

FCC CLASS B CONFORMITY REPORT

Product Name : Multimedia Projector
Model Number : PLC-WXU30A
Trade Name : SANYO
FCC ID : WS309KB3AE00
Report Number : SZEE091014298715-1
Date : October 27, 2009

Standards	Results
<input checked="" type="checkbox"/> FCC Part 15: 2008	PASS

Prepared for:

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(Note: N/A means not applicable)

1. VERIFICATION OF CONFORMITY

Applicant & Address: Dongguan Huaqiang SANYO Electronics Co., Ltd
HongYe Industry Area, Tang Xia Town,
Dongguan, Guangdong.

Manufacturer & Address: Dongguan Huaqiang SANYO Electronics Co., Ltd
HongYe Industry Area, Tang Xia Town,
Dongguan, Guangdong.

Type of Test: FCC Part 15 SUBPART B

FCC ID: WS309KB3AE00

Equipment Under Test: Multimedia Projector

Model Name: PLC-WXU30A

Technical Date: AC100-120V, 3.7A MAX, 50/60Hz;
AC200-240V, 2A MAX, 50/60Hz;

Serial Number: N/A

Date of test: Oct. 14, 2009 to Oct. 27, 2009

Condition of Test Sample: Normal

The above equipment was tested by Centre Testing International for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4.

The test results of this report relate only to the tested sample identified in this report.

Prepared by :

Louisa Lu

Louisa Lu

Reviewed by :

Lily Yan

Lily Yan

Approved by :

Jim Zhang

Jim Zhang
Manager



Date

: Oct. 27, 2009



2. TEST SUMMARY

The EUT has been tested according to the following specifications:

EMISSION			
Standard	Test Type	Result	Remark
FCC Part 15	Conducted emission at AC power port	PASS	See clause 6 in this report
	Radiated emission	PASS	See clause 7 in this report

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement items	Value
Conducted emission	3.2 dB
Radiated emission	4.6 dB

4. FACILITIES AND ACCREDITATIONS

4.1 TEST FACILITY

Centre Testing International Corporation

Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen, Guangdong, China

4.2 TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing. The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Table 1: List of Test and Measurement Equipment

Equipment	Manufacturer	Model Number	Serial Number	Last Calibration Date	Next Calibration Date
Shielding Room No. 1 —AC Power Line Conducted Emissions Measurement					
Receiver	R&S	ESCI	100435	01/29/2009	01/28/2010
LISN	R&S	ENV216	100098	06/13/2009	06/12/2010
3M Semi-anechoic Chamber — Radiated Emission Test Site					
Spectrum Analyzer	Agilent	E4443A	MY46185649	01/29/2009	01/29/2010
Biconilog Antenna	A.H.System	SAS-521-2	487	06/05/2009	06/04/2010
Horn Antenna	ETS-LINDGREN	3117	00057407	07/30/2009	07/29/2010
Loop Antenna	ETS-LINDGREN	6502	00071730	07/24/2009	07/23/2010
3M Chamber & Accessories	ETS-LINDGREN	FACT-3	N/A	05/11/2009	05/10/2010

4.3 LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by China National Accreditation Board for Laboratories (CNAS). Electromagnetic Interference tests according to ANSI C63.4 and CISPR 16 requirements.

5. SETUP OF EQUIPMENT UNDER TEST

5.1 SETUP CONFIGURATION OF EUT

1. See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.
2. Make sure EUT work normally during the whole test.

5.2 SUPPORT EQUIPMENT

Table 2: Test Auxiliary Equipments

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	PC	IBM	8143	BD-241	N/A	Un-shielded 1.2M
2.	Monitor	IBM	9205-AB6	VK-KZ133	Un-shielded 1M	Un-shielded 1M
3.	Mouse	IBM	M028UOL	23-468157	Un-shielded 1.2M	N/A
4.	Keyboard	IBM	89P8300	02284699	Un-shielded 1.2M	N/A
5.	Earphone	--	--	--	Un-shielded 1M	N/A

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

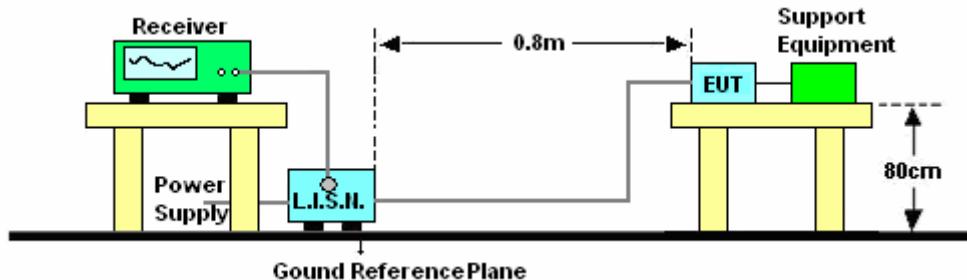
6. AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT

6.1 LIMITS

Frequency (MHz)	Conducted Limit (dBuV) – Class B Digital Device	
	Q.P.	Average(dBuV)
0.150 – 0.5	66-56	56-46
0.5 – 5	56	46
5 - 30	60	50

Note: the tighter limit applies at the band edges.

