62368-1 Activity

February 2013 Update
Introduction
Topics

- Introduction
- Recap: IEC 62368-1
- Status: IEC 62368-1 & National/Regional Versions
- Likely Publication/Adoption Scenarios – Ed. No. 2
- Observations so Far Applying Ed. No. 1
- Related Considerations/Challenges
- Q&A
Objectives

- Facilitate knowledge-sharing on the Standard
- Discuss some concerns expressed by manufacturers and supply chain - and how have they have been addressed by IEC TC108.
- Review associated implementation considerations as we move closer towards global implementation (incl. some lessons learned so far applying Ed. 1)
Recap: IEC 62368-1
What is it?

  - Ed. No. 1 published **January 2010**

- **New Safety Standard for**
  - Audio/Video Equipment, including consumer electronics, professional equipment, and musical instruments,
  - Information Technology Equipment,
  - Office Appliances, and
  - Communication Technology (Telecom) Equipment
What is it?

- A **hazard-based** standard.
- A performance-oriented standard.

- Covers Scopes of previous (legacy) standards:
  - **IEC 60065**, Audio, Video & Similar Electronic Apparatus – Safety
  - **IEC 60950-1**, Information Technology Equipment – Safety

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**UL 60065**

**STANDARD FOR SAFETY**
Audio, Video and Similar Electronic Apparatus – Safety Requirements

**UL 60950-1**

**STANDARD FOR SAFETY**
Information Technology Equipment – Safety – Part 1: General Requirements
What is it not?

- **Not** a simple merger of IEC 60065 & 60950-1!
  - Although many common elements…

- **Not** a generic (*free form*) HBSE Standard!
  - Standard is **only** applicable to products falling under its Scope, w/examples in Annex A
  - Annex A examples are same found in scopes of 60065 & 60950-1
  - Standard has **both** requirements and compliance criteria, either *performance-based* or *prescribed constructions*.
  - Standard is fully compatible with a TRF & IECEE CB Scheme, **and** 3rd Party Mark Certification Programs!
What is it not?

- **Not** a Risk-based Standard!
  - Risk Analysis **not** required (aka, IEC 60601-1, Third Edition) during application & certification.
  - Decision on application of requirements does **not** involve risk considerations...
  - Some *Risk Analysis* was used by IEC TC108 at the technical committee level to develop the actual requirements, e.g., levels/limits associated with Class 1, 2 & 3…
Why?

Less distinction today, in the recent past, and in the future among high-tech products:

- Similar technology,
- Similar marketing/distribution channels,
- Similar use environments,
- Similar users.

Therefore, need a single safety standard that,

- Applies to a broad range of HT products
- Both is technology independent, and allows for introduction of new technology easier
- Allows for more design freedom
- Minimizes need for national/ regional differences
- Preserves information on the rationale for requirements
- Stable, understandable & user friendly; and
- Ultimately leads to design and manufacture of safe products!
Status: IEC 62368-1 & National/Regional Versions
IEC 62368-1, Edition No. 1 & National/Regional Versions

- Published as IEC Standard in **January 2010**
  - Canada, Denmark, Netherlands, South Africa & United States adopted national versions as allowed alternative, or optional safety standards …
  - Europe (CENELEC) – Ed No. 1 was not supported.
    - Wanted further refinement of requirements before adoption….
  - Asia – under close & ongoing study by multiple countries
IEC 62368-1, Edition No. 1

- IECEE CB Scheme for IEC 62368-1 activated under OFF/TRON
  - TRF available – UL originator
  - Multiple CBTLs – including UL offices
  - IECEE CTL activity started, including development of test equipment list...
Top 10 Product Categories in the last 3 years (2009, 2010 and 2011)

OFF & TRON ≈ 56% CB Scheme!
CAN-CSA C22.2 No 62368-1/ANSI-UL 62368-1, Edition No. 1

- Canadian/U.S. Bi-national Standard
  - Published - February 2012
  - SCC & ANSI Approved in Canada & U.S.!
  - Follows IEC TC108 recommendation for countries to adopt Edition No. 1 to gain real experience using the standard to allow for further improvement/refinement in Edition No. 2.
  - **Optional** standard – No formal Effective Date established for mandatory use of Ed. No. 1 in the U.S. & Canada…
  - Gives NA running start on development & adoption of Ed. No. 2 of CSA/UL 62368-1!
Likely Publication/Adoption Scenarios, including Ed. No. 2 status...
Edition No. 2 of IEC 62368-1?

