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|  BOSCH Security Systems 850 Greenfield Road Lancaster, PA 17601 | Product Tests Report | |
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Product Tests Report

Product name: EXTEGRA IP starlight 9000 FX Camera

Model number and description:

NXF-9130-A4 EXTEGRA IP starlight 9000 FX 30x zoom 720p HD Explosion-Protected Camera, aluminum


NXF-9130-S4 EXTEGRA IP starlight 9000 FX 30x zoom 720p HD Explosion-Protected Camera, stainless steel

The above-mentioned Bosch Security Systems product has been tested in accordance and was found to comply with the tests listed below which were carried out during the development phase of the product. Please note that for some tests, test conditions exceed the range that Bosch recommends for effective continuous operation of the camera.

Data subject to change without notice.

ENVIRONMENTAL TEST

| BS EN 50130-5:1999 Alarm systems Part 5: Environmental test methods | Specific Test Description (Temperatures stated are outside of the camera housing) | Comments | Passed |
|--|---|--------------------------|--------|
| Dry heat Operational IEC 60068-2-2:1974 +A1:1993+ A2:1994 | Pendant: Temp. +60 °C, duration 48 hours In-ceiling: Temp. +45 °C, duration 48 hours | | Yes |
| Dry heat Storage IEC 60068-2-2:1974 +A1:1993+ A2:1994 | Temp. +65 °C, duration 4 hours | | Yes |
| Cold operational IEC 60068-2-1:1990 +A1:1993+ A2:1994 | Pendant: Temp. -50 °C, duration 48 hours In-ceiling: Temp. -15 °C, duration 48 hours | | Yes |
| Cold start test | Power off, soak overnight (12 hours) @ -45 °C, power up unit, unit must power up & function normally within < 30 minutes. | | Yes |
| Cold Endurance IEC 60068-2-1:1990 +A1:1993+ A2:1994 | Temp -45 °C, Duration 4 hours | | Yes |
| Humidity, operational Damp heat, steady state operational IEC 60068-2-2:1988 | 60 °C / 95 %RH for 6 hours, 35 ℓC/85% RH for 16 hours, repeat for 5 cycles total, 110 hours total. | | Yes |
| Condensation Temperature Test Profile | Ramp from 3 °C to -45 °C @ 5 °C/hour | No condensation observed | Yes |
| IEC 60529 Ingress Protection Rating (IP68) Degrees of protection provided by enclosures (IP Code) [Dust, water ingress (operational)] | Dust tight (no dust ingress; complete protection against contact). Water immersion: 24 hours Water depth: 1.8 meters | IP68 | Yes |
| UL Type rating | Hosedown: 246L/65 gal. per min. Corrosion: 200 hour salt spray Water immersion: 24 hours Water depth: 1.8 meters Corrosion: 200 hour salt spray | Type 4X Type 6P | Yes |
| Vibration sinusoidal operational IEC 60068-2-6:1995 Test Fc: 10 m/s ² (1.0 g) | Freq. Range 10-150Hz, 10m/s ² , 3 axes, sweep rate 1 octave/m 1 sweep/axis, (1.0g) | | Yes |
| Vibration sinusoidal endurance IEC 60068-2-6:1995 | Freq. Range 10-150Hz, 10m/s ² , 3 axes, sweep rate 1 octave/min 20 sweep/axis | | Yes |

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| BS EN 50130-5:1999 Alarm systems Part 5: Environmental test methods | Specific Test Description (Temperatures stated are outside of the camera housing) | Comments | Passed |
|---|---|----------|--------|
| Test Fc: 10 m/s ² (1.0 g) | | | |
| Shock operational IEC 60068-2-27:1987 Test Ea: Shock, 100 m/s ² (10.0 g) | Half sine wave 11 ms, 10g, 6 number of shocks, 3 pulses per direction | | Yes |
| Impact operational IEC 60068-2-75:1997 | Impact energy 1.0 Joule, 3 impacts per point | | Yes |
| Sound level (audible noise) | < 45 dB | | Yes |
| Transportation Tests (ISTA Procedure 1A) | ISTA - Vibration 14,200 vibratory shocks - 2 axis | | Yes |
| Transportation Tests (ISTA Procedure 1A) | ISTA - 36 inches (0.9 m) free fall drop 6 axes @ 1 drop / axis | | Yes |

ADDITIONAL CERTIFICATIONS

| Functional tests description | Description | Comments | Passed |
|--|--|----------------|--------|
| SMPTE 296M-2001 Standard 1280 x 720 Progressive Image Sample Structure - Analogue and Digital Representation and Analogue Interface | Resolution: 1280x720 Scan: Progressive Color representation: complies with ITU-R BT.709 Aspect ratio: 16:9 Frame rate: 25, 30, 50 and 60 frames/s | For HD cameras | Yes |
| Conformant with NTCIP protocols 1205, 2301, 1101:1996, 2202:2001, 2101:2001, 2102:2003 | | | Yes |
| Conformant with Open Network Video Interface Forum (ONVIF) | Interoperability between network video products, regardless of manufacturer | | Yes |

