

EN 55022:2010/AC:2011
EN 61000-6-3:2007+A1:2011EN 55024:2010
EN 50130-4:2011
EN 61000-3-2:2014
EN 61000-3-3:2013

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/ Xiaon. Deng</u>
Report Number:	<u>HCT15GR-0610E-1</u>
Test Date:	<u>July 03~17, 2015</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 No: **DH-PFT1200**
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 output current.
* HCT15GR-0610E-1 is produced on the basis of HCT15GR-0610E

General Description of Test Auxiliary

AUX Description:	Manufacturer	Model No.	Certificate	CABLE
Digital multimeter	FLUKE	15B	CE,FCC	/

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

EN 55022:2010/AC:2011;

EN 61000-6-3:2007+A1:2011

EN 55024:2010

EN 50130-4:2011

EN 61000-3-2:2014

EN 61000-3-3:2013

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

1.3 Test Summary

For the EUT described above. The standards used were EN 55022 Class B for Emissions & EN 55024 for Immunity.

Table 1 : Tests Carried Out Under EN 55022:2010/AC:2011;EN 61000-6-3:2007+A1:2011

Standard	Test Items	Status
EN 55022:2010	Disturbance Voltage at The Mains Terminals (150KHz To 30MHz)	√
EN 61000-6-3:2007 +A1:2011	Radiated Disturbances (30MHz To 1GHz)	√

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

Table 2 : Tests Carried Out Under EN 61000-3-2:2014/ EN 61000-3-3:2013

Standard	Test Items	Status
EN 61000-3-2:2014	Harmonic Current Test	√
EN 61000-3-3:2013	Voltage Fluctuations and Flicker Test	√

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

Table 3 : Tests Carried Out Under EN 55024:2010/ EN50130-4:2011

Standard	Test Items	Status
EN61000-4-2:2009	Electrostatic discharge Immunity	√
EN61000-4-3:2006+A2:2010	Radiated Susceptibility (80MHz to 2.7GHz)	√
EN61000-4-4:2012	Electrical Fast Transient/Burst Immunity	√
EN61000-4-5:2014	Surge Immunity	√
EN61000-4-6:2014	Conducted Susceptibility (150kHz to 80MHz)	√
EN61000-4-8:2010	Power Frequency Magnetic Field Immunity (50/60Hz)	×
EN61000-4-11:2004	Voltage Dips, Short Interruptions Immunity	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1: 2006, radio disturbance and immunity measuring apparatus, and CISPR16-2-3: 2010, Method of measurement of disturbances and immunity.

All measurement required was performed at Shenzhen Hongcai Testing Technology Co.,LTD. at 1st-3rd Floor,Building C,Shuanghuan Xin Yi Dai Hi-Tech Industrial Park,No.8 Baoqing Road,Baolong Industrial Zone,Longgang District, Shenzhen, Guangdong, China

1.5 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.

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

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

2.2 EUT Exercise Software

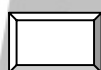
The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

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.

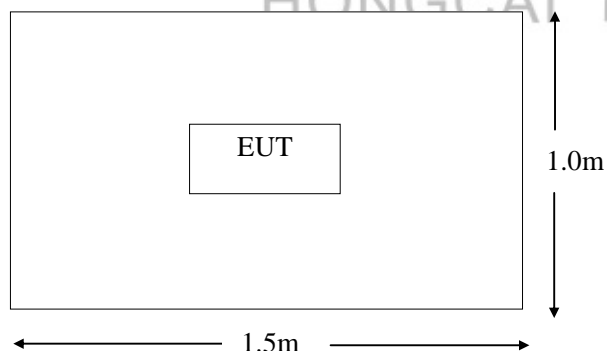
2.4 Equipment Modifications

The EUT tested was not modified by HCT.



EUT

2.5 Test Setup Diagram



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 (Class B)

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

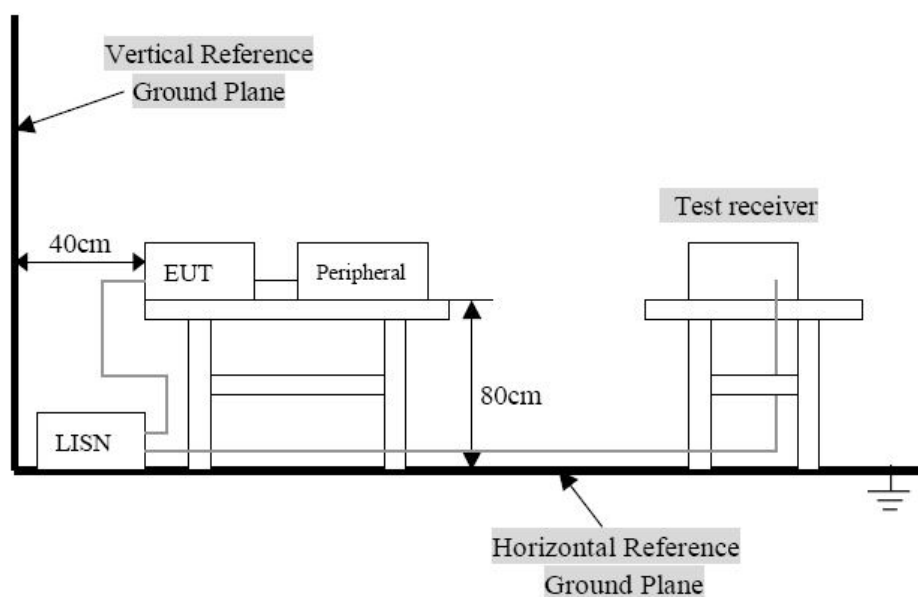
The setup of EUT is according with CISPR 16-1-1: 2006, CISPR 16-2-3: 2010 measurement procedure. The specification used was the EN 55022 limits.

