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## KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

CIN No. U40109KA1999SGC025521

Corporate Office  
Kaveri Bhavan, K.G Road,  
Bengaluru - 560 009

No. KPTCL/B19/345/85-86

Date: 14 JUL 2022

### CIRCULAR

**Sub:** Guidelines for Testing and Commissioning of SAS/PLCC/DTPC/RTU to be adopted for construction of new Sub-station / Augmentation works / Renovation & Modernization works.

**Ref:** Note approved by the Managing Director, KPTCL on 12.07.2022

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Sub-station Automation System (SAS) is provided for all the 220kV and above Voltage class Sub-stations being established by KPTCL for control and monitoring of Sub-station Switchyard as per CEA guidelines. Healthiness of SAS is very much essential in order to ensure proper linking with the State Load Dispatch Centre (SLDC) for energy management and centralized monitoring. The availability of data on real time at SLDC is important from load monitoring and control point of view.

The testing of SAS hardware such as Remote Gateway, Main Human Machine Interface (MHMI), Redundant-Human Machine Interface (R-HMI), Disturbance Recorder (DR), Energy Management System (EMS) and protection signals has to be carried out at site prior to commissioning of Sub-stations. The Major works wing and SCADA/TCD wings of KPTCL need to co-ordinate with each other in ensuring completeness in testing of SAS system before commissioning in case of establishment of new Sub-stations or new Terminal Bays in existing Sub-station / Augmentation works / Renovation & Modernization (R&M) works.

Further, PLCC (Power Line Carrier Communication) links are envisaged for all 220kV and above Voltage class Transmission Lines having overhead conductor and Optic Fibre Cables (OFC) with Digital Tele Protection Coupler (DTPC) for Transmission Lines with Under Ground (UG) Cable or with combination of overhead conductor and UG cable. This PLCC link is very much essential for providing second zone accelerated tripping. Testing of such PLCC links and

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DTPC provided for OFCs needs to be carried out in presence of SCADA/TCD Engineers so as to ensure point to point working of PLCC and DTPC system.

Henceforth, the following guidelines shall be followed in order to ensure that, all the upcoming 220kV and above Voltage class Sub-stations / Augmentation works / Renovation & Modernization (R&M) works of KPTCL are commissioned with completeness in testing of SAS.

1. Bill of Quantities (BoQ) for PLCC & SCADA materials shall be obtained from SEE, SCADA at the time of preparation of estimate/DPR.
2. At the time of execution of work, the SAS system and PLCC equipment shall be erected in co-ordination with SCADA/TCD wing as per the BoQ.
3. Pre-commissioning (PC) test shall be carried out in co-ordination with SCADA/TCD wing and all tests shall be witnessed by concerned SCADA/TCD Engineers.
4. Pre-commissioning tests pertaining to SAS shall be carried out at the time of PC tests of C&R panels and all tests shall be witnessed by concerned SCADA/TCD Engineers.
5. Necessary action shall be taken to ensure 100% working of SAS and for proper linking of Sub-station data with SLDC, Bengaluru.
6. In case of new Terminal Bay work in existing Sub-station / Augmentation works / Renovation & Modernization (R&M) works, the new Terminal Bays shall be integrated with the existing SAS/RTU. All tests w.r.t RTUs in all such works shall be witnessed by concerned SCADA/TCD Engineers.
7. Minutes of Meeting shall be signed between the executing agency, SAS provider, Major Works Engineers and TCD/SCADA Engineers.

The checklist for testing and commissioning of SAS/PLCC/DTPC annexed to this Circular shall be adopted for Testing and Commissioning of SAS/PLCC/DTPC/RTU in all new Sub-station / Augmentation works / Renovation & Modernization works of KPTCL.

The above shall be followed scrupulously.

Any clarifications on the above shall be obtained from SEE (SCADA), O/o Chief Engineer Electy, SLDC, KPTCL, Bengaluru.

Approved by  
Managing Director

  
General Manager (Tech)  
KPTCL

**To:**

1. All Chief Engineers Electricity, KPTCL.
2. All Superintending Engineers (El), KPTCL.
3. All Executive Engineers (El), KPTCL.
4. The Company Secretary, KPTCL, Kaveri Bhavan, Bengaluru.
5. All Assistant Executive Engineers (El), KPTCL.
6. All Assistant Engineers (El), KPTCL
7. SPS to Managing Director / Director (Transmission) / Director (Finance) / Director (A&HR) / Company Secretary / KPTCL, Kaveri Bhavan, Bengaluru.

**Copy to:**

✓ The Superintending Engineer (El), IT & MIS, with a request to arrange to upload this Circular in KPTCL website.

## **ANNEXURE**

### **Check list for Commissioning of SAS**

1	Check for the BoM of Hardware and spares supplied as per approval (Make and model)
2	Check for Time Synchronisation with GPS and Time Display Unit
3	Check the architecture and for dual ring system
4	Check for observations made during Inspection in MoM and drawings
5	Check for the connectivity of all IEDs to switch as per approved drawing
6	Check for the status of Switches, IEDs, BCUs and gateway
7	Obtain the IP list of all IEDs, BCUs, M-HMI, R-HMI, DR, EMS, Remote Gateway
8	Check for all protection signals in event list both locally and remote (At SLDC)
9	Check for surveillance system (where ever provided)
10	Check NMS mapping of all IEDs
11	Check command operation both locally and remote
12	Status of Inverter
13	Energy Meter integration to local (EMS system) and remote (MDAS)
14	Back up file to be taken
15	Ensure Visibility at SLDC KPTCL Bengaluru
16	MoM to be with concerned Major Works, Turnkey Agency and SCADA/TCD

### **Check list for Commissioning of PLCC Link**

1	To obtain wiring schedule from SCADA/TCD
2	To verify the hardware detail as per approved drawing
3	Check for any observation during inspection
4	Check for DC availability to PLCC cabinet, ferruling as per drawing
5	Check the Signal level upto yard
6	Commissioning of Exchange
7	Make, model and rating of WT, Coupling device
8	Point to Point testing shall be carried out before commissioning of line in presence of RT
9	MoM to be with concerned Major Works, Turnkey Agency and SCADA/TCD

### **Check list for Commissioning of DTPC Link**

1	To verify the hardware detail as per approved drawing
2	Check for any observation during inspection
3	Check for DC availability to DTPC cabinet, ferruling as per drawing
4	Make, model of DTPC
5	Optic fibers to be tested and witness by Major Works and SCADA/TCD
6	Point to Point testing shall be carried out before commissioning of line in presence of RT
7	MoM to be with concerned Major Works, Turnkey Agency and SCADA/TCD