

TO WHOM IT MAY CONCERN

Bosch Security Systems
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 Taiwan >>>
 <<AT18-Q1616>>

Product Test report

**Product name: DINION IP 4000i IR; DINION IP 5000i IR; DINION IP starlight 6000i IR;
 DINION IP 4000i IR**

Model numbers: NBE-4502-AL; NBE-5503-AL; NBE-6502-AL; NBE-4502-ALAR

**Product description: Bullet 2MP 2.8-12mm auto IP67 IK10;
 Bullet 5MP HDR 2.7-12mm auto IP67 IK10;
 Bullet 2MP HDR 2.8-12mm auto IP67 IK10;
 Bullet 2MP 2.8-12mm auto IP67 IK10**

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 TEST

EN50130-5:1999 Alarm systems Part 5: Environmental test methods	Specific Test description class IV fixed equipment	Passed
1) till 7) is Introduction		
8) Dry heat operational IEC60068-2- 2:1974 +A1:1993+ A2:1994	Temp. +70°C, duration 16 hours.	Yes
9) Dry heat endurance IEC60068-2-2:1974 +A1:1993+ A2:1994	Temp. +70°C, duration 21 days.	Yes
10) Cold operational IEC60068-2-1:1990 +A1:1993+ A2:1994	Temp. -40°C, duration 16 hours	Yes
11) Temperature change operational IEC60068-2- 14:1984 +A1:1986	Operational 4 cycles -25°C to +30°C, fast changes, 2h stabilizing, 2 chamber method. Change time: 2~3 minutes Special attention to mechanical damage and cracks of the cable assembly.	NA
12) Damp heat, steady state operational IEC60068- 2-3: 1969+A1: 1984	Not test	NA
13) Damp heat, steady state endurance IEC60068- 2-3: 1969+A1: 1984	Temp. +40°C, Relative humidity 93%, non-condensing, duration 21 days	Yes
14) Damp heat, cyclic operational IEC60068-2- 30:1980+A1:1985	Temp. 20°C~55°C , Relative humidity 93%, Duration 24hr x 2 Covered by test 15.	NA

15) Damp heat, cyclic endurance IEC60068-2-30:1980+A1:1985	Temp. 20°C~55°C , Relative humidity 93%, Duration 24hr x 6 (Operating mode test.)	Yes
16) Water ingress (operational)	IEC60529 IPX7	Yes
17) Sulphur Dioxide SO ₂ endurance IEC60068-2-42:1982	Sulphur Dioxide 25 ppm, Temperature 25°C, Humidity 93%, Duration 21 days	Yes
18) Salt mist, cyclic endurance IEC60068-2-52:1996	Total duration 28 days, 4 cycles. Salt mist exposure: 5%, Temp. 15-35°C, Duration 2h. Damp heat exposure: NaCl, Temp. 40°C, Hum. 93%, duration per cycle 166h	Yes
19) Shock operational IEC60068-2-27:1987	Half sine wave 6 ms, A =1000-(200xM)m/s ² , 6 directions of shocks,3 shocks per direction	Yes
20) Impact operational IEC60068-2-75:1997	IK10: Impact energy 20 Joule, 3 impacts per point	Yes
21) Free fall operational IEC60068-2-32:1975 +A1:1982+A2:1990	No test for Fixed equipment	NA
22) Vibration sinusoidal operational IEC60068-2-6:1995	Freq. Range 10-150Hz, Acceleration 5 m/s ² , 3 numbers of axes, sweep rate 1 octaves/min, 1 number of sweep cycles/axis Covered by test 23.	NA
23) Vibration sinusoidal endurance IEC60068-2-6:1995	Freq. Range 10-150Hz, Acceleration 10m/s ² , 3 numbers of axes, sweep rate 1 octaves/min, 20 number of sweep cycles/axis (Operating mode test.)	Yes
24) Simulated solar radiation, Temperature rise operational	Temperature 40°C, duration 2 * (8hrs UV + 16hrs Darkness), Irradiance 1120 W/m ²	Yes
25) Simulated solar radiation, Surface degradation endurance	Temperature 40°C, duration 10 days (240hrs UV), Irradiance 1120 W/m ²	Yes
26) Dust tightness endurance	IP6X	Yes

