



**EPSMA TC2 2017  
Technical Committee Meeting  
Tuesday, 7th November 2017**

**Held at PULS GmbH, Elektrastraße 6, 81925 Munich.**

## EPSMA Technical Committee Meeting 7th November 2017

Date: Tuesday, 7th November 2017

Time: Arrive from 11:30 for meeting 12:00 ~ 17:00.

Venue: PULS GmbH, Elektrastraße 6, 81925 Munich. The nearest U-Bahn now is Arabellapark.

Please report to reception on your arrival. Tel: Mrs. Ulrike Baur, PA to PULS MD, Direct: +49 89 9278 121

PULS Head Office: +49 89 9278 0, Directions: <http://www.pulspower.com/contact/how-to-get-to-puls/>

11:30	<b>Arrival for light buffet lunch at PULS GmbH.</b>	All
12:00	<b>Open meeting, introductions and brief review of agenda</b>	Vlad
12:20 - 12:40	<b>General TC status review</b> <ul style="list-style-type: none"> <li>Update on current and possible future TC member's status.</li> <li>Brief review of projects and actions</li> <li>Approval of TC1-17 minutes</li> </ul>	Vlad Vlad TC1-17 Attendees
12:40 - 12:55	<b>Safety of Low-Voltage Switch Mode Power Supplies'</b> (The new standard IEC 61204-7, 2 <sup>nd</sup> edition: proposed in 22E/142/NP). <ul style="list-style-type: none"> <li>Update from Clemens Klemm</li> <li>Status of a position statement from UL on applicability of IEC 61204-7 and the teleconference held with UL on 5 September 2017.</li> <li>EPSMA response – see MC 3Q17 MC Minutes, pages 4-5.</li> <li>Comments/Questions.</li> </ul>	Vlad Vlad  All
12:55 – 13:55	<b>EPSMA Guideline 'PFC Harmonic Current Emissions – Guide to EN 61000-3-2:2014'</b> <ul style="list-style-type: none"> <li>Progress on update from EN 61000-3-2:2006 to EN 61000-3-2:2014</li> <li>TC review and edit for release for approval.</li> </ul>	Vlad Milos, Dave + all TC
13:55-14:10	<b>Refreshment break</b>	All
14:10 - 14:20	<b>DALI standard - IEC 62386 Digital Addressable Lighting Interface</b> <b>Brief look at the Presentation by Armin Wegener, FRIWO</b> (Part 101: System, Part 102: Control gear (applicable to control gear in a bus system for control by digital signals of electronic lighting equipment) Part 207: LED Modules (Device Type 6))	Vlad (Armin is unable to attend)
14:20-14:40	<b>EPSMA Guideline 'CE MARKING GUIDANCE FOR POWER SUPPLIES'</b> <ul style="list-style-type: none"> <li>Review update to meet 2014 directives mandatory in April 2016.</li> </ul>	Vlad, Others?
14:40 - 15:10	<b>Accurate Efficiency Measurements</b> <ul style="list-style-type: none"> <li>Review of the additions of 3-phase Power Factor, and Power Sources. (No new material on 3-Phase measuring techniques for DC-AC and AC-DC, and the Power Circulation Efficiency Measurement method so these will not be added)</li> <li>TC review and edit for release for approval.</li> </ul>	Hubert, Vlad, All
15:10-15:20	<b>UL508 and UL-61010</b> <ul style="list-style-type: none"> <li>Review of EPSMA concerns and comments and response from UL.</li> <li>Review of follow-up by EPSMA MC/TC.</li> </ul>	Vlad Vlad/All
15:20 - 15:40	<b>Review of other areas of interest – Reports from monitoring “champions”</b> <ul style="list-style-type: none"> <li><b>Energy Efficiency/Savings</b> External Power Supplies (19.03.2014)</li> <li><b>Energy Efficiency/Savings</b> Battery Charging Systems (2012_09_03)</li> <li><b>Future Trends in Semiconductors:</b> Any new topics?</li> <li><b>Photo Voltaic</b> - Any update since presentation on PV-applications?</li> <li><b>HVDC Systems for Telecom (380VDC)</b> Need new champion to keep a watch of development of ETSI EN 301605 to report developments to the TC.</li> <li><b>Electronic Lighting/LED</b></li> <li><b>ROHS and WEEE</b> - Any update since re-issue Nov 2012?</li> <li><b>International Standards and Directives</b> – Any issues affecting EPSMA?</li> </ul>	Matti Armin Francesco, Jürgen All (Previously Markus) Arthur Jordan?  Armin All All
15:40 – 16:00	<b>Other?</b> <ul style="list-style-type: none"> <li>Do any EPSMA TC publications need update?</li> <li>Contributors for new subjects e.g: <ul style="list-style-type: none"> <li>UL/EN62368 Guideline requested by MC</li> </ul> </li> <li>Trade Barriers EU-USA. Any Alerts arising?</li> <li>China – Manufacturer and competitor. What effect on EPSMA companies?</li> </ul>	All All  All All
16:00 - 16:10	<b>Summary of actions from the meeting.</b> <b>Set next meeting and adjourn</b> Propose Monday 4 June 2018, at Siemens, Nuremberg. Hotel reservation - Possibly stay at IBIS <a href="http://www.ibis-nuernberg-city-am-plaerrer.com/">ibis-nuernberg-city-am-plaerrer</a> Note: PCIM is being held from 5 <sup>th</sup> to the 7 <sup>th</sup> June 2018	Vlad Vlad
19:30: Social/meal – <a href="http://www.hofbraeuhaus.de/">http://www.hofbraeuhaus.de/</a> upstairs in Bräustüberl		

