

TO WHOM IT MAY CONCERN

Bosch Security Systems  
Torenallee 49  
5617 BA Eindhoven  
The Netherlands  
AR18-13-D182

## Product Test report

Product name: **DINION IP 8000 camera series**

Material No / CTN / description:

F.01U.285.362	NBN-80052-BA	DINION IP starlight 8000 MP
F.01U.309.129	NBN-80122-CA	DINION IP ultra 8000

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.

### ENVIRONMENTAL TESTS

<b>EN 50130-5:2011 Alarm systems Part 5: Environmental test methods</b>	<b>Specific Test description Class II Indoor in general, fixed equipment.</b>	<b>Passed</b>
Dry heat Operational EN 60068-2- 2:2007.	Temperature +55°C, duration 16 hrs. Bosch tested at +50°C, duration 24hrs.	Yes
Dry heat endurance EN 60068-2-2:2007.	Not required for Class II products.	N.A.
Cold operational EN 60068-2-1:2007.	Temperature -10°C, during 16hrs. Bosch tested more severe: -20°C during 24h.	Yes
Temperature change operational EN 60068-2-14:2009.	No test for Class II Fixed products. Bosch tested: -30°C to +60°C, 5 cycles.	Yes
Damp heat, steady state operational EN 60068-2-78:2001.	No test for Class II products.	N.A.
Damp heat, steady state endurance EN 60068-2-78:2001.	Temp. +40°C, Relative Humidity 93% during 21 days. Bosch tested this in combination with Damp heat, cyclic operational test.	Yes
Damp heat, cyclic operational EN 60068-2-30:2005.	Temperature 25°C to +40°C, Relative humidity >93%, of 2 cycles. Bosch tested: Non operating, +25°C to 50°C, Relative humidity >93%, 21 cycles.	Yes

<b>EN 50130-5:2011 Alarm systems Part 5: Environmental test methods</b>	<b>Specific Test description Class II Indoor in general, fixed equipment.</b>	<b>Passed</b>
Damp heat, cyclic endurance EN 60068-2-30:2005.	No test for Class II products.	N.A.
Water ingress (operational) EN 60068-2-18:2001	No test for Class II products.	N.A.
Sulphur Dioxide SO <sub>2</sub> endurance EN 60068-2-42:2003.	Temperature 25°C, SO <sub>2</sub> concentration 25x10 <sup>-6</sup> , Relative humidity 93%, 4days.	Yes, for Class I
Salt mist, cyclic endurance EN 60068-2-52:1996	No test for Class II products.	N.A.
Shock operational EN 60068-2-27:2009.	Halve sine wave pulse 6 ms, ±800m/s <sup>2</sup> , 3 directions, 3 pulses per direction.	Yes
Impact operational EN 60068-2-75:1997.	Impact energy 0.5 Joule, 3 impacts per point. (Similar to EN 62262 IK04 rating)	Yes
Free fall operational EN 60068-2-31:2008.	No test for fixed equipment.	N.A.
Vibration sinusoidal operational EN 60068-2-6:2008.	Frequency range 10-150 Hz, 5 ms <sup>2</sup> , 3 axes, sweep rate 1 octave x min <sup>-1</sup> , 1 sweep cycles/axis.	Yes
Vibration sinusoidal endurance EN 60068-2-6:2008.	Freq. Range 10-150 Hz, 10 m/s <sup>2</sup> , 3 axes, sweep rate 1 octave x min <sup>-1</sup> , 20 sweep cycles/axis.	Yes
Simulated solar radiation Temperature rise operational EN 60068-2-5:1999.	No test for Class II fixed equipment.	N.A.
Simulated solar radiation Surface degradation EN 60068-2-5:1999.	No test for Class II fixed equipment.	N.A.
Dust tightness endurance EN 60529:1991, A1:2000	Duration 8h (similar to EN 60529 IP5X). Bosch did not test this because the ingress of dust is considered not to be critical for this product.	N.A.