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 EN 55022:2010/AC:2011;EN 61000-6-3:2007+A1:2011_Conducted margin, with the worst margin reading of:

3.7 Disturbance Voltage Test Data

Temperature (°C)	22~25
Humidity (%RH)	50~60
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Test data see following pages

3.8 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
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

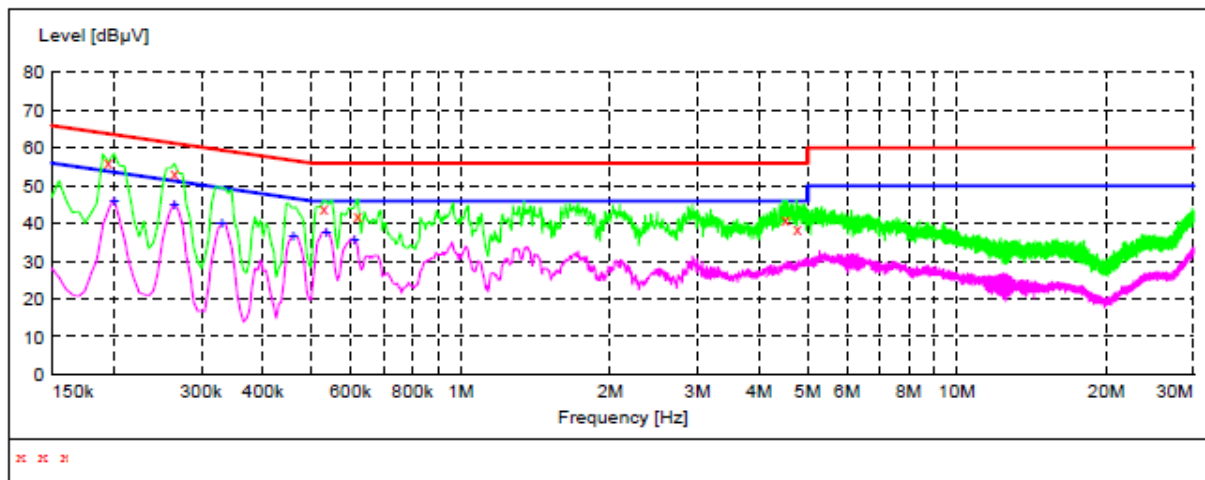
3.9 Test Result

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 230V/50Hz
 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
0.195000	56.20	11.3	64	7.6	QP	L1	GND
0.265000	53.30	10.9	61	8.0	QP	L1	GND
0.530000	43.90	10.3	56	12.1	QP	L1	GND
0.620000	42.00	10.3	56	14.0	QP	L1	GND
4.525000	40.90	10.4	56	15.1	QP	L1	GND
4.775000	38.50	10.4	56	17.5	QP	L1	GND

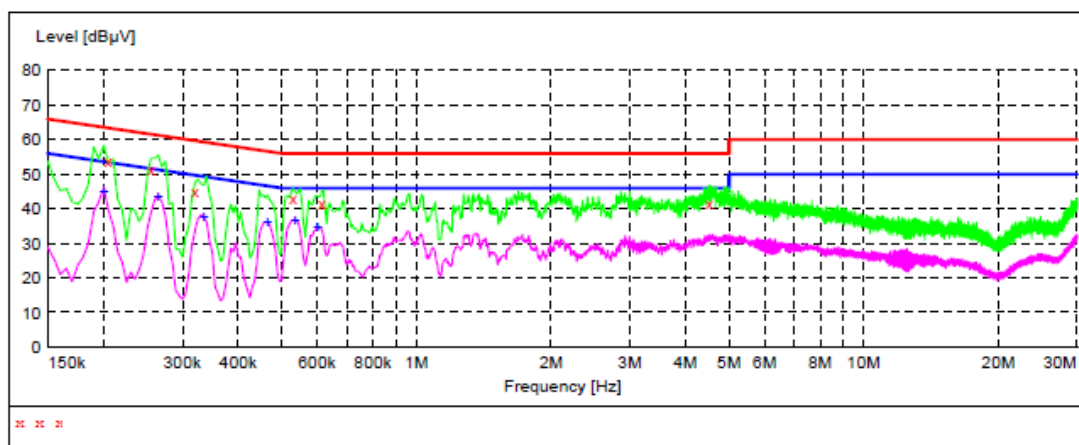
MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.200000	45.80	11.1	54	7.8	AV	L1	GND
0.265000	45.30	10.9	51	6.0	AV	L1	GND
0.330000	40.10	10.7	50	9.4	AV	L1	GND
0.460000	36.70	10.4	47	10.0	AV	L1	GND
0.535000	37.80	10.3	46	8.2	AV	L1	GND
0.610000	35.60	10.3	46	10.4	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 230V/50Hz
 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
0.205000	53.90	11.1	63	9.5	QP	N	GND
0.255000	51.60	10.9	62	10.0	QP	N	GND
0.320000	45.10	10.8	60	14.6	QP	N	GND
0.530000	43.10	10.3	56	12.9	QP	N	GND
0.615000	41.60	10.3	56	14.4	QP	N	GND
4.510000	41.80	10.4	56	14.2	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.200000	44.90	11.1	54	8.7	AV	N	GND
0.265000	43.80	10.9	51	7.5	AV	N	GND
0.335000	37.80	10.7	49	11.5	AV	N	GND
0.465000	36.10	10.4	47	10.5	AV	N	GND
0.535000	36.90	10.3	46	9.1	AV	N	GND
0.600000	34.50	10.3	46	11.5	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 (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Frequency (MHz)	Distance (Meters)	Field Strengths Limits AV(dB μ V/m)	Field Strengths Limits PK(dB μ V/m)
1000~3000	3	50	70
3000-6000	3	54	74

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.

