# **EU Declaration of Conformity**

# SAMSUNG



#### We hereby declare that the product

Type of equipment : NETWORK CAMERA

Brand Name / Trade Mark : SAMSUNG
Model number : XND-8020RP

Variant Model : -

satisfies all the technical regulations applicable to the product within the scope of Council Directives 2014/30/EU

EN 55022:2010 : Limits and methods of measurement of radio disturbance

characteristics of information technology equipment Technical documentation for the assessment of electrical

EN 50581:2012 and electronic products with respect to the restriction of

hazardous substances

EN 50130-4:2011+A1:2014 Product family standard: Immunity requirements for components of

fire,intruder and social alarm systems

EN 61000-4-2:2009 : Electrostatic discharge immunity test

EN 61000-4-3:2006+A2:2010 : Radiated, radio-frequency, electromagnetic field immunity test

EN 61000-4-4:2012 : Electrical fast transient/burst immunity test

EN 61000-4-5:2014 : Surge immunity test

EN 61000-4-6:2014 : Immunity to conducted disturbances, induced by radio-

frequency fields

#### All essential testing suites have been carrier out.

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Manufacturer address : No.11 Weiliu Rd, Micro-Electronic Industrial

Park, TEDA, Tianjin, 300385, People's Republic of China

Telephone / Fax : 82-02-729-2900 /82-02-729-2904 (www.hanwhatechwin.com)

Applicant: Hanwha Techwin Co., Ltd.

Applicant address : 1204, Changwon-daero, Seongsan-gu, Chang-won-si,

Gyeongsangnam-do, korea

This declaration is issued under the sole responsibility of the manufacturer and his authorised representative.

Authorized signatory

Name / Title : Jei Soon, Kang / Principal Research Engineer

Date of issue : Jan. 25, 2017



C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-E1-17T0064 Page (1) of (80)

# **EMC TEST REPORT For CE**

Test Report No. : KES-E1-17T0064

Date of Issue : Jan, 25, 2017

Product name : NETWORK CAMERA

Model/Type No. : XND-8020RP

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,

Gyeongsangnam-do, Korea

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial

Park, TEDA, Tianjin, 300385, People's Republic of China

Date of Receipt : Jan, 10, 2017

Test date : Jan, 12, 2017 – Jan, 17, 2017

Tested by

Young Suk, Song EMC Test Engineer Reviewed by

Dong-Hun, Jang EMC Technical Manager



C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-E1-17T0064 Page (2) of (80)

## REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 25, 2017	KES-E1-17T0064	Issued

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# KES Co., Ltd.

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	oltage Dips and Short Interruptions	
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# 1.0 General Product Description

# Main Specifications of E.U.T are:

	XND-8020R		
Video			
Imaging Device	1/1.8" 6M CMOS		
Total Pixels	3096(H) x 2094(V)		
Effective Pixels	2616(H) x 1976(V)		
Scanning System	Progressive Scan		
Min. Illumination	Color: 0.2 lux(F1.6, 1/30sec) B/W: 0 Lux (IR LED On)		
S / N Ratio	50dB		
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB: Micro USB type B, 1280x720, for installation		
Lens			
Focal Length (Zoom Ratio	3.7mm Fixed		
Max. Aperture Ratio	F1.6		
Angular Field of View	H: 97.5°, V:71.9°, D: 126.2°		
Min. Object Distance	0.4m		
Focus Control	Manual		
Lens Type	Fixed		
Mount Type	Board-in type		
Pan / Tilt / Rotate			
Pan / Tilt / Rotate range	0° ~ 354° / 0° ~ 67° / 0° ~ 355°		
Operational	2 22.72 3770 330		
IR Viewable Length	30m(98.43ft)		
ii viewabie zerigar	Off / On (Displayed up to 85 characters)		
Camera Title	- W/W: English/Numeric/Special Characters - China: English/Numeric/Special/Chinese Characters - Common: Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale - Common: Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale		
Day 9 Night	by Resolution		
Day & Night Backlight Compensation	Auto (ICR) / Color / B/W / External / Schedule		
	Off / BLC / HLC(Masking/Dimming), WDR		
Wide Dynamic Range	120dB		
Contrast Enhancement	SSDR (Off / On)		
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)		
Digital Image Stabilization	Off / On		
Defog	Auto(input from fog detection) / Manual / Off		
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover		
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic		
Gain Control	Off / Low / Middle / High		
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)		
Contrast	level adjustment		
LDC	On/Off (5 levels with Min/Max)		
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)		
Digital PTZ	24X, 'Digital PTZ(Preset, Group)		
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°		
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog&Dust Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification, People counting, Heat map, Queue management		
Alarm I/O	Input 1ea / Output 1ea		
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect		
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers External output DPTZ preset		
Audio In	Selectable (Mic IN/Line IN), Built-in MIC. Max output level : 1Vrms Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm		
Audio out	Line out, Max output level: 1 Vrms		