6.2 BLOCK DIAGRAM OF TEST SETUP

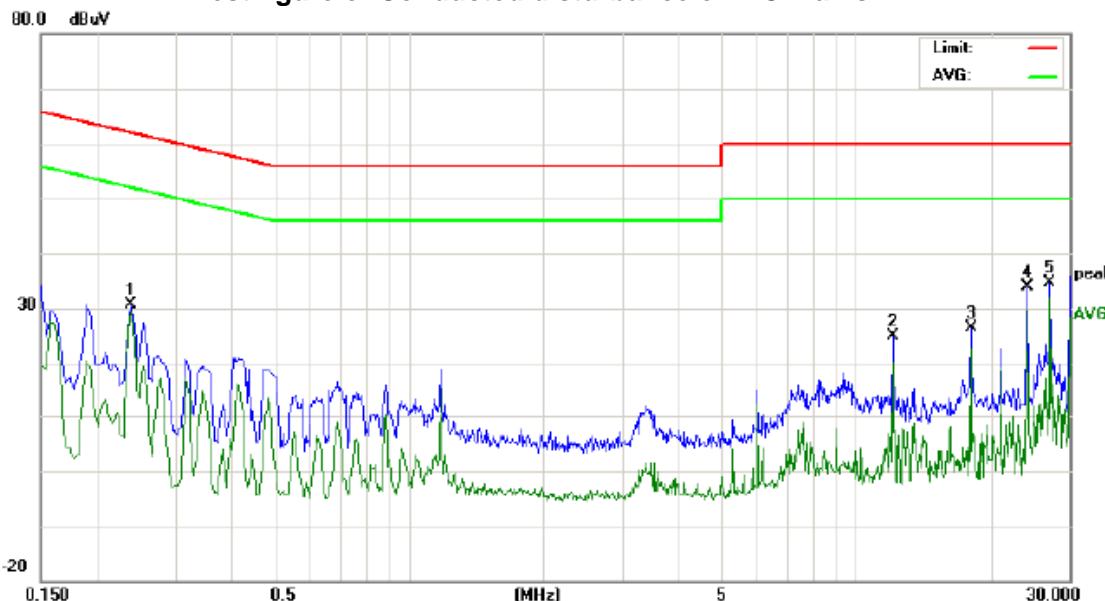


6.3 TEST PROCEDURE

- The EUT was placed 0.4 meters from the conducting wall of the shielded room and connected to the main through Line Impedance Stability Network (LISN). This provided a 50ohm coupling impedance for the tested equipments.
- The bandwidth of the field strength meter (Receiver) was set at 9kHz in 150kHz ~ 30MHz.
- The disturbance levels and the frequencies of at least two highest disturbances were recorded from each power line which comprises the EUT.

