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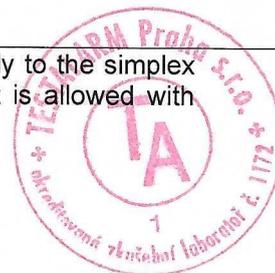
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TEST REPORT

OF ALARM INTRUSION SYSTEMS COMPONENT TESTS

Test Report number: 4315 9652	Issue No.: 1	
Ref. No.: TAP- 42/2019	Number of pages: 24 including annex No.1	
	Annexes: No. 1: Photos No. 2: Test Report No. 913080-01/01 (EZÚ) No. 3: Test Report No. EΔ 111-15 (NTUA) – EMC No. 4: Installation instruction	
Customer:	SIGMA SECURITY S.A.	Kód: 733
Address:	5, Ethnarhou Makariou Str. 173 43 Ag. Dimitrios, Athens/Hellas, Greece	
Product:	Outdoor Self Powered Sirens	
Type :	IRIS PLUS	
Serial (batch) number :	5041002221019000001, 5041002221019000002, 5041002221019000003, 5041002221019000004, 5041002221019000005, 5041002270819000001	
Hardware :	IRIS PLUS V1.8	
Software :	V1.8	
Manufacturer:	SIGMA SECURITY S.A.	
Documentation:	Installation instruction	
Number of pieces:	6	
Date of receive for testing:	30. 9.2019	
Date implementation of tests:	30. 9.2019 to 23. 1.2020	
Tested :	R. Moulis: <i>Moulis</i>	J. Krejčí: <i>Krejčí</i>
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Date of issue :	23. 1.2020	

Declaration: The results of test checks reported in this Test Report refer exclusively to the simplex tested and described in the Report itself. Only full reproduction of the Test Report is allowed with written permission of TESTALARM Praha Ltd.



Measuring equipment

Testing devices	Serial, identification number
Power supply VLP-2403	M 25
Multimeter UT71A	M 3
Stopwatch HS-10W	M 5
Terminators and installation preparative	---
Oscilloscope MS08102T	M 6
Digital anemometer AM 4203	M 23
Digital hygrometer/thermometer/barometer D 4141	M 11
Mechanical shock testing equipment RATES	Z2
Instruments set for protection overcoming	K1
Climatic testing chamber MEMMERT CTC 256	M22
Sound level meter Testo 816-1	M 10
Tape measure 3m comfort	M15
Spring hammer F 22.50	M 21
Digital sliding scale PROTECO 150/0,01	M 14

For the each of measured value, which are stated in this Test Report the following uncertainty of measurement correspond to:

Current $I = \pm 0,1 \mu\text{A}$ (current range to 100 μA)	Length $l = \pm 1 \text{ mm}$
Current $I = \pm 0,1 \text{ mA}$ (current range to 100 mA)	Thickness = $\pm 0,02 \text{ mm}$
Current $I = \pm 0,07 \text{ A}$ (current range to 10 A)	Electromagnetic fields intensity $H = \pm 3,5 \text{ dB}\mu\text{V}$
Voltage $U = \pm 0,01 \text{ V}$ (voltage range to 20 V)	Temperature $T = \pm 1 \text{ }^\circ\text{C}$
Voltage $U = \pm 0,5 \text{ V}$ (voltage range 400 V)	Humidity = $\pm 2 \%$
Time $t = \pm 0,2 \text{ s}$	Light intensity = $\pm 20 \text{ lx}$
Resistance $R = \pm 0,0006 \Omega$ (resistance range to 4 Ω)	Magnetic remanence $B = \pm 50 \text{ mT}$
Resistance $R = \pm 20 \Omega$ (resistance range above 4 Ω)	Air flow velocity = $\pm 0,2 \text{ m/s}$
Acoustic power = $\pm 5 \text{ dB}$	Frequency = $\pm 60 \text{ Hz}$
Performance = $\pm 1 \text{ dB}$	

Measurement uncertainty

Mentioned extended measurement uncertainty is the product of standard measurement. Uncertainty and expansion coefficient $k = 2$, which for normal collocation conform to overage probability 95 %. Standard measurement uncertainty was intended according to EA 4/16 (eventually EA-4/02).

Annotation:

EUT - Equipment Under Test

RFT - Reduced Functional Test – according to ČSN EN 50131-4, Art. 6.2.

Criteria used according to Chapter 9, ČSN EN 61000-4-x:

A - The product continues to operate as intended.

B - Degradation of the product performance occurs, but normal operation resumes at the end of the test with no data loss.

C - The product either stops functioning or its performance degrades and does not recover after the test without intervention.

D - The product unrenewable stops functioning or its performance degrades

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1. Introduction

The tests of the outdoor siren IRIS PLUS were performed on the basis of contract TAP-42/2019 with SIGMA SECURITY S.A. The outdoor siren is used to acoustic signalization. The siren is wired and powered by 12 V DC. The device can be backed up from (battery 12V / 1,3 Ah or 2,3Ah).
The EUTs were tested in configuration which it see below.

2. Set of components submitted for tests:

EUT No. 1 to 6			
Type	Description	HW	FW
IRIS PLUS	Outdoor Self Powered Sirens	IRIS PLUS V1.8	V1.8

3. Overview of the tests

Accredited tests were carried out according to ČSN EN*) 50131-1 ed. 2:2007 + A1:2010 +A2:2017, ČSN EN 50131-4 ed. 2:2019, **for security grade 3, for environmental class IV** according to ČSN EN 50130-5 ed. 2:2012 and **EMC** according to ČSN EN 50130-4 ed. 2:2012.