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Network   Resolution   R.J.45 (10/1008ASE-T)   Resolution   R.J.45 (10/1008ASE-T)   Resolution   R.J.56 (10/1008ASE-T)   Resolution   R.J.56 (10/1008ASE-T)   Resolution   R.J.56 (10/1008ASE-T)   Resolution   R.J.56 (10/1008ASE-T)   Resolution   Resol	Pixel Counter	Support				
Filement		Support				
\( \text{Video Compression Forms H. 25SHz 264 (MPEG-4 Part 10/AVC): \text{ Main/BaselineHigh, Motion JPEG Resolution} \) \( \text{Presolution} \) \( \text{Video Quality Adjustment } \) \( \text{Video Quality Adjustment } \) \( \text{Video Cuality Adjustment } \) \( \text{Presolution} \) \( \text{Video Control Method} \) \( \text{Sixteaming Capability } \) \( \text{Miles Control Method} \) \( \text{Miles Communication} \) \( \text{Miles Communication} \) \( \text{Miles Communication} \) \( \text{Miles Communication} \) \( \text{Presolution} \) \( \text{Miles Communication} \) \( \text{Presolution} \) \( \text{Presolution} \) \( \text{Miles Communication} \) \( \text{Presolution} \) \( P		D 1 45 (40)(00D 105 T)				
2560 x 1920, 2560 x 1440, 1920 x 1080, 1500 x 1200, 1280 x 1024, 1280 x 960						
1280 x 720, 1024 x 788, 800 x 800, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 380, 320 x	Video Compression Forma	,				
Mass. Framerate         Motion JPEG: Max. 30fps           Smart Codec         Manual Mode (area-based : SEA)           WiseStream II         Support           Video Quality Adjustment         Support           Ivideo Cuality Adjustment         LUPEG: Target Bitrate Level Control           LUPEG: Target Bitrate Level Control         LUPEG: Target Bitrate Level Control           Streaming Capability         MUPEG: Yell           Audio Compression Form         C72 (APEM) Section (Section (Section)           Audio Compression Form         APEG: Yelk (Section)           Audio Communication         Bi-dierctional (2-Way)           IPVA (IPVA)         IPVA (IPVA)           Protocol         PPPPOE, FTP, DIDPIP, RTP(TCP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTP, SSL/TLS, DHCP, PPPOE, FTP, SMTP, ICMP, ISMP, SMMPV1/20/3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPPA, IPVA           Security         P Address Filtering           User Streaming Method         Unication Formation Formation Proton Formation Proton Formation Proton Formation Proton Formation Proton Formation Proton	Resolution	1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x				
Support	Max. Framerate	·				
H_264H_265 : Target Bitrate Level Control	Smart Codec	Manual Mode (area-based : 5EA)				
A   A   A   A   A   A   A   A   A   A	WiseStream II	Support				
MD-EG : larget birtate Level Control		H.264/H.265 : Target Bitrate Level Control				
Ministrate Control Method   Ministration   Minist	Video Quality Adjustment	MJPEG : Target Bitrate Level Control				
G.711 u-law (G.726 Selectable G.726 (ADPCN) RKHz, G.711 8/Hz G.726 (16/RDN, 8/Hz), G.711 8/Hz G.726 (16/RDN, 24/Kbps, 32/Kbps, 40/Kbps AAC-LC : 48/Kbps at 8/16/32/48/Hz  Audio Communication Bi-dierctional (2-Way) IP-V4, IPv6 TCP/IP, UDPIP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PProtocol PPDeE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPP, Boniour HTTPS(SSL) Login Authentication Digest Login Authentication Digest Login Authentication Per Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP) Unicast / Multicast Max. User Access SD/SDHC/SDX 22 slot (up to 512 GB) - Continuous recording(19t slot to 2nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording OWIP Profile SIG Application Programming SUNAP(IHTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Soft Smart/Lewer, SSM Environmental Operating Temperature / Humidity Audal Resistance IKO8 Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) O110xH30mm(Q4.33* x 3.54*)	Bitrate Control Method					
Audio Compression Form  A726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16kbps, 24kbps, 32kbps, 40kbps AAC-LC : 48kbps at 8/16/32/48kHz B-dierctional (2-Way)    Py	Streaming Capability	Multiple Streaming (Up to 10 Profiles)				
Bi-dierctional (2-Way)    P	Audio Compression Forma	G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps				
TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2e/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPP, Boniour HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)  Streaming Method Unicast / Multicast Max. User Access 20 users at Unicast Mode SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ON/IP Profile S/G Application Programming I SUNAP(IHTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish. Portuguese, Czech. Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Softs, SmartViewer, SSM Environmental Operating Temperature / Humidity Vandal Resistance IK08 Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) O0110xH90mm(04.33" x 3.54")	Audio Communication					
TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2e/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPP, Boniour HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)  Streaming Method Unicast / Multicast Max. User Access 20 users at Unicast Mode SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ON/IP Profile S/G Application Programming I SUNAP(IHTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish. Portuguese, Czech. Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Softs, SmartViewer, SSM  Environmental Operating Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) O110xH90mm(04.33" x 3.54")	IP.					
HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)  Streaming Method Unicast / Multicast  Max. User Access 20 users at Unicast Mode SD/SDHC/SDXC Zelot (up to 512 GB) - Continuous recording(1*st slot to 2*nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ONVIF Profile S/G Application Programming SUNAP(IHTTP API) Open Platform Webpage Language Webpage Language Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8-1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Softs SmartViewer, SSM Environmental Operating Temperature / Humidity Sara (Mac OS X only) Find Control of	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM,				
Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)  Streaming Method Unicast / Multicast Max. User Access 20 users at Unicast Mode SD/SDHC/SDXC 2siot (up to 512 GB) - Continuous recording (1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ONVIF Profile S/G SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10.11.11.11.12 Non-plugin Webviewer Web Viewer Web Viewer Web Viewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Soft, SmartViewer, SSM Environmental Operating Temperature / Humidity Operating Temperature / Humidity Vandal Resistance IKO8 Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Dimension (WxHxD) Opension (WxHxD) Opension State Plate Automatical State Plate Plat						
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User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)  Streaming Method Unicast / Multicast  Max. User Access 20 users at Unicast Mode SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1st stot to 2nd slot) - Motion Images recording(1st stot to 2nd slot) - Motion Images recording(1st stot to 2nd slot) - Max (Network Attached Storage) Local PC for Instant Recording ONVIF Profile S/G Application Programming UNAPIHITTY API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10.10.11.10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Plug-in Webviewer, SSM  Environmental Operating Temperature / Humidity Storage Temperature / Humidity -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH Vandal Resistance  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Dimension (WxHxD) Olive Authanical Dimension (WxHxD) Olive Authanical Dimension (WxHxD) Olive Authanical Dimension (WxHxD)  Olive Authanical Dimension (WxHxD)  Olive Authanical Dimension (WxHxD)  Olive Authanical Dimension (WxHxD)	Conumity					
Streaming Method   Unicast / Multicast	Security	3				
Streaming Method   Unicast / Multicast						
Max. User Access   20 users at Unicast Mode   SD/SDHC/SDXC 2slot (up to 512 GB)   - Continuous recording (1'st slot to 2'nd slot)   - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded.   NAS(Network Attached Storage)   Local PC for Instant Recording   ONVIF Profile S/G   SUNAPI(HTTP API)   Open Platform   English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek   Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12   Non-plugin Webviewer   Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Safari 9 (Mac OS X only)		802.1X Authentication (EAP-TLS, EAP-LEAP)				
SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS (Network Attached Storage) Local PC for Instant Recording ONVIP Profile S/G Application Programming I SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Soft Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08 Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Streaming Method	Unicast / Multicast				
- Continuous recording (1'st slot to 2'nd slot) - Motion Images recorded in the SDJ/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ONVIF Profile S/G Application Programming   SUNAP(IHTTP API) Open Platform Webpage Language   Sunaprile Signature   Webpage Language   Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Plug-in Webviewer, SSM Environmental Operating Temperature / Humidity	Max. User Access					
Edge Storage  - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording ONVIF Profile S/G  SUNAPI(HTTP API) Open Platform  Webpage Language  Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10.10.11 10.12  Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Safari 9 (Mac OS X only) SmartViewer, SSM  Environmental  Operating Temperature / Humidity  Operating Temperature / Humidity  Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")						
NAS(Network Attached Storage) Local PC for Instant Recording ONVIP Profile S/G Application Programming Webpage Language Non-plugin Webviewer Supported S: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Soft SmartViewer, SSM  Environmental Operating Temperature / Humidity  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Ed					
Local PC for Instant Recording ONVIF Profile S/G Application Programming SUNAP(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Softs SmartViewer, SSM Environmental Operating Temperature / Humidity -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH Storage Temperature / Humidity Vandal Resistance IKO8 Electrical Input Voltage / Current Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Edge Storage					
Application Programming   ONVIF Profile S/G   SUNAPI(HTTP API)   Open Platform   Webpage Language   English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek   Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10.10.11 10.12   Non-plugin Webviewer   Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only)   Plug-in Webviewer   Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)   Central Management Soft   SmartViewer, SSM   Environmental   -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH   Storage Temperature / Humidity   -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH   Wandal Resistance   IKO8   Electrical   Input Voltage / Current   DC12V,PoE(IEEE802.3af,Class3)   Power Consumption   Max. 8W(12VDC), Max. 9W(PoE)   Mechanical   Vory / Metal   Dimension (WxHxD)   Ø110xH90mm(Ø4.33" x 3.54")						
Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) Central Management Soft Environmental Operating Temperature / Humidity Operating Temperature / Humidity Storage Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08 Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE) Mechanical Color / Material Dimension (WxHxD) Openation Supported Suppor						
Webpage Language  English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek  Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12  Non-plugin Webviewer  Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only)  Plug-in Webviewer  Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Soft\  Environmental  Operating Temperature / Humidity  Storage Temperature / Humidity  Vandal Resistance  IK08  Electrical  Input Voltage / Current  DC12V,PoE(IEEE802.3af,Class3)  Power Consumption  Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material  Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")		IONVII FIGIRE 3/G				
Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Softi SmartViewer, SSM  Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")	Application Programming I					
Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12  Non-plugin Webviewer  Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only)  Plug-in Webviewer  Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Softs SmartViewer, SSM  Environmental  Operating Temperature / Humidity  Operating Temperature / Humidity  Storage Temperature / Humidity  Vandal Resistance  IK08  Electrical  Input Voltage / Current  DC12V,PoE(IEEE802.3af,Class3)  Power Consumption  Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material  Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")	Application Programming I	SUNAPI(HTTP API) Open Platform				
Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Softs SmartViewer, SSM  Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")		SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese,				
Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Soft SmartViewer, SSM  Environmental  Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Ivory / Metal Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Application Programming I Webpage Language	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek				
Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Soft SmartViewer, SSM  Environmental  Operating Temperature / Humidity  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  Storage Temperature / Humidity  Vandal Resistance  IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")		SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12				
Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)  Central Management Softx SmartViewer, SSM  Environmental  Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3) Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer				
Central Management Soft SmartViewer, SSM  Environmental  Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  IK08  Electrical Input Voltage / Current Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")		SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple				
Environmental  Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  IK08  Electrical Input Voltage / Current Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only)				
Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  ### April 10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  #### April 10°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH  ###################################	Webpage Language Web Viewer	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)				
Humidity Storage Temperature / Humidity Vandal Resistance IK08  Electrical Input Voltage / Current Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical Color / Material Dimension (WxHxD)  ### * +131*F * / Less than 90% RH  -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH  ###################################	Webpage Language Web Viewer	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)				
Storage Temperature / -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH  Wandal Resistance IK08  Electrical  Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3)  Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material Ivory / Metal  Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Soft	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only)				
Humidity  -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH  Vandal Resistance IK08  Electrical Input Voltage / Current DC12V,PoE(IEEE802.3af,Class3)  Power Consumption Max. 8W(12VDC), Max. 9W(PoE)  Mechanical  Color / Material Ivory / Metal  Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Software Software Central Management Software Softwar	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM				
Vandal Resistance         IK08           Electrical         Input Voltage / Current         DC12V,PoE(IEEE802.3af,Class3)           Power Consumption         Max. 8W(12VDC), Max. 9W(PoE)           Mechanical         Ivory / Metal           Color / Material         Ivory / Metal           Dimension (WxHxD)         Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM				
Electrical	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity  Storage Temperature /	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH				
Input Voltage / Current	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity  Storage Temperature / Humidity	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH				
Power Consumption         Max. 8W(12VDC), Max. 9W(PoE)           Mechanical         Ivory / Metal           Color / Material         Ivory / Metal           Dimension (WxHxD)         Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity  Storage Temperature / Humidity  Vandal Resistance	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH				
Mechanical         Color / Material         Ivory / Metal           Dimension (WxHxD)         Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  Electrical	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH  IK08				
Color / Material         Ivory / Metal           Dimension (WxHxD)         Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Softs  Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  Electrical Input Voltage / Current	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  IK08  DC12V,PoE(IEEE802.3af,Class3)				
Dimension (WxHxD) Ø110xH90mm(Ø4.33" x 3.54")	Webpage Language  Web Viewer  Central Management Softs  Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  Electrical Input Voltage / Current Power Consumption	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  IK08  DC12V,PoE(IEEE802.3af,Class3)				
	Webpage Language  Web Viewer  Central Management Softe  Environmental Operating Temperature / Humidity Storage Temperature / Humidity Vandal Resistance  Electrical Input Voltage / Current Power Consumption  Mechanical	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  IK08  DC12V,PoE(IEEE802.3af,Class3) Max. 8W(12VDC), Max. 9W(PoE)				
Weight 365g (0.8lb)	Webpage Language  Web Viewer  Central Management Softs  Environmental  Operating Temperature / Humidity  Storage Temperature / Humidity  Vandal Resistance  Electrical  Input Voltage / Current  Power Consumption  Mechanical  Color / Material	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  IK08  DC12V,PoE(IEEE802.3af,Class3) Max. 8W(12VDC), Max. 9W(PoE)  Ivory / Metal				
	Webpage Language  Web Viewer  Central Management Softe  Environmental  Operating Temperature / Humidity  Storage Temperature / Humidity  Vandal Resistance  Electrical  Input Voltage / Current  Power Consumption  Mechanical  Color / Material  Dimension (WxHxD)	SUNAPI(HTTP API) Open Platform English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Non-plugin Webviewer Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only) Plug-in Webviewer Supported Browser: MS Explore 11, Apple Safari 9 (Mac OS X only) SmartViewer, SSM  -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH  IK08  DC12V,PoE(IEEE802.3af,Class3) Max. 8W(12VDC), Max. 9W(PoE)  Ivory / Metal Ø110xH90mm(Ø4.33" x 3.54")				



C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-E1-17T0064 Page (6) of (80)

# 1.1 Test Voltage & Frequency

	Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.							age
	Voltage	☐ 220 Vac	☐ 230 Vac	☐ 24 V	∕ac ⊠	12 Vdc	⊠ PoE	
	Frequency	☐ 50 Hz	☐ 60 Hz		Hz			
1.2	Variant M	lodel Diff	erences					
	Not applicable							
1.3	Device M	odificatio	ons					
	Not applicable							

# 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XND-8020RP	-	Hanwha Techwin(Tianjin) Co.,Ltd.	E.U.T

# 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adapter	KPL-060F	-	CHANNEL WELL TECHNOLOGY	-
Notebook	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Phone	A1530	-	APPLE	-
MIC	CMK-303	-	CAMAC	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI- TECH GROUP.	-
Alarm	-	-	-	-
SD card	-	-	SanDisk	-



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# 1.6 External I/O Cabling

#### - DC 12 V Mode

Start		END		Cable Spec.	
Description I/O Port		Description	I/O Port	Length	Shield
	RJ-45	Notebook	RJ-45	3.0	U
NETWORK	7 Pin	MIC	3.5 mm	1.7	U
NETWORK CAMERA		Speaker	3.5 mm	1.6	U
(E.U.T)		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Notebook	Audio in	Phone	Audio out	1.7	U

## - PoE Mode

Start		END		Cable Spec.	
Description I/O Port		Description	I/O Port	Length	Shield
	RJ-45 (POE)	POE Adapter	RJ-45 (POE)	3.0	U
NETWORK	7 Pin	MIC	3.5 mm	1.7	U
CAMERA		Speaker	3.5 mm	1.6	U
(E.U.T)		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Natabaala	Audio in	Phone	Audio out	1.7	U
Notebook	RJ-45 (DATA)	POE Adapter	RJ-45 (DATA)	3.0	U

<sup>\*</sup> Unshielded=U, Shielded=S



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# 1.7 E.U.T Operating Mode(s)

Test mode	operating
DC, POE	E.U.T Monitoring, 1 🕅 , Ping Test

	E.U.T Test operating S/W	
Name	Version	Manufacture Company
SmartViewer	-	Hanwha Techwin Co., Ltd.

