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Report No.: SHEM170600410801

Page: 1 of 24

TEST REPORT

Application No.: SHEM1706004108IT
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: 1, ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
2, ZHEJIANG DAHUA ZHILIAN CO., LTD.
Address of Factory: 1, No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
2, No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou, P.R.China.
Equipment Under Test (EUT):
EUT Name: IP Villa Outdoor Station
Model No.: DHI-VTO3211D-P2, VTO3211D-P2, DH-VTO3211D-P2, OEM-VTO3211D-P2, DHI-VTO3211D-P4, VTO3211D-P4, DH-VTO3211D-P4, OEM-VTO3211D-P4 □
□ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standards: 47 CFR Part 15, Subpart B:2016
Date of Receipt: 2017-06-26
Date of Test: 2017-06-29 to 2017-09-04
Date of Issue: 2017-09-08

Test Result :	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Parlam Zhan
E&E Section 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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**SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.**

Report No.: SHEM170600410801

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Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2017-09-08	/	Original

Authorized for issue by:			
Tested By	 Bruce_tang /Project Engineer	2017-09-05 Date	
Checked By	 Zenger_zhang /Reviewer	2017-09-05 Date	



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
Radiated Emissions (above 1GHz)	47 CFR Part 15,Subpart B:2016	ANSI C63.4	Class B	Pass

InternalSource	UpperFrequency
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:

There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model DHI-VTO3211D-P2 was tested since their differences are model number and appearance.



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4 General Information

4.1 Details of E.U.T.

Power supply: DC12V 2A

4.2 Description of Support Units

Description	Manufacturer	Model No.
Laptop 1	LENOVO	R400
Switching Adapter 1	Aoepower	BSW0127-1210002

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	3.2dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
	Conducted Emission at mains port using VP	1.9 dB(9kHz to 30MHz)
	Conducted Emission at telecommunication port using AAN	2.4 dB(150kHz to 30MHz)
2	Radiated Power	3.5dB
3	Radiated emission	4.4dB (30MHz-1GHz)
		4.6dB (1GHz-6GHz)
4	Radiated Immunity	1.64dB
5	Conducted Immunity	0.96dB
6	ESD	6 %
7	EFT (Electrical Fast Transients)	5 %
8	Surge Immunity	5 %
9	Voltage Dips and Interruptions	4 %
10	20 system	1.5dB
11	Temperature test	1 °C
12	Humidity test	3%
13	DC power test	0.5 %



4.4 Standards Applicable for Testing

Table 1 : Tests Carried Out Under 47 CFR Part 15,Subpart B:2016

Item	Status
Conducted Emissions at Mains Terminals (150kHz-30MHz)	√
Radiated Emissions (30MHz-1GHz)	√
Radiated Emissions (above 1GHz)	√

× Indicates that the test is not applicable

√ Indicates that the test is applicable



4.5 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.

4.6 Test Facility

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

- **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.

- **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.

- **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.

4.7 Deviation from Standards

None

4.8 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
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2016-12-29	2017-12-28
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2017-05-17	2018-05-16
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2016-12-29	2017-12-28
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2017-08-01	2018-07-31
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2016-12-29	2017-12-28

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2016-10-08	2017-10-07
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2017-02-28	2018-02-27
Low Frequency Amplifier	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-01	2018-07-31
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2016-10-08	2017-10-07
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Double ridged broadband horn ANTENNA	SCHWARZBECK	BBHA9120D	SHEM050-1	2017-01-14	2018-01-13
High-amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CS	SHEM050-2	2017-01-14	2018-01-13
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2017-03-03	2018-03-02
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2017-08-18	2018-08-17
Digital Multimeter	FLUKE	17B	SHEM043-5	2017-08-14	2018-08-13
Autotransformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2017-01-29	2018-01-28

