Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Tender Enquiry No : CPRIBLR20ERED16S674

Description of the Equipment/Goods/Services : Automated Electric Vehicle Supply Equipment (EVSE) Test Equipment

Note : 1) The technical bid submitted in other than this format is liable to be rejected.

2) All blue fields are mandatorily to be filled in.

Name and address of the bidder	
Quotation Number and Date	

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Detials of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
I	**Supply, installation, commissioning and training of "Automated Electric Vehicle Supply Equipment (EVSE) Test Equipment" at CPRI, Bengaluru**	**1 Set**			
II	**The quoted EVSE test equipment shall be suitable for testing of both AC & DC electric vehicle (EV) supply equipment (EVSE) or EV Charging station or EV Chargers. Quoted EVSE test equipment/ system shall be able to verify the characterstics of charging performance, safety performance and communication protocols as per the corresponding Standards of IS 17017-1, IEC 61851-1, AC-001, DC-001, IEC 61851-23, IEC 61851-24, ISO 15118-4, ISO 15118-5, etc covering all charging methodologies viz. CCS, CHAdeMO, GB/T and Bharat chargers.**				
III	**This section provides the pre-qualification criteria for the bidders/ suppliers**				
1	Pre-Qualification Criteria-1 The supplier must have supplied similar set-up to duly accredited national or international laboratories (Government run labs are preferred) as per ISO:17025:2017 or equivalent. Proof of document may be furnished along with the technical specification.				
2	Pre-Qualification Criteria 2: In case the bidder is an Indian Agent representing OEMs from abroad, then they shall submit the documentary evidence for the same. In case of change of Indian Agent by OEM, then OEM shall support us their services and supply of spares, after sales.				
IV	**The quoted system shall have Power Source, Electronic Load or Resistive Load, Measuring Instruments, Oscilloscope, High Voltage Probe, PWM Simulation Device, Test Simulator of the Vehicle and Current Probe as per the cl. nos. 6.3, 12.2.6, Annex A & Annex B of the Standard IS:17017(Part-1):2018 & IEC61851-1:2017, Ed. 3. The input for both of the systems are AC in nature (like Grid power). Quoted AC & DC power sources, power loads and communication simulator shall be suitable to be used with 10m Semi-anechoic chamber (please refer Fig. A.1, A.2 & E.1 of IS:17017(Part-21/Sec.2):2019/IEC61851-21-2:2018.**				

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V	**Quoted system shall comply with relavant charging standards with latest editions for both AC and DC EVSE testing and the list of Standards are as follows:**				
1	IS 17017 (Part 1):2018 (CCS, GB/T, DC-001 and AC-001) – AC EVSE testing and DC EVSE testing) and IEC 61851-1:2017.				
2	IEC 61851-1:2017 (CCS, GB/T, DC-001 and AC-001 – AC EVSE testing and DC EVSE testing)				
3	IEC 61851-23: 2014 (CCS, GB/T, CHAdeMO version 1.2/ 2.0 and DC-001 – DC EVSE testing)				
4	IEC 61851-24 (CCS, GB/T, CHAdeMO version 1.2/ 2.0 and DC-001– communication protocols testing for DC EVSE).				
5	ISO 15118, 15118-4:2018 and ISO 15118-5:2018 (all test cases relevant to EVSE testing from corresponding parts of ISO 15118 series standard must be included in this system).				
6	AC-001- Bharat AC Charger Specifications & DC-001- Bharat DC Charger specifications and the concerned links are as follows: https://dhi.nic.in/writereaddata/UploadFile/Standardization%20of%20protocol.pdf & https://dhi.nic.in/writereaddata/UploadFile/REPORT%20OF%20COMMITTEE636469551875975520.pdf				
7	DIN 70121, SAE J1772, GB/T 18487.1-2015 and GB/T 34657.1-2015, JIS/TS D0007, CHAdeMO version 0.9,1.0, 1.1, 1.2 or 2.0, GB/T 34658-2017, DIN 70122, ISO 15118-2, ISO 15118-3 etc.				
8	The quoted test system shall be suitable to use it as testing equipment for EMC testing as per Clause No. 4.4.2, 4.4.3, Figure A.1, A.2 and E.1 of IS 17017 (Part 21/ Sec 2)/ IEC 61851-21-2 standard. Bidder shall specify the list of additional test equipment required to carry out EMC testing as per the Standards.				

