

# REPORT OF PERFORMANCE

1029-15

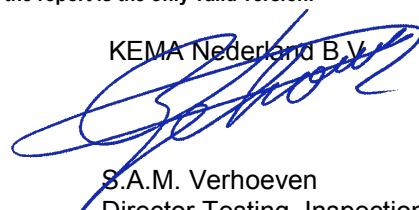
<b>OBJECT</b>	Single-core power cable
<b>TYPE</b>	CU/XLPE/CW/LEAD/HDPE 130/220 kV, 1x2500 mm <sup>2</sup> Cu, XLPE insulated
<b>MANUFACTURER</b>	EI-Sewedy Cables 10 <sup>th</sup> of Ramadan City, Egypt
<b>CLIENT</b>	EI-Sewedy Cables 10 <sup>th</sup> of Ramadan City, Egypt
<b>REFERENCE</b>	EI-Sewedy Cables Purchase order no. 2/2015 dated 15 January 2015
<b>TESTED BY</b>	KEMA Nederland B.V. Arnhem, the Netherlands
<b>DATE OF TESTS</b>	23 February 2015
<b>TEST PROGRAMME</b>	Power-frequency voltage withstand test at 3U <sub>0</sub> for the duration of 12 hours.
<b>SUMMARY AND CONCLUSION</b>	The object passed the test

This Report of Performance applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This report consists of 10 pages in total.

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KEMA Nederland B.V.

A handwritten signature in blue ink, appearing to read "S.A.M. Verhoeven".

S.A.M. Verhoeven  
Director Testing, Inspections &  
Certification The Netherlands

Arnhem, 12 March 2015

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## 1 IDENTIFICATION OF THE TEST OBJECT

### 1.1 Ratings assigned by the manufacturer

Rated voltage ( $U_0 / U_r$ )	130 / 220	kV
Rated power frequency	50	Hz
Rated conductor cross-section	1 x 2500	mm <sup>2</sup>

### 1.2 Description of the test object

Manufacturer	EI-Sewedy Cables 10 <sup>th</sup> of Ramadan City – Industrial Zone A3 - Egypt
Type	CU/XLPE/CW/LEAD/HDPE
Manufacturing code	GB8-TX01-N2500-00-00
Conductor cross-section and material	1x2500 mm <sup>2</sup> copper (segmental construction)
Drawing(s)	see appendix B
Year of manufacture	2012
Total active length of the cable sample (excluding the water terminations)	23 m

### 1.3 List of drawings

The following drawing was submitted by the client and is included in this report in Appendix B.  
KEMA has not verified this drawing:

GB8-TX01-N2500-00-00

## **2 GENERAL INFORMATION**

### **2.1 The tests were witnessed by**

The test was carried out without a representative of the client present.

### **2.2 The tests were carried out by**

**Name**

Mr P. Kuijpers

Mr R. Hensbroek

**Company**

KEMA Nederland B.V.,

Arnhem, the Netherlands

### **2.3 Purpose of the test**

Purpose of the test was to verify whether the material complies with the specified requirements.

### **2.4 Measurement uncertainty**

A table with measurement uncertainties is enclosed in appendix A. Unless otherwise indicated in the report, the measurement uncertainties of the results presented are as indicated in this table.

### **2.5 Applicable standards**

When reference is made to a standard and the date of issue is not stated, this applies to the latest issue, including amendments, which have been officially published prior to the date of the tests.