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**Present at the meeting:**

<b>Name</b>	<b>Company</b>	<b>Tel No.</b>	<b>Mail address</b>
<b><u>TC Members</u></b>			
Dave Collins (DC)	Artesyn	+353 87 6470711	<a href="mailto:david.collins@artesyn.com">david.collins@artesyn.com</a>
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Hubert Schoenenberger (HS)	PULS	+49 89 9278 184	<a href="mailto:Hubert.Schoenenberger@pulspower.com">Hubert.Schoenenberger@pulspower.com</a>
Matti Kulmala (MK)	Salcomp	+358 400 267 578	<a href="mailto:Matti.Kulmala@salcomp.com">Matti.Kulmala@salcomp.com</a>
<b><u>TC Chairman (acting):</u></b>			
Vlad Grigore (VG)	Efore	+358 9 4784 6422	<a href="mailto:vlad.grigore@efore.fi">vlad.grigore@efore.fi</a>
<b><u>Apologies:</u></b>			
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Paul Conway (PC)	EPSMA	+44 7814183450 +44 1908 501483	<a href="mailto:conwaypk@gmail.com">conwaypk@gmail.com</a>

*Note: In the following minutes, any actions are indicated in blue after the respective item.*

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### **Open meeting, introduction and review of agenda**

VG opened by welcoming the TC members to the second EPSMA TC meeting in 2017 and thanked everyone for making the effort to attend.

VG explained that he was standing in as chairman as PC was unable to attend as he had a surgical appointment, which he could not shift.

The agenda was presented and there were no new items requested.

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### **General TC status review**

The membership status, Appendix 1, was reviewed.

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## **Brief Review of Projects and Actions**

The previous minutes were viewed by the TC both to review the accuracy of the minutes and to review projects and actions.

The status of projects is summarised in the minutes.

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## **Approval of TC1-17 Minutes**

The previous minutes of TC1-17 held 15<sup>th</sup> May 2017 at Siemens, Nuremburg, were approved by Dave Collins, seconded by Diarmuid Hogan, with no changes requested by the TC.

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## **IEC 61204-7 edition 2.0 'Safety of Low-Voltage Switch Mode Power Supplies'**

### **Background**

The TC endeavours to keep up to date with developments:

Thierry Pelikan of TDK-Lambda, Member of French mirror TC22X (Cenelec) and TC22 (IEC), has helped keep the TC and MC informed of developments. Also, TDK-Lambda safety experts raised questions about IEC 61204-7 Ed 2 and the implications to the industry of its issue soon.

