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Report No.: SHEM180500412801

Page: 1 of 24

TEST REPORT

Application No.: SHEM1805004128IT
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 Indoor Monitor

Model No.: DHI-VTH5221E-H, DHI-VTH5221EW-H, VTH5221E-H, VTH5221EW-H, DH-VTH5221E-H, DH-VTH5221EW-H, OEM-VTH5221E-H, OEM-VTH5221EW-H; □

□

Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Trade mark:



Standard(s) : 47 CFR Part 15, Subpart B

Date of Receipt: 2018-05-29

Date of Test: 2018-06-04 to 2018-06-05

Date of Issue: 2018-08-21

Test Result: Pass*

* 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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Revision Record			
Version	Description	Date	Remark
00	Original	2018-08-21	/

Authorized for issue by:				
				
		<hr/> Bruce Tang / Project Engineer		
				
		<hr/> Zenger Zhang / Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	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

Note: 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-VTH5221E-H 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

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
AC Adapter	HOIOTO	ADS-25FSG-12	/
Laptop	LENOVO	R400	/

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)
2	Conducted Emission at mains port using VP	1.9 dB(9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	2.4 dB(150kHz to 30MHz)
4	Radiated Power	3.5dB
5	Radiated emission	4.4dB (30MHz-1GHz)
		4.6dB (1GHz-6GHz)

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

4.4 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.

4.5 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.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **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-13868, C-14336, T-12221, G-10830 respectively.

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
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2017-12-20	2018-12-19
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2017-12-20	2018-12-19
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2017-12-20	2018-12-19
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2017-12-20	2018-12-19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2017-12-20	2020-12-19
CE test Cable	/	/	CE01	2017-12-26	2018-12-25

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
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	2020-02-27
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
Low Amplifier	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
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	2020-01-13
High-amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CS	SHEM050-2	2017-12-20	2018-12-19
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2018-01-25	2019-01-24
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2017-09-13	2018-09-12
Digital Multimeter	FLUKE	17B	SHEM043-3	2017-09-11	2018-09-10
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2017-12-20	2018-12-19

6 Emission Test Results

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

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
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

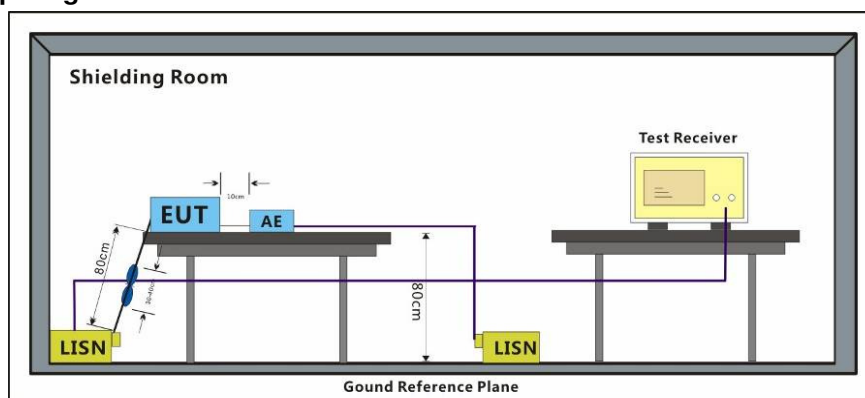
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Normal Working_keep EUT monitoring and data running continual .

