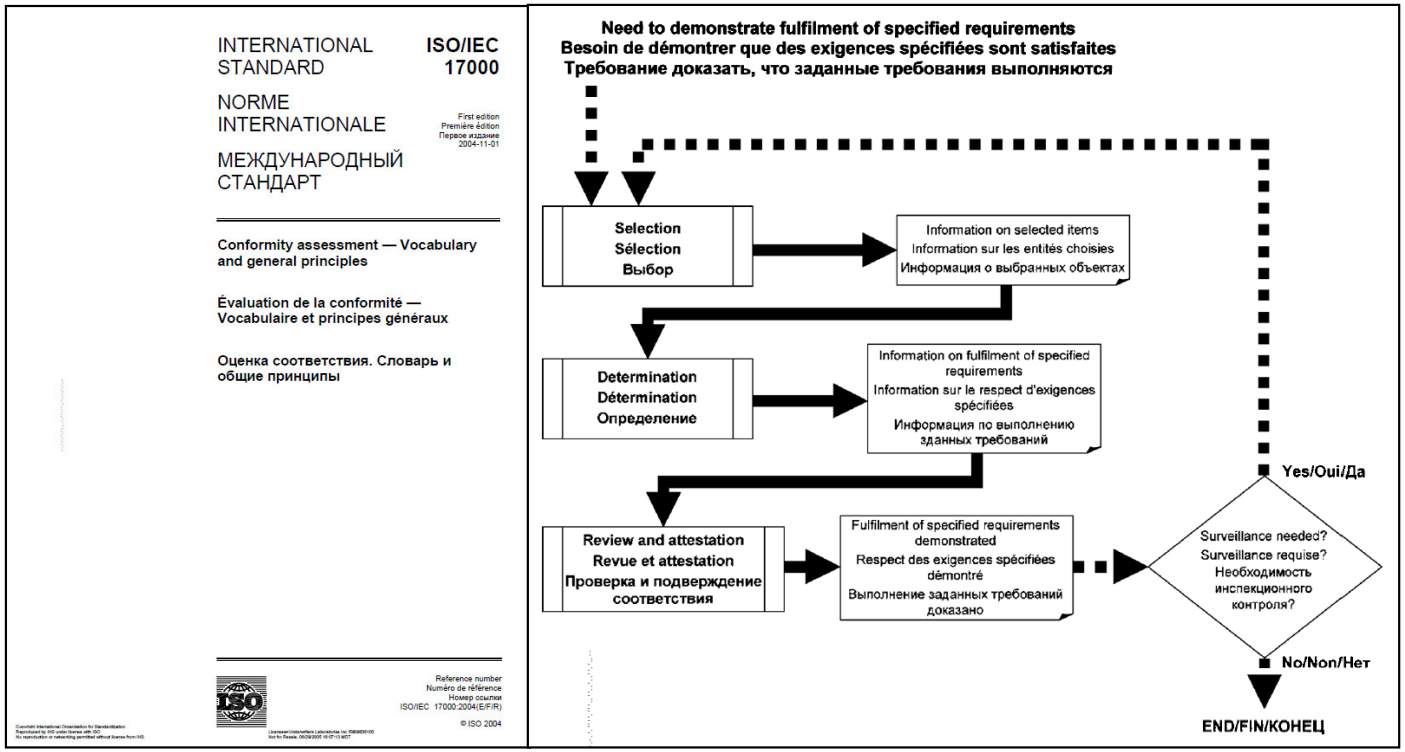
Steven Margis
Chair: IECEE
UL Director, Conformity Assessment Programs

Utilization of Voluntary Consensus Standards and Conformity Assessment
2022-03-17
Medical Devices Webinar Series - Session IV

International Electrotechnical Commission

Conformity Assessment

"demonstration that **specified requirements** relating to a product, process, system, person or body are fulfilled"



