

Special Committee 1 - Smart Grid Support and EMC Issues

Online at <https://www.emcs.org/special-committee-smart-grid.html>

Glasgow Virtual Conference

SC 1 Meeting Minutes Approved at the 1 August 2022 Meeting

Prepared by:

Dave Thomas, Secretary

Mike McInerney, Chair

Monday, 9 August 2021

Virtual Meeting from 10:00 – 11:00 AM (U.S. Eastern Daylight Time)

1. The meeting was opened by the Chair, Mike McInerney, at 10:03 AM EDT via a WEBEX meeting. Mike McInerney presented the agenda for the meeting, and it was approved.
2. Mike reminded the attendees of the scope of the special committee, which is to coordinate within the EMC Society on Smart Grid issues. As a coordinating committee SC 1 does not actively solicit papers and abstracts for IEEE EMC conferences, however, if an abstract or paper clearly addresses a Smart Grid issue then SC 1 will review it.

There were 5 attendees at this WEBEX meeting including: Ed Hare, Frank Leferink, Mike McInerney, Jerry Ramie, and Dave Thomas.

3. Don Heirman (SC 1 chairman) passed away in the fall of 2020. Don had been an active member of the EMC Society for decades, leading many projects and committees; his passing was a great loss to the EMC community.

As a result of the Don's passing a Ballot for new officers was completed (Bill Radasky emailed active members on 10 November 2020 and requested a response by 30 November 2020):

Mike McInerney was voted in as Chair with seven yeas and no nays. *
Bill Radasky was voted in as Vice Chair. with seven yeas and no nays. *
The position of secretary was temporarily left unfilled.

* There were seven attendees at the virtual SC 1 meeting on 21 August 2020, so this number should be considered a quorum for this election.

4. Dave Thomas volunteered to serve as Secretary and a vote was taken at this meeting. Dave Thomas was unanimously voted in as Secretary.

All officers will serve a three-year term from 1 January 2021 through 31 December 2023.

5. Mike McInerney reviewed the 2020 Reno minutes and asked if there were any corrections. None were mentioned and the minutes of the 2020 Reno meeting were approved as written.
6. One EMC conference paper was submitted to SC 1, titled "Vulnerability of Wireless Smart Meter to Electromagnetic Interference Sweep Frequency Jamming Signals." It was reviewed by three SC 1 technical experts and accepted with suggested changes. No abstracts were submitted.

One SC 1 tutorial, "Smart Grid and EMC Issues," was presented at the 2021 Glasgow virtual EMC Symposium. It "aired" on Monday 2 August at 11:00 AM EDT.

The following topics were presented:

Introduction to the IEEE EMC Society Special Committee 1 (SC 1) and an Introduction to this Tutorial
(Mike McInerney)

SEPA (Smart Electric Power Alliance) Electromagnetic Interoperability Issues Working Group (EMIIWG) – Its History, Accomplishments and Status
(William Radasky)

Immunity for Power Station and Substation Environments
(William Radasky)

Conducted Emissions (2 kHz-150 kHz) and Their Effects on the Smart Grid
(Dave Thomas)

7. Review of action items:

ACTION ITEM 2020-1 SC 1 and TC 5 to work with the NGO Helena (<https://helena.org/>) regarding the possible impacts of high-altitude electromagnetic pulse (HEMP) on Smart Grids (<https://helena.org/projects/shield>). Helena takes on societal problems and funds projects to solve these problems **[OPEN]**

Bill Radasky has made contact but has not yet heard back.

ACTION ITEM 2018-2 Bill Radasky to contact IEC TC 13 to find out their procedures as they have defined test methods for EMC in the past to find out how to load Smart Meters during testing. Don Heirman was to provide contact information from the ACEC TC 13 member to Bill Radasky. Because Bill could not identify a contact the item is closed.

[ITEM CLOSED in 2021]

During the discussion Jerry Ramie shared an article that he had written for EMC Magazine on what is wrong with ANSI ASC C12.1. (Ref: J. Ramie, "Smart grid EMC standards harmonization," in IEEE Electromagnetic Compatibility Magazine, vol. 2, no. 4, pp. 79-82, 4th Quarter 2013, <https://ieeexplore.ieee.org/document/6714704>). Analysis shows that there are significant failings with the suggested smart meter immunity tests primarily because the meters are not tested in communicating modes.

Frank Leferink reported that the European situation is even worse as EMC testing of smart meters is not even a requirement. There is a paper to be presented at this conference showing meters can be interfered with by small domestic devices. (Ref: T Hartman, B ten Have, N Moonen, F Leferink, "How to Earn Money with an EMI Problem: Static Energy Meters Running Backwards," (https://ris.utwente.nl/ws/portalfiles/portal/276415600/2021_EMC_Europe_Static_Energy_Meters_Running_Backwards.pdf).

ACTION ITEM 2018-5 Petre-Marian Nicolae to discuss the possibility of a special issue with IEEE PES under one of their magazines, to cover the topic of EMC at frequencies between 2 and 150 kHz. **[CLOSED in 2020]**

ACTION ITEM 2019-1 Benoit Nardeau will review IEEE Smart Grid documents provided by Mike McInerney at the New Orleans meeting to determine if hardware testing is mentioned. Provide results to Don Heirman. **[CLOSED in 2020]**

ACTION ITEM 2019-2 Petre-Marian Nicolae to prepare a joint TC7 and SC1 tutorial to be presented in Reno. **[CLOSED in 2020]**

8. Possible new activities

Bill Radasky was unable to attend the meeting but provided some comments for the committee and several documents to share.

- a. The Terms of Reference (TOR) document for the new EMC for future systems topic from CIGRE Study Committee C4 (which covers EMC among other topics). (Attachment A to these minutes.)
- b. A briefing on CIGRE activities from October 2020. (Attachment B to these minutes.) Bill prepares this briefing annually for the IEC (he is the official liaison) so they can be aware of the work in CIGRE that could affect future IEC EMC standards.
- c. A summary of activities past and present of the SEPA EMIWG (Smart Electric Power Alliance Electromagnetic Interoperability Issues Working Group. Bill is now the chair of this SEPA committee. (Attachment C to these

minutes.) Bill will provide copies of previous white papers if they are available for distribution to this committee.

9. Discussed the possibility of either a joint or separate SC-1 tutorial dealing with Smart Grid topics at the 2022 EMC Symposium.
10. Coordination of EMC TCs with SC 1

Reminder for IEEE EMC Society TCs to coordinate with SC 1 when they have any Smart Grid issues. This coordination has not been highly successful, but some TCs have members who have attended the annual SC 1 meeting including TC 2, TC 4, TC 5 and TC 7. We remind the TC officers of the need for coordination at the annual TAC meetings.

11. Review of action items.
12. Adjournment

The meeting was adjourned at 10:57 AM EDT.