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

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1 Cover Page

TEST REPORT

Application No.:	SHEM1704001874IT
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:	Intelligent IR PTZ Dome Camera
Model No.(EUT):	DH-SD6AE230IA-HC
Add Model No.:	DH-SD6AExyztuv-Ha, SD6AExyztuv-Ha ("x" can be 1-9 or blank or missing; "y" can be 0-9 or blank or missing; "z" can be 0-9 or blank or missing; "t" can be A-Z or blank or missing; "u" can be A-Z or blank or missing; "v" can be N or P or blank or missing; "a" can be C, N, NI or blank or missing)
Standards:	CFR 47 Part 15 subpart B, 2016
Date of Receipt:	2017-04-06
Date of Test:	2017-04-12 to 2017-04-20
Date of Issue:	2017-05-03
Test Result:	**Pass***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Parlam 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. 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.

Revision Record				
Version	***Chapter***	***Date***	***Modifier***	***Remark***
00		2017-05-03		*Original*

Authorized for issue by:				
Tested By		Bruce, Tang **Bruce Tang /Project Engineer**		2017-04-11 **Date**
Checked By		Zenger Zhang **Zenger Zhang /Reviewer**		2017-04-24 **Date**

2 Test Summary

ELECTROMAGNETIC INTERFERENCE (EMI)			
Test	**Test Requirement**	**Test Method**	**Result**
Conducted Emission (150kHz to 30MHz)	CFR 47 Part 15 subpart B, 2016	ANSI C63.4: 2014	PASS
Radiated Emission, (30MHz to 1GHz)	CFR 47 Part 15 subpart B, 2016	ANSI C63.4: 2014	PASS
Radiated Emission above 1 GHz	CFR 47 Part 15 subpart B, 2016	ANSI C63.4: 2014	PASS*
Remark: Note1:* The highest frequency of the internal sources of the EUT is above 1GHz, the measurement shall be made up to 5 times the highest frequency of 6GHz, whichever is less. Note2: There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model DH-SD6AE230IA-HC was tested since their differences are model number and appearance.			

3 Contents

4 General Information

4.1 Client Information

Applicant:	Zhejiang Dahua Vision Technology Co., Ltd.
Address of Applicant:	No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Manufacturer:	Zhejiang Dahua Vision Technology Co., Ltd.
Address of Manufacturer:	No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Factory:	Zhejiang Dahua Vision Technology Co., Ltd.
Address of Factory:	No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

4.2 Details of E.U.T.

Power Supply:	AC24V Adapter (A24-3A): Input : AC120V Output :24V 3A

4.3 E.U.T Operation Mode

Functions/Modes:	a; Monitoring mode
Monitoring mode:	Keep EUT monitoring continual.

4.4 E.U.T Operation Environment

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

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
HD DVR	Hikvision	——
Laptop	Lenovo	R400
DELL Monitor	——	——

4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions

None.

4.8 Modification/Retest Record

None.

4.9 Test Location

All tests were performed at:

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

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

4.10 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 Equipment list

Conducted Emission

Item	Test Equipment	Manu facturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2016-12-29	2017-12-28
2	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127490	2016-12-29	2017-12-28
3	Line impedance stabilization network	EMCO	3816/2	00034161	2016-12-29	2017-12-28
4	SCHWARZBECK CAT5 8158	SCHWARZBECK	8-Wire ISN CAT 5	CAT5-8158-0061	2016-12-29	2017-12-28

Radiated Emission

Item	Test Equipment	Manu facturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU40	SHEM 051-1	2016-08-12	2017-08-11
2	CONTROLLER	INNCO	CO200	SHEM 047-1	N/A	N/A
3	ANTENNA MAST	INNCO	MA400-EP	SHEM 047-2	N/A	N/A
4	TURN DEVICE	INNCO	DE 3600-RH	SHEM 047-3	N/A	N/A
5	BROADBAND UHF-VHF ANTENNA	SCHWARZBECK	VULB 9168	SHEM 048-1	2016-12-29	2017-12-28
6	LOW FREQUENCY AMPLIFIER	CLAVIIO	BDLNA-0001-412010	SHEM 164-1	2016-08-12	2017-08-11

General used equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal.Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2017-03-02	2018-03-01
2	Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	84320600803136, F304020153,20101201FS100A6K,201106117	2016-08-03	2017-08-02
3	Digital Multimeter	FLUKE	17B	19720439	2017-01-13	2018-01-12
4	Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	/	/	/
5	CLAMP METER	FLUKE	316	2503030971	2017-01-13	2018-01-12

6 Electromagnetic Interference Test Results

6.1 Conducted Emissions on Mains Terminals

Test Frequency: 150 kHz to 30 MHz

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

Limit:

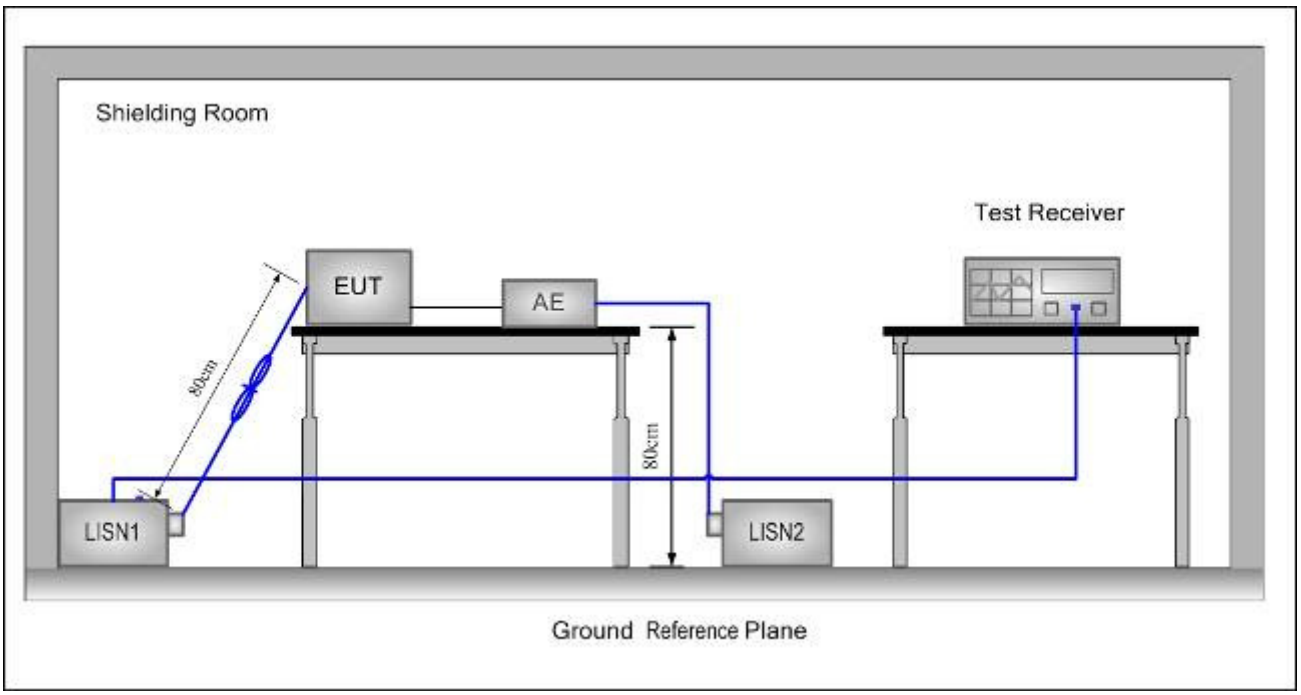
Frequency range (MHz)	**Class B Limits** (dB (μV))	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz. Note2: The lower limit is applicable at the transition frequency.		

