11, 07	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 11, 07	1 Year
4.	Amplifier	HP	8447D	2944A07794	Sep.11, 07	1/2 Year
5.	Bilog Antenna	Schaffner	CBL6111C	2598	Feb.22, 07	1 Year
6.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	July. 16, 07	1/2 Year
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	July. 16, 07	1/2 Year
8.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	July. 16, 07	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	July. 16, 07	1/2 Year
10.	Coaxial Switch	Anritsu	MP59B	M73989	July. 16, 07	1/2 Year

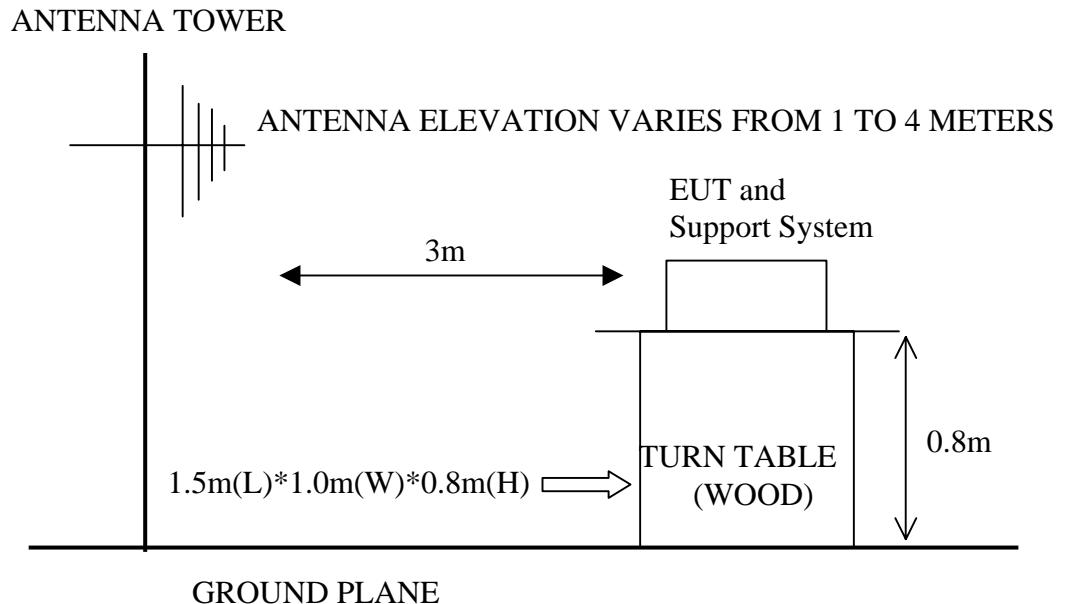
### 4.2. Block Diagram of Test Setup

#### 4.2.1. Block Diagram of connection between EUT and simulators



(EUT: LCD SIGNATURE TABLET)

#### 4.2.2.Anechoic Chamber Setup Diagram



#### 4.3.Radiated Emission Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu$ V/m	dB( $\mu$ V)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

Remark : (1) Emission level  $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$   
 (2) The smaller limit shall apply at the cross point between two frequency bands.  
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

#### 4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

##### 4.4.1. LCD SIGNATURE TABLET (EUT)

Model Number : STU-500  
 Serial Number : N/A

##### 4.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

## 4.5.Operating Condition of EUT

- 4.5.1.Setup the EUT and simulator as shown as Section 4.2.
- 4.5.2.Turn on the power of all equipment.
- 4.5.3.Let the EUT work in test modes (Running) and test it.

## 4.6.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2003 on Radiated Emission test.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESVS20) is 120 kHz.

The frequency range from 30MHz to 1000MHz is checked. The test result are reported on Section 4.7.

## 4.7.Radiated Disturbance Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes was tested and selected (mode 1) to read Q.P values, all the test results are listed in next pages.