6 Emission Test Results

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

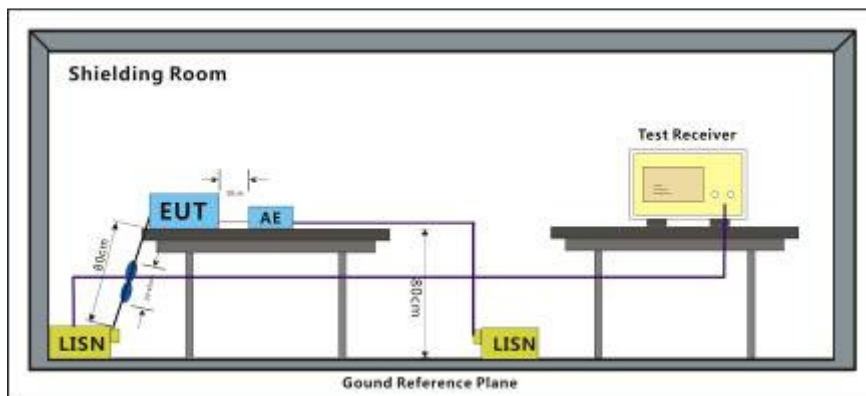
Test Requirement:	47 CFR Part 15, Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan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

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1001 mbar
Test mode a: monitoring : keep EUT calling and monitoring continual .

