Test Report

(Declaration of Conformity)

for

Electromagnetic Compatibility

of

Product: **Network Camera**

Trade Name: VIVOTEK BUILT WITH RELIABILITY

Model Number: MD7530D; MD7560D

Prepared for

VIVOTEK INC.

6F, No. 192, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.

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Remark:

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The test results in the report only to the tested sample.

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Statement of Compliance

Applicant:	VIVOTEK INC.
Manufacturer:	VIVOTEK INC.
Product:	Network Camera
Model No.:	MD7530D; MD7560D
Tested Power Supply:	230Vac; 50Hz
Date of Final Test:	Sep. 15, 2010

Measurement Procedures and Standards Used：

Emission:

- ☒ EN 55022: 2006+A1: 2007
- ☒ EN 61000-3-2: 2006
- ☒ EN 61000-3-3: 2008

Immunity:

- ☒ EN 55024: 1998+A1: 2001+A2: 2003
  - ☒ IEC 61000-4-2: 2008
  - ☒ IEC 61000-4-3: 2006+A1: 2007
  - ☒ IEC 61000-4-4: 2004
  - ☒ IEC 61000-4-5: 2005
  - ☒ IEC 61000-4-6: 2008
  - ☒ IEC 61000-4-8: 1993+A1: 2000
  - ☒ IEC 61000-4-11: 2004

The measurement results in this test report were performed at Interocean EMC Technology Corp. the responsibility of measurement result is only subject to the tested sample.
This report shows the EUT is technically compliance with the above official standards.
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Report Issued: 2010/09/28

Project Engineer: John Wu (John Wu) Approved: (Benson Tsai)

1 General Information

1.1 Description of Equipment Under Test

Product	:	Network Camera
Model Number	:	MD7530D; MD7560D
Applicant	:	**VIVOTEK INC.** 6F, No. 192, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.
Manufacturer	:	**VIVOTEK INC.** 5F, No. 168, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.
Date of Receipt of Sample	:	Aug. 16, 2010
Date of Test	:	Aug. 16 ~ Sep. 15, 2010
Product Information	:	**Interface Port:** General I/O Terminal Block*1 Ethernet 10/100 RJ45 Plug*1 Power port*2 **Data Cable:** Connect Cable: Non-shielded, Un-detachable 0.5 m, w/o core
Additional Description	:	1.) The test models are **"MD7530D; MD7560D"** and included in this report. 2.) All the difference and detail specification of models as in following page. 3.) For more detail specification about EUT, please refer to the user's manual.

1.2 Specifications

Model No.: MD7560D

System	· CPU: Mozart 120 SoC · Flash: 16MB · RAM: 128MB + 128MB · Embedded OS: Linux 2.6
Lens	· Board lens, f = 2.8 mm, F2.0, Fixed
Angle of View	· 98° (horizontal) · 73° (vertical) · 122° (diagonal)
Shutter Time	· 1/5 sec. to 1/40,000 sec.
Image Sensor	· 1/3.2" CMOS sensor in 1600x1200 resolution
Minimum Illumination	· 0.6 Lux / F2.0
Video	· Compression: MJPEG & MPEG-4 · Streaming: Multiple simultaneous streams MPEG-4 streaming over UDP, TCP, HTTP or HTTPS MPEG-4 multicast streaming MJPEG streaming over HTTP or HTTPS · Supports activity adaptive streaming for dynamic frame rate control · Supports video cropping for bandwidth saving · Supports ePTZ for data efficiency · Supports 3GPP mobile surveillance · Frame rates: MPEG-4: Up to 30 fps at 800x600 Up to 20 fps at 1280x720 Up to 10 fps at 1600x1200 MJPEG: Up to 30 fps at 1280x720 UP to 15 fps at 1600x1200
Image Settings	· Adjustable image size, quality and bit rate · Time stamp and text caption overlay · Flip & mirror · Configurable brightness, contrast, saturation, sharpness, white balance and exposure · AGC, AWB, AES · BLC (Backlight Compensation) · Supports privacy masks
Audio	· Compression: GSM-AMR speech encoding, bit rate: 4.75 kbps to 12.2 kbps MPEG-4 AAC audio encoding, bit rate: 16 kbps to 128 kbps · Interface:External microphone input · Supports audio input via SIP protocol · Supports audio mute
Networking	· 10/100 Mbps Ethernet · Protocols: IPv4, IPv6, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, IGMP, SMTP, FTP,DHCP, NTP, DNS, DDNS, PPPoE, CoS, QoS, SNMP and 802.1X
Alarm and Event Management	· Triple-window video motion detection · Tamper detection · Temperature alarm trigger · One D/I for external sensor · Event notification using HTTP, SMTP or FTP · Local recording of MP4 file
On-Board Storage	· MicroSD/SDHC card slot · Stores snapshots and video clips
Security	· Muilti-level user access with password protection · IP address filtering · HTTPS encrypted data transmission · 802.1X port-based authentication for network protection
Users	· Live viewing for up to 10 clients
Dimension	· 130 mm (D) x 107 mm (W) x 47 mm (H)
Weight	· Net: 450 g
LED Indicator	· System restore status indicator
Power	· Power consumption: Max. 4.3 W Max. 7.5 W (with heater) · 802.3af compliant Power-over-Ethernet (MD7560) · DC 12~36V Input (MD7560D)
Housing	· Vandal-proof metal housing · Weather-proof IP67-rated housing
Approvals	· CE, LVD, FCC, VCCI, C-Tick · EN50155
Operating Environments	· Temperature: -25 ~ 50 ° C (-13 ~ 122 ° F) · Humidity: 90% RH
Viewing System Requirements	· OS: Microsoft Windows 7/Vista/XP/2000 · Browser: Mozilla Firefox, Internet Explorer 6.x or above · Cell phone: 3GPP player · Real Player: 10.5 or above · Quick Time: 6.5 or above
Installation, Management, and Maintenance	· Camera angle adjustment: Tilt 90° (0° ~ 90°) · Rugged M12 connector · Installation Wizard 2 · 32-CH ST7501 recording software · Supports firmware upgrade
Applications	· SDK available for application development and system integration
Warranty	· 24 months

Model No.: MD7530D

Models	· MD7530 (PoE) · MD7530D (DC power)
System	· CPU: Mozart 120 SoC · Flash: 16MB · RAM: 128MB + 128MB · Embedded OS: Linux 2.6
Lens	· Board lens, f = 2.8 mm, F2.0, Fixed
Angle of View	· 74° (horizontal) · 55° (vertical) · 92° (diagonal)
Shutter Time	· 1/5 sec. to 1/15,000 sec.
Image Sensor	· 1/4" CMOS sensor in VGA resolution
Minimum Illumination	· 0.5 Lux / F2.0
Video	· Compression: MJPEG & MPEG-4 · Streaming: Simultaneous dual streams MPEG-4 streaming over UDP, TCP, HTTP or HTTPS MPEG-4 multicast streaming MJPEG streaming over HTTP or HTTPS · Supports activity adaptive streaming for dynamic frame rate control · Supports 3GPP mobile surveillance · Frame rates: MPEG-4: Up to 30/25 fps at 640x480 MJPEG: Up to 30/25 fps at 640x480
Image Settings	· Adjustable image size, quality and bit rate · Time stamp and text caption overlay · Flip & mirror · Configurable brightness, contrast, saturation, sharpness, white balance and exposure · AGC, AWB, AES · BLC (Backlight Compensation) · Supports privacy masks
Audio	· Compression: GSM-AMR speech encoding, bit rate: 4.75 kbps to 12.2 kbps MPEG-4 AAC audio encoding, bit rate: 16 kbps to 128 kbps · Interface: External microphone input · Supports audio input via SIP protocol · Supports audio mute
Networking	· 10/100 Mbps Ethernet · Protocols: IPv4, IPv6, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, IGMP, SMTP, FTP,DHCP, NTP, DNS, DDNS, PPPoE, CoS, QoS, SNMP and 802.1X
Alarm and Event Management	· Triple-window video motion detection · Tamper detection · Temperature alarm trigger · One D/I for external sensor · Event notification using HTTP, SMTP or FTP · Local recording of MP4 file
On-Board Storage	· MicroSD/SDHC card slot · Stores snapshots and video clips
Security	· Muilti-level user access with password protection · IP address filtering · HTTPS encrypted data transmission · 802.1X port-based authentication for network protection
Users	· Live viewing for up to 10 clients
Dimension	· 130 mm (D) x 107 mm (W) x 47 mm (H)
Weight	· Net: 450 g
LED Indicator	· System restore status indicator
Power	· Power consumption: Max. 4 W Max. 7.2 W (with heater) · 802.3af compliant Power-over-Ethernet (MD7530) · DC 12~36V Input (MD7530D)
Housing	· Vandal-proof metal housing · Weather-proof IP67-rated housing
Approvals	· CE, LVD, FCC, VCCI, C-Tick · EN50155
Operating Environments	· Temperature: -25 ~ 50 ° C (-13 ~ 122 ° F) · Humidity: 90% RH
Viewing System Requirements	· OS: Microsoft Windows 7/Vista/XP/2000 · Browser: Mozilla Firefox, Internet Explorer 6.x or above · Cell phone: 3GPP player · Real Player: 10.5 or above · Quick Time: 6.5 or above
Installation, Management, and Maintenance	· Camera angle adjustment: Tilt 90° (0° ~ 90°) · Installation Wizard 2 · 32-CH ST7501 recording software · Supports firmware upgrade
Applications	· SDK available for application development and system integration
Warranty	· 24 months

1.3 Details of Tested Supporting System

1.3.1 Adapter

Model Number	:	MU12-G120100-A1
Manufacture	:	LEI
EMC Compliance	:	FCC, UL, BSMI: R33175
Description	:	Input: 100-240V~, 50/60Hz, 1.0A Output: 12Vdc, 1.0A, 70W max Power Cable: Non-shielded, Un-detachable 1.8 m, w/o core

1.3.2 Microphone

EAR10

Model Number	:	MIC-04
Serial Number	:	N/A
Manufacturer	:	Shyaro Chi Enterprise Co., Ltd.
Data Cable	:	Non-shielded, detachable, 1.8m

1.3.3 Link PC

PC28

CPU Speed	:	Intel E5400
RAM	:	Sumsung M378B2873FHS-CF8 DDR3 1066 2G
EMC Compliance	:	CE, FCC, C-Tick, BSMI, VCCI, UL
Main Board	:	Dell 643T-MD1
Hard Disk Driver	:	Seagate ST3320418AS 320G
USB 3.0 Card (PCI)	:	e-SENSE, P300
Switching Power Supply	:	HIPRO HP-P3017F3P, 300W
Power Cord	:	Non-shielded, Detachable, 1.8m, w/o core
RJ45 Cable	:	Non-shielded, Detachable 1.8 m, without core

1.4 Test Facility

Site Description : ☒Conduction 2 ☒OATS 2 ☒EMS Site

Name of Firm : Interocean EMC Technology Corp.

Company web : http://www.ietc.com.tw

Site 1, 2 Location : No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.

Site 3, 4 Location : No. 12, Ruei-Shu Valley, Ruei-Ping Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.

Site Filing :

- Federal Communication Commissions – USA
  Registration No.: 96399 (OATS 1 & 2)
  Registration No.: 518958 (OATS 3 & 4)
  Designation No.: TW1020
- Voluntary Control Council for Interference by Information Technology Equipment (VCCI) – Japan
  Member No.: 1349
  Registration No. (Conducted Room): C-1094
  Registration No. (Conducted Room): T-1562
  Registration No. (OATS 1): R-1040
  Registration No. (OATS 2): R-1041
- Industry Canada (IC)
  OUR FILE: 46405-4437 Submission: 130946
  Registration No. (OATS 1): 4437A-1
  Registration No. (OATS 2): 4437A-2
  Registration No. (OATS 3): 4437A-3
  Registration No. (OATS 4): 4437A-4

Site Accreditation :

- Bureau of Standards and Metrology and Inspection (BSMI) – Taiwan, R.O.C.
  Accreditation No.:
  SL2-IN-E-0026 for CNS13438 / CISPR22
  SL2-R1-E-0026 for CNS13439 / CISPR13
  SL2-R2-E-0026 for CNS13439 / CISPR13
  SL2-A1-E-0026 for CNS13783-1 / CISPR14-1
  SL2-L1-E-0026 for CNS 14115 / CISPR 15
- Taiwan Accreditation Foundation (TAF)
  Accrditation No.: 1113
- TüV NORD
  Certificate No: TNTW0801R-02

1.5 Summary of Test Results

1.5.1 Test program according EN 55022

Emission test equipment intended	
☐	Class A
☒	Class B

Report Clause	Phenomenon	Application	Reference Clause(s)	Reference standard	Result
2	Power Line Conducted Emission	Main power port	5.1	--	PASS
3	Telecommunication Ports Conducted Emission	Telecommunication	5.2	--	PASS
4	Radiated Emission (Below 1GHz)	Enclosure port	6.1	--	PASS
5	Radiated Emission (Above 1GHz)	Enclosure port	6.2	--	PASS

1.5.2 Test program according EN 61000-3-2

Report Clause	Phenomenon	Application	Reference Clause	Reference standard	Result
6	Harmonic current emissions	AC power port	5	--	PASS

1.5.3 Test program according EN 61000-3-3

Report Clause	Phenomenon	Application	Reference Clause	Reference standard	Result
7	Voltage changes, voltage fluctuations and flicker	AC power port	5	--	PASS

1.5.4 Test program according EN 55024

Report Clause	Phenomenon	Application	Reference Clause(s)	Reference standard	Result
9	Electrostatic discharges (ESD)	Enclosure port	4.2.1	IEC 61000-4-2	PASS
10	Radio-frequency electromagnetic field	Enclosure port	4.2.3.1	IEC 61000-4-3	PASS
11	Fast transients	AC power port Signal port	4.2.2	IEC 61000-4-4	PASS
12	Surge	AC power port	4.2.5	IEC 61000-4-5	PASS
13	Radio-frequency continuous conducted	AC power port Signal port	4.2.3.2	IEC 61000-4-6	PASS
	Power-frequency magnetic field	Enclosure port	4.2.4	IEC 61000-4-8	Not applicable
14	Voltage dips and interruptions	AC power port	4.2.6	IEC 61000-4-11	PASS

1.6 Measurement Uncertainty

No.	Item	Value
1	Power Line Conducted Emission (Conduction 1)	2.4 dB
2	Power Line Conducted Emission (Conduction 2)	2.4 dB
3	Disturbance Power Emission (Conduction 2)	3.1 dB
4	Click disturbances Emission (Conduction 2)	2.4 dB
5	Radiated Electromagnetic disturbance (Loop Antenna)	4.8 dB
6	Radiated Emission Test (OATS 1)	4.2 dB
7	Radiated Emission Test (OATS 2)	4.2 dB
8	Radiated Emission Test (OATS 3)	4.2 dB
9	Radiated Emission Test (OATS 4)	4.2 dB
10	Radiated Emission Test (1GHz~18GHz)	3.2 dB
11	Radiated Emission Test (18GHz~40GHz)	3.4 dB
12	Conducted Immunity Test (CDN-M2)	1.3 dB
13	Conducted Immunity Test (CDN-M3)	1.3 dB
14	Conducted Immunity Test (EM Clamp)	3.2 dB

1.7 Measured Mode

1.7.1 The test modes for preliminary test are as following:

- Mode 1: Working Mode (Model No.: MD7530D)
- Mode 2: Working Mode (Model No.: MD7560D)

1.7.2 After preliminary test, EUT was selected the worse case for the final testing.

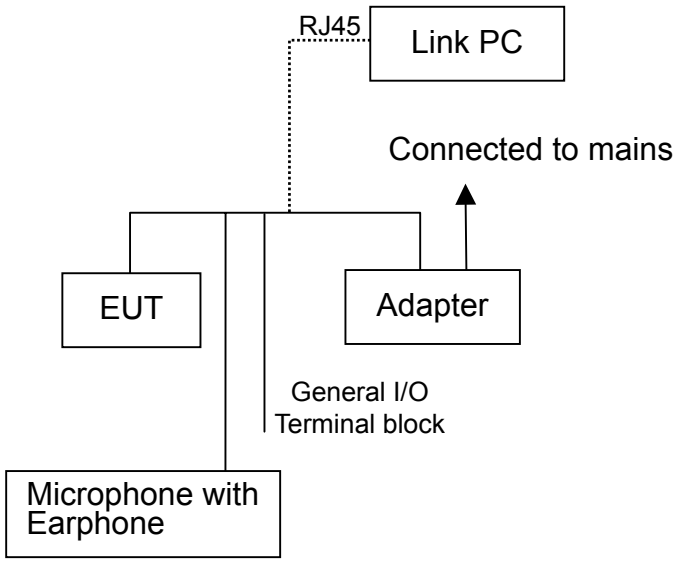
The test modes are:

- For Conduction: Mode 1~2
- For Radiation: Mode 1~2
- For Harmonic & flicker: Mode 1 & 2
- For Immunity: Mode 2

1.7.3 For Telecommunication Ports Conducted Emission Measurement, the test modes for final test are as following:

- Mode 1: RJ45 (LAN 100Mbps) (Model No.: MD7530D)
- Mode 2: RJ45 (LAN 100Mbps) (Model No.: MD7560D)

1.8 Configuration of EUT Setup



1.9 Test Step of EUT

1.9.1 Setup the EUT and peripheral as above.

1.9.2 Turn on the power of all equipment.

1.9.3 Executed the test.

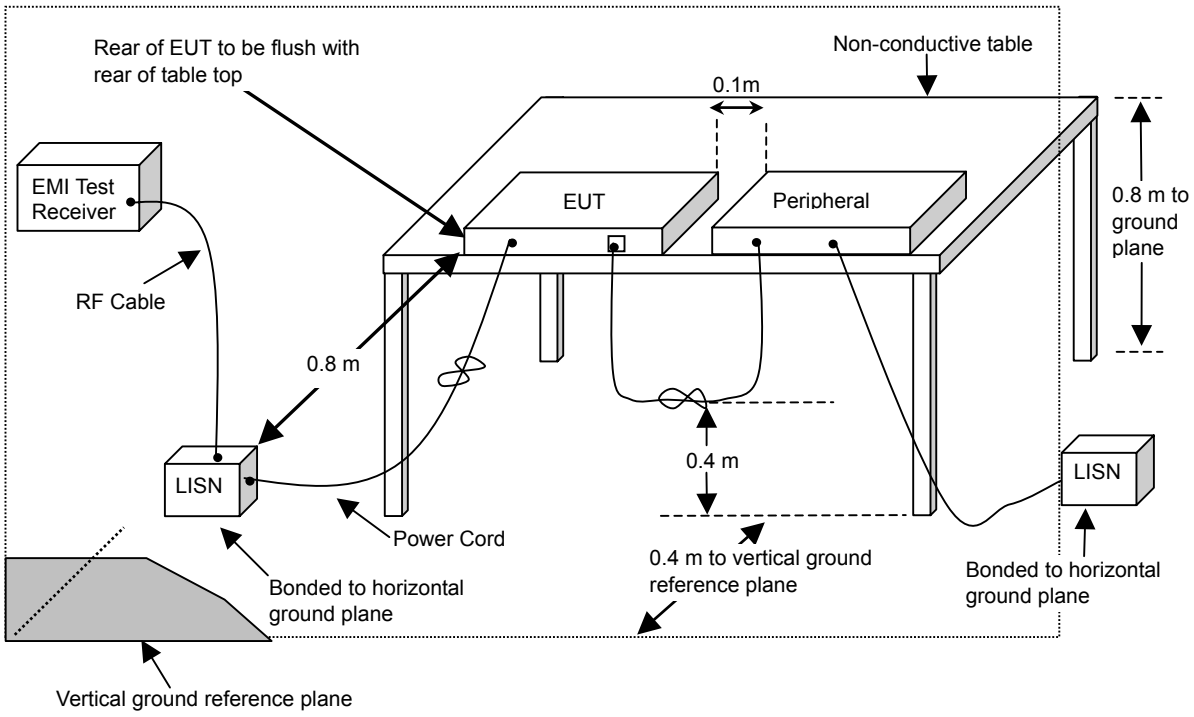
2 Power Line Conducted Emission Measurement

2.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	100134	2011/07/20
RF Cable	HARBOUR	M71/128-RG400	MILC17-1	2011/07/23
L.I.S.N.	Schaffner	MN2050D	1597	2011/06/10
L.I.S.N.	Rohde & Schwarz	ESH3-Z5	829996/016	2011/01/09

Note: The above equipments are within the valid calibration period.