6.1.1 E.U.T. Operation

Test mode: a; Monitoring mode: Keep EUT monitoring continual.

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.

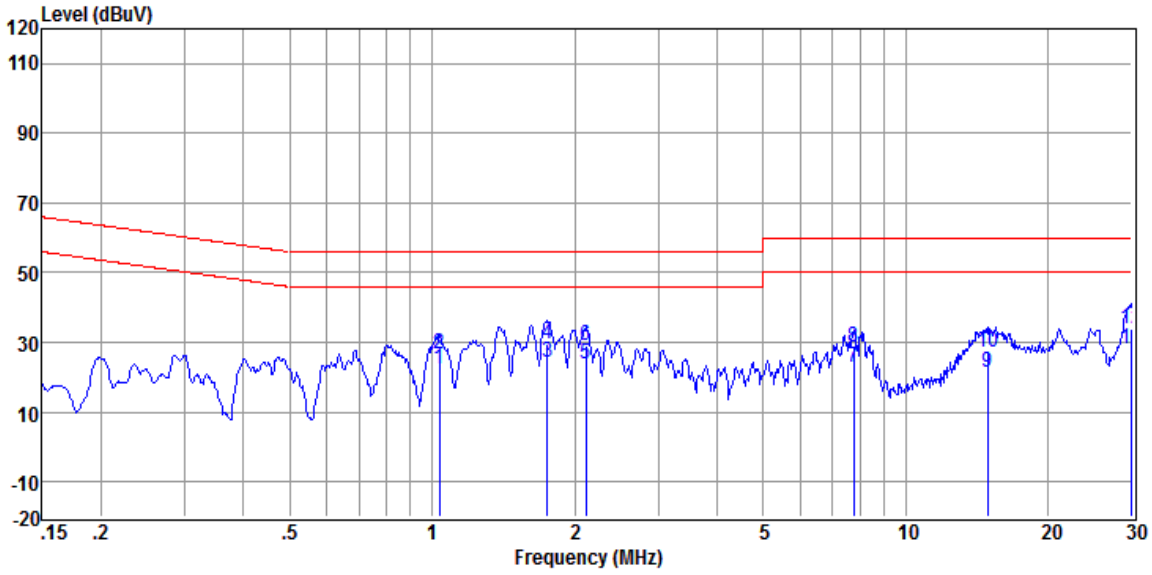
6.1.2 Test Setup and Procedure



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 50Ω/50μH + 5Ω 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.

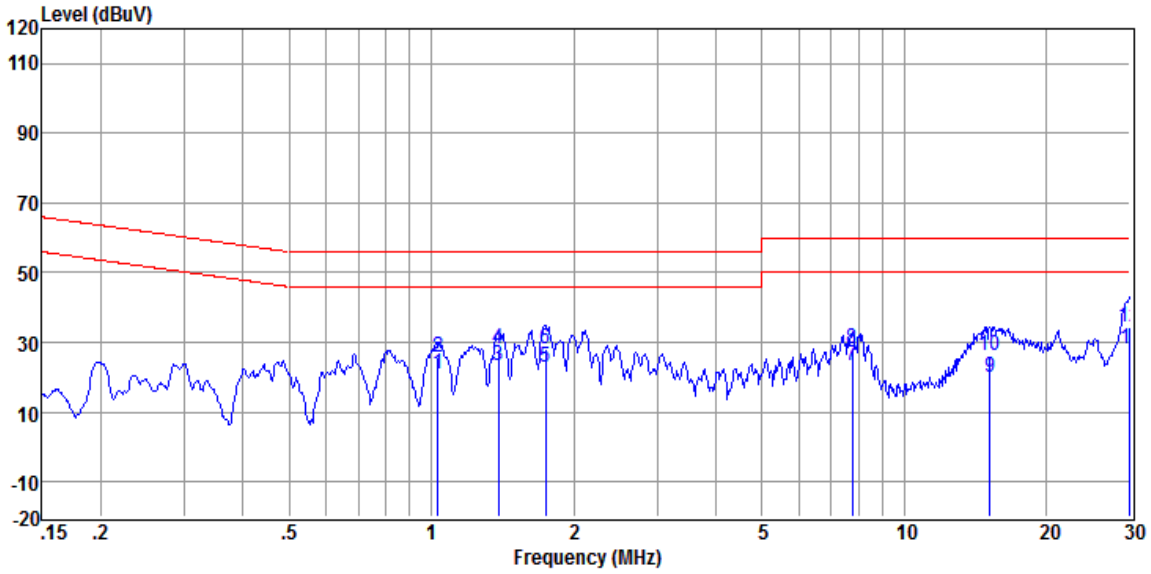
6.1.3 Measurement Data

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	1.037	12.00	0.08	10.18	22.26	46.00	-23.74	Average
2	1.037	16.63	0.08	10.18	26.89	56.00	-29.11	QP
3	1.753	13.96	0.08	10.19	24.23	46.00	-21.77	Average
4	1.753	19.46	0.08	10.19	29.73	56.00	-26.27	QP
5	2.110	13.51	0.08	10.19	23.78	46.00	-22.22	Average
6	2.110	18.88	0.08	10.19	29.15	56.00	-26.85	QP
7	7.769	12.23	0.18	10.29	22.70	50.00	-27.30	Average
8	7.769	17.92	0.18	10.29	28.39	60.00	-31.61	QP
9	14.907	11.09	0.22	10.28	21.59	50.00	-28.41	Average
10	14.907	16.61	0.22	10.28	27.11	60.00	-32.89	QP
11	29.841	17.31	0.48	10.50	28.29	50.00	-21.71	Average
12	29.841	23.03	0.48	10.50	34.01	60.00	-25.99	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	1.032	10.48	0.05	10.18	20.71	46.00	-25.29	Average
2	1.032	15.43	0.05	10.18	25.66	56.00	-30.34	QP
3	1.388	12.97	0.05	10.19	23.21	46.00	-22.79	Average
4	1.388	17.82	0.05	10.19	28.06	56.00	-27.94	QP
5	1.744	12.65	0.06	10.19	22.90	46.00	-23.10	Average
6	1.744	18.09	0.06	10.19	28.34	56.00	-27.66	QP
7	7.769	12.63	0.20	10.29	23.12	50.00	-26.88	Average
8	7.769	17.82	0.20	10.29	28.31	60.00	-31.69	QP
9	15.146	9.40	0.26	10.28	19.94	50.00	-30.06	Average
10	15.146	15.59	0.26	10.28	26.13	60.00	-33.87	QP
11	30.000	16.94	0.59	10.50	28.03	50.00	-21.97	Average
12	30.000	23.08	0.59	10.50	34.17	60.00	-25.83	QP

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

6.2 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.	

