Hermon Laboratories Ltd.
Harakevet Industrial Zone, Binyamina 30500, Israel
Tel. +972-4-6288001
Fax. +972-4-6288277
E-mail: mail@hermonlabs.com

TEST REPORT

ACCORDING TO:
EN 50131-2-2:2021
EN 50131-1:2006+A1:2009+A2:2017+A3:2020

FOR:
Paradox Security Systems Ltd.

EUT:
Wired PIR detector

Model:
1) **DG55+**
2) **DG65+**

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1 Applicant information

Client name:	Paradox Security Systems Ltd.
Address:	780 INDUSTRIAL BLVD ST-EUSTACHE, QC, CANADA J7R 5V3
Telephone:	+1(242)3527766
Fax:	+1(242)3527771
E-mail:	alexc@paradox.com
Contact name:	Mr. Alex Chaplik

2 Equipment under test attributes

Description	Model Name	HW Version	SW Version
Wired PIR detector	DG55+	404-5005-000	V6.40
	DG65+	404-5005-000	V6.40

Condition of the equipment	Test samples
Receipt date	15-Jan-20 for PARIAS_EN 50131-2-2.36331 Not required for PARIAS_EN 50131-2-2.54996

3 Manufacturer information

Manufacturer name:	Paradox Security Systems Ltd.
Address:	780 INDUSTRIAL BLVD ST-EUSTACHE, QC, CANADA J7R 5V3
Telephone:	+1(242)3527766
Fax:	+1(242)3527771
E-mail:	alexc@paradox.com
Contact name:	Mr. Alex Chaplik

4 Test details

Project ID:	54496
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	15-Jan-20 for PARIAS_EN 50131-2-2.36331 Not required for PARIAS_EN 50131-2-2.54496
Test completed:	02-Feb-20 for PARIAS_EN 50131-2-2.36331 Not required for PARIAS_EN 50131-2-2.54496
Test specification(s):	EN 50131-2-2:2021, EN 50131-1:2006+A1:2009+A2:2017+A3:2020

5 EUT description

5.1 General information

The EUTs are wired PIR motion detector model DG55+ and DG65+ for indoor use.
The detectors classified as Environmental **Class II**, Security **Grade 2**, fixed alarm system components.
Both detectors are powered by 9-16Vdc from certified control panel.
The only difference between the models is in PIR detector.
DG55+ has **Dual** element PIR detector and DG65+ has **Quad** element PIR detector.
DG65+ (Quad element) used for even greater accuracy in demanding environments.

The EUT is presented in Photographs 5.1.1 to 5.1.4

Table 5.1.1 Models description

#	Model	Description	Remark
1	DG55+	Wired PIR Detector Class II, Grade 2, Detection range - 12m	See Photographs 5.1.1 to 5.1.10
2	DG65+	Wired PIR Detector Class II, Grade 2, Detection range - 12m	See Photographs 5.1.1 to 5.1.10

Photograph 5.1.1, 5.1.2 – General View of both models

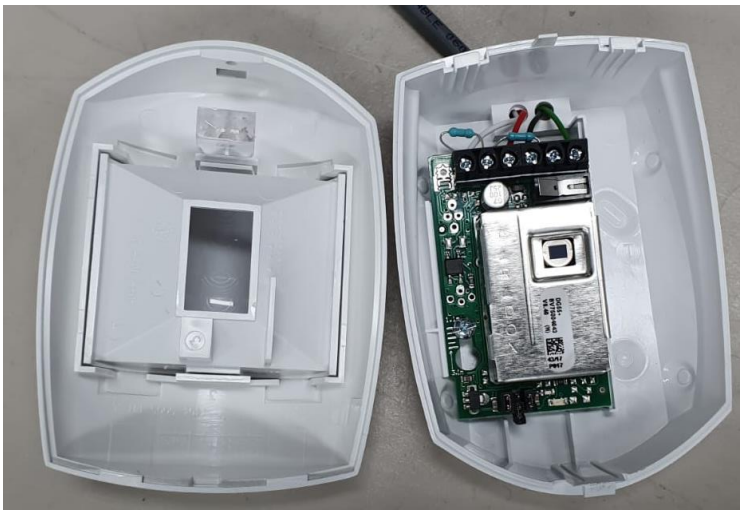
Photograph 5.1.3, 5.1.4 – Rear View

DG55+

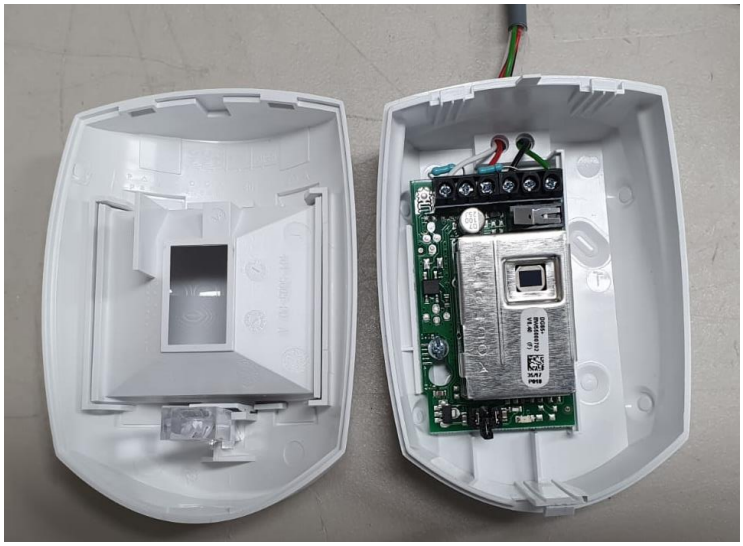
DG65+

Photograph 5.1.5, 5.1.6 – internal View

DG55+

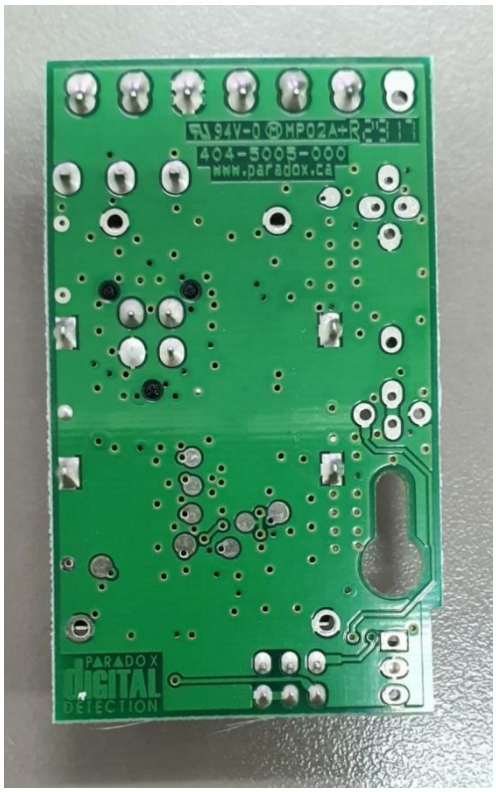


DG65+



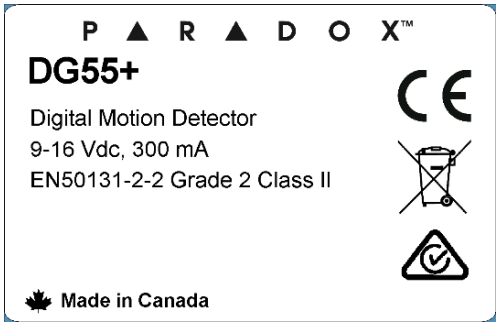
Photograph 5.1.7, 5.1.8, 5.1.9, 5.1.10 – PCB View

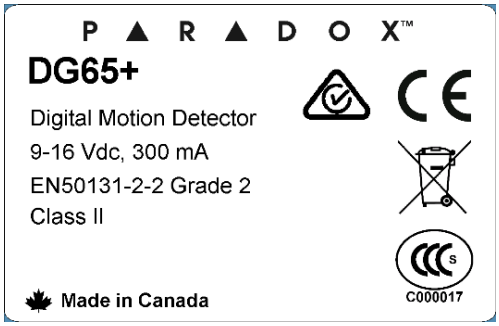
DG55+



DG65+

Photograph 5.1.11 – EUTs labels





5.2 EUT acceptance criteria

Wherever specified by the EN50131-2-2 standard, the EUT shall pass the Basic Detection Tests. The EUT should comply with standard tamper requirements, no false alarms/unwanted signals are accepted during Immunity tests, and all walk tests should be passed.
The EUT should fulfill all EN50131-2-2 standard requirements.