6.4 TEST RESULT

Test figure of Conducted disturbance on AC mains



Site: site #1 Phase: *L1* Temperature: 24

Limit: FCC Class B Conduction (QP) Power: AC 120V/60Hz Humidity: 53 %

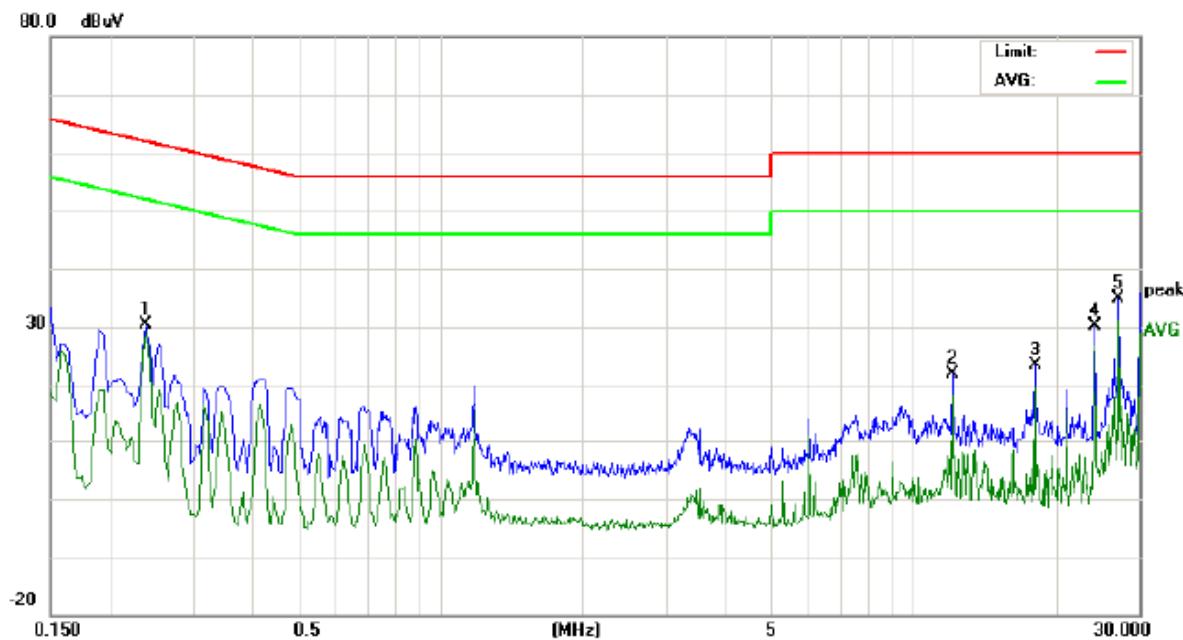
EUT: Multimedia Projector

M/N: PLC-WXU30A

Mode: VGA

Note:

No.	Freq.	Reading Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		MHz	Peak	QP	Avg	peak	QP	Avg	QP	Avg	QP	Avg		
1	0.2380	30.69	29.80	29.69	0.00	30.69	29.80	29.69	62.17	52.17	-32.37	-22.48	P	
2	12.0740	24.99	20.00	20.16	0.00	24.99	20.00	20.16	60.00	50.00	-40.00	-29.84	P	
3	18.1100	26.35	21.40	22.51	0.00	26.35	21.40	22.51	60.00	50.00	-38.60	-27.49	P	
4	24.1500	33.82	27.60	29.95	0.00	33.82	27.60	29.95	60.00	50.00	-32.40	-20.05	P	
5	27.1660	34.71	33.20	31.97	0.00	34.71	33.20	31.97	60.00	50.00	-26.80	-18.03	P	



Site site #1

Phase: *N*

Temperature: 24

Limit: FCC Class B Conduction (QP)

Power: AC 120V/60Hz

Humidity: 53 %

EUT: Multimedia Projector

M/N: PLC-WXU30A

Mode: VGA

Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		MHz	Peak	QP	Avg	Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.2380	30.39	29.60	29.20	0.00	30.39	29.60	29.20	62.16	52.16	-32.56	-22.96	P	
2	12.0740	21.97	21.30	18.00	0.00	21.97	21.30	18.00	60.00	50.00	-38.70	-32.00	P	
3	18.1100	23.38	23.20	19.63	0.00	23.38	23.20	19.63	60.00	50.00	-36.80	-30.37	P	
4	24.1500	30.11	28.50	26.54	0.00	30.11	28.50	26.54	60.00	50.00	-31.50	-23.46	P	
5	27.1660	34.88	33.60	31.11	0.00	34.88	33.60	31.11	60.00	50.00	-26.40	-18.89	P	

7. RADIATED EMISSION TEST

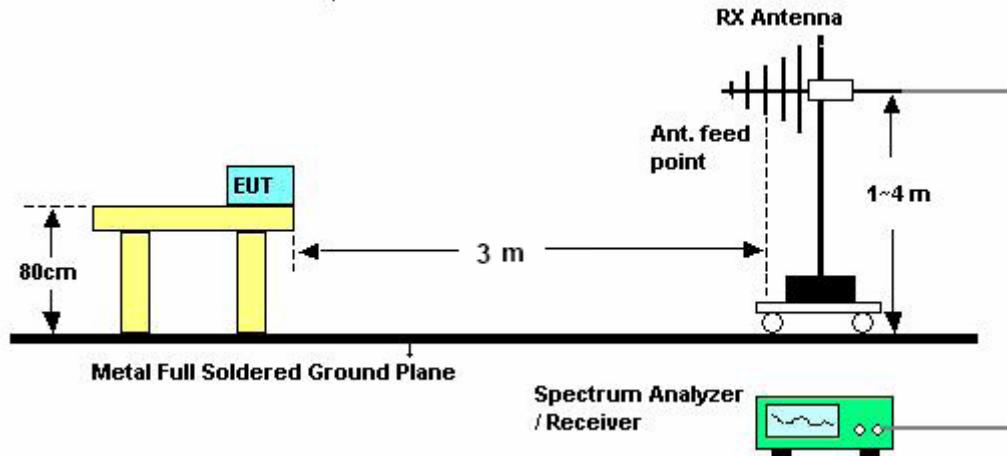
7.1 LIMITS

Frequency (MHz)	Field strength (μ V/m)	Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

