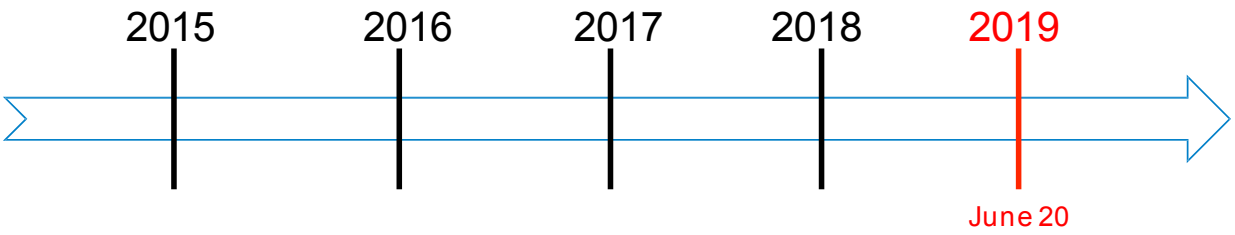
Regulatory Compliance Engineering News

Issue 11: May 2015

UPCOMING REGULATORY REQUIREMENTS

1. IEC / EN60950-1 will soon be replaced by IEC / EN62368-1



IEC / EN60950-1 (Safety Standard for ITE) is to be withdrawn by June 20, 2019. All application for European safety certification for ITE (i.e. TUV, Demko, Nemko, etc.) from June 20, 2019 onwards should be under EN62368-1.

This is a challenge for all power supply manufacturers to adopt the new standard the soonest possible to ensure avoid future redesigns.

EUROPEAN STANDARD **EN 62368-1**
NORME EUROPÉENNE
EUROPÄISCHE NORM August 2014

ICS 33.160.01; 35.020

English Version

Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 62368-1:2014, modified)

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-06-20
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2019-06-20

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There are 2 major compliance challenges introduced by the new standard:

A. Touch temperature limits for accessible parts

	Accessible parts [a]	Maximum temperature (T_{max}) °C			
		Metal [f]	Glass, porcelain and vitreous material	Plastic and rubber	Wood
TS1	Handles, knobs, grips, etc., and external surfaces either held, touched or worn against the body in normal use (> 1 min) [b] [c]	48	48	48	48
	Handles, knobs, grips, etc., and external surfaces held for short periods of time or touched occasionally (> 10 s and < 1 min) [c]	51	56	60	60
	Handle, knobs, grips etc., and external surfaces touched occasionally for very short periods (>1 s and < 10 s) [c]	60	71	77	107
	External surfaces that need not be touched to operate the equipment (<1 s) [c]	70 [d]	80 [d]	94 [d]	140
TS2	Handles, knobs, grips, etc., and external surfaces held in normal use (> 1 min) [c]	58	58	58	58
	Handles, knobs, grips, etc., and external surfaces held for short periods of time or touched occasionally (> 10 s and < 1 min) [d]	61	66	70	70
	Handle, knobs, grips etc., and external surfaces touched occasionally for very short periods (> 1 s and < 10 s) [d]	70	81	87	117
	External surfaces that need not be touched to operate the equipment (< 1 s) [d]	80 (100) [e]	90 (100) [e]	104	150
TS3	Higher than the TS2 limits				

Affected Products:

- External power supplies
- Component type power supplies with an external surface that maybe accessed by Ordinary or Informed Person (i.e. service personnel).