ADDITIONAL ENVIRONMENTAL – FUNCTIONAL BOSCH TESTS

Environmental test methods	Specific Test description	Passed
MTBF calculation of used components	Based on: Siemens SN 29500 or FIT figures manufacturer. Theoretical MTBF > 100,000 hrs	Yes
HALT (Highly Accelerating Life Test)	-40°C to +80°C with 5 Grms to 30 Grms	Yes
Decorative surface test	Cross Cut Test	Yes
Type plate test	IEC60065 par.5 Rubbing water+ Petroleum spirit 15s	Yes
FMEA (failure Mode and Effect Analysis)	Design and Process analyses based on Bosch template.	Yes



Hot spots on components.	With Infra red scanner at room temperature Tamb. 20 ±5 °C	Yes												
Temperature of Hot spots components	With thermocouples at room temperature Tamb. 50 ±5 °C	Yes												
Bump Non-operating	IEC 60068-2-29 test Eb 10g, 16ms, 3 x 1000 times.	Yes												
Cold start test	At -40°C	Yes												
Transport tests acc. AV18-Q0681 ISTA-2A: 2011														
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.	Yes												
2. Compression	Top to Bottom, Apply and Hold, Duration 60min. Calculated test load = 856 lbs	Yes												
3. Sine vibration test	Frequency 318CPM, Duration 44 min. ; Number of Impact (cycle): 14200 cycles	Yes												
4. Drop test	Height depending of weight of product. Drop height (inch): 20 ; drop times: 10	Yes												
5. Random vibration test	<p>Random vibration</p> <table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>PSD Level, g²/Hz</th> <th>Overall Grms</th> </tr> </thead> <tbody> <tr> <td>1.0</td> <td>0.0001</td> <td rowspan="4">1.15</td> </tr> <tr> <td>4.0</td> <td>0.01</td> </tr> <tr> <td>100.0</td> <td>0.01</td> </tr> <tr> <td>200.0</td> <td>0.001</td> </tr> </tbody> </table> <p>Test duration: total 60 minutes</p>	Frequency (Hz)	PSD Level, g ² /Hz	Overall Grms	1.0	0.0001	1.15	4.0	0.01	100.0	0.01	200.0	0.001	Yes
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Approvals Safety, EMC and Environmental

EMC Europe	Description	Passed
EN 55022:2010 /AC:2011 (Class B) EN 55024:2010	Information Technology Equipment- Radio disturbance characteristics Limits and Methods of measurement. Class B	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 61000-3-2: 2014	Mains harmonics Part 3-2: Limits - Limits for harmonic current emissions	Yes

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	Yes
EN 50121-4: 2006 / AC:2008	Railway applications EMC	Yes
EMC Russia TP TC 020/2011	EMC of technical devices	Yes
EMC USA CFR 47 FCC part 15 Class B	Conducted + Radiated Emission based on VERIFICATION procedure	Yes
EMC Canada ICES-003 issue 6:2016	Conducted + Radiated Emission based on VERIFICATION procedure	Yes
Australian AS/NZS CISPR 22(2009) / A1 (2010) Class B	Product market with BOSCH supplier code N663	Yes
EMC Japan VCCI: 2015-04 Class B	Japan EMC certification	Yes
Safety Europe		
EN 60950-1: 2006+ A11: 2009+ A1: 2010+ A12: 2011+ A2: 2013 EN 60950-22: 2006+ A11: 2008	Information technology equipment — Safety — Part 1: General requirements	Yes
IEC 62471: 2006	Eye Safety	Yes
Safety USA + Canada		
UL 60950-1: 2 nd edition CAN/CSA-C22.2 No.60950-1-07 cUL 60950-22	UL listing + cUL listing. 2nd edition dated October 14, 2014. Information technology equipment — Safety — Part 1: General requirements	Yes
Environmental		
Prohibited and declarable substances in products, components, materials and preparations.	Manufacturer's declaration database based on N2580-1.	Yes
Restriction of Hazardous Substances	RoHS compliant	Yes

The product is produced by a manufacturing organisation, which is certified on **ISO9001** and **ISO14001** standards.

Data subject to change without notice.

<< Taipei>> << May 2017>>