

# FCC Test Report (DoC)

**Application No.:** HKEM1611001606IT  
**Applicant:** Zhejiang Dahua Vision Technology Co., Ltd.  
**Manufacturer:** Zhejiang Dahua Vision Technology Co., Ltd.  
**Factory:** Zhejiang Dahua Vision Technology Co., Ltd.  
**Product Information:**  
**Product Name:** IP Camera  
**Model:** DH-IPC-PFW8601P-A180, DH-IPC-PFW8800P-A180, DH-IPC-PFW8601N-A180, IPC-PFW8601P-A180, IPC-PFW8601N-A180, DH-IPC-PFW8800N-A180, IPC-PFW8800N-A180, IPC-PFW8800P-A180, DH-IPC-PFW8802P-A180, DH-IPC-PFW8802N-A180, IPC-PFW8802N-A180, IPC-PFW8802P-A180  
**Serial No.:** --  
**Requirement:** 47 CFR PART 15 SUBPART B, 2015  
**Date of Receipt:** 2016-11-15  
**Date of Test:** 2016-11-18 to 2016-11-22  
**Date of Issue:** 2016-12-26

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature:




CHEN Jian-feng, Jeffrey

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## 2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150kHz to 30MHz)	FCC PART 15, SUBPART B: 2015	ANSI C63.4:2014	Class B	PASS
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2015	ANSI C63.4:2014	Class B	PASS
Radiated Emission above 1 GHz	FCC PART 15, SUBPART B: 2015	ANSI C63.4:2014	Class B	PASS

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## 4 General Information

### 4.1 Client Information

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

### 4.2 General Description of EUT

EUT Name: IP Camera  
Model: DH-IPC-PFW8601P-A180, DH-IPC-PFW8800P-A180, DH-IPC-PFW8601N-A180, IPC-PFW8601P-A180, IPC-PFW8601N-A180, DH-IPC-PFW8800N-A180, IPC-PFW8800N-A180, IPC-PFW8800P-A180, DH-IPC-PFW8802P-A180, DH-IPC-PFW8802N-A180, IPC-PFW8802N-A180, IPC-PFW8802P-A180  
Serial No.: --  
EUT Description: IP camera with LAN port which can be connect with PC to monitor.

### 4.3 Details of EUT

Power Supply: DH-IPC-PFW8601P-A180: AC24V, 2A or POE: 48V, 500mA  
DH-IPC-PFW8800P-A180: AC24V, 2A or POE: 48V, 500mA  
Test Voltage: AC 120V, 60Hz  
Power Cord: --  
Operating frequency: 1.2GHz (the Highest working frequency )

### 4.4 Description of Support Units

Supporting equipment :

Description	Manufacturer	Model No.	Serial No.	Data Cable	Power Cable
Notebook computer	ASUS	A556U	FBN0CV921383 48E	N/A	2.2m(DC)
Mouse	Lenovo	MO28UOL	4401282 081	USB <sup>3)</sup>	N/A
Ethernet router	Net Screen	NS-5GT-103	00640220040 02202	LAN	1.8m (DC)
AC Adapter (120V)	JS	JS-24030	--	--	--
PoE Adapter	PowerDsine	PD-9001GR/AC	--	--	--
Monitor 2	JVC	TM-A170G	--	--	--
Note: For the cable detail please refer to below table.					

**Software:**

Description	Manufacturer	Software name	Version no.
EMC test software	Microsoft	Internet Explorer	11.0.9600.18204

#### 4.5 Standards Applicable for Testing

CFR 47, Part 15, 2015

ANSI C63.4:2014

#### 4.6 Test Location

All tests were performed at:

SGS IECC Ltd. (wholly owned by SGS Group)

Units 303-305, 3/F., 31 Lok Yip Road, On Lok Tsuen, Fanling, N.T., Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480.

#### 4.7 Test Laboratory

The test laboratory is recognized by FCC as accredited laboratory:

- **FCC – CAB Registration No.: 446297**

Measurement facility located at Fanling (Hong Kong), accredited as a Conformity Assessment Body (CAB) and was designated by FCC to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Part 15 and 18 of the Commission's Rules.

#### 4.8 Deviation from Standards

None.

#### 4.9 Abnormalities from Standard Conditions

None.

#### 4.10 Declaration of Family Grouping

Model No.: DH-IPC-PFW8601P-A180, DH-IPC-PFW8800P-A180, DH-IPC-PFW8601N-A180, IPC-PFW8601P-A180, IPC-PFW8601N-A180, DH-IPC-PFW8800N-A180, IPC-PFW8800N-A180, IPC-PFW8800P-A180, DH-IPC-PFW8802P-A180, DH-IPC-PFW8802N-A180, IPC-PFW8802N-A180, IPC-PFW8802P-A180

Only the model DH-IPC-PFW8601P-A180, DH-IPC-PFW8800P-A180 was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, with only difference being model number, brand or color.

#### 4.11 Abbreviations

N/A: Not Applicable

EUT: Equipment Under Test

## 5 Equipments Used during Test

Conducted Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
Test Receiver	Rohde & Schwarz	ESCS 30 /100388	2016/09/28	2017/09/27
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2 / 375881052	2015/02/02	2017/02/01
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127 / 8127312	2016/04/20	2017/04/19

Radiated Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
3m Semi-Anechoic Chamber (pre-test)	--	--	--	--
3m / 10m Open Area Test Site	--	--	2015/03/11	2018/03/10
Test Receiver 9KHz-2750MHz	Rohde & Schwarz	ESCS 30 /100388	2016/09/28	2017/09/27
Spectrum Analyzer 9kHz - 30GHz	Rohde & Schwarz	FSP30/101474	2016/05/31	2017/05/30
Loop Antenna 9KHz-30MHz	Rohde & Schwarz	HFH2-Z2	2016/01/23	2019/01/22
Antenna (30-300 MHz)	Schwarzbeck	BBA9106, VHA9103	2014/11/15	2017/11/14
Log-periodic Antennas 300MHz-1000MHz	Schwarzbeck	UHALP9107	2016/10/19	2017/11/14
Antenna, 30MHz – 1000MHz	Schaffner	CBL6111C / 2791	2016/10/19	2018/10/18
Horn Antenna 1 - 18GHz	Schwarzbeck	BBHA9120D/9120D-1070	2016/01/23	2018/01/22
Preamplifier 1 - 18GHz	Schwarzbeck	BBV9718/9718-223	2016/01/23	2017/01/22
Coaxial Cable	--	E167	2016/11/17	2017/11/16
Antenna Mast System	Schwarzbeck	AM9104 / -	--	--
Turntable with Controller	Drehtisch	DT312 / -	--	--

## 6 Test Results

### 6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4:2014  
 Test Voltage & frequency: 120V AC, 60Hz  
 Test Date: 2016-11-18  
 Frequency Range: 150kHz to 30MHz  
 Class / Severity: Class B  
 Detector: Peak for pre-scan (9kHz Resolution Bandwidth)  
 Quasi-Peak and Average if maximised peak within 20dB of Quasi-Peak limit

Limit:

Frequency range MHz	Class B Limits dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
<b>Note:</b> 1) The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. 2) The lower limit is applicable at the transition frequency.		

