Verification Report for

Project : Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra

UCR Project ID : 269

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	March 14, 2023
Project Proponent	M/s Serum Institute of India Pvt Ltd. (SIIPL), Pune, Maharashtra
UCR Project Aggregator	Egis India Consulting Engineers Pvt Ltd.
Work carried by	Mr. Santosh Nair & Ms. Sheetal Wader
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the "Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra, India" for generating electricity from solar, on the basis of UCR criteria. This is a small scale bundled project activity of total installed capacity of 0.36 MWh (360KWh), supplying renewable power for captive use only.

Verification for the period**: 11/03/2017 to 31/12/2022**

The GHG emission reductions were calculated on the basis of UCR Protocols which draws reference from, UCR Protocol Standard Baseline & Emission Factor, Type I (Renewable Energy Projects) UNFCCC Methodology Category AMS I.F.: "Renewable electricity generation for captive use and mini-grid" Ver 05. The verification was done onsite by way of interviews, onsite document verification and submission of documents for verification through emails.

SQAC is able to certify that the emission reductions from the Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra, India (UCR ID – 269) for the period **11/03/2017 to 31/12/2022** amounts to **522 CoUs** (522 tCO_2eq)

Detailed Verification Report:

Purpose:

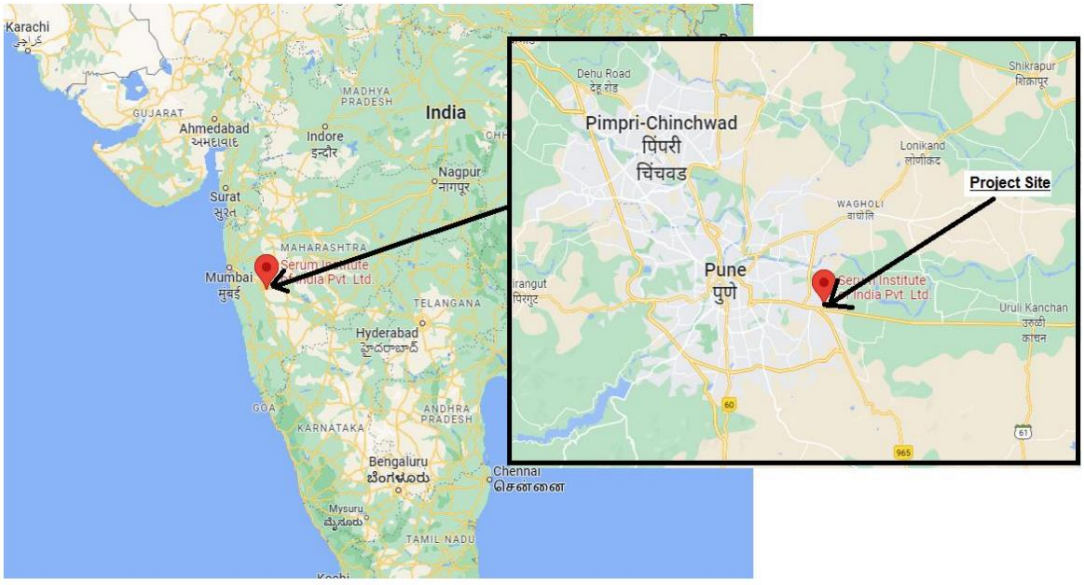
The purpose of the proposed project activity is to generate solar power using a clean and renewable source of energy i.e., solar radiation. The project activity of 0.36 MWh (i.e., 360 kWh) total capacity involves the installation and operation of three small scale roof-top solar power plants supplying renewable power for captive use only as per the details listed below:

Village	District	Type	Total installed capacity KW	Commissioning date
Hadapsar	Pune	Roof-Top	30	11-03-2017
Manjari			130	23-12-2021
Hadapsar			200	14-05-2022

The project activity uses Poly Crystalline solar photovoltaic technology to generate clean energy.

Location of project activity:

Country : India
Village : Hadapsar, Manjari
District : Pune
State : Maharashtra





Scope:

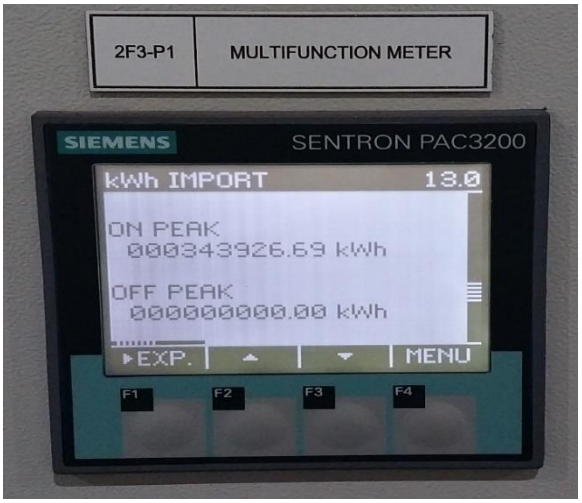
The scope covers verification of emission reductions from the project Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra, India (UCR ID – 269)

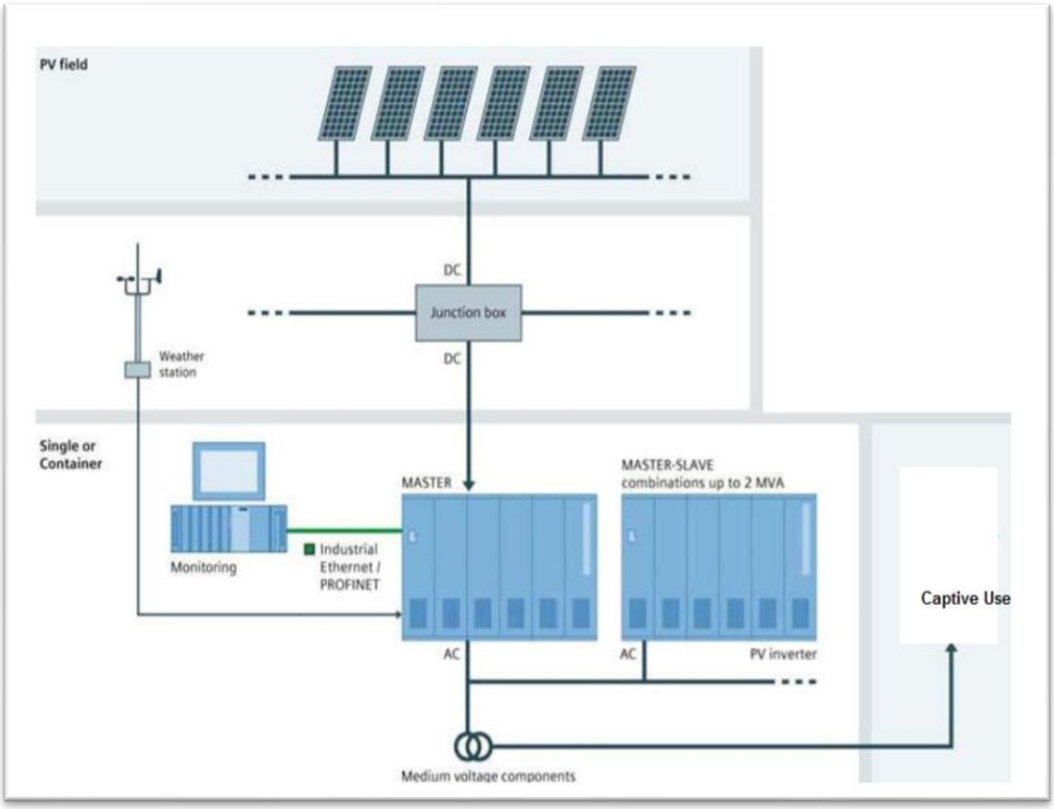
Criteria:
Verification criteria is as per the requirements of UCR Standard.

