RESEARCH-DEVELOPMENT AND TESTING NATIONAL
INSTITUTE FOR ELECTRICAL ENGINEERING

**ICMET CRAIOVA**

**HIGH VOLTAGE DIVISION**

**Force Testing Laboratory - FTL**

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# TEST REPORT
# No. 1988/ 01.08.2013

| | |
|---|---|
| **1. CUSTOMER:** | SCHIRTEC AG<br>Ignaz – Köck Strasse 10, A–1210 Wien, Austria |
| **2. MANUFACTURER:** | SCHIRTEC AG<br>Ignaz – Köck Strasse 10, A–1210 Wien, Austria |
| **3. TESTED PRODUCT:** | Early Streamer Emission (E.S.E.) Lightning Conductor, type SCHIRTEC – AM (S-AM) |
| **4. TEST STANDARD:** | NFC 17-102:2011, Annex C 3.1, 3.2<br>UNE 21186:2011, Anexo C |
| **5. PERFORMED TESTS:** | I. Documentary information and identification<br>II. Marking<br>III. Mechanical test |
| **6. TEST DATE:** | 31.07.2013 |
| **7. TEST RESULTS:** | The product passed the tests |

The report has 8 pages and is edited in 4 copies, copy no.1 remain in laboratory and copies no. 2, no. 3 and no. 4 are sent to the customer.

**HEAD OF HIGH VOLTAGE DIVISION,**
**Dipl. Eng. Ion Pătru**

ICMET DIVIZIA DE ÎNALTĂ TENSIUNE CRAIOVA

*a. The results refer only to the tested product.*
*b. Publication and reproduction of the contents of this report in any other form unless its complete photocopying is not allowed without writing approval of laboratory.*
*c. All signatures of the present report are original ones.*

**Content** **page**

1. **Identification of the test product:** E.S.E. Lightning Conductor

   **Type:** SCHIRTEC – AM (S – AM)

   **Serial / year:** Prototype/2013

   **Technical Specification / Drawing:** see page 8

   **Contract / Test order:** 705.2/ 8044/16.05.2013

   **Internal test order:** 22160/20.05.2013

   **Product receiving date:** 31.07.2013

   **Product condition at receiving:** New

2. **Technical characteristics established by manufacturer:**
   Early ionization time period $\Delta T \ldots 15\ \mu s$

3. **Test program:**
   I. Documentary information and identification
   II. Marking
   III. Mechanical test

4. **Responsible for test:** Dipl. Eng. R. Georgescu (I, II, III)

5. **Checking by:** Dipl. Eng. I. Dinu

# I – DOCUMENTARY INFORMATION AND IDENTIFICATION

**1. Test date:** 31.07.2013

**2. Atmospheric conditions:** p = 982mbar; t = $25^0$C; $h_r$ = 55%

**3. Test standard:** NFC 17-102:2011, Annex C, 3.1.1

**4. Test set-up / test plan:** –

**5. Working mode:**

SCHIRTEC –AM Early Streamer Emission Lighting Conductor was identified by the information indicated on the product marking (Photo 1) and by the technical documentation.

- Name (logo and trade mark) of the manufacturer: SCHIRTEC
- Product reference:
  - Model: E.S.E.
  - Type: SCHIRTEC – AM (S – AM)
  - Reference standard: NFC 17-102:2011
  - Early streamer emission efficiency ΔT (μs): 15
  - Serial number: prototype/2013

**6. Equipment and apparatus used:** –

**7. Measuring system:** –

**8. Conclusion/test results**:

The product passed the test.

## II – MARKING

1. **Test date:** 31.07.2013
2. **Atmospheric conditions:** p = 982mbar; t = 25$^0$C; $h_r$ = 55%
3. **Test standard:** NFC 17-102:2011, Annex C, 3.1.2
4. **Test set-up / test plan (as necessary):** –

5. **Test voltage / working mode (as necessary):**

The test was carried out by rubbing the marking by hand for 15s with a cotton rag dipped in water and for 15s more with a cotton rag dipped in hexane aliphatic.

