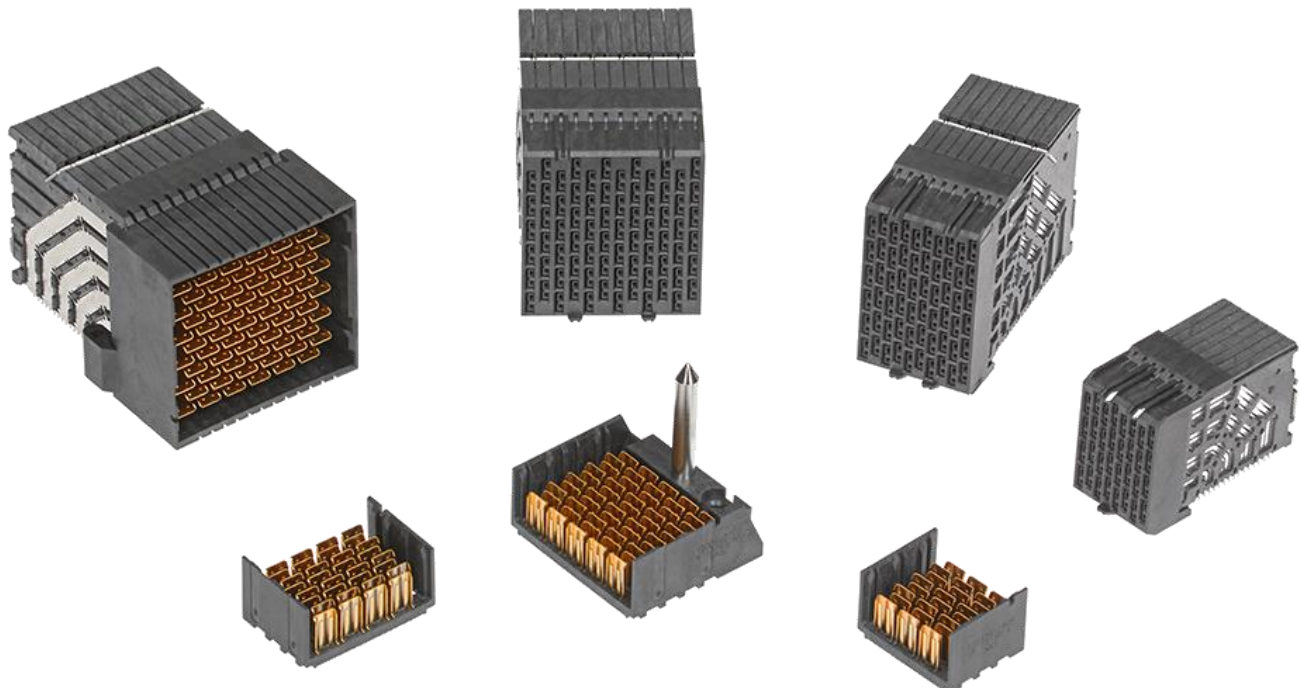


PRODUCT SPECIFICATION FOR



INTERCONNECT SYSTEMS



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PRODUCT SPECIFICATION

1.0 SCOPE

This specification covers the performance requirements and test methods for the following products listed by series numbers:

- * 171745 IMPEL 2 Pair Backplane Signal Module
- * 171750 IMPEL 2 Pair Daughtercard Signal Module
- * 171743 IMPEL 2 Pair Custom Backplane Signal Module
- * 172390 IMPEL 2 Pair Right Angle Male (RAM) Signal Module

- * 171335 IMPEL 3 Pair Backplane Signal Module
- * 171990 IMPEL 3 Pair Daughtercard Signal Module
- * 171333 IMPEL 3 Pair Custom Backplane Signal Module

- * 171315 IMPEL 4 Pair Backplane Signal Module
- * 171320 IMPEL 4 Pair Daughtercard Signal Module
- * 171313 IMPEL 4 Pair Custom Backplane Signal Module
- * 172140 IMPEL 4 Pair Right Angle Male (RAM) Signal Module