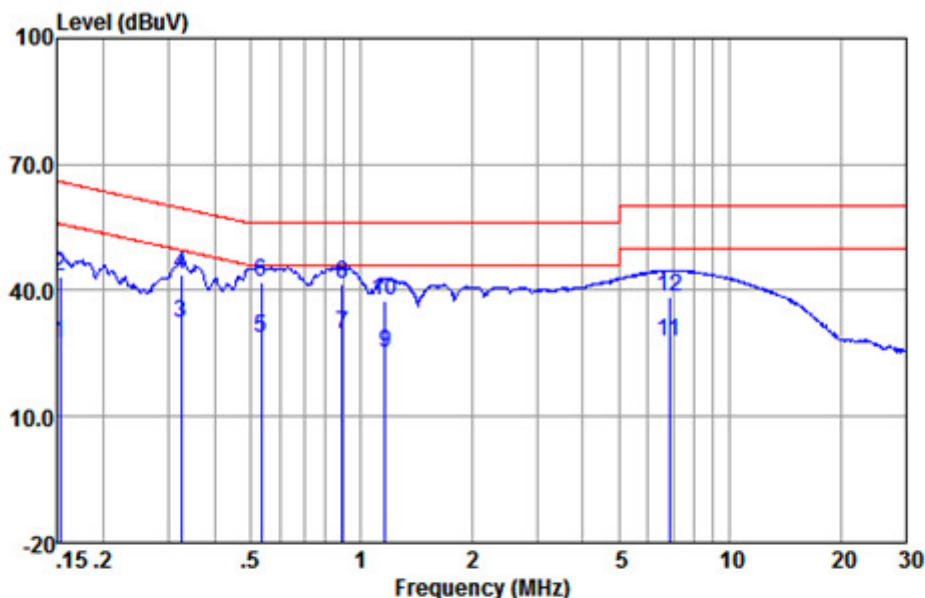
6.1.2 Test Setup Diagram



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



ISN : ISN CAT5

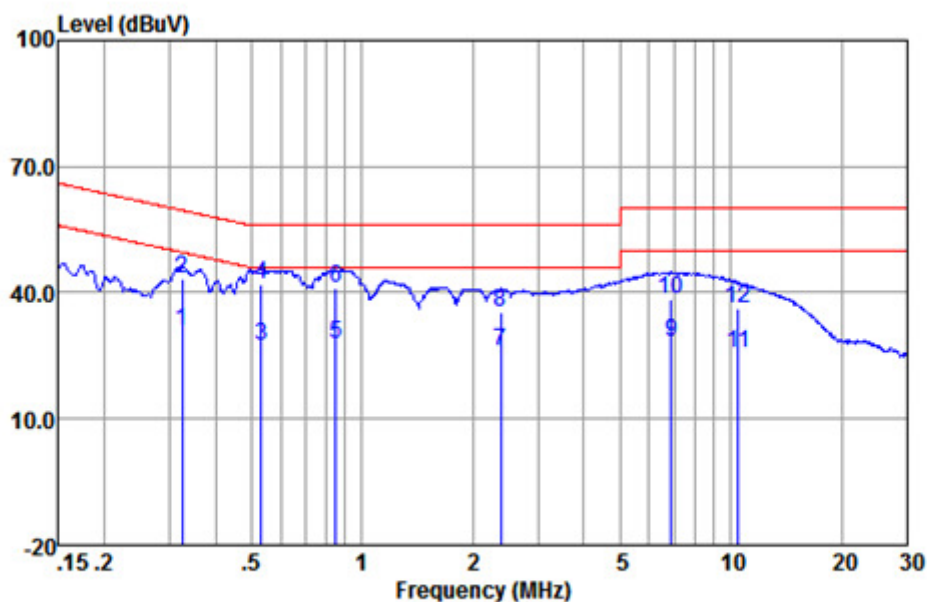
EUT/Project No : 4128IT

Test Mode : a

	Freq (MHz)	Read level (dBUV)	ISN Factor (dB)	Cable Loss (dB)	Emission Level (dBUV)	Limit (dBUV)	Over Limit (dB)	Remark
1	0.15	17.36	0.11	9.81	27.28	55.87	-28.59	Average
2	0.15	33.56	0.11	9.81	43.48	65.87	-22.39	QP
3	0.33	22.35	0.11	9.81	32.27	49.57	-17.30	Average
4	0.33	33.71	0.11	9.81	43.63	59.57	-15.94	QP
5	0.53	18.57	0.11	9.82	28.50	46.00	-17.50	Average
6	0.53	31.86	0.11	9.82	41.79	56.00	-14.21	QP
7	0.89	19.56	0.11	9.83	29.50	46.00	-16.50	Average
8	0.89	31.76	0.11	9.83	41.70	56.00	-14.30	QP
9	1.16	15.34	0.11	9.84	25.29	46.00	-20.71	Average
10	1.16	27.56	0.11	9.84	37.51	56.00	-18.49	QP
11	6.84	17.87	0.11	9.86	27.84	50.00	-22.16	Average
12	6.84	28.43	0.11	9.86	38.40	60.00	-21.60	QP