6.1.2 Test Setup Diagram

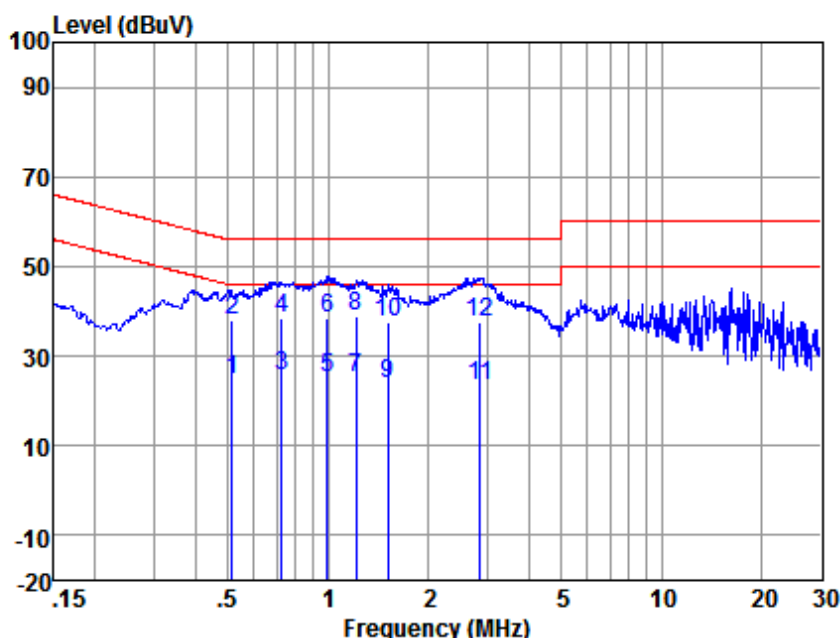


6.1.3 Measurement Data

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

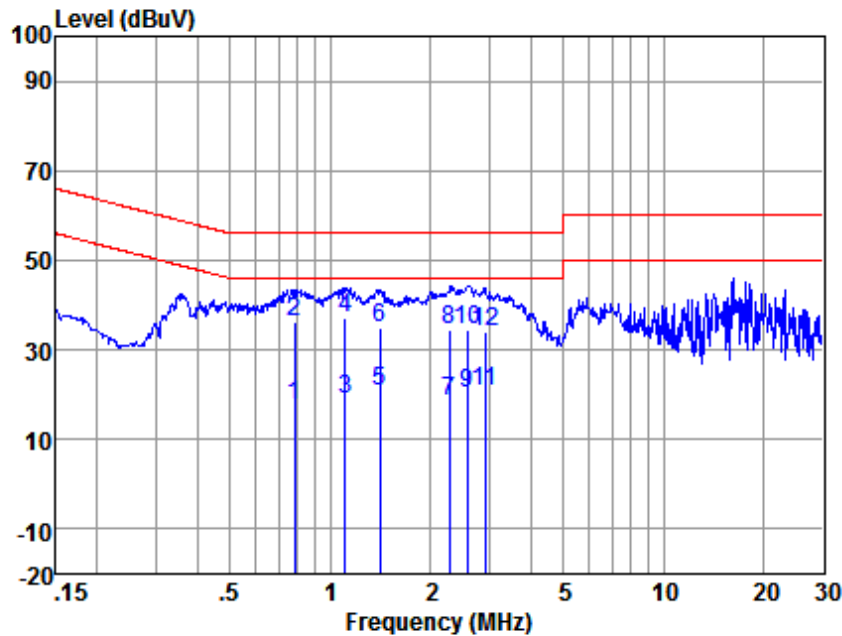


Site : chamber
Condition : LISN-L-2017
Project No: 4108IT
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.516	14.78	0.11	9.82	24.71	46.00	-21.29	Average
2	0.516	28.10	0.11	9.82	38.03	56.00	-17.97	QP
3	0.727	15.87	0.11	9.83	25.81	46.00	-20.19	Average
4	0.727	28.73	0.11	9.83	38.67	56.00	-17.33	QP
5	0.994	15.04	0.11	9.84	24.99	46.00	-21.01	Average
6	0.994	28.61	0.11	9.84	38.56	56.00	-17.44	QP
7	1.210	15.35	0.11	9.84	25.30	46.00	-20.70	Average
8	1.210	28.95	0.11	9.84	38.90	56.00	-17.10	QP
9	1.511	13.71	0.11	9.84	23.66	46.00	-22.34	Average
10	1.511	27.43	0.11	9.84	37.38	56.00	-18.62	QP
11	2.854	13.38	0.12	9.85	23.35	46.00	-22.65	Average
12	2.854	27.78	0.12	9.85	37.75	56.00	-18.25	QP



Mode:a; Line:Neutral Line



Site : chamber
Condition : LISN-N-2017
Project No: 4108IT
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.779	7.84	0.11	9.83	17.78	46.00	-28.22	Average
