



# PSMA

## Reliability Committee

**TIME:** Wednesday, 2/10/21, 11-12pm CST

**PLACE:** Zoom (669-900-6833 or 408-638-0968), 272 780 335, <https://zoom.us/j/272780335>

**MINUTES:** [https://www.pdma.com/technical-forums/reliability/meeting\\_minutes](https://www.pdma.com/technical-forums/reliability/meeting_minutes)

**ATTENDEES:**

PRESENT?	COMMITTEE MEMBER
	<b>TBD – Co-Chair</b>
X	Brian Zahnstecher, PowerRox – Co-Chair
X	Joe Horzepa, PSMA – PSMA Representation
	Lisa Horzepa, PSMA – PSMA Representation
X	John Horzepa, PSMA – PSMA Representation
X	Ada Cheng, AdaClock – Member
X	Rick Fishbune, IBM – Member
X	Patrick Le Fèvre, Powerbox – Member
	Tim McDonald, Infineon – Member
	Steve Miller, SL Power ( <b>RETIRED</b> ) – Member
	Kevin Parmenter, Taiwan Semi – Member
	Shane Callanan, AEI – Member
	Greg Miller, Silanna – Member
	Mike Seeman, Eta One Power – Member
X	Ed Massey, Ed Massey Consulting – Member
	Eric Swenson, IBM – Member
X	Bill Mallory, SL Power – Member
	Shobhana Punjabi, Cisco – Member
	Hamish Laird, ELMG Digital Power – Member
	Francesco Carobolante, IoTissimo – Member
X	Nitish Agarwal, SL Power – Member
	Manish Bhardwaj, TI – Member
X	Denis Downey, Cisco – Member

\* Attending APEC

GREEN = NEW MEMBER, 1<sup>st</sup> MEETING (i.e. – introduce yourself)

RED = REMOVING MEMBER, NO ATTENDANCE AND/OR RESPONSE FOR LONG TIME, PURGING  
**ACTIONS (w/OWNER) HIGHLIGHTED BELOW**  
**ACTION COMPLETED**

**AGENDA:**

FYI – **PSMA ANNUAL MEETING (VIRTUAL) WILL BE HELD ON WED, 3/24/21, 10 AM – 1:30 PM CST.**  
 PLEASE CONTACT THE PSMA OFFICE OR BZ FOR INFO TO JOIN. **NOTE:** ALL ARE WELCOME  
 REGARDLESS OF ANY MEMBERSHIP STATUS!

**IF ANYONE IS INTERESTED IN CO-CHAIR ROLE, THEN PLEASE REACH OUT TO BZ RIGHT AWAY.**

- **New Comm Introductions / Membership**

- Elevator pitch intros, roundtable.
  - NEW MEMBERS =
- New Member Recruiting
  - Enough on plate for this year, **WILL DEFER SURVEY TO END-'21 / EARLY '22.**

- **Comm Website / Purpose Statement**
  - Comm website up and running on PSMA.com ADA REPORTS FULL PSMA WEBSITE REVAMP UP BY END-JAN
    - **COMM = IF HAVE ANY GOOD RESOURCES, LINKS, PAPERS, ETC. TO POST ON WEBSITE (REMINDER, OPEN TO PUBLIC), THEN PLEASE SEND TO BZ FOR POSTING VIA LISA.**
- **Initiatives**
  - New Committee Execution Strategy
    - Separate champions for key initiatives, run meetings accordingly.
    - **1. PS Comm Bus Reliability (Brian), 2. PTR Webinar(s) (CHAMPION NEEDED), 3. APEC '21 IS (Ed)**
  - **Power Supply Communication Bus Reliability (BRIAN SPEARHEADS)**
  - **PTR Webinars (NEED NEW CHAMPION SPEARHEADS):**
    - Topics? Speakers? Schedule? **FOR ANY WEBINAR, DECIDE IF PROPOSE TO PTR OR IF RELIAB COMM INDEPENDENT EVENT.**
      - **COMM ACTION: WEBINAR TOPICS, PERHAPS FROM WITHIN COMM.**
      - Bob White, Power Supply Communication Bus Reliability (pending special project activities **COMING OFF HIATUS**). **INDEFINITELY POSTPONED**
    - **Charles Hymowitz, AEI Systems**
      - *"Test vs. Analysis; what's the right ratio?"*
      - **Consider for PTR webinar? BZ TO REACH OUT. CHARLES CONFIRMS PRELIM INTEREST, ASKING FOR TIMEFRAME...ADA MENTIONS MAY HAVE ALREADY PRESENTED, JOHN/BZ WILL INVESTIGATE** Has not given before so free to do so. PTR Comm requested more detail to justify as part of supporting PTR series. **BZ WILL PING AGAIN FOR RESPONSE TO PTR CLARIFICATIONS.** PTR Co-chairs now pinging (last 8/9/20) Charles direct for date. **BZ WILL CHECK ON STATUS WITH PTR TEAM.** Charles now has schedule conflicts...looking to date in early '21. **PTR COMM KICKING UP SCHEDULING, EXPECT TO SLOT CHARLES IN NEXT QUARTER.** Now scheduled for 2/18/21!!! **JOHN WILL SHARE MARKETING INFO FOLLOWING 2/5/21 WEBINAR. ALL TO HELP PROMOTE ONCE ANNOUCEMENT MADE TO SUPPORT OUR WEBINAR.**
    - **Doug Kirkpatrick, CEO, Eridan Communications**
      - *"System Reliability for Small Cells Enable 5G"*
      - **Consider for PTR webinar? BZ TO REACH OUT. GIVING COMP TIME TO WORK OUT LOGISTICAL ISSUES FIRST, REVISIT IN LATER APR.**
  - **APEC '21 INDUSTRY SESSION (ED SPEARHEADS APEC 1/11/21 ACCEPTANCE NOTICE-RECEIVED, ACCEPTED!!! 3/26/21 FINAL PPT DUE TO APEC, COMM TARGET FIRST DRAFT BY 2/1/21 FOR REVIEW/ITERATION, ED TO GENERATE DETAILED COMM SCHEDULE): IS21 (Rm. 4 if F2F), 6/11/21, TBD pm MST.** Ed now Co-chair for APEC session, thanks Ed!!! **One session cancelled, one unresponsive...ED/BZ WORKING ON CONTINGENCY BACKFILLS.** Rick mentions Dr. Eric Maass (former TI/Medtronic) may be good resource, **WILL SEND INFO TO ED/BZ OFFLINE.**