*) **Notice:** ČSN EN is Czech version of European Standard (EN)

4. Tests of warning and optical signalling devices (ČSN EN 50131-4 ed.2), Test TA No. 7

Art. 6. Test section

All tests were performed at the manufacturers specified nominal supply voltage and verified the correct operation of the siren according to manual provided by the manufacturer. All the test parameters specified shall carry a general tolerance of $\pm 10\%$ unless otherwise stated.

Art. 6.2.1 General conditions

The general atmospheric conditions in the measurement and tests laboratory were in the range:

Temperature:	15 °C – 35 °C
Relative humidity:	25 % – 75 %
Air pressure:	86 kPa – 106 kPa

Art. 6.2.2, 6.2.3 General mounting, General testing procedures

The siren was mounted in accordance with the manufacturer's installation manual, the manufacturer's specified parameters were compared with the requirements of ČSN EN 50131-4 ed.2.

Test schedule and test results according to ČSN EN 50131-4 ed.2: 2019, Chapter 6.

Art.	Test	Result*)				Remarks and document reference	
		P	F	NA	NT	Requirement ČSN EN 50131-4 Art.	Test TA No.
6.3	Reduced functional test	√				5.1	7
6.4.1	Response to trigger command	√				5.1.1	7
6.4.2	Response to loss of trigger command interconnection integrity	√				5.1.1	7
6.4.3	Maximum sound duration limit	√				5.1.3	7
6.5	Acoustic output level	√				5.1.2	7
6.6.1	Opening by normal means	√				5.2.1	7
6.6.2	Protection	√				5.2.1	7
6.6.3	Detection of opening by normal means	√				5.2.2	7
6.6.4	Detection of removal from mounting	√				5.2.2	7
6.6.5	Detection of penetration			√		5.2.2	Not mandatory for Grade 3
6.7.1	Operating voltage range and current consumption	√				5.6.2.1	7
6.7.2	Slow rise of remote power source voltage	√				5.6.2.2	7
6.7.3	Remote power source voltage step change	√				5.6.2.3	7
6.7.4	Storage device standby time	√				5.6.3.2	7
6.7.5	Storage device operating time	√				5.6.3.1	7
6.7.6	Storage device recharge rate	√				5.6.3.3	7
6.7.7	Loss of remote power	√				5.6.3.4	7
6.7.8	Remote power short circuit protection	√				5.6.3.5	7
6.7.9	Storage device monitoring – Low residual energy	√				5.7.1.2.1	7
6.7.10	Storage device monitoring – Failure	√				5.7.1.2.2	7
6.8	Marking	√				5.8	43
6.9	Documentation	√				5.9	43
6.10	Environmental	√					See next table below

*) P -Pass, F – Fail, NA - Not Applicable, NT - Not Tested

The plan and test results according to ČSN EN 50131-4 ed.2 for environment class IV

Art.	Test	Result*)				Remarks and document reference	
		P	F	NA	NT	Requirement of ČSN EN 50130-5	Verified (No. of the test TA)
6.9 Tab.11	Dry heat – operational	√				Chapter 8	18
-,-	Dry heat – endurance	√				Chapter 9	18
-,-	Cold – operational	√				Chapter 10	19
-,-	Damp heat (steady state) – operational			√		Chapter 12	-
-,-	Damp heat (steady state) – endurance	√				Chapter 13	22
-,-	Damp heat (cyclic) – operational	√				Chapter 14	23
-,-	Damp heat (cyclic) – endurance	√				Chapter 15	24
-,-	Water ingress – operational	√				Chapter 16	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	Sulphur Dioxide (SO ₂)– endurance	√				Chapter 17	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	Salt mist (cyclic) – endurance	√				Chapter 18	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	Mechanical shock – operational	√				Chapter 19	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	Impact – operational	√				Chapter 20	26
-,-	Vibration (sinusoidal) – operational	√				Chapter 22	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	Vibration (sinusoidal) – endurance	√				Chapter 23	Test Report No.: 913080-01/01 (EZÚ), Annex 2
-,-	EMC – operational	√				ČSN EN 50130-4	Test report No EA 111-15 (NTUA), Annex No.3

*) P -Pass, F – Fail, NA - Not Applicable, NT - Not Tested

Requirements (selection) and results according ČSN EN 50131-1 ed.2 :2007

Section	Requirement	Result*)				Remarks and document reference
		P	F	NA	NT	Verified (number of the test TA)
4	System functions	√				7
5	System components	√				7
6	Security grading	√				7
7	Environmental Classification	√				Environmental class IV verified according to ČSN EN 50130-5 ed.2
8	Function requirements					
8.1.1	Intruder detection			√		-
8.1.3	Tamper detection	√				7
8.7.1	Tamper protection	√				7
8.7.2	Tamper detection	√				7
9	Power supply					
9.1	Types of power supply	√				Verified according to ČSN EN 50131-4 ed.2 Tab. 8, Type Z
9.2	Requirements	√				7
10	Operational reliability					
10.1	I&HAS components	√				7
11	Functional reliability	√				7
12	Environmental requirements	√				Tested according to ČSN EN 50131-4 ed.2, Article 6.9, Tab. 11 for environmental class IV.
12.1	Electromagnetic compatibility	√				Test report No EΔ 111-15 (NTUA), Annex No.3
14	Documentation	√				43
15	Marking/Identification	√				43

*) P -pass, F – fail, NA- not applicable, NT- not tested

Art. 6.3 Reduced functional test

Used EUT No. 1 to 6

Test procedure:

To check that the warning device is operational before undergoing other tests and that it continues to function after these tests (e.g. shock, environmental and EMC tests, etc.)

