EU Declaration of Conformity

ATTESTATION

of conformity

with European Directives

For the following

Product	**:**	**Network Video Recorder**
Model Name	**:**	**DR-2316P**
Variant Model Name	**:**	**DIR1640, EN4416P, DR-2308P, DIR840, EN4208P**

Manufactured at	**:**	**IDIS CO., LTD.**
Address	**:**	**8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA**

The submitted sample of the above equipment has been tested for CE marking according to following European Directive and standards:
- Electromagnetic Compatibility Directive 2014/30/EU

The referred test report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the specified European Directive.
This verification does not imply assessment of the production of the product.
The CE marking may be affixed if all relevant and effective European Directives with CE are applicable.

The standards relevant for the evaluation of EMC requirements are as follows:

Test Standards	**:**	**EN 55032:2015, Class A** **EN 50130-4:2011/A1:2014** **EN 61000-3-2:2014** **EN 61000-3-3:2013**

Date of issue: August 29, 2016

IDIS CO., LTD.

8-10, TECHNO 3-RO, YUSEONG-GU,
DAEJEON, KOREA

(Name and signature of authorized person)

TEST REPORT

KCTL Inc.
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Applicant	:	IDIS CO., LTD. 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA
Manufacturer	:	IDIS CO., LTD. 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA
Type of equipment	:	Network Video Recorder
Model Name	:	DR-2316P
Variant Model Name	:	DIR1640, EN4416P, DR-2308P, DIR840, EN4208P
Date of Receipt	:	July 27, 2016
Date of Test	:	August 03 ~ August 12, 2016
Test method used	:	EN 55032:2015, Class A EN 50130-4:2011/A1:2014 EN 61000-3-2:2014 EN 61000-3-3:2013
Test Results	:	Complied

This product complies with the requirements of the EMC Directive 2014/30/EU.
The results in this report apply only to the sample tested.
This Test Report cannot be reproduced, except in full, without the written approval of KCTL Laboratory.

Affirmation	Tested by Name: Seungtae Kim	Technical Manager Name: Gunsu Park

2016. 08. 29

Contents

1. Applicant information

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2. Laboratory information

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Facsimile Number: 82 505 299 8311

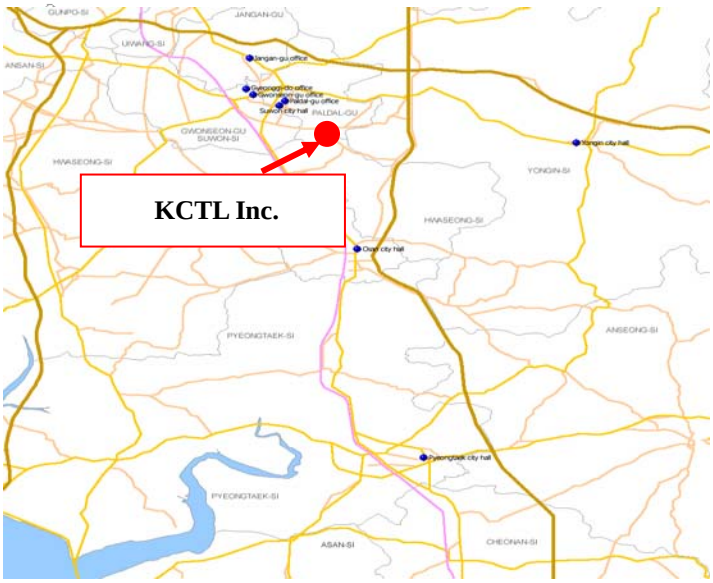
FCC Site Designation No: KR0040, FCC Site Registration No: 687132

VCCI Registration No. : R-3327, G-198, C-3706, T-1849

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP



3. Test system configuration

3.1 Operation environment

		Temperature	Humidity	Pressure
Chamber(10 m)	:	24.7 °C	41.1 % R.H.	-
Shielded room(CE)	:	21.5 °C	52.3 % R.H.	-
Shielded room(ESD)	:	25.4 °C	42.1 % R.H.	100.9 kPa

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Radiated Emission	10 m Chamber
Harmonics current	EMI Test area(6F)
Voltage fluctuations and flickers	EMI Test area(6F)
Electrostatic discharge	Shielded Room
Radiated RF immunity	6F Fully anechoic chamber (3 m)
Electrical Fast Transient/BURST	Shielded Room
Surge	Shielded Room
Conducted RF immunity	Shielded Room
Voltage dip/interruption	Shielded Room
Mains supply voltage variations	Shielded Room

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability.
Based on CISPR 16-4-2, the measurement uncertainty level with a 95 % confidence level was applied.

Conducted emission measurement (C.L.: Approx 95 %, k = 2)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz: 3.80 dB 150 kHz ~ 30 MHz: 3.42 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: 3.82 dB 150 kHz ~ 30 MHz: 3.40 dB	
Radiated Emission measurement (C.L.: Approx 95 %, k = 2)		
10 m Chamber (4F)	30 MHz ~ 300 MHz	3 m: 5.48 dB 10 m: 5.48 dB
	300 MHz ~ 1 000 MHz	3 m: 5.60 dB 10 m: 5.48 dB
	1 GHz ~ 6 GHz	3 m: 6.00 dB
10 m Chamber (2F)	30 MHz ~ 300 MHz	3 m: 5.04 dB 10 m: 5.04 dB
	300 MHz ~ 1 000 MHz	3 m: 5.16 dB 10 m: 5.04 dB
	1 GHz ~ 6 GHz	3 m: 6.10 dB
Radio Frequency Electromagnetic Fields (C.L.: Approx 95 %, k = 2)		
1.85 dB		
Disturbance power Electromagnetic Fields (C.L.: Approx 95 %, k = 2)		
3.20 dB		

3.3 Measurement Program

These test items were performed by software programs;

Test item	Measurement Program	
Conducted Emission	EP5CE_V 5.4.0(TOYO)	
Radiated Emission	EP5RE_V 4.6.0(TOYO)	
Harmonics current, Voltage fluctuations and flickers	CTS 4_V 4.6.2 (AMETEK)	
Radiated RF immunity	3F	EMC32_V 9.01.0 (ROHDE & SCHWARZ)
	6F	EMC32_V 8.53.0 (ROHDE & SCHWARZ)
Electrical Fast Transient/BURST, Surge, Magnetic field immunity, Voltage dip/interruption	6F(#1)	ISMIEC_V 4.08(EM TEST)
	6F(#2)	ISMIEC_V 4.07(EM TEST)
	3F(#3)	IEC_V 5.2.9(EM TEST)
Conducted RF immunity	6F(#1)	EMC32_V 9.25.00 (ROHDE & SCHWARZ)
	3F(#2)	ICD_V 5.3.4(EM TEST)

4. Description of E.U.T.

4.1 General information

Project Name	DR-2308P	DR-2316P
Key Feature -for catalog	- Total incoming throughput 210Mbps - Up to 240ips Full HD real-time recording - Supports H.265 / H.264 codec - Supports UHD display - Up to 240ips live display - Easy to install, set-up and play with DirectIP™ cameras - Built-in 8 channel PoE Switch - Supports one click network configuration through FEN service - Supports third party cameras (Axis, Panasonic, ONVIF™)	- Total incoming throughput 300Mbps - Up to 480ips Full HD real-time recording - Supports H.265 / H.264 codec - Supports UHD display - Up to 480ips live display - Easy to install, set-up and play with DirectIP™ cameras - Built-in 8 channel PoE Switch - Supports one click network configuration through FEN service - Supports third party cameras (Axis, Panasonic, ONVIF™)
VIDEO		
Video Inputs	8 IP channels	16 IP channels
3rd party above 5MP abailable channels	4	4
IDIS 8MP regist channels	8	8
IDIS 5MP Fish eye regist channels	8	8
Max. Incoming Throughput	210Mbps	300Mbps
(Live + Recording + Remote)	(80+80+50)	(90 + 160 + 50)
Supported Camera	DirectIP™, AXIS, PANASONIC, ONVIF™	DirectIP™, AXIS, PANASONIC, ONVIF™
Video Outputs	1 HDMI, 1 VGA	1 HDMI, 1 VGA
Display Layout	1x1, 2x2, 3x3, 3x1	1x1, 2x2, 3x3, 4x4, 3x1
Display Resolution	3840x2160, 1920 x 1200 , 1920 x 1080, 1680 x 1050, 1600 x 1200	3840x2160, 1920 x 1200 , 1920 x 1080, 1680 x 1050, 1600 x 1200
Display Speed	Up to 240ips	Up to 480ips
Max. Display Throughput	80Mbps	90Mbps
Digital Zoom	x2 ~ x12	x2 ~ x12
RECORDING		
Max. Throughput	80Mbps, 240ips @ Full HD, 120ips @ 4K (UHD)	160Mbps, 480ips@Full HD, 240 ips @ 4K (UHD)
Recording Resolution	Up to 8MP (Depending on IP Camera)	Up to 8MP (Depending on IP Camera)
Recording bit rate(CIF @30ips) - Very High / High / Standard / Basic	1/4 x D1	1/4 x D1
Recording bit rate(640x360 @30ips) - Very High / High / Standard / Basic	3Mbps / 2.25Mbps / 1.5Mbps / 0.75Mbps	3Mbps / 2.25Mbps / 1.5Mbps / 0.75Mbps
Recording bit rate(D1 @30ips) - Very High / High / Standard / Basic	4Mbps / 3Mbps / 2Mbps / 1Mbps	4Mbps / 3Mbps / 2Mbps / 1Mbps
Recording bit rate(720P @30ips) - Very High / High / Standard / Basic	8Mbps / 6Mbps / 4Mbps / 2Mbps	8Mbps / 6Mbps / 4Mbps / 2Mbps
Recording bit rate(FHD @15ips) - Very High / High / Standard / Basic	7.2Mbps / 5.76Mbps / 4.32Mbps / 2.88Mbps	7.2Mbps / 5.76Mbps / 4.32Mbps / 2.88Mbps
Recording bit rate(FHD @30ips) - Very High / High / Standard / Basic	10Mbps / 8Mbps / 6Mbps / 4Mbps	10Mbps / 8Mbps / 6Mbps / 4Mbps
Recording bit rate(1536x1536 @30ips) - Very High / High / Standard / Basic	12Mbps / 10Mbps / 8Mbps / 4Mbps	12Mbps / 10Mbps / 8Mbps / 4Mbps
Recording bit rate(2560x2048 @30ips) - Very High / High / Standard / Basic	16Mbps / 14Mbps / 12Mbps / 10Mbps	16Mbps / 14Mbps / 12Mbps / 10Mbps
Recording bit rate(3840x2160 @15ips) - Very High / High / Standard / Basic	12Mbps / 10Mbps / 8Mbps / 7Mbps	12Mbps / 10Mbps / 8Mbps / 7Mbps

Encoding Mode	CBR, VBR *	CBR, VBR *
Compression	H.264, H.265	H.264, H.265
Recording Mode	Time-Lapse, Event, Pre-Event, Panic	Time-Lapse, Event, Pre-Event, Panic
Trigger Events	Alarm in, Audio detection, Motion detection, Trip-zone, Tampering, Video loss	Alarm in, Audio detection, Motion detection, Trip-zone, Tampering, Video loss
PLAYBACK		
Performance	8ch Full HD synchronous playback 4ch 4K playback	16ch Full HD synchronous playback 4ch 4K playback
Search Mode	Time-lapse, Event log,Thumbnail, Motion, Text-in	Time-lapse, Event log,Thumbnail, Motion, Text-in
Digital Zoom	x2 ~ x12	x2 ~ x12
STORAGE		
HDD	SATA x2, eSATA x1,(Up to 4TB capacity for each disk)	SATA x2, eSATA x1,(Up to 4TB capacity for each disk)
Total Capacity	24TB=4TB x (2 +1x4)	24TB=4TB x (2 +1x4)
Data Export Device	USB HDD, USB Stick	USB HDD, USB Stick
NETWORK		
Client Connection	Gigabit Ethernet(Client) x1	Gigabit Ethernet(Client) x1
Video in Connection	Fast Ethernet(IP Camera) x8 +Gigabit Ethernet(Ext) x1	Fast Ethernet(IP Camera) x8 +Gigabit Ethernet(Ext) x1
Transmission Speed	50Mbps / 100Mbps(BRP Mode)	50Mbps / 100Mbps(BRP Mode)
Camera Power	PoE(IEEE 802.3at class 4) supported 8 ports, 50W	PoE(IEEE 802.3at class 4) supported 8 ports, 50W
Remote Data Export	IDIS Player, AVI, JPG	IDIS Player, AVI, JPG
Event Notification	Email (attach clip (.cbf) .MP4), Callback to Remote S/W, Push notification (IDIS Mobile), SNS (Twitter)	Email (attach clip (.cbf) .MP4), Callback to Remote S/W, Push notification (IDIS Mobile), SNS (Twitter)
Two-way Audio	yes (NVR<->Camera, iRAS <->Camera)	yes (NVR<->Camera, iRAS <->Camera)
Client Viewer	IDIS Center, IDIS Mobile, IDIS Web, IDIS Solution Suite	IDIS Center, IDIS Mobile, IDIS Web, IDIS Solution Suite
INTERFACE		
Audio In/ Out	Local(NVR) : - / 1RCA + 1HDMI IP Camera : 8 / 8 (Depending on IP Camera)	Local(NVR) : - / 1RCA + 1HDMI IP Camera : 16 / 16 (Depending on IP Camera)
- NVR AUDIO (Impedance) In / Out	'---	'---
- NVR AUDIO (Signal Level) In / Out	'---	'---
- Frequency Range Live / Record	16KHz samping, 16bit per sample	16KHz samping, 16bit per sample
- Sampling Frequency Live / Record	16KHz samping, 16bit per sample	16KHz samping, 16bit per sample
- Audio Data Size	64Kbps (per channel)	64Kbps (per channel)
- 'Audio Codec Format	G.711, G.726	G.711, G.726
Alarm In / Out	Local(NVR) : 4 / 1 IP Camera : 8 / 8 (Depending on IP Camera)	Local(NVR) : 4 / 1 IP Camera : 16 / 16 (Depending on IP Camera)
- NVR Alarm Spec- In	4 TTL, NC/NO programmable, 2.4V (NC) or 0.3V (NO) threshold, 5VDC	4 TTL, NC/NO programmable, 2.4V (NC) or 0.3V (NO) threshold,5VDC
- NVR Alarm Spec- Out	1 relay output, 2A@125VAC, 1A@30VDC (NO)	1 relay output, 2A@125VAC, 1A@30VDC (NO)
- NVR Alarm Spec - Reset IN	-	-
- Internal Buzzer	Yes	Yes
Alarm Reset In	-	-
Serial Interface	RS232 (Terminal Block)	RS232 (Terminal Block)
USB	USB 2.0 x 1, USB 3.0 x 1	USB 2.0 x 1, USB 3.0 x 1
User Interface	Mouse, IR Remote Control, Network Remote Keyboard	Mouse, IR Remote Control, Network Remote Keyboard
GENERAL		
Operating System	Embedded Linux	Embedded Linux
System Language	English, French, German, Italian, Spanish, Dutch, Danish, Russian, Polish, Hungarian, Czech, Portuguese, Croatian, Finnish, Swedish, Turkish, Korean, Japanese	English, French, German, Italian, Spanish, Dutch, Danish, Russian, Polish, Hungarian, Czech, Portuguese, Croatian, Finnish, Swedish, Turkish, Korean, Japanese
User Guide Language	English, Korean, Japanese German, Italian, French, Spanish, Dutch, Turkish, Russian (1.0.0)	English, Korean, Japanese German, Italian, French, Spanish, Dutch, Turkish, Russian (1.0.0)
Quick Guide Language	English, Korean, Japanese German, Italian, French, Spanish, Dutch, Turkish, Russian (1.0.0)	English, Korean, Japanese German, Italian, French, Spanish, Dutch, Turkish, Russian (1.0.0)
UNIT Dimensions (W x H x D)	300mm x 62mm x 231 mm (11.8" x 2.4" x 9.1")	300mm x 62mm x 231 mm (11.8" x 2.4" x 9.1")
Unit Weight	2.31kg (5.1lb) (with 1 HDD)	2.31kg (5.1lb) (with 1 HDD)
Shipping Dimensions (W x H x D)	460mm x 113mm x 360mm	460mm x 113mm x 360mm
Shipping Dimensions	3.9kg (with 1 HDD)	3.9kg (with 1 HDD)
Working Temperature	0°C to 40°C (32°F ~ 104°F)	0°C to 40°C (32°F ~ 104°F)
Operating Humidity	0% ~ 90%	0% ~ 90%
Power	NVR Adaptor (Input : 100-240V AC, 50/60Hz, 1.5A, Output : 12V DC, 5A) PSE Adaptor (Input : 100-240V AC, 50/60Hz, 1.4A, Output : 48V DC, 1.36A)	NVR Adaptor (Input : 100-240V AC, 50/60Hz, 1.5A, Output : 12V DC, 5A) PSE Adaptor (Input : 100-240V AC, 50/60Hz, 1.4A, Output : 48V DC, 1.36A)
Power Input	DC 12V 1.76A (for NVR), DC48V 1.1A(for PSE)	DC 12V 1.76A (for NVR), DC48V 1.1A(for PSE)
Power Consumption	Max. 21.12W (for NVR), Max. 52.8W (for PSE)	Max. 21.12W (for NVR), Max. 52.8W (for PSE)

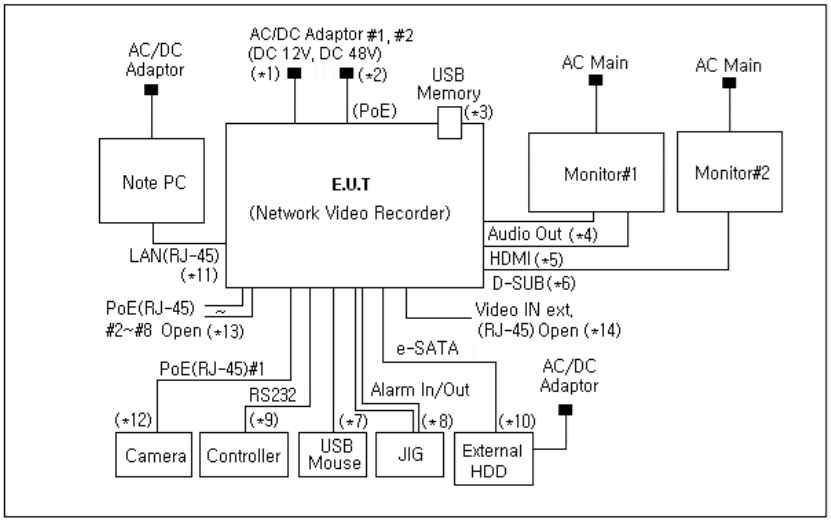
4.2 Product description

Type of product	Network Video Recorder
Model name (Basic)	DR-2316P
Model name (Variant)	DIR1640, EN4416P, DR-2308P, DIR840, EN4208P
Difference	Buyer model names.
Trade name	-
Serial no	-
Testing Voltage	230 V, 50 Hz
Input/Output range	* AC/DC Adaptor #1 (PA-1061-81) Input: 100 - 240 V, 50/60 Hz, 1.6 A Output: DC 12V, 5.0 A *AC/DC Adaptor #2 (ATS065T-A480) Input: 100 - 240 V, 50/60 Hz, 1.4 A Output: DC 48 V, 1.36 A
Internal clock frequency	6 GHz
Note	* AC/DC adaptors were provided by the manufacturer. * Front Type#1