EUT: LCD SIGNATURE TABLET Model No. : STU-500

Test Date: Oct.27, 2007 Temperature: 24°C Humidity: 56%

The details of test modes are as follows :

No.	Test Mode	Reference Test Data No.	
		Horizontal	Vertical
1.	Running	# 2	# 1

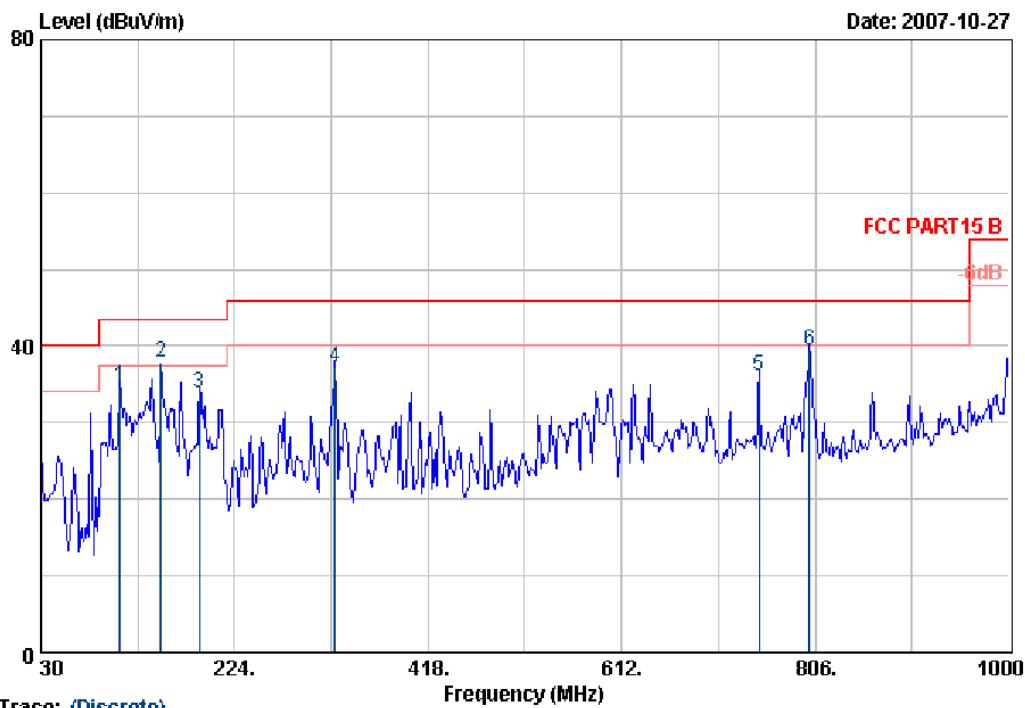


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Data: 2

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Date: 2007-10-27



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 2  
 Dis. / Ant. : 3m 2598 Ant. pol. : HORIZONTAL  
 Limit : FCC PART15 B  
 Env. / Ins. : 24°C/56% EVS20 Engineer : Skyle  
 EUT : LCD SIGNATURE TABLET M/N:STU-500  
 Power Rating : DC 5V Adaptor From AC 120V/60Hz  
 Test mode : Running  
 Memo :

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 109.54	11.30	1.04	22.47	34.81	43.50	8.69	QP
2 150.28	11.40	1.21	25.30	37.91	43.50	5.59	QP
3 189.08	9.36	1.30	23.11	33.77	43.50	9.73	QP
4 324.88	14.40	1.64	21.11	37.15	46.00	8.85	QP
5 749.74	21.90	2.59	11.53	36.02	46.00	9.98	QP
6 800.18	21.80	2.61	14.93	39.34	46.00	6.66	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 150.28MHz with corrected signal level of 37.91dB $\mu$ V/m (Limit is 43.50dB $\mu$ V/m) when the antenna was at horizontal polarization and at 1.0m high and the turn table was at 155°.