The chairman of IEC-SC22E, Holger Laible, has kept EPSMA informed with presentations and answering questions at every April/May TC from 2013 to 2017 (MC present at 2015 TC).

### **Update on the Status of IEC 61204-7, 2nd edition from Holger Laible**

PC presented a slide of the last status update on 17 January 2017 from Holger and he explained the current situation in more detail:

1. Extended version has been created: IEC 62477-1 and the IEC 61204-7 combined in one document.
2. The EN 61204-7 was voted positively, but there is an issue regarding the harmonization of all standards right now (for over 2 years), so we do have the same trouble to get the standard harmonized in the EU.
3. The translation of the document into German was completed February 2017.
4. At the moment, there is work going on to get the IEC 62477-1 accepted in US (UL standardization process).

Notes arising:

Ref 1 above, Other standards are also being published as extended edition, especially those produced by TC22 e.g. the UPS standard will follow IEC 62477-1.

Ref 2 above Holger explained that several hundred are blocked currently, and he emphasised that EPSMA can do nothing about the situation but should be aware. Delays are due to the requirement for Consultants to audit the documents and for

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example check compliance with the Low Voltage Directive where applicable. (Post TC, PC informed the MC 16/5/17 about this)

I response to a query from MR, as to why industry should follow 61204-7 instead of e.g. UL/EN62368, Holger explained how 61204-7 is specific to power supplies unlike 62368, and more standards are stating that compliance of power supplies with IEC61204-7 meets the requirements of their standard e.g. The machinery standard IEC 60204-1. Holger wants 61204-7 in 61010-2-201, and China, Japan and the EU are on board with this, but the USA is still an issue.

It was felt by Holger that EPSMA should go for 61204-7 as it can be used for Industrial and Machinery standards. It needs UL to agree to certify products to it to recognise it is applicable. MR agreed to consider writing such a letter (to petition UL), which Holger offered to help with, after consultation with his management at PULS.

At the TC2 November 2017, Clemens Klemm (Siemens) sent a presentation update on of the standardization work for IEC 61204-7 and participants went through the presentation during the meeting. We also went through the dialog with UL on this topic. Participants were in agreement with MC position, worry that 61206-7 will create additional costs, and would like to have an assurance that this standard will be accepted.

**Action: MR** to discuss the possibility of writing the above letter on behalf of EPSMA.

**Action closed:** A poll had been held by EPSMA management and a majority of members had voted not to support the standard believing that it would be an additional standard that customers would request compliance to as well as the existing product standards.

**Continuing Action: PC** to keep contact with Holger Laible, Chairman of IEC 22E committee, and Thierry Pelikan to keep the TC up to date with IEC61204-7 developments.

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### **UL508 and UL61010**

A letter listing concerns and petitions, written by MR and amended in consultation with the TC, MC and Kevin Parmenter of PSMA is to be sent to UL.

MR summarised the issues at the TC, and next day at the MC of 16 May 2017, the MC thought maybe the letter should be addressed individually to each of the three UL contacts listed rather than all three on each letter.

An agreed letter had been written to UL by the secretariat and comments received back which were generally positive. Bernhard Erdl has requested a more formal response from UL that could be used to explain the implications to customers. Paul Lee will work with BE on the format of this request to UL. Action Paul Lee.

## **MOSFET and GaN Body Diode Reverse Recovery Parameters**

### Background

Diarmuid sent an email to the TC chairman which included a section, Appendix 2, regarding MOSFET and GaN failures attributed to body diode.

He recommended that manufacturers include data sheet parameters of Softness Factor & Qrr with realistic current e.g. 10% of Id rated,  $di/dt = (10\% I_d \text{ rated}) / (20 \text{ to } 50\text{ns})$ .

Infineon and Texas Instruments were invited to comment and find a solution.

Francesco and Jurgen both agreed to work with their specialists to try to understand the failures and consider appropriate parameters.