The general test conditions of clause 6.2.1 and stimuli of clause 6.3.4 were applied. The response to the stimuli of alarm signal and acoustic output were monitored.

Pass/ Fail criteria:

The warning device shall generate a sound output in response to the trigger command. There is no requirement to measure this, unless there is concern that the sound output is inadequate, in which case the full sound output shall be measured in accordance with 6.5.1.

Art. 6.4.1 Response to trigger command

Used EUT No.: 1

Test procedure:

To verify that after application of a stimulus as indicated by the manufacturer the warning device responds within the correct time frame and according to ČSN EN 50131-4, art. 6.4.1.4.
Apply a trigger command, of greater than 400 ms where appropriate. Wait for a period greater than 10 s but less than 1 min, and cancel the trigger command, in accordance with the manufacturer's instructions

Result:

The audio device was activated by executing the alarm trigger command. The alarm device is powered by the control panel, the duration of the alarm depends on the control panel setting.

Conclusion: Pass for security grade 3

Tested by: Trkovský

Art. 6.4.2 Response to loss of trigger command interconnection integrity

Used EUT No.: 1

Test procedure:

To verify the correct response, according to Table 2 and as specified by the manufacturer, to a loss of trigger command interconnection integrity.
Effect a loss of trigger command interconnection integrity.

Result:

When the wires connecting the siren to the I&HAS control panel are interrupted or shorted, the siren generates an alarm:

- lasting five minutes at cut-off the power supply wires (+12 V),
- lasting fifteen minutes at cut-off the TRIGGER wire,
- lasting five minutes at cut-off the power supply wires (+12 V) and TRIGGER wire, simultaneously

Conclusion: Pass for security grade 3

Tested by: Trkovský

Art. 6.4.3 Maximum sound duration limit

Used EUT No. 1

Test procedure:

To verify the maximum time for which the warning device sounder operates, and that the timer resets correctly.

The warning device was activated by using all methods identified in Table 2, which are applicable to the warning. After the sound start up, activation stimulus was terminated. They were also applied to all individual stimuli listed above.

Result:

The warning device after the application of the stimuli for the time specified in supplied documentation generated acoustic signal, which wasn't longer than the time defined in clause 5.1.3 of ČSN EN 50131-4 ed.2. Reapplication of one or all of the stimulus caused the warning device to sound.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.5 Acoustic output level

Used EUT No. 1

Test procedure:

To verify that the siren acoustic level meets the minimum requirements as defined in clause 5.1.2, tab.3. The siren was fully assembled and mounted according to mounting conditions as defined in annex "A" ČSN EN 50131-4 ed.2. The tests were applied from the minimum and maximum rated supply voltage operated in manufacturer's documentation.

The sound level measured at 1 m away from the siren under test, at 30 ° intervals on a horizontal plane, over the range as defined in clause 5.1.2 of ČSN EN 50131-4 ed.2 Table 3 (for external warning device) and annex "A".

Result: Pass

The arithmetic means output of all readings were not be less than 100 dB (A) – (110 dB (A)). Each peak reading was not be less than 95 dB (A) according to clause 5.1.2 of ČSN EN 50131-4 ed.2.

Conclusion: Pass for security grade 3 – external warning device

Tested by : Moulis

Art. 6.6.1 Opening by normal means

Used EUT No. 1

Test procedure:

Attempt to open the cover of the warning device without the use of a tool or key. Record whether it has been possible to open the cover.

Result: Pass

Opening the cover of the siren without the use of a tool or key was not being achieved without causing visible damage.

Conclusion: Pass for security grade 3 for external WD,

Tested by: Krejčí

Art. 6.6.2 Protection

Used EUT No. 2

Test procedure

To demonstrate that it is not possible to insert a metal rod into the warning device in its normal mounting position and prevent its normal operation, or defeat the operation of the tamper detection circuitry.

Were used a tools as specified in the table below (ČSN EN 50131-4 ed.2, Table 5 for security grade 3). The test procedure was according to Article 6.6.2.

Tools	Grade 3	Result
Steel rod, diameter	1 mm	Pass
Flat bar dimensions (± 0,05 mm)	5 x 0,5 x 300 mm	Pass

Result:

It has not been possible to defeat the operation of the tamper detection device by inserting the tool. Additionally, no faulty-operation of the warning device was noted.

The warning device has successfully passed the reduced functional test. With the tool withdrawn, there was not visible damage to the warning device.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.6.3 Detection of opening by normal means

Used EUT No. 2

Test procedure:

To verify that after activation of tamper detection circuitry, the tamper signal or message is generated within the correct time frame.

To demonstrate that when opening the warning device by normal means it is not possible to insert a tool as specified in Tables 5 and 6 into the warning device in its normal mounting position and defeat the operation of the tamper detection circuitry, before a tamper signal or message is generated

Result:

The time between the siren removal from the socket and the generation of a tamper signal and message was less than 1 s as specified in 5.1.3. After the end of test the warning device completed the reduced functional test successfully.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.6.4 Detection of removal from mounting

Used EUT No. 1

Principle:

To demonstrate that a tamper signal or message is generated within the appropriate time period than the warning device is removed from the mounting surface, by a distance defined in Table 8 of ČSN EN 50131-4 ed.2 for security grade 3.

