

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
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The Netherlands

Product Test Report

BT-SC 2019-E-042

Products**FLEXIDOME IP 3000i IR**

F.01U.360.360 NDE-3502-AL Fixed dome 2MP HDR 3.2-10mm IP66 IK10 IR
F.01U.360.359 NDE-3503-AL Fixed dome 5MP HDR 3.2-10mm IP66 IK10 IR

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 | |
|---|--|
| IEC 60950-1: 2005/A1: 2009/A2: 2013 EN 60950-1: 2006/A11: 2009/A1: 2010/A12: 2011/A2: 2013 EN 60950-22 :2017 | Safety standard ITE information technology equipment |
| IEC 60950-22 : 2016(2nd Edition) EN 60950-22: 2017 | Information technology equipment - Safety - Part 22: Equipment installed outdoors. |
| IEC 62471: 2006 (Only for IR version) EN 62471: 2008 (Only for IR version) | Eye Safety |
| Safety USA + Canada | |
| UL 60950-1, 2nd Edition, 2019-05-09 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 | Information Technology Equipment - Safety - Part 1: General Requirements |
| UL 60950-22, 2nd Edition, 2017-03-31 CSA C22.2 NO. 60950-22-17, 2nd Edition, 2017-03 | Information technology equipment - Safety - Part 22: Equipment installed outdoors. |

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. |

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| ISO 14001:2004 /AC:2009 | Environmental management systems – Requirements with guidance for use <u>Scope:</u> Development, Production, Sales and After Sales. |
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Reliability tests

| EN50130-5:2011 Alarm systems Part 5: Environmental test methods | Class IV, fixed equipment, outdoor in general |
|--|---|
| Dry heat (Operational) (EN 60068-2-2:2007) | Temperature +50°C, Duration 16 hours. |
| Dry heat (Endurance) (EN 60068-2-2:2007) | Temperature +50°C, Duration 21 days. |
| Cold operation (Operational) (EN 60068-2-1:2007) | Temperature -30°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. |
| Water ingress (Operational) (EN 60068-2-18:2001) | Test procedure similar to EN60529 IPX6. |
| Salt mist, cyclic (Endurance) (EN 60068-2-52:1996) | Temperature +40°C, Relative Humidity 93%, 4 cycles, Duration 28 days. |
| 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 20 Joule , 3 impacts per point (Similar to EN 62262 IK10 rating). |
| Vibration sinusoidal (Operational) (EN 60068-2-6:2008) | Frequency Range 10~150Hz, 5 m/s ² , 3 axes, Sweep rate 1 octave/min, 1 sweep/axis. |
| Vibration sinusoidal (Endurance) (EN 60068-2-6:2008) | Frequency Range 10~150Hz, 10 m/s ² , 3 axes, Sweep rate 1 octave/min, 20 sweep/axis. |
| Dust tightness (Endurance) (EN 60529:1991 A1:2000) | Duration 8h (similar to EN 60529 IP6X). |
| Simulated solar radiation, surface degradation (endurance) (EN 60068-2-5:1999, for procedure C) | Temperature: 40°C, duration 10 days for class IV |

Additional Reliability tests

| Environmental test methods | Specific Test description |
|--|--|
| MTBF calculation of used components | Based on: Siemens SN 29500, or FIT figures manufacturer. Theoretical MTBF is about 320000 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 = 3100N. |
| 3. First vibration test | CPM: 300, 5Hz, Duration 48 min. |
| 4. Drop test after 1 st vibration test | Height depending of weight of product. Drop height (mm): 660; drop times: 10 |
| 5. Second vibration test | CPM: 300, 5Hz, Duration 48 min. |

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