Description of project:

The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of conventional power plants.

Parameter	Description		
Total number of Photovoltaic Modules	94	446	296
Rating of Photovoltaic Module	320 Wp	450 Wp	440 Wp
Location	Latitude: 18°30'12.4" N Longitude: 73° 56'44.9"E	Latitude: 18° 30' 18.2412" N Longitude: 73° 56' 43.2528'' E	
Make	AcuTech Solar	Tata Power Solar	Orb
Technology	Poly Crystalline Silicon		

30 Kw Solar System Location: MSEZ Civil Bldg. Terrace Make: Schneider Model: Conzerv EM6436 Sr. No.: 34165220907 	100 Kw Solar System Location: MSEZ Engg. Block Make: Siemens Model: Sentron PAC3200 Sr. No.: LQN 3717 
200 Kw Solar System Location: SEZ-10 Terrace Make: Siemens Model: Sentron PAC3200 Sr. No.: LQN 5019 	30 Kw Solar System (15*2) Location: Corporate Bldg. Make: Delta MPPT Model: RPI-M15A Sr. No.: 04716900012W0 



AcuTech Solar Pvt. Ltd.
www.acutechsolar.in
www.acutechcorp.com

AcuTech SOLAR

Project completion Report for Grid Tie Solar Power Plants

We AcuTech Solar Pvt Ltd certify that 30KW ON Grid Solar Power Project has been completed as per below specification

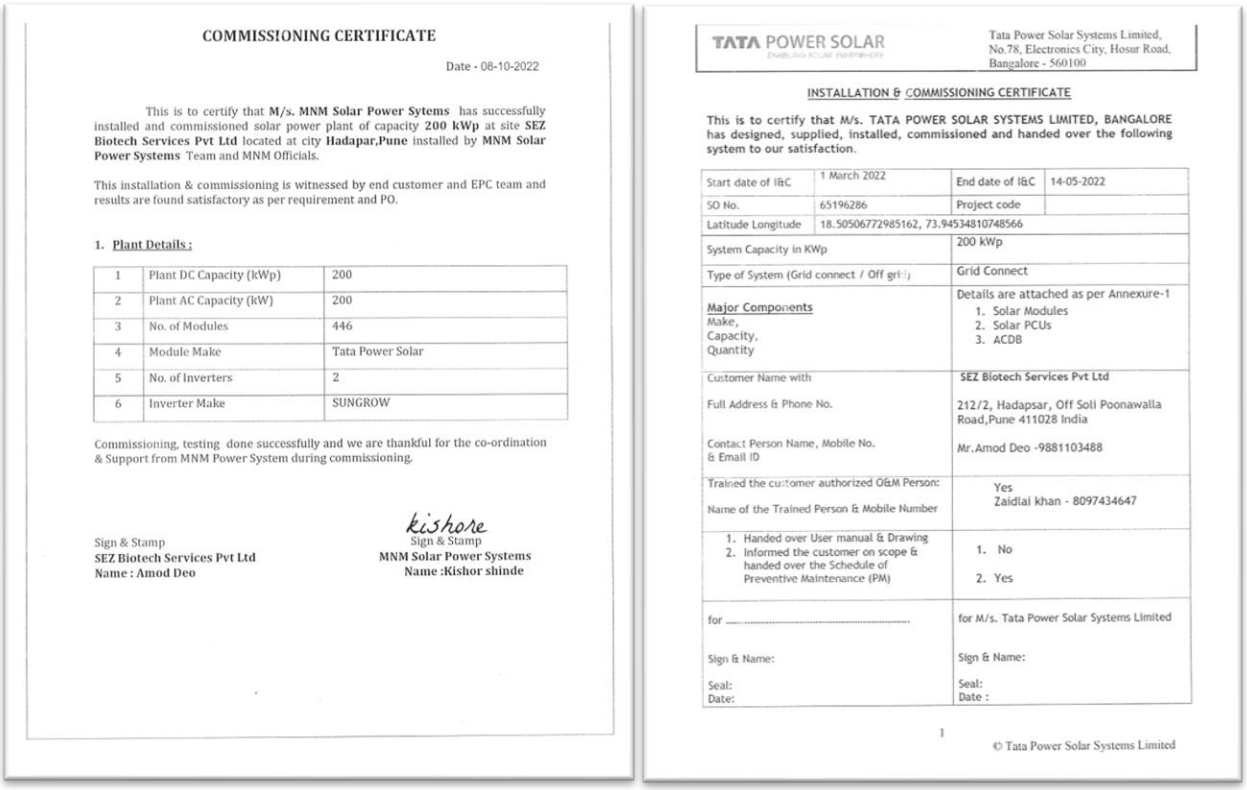
Sr No	Component	Observation
1	Sanction No & Date	*Your P.O No. 4800063352 Date-23/01/2017*
2	**Category :-** Nodal Agency/ Channel partner (Name) and Complete Address	*AcuTech Solar Pvt Ltd Gat No-1405,Plot No-7 Pune Nagar Highway Shikrapur Pune- 412208*
	Site/ Location with Complete Address	*Serum Institute India Pvt.Ltd. Servey No 212/2,Main Road, Hadapsar,Pune-411028*
	Longitude/ Latitude	*18°30'12.4"N 73°56'44.9"E*
3	**Capacity of system installed (kWp)**	*30KW*
4	**Specification of the Modules**	
a	Type of modules(multi/mono)	*Multicrystalline*
b	Make of Modules and year of manufacturing	*AcuTech Solar, FEB-2016*
c	Wattage and no of modules	*320Wp, 94 No's*
d	Module Efficiency	*17%*
e	No of series &Parallel combinations	*1) 20 x 4 2) 14 x 1*
f	Tilt Angle of Modules	*18°*
5	**PCU**	
a	Make,& rating	*Delta MPPT*
a	Make,& rating Type of Charge controller/MPPT	*Delta MPPT*
b	Capacity of inverter and year of manufacturing	*15KW X 2 MFY 2016*
c	AC Output	*3 Ø- 415V*
d	Whether hybrid or stand alone	*Stand alone*
e	Enclose test certificate as per MNRE requirement	*Attached*
f	Input Voltage to Inverter	*Max-1000V/MPPT*
6	**Structures**	
a	Tracking or non tracking	*Non Tracking, GI Structure*
b	Indigenous or Imported	*Indigenous*
7	**Cables Make and size**	***Make- PolyCab, 4Sqmm***
a	Enclose Certificate: Rating :-	*TUV Approved*
b	voltage of cable	*1000V DC*
8	**Array Junction Box**	
a	Make	*NA*
b	Type	-
9	**AC Distribution Box**	
a	Make	*INDO Asian*
b	Type	*2 In 1 out IP-43, 4 pole 440V,100A MCCB*
10	**Earthing and protections**	*AC and DC Earthing (Conventional Type)*
	Lightening Arrester (Type)	*Ball type lightening arrester*
11	**Date of Commissioning**	*11.03.2017*
12	**Enclose Generation data for one month (for without battery systems)**	*Under Observation*
13	**Technical Person Trained to maintain system Name with Mobile no.**	*Mr.Mahesh Raut Mob - 7219703457*