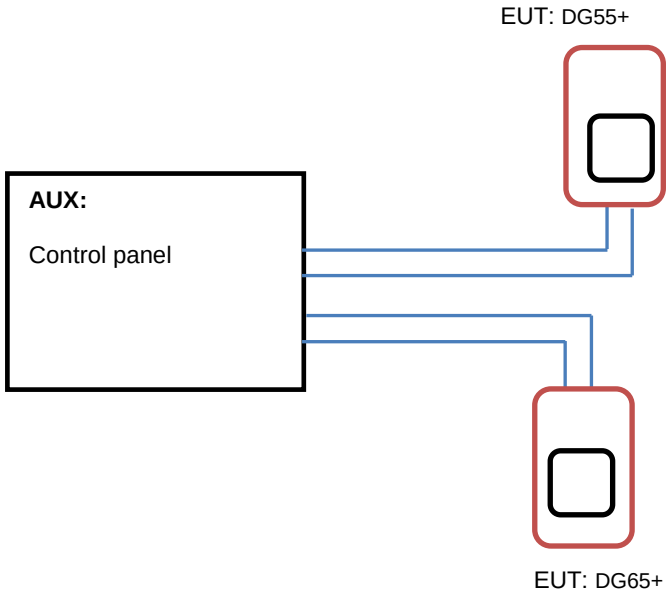
5.3 EUT visual inspection and functional check

Whenever specified by EN50131-2-2 Standard the Basic detection test (BDT) was carried out also the posttests visual inspections.

5.4 Setup and settings

The test configuration is presented in Figure 5.4.1.
Detection range 12 m, PIR sensitivity: Default
The used mounting height for Walk test was 2.1 m.
The led and tamper features were activated.

Figure 5.4.1 Setup configuration



6 Tests summary

Test	Status
EN50131-2-2	
Section 6.4, Walk test	Pass
Section 6.5, Switch on delay and interval between signals test	Pass
Section 6.6, Self-test	N/A*
Section 6.7.1, Immunity to turbulent warm air flow test	Pass
Section 6.7.2, Immunity to visible and near infrared radiation test	Pass
Section 6.8.1, Resistance to and detection of unauthorized access to the inside of the detector through covers and existing holes test	Pass
Section 6.8.2, Detection of removal from the mounting surface test	Pass
Section 6.8.3, Resistance to re-orientation of adjustable mountings test	N/A**
Section 6.8.4, Immunity to magnetic field interference test	Pass
Section 6.8.5, Detection of detector masking test	N/A*
Section 6.8.6, Immunity to false masking signals test	N/A*
Section 6.9.2 ,Detector current consumption	Pass
Section 6.9.3 ,Slow input voltage change and input voltage range limits	Pass
Section 6.9.4 ,Input voltage ripple	Pass
Section 6.9.5 ,Input voltage step change	Pass
Section 6.9.6 ,Total loss of power supply	Pass
Section 6.10, Environmental classification and conditions	Note 1
Section 6.11, Marking, identification and documentation test	Pass

* Not mandatory for Grade 2
** Not install on adjustable bracket
Note 1: See separate ENV report: PARENV_EN.36331, EMC not tested by HL

The EUT was subjected to tests according to EN 50131-2-2:2021 and EN 50131-1:2006+A1:2009+A2:2017 +A3:2020 standards for Security Grade 2, Environmental Class II and found to be in compliance with the standard requirements.

Revision History Table:					
Date	**File No.**	**Prepared**	**Reviewed**	**Approved**	**Amendment Description**
24 June, 2024	PARIAS_EN 50131-2-2.54496	Mr. Golan Taib Project Manager Product safety & Security Systems	Mr. Ilan Benihas Head of Department, Product Safety	Mr. Ilan Benihas Head of Department, Product Safety	1. Standards for compliance were updated to EN50131-2-2:2021 and A3:2020 of general standard EN 50131-1 2. TRF was updated to fit the new standard versions 3. Standard upgrade changes not affect the tested models. Due to these changes, additional tests not required to be performed 4. Minor editorial changes for better clarity
1 April, 2020	PARIAS_EN 50131-2-2.36331	Mr. Alex Zober Project Manager Product safety & Security Systems	Mr. Ilan Benihas Site Manager, Product Safety & Security Systems	Mr. Michael Brun, Safety Group Manager	Original report

7 Tests results

Table 7.1 - EN 50131-2-2 Compliance General Matrix

The results apply to all EUTs bellow according to their technology type and security grade

Model	Applicable Standard	Security Grade
DG55+	EN 50131-2-2	2
DG65+		

I. EN 50131-2-2 reference		Result				Remarks and/or document reference
Section	Requirement	C	NC	NA	NT	
4	**Functional Requirements**					
4.1	**Event Processing**	✓				
4.2	**Detection**					
4.2.1	Detection performance	✓				See 6.4.3 below
4.2.2	Indication of detection	✓				Intrusion indicator provided. Indicator can be locally enabled or disabled by appropriate jumper that located inside the detector.
4.3	**Operational requirements**					
4.3.1	Time interval between intrusion signals or messages	✓				See 6.5 below
4.3.2	Switch on delay	✓				See 6.5 below
4.3.3	Self-tests			✓		Not mandatory for grade 2
4.3.3.1	General			✓		As above
4.3.3.2	Local self-test			✓		As above
4.3.3.3	Remote self-test			✓		As above
4.4	**Immunity to incorrect operation**					
4.4.1	General	✓				Considered
4.4.2	Immunity to turbulent warm air flow test	✓				See 6.7.1 below
4.4.3	Immunity to visible and near infrared radiation	✓				See 6.7.2 below
4.5	**Tamper security**					
4.5.1	General	✓				See below
4.5.2	Resistance to and detection of unauthorized access to components and means of adjustment	✓				See 6.8.1 below
4.5.3	Detection of removal from the mounting surface			✓		Not required for wired detectors
4.5.4	Resistance to, or detection of, re-orientation			✓		No mounting brackets
4.5.5	Immunity to magnetic field interference	✓				See 6.8.4 below
4.5.6	Detection of masking			✓		Not mandatory for grade 2
4.6	**Electrical requirements**					
4.6.1	General	✓				See 6.9 below
4.6.2	Detector current consumption	✓				
4.6.3	Slow input voltage change and voltage range limits	✓				
4.6.4	Input voltage ripple	✓				
4.6.5	Input voltage step change	✓				

I. EN 50131-2-2 reference		Result				Remarks and/or document reference
Section	**Requirement**	**C**	**NC**	**NA**	**NT**	
4.7	**Environmental classification and conditions**					
4.7.1	Environmental classification and conditions	✓				Class II
4.7.2	Immunity to environmental conditions	✓				See 6.10 below
5	**Marking, identification and documentation**					
5.1	Marking and/or identification	✓				See 6.11 below
5.2	Documentation	✓				See 6.11 below
6	**Testing**					
6.1	**General**	✓				Considered
6.2	**General test conditions**	✓				Temperature: 15 - 35 °C; Relative humidity: 25 - 75%; Air pressure: 86 - 106kPa.
6.3	**Basic detection test**	✓				
6.4	**Walk testing**					
6.4.3	**Detection across and within the detection boundary**					
6.4.3.2	Verify detection across the boundary for detectors with coverage angles less than or equal to 180°	✓				See chapter 7.1 below
6.4.3.3	Verify detection across the boundary for detectors with a coverage angle of greater than 180°			✓		Coverage angle isn't greater than 180°
6.4.3.4	Verify detection within the boundary for detectors with coverage angles less than or equal to 180°	✓				See chapter 7.1 below
6.4.3.5	Verify detection within the boundary for detectors with coverage angle of greater than 180°			✓		Coverage angle isn't greater than 180°
6.4.4	Verify the high-velocity detection performance for detectors with a coverage angle less than or equal to 180°	✓				See chapter 7.1 below
6.4.5	Verify the high-velocity detection performance for detectors with a coverage angle of greater than 180°			✓		Coverage angle isn't greater than 180°
6.4.6	Verify the intermittent movement detection performance for detectors with a coverage angle less than or equal to 180°			✓		Not mandatory for grade 2
6.4.7	Verify the intermittent movement detection performance for detectors with a coverage angle of greater than 180°			✓		Coverage angle isn't greater than 180°
6.4.8	Verify the close-in detection performance for detectors with a coverage angle less than or equal to 180°	✓				See chapter 7.1 below
6.4.9	Detection of radial movement for detectors with a coverage angle of greater than 180°			✓		Coverage angle isn't greater than 180°
6.5	**Switch-on delay, time interval between signals and indication of detection**	✓				See chapter 7.2 below
6.6	**Self-tests**			✓		Not mandatory for grade 2
6.7	**Immunity to incorrect operation**					
6.7.1	Immunity to turbulent warm air flow	✓				See chapter 7.4 below
6.7.2	Immunity to visible and near infrared radiation	✓				See chapter 7.5 below

