



**IECEE OD 2055**

Edition 2.2 2020-06-03

# **IECEE OPERATIONAL DOCUMENT**

**IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System)**

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**Operational Document on Medical Electrical Equipment in the CB Scheme according to the IEC 60601 and ISO/IEC 80601 Series of Standards**





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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

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## FOREWORD

**Document Owner**

CMC WG 29 "Certification"

<b>Revision Date</b>	<b>Brief summary of changes</b>
2017-03-01	Update to document based on CMC Decision 055/2015
2020-01-07	Clarification of the standards for Annexes A, B, C; Update to sections 3 and 4
2020-06-03	Title of OD updated as per CMC Decision 31/2020 to read: "Operational Document on Medical Electrical Equipment in the CB Scheme according to the IEC 60601 and ISO/IEC 80601 Series of Standards"

<b>Effective Date</b>	<b>Next maintenance due date</b>
2021-01-01	2024-01-01

## 1 General

### 1.1 Scope

This Operational Document (OD) addresses:

- The application of the Collateral and related Standards for medical electrical equipment when issuing a CB Test Certificate and Report according to the IEC 60601 and IEC/ISO 80601 Series of Standards.
- It defines the minimum expectations for Collateral standards to be applied in the investigation of medical electrical equipment submitted for the purpose of obtaining a CB Test Certificate.
- It addresses the application of Risk Management for Power Supplies used in Medical equipment.

### 1.2 Purpose

The purpose of this OD is to provide instructions to all parties involved in issuing CB Test Reports and Certificates for medical electrical equipment and to ensure the consistent application of IECEE CB Scheme requirements in order to facilitate the acceptance of CB Test Certificates among IECEE members.

## 2 Use of Collateral and Related Standards in CB Test Reports according to the IEC 60601 and IEC/ISO 80601 Series of Standards

### 2.1 General

The IEC 60601 series of standards contains requirements concerning BASIC SAFETY and ESSENTIAL PERFORMANCE that are generally applicable to MEDICAL ELECTRICAL EQUIPMENT. For certain types of MEDICAL ELECTRICAL EQUIPMENT, these requirements are either supplemented or modified by the special requirements of a collateral or particular standard. As noted in Clause 1.3 of IEC 60601-1, applicable collateral standards are normative at the date of their publication and are to be applied together with the general standard.

### 2.2 Use of Collateral Standards for IECEE Certification

Currently, manufacturers of MEDICAL ELECTRICAL EQUIPMENT may apply for IECEE CB Scheme Test Certificates to three different editions of the IEC 60601 family, specifically: Edition 2, Edition 3 and Edition 3 with Am. 1. Because the collateral and related Standards include special requirements for application to MEDICAL ELECTRICAL EQUIPMENT, they are normative when applicable. However; IECEE has established protocols for certification and data exchange for select collateral and related standards, allowing NCBs to exclude some of these standards as part of the CB Test Report. In cases where the compiled CB Test Report does not include reports for these selected standards, the verification of compliance rests with the manufacturer.

### 2.3 Collateral Tables

Tables specifying the collateral and related standards that are normative for IECEE certifications to the various editions of the IEC 60601 and IEC/ISO 80601 Series of Standards are specified in the Annexes A, B and C to this OD as follows:

[Annex A](#) - Use of Standards in the IECEE system according to the IEC 60601-1:1988 with A1 and A2.;

[Annex B](#) - Use of Standards in the IECEE system according to the IEC 60601-1:2005;

[Annex C](#) - Use of Standards in the IECEE system according to the IEC 60601-1:2005 + A1:2012

## 3 CERTIFICATION OF POWER SUPPLIES ACCORDING TO IEC 60601-1: 2005 and IEC 60601-1:2005 with Am.1:2012

### 3.1 General

For this section, the following definitions apply:

Component Power Supply – A power supply that is incomplete and cannot be used without incorporation into a MEE/MES (e.g. Open Frame Power Supply with no enclosure).