4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

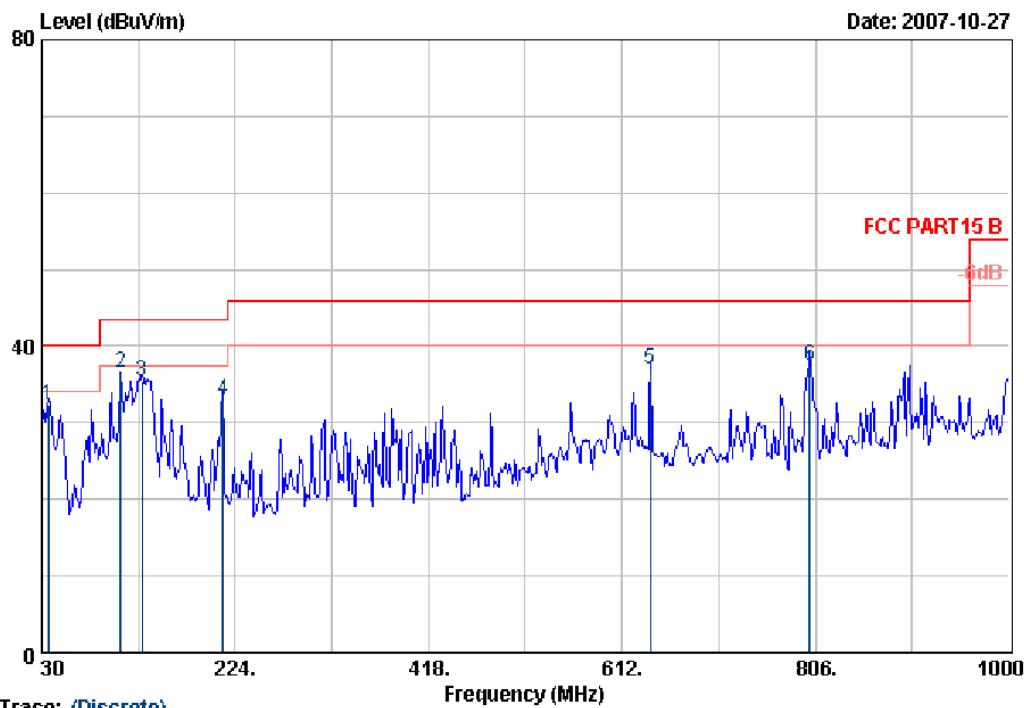


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Data: 1

File: D:\2007 Report Data\S\SUMITRONICS\ACS7Q1376.EMI (2)

Date: 2007-10-27



Trace: (Discrete)

Site no. : 3# Chamber Radiation      Data no. : 1  
 Dis. / Ant. : 3m 2598      Ant. pol. : VERTICAL  
 Limit : FCC PART15 B  
 Env. / Ins. : 24°C/56% EVS20      Engineer : Skyle  
 EUT : LCD SIGNATURE TABLET      M/N:STU-500  
 Power Rating : DC 5V Adaptor From AC 120V/60Hz  
 Test mode : Running  
 Memo :

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 36.79	15.86	0.76	15.65	32.27	40.00	7.73	QP
2 109.54	11.30	1.04	24.31	36.65	43.50	6.85	QP
3 130.88	12.06	1.16	22.16	35.38	43.50	8.12	QP
4 211.39	10.32	1.37	21.34	33.03	43.50	10.47	QP
5 640.13	20.30	2.32	14.41	37.03	46.00	8.97	QP
6 800.18	21.80	2.61	12.97	37.38	46.00	8.62	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 109.54MHz with corrected signal level of 36.65dB $\mu$ V/m (Limit is 43.50dB $\mu$ V/m) when the antenna was at vertical polarization and at 1.0m high and the turn table was at 330°.

4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

## 5. DEVIATION TO TEST SPECIFICATIONS

[ NONE]