

**CENTRAL POWER RESEARCH INSTITUTE
ENERGY EFFICIENCY AND RENEWABLE ENERGY DIVISION**

Test Report No. : CPRI/ERED/SPV/2884/2013
Sample ID No : CPRI/ERED/SPV/S2956/2013
Manufactured by : M/s. KOTAK URJA (P) LTD.
Submitted by : M/s. KOTAK URJA (P) LTD.
378, 10th Cross, 4th phase, Peenya Industrial Area,
Bangalore -58



TEST REPORT

ON

Home Lighting System Model I

The Industry is the manufacturer of Solar Photovoltaic Module and Electronics for Home Lighting System

Date of Test : 30/10/2013 to 20/11/2013

Issue Date : 04/12/2013


NOTE


This is a report on measurements carried out on the Home lighting system submitted at Central Power Research Institute as per MNRE specifications. The data reported in this TEST REPORT are valid at the time of and under the stipulated conditions of measurement and the test results are applicable to this system only and do not apply to other home lighting systems even though declared to be identical. The data contents in this report do not constitute a qualification test certificate. CPRI does not accept any liability for any consequences including commercial or otherwise arising out of the utilization of the information contained in this report.

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(M. Siddhartha Bhatt)
Additional Director


Test In-charge
= (4/12/13)


Test Engineer

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SN	Test Description		Requirements as per MNRE Specifications	Manufacturer's claim	Observations	Remarks
1.	PV Module					
i	a	Name of Manufacture's or distinctive logo	Description to be laminated inside module so as to be clearly visible from the front side.	Provided	M/s. Kotak Urja (P) Ltd.	*see below
	b	Model or Type No	Should be mentioned	Provided	KM 0018	
	c	Serial No	Should be mentioned	Provided	32150	
	d	Year of make.	Should be mentioned	2013	2013	
	ii	No. of Modules	1 x 18 Wp module	1 x 18 Wp	1 x 18 Wp	
	iii	Module Wattage at 16.4 or any other suitable wattage optimal charging of battery.	1 Module of 18 W at STC	>18.00 W	19.84 Wp	
	iv	Type of Module	Crystalline Si	Crystalline silicon	Poly crystalline silicon	
	v	Module efficiency	10 % for 18 W	>10 .00 %	11.32 %	
	vi	Voc of PV module	21 V	>21.00 V	21.06 VDC	
2.	Lamp					
i	Make and Wattage		1 No. of 9W/11W CFL	Osram delux – 11 W	Osram Delux –11W	
ii	No. of Pins		4 or 2 pin only.	Four pin	Four pin	
iii	Light output (Lumens)					
	Prior to 1000 On/Off cycles		Not specified	900 lumen	872 lumen	
	After 1000 On/Off cycles		Total degradation in lumen output should not be more than 10%	Not provided	867 lumen	
3.	Battery (Sl. No. 3F00XZ1479)					
i	Make and type		Flooded electrolyte type, Tubular plate low maintenance battery	M/s. Sakthi Electronics	M/s. Sakthi Electronics LMLA	
ii	Voltage		12V	12 V DC	12 V DC	
iii	Capacity at C/10 discharge rate.		20 Ah	20 Ah	20 Ah	
iv	% of rated capacity between low and high voltage cut-off		75%	75 %	17.24 Ah 86.20 %	

*PV module is manufactured as per IEC 61215 standards. Vide test report No.12605477 002, dated 07/12/2009 issued by TUV Rheinland

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S.N	Test Description	Requirements as per MNRE Specifications	Manufacturer's claim	Observations	Remarks
4.	Electronics Inverter-1 (11W) Sl. No. 10-13-0101 CC: 0722				
i	Waveform type	Sine or quasi sine	Quasi sine wave	Quasi sine wave	
ii	Frequency	20-35 kHz	25 kHz	27.58 kHz	
iii	Efficiency	85%	90 %	87.04 %	
iv	Preheating arrangement	Required for 4 Pin lamp only.	Provided	Provided	
10.	PCB Installation	Solder Free	Solder free	Solder free	
11	Protections				
i	No Load Protection	Required	Provided	Provided	
ii	Battery Protection	Required	Provided	Provided	
iii	a) Low Voltage cut-off	Required	11.00 VDC	10.98 VDC	
	b) Load Reconnect	Required	12.40 VDC	12.32 VDC	
	c) Over charge	Required	14.20 VDC	14.18 VDC	
iv	Short Circuit	Required	Provided	Provided	
v	Battery reverse polarity	Required	Provided	Provided	
vi	Reverse flow protection	Required	Provided	Provided	
vii	Temp Compensation	Required	Provided	Provided	
viii	Idle current No Load current	Less than 2 mA	1.00 mA	1.86 mA	
ix	Voltage drop between module and battery terminal	Less than 0.6 V	0.40 VDC	0.56 VDC	

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12. Other Features:					
i	Duty cycle	Required to qualify	Qualifies	Qualifies	
ii	Indicators(charge controller)	Required(2 LED)	Provided	Provided	
iii	Switch and cable	Required	Provided	Provided	
iv	Marking on Module	Required	Provided	Provided	
v	Undertaking of the Manufacturer in respect of product	Required	Provided	Provided	
vi	Photographs of Manufacturing Unit	Required	Provided	Provided	
Warranty					
i.	PV Module	25 years	Provided	Provided	
ii.	Battery	2 years	Provided	Provided	
iii.	Electronicis	5 years	Provided	Provided	

Note: It is endorsed that the CFL based Solar Home lighting system (M1) Submitted by M/s. Kotak Urja (P) Ltd. qualifies the MNRE specification 2013-2014 and M/s. Kotak Urja (P) ltd. is the Original manufacturer of solar photovoltaic module and electronics.

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