



LIT


**RESEARCH , DEVELOPMENT AND  
TESTING NATIONAL  
INSTITUTE FOR ELECTRICAL ENGINEERING**

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**TEST REPORT  
No.40734 / 31.05.2006**

- 1. Product:** Early Streamer Emission Lightning Conductor-ESELC type SCHIRTEC - AS Ex/1
- 2. Test:** Evaluation of the initiation advance according to NF C 17 - 102 / 1995 standard
- 3. Test order:** INVOICE No.17946 / 31.05.2006
- 4. Customer:** SCHIRTEC Trading GmbH
- 5. Customer's address:** Ignaz - Köck Strasse 8/Top 3, A - 1210 Wien, Austria
- 6. Test result:** There are presented the measurements results
- 7. Test responsible:** /Eng. I.Badea 

**Test Supervisor**  
Eng. A. Ungureanu



- 8. The test report contains 12 pages.**
- 9. The test report was edited in 4 ex.; 1 ex to LIT and 3 ex to customer.**

**CAUTION:**

- The test result makes reference only to tested product .
- Integral reproduction of the test report is forbidden.
- Any part of this test report may be reproduced only with the accord of LIT.
- Reports without original signatures are not valid.



## 1. Tested material

Early Streamer Emission Lightning Conductor (ESEL) type SCHIRTEC – AS Ex/1

See photo on pages 9, 10

Lightning Conductor supplied by SCHIRTEC Trading GmbH

## 2. Type of tests

A switching impulse wave negative polarity and a DC voltage of negative polarity are applied on the upper metallic plane.

## 3. Specification

N F C 17 – 102 / 1995 Appendix C

## 4. Test equipment

Laboratory inner dimensions: 48 m x 32 m x 27 m (height)

Altitude: 100 m above sea level

4200 kV High Voltage Impulse Generator type SPF 340; 340 kW, TUR Dresden - Germany

1000 kV Rectifier cascade type GS 1000 / 30; 30 mA; TUR Dresden – Germany

1400 kV Damped capacitive divider, ICMET Craiova, Romania;

TR – AS transient – recorder, Dr. Strauss System Elektronik, GmbH- Germany

Impulse calibrator type KAL – 1000, 0.84 / 60  $\mu$ s and 20 / 3000  $\mu$ s Dr. Strauss System Elektronik, GmbH – Germany

Fluke calibrator type 5500 A.

## 5. Test circuit

See the test circuit diagram on page 11

The 1400 kV damped capacitive divider was calibrated by official Accredited Laboratory DKD – K – 18702, Romania with certificate 0060 of 14<sup>th</sup> January 2004 and checked before beginning of measurement with the impulse calibrator KAL 1000, calibrated by PTB – Braunschweig – Germany, calibration certificate 3080 PTB 05, and Fluke 5500 A calibrator calibrated by Metrology National Institute of Romania, calibration certificate 000256/DKD-K-39701/06.05.

**9. TEST ON ESELC TYPE SCHIRTEC – AS Ex/1****9.1. Atmospheric conditions**

BEFORE TEST	Beginning of the test: 17h35 p = 996 mb t = 20.3 °C hr = 45.9 %
AFTER TEST	End of the test: 19h20 p = 997 mb t = 20.2 °C hr = 47 %

**9.2. Results**

See tables on page 7

Number of significant impulses: 100

Average of significant  $T_B$ :

- calculated from the experimental wave  $T'_{PDA} = 265.20 \mu s$  Stdev: 40.2 %
- transferred on the reference waveform:  $T_{PDA} = 336.84 \mu s$

See curves on page 8

Triggering advance:  $\Delta T = T_{PTS} - T_{PDA} = 373.73 - 336.84 = 36.89 \mu s$