

# ROMANIAN ACCREDITATION ASSOCIATION – RENAR

Bucharest, Calea Vitan no. 242, sector 3, zip code 031301

CIF RO 4311980



*RENAR is EA-MLA signatory for Testing.*

## ACCREDITATION CERTIFICATE

**No. LI 1036**

Romanian Accreditation Association – RENAR, being recognized as National Accreditation Body by GO 23/2009, herewith attests that the organization:

### **NATIONAL INSTITUTE FOR RESEARCH-DEVELOPMENT AND TESTING IN ELECTRICAL ENGINEERING - ICMET CRAIOVA**

**Craiova, # 118A Decebal Avenue, Dolj county**

through

#### **Low and High Voltage Testing Laboratory for Electrical Equipment**

fulfills the requirements of **SR EN ISO/IEC 17025:2018** and is competent to carry on **TESTING** activities, as it is detailed in the Annex of the present accreditation certificate.

This accreditation is maintained provided that the accreditation criteria established by the Romanian Accreditation Association – RENAR are met continuously.

The present certificate includes Annex no. 1/17.01.2024 (30 pages), which is an integrated part of this certificate.

The accreditation certificate is an essential accreditation document which might be periodically revised and issued by RENAR. The most recent version of the accreditation certificate is available on the website of RENAR, [www.renar.ro](http://www.renar.ro)

Date of initial accreditation: 10.10.2014

Date of renewal the accreditation 10.10.2022

Updated on: 17.01.2024

The accreditation is valid until: 09.10.2026

**GENERAL DIRECTOR**

**Alina Elena TAINĂ**



**PRESIDENT OF THE ACCREDITATION COUNCIL**

**PhD. eng. Dumitru DINU**

The translation of this certificate was issued today, 29.04.2024.

The accreditation certificate does not exempt CABs from the obligation to obtain all approvals and authorizations required for its operation in accordance with the law.

Partial reproduction of this certificate is forbidden.

**Annex no.1 to Accreditation Certificate no. LI 1036**  
**Annex no. 1 Issue Date: 17.01.2024**

**NATIONAL INSTITUTE FOR RESEARCH-DEVELOPMENT AND TESTING IN ELECTRICAL ENGINEERING - ICMET CRAIOVA**

through **Low and high voltage testing laboratory for electrical equipment**

Craiova, # 118 A Decebal Avenue, Dolj County

**A. Tests performed in permanent sites**

No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
<b>I. TESTS FOR HIGH VOLTAGE EQUIPMENTS</b>			SR EN 60060-1:2011 (IEC 60060-1:2010) SR EN 60060-2:2011 (IEC 60060-2:2010) SR EN IEC 60071-1:2020 (IEC 60071-1:2019) SR EN IEC 60071-2:2023 (IEC 60071-2:2023)
1.	Lightning impulse test (LI) 1,2/50 $\mu$ s ( $U_{max} = 2\ 500\ kV_{peak}$ )	Oil-immersed or dry power transformers	SR EN 60076-3:2014 + A1:2018 (IEC 60076-3:2013 +A1:2018), clause 13 SR EN 60076-4:2003 (IEC 60076-4:2002), clauses 7, 9, 10, 11 IEC 60076-11:2018, clause 14.3.1 <b>PT-01-IT.03</b>
		Tap-changers	SR EN 60214-1:2015 (IEC 60214-1:2014), clauses 5.2.8.5, 5.2.8.6, 7.2.5.5, 7.2.5.6 <b>PT-01-IT.47</b>
		Current instrument transformers	SR EN 61869-1:2010, clauses 7.2.3, 7.4.1, 7.4.2 IEC 61869-1:2023, clauses 7.2.3, 7.2.3.3, 7.4.1 SR EN 61869-2:2013 (IEC 61869-2:2012), clause 7.2.3 SR EN 61869-4:2014 (IEC 61869-4:2013), clause 7.2.3 SR EN 61869-6:2017 (IEC 61869-6:2016), clauses 7.2.3, 7.2.601.4, 7.4.1, 7.4.2 <b>PT-01-IT.10</b>
		Voltage instrument transformers	SR EN 61869-1:2010, clauses 7.2.3, 7.4.1, 7.4.2 IEC 61869-1:2023, clauses 7.2.3, 7.2.3.3, 7.4.1 SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.2.3 SR EN 61869-4:2014 (IEC 61869-4:2013), clause 7.2.3 SR EN 61869-5:2012 (IEC 61869-5:2011), clauses 7.2.3, 7.4.1, 7.4.2 SR EN 61869-6:2017 (IEC 61869-6:2016), clauses 7.2.3, 7.2.601.4, 7.4.1, 7.4.2 <b>PT-01-IT.09</b>
		Alternating current disconnectors	IEC 62271-1:2017+A1:2021, clause 7.2 SR EN IEC 62271-102:2019 SR EN IEC 62271-102:2019/A1:2022 IEC 62271-102:2018+A1:2022, clause 7.2 <b>PT-01-IT.14</b>
		Alternating current circuit breakers	IEC 62271-1:2017+A1:2021, clause 7.2 IEC 62271-100:2021, clause 7.2 SR EN 62271-103:2012, clause 6.2 IEC 62271-103:2021, clause 7.2



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
			<b>PT-01-IT.16</b>
		AC metal-enclosed switchgear controlgear	IEC 62271-1:2017+A1:2021, clause 7.2 SR EN IEC 62271-200:2021 (IEC 62271-200:2021), clause 7.2 <b>PT-01-IT.17</b>
		AC enclosed busbars	IEC 62271-1:2017+A1:2021, clause 7.2 <b>PT-01-IT.20</b>
		Insulated bushings	IEC 60137:2017, clauses 8.4, 9.3 SR EN 50386:2011+A1:2014 (EN 50386:2010+A1:2013) <b>PT-01-IT.23</b>
		Ceramic material or glass insulators	SR EN 60383-1:2002 (IEC 60383-1:1993), clauses 13, 15 SR EN 60383-2:1996 (IEC 60383-2:1993), clause 9 SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clause 4.5 <b>PT-01-IT.39</b>
		Composite insulators	SR EN 61109:2009 (IEC 61109:2008), clauses 10, 11.1 SR EN 61952:2008 (IEC 61952:2008), clauses 10, 11 SR EN 61462:2008 (IEC 61462:2007), clause 7.2.5.2 <b>PT-01-IT.39</b>
		Polymeric insulators	SR EN 62217:2013 (IEC 62217:2012), clause 9.2.7.3 <b>PT-01-IT.39</b>
		Organic material insulators	SR EN 60660:2001 (IEC 60660:1999), clauses 3.3 and 3.6 <b>PT-01-IT.39</b>
		Power cables with extruded insulation, terminals and their accessories	SR IEC 60502-1:2021 (IEC 60502-1:2021), clause 17.5 SR EN IEC 60230:2018 (IEC 60230:2018) SR EN IEC 60230:2018/A1:2023 (IEC 60230:2018/AMD1:2023) SR EN 61442:2006 (IEC 61442:2005), clause 6 IEC 60502-2:2014, clause 18.2.8 IEC 60502-4:2010, clauses 8, 9 IEC 60840:2020, clauses 10.12, 12.4 <b>PT-01-IT.38</b>
		Metal-oxide surge arresters without gaps	SR EN 60099-4:2015 (IEC 60099-4:2014), clause 8.2.6 <b>PT-01-IT.39</b>
		Reactors, grounding resistors	SR EN 60076-6:2009 (IEC 60076- 6:2007), clauses 7.8.10.4, 7.8.10.5 IEC 62271-1:2017+A1:2021, clause 7.2 <b>PT-01-IT.26</b>
		Capacitive dividers, coupling capacitors, shunt capacitors	SR EN 60358-1:2013 (IEC 60358-1:2012), clause 10.1 SR EN 60871-1:2015 (IEC 60871-1:2014), clause 15.2