Specified Requirements

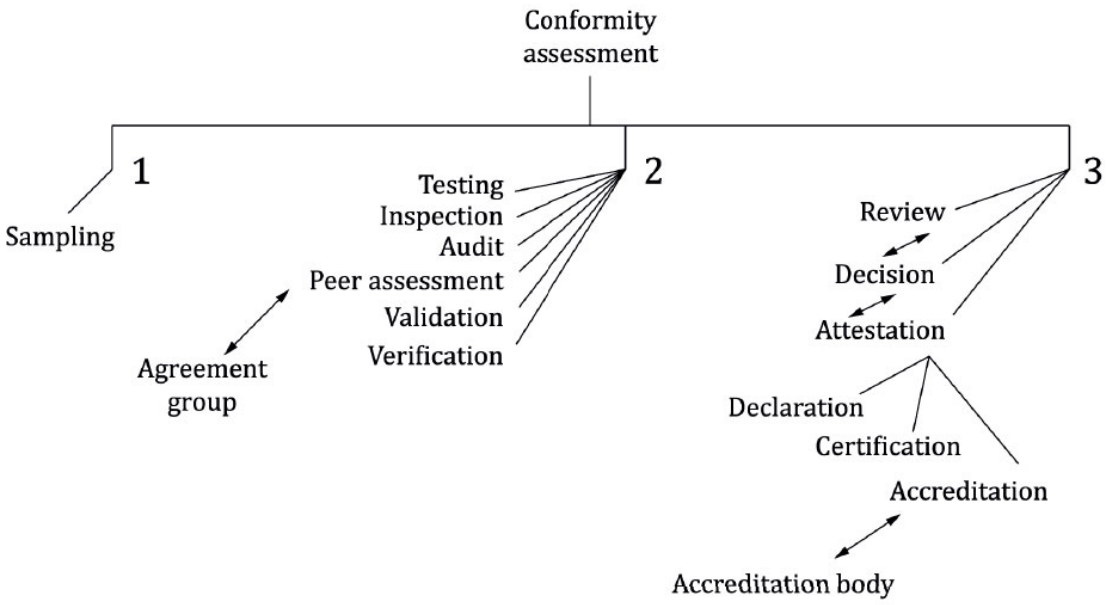
Conformity Assessment

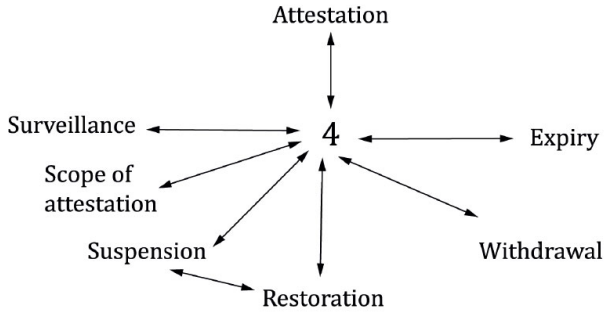
“need or expectation that is stated”

*NOTE: Specified requirements may be stated in normative documents such as **regulations**, **standards** and **technical specifications**.*

