



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL TECHNICAL SYSTEMS (NTS)  
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ELECTRICAL

Valid To: June 30, 2018

Certificate Number: 0214.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility, electrical characteristic, and fiber optic tests:

**Test:**

**Test Method(s)<sup>1</sup>:**

***Emissions***

Radiated & Conducted  
(3m Semi Anechoic Chamber)

Code of Federal Regulation (CFR) 47, FCC Part 15B using ANSI C63.4:2014, FCC Part 18 (using MP5:1986); ANSI C63.4:2009; CISPR 22; CISPR 32; EN 55022; EN 55032; KN 22; KN 32; AS/NZS CISPR 22; AS/NZS CISPR 32; CISPR 11; EN 55011; ICES-003; VCCI V-3 (up to 6 GHz)

Current Harmonics

EN 61000-3-2; IEC 61000-3-2

Voltage Fluctuations

EN 61000-3-3; IEC 61000-3-3

***Immunity***

Electrostatic Discharge (ESD)

EN 61000-4-2; IEC 61000-4-2

Radiated Immunity

EN 61000-4-3; IEC 61000-4-3

Electrical Fast Transient/Burst

EN 61000-4-4; IEC 61000-4-4

Surge Immunity

EN 61000-4-5; IEC 61000-4-5

Conducted Immunity

EN 61000-4-6; IEC 61000-4-6

Power Frequency Magnetic Field Immunity

EN 61000-4-8; IEC 61000-4-8

Voltage Dips, Short Interruptions and Line Voltage Variations

EN 61000-4-11; IEC 61000-4-11

**Test:**

**Test Method(s)<sup>1</sup>:**

***Generic/Product Family Standards  
and Industry Standards***

IEC/EN 61000-6-1; IEC/EN 61000-6-2;  
CISPR 24; EN 55024; KN 24; KN 35;  
IEC/EN 61326-1

Aerospace

RTCA/DO-160D-G Sections: 15, 16, 17, 18, 19, 20, 21, 22, 25;  
Boeing D6-16050-5 Paragraphs: 7.1, 7.2, 8.1, 8.2, 8.3, 8.4;  
Boeing 787B3-0147, Rev. B;  
Airbus ABD0100.1.8, Issue D

Military/Defense  
*(RS03 and RS103 testing up to 40  
GHz and 200 V/m)*

MIL-STD-461A-C/462 Methods CE01, CE02, CE03, CE04,  
CE06, CE07, CS01, CS02, CS04, CS05, CS06, RE01, RE02,  
RS01, RS03;  
MIL-STD-461D/462D Methods CE101, CE102, CE106, CS101,  
CS103, CS104, CS105, CS109, CS114, CS115, CS116, RE101,  
RE102, RS101, RS103;  
MIL-STD-461E Methods CE101, CE102, CE106, CS101, CS103,  
CS104, CS105, CS109, CS114, CS115, CS116, RE101, RE102,  
RS101, RS103;  
MIL-STD-461F Methods CE101, CE102, CE106, CS101, CS103,  
CS104, CS105, CS106, CS109, CS114, CS115, CS116, RE101,  
RE102, RS101, RS103;  
MIL-STD-704A-F;  
MIL-STD-1399 Sections: 070, 300A/B

Telecommunications

GR-1089-CORE; EN 300 386

***Electrical/Mechanical Tests for  
Connectors***

Altitude Immersion

EIA 364-03; MIL-DTL-26482; MIL-DTL-26500;  
MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83723

Contact Resistance

EIA 364-06; MIL-STD-202 Method 307; MIL-DTL-24308;  
MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840;  
MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302;  
MIL-DTL-83513; MIL-DTL-83723; MIL-PRF-39012;  
MIL-PRF-49142

DWV

EIA 364-20; MIL-STD-202 Method 301; MIL-DTL-24308;  
MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840;  
MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302;  
MIL-DTL-83513; MIL-DTL-83723; MIL-PRF-39012;  
MIL-PRF-49142; SAE AS 39029

