

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
5617 BA Eindhoven
The Netherlands

Product Test Report

BT-SC 2018-E-054

Products**DINION 5100i (IR)**

NBE-5702-AL	F.01U.393.997	Bullet 2MP HDR 3.2-10.5mm IP66/67 IK10
NBE-5703-AL	F.01U.393.998	Bullet 5MP HDR 3.2-10.5mm IP66/67 IK10
NBE-5704-AL	F.01U.393.999	Bullet 8MP HDR 3.2-10.5mm IP66/67 IK10
NBE-5702-AL-GOV	F.01U.408.167	Bullet 2MP HDR 3.2-10.5mm IP66/67 GOV
NBE-5703-AL-GOV	F.01U.408.168	Bullet 5MP HDR 3.2-10.5mm IP66/67 GOV
NBE-5704-AL-GOV	F.01U.408.169	Bullet 8MP HDR 3.2-10.5mm IP66/67 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 and Safety approvals

EMC EU, 2014/30/EU (EMCD)	Description
EN 55032:2015 +A11:2020	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.
EMC Canada	
ICES-003 Class B	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
EMC US	
CFR 47 FCC part 15 Class B	Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter B – Unintentional Radiators, Part 15 - RADIO FREQUENCY DEVICES
EMC Australia and New Zealand	
AS/NZS CISPR 32 equal to CISPR 32	Electromagnetic compatibility of multimedia equipment - Emission requirements.

EMC Japan	
VCCI: VCCI-CISPR 32: 2016	CISPER 32. EMC certification for Japan.
EMC United Kingdom	
UKCA	UKCA DoC
EMC India	
BIS: IS 13252 (Part 1):2010	EMC certification for India

Safety approvals

Safety EU, 2014/35/EU (LVD)	
EN IEC 62368-1:2020/A11:2020	Audio/video, information and communication technology equipment - Part 1: Safety requirements
	Information technology equipment - Safety - Part 22: Equipment installed outdoors
Safety USA	
UL 62368-1, 2nd Edition, 2014-12-01	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
	Information Technology Equipment - Safety - Part 22: Equipment to be Installed Outdoors
Safety Canada	
CSA/UL 62368-1:2019	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
	Information Technology Equipment - Safety - Part 22: Equipment to be Installed Outdoors
IR lighting (IR model only)	
IEC 62471	Photobiological safety of lamps and lamp systems

Environmental approvals

Directive or standard	Description
RoHS EU, 2011/65/EU and 2015/863/EU	Directive of the European Parliament and of the Council as regards the list of restricted substances
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
EN 50130-5	Class IV Alarm systems - Part 5: Environmental test methods
WEEE EU, 2012/19/EU	Waste Electrical and Electronic Equipment (WEEE)
NEMA TS-2	Compliant to the following chapters when using a TS-2 compliant power supply: Section 2.2.7.3 ~2.2.7.7 (operational)
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.

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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

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 60068-2-1:2007)	Temperature -40°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 +55°C, Relative Humidity 93%, 2 cycles.
Damp heat, cyclic (Endurance) (EN 60068-2-30:2005)	Temperature +25 to +55°C, Relative Humidity 93%, 6 cycles
Shock (Operational) (IEC 60068-2-27:2008)	Halve sine wave pulse, duration 6ms, 3 shocks per direction, 6 directions
Impact (Operational) EN 62262 Edition 1.1:2021 (IK10)	2002 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK 10)
Vibration sinusoidal (Operational) (IEC 60068-2-6:2007)	Frequency Range 10~150Hz, 5 m/s ² , 3 axes, Sweep rate 1 octave/min, 1 sweep/axis.
Vibration sinusoidal (Endurance) (IEC 60068-2-6:2007)	Frequency Range 10~150Hz, 10 m/s ² , 3 axes, Sweep rate 1 octave/min, 20 sweep/axis.
Water/Dust protection IEC 60529 Edition 2.2:2013 (IP66) Impact operational IEC60068-2-75: 1997 IK10 must following IEC 62262 – 2002 definition	Degrees of protection provided by enclosures (IP66/IP67)
Salt mist, cyclic (Endurance) EN 60068-2-52:1996	Temperature +40°C, Relative Humidity 93%, 28 days
Simulated solar radiation, surface degradation (Operation) IEC 60068-2-5, Edition 2.0:2020 IEC 60068-2-5:1975 Procedure A	Temperature +40°C for irradiation, +25 °C for darkness, 48 hours
Simulated solar radiation, surface degradation (Endurance) IEC 60068-2-5, Edition 2.0:2020	Temperature +40°C, 240 hours

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IEC 60068-2-5:1975 Procedure C	
Sulfur dioxide gas corrosion	Temperature +25°C, Relative Humidity 93%, 21 days, das concentration: SO ₂ /25ppm

Additional Reliability tests

Environmental test methods	Specific Test description
MTBF (Mean Time Between Failures) calculation of used components	Based on: Telcordia Issue 4, or FIT figures manufacturer. Theoretical MTBF is about 495,000 h.
HALT (Highly Accelerating Life Test)	Overstress test to Fail, Operational, Lower Of Limitation = -40°C, High Of Limitation = +80°C, Vibration OL > 27.5Grms Combined Environment Stress: Temperature -40°C to +80°C, with 4 to 24 Grms for each cycle.
Cold start test	At ambient temperature -20°C.
UL50E (NEMA Type 4X)	Enclosures for Electrical Equipment, Environmental Considerations 1st edition
Transport tests acc. AV18-Q0681 ISTA-2A: 2011	
1. Conditioning	Pre-conditioning: Temp. +25(±3)°C, 55(±20)%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 = 892.04 lbs
3. First vibration test	Frequency 240CPM, Duration 60 min. ; Number of Impact (cycle): 14,200 cycles
4. Drop test after 1 st vibration test	Height depending of weight of product Drop height: 810mm; drop times: 10
5. Second vibration test	Frequency 240CPM, Duration 60 min. ; Number of Impact (cycle): 14,200 cycles

Image performance	Specific Test description
IEC 62676-5	Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices

ONVIF

Conformance	Specific Test description
EN 50132-5-2	Alarm systems - CCTV surveillance systems for use in security applications - Part 5-2: IP Video Transmission Protocols
EN 62676-2	Video surveillance systems for use in security applications

Data subject to change without notice.
Eindhoven, Mar 2024.