

TO WHOM IT MAY CONCERN

Bosch Security Systems  
 Glaslaan 2  
 5600JB Eindhoven  
 The Netherlands  
 AR18-09-D026

## Product Test report

Product name: **BOSCH Dinion 2X camera**

Model numbers:

**LTC0630/11** Dinion2X Analog Fixed Body Day/Night ('620), ½" non-WDR PAL, Low Voltage  
**LTC0630/21** Dinion2X Analog Fixed Body Day/Night ('620), ½" non-WDR NTSC, Low Voltage  
**LTC0630/51** Dinion2X Analog Fixed Body Day/Night ('620), ½" non-WDR PAL, 230VAC  
**LTC0630/61** Dinion2X Analog Fixed Body Day/Night ('620), ½" non-WDR NTSC, 120VAC Voltage  
**LTC0498/11** Dinion2X Analog Fixed Body Day/Night ('495), WDR PAL, Low Voltage  
**LTC0498/21** Dinion2X Analog Fixed Body Day/Night ('495), WDR NTSC, Low Voltage  
**LTC0498/51** Dinion2X Analog Fixed Body Day/Night ('495), WDR PAL, 230VAC Voltage  
**LTC0498/61** Dinion2X Analog Fixed Body Day/Night ('495), WDR NTSC, 120VAC Voltage

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

EN50130-5:1999 Alarm systems Part 5: Environmental test methods 1) till 7) is Introduction	Specific Test description Class 2 Indoor in general, fixed equipment.	Passed
8) Dry heat Operational IEC60068-2- 2:1974 +A1:1993+ A2:1994	Temp. +55°C (131°F), duration 96 hours.	Yes
9) Dry heat endurance IEC60068-2-2:1974 +A1:1993+ A2:1994	No test for Class II products. However tested at Temp. +70°C (158°F) during 120 hrs.	Yes
10) Cold operational IEC60068-2-1:1990 +A1:1993+ A2:1994	Temp. -10°C (14°F) during 16h more severe test executed: tested at Temp. -20°C (-4°F), duration 96 h.	Yes
11) Temperature change operational IEC60068-2-14:1984 +A1:1986	No test for Class II Fixed products. Tested at more severe executed: Non operational mode 5 cycles -40°C (-40°F) to +70°C (158°F) fast changes.	Yes
12) Damp heat, steady state operational IEC60068-2-2:1988	No test for Class II products but covered by test 14).	Yes
13) Damp heat, steady state endurance IEC60068-2-3:1969+A1:1984	Temp. +40°C (104) during 21 days. See test 14).	Yes
14) Damp heat, cyclic operational IEC60068-2-30:1980+A1:1985	Temp. 25°C to +55°C (77-131°F), Relative humidity >93%, duration 21 days instead of 2 cycles.	Yes
15) Damp heat, cyclic endurance IEC60068-2-30:1980+A1:1985	No test for Class II products but covered by test 14).	Yes
16) Water ingress (operational)	No test for Class II fixed products	N.A.

17) Sulphur Dioxide SO <sub>2</sub> endurance IEC60068-2-42:1982	Check for resistance of connectors to SO <sub>2</sub> Sulphur Dioxide 25 ppm, Temperature 25°C, Humidity 93%, Duration 21 days.	N.A.
18) Salt mist, cyclic endurance IEC60068-2-52:1996	No test for Class II products.	Yes
19) Shock operational IEC60068-2-27:1987	Tested with pulse 6 ms, $\pm 90 \text{ m/s}^2$ with 2 shocks per axis.	Yes
20) Impact operational IEC60068-2-75:1997	Impact energy 1.0 Joule, 3 impacts per point.	Yes
21) Free fall operational IEC60068-2-32:1975 + A1:1982+ A2:1990	No test for fixed equipment.	N.A.
22) Vibration sinusoidal operational IEC60068-2-6:1995	Freq. Range 10-150Hz, $5 \text{ m/s}^2$ , 3 axes, sweep rate 1 octave/m 1 sweep/axis. Tested with severe level of $10 \text{ m/s}^2$	Yes
23) Vibration sinusoidal endurance IEC60068-2-6:1995	Freq. Range 10-150Hz, $10 \text{ m/s}^2$ , 3 axes, sweep rate 1 octave/min 20 sweep/axis.	Yes
24) Simulated solar radiation Temperature rise operational	No test for Class II fixed equipment.	N.A.
25) Simulated solar radiation Surface degradation	No test for Class II fixed equipment.	N.A.
26) Dust tightness endurance	This product is not a specific enclosure to protect ingress of dust. Optical path is tested to P6X. NO ingress of dust.	Yes

