TEST REPORT

EN 50131-2-2

Alarm Systems – Intrusion and Hold-up Systems – Part 2-2: Intrusion Detectors – Passive Infrared Detectors

Report Reference No.....:	100803903MIN-005
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Date of issue.....:	2012-Oct-31

CB Testing Laboratory.....:	Intertek Testing Services NA, Inc.
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Testing location/procedure .....:	CBTL ☒ SMT ☐ TMP ☐
Address.....:	As above
Applicant's name.....:	Paradox Security Systems
Address.....:	6 Milton Street Grand Bahamas, FR

Test specification:

Standard .....:	EN 50131-2-2: 2008
Test procedure .....:	CCA
Non-standard test method……..:	N/A
Test Report Form No.....:	EN50131_2_2A
TRF Originator.....:	Intertek Testing Services NA, Inc
Master TRF.....:	Dated 2011-05

Test item description .....:	
Trade Mark .....:	PARADOX
Manufacturer.....:	Paradox Security Systems
Model/Type reference.....:	NVR780 Wireless Passive Infra-Red Motion Detector
Ratings.....:	4.5 Vdc, 120uA standby / 30mA Alarm, from three 1.5V Alkaline AAA Batteries in series

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Clause	Requirement – Test	Result - Remark	Verdict

Copy of marking plate:

Summary of testing:

4.1	Event Processing
4.3.1	Time interval between intrusion signals or messages
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Clause 14	Damp heat, cyclic (operational)
Clause 17	SO2 corrosion (endurance)
Clause 19	Mechanical shock (operational)
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Clause 23	Vibration, sinusoidal (endurance)
Clause 27	EMC (operational)

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Test item particulars ..... :	
Classification of installation and use ..... :	Security Grade 2, Environmental Class IV
Supply Connection ..... :	None, self powered by 3 AAA batteries
..... :	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
- test object was not evaluated for this requirement .... :	NE
Testing ..... :	
Date of receipt of test item ..... :	9/1/2012
Date (s) of performance of tests ..... :	10/1/2012-10/31/2012

Sample ID	Description/Model Number	Serial Number
1	NVR780 Outdoor Infrared Motion detector	254166
2	NVR780 – Wireless PIR Detector	254158
3	NVR780 – Wireless PIR Detector	252124
4	NVR780 – Wireless PIR Detector	252118
5		

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General remarks:

The test results presented in this report relate only to the object tested.
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"(see Enclosure No.)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Following abbreviations are used:

- APS : Alternative Power Source;
- CIE: Control and Indicating Equipment;
- EPS: External Power Source;
- IAS: Intruder Alarm System;
- PPS: Prime Power Source;
- PS: Power Supply;
- PU: Power Unit;
- SD: Storage Device;
- ATS: Alarm Transmission System.

General product information:

The NVR780 is a wireless motion detector designed for Paradox alarm systems.

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Clause	Requirement – Test	Result - Remark	Verdict
4	**Functional Requirements**		
4.1	**Event processing**		
4.1.1	Detectors shall process the events shown in Table 1.		P
4.1.2	Detectors shall generate signals or messages as shown in Table 2.		P
4.2	**Detection**		
4.2.1	Detection performance		
	The detector shall generate an intrusion signal or message when the standard or simulated walk-test target moves at velocities and attitudes specified in Table 3. For detection across the boundary the walk-test distance shall be 1.5 m either side of the boundary. For detection within the boundary the walk-test distance shall be 3.0 m.	See Table 6.3.3.14 and 6.3.3.2	P
4.2.2	Indication of Detection		
	An indicator shall be provided at the detector to indicate when an intrusion signal or message has been generated. At grades 1 and 2 this indicator shall be capable of being enabled and disabled either remotely at Access Level 2 and/or locally after removal of cover which provides tamper detection as described in Tables 1 and 4. At grades 3 and 4 this indicator shall be capable of being enabled and disabled remotely at Access Level 2.	Red indicator light on PIR	P
4.2.3	Significant reduction of range		
	Grade 4 detectors shall detect significant reduction of range or coverage area due, for example, to deliberate or accidental introduction of objects or obstructions into the coverage area.	Range reduction optional for security grade 2	N/A
	Range reduction along the principal axis of detection of more than 50 % shall generate a signal or message within 180 s, according to the requirements of Table 2 and Table 3.		N/A
	If additional equipment is required to detect significant reduction of range, reference shall be made to this equipment and its operation in the manufacturer's documentation.		N/A
4.3	**Operational Requirements**		
	Grade 4 detectors shall detect significant reduction of range or coverage area due, for example, to deliberate or accidental introduction of objects or obstructions into the coverage area.	Not security grade 4	N/A

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	Range reduction along the principal axis of detection of more than 50 % shall generate a signal or message within 180 s, according to the requirements of Table 2 and Table 3.	Range reduction optional for security grade 2	N/A
	If additional equipment is required to detect significant reduction of range, reference shall be made to this equipment and its operation in the manufacturer's documentation.		N/A
4.3.1	Time interval between intrusion signals or messages		
	Detectors using wired interconnections shall be able to provide an intrusion signal or message not more than 15 s after the end of the preceding intrusion signal or message.	No wired interconnections	N/A
	Detectors using wire free interconnections shall be able to provide an intrusion signal or message after the end of the preceding intrusion signal or message within the following times:	See Test Data Sheets. NOTE: NVR780 has a "3-minute energy save mode after two detections within a five-minute period"	P
	Grade 1 300s		N/A
	Grade 2 180s		P
	Grade 3 30s		N/A
	Grade 4 15s		N/A
4.3.2	Switch on delay		
	The detector shall meet all functional requirements within 180 s of the power supply reaching its nominal voltage as specified by the manufacturer.	Battery powered	N/A
4.3.3	Self Tests		
4.3.3.1	Local Self Test		
	The detector shall automatically test itself at least once every 24 h according to the requirements of Tables 1 and 2. If normal operation of the detector is inhibited during a local self-test, the detector inhibition time shall be limited to a maximum of 30 s in any period of 2 h.	Optional for security grade 2	N/A
4.3.3.2	Remote Self Test		
	A detector shall process remote self tests and generate signals or messages in accordance with Tables 1 and 2 within 10 s of the remote self test signal being received, and shall return to normal operation within 30 s of the remote test signal being received	Optional for security grade 2	N/A