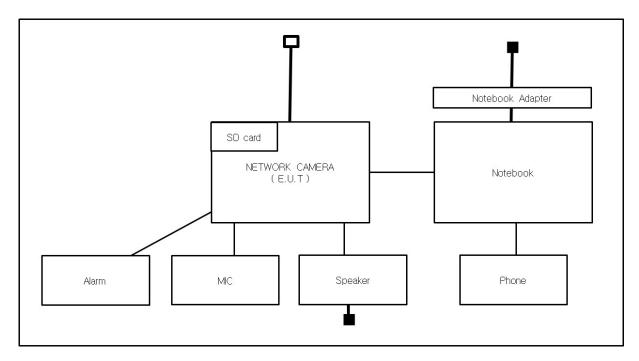


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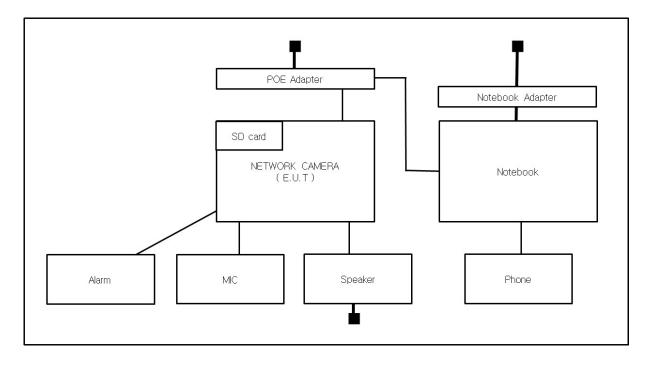
# 1.8 Configuration

■ AC Main□ DC Main

#### - DC 12 V Mode



## - PoE Mode





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# 1.9 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

# 1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

# 1.11 Laboratory Accreditations and Listings

Country	untry Agency Scope of Accreditation		Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	FC
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1	R-4308, C-4798, T-2311, G-914
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	( (
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	ABORATORY ACCREDITATION OF TESTING NO. 489



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# 2.0 Test Regulations

The emissions tests were performed accordi	ng to following regulati	ons:
☐ EN 61000-6-3:2011		
☐ EN 61000-6-1:2007		
☐ EN 61000-6-4:2007 +A1:2011		
☐ EN 61000-6-2:2005		
☐ EN 55011:2007 +A1:2010	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55014-1:2006 +A2:2011		
☐ EN 55014-2:1997 +A2:2008		
☐ EN 55015: 2013		
☐ EN 61547: 2009		
⊠ EN 55022: 2010	☐ Class A	☐ Class B
☐ EN 55024:2010 +A1:2015		
⊠ EN 50130-4:2011 +A1:2014		
☐ EN 61000-3-2:2014		
☐ EN 61000-3-3:2013		
☐ EN 61326-1:2013		



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 □ VCCI V-3 / 2015.04 ☐ Class A ☐ Class B ☐ Class B ☐ AS/NZS CISPR22:2009 +A1:2010 ☐ Class A ☐ 47 CFR Part 15, Subpart B ☐ Class A CISPR 22:2009 +A1:2010 ☐ Class B ☐ ANSI C63.4-2009 ☐ IC Regulation ICES-003 : 2016 ☐ CAN/CSA CISPR 22-10 Class A ☐ Class B ☐ ANSI C63.4-2014 ☐ RE- Directive 2014/53/EU ■ EN 301 489-1 V1.9.2 Equipment for fixed use Equipment for vehicular use Equipment for portable use ■ EN 301 489-3 V1.6.1 ☐ EN 301 489-17 V2.2.1 ■ EN 60945: 2002



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# 2.1 Conducted Emissions at Mains Power Ports

**Test Date** 

N/A

**Test Location** 

Electro wave Shieldroom

# **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	EMI Test Receiver	FYRY	R & S	101783	05, 03, 2017
	☐ LISN ENV21	ENV216	R & S 101137	02, 04, 2017	
	LISN	ENV216	R & S	101786	05, 02, 2017
	Electro wave Shieldroom	-	SEMITEC	-	-
	EMI Test S/W	EMC32	R&S	9.12.00	-

	Electro wave Shieldroom	-	SEMITEC	-	-
	EMI Test S/W	EMC32	R&S	9.12.00	-
Ter Re	est Conditions mperature: lative Humidity:	°C %			
	equency Range 0 Hz to 30 Hz	e of Measureme	ent		
	strument Setti Band Width: 9 kHz	ngs			
	est Results e requirements are	e:			
	PASS NOT PASS NOT APPLICABLE				
DC	Remarks DC 12 V, PoE Mode N/A: E.U.T Power is 12 V(dc) Power and PoE, linits are not Specified.				

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# 2.2 Conducted Emissions at Telecommunication Ports

**Test Date** 

Jan, 12, 2017

**Test Location** 

Electro wave Shieldroom

## **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
$\boxtimes$	LISN	ENV216	R & S	101137	02, 04, 2017
$\boxtimes$		ENV216	R & S	101786	05, 02, 2017
$\boxtimes$	⊠ 8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
	8-Wire ISN CAT5 CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017	
$\boxtimes$	□ PULSE LIMITER ESH3-Z2	ESH3-Z2	R&S	101914	12, 13, 2017
Shield Room #3 -		SEMITEC	-	-	
$\boxtimes$	EMI Test S/W	EMC32	R & S	9.12.00	-

#### **Test Conditions**

Temperature:  $21,2 \,^{\circ}\text{C}$  Relative Humidity:  $42,0 \,^{\circ}\text{M}$ 

# **Frequency Range of Measurement**

150 kHz to 30 MHz

#### **Instrument Settings**

IF Band Width: 9 kHz

#### **Test Results**

The requirements are:

PASS

■ NOT PASS

☐ NOT APPLICABLE

#### Remarks

See Appendix A for test data.

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#### Radiated Electric Field Emissions (Below 1 础) 2.3

**Test Date** Jan, 13, 2017 **Test Location** Open Area Test Site #1 Open Area Test Site #2

## **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	EMI TEST Receiver	ESR3	R&S	101781	05, 03, 2017
$\boxtimes$	Trilog-Broadband VULB 9163	VULB 9163	Schwarzbeck	714	11, 28, 2018
$\boxtimes$	Open Area Test -	-	KES	-	-
$\boxtimes$	🛛 Antenna Mast	-	DAEIL EMC	-	-
□ 1	Turn Table	-	DAEIL EMC	-	-
$\boxtimes$	EMI Test S/W	-	-	-	-

#### **Test Conditions**

Temperature: 0,3 ℃ Relative Humidity: 81,0 %

#### **Frequency Range of Measurement**

30 MHz to 1 GHz

#### **Instrument Settings** IF Band Width: 120 kHz

# **Test Results** The requirements are: PASS **NOT PASS** ☐ NOT APPLICABLE

#### Remarks

See Appendix A for test data.

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# 2.4 Radiated Electric Field Emissions (Above 1 勋)

**Test Date** 

Jan, 13, 2017

**Test Location** 

Semi Anechoic Chamber #2

#### **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
$\boxtimes$	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 14, 2017
$\boxtimes$	Somi Anachaic	-	SEMITEC	-	-
$\boxtimes$	Antenna Mast -	AUDIX	-	-	
$\boxtimes$	☐ Turn Table -	AUDIX	-	-	
	EMI Test S/W	e3	AUDIX	8.083b	-

**Test Conditions** 

Temperature: 21,4  $^{\circ}$ C Relative Humidity: 40,4  $^{\circ}$ 

## **Frequency Range of Measurement**

1 GHz to 6 GHz

**Instrument Settings** 

IF Band Width: 1 ₩2

**Test Results** 

The requirements are:

 $\square$  PASS

☐ NOT PASS

■ NOT APPLICABLE

Remarks

See Appendix A for test data.



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#### 2.5 **Harmonic Current Emissions**

**Test Date** 

N/A

**Test Location** 

Electro wave Shieldroom

# **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	AC Source	ACS 500 N	EM TEST	V1024106760	08, 08, 2017
	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 08, 2017
	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

Ш	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-		
Tei	est Conditions mperature: lative Humidity:	°(	C 6				
	Classification of Equipment for Harmonic Current Emissions  Class A Class B Class C(Below 25 W) Class C(Above 25 W) Class D						
	est Results e requirements ar	e:					
	PASS NOT PASS NOT APPLICABLE						
DC	emarks C 12 V, PoE Mode Mecified.	N/A: E.U.T Power	is 12 V(dc) Powe	er and PoE, linit	ts are not		



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# 2.6 Voltage Fluctuations and Flicker

**Test Date** 

N/A

**Test Location** 

Electro wave Shieldroom

# **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	AC Source	ACS 500 N	EM test	V1024106760	08, 08, 2017
	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 08, 2017
	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-			
Te	Test Conditions Temperature: °C Relative Humidity: %							
	Test Results The requirements are:							
	PASS NOT PASS NOT APPLICABLE	:						
DC	emarks C 12 V, PoE Mode Necified.	N/A: E.U.T Power	is 12 V(dc) Powe	er and PoE, linit	s are not			



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# 3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 +A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

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 is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

#### Radiated electromagnetic fields

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 which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3  $\,\mathrm{V/m}$ .