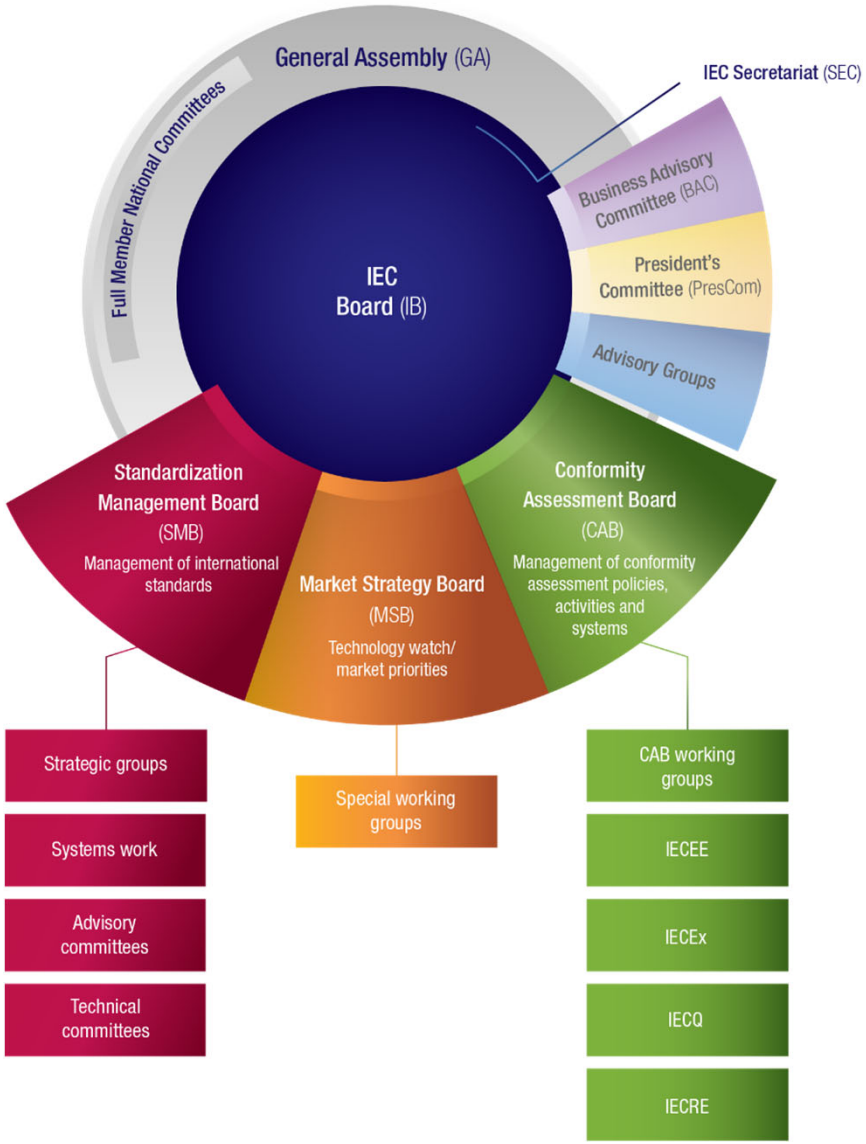
Conformity Assessment

"demonstration that **specified requirements** are fulfilled"



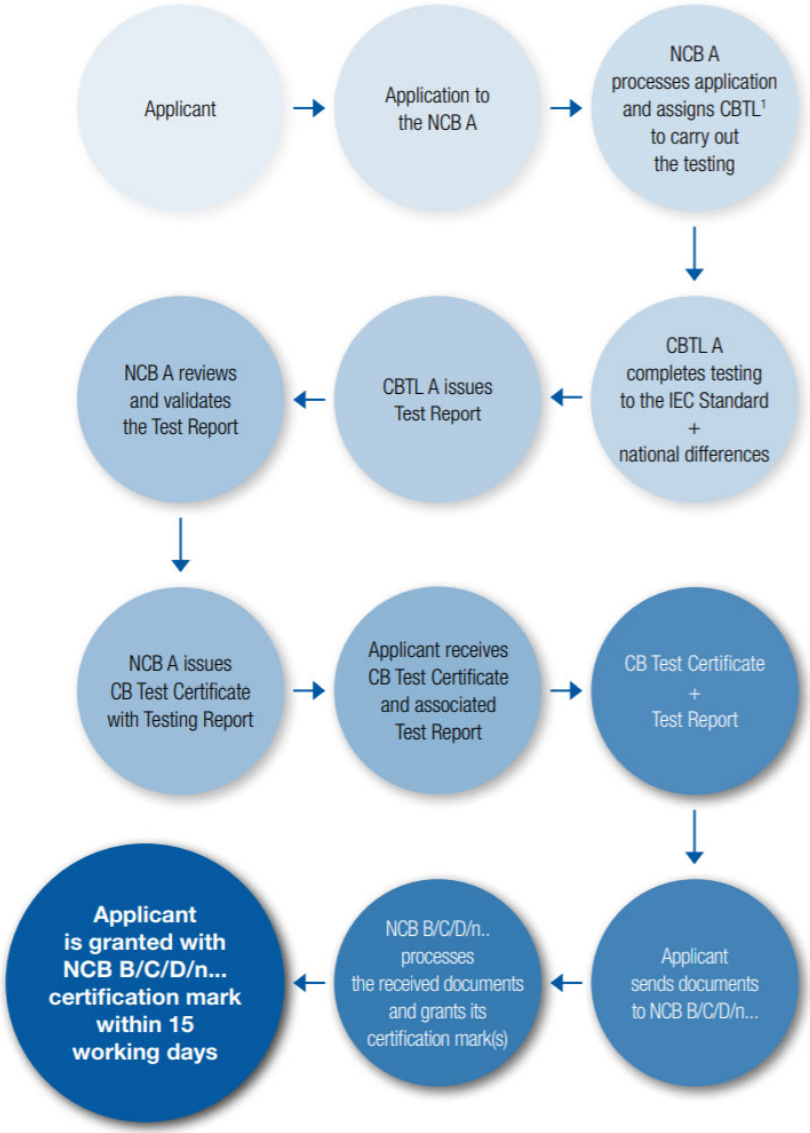


Source: ISO regarding ISO/IEC 17000: 2019


General Assembly (GA)
Full Member National Committees
IEC Secretariat (SEC)
IEC Board (IB)
Business Advisory Committee (BAC)
President's Committee (PresCom)
Advisory Groups
Standardization Management Board (SMB)
Management of international standards
Market Strategy Board (MSB)
Technology watch/ market priorities
Conformity Assessment Board (CAB)
Management of conformity assessment policies, activities and systems
Strategic groups
Systems work
Advisory committees
Technical committees
Special working groups
CAB working groups
IECEE
IECEx
IECQ
IECRE

IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components

- **Facilitate trade** by eliminating duplication of testing and providing market access
- National adoption and use of **IEC standards** (with or without differences)
- **Mutual acceptance** of IECEE certificates and their related test reports
- **Peer Assessment** to ensure competence, consistency and mutual confidence


Applicant
Application to the NCB A
NCB A processes application and assigns CBTL[1] to carry out the testing
CBTL A completes testing to the IEC Standard + national differences
CBTL A issues Test Report
NCB A reviews and validates the Test Report
NCB A issues CB Test Certificate with Testing Report
Applicant receives CB Test Certificate and associated Test Report
CB Test Certificate + Test Report
Applicant sends documents to NCB B/C/D/n...
NCB B/C/D/n.. processes the received documents and grants its certification mark(s)
Applicant is granted with NCB B/C/D/n... certification mark within 15 working days

- Argentina
- Australia
- Austria
- Bahrain
- Belarus
- Belgium
- Brazil
- Bulgaria
- Canada
- Chile
- China
- Colombia
- Croatia
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- India
- Indonesia
- Israel
- Italy
- Japan
- Kenya
- Korea, Rep. Of
- Malaysia
- Mexico
- Netherlands
- New Zealand
- Nigeria
- Norway
- Pakistan
- Poland
- Portugal
- Russian Federation
- Saudi Arabia
- Serbia, Rep. Of
- Singapore
- Slovakia
- Slovenia
- South Africa
- Spain
- Sweden
- Switzerland
- Thailand
- Turkey
- Ukraine
- United Arab Emirates
- United Kingdom
- US
- Vietnam

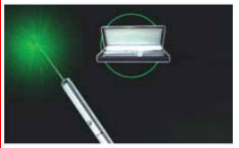
INST
Installation accessories & connection devices

ITAV
Information technology audio video

LITE
Luminaires

MEAS
Measuring instruments

MED
Electrical equipment for medical use



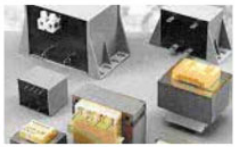
MISC
Miscellaneous

OFF
IT and office equipment

POW
Low voltage, high power switching equipment

PROT
Installation protective equipment

PV
Photovoltaics



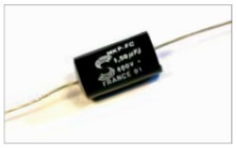
SAFE
Safety transformers and similar equipment

TOOL
Portable tools

TRON
Electronics, entertainment

BATT
Batteries

CABL
Cables and cords

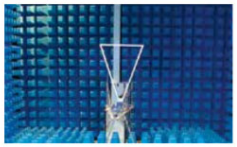


CAP
Capacitors as components

CONT
Switches for appliances and automatic controls for electrical household appliances