Declaration
It is to certify that all the components/subsystems and materials including junction boxes, cables, distribution boards. Switches, circuit barkers used are as per MNRE requirement and as per DPR submitted.

(Channel Partner/Dealer)

SERUM INSTITUTE OF INDIA PVT. LTD. PUNE-411028

ACUTECH SOLAR PVT. LTD.



COMMISSIONING CERTIFICATE

Date - 08-10-2022

This is to certify that **M/s. MNM Solar Power Sytems** has successfully installed and commissioned solar power plant of capacity **200 kWp** at site **SEZ Biotech Services Pvt Ltd** located at city **Hadapar,Pune** installed by **MNM Solar Power Systems** Team and MNM Officials.

This installation & commissioning is witnessed by end customer and EPC team and results are found satisfactory as per requirement and PO.

1. Plant Details :

1	Plant DC Capacity (kWp)	200
2	Plant AC Capacity (kW)	200
3	No. of Modules	446
4	Module Make	Tata Power Solar
5	No. of Inverters	2
6	Inverter Make	SUNGROW

Commissioning, testing done successfully and we are thankful for the co-ordination & Support from MNM Power System during commissioning.

Sign & Stamp
SEZ Biotech Services Pvt Ltd
Name : Amod Deo

kishore
Sign & Stamp
MNM Solar Power Systems
Name :Kishor shinde

TATA POWER SOLAR
ENABLING SOLAR ENERGY

Tata Power Solar Systems Limited,
No.78, Electronics City, Hosur Road,
Bangalore - 560100

INSTALLATION & COMMISSIONING CERTIFICATE

This is to certify that M/s. TATA POWER SOLAR SYSTEMS LIMITED, BANGALORE has designed, supplied, installed, commissioned and handed over the following system to our satisfaction.

Start date of I&C	1 March 2022	End date of I&C	14-05-2022
SO No.	65196286	Project code	
Latitude Longitude	18.50506772985162, 73.94534810748566		
System Capacity in KWp		200 kWp	
Type of System (Grid connect / Off grid)		Grid Connect	
Major Components Make, Capacity, Quantity		Details are attached as per Annexure-1 1. Solar Modules 2. Solar PCUs 3. ACDB	
Customer Name with Full Address & Phone No. Contact Person Name, Mobile No. & Email ID		SEZ Biotech Services Pvt Ltd 212/2, Hadapsar, Off Soli Poonawalla Road,Pune 411028 India Mr.Amod Deo -9881103488	
Trained the customer authorized O&M Person: Name of the Trained Person & Mobile Number		Yes Zaidlai khan - 8097434647	
1. Handed over User manual & Drawing 2. Informed the customer on scope & handed over the Schedule of Preventive Maintenance (PM)		1. No 2. Yes	
for ..... Sign & Name: Seal: Date:		for M/s. Tata Power Solar Systems Limited Sign & Name: Seal: Date :	

1

© Tata Power Solar Systems Limited

Level of Assurance:

The verification report is based on the information collected through interviews conducted onsite, supporting documents provided during the verification, Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Verification Methodology:

Review of the following documentation was done by SQAC Lead Verifier Mr. Santosh Nair and Verifier Ms. Sheetal Wader, who are experienced in such projects.

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Commissioning Report
- Calibration report
- Data provided upon request of all the documents of the related projects

Sampling:

Not applicable

Persons interviewed:

1. Mr. Santosh Arankalle : Sr. General Manager, M/s Serum Institute of India Pvt Ltd.
2. Mr. Baban Chaudhari : Sr. Manager – Engineering, M/s Serum Institute of India Pvt Ltd.
3. Mr. Saurabh Sainger : Sr. Project Manager, M/s. Egis India Consulting Engineers Pvt Ltd.

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Calibration Reports
- Energy Meter
- Commissioning Certificates

Applied methodologies and standardized baselines:

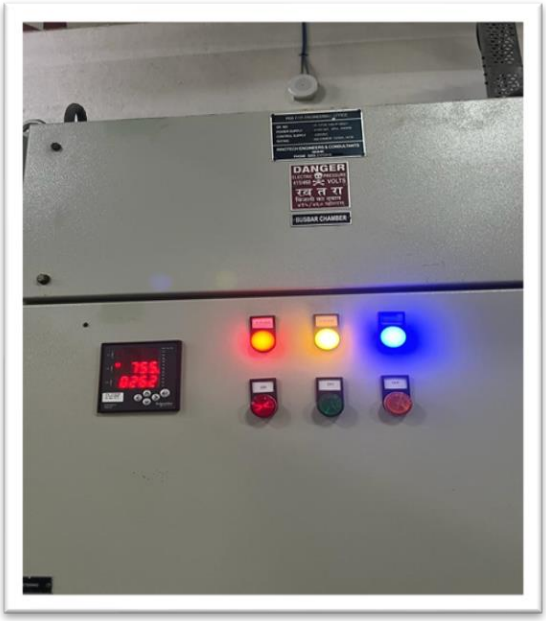
UCR Protocol Standard Baseline e & Emission Factor
AMS-I.F.-“Renewable electricity generation for captive use and mini-grid”, Ver. 05