2.2 Block Diagram of Test Configuration



2.3 Conducted Limits

EN 55022 / AS/NZS CISPR 22

Frequency (MHz)	☐ Class A (dB μ V)		☒ Class B (dB μ V)	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	79	66	66 to 56	56 to 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30	73	60	60	50

2.4 Instrument configuration

2.4.1 Set the EMI test receiver frequency range from 150 kHz to 30 MHz.

2.4.2 Set the EMI test receiver bandwidth at 9kHz.

2.4.3 Set the EMI test receiver detector as Quasi-Peak (Q.P.) and Average (AV).

2.5 Configuration of Measurement

2.5.1 The EUT was placed on a non-conductive table whose total height equaled 80cm and vertical conducting plane located 40cm to the rear of the EUT.

2.5.2 The EUT was connected to the main power through Line Impedance Stabilization Networks (LISN). This setup provided a 50ohm / 50μH coupling impedance for the measuring equipment. The auxiliary equipment was also connected to the main power through a LISN that provided a 50ohm/50μH coupling impedance with 50ohm termination. (Refer to the block diagram of the test setup and photographs.)

2.5.3 The conducted disturbance was measured between the phase lead and the reference ground, and between the neutral lead and reference ground. The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

2.5.4 The identification of the frequency of highest disturbance with respect to the limit was found by investigating disturbances at a number of significant frequencies. The probable frequency of maximum disturbance had been found and that the associated cable and EUT configuration and mode of operation had been identified.

2.6 Test Result

PASS.

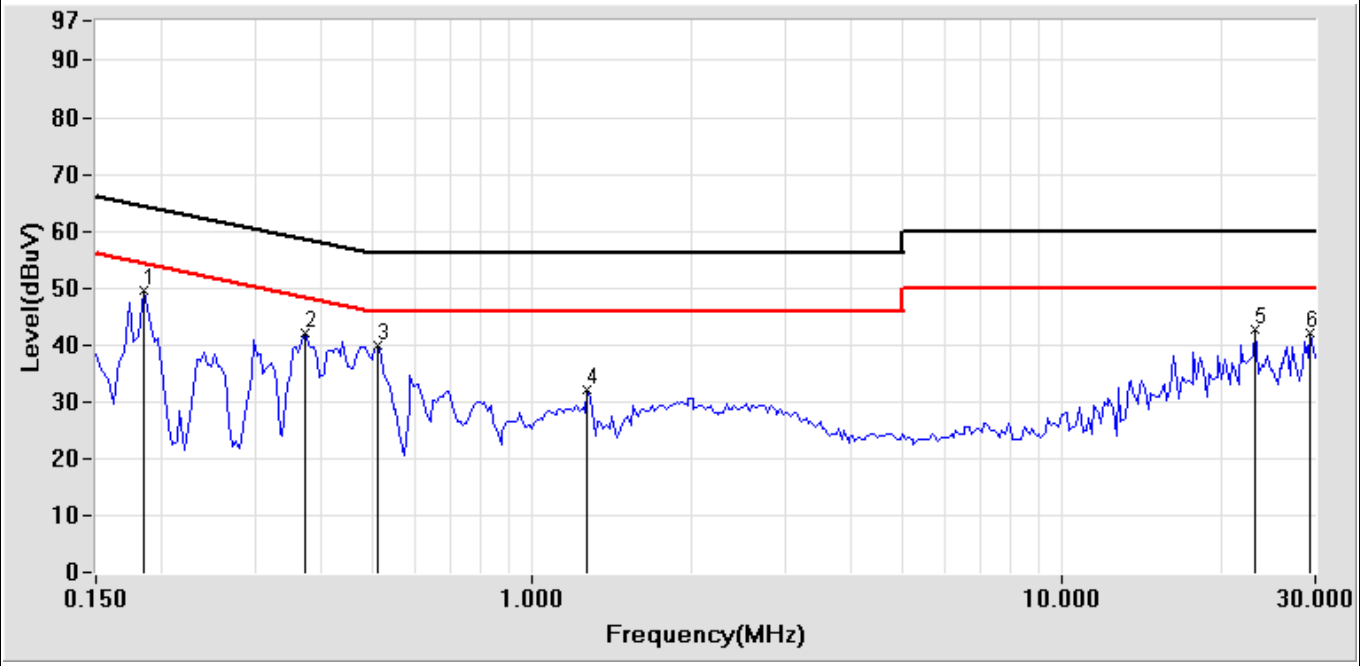
The final test data is shown as following pages.

Power Line Conducted Test Data

EUT: Network Camera	POLARITY: Line
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/43
Temperature: 26.9 ℃	OPERATOR: Willion
Humidity: 52 %	TEST SITE: Conduction 2

Frequency	Factor	Meter Reading (dBµV)		Emission Level (dBµV)		Limits (dBµV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.185	0.12	38.61	24.10	38.73	24.22	64.26	54.26	-25.53	-30.04
0.373	0.11	37.16	24.68	37.27	24.79	58.43	48.43	-21.16	-23.64
0.509	0.11	37.65	23.84	37.76	23.95	56.00	46.00	-18.24	-22.05
1.267	0.14	23.63	17.63	23.77	17.77	56.00	46.00	-32.23	-28.23
23.130	1.11	35.83	22.97	36.94	24.08	60.00	50.00	-23.06	-25.92
29.236	1.19	29.95	24.88	31.14	26.07	60.00	50.00	-28.86	-23.93

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



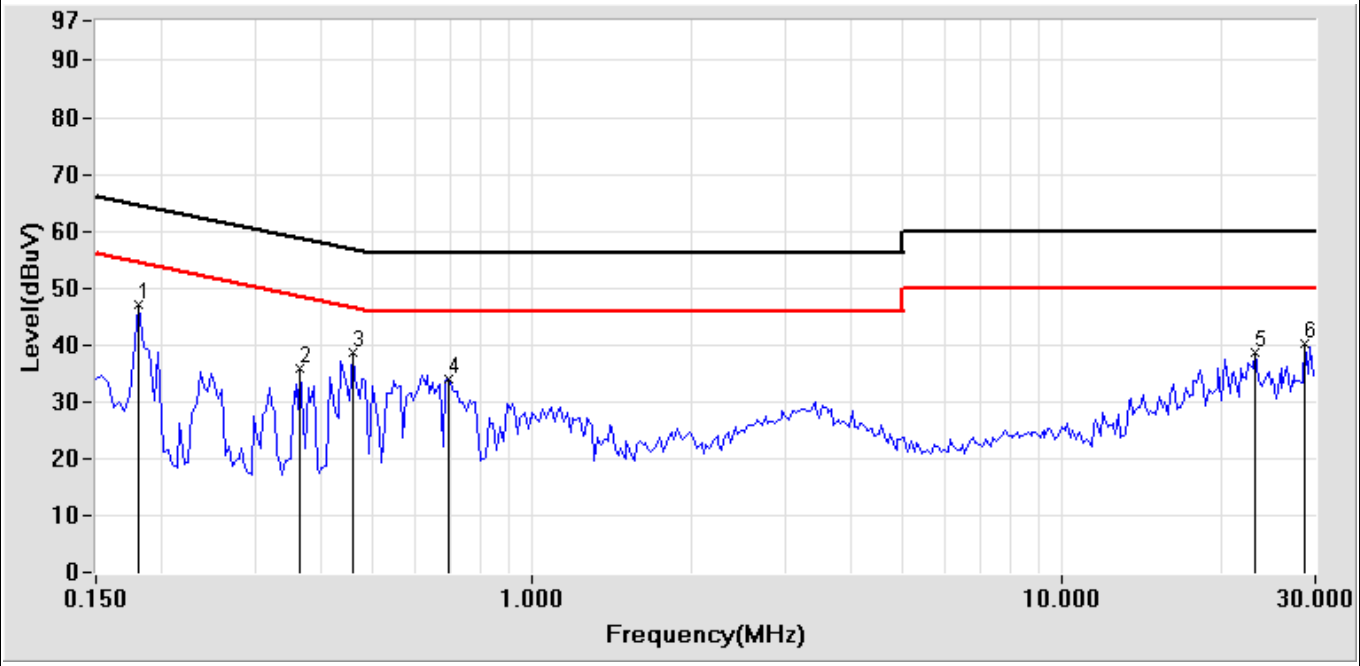
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Power Line Conducted Test Data

EUT: Network Camera	POLARITY: Neutral
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/44
Temperature: 26.9 ℃	OPERATOR: Willion
Humidity: 52 %	TEST SITE: Conduction 2

Frequency	Factor	Meter Reading (dBµV)		Emission Level (dBµV)		Limits (dBµV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.181	0.12	44.19	33.48	44.31	33.60	64.44	54.44	-20.13	-20.84
0.365	0.11	31.53	21.27	31.64	21.38	58.61	48.61	-26.97	-27.23
0.459	0.11	32.85	17.63	32.96	17.74	56.71	46.71	-23.75	-28.97
0.693	0.11	31.21	20.34	31.32	20.45	56.00	46.00	-24.68	-25.55
23.130	0.97	37.61	33.07	38.58	34.04	60.00	50.00	-21.42	-15.96
28.685	1.04	36.29	33.02	37.33	34.06	60.00	50.00	-22.67	-15.94

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



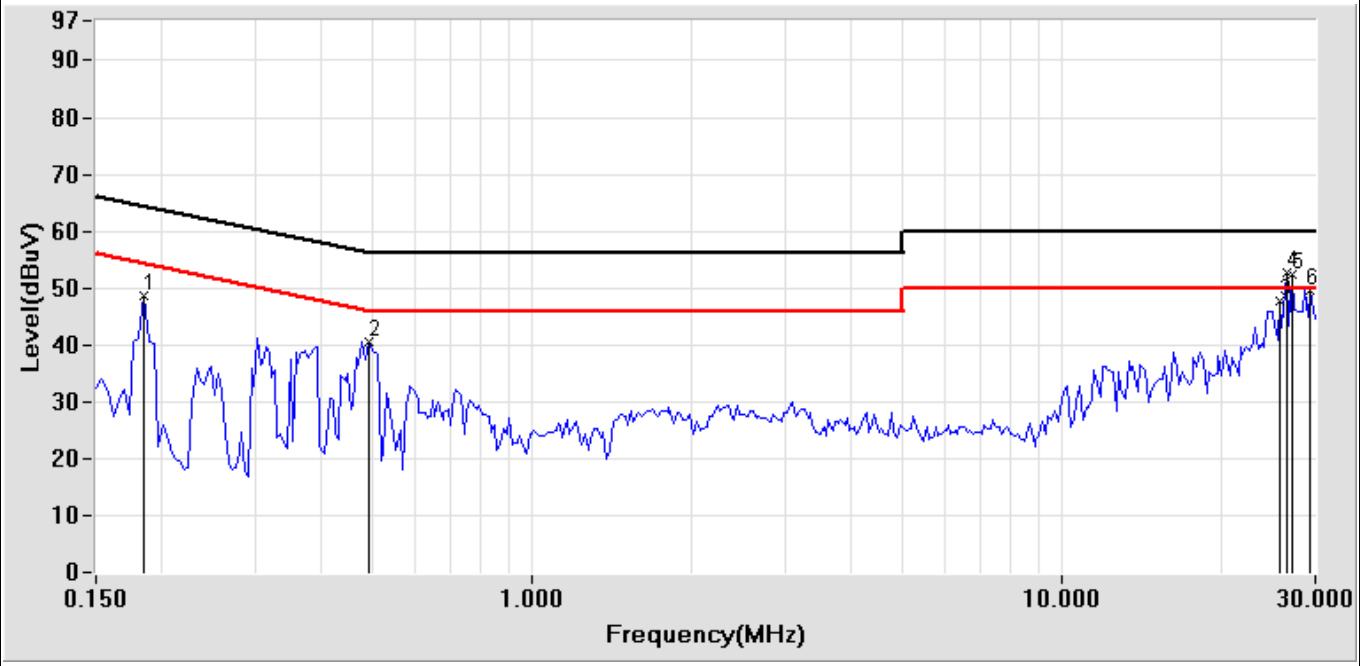
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Power Line Conducted Test Data

EUT: Network Camera	POLARITY: Line
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/47
Temperature: 26.9 ℃	OPERATOR: Willion
Humidity: 52 %	TEST SITE: Conduction 2

Frequency	Factor	Meter Reading (dBµV)		Emission Level (dBµV)		Limits (dBµV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.185	0.12	45.12	35.60	45.24	35.72	64.26	54.26	-19.02	-18.54
0.490	0.11	37.85	27.42	37.96	27.53	56.17	46.17	-18.21	-18.64
25.697	1.18	44.17	39.71	45.35	40.89	60.00	50.00	-14.65	-9.11
26.611	1.18	48.78	44.23	49.96	45.41	60.00	50.00	-10.04	-4.59
27.162	1.18	48.30	44.19	49.48	45.37	60.00	50.00	-10.52	-4.63
29.236	1.19	46.71	44.47	47.90	45.66	60.00	50.00	-12.10	-4.34

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



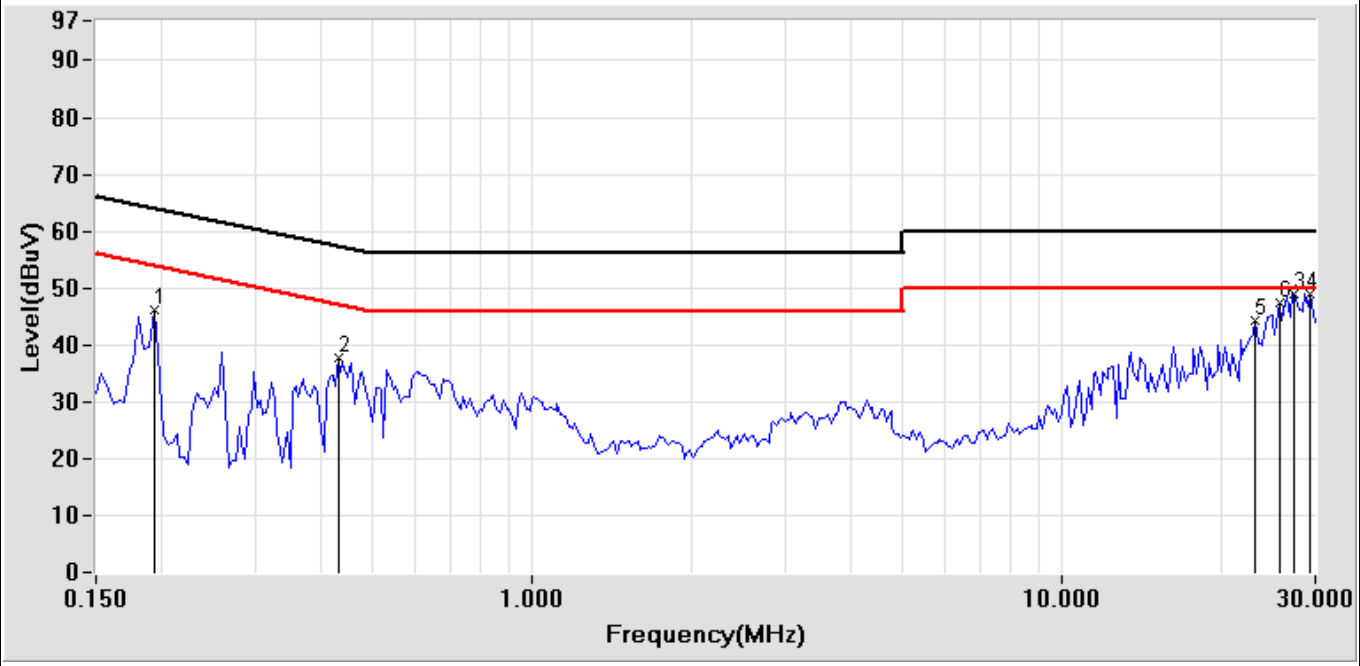
Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

Power Line Conducted Test Data

EUT: Network Camera	POLARITY: Neutral
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/46
Temperature: 26.9 ℃	OPERATOR: Victor
Humidity: 52 %	TEST SITE: Conduction 2

Frequency	Factor	Meter Reading (dBµV)		Emission Level (dBµV)		Limits (dBµV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.193	0.11	42.09	29.32	42.20	29.43	63.91	53.91	-21.71	-24.48
0.431	0.11	34.02	23.84	34.13	23.95	57.23	47.23	-23.10	-23.28
27.345	1.04	45.57	41.75	46.61	42.79	60.00	50.00	-13.39	-7.21
29.236	1.05	46.55	44.31	47.60	45.36	60.00	50.00	-12.40	-4.64
23.127	0.97	43.46	39.01	44.43	39.98	60.00	50.00	-15.57	-10.02
25.693	1.03	44.56	40.00	45.59	41.03	60.00	50.00	-14.41	-8.97

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

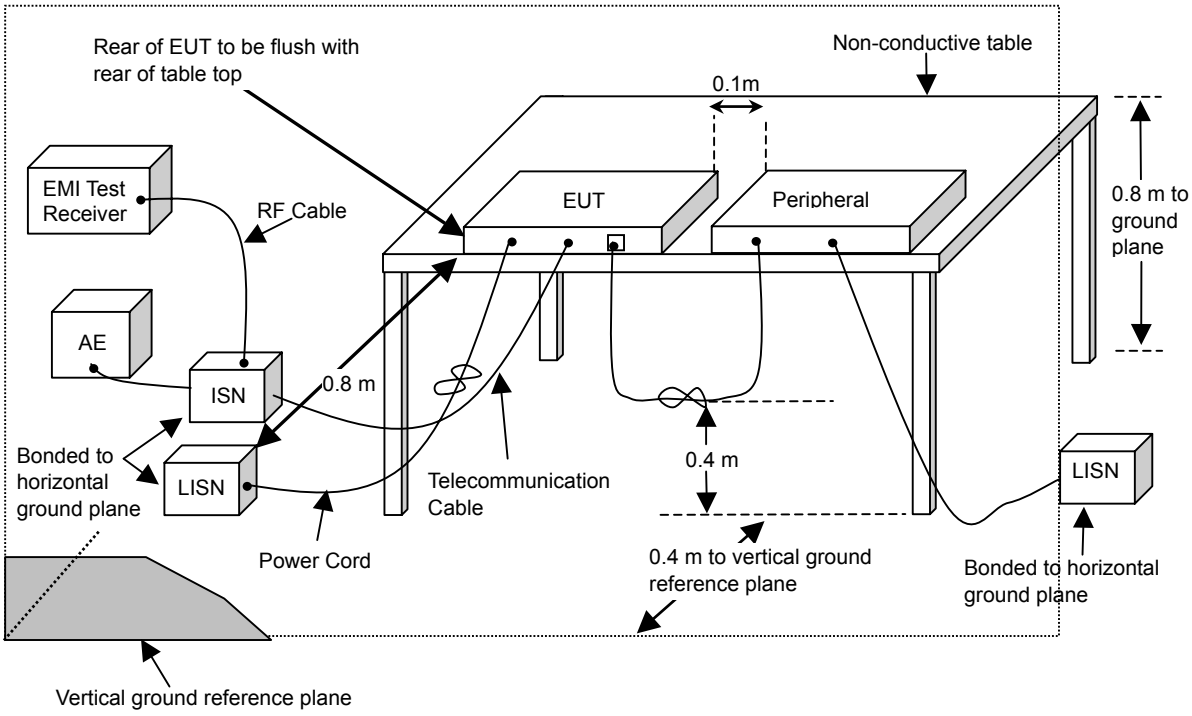
3 Telecommunication Ports Conducted Emission Measurement

3.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	100134	2011/07/20
RF Cable	HARBOUR	M71/128-RG400	MILC17-1	2011/07/23
L.I.S.N.	Schaffner	MN2050D	1597	2011/06/10
L.I.S.N.	Rohde & Schwarz	ESH3-Z5	829996/016	2011/01/09
ISN	FCC	FCC-TLISN-T8-02	20417	2011/06/14

Note: The above equipments are within the valid calibration period.