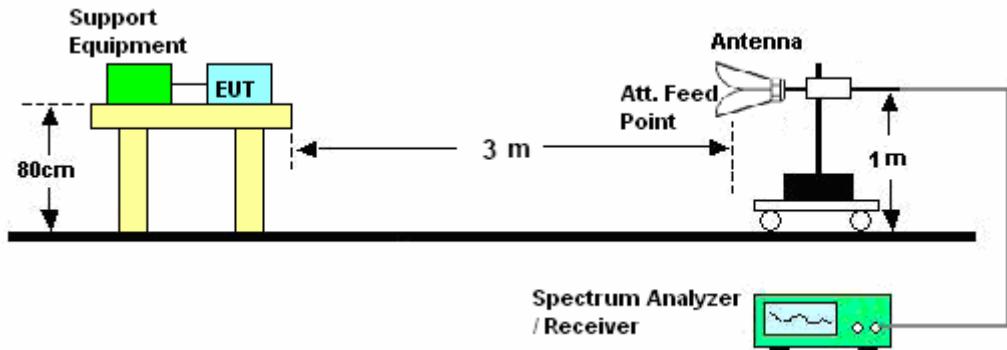
Note: the tighter limit applies at the band edges.

7.2 BLOCK DIAGRAM OF TEST SETUP

For radiated emissions from 30 - 1000MHz



For radiated emissions above 1GHz



7.3 PROCEDURE

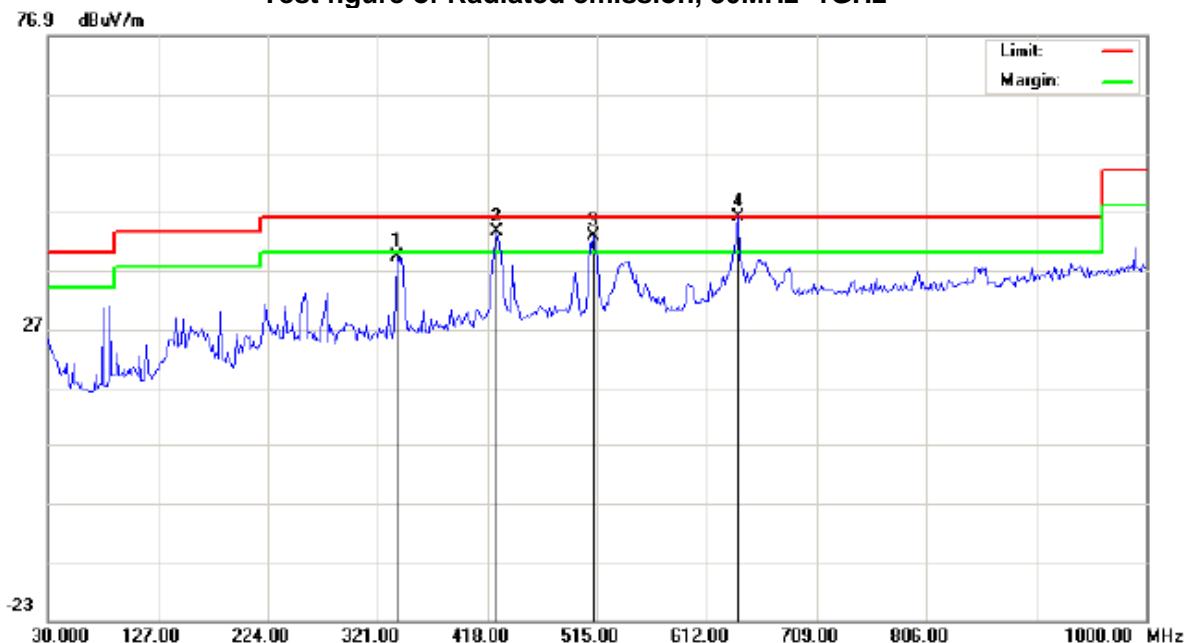
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