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	NT271B5E	JGFE919DB00025Z	SAMSUNG
Monitor #1	SMT-2231P	YDQ03VDBB02500H	SAMSUNG
Monitor #2	D2214Hb	-	Dell
Camera	MNC322D	-	IDIS
USB Mouse	GP-M3100UE	2C001153	GP Electronics
Controller	SPC-1010	-	SAMSUNG
JIG	-	-	-
External HDD	IT-735	-	IT-CEO
USB Memory (16 GB)	-	-	SanDisk

4.4 Test configuration



Note	Start		End		Cable		
	Name	I/O port	Name	I/O port	Length (m)	Spec.	Cable
1	**EUT** (Network Video Recorder)	Power #1	AC/DC Adaptor#1 (DC 12V)	Power #1	1.5	Unshield	-
2		Power(PoE) #2	AC/DC Adaptor#2 (DC 48V)	Power(PoE) #2	1.5	Unshield	-
3		USB 3.0	USB Memory	USB 3.0	Direct	-	-
4		Audio Out	Monitor#1	Audio In	3.0	Shield	Out-door
5		HDMI	Monitor#1	HDMI	2.0	Shield	-
6		D-SUB	Monitor#2	D-SUB	1.8	Shield	-
7		USB 2.0	USB Mouse	USB 2.0	1.8	Shield	-
8		Alarm In/Out	JIG	Alarm In/Out	3.0	Unshield	Out-door
9		RS232	Controller	RS232	3.0	Unshield	Out-door
10		e-SATA	External HDD	e-SATA	2.0	Shield	-
11		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Unshield	Out-door
12		PoE(RJ-45)#1	Camera	PoE(RJ-45)#1	3.0	Unshield	Out-door
13		PoE(RJ-45) #2~#8	Open	-	3.0	Unshield	Out-door
14		Video IN ext. (RJ-45)	Open	-	2.0	Unshield	-

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
1	Monitoring test using the Camera. (HDMI, D-SUB: 1 920 X 1 080)
	Check the recording video using the USB Memory.
	Audio Out test using the Monitor#1.
	RS232 test using the Controller.
	Alarm In/Out test using the JIG.
	Ping test.

5. Summary of test results

5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
☒	Conducted Emission	EN 55032:2015	Pass
☒	Radiated Emission	EN 55032:2015	Pass
☒	Harmonics current	EN 61000-3-2:2014	Pass
☒	Voltage fluctuations and flickers	EN 61000-3-3:2013	Pass

5.2 Summary of immunity test results

Applied	Test items	Test method	Result
* **EN 50130-4:2011/A1:2014**			
☒	Electrostatic discharge	EN 61000-4-2:2009	Pass
☒	Radiated RF immunity	EN 61000-4-3:2006+A2:2010	Pass
☒	Electrical Fast Transient/BURST	EN 61000-4-4:2012	Pass
☒	Surge	EN 61000-4-5:2014	Pass
☒	Conducted RF immunity	EN 61000-4-6:2014	Pass
☒	Voltage dip/interruption	EN 61000-4-11:2004	Pass
☒	Mains supply voltage variations	EN 50130-4:2011/A1:2014	Pass

5.3 Performance criteria

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.
If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.
A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of discharge is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at a field strength of 3 V/m.
For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable setting etc.)
(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and
(c) there is no observable deterioration of the picture at 1 V/m.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of the bursts is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of the surges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at U_0 = 130 dBμV.
For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at U_0 = 140 dBμV, providing

(a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings, etc.)
(b) at U_0 = 130 dBμV, any deterioration of the picture is so minor that the system could still be used, and
(c) there is no observable deterioration of the picture at U_0 = 120 dBμV.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Mains supply voltage variations

There shall be no damage, malfunction or change of status due to the different supply voltage conditions.
The EUT shall meet the acceptance criteria for the functional test(see Clause 6), during the conditioning.

6. Test results

6.1 Conducted Emission

Test specification	EN 55032:2015, Class A		
Testing voltage	230 V, 50 Hz		
Test facility	Shielded room (CE#1)		
Date	2016. 08. 03		
Temperature (°C)	21.5 °C	Humidity (% R.H.)	52.3 % R.H.
Remarks	Pass		

Both conducted lines are measured in Quasi-Peak and C/Average mode, including the worst-case data points for each tested configuration. The EUT measured in accordance with the methods described in standards.

6.1.1 Limits of conducted emission measurement

☒ AC main

Frequency [㎒]	Resolution Bandwidth [㎑]	Class A Limits (dB(㎶))		Class B Limits (dB(㎶))	
		Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	9	79	66	66 ~ 56 *	56 ~ 46*
0.5 ~ 5	9	73	60	56	46
5 ~ 30	9	73	60	60	50

☒ Telecommunication

Frequency [㎒]	Resolution Bandwidth [㎑]	Class A Limits (dB(㎶))		Current Limits (dB(㎂))	
		Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	9	97 to 87	84 to 74	53 to 43	40 to 30
0.5 ~ 30	9	87	74	43	30
Frequency [㎒]	Resolution Bandwidth [㎑]	Class B Limits (dB(㎶))		Current Limits (dB(㎂))	
		Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	9	84 to 74	74 to 64	40 to 30	30 to 20
0.5 ~ 30	9	74	64	30	20

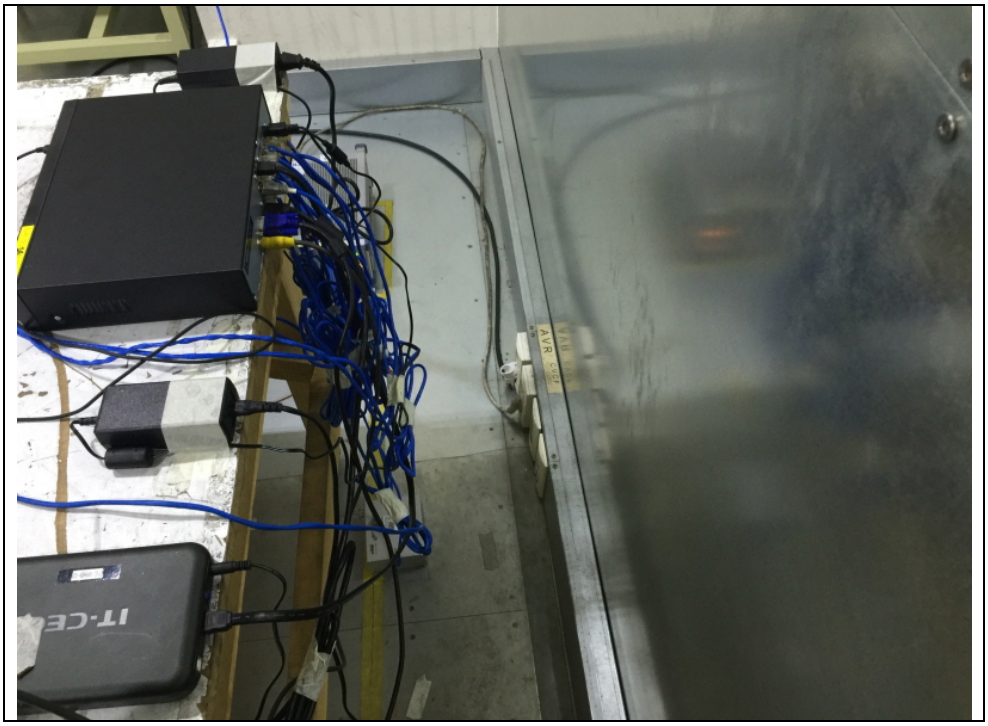
If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 seconds at each measurement frequency, the highest reading shall be recorded, with the exception of any brief isolated high reading (which shall be ignored).

6.1.2 Used equipment

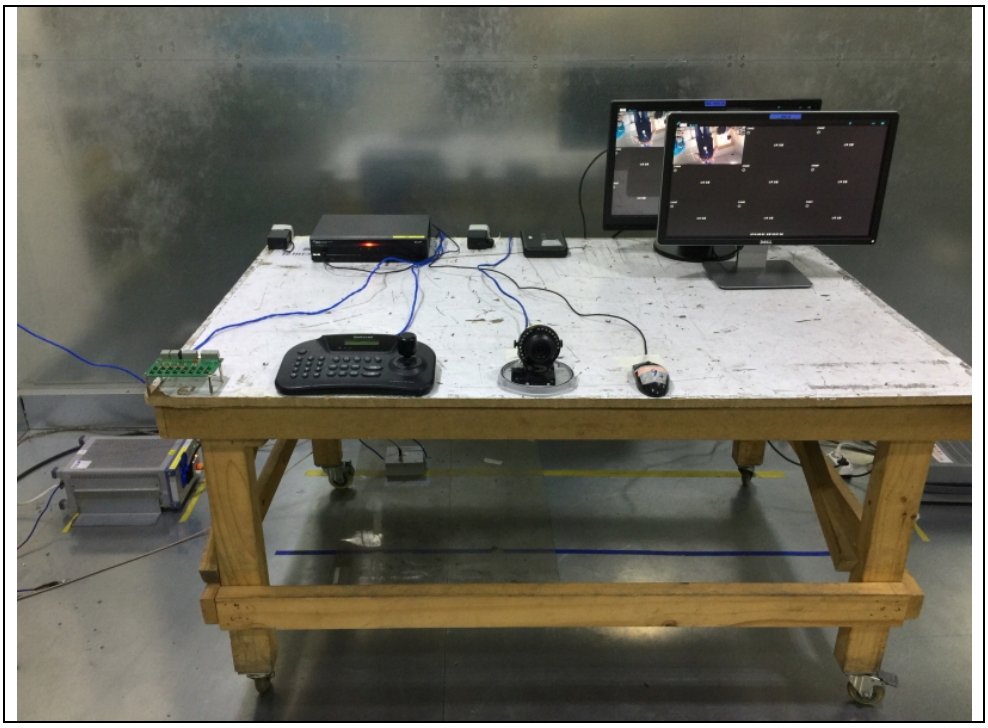
Equipment	Model	Serial No.	Makers	Next Cal. Date	Used
Test Receiver	ESCI	100001	R&S	2017.02.26	☒
TWO-LINE V-NETWORK	ENV216	101358	R&S	2016.09.03	☒
TWO-LINE V-NETWORK	ESH3-Z5	100267	R&S	2017.04.07	☒
8-WIRE ISN CAT5	NTFM 8158 ISN CAT5	CAT5 8158 #138	SCHWARZBECK	2017.05.19	☒
IMPEDANCE STABILIZATION NETWORK	ISN ST08	24342	TESEQ	2017.08.25	☒

6.1.3 Photographs of test setup

* AC main

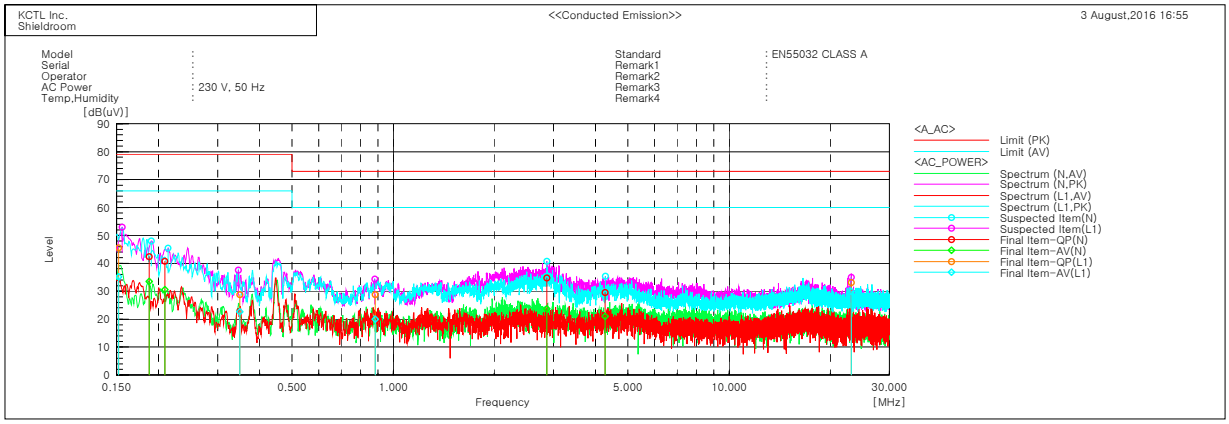


* Telecommunication



6.1.4 Conducted emission measurement result

* AC main (DR-2316P)(AC/DC Adaptor#1)



Final Result

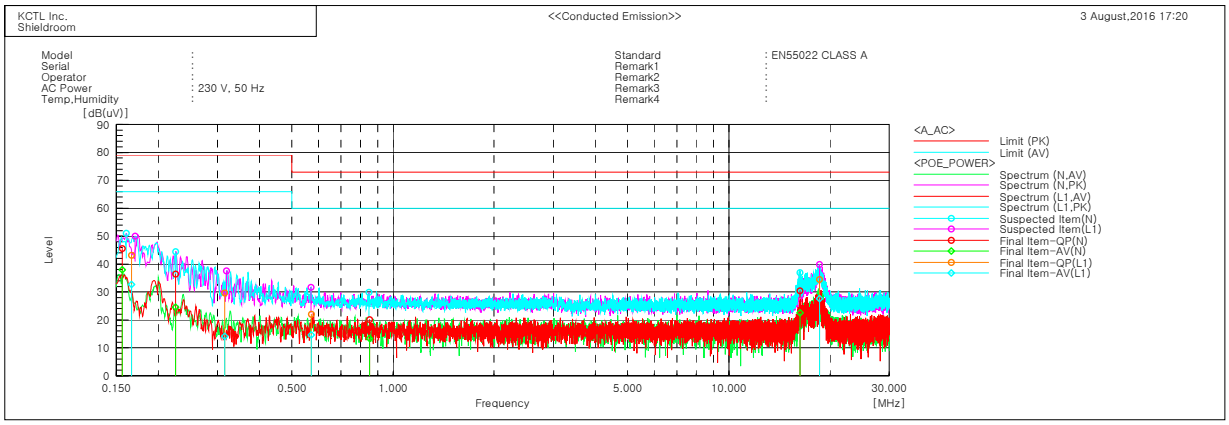
--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18777	32.4	23.4	10.0	42.4	33.4	79.0	66.0	36.6	32.6
2	0.20881	30.8	20.5	10.0	40.8	30.5	79.0	66.0	38.2	35.5
3	2.86721	25.0	14.0	9.7	34.7	23.7	73.0	60.0	38.3	36.3
4	4.27729	19.8	11.3	9.7	29.5	21.0	73.0	60.0	43.5	39.0

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15221	35.7	25.2	9.9	45.6	35.1	79.0	66.0	33.4	30.9
2	0.34956	18.8	12.7	9.9	28.7	22.6	79.0	66.0	50.3	43.4
3	0.88432	18.9	10.0	9.9	28.8	19.9	73.0	60.0	44.2	40.1
4	23.12775	23.1	19.9	10.0	33.1	29.9	73.0	60.0	39.9	30.1

* AC main (DR-2316P)(AC/DC Adaptor#2)



Final Result

--- N Phase ---

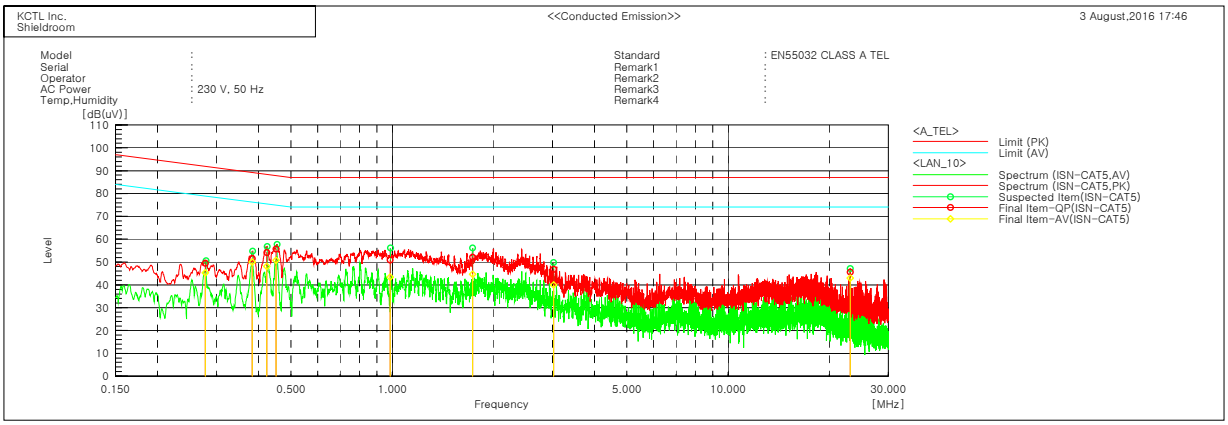
No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15641	35.7	28.0	9.9	45.6	37.9	79.0	66.0	33.4	28.1
2	0.22537	26.5	14.6	9.9	36.4	24.5	79.0	66.0	42.6	41.5
3	0.85207	10.2	3.5	9.9	20.1	13.4	73.0	60.0	52.9	46.6
4	16.27941	20.5	12.6	9.9	30.4	22.5	73.0	60.0	42.6	37.5

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.1666	33.3	22.9	9.9	43.2	32.8	79.0	66.0	35.8	33.2
2	0.31558	19.7	4.3	9.9	29.6	14.2	79.0	66.0	49.4	51.8
3	0.57154	12.0	4.6	10.0	22.0	14.6	73.0	60.0	51.0	45.4
4	18.6174	24.4	17.7	10.0	34.4	27.7	73.0	60.0	38.6	32.3

* Telecommunication port

LAN Port (LCL 65 dB)_10 Mbps (DR-2316P)