Notes: Emission Level = Read Level + ISN Factor + Cable loss

Mode:a; Line:Neutral Line



ISN : ISN CAT5

EUT/Project No : 4128IT

Test Mode : a

	Freq (MHz)	Read level (dBuV)	ISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.33	21.06	0.11	9.81	30.98	49.57	-18.59	Average
2	0.33	33.27	0.11	9.81	43.19	59.57	-16.38	QP
3	0.53	17.37	0.11	9.82	27.30	46.00	-18.70	Average
4	0.53	31.84	0.11	9.82	41.77	56.00	-14.23	QP
5	0.85	17.88	0.11	9.83	27.82	46.00	-18.18	Average
6	0.85	31.07	0.11	9.83	41.01	56.00	-14.99	QP
7	2.37	16.05	0.13	9.85	26.03	46.00	-19.97	Average
8	2.37	25.41	0.13	9.85	35.39	56.00	-20.61	QP
9	6.91	18.15	0.13	9.86	28.14	50.00	-21.86	Average
10	6.91	28.64	0.13	9.86	38.63	60.00	-21.37	QP
11	10.51	15.66	0.13	9.87	25.66	50.00	-24.34	Average
12	10.51	26.34	0.13	9.87	36.34	60.00	-23.66	QP

Notes: Emission Level = Read Level +ISN Factor + Cable loss

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

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

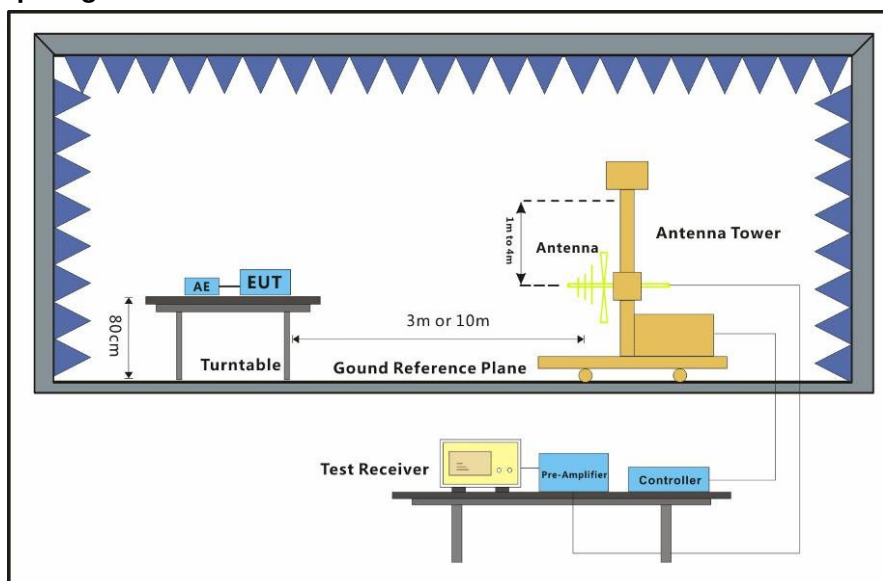
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode a:Normal Working_keep EUT monitoring and data running continual .