7.4 TEST RESULT OF RADIATED EMISSION TEST

Pass

Test figure of Radiated emission, 30MHz~1GHz



Site site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 60 %

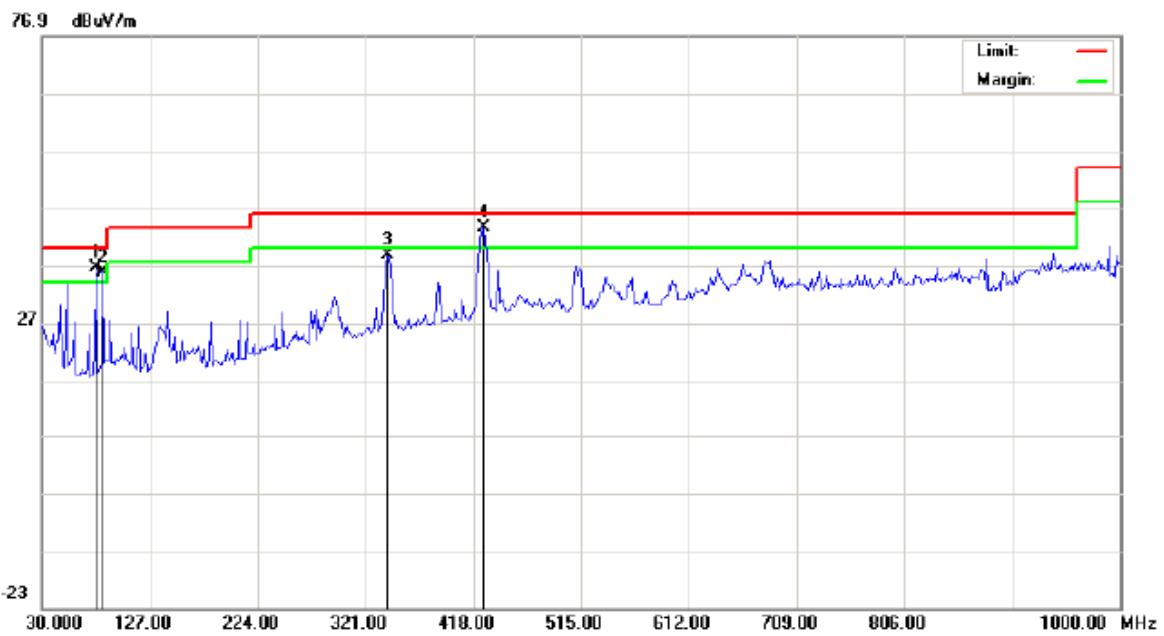
EUT: Multimedia Projector

M/N: PL C-WXU30A

Mode: VGA

Note:-

No.	Freq.	Reading_Level		Correct Factor	Measurement			Limit		Margin		P/F	Comment
		dBuV	(dBuV)		peak	QP	Avg	QP	Avg	QP	Avg		
MHz	Peak	QP	Avg	dB	peak	QP	Avg	QP	Avg	QP	Avg		
1	338.7833	21.95		17.27	39.22			46.00		-6.78		P	
2	426.0833	25.03		18.55	43.58			46.00		-2.42		P	
3	511.7667	22.52		20.35	42.87			46.00		-3.13		P	
4	639.4833	22.74	19.20	23.29	46.03	42.49		46.00		-3.51		P	



Site site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 60 %

EUT: Multimedia Projector

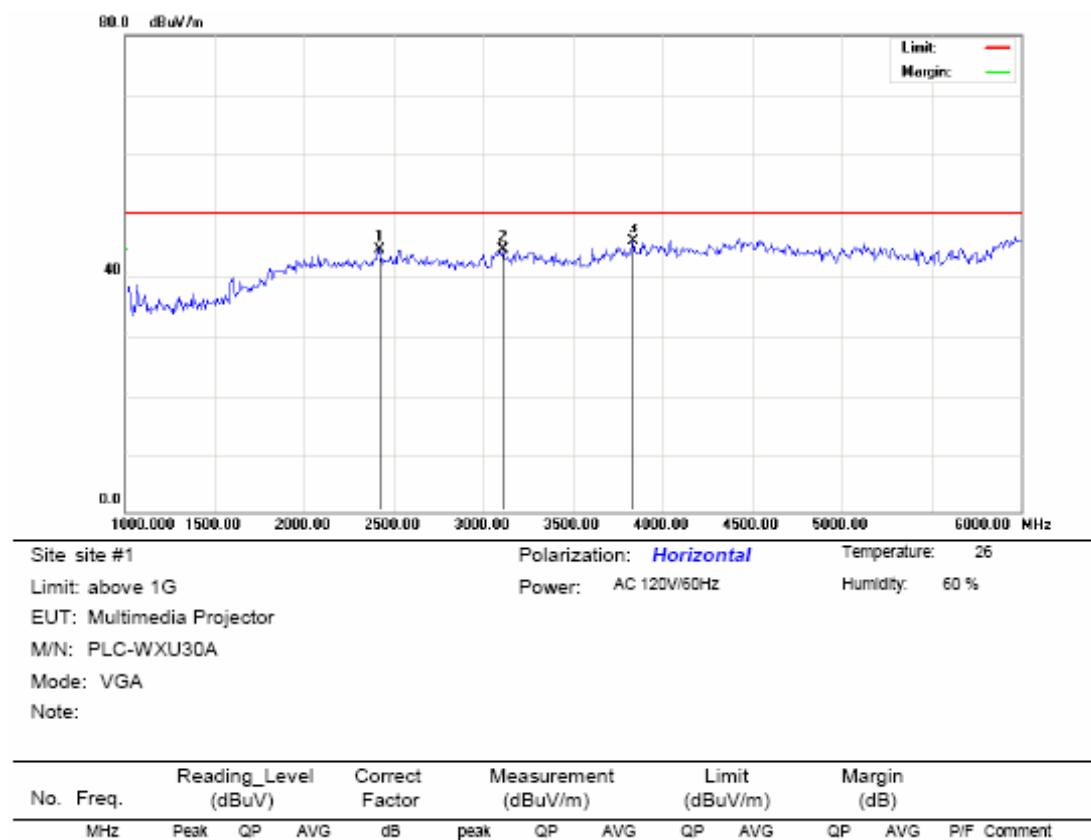
M/N: PLC-WXU30A

Mode: VGA

Note:

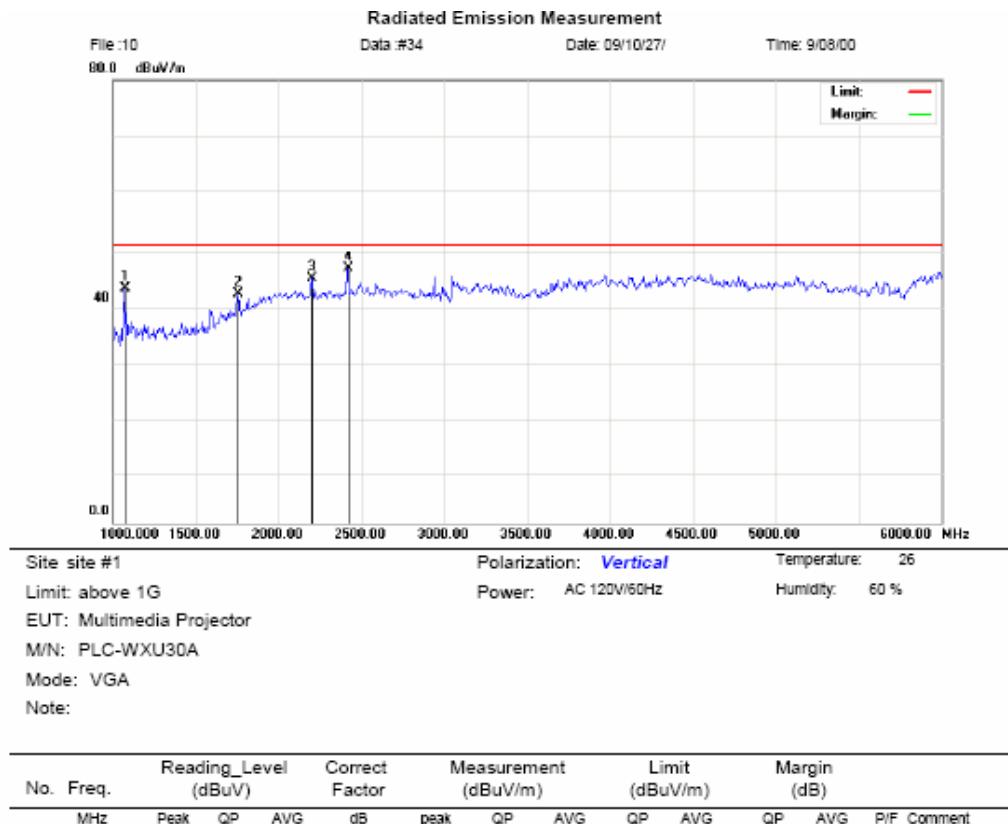
No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		MHz	Peak	QP		Peak	QP	Avg	QP	Avg	QP	Avg		
1	78.5000	27.68			8.80	36.48			40.00		-3.52		P	
2	84.9666	26.44			9.46	35.90			40.00		-4.10		P	
3	340.4000	21.40			17.32	38.72			46.00		-7.28		P	
4	427.7000	24.84			18.59	43.43			46.00		-2.57		P	

Test figure of Radiated emission, above 1GHz



Remark:

The test data are too low, so they are not recorded.



Remark:

The test data are too low, so they are not recorded.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP**CE Test Setup****RE Test Setup (Below 1GHz)**