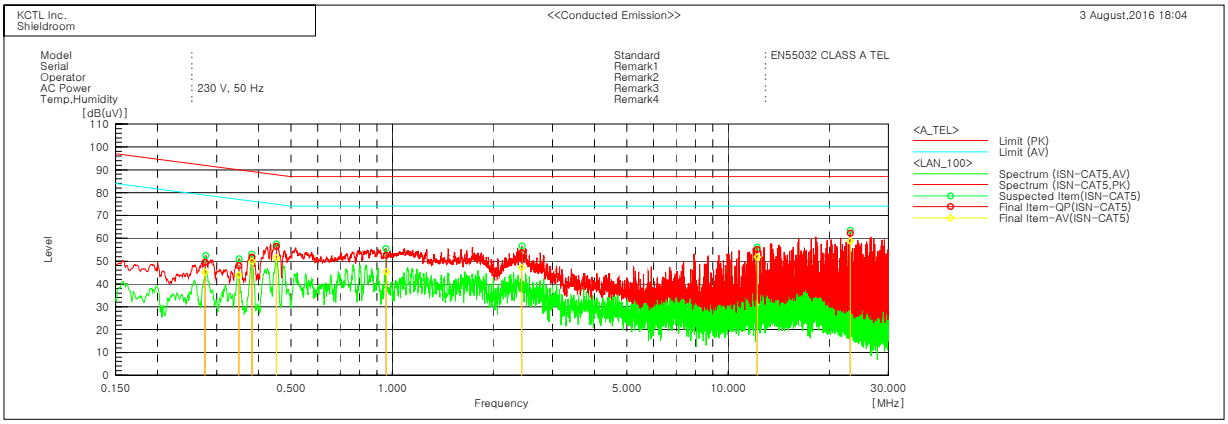


Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.2778	39.8	35.6	9.7	49.5	45.3	91.9	78.9	42.4	33.6
2	0.38307	41.8	40.2	9.7	51.5	49.9	89.2	76.2	37.7	26.3
3	0.42314	44.4	38.3	9.7	54.1	48.0	88.4	75.4	34.3	27.4
4	0.45136	46.0	41.0	9.7	55.7	50.7	87.9	74.9	32.2	24.2
5	0.98597	41.3	33.8	9.6	50.9	43.4	87.0	74.0	36.1	30.6
6	1.73347	42.6	35.2	9.5	52.1	44.7	87.0	74.0	34.9	29.3
7	3.02218	37.4	30.6	9.4	46.8	40.0	87.0	74.0	40.2	34.0
8	23.12779	36.0	33.3	9.6	45.6	42.9	87.0	74.0	41.4	31.1

LAN Port (LCL 65 dB)_100 Mbps (DR-2316P)

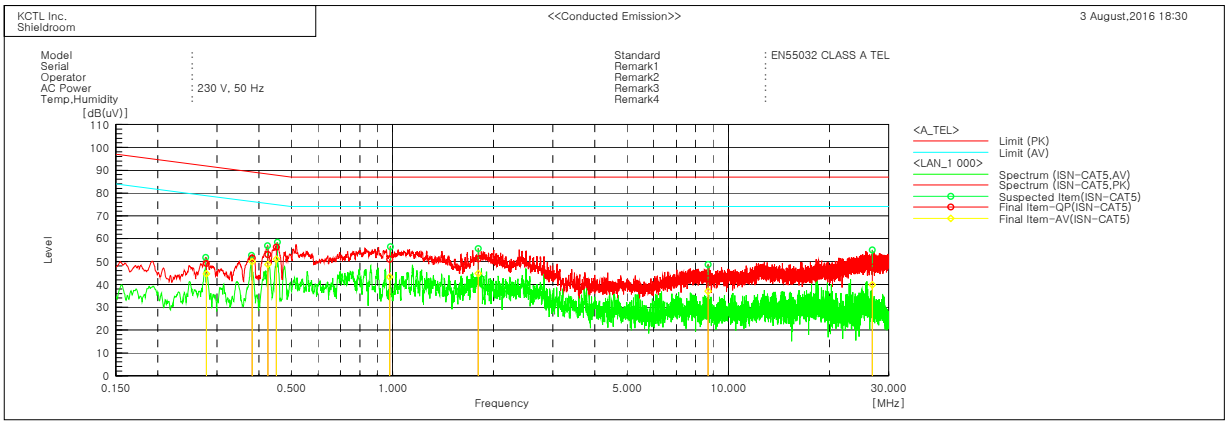


Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.27731	39.7	35.5	9.7	49.4	45.2	91.9	78.9	42.5	33.7
2	0.3491	38.4	34.2	9.7	48.1	43.9	90.0	77.0	41.9	33.1
3	0.38213	42.0	40.2	9.7	51.7	49.9	89.2	76.2	37.5	26.3
4	0.45234	46.7	41.6	9.7	56.4	51.3	87.8	74.8	31.4	23.5
5	0.95902	42.9	35.7	9.6	52.5	45.3	87.0	74.0	34.5	28.7
6	2.42854	44.2	37.7	9.4	53.6	47.1	87.0	74.0	33.4	26.9
7	12.19792	45.4	42.2	9.6	55.0	51.8	87.0	74.0	32.0	22.2
8	23.12783	52.6	49.2	9.6	62.2	58.8	87.0	74.0	24.8	15.2

LAN Port (LCL 65 dB)_1 000 Mbps (DR-2316P)

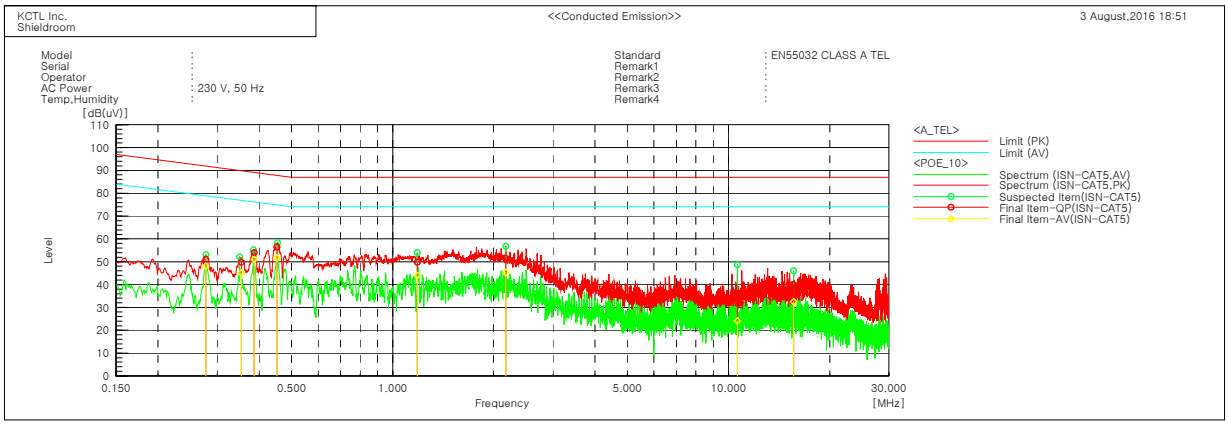


Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.27914	39.5	35.0	9.7	49.2	44.7	91.8	78.8	42.6	34.1
2	0.38195	41.8	40.2	9.7	51.5	49.9	89.2	76.2	37.7	26.3
3	0.42564	43.3	38.9	9.7	53.0	48.6	88.3	75.3	35.3	26.7
4	0.45142	46.6	41.3	9.7	56.3	51.0	87.8	74.8	31.5	23.8
5	0.9818	41.5	33.7	9.6	51.1	43.3	87.0	74.0	35.9	30.7
6	1.79884	41.7	35.4	9.5	51.2	44.9	87.0	74.0	35.8	29.1
7	8.71028	32.8	27.4	9.6	42.4	37.0	87.0	74.0	44.6	37.0
8	26.80748	38.1	30.3	9.5	47.6	39.8	87.0	74.0	39.4	34.2

PoE(RJ-45) Port (LCL 65 dB)_10 Mbps (DR-2316P)

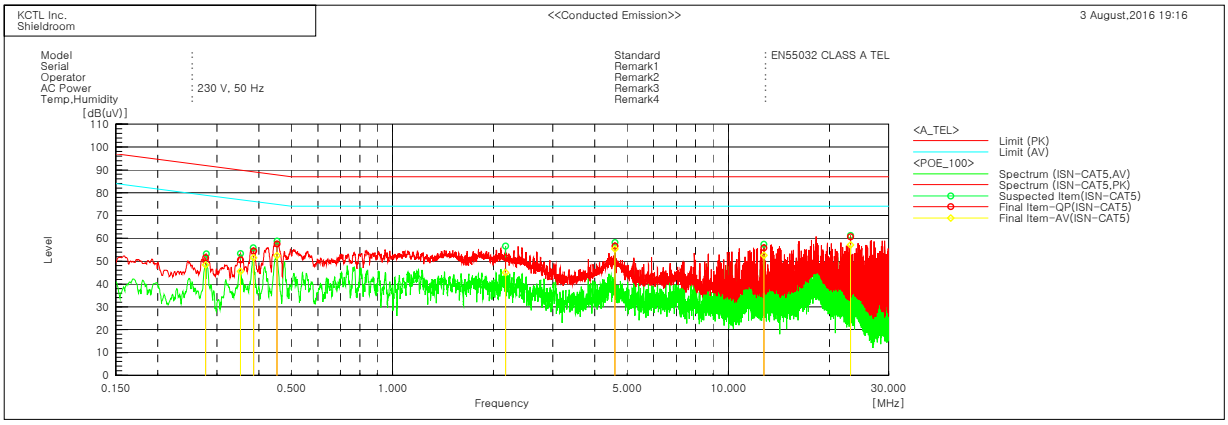


Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.27769	41.4	38.4	9.7	51.1	48.1	91.9	78.9	40.8	30.8
2	0.35417	40.1	35.4	9.7	49.8	45.1	89.9	76.9	40.1	31.8
3	0.38654	44.4	41.4	9.7	54.1	51.1	89.1	76.1	35.0	25.0
4	0.45192	46.8	41.9	9.7	56.5	51.6	87.8	74.8	31.3	23.2
5	1.18423	40.3	34.5	9.5	49.8	44.0	87.0	74.0	37.2	30.0
6	2.1707	42.2	35.9	9.4	51.6	45.3	87.0	74.0	35.4	28.7
7	10.62557	25.2	14.6	9.6	34.8	24.2	87.0	74.0	52.2	49.8
8	15.60649	30.2	22.7	9.7	39.9	32.4	87.0	74.0	47.1	41.6

PoE(RJ-45) Port (LCL 65 dB)_100 Mbps (DR-2316P)

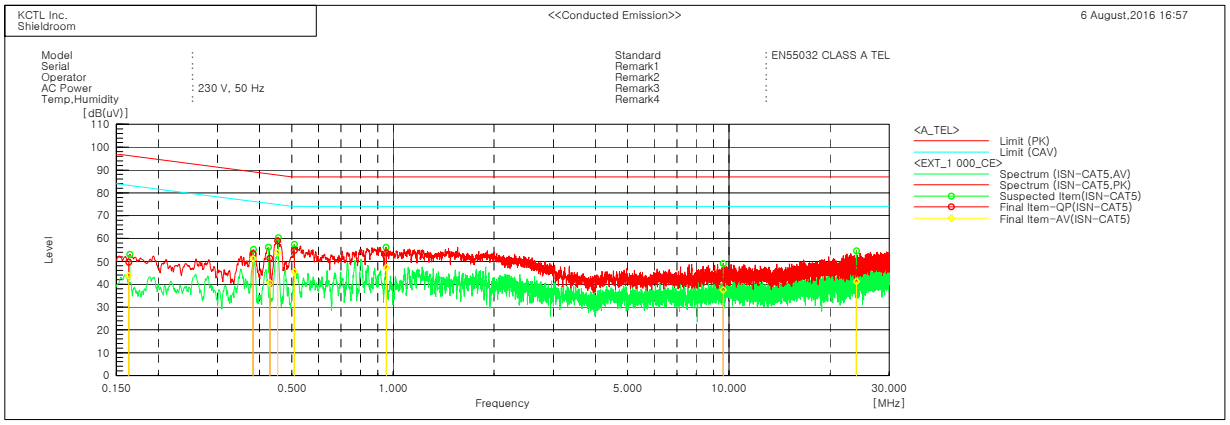


Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.27778	41.8	38.7	9.7	51.5	48.4	91.9	78.9	40.4	30.5
2	0.35293	40.9	35.9	9.7	50.6	45.6	89.9	76.9	39.3	31.3
3	0.45351	47.8	42.7	9.7	57.5	52.4	87.8	74.8	30.3	22.4
4	0.38577	44.8	41.8	9.7	54.5	51.5	89.2	76.2	34.7	24.7
5	2.17191	42.0	35.6	9.4	51.4	45.0	87.0	74.0	35.6	29.0
6	4.59301	47.2	45.9	9.5	56.7	55.4	87.0	74.0	30.3	18.6
7	12.74699	46.2	43.0	9.6	55.8	52.6	87.0	74.0	31.2	21.4
8	23.12867	51.1	47.5	9.6	60.7	57.1	87.0	74.0	26.3	16.9

Video IN ext. (RJ-45) Port (LCL 65 dB)_1 000 Mbps (DR-2316P)



Final Result

--- ISN-CAT5 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.1633	39.8	33.9	9.8	49.6	43.7	96.3	83.3	46.7	39.6
2	0.38342	43.7	41.5	9.7	53.4	51.2	89.2	76.2	35.8	25.0
3	0.4293	41.7	30.9	9.7	51.4	40.6	88.3	75.3	36.9	34.7
4	0.45332	49.3	44.2	9.6	58.9	53.8	87.8	74.8	28.9	21.0
5	0.50829	45.2	35.8	9.6	54.8	45.4	87.0	74.0	32.2	28.6
6	0.95443	44.2	37.7	9.5	53.7	47.2	87.0	74.0	33.3	26.8
7	9.62057	33.3	27.9	9.6	42.9	37.5	87.0	74.0	44.1	36.5
8	23.97753	37.1	31.8	9.5	46.6	41.3	87.0	74.0	40.4	32.7

6.2 Radiated Emission

Test specification	EN 55032:2015, Class A		
Testing voltage	230 V, 50 Hz		
Test facility	10 m Chamber (4F)		
Test distance	10 m, 3 m		
Date	2016. 08. 07		
Temperature (°C)	24.7 °C	Humidity (% R.H.)	41.1 % R.H.
Remarks	Pass		

Of those emissions above (L – 20 dB), where L is the limit level in logarithmic units, record at least the emission levels and the frequencies of the six highest emissions.
The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin. All measurements were taken utilizing quasi-peak detection unless stated otherwise.
Measurements were performed at an antenna to EUT distance of 10 or 3 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Below 1 GHz, peak detector function mode for prescan was used with resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz and sweep method.
The sweep time for prescan set below 200 ms up and final measurement with quasi-peak detector evaluated for suspected frequencies points, which are detected from prescan measurement.

Final measurements consisted of 3 steps.
First step, frequency fine tuning to find exact emission frequency.
Second step, rechecking to search for maximum height and azimuth for interference from EUT
In final step, there are conducted measuring with quasi-peak detector for points which are detected from 1st step & 2nd step.

6.2.1 Limits of radiated emission measurement

☒ Limits below 1 ㎓

Frequency [㎒]	Resolution Bandwidth [㎑]	Class A Limits (dB(㎶/m)) @ 10 m	Class B Limits (dB(㎶/m)) @ 10 m
30 ~ 230	120	40	30
230 ~ 1 000	120	47	37

☒ Limits above 1 ㎓

Frequency [㎓]	Resolution Bandwidth [㎒]	Class A @ 3 m		Class B @ 3 m	
		Average limit (dB(㎶/m))	Peak limit (dB(㎶/m))	Average limit (dB(㎶/m))	Peak limit (dB(㎶/m))
1 ~ 3	1	56	76	50	70
3 ~ 6	1	60	80	54	74
Note - The lower limit applies at the transition frequency.					

Measurements within 20 dB of the limit were then maximized by adjusting turntable position.

Final measurements were made using an C/Average detector.

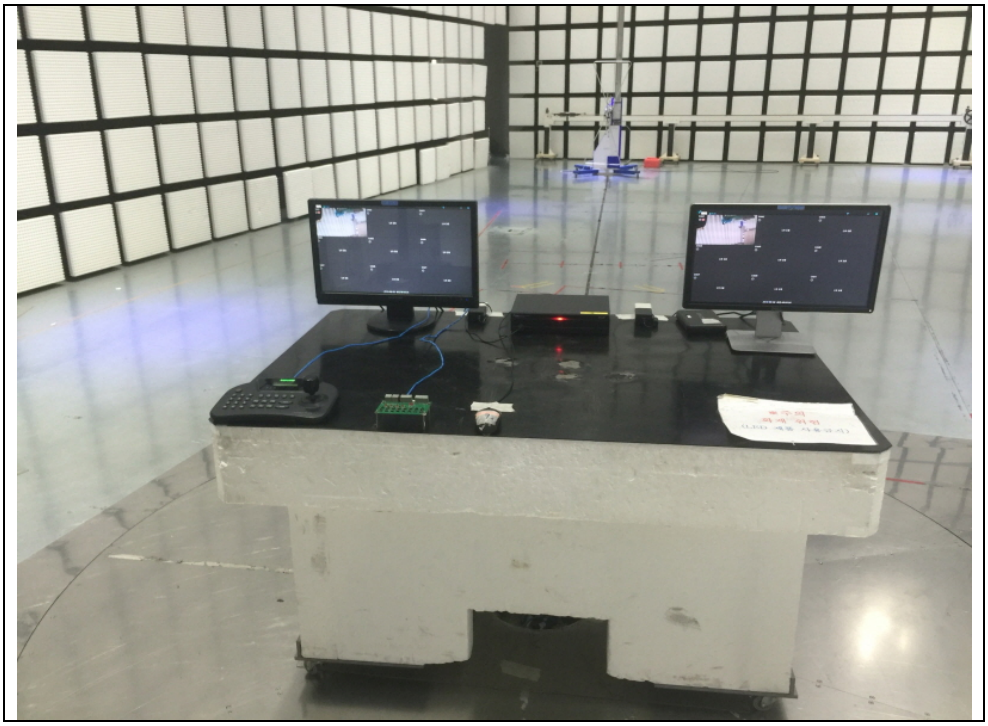
Results checked manually and points close to the limit line were re-measured.