- SCHEDULE
  - 12/08/20: Speaker provides: Title, abstract, bio (completed)
  - 02/01/21: Speakers provide presentation for review
  - 02/12/21: Rel. Comm provides initial presentation feedback
  - 02/26/21: Final session details submitted to APEC (entered into epapers)
  - 02/26/21: Speaker provides updated presentation for review
  - 03/12 5/21: Rel. Comm completes presentation review and provides final feedback
  - 03/26 12 26/21: Final presentation submitted to APEC (entered into epapers)
- Prelim proposal for 4-slot session abstract submitted to APEC for consideration, **BZ WILL SHARE WITH MTG MINS**. Ed has agreed to own this for us, THANKS ED!!! **BZ ADDING ED TO ALL DISCUSSIONS AS APPROPRIATE. ED TO SEND SPEAKER SUMMARY. BZ WORK WITH ED ON GETTING ABSTRACTS UPLOADED. ED TO CHECK AVAILABILITY TO SUPPORT BEING SESSION CO-CHAIR, BZ TO FOLLOW-UP w/ ENABLING FOR ePAPERS.**
- Ada notes importance to highlight interests of academics that need help understanding how to transition developments from research to production (particularly through lens of reliability). **COMM WILL NOTE AS FOCUS FOR SPEAKER SEARCH**. Ada informs IS schedule should now be available. **ED/BZ TO CAPTURE OFFLINE AND UPDATE TEAM ACCORDINGLY.**
- Potential Speaker Chase List (**TARGET CLOSE ON SPEAKERS/TOPICS BY END-NOV**) –
  1. Ada suggests we consider highlighting collaboration efforts with IPC (particularly IPC-9592 or other investigation spearheaded by Rick/Eric). Aside from APEC IS, other calls to action likely to come out of this effort for us to track and turn into actionable stuff, **WILL CHECK-IN ON MONTHLY BASIS**. **PPT received and looking good so in great shape.**
    - “**IPC-9592B - What is it? What isn't it?**” from Eric Swenson, IBM
    - ABSTRACT: *The IPC-9592 standard, "Requirements for Power Conversion Devices for the Computer and Telecommunications Industries," was first released in September 2008. This document defined design, test, and manufacturing requirements for various types of power assemblies from AC/DC converters to battery packs. This standard covers requirements for each of these topics in varying degrees of detail. Specifics on qualification testing are especially well covered. However, this standard has several omissions that need to be addressed. The development and testing of firmware is one important topic not addressed in this standard. Another area where the standard could be strengthened is better defining manufacturing process requirements for each product class. This presentation will summarize the strengths and weaknesses of the current IPC-9592B standard and discuss various options to strengthen it.*
  2. Bob White, Embedded Power Labs (representing PSMA Reliab Comm) = Special Project Overview (major assumption on sufficient project status and APEC slippage past April). **CANCELLED, WORKING ON BACKFILL.**
    - “**The PSMA Power Supply Communication Reliability Report**”
    - ABSTRACT: Digital communication is now commonly used with all types of power supplies and power converters. Communication interfaces allow for configuration, control, and monitoring by system management functions. The management of power converters can be at the local level, such as with point-of-load converters on a single circuit board to managing the power supplies in an entire data to managing power converters in cellular base stations scattered around the world.

