

TO WHOM IT MAY CONCERN

Bosch Security Systems  
Torenallee 49  
5617 BA Eindhoven  
The Netherlands

**Product Test Report**

BT-SC 2019-E-043

**Products****DINION IP 3000i IR**

F.01U.360.358	NBE-3502-AL	Bullet 2MP HDR 3.2-10mm IP66 IK10 IR
F.01U.360.357	NBE-3503-AL	Bullet 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**

<b>EMC EU</b>	<b>Description</b>
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.
<b>EMC US</b>	
CFR 47 FCC part 15 Class B	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 55032:2012, Product marked with RCM logo
<b>EMC Japan</b>	
VCCI: VCCI-CISPR 32: 2016	EMC certification for Japan.

### Safety approvals

<b>Safety EU</b>	
EN 62368-1 (EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013) EN 60950-22 : 2017	Audio/video, Information and Communication technology equipment - Part 1: Safety requirements
IEC 62368-1 (IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013) IEC 60950-22 : 2016 (2st Edition)	Audio/video, Information and Communication technology equipment - Part 1: Safety requirements
IEC 62471: 2006 (Only for IR version) EN 62471: 2008 (Only for IR version)	Eye Safety
<b>Safety USA + Canada</b>	
UL62368-1 (UL 60950-1, 2nd Edition, 2019- 05-09) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10) UL 60950-22 2nd Edition, 2017-03-31 CSA C22.2 NO. 60950-22-17, 2nd Edition, 2017-03	Audio/video, Information and Communication technology equipment - Part 1: Safety requirements

### Environmental approvals

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

<b>Directive or standard</b>	<b>Description</b>
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.
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### 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 +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. <i>Bosch tested more severe for 6 cycles.</i>
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 <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

### 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 50 Grms for each cycle.
Cold start test	At ambient temperature -20°C.
<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 = 1736N.
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): 510; drop times: 10
5. Second vibration test	CPM: 300, 5Hz, Duration 48 min.

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