**Action Complete:** DH send waveforms to FD for Infineon comment.

**Action Continues:** JS to send DH info to the TI team and arrange a conference call with DH.

## **EPSMA Guideline ‘PFC Harmonic Current Emissions – Guide to EN 61000-3-2:2014’**

*[Milos Luptak (Champ), Arthur Jordan, Dave Collins and Diarmuid Hogan]*

The EPSMA Guideline ‘Harmonic current emissions - Guide from the EPSMA’ dated November 2010 based on EN 61000-3-2: 2006 is being revised to the latest version IEC 61000-3-2:2014 exists: <https://webstore.iec.ch/publication/4149>

The project was started at the TC Nov 2015 and a revision circulated 5 February 2017 was reviewed. Since then Milos has added a new colour flow chart and topologies for Single-Phase. Milos offered to add three-phase topologies to the report.

**Action Continues:** DC to tidy the report and add references to the source material. (DC has expanded the introduction to include reference to above 16 Amp mains, and reviewed the report. DC also added helpful information and illustrations on harmonics, their sources, the effects of linear and non-linear loads, the effects of harmonics on different circuit types, and harmonic measurement.)

**Action:** DC to try to do it by 21.11.2017.

**Action:** ML Continue to champion the project leading to draft for final review.

## **EPSMA Guideline ‘CE MARKING GUIDANCE FOR POWER SUPPLIES’**

*[Dominique Hessmann (Champ), supported by Clemens Klemm and Michael Raspotnig, (final review to be done by Armin, Bernhard, Dave, Diarmuid, Esa, and Michael)]*

### Background

A recommendation for update of the CE MARKING GUIDANCE FOR POWER SUPPLIES was made November 2014 by Dominique.

This guideline, issued in 2005, refers to directives that have been updated for a long time. Also, new LVD & EMC directives published in 2014 will be mandatory April 2016.

### Progress

The guideline shown to the TC is greatly revised and includes decision tree/flowcharts to clarify this complex standard. Two issues raised by the TC are to be resolved before release for final review:

1. Include a summary of the applicability of WEEE Directive to CE Marking. It was suggested the Quality Manager at PULS, Friederich Haunschild, might write a few words to include in the report.
2. Consider whether the CE Marking Process should include different languages. Post TC, PC discussed this with the MC and it was agreed that we would make no reference to this in the report.

DMH was not at the TC 7 November 2017. The report is in final edit. Release for final TC approval is imminent and it should be available after the TC in November.

**Continuing Action: DMH** to Champion the CE Marking project to issue the draft update by Friday 19 May.

**Action: MR** ask Friederich Haunschild if he would write a few words on WEEE applicability to include in the report. **Action Complete.** Email sent 18/5/17 but Mr Haunschild is on leave until 22 May.

**Continuing Action DMH:** Release the TC reviewed CE Guideline ready for MC review.

### **Accurate Efficiency Measurements**

*[Hubert Schoenenberger(Champ), Vlad Grigore, Milos Luptak and previously Andi Stiedl]*

This paper was released to the EPSMA web on 21 June 2015. After the November 2015 TC, the MC decided next day to release the paper and two associated Excel tools for free public download on the EPSMA website. These are now available to the public.

The report will be up-issued to add more detail on described measurement techniques and add other methods and revise the structure.

At a previous TC Hubert showed the new additions he had written on 3-phase power factor and the effect on voltage and phase errors in efficiency. He is unable to investigate the chapters DC/AC and AC/AC conversion which are not in the field of interest of PULS and would not be effective use of his time at PULS.

**Note:** The secretariat has contacted EPSMA University Members e.g. Nottingham University, to ask whether they could contribute to DC/AC and AC/AC conversion and the Power Circulation Method however no material is forthcoming.

Similarly, the secretariat has attempted to contact Zimmer but no response though Hannes Schachenmayr may supply a contact at Zimmer.

ML was not able to attend the November TC and we understand he is very busy and probably does not have time to investigate further. The TC recommends that a new edition of the report will be released ASAP with Hubert's additions on 3-phase. DC commented that the paper in its current form is the best publication on practical accurate efficiency measurement.

The power circulation method is still open and would be useful to be added later in a new release.

