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TEST REPORT
IEC 62561-2
Lightning protection system components (LPSC)
Part 2: Requirements for conductors and earth electrodes

Report Number. .....:	P250605003
Date of issue .....:	2025-06-20
Total number of pages.....:	19
Testing Laboratory:	Guangdong LNP Electrical Testing Technology Co., Ltd.
Testing location/ address .....:	No. 101, Building B, Xinyongsheng Technology Park, Wenquan South Road No. 70, Xinwei Village, Shilong Town, Dongguan City, Guangdong Province, China.
Tested by (name + signature) .....:	Ximing Li Test Engineer
Approved by (name + signature) ..:	Guoxiang Chen Authorized Signaturer
Applicant's name.....:	Indelec SA.
Address .....:	61, chemin des postes 59500 Douai - France
Test specification:	
Standard.....:	IEC 62561-2:2018
Test procedure .....:	Type test
Non-standard test method…….. ...:	N/A
Test item description.....:	Coupling
Trade Mark .....:	Indelec
Manufacturer .....:	Indelec SA.
Model/Type reference.....:	ARLM16
Size .....:	Diameter: 14.2mm

Copy of marking plate

Description	Coupling
Model	ARLM16
Trade Mark	Indelec

Test item particulars	Coupling
	☐ air-termination rod; ☐ air-termination conductor; ☐ down-conductor; ☐ earth electrode ☐ earth rod; ☐ earth conductor; ☐ earth plate; ☒ earth rod coupler;
Conductor material	Copper Alloy
Cross-sectional area, dimensions and shape	Diameter: 14.2mm
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement.....	F (Fail)
Testing	
Date of receipt of test item.....	2025-01-03
Date (s) of performance of tests	2025-01-03 to 2025-01-15

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

General product information:

1. The tests were conducted on 3 samples as listed in table below:

Clause	Test items	Sample No.:
5.5	Marking	ARLM16-#1, ARLM16-#2, ARLM16-#3
5.4.2	Compression test	
5.4.3	Environmental test	
5.4.4	Electrical test	
5.4.5	Tensile test	

2. Name and address of factory:

Indelec SA.

61, chemin des postes 59500 Douai - France

Remark:The data in this report are derived from the original report number P250100802. The two products are only different in trademark, and the rest are consistent.

Clause	Requirement - Test	Result - Remark	Verdict
4	Requirements		--
4.1	General		--
	Conductors and earth electrodes shall be designed in such a manner that, when they are installed in accordance with the manufacture's instructions, their performance shall be reliable, stable and safe to persons and surrounding equipment.		P
	The choice of a material depends on its ability to match the particular application requirements such as life cycle of the material, effects from galvanic corrosion and compatibility with other interconnected materials or services.		P
	A summary of the requirements are given in Annex C and Annex D and their corresponding test are given in Annex A, Annex B and the sequence of test of in Annex E (Figure E.1), Annex F (Figure F.1) and Annex G (Figure G.1)	Annex G (Figure G.1).	P
4.2	Documentation		--
	The manufacturer or supplier of the conductors and earth electrodes shall provide adequate information in their literature to ensure that the installer of the conductors and earth electrodes can select and install the materials in a suitable and safe manner, in accordance with IEC 62305-3 and IEC 62305-4.		P
	Compliance is checked by inspection.		P
4.3	Air-termination conductors, air-termination rods, earth lead-in and down-conductors	Coupler for earth rods	N/A
4.4	Earth electrodes	Coupler for earth rods	--
4.4.1	General		--
	The cross-sectional area of earth electrodes, its material and its configuration shall be in accordance with Table 3. Moreover, its mechanical and electrical characteristics shall be in accordance with Table 2.		N/A
	Other materials may be used if they possess equivalent mechanical and electrical characteristics and corrosion resistance properties for the intended application.		N/A
	Other configurations may be used if the relevant dimensions are met.		N/A
4.4.2	Earth rods	Coupler for earth rods	N/A
4.4.3	Couplers for earth rods		--
	Earth rods can be extended allowing them to be driven deeper into the ground. This can be achieved by means of a joint/coupling device.		P
	The choice of material shall be compatible with that of the earth rod being joined.	Coupler	P

Clause	Requirement - Test	Result - Remark	Verdict
	It shall be sufficiently mechanically robust to withstand the driving forces generated during installation.		P
	It shall also exhibit good corrosion resistance.		P
	Threaded external couplers shall be of a sufficient length to ensure no threads on the earth rod are exposed when installed.		P
	Threaded internal couplers shall ensure that the mating faces of the earth rods come in contact after assembly.	14.2 mm earth rods	P
	Compliance is checked by the tests of 5.4.2, 5.4.3, 5.4.4 and 5.4.5.		P
4.4.4	Earth conductors and earth plates	Coupler for earth rods	--
	Earth electrode conductors and earth plates shall be corrosion resistant and any coating shall exhibit good adherence to the base material.		N/A
	Compliance is checked by the test of 5.2.2, 5.2.3 and 5.2.4.		N/A
4.5	Marking	Coupler for earth rods	--
	All products complying with this document shall be marked at least with the manufacturer's or responsible vendor's name or trade mark or identifying symbol.	Indelec Trademark on the samples body.	P
	Where this proves to be impractical, the marking in accordance with the identifying symbol may be given on the smallest packing unit.	Other information was given on the smallest packing unit	P
	Compliance is checked in accordance with 5.5.		P
5	Tests		--
5.1	General conditions for tests		--
	Tests according to this document are type tests. These tests are of such a nature that, after they have been performed, they need not be repeated unless changes are made to the materials, design or type of manufacturing process, which might change the performance characteristics of the product.		P
	- Unless otherwise specified, all tests are carried out on new specimens.	New specimens.	P
	-Unless otherwise specified, three specimens are subjected to the tests and the requirements are satisfied if all the tests are met.	Three specimens	P

