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Shenzhen Branch**

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Report No.: SZEM170700708001  
Page: 1 of 25

## **TEST REPORT**

**Application No.:** SZEM1707007080AV  
**Applicant:** ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD  
**Address of Applicant:** No. 1199 Binan Road, Changhe Street, Binjiang District, Hangzhou, P.R.China  
**Manufacturer:** ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD  
**Address of Manufacturer:** No. 1199 Binan Road, Changhe Street, Binjiang District, Hangzhou, P.R.China  
**Factory:** ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD  
**Address of Factory:** No. 1199 Binan Road, Changhe Street, Binjiang District, Hangzhou, P.R.China  
**Equipment Under Test (EUT):**  
**EUT Name:** LCD Display Wall Unit ( LCD Monitor )  
**Model No.:** Please refer to section 2 ♣  
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Trade mark:**   
**Standards:** 47 CFR Part 15, Subpart B:2016  
**Date of Receipt:** 2017-07-07  
**Date of Test:** 2017-07-19 to 2017-07-24  
**Date of Issue:** 2017-07-26

<b>Test Result :</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.





Jack Zhang  
EMC Laboratory Manager



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2017-07-26		Original

Authorized for issue by:			
			
		<hr/> Foray Chen /Project Engineer	
			
		<hr/> Eric Fu /Reviewer	

## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B:2016	ANSI C63.4	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B:2016	ANSI C63.4	Class B	Pass

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

### Declaration of EUT Family Grouping:

Model No.: DHL460UTS, DH-DHL460UTS, DHL460UT-E, DH-DHL460UT-E, DHL110, DHL460UTS-E, DH-DHL460UTS-E, DHL460UCH-ES, DH-DHL460UCH-ES, DHL98, DHL460UCM-ES, DH-DHL460UCM-ES, DHL460UDH-ES, DH-DHL460UDH-ES, DHL460UDM-ES, DH-DHL460UDM-ES, DHL470UI, DH-DHL470UI, DHL470UT-E, DH-DHL470UT-E, DHL470UTS-E, DH-DHL470UTS-E, DHL490UCS-ES, DH-DHL490UCS-ES, LS490YXS-EF, DH-LS490YXS-EF, DHL490UCM-EG, DH-DHL490UCM-EG, DHL490UCH-ES, DH-DHL490UCH-ES, DHL490UDH-ES, DH-DHL490UDH-ES, DHL550UT-E, DH-DHL550UT-E, DHL550UTS-E, DH-DHL550UTS-E, DHL550UCM-EF, DH-DHL550UCM-EF, DHL550UCH-ES, DH-DHL550UCH-ES, DHL550UCM-ES, DH-DHL550UCM-ES, DHL550UCM-EG, DH-DHL550UCM-EG, DHL550UCH-EG, DH-DHL550UCH-EG, DHL550UDH-ES, DH-DHL550UDH-ES, DHL550UDM-ES, DH-DHL550UDM-ES, DHL550UDH-EG, DH-DHL550UDH-EG, DHL550UDM-EG, DH-DHL550UDM-EG, DHL600UT-E, DH-DHL600UT-E, DHL600UTS-E, DH-DHL600UTS-E, DHL19, DHL190UX, DHL22-F500, DHL22-F600, DHL22-S200, DHL22-L200, DHL27-S200, DHL32, DHL32-S200, DHL32-F600, DHL42-S200, DHL43-S200, DHL43-F600, DH-DHL43-F600, DHL49-S200, DHL49-S300, DH-DHL49-S300, DHL49-S400, DHL49-F600, DH-DHL49-F600, DHL55-S200, DHL55-S400, DHL65, DHL70, DHL84-S400, DH-LM75-S400, DH-LM86-S400

Only the model DH-DHL490UCS-ES was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, with only difference being of sales customer

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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: Input: AC100-240V 50/60Hz  
3.0V DC (1.5V x 2 "AAA" Size batteries) for remote control