- Currently at CDV stage
- First CDV version did not pass TC108 vote successfully…
  - Concern with External Ignition (candle flame), some SPD applications, etc…
- Second CDV (108/495A/CDV) issued December 7, 2012
  - Activities associated with June 2012 TC108 Meeting (held a UL Northbrook) addressed major Industry concerns…
- National Committee Vote Due: March 1, 2013
- If Vote Successful: CDV --> FDIS --> IS

IEC target publication date remains --> H2 2013 !
Edition No. 2

Assuming Ed No. 2 of IEC 62368-1 published in 2013:

- **Reasonable expectation** -> Europe will adopt Ed. 2 as EN 62368-1, Ed. No. 2
  - Reasonable expectation since IEC Standard has been further refined since Ed. No. 1 and most of the previously expressed, significant concerns have been addressed.
  - If adopted, it likely will have 5 year effective date (DOW)

- Since Europe & NA are two major markets, **Ed. No. 2** likely will result in more universal adoption and global transition from legacy standards
Edition No. 2 of CSA/UL 62368-1?

- Planning by Technical Harmonization Committee (THC) already occurring.
- If TC108 vote successful (March 1, 2013), THC will begin discussing Ed. 2 in-depth and meet again in H2 2013.
- Ed. No. 2 development expected to be streamlined since National Differences (NDs) already developed and published.
  - Edition No. 2 activity will be mostly fine-tuning NDs, update standard & Code references, etc.
- **Target publication date --> Summer 2014 !**
- UL (like EU) likely also will establish 5 year effective date.
Transition (subject to change) :
Legacy AV/ITE Standards → IEC 62368-1

Likely Transition Scenario…

- Last versions of **IEC 60065 (Ed 8) and IEC 60950-1 (Ed 2, Am 2)** also will be published in **2013**…
  - **Europe**: Final versions of **EN 60065 and 60950-1** published in **2013**… (w/likely 3 year effective date (DOW))
  - **CAN/US**: Final versions of **CSA/UL 60065 & 60950-1** published in **2014**… (w/likely 3 year effective date)

*For EU & NA, new certifications of A/V, IT & CT Equipment likely to be required to comply with an IEC 62368-1 based standard beginning around 2018….*
Likely Transition Scenario…

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### Possible EU/NA Transition (subject to change):
Legacy AV/ITE Standards → IEC 62368-1

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High Tech
- IEC and UL 62368-1 - the new Hazard Based Standard
- Advantage Program
- 2012 CES
- Batteries
- Components and Devices

Computing and Peripherals
- Additional Resources
- Effective Date Information
  - UL 60950-1, Second Edition
  - UL 60950-21, First Edition
  - UL 60950-22, First Edition
  - UL 60950-23, First Edition
  - UL 62368-1, First Edition

Effective date information

UL has removed effective date information from UL's Information Technology Equipment (ITE) related Standards, including the new hazard-based standard, UL 62368-1, First Edition. We are now providing effective date information online. This information will be updated as necessary to accurately track the current effective date information for the related Standards. It is recommended to check back here periodically to view the most current effective date information.

Also, UL is piloting a new industry review process associated with UL’s IEC 60950- and 62368-based Standards. See the ITE Sector Review process for an overview.
Observations so Far Applying Ed. No. 1
Sampling of HT Products 62368-1 has been applied to...