Clause	Requirement - Test	Result - Remark	Verdict
	-If only one of the specimens does not satisfy a test, due to an assembly or a manufacturing fault, that test and any preceding one which may have influenced the results of the test shall be repeated and also the tests that follow shall be carried out in the required sequence on another full set of specimens, all of which shall comply with the requirements.		N/A
	The applicant, when submitting a set of specimens, may also submit an additional set of specimens, which may be necessary should one specimen fail. The testing laboratory will then, without further request, test the additional set of specimens and will reject it only if a further failure occurs. If the additional set of specimens is not submitted at the same time, the failure of one specimen will entail rejection.		P
5.2	Conductors, air-termination rods, earth lead-in rods and earth electrodes (except earth rods)	Coupler for earth rods	N/A
5.3	Earth rods	Coupler for earth rods	N/A
5.4	Couplers for earth rods		--
5.4.1	General		--
	Couplers for earth rods shall be subjected to the following tests to confirm their suitability for the intended application.		P
5.4.2	Compression test by mechanical means		--
5.4.2.1	General conditions for tests		P
	Each specimen shall be assembled from two sections of earth rod. each 500 mm long. The tests shall be performed with suitable driving heads and driving tools following the manufacturer's or supplier's instructions.	Threaded Coupling	P
	The top of the specimens shall be impacted with a vibration hammer defined with the following parameters for a duration of 1 min:		P
	percussion rate (2 000 ± 1 000) min^{-1}; single stroke impact energy (50 ± 10) Nm.	1800 min^{-1} 50 Nm	P
5.4.2.2	Acceptance criteria		--
	The specimens are deemed to have passed the tests if their couplers are not broken or do not show any crack to normal or corrected vision without magnification.	The Coupling did not broken after test.	P
5.4.3	Environmental test		--
5.4.3.1	General conditions for tests		--
	Specimen assemblies used in and complying with 5.4.2 shall be subjected to an environmental test as specified in Annex A.		P

Clause	Requirement - Test	Result - Remark	Verdict
	The manufacturer or supplier shall provide proof of the copper content of any part of the assembly made from an alloy copper.		P
5.4.3.2	Acceptance criteria		--
	The specimens are deemed to have passed the tests if:		--
	the specimen assembly remains intact;		P
	the base metal of the specimens shall not exhibit any visual corrosive deterioration when inspected with normal or corrected vision without magnification. 100 mm from both ends of the specimens are excluded from inspection.	No visual corrosive deterioration	P
	White rust is not considered as corrosive deterioration.		P
5.4.4	Electrical test		--
	Specimen assemblies used in and complying with 5.4.3 shall be subjected, without cleaning, to an electrical test according to Clause B.1.	Refer to Annex B	P
5.4.5	Tensile strength test		--
5.4.5.1	General conditions for tests		P
	Specimen assemblies, used in and complying with 544, shall be subjected to a mechanical tensile force of 1 000 N (±10 N).		P
5.4.5.2	Acceptance criteria		--
	After the tests as per 5.4.4 and 5.4.5, the specimens shall satisfy the criteria according to Clause B.2.		P
5.5	Marking test		--
5.5.1	General conditions for tests		--
	The marking is checked by inspection and by rubbing it by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with white spirit/mineral spirit.		N/A
	Marking made by moulding, pressing or engraving is not subjected to this test.	Marking made by moulding	P
5.5.2	Acceptance criteria		--
	The specimen is deemed to have passed the test if the marking remains legible.		N/A
6	Electromagnetic compatibility (EMC)	No such parts	N/A
7	Structure and content of the test report		--
7.1	General		--
	The purpose of Clause 7 is to provide general requirements for laboratory test reports and to promote clear, complete reporting procedures for laboratories submitting test reports.		P

Clause	Requirement - Test	Result - Remark	Verdict
	The results of each test carried out by the laboratory shall be reported accurately, clearly, unambiguously and objectively, in accordance with any instructions in the test methods. The results shall be given in a test report and shall include all the information necessary for the interpretation of the test results and all information required by the method used.		P
	Particular care and attention shall be paid to the arrangement of the report, especially with regard to presentation of the test data and ease of assimilation by the reader. The format shall be carefully and specifically designed for each type of test carried out, but the headings shall be standardized as indicated below.		P
	The structure of each report shall include at least information according to 7.2 to 7.1 0.		P
7.2	Report identification		--
	The following information shall be included:		--
	a) a title or subject of the report;	TEST REPORT	P
	b) name, address, e-mail and telephone number of the test laboratory;	Name: Guangdong LNP Electrical Testing Technology Co., Ltd. Address: No. 101, Building B, Xinyongsheng Technology Park, Wenquan South Road No. 70, Xinwei Village, Shilong Town, Dongguan City, Guangdong Province, China. Email: leo@lnptest.com Tel: +86-769-81329986	P
	c) name, address, e-mail and telephone number of the sub test laboratory where the test was carried out if different from the company which has been assigned to perform the test;		N/A
	d) unique identification number (or serial number) of the test report;	P250605003	P
	e) name and address of the vendor;	Name: Indelec SA. Address: 61, chemin des postes 59500 Douai - France	P
	f) report shall be paginated and the total number of pages indicated;	Total 19 pages	P
	g) date of issue of the report;	2025-01-15	P
	h) date(s) of performance of the test(s);	2025-01-03 to 2025-01-15	P
	i) signature and title, or an equivalent identification of the person(s) authorized to sign for the testing laboratory for the content of the report;	Guoxiang chen / Authorized Signaturer	P
	j) signature and title of person(s) conducting the tests;	Ximing Li / Test Engineer	P