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
			SR EN 60831-1:2014 (IEC 60831-1:2014), clause 15 <b>PT-01-IT.41</b>
		High voltage current limiting fuses	SR EN IEC 60282-1:2020 (IEC 60282-1:2020) clause 7.4.4 <b>PT-01-IT.33</b>
2.	Alternative applied voltage test (AV) ( $U_{max} = 1000 \text{ kV}_{ef}$ )	Oil-immersed or dry power transformers	SR EN 60076-3:2014+A1:2018 (IEC 60076- 3:2013+A1:2018), clause 10 IEC 60076-11:2018, clause 14.2.5 <b>PT-01-IT.02</b>
		Tap-changers	SR EN 60214-1:2015 (IEC 60214-1:2014), clauses 5.2.8.8, 7.2.5.8 <b>PT-01-IT.47</b>
		Current instrument transformers	SR EN 61869-1:2010, clauses 7.2.4, 7.3.1, 7.3.3, 7.3.4 IEC 61869-1:2023, clauses 7.2.4, 7.3.1, 7.3.3, 7.3.4 SR EN 61869-2:2013 (IEC 61869-2:2012), clause 7.3.1 SR EN 61869-4:2014 (IEC 61869-4:2013), Table 10, clause 7.3.1 SR EN 61869-6:2017 (IEC 61869-6:2016), Table 10, clauses 7.2.601.3, 7.3.1, 7.3.4, 7.3.601 <b>PT-01-IT.08</b>
		Voltage instrument transformers	SR EN 61869-1:2010, clauses 7.2.4, 7.3.1, 7.3.3, 7.3.4 IEC 61869-1:2023, clauses 7.2.4, 7.3.1, 7.3.3, 7.3.4 SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.3.1 SR EN 61869-4:2014 (IEC 61869-4:2013), Table 10, clause 7.3.1 SR EN 61869-5:2012 (IEC 61869-5:2011), clauses 7.2.4, 7.3.1 SR EN 61869-6:2017 (IEC 61869-6:2016), Table 10, clauses 7.2.601.3, 7.3.1, 7.3.4, 7.3.601 <b>PT-01-IT.07</b>
		Alternating current disconnectors	IEC 62271-1:2017+A1:2021, clause 7.2 SR EN IEC 62271-102:2019 SR EN IEC 62271-102:2019/A1:2022 IEC 62271-102:2018+A1:2022, clause 7.2 <b>PT-01-IT.13.</b>
		Alternating current circuit - breakers	IEC 62271-1:2017+A1:2021, clause 7.2 IEC 62271-100:2021, clause 7.2 SR EN 62271-103:2012, clause 6.2 IEC 62271-103:2021, clause 7.2 <b>PT-01-IT.15</b>
		AC metal enclosed switchgear and control gear	IEC 62271-1:2017+A1:2021, clause 7.2 SR EN IEC 62271-200:2021 (IEC 62271-200:2021), clause 7.2 <b>PT-01-IT.18</b>



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		AC enclosed busbars	IEC 62271-1:2017+A1:2021, clause 7.2 <b>PT-01-IT.19</b>
		Insulated bushings	IEC 60137:2017, clauses 8.2, 8.3 and 9.4, 9.6 SR EN 50386:2011+A1:2014 (EN 50386:2010+ A1:2013) <b>PT-01-IT.22</b>
		Ceramic material or glass insulators	SR EN 60383-1:2002 (IEC 60383-1:1993), clauses 13, 14, 15, 16 SR EN 60383-2:1996 (IEC 60383-2:1993), clauses 7, 10. SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clauses 4.7, 4.8, 4.9, 4.10 <b>PT-01-IT.39</b>
		Composite insulators	SR EN 61109:2009 (IEC 61109:2008), clauses 10, 11.1 SR EN 61952:2008 (IEC 61952:2008), clauses 10, 11 SR EN 61462:2008 (IEC 61462:2007), clauses 7.2.2, 7.2.5.3 <b>PT-01-IT.39</b>
		Polymeric insulators	SR EN 62217:2013 (IEC 62217:2012), clauses 9.2.3, 9.2.4, 9.2.7.4 <b>PT-01-IT.39</b>
		Organic material insulators	SR EN 60660:2001 (IEC 60660:1999), clauses 3.4, 5.4 <b>PT-01-IT.39</b>
		Power cables with extruded insulation, terminals and their accessories	SR IEC 60502-1:2021 (IEC 60502-1:2021), clause 17.4 SR EN 61442:2006 (IEC 61442:2005), clause 4 IEC 60502-2:2014, clause 18.2.9 IEC 60502-4:2010, clauses 8, 9 IEC 60840:2020, clause 12.4 <b>PT-01-IT.38</b>
		Metal-oxide surge arresters without gaps	SR EN 60099-4:2015 (IEC 60099-4:2014), clauses 8.2.8, 9 <b>PT-01-IT.39</b>
		Reactors, grounding resistors	SR EN 60076-6:2009 (IEC 60076- 6:2007), clause 7.8.10.2 IEC 62271-1:2017+A1:2021, clause 7.2 <b>PT-01-IT.30</b>
		Capacitive dividers, coupling capacitors, shunt capacitors	SR EN 60358-1:2013 (IEC 60358-1:2012), clauses 9.2.3, 10.2.1 SR EN 60871-1:2015 (IEC 60871-1:2014), clauses 9.2, 10, 15.1 SR EN 60831-1:2014 (IEC 60831-1:2014), clauses 9, 10 <b>PT-01-IT.41</b>
		High voltage current limiting fuses	SR EN IEC 60282-1:2020 (IEC 60282-1:2020), clauses 7.4.5, 7.4.6 <b>PT-01-IT.33</b>
3.	Induced alternative voltage	Oil-immersed or dry power	SR EN 60076-3:2014+A1:2018 (IEC 60076-



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
	test ( $f_{max} = 150$ Hz)	transformers, reactors	3:2013+ A1:2018), clauses 11, 12 IEC 60076-11:2018, clause 14.2.6 SR EN 60076-6:2009 (IEC 60076-6:2007), clause 7.8.10.3 <b>PT-01-IT.04</b>
4.	Switching impulse test (SI) 250 / 2500 $\mu$ s ( $U_{max} = 1500$ kV <sub>peak</sub> )	Oil-immersed power transformers	SR EN 60076-3:2014+A1:2018 (IEC 60076-3: 2013+A1:2018), clause 14 SR EN 60076-4:2003 (IEC 60076-4:2002), clauses 8, 9, 10, 11 <b>PT-01-IT.06</b>
		Reactors	SR EN 60076-6:2009 (IEC 60076- 6:2007), clause 7.8.10.6 <b>PT-01-IT.06</b>
		Tap-changers	SR EN 60214-1:2015 (IEC 60214-1:2014), clauses 5.2.8.7, 7.2.5.7 <b>PT-01-IT.47</b>
		Current instrument transformers	SR EN 61869-1:2010, clause 7.2.3.3 IEC 61869-1:2023, clause 7.2.3.4 SR EN 61869-2:2013 (IEC 61869-2:2012), clause 7.2.3.3 SR EN 61869-4:2014 (IEC 61869-4:2013), clause 7.2.3.3 SR EN 61869-6:2017 (IEC 61869-6:2016), clause 7.2.3 <b>PT-01-IT.12</b>
		Voltage instrument transformers	SR EN 61869-1:2010, clause 7.2.3.3 IEC 61869-1:2023, clause 7.2.3.4 SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.2.3.3 SR EN 61869-4:2014 (IEC 61869-4:2013), clause 7.2.3.3 SR EN 61869-5:2012 (IEC 61869-5:2011), clause 7.2.3.3 SR EN 61869-6:2017 (IEC 61869-6:2016), clause 7.2.3 <b>PT-01-IT.12</b>
		Alternating current disconnectors	IEC 62271-1:2017+A1:2021, clause 7.2 SR EN IEC 62271-102:2019 SR EN IEC 62271-102:2019/A1:2022 IEC 62271-102:2018+A1:2022, clause 7.2 <b>PT-01-IT.28</b>
		Alternating current circuit - breakers	IEC 62271-1:2017+A1:2021, clause 7.2 IEC 62271-100:2021, clause 7.2 SR EN 62271-103:2012, clause 6.2 IEC 62271-103:2021, clause 7.2 <b>PT-01-IT.27</b>
		Ceramic material or glass insulators	SR EN 60383-2:1996 (IEC 60383-2:1993), clause 11 SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clause 4.6 <b>PT-01-IT.39</b>
		Composite insulators	SR EN 61109:2009 (IEC 61109:2008), clause



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			11 SR EN 61952:2008 (IEC 61952:2008), clause 11 <b>PT-01-IT.39</b>
5.	Capacitances and tan $\delta$ measurement	Power transformers	SR EN 60076-1:2012 (IEC 60076-1:2011), clauses 11.1.2.2, 11.1.4 <b>PT-01-IT.01</b>
		Current instrument transformers	SR EN 61869-1:2010, clause 7.4.3 IEC 61869-1:2023, clause 7.3.10 SR EN 61869-2:2013 (IEC 61869-2:2012), clause 7.4.3 <b>PT-01-IT.32</b>
		Voltage instrument transformers	SR EN 61869-1:2010, clause 7.4.3 IEC 61869-1:2023, clause 7.3.10 SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.4.3 SR EN 61869-5:2012 (IEC 61869-5:2011), clause 7.4.3 <b>PT-01-IT.32</b>
		Insulated bushings	IEC 60137:2017, clause 9.2 <b>PT-01-IT.21</b>
		Power cables with extruded insulation	IEC 60502-2:2014, clause 18.2.6 IEC 60840:2020, clause 12.4.5 <b>PT-01-IT.38</b>
		Capacitive dividers, coupling capacitors, shunt capacitors	SR EN 60358-1:2013 (IEC 60358-1:2012), clauses 6.2.5, 9.2.2 SR EN 60871-1:2015 (IEC 60871-1:2014), clauses 7, 8, 14 SR EN 60831-1:2014 (IEC 60831-1:2014), clauses 7, 8, 14 <b>PT-01-IT.30</b>
6.	Partial discharge measurement (min.1 pC)		SR EN 60270:2003+A1:2016 (IEC 60270:2000 +A1:2015)
		Oil-immersed or dry power transformers, reactors	SR EN 60076-3:2014+A1:2018 (IEC 60076-3:2013+ A1:2018), clause 11.3 IEC 60076-11:2018, clauses 14.2.7, 14.4.1 SR EN 60076-6:2009 (IEC 60076- 6:2007), clause 7.8.10 <b>PT-01-IT.05</b>
		Tap-changers	SR EN 60214-1:2015 (IEC 60214-1:2014), clauses 5.2.8.9, 7.2.5.9 <b>PT-01-IT.47</b>
		Current instrument transformers	SR EN 61869-1:2010, clauses 5.3.3.1, 7.3.2 IEC 61869-1:2023, clauses 5.4.3.1, 7.3.2 SR EN 61869-2:2013 (IEC 61869-2:2012) SR EN 61869-4:2014 (IEC 61869-4:2013, Table 10 SR EN 61869-6:2017 (IEC 61869-6:2016), clause 7.3.2, Table 10 <b>PT-01-IT.11</b>
		Voltage instrument transformers	SR EN 61869-1:2010, clauses 5.3.3.1, 7.3.2 IEC 61869-1:2023, clauses 5.4.3.1, 7.3.2



