



Test Report issued under the responsibility of:

<b>TEST REPORT</b> <b>IEC or ISO Reference Number(s)</b> <b>Title of the IEC or ISO Standard(s)</b>		
<b>Report Number</b> ..... :		
<b>Date of issue</b> ..... :		
<b>Total number of pages</b> .....		
<b>Name of Testing Laboratory</b> <b>preparing the Report</b> .....		
<b>Applicant's name</b> .....		
<b>Address</b> ..... :		
<b>Test specification:</b>		
<b>Standard</b> .....	According to OD -2020, Clause 3.3	
<b>Test procedure</b> .....	CB Scheme	
<b>Non-standard test method</b> .....	N/A	
<b>TRF template used</b> ..... : IECEE OD-2020-F7:2020; ed. 1.1		
<b>Test Report Form No.</b> .....		According to OD -2020, Clause 3.3
<b>Test Report Form(s) Originator</b> .... :		Name of Originator
<b>Master TRF</b> .....		Dated YYYY-MM-DD (according to 3.3.4)
<b>Copyright © 2020 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</b>		
This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.		
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.		
<b>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.</b>		
<b>General disclaimer:</b>		
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 NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.		

<b>Test item description</b> ..... :		
<b>Trade Mark</b> ..... :		
<b>Manufacturer</b> .....		
<b>Model/Type reference</b> ..... :		
<b>Ratings</b> .....		
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input type="checkbox"/> <b>CB Testing Laboratory:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name, function, signature)</b> ..... :		
<b>Approved by (name, function, signature)</b> ... :		
<hr/>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 1:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name, function, signature)</b> ..... :		
<b>Approved by (name, function, signature)</b> ... :		
<hr/>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 2:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name + signature)</b> ..... :		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature)</b> ... :		
<hr/>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 3:</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 4:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name, function, signature)</b> ..... :		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature)</b> ... :		
<b>Supervised by (name, function, signature) :</b>		

<b>List of Attachments (including a total number of pages in each attachment):</b>	
<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b>	<b>Testing location:</b>
<b>Summary of compliance with National Differences (List of countries addressed):</b>	
<input type="checkbox"/> The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)	
<b>Statement concerning the uncertainty of the measurement systems used for the tests</b> (may be required by the product standard or client)	
<input type="checkbox"/> <b>Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:</b> <b>Procedure number, issue date and title:</b>	
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	
<input type="checkbox"/> <b>Statement not required by the standard used for type testing</b>	
<small>(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)</small>	

**Copy of marking plate:**

**The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.**

<b>Test item particulars</b> .....:	
<b>Classification of installation and use</b> .....:	
<b>Supply Connection</b> .....	
.....:	
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
<b>Testing</b> .....:	
<b>Date of receipt of test item</b> .....	
<b>Date (s) of performance of tests</b> .....	
.....:	
<b>General remarks:</b>	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....	<input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> .....	
.....:	
<b>General product information (GPI) and other remarks:</b>	
<b>All red and green text is provided as a guideline for TRF Originators and TRF users. These comments shall be deleted in the final TR form for specific standard or in the final CB Test Report!</b>	
<i>Examples of information to be entered in this section:</i>	
1. Specifics of the product tested, model differences;	
2. History of Test Report changes (Amendments, Corrections, Technical Modifications); Example: The original Test Report Ref. No. TR-12345a, dated 2015 February 8 was modified on June 22, 2015 to include the following changes and/or additions, which were considered technical modifications:	
3. New models added and how they differ from the originally tested product and what tests were repeated Example: The two new Models HQ 213 and HQ 432 are multifunction patient monitoring equipment identical to the previous Model ABC-123, except for minor variations in plastic housing and markings. After review of the construction, no additional tests were considered necessary.	

**Table of Contents:**

1	General description of test item .....	7
1.1	Description of test item specific for IEC xxxx.....	9
1.2	Photos of the test item .....	9
2	Verdict summary section.....	10
3	Test conditions .....	11
3.1	General .....	11
3.2	Specific test conditions for IEC xxxx.....	11
4	Emission .....	12
4.1	<<Disturbance voltage >>.....	12
4.2	<<Discontinuous disturbances (clicks)>> .....	14
4.3	<<Disturbance power>> .....	16
4.4	<<Insertion loss >> .....	17
4.5	<<Disturbance field strength / Magnetic field>> .....	18
4.6	<<Disturbance field strength / Electric field>> .....	19
5	Harmonics IEC 61000-3-2 .....	20
6	Harmonics IEC 61000-3-12 .....	21
7	AC Mains Voltage fluctuation and flicker .....	23
8	Immunity .....	24
8.1	General information .....	24
8.2	Information specific for IEC 60601-1-2 .....	24
8.3	Information specific for IEC xxxx .....	24
8.4	<<Electrostatic discharge immunity test (ESD)>> .....	25
8.5	<<Radiated, radio-frequency, electromagnetic field immunity test>> .....	27
8.6	<<Electrical fast transients / burst immunity test>> .....	28
8.7	<<Surge immunity test>>.....	29
8.8	<<Immunity to conducted disturbances, induced by radio-frequency fields>> .....	30
8.9	<<Power frequency magnetic field immunity test>>.....	31
8.10	<<Voltage dips, short interruptions and voltage variations immunity test>> .....	32
8.11	<<Voltage dips, short interruptions and voltage variations on d.c. input power port immunity test (IEC 61000-4-29)>>.....	33
8.12	<<Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity test (IEC 61000-4-13)>>.....	35
8.13	<<Conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz (IEC 61000-4-16)>> .....	37
9	Accompanying documents as required by IEC 60601-1-2 .....	38
10	List of test equipment.....	41
11	Annex.....	42
11.1	Critical components table .....	42
11.2	Type designation code.....	42

**1 General description of test item**

Description .....	<i>Describe here the test item. (The use, purpose etc. may be included in GPI)</i>				
Model number .....					
Serial number .....					
Brand name .....					
Ports .....	<b>Port name and description</b>	<b>Cable</b>			
		<b>Specified length [m]</b>	<b>Attached during test</b>	<b>Shielded</b>	
	<i>AC Mains</i>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<i>Signal / Temperature signal from Sensor</i>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<i>Control / controls the actuator switch</i>	10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<i>Ethernet / 100 Mbit port</i>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	<i>RS232 / For service purpose only</i>	-	<input type="checkbox"/>	<input type="checkbox"/>	
	<i>DC / Battery input power port</i>	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<i>AC Load port / Intended for connecting up to 10 luminaires</i>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>		
Supplemental information to the ports .....					
Rated power supply .....		<b>Voltage and frequency</b>	<b>1 ph/ PE</b>	<b>2 ph/N/PE</b>	<b>3 ph/N/PE</b>
	<input checked="" type="checkbox"/>	AC: 220 V–240 V / 50 - 60 Hz	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
	<input type="checkbox"/>	DC:			
Rated power .....					
Protection class .....					
Clock frequencies .....	<i>Indicate here the clock frequencies as defined by manufacturer / applicant or write "no information available"</i>				
Other parameters .....	<i>All parameters which seem necessary for testing can be documented here</i>				
Software version .....					
Hardware version .....					
Dimensions (W x H x D)....	cm				
Mounting position:	<input type="checkbox"/>	Table top equipment			
	<input type="checkbox"/>	Wall/Ceiling mounted equipment			
	<input type="checkbox"/>	Floor standing equipment			
	<input type="checkbox"/>	Hand-held equipment			
	<input type="checkbox"/>	Other:			