Clause	Requirement - Test	Result - Remark	Verdict
	k) "This type test report may not be reproduced other than in full, except with the prior written approval of the issuing testing laboratory. This type test report only covers the samples submitted for test and does not produce evidence of the quality for series production."	This type test report may not be reproduced other than in full, except with the prior written approval of the issuing testing laboratory. This type test report only covers the samples submitted for test and does not produce evidence of the quality for series production	P
7.3	Specimen description		--
	a) Sample description.	Coupling	P
	b) Detailed description and unambiguous identification of the test sample and/or test assembly.	Six earth rod samples 500mm length each and three couplings.	P
	c) Characterization and condition of the test sample and/or test assembly.	The received specimens were new and in good condition.	P
	d) Sampling procedure, where relevant.		N/A
	e) Date of receipt of the test items.	2025-01-15	P
	f) Photographs, drawings or any other visual documentation, if available.	Refer to annex 1	P
7.4	Conductor		--
	a) Conductor material.	Copper alloy	P
	b) Cross-sectional area, dimensions and shape. It is recommended that the actual cross-sectional area also be given.	Diameter: 14.2mm	P
7.5	Standards and references		--
	a) Identification of the test standard used and the date of issue of the standard.	IEC 62561-2:2018	P
	b) Other relevant documentation with the documentation date.	IEC 60068-2-53:1996; IEC 62305-3; IEC 62305-4; ISO 6982-1:1988; ISO 6988:1985	P
7.6	Test procedure	According to Annex G	--
	a) Description of the test procedure.	Coupling	P
	b) Justification for any deviations from, additions to or exclusions from the referenced standard.		N/A
	c) Any other information relevant to a specific test, such as environmental conditions.	25°C ± 10°C, less than 70% RH	P
	d) Configuration of testing assembly.	Rod 14.2mm	P
	e) Location of the arrangement in the testing area and measuring techniques.		P
7.7	Testing equipment, description		--
	Description of equipment used for every test conducted, e.g. generator, conditioning/ageing device.	Refer to List of test equipment used	P

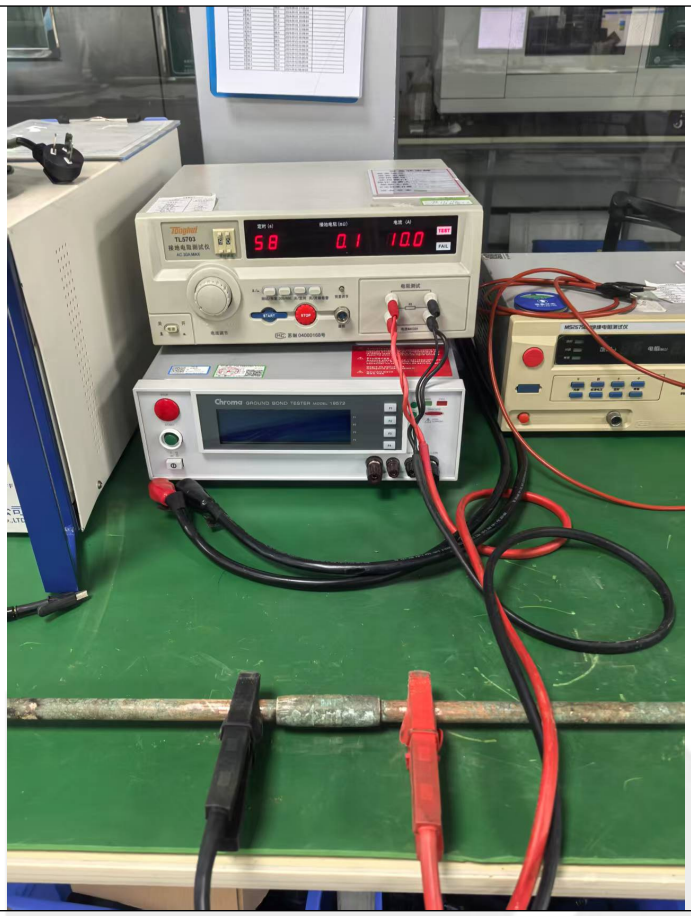
Clause	Requirement - Test	Result - Remark	Verdict
7.8	Measuring instruments description		--
	Characteristics and calibration date of all instruments used for measuring the values specified in the standard, e.g. radius gauge shunts, tensile testing machine, extensometer, ohmmeter, torque meter, thickness caliper gauge, etc.	Refer to List of test equipment used	P
7.9	Results and parameters recorded		--
	a) Required passing criteria for each test, defined by the standard.		P
	b) Relevant observed or derived results of the tests.		P
	All results shall be presented by means of tables, graphs, drawings, photographs or other documentation of visual observations as appropriate.		P
7.10	Statement of pass/fail		--
	Statement that the specimen passed or failed the tests shall be reported. If the specimen has failed, a description of the failure is necessary.	Pass	P
Annex A (normative)	Environmental test for conductors, air-termination rods and earth lead-in rods	Coupler for earth rods	--
A.1	General		--
	The condition/ageing test consists of a salt mist treatment as specified in Clause A.2 followed by humid sulphurous atmosphere treatment as specified in clause A.3 and an additional ammonia atmosphere treatment for specimens where any component part is made of copper alloy with a copper content less than 80%, as specified in Clause A.4.	A.2 and A.3 tests were conducted. Copper content is 81%, the result of chemical composition is from mill cert.	P
	The manufacturer or supplier shall provide proof of the copper content of any part of the assembly made from a copper alloy.		P
A.2	Salt mist treatment		--
	The salt mist treatment shall be in accordance with IEC 60068-2-52:1996 except for Clauses 7, 10 and 11 which are not applicable. The test is carried out using severity (2).	Severity (2) 35°C, 2h;	P
	If the salt mist chamber maintains the temperature conditions as specified in 9.3 of IEC 60068-2-52:1996 and relative humidity of not less than 90% then the specimen can remain in the chamber for the humidity storage period.	40°C, 93% RH, 22h	P
A.3	Humid sulphurous atmosphere treatment		--
	The humid sulphurous atmosphere treatment shall be in accordance with ISO 6988:1985 with seven cycles with a volume concentration of sulphur dioxide of $667 \times 10^{-6} \pm 25 \times 10^{-6}$, except for Clauses 9 and 10 which are not applicable.	667×10^{-6}	P

