

FCC PART 15 SUBPART B MEASUREMENT AND TEST REPORT

For

ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD

The 1st Floor, Building F, 1199 Bin'an Road, Changhe Street, Binjiang, Hangzhou, 310053
Zhejiang, China

Model: DH-PFT1200, PFT1200

July 20, 2015

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: High PoE Midspan
Test By:	<u>Xiaona.Deng/ Xiaona.Deng</u>
Report Number:	<u>HCT15GR-0611E-1</u>
Test Date:	<u>July 03~17, 2015</u>
Reviewed By:	<u>Jiankuai.Li/ Jiankuai.Li</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Hongcai Testing Technology Co.,Ltd.

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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

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

General Description of E.U.T

EUT Description: **High PoE Midspan**
Trade Mark: **N/A**
Model No: **DH-PFT1200, PFT1200**
Test Model **DH-PFT1200**
Adapter Power Rating: **Input: AC 100-240V 50/60Hz 1.7A Max**
Output: DC 54V 1.2A

Remark: * *The test data gathered are from the production sample provided by the manufacturer.*
* *Supplementary models have the same circuit, but with different appearance*
* *HCT15GR-0611E-1 is produced on the basis of HCT15GR-0611E*

HONGCAI TESTING

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with FCC Rules and Regulations Part 15 Subpart B

The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Summary

For the EUT described above. The standards used were FCC Part 15 Subpart B for Emissions

Table 1 : Tests Carried Out Under FCC Part 15 Subpart B

Standard	Test Items	Status
FCC Part 15 Subpart B	Conduction Emission, 0.15MHz to 30MHz	√
FCC Part 15 Subpart B	Radiation Emission, 30MHz to 1GHz	√

- √ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4 Test Facility

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

CNAS - Registration No.: L3923

Shenzhen Hongcai Testing Technology 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. The acceptance letter from the CNAS is maintained in our files: Registration: L3923, June 1,2015.

FCC – Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December, 2013.

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as only used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being ON operation.

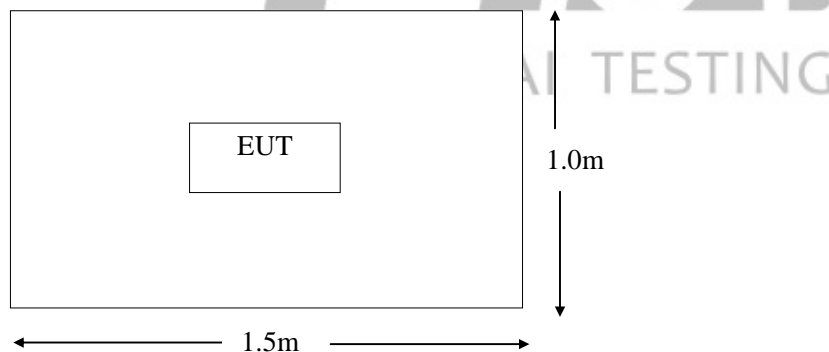
2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD** and its respective support equipment manufacturers.

2.4 Equipment Modifications

The EUT tested was not modified by HCT.

2.5 Configuration of Test System



3 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is 3.4 dB.

3.2 Limit of Disturbance Voltage at The Mains Terminals

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

Note: (1)The tighter limit shall apply at the edge between two frequency bands.

3.3 EUT Setup

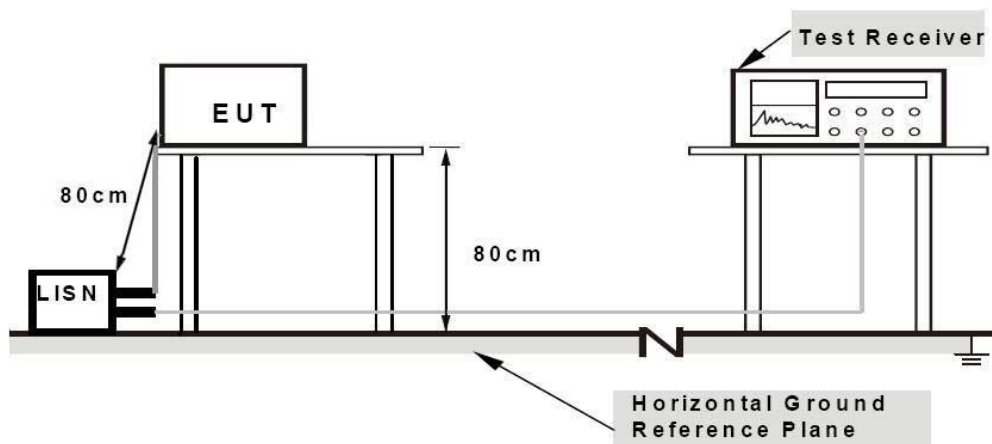
The setup of EUT is according with ANSI C63.4-2009 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.