ADDITIONAL ENVIRONMENTAL - FUNCTIONAL BOSCH TESTS

| Environmental test methods | Specific Test Description | Comments | Passed |
|--|---|----------|--------|
| MTBF calculation of used components Based on: for electronics, MIL-HDBK-217FN1, GB, GC, 25C. | MTBF > 115,195 hours | | Yes |
| Design Maturity Test | Outdoor Life test - external environmental conditions | | Yes |
| HALT (Highly Accelerating Life Test) | -60 to +80C and back to -60C with 15 min hold at each extreme vibration stress of 5g, 10g, 15g, 20g, 25g, 30g, 35g, 40g, 45g, 50g | | Yes |
| FMEA (Failure Mode and Effect Analysis) | | | Yes |
| Temperature of Hot spots on components | With thermocouples at T = 20 °C, 55 °C, using Bosch Derating Guidelines | | Yes |
| NEMA TS-2 Traffic Controller Assemblies w/NTCIP Requirements | TS 2 Section 2.2.7 Transients, Temperature, Voltage, and Humidity Tests | | Yes |
| NEMA TS-2 Traffic Controller Assemblies w/NTCIP Requirements | TS 2 Section 2.2.8 Vibration - 5-30 Hz, 0.5g, Resonant Frequency Search | | Yes |
| NEMA TS-2 Traffic Controller Assemblies w/NTCIP Requirements | TS 2 Section 2.2.8 Vibration - Endurance 5-30 Hz, 0.5g, @ Resonant Freq for 1 hour | | Yes |
| NEMA TS-2 Traffic Controller Assemblies w/NTCIP Requirements | TS 2 Section 2.2.9 Shock (Impact) Test Half sine wave 11 ms, 10g, 6 number of shocks, 3 pulses per direction | | Yes |


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ADDITIONAL CERTIFICATIONS

| Functional tests description | Description | Comments | Passed |
|--|---|----------|--------|
| Explosion-protected | UL, ATEX, IEXEx, InMetro | | Yes |
| Relevant standards associated with the HazLoc, ATEX, IECEx, and INMETRO certifications | UL 1203, Fifth Edition, Revised 2013 UL 60079-0 Sixth Edition UL 60079-1 Sixth Edition ANSI/ISA-60079-31 2009 CAN/CSA C22.2 No. 30-M1986, Reaffirmed 2012 CAN/CSA C22.2 No. 25-1966, Reaffirmed 2009 CAN/CSA C22.2 No. 60079-0-11 CAN/CSA C22.2 No. 60079-1-11 CAN/CSA C22.2 No. 60079-31:12 First Edition EN 60079-0:2012+A11:2013 EN 60079-1:2007 EN 60079-31:2009 IEC 60079-1:2011 Edition 6 IEC 60079-1:2007-04 Edition 6 IEC 60079-31:2008 Edition 1 ABNT NBR IEC 60079-0:2008 ABNT NBR IEC 60079-1:2009 ABNT NBR IEC 60079-31:2011 | | Yes |

Approvals Safety, EMC and Environmental

| Specific Approval | Description | Comments | Passed |
|---|--|----------|---------------|
| EMC Europe | | | Passed |
| EN 55022:2010 | Information Technology Equipment- Radio disturbance characteristics Limits and Methods of measurement. Class A | | Yes |
| EN 50130-4:2011 | Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. | | Yes |
| EN 61000-3-2:2006 + A2:2009 | Mains harmonics Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase) | | Yes |
| EN 61000-3-3:2008 | Voltage fluctuations Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection. | | Yes |
| EN 50121-4:2006 | Railway applications | | Yes |
| EMC USA | | | Passed |
| CFR 47 FCC part 15 Class A | Conducted + Radiated Emission based on VERIFICATION procedure | | Yes |
| Australian AS/NZS CISPR 22 equal to CISPR 22 | Product market with BOSCH supplier code N663 | | Yes |
| Mains Voltage Tolerance Test (Brown out supply voltage test) | Camera fully operational down to 105V (230 V PSU) and 55V (120V PSU). Below this voltage, the camera is not operational. Camera must be power- cycled for the camera block to reset. | | Yes |
| Lightning protection EN 61000-4-5:1995 | Levels ±0.5, 1, 2 and 4kV common mode. ± 0.5, 1 and 2kV differential mode. To ALL input / output - and supply-wiring. | | Yes |

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| Specific Approval | Description | Comments | Passed |
|---|--|----------|--------|
| Safety Europe | | | |
| IEC 60950-1:2005 (2nd Edition) + A1:2009 EN 60950-1:2006, EN 60950-1, 2nd Edition, 2007-03-27 + A12:2011 | Information technology equipment – Safety – Part 1: General requirements | | Yes |
| Safety USA + Canada | | | |
| UL 60950-1 (2 nd edition dated March 27, 2007; revised December 19, 2011) CAN/CSA-C22.2 No.E60950-1 (CSA C22.2 No. 60950-1-07, R2012) | UL listing + cUL listing. Information technology equipment – Safety – Part 1: General requirements | | Yes |
| Environmental | | | |
| Restriction of Hazardous Substances | ROHS complaint | | Yes |
| Prohibited and declarable substances in products, components, materials and preparations. | Manufacturer's declaration database based on N 2580-1 | | Yes |

Functional and specification test

| Functional tests description | | Comments | Passed |
|------------------------------|--|----------|--------|
| Camera Performance | Refer to to EXTEGRA IP starlight 9000 FX datasheet. | | Yes |

The product is produced by a manufacturing organization which is certified on **ISO9001** and **ISO14001** standards.