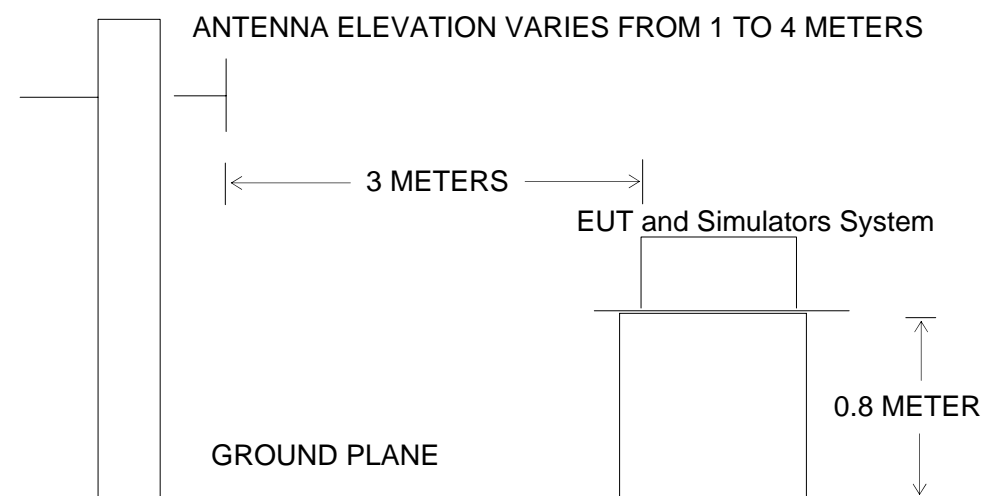
4.3 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1-1: 2006, CISPR16-2-3: 2010. The specification used was EN 55022:2010/AC:2011;EN 61000-6-3:2007+A1:2011 Class 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)



4.4 Test Receiver Setup

According to EN 55022 rules, 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 dB μ 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 7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

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

4.7 Radiated Emissions Test Result

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

Note: Due to EUT emission source below 108MHz, there is no need for determination of 1GHz.

4.8 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
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	2016-2-9
4	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2015-2-10	2016-2-9
5	BCT-EMC037	Broadband preamplifier	SCHWARZBECK	BBV9718	9718-182	2015-6-12	2016-11

4.9 Test Result

PASS

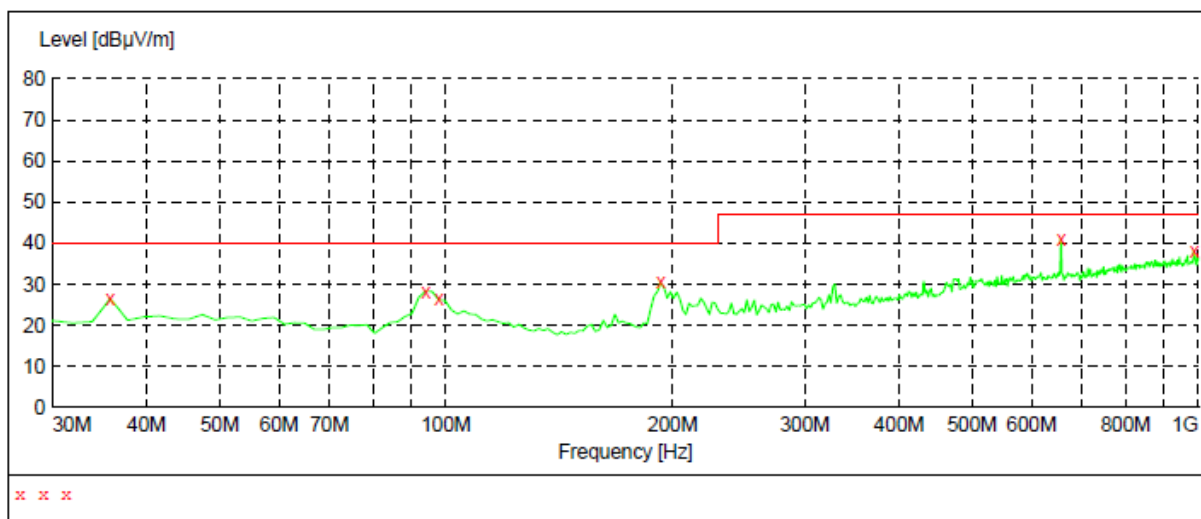


Radiated Emission Test Data of Below 1GHz

EUT: High PoE Midspan
 M/N: DH-PFT1200
 Operating Condition: Full Load
 Test Site: 3m CHAMBER
 Operator: SH
 Test Specification: AC 230V/50Hz
 Comment: Polarization: Horizontal
 Start of Test: 7/13/2015 Tem:25°C Hum:50%

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

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



MEASUREMENT RESULT:

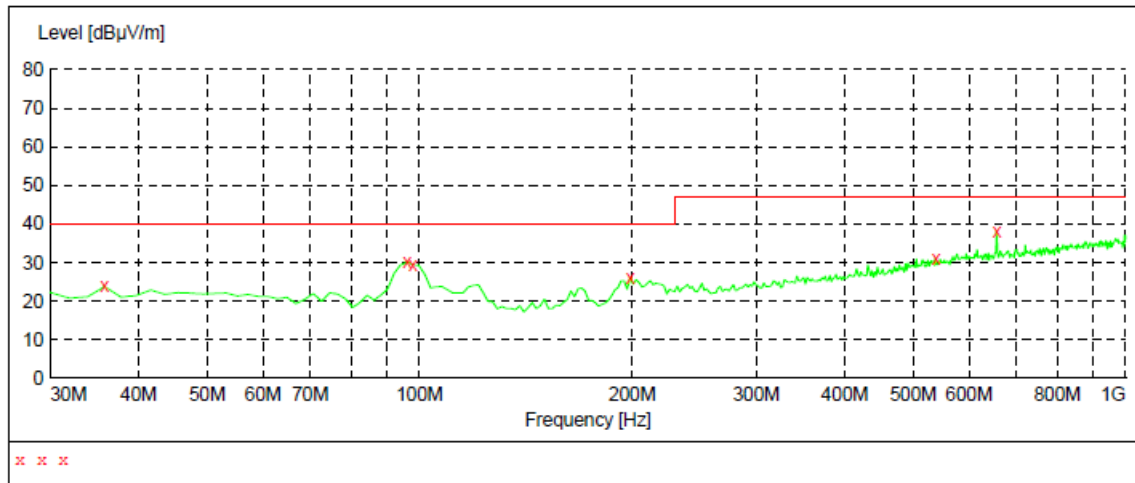
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	26.50	14.7	40.0	13.5	QP	300.0	0.00	HORIZONTAL
94.020000	28.30	16.9	40.0	11.7	QP	300.0	0.00	HORIZONTAL
97.900000	26.30	17.4	40.0	13.7	QP	300.0	0.00	HORIZONTAL
192.960000	30.40	14.8	40.0	9.6	QP	100.0	0.00	HORIZONTAL
656.620000	40.90	26.3	47.0	6.1	QP	300.0	0.00	HORIZONTAL
986.420000	38.00	29.8	47.0	9.0	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: 3m CHAMBER
 Operator: SH
 Test Specification: AC 230V/50Hz
 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
Frequency	Frequency				
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
35.820000	23.80	14.7	40.0	16.2	QP	100.0	0.00	VERTICAL
95.960000	30.00	17.2	40.0	10.0	QP	100.0	0.00	VERTICAL
97.900000	29.50	17.4	40.0	10.5	QP	100.0	0.00	VERTICAL
198.780000	25.90	14.9	40.0	14.1	QP	100.0	0.00	VERTICAL
538.280000	31.10	24.7	47.0	15.9	QP	100.0	0.00	VERTICAL
656.620000	38.10	26.3	47.0	8.9	QP	100.0	0.00	VERTICAL

