



INTERNATIONAL COMMITTEE *on* ELECTROMAGNETIC SAFETY

Sub-Committee 1 Minutes June 2022

IEEE/ICES TC95 Subcommittee 1 Techniques, Procedures, Instrumentation and Computation 19:00 – 21:30 UTC: 7 June 2022 Via WebEx conference

0. Registration of attendees

Subcommittee 1 on Techniques, Procedures, Instrumentation and Computation meeting convened from 18:45 UTC on 7 June 2022 via WebEx. Attendees were welcomed and their attendees registered using the chat function of WebEx.

1. Call to order

At 19:03 UTC the meeting was called to order by SC-1 Co-Chair, Matt Butcher. All attendees were again welcomed, especially those who were attending at unsociable times of their day.

2. Approval of agenda

The draft SC-1 agenda was proposed and accepted by the committee on a motion from Lapin with Maxson seconding and was approved. (Attachment 1)

3. Approval of the January 2022 SC-1 meeting minutes

With no amendments, the January 2022 SC1 meeting minutes were accepted on a motion from Maxson and seconded by Lapin.

4. Update of SC-1 membership

The SC1 Co-Chair (Butcher) called the SC1 membership on hand to provide their contact information in the Chat function of WebEx. Throughout the meeting 23 people indicated their participation, (Attachment 2).

5. Call for Patents

In the meeting announcement and the draft Agenda circulated prior to the meeting, the SC1 members had been asked to state if they had any essential patent claims. No such claim has been recorded. SC1 Co-Chair (Butcher) asked if anyone now in the meeting had any such claims. Again no one made any claim.

6. Copyright Policy

In accordance with IEEE_SA procedures, the SC1 Co-Chair (Butcher) reminded the attendees of the IEEE_SA copyright policy linked from a footnote in the meeting agenda.

Following this item, the meeting chair was passed to SC1 Co-Chair (Zollman).



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7. Presentation: Investigations in modelling amateur radio EMF compliance - Zollman

(Attachment 3)

The presentation outlined some of the work that has been conducted over the past couple of years to support radio amateurs in the US and UK in establishing compliance with updated respective national regulatory requirements. The US requirements are defined by the FCC and the UK requirements are based on ICNIRP (1998 or 2020). The presentation showed cases where the default ground reflection coefficient that is often used in EMF compliance standards can be very inaccurate with significant under or over estimation of exposure – especially for cases pertinent to common radio amateur station configurations.

Computations were shown comparing compliant transmit powers when assessing exposure against the US FCC limits and the ICNIRP 2020 exposure guidelines for frequencies below 10 MHz and for low antennas commonly deployed by radio amateurs. It was reported that the FCC WBA GP limit supports compliance for low HF sources at >30 times the power (considering time and spatial averaging) than would be consistent with compliance with ICNIRP 2020 Table 8 peak field constraints. Zollman posed the question: “*Are the FCC limits under-protective, or are the ICNIRP 2020 guidelines overprotective to the extent that they are unnecessarily limiting?*” He suggested that such discrepancy should trigger more detailed investigation to maintain credibility in the respective limits.

A discussion followed about the issues identified. It was suggested that there should be an action item to ask ADCOM to work to address the issues identified by Peter on discrepancies between ICNIRP and IEEE and other limits. This was agreed.

ACTION: Peter Zollman to provide a briefing to ADCOM on the observed consequences of the discrepancy between FCC and ICNIRP 2020 limits below 10MHz.

A technical question was raised regarding the spatial averaging algorithm used in the VHF/UHF modelling reported in the presentation. Zollman indicated that indeed there are two significant criteria defining the spacing. The first is adequate sampling over the space of the body to capture large scale variations – 0.1m is reasonable. However, if the computational model includes vector field summation, then sampling at spacing below $\lambda/2$ can be needed especially when the incident field is at a steep angle to e.g. ground to account for standing wave type interference

It was also observed that in Ireland there are legislative actions which mention ICNIRP which can't be changed easily.

8. Any other business

No other business was discussed.



