

TO WHOM IT MAY CONCERN

Bosch Security Systems
 Torenallee 49
 5617 BA Eindhoven
 The Netherlands

Product Test Report

BT-SC 2018-E-054

Product

FLEXIDOME IP panoramic 6000 outdoor / FLEXIDOME IP panoramic 7000 outdoor

- F.01U.359.667 NDS-6004-F180E Fixed dome 12MP 180° IP66
- F.01U.359.668 NDS-6004-F360E Fixed dome 12MP 360° IP66
- F.01U.359.669 NDS-7004-F180E Fixed dome 12MP 180° IVA IP66
- F.01U.359.670 NDS-7004-F360E Fixed dome 12MP 360° IVA IP66

The above mentioned Bosch Security Systems products have been tested in accordance and were found to comply with the tests listed below which were conducted during the development phase of the product.

Safety approvals

Directive or standard	Description	Passed
Safety Canada		
CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-12	Information Technology Equipment - Safety - Part 1: General Requirements)	Yes
CAN/CSA-C22.2 No. 60950-22-17, 2nd Edition, 2017-03	Information Technology Equipment - Safety - Part 22: Equipment to be Installed Outdoors	Yes
Safety EU, 2014/35/EU (LVD)		
Low Voltage Directive		
EN 60950-1:2006 /A11:2009 /A1:2010 /A12:2011 /A2: 2013	Information Technology Equipment - Safety - Part 1: General Requirements)	Yes
EN 60950-22:2017	Information technology equipment - Safety - Part 22: Equipment installed outdoors	Yes
Safety USA		
UL 60950-1, 2nd Edition, 2014-10-14	Information Technology Equipment - Safety - Part 1: General Requirements)	Yes
UL 60950-22 2nd Edition, 2017-03-31	Information Technology Equipment - Safety - Part 22: Equipment to be Installed Outdoors	Yes

EMC and Radio approvals

Directive or standard	Description	Passed
EMC Australia		
AS/NZS CISPR 32 equal to CISPR 32	RCM certificate	Yes
EMC EU, 2014/30/EU (EMC)	Electromagnetic Compatibility Directive	
EN 50130-4:2011 +A1:2014	Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems	Yes
EN 55024:2010 +A1:2015	Information Technology Equipment- Radio disturbance characteristics Limits and Methods of measurement. Class B	Yes
EN 55032:2015 /AC:2016	Electromagnetic compatibility of multimedia equipment. Emission Requirements	Yes
EN 50121-4:2016	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signaling and telecommunications apparatus	Yes
EMC Japan		
VCCI: VCCI-CISPR 32:2016	EMC certification for Japan.	Yes
EMC USA		
CFR 47 FCC, part 15, Class B	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.	Yes

Environmental approvals

Directive or standard	Description	Passed
ISO 9001:2015	Quality management systems -- Requirements <u>Scope:</u> Development, production, installation and sales	Yes
ISO 14001:2015	Environmental management systems -- Requirements with guidance for use <u>Scope:</u> Development, Production, Sales and After Sales	Yes

Reliability tests

According to: EN 50130-5:2011 Alarm systems Part 5: Environmental test methods Class IV, Fixed equipment, Outdoor in general

Test specification	Description	Passed
Dry heat (operational) (EN 60068-2-2:2007)	Temperature +70°C, Duration 16 hours	Yes
Dry heat (endurance) (EN 60068-2-2:2007)	Temperature +70°C, Duration 21 day	Yes
Cold (Operational) (EN 60068-2-1 : 2007)	Temperature -30°C, Duration 16 hours; , cold start -20°C	Yes
Damp heat, cyclic (operational) (EN 60068-2-30:2005)	Temperature +25°C to +55°C, Relative humidity 93%, 2 cycles.	Yes
Damp heat, cyclic (endurance) (EN 60068-2-30:2005)	Temperature +25°C to +55°C, Relative humidity 93%, 6 cycles.	Yes
Water ingress (operational) (IEC 60529 Edition2.2:2013)	(EN 60068-2-18:2001) Test procedure Ra1.1 or Rb1.2, 10min (Similar EN60529 IPX4). <i>Bosch tested more severe for class IPX6</i>	Yes

Environmental Type 4X (Raintight) UL50E, UL 60950-22, 4.2.5, 4.2.1	Type 4X	Yes
Sulphur dioxide (SO ₂) (endurance) (EN 60068-2-42:2003)	Temperature 25°C, SO ₂ Concentration 25x10e-6, RH 93%, Duration 21d	Yes
Salt mist, cyclic (endurance) (EN 60068-2-52:1996)	Temperature 35°C with salt spray 5%NaCl then 40°C, RH 93%, 4 cycles, Duration 28d.	Yes
Shock (operational) (EN 60068-2-27:2009)	(EN 60068-2-27:2009) Halve sine wave pulse, duration 6ms, 3 pulses per direction, 6 directions. <i>Bosch tested with acceleration of 58G.</i>	Yes
Impact (operational) (EN 60068-2-75:1997 Test Ehb)	IK10	Yes
Vibration, sinusoidal (operational) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 5 ms ² , 3 axes, sweep rate 1 octave x min-1, 1 sweep cycles per axis functional mode.	Yes
Vibration, sinusoidal (endurance) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 10 m/s ² , 3 axes, sweep rate 1 octave x min-1, 20 sweep cycles per axis	Yes
Simulated solar radiation, surface degradation (endurance) (EN 60068-2-5:2010, procedure C)	Irradiance 1120Wxm-2, Temperature 40°C, Duration 10d.	Yes
Dust tightness (endurance) (IEC 60529 Edition2.2:2013)	Duration 8h (similar to EN 60529 IP5X). <i>Bosch tested more severe for class IP6X</i>	Yes

Additional reliability tests

Activity	Description	Passed
FMEA (Failure Mode and Effect Analysis)	Design and Process analyses based on a Bosch template	Yes
MTBF (Mean Time Between Failures)	MTBF > 142.000 h	Yes
HALT (Highly Accelerating Life Test)	Overstress test to Fail. Determination of fail limits for: <ul style="list-style-type: none"> • Low ambient temperature • High ambient temperature • Vibration • Combination of Temperature and vibration 	Yes
IEC 60950-1 Edition 2.2:2013 label test	Rubbing the marking by hand for 15 second with a piece of cloth soaked with water and petroleum spirit each	Yes
Hot spots on components.	With Infra red scanner at room temperature Tamb. 20 ±5 °C.	Yes
Definition of Test Methods for Transport Packaging BTPD-06046-000 Definition		
<ul style="list-style-type: none"> • Vibration test 	Fixed displacement vibration (Freq. 3.8Hz, 62min, 1 direction)	Yes
<ul style="list-style-type: none"> • Drop test 	10 Drops, 970mm	Yes
<ul style="list-style-type: none"> • Compression test 	Apply and Release, Package shall be in a visible good condition and product shall be conform specification	Yes
Cold start test	Guaranteed until ambient temperature -20°C	Yes
Quality (Q) and Reliability (Z) testing	Annual product compliance. Verification tests to secure that products remain compliant to the specified requirements.	Yes

Data subject to change without notice.

Eindhoven, June 2020