3.2 Block Diagram of Test Configuration



3.3 Conducted Limit (Telecommunication ports)

☐ Voltage Limits for Class A equipment

☐ Current Limits for Class A equipment

Frequency range (MHz)	Voltage Limits (dB μ V)		Current Limits (dB μ A)	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	97 to 87	84 to 74	53 to 43	40 to 30
0.50 ~ 30	87	74	43	30
NOTE 1 – The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz. NOTE 2 – The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is 20 $\log_{10}$ 150 1 = 44 dB.				

☒ Voltage Limits for Class B equipment

☐ Current Limits for Class B equipment

Frequency range (MHz)	Voltage Limits (dB μ V)		Current Limits (dB μ A)	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	84 to 74	74 to 64	40 to 30	30 to 20
0.50 ~ 30	74	64	30	20
NOTE 1 – The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz. NOTE 2 – The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN), which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is 20 $\log_{10}$ 150 / 1 = 44 dB).				

3.4 Instrument configuration

3.4.1 Set the EMI test receiver frequency range from 150 kHz to 30 MHz.

3.4.2 Set the EMI test receiver bandwidth at 9kHz.

3.4.3 Set the EMI test receiver detector as Quasi-Peak (Q.P.) and Average (A.V.).

3.5 Configuration of Measurement

3.5.1 Measurement is made at telecommunication ports using ISNs with longitudinal conversion losses (LCL) as defined in EN 55022 Section 9.6.2.

3.5.2 The manufacturer shall demonstrate that the equipment does not exceed the Conducted limits of Telecommunication ports when tested with the ISN according to the cable category specified by the equipment documentation provided to the user.

3.5.3 In order to make reliable emission measurements representative of high LAN utilization it is only necessary to create a condition of LAN utilization in excess of 10% and sustain that level for a minimum of 250ms. The content of the test traffic should consist of both periodic and pseudo-random messages in order to emulate realistic types of data transmission (e.g. random: files compressed or encrypted; periodic: uncompressed graphic files, memory dumps, screen updates, disk images).

a) Voltage measurement at balanced telecommunication ports intended for connection to unscreened balanced pairs. (See EN 55022 Section 9.6.3.1.)
b) Current measurements at balanced telecommunication ports intended for connection to unscreened balanced pairs. (See EN 55022 Section 9.6.3.2.)
c) Voltage measurements at telecommunication ports intended for connection to screened cables or to coaxial cables. (See EN 55022 Section 9.6.3.3.)
d) Current measurements at telecommunication ports intended for connection to screened cables or to coaxial cables. (See EN 55022 Section 9.6.3.4.)
e) Measurements at telecommunication ports intended for connection to cables containing more than four balanced pairs or to unbalanced cables. (See EN 55022 Section 9.6.3.5.)

3.5.4 Recording of measurements

Of those disturbances above (*L*-20dB), where *L* is the limit level in logarithmic units, record at least the disturbance levels and the frequencies of the six highest disturbances from each mains port and each telecommunication port, which comprise the EUT. For the mains port, the current-carrying conductor for each disturbance shall be identified.

3.6 Test Result

PASS.

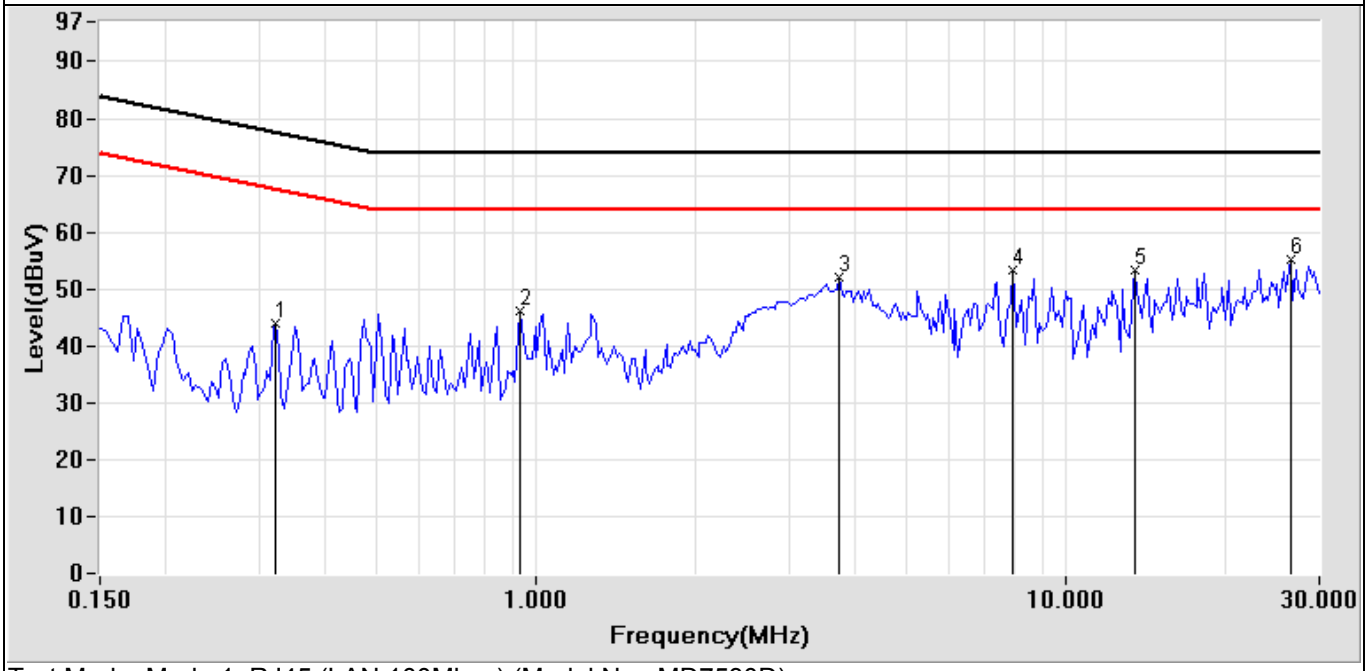
The final test data is shown as following pages.

Telecommunication Ports Conducted Emission Test Data

EUT: Network Camera	POLARITY:
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/45
Temperature: 26.9 ℃	OPERATOR: Willion
Humidity: 52 %	TEST SITE: Conduction2

Frequency	Factor	Meter Reading (dBµV)		Emission Level (dBµV)		Limits (dBµV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.322	9.81	32.46	32.32	42.27	42.13	77.66	67.66	-35.39	-25.53
0.931	9.71	35.06	33.98	44.77	43.69	74.00	64.00	-29.23	-20.31
3.709	9.68	37.27	30.55	46.95	40.23	74.00	64.00	-27.05	-23.77
7.923	9.75	42.43	40.95	52.18	50.70	74.00	64.00	-21.82	-13.30
13.482	9.81	42.08	37.55	51.89	47.36	74.00	64.00	-22.11	-16.64
26.611	9.98	43.19	40.06	53.17	50.04	74.00	64.00	-20.83	-13.96

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



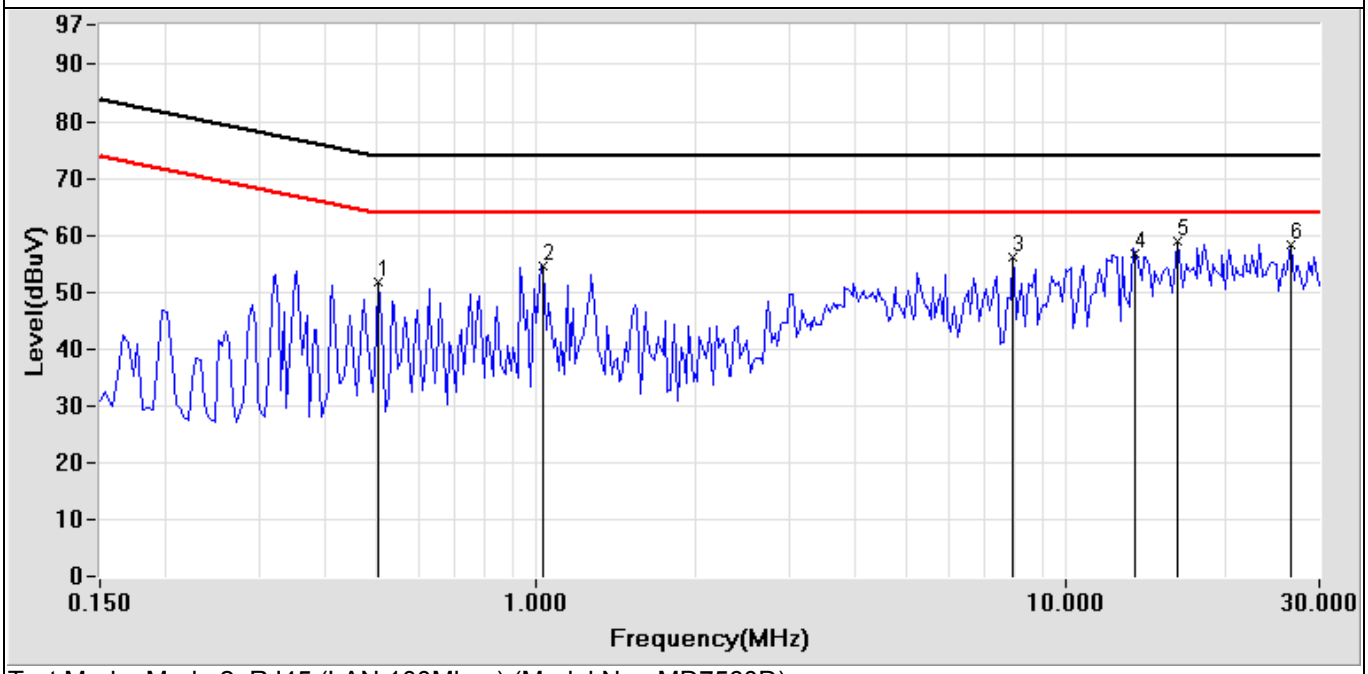
Test Mode: Mode 1: RJ45 (LAN 100Mbps) (Model No.: MD7530D)

Telecommunication Ports Conducted Emission Test Data

EUT: Network Camera	POLARITY:
CLIENT: VIVOTEK INC.	DISTANCE:
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/52
Temperature: 26.9 ℃	OPERATOR: Willion
Humidity: 52 %	TEST SITE: Conduction2

Frequency	Factor	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
(MHz)	(dB)	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.502	9.79	40.54	38.31	50.33	48.10	74.00	64.00	-23.67	-15.90
1.025	9.70	43.32	41.32	53.02	51.02	74.00	64.00	-20.98	-12.98
7.923	9.75	45.54	44.58	55.29	54.33	74.00	64.00	-18.71	-9.67
13.482	9.81	45.74	43.32	55.55	53.13	74.00	64.00	-18.45	-10.87
16.228	9.84	47.92	45.66	57.76	55.50	74.00	64.00	-16.24	-8.50
26.490	9.98	45.79	43.49	55.77	53.47	74.00	64.00	-18.23	-10.53

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



Test Mode: Mode 2: RJ45 (LAN 100Mbps) (Model No.: MD7560D)

4 Radiated Emission Measurement (Below 1GHz)

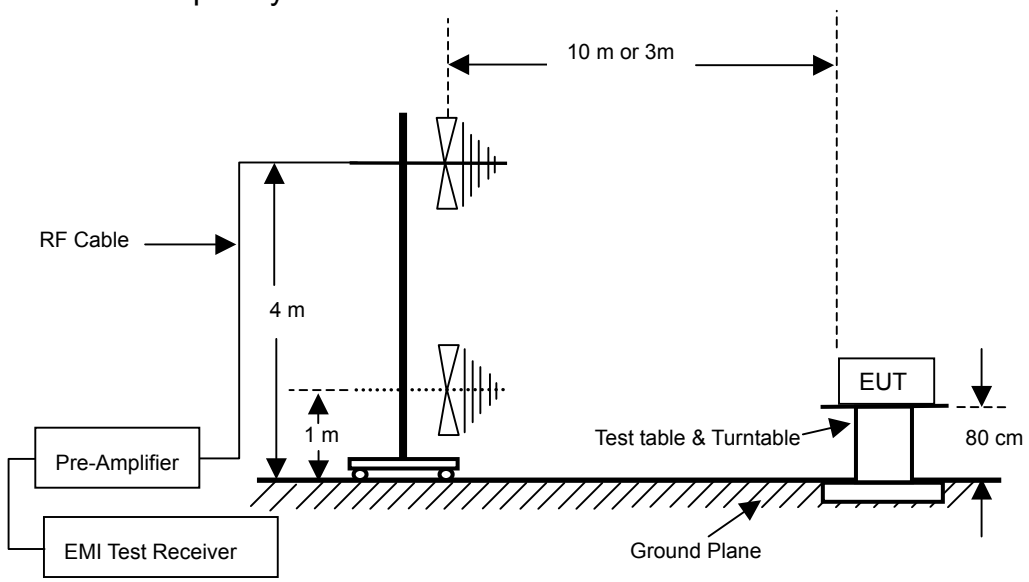
4.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	100134	2011/07/20
Spectrum Analyzer	Advantest	R3162	131201395	2011/04/25
Biconical Antenna	Schwarzbeck	VHA 9103	2484	2010/10/09
Log Antenna	Schwarzbeck	UHALP 9108	A 0765	2010/10/09
Pre-Amplifier	SCHAFFNER	CPA9231A	3349	2011/08/03
RF Cable	IETC	8DFB	CBL14	2011/07/14

Note: The above equipments are within the valid calibration period.

4.2 Block Diagram of Test Configuration

Measurement Frequency under 1GHz



4.3 Radiated Limits

EN 55022 / AS/NZS CISPR 22

Frequency (MHz)	☐ Class A	☒ Class B
	Quasi-Peak dB(μV/m)	Quasi-Peak dB(μV/m)
30 ~ 230	40.0	30.0
230 ~ 1000	47.0	37.0

4.4 Instrument configuration

4.4.1 Set the EMI test receiver frequency range from 30 MHz to 1000 MHz.

4.4.2 Set the EMI test receiver bandwidth at 120 kHz.

4.4.3 Set the EMI test receiver detector as Quasi-Peak (Q.P.).

4.5 Configuration of Measurement

4.5.1 The EUT was placed on a non-conductive table whose total height equaled 80cm. The turntable can rotate 360 degree to determine the position of the maximum emission level.

4.5.2 The EUT was set 10 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

4.5.3 The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

4.5.4 The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

4.6 Test Result

PASS.

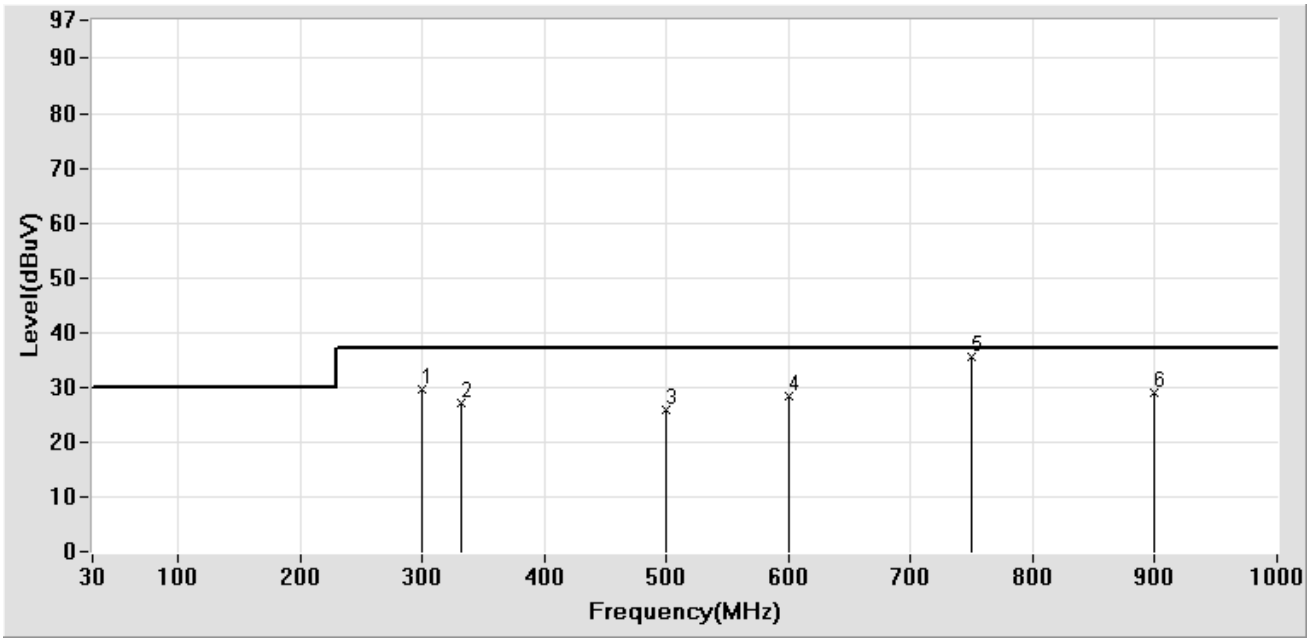
The final test data is shown as following pages.

