



Certificate No: TC-5100

TEST REPORT

TEST REPORT AS PER IS: 13340 (Part 1):2012

SRF No.: 19010951

Name & Address of Customer:	ULR-TC510019000000160F		
M/s. AB Power System Solution Factory: Gat No. 258/1, Plot No. 8/2, vill. Khalumbre, Chakan – Talegaon Road, Tal Khed, Near Lohr TSI Compound, Dist Pune – 411501	Discipline: Electrical Testing		
	Group: Capacitors		
	Test Report No.: HPLI/Test/1901095101(Part B)		
	Date of Issue: 01/10/2019		
Customer Ref.: Dated 12/01/2019			
	Date of Sample Receipt: 12/01/2019	Start of Test Date: 21/01/2019	End of Test Date: 28/09/2019

PART A - PARTICULARS OF THE SAMPLE SUBMITTED

Sample description	Shunt Power Capacitors of the Self-Healing type for AC Systems having a rated voltage up to and including 1000V
Grade/ variety/ type/ class/ size etc.	Qn: 7.5 Kvar, Un: 525 V, f: 50 Hz, In: 8.25A, 55°C, 3 KV, —□—, D, SH
Declared values, if any	7.5Kvar, 525V, 3PH, 50 Hz, Delta Connected, 43µfarad (-5% TO +10%), Temperature Category: 55°C, Overpressure or Thermal disconnecter: Not Fitted, Application: Indoor, Internal Fuse: Not used
Code no., BIS seal and IO's sign. if any	Nil
Batch no., date of manufacture and Brand name	Date of Manufacture: January 2019 & Brand Name: "AB POWER CAPACITORS"
Quantity	03 Nos.: (Including Dummy Capacitors)
Condition of the sample	OK
Reference specification (s)	IS 13340(Part 1):2012
Environmental conditions	Temperature (25±2)°C & Relative Humidity<65%

PART B -SUPPLEMENTARY INFORMATION

- Deviations from the test methods as per relevant specification/work instructions, if any : Nil
- Details of the drawings, graphs, tables, sketches or photographs as referred in the test report, if any: Nil.
- Testing procedure according to work instruction HPLI03/Test-Cap/WI-30 to 42.
- The Management System is maintained in accordance with IS/ISO/IEC 17025:2005 and testing Standards/Instruments are traceable to National/International Standards.

- Notes:**
- This report is not to be reproduced wholly or in part without our special permission in writing.
 - This report refers only to the particular sample detailed above.
 - The results reported in this certificate are valid at the time of and under the stipulated conditions of measurement.
 - Remnants of sample will be disposed off after 90 days of issue of the test report if no any further information is received.

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Tested By

[Signature]
Checked By

Format No. P 17 F 04-00

For HI PHYSIX LABORATORY INDIA PVT. LTD.

[Signature]
Ashutosh Pathak
(Chief Technical Manager)
Approved By



ULR-TC510019000000160F

PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/1901095101(Part B)

IS 13340 (Part 1):2012

Sl. No	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	RESULTS			
1.	Thermal stability test (Cl.13 of IS 13340 (Part 1): 2012)	The test capacitor unit subjected to the test shall be placed between two dummy units submitted by manufacturer which shall be energized at the same voltage as the test capacitor. After all parts of capacitor have attained temperature of the ambient air, the capacitor shall subjected for 48h to an a.c. voltage of sinusoidal form. The magnitude of the voltage of the test shall be adjusted to give a calculated output of at least 1.44 times its rated output. Test Voltage: 626V at 55°C for 48h.	Satisfactory			
		During the last six hours, the temperature of the container near the top shall be measured at least four times. The temperature rise shall not be increase by more than 1°C.				Hour
			43 rd	64.3		
			44 th	64.6		
			45 th	64.5		
			46 th	64.4		
			47 th	64.5		
			48 th	64.6		
			At the end of the stability test, the difference between the measured temperature of the container and the ambient air temperature shall be recorded.	9.6°C Max.		
			Before and after the test the Capacitance shall be measured within the standard temperature range for testing before and after the thermal stability test. These two measurements shall be corrected to the same dielectric temperature. No change of capacitance greater than 2% shall be apparent from these measurements.	Before Test	After Test	Change
			Between terminal 1&2	43.7 µF	43.9 µF	0.46%
			Between terminal 2&3	43.7 µF	43.6 µF	-0.23%
	Between terminal 3&1	43.9 µF	43.6 µF	-0.68%		
	A measurement of the tangent of the loss angle (tan δ) shall be made before and after the thermal stability test, at a temperature of approximately 20 °C. (Change in Loss angle: Max. 2x10 ⁻⁴)	Before Test	After Test	Change		
	Between terminal 1&2	0.0007	0.0008	0.0001		
	Between terminal 2&3	0.0009	0.0008	-0.0001		
	Between terminal 3&1	0.0008	0.0009	0.0001		