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			SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.3.2 SR EN 61869-4:2014 (IEC 61869-4:2013), Table 10 SR EN 61869-5:2012 (IEC 61869-5:2011), clause 7.3.2 SR EN 61869-6:2017 (IEC 61869-6:2016), clause 7.3.2, Table 10 <b>PT-01-IT.11</b>
		Insulated bushings	IEC 60137:2017, clauses 8.3, 9.5 <b>PT-01-IT.24</b>
		Organic material insulators	SR EN 60660:2001 (IEC 60660:1999), clause 3.5 <b>PT-01-IT.39</b>
		Power cables with extruded insulation, terminals and their accessories	IEC 60502-2:2014, clause 18.2.5 IEC 60840:2020, clause 12.4.4 SR EN 61442:2006 (IEC 61442:2005), clause 7 <b>PT-01-IT.38</b>
		Metal-oxide surge arresters without gaps	SR EN 60099-4:2015 (IEC 60099-4:2014), clauses 9.1 c), d), 9.2.1 c), 12.8.17 <b>PT-01-IT.42</b>
		Capacitive dividers, coupling capacitors	SR EN 60358-1:2013 (IEC 60358-1:2012), clauses 6.2.3, 9.2.4 <b>PT-01-IT.41</b>
7.	Direct current (DC) high voltage test ( $U_{max} = 1000$ kV)	Electric cables, terminals and connections for electric cables	SR EN 60229:2009 (IEC 60229:2007), clause 3.1 SR EN 61442:2006 (IEC 61442:2005), clause 5 <b>PT-01-IT.34</b>
8.	Combined high voltage test (LI or SI; AC; DC)	High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clauses 7.2, 7.2.6.3 b), 7.2.7.3, 7.2.8.3, 7.2.8.4 IEC 62271-100:2021, clause 7.2 SR EN IEC 62271-102:2019 SR EN IEC 62271-102:2019/A1:2022 IEC 62271-102:2018+A1:2022, clause 7.2 SR EN 62271-103:2012, clause 6.2 IEC 62271-103:2021, clause 7.2 <b>PT-01-IT.35</b>
		Early streamer emission lightning protection systems	NFC 17-102:2011 (Annex C) UNE 21186:2011 (Annex C) <b>PT-01-IT.37</b>
9.	Evaluation of effectiveness of the early streamer emission devices	Early streamer emission lightning protection systems	NFC 17-102:2011 (Annex C) UNE 21186:2011 (Annex C) <b>PT-01-IT.37</b>
10.	Errors determination test (Test for accuracy)	Current instrument transformers	SR EN 61869-1:2010, clauses 3.4, 5.6, 7.2.6, 7.3.5 IEC 61869-1:2023, clauses 5.7.2, 7.2.6.2, 7.2.6.3, 7.3.6 SR EN 61869-2:2013 (IEC 61869-2:2012), clauses 7.2.6.201, 7.2.6.203, 7.3.5.201, 7.3.5.202 SR EN 61869-4:2014 (IEC 61869-4:2013), clause 7.3.5 <b>PT-01-IT.43</b>




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		Voltage instrument transformers	SR EN 61869-1:2010, clauses 3.4, 5.6, 7.2.6, 7.3.5 IEC 61869-1:2023, clauses 5.7.2, 7.2.6.2, 7.2.6.3, 7.3.6 SR EN 61869-3:2012 (IEC 61869-3:2011), clauses 7.2.6.301, 7.2.6.302, 7.3.5.301, 7.3.5.302 SR EN 61869-4:2014 (IEC 61869-4:2013), clauses 7.3.5 SR EN 61869-5:2012 (IEC 61869-5:2011), clauses 7.2.6.501, 7.2.6.502, 7.2.6.503, 7.2.6.504, 7.3.5.501, 7.3.5.502, 7.3.5.503 <b>PT-01-IT.44</b>
<b>II ELECTROMAGNETIC COMPATIBILITY TESTS</b>			
<b>II.1 EMISSIONS MEASUREMENTS</b>			
11.	Conducted continuous radio disturbance measurement (9 ÷ 30 000) kHz		SR EN 55016-2-1:2014+AC:2020 (EN 55016-2-1: 2014, CISPR 16-2-1:2014+A1:2017) <b>PT-01-CEM.01</b>
		Lifts, escalators and moving walks	SR EN 12015:2020, clauses 6.2, 6.2.3, 6.2.2
		Railway equipment	SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2:2016), clause 7 SR EN 50121-4:2017+A1:2019 (EN 50121-4:2016), clause 5 SR EN 50121-5:2017+A1:2019 (EN 50121-5:2017), clause 5 SR EN 50155: 2021 (SR EN 50155:2021), clause 13.4.9
		Measuring relays and protection equipments	SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.1
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 7
		Industrial, scientific and medical equipment	SR EN 55011:2016 (EN 55011:2016, CISPR 11:2015), clause 8.2 SR EN 55011:2016/A1:2017 (EN 55011:2016/A1:2017, CISPR 11:2015/AMD1:2016) SR EN 55011:2016/A11:2020 (EN 55011:2016/A11:2020) SR EN 55011:2016/A2:2021 (EN 55011:2016/A2:2021, CISPR 11:2015/AMD2:2019)
		Household appliances, electric tools and similar apparatus	SR EN IEC 55014-1:2021 (EN IEC 55014-1:2021, CISPR 14-1:2020), clause 5
		Electrical lighting and similar equipment	SR EN IEC 55015: 2019 (EN IEC 55015:2019, CISPR 15:2018), clause 8 SR EN IEC 55015: 2019/A11:2020 (EN IEC 55015:2019/A11:2020)
		Multimedia equipment	SR EN 55032:2015 (EN 55032:2015, CISPR 32:2015), clauses A3, 6.3



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			SR EN 55032:2015/AC:2016 (EN 55032:2015/ AC:2016-07, CISPR 32:2015/COR1:2016) SR EN 55032:2015/A11:2020 (EN 55032:2015/ A11:2020) SR EN 55032:2015/A1:2021 (EN 55032:2015/ A1:2021)
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.9.1.2
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-3: 2021 (EN IEC 61000-6-3:2021, IEC 61000-6-3:2020), clause 7
		Electrical equipment used in industrial environments	SR EN 61000-6-4:2019 (EN IEC 61000-6-4: 2019), IEC 61000-6-4:2018, clause 9
		Low voltage switch mode power supplies	SR EN 61204-3:2019 (EN 61204-3:2018, IEC 61204-3: 2016), clause 6.3
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1: 2021 (EN IEC 61326- 1:2021, IEC 61326-1:2020), clause 7
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800- 3:2018, IEC 61800-3:2017), clause 6.3.1.2
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clauses 6.1, 6.2
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clauses 8.3, 8.4
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2: 2015, IEC 60601-1-2: 2014), clause 7 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1- 2:2015/A1:2021, IEC 60601-1-2:2014/ AMD1:2020)
		Equipment and communication systems for signalling on low- voltage electrical installations	SR EN 50065-1:2011 (EN 50065-1:2011), clause 7.2
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1: 2021, IEC 61439-1:2020), clause J.10.12.3.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/ COR1:2021)
		Electrical and electromechanical subsystems and equipment intended for military equipment use	MIL-STD-461G:2015, Method CE 102
12.	Radio interference voltage measurement (500 kHz, 1000 kHz)		CISPR TR 18-2:2017, clause 4.5 NEMA 107 (Annex A of ANSI/NEMA CC 1-2009 (R 2015)) <b>PT-01-IT.31</b>
		High-voltage insulators	SR EN 60437:2003 (IEC 60437:1997)
		Ceramic material or glass insulators	SR EN 60383-1:2002 (IEC 60383-1:1993) SR EN 60383-2:1996 (IEC 60383-2:1993) SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clause 6.1.2
		Composite insulators	SR EN 61109:2009 (IEC 61109:2008)