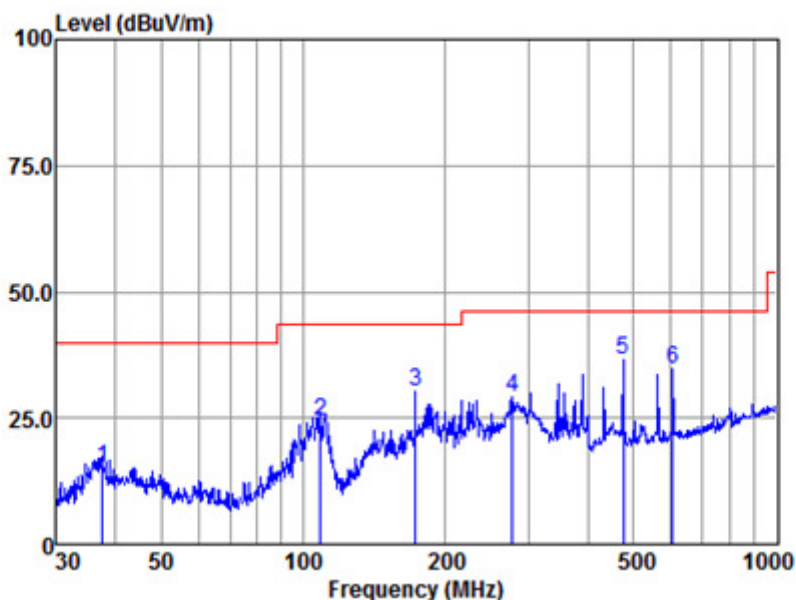
6.2.2 Test Setup Diagram



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

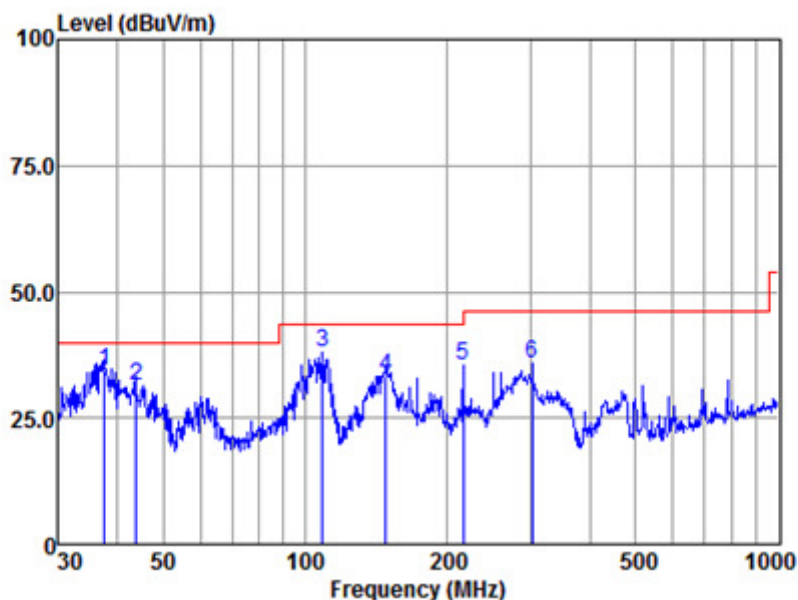


Antenna Polarity :HORIZONTAL
EUT/Project :4128IT
Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1 37.55	30.38	13.13	1.26	29.50	15.27	40.00	-24.73	QP
2 108.65	41.25	10.23	2.18	29.49	24.17	43.50	-19.33	QP
3 172.60	44.80	12.05	2.76	29.42	30.19	43.50	-13.31	QP
4 277.09	42.68	12.03	3.56	29.29	28.98	46.00	-17.02	QP
5 475.50	44.49	16.51	4.74	29.12	36.62	46.00	-9.38	QP
6 605.66	39.16	18.81	5.58	28.93	34.62	46.00	-11.38	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL
EUT/Project :4128IT
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.55	49.48	13.13	1.26	29.50	34.37	40.00	-5.63	QP
2	43.81	46.31	13.10	1.36	29.50	31.27	40.00	-8.73	QP
3	108.65	55.00	10.23	2.18	29.49	37.92	43.50	-5.58	QP
4	147.92	46.94	13.28	2.55	29.44	33.33	43.50	-10.17	QP
5	216.02	51.75	9.92	3.14	29.37	35.44	46.00	-10.56	QP
6	302.48	48.56	12.71	3.70	29.27	35.70	46.00	-10.30	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor

6.3 Radiated Emissions (above 1GHz)

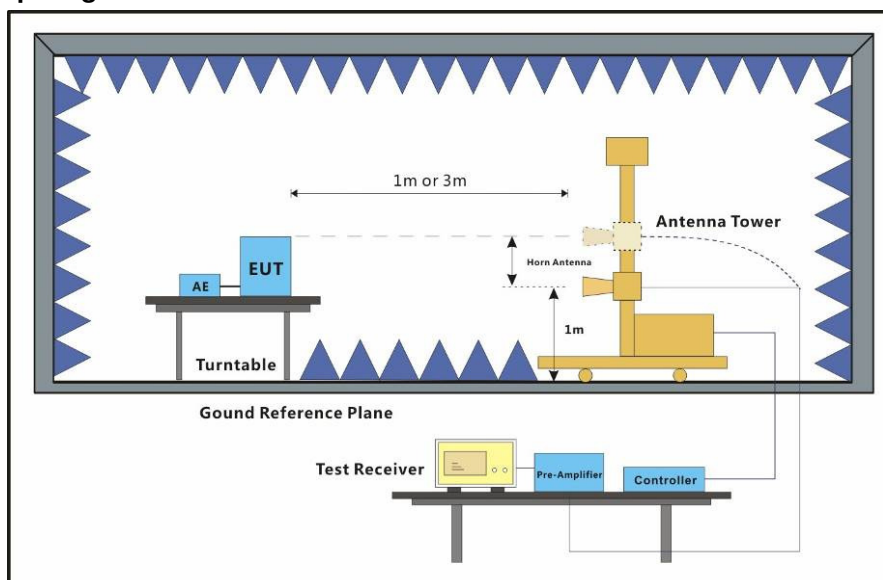
Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
Above 1GHz	74(dBμV/m) peak, 54(dBμV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
Test mode a:Normal Working_keep EUT monitoring and data running continual .