5 - HARMONIC CURRENT TEST

5.1 Application of Harmonic Current Emission

Compliance to these standards ensures that tested equipment will not generate harmonic currents at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

5.2 Measurement Data

Note: For detailed test data, refer to the following pages:

Standard used:	EN 61000-3-2 A14 (2014) Quasi-stationary - Equipment class A
Observation time:	150s
E. U. T.:	High PoE Midspan
M/N	DH-PFT1200
Operation Mode	Full Load

5.3 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC035	HARMONICS&FLICKER ANALYSER	VOLTECH	PM6000	200006700433	2014-11-12	2015-11-11

5.4 Test Results

Note: The EUT's power is lower than 75W, this test isn't applicable.

6 - VOLTAGE FLUCTUATIONS AND FLICKER TEST

6.1 Application of Voltage Fluctuations and Flicker Test

Compliance to these standards ensures that tested equipment will not generate flickers and voltage change at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

6.2 Measurement Data

Note: For detailed test data, refer to the following pages:

Standard used:	EN 61000-3-3:2013 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flicker meter:	AC 230V/50Hz
E. U. T.:	High PoE Midspan
M/N	DH-PFT1200
Operation Mode	Full Load

6.3 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC035	HRMONICS&FLICKRE ANALYSER	VOLTECH	PM6000	200006700433	2014-11-12	2015-11-11

6.4 Test Results

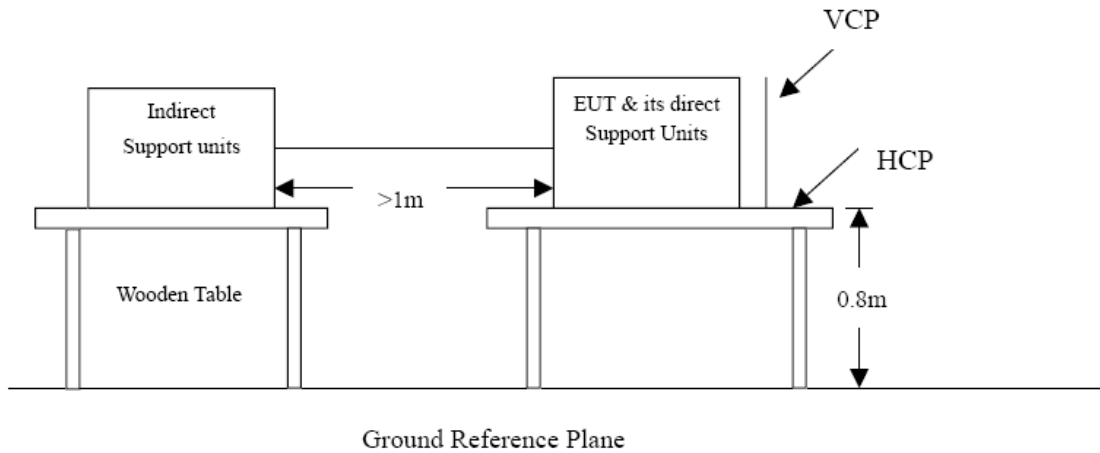
Test Result	PASS
E. U. T.:	High PoE Midspan

Maximum Flicker results

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.086	0.005	0.143	0

7 - Electrostatic Discharge immunity Test

7.1 Block Diagram of Test Setup



7.2 Test Standard

EN 55024:2010/ EN50130-4:2011
(EN61000-4-2:2009 :Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$ Level: 3 / Contact Discharge: $\pm 6\text{KV}$)

7.3 Severity Levels and Performance Criterion

7.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

7.3.2 Performance criterion : B

7.4 Operating Condition of EUT

7.4.1 Setup the EUT as shown on Section 7.1.

7.4.2 Turn on the power of all equipments.

7.4.3 Let the EUT work in measuring mode (Full Load) and measure it.

7.5 Test Procedure

7.5.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

7.5.2 Contact Discharge:

All the procedure shall be same as Section 7.5.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.5.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

7.5.4 Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

7.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC008	Electrostatic Discharge Simulator	TESEQ	NSG437	125	2014-12-12	2015-12-11

7.7 Test Results

PASS

Please refer to the following pages

Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Gap	A	A	A	A	A	A	A	A	/	/
Crust	A	A	A	A	A	A	A	A	/	/
Port	A	A	A	A	A	A	A	A	/	/
Others	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Port	A	A	A	A	A	A	/	/	/	/
Others	A	A	A	A	A	A	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

