

# Test Photographs

LIGHTNING ONAY



# Test Report



Figure 1: Sample Test System and ESE sample

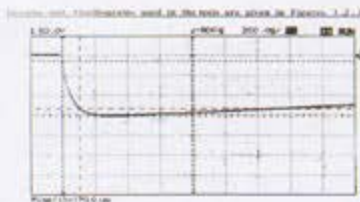


Figure 2: Sample Test Voltage -  $V_{50\%}$  = 40kV, 50000µs

*[Handwritten signature and circular stamp]*

**TÜRKİYE İÇİŞİLERİ BAKANLIĞI TEKNİK DENETİM VE STANDARTİZASYON GENEL MÜDÜRLÜĞÜ**  
**TRC 1000 TÜRKİYE TEKNİK DENETİM VE STANDARTİZASYON GENEL MÜDÜRLÜĞÜ**  
**TRC 1000 TÜRKİYE TEKNİK DENETİM VE STANDARTİZASYON GENEL MÜDÜRLÜĞÜ**

TRC 1000

**TÜRKİYE İÇİŞİLERİ BAKANLIĞI**  
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## TEST REPORT

02.02.2011

*[Handwritten signature and circular stamp]*



Figure 2: Sample Test Voltage - 50 kV

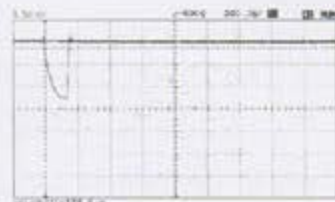


Figure 3: Sample Test Voltage - 50 kV

*[Handwritten signature and circular stamp]*



Quality Certified

## Certificate of Registration

**Onay Paratoner Sistemleri San. Ve Tic. Ltd. Şti.**

10031 Sok. No: 15 D:10E - Bayrampaşa, İstanbul, Turkey

The above licensee has been assessed and registered by TQCSI International Pty Ltd as having the capability to control the quality and safety of goods or services provided in accordance with the conditions of the Licence Agreement at or from the addresses shown above, under a quality management system complying with the requirements of:

**ISO 9001:2008**

The registration covers the manufacturing of active lightning arresters and grounding materials.

Exclusions: \* Design and Development

Issue Date: 1/2/2010  
 Expiry Date: 26/1/2013

Licence No: TQ2588-QC  
 Original Certification: 1/2/2010

*[Signature]*  
 President  
 TQCSI International (Group) Pty Ltd



*[Signature]*  
 General Manager  
 TQCSI International (Group) Pty Ltd  
 For and on behalf of the Board Panel  
 TQCSI Certification Approval Panel



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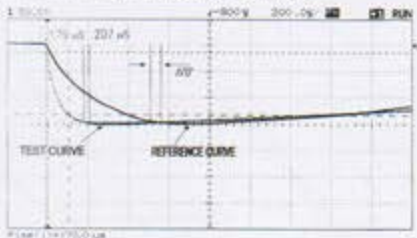


LIGHTNING ONAY

# Test Report

## 1. EVALUATION OF THE TEST RESULTS

As required in NF C15-102 (Appendix C), the average time lag was applied to the reference curve and the test curve and the difference between the corresponding values was obtained in the time lag gain for the ESE sample:  $217 \mu\text{s}$ .



Electrical Steeper Time gain determination for the ESE Sample  
( $\Delta V = 0.2 \text{ kV}$ )

## 2. RESULT

In context of the tests described above, it was determined that the ESE Sample has not been qualified since gain against the test catching rod and therefore can be qualified as ESE 1 according to testing device according to the criteria described in NF C15-102 (Appendix C).

Prof. Dr. Mustafa PEKAL

Maltepe İktisadi ve İdari Bilimler Üniversitesi  
Fakültesi Elektrik ve Elektronik Mühendisliği  
Mühürleme Laboratuvarı



## DECLARATION OF CONFORMITY

CERTIFICATE NO: TR-0112-10  
CERTIFICATE DATE: 04.05.2010

MANUFACTURER:

ONAY PARATONER SİSTEMLERİ  
SAN. TİC. LTD. ŞTİ.  
139/1 Sokak No:15 Daire:108 Beşiktaş/İSTANBUL  
TEL: (+90) 212 486 10 34 FAX: (+90) 212 486 18 07  
www.onayparatoner.com  
info@onayparatoner.com

PRODUCT DESIGNATION:

PARATONER SİSTEMLERİ

THE DESIGNATED PRODUCTS CONFORM TO THE PROVISIONS OF THE FOLLOWING EUROPEAN DIRECTIVES:

THE FOLLOWING DIRECTIVES:

PARATONER SİSTEMLERİ  
IEC 61077/07  
EN 61077-1/06:04-1

FOR FURTHER INFORMATION ABOUT COMPLIANCE WITH THESE DIRECTIVES SEE TECHNICAL FILES.

*Mustafa Pekal*  
Responsible Engineer



*Mustafa Pekal*  
Responsible Engineer

## 1. GENERAL

Item tested for the Test: MALTEPE İKTİSADİ VE İDARİ BİLİMLER ÜNİVERSİTESİ  
FEN BİLİMLERİ ENSTİTÜSÜ  
ELEKTRİK VE ELEKTRONİK MÜHENDİSLİĞİ  
MÜHÜRLEME LABORATUVARI  
KARATAŞ SOK. NO: 15  
BEŞİKTAŞ / İSTANBUL / TÜRKİYE

Test Environment: Lightning Catching Head (ESE) Impulse Voltage Steeper Time Lag, Gain Measurement

Date of the Test: 01.02.2011

Environmental Conditions: 17°C, 68% humidity, 56% Relative Humidity  
(These values were observed not to change appreciably during the test.)

Equipment Used: ONAY brand ESE lightning catching Head, code No: 1724,  
Year: 2011

Impulse Voltage Measurement System Certification:  
High Voltage Steeper (ESE) : IEC 61077-1/06:04-1, series no: 094  
Calibration Cert. No: TÜRK GİVİM 0003, Date: 23.06.2009  
Quality Certification: ISO 9001, series no: 09-0003000794 ESE, Çelikler Çelt. No:  
TMMOB GİVİM 0002, Date: 23.06.2009

1. TEST STANDARDS: NF C15-102 (Appendix C), French Standard

## 2. APPLICATIONS OF THE TESTS

Tests were carried out using a high voltage electrode used according to the criteria mentioned in the relevant standard with dimensions: edge radius  $R = 20 \text{ mm}$ , Diameter 250 mm, and as the ground electrode at the test was a simple catching rod, and in the second case the sample device catching device (ESE) used in each case 100 negative impulses of approximately 200-2000  $\mu\text{s}$  (rise time = 170  $\mu\text{s}$ ) waveforms were applied and the average initiation time lag were recorded by (50). The spacing between the catching rod or device and the high voltage plane electrode was set to 100 mm. The test initiation voltages were applied by means of a 5000 kV, 20 kA impulse generator (IEGAL); the tests were applied using the ESE device under the test and a simple catching rod (SR) of the same geometry and test length. The average time lag results are given in Table 1, and the test system is indicated in Figure 1.

TABLE 1

ESE	Time Lag to Steeper ( $\mu\text{s}$ )		
	Min.	Max.	Average
SR	88	206	207
ESE Sample	88	206	179



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