#### 6.1.1 EUT Operation

Operating Environment:

Temperature: 25°C

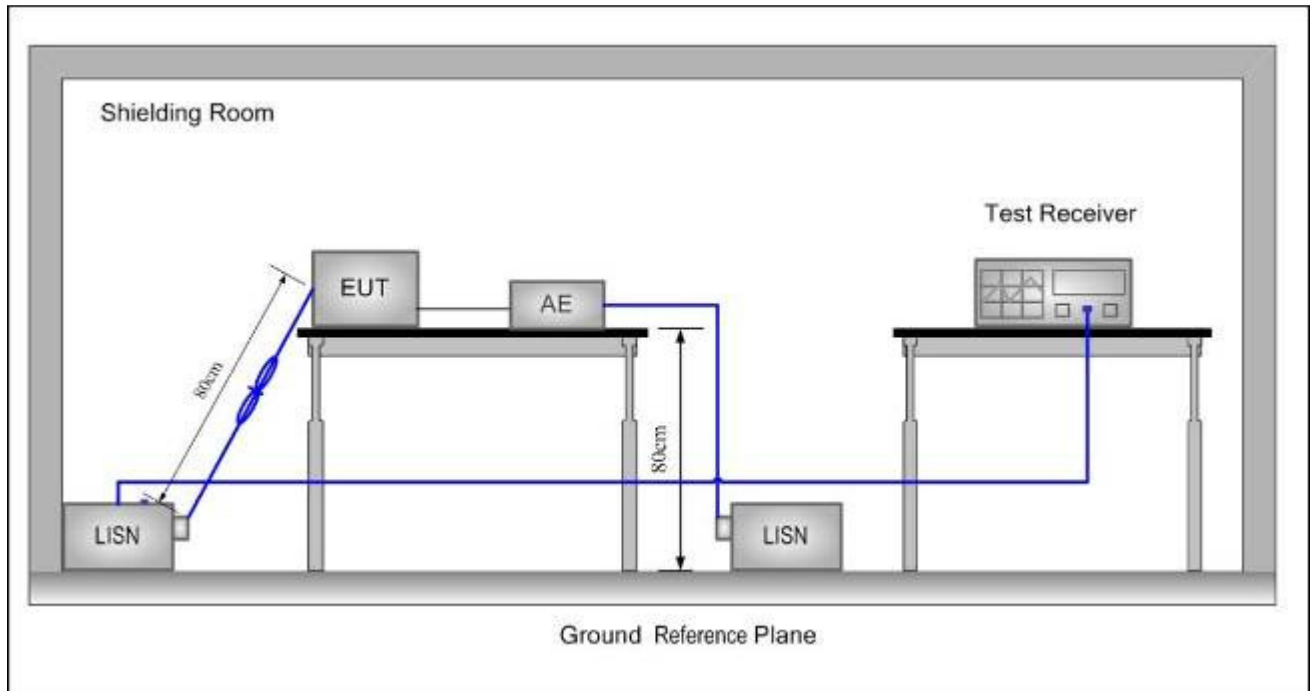
Humidity: 47%

Atmospheric Pressure: 1020mbar

EUT Operation: Pre-test with Peak detector with the following modes:  
 DH-IPC-PFW8601P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
 DH-IPC-PFW8800P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)

Final test with Quasi-Peak :and Average detector with the following mode(s):  
 DH-IPC-PFW8601P-A180  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
 DH-IPC-PFW8800P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)

### 6.1.2 Test Setup and Procedure



1. The mains terminal conducted emission test was conducted in a shielded room.
2. The EUT was connected via the host computer to AC power source through a LISN (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. For Load terminal voltage measurement, a voltage probe was used on the load terminals. Measurement at control terminals were carried out by means of an impedance stabilization network (ISN). The ISN was bounded to ground.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The EUT kept a distance of at least 0.8m from any other earthed conducting surface. The Artificial Mains Network was situated at a distance of 0.8m from the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.



### 6.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

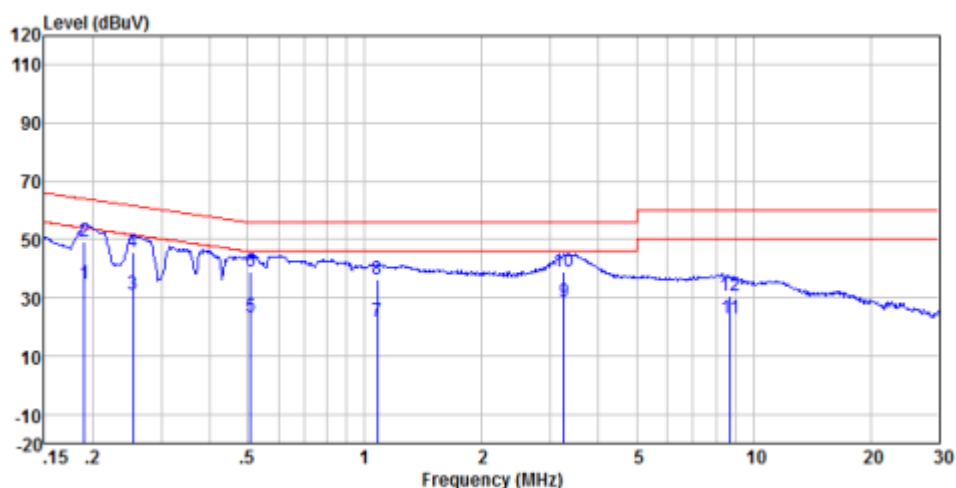
The following Quasi-Peak and Average measurements were performed on TEST MODE :

DH-IPC-PFW8601P-A180:

AC 24V mode:

Live line:

Peak Scan:



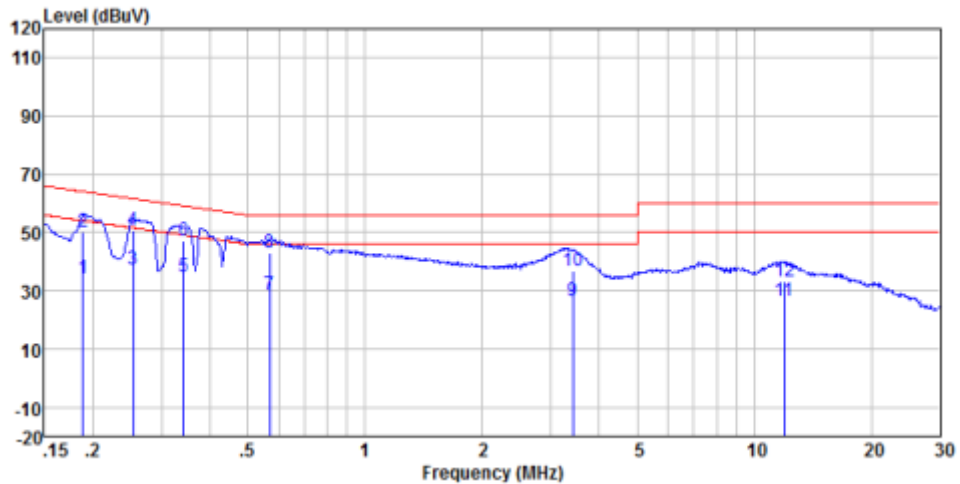
Quasi-peak and Average measurement:

		Read	LISN	Cable		Limit	Over	
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.190	34.35	0.10	0.10	34.55	54.02	-19.47	Average
2	0.190	48.90	0.10	0.10	49.10	64.02	-14.92	QP
3	0.253	31.15	0.05	0.10	31.30	51.64	-20.34	Average
4	0.253	45.66	0.05	0.10	45.81	61.64	-15.83	QP
5	0.510	23.21	0.09	0.10	23.40	46.00	-22.60	Average
6	0.510	38.62	0.09	0.10	38.81	56.00	-17.19	QP
7	1.077	21.54	0.16	0.10	21.80	46.00	-24.20	Average
8	1.077	36.10	0.16	0.10	36.36	56.00	-19.64	QP
9	3.258	28.20	0.23	0.10	28.53	46.00	-17.47	Average
10	3.258	38.68	0.23	0.10	39.01	56.00	-16.99	QP
11	8.730	22.56	0.30	0.10	22.96	50.00	-27.04	Average
12	8.730	30.19	0.30	0.10	30.59	60.00	-29.41	QP

Level = Read Level + LISN Factor + Cable Loss .

**Neutral line:**

Peak Scan:



Quasi-peak and Average measurement:

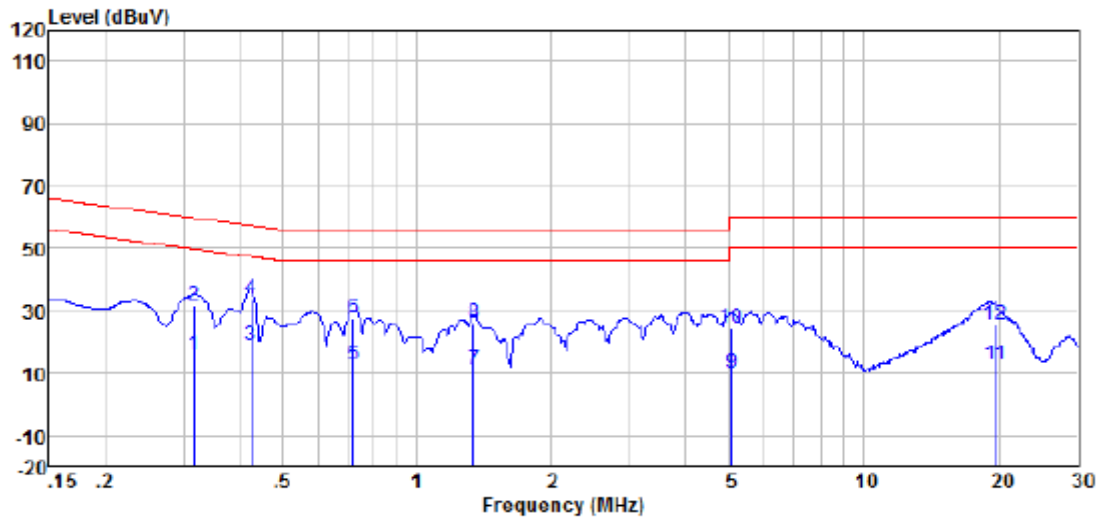
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.188	34.19	0.10	0.10	34.39	54.11	-19.72	Average
2	0.188	50.21	0.10	0.10	50.41	64.11	-13.70	QP
3	0.253	37.21	0.05	0.10	37.36	51.64	-14.28	Average
4	0.253	50.53	0.05	0.10	50.68	61.64	-10.96	QP
5	0.341	34.92	0.00	0.10	35.02	49.18	-14.16	Average
6	0.341	47.20	0.00	0.10	47.30	59.18	-11.88	QP
7	0.570	28.16	0.05	0.10	28.31	46.00	-17.69	Average
8	0.570	42.77	0.05	0.10	42.92	56.00	-13.08	QP
9	3.417	26.45	0.20	0.10	26.75	46.00	-19.25	Average
10	3.417	36.68	0.20	0.10	36.98	56.00	-19.02	QP
11	11.933	26.19	0.28	0.14	26.61	50.00	-23.39	Average
12	11.933	32.56	0.28	0.14	32.98	60.00	-27.02	QP

$$\text{Level} = \text{Read Level} + \text{LISN Factor} + \text{Cable Loss.}$$

PoE mode:

Live line:

Peak Scan:



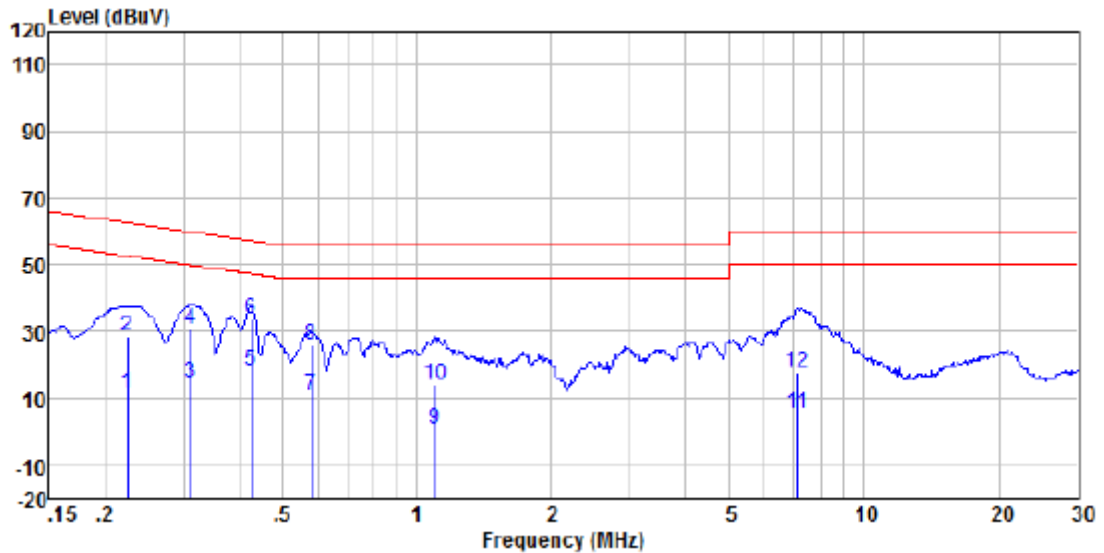
Quasi-peak and Average measurement:

		Read	LISN	Cable		Limit	Over	
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.317	15.63	0.02	0.10	15.75	49.80	-34.05	Average
2	0.317	31.36	0.02	0.10	31.48	59.80	-28.32	QP
3	0.424	18.37	0.05	0.10	18.52	47.37	-28.85	Average
4	0.424	33.64	0.05	0.10	33.79	57.37	-23.58	QP
5	0.720	12.39	0.17	0.10	12.66	46.00	-33.34	Average
6	0.720	27.25	0.17	0.10	27.52	56.00	-28.48	QP
7	1.338	10.74	0.17	0.10	11.01	46.00	-34.99	Average
8	1.338	25.45	0.17	0.10	25.72	56.00	-30.28	QP
9	5.085	9.60	0.29	0.10	9.99	50.00	-40.01	Average
10	5.085	24.28	0.29	0.10	24.67	60.00	-35.33	QP
11	19.532	12.08	0.43	0.20	12.71	50.00	-37.29	Average
12	19.532	24.59	0.43	0.20	25.22	60.00	-34.78	QP

Level = Read Level + LISN Factor + Cable Loss.