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VI	**Power ratings of quoted test system shall be as follows:**				
1	For AC EVSE, the system shall be able to test EVSE with minimum capacity of 22 kW. Output AC voltage shall be variable from 120V to 480V, 50Hz and 60 Hz both single and three phase systems. Resolution of voltage measurement shall be 1V. Maximum current (line current) capacity shall be 32 A at 400 V.				
2	For DC EVSE, the system shall be able to test EVSE with minimum capacity of 50 kW. Output DC voltage shall be variable from 48V to 500V, both single and three phase systems. Resolution of voltage measurement shall be 1V. Maximum current capacity shall be 100 A at 500 V.				
VII	**The minimum required test cases shall be provided as follows:**				
1	Test Case EVSE – IEC 61851-1 and IS 17017 (Part 1) (Minimum Compliance shall be provided as per Annexure 1 of this specification)				
2	Test Case EVSE – IEC 61851-23 (System A, CHAdeMO). The compliance shall be provided as per standard i.e. Annex AA of IEC 61851-23 (Minimum Compliance shall be provided as per Annexure 2 of this specification)				
3	Test Case EVSE – IEC 61851-23 (System B, GB/T). The compliance shall be provided as per standard i.e. Annex BB of IEC 61851-23 (Minimum Compliance shall be provided as per Annexure 2 of this specification)				
4	Test Case EVSE – IEC 61851-23 (System C, CCS). The compliance shall be provided as per standard i.e. Annex CC of IEC 61851-23 (Minimum Compliance shall be provided as per Annexure 2 of this specification)				
5	Test case EVSE- IEC 61851-24 for System A-CHAdeMO				
6	Test case EVSE- IEC 61851-24 for System B-GB/T				
7	Test case EVSE- IEC 61851-24 for System C-CCS				
8	Test Case EVSE – DIN SPEC 70121				
9	Test Case EVSE – GB/T 34657.1				
10	Test Case EVSE – GB/T 34658				
11	Test Case EVSE – ISO 15118-4 and ISO 15118-5				
12	The test cases which are not complied within each standard and the reason thereof shall be provided by highlighting the deviations from the corresponding standards against the relevant clauses of this specification. The copy shall be enclosed during the time of bidding.				
13	The test cases shall be in test case libraries for easy access and testing. Bidder shall support for additional and amendments of the above said standards from time to time. However, this support shall be extended until the warranty period.				

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VIII	**The quoted AC Source for the test system shall be programmable and regenerative with the following specifications:**				
1	Input of the quoted AC source shall be of 1 phase or 3 phase type which can operate with 230 V(L-N) or 400 (L-L), 50 Hz supply. Exact requirements for input power supply shall be specifiifed by the bidder.				
2	The voltage tolerance in AC source shall be ± 10%				
3	The quoted AC source shall be able to provide output of 230 V (L-N)/ 400 (L-L) to single and three phase AC and DC EVSE systems The quoted AC source shall be suitable to test both AC and DC EVSE systems with input voltages of 120 V and 220 V (spilt phase US).				
4	Output voltage regulation (line regulation and load regulation) of the quoted AC source shall be less than or equal to ± 0.25 % or appropriate.				
5	Output Frequency deviation of the quoted AC source shall be less than or equal to ± 0.1 Hz				
6	Phase angle tolerance of the quoted AC source shall be less than or equal to 1.5°				
7	The AC power output from the quoted AC source shall be such that it can deliver power to AC EVSE of 22 kW capacity and DC EVSE of 50 kW capacity.				
8	Both 50Hz and 60 Hz- output frequency options shall be provided in the quoted AC source				
9	The quoted AC source shall be such that voltage, current and power shall be programmable/ variable apart from 400 (L-L). For example- 120 V, 220 V, 240 V, 380 V, 400 V and 415 V or higher				
10	The quoted AC source shall be able to act as a grid source and grid load/sink				
11	The operation of the quoted AC source shall be suitable as per the above said standards				
IX	**The quoted AC load or AC EV Simulator shall be programmable and regenerative with the following specifications:-**				
1	The operating supply voltage of the quoted AC load or AC EV Simulator shall be of 1 phase or 3 phase type which can operate with 230 V(L-N) or 400 (L-L), 50 Hz supply. Exact requirements for input power supply shall be specifiifed by the bidder.				
2	The quoted AC load shall be capable to test both 1 phase and 3 phase AC EVSE systems				
3	Minimum current rating of the AC load shall be 32 A at 400 V with 50Hz and 60 Hz.				
4	The quoted AC load/ EV simulator shall be able to act as an AC source for Vehicle to Grid (V2G) testing of AC EVSE systems				
5	The operation of the quoted AC load or AC EV simulator shall be suitable as per the above said standards				