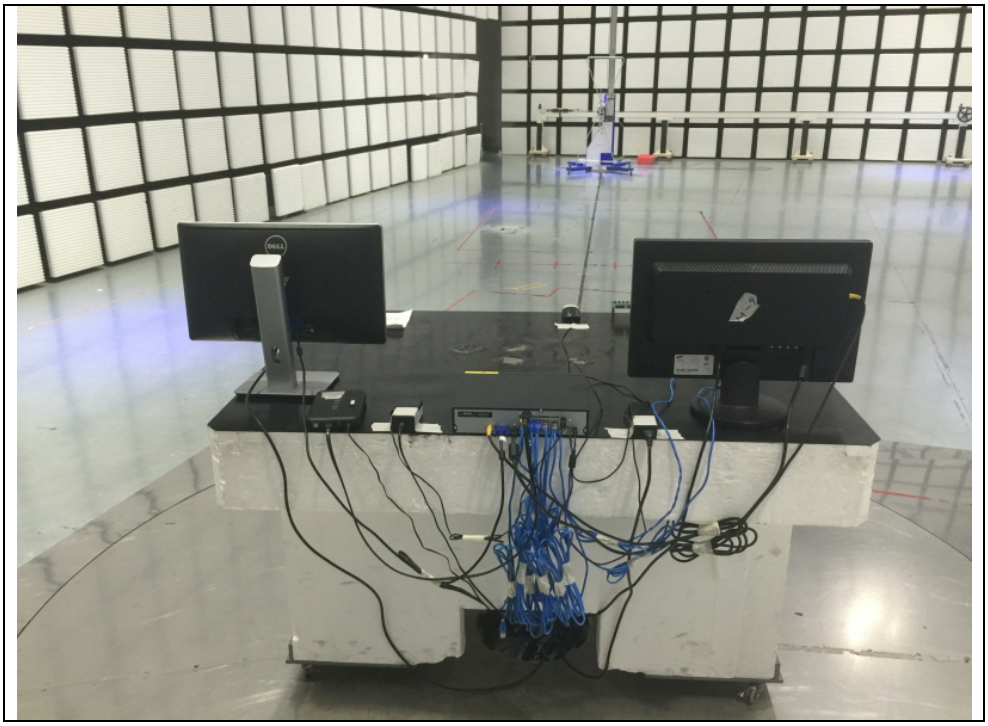
6.2.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
Test Receiver	ESR	101078	R&S	2017.02.26	☒
Bilog Antenna	VULB 9168	583	SCHWARZBECK	2018.06.10	☒
Amplifier	317	321041	SONOMA INSTRUMENT	2017.03.05	☒
COAXIAL FIXED ATTENUATOR	8491B-003	2708A18758	Agilent	2016.09.01	☒
Antenna Mast	AM4.0	079/3440509	MATURO	-	☒
Turn Table	CO2000-SOFT	-	MATURO	-	☒
Preamplifier	8449B	3008A01802	AGILENT	2017.04.07	☒
Horn ANT	3115	00086706	ETS	2016.09.02	☒
Spectrum Analyzer	FSV40	100988	R&S	2017.01.07	☐

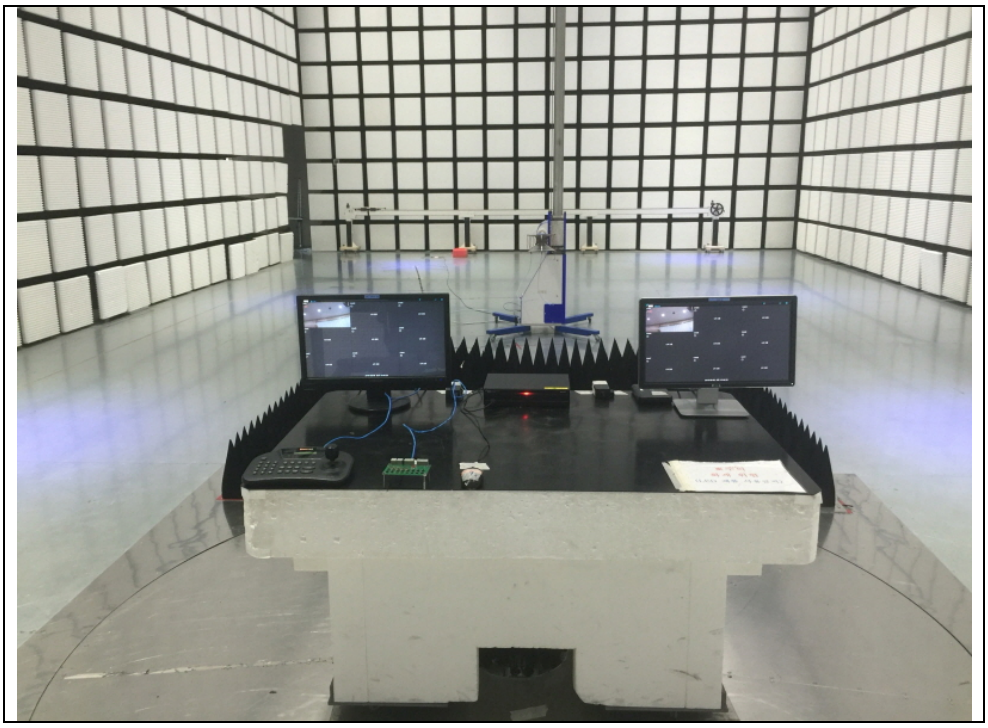
6.2.3 Photographs of test setup

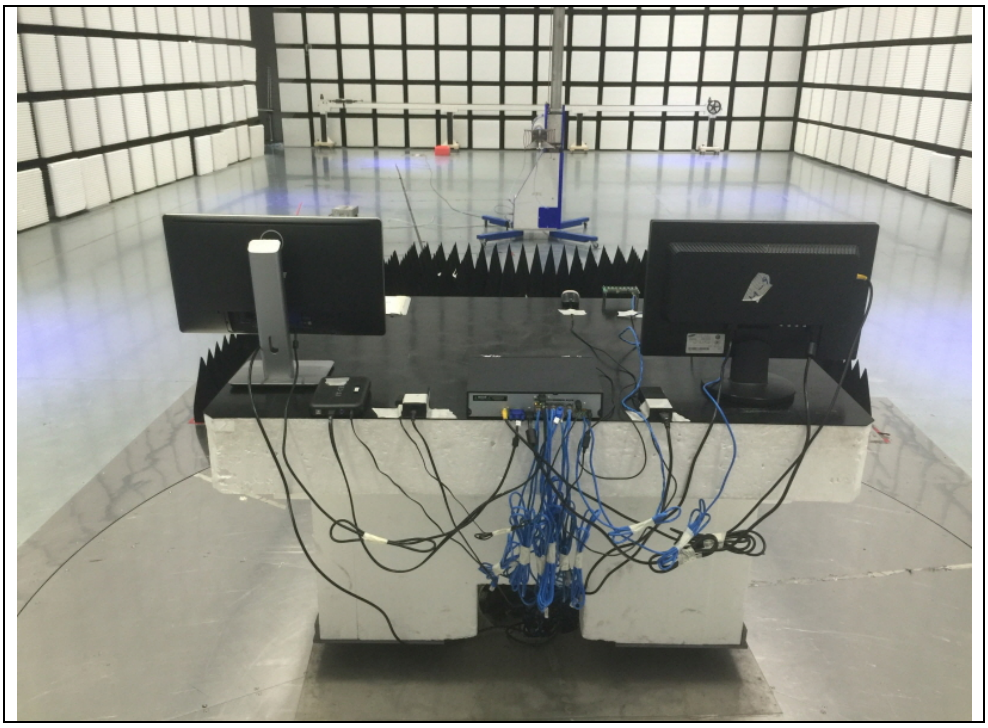
* 30 ㎒ ~ 1 ㎓





* 1 ㎓ ~ 6 ㎓

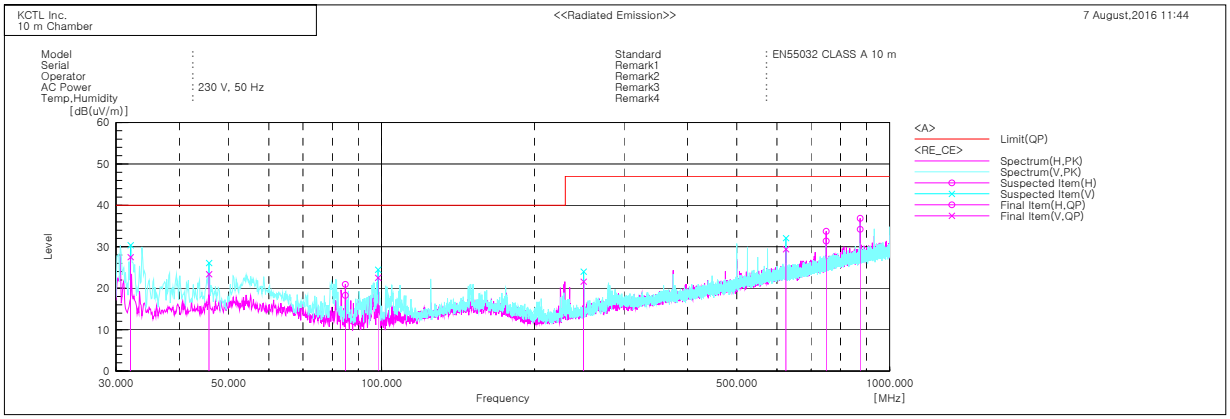




6.2.4 Radiated emission measurement result

*** Graph and Data**

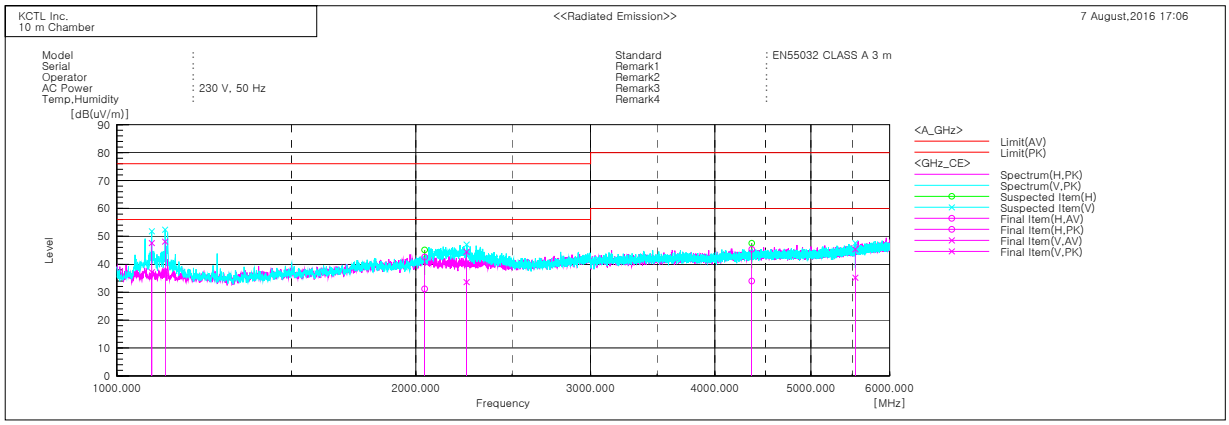
* 30 ㎒ ~ 1 ㎓ (DR-2316P)(AC/DC Adaptor#1, #2)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	32.061	V	46.2	-18.7	27.5	40.0	12.5	100.0	123.2
2	45.763	V	40.9	-17.5	23.4	40.0	16.6	100.0	347.3
3	84.805	H	40.4	-22.1	18.3	40.0	21.7	400.0	104.8
4	98.385	V	44.3	-21.8	22.5	40.0	17.5	200.0	269.7
5	249.947	V	38.7	-17.1	21.6	47.0	25.4	100.0	172.5
6	624.974	V	36.1	-6.7	29.4	47.0	17.6	400.0	322.4
7	749.983	H	35.8	-4.4	31.4	47.0	15.6	400.0	225.4
8	875.112	H	36.6	-2.4	34.2	47.0	12.8	300.0	129.1

* 1 ㎓ ~ 6 ㎓ (DR-2316P)(AC/DC Adaptor#1, #2)



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	c.f [dB(1/m)]	Result AV [dB(uV/m)]	Result PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	1084.375	V	49.8	60.2	-12.6	37.2	47.6	56.0	76.0	18.8	28.4	100.0	355.4
2	1118.750	V	50.1	60.5	-12.4	37.7	48.1	56.0	76.0	18.3	27.9	100.0	30.7
3	2041.875	H	36.4	47.8	-5.2	31.2	42.6	56.0	76.0	24.8	33.4	100.0	3.6
4	2250.000	V	38.7	49.6	-5.1	33.6	44.5	56.0	76.0	22.4	31.5	100.0	30.7
5	4359.375	H	32.5	43.9	1.5	34.0	45.4	60.0	80.0	26.0	34.6	100.0	291.5
6	5542.500	V	31.2	41.4	4.0	35.2	45.4	60.0	80.0	24.8	34.6	100.0	30.7

6.3 Harmonics

Test specification	EN 61000-3-2:2014				
Testing voltage	230 V, 50 Hz				
Test facility	EMI Test area(6F)				
Date	2016. 08. 05				
Temperature(°C)	24.7 °C	Humidity (% R.H.)	42.6 % R.H.	Pressure (kPa)	100.1 kPa
Remarks	Pass				

6.3.1 Measurement procedure

The equipment is supplied in series with shunt(s) Rm or current transformer(s) from a source having the same nominal voltage and frequency as the rated supply voltage and frequency of the equipment. Measurements shall be made under normal load, or conditions for adequate heat discharge, and under normal operating conditions. User's operation controls or automatic programmers shall be set to produce the maximum harmonic component, for each successive harmonic component in turn. For the purpose of harmonic current limitation, equipment is classified as follows :

Class A : Equipment not specified in one of the three other Classes shall be considered as Class A equipment.

- Balanced three-phase equipment;
- Household appliances, excluding equipment identified as Class D;
- Tools, excluding portable tools;
- Dimmers for incandescent lamps;
- Audio equipment.

Class B : Portable tools; Arc welding equipment which is not professional equipment.

Class C : Lighting equipment.

Class D : Equipment having a specified power according to 6.2.2 less than or equal to 600 w, of the following types:

- Personal computers and personal computer monitors;
- Television receivers.
- Refrigerators and freezers having one or more variable-speed drives to control compressor motor(s).

6.3.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Harmonics/Flicker meter (AC POWER SOURCE)	5001x-CTS -400-413	54894	C.I.	2017.03.16	☒
Harmonics/Flicker meter (Analyzer)	PACS-1	72072	C.I.	2017.03.16	☒

6.3.3 Photographs of test setup

6.3.4 Measurement result

* AC/DC Adaptor#1

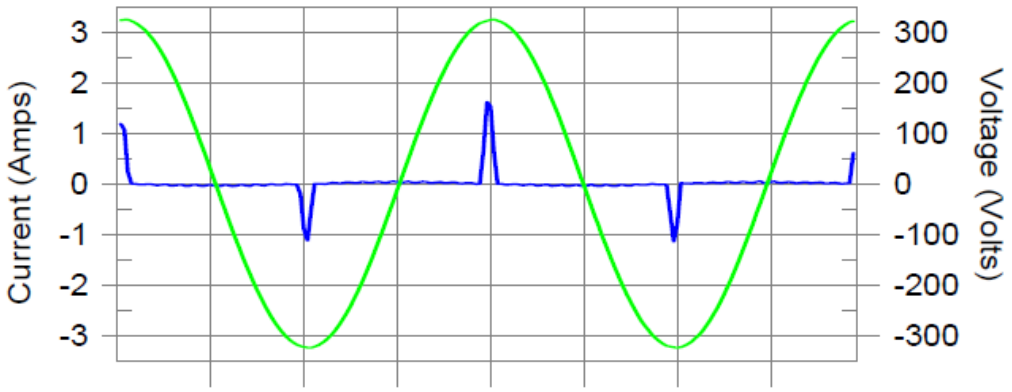
Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

EUT: DR-2316P
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test date: 05/08/2016 Start time: 07:03:18
Test duration (min): 2.5 Data file name: H-000475.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

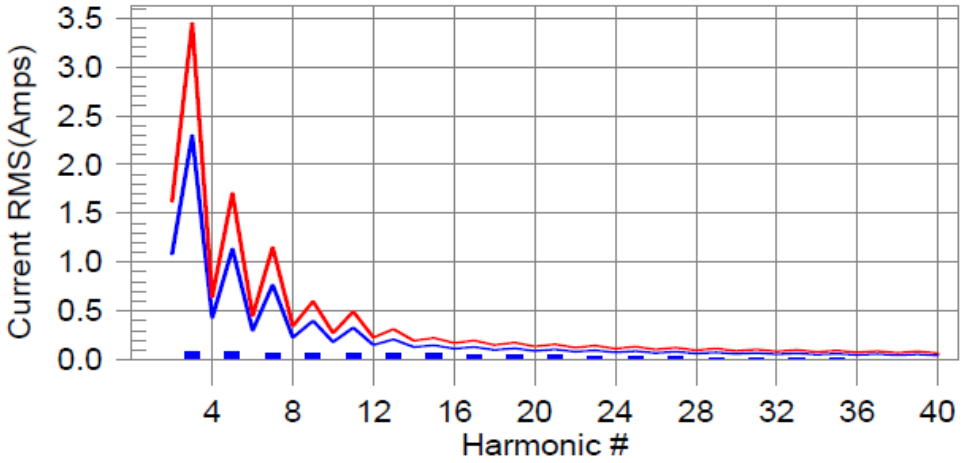
Tested by: Test Operator
Test Margin: 100
End time: 07:06:09

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonic was #19 with 42.2% of the limit.