**Action Revised: ML** was to investigate the paper on the Power Circulation Method and write a section for the report. Milos does not have the time to investigate this and he offered to contact the University of Zilema to see whether their Power faculty would be interested.

**Action: PC** to chase ML and the secretariat for new material for the revision.

**Action: PC:** Take the necessary actions to publish a new release of the paper.

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## Review of Other Areas of Interest – Reports from monitoring ‘champions’

### General Requirement of Energy Efficiency for External Power Supplies

*[Matti Kulmala]*

At the May 2017 TC, Matti sent his update, Appendix 2, and has updated one sheet of the database which will be added to EPSMA web documents when the remaining sheets have been updated and it will be kept up to date with any new changes.

Matti explained that the main driver for efficiency is DOE Level 6. EU not requiring that, but in practice it will be requested by customers.

**Action:** MK to complete the database update and send it to PC for EPSMA web release, and continue to keep a watch of the EPS standards and update the database when these change.

**Action closed:** MK sent the update to PC and it is on [www.epsma.org](http://www.epsma.org) as issue 28\_07\_2017.

**Action:** MK to investigate the meaning of ‘Belarus registration required’ and inform DH and PC who will pass this on to the TC with the database update.

**Action closed:** No specific marking required for Belarus, the meaning is just to send them the documents for EU, there is no charge for the registration.

### Energy Efficiency Standards for Battery Charging Systems

*[Armin Wegener (Author)]*

- US Department of Energy (DOE) published 81 FR 38266 (June 13, 2016) with effective date June 13, 2018.

FRIWO have assessed the new DOE standard and concluded as follows:

- The test method, limit values and evaluation is clearly described. The evaluation and limits differ strongly from the CEC standard. Spot checks on existing CEC compliant battery systems (charger and battery pack) all also fulfilled the DOE standard. So in the end, the results are comparable.
- CEC was a clearly structured scheme which made technical and economic sense and is easy to follow! DOE is quite the opposite!
- FRIWO have sent technical questions to DOE however no reply yet.

The assessment in more detail is in EPSMA Members Area, titled ‘81 FR 38266’. Armin will update the database to show the changes.

**Action:** AW to keep a watch of the BCS standards and update the database when changes arise.

### Future Trends in Semiconductors

We did not have any participant from the semiconductor industry at the TC November 2017. Participants discussed the outlook for the adoption of new device technologies GaN and SiC. Reliability (for GaN) and Cost (for SiC) are seen as the main factors to be improved, before such devices will be adopted on a wide scale.

## Photo Voltaics

*[Previously Markus Hallenberger]*

No TC activity needed currently. TC thinks that a contributor from a Solar Inverter company should be recruited to the TC, if this project needs to be activated.

## HVDC Systems for Telecom (380Vdc):

**(Previously “High Voltage DC Systems for Tele - Datacom and Data Handler Applications”** *[Previously Andreas Stiedl and Anders Petersson]*)

*[Background;*

*At the November 2011 TC, Anders said that Inteltec, The International Telecommunications Energy Conference, held October 2011, probably revealed details on the subject. Also ETSI is looking into this area and obstacles foreseen are e.g. Infrastructure/Fuses/Security issues.*

*A driving application for the higher voltage is Blade Servers.*

*At the November 2012 TC, AP said there is a new draft to cover HVDC:*

*ETSI EN 301605: ‘Environmental Engineering Earthing and Bonding of 400VDC Data and Telecom ICT Equipment’.*

*There is also ETSI EN 300132-3-1 V2.1.1 2012-0: ‘Environmental Engineering.’*

*The TC previously decided that we should keep a watch of development of ETSI EN 301605.*

*AS commented at the November 2013 TC that demand for HVDC is coming from customers especially for power back-up. AS also explained that lightning strikes at outstations is a problem to HVDC when it results in arcing that is difficult to stop as there is no zero crossing as with AC power.*

*At the November 2014 TC, AS commented that interest seems to have decreased within equipment racks as distances are short and DC power losses in wiring are low. HVDC is used for outside installations and Data Centres where longer distances are involved. Problems with HVDC are lightning, as mentioned earlier, also corrosion.]*

At the November 2015 TC, Arthur Jordan said he may be interested in working on this as Vicor are looking into HVDC. Vlad commented that Eltek has new products for HVDC and the EU has granted money to universities for work on the Microgrid.