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X	**Programmable DC load or DC EV Emulator or battery emulator or regenerative battery pack system shall have the following specifications:**				
1	The operating supply voltage of the quoted DC load or DC EV Emulator shall be of 1 phase or 3 phase type which can operate with 230 V(L-N) or 400 (L-L), 50 Hz supply. Exact requirements for input power supply shall be specifiifed by the bidder.				
2	Shall act as an Electric Vehicle (EV) simulator for testing EVSE. The DC or EV emulator (along with communication emulator) shall be used to emulate a DC EV to test DC EVSE				
3	Shall be able to programme the load as per charging standards like CCS-1, CCS-2, GB/T-DC, CHAdeMO-DC(version 1.2/2.0), Bharat AC and DC standard. Need to support older version of CHAdeMO (like 0.9, 1.0, 1.1, 1.2) as standard calls for backward compatibility				
4	Shall be able to simulate for voltage up to 500 V DC. The maximum current shall be such that the load can able to receive a power of 50 kW. That is 100 A at 500 V DC shall be possible.				
5	DC load shall also be able to act as a DC source of 50 kW for V2G testing of DC EVSE.				
XI	**Specifications of EVSE Analyzer or EVSE tester**				
1	Shall be able to simulate/ emulate the functions of EV for different test cases as required by the respective standards mentioned in this specification.				
2	The EVSE analyzer shall be able to measure AC and DC electrical parameters (viz. voltage, current, frequency, harmonics, power, power factor) of input and output sides of EVSE during testing.				
3	Apart from simulation, the system (EVSE analyzer or simulator) shall have the capability to measure the safety parameters, communication parameters during the EVSE testing & charging process through use of dedicated software.				
4	It shall have Real Time measurement of instantaneous electrical parameters. The analyzer shall provide visual or graphical representation of charging processes, test reports, user friendly and easy to understand visualization of non-conformances and logging files with measurement data for verification. A visualization or log data in raw format of PLC & CAN messages should be able to be seen in the system display or software or shall provide a better system. Test system (using software) shall be able to show which test item failed from the sequence of tests conducted. In AC & DC EVSE measurements- AC & DC voltage and AC & DC current measurement must be displayed time-synchronous to Control Pilot (CP) and Proximity Pilot (PP) measurement along with PLC & CAN messages during EV simulation (EVSE testing).				
5	Shall be compliant for Communication Emulator for respective standards CCS, GB/T, CHAdeMO and also Bharat AC & DC standards.				