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4.4	**Immunity to incorrect operation**		
	The detector shall be considered to have sufficient immunity to incorrect operation if the following requirements have been met. No intrusion signal or message shall be generated during the tests.		P
4.4.1	Immunity to Air Flow		
	The detector shall not generate any signal or message when air is blown over the face of the detector.	See Test Data Sheets No detection signals generated	P
4.4.2	Immunity to visible and near infrared radiation		
	The detector shall not generate any signal or message when a car headlamp is swept across the front window or lens through two panes of glass.	See Test Data Sheets No detection signals generated	P
4.5	Tamper Security		
	Tamper security requirements for each grade of detector are shown in Table 4.	Security grade 2	P
4.5.1	Resistance to and detection of unauthorised access to components and means of adjustment		
	All components, means of adjustment and access to mounting screws, which, when interfered with, could adversely affect the operation of the detector, shall be located within the detector housing. Such access shall require the use of an appropriate tool and depending on the grade as specified in Table 4 shall generate a tamper signal or message before access can be gained.	Housing has 2 screws that need to be removed for access. Tamper contact available inside detector	P
	It shall not be possible to gain such access without generating a tamper signal or message or causing visible damage.	Tamper activated when cover removed	P
4.5.2	Detection of removal from the mounting surface		
	A tamper signal or message shall be generated if the detector is removed from its mounting surface, in accordance with Table 4.	Meets Table 4	P
4.5.3	Resistance to, or detection of, re-orientation		
	When the torque given in Table 4 is applied to the detector it shall not rotate more than 5°. Alternatively, when the torque given in Table 4 is applied, a tamper signal or message shall be generated before the detector has rotated by 5°.	Re-orientation not possible (not mounted on brackets)	N/A
4.5.4	Immunity to magnetic field interference		
	It shall not be possible to inhibit any signals or messages with a magnet of grade dependence according to Table 4. The magnet types shall be as described in Annex A.	Magnet Type 2 does not interfere	P
4.5.5	Detection of masking		

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Clause	Requirement – Test	Result - Remark	Verdict
	Means shall be provided to detect inhibition of the operation of the detector by masking according to the requirements of Table 4.	Masking not required for security Grade 2	N/A
	NOTE In an I&HAS, any masked detectors should prevent setting of the system.		N/A
	The maximum response time for the masking detection device shall be 180 s. Masking shall be signalled according to the requirements of Table 2. The signals or messages shall remain for at least as long as the masking condition is present. A masking signal or message shall not be reset while the masking condition is still present. Alternatively the masking signal or message shall be generated again within 180 s of being reset if the masking condition is still present.		N/A
	NOTE From a system design point of view it would be preferable for masked detectors to automatically reset after the masking condition is removed.		N/A
	No masking signal or message shall be generated by normal human movement at 1 ms^{-1} at a distance equal to or greater than 1 m.		N/A
	For detectors where detection of masking may be remotely disabled the detection of masking shall operate when the I&HAS is unset; it is not required to operate when the I&HAS is set.		N/A
4.6	Electrical requirements		
	The grade dependencies appear in Table 5. These requirements do not apply to detectors having internal Type C power supplies. For these detectors refer to EN 50131-6.	Detectors are Type C power supplies (Battery powered)	N/A
4.6.1	Detector current consumption		
	The detector's quiescent and maximum current consumption shall not exceed the figures claimed by the manufacturer at the nominal input voltage.	Detectors are Type C power supplies (Battery powered)	N/A
4.6.2	Slow input voltage change and voltage range limits		
	The detector shall meet all functional requirements when the input voltage lies between ± 25 % of the nominal value, or between the manufacturer's stated values if greater. When the supply voltage is raised slowly, the detector shall function normally at the specified range limits.	Detectors are Type C power supplies (Battery powered)	N/A
4.6.3	Input voltage ripple		
	The detector shall meet all functional requirements during the sinusoidal variation of the input voltage by ± 10 % of nominal, at a frequency of 100 Hz.	Detectors are Type C power supplies (Battery powered)	N/A
4.6.4	Input voltage step change		
	No signals or messages shall be caused by a step in the input voltage between nominal and maximum and between nominal and minimum.	Detectors are Type C power supplies (Battery powered)	N/A

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4.7	Environmental classification and conditions		
4.7.1	Environmental classification		
	The environmental classification is described in EN 50131-1 and shall be specified by the manufacturer.	Environmental class IV	P
4.7.2	Immunity to environmental conditions		
	Detectors shall meet the requirements of the environmental tests described in Tables 7 and 8. These tests shall be performed in accordance with EN 50130-5 and EN 50130-4.	See “Environmental TDS – G100803903MIN TDS Enviormental”	P
	Unless specified otherwise for operational tests, the detector shall not generate unintentional intrusion, tamper, fault or other signals or messages when subjected to the specified range of environmental conditions		P
	Impact tests shall not be carried out on delicate detector components such as LEDs, optical windows or lenses.		P
	For endurance tests, the detector shall continue to meet the requirements of this standard after being subjected to the specified range of environmental conditions.		P
5	**Marking, identification and documentation**		
5.1	**Marking and/or identification**		
	Marking and/or identification shall be applied to the product in accordance with the requirements of EN 50131-1.		P
5.2	**Documentation**		
	The product shall be accompanied with clear and concise documentation conforming to the main systems document EN 50131-1.The documentation shall additionally state		P
	a) a list of all options, functions, inputs, signals or messages, indications and their relevant characteristics;	List of options/functions/inputs/signals provided in documentation.	P
	b) the manufacturer’s diagram of the detector and its claimed detection boundary showing top and side elevations at 2.0 m mounting height or at a height specified by the manufacturer, superimposed upon a scaled 2 m squared grid. The size of the grid shall be directly related to the size of the claimed detection boundary	Diagram provided	P
	c) the recommended mounting height, and the effect of changes to it on the claimed detection boundary;	Provided in documentation	P

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	d) the effect of adjustable controls on the detector's performance or on the claimed detection boundary including at least the minimum and maximum settings;	Provided in documentation	P
	e) any disallowed field adjustable control settings or combinations of these;	No adjustable controls are disallowed	P
	f) any specific settings needed to meet the requirements of this European Standard at the claimed grade;	No such settings	N/A
	g) where alignment adjustments are provided, these shall be labeled as to their function;	No such alignments	N/A
	h) a warning to the user not to obscure partially or completely the detector's field of view;	Not found in documentation	P
	i) the manufacturer's quoted nominal operating voltage, and the maximum and quiescent current consumption at that voltage;	Quiescent not in documentation	P
	j) any special requirements needed for detecting a 50 % reduction in range, where provided.	Range reduction is optional in security grade 2	N/A
6	**Testing**		
	The tests are intended to be primarily concerned with verifying the correct operation of the detector to the specification provided by the manufacturer. All the test parameters specified shall carry a general tolerance of ± 10 % unless otherwise stated. A list of tests appears as a general test matrix in Annex B.		P
6.1	**General test conditions**		
6.1.1	Standard conditions for testing		
	The general atmospheric conditions in the measurement and tests laboratory shall be those specified in EN 60068-1, 5.3.1, unless stated otherwise.		P
	Temperature 15 °C to 35 °C		P
	Relative humidity 25 % RH to 75 % RH		P
	Air pressure 86 kPa to 106 kPa		P
6.1.2	General detection testing environment and procedures		
	Manufacturer's documented instructions regarding mounting and operation shall be read and applied to all tests.		-
6.1.3	Testing environment		
	The detection tests require an enclosed, unobstructed and draught-free area that enables testing of the manufacturer's claimed coverage pattern.	(see appended table 6.1.3)	P

