



EDUCATION & STUDENT ACTIVITIES  
COMMITTEE  
(ESAC)



Unconfirmed Minutes of the  
IEEE EMC Society Education & Student Activities Committee  
Meeting at the IEEE EMCS Symposium  
Montreal, Canada  
Tuesday, August 14, 2001

1. Call to Order – Introduction
  - 1.1 Chairman Maqsood Mohd started the meeting at 7:00 am. Maqsood thanked everyone for coming.
  - 1.2 Introductions were made of everyone present.
2. Review of Draft Agenda
  - 2.1 No new items were added to the agenda.
3. Announcements
  - 3.1 Andy Drozd announced that the Experiments and Demonstrations (both hardware and software) are located in the exhibit area.
4. Minutes of Last Meeting
  - 4.1 The minutes of the August 22, 2000 committee meeting were approved. It was noted that the minutes are available via the EMCS Education Committee website. Kimball Williams suggested that a link to that location be included in the notice sent out to the members.
5. Old Business
  - 5.1 Brief Subcommittee Reports
    - 5.1.1 Demonstrations

Larry Cohen reported that the demonstrations (hardware and software) are located near the back of the exhibit area. Andy noted that this is the first year that we are having a software (i.e.,

modeling / simulation) aspect to the demos. We have 23 software demos.

#### 5.1.2 Experiments, Vol. II

Dick DuBroff reported that we now have four experiments ready to go for Volume 2 of the Experiments manual. They are currently residing on the UMR server, but will be moved to the IEEE server, and maintained by the Education and Student Activities Committee (ESAC) Secretary on that site. They will be available via pdf files very soon. The suggested experiment format will also be available on the web. Maqsood suggested that Andy continue to encourage the experiment presenters to submit written versions of their experiments.

#### 5.1.3 NARTE

Jim Whalen reported that the tutorial on Monday had about 20 attendees, which is a little down from the 55-60 that we have had the past few years. The exam will be given on Friday. Jim mentioned that this is the eighth year of the activity.

Jim mentioned that the “Memorandum of Understanding” between NARTE and the IEEE EMC Society is available on the NARTE website. Jim said that this may have implications for our committee, as technical help is needed. Maqsood and Kimball said that the needed help will most likely come from the individual technical committees. Jim mentioned that one of the main problems with the exam is the large number of questions dealing with military standards. He is hopeful that this will become more balanced with questions on commercial standards.

Maqsood mentioned that discussion about a 3-member liaison committee to work with NARTE was discussed in Sunday BoD meeting and that he suggested to the TAC chair to include Jim as a member of the Liaison committee. A TAC meeting was scheduled on Thursday AM and Jim mentioned he was aware of it and was planning to attend.

#### 5.1.4 Tutorials

Maqsood reported that the Tutorial sessions went very well yesterday. This is the eighth year of the tutorials. Attendance was very good, with the morning sessions full, and only a few chairs open in the afternoon. We had a new topic this year, which was

passive intermodulation (PIM). Maqsood will be contacting the Minnesota folks shortly to make arrangements for the 2002 Symposium.

#### 5.1.5 EMC Outreach

Maqsood reported that EMC Outreach (otherwise called “K through Grey”) remains an active area. He reminded us that the functions are divided into three target areas: kindergarten through high school, college/university, and professional. Several members visit various local schools (at all levels). He also reported that we have been involved in the International Science and Engineering Fair, and have presented awards at that event to deserving students.

#### 5.1.6 University Grant

Kimball reported for John Howard that the committee had a very productive meeting Monday afternoon, which resulted in ten action items to improve the grant process. Kimball introduced Randy Jost from Utah State University (the winning school this year). We had three excellent proposals, and the committee is working on expanding the exposure next year.

One of the problems we have encountered in the past is that most universities have a policy of taking a certain percentage (typically 40 to 50%) of the grant for “indirect or overhead costs”. We would like to avoid this, and get as much of the award as possible to the winning department / faculty member. Possible solutions were discussed, including stipulating in the call for proposals the maximum overhead allowed in the proposal, and/or asking the proposal writer to describe how the indirect costs will be handled at his/her university.

Dick Ford and Hugh Denny suggested that an article be written for the newsletter reporting on the award winner, as well as giving a summary of past awardees. The article might also include a summary of how the award benefited the recipients. The article might also be used to advertise the award, with copies being sent out to various universities.

