



IEEE TC 5: High Power Electromagnetics (HPEM) Technical Committee

Minutes of the Raleigh Hybrid Meeting Wednesday, 20 August 2025 (Noon – 1:30 PM EDT)

Unconfirmed Minutes

1. Opening of Meeting and Approval of Agenda

Chair W. Radasky called the meeting to order at 12:00 PM. The agenda was approved without modifications.

2. Review and Approval of Minutes from Phoenix Meeting

The minutes from the previous TC-5 meeting in Phoenix, Arizona were distributed prior to the meeting. No comments were received. A motion to approve the minutes was made, seconded, and passed unanimously. The minutes will be updated from "unapproved" to "approved" status on the website.

3. Current TC-5 Membership List

- Current active membership stands at over 75 members who have attended meetings over the last five years
- Typically 25-30 members attend each meeting; approximately 40 attended this meeting
- A sign-up sheet was circulated to capture new member information
- Members remain on the distribution list for 3-5 years unless they request removal

4. Report on Paper Review Process for Raleigh Conference

W. Radasky presented the paper review summary:

- **Regular papers:** 6 submitted, 6 accepted, 1 withdrawn later
- **Abstract papers:** 4 submitted, 4 accepted
- **Special sessions:** 2 large sessions organized
- **Best paper nominations:** 4 papers nominated out of 24 total accepted papers
- **Regular sessions held:**
 - 2 sessions on EMI topics (Wednesday morning), 6 papers (1 withdrawn)
 - 1 session on HEMP topics (Thursday afternoon), 4 papers
- **Special sessions:**
 - EM Information Security and Countermeasures (8 papers, Tuesday morning, ~40 attendees)
 - Advances in High-Altitude EMP Environments and Protection (6 papers, Thursday morning)
- **Tutorials sponsored by TC-5:**

- 2 ESD tutorials scheduled for Friday (morning and afternoon)

5. Report from Lightning Subcommittee

Presented by: A. Tatematsu (new Subcommittee Chair, replacing retired Marcos Rubinstein)

- **2025 Lightning conferences:** 8 major conferences including IPST (Mexico), SIPDA (Greece), APL (Indonesia)
- **2026 Major events:**
 - ICLP 2026 in Sapporo, Japan (May 31-June 5) - paper submissions due October 31, 2025
 - GlobalEM 2026 in Seoul, Korea (June 29-July 3)
- **CIGRE SC C4 Working Groups:** 14 active groups on lightning protection for power systems, wind turbines, nuclear plants
- **Publications:** 6 papers in IEEE Trans. EMC (2025) on altitude-triggered lightning, LEMP waveforms, metamaterial protection
- **Current research:** Lightning overvoltage analysis of substations and transmission lines with taking into account the LEMP impact
- **Future activities:** Contributing to ICLP 2026 organization as local committee member

6. Report from EM Information Leakage Subcommittee

Presented by: Y. Hayashi

- **EMC+SIPI 2025 Special Session:** 8 papers presented, ~50 attendees, topics included TEMPEST threats, side-channel analysis, cryptographic modules
- **EMC Europe 2025 activities:**
 - Tutorial session (September 1): 7 presentations on physical layer security
 - Special session (September 3-4): 8 papers on information security threats
- **Key research areas:** DisplayPort eavesdropping, RF retroreflector attacks, time-varying frequency-selective shielding, software jamming countermeasures
- **Future conferences:**
 - APEMC 2026 (May 4-7, Kuala Lumpur): Special session planned
 - GlobalEM 2026 (June 29-July 3, Yonsei University, Seoul): Special session proposed
 - EMC Europe 2026 (August 31-September 3, Prague): Special session and tutorial planned

7. Report from HEMP/IEMI Subcommittee

Presented by: M. McInerney and W. Radasky

Major updates:

- **IEC Standards Updates:** Substantial revisions to multiple standards
 - Environment definitions expanded beyond single waveform
 - Multiple environment options for commercial applications
 - Cost-conscious protection approaches introduced
- **Power System Activities:** Continued work following 2019 Executive Order
 - IEC standards cited by Department of Energy as primary reference
 - Increased industry engagement in grid protection
- **Publications:** Multiple journal articles published in 2024-2025
- **Events:**

