

TO WHOM IT MAY CONCERN

Bosch Security Systems
 Glaslaan 2
 5600JB Eindhoven
 The Netherlands
 AR18-08-D153

Product Test report

Product name: **BOSCH FlexiDome 2X camera**
 Model numbers: **VDN-489V02-11 FLEXIDOME2X D/N 540TVL 2.6-6 PAL**
VDN-498V02-21 FLEXIDOME2X D/N 540TVL 2.8-10 NTSC
VDN-498V03-11 FLEXIDOME2X D/N 540TVL 2.8-10 PAL
VDN-498V03-21 FLEXIDOME2X D/N 540TVL 2.8-10 NTSC
VDN-498V04-11 FLEXIDOME2X D/N 540TVL 3.7-12 PAL
VDN-498V04-21 FLEXIDOME2X D/N 540TVL 3.7-12 NTSC
VDN-498V09-11 FLEXIDOME2X D/N 540TVL 9-22 PAL
VDN-498V09-21 FLEXIDOME2X D/N 540TVL 9-22 NTSC

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 4 Outdoor in general, fixed equipment	Passed
8) Dry heat Operational IEC60068-2- 2:1974 +A1:1993+ A2:1994	Temp. +70°C (158°F), duration 16 hours.	Yes
9) Dry heat endurance IEC60068-2-2:1974 +A1:1993+ A2:1994	Temp. +70°C (158°F), duration 16 hours.	Yes
10) Cold operational IEC60068-2-1:1990 +A1:1993+ A2:1994	Temp. -25°C (77°F) during 16h more severe test executed: tested at Temp. -50°C (-58°F), duration 96 h.	Yes
11) Temperature change operational IEC60068- 2-14:1984 +A1:1986	Temp. -25°C (77°F) to +30°C (86°F) and 4 cycles) 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 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	Temp +55°C (77) for 6 cycles. See test 14).	N.A.
16) Water ingress (operational)	IPX6.	Yes
17) Sulphur Dioxide SO ₂ endurance IEC60068-2-	Check for resistance of connectors to SO ₂ Sulphur	N.A.

Commercial Register Eindhoven no. 17078624

VAT: 8016.26.985B01

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42:1982	Dioxide 25 ppm, Temperature 25°C, Humidity 93%, Duration 21 days.	
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	Tested with pulse 6 ms, 90 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. More severe test with 50 Joule.	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, 5m/s ² , 3 axes, sweep rate 1 octave/m 1 sweep/axis.	Yes
23) Vibration sinusoidal endurance IEC60068-2-6:1995	Freq. Range 10-150Hz, 10m/s ² , 3 axes, sweep rate 1 octave/min 20 sweep/axis.	Yes
24) Simulated solar radiation Temperature rise operational	Alternative test for this test see test 8)	N.A.
25) Simulated solar radiation Surface degradation	Alternative test for this test see test 8)	N.A.
26) Dust tightness endurance	IP6X. NO ingress of dust.	Yes

ADDITIONAL BOSCH TESTS

Test specification	Specific Test description	Passed
Vandalism proof test to Dome Camera	Energy 50J tested with: <ul style="list-style-type: none"> • Sphere 50mm diameter and mass 500g. Height 10m. • Sphere 100mm diameter, mass 10 kg. 	Yes
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: Siemens SN29500, or FIT figures manufacturer. MTBF > 588,325 hrs.	Yes
HALT (Highly Accelerating Life Test)	Overstress test to Fail.	Yes
Bump Non operating	IEC 60068-2-29 test Eb, 10g, 16ms, 3 x 1000 times.	Yes
Decorative surface test UN-D 1235/01	25 rubbings by hand <ul style="list-style-type: none"> • 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 ±5 °C (±68°F).	Yes
Temperature of Hot spots components	With thermocouples at room temperature Tamb. 20 ±5 °C (±68°F).	Yes
Cold start	At T ambient -50°C (-58F).	Yes
Transport tests acc. AV18-Q0681		
1. Vibration test	Freq. 7Hz, 5.3 mm (= 1.05g), 30 min each side, 3	Yes

	directions.	
2. Drop test after vibration test 10 drops.	Height depending of weight of product.	Yes

Approvals Safety, EMC and Environmental

EMC Europe standards	Description	Passed
EN 55022:2006. 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: 2000 +A2:2005.	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 <= 16 A per phase and not subject to conditional connection.	Yes
EN50121-4:2006	EMC Railway EMC Part 4: Emission and immunity of the signaling and telecommunications apparatus.	Yes
EMC USA		Passed
CFR 47 FCC part 15 Class B	Conducted + Radiated Emission based on VERIFICATION procedure.	Yes
Australian		Yes
AS/NZS CISPR 22 equal to CISPR 22	Product market with BOSCH supplier code N663.	
Safety Europe		Passed
EN 60950: 2001	Information technology equipment — Safety — Part 1: General requirements.	Yes
Safety USA + Canada		Passed
UL 60950-1, Second Edition CAN/CSA-C22.2 No.E60950-1-07	Information technology equipment - Safety – Part 1: General requirements.	Yes
Environmental		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, May 2009.

Phil Brewer
Product Manager - Imaging