



केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो सर सी. वी. रामन रोड, सदाशिवनगर डाक घर, पो. बा. सं. 8066, बेंगलूर - 560 080

CENTRAL POWER RESEARCH INSTITUTE

(A Govt of India Society under Min. of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India

वेबसाइट/website : <http://www.cpri.in>

ENERGY EFFICIENCY AND RENEWABLE ENERGY DIVISION

Phone/Tele fax: 080-23604682 email: msb@cpri.in, ered@cpri.in

CPRI/ERED/SPV/2013

07/10/2013

To,

M/s. Focusun Energy Systems,
Old No. 27, New No. 30,
Dr. Jaganathan Nagar, Opp. Medical College,
Aerodrome Post, Coimbatore

Dear Sir,

Please find enclosed the test report for the following:

1. LED based Solar Street Lighting System – 1 No.

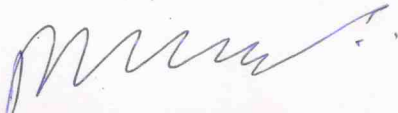
Please acknowledge the receipt of the test report. Thank you for utilizing our services.

Corrections, if any, in the report may please be brought to our notice within 45 days from the date of issue of the report.

Kindly arrange to take back the equipment tested within 15 days, failing which the same will be disposed off.

Thanking you,

Yours Sincerely,


(M. Siddhartha Bhatt)
Additional Director

CENTRAL POWER RESEARCH INSTITUTE
ENERGY EFFICIENCY AND RENEWABLE ENERGY DIVISION

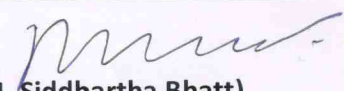
Submitted By: M/s. Focusun Energy Systems
Sample ID: S2965
Date of Issue: 07/10/2013



TEST REPORT

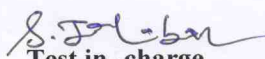
SL. No.	Particulars	Details
01	Test report no.	CPRI/ERED/SPV/2778/2013
02	Date	07/10/2013
03	Client's address	M/s. Focusun Energy Systems, Old No. 27, New No. 30, Dr. Jaganathan Nagar, Opp. Medical College, Aerodrome Post, Coimbatore
04	Reference	Nil, Dated 01/08/2013
05	Manufacturers address	Same as above
06	Reference	--
07	Sample tested	White LED based Solar Street Lighting System
08	Designation	--
09	Configuration	--
10	Identification no.	ERED/SPV/LED/S2965/2013
11	Serial no.	FS0127
12	Date (s) of the test	28/08/2013 to 29/09/2013
13	No. of samples tested	One
14	Test in accordance with standards/specifications	MNRE Specifications 2013-2014
15	Client's requirement	Nil
16	Deviation (if any)	Nil
17	Name of the witnessing persons	Nil
18	Clients representative	Nil
19	Other than clients representative	Nil
20	No. of pages (including this page)	Four
21	No. of oscillograms	Nil
22	No. of drawings	Nil
23	No. of graphs	Nil
24	No. of photos	Nil

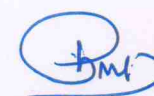



(M. Siddhartha Bhatt)
Additional Director

NOTE:

- This is not a certificate of compliance.
- These test results relate only to the items tested, which are selected and submitted by the client mentioned above.
- The data reported in this test report are valid at the time of and under the stipulated conditions of measurements.
- Publications or reproduction of this report in any form other than by complete set of the whole report and in the language written is not permitted without consent of CPRI.
- Correction/erasing invalidate the test report.


Test in- charge


Test Engineer

Total No. of pages	Page No.	Report No.
4	1	2778

Submitted By: M/s. Focusun Energy Systems
Sample ID: S2965
Date of Issue: 07/10/2013