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IS 13340 (Part 1):2012

Sl. No	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	RESULTS
2.	Measurement of the tangent of the loss angle ($\tan \delta$) of the capacitor at elevated temperature (Cl.14 of IS 13340 (Part 1): 2012)	The capacitor losses ($\tan \delta$) shall be measured at the end of the thermal stability test The measuring voltage shall be that of the thermal stability test. The value of $\tan \delta$, measured in accordance with 14.1, shall not exceed the value declared by manufacturer. (Declared Value: 0.0025)	See below
		Between terminal 1&2	0.0009
		Between terminal 2&3	0.0009
		Between terminal 3&1	0.0008
3.	Ageing Test (Cl.17 of IS 13340 (Part 1) & (Part 2): 2012)	The capacitor unit is mounted as specified in enclosure in which heated air is circulated with an air velocity such that the temperature variation at any point of enclosure do not exceed 2 °C . The capacitor shall be energized at a voltage equal to 1.25 U_N (i.e. 656V) for 750 hours. For Ageing test, case temperature of the capacitor shall be maintained which is the highest mean temperature in 24 hours (as per Table 1 of IS 13340 (Part 1):2012) plus the difference between the capacitor case temperature and the cooling air temperature recorded at the end of thermal stability test.	Satisfactory
		The capacitor shall then be subjected to 1000 discharge cycles consisting of charging the capacitor to a dc voltage of 2 U_N (i.e.1050V) between terminal 1&3 (terminal 2 left open) for 30s minimum charge-discharge cycle as specified.	Satisfactory
		The Ageing test will repeated after 1000 charge and discharge cycles. At 1.25 U_N (i.e. 656V) for 750 hours	Satisfactory
		During the test no permanent breakdown, interruption or flashover shall occur.	No permanent breakdown, interruption or flashover occurred
		Change in Capacitance before and after ageing test. Test Voltage: 525 Vac, Frequency: 50 Hz	Before Test After Test Change (%)
		Between terminal 1&2 (Limit: 5% Max.)	43.9 μ F 43.8 μ F -0.23%
		Between terminal 2&3 (Limit: 5% Max.)	43.6 μ F 43.9 μ F 0.69%
		Between terminal 3&1 (Limit: 5% Max.)	43.6 μ F 43.8 μ F 0.46%
		Overall Phase (Limit: 3% Max.)	Satisfactory
		On one phase, (Limit: 5% Max.)	Satisfactory

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IS 13340 (Part 1):2012

Sl. No	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	RESULTS
		The Voltage test has been carried out between terminals and container as prescribed in 10.1 of IS 13340 (Part 1):2012.	No Puncture or flashover occurred
		The Sealing test has been carried out as prescribed in Cl. 12 of IS 13340 (Part 1):2012.	Satisfactory
4.	Destruction Test (Cl.19 of IS 13340 (Part 1) & (Part 2): 2012)	The capacitor sample was mounted in a circulating air oven maintained at a temperature of 55°C. After, all the parts of the capacitor attained the test temperature; the destruction test was performed between terminals 3 and 1 & 2 (joined together). a) A.C. Voltage $1.3U_N$ (i.e 683V) b) D.C. Voltage $10 U_N$ (i.e 5.25 kV)	Satisfactory
		At the conclusion of the test, following conditions are met.	See below
		a) Escaping liquid material may wet the outer surface of the capacitor but shall not fall in drops.	Satisfactory
		b) Container may deform & damage but not broken.	Container not broken
		c) Flame or fiery shall not be emitted from opening	No Flame occur
		d) The results of dielectric test between terminal and container with 1500V for 10s shall be satisfactory	Satisfactory & withstood

PART D:-

- Remarks:**
- The observations given in part A of the cover page of the test report are taken from the marking on samples and specification provided with the sample.
 - This test report is issued as Part B covering above mentioned tests only as per the customer's request. Test Report No. HPLI/Test/1901095101(Part A) dated 20/02/2019 has been issued earlier covering all the tests except above mentioned tests.

***** END OF THE TEST REPORT *****

For HI PHYSIX LABORATORY INDIA PVT. LTD.

Ashutosh Pathak
Ashutosh Pathak
(Chief Technical Manager)

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