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to 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  $\,\mathrm{V/m}$ .



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#### 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 discharge is permissible, providing

That there is no residual 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.

#### Conducted RF immunity

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 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 oeuvres at U = 130 dB  $\mu N$ .

For component of CCTV systems, where the status is monitored by observing the TV picture,

then deterioration of the picture is allowed at  $U = 140 \text{ dB} \mu\text{V}$ , 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 = 130 dB \( \mu \), any deterioration of the picture is so minor that the system could

still be used; and

(c) there in no observable deterioration of the picture at  $U = 120 \text{ dB} \mu V$ .

#### 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, after the conditioning.



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# 3.1 Electrostatic Discharge

**Reference Standard** 

EN 61000-4-2:2009

**Test Date** Jan, 16, 2017

**Test Location** 

EMS-ESD: Electro wave Shieldroom

**Test Equipment** 

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
		-	Noise Ken	-	-
$\boxtimes$	VCP	-	Noise Ken	-	-
	EMS Test S/W	-	-	-	-

#### **Test Conditions**

Temperature: 24,1  $^{\circ}$ C Relative Humidity: 40,2  $^{\circ}$ Atmospheric Pressure: 100,2  $^{\circ}$ Relative Humidity:

#### **Test Specifications**

Discharge Factor:  $\geq 1 \text{ s}$ 

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge

10 at all locations for Contact discharge

Discharge Voltage: Contact **HCP VCP** \_ 2 kV 2 kV  $\boxtimes$  2 kV \_\_\_ 2 kV 4 kV 7 4 kV 4 kV 6 kV  $\boxtimes$  6 kV 6 kV 6 kV

Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: 

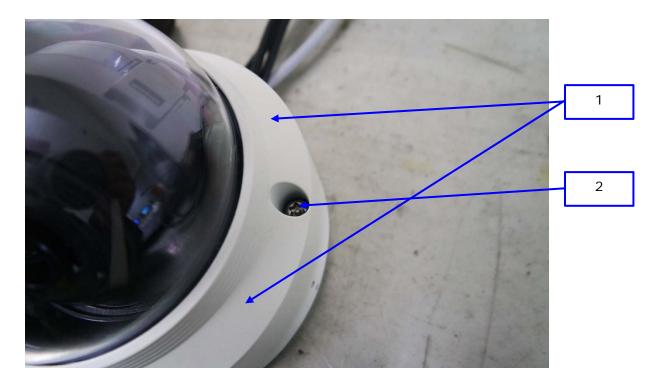
Complied



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# Location of Discharge:







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#### **Test Data**

#### - DC 12 V Mode

Indirect Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Surface	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

#### - PoE Mode

Indirect Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Surface	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied - No degradation of function

#### **Test Results**

☑ PASS Required Performance Criteria☑ NOT PASS Required Performance Criteria

#### Remarks

PASS Required Performance Criteria.



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# 3.2 Radiated Electric Field Immunity

**Reference Standard** 

EN 61000-4-3:2006 +A2:2010

**Test Date** Jan, 14, 2017

**Test Location** 

EMS-RS: Semi Anechoic Chamber #1 Semi Anechoic Chamber #2

#### **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	Signal Generator	ESG-3000A	HP	US37040210	11, 01, 2017
$\boxtimes$	Amplifier	ITA0300-200	Infinitech	-	11, 01, 2017
$\boxtimes$	Amplifier	ITA0750-200	Infinitech	-	11, 01, 2017
	Amplifier	ITA1500-100	Infinitech	-	11, 01, 2017
$\boxtimes$	Amplifier	ITA2500-100	Infinitech	-	11, 01, 2017
$\boxtimes$	GPIB INTERFACE CONTROL	SYSTEM CONTROL UNIT	Infinitech	-	-
$\boxtimes$	POWER SUPPLY	SYSTEM POWER SUPPLY	Infinitech	-	-
$\boxtimes$	Power Meter	E4419B	Agilent	MY45101506	06, 27, 2017
$\boxtimes$	Average Power Sensor	E9301A	Agilent	-	06, 27, 2017
$\boxtimes$	Average Power Sensor	E9301A	Agilent	MY41495698	11, 17, 2017
$\boxtimes$	Stacked Double Log-Per- Antenna	STPL9128 D	SCHWARZBECK	9128D038	-
	Semi Anechoic Chamber #2	-	SEMITEC	-	-
$\boxtimes$	EMS Test S/W	KTI_RS2012	KOREA TECHNOLOGY INSTITUDE CO., LTD	2.1.1	-

#### **Test Conditions**

Temperature: 22,0  $^{\circ}$ C Relative Humidity: 39,8  $^{\circ}$ Atmospheric Pressure: 100,5  $^{\circ}$ Relative Humidity:



Required Performance Criteria:

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**Test Specifications** Antenna Polarization: Horizontal & vertical unless indicated otherwise Antenna Distance: 1 V/m ☐ 3 V/m Field Strength: □ 10 V/m 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz Frequency Range:  $\boxtimes$  80 MHz to 2,7 GHz Modulation:  $\square$  PM, 1 Hz (0,5 s ON : 0,5 s OFF) Frequency step: □ 1 s □ 3 s Dwell Time: # of Sides Radiated:  $\boxtimes$  4



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#### **Test Data**

#### - DC 12 V Mode

Side Eypood	Observations		
Side Exposed	Horizontal	Vertical	
Front	Complied	Complied	
Right	Complied	Complied	
Back	Complied	Complied	
Left	Complied	Complied	

#### - PoE Mode

Side Evpeed	Observations		
Side Exposed	Horizontal	Vertical	
Front	Complied	Complied	
Right	Complied	Complied	
Back	Complied	Complied	
Left	Complied	Complied	

Note: "Blank" = Not performed

Observations:

Complied - No degradation of function

#### **Test Results**

☑ PASS Required Performance Criteria☑ NOT PASS Required Performance Criteria

#### Remarks

PASS Required Performance Criteria.



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# 3.3 Electrical Fast Transients/Bursts

#### **Reference Standard**

EN 61000-4-4:2012

**Test Date** Jan, 17, 2017

**Test Location** 

EMS-EFT: Electro wave Shieldroom

#### **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	2017.06.27
$\boxtimes$	MOTOR VARIAC	MV2616	EM TEST	V0936105123	2017.06.27
$\boxtimes$	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	070925	2017.06.27
	EMS Test S/W	iec.control	EM TEST	5.0.9.0	-

#### **Test Conditions** Temperature: 23,3 ℃ Relative Humidity: 38.1 % Atmospheric Pressure: 99,8 kPa **Test Specifications** ☐ ± 2.0 kV Pulse Amplitude & Polarity: ± 1.0 kV (DC Power Lines) $\pm 4.0 \text{ kV}$ $\Box$ ± 0.5 kV Pulse Amplitude & Polarity: ± 1.0 kV (Other supply / Signal Lines) $\pm$ 2.0 kV Burst Period: **⊠** 300 ms ☐ 2 s Repetition Rate: □ 5 kHz Duration of Test Voltage: $\ge 1 \text{ min}$ Required Performance Criteria:

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#### **Test Data**

Mode of Application	Observations	
-	(+) Burst (kV)	(-) Burst (kV)
	-	-
Mode of Application	Observ	
	(+) Burst (kV)	(-) Burst (kV)
L1 – L2	Complied	Complied
Signal ports and telecommuni	cation ports – Coupling (	Clamp used
		ations
Mode of Application	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm	Complied	Complied
Input a.c. power ports – Coup Mode of Application	Observ	vations
Input a.c. power ports – Coup		
Input a.c. power ports – Coup  Mode of Application		
	Observ	vations
Mode of Application	(+) Burst (kV)	vations (-) Burst (kV) -
Mode of Application  -  Input d.c. power ports – Coup	(+) Burst (kV)	vations (-) Burst (kV) - used
Mode of Application	Observ (+) Burst (kV) - oling/Decoupling Network	vations (-) Burst (kV) - used
Mode of Application  -  Input d.c. power ports – Coup	(+) Burst (kV)  - bling/Decoupling Network Observ	vations (-) Burst (kV) - used vations
Mode of Application  -  Input d.c. power ports – Coup  Mode of Application  -	Observe (+) Burst (kV)  - Dling/Decoupling Network Observe (+) Burst (kV)  -	vations (-) Burst (kV) - used vations (-) Burst (kV) -
Mode of Application  - Input d.c. power ports – Coup Mode of Application  - Signal ports and telecommuni	Observe (+) Burst (kV)  - Dling/Decoupling Network Observe (+) Burst (kV)  -	vations  (-) Burst (kV)  -  used vations  (-) Burst (kV)  -
Mode of Application  -  Input d.c. power ports – Coup  Mode of Application  -	Observe (+) Burst (kV)	vations  (-) Burst (kV)  -  used vations  (-) Burst (kV)  -  Clamp used vations
Mode of Application  - Input d.c. power ports – Coup Mode of Application  - Signal ports and telecommuni	Observed  (+) Burst (kV)  - Dling/Decoupling Network Observed (+) Burst (kV)  - Ideation ports – Coupling Observed	vations  (-) Burst (kV)  -  used vations  (-) Burst (kV)  -

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PASS Required Performance Criteria.