E3
Electrical energy efficiency

ELVH
Electrical vehicles

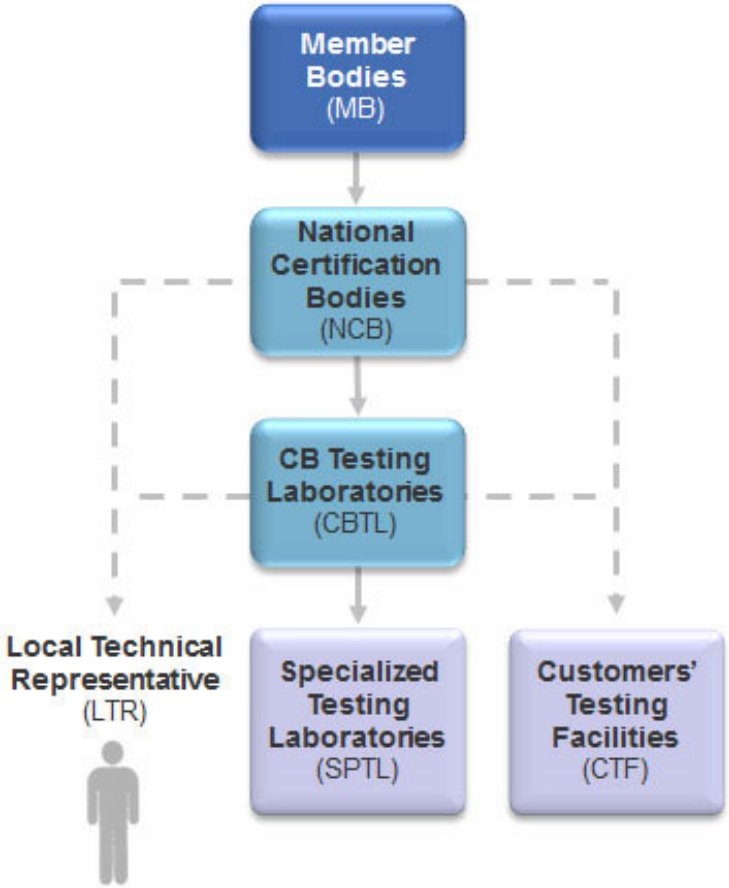


EMC
Electromagnetic compatibility

HOUS
Household and similar equipment

INDA
Industrial automation

- 54 Member Bodies
- 91 Certification Bodies
- 556 Testing Laboratories
- 1794 Customer Testing Facilities
- 120,000+ Certificates (2020)
  - Over 1.5M Issued
- **MED**
  - 28 Member Bodies
  - 51 Certification Bodies
  - 148 Testing Laboratories
  - 275 Standards
  - 2.8% of all Certificates (3503)



MED: NCB Economies

*Belgium**
Belarus (R*)
Canada
*Czech Republic**
*Denmark**
*Finland**
*France**
*Germany**
*Hungary**

Israel
*Italy**
Japan
Republic of Korea
*Netherlands**
*Norway***
Poland (R*)
Portugal (R*)
Serbia (R)

Singapore
*Slovakia**
*Slovenia**
*Spain**
*Sweden**
Switzerland**
Turkey (R*)
Ukraine
United Kingdom
United States

Key: IMDRF Member Countries (*EU**, *EEA***) R: Recognizing Only
[not participating Australia, Austria, Brazil, China, Russian Federation]