Stand-Alone Power Supply – A power supply that is a complete device, provided with a connection to a SUPPLY MAINS (e.g. appliance inlet or power supply cord) and a full enclosure that is intended to be used without modification or incorporation into an MEE/MES. Typically this is a power supply with no or very limited user interface such as a “brick” power supply or a direct plug-in power supply.

Note: An Uninterruptible Power Supply (UPS) is not to be considered a stand-alone power supply. As such this section does not pertain to these products.

The evaluation of the Risk Management Process may be excluded using the following or equivalent wording: “The risk management requirements were not addressed.” Alternatively, the evaluation of such power supplies may include the full Risk Management Process using the entire standard IEC 60601-1:2005 or IEC 60601-1:2005 with AMD1:2012. See the below certification scenarios.

### 3.2 Possible certification scenarios:

- 1) A Component Power Supply may be certified to a number of standards other than IEC 60601-1:2005 or IEC 60601-1:2005 with AMD1:2012. If that Component Power Supply is subsequently incorporated into a medical electrical equipment or system, the complete equipment including the power supply will be evaluated for certification against all applicable clauses/requirements of IEC 60601-1:2005 or IEC 60601-1:2005 with AMD1:2012, including all applicable risk management requirements.
- 2) A Component Power Supply or a Stand-Alone Power Supply can be issued its own CB Test Certificate to IEC 60601-1:2005 and IEC 60601-1:2005 with AMD1:2012. where the supplier does not perform a Risk Management Process as required by IEC 60601-1.

The CB Test Certificate shall have the Risk Management Process exclusion clearly stated;

- All applicable type testing required for power supplies shall be performed and the CB Test Certificate shall have the Risk Management Process exclusion clearly stated;
- In cases where compliance with a requirement relies entirely on Risk Management Process, the Power Supply manufacturer must provide documentation indicating how the relevant clauses were addressed (for example, IEC 60601-1:2005, Clauses 8.10.1, 8.10.2, 8.10.5, and 8.11.5);
- Partial application of the Risk Management Process is not permitted. If the Risk Management Process is used to modify/reduce any requirement in the standard then the Full Risk Management Process must be performed using the entire standard IEC 60601-1:2005, 3rd Edition or IEC 60601-1:2005 with Am.1:2012, as applicable.

Note: The following wording must be used on the Certificate when the risk management process was not assessed: “The risk management requirements of the standard were not addressed.”

- 3) Power supplies meant for specific use in Medical Electrical Equipment (e.g. Medical Grade High Voltage Power Supplies/Generators for X-Ray Equipment) must additionally meet the applicable requirements from relevant particular standards (e.g. IEC 60601-2-43, IEC 60601-2-54).

### 3.3 When Risk Management is not part of the evaluation, the following or equivalent wording shall be included in the TRF and the CB certificate: “The risk management requirements were not addressed” Additional considerations for certification of stand-alone and component power supplies – Application of [Annex B](#) or [Annex C](#) as applicable.

Component Power Supplies may also be exempt from the requirements of [Annex B](#) or [Annex C](#) as applicable, provided any applicable collateral standards not evaluated are specifically indicated on the Certificate using the following or equivalent wording: “Compliance with IEC 60601-1-XX was not evaluated for the models covered by this Certificate.”

Stand-Alone Power Supplies are subject to the requirements of [Annex B](#) or [Annex C](#) as applicable and all applicable collateral standards must be applied except as noted in [Annex B](#) or [Annex C](#), as appropriate.

**3.4** Component Power Supplies and Stand Alone Power supplies evaluation for Usability may be excluded using the following or equivalent wording;” The Usability evaluation has not been addressed”. This statement should be in the TRF and on the certificate. Alternatively, the evaluation of the power

supplies may include Usability evaluation using the requirements stated in IEC 60601-1:2005 or IEC 60601-1:2005 with AMD1:2012. .

#### **4 CERTIFICATION OF COMPONENTS ACCORDING TO IEC 60601-1: 2005 and IEC 60601-1:2005 with Am.1:2012**

The IECEE MEE RM Task Force considered the issue of certification of components that may be incorporated into medical electrical equipment which are intended to be certified to IEC 60601-1:2005, 3rd Edition and IEC 60601-1:2005 with Am.1: 2012.