Current Test Result Summary (Run time)

EUT: DR-2316P
Tested by: Test Operator
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test Margin: 100
Test date: 05/08/2016
Start time: 07:03:18
End time: 07:06:09
Test duration (min): 2.5
Data file name: H-000475.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

Test Result: Pass
Source qualification: Normal
THC(A): 0.219
I-THD(%): 262.7
POHC(A): 0.084
POHC Limit(A): 0.251
Highest parameter values during test:

V_RMS (Volts):	229.49	Frequency(Hz):	50.00
I_Peak (Amps):	1.754	I_RMS (Amps):	0.247
I_Fund (Amps):	0.084	Crest Factor:	7.407
Power (Watts):	18.4	Power Factor:	0.340

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.004	1.080	N/A	0.004	1.620	N/A	Pass
3	0.079	2.300	3.4	0.080	3.450	2.3	Pass
4	0.004	0.430	N/A	0.004	0.645	N/A	Pass
5	0.077	1.140	6.8	0.078	1.710	4.6	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.075	0.770	9.7	0.076	1.155	6.5	Pass
8	0.004	0.230	N/A	0.004	0.345	N/A	Pass
9	0.072	0.400	18.0	0.073	0.600	12.1	Pass
10	0.004	0.184	N/A	0.004	0.276	N/A	Pass
11	0.068	0.330	20.7	0.069	0.495	13.9	Pass
12	0.004	0.153	N/A	0.004	0.230	N/A	Pass
13	0.064	0.210	30.6	0.065	0.315	20.6	Pass
14	0.004	0.131	N/A	0.004	0.197	N/A	Pass
15	0.060	0.150	39.9	0.060	0.225	26.9	Pass
16	0.004	0.115	N/A	0.004	0.173	N/A	Pass
17	0.055	0.132	41.7	0.056	0.198	28.0	Pass
18	0.004	0.102	N/A	0.004	0.153	N/A	Pass
19	0.050	0.118	42.2	0.050	0.178	28.4	Pass
20	0.004	0.092	N/A	0.004	0.138	N/A	Pass
21	0.045	0.107	41.8	0.045	0.161	28.1	Pass
22	0.003	0.084	N/A	0.004	0.125	N/A	Pass
23	0.039	0.098	40.3	0.040	0.147	27.2	Pass
24	0.003	0.077	N/A	0.004	0.115	N/A	Pass
25	0.034	0.090	38.0	0.035	0.135	25.6	Pass
26	0.003	0.071	N/A	0.003	0.107	N/A	Pass
27	0.029	0.083	35.0	0.029	0.125	23.5	Pass
28	0.003	0.066	N/A	0.003	0.099	N/A	Pass
29	0.024	0.078	31.2	0.024	0.116	21.0	Pass
30	0.002	0.061	N/A	0.003	0.092	N/A	Pass
31	0.020	0.073	27.1	0.020	0.109	18.3	Pass
32	0.002	0.058	N/A	0.002	0.086	N/A	Pass
33	0.015	0.068	22.6	0.016	0.102	15.2	Pass
34	0.002	0.054	N/A	0.002	0.081	N/A	Pass
35	0.012	0.064	18.0	0.012	0.096	12.2	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.008	0.061	13.4	0.008	0.091	9.1	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.005	0.058	9.1	0.005	0.087	6.3	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: DR-2316P
Tested by: Test Operator
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test Margin: 100
Test date: 05/08/2016
Start time: 07:03:18
End time: 07:06:09
Test duration (min): 2.5
Data file name: H-000475.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

Test Result: Pass
Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.49	Frequency(Hz):	50.00
I_Peak (Amps):	1.754	I_RMS (Amps):	0.247
I_Fund (Amps):	0.084	Crest Factor:	7.407
Power (Watts):	18.4	Power Factor:	0.340

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.100	0.459	21.82	OK
3	0.527	2.065	25.51	OK
4	0.023	0.459	5.08	OK
5	0.014	0.918	1.50	OK
6	0.025	0.459	5.43	OK
7	0.028	0.688	4.03	OK
8	0.019	0.459	4.11	OK
9	0.041	0.459	9.02	OK
10	0.007	0.459	1.56	OK
11	0.040	0.229	17.52	OK
12	0.016	0.229	7.02	OK
13	0.059	0.229	25.49	OK
14	0.007	0.229	3.07	OK
15	0.047	0.229	20.58	OK
16	0.011	0.229	4.98	OK
17	0.051	0.229	22.19	OK
18	0.014	0.229	6.25	OK
19	0.053	0.229	23.28	OK
20	0.007	0.229	2.89	OK
21	0.049	0.229	21.21	OK
22	0.007	0.229	3.11	OK
23	0.046	0.229	19.99	OK
24	0.010	0.229	4.33	OK
25	0.044	0.229	19.23	OK
26	0.009	0.229	3.76	OK
27	0.040	0.229	17.45	OK
28	0.008	0.229	3.49	OK
29	0.036	0.229	15.68	OK
30	0.012	0.229	5.40	OK
31	0.033	0.229	14.52	OK
32	0.005	0.229	2.25	OK
33	0.031	0.229	13.53	OK
34	0.011	0.229	4.58	OK
35	0.027	0.229	11.78	OK
36	0.011	0.229	4.98	OK
37	0.022	0.229	9.65	OK
38	0.005	0.229	1.99	OK
39	0.012	0.229	5.16	OK
40	0.006	0.229	2.50	OK

* AC/DC Adaptor#2

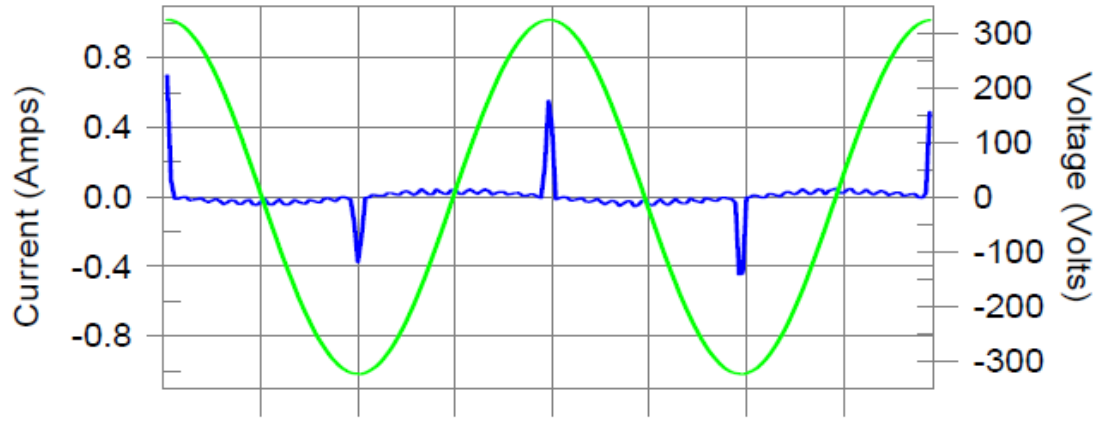
Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

EUT: DR-2316P
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test date: 05/08/2016
Test duration (min): 2.5
Comment: Comments
Customer: IDIS CO., LTD.

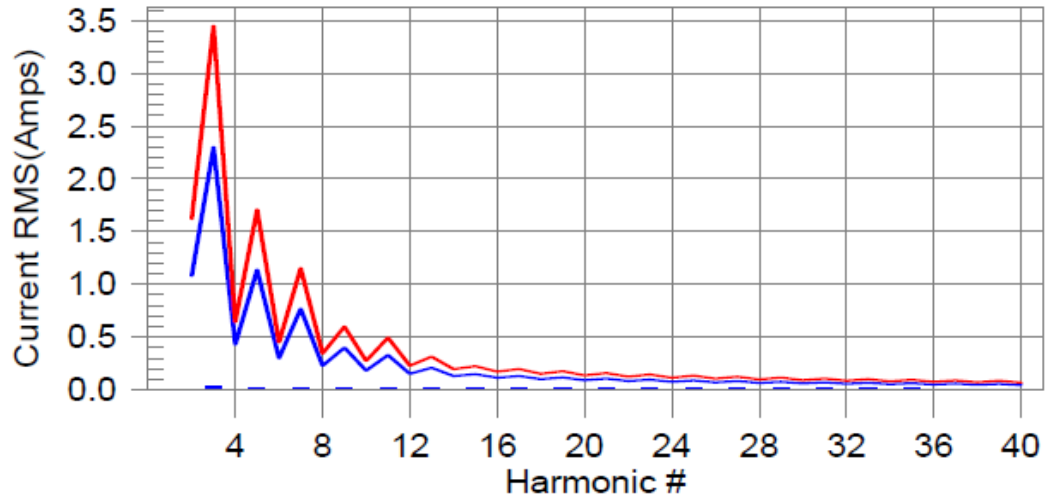
Tested by: Test Operator
Test Margin: 100
Start time: 07:22:40
End time: 07:25:32
Data file name: H-000478.cts_data

Test Result: Pass
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line
European Limits



Test result: Pass
Worst harmonic was #25 with 17.9% of the limit.

Current Test Result Summary (Run time)

EUT: DR-2316P
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test date: 05/08/2016 Start time: 07:22:40
Test duration (min): 2.5 Data file name: H-000478.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

Tested by: Test Operator
Test Margin: 100
End time: 07:25:32

Test Result: Pass Source qualification: Normal
THC(A): 0.084 I-THD(%): 241.6 POHC(A): 0.042 POHC Limit(A): 0.251
Highest parameter values during test:

V_RMS (Volts):	229.49	Frequency(Hz):	50.00
I_Peak (Amps):	0.713	I_RMS (Amps):	0.093
I_Fund (Amps):	0.035	Crest Factor:	7.785
Power (Watts):	6.0	Power Factor:	0.288

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.004	1.080	N/A	0.005	1.620	N/A	Pass
3	0.026	2.300	1.1	0.026	3.450	0.8	Pass
4	0.004	0.430	N/A	0.005	0.645	N/A	Pass
5	0.026	1.140	2.3	0.026	1.710	1.5	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.025	0.770	3.3	0.025	1.155	2.2	Pass
8	0.004	0.230	N/A	0.005	0.345	N/A	Pass
9	0.025	0.400	6.2	0.025	0.600	4.1	Pass
10	0.004	0.184	N/A	0.005	0.276	N/A	Pass
11	0.024	0.330	7.3	0.024	0.495	4.9	Pass
12	0.004	0.153	N/A	0.004	0.230	N/A	Pass
13	0.023	0.210	11.0	0.023	0.315	7.4	Pass
14	0.004	0.131	N/A	0.004	0.197	N/A	Pass
15	0.022	0.150	14.8	0.022	0.225	9.9	Pass
16	0.004	0.115	N/A	0.004	0.173	N/A	Pass
17	0.021	0.132	16.0	0.021	0.198	10.7	Pass
18	0.004	0.102	N/A	0.004	0.153	N/A	Pass
19	0.020	0.118	16.8	0.020	0.178	11.3	Pass
20	0.003	0.092	N/A	0.004	0.138	N/A	Pass
21	0.019	0.107	17.4	0.019	0.161	11.7	Pass
22	0.003	0.084	N/A	0.004	0.125	N/A	Pass
23	0.017	0.098	17.8	0.017	0.147	11.9	Pass
24	0.003	0.077	N/A	0.003	0.115	N/A	Pass
25	0.016	0.090	17.9	0.016	0.135	12.0	Pass
26	0.003	0.071	N/A	0.003	0.107	N/A	Pass
27	0.015	0.083	17.7	0.015	0.125	11.9	Pass
28	0.003	0.066	N/A	0.003	0.099	N/A	Pass
29	0.013	0.078	17.2	0.013	0.116	11.6	Pass
30	0.002	0.061	N/A	0.003	0.092	N/A	Pass
31	0.012	0.073	16.6	0.012	0.109	11.2	Pass
32	0.002	0.058	N/A	0.003	0.086	N/A	Pass
33	0.011	0.068	15.7	0.011	0.102	10.6	Pass
34	0.002	0.054	N/A	0.002	0.081	N/A	Pass
35	0.009	0.064	14.7	0.010	0.096	10.0	Pass
36	0.002	0.051	N/A	0.002	0.077	N/A	Pass
37	0.008	0.061	13.5	0.008	0.091	9.2	Pass
38	0.002	0.048	N/A	0.002	0.073	N/A	Pass
39	0.007	0.058	12.1	0.007	0.087	8.4	Pass
40	0.001	0.046	N/A	0.002	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: DR-2316P
Tested by: Test Operator
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test Margin: 100
Test date: 05/08/2016
Start time: 07:22:40
End time: 07:25:32
Test duration (min): 2.5
Data file name: H-000478.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

Test Result: Pass
Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.49	Frequency(Hz):	50.00
I_Peak (Amps):	0.713	I_RMS (Amps):	0.093
I_Fund (Amps):	0.035	Crest Factor:	7.785
Power (Watts):	6.0	Power Factor:	0.288

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.106	0.459	23.05	OK
3	0.514	2.065	24.90	OK
4	0.026	0.459	5.65	OK
5	0.018	0.918	1.91	OK
6	0.026	0.459	5.75	OK
7	0.013	0.688	1.90	OK
8	0.019	0.459	4.23	OK
9	0.021	0.459	4.59	OK
10	0.006	0.459	1.37	OK
11	0.016	0.229	6.90	OK
12	0.017	0.229	7.28	OK
13	0.033	0.229	14.28	OK
14	0.005	0.229	2.35	OK
15	0.014	0.229	6.04	OK
16	0.013	0.229	5.47	OK
17	0.023	0.229	9.92	OK
18	0.011	0.229	4.93	OK
19	0.022	0.229	9.68	OK
20	0.008	0.229	3.29	OK
21	0.023	0.229	10.09	OK
22	0.004	0.229	1.60	OK
23	0.019	0.229	8.45	OK
24	0.009	0.229	3.78	OK
25	0.026	0.229	11.41	OK
26	0.006	0.229	2.60	OK
27	0.024	0.229	10.29	OK
28	0.010	0.229	4.49	OK
29	0.028	0.229	12.42	OK
30	0.008	0.229	3.68	OK
31	0.028	0.229	12.18	OK
32	0.007	0.229	3.05	OK
33	0.028	0.229	12.35	OK
34	0.008	0.229	3.53	OK
35	0.026	0.229	11.47	OK
36	0.010	0.229	4.29	OK
37	0.027	0.229	11.64	OK
38	0.005	0.229	2.26	OK
39	0.013	0.229	5.56	OK
40	0.008	0.229	3.47	OK

6.4 Flicker

Test specification	EN 61000-3-3:2013				
Testing voltage	230 V, 50 Hz				
Test facility	EMI Test area(6F)				
Date	2016. 08. 05				
Temperature(°C)	24.7 °C	Humidity (% R.H.)	42.6 % R.H.	Pressure (kPa)	100.1 kPa
Remarks	Pass				

6.4.1 Measurement procedure

EUT was connected to the power analyzer system.

Measurement was performed to obtain the desired flicker parameters.

The measuring time depends on which parameters are to be measured.

P_{lt} = 2 h

P_{st} = 10 min

Controls and automatic programs shall be set to produce the most unfavorable sequence of voltage changes, using only those combinations of controls and programs are mentioned by the manufacturer in the instruction manual.

6.4.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Harmonics/Flicker meter (AC POWER SOURCE)	5001x-CTS -400-413	54894	C.I.	2017.03.16	☒
Harmonics/Flicker meter (Analyzer)	PACS-1	72072	C.I.	2017.03.16	☒

6.4.3 Photographs of test setup

6.4.4 Measurement result

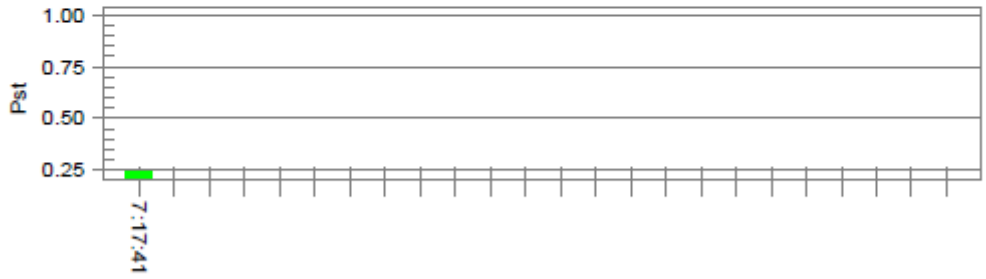
* AC/DC Adaptor#1

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

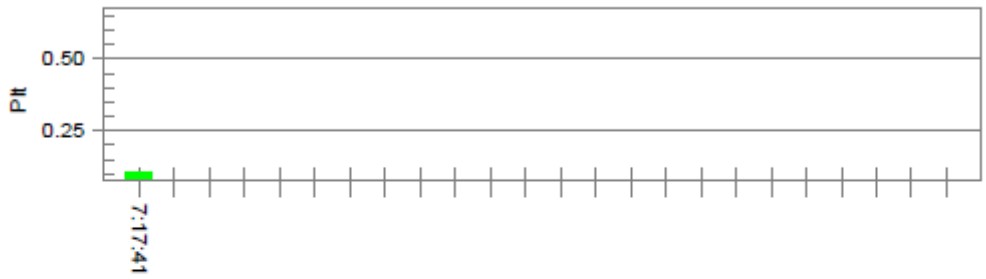
EUT: DR-2316P
Tested by: Test Operator
Test category: All parameters (European limits)
Test Margin: 100
Test date: 05/08/2016
Start time: 07:07:11
End time: 07:17:42
Test duration (min): 10
Data file name: F-000476.cts_data
Comment: Comments
Customer: IDIS CO., LTD.

Test Result: Pass
Status: Test Completed

Pst and limit line
European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.44			
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.02	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.248	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.108	Test limit:	0.650	Pass

* AC/DC Adaptor#2

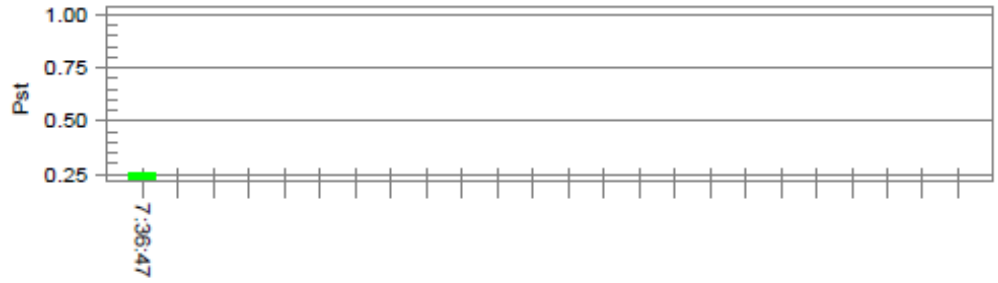
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: DR-2316P
Test category: All parameters (European limits)
Test date: 05/08/2016
Test duration (min): 10
Comment: Comments
Customer: IDIS CO., LTD.