TEST RESULTS

SL. No.	Test description	Observations	Requirement as per MNRE specifications 2013-2014	Remarks
1.0 PV MODULE				
1.1	Type of module	Poly crystalline silicon	Mono or poly crystalline silicon	
1.2	Manufacturer	M/s. Udhaya Semiconductors Limited		
1.3	SL. No.	13206747		
1.4	Module configuration	1 x 40 W	One 40 Wp module	
1.5	Open circuit voltage at STC	21.01 V DC	≥ 21.0 VDC	See below*
1.6	Peak power at 16.4 V	41.31 Wp	≥40 Wp	
1.7	PV Module efficiency	12.22 %	12.00 %	
2.0 LAMP				
2.1	Make	M/s. Seoul Semiconductors		
2.2	Model No.	SZW05A013		
2.3	No. of LED/luminaire	9 Nos.		
2.4	Light output			
	Average lux levels at 4 meter height and 4 meter periphery	Centre : 21.22 Lux Avg. Lux: 17.14 Lux	15.0 lux	
3.0 BATTERY				
3.1	Make	M/s. Exide		
3.2	Serial No	3VB025056		
3.3	Type of battery	LMLA	Lead acid tubular plate /VRLA	
3.4	Capacity at C/10 discharge rate (12V)	40.0 Ah	40.0 Ah.	
3.5	% of rated capacity between battery high and low	37.05 Ah 92.62 % 50hrs.40 min	75 %	

*PV module is manufactured as per IEC61215 standards. Vide test report No.21154280.001 dated 26/07/2010 issued by TUV Rheinland.

S. J. Liban
Test in- charge

Bm
Test Engineer

Total No. of pages	Page No.	Report No.
4	2	2778

Submitted By: M/s. Focusun Energy Systems
Sample ID: S2965
Date of Issue: 07/10/2013



TEST RESULTS

SL. No.	Test description	Observations	Requirement as per MNRE specifications 2013-2014	Remarks
4.0 Output (circuit to LED)				
4.1	Voltage (circuit to LED)	24.02 V DC	--	
4.2	Current	0.40 ADC	--	
4.3	Power	9.60 W	--	
5.0 Overall System				
5.1	Input Voltage	12.00 VDC	12.00 VDC	
5.2	Input Current	0.90 A	--	
5.3	Input Power	10.8 W	--	
5.4	Power consumption of the electronic circuit	1.20 W	--	
5.5	Efficiency	88.88 %	85 %	
5.6	Idle current	6.19 mA	<20 mA	
5.7	PCB installation	Solder free	Solder free	
5.8	Battery temperature compensation	Provided	Required	
5.9	Voltage drop across battery terminal to PV module terminal	0.56 V DC	< 0.6 V DC	
5.10	Temperature rise in the heat sink after 12 hours of operation	7.31 °C	<20 °C	
6.0 PROTECTION				
6.1	No load protection	Provided	Required	
6.2	Short circuit	Provided	Required	
	Reverse polarity	Provided	Required	
6.3	Reverse flow protection (blocking diode)	Provided	Required	
Battery protection				
6.4	Low voltage cut off	11.07 V DC	Required	
6.5	Load reconnect	12.49 V DC	Required	
6.6	Over charge cut off	14.04 V DC	Required	
6.7	Module reconnect	12.35 V DC	Required	

S. J. Lohar
Test in- charge

(Signature)
Test Engineer

Total No. of pages	Page No.	Report No.
4	3	2778

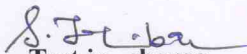
Submitted By: M/s. Focusun Energy Systems
Sample ID: S2965
Date of Issue: 07/10/2013

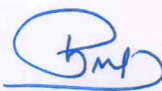


TEST RESULTS

SL. No.	Test description	Observations	Requirement as per MNRE specifications 2013-2014	Remarks
6.0 Other features				
6.1	Duty cycle	Qualifies Dusk to dawn	Dusk to dawn	
6.2	Indicators	Provided	Required	
6.3	Switch and cable	Provided	Required	
6.4	Marking on lighting system	Provided	Required	
6.5	Marking on modules	Provided	Required	
6.6	Manual	Provided	Required	
6.7	Warranty			
	(a) Module	Provided	25 years	
	(b) Street light with charge controller	Provided	5 years	
	(c) Battery	Provided	5 years	

Conclusions: It is endorsed that the LED based solar street lighting systems submitted by M/s. Focusun Energy Systems qualifies the MNRE Specification 2013-2014 and M/s. Focusun Energy System is the original manufacturer of electronics.


Test in- charge


Test Engineer

Total No. of pages	Page No.	Report No.
4	4	2778