TEST REPORT

Test object:	Cap and pin type porcelain insulator
Designation:	U100B/E-N
Manufacturer:	**EMCO Industries Limited**
Tested for:	**EMCO Industries Limited** 4th Floor, National Tower, 28 – Edgerton Road, Lahore - 54000 **PAKISTAN**
Date of tests:	28th November – 16th December 2016
Project ID:	NFL-11/2016
Order/Contract:	NFL-11/2016c, 10.02.2016
Test specification:	**IEC 60383-1:1993** **ANSI C29.1:1988 (R2002)** **WAPDA P-8:1996**
Tests performed:	The test object, constructed in accordance with the description, drawings and photographs incorporated in this report has been subjected to dry lightning impulse withstand voltage, dry and wet power-frequency withstand voltage, electromechanical failing load, thermal mechanical performance and R.I.V. tests.
Test results:	**The test object passed the requirements of the standard and specification.**

This Test Report has been issued by VEIKI-VNL Electric Large Laboratories Ltd. Testing Laboratory in accordance with above mentioned specification.

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

This Report comprises 18 sheets in total (17 numbered pages and 1 drawing).

VEIKI-VNL VILLAMOS NAGYLABORATÓRIUMOK KFT. * VEIKI-VNL ELECTRIC LARGE LABORATORIES Ltd.

Budapest, 22nd February, 2017	Attila Sántha responsible for the test	Csaba Homok supervised by	Dr. László Varga managing director

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TESTS PERFORMED ON THE TEST OBJECT

No.	Description	Relevant clauses of the standard
1	Lightning impulse withstand voltage test	Clause 13 of IEC 60383 1:1993
2	Dry power-frequency withstand voltage test	Clause 14 of IEC 60383 1:1993
3	Wet power-frequency withstand voltage test	Clause 14 of IEC 60383 1:1993
4	Electromechanical failing load test	Clause 18 of IEC 60383 1:1993
5	Thermal-mechanical performance test	Sub-clause 8.1.5 of WAPDA P-8
6	Radio influence voltage test	Sub-clause 4.9 of ANSI C29.1:1988 (R2002)

DESCRIPTION OF THE TESTS

Cap and pin type U100B/E-N porcelain insulators were subjected to dry lightning impulse withstand voltage, dry and wet power-frequency withstand voltage, electromechanical failing load, thermo-mechanical performance, radio influence voltage tests according to the WAPDA P-8 Technical Specification based on the referred standards. The tests were performed on new insulators. The attached assembly drawing is serving the identification of the tested insulators. The test objects can be seen on Photo 1.

1 Dry lightning impulse withstand voltage test on one insulator unit

During the tests the ambient parameters were:

Dry temperature:	20.6 °C
Air pressure:	101.46 kPa
Absolute humidity:	4.37 g/m^3

1.1 Test method and parameters

The test was carried out on 5 samples in dry condition according to the Client's request. The test voltage was 110 kV_{peak} corrected by meteorological correction factor. During the withstand test 15 positive impulses were applied according to Sub clause 7.3.1.2 of IEC 60060 1:2010 standard (shown in the attached oscillogram No.: 53287). The test object shall withstand 15 impulses without breakdown or with not more than two flashovers according to referred standard. The test circuit can be seen on the Figure 1 and the test arrangement on the Photo 2.

The correction factor was K=0.9365 during the test.

1.2 Test results

The test object passed the lightning impulse voltage withstand test at 110 kVpeak without breakdown and without flashover on positive polarity, therefore the test object met the Client's requirements regarding the lightning impulse voltage test in dry condition.