- * 171325 IMPEL 4 Pair Backplane Signal Module – 3mm Pitch
- * 171329 IMPEL 4 Pair Daughtercard Signal Module – 3mm Pitch
- * 171323 IMPEL 4 Pair Custom Backplane Signal Module – 3mm Pitch
- * 172135 IMPEL 4 Pair Right Angle Male (RAM) Signal Module – 3mm Pitch

- * 172005 IMPEL 5 Pair Backplane Signal Module
- * 172010 IMPEL 5 Pair Daughtercard Signal Module
- * 172003 IMPEL 5 Pair Custom Backplane Signal Module

- * 171395 IMPEL 6 Pair Backplane Signal Module
- * 171400 IMPEL 6 Pair Daughtercard Signal Module
- * 171393 IMPEL 6 Pair Custom Backplane Signal Module
- * 172130 IMPEL 6 Pair Right Angle Male (RAM) Signal Module

- * 171755 IMPEL 6 Pair Backplane Signal Module – 3mm Pitch
- * 171760 IMPEL 6 Pair Daughtercard Signal Module – 3mm Pitch
- * 171753 IMPEL 6 Pair Custom Backplane Signal Module – 3mm Pitch

- * 171495 IMPEL 6 Pair Ortho Backplane Signal Module
- * 171500 IMPEL 6 Pair Ortho Daughtercard Signal Module
- * 171493 IMPEL 6 Pair Ortho Custom Backplane Signal Module

- * 171740 IMPEL 6 Pair Ortho Direct RAM Signal Module

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PRODUCT SPECIFICATION

The IMPEL interconnect system consists of modular groupings of differential signals with optional integrated guidance. These connectors are two-piece devices, which connect two printed circuit boards. The right angle receptacle connectors (daughtercard) and header pin connectors (backplane) are through-hole devices with eye-of-the-needle compliant pin terminals.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME

IMPEL

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, platings, and markings. The backplane header pins and shields are lubricated in the contact area with an approved lubricant per industry standard Telcordia GR-1217-CORE, Section 5.3.

Standard Product Plating:

Mate Zone: 30µIN Minimum Gold over 50µIN Minimum Nickel
Tail Zone: 30µIN to 60µIN Matte Tin over 50µIN Minimum Nickel
Overall: 50µIN Minimum Nickel

2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawings and other sections of this specification for the necessary referenced documents and specifications.

3.1 MOLEX DOCUMENTS

AS-171320-990 IMPEL Routing Guide
AS-171500-990 IMPEL Ortho Routing Guide

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PRODUCT SPECIFICATION

3.2 COMMERCIAL STANDARDS

EIA-364 Electrical Connector Test Procedure
GR-1217-CORE Generic Requirements for Separable Electrical Connectors used
In Telecommunications Hardware

4.0 RATINGS

4.1 CURRENT AND TEMPERATURE RATING

Agency Voltage: 29.9 VAC RMS/DC max
Non-Agency Voltage: 150 VAC RMS/DC max
Signal Contact: 0.75 Amp per contact
Temperature: -55°C to 85°C

4.2 ELECTRICAL RATINGS

Description	Value
Mating interface contact resistance change	10mΩ maximum
Compliant pin to plated through hole resistance	1mΩ maximum
Insulation resistance	1000 MegaΩ
Dielectric Withstanding Voltage (except 171740 Series)	500 VAC
Dielectric Withstanding Voltage for 171740 Series	150 VAC

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PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mated, 100mA max, 20mV per EIA-364-TP23	10 milliohm maximum change
2A	Insulation Resistance	Unmated, 500VDC per EIA-364-TP21	1000 megaohms minimum
2B	Insulation Resistance	Mated State, 500VDC per EIA-364-TP21	1000 megaohms minimum
3A	Dielectric Withstanding Voltage	Unmated, 500VAC per EIA-364-TP20	No breakdown or flashover
3B	Dielectric Withstanding Voltage	Mated State, 500VAC per EIA-364-TP20	No breakdown or flashover
4	Signal Continuity	Mated per EIA-364-TP87	No interrupts greater than 10 nanoseconds
5	Compliant Pin Interface Resistance	Contact inserted into PCB per EIA-364-TP23	1 milliohm Maximum