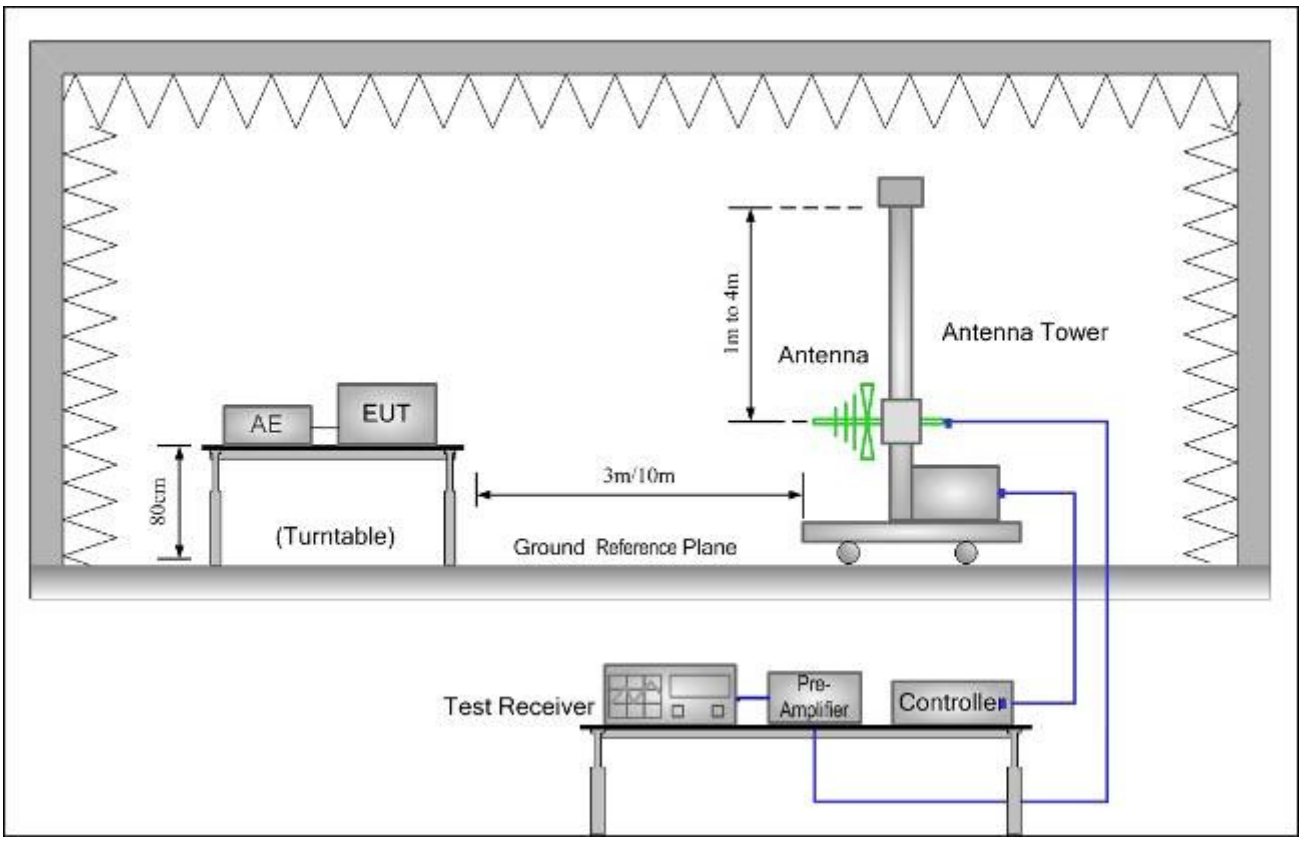
6.2.1 E.U.T. Operation

Test mode: a; Monitoring mode: Keep EUT monitoring continual.

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.

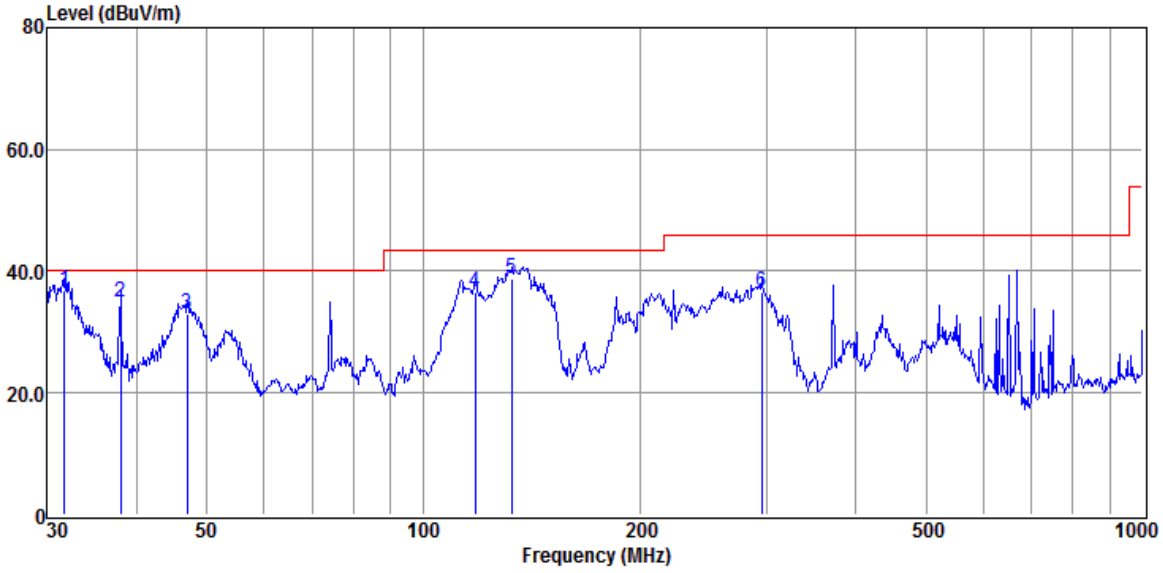
6.2.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The EUT was connected to DC 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.