Results of tests:

Test procedure and tools	Result
Place the EUT on the mounting surface without the fixing screws, unless they form a part of the tamper detection device. Slowly lift the EUT away from the mounting surface and attempt to prevent the tamper device from operating by inserting a strip of steel 300 mm long by 25 mm wide, and 1 mm thick or by use of pliers (of thickness 5 mm and reach 150 mm) between the rear of the EUT and its mounting surface.	Maximum distance before tamper detection - 5 mm Pass for Grade 3
The EUT is installed on the mounting surface with the screws at the tamper-sensitive section. The EUT is slowly pry away from the mounting surface until is torn away moulded plastic part, and attempt to prevent the tamper device from operating by inserting a tools.	---
Supplementary information:	

Conclusion:

Pass for security grade 3

Tested by: Trkovský

Art. 6.6.5 Detection of penetration

Not applicable – only for Grade 4

Art. 6.7.1 Operating voltage range and current consumption

Used EUT No. 3

Test procedure: According to Art.6.7.1.

The external siren is powered by DC power.

Power supply voltage - maximum	14,5 V	Pass
Power supply voltage - minimum	13,2 V	Pass

WD mode	Current consumption (13,8 V DC)	Remark
Stand-by	9 mA	-
Alarm (without a backup power supply)	1,3 A	-

Result: Pass

The siren successfully passed the reduced functional test and the current consumption did not exceed the values specified by the manufacturer.

Conclusion:

Pass

Tested by: Krejčí

Art. 6.7.2 Slow rise of remote power source voltage

Used EUT No. 2

Test procedure:

To verify that the WD is subject to a slow input voltage rise it functions normally when the working range is reached. The power supply voltage has reached from zero at rate of 1V s^{-1} to reach the manufacturer's minimum operating voltage and then was perform a reduced functional test.

Result: Pass

No mis-operation of the warning device has been recorded. The siren successfully passed the reduced functional test.

Conclusion:

Pass for security grade 3

Tested by: Krejčí

Art. 6.7.3 Remote power source voltage step change

Used EUT No. 2

Test procedure:

To verify that the warning device operates correctly when subjected to a step in the input voltage between maximum and minimum, and vice versa.

The voltage step changes are applied to the range specified by the manufacturer and the basic functional test is performed.

Result: Pass

No mis-operation of the warning device has been recorded. The siren successfully passed the reduced functional test.

Conclusion:

Pass for security grade 3

Tested by: Moulis

Art. 6.7.4 Storage device standby time

Used EUT No. 2

Test procedure:

To verify that the storage device shall have sufficient capacity to maintain the warning device in its standby condition for the periods as specified in ČSN EN 50131-4 ed.2, Table 9.

Result:

The warning device is of the Z type. The current consumption of warning device in standby mode (from SD) was 9 mA. The storage device has sufficient capacity to maintain the warning device in standby condition for minimum 60 hour according to ČSN EN 50131-4 ed.2, Table 9 (for security grade 3).

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.7.5 Storage device operating time

Used EUT No. 3

Test procedure:

To verify that the storage device of warning device has sufficient capacity to operate the warning device as specified in 5.6.3.2, i.e. 30 minutes of continuous operation.

Result: Pass

The peak acoustic reading during 30 minutes of continuous operation was not less than 95 dB/m(A) at one of the 30° interval on a horizontal plane as defined in 5.1.2 (see Annex "A").

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.7.6 Storage device recharge rate

Used EUT No. 3

Test procedure:

To verify that the warning device is able to recharge the storage device as specified in 5.6.3.4. Reconnect the remote power source at the manufacturer's specified minimum operating voltage (for type Z of warning devices). The storage device was at the minimum discharge point as specified by the storage device manufacturer. Measure and record the charge current supplied to the storage device over the grade dependent recharge time as specified in Table 10.

Result: Pass

The warning device supply current at the appropriate voltage to the storage device equivalent to 80 % of that supplied by the storage device in tests 6.7.4 and 6.7.5.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.6.7 Loss of remote power

Used EUT No. 3

Test procedure:

To verify that the warning device responds correctly to loss of the remote power source. Remove the remote power source. Monitor and record the operation of the warning device outputs.

Result: Pass

The warning device responds as specified by Table 2, within the period specified in 5.1.3.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.7.8 Remote power short circuit protection

Used EUT No. 3

Test procedure:

To verify that it is not possible to discharge the storage device through a short circuit applied to the remote power source connections.

Disconnect the remote power source, and apply a short circuit across the remote power source connections. Monitor any current flow through the short circuit.

Result: Pass

There no measure current flowing through the short circuit.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.7.9 Storage device monitoring – Low residual energy

Used EUT No. 4

Test procedure:

To verify that the warning device can generate a fault signal or message when the storage device residual energy falls below the condition specified by the manufacturer.

Simulate a storage device by variable voltage power supply. Reduce the simulated SD energy to the level at which the warning device manufacturer has declared that a fault signal or message will be generated.

Monitor the fault signal or message output. Record the time from the simulated SD energy level reaching the SD Failure - Low Residual Energy condition as specified by the warning device manufacturer to the fault signal or message being generated

Result:

Event log in CIE	Type of SD	Low voltage output signal		Output voltage	
		Time generating	of Limit	Measured	Stated by manufacturer
Low voltage	C	< 1 s	1 s	11,5 V	11,5

The time between the simulated SD energy level reaching the SD Failure - Low Residual Energy condition as specified by the warning device manufacturer and a fault signal or message being generated did not exceed that specified in 5.1.3.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.7.10 Storage device monitoring - Failure

Used EUT No. 4

Test procedure:

To verify that the warning device generates a fault signal or message in the event that the storage device is no longer able to power the warning device.

