

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
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The Netherlands

Product Test Report

BT-SC 2021-E-052

Product**FLEXIDOME panoramic 5100i IR**

NDS-5703-F360LE	FLEXIDOME panoramic 5100i IR	Fixed dome 6MP 360° IP66 IR
NDS-5704-F360LE	FLEXIDOME panoramic 5100i IR	Fixed dome 12MP 360° IP66 IR
NDS-5703-F360LE-GOV	FLEXIDOME panoramic 5100i IR	Fixed dome 6MP 360° IP66 IR Gov
NDS-5704-F360LE-GOV	FLEXIDOME panoramic 5100i IR	Fixed dome 12MP 360° IP66 IR Gov

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 + A11: 2010	Information Technology Equipment- Radio disturbance characteristics Limits and Methods of measurement. Class A
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.
EMC US	
CFR 47 FCC part 15 Class A	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 55032:2015
EMC Japan	
VCCI: VCCI-CISPR 32: 2016	EMC certification for Japan.
EMC EurAsian Customs Union	
EAC	EMC certification for EurAsian Countries
EMC Saudi Arabia	
SASO	EMC certification for Saudi Arabia.
EMC Morocco	
CMIM	Conformity Mark for Electronics and Electro technical Products

EMC United Kingdom	
UKCA	Declaration of Conformity for UKCA

Safety approvals

Safety EU	
EN/ IEC 62368-1 (EN 62368-1: 2014/ A11: 2017)	Audio/video, Information and Communication technology equipment - Part 1: Safety requirements
EN/ IEC 60950-22 (EN 60950-22: 2017)	Information technology equipment - Safety - Part 22: Equipment installed outdoors.
EN 62471:2008	Photobiological safety of lamps and lamp systems. Applicable to IR LEDs for eye safety
Safety USA + Canada	
UL 62368-1 (UL 62368-1, 2nd Edition, 2014-12-01) CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12	Audio/video, Information and Communication technology equipment - Part 1: Safety requirements
UL 60950-22, 2nd Edition CAN/CSA C22.2 NO. 60950-22-17, 2nd Edition	Information technology equipment - Safety - Part 22: Equipment installed outdoors.

Environmental approvals

Directive or standard	Description
RoHS EU, 2011/65/EU EN IEC 63000:2018 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 <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

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 +70°C, Duration 16 hours.
Dry heat (Endurance) (EN 60068-2-2:2007)	Temperature +70°C, Duration 21 days.
Cold operation (Operational) (EN 60068-2-1:2003)	Temperature -50°C, Duration 16 hours.
Sulphur Dioxide (SO ₂) (Endurance)	Temperature +25° C, Relative Humidity 93%, 21 days.
Damp heat, cyclic (Operational) (EN 60068-2-30:2003)	Temperature +25°C to +55°C, Relative Humidity 93%, 2 cycles.
Damp heat, cyclic (Endurance) (EN 60068-2-30:2005)	Temperature +25°C to +55°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 60068-2-75:1997)	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
Simulated Solar Radiation, Temperature Raise (Operational) (EN 60068-2-5:1999, for procedure A)	Temperature: 40°C, duration 2 days

Additional Reliability tests

Environmental test methods	Specific Test description
MTBF (Mean Time Between Failures) calculation of used components	Based on: Telcordia Issue 3. Theoretical MTBF is about 107,528 hours.
HALT (Highly Accelerating Life Test)	Overstress test to Fail, Operational, Lower Of Limitation = -50°C, High Of Limitation = +100°C, Vibration OL > 45Grms Combined Environment Stress: Temperature -40°C to +90°C, with 40 Grms for each cycle.
IR cut filter/ICR reliability test	85°C / 85% RH 500 hours , Use 3M 365 tape to peel it by 3 times.
Operating temperature	IR on: -40 °C to +50 °C IR off: -40 °C to +55 °C
Cold start test	Guaranteed until -20°C
NEMA TS2	Operational temperature test at -34°C and +74°C at NEMA TS2 part 2-14 specified conditions
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 = 760 kgf
3. First vibration test	CPM: 240, Duration 60 min.
4. Drop test after 1 st vibration test	Height depending of weight of product. Drop height (mm): 970; drop times: 10
5. Second vibration test	CPM: 240, Duration 60 min.

Data subject to change without notice.
Eindhoven, November 2022.