2	0.779	26.19	0.11	9.83	36.13	56.00	-19.87	QP
3	1.111	9.10	0.11	9.84	19.05	46.00	-26.95	Average
4	1.111	27.22	0.11	9.84	37.17	56.00	-18.83	QP
5	1.411	10.92	0.12	9.84	20.88	46.00	-25.12	Average
6	1.411	25.13	0.12	9.84	35.09	56.00	-20.91	QP
7	2.285	8.34	0.13	9.85	18.32	46.00	-27.68	Average
8	2.285	24.60	0.13	9.85	34.58	56.00	-21.42	QP
9	2.581	10.17	0.13	9.85	20.15	46.00	-25.85	Average
10	2.581	24.68	0.13	9.85	34.66	56.00	-21.34	QP
11	2.915	10.64	0.13	9.85	20.62	46.00	-25.38	Average
12	2.915	23.84	0.13	9.85	33.82	56.00	-22.18	QP

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:	3m
Limit:	
30MHz -88MHz	40.0(dBμV/m) quasi-peak
88MHz-216MHz	43.5(dBμV/m) quasi-peak
216MHz-960MHz	46.0(dBμV/m) quasi-peak
960MHz-1000MHz	54.0(dBμV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

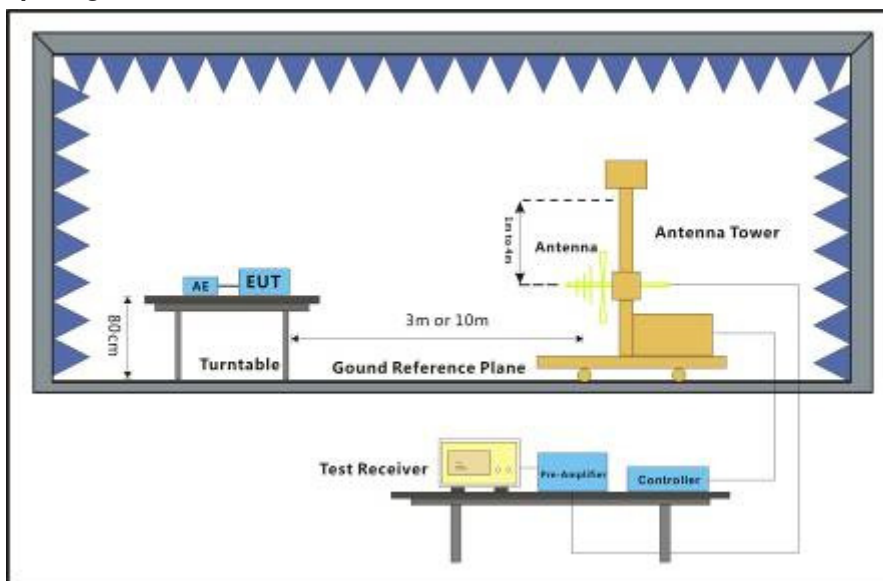
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 50 % RH Atmospheric Pressure: 1001 mbar

Test mode a:monitoring : keep EUT calling and monitoring continual .