I. EN 50131-2-2 reference		Result				Remarks and/or document reference
Section	**Requirement**	**C**	**NC**	**NA**	**NT**	
6.8	**Tamper security**					
6.8.1	Resistance to and detection of unauthorized access to the inside of the detector through covers and existing holes	✓				See chapter 7.6 below
6.8.2	Detection of removal from the mounting surface	✓				See chapter 7.7 below
6.8.3	Resistance to re-orientation of adjustable mountings			✓		Not install to bracket
6.8.4	Immunity to magnetic field interference	✓				See chapter 7.9 below
6.8.5	Detection of detector masking			✓		Not mandatory for grade 2
6.8.6	Immunity to False Masking Signals			✓		Not mandatory for grade 2
6.9	**Electrical tests**					
6.9.2	Detector current consumption	✓				See chapter 7.12 below
6.9.3	Slow input voltage change and voltage range limits	✓				See chapter 7.13 below
6.9.4	Input voltage ripple	✓				See chapter 7.14 below
6.9.5	Input voltage step change	✓				See chapter 7.15 below
6.9.6	Total loss of supply	✓				See chapter 7.16 below
6.10	**Environmental classification and conditions**					
	Operational tests					
	Dry Heat	✓				See separate HL TR: PARENV_EN.36331
	Cold	✓				
	Damp heat (steady state)			✓		
	Damp heat (cyclic)	✓				
	Water ingress			✓		
	Mechanical Shock	✓				
	Vibration	✓				
	Impact	✓				
	EMC				✓	Not test by HL
	Endurance tests					
	Damp heat (steady state)	✓				See separate HL TR: PARENV_EN.36331
	Damp heat (cyclic)			✓		
	SO_2 corrosion	✓				See separate ANPI TR: BIS-REC-1453
	Vibration (sinusoidal)	✓				See separate HL TR: PARENV_EN.36331
6.11	**Marking, identification and documentation**					
6.11.1	Marking and/or identification	✓				See Chapter 7.17
6.11.2	Documentation	✓				

C= conform; NC= not conform; NA = not applicable; NT = not tested

Table 7.2 - EN50131-1 Compliance General Matrix

II. EN 50131-1 reference		Result				Remarks and/or document reference
Section	**Requirement**	**C**	**NC**	**NA**	**NT**	
4	**System functions**			✓		Security Grade 2, Environmental Class II
5	**System components**	✓				
6	**Security grading**	✓				
7	**Environmental Classification**	✓				
8	**Functional requirements**					
8.1	**Detection of intruders, triggering, tampering and the recognition of faults**					
8.1.1	Intruder detection	✓				See Stable 7.1 above
8.1.2	Hold-up device-triggering			✓		
8.1.3	Tamper Detection	✓				
8.1.4	Recognition of faults	✓				
8.2	**Other Functions**					
8.2.1	Masking			✓		Not mandatory for Grade 2
8.3	**Operation**					
8.3.1	Access levels			✓		Not applicable for detectors
8.3.2	Authorization			✓		
8.3.3	Setting and Unsetting			✓		
8.3.4	Setting			✓		
8.3.5	Prevention of setting			✓		
8.3.6	Overriding prevention of setting			✓		
8.3.7	Set state			✓		
8.3.8	Unsetting			✓		
8.3.9	Restoring			✓		
8.3.10	Inhibit			✓		
8.3.11	Isolate			✓		
8.3.12	Test			✓		
8.3.13	Other Functions			✓		
8.4	**Processing**					
8.4.1	Intruder signals or messages			✓		Not applicable for detectors
8.4.2	Hold-up signals or messages			✓		
8.4.3	Tamper signals or messages			✓		
8.4.4	Fault signal or messages			✓		
8.4.5	Masking signals or messages			✓		
8.4.6	Reduction of range signals or messages			✓		
8.5	**Indications**					
8.5.1	General			✓		Not applicable for detectors
8.5.2	Availability of indications			✓		
8.5.3	Canceling indication			✓		
8.5.4	Identification of cause of intrusion alarm condition			✓		
8.6	**Notification**					
8.6.1	General			✓		Not applicable for detectors

II. EN 50131-1 reference		Result				Remarks and/or document reference
Section	**Requirement**	**C**	**NC**	**NA**	**NT**	
8.6.2	ATS notification			✓		
8.6.3	Warning device notification			✓		
8.6.4	Notification - other			✓		
8.7	**Tamper Security**					
8.7.1	Tamper protection	✓				See Table 7.1 above
8.7.2	Tamper detection	✓				
8.7.3	Monitoring of substitution			✓		Not mandatory for Grade 2 detectors
8.7.4	Monitoring of substitution- timing requirements			✓		
8.8	**Interconnections**					
8.8.1	General			✓		Not applicable for detectors
8.8.2	**Monitoring of interconnections**			✓		
8.8.2.1	General			✓		
8.8.2.2	Monitoring of interconnections (Coerciveness Principle)			✓		
8.8.3	Availability			✓		
8.8.4	Verification			✓		
8.8.5	Security of communication			✓		
8.8.6	Signals or messages to be generated	✓				Open zone , tamper
8.9	**I&HAS timing performance**					
8.9.1	Intruder detection, tampering, triggering, and the recognition of faults - Timing requirements			✓		Not applicable for detectors
8.9.2	Processing			✓		
8.10	Event Recording			✓		
9	**Power Supply**					
9.1	Types of power supply	✓				Wired detector
9.2	Requirements	✓				
10	**Operational reliability**					
10.1	I&HAS components	✓				
11	**Functional reliability**	✓				
12	**Environmental requirements**					
12.2	Environmental	✓				See separate HL TR: PARENV_EN.36331
12.3	Electromagnetic compatibility				✓	Not tested by HL
13	**Electrical safety**				✓	Not tested by HL
14	**Documentation**	✓				See Chapter 7.17
15	**Marking / Identification**	✓				
Annex B	**Requirements applicable when an I&HAS is remotely accessed**					
B.1	General			✓		No remote access from a non-certified I&HAS equipment
B.2	Requirements			✓		As above

C= conform; NC= not conform; NA = not applicable; NT = not tested

Test specification:	**Walk test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.4 Walk test		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	30/1/2020		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1013hPa	**Relative Humidity:** 48 %
Remarks:			

7.1 Walk test procedure and results

7.1.1 Test purpose

To prove the detector detection performance within the manufacturer declared detection area and with SWT different speeds and attitudes as required by EN50131-2-2 standard.

7.1.2 Test procedure

7.1.2.1 The test area was lied out according to manufacturer detection pattern and standard requirement as presented in Figure 7.1.1.

7.1.2.2 The SWT temperature differential was calculated after performing the required temperature measurements on the test hall (background and floor) and on SWT as presented in Table 7.1.1.

7.1.2.3 The detector was mounted at the height as specified by manufacturer and presented in Table 7.1.2 to 7.1.6

7.1.2.4 The walk tests for each relevant detector setting or combination of settings were performed as presented in 7.1.2 to 7.1.6 and the results documented.

