सत्यमेव जयते

Govt. of India
Ministry of New & Renewable Energy
Solar Energy Centre
P.O. & Village Gwalpahari, Distt. Gurgaon
Haryana, India

2010-2011

TEST REPORT

ON

Solar Lantern

The Industry is the manufacturer of Electronics for Solar Lantern (12 Volt System)

Sample ID No. 196/10/LED
Manufactured by: M/s. INSTAPOWER Limited , Gurgaon
Submitted by: M/s. INSTAPOWER Limited , Gurgaon

This is a report on measurements carried out on the solar Lantern (LED based) submitted at Solar Energy Centre 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 sample 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. SEC 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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Rajesh Kumar

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S.N.	*Test Description as MNRE specifications*	MNRE Specifications	Manufacturer's claim	SEC's observations	Remarks
1.	PV module i. a) Name of Manufacture's or distinctive logo b) Model or Type No c) Serial No d) Year of make. ii. Module Wattage at 16.4 V or any other suitable voltage for optimal charging of battery iii. Type of Module iii. Voc of PV Module	Should be mentioned Should be mentioned Should be mentioned Should be mentioned 2.5 to 5 Watt at 16.4V & 8.2 V for 12V & 6 V system respectively Crystalline/Thin film 21V for 12 V system & 10.8 V for 6 V system	M/s Maharishi Solar MUM BD 12 N0223004119 2009 5 W Multi crystalline Si 21.00 V	M/s Maharishi Solar MUM BD 12 N0223004119 2009 5.986 W Multi crystalline Si 21.36 V	Detailed I-V curve of module is enclosed (page No. 4)
2.	LOAD/LIGHT (White LED based Light) i. Make or Brand of LED ii. No of LED(S) iii. Lux output Detector in Horizontal/Vertical Position a) 1 feet distance b) 2 feet distance c) 3 feet distance d) 4 feet distance e) 5 feet distance Iv. Housing including optics for focusing light	Should be mentioned Should be mentioned Horizontal/Vertical 32/105 Lux 6.5/32 Lux 3/16 Lux 2/9.5 Lux 1.5/8.5 Lux Should have proper housing and optics for uniform intensity	M/s NICHIA 36 Nos Horizontal / Vertical 70/137 Lux 21/52 Lux 9/25 Lux 4/11 Lux 3/9 Lux	M/s NICHIA 36 Nos Horizontal / Vertical 34.02/109 Lux 14.06/61.5 Lux 4.7/27 Lux 2.6/16.7 Lux 1.51/10.6 Lux Provided	
3	Battery i Make and type of Battery ii Voltage iii 100% capacity at C/20 or suitable discharge rate iv % of rated capacity between low and high cut-off voltages	M/s Wakai Lead Acid, SMF 6V& 12 V for 6V & 612 V system respectively Up to 7 AH 75%	M/s Wakai Lead Acid, SMF 12V 4.5 AH 75%	M/s Wakai Lead Acid, SMF 12V 4.58 AH comply	D4110
4.	Electronics DC-DC converter a.Parameters at 6V I)Input Power ii) Output Power iii) Efficiency b Variation of output current with input voltage c.PCB installation	Should be provided Should be provided 80% No variation in output current with input voltage. Solder Free	2.4 W 2 W 83 % Solder free	2.292 W 2.0716 W 90.38 % Constant Solder free	Buck type converter
5.	Protections a) No load protection b) Battery protection c) Low voltage cut-off d) Load reconnect e) Over charge cut-off f) Temp compensation g) Short circuit h) Battery reverse polarity i) Reverse flow protection j) No load current	Should be provided Should be provided Should be provided Should be provided Should be provided Should be provided Should be provided Should be provided Should be provided Should be provided Should be indicated	Provided Provided 11.4 V 12.13 V 14 V Provided Provided Provided Provided Provided	Provided Provided 10.62 V 12.29 V 13.26 V* Provided Provided Provided Provided Provided 5.92 mA	*Needs to be adjusted

Prepared by Richie Approved by: Rajeev Kumar Issued by

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6.	**Other features** d. Duty cycle e. Indicators f. Name plate on the system body with information.	Should quality Two indicators should be provided Logo/Model/S.No / Year should be provided	Qualify Provided Provided	Qualify Provided Observed.	
7.	**Quality & warranty** Components Module System Battery	As per BIS standard 10 Years warranty 2-years warranty 2-years warranty	Provided Provided Provided Provided	Required Required Required	The warranty should be as per MNRE terms.
8.	**Documentation** Manual	Should contain details about photovoltaic/ Home lighting system and its components/Battery/ module mounting and the system maintenance instructions / Do's & Dont's	Provided	Required	

The manufacturer has submitted undertaking that he is the original manufacturer of Electronics for the LED based solar lantern. Based on the testing conducted at SEC the LED based Solar Lantern **Qualifies** the MNRE specs.2009-10