Cable: AC cable: 150cm unshielded

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No.SEA1800
U-disk	Sandisk	SDCZ60-016G	REF. No.SEA0100
Router	NETGEAR	DGN2200	REF. No.SEA2200
HDMI Cable	Apple	MC838FE/B	REF. No.SEA0900
DVI Cable	SGS	N/A	REF. No.SEA1200
VGA Cable	SGS	N/A	REF. No.SEA1000
Network Cable	SGS	N/A	REF. No.SEA1100
Mouse	Lenovo	M-U0025-O	REF. No.:SEA2400
CVBS input camera	Supply by client	DH-HAC-HDBW2401RN-Z	N/A
IR module	Supply by client	N/A	N/A
Control Software	Supply by client	N/A	N/A

### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz )
3	Temperature test	1 °C
4	Humidity test	3%

#### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

#### 4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None

## 5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2018-05-10
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-13
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2017-04-14	2018-04-13

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-10
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESR	SEM004-03	2017-04-14	2018-04-13
Trilog-Broadband Antenna (30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2017-06-05	2018-06-04

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-18

## 6 Emission Test Results

### 6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C      Humidity: 51 % RH      Atmospheric Pressure: 1005 mbar

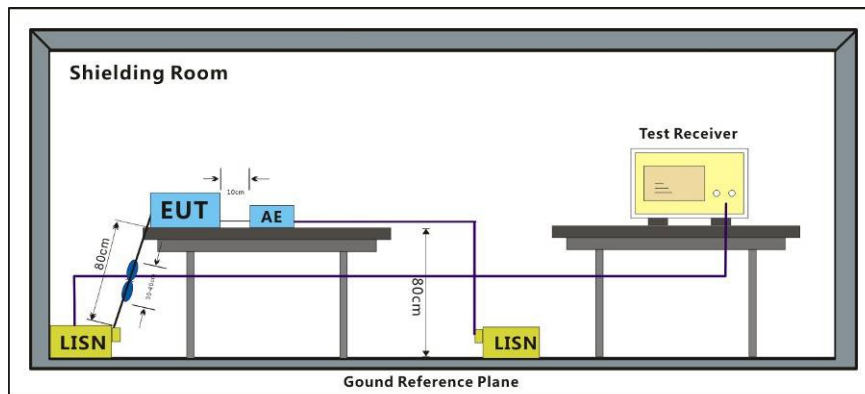
Pretest these mode to find the worst case:

- a: HDMI mode, keep EUT working with external HDMI source.
- b: VGA mode, keep EUT working with external VGA source.
- c: DVI mode, keep EUT working with external DVI source.
- d: CVBS mode, keep EUT working with external CVBS source.
- e: USB play mode, keep EUT playing with USB stick.
- f: LAN mode, keep EUT working via LAN in port.

The worst case for final test:

- a: HDMI mode, keep EUT working with external HDMI source.

