



A2LA has compiled information regarding the classification of common test methods according to the A2LA Policy on Measurement Uncertainty for Testing Laboratories. Following is a list of example classifications, which has been reviewed by the A2LA Electro-Mechanical Advisory Committee.

The list below is intended to provide examples of how the listed methods were typically categorized. **These classifications are dependent on the particular circumstances in a laboratory, and may not apply in all cases.** The fact that a method is listed below in Category I or II does not absolve a laboratory from compliance with 5.4.6.2 of ISO/IEC 17025 or the need to address measurement uncertainty.

The list is organized by test area. Within each area, the methods are ordered first by Category (as defined in the Measurement Uncertainty Policy), then by method designation. In some disciplines, specific method numbers are not listed. This list will be updated periodically as more information is made available. Such updates may include changes in categories. Following is a list of the test areas currently covered:

- Electrical Tests and Electric Product Tests
- Environmental Stress or Exposure (Military & Generic)
- Electromagnetic Compatibility (EMC) & Telecom
- Environmental Stress or Exposure (Automotive/Vehicle)
- Automotive/Vehicle Vibration Testing
- ETSI-based Radio Tests
- Bluetooth RF Tests
- SAR Testing
- Product Safety Testing

Electrical Tests and Electric Product Tests

Test Method	Standard(s)	Category (I through V)
Capacitance	MIL-STD-202 Method 305	I/II
Dielectric Withstanding Voltage	MIL-STD-202 Method 301, IPC-6012, IPC-6013, IPC-TM-650, GR-1217-CORE, MIL-STD 1344 Method 3001, Boeing D6-44588, Boeing D6-16050-4, UL746A, UL796, IEC 60243-1, JIS K6911, JIS C2110	I/II
Dielectric Breakdown Voltage	ASTM 149	I/II
Contact Resistance	MIL-STD-202 Method 307 ASTM B539-80	I/II I/II



Electrical Tests and Electric Product Tests (cont.)

Test Method	Standard(s)	Category (I through V)
DC Resistance	MIL-STD-202 Method 303	I/II
	ASTM D 257	I/II
Insulation Resistance	MIL-STD-202 Method 302, MIL-PRF-55110, MIL-STD 1344 Method 3003	I/II
	MIL-STD-883 Method 1003	I/II
Resistivity of Electrical Conductor Materials	ASTM B193	I/II
Quality Factor	MIL-STD-202 Method 306	I/II
Electromigration Resistance	GR-78-CORE	I/II
Contact Resistance	SAE AS13441; MIL-STD-202, Method 307, ASTM B539, GR-1217-CORE	I/II
Bonding & Grounding	Boeing D6-44588, Boeing D6-16050-4 R	I/II
Dry Arc Resistance Test	ASTM D495, JIS K6911	I/II
Volume / Surface Resistivity	UL746A, ASTM D257, JIS K6911, JIS C6481, IEC 93	I/II
Bare and Assembled Printed Wiring Boards	IPC-TM-650	I/II

Environmental Stress or Exposure (Military & Generic)

Test Method	Standard(s)	Category (I through V)
Acceleration	MIL-STD-202 Method 212	I/II
	MIL-STD-810 Method 513.3	I/II
Drop Test	ISTA	I/II
	FED-STD-101	I/II
Explosion	MIL-STD-202 Method 109	I/II
	MIL-STD-810, Method 511.2	I/II
High Impact Shock	MIL-STD-202 Method 207	I/II
	MIL-S-901	I/II
High Temperature	MIL-STD-810 Method 5001.2, MIL-STD-1344 Method 1003, 1005, RTCA/DO160, GR-63-CORE, GR-1221-CORE, IEC 68-2-2, Test Ba	I/II
Humidity	MIL-STD-202 Method 103, RTCA/DO160	I/II



Environmental Stress or Exposure (Military & Generic) (cont.)