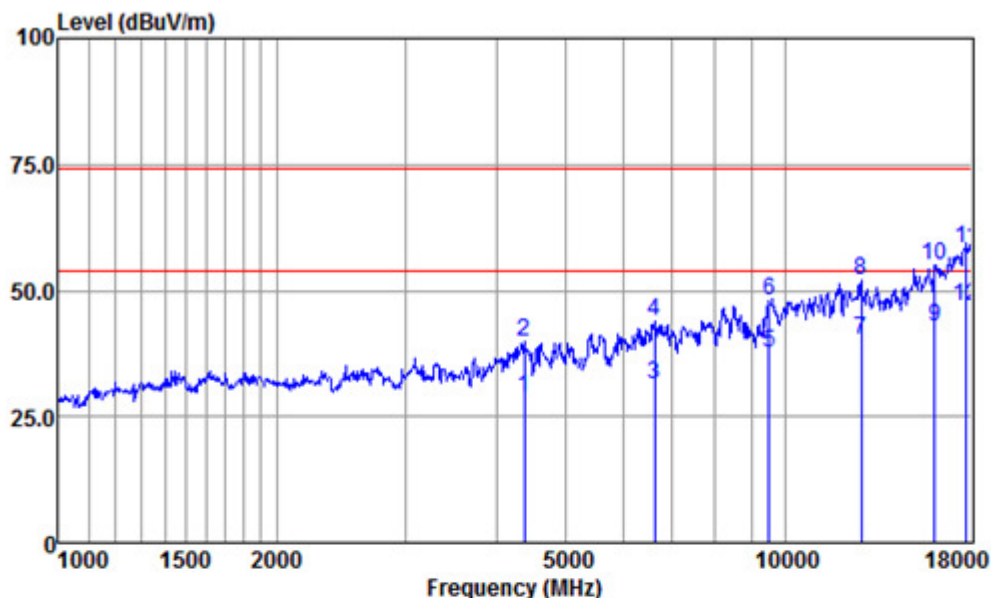
6.3.2 Test Setup Diagram



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



Antenna Polarity :HORIZONTAL

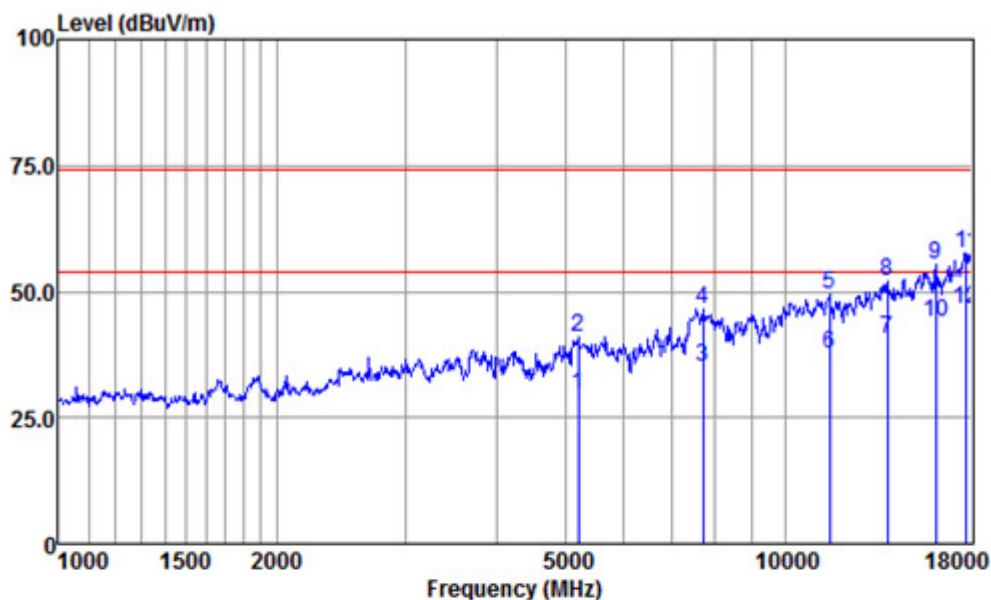
EUT/Project :4128IT

Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4379.70	32.44	30.40	7.64	41.73	28.75	54.00	-25.25	Average
2	4379.70	43.57	30.40	7.64	41.73	39.88	74.00	-34.12	Peak
3	6621.38	30.52	34.34	8.57	41.94	31.49	54.00	-22.51	Average
4	6621.38	42.80	34.34	8.57	41.94	43.77	74.00	-30.23	Peak
5	9502.93	31.87	38.50	9.62	42.33	37.66	54.00	-16.34	Average
6	9502.93	42.06	38.50	9.62	42.33	47.85	74.00	-26.15	Peak
7	12724.47	33.30	38.87	10.05	41.89	40.33	54.00	-13.67	Average
8	12724.47	45.08	38.87	10.05	41.89	52.11	74.00	-21.89	Peak
9	16081.14	35.58	37.93	10.79	41.54	42.76	54.00	-11.24	Average
10	16081.14	47.76	37.93	10.79	41.54	54.94	74.00	-19.06	Peak
11	17741.74	40.49	46.95	12.40	41.56	58.28	74.00	-15.72	Peak
12	17741.74	28.92	46.95	12.40	41.56	46.71	54.00	-7.29	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor

Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL

EUT/Project :4128IT

Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	5194.04	31.47	31.72	8.22	41.77	29.64	54.00	-24.36	Average
2	5194.04	42.66	31.72	8.22	41.77	40.83	74.00	-33.17	Peak
3	7717.52	31.67	36.93	8.84	42.43	35.01	54.00	-18.99	Average
4	7717.52	43.09	36.93	8.84	42.43	46.43	74.00	-27.57	Peak
5	11500.20	41.11	40.20	9.76	41.78	49.29	74.00	-24.71	Peak
6	11500.20	29.43	40.20	9.76	41.78	37.61	54.00	-16.39	Average
7	13837.02	31.47	40.79	10.32	41.81	40.77	54.00	-13.23	Average
8	13837.02	42.84	40.79	10.32	41.81	52.14	74.00	-21.86	Peak
9	16127.69	48.02	37.99	10.79	41.51	55.29	74.00	-18.71	Peak
10	16127.69	36.75	37.99	10.79	41.51	44.02	54.00	-9.98	Average
11	17741.74	39.83	46.95	12.40	41.56	57.62	74.00	-16.38	Peak
12	17741.74	28.88	46.95	12.40	41.56	46.67	54.00	-7.33	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7 Photographs

