



परीक्षण / अंशांकन रिपोर्ट  
TEST / CALIBRATION REPORT

संख्या / No.  
ETDC (MH) T & M / 244 /

दिनांक  
Dated 12 / 04 / 2013



भारत सरकार

Government of India

संचार एवं सूचना प्रौद्योगिकी मंत्रालय

Ministry of Communications and Information Technology

इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी विभाग

Department of Electronics and Information Technology

मानकीकरण, परीक्षण एवं गुणवत्ता प्रमाणन निदेशालय

Standardisation, Testing and Quality Certification Directorate

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**ELECTRONICS TEST AND DEVELOPMENT CENTRE, MOHALI  
FINAL TEST REPORT**

No. : ETDC(MH)/T&amp;M/ 244

Dated : 12.04.2013

Page : 1 of 6

1. **Indentor's Address** Okaya Power Ltd.  
D-7, Udyog Nagar,  
Near Peeragarhi Metro Station  
New Delhi.
2. **Description of item(s)**
- 2.1 **Nomenclature** : SMF / VRLA Battery (12V ,70 Ah)
- 2.2 **Make/Model** : OKAYA/ OB 70-12
- 2.3 **Sr. No.** : Sample No.1 to 3 (Refer Remarks 1)
- 2.4 **Manufactured by** : OKAYA
- 2.5 **Quantity** : Three.
3. **Sample(s) received on** : 17.10.2012
4. **Condition of sample(s) on receipt** : Good
5. **Date(s)/Period item(s) tested** : 25.10.2012 to 06.04.2013
6. **Location where test(s) carried out  
(With name and address)** : ETDC Mohali
7. **Reference of test method(s) used** : JIS C 8702 -1 : 2003, and Indentor's.
8. **Applicable product specification(s)** : JIS C 8702 -1 : 2003 and Indentor's.
9. **Deviation(s), exclusion(s), addition(s)  
in test method(s)** : Nil
10. **Environmental conditions**
- 10.1 **Temperature** : 25°C ± 10°C
- 10.2 **Humidity** : 45% to 70%
11. **Statement with regard to  
compliance** : Not Applicable
12. **Statement on uncertainty in  
measurement** : Not Applicable.
13. **Major Equipment Used**



S. no.	Nomenclature	Make	Model	Cal. Validity
1.	ELECTRONIC LOAD	Digitronics	750W	March, 2013
2.	MULTIMETER (DIGITAL)	RISHABH	15S	Jan, 2014
3.	High Rate Discharger	SIMAKANS	400A	Used as source
4.	Clamp meter	Meco	3600	Aug,2013
5.	Measuring Tape	Freemans	15M	Aug,2014
6.	Weighting Scale	Modern Business	SNEW-100	July, 2013
7.	Stop Watch	Timeter	J-23	Jan,2014
8.	Vibration Test Machine	Sarswati Dynamics	SEV 100	Jan,2014

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Head (Test)

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**ELECTRONICS TEST AND DEVELOPMENT CENTRE, MOHALI  
FINAL TEST REPORT**

No. : ETDC(MH)/T&amp;M/ 244

Dated : 12.04.2013

Page : 2 of 6

**14. RESULTS SUMMARISED:**

Test Stage	Test Requirements (Cl. Ref. of specs.)	Test Condition	Test Data	Pass/Fail (Qty.)	Uncertainty (Where applicable)
1. Visual Examination	-	There shall not be any deformation of body and cracks / corrosion on the terminals of the sample (Sealed Lead Acid Battery).	No defects observed.	Pass	-
2. Marking	-	As given below			
2.1 Polarity Cl : 4.4 JISC : 8702	Cl. 6.1 of JIS C 8702-2, Cl. 4.4 of JIS 8702-1	Positive and negative terminals of the sample shall be marked with symbols (+) and (-) respectively.	Positive: Symbol (+) (With Red colour) Negative: Symbol (-) (With Black colour)	Pass	-
2.2 Designation Cl : 4.3	Cl. 6.2 of JIS 8702-2, Cl. 4.3 of JIS C 8702-1	The sample shall be marked with relevant details : a) Type Designation.	SMF / VRLA Battery	Pass	-
		b) Nominal Voltage (n x 2.0 V)	12V	Pass	
		c) Rated Capacity (20 Hr. rate)	70Ah	Pass	
		d) Manufacturer.	Sunox International	Pass	
		e) Year and Month of Manufacture.	Not mentioned	-	
2.3. Additional Information	4.3 of JIS C 8702-1	Following parameters shall be determined in respect of the sample: a) Mass (Kg)	<u>Sample No</u> <u>Mass(Kg)</u> 1. 22.30 2. 22.64 3. 22.38	-	-
		b) Dimension (LxWxH) (cm)	<u>Sample No</u> <u>LxWxH(cm)</u> 1. 350 x 169 x 181 2. 350 x 169 x 181 3. 350 x 170 x 182	-	-
		c) Charging Current / Voltage	Stand By Use 13.5 - 13.8 V (20 °C) Initial current 19.5 A Cycle use 14.4 - 15.0 V (20 °C)	-	-