- **UL LLC** has experience applying Edition No. 1 of IEC 62368-1 & CSA/UL 62368-1 to the following products:

  - Amplifier
  - Desktop Computer
  - LCD Monitor
  - Notebook computer
  - Power Distribution Unit (PDU)
  - Power Supply (SMPS)
  - Printers
  - Projector
  - Scanner
  - Server
  - TV
Sampling of HT Products 62368-1 has been applied to…

- Some Certifications (UL, CB, etc.) and some Customized Projects (e.g., gap analyses), involving:
  - ODMs/OEMs
  - Component manufacturers
  - Brand owners
Observations

Investigation length compared to 60065 & 60950-1?

- Longer, but mostly due to need to become efficient applying the new standard....
- Some extra time is associated with interaction with manufacturers, who also are only beginning to become familiar with the Standard.
- The technical details of the Standard do not in themselves necessarily translate to longer investigation lengths.

Relative size of TRFs & UL Reports compared to 60065 & 60950-1?

- Depends on the complexity of the product and number of energy sources.
- For relatively simple products, no significant difference.
- For more complex products, the TRF/Report tends to be larger (e.g., +10%), but some of this is due to relative early stage of application and limited number of best practices identified & adopted yet.
Observations

Are product safety engineers using the HB application process when applying the Standard?

- Generally, yes.
- The nature & structure of the Standard, the HB process (i.e., identify & classify energy sources, identify & qualify safeguards) is more practical from an engineering application perspective.
HBSE Application Process

Application Practice of 62368-1 during 3rd party certification...

- e.g., via initial review of product & schematics....
- e.g., via measurements to determine energy levels, Class 1, 2 or 3...
- e.g., via detailed product review and analysis of design, construction & circuits, including identification of safeguards, such as insulation & critical components...
- e.g., via performance tests, or use of allowed prescribed constructions, including safety critical components...
- e.g., via test compliance criteria, or confirmation of compliance w/requirements for prescribed constructions...

Application by Product Designers/Engineers, aka Manufacturers, ODMs, etc…
Observations

Since IEC 62368-1 is more *performance-oriented* than 60065 & 60950-1, is there much more time spent testing per the new standard versus the test time for the legacy standards?

- Again, being a new standard, it will take some time to incorporate some efficiencies into performance testing. Therefore, there is some more time spent conducting performance testing.
- However, prescriptive constructions options often are being used, so there is not always significantly more testing required.
- One area that can take time is measurement of PS1, PS2, PS3, PIS, etc. for the Electrically-caused Fire clause (6).
  - Similar measurements were in 60065 previously, but not 60950-1.
What do we mean by performance oriented?

- Example 1 - Bottom Enclosure Openings (S.3)
  - Performance Option: Hot Flaming Oil Test
  - Construction Options (w/ proven track record in legacy standards):
    - 2x2 mm mesh,
    - perforated panels,
    - openings 1mm in length regardless of length, etc.

- Example 2 – Min. Clearances Based on Electric Strength Test (5.4.2.8)
  - Performance Option: Electric Strength Test
    - w/ minimum spacing requirement
  - Construction Option: More traditional prescriptive spacing requirement
Observations

Is the new 62368-1 standard difficult to understand technically?

- It appears not unreasonably so - its HB structure is relatively straightforward.

- The Rationale Document (IEC TR 62368-2) assists in understanding the background/intent.

- Also, having familiarity with the planned changes for Ed. No. 2 further eases the understanding (intent) and application of the Standard - UL is helping with this knowledge sharing!

Are most products investigated to the Standard so far in compliance with the Standard?

- So far, most appear to be, but too soon to draw any firm conclusions.
Observations

Any best practices identified yet?

- Because of the HB process, it is very helpful to have color-coded schematics to more efficiently identify Energy Source Classifications, e.g., \text{green} = \text{ES1}, \text{yellow} = \text{ES2}, \text{red} = \text{ES3}.
- Similarly identifying the same information on printed circuit board topography/layouts of safety critical printed boards also is helpful.
- If manufacturers provide this descriptive information to the certifier to verify, as needed, the investigation is more efficient.
Example for color-coded schematic

green = ES1, yellow = ES2, red = ES3
Related Considerations/Challenges
Components & Supply Chain

Concerns:

- **End product/system manufacturers** adopting IEC 62368-1 now will not have enough component suppliers with components investigated/certified to IEC 62368-1.