Modules / parts..... :	<b>Module / parts of test item</b>		<b>Type</b>	<b>Manufacturer</b>
	<i>Main enclosure with CPU and power supply</i>		<i>1234</i>	<i>Helot</i>
	<i>External power supply</i>		<i>4321</i>	<i>Jawa</i>
	<i>Monitor</i>		<i>5436</i>	<i>Visio</i>
Operating modes..... :	<b>No.</b>	<b>Operating mode of test item</b>	<b>Applied for testing</b>	
			<b>Emission</b>	<b>Immunity</b>
	1		<input type="checkbox"/>	<input type="checkbox"/>
	2		<input type="checkbox"/>	<input type="checkbox"/>
	3		<input type="checkbox"/>	<input type="checkbox"/>
	4		<input type="checkbox"/>	<input type="checkbox"/>
	5		<input type="checkbox"/>	<input type="checkbox"/>
	6		<input type="checkbox"/>	<input type="checkbox"/>
	7		<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	
Supplemental information to the operating modes .....				
Accessories (not part of the test item) .....	<b>Accessory</b>		<b>Type</b>	<b>Manufacturer</b>
	<i>Mouse</i>		<i>3478</i>	<i>Helot</i>
	<i>External power supply</i>		<i>4321</i>	<i>Jawa</i>
	<i>Monitor</i>		<i>5436</i>	<i>Visio</i>
Documents as provided by the applicant..... :	<b>Description</b>		<b>File name</b>	<b>Issue date</b>
	<i>Only if the information is available from the client. If not: "No documents provided"</i>			
	<i>Circuit diagram</i>		<i>Schematic.pdf</i>	<i>2013-12-03</i>
	<i>PCB Layout</i>		<i>PCB-123.pdf</i>	<i>2012-11-03</i>
	<i>Parts list</i>		<i>BOM-543.pdf</i>	<i>2013-05-03</i>
Modifications to the test item during testing..... :	<i>List here measures like additional shielding, ferrites, capacitors, filters etc. which are applied during the testing and are not described in the documents as listed above.</i>			



Copy of marking plate :

--

1.1 Description of test item specific for IEC xxxx

Advice to the Originator of the TRF: Insert here the specific information needed for testing the relevant IEC xxxx, if needed. If not needed, then this clause may be deleted.

1.2 Photos of the test item

Photo of test item .....	<i>Advice to TRF User: The number of photos printed here is to be decided by the laboratory.</i>

## 2 Verdict summary section

Advice to Originator: Use this standard table format and content for emission summary section. In case of multiple standards, TRF shall have a single table for each standard, separated by a headline. All tables shall be combined in a single table. The goal is to have the whole summary section on one page only. The supplementary information row shall be only included once in the summary section.

- Please use a test case description and the original text of the standard (heading or clause).

EMC product standard number, e.g. CISPR 15			
Clause	Requirement – Test case	Basic standard	Verdict
T1.2	Terminal disturbance voltages	CISPR xxx:2013+A1:2014 Use dated references here	Pass
T1.3	Disturbance power	CISPR xxx	Fail
IEC 61000-3-2			
Clause	Requirement – Test case	Basic standard	Verdict
6.1	Control principle shall be allowed for the application according to the clause 6.1	IEC 61000-3-2:2005 +A1:2008+A2:2009	N/A
7	AC-Mains Harmonics	IEC 61000-4-15:2010	
IEC 61000-3-12			
Clause	Requirement – Test case	Basic standard	Verdict
5.1	Control principle shall be allowed for the application according to the clause 6.1	IEC 61000-3-12:2011	
5.2	AC-Mains Harmonics	IEC 61000-4-15:2010	
EMC product standard number, e.g. IEC 61000-3-3			
Clause	Requirement – Test case	Basic standard	Verdict
6	AC-Mains Voltage fluctuations and flicker	IEC 61000-4-7:2002 + A1:2008	
EMC product standard number, e.g. IEC 61547			
Clause	Requirement – Test case	Basic standard	Verdict
5.2	Electrostatic discharges	IEC 61000-4-2:2008	
5.3	Radiated, radio-frequency, electromagnetic field	IEC 61000-4-3:2006 + A1	
5.4	Power frequency magnetic fields	IEC 61000-4-8:1993 + A1	
5.5	Electrical fast transients	IEC 61000-4-4:2004	
5.6	Injected currents (radio frequency common mode)	IEC 61000-4-6:2008	
5.7	Surges	IEC 61000-4-5:2005	
5.8	Voltage dips, short interruptions	IEC 61000-4-11:2004	
5.8	Voltage fluctuations	IEC 61000-4-11:2004	
Supplementary information:			

### 3 Test conditions

#### 3.1 General

Environmental reference conditions ..... :	The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.		
	The climatic conditions during the tests were within the following limits:		
	<b>Temperature</b>	<b>Humidity</b>	<b>Atmospheric pressure</b>
	15 °C – 35 °C	30 % - 60 %	800 hPa – 1060 hPa
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.		
Measurement uncertainties..... :	<p>For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2, IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.</p> <p>In all cases if the test laboratory uncertainty is larger than the value for UCISPR given in CISPR 16-4-2 the uncertainty are included in the test report annex.</p> <p>In case the standards in the IEC 61000-4 series or the product standard requires the indication of the uncertainty in the report these uncertainty values are included in the annex.</p>		

#### 3.2 Specific test conditions for IEC xxxx

Advice to the Originator of the TRF: Insert here the specific test conditions needed for testing the relevant IEC xxxx, if needed. If not needed, then delete this clause.

#### 4 EMISSION

Advice to TRF Originator: The Results section shall be designed in the following way:

1. Emission results
2. Harmonics/flicker
3. Immunity
4. Additional requirements (See documents test of IEC 60601-1-2 as example)

Advice to the TRF Originator: All headings shall have the same wording as given in the products standard and in the summary section Replace the headlines << xxxxxx >> by the original text of the product standard. Delete the "<<" and ">>" in the headings.