#### 5.1.7 University Survey

Antonio Orlandi reported on the status of the university survey. The survey has been posted on the Web for almost three years

now. Antonio mentioned that we had a couple of problems this year – the host machine was down for an extended period, and the advertising requests made to the Transactions were not honored. Discussion revolved around the purpose of the survey, and whether we are accomplishing what we want to do. The discussion concluded with the view that the survey is fine as it is. The main thing that can be improved on is advertising the survey. We will work on that again this year. Randy Jost pointed out that there might be some schools who include EMC content in other EE or ECE courses. We might want to consider broadening the scope of the survey to include schools like that. He suggested that it might be helpful to advertise in the MTT or AP-S Magazine.

#### 5.1.8 Video Productions

Dick Ford reported that three videos will soon be ready for production. One of the videos includes segments of the experiment Clayton Paul did at the 1999 Symposium. The second video features Doug Smith and was taken during the 2000 Symposium. Footage for the third video will be taken this week. Once this video is made, we will have a product that includes three videos that we will make available to various people / organizations that have opportunity to “spread the word” about EMC. This is likely to include the IEEE EMC Board of Director members and officers, Committee chairs, distinguished lecturers, interested universities, EMC Chapters, and other related IEEE societies (MTT, AP, etc.). Dick anticipates that we will have a very good quality product that will be a very helpful tool for us.

#### 5.1.9 Student Activities

Ahmad Fallah reported that most activity in this committee revolved around the Student Design Contest (see 5.1.10). Apart from that, he has received the videos from Mike Bogusz, and has initiated some attempts at finalizing the outstanding copyright issues relating to the videos. Maqsood volunteered to write the appropriate letters that relate to the Connie Chung video. Ahmad summarized other “outreach” activities that he has personally been involved with in the Fargo area. Kimball mentioned that we had a group working on a presentation format that could be used when visiting local schools. Bob Nelson said that he thought John Maas had completed that assignment, and that the information was available. Bob will track that down.

#### 5.1.10 Student Design Contest

Ahmad reported that we had a very successful competition this year. After advertising on the web, and notifying the members of the Education Committee about the contest Ahmad received 36 requests for kits, with 9 of those going overseas. Three kits were returned. Two of those three were excellent works. After the kits were tested in a GTEM cell and the reports were judged by three independent reviewers, it was deemed that there was a two-way tie for first place. Students from both Florida Atlantic University and Chico State University were both awarded the \$900 prize and a trip to the Symposium. Both winners will display their project in the exhibit area on Wednesday. Ahmad asked us to stop by and encourage the students. As far as next year goes, students can start requesting the kit immediately. Hopefully this will result in more kits being returned. Ahmad was asked to write an article about the contest for the Newsletter. There was some discussion regarding whether the students should be given radiation limits as a guideline. Advantages and disadvantages were discussed. For the time being there will be no change in the Contest rules.

#### 5.1.11 Website Activity

Bob Nelson and Andy Drozd reported on the status of the website. Andy and his associates set up the website, (using the same template as most of the other TCs are using), and helped Bob get started in managing the site. Bob showed viewgraphs of each page of the website, and then asked for suggested changes. Several items were discussed, including the length of the pages (it is best avoid scrolling), what to include in the member list, inclusion of the capability to include streaming video, Power Point slides, etc. Work will continue in this area.

#### 5.2 Student Paper Contest

Maqsood said that this year's contest went very well. We had 22 papers submitted, one of which was rejected (it did not include a student author name). He said the review process was the same as the previous year: he recruited three unbiased people to assist him in evaluating the papers. The three evaluators included one from academia, one from a lab environment, and one from industry. They used the same guidelines as were used to review any other paper. He reported that the papers were very good quality and that the whole activity went very well. Kimball pointed out that thank you notes should be sent out to each of the participants, acknowledging their efforts.

### 5.3 EMC Short Course Content

Johan Catryse reported that three years ago he visited with the committee about a short course that many of the professors in Europe were developing. More work has been done on that course, and Johan showed the proposed content (see Attachment 1). The course is intended to run for a week, meeting six hours per day. The group proposing the course is asking that the Education Committee review the course content and provide our “stamp of approval”. Maqsood said that a subcommittee should be formed to investigate the matter further. Although other volunteers are welcome also, the initial members will include Elya Joffee, Jim Whalen, Randy Jost and Bob Nelson. Johan will send additional detailed information about the course content, as well as required prerequisites, the intended level and audience of the course, etc. Dan Hoolihan pointed out that legal matters may arise, needing the attention of IEEE lawyers.