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Clause	Requirement – Test	Result - Remark	Verdict
	The test area walls and floor shall have a recommended emissivity of at least 80 % between 8 µm and 14 µm wavelength, at least directly behind the SWT.	Emissivity of concrete is 85%	P
	The temperature of the background surface immediately behind the SWT shall be in the range 15 °C to 25 °C, and shall be horizontally uniform over that area to ± 2 °C. Over the whole background area it shall be measured at ten points spread evenly throughout the coverage pattern. The average background temperature is the linear average of the ten points.	Average background temperature was 21.88°C	P
	The default mounting height shall be 2.0 m unless otherwise specified by the manufacturer.	Manufacturer states a mounting height between 1.5m	P
	Annex C provides example diagrams for the range of walk tests for one format of detection pattern. Many others are possible.		P
6.1.4	Standard walk test target		
	The SWT shall have the physical dimensions of 1.60 m to 1.85 m in height, shall weigh 70 kg ± 10 kg and shall wear close-fitting clothing having a recommended emissivity of at least 80 % between 8 µm and 14 µm wavelength.	(see appended table 6.1.4) SWT was 1.76m, 69 kg	P
	Temperatures shall be measured at the following five points on the front of the body of the SWT: 1. Head 2. Chest 3. Back of hand 4. Knee 5. Feet	(See Table 6.1.3 and 6.1.4)	P
	Temperatures shall be measured using a non-contact thermometer or equivalent equipment,	Non-contact thermometer used. See Table 6.1.3 and 6.1.4	P
	The temperature differential at each body point is measured, then weighted and averaged as detailed in D.1.	See Table 6.1.3 and 6.1.4	P
	There shall be a means of calibration and control of the desired velocity at which the SWT is required to move.	Metronome used with grid marked on the floor	P
	NOTE The use of a simulator/robot in place of the SWT is permitted, provided that it meets the specification of the SWT with regard to temperature. It is known as the simulated target. In case of conflict, a human walk test shall be the primary reference.	Human walk test used	P

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Clause	Requirement – Test	Result - Remark	Verdict
6.1.4.1	Standard walk test target temperature differential		
	The walk tests shall be performed either with an average temperature differential Dt_r (as calculated in D.1) of 3.5 °C ± 20 %, or if the temperature differential is larger than 3.5 °C + 20 % (4.2 °C), it may be adjusted to achieve an equivalent temperature differential Dte within this range by one of the means specified in D.2.	Temperature differential was 3.54°C	P
	If Dt_r is less than 3.5 °C – 20 % (2.8 °C), no valid test is possible.	Not less than 2.8°C	N/A
	If Dt_r is between 2.8 °C and 4.2 °C, no adjustment is required.		P
6.1.5	Testing procedures		
	The detector shall be mounted at a height of 2.0 m unless otherwise specified by the manufacturer. The orientation shall be as specified by the manufacturer with unobstructed view of the walk test to be performed. The detector shall be connected to the nominal supply voltage, and connected to equipment with a means of monitoring intrusion signals or messages. The detector shall be allowed to stabilise for 180 s. If multiple sensitivity modes such as pulse counting are available, any noncompliant modes shall be identified by the manufacturer. All compliant modes shall be tested.	Manufacturer states a mounting height of 1.5m	P
6.2	**Basic detection test**		
	The purpose of the basic detection test is to verify that a detector is still operational after a test or tests has/have been carried out. The basic detection test verifies only the qualitative performance of a detector. The basic detection test is performed using the BDT.	(see appended table 6.2) Close in walk test of clause 6.3.6 is used	N/A
6.2.1	Basic detection target (BDT)		
	The BDT consists of a heat source equivalent to the human hand that can be moved across the field of view of the detector. An informative description is given in Annex E. The temperature of the source shall be between 3.5 °C and 10.0 °C above the background.	Close in walk test of clause 6.3.6 is used	N/A
	A close-in walk test may be carried out as an alternative to using the BDT.	Close in walk test of clause 6.3.6 is used	N/A

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Clause	Requirement – Test	Result - Remark	Verdict
6.2.2	Basic test of detection capability		
	A stimulus that is similar to that produced by the SWT is applied to the detector, using the BDT. Move the BDT perpendicularly across the centre line of the detection field at a distance of not more than 1 m, and at a height where the manufacturer claims detection will occur.	Close in walk test of clause 6.3.6 is used	N/A
	Move the BDT a distance of 1 m at a velocity of 0.5 ms^{-1} to 1.0 ms^{-1}. The detector shall produce an intrusion signal or message when exposed to an alarm stimulus both before and after being subjected to any test that may adversely affect its performance.	Close in walk test of clause 6.3.6 is used	N/A
6.3	**Walk testing**		
6.3.1	General walk test method		
	Walk testing is accomplished by the controlled movement of a SWT across the field of view of the detector. The grade dependent velocities and attitudes to be used by the SWT are specified in Table 3. The tolerance of these velocities shall be better than ± 10 %. The SWT begins and ends a walk with feet together. Annex F is an informative description of two systems that may be used to control and monitor the desired velocity.	Metronome used with grid marked on the floor (see appended table 6.3.1)	P
6.3.2	Verification of detection performance		
	The general test conditions of 6.1.1, 6.1.2 and 6.1.3 shall apply to all tests in this series.	(see appended table 6.3.2)	P
	Detection performance shall be tested against the manufacturer's documented claims. Example walk test diagrams are shown in Annex C.	Manufacturer provided detection map for the detector as part of manual.	P
	Any variable controls shall be set to the values recommended by the manufacturer to achieve the claimed performance.	No variable controls were adjusted	-
	PIR detectors of all types shall be assessed in the specified test environment.		-
	If the dimensions of the detection pattern exceed the available test space, it may be tested in sections rather than as a whole.	Space is adequate for detection tests	P
	The SWT or a suitable simulated target, with its temperature difference with the background adjusted according to Annex D shall be used. Grade dependent velocities and attitudes are specified in Table 3.	SWT meets Annex D (see appended table 6.1.4)	P