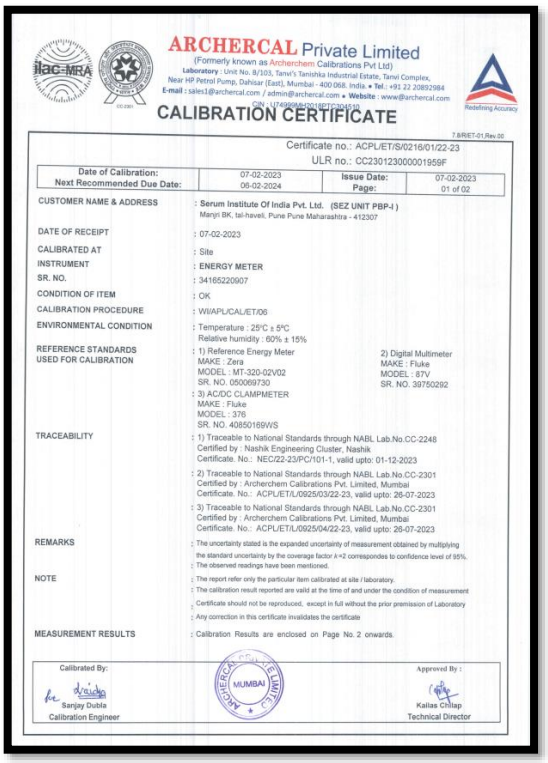



DANGER
BUSBAR CHAMBER









ARCHERCAL Private Limited
(Formerly known as Archerchem Calibrations Pvt Ltd)
Laboratory : Unit No. B/103, Tanvi's Tanishka Industrial Estate, Tanvi Complex, Near HP Petrol Pump, Dahisar (East), Mumbai - 400 068. India. • Tel.: +91 22 20892984
E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com
CIN : U74999MH2018PTC304510

CALIBRATION CERTIFICATE

7.8/RET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/01/22-23
ULR no.: CC230123000001959F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	01 of 02

CUSTOMER NAME & ADDRESS : **Serum Institute Of India Pvt. Ltd. (SEZ UNIT PBP-I)**
Manjri BK, tal-haveli, Pune Pune Maharashtra - 412307

DATE OF RECEIPT : 07-02-2023

CALIBRATED AT : Site

INSTRUMENT : **ENERGY METER**

SR. NO. : 34165220907

CONDITION OF ITEM : OK

CALIBRATION PROCEDURE : WI/APL/CAL/ET/06

ENVIRONMENTAL CONDITION : Temperature : 25°C ± 5°C
Relative humidity : 60% ± 15%

REFERENCE STANDARDS USED FOR CALIBRATION :
1) Reference Energy Meter
MAKE : Zera
MODEL : MT-320-02V02
SR. NO. 050069730
2) Digital Multimeter
MAKE : Fluke
MODEL : 87V
SR. NO. 39750292
3) AC/DC CLAMPMETER
MAKE : Fluke
MODEL : 376
SR. NO. 40850169WS

TRACEABILITY :
1) Traceable to National Standards through NABL Lab.No.CC-2248
Certified by : Nashik Engineering Cluster, Nashik
Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023
2) Traceable to National Standards through NABL Lab.No.CC-2301
Certified by : Archerchem Calibrations Pvt. Limited, Mumbai
Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023
3) Traceable to National Standards through NABL Lab.No.CC-2301
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Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023

REMARKS :
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The observed readings have been mentioned.

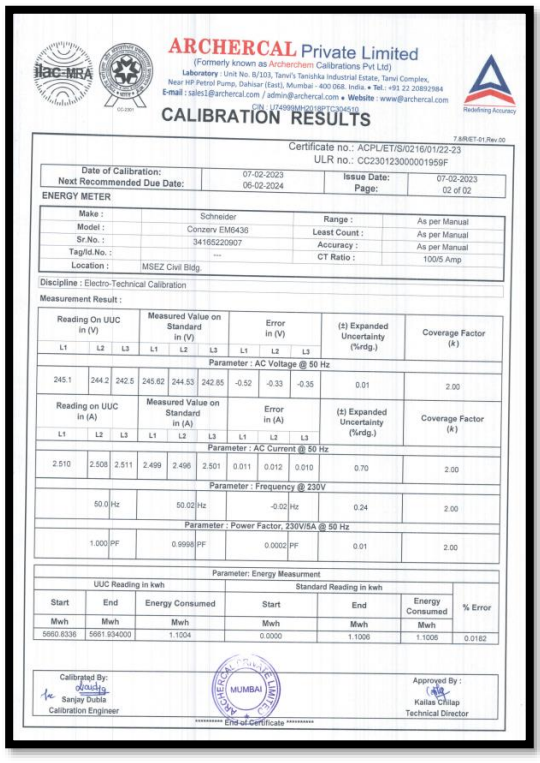
NOTE :
The report refer only the particular item calibrated at site / laboratory.
The calibration result reported are valid at the time of and under the condition of measurement
Certificate should not be reproduced, except in full without the prior premission of Laboratory
Any correction in this certificate invalidates the certificate

MEASUREMENT RESULTS : Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By:
Sanjay Dubla
Calibration Engineer

MUMBAI

Approved By :
Kailas Chilap
Technical Director



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CALIBRATION RESULTS

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ULR no.: CC230123000001959F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Schneider	Range :	As per Manual
Model :	Conzerv EM6436	Least Count :	As per Manual
Sr.No. :	34165220907	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	100/5 Amp
Location :	MSEZ Civil Bldg.		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
245.1	244.2	242.5	245.62	244.53	242.85	-0.52	-0.33	-0.35	0.01	2.00
Reading on UUC in (A)			Measured Value on Standard in (A)			Error in (A)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
2.510	2.508	2.511	2.499	2.496	2.501	0.011	0.012	0.010	0.70	2.00
Parameter : Frequency @ 230V										
50.0 Hz			50.02 Hz			-0.02 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.000 PF			0.9998 PF			0.0002 PF			0.01	2.00

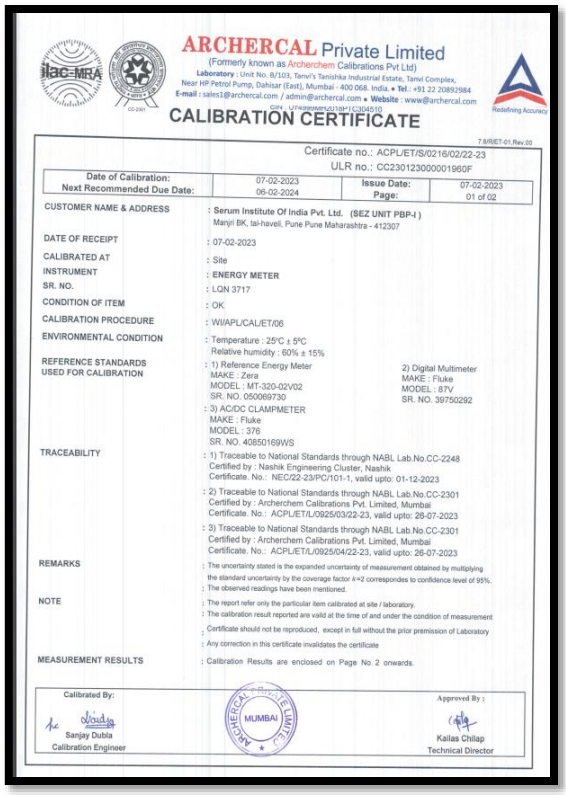
Parameter: Energy Measurment						
UUC Reading in kwh			Standard Reading in kwh			
Start	End	Energy Consumed	Start	End	Energy Consumed	% Error
Mwh	Mwh	Mwh	Mwh	Mwh	Mwh	
5660.8336	5661.934000	1.1004	0.0000	1.1006	1.1006	0.0182

Calibrated By:
Sanjay Dubla
Calibration Engineer

MUMBAI

Approved By :
Kailas Chilap
Technical Director

********** End of Certificate **********



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INSTRUMENT : **ENERGY METER**

SR. NO. : LQN 3717

CONDITION OF ITEM : OK

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ENVIRONMENTAL CONDITION : Temperature : 25°C ± 5°C
Relative humidity : 60% ± 15%

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1) Reference Energy Meter
MAKE : Zera
MODEL : MT-320-02V02
SR. NO. 050069730
2) Digital Multimeter
MAKE : Fluke
MODEL : 87V
SR. NO. 39750292
3) AC/DC CLAMPMETER
MAKE : Fluke
MODEL : 376
SR. NO. 40850169WS

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2) Traceable to National Standards through NABL Lab.No.CC-2301
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REMARKS :
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The observed readings have been mentioned.