#### 6.1.2 Test Setup Diagram

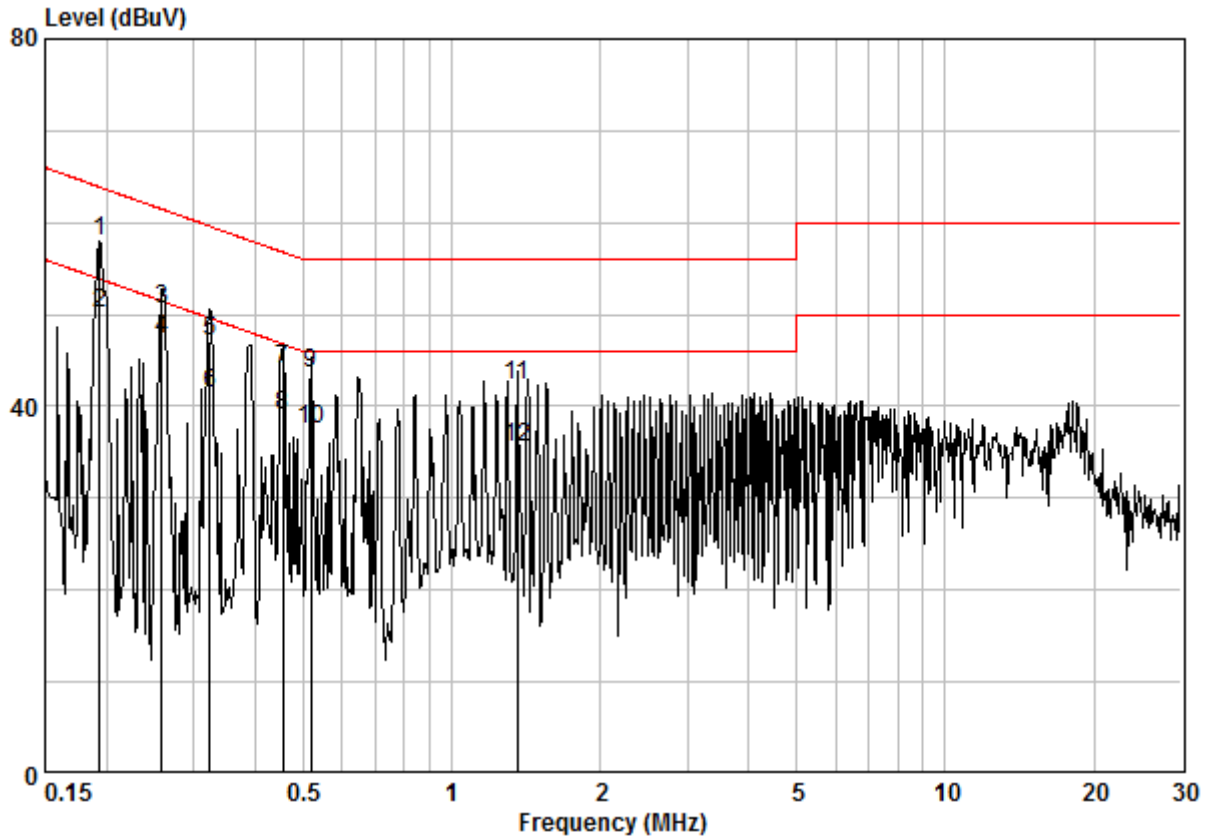


#### 6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.



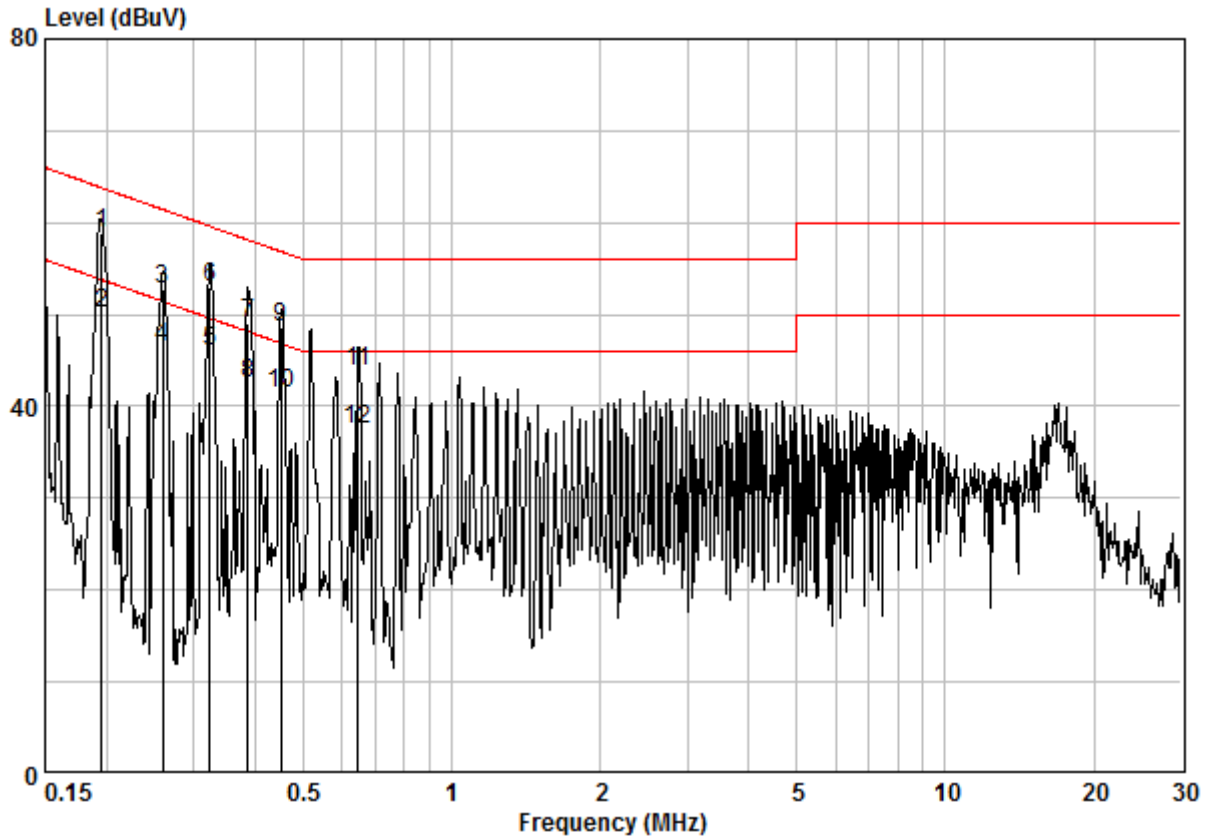
Mode:a; Line:Live Line



Site : Shielding Room  
Condition : CE LINE  
Job No. : 07080AV  
Test Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19344	0.02	9.64	48.41	58.07	63.89	-5.82	QP
2 @	0.19344	0.02	9.64	40.42	50.08	53.89	-3.81	AVERAGE
3	0.25888	0.02	9.64	40.86	50.52	61.47	-10.95	QP
4	0.25888	0.02	9.64	37.60	47.26	51.47	-4.21	Average
5	0.32340	0.02	9.64	37.50	47.16	59.62	-12.46	QP
6	0.32340	0.02	9.64	31.65	41.31	49.62	-8.31	Average
7	0.45395	0.02	9.64	34.36	44.02	56.80	-12.78	QP
8	0.45395	0.02	9.64	29.44	39.10	46.80	-7.71	Average
9	0.51824	0.02	9.64	33.89	43.55	56.00	-12.45	QP
10	0.51824	0.02	9.64	27.90	37.56	46.00	-8.44	Average
11	1.359	0.03	9.66	32.60	42.29	56.00	-13.71	QP
12	1.359	0.03	9.66	25.76	35.45	46.00	-10.55	Average

Mode:a; Line:Neutral Line



Site : Shielding Room  
Condition : CE NEUTRAL  
Job No. : 07080AV  