6.2.2 Test Setup Diagram

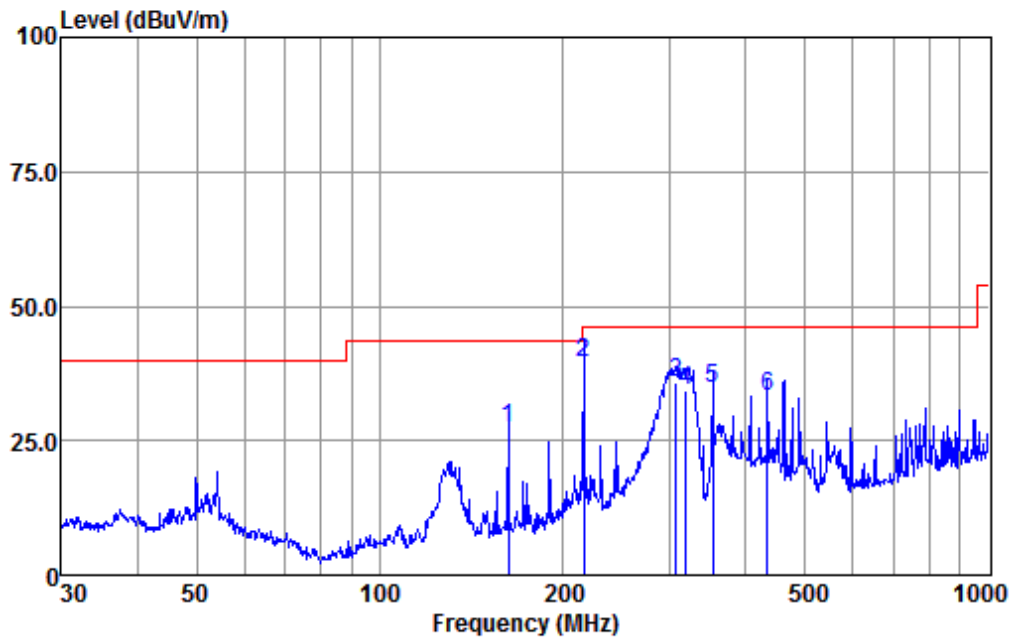


6.2.3 Measurement Data

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

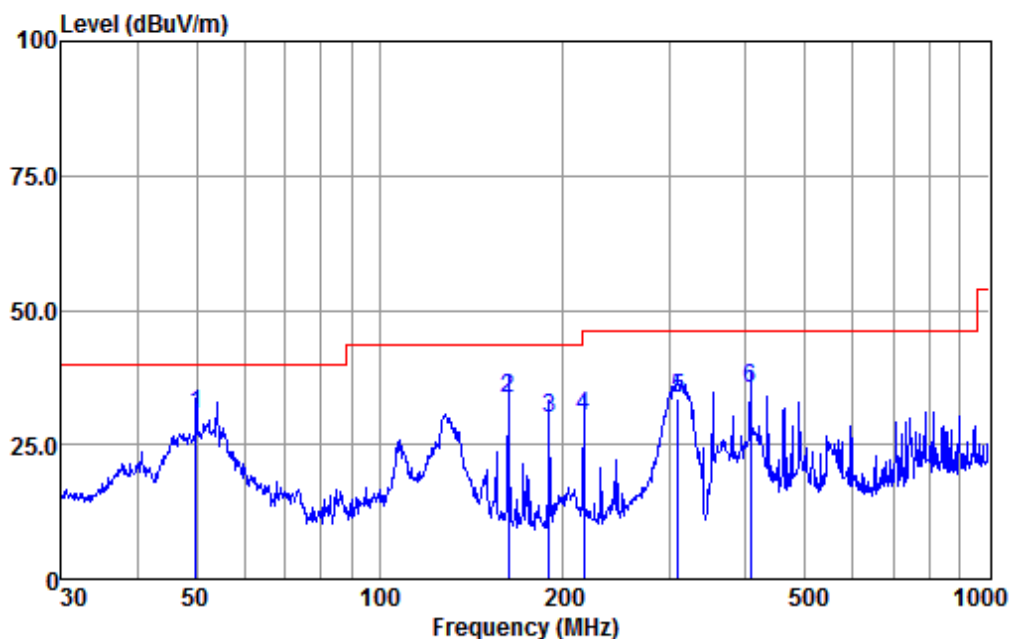


Condition : HORIZONTAL
EUT/Project: 4108IT
Test mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	162.61	56.65	12.68	0.64	42.55	27.42	43.50	-16.08	QP
2 q	216.78	71.13	10.15	0.72	42.47	39.53	46.00	-6.47	QP
3	306.75	63.76	13.34	0.85	42.31	35.64	46.00	-10.36	QP
4	318.82	62.16	13.59	0.87	42.29	34.33	46.00	-11.67	QP
5	352.94	61.80	14.27	0.92	42.20	34.79	46.00	-11.21	QP
6	434.07	58.34	15.87	1.06	42.03	33.24	46.00	-12.76	QP



Mode:a; Polarization:Vertical



Condition : VERTICAL
EUT/Project: 4108IT
Test mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 q	49.88	62.34	10.69	0.26	42.68	30.61	40.00	-9.39	QP
2	162.61	62.75	12.68	0.64	42.55	33.52	43.50	-9.98	QP
3	189.74	61.58	10.30	0.68	42.51	30.05	43.50	-13.45	QP
4	216.78	61.92	10.15	0.72	42.47	30.32	46.00	-15.68	QP
5	308.91	61.57	13.39	0.86	42.31	33.51	46.00	-12.49	QP
6	407.51	61.29	15.27	1.01	42.06	35.51	46.00	-10.49	QP

6.3 Radiated Emissions (above 1GHz)

Test Requirement:	47 CFR Part 15, Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
Above 1GHz	74(dBμV/m) peak, 54(dBμV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

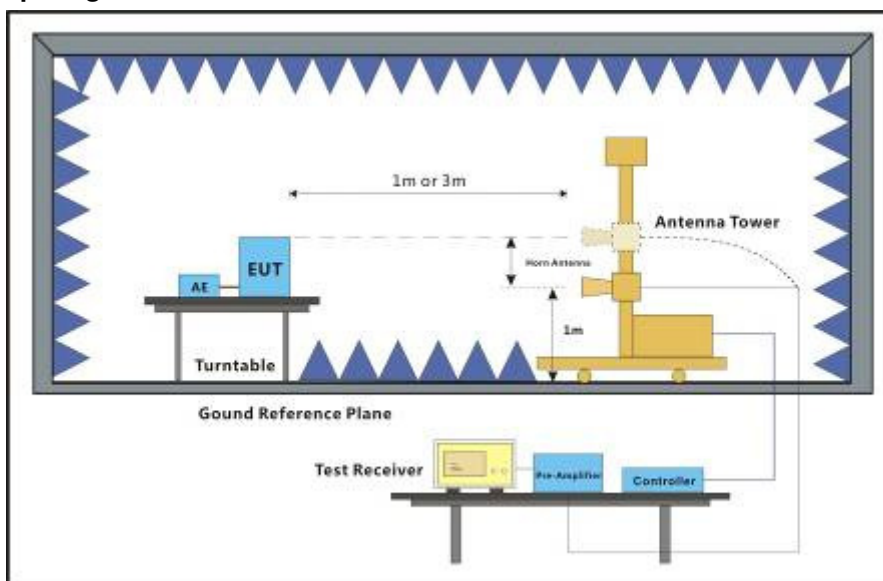
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 50 % RH Atmospheric Pressure: 1001 mbar

Test mode a: monitoring : keep EUT calling and monitoring continual .