### Neutral line:

Peak Scan:



Quasi-peak and Average measurement:

		Read	LISN	Cable		Limit	Over	
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.224	11.12	0.07	0.10	11.29	52.66	-41.37	Average
2	0.224	28.23	0.07	0.10	28.40	62.66	-34.26	QP
3	0.310	14.68	0.02	0.10	14.80	49.97	-35.17	Average
4	0.310	30.66	0.02	0.10	30.78	59.97	-29.19	QP
5	0.424	18.30	0.02	0.10	18.42	47.37	-28.95	Average
6	0.424	33.47	0.02	0.10	33.59	57.37	-23.78	QP
7	0.579	11.04	0.05	0.10	11.19	46.00	-34.81	Average
8	0.579	25.93	0.05	0.10	26.08	56.00	-29.92	QP
9	1.100	0.54	0.16	0.10	0.80	46.00	-45.20	Average
10	1.100	13.96	0.16	0.10	14.22	56.00	-41.78	QP
11	7.100	4.96	0.28	0.10	5.34	50.00	-44.66	Average
12	7.100	17.44	0.28	0.10	17.82	60.00	-42.18	QP

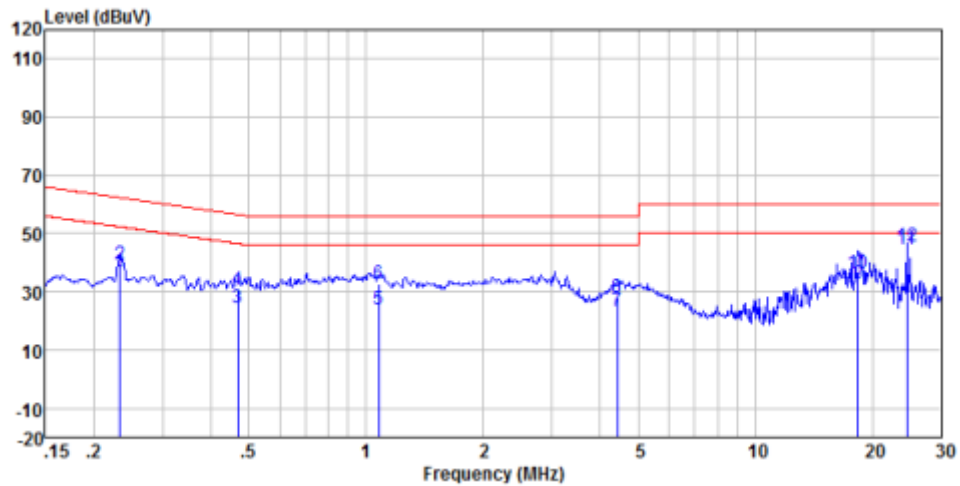
Level = Read Level + LISN Factor + Cable Loss.

DH-IPC-PFW8800P-A180:

AC 24V mode:

Live line:

Peak Scan:



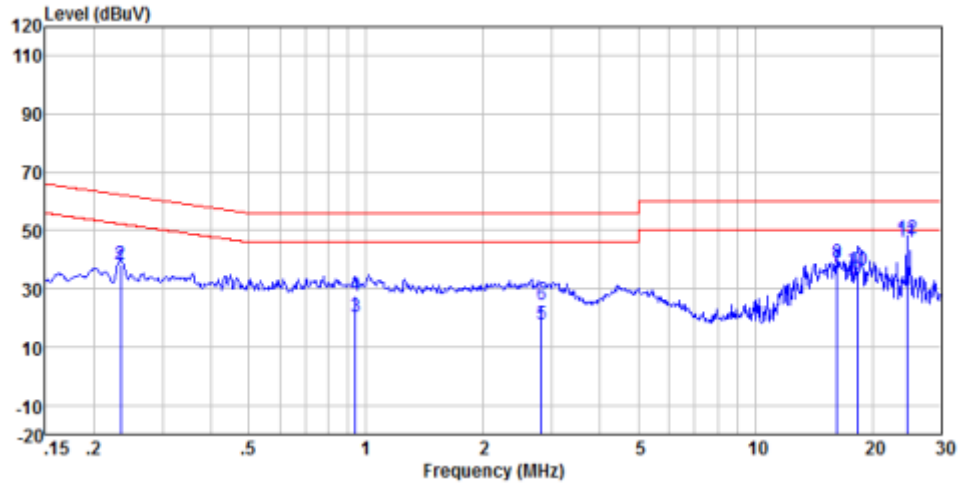
Quasi-peak and Average measurement:

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.233	36.85	0.07	0.10	37.02	52.35	-15.33	Average
2	0.233	39.44	0.07	0.10	39.61	62.35	-22.74	QP
3	0.469	24.23	0.07	0.10	24.40	46.54	-22.14	Average
4	0.469	30.45	0.07	0.10	30.62	56.54	-25.92	QP
5	1.077	23.78	0.16	0.10	24.04	46.00	-21.96	Average
6	1.077	32.51	0.16	0.10	32.77	56.00	-23.23	QP
7	4.430	23.23	0.29	0.10	23.62	46.00	-22.38	Average
8	4.430	27.45	0.29	0.10	27.84	56.00	-28.16	QP
9	18.366	32.22	0.41	0.20	32.83	50.00	-17.17	Average
10	18.366	35.68	0.41	0.20	36.29	60.00	-23.71	QP
11	24.576	43.84	0.74	0.20	44.78	50.00	-5.22	Average
12	24.576	44.76	0.74	0.20	45.70	60.00	-14.30	QP

Level = Read Level + LISN Factor + Cable Loss.

### Neutral line:

Peak Scan:



Quasi-peak and Average measurement:

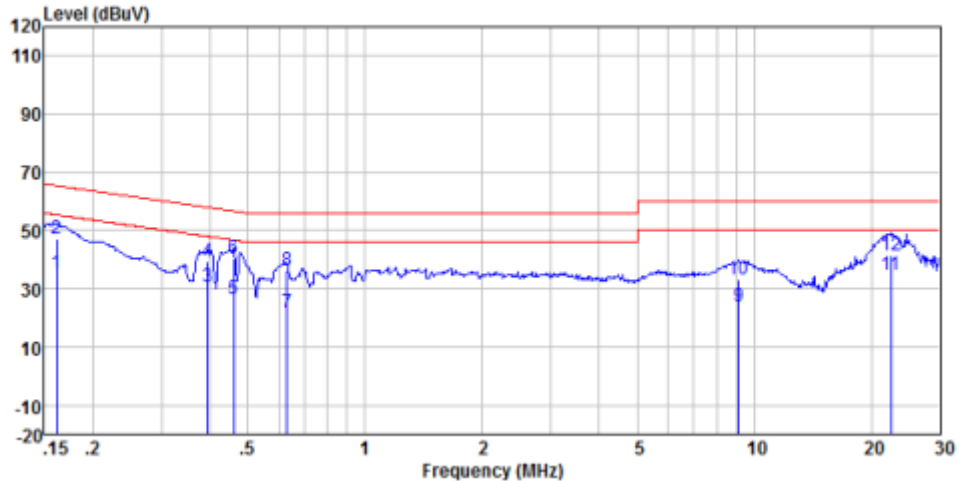
	Read	LISN	Cable		Limit	Over	
Freq	Level	Factor	Loss	Level	Line	Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.234	36.94	0.07	0.10	37.11	52.30	-15.19 Average
2	0.234	38.14	0.07	0.10	38.31	62.30	-23.99 QP
3	0.938	20.27	0.14	0.10	20.51	46.00	-25.49 Average
4	0.938	27.41	0.14	0.10	27.65	56.00	-28.35 QP
5	2.824	17.30	0.20	0.10	17.60	46.00	-28.40 Average
6	2.824	24.09	0.20	0.10	24.39	56.00	-31.61 QP
7	16.226	36.80	0.27	0.20	37.27	50.00	-12.73 Average
8	16.226	38.38	0.27	0.20	38.85	60.00	-21.15 QP
9	18.302	32.70	0.31	0.20	33.21	50.00	-16.79 Average
10	18.302	35.99	0.31	0.20	36.50	60.00	-23.50 QP
11	24.576	45.41	0.70	0.20	46.31	50.00	-3.69 Average
12	24.576	46.31	0.70	0.20	47.21	60.00	-12.79 QP

Level = Read Level + LISN Factor + Cable Loss.

POE mode:

Live line:

Peak Scan:



Quasi-peak and Average measurement:

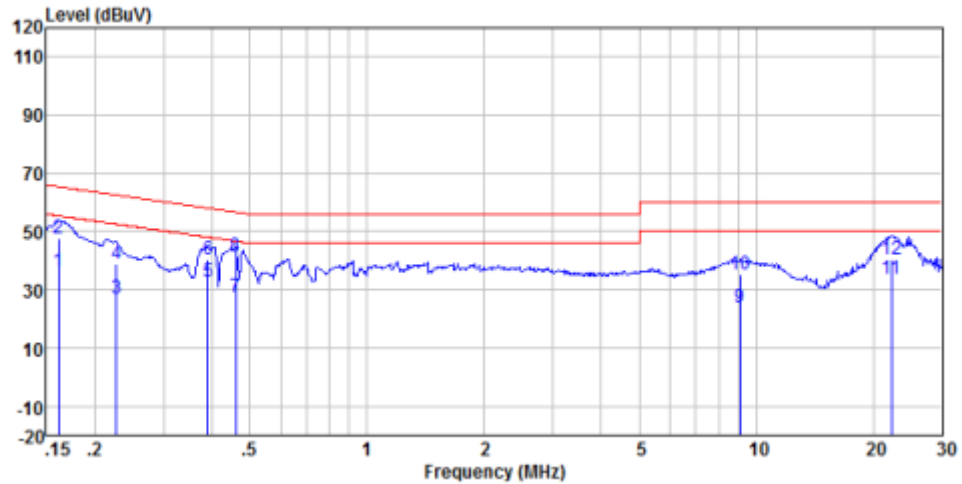
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.162	35.06	0.00	0.10	35.16	55.38	-20.22	Average
2	0.162	47.13	0.00	0.10	47.23	65.38	-18.15	QP
3	0.393	30.61	0.00	0.10	30.71	47.99	-17.28	Average
4	0.393	39.44	0.00	0.10	39.54	57.99	-18.45	QP
5	0.459	26.38	0.00	0.10	26.48	46.71	-20.23	Average
6	0.459	40.38	0.00	0.10	40.48	56.71	-16.23	QP
7	0.630	21.80	0.00	0.10	21.90	46.00	-24.10	Average
8	0.630	36.40	0.00	0.10	36.50	56.00	-19.50	QP
9	9.107	23.98	0.00	0.10	24.08	50.00	-25.92	Average
10	9.107	32.88	0.00	0.10	32.98	60.00	-27.02	QP
11	22.416	34.31	0.00	0.20	34.51	50.00	-15.49	Average
12	22.416	41.42	0.00	0.20	41.62	60.00	-18.38	QP

Level = Read Level + LISN Factor + Cable Loss.



**Neutral line:**

Peak Scan:



Quasi-peak and Average measurement:

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.162	35.86	0.13	0.10	36.09	55.38	-19.29	Average
2	0.162	47.28	0.13	0.10	47.51	65.38	-17.87	QP
3	0.227	26.94	0.07	0.10	27.11	52.57	-25.46	Average
4	0.227	38.80	0.07	0.10	38.97	62.57	-23.60	QP
5	0.389	32.35	0.03	0.10	32.48	48.08	-15.60	Average
6	0.389	40.21	0.03	0.10	40.34	58.08	-17.74	QP
7	0.459	27.31	0.07	0.10	27.48	46.71	-19.23	Average
8	0.459	41.10	0.07	0.10	41.27	56.71	-15.44	QP
9	9.059	23.69	0.30	0.10	24.09	50.00	-25.91	Average
10	9.059	34.71	0.30	0.10	35.11	60.00	-24.89	QP
11	22.298	32.99	0.60	0.20	33.79	50.00	-16.21	Average
12	22.298	39.86	0.60	0.20	40.66	60.00	-19.34	QP

**Level = Read Level + LISN Factor + Cable Loss.**



## 6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 B  
Test Method: ANSI C63.4:2014  
Test Voltage & frequency: 120V AC, 60Hz  
Test Date: 2016-11-22  
Frequency Range: 30MHz to 1GHz  
Measurement Distance: 3m  
Detector: Peak for pre-scan (120kHz resolution bandwidth)  
Quasi-Peak if maximised peak within 20dB of limit  
Class: Class B

Frequency range MHz	Quasi-peak limits dB (µV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54
Note: At transitional frequencies the lower limit applies.	