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Clause	Requirement – Test	Result - Remark	Verdict
6.3.3	Detection across and within the detection boundary		
	The tests assess detection of intruders moving within and across the boundaries of the detection area. The diagrams in Annex C show an example of the detection boundary superimposed where appropriate upon a scaled 2 m squared grid. A variety of boundary formats is possible and can be tested.	Tests conducted according to Annex C	P
6.3.3.1	Verify detection across the boundary		
	Figure C.1 shows an example of a manufacturer's claimed detection boundary.	(see appended table 6.3.3.1)	P
	Place test points at 2 m intervals around the boundary of the detection pattern, starting from the detector, and finishing where the boundary crosses the detector axis. Repeat for the opposite side of the detection pattern. If the gap between the final point on each side is greater than 2 m, place a test point where the boundary crosses the detector axis. For grade 1 detectors it is only necessary to test alternate test points.		P
	Each test point is connected to the detector by a radial line. At each test point, two test directions into the detection coverage pattern are available at + 45° and – 45° to the radial line. Both directions shall be tested beginning at a distance of 1.5 m from the test point, and finish 1.5 m after it.		P
	A walk test is a walk in one direction through a test point. Before commencing and after completing each walk test the SWT shall stand still for at least 20 s.		P
	A walk test that generates an intrusion signal or message is a Passed walk test. Alternatively if the first walk test attempt does not generate an intrusion signal or message then four further attempts shall be carried out. All of these further attempts shall generate an intrusion signal or message to constitute a passed walk test.		P
	Pass/Fail criteria: There shall be a passed walk test in both directions for every test point.	An intrusion signal was generated in each direction at each point on the boundary	P
6.3.3.2	Verify detection within the boundary		
	Figure C.2 shows an example of a manufacturer's claimed detection boundary superimposed upon a scaled 2 m squared grid.	(see appended table 6.3.3.2)	N/A
	Starting at the detector, place the first test point at 4 m along the detector axis. Using the 2 m squared grid, place further test points at every alternate grid intersection, on both sides of the detector axis. No test point shall be less than 1 m from, or lie outside, the claimed boundary.	The grid pattern does not allow for verification points within the boundaries	N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	Each test point is connected to the detector by a radial line. At each test point, two test directions are available, at + 45° and – 45° to the radial line. Both directions shall be tested beginning at a distance of 1.5 m from the test point, and finish 1.5 m after it.		N/A
	A walk test is a walk in one direction through a test point. Before commencing and after completing each walk test the SWT shall stand still for at least 20 s.		N/A
	A walk test that generates an intrusion signal or message is a passed walk test. Alternatively if the first walk test attempt does not generate an intrusion signal or message then four further attempts shall be carried out. All of these further attempts shall generate an intrusion signal or message to constitute a passed walk test.		N/A
	Pass/Fail criteria: There shall be a passed walk test in both directions for every test point.		N/A
6.3.4	Verify the high-velocity detection performance		
	Four walk tests are performed. Two walk tests begin outside the boundary of the area, from opposite sides, and pass through the detector axis mid-range point at + 45° and – 45° to the detector axis, moving towards the detector. The third and fourth walk tests pass in opposite directions at right angles to the detector axis at a distance of 2 m in front of, and parallel to the detector reference line. Examples are shown in Figure C.3.	(see appended table 6.3.4)	N/A
	The SWT shall cross all of the specified detection area, coming to rest after clearing the other detection boundary. Before commencing and after completing each walk test the SWT shall stand still for at least 20 s.	The grid pattern does not allow for verification points within the boundaries	N/A
	Pass/Fail criteria: An intrusion signal or message shall be generated for each of the three walk tests.		N/A
6.3.5	Verify the intermittent movement detection performance		
	Two walk tests are performed, crossing the entire detection area. Before commencing and after completing each walk test the SWT shall stand still for at least 20 s.	Optional for security grade 2	N/A
	The tests begin outside the detection boundary, from opposite sides, and pass through the detector axis mid-range point at + 45° and – 45° to the detector axis, moving towards the detector.		N/A

