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Report No.: SHEM150800292401
Page: 1 of 21

1 Cover Page

TEST REPORT

Application No.:	SHEM1508002924IT
Applicant:	Zhejiang Dahua Vision Technology Co., Ltd.
Equipment under Test (EUT) NOTE: The following sample(s) was/were submitted and identified by the client as.	
Product Name:	Outdoor Station
Model No.(EUT):	DHI-VTO1210C-X
Add Model No.:	DH-VTO1210C-X, VTO1210C-X, DHI-VTO1210C-X-VTOB110, DHI-VTO1210C-X-VTOB103
Standards:	ICES-003 Issue 5: 2012
Date of Receipt:	August 24, 2015
Date of Test:	August 31, 2015 to September 01, 2015
Date of Issue:	September 10, 2015
Test Result:	Pass*

* In the configuration tested, the EUT (Equipment under test) complied with the standards specified above.



Parliam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

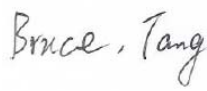

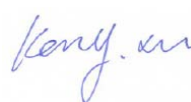
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		September 10, 2015		Original

Authorized for issue by:			
Engineer		Bruce Tang _____ Print Name	 _____
Clerk		Susie Liu _____ Print Name	 _____
Reviewer		Keny Xu _____ Print Name	 _____

3 Test Summary

ELECTROMAGNETIC INTERFERENCE (EMI)			
Test	Test Requirement	Test Method	Result
Conducted Emission (150kHz to 30MHz)	ICES-003 Issue 5: 2012	ANSI C63.4: 2014	PASS
Radiated Emission, (30MHz to 1GHz)	ICES-003 Issue 5: 2012	ANSI C63.4: 2014	PASS*
Radiated Emission above 1 GHz	ICES-003 Issue 5: 2012	ANSI C63.4: 2014	N/A
<p>Remark:</p> <p>N/A: Not Applicable.</p> <p>Note1:* If the highest frequency of the internal sources of the EUT is less than 108MHz, the measurement shall only be made up to 1GHz.</p> <p>Note2: There are 5 models mentioned in this report, and they are the similar in electrical and electronic characters. Only the model DHI-VTO1210C-X was tested since their differences were the model number, trade name and appearance deviation.</p>			

4 Contents

1	COVER PAGE	1
2	VERSION	2
3	TEST SUMMARY	3
4	CONTENTS	4
5	GENERAL INFORMATION	5
5.1	Client Information.....	5
5.2	Details of E.U.T.	5
5.3	E.U.T Operation Mode.....	5
5.4	E.U.T Operation Environment	5
5.5	Description of Support Units	5
5.6	Deviation from Standards	5
5.7	Abnormalities from Standard Conditions	6
5.8	Modification/Retest Record	6
5.9	Test Location.....	6
5.10	Test Facility.....	6
5.11	Measurement Uncertainty.....	7
6	EQUIPMENT LIST	8
7	ELECTROMAGNETIC INTERFERENCE TEST RESULTS.....	10
7.1	Conducted Emissions on Mains Terminals, 150 kHz to 30 MHz	10
7.2	Radiated Emissions, 30MHz to 1GHz	14
8	PHOTOGRAPHS (TEST SETUP FOR THE EUT).....	18
8.1	Conducted Emissions on Mains Terminals Test Setup.....	18
8.2	Radiated Emission Test Setup.....	18
9	EUT CONSTRUCTIONAL DETAILS	19
9.1	Exterior of EUT	19
9.2	Interior of EUT	20-21

5 General Information

5.1 Client Information

Applicant: Zhejiang Dahua Vision Technology Co., Ltd.
 Address of Applicant: The 1st Floor, Building F, 1199 Bin'an Road, Changhe Street, Binjiang, Hangzhou, 310053 Zhejiang, China.
 Manufacturer: Zhejiang Dahua Vision Technology Co., Ltd.
 Address of Manufacturer: The 1st Floor, Building F, 1199 Bin'an Road, Changhe Street, Binjiang, Hangzhou, 310053 Zhejiang, China.
 Factory: Zhejiang Dahua Vision Technology Co., Ltd.
 Address of Factory: The 1st Floor, Building F, 1199 Bin'an Road, Changhe Street, Binjiang, Hangzhou, 310053 Zhejiang, China.