7.1.3 Test results

Table 7.1.1 SWT temperature differential

Body zone	Significance: weighting factor	Body temp [^{0}C]	Body background: temp difference	Dtr.	Average Dtr.
Head	**2**	23.8	**2.91**	5.82	
Upper torso side	**4**	23.1	**2.21**	8.84	
Hand at body side	**4**	24.9	**4.01**	16.04	**2.94**
Legs at knee	**2**	24	**3.11**	6.22	
Feet	**1**	22.2	**1.31**	1.31	
SUM	**13**				

The 10 temperature points of the background measurements [^{0}C]	Average [^{0}C]	SWT characteristics	Floor and backgrounds emissivity
21.5	20.89	80 kg, 1.84 m	>85%
22			
22.1			
20.8			
21.2			
19.9			
19.8			
20.1			
21.4			
20.1			

Test specification:	**Walk test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.4 Walk test		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	30/1/2020		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1013hPa	**Relative Humidity:** 48 %
Remarks:			

Table 7.1.2 - Verify detection across the boundary for detectors with coverage angles less than or equal to 180°

SWT speed 1 m/s; upright				
Detector Model	**Detection pattern and tested points (marked in blue)**	**Verdict**	**Date**	**Settings/Remarks**
DG55+	Figure 7.1.1	Pass	30.1.20	Installation height = 2.1 m PIR on sensitivity Normal, Single edge
DG65+	Figure 7.1.1	Pass	30.1.20	

Table 7.1.3 - Verify detection within the detection boundary for detectors with coverage angles less than or equal to 180°

SWT speed 0.3 m/s for Grade 2				
Detector Model	**Detection pattern and tested points (marked in blue)**	**Verdict**	**Date**	**Settings/Remarks**
DG55+	Figure 7.1.1	Pass	30.1.20	Installation height = 2.1 m PIR on sensitivity Normal, Single edge
DG65+	Figure 7.1.1	Pass	30.1.20	

Test specification:	**Walk test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.4 Walk test		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	30/1/2020		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1013hPa	**Relative Humidity:** 48 %
Remarks:			

Table 7.1.4 - Verify the high-velocity detection performance for detectors with a coverage angle less than or equal to 180°

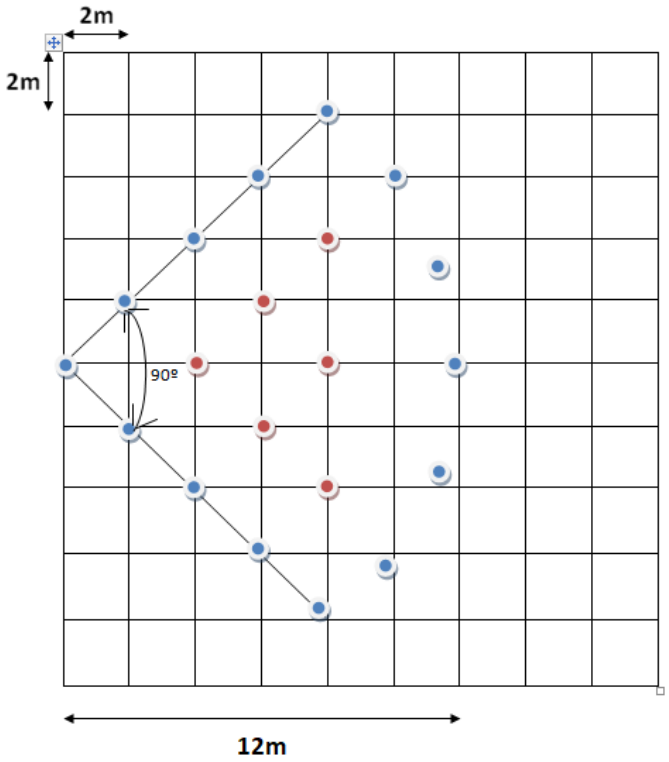
SWT speed 2 m/s for Grade 2				
Detector Model	**Detection pattern and tested points (marked in blue)**	**Verdict**	**Date**	**Settings/Remarks**
DG55+	Figure 7.1.1	Pass	30.1.20	Installation height = 2.1 m PIR on sensitivity Normal, Single edge
DG65+	Figure 7.1.1	Pass	30.1.20	

Table 7.1.5 - Verify the close-in detection performance for detectors with a coverage angle less than or equal to 180°

SWT speed 0.4 m/s for Grade 2 upright distance 2m				
Detector Model	**Detection pattern and tested points (marked in blue)**	**Verdict**	**Date**	**Settings/Remarks**
DG55+	Figure 7.1.1	Pass	30.1.20	Installation height = 2.1 m PIR on sensitivity Normal, Single edge
DGF65+	Figure 7.1.1	Pass	30.1.20	

Test specification:	**Walk test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.4 Walk test		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	30/1/2020		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1013hPa	**Relative Humidity:** 48 %
Remarks:			

Figure 7.1.1 Detection area and the tested points



Detection across the boundary ●
Detection inside the boundary ●

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 3214	HL 2948	HL 3716

Full description is given in Appendix A.

Test specification:	**Switch-on delay, time interval between signals and indication of detection**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.5 Switch-on delay, time interval between signals and indication of detection		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

7.2 Switch on delay and interval between signals test procedure and results

7.2.1 Test purpose

To prove that within **180** s of the power supply reaching its nominal voltage the detector meets all functional requirements.
To prove according to timings specified in EN 50131-2-2 (for each security grade for wire free detectors, 15s for wired detectors) the detector ability to provide 2 successive intrusion signals in the required time interval.

7.2.2 Test procedure

7.2.2.1 The detector was switched on and time when the detector was ready and performing his detection function was recorded also if this switch on delay was less than 180 seconds.

7.2.2.2 The detector was switched on and after stabilization, the BDT was used in order to record the maximum interval between 2 successive intrusion signals.

7.2.2.3 The results were documented as presented in Table 7.2.1.

7.2.3 Test results

Table 7.2.1 Test results

EUT model	**Stabilization time measurement**	**Interval between signals measurement**	**Stabilization time pass criteria**	**Interval between signals pass criteria for (wire / wire free)**
DG55+	10 s	*3 s	<180 s	<180 s
DG65+	10 s	*3 s	<180 s	<180 s
Remarks	*2 successive successful BDT were performed in set state			
Observation				**Verdict**
The stabilization time and interval between signals were found in accordance with standard requirements for all tested shock detectors.				**Pass**

Reference numbers of test equipment used:

HL 5933	HL 3460	HL 5413

Full description is given in Appendix A.

Test specification:	**Self-tests**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.6 Self-tests		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

7.3 Self-tests procedure and results

7.3.1 Test purpose

When security grade classification is more than Grade 2, to prove the detector ability to perform a self-test and within timing requirements to generate fault signals when the self-test is not passed.

7.3.2 Test procedure

7.3.2.1 The detector was mounted in its operational configuration and switched on.
7.3.2.2 Carry out the basic detection test to verify that the detector is operating.
7.3.2.3 The local passed self-tests signals were checked.
7.3.2.4 A short of PIR module was performed, fault signal generation was checked and recorded, as presented in Table 7.3.2.
7.3.2.5 The results were documented as presented in Table 7.3.1.

7.3.3 Test results

Table 7.3.1 Test results

Observation	Verdict
When the self-test was passed, no signals (tamper, intrusion or trouble) were generated. When the self-test was not passed due to a simulated fault condition, a trouble signal was generated and no other signals (tamper and intrusion) were generated.	**N/A**

NOTE:
The self-test check starts at detector's warm-up and then each _____ hour
Self-test duration is ___ to ___ sec.

Table 7.3.2 Test conditions

Event (*Self-test type*)	Procedure	Trouble Signal	Remark	Verdict
Local self- test pass	No PIR short			**N/A**
Local self-test fail	PIR short			**N/A**

Reference numbers of test equipment used:

Full description is given in Appendix A.

Test specification:	**Immunity to turbulent warm air flow test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.7.1 Immunity to air flow		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

7.4 Immunity to turbulent warm air flow test procedure and results

7.4.1 Test purpose

To prove the detector capability not to generate false alarm signals or messages when air is blown over the face of the detector.

7.4.2 Test procedure

7.4.2.1 The detector was installed on its support at a distance of 1 m ± 0.5 m above the fun heater source (variable speed fans) as presented in Photograph 7.4.1.

7.4.2.2 A thermocouple was mounted next to the detector window to monitor and assure that the air temperature in front of the detector reached 15°C more than the ambient temperature.

7.4.2.3 The airflow speed was adjusted such as the ascending air speed at the detector window was 0.7 m/s ± 0.2m/s.

7.4.2.4 The detector was set in the alarm mode. A BDT was performed in order to prove the detector ability to detect, and then the detector was rearmed.

7.4.2.5 The air temperature was increased from the ambient by 3°C/min to 15°C more than the ambient temperature, within about 5 min.

7.4.2.6 The air temperature was stabilized and dwelled at 15°C more than the ambient temperature for 4 min.

7.4.2.7 The heat was switched off and the temperature allowed to ramp down for 2 min, the ambient temperature was reached. This ambient temperature was maintained for 2 min.

7.4.2.8 Steps 5 to 7 were 4 times repeated while recording any false alarm. Test conditions are presented in Table 7.4.2.