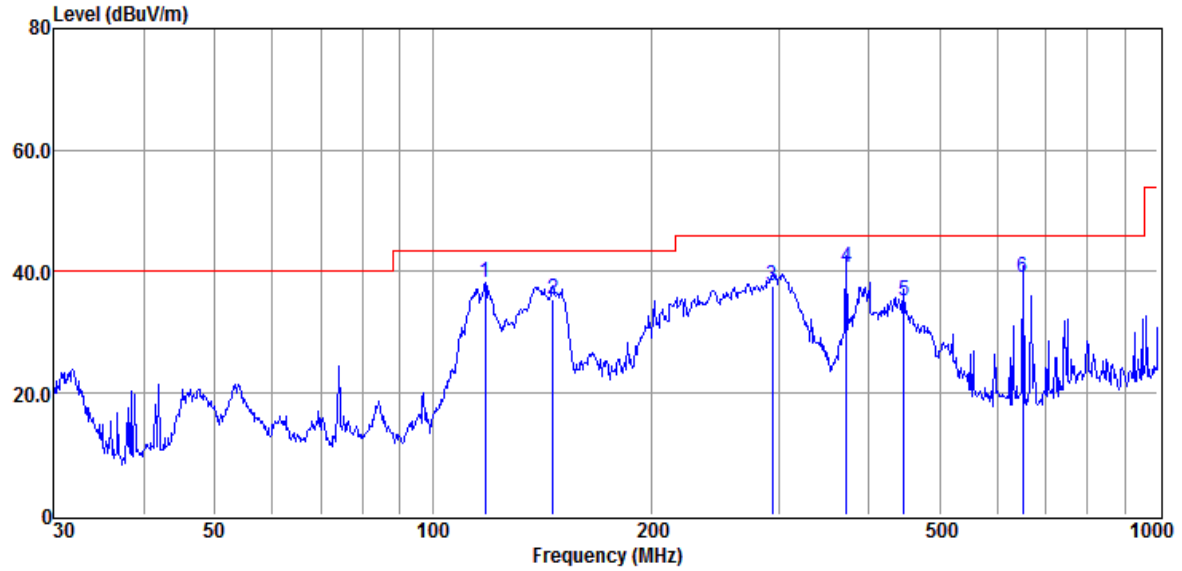
6.2.3 Measurement Data

Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
1	31.73	52.74	12.68	28.90	0.19	36.71	40.00	-3.29	QP
2	37.95	50.17	13.30	28.90	0.21	34.78	40.00	-5.22	QP
3	47.00	47.89	13.55	28.80	0.25	32.89	40.00	-7.11	QP
4	118.19	53.05	11.65	28.60	0.53	36.63	43.50	-6.87	QP
5	132.69	54.71	12.01	28.50	0.59	38.81	43.50	-4.69	QP
6	295.15	50.69	13.00	27.90	0.84	36.63	46.00	-9.37	QP

Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	118.19	54.59	11.65	28.60	0.53	38.17	43.50	-5.33	QP
2	146.37	50.77	12.62	28.40	0.61	35.60	43.50	-7.90	QP
3	294.11	51.84	12.90	27.90	0.83	37.67	46.00	-8.33	QP
4	372.00	54.64	13.54	28.42	0.95	40.71	46.00	-5.29	QP
5	446.41	46.56	16.59	29.03	1.08	35.20	46.00	-10.80	QP
6	651.94	46.48	20.35	29.27	1.51	39.07	46.00	-6.93	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor

6.3 Radiated Emissions, 1GHz to 6GHz

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

Limit: For 3m

Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

Remark: The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

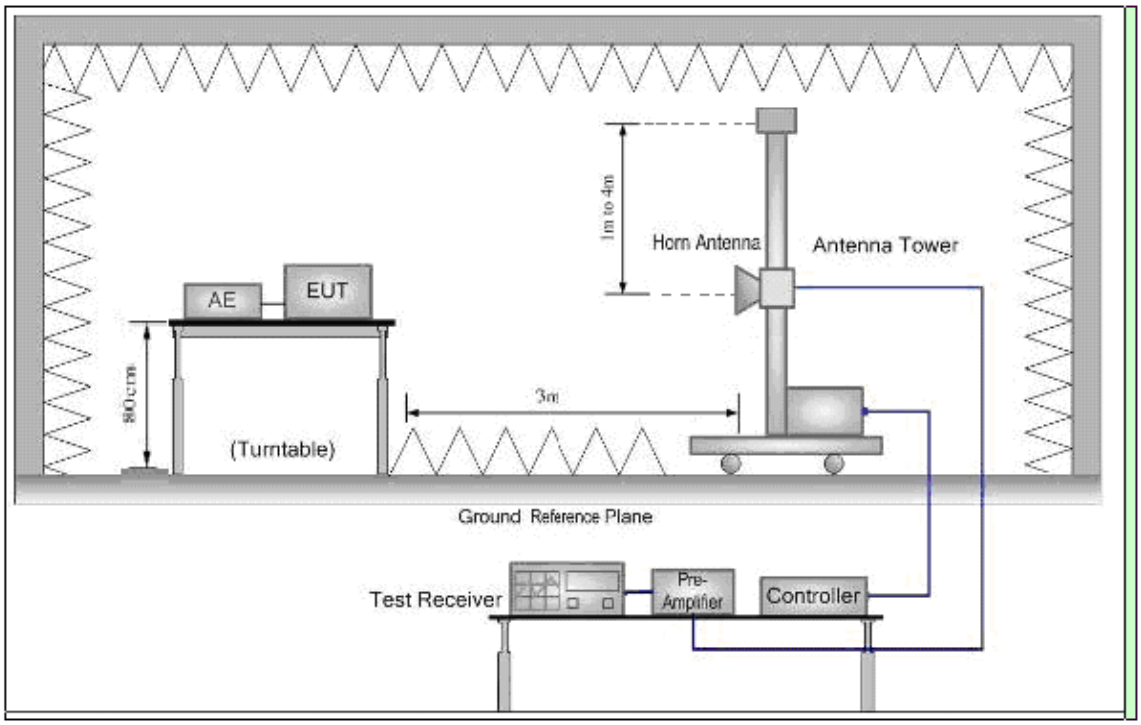
6.3.1 E.U.T. Operation

Test mode: a; Monitoring mode: Keep EUT monitoring continual.

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

Please see the attached Peak and Average test results.

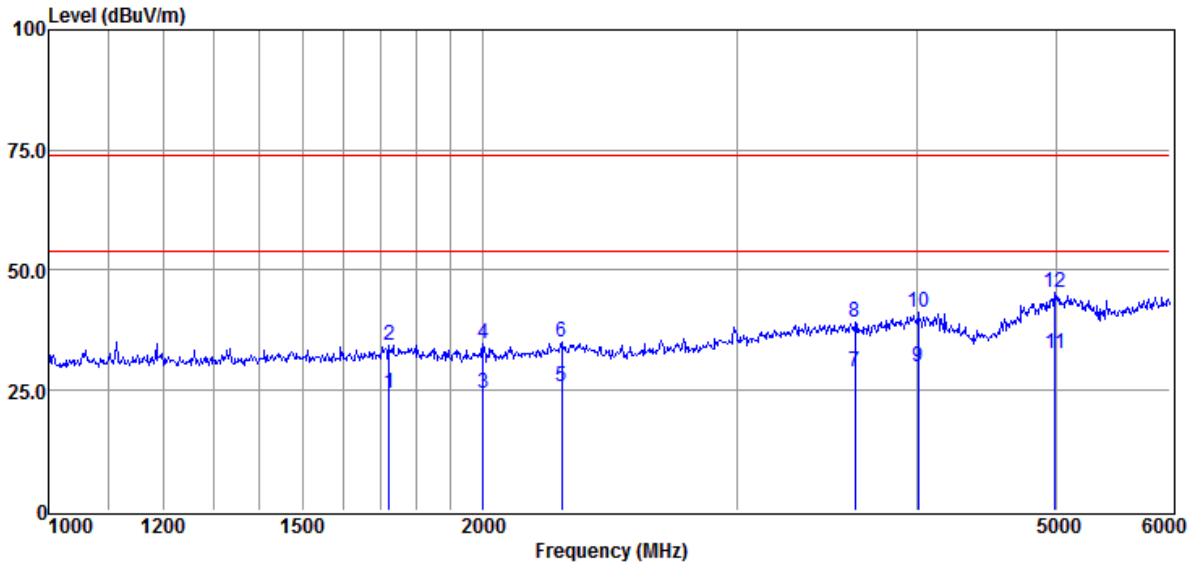
6.3.2 Test Setup and Procedure



6. The radiated emissions test was conducted in a semi-anechoic chamber.
7. The EUT was connected to DC 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.
8. 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.
9. 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.
10. 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.