A failed storage device has been used in the warning device.

Monitor the fault signal or message output. Record the time from connection of the failed storage device to the fault signal or message being generated.

Result:

The time between the connection of the failed storage device and a fault signal or message being generated did not exceed the sum of the times specified in 5.1.3 and 5.7.1.2.2 for security grade 3.

Conclusion: Pass for security grade 3

Tested by: Moulis

Art. 6.8 Marking

Used EUT 1 to 6

Test procedure:

Examine the equipment visually to confirm that it is marked either internally or externally with the required marking and/or identification given in ČSN EN 50131-4 ed.2, Art. 5.8 and ČSN EN 50131-1 ed.2, Chap. 15.

Result: Pass

Results of verified markings correspond to the requirements of ČSN EN 50131-4 ed.2, Art. 5.8 and ČSN EN 50131-1 ed.2, Chap. 15. All specified markings were presented.

Tested by: Moulis

Art. 6.9 Documentation

Used EUT 1 to 6

Test procedure:**Result:**

The inspection of documentation was carried out (service instructions, technical conditions). All information's specified were presented.

Results of verified documentation correspond to the requirements of ČSN EN 50131-1 ed.2, Chap. 14 and ČSN EN 50131-4 ed.2, Art. 5.9

Tested by: Moulis

Art. 6.10 Environmental

EUTs were subjected to the environmental conditioning described in ČSN EN 50130-5 ed. 2:2012. The reduced functional test 6.2, before, during and after the environmental conditioning inclusive of any recovery period as specified in ČSN EN 50130-5 ed.2, as defined in ČSN EN 50131-4 ed.2, Table 11 were applied. EUTs subjected to the endurance tests were not in operation mode. After the each of tests carried out based on the order with others testing laboratories were the functional tests carried out before and after each test. EMC tests were carried out in accordance with requirements of ČSN EN 50130-4 ed. 2.

Chap. 8 Dry heat – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-2), Test TA No. 18

Used EUT No. 1

Object of the test: To demonstrate the ability of the EUT to function correctly at high ambient temperatures appropriate to the anticipated service environment.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Temperature	(70 ± 2) °C
Duration	16 h

Final measurements: During the conditioning any changes in status of the EUT were monitored – without any changes. After the recovery period the RFT was carried out and the EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed. 2 chap. 8.

Pass for environmental class IV.

Tested by: Trkovský

Chap. 9 Dry heat – endurance, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-2), Test method TA No. 18

Used EUT: No. 1

Object of the test: The object of the test is to demonstrate the ability of the equipment to withstand long term ageing effects.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Temperature	(55 ± 2) °C
Duration	21 days

Final measurements: During the conditioning any changes in status of the EUT were monitored – without any changes. After the recovery period the RFT was carried out and the EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed. 2 chap. 8.

Pass for environmental class IV.

Tested by: Trkovský

Chap. 10 Cold – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-1 ed.2), Test TA No. 19

Used EUT No. 1

Object of the test: To demonstrate the ability of the EUT to function correctly at low ambient temperatures appropriate to the anticipated service environment.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Temperature	$(-25 \pm 2) ^\circ\text{C}$
Duration	16 h

Final measurements: During the conditioning any changes in status of the EUT were monitored – without any changes. After the recovery period the RFT was carried out and the EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed. 2 chap. 10.

Pass for environmental class IV.

Tested by: Trkovský

Chap. 13 Damp heat (steady state) – endurance, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-78 ed.2),
Test TA No.22

Used EUT No. 2

Object of the test: The object of the test is to demonstrate the ability of the equipment to withstand the long-term effects of humidity in the service environment.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Temperature	$(40 \pm 2) ^\circ\text{C}$
Relative humidity	$(93 \pm 3) \%$
Duration	21 days

Final measurements: After the conditioning and recovery period the RFT was carried out and the tested EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed.2 chap. 13.

Pass for environmental class IV.

Tested by: Trkovský

Chap. 14 Damp heat (cyclic) – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-30 ed.2),
Test TA No.23

Used EUT No. 2

Object of the test:

The object of the test is to demonstrate the immunity of the equipment to an environment with high relative humidity, where condensation occurs on the equipment.

Test procedure:

Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Upper temperature	(55 ± 2) °C
Low temperature	(25 ± 2) °C
Relative humidity	(93 ± 3) %
Cycles	2

Final measurements:

During the conditioning any changes in status of the EUT were monitored – without any changes. After the recovery period the RFT was carried out and the EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion:

Results of tested parameters corresponded to the requirements of ČSN EN 50130-5 ed.2 chap. 14.

Pass for environmental class IV

Tested by: Trkovský

Chap. 15 Damp heat, cyclic (endurance), ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-30 ed.2),
Test TA No.24

Used EUT No. 2

Object of the test: The object of the test is to demonstrate the ability of the equipment to withstand the long-term effects of high humidity and condensation.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure	Class IV
Upper temperature	(55 ± 2) °C
Low temperature	(25 ± 2) °C
Relative humidity	(93 ± 3) %
Cycles	6

Final measurements: During the conditioning any changes in status of the EUT were monitored – without any changes. After the recovery period the RFT was carried out and the EUT was visually inspected both internally and externally for signs of mechanical damage – without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed. 2 chap. 15.

Pass for environmental class IV.