MED


IEC 60601-1

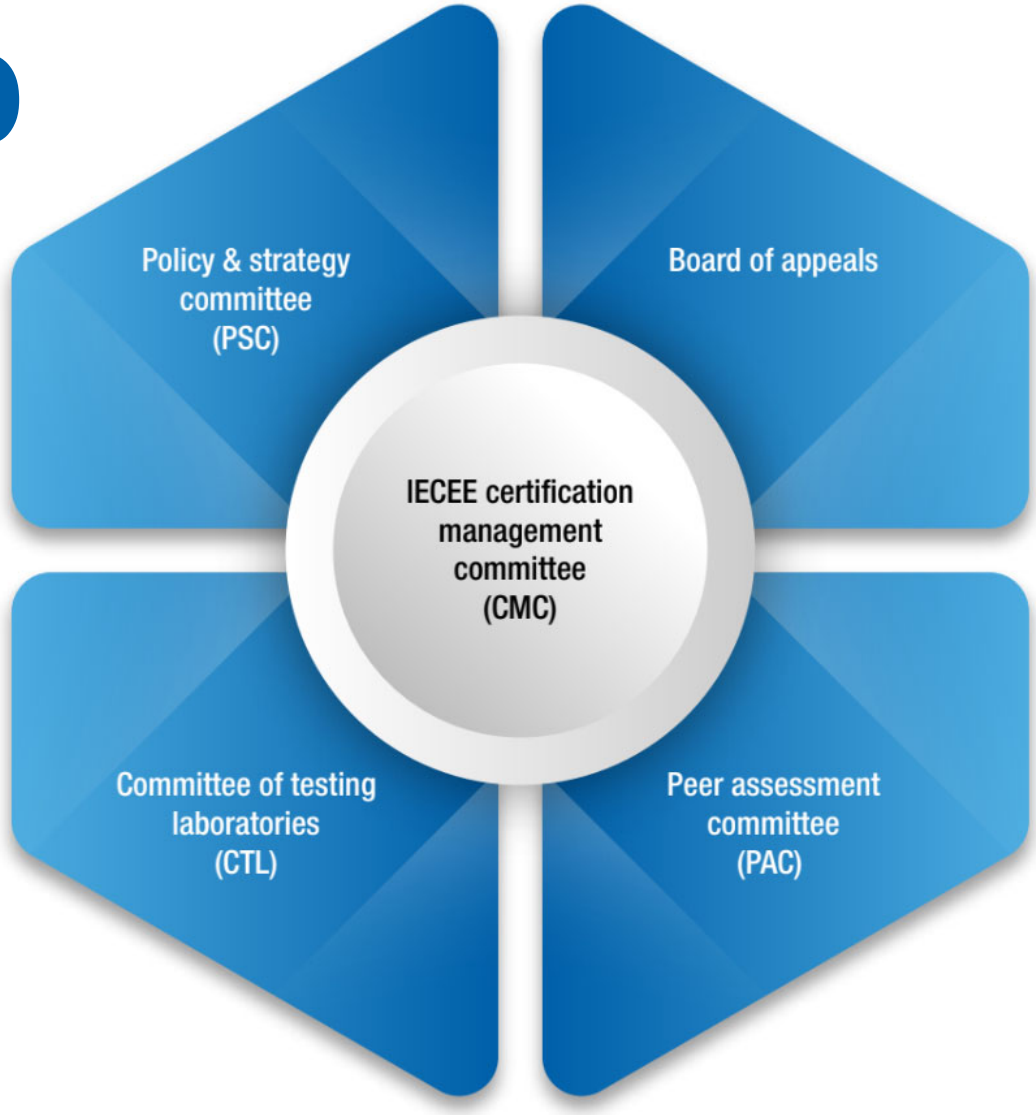
INTERNATIONAL STANDARD

NORME INTERNATIONALE

Medical electrical equipment –
Part 1: General requirements for basic safety and essential performance

Appareils électromédicaux –
Partie 1: Exigences générales pour la sécurité de base et les performances essentielles

Editions:
1998 & 2005



MED

IECEE OD-2044

Edition 2.3 2019-06

IECEE OPERATIONAL DOCUMENT

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

Committee of Testing Laboratories (CTL)

Evaluation of Risk Management in medical electrical equipment according to the IEC 60601-1 & ISO/IEC 80601-1 Series of Standards

IECEE OD-2044:2019(EN)

IECEE OD-2055

Edition 2.1 2017-05-17

IECEE OPERATIONAL DOCUMENT

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

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

IECEE OD-2055:2017(en)

CTL DECISION SHEET (DSH)

Standard(s) (incl. year)	Subclause(s)	Tracking No.	Year
IEC 60601-1: 2005 (ed 3 .0)	8.9	2017	2015
Category			
MED			
Subject	**Keywords**	**Developed by**	**Approved at**
Creepage distance	Creepage distance Working voltage, PCB traces	ETF-3	2016 CTL Plenary Meeting

Question

How should the creepage distance be measured in a scenario where the point with the highest working voltage is behind a point with a lower working voltage?

See the case study below for details:

Creepage distance requirement on a Class II switch mode power supply unit designed for 2 MOPP.

A working voltage of 240 Vrms was measured between the secondary side and the nearest printed track on the primary side.

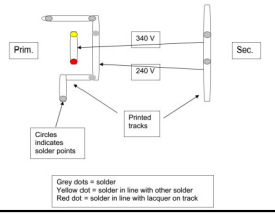
However, behind the nearest printed track on the primary side there is a point with a working voltage of 340 Vrms.

The creepage distance between secondary and the nearest 240 V point is 8 mm, which meets the requirement for 240 V.

The creepage distance between the 340 V point and the 240 V point is 1 mm.

Question:

How shall the creepage distance between primary and secondary be measured in such a case?