5.2 Details of E.U.T.

Power Supply: For EUT: DC 12V
 For Adaptor:
 Model: ADS-12B-12
 Input: AC 100V-240V
 Output: DC 12V, 1A
 Test voltage: AC 120V, 60Hz
 Cable Type: 150cm Length (2 wires) for DC cable (Supply by Client)

5.3 E.U.T Operation Mode

Functions/Modes: Running mode
 Running mode: Keep EUT running continual.

5.4 E.U.T Operation Environment

Temperature Range: 20-25°C
 Humidity Range: 30-60% RH
 Atmospheric Pressure Range: 100-105kPa

5.5 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Adapter	HONOR	ADS-12B-12
Laptop	Lenovo	R400

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Modification/Retest Record

None.

5.9 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666

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5.10 Test Facility

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 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. Date of expiry: 2017-07-14.

• FCC – Registration No.: 402683

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

• Industry Canada (IC) – IC Assigned Code: 8617A

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868,C-4336,T-2221,G-830 respectively. Date of Expiry: 2017-11-16.

5.11 Measurement Uncertainty

According to CISPR 16-4-2.

Test Item	Frequency Range	Measurement Uncertainty	U _{cispr}
Conducted Emission at mains port using AMN	9kHz-150kHz	3.2 dB	3.8 dB
Conducted Emission at mains port using AMN	150kHz-30MHz	3.0 dB	3.4 dB
Conducted Emission at mains port using VP	9kHz-30MHz	3.9 dB	2.9 dB
Conducted Emission at telecommunication port using AAN	150kHz-30MHz	4.5 dB	5.0 dB
Radiated Emission	30MHz-1000MHz	4.4 dB	6.3 dB
Radiated Emission	1GHz-18GHz	4.6 dB	5.2 dB (1GHz-6GHz)
			5.5 dB (6GHz-18GHz)
Disturbance Power	30MHz-300MHz	3.5 dB	4.5 dB
Remark: AMN – Artificial Mains Network VP – Voltage Probe ANN – Asymmetric Artificial Network			

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

6 Equipment list

Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2015-01-22	2016-01-21
2	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2015-01-22	2016-01-21
3	Line impedance stabilization network	EMCO	3816/2	00034161	2015-01-22	2016-01-21

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1.	EMI test receive	Rohde & Schwarz	ESR7	101391	2015-01-22	2016-01-21
2	CONTROLLER	INNCO	CO200	474	/	/
3	Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	9168-313	2015-02-07	2016-02-06
4	Double ridged broadband horn ANTENNA	SCHWARZBECK	BBHA9120D	9120D-679	2015-02-07	2016-02-06
5	Amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CSS(F)	10001	2015-01-22	2016-01-21
6	Low noise amplifier	TESEQ	LNA6900	71033	2014-12-27	2015-12-26



General Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2015-04-13	2016-04-12
2	Temperature& humidity recorder	ShangHai weather meter work	ZJ 1-2B	84320600 803136, F3040201 53,20101 201FS10 0A6K,201 106117	2015-08-03	2016-08-02
3	Digital Multimeter	FLUKE	17B	19720439	2015-01-22	2016-01-21
4	Autoformer regulator	Guangzhou bao de	TDGC2-5K VA-	/	/	/
5	CLAMP METER	FLUKE	316	250303097 1	2015-01-22	2016-01-21

7 Electromagnetic Interference Test Results

7.1 Conducted Emissions on Mains Terminals, 150 kHz to 30 MHz

Detector: Peak for pre-scan (9 kHz Resolution Bandwidth from 150 kHz to 30 MHz)

Limit:

Frequency range MHz	Class B Limits dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.
Note2: The lower limit is applicable at the transition frequency.