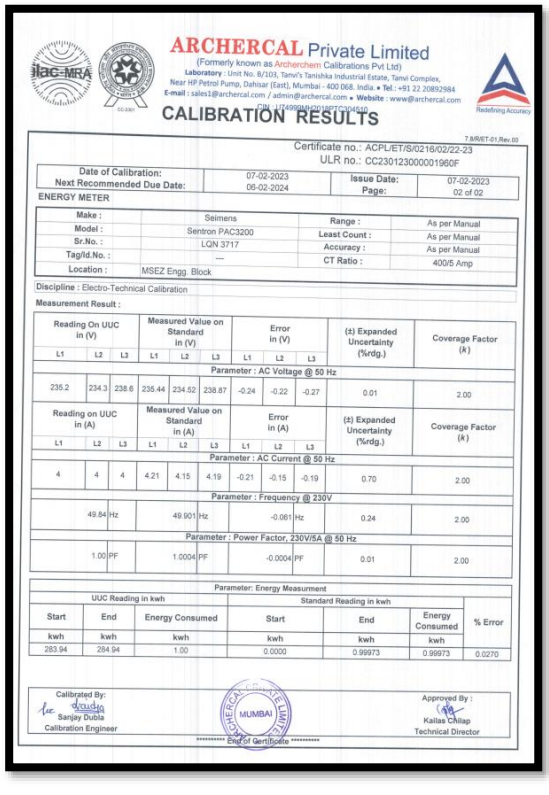
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CALIBRATION RESULTS

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ULR no.: CC230123000001960F

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Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Seimens	Range :	As per Manual
Model :	Sentron PAC3200	Least Count :	As per Manual
Sr.No. :	LQN 3717	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	400/5 Amp
Location :	MSEZ Engg Block		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
235.2	234.3	238.6	235.44	234.52	238.87	-0.24	-0.22	-0.27	0.01	2.00
Reading on UUC in (A)			Measured Value on Standard in (A)			Error in (A)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
4	4	4	4.21	4.15	4.19	-0.21	-0.15	-0.19	0.70	2.00
Parameter : Frequency @ 230V										
49.84 Hz			49.901 Hz			-0.061 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.00 PF			1.0004 PF			-0.0004 PF			0.01	2.00

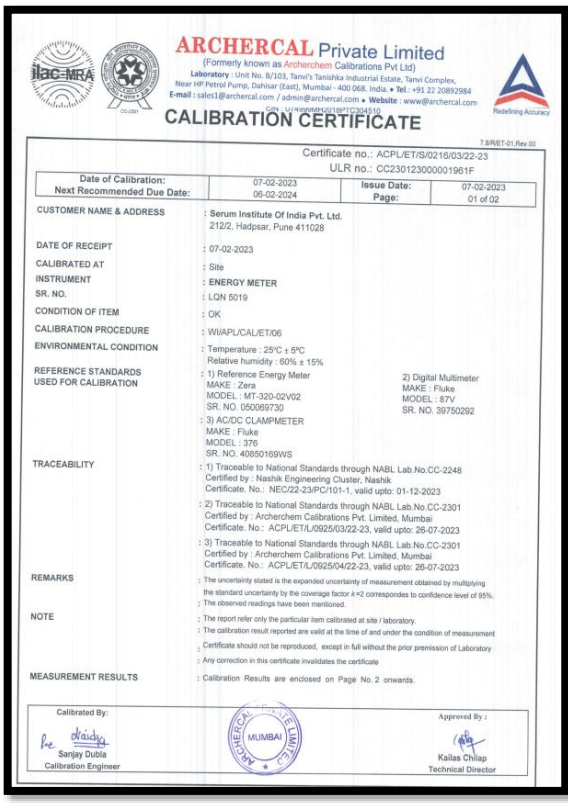
Parameter: Energy Measurment						
UUC Reading in kwh			Standard Reading in kwh			
Start	End	Energy Consumed	Start	End	Energy Consumed	% Error
kwh	kwh	kwh	kwh	kwh	kwh	
283.94	284.94	1.00	0.0000	0.99973	0.99973	0.0270

Calibrated By:
Sanjay Dubla
Calibration Engineer

MUMBAI

Approved By :
Kailas Chilap
Technical Director

********** End of Certificate **********



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CIN : U74999MH2018PTC304510

CALIBRATION CERTIFICATE

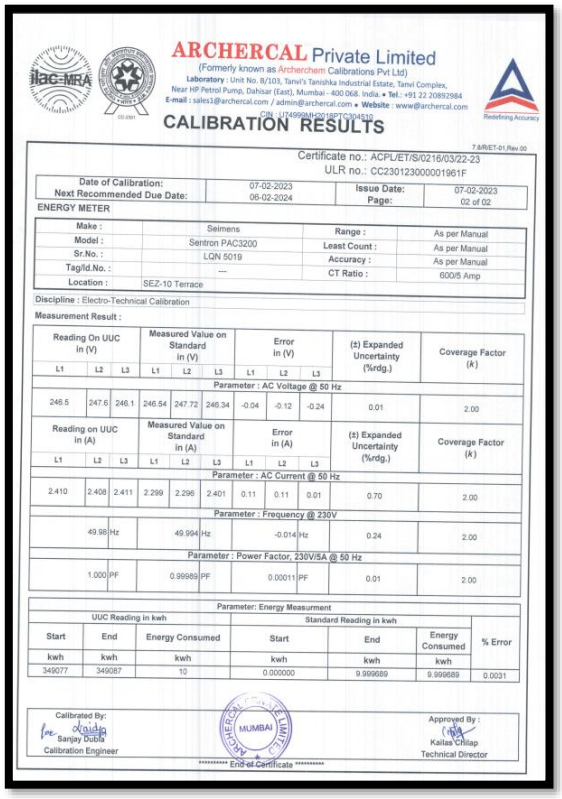
7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/03/22-23
ULR no.: CC230123000001961F