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	For grades 3 and 4 detectors the intermittent movement shall consist of the SWT walking 1 m at a velocity of 1.0 ms^{-1}, then pausing for 5 s before continuing. The sequence shall be maintained until the SWT has traversed the entire detection area.		N/A
	Pass/Fail criteria: An intrusion signal or message shall be generated for both walk tests.		N/A
6.3.6	Verify the close-in detection performance		
	Two walk tests are performed beginning and ending outside the boundary of the detection area as detailed in Figure C.4. The tests begin outside the detection boundary with the centre of the SWT at a distance (for grades 1 and 2) of 2.0 m ± 0.2 m from, and (for grades 3 and 4) of 0.5 m ± 0.05 m from the vertical axis of the detector.	(see appended table 6.3.6)	N/A
	The SWT shall cross all of the specified detection area, coming to rest after clearing the other detection boundary. Before commencing and after completing each walk test the SWT shall stand still for at least 20 s.	The grid pattern does not allow for verification points within the boundaries	N/A
	Pass/Fail criteria: An intrusion signal or message shall be generated for both walk tests.		N/A
6.3.7	Verify the significant reduction of specified range		
	Select a test point on the detector axis at a distance of 55 % of the manufacturer's claimed detection range. Erect a barrier which blocks infrared radiation across the axis and perpendicular to it, at a distance of 45 % of the manufacturer's claimed detection range, covering a horizontal distance of ± 2.5 m on either side of the detector axis, and a vertical height of 3 m as detailed in Figure C.5.	Optional for security grade 2	N/A
	At the test point, two test directions are used, beginning at a distance of 1.5 m before the test point, and finishing 1.5 m after it, moving perpendicularly to the detector axis.		N/A
	The SWT shall move along each path from start to finish. At the end of each walk test, the SWT shall pause for at least 20 s before carrying out any further test.		N/A
	Pass/Fail criteria: A masking signal or message shall be generated when the barrier is present.		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
6.4	**Switch-on delay, time interval between signals and indication of detection**		
	Switch on the detector power with the indicator enabled and allow 180 s for stabilisation. Carry out the basic detection test. Note the response. After the specified time interval between signals carry out the basic detection test. Note the response. Disable the intrusion indicator. After the specified time interval between signals carry out the basic detection test. Note the response.	Detector is Type C power supplies (Battery powered)	N/A
	Pass/Fail criteria: The detector shall generate an intrusion signal or message in response to each of the three basic detection tests. For the first and second basic detection tests, the intrusion signal or message and the intrusion indicator shall both respond. For the third basic detection test there shall be no indication.		N/A
6.5	**Self tests**		
	Carry out the basic detection test to verify that the detector is operating.	Self tests optional for security grade 2	N/A
	Pass/Fail criteria: The detector shall generate an intrusion signal or message and shall not generate tamper or fault signals or messages.		N/A
	For grade 3 and 4 detectors, monitor the detector during a local self test.		N/A
	Pass/Fail criteria: The detector shall not generate any intrusion, tamper or fault signals or messages.		N/A
	For grade 4 detectors, monitor the detector during a remote self test. Note the response.		N/A
	Pass/Fail criteria: The detector shall generate an intrusion signal or message and shall not generate tamper or fault signals or messages.		N/A
	Short the sensor signal output to ground or carry out an equivalent action as recommended by the manufacturer. For grade 3 and 4 detectors, monitor the detector during a local self test. For grade 4 detectors, also monitor the detector during a remote self test. For detectors with more than one sensor signal output, the test(s) shall be repeated for each output individually.		N/A
	Pass/Fail criteria: (local self test): The detector shall generate a fault signal or message and shall not generate intrusion or tamper signals or messages.		N/A
	Pass/Fail criteria: (remote self test): The detector shall generate a fault signal or message and shall not generate intrusion or tamper signals or messages.		N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
6.6	**Immunity to incorrect operation**		
6.6.1	Immunity to air flow		
	From a point 1.0 m below the detector, direct the airflow from a fan heater over the face of the detector, raising the air temperature at the detector window by 20 °C from ambient at a rate of 5 °C min^{-1} The warm air shall flow at a mean velocity of 0.7 $ms^{-1} \pm$ 0,1 ms^{-1}, measured at the detector window. Do not allow the detector a direct view of the heating elements.	(see appended table 6.6.1)	P
	Stabilise for 4 min at ambient + 20 °C. Switch off the heat and allow the temperature to ramp down for 1 min or until ambient is reached. Stabilise at ambient for 2 min. Repeat the cycle 5 times.		P
	Pass/Fail criteria: There shall be no change of status of the detector.		P
6.6.2	Immunity to visible and near infrared radiation		
	A white light source (a 12 V halogen car headlamp, VW H4 bulb or equivalent, without front reflector and lens) connected to a 13.5 V d.c. power supply, capable of generating at least 2 000 lx at 3 m range is used to illuminate the detector.	(see appended table 6.6.2)	P
	The lamp shall be burned in for 10 h and shall be discarded after 100 h use.		P
	The light from the source shall fall on the detector through two clean 4 mm thick panes of glass, separated by a 10 mm air gap, and placed at 0.5 m in front of the detector.		P
	Measure the light intensity at the detector with a calibrated visible light meter. Calibration is described in Annex G.		P
	Mount the detector in a darkened room at an initial range of 5 m from the source. The source shall be mounted in the main axial detection zone of the detector that is sensitive to infrared radiation in the 8 µm to 14 µm wavelength band. Mount the visible light meter at the chosen position of the detector, and move the light source towards and away from it until a reading in the visible band of 2 000 lx $\pm$ 10 % is obtained.	2000 lx measured at ~ 2.4m away from detector (including glass panes at .5m away)	P
	The light source is scanned about a vertical axis such that the emitted light crosses the detector at a rate of 0.5 ms^{-1}, and clears the outer edge of the detector housing. A total of ten scans shall be made across the front of the detector.		P
	Pass/Fail criteria: There shall be no change of status of the detector.	No detections	P