Tested by: Test Operator
Test Margin: 100
Start time: 07:26:16
End time: 07:36:48
Data file name: F-000479.cts_data

Test Result: Pass
Status: Test Completed

Pst and limit line — European Limits



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.46			
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.01	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.261	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.114	Test limit:	0.650	Pass

6.5 Electrostatic Discharge

Test specification	EN 61000-4-2:2009				
Test level	☒ Contact: ± 6 ㎸ ☒ Air: ± 2 ㎸, ± 4 ㎸, ± 8 ㎸ ☒ HCP: ± 6 ㎸ ☒ VCP: ± 6 ㎸				
Discharge impedance	330 Ω / 150 ㎊				
Number of discharge (Each polarity)	☒ Contact: 10 ☒ Air: 10 ☒ HCP / VCP: 10				
Interval between discharges	1 s				
Testing voltage	230 V, 50 Hz				
Test facility	Shielded room (3F)				
Date	2016. 08. 04				
Temperature (°C)	25.4 °C	Humidity (% R.H.)	42.1 % R.H.	Pressure (kPa)	100.9 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

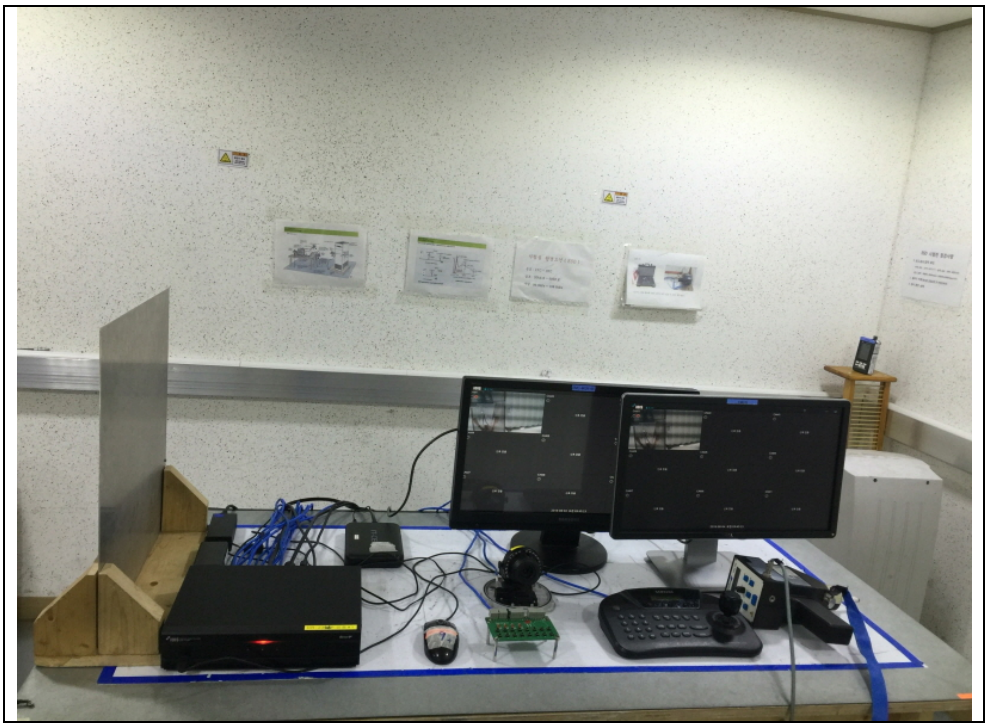
6.5.1 Measurement procedure

A ground reference plane was located on the floor, and connected to earth via a low Impedance connection. The return cable of the ESD generator was connected to the reference plane.
In case of floor standing equipment, EUT was placed on the reference plane on 0.1 ㎝ of insulating Support. In case of table top equipment, EUT was placed on a wooden table 0.8 ㎝ above the reference grounded floor. A horizontal coupling plane (HCP) was placed on the table, and Connected to the reference plane via a 470 ㏀ resistor located in each end (0.5 ㎜ insulating support between EUT and HCP). In both cases a vertical coupling plane(VCP) OF 0.5 X 0.5 ㎝ was located 0.1 ㎝ from the EUT's sides. The VCP was connected to the reference plane in the same matter as the HCP.

6.5.2 Used equipments

Equipment	Model No.	Serial No.	Makers	Next Cal. Date	Used
ESD Tester	PESD-1600	H011 309	HAEFELY	2017.05.10	☒
ESD Tester	NSG 437	182	TESEQ	2017.04.26	☐
HCP	-	-	-	-	☒
VCP	-	-	-	-	☒

6.5.3 Photographs of test setup

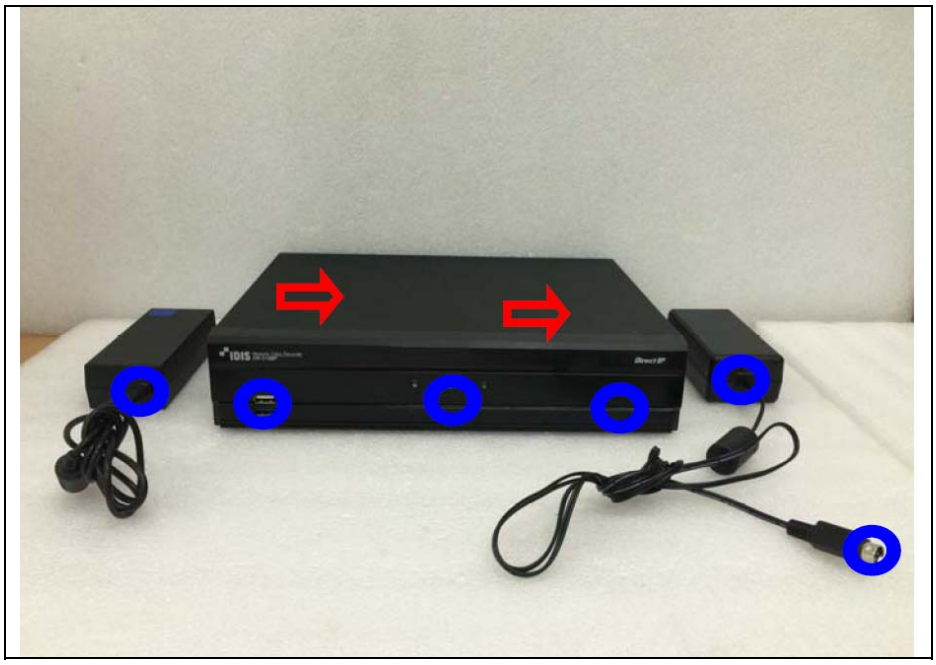


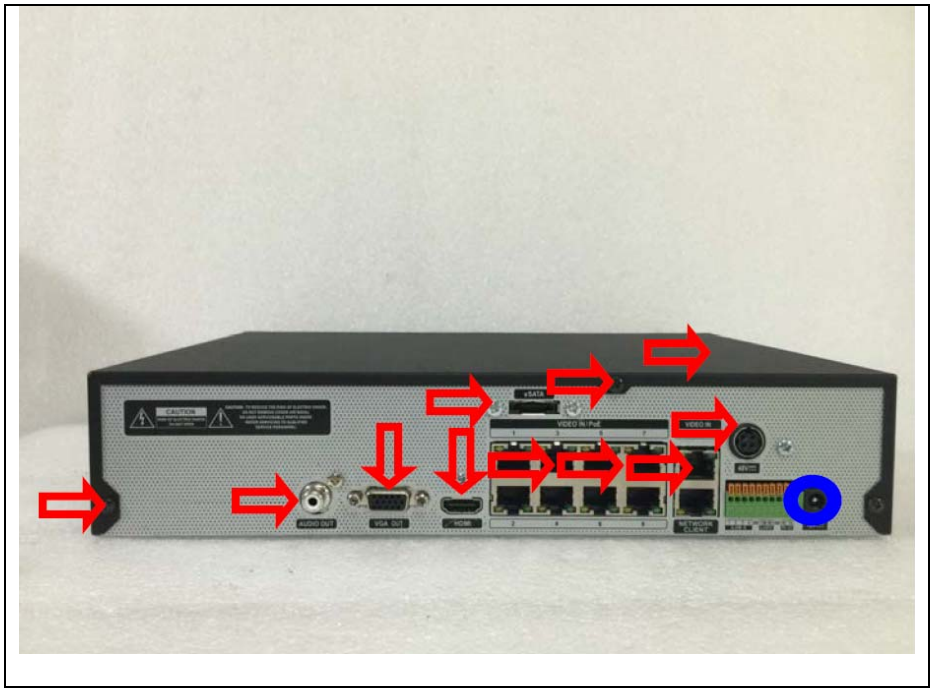
6.5.4 Measurement result

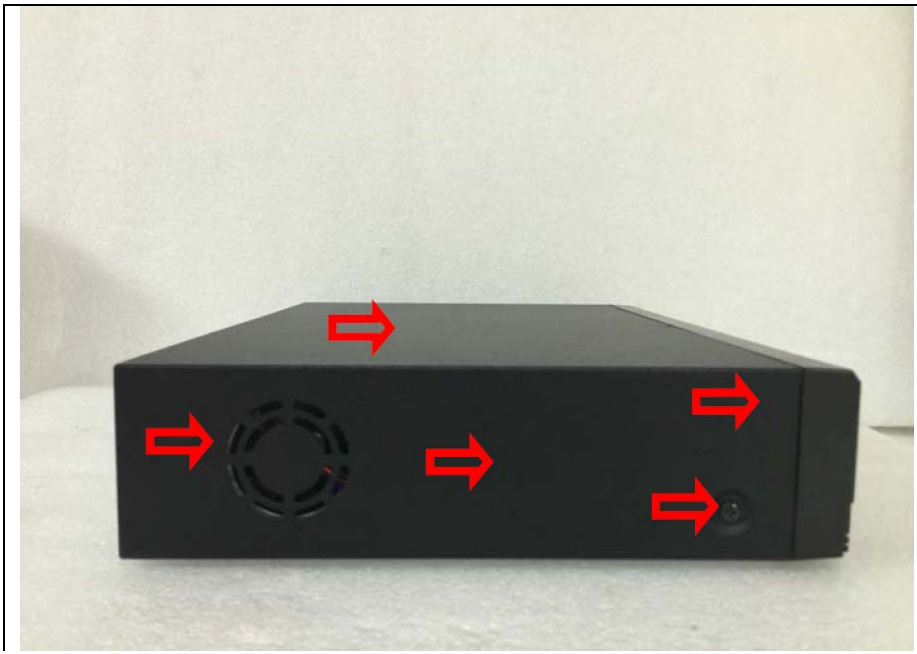
Electrostatic Discharge (Test Point)

Air discharge

Contact discharge







(AC/DC Adaptor#1, #2)

HCP/VCP discharge

Location(EUT)	Applied level (±)	Result
HCP (All 4 sides)	± 6 ㎸	Pass
VCP (All 4 sides)	± 6 ㎸	Pass

Contact discharge

Location(EUT)	Applied level (±)	Result
Front	± 6 ㎸	Pass
Rear	± 6 ㎸	Pass
Left	± 6 ㎸	Pass
Right	± 6 ㎸	Pass

Air discharge

Location(EUT)	Applied level (±)	Result
Front	± 2 ㎸, ± 4 ㎸, ± 8 ㎸	Pass
Rear	± 2 ㎸, ± 4 ㎸, ± 8 ㎸	Pass
Left	± 2 ㎸, ± 4 ㎸, ± 8 ㎸	-
Right	± 2 ㎸, ± 4 ㎸, ± 8 ㎸	-

6.6 Radio Frequency Electromagnetic Fields

Test specification	EN 61000-4-3:2006+A2:2010				
Tested frequency	80 ㎒ ~ 1 ㎓, 1 ㎓ ~ 2.7 ㎓				
Test level & Modulation	1 ㎷/m, 3 ㎷/m, 10 ㎷/m, 80 % Amplitude Modulation (1 ㎑) 1 ㎷/m, 3 ㎷/m, 10 ㎷/m, Pulse Modulation (1 ㎐ (0.5 s ON: 0.5 s OFF))				
Frequency Step	1 % step				
Dwell time	1 s				
Distance	3 m from EUT to tip of antenna				
Testing voltage	230 V, 50 Hz				
Test facility	6F Fully anechoic chamber (3 m)				
Date	2016. 08. 12				
Temperature (°C)	25.5 °C	Humidity (% R.H.)	46.7 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.6.1 Measurement procedure

The test was performed at 3 m full anechoic chamber.

For floor standing equipment, the EUT was standing on the floor.

For tabletop equipment, the EUT was located on a wooden table 0.8 m above the floor.

The EUT was tested all sides, horizontal and vertical polarization.

6.6.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Power meter	PM2002	302852	AR	2016.09.03	☒
Power sensor	PH2000	303224	AR	2016.09.03	☒
Power sensor	PH2000	311217	AR	2016.09.03	☒
Directional coupler	DC6180	303976	AR	2016.09.03	☒
Directional coupler	DC7144M1	320279	AR	2016.09.03	☒
Signal generator	E4421B	GB40052295	AGILENT	2016.09.03	☒
Broadband Amplifier	BBA100	100996-1	R&S	-	☒
Amplifier	60S1G3M2	320444	AR	-	☒
Log Periodic Dipole Antenna	LPDA-0803	130269	ETS	-	☒
Antenna master	-	-	ETS	-	☒

6.6.3 Photographs of test setup

6.6.4 Measurement result

(AC/DC Adaptor#1, #2)

Location(EUT)	Antenna polarization	Result
Front side	Horizontal	Pass
	Vertical	Pass
Rear side	Horizontal	Pass
	Vertical	Pass
Left side	Horizontal	Pass
	Vertical	Pass
Right side	Horizontal	Pass
	Vertical	Pass

6.7 Electrical Fast Transient/BURST

Test specification	EN 61000-4-4:2012				
Coupling	☒ AC main ☒ Signal / Control: Clamp ☒ Telecommunication: Clamp				
Test level	☒ AC main: ± 2 ㎸ Peak ☒ Signal / Control: ± 1 ㎸ Peak ☒ Telecommunication: ± 1 ㎸ Peak				
Repetition frequency	100 ㎑, Tr/Th = 5 / 50 ㎱				
Coupling time (Minimum)	60 s				
Testing voltage	230 V, 50 Hz				
Test facility	Shielded room (6F)				
Date	2016. 08. 11				
Temperature(°C)	22.8 °C	Humidity (% R.H.)	50.5 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

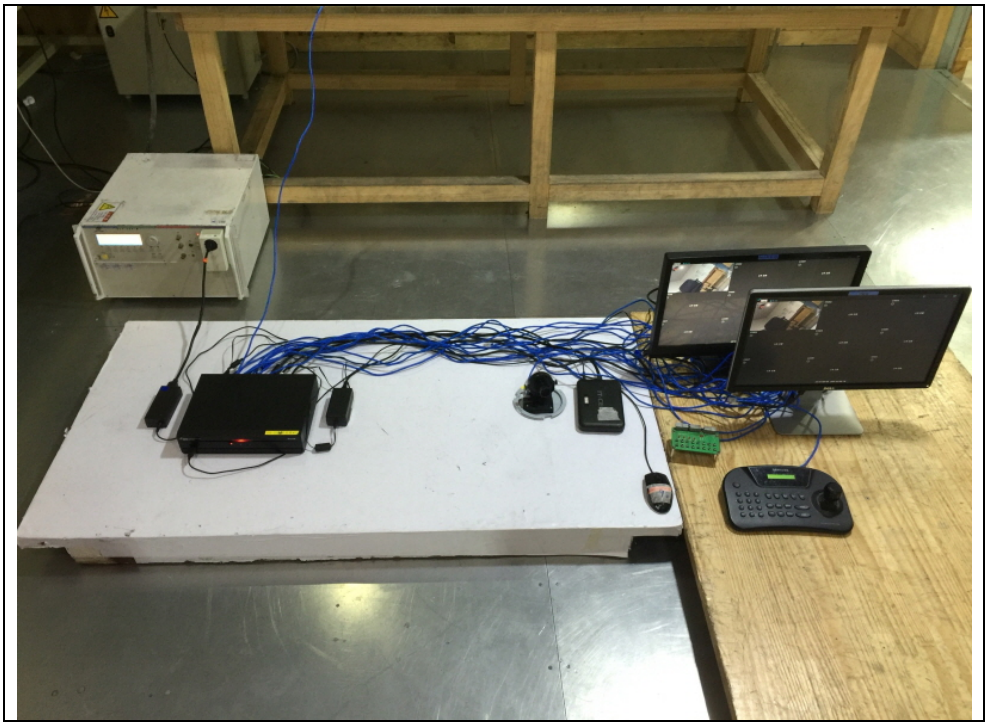
6.7.1 Measurement procedure

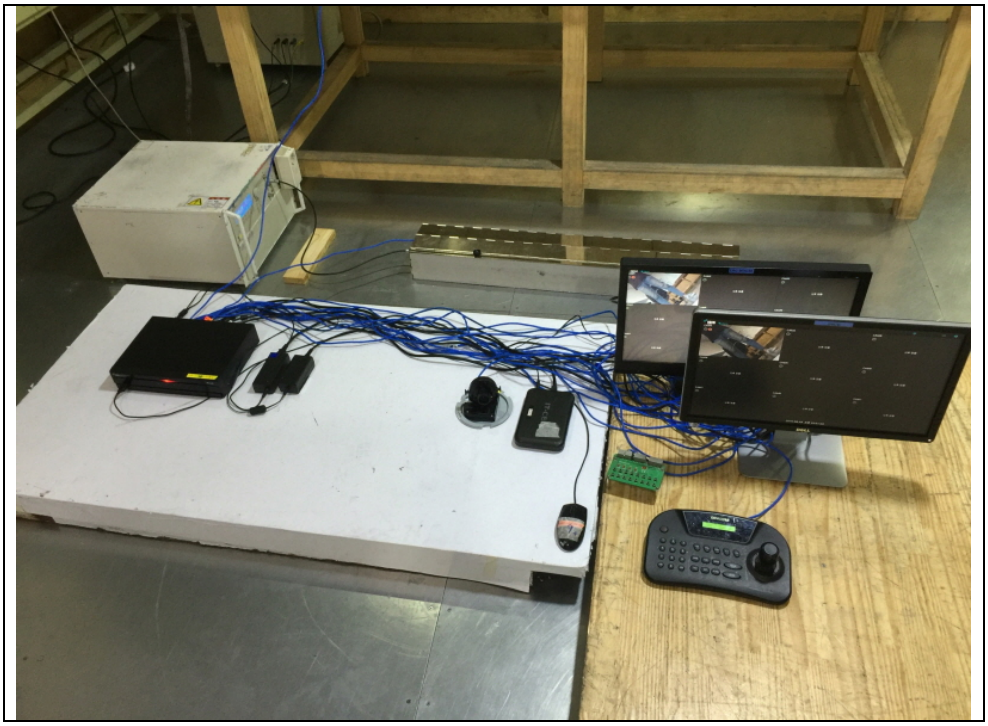
A ground reference plane was located on the floor.
EFT generator was connected to reference ground plane via low impedance connection.
For floor standing equipment, EUT was placed on a 0.1 ㎜ wooden table.
For tabletop equipment, EUT was placed on a 0.1 ㎜ above the ground reference plane.
Test generator and coupling/decoupling network was placed on, and bounded to, the ground reference plane. When using the coupling clamp, the minimum distance between the coupling plates and all other conductive surfaces, except the ground reference plane beneath the coupling clamp, Shall be 0.5 ㎜.

