

To be Printed on Letter Head of the Applicant

CERTIFICATE FOR GRID CONNECTIVITY

Applicant:

BYPL Application No :

Product :

Sanctioned Capacity :

Use in accordance with regulation:

The charging station is tested for grid stability, grid protection, power quality and specified environmental influences and is found to have equivalent standards, including but not limited to the required interconnectivity specifications as per CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013 and CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.

Verified Rules and standard:

- IEC 61851-1: General Requirements
- IEC 61851-21: Electric Vehicle Requirements for conductive connection to AC/DC supply
- IEC 61851-22: AC Electric Vehicle Charging Stations
- IEC 61851-23: DC Electric Vehicle Charging Stations
- IEC 61851-24: Digital connection between a DC EV Charging Station and an Electric Vehicle for Control of DC Charging
- IEC 62196-1: Definitions
- IEC 62196-2: AC Connector
- IEC 62196-3: DC Connector
- IEEE 519: Recommended practice and requirements for Harmonic control in Electrical Power Systems
- IEC 62305: Protection against Lightning
- IEC 60950: Safety IS 732: Earthing
- IEC 60529: Degrees of protection provided by enclosures (IP Code)

Technical Evaluation Report for Interconnection Requirements of EV Charging Stations to ensure Grid Safety, Protection & Stability

1.	Name	
2.	Customer No.	
3.	Installation Address	
4.	Telephone No.	
5.	Email Address	
6.	Sanctioned Load	
7.	Type of Charging Station (AC/DC)	
8.	Voltage level of Connectivity	

Criteria	Reference Standard	Verification Remarks	Ok / Not Ok
Overall Condition of Service	Delhi Electricity Supply Code & Performance Standards Regulation, 2007	Connecting voltage: 415V, TP, LT or 11kV, TP, HT Frequency : 50Hz	
Protection	CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013, as amended from time to time.	Detection of various faults/ abnormal conditions and provision of appropriate means to isolate the faulty equipment or system automatically. Ensure that fault of charging equipment or charging system does not affect grid adversely.	
Harmonic Current	IEEE 519 – 2014 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013, as amended from time to time.	Harmonic Current Injections from the generating system do not exceed the limit specified in IEEE 519.	
DC Injection	IEEE 519 – 2014 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013, as amended from time to time.	Prosumer shall not inject direct current greater than 0.5% of rated output at the interconnection point.	
Voltage Sag, Voltage Swell, Flicker, Disruptions, etc.	Relevant BIS standards or as per IEC / IEEE standards if BIS not available.	Power Quality parameters	
Overload	CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.	All EV charging stations shall be provided with protection against the overload of input supply and output supply fittings.	
Installation Height	CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended	All EV charging stations shall be installed so that any socket-outlet of supply is at least 800 mm above the finished ground level.	

Criteria	Reference Standard	Verification Remarks	Ok / Not Ok
	from time to time.		
Cord extension set or second cable assembly	CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.	A cord extension set or second cable assembly shall not be used in addition to the cable assembly for the connection of the EV to the Electric Vehicle Charging Point. A cable assembly shall be so constructed so that it cannot be used as a cord extension set.	
Adaptors	CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.	Adaptors shall not be used to connect a vehicle connector to a vehicle inlet.	
Maximum Cable Length / Parking Space	CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.	Maximum length of the supply lead is 5m / Parking Place shall be within five meter from the electric vehicle charging point.	
Portable socket-outlets	CEA (Measures relating to Safety and Electric Supply) Regulations	Portable socket-outlets are not permitted to be used for EV charging.	
Lightning Protection	CEA (Measures relating to Safety and Electric Supply) Regulations. IS/IEC 62305	Suitable lightning protection system shall be provided for the EVs charging stations as per IS/IEC 62305.	
Protective device	CEA (Measures relating to Safety and Electric Supply) Regulations.	The EVs charging stations shall be equipped with a protective device against the uncontrolled reverse power flow from vehicle.	
Disconnection of EV from the supply	CEA (Measures relating to Safety and Electric Supply) Regulations. IEC 60950	One second after having disconnected the EV from the supply (mains), the voltage between accessible conductive parts or any accessible conductive part and earth shall be less than or equal to 42.4 V peak (30 V rms) , or 60 V D.C., and the stored energy available shall be less than 20 J (as per IEC 60950). A warning label shall be attached in an appropriate position on the charging stations in case voltage is greater than 42.4 V peak (30 V rms) , or 60 V D.C., or the stored energy is 20 J or more.	
Locking of the coupler	CEA (Measures relating to Safety and Electric Supply) Regulations.	A vehicle connector used for D.C. charging shall be locked on a vehicle inlet if the voltage is higher than 60 V D.C. The vehicle connector shall not be unlocked (if the locking mechanism is engaged) when hazardous voltage is detected through charging process including after the end of charging. In case of charging system malfunction, a	