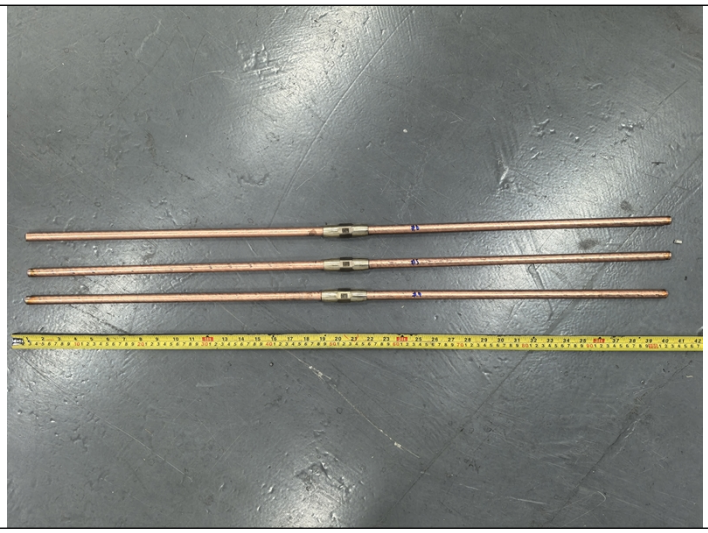
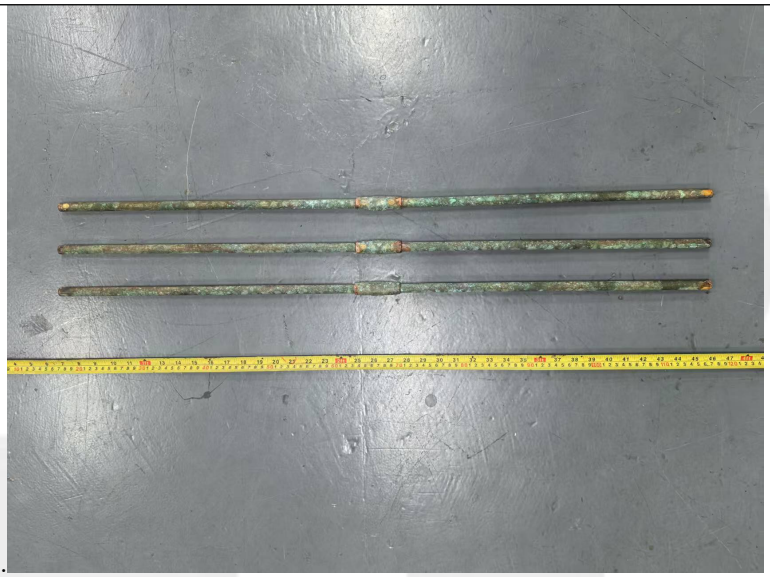
<table>
<tr><th>Clause</th><th>Requirement - Test</th><th>Result - Remark</th><th>Verdict</th></tr>
<tr><td></td><td>Each cycle which has a duration of 24 h is composed of heating period of 8 h at a temperature of 40°C ± 3°C in the humid saturated atmosphere which is followed by a rest period of 16 h. After that, the humid sulphurous atmosphere is replaced.</td><td>40°C , 8h and in the humid saturated atmosphere which is followed by a rest period of 16 h.</td><td>P</td></tr>
<tr><td></td><td>If the test chamber maintains the temperature conditions as specified in 6.5.2 of ISO 6988:1985 then the specimen can remain in the chamber for the storage period.</td><td></td><td>P</td></tr>
<tr><td>A.4</td><td>Ammonia atmosphere treatment</td><td></td><td>N/A</td></tr>
<tr><td>Annex B (normative)</td><td>Electrical test</td><td></td><td>--</td></tr>
<tr><td>B.1</td><td>General</td><td></td><td>--</td></tr>
<tr><td></td><td>Each specimen shall be stressed three times by a test current as given in Table B.1. The time interval between individual shots shall allow the arrangement of the specimen to cool down to approximately ambient temperature.</td><td>Refer to annex 2</td><td>P</td></tr>
<tr><td></td><td>The impulse discharge current passing through the device under test is defined by the peak value I_{imp}， and the specific energy W/R. The impulse current shall show no reversal and reach I_{imp} within 50 µs. The transfer of the specific energy W/R shall be dissipated within 5 ms.</td><td>Test Model: ARLM16
<table>
<tr><td></td><td>#1</td><td>#2</td><td>#3</td></tr>
<tr><td rowspan="2">Test 1</td><td>100.2 kA</td><td>102 kA</td><td>102 kA</td></tr>
<tr><td>2913 kJ/Ω</td><td>3099 kJ/Ω</td><td>3144 kJ/Ω</td></tr>
<tr><td rowspan="2">Test 2</td><td>101 kA</td><td>102 kA</td><td>102 kA</td></tr>
<tr><td>2672 kJ/Ω</td><td>3101 kJ/Ω</td><td>3002 kJ/Ω</td></tr>
<tr><td rowspan="2">Test 3</td><td>100 kA</td><td>104 kA</td><td>102 kA</td></tr>
<tr><td>3160 kJ/Ω</td><td>2938 kJ/Ω</td><td>2973 kJ/Ω</td></tr>
</table></td><td>P</td></tr>
<tr><td>B.2</td><td>Acceptance criteria</td><td></td><td>--</td></tr>
<tr><td></td><td>The specimens are deemed to have passed the tests if:</td><td></td><td>--</td></tr>
<tr><td></td><td>the couplers are not broken or do not show any crack to normal or corrected vision without magnification;</td><td>After the test, the couplers not broken.</td><td>P</td></tr>
<tr><td></td><td>the contact resistance measured with a source of at least 10 A, as close as possible to the coupler, is equal to or less than 1 mΩ. In the case where the earth rod joint or the earth rods are of stainless steel, a value of equal to or less than 3 mΩ is allowed;</td><td>Test Model: ARLM16, Source is 10A,
<table>
<tr><td>#1</td><td>#2</td><td>#3</td></tr>
<tr><td>0.6 mΩ</td><td>0.6 mΩ</td><td>0.1 mΩ</td></tr>
</table>
less than 1 mΩ</td><td>P</td></tr>
<tr><td></td><td>the specimen assembly still remains intact.</td><td></td><td>P</td></tr>
</table>

