AMIT TEST AND CALIBRATION CENTRE

(NABL ACCREDITED LABORATORY)

Kh.No. 45/14,17 & 45/6 & 7, Village Prahaladpur Bangar, Near Kali Mata Mandir, Delhi-110042
Ph.: +91-9871727340, 9911196977 Email : amittestcc2@gmail.com Website : www.atncc.in

TEST REPORT

(ELECTRICAL & ELECTRONICS LABORATORY) Format no. 7.8F-01

ADDRESS OF THE LABORATORY : Kh. No. 45/14, 17 & 45/6 , Village Prahaladpur, Bangar
Near Kali Mata Mandir Delhi -110042

TELEGRAM : -----

TELEPHONE(S) : -----

FAX : -----

E-mail : amittestcc2@gmail.com

TEST REPORT AS PER: as per EESL specification

REPORT No. : ATCC2/2019061514 **DATED : 02/07/2019**

Issue to: **MAHALAXMI MINDA TECHNOLOGIES**
59B, SHIPRA SUN CITY, GYAN KHANDI II, NEAR SHIPRA RIVERA, GATE NO. – 1, INDRAPURAM, GHAZIABAD UP - 201010

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Nature of Sample :	**LED Based Solar Street Light System**
b) Grade/Variety/Type/Class/Size etc:	i) Solar PV Module 80Wp (Make: Enkay Solar Power And Infrastructure Pvt. Ltd.) ii) Battery LFP 12.8 V-30 Ah (Make: Fusion Power Systems) iii) LED Luminaries 12W (Make: NKMINDA Mahalaxmi Minda technologies)
c) Declared Values, if any :	--
d) Code No. :	--
e) Batch No. & Date of Manufacture :	--
f) Quantity :	Solar PV Module: 01 Nos, Battery: 01 Nos, LED Luminaire: 01 Nos
g) Date of Receipt :	15/06/2019
h) Job order No.:	2019061514
i) Seal :	....
j) IO's Signature :	....
k) Any other Information/Expiry date, if any :	....
l) Date of Commencement of Testing :	15/06/2019
m) Date of Completion of Testing :	02/07/2019
n) Embossing/Printing:	--
o) Party Ref. No. :	NIL

PART B : SUPPLEMENTARY INFORMATIONS

a) Reference to sampling procedure, wherever applicable : N.A.

b) Supporting documents for the measurements taken and results derived like graphs, tables, sketches and/or photographs, as appropriate to test report, if any[To be attached]: Attached

c) Deviation from the test methods as prescribed in relevant ISS/ work instructions, NIL

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PART C: Test Result

S. No.	Description	Specification	Observation	Result
1.	**Solar PV Module**			
i	Indigenously manufactured PV module should be used	Made In India	Made in India	
ii	certificate	The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.	Complies with IEC Certificate no. NC28295-4787863180A	
iii	power output of the module	The power output of the module under STC should be a minimum of 75Wp.	80.328 W	
iv	module efficiency	The module efficiency should not be less than 14%.	15.586%	
v	terminal box	The terminal box on the module should have a provision for opening it for replacing the cable, if required.	Provided	Satisfactory
vi	There should be a Name Plate fixed inside the module which will give:			
	Name of the manufacturer or Distinctive Logo.	Enkay Solar Power And Infrastructure Pvt. Ltd.	Enkay Solar Power And Infrastructure Pvt. Ltd.	
	Model Number.	ESP75/12V	ESP75/12V	
	Serial Number.	MSE 075P0720190002	MSE 075P0720190002	
	Year of manufacture.	2019	2019	
vii	A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.	module Serial No.: MSE 075P0720190002	MSE 075P0720190002	
2	**BATTERY**			
i.	Battery Make	Fusion Power Systems	Fusion Power Systems	
ii.	Minimum 12.8V, 30AH capacity Lithium Ferro Phosphate Battery.	12.8V, 30Ah LiFePo4 Battery	12.8V, 30Ah LiFePo4 Battery	
iii.	Battery management System' (BMS)	Battery pack should have proper 'Battery management System' (BMS) for cell balancing, over charge and over temperature protection.	Provided	Satisfactory
iv.	Certification	Battery should conform to the latest BIS/international standards.	Complies with Test report no. URS/TEE/RID/19-20/375	