7.4.2.9 The results were documented as presented in Table 7.4.1.

7.4.3 Test results

Table 7.4.1 Test results

Observation	Verdict
No false alarm noticed	**Pass**

Table 7.4.2 Test conditions

EUT model	Distance Fan- detector [m]	Air Temperature at detector window [°C]	Air speed at detector window [m/s]
DG55+	1	37 to 38	0.6 to 0.9
DG65+	1	37 to 38	0.6 to 0.9
1 Cycle conditions	2 min ambient, 4-5 min from ambient to 39°C, 4 min 39°C, 3-4 min return to ambient, Air speed constant 0.7 m/s (measured before and after test, detector status Armed)		
Settings/Remarks	PIR sensitivity: Default BDT passed before and after test No false alarm		

Test specification:	**Immunity to turbulent warm air flow test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.7.1 Immunity to air flow		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

Photograph 7.4.1 Setup general view

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 5578	HL 5577	HL 5413

Full description is given in Appendix A.

Test specification:	**Immunity to visible and near infrared radiation test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.7.2 Immunity to visible and near infrared radiation		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

7.5 Immunity to visible and near infrared radiation test procedure and results

7.5.1 Test purpose

To prove the detector capability not to generate false alarm signals when exposed to visible and near infrared radiation.

7.5.2 Test procedure

7.5.2.1 The detector was installed 0.5 m behind two clean 4 mm thick panes of glass, separated by 10 mm air gap on its support at a distance from the light source such as the illuminance measured with the calibrated light meter at the detector window was 2000 lux.

7.5.2.2 The light from the source was fallen on the detector through two clean 4 mm thick panes of glass, separated by 10 mm air gap. The test setup is presented in Photographs 7.5.1.

7.5.2.3 The detector was set in alarm mode, the room light was switched off and the halogen lamp was switched on.

7.5.2.4 The light source was scanned about a vertical axis such that the emitted light crossed the combined detector at a rate of about 0.5 m/s and cleared the other edge of the detector housing. Test conditions are presented in Table 7.5.2.

7.5.2.5 A total of 10 scans were performed across the detector. The detector was monitored for false alarms and the results recorded in Table 7.5.1.

7.5.3 Test results

Table 7.5.1 Test results

Observation	Verdict
No false alarm noticed.	**Pass**

Table 7.5.2 Test conditions

EUT model	Light intensity [lx]	Distance Light source-detector [m]
DG55+	2000	4.7
DG65+		
Settings/Remarks	PIR sensitivity: Default sensitivity, no false alarms	

Test specification:	**Immunity to visible and near infrared radiation test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.7.2 Immunity to visible and near infrared radiation		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

Photograph 7.5.1 Setup general view

DG55+

DG65+

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 3651	HL 2985	HL 5551

Full description is given in Appendix A.

Test specification:	**Resistance to and detection of unauthorized access to the inside of the detector through covers and existing holes test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.1 Resistance to and detection of unauthorized access to the inside of the detector through covers and existing holes		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	19/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1008hPa	**Relative Humidity:** 48 %
Remarks:			

7.6 Resistance to and detection of unauthorized access to the inside of the detector through covers and existing holes test procedure and results

7.6.1 Test purpose

To prove that it is impossible to have access inside the detector using some common objects like presented in Table 7.6.2, and if the access is attained, a tamper signal is generated.

7.6.2 Test procedure

7.6.2.1 The detector was mounted on the wood plate using the mounting screws specified by the manufacturer.

7.6.2.2 Attempts to gain access to the detector internal components were made in order to prove that the internal tamper cannot be deactivated without a tamper signal generation. Test conditions are presented in Table 7.6.2.

7.6.2.3 The results were documented as presented in Table 7.6.1.

7.6.3 Test results

Table 7.6.1 Test results

Observation	Verdict
A tool (screwdriver) is required for normal access inside the detector. No access (without causing visible damage) inside the detector cover attained using objects presented in Table 7.6.2. Once the cover is removed the internal detector tamper is activated.	**Pass**

Table 7.6.2 Test conditions

EUT model	Object	Dimensions
1) DG55+ 2) DG65+	Penknife	-
	Wire Probe	Thickness 1mm
	Screw driver	4x1mm Thickness
	Paper	-
	Steel probe	100 x 7 x 1mm
	Matches	-

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 4548	HL 2043

Full description is given in Appendix A.

Test specification:	**Detection of removal from the mounting surface test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.3 Detection of removal from the mounting surface		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

7.7 Detection of removal from the mounting surface test procedure and results

7.7.1 Test purpose

To prove the detector ability to generate a tamper signal when without opening it, the detector is removed from the mounting surface.

7.7.2 Test procedure

7.7.2.1 The detector was placed on the mounting position without the fixing screw using only the back tamper device screw if applicable.

7.7.2.2 The detector was switched on and slowly raised from the surface while attempting to reach and neutralize the back tamper with a steel strip (100 mm to 200 mm long by 10 mm to 20 mm wide and 1 mm thick) before the tamper is activated.

7.7.2.3 The results were documented as presented in Table 7.7.1.

7.7.3 Test results

Table 7.7.1 Test results

Observation	Verdict
The back tamper signal recorded before access could be gained to it, see Table 7.7.2.	**N/A**

Table 7.7.2 Test conditions

EUT model	Steel Strip dimensions length x width x thickness [mm]	Observation	Verdict
			N/A

Reference numbers of test equipment used:

Full description is given in Appendix A.

Test specification:	**Resistance to or detection of re-orientation of adjustable mountings test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.3 Resistance to or detection of re-orientation of adjustable mountings		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

7.8 Resistance to or detection of re-orientation of adjustable mountings test procedure and results

7.8.1 Test purpose

To prove the detector resistance to attempts to re orientate it when is mounted using adjustable bracket.

7.8.2 Test procedure

7.8.2.1 The detector was mounted per user guide instructions

7.8.2.2 The detector was switched on and a torque of 2 Nm (according to Security Grade classification at Table 4) was applied.

7.8.2.3 The angle of detector rotation was checked not to be more than 5°, also if a tamper signal generation was noticed. The test results are presented in Table 7.8.1.

7.8.3 Test results

Table 7.8.1 Test results

EUT	**Applied moment [NM]**	**Angle of reorientation point [°]**	**Remarks**
	____	<5	Tested for Grade ____
Observation			**Verdict**
Reorientation angle, less than 5°. No tamper signal.			**N/A**

Reference numbers of test equipment used:

Full description is given in Appendix A.

Test specification:	**Resistance to magnetic field interference test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.4 Immunity to magnetic field interference		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

7.9 Immunity to magnetic field interference test procedure and results

7.9.1 Test purpose

To prove the detector ability to withstand the magnetic field interference without any degradation of intrusion or tampering detection.

7.9.2 Test procedure

7.9.2.1 The detector was mounted in its operating configuration as specified by the manufacturer.

7.9.2.2 180 seconds were allowed after switching on the detector.

7.9.2.3 A single pole of the standard magnet was placed on each accessible surface of the detector.

7.9.2.4 The correct generation of alarm, tamper and fault signals was verified. Test conditions are presented in Table 7.9.2.

7.9.2.5 The test was repeated for the other magnet pole.

7.9.2.6 The results were documented as presented in 7.9.1.

7.9.3 Test results

Table 7.9.1 Test results

Observation	Verdict
No influence of the magnetic field interferences with the normal detector functioning as regarding tamper and detection (BDT) was noticed.	**Pass**

Table 7.9.2 Test conditions

EUT model	MAGNET CHARACTERISTICS	Detector face and description	Event
DG55+	Type 1 (1275 mT)	On any accessible detector's surface (2 magnet poles)	No tamper or intrusion detection inhibition (BDT passed)
DG65+			

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 3665

Full description is given in Appendix A.

Test specification:	**Detection of detector masking test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.5 Detection of detector masking		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

7.10 Detection of detector masking test procedure and results

7.10.1 Test purpose

When security grade classification is more than Grade 2, to prove the detector ability to generate a fault signal when different materials obstruct the detector window.

7.10.2 Test procedure

7.10.2.1 The detector was mounted in its operating configuration and switched on.

7.10.2.2 The different materials were applied at the detector window with the speed and distance as presented in Table 7.10.2.