Prepared by Richie

Approved by: RajeshKumar

Issued by

31/11/10

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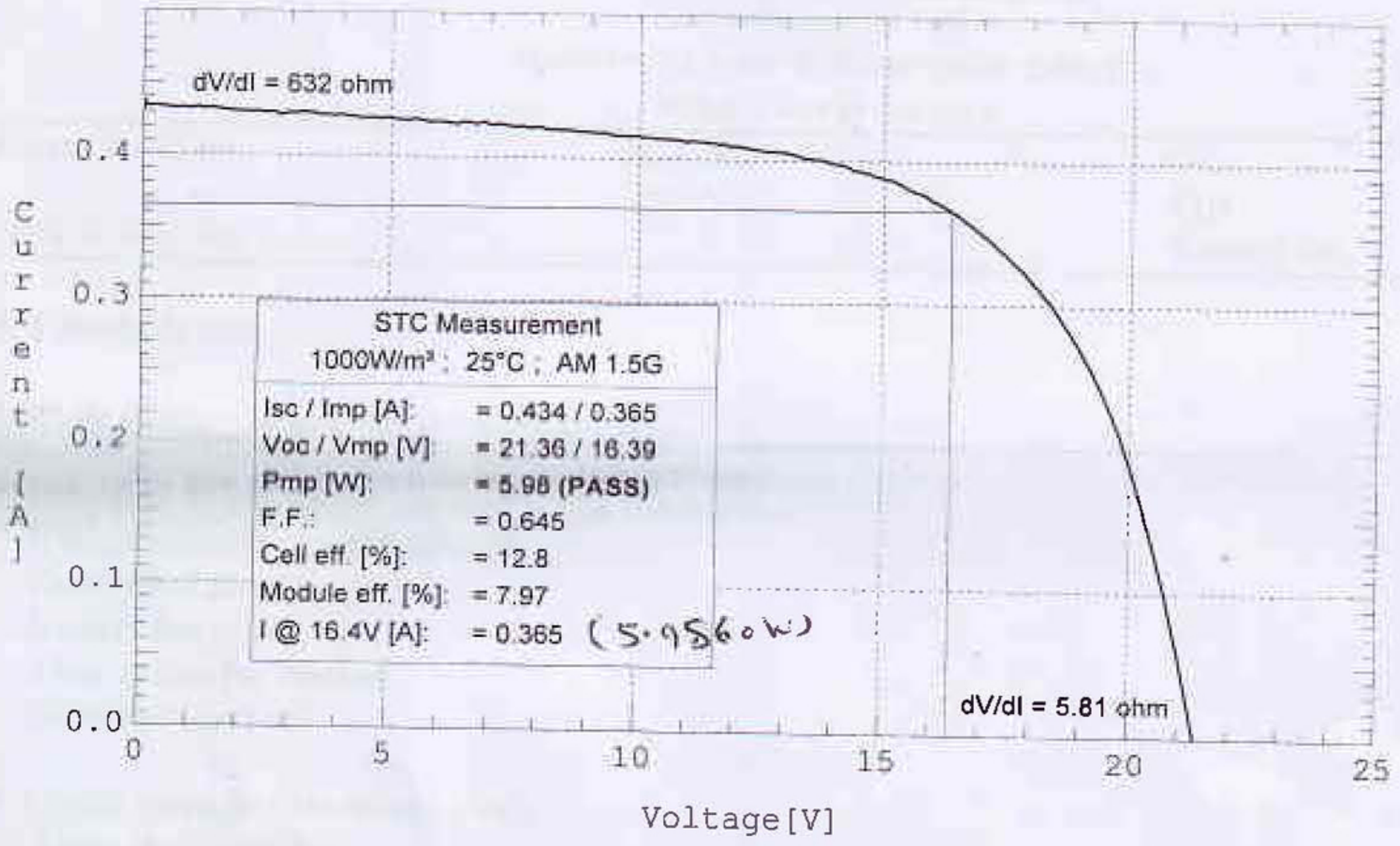
Solar Energy Centre

File: 196-10-led.Iot
Module name: Multi C SI 196/10/LED

QuickSun Flash Tester
Version 5.18.19

Print Date: 07/01/2011



Module:	1	Operator:	VK
Name:	Multi C SI 196/10/LED	#:	MUM BD 12
Bin #:	Yr-2009		
Manufacturer:	Maharishi Solar	Product ID:	N 0223004119
Current temp. coeff. (microA/cm²/°C):	15.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	6.00
Cell area (cm²):	13.02	Module area (m²):	0.075006
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.2	Sensor temp. (°C):	25.0
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.434	Imp (A):	0.365
Voc (V):	21.36	Vmp (V):	16.39
Pmp (W):	5.98	F.F.:	0.645
Cell eff. (%):	12.8	Module eff. (%):	7.97
Est. shunt resistance: (ohm)	632	Est. series resisrance: (mohm)	5810

Notes:

Richie

Rajesh Kumar

31/1/11