##### 4.1 <<Disturbance voltage >>

Advice to TRF Originator: Limits (e.g. "Applied limits") are not listed in this section. The applicable limits are clearly defined in the product standards and it is not necessary to repeat them here. Only limit class or environment as selected by the applicant/manufacturer shall be indicated here.

Typical content of the result section for disturbance voltage is given below. Rows below which are not applicable for the product standard shall be deleted by the TRF Originator.

Additional content (rows) shall be added if required by the product standard.

Tested by .....	:	
Test date .....	:	
Test location (stand).....	:	
Applied limit class or environment :	<input type="checkbox"/>	Class A according to applied standard
	<input type="checkbox"/>	Class B according to applied standard
	<input type="checkbox"/>	Other:
Test set-up description..... :	<input type="checkbox"/>	Set-up Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	<input type="checkbox"/>	Set-up Type B (40 cm distance to horizontal ground plane)
	<input type="checkbox"/>	Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/>	Other:
	<input type="checkbox"/>	Artificial hand applied
Supplementary test set-up description .....	:	
Test method applied..... :	<input type="checkbox"/>	Artificial mains network
	<input type="checkbox"/>	Artificial mains network used as voltage probe
	<input type="checkbox"/>	Voltage probe
	<input type="checkbox"/>	CDN according to IEC 61000-4-6
	<input type="checkbox"/>	Current probe and capacitive voltage probe (CVP)
	<input type="checkbox"/>	ISN
	<input type="checkbox"/>	In situ CDN (150 Ohm and current probe)
	<input type="checkbox"/>	Other:

Used mains voltage/frequency for the test. Evaluated at 160 kHz (0,9 – 1,1 of $U_N$ ) .....	Xxx V <i>Advice to TRF Originator: This row is only necessary for CISPR 14-1. Advice to TRF User: Insert all voltages where the tests have been done. E.g. for products with rated voltage range: More than one voltage can be indicated here.</i>
Supplementary information .....	---
Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>

*Advice to TRF Originator: Do not include any mandatory tables or diagram placeholders here.*

*Advice to the TRF User:*

***Minimum content to be inserted here by the laboratory for each single measurement:***

- Operation mode which has been used during testing*
- Port which has been measured (Including measured terminal: L or N)*
- Mains voltage and frequency at which the test has been done*
- Verdict (Pass/Fail) for the single measurement documented here*
- Used detectors*
- Used IF BW and step size and / or Preamp*
- Used measurement times per frequency for prescan and final measurement*

*Diagram of the disturbance voltage over the frequency range measured including the limits*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*Frequency, Reading, Limit, Margin (Limit - reading)*

&lt;&lt; Discontinuous disturbances (clicks)&gt;&gt;

Advice to TRF Originator: See information under 4.1 above which is valid also here

Tested by .....	
Test date .....	
Test location (stand).....	
Test set-up description.....	<input type="checkbox"/> Set-up Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	<input type="checkbox"/> Set-up Type B (40 cm distance to horizontal ground plane)
	<input type="checkbox"/> Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/> Other: ---
	<input type="checkbox"/> Artificial hand applied
Supplementary test set-up description .....	---
CDN applied .....	<input type="checkbox"/> Artificial mains network
	<input type="checkbox"/> Artificial mains network used as voltage probe
	<input type="checkbox"/> Voltage probe
	<input type="checkbox"/> Other: ---
Applied method for discontinuous disturbances .....	<input type="checkbox"/> Click rate determined on base of switching operations
	<input type="checkbox"/> Click rate determined on base of clicks measurements
	<input type="checkbox"/>
	<input type="checkbox"/> Other: ---
Exceptions from the click definition applied.....	<input type="checkbox"/> Test item only causes single switching events (5.4.3.2)
	<input type="checkbox"/> Combination of disturbances in a time frame less than 600 ms (5.4.3.3)
	<input type="checkbox"/> Instantaneous switching (5.4.3.4)
	<input type="checkbox"/> Separation less than 200 ms (5.4.3.5)
	<input type="checkbox"/> Thermostatically controlled three-phase switches (5.4.3.6)
	<input type="checkbox"/> Superposition of clicks with continuous disturbance (5.4.3.7)
	<input type="checkbox"/> Other: ---
Used mains voltage/frequency for the test .....	xxx V <i>Advice to TRF User: Insert all voltages where the tests have been done. E.g. for products with rated voltage range: More than one voltage can be indicated here.</i>
Supplementary information .....	---

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

Advice to TRF Originator: Do not include any mandatory tables or diagram placeholders here.

*Advice to the TRF user:*

***Minimum content to be inserted here by the laboratory for each single measurement:***

*Operation mode which has been used during testing*

*Port which has been measured (Including measured terminal: L or N)*

*Mains voltage and frequency at which the test has been done (if not given above)*

*Results of the clicks evaluation:*

- *Minimum observation time*
- *click rate for at least 150 kHz and 500 kHz*
- *Input attenuator (if applied)*
- *Number of short and long clicks (< 10 ms, 10 ms - 20 ms, 20 ms – 200 ms)*
- *Number of Switching events (if applied)*
- *Applied limit (dB $\mu$ V) per frequency*
- *Result of the upper quartile evaluation (if applied and if necessary)*

## 4.2 &lt;&lt;Disturbance power&gt;&gt;

Advice to TRF Originator: See information under 4.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (stand) .....		
Test set up description .....	<input type="checkbox"/>	Equipment on table 80 cm height
	<input type="checkbox"/>	Equipment on support 10 cm height
	<input type="checkbox"/>	Other:
Test set up description .....		
Used mains voltage / frequency for the test. Evaluated at 50 MHz (0,9 – 1,1 of $U_N$ ) .....	<p>Advice to TRF Originator: This row is only necessary for CISPR 14-1.  <i>Advice to TRF User:</i>  <i>Insert all voltages where the tests have been done. E.g. for products with rated voltage range: More than one voltage can be indicated here.</i></p>	
Conditions for exemption from measurements above 300 MHz ...	<input type="checkbox"/>	Table 2 b limits applied and passed
	<input type="checkbox"/>	Maximum clock frequency < 30 MHz
Supplementary information .....	---	
Test set-up photo .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i></p>	

**Minimum content to be inserted here by the laboratory for each single measurement:**

*Operation mode which has been used during testing*

*Port which has been measured*

*Mains voltage and frequency at which the test has been done*

*Verdict (Pass/Fail) for the single measurement documented here*

*Used detectors*

*Used IF BW and step size and / or Preamp*

*Used measurement times per frequency for pre-scan and final measurement if applicable*

*Diagram of the disturbance power over the frequency range measured including the limits*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*Frequency, Reading, Limit, Margin (Limit - reading)*