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		Overhead lines fittings	SR EN 61284:2000 (IEC 61284:1997), clause 14
		Insulated bushings	IEC 60137:2017, clause 8.7.1
		Metal-oxide surge arresters without gaps	IEC 60099-4:2014, clause 8.14
		Line traps	IEC 60353:1989, clause 11
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clauses 7.3, 7.9.1.1
		Alternating-current circuit-breakers	IEC 62271-100:2021, clause 7.3
		Alternating current disconnectors	IEC 62271-102:2018+A1:2022, clause 7.3
		Current instrument transformers	SR EN 61869-1:2010, clauses 6.11.2, 7.2.5.1 IEC 61869-1:2023, clauses 6.11.5, 7.2.5.1 SR EN 61869-2:2013 (IEC 61869-2:2012), Table 10 SR EN 61869-4:2014 (IEC 61869-4:2013), Table 10
		Voltage instrument transformers	SR EN 61869-1:2010, clauses 6.11.2, 7.2.5.1 IEC 61869-1:2023, clauses 6.11.5, 7.2.5.1 SR EN 61869-3:2012 (IEC 61869-3:2011), clause 7.2.5 SR EN 61869-4:2014 (IEC 61869-4:2013), Table 10 SR EN 61869-5:2012 (IEC 61869-5:2011)
13.	Harmonic current emissions measurement (50 ± 2 000) Hz		SR EN IEC 61000-3-2:2019+A1:2021 (EN IEC 61000-3-2: 2019+ A1:2021), IEC 61000-3-2: 2018+A1:2020 <b>PT-01-CEM.03</b>
		Lifts, escalators and moving walks	SR EN 12015:2020, clause 6.4
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-3:2021 (EN IEC 61000-6-3:2021, IEC 61000-6-3:2020), clause 7
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3: 2018), IEC 61204-3:2016, clause 6.2.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1:2021, IEC 61326-1:2020), clause 7
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 6.2.3
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 8.5
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2: 2015, IEC 60601-1-2:2014), clause 7.2.1 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1-2: 2015/A1:2021, IEC 60601-1-2:2014/AMD1:2020)



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14.	Voltage fluctuations and flicker measurement ( $P_{it}$ , $P_{st}$ , $d(t)$ , $d_c$ , $d_{max}$ )		SR EN 61000-3-3:2014+A1:2019+A2:2021+ AC:2022 (EN 61000-3-3:2013+A2:2021+ AC:2022), IEC 61000-3-3:2013+ A1:2017+A2:2021+AC:2022 <b>PT-01-CEM.04</b>
		Lifts, escalators and moving walks	SR EN 12015:2020, clause 6.3
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-3:2021 (EN IEC 61000-6- 3:2021, IEC 61000-6-3:2020), clause 7
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3: 2018), IEC 61204-3:2016, clause 6.2.3
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1: 2021, IEC 61326-1:2020), clause 7
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 6.2.4
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 8.6
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2:2015, IEC 60601-1-2:2014), clause 7.2.2 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1- 2: 2015/A1:2021, IEC 60601-1-2:2014/ AMD1:2020)
15.	Radiated disturbance measurement (0,009 ÷ 1 000) MHz		SR EN 55016-2-3:2017 (EN 55016-2-3:2017, CISPR 16-2-3:2016) SR EN 55016-2-3:2017/A1:2019 (EN 55016-2-3:2017/A1:2019, CISPR 16-2-3:2016/AMD1:2019) EN 55016-2-3:2017/A2:2023 (CISPR 16-2- 3:2016/AMD2:2023) <b>PT-01-CEM.05</b>
		Lifts, escalators and moving walks	SR EN 12015:2020, clause 6.1
		Railway equipment	SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2:2016), clause 7 SR EN 50121-4:2017+A1:2019 (EN 50121-4:2016), clause 5 SR EN 50121-5:2017+A1:2019 (EN 50121-5:2017), clause 5
		Measuring relays and protection equipment	SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.1
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 7
		Industrial, scientific and medical equipment	SR EN 55011:2016 (EN 55011:2016, CISPR 11: 2015), clauses 8.3, 8.4, 9 SR EN 55011:2016/A1:2017 (EN 55011:2016/A1:2017, CISPR 11:2015/AMD1:2016) SR EN 55011:2016/A11:2020 (EN 55011:2016/A11:2020) SR EN 55011:2016/A2:2021



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			(EN 55011:2016/A2:2021 CISPR 11:2015/AMD2:2019)
		Household appliances, electric tools and similar apparatus	SR EN IEC 55014-1:2021 (EN IEC 55014-1:2021, CISPR 14-1:2020), clause 5
		Electrical lighting equipment	SR EN IEC 55015:2019 (EN IEC 55015:2019, CISPR 15:2018), clauses 4.5 and 9 SR EN IEC 55015:2019/A11:2020 (EN IEC 55015:2019/A11:2020)
		Multimedia equipment	SR EN 55032:2015 (EN 55032:2015, CISPR 32:2015), clauses A2, 6.3 SR EN 55032:2015/AC:2016 (EN 55032:2015/ AC:2016-07, CISPR 32:2015/COR1:2016) SR EN 55032:2015/A11:2020 (EN 55032:2015/ A11:2020) SR EN 55032:2015/A1:2021 (EN 55032:2015/ A1:2021)
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.9.1.2
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-3:2021 (EN IEC 61000-6-3:2021, IEC 61000-6-3:2020), clause 7
		Electrical equipment used in industrial environments	SR EN 61000-6-4:2019 (EN IEC 61000-6-4:2019) IEC 61000-6-4:2018, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3:2018) IEC 61204-3:2016, clause 6.4
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1:2021, IEC 61326-1:2020), clause 7
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 6.3.1.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 6.5
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 8.2
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2:2015, IEC 60601-1-2:2014) clause 7 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1- 2:2015/A1:2021, IEC 60601-1-2:2014/ AMD1: 2020)
		Equipment and communication systems for signalling on low- voltage electrical installations	SR EN 50065-1: 2011 (EN 50065-1:2011), clause 7.3
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1: 2021, IEC 61439-1:2020), clause J.10.12.3.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/ COR1:2021)
		Electrical and electromechanical subsystems	MIL-STD-461G: 2015, Methods RE 102, RE 103



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		and equipment intended for military equipment use	
16.	Electromagnetic fields measurement H:(5 ÷ 32 000) Hz E:(5 ÷ 32 000) Hz and (80 ÷ 3000) MHz		SR EN 50413: 2020 (EN 50413:2019), clause 5.2 <b>PT-01-CEM.07</b>
		Industrial environments: substations, energy distribution plants, industrial halls etc.	Directive 2013/35/EU (GD 520:2016) SR EN 62110: 2010 (EN 62110:2009, IEC 62110: 2009), clause 4 SR EN 62110:2010/AC:2015 (EN 62110:2009/AC:2015, IEC 62110:2009/COR1:2015) SR EN 50499:2020 (EN 50499:2019), clause 8.9
		Residential environments: office buildings, firm residences, etc.	OMS 1193:2006 IEC 61566:1997, clause 6.2
17.	Measuring the effectiveness of electromagnetic shielding (9 kHz ÷ 6 GHz)		<b>PT-01-CEM.08</b>
		Electromagnetic shielded enclosures	IEEE 299:2006
		Anechoic chambers	SR EN 50147-1:1999 (EN 50147-1:1996)
		Durable rigid wall relocatable structures	ASTM E1851-21
		Planar materials	ASTM D4935-18
<b>II.2 IMMUNITY TESTS</b>			
18.	Electrical fast transient/burst immunity test (0,2 ÷ 4) kV		SR EN 61000-4-4:2013 (EN 61000-4-4:2012, IEC 61000-4-4:2012) <b>PT-01-CEM.11</b>
		Lifts, escalators and moving walks	SR EN 12016:2013, clause 4
		Railway equipment	SR EN 50121-1:2017 (EN 50121-1:2017), clause 3 SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2: 2016), clause 8 SR EN 50121-4:2017+A1:2019 (EN 50121-4: 2016), clause 6 SR EN 50121-5:2017+A1:2019 (EN 50121-5: 2017), clause 6 SR EN 50155:2021 (EN 50155:2021), clause 13.4.9
		Fire, intruder, social alarm systems	SR EN 50130-4:2012+A1:2015, (EN 50130-4: 2011+A1:2014), clause 12
		Measuring relays and protection equipment	SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.2
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 3
		Household appliances, electric tools and similar apparatus	SR EN IEC 55014-2:2021 (EN IEC 55014-2: 2021, CISPR 14-2:2020), clause 5.2
		Information technology equipment	SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.4, 2.5 in Table 2, 3.3 in Table 3, 4.5 in Table 4 SR EN 55035:2017/A11:2020 (EN 55035:2017/ A11:2020)
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.9.2.2
		Electrical equipment used in	SR EN IEC 61000-6-1:2019 (EN IEC 61000-



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		residential, commercial and light-industrial environments	6-1:2019), IEC 61000-6-1:2016, clause 9
		Electrical equipment used in industrial environments	SR EN IEC 61000-6-2:2019 (EN IEC 61000- 6-2:2019), IEC 61000-6-2:2016, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3: 2018), IEC 61204-3:2016, clause 7.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1: 2021, IEC 61326-1:2020), clause 6.2
		Equipment for general lighting purposes	SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547:2020), clause 5.5
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 5.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.2
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.4
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2: 2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1- 2:2015/A1:2021, IEC 60601-1-2:2014/ AMD1: 2020)
		Equipment and communication systems for signalling on low- voltage electrical installations	SR EN 50065-2-1:2003 (EN 50065-1:2003), clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug.2003) SR EN 50065-2-2:2003 (EN 50065-1:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005) SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug. 2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3: 2003 (EN 50065-1: 2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005) SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1: 2021, IEC 61439-1:2020), clause J.10.12.2.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/ COR1:2021)		
19.	Surge immunity test (0,2 + 4) kV; (80 + 2000) A		SR EN 61000-4-5:2015, EN 61000-4-5:2014+ A1:2017 (IEC 61000-4-5:2014+A1:2017) <b>PT-01-CEM.12</b> Lifts, escalators and moving walks SR EN 12016: 2013, clause 4 Railway equipment SR EN 50121-1:2017 (EN 50121-1:2017),