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**ELECTRONICS TEST AND DEVELOPMENT CENTRE, MOHALI  
FINAL TEST REPORT**

No. : ETDC(MH)/T&amp;M/ 244

Dated : 12.04.2013

Page : 3 of 6

**14. RESULTS SUMMARISED(Contd.):**

Test Stage	Test Requirements (Cl. Ref. of specs.)	Test Condition	Test Data	Pass/Fail (Qty.)	Uncertainty (Where applicable)
3 Classification of Battery (Sample No.1,2,3)	Cl. 7 of JIS C 8702-2	The sample shall either be Prismatic or Cylindrical.	Prismatic.	Pass	-
4. Capacity Test (20Hrs.) (Sample No.1)	Cl. 5.1 and 7.1 of JIS C 8702-1/2003	The Fully charged sample shall be discharged by at a constant current of $3.5A \pm 2\%$ at an ambient temperature of $25^{\circ}C \pm 2^{\circ}C$ till an end point terminal voltage of 10.5V (6 x 1.75V). The capacity shall be 70 Ah or more.	Capacity observed: 80.79 Ah (First cycle)	Pass	-
(Sample No.2)			Capacity observed: 80.21 Ah (First cycle)		
(Sample No.3)			Capacity observed: 76.71 Ah (First cycle)		
5. High Rate Discharge Test (Sample No.2)	Cl. 5.2 and 7.2 of JIS C 8702-1/2003	Fully charged sample shall be discharged at a constant current of 70.0A ( $20 \times I_{20}$ ) upto an end point terminal voltage of 9.6V ( $6 \times 1.6V$ ). The discharge duration shall be 27 minutes or more.	Discharge time: 32 minutes	Pass	-
6. Maximum Permissible Current (Sample No.3)	Cl. 5.5 and 7.5 of JIS C 8702/1	Fully charged sample shall be discharged at a constant current as under: 140A ( $40 \times I_{20}$ ) for 300sec.  After the discharge ,sample shall be recharged and it shall be discharged at a constant current of 140 A ( $40 \times I_{20}$ ) upto an end point terminal voltage of 8.04 V ( $6 \times 1.34$ V) The discharge duration shall not be less than 150 sec.	812 Seconds.	Pass	-

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**ELECTRONICS TEST AND DEVELOPMENT CENTRE, MOHALI  
FINAL TEST REPORT**