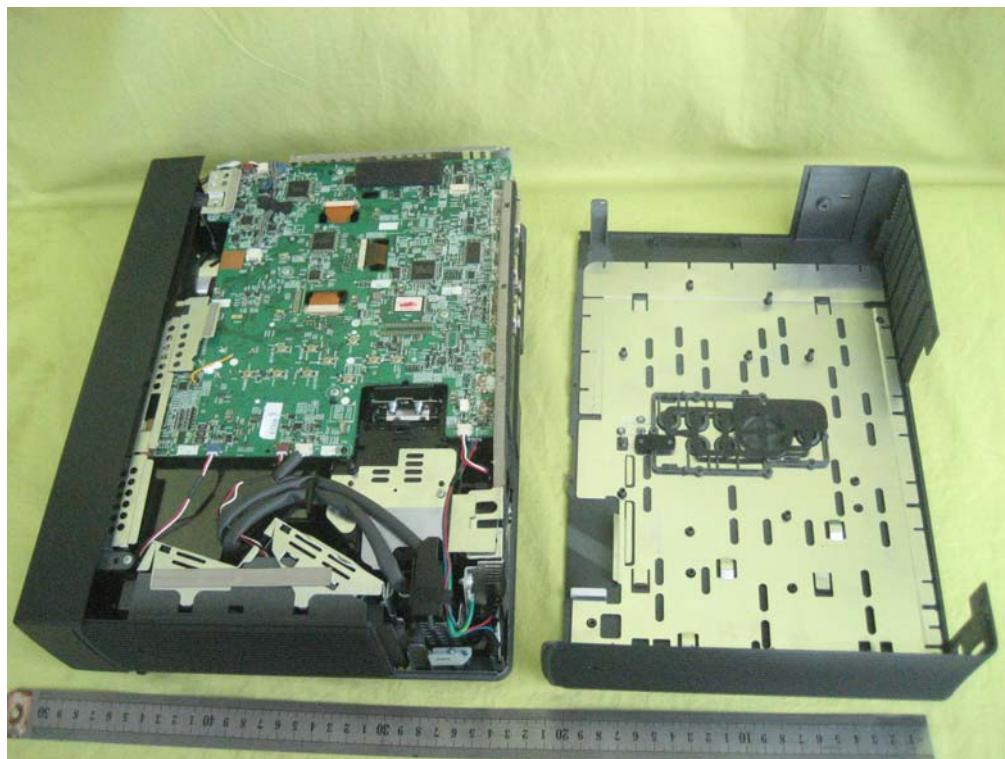
RE Test Setup (Above 1GHz)