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# 3.4 Surge Transients

#### **Reference Standard**

EN 61000-4-5:2014

**Test Date** Jan, 17, 2017

#### **Test Location**

EMS-Surge: Electro wave Shieldroom

# **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	2017.06.27
	MOTOR VARIAC	MV2616	EM TEST	V0936105123	2017.06.27
$\boxtimes$	CDN	CNV 508N1	EM TEST	P1551168979	2017.04.27
	CDN	CNV 508T5	EM TEST	P1549168422	2017.04.27
	EMS Test S/W	iec.control	EM TEST	5.0.9.0	-

#### **Test Conditions**

Temperature: 23,3  $^{\circ}$ C Relative Humidity: 38,1  $^{\circ}$ Atmospheric Pressure: 99,8  $^{\triangleright}$ Relative Humidity: 23,3  $^{\circ}$ C



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# **Test Specifications**

AC Power Lines	
Source Impedance:	12 ohm for common mode and 2 ohm for differential mode
Surge Amplitude :	Common Mode  ☐ (0,5 / 1,0 / 2,0) kV  Differential Mode  ☐ (0,5 / 1,0) kV
Number of Surges:	□ 5 surges per angle
Angle:	○ 0°, 90°, 180°, 270° (input a.c. power port)
Polarity:	□ Positive & Negative
Repetition Rate:	☐ 1 surge per min ☐ 1 surge per 30 sec.
Required Performance Criteria:	□ Complied
Other supply / Signal Lines Source Impedance: Surge Amplitude:	42 ohm for common mode  Common Mode  (0,5 / 1,0) kV
Number of Surges:	□ 5 Surges
Polarity:	□ Positive & Negative
Repetition Rate:	☐ 1 surge per min ☐ 1 surge per 30 sec.
Required Performance Criteria:	□ Complied



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#### **Test Data**

#### - DC 12 V Mode

☐ Line to Line – Differential Mode

Made of Application	Observations				
Mode of Application	(+) Surge (kV)	(-) Surge (kV)			
L – N	-	-			
L – PE	-	-			
N - PE	-	-			

#### □ Line to Earth – Common Mode

Mode of Application	Observations		
Mode of Application	(+) Surge (kV)	(-) Surge (kV)	
L1-PE	Complied	Complied	
L2-PE	Complied	Complied	

# **Signal Lines**

# 

Marka of Assallantina	Observations		
Mode of Application	(+) Surge (kV)	(-) Surge (kV)	
RJ-45	Complied	Complied	
Alarm	Complied	Complied	



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#### - PoE Mode

Line to Line – Differential Mode			
Mode of Application	Observations		
	(+) Surge (kV)	(-) Surge (kV)	
L – N	-	-	
L – PE	-	-	
N - PE	-	-	

☐ Line to Earth – Common Mode

Mode of Application	Observations		
	(+) Surge (kV)	(-) Surge (kV)	
L1-PE	-	-	
L2-PE	-	-	

# Signal Lines

Mada of Application	Observations		
Mode of Application	(+) Surge (kV)	(-) Surge (kV)	
RJ-45	Complied	Complied	
Alarm	Complied	Complied	

Note: "Blank" = Not performed

Observations:

Complied - No degradation of function

# **Test Results**

☑ PASS Required Performance Criteria☑ NOT PASS Required Performance Criteria

#### Remarks

PASS Required Performance Criteria.



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# 3.5 Conducted Disturbance

**Reference Standard** 

EN 61000-4-6:2014

**Test Date** Jan, 16, 2017

**Test Location** 

EMS-CS: Electro wave Shieldroom

#### **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
$\boxtimes$	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	2017.08.08
$\boxtimes$	6 dB Attenuator	ATT6	EM TEST	1208-34	2017.08.08
$\boxtimes$	CDN	CDN-M2/M3N	EM TEST	0909-06	2017.08.08
$\boxtimes$	EM Injection Clamp	EM 101	Liithi	35943	2017.02.04
	EMS Test S/W	icd.control	EM TEST	5.3.7	-

#### **Test Conditions**

Temperature: 24,1  $^{\circ}$ C Relative Humidity: 40,2  $^{\circ}$ Atmospheric Pressure: 100,2  $^{\circ}$ Relative Humidity: 40,2  $^{\circ}$ 



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•	pecifications Frequency range:	$\boxtimes$	150 kHz to 100 MHz		☐ 150 kHz to 80 MHz
,	Voltage Level:		1 Vrms 10 Vrms		3 Vrms
I	Modulation:	=	] AM, 80 %, 1 \( \text{\text{Mz}} \) sine wave ] PM, 1 \( \text{Hz} \) (0,5 s ON : 0,5 s OFF)		
I	Frequency step:		1 % step		
I	Dwell Time:		1 s	☐ 3 s	
i	Required Performance Criteria:	$\boxtimes$	Complied		



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## **Test Data**

- DC 12 V Mode

☐ Input a.c. power ports					
Coupling Location (Line Stressed)	Coupling Method	Observations			
-	CDN (□M2, □M3)	-			
☐ Input d.c. power ports					
Coupling Location (Line Stressed)	Coupling Method	Observations			
L1 – L2	CDN (⊠M2, □M3)	Complied			
☐ Signal ports and telecommunication ports					
Coupling Location (Line Stressed)	Coupling Method	Observations			
RJ-45	Complied	Complied			
Alarm	Complied	Complied			

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#### - PoE Mode

☐ Input a.c. power ports		
Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN ( <u>M2</u> , <u>M3</u> )	-
☐ Input d.c. power ports		
Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (□M2, □M3)	-
	ication ports	
Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	Complied	Complied
Alarm	Complied	Complied
Notes: CDN = Coupling Decoupl "blank" = Not performed		
Observations: Complied – No degradation of ful		
	nction	
Test Results  ☑ PASS Required Performance C ☐ NOT PASS Required Performa	Criteria	

PASS Required Performance Criteria.



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## 3.6 Voltage Dips and Short Interruptions

**Reference Standard** 

EN 61000-4-11:2004

**Test Date** 

N/A

**Test Location** 

EMS-Voltage dip: Electro wave Shieldroom

#### **Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

#### **Test Conditions**

Temperature: °C Relative Humidity: % Atmospheric Pressure: kPa



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## **Test Specifications & Observations/Remarks**

(Test V	'oltage : <u>)</u>		
	Test Level	Duration [in period/ms (50 Hz)]	<u>Results</u>
	☐ 20 % dip	<u> 250 /5000</u>	N/A
	☐ 30 % dip	☐ 25 /500	N/A
	☐ 60 % dip	☐ 10 /200	N/A
	☐ 100 % dip	<u> </u>	N/A
- Volta	ge cariations		
	☐ Unom + 10 %	☐ 253 V (ac)	N/A
	☐ Unom - 15 %	☐ 195.5 V (ac)	N/A
	Observations: Complied – No degrad	lation of function	
	Test Results  ☐ PASS Required Per ☐ NOT PASS Require ☑ NOT APPLICABLE	formance Criteria d Performance Criteria	
	<b>-</b> .		

#### Remarks

N/A Because the E.U.T power is 12 v (dc) power and PoE, limits are not specified.



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## APPENDIX A - TEST DATA

# Conducted Emissions at Mains Power Ports

[HOT]

N/A

#### ♦ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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#### [NEUTRAL]

N/A

**♦** Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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#### **Conducted Emissions at Telecommunication Ports**

- DC 12 V Mode

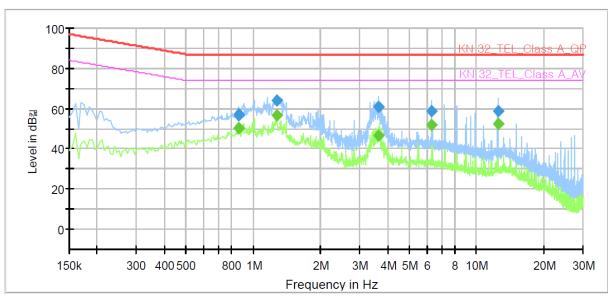
#### [10 Mbps]

## **Common Information**

Test Description: Telecommunication Emission

Model No.: XND-8020RP
Mode DC 12V \_ 10 Mbps

Operator Name: KES



# Final\_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dB킮)	(dB킮)	(dB킮)	(dB)	Time (ms)	(kHz)		(dB)
0.860000		50.46	74.00	23.54	1000.0	9.000	Single Line	20.5
0.860000	57.28		87.00	29.72	1000.0	9.000	Single Line	20.5
0.865000		50.19	74.00	23.81	1000.0	9.000	Single Line	20.5
0.865000	56.87		87.00	30.13	1000.0	9.000	Single Line	20.5
1.270000		56.45	74.00	17.55	1000.0	9.000	Single Line	20.2
1.270000	63.79		87.00	23.21	1000.0	9.000	Single Line	20.2
3.645000		46.66	74.00	27.34	1000.0	9.000	Single Line	19.8
3.645000	61.00		87.00	26.00	1000.0	9.000	Single Line	19.8
6.305000		51.77	74.00	22.23	1000.0	9.000	Single Line	19.9
6.305000	58.67		87.00	28.33	1000.0	9.000	Single Line	19.9
12.500000		52.14	74.00	21.86	1000.0	9.000	Single Line	20.0
12.500000	58.63	-	87.00	28.37	1000.0	9.000	Single Line	20.0

#### **♦** Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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#### [100 Mbps]

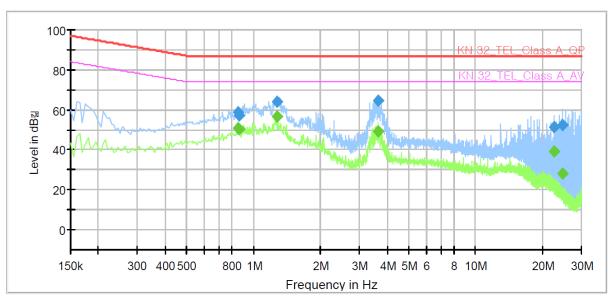
## **Common Information**

Test Description: Telecommunication Emission

Model No.: XND-8020RP

Mode DC 12V \_ 100 Mbps

Operator Name: KES



## Final Result

<u> </u>	Juit							
Frequency	QuasiPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dB킮)	(dB킮)	(dB킮)	(dB)	Time	(kHz)		(dB)
	,,	·/	· =-/		(ms)			
0.855000		50.70	74.00	23.30	1000.0	9.000	Single Line	20.5
0.855000	58.71		87.00	28.29	1000.0	9.000	Single Line	20.5
0.860000		50.40	74.00	23.60	1000.0	9.000	Single Line	20.5
0.860000	57.38		87.00	29.62	1000.0	9.000	Single Line	20.5
1.270000		56.81	74.00	17.19	1000.0	9.000	Single Line	20.2
1.270000	64.16		87.00	22.84	1000.0	9.000	Single Line	20.2
3.650000		49.43	74.00	24.57	1000.0	9.000	Single Line	19.8
3.650000	64.44		87.00	22.56	1000.0	9.000	Single Line	19.8
22.530000		39.26	74.00	34.74	1000.0	9.000	Single Line	20.1
22.530000	51.57		87.00	35.43	1000.0	9.000	Single Line	20.1
24.730000		28.20	74.00	45.80	1000.0	9.000	Single Line	20.1
24.730000	52.66		87.00	34.34	1000.0	9.000	Single Line	20.1