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Horizontal
CLIENT: VIVOTEK INC.	DISTANCE: 10 m
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/47
Temperature: 28.1 ℃	OPERATOR: John
Humidity: 55 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
300.060 **	-17.13	46.80	29.67	37.00	-7.33
332.000 **	-16.72	43.90	27.18	37.00	-9.82
500.000 **	-13.17	39.20	26.03	37.00	-10.97
600.000 **	-11.07	39.40	28.33	37.00	-8.67
750.000 **	-8.63	44.30	35.67	37.00	-1.33
900.000 **	-6.47	35.60	29.13	37.00	-7.87

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Quasi-Peak values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



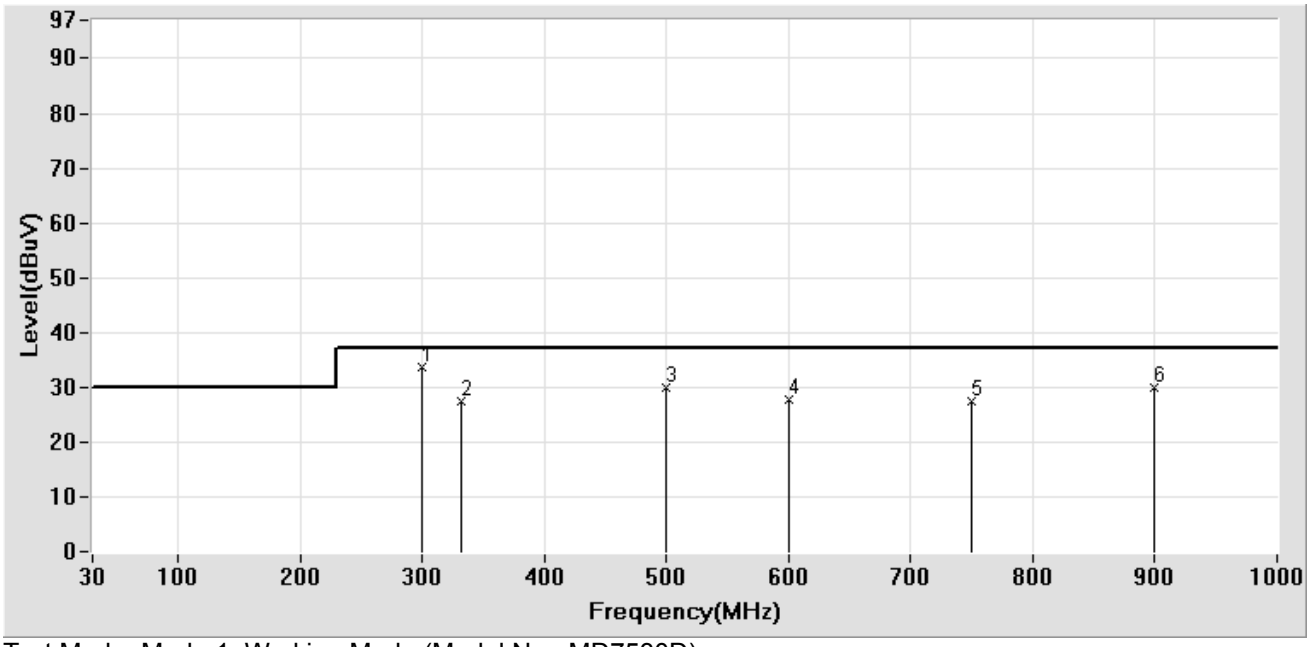
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Vertical
CLIENT: VIVOTEK INC.	DISTANCE: 10 m
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/48
Temperature: 28.1 ℃	OPERATOR: John
Humidity: 55 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
300.006 **	-14.53	48.30	33.77	37.00	-3.23
331.560 **	-16.72	44.20	27.48	37.00	-9.52
500.160 **	-13.17	43.20	30.03	37.00	-6.97
600.000 **	-11.07	38.90	27.83	37.00	-9.17
750.000 **	-8.63	36.20	27.57	37.00	-9.43
900.012 **	-6.47	36.50	30.03	37.00	-6.97

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Quasi-Peak values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



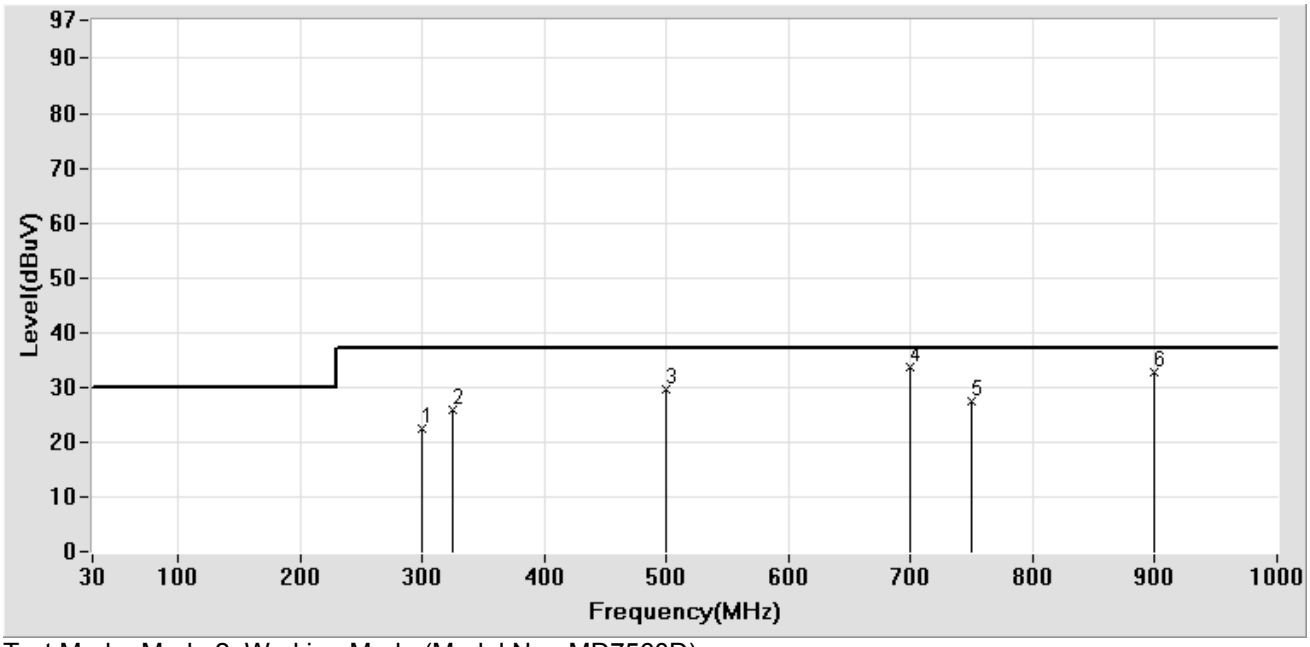
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Horizontal
CLIENT: VIVOTEK INC.	DISTANCE: 10 m
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/46
Temperature: 28.1 ℃	OPERATOR: John
Humidity: 55 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
300.050 **	-16.73	39.21	22.48	37.00	-14.52
325.010 **	-16.54	42.31	25.77	37.00	-11.23
500.000 **	-12.67	42.38	29.71	37.00	-7.29
700.000 **	-8.84	42.51	33.67	37.00	-3.33
750.030 **	-8.53	35.84	27.31	37.00	-9.69
900.020 **	-6.47	39.21	32.74	37.00	-4.26

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Quasi-Peak values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



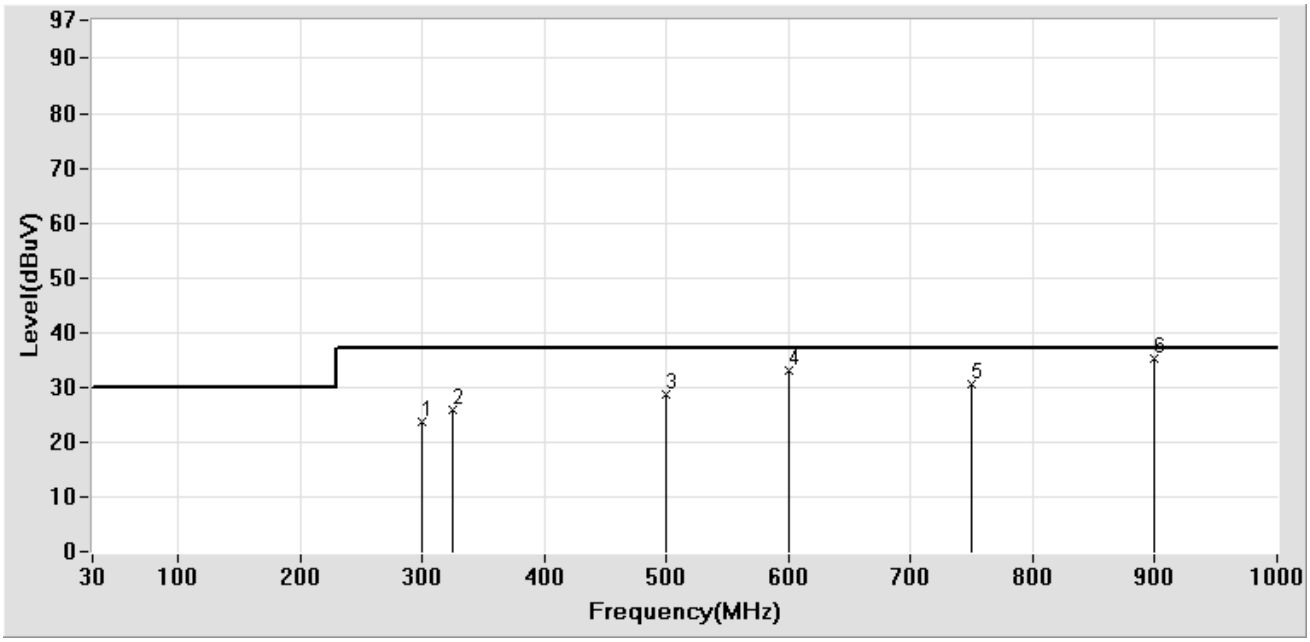
Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Vertical
CLIENT: VIVOTEK INC.	DISTANCE: 10 m
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/46
Temperature: 28.1 ℃	OPERATOR: John
Humidity: 55 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
300.080 **	-16.73	40.30	23.57	37.00	-13.43
325.010 **	-16.54	42.31	25.77	37.00	-11.23
500.010 **	-12.67	41.30	28.63	37.00	-8.37
600.000 **	-10.67	43.70	33.03	37.00	-3.97
750.000 **	-8.53	39.20	30.67	37.00	-6.33
900.000 **	-6.47	41.60	35.13	37.00	-1.87

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Quasi-Peak values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

5 Radiated Emission Measurement (Above 1GHz)

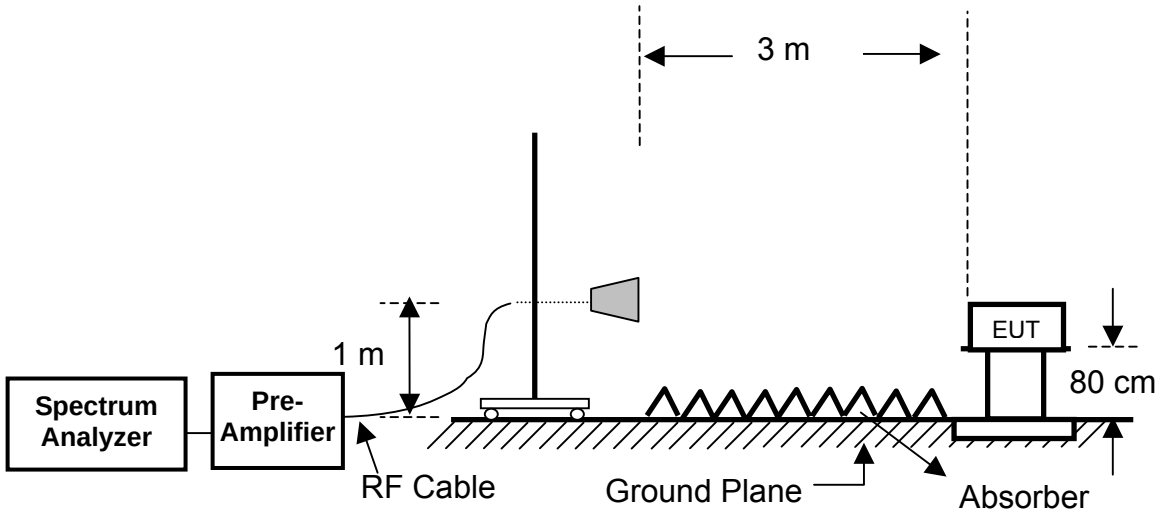
5.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSP30	100002	2010/12/08
Preamplifier	Agilent	8449B	3008A01434	2011/04/20
Cable	HARBOUR	27478LL142	CBL22	2010/10/20
Cable	HARBOUR	27478LL142	CBL23	2010/10/20
Horn Antenna	COM-POWER	AH-118	10081	2012/05/19

Note: The above equipments are within the valid calibration period.

5.2 Block Diagram of Test Configuration

Measurement Frequency above 1GHz



5.3 Radiated Limit

	☐ Class A		☒ Class B	
Frequency (GHz)	Peak dB(μV/m)	Average dB(μV/m)	Peak dB(μV/m)	Average dB(μV/m)
1 to 3	76	56	70	50
3 to 6	80	60	74	54

5.4 Instrument configuration

5.4.1 Set the EMI test Spectrum frequency range above 1GHz.

5.4.2 Set the EMI test Spectrum bandwidths above 1GHz are at 1MHz for peak value and 10Hz for average value.

5.4.3 All readings of the test Spectrum detector above 1GHz are average value.

5.5 Configuration of Measurement

5.5.1 The EUT was set 3 meters for measuring frequency above 1GHz away from the receiving antenna that was mounted on a non-conductive mast.

5.5.2 The antenna set at 1 meter height and EUT was placed on a non-conductive table whose total height equaled 80cm. The turntable can rotate 360 degree to determine the position of the maximum emission level.

5.5.3 The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

5.5.4 The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

5.6 Test Result

PASS.

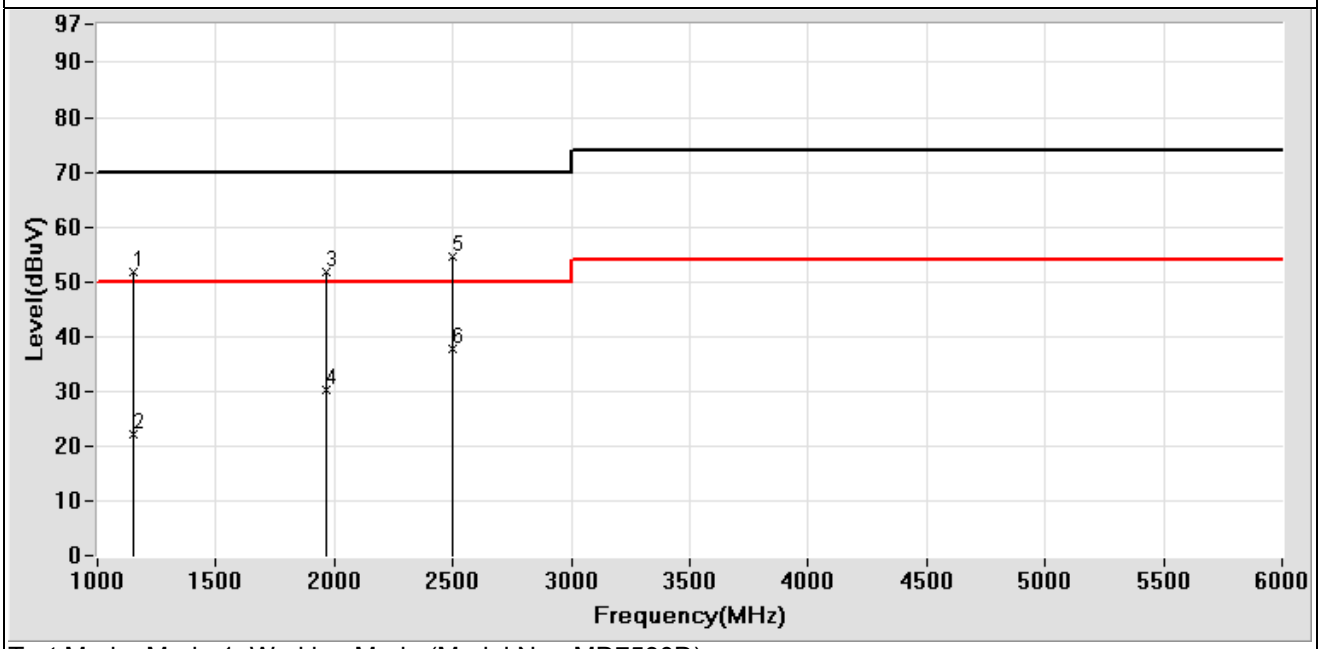
The final test data is shown as following pages.

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Horizontal
CLIENT: VIVOTEK INC.	DISTANCE: 3 m
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/61
Temperature: 28.6 ℃	OPERATOR: John
Humidity: 41 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
1152.260 *	1.39	50.26	51.65	70.00	-18.35
1152.260 **	1.39	20.85	22.24	50.00	-27.76
1966.800 *	3.42	48.26	51.68	70.00	-18.32
1966.800 **	3.42	26.85	30.27	50.00	-19.73
2500.001 *	5.44	49.26	54.70	70.00	-15.30
2500.001 **	5.44	32.26	37.70	50.00	-12.30

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Average values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



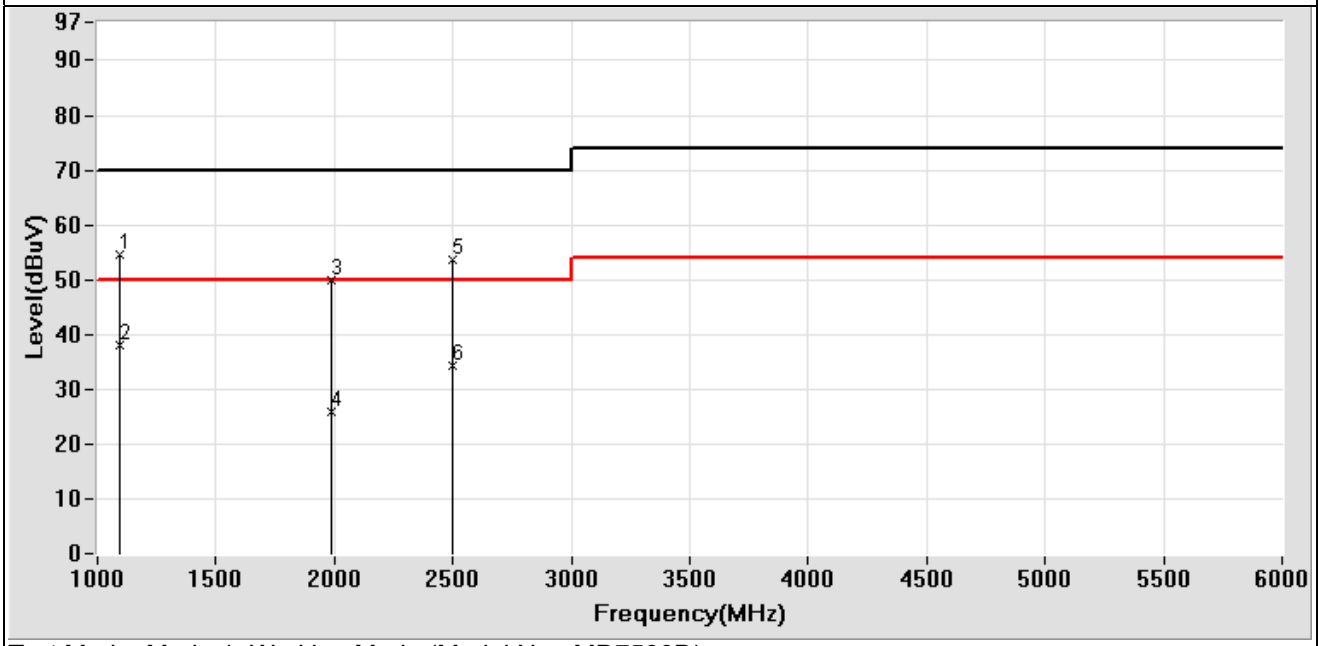
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Vertical
CLIENT: VIVOTEK INC.	DISTANCE: 3 m
MODEL: MD7530D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/62
Temperature: 28.6 ℃	OPERATOR: John
Humidity: 41 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
1092.550 *	1.32	53.25	54.57	70.00	-15.43
1092.550 **	1.32	36.84	38.16	50.00	-11.84
1988.250 *	3.54	46.26	49.80	70.00	-20.20
1988.250 **	3.54	22.23	25.77	50.00	-24.23
2500.000 *	5.44	48.26	53.70	70.00	-16.30
2500.000 **	5.44	28.95	34.39	50.00	-15.61

