Section 3
Terms and Definitions

Copyright © 2012 Charles Bayhi
Permission to copy if attribution is included
CPSM Corporation
Safety Requirements, UL 62368-1

• **Background**
  - Is intended to ultimately **replace** IEC 60065 and IEC 60950-1;
  - IEC Standard initially published in 2010 with a minimum five (5) year effective date that is being recommended by IEC TC108;
  - Its Test Report Form (**TRF**) has been published;
  - Publication of national standards based on IEC 62368-1 expected to follow after the publication of IEC 62368-1.
    - It is hoped that National/Regional Committees will adopt effective dates that will coincide with the effective date timing recommended by IEC TC108, but this cannot be guaranteed.
    - Since the five-year transition period is the **best case scenario**, there’s **no guarantee** that one or more **regulators** will not adopt the standard sooner.
    - **Retailers** and other major **customers** may demand a product to be certified to IEC 62368-1 sooner than the transition period.
Safety Requirements, UL 62368-1

- **Background**
  - **IEC 62368-1/UL 62368-1**
    - New Safety Standard for
      - *Consumer Electronic* (Audio/Video) Apparatus,
      - *Information Technology Equipment*, and
      - *Communication Technology Equipment*
    - **NOT** a simple *merger* of IEC 60065 and IEC 60950-1
  - **IEC 62368-1 published 2010-01-21**
    - (www.ansi.org – cost $370 US)
  - **UL 62368-1 published 2012-2-17**
  - **CSA 62368-1-12 published 2012-2-17**
    - (www.shop.csa.ca – cost $330 US)
Safety Requirements, UL 62368-1

- **Background**
- **IEC 62368-1**
  - Its **scope** is broad and inclusive of the current IEC 60065 and IEC 60950-1.
  - Follows a different approach to safety using **HBSE** principles – but it is **not** a full HBSE or Risk Based standard – it relies on performance tests to demonstrate safety.
  - It’s Hazard Based approach is different than that of the more prescriptive approach taken by the existing standards, i.e., IEC 60065 and IEC 60950-1.
Safety Requirements, UL 62368-1

• Workshop Format
  • Series of presentations
  • Each presentation will go thru the standard, Section by Section
    • Section 0, Principles of Product Safety,
    • Section 1, Scope (skip)
    • Section 2, Normative References (skip)
    • Section 3, Terms and Definitions
    • Section 4, General Requirements
    • Section 5, Electrically Caused Injuries
    • Section 6,
  • Open discussion
3.2.1 Terms in alphabetical order

Term Description
- ES Electrical energy source
- ES1 Electrical energy source class 1
- ES2 Electrical energy source class 2
- ES3 Electrical energy source class 3
3.2.1 Terms in alphabetical order

- Term Description
  - MS Mechanical energy source
  - MS1 Mechanical energy source class 1
  - MS2 Mechanical energy source class 2
  - MS3 Mechanical energy source class 3
3.2.1 Terms in alphabetical order

- **Term Description**
  - PS Power source see 6.2
  - PS1 Power source class 1
  - PS2 Power source class 2
  - PS3 Power source class 3
### 3.2.1 Terms in alphabetical order

**Term Description**
- RS Radiation energy source see 10.2
- RS1 Radiation energy source class 1
- RS2 Radiation energy source class 2
- RS3 Radiation energy source class 3
3.2.1 Terms in alphabetical order

- Term Description
  - TS Thermal energy source see 9.2
  - TS1 Thermal energy source class 1
  - TS2 Thermal energy source class 2
  - TS3 Thermal energy source class 3
3.3.1 Circuit terms

3.3.1.1 external circuit – electrical circuit that is external to the equipment and is not mains

NOTE An external circuit is classified as ES1, ES2 or ES3, and PS1, PS2, or PS3.
3.3.1 Circuit terms

3.3.1.2 mains – a.c. or d.c. power distribution system (external to the equipment) that supplies operating power to the equipment and is PS3
   - NOTE Mains include public or private utilities and, unless otherwise specified in this standard, equivalent sources such as motor driven generators and uninterruptible power supplies.