6.5.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Ultra compact simulator	UCS 500-M6BS1	V0545100858	EM TEST	2017.04.07	☐
Ultra compact simulator	UCS500M	0701-03	EM TEST	2016.09.01	☒
Capacitive coupling clamp	-	0001	EM TEST	2016.09.03	☒

6.7.3 Photographs of test setup





6.7.4 Measurement result

* AC main (AC/DC Adaptor#1)

Coupling point	(+)	(-)	Result
L+N+PE	+ 2 ㎸	- 2 ㎸	Pass

* AC main (AC/DC Adaptor#2)

Coupling point	(+)	(-)	Result
L+N	+ 2 ㎸	- 2 ㎸	Pass

* Signal / Control(AC/DC Adaptor#1, #2)

Coupling point	(+)	(-)	Result
Audio Out	+ 1 ㎸	- 1 ㎸	Pass
Alarm In/Out	+ 1 ㎸	- 1 ㎸	Pass
RS232	+ 1 ㎸	- 1 ㎸	Pass

* Telecommunication(AC/DC Adaptor#1, #2)

Coupling point	(+)	(-)	Result
LAN(RJ-45)	+ 1 ㎸	- 1 ㎸	Pass
PoE(RJ-45)	+ 1 ㎸	- 1 ㎸	Pass
Video IN ext. (RJ-45)	+ 1 ㎸	- 1 ㎸	Pass

6.8 Surge

Test specification	EN 61000-4-5:2014				
Coupling	☒ AC main: Direct ☒ Signal / Control: CDN ☒ Telecommunication: CDN				
Test level	☒ AC main: ± 0.5 kV, ± 1 kV, ± 2 kV ☒ Signal: ± 0.5 kV, ± 1 kV ☒ Telecommunication: ± 0.5 kV, ± 1 kV				
Coupling Impedance	☒ Differential mode: 18 μF ☒ Common mode: 10 Ω + 9 μF ☒ 40 Ω + 0.5 μF ☐ Direct				
Surge pulse shape	Tr/Th = 1.2 / 50 μs				
Angles	0 °, 90 °, 180 °, 270 °				
Number of surge	5				
Coupling time	30 s				
Testing voltage	230 V, 50 Hz				
Test facility	Shielded room (6F)				
Date	2016. 08. 11				
Temperature(°C)	22.8 °C	Humidity (% R.H.)	50.5 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

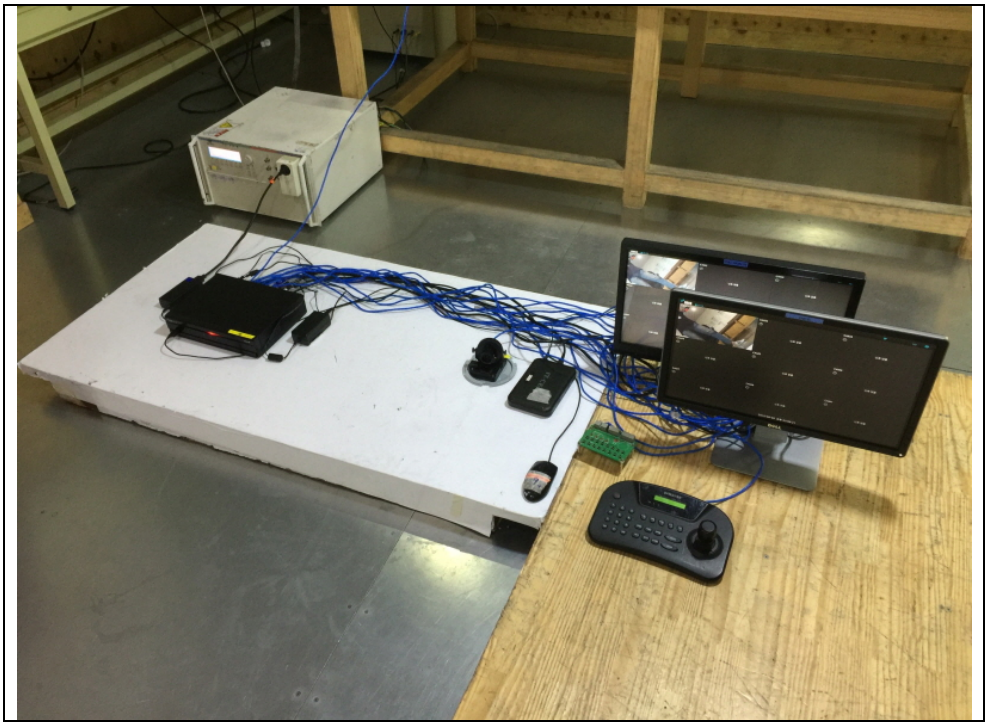
6.8.1 Measurement procedure

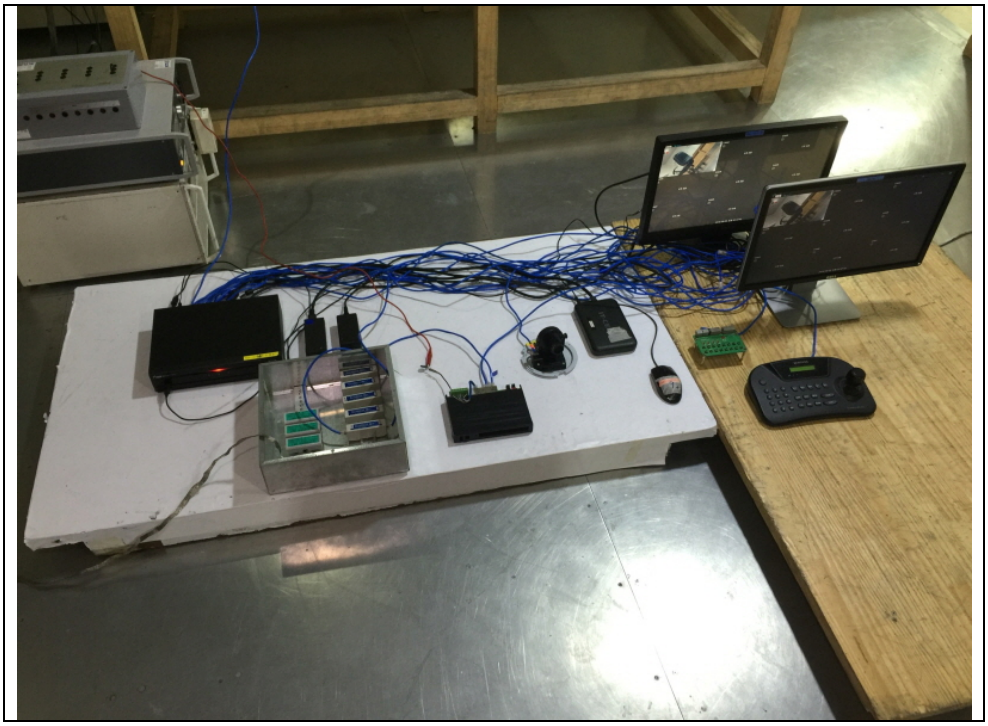
A ground reference plane was located on the floor. SURGE generator was connected to reference ground plane via low impedance connection. For floor standing equipment & table top equipment, EUT was placed on a wooden table.

6.8.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Ultra compact simulator	UCS 500N5V	P1429136861	EM TEST	2016.09.03	☒
CDN	CNV 508 N1	V1108108861	EM TEST	2016.09.02	☒

6.8.3 Photographs of test setup





6.8.4 Measurement result

* AC main (AC/DC Adaptor#1)

Coupling point	(+)	(-)	Result
L-N	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
L-PE	+ 0.5 kV, + 1 kV, + 2 kV	- 0.5 kV, - 1 kV, - 2 kV	Pass
N-PE	+ 0.5 kV, + 1 kV, + 2 kV	- 0.5 kV, - 1 kV, - 2 kV	Pass

* AC main (AC/DC Adaptor#2)

Coupling point	(+)	(-)	Result
L-N	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

* Signal / Control (AC/DC Adaptor#1, #2)

Coupling point	(+)	(-)	Result
Audio Out	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
Alarm In/Out	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
RS232	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

* Telecommunication (AC/DC Adaptor#1, #2)

Coupling point	(+)	(-)	Result
LAN(RJ-45)	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
PoE(RJ-45)	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
Video IN ext. (RJ-45)	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

6.9 Conducted Immunity

Test specification	EN 61000-4-6:2014				
Tested frequency	0.15 ㎒ ~ 100 ㎒				
Test level & Modulation	1 Ⅴ, 3 Ⅴ, 10 Ⅴ, 80 % Amplitude Modulation (1 ㎑) 1 Ⅴ, 3 Ⅴ, 10 Ⅴ, Pulse Modulation (1 ㎐ (0.5 s ON: 0.5 s OFF))				
Frequency Step	1 % step				
Dwell time	1 s				
Coupling method	☒ AC main: CDN(M3), CDN(M2) ☒ Signal / Control: Clamp, CDN(S1/75) ☒ Telecommunication: CDN(T8-RJ45), ISN(ST08)				
Testing voltage	230 V, 50 Hz				
Test facility	Shielded room (6F)				
Date	2016. 08. 10				
Temperature(°C)	24.3 °C	Humidity (% R.H.)	43.0 % R.H.	Pressure (kPa)	100.3 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.9.1 Measurement procedure

A ground reference plane was located on the floor.

The test was performed on a ground reference plane on a 0.1 m wooden table. This test were Performed using CDN for mains, clamp for signal and injection probe. The frequency range was swept from 0.15 ㎒ to 80 ㎒. This frequency range was Modulated with 1 ㎑ sine wave at 80 %.

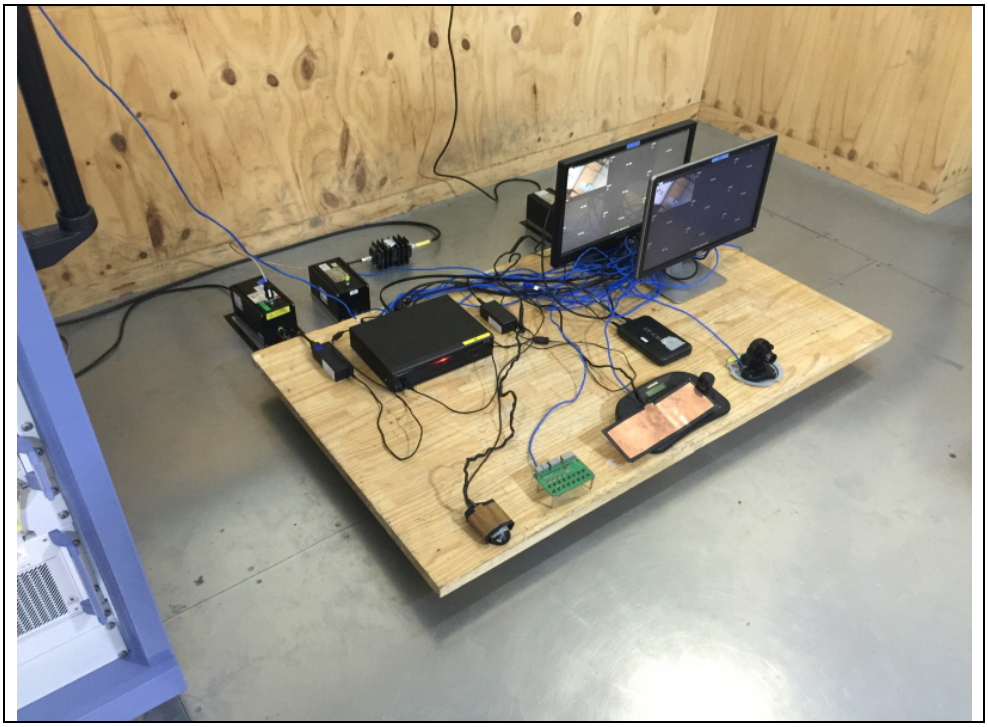
The signal generators provided the modulated frequency at a 1 % step size.

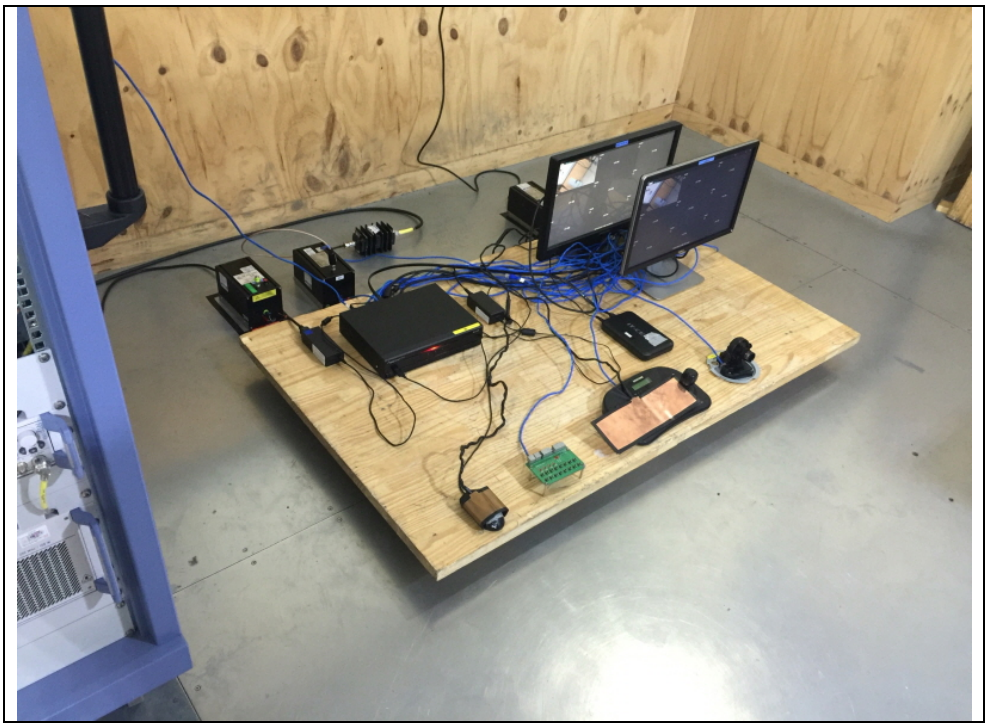
The power and all network cable, I/O cables longer than 3 m length were tested.

6.9.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
POWER SENSOR	NRP-Z91	103183	R&S	2017.02.15	☒
POWER SENSOR	NRP-Z91	103184	R&S	2017.02.15	☒
CDN	CDN L-801 M2 / M3	2936	EM TEST	2016.09.03	☒
CDN	CDN M2/M3	0906-12	EM TEST	2016.09.03	☒
SIGNAL GENERATOR	SMC100A	105221	R&S	2017.08.02	☒
COAXIAL FIXED ATTENUATOR	MU918	73-6-34	MCE/ WEINSCHEL	2017.08.02	☒
BROADBAND AMPLFIER	BBA150	101937	R&S	2017.02.15	☒
CDN	CDN S1/75	0410-28	EM TEST	2017.02.29	☒
CDN	CDN-T8-RJ45	0113-22	EM TEST	2016.09.03	☒
EM Clamp	KEMZ 801	17643	Schaffner	2017.04.08	☒
IMPEDANCE STABILIZATION NETWORK	ISN ST08	24342	TESEQ	2017.08.25	☒

6.9.3 Photographs of test setup





6.9.4 Measurement result

* AC main (AC/DC Adaptor#1)

Coupling point	Coupling method	Result
Power	CDN(M3)	Pass

* AC main (AC/DC Adaptor#2)

Coupling point	Coupling method	Result
Power	CDN(M2)	Pass

* Signal / Control (AC/DC Adaptor#1, #2)

Coupling point	Coupling method	Result
Audio Out	CDN(S1/75)	Pass
Alarm In/Out	Clamp	Pass
RS232	Clamp	Pass

* Telecommunication (AC/DC Adaptor#1, #2)

Coupling point	Coupling method	Result
LAN(RJ-45)	CDN(T8-RJ45)	Pass
PoE(RJ-45)	CDN(T8-RJ45)	Pass
Video IN ext. (RJ-45)	ISN(ST08)	Pass

6.10 Dips and Interruptions

Test specification	EN 61000-4-11:2004				
Number of dips	3 T				
Duration	10 s				
Phase	Zero crossing (0 °)				
Testing voltage	100 V, 50/60 Hz / 240 V, 50/60 Hz				
Test facility	Shielded room (6F)				
Date	2016. 08. 11				
Temperature(°C)	22.8 °C	Humidity (% R.H.)	50.5 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.10.1 Measurement procedure

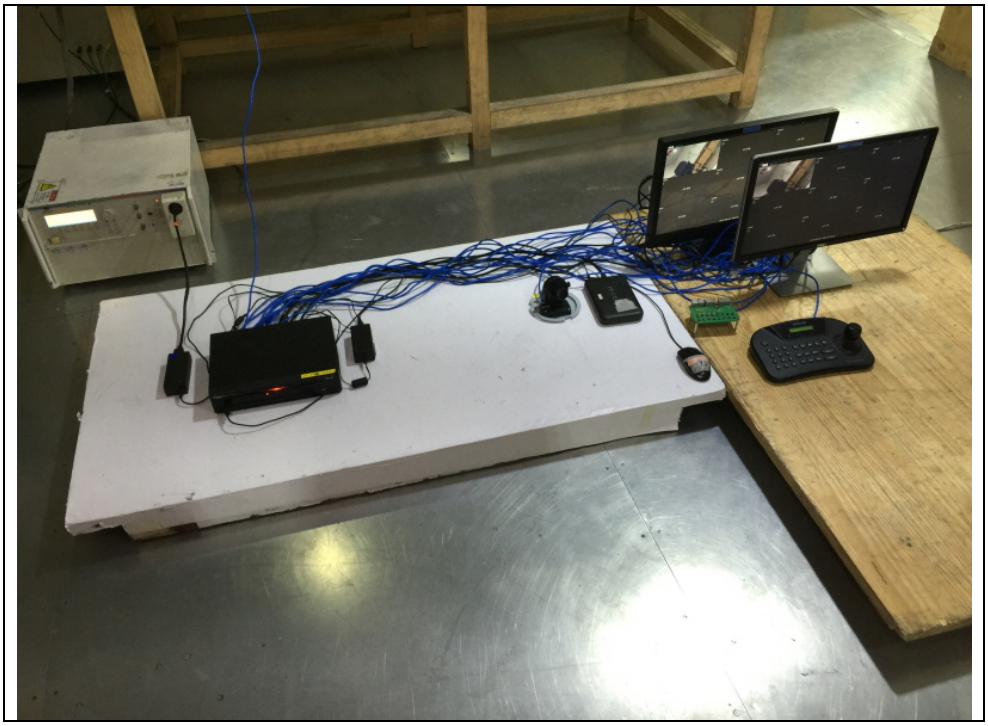
The dips/interruption test is only applicable to AC mains.

The dips/interruptions were applied at zero crossing.

6.10.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Ultra compact simulator	UCS 500-M6BS1	V0545100858	EM TEST	2017.04.07	☐
Ultra compact simulator	UCS500M	0701-03	EM TEST	2016.09.01	☒

6.10.3 Photographs of test setup



6.10.4 Measurement result

* 100 V, 50/60 Hz / 240 V, 50/60 Hz (AC/DC Adaptor#1, #2)

Test Level (%UT)	Dip/Int. (%UT)	Duration /Period	Phase (°)	Count number	Result
80 %	20%	250/300 Period (1)	0	3T	Pass
70 %	30 %	25/30 Period	0	3T	Pass
40 %	60 %	10/12 Period	0	3T	Pass
0%	100 %	250/300 Period (2)	0	3T	Note*

Comment:

- There was no change of operation status during above testing.