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			clause 3 SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2:2016), clause 8 SR EN 50121-4:2017+A1:2019 (EN 50121-4:2016), clause 6 SR EN 50121-5:2017+A1:2019 (EN 50121-5:2017), clause 6 SR EN 50155:2021 (EN 50155:2021), clause 13.4.9
		Fire, intruder, social alarm systems	SR EN 50130-4:2012+A1:2015 (EN 50130-4:2011+A1:2014), clause 13
		Measuring relays and protection equipment	SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.2
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 6.2
		Household appliances, electric tools and similar apparatus	SR EN IEC 55014-2:2021 (EN IEC 55014-2:2021, CISPR 14-2:2020), clause 5.6
		Information technology equipment	SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.5, 3.2 in Table 3, 4.4 in Table 4 SR EN 55035:2017/A11:2020 (EN 55035:2017/A11:2020)
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-1:2019 (EN IEC 61000-6-1:2019), IEC 61000-6-1:2016, clause 9
		Electrical equipment used in industrial environments	SR EN IEC 61000-6-2:2019 (EN IEC 61000-6-2:2019), IEC 61000-6-2:2016, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3:2018), IEC 61204-3:2016, clause 7.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1:2021, IEC 61326-1:2020), clause 6.2
		Equipment for general lighting purposes	SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547:2020), clause 5.7
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.3
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.8
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2:2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1-2:2015/A1:2021, IEC 60601-1-2:2014/AMD1:2020)
		Equipment and communication systems for signalling on low-voltage electrical installations	SR EN 50065-2-1:2003 (EN 50065-2-1:2003), clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug. 2003) SR EN 50065-2-2:2003 (EN 50065-2-2:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005)



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			SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug. 2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3:2003 (EN 50065-2-3:2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005) SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1:2021, IEC 61439-1:2020), clause J.10.12.2.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/COR1:2021)
20.	Electrostatic discharge immunity test (0,2 ÷ 25) kV	Lifts, escalators and moving walks Railway equipment Fire, intruder, social alarm systems Measuring relays and protection equipment Road traffic signal systems Household appliances, electric tools and similar apparatus Information technology equipment Electrical equipment used in residential, commercial and light-industrial environments Electrical equipment used in industrial environments Low voltage switch mode power supplies Electrical equipment for measurement, control and laboratory use Equipment for general lighting purposes	SR EN 61000-4-2:2009 (EN 61000-4-2:2009, IEC 61000-4-2:2008) <b>PT-01-CEM.13</b> SR EN 12016: 2013, clause 4 SR EN 50121-1:2017 (EN 50121-1:2017), clause 3 SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2:2016), clause 8 SR EN 50121-4:2017+A1:2019 (EN 50121-4:2016), clause 6 SR EN 50121-5:2017+A1:2019 (EN 50121-5:2017), clause 6 SR EN 50155:2021 (EN 50155:2021), clause 13.4.9 SR EN 50130-4:2012+A1:2015 (EN 50130-4:2011+A1:2014), clause 9 SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.2 SR EN 50293:2013 (EN 50293:2012), clause 3 SR EN IEC 55014-2:2021 (EN IEC 55014-2:2021, CISPR 14-2:2020), clause 5.1 SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.1, 1.4 in Table 1 SR EN 55035:2017/A11:2020 (EN 55035:2017/A11:2020) SR EN IEC 61000-6-1:2019 (EN IEC 61000-6-1:2019), IEC 61000-6-1:2016, clause 9 SR EN IEC 61000-6-2:2019 (EN IEC 61000-6-2:2019), IEC 61000-6-2:2016, clause 9 SR EN IEC 61204-3:2019 (EN IEC 61204-3:2018), IEC 61204-3:2016, clause 7.2 SR EN IEC 61326-1:2021 (EN IEC 61326-1:2021, IEC 61326-1:2020), clause 6.2 SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547: 2020), clause 5.2



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		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3:2018), IEC 61800-3:2017, clause 5.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.1
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.3
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2: 2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1-2: 2015/A1:2021, IEC 60601-1-2:2014/AMD1:2020)
		Equipment and communication systems for signalling on low-voltage electrical installations	SR EN 50065-2-1:2003 (EN 50065-2-1:2003), clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug. 2003) SR EN 50065-2-2:2003 (EN 50065-2-2:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005) SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug.2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3:2003 (EN 50065-2-3:2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005), SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1:2021, IEC 61439-1:2020), clause J.10.12.2.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/COR1:2021)
21.	Voltage dips, short interruptions and voltage variations immunity tests (0 ÷ 100 %) U <sub>N</sub> ; U <sub>N</sub> = 250 V max.		SR EN IEC 61000-4-11+AC:2020 (EN IEC 61000-4-11:2020, EN IEC 61000-4-11:2020/AC:2020-06, IEC 61000-4-11:2020, IEC 61000-4-11:2020/COR1:2020) SR EN IEC 61000-4-11+AC:2020/AC:2022 (EN IEC 61000-4-11:2020/AC:2022-10, IEC 61000-4-11:2020/COR2:2022) <b>PT-01-CEM.14</b>
		Lifts, escalators and moving walks	SR EN 12016:2013, clause 4
		Fire, intruder, social alarm systems	SR EN 50130-4:2012+A1:2015 (EN 50130-4:2011+A1:2014), clause 8
		Measuring relays and protection equipment	SR EN 60255-26:2014 (EN 60255-26: 2013, IEC 60255-26:2013), clause 4.2
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 3
		Household appliances, electric	SR EN IEC 55014-2:2021 (EN IEC 55014-2:



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		tools and similar apparatus	2021, CISPR 14-2:2020), clause 5.7
		Information technology equipment	SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.6, 4.2 and 4.3 in Table 4 SR EN 55035:2017/A11:2020 (EN 55035:2017/ A11:2020)
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-1:2019 (EN IEC 61000-6-1: 2019), IEC 61000-6-1:2016, clause 9
		Electrical equipment used in industrial environments	SR EN IEC 61000-6-2:2019 (EN IEC 61000-6-2: 2019), IEC 61000-6-2:2016, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3: 2018), IEC 61204-3:2016, clause 7.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1: 2021, IEC 61326-1:2020), clause 6.2
		Equipment for general lighting purposes	SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547:2020), clause 5.8
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 5.2
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.9.3.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.6
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.7
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2: 2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1- 2: 2015/A1:2021, IEC 60601-1-2:2014/ AMD1:2020)
		Equipment and communication systems for signalling on low- voltage electrical installations	SR EN 50065-2-1:2003 (EN 50065-2-1:2003), clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug. 2003) SR EN 50065-2-2:2003 (EN 50065-2-2:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005) SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug. 2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3:2003 (EN 50065-2-3:2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005), SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1: 2021, IEC 61439-1:2020), clause J.10.12.2.2



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			SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/COR1:2021)
22.	Radiated radio-frequency electromagnetic field immunity test (80 ÷ 1000) MHz		SR EN IEC 61000-4-3:2020, (EN IEC 61000-4-3:2020, IEC 61000-4-3:2020) SR EN 61000-4-20:2022 (EN 61000-4-20:2022, IEC 61000-4-20:2022) <b>PT-01-CEM.16</b>
		Lifts, escalators and moving walks	SR EN 12016:2013, clause 7
		Railway equipment	SR EN 50121-1:2017 (EN 50121-1:2017), clause 3 SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2: 2016), clause 8 SR EN 50121-4:2017+A1:2019 (EN 50121-4: 2016), clause 6 SR EN 50121-5:2017+A1:2019 (EN 50121-5: 2017), clause 6
		Fire, intruder, social alarm systems	SR EN 50130-4:2012+A1:2015 (EN 50130-4: 2011+A1:2014), clause 10
		Measuring relays and protection equipment	SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.2
		Road traffic signal systems	SR EN 50293:2013 (EN 50293:2012), clause 3
		Household appliances, electric tools and similar apparatus	SR EN IEC 55014-2:2021 (EN IEC 55014-2: 2021, CISPR 14-2:2020), clause 5.5
		Information technology equipment	SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.2.2, 1.2 in Table 1 SR EN 55035:2017/A11:2020 (EN 55035:2017/A11:2020)
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-1:2019 (EN IEC 61000-6-1:2019), IEC 61000-6-1:2016, clause 9
		Electrical equipment used in industrial environments	SR EN IEC 61000-6-2:2019 (EN IEC 61000-6-2:2019), IEC 61000-6-2:2016, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3: 2018), IEC 61204-3:2016, clause 7.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1: 2021, IEC 61326-1:2020), clause 6.2
		Equipment for general lighting purposes	SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547:2020), clause 5.3
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3: 2018), IEC 61800-3:2017, clause 5.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.5
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.2
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2:2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1-2: 2015/A1:2021, IEC 60601-1-2:2014/AMD1:2020)
		Equipment and communication	SR EN 50065-2-1:2003 (EN 50065-2-1:2003),