With communication with power converters now so widely used it is important that this communication be reliable. A corrupted value in a command to change a converter's output voltage could cause problems ranging from a loss of data to the destruction of the system. Loss of communication with power converters in servers in a data center could mean a loss of revenue from power metering charges. Recognizing this importance, the Power Sources Manufacturers Association commissioned a report on the reliability of communication with power supplies and power converters. This presentation will provide an overview of that report.

The first part of the presentation will provide an overview of the contents of the report including:

- Why we want to communicate with power conversion equipment
- An brief introduction to the various methods used to communicate with power converters
- A review of the common failure modes and effects in power converter communication
- Specific discussion of common interfaces and protocols and failure modes and effects specific to those interfaces and protocols
- Recommended best practices for designing and implementing communication with power converters to minimize failures and maximize reliability

The second half of the presentation will present selected examples of particular failure modes and the recommended practices to minimize those failures.

3. Jonathan Pollet, Red Tiger Security. **Completely unresponsive after multiple attempts from Ed and BZ. CANCELLED, WORKING ON BACKFILL.**
  - **"Security Lessons Embedded Vendors Should Learn from Big IT Vendors"**
  - ABSTRACT: Recently Red Tiger Security had the opportunity to work alongside HP to help develop a security strategy for one fleet of embedded devices that has an install base of over 500 million devices – network IP enabled printers. HP recognized that while computers, laptops, servers, and most devices with mature operating systems offer an extensive set of security features, their embedded devices (printers) generally had multiple vulnerabilities due to not supporting authentication, encryption, security logging, centralized asset management, and more. This presentation will discuss the lessons that we learned from working with a large IT vendor, how similar excuses such as limited system resources were overcome, and how a security platform was created and deployed to all devices, regardless of the model number so that all network printer devices could receive the same amount of security rigor as a computer resource, and truly be an equal citizen on the network from a security perspective. This presentation will also compare and contrast the security features supported in most IT appliances versus IoT and Industrial controllers.
4. Ada notes PSMA newsletter (<https://www.psmas.com/HTML/newsletter/page17.html>) recently highlighted iNemi article about the impacts COVID needs have on equipment reliability. **BZ WILL FIGURE OUT WHOM TO SOLICIT FOR TALK PROPOSAL.** BZ emailed iNEMI 10/14/20 with a

follow-up 11/10/20 since no response to-date. PPT received and looking good so in great shape.

- **“Recommended Best Practices for Protecting the Reliability and Integrity of Electronic Products and Assemblies when Disinfecting for SARSCoV- 2 (COVID-19)”** from Julie Silk, Keysight (on behalf of iNEMI)
- ABSTRACT: The disinfecting procedures developed in response to the COVID-19 crisis could potentially have a detrimental impact on electronic equipment and assemblies. Many commonly recommended disinfection substances and/or application methods could potentially cause failures in electronic equipment if the internal electronics were inadvertently exposed to them. This is an obvious concern for electronics manufacturers who want to ensure the safety of their employees, supply chain partners and customers, while protecting the reliability and integrity of their products. A team of experts from across iNEMI member organizations reviewed key industry, government and technical sources and assembled a best practices document. The team assessed chemicals and common application methods, identifying those substances that minimize the risk of negative impact on electronic equipment when applied in an appropriate manner.

### - General

- Post-mortem PS SW/FW Reliability Report Update
  - Powerbox: given to design teams, lot of interest, inhibited by language barrier (Japanese in this case).
  - SL: given to teams, already have Reliab stakeholders involved, driving change in FW review process.
  - IBM: presented to some suppliers, neutral response so far, awaiting next major project kickoff for true assessment.
  - Patrick notes similar activities kicking-up within EPSMA, **PATRICK WILL INQUIRE FURTHER TO SEE IF THERE ARE ADDITIONAL COLLABORATION OPPORTUNITIES.** Patrick reports no response as of 10/14/20, 11/11/20, 1/13/21 (Patrick pinged again, expecting response).
- Any other revenue-generating thoughts for PSMA?
  - Virtual Workshop (recent '20 Cap & Mag Virtual Workshop success as example)
    - Very well-received thus far, most seem to be ok with virtual format.
    - Joe notes guidance to reduce proposed event budget by ~20% for offset, F2F expenses, and pass through to attendee registration. Also, consider turning PS SW/FW Reliability Report into workshop theme.
    - Viability determined by success of existing webinar efforts.
  - Standards (primarily through conversion of existing project outputs)
    - Input into IPC-9592B standard update. Consider SW/FW input? **Rick former colleague of IPC CTO (Matt Kelly), will work with IPC/PSMA efforts to cultivate opportunity here. BZ to facilitate email discussion with Mike Hayes as part of overall PSMA/IPC collaboration efforts.** SW/FW report currently with IPC for review/feedback/suggestions. Eric also notes deep experience with this and interest in efforts. IPC currently reviewing with their committees to determine best course of action.