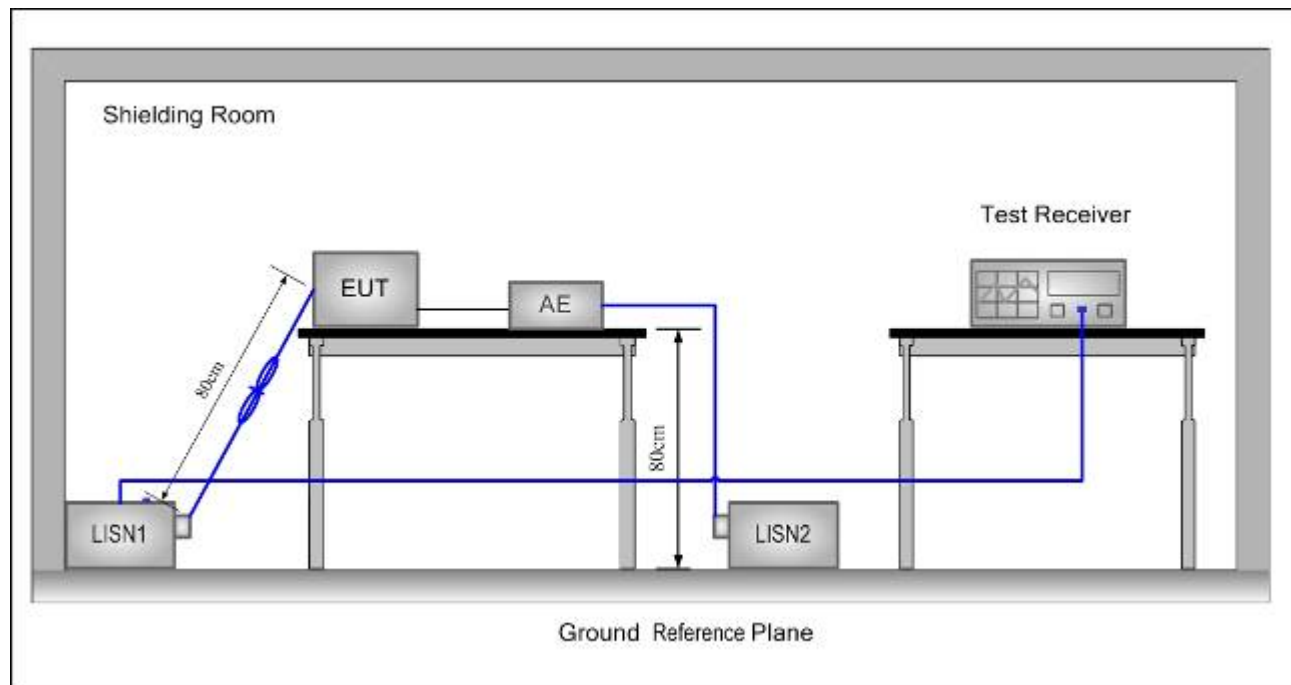
7.1.1 E.U.T. Operation

Test mode: Running mode

Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak and Average test results.

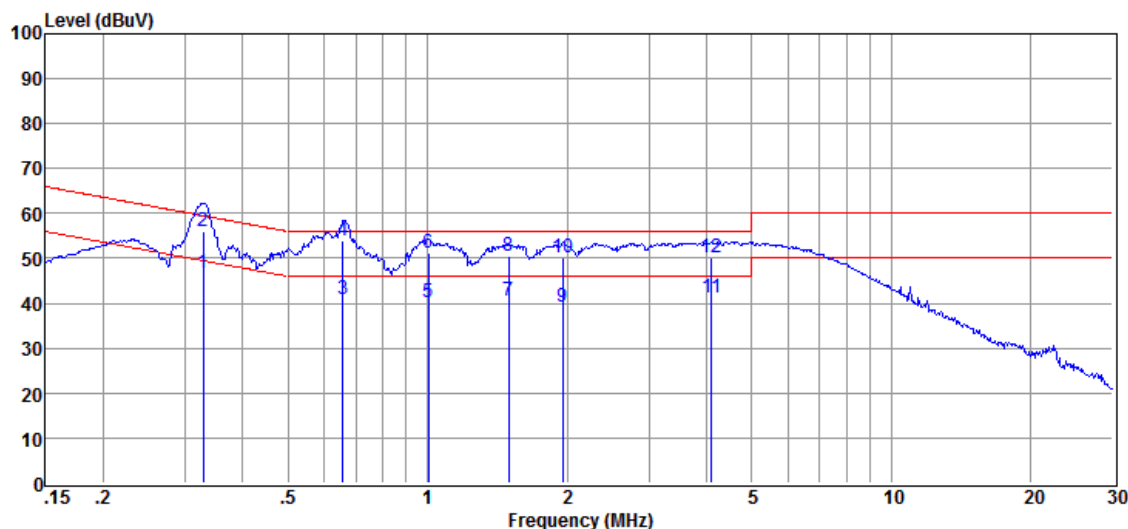
7.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT was connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment was at least 0,8 m from the LISN.