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6	Bidder shall supply different inlet ports suitable to various charging connectors like CCS-Type1 & Type 2, GB/T DC & AC , Bharat Chargers AC-001 , DC-001 and CHAdeMO DC.				
7	The analyzer shall have either separate equipment's like digital signal oscilloscope, digital Multimeter, insulation tester, power analyzer, multi-channel data logger, PWM generator, etc. i.e. all equipments integrated into a single system or appropriately without compromising the testing requirements.				
8	Harmonic measurement up to 50th order shall be provided along with the quoted test system.				
9	Accuracy of the voltage and current measurements in the quoted test system shall be ± 0.5% or ±1% respectively or better				
9	Full-automatic EV simulation must be available with comfortable graphical user interface for reaction timing visualization and analysis if signal levels and communication message types and AC/DC voltage and AC/DC current are all at the required state at the same time. It shall be able to recognize and alarm for wrong connections and it shall ensure that the testing shall not initiate.				
10	The system shall have simulation of electric vehicle parameters like voltage, current, power, state of charge, change of CAN message parameters, welded contact simulation, variation in R4 resistor etc				
11	The EVSE tester or analyzer or the system shall have appropriate communication modules for each standard CCS (PLC), GB/T (CAN) and CHAdeMO (CAN). The system during charging or before charging shall have provision to access, record and display all the CAN or PLC parameters to create different test scenarios including PWM, V2G and SLAC parameters.				
15	PLC communication shall be used for EV emulator mode in case of CCS and CAN communication in case of GB/T and CHAdeMO. Following Parameters shall be adjustable: 1. Power, current, voltage limits 2. Set SOC (State-of-charge) 3. Selection of communication standard (IEC 61851-1, IEC 61851-24, DIN 70121, ISO 15118, ISO 15118 or as relevant). Main purpose is to test all types of charging methodologies like CCS, CHAdeMO, GB/T and Bharat AC & DC.				
16	The system shall have provision to inject fault, related to PWM and Proximity pilot (PP) signals. Also the system shall have provision for fault insertion on CAN bus like open circuit and short circuit between CAN-H to ground and CAN-L to ground or appropriate cases shall be provided. AC fault injection between AC mains/ source and EVSE shall be possible, break of PE wire shall be possible, etc.				
17	The system shall be capable of testing insulation for AC and DC EVSE testing by detecting low isolation resistor between DC+ and PE, DC- and PE. Injection of insulation error shall be prossible to check the insulation monitoring device of EVSE				
18	The hardware design of the system shall be modular and upgradable for future requirements				
19	The test system shall be able to simulate the V2G test cases i.e. measurement and control when power transfer is happening from load side (AC or DC) to source side (AC source/ programmable regenerative simulator)				
20	Over voltage protection, over current protection, over temperature protection, FAN safety, Emergency stop button etc. shall be provided in the quoted test system				

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21	The quoted test system shall have provision for GPIB, RS232, USB(latest), Ethernet/LAN interfaces or preferrably with latest suitable interface				
22	The test system shall have real time PC included in case of disconnection of Host PC. Host PC shall minimum requirements of Core i7, Windows 10 professional or latest edition, 32 inches, 16 GB RAM, 1 TB, 256 GB SSD or 500 GB hard disk, USB ports, Ethernet/LAN ports, wireless mouse (with mouse pad) and keyboard. The brands of PC shall be either HP, DELL, SAMSUNG, VAIO,TOSHIBA, MICROSOFT, PANASONIC or ASUS. A multi function (print, copy, scan, internet connectivity, LAN, wifi, auto feeder, etc.) colour printer shall be provided along with the test system. The printer shall be used for taking A3 and A4 size papers. The printer brands shall be Brother, Xerox, Canon, HP or Samsung.				
XII	**Following are the requirements of digtal communication protocols in EV simulation using the EVSE tester mentioned in the above Section XI of this specification:**				
XII.1	**Automated tests on protocol side to EVSE must be possible.** **Following are automated tests for EVSE verification (CHAdeMO) as per Annex A of IEC 61851-24 standard (System A based EVSE)**				
1.1	Select timeouts created by EV simulation in every charge state				
1.2	Select stop events created by EV simulation in every charge state. The stop events can be started at this selected state with variable changeable timer.				
1.3	Change CAN send orders				
1.4	Change CAN send timings				
1.5	Drop-out of defined CAN messages of the protocol (CHAdeMO)				
1.6	Full automated operation of the selected fault injection				
1.7	With full measurement and monitoring function for verification of Charger reaction				
1.8	Interoperability testing of EVSE shall be possible				
1.9	Electrical wiring, resistor and voltage values shall be according to the CHAdeMO specification				
1.10	CHAdeMO charge sequence 1.0.1 shall be possible. Measurement and judgement of state and timing as well as visualization of state transition according to the protocol versions 0.9.x, 1.x/ 2.0 shall be able to support				
1.11	Monitoring function of all communication signals, recording of voltage and current of all 12V signals				
1.12	For testing of EVSE digital communication protocols, the quoted Electric Vehicle-Simulator shall be according to JIS/TSD0007 standard (refer Annex A of IEC 61851-24 standard)				
1.13	For testing EVSE Physical and Data Link Layer (application layer) of digital communication protocol, the quoted Electric Vehicle-Simulator shall be as per ISO 11898-1 & ISO 11898-2 standards (refer Annex A of IEC 61851-24 standard)				

