

Deutsche Akkreditierungsstelle GmbH

Anlage zur Akkreditierungsurkunde D-PL-11020-03-03 nach DIN EN ISO/IEC 17025:2005

Gültig ab: 23.01.2019

Ausstellungsdatum: 23.01.2019

Urkundeninhaber:

**SGS Germany GmbH
Rödingsmarkt 16, 20459 Hamburg**

Am Standort:

Traunreuter Str. 3, 82538 Gelting

Prüfungen in den Bereichen:

Umweltsimulation, Elektrisch- mechanische Bauteile, Batterien

Innerhalb der mit *gekennzeichneten Prüfbereiche ist dem Prüflaboratorium, ohne dass es einer vorherigen Information und Zustimmung der DAkKS bedarf die freie Auswahl von genormten oder ihnen gleichzusetzenden Prüfverfahren gestattet.

Die aufgeführten Prüfverfahren sind beispielhaft. Das Prüflaboratorium verfügt über eine aktuelle Liste aller Prüfverfahren im flexiblen Akkreditierungsbereich.

Flexibilisierung der Akkreditierung nach Kategorie 1, Seite 2 bis 4

Umweltsimulation

Innerhalb der mit **gekennzeichneten Akkreditierungsbereiche ist dem Prüflaboratorium–, ohne dass es einer vorherigen Information und Zustimmung der DAkKS bedarf, die Anwendung der hier aufgeführten genormten Prüfverfahren mit unterschiedlichen Ausgabeständen der Normen gestattet.“

Flexibilisierung der Akkreditierung nach Kategorie 3, Seite 5 bis 17

Umweltsimulation, Elektrisch- mechanische Bauteile, Batterien

*** Flexibler Bereich nach Kategorie 1**

verwendete Abkürzungen: siehe letzte Seite

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Fachbereich	Prüfbereich	Prüfparameterbereich	Charakteristische Prüfverfahren
Umwelt-simulation / Environmental Simulation	Climate (Temperature, Change of Temp. Humidity, Climatic Sequ., Damp Heat)	Temperature: -70 – 180 °C Change of Temperature: ≤ 15 °C/min Relative Humidity: 10 – 98 % Examples for Damp Heat Combinations: 40°C/93%r.H., 65°C/93%r.H., 85°C/85%r.H.	IEC 60068-2-1/-2 IEC 60068-2-14 (Nb) IEC 60068-2-30/-38 IEC 60068-2-61 IEC 60068-2-67/-78 MIL STD 810 (501, 502, 507) RTCA DO-160 (4, 5, 6) GR-63-CORE (5.1.1/2/4/5)
	Temperature Shock (air-air)	<i>Temperature Shock Chamber</i> Upper Temperature: 40 – 180 °C Lower Temperature: 70 – 150 °C Transfer Time: ≥ 8 s <i>Two Separate Temperature Chambers</i> Temperature: see respective section above Transfer Time: ≥ 30 s	IEC 60068-2-14 (Na) MIL STD 810 (503)
	Vibration (Sine, Random, Sine on Random)	Frequency Range: 3 – 2000 Hz Sine: Displacement: ≤ 50 mm (peak-peak) Velocity: ≤ 2 m/s Acceleration: ≤ 100 g Random: Displacement: ≤ 52 mm (peak-peak) Velocity: ≤ 3.5 m/s Acceleration: ≤ 50 g _{eff} Sine on Random: Within the above limits of Sine and Random (depending on the relative contribution of sine and random in the test profile)	IEC 60068-2-6 IEC 60068-2-64 IEC 60068-2-80 JESD22-B103 MIL STD 810 (514 Procedure I) RTCA DO-160 (8) GR-63-CORE (5.4.2/3)