3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz
 Detector.....Peak & Quasi-Peak & Average
 Sweep Speed.....Auto
 IF Band Width.....9 KHz

3.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

3.6 Summary of Test Results

According to the data in section 3.6, the EUT complied with the FCC Part 15 B Conducted margin, with the *worst* margin reading of:

3.7 Disturbance Voltage Test Data

Temperature (°C)	22~25
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Test data see following pages

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
 (2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

3.8 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last calibration	Due calibration
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2015-6-12	2016-6-11
2	BCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128247	2014-11-7	2015-11-6
3	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2015-6-12	2016-6-11

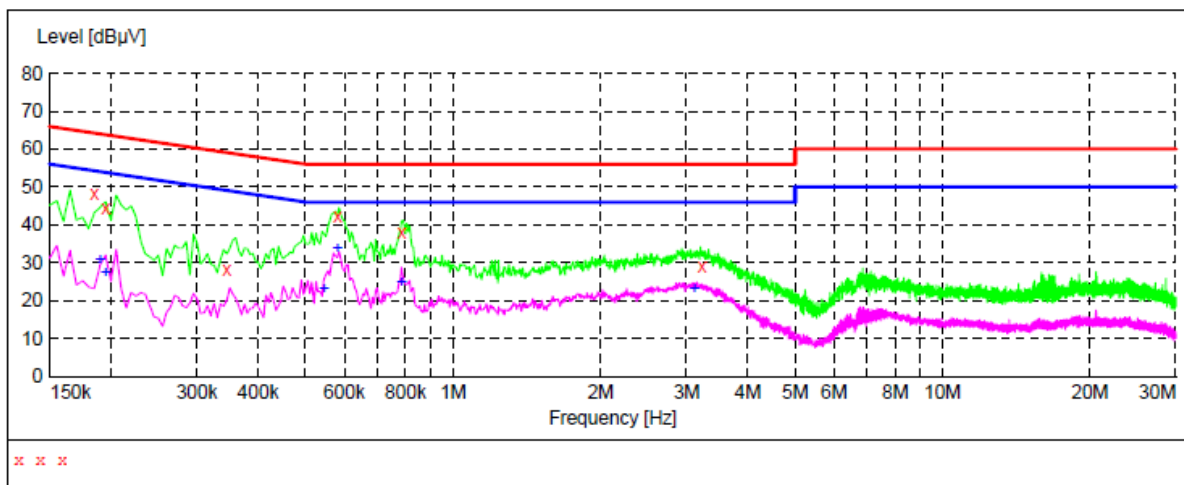
3.9 Test Result

PASS

Conducted Emission Test Data

EUT: High PoE Midspan
 M/N: DH-PFT1200
 Operating Condition: Full Load
 Test Site: Shielded Room
 Operator: SH
 Test Specification: AC 120V/60Hz
 Comment: Live Line
 Start of Test: 7/13/2015 Tem:25°C Hum:50%

SCAN TABLE: "Voltage (150K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	48.50	11.7	64	15.8	QP	L1	GND
0.195000	44.60	11.3	64	19.2	QP	L1	GND
0.345000	28.20	10.7	59	30.9	QP	L1	GND
0.580000	42.50	10.3	56	13.5	QP	L1	GND
0.785000	37.90	10.3	56	18.1	QP	L1	GND
3.220000	28.90	10.3	56	27.1	QP	L1	GND