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
6.7	**Tamper security**		
	The general test conditions of 6.1.1 shall apply.		-
6.7.1	Resistance to and detection of unauthorised access to the inside of the detector through covers and existing holes		
	Mount the detector according to the manufacturer's recommendations. Using commonly available small tools such as those specified in Annex H and by attempting to distort the housing attempt to gain access to all components, means of adjustment and mounting screws, which, when interfered with, could adversely affect the operation of the detector.	(see appended table 6.7.1)	P
	Pass/Fail criteria: Normal access shall require the use of an appropriate tool. For the grades specified in Table 4, it shall not be possible to gain access to any components, means of adjustment and mounting screws, which, when interfered with, could adversely affect the operation of the detector, without generating a tamper signal or message or causing visible damage.	A screwdriver is required for access.	P
6.7.2	Detection of removal from the mounting surface		
	Confirm the operation of the back tamper device by removing the detector from the mounting surface. Replace the unit on the mounting surface without the fixing screws, unless they form a part of the tamper detection device. Slowly prise the detector away from the mounting surface and attempt to prevent the tamper device from operating by inserting a strip of steel between 100 mm and 200 mm long by 10 mm to 20 mm wide, and 1 mm thick, between the rear of the detector and its mounting surface.	(See appended table 6.7.2)	P
	Pass/Fail criteria: A tamper signal or message shall be generated before the tamper device can be inhibited.	Tamper signal generated.	P
6.7.3	Resistance to or detection of re-orientation of adjustable mountings		
	Mount the detector with the bracket so that it may be turned on the adjustable mount by a measured torque and the resultant angular displacement assessed both during and after the test, as shown in Annex I. The levels of grade dependent torque required are given in Table 4.	Re-orientation is not possible (no brackets or adjustable mountings used)	N/A
	Apply the required torque. Remove the torque. Measure the angle of twist of the detector relative to the mounting.		N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Pass/Fail criteria: When the torque given in Table 4 is applied to the detector it shall not rotate more than 5°. Alternatively, when the torque given in Table 4 is applied, a tamper signal or message shall be generated before the detector has rotated by 5°.		N/A
6.7.4	Resistance to magnetic field interference		
	Connect power to the detector and wait 180 s. Attempt to prevent intrusion, tamper and fault signals or messages by placing a single pole of a magnet of type according to Table 4 on each surface of the detector housing in sequence. For each placement carry out the basic detection test and verify correct generation of tamper and fault signals or messages. Repeat the test with the other pole.	(see appended table 6.7.4)	P
	Pass/Fail criteria: The presence of the magnet shall not prevent correct generation of any signal or message.	Signals generated properly	P
6.7.5	Detection of detector masking		
	For each test, the detector shall be powered, the materials applied and its signals or messages monitored for changes of status.	Optional for security grade 2	N/A
	Apply each of the sheet material samples number 1 to 4 as specified in Table 6:		N/A
	a) slid across and held in front of the face of the detector from one side, at a distance of 0 mm in 1 s,		N/A
	b) slid across and held in front of the face of the detector from one side, at a distance of 50 mm in 1 s,		N/A
	c) slid across and held in front of the face of the detector from one side, at a distance of 0 mm in 10 s,		N/A
	d) slid across and held in front of the face of the detector from one side, at a distance of 50 mm in 10 s.		N/A
	Material no. 5 shall be applied directly to the front of the detector.		N/A
	Apply the materials numbers 6 and 7 as specified in Table 6 directly to the front face of the detector.		N/A
	Material 6 shall be sprayed using intermittent passes lasting no longer than 2 s each.		N/A
	Material 7 shall be applied using single passes of the brush.		N/A
	After each individual material application, wait 180 s for the system to stabilise and carry out a basic detection test.		N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Pass/Fail criteria: A masking signal or message as described in Table 2 shall be generated within 180 s of the masking material being applied, and shall continue to be generated for at least as long as the material is in place. Alternatively, the detector shall continue to operate normally.		N/A
	If an individual test is failed, it shall be repeated twice more. Two passes out of the three tests shall constitute a passed test.		N/A
	All materials tested shall be passed.		N/A
	All sheet samples shall be large enough to inhibit detection.		N/A
6.7.6	Immunity to False Masking Signals		
	The SWT shall walk across the detector coverage pattern at a distance of 1 m at $1ms^{-1}$.	Optional for security grade 2	N/A
	Pass/Fail criteria: The detector shall not generate masking signals or messages.		N/A
6.8	**Electrical tests**		
	Ensure that there is no human movement in the coverage area of the detector during the tests.	Detectors are Type C power supplies (Battery powered)	N/A
	Table 5 specifies grade dependency.		N/A
6.8.1	Detector Current consumption		
	This test is not applicable to detectors with internal Type C power supplies.	Type C power supply	N/A
	Connect the detector to a suitable variable, stabilised power supply with a current measuring meter in series. Connect a voltmeter across the power input terminals of the detector. Set the voltage to the nominal supply voltage and allow the detector to stabilise for at least 180 s.		N/A
	Place the detector in the mode which draws the maximum current as described by the manufacturer and measure the current drawn.		N/A
	Place the detector in the mode which draws quiescent current as described by the manufacturer and measure the current drawn.		N/A
	Pass/Fail criteria: The current shall not exceed the manufacturer's stated values by more than 20 % in either mode.		N/A
6.8.2	Slow input voltage change and input voltage range limits		
	Connect the detector to a suitable variable, stabilised power supply.	Type C power supply	N/A
	Raise the supply voltage from zero at a rate of $0,1\ Vs^{-1}$ in steps not greater than 10 mV until the nominal supply voltage V – 25 % is reached, or the minimum supply voltage specified by the manufacturer, whichever is lower. Allow the detector to stabilise for 180 s.		N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Monitor the intrusion and fault signals or messages and carry out the basic detection test. This test is not applicable to detectors with Type C power supplies.		N/A
	Pass/Fail criteria: The basic detection test shall cause an intrusion signal or message and shall not cause a fault signal or message.		N/A
	Reset the input voltage to the nominal V + 25 % or the maximum level specified by the manufacturer, whichever is greater. Allow the detector to stabilise for 180 s. Monitor the intrusion and fault signals or messages and carry out the basic detection test. This test is not applicable to detectors with Type C power supplies.		N/A
	Pass/Fail criteria: The basic detection test shall cause an intrusion signal or message and shall not cause a fault signal or message.	Type C power supply	N/A
	For grade 3 and 4 detectors, lower the supply voltage at a rate of 0,1 Vs^{-1} in steps of not more than 10 mV until a fault signal or message is generated. Carry out the basic detection test.		N/A
	Pass/Fail criteria: For grade 3 and 4 detectors, the detector shall generate a fault signal or message prior to the situation where no intrusion signal or message is generated when the basic detection test is carried out.	Type C power supply	N/A
6.8.3	Input voltage ripple		
	This test is not applicable to detectors with internal Type C power supplies.	Type C power supply	N/A
	Set a signal generator to the nominal voltage V. Allow 180 s for the detector to stabilise. Modulate the detector supply voltage V by $\pm$ 10 % at a frequency of 100 Hz for a further 180 s.		N/A
	During the application of the ripple carry out a basic detection test. Observe whether any intrusion or fault signals or messages are generated.		N/A
	Pass/Fail criteria: There shall be no unintentional signals or messages generated by the detector during the voltage ripple test. There shall be an intrusion signal or message generated by the basic detection test.	Type C power supply	N/A
6.8.4	Input voltage step change		
	This test is not applicable to detectors with internal Type C power supplies.	Type C power supply	N/A
	Connect the detector to a square wave generator limited to a maximum current of 1 A, capable of switching from the nominal supply voltage V to the nominal voltage V $\pm$ 25 % in 1 ms.		N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Set the input voltage to the nominal supply voltage V and allow at least 180 s for the detector to stabilise. Monitor intrusion and fault signals or messages. Apply ten successive square wave pulses from nominal supply voltage V to V + 25 %, of duration 5 s at intervals of 10 s. Repeat the step change test for the voltage range V to V – 25 %.		N/A
	Pass/Fail criteria: There shall be no unintentional signals or messages generated by the detector during the test.		N/A
6.8.5	Total loss of power supply		
	This test is not applicable to detectors with internal Type C power supplies.	Type C power supply	N/A
	Connect the detector to a suitable variable, stabilised power supply. Set the voltage to the nominal supply voltage and allow the detector to stabilise for at least 180 s.		N/A
	Monitor the intrusion and fault signals or messages and disconnect the detector from the power supply.		N/A
	Pass/Fail criteria: The detector shall either generate signals or messages according to the requirements of Table 2. Alternatively for bus based system total loss of power supply may be determined by loss of communication with the detector.		N/A
6.9	**Environmental classification and conditions**		
	Unless stated otherwise the general test conditions of 6.1.1 shall apply.	(see appended table 6.9)	P
	Detectors shall be subjected to the environmental conditioning described in EN 50130-5 according to the requirements of Tables 7 and 8, and the tests of the EMC product family standard EN 50130-4.	Tested for Environmental Class IV See report number 100803903MIN-009° and 100803903MIN-009B	P
	Detectors subjected to the operational tests are always powered. Detectors subjected to the endurance tests are always un-powered.		P
	Special conditions:		P
	During testing ensure that the PIR detector is shielded from rapid changes of surface temperature or air movement within the field of view due to unwanted effects of the tests. This may be achieved by covering the receiving aperture of the detector with a material unable to pass infrared energy, which shall not interfere with the intended conditioning. It is necessary to consider the effect on any antimasking sensors when selecting a suitable material or method.		P