- Offer supporting resources to enable utilization of PS SW/FW Reliability Report.  
**COMM ACTION TO SUGGEST OTHER POTENTIAL RESOURCES/TOOLS TO CREATE TO SUPPORT THIS.**
  - Ada reports there is a PSMA Automotive Electronics Webinar/Workshop that may be a good opportunity to highlight our PS SW/FW Reliability Report. Event will occur no earlier than Aug. '21 (may push out) and even event logistics still TBD so continue to monitor.
  - For example, extract a checklist from report to simplify barrier to entry (i.e. – team code review checklist). **COMM ACTION (ADA SPEARHEADING) TO PROPOSE LIST OF POTENTIAL TOOLS FOR DETERMINING ACTIONABLE PRIORITIES.** White paper? Checklist?
    1. Thoughts from Nitish: commonly challenged by disconnect between SW/FW & HW stakeholder expectations...could be helped by Process Checklist (for code reviews, functional flowchart/review, test plan, etc.).
    2. Thoughts from Ada: “Dashboard” of Metrics, Process Diagram, Prototyping & BIST...**ADA WILL EMAIL LIST w/ DESCRIPTIONS.** Ada sent analysis to Comm list 9/9/20, captured below for convenience (**REVIEW NXT MTG**):
      - **Those already in the report are as follows:**
        - \* Sources of Coding Standards (p. 80)
        - \* SW Development Process Audit Checklist (p. 85)
        - \* Safety Assessment using a Risk Matrix to determine acceptable and unacceptable risks (p. 93)
        - \* Regulatory inputs for software quality (p. 98)
        - \* Example Software Quality Specification (pp. 98-100)
        - \* Software Development Process Assessment Template (pp. 101-104)
        - \* Software Security Assessment Specification (pp. 104-105) includes security checklist (also on p. 150)
        - \* Digital PSU Verification Test Plan Example (pp. 106-109)
        - \* Development Team Specifications (pp. 110-112) includes PSU Functional Partition Specification Template, & SW Interface Specification Template.
        - \* Testing Checklist example (p. 159)
      - **Some proposed resources/tools that are not currently in the report: (COMM PRIORITIES) BZ WILL PREPARE PROPOSAL FOR ADDRESSING BY NEXT MTG.** Ada suggests once have enough of these tangible tools, introduce to industry via webinar and package tools (delivery mechanism for monetization TBD, **ONCE TOOLS IN HAND, CAN REACH OUT TO MKG COMM FOR ADVICE**).
        - \* Process Flow Diagram **(1)**
          - Translate Hamish’s text into more functional diagrams. **MANISH CAN LOOK INTO CONTRIBUTING TO THIS TASK, BZ TO GENERATE FOCUSED EMAIL DISCUSSION TO DRIVE.**
        - \* Design checklist? **(2)**
          - Generate bulleted, process checklist. **MANISH CAN LOOK INTO CONTRIBUTING TO THIS TASK.** Manish provided a draft flow diagram and iterated process approach doc, which Ada has

commented on, for group discussion. Nitish can be added to offline discussion to provide additional review/guidance so **BZ WILL ADD. TEAM WILL CONTINUE TO WORK OFFLINE.** Manish continues to refine flow chart, additional input from Manish & Ada...challenges in forming the flow chart and/or other deliverables. Nitish requests offline, focused discussion. **BZ WILL FACILITATE MTG PROPOSAL OFFLINE AND SOLICIT COMM PARTICIPATION.**

- \* BIST examples? **(3.1)**
    - Functional examples very enabling to new users.
  - \* “Dashboard” of metrics **(3.2)**
    - Propose hybrid dashboard of HW and SW metrics.
  - \* Code review checklist? **(5)**
    - Generate bulleted, process checklist.
  - \* Software release checklist? **(6)**
    - Generate template for release roadmap, examples and references.
  - **Some inputs on the report for next phase/revision:**
    - \* Add prototyping?
    - \* Need to define code escrow
- **Next Meeting**
- Wed 3/10/21, 11 am CST.
  - Regular Schedule = 2<sup>nd</sup> Wed of each month, 11 am – 12 pm CST