Test Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19550	0.02	9.63	49.15	58.80	63.80	-5.00	QP
2 @	0.19550	0.02	9.63	40.39	50.04	53.80	-3.76	AVERAGE
3	0.26025	0.02	9.63	43.00	52.65	61.42	-8.77	QP
4	0.26025	0.02	9.63	36.80	46.45	51.42	-4.97	Average
5 @	0.32340	0.02	9.63	36.39	46.04	49.62	-3.58	AVERAGE
6	0.32340	0.02	9.63	43.38	53.03	59.62	-6.59	QP
7	0.38724	0.02	9.63	39.37	49.02	58.12	-9.11	QP
8	0.38724	0.02	9.63	32.80	42.45	48.12	-5.67	Average
9	0.45155	0.02	9.63	38.90	48.55	56.85	-8.30	QP
10	0.45155	0.02	9.63	31.84	41.49	46.85	-5.36	Average
11	0.64740	0.02	9.63	34.09	43.75	56.00	-12.25	QP
12	0.64740	0.02	9.63	27.81	37.47	46.00	-8.53	Average

## 6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	30MHz to 1GHz
Measurement Distance:	10m
Limit:	
30MHz -88MHz	29.5(dB $\mu$ V/m) quasi-peak
88MHz-216MHz	33.1(dB $\mu$ V/m) quasi-peak
216MHz-960MHz	35.6(dB $\mu$ V/m) quasi-peak
960MHz-1000MHz	43.5(dB $\mu$ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

### 6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 26 °C      Humidity: 55 % RH      Atmospheric Pressure: 1005 mbar