## 4.3 &lt;&lt;Insertion loss &gt;&gt;

Advice to TRF Originator: See information under 4.1 above which is valid also here

Tested by .....	:	
Test date .....	:	
Test location (stand) .....	:	
Test set up description .....	:	
Supplementary information .....	:	---

Test set-up photo .....	:	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	---	--

**Minimum content to be inserted here by the laboratory for each single measurement:**

*Mains voltage and frequency at which the test has been done*

*Verdict (Pass/Fail) for the single measurement documented here*

*Table of the measurement values*

*Minimum content (columns) of the table:*

*Frequency, Reading, Limit, Margin (Limit - reading)*

## 4.4 &lt;&lt;Disturbance field strength / Magnetic field&gt;&gt;

Advice to TRF Originator: See information under 4.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (stand) .....		
Applied limit class.....	<input type="checkbox"/>	Class A according to applied standard
	<input type="checkbox"/>	Class B according to applied standard
	<input type="checkbox"/>	Other:
Test set up description .....	<input type="checkbox"/>	Equipment on a table 80 cm height
	<input type="checkbox"/>	Equipment on the floor (isolated from ground plane)
	<input type="checkbox"/>	Other:
Supplementary test set up description.....	---	
Test method applied .....	<input type="checkbox"/>	Large loop antenna: Diameter 2 m
	<input type="checkbox"/>	Large loop antenna: Diameter x m
	<input type="checkbox"/>	60 cm loop antenna with measurement distance [m]:
Supplementary information .....	---	

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

**Minimum content to be inserted here by the laboratory for each single measurement:**

*Operation mode which has been used during testing*

*Mains voltage and frequency at which the test has been done*

*Verdict (Pass/Fail) for the single measurement documented here*

*Used detectors*

*Used IF BW and step size and / or Preamp*

*Used measurement times per frequency for prescan and final measurement if applicable*

*Diagram of the disturbance field strength over the frequency range measured including the limits*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*Frequency, Reading, Limit, Margin (Limit - reading),*

*Polarisation, turntable azimuth, antenna height*

## 4.5 &lt;&lt;Disturbance field strength / Electric field&gt;&gt;

Advice to TRF Originator: See information under 4.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (stand) .....		
Applied limit class.....	<input type="checkbox"/>	Class A according to applied standard
	<input type="checkbox"/>	Class B according to applied standard
	<input type="checkbox"/>	Other:
Test set up description .....	<input type="checkbox"/>	Equipment on a table 80 cm height
	<input type="checkbox"/>	Equipment on the floor (isolated from ground plane)
	<input type="checkbox"/>	Other:
Supplementary test set up description.....	---	
Test method applied .....	<input type="checkbox"/>	OATS or SAC with measurement distance [m]:
	<input type="checkbox"/>	FAR with measurement distance [m]:
	<input type="checkbox"/>	TEM waveguide
	<input type="checkbox"/>	CDN(E) according to CISPR 15
Supplementary information .....	---	

Test set-up photo .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i></p>
-------------------------	---

**Minimum content to be inserted here by the laboratory for each single measurement:**

*Operation mode which has been used during testing*

*Mains voltage and frequency at which the test has been done*

*Verdict (Pass/Fail) for the single measurement documented here*

*Used detectors*

*Used IF BW and step size and / or Preamp*

*Used measurement times per frequency for prescan and final measurement if applicable*

*Diagram of the disturbance field strength over the frequency range measured including the limits*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*Frequency, Reading, Limit, Margin (Limit - reading),*

*Polarisation, turntable azimuth, antenna height*

**5 Harmonics IEC 61000-3-2**

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (stand) .....		
Version of measurement instrument standard used IEC 61000-4-7 (Clause 7) .....	<input type="checkbox"/>	IEC 61000-4-7:1991
	<input type="checkbox"/>	IEC 61000-4-7:2002 + A1:2008
Test set up description .....		
Operating modes of EUT .....		
Limit classification in accordance with the standard.....	<input type="checkbox"/>	Class A
	<input type="checkbox"/>	Class B
	<input type="checkbox"/>	Class C with power > 25 W
	<input type="checkbox"/>	Class C with power < 25 W Option a)
	<input type="checkbox"/>	Class C with power < 25 W Option b)
	<input type="checkbox"/>	Class D
Observation period.....	Description	Period selected $T_{obs}$
	<input type="checkbox"/> Quasi stationary	2.5 min
	<input type="checkbox"/> Short cyclic	$T_{obs} \geq 10$ cycles =
	<input type="checkbox"/> Random	$T_{obs} =$
	<input type="checkbox"/> Long cyclic	Full program cycle or 2.5 min. with highest THC $T_{obs} =$
Control principle used in the sample.....		
Supplementary information .....	---	

Advice to TRF User:

**Minimum content to be inserted here by the laboratory for each single measurement:**

Operation mode which has been used during testing

Mains voltage and frequency at which the test has been done

Verdict (Pass/Fail) for the single measurement documented here

power factor

real power

Table of the final measurement values

Minimum content (columns) of the table:

Harmonic order, Average values, limit,

Graphic representation of the wave shape if power < 25 W and limit C b) has been selected

**6 Harmonics IEC 61000-3-12**

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....			
Test date .....			
Test location (stand) .....			
Test method .....	<input type="checkbox"/>	Direct measurement	
	<input type="checkbox"/>	Calculation by validated simulation	
Version of measurement instrument standard for direct measurement .....	<input type="checkbox"/>	IEC 61000-4-7:1991	
	<input type="checkbox"/>	IEC 61000-4-7:2002 + A1:2008	
Test set up description .....			
Operating modes of EUT .....			
Minimum $R_{sce}$ .....			
Limit classification in accordance with the standard .....	<input type="checkbox"/>	Non symmetrical equipment (Table 2)	
	<input type="checkbox"/>	Symmetrical 3-phase equipment (Table 3)	
	<input type="checkbox"/>	Symmetrical 3-phase equipment under special conditions (Table 4)	
		<input type="checkbox"/>	Condition a)
		<input type="checkbox"/>	Condition b)
	<input type="checkbox"/>	Symmetrical 3-phase equipment under special conditions (Table 5)	
		<input type="checkbox"/>	Condition d)
		<input type="checkbox"/>	Condition e)
		<input type="checkbox"/>	Condition f)
	Observation period .....	Description	
<input type="checkbox"/>		Quasi stationary	Period selected $T_{obs}$ 2.5 min
<input type="checkbox"/>		Short cyclic	$T_{obs} \geq 10$ cycles =
<input type="checkbox"/>		Random	$T_{obs} =$
<input type="checkbox"/>		Long cyclic	Full program cycle or 2.5 min. with highest THC $T_{obs} =$
Control principle used in the sample .....			
Supplementary information .....	---		

Advice to TRF User:

**a) For Method: Direct measurement****Minimum content to be inserted here by the laboratory for each single measurement:**

TRF No. IEC (or ISO) xxxxx\_xy

*Operation mode which has been used during testing*  
*Mains voltage and frequency at which the test has been done*  
*Verdict (Pass/Fail) for the single measurement documented here*  
*power factor*  
*real power*  
*Measurement Impedance of mains used during test*  
*Reference current  $I_{ref}$*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*Harmonic order, Average values, limit,*

*Graphic representation of the waveshape if power < 25 W and limit C b) has been selected*

**b) For method: Simulation**

Insert here the documentation and results of the simulation used for determining compliance.