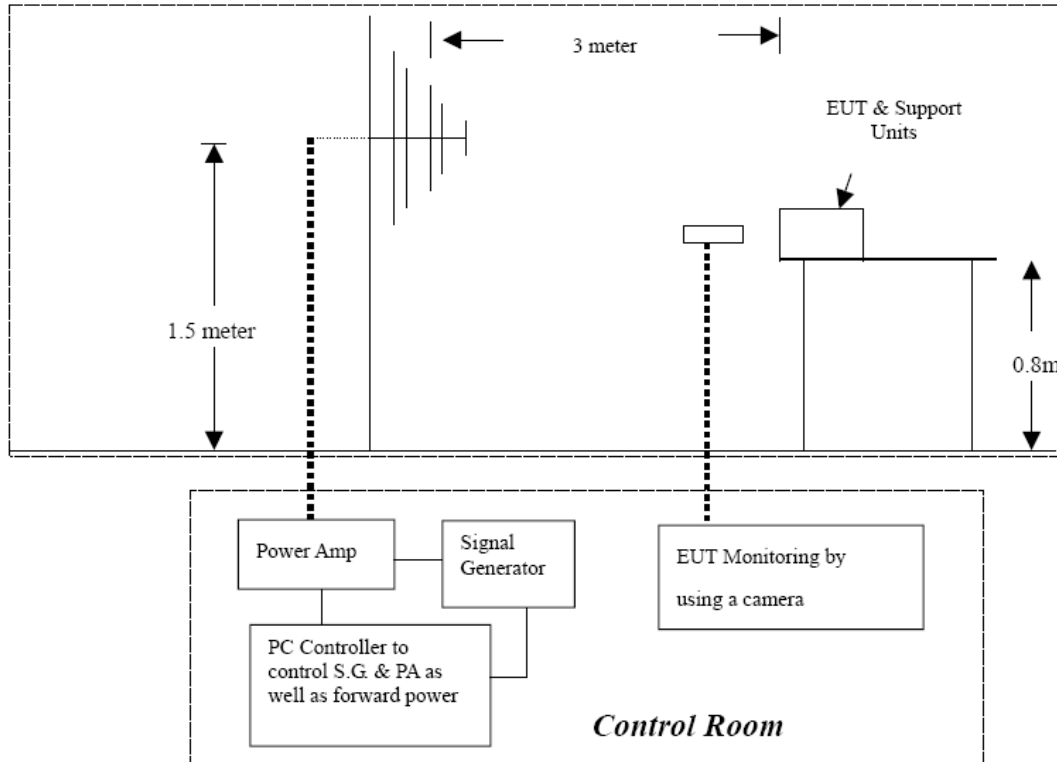
EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

8 - RF Field Strength susceptibility TEST

8.1 Block Diagram of Test



8.2 Test Standard

EN55024:2010/ EN50130-4:2011 (EN61000-4-3:2006+A2:2010, Severity Level: 2, 3V / m)

8.3 Severity Levels and Performance Criterion

8.3.1 Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

8.3.2 Performance Criterion: A

8.4 Operating Condition of EUT

8.4.1 Setup the EUT as shown on Section 8.1.

8.4.2 Turn on the power of all equipments.

8.4.3 Let the EUT work in measuring mode (Full Load) and measure it..

8.5 Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor its screen. All the scanning conditions are as following:

Condition of Test

1. Fielded Strength
2. Radiated Signal
3. Scanning Frequency
4. Sweep time of radiated
5. Dwell Time

Remark

3V/m (Severity Level 2)
Modulated
80-2700MHz
0.0015 Decade/s
1 Sec.

8.6 Test Equipment List and Details

No.	Equipment	Manufacturer	Model No.	S/N	Calibration Date	Next Calibration Date
1	3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	2014-7-7	2015-7-6
2	ESG Vector signal generators	Agilent	E4438C	MY45095744	2015-3-4	2016-3-3
3	Power Amplifier	AR	150W1000	0322288	2015-7-4	2015-7-3
4	Power Amplifier	AR	25S1G4A	0321112	2015-7-4	2015-7-3
5	TRILOG Broadband Antenna	schwarzbeck	VULB 9136	401	2015-7-4	2015-7-3
6	Horn Antenna	ETS-LINGREN	3117	00057407	2015-7-4	2015-7-3
7	3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	2014-7-7	2015-7-6
8	Spectrum Analyzer	Agilent	E4440A	MY46185649	2015-3-4	2016-3-3
9	TRILOG Broadband Antenna	schwarzbeck	VULB 9136	401	2014-7-4	2015-7-3
10	Multi device Controller	ETS-LINGREN	2090	00057230	N/A	N/A
11	Horn Antenna	ETS-LINGREN	3117	00057407	2014-7-4	2015-7-3
12	Microwave Preamplifier	Agilent	8449B	3008A02425	2015-3-24	2016-3-25

8.7 Test Results

PASS

Please refer to the following page.

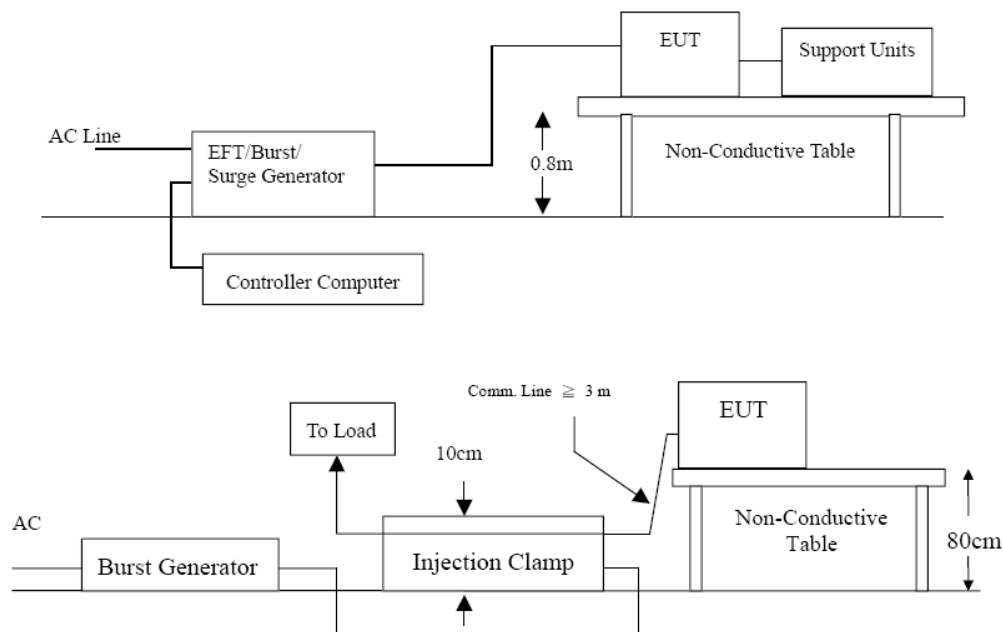
Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Frequency Range (MHz)	Front (3 V/m)		Rear (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-2700	A	A	A	A	A	A	A	A