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3	**LIGHT SOURCE**			
i.	The light source will be a white LED type.	Should be Provide	Provide	Satisfactory
ii.	System Wattage	12W	12.02W	
iii.	Efficiency at system Level	≥ 125 lumens/watt	149.5 lumens/watt	
iv.	Lumen at system Level after all losses	≥ 1500 lumens	1808 lumens	
v.	Luminaire Mounting Height	4.5 Meters above the ground level	4.5 Meters	
vi.	LM80	Compliant	Complies	
vii.	Impact Resistance (IK08)	Compliant	Complies	
viii.	Color rendering Index (CRI)	≥ 70 Ra	70.7 Ra	
ix.	Luminous intensity distribution	it should follow the batwing patterns in polar curves.	Complies	
x.	Certificate	The Luminous should be tested for all type tests as per IS 10322 Part 5 Sect 3 or IEC 60598-2-3 standards	Complies	
xi.	Ingress protection	Optical and control gear compartment – IP 65/ IP 66	Complies	
xii.	Radiated Emission Test	As per CISPR - 15	Complies	
xiii.	ESD (Electro Static Discharge and Radiated susceptibility test)	As per IEC 61547	Complies	
xiv.	Duty Cycle	Auto Dimming by 50% after 4 hours of use	Also has non diming & customized diming switching options	
xv.	Minimum Average level of illuminance on road surface	24 Lux	32.5 Lux	
xvi.	colour temperature	The colour temperature of white LED used in the system should be in the range of 5500°K-6500°K.	5830°K	
xvii.	ultraviolet light	W-LEDs should not emit ultraviolet light.	Complies	
xviii.	The light output from the white LED light source should be constant throughout the duty cycle.	Should be provide	Complies	
xix.	The lamps should be housed in an assembly suitable for outdoor use.	Provide	Provided	
xx.	temperature during the dusk to dawn operation	The temperature of heat sink should not increase more than 20°C above ambient temperature during the dusk to dawn operation.	16°C	

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4	**ELECTRONICS**			
i.	electronic efficiency	The total electronic efficiency should be at least 90%.	93.5%	
ii.	Charge controller should be MPPT Type.	MPPT Type	Complies	
iii.	Electronic should operate at an appropriate voltage suitable for proper charging of the battery.	Should be provide	Provided	
iv.	No load current consumption should be less than 20mA.	< 20mA	4.6mA	Satisfactory
v.	The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.	Should be provide	Provided	
vi.	The PCB containing the electronics should be capable of solder free installation and replacement.	Should be provide	Provided	
vii.	Necessary length of wire/cables, switches suitable for DC use and fuses should be provided.	Should be provide	Provided	Satisfactory
5	**ELECTRONIC PROTECTIONS**			
i.	Adequate protection is to be incorporated under "No Load" condition e.g. when the lamp is removed and the system is switched 'ON'.	Should be provide	Provided	
ii.	The system should have protection against battery overcharge and deep discharge conditions.	Should be provide	Provided	
iii.	The system should have protection against short circuit conditions.	Should be provide	Provided	
iv.	Protection for reverse flow of current through the PV module(s) should be provided.	Should be provide	Provided	Satisfactory
v.	Adequate protection should be provided against battery reverse polarity.	Should be provide	Provided	
vi.	Load reconnect should be provided at 80% of the battery capability status.	Should be provide	Complies	

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6.	**MECHANICAL COMPONENTS**			
i.	A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.	Should be provide	Complies	Satisfactory
ii.	The frame structure should have provision so that the module can be oriented at the suitable tilt angle.	Should be provide	Complies	
iii.	The pole should Hot dip Galvanised pipe as per IS 1161 & IS 4736 i.e. class B with 76.1 mm Dia & 3.6+ 10% mm thickness of the pole.	Should be provide	Complies	
iv.	The height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5m above the ground level.	Should be provide	Complies	Satisfactory
v.	The pole should have the provision to hold the luminaire.	Should be provide	Complies	
vi.	The battery shall be either included in the luminaire enclosure, which should be water proof (IP 65) and corrosion resistant or outside the luminaire enclosure in a vented, acid proof and corrosion resistant, hot dip galvanized metallic box (IP 65) with anti-theft locking arrangement for outdoor use.	Should be provide	Complies	
7.	**INDICATORS**			
i.	The system should have two indicators, green and red.	Should be provide	Complies	Satisfactory
ii.	The green indicator should indicate the charging under progresses and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.	Should be provide	Complies	
iii.	Red indicator should indicate the battery " Load Cut off' condition.	Should be provide	Complies	