Note:

i) More stringent limits as compared to IEC / EN60950-1

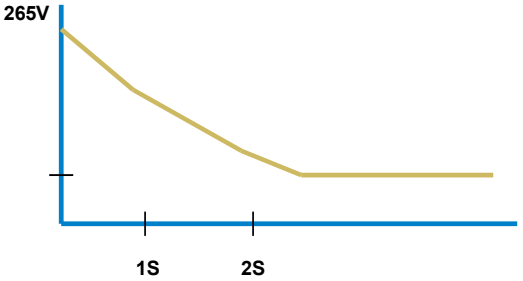
ii) The touch period for touchable sides or parts (other than handle) of a component type power supply is to be defined by manufacturer according to its practical application. This has to be coordinated also with customer to ensure that they agree.

iii) Temperature limit for external power supply (i.e. AC/DC adapter / charger) shall refer to < 1s touch time.

iv) TS1 refers to Thermal Energy Source Level 1 applicable for areas that can be accessed by Ordinary Person (i.e. operator, user), normal condition

v) TS2 refers to Thermal Energy Source Level 2 applicable for areas that can be accessed by Informed Person (i.e. service personnel) at normal condition. Limit for Ordinary person during fault conditions (i.e. overload or short circuit faults) should refer to TS2.

B. Capacitor Discharge – Residual Voltage 2 seconds after disconnection of the mains supply.



Safeguards against capacitor discharge after disconnection of a connector
Where a capacitor voltage becomes **accessible** upon disconnection of a connector (for example, the **mains** connector) the **accessible** voltage measured **2 s** after disconnection of the connector, shall comply with:
the ES1 limits of Table 5 under **normal operating conditions** for an **ordinary person**; and
the ES2 limits of Table 5 under **normal operating conditions** for an **instructed person**; and
the ES2 limits of Table 5 under **single fault conditions** for both an **ordinary person** and an **instructed person**.

C nF	ES1 *U*peak V	ES2 *U*peak V	ES3 *U*peak V
300 or greater	60	120	> ES2
170	75	150	
91	100	200	
61	125	250	
41	150	300	
28	200	400	
18	250	500	
12	350	700	
8,0	500	1 000	
4,0	1 000	2 000	
1,6	2 500	5 000	
0,8	5 000	10 000	
0,4	10 000	20 000	
0,2	20 000	40 000	
0,133 or less	25 000	50 000	
Linear interpolation may be used between the nearest two points.			

The new standard introduced a “single fault” condition which can be considered as opening of any of the resistor in the discharge path where the limits for ES2 would apply. This is a challenge for currently certified power supplies evaluated without such fault condition and maybe subject to PCB re-spin to accommodate additional resistor in parallel.

Good news is that the IEC/EN62368-1 has a provision for waiving the single fault condition if the resistor is compliant to Clause G.10.2 which is an additional test involving thermal cycling, impulse test and resistance verification to be done by safety agency laboratory. This will involve

additional test fee.

Recommended Plan: Identify the common ratings and types of resistor that can be submitted to safety agency for testing according to Clause G.10.2 of IEC/EN62368-1.

Note:

a) ES1 limits apply to the touch voltage for Ordinary person. It is expected that this would be the default requirement for every product.

b) ES2 limits apply to the touch voltage for Informed Person.

Backward compatibility during the Transitional Period:

End Product may start applying for EN62368 certification using power supplies certified according to EN60950-1 but will only be valid before June 20, 2019. It would therefore be expected that customers may not be pushing for this approach.

Expectations for New Programs:

Power Supply Engineers should start considering compliance to IEC/EN62368 to avoid the need for future redesigns.

Having an IEC 62368 CB report for new programs is also preferred.

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3. General Reference Date for Certification Validity

It has always been understood that Safety Certification validity was aligned to the manufacturing date or the ship out date. However, based on the recent clarification by safety agencies, it depends on the country of destination. Refer below for the quick guide for the reference certification validity per corresponding countries:

- **US/Canada & European Safety Agencies**
  - **Requires valid certification before ship-out of products from the factory.**

- **China, Taiwan, Korea and other countries**
  - **Requires valid certification at the date of entry to their respective country.**

Concern will be when PSU's are stocked in a hub (outside the factory locations) and shall be shipped to country of destination where it should have a valid certification at the time of entry.

This would mean special attention on the treatment for Active or EOL status or instructions to Product Safety teams on the maintenance to Certification.