9 - Electrical Fast Transient/Burst Immunity Test

9.1 Block Diagram of Test Setup



9.2 Test Standard

EN55024:2010/ EN50130-4:2011 (EN61000-4-4:2012, Severity Level, Level 2: 1KV)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance criterion : B

9.4 Operating Condition of EUT

9.4.1 Setup the EUT as shown in Section 9.1.

9.4.2 Turn on the power of all equipments.

9.4.3 Let the EUT work in test mode (Full Load) and measure it.

9.5 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.5.1 For input and output DC power ports:
It's unnecessary to test

9.5.2 For signal lines and control lines ports:
It's unnecessary to test.

9.5.3 For AC Input line ports:
The EUT is connected to the AC power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2015-6-12	2016-6-11

9.7 Test Result

PASS

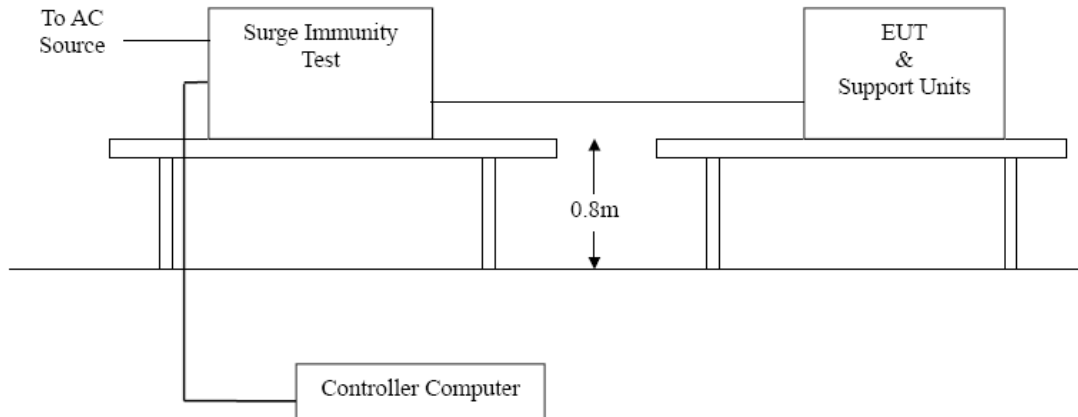
Please refer to the following page.

Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Line of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	A	A	A	A	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	A	A	A	A	/	/	/	/
	L2 + Earth	A	A	A	A	/	/	/	/
	L1+L2+Earth	A	A	A	A	/	/	/	/

10 - Surge Immunity Test

10.1 Block Diagram of Test Setup



10.2 Test Standard

EN55024:2010/ EN50130-4:2011
(EN61000-4-5:2014 Severity Level: Line to Line, Level 2: 1KV, Line to Earth , Level 3: 2KV)

10.3 Severity Levels and Performance Criterion

10.3.1 Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

10.3.2 Performance criterion: B

10.4 Operating Condition of EUT

10.4.1 Setup the EUT as shown in Section 10.1.

10.4.2. Turn on the power of all equipments.

10.4.3. Let the EUT work in test mode (Full Load) and measure it.

10.5 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 10.1.
- 2) For DC port coupling mode, provide a 1 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2015-6-12	2016-6-11

10.7 Test Result

PASS

Please refer to the following page.

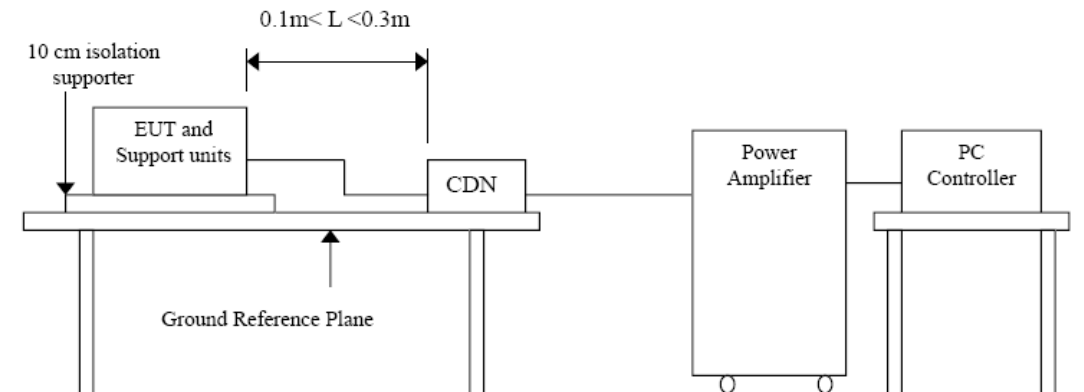
Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Table 1: Surge Power Supply

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	A	/
4	4kV	±	L-N, L-PE, N-PE	/	/

11 - Conducted Susceptibility Test

11.1 Block Diagram of Test Setup



11.2 Test Standard

EN55024:2010/ EN50130-4:2011
(EN61000-4-6:2014, Severity Level 2: 3V (rms)).(0.15MHz ~ 80MHz)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Level	Field Strength V(rms)
1.	1
2.	3
3.	10
X	Special

11.3.2 Performance criterion: A

11.4 Operating Condition of EUT

11.4.1 Setup the EUT as shown in Section 11.1.

11.4.2 Turn on the power of all equipments.

11.4.3 Let the EUT work in test mode (Full Load) and measure it.

11.5 Test Procedure

11.5.1 For DC Mains
It's unnecessary to test.

11.5.2 For signal lines and control lines ports:
It's unnecessary to test.

11.5.3 For AC Input line ports:

- 1) Set up the EUT, CDN and test generators as shown on Section 11.1.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling network) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2015-6-16	2016-6-15
2	BCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2015-6-16	2016-6-15
3	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2015-6-12	2016-6-11
4	BCT-EMC030	EM Injection clamp	FCC	F-203I-23mm	091536	2015-6-16	2016-6-15

11.7 Test Results

PASS

Please refer to the following page.