## 7 AC Mains Voltage fluctuation and flicker

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test Location (stand) .....		
Test set up description .....		
Test method .....	<input type="checkbox"/>	4.2.2 Flickermeter according IEC 61000-4-15
	<input type="checkbox"/>	4.2.3 Simulation
	<input type="checkbox"/>	4.2.4 Analytical method
	<input type="checkbox"/>	4.2.5 Use of $P_{st} = 1$ curve
Observation time selected .....	<input type="checkbox"/>	10 Minutes
	<input type="checkbox"/>	120 Minutes
	<input type="checkbox"/>	24 times switching according to annex B
Limit for $d_{max}$ applied .....	<input type="checkbox"/>	4 %
	<input type="checkbox"/>	6 %
	<input type="checkbox"/>	7 %
AC Mains voltage during test .....		
Supplementary information .....		

Advice to TRF User:

**Minimum content to be inserted here by the laboratory for each single measurement:**

*Operation mode which has been used during testing*

*Mains voltage and frequency at which the test has been done*

*Verdict (Pass/Fail) for the single measurement documented here*

*Impedance used for measurement ( $Z_{ref} = xx \text{ Ohms} + j YY \text{ Ohms}$ )*

*Table of the final measurement values*

*Minimum content (columns) of the table:*

*$p_{st}$ ,  $p_{lt}$ ,  $d_{max}$ ,  $d_c$ ,  $T(500 \text{ ms})$*

*Minimum content (columns) of the table used for documenting the annex B measurement:*

*$d_{max}$  for each of the 24 measurements*

*final values of  $d_{max}$  for the average of 22 measurements*

**Additionally in case the IEC 61000-3-11 has been applied:**

*$Z_{max}$  (Maximum allowed system impedance for conditional connection)*

*$Z_{sys}$  for each measurement value ( $P_{lt}$ ,  $P_{st}$ ,  $d_c$ ,  $d_{max}$ )*

*Graphic representation of the waveshape if power < 25 W and limit C b) has been selected*

## 8 IMMUNITY

Advice to Originator: The sequence of the tests shall be identical to the sequence typically given in the product standard (if applicable).

### 8.1 General information

Performance criteria as defined by the standard	
Criterion	Description from standard
A	Advice to Originator: Copy here the criterion from the product standard
B	Advice to Originator: Copy here the criterion from the product standard
C	Advice to Originator: Copy here the criterion from the product standard
D	Advice to Originator: Copy here the criterion from the product standard
Other:	--

Manufacturer defined performance criteria .....	Criterion	Description
	A	<i>Advice to TRF User: Insert here the criterion based on the actual sample. Do not copy the criterion from the standard Example: Motor speed shall not be different more than 10 % form the selected value without disturbance.</i>
	B	
	C	
	D	
Other:	--	
Monitoring during the tests.....	<i>Advice to TRF User: Describe here what kind of monitoring has been used during the tests. Example: Visual inspection, Bit error rate monitoring.</i>	

### 8.2 Information specific for IEC 60601-1-2

Advice to the Originator of the TRF: Insert here the specific information needed for testing the relevant IEC xxxx, if needed. If not needed, then delete this clause.

Manufacturer's definition of minimal performance quality and essential performance criteria.....	<i>Advice to TRF User: Please fill in for test items according to IEC 60601-1-2 or make a reference to the general section above.</i>
--	---

### 8.3 Information specific for IEC xxxx

Advice to the TRF Originator

TRF: Insert here the specific information needed for testing the relevant IEC xxxx, if needed. If not needed, then delete this clause.



8.4 <<Electrostatic discharge immunity test (ESD)>>

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test location(Stand) .....		
Test set up .....	<input type="checkbox"/>	Table top equipment
	<input type="checkbox"/>	Floor standing equipment
	<input type="checkbox"/>	Wall or ceiling mounted equipment (Treated as table top)
Supplementary test set up description .....	--	
Size of horizontal coupling plate ..	1,6 x 0,8 m	
Number of discharges for each test point .....		
Discharge interval .....		
Number of discharges .....	Min. 10 / 25 per discharge location	
Performance criterion .....	B	
Supplementary information .....		

Test set-up photo .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i></p>
-------------------------	---

Photo of selected test points .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i></p>
-------------------------------------	---

Test results for electrostatic discharges						
No.	Location of discharge	Type	Polarity	Test level [kV]	Operating mode	Observations
1	VCP ....	Con	P			
2	VCP ....	Con	N			
3		Air	P			
		Air	N			
HCP = Horizontal coupling plate; VCP = Vertical coupling plate N= Negative; P= Positive Con= Conducted discharge; Air= Air discharge						
Supplementary information:						

*Advice to TRF user:*

*Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

## 8.5 &lt;&lt;Radiated, radio-frequency, electromagnetic field immunity test&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test location(Stand) .....		
Test set-up .....	<input type="checkbox"/>	Equipment on the table (0,8 m height)
	<input type="checkbox"/>	Equipment standing on floor (0,05 – 0,15 m height)
Supplementary test set up description .....		
Exposed side of EUT .....	<input type="checkbox"/>	0° (Front)
	<input type="checkbox"/>	90 °
	<input type="checkbox"/>	180 ° (Rear)
	<input type="checkbox"/>	270 °
Reason for not exposing a side ... :		
Distance Antenna to EUT .....	3 m	
Step size [%] .....	1 %	
Performance criterion .....	A	
Mains voltage / frequency during test .....		
Supplementary information .....	--	

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

Test results for radiated electromagnetic field						
Frequency range / discrete frequencies	Test Level [V/m]	Polarisation	Modulation	Operation mode	Dwell time [s]	Observations
80 – 1000 MHz	3	H	AM 1 kHz 80 %	1	1	--
1,4 – 2,7 GHz	10	V	PM 100 %, 200 Hz	2	1	--
Supplementary information: ---						