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Average values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



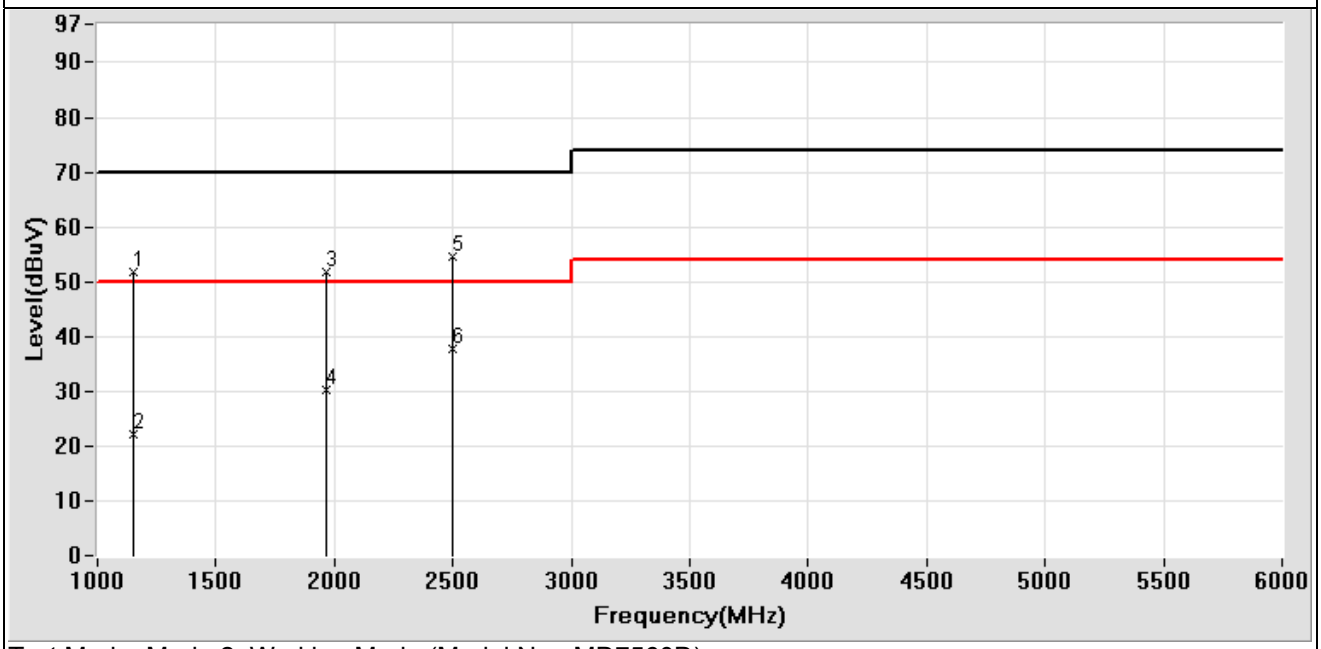
Test Mode: Mode 1: Working Mode (Model No.: MD7530D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Horizontal
CLIENT: VIVOTEK INC.	DISTANCE: 3 m
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/59
Temperature: 28.6 ℃	OPERATOR: John
Humidity: 41 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
1152.260 *	1.39	50.26	51.65	70.00	-18.35
1152.260 **	1.39	20.85	22.24	50.00	-27.76
1966.800 *	3.42	48.26	51.68	70.00	-18.32
1966.800 **	3.42	26.85	30.27	50.00	-19.73
2500.001 *	5.44	49.26	54.70	70.00	-15.30
2500.001 **	5.44	32.26	37.70	50.00	-12.30

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Average values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



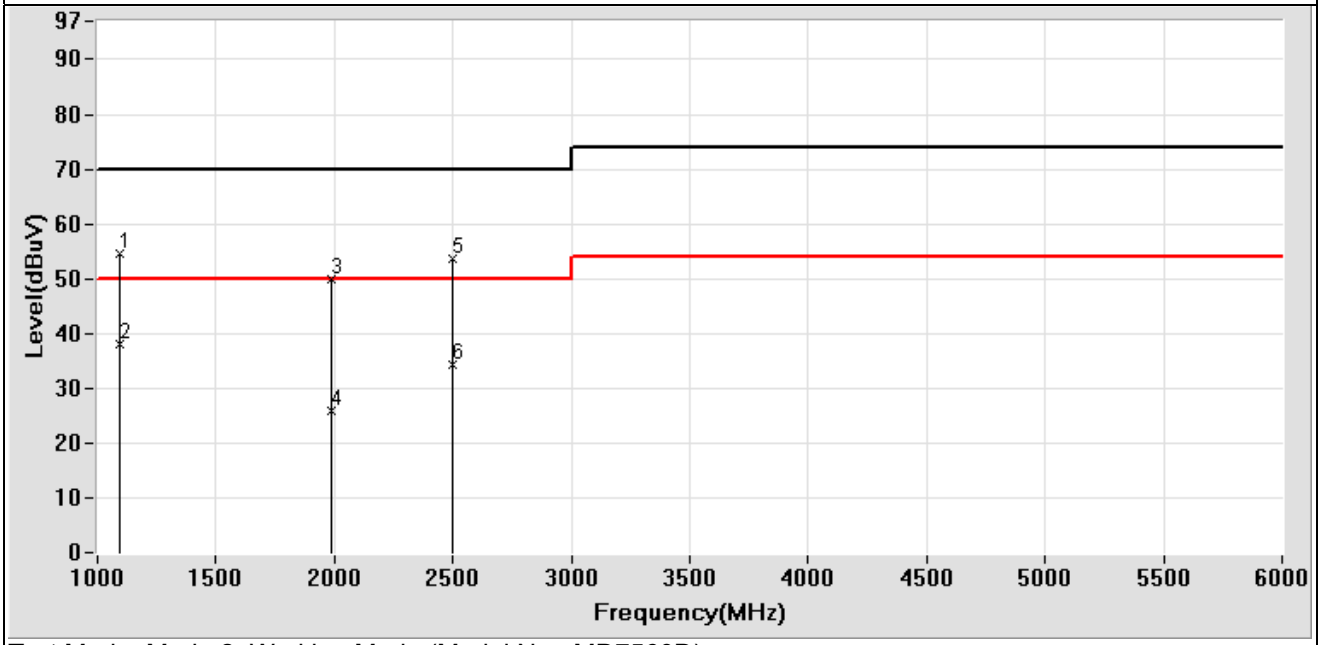
Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

Radiated Emission Measurement Data

EUT: Network Camera	POLARITY: Vertical
CLIENT: VIVOTEK INC.	DISTANCE: 3 m
MODEL: MD7560D	Serial No.:
RATING: 230V/50Hz	FILE/DATA#: VIVOTEK.emi/60
Temperature: 28.6 ℃	OPERATOR: John
Humidity: 41 %	TEST SITE: OATS 2

Frequency	Factor	Meter Reading	Emission Level	Limits	Margin
(MHz)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
1092.550 *	1.32	53.25	54.57	70.00	-15.43
1092.550 **	1.32	36.84	38.16	50.00	-11.84
1988.250 *	3.54	46.26	49.80	70.00	-20.20
1988.250 **	3.54	22.23	25.77	50.00	-24.23
2500.000 *	5.44	48.26	53.70	70.00	-16.30
2500.000 **	5.44	28.95	34.39	50.00	-15.61

Remark:
1. " * " Mark means readings are Peak Values.
2. " ** " Mark means readings are Average values.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Test Mode: Mode 2: Working Mode (Model No.: MD7560D)

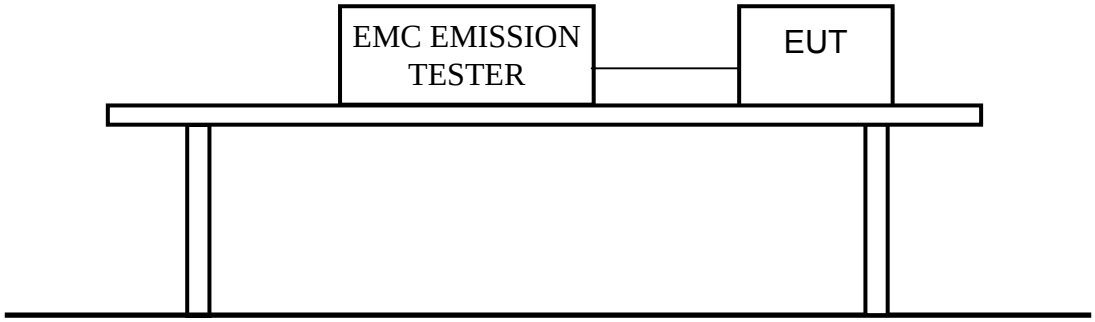
6 Harmonic Current Emissions Measurement (EN 61000-3-2)

6.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMC EMISSION TESTER	EMC PARTMER	HARMONICS-1000	41	2011/04/15

Note: The above equipments are within the valid calibration period.

6.2 Block Diagram of Test Configuration



6.3 Test Limits

☒ **Class A Equipment**

Harmonic order (n)	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15 ≤ n ≤ 39	0.15 15 / n
Even harmonics	
2	1.08
4	0.43
6	0.30
8 ≤ n ≤ 40	0.23 8 / n

☐ **Class B equipment**

For Class B equipment, the harmonics of the input current shall not exceed the values given in Class A equipment multiplied by a factor of 1.5.

☐ **Class C equipment**

Harmonic order (n)	**Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency** %
2	2
3	30. λ *
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3
* λ is the circuit power factor	

☐ **Class D equipment**

Harmonic order (n)	**Maximum permissible harmonic current Per watt** (mA/W)	**Maximum permissible harmonic current** (A)
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See Class A equipment

6.4 Configuration of Measurement

6.4.1 The EUT with power analyzer was in series and supplied from a power source with the same nominal voltage and frequency as the rated supply voltage.

6.4.2 Set the output of the power analyzer to the rated voltage and frequency of EUT (230V, 50Hz).

6.4.3 The EUT was classified by clause 5. of EN61000-3-2.

6.5 Test Result

PASS.

The measured result is shown as following pages.

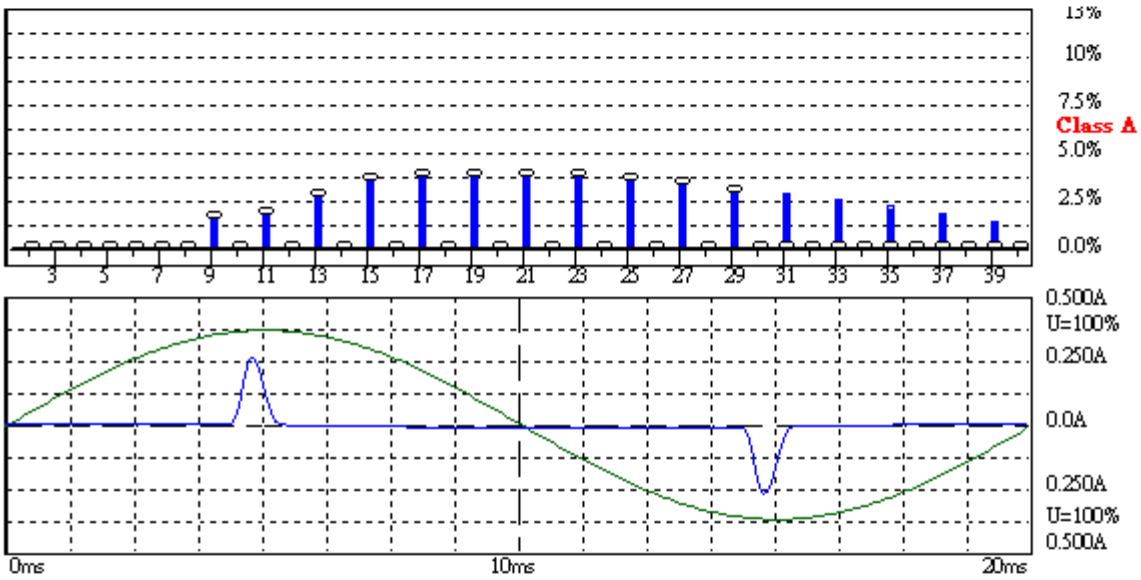
Mode 1: Working Mode (Model No.: MD7530D)

Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

Comply: IEC 61000-3-2 Ed.3.0 - IEC 61000-4-7 Ed.2.0

HARCS Setup File : unnamed
HARCS Report File : unnamed

Operator :	Willion
Unit :	Network Camera
Serialnumber :	MD7530D
Remarks	29.8"C / 45



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2) 2010/9/15 下午 04:02

Urms =	228.1	V	P =	4.565	W	THC =	0.049	A	Range: 0.5 A
Irms =	0.052	A	pf =	0.388					V-nom: 230 V
									TestTime: 10 min (100%)

Network Camera
29.8℃/45

Test completed, Result: PASSED

EMC-Partner

Full Bar : Actual Values
Empty Bar : Maximum Values
Blue : Current , Green : Voltage , Red : Failed

Measurement

Date : 2010/9/15 ¤U¤È 04:02 V4.18

Urms =	228.1V	Freq =	50.000	Range:	0.5 A
Irms =	0.052A	Ipk =	0.276A	cf =	5.355
P =	4.565W	S =	11.75VA	pf =	0.388
THDi =	91.7 %	THDu =	0.10 %	Class A	

Test - Time : 10min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.0215		0.0221			
2	100	0.0000	0.0000	0.0003	0.0283	1.0800	
3	150	0.0174	0.7553	0.0180	0.7815	2.3000	
4	200	0.0000	0.0000	0.0002	0.0426	0.4300	
5	250	0.0171	1.5000	0.0177	1.5526	1.1400	
6	300	0.0000	0.0000	0.0002	0.0712	0.3000	
7	350	0.0167	2.1633	0.0172	2.2393	0.7700	
8	400	0.0000	0.0000	0.0002	0.0796	0.2300	
9	450	0.0161	4.0149	0.0166	4.1504	0.4000	
10	500	0.0000	0.0000	0.0002	0.0829	0.1840	
11	550	0.0153	4.6464	0.0158	4.7996	0.3300	
12	600	0.0000	0.0000	0.0002	0.0995	0.1533	
13	650	0.0145	6.8938	0.0150	7.1208	0.2100	
14	700	0.0000	0.0000	0.0001	0.0929	0.1314	
15	750	0.0135	9.0197	0.0139	9.2977	0.1500	
16	800	0.0000	0.0000	0.0001	0.1061	0.1150	
17	850	0.0125	9.4404	0.0129	9.7304	0.1324	
18	900	0.0000	0.0000	0.0001	0.1194	0.1022	
19	950	0.0114	9.6518	0.0117	9.9216	0.1184	
20	1000	0.0000	0.0000	0.0001	0.0995	0.0920	
21	1050	0.0103	9.6218	0.0106	9.8836	0.1071	
22	1100	0.0000	0.0000	0.0001	0.1460	0.0836	
23	1150	0.0092	9.3905	0.0094	9.6083	0.0978	
24	1200	0.0000	0.0000	0.0001	0.1592	0.0767	
25	1250	0.0081	8.9668	0.0082	9.1553	0.0900	
26	1300	0.0000	0.0000	0.0002	0.2156	0.0708	
27	1350	0.0070	8.3750	0.0071	8.5327	0.0833	
28	1400	0.0000	0.0000	0.0002	0.2322	0.0657	
29	1450	0.0059	7.6408	0.0060	7.7881	0.0776	
30	1500	0.0000	0.0000	0.0002	0.2985	0.0613	
31	1550	0.0000	0.0632	0.0050	6.8956	0.0726	
32	1600	0.0000	0.0000	0.0002	0.3184	0.0575	
33	1650	0.0000	0.0000	0.0041	5.9977	0.0682	
34	1700	0.0000	0.0000	0.0002	0.3383	0.0541	
35	1750	0.0000	0.0000	0.0033	5.1270	0.0643	
36	1800	0.0000	0.0000	0.0002	0.3582	0.0511	
37	1850	0.0000	0.0000	0.0026	4.2155	0.0608	
38	1900	0.0000	0.0000	0.0002	0.3782	0.0484	
39	1950	0.0000	0.0000	0.0020	3.4383	0.0577	
40	2000	0.0000	0.0000	0.0002	0.3981	0.0460	

Calculation of Individual Harmonic Limits

Fixed Limits for **Class A**:

Order	Limits in Ampere			
	90%	100%	150%	200%
2				
3				
4	0.3870	0.4300	0.6450	0.8600
5				

6		0.2700	0.3000	0.4500	0.6000
7					
8		0.2070	0.2300	0.3450	0.4600
9		0.3600	0.4000	0.6000	0.8000
10		0.1656	0.1840	0.2760	0.3680
11		0.2970	0.3300	0.4950	0.6600
12		0.1380	0.1533	0.2300	0.3066
13		0.1890	0.2100	0.3150	0.4200
14		0.1183	0.1314	0.1972	0.2629
15		0.1350	0.1500	0.2250	0.3000
16		0.1035	0.1150	0.1725	0.2300
17		0.1191	0.1324	0.1985	0.2647
18		0.0920	0.1022	0.1534	0.2045
19		0.1066	0.1184	0.1776	0.2368
20		0.0828	0.0920	0.1380	0.1840
21	*	0.0964	0.1071	0.1607	0.2143
22		0.0753	0.0836	0.1255	0.1673
23	*	0.0881	0.0978	0.1468	0.1957
24		0.0690	0.0767	0.1150	0.1533
25	*	0.0810	0.0900	0.1350	0.1800
26		0.0637	0.0708	0.1062	0.1415
27	*	0.0750	0.0833	0.1250	0.1667
28		0.0591	0.0657	0.0986	0.1314
29	*	0.0698	0.0776	0.1164	0.1552
30		0.0552	0.0613	0.0920	0.1227
31	*	0.0653	0.0726	0.1089	0.1451
32		0.0517	0.0575	0.0862	0.1150
33	*	0.0614	0.0682	0.1023	0.1364
34		0.0487	0.0541	0.0812	0.1082
35	*	0.0579	0.0643	0.0965	0.1286
36		0.0460	0.0511	0.0767	0.1022
37	*	0.0547	0.0608	0.0912	0.1216
38		0.0436	0.0484	0.0726	0.0969
39	*	0.0519	0.0577	0.0865	0.1154
40		0.0414	0.0460	0.0690	0.0920

EUT is PASSED if:
- all Average values of the Individual Harmonic Currents (Iavg)
  are below 100% of the Individual Limits.
- all Maximum values of the Individual Harmonic Currents (Imax)
  are below 150% of the Individual Limits.