Test Method	Standard(s)	Category (I through V)
Low Pressure (Altitude)	MIL-STD-810 Method 500.2	I/II
Low Temperature	MIL-STD-810 Method 502.2	I/II
Immersion	MIL-STD-202 Method 104, MIL-STD-810 Method 512; MIL-STD-883 Method 1002; RTCA-DO160 Section 10	I/II
Moisture Resistance	MIL-STD-202 Method 106	I/II
Mechanical Shock	MIL-STD-202 Method 213 MIL-STD-883 Method 2002, IEC 68-2-27, Test Ea, IEC 68-2-29, Test Eb, GR-1221-CORE, MIL-B-49430, MIL-B-49458, MIL-PRF-49471 MIL-STD-883 Method 1004.7	I/II I/II I/II
Telecommunications Core Environmental Exposure	GR-63-CORE, ETS 300 019	I/II I/II
Particle Impact Noise Detection	MIL-STD-202 Method 217	I/II
Sand and Dust	MIL-STD-202 Method 110, MIL-STD-810 Method 510, RTCA/DO160 Section 12	I/II
Rain Test	MIL-STD-810 Method 506.3	I/II
Resistance to Soldering Heat	MIL-STD-202 Method 210	I/II
Resistance to Solvents	MIL-STD-202 Method 215	I/II
Thermal Shock	MIL-STD-202 Method 107	I/II
Vibration	MIL-STD-202 Method 201, Method 204, Method 214 MIL-STD-810 MIL-STD-883 Method 2026 Method 2007.2 MIL-STD-167, RTCA/DO160, ISTA Project 1	I/II I/II I/II I/II I/II I/II

Electromagnetic Compatibility (EMC) & Telecom

Test Method	Standard(s)	Category (I through V)
Radio disturbance characteristics	CISPR 12, CISPR 25, SAE J1113-41	I/II
Radiated, RF field immunity	EN 61000-4-3, IEC 1000-4-3	I/II



Electromagnetic Compatibility (EMC) & Telecom

Test Method	Standard(s)	Category (I through V)
Radiated Emissions and Conducted Emissions	CISPR 11 (Edition 4 Amd 1 or earlier), 13, 14, 15, 20, 22 (Edition 5 or earlier), EN 55011, EN 55013, EN 55014, EN 55022, CNS: 13438, 13439, 13803, 13783, 14115, AS/NZS 1044, AS/NZS CISPR14.1, AS/NZS 3548, AS/NZS CISPR 22, AS/NZS 2064, AS/NZS CISPR11 (Edition 4.1 or earlier), SABS CISPR 22, SABS CISPR-11, CSA C108.8, CISPR 13, AS/NZS CISPR 13, CISPR 14, EN 55014, MIL-STD 461/462, CFR 47, Part 15 (using ANSI C63.4) CFR 47, Part 18 (using MP5); Boeing D6-16050-4, TIA/EIA-603	I/II
Radiated Emissions Conducted Emissions	CISPR 22 (Edition 5.2) CISPR 11 (Edition 4 Amd 1 or earlier), 13, 14, 15, 20, 22 (Edition 5 or earlier), EN 55011, EN55013, EN 55014, EN 55022, CNS: 13438, 13439, 13803, 13783, 14115, AS/NZS 1044, AS/NZS CISPR14.1, AS/NZS 3548, AS/NZS CISPR 22, AS/NZS 2064, AS/NZS CISPR11, SABS CISPR 22, SABS CISPR-11,	V I/II



Electromagnetic Compatibility (EMC) & Telecom (cont.)

Test Method	Standard(s)	Category (I through V)
Conducted Emissions (<i>cont.</i>)	CSA C108.8, CISPR 13, AS/NZS CISPR 13, CISPR 14, EN 55014, MIL-STD 461/462, CFR 47, Part 15 (using ANSI C63.4), CFR 47, Part 18 (using MP5); Boeing D6-16050-4, Boeing D6-4588, EN 60555 Part 2, EN 60555 Part 3	I/II
Conducted Emissions	CISPR 22 (Edition 5.2)	V
<i>EMC Product Family Standards</i>	EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-1, EN 61000-6-2, EN 50091-2, CISPR 24, EN 55024, EN 55103-1, EN 55103-2, EN 61326, EN 61547, EN 50130-4, EN 55104, EN 50083-2, 60601-1-2, IEC 1800-3, EN 61000-3-2, AS/NZS 61000.3.2, EN 61000-3-3, AS/NZS 61000.3.3, ETS 300 386-1, EN 60669-2-1, GR-1089-CORE, IEC 60728-1, EN 50083-2, ANSI/RESNA WC/Vol. 2	I/II
Telecom Standards	FCC 47 CFR Part 68, CS-03 TIA/EIA TSB31, TIA/EIA-IS-968, TIA/EIA-IS-883, T1.TRQ.6-2001, AS/ACIF S002, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038,	I/II



Electromagnetic Compatibility (EMC) & Telecom (cont.)