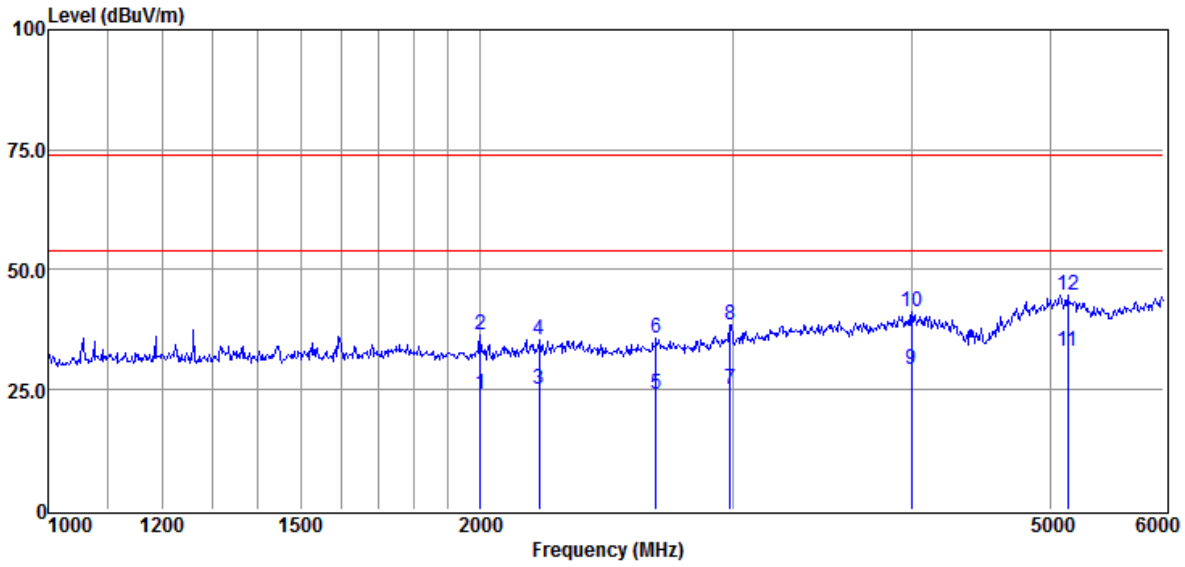
6.3.3 Measurement Data

Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	1721.00	34.96	26.01	40.86	4.14	24.25	54.00	-29.75	Average
2	1721.00	45.08	26.01	40.86	4.14	34.37	74.00	-39.63	Peak
3	2000.53	34.12	27.10	41.23	4.45	24.44	54.00	-29.56	Average
4	2000.53	44.28	27.10	41.23	4.45	34.60	74.00	-39.40	Peak
5	2267.85	34.36	27.49	41.07	5.04	25.82	54.00	-28.18	Average
6	2267.85	43.51	27.49	41.07	5.04	34.97	74.00	-39.03	Peak
7	3626.53	32.34	31.61	40.38	5.33	28.90	54.00	-25.10	Peak
8	3626.53	42.46	31.61	40.38	5.33	39.02	74.00	-34.98	Average
9	4009.29	30.36	32.70	40.05	6.96	29.97	54.00	-24.03	Peak
10	4009.29	41.54	32.70	40.05	6.96	41.15	74.00	-32.85	Average
11	4988.86	29.14	38.08	41.71	7.04	32.55	54.00	-21.45	Average
12	4988.86	42.08	38.08	41.71	7.04	45.49	74.00	-28.51	Peak

Horizontal:

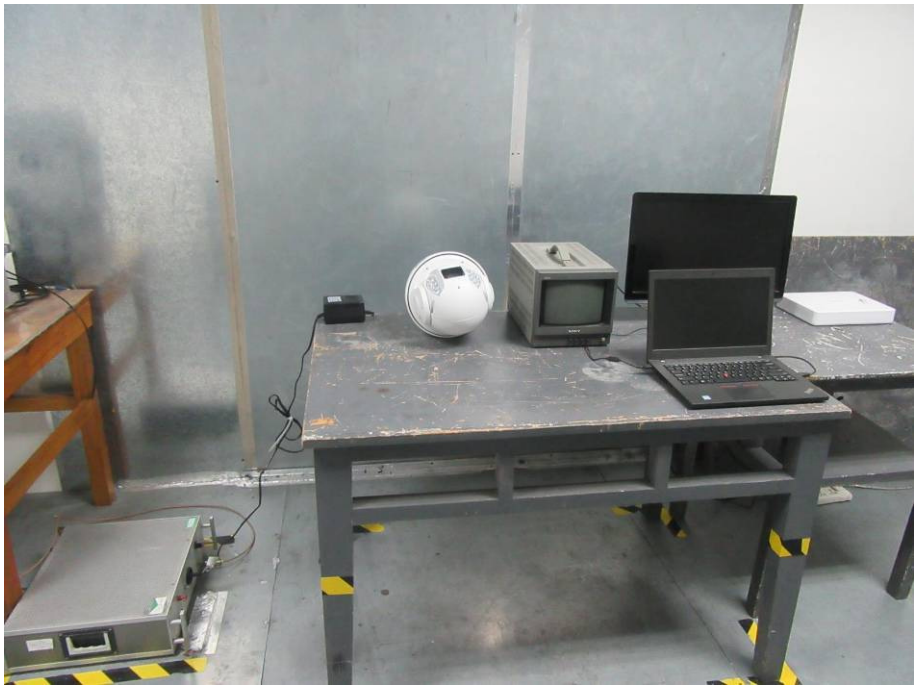


Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	2000.53	33.62	27.10	41.23	4.45	23.94	54.00	-30.06	Average
2	2000.53	46.19	27.10	41.23	4.45	36.51	74.00	-37.49	Peak
3	2199.82	34.27	27.40	41.11	4.49	25.05	54.00	-28.95	Average
4	2199.82	44.57	27.40	41.11	4.49	35.35	74.00	-38.65	Peak
5	2655.17	32.23	27.96	40.91	4.82	24.10	54.00	-29.90	Average
6	2655.17	43.76	27.96	40.91	4.82	35.63	74.00	-38.37	Peak
7	2988.48	31.26	29.26	40.82	5.35	25.05	54.00	-28.95	Average
8	2988.48	44.86	29.26	40.82	5.35	38.65	74.00	-35.35	Peak
9	4002.11	29.56	32.70	40.05	6.96	29.17	54.00	-24.83	Average
10	4002.11	41.51	32.70	40.05	6.96	41.12	74.00	-32.88	Peak
11	5143.16	30.24	37.06	41.64	7.21	32.87	54.00	-21.13	Average
12	5143.16	42.19	37.06	41.64	7.21	44.82	74.00	-29.18	Peak