2 Dry power-frequency withstand voltage test

During the tests the ambient parameters were:

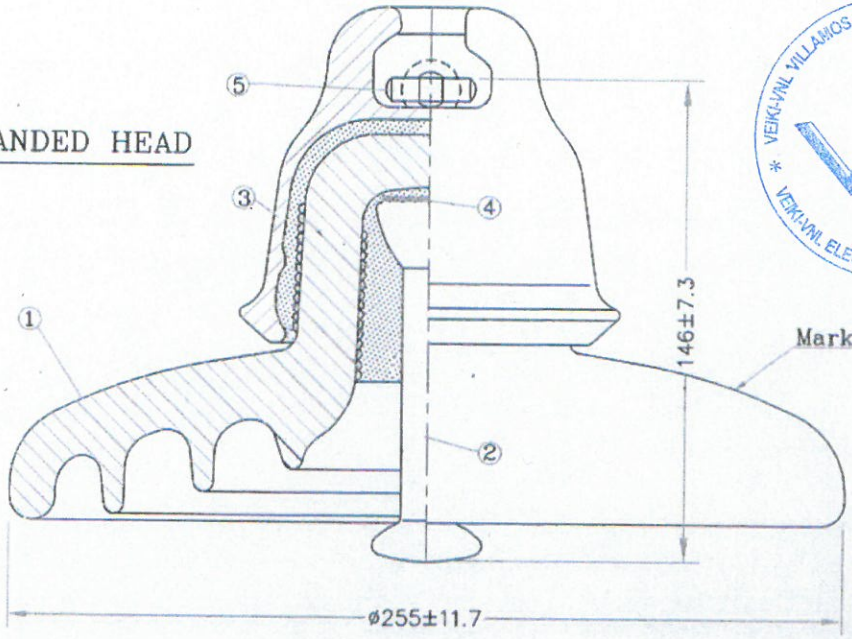
Dry temperature:	20.7 °C
Air pressure:	101.51 kPa
Absolute humidity:	4.3 g/m^3

2.1 Test method and parameters

The dry power-frequency withstand voltage test was carried out on 5 samples according to Client's request at the test voltage of 70 kV_{rms} with application of the correction factor for 1 minute in dry condition. The test object shall withstand the test voltage for 1 minute without breakdown and

Photo 7
The test arrangement of R.I.V. measurement

STRAIGHT SANDED HEAD



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TECHNICAL DATA

Minimum Creepage Distance	290 mm
Standard Coupling Diameter	16 mmA
Short Time Electromechanical Breaking Load	100 kN
Mechanical Routine Test Load	40 kN
Mechanical Impact Strength	11.3 N–m
Power Frequency Withstand Voltage Dry	70 kV
Power Frequency Withstand Voltage Wet	40 kV
Impulse Withstand Voltage	110 kV
Low Frequency Puncture Voltage	110 kV
Maximum RIV at 1000 KHz	50 µV
Test voltage to ground.	10 kV

Mark

100kN
EMCO
PAKISTAN
YEAR

WEIGHT OF ZINC COATING ON CAP

Individual sample	Average of 3 samples
550 gm/sqm	610 gm/sqm

Emco Industries Ltd. LAHORE 54000 4th Floor, National Tower, 28-Egerton Road

NOTE:

1. On all dimensions for which special tolerance does not apply , will be according to IEC Pub. 60383, clause 17.
2. COLOR OF GLAZE : BROWN/GREY
3. FERROUS PARTS: HOT DIP GALVANIZED

Specifications Applied : WAPDA P-8:1996/IEC-60383:1993

SR.NO	DESCRIPTION	DRG.NO:	MATERIAL	QTY.	REMARKS
5	Socket Key		Stainless Steel	1	
4	Cork			1	
3	Socket Cap		Malleable/ductile Iron	1	
2	Ball Pin		Mild Steel(Hot Forged)	1	
1	Insulator		Porcelain	1	

REV.	DESCRIPTION	DATE	NAME

1986	DATE	NAME
DRWN.	28–1	M.Y.Qureshi
CHKD.	28–1	M.J.Abbasi
APPD.	28–1	I.A.Nadeem

EMCO
LAHORE PAKISTAN

NORMAL TYPE SUSPENSION INSULATOR 100kN
Ref: EM–10JR–2

SCALE
mm

CAT.NO: U100B/E–N