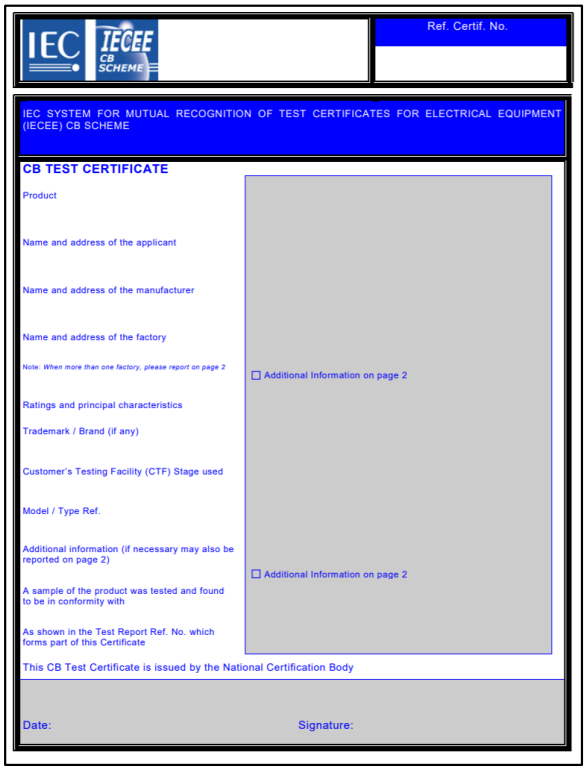


TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 60601-1:2005 + Am.1:2012
Medical electrical equipment - Part 1: General requirements for basic safety and essential performance

"R" Required
"S" May be subcontracted, see OD 2012
"SPTL" Specialized Facility, see IECEE 02-2
"W" Witness testing in the categories "MED" and "MEAS"
"3PPS" Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
4.11	Power input	Suitable devices for the voltage, current/power and frequency Supply: 1 phase and 3 phase variacs	R
5.3	Ambient temperature, humidity, atmospheric pressure	Suitable devices for recording ambient temperature, humidity, atmospheric pressure	R
5.7	Humidity preconditioning treatment	Environmental conditions: Climate chamber controlling temperature and humidity	R
5.9.2	Accessible parts	Force gauge (30 N), standard test finger (figure 6),	R

MED



Ref. Certif. No.

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product

Name and address of the applicant

Name and address of the manufacturer

Name and address of the factory

Note: When more than one factory, please report on page 2

☐ Additional Information on page 2

Ratings and principal characteristics

Trademark / Brand (if any)

Customer's Testing Facility (CTF) Stage used

Model / Type Ref.

Additional information (if necessary may also be reported on page 2)

☐ Additional Information on page 2

A sample of the product was tested and found to be in conformity with

As shown in the Test Report Ref. No. which forms part of this Certificate

This CB Test Certificate is issued by the National Certification Body

Date: Signature:

Test Report issued under the responsibility of:

IEC 60601-1
Medical electrical equipment
Part 1: General requirements for basic safety and essential performance

Report Reference No......:
Date of issue .....:
Total number of pages.....:

CB Testing Laboratory.....:
Address .....:

Applicant's name.....:
Address .....:

Test specification:
Standard.....: IEC 60601-1:2005, COR1:2006, COR2:2007, AMD1:2012
(or IEC 60601-1:2012 reprint)

Test procedure.....: CB Scheme
Non-standard test method.....:

Test Report Form No......: IEC60601_1N
Test Report Form Originator.....: UL(US)
Master TRF .....: 2019-09-17

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB testing laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

4	GENERAL REQUIREMENTS		
4.1	Requirements of this standard applied in NORMAL USE and reasonably foreseeable misuse		
4.2	RISK MANAGEMENT PROCESS FOR ME EQUIPMENT OR ME SYSTEMS		
4.2.2	General requirement for RISK MANAGEMENT - PROCESS complies with ISO14971 (2007).....:	See Appended RM Results Table 4.2.2.	
4.2.3	Evaluating RISK		
4.2.3.1	a) Compliance with the standard reduces residual risk to an acceptable level		
	b) Manufacturer has defined risk acceptability criteria in the RISK MANAGEMENT PLAN.....:	RISK MANAGEMENT PLAN Document: __	
	c) When no specific technical requirements provided manufacturer has determined HAZARDS or HAZARDOUS SITUATIONS exists.		
	- HAZARDS or HAZARDOUS SITUATIONS have been evaluated using the RISK MANAGEMENT PROCESS.		
4.2.3.2	MANUFACTURER has addressed HAZARDS or HAZARDOUS SITUATIONS not specifically addressed in the IEC 60601-1 series.		
4.3	Performance of clinical functions necessary to achieve INTENDED USE or that could affect the safety of the ME EQUIPMENT or ME SYSTEM were identified during RISK ANALYSIS.	RM File Reference to Essential performance: __	
	- Performance limits were identified in both NORMAL CONDITION and SINGLE FAULT CONDITION.		
	- Loss or degradation of performance beyond the limits specified by the MANUFACTURER were evaluated		
	- Functions with unacceptable risks are identified as ESSENTIAL PERFORMANCE ..... :	See Appended Table 4.3	
	- RISK CONTROL measures implemented		
	- Methods used to verify the effectiveness of RISK CONTROL measures implemented		
4.4	EXPECTED SERVICE LIFE stated in RISK MANAGEMENT FILE .....:		
4.5	Alternative RISK CONTROL methods utilized:		