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6	Durability	200 Cycles minimum, mated and unmated per EIA-364-TP09	10 milliohm max change in LLCR
7	Vibration	Mated, 10-500Hz, 10g's, 8 hr, 3 axis per EIA-364-TP28 with 10 ns event detection	10 milliohm max change in LLCR, zero events detected
8	Mechanical Shock	Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP27 With 10 ns event detection	10 milliohm max change in LLCR, zero events detected
9	Mating Force Per Pin	Mate daughtercard and backplane assembly per EIA-364-TP13	60g max per signal pin 80g max per shield
10	Unmating Force Per Pin	Unmate daughtercard and backplane assembly per EIA-364-TP13	15g min per signal pin 15g min per shield

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PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
11	Thermal Shock	Mated, 5 cycles from -55°C to 85°C per EIA-364-TP32	10 milliohm max change in LLCR
12	Temperature Life	Mated, 85°C for 1000 hours min per EIA-364-TP17	10 milliohm max change in LLCR
13	Humidity Cycling	Relative humidity 80 to 100% for 500 hrs per EIA-364-TP31	10 milliohm max change in LLCR
14	Dust	Unmated per EIA-364-TP91	10 milliohm max change in LLCR
15	Mixed Flowing Gas	10 days unmated 10 days mated per EIA-364-TP65 (Class IIA)	10 milliohm max change in LLCR

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PRODUCT SPECIFICATION

5.4 COMPLIANT PIN PERFORMANCE

5.4.1 Insertion Force for Various Plating Types

COMPONENT	MAX
IMPEL Backplane Pin	4 lbs
IMPEL Daughtercard Pin	4 lbs

Note: These max values are intended for press sizing only. Typical peak values are less than 4 lbs per pin. The peak force value will occur prior to the final seating of the connector. Plating surface finish and PCB materials will impact actual values.

5.4.2 Retention Force for Various Plating Types

COMPONENT	MIN
IMPEL Backplane Pin	0.4 lb
IMPEL Daughtercard Pin	0.4 lb

Note: Chart reflects minimum expected values for retention forces when tested in plated through holes drilled and plated as described in Section 5.4.3. Plating surface finish and PCB materials will impact actual values.

Radial hole deformation: 1.5 mils max

Axial hole deformation: 1.0 mil max

5.4.3 Printed Circuit Board Specifications

Refer to the appropriate Sales Drawing for the recommended pcb thickness.
Refer to routing guide AS-171320-990 for the detailed plated hole requirements.