Exceptions:
These exceptions are mutually exclusive and cannot be used together.

1) All Maximum values of the Individual Harmonic Currents (Imax)
   are below 200% of the Individual Limits if :
   EUT belongs to Class A
   AND excursion beyond 150% lasts less than 10% of observation
   time with a maximum of 10 minutes
   AND the average value of the corresponding harmonic current
   over the entire observation period is less than 90% of
   applicable limits

2)
- Average values of some Individual Harmonic Currents (marked with "*")
  may be up to 150% if the Partial Harmonic Current (PHC)
  is lower than the PHC which is calculated from the Limit Currents:
  Actual PHC = 0.0184A
  PHC calculated from Limit values = 0.2514A

- Individual Harmonic Currents less than 5mA or less than 0.6% of Irms
  (which is 0.006*0.052 = 0.000A) are disregaded.

Definitions of Abbreviations

```
Urms      ***    Actual total Voltage in Volt RMS
Irms      ***    Actual total Current in Ampere RMS
Ipk       ***    Actual Peak value of the Current in Ampere
cf        ***    Actual Crest Factor (Ipk/Irms)
P         ***    Actual Active Power in Watt
S         ***    Actual Apparent Power in VA (Urms*Irms)
pf        ***    Actual Power Factor (P/S)
THDi      ***    Actual Total Harmonic Current Distortion in %
THDu      ***    Actual Total Harmonic Voltage Distortion in %
THC       ***    Actual Total Harmonic Current in Ampere
PHC       ***    Actual Partial Harmonic Current in Ampere

Individual measurements for 2nd to 40th order:

Iavg             Average value of the Individual Harmonic Current
                 in Ampere RMS
Iavg%L           Average value of the Individual Harmonic Current
                 in percentage of the applicable Limit
Imax             Maximum Individual Harmonic Current
                 in Ampere RMS
Imax%lim         Maximum Individual Harmonic Current
                 in percentage of the applicable Limit
Limit Irms       Individual Limit (100%) for the selected Class
                 in Ampere RMS

General :
- Maximum and Average values are calculatet over the full test-time
- The values marked with "***" are actual values which could vary
  during test-time and are taken at the time of protocol printout.
- The individual measurements are taken over every 200ms
  and smoothed with an 1,5second filter.
```

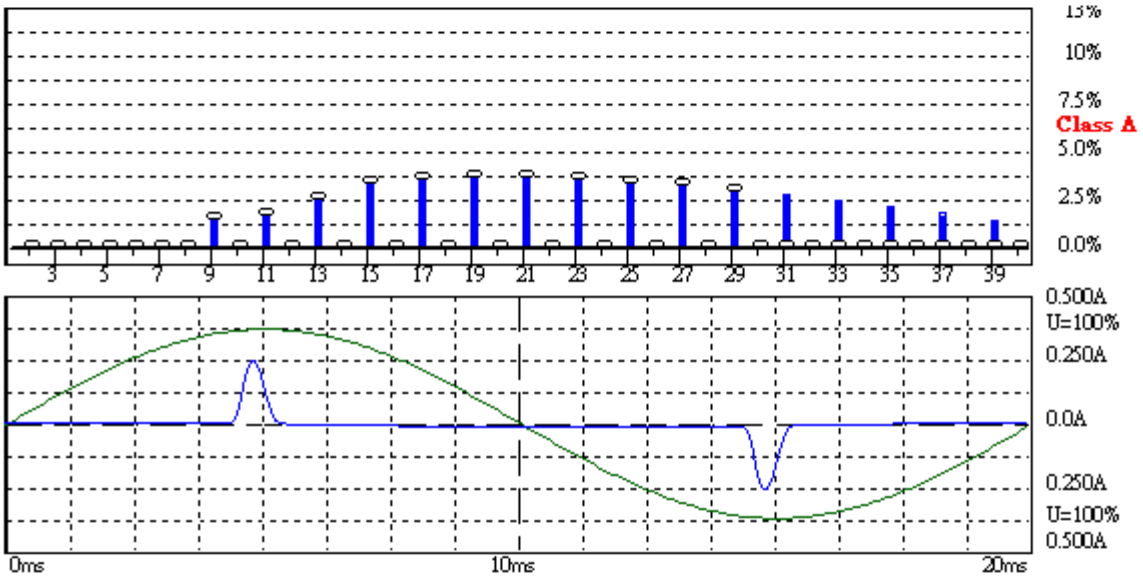
Mode 2: Working Mode (Model No.: MD7560D)

Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

Comply: IEC 61000-3-2 Ed.3.0 + IEC 61000-4-7 Ed.2.0

HARCS Setup File : unnamed
HARCS Report File : unnamed

Operator :	Willion
Unit :	Network Camera
Serialnumber :	MD7560D
Remarks	29.8"C / 45



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2) 2010/9/15 下午 02:46

Urms =	227.9	V	P =	4.319	W	THC =	0.047	A	Range: 0.5 A
Irms =	0.048	A	pf =	0.392					V-nom: 230 V
									TestTime: 10 min (100%)

Network Camera
29.8℃ / 45

Test completed, Result: PASSED

B4R-1000 EMC-Remote

Full Bar : Actual Values
Empty Bar : Maximum Values
Blue : Current , Green : Voltage , Red : Failed

Measurement

Date : 2010/9/15 ¤U¤È 02:46 V4.18

Urms =	227.9V	Freq =	50.000	Range:	0.5 A		
Irms =	0.048A	Ipk =	0.260A	cf =	5.374		
P =	4.319W	S =	11.02VA	pf =	0.392		
THDi =	91.6 %	THDu =	0.10 %	Class A			

Test - Time : 10min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.0205		0.0207			
2	100	0.0000	0.0000	0.0003	0.0311	1.0800	
3	150	0.0163	0.7091	0.0166	0.7205	2.3000	
4	200	0.0000	0.0000	0.0002	0.0426	0.4300	
5	250	0.0161	1.4088	0.0163	1.4295	1.1400	
6	300	0.0000	0.0000	0.0002	0.0712	0.3000	
7	350	0.0157	2.0337	0.0159	2.0649	0.7700	
8	400	0.0000	0.0000	0.0002	0.0796	0.2300	
9	450	0.0151	3.7771	0.0154	3.8376	0.4000	
10	500	0.0000	0.0000	0.0002	0.0995	0.1840	
11	550	0.0144	4.3762	0.0146	4.4389	0.3300	
12	600	0.0000	0.0000	0.0002	0.0995	0.1533	
13	650	0.0137	6.5030	0.0139	6.5976	0.2100	
14	700	0.0000	0.0000	0.0002	0.1161	0.1314	
15	750	0.0128	8.5222	0.0130	8.6466	0.1500	
16	800	0.0000	0.0000	0.0002	0.1327	0.1150	
17	850	0.0118	8.9378	0.0120	9.0617	0.1324	
18	900	0.0000	0.0000	0.0001	0.1194	0.1022	
19	950	0.0108	9.1602	0.0110	9.2773	0.1184	
20	1000	0.0000	0.0000	0.0001	0.1327	0.0920	
21	1050	0.0098	9.1548	0.0099	9.2855	0.1071	
22	1100	0.0000	0.0000	0.0002	0.1824	0.0836	
23	1150	0.0088	8.9660	0.0089	9.0780	0.0978	
24	1200	0.0000	0.0000	0.0002	0.1990	0.0767	
25	1250	0.0077	8.5873	0.0078	8.6806	0.0900	
26	1300	0.0000	0.0000	0.0002	0.2156	0.0708	
27	1350	0.0067	8.0569	0.0068	8.1665	0.0833	
28	1400	0.0000	0.0000	0.0002	0.2322	0.0657	
29	1450	0.0057	7.3802	0.0058	7.4734	0.0776	
30	1500	0.0000	0.0000	0.0002	0.2985	0.0613	
31	1550	0.0000	0.0000	0.0049	6.7274	0.0726	
32	1600	0.0000	0.0000	0.0002	0.3184	0.0575	
33	1650	0.0000	0.0000	0.0040	5.8634	0.0682	
34	1700	0.0000	0.0000	0.0002	0.3383	0.0541	
35	1750	0.0000	0.0000	0.0032	4.9845	0.0643	
36	1800	0.0000	0.0000	0.0002	0.3582	0.0511	
37	1850	0.0000	0.0000	0.0025	4.1151	0.0608	
38	1900	0.0000	0.0000	0.0002	0.3782	0.0484	
39	1950	0.0000	0.0000	0.0019	3.2796	0.0577	
40	2000	0.0000	0.0000	0.0002	0.3981	0.0460	

Calculation of Individual Harmonic Limits

Fixed Limits for **Class A**:

Order	Limits in Ampere			
	90%	100%	150%	200%
2				
3				
4	0.3870	0.4300	0.6450	0.8600
5				

6		0.2700	0.3000	0.4500	0.6000
7					
8		0.2070	0.2300	0.3450	0.4600
9		0.3600	0.4000	0.6000	0.8000
10		0.1656	0.1840	0.2760	0.3680
11		0.2970	0.3300	0.4950	0.6600
12		0.1380	0.1533	0.2300	0.3066
13		0.1890	0.2100	0.3150	0.4200
14		0.1183	0.1314	0.1972	0.2629
15		0.1350	0.1500	0.2250	0.3000
16		0.1035	0.1150	0.1725	0.2300
17		0.1191	0.1324	0.1985	0.2647
18		0.0920	0.1022	0.1534	0.2045
19		0.1066	0.1184	0.1776	0.2368
20		0.0828	0.0920	0.1380	0.1840
21	*	0.0964	0.1071	0.1607	0.2143
22		0.0753	0.0836	0.1255	0.1673
23	*	0.0881	0.0978	0.1468	0.1957
24		0.0690	0.0767	0.1150	0.1533
25	*	0.0810	0.0900	0.1350	0.1800
26		0.0637	0.0708	0.1062	0.1415
27	*	0.0750	0.0833	0.1250	0.1667
28		0.0591	0.0657	0.0986	0.1314
29	*	0.0698	0.0776	0.1164	0.1552
30		0.0552	0.0613	0.0920	0.1227
31	*	0.0653	0.0726	0.1089	0.1451
32		0.0517	0.0575	0.0862	0.1150
33	*	0.0614	0.0682	0.1023	0.1364
34		0.0487	0.0541	0.0812	0.1082
35	*	0.0579	0.0643	0.0965	0.1286
36		0.0460	0.0511	0.0767	0.1022
37	*	0.0547	0.0608	0.0912	0.1216
38		0.0436	0.0484	0.0726	0.0969
39	*	0.0519	0.0577	0.0865	0.1154
40		0.0414	0.0460	0.0690	0.0920

EUT is PASSED if:
- all Average values of the Individual Harmonic Currents (Iavg)
  are below 100% of the Individual Limits.
- all Maximum values of the Individual Harmonic Currents (Imax)
  are below 150% of the Individual Limits.

Exceptions:
These exceptions are mutually exclusive and cannot be used together.

1) All Maximum values of the Individual Harmonic Currents (Imax)
   are below 200% of the Individual Limits if :
   EUT belongs to Class A
   AND excursion beyond 150% lasts less than 10% of observation
   time with a maximum of 10 minutes
   AND the average value of the corresponding harmonic current
   over the entire observation period is less than 90% of
   applicable limits

2)
- Average values of some Individual Harmonic Currents (marked with "*")
  may be up to 150% if the Partial Harmonic Current (PHC)
  is lower than the PHC which is calculated from the Limit Currents:
  Actual PHC = 0.0176A
  PHC calculated from Limit values = 0.2514A

- Individual Harmonic Currents less than 5mA or less than 0.6% of Irms
  (which is 0.006*0.048 = 0.000A) are disregaded.

Definitions of Abbreviations

```
Urms      ***    Actual total Voltage in Volt RMS
Irms      ***    Actual total Current in Ampere RMS
Ipk       ***    Actual Peak value of the Current in Ampere
cf        ***    Actual Crest Factor (Ipk/Irms)
P         ***    Actual Active Power in Watt
S         ***    Actual Apparent Power in VA (Urms*Irms)
pf        ***    Actual Power Factor (P/S)
THDi      ***    Actual Total Harmonic Current Distortion in %
THDu      ***    Actual Total Harmonic Voltage Distortion in %
THC       ***    Actual Total Harmonic Current in Ampere
PHC       ***    Actual Partial Harmonic Current in Ampere

Individual measurements for 2nd to 40th order:

Iavg             Average value of the Individual Harmonic Current
                 in Ampere RMS
Iavg%L           Average value of the Individual Harmonic Current
                 in percentage of the applicable Limit
Imax             Maximum Individual Harmonic Current
                 in Ampere RMS
Imax%lim         Maximum Individual Harmonic Current
                 in percentage of the applicable Limit
Limit Irms       Individual Limit (100%) for the selected Class
                 in Ampere RMS

General :
- Maximum and Average values are calculatet over the full test-time
- The values marked with "***" are actual values which could vary
  during test-time and are taken at the time of protocol printout.
- The individual measurements are taken over every 200ms
  and smoothed with an 1,5second filter.
```

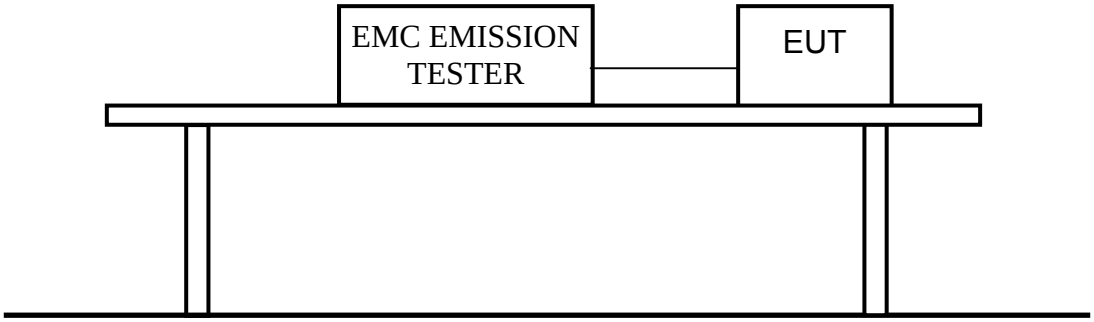
7 Voltage Fluctuations and Flicker Measurement (EN 61000-3-3)

7.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMC EMISSION TESTER	EMC PARTMER	HARMONICS-1000	41	2011/04/15

Note: The above equipments are within the valid calibration period.

7.2 Block Diagram of Test Configuration



7.3 Test Limits

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the relative steady-state voltage change, $d_{c'}$ shall not exceed 3.3%;
- the maximum relative voltage change, $d_{max'}$ shall not exceed 4%;
- the value of d(t) during a voltage change shall not exceed 3.3% for more than 500 ms.

7.4 Configuration of Measurement

7.4.1 The EUT with power analyzer is in series and supplied from a power source with the same nominal voltage and frequency as the rated supply voltage.

7.4.2 Set the output of the power analyzer to the rated voltage and frequency of EUT (230V, 50Hz).

7.4.3 Select the test time of observation period for short-term (T_p = 10 min) and long-term (T_p = 2 hrs). The test result was collected and analyzed by the computer.

7.5 Test Result

PASS.

The measured result is shown as following pages.

Mode 1: Working Mode (Model No.: MD7530D)

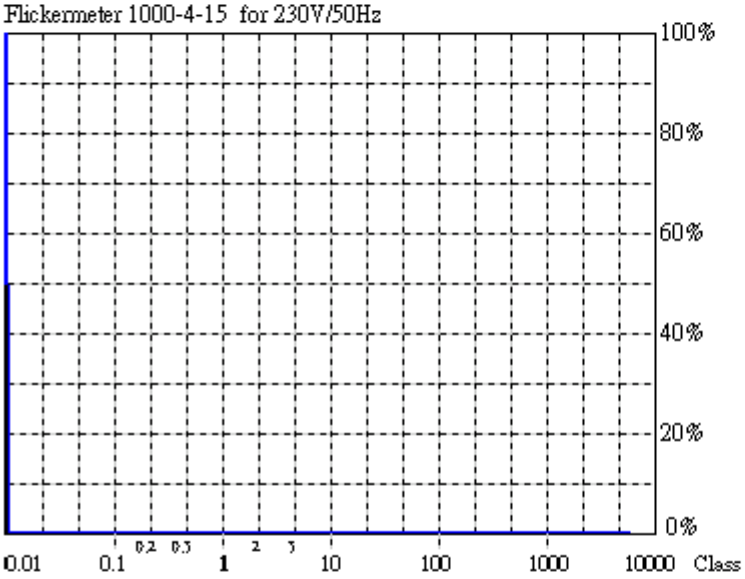
Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

```
Comply: IEC 61000-3-3 Ed.1.2 - IEC 61000-4-15 Ed.1.1
```

HARCS Setup File : unnamed
HARCS Report File : unnamed

```
Operator :                      Willion
Unit :                          Network Camera
Serialnumber :                  MD7530D
Remarks                         29.8"C / 45
```

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.00%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3) 2010/9/15 下午 03:46

Urms =	227.9	V	P =	4.553	W
Irms =	0.052	A	pf =	0.388	

Range: 0.5 A
V-nom: 230 V
TestTime: 12 min (100%)

Network Camera
29.8℃/45

Test completed, Result: PASSED

BAR-1000 EMC-Partner

```
Full Bar   : Actual Values
Empty Bar  : Maximum Values
Circles    : Average Values
Blue : Current , Green : Voltage , Red : Failed
```

Measurement

```
                                        Date : 2010/9/15 ¤U¤È 03:46 V4.18

Urms =  227.9V  Freq =  50.000  Range:  0.5 A
Irms =  0.052A  Ipk  =  0.279A  cf    =  5.412
P    =  4.553W  S    =  11.74VA pf    =  0.388
```

```
Test - Time :   12 x 1min = 12min       ( 100 %)

LIN (Line Impedance Network) :  SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits :        Plt  :  0.65    Pst   : 1.00
                dmax :  4.00 %  dc    : 3.30 %
                dtLim:  3.30 %  dt>Lim: 500ms

Test completed, Result: PASSED



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12
```

Definitions of Abbreviations

```
Urms      ***    Actual total Voltage in Volt RMS
Irms      ***    Actual total Current in Ampere RMS
Ipk       ***    Actual Peak value of the Current in Ampere
cf        ***    Actual Crest Factor (Ipk/Irms)
P         ***    Actual Active Power in Watt
S         ***    Actual Apparent Power in VA (Urms*Irms)
pf        ***    Actual Power Factor (P/S)

Plt              Long term Flicker over all Pst cycles

For every Pst-cycle:


General :
- The values marked with "***" are actual values which could vary
  during test-time and are taken at the time of protocol printout.
```

Mode 2: Working Mode (Model No.: MD7560D)