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XII.2	**Automated tests on protocol side to EVSE must be possible. Following are automated tests for EVSE verification (GB/T) as per Annex B of IEC 61851-24 standard (System B based EVSE)**				
2.1	select timeouts created by EV simulation in every charge state				
2.2	select stop events created by EV simulation in every charge state. The stop events can be started at this selected state with variable changeable timer.				
2.3	change CAN send orders				
2.4	change CAN send timings				
2.5	drop-out of defined CAN messages of the protocol (for GB/T)				
2.6	full automated operation of the selected fault injection				
2.7	with full measurement and monitoring function for verification of Charger reaction				
2.8	State monitoring and timing measurement of state transition according to the protocol versions in GB/T 18487.1-2015, GB/T 27930 2011, GB/T 27930 2015				
2.9	Monitoring function of all eectrical and digital communication signals shall be possible				
2.10	Shall be able to change EV CAN message parameters of EV simulation configuration for charging methodologies using CAN communication protocols between EV and EVSE.				
2.11	For testing of EVSE digital communication protocols, the quoted Electric Vehicle-Simulator shall be according to GB/T 27930 standard (refer Annex B of IEC 61851-24 standard)				
2.12	For testing EVSE Physical and Data Link Layer (application layer) of digital communication protocol, the quoted Electric Vehicle-Simulator shall be as per SAE J1939-11 & SAE J1939-21 standards (refer Annex B of IEC 61851-24 standard)				
XII.3	**Automated tests on digital communication protocol side to EVSE must be possible for Combined charging system (CCS) as per Annex C of IEC 61851-24 standard (System C based EVSE)**				
3.1	The standard conformance check must cover DIN 70121 and ISO 15118-1, ISO 15118-2 and ISO 15118-3 standards.				
3.2	Possibility to expand or upgrade for CharIN interface (CCTS)				
3.3	Possibility to display communicated voltage (request and response) and communicated current (request and response) and real voltage and real current				
3.4	Logging and visualisation of SLAC and PLC messages				
3.5	Test System shall be extendable for further full-automated analysis,EV simulation and conformance test libraries on later demand and further charging standards creation as well as CharIN test cases				
3.6	Charge Cycle Automation, to create own charge cycles with previously defined message delays and message contents of PLC messages. Additionally, configure charge cycle timing and CP settings, plug type selection and how to stop the charge cycle. Unlimited amount shall be configurable for full-automated execution of a lot of different charge cycles including automated logging of each charge cycle.				

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3.7	Timings of the communication states shall be comfortable adjustable to create Message delay of PLC communication to check timing and timeout behavior of EV.				
3.8	Changeable content of the messages over a selection in a comfortable graphical user interface shall be possible. The content configuration shall be saved. Selection shall be possible to send the standard response and another error-injected messages from a PLC message list.				
3.9	The creation of current profile requested by EV simulation shall be possible.				
3.10	For testing EVSE digital communication protocols, the quoted Electric Vehicle-Simulator shall be as per ISO/IEC 15118-2, ISO/IEC 15118-3 and Annex CC of IEC 61851-23 standards. (refer Annex C of IEC 61851-24 standard)				
3.11	For testing EVSE Physical and Data Link Layer (application layer) of digital communication protocol, the quoted Electric Vehicle-Simulator shall be as per ISO/IEC 15118-3 standards (refer Annex C of IEC 61851-24 standard)				
3.12	For testing EVSE digital communication protocols & EVSE Physical and Data Link Layer (application layer) of digital communication protocols, the quoted Electric Vehicle-Simulator for shall be as per DIN SPEC 70121 standard. (refer Annex C of IEC 61851-24 standard)				