Date of Calibration: / Next Recommended Due Date:	07-02-2023 / 06-02-2024	Issue Date: / Page:	07-02-2023 / 01 of 02

CUSTOMER NAME & ADDRESS : **Serum Institute Of India Pvt. Ltd.** 212/2, Hadpsar, Pune 411028
DATE OF RECEIPT : 07-02-2023
CALIBRATED AT : Site
INSTRUMENT : **ENERGY METER**
SR. NO. : LQN 5019
CONDITION OF ITEM : OK
CALIBRATION PROCEDURE : WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION : Temperature : 25°C ± 5°C, Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION : 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730; 2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292; 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40850169WS
TRACEABILITY : 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023; 2) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023; 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
REMARKS : The uncertainty stated is the expanded uncertainty of measurement obtained by multiplying the standard uncertainty by the coverage factor k =2 corresponds to confidence level of 95%.
NOTE : The observed readings have been mentioned.; The report refer only the particular item calibrated at site / laboratory.; The calibration result reported are valid at the time of and under the condition of measurement; Certificate should not be reproduced, except in full without the prior premission of Laboratory; Any correction in this certificate invalidates the certificate
MEASUREMENT RESULTS : Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By: Sanjay Dubla, Calibration Engineer
Approved By : Kailas Chilap, Technical Director



ARCHERCAL Private Limited
(Formerly known as Archerchem Calibrations Pvt Ltd)
Laboratory : Unit No. 8/103, Tanvi's Tanishka Industrial Estate, Tanvi Complex, Near HP Petrol Pump, Dahisar (East), Mumbai - 400 068. India. • Tel.: +91 22 20892984
E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com
CIN : U74999MH2018PTC304510

CALIBRATION RESULTS

7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/03/22-23
ULR no.: CC230123000001961F

Date of Calibration: / Next Recommended Due Date:	07-02-2023 / 06-02-2024	Issue Date: / Page:	07-02-2023 / 02 of 02

ENERGY METER

Make :	Seimens	Range :	As per Manual
Model :	Sentron PAC3200	Least Count :	As per Manual
Sr.No. :	LQN 5019	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	600/5 Amp
Location :	SEZ-10 Terrace		

Discipline : Electro-Technical Calibration
Measurement Result :

Reading On UUC in (V) L1	L2	L3	Measured Value on Standard in (V) L1	L2	L3	Error in (V) L1	L2	L3	(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
Parameter : AC Voltage @ 50 Hz										
246.5	247.6	246.1	246.54	247.72	246.34	-0.04	-0.12	-0.24	0.01	2.00
Reading on UUC in (A) L1	**L2**	**L3**	**Measured Value on Standard in (A) L1**	**L2**	**L3**	**Error in (A) L1**	**L2**	**L3**	**(±) Expanded Uncertainty (%rdg.)**	**Coverage Factor (k)**
Parameter : AC Current @ 50 Hz										
2.410	2.408	2.411	2.299	2.296	2.401	0.11	0.11	0.01	0.70	2.00
Parameter : Frequency @ 230V										
49.98 Hz			49.994 Hz			-0.014 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.000 PF			0.99989 PF			0.00011 PF			0.01	2.00

Parameter: Energy Measurment

UUC Reading in kwh Start	End	Energy Consumed	Standard Reading in kwh Start	End	Energy Consumed	% Error
kwh	kwh	kwh	kwh	kwh	kwh	
349077	349087	10	0.000000	9.999689	9.999689	0.0031

Calibrated By: Sanjay Dubla, Calibration Engineer
Approved By : Kailas Chilap, Technical Director
********** End of Certificate **********



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E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com
CIN : U74999MH2018PTC304510

CALIBRATION CERTIFICATE

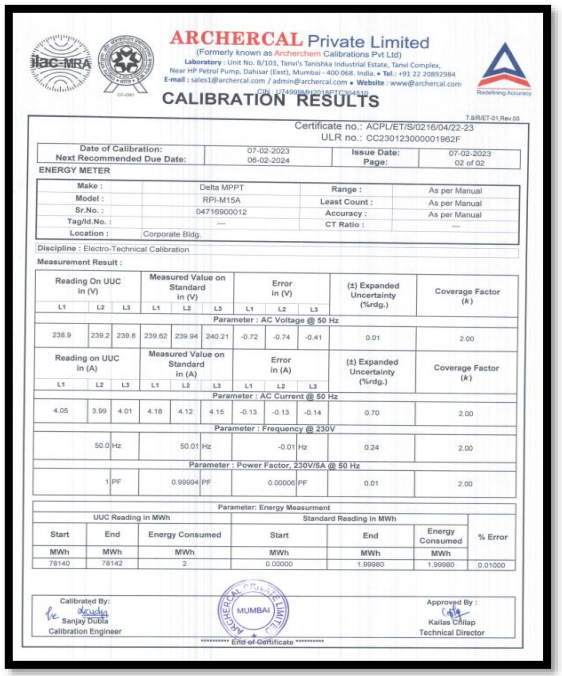
7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/04/22-23
ULR no.: CC230123000001962F

Date of Calibration: / Next Recommended Due Date:	07-02-2023 / 06-02-2024	Issue Date: / Page:	07-02-2023 / 01 of 02

CUSTOMER NAME & ADDRESS : **Serum Institute Of India Pvt. Ltd.** 212/2, Hadpsar, Pune 411028
DATE OF RECEIPT : 07-02-2023
CALIBRATED AT : Site
INSTRUMENT : **ENERGY METER**
SR. NO. : 04716900012
CONDITION OF ITEM : OK
CALIBRATION PROCEDURE : WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION : Temperature : 25°C ± 5°C, Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION : 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730; 2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292; 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40850169WS
TRACEABILITY : 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023; 2) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023; 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
REMARKS : The uncertainty stated is the expanded uncertainty of measurement obtained by multiplying the standard uncertainty by the coverage factor k =2 corresponds to confidence level of 95%.
NOTE : The observed readings have been mentioned.; The report refer only the particular item calibrated at site / laboratory.; The calibration result reported are valid at the time of and under the condition of measurement; Certificate should not be reproduced, except in full without the prior premission of Laboratory; Any correction in this certificate invalidates the certificate
MEASUREMENT RESULTS : Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By: Sanjay Dubla, Calibration Engineer
Approved By : Kailas Chilap, Technical Director



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E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com
CIN : U74999MH2018PTC304510

CALIBRATION RESULTS

7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/04/22-23
ULR no.: CC230123000001962F

Date of Calibration: / Next Recommended Due Date:	07-02-2023 / 06-02-2024	Issue Date: / Page:	07-02-2023 / 02 of 02

ENERGY METER

Make :	Delta MPPT	Range :	As per Manual
Model :	RPI-M15A	Least Count :	As per Manual
Sr.No. :	04716900012	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	---
Location :	Corporate Bldg.		