6.3.2 Test Setup Diagram

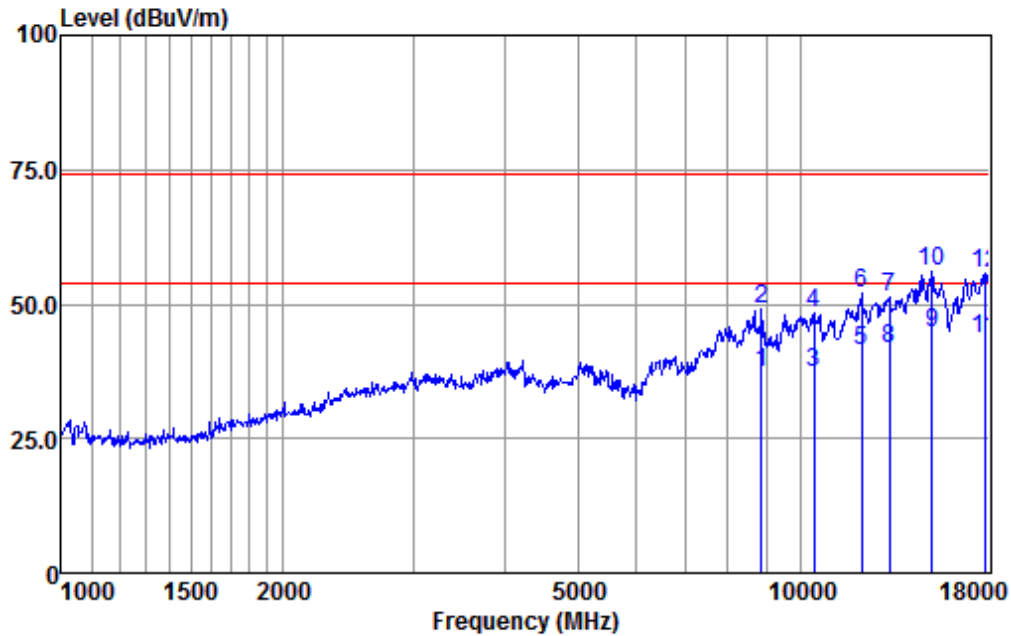


6.3.3 Measurement Data

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

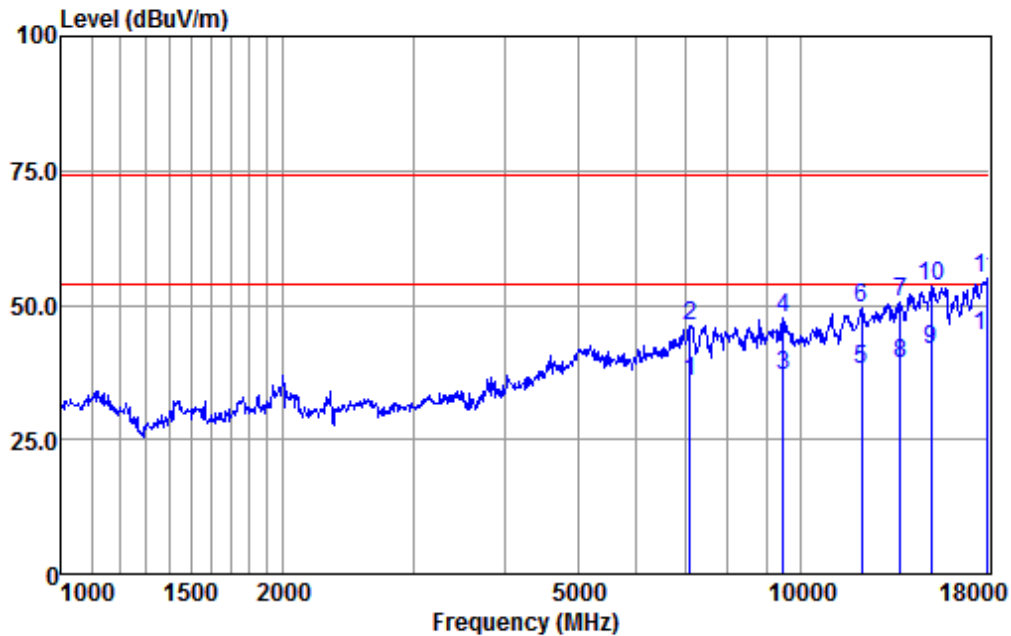


Condition : HORIZONTAL
EUT/Project: 4108IT
Test Mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	8866.06	33.00	37.17	9.43	42.35	37.25	54.00	-16.75	Average
2	8866.06	44.85	37.17	9.43	42.35	49.10	74.00	-24.90	Peak
3	10453.97	30.17	39.63	9.63	42.14	37.29	54.00	-16.71	Average
4	10453.97	41.09	39.63	9.63	42.14	48.21	74.00	-25.79	Peak
5	12114.35	34.31	38.97	9.92	41.98	41.22	54.00	-12.78	Average
6	12114.35	45.03	38.97	9.92	41.98	51.94	74.00	-22.06	Peak
7	13211.69	43.30	39.67	10.18	41.94	51.21	74.00	-22.79	Peak
8	13211.69	33.75	39.67	10.18	41.94	41.66	54.00	-12.34	Average
9	15090.40	34.97	40.92	10.18	41.41	44.66	54.00	-9.34	Average
10 p	15090.40	46.44	40.92	10.18	41.41	56.13	74.00	-17.87	Peak
11	17793.09	25.00	47.74	12.40	41.62	43.52	54.00	-10.48	Average