Clause	Requirement - Test	Result - Remark	Verdict
Annex C (normative)	Requirements for conductors		--
	Table C.1 is a summary of requirements for cross-sectional area, mechanical and electrical characteristics as well as tests to be applied for air-termination conductors, air-termination rods, earth lead-in rods and down-conductors according to Table 1 and Table 2.		N/A
Annex D (normative)	Requirements for earth electrodes		--
	Table D.1 is a summary of requirements for dimensions, mechanical and electrical characteristics as well as tests to be applied for earth electrodes according to Table 2 and Table 3.		N/A
Annex E (normative)	Flow chart of tests for air-termination conductors, air-termination rods, earth lead-in rods, down-conductors, earth conductors and earth plates		N/A
Annex F	Flow chart of tests for earth rods		N/A
Annex G (normative)	Flow chart of tests of couplers for earth rods	Coupler for earth rods	P

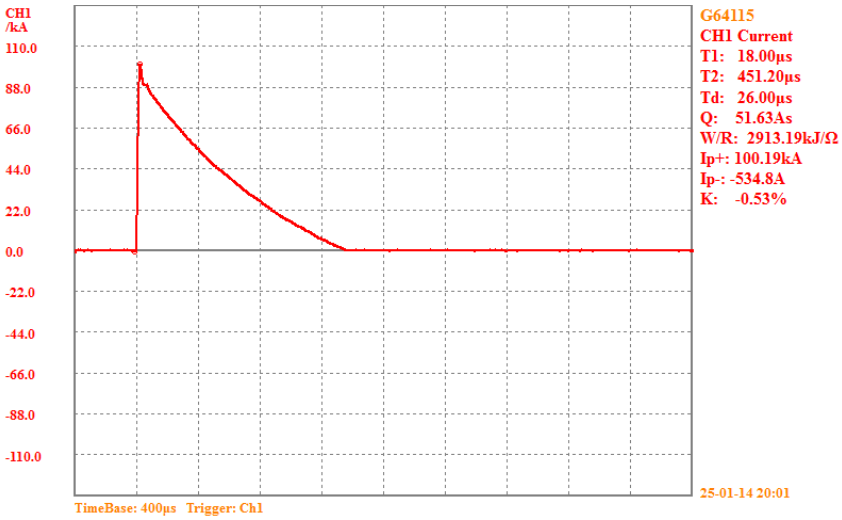
Annex 1: Photos of samples

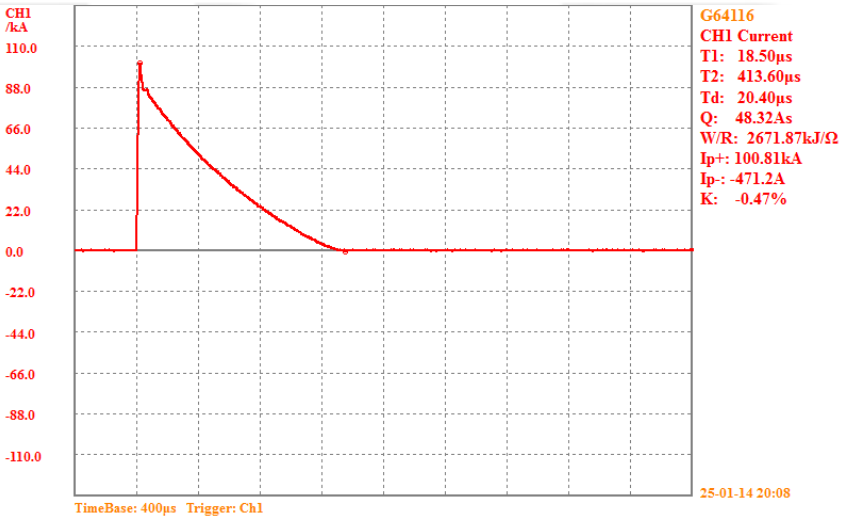
Details of:	External view
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

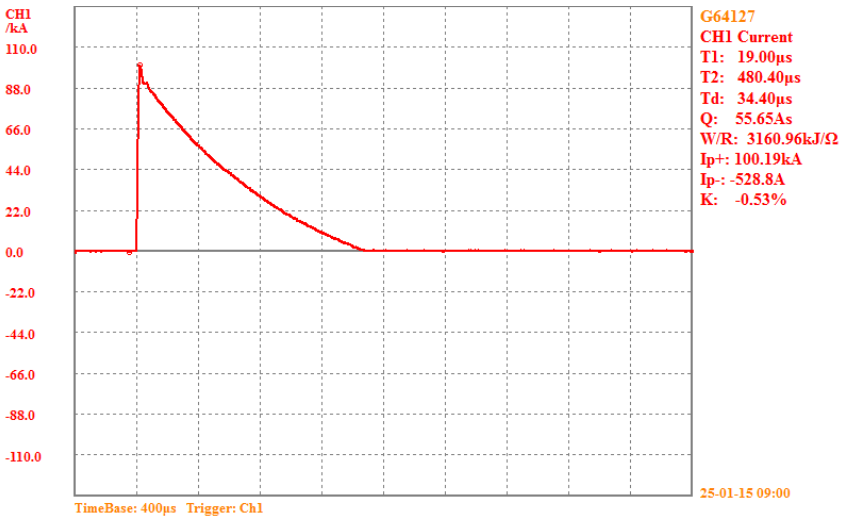
View:	
☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

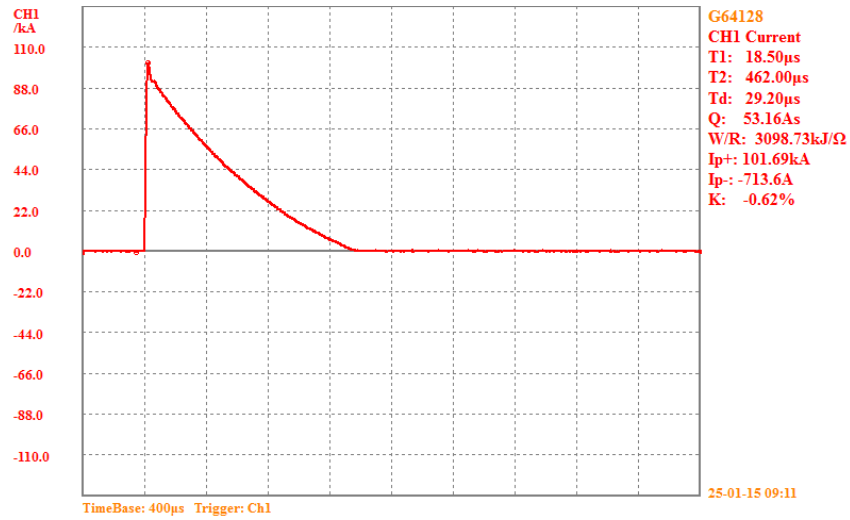
Details of:	Before Test
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	
Details of:	After Environmental Test
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	
Details of:	Electrical test
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Annex 2 Testing wave