- Tutorial in Taiwan on IEMI in May 2025
- EMC Europe workshop on risk management in 2025
- Combined session on emerging threats in 2025

8. Report from ESD Subcommittee

Presented by: Representative from ESD Association (sister organization)

Key points:

- ESD Symposium scheduled for Riverside, California (September 2025)
- Workshop on Friday covering proper device characterization methods
- **Standards updates:**
 - ANSI/ESDA JS-001 and JS-002 (HBM and CDM test methods)
 - Standards elevated to IEC TC47
 - New terminology: EIPD (Electrically Induced Physical Damage) replacing EOS
- **Technical trends:**
 - CDM voltage thresholds continuing to decrease
 - 3D packaging creating new ESD challenges
 - Development of ESD simulation software (still in early stages)

9. Coordination with SC-1 Smart Grid

Presented by: M. McInerney

- SC-1 transitioned from Special Committee to Subcommittee under TC-7
- 14-year mission largely accomplished in helping power industry incorporate EMC
- Activities continuing at reduced level
- M. McInerney remains POC for Smart Grid activities

10. Status of TC-5 Web Page

Presented by: M. McInerney

- Website maintenance ongoing with improved editing capabilities
- Repository for technical references being developed
- Request for members to submit relevant publications and references
- Links to papers and resources being added

11. Review of HPEM Activities Since Phoenix Meeting

Various members reported on conferences and activities:

- APEMC 2024 in Okinawa with TC-5 participation
- Multiple workshops and tutorials delivered
- Continued collaboration with international conferences

12. Discussion of Tutorials/Workshops for Dallas 2026

The committee discussed potential offerings for next year's conference:

- **HEMP:** Possible workshop on new developments
- **ESD:** Tentative system-level ESD workshop or special session
- **IEMI:** Discussion of counter-UAV technologies, though noting classification constraints
- **Lightning:** Checking for conflicts with other lightning conferences
- Final proposals due December/January

13. Standardization Activities

PAR 2838 Lightning Test Standard Working Group:

- Meeting Thursday 9:30-11:00 AM
- 21 test methods completed
- Scope expanded from "airplanes" to "aerospace vehicles"
- Application guide/appendix being developed
- Standard nearing completion, review phase approaching

14. Election of TC-5 Officers

W. Radasky announced his decision to step down as Chair due to medical issues. The following slate was presented and elected unanimously for 3-year terms (January 1, 2026 - December 31, 2028):

- **Chair:** Mike McInerney (elevated from Vice Chair)
- **Vice Chair:** Yuichi Hayashi (elevated from Secretary)
- **Secretary:** Akiyoshi Tatematsu

The committee expressed appreciation to W. Radasky for his many years of leadership.

15. Any Other Business

- **Global EM 2026:** Announced for Seoul, South Korea (June 29 - July 3, 2026)
 - One-page abstracts due January 2026
 - Hosted at Yonsei University
 - Expected 80-100 papers
- Acknowledgment of excellent conference facilities and organization in Raleigh
- Group photo taken

16. Adjournment

The meeting was adjourned at approximately 1:30 PM.

Attachments (labeled with agenda item)

- Meeting Agenda
(1_TC-5_Agenda_2025_Raleigh)
- Confirmed Okinawa and Phoenix Minutes
(2_TC-5_Meeting_Minutes...Okinawa_Phoenix_confirmed)
- TC-5 Membership Update (including 2024 meeting attendees)
(3_TC-5_Sep_2024_Membership_no_emails)
- Report on Paper Review Process in Okinawa and Phoenix
(4_TC-5_Paper_Rev_Process-2025)
- Lightning Subcommittee Report
(5_Lightning_TC-5_2025)
- EM Information Leakage Subcommittee Report
(6_2025_TC-5-Information_Leakage_v1.pptx)
- HEMP/IEMI Subcommittee Report
(7_TC5_HEMP_IEMI_Report_2025_(McInerney).pptx)
- ESD Subcommittee Report

- (8_2025_TC-5 - EMC Meeting - ESD.pptx)
- IEEE P2838 Standard Meeting Agenda
(11_CFP_Global EM 2026_20250707_rev0.1.pdf)
- TC 5 Election
(14_TC-5 Officer Election.pdf)