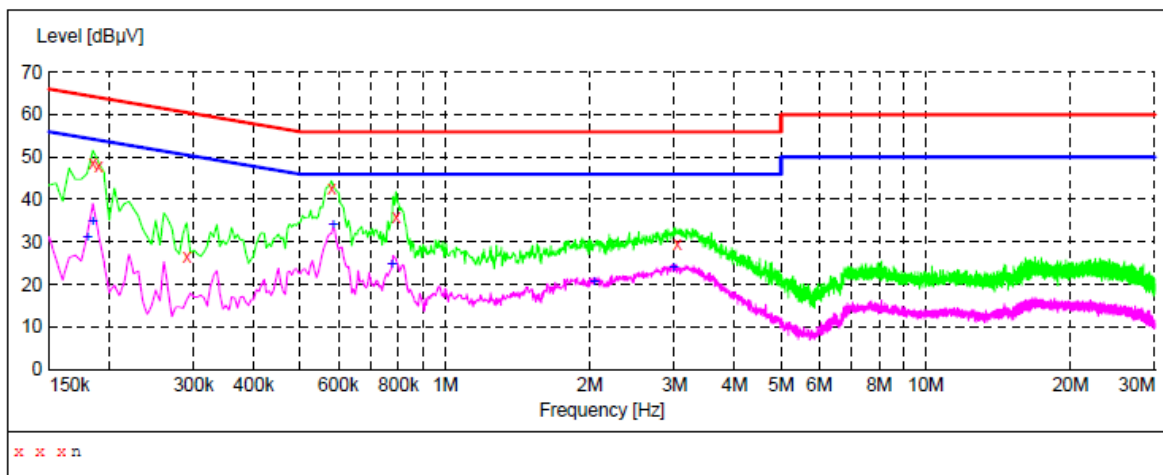
MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.190000	30.70	11.5	54	23.3	AV	L1	GND
0.195000	27.30	11.3	54	26.5	AV	L1	GND
0.545000	23.10	10.3	46	22.9	AV	L1	GND
0.580000	33.60	10.3	46	12.4	AV	L1	GND
0.785000	24.90	10.3	46	21.1	AV	L1	GND
3.110000	23.00	10.3	46	23.0	AV	L1	GND

Conducted Emission Test Data

EUT: High PoE Midspan
 M/N: DH-PFT1200
 Operating Condition: Full Load
 Test Site: Shielded Room
 Operator: SH
 Test Specification: AC 120V/60Hz
 Comment: Neutral Line
 Start of Test: 7/13/2015 Tem:25°C Hum:50%

SCAN TABLE: "Voltage(150K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	48.60	11.7	64	15.7	QP	N	GND
0.190000	47.90	11.5	64	16.1	QP	N	GND
0.290000	26.70	10.8	61	33.8	QP	N	GND
0.580000	42.50	10.3	56	13.5	QP	N	GND
0.790000	35.80	10.3	56	20.2	QP	N	GND
3.040000	29.50	10.3	56	26.5	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.180000	31.00	11.9	55	23.5	AV	N	GND
0.185000	34.60	11.7	54	19.7	AV	N	GND
0.585000	33.90	10.3	46	12.1	AV	N	GND
0.775000	24.80	10.3	46	21.2	AV	N	GND
2.045000	20.60	10.3	46	25.4	AV	N	GND
2.990000	23.90	10.3	46	22.1	AV	N	GND

4 - RADIATED DISTURBANCES

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is 4.0 dB.

