

items, we got down to business with a discussion of plans for the 2020 Virtual Symposium. Like most of the Symposium content, our Standards Week was spread out over the month of August. SDECom expanded its content this year with the addition of the IBIS Summit, sponsored by the IBIS Open Forum. (See the accompanying article on this special event by Zhiping Yang.) We next discussed several topics of interest to SDECom including the creation of Standards Continuity Groups to identify when standards need revision, working closer with the Technical Committees of the EMC Society, working closer with other IEEE Societies and non-IEEE organizations such as the ESD Association, and our long-range plan to address future challenges and directions in standards development.

The meeting on 27 August 2020 began with the approval of extensions for projects expiring in 2020: P473, P1897, P2710, P2715, and P2716. The next topic discussed was the status of the standards overseen by SDECom. We reviewed the status of each standard

and received Working Group reports, where available. SDECom is already considering extensions to P1848 to focus on industry- or application-specific guidance for functional safety with respect to EMC such as military, medical, rail, nuclear, etc. Interested parties should attend a future SDECom meeting to get involved. We closed the meeting with observations from our EMC Society VP of Standards, Ed Hare.

The next meeting of SDECom will be held in the November 2020 time frame. Dates are still under consideration. Check the SDECom website for details.

Meeting announcements, agendas, minutes, status of EMC standards, and other documentation are open to all and available at the SDECom website located at: <https://www.emcs.org/development-and-education.html>. Please feel free to contact me directly with any questions at ross.carlton@ets-lindgren.com. Your involvement is most welcome!

EMC



Managing Functional Safety (and Other) Risks Caused by EMI: Notes on the Final Meeting of the IEEE P1848 Working Group, August 24, 2020

By Keith Armstrong, P1848 Working Group Chair, karmstrong@ieee.org

IEEE STD 1848 is approved for publication, expected in September 2020 when it will probably replace the Approved Draft currently posted at <https://standards.ieee.org/standard/1848-2020.html>.

The P1848 Working Group met for the last time on August 24, virtually of course, during the 2020 IEEE International Virtual Symposium on EMC+SIP1. Twenty-two people attended, not all of them were members of the Working Group.

Alistair Duffy, the current President of the IEEE EMC Society, described his plans to create a 'Continuity Group' (CG) to keep the technical awareness of 1848's topics up-to-date until it is time to create a new Working Group for its Second Edition.

I am retiring from standards work, but as no Chair has yet been appointed for this CG please email me if you want to take part in it, at karmstrong@ieee.org.

At this meeting, we also discussed creating industry/application-specific versions of IEEE STD 1848:2020. I anticipate that creating these 'spin-offs' would not require the technical content to change by very much, but that most of the changes would be in the introductory and descriptive material, and in the terminology, to make the new version particularly relevant to the application/industry concerned.

The IEEE EMC Society's TC-1 was the sponsor for IEEE P1848, and

Tom Braxton (the current Chair of TC-1) has said that they would be pleased to sponsor any spin-offs.

No proposals (called 'PARs') have yet been created, or Chairs appointed, for any new versions, but if you are interested in joining a Working Group on one of the topics below, or creating a new topic, please communicate with the people named below, or with me at karmstrong@ieee.org.

There was strong interest in the following topics:

- NATO/military – Greg Hiltz (NATO's EMC co-ordinator): GREGORY.HILTZ@forces.gc.ca
- Railways – Ken Webb: Ken.Webb@mottmac.com
- Medical devices and systems – Warwick Wong: warwickwong@google.com
- Avionics – Warwick Wong: warwickwong@google.com
- Automotive – Kai Borgeest: Kai.Borgeest@th-ab.de

Other possibilities for which some support has been expressed, are (so far):

- Machinery
- Agricultural machinery
- Radio/wireless communications
- Process Industry
- Nuclear

Background: IEEE 1848:2020 has been created to deal with the problem that because modern digital systems have so many possible digital states, it is impossible to find enough time to test them all. Also, because digital systems are non-linear, no amount of testing can provide any confidence that any untested states would not cause unacceptable safety risks.

For this reason, it has long been known that all modern digital systems can fail, in the most undesirable way for their application, due to untested combinations of perfectly correct inputs. Because

it is impossible to test all of a digital systems' states even once, it is *even more impossible* to prove that EMI cannot cause excessive safety risks by performing EMC immunity tests! No matter by how much the test levels are increased.