(250/300 Period(1), 25/30 Period, 10/12 Period)

- Note* (250/300 Period(2))

The power of EUT is off during the test. After the test, EUT is getting back to normal operation.

It fully recorded using ancillary Power source equipment to content with Manufacturer`s set up manual. During the 250 period power loss, in accordance with the standard, a UPS was used to maintain full operation of the unit.
(AC/DC Adaptor#1, #2)

6.11 Mains supply voltage variations

Test specification	EN 50130-4:2011/A1:2014				
Supply voltage	*U nom* + 10 %, *U nom* - 15 %				
Testing Voltage	100 V, 50/60 Hz / 240 V, 50/60 Hz				
Date	2016. 08. 11				
Temperature(°C)	22.8 °C	Humidity (% R.H.)	50.5 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass				

6.11.1 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. date	Used
Ultra compact simulator	UCS 500-M6BS1	V0545100858	EM TEST	2017.04.07	☐
Ultra compact simulator	UCS500M	0701-03	EM TEST	2016.09.01	☒

6.11.2 Measurement result

* 100 V, 50/60 Hz (AC/DC Adaptor#1, #2)

Supply voltage		Result
+ 10 %	110 V	Pass
- 15 %	85 V	Pass

* 240 V, 50/60 Hz (AC/DC Adaptor#1, #2)

Supply voltage		Result
+ 10 %	264 V	Pass
- 15 %	204 V	Pass

Comment:

- There was no change of operation status during above testing. (AC/DC Adaptor#1, #2)

7. E.U.T. photographs

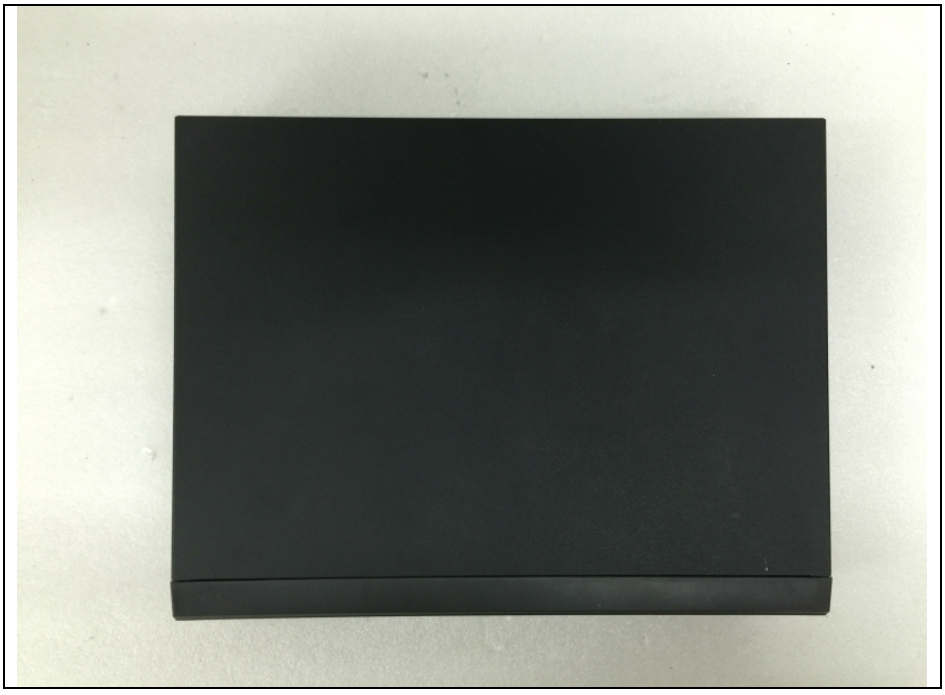
Front View

Rear View

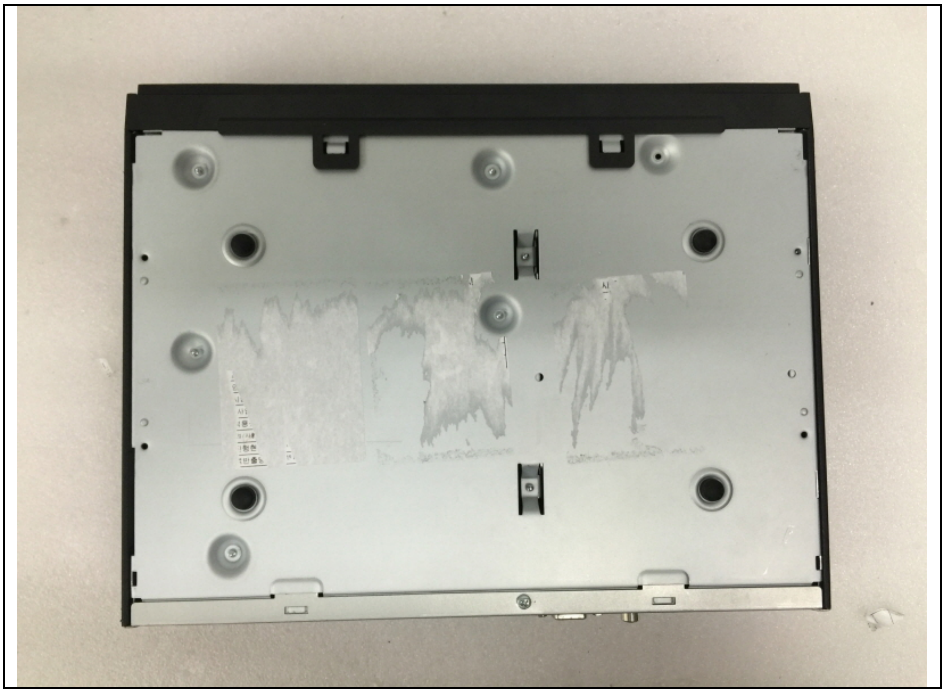
Left View

Right View

Top View

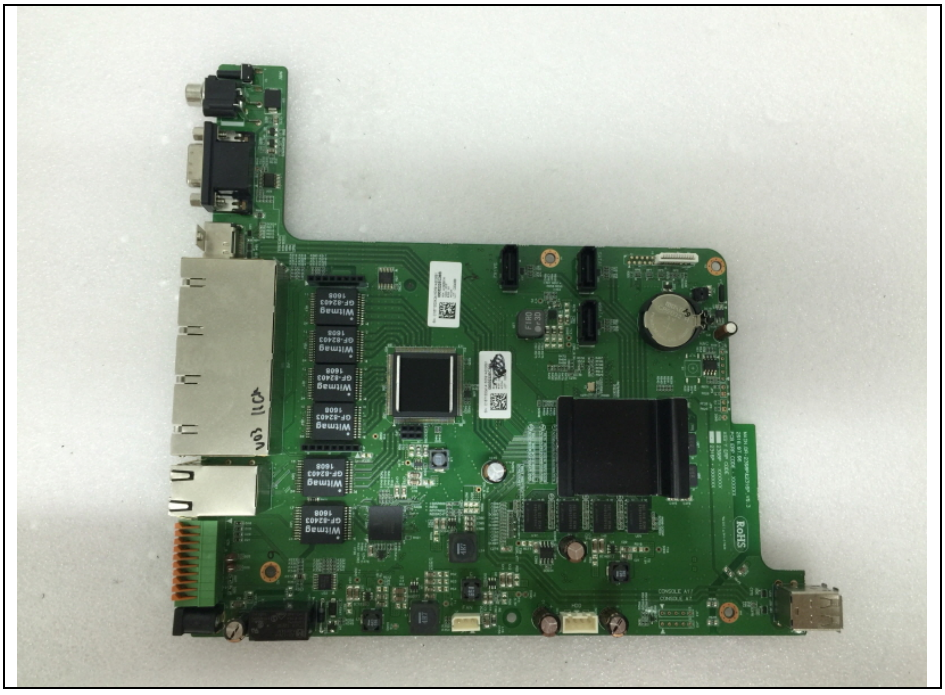


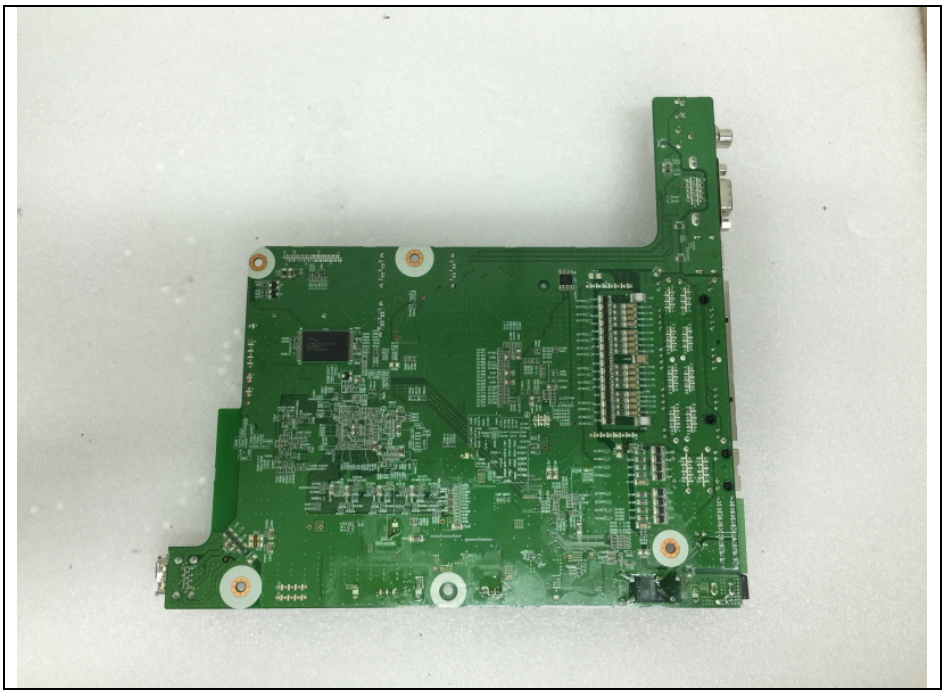
Bottom View



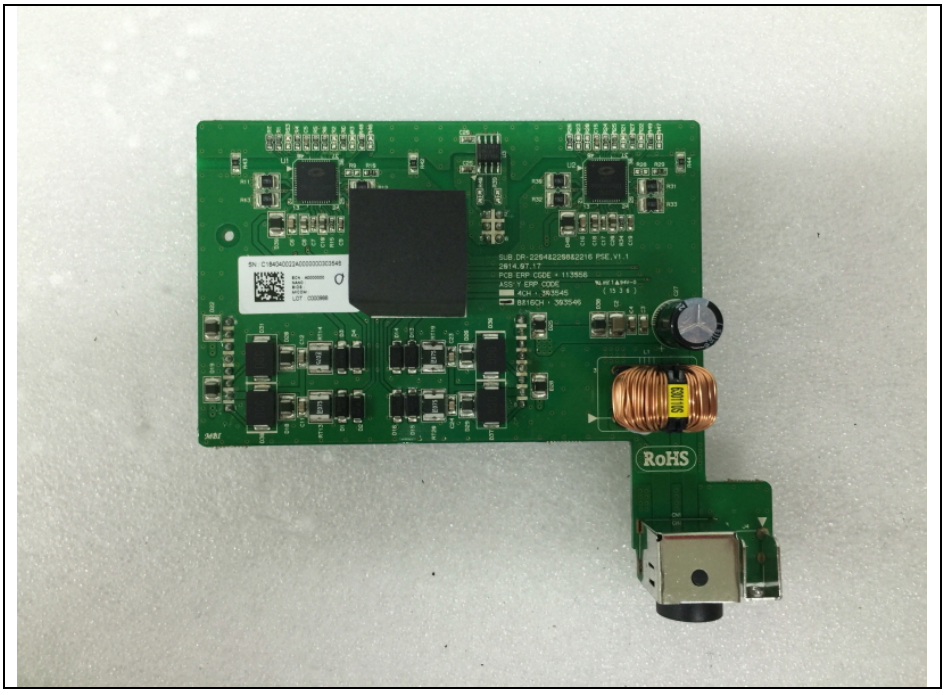
Inside

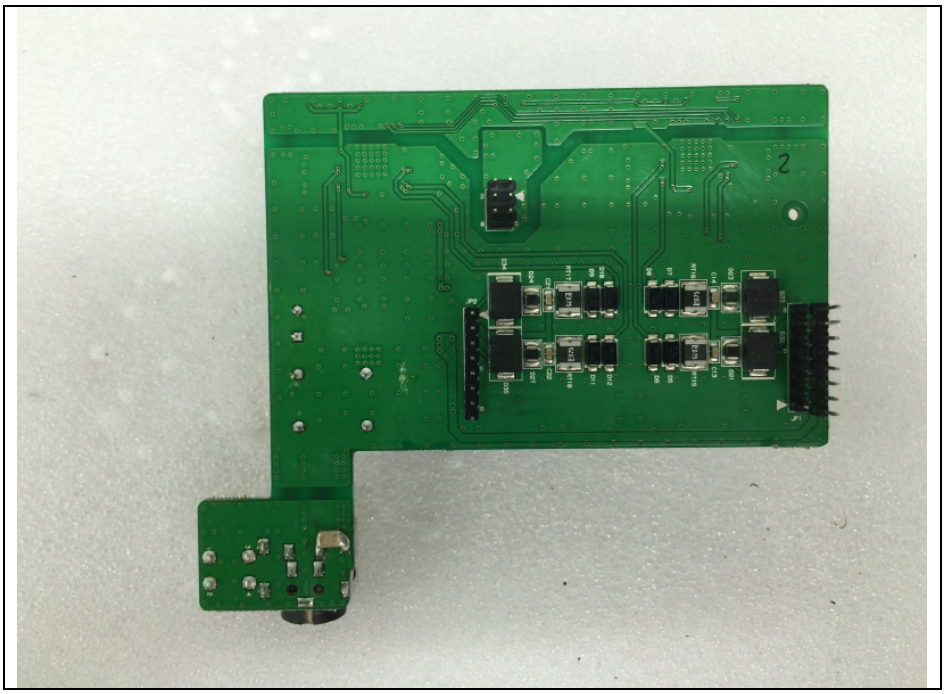
Main Board



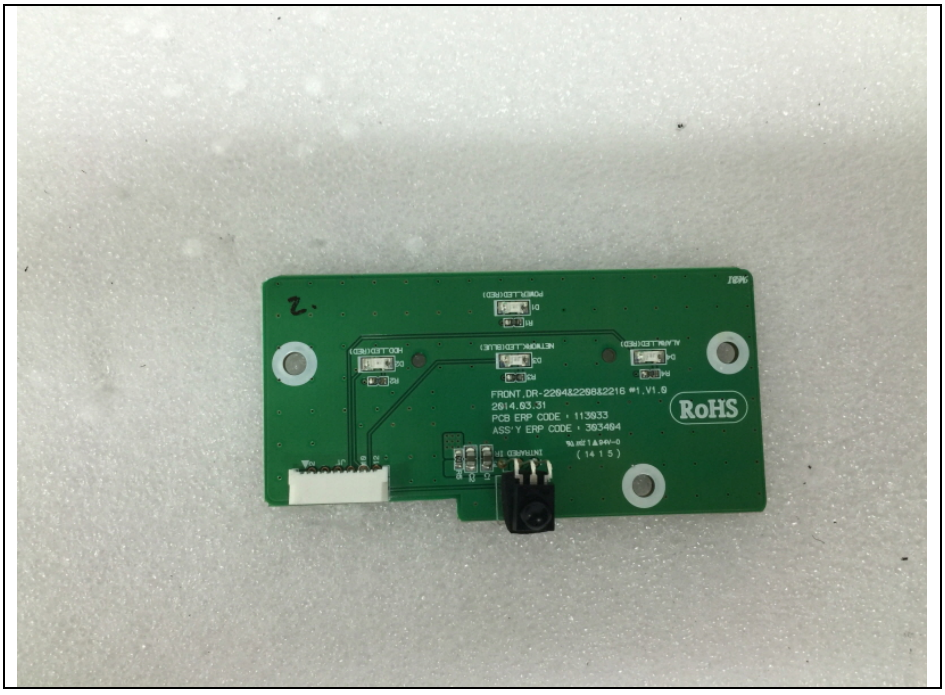


SUB Board

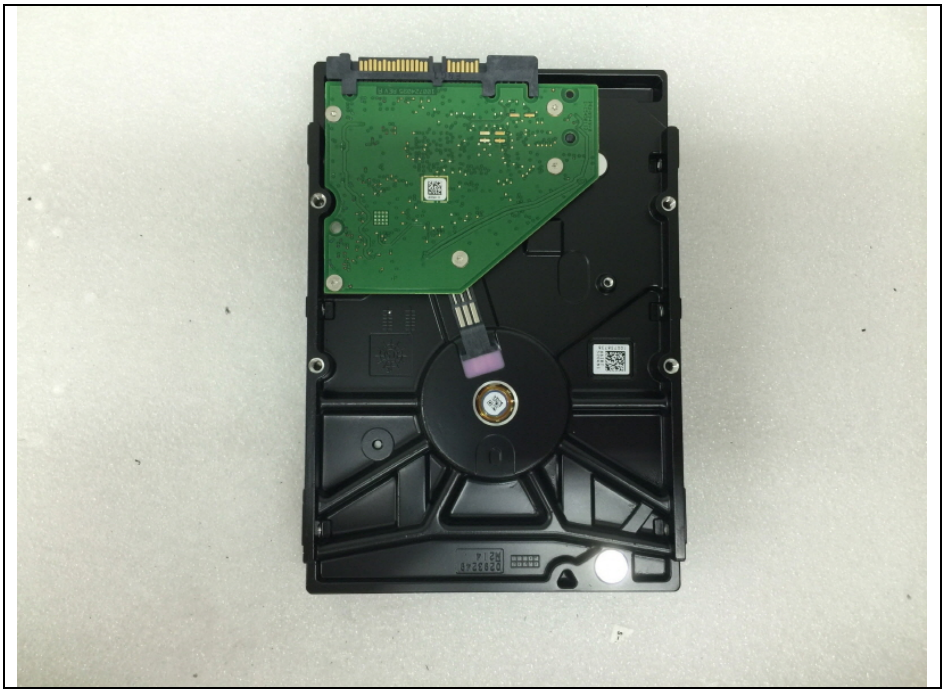




Front Board



HDD(2000 GB)(2 EA)



AC/DC Adaptor#1

AC/DC Adaptor#2