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| 1 August 2023 | Thomas J. Fagan Chair  The Aerospace Corp.  +1.571.599.5363  [tjfagan@ieee.org](mailto:tjfagan@ieee.org) | Monrad L. Monsen Vice Chair Oracle+1.303.272.9612 [monrad\_monsen@ieee.org](mailto:monrad_monsen@ieee.org) | Ghery PettitSecretary Pettit EMC Consulting LLC  +1.360.790-9672  [g.pettit@ieee.org](mailto:g.pettit@ieee.org) | Ahalya SrikanthSecretary Ford Motor Company  +1.864.633.7385  srikanth.ahalya@ieee.org |

# Minutes

## Committee: TC-2; Electromagnetic Compatibility (EMC) Measurements

## Place: Riverview overlook B, DeVos Place Convention Center, 303 Monroe Ave NW, Grand Rapids, MI 49503, United States.

Date: 1 August 2023 (Tuesday)

Time: 7:30 to 9:00 AM Eastern Time

1. Call to Order/Introductions

Quorum Check: TC-2 Meeting Quorum shall be 20% of the membership. Ballots for new officers shall have minimum voting participation of 50% and may include email ballots in the participation count.

5/20 or 25% of membership attended.

* 1. Charter  
     The committee reviews the adequacy of measurement procedures and measurement instrumentation specifications for radiated and conducted emission and immunity tests. Also discussed is the rationale for product emission limits and immunity test levels including performance requirements. The committee also supports EMC standards and procedures that deal with measurements and their uncertainty and how they are interpreted and applied.

1. Approval of Minutes from IEEE EMC TC-2 meeting (2 Aug 2022) at the IEEE EMC+SIPI 2022 Spokane Symposium.
2. TC-2 Election Announcement

TC-2 officer election was held in person during this TC-2 meeting (August 1st 2023) and the members have elected the following officers: Monrad Monsen (Chair), Ahalya Srikanth (Vice Chair) and John Kraemer (Secretary). Our next election will be held in summer of 2026 with the next officer transition occurring on 1 January 2027.

1. Privacy

Personal data will be handled in accordance with the IEEE Privacy Policy which can be found at: [https://www.ieee.org/security-privacy.html](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.ieee.org_security-2Dprivacy.html&d=DwMFaQ&c=RoP1YumCXCgaWHvlZYR8PZh8Bv7qIrMUB65eapI_JnE&r=bdhQMzFxnmYEOUrCJpiaOszYW-e590kX_eWuZIISyNU&m=M3PU4y7aoKzpteHsjJeTUoTG8My68lts2XyjUkeIwiY&s=hxWnbR1vEjfV1RWrKLqqjhEnoLJj5d2xV-BF824aIkA&e=) . The TC-2 minutes will have list attendee names unless you contact the TC-2 secretary to ask for your name to not be mentioned. The information you provide in the sign-in roster (including email and company) will be used by the chapter officers for TC-2 related notifications/communications.

*Note: For any attendees that are participating remotely, please ensure that your full name appears on the Webex call. Also, please send the secretary an email (*[*srikanth.ahalya@ieee.org*](mailto:srikanth.ahalya@ieee.org)*) with your name, company and email address.(This will ensure that you are included in the attendance and will be on the distribution list for future TC-2 email news and meeting announcements).*

1. Committee Membership Status
   1. Removal of non-active participants from membership roster.

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| Membership indicates that you have attended the TC-2 committee meeting at least two (2) or more times in the last four (4) years; candidates are shown as attending a single meeting on or after 2020 and no other. By committee rules, these candidates are not members of TC-2 unless they attend a second TC-2 meeting within a four year period. |

All attendees will initial the sign-in roster. After the August 2023 TC-2 meeting, those that have not attended a TC-2 meeting since 2020 will no longer be a TC-2 member but will remain on the list for one additional year (2024) to receive meeting announcements. Those that have not attended a TC-2 meeting since 2019 are removed from the list. Any of those that are dropped from the membership list can rejoin TC-2 by attending the requisite number of meetings in the time frame noted above.

1. Current Symposium Activity (IEEE EMC+SIPI 2023), August 2023
   1. Symposium paper review status (top paper, top TC-2 paper, Round 2 reviewing, etc).
      1. FULL PAPERS