At the present time, only component power supplies have established methods for handling these issues which have been formalized through a CMC Decision (See Clause 3 of OD 2055).

It is noted that there are generally two cases of medical-specific components:

1. Those where a Particular Standard (IEC 60601-2-XX) explicitly addresses and establishes requirements for sub-assemblies, accessories and similar modules, as illustrated by the following examples:
  - IEC 60601-2-2: Particular requirements for the basic safety and essential performance of high frequency surgical equipment and high frequency surgical accessories
  - IEC 60601-2-28: Particular requirements for the basic safety and essential performance of X-ray tube assemblies for medical diagnosis (Scope includes X-RAY TUBE ASSEMBLIES and components thereof)
2. Those where a Particular standard currently does not explicitly address and establish requirements for sub-assemblies, accessories and similar modules, as illustrated by the following examples:
  - IEC 60601-2-26: Particular requirements for the basic safety and essential performance of electroencephalographs
  - IEC 60601-2-35: Particular requirements for the basic safety and essential performance of heating devices using blankets, pads or mattresses and intended for heating in medical use

From a Certification perspective, it is only possible to formalize the method of handling Risk Management and Essential Performance of the Case 1 components, due to the fact that explicit requirements exist in a Part 2 Standard. It may be possible to address the Case 2 components at some time in the future, pending development of formal requirements by the associated IEC Technical committee responsible for the Part 2 standard involved.

For the Case 1 components, the RM Task Force recommends the following to establish consistent practices in Certification:

- 1.1 Test Report Forms for the involved Part 1 and Part 2 standard are mandatory and must be applied in full.
- 1.2 What can and cannot be excluded and how to report it -
  - The CB report must address all applicable clauses involving basic safety and safety testing. All practical testing would need to be conducted, such as input, heating, leakage current, component failure, dielectric, etc.
3. Clauses involving Essential Performance should be marked N/A, and the TRF should clearly indicate that Essential Performance was not considered under the general section of the report,

unless the component is a stand-alone device where the aspect of the standard can be applied. Further, the TRF shall state that it is the responsibility of the end-product manufacturer to consider Essential Performance aspects of the component as it is applied in the end-equipment (see 1.3 below).

4. Any requirement from the Part 1 or Part 2 standard for which compliance cannot be verified due to the nature of the component should be marked N/A and it must clearly indicate that this requirement must be addressed in the end-product, (example, component has no enclosure and will rely on the end product enclosure to satisfy accessibility requirements).
5. 1.3 Disclaimer on CB Test Certificate:
  - Where the manufacturer does not perform the Risk Management Process the exclusion shall be clearly stated with the following or equivalent wording:

“The risk management requirements were not addressed.”
  - The CB test certificate would have to indicate that Essential Performance was not evaluated. Typical statement on the certificate should read:

“Essential Performance of this component was not evaluated”.
  - The only exception to this would be for an accessory, where it is possible to assess Essential Performance on the accessory alone and where the accessory would not impact the overall systems essential performance.



**Annex A - Use of Standards in the IECEE system according to the IEC 60601-1 2<sup>nd</sup> edition**

IEC 60601-1 2 <sup>nd</sup> edition (including Am. 1 & Am. 2) for Medical Electrical Equipment – Part 1: General Requirements for Safety	Collateral and Related standards Required to be included in CBTC		Acceptable to issue a separate CBTC and CBTR	
	Yes	No	Yes	No
Standards				
IEC 60601-1-1, ed. 2:2000, Medical electrical equipment - Part 1-1: General requirements for Safety - Collateral standard: Safety requirements for medical electrical systems	X			X
IEC 60601-1-2, ed. 2:2000 and Am.1:2004, Medical electrical equipment - Part 1-2: General requirements for Safety - Collateral standard: Electromagnetic compatibility - Requirements and tests		X	X	
IEC 601-1-3, ed1:1994 Medical electrical equipment - Part 1-3: General requirements for Safety - Collateral Standard: Radiation protection in diagnostic X-ray equipment	X			X
IEC 60601-1-4, ed1:1996 and Am.1:1999, Medical electrical equipment - Part 1: General requirements for Safety - Collateral standard: Programmable electrical medical systems		X		X
IEC 60601-1-6, ed1:2004, Medical electrical equipment - Part 1-6 General requirements for Safety - Collateral standard: Usability		X		X
IEC 60601-1-8, ed1:2003 and Am.1:2006, Medical electrical equipment - Part 1-8: General requirements for Safety - Collateral Standard: General requirements, tests and guidance for alarm systems in medical electrical equipment and medical electrical systems	X			X
ISO 10993-1, ed. 3:2003 – Biological evaluation of medical devices — Part 1: Evaluation and testing		X		X