### 3 POWER-FREQUENCY VOLTAGE WITHSTAND TEST

#### Standard and date

Standard not applicable, in accordance with the client's specification  
 Test dates 23 February 2015

#### Environmental conditions

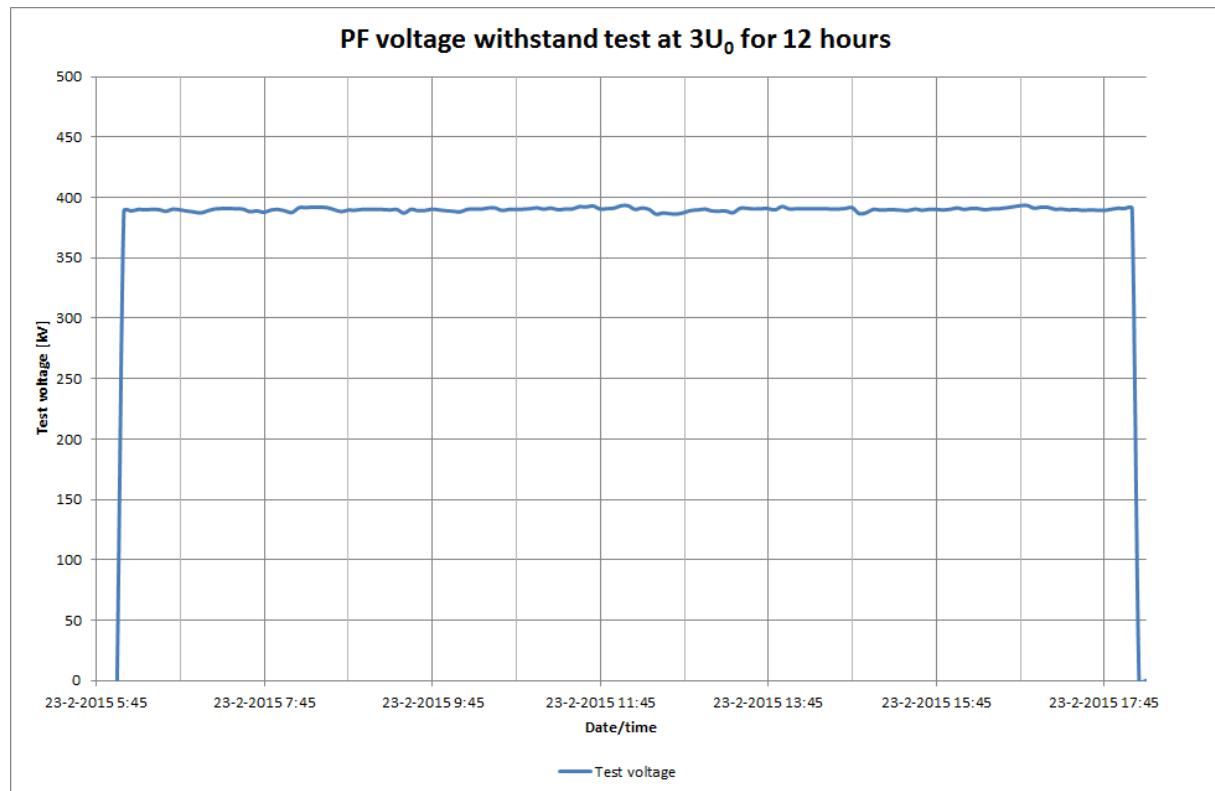
Ambient temperature	20 °C	Ambient air pressure	991 hPa
Temperature of test object	20 °C	Humidity (relative)	43 %

#### Characteristic test data

Specified PF test voltage ( $3U_0$ )	390 kV
Power-frequency	50 Hz
Specified duration of test	12 hours
Total active length of the cable sample (excluding the water terminations)	23 m

Water terminations from KEMA had been installed on both ends of the cable sample.

Testing arrangement		Voltage applied, 50 Hz		Duration
Voltage applied to	Earth connected to	... x $U_0$	(kV)	(hours)
Conductor	Metallic screen	3	390	12



Recorded graph of the test voltage during the test



**Requirements**

No breakdown of the insulation shall occur.

**Result**

The object passed the test.