Frequency Range (MHz): 0.15~80MHz

Modulation: Amplitude 80%, 1kHz sinewave

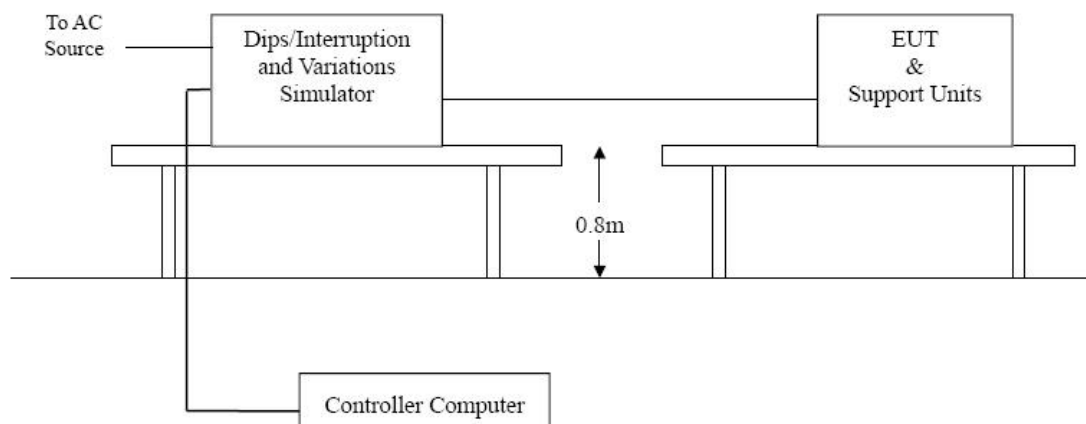
Severity Level: 3Vr.m.s.

Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Level	Voltage Level (e.m.f.) U ₀	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

12 - Voltage Dips, Short Interruptions Immunity Tests

12.1 Block Diagram of Test Setup



12.2 Test Standard

EN 55024:2010 / EN50130-4:2011(EN 61000-4-11:2004)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
20%	80	250
30%	70	25
60%	40	10
100%	0	250
>95%	<5	0.5
>95%	<5	250

12.3.2 Performance criterion : B&C

12.4 EUT Configuration

The configuration of EUT is listed in Section 12.4.

12.5 Operating Condition of EUT

12.5.1 Turn on the power of all equipments.

12.5.2 Let the EUT work in test mode (Full Load) and measure it.

12.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 12.1.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

12.7 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2015-6-12	2016-6-11

12.8 Test Result

PASS

Please refer to the following page.

Temperature (°C)	22~24
Humidity (%RH)	50~55
Barometric Pressure (mbar)	950~1000
EUT	High PoE Midspan
M/N	DH-PFT1200
Operating Mode	Full Load

Level	U2	td	Phase Angle	N	Pass	Fail
1	30%	500ms	0/90/180/270	3	B	/
2	60%	100ms	0/90/180/270	3	B	/
3	80%	5000ms	0/90/180/270	3	C	/
4	100%	5000ms	0/90/180/270	3	C	/
5	>95%	10ms	0/90/180/270	3	B	/
6	>95%	5000ms	0/90/180/270	3	C	/

Note:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

13 - TEST RESULTS

The following tests were performed on the **ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD** 's product; model: **DH-PFT1200** ; the actual test results are contained within the Test Data section of this report.

13.1 EN 61000-4-2 Electrostatic Discharge Immunity Test Configuration

The EUT was subjected to the electrostatic discharge tests required by EN 55024 and all lower levels specified in EN 61000-4-2.

The EUT continued to perform as intended during and after the application of the ESD. Test setup photographs presented in Appendix C.

13.2 EN 61000-4-3 Radiated Susceptibility Test Configuration

The EUT was subjected to a 3-volt/meter, 80% Amplitude, 1 kHz Sine wave field as required by EN 55024 and all lower levels specified in EN 61000-4-3.

The EUT continued to perform as intended during and after the application of the electromagnetic field. Test setup photographs presented in Appendix C.

13.3 EN 61000-4-4 Electrical Fast Transient/Burst Immunity Test Configuration

The EUT was subjected to the electrical fast transient tests required by EN 55024 and all lower levels specified in EN 61000-4-4.

The EUT continued to perform as intended during and after the application of the EFT/B. Test setup photographs presented in Appendix C.

13.4 EN 61000-4-5 Surge Immunity Test Configuration

The EUT was subjected to the Surge Immunity tests required by EN 55024 and all lower levels specified in EN 61000-4-5.

The EUT continued to perform as intended during and after the application of the Surge Immunity Test. Test setup photographs presented in Appendix C.

13.5 EN 61000-4-6 Conducted Susceptibility Test Configuration

The EUT was subjected to the Conducted Susceptibility tests required by EN 55024 and all lower levels specified in EN 61000-4-6.

The EUT continued to perform as intended during and after the application of the Conducted Susceptibility Test.

13.6 EN 61000-4-11 Voltage Dips, Short Interruptions Immunity Tests Configuration

The EUT was subjected to the Voltage Dips/Interruptions tests required by EN 55024 and all lower levels specified in EN 61000-4-11.

The EUT continued to perform as intended during and after the application of the Voltage Dips/Interruptions Test. Test setup photographs presented in Appendix C.