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	Monitor the detector for unintentional signals or messages. No functional test is required during the tests.		P
	After the tests and any recovery period prescribed by the environmental test standard carry out the basic detection test, and visually inspect the detector both internally and externally for signs of mechanical damage.	The close in detection test of clause 6.3.6 is allowed to be used	P
	After the water ingress test, wipe any water droplets from the exterior of the enclosure, dry the detector, and carry out the basic detection test. Warm air shall not be used for drying.	Environmental class IV	P
	After the SO_2 test, detectors shall be washed and dried in accordance with the procedure prescribed in EN 60068-2-52. The basic detection test shall be performed immediately after drying. Carry out the access to interior test (6.7.1) and the detection of detector masking test (6.7.5) with material number 1 only.	The SO2 conditioning was not conducted at the Intertek facility, so the basic detection test was not performed immediately after drying. This test was conducted after the samples were shipped back to Intertek and represents the worst case scenario, if any residual SO2 could cause additional corrosion.	P
	Table 7 — Operational tests		
	Pass/Fail criteria: No unintentional signals or messages shall occur during the tests. There shall be no signs of mechanical damage after the tests and the detector shall continue to meet the requirements of the basic detection test. It is permissible for the detector to generate an intrusion signal or message during the impact test.	No unintentional signals were generated	P
	Table 8 — Endurance tests		
	Pass/Fail criteria: There shall be no signs of mechanical damage after the tests and the detector shall continue to meet the requirements of the basic detection test.	No mechanical damage. Meets basic detection test (See appended table 8 VIBRATION, SINUSOIDAL (ENDURANCE))	P
6.10	**Marking, identification and documentation**		
6.10.1	Marking and/or identification		
	Examine the detector visually to confirm that it is marked either internally or externally with the required marking and/or Identification (given in EN 50131-1).		P
	Pass/Fail criteria: All specified markings shall be present.	Meets the requirements of EN50131-1	P
6.10.2	Documentation		

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict
	By visual inspection ensure the detector has been supplied with clear and concise installation instructions and maintenance functions, all information specified in this standard and in EN 50131-1, and the manufacturer's claimed performance data.		P
	Pass/Fail criteria: All information specified shall be present.	Documentation meets the requirements of this standard and EN 50131-1	P

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

TEST EQUIPMENT

Item	Type	Equipment Number	Calibration Date		Comments
			Last	Due	
1	Temp Humidity gauge	172071	4/9/2012	4/9/2013	
2	Barometer	17393	1/14/2012	1/14/2013	
3	Environmental chamber	15277	4/9/2012	4/9/2013	
4	Chart recorder	17098	4/9/2012	4/9/2013	
5	Fisher Scientific Timer	172029	5/22/2012	5/22/2012	
6	ESPEC Environmental chamber	24300	4/9/2012	4/9/2013	
7	Impact hammer	9859	2/7/2012	2/7/2013	
8	Test blade	172162-C	6/7/2011	ICO	
9	Fluke 52 Thermometer	9846	11/28/2012	11/28/2013	
10	Anemometer	9814	5/11/2012	5/11/2013	
11	Heat Gun	172178	Verified with #10		
12	Tape Measure	172002	3/25/2008	ICO	
13	4mm Glass	172166	6/17/2012	ICO	
14	VW H4 Light Bulb with Reflector	172176	Verified with #15		
15	Optometer (light detector)	24046	6/30/2012	6/30/2013	
16	Magnets (Type B)	172170	Verify before use		
17	Metronome	172161	6/3/2011	ICO	
18	Tape Measure (Large roll)	172085			
19	IR Thermometer	721164	12/16/2011	12/16/2012	
20	Tape Measure	172002	3/25/2008	ICO	
21	Timer	MIN-0042	12/30/2011	12/30/2012	
22					

During the testing, the ambient conditions were: 22.1 to 26.0°C, 17.6 to 26.8% RH, 1023 to 1025 hPa

Statement on Measurement Uncertainty - Specific measurement uncertainty calculations are not necessary under the following provision: All measurements in this data packet are taken with instruments that meet the minimum tolerances established in current CTL decisions.

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

4.1	Table: Events to be processed by grade	Pass

Event	Grade 2	Result
Intrusion detection	M	P
Tamper detection	M	P
Masking detection	Op	N/A
Significant reduction of range	Op	N/A
Low supply voltage	Op	N/A
Total loss of power supply	M*	N/A
Local self test	Op	N/A
Remote self test	Op	N/A

Supplementary information - M = Mandatory, Op = Optional
*Optional for Type C power source

4.3.1	TABLE: Time interval between intrusion signals or messages	Pass

Minimum time between intrusion signals	Requirement	Result / Comments
1.59 seconds	180 seconds	P

Supplementary information: See NVR780 Test data Sheets

After second indication the PIR will go into a standby mode for 180 seconds before sending the next indication.

Date: 10/22/2012 Equipment Used: 5

6.1.3	TABLE: General Test Conditions – Test environment	Pass

Temperature of background (°C)										Result / Comments
21.8	21.8	22	21.8	21.8	22.2	21.8	21.8	21.8	22	P
Average temperature = 21.8										P

Supplemental information: Average background temperature between 15 °C to 25 °C, and shall be horizontally uniform over that area to ± 2

Date: 9/25/2012 Equipment Used: 19

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

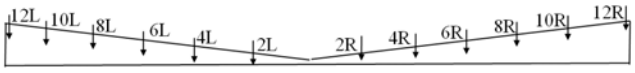
6.1.4	TABLE: General Test Conditions – Standard walk test target temperature differential					Pass
	Head	Chest	Back of hand	Knee	Feet	Result / Comments
Measured temperature	22.1	23.7	23.0	23.6	21.5	-
Difference from background	0.4	2	1.3	1.9	0.2	P
Weighing factor	2	4	4	2	1	-
	0.8	8	5.2	3.8	0.2	
Average temperature difference (DTr) = 3.54°C SWT height = 1.76M SWT weight = 69 kg						
Supplemental information: The SWT shall have the physical dimensions of 1.60 m to 1.85 m in height, shall weigh 70 kg ± 10 kg. DTr shall be between 2.8 and 4.2°C Date: 9/25/2012 Equipment Used: 19						

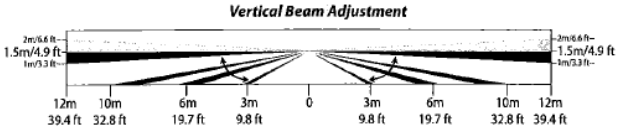
CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

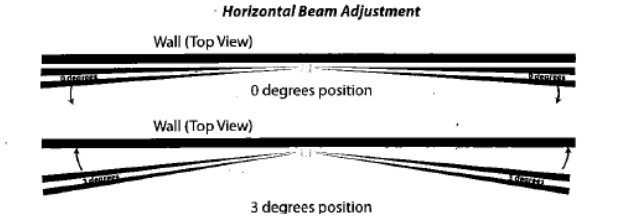
6.3.3.1b	TABLE: Verify detection across the boundary		Pass
Location	45°		Result / Comments
2L	P		P
4L	P		P
6L	P		P
8L	P		P
10L	P		P
12L	P		P
2R	P		P
4R	P		P
6R	P		P
8R	P		P
10R	P		P
12R	P		P

Supplementary information: walking velocity 1.0 m/s, One direction was considered because at the furthest out boundary the beam only extended out 0.6m.