#### **ADDITIONAL BOSCH TESTS**

Test specification	Specific Test description	Passed
Cold Endurance IEC60068-2-1:1990 + A1:1993 + A2:1994	Temp -40°C (-40°F), Duration 96h.	Yes
MTBF calculation of used components Based on: for electronics Siemens SN29500, or based on FIT number of manufacturer.	MTBF for the: Low voltage models better as 493,738 hrs. High voltage models better as 504,973 hrs.	Yes
HALT (Highly Accelerating Life Test)	Overstress test to Fail.	Yes
FMEA (failure Mode and Effect Analysis)	Design and Process review	Yes
Bump Non operating IEC 60068-2-29:1987	Test Eb, 10g, 16ms, 3 x 1000 times.	Yes
Decorative surface test UN-D 1235/01	25 rubbings by hand • Boiling point spirit 100- 140°C (212-284°F) • Ethanol 96 % with 5% methanol.	Yes
Type plate test IEC60950	Rubbing by hand with water+ Petroleum spirit during 15s.	Yes
Hot spots on components.	With Infra red scanner at room temperature Tamb. $20 \pm 5 \text{ °C}$ ( $\pm 68 \text{ °F}$ ).	Yes
Temperature of Hot spots components	With thermocouples at room temperature Tamb. $20 \pm 5 \text{ °C}$ ( $\pm 68 \text{ °F}$ ).	Yes
Cold start	At T ambient -20°C (-4°F).	Yes
<b>Transport tests acc. AV18-Q0681</b>		
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



### Approvals Safety, EMC and Environmental

<b>EMC Europe standards</b>	Description	Passed
EN 55022:2006+ A1:2007. Class B	Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement CISPR 22:2005 (Modified).	Yes
EN 50130-4:1995, +A1:1998, +A2:2003.	Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.	Yes
EN 61000-3-2: 2006.	Mains harmonics. Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).	Yes
EN 61000-3-3:1995 +A1:2001+ A2:2005.	Voltage fluctuations. Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection.	Yes
EN50121-4:2006	Railway EMC Part 4: Emission and immunity of the signaling and telecommunications apparatus	Yes
<b>EMC USA</b>		Passed
CFR 47 FCC part 15 Class B	Conducted + Radiated Emission based on VERIFICATION procedure.	Yes
<b>Australian</b> AS/NZS CISPR 22 equal to CISPR 22	Product market with BOSCH supplier code N663.	Yes
<b>Safety Europe</b>		Passed
EN 60950-1: 2006	Information technology equipment — Safety — Part 1: General requirements.	Yes
<b>Safety USA + Canada</b>		Passed
<b>UL 60950-1 2<sup>nd</sup> edition</b> dated March 27, 2007 <b>CAN/CSA-C22.2 No. 60950-1-07</b>	Information technology equipment - Safety – Part 1: General requirements.	Yes
<b>Environmental</b>		Passed
Restriction of Hazardous Substances	RoHS compliant.	Yes
N 2580-1 Prohibited and declarable substances in product, component, materials and preparations.	Bosch internal environmental standard.	Yes

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

Data subject to change without notice.

Eindhoven, June 2009.

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