3.3.1.2DV D2 Modify 3.3.1.2 by adding the following text:

3.3.1.3DV.1 telecommunication network – metallically terminated transmission medium intended for communication between equipment that may be located in separate buildings, excluding:
   - the mains system for supply, transmission and distribution of electrical power, if used as a telecommunication transmission medium;
   - cable distribution systems;
   - ES1 circuits connecting units of audio/video, information and communication technology equipment.
• **3.3.3 Equipment terms**
  
  • **3.3.3.5 pluggable equipment type A** – equipment that is intended for connection to the mains via a non-industrial plug and socket-outlet (IEC/TR 60083 or national equivalent) or via a non-industrial appliance coupler (IEC 60320-1), or both
  
  • **3.3.3.5DV DE** Modify 3.3.3.5 by adding the following NOTE:
    
    - NOTE 1-15, 2-15, 2-20, 5-15 and 5-20 plugs and outlets as specified in IEC/TR 60083 are considered to be non-industrial within the meaning of this standard.
Safety requirements, UL 62368-1

- 3.3.6 Miscellaneous
  - 3.3.6.6 restricted access area – area accessible only to skilled persons and instructed persons with the proper authorization
3.3.7 Operating and fault conditions

- 3.3.7.8 reasonably foreseeable misuse – use of a product, process or service in a way not intended by the supplier, but which may result from readily predictable human behaviour.
3.3.8 Persons

3.3.8.1 instructed person – person instructed or supervised by a skilled person as to energy sources and who can responsibly employ equipment and precautionary safeguards with respect to those energy sources

- NOTE: Supervised, as used in the definition, means having the direction and oversight of the performance of others.

3.3.8.2 ordinary person – person who is neither a skilled person nor an instructed person

3.3.8.3 skilled person – person with relevant education or experience to enable him or her to avoid dangers and to reduce the likelihood of risks that may be created by the equipment
3.3.9 Potential ignition sources

3.3.9.1 potential ignition source PIS – location where electrical energy can cause ignition

3.3.9.2 arcing PIS – location where an arc may occur due to the opening of a conductor or a contact
- NOTE 1 An electronic protection circuit or additional constructional measures may be used to prevent a location from becoming an arcing PIS.
- NOTE 2 A faulty contact or interruption in an electric connection that may occur in conductive patterns on printed boards is considered to be within the scope of this definition.

3.3.9.3 resistive PIS – location where a component may ignite due to excessive power dissipation
3.3.11 Safeguards

- **3.3.11.1 basic safeguard** – safeguard that provides protection under normal operating conditions and under abnormal operating conditions whenever an energy source capable of causing pain or injury is present in the equipment.
- **3.3.11.2 double safeguard** – safeguard comprising both a basic safeguard and a supplementary safeguard.
- **3.3.11.3 equipment safeguard** – safeguard that is a physical part of the equipment.
3.3.11 Safeguards

- 3.3.11.4 installation safeguard – safeguard that is a physical part of a man-made installation
- 3.3.11.5 instructional safeguard – instruction invoking specified behaviour to avoid contact with or exposure to a class 2 or class 3 energy source (see 4.2)
- 3.3.11.6 personal safeguard – personal protective equipment that is worn on the body
- 3.3.11.7 precautionary safeguard – instructed person behaviour to avoid contact with or exposure to a class 2 energy source based on supervision or instructions given by a skilled person
3.3.11 Safeguards

3.3.11.11 reinforced safeguard – single safeguard that is operational under:

- normal operating conditions,
- abnormal operating conditions, and
- single fault conditions
3.3.11 Safeguards

3.3.11.14 **skill safeguard** – skilled person behaviour to avoid contact with or exposure to a class 2 or class 3 energy source based on education and experience

3.3.11.15 **supplementary safeguard** – safeguard applied in addition to the basic safeguard that is or becomes operational in the event of failure of the basic safeguard
3.3.11 Safeguards

3.3.16.5 personal protective equipment – PPE – personal safeguard, typically worn on the body, that reduces the known exposure of a person to a class 3 energy source.
Safety requirements, UL 62368-1