Tested by: Trkovský

Chap. 16 Water ingress – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-18)

Used EUT No. 3

Object of the test:

Demonstrate that the EUT is properly protected against water ingress.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). Conditioning was performed by contract with accredited testing laboratory No. 1056 EZÚ s.p., see Test Report No. 913080-01/01, which is in Annex 2. After conditioning the reduced functional test and visual inspection of the EUT was carried out according to product standard.

Results:

Before exposition: Before conditioning the RFT was carried out – the correct function of EUT.

During exposition: During the conditioning any changes in status of the EUT were monitored – without any changes.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion:

Results of tested parameters corresponded to the requirements of ČSN EN 50130-5 ed.2 Chap. 16.

Pass for environmental class IV.

Test performed: Trkovský (Testalarm)

Exposition performed: Baron (EZÚ)

Chap. 17 Sulphur dioxide (SO₂) – endurance, ČSN EN 50130-5 ed. 2 (ČSN EN 60068-2-42)

Used EUT No.5

Object of the test:

To demonstrate the ability of the EUT to withstand the corrosive effects of sulphur dioxide as an atmosphere pollutant.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). Conditioning was performed by contract with accredited testing laboratory No. 1056 EZÚ s.p., see Test Report No. 913080-01/01, which is in Annex 2. After conditioning the reduced functional test and visual inspection of the EUT was carried out according to product standard.

Results:

Before exposition: Before conditioning the RFT was carried out – the correct function of EUT.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion:

Results of tested parameters corresponded to the requirements of ČSN EN 50130-5 ed. 2 Chap. 17.

Pass for environmental class IV.

Test performed: Trkovský (Testalarm)

Exposition performed: Medová (EZÚ)

Chap. 18 Salt mist (cyclic) – endurance, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-52)

Used EUT No. 2

Object of the test:

Demonstrate an adequate level of corrosion protection to equipment exposed to the chemical elements.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). Conditioning was performed by contract with accredited testing laboratory No. 1056 EZÚ s.p., see Test Report No. 913080-01/01, which is in Annex 2. After conditioning the reduced functional

test and visual inspection of the EUT was carried out according to product standard.

Results:

Before exposition: Before conditioning the RFT was carried out – the correct function of EUT.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion:

Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed. 2 Chap. 18.

Pass for environmental class IV.

Test performed: Trkovský (Testalarm)

Exposition performed: Medová (EZÚ)

Chap. 19 Shock (operational), ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-27 ed.2)

EUT No.6

Test procedure: Before the exposure the RFT was carried out according to product standards. Exposure was performed by contract with accredited testing laboratory No. 1056 EZÚ s.p., see Test Report No. 913080-01/01, which is in Annex 2. After exposure the was carried out according to product standards and visual inspection of the EUT.

Results:

Before exposition: Before conditioning the RFT was carried out - the correct functioning of EUT.

During exposition: In the y-axis impact, the mounting bracket with the perforated portion for to activate an attempt to move away from the mounting position was unlocked, which generated a sabotage signal. The other axes were OK.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed.2 Chap.19.

Test performed: Trkovský (Testalarm)

Exposure performed: Bažant (EZU)

Chap. 20 Impact – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-75 ed.2), Test TA No.26

Used EUT No. 6

Object of the test: To demonstrate the immunity of the EUT to mechanical impacts upon its surface that it may sustain in the normal service environment and which it can reasonably be expected to withstand.

Test procedure: Before the conditioning, the EUT was subjected to the initial measurements required by the product standard (RFT). The EUT was exposed to the following conditions:

Exposure according to ČSN EN 50131-4 , Table No.4	Warning device external
	Security grade 3 (external)
Impact energy	(5,0 ± 0,04) J
Number of impacts	3 per spot
EN 62262 classification	IK08

Result: During the conditioning any changes in status of the EUT were monitored – without any changes.

After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion: Results of tested parameters corresponded to the requirements of ČSN EN 50131-4 ed.2, Article 5.2.1, Table 4.

Pass for security grade 3.

Tested by: Moulis

Chap. 22 Vibration (sinusoidal) – operational, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-6)

Used EUT No. 1

Test procedure: Before the exposure the Reduced Functional Test was carried out according to product standards. Exposure was performed by contract with accredited testing laboratory No. 1056 ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, s.p., see the Test Report No. 913080-01/01, which is in Annex 2. After exposure the reduced functional test was carried out according to product standards and visual inspection of the EUT.

Results:

Before exposition: Before conditioning the RFT was carried out – the correct functioning of EUT.

During exposition: During the conditioning any changes in status of the EUT were monitored – without any changes.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed.2 chap. 22.

Pass for environmental class IV.

Test performed: Trkovský (Testalarm)

Exposure performed: Bažant (EZÚ)

Chap. 23 Vibration (sinusoidal) – endurance, ČSN EN 50130-5 ed.2 (ČSN EN 60068-2-6)

Used EUT No. 2

Test procedure: Before the exposure the Reduced Functional Test was carried out according to product standards. Exposure was performed by contract with accredited testing laboratory No. 1056 ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, s.p., see the Test Report No. 913080-01/01, which is in Annex 2. After exposure the reduced functional test was carried out according to product standards and visual inspection of the EUT.

Results:

Before exposition: Before conditioning the RFT was carried out – the correct functioning of EUT.

After exposition: After the conditioning the RFT was carried out – the correct function, without any changes.

Conclusion: Results of tested parameters correspond to the requirements of ČSN EN 50130-5 ed.2 chap. 23.