7.10.2.3 The fault signal generation within 180 s was checked.

7.10.2.4 The results were documented as presented in Table 7.10.1.

7.10.3 Test results

Table 7.10.1 Test results

Observation	Verdict
For each different material appliance as presented in Table 7.10.2, the detector generated a masking signal within 180 s. One's masking signal is generated, it remain for as long as the masking condition is present. To restore masking signaling, masking material was removed and BDT performed.	**N/A for Grade 2**

Test specification:	**Detection of detector masking test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.5 Detection of detector masking		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

Table 7.10.2 Test conditions

Material number	Material	Procedure/Remarks	Verdict
1	A matte finish black paper sheet with the following characteristics : • Diffuse Reflectance in the NIR shall be between 4 and 6 % when tested perpendicular to the paper surface. • Black paper shall be 0,15 mm thick minimum. • The paper coloured throughout the thickness (not surface coloured)	**a)** slid across in 1 s and held in front of the face of the detector from one side, at a distance of 0 mm. **b)** slid across in 1 s and held in front of the face of the detector from one side, at a distance of 50 mm.	N/A
2	2 mm thick aluminum sheet, unpainted and untreated	**c)** slid across in 10 s and held in front of the face of the detector from one side, at a distance of 0 mm. **d)** slid across in 10 s and held in front of the face of the detector from one side, at a distance of 50 mm.	N/A
3	3 mm thick clear gloss acrylic sheet		N/A
4	White polystyrene foam sheet with dimensions: 30 mm thickness with a tolerance of ± 50 %		N/A for Grade 2
5	Self-adhesive clear vinyl sheet with dimensions: 0,1 mm thickness with a tolerance of ± 40 %	Applied directly to the front of the detector.	N/A
6	Colourless medical plastic skin spray, polyurethane polymer based	Apply directly to the front face of the detector.	N/A
7	Clear gloss lacquer, brush applied		N/A

Reference numbers of test equipment used:

Full description is given in Appendix A.

Test specification:	**Immunity to false masking signal test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.6 Immunity to false masking signal		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

7.11 Immunity to false masking signal test procedure and results

7.11.1 Test purpose

When security grade classification is more than Grade 2, to prove the detector immunity to false masking signals when SWT walk across the detector.

7.11.2 Test procedure

7.11.2.1 The detector was mounted in its operating configuration and switched on.

7.11.2.2 Immunity to false masking signals was checked by performing a SWT at 1 m distance in front of detector with SWT speed of 1 m/s as presented at figure 7.11.1 and 7.11.2.

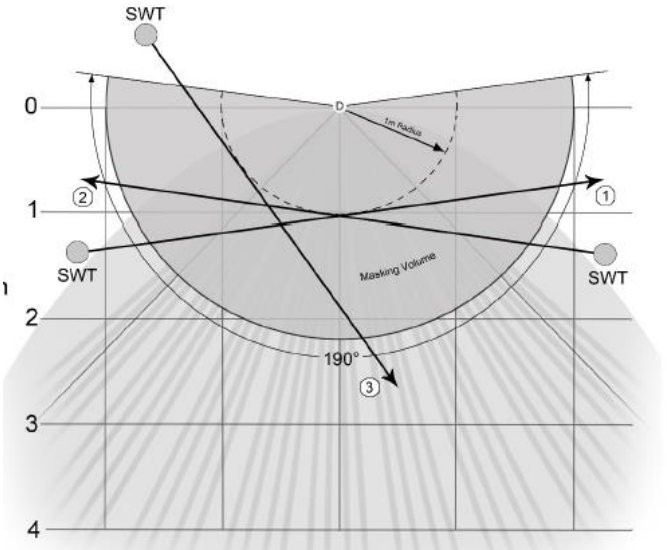
7.11.2.3 The results were documented as presented in Table 7.11.1.

7.11.3 Test results

Table 7.11.1 Test results

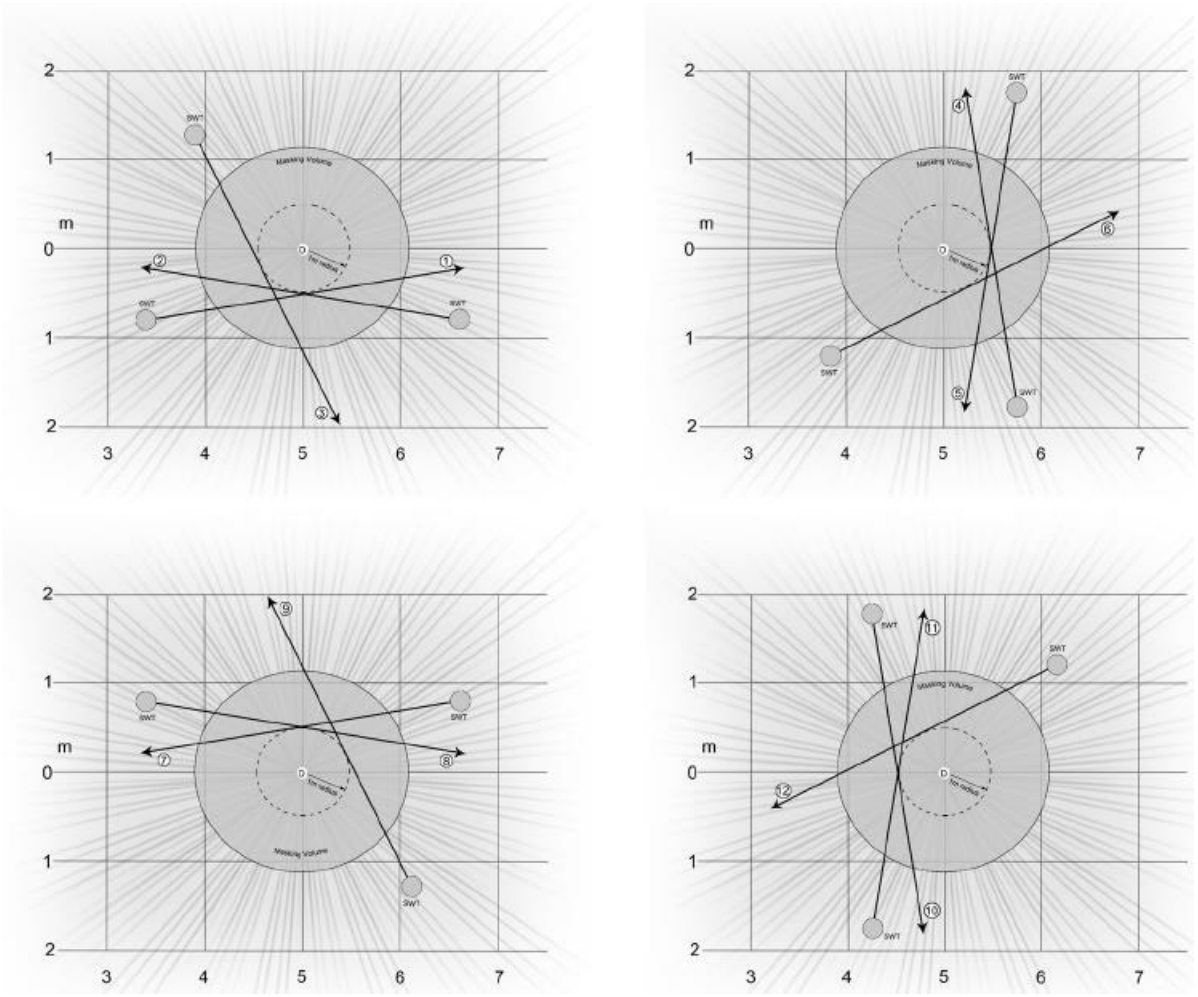
Observation	Verdict
Following the SWT walk test at 1 m/s, 1 m in front of detector (transversal) the EUTs proved immune to false masking signals.	**N/A for Grade 2**

Figure 7.11.1 Immunity to False Masking signals for detectors with a coverage angle less than or equal 180˚



Test specification:	**Immunity to false masking signal test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.8.6 Immunity to false masking signal		
Test mode:	Compliance	**Verdict:**	N/A
Test Date:			
Atmospheric conditions during the test:	**Temperature:**	**Air Pressure:**	**Relative Humidity:**
Remarks:			

Figure 7.11.2 Immunity to False Masking signals for detectors with a 360° coverage angle



Reference numbers of test equipment used:

Full description is given in Appendix A.

Test specification:	**Detector current consumption**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.2 Detector current consumption		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

7.12 Detector current consumption

7.12.1 General

This test was performed to measure the current consumption at the EUT power port.

7.12.2 Test purpose

7.12.2.1 The detector's quiescent and maximum current consumption shall not exceed the figures claimed by the manufacturer at the nominal input voltage.

7.12.3 Test procedure

7.12.3.1 The EUT was connected in series with Amperemeter. The voltmeter was connected across the EUT power input terminals. The voltage was set to the nominal value. The EUT was energized for 180 s and the EUT performance was checked.