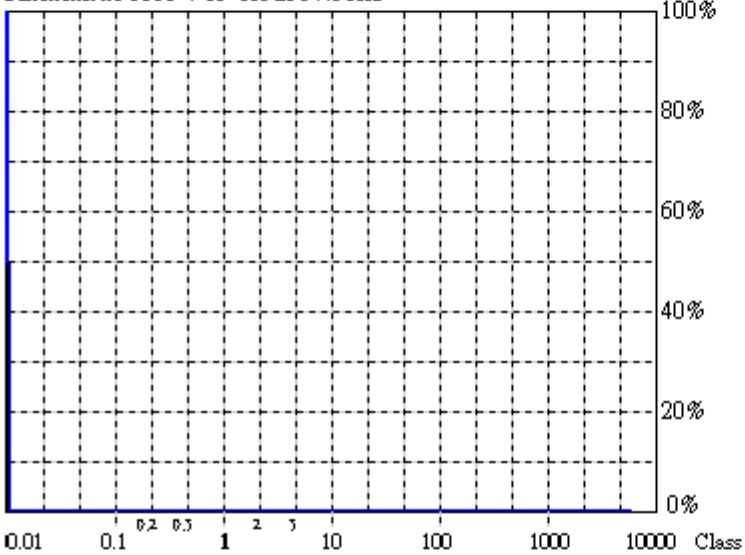
Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

```
Comply: IEC 61000-3-3 Ed.1.2 - IEC 61000-4-15 Ed.1.1
```

HARCS Setup File : unnamed
HARCS Report File : unnamed

```
Operator :                      Willion
Unit :                          Network Camera
Serialnumber :                  MD7560D
Remarks                         29.8"C / 45
```

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.00%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2010/9/15 下午 03:24

Urms =	227.9	V	P =	4.332	W
Irms =	0.049	A	pf =	0.387	

Range:	0.5 A
V-nom:	230 V
TestTime:	12 min (100%)

Network Camera
29.8℃ / 45

Test completed, Result: PASSED

BAR-1000 EMC-Remote

```
Full Bar  : Actual Values
Empty Bar : Maximum Values
Circles   : Average Values
Blue : Current , Green : Voltage , Red : Failed
```

Measurement

```
                                        Date : 2010/9/15 ¤U¤È 03:24 V4.18

Urms =  227.9V  Freq =  50.000  Range:  0.5 A
Irms =  0.049A  Ipk  =  0.266A  cf    =  5.428
P    =  4.332W  S    =  11.19VA pf    =  0.387
```

```
Test - Time :   12 x 1min = 12min       ( 100 %)

LIN (Line Impedance Network) :  SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits :        Plt  :  0.65    Pst   : 1.00
                dmax :  4.00 %  dc    : 3.30 %
                dtLim:  3.30 %  dt>Lim: 500ms

Test completed, Result: PASSED



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```

Definitions of Abbreviations

```
Urms      ***    Actual total Voltage in Volt RMS
Irms      ***    Actual total Current in Ampere RMS
Ipk       ***    Actual Peak value of the Current in Ampere
cf        ***    Actual Crest Factor (Ipk/Irms)
P         ***    Actual Active Power in Watt
S         ***    Actual Apparent Power in VA (Urms*Irms)
pf        ***    Actual Power Factor (P/S)

Plt              Long term Flicker over all Pst cycles

For every Pst-cycle:


General :
- The values marked with "***" are actual values which could vary
  during test-time and are taken at the time of protocol printout.
```

8 Performance Criterion of Immunity Test

8.1 EN 55024

Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the use may reasonably expect from the equipment if used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonable expect from the equipment if used as intended.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer’s instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

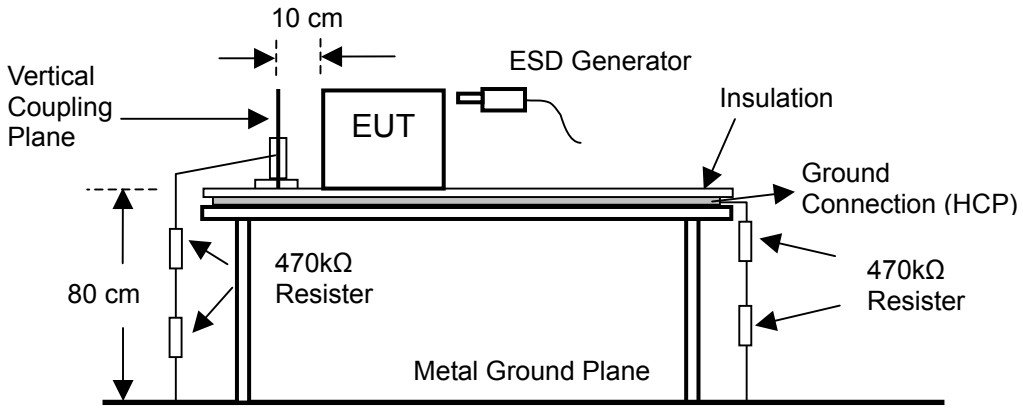
9 Electrostatic Discharges Immunity Test (IEC 61000-4-2)

9.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
ESD Simulator	EMC PARTNER	ESD3000	276	2011/01/12

Note: The above equipments are within the valid calibration period.

9.2 Block Diagram of Test Configuration



9.3 Test Levels

Level	Contact discharge (kV)	Air discharge (kV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

9.4 Test Requirement

IEC 61000-4-2 (EN 55024) require:

Air discharge: ±8 kV

Contact discharge: ±4 kV

Performance criterion: B

9.5 Configuration of Measurement

9.5.1 Static electricity discharges shall be applied only to those points and surfaces of the EUT which are expected to be touched during usual operation, including user access, as specified in the user manual, for example for ribbon and paper roll changes.

9.5.2 The discharges shall be applied in two ways:

a) Contact discharges to the conductive surfaces and to coupling planes:
The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points (a minimum of 50 discharges at each point). One of the test points shall be subjected to at least 50 indirect discharges (contact) to the center of the front edge of the horizontal coupling plane (HCP), the remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode (see IEC 61000-4-2 for use of the Vertical Conducting Plane (VCP)). Tests shall be performed at a maximum repetition rate of one discharge per second.

b) Air discharge at slots and apertures, and insulating surfaces:
On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur; examples are openings at edges of keys, or in the covers of keyboards and telephone handsets. Such points are tested using the air discharge method. See also IEC 61000-4-2 regarding painted surfaces. This investigation should be restricted to those areas normally handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

9.5.3 The ESD generator (gun) was held perpendicular to the surface to which the discharge was applied. The application of electrostatic discharges to the contacts of open connectors is not required.

9.6 Test Result

Temperature: 25.6 ℃； Humidity: 48 %； Atm pres: 101 Kpa； Test Engineer: Willion

PASS.

The performance criterion after tested EN 55024:

Air discharge ±2 kV, ±4 kV, ±8 kV:	☒ **A**	☐ **B**	☐ **C**
Contact discharge ±2 kV:	☒ **A**	☐ **B**	☐ **C**
Contact discharge ±4 kV:	☐ **A**	☒ **B**	☐ **C**
Indirect discharge (HCP) ±2 kV, ±4 kV:	☒ **A**	☐ **B**	☐ **C**
Indirect discharge (VCP Front, Left, Back, Right) ±2 kV, ±4 kV:	☒ **A**	☐ **B**	☐ **C**

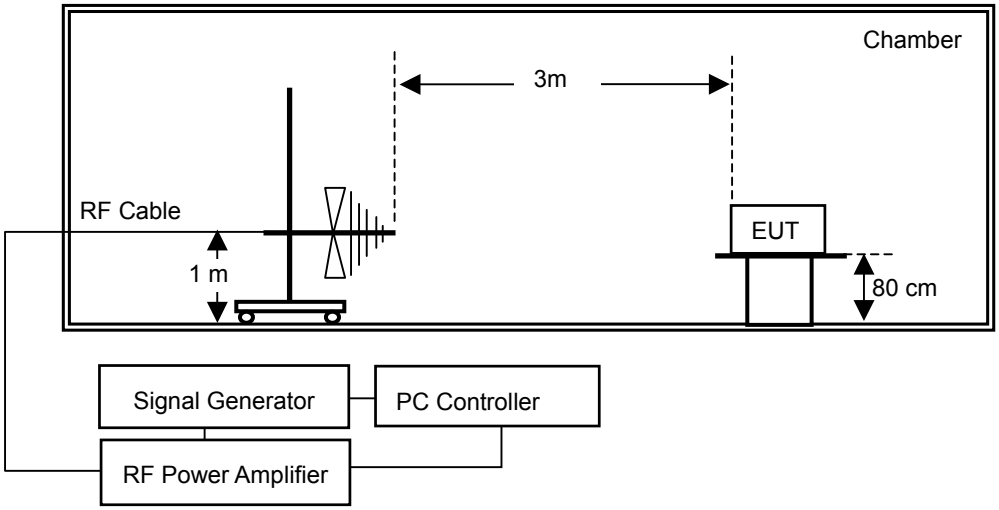
10 Radio-frequency, Electromagnetic field Immunity Test (IEC 61000-4-3)

10.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Signal Generator	R&S	SM300	101279	2010/10/14
RF Power Amplifier	Frankonia	FLG-200B	1038	2011/02/21
RF Power Amplifier	Frankonia	FLG-50C	1013	2011/02/21
Bilog Antenna	Frankonia	BTA-M	06012M	2011/02/21

Note: The above equipments are within the valid calibration period.

10.2 Block Diagram of Test Configuration



10.3 Test Levels

Level	Test field strength (V/m)
1	1
2	3
3	10
4	30
X	Special

10.4 Test Requirement

IEC 61000-4-3 (EN 55024) require:
The frequency steps: 1%, Log sweep, Dwell time: 3.0 sec.
Frequency range: 80 to 1000 MHz, Field strength: 3 V/m, 80%AM (1kHz),
Performance criterion: A

10.5 Configuration of Measurement

10.5.1 Before testing, the intensity of the established field strength was checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward and reverse power were measured. The forward power needed to give the calibrated field was evaluated.

10.5.2 The EUT was placed on a non-metallic table 0.8m above the reference ground plane (RGP) and was operated according to its specified operating mode.

10.5.3 Ferrite tiles/ absorbers were placed on the RGP between the EUT and the antenna to reduce the reflections from the RGP.

10.5.4 The distance between antenna and EUT is 3 meter.

10.5.5 During the test EUT performance has been monitoring by CCD camera.

10.6 Test Result

Temperature: 26.1 ℃； Humidity: 42 %； Atm pres: 101 Kpa； Test Engineer: Alex

PASS.

The performance criterion after tested EN 55024:
Frequency range: **80** to **1000** MHz, Field strength: **3** V/m, 80% AM (1kHz),
Performance criterion: ☒ **A** ☐ **B** ☐ **C**

11 Electrical Fast Transients Immunity Test (IEC 61000-4-4)

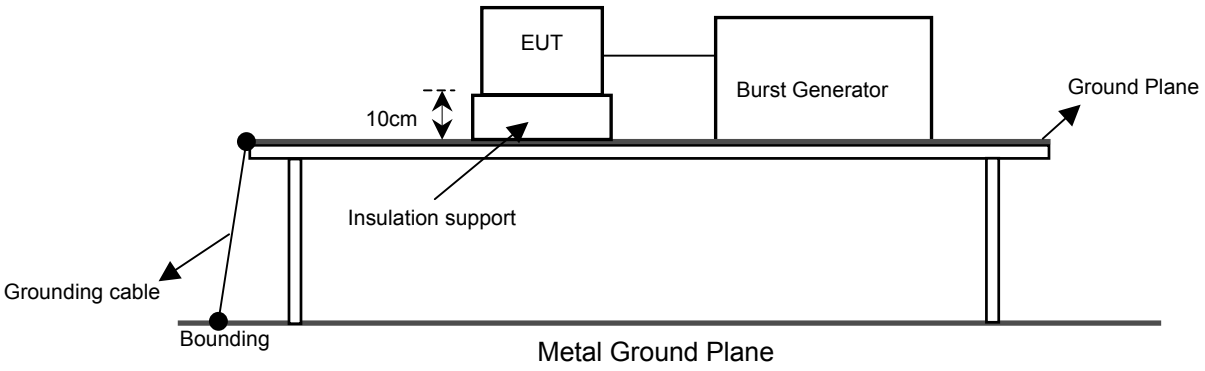
11.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMC Pro System	KeyTek	EMC Pro	0003231	2011/04/07
Injection Clamp	KeyTek	PRO-CCL-C	0003198	N. C. R.

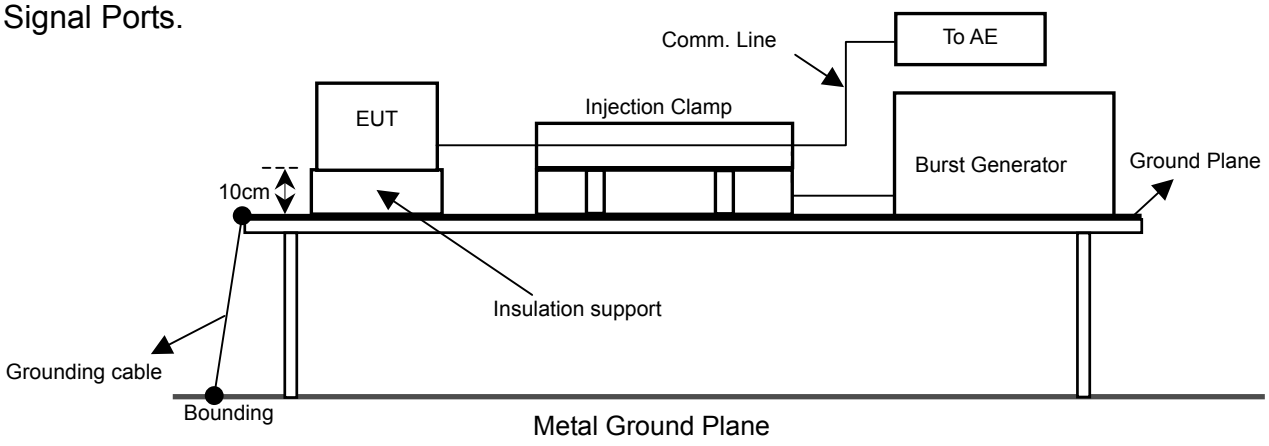
Note: The above equipments are within the valid calibration period.

11.2 Block Diagram of Test Configuration

For Power Ports.



For Signal Ports.



11.3 Test Levels

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (input/output) signal, data and control ports	
	Voltage peak kV	Repetition rate kHz	Voltage peak kV	Repetition rate kHz
1	0,5	5 or 100	0,25	5 or 100
2	1	5 or 100	0,5	5 or 100
3	2	5 or 100	1	5 or 100
4	4	5 or 100	2	5 or 100
X[a]	Special	Special	Special	Special
NOTE 1: Use of 5 kHz repetition rates is traditional; however, 100 kHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types. NOTE 2: With some products, there may be no clear distinction between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
[a] "X" is an open level. The level has to be specified in the dedicated equipment specification.				

11.4 Test Requirement

IEC 61000-4-4 (EN 55024) require:
5 kHz Repetition frequency
☒ ±1.0 kV input AC power ports.
☐ ±0.5 kV input DC power ports.
☐ ±0.5 kV Signal ports.
☒ ±0.5 kV Telecommunication ports.
Performance criterion: B

11.5 Configuration of Measurement

11.5.1 The EUT and the auxiliary equipment were placed on a wooden table of 0.8 meters height. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth.

11.5.2 The EUT was connected to the power mains through a coupling device that directly couples the EFT interference signal. Each of the Line, Neutral and Protective Earth (PE) conductors was impressed with burst noise for 1 minute. Both the voltage polarities were applied for each test level. The length of power cord between the coupling device and the EUT was less than 1 meter.

11.6 Test Result

Temperature: 25.3 ℃； Humidity: 47 %； Atm pres: 101 Kpa； Test Engineer: Willion

PASS.

The performance criterion after tested EN 55024:
±1.0 kV input AC power port: Line + Neutral + PE
Performance criterion: ☒ **A** ☐ **B** ☐ **C**
±0.5 kV for Telecommunication port: RJ45
Performance criterion: ☒ **A** ☐ **B** ☐ **C**

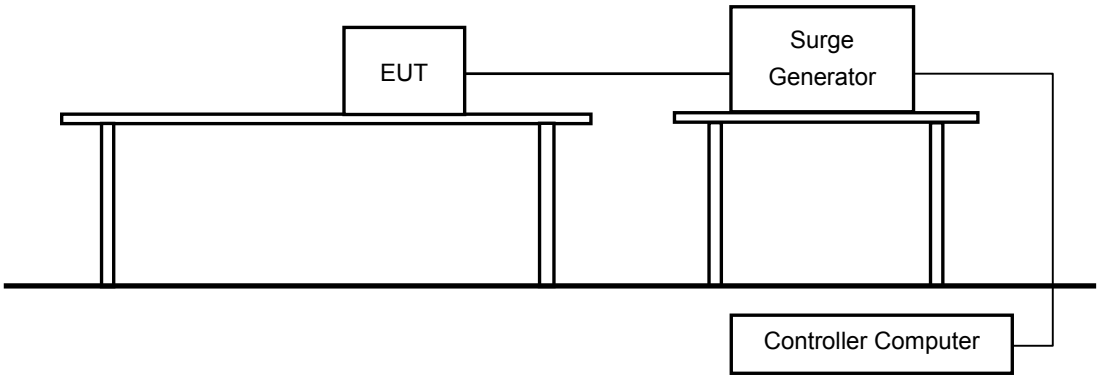
12 Surges Immunity Test (IEC 61000-4-5)

12.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMC Pro Systems	KeyTek	EMC Pro	0003234	2011/03/16

Note: The above equipments are within the valid calibration period.

12.2 Block Diagram of Test Configuration



12.3 Test Levels

Level	Open-circuit test voltage ±10% (kV)
1	0.5
2	1.0
3	2.0
4	4.0
X	Special
Note: X can be any level, above, below or in between the other levels. This level can be specified in the product standard.	

12.4 Test Requirement

IEC 61000-4-5 (EN 55024) require:

☒ Input AC power ports: ☒ Line to line: ±1kV (peak), 1.2/50 (8/20) Tr/Th us

☒ Line to earth (ground): ±2kV (peak), 1.2/50 (8/20) Tr/Th us

☐ Input DC power ports: ±0.5kV (peak): line to earth, 1.2/50 (8/20) Tr/Th us

☐ Signal ports: ±1.0kV (peak): 1.2/50 (8/20) Tr/Th us

☐ Telecommunication ports: ±1.0kV (peak): 1.2/50 (8/20) Tr/Th us

Performance criterion: **B**

12.5 Configuration of Measurement

12.5.1 The EUT and support units were located on a wooden table 0.8m away from ground floor.

12.5.2 The EUT was connected to the power mains through a coupling device that directly couples the Surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).

12.5.3 The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.

12.6 Test Result

Temperature: 28.3 ℃； Humidity: 50 %； Atm pres: 101 Kpa； Test Engineer: Willion

PASS.

The performance criterion after tested EN 55024:

±0.5 kV (peak) Input AC power port: Line to line

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

±1.0 kV (peak) Input AC power port: Line to line

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

±0.5 kV (peak) Input AC power port: Line to earth (ground)

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

±1.0 kV (peak) Input AC power port: Line to earth (ground)

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

±2.0 kV (peak) Input AC power port: Line to earth (ground)

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

13 Radio-frequency, Conducted Disturbances Immunity Test (IEC 61000-4-6)

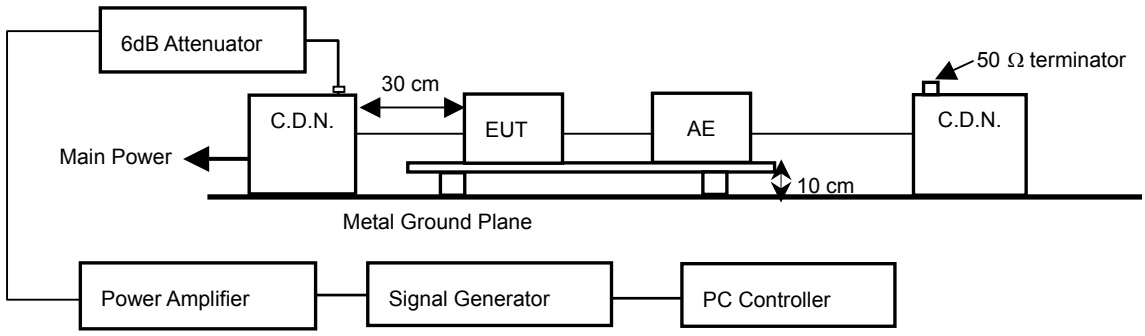
13.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Signal Generator	R&S	SM300	101279	2010/10/14
Power Amplifier	Frankonia	CIT-10	162D1278	2011/02/11
Attenuator	SCHAFFNER	ATN6075	22300	2011/02/11
C.D.N	FCC	FCC-801-M3-25A	2045	2011/02/11
C.D.N	SCHAFFNER	M216	16394	2011/02/11
EM Injection Clamp	SCHAFFNER	KEMZ 801	17037	2011/02/11

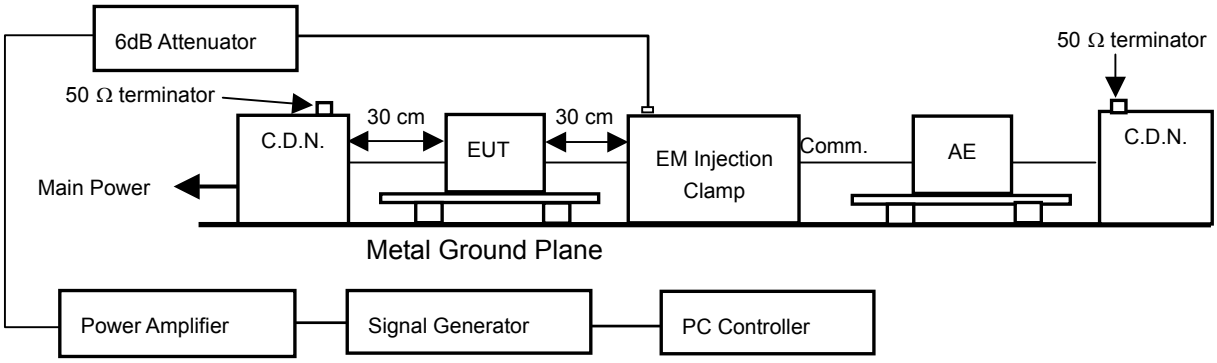
Note: The above equipments are within the valid calibration period.

13.2 Block Diagram of Test Configuration

For Power Ports.



For Signal Ports.



13.3 Test Levels

Level	Voltage Level (V)
1	1
2	3
3	10
X	Special

13.4 Test Requirement

IEC 61000-4-6 (EN 55024) require:

The frequency steps: 1%, Log sweep, Dwell time: 3.0 sec.

Frequency Range is from 0.15 to 80MHz.

Field strength: **3** V, 80% AM (1kHz)

☒ Input AC power ports.

☐ Input DC power ports.

☐ Signal ports.

☒ Telecommunication ports.

Performance criterion: A

13.5 Configuration of Measurement

13.5.1 The EUT was placed on a table of is 0.1 m height. In Semi-Anechoic chamber A Ground reference plane was placed on the table and a 0.1 meter insulating support was inserted between the EUT and Ground reference plane.

13.5.2 The EUT was connected to the power mains through a Coupling and Decoupling Networks (CDN).

13.5.3 The test was performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input ports of the coupling devices were terminated by a 50 Ω terminator.

13.5.4 The frequency range was swept from 150kHz to 80MHz.using the signal levels established during the setting process, and without the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or to switch coupling devices as necessary. The rate of sweep was less than 1.5×10^{-3} decades/s. And the step size of the frequency sweep was also less than 1% of the start and thereafter 1% of the preceding frequency value. The dwell time at each frequency was more than the time necessary for the EUT to be excited, and able to respond.

13.5.5 The EUT was fully excised during the testing and all the selected excise modes were fully interrogated for susceptibility.

13.6 Test Result

Temperature: 27.1 ℃； Humidity: 45 %； Atm pres: 101 Kpa； Test Engineer: Willion

PASS.

The performance criterion after tested EN 55024:

Frequency range: **0.15** to **80** MHz, Field strength: **3** V, 80% AM (1kHz),

Input AC power port.

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

Telecommunication port.

Performance criterion: ☒ **A** ☐ **B** ☐ **C**

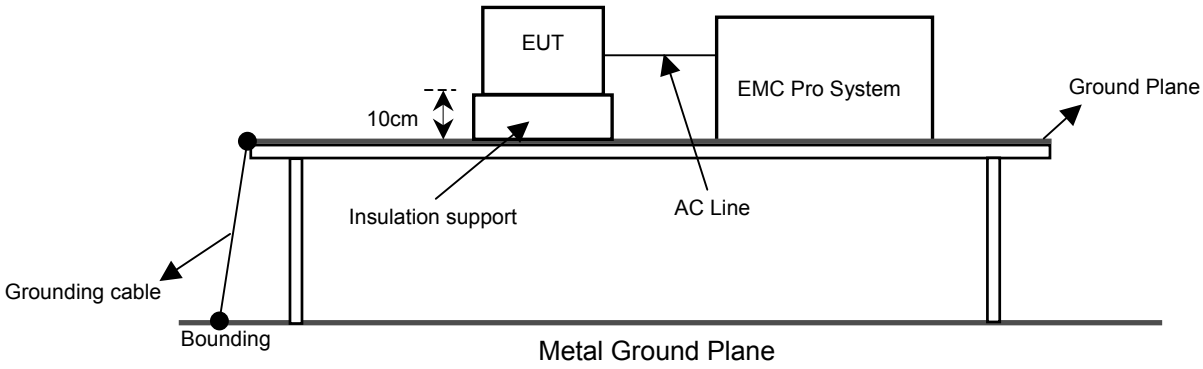
14 Voltage Dips, Short Interruptions Immunity Test (IEC 61000-4-11)

14.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMC Pro System	KeyTek	EMC Pro	0003231	2011/04/07

Note: The above equipments are within the valid calibration period.

14.2 Block Diagram of Test Configuration



14.3 Test Levels

Preferred test level and durations for voltage dips

Class [a]	Test level and durations for short interruptions (t_s) (50 Hz/60 Hz)				
Class 1	Case-by-case according to the equipment requirements				
Class 2	0 % during 1/2 cycle	0 % during 1 cycle	70 % during 25/30[c] cycles		
Class 3	0 % during 1/2 cycle	0 % during 1 cycle	40 % during 10/12[c] cycles	70 % during 25/30[c] cycles	80 % during 250/300[c] cycles
Class X[b]	X	X	X	X	X

[a] Classes as per IEC 61000-2-4; see Annex B.
[b] To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
[c] "25/30 cycles" means "25 cycles for 50 Hz test" and "30 cycles for 60 Hz test".

Preferred test level and durations for short interruptions

Class [a]	Test level and durations for short interruptions (t_s) (50 Hz/60 Hz)
Class 1	Case-by-case according to the equipment requirements
Class 2	0 % during 250/300[c] cycles
Class 3	0 % during 250/300[c] cycles
Class X[b]	X

[a] Classes as per IEC 61000-2-4; see Annex B.
[b] To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
[c] "250/300 cycles" means "250 cycles for 50 Hz test" and "300 cycles for 60 Hz test".

14.4 Test Requirement

IEC 61000-4-11 (EN 55024) require:

> 95% reduction (Voltage Dips), 0.5 period, Performance criterion: B

30% reduction (Voltage Dips), 25 period, Performance criterion: C

> 95% reduction (Voltage Interruptions), 250 period, Performance criterion: C

14.5 Configuration of Measurement

14.5.1 The power cord was used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.

14.5.2 According to EN 55024, the EUT was tested for (I) > 95% voltage dip of supplied voltage with duration of 0.5 period (10ms), (II) 30% voltage dip of supplied voltage and duration 25 period (500ms). Both of the dip tests were carried out for a sequence of three voltage dips with intervals of 10 seconds. (III)> 95% voltage interruption of supplied voltage with duration of 250 period (5000ms) was followed, which was a sequence of three voltage interruptions with intervals of 10 seconds.

14.6 Test Result

Temperature: 25.3 ℃； Humidity: 47 %； Atm pres: 101 Kpa； Test Engineer: Willion

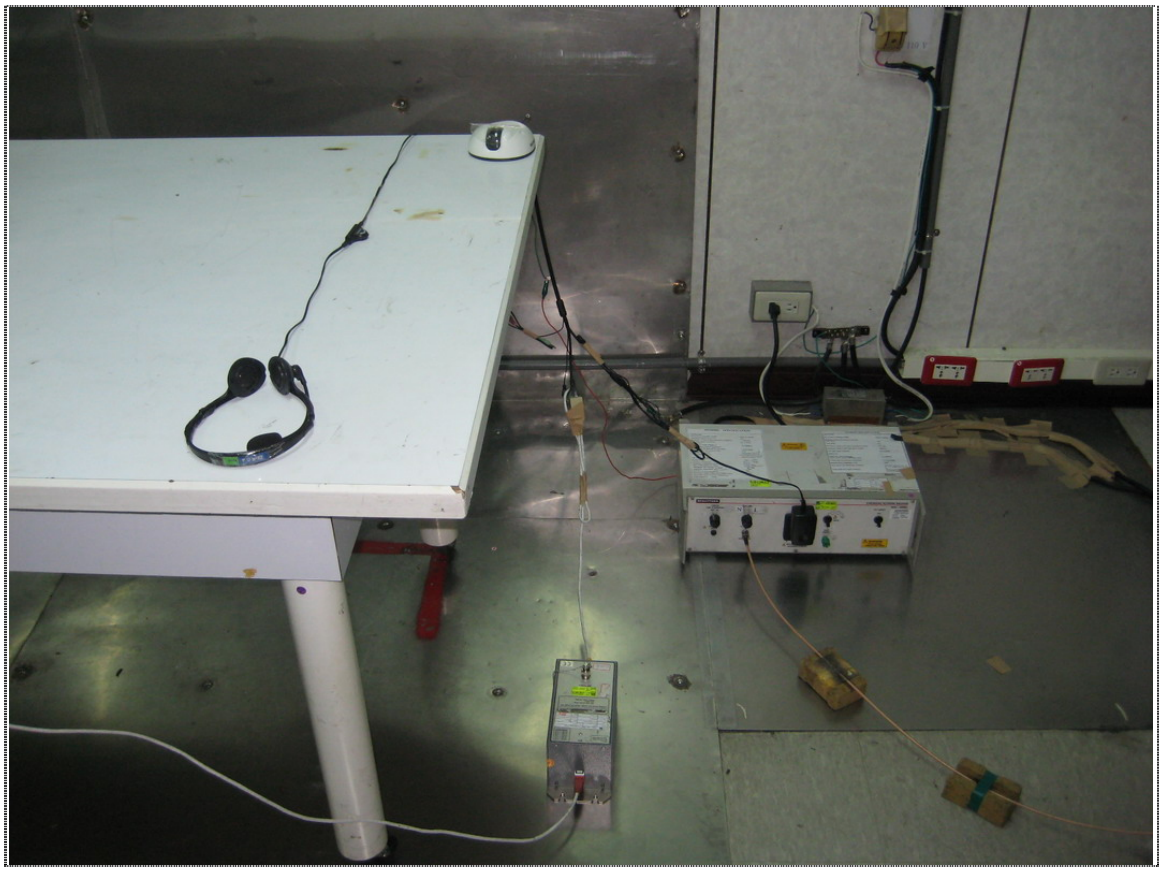
PASS.

The performance criterion after tested EN 55024:

> 95% reduction (Voltage Dips), 0.5 period	☒ **A**	☐ **B**	☐ **C**
30% reduction (Voltage Dips), 25 period	☒ **A**	☐ **B**	☐ **C**
> 95% reduction (Voltage Interruptions), 250 period	☐ **A**	☒ **B**	☐ **C**

15 Photographs of Test

15.1 Power Line & Telecommunication Port Conducted Emission Measurement



Front View

Rear View

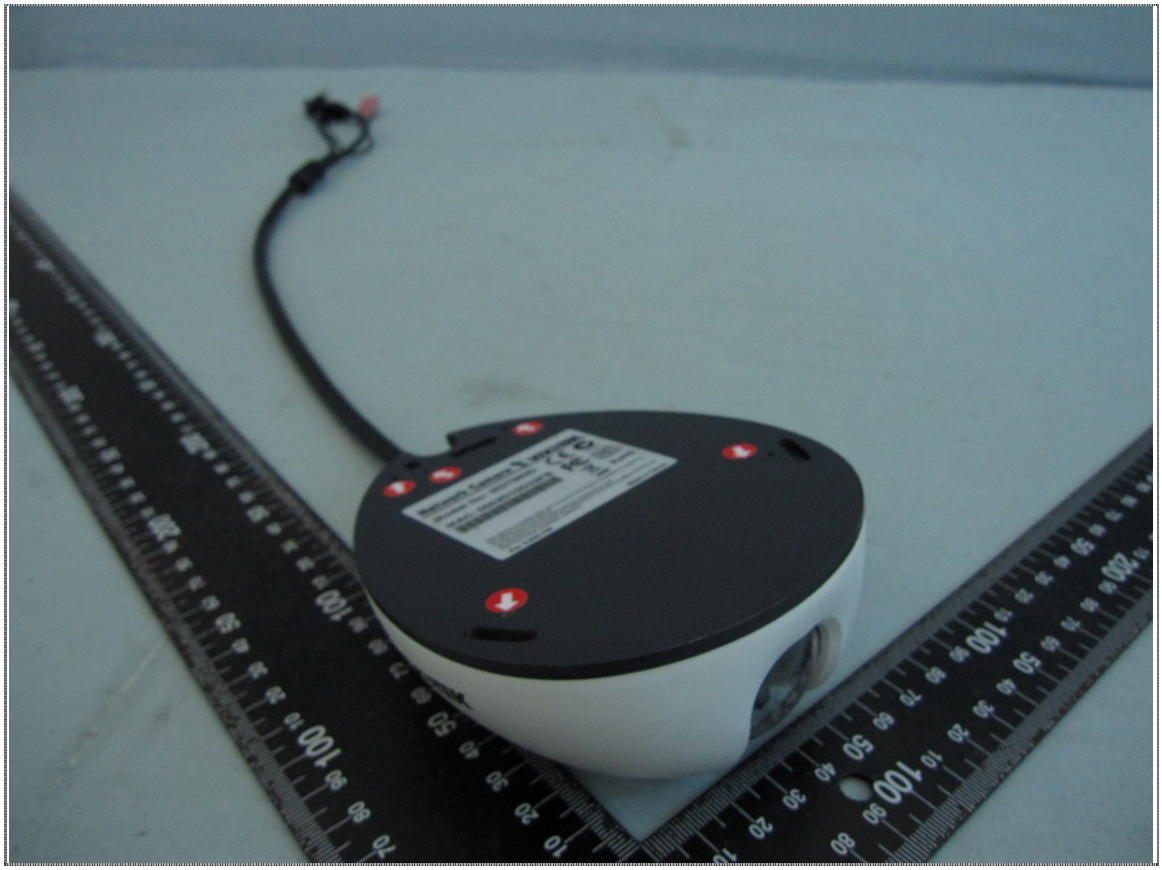
15.2 Radiated Emission Measurement (Below 1GHz)

Front View

Rear View

15.3 Electrostatic Discharge Test Point

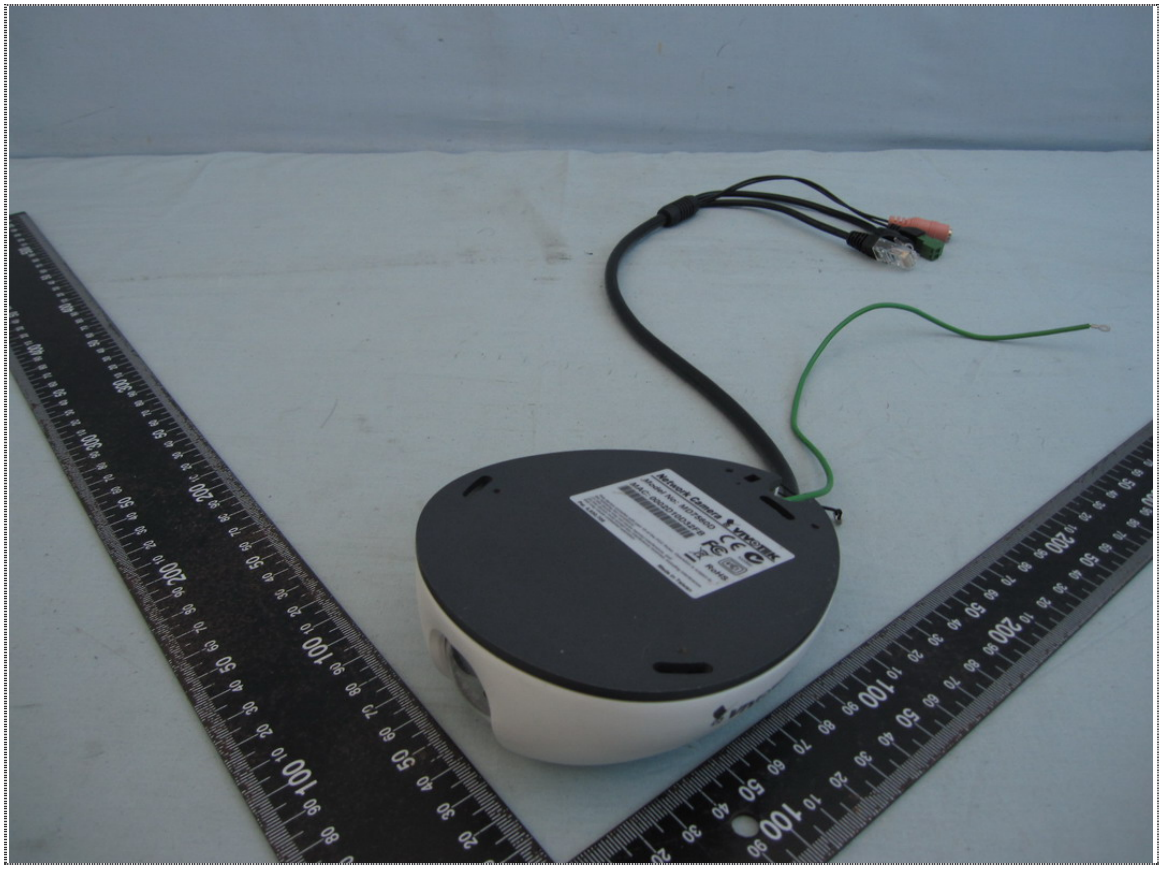
Discharge Point-1 (Green: Air discharge; Red: Contact discharge)



Discharge Point-2 (Green: Air discharge; Red: Contact discharge)

16 Photographs of EUT

Front View of EUT



Rear View of EUT