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XIII	**Control Pilot Measurement**				
1	All states according to IS 17017 (Part 1)/ IEC 61851-1 shall be detected using the software or provided user interface				
2	CP signals shall be measured using internal or external oscilloscope which is to be provided along with this system				
3	Voltage measurement range of CP is -13 V to +13 V (minimum range). This measurement has to be very accurate and must have a minimum accuracy of ±0.1 V or better and resolution of minimum ±0.1 V or better.				
4	Pulse width measurement range of CP shall be 0% to 100% (0%, 2%, … 98% also) with ±0.1% tolerance and accuracy of CP pulse width shall be ±0.5µs or better.				
5	Frequency measurement range of CP shall be 900 Hz to 1.1 kHz with ± 0.1Hz as tolerance or better				
6	There shall be provision to measure the CP rise and fall time in the range 1µs to 100µs with ± 1µs tolerance or better.				
7	Input impedance range of CP measurement must be high enough for non-influencing (shall be up to 1 MΩ + 4 pF or appropriate as per standard or higher like up to 5 MΩ)				
8	For CP simulation (where CP is generated by EVSE), the Control Pilot (CP) for EV circuit parameters shall be available to change using the user interface for evaluating the EVSE under test.				
9	R2 and R3 resistor values or CP-PE resistance of EV shall be changeable in the range 1Ω to 5 kΩ or higher like 20 kΩ (as per IEC 61851-1:2017) with 1Ω resolution & 0.5% tolerance or better. (where PE is potential earth point). Refer Table A-3, A-4 and A-9 of IS 17017 (Part 1): 2018.				
10	Switchable capacitance Cc for emulating the maximum line capacitances shall be 1500 pF, 2400 pF or 3900 pF with ± 5% tolerance or better.				
11	Short circuit of CP-PE with 120Ω shall be possible using the system. Refer to Clause A-4.9 of IS 17017 (Part 1): 2018- Test of short circuit values of the voltage				
12	During EV simulation, the CP measurement results must be provided for every CP cycle for many hours as required				
13	Fully automated charging process shall be available with the user interface provided				
14	For CP signal measurements, BNC ports or appropriate shall be provided on the EVSE tester/ analyzer for signal analyses and verifying PWM signal profiles				

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XIV	**Proximity Pilot (PP) Measurement**				
1	The PP measurement range for PP-PE resistance is 50Ω to 3.25 kΩ with 2 % tolerance or better or as per relevant standard shall be provided for EVSE testing				
2	PP resistance parameter shall be changeable in the range from 0 to 8/ 8.5 kΩ or as per Table B.1 of IS 17017-1 standard (150 Ω to 2700 Ω ± 10% tolerance) or range from 5 Ω to 8 kΩ or appropriate range for future consideration. The minimum resolution of 5Ω or better shall be provided				
3	According to IS 17017 (Part 1): 2017, "The EVSE shall interrupt the current supply if the current capability of the cable is exceeded as detected by the measurement of the Rc, as specified by the values for the recommended interpretation range in Table B.2. of IS 17017 (Part 1): 2018". In such case, resistance range from 0 to 4600Ω shall be provided for PP measurement with an accuracy of ±2%.				
XV	**Software requirements**				
1	In case of AC and DC power source/ sink integration- the test equipment shal be able to integrate with the quoted AC/DC simulators and accessories. It shall also be controlled by single or separate software for AC and DC EVSE testing				
2	Shall have either graphical user interface based software or display option in the external PC (which is to be quoted along with the test equipment)				
3	The software shall have the possibility of data logging of measurements				
4	The software shall be able to display communicated messages (request and response) in real time for all charging standards				
5	The software shall have report generating tool which shall generate report as per standards in the test libraries created (viz. IEC 61851-1, IEC 61851-23, IEC 61851-24, IS 17017, etc.) i.e. automatic test report creation tool shall be provided for AC and DC EVSE testing				
6	The software shall have options to create simple/ basic test cases, own charging standards by the user and also for future upgradation based on demand				
7	The software shall be in "ENGLISH" language only				
8	One consolidated software shall be provided for all the control and analysis				
9	The software shall be able to monitor state transition monitoring, stop events and timing measurement for all charging standards.				