* 1st round number submitted:  15
* Accepted: 15
* Rejected: 0
  + 1. ABSTRACT REVIEW PAPERS
* 1st round number submitted: 12
* Accepted: 12
* Rejected: 0
  1. Symposium Sessions sponsored by TC-2 as shown in the final program. TC-2 is to be congratulated for sponsoring or participating in the **nine** sessions/tutorials and workshops listed below.
* 08:00 AM-12:30 PM, Monday (7/31/2023): “Automotive EMC standards update”, Tutorial, 6 presentations, Craig Fanning (Chair), Garth D'Abreu (Co-chair), Location: Gallery Overlook F.
* 08:00 AM-12:30 PM, Monday (7/31/2023): “Basic EMC measurements”, Tutorial, 5 presentations, Ghery Pettit (Chair), Location: Gallery Overlook H.
* 01:30 PM-6:00 PM, Monday (7/31/2023), “EMC testing basics”, Tutorial, 7 presentations, Thomas J. Fagan (Chair), Monrad Monsen (Co-chair), Location: Gallery Overlook F.
* 01:30 PM-6:00 PM, Monday (7/31/2023), “Automotive EMC, ESD, and SI design considerations and test methodologies”, Tutorial, 5 presentations, Garth D'Abreu (Chair), Robert Kado (Co-chair), Location: Gallery Overlook F.
* 01:30 PM-5:30 PM, Wednesday (8/2/2023), “EMC measurements, techniques, test instrumentation and facilities, standards and regulations and measurement uncertainty”, Technical session, 7 presentations, Thomas J. Fagan (Chair), Monrad Monsen (Co-chair), Location: Gallery Overlook F.
* 08:00 AM-5:30 PM, Thursday (8/3/2023): “EMC measurements, techniques, test instrumentation and facilities, standards and regulations and measurement uncertainty”, Technical session, 11 presentations, Thomas J. Fagan (Chair), Sarah Seguin (Co-chair), Location: Gallery Overlook F.
* 08:00 AM-12:30 PM, Friday (8/4/2023): “Reverberation Chambers: RC you there!”, Workshop, 4 presentations, Vignesh Rajamani (Chair), Vasso Gkatsi (Co-chair), Location: Gallery Overlook H.
* 01:30 PM-6:00 PM, Friday (8/4/2023): “International standards and regulations workshop sponsored by IEEE EMCS standards advisory and coordination committee (SACCOM)”, Workshop, 4 presentations, Henry Benitez (Chair), Ghery Pettit, Andrew Griffin, Kimball Williams (Experts). Location: Gallery Overlook F.
* 01:30 PM-6:00 PM, Friday (8/4/2023): “Recent advancements in measurement uncertainty”, Workshop, 4 presentations, Zhong Chen (Chair), Janet O'Neil (Co-chair). Location: Gallery Overlook H.

1. Standards Sponsorship Support Review

Below is an excerpt of information from the full matrix from the EMC Society site.

Here is the part that standards play in Technical Committee activity. It is from the EMC Society Bylaws and in particular clause 10.3 which states:

10.3 Functions:

Each Technical Committee shall promote activities in its field of interest and shall provide expert knowledge and assistance to:

a. Receive, generate, and review technical papers within its scope in cooperation with the Transactions Editor and/or the Technical Papers Committee.

b. Organize and host sessions at meetings of the IEEE at all levels and at meetings of other organizations with which the Society is desirous of cooperating, in accordance with the rules in effect at such meetings.

c. Arrange for publishing pertinent papers in IEEE publications.

d. Generate and develop appropriate standards in its field for processing by the IEEE Standards Committee, through the Society’s Standards Committee and in accordance with IEEE policies.

e. Evaluate "state of the art" in the area of committee interest.

Clause 10.3 d above is directly applicable to TC-2 (EMC Measurements).

The attached PDF below shows EMCS standards which directly involve measurements and hence TC-2 interest. Note that by far the number of standards devoted to measurements is the vast majority.

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1. iNARTE Exam Question Review Activity

The iNARTE exam has gone to a 3rd party for creation and test question review, so no assistance has been asked for in recent years from TC-2.

The EMC society has ended its Memorandum-of-Understanding (MOU) with Exemplar Global. A new committee under TC-1 (Tom Braxton) has been set up to start a new certification program that includes more continuing education or furthering the EMC discipline even after the initial testing of an EMC body-of-knowledge. The certification program committee is planning to create a 200-question exam. The committee is requesting TC-2 members to submit EMC questions (including multiple choice answers) that are focused on commercial EMC related topics. Please send these questions by email to the TC-2 committee.

1. Future Symposium Activity
   1. Future topics and call for special sessions for the IEEE EMC+SIPI 2024 symposium in Phoenix, Arizona, USA on August 5 – 9, 2024.

Special Session Proposal Schedule  
• Tentative deadline: TBD  
  
Special Session Papers  
• Tentative deadline: TBD

* 1. Technical Program Responsibilities and session chair reminders

We will not know how many sessions we will have at each symposium until the paper reviews are completed.

* 1. 2024 Paper Review Deadlines

Proposed papers (full papers) due by about TBD.

Acceptance or accept conditioned on changes will be issued by about TBD.

Abstract review paper due about TBD.

Revised full paper due about TBD.

Final decision notification is about TBD

Final paper (adding author names, etc.) is due about TBD.

* 1. Paper reviewers

TC-2 members are welcome to be paper reviewers. Please send Monrad and Ahalya your resume along with your subject matter strengths/expertise so we can identify the best papers for you to review. The TC-2 leadership team will send out the ScholarOne Abstracts link to the TC-2 distribution list to register for paper reviews.

* 1. New membership

We are always looking for more members that engage in the activities noted above.

* 1. New areas of interest

In discussion, suggestions included adding topics like Measurement uncertainty, vehicle wireless charging, solar power from space beamed to earth and cell phone charging systems within vehicles.

1. Any other business?
   1. An update from TAC is that 2024 will be the last year that TAC will use ScholarOne for the paper submission and reviews.
2. Action Items
   1. Action Item 2020-1: Tom Fagan will assess TC-2 membership interest in setting up teams to review existing untouched-for-years IEEE standards to assess their validity or whether they are subjects now addressed in other standards. He will work with Ed Hare on the details.

8/2/2022: Tom reports that the Education Chair is changing over to Karen Burnham. Tom will address this with her and give an update in 2023.

1/24/2023: Ahalya Srikanth will work with Karen Burnham to update the Standards table (Completed).

1. Set meeting and agenda for next meeting(s)
   1. Phoenix, Arizona, USA, August 6th, 2024.
2. Adjournment

*Ahalya Srikanth*

*Secretary, IEEE EMC TC-2 (EMC Measurements)*