

**PSCCC Meeting Minutes
May 11, 2017
Albuquerque, NM USA**

**Power Line Carrier Subcommittee
Chair: Roger Ray**

Quorum of 11 members present with no guests (shown below).

After introductions and review of PAR slides and copyright policy, the chair announced quorum was achieved. A motion was made by Craig Palmer to approve the minutes from the January 2017 meetings, seconded by Jim O'Brien and passed. Next, the Chair reviewed the action items status from the previous meeting:

C93.3 Line Trap Standard Update:

Bruce Pickett reviewed the editorial comments from the IEEE editorial board (Ms. Turner) with the group and all comments were accepted or responded to. Members listed as being involved with the standard were corrected as the original standard was partially incorrect. Plan is to publish this standard by June 14.

C93.1 CCVT Standard Update:

Roger Ray to talk with the Instrument Transformer group and will give an update later.

Discussion then turned the work of the C93.5 working group.

C0: Standard for Requirements for Power Line Carrier Transmitter/Receiver Equipment used to Transfer Discrete Teleprotection Signals C93.5

Chair: Craig Palmer

Vice Chair: Tony Bell

Secretary: Tony Bell

Output: Standard

Draft: 0.2

Established Date: 22-Sept-2017 (PAR approval date)

Completion Date: 31-Dec-2020

C93.5 TX/RX PLC Standard Update:

The following main issues were discussed:

1. Modified section 7 (mounting) to make more generic. Will seek to obtain the referenced specs having to do with physical dimensions of the power line carrier chassis.
2. Will check for harmonization with C37.90, C37.90.1, C37.90.2, C37.90.3 and add IEEE 1613 as a reference.
3. Decided to combine sections 5 (Ratings) and 6 (Testing) so that the ratings or not separated in the document by many pages from the testing they correspond to.
4. Talked about completely rewriting the statistical part of the dependability/security section of the standard to make this test more practical (1 test can take a month of elapsed time) and clearer for both suppliers and customers. Tony Bell presented a document on a proposed new method of calculating statistical dependability/security that would reduce the time when these numbers are very good (i.e. low number of false trips and missed trips). This document will be sent to all members along with the minutes of the meeting. Roger Ray mentioned that it might be simpler to pick the maximum number of noise bursts (1 million?) for the test, if no false trip is received for equipment that has high security rather than using statistics. Discussed the need to specify specific msec RX trip delay times rather than 1/3, 2/3, etc of max setting in supplier's product, **and also to specify SNR, with a note about averaging the noise level measurement to determine SNR.**

5. Discussed adding a specific time regarding operation into different loads and with open and short circuits. None is presently specified. Utilities would like indefinite but suppliers will need to research/test to see what is practical to still give a decent life span and be economical. Roger suggested that suppliers short the TX full power output and measure short circuit current or the temperature of the output amplifier **to see at which point it stabilizes, and reference** the manufacturer's datasheets for the semiconductors used in the amplifier.
6. Discussed updating recommended test set ups. We decided to keep them as they are and just add a note that other equivalent test methods could be used, because the present methods use non-specialized test equipment that a utility is more likely to have if they wanted to verify a product with their test equipment. Suppliers normally will use more expensive specialized test equipment.

Previous Assignments (still outstanding/ongoing)

- Unusual Service Conditions (section 4) – Mark Majka
- Security/Dependability (Ratings, testing, etc) – Tony Bell
- Ratings – Craig Palmer
- New functionality/Migration from EM relays (Ratings) – Jeff Brown
- Testing (Section 6)– Tony Bell & Craig Palmer both to review whole section
- Production Testing - ?
- Manufacturing Requirements – Ian Tualla/Don Lukach (Craig P to get referenced standards)
- Annex A – Tony Bell/Craig Palmer
- Definitions – Addis K.

The attendee list is below.

Members	
Roger Ray	PowerComm Solutions
Craig Palmer	Hubble/RFL
Tony Bell	Ametek/Pulsar
Bruce Pickett	EFC Consultants
Don Lukach	Ameren
Ian Tullah	Duke Energy
Jim O'Brien	Duke Energy
Addis Kiefl	GA Transmission Co.
Dom Fontana	Eversource
Mark Majka	AEP
Rafael Garcia	Oncor