Test Method	Standard(s)	Category (I through V)
Telecom Standards (<i>cont.</i>)	AS/ACIF S043, TBR 1, TBR 2, ITU-T G.703, TBR 012, TBR 013, TBR 24, TBR 20, TS 002, TS 016, TS 030, TS 038, ETS 300 132-2, ETS 300 132-1, FTZ 1TR 09	I/II
Electrical fast transient/burst immunity	EN 61000-4-4, IEC 1000-4-4, IEC 801-4	I/II
Surge immunity	EN 61000-4-5, IEC 1000-4-5, IEEE C62.41: IEC 801-5	I/II
Immunity to conducted disturbances	EN 61000-4-6, IEC 1000-4-6	I/II
<i>Canadian Radio Tests</i>	All RSS and BETS standards available at the following URL's: RSS URL: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf06129.html BETS URL: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf06125.html	I/II
Electrostatic discharge immunity	EN 61000-4-2, IEC 61000-4-2, RTCA/DO160; Boeing D6-16050-4, IEC 801-2	I/II
47 CFR (FCC)	FCC Rules parts 2, 11, 15, 18, 21, 22, 24, 25, 27, 74, 80, 87, 90, 95, 97, 101 (using test methods of either ANSI C63.4 or EIA/TIA 603)	I/II
Overvoltage, Overcurrent, Surge	ITU-T K17, ITU-T K20, ITU-T K21, ITU-T K40, ITU-T K45	I/II



Electromagnetic Compatibility (EMC) & Telecom (cont.)

Test Method	Standard(s)	Category (I through V)
Magnetic Field Immunity	EN 61000-4-8, Boeing D6-16050-4, RTCA/DO160, IEC 801-8,	I/II
Voltage dips, short interruptions and voltage Variations	EN 61000-4-11, IEC 801-11	I/II
Voltage Spike	RTCA/DO160	I/II
Audio Frequency Conducted	RTCA/DO160	I/II
Conduction and Coupling - Part 1	ISO 7637-1	I/II
Lightning Induced Transient Susceptibility	RTCA/DO160, Boeing D6-16050-4, Boeing D6-44588	I/II
Conduction and Coupling – Part 2	ISO 7637-2	I/II
Vehicles - electrostatic discharge	ISO TR 10605	I/II
Earth-moving machinery	ISO 13766	I/II
Narrowband Radiated EM	ISO 11452-1	I/II
Absorber-lined Chamber	ISO 11452-2	I/II
Transverse EM mode cell	ISO 11452-3	I/II
Bulk current injection (BCI)	ISO 11452-4	I/II
Stripline	ISO 11452-5	I/II
Parallel Plate	ISO 11452-6	I/II
Direct Radio Frequency Power Injection	ISO 11452-7	I/II
Control of EM Interference	MIL STD 461E	I/II
Vehicle EMC	SAE J551-1	I/II
Vehicle component EMC	SAE J1113-1	I/II
Conducted Immunity	SAE J1113-2	I/II
Direct Injection of RF Power	SAE J1113-3	I/II
Bulk Current Injection (BCI)	SAE J1113-4	I/II
Conducted Transients on Power Leads	SAE J1113-11	I/II
Conduction and Coupling Clamp	SAE J1113-12	I/II
Immunity to Electrostatic Discharge	SAE J1113-13	I/II
Immunity - Absorber-Lined Chamber	SAE J1113-21	I/II
Magnetic Fields from Power Lines	SAE J1113-22	I/II
Immunity - Stripline	SAE J1113-23	I/II
Immunity - Wideband TEM Cell	SAE J1113-24	I/II
Immunity – Triplate	SAE J1113-25	I/II
AC Power Line Electric Fields	SAE J1113-26	I/II



Electromagnetic Compatibility (EMC) & Telecom (cont.)