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Fachbereich	Prüfbereich	Prüfparameterbereich	Charakteristische Prüfverfahren
	Mechanical Shock	<p>Electro Dynamical Shaker Displacement: ≤ 52 mm (peak-peak) Velocity: ≤ 3.5 m/s Acceleration: ≤ 100 g Examples of Acceleration/Duration Combinations Close to the Limit: 100g/6ms, 50g/11ms, 30g/18ms, 5g/30 ms Shock Shape: Half-Sine, Saw-Tooth, Trapezoidal</p> <p>Shock Tester Acceleration: ≤ 10000 g Examples of typical Acceleration/Duration Combinations: 10000g/0.3ms, 3000g/0.3ms, 1500g/0.5ms, 500g/1ms Shock Shape: Half-Sine</p>	<p>IEC 60068-2-27 JESD22-B104 MIL STD 810 (516) MIL STD 883 (2002) RTCA DO-160 (7)</p>
	Vibration/Shock with Temperature/Humidity	<p>Frequency Range: 3 – 2000 Hz</p> <p>Sine: Displacement: ≤ 36 mm (peak-peak) Velocity: ≤ 1.6 m/s Acceleration: ≤ 39 g</p> <p>Random/Shock: Displacement: ≤ 52 mm (peak-peak) Velocity: ≤ 2.65 m/s Acceleration (Random): ≤ 35 g_{eff} Acceleration (Shock): ≤ 100 g Shock Shape: Half-Sine, Saw-Tooth, Trapezoidal</p> <p>Sine on Random: Within the above limits of Sine and Random (depending on the relative contribution of sine and random in the test profile)</p> <p>Temperature: -70 – 160 °C Change of Temperature: ≤ 15 °C/min Relative Humidity: 10 – 98 %</p>	<p>IEC 60068-2-1/-2/-14 combined with IEC 60068-2-6/-27/-64 IEC 60068-2-53 ISO 16750-3</p>
	Drop	<p>Height: ≤ 2 m Surfaces: Hard Wood, Concrete, Steel, PVC on Concrete</p>	<p>IEC 60068-2-31 GR-63-CORE (5.3)</p>
	Salt Mist	<p>Salt: NaCl, "Nordlandsalz" (95 % NaCl, 2.5 % MgCl₂, 2.5 % CaCl₂) Salt Concentration: 0 - 5 % Temperature during spraying: RT - 50 °C Climate during non-spraying periods of cyclic tests: see section Climate above</p>	<p>IEC 60068-2-11/-52 ISO 9227 (NSS) MIL STD 810 (509) RTCA DO-160 (14)</p>

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Fachbereich	Prüfbereich	Prüfparameterbereich	Charakteristische Prüfverfahren
	Mixed Flowing Gas	Gas & Concentration: H ₂ S: ≤ 1 ppm NO ₂ : ≤ 1 ppm Cl ₂ : ≤ 100 ppb SO ₂ : ≤ 1 ppm Temperature: 25 – 30 °C Relative Humidity: 60 – 85 % Corrosivity Monitoring: Weight gain of copper coupons	IEC 60068-2-60 GR-63-CORE (5.5.2)
	Single Gas	Gas & Concentration: H ₂ S: ≤ 50 ppm SO ₂ : ≤ 50 ppm Temperature: 25 – 85 °C Relative Humidity: 50 – 90 %	IEC 60068-2-42 IEC 60068-2-43
	Resistance of Surfaces to Chemical Agents	Chemical Agents: Agents that can be legally acquired in small amounts and that can safely be handled (no highly toxic/carcinogenic/explosive/mutagenic/radioactive substances) Examples: Fuels, Oils and Lubricants, Other Operating Agents, Solvents and Cleaning Agents, Soft Drinks, Cosmetic Products, Artificial Sweat, Liquid Manure Application: Spraying, Splashing, Brushing, Wiping, Pouring, Dipping/Immersing Storage: Climate (see section Climate above) Evaluation: Naked Eye, Microscope	IEC 60068-2-74 MIL STD 810 (504) RTCA DO-160 (11) ISO 16750-5

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**** Flexibilisierung der Akkreditierung nach Kategorie 3**

Fachbereich	Norm / Hausverfahren/ Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Norm- verfahren angeben)	Prüfbereich /Einschränkung
Umwelt- simulation / Environmental Simulation	IEC 60068-2-x: Environmental testing / Basic environmental testing procedures		
	IEC 60068-2-1 (1990-04 (am1 1993-02, am2 1994-06), 2007-03)	Tests A: Cold	
	IEC 60068-2-2 (1974-01 (am1 1993-01, am2 1994-05), 2007-07)	Tests B: Dry Heat	
	IEC 60068-2-6 (2007-12)	Test Fc: Vibration (sinusoidal)	
	IEC 60068-2-11 (1981-01)	Test Ka: Salt mist	
	IEC 60068-2-13 (1983-01)	Test M: Low air pressure	
	IEC 60068-2-14 (2009-01)	Tests N: Change of temperature	Only Methods Na, Nb
	IEC 60068-2-18 (2000-01) (2017-03)	Test R and guidance: Water	Only Methods Ra 2, Rb 1, Rb 2, Rc 1
	IEC 60068-2-21 (2006-06)	Test U: Robustness of terminations and integral mounting devices	
	IEC 60068-2-27 (2008-02)	Test Ea and guidance: Shock	
	IEC 60068-2-30 (2005-08)	Test Db: Damp heat, cyclic (12 + 12 hour cycle)	
	IEC 60068-2-31 (2008-05)	Test Ec: Rough handling shocks, primarily for equipment-type specimens	Only Drop and topple, Free fall – Procedure 1
	IEC 60068-2-38 (2009-01)	Test Z/AD: Composite temperature/humidity cyclic test	