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



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



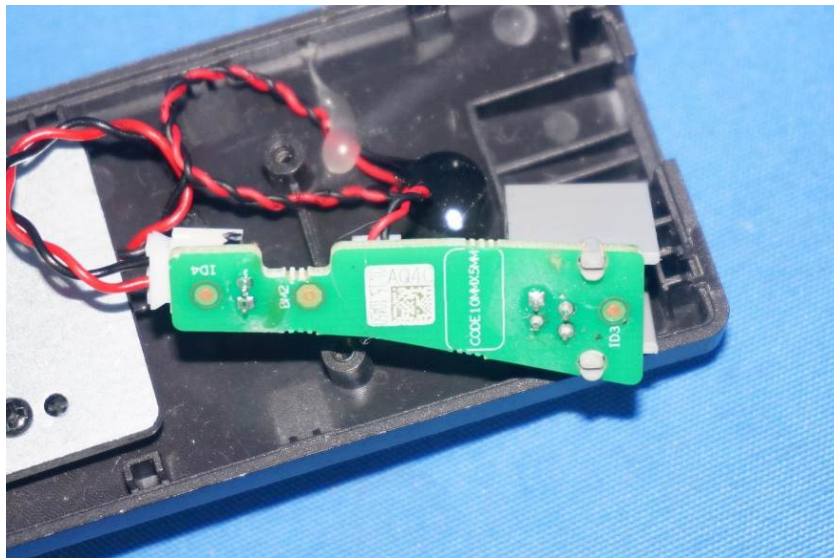
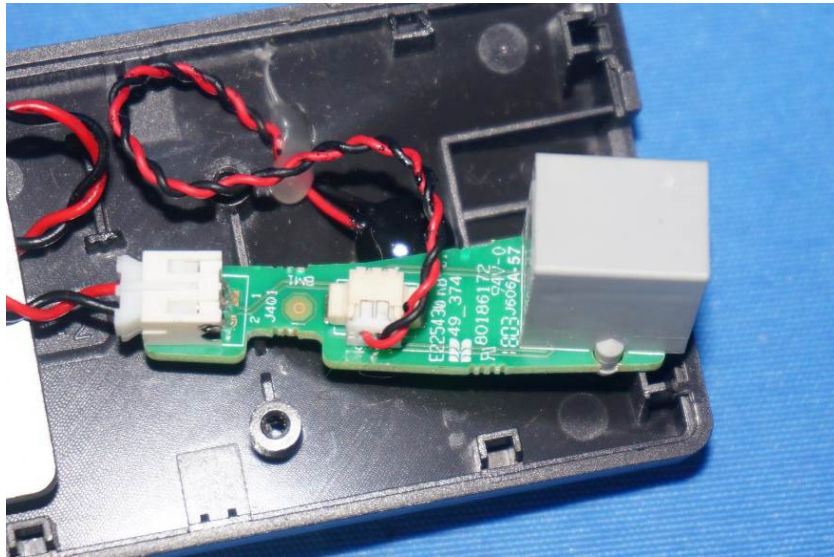
7.3 Radiated Emissions (above 1GHz) Test Setup