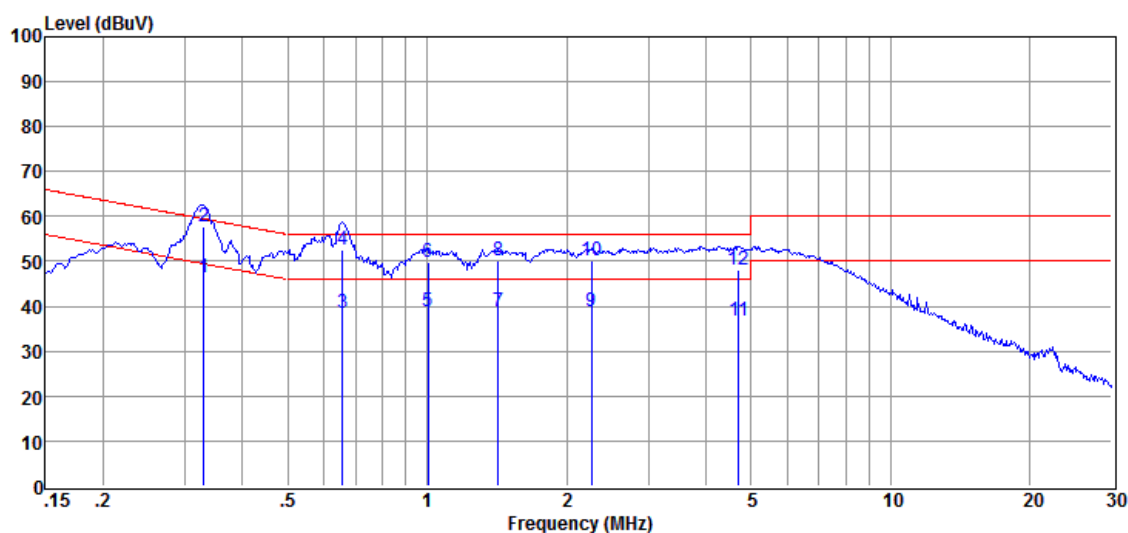
7.1.3 Measurement Data

Live Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.329	36.60	0.25	9.86	46.71	49.49	-2.78	Average
2	0.329	45.81	0.25	9.86	55.92	59.49	-3.57	QP
3	0.658	30.88	0.23	9.86	40.97	46.00	-5.03	Average
4	0.658	43.77	0.23	9.86	53.86	56.00	-2.14	QP
5	1.005	30.13	0.17	9.87	40.17	46.00	-5.83	Average
6	1.005	41.33	0.17	9.87	51.37	56.00	-4.63	QP
7	1.495	30.47	0.28	9.87	40.62	46.00	-5.38	Average
8	1.495	40.31	0.28	9.87	50.46	56.00	-5.54	QP
9	1.959	28.89	0.36	9.87	39.12	46.00	-6.88	Average
10	1.959	39.82	0.36	9.87	50.05	56.00	-5.95	QP
11	4.092	30.88	0.38	9.89	41.15	46.00	-4.85	Average
12	4.092	39.93	0.38	9.89	50.20	56.00	-5.80	QP

Neutral Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.330	36.32	0.30	9.86	46.48	49.44	-2.96	Average
2	0.330	47.74	0.30	9.86	57.90	59.44	-1.54	QP
3	0.658	28.33	0.21	9.86	38.40	46.00	-7.60	Average
4	0.658	42.48	0.21	9.86	52.55	56.00	-3.45	QP
5	1.005	28.85	0.23	9.87	38.95	46.00	-7.05	Average
6	1.005	39.74	0.23	9.87	49.84	56.00	-6.16	QP
7	1.426	28.27	0.62	9.87	38.76	46.00	-7.24	Average
8	1.426	39.74	0.62	9.87	50.23	56.00	-5.77	QP
9	2.261	28.01	0.92	9.87	38.80	46.00	-7.20	Average
10	2.261	39.25	0.92	9.87	50.04	56.00	-5.96	QP
11	4.696	26.52	0.46	9.90	36.88	46.00	-9.12	Average
12	4.696	37.68	0.46	9.90	48.04	56.00	-7.96	QP

Level = Read Level + LISN/ISN Factor + Cable Loss

7.2 Radiated Emissions, 30MHz to 1GHz

Detector: Peak for pre-scan (120 kHz resolution bandwidth)

Limit:

For 3m

Frequency range MHz	Quasi-peak limits dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54
Note: At transitional frequencies the lower limit applies.	