The May 2016 TC alerted to the evolving 48VDC bus supported by OCP, the Open Compute Project, with members including Google, Facebook, Microsoft, AT & T, Deutsche Telekom.  
<http://www.opencompute.org/about/membership-organizational-directory/>

FD suggested EPSMA could contact Eric Persson, ex International Rectifier and Infineon USA, and involved with PSMA Roadmap Committee. This was raised with the MC but no follow-up taken.

TC does not currently have good enough expertise in HVDC. Could Vicor propose a Champion for this topic?

### Previous Actions:

**Action PC** to find a new champion for this evolving technology.

**Action AJ** to consider what he might offer towards an HVDC paper.

**Action Closed:** PH and AJ are unable to attend future TC's.

**Action DH:** DH promised to send a presentation from APEC about HVDC, to be circulated in the TC.

**Action DC:** DC will check if he can find something related to HVDC.

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## **Electric Lighting – LED applications**

*[Armin Wegener]*

At the May 2017 TC, Armin offered to give a presentation at the November TC on DALI standard - IEC 62386 Digital Addressable Lighting Interface - See Appendix 4.

The presentation will primarily cover these parts:

Part 101: System

Part 102: Control gear (applicable to control gear in a bus system for control by digital signals of electronic lighting equipment)

Part 207: LED Modules (Device Type 6)

Armin forwarded the presentation ppt to PC as he was unable to attend the Nov 2017 TC however he will present it at the next TC.

**Action:** **AW** to make above presentation at the June 2018 TC.

## **RoHS and WEEE**

This is at issue November 2012 and was revised by Friedrich Haunschild of PULS.

ROHS changing to ROHS 3: issued in 2015, 4 substances in addition to the current 6. Becomes mandatory 22. 7.2019.

WEEE - changes regarding disposal responsibility.

## **International Standards**

The TC was asked whether they knew of any developments affecting members.

**DH** mentioned an issue of UL rejecting NRTL mark from TUV Rheinland and inquired whether TC participants have had similar experiences (Answer - no).

## **NEW PROJECTS**

*[To be formally approved/ assigned]*

The TC reviewed all TC publications, Appendix 3, to remind members of projects completed and to consider whether any released projects need revision.

The review/update of the two Database EPS and BCS recorded earlier in the minutes is ongoing.

Three TC Publications are now subject to revision as detailed earlier in these minutes:

- Harmonic Current Emissions (To be re-named 'PFC Harmonic Current Emissions – Guide to EN 61000-3-2:2014')
- CE Marking Guidance for Power Supplies.
- Accurate Efficiency Measurements.

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The TC commented on the following updates needed to TC publications, Appendix 3.

- ROHS Decision Tree Guideline: needs review with regard to ROHS 3.
- WEEE Decision Tree Guideline: needs review with regard to Disposal Responsibility.
- Energy Efficiency Database EPC: has been updated 28.7.2017.
- Safety Guidelines for Telecom Applications: Refers to 60950, which will soon be obsolete.
- Some other guidelines, e.g. for Railway, Hazardous locations, DIN Rail, are very old. The TC is not aware of specific update needs, but it's very possible that changes have occurred.

#### **POSSIBLE NEW TOPICS REQUESTED BY THE MC**

- **Quality Assurance of Firmware in Digital Power Supplies.**

The TC was asked May 2016 whether they have any knowledge of this subject.

At the TC Nov 2016, Christian said Siemens had not yet managed to recruit a person with responsibilities for firmware QA.

An appointment has been made recently in 2017 and this issue may be followed up.

DH offered to do a presentation on firmware QA

**Action: DH to do a presentation on firmware QA at the June 2018 TC.**

**Action: DC will check what Artesyn does in this area.**

- **UL/EN62368 Guideline requested earlier by MC**

Participants see that it is very useful to change experiences about the transition to the new standard, but a guideline may be very difficult to issue.

Discussion: edition 3 will be released in 2018.