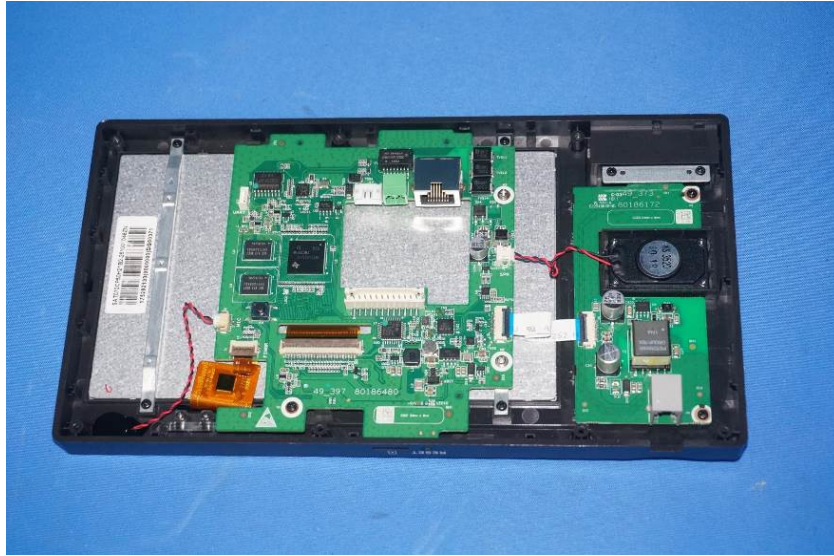


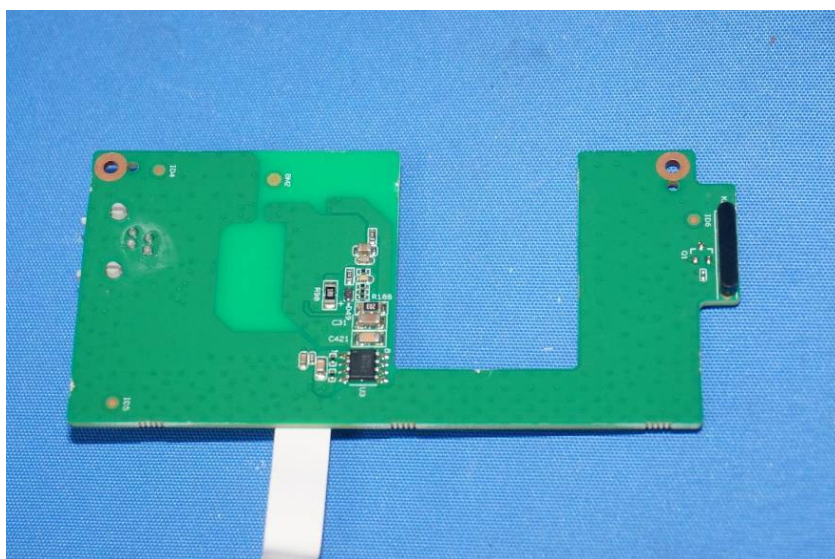
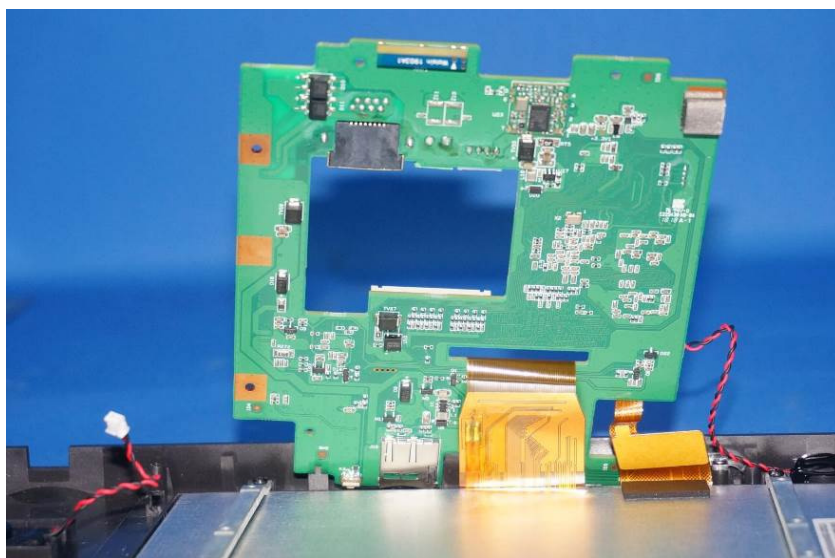
7.4 EUT Constructional Details (EUT Photos)

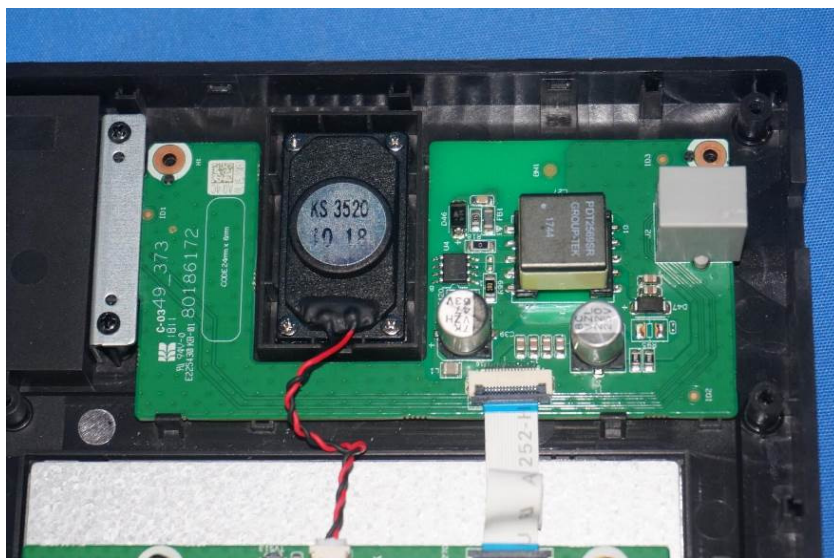












- End of the Report -