Sample ID: NVR780





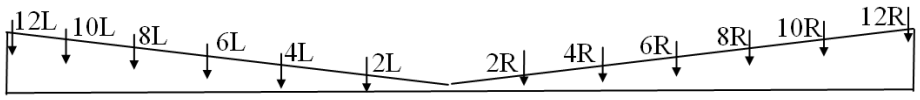


Date: 9/25/2012 Equipment: N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

6.3.3.2b	TABLE: Verify detection within the boundary		NA
Location	-45° (left)	+45° (right)	Result / Comments

Supplementary:). Test was not considered because at the furthest out boundary the beam on extended out 0.6m.



Date: 9/25/2012 Equipment used: N/A

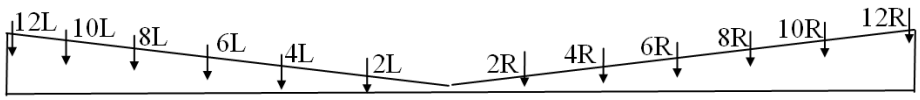
6.3.4b	TABLE: Verify the high velocity detection performance	N/A
Direction		Result / Comments
-45°		
+45°		
Right @ 2m		
Left @ 2m		

Supplementary: Test was not considered because at the furthest out boundary the beam on extended out 0.6m.

Date: 9/25/2012201 Equipment used: N/A

6.3.6	TABLE: Verify the close-in detection performance	N/A
Direction		Result / Comments
Right @ 2m		
Left @ 2m		

Supplementary information: walking velocity 0.4 m/s. (Graph below not a representation of PMD1P coverage, only demonstration of test routes, see table 6.3.3.1 or 6.3.3.2 for accurate coverage graph)



Date: 9/25/201 Equipment used: N/A

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

6.6.1	TABLE: Immunity to air flow	Pass
Cycle	Observations	Result / Comments
1	No indications	P
2	No indications	P
3	No indications	P
4	No indications	P
5	No indications	P

Supplementary information: Tested on NVR780 PIR

Ambient temperature = 22.5°C

Air flow velocity = 0.7 – 0.8 m/s

Average temperature at detector: 42.7°C

Date: 10/242012 Equipment used: 9, 10, 11, 20, 21

6.6.2	TABLE: Immunity to visible and near infrared radiation	Pass
Measured light intensity	Response after 10 scans	Result / Comments
2000 lx (Left Side)	No detection	P
2000 lx (Right Side)	No detection	P

Supplementary information:

Date: 10/22/2012 Equipment used: 13, 14, 15,

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

6.7.1-4	TABLE: Tamper security (Grade 2)	Pass
Action	Observations	Result / Comments
Resistance to access to the inside of the detector	Access requires the use of a screwdriver	P
Detection of access to the inside of the detector	“Area1 UNREADY” and “i: Tamper Trouble, Zone 01, Close unit cover” notification, Event Log: “Zone 01 Tamper Area 1”	P
Removal from the mounting surface wire-free detectors with use of a steel strip (100mm x 10mm x 1mm)	Steel strip cannot inhibit tamper device. Tamper signal generated when lifted more than 1.5 mm	P
Resistance to, or detection of, re-orientation - for detectors mounted on brackets only. Applied torque = 2 Nm	No re-orientation possible (no brackets or adjustable mountings used)	N/A
Magnetic field immunity. Magnet type 1	Magnet did not prevent the correct generation of signals.	P
Supplementary information: Date: 10/19/2012 Equipment used: 8, 16		

CEI EN 50131-2-2			
Clause	Requirement – Test	Result - Remark	Verdict

6.9	TABLE: Environmental and EMC			Pass
Test Conditions	Reduced functional test results			Result
	Before	During	After	
Dry Heat (Operational) Conditioned at 70°C for 16 hours	P	P	P	P
Cold (Operational) Conditioned at -40°C for 16 hours	P			P
Damp Heat, Steady State (Endurance) Conditioned at 40°C & 93%RH for 21 days	P	-		P
Damp Heat, Cyclic (Operational) Conditioned at 25°C & 95%RH for 9 hours, then 55°C and 93%RH for 9 hours. Repeat the cycle again	P	P	P	P
Sulphur Dioxide (Endurance) Conditioning: Relative humidity at 93 ±3%, SO2 concentration 25 ppm, Temperature 25°C, Duration 21 days. After conditioning: Drying period of 16 hours at 40°C ≤ 50% RH	P	-	P	P
Impact (1.0J)	P	-	P	P
Mechanical Shock (Operational) Pulse duration 6 ms, Peak acceleration = 1000 – (200M), Number of shock directions = 6, Number of pulses per direction = 3	P	Monitor	P	P
Vibration, Sinusoidal (Operational) Frequency range: 10-150 Hz Acceleration: 5 m/s Number of axes: 3 Sweep rate: 1 octave per minute Number of sweep cycles/axis/functional mode: 1	P	Monitor	P	P
Vibration, Sinusoidal (Endurance) Frequency range: 10-150 Hz Acceleration: 10 m/s Number of axes: 3 Sweep rate: 1 octave per minute Number of sweep cycles/axis/functional mode: 20	P	-	P	P
EMC	P	P	P	P*
Supplementary information: “P” for result of reduced functional test indicated that the results are identical to those in Clause 6.2 (6.3.6). “Monitor” indicates no errant signals or messages occurred during the conditioning period. *EMC testing See “100803903MIN-009 and 100803903MIN-009B See “100803903MIN TDS Enviromental” report for dates tested and samples used.				

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Clause	Requirement – Test	Result - Remark	Verdict

Photo 1: External view of NVR780 PIR Detector

Photo 2: view of the inside of NVR780 PIR Detector

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Clause	Requirement – Test	Result - Remark	Verdict

Photo 3 – Internal View NVR780 Cover