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	IEC 60068-2-40 (1976-01) (AMD1 1983-07)	Test Z/AM: Combined cold/low air pressure tests	
	IEC 60068-2-41 (1976-01) (AMD1 1983-01)	Test Z/BM: Combined dry heat/low air pressure tests	
	IEC 60068-2-42 (2003-05)	Test Kc: Sulphur dioxide test for contacts and connections	
	IEC 60068-2-43 (2003-05)	Test Kd: Hydrogen sulphide test for contacts and connections	
	IEC 60068-2-52 (1996-01) (CORR1 1996-07) (2017-11)	Test Kb: Salt mist, cyclic (sodium chloride solution)	Issue 2017: without test methods 7 and 8
	IEC 60068-2-53 (2010-04)	Tests and guidance – Combined climatic (temperature/humidity) and dynamic (vibration/shock) tests	
	IEC 60068-2-55 (2013-02)	Tests and guidance – Loose cargo testing including bounce	
	IEC 60068-2-60 (1995-12) (2015-06)	Test Ke: Flowing mixed gas corrosion test	
	IEC 60068-2-61 (1991-06)	Test Z/ABDM: Climatic sequence	
	IEC 60068-2-64 (2008-04)	Test Fh: Vibration, broad-band random and guidance	
	IEC 60068-2-67 (1995-12)	Test Cy: Damp heat, steady state, accelerated test primarily intended for components	
	IEC 60068-2-74 (1999-06)	Test Xc: Fluid contamination	
	IEC 60068-2-78 (2012-10)	Test Cab: Damp heat, steady state	
	IEC 60068-2-80 (2005-05)	Test Fi: Vibration – Mixed mode	

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	IEC 60068-2-82 (2007-05) (CORR1 2009-12)	Test XW ₁ : Whisker test methods for electronic and electric components	Restriction: Whisker evaluation with optical microscope only
Umwelt- simulation / Environmental Simulation	ETSI EN 300 019-2-x Equipment Engineering (EE) / Equipment Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Specification of environmental tests;		
	ETSI EN 300 019 - 2-1 V2.1.2 (2000- 09) V2.2.1 (2014-10)	Storage	
	ETSI EN 300 019 - 2-2 V2.3.1 (2013- 04)	Transportation	
	ETSI EN 300 019 - 2-3 V2.3.1 (2013- 04) V2.4.1 (2015-12)	Stationary use at weatherprotected locations	
	ETSI EN 300 019 - 2-4 V2.3.1 (2013- 08) V2.4.1 (2015-12)	Stationary use at non-weatherprotected locations	
	ETSI EN 300 019 - 2-5 V3.0.0 (2002- 12)	Ground vehicle installations	
	ETSI EN 300 019 - 2-6 V3.0.0 (2002- 12)	Ship environments	
	ETSI EN 300 019 - 2-7 V3.0.1 (2003- 04)	Portable and non-stationary use	