#### ♦ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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- PoE Mode

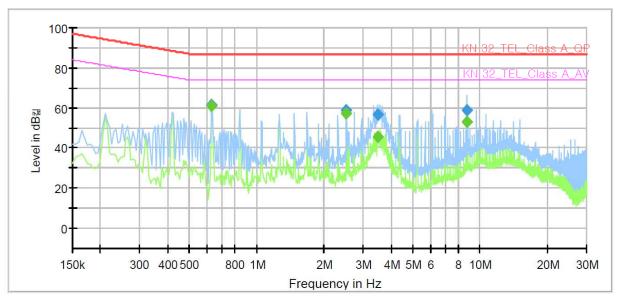
#### [10 Mbps]

## **Common Information**

Test Description: Telecommunication Emission

Model No.: XND-8020RP Mode POE \_ 10 Mbps

Operator Name: KES



## Final\_Result

Frequency (MHz)	QuasiPeak (dB킮)	CAverage (dB킮)	Limit (dB킮)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.630000		60.99	74.00	13.01	1000.0	9.000	Single Line	20.7
0.630000	61.15		87.00	25.85	1000.0	9.000	Single Line	20.7
2.525000		57.12	74.00	16.88	1000.0	9.000	Single Line	19.9
2.525000	58.55		87.00	28.45	1000.0	9.000	Single Line	19.9
3.500000		45.77	74.00	28.23	1000.0	9.000	Single Line	19.8
3.500000	56.63		87.00	30.37	1000.0	9.000	Single Line	19.8
8.750000		53.18	74.00	20.82	1000.0	9.000	Single Line	19.9
8.750000	58.72		87.00	28.28	1000.0	9.000	Single Line	19.9

#### ♦ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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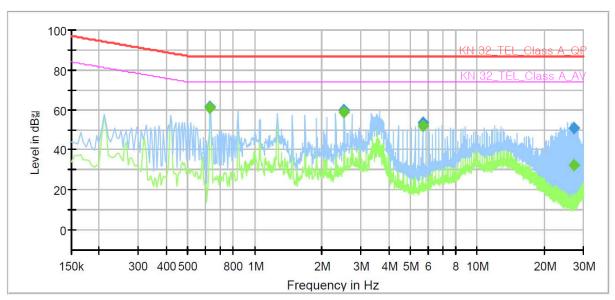
#### [100 Mbps]

## **Common Information**

Test Description: Telecommunication Emission

Model No.: XND-8020RP
Mode POE \_ 100 Mbps

Operator Name: KES



## **Final Result**

ac	Juit							
Frequency (MHz)	QuasiPeak (dB킮)	CAverage (dB킮)	Limit (dB킮)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Corr. (dB)
0.630000		61.06	74.00	12.94	(ms) 1000.0	9.000	Single Line	20.2
		01.00					Single Line	
0.630000	61.32		87.00	25.68	1000.0	9.000	Single Line	20.2
2.525000		58.52	74.00	15.48	1000.0	9.000	Single Line	19.4
2.525000	59.71		87.00	27.29	1000.0	9.000	Single Line	19.4
5.680000		51.76	74.00	22.24	1000.0	9.000	Single Line	19.4
5.680000	53.61		87.00	33.39	1000.0	9.000	Single Line	19.4
27.065000		32.51	74.00	41.49	1000.0	9.000	Single Line	19.6
27.065000	50.64		87.00	36.36	1000.0	9.000	Single Line	19.6

#### ♦ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value Reading Value : Not shown in the table.



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## Radiated Electric Field Emissions(Below 1 础)

#### - DC 12 V Mode

Frequency	Amplitude	ANT Polar.	ANT. Height	Corrected Amplitude           ANT.         Cable [dB/M]         [dB/M]			Applicable Limit	Margin
[MHz]	[dB <i>µ</i> V]	(H/V)	[m]			[dB <i>µ</i> V/ <b>m</b> ]	[dB]	
150.24	12.36	Н	2.60	7.89	3.57	23.82	40.00	16.18
189.03	10.28	V	1.25	10.39	4.00	24.67	40.00	15.33
243.43	15.39	Н	2.33	12.40	4.64	32.43	47.00	14.57
350.12	11.97	V	3.01	14.52	5.64	32.13	47.00	14.87
400.58	16.87	Н	2.95	15.62	6.18	38.67	47.00	8.33
459.66	12.08	V	2.69	16.65	6.84	35.57	47.00	11.43
541.09	13.58	V	1.02	18.16	7.33	39.07	47.00	7.93
650.02	14.10	Н	1.89	19.49	8.15	41.74	47.00	5.26

<sup>\*</sup> H: Horizontal, V: Vertical

#### **♦** Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB] Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor: ANT FACTOR + Cable loss



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#### - PoE Mode

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor A ANT. Cable		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB <i>µ</i> V]	(H/V)	[m]			[dB <i>µ</i> V/ <b>m</b> ]	[dB <i>µ</i> V/ <b>m</b> ]	[dB]
150.16	13.58	Н	2.36	7.89	3.57	25.04	40.00	14.96
188.90	10.23	V	3.01	10.37	4.00	24.60	40.00	15.40
350.09	11.85	V	1.58	14.52	5.64	32.01	47.00	14.99
400.52	12.06	Н	1.32	15.62	6.18	33.86	47.00	13.14
459.75	13.27	V	2.02	16.65	6.84	36.76	47.00	10.24
541.14	11.63	Н	3.00	18.16	7.33	37.12	47.00	9.88
600.29	12.96	Н	1.25	19.32	7.83	40.11	47.00	6.89
650.02	14.10	V	1.09	19.49	8.15	41.74	47.00	5.26

<sup>\*</sup> H: Horizontal, V: Vertical

#### ♦ Calculation

Corrected Amplitude [ $^{dB}uV$ ] = Amplitude[ $^{dB}uV$ ] + Correction Factor [ $^{dB}$ ] Corrected Amplitude : The Final Value, Amplitude : Reading Value,

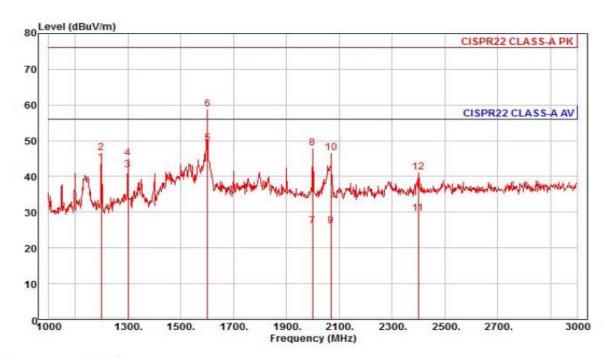
Correction Factor: ANT FACTOR + Cable loss



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## Radiated Electric Field Emissions (Above 1 础)

#### - DC 12 V Mode



Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project

Model : XND-8020RP Mode : DC 12V Memo : 1 ~ 3 GHz

					_			-		
	Freq	Read	Ant		Preamp	TPos	Limit	Over	Pol/Phase	Remark
	rreq	rever	ractor	LUSS	ractor		LINE	CIMIC	roi/rilase	IVEIII A
-	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1200.00	51.56	24.70	7.14	39.61	30	56.00	-12.21	horizontal	Average
2	1200.00	54.43	24.70	7.14	39.61	30	76.00	-29.34	horizontal	Peak
3	1300.00	48.79	25.10	7.43	39.37	254	56.00	-14.05	horizontal	Average
4	1300.00	51.87	25.10	7.43	39.37	254	76.00	-30.97	horizontal	Peak
5 pp	1600.00	53.91	26.29	8.31	39.22	279	56.00	-6.71	horizontal	Average
6 pk	1600.00	63.38	26.29	8.31	39.22	279	76.00	-17.24	horizontal	Peak
7	2000.00	28.33	27.88	9.34	39.41	200	56.00	-29.86	horizontal	Average
8	2000.00	50.15	27.88	9.34	39.41	200	76.00	-28.04	horizontal	Peak
9	2068.00	27.99	28.05	9.49	39.41	248	56.00	-29.88	horizontal	Average
10	2068.00	48.58	28.05	9.49	39.41	248	76.00	-29.29	horizontal	Peak
11	2400.00	29.95	28.86	10.32	39.42	180	56.00	-26.29	horizontal	Average
12	2400.00	41.48	28.86	10.32	39.42	180	76.00	-34.76	horizontal	Peak

#### ♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

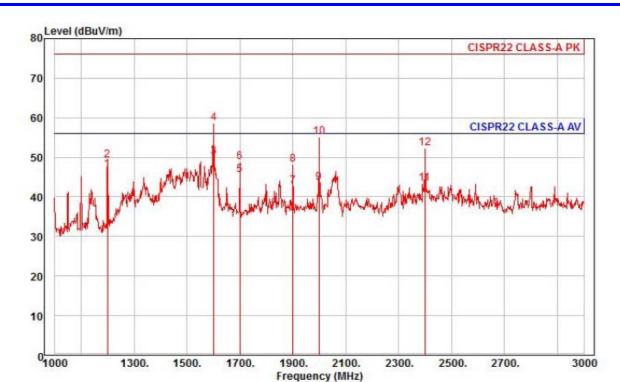
Over Limit: Margin Value, Read Level: Reading Value, Ant Factor: Ant Factor, Cable Loss: Cable loss, Preamp Factor: Preamp Factor

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: chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

: XND-8020RP Model Mode : DC 12V Memo : 1 ~ 3 GHz

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	Freq	Read Level	Ant Factor		Preamp Factor	TPos	Limit Line		Pol/Phase	Remark
7-	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1200.00	54.54	24.70	7.14	39.61	121	56.00	-9.23	vertical	Average
2	1200.00	56.95	24.70	7.14	39.61	121	76.00	-26.82	vertical	Peak
3 pp	1600.00	54.73	26.29	8.31	39.22	45	56.00	-5.89	vertical	Average
4 pk	1600.00	63.29	26.29	8.31	39.22	45	76.00	-17,33	vertical	Peak
5	1700.00	49.63	26.69	8.57	39.27	183	56.00	-10.38	vertical	Average
6	1700.00	52.78	26.69	8.57	39.27	183	76.00	-27.23	vertical	Peak
7	1900.00	45.46	27.48	9.08	39.36	330	56.00	-13.34	vertical	Average
8	1900.00	51.00	27.48	9.08	39.36	330	76.00	-27.80	vertical	Peak
9	2000.00	45.86	27.88	9.34	39.41	327	56.00	-12.33	vertical	Average
10	2000.00	57.37	27.88	9.34	39.41	327	76.00	-20.82	vertical	Peak
11	2400.00	43.54	28.86	10.32	39.42	262	56.00	-12.70	vertical	Average
12	2400.00	52.65	28.86	10.32	39.42	262	76.00	-23.59	vertical	Peak