Criteria	Reference Standard	Verification Remarks	Ok / Not Ok
		means for safe disconnection may be provided.	
Protection against overvoltage at the battery	CEA (Measures relating to Safety and Electric Supply) Regulations.	The D.C. EV charging point shall disconnect supply of electricity to prevent overvoltage at the battery, if output voltage exceeds maximum voltage limit sent by the vehicle.	
Verification of Vehicle Connector Voltage	CEA (Measures relating to Safety and Electric Supply) Regulations.	The EV Charging station shall not energize the charging cable when the vehicle connector is unlocked. The voltage at which the vehicle connector unlocks shall be lower than 60 V.	
Residual Current Devices (RCDs)	CEA (Measures relating to Safety and Electric Supply) Regulations.	<p>All Residual Current Device (RCDs) for the protection of supplies for EVs shall a) have a residual operating current of not greater than 30 mA, b) shall operate to interrupt all live conductors, including the neutral and c) have a performance at least equal to Type A and be in conformity with IS 732-2018</p> <p>These shall be permanently marked to identify their function and the location of the charging station or socket outlet they protect.</p> <p>Where required for service reasons, discrimination (selectivity) shall be maintained between the residual current device protecting a connecting point and a residual current device installed upstream.</p> <p>The owner of the charging station shall ensure that the tests as specified in the manufacturer's instructions for the residual current device and the charging station have been carried out</p>	
Overcurrent Protection device	CEA (Measures relating to Safety and Electric Supply) Regulations.	<p>Each EV charging station shall be supplied individually by a dedicated final sub-circuit protected by an overcurrent protective device complying with IEC 60947-2, IEC 60947-6-2 or the IEC 60269 series.</p> <p>The overcurrent protective device shall be part of a switchboard.</p> <p>Co-ordination of various protective device shall be required.</p>	
Voltage independent RCD	CEA (Measures relating to Safety and Electric Supply) Regulations.	All EV charging stations shall be supplied from a sub-circuit protected by a voltage independent RCD and also providing personal protection that is compatible with a charging supply for an electric vehicle.	
Earth	CEA (Measures relating to	All EV charging stations shall be provided	

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Continuity Monitoring system	Safety and Electric Supply) Regulations.	with an earth continuity monitoring system that disconnects the supply in the event that the earthing connection to the vehicle becomes ineffective.	
Earthing	IS – 732	Earthing of all EV charging stations shall be TN system as per IS 732.	
Cable	CEA (Measures relating to Safety and Electric Supply) Regulations.	The cable may be fitted with an earth-connected metal shielding. The cable insulation shall be wear resistant and maintain flexibility over the full temperature range. Power supply cables used in charging station or charging points shall conform to IEC 62893-1 and its relevant parts	
Detection of the electrical continuity by the protective conductor	CEA (Measures relating to Safety and Electric Supply) Regulations.	A protective earth conductor shall be provided to establish an equipotential connection between the earth terminal of the supply and the conductive parts of the vehicle. The protective conductor shall be of sufficient rating to satisfy the requirements of IEC 60364-5-54.	
Firefighting System	CEA (Measures relating to Safety and Electric Supply) Regulations.	Firefighting system for EVs Charging Stations shall be as per relevant provisions of CEA (Measures Relating to safety and Electric Supply) Regulations 2010.	
Enclosure	CEA (Measures relating to Safety and Electric Supply) Regulations.	Enclosure of charging stations shall be made of fire retardant material with self-extinguishing property and free from Halogen.	
Alarm and Control System	CEA (Measures relating to Safety and Electric Supply) Regulations.	Fire detection, alarm and control system shall be provided as per relevant IS.	
Insulation Resistance	IEC: 61851 – 1	All apparatus of EV Charging Station shall have the insulation resistance value as stipulated in the relevant IEC 61851-1.	
Energisation of Charging stations	CEA (Measures relating to Safety and Electric Supply) Regulations.	Every charging station shall be tested and inspected by the owner or the Electrical Inspector or Chartered Electrical Safety Engineer before energisation of charging stations.	
Periodical Maintenance	CEA (Measures relating to Safety and Electric Supply) Regulations.	An electric vehicle charging station operator shall arrange periodic test/ inspection of an EV charging station or EVSE should be carried out by electrical inspector/CESE in every year in the initial period of first three years after the energisation of charging station and in every four years thereafter. The owner/operator shall establish and	

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		implement a safety assessment programme for regularly assessing the electrical safety of EVSE, conductors and fittings.	
Ingress Protection	IEC 60529	Where the connection point is installed outdoors, or in a damp location, the equipment shall have a degree of protection of at least IPX4 in accordance with IEC 60529.	
Maintenance of Records	CEA (Measures relating to Safety and Electric Supply) Regulations	(1) The owner of the charging station shall keep records in regard to design, construction and labelling to be compatible with a supply of standard voltage at a nominal frequency of 50 Hertz of the charging station. (2) The owner of the charging station shall keep records of the relevant test certificate as indicated in these regulations and as per IEC 61851. (3) The owner of the charging station shall keep records of the results of every inspection, testing and periodic assessment and details of any issues observed during the assessment and any actions required to be taken in relation to those issues. (4) The owner of the charging station shall retain a copy of all records, as specified in sub regulation (1), (2) and (3) of above, either in hard form or in electronic form, for at least seven years and shall provide a copy of the records to the officials during the inspection.	
International Standards for Charging stations	CEA (Measures relating to Safety and Electric Supply) Regulations	(1) The safety provisions of all Alternating Current charging stations shall be in accordance with IEC 61851-1, IEC 61851-21 and IEC 61851-22. (2) The safety provisions of all Direct Current charging stations shall be in accordance with IEC 61851-1, IEC 61851-21, IEC 61851-23 and IEC 61851-24.	

The EV charging station has been technically evaluated for interconnection requirements to ensure stability of the Grid on the date of the above report. It is further confirmed that at the time of issue of this report the certification of the aforementioned system corresponds to the valid safety specification for the specified use in accordance with

Application No.

Report No.

Date of Issue:

Signature