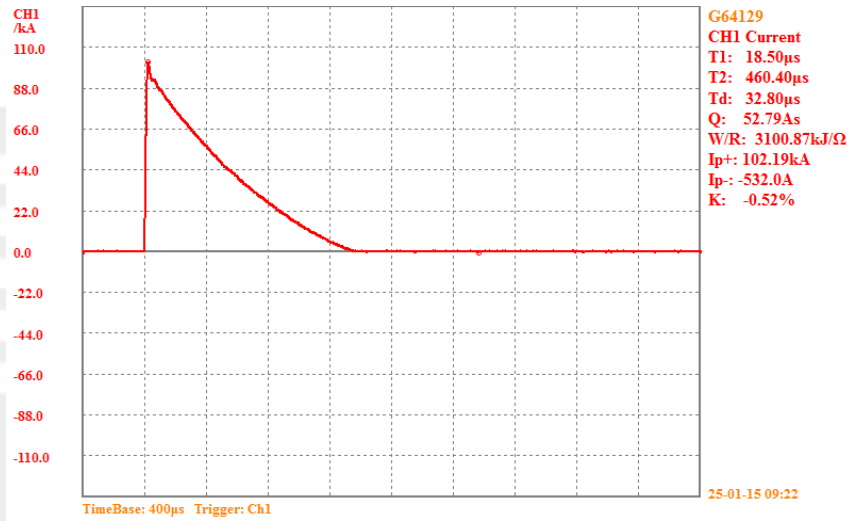




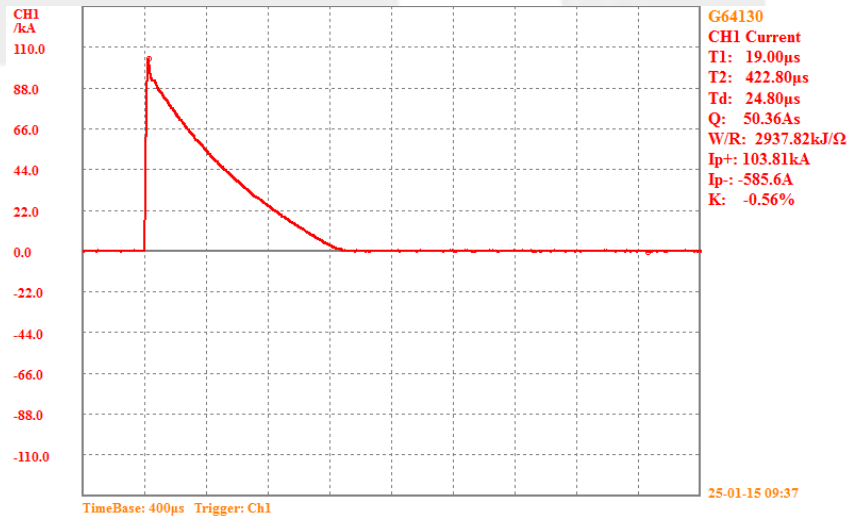




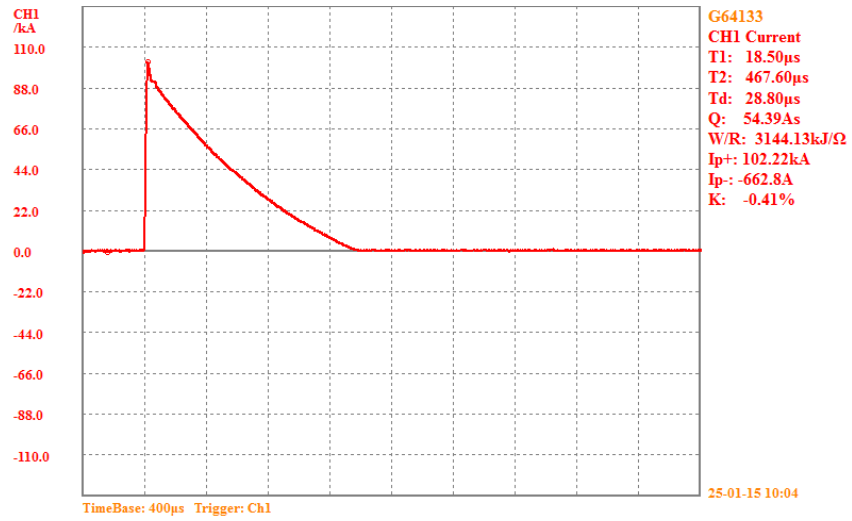
G64128
CH1 Current
T1: 18.50μs
T2: 462.00μs
Td: 29.20μs
Q: 53.16As
W/R: 3098.73kJ/Ω
Ip+: 101.69kA
Ip-: -713.6A
K: -0.62%
25-01-15 09:11