APPENDIX A - PRODUCT LABELING

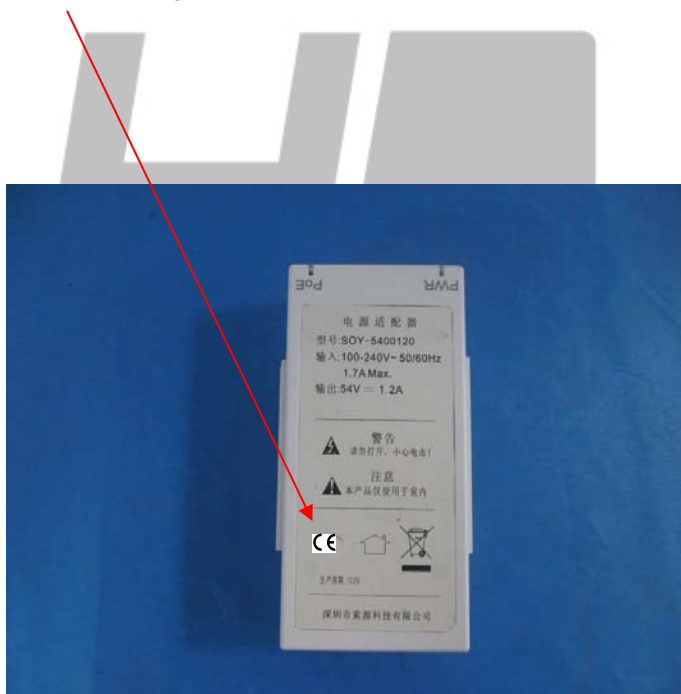
CE Marking Label Specification

Specification: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



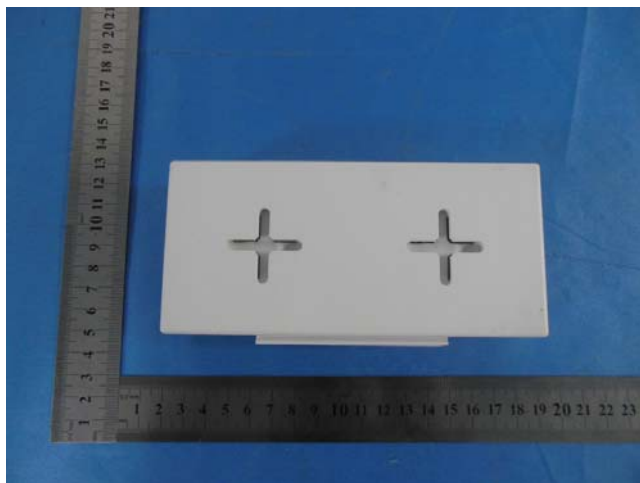
Proposed Label Location on EUT

EUT Rear View/Proposed CE Marking Location



APPENDIX B - EUT PHOTOGRAPHS

EUT – Front View



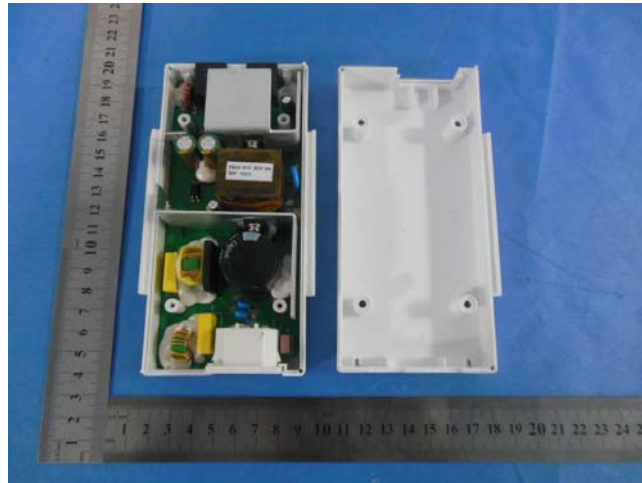
EUT – Rear View



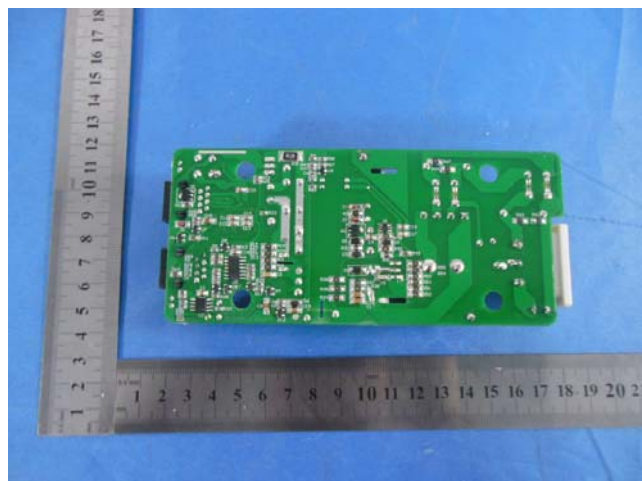
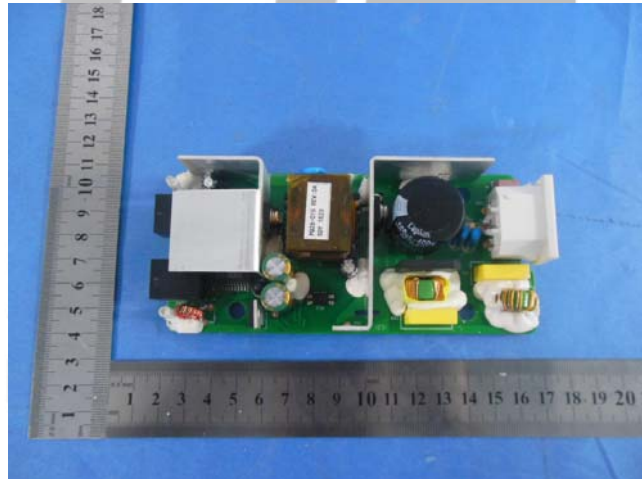
EUT – Side View



EUT –Open View



EUT –PCB View



APPENDIX C - TEST SETUP PHOTOGRAPHS

Conducted Emission



Radiated Emission



Electrostatic Discharge Immunity Test



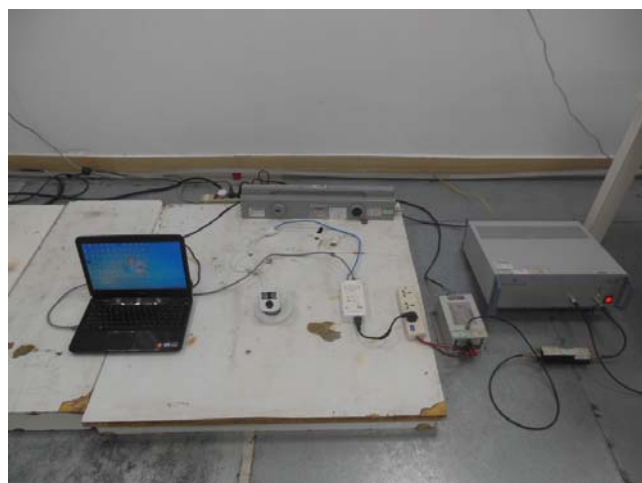
Radiated Susceptibility Test



Electrical Fast Transient/Surge/ Voltage Dips, Short Interruptions Immunity Test



Conducted Susceptibility Test



VOLTAGE FLUCTUATIONS AND FLICKER TEST