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9. Time and Place of Next Meeting:

Next meeting will be in person, currently scheduled for Arizona, USA, and via WebEx in January-2023 prior to the next scheduled TC95 meeting. SC1 date to be determined depending on the decision of AdCom. In the meantime, if SC1 members are willing to present on a suitable topic, the Co-chairs are prepared to organize additional Webex meetings prior to then.

10. Adjourn

The Co-Chairs Zollman/Butcher adjourned the SC-1 meeting at 21:05 UTC.



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Attachment 1

IEEE/ICES TC95 Subcommittee 1
Techniques, Procedures, and Instrumentation
Draft Agenda: 7 June¹ 2022 19:00 UTC Meeting
Via [WebEx](#) (click to join)

	Los Angeles	New York	London	Amsterdam	Jerusalem	Beijing	Tokyo	Sydney	Auckland
Start Time	Tue 12:00	Tue 15:00	Tue 20:00	Tue 21:00	Tue 22:00	Wed 03:00	Wed 04:00	Wed 05:00	Wed 07:00
Start Date	7 June 2022					8 June 2022			
Duration	Approximately 1.5 Hrs								

(Registration – Please enter Name, Affiliation, Country in chat message or send email when joining meeting to c95.3@sublight.net Subject: Present at SC1 Jun 22, Name, Affiliation, Country)

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|---|---------|
| 1. Introduction & Call to Order | Butcher |
| 2. Modifications and approval of agenda | Butcher |
| 3. Approval of SC-1 Minutes (Jan 2022 meeting) | Butcher |
| 4. Update of SC-1 Membership | Butcher |
| 5. Call for Patents ² | Butcher |
| 6. Copyright Policy ³ | Butcher |
| 7. Presentation | Butcher |
| a) Investigations in modelling Amateur Radio EMF Compliance | Zollman |
| 8. Any other business | Butcher |
| 9. Time and Place of Next Meeting | Butcher |
| 10. Adjourn | Butcher |

¹ 8 June for Far East, Australasia, and New Zealand

² Participants have a duty to inform the IEEE of holders of essential patent claims if they or their affiliations hold such claims. Check the web link on the agenda for more details. If anyone in this meeting is personally aware of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please notify the committee chair today. The IEEE SA patent policy is explained at the following link:
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>

³ It is the policy of the IEEE to own the copyright to the technical contributions it publishes on behalf of the interests of the IEEE, its authors, and their employers, and to facilitate the appropriate reuse of this material by others. The IEEE copyright policy is explained at the following link:
<https://www.ieee.org/publications/rights/copyright-policy.html>



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Attachment 2

Participants in SC1 WebEx 7 June 2022

23 Attendees (based on Chat reports and email notifications):

- Peter Zollman, PZC, UK
- Matt Butcher, Sublight Engineering
- Ric Tell, Richard Tell Associates, Inc., Alabama, IEEE SA member
- Xun Zhao, DND Canada
- C-K. Chou, TC95 Chair
- Tim Harrington, FCC Lab Div., USA, IEC-TC-106/ICES-TC-34 JWG participant
- Martin Gledhill, EMF Services, New Zealand
- James Futch, DOH Radiation Control, Florida
- Romeo Gallamoza, U.S. Army Public Health Center
- Art Thansandote, Health Canada (Retired)
- Greg Lapin, ARRL
- Rafal Lukawiecki (EI6LA), Ireland, IRTS (Irish Radio Transmitters Society)
- David Maxson, Isotrope, USA
- Robert Acacio, FCC
- Martin Gledhill, EMF Services, New Zealand
- Klaus Bender, Arizona, US
- Yujuan Zhao, Intel
- Reuben Braddock, Ofcom, UK
- Rajat Mathur, Hammett & Edison, Inc., USA
- Gulmira Mustapaeva, FCC
- Don Haes, Secretary SC2
- Kevin Fisher, Smith and Fisher
- Amnon Duvdevany, Israel Institute for Occupational Safety and Hygiene, Israel