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10	The software shall be able to display and record all communication signals and other appropriate signals which are relevant for testing of AC and DC EVSE.				
11	The software shall be programmable to carry out selected test cases and automatically run those set of test cases. The user shall be able to create different test templates based on the EUT specifications and run those templates directly for the puspose of automatic testing requirements is preferred.				
13	Test case editor option shall be provided in the software for all charging standards				
14	There shall be a provision to use EV parameters (in EV simulator/ emulator) like Max current, Min Current, Max Voltage, Min Voltage, Max Power. Min Power, other appropriate limits and charging method to emulate EV accurately				
15	Live display of measurement results shall be provided				
16	Support for upgradation of the software shall be provided in line with the future amendments with the standard.				
17	The software shall have capability to export measured results in .csv, .txt or .docx formats (editable formats)				
18	There should be common software platform for testing and reporting and should be able to control the test setup with quoted AC & DC emulators.				
XVI	**The software shall include all the standards required for the EVSE testing and shall have a test library. The test library shall have relevant standards as mentioned below and their complete test cases. The standards shall cover all types of charging standards like CCS (Type-1 and Type 2)- AC & DC, GB/T AC and DC, Bharat Chargers AC (AC001) and DC (DC001) and CHAdeMO DC.**				
1	IEC 61851-1				
2	IEC 61851-23				
3	IEC 61851-24				
4	ISO 15118-4				
5	ISO 15118-5				
6	DIN 70121				
7	GB/T 18487.1				
8	GB/T 34657.1-2015				
9	SAE J1772				
XVII	**Safety Requirements for the quoted test system**				
1	Provision for integration of External emergency stop button should be provided along with one emergency stop button installed on the tester.				
2	The test system should be protected against single phase, phase reversal, over voltage, under voltage, etc.				
3	LED or appropriate indicators should be provided for status in the system during testing, before testing and after testing				
4	Minimum of IP 20 protection class shall be provided for the test equipment				
5	The system shall be able to operate safely under the ambient temperature of 20°C ± 2°C to 45°C ± 2°C and relative humidity of 65% ± 5%				
6	Proper cooling systems shall be provided by the supplier				
7	System shall have rotatable wheels (with lockable wheels) on base and it shall be easily movable to any location.				

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8	Tower light provision or similar indication like LED shall be provided properly in emulators or sources or loads for during, after and before EVSE testing				
XVIII	**General Requirements**				
1	All suitable rated cables shall be supplied for interconnections including communication cables.				
2	The system shall be able to operate at altitude of 900 meters (Location: Bengaluru, Karnataka, India)				
3	Supplier will be responsible to perform performance verification tests and provide test reports at the time of installation and commissioning.				
4	Equipment supplied and the whole test system shall have Warranty for a period of 1 year from the date of satisfactory installation and commissioning at CPRI Bengaluru, Karnataka, India				
5	The supplier shall inform the list of items and softwares quoted for this test equipment.				
6	Calibration certificates or reports shall be provided for all instruments mentioned in in Sl. No. 5 of Section XVIII. All calibration certificate or report shall be in the name of “Central Power Research Institute, Bengaluru”. Calibration certificates/ reports shall be from a NABL or ISO 17025 accredited laboratory or its equivalent. Calibration date shall be after the CPRI's purchase order date				
7	Proper and relevant documentation shall be provided. 2 Nos. of hard and soft copies of operating manuals, safety details, instruction details, maintenance procedure in CDs (2 Nos.) or Pen drives (2 Nos.), etc. shall be provided.				
8	After sales support shall be provided. Maintenances for a minimum period of one year shall be included in the quotation.				
9	All materials/equipment manufactured by the vendor shall be subject to inspection, check and/or test by the CPRI officials at manufacturer's facility. Pre-dispatch inspection will be carried out by CPRI officials for 5 or more days to inspect the system functionality and acceptance criteria along with sample demonstration. CPRI shall bear the expenditures for PDI. Based on Govt. of India rules for travel, CPRI shall consider to waive off the pre-dispatch inspection.				
10	The bidder shall specify the dimensions and area required for the quoted test system and power supply requirements (including earth resistance values, etc)				
11	The supplier must show full demonstration of the EVSE test equipment (max. capacity of EVSE shall be considered) supplied using both AC EVSE and DC EVSE as a sample during pre-dispatch inspection and at the installation site during commissioning (at CPRI, Bengaluru).				

PN: 1) Mere statement of "Complied" do not suffice the requirement. The details of technical parameters in proof of CPRI requirements shall be furnished along with technical write-up, catalogues, brouchers, literatures, phamplates, or any other documents shall be submitted in hard copy along with technical bid.
2) Calibration reports/certificates, factory test reports/certificates from an accreditated agencies/facilites shall be submitted wherever applicable.
3) CPRI reserves the right to conduct "predispatch inspection" prior to dispatch at the works of the supplier and the expenditure towards PDI shall be borne by CPRI. However information regarding the rediness of the equipment/machinary for the PDI shall be communicated in writing at lease 70 days in advance.