- **Component manufacturers** adopting IEC 62368-1 now will not be able to accommodate their end product/system customers still using IEC 60065 or IEC 60950-1.
Components & Supply Chain

Solutions:

IEC 62368-1:

4.1.1 Application of requirements and acceptance of materials, components and subassemblies

Components and subassemblies that comply with IEC 60950-1 or IEC 60065 are acceptable as part of equipment covered by this standard without further evaluation other than to give consideration to the appropriate use of the component or subassembly in the end-product.

Provision should ease transition & implementation!
Components & Supply Chain (cont’)

Solutions:

IEC 60065 & 60950-1:

1.5.1 (60950-1) Components and subassemblies that comply with IEC 62368-1 are acceptable as part of equipment covered by this standard without further evaluation other than to give consideration to the appropriate use of the component or subassembly in the end-product.

Will allow for backwards compatibility of 62368-1!
Will further ease of transition & implementation!
Codes & Regulations

- NFPA 70-2011, National Electrical Code (NEC)
  - US Electrical Installation Code - numerous references to UL 60950-1 need updating
  - Currently in Year 2014 Review Cycle, i.e., NFPA 70-2014
  - Proposals to update NEC submitted by UL.
Codes & Regulations

- OSHA NRTL Program

  - UL 62368-1 being added to Scope of UL NRTL
  
  - NRTL system inherently accommodates updated & new standards
  
  - Do **not** anticipate the same issues as with AAMI 60601-1 Third Edition since *Risk Management not* part of application of UL 62368-1...
Knowledge Exchange & Training Opportunities

IEC TR 62368-2 – Audio/video, information and communication technology equipment – Part 2: Explanatory information related to IEC 62368-1

- *Essential* accompaniment to 62368-1.
- Proposed Ed. No. 2 of TR 62368-2 contains many updates and improvements!
IEEE PSES Local Chapters & ISPCE...

Chapter Announcements

The Chapter Chair conference call is the last Tuesday of every month. Contact Thomas Ha for details.

- There is a group working on forming a chapter in the UKRI Section. Please contact Doug Nix if you have questions.
- The Denver Section's web site announces that they are looking for members interested in starting an IEEE PSES Chapter in Colorado. Contact Richard Georgian.
- Those in the Dallas/Ft. Worth area interested in starting a chapter should contact Jonathan Jordan.
- Those in Southern California interested in starting a chapter should contact Charles Bayhi.
- Those in the area of Milwaukee, WI contact Dan Nachtigall.
- Those in West Virginia contact Scott Kiddle.
- Those in Japan please contact Hiroshi Sasaki.
- Those in Singapore please contact Richard Gao Xianke Ph.D.
- Those in Ohio (southeast part of state) interested in starting a chapter, please contact Jim Bacher.
- Those in Argentina interested in starting a IEEE-PSES chapter or joint chapter with another society, please contact Silvia Diaz Monnier.

Want to start a Chapter or find out how to run your existing Chapter? Read the best practices summary and download the PSES Chapter Guide. Rules for starting a Chapter were revised by the IEEE effective 1-Jan-2012. Petition forms and instructions can be found on the IEEE Geographic Unit Formation page under technical chapter.

See the Society Members Only section of the website for presentations that can be used for Chapter meetings. The list of presentations currently available are:

- Certifying 802.11 Devices by Jim Bacher
- Touch Current Measurement Comparison by Pete Perkins
- EMC Regulations and Standards Workshop by Henry Benitez
- How to avoid being the next Toyota as presented at the April 2010 Santa Clara Valley Chapter meeting
- 2010 Symposium Review as presented at the Central Texas chapter

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WHAT THE CHAPTER DOES

The Orange County, California Chapter of the IEEE Product Safety Engineering Society holds monthly technical presentations on cutting edge topics relating to Product Safety Engineering. The meetings are free, open to everyone, and typically include dinner. These meetings are a great place to network with other product safety professionals, expand your technical knowledge, keep up to date on the ever-changing safety standards, and enjoy a great meal with your colleagues. These meetings are a great forum to address questions we all have from time to time. Check out our Calendar page for the date of the next meeting!