Electrical Engagement

MIL-DTL-38999

Electrolytic Erosion

MIL-DTL-38999; MIL-DTL-83723



**Test:**

**Test Method(s)<sup>1</sup>:**

***Electrical/Mechanical Tests for Connectors (cont'd)***

Insulation Resistance	EIA 364-21; MIL-STD-202 Method 302; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302; MIL-DTL-83513; MIL-DTL-83723; MIL-PRF-39012; MIL-PRF-49142; SAE AS 39029
Shell Conductivity	EIA 364-83; MIL-DTL-26482; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83723; SAE AS 85049
LLCR	EIA 364-23; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-83513; MIL-DTL-55302; SAE AS39029
Magnetic Permeability	EIA 364-54; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83513; MIL-PRF-39012; MIL-PRF-49142; SAE AS39029; SAE AS85049
Air Leakage at Low Temp	SAE AS50151C
Cable Pull-Out	EIA 364-38; MIL-DTL-28840; SAE AS85049
Contact Engagement/Separation Force	EIA 364-37; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302; MIL-DTL-83513; SAE AS 39029
Contact Insertion and Removal Force	EIA 364-05; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500 (inactive 02-2004); MIL-DTL-5015; MIL-DTL-38999; SAE AS50151; MIL-DTL-28840
Contact Retention (Center Contact Retention, Conductor Retention)	EIA 364-29; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302; MIL-DTL-83513; MIL-DTL-83723; MIL-PRF-39012; MIL-PRF-49142
Coupling Pin Strength	MIL-DTL-38999; MIL-DTL-83723
Coupling Thread Strength (Accessory Thread Strength)	MIL-DTL-26482; MIL-DTL-38999; MIL-DTL-83723; SAE AS85049
Crimp Tensile Strength	EIA 364-08; MIL-DTL-55302; MIL-DTL-83513; SAE AS39029
Coupling Torque (Force to Engage and Disengage)	MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-83723; MIL-PRF-39012; MIL-PRF-49142
Durability (Contact Life) (Connector Durability)	EIA 364-09; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-55302; MIL-DTL-83513; MIL-DTL-83723; MIL-PRF-39012; MIL-PRF-49142; SAE AS39029



**Test:****Test Method(s)<sup>1</sup>:*****Electrical/Mechanical Tests for Connectors (cont'd)***

External Bending Moment	EIA 364-43; MIL-DTL-26482; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83723; SAE AS85049
Fluid Immersion (Immersion) (Retention System Fluid Immersion)	EIA 364-10 Method 10; MIL-STD-202 Method 104; MIL-STD-883; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83513; MIL-DTL-83723; SAE AS85049
Insert Retention	EIA 36435; MIL-DTL-24308 Section 4.7.12; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-5015; MIL-DTL-83513; MIL-DTL-83723
Installing and Removal Tool Abuse (Insertion/Removal Tool Abuse)	MIL-DTL-26482 Section 4.6.45; MIL-DTL-38999 Section 4.5.32; MIL-DTL-83723 Section 4.7.29
Impact (Drop)	EIA 364-42; MIL-DTL-28840; MIL-DTL-26482; MIL-DTL-38999
Life Cycle	SAE AS85049
Maintenance Aging	EIA 364-24; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-26500; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-83723
Mating and Unmating Force	EIA 364-13; MIL-DTL-24308; MIL-DTL-26482; MIL-DTL-55302; MIL-DTL-83513
Pin Contact Stability	MIL-DTL-26482; MIL-DTL-28840; MIL-DTL-38999; MIL-DTL-83723
Resistance to Solvents	MIL-STD-202 Method 215; MIL-DTL-39014
RFI Finger Spring Force (Shell Spring Finger Force)	MIL-DTL-26482 Section 4.6.44; MIL-DTL-38999 Section 4.5.26; MIL-DTL-83723 Section 4.7.23
Safety Wire Holes	MIL-PRF-39012; MIL-DTL-28840; SAE AS85049
Temperature Life Without Load	EIA 364-17; MIL-DTL-26482; MIL-DTL-38999; SAE AS39029
Terminal Strength (Test Conditions A & E)	EIA 364-62; MIL-STD-202 Method 211; MIL-PRF-39014
Thermal Shock (liquid to liquid)	MIL-DTL-38999; MIL-DTL-83723



**Test:**

**Test Method(s)<sup>1</sup>:**

***Electrical/Mechanical Tests for Connectors (cont'd)***

Fiber Optic Tests

MIL-PRF-85045F (and earlier versions) Test Paragraphs 4.7.4.1, 4.7.4.3, 4.7.6.1, 4.7.6.3, 4.7.6.4, 4.7.5.3, 4.7.5.4, 4.7.5.5, 4.7.5.6, 4.7.5.8, 4.7.6.5, 4.7.6.6, 4.7.5.1, 4.7.5.1.1, 4.7.6.7, 4.7.5.10, 4.7.5.18, 4.7.6.12.1, 4.7.6.2, 4.7.6.9, 4.7.6.15, 4.7.6.11, 4.7.6.13, 4.7.5.2;

TIA/EIA-455-1 to 6, 8, 11 to 16, 20 to 26, 28, 33 to 39, 41, 42, 46, 53, 57, 59 to 62, 67, 69 to 78 (A&B), 80 to 82, 84 to 89, 91, 95, 98, 104, 107, 126, 127, 134, 141, 157, 158, 160 to 162, 171, 172, 177 to 179, 188 to 190, 194

<sup>1</sup> When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is required to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*. If a specifier/regulator imposes a different transition period, this will supersede the A2LA one year implementation period.

On the following types of equipment:

Telecommunication Equipment, Network Equipment, Industrial and Commercial Equipment, Electronic (Digital) Equipment, Aerospace

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

<b>Rule Subpart/Technology</b>	<b>Test Method</b>	<b>Maximum Frequency (MHz)</b>
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	40 GHz
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	40 GHz

<sup>2</sup> Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.





## *Accredited Laboratory*

A2LA has accredited

# **NATIONAL TECHNICAL SYSTEMS (NTS)**

*Fullerton, CA*

for technical competence in the field of

## **Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 18<sup>th</sup> day of July 2016.

A handwritten signature in black ink, written over a horizontal line.

President and CEO  
For the Accreditation Council  
Valid to June 30, 2018  
Revised March 27, 2018

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*