Edition 1 and 2 backwards compatible with 60950. Edition 3 to be checked.

**Action: DC to do a presentation at the June 2018 TC.**

- **Trade Barriers EU-USA. Any Alerts arising?**

**DH** made comments at the May 2017 TC with respect to Trade Barriers that it seems some agencies are not recognising the NRTL mark, or are making it difficult to agree recognition of the NRTL mark from other agencies, and asked whether any other EPSMA members are experiencing this?

**Action: DH to send more information to the TC if he receives written confirmation from an agency.**

- **China – Manufacturer and competitor. What effect on EPSMA companies?**

Participants were of the opinion that this topic is outside the scope of the TC and it is more appropriate to be discussed in the MC.

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## Any other Business

### Wireless charging:

Matti offered to do a presentation on low power wireless charging at the next TC.

High power wireless charging is also of interest to the TC. Presenter TBD.

**Action:** MK to make above presentation at the June 2018 TC.

### PSMA:

TC would like to have an update from Paul Lee about the status of discussions between EPSMA and PSMA. Could EPSMA become a member of PSMA to access PSMA reports?

### Other discussion:

Could EPSMA involve universities to do research on selected topics?

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## Next meeting

Propose Monday 4 June 2018, at Siemens, Nuremberg.

Hotel reservation – It was not possible to get block reservations at IBIS [ibis-nuernberg-city-am-plaerrer](http://www.ibis-nuernberg-city-am-plaerrer.com)

Annette reserved the Park Plaza hotel which looks good and is close to HBH, and the price 119 Euro per night is very good discount from some agents prices.

<http://www.accorhotels.com/gb/hotel-0888-ibis-nuernberg-city-am-plaerrer/index.shtml>

Note: PCIM is being held from 5<sup>th</sup> to the 7<sup>th</sup> June 2018

**Action:** PC to send invitations with a spreadsheet.

**Action:** All to put the next TC meeting date in their calendar and please reply to the invites promptly to make it easier to arrange catering and restaurant reservation for the TC meal/social.

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## Adjourn

The meeting was concluded with thanks to all members for attending, and thanks to PULS for hosting the meeting.

Later at 19:30 the TC attended a Social/meal at <http://www.hofbraeuhaus.de> upstairs in Bräustüberl

## Appendix 1

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### TC Member Status, November 2017

**A total of 13 members from 5 countries:**



- Armin Wegener – FRIWO, Germany. (1/5)\*
  - Bernhard Grub – XP-Power, Germany. (2/5)\*
  - Christian Hoesch/Clemens Klemm – Siemens, Austria/(Germany). (1/2)\*
  - Diarmuid Hogan, Excelsys, Ireland. (1/2)\*
  - Dave Collins – Artesyn, Ireland. (2/2)\*
  - Dominique Hessmann – Delta Energy Systems, Germany. (3/5)\*
  - Esa Väkeväinen - Murrelektronik Power Oy, Finland (1/3)\*
  - Francesco Di Domenico – Infineon, Austria. (2/2)\*
  - Hubert Schoenenberger – PULS, Germany (4/5)\*
  - Jürgen Schneider – Texas Instruments, Germany. (5/5)\*
  - Matti Kulmala – Salcomp, Finland. (2/3)\*
  - Milos Luptak – Bel Power Solutions, Slovakia. (1/1)\*
  - Vlad Grigore – Efore, Finland. (3/3)\*
- A Vicor representative is wanted on the TC to replace Arthur Jordan who retires early 2018.
- TDK Lambda has been invited to provide a TC member.  
Thierry Pelikan attended the TC in May 2013 and in April 2015.

\* Key: (x/n) = (Member # from each country / Number of members from same country)

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3 November 2017

TC report to AGM 2016 at PULS, Munich

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## Appendix 2

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### General Requirement of Energy Efficiency for External Power Supplies [Matti Kulmala, Salcomp]



- Ecodesign Directive is postponed due to Brexit
  - The effective date of new mandatory requirements in EU is unknown
  - Most likely Erp 2 voting will happen this year
- Natural Resources Canada (NRCAN)
  - Nrcan is under update
  - New requirements will follow latest DOE levels (level VI)
  - Amendment 14 will be published spring/summer 2017
  - New rules will most likely apply from beginning 2018
- Belarus
  - Belarus will adopt regulations for EPS 1.9.2017->
  - Same level as Erp level 5
  - All EPS should fulfill this already, but Belarus registration needed

The updated database is to be added to the EPSMA.