Information and Communication
Technology Equipment – Part 1: Safety Requirements, UL 62368-1

Section 5
Electrically Caused Injury

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CPSM Corporation
Knowledge Exchange & Training Opportunities

UL.com -> Home > Industries > High Tech > Computing and Peripherals > New Hazard Based Standard: IEC 62368-1

New Hazard Based Standard: IEC 62368-1

On Jan. 10, 2010, IEC 62368-1 Ed 1.0: Audio/Video, Information and Communication Technology Equipment – Safety Requirements, was published as an International Standard. Not only will this new standard replace the current standards for these product categories, it is also an important milestone for safety standards to move from the traditional, prescriptive approach to a new, hazard-based approach that emphasizes safety design in the early product development phase.

The earlier manufacturers understand the Hazard Based Safety Engineering (HBSE) concept, the faster they can meet the challenges and transition to the new standard smoothly.

UL has been serving on various national committees involved in the development of IEC 62368-1 and is your resource for HBSE knowledge and information on hazard-based standards development.

Check this site often for more technical information and updates.

Training Resources
Standard Updates
Knowledge Exchange & Training Opportunities


- White Paper

- Instructor & On-line Training

- Comparison Matrixes (62368-1 vs. 60065/60950-1)

- 30 + Technical Briefs on variety of 62368-1 Topics
Knowledge Exchange & Training Opportunities

- **Technical Briefs - 2012**
  
  What is IEC 62368-1; What is it Not? (March 16, 2012) (registration required)

- **Technical Briefs - 2011**
  
  
  
  - IEC 62368-1 Technical Brief: Requirements for Circuits Supplying External Wiring (February 11, 2011) (registration required)
  
  - IEC 62368-1 Technical Brief: Requirements For Protective Conductors Used as Safeguards (May 13, 2011) (registration required)
  
  - IEC 62368-1 Technical Brief: Requirements for Investigation of Safeguard Robustness (May 27, 2011) (registration required)
  
  - IEC 62368-1 Technical Brief: Requirements for Wound Components (June 10, 2011) (registration required)
  
  - IEC 62368-1 Technical Brief: Classification & Electrical Measurement of PS1, PS2 and PS3 Power Sources (July 3, 2011) (registration required)
LinkedIn HBSE Group: 
Ongoing 62368-1 Updates. Please join!

Best Electrical Software - Simplify Your Software Selection. Get Free Pricing from Top Vendors Today!

UL - Hazard Based Safety Engineering

For the information of the group, the ATIS Protection Engineers Group (PEG) will be holding their annual learning conference in San.

I / UL will be presenting a session titled: "Surge Protection: Safety Requirements for Surge Protectors and Grounding at the Customer..."

posted 11 days ago

sw chen 5 days ago • sw likes this.

If we had a database of common hazards for various product categories, wouldn’t it help the CPSC and others??

GAO reports on CPSC’s challenges in addressing product safety

posted 25 days ago

John Allen 19 days ago • Thanks guys. It does seem Standards are the best place for this. Can you imagine the day the hair dryer Standard, for example, lists all..."
**More Information**

www.ul.com -> High Tech

**High-Tech Direct**

Your Connection to Trends in Technology, Standards and Regulations

**UL Hazard Based Safety Engineering**

> Connect with us on LinkedIn

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**IEC 62368-1 Technical Brief**

**Planned Changes to IEC 62368-1 for Edition No. 2**

Ikuro Kinno, UL Japan, Inc.

Florence Chiang, Underwriters Laboratories Taiwan Co., Ltd.

December 19, 2011

This technical brief is one in an ongoing series of briefs that are intended to provide an introduction to key concepts and requirements covered in the new safety standard for audio/video, information and communication technology equipment, IEC 62368-1.
Thank you for your interest…

Updates to be provided regularly…

Check back soon !