4.2 Limit of Radiated Disturbances

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.3 EUT Setup

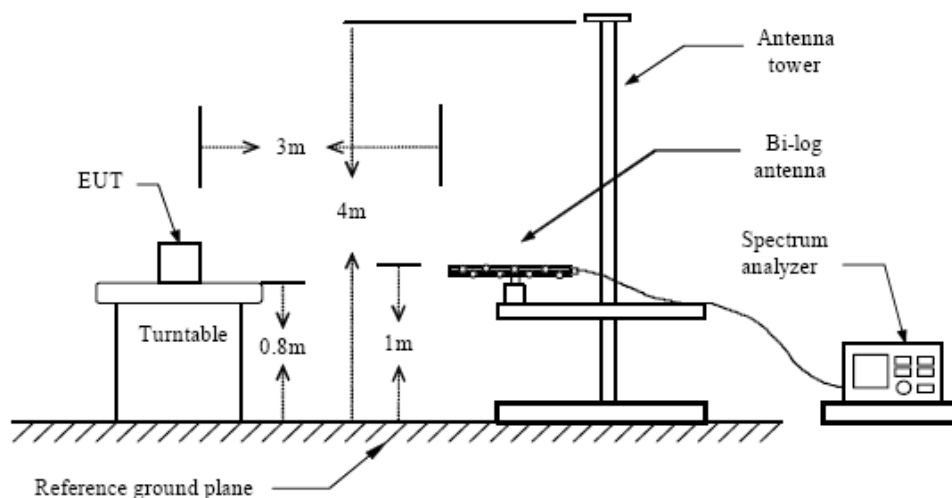
The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

Block diagram of test setup (In chamber)

Below 1 GHz



4.4 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector.....Peak & Quasi-Peak
IF Band Width.....120KHz
Frequency Range.....30MHz to 1000MHz
Turntable Rotated.....0 to 360 degrees

Antenna Position:

Height.....1m to 4m
Polarity.....Horizontal and Vertical

4.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within $-10\text{ dB } \mu\text{V}$ of specification limits), and are distinguished with a "QP" in the data table.

4.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-7\text{ dB } \mu\text{V}$ means the emission is $7\text{ dB } \mu\text{V}$ below the maximum limit for Subpart B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

4.7 Radiated Emissions Test Result

Temperature (°C)	22~25
Humidity (%RH)	50~54
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

4.8 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last calibration	Due calibration
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2015-6-12	2016-6-11
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2014-11-7	2015-11-6
3	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2015-2-10	2016-3-9

4.9 Test Result

PASS

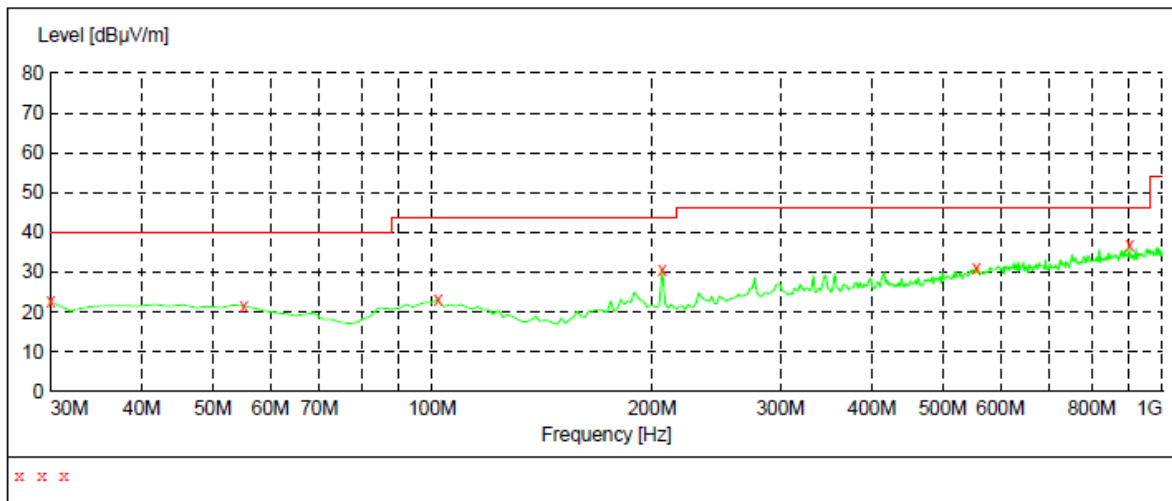


Radiated Emission Test Data of Below 1GHz

EUT: High PoE Midspan
 M/N: DH-PFT1200
 Operating Condition: Full Load
 Test Site: CHAMBER
 Operator: SH
 Test Specification: AC 120V/60Hz
 Comment: Polarization: Horizontal
 Start of Test: 7/13/2015 Tem:25°C Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT:

