TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
5617 BA Eindhoven
The Netherlands

Product Test Report BT-SC 2019-E-041

Products
FLEXIDOME IP micro 3000i

F.01U.360.369	NDV-3502-F02	Fixed micro dome 2MP HDR 130° IK08
F.01U.360.368	NDV-3502-F03	Fixed micro dome 2MP HDR 100° IK08
F.01U.360.366	NDV-3503-F02	Fixed micro dome 5MP HDR 120° IK08
F.01U.360.365	NDV-3503-F03	Fixed micro dome 5MP HDR 100° IK08

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

EMC approvals

EMC EU	**Description**
EN 55032: 2015 / AC: 2016 EN 55024: 2010+ A1: 2015	Information Technology Equipment- Radio disturbance characteristics Limits and Methods of measurement. Class B
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.
EN 50121-4: 2016	Railway applications – Electromagnetic compatibility – Part 4: Emission and immunity of signaling and telecommunications apparatus.
EN 61000-3-2: 2014	Mains harmonics Part 3-2: Limits - Limits for harmonic current emissions
EN 61000-3-3: 2013	Voltage fluctuations Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems.
EMC US	
CFR 47 FCC part 15 Class B	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.
EMC Australia	
AS/NZS CISPR 32 equal to CISPR 32	Electromagnetic compatibility of multimedia equipment - Emission requirements. Compliance via EN 55032:2012, Product marked with RCM logo
EMC Japan	
VCCI: VCCI-CISPR 32: 2016	EMC certification for Japan.

Safety approvals

Safety EU	
EN 60950-1: 2006+ A11: 2009+A1: 2010+ A12: 2011+A2: 2013 IEC 60950-1: 2005(Second Edition)+ A1: 2009+ A2: 2013	Safety standard ITE information technology equipment
Safety USA + Canada	
UL 60950-1, 2nd Edition, 2019-05-09.	Information Technology Equipment - Safety - Part 1: General Requirements
CAN/CSA C22.2 No. 60950-1-07, second Edition 2014-10.	Information Technology Equipment - Safety - Part 1: General 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 2014/12/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 Scope: Development, Production, Installation and Sales.
ISO 14001:2004 /AC:2009	Environmental management systems – Requirements with guidance for use Scope: Development, Production, Sales and After Sales.

Reliability tests

EN50130-5:2011 Alarm systems Part 5: Environmental test methods	**Class II, fixed equipment, indoor in general**
Dry heat (Operational) (EN 60068-2-2:2007)	Temperature +50°C, Duration 16 hours.
Cold operation (Operational) (EN 60068-2-1:2007)	Temperature -20°C, Duration 16 hours.
Damp heat, steady state (Endurance) (EN 60068-2-78:2012)	Temperature +40°C, Relative Humidity 93%, duration 21 days.
Damp heat, cyclic (Operational) (EN 60068-2-30:2005)	Temperature +25°C to +50°C, Relative Humidity 93%, 2 cycles.
Damp heat, cyclic (Endurance) (EN 60068-2-30:2005)	Temperature +25°C to +50°C, Relative Humidity 93%, 6 cycles.
Shock (Operational) (EN 60068-2-27:2009)	Halve sine wave pulse, duration 6ms, 3 pulses per direction, 6 directions.
Impact (Operational) (EN 60068-2-75:2014)	Impact energy 5 Joule , 3 impacts per point (Similar to EN 62262 IK08 rating).
Vibration sinusoidal (Operational) (EN 60068-2-6:2008)	Frequency Range 10~150Hz, 10 m/s², 3 axes, Sweep rate 1 octave/min, 1 sweep/axis.
Vibration sinusoidal (Endurance) (EN 60068-2-6:2008)	Frequency Range 10~150Hz, 10 m/s², 3 axes, Sweep rate 1 octave/min, 20 sweep/axis.
Dust tightness (Endurance) (EN 60529:1991 A1:2000)	N/A

Additional Reliability tests

Environmental test methods	Specific Test description
MTBF (Mean Time Between Failures) calculation of used components	Based on: Siemens SN29500, or FIT figures manufacturer. Theoretical MTBF is about 410000 hours.
HALT (Highly Accelerating Life Test)	Overstress test to Fail, Operational, Lower Of Limitation = -50°C, High Of Limitation = +100°C, Vibration OL > 50Grms Combined Environment Stress: Temperature -50°C to +100°C, with 45 Grms for each cycle.
Cold start test	At ambient temperature -20°C.
Transport tests acc. AV18-Q0681 ISTA-2A: 2011	
1. Conditioning	Pre-conditioning: Temp. +25°C, 43%RH, Duration 6 hours. Conditioning: Temp. +38°C, 85%RH, Duration 72 hours. Temp. +60°C, 30%RH, Duration 6 hours.
2. Compression	Top to Bottom, Apply and Hold, Duration 60min. Calculated test load = 813N
3. First vibration test	CPM: 300, 5Hz, Duration 48 min.
4. Drop test after 1st vibration test	Height depending of weight of product. Drop height (mm): 810; drop times: 10
5. Second vibration test	CPM: 300, 5Hz, Duration 48 min.

Data subject to change without notice.
Eindhoven, January 2020.