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor

7 Photographs (Test Setup For the EUT)

7.1 Conducted Emissions on Mains Terminals Test Setup



7.2 Radiated Emission Test Setup

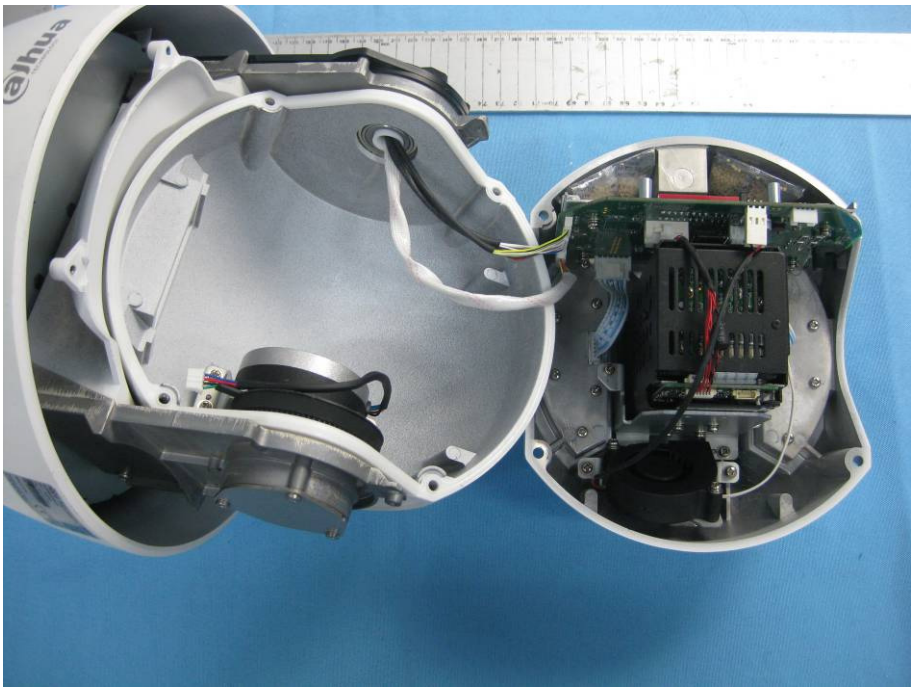
Below 1G:

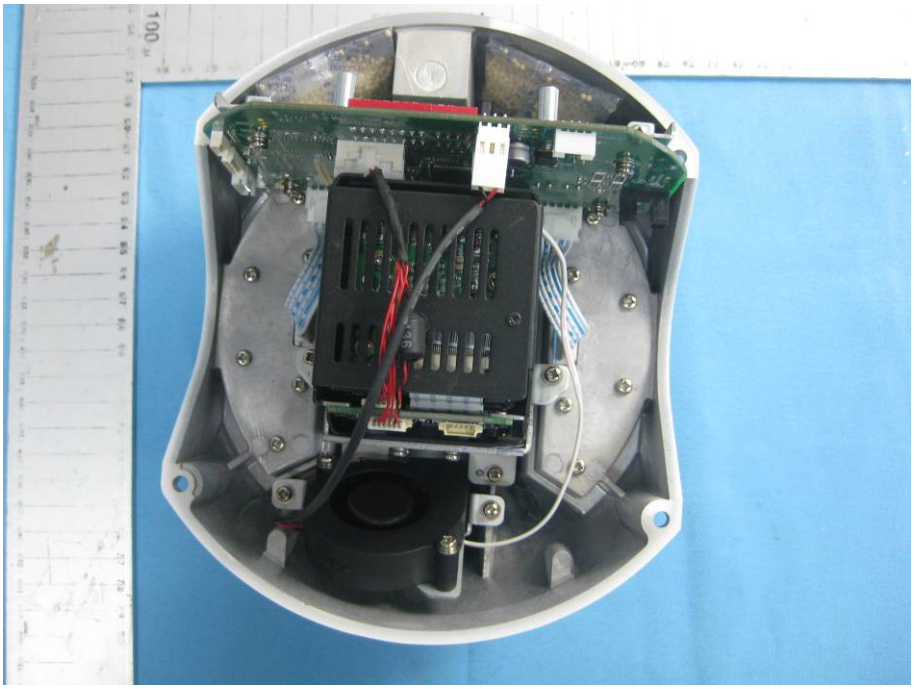
Above 1G:

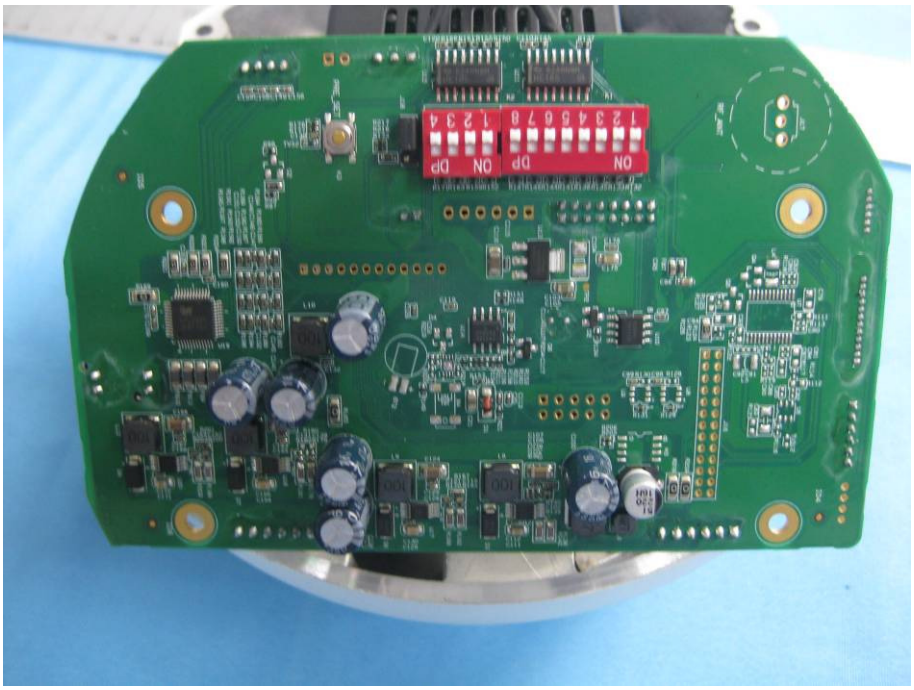
8 EUT Constructional Details

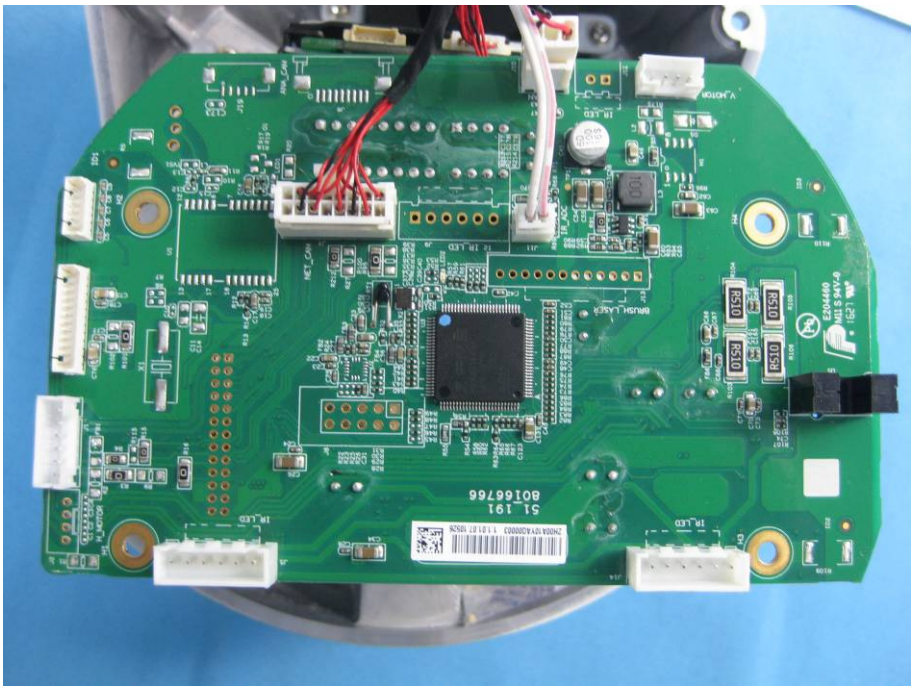
8.1 Exterior of EUT

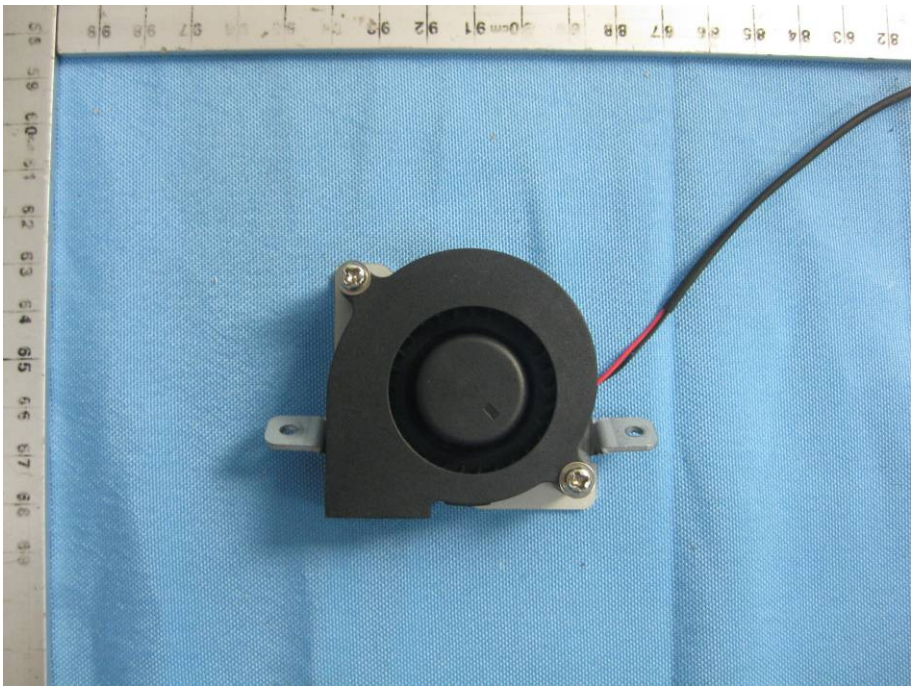
8.2 Interior of EUT

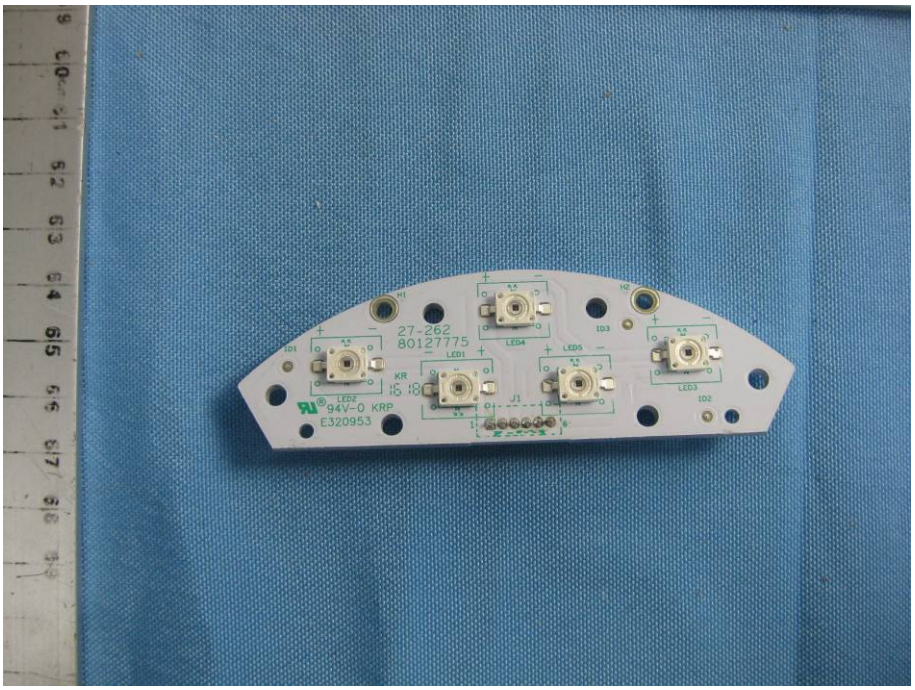