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		systems for signalling on low-voltage electrical installations	clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug. 2003) SR EN 50065-2-2:2003 (EN 50065-2-2:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005) SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug. 2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3:2003 (EN 50065-2-3:2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005), SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1:2021, IEC 61439-1:2020), clause J.10.12.2.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/COR1:2021)
		Electrical and electromechanical subsystems and equipment intended for military equipment use	MIL-STD-461G:2015, Method RS103
23.	Immunity to conducted disturbances, induced by radio-frequency fields (0,15 ÷ 80) MHz	Lifts, escalators and moving walks Railway equipment Fire, intruder, social alarm systems Measuring relays and protection equipment Road traffic signal systems Household appliances, electric tools and similar apparatus Information technology equipment	SR EN 61000-4-6:2014 (EN 61000-4-6:2014, IEC 61000-4-6:2013) <b>PT-01-CEM.17</b> SR EN 12016:2013, clause 7 SR EN 50121-1:2017 (EN 50121-1:2017), clause 3 SR EN 50121-3-2:2017+A1:2019 (EN 50121-3-2:2016), clause 8 SR EN 50121-4:2017+A1:2019 (EN 50121-4:2016), clause 6 SR EN 50121-5:2017+A1:2019 (EN 50121-5:2017), clause 6 SR EN 50155:2021 (EN 50155:2021), EN 50155:2017, clause 13.4.9 SR EN 50130-4:2012+A1:2015 (EN 50130-4:2011+A1:2014), clause 11 SR EN 60255-26:2014 (EN 60255-26:2013, IEC 60255-26:2013), clause 4.2 SR EN 50293:2013 (EN 50293:2012), clause 3 SR EN IEC 55014-2:2021 (EN IEC 55014-2:2021, CISPR 14-2:2020), clause 5.4 SR EN 55035:2017 (EN 55035:2017, CISPR 35:2016), clauses 4.2.2.3, 2.1 in Table 2,



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			3.1 in Table 3, 4.1 in Table 4 SR EN 55035:2017/A11:2020 (EN 55035:2017/ A11:2020)
		Electrical equipment used in residential, commercial and light-industrial environments	SR EN IEC 61000-6-1:2019 (EN IEC 61000-6-1:2019), IEC 61000-6-1:2016, clause 9
		Electrical equipment used in industrial environments	SR EN IEC 61000-6-2:2019 (EN IEC 61000-6-2:2019), IEC 61000-6-2:2016, clause 9
		Low voltage switch mode power supplies	SR EN IEC 61204-3:2019 (EN IEC 61204-3:2018), IEC 61204-3:2016, clause 7.2
		Electrical equipment for measurement, control and laboratory use	SR EN IEC 61326-1:2021 (EN IEC 61326-1:2021, IEC 61326-1:2020), clause 6.2
		Equipment for general lighting purposes	SR EN IEC 61547:2023 (EN IEC 61547:2023, IEC 61547:2020), clause 5.6
		Adjustable speed electrical power drive systems	SR EN IEC 61800-3:2019 (EN IEC 61800-3:2018), IEC 61800-3:2017, clause 5.3
		Telecommunication network equipment	ETSI EN 300 386 V2.2.1 (2022-09), clause 5.4
		Radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11), clause 9.5
		Medical electrical equipment	SR EN 60601-1-2:2016 (EN 60601-1-2:2015, IEC 60601-1-2:2014), clause 8 SR EN 60601-1-2:2016/A1:2021 (EN 60601-1-2:2015/A1:2021, IEC 60601-1-2:2014/ AMD1:2020)
		Equipment and communication systems for signalling on low-voltage electrical installations	SR EN 50065-2-1:2003 (EN 50065-2-1: 2003), clause 7 SR EN 50065-2-1:2003/A1:2006 (EN 50065-2-1:2003/A1:2005) SR EN 50065-2-1:2003/AC:2015 (EN 50065-2-1:2003/corrigendum Aug.2003) SR EN 50065-2-2: 2003 (EN 50065-2-2:2003), clause 7 SR EN 50065-2-2:2003/A1:2006 (EN 50065-2-2:2003/A1:2005) SR EN 50065-2-2:2003/AC:2015 (EN 50065-2-2:2003/corrigendum Aug. 2003, EN 50065-2-2:2003/A1:2005/corrigendum Oct. 2006) SR EN 50065-2-3: 2003 (EN 50065-2-3:2003), clause 7 SR EN 50065-2-3:2003/A1:2006 (EN 50065-2-3:2003/A1:2005), SR EN 50065-2-3:2003/AC:2015 (EN 50065-2-3:2003/corrigendum Aug. 2003)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021 (EN IEC 61439-1:2021, IEC 61439-1:2020), clause J.10.12.2.2 SR EN IEC 61439-1:2021/AC:2022 (EN IEC 61439-1:2021/AC:2022-01, IEC 61439-1:2020/COR1:2021)
<b>III. LOW VOLTAGE EQUIPMENTS TESTS</b>			
24.	Dielectric strength test		<b>PT-01-JT.01</b>



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		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.9 (IEC 61439-1:2020, clause 10.9) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021) SR EN 62208:2012, clause 9.10
		Low-voltage switchgear and controlgear	SR EN IEC 60947-1:2021, clauses 8.2.3.1, 8.2.3.2, 8.2.3.3 IEC 60947-1:2020, clauses 8.2.3.1, 8.2.3.2, 8.2.3.3 IEC 60947-2:2016, clauses 8.3.3.3, 8.3.3.6, 8.3.4.4, 8.3.5.4, 8.3.6.6, 8.3.7.4, 8.3.7.8, 8.3.8.6 SR EN 60947-2:2018/A1:2020 (IEC 60947-2:2016/AMD1:2019) IEC 60947-3:2020, clause 8.2.3
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clauses 7.2.11, 8.3.4 IEC 62271-100:2021, clause 7.2.11 IEC 62271-102:2018+A1:2022, clause 7.2.11 IEC 62271-103:2021, clause 7.2 IEC 62271-200:2021, clause 7.2.11 IEC 62271-202:2022, clauses 7.2.11, 7.2.102
		Railway equipment	SR EN 50155:2021 (EN 50155:2021), clauses 13.4.7, 13.4.7.3
		Luminaires	SR EN IEC 60598-1:2021, clause 10.2.2 (IEC 60598-1:2020, clause 10.2.2) SR EN IEC 60598-1:2021/A11:2022
25.	Protective earth circuit test		<b>PT-01-JT.02</b>
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.5.2 (IEC 61439-1:2020, clause 10.5.2) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021) SR EN 62208:2012, clause 9.11
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.4.3 IEC 62271-103:2021, clause 7.4 IEC 62271-200:2021, clause 7.4.3 IEC 62271-202:2022, clause 7.4.3
		Luminaires	SR EN IEC 60598-1:2021, clause 7.2.3 (IEC 60598-1:2020, clause 7.2.3) SR EN IEC 60598-1:2021/A11:2022
26.	Measurement of clearances and creepage distances		<b>PT-01-JT.03</b>
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.4 (IEC 61439-1:2020, clause 10.4) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		Low-voltage switchgear and controlgear	SR EN IEC 60947-1:2021, clauses 8.2.3.4, 8.2.3.5 IEC 60947-1:2020, clauses 8.2.3.4, 8.2.3.5 IEC 60947-2:2016, clauses 7.2.3.4, 7.2.3.5 SR EN 60947-2:2018/A1:2020 (IEC 60947-2:2016/AMD1:2019)
		Luminaires	SR EN IEC 60598-1:2021+A1:2018, clause 11 (IEC 60598-1:2020, clause 11) SR EN IEC 60598-1:2021/A11:2022