12	17793.09	37.34	47.74	12.40	41.62	55.86	74.00	-18.14	Peak



Mode:a; Polarization:Vertical

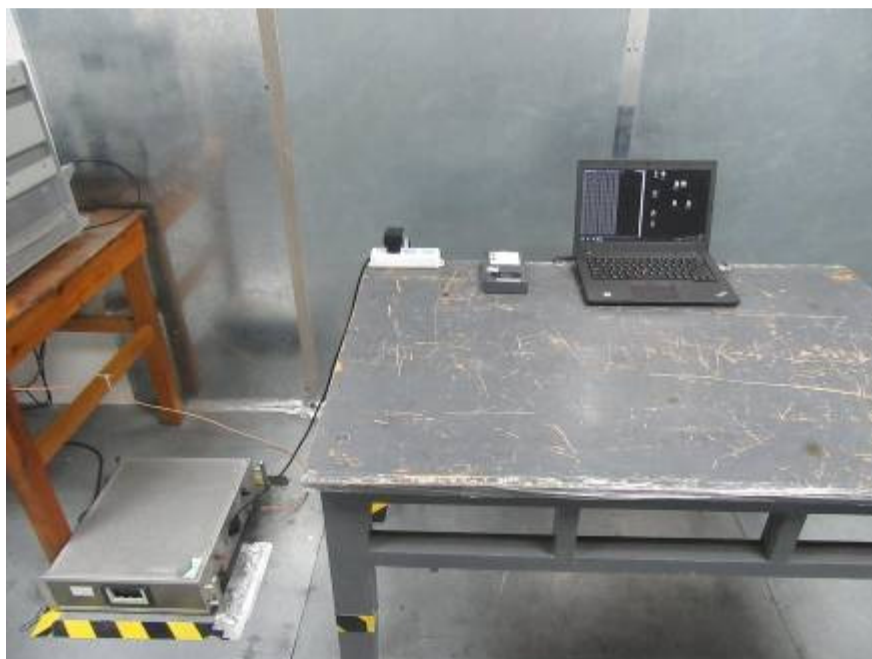


Condition : VERTICAL
EUT/Project: 4108IT
Test Mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7097.00	33.87	35.67	8.69	42.29	35.94	54.00	-18.06	Average
2	7097.00	44.19	35.67	8.69	42.29	46.26	74.00	-27.74	Peak
3	9502.93	30.93	38.50	9.62	42.33	36.72	54.00	-17.28	Average
4	9502.93	41.71	38.50	9.62	42.33	47.50	74.00	-26.50	Peak
5	12114.35	31.27	38.97	9.92	41.98	38.18	54.00	-15.82	Average
6	12114.35	42.67	38.97	9.92	41.98	49.58	74.00	-24.42	Peak
7	13677.97	41.75	40.48	10.27	41.93	50.57	74.00	-23.43	Peak
8	13677.97	30.26	40.48	10.27	41.93	39.08	54.00	-14.92	Average
9	15046.85	31.69	41.11	10.18	41.39	41.59	54.00	-12.41	Average
10	15046.85	43.60	41.11	10.18	41.39	53.50	74.00	-20.50	Peak
11 p	17896.25	34.57	49.32	12.83	41.74	54.98	74.00	-19.02	Peak
12	17896.25	23.78	49.32	12.83	41.74	44.19	54.00	-9.81	Average