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Umwelt- simulation / Environmental Simulation	Other Standards		
	ISO 9227 (2012-05) (Replaces DIN 50021) (2017-03)	Corrosion tests in artificial atmospheres – Salt spray tests	Only Test NSS
	ASTM B 117 (2011, 2016)	Standard Practice for Operating Salt Spray (Fog) Apparatus	
	ISO 6270-2 (2005-07) (Replaces DIN 50017)	Paints and varnishes - Determination of resistance to humidity - Part 2: Procedure for exposing test specimens in condensation-water atmospheres	
	DIN 50018 (2013-05)	Prüfung im Kondenswasser-Wechselklima mit schwefeldioxidhaltiger Atmosphäre	
	ISO 6988 (1985-02)	Metallic and other non-organic coatings; Sulfur dioxide test with general condensation of moisture	
	IEC 60529 (2013-08) ISO 20653 (2013-02)	Degrees of protection provided by enclosures Road vehicles - Protection of electrical equipment against foreign objects, water and access	Only: IP 5x, 5kx, 6x, 6kx, x3, x4, x4k, x5, x6, x6k, x7, x8 (IP 1x, 2x, 3x, 4x, x1, x2 are included in the scope of the Product Safety Lab, Munich)
	NEMA 250 (2008) (2014)	Enclosures for Electrical Equipment (1000V Maximum)	Only 5.4 Test for Protection against Ingress of Water (Rain)
	JESD22-B103 (B 2002-06) (B.01 2016-09)	Vibration, Variable Frequency	
	JESD22-B104 (C 2004-12)	Mechanical Shock	
	IEC 61373 (1999-01, 2010-05)	Railway applications – Rolling stock equipment – Shock and vibration tests	

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	ISO 16750-3 (2012-12)	Road vehicles - Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads	Restrictions: 4.4: excluded 4.5: only according to ISO 20567-1
	ISO 16750-4 (2010-04)	Road vehicles - Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads	Restriction: Excluding section 5.9
	ISO 16750-5 (2010-04)	Road vehicles - Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads	
	VW 80000 (2009-10, 2013-06) MBN LV 124-2 (2009-11, 2013-08) GS 95024-3-1 (2010-01, 2013-07)	Elektrische und elektronische Komponenten in Kraftfahrzeugen bis 3,5t - Allgemeine Anforderungen, Prüfbedingungen und Prüfungen Teil II – Umweltaanforderungen	Restrictions: K-05: only Method Na K-10: without IPx1, IPx2 K-11: excluded L-01: only within the limits of the remainder of the scope
	GS 95011-4 (2009-10)	Electronic devices in motor vehicles Dewing test and climate test	
	MBN 10 305-1 (2008-06)	E/E Environmental Testing Part 1: Test Specifications	Only sections: 6.4.3 Chemical Exposure – Cabin Compartment 6.4.4 Chemical Exposure - Outside Cabin Compartment
	ISO 20567-1 (2005) (2017-01)	Paints and varnishes – Determination of stone-chip resistance of coatings – Part 1: Multi-impact testing	
	DIN 75220 (1992-11)	Alterung von Kfz-Bauteilen in Sonnensimulationsanlagen	
	Telcordia GR-63-CORE (2012-04)	NEBS Requirements: Physical Protection	Restriction: Excluding sections 5.2, 5.4.1, 5.5.3, 5.6

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	Telcordia GR-3108-CORE (Iss 2, 2008-12) (Iss 3, 2013-04)	Generic Requirements for Network Equipment in the Outside Plant (OSP)	Restriction: Excluding section 5 (which is included in the scope of the Product Safety department)
	MIL-STD-810 (D 1983-07, E 1989-07, F 2000-01, G 2008-10 G w/Change 1 2014-04)	Test Method Standard Environmental Engineering Considerations and Laboratory Tests	Only Methods: 500 (Proced. I, II, without humidity control), 501, 502, 503, 504, 505 (Proced. II), 507, 509, 514 (Proced. I, II, 516 (except Proced. VII, VIII)
	MIL-STD-883 (H 2010-02, J 2013-06, J w/Change 5 2015-06, K 2016-04, K w/Change 1 2016-07, K w/Change 2 2017-02)	Test Method Standard Microcircuits	Only Methods: 2002, 2007
	NATO AECTP 300 (ED 3, 2006-01)	Climatic Environmental Tests	Only Methods: 302, 303, 304, 305 (only Proced. II), 306, 309, 312 (only Proced. I, II), 314
	NATO AECTP 400 (ED 3, 2006-01)	Mechanical Environmental Tests	Only Methods: 401, 403, 406, 414 (without Proced. II)