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27.	Insulation resistance measurement		<b>PT-01-JT.04</b>
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 11.9 (IEC 61439-1:2020, clause 11.9) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		Railway equipment	SR EN 50155:2021 (EN 50155:2021), clauses 13.4.7, 13.4.7.2
		Luminaires	SR EN IEC 60598-1:2021, clause 10.2.1 (IEC 60598-1:2020, clause 10.2.1) SR EN IEC 60598-1:2021/A11:2022
<b>IV. FIRE HAZARD TESTING</b>			
28.	Glowing/hot-wire based test		SR EN IEC 60695-2-10:2022 (IEC 60695-2- 10:2021) SR EN IEC 60695-2-11:2022 (IEC 60695-2- 11:2021) <b>PT-01-SFM.03</b>
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.2.3.2 (IEC 61439-1:2020, clause 10.2.3.2) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		Low-voltage switchgear and controlgear	SR EN IEC 60947-1:2021, clause 9.2.2.1 IEC 60947-1:2020, clause 9.2.2.1
		Empty enclosures for low- voltage switchgear and controlgear assemblies	SR EN 62208:2012, clause 9.9.3 (IEC 62208:2011, clause 9.9.3)
		Luminaires	SR EN IEC 60598-1:2021, clause 13.3.2 (IEC 60598-1:2020, clause 13.3.2) SR EN IEC 60598-1:2021/A11:2022
		Low-voltage fuses	SR EN 60269-1:2008+A1:2010+A2:2015 clause 8.11.2.2 (IEC 60269-1:2006+A1:2009+A2:2014, clause 8.11.2.2)
		Circuit-breakers	IEC 60947-2:2016, clause 8.2 SR EN 60947-2:2018/A1:2020 (IEC 60947-2:2016/AMD1:2019)
29.	50 W horizontal and vertical flame test methods		SR EN 60695-11-10:2014 (IEC 60695-11-10:2013) <b>PT-01-SFM.04</b>
		Insulators of organic material	SR EN 60660:2001, clause 3.12 (IEC 60660:1999, clause 3.12)
		Polymeric insulators	SR EN 62217:2013, clause 9.3.4 (IEC 62217:2012, clause 9.3.4)
		Composite insulators for overhead lines	SR EN 61109:2009, clause 10 (IEC 61109:2008, clause 10)
		Low-voltage switchgear and controlgear	SR EN IEC 60947-1:2020, clause 9.2.2.2 a) IEC 60947-1:2020, clause 9.2.2.2 a) IEC 60947-2:2016, clause 8.2 SR EN 60947-2:2018/A1:2020 (IEC 60947-2:2016/AMD1:2019)
		Composite line post insulators	SR EN 61952:2008, clauses 9.1, 10.1 (IEC 61952:2008, clauses 9.1, 10.1)
<b>V. ENVIRONMENTAL TESTS</b>			
30.	Damp heat, steady state		SR EN 60068-2-78:2013 (IEC 60068-2-



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	Humidity <sub>max</sub> 99 %		78:2012) <b>PT-01-SFM.06</b>
	a) conditioning b) testing (before, during and after conditioning)	Low-voltage fuses	SR EN 60269-1:2008+A1:2010+A2:2015, clause 8.2.2.3.2 (IEC 60269-1:2006+A1:2009+A2:2014, clause 8.2.2.3.2)
		Early streamer emission lightning protection systems	NF C 17-102:2011, Annex C 3.3.1
31.	Cold test – test Ab T <sub>min</sub> - 40 °C		SR EN 60068-2-1:2007, clause 5.2 and clause 6 (IEC 60068-2-1:2007, clause 5.2 and clause 6) <b>PT-01-SFM.07</b>
	a) conditioning b) testing (before, during and after conditioning)	High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.10.4.2
		Electronic taximeters	SR EN 50148:2001, clause 10.9 OIML R21 clause A 5.4.1
32.	Dry heat test - test Bb T <sub>max</sub> : + 180 °C		SR EN 60068-2-2:2008, clauses 5.2, 6 (IEC 60068-2-2:2007, clauses 5.2, 6) <b>PT-01-SFM.08</b>
	a) conditioning b) testing (before, during and after conditioning)	Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.2.3.1 (IEC 61439-1:2020, clause 10.2.3.1) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.10.4.3
		Electronic taximeters	SR EN 50148:2001, clause 10.7 OIML R21:2007, clause A 5.4.1
33.	Change of temperature test- test Na and test Nb T = (-40 +180) °C		SR EN 60068-2-14:2010, clauses 7 and 8 (IEC 60068-2-14:2009, clauses 7 and 8) <b>PT-01-SFM.09</b>
	a) conditioning b) testing (before, during and after conditioning)	Metal-oxide surge arresters	SR EN 60099-4:2015, clause 8.12.3.1 (IEC 60099-4:2014, clause 8.12.3.1)
		Insulators of organic material	SR EN 60660:2001, clause 3.13 (IEC 60660:1999, clause 3.13)
34.	Damp heat, cyclic (12 h + 12 h cycle) - test Db Humidity <sub>max</sub> 99 %		SR EN 60068-2-30:2006 (IEC 60068-2-30: 2005) <b>PT-01-SFM.10</b>
	a) conditioning b) testing (before, during and after conditioning)	High-voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.10.4.4
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.2.2 (IEC 61439-1:2020, clause 10.2.2) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		Empty enclosures for low- voltage switchgear and controlgear assemblies	SR EN 62208:2012, clause 9.13 (IEC 62208:2011, clause 9.13)
		Electronic taximeters	SR EN 50148:2001, clause 10.8 OIML R21:2007 clause A 5.4.2
35.	Salt mist test		SR EN IEC 60068-2-11:2021 (IEC 60068-2-11:2021) <b>PT-01-SFM.11</b>



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
	a) conditioning b) testing (before, during and after conditioning)	Empty enclosures for low- voltage switchgear and controlgear assemblies	SR EN 62208:2012, clause 9.13 (IEC 62208:2011, clause 9.13)
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 10.2.2 (IEC 61439-1:2020, clause 10.2.2) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021)
		Metal-oxide surge arresters	SR EN 60099-4:2015, clause 8.12.3.2 (IEC 60099-4:2014, clause 8.12.3.2)
36.	Verification of degrees of protection provided by enclosures (max. IP 65)		SR EN 60529:1995+A1:2003, IEC 60529:2013 <b>PT-01-IT.36</b>
		Luminaires	SR EN IEC 60598-1:2021, clause 9 (IEC 60598-1:2020, clause 9) SR EN IEC 60598-1:2021/A11:2022
		High voltage switchgear and controlgear	IEC 62271-1:2017+A1:2021, clause 7.7.1
37.	Tracking and erosion test. 1000 h salt fog test	Polymeric insulators	SR EN 62217:2013, clause 9.3.3 (IEC 62217:2012, clause 9.3.3) <b>PT-01-IT.46</b>
38.	Determination of hardness		<b>PT-01-SFM.14</b>
		Plastics, rubber, ebonite	SR EN ISO 868:2003
		Composite line post insulators	SR EN 61952:2008, clauses 9.1,10.1 (IEC 61952:2008, clauses 9.1, 10.1)
		Polymeric insulators	SR EN 62217:2013, clause 9.3.1 (IEC 62217:2012, clause 9.3.1)
39.	Sulfur dioxide test in a humid atmosphere		SR EN ISO 22479:2022 <b>PT-01-SFM.15</b>
		Early streamer emission lightning protection systems	NFC 17-102:2011, Annex C, clause 3.3.2 UNE 21186/2011, Annex C, clause 3.3.2
40.	Salt mist test, cyclic test		SR EN 60068-2-52:2018 (IEC 60068-2-52:2017) <b>PT-01-SFM.16</b>
		Early streamer emission lightning protection systems	NF C 17-102:2011, Annex C, clause 3.3.1 UNE 21186:2011, Annex C, clause 3.3.1
41.	UV testing		SR EN ISO 4892-2:2013 <b>PT-01-SFM.17</b>
		Polymeric insulators	SR EN 62217:2013, clause 9.3.2 (IEC 62217:2012, clause 9.3.2)
		Composite suspension and tension insulators	SR EN 61109:2009, clause 10 (IEC 61109:2008, clause 10)
		Composite line post insulators	SR EN 61952:2008, clauses 9.1, 10.1 (IEC 61952:2008, clauses 9.1, 10.1)
<b>VI. MECHANICAL TESTS</b>			
42.	Mechanical tensile test		<b>PT-01-MEC.01</b>
		Composite suspension and tension insulators	SR EN 61109:2009 (IEC 61109:2008), clauses 10.4.2.1; 10.4.2.2; 11.2; 12.4
		Composite line post insulators	SR EN 61952:2008 (IEC 61952:2008), clause 10.4.2
		Post insulators of ceramic material or glass	SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clause 5.2.6
		Insulators of organic material	SR EN 60660:2001 (IEC 60660:1999), clause



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
			3.7.2.c)
		Instrument transformers (Current transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Instrument transformers (Inductive voltage transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Instrument transformers (Capacitor voltage transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Hollow pressurized and unpressurized ceramic or glass insulators	IEC 62155:2003, clause 7.2.4
		Composite station post insulators for substations	IEC 62231:2006, clauses 8.3.3; 9.3.2; 10.4.2
		Fittings for overhead lines	SR EN 61284:2000, clause 11.3.1; 11.4.1; 11.4.2; 11.4.3; 11.5.1; 11.5.2; 11.6.1; 11.6.2; 11.7
		Ceramic or glass insulators for a.c.overhead lines	SR EN 60383-1:2002 (IEC 60383-1:1993), clauses 19.2; 19.4; 33.1; 33.2
		Insulator strings and sets for overhead lines	SR EN 61467:2009 (IEC 61467:2008), clause 10.5
43.	Mechanical bending test		<b>PT-01-MEC.02</b>
		Post insulators of ceramic material or glass	SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clauses 5.2.4; 5.3; 5.9
		Insulators of organic material	SR EN 60660: 2001 (IEC 60660:1999), clauses 3.7.2.a; 3.8; 3.9; 3.13
		Instrument transformers (Current transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Instrument transformers (Inductive voltage transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Instrument transformers (Capacitor voltage transformers)	SR EN 61869-1:2010, clause 7.4.5 IEC 61869-1:2023, clause 7.2.10
		Hollow pressurized and unpressurized ceramic and glass insulators	IEC 62155:2003, clause 7.2.2
		Pressurized and unpressurized composite hollow insulators	IEC 61462:2007, clauses 8.5; 9.4
		Composite station post insulators for substations	IEC 62231:2006, clauses 8.3.1; 9.3.1; 10.4.1
		Insulated bushings	IEC 60137:2017, clause 8.10
		Polymeric insulators	SR EN 62217:2013 (IEC 62217:2012), clause 9
		Metal-oxide surge arresters without gaps	SR EN 60099-4:2015 (IEC 60099-4:2014), clause 8.11
		Composite line post insulators	SR EN 61952:2008 (IEC 61952:2008), clauses 10.4.1; 11.2.1
		Ceramic or glass insulators for a.c.overhead lines	SR EN 60383-1: 2002 (IEC 60383-1:1993), clauses 19.1; 19.3; 19.4; 29.3; 30.1; 30.2; 31.3
44.	Mechanical torsion test		<b>PT-01-MEC.03</b>
		Post insulators of ceramic	SR EN 60168:1997+A1:2004+A2:2001 (IEC