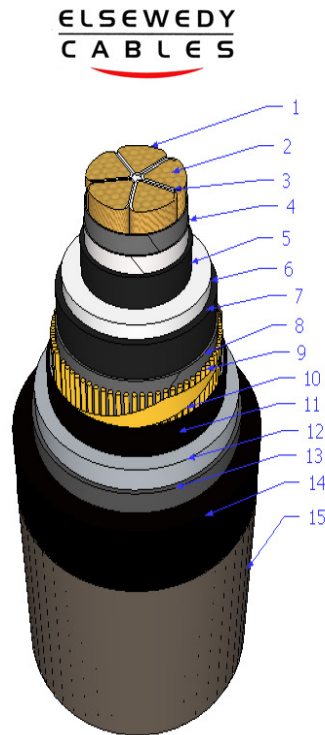
#### 4 MEASUREMENT UNCERTAINTIES

The measurement uncertainties in the results presented are as specified below unless otherwise indicated.

measurement	measurement uncertainty
dielectric tests and impulse current tests:	
peak value	≤ 3%
time parameters	≤ 10%
capacitance measurement	0,3%
tan δ measurement	± 0,5% ± 5 x 10 <sup>-5</sup>
partial discharge measurement:	
< 10 pC	2 pC
10 to 100 pC	5 pC
> 100 pC	20%
measurement of impedance	≤ 1%
AC-resistance measurement	
measurement of losses	≤ 1%
measurement of insulation resistance	≤ 10%
measurement of DC resistance:	
1 to 5 μΩ	1%
5 to 10 μΩ	0,5%
10 to 200 μΩ	0,2%
radio interference test	2 dB
calibration of current transformers	2,2 x 10 <sup>-4</sup> I <sub>i</sub> /I <sub>u</sub> and 290 μrad
calibration of voltage transformers	1,6 x 10 <sup>-4</sup> U <sub>i</sub> /U <sub>u</sub> and 510 μrad
measurement of conductivity	5%
measurement of temperature:	
-50 to -40 °C	3 K
-40 to 125 °C	2 K
125 to 150 °C	3 K
tensile test	1%
sound level measurement	type 1 meter as per IEC 60651 and ANSI S1,4,1971
measurement of voltage ratio	0,1%



5 MANUFACTURER'S DRAWING(S)/DATA SHEET



<i>Size</i> : <b>1 x 2500</b> <i>mm<sup>2</sup></i>		<i>Type</i> : <b>CU/XLPE/CW/LEAD/HDPE</b>
<i>Voltage</i> : <b>130/220</b> <i>kV</i>		<i>Standard</i> : <b>IEC 62067</b>
<i>Code</i> : <b>GB8-TX01-N2500-00-00</b>		<b>EL-SEWEDY CABLES</b>
<i>Sr.</i>	<i>Description</i>	<i>Thickness mm</i>
1.	<b>Copper Conductor (Segmental)</b>	
2.	<b>Non-Conductive Swelling Tape inside conductor</b>	<b>0.1</b>
3.	<b>Semi-Conductive Water Blocking Tape</b>	<b>0.1</b>
4.	<b>Inner Semi-conductor</b>	<b>1.8</b>
5.	<b>XLPE Insulation</b>	<b>23.0</b>
6.	<b>Outer Semi-conductor</b>	<b>1.4</b>
7.	<b>Semi-Conductive Water Blocking Tape</b>	<b>0.3</b>
8.	<b>Copper Wire Screen</b>	<b>75 x 1.75</b>
9.	<b>Copper Tape (Open Helix)</b>	<b>0.1</b>
10.	<b>Semi-Conductive Water Blocking Tape</b>	<b>0.3</b>
11.	<b>LEAD ALLOY Sheath</b>	<b>3.2</b>
12.	<b>Bituminized Coating</b>	
13.	<b>HDPE Sheath</b>	<b>3.7</b>
14.	<b>Graphite Coating</b>	
<i>Not to Scale</i>		<i>Approved by</i> <b>Eng. Ayman Elkholy</b>
<i>Drawn by</i> <b>Mr. Nabil Abdallah</b>		

**6 PHOTOGRAPH OF THE TEST OBJECT / TEST SETUP**



Photograph of the test setup and the cable sample with water terminations installed.