



RESEARCH , DEVELOPMENT AND TESTING NATIONAL
INSTITUTE FOR ELECTRICAL ENGINEERING

ICMET CRAIOVA
ROMANIA

LIT

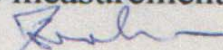
HIGH VOLTAGE LABORATORY - LIT

200515 Craiova, Calea Bucuresti 144

Phone :0251-436866,437795,438380,Fax:0251-415482

TEST REPORT

No.40049 / 14.05.2004

- 1.**Product:** Early Streamer Emission Lightning Conductor–ESEL C type Schirtec-A
- 2.**Test:** Evaluation of the initiation advance
- 3.**Producer:** SCHIRTEC Trading GmbH
- 4.**Customer:** SCHIRTEC Trading GmbH
- 5.**Customer's adress:** Ignaz – Köck Strasse 8 / Top 3 A – 1210 Wien Austria
- 6.**Test result:** They are presented the measurements results
- 7.**Test responsible:** Eng. I.Badea 

Test Supervisor
Eng.A.Ungureanu



Q.A. Responsible:
Eng. Gh. Macovei



APPROVED ICMET
LABORATORY HEAD
Eng. Dorin Popa
LABORATORUL DE ÎNALTĂ TENSIUNE
CRAIOVA



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:

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



1. Tested material

Early Streamer Emission Lightning Conductor (ESEL) type Schirtec - A
See photo on page 10
See drawing on page 9
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 μ s and 20 / 3000 μ 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 14th January 2004 and checked before beginning of measurement with the impulse calibrator KAL 1000, calibrated by PTB – Braunschweig – Germany, calibration certificate 2727 PTB 02, and Fluke 5500 A calibrator calibrated by Metrology National Institute of Romania, order calibration certificate No.3.1 – 112 / 26.02.2004



9. TEST ON ESELC TYPE Schirtec - A

9.1. Atmospheric conditions

BEFORE TEST	Beginning of the test: 16h50 p = 999 mbari t = 15.9 °C hr = 63.3%
AFTER TEST	End of the test: 18h50 p = 998 mbari t = 16.0 °C hr = 58.9 %

9.2. Results

See tables on page 7

Number of significant impulses: 100

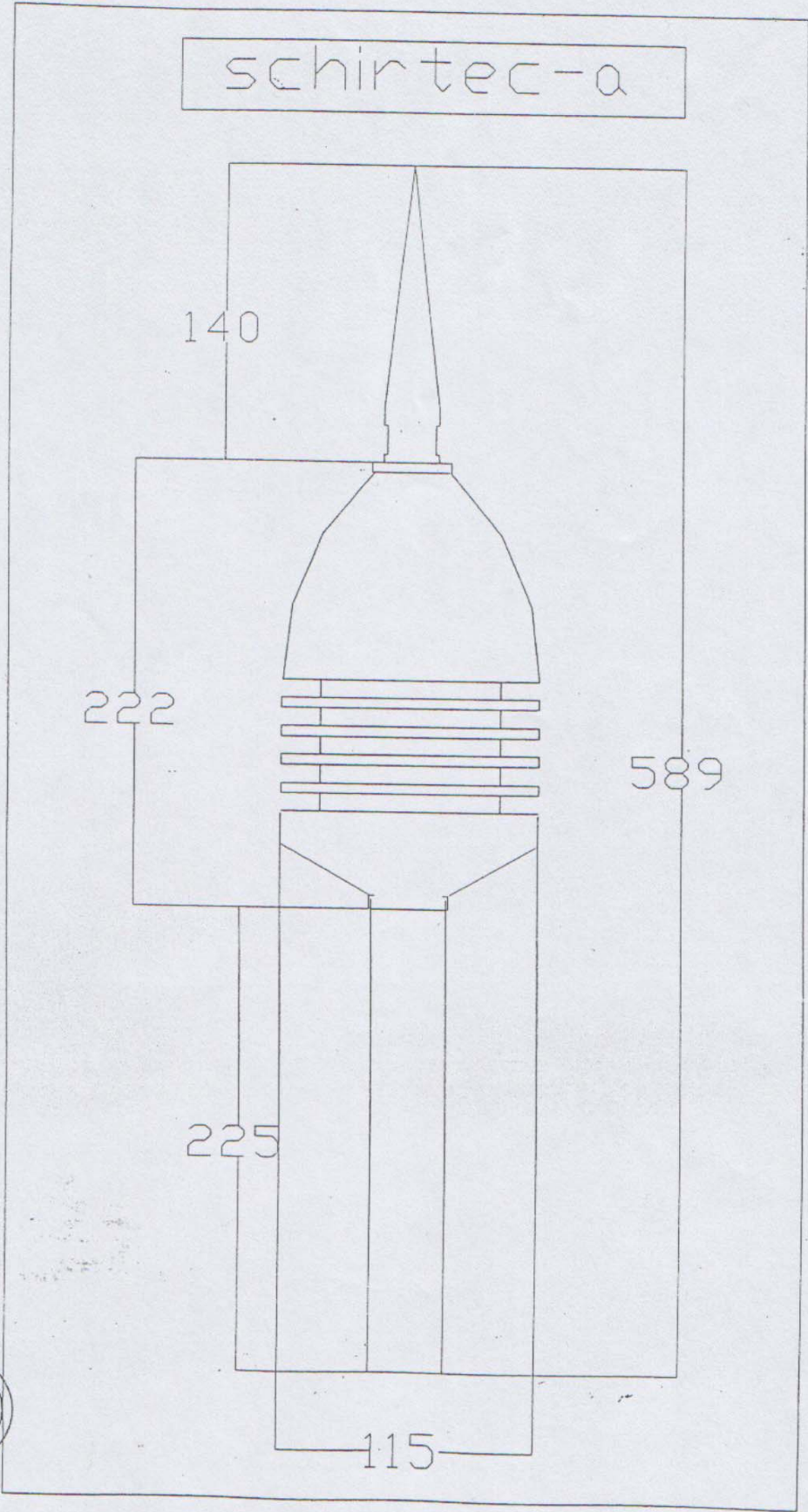
Average of significant T_B :

- calculated from the experimental wave $T'_{PDA} = 258.67 \mu s$
- transferred on the reference waveform: $T_{PDA} = 318.59 \mu s$

See curves on page 8

Triggering advance: $\Delta T = T_{PTS} - T_{PDA} = 386.97 - 318.59 = 68.38 \mu s$

schirtec-a



TEST REPORT No. 40049



AS