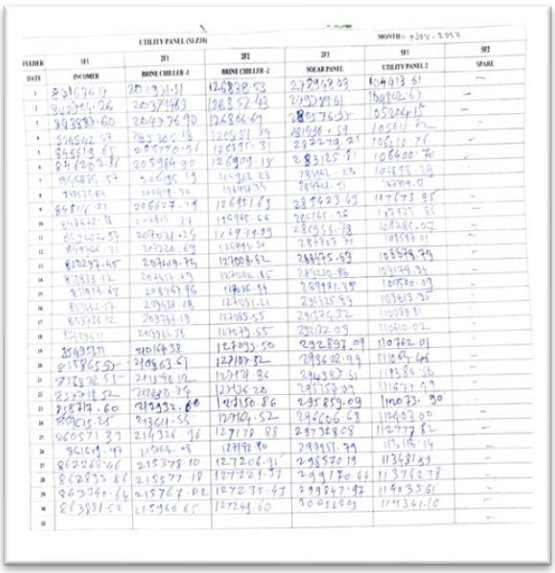
Discipline : Electro-Technical Calibration
Measurement Result :

Reading On UUC in (V) L1	L2	L3	Measured Value on Standard in (V) L1	L2	L3	Error in (V) L1	L2	L3	(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
Parameter : AC Voltage @ 50 Hz										
238.9	239.2	239.8	239.62	239.94	240.21	-0.72	-0.74	-0.41	0.01	2.00
Reading on UUC in (A) L1	**L2**	**L3**	**Measured Value on Standard in (A) L1**	**L2**	**L3**	**Error in (A) L1**	**L2**	**L3**	**(±) Expanded Uncertainty (%rdg.)**	**Coverage Factor (k)**
Parameter : AC Current @ 50 Hz										
4.05	3.99	4.01	4.18	4.12	4.15	-0.13	-0.13	-0.14	0.70	2.00
Parameter : Frequency @ 230V										
50.0 Hz			50.01 Hz			-0.01 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1 PF			0.99994 PF			0.00006 PF			0.01	2.00

Parameter: Energy Measurment

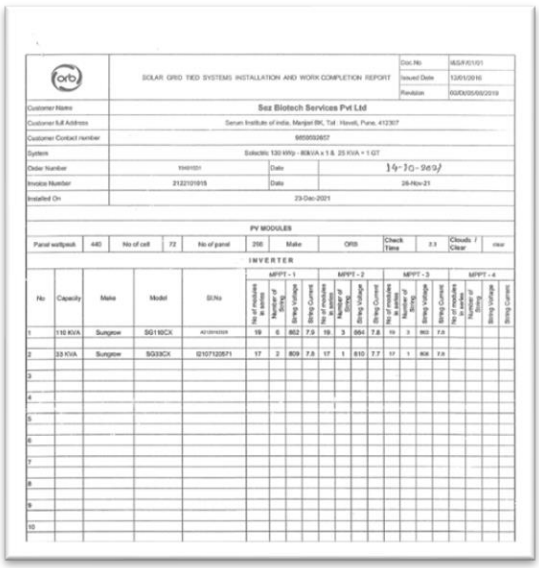
UUC Reading in MWh Start	End	Energy Consumed	Standard Reading in MWh Start	End	Energy Consumed	% Error
MWh	MWh	MWh	MWh	MWh	MWh	
78140	78142	2	0.00000	1.99980	1.99980	0.01000

Calibrated By: Sanjay Dubla, Calibration Engineer
Approved By : Kailas Chilap, Technical Director
********** End of Certificate **********



UTILITY PANEL (SEZB)

FEEDER	371	372	373	373	572
DATE	INCOMER	BRINE CHILLER -1	BRINE CHILLER -2	SOLAR PANEL	UTILITY PANEL 2	SPARE
1	3916767	2013921.51	1240838.53	27594.93	1A913.61	—
2	3947341.26	2037146.3	1283.52.43	27027.61	1390402.57	—
3	3933993.60	2037376.90	1248866.69	28057.63	1252464.6	—
4	3965942.93	2063.362.18	1265991.19	28188.59	1265611.72	—
5	3985619.68	2057770.98	1261995.91	27922.79	1256612.77	—
6	3962203.88	2053864.90	1268909.18	28326.81	1264600.76	—
7	3965895.54	2060895.13	1269323.23	28141.13	1265955.38	—
8	3993724.64	2064917.32	1274893.55	28421.51	1267794.9	—
9	3981116.21	2056607.74	1268951.89	28356231.63	1267773.95	—
10	3962462.78	2064811.23	1265995.66	28261.52	1261727.35	—
11	3952.1025.53	2070734.05	1269.719.93	28055.18	1264288.02	—
12	3949566.11	2072206.69	1263995.50	28187.57	1259593.81	—
13	3952287.45	2078149.75	1278008.52	28875.69	1275599.79	—
14	3973833.12	2065417.29	1275582.85	28330.86	1271739.32	—
15	3981916.49	2058169.96	1280136.99	28799131.35	1269580.09	—
16	3953552.78	2059438.18	1274051.21	28535.33	1263613.35	—
17	3953782.12	2063764.13	1273265.55	28535.32	1265599.81	—
18	3953941.11	2059316.79	1273639.55	28012.09	1264602.62	—
19	3949579.31	2061644.38	1273893.50	28289709	1267622.01	—
20	3958655.57	2069863.51	1273787.82	27962819.99	1268967.66	—
21	3978298.53	2063.46.19	1273179.86	28439751	1263556.36	—
22	3977818.52	2078880.74	1274936.28	28375837.07	1266727.93	—
23	3978719.60	2072932.80	1273150.86	28389.09	1260733.30	—
24	3980615.25	2073611.55	1273169.52	28426606.63	1264983.00	—
25	3960571.39	2063326.96	1273178.88	28738908	1267778.85	—
26	3961619.99	2070669.48	1278992.80	28995187.99	1275.15.14	—
27	3962269.46	2065378.10	1272206.91	28857019	1263681.63	—
28	3962833.86	2065577.18	1267221.97	28917066.66	1263763.78	—
29	3963760.66	2065767.02	1267235.63	28998797.92	1264331.61	—
30	3963881.62	2065960.65	1273269.60	29058209	1264341.10	—
31						



SOLAR GRID TIED SYSTEMS INSTALLATION AND WORK COMPLETION REPORT

Doc No: I&S/F/01/01
Issued Date: 13/01/2016
Revision: 00/01/05/00/2019

Customer Name	Sez Biotech Services Pvt Ltd
Customer full Address	Serum Institute of India, Manjari BK, Tal : Haveli, Pune, 412307
Customer Contact number	9850592607
System	Solectric 130 kWp - 80kVA x 1 & 25 KVA + 1 GT
Order Number	Date: 14-10-2021
Invoice Number	2122101015 Date: 26-Nov-21
Installed On	23-Dec-2021

PV MODULES

Panel wattpeak	440	No of cell	72	No of panel	266	Make	ORB	Check Tires	2.3	Clouds / Clear	clear