7.12.3.2 The EUT was p[laced in unset/standby mode. The current and voltage were measured.

7.12.3.3 The measurements were repeated in alert/set mode.

7.12.3.4 The test results were recorded in Table 7.12.1

7.12.4 Test results

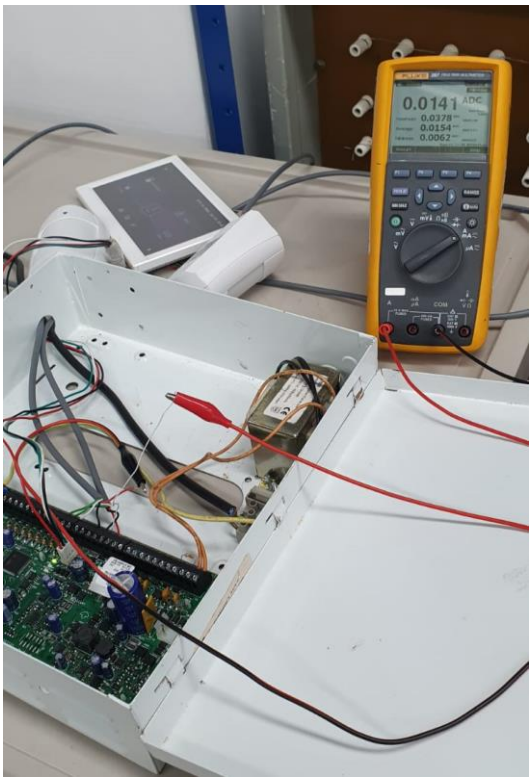
Table 7.12.1 Test results

EUT	Security Grade	Alert/set mode				Unset/standby mode			
		Technical specification		Measured		Technical specification		Measured	
		$I_{declared}$, mA	I_{limit}*, mA	I, mA	Verdict	$I_{declared}$, mA	I_{limit}*, mA	I, mA	Verdict
DG55+	2	300	360	300	Pass	15	18	14	Pass
DG65+	2	300	360	300	Pass	15	18	14	Pass

* $I_{limit} = I_{declared} + 20\%$

Test specification:	**Detector current consumption**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.2 Detector current consumption		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

Photograph 7.12.1 - Setup for current consumption measurements



Reference numbers of test equipment used:

HL 2774	HL 3460	HL 5201

Full description is given in Appendix A.

Test specification:	**Slow input voltage change and input voltage range limits**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.3 Slow input voltage change and input voltage range limits		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

7.13 Slow input voltage change and input voltage range limits

7.13.1 General

This test was performed to verify the EUT immunity to slow input voltage change (rise) and input voltage range limits. The EUT voltage parameters are shown in 7.13.1

7.13.1.1 Test procedure part I

7.13.1.2 The supply voltage was raised from zero by 10 mV at a rate of $0.1Vs^{-1}$ until the nominal V-25% or minimum voltage specified by manufacturer (whichever is lower) was reached. The EUT was allowed 180 s for stabilization. The BDT was carried out. The intrusion signals and fault signals or messages were monitored.

7.13.1.3 The test results were recorded in Table 7.13.1.

7.13.1.4 Test procedure part II

7.13.1.5 The input voltage was reset to the nominal V+25% or maximum voltage specified by manufacturer (whichever is greater). The EUT was allowed 180 s for stabilization. The BDT was carried out. The intrusion signals and fault signals or messages were monitored.

7.13.1.6 The test results were recorded in Table 7.13.2

7.13.1.7 Test procedure part III

7.13.1.8 The input voltage was reset to the nominal voltage. The voltage was lowered from the nominal voltage by 10 mV at a rate of $0.1Vs^{-1}$ until fault signal or massage was generated. The BDT was carried out. The fault signals were monitored.

7.13.1.9 The test results were recorded in Table 7.13.2

7.13.2 Test results

Table 7.13.1 EUT voltage parameters

U_{nom}, V	U_{min} V	U_{max} V	U_{nom} - 25% V	U_{nom} + 25% V
12	9.6	16.0	9	15

Test specification:	**Slow input voltage change and input voltage range limits**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.3 Slow input voltage change and input voltage range limits		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

Table 7.13.2 Slow input voltage change and input voltage range limits test results

EUT	EUT performance description during the test			Verdict		
	Part I	**Part II**	**Part III**	**Part I**	**Part II**	**Part III**
DG55+	The EUT started to operate at 9.0 V. The BDT caused an intrusion signal.	Not reduced performance. The BDT caused an intrusion signal.	NP (fault signal was generated at 7V.)	Pass	Pass	Pass
DG65+	The EUT started to operate at from 9.0 V. The BDT caused an intrusion signal.	Not reduced performance. The BDT caused an intrusion signal.	NP (fault signal was generated at 7V.)	Pass	Pass	Pass

Reference numbers of test equipment used:

HL 2774	HL 3460	HL 5201	HL 2178

Full description is given in Appendix A.

Test specification:	**Input voltage ripple**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.4 Input voltage ripple		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	20/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1009hPa	**Relative Humidity:** 48 %
Remarks:			

7.14 Input voltage ripple

7.14.1 General

This test was performed to verify the EUT immunity to input voltage ripple. The EUT voltage parameters are shown in Table 7.14.1

7.14.1.1 Test procedure

7.14.1.2 The EUT was connected to programmable power supply with appropriate output impedance capable of generating a sinusoidal voltage of V±10%

7.14.1.3 superimposed of the EUT nominal voltage at the frequency of 100 Hz. The EUT was allowed 180 s for stabilization

7.14.1.4 The sinusoidal voltage was applied for 180 s at 100 Hz. It was observed that no unintentional signals and messages were generated by the EUT. The BDT was carried out. It was observed that intrusion signals or fault signals or messages were generated by the EUT.

7.14.1.5 The test results were recorded in Table 7.14.2.

7.14.2 Test results

Table 7.14.1 EUT voltage parameters

U_{nom}, V	U_{nom} - 10% V	U_{nom} + 10% V
12	10.8	13.2

Table 7.14.2 EUT voltage parameters

EUT	Security Grade	EUT performance description during the test	EUT performance description during the BDT	Verdict
DG55+	2	No unintentional signals and messages were generated by the EUT.	An intrusion signal was generated by the EUT.	Pass
DG65+	2	No unintentional signals and messages were generated by the EUT.	An intrusion signal was generated by the EUT.	Pass

Reference numbers of test equipment used:

HL 5538	HL 5548	HL 2274	HL 3460

Full description is given in Appendix A.

Test specification:	**Input voltage step change**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.5 Input voltage step change		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	27/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1011hPa	**Relative Humidity:** 46 %
Remarks:			

7.15 Input voltage step change

7.15.1 General

This test was performed to verify the EUT immunity to input voltage step change. The EUT voltage parameters are shown in Table 7.15.1

7.15.1.1 Test procedure

7.15.1.2 The EUT was connected to programmable power supply limited to a maximum current of 1 A, capable of switching from the nominal supply voltage to the nominal voltage V ± 25% in 1 ms.

7.15.1.3 The test was started at the nominal voltage. The EUT was allowed 180 s for stabilization. The BDT was carried out. The intrusion signals and fault signals or messages were monitored.

7.15.1.4 The BDT was repeated. The step change test was repeated for the voltage range from the nominal supply voltage V to V - 25%.

7.15.1.5 The test results shown in table 7.15.1

7.15.2 Test results

Table 7.15.1 EUT voltage parameters

U_{nom}, V	U_{nom} - 25% V	U_{nom} + 25% V
12	9	15

Table 7.15.1 Input voltage step change test results

EUT	EUT performance description during the test		Verdict
	U_{nom} to U_{nom}+25% voltage range	U_{nom} to U_{nom}-25% voltage range	
DG55+	No unintentional signals and messages were generated by the EUT.	No unintentional signals and messages were generated by the EUT.	Pass
DG65+	No unintentional signals and messages were generated by the EUT.	No unintentional signals and messages were generated by the EUT.	Pass

Reference numbers of test equipment used:

HL 5538	HL 5548	HL 2274	HL 3460

Full description is given in Appendix A.

Test specification:	**Total loss of power supply**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.9.6 Total loss of power supply		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	21/1/20		
Atmospheric conditions during the test:	**Temperature:** 23 ºC	**Air Pressure:** 1010hPa	**Relative Humidity:** 46 %
Remarks:			

7.16 Total loss of power supply

7.16.1 General

This test was performed to verify the EUT immunity to the total loss of power supply.

7.16.1.1 Test procedure

7.16.1.2 The EUT was connected in series with the amperemeter. The voltmeter was connected across the EUT power input terminals. The voltage was set to the nominal value. The EUT was energized for 180 s and the EUT performance was checked.