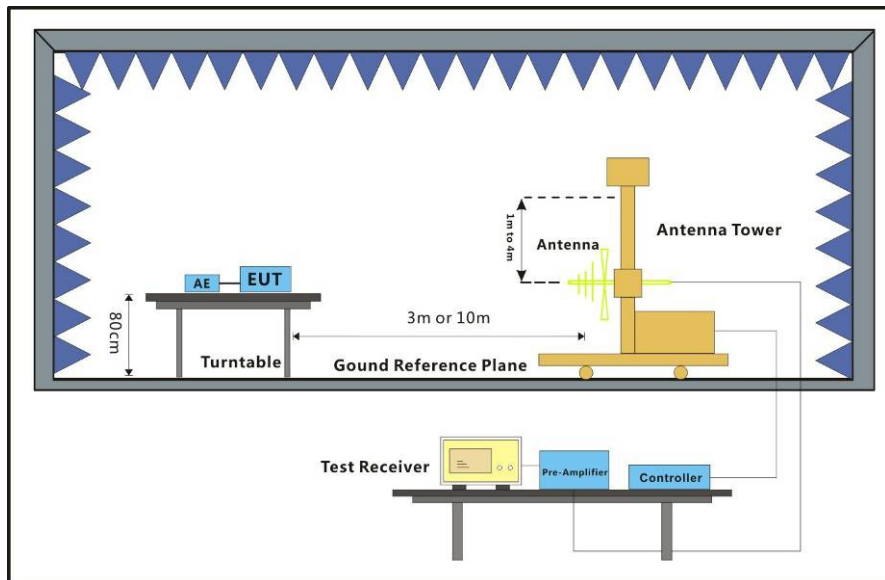
Pretest these mode to find the worst case:

- a: HDMI mode, keep EUT working with external HDMI source.
- b: VGA mode, keep EUT working with external VGA source.
- c: DVI mode, keep EUT working with external DVI source.
- d: CVBS mode, keep EUT working with external CVBS source.
- e: USB play mode, keep EUT playing with USB stick.
- f: LAN mode, keep EUT working via LAN in port.

The worst case for final test:

- a: HDMI mode, keep EUT working with external HDMI source.