INVERTER

No	Capacity	Make	Model	SI.No	MPPT - 1			MPPT - 2			MPPT - 3			MPPT - 4		
					No of modules & strings	Number of String	String Voltage	String Current	No of modules & strings	Number of String	String Voltage	String Current	No of modules & strings	Number of String	String Voltage	String Current	No of modules & strings	Number of String	String Voltage	String Current
1	110 KVA	Sungrow	SG110CX	A21910320	19	6	802	7.9	19	3	864	7.8	19	3	863	7.8				
2	33 KVA	Sungrow	SG33CX	G2107120571	17	2	809	7.8	17	1	810	7.7	17	1	808	7.8				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Application of methodologies and standardized baselines

References to methodologies and standardized baselines

SECTORAL SCOPE – 01 Energy industries (Renewable/Non-renewable sources)
TYPE I – Renewable Energy Projects

CATEGORY – AMS-I.F.-“Renewable electricity generation for captive use and mini-grid”, Ver. 05

This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit, i.e., in the absence of the project activity, the users would have been supplied electricity from sources listed below:

(a) A national or a regional grid (grid hereafter)

For the purpose of this methodology the following definition applies:

(a) Mini-grid - is a small-scale power system with a total capacity not exceeding 15 MW (i.e., the sum of installed capacities of all generators connected to the minigrid is equal to or less than 15 MW) which is not connected to a national or a regional grid

Applicability of methodologies and standardized baselines

- This project is included within the UCR Standard Positive List of technologies and are within the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). The positive list comprises of: (a) The grid-connected renewable electricity generation technologies of installed capacity up to 15 MW, (b) Solar technologies (photovoltaic and solar thermal electricity generation);
- Project activity involves installation of grid-connected solar photovoltaic power generation with capacity 0.36 MW which is less than 15MW.
- The project activity involves installation of Solar PV (SPV). Hence, the activity is not a Hydro power project.
- The project activity was commissioned in two phases, however, the total capacity of the project activity is below the 15 MW threshold.
- The project activity is a new installation, it does not involve any retrofit measures nor any replacement.
- Landfill gas, waste gas, wastewater treatment and agro-industries projects are not relevant to the project activity. No biomass is involved, the project is only a solar power project.
- The technology/measure allowed under the grid connected Solar PV based generation systems displace equivalent quantity of electricity from the regional grid in India. The testing/certifications; all the equipment of the solar project activity will be complying with applicable national/ international standards. The above details may be verified from one or more of the following documents:
    - Technology Specification provided by the technology supplier
    - Purchase order copies
    - EPC contracts
    - Project commissioning certificates
- The project activity is a voluntary coordinated action
- As per the Ministry of Environment and Forest (MoEF), Govt. of India Office Memorandum dated 13/05/2011, it had received specific clarification regarding the

applicability of EIA Notification, 2006 in respect of Solar Photo Voltaic (PV) Power plants. It was further clarified in the above memorandum that both Solar PV power projects are not covered under the ambit of EIA Notification, 2006 and no environment clearance is required for such projects under provisions thereof.

- The project activity involves installation of new power plants at listed sites where there was no renewable energy power plant operating prior to implementation of project.
- Project displaces grid electricity consumption (e.g., grid import) at the user end.

Applicability of double counting emission reductions

Each of the installations within the Project Activity are provided with unique IDs and meters, which is visible on each of the installations.

The project is not registered with any other voluntary market (National or International).

Agreement for Double Counting Avoidance from Proponent has been provided duly signed on 28.02.2023.

Project boundary, sources and greenhouse gases (GHGs)

The project boundary encompasses the physical, geographical site of the solar power plant, the energy metering equipment and the connected grid.

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid connected electricity.	**CO_2**	**Included**	**Major source of emission**
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
Project Activity	Greenfield Solar Power Project	CO_2	Excluded	Excluded for simplification. This is conservative.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.

Leakage Emissions is not applicable.

PEy = Project emissions in year y (tCO2/y) related to the operation of geothermal power plants (e.g., non condensable gases, electricity/fossil fuel consumption) are not applicable. Project emissions from water reservoirs of hydro power plants is also not applicable. Hence, PEy = 0

This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s).

The project activity involves "a small-scale power system with a total capacity not exceeding 15MW (i.e., the sum of installed capacities of all generators connected to the minigrid is equal to or less than 15 MW) which is not connected to a national or a regional grid."

In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. The power produced at grid from the other conventional sources which are predominantly fossil fuel based. Hence, the baseline for the project activity is the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor.

A "grid emission factor" refers to a CO_2 emission factor (tCO_2/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO_2/MWh for the 2014-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021-2022, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same UCR emission factor has been considered to calculate the emission reduction under conservative approach

Establishment and description of baseline scenario (UCR Protocol)

Baseline emissions for other systems are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor.

Total Capacity: 0.36 MW
Commissioning Date of first installation: 11/03/2017

Emission Reductions: $BE_y = EG_{BL,yl} \times EF_{CO2, GRID, y}$

BEy = Emission reductions in a year y.

where:

$EG_{BL,y}$ = Quantity of net electricity supplied to the mini-grid as a result of the implementation of the

UCR project activity in year y (MWh)

$EF_{Grid,CO2,y}$ = CO_2 emission factor of the grid in year y (t CO_2/MWh) as determined by the UCR Standard.

Net GHG Emission Reductions and Removals

Thus, ERy = BEy – PEy – LEy

Where:

ERy = Emission reductions in year y (tCO_2/y)

BEy = Baseline Emissions in year y (t CO_2/y);

PEy = Project emissions in year y (tCO_2/y)

LEy = Leakage emissions in year y (tCO_2/y)

BE power,y = Baseline emissions for the grid electricity displaced by the project in year y (tCO_2e)

EG y,grid = Amount of grid electricity displaced by project in year y (MWh)

EF y,grid = Emission factor of the grid (t CO_2e/MWh) = 0.9 (UCR Standard)

Issuance Period: 5 years 9 months – 11/03/2017 to 31/12/2022

Year	KWh	MWh	ER (tCO_{2eq})
2017	31072	31.072	27
2018	36799	36.799	33
2019	37062	37.062	33
2020	37176	37.176	33
2021	43463	43.463	39
2022	3,97,148.22	397.1482	357
		TOTAL	**522**

Total Emission Reductions (ER_y) = 522 CoUs (522 tCO_2eq)

Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Protocol Standard Baseline & Emission Factor, UNFCCC Methodology Category AMS I.F.: "Renewable electricity generation for captive use and mini-grid" Ver 05, the audit conducted onsite and the documents verified and submitted during the verification including the Data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra (UCR ID – 269) for the period **11/03/2017 to 31/12/2022** amounts to **522 CoUs (522 tCO2eq)**

Santosh Nair Lead Verifier (Signature)	SQAC Certification Pvt. Ltd. Mapusa-Goa	Sheetal Wader Verifier (Signature)	Praful Shinganapurkar Senior Internal Reviewer (Signature)

Date: 14/03/2023