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PRODUCT SPECIFICATION

5.4.4 Torque Specification for Mounting Screws

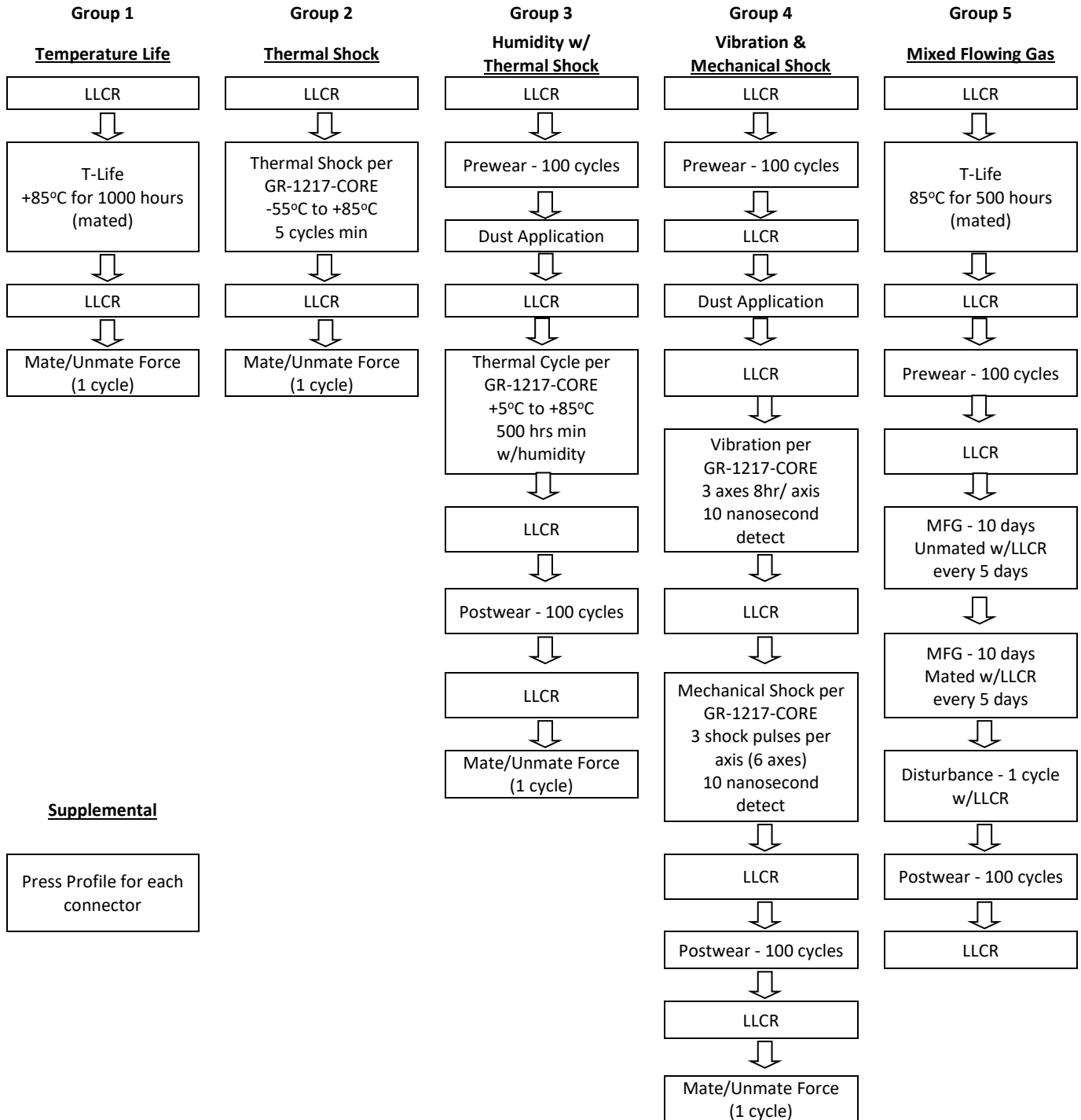
PRODUCT TYPE	SCREW TYPE	BOARD THICKNESS	RECOMMENDED TORQUE **
BACKPLANE HEADERS	2-56 Machine Screw	6.5mm MAX	2.0 in-lbs
DAUGHTERCARD RECEPTACLES 2P	2-32 Self-Tapping Screw	1.6mm to 2.4mm	1.0 in-lbs
DAUGHTERCARD RECEPTACLES 3P THRU 6P	2-32 Self-Tapping Screw	4.4mm MAX	2.0 in-lbs
Ortho Direct RAM RECEPTACLES 6P	2-32 Self-Tapping Screw 9.50mm Length	4.4mm MAX	2.0 in-lbs
	2-32 Self-Tapping Screw 11.00mm Length	5.5mm MAX	2.0 in-lbs

** Note: The thread forming screws used for the daughtercard guidance modules will require varying torque to seat the screw dependent upon the screw engagement in the module. The screw length and the pcb thickness will both impact the screw engagement into the module. It is recommended that the torque applied be the minimum necessary to fully seat the screw for the specific application. For applications in which the board thickness exceeds the listed recommendations, testing should be conducted to confirm that 1.0 in-lbs of torque can successfully be applied.

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6.0 TEST SEQUENCE



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PRODUCT SPECIFICATION

Group 6

Durability

LLCR



Mate/Unmate Force
(1 cycle)



Durability -200 Cycles



LLCR



Mate/Unmate Force
(1 cycle)

Group 7

Insulation Resistance/Dielectric Withstanding Volt

Mate/ Unmate
Insulation Resistance



Mate/ Unmate
Dielectric
Withstanding Voltage



Durability -200 Cycles



Mate/ Unmate
Insulation Resistance



Mate/ Unmate
Dielectric
Withstanding Voltage

Supplemental

Press Profile for each
connector

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