7.16.1.3 The EUT was disconnected from the power supply. Intrusion and fault signals and messages were observed.

7.16.1.4 The test results were recorded in Table 7.16.1

7.16.1.5 The test results were recorded in Table 7.16.1

7.16.2 Test results

Table 7.16.1 Total loss of power supply test results

EUT	Security Grade	Intrusion signal	Fault signal	Verdict
DG65+	2	Generated by EUT	Generated by EUT	Pass
DG55+	2	Generated by EUT	Generated by EUT	Pass

Reference numbers of test equipment used:

HL 5548	HL5201	HL 2274	HL 3460

Full description is given in Appendix A.

Test specification:	**Marking, identification and documentation test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.11 Marking, identification and documentation		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	21/1/2020		
Atmospheric conditions during the test:	**Temperature:** 24ºC	**Air Pressure:** 1010hPa	**Relative Humidity:** 48%
Remarks:			

7.17 Labels and documentation test procedure and results

7.17.1 Test purpose

To check and confirm that the customer user manual and labels are in accordance with EN 50131-1 and EN 50131-2-2 requirements.

7.17.2 Test procedure

7.17.2.1 The available last version of the user manual was read and compared with the product characteristics and standard requirements as summarized in Table 7.17.2.

7.17.2.2 The results were documented as presented in Table 7.17.1.

7.17.3 Test results

Table 7.17.1 Test results

Observation	Verdict
Labels and documentation requirements fulfilled.	**Pass**

Test specification:	**Marking, identification and documentation test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.11 Marking, identification and documentation		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	21/1/2020		
Atmospheric conditions during the test:	**Temperature:** 24ºC	**Air Pressure:** 1010hPa	**Relative Humidity:** 48%
Remarks:			

Table 7.17.2 Marking and documentation requirements

EUT: **1.** DG55+ **2.** DG65+		**Documents:** DG5565+-EI02.pdf				
Standard/ Section	**Requirement**	**Verdict**				**Remark**
		C	**NC**	**NA**	**NT**	
EN 50131-2-2/ 5.1 EN 50131-1/ 15 Marking/ Identification Labeling	Name of manufacturer or supplier	✓				See Photograph 5.1.11
	Manufacturer's model number or identifier	✓				
	Date of manufacture or batch number or serial number	✓				
	Standard to which the component claims compliance	✓				
	Security grade	✓				
	Environmental class	✓				
EN 50131-2-2/ 5.2 EN 50131-1/ 14 Documentation	A list of all options, Functions, inputs or messages, indication and relevant characteristics	✓				
	The manufacturer's diagram of the detector and its claimed detection boundary showing top and side elevations at the claimed nominal mounting height, superimposed upon a scaled 2 m grid. The size of the grid shall be directly related to the size of the claimed detection boundary.	✓				
	The claimed nominal mounting height, and the effect of changes to it on the claimed detection boundary	✓				
	The effect of adjustable controls on the detector's performance or on the claimed detection boundary including at least the minimum and maximum settings;	✓				
	Any disallowed field adjustable control settings or combinations of these			✓		No such No such adjustable control settings
	Any specific settings needed to meet the requirements of this European Standard at the claimed grade			✓		No such setting
	any non-compliant detection settings shall be identified			✓		

Test specification:	**Marking, identification and documentation test**		
Test procedure:	EN 50131-2-2 TEST METHOD: 6.11 Marking, identification and documentation		
Test mode:	Compliance	**Verdict:**	PASS
Test Date:	21/1/2020		
Atmospheric conditions during the test:	**Temperature:** 24ºC	**Air Pressure:** 1010hPa	**Relative Humidity:** 48%
Remarks:			

	Where alignment adjustments are provided, these shall be labelled as to their function			✓		No such adjustments
	A warning to the user not to obscure partially or completely the detector's field of view	✓				
	Manufacturer quoted nominal operating voltage and maximum quiescent power consumption at that voltage	✓				
	Any special requirements needed for detecting a 50 % reduction in range, where provided	✓				No such special requirements
	Name of manufacturer or supplier	✓				
	Description of equipment	✓				
	Clear and concise documentation	✓				
	Standard to which component claims compliance	✓				
	If certified, name or mark of the certification body	✓				
	Security grade	✓				
	Environmental class	✓				

C=compliant; NC= non-compliant; NA = not applicable; NT= not tested

8 APPENDIX A Test equipment and ancillaries used for tests

For PARIAS_EN 50131-2-2.36331

HL No	Description	Manufacturer	Model	Ser. No.	Due Cal./Check
2774	HygroThermometer, Min/Max Memory	Delta TRAK	13301	NA	11-Aug-20
3460	Precision Barometer, 870 - 1050 hPa	LUFFT Mess- und Regeltechnik GmbH	DKD-K-26701	100469	05-Jun-20
5578	Air Flow	PLASTROCHEM CO., LTD.	NA	NA	22-Aug-20
5577	Hot Wire Anemometer	DIGICON	DA-47	R.035014	19-Oct-20
1594	Data Logger Hydra Series II	Fluke	2635A	7710004	16-Jan-21
3651	Halogen lamp 12V VW H4 bulb	Hermon Laboratories	VW H4 (bulb)	001	03-Feb-20
2985	Glass panes support 0.5x0.5 m 2 glass panes of 4 mm, 10 mm air gap	Hermon Laboratories	GP500	2985	28-Oct-20
5551	Digital Lux meter	Tes Electrical Electronic Corp.	TES 1332A	140004545	11-Jun-20
2178	Digital Programmable Power Supply 80V/75A, DC	Xantrex	XDC 80-75	76235	26-Feb-20
3214	Precision Infrared Thermometer	Fluke	Fluke-574	9394-014	21-Feb-20
2948	Metronome, (40-208) beat/min.	Wittner Gmbh	MS-1	2948	19-Aug-20
3716	Orientation Device, per. STD EN50131-2-2, EN50131-2-4	Hermon Laboratories	ODHL45	NA	26-Jun-20
5413	Digital Stopwatch	Shenzhen Huibo Industrial & Trading Co. Ltd.	PC396	NA	19-Aug-20
4548	Tamper test tool set. EN50131-3:2009 STD	Hermon Laboratories	TTT-1	NA	24-Dec-20
1814	Caliper, 150 mm	Mitutoyo	150	367	01-Jul-21

Not required for PARIAS_EN 50131-2-2.54496

9 APPENDIX B Test laboratory description

Testing laboratory and location	Tests were performed at Hermon Laboratories, which is a fully independent, private safety, EMC, telecommunication and environmental testing facility. Hermon Laboratories is accredited by American Association for Laboratory Accreditation (A2LA, USA) according to ISO GUIDE 17025 (certificate No. 839.01) and accredited as NCB. The safety/Security laboratory has gained numerous certifications and accreditations from National Certification Bodies including UL, ETL, TUV, MET, SII, Telefication and others, and provides solution for global safety certification in various product categories. Address: P.O. Box 23, Binyamina 30500, Israel. Telephone: +972 4628 8001 Fax: +972 4628 8277 e-mail: mail@hermonlabs.com website: www.hermonlabs.com Person for contact: Mr. Ilan Benihas, Head of Department, Product Safety.

10 APPENDIX C Abbreviations and acronyms

°C	degree Celsius
cm	centimeter
dB	decibel
EUT	equipment under test
g_n	acceleration due to gravity
HL	Hermon Laboratories
hPa	hectopascal
Hz	Hertz
kg	kilogram
m	meter
min	minute
ms	millisecond
oct	octave
pH	acidity scale
RMS	root mean square
RH	relative humidity
s	second

11 APPENDIX D Tests specifications

1.	EN 50131-1:2006+A1:2009+A2:2017+A3:2020	Alarm systems- Intrusion and hold-up systems Part 1: System requirements
2.	EN 50131-2-2:2021	Alarm systems - Intrusion and hold-up systems - Part 2-2: Requirements for passive infrared detectors

12 APPENDIX E Measurement uncertainties

Parameter	Uncertainty estimation at 95% confidence	
	Calculated	Limit
Air pressure	± 0.8 mBar	± 4.1 mBar
High temperature	± 1.2°C	± 2°C
Humidity	± 2.86 %	± 5.0 %
Air velocity	5 %	10 %
Distances measurement	± 1.3%	± 10%
Impact energy measurement	± 6.1%	± 10%
Illuminance	± 5.6%	± 10%

Note: Pass/Fail decision was based on nominal values

END OF TEST REPORT