**ADDITIONAL BOSCH TESTS**

Test specification	Specific Test description	Passed
FMEA (failure Mode and Effect Analysis)	Design and Process analyses based on a Bosch template	Yes
MTBF	<p>&gt; 144.266 h Calculation of used components according Siemens SN29500.</p> <p>&gt; 500.000 h Based on current field performance of comparable products.</p>	Yes
HALT (Highly Accelerating Life Test)	<p>Overstress test to Fail. Determination of fail limits for:</p> <ul style="list-style-type: none"> <li>• Low ambient temperature</li> <li>• High ambient temperature</li> <li>• Vibration</li> <li>• Combination of Temperature and vibration</li> </ul>	Yes
Thermal cycling / Power cycling tests	Power on/off switching test In combination with Thermal cycling for DC and POE on/off switching (every 3 minutes) and temperature changing from -20°C to +60°C continuously.	Yes
Bump IEC 60068-2-27:2009 Non operating	Test Eb, 10g, 16ms, 3 perpendicular directions each 1000, in total 6000x	Yes
Decorative surface test UN-D 1235/01	<p>25 rubbings by hand</p> <ul style="list-style-type: none"> <li>• Boiling point spirit 100- 140°C</li> <li>• Ethanol 96 % with 5% methanol.</li> </ul>	Yes
Type plate test EN / UL 60950-1 Par. 1.7.13.	Rubbing by hand with water+ Petroleum spirit during 15s.	Yes
Hot spots on components.	With Infra red scanner at room temperature Tambient 20 ±5 °C.	Yes
Temperature of Hot spots components	With thermocouples at room temperature Tamb. 20±5°C.	Yes
Cold start test	At ambient -20°C.	Yes
Transport tests acc. AV18-Q0681		
1. Vibration test	Freq. 7Hz, 5.3 mm (= 1.05g), 30 min each side, 3 directions.	Yes
2. Drop test after vibration test 10 drops.	Height depending of weight of product.	Yes
3. Dynamic compression test of package. (Product in packaging).	Package shall be in a visible good condition and product shall be conform specification.	Yes

### Approvals Safety, EMC and Environmental

<b>EMC Europe standards</b>	<b>Test description</b>	<b>Passed</b>
EN 55032:2010 /AC:2013 Class B	Electromagnetic compatibility of multimedia equipment - Emission Requirements	Yes
EN 50130-4:2011 /A1:2014	Part 4: Electromagnetic compatibility – Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.	Yes
EN 50121-4:2016	Railway EMC Part 4: Emission and immunity of the signaling and telecommunications apparatus	Yes
<b>EMC USA</b>	<b>Test description</b>	<b>Passed</b>
CFR 47 FCC part 15:2010-10-1, Class B	Radiated Emission based on VERIFICATION procedure.	Yes
<b>Australian</b> AS/NZS CISPR 32 equal to CISPR 32	Product marked with RCM logo.	Yes
<b>Safety Europe</b>	<b>Test description</b>	<b>Passed</b>
EN 60950-1:2006 /A11:2009 /A1:2010 /A12:2011 /A2:2013	Information technology equipment — Safety — Part 1: General requirements.	Yes
EN 62368-1 :2014 /AC:2015	Audio/video, information and communication technology equipment - Part 1: Safety requirements	Yes
<b>Safety USA + Canada</b>	<b>Test description</b>	<b>Passed</b>
UL 60950-1, 2 <sup>nd</sup> edition, 2011 CAN/CSA-C22.2 No. 60950-1-07, 2 <sup>nd</sup> edition	Information technology equipment - Safety – Part 1: General requirements. Products marked with cULus logo.	Yes
<b>Environmental</b>	<b>Test description</b>	<b>Passed</b>
RoHS Restriction of Hazardous Substances	Compliant according EN 50581:2012.	Yes
N2580-1 Prohibited and declarable substances in product, component, materials and preparations.	Bosch internal environmental standard.	Yes
N33.6 Design for Environment.	Bosch internal environmental standard.	Yes

The products are produced by a manufacturing organization, which is certified on **ISO9001** and **ISO14001** standards.

Data subject to change without notice.

Eindhoven, September 2019.