After the test the marking was checked. It was legible.

6. **Equipment and apparatus used:**
   - cotton rag
   - water
   - hexane aliphatic

7. **Measuring system:** –

8. **Conclusion/test results**:

After the test the marking was legible.

The product passed the test.

# III – MECHANICAL TEST

**1. Test date:** 31.07.2013

**2. Atmospheric conditions:** p = 982mbar; t = 25$^0$C; $h_r$ = 55%

**3. Test standard:** NFC 17-102:2011, Annex C, 3.2

**4. Test set-up / test plan:**

The test was performed inside the laboratory, in normal environmental conditions, at the daylight.

**5. Working mode:**

The dimensions of the product were measured and the values were recorded.
Then it was checked the concordance with the dimensions from the drawing attached.
The data are presented in Table 1.

Table 1

| Dimension acc. to the drawing (mm) | Measured dimension (mm) |
|---|---|
| Φ30.06 | Φ30.06 |
| 263.70 | 263.70 |
| 37.70 | 37.70 |
| 86.30 | 86.30 |
| 51.00 | 51.00 |
| 124.00 | 124.00 |

**6. Equipment and apparatus used:**

- electronic termohygrograph EE 23, serial no. 0409/P23123.007, manufacturer E+E Elektronik – Austria, c.c. no. DJ 005084.578/2013 (DRML Craiova), measurement uncertainty 0.4$^0$C (for coverage factor k = 2 and confidence level ρ = 95%)

**7. Measuring system:**

- digital caliper, serial no. 5V0064501, manufactured by TESA – Switzerland, c.c. no. DJ-017-162-833/2013, expanded uncertainty U = 0.02mm for k = 2

**8. Conclusion/test results**:

The differences between measured dimensions and the dimensions in the drawing are less the specified tolerances.

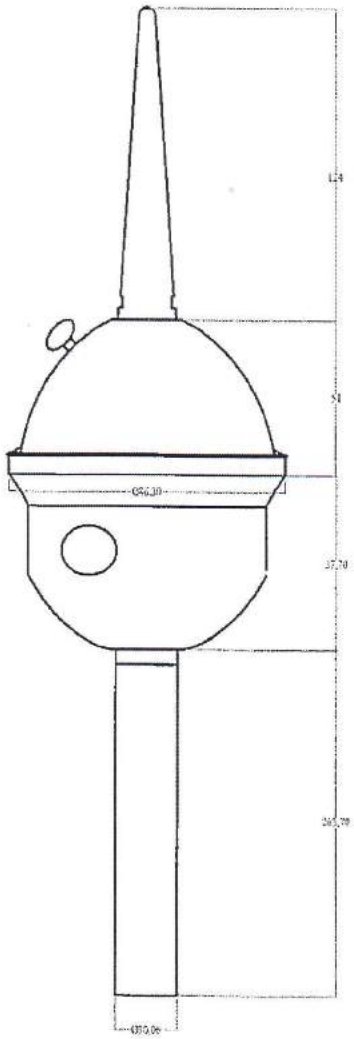
The product passed the test.


Photo 1

1 2 3 4

## TECHNICAL SPECIFICATIONS

| NO | DESCRIPTION | APPROVAL | DATE |
|---|---|---|---|
| | | | |



| | NAME | DATE | SIGNATURE |
|---|---|---|---|
| PREPARED | | | |
| CONTROL | | | |
| APPROVAL | | | |

| | | |
|---|---|---|
| MATERIAL | | WEIGHT |
| STANDARD EQUIPMENT | | |
| COATING | | |

* UNIT OF MEASURE : mm
* TOLERANCES STATED IN PICTURES
: MEASURE : ± ..0,5.... mm / ANGLE : ± ...1....°
-SURFACE ROUGHNESS : ..6,2.... µm
(NOT MEASURE ON DRAWING)

SCHIRTEC ®

PART NAME

SCHIRTEC -AM ( S-AM)

PART NO/DRAWING NO:

| DATE OF PUB. | SCALE | PAGE | SHEET |
|---|---|---|---|
| | | | |