*Advice to TRF user:**Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

## 8.6 &lt;&lt;Electrical fast transients / burst immunity test&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (stand) .....		
Test set-up .....	<input type="checkbox"/>	Equipment on the table (0,1 ± 0,01) m above ground plane
	<input type="checkbox"/>	Equipment standing on floor at (0,1 ± 0,05) m above ground plane
	<input type="checkbox"/>	Artificial hand applied. Location see photo.
Supplementary test set up description .....		
Repetition frequency .....	<i>5 kHz or 100 kHz</i>	
Test time .....	<i>1 min</i>	
Performance criterion .....	<i>B</i>	
Supplementary information .....	--	

Test set-up photo .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i>  <i>Advice to TRF User: Add here a photo of the location of the artificial hand if applied during the test.</i></p>
-------------------------	---

Test results fast transients						
Port	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage / frequency	Observation
<i>mains</i>	<i>CDN</i>	<i>2</i>	<i>P</i>	<i>No. 2</i>	<i>230 V / 50 Hz</i>	<i>None</i>
<i>mains</i>	<i>CDN</i>	<i>2</i>	<i>P</i>	<i>No. 2</i>	<i>220 V / 60 Hz</i>	<i>None</i>
<i>Signal</i>	<i>Clamp</i>	<i>2</i>	<i>N</i>	<i>No. 2</i>	<i>230 V / 50 Hz</i>	<i>None</i>
<i>Signal</i>	<i>Clamp</i>	<i>2</i>	<i>N</i>	<i>No. 2</i>	<i>220 V / 60 Hz</i>	<i>None</i>
Supplementary information: ---						

*Advice to TRF User:*

*Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

8.7 <<Surge immunity test>>

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....	
Test date .....	
Test location(Stand) .....	
Test set up description .....	
Repetition rate .....	1 / min
Number of pulses for each coupling .....	5
Performance criterion .....	B
Supplementary information .....	--

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

Test results for surges								
Port	Coupling	CDN (figure no.)	Level [kV]	Polarity	Phase angles [°]	Operating mode	Mains voltage / frequency	Observation
Mains	L1 - N	Mains	1	P	0, 90, 180, 270	3	230 V / 50 Hz	None
Mains	L1 - PE N - PE	Mains	2	P	0, 90, 180, 270	3	220 V / 60 Hz	None
Control	A1	F13	1	N	-	3	230 V / 50 Hz	None
Mains	Direct	Mains	1	P	-	3	220 V / 60 Hz	None
Lower test levels .....			<input type="checkbox"/>	The lower test levels are tested also.				
			<input type="checkbox"/>	The lower test levels are not tested.				
Legend: Polarity: P = Positive, N = Negative CDN: Mains = Mains Coupling Network, Signal/Control: F13 = Figure No. 13 from IEC 61000-4-5 etc.								
Supplementary information:								

*Advice to TRF user:  
Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

## 8.8 &lt;&lt;Immunity to conducted disturbances, induced by radio-frequency fields&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....		
Test date .....		
Test location (Stand) .....		
Test set-up .....	<input checked="" type="checkbox"/>	Equipment located (0,1 ± 0,05) m above ground plane
	<input type="checkbox"/>	Elevated ground plane according to Annex F
	<input type="checkbox"/>	Artificial hand applied. Location see photo.
	<input type="checkbox"/>	Medical equipment (Deviations of IEC 60601-1-2 considered)
Supplementary test set up description .....		
Modulation .....	<input type="checkbox"/>	80 % AM with 1 kHz
	<input type="checkbox"/>	100 % PM with 222 Hz
	<input type="checkbox"/>	Other:
Step size .....	1 %	
Performance criterion .....	A	
Mains voltage / frequency during test .....		
Supplementary information .....	--	

Test set-up photo .....	<p><i>Advice to TRF User:</i>  <i>The number of photos printed here is decided by the laboratory.</i></p> <p><i>Advice to TRF user:</i>  <i>Add here a photo of the location of the artificial hand if applied during the test.</i></p>
-------------------------	---

Test results for conducted disturbances, induced by radio-frequency fields							
Frequency range / discrete frequencies	Test Level [V]	Port under test	CDN type	Port with terminated CDN	Operating mode	Dwell time [s]	Observations
0,15 - 80 MHz	3	Mains	M3	RS232	1	1	--
0,15 - 80 MHz	3	USB	USB	Mains	1	1	--
Supplementary information: ---							

*Advice to TRF user:*  
Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.

## 8.9 &lt;&lt;Power frequency magnetic field immunity test&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....	
Test date .....	
Test location (Stand) .....	
Test set-up .....	<input type="checkbox"/> 0,1 m above metal surface
	<input type="checkbox"/> Homogeneous field (Helmholtz coil). Dimensions:
	<input type="checkbox"/> Single Coil. Dimensions: 1 x 1 m
	<input type="checkbox"/> Single Coil. Dimensions: 1 x 2,6 m
Performance criterion .....	A
Observations during test .....	--
Reason for not performing the test:	
Supplementary information .....	--

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

Test results for power frequency magnetic field immunity test							
Test frequency	Test Level [A/m]	Test time [s]		Axis	Operating mode	Mains voltage / frequency	Observations
50 Hz	3	10		x	1	230 V / 50 Hz	--
60 Hz	3	10		y	1	230 V / 50 Hz	--
Supplementary information: ---							

*Advice to TRF User:  
Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

## 8.10 &lt;&lt;Voltage dips, short interruptions and voltage variations immunity test&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....	:	
Test date .....	:	
Test location (Stand) .....	:	
Test set up description .....	:	
Repetition rate .....	:	10 s
Number of dips or interruptions....	:	3
Performance criterion.....	:	B (Voltage dips) C (Short interruptions UN= 0 %)
Supplementary information .....	:	--

Test results voltage dips						
$U_N$ [Volt]	Frequency [Hz]	Test level [% of $U_N$ ]	Phase angle	Duration [Cycles]	Operating mode	Observations
230	50	0	0 °	0,5	2	None
230	50	0	0 °	0,5	2	None
110	60	0	180 °	0,5	2	None
110	60	0	180 °	0,5	2	None
230	50	70	0 °	10	2	None
Supplementary information: ---						

Test results voltage interruptions						
$U_N$ [Volt]	Frequency [Hz]	Test level [% of $U_N$ ]	Phase angle	Duration [Cycles]	Operating mode	Observations
230	50	0	0 °	50	2	None
230	50	0	0 °	2500	2	None
Supplementary information: ---						

Test set-up photo .....	:	Advice to TRF User: The number of photos printed here is decided by the laboratory.
-------------------------	---	--

Advice to TRF user:

Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.