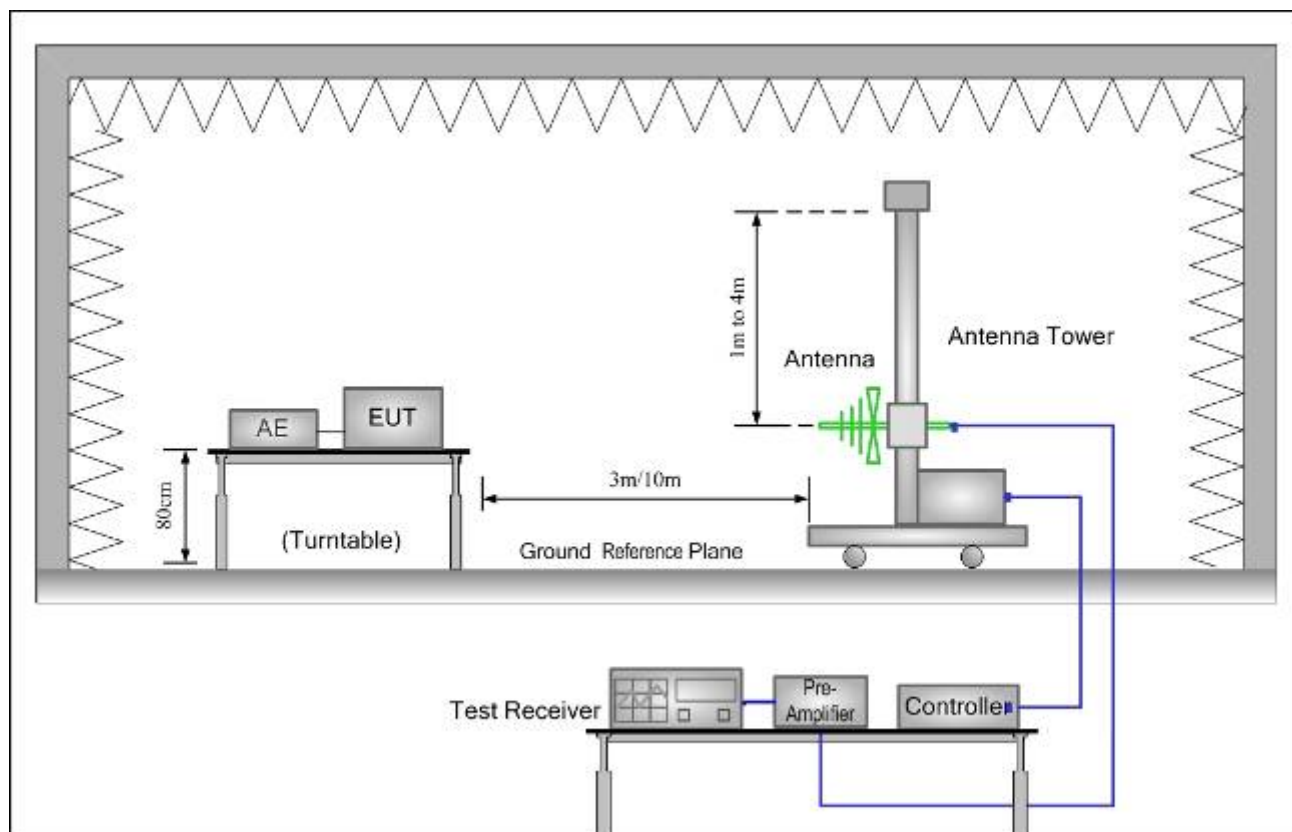
7.2.1 E.U.T. Operation

Test mode: Running mode

Pre-scan was performed with peak detected on all ports, Quasi-peak measurements was performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak test results.

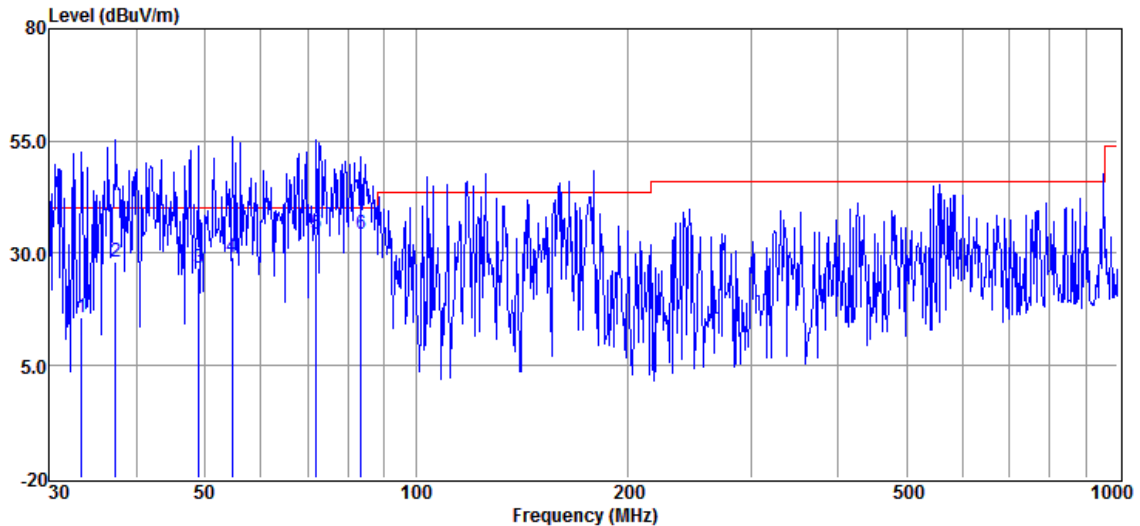
7.2.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The EUT was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum signature data plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement, the physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