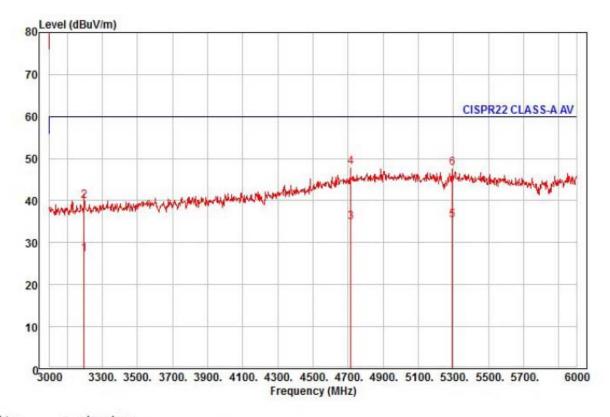
#### **♦** Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor

[dB]) - Limit Line[dBuV]



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Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : XND-8020RP Mode : DC 12V Memo : 3 ~ 6 GHz

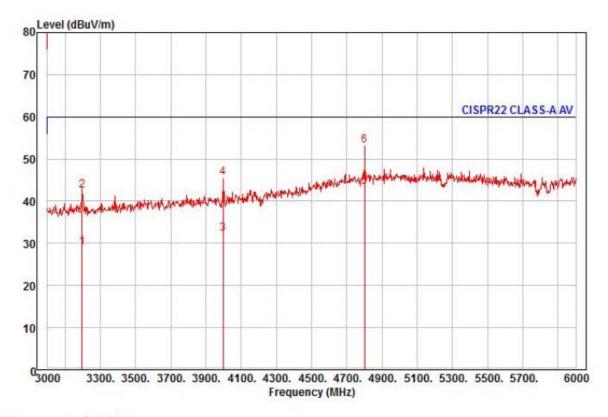
- mo		O GITZ								
	Freq	Read Level			Preamp Factor				Pol/Phase	Remark
(0-	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3198.00	24.91	30.66	12.05	40.41	99	60.00	-32.79	horizontal	Average
2	3198.00	37.62	30.66	12.05	40.41	99	80.00	-40.08	horizontal	Peak
3	4716.00	24.32	36.10	14.91	40.55	173	60.00	-25.22	horizontal	Average
4 pk	4716.00	37.40	36.10	14.91	40.55	173	80.00	-32.14	horizontal	Peak
5 pp	5295.00	23.12	37.12	15.86	40.76	152	60.00	-24.66	horizontal	Average
6	5295.00	35.52	37.12	15.86	40.76	152	80.00	-32.26	horizontal	Peak

#### ♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]



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Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : XND-8020RP Mode : DC 12V Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor		Preamp Factor				Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3198.00	26.78	30.66	12.05	40.41	46	60.00	-30.92	vertical	Average
2	3198.00	40.17	30.66	12.05	40.41	46	80.00	-37.53	vertical	Peak
3	3999.00	27.43	32.01	13.56	40.70	214	60.00	-27.70	vertical	Average
4	3999.00	40.71	32.01	13.56	40.70	214	80.00	-34.42	vertical	Peak
5 pp	4800.00	32.24	36.58	15.10	40.47	243	60.00	-16.55	vertical	Average
6 pk	4800.00	41.90	36.58	15.10	40.47	243	80.00	-26.89	vertical	Peak

#### **♦** Calculation

Over Limit [ $^{dB}$ ] = (Read Level[ $^{dB}$ uV] + Ant Factor[ $^{dB}$ /m] + Cable Loss [ $^{dB}$ ] - Preamp Factor

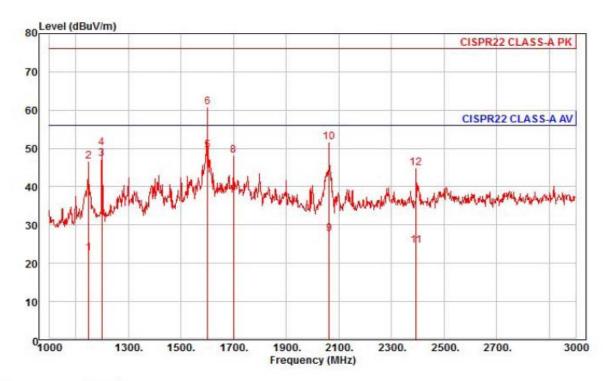
[dB]) - Limit Line[dBuV]

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#### - PoE Mode



Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : XND-8020RP

Mode : POE

Memo : 1 ~ 3 GHz

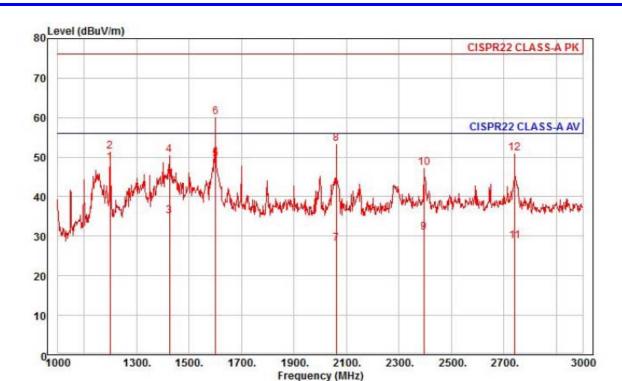
	Freq	Read Level	Ant Factor		Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
-	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		1
1	1148.00	31.02	24.50	6.97	39.73	250	56.00	-33.24	horizontal	Average
2	1148.00	54.82	24.50	6.97	39.73	250	76.00	-29.44	horizontal	Peak
3	1200.00	55.09	24.70	7.14	39.61	134	56.00	-8.68	horizontal	Average
4	1200.00	57.99	24.70	7.14	39.61	134	76.00	-25.78	horizontal	Peak
5 pp	1600.00	54.05	26.29	8.31	39.22	247	56.00	-6.57	horizontal	Average
6 pk	1600.00	65.48	26.29	8.31	39.22	247	76.00	-15.14	horizontal	Peak
7	1700.00	41.61	26.69	8.57	39.27	224	56.00	-18.40	horizontal	Average
8	1700.00	52.15	26.69	8.57	39.27	224	76.00	-27.86	horizontal	Peak
9	2064.00	29.61	28.04	9.48	39.41	219	56.00	-28.28	horizontal	Average
10	2064.00	53.58	28.04	9.48	39.41	219	76.00	-24.31	horizontal	Peak
11	2394.00	24.98	28.85	10.31	39.42	60	56.00	-31.28	horizontal	Average
12	2394.00	45.19	28.85	10.31	39.42	60	76.00	-31.07	horizontal	Peak

### ♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]



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Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project

Model : XND-8020RP

Mode : POE

Memo : 1 ~ 3 GHz

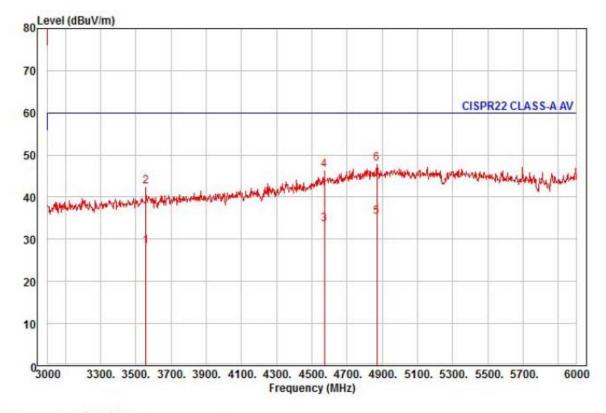
	Freq	Read Level	Ant Factor		Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
-	MHz	dBuV	dB/m	dB	dB .	deg	dBuV/m	dB		
1	1200.00	56.36	24.70	7.14	39.61	117	56.00	-7.41	vertical	Average
2	1200.00	59.14	24.70	7.14	39.61	117	76.00	-24.63	vertical	Peak
3	1426.00	40.88	25.60	7.80	39.14	355	56.00	-20.86	vertical	Average
4	1426.00	56.22	25.60	7.80	39.14	355	76.00	-25.52	vertical	Peak
5 pp	1600.00	54.19	26.29	8.31	39.22	15	56.00	-6.43	vertical	Average
6 pk	1600.00	64.83	26.29	8.31	39.22	15	76.00	-15.79	vertical	Peak
7	2062.00	30.01	28.03	9.48	39.41	358	56.00	-27.89	vertical	Average
8	2062.00	55.33	28.03	9.48	39.41	358	76.00	-22.57	vertical	Peak
9	2396.00	31.15	28.85	10.31	39.42	254	56.00	-25.11	vertical	Average
10	2396.00	47.53	28.85	10.31	39.42	254	76.00	-28.73	vertical	Peak
11	2742.00	27.71	29.70	11.09	39.81	188	56.00	-27.31	vertical	Average
12	2742.00	49.98	29.70	11.09	39.81	188	76.00	-25.04	vertical	Peak

#### ♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]



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Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : XND-8020RP

Mode : POE

Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor		Preamp Factor		Limit Line		Pol/Phase	Remark
-	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3558.00	25.30	31.27	12.73	40.86	143	60.00	-31.56	horizontal	Average
2	3558.00	39.38	31.27	12.73	40.86	143	80.00	-37.48	horizontal	Peak
3	4572.00	24.32	35.28	14.60	40.70	127	60.00	-26.50	horizontal	Average
4	4572.00	37.31	35.28	14.60	40.70	127	80.00	-33.51	horizontal	Peak
5 pp	4869.00	23.65	36.97	15.17	40.40	238	60.00	-24.61	horizontal	Average
6 pk	4869.00	36.12	36.97	15.17	40.40	238	80.00	-32.14	horizontal	Peak