For More Information: I recommend reading the early-access article published in the IEEE Letters on EMC Practice and Applications (L-EMCPA): <https://ieeexplore.ieee.org/document/9113675>, and the IEEE EMC Magazine article: <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7477140>. **EMC**



EMC Society Standards Update: IEEE Standards Association Board Approves IEEE P370!

By Xiaoning Ye, IEEE P370 Working Group Chair, Technical Advisory Committee Chair

Congratulations to Team IEEE P370, the Draft Standard for “Electrical Characterization of Printed Circuit Board and Related Interconnects at Frequencies up to 50 GHz”. Sponsored by the IEEE EMC Society, this document was approved as a new standard by the IEEE Standards Association Board on 24 September 2020!

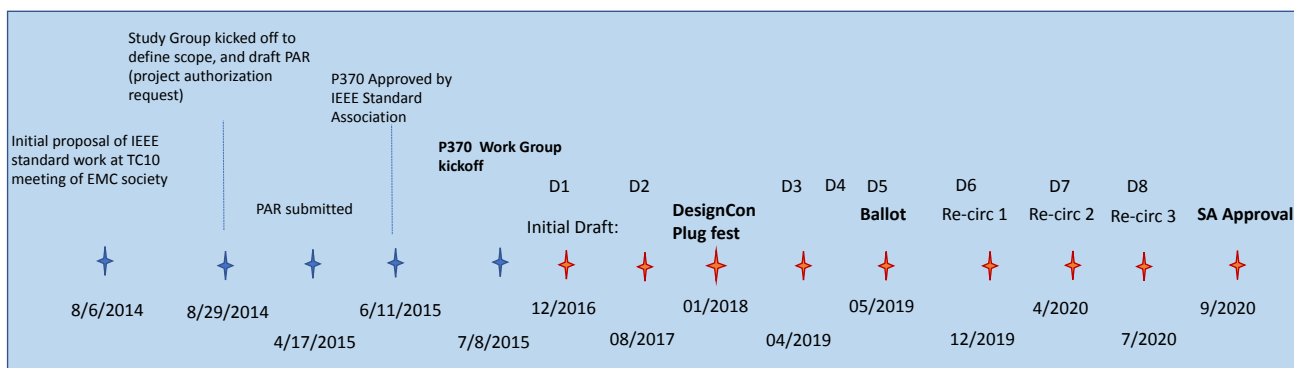
I would like to take this opportunity to thank all the working group members and task group members for several years of dedicated hard work! We went through eight versions of drafts, three re-circulations after the initial ballot, and addressed 523 comments from balloters. Special thanks to all the balloters as well; their comments helped to greatly improve the quality of the draft document. Soon (after going through editorial review with the IEEE publication team) we will have a high-quality published standard that is sure to help many engineers in the field!

It has been a long journey for the development of the P370 standard. At the IEEE EMC Society TC-10 meeting in August 2014, questions were raised about common industry problems that need to be addressed through standards development. The committee members quickly came to the consensus that there was a lack of standard practice to address the measure-

ment quality of high-speed interconnect, and the industry was plagued with low quality measurement data. A study group was created to define the scope of standards development. The Working Group was established in July 2015 after the Project Authorization Request (PAR) was approved by IEEE Standards Association.

The P370 Working Group participants include active members working on technical details to collect critical measurement and simulation data for the draft development, as well as passive listeners from industry to provide feedback. The members came from various industries including:

- Computer industries who are using the high speed interconnect, such as Intel, IBM, Cisco, Google, Hewlett-Packard, Qualcomm, Broadcom, Teraspeed Labs, Broadcom, Fidus Systems, Christie Digital Systems, DuPont, Mercury Systems, Harting, etc.
- High speed interconnect manufacturers, such as Samtec, Molex, Hirose, FCI, Tyco, etc.
- Measurement equipment manufacturers and service providers, such as Keysight Technologies, Teledyne LeCroy, Rohde & Schwarz, Advantest, Anritsu, Wild River Technology, etc.



The above figure shows a snapshot of the development timeline of IEEE P370. It took the Working Group and Task Group members several years of hard work to reach this important milestone!