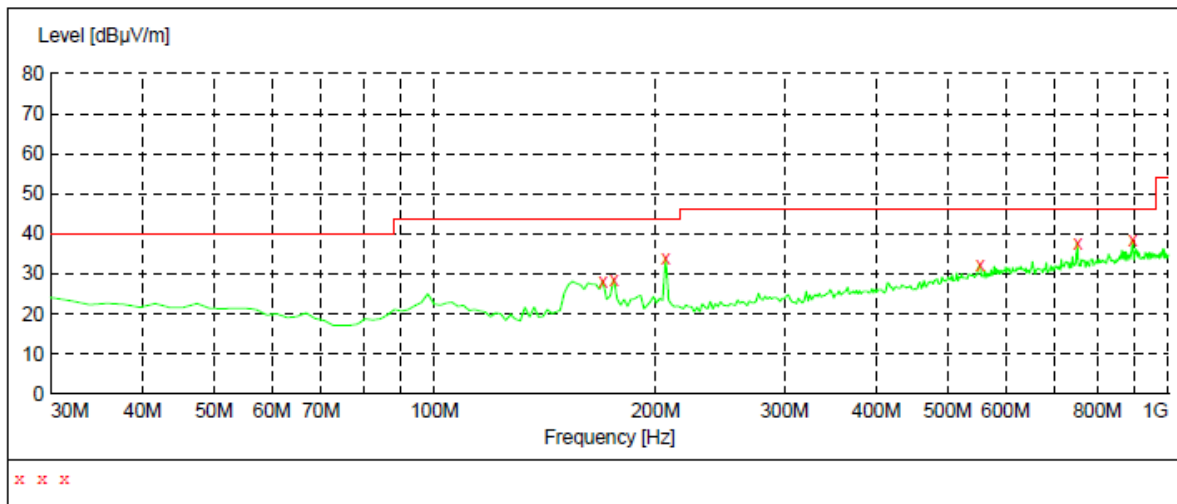
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	22.60	14.3	40.0	17.4	QP	100.0	0.00	HORIZONTAL
55.220000	21.50	15.6	40.0	18.5	QP	100.0	0.00	HORIZONTAL
101.780000	23.10	17.3	43.5	20.4	QP	100.0	0.00	HORIZONTAL
206.540000	30.70	15.0	43.5	12.8	QP	300.0	0.00	HORIZONTAL
555.740000	30.90	25.1	46.0	15.1	QP	100.0	0.00	HORIZONTAL
901.060000	36.90	29.2	46.0	9.1	QP	100.0	0.00	HORIZONTAL

Radiated Emission Test Data of Below 1GHz

EUT: High PoE Midspan
 M/N: DH-PFT1200
 Operating Condition: Full Load
 Test Site: CHAMBER
 Operator: SH
 Test Specification: AC 120V/60Hz
 Comment: Polarization: Vertical
 Start of Test: 7/13/2015 Tem:25°C Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