### 5.4 Other Old Business

Dick DuBroff mentioned that it would be nice to be able to post copies of pertinent EMC articles on the web. For instance, when teaching a course, it would be nice to be able to point students to the web and ask them to get the article there, rather than make paper copies for them. The copyright law covering this area was briefly discussed. Andy will look into that more thoroughly.

## 6. New Business

### 6.1 Institutionalize Experiment Demos

Andy Drozd reminded us that two years ago a recommendation was made that the experiments / demonstrations become a permanent part of the Symposium planning, rather than he and Larry organizing it by themselves. Larry and Andy have been organizing this activity for the past nine years, and have noted that it seems to be increasingly difficult to have the organizing process fit in the infrastructure of the rest of the Symposium. In addition, it seems to be increasingly difficult for Andy and Larry to line up all of the needed equipment, when they are sometimes far away from the actual Symposium location. For these reasons and others, we are going to try including the Experiments in the regular Symposium planning next year. There will be a “Call for Experiments”, and the process will follow a schedule similar to the “Call for Papers”. Dan Hoolihan (Chair of the 2002 Symposium) said that he will find a volunteer on the local committee to be the focal person for this activity.

Discussion ensued, with some folks excited about this step, and some concerned that the quality of the experiments might be degraded. Bernie Segal suggested that we consider formulating this like a poster session and ask the presenters to include some background information about the experiment in a poster format. Randy Jost pointed out that the experimenters could use the same format as suggested for the Experiments Manual. Dick Ford expressed concern that although the process might be smoother, the quality of experiments might go down. At the present time, Andy and Larry pick who does the experiments, and they are always excellent. This might not continue when institutionalized. It was noted that Andy and Larry will still be guiding the process, and that we do not need to accept all of the experiments that are proposed. The conclusion was that we are going to try the institutional route next year and see how it goes. We can always go back to the current model in future years if need be.

## 6.2 Other

Randy Jost suggested that we consider collecting the software demonstrations on a CD and make it available to appropriate parties.

## 7. Adjourn

The meeting adjourned at 9:25 a.m.

Respectfully submitted,

Bob Nelson, Secretary

## ATTACHMENT 1.

### Draft Course EMC: high speed communication systems and industrial applications

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
<p><b>Introduction on EMC</b></p> <p>general introduction some examples basic items: CM/DM, wire impedance, Fourier Transform, coupling of wires, ...</p>	<p><b>Design I</b></p> <p>common impedance common mode differential mode</p>	<p><b>Design III</b></p> <p>crosstalk filters non-linear effects and mode conversion in components decoupling capacitors equipotential design</p>	<p><b>Shielding</b></p> <p>shielding theory shielding materials near/far field boxes and enclosures holes and apertures joining structures &amp; gaskets</p>	<p><b>Numerical methods: MoM</b></p> <p>introduction examples</p>
<p><b>Basic EM theory and antennas</b></p> <p>Maxwell's equations plane waves near/far field dipole/monopole antennas loop antennas</p>	<p><b>Design II</b></p> <p>balanced signal transmission reflections on lines high speed models for traces, corners, VIA's ...</p>	<p><b>Components &amp; chips</b></p> <p>HF behaviour of passive comp. HF behaviour of active comp. EMC and components EMC and chips</p>	<p><b>Filters</b></p> <p>Filters: general intro Power line filters I/O filters specific CM filters mechanical mounting</p>	<p><b>Numerical methods: TLM</b></p> <p>introduction examples</p>
<p><b>European Directive and related standards</b></p> <p>content organisation of standards examples</p>	<p><b>Cables and cabling</b></p> <p>crosstalk, coupling attenuation transfer impedance, cable trays measuring methods</p>	<p><b>ESD and transients</b></p> <p>ESD on component level ESD on system level Surge and EFT</p>	<p><b>EMC related to power</b></p> <p>EMC in power supplies EMC in power electronics Current harmonics</p>	<p><b>Numerical methods: FDTD</b></p> <p>Introduction examples</p>
<p><b>Testing and Measuring I</b></p> <p>standardised measuring and test methods</p>	<p><b>Testing and Measuring II</b></p> <p>non-standardised measuring and test methods</p>	<p><b>Large systems and functional safety</b></p> <p>large system design equipotential design functional safety and EMC</p>	<p><b>Visit to EMC lab</b></p>	<p><b>Biological aspects of EM</b></p> <p><b>Evaluation and conclusions</b></p>