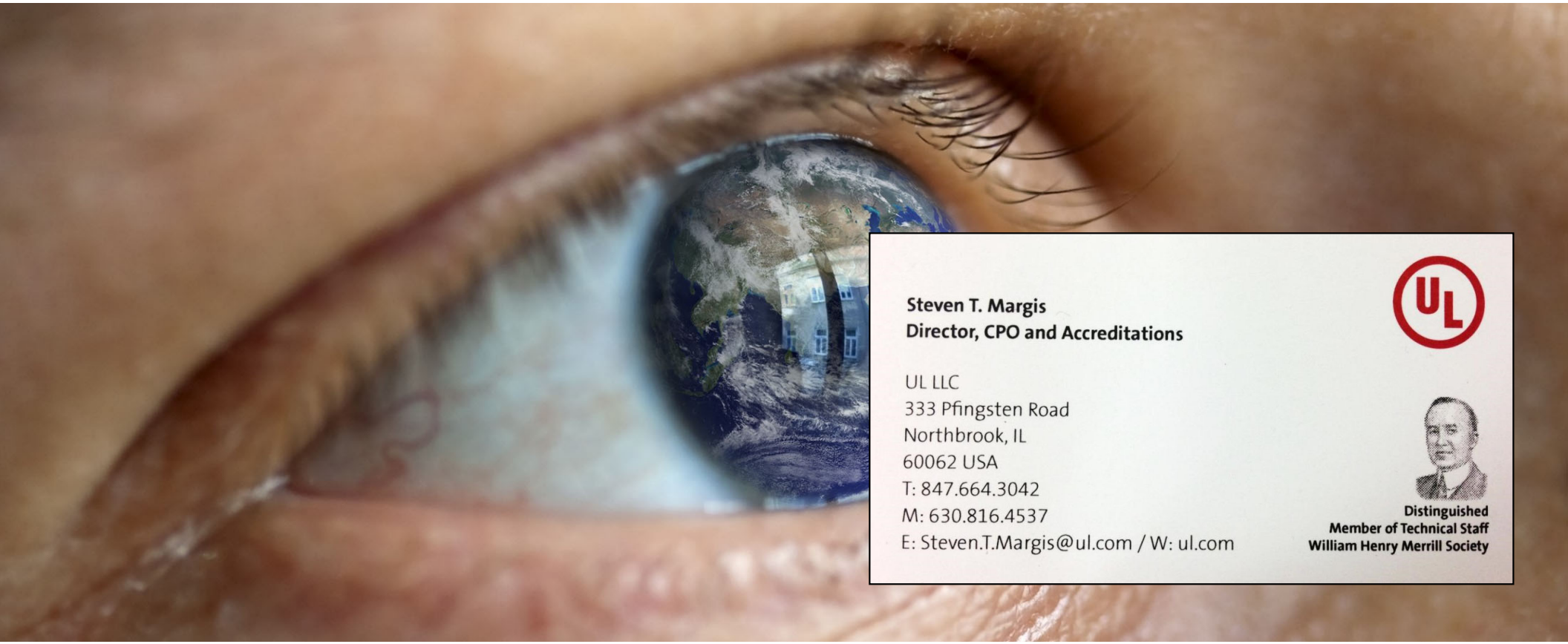
Other Considerations

- Cybersecurity
  - IEC 62443
- *Functional Safety*
  - IEC 61508
- *Personnel Competence*

A Methodical Approach

… to Medical Device Regulation

- Participate
- Object of Conformity Assessment
- Specified Requirements
- Conformity Assessment Activity
- Conformity Assessment System / Scheme
- Global Optimization



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2022-03-17

Medical Devices Webinar Series - Session IV

International Electrotechnical Commission


IEC
IECEE
TM

IMDRF International Medical Device Regulators Forum

- Australia Therapeutic Goods Administration
- Brazil National Health Surveillance Agency (ANVISA)
- Canada Health Canada
- China China Food and Drug Administration
- European Union European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
- Japan Pharmaceuticals and Medical Devices Agency and the Ministry of Health, Labour and Welfare
- Russia Russian Minstry of Health
- Singapore Health Sciences Authority
- South Korea Ministry of Food and Drug Safety
- United States of America US Food and Drug Administration

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