No. : ETDC(MH)/T&amp;M/ 244

Dated : 12.04.2013

Page : 4 of 6

**14. RESULTS SUMMARISED(Contd.):**

Test Stage	Test Requirements (Cl. Ref. of specs.)	Test Condition	Test Data	Pass/Fail (Qty.)	Uncertainty (Where applicable)
7.Charge Retention Test (Sample No. 1)	Cl.5.4 &7.4 JISC:8702	Fully charged sample shall be stored for 120 days. After the period, the capacity test shall be performed at a constant discharge current of 3.5A(I <sub>20</sub> ) upto an end point terminal voltage of 10.5V. The capacity shall not be less than 75% of the rated capacity	Test Conducted  105.91%	Pass	
8. Charge Acceptance Test after Deep Discharge (Sample No. 01)	JIS C 8702 Cl. 5.6	A suitable load resistor which can draw a current of 140 A ± 10% (40xI <sub>20</sub> ) shall be connected across the fully charged sample and it shall be stored for 360Hrs. After the storage period, the load resistor shall be disconnected from the sample and sample shall be recharged at constant voltage (U <sub>c</sub> ) for a period of 48 Hrs with initial charging current between 21 A to 35A (6 x I <sub>20</sub> to 10 x I <sub>20</sub> ). After the charging period ,the sample shall remain open circuited for 5 to 24Hrs. and then shall be discharged with constant current 3.5A (I <sub>20</sub> )  The observed capacity of the sample shall not be less than 75% of the rated capacity	Test conducted.  100%	Pass	
9. Gas Recombination Efficiency (Sample no. 3 )	JIS C 8702-1 Cl. 5.8	Fully charged sample shall be charged continuously at a constant current (2xI <sub>20</sub> ) for 48 Hrs. Within one hour the sample shall be charged at a constant current of (0.1xI <sub>20</sub> ) Immediately after lapse of 24 Hrs. from current passing, the gas shall be collected for 5 Hours at ambient temperature 25 ±10°C. The gas recombination efficiency of the sample shall be 90% or more.	Test Conducted  98.49%	Pass	

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FINAL TEST REPORT**

No. : ETDC(MH)/T&amp;M/ 244

Dated : 12.04.2013

Page : 5 of 6

**14. RESULTS SUMMARISED(Contd.):**

Test Stage	Test Requirements (Cl. Ref. of specs.)	Test Condition	Test Data	Pass/Fail (Qty.)	Uncertainty (Where applicable)
10. Resistance to Vibration (Sample No. 3)	JIS C 8702-1 Cl.5.9	The sample shall be subjected to the following conditions: Frequency : 16.7Hz Amplitude :4mm (peak to peak) Duration : 1 Hr continuous Direction : Vertical, Longitudinal and lateral (X, Y & Z) State of sample: Fully charged.  After the above test, there shall not be any deformation, mechanical damage, breaking on the sample	Conducted.  No visual defects deformation, mechanical damage, breaking on the sample observed.	Pass	-
11. Resistance to Shock (Sample No. 3)	JIS C 8702-1 Cl 5.10	The fully charged sample shall be given three falls from a height of 20cm with bottom facing downward on a flat hard wooden plate of 10 mm or more in thickness.  There shall not be any deformation, mechanical damage, breaking on the sample	Conducted.  No visual defects deformation, mechanical damage, breaking on the sample observed.	Pass	-

**15. Additional Remarks:**

1.

Sample No	Serial No
1	SQODS03201000502
2	SQODS03201000503
3	SQOX503201002010

- Maximum Permissible current as per cl no. 5.5 is conducted only on  $I_m = 40 \times I_{20}$  as per the facility available and customer request.
- This test report supersede the earlier interim test report No.ETDC(MH)/T&M/244 dated 18.12.2012.
- Device under test (DUT) Photograph enclosed as Annexure-I

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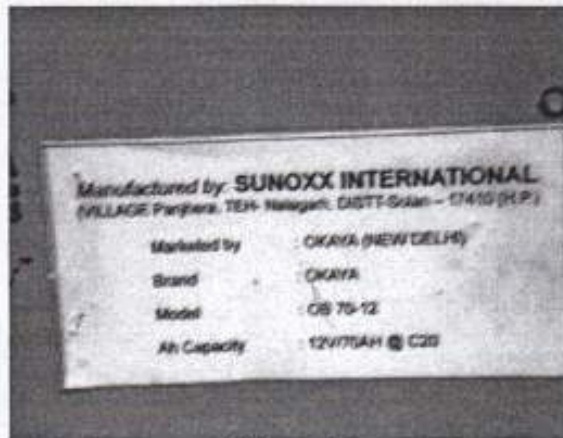
**ELECTRONICS TEST AND DEVELOPMENT CENTRE, MOHALI  
FINAL TEST REPORT**

No. : ETDC(MH)/T&M/ 244	Dated : 12.04.2013	Page : 6 of 6
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**Annexure-I**



**Figure-I**



**Figure-II**

*WJ*  
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