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	RTCA DO-160 (D 1997-07, E 2004-12, F 2007-12, G 2010-12)	Environmental Conditions and Test Procedures for Airborne Equipment	Only Sections: 4 (excluding decompression and overpressure), 5, 6, 7, 8, 10 (only Condensing Water Proof Test, Continuous Stream Proof Test), 11, 14, 24
	UN ST/SG/AC.10/11 (Rev 5 AMD1, 2013-01) (Rev 6, 2015-01)	United Nations Recommendations on the Transport of dangerous goods Manual of Test and Criteria	Only Section 38.3 Lithium metal and lithium ion batteries, T1, T2, T3, T4 (T5, T6, T7, T8 are included in the scope of the e-Mobility Lab, Munich)
Elektr.-mech. Bauelemente / Electro-mech. Components	IEC 60512-x-x: Connectors for electronic equipment – Tests and measurements / Electromechanical components for electronic equipment – Basic testing procedures and measuring methods		
	IEC 60512-1-1 (2002-02)	General examination - Test 1a: Visual examination	
	IEC 60512-1-2 (2002-02)	General examination - Test 1b: Examination of dimension and mass	Only Vernier Gauge, Micrometer, Dial Gauge (incl. End-Gauge), Gauges, Test-Pins, Measuring Microscope Balance
	IEC 60512-1-3 (1997-07)	General examination - Section 3: Test 1c - Electrical engagement length	
	IEC 60512-1-4 (1997-08)	General - Section 4: Test 1d: Contact protection effectiveness (scoop- proof)	
	IEC 60512-2-1 (2002-02)	Electrical continuity and contact resistance tests - Test 2a: Contact resistance - Millivolt level method	
	IEC 60512-2-2 (2003-05)	Electrical continuity and contact resistance tests - Test 2b: Contact resistance; Specified test current method	

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	IEC 60512-2-3 (2002-02)	Electrical continuity and contact resistance tests - Test 2c: Contact resistance variation	
	IEC 60512-2-5 (2003-05)	Electrical continuity and contact resistance tests - Test 2e: Contact disturbance	
	IEC 60512-2-6 (2002-06)	Electrical continuity and contact resistance tests - Test 2f: Housing (shell) electrical continuity	
	IEC 60512-3-1 (2002-02)	Insulation tests - Test 3a: Insulation resistance	
	IEC 60512-4-1 (2003-05)	Voltage stress tests - Test 4a: Voltage proof	
	IEC 60512-4-3 (2002-02)	Voltage stress tests - Test 4c: Voltage proof of pre-insulated crimp barrels	
	IEC 60512-5-1 (2002-02)	Current-carrying capacity tests - Test 5a: Temperature rise	
	IEC 60512-5-2 (2002-02)	Current-carrying capacity tests - Test 5b: Current-temperature derating	
	IEC 60512-6-2 (2002-02)	Dynamic stress tests - Test 6b: Bump	
	IEC 60512-6-3 (2002-02)	Dynamic stress tests - Test 6c: Shock	
	IEC 60512-6-4 (2002-02)	Dynamic stress tests - Test 6d: Vibration (sinusoidal)	
	IEC 60512-6-5 (1997-10)	Dynamic stress tests - Section 5: Test 6e: Random vibration	
	IEC 60512-8-1 (2010-06)	Static load tests (fixed connectors) - Test 8a: Static load, transverse	
	IEC 60512-8-2 (2011-04)	Static load tests (fixed connectors) - Test 8b: Static load, axial	
	IEC 60512-8-3 (2011-04)	Static load tests (fixed connectors) - Test 8c: Robustness of actuating lever	
	IEC 60512-9-1 (2010-03)	Endurance tests - Test 9a: Mechanical operation	
	IEC 60512-9-2 (2011-11)	Endurance tests - Test 9b: Electrical load and temperature	

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	IEC 60512-9-3 (2006-02) (2011-06)	Endurance tests - Test 9c: Mechanical operation (engaging and separating) with electrical load	
	IEC 60512-9-4 (2011-04)	Endurance tests - Test 9d: Durability of contact retention system and seals (maintenance, ageing)	
	IEC 60512-9-5 (2010-03)	Endurance tests - Test 9e: Current loading, cyclic	
	IEC 60512-10-4 (2003-08)	Impact tests (free components), static load tests (fixed components), endurance test and overload tests - Test 10d: Electrical overload (connectors)	
	IEC 60512-11-1 (1995-11)	Climatic tests - Section 1: Test 11a: Climatic sequence	
	IEC 60512-11-3 (2002-02)	Climatic tests - Test 11c: Damp heat, steady state	
	IEC 60512-11-4 (2002-02)	Climatic tests - Test 11d: Rapid change of temperature	
	IEC 60512-11-6 (2002-02)	Climatic tests - Test 11f: Corrosion, salt mist	
	IEC 60512-11-7 (2003-05)	Climatic tests - Test 11g: Flowing mixed gas corrosion test	
	IEC 60512-11-9 (2002-02)	Climatic tests - Test 11i: Dry heat	
	IEC 60512-11-10 (2002-02)	Climatic tests - Test 11j: Cold	
	IEC 60512-11-11 (2002-02)	Climatic tests - Test 11k: Low air pressure	
	IEC 60512-11-12 (2002-02)	Climatic tests - Test 11m: Damp heat, cyclic	
	IEC 60512-11-13 (2002-02)	Climatic tests - Test 11n: Gas tightness, solderless wrapped connections	
	IEC 60512-11-14 (2003-07)	Climatic tests - Test 11p: Flowing single gas corrosion test	