7 Photographs

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



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





7.3 Radiated Emissions (above 1GHz) Test Setup



7.4 EUT Constructional Details





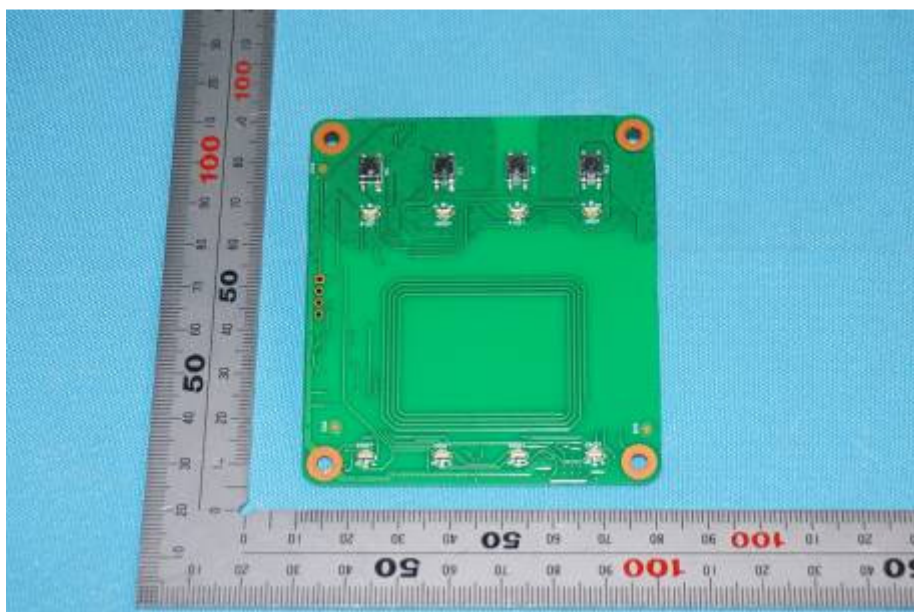
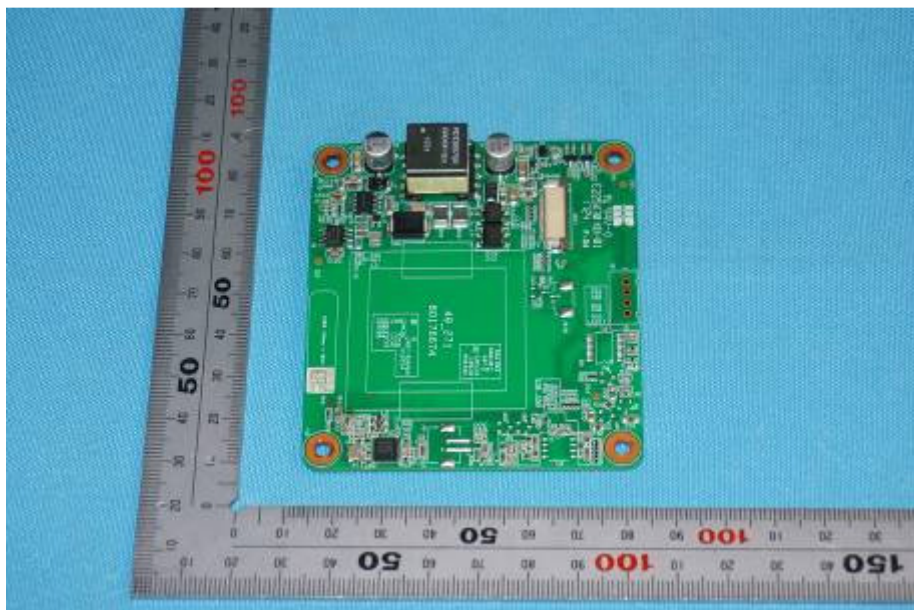




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