## 8.11 &lt;&lt;Voltage dips, short interruptions and voltage variations on d.c. input power port immunity test (IEC 61000-4-29)&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....	
Test date .....	
Test location (Stand) .....	
Test set up description .....	
Repetition rate .....	10 s
Number of dips or interruptions....	3
Performance criterion.....	Advice to TRF Originator: To be defined by the product standard
Supplementary information .....	--

Test results voltage dips					
$U_N$ [Volt]	Test level [% of $U_N$ ]	Impedance	Duration, [ms]	Operating mode	Observations
24	40 %	Low	10 / 30 / 100 / 300 / 1000	2	None
24	70 %	Low	10 / 30 / 100 / 300 / 1000	2	None
100	40 %	Low	10 / 30 / 100 / 300 / 1000	2	None
110	70 %	Low	10 / 30 / 100 / 300 / 1000	2	None
x	x	Low	x	2	None
Supplementary information: ---					

Test results voltage interruptions					
$U_N$ [Volt]	Test level, [% of $U_N$ ]	Impedance	Duration, [ms]	Operating mode	Observations
24	0 %	Low	1 / 3 / 10 / 30 / 100 / 300 / 1000	2	None
24	0 %	High	1 / 3 / 10 / 30 / 100 / 300 / 1000	2	None
110	0 %	Low	1 / 3 / 10 / 30 / 100 / 300 / 1000	2	None
110	0 %	High	1 / 3 / 10 / 30 / 100 / 300 / 1000	2	None
x	x	Low	x	2	None
x	x	High	x	2	None
Supplementary information: ---					

<b>Test results voltage variations</b>					
$U_N$ [Volt]	Test level, [% of $U_N$ ]	Impedance	Duration [s]	Operating mode	Observations
24	80	Low	0.1 / 0.3 / 1 / 3 / 10	2	None
24	85	Low	0.1 / 0.3 / 1 / 3 / 10	2	None
24	120	Low	0.1 / 0.3 / 1 / 3 / 10	2	None
24	x	Low	0.1 / 0.3 / 1 / 3 / 10	2	None
110	x	Low	0.1 / 0.3 / 1 / 3 / 10	2	None
Supplementary information: ---					

Test set-up photo .....	<i>Advice to TRF User: The number of photos printed here is decided by the laboratory.</i>
-------------------------	--

*Advice to TRF user:*

*Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.*

## 8.12 &lt;&lt;Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity test (IEC 61000-4-13)&gt;&gt;

Advice to TRF Originator: See information under 4.1.1 above which is valid also here

Tested by .....	
Test date .....	
Test location (Stand) .....	
Test set up description .....	
Performance criterion .....	Advice to TRF originator: To be defined by the product standard
Supplementary information .....	--

Test results according to table 7 of IEC 61000-4-13 – Time related function, “flat curve”					
$U_N$ [Volt]	Frequency [Hz]	Test level for class	Time at each dwell point [min]	Operating mode	Observations
230	50	1 or 2 or 4 X	2	2	None
230	60	1 or 2 or 4 X	2	2	None
Supplementary information: ---					

Test results according to table 8 of IEC 61000-4-13 – Harmonic combination, “over swing”							
$U_N$ [Volt]	Frequency [Hz]	h	3	5	Time at each dwell point, [min]	Operating mode	Observations
230	50	% of $U_N$	4 % / 180°	3 % / 0°	2	2	None
230	60	% of $U_N$	6 % / 180°	4 % / 0°	2	2	None
230	50	% of $U_N$	8 % / 180°	5 % / 0°	2	2	None
230	60	% of $U_N$	X % / 180°	X % / 0°	2	2	None
Supplementary information: ---							

Test results according to table 9 of IEC 61000-4-13 – Sweep in frequency test levels							
$U_N$ [Volt]	Frequency [Hz]	Frequency range	Freq. step	Test level [% of $U_N$ ]	Time at each dwell point, [s]	Operating mode	Observations
230	50	$0.33 \times f_1$ to $2 \times f_1$	$0.1 \times f_1$	2 / 3 / 4.5 / open	> 120	2	None
230	60	$2 \times f_1$ to $10 \times f_1$	$0.2 \times f_1$	5 / 9 / 14 / open	> 120	2	None
230	50	$10 \times f_1$ to $20 \times f_1$	$0.2 \times f_1$	4 / 4.5 / 9 / open	> 120	2	None
230	60	$20 \times f_1$ to $30 \times f_1$	$0.5 \times f_1$	2 / 2 / 6 / open	> 120	2	None
230	50	$30 \times f_1$ to $40 \times f_1$	$0.5 \times f_1$	2 / 2 / 4 / open	> 120	2	None
Supplementary information: ---							

Test results according to table 11 of IEC 61000-4-13 – Meister curve test levels							
$U_N$ [Volt]	Frequency [Hz]	Frequency range	Freq. step	Test level [% of $U_N$ ]	Time per decade, [min]	Operating mode	Observations
230	50	$0.33 \times f_1$ to $2 \times f_1$	$0.1 \times f_1$	3 / 4 / open	> 5	2	None
230	60	$2 \times f_1$ to $10 \times f_1$	$0.2 \times f_1$	9 / 10 / open	> 5	2	None
230	50	$10 \times f_1$ to $20 \times f_1$	$0.2 \times f_1$	4500/f or open	> 5	2	None
230	60	$20 \times f_1$ to $40 \times f_1$	$0.5 \times f_1$	4500/f or open	> 5	2	None
Supplementary information: ---							

Test set-up photo .....	<p><b>Advice to TRF User:</b> The number of photos printed here is decided by the laboratory.</p>
-------------------------	---

**Advice to TRF User:**  
Add here additional information (if applicable) for monitoring (e.g. recorded diagrams) or other information.

<<Conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz (IEC 61000-4-16)>>

Advice to TRF Originator: See information under 4.1.1 above which is valid also here




Tested by .....	
Test date .....	
Test location (Stand) .....	
Test set up description .....	
Performance criterion .....	Advice to TRF Originator: To be defined by the product standard
Supplementary information .....	---

Test results for conducted disturbances: Continuous disturbance						
Frequency	Test Level, [V]	Port under test	CDN type	Operating mode	Dwell time [s]	Observations
<i>DC</i>	<i>3</i>	<i>Mains</i>	<i>M3</i>	<i>1</i>	<i>120</i>	<i>--</i>
<i>50 Hz</i>	<i>3</i>	<i>Mains</i>	<i>M2</i>	<i>1</i>	<i>120</i>	<i>--</i>
<i>16 2/3 Hz</i>	<i>3</i>	<i>Mains</i>	<i>M2</i>	<i>1</i>	<i>120</i>	<i>-</i>
Supplementary information:						
---						

Test results for conducted disturbances: Short duration disturbance (typically 1 s)						
Frequency	Test level [V]	Port under test	CDN type	Operating mode	Dwell time [s]	Observations
<i>DC</i>	<i>30</i>	<i>Mains</i>	<i>M3</i>	<i>1</i>	<i>1</i>	<i>--</i>
<i>50 Hz</i>	<i>30</i>	<i>Mains</i>	<i>M2</i>	<i>1</i>	<i>1</i>	<i>--</i>
<i>16 2/3 Hz</i>	<i>30</i>	<i>Mains</i>	<i>M2</i>	<i>1</i>	<i>1</i>	<i>-</i>
Supplementary information:						
---						