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	IEC 60512-13-1 (2006-02)	Mechanical operation tests; Test 13a: Engaging and separating forces	
	IEC 60512-13-2 (2006-02)	Mechanical operation tests; Test 13b: Insertion and withdrawal forces	
	IEC 60512-13-5 (2006-02)	Mechanical operation tests - Test 13e: Polarizing and keying method	
	IEC 60512-14-4 (2006-03)	Sealing tests - Test 14d: Immersion - Waterproof	
	IEC 60512-14-5 (2006-03)	Sealing tests - Test 14e: Immersion at low air pressure	
	IEC 60512-14-6 (2006-03)	Sealing tests - Test 14f: Interfacial sealing	
	IEC 60512-14-7 (1997-10)	Sealing tests - Section 7: Test 14g: Impacting water	
	IEC 60512-15-1 (2008-05)	Connector tests (mechanical) - Test 15a: Contact retention in insert	
	IEC 60512-15-2 (2008-05)	Connector tests (mechanical) - Test 15b: Insert retention in housing (axial)	
	IEC 60512-15-3 (2008-05)	Connector tests (mechanical) - Test 15c: Insert retention in housing (torsional)	
	IEC 60512-15-4 (2008-05)	Connector tests (mechanical) - Test 15d: Contact insertion, release and extraction force	
	IEC 60512-15-5 (2008-05)	Connector tests (mechanical) - Test 15e: Contact retention in insert, cable nutration	
	IEC 60512-15-6 (2008-05)	Connector tests (mechanical) - Test 15f: Effectiveness of connector coupling devices	
	IEC 60512-15-7 (2008-05)	Connector tests (mechanical) - Test 15g: Robustness of protective cover attachment	
	IEC 60512-15-8 (1995-11)	Mechanical tests on contacts and terminations - Section 8: Test 15h: Contact retention system resistance to tool application	

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	IEC 60512-16-1 (2008-06)	Mechanical tests on contacts and terminations - Test 16a: Probe damage	
	IEC 60512-16-2 (2008-06)	Mechanical tests on contacts and terminations - Test 16b: Restricted entry	
	IEC 60512-16-3 (2008-07)	Mechanical tests on contacts and terminations - Test 16c: Contact-bending strength	
	IEC 60512-16-4 (2008-06)	Mechanical tests on contacts and terminations - Test 16d: Tensile strength (crimped connections)	
	IEC 60512-16-5 (2008-07)	Mechanical tests on contacts and terminations - Test 16e: Gauge retention force (resilient contacts)	
	IEC 60512-16-6 (2008-07)	Part 16-6: Mechanical tests on contacts and terminations - Test 16f: Robustness of terminations	
	IEC 60512-16-7 (2008-07)	Mechanical tests on contacts and terminations - Test 16g: Measurement of contact deformation after crimping	
	IEC 60512-16-8 (2008-05)	Mechanical tests on connections and terminations - Test 16h: Insulating grip effectiveness (crimped connections)	
	IEC 60512-16-9 (2008-05)	Mechanical tests on contacts and terminations - Test 16i: Grounding contact spring holding force	
	IEC 60512-16-11 (2008-05)	Mechanical tests on contacts and terminations - Test 16k: Stripping force, solderless wrapped connections	
	IEC 60512-16-13 (2008-05)	Mechanical tests on contacts and terminations - Test 16m: Un-wrapping, solderless wrapped connections	
	IEC 60512-16-14 (2008-07)	Mechanical tests on contacts and terminations - Test 16n: Bending strength, fixed male tabs	
	IEC 60512-16-16 (2008-07)	Mechanical tests on contacts and terminations - Test 16p: Torsional strength, fixed male tabs	
	IEC 60512-16-17 (2008-07)	Mechanical tests on contacts and terminations - Test 16q: Tensile and compressive strength, fixed male tabs	
	IEC 60512-16-18 (2008-05)	Mechanical tests on contacts and terminations - Test 16r: Deflection of contacts, simulation	