## Annex B - Use of Standards in the IECEE system according to the IEC 60601-1 3<sup>rd</sup> edition

IEC 60601-1 3rd edition (2005-12)*, Medical Electrical Equipment, Part 1: General Requirements for Basic Safety and Essential Performance	Collateral & Related Standards Required to be included in CBTC		Acceptable to issue a separate CBTC and CBTR	
	Yes	No	Yes	No
<b>Standards</b>				
IEC 60601-1-2, ed. 3:2007, Medical electrical equipment - Part 1-2: General requirements for Basic Safety and essential performances - Collateral standard: Electromagnetic compatibility - Requirements and tests		X	X	
IEC 60601-1-3, ed. 2:2008, Medical electrical equipment - Part 1-3: General requirements for Basic Safety and essential performances- Collateral Standard: Radiation protection in diagnostic X-ray equipment	X			X
IEC 60601-1-6, ed. 2:2006 or IEC 60601-1-6, ed. 3:2010, Medical electrical equipment - Part 1-6 General requirements for Basic Safety and essential performance - Collateral standard: Usability - See Note 3 and 4		X**		X
IEC 60601-1-8 ed. 2:2006, Medical electrical equipment - Part 1-8: General requirements for Basic safety and essential performance - Collateral Standard: General requirements, tests and guidance for alarm systems in medical electrical equipment and medical electrical systems	X			X
IEC 60601-1-9, ed. 1:2007, Medical electrical equipment - Part 1-9: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for environmentally conscious design		X		X
IEC 60601-1-10, ed. 1:2007, Medical electrical equipment - Part 1-10: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for the development of physiologic closed-loop controllers	X			X
IEC 60601-1-11, ed. 1:2010, Medical electrical equipment - Part 1-11: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment	X			X
ISO 10993-1, ed. 4:2009, Biological evaluation of medical devices — Part 1: Evaluation and testing within a risk management process		X		X

\*Note 1: All collateral standards must be included in the CB Test Report as applicable.

\*\*Note 2: Any CB Test Report addressing Collateral standards IEC 60601-1-8 and IEC 60601-1-11 requires Usability Engineering Process according to IEC 60601-1-6. This is due to the fact that the primary concern of alarms (IEC 60601-1-8) and home healthcare (IEC 60601-1-11) applications is whether the users/operators and patients respond appropriately to the medical electrical equipment; this is mitigated through the Usability Engineering Process of the IEC 60601-1-6 standard.

Note 3: Alternative editions (including amendments) of the standards listed above apply as determined by national requirements

Note 4: Applicable Clauses of IEC 62366 must be addressed in the CB Test Report for IEC 60601-1-6:2010 but IEC 62366 **is not** to be listed on the CB Test Certificate as certification standard together with IEC 60601-1-6. However, including IEC 62366 in “additional information” (for example by saying: *In addition, all applicable Clauses of IEC 62366 have been addressed*) is permitted.