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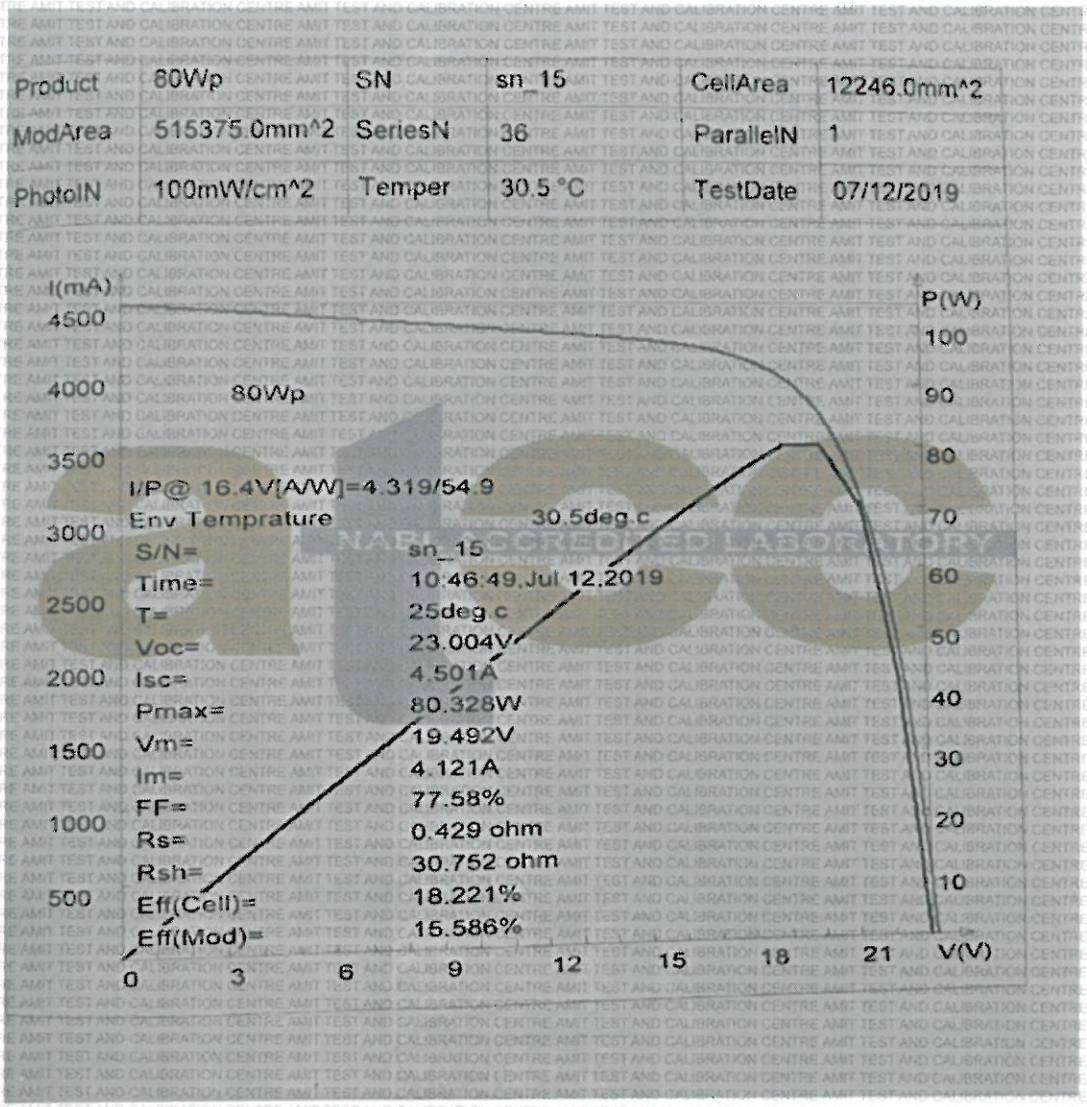
Annex-1

I-V Curve

Product	80Wp	SN	sn_15	CellArea	12246.0mm^2
ModArea	515375.0mm^2	SeriesN	36	ParallelN	1
PhotoIN	100mW/cm^2	Temper	30.5 °C	TestDate	07/12/2019



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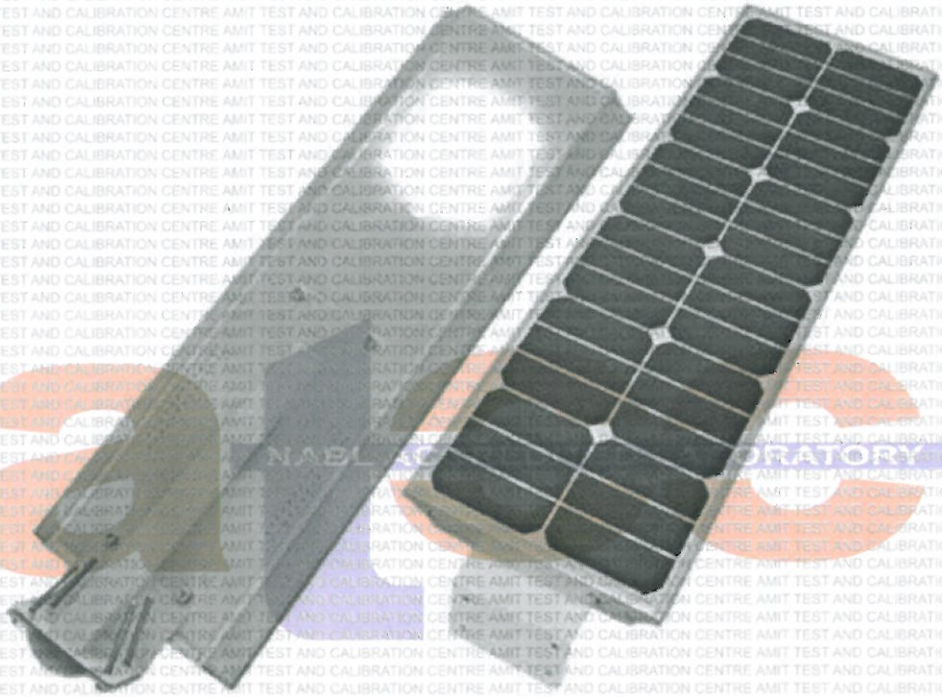

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