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Anlage zur Akkreditierungsurkunde D-PL-11020-03-03

Fachbereich	Norm / Hausverfahren /Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Norm- verfahren angeben)	Prüfbereich /Einschränkung
	IEC 60512-16-20 (1996-08)	Mechanical tests on contacts and terminations - Section 20: Test 16t: Mechanical strength (wired termination of solderless connections)	
	IEC 60512-16-21 (2012-05)	Mechanical tests on contacts and terminations – Test 16u: Whisker test via the application of external mechanical stresses	Restriction: Whisker evaluation with optical microscope only
	IEC 60512-17-1 (2010-06)	Cable clamping tests - Test 17a: Cable clamp robustness	
	IEC 60512-17-2 (2011-04)	Cable clamping tests - Test 17b: Cable clamp resistance to cable rotation	
	IEC 60512-17-3 (2010-06)	Cable clamping tests - Test 17c: Cable clamp resistance to cable pull (tensile)	
	IEC 60512-17-4 (2010-06)	Cable clamping tests - Test 17d: Cable clamp resistance to cable torsion	
	IEC 60512-19-1 (2010-03)	Chemical resistance tests - Test 19a: Fluid resistance of pre-insulated crimp barrels	
	IEC 60512-19-3 (1997-07)	Chemical resistance tests - Section 3: Test 19c: Fluid resistance	
Elektr.-mech. Bauelemente / Electro-mech. Components	Connectors for electronic equipment / Connectors for use in d.c. low-frequency analogue and digital high speed data applications		
	IEC 61076-4-100 (2001-10)	Printed board connectors with assessed quality - Detail specification for two-part connectors modules having a grid of 2,5mm for printed boards and backplanes	
	IEC 61076-4-101 (2001-09)	Printed board connectors with assessed quality - Detail specification for two-part connectors modules, having a basic grid of 2,0mm for printed boards and backplanes in accordance with IEC 60917	
	IEC 61076-4-103 (1999-02)	Printed board connectors with assessed quality - Detail specification for two-part connectors with shielding and a basic grid of 2,5mm.	

Anlage zur Akkreditierungsurkunde D-PL-11020-03-03

Fachbereich	Norm / Hausverfahren /Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Norm- verfahren angeben)	Prüfbereich /Einschränkung
	IEC 61076-4-104 (1999-03)	Printed board connectors with assessed quality - Detail specification for two-part modular connectors, basic grid of 2,0 mm, with termination on a multiple grid of 0,5 mm	
	IEC 60603-7 (2008-07) (AMD1 2011- 09)	Detail specification for connectors, 8-way, including fixed and free with common mating features, with assessed quality	
	IEC 60603-7-1 (2011-04)	Detail specification for 8-way, shielded free and fixed connectors with common mating features, with assessed quality	Excluding sections 6.4.8/9
	IEC 60603-7-4 (2010-04)	Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz	Excluding section 6.5
	IEC 60603-7-7 (2010-05)	Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 600 MHz (category 7, shielded)	Excluding section 6.5
Elektr.-mech. Bauelemente / Electro-mech. Components	Other Standards		
	IEC 60352-2 (2006-02)	Solderless connections – Part 2: Crimped connections – General requirements, test methods and practical guidance	
	IEC 60352-5 (2012-02)	Solderless connections – Part 5: Press-in connections – General requirements, test methods and practical guidance	
	HELLA Norm HN28100-01 (2016-02)	Prüfrichtlinie Einpresstechnik	Without measurement of 3D lengths for whisker test
	VW 75174 (2010-04) MBN 10384 (2010-11) GS 95006-7-1 (2010-05)	Kfz-Steckverbinder, Prüfvorschrift (LV 214) Leitungssätze in Kraftfahrzeugen, Steckverbinder, Prüfungen	Restrictions: PG 2, 3, 4, 9, 28, 29: excluded PG 23: without B23.2, B23.4