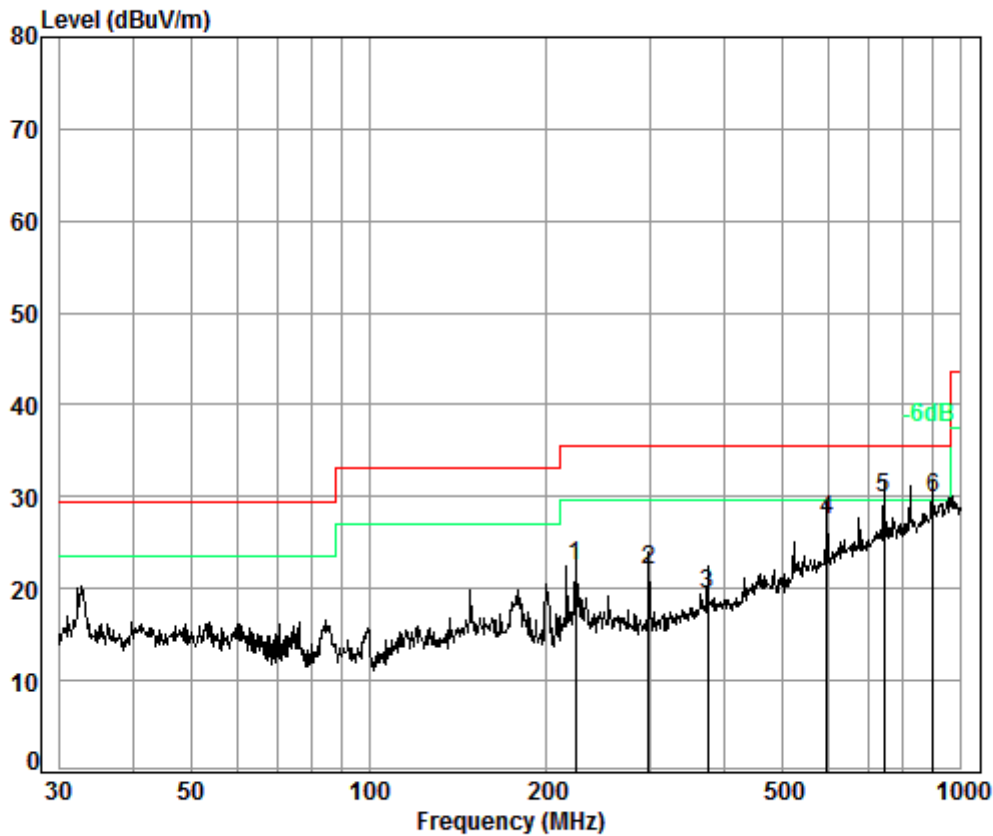
### 6.2.2 Test Setup Diagram



### 6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

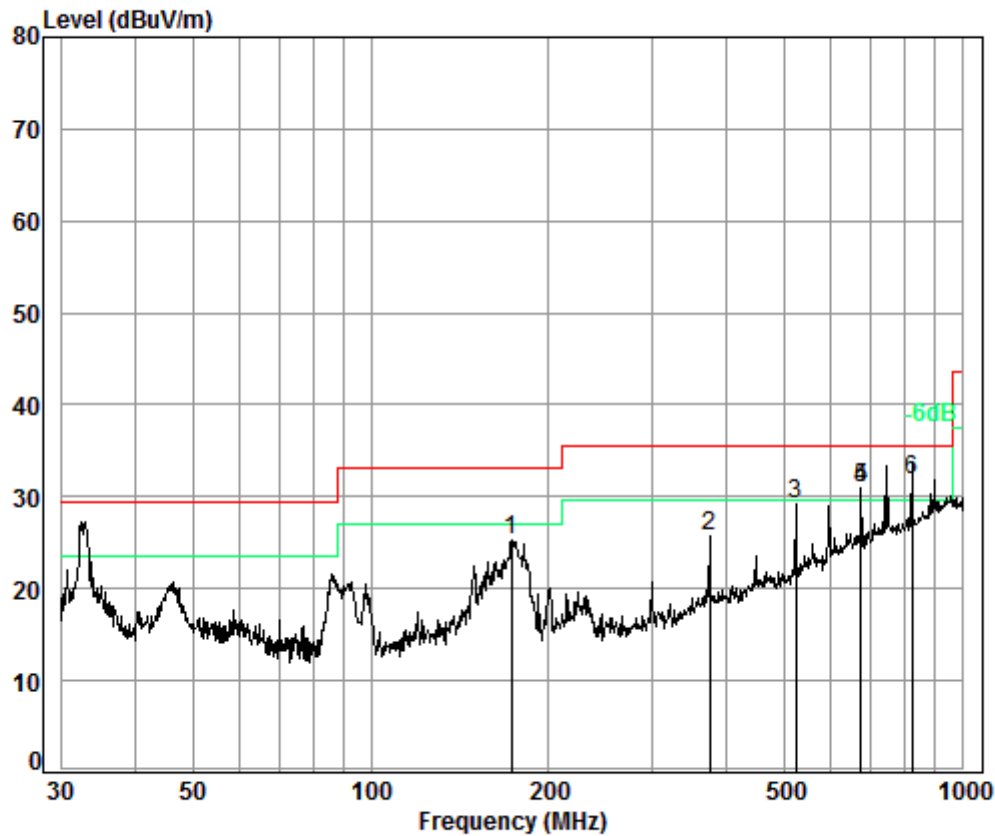
Mode:a; Polarization:Horizontal



Condition: 10m HORIZONTAL  
Job No. : 07080AV  
Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	223.73	7.72	10.39	32.44	36.83	22.50	35.60	-13.10
2	297.22	8.04	12.59	32.38	33.82	22.07	35.60	-13.53
3	373.31	8.30	14.35	32.34	29.04	19.35	35.60	-16.25
4	595.13	8.89	18.61	32.28	32.16	27.38	35.60	-8.22
5	742.26	9.20	20.68	32.26	32.16	29.78	35.60	-5.82
6 pp	897.00	9.50	22.18	31.42	29.64	29.90	35.60	-5.70

Mode:a; Polarization:Vertical



Condition: 10m VERTICAL  
Job No. : 07080AV  
Test Mode: a

	Freq	Cable	Ant	Preamp	Read		Limit	Over
	MHz	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	172.60	7.50	12.02	32.44	38.29	25.37	33.10	-7.73
2	373.31	8.30	14.35	32.34	35.37	25.68	35.60	-9.92
3	522.72	8.71	17.23	32.29	35.66	29.31	35.60	-6.29
4	672.84	9.08	19.81	32.27	34.25	30.87	35.60	-4.73
5	672.84	9.08	19.81	32.27	34.25	30.87	35.60	-4.73
6 pp	821.71	9.30	21.39	32.06	33.20	31.83	35.60	-3.77

## 7 Photographs

### 7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



### 7.2 Radiated Emissions (30MHz-1GHz) Test Setup



### 7.3 EUT Constructional Details