Test results for conducted disturbances: Test in the frequency range 15 Hz to 150 kHz						
Frequency range	Test level, [V]	Port under test	CDN type	Operating mode	Dwell time [s]	Observations
<i>15 Hz – 150 kHz</i>	<i>30</i>	<i>Mains</i>	<i>M3</i>	<i>1</i>	<i>1</i>	<i>--</i>
	<i>30</i>	<i>Mains</i>	<i>M2</i>	<i>1</i>	<i>1</i>	<i>--</i>
Supplementary information: ---						

**9 Accompanying documents as required by IEC 60601-1-2**

IEC 60601-1-2			
Clause	Requirement + Test	Result – Remark	Verdict
<b>5</b>	<b>Identification, Marking and Documents</b>		
5.1	Marking on the outside		
5.1.1	RF equipment marked with symbol IEC 60417-5140 for non-ionizing radiation.		
5.1.2	Equipment for which the connector testing exemption is used marked with symbol IEC 60417-5134		
5.1.3	Equipment specified for use only in shielded location has appropriate marking / warning labels		
5.2	Accompanying documents		
5.2.1	Instructions for use		
5.2.1.1	All equipment and systems:		
	a) A statement that medical electrical equipment needs special precautions regarding EMC and needs to be installed according to EMC information		
	b) A statement that mobile RF communications equipment can effect medical electrical equipment		
5.2.1.2	Equipment for which the connector testing exemption is used		
	a) A reproduction of the ESD warning symbol (IEC 60417-5134)		
	b) A warning that pins of connectors marked with the warning symbol shall not be touched and connections shall not be made without special precautions		
	c) A specification of ESD precautionary procedures		
	d) A recommendation that all staff receive explanation and training in ESD procedures		
	e) A specification of the minimum contents of ESD precautions procedure training		
5.2.1.3	For equipment and systems without a manual sensitivity adjustment and for which the manufacturer specifies a minimum amplitude or value:		
	a) The minimum amplitude or value of signal		
	b) A warning that operation of the equipment below that value may cause inaccurate results		
5.2.1.4	For Type A Professional ME Equipment intended for use in domestic establishment		

IEC 60601-1-2			
Clause	Requirement + Test	Result – Remark	Verdict
	instructions for use includes a warning: This ME equipment is intended for use by professional healthcare personnel only.		
5.2.2	Technical description		
5.2.2.1	Requirements for all ME equipment and systems:		
	a) List of cables and accessories		
	b) A warning that other cables and accessories may negatively affect EMC performance		
	c) Table 1, modified as appropriate using Fig. 1 and 2		
	d) A warning regarding stacking and location close to other equipment		
	e) A justification for each immunity compliance level below 60601 test level		
	f) Table 2, completed as appropriate using Figure 3		
	g) The essential performance of ME equipment		
5.2.2.2	ME Equipment not specified for use in shielded location		
	Tables 3 and 5 (life-supporting) using Figure 4, Tables 4 and 6 (non-life-supporting) using Figure 5 selected and completed as appropriate following a)-e)		
5.2.2.3	ME Equipment specified for use only in shielded location		
	a) A warning that equipment should be used only in the specified type of shielded location		
	b) Tables modified if disturbance allowance according to 6.1.1.1 d) is used		
	c) A specification of allowed emission of other equipment located within the shielded location		
	d) Table 7 (life-supporting) or 8 (non-life-supporting) as appropriate		
5.2.2.4	ME Equipment that intentionally apply RF energy – documents shall include guidelines for avoiding or identifying and resolving adverse electromagnetic effects on other equipment		
5.2.2.5	ME Equipment that intentionally receive RF energy		
	a) Each (preferred if applicable) frequency or frequency band of reception, and the bandwidth of the receiving section of the ME equipment in those bands		
	b) A warning that the ME equipment may be interfered with by other equipment		
5.2.2.6	ME Equipment that includes RF transmitters – documentation shall include each frequency or		

IEC 60601-1-2			
Clause	Requirement + Test	Result – Remark	Verdict
	frequency band of transmission, the type and frequency characteristics of the modulation and ERD		
5.2.2.7	Requirements of cables, transducers and accessories		
	a) Documentation shall include list of ME Equipment		
	b) A warning that use of other accessories results in non-compliance		
5.2.2.8	Requirements applicable to large permanently installed ME equipment and systems		
	a) A statement that an exemption has been used and that the me equipment has not been tested for radiated RF immunity over the entire frequency range 80 MHz to 2.5 GHz		
	b) A warning that the ME equipment has been tested for radiated RF immunity only at selected frequency		
	c) A list of the transmitters or equipment used as RF test sources and the frequency and modulation characteristics of each source.		
5.2.2.9	Requirements applicable to ME equipment that has no essential performance		
	a) Statement that the ME equipment was not tested for immunity to electromagnetic disturbance		
	b) Document shall include information applicable to the ME equipment		
5.2.2.10	Requirements applicable to ME equipment that is Type A Professional only		
	Document include a justification for not complying with the CISPR 11 group 2 Class B electromagnetic radiation disturbance limit		



**10 List of test equipment**

Equipment used					
<p><i>Advice to the TRF User: Insert here the name/number of the test location (Stand) which is referenced in the test result sections. Example: "Test stand No. 5 Disturbance voltage"</i></p>					
Equipment	Type	Inventory number	Manufacturer	Last calibration	Calibration due date
					*
<p><i>Advice to the TRF User: Insert here the name/number of the test location (Stand) which is referenced in the test result sections. Example: "Test stand No. 7 Disturbance power"</i></p>					
<p><i>Advice to the TRF User: Add in this table all used instrumentation in the same way as described above.</i></p>					

\* Calibration interval extended based on sufficient calibration data and experience of use (see IEC 60730:2015 clause 8.3)

**ANNEX**

Critical components table

*Advice to the TRF User: Fill in here the critical components table if applicable.*

<b>Critical components information</b>			
<b>Object</b>	<b>Manufacturer / Trademark</b>	<b>Type/Model</b>	<b>Remark</b>
<i>Mains filter</i>			
<i>Ferrite</i>			
<i>Shielding</i>			
<i>Cable arrangement</i>			

Type designation code

*Advice to the TRF User:**Insert here: Description of the type code for the test item.**Insert here also the reason why the test item(s) covers the whole type code.**Advice to the TRF User:**Add from here on any information as decided by the laboratory. Use new headings for each section.*

