

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
5617 BA Eindhoven
The Netherlands

Product Test Report

BT-VS 2021-E-040

Product**FLEXIDOME IP indoor 8000i**

F.01U.396.935	NDV-8502-R	Fixed dome 2MP HDR 3-9mm PTRZ
F.01U.396.936	NDV-8503-R	Fixed dome 6MP HDR 3.9-10mm PTRZ
F.01U.396.937	NDV-8504-R	Fixed dome 8MP HDR 3.9-10mm PTRZ
F.01U.393.108	NDV-8502-RX	Fixed dome 2MP HDR X 4.4-10mm PTRZ
F.01U.393.109	NDV-8503-RX	Fixed dome 4MP HDR X 4.4-10mm PTRZ
F.01U.410.326	NDV-8504-R-K	Fixed dome 8MP HDR 3.9-10mm PTRZ-K

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.

Safety approvals

Directive or standard	Description
Safety EU, 2014/35/EU (LVD)	Low Voltage Directive
EN 62368-1:2014 /A11:2017 EN IEC 62368-1:2020/A11:2020 EN IEC 62368-3:2020	Audio/video, information and communication technology equipment - Part 1: Safety requirements
Safety USA	
UL 62368-1, 2nd Edition, 2014-12-01 UL 62368-1, 3rd Edition, 2019-12-13	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
Safety Canada	
CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 CSA C22.2 NO. 62368-1:19, 3rd Edition, 2019-12-13	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
Safety International	
IEC 62368-1:2014 (Second Edition) IEC 62368-1:2018 (Third Edition) IEC 62368-3:2017	Audio/video, information and communication technology equipment - Part 1: Safety requirements

EMC and Radio approvals

Directive or standard	Description
EMC EU, 2014/30/EU (EMCD)	Electromagnetic Compatibility Directive
Emission	
EN 55032:2015 /A11:2020, Class B	Electromagnetic compatibility of multimedia equipment - Emission requirements
EN 61000-6-3:2007 /A1:2011 /AC:2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments
Immunity	
EN 55035:2017 /A11:2020	Electromagnetic compatibility of multimedia equipment - Immunity requirements
EN 61000-6-2:2005 /AC:2005 EN 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
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
IEC 62599-2:2010	Alarm systems - Part 2: Electromagnetic compatibility - Immunity requirements for components of fire and security alarm systems
Emission / Immunity	
EN 50121-4:2016 /A1:2019	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signaling and telecommunications apparatus
IEC 62236-4:2018	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus
EMC USA	
CFR 47 FCC part 15, Class B	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.
EMC Canada	
ICES-003 (Issue 7)	Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement
Basic standards	
EN 55016-2-3:2017	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements
EN IEC 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN IEC 61000-4-3:2006 /A1:2008 /A2:2010	Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
EN IEC 61000-4-4:2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
EN IEC 61000-4-5:2014 /A1:2017	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test

EN IEC 61000-4-6:2014	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
EN IEC 61000-4-8:2010	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test

Environmental approvals

Directive or standard	Description
RoHS EU, 2011/65/EU EN IEC 63000:2018	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	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 9001:2015	Quality management systems -- Requirements <u>Scope:</u> Development, production, installation and sales.
ISO 14001:2015	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 III, Outdoor but sheltered from direct rain and sunshine, or indoor with extreme environmental conditions

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 -25°C, Duration 16 hours. <i>Bosch tested more severe at -30°C.</i>
Damp heat, steady state (endurance) (EN 60068-2-78:2001)	Temperature +40°C, Relative Humidity 93%, Duration 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 Ra2, 10min (Similar EN 60529 IPX2). <i>Bosch tested more severe for class IPx4 (with accessory NDA-8001-IP)</i>
Sulphur dioxide (SO ₂) (endurance) (EN 60068-2-42:2003)	Temperature 25°C, SO ₂ Concentration 25x10e-6, RH 93%, Duration 10 days <i>In combination with accessory NDA-8001-IP</i>
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 60G.</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.
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.
Dust tightness (endurance) (EN 60529:1991 A1:2000)	Duration 8h (similar to EN 60529 IP5X).

Additional reliability tests

Activity	Description
Degrees of protection against external mechanical impacts (endurance) (EN 62262)	IK10 housing including bubble, Impact energy 20 Joule, 3 impacts per point
MTBF (Mean Time Between Failures)	> 85.053 h Calculation of used components according Siemens SN29500. > 800.000 h Based on current field performance of predecessor products.
Operating temperature	-20 and 55°C
Cold start test	Guaranteed until ambient temperature -20°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, January 2023