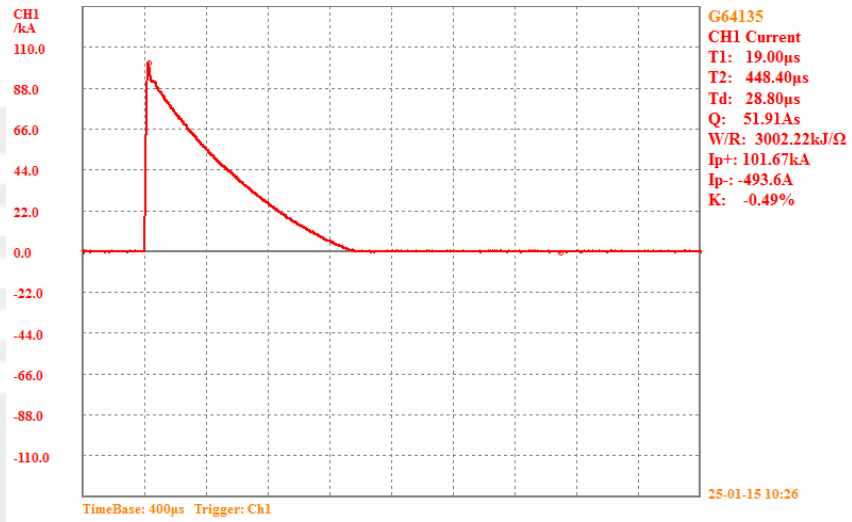


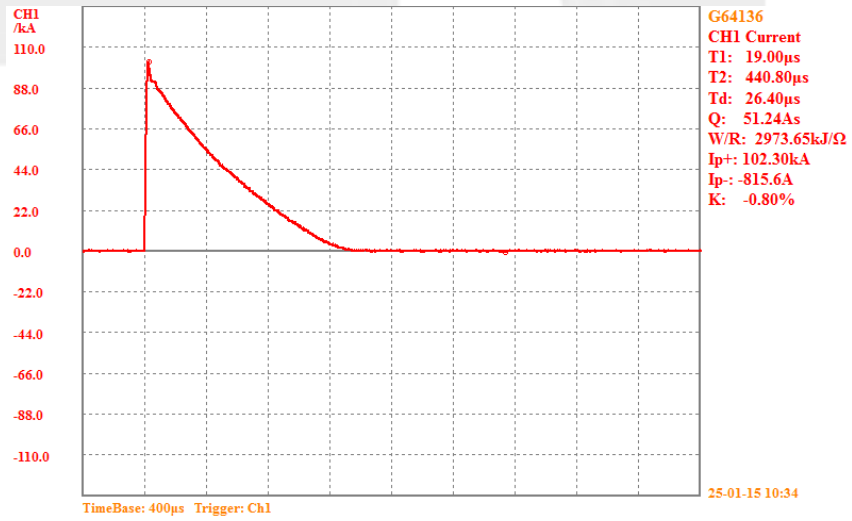
G64129
CH1 Current
T1: 18.50μs
T2: 460.40μs
Td: 32.80μs
Q: 52.79As
W/R: 3100.87kJ/Ω
Ip+: 102.19kA
Ip-: -532.0A
K: -0.52%
25-01-15 09:22



G64130
CH1 Current
T1: 19.00μs
T2: 422.80μs
Td: 24.80μs
Q: 50.36As
W/R: 2937.82kJ/Ω
Ip+: 103.81kA
Ip-: -585.6A
K: -0.56%
25-01-15 09:37


CH1
/kA
110.0
88.0
66.0
44.0
22.0
0.0
-22.0
-44.0
-66.0
-88.0
-110.0
TimeBase: 400μs Trigger: Ch1
G64133
CH1 Current
T1: 18.50μs
T2: 467.60μs
Td: 28.80μs
Q: 54.39As
W/R: 3144.13kJ/Ω
Ip+: 102.22kA
Ip-: -662.8A
K: -0.41%
25-01-15 10:04


CH1
/kA
110.0
88.0
66.0
44.0
22.0
0.0
-22.0
-44.0
-66.0
-88.0
-110.0
TimeBase: 400μs Trigger: Ch1
G64135
CH1 Current
T1: 19.00μs
T2: 448.40μs
Td: 28.80μs
Q: 51.91As
W/R: 3002.22kJ/Ω
Ip+: 101.67kA
Ip-: -493.6A
K: -0.49%
25-01-15 10:26


CH1
/kA
110.0
88.0
66.0
44.0
22.0
0.0
-22.0
-44.0
-66.0
-88.0
-110.0
TimeBase: 400μs Trigger: Ch1
G64136
CH1 Current
T1: 19.00μs
T2: 440.80μs
Td: 26.40μs
Q: 51.24As
W/R: 2973.65kJ/Ω
Ip+: 102.30kA
Ip-: -815.6A
K: -0.80%
25-01-15 10:34

List of test equipment used

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
Annex D.2	Salt mist treatment	Salt mist treatment tester / LNP-SB-086	1-2ml/80cm²/h, 35°C	2024-05-23	2025-05-22
Annex D.2	Salt mist treatment	Temp. & Hum. Chamber / LNP-SB-011	-40°C~150°C; 30%~98% RH	2024-11-22	2025-11-21
Annex D.3	Humid sulphurous atmosphere treatment	Humid sulphurous atmosphere treatment Machine / LNP-SB-088	$667x10^{-6}$, 40°C	2024-06-21	2025-06-20
5.4.4	Electrical test	Impulse current generator / LNP-SB-001	10/350us 10kA~150kA	2024-06-05	2025-06-04
5.4.4	Electrical test	Ground Resistance Tester / LNP-SB-064	30A 0.1~600mΩ	2024-03-07	2025-03-06
5.4.2	Compression test by mechanical means	Compression test Equipment / LNP-SB-090	(2000±1000) min^{-1} (50±10) N·m	2024-08-08	2025-08-07
5.4.5	Tensile strength test	Electromechanical Universal Testing Machine / LNP-SB-087	800N~200kN	2024-05-23	2025-05-22
--	Ambient	Hygrothermograph / LNP-SB-111	-20°C~60°C; 0%~95%RH	2024-08-08	2025-08-07

END OF REPORT