**Annex C - Use of Standards in the IECEE system according to the IEC 60601-1 3<sup>rd</sup> edition and Am.1**

IEC 60601-1 3rd edition (2005-12), Am. 1 (2012)*, Medical Electrical Equipment, Part 1: General Requirements for Basic Safety and Essential Performance	Collateral & Related Standards Required to be included in CBTC		Acceptable to issue a separate CBTC and CBTR	
	Yes	No	Yes	No
<b>Standards</b>				
IEC 60601-1-2, ed.3:2007 or IEC 60601-1-2, ed.4:2014, Medical electrical equipment - Part 1-2: General requirements for Basic Safety and essential performances - Collateral standard: Electromagnetic compatibility (ed.3) / disturbances (ed.4) - Requirements and tests - See note 3		X	X	
IEC 60601-1-3, ed.2:2008 or IEC 60601-1-3, ed.2:2008 and Am1:2013, Medical electrical equipment - Part 1-3: General requirements for Basic Safety and essential performances- Collateral Standard: Radiation protection in diagnostic X-ray equipment - See note 3	X			X
IEC 60601-1-6, ed.2:2006 or IEC 60601-1-6, ed.3:2010 or IEC 60601-1-6, ed.3:2010 and Am1: 2013, Medical electrical equipment - Part 1-6 General requirements for Basic Safety and essential performance - Collateral standard: Usability- See note 3 and 4	X			X
IEC 60601-1-8, ed.2:2006 or IEC 60601-1-8, ed.2:2006 and Am.1:2012, Medical electrical equipment - Part 1-8: General requirements for Basic safety and essential performance - Collateral Standard: General requirements, tests and guidance for alarm systems in medical electrical equipment and medical electrical systems - See note 3	X			X
IEC 60601-1-9, ed.1:2007 or IEC 60601-1-9, ed.1:2007 and Am.1:2013, Medical electrical equipment - Part 1-9: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for environmentally conscious design - See note 3		X		X
IEC 60601-1-10, ed.1: 2007 or IEC 60601-1-10, ed.1:2007 and Am.1:2013, Medical electrical equipment - Part 1-10: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for the development of physiologic closed-loop controllers - See note 3	X			X
IEC 60601-1-11, ed.1:2010 or IEC 60601-1-11, ed. 2:2015, Medical electrical equipment - Part 1-11: General requirements for Basic safety and essential performance - Collateral Standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment	X			X
IEC 60601-1-12, ed.1: 2014: Medical electrical equipment - Part 1-12: General requirements for Basic safety and essential performance – Collateral Standard: Requirements for medical electrical equipment and medical electrical systems intended for use in the emergency medical services environment	X			X
ISO 10993-1, ed.4:2009, Biological evaluation of medical devices — Part 1: Evaluation and testing within a risk management process		X		X
IEC 62304, ed.1:2006, Medical device software – Software life cycle processes – See Note 2	X			X

\* Note 1: All collateral standards must be included in the CB Test Report as applicable.

Note 2: Applicable clauses of IEC 62304 must be addressed in the CB Test Report but the standard IEC 62304 **is not** to be listed on the CB Test Certificate. However, including IEC 62304 in “additional information” (for example by saying: *In addition, all applicable Clauses of IEC 62304 have been addressed*) is permitted.

Note 3: Alternative editions (including amendments) of the standards listed above apply as determined by national requirements

Note 4: Applicable Clauses of IEC 62366 must be addressed in the CB Test Report for IEC 60601-1-6:2010 including Am. 1:2013 but IEC 62366 **is not** to be listed on the CB Test Certificate as certification standard together with IEC 60601-1-6. However, including IEC 62366 in “additional information” (for example by saying: *In addition, all applicable Clauses of IEC 62366 have been addressed*) is permitted.

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

3 rue de Varembé  
PO Box 131  
CH-1211 Geneva 20  
Switzerland

T +41 22 919 0211  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

IEC SYSTEM OF CONFORMITY ASSESSMENT  
SCHEMES FOR ELECTROTECHNICAL  
EQUIPMENT AND COMPONENTS (IECEE SYSTEM)

IECEE Secretariat c/o IEC  
3 rue de Varembé  
PO Box 131  
CH-1211 Geneva 20  
Switzerland

T +41 22 919 0211  
[secretariat@iecee.org](mailto:secretariat@iecee.org)  
[www.iecee.org](http://www.iecee.org)