

TO WHOM IT MAY CONCERN

Bosch Security Systems  
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The Netherlands

**Product Test Report**

BT-SC 2021-E-052

**Product****FLEXIDOME multi 7000i IR**

NDM-7702-AL	FLEXIDOME multi 7000i IR	Fixed dome 12MP 3.7-7.7mm IP66 IR
NDM-7703-AL	FLEXIDOME multi 7000i IR	Fixed dome 20MP 3.7-7.7mm IP66 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**

<b>EMC EU</b>	<b>Description</b>
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 <i>Expected Q1 2022</i>	Railway applications – Electromagnetic compatibility – Part 4: Emission and immunity of signaling and telecommunications apparatus.
<b>EMC US</b>	
CFR 47 FCC part 15 Class A	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.
<b>EMC Australia</b>	
AS/NZS CISPR 32 equal to CISPR 32	Electromagnetic compatibility of multimedia equipment - Emission requirements. Compliance via EN 55032:2015
<b>EMC Japan</b>	
VCCI: VCCI-CISPR 32: 2016	EMC certification for Japan.
<b>EMC EurAsian Customs Union</b>	
EAC	EMC certification for EurAsian Countries
<b>EMC Saudi Arabia</b>	
SASO	EMC certification for Saudi Arabia.
<b>EMC Morocco</b>	
CMIM	Conformity Mark for Electronics and Electro technical Products
<b>EMC United Kingdom</b>	
UKCA	Declaration of Conformity for UKCA

### Safety approvals

<b>Safety EU</b>	
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
<b>Safety USA + Canada</b>	
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

<b>Directive or standard</b>	<b>Description</b>
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

<b>Directive or standard</b>	<b>Description</b>
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

<b>EN50130-5:2011 Alarm systems Part 5: Environmental test methods</b>	<b>Class IV, fixed equipment, outdoor in general</b>
Dry heat (Operational) (EN 60068-2-2:2007)	Temperature +70°C, Duration 16 hours.
Dry heat (Endurance) (EN 60068-2-2:2007)	Temperature +55°C, Duration 21 days.
Cold operation (Operational) (EN 60068-2-1:2007)	Temperature -50°C, Duration 16 hours.
Sulphur Dioxide ( SO <sub>2</sub> ) ( Endurance )	Temperature +25° C, Relative Humidity 93%, 21 days.
Damp heat, cyclic (Operational) (EN 60068-2-30:2005)	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 60068-2-75:2014)	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 <sup>2</sup> , 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 <sup>2</sup> , 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 480.000 hours.
HALT (Highly Accelerating Life Test)	Overstress test to Fail, Operational, Lower Of Limitation = -40°C, High Of Limitation = +100°C, Vibration OL > 50Grms Combined Environment Stress: Temperature -40°C to +100°C, with 50 Grms for each cycle.
Cold start test	At ambient temperature -20°C.
IR cut filter/ICR reliability test	85°C / 85% RH 500 hours , Use 3M 365 tape to peel it by 3 times.
<b>Transport tests acc. AV18-Q0681 ISTA-2A: 2011</b>	
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 = 2610N.
3. First vibration test	CPM: 300, 5Hz, Duration 48 min.
4. Drop test after 1 <sup>st</sup> 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, August 2021.