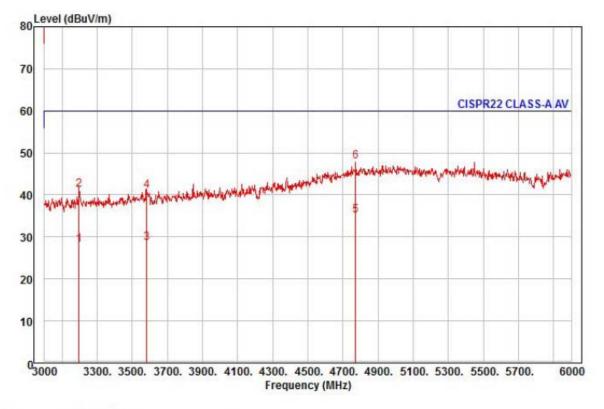
#### **♦** Calculation

Over Limit [ $^{dB}$ ] = (Read Level[ $^{dB}$ uV] + Ant Factor[ $^{dB}$ /m] + Cable Loss [ $^{dB}$ ] - Preamp Factor

[dB]) - Limit Line[dBuV]



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Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project

Model : XND-8020RP

Mode : POE

Memo : 3 ~ 6 GHz

	Freq	Read			Preamp Factor				Pol/Phase	Remark
-	MHz	dBuV		dB	- dB		dBuV/m		- I OI/I III GSE	- Tellar K
1	3198.00	25.88	30.66	12.05	40.41	38	60.00	-31.82	vertical	Average
2	3198.00					38			vertical	Peak
3	3582.00	25.43	31.31	12.77	40.85	75	60.00	-31.34	vertical	Average
4	3582.00	37.81	31.31	12.77	40.85	75	80.00	-38.96	vertical	Peak
5 pp	4773.00	24.12	36.42	15.04	40.50	336	60.00	-24.92	vertical	Average
6 pk	4773.00	36.94	36.42	15.04	40.50	336	80.00	-32.10	vertical	Peak

#### ♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]



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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

	Average harmonic current results									
Hn	leff [A]	% of Limit	Limit [A]	Result						
		N/A								

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.



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Test Data - Harmonics (continued)

	Maximum harmonic current results									
Hn	leff [A]	% of Limit	Limit [A]	Result						
		N/A								
<u> </u>	ļ	1	ļ	ļ						

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.



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Test Data - Voltage Fluctuations

# Maximum Flicker results

	EUT values	Limit	Result
Pst		N/A	
Plt			
dc [%]			
dmax [%]			
Tmax [s]			



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# **Test Setup Photos and Configuration**

## **Conducted Voltage Emissions**

N/A

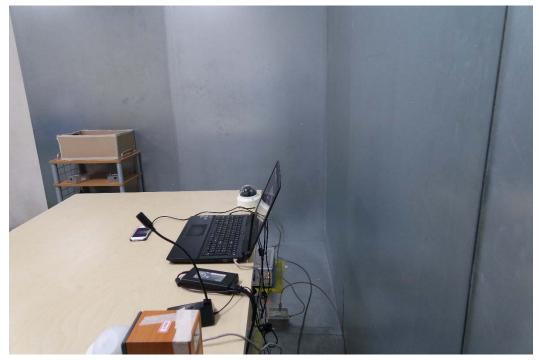


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#### **Conducted Telecommunication Emissions**

- DC 12 V Mode





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#### - PoE Mode







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## Radiated Electric Field Emissions(Below 1 础)

- DC 12 V Mode





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#### - PoE Mode







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## Radiated Electric Field Emissions (Above 1 础)

- DC 12 V Mode





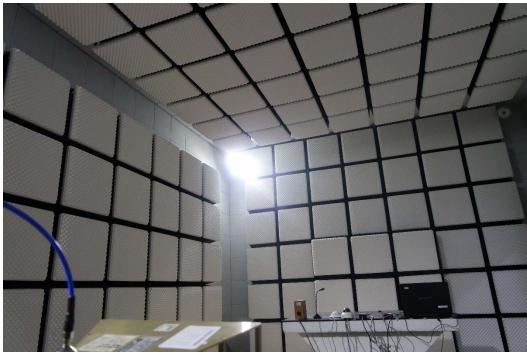
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#### - PoE Mode







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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A



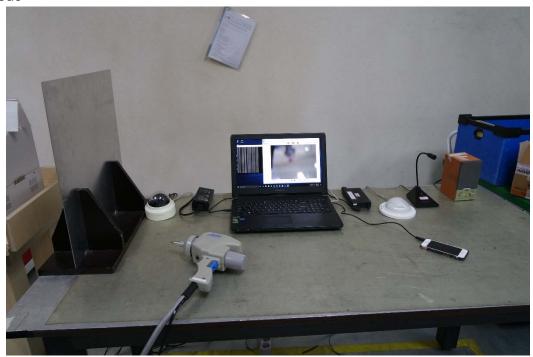
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## **Electrostatic Discharge**

- DC 12 V Mode



- PoE Mode

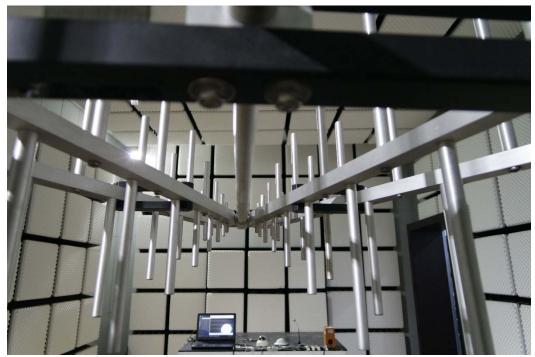




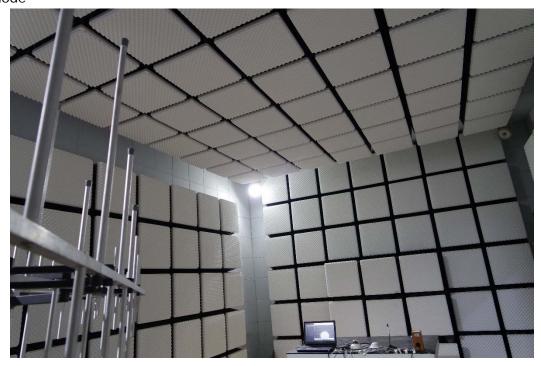
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## **Radiated Electric Field Immunity**

- DC 12 V Mode



- PoE Mode





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#### **Electrical Fast Transients/Bursts**

- DC 12 V Mode







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- PoE Mode

N/A





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# **Surge Transients**

- DC 12 V Mode



- PoE Mode





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#### **Conducted Disturbance**

- DC 12 V Mode







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- PoE Mode

N/A





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## **Voltage Dips and Short Interruptions**

N/A



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## **EUT External Photographs**

(Top)



(Bottom)





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## **EUT Internal Photographs**

(Internal View)





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## **EUT Internal View - Main Board**

(Top)



(Bottom)

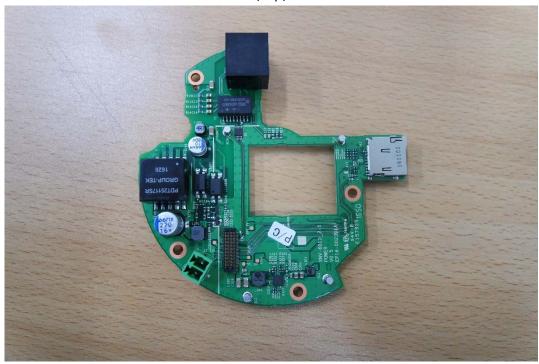




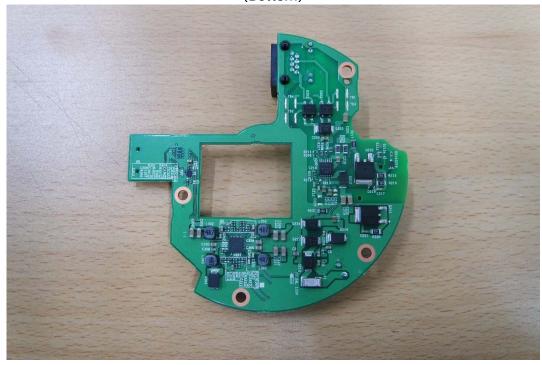
C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-E1-17T0064 Page (77) of (80)

## **EUT Internal View - Sub Board**

(Top)



(Bottom)



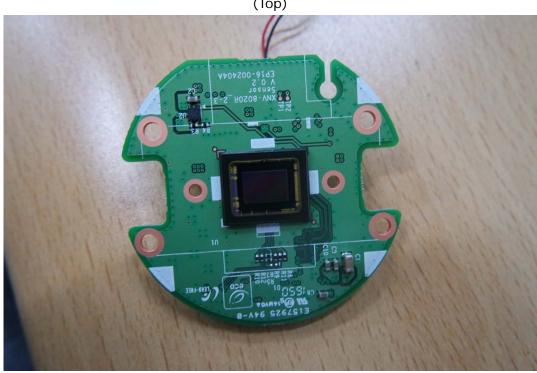


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#### **EUT Internal View - Lens Board**

(Top)



(Bottom)





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## **EUT Internal View - LED Board**

(Top)



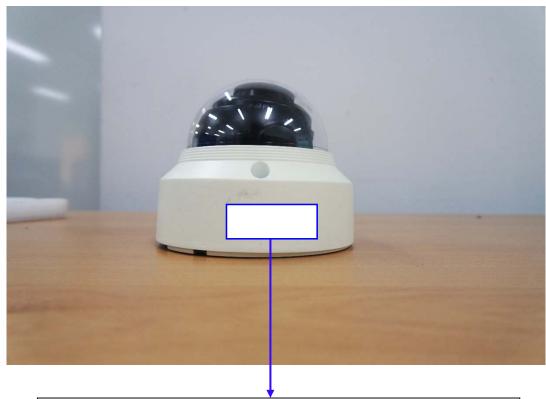
(Bottom)





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#### **Label and Location**



## **NETWORK CAMERA**

Model No: XND-8020RP

Manufacturer: Hanwha Techwin (Tianjin) Co.,Ltd.

Made in of Chin