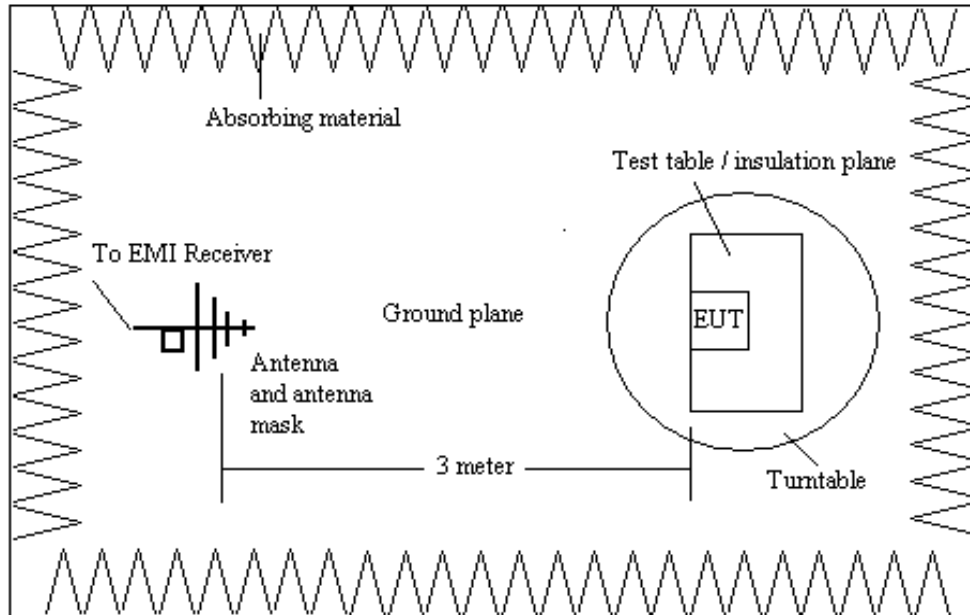
### 6.2.1 EUT Operation

Operating Environment:

Temperature: 25°C Humidity: 47% Atmospheric Pressure: 1020mbar

EUT Operation: Pre-test with Peak detector with the following modes:  
DH-IPC-PFW8601P-A180:  
1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
DH-IPC-PFW8800P-A180:  
1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
  
Final test with Quasi-Peak :and Average detector with the following mode(s):  
DH-IPC-PFW8601P-A180  
1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
DH-IPC-PFW8800P-A180:  
1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)

## 6.2.2 Test Setup and Procedure



1. The pre-test of the radiated emissions test was conducted in a semi-anechoic chamber and the final measurement was conducted in the open area test site.
2. Bilog antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to the host PC which was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT with located frequencies.
5. The actual frequencies of maximum emission were confirmed in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

## 6.2.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and frequencies of peak emissions from the EUT were detected within 20dB of the class B limit line. Final measurement was conducted in the open area test site with data as follows:

**DH-IPC-PFW8601P-A180:**
**Test results on AC 24V mode:**

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)
33.45	V	18.02	15.29	33.31	40.00	-6.69
47.83	V	12.74	18.70	31.44	40.00	-8.56
69.60	H	9.33	16.00	25.33	40.00	-14.67
77.05	V	9.09	21.08	30.17	40.00	-9.83
102.00	H	10.08	21.09	31.17	43.50	-12.33
106.76	V	10.51	19.92	30.43	43.50	-13.07
193.77	H	9.38	22.06	31.44	43.50	-12.06
383.93	V	16.00	17.09	33.09	46.00	-12.91
385.28	H	16.06	17.38	33.44	46.00	-12.56
576.64	H	19.51	15.00	34.51	46.00	-11.49
900.15	V	22.20	16.69	38.89	46.00	-7.11
900.15	H	22.20	11.12	33.32	46.00	-12.68
<b>Note:</b> 1) Transducer = Antenna Factor + Cable Loss. 2) Final Test Level = Receiver Reading + Transducer.						

**Test results on POE mode:**

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)
43.79	V	14.11	23.83	37.94	40.00	-2.06
69.11	V	9.36	24.64	34.00	40.00	-6.00
77.05	H	9.09	21.33	30.42	40.00	-9.58
104.54	H	10.31	27.96	38.27	43.50	-5.23
106.76	V	10.51	24.73	35.24	43.50	-8.26
145.35	H	11.59	21.15	32.74	43.50	-10.76
255.62	H	12.52	20.74	33.26	46.00	-12.74
385.28	V	16.06	17.66	33.72	46.00	-12.28
576.64	H	19.51	16.98	36.49	46.00	-9.51
601.43	V	19.71	17.71	37.42	46.00	-8.58
701.76	H	20.91	16.07	36.98	46.00	-9.02
900.15	V	22.20	16.23	38.43	46.00	-7.57
<b>Note:</b> <b>3) Transducer = Antenna Factor + Cable Loss.</b> <b>4) Final Test Level =Receiver Reading + Transducer.</b>						

**DH-IPC-PFW8800P-A180:**

**AC 24V mode:**

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)
52.03	H	13.56	9.97	23.53	40.00	-16.47
53.88	V	13.34	6.44	19.78	40.00	-20.22
74.66	H	10.42	8.43	18.85	40.00	-21.15
158.67	V	12.18	5.30	17.48	43.50	-26.02
234.99	H	10.55	15.21	25.76	46.00	-20.24
235.82	V	10.64	16.05	26.69	46.00	-19.31
325.60	H	13.12	14.58	27.70	46.00	-18.30
393.47	V	14.76	16.75	31.51	46.00	-14.49
601.43	V	20.23	16.83	37.06	46.00	-8.94
601.43	H	20.23	23.60	43.83	46.00	-2.17
701.76	V	20.93	22.31	43.24	46.00	-2.76
701.76	H	20.93	23.00	43.93	46.00	-2.07
<b>Note:</b> 1) Transducer = Antenna Factor + Cable Loss. 2) Final Test Level = Receiver Reading + Transducer.						

**POE mode:**

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)
49.88	V	13.81	13.47	27.28	40.00	-12.72
78.97	V	9.36	17.77	27.13	40.00	-12.87
106.01	H	10.23	11.57	21.80	43.50	-21.70
173.81	H	11.71	12.45	24.16	43.50	-19.34
182.56	V	10.95	16.99	27.94	43.50	-15.56
235.82	H	10.64	16.47	27.11	46.00	-18.89
324.46	H	13.16	15.05	28.21	46.00	-17.79
601.43	V	20.23	22.71	42.94	46.00	-3.06
701.76	V	20.93	22.68	43.61	46.00	-2.39
701.76	H	20.93	22.75	43.68	46.00	-2.32
900.15	V	22.87	19.29	42.16	46.00	-3.84
900.15	H	22.87	19.41	42.28	46.00	-3.72
<b>Note:</b> <b>3) Transducer = Antenna Factor + Cable Loss.</b> <b>4) Final Test Level = Receiver Reading + Transducer.</b>						

### 6.3 Radiated Emissions, above 1GHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4:2014  
 Test Voltage & frequency: 120V AC, 60Hz  
 Test Date: 2016-11-22  
 Frequency Range: 1GHz to 6GHz  
 Measurement Distance: 3m  
 Detector: Peak for pre-scan (1MHz resolution bandwidth)  
 Peak and Average if maximised peak within 20dB of limit  
 Class: Class B

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower
Average limits dB(μV/m)	Peak limits dB(μV/m)
54	74

#### 6.3.1 EUT Operation

Operating Environment:

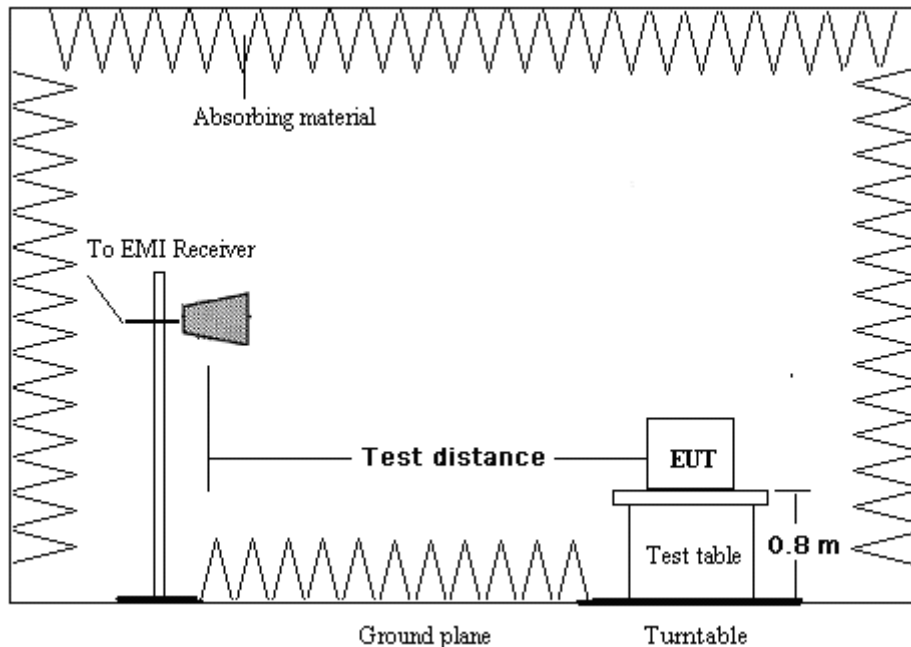
Temperature: 25°C

Humidity: 47%

Atmospheric Pressure: 1020mbar

EUT Operation: Pre-test with Peak detector with the following modes:  
 DH-IPC-PFW8601P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
 DH-IPC-PFW8800P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
  
 Final test with Quasi-Peak :and Average detector with the following mode(s):  
 DH-IPC-PFW8601P-A180  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)  
 DH-IPC-PFW8800P-A180:  
 1: AC 24V mode; ( Supply by AC24V adapter , keep EUT monitoring continual.)  
 2: PoE mode; (Supply by PoE adapter , keep EUT monitoring continual.)

### 6.3.2 Test Setup and Procedure



1. The pre-test of the radiated emissions test was conducted in a semi-anechoic chamber and the final measurement was conducted in the open area test site.
2. Horn antenna was used for the frequency range from 1GHz to 18GHz
3. The EUT was connected to the host PC which was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT with located frequencies.
5. The actual frequencies of maximum emission were confirmed in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters, and keeping point the antenna in cones of radiation from EUT area both in azimuth and elevation in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.



### 6.3.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Horn antenna with 2 orthogonal polarities and frequencies of peak emissions from the EUT were detected within 20dB of the class B limit line. Final measurement was conducted in the open area test site with data as follows:

#### DH-IPC-PFW8601P-A180:

#### Test results on AC 24V mode:

Frequency (GHz)	Antenna Polarization	Trans. (dB/m)	Receiver Reading (dBμV)	Emission Level (dBμV/m)	Detector	Limit (dBμV/m)	Over Limit (dB)
1308.35	H	24.83	-7.98	16.85	Peak	54	-37.15
1308.35	H	24.83	7.04	31.87	Average	74	-42.13
1410.6	V	24.92	-4.41	20.51	Peak	54	-33.49
1410.6	V	24.92	7.53	32.45	Average	74	-41.55
1816.04	V	26.39	-6.36	20.03	Peak	54	-33.97
1816.04	V	26.39	7.89	34.28	Average	74	-39.72
1816.04	H	26.39	-9.36	17.03	Peak	54	-36.97
1816.04	H	26.39	7.89	34.28	Average	74	-39.72
2338	V	27.59	-6.37	21.22	Peak	54	-32.78
2338	V	27.59	6.32	33.91	Average	74	-40.09
2547.97	H	27.85	-9.81	18.04	Peak	54	-35.96
2547.97	H	27.85	5.13	32.98	Average	74	-41.02
3086.44	V	29.65	-6.93	22.72	Peak	54	-31.28
3086.44	V	29.65	8.56	38.21	Average	74	-35.79
3262.72	H	30.34	-10.38	19.96	Peak	54	-34.04
3262.72	H	30.34	7.74	38.08	Average	74	-35.92
3952.23	V	32.54	-7.17	25.37	Peak	54	-28.63
3952.23	V	32.54	10.52	43.06	Average	74	-30.94
3952.23	H	32.54	-8.63	23.91	Peak	54	-30.09
3952.23	H	32.54	8.82	41.36	Average	74	-32.64
5069.97	V	37.68	-11.07	26.61	Peak	54	-27.39
5069.97	V	37.68	7.53	45.21	Average	74	-28.79
5069.97	H	37.68	-11.07	26.61	Peak	54	-27.39
5069.97	H	37.68	7.53	45.21	Average	74	-28.79

#### Note:

- 1) Transducer = Antenna Factor + Cable Loss - Pre-amp.
- 2) Final Test Level = Receiver Reading + Transducer .

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**Test results on POE mode:**

Frequency (GHz)	Antenna Polarization	Trans. (dB/m)	Receiver Reading (dBμV)	Emission Level (dBμV/m)	Detector	Limit (dBμV/m)	Over Limit (dB)
1204.84	V	24.73	-8.31	16.42	Peak	54	-37.58
1204.84	V	24.73	7.58	32.31	Average	74	-41.69
1303.67	H	24.83	-8.52	16.31	Peak	54	-37.69
1303.67	H	24.83	7.47	32.3	Average	74	-41.7
1565.09	H	25.32	-8.57	16.75	Peak	54	-37.25
1565.09	H	25.32	8.42	33.74	Average	74	-40.26
1690.43	V	25.88	-8.02	17.86	Peak	54	-36.14
1690.43	V	25.88	8.23	34.11	Average	74	-39.89
1986.24	H	27.04	-9.98	17.06	Peak	54	-36.94
1986.24	H	27.04	6.46	33.5	Average	74	-40.5
2317.14	V	27.56	-7.72	19.84	Peak	54	-34.16
2317.14	V	27.56	7.39	34.95	Average	74	-39.05
2631.49	H	27.93	-11.64	16.29	Peak	54	-37.71
2631.49	H	27.93	5.69	33.62	Average	74	-40.38
3026.2	V	29.4	-8.97	20.43	Peak	54	-33.57
3026.2	V	29.4	7.85	37.25	Average	74	-36.75
3931.04	H	32.51	-10.1	22.41	Peak	54	-31.59
3931.04	H	32.51	7.73	40.24	Average	74	-33.76
4045.37	V	32.45	-10.42	22.03	Peak	54	-31.97
4045.37	V	32.45	9.74	42.19	Average	74	-31.81
5097.29	V	37.55	-11.53	26.02	Peak	54	-27.98
5097.29	V	37.55	7.13	44.68	Average	74	-29.32
5198.75	H	36.68	-9.52	27.16	Peak	54	-26.84
5198.75	H	36.68	8.4	45.08	Average	74	-28.92

**Note:**
**3) Transducer = Antenna Factor + Cable Loss - Pre-amp.**
**4) Final Test Level = Receiver Reading + Transducer .**

