

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
5617 BA Eindhoven
The Netherlands

Product Test Report

ST-VS 2016-E-066

Product

F.01U.314.349	NBN-63013-B	Fixed camera 1MP HDR
F.01U.314.804	NBN-73013-BA	Fixed camera 1MP HDR
F.01U.314.805	NBN-63023-B	Fixed camera 2MP HDR
F.01U.314.806	NBN-73023-BA	Fixed camera 2MP HDR
F.01U.316.788	NBN-64013-B	Fixed camera 1MP HDR
F.01U.316.789	NBN-74023-BA	Fixed camera 2MP HDR
F.01U.349.537	NBN-75023-BA	Fixed camera 2MP HDR 24V
F.01U.349.538	NBN-65023-B	Fixed camera 2MP HDR 24V

The above mentioned Bosch Security Systems products have been tested in accordance and were found to comply with the tests listed below which were conducted during the development phase of the product.

EMC approvals

Directive or standard	Description
EMC EU, 2014/30/EU (EMCD)	
EN 55032:2012 /AC:2013 Class B	Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 50130-4:2011 /A1:2014	Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems
EN 50121-4:2016	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signaling and telecommunications apparatus
EMC USA	
CFR 47 FCC part 15, Class B ICES-003 (Issue 6)	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.
EMC Australia	
AS/NZS CISPR 32:2013	Electromagnetic compatibility of multimedia equipment - Emission requirements. Compliance via EN 55032:2012, Product marked with RCM logo

Safety approvals

Directive or standard	Description
Safety EU, 2014/35/EU (LVD)	
EN 60950-1:2006 /A11:2009 /A1:2010 /A12:2011 /A2:2013	Information technology equipment - Safety - Part 1: General requirements.
EN 62368-1:2014	Audio/video, information and communication technology equipment. Part 1: Safety requirements
Safety USA and Canada	
UL 60950-1, 2nd Ed., 2014-10-14 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10	Information technology equipment - Safety – Part 1: General requirements. Products marked with cULus logo.
UL 62368-1:2ND Ed CSA C22.2 NO. 62368-1-14	Audio/video, information and communication technology equipment - Part 1: Safety requirements
Safety CB	
IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1, IEC 60950-1(ed.2);am2	Information technology equipment - Safety - Part 1: General requirements.
IEC 62368-1(ed.2)	Audio/video, information and communication technology equipment. Part 1: Safety requirements

Environmental approvals

Directive or standard	Description
RoHS EU, 2011/65/EU EN 50581:2012	Restriction of the use of certain hazardous substances (RoHS)
WEEE EU, 2012/19/EU	Waste Electrical and Electronic Equipment (WEEE)
Packaging EU, 94/62/EC (amended by 2004/12/EC)	Packaging and packaging waste
N2580-1 (Bosch standard)	Central directive Bosch-Norm N 2580-1: "Prohibition and declaration of substances" Bosch-Norm N 2580-1 regulates prohibited substances and those rated declarable in materials, and it is part of the requirements for materials.
N33 6 (Bosch standard)	Design for Environment (DfE): Design and manufacturing rules

Management system

Directive or standard	Description
ISO 9001:2008	Quality management systems -- Requirements <u>Scope:</u> Development, production, installation and sales.
ISO 14001:2004 /AC:2009	Environmental management systems -- Requirements with guidance for use <u>Scope:</u> Development, Production, Sales and After Sales.

Reliability tests

Accordinging: EN 50130-5:2011 Alarm systems Part 5: Environmental test methods
Class II, Fixed equipment, Indoor in general

Test specification	Description
Dry heat (operational) (EN 60068-2-2:2007)	Temperature +55°C, Duration 16 hours.
Cold (operational) (EN 60068-2-1:2007)	Temperature -10°C, Duration 16 hours.
Damp heat, steady state (endurance) (EN 60068-2-78:2001)	Temperature 40°C, Relative Humidity 93%, Duration 21 days. <i>Bosch tested more severe at temperature 55°C</i>
Damp heat, cyclic (operational) (EN 60068-2-30:2005)	Temperature +25°C to +40°C, Relative humidity 93%, 2 cycles.
Shock (operational) (EN 60068-2-27:2009)	Halve sine wave pulse, duration 6ms, 3 pulses per direction, 6 directions. <i>Bosch tested with acceleration of ±980m/s².</i>
Impact (operational) (EN 60068-2-75:1997 Test Ehb)	Impact energy 0.5Joule, 3 impacts per point (Similar to EN 62262 IK04 rating).
Vibration, sinusoidal (operational) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 5 ms ² , 3 axes, sweep rate 1 octave x min ⁻¹ , 1 sweep cycles per axis functional mode. <i>Bosch tested with acceleration of 10m/s² in operational mode.</i>
Vibration, sinusoidal (endurance) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 10 m/s ² , 3 axes, sweep rate 1 octave x min ⁻¹ , 20 sweep cycles per axis.

Additional reliability tests

Activity	Description
MTBF (Mean Time Between Failures)	> 136.712 h Calculation of used components according Siemens SN29500. > 657.000 h Based on current field performance of predecessor products.
ALT (Accelerated Life Test)	Reliability test in which a moderate number of products are stressed at elevated, but non-destructive stress levels for a longer period of time. Power, PoE input 2m – 100m cable Power, DC input 10,8VDC – 13,2VDC High temperature stress +60°C Temperature shock -20°C - +80°C (20°C /min) Power/temperature cycling -30°C - +55°C (4,5°C /min) Temperature & random vibrations -20°C +40°C, 5Grms, 10Hz-10kHz
Cold start test	At ambient temperature -10°C.
Quality (Q) and Reliability (Z) testing	Annual product compliance. Verification tests to secure that products remain compliant to the specified requirements.

Data subject to change without notice.
Eindhoven, September 2019