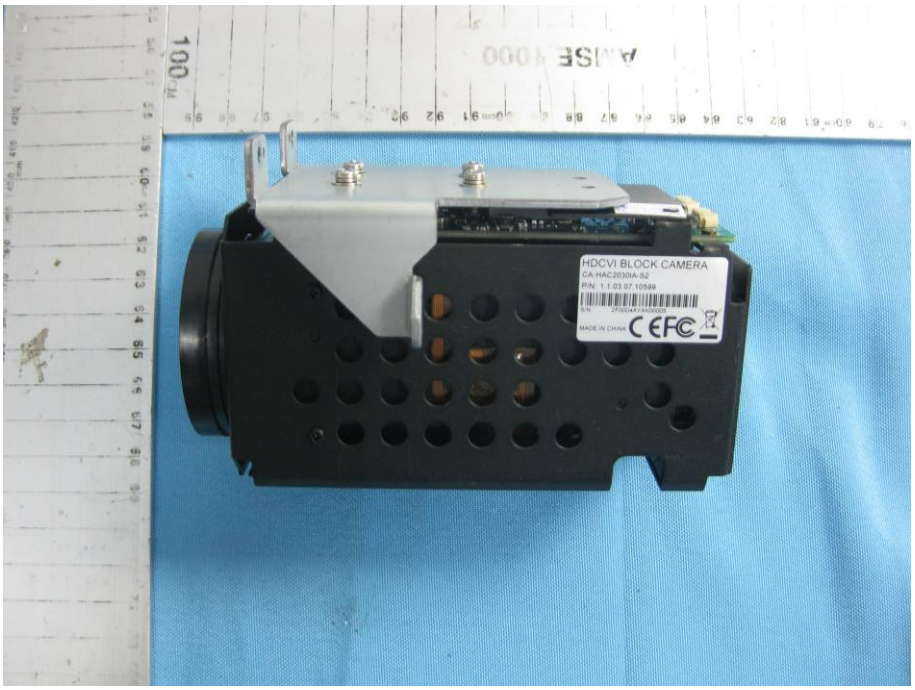


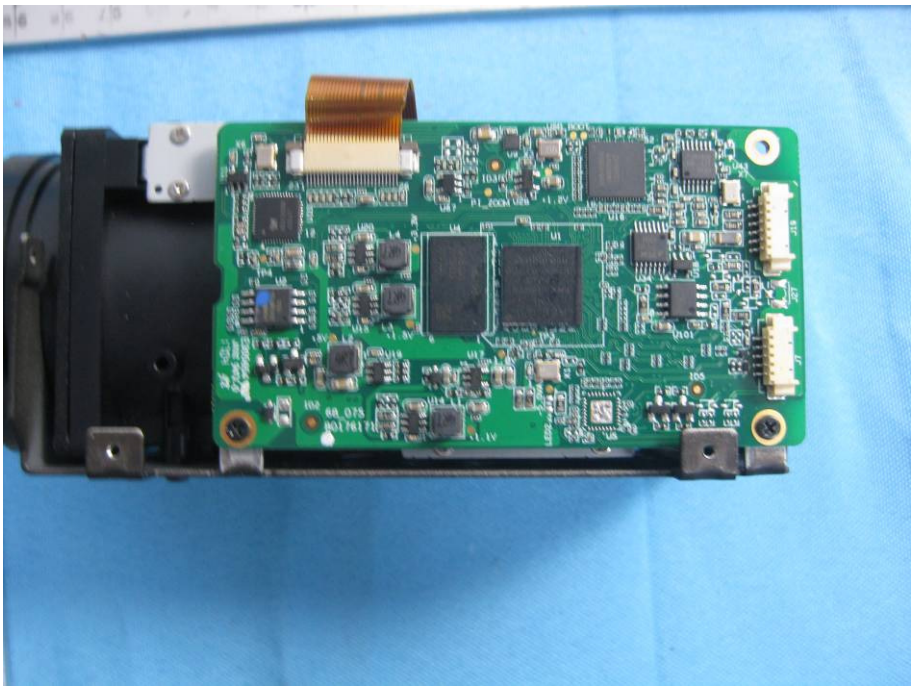


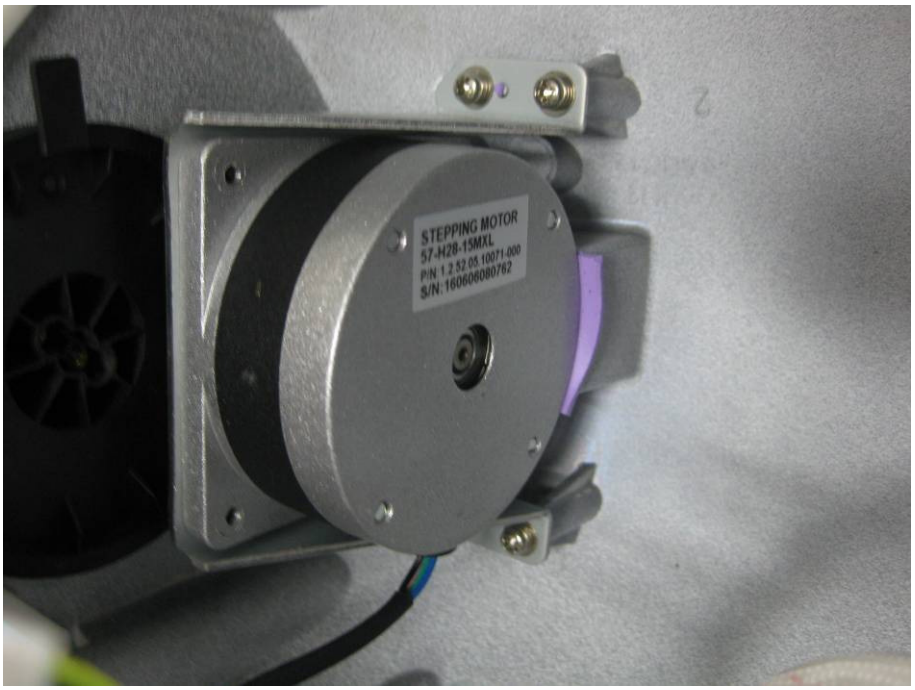


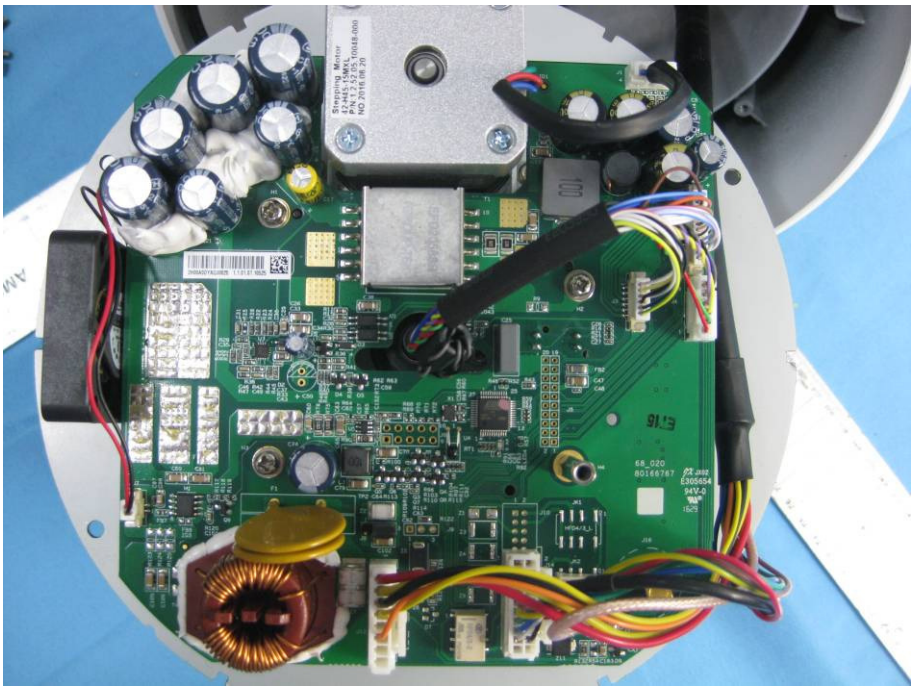












--End of the Report--