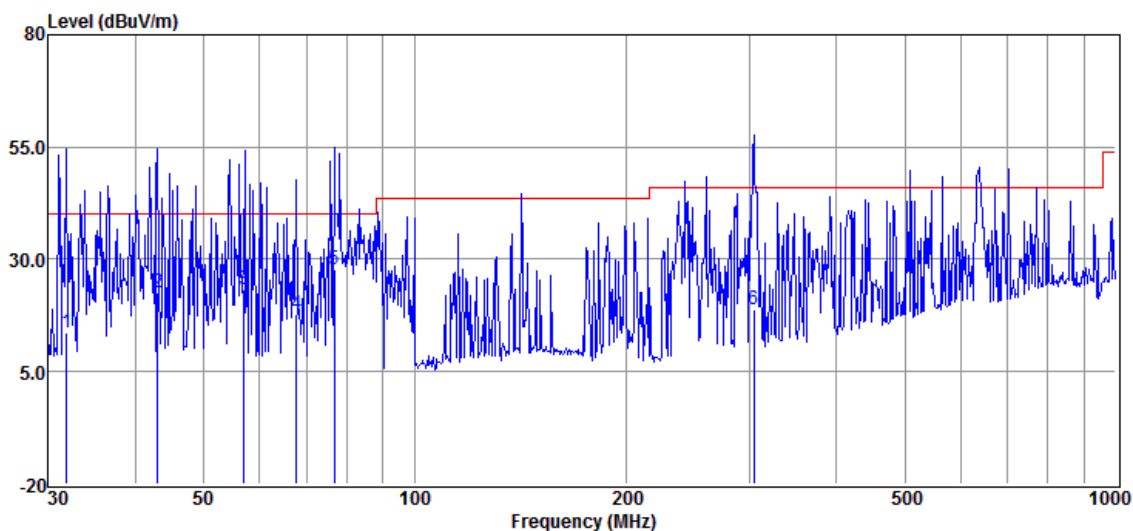
7.2.3 Measurement Data

Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	33.33	27.29	12.43	24.60	0.56	15.68	40.00	-24.32	QP
2	37.29	39.05	13.09	24.60	0.58	28.12	40.00	-11.88	QP
3	49.01	36.95	13.85	24.60	0.69	26.89	40.00	-13.11	QP
4	54.64	39.70	13.26	24.60	0.74	29.10	40.00	-10.90	QP
5	72.08	46.98	11.08	24.60	0.88	34.34	40.00	-5.66	QP
6	83.52	49.16	8.75	24.60	1.00	34.31	40.00	-5.69	QP

Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	31.83	25.03	12.68	24.60	0.55	13.66	40.00	-26.34	QP
2	42.95	33.07	13.62	24.60	0.63	22.72	40.00	-17.28	QP
3	57.14	34.39	12.82	24.60	0.76	23.37	40.00	-16.63	QP
4	67.77	29.46	12.09	24.60	0.85	17.80	40.00	-22.20	QP
5	76.82	41.62	9.90	24.60	0.92	27.84	40.00	-12.16	QP
6	305.00	27.61	13.45	24.41	2.08	18.73	46.00	-27.27	QP

$$\text{Level} = \text{Read Level} + \text{Antenna Factor} + \text{Cable Loss} - \text{Preamplifier Factor}$$

8 Photographs (Test Setup For the EUT)

8.1 Conducted Emissions on Mains Terminals Test Setup



8.2 Radiated Emission Test Setup



9 EUT Constructional Details

9.1 Exterior of EUT



9.2 Interior of EUT





--End of the Report--