APPENDIX 2 EXTERNAL PHOTOGRAPHS OF EUT

Front View of EUT



Rear View of EUT

APPENDIX 3 INTERNAL PHOTOGRAPHS OF EUT

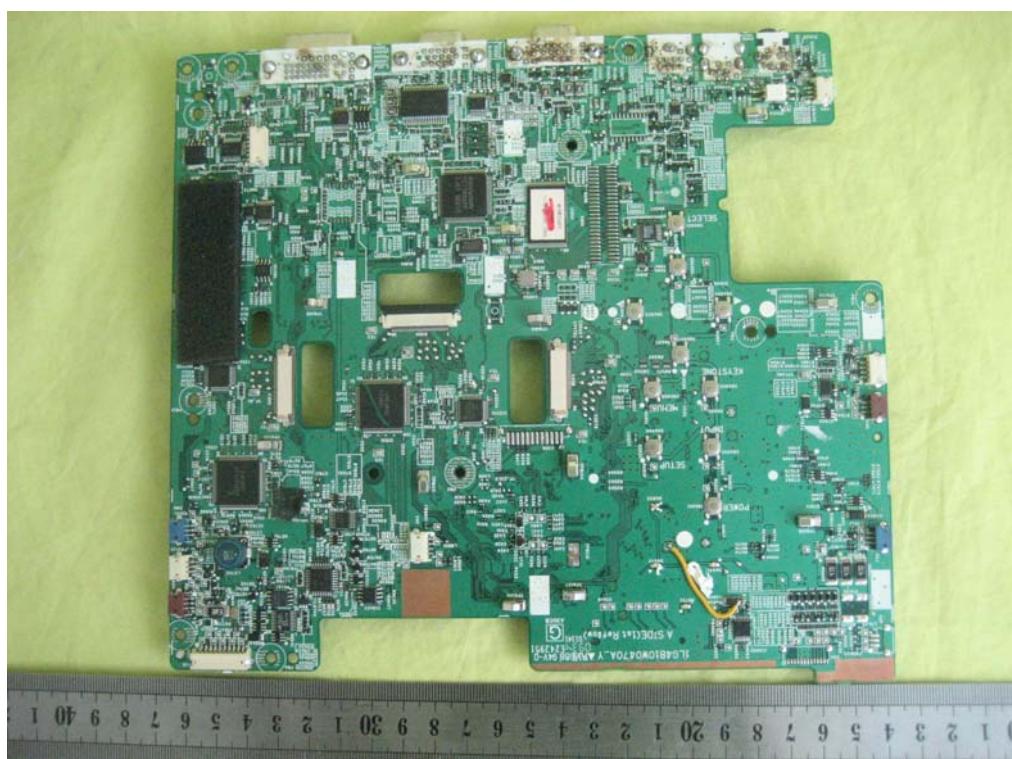
Uncover View of EUT-1



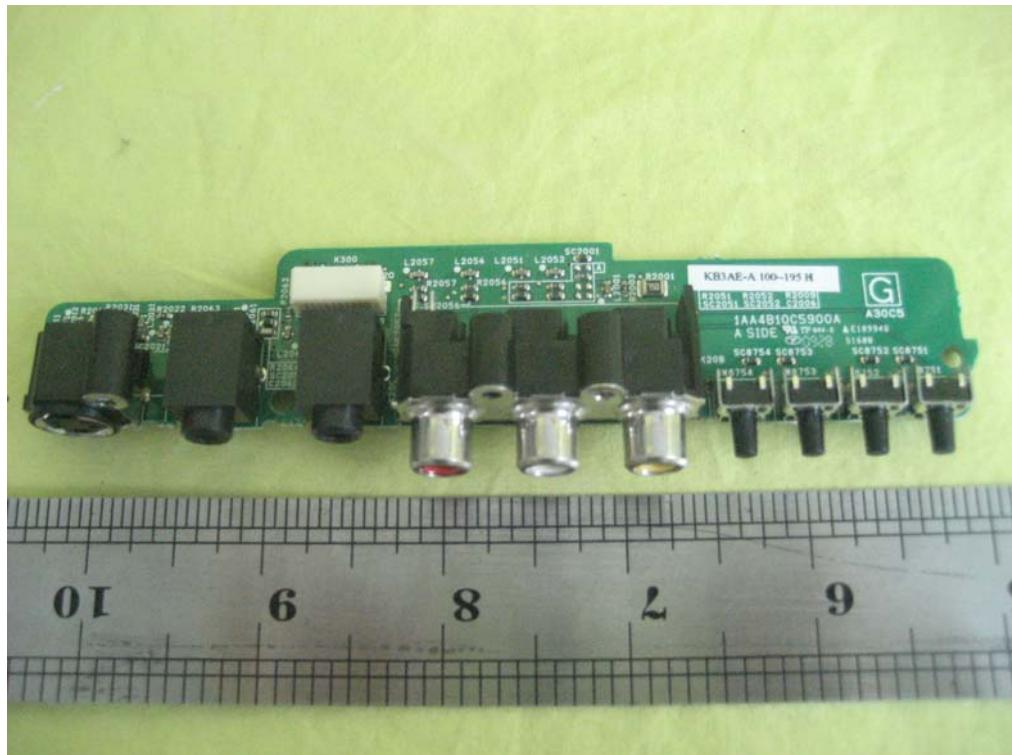
Uncover View of EUT-2



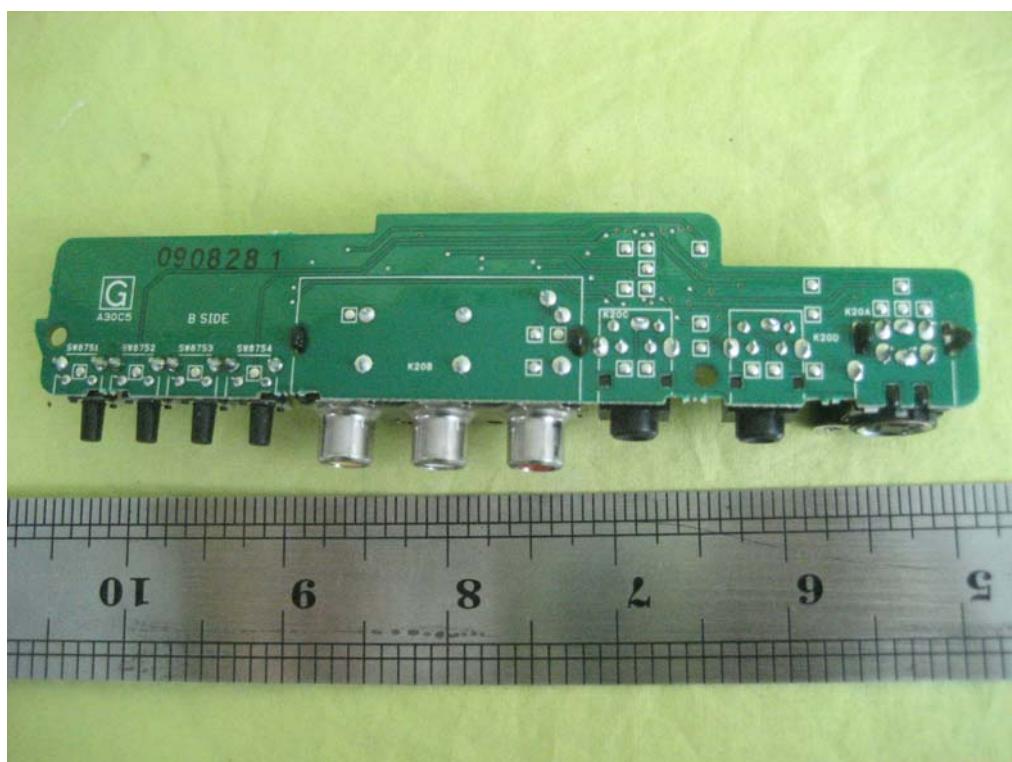
Front View of PCB 1



Rear View of PCB1



Front View of PCB 2



Rear View of PCB 2

----- End of report -----