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15 May 2017

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## Appendix 3

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### EPSMA Publications – Public

(Accessible to the general public as a free download)



- Accurate Efficiency Measurements (Final, 2015-06-21)
- WEEE Decision Tree Guidelines (Nov 2012)
- RoHS Decision Tree Guidelines (Nov 2012)
- Power Factor Correction - Guide from the EPSMA (November 2010)  
N.B. This is now marked on [www.epsma.org](http://www.epsma.org) as 'New revision coming'.
- Thermal Measurements of Power Converters – How and Why? (March 2009)
- Guidelines to Understanding Reliability Prediction (June 2005)
- CE-Marking on Power Supplies - Guidance from the EPSMA (April 2005)  
N.B. This is now marked on [www.epsma.org](http://www.epsma.org) as 'New revision coming'.
- The Status of Lead-Free Electronics and its Impact on Power Electronics (Feb 2003)

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### EPSMA Publications – Members

(Not accessible to general public but some may be purchased)



- Energy Efficiency Database: Energy Efficiency No-load Consumption for EPS (Updated 19 March 2014)
- Energy Efficiency Database: Energy Efficiency BCS (Updated 3 Sept 2012)
- Safety Guidelines for Telecom Applications (Final, 3rd September 2012)
- Lead-free soldering – Concerns and Practices (Final issue 1F, 21 Feb 2012)
- AC-DC Power Supply Safety Guidelines for Medical Applications (November 2009)
- AC/DC Power Supply Safety Guidelines for Railway Applications (Nov 2008)
- AC-DC Power Supply Safety Guidelines for Power in Hazardous Locations (Jan 2008)
- HDPUG Applications Guidelines for Board Mounted Power Supplies (Feb 2007)
- AC-DC Power Supply Safety Guidelines for DIN Rail Supplies (Sept 2006)

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15 May 2017

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## Appendix 4

### DALI standard - IEC 62386

DALI is a worldwide standard, specified by the International Electrotechnical Commission (IEC). The DALI protocol is set out in the technical standard IEC 62386.

IEC 62386											
101 – General requirements – System (V1 & V2)											
102 – Control gear (V1 & V2)					103 – Control devices (V2)						
207 LED (V2 in progress)		208 Switching		209 Colour Control		in progress (control gear functions)			in progress (input devices)		
204 LV Halogen		205 Incandescent Dimmer		206 Conversion to DC (0/1-10 V)		222 Thermal lamp information		223 Light compensation over time		22x by colour type	
201 Fluorescent (V1 & V2)		202 Self-contained Emergency (V2 in progress)		203 HD		219 Power measurement		220 Central emergency		221 Load shedding	
						216 Load referencing		217 Thermal gear information		218 Dimming curve selection	
						304 Light sensor		305 Colour sensor		306 Remote Interface	
						301 Push Buttons		302 Absolute input devices		303 Occupancy Sensors	
						312 Feedback		313 Manual configuration			

The DALI working party is not responsible for the publication dates of the standards. For information or updates on the current status of IEC 62386 standardisation, please contact IEC - International Electrotechnical Commission.

#### General requirements

- 101: System
- 102: Control gear
- 103: Control devices

#### Particular requirements for control gear

- 201: Fluorescent Lamps (Device type 0)
- 202: Self-contained emergency lighting (device type 1)
- 203: discharge lamps (excluding fluorescent lamps) (device type 2)
- 204: Low voltage halogen lamps (device type 3)
- 205: Supply voltage controller for incandescent lamps (device type 4)
- 206: Conversion from digital signal into d. c. voltage (device type 5)
- 207: LED modules (device type 6)
- 208: Switching function (device type 7)
- 209: Colour control (device type 8)