**DH-IPC-PFW8800P-A180:**
**Test results on AC 24V mode:**

Frequency (GHz)	Antenna Polarization	Trans. (dB/m)	Receiver Reading (dBμV)	Emission Level (dBμV/m)	Detector	Limit (dBμV/m)	Over Limit (dB)
1187.69	V	24.71	-6.03	18.68	Peak	54	-35.32
1187.69	V	24.71	9.85	34.56	Average	74	-39.44
1187.69	H	24.71	-4.43	20.28	Peak	54	-33.72
1187.69	H	24.71	11.51	36.22	Average	74	-37.78
1590.53	H	25.44	-4.21	21.23	Peak	54	-32.77
1590.53	H	25.44	10.8	36.24	Average	74	-37.76
1593.38	V	25.44	-5.31	20.13	Peak	54	-33.87
1593.38	V	25.44	8.51	33.95	Average	74	-40.05
1721	V	26.01	-4.51	21.5	Peak	54	-32.5
1721	V	26.01	8.36	34.37	Average	74	-39.63
2000.53	H	27.1	-4.55	22.55	Peak	54	-31.45
2000.53	H	27.1	9.41	36.51	Average	74	-37.49
2267.85	V	27.49	-5.61	21.88	Peak	54	-32.12
2267.85	V	27.49	7.48	34.97	Average	74	-39.03
2321.3	H	27.56	-4.34	23.22	Peak	54	-30.78
2321.3	H	27.56	7.6	35.16	Average	74	-38.84
2988.48	H	29.26	-4.66	24.6	Peak	54	-29.4
2988.48	H	29.26	9.39	38.65	Average	74	-35.35
4002.11	H	32.7	-5.35	27.35	Peak	54	-26.65
4002.11	H	32.7	8.42	41.12	Average	74	-32.88
4009.29	V	32.7	-5.44	27.26	Peak	54	-26.74
4009.29	V	32.7	8.45	41.15	Average	74	-32.85
4988.86	V	38.08	-7.36	30.72	Peak	54	-23.28
4988.86	V	38.08	7.41	45.49	Average	74	-28.51
<b>Note:</b> 1) Transducer = Antenna Factor + Cable Loss - Pre-amp. 2) Final Test Level = Receiver Reading + Transducer .							

**Test results on POE mode:**

Frequency (GHz)	Antenna Polarization	Trans. (dB/m)	Receiver Reading (dBμV)	Emission Level (dBμV/m)	Detector	Limit (dBμV/m)	Over Limit (dB)
1057.12	H	24.57	-5.66	18.91	Peak	54	-35.09
1057.12	H	24.57	11.16	35.73	Average	74	-38.27
1113.5	V	24.63	-4.26	20.37	Peak	54	-33.63
1113.5	V	24.63	10.57	35.2	Average	74	-38.8
1262.29	H	24.79	-4.35	20.44	Peak	54	-33.56
1262.29	H	24.79	12.55	37.34	Average	74	-36.66
1336.78	V	24.86	-3.33	21.53	Peak	54	-32.47
1336.78	V	24.86	8.73	33.59	Average	74	-40.41
1590.53	H	25.44	-4.05	21.39	Peak	54	-32.61
1590.53	H	25.44	10.8	36.24	Average	74	-37.76
1721	V	26.01	-3.52	22.49	Peak	54	-31.51
1721	V	26.01	8.36	34.37	Average	74	-39.63
2000.53	H	27.1	-4.61	22.49	Peak	54	-31.51
2000.53	H	27.1	9.41	36.51	Average	74	-37.49
2988.48	V	29.26	-5.69	23.57	Peak	54	-30.43
2988.48	V	29.26	8.99	38.25	Average	74	-35.75
4002.11	H	32.7	-5.49	27.21	Peak	54	-26.79
4002.11	H	32.7	8.42	41.12	Average	74	-32.88
4009.29	V	32.7	-5.68	27.02	Peak	54	-26.98
4009.29	V	32.7	8.45	41.15	Average	74	-32.85
4988.86	V	38.08	-7.86	30.22	Peak	54	-23.78
4988.86	V	38.08	7.41	45.49	Average	74	-28.51
5143.16	H	37.06	-7.23	29.83	Peak	54	-24.17
5143.16	H	37.06	7.76	44.82	Average	74	-29.18

**Note:**

- 1) Transducer = Antenna Factor + Cable Loss - Pre-amp.
- 2) Final Test Level = Receiver Reading + Transducer .

## 7 Photographs

### 7.1 Conducted Emission Test Setup

**DH-IPC-PFW8601P-A180:**



**DH-IPC-PFW8800P-A180:**





## 7.2 Radiatd Emission Test Setup

**DH-IPC-PFW8601P-A180:**

Below 1G



Above 1G



**DH-IPC-PFW8800P-A180:**

Below 1G



Above 1G

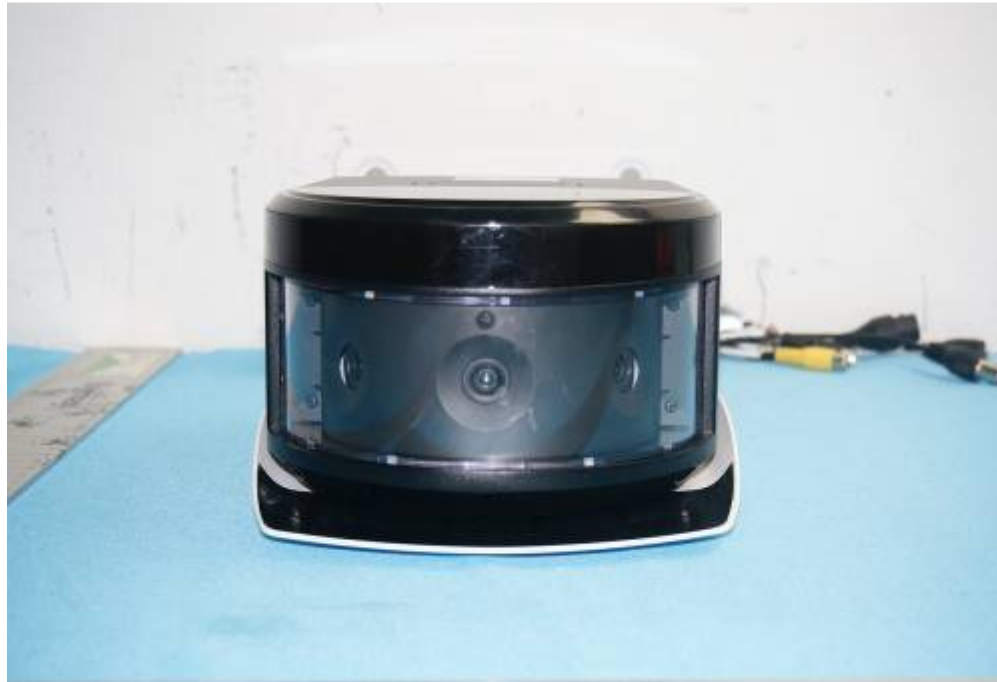


### 7.3 EUT Constructional Details

DH-IPC-PFW8601P-A180









**DH-IPC-PFW8800P-A180**