Pass for environmental class IV.

Test performed: Trkovský (Testalarm)

Exposure performed: Bažant (EZÚ)

5. EMC – operational (ČSN EN 50130-4 ed.2, ČSN EN 55032 ed.2)

EMC tests according to ČSN EN 50130-4 ed.2 + A1, ČSN EN 55032 ed.2 were carried out by contract with accredited testing laboratory No. 490 NATIONAL TECHNICAL UNIVERSITY OF ATHENS.

Test results are mentioned in test report EMC No. EA 111-15, see Annex No.3.

Declaration:

Paragraph "Conclusion" is understood as a statement of conformity.

The decision-making process for the conformity statement does not take into account the measurement uncertainties at the limit result.

The place of testing is at the registered office of ZL: Božanovská 2098, Praha 9, 193 00, unless stated otherwise.

The test results refer to a sample thus as it was received.

Without the written consent TESTALARM laboratory, this Test Report must not be reproduced otherwise than as a whole.

Date of the protocol issue: 23. 1.2020

Approved by:

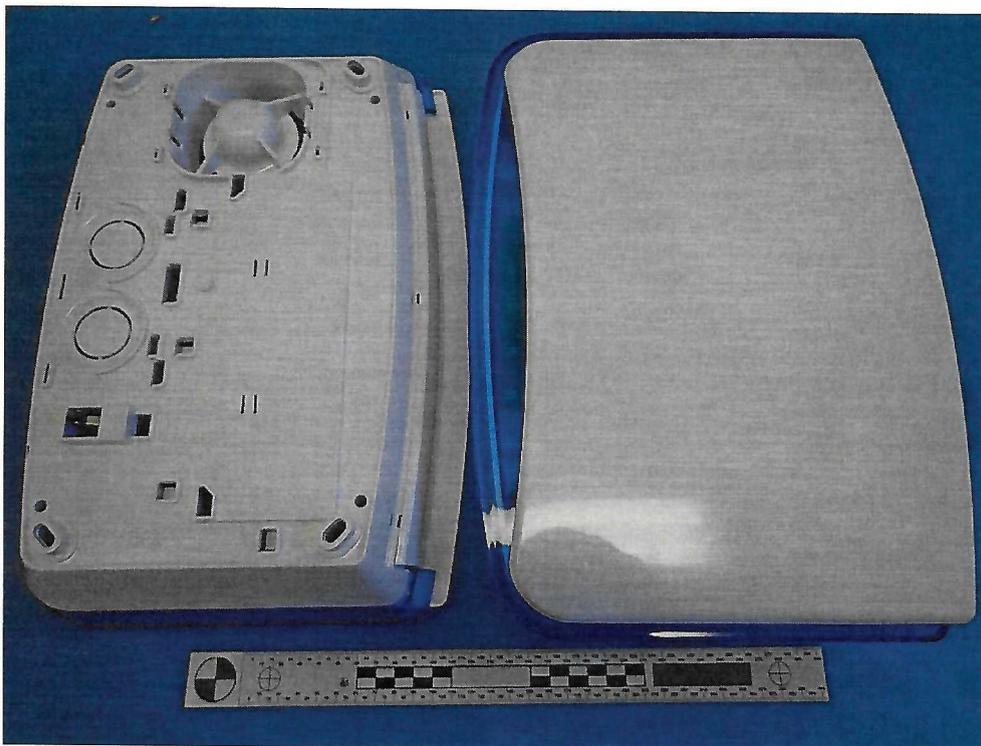
Zbyněk Görner

Testing laboratory head

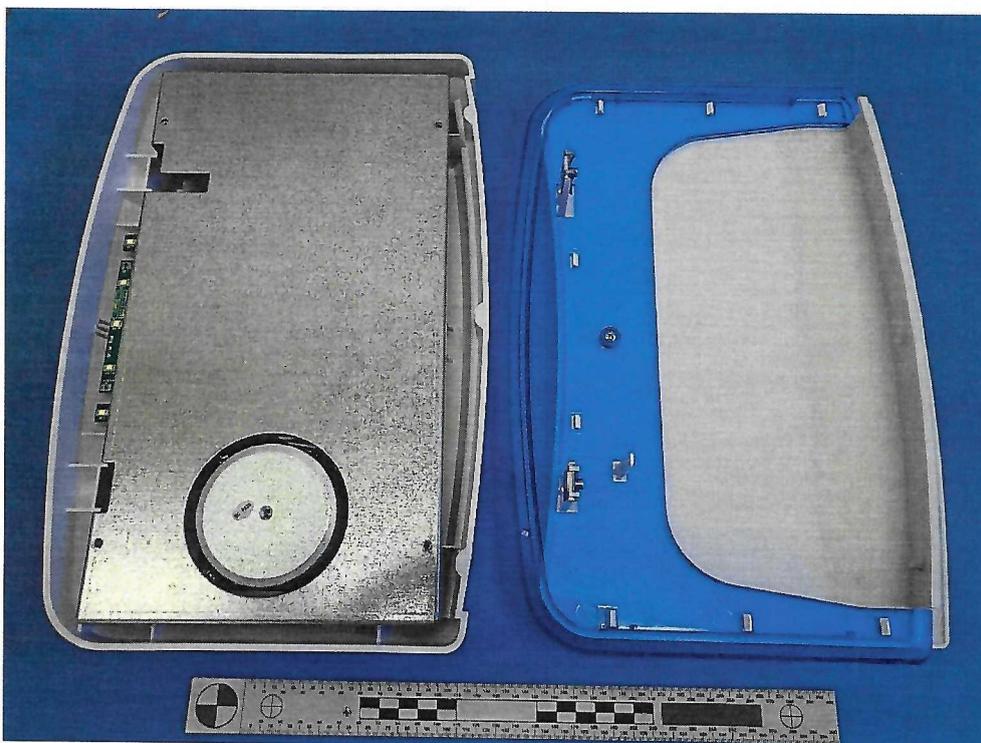


Photos

Annex No.: 1a



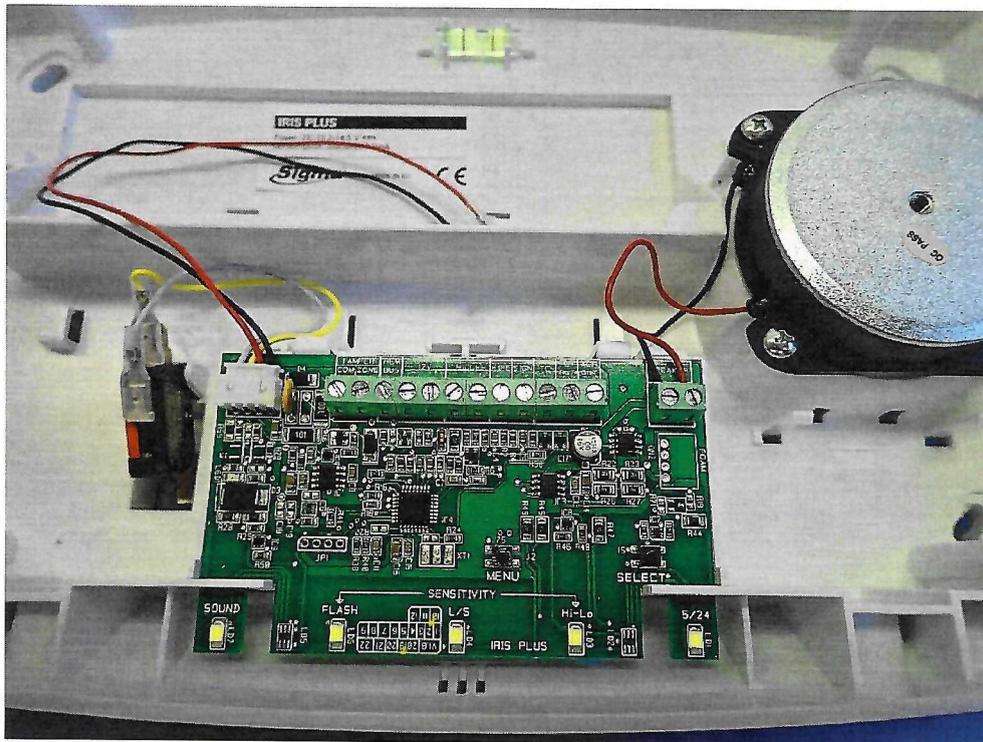
Outdoor Self Powered Sirens **IRIS PLUS**



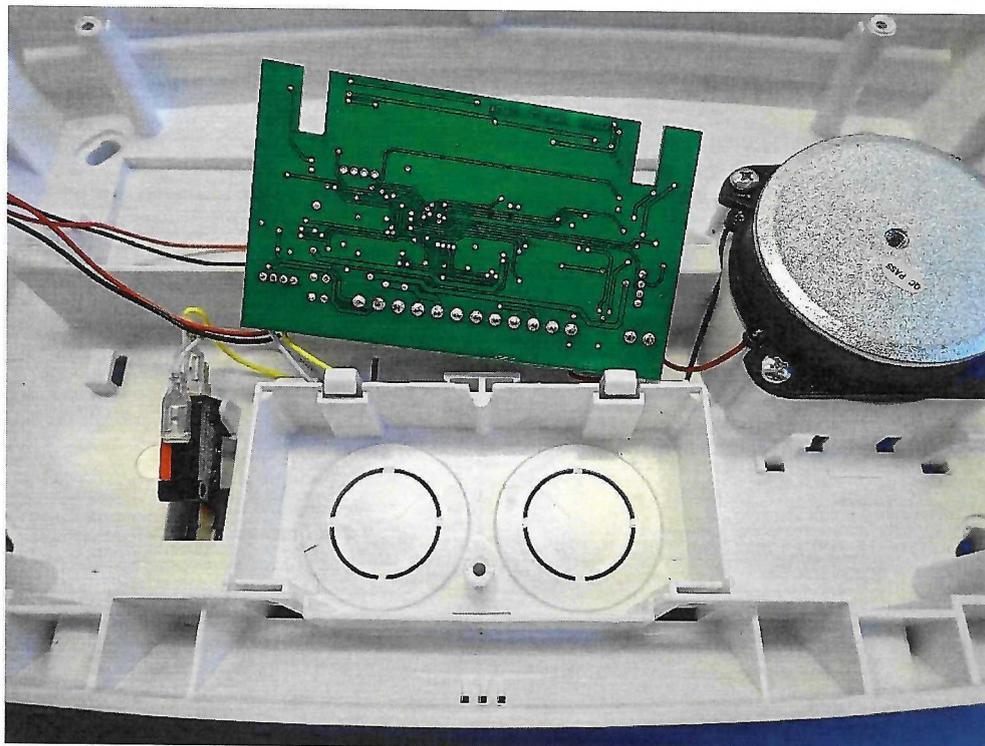
Outdoor Self Powered Sirens **IRIS PLUS**



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