

# ISO 20076:2019-11 (E)

## Road vehicles - Test methods and performance requirements for voltage class B connectors

---

<b>Contents</b>		<b>Page</b>
Foreword .....		vi
Introduction .....		vii
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>4</b>	<b>Test and requirements .....</b>	<b>3</b>
4.1	General .....	3
4.1.1	Preconditioning for environmental and mechanical durability .....	3
4.1.2	Test conditions .....	3
4.1.3	Test sequences and sample quantities .....	4
4.2	Visual examination .....	10
4.2.1	Purpose .....	10
4.2.2	Test .....	10
4.2.3	Requirements .....	10
4.3	Connection and disconnection .....	10
4.3.1	Purpose .....	10
4.3.2	Test .....	11
4.3.3	Requirements .....	11
4.4	Tensile strength between terminal and cable .....	11
4.4.1	Purpose .....	11
4.4.2	Test .....	11
4.4.3	Requirements .....	12
4.5	Tensile strength for shield connections .....	12
4.5.1	Purpose .....	12
4.5.2	Test .....	12
4.5.3	Requirements .....	13
4.6	Locking device strength .....	13
4.6.1	Purpose .....	13
4.6.2	Test .....	13
4.6.3	Requirements .....	13
4.7	Unintentional lever release force .....	14
4.7.1	Purpose .....	14
4.7.2	Test .....	14
4.7.3	Requirements .....	14
4.8	Lock button release force .....	14
4.8.1	Purpose .....	14
4.8.2	Test .....	14
4.8.3	Requirements .....	14
4.9	Locking force of CPA .....	14
4.9.1	Purpose .....	14
4.9.2	Test .....	15
4.9.3	Requirements .....	15
4.10	Disengage force of CPA .....	15
4.10.1	Purpose .....	15
4.10.2	Test .....	15
4.10.3	Requirements .....	15

4.11	Locking force of TPA .....	15
4.11.1	Purpose .....	15
4.11.2	Test .....	15
4.11.3	Requirements .....	16
4.12	Extraction force of TPA .....	16
4.12.1	Purpose .....	16
4.12.2	Test .....	16
4.12.3	Requirements .....	16
4.13	Connector coding and polarization effectiveness .....	16
4.13.1	Purpose .....	16
4.13.2	Test .....	16
4.13.3	Requirements .....	17
4.14	Terminal insertion force .....	17
4.14.1	Purpose .....	17
4.14.2	Test .....	17
4.14.3	Requirements .....	17
4.15	Terminal insertion force with incorrect orientation .....	17
4.15.1	Purpose .....	17
4.15.2	Test .....	17
4.15.3	Requirements .....	17
4.16	Terminal extraction force .....	18
4.16.1	Purpose .....	18
4.16.2	Test .....	18
4.16.3	Requirements .....	18
4.17	Connector engagement sound .....	19
4.17.1	Purpose .....	19
4.17.2	Test .....	19
4.17.3	Requirements .....	19
4.18	Connection resistance (voltage drop) .....	19
4.18.1	Purpose .....	19
4.18.2	Test .....	19
4.18.3	Requirements .....	19
4.19	Temperature rise .....	20
4.19.1	Purpose .....	20
4.19.2	Test .....	20
4.19.3	Requirements .....	21
4.20	Insulation resistance .....	21
4.20.1	Purpose .....	21
4.20.2	Test .....	22
4.20.3	Requirements .....	22
4.21	Withstanding voltage .....	22
4.21.1	Purpose .....	22
4.21.2	Test .....	23
4.21.3	Requirements .....	23
4.22	Electromagnetic shielding performance .....	23
4.22.1	Purpose .....	23
4.22.2	Test .....	23
4.22.3	Requirements .....	23
4.23	Water tightness .....	23
4.23.1	Purpose .....	23
4.23.2	Test .....	24
4.23.3	Requirements .....	26
4.24	Mechanical shock .....	26
4.24.1	Purpose .....	26
4.24.2	Test .....	26
4.24.3	Requirements .....	27
4.25	Drop .....	27
4.25.1	Purpose .....	27
4.25.2	Test .....	27
4.25.3	Requirements .....	27
4.26	Vibration with thermal cycling .....	27

4.26.1	Purpose .....	27
4.26.2	Test .....	28
4.26.3	Requirements .....	29
4.27	Current cycling at environmental temperature .....	30
4.27.1	Purpose .....	30
4.27.2	Test .....	30
4.27.3	Requirements .....	30
4.28	Thermal aging .....	30
4.28.1	Purpose .....	30
4.28.2	Test .....	30
4.28.3	Requirements .....	30
4.29	Thermal shock .....	30
4.29.1	Purpose .....	30
4.29.2	Test .....	30
4.29.3	Requirements .....	31
4.30	Temperature/humidity cycle .....	31
4.30.1	Purpose .....	31
4.30.2	Test .....	31
4.30.3	Requirements .....	31
4.31	Condensation .....	32
4.31.1	Purpose .....	32
4.31.2	Test .....	32
4.31.3	Requirements .....	32
4.32	Salt spray .....	32
4.32.1	Purpose .....	32
4.32.2	Test .....	32
4.32.3	Requirements .....	33
4.33	High-pressure/steam-jet cleaning .....	33
4.33.1	Purpose .....	33
4.33.2	Test .....	33
4.33.3	Requirements .....	36
4.34	Dust resistance .....	36
4.34.1	Purpose .....	36
4.34.2	Test .....	36
4.34.3	Requirements .....	36
4.35	Oil and liquid resistance .....	36
4.35.1	Purpose .....	36
4.35.2	Test .....	36
4.35.3	Requirements .....	36
Annex A (informative) EMC test methods .....		37
Annex B (informative) Typical sample preparation for environmental tests .....		55
Bibliography .....		57