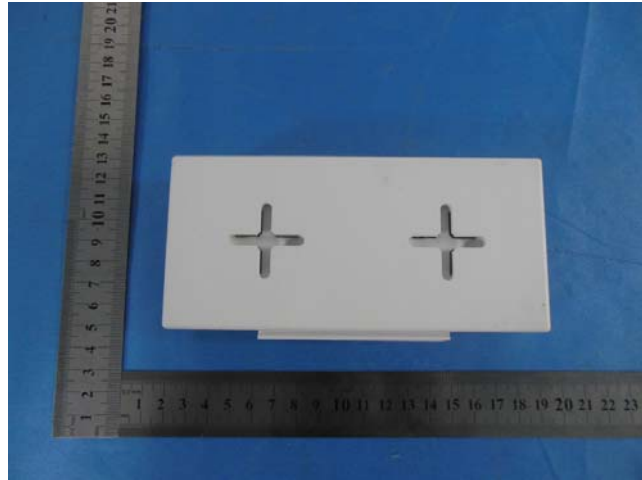


MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
169.680000	28.30	13.1	43.5	15.2	QP	100.0	0.00	VERTICAL
175.500000	28.70	13.5	43.5	14.8	QP	100.0	0.00	VERTICAL
206.540000	34.10	15.0	43.5	9.4	QP	100.0	0.00	VERTICAL
553.800000	32.20	25.1	46.0	13.8	QP	100.0	0.00	VERTICAL
751.680000	37.80	27.3	46.0	8.2	QP	100.0	0.00	VERTICAL
893.300000	38.50	29.1	46.0	7.5	QP	100.0	0.00	VERTICAL

APPENDIX A - EUT PHOTOGRAPHS

EUT – Front View



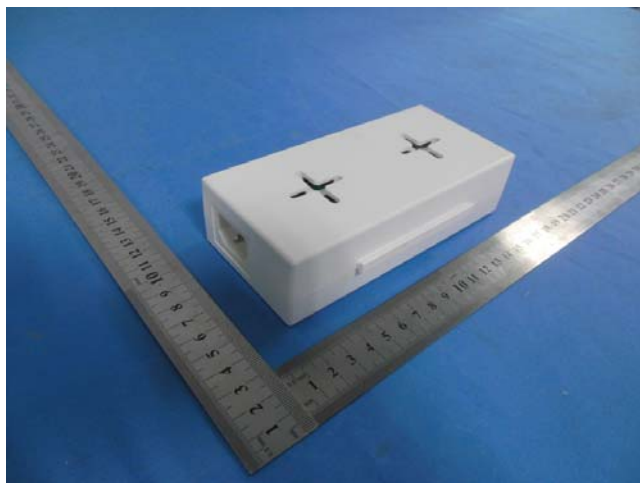
EUT – Rear View



EUT – Side View



EUT – Side View



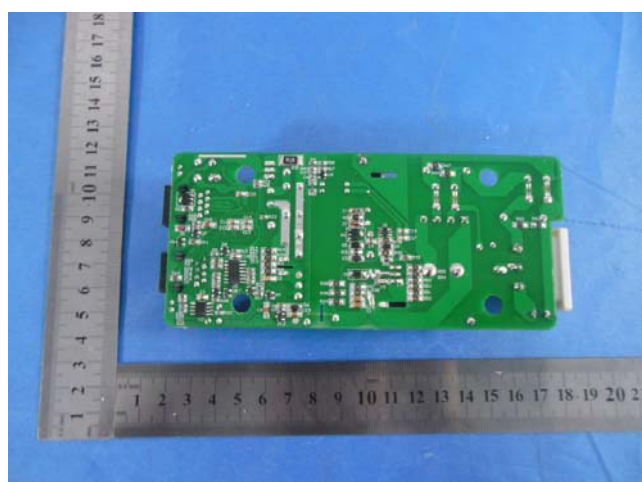
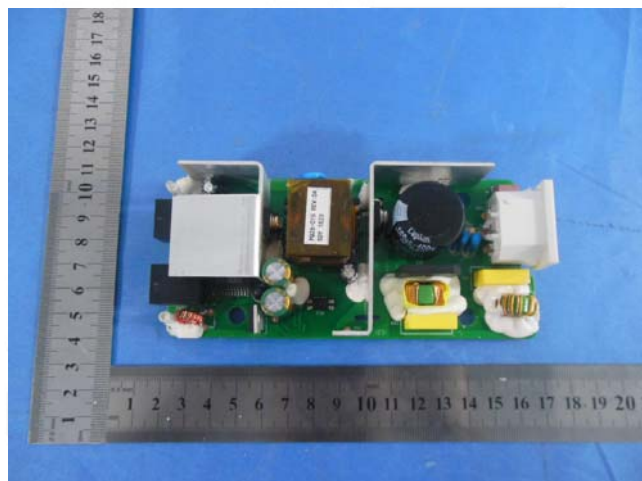
EUT – Port View



EUT –Open View



EUT –PCB View



APPENDIX B - TEST SETUP PHOTOGRAPHS

Conducted Emission



Radiated Emission