Test Method	Standard(s)	Category (I through V)
Immunity – Reverberation chamber	SAE J1113-27	I/II
Conducted Transient Emissions	SAE J1113-42	I/II
BMW Electromagnetic Compatibility	GS 95002	I/II
Immunity-Reverberation Mode Tune	SAE J1113-28	I/II
Caterpillar Electromagnetic Compatibility	EC-1	I/II
Cummins Electromagnetic Compatibility	14270	I/II
DAF Conducted Requirements	BSL 0003-103	I/II
DAF Radiated Requirements	BSL 0003-103	I/II
DAF ESD	BSL 0003-103	I/II
Daimler Chrysler EMC	PF9326	I/II
Daimler Chrysler EMC	PF10540	I/II
Daimler Chrysler EMC	DC 10614	I/II
Fiat EMC	990110	I/II
Ford EMC	ES-XW7T-1A278-AB	I/II
Freightliner Performance Requirements	49-00085	I/II
Susceptibility to Conducted Transients	GM9105P	I/II
Susceptibility to ESD During Operation	GM9109P	I/II
Susceptibility - Bulk current injection	GM9112P	I/II
Susceptibility to Magnetic Fields	GM9113P	I/II
Radiated Emissions – Reverb	GM9114P	I/II
Conducted Transient Emissions	GM9115P	I/II
Conducted Sinusoidal Bursts	GM9116P	I/II
Jump Start / Reverse Battery	GM9117P	I/II
ESD Sensitivity During Handling	GM9119P	I/II
Radiated Electric Fields - Reverberation	GM9120P	I/II
EMC Component/Subsystem Requirements	GMW3097	I/II
EMC Component/Subsystem Verification	GMW3100	I/II
EMC Vehicle Requirement Specifications	GMW3091	I/II
Electronic Component	GMW3172GS	I/II
Environmental Tests		
Harley Davidson EMC Testing	22603	I/II



Electromagnetic Compatibility (EMC) & Telecom (cont.)

Test Method	Standard(s)	Category (I through V)
Hyundai EMC Testing	ES 96200-00	I/II
Mercedes EMC	EMV AV 7199	I/II
Mercedes Vehicle EMC Testing	MBN10284 1	I/II
Mercedes Component EMC Testing	MBN10284 2	I/II
Peugeot South America	B21 7090	I/II
Renault EMC	NC 2000 00 96	I/II
Renault EMC	3600808	I/II
Toyota EMC Bench Test Method	TSC 7001G	I/II
Toyota EMC interference susceptibility	TSC 7006G	I/II
Toyota EMC test method	TSC 7026G	I/II
Toyota EMC radio noise interference	TSC 7508G	I/II
VW Short-Distance Interference Suppression	TL965	I/II
VW Conducted Interferences	TL82066	I/II
VW Radiated Interferences	TL82166	I/II
VW Coupled Interference on Sensors	TL82366	I/II
VW ESD	TL82466	I/II

Environmental Stress or Exposure (Automotive/Vehicle)

Test Method	Standard(s)	Category (I through V)
Daimler Chrysler Environmental	PF9688	I/II
Ford	Ford 00.00EA-D11	I/II
Interior mounted modules	GM9123	I/II
Gravelometer	SAE J400	I/II
Radar object detection	MIL-STD285	I/II
Testing methods for automotive electronic	JASO D001-87	I/II
Heavy duty trucks	SAEJ1455	I/II
Electronic Equipment	SAE J1211	I/II
Electrical/Electronic Component	GMW3172	I/II
Harley Davidson	GES 22601	I/II
Toyota - Compact Disk Players	TSC 7513G	I/II



Automotive/Vehicle Vibration Testing

Test Method	Standard(s)	Category (I through V)
	GMI 12558	I/II
	GMW7293	I/II
	PF9688	I/II
	GM9123	I/II
	GMW3172	I/II
	GES 22601	I/II
	TSC 7513G	I/II
	SAE J1211	I/II
	Ford 00.00EA-D11	I/II

ETSI-based Radio Tests

All ETSI 300 series tests are considered Category V, and as such, measurement uncertainty calculations are expected.

Bluetooth RF Tests

Test Specification	Date	Section requiring MU
RF Test specifications	February 1, 2003	Section 6.9
RF Provisional Test specifications	February 1, 2003	Section 6.9

CTIA Tests

Test Specification	Date	Section requiring MU
Test Plan for Mobile Station Over the Air Performance	January 15, 2008	Section 7

SAR Testing

Similar Measurement Uncertainty is expected to apply to IEEE 1528, EN 50360, EN 50361, AS/NZS 2772.1, Australian RF Exposure, and Australian Radio Communication (Electromagnetic Radiation – Human Exposure) Standard

Product Safety Testing

Using the international industry guideline IEC60601-1, product safety test standards/specifications are considered Type I/II.

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