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		material or glass	60168:1994+A1:1997+A2:2000), clause 5.2.5
		Insulators of organic material	SR EN 60660:2001 (IEC 60660:1999), clause 3.7.2.b
		Hollow pressurized and unpressurized ceramic and glass insulators	IEC 62155:2003, clause 7.2.3
		Composite station post insulators for substations	IEC 62231:2006, clause 8.3.2
		Fittings for overhead lines	SR EN 61284:2000, clause 11.4.5
45.	Mechanical compression test		<b>PT-01-MEC.04</b>
		Post insulators of ceramic material or glass	SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168:1994+A1:1997+A2:2000), clause 5.2.7
		Insulators of organic material	SR EN 60660:2001 (IEC 60660:1999), clause 3.7.2.c)
		Hollow pressurized and unpressurized ceramic and glass insulators	IEC 62155:2003, clause 7.2.5
		Composite station post insulators for substations	IEC 62231:2006, clause 9.3.3
46.	Tensile – temperature test		<b>PT-01-MEC.05</b>
		Composite suspension and tension insulators	SR EN 61109:2009 (IEC 61109:2008), clause 10.3.2
		Ceramic or glass insulators for a.c.overhead lines	SR EN 60383-1:2002 (IEC 60383-1:1993), clauses 20; 33.1
47.	Bending – temperature test		<b>PT-01-MEC.05</b>
		Polymeric insulators	SR EN 62217:2013 (IEC 62217:2012), clause 9.2.7.2
		Composite line post insulators	SR EN 61952:2008 (IEC 61952:2008), clause 10.3
		Composite station post insulators for substations	IEC 62231:2006, clause 8.2.4
48.	Test for mechanical bending strength as a function of temperature	Insulators of organic material	SR EN 60660:2001 (IEC 60660:1999), clause 3.9 <b>PT-01-MEC.06</b>
49.	Sudden load release pre-stressing	Composite suspension and tension insulators	SR EN 61109:2009 (IEC 61109:2008), clause 10.3.1 <b>PT-01-MEC.06</b>
50.	Visual examination, marking, inspection of dimensional characteristics		<b>PT-01-MEC.07</b>
		Composite suspension and tension insulators	SR EN 61109:2009 (IEC 61109:2008), clause 12.2
		Composite line post insulators	SR EN 61952:2008, clauses 12.2; 13.2
		Ceramic or glass insulators for a.c.overhead lines	SR EN 60383-1:2002 (IEC 60383-1:1993), clauses 17; 21
		Post insulators of ceramic material or glass	SR EN 60168:1997+A1:2004+A2:2001 (IEC 60168: 1994+A1:1997+A2:2000), clause 5.1
		Insulators of organic material	SR EN 60660: 2001(IEC 60660:1999), clause 4.2
		Pressurized and unpressurized composite hollow insulators	IEC 61462: 2007, clause 9.3



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
		Composite station post insulators for substations	IEC 62231:2006, clauses 9.1; 10.2
		Insulated bushings	IEC 60137:2017, clauses 8.14; 9.11
		Fittings for overhead lines	SR EN 61284: 2000, clauses 7; 8
		Early streamer emission lightning protection systems	NFC 17-102: 2011, clauses C.3.1.1; C.3.1.2; C.3.2
		Polymeric insulators	SR EN 62217: 2013 (IEC 62217:2012), clause 9.2.7.2
		Low-voltage switchgear and controlgear assemblies	SR EN IEC 61439-1:2021, clause 6.1, clause 10.2.7 (IEC 61439-1:2020, clause 6.1 and clause 10.2.7) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021) SR EN 62208:2012, clause 9.3
		Low-voltage switchgear and controlgear	SR EN IEC 60947-1:2020, clause 6.2 IEC 60947-1:2020, clause 6.2 IEC 60947-2:2016, clause 5.2 SR EN 60947-2:2018/A1:2020 (IEC 60947-2:2016/AMD1:2019) IEC 60947-3:2020, clause 6.2
		Luminaires	SR EN IEC 60598-1:2021, clause 3.4 (IEC 60598-1:2020, clause 3.4) SR EN IEC 60598-1:2021/A11:2022
		Current instrument transformers	IEC 61869-1:2023, clause 7.3.7 IEC 61869-2:2012 IEC 61869-4:2013, clauses 6.13 and 7.3.6 IEC 61869-5:2011, clauses 6.13 and 7.3.6
		Voltage instrument transformers	IEC 61869-1:2023, clause 7.3.7 IEC 61869-3:2011 IEC 61869-4:2013, clauses 6.13 and 7.3.6 IEC 61869-5:2011, clauses 6.13 and 7.3.6
51.	Mechanical impact test  		<b>PT-01-MEC.08</b>  Low-voltage switchgear and controlgear assemblies SR EN IEC 61439-1:2021, clause 10.2.6 (IEC 61439-1:2020, clause 10.2.6) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021) IEC 62262:2002+A1:2021, clause 6 SR EN 62208:2012, clause 9.7 SR EN 60068-2-75:2015, clause 5  High-voltage switchgear and controlgear IEC 62271-1:2017+A1:2021, clause 7.7.2 IEC 62271-100:2021, clause 7.7.2

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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
			IEC 62271-102:2018+A1:2022, clause 7.7 IEC 62271-103:2021, clause 7.7 IEC 62271-200:2021, clause 7.7.2 IEC 62271-201:2014, clause 6.7.2 IEC 62271-202:2022, clauses 7.101.3, 7.7 IEC 62262:2002+A1:2021 SR EN 60068-2-75:2015, clause 5
52.	Tightness test of the liquid-filled electromagnetic unit	Instrument transformers (Capacitor voltage transformers)	SR EN 61869-5:2012 (IEC 61869-5:2011), clause 7.2.8.501 <b>PT-01-MEC.09</b>
53.	Operating and mechanical endurance tests	Alternating current disconnectors and earthing switches	IEC 62271-102:2018+A1:2022, clause 7.102 <b>PT-01-MEC.10</b>
54.	Water immersion pre-stressing test	Polymeric insulators	SR EN 62217:2013 (IEC 62217:2012), clause 9.2.6 <b>PT-01-MEC.11</b>
55.	Specific tests for empty enclosures and assemblies for low-voltage switchgear and controlgear	Empty enclosures and assemblies for low-voltage switchgear and controlgear	SR EN IEC 61439-1:2021, clause 10.2.5 (IEC 61439-1:2020, clause 10.2.5) SR EN IEC 61439-1:2021/AC:2022 (IEC 61439-1:2020/COR1:2021) SR EN 62208:2012, clauses 9.4; 9.5; 9.6 <b>PT-01-MEC.12</b>

**B. Tests performed in situ**

No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
56.	Electromagnetic fields measurement H: (5 ÷ 32 000) Hz E: (5 ÷ 32 000) Hz și (80 ÷ 3000) MHz	Residential environments: office buildings, firm residences etc.	<b>PT-01-CEM.07</b> SR EN 50413:2020 (EN 50413:2019), clause 5.2 OMS 1193:2006 IEC 61566:1997, clause 6.2
		Industrial environments: transformation stations, power distribution stations, industrial halls, etc.	Directive 2013/35/EU (GD 520:2016) SR EN 62110:2010 (EN 62110:2009, IEC 62110:2009), clause 4 SR EN 62110:2010/AC:2015 (EN 62110:2009/AC:2015, IEC 62110:2009/COR1:2015) SR EN 50499:2020 (EN 50499:2019), clause 8.9
57.	Measuring the effectiveness of electromagnetic shielding (9 kHz ÷ 6 GHz)	Electromagnetic shielded enclosures	<b>PT-01-CEM.08</b> IEEE 299:2006
		Anechoic chambers	SR EN 50147-1:1998 (EN 50147-1:1996)
		Durable rigid wall relocatable structures	ASTM E1851-21



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No.	Activity area / Measurement technique / Name of the test	Material / product / test object	Reference document
58.	Measurement of radiated emissions produced by vehicles  (9 kHz ÷ 1 GHz)	Railway equipment	<b>PT-01-CEM.09</b> SR EN 50121-2:2017 (EN 50121-2:2017), clause 5 SR EN 50121-3-1:2017+A1:2019 (EN 50121-3-1: 2017), clause 6.3

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**GENERAL DIRECTOR**  
**Alina Elena TAINA**

