

**Report EL-2011-04-020A CR-PE**  
Intermateability Testing, ATCS and FCI XCede® Connectors  
(XCede® is a registered trademark of the Amphenol Corp.)  
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**PURPOSE**

ATCS and FCI XCede® connectors were subjected to intermateability testing. Tested product included ATCS gold plated receptacles and headers, FCI GXT™ plated receptacles and headers, and FCI gold plated headers.

**CONCLUSIONS**

The tested samples met the specified requirements.

**SAMPLE DESCRIPTION**

The test samples were composed of 4-pair connector modules. Each connector module was constructed of six (6) wafers, each wafer having 4 pairs of signal contacts. The header modules were in a vertical configuration; the receptacle modules were in a right angle configuration. The contact surfaces of the header terminals were lubricated. The details of the submitted test samples are given in the following table.

**SUBMITTED SAMPLE DESCRIPTION**

Item	Description	Part #	Plating Type (µm)
1	FCI XCede® Receptacle Module	10091799-101LF	GXT™ (0.76) / Ni (2.54)
2	FCI XCede® Receptacle Monoblock <sup>1</sup>	10091960-400LF	GXT™ (0.76) / Ni (2.54)
3	FCI XCede® Header Module	10091767-00C-20DLF	GXT™ (0.76) / Ni (2.54)
4	FCI XCede® Header Module	10091767-00C-20DLF	Au (0.76) / Ni (2.54)
5	ATCS XCede® Receptacle Module	950-400A-B1D	Au (0.76) / Ni (1.27)
6	ATCS XCede® Receptacle Monoblock <sup>1</sup>	AX400-00566	Au (0.76) / Ni (1.27)
7	ATCS XCede® Header Module	951400C20D	Au (0.76) / Ni (1.27)
8	ATCS XCede® Test Board	PCB444 Rev E	Immersion Sn

<sup>1</sup> Each receptacle monoblock consisted of 3 receptacle modules with a common organizer.

Each backplane test board held three (3) header modules; each daughter card test board held a single 3-module monoblock receptacle assembly. The test boards provided circuitry for low level contact resistance (LLCR) measurement of 120 positions per sample comprising 60 signal contacts, 51 wide ground contacts, and 9 narrow (end) ground contacts. Dielectric testing was conducted on single unmounted modules

The connectors were tested in all inter-mated combinations of ATCS and FCI receptacles with ATCS, FCI GXT™ plated, and FCI gold plated headers. The resulting sample sets are listed in the following table.

**SAMPLE SET DESCRIPTION**

Sample Set	Receptacle Identity	Header Identity
1	ATCS	ATCS
2	FCI	FCI, GXT™ Plated
3	FCI	ATCS
4	ATCS	FCI, GXT™ Plated
5	FCI	FCI, Au Plated
6	ATCS	FCI, Au Plated

**TEST DESCRIPTIONS**

Test sequences are given in the following table.

Clause #	Test Description	Grp. # 1 Temp Life	Grp. # 2a Dielectric	Grp. # 2b T Shock / Hmd	Grp. # 3 Vib / Shock	Grp. # 4 MFG
1	Visual Examination	1,8	1,10	1,16	1,14	1,15
2	Mating/Unmating Force	2		2	2	7
3	LLCR <sup>1</sup>	3,5,7		3,5,7,9,11,13,15	3,5,7,9,11,13	2,4,6,8,10,12,14
4	Insulation Resistance		2,5,8			
5	DWV <sup>2</sup>		3,6,9			
6	Thermal Shock		4	6		
7	Humidity		7	10		
8	Temperature Life	6				
9	Thermal Preconditioning				6	5
10	MFG <sup>3</sup>					9,11
11	Mechanical Shock				8	
12	Vibration				10	
13	Durability Preconditioning	4		4	4	3
14	Durability				12	
15	Dust Application			8		
16	Reseat			12		13
17	Thermal Disturbance			14		
<b>Sample Size per Sample Set</b>		3	3 <sup>†</sup>	3	3	3

<sup>1</sup> LLCR = Low Level Contact Resistance

<sup>2</sup> DWV = Dielectric Withstanding Voltage

<sup>3</sup> MFG = Mixed Flowing Gas

<sup>†</sup> Individual Unmounted Modules (Mated throughout Test)

## TEST METHODS/REQUIREMENTS

Clause #	Item	Test Method	Condition	Requirement
1	Visual Exam	EIA/ECA-364-18B	Visual	No Detrimental Condition
2	Mating Force Unmating Force	EIA/ECA-364-13D	Method A	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact
3	LLCR	EIA/ECA-364-23C	Option 1	$\leq 55 \text{ m}\Omega$ Initial, $\leq 10 \text{ m}\Omega$ Change
4	Insulation Resistance	EIA/ECA-364-21D	500 V DC	$\geq 1 \text{ G}\Omega$
5	DWV	EIA-364-20D	Method B, Cond. 1, 750V <sub>rms</sub> AC	No Arc or Leakage $\geq 5 \text{ mA}$
6	Thermal Shock	EIA-364-32E	Method A, Cond. 2, Dur. A-1	No Damage
7	Humidity	EIA-364-31C	Method 3 exc. Profile <sup>1</sup> & Dur. <sup>2</sup>	No Damage
8	Temperature Life	EIA-364-17B	Method A, Cond. 4, Dur. C: 500 hr	No Damage
9	Thermal Precond.	EIA-364-17B	Method A, Cond. 4, 72 hr	No Damage
10	MFG	EIA-364-65B	Class 2A, 7 days	No Damage
11	Mechanical Shock <sup>3</sup>	EIA-364-27B	Cond. A	No Discontinuity <sup>7</sup> $> 1 \mu\text{s}$
12	Vibration <sup>3</sup>	EIA/ECA-364-28E	Cond. 5 exc. Freq. <sup>4</sup> , PSD <sup>5</sup> , Dur. <sup>6</sup>	No Discontinuity <sup>7</sup> $> 1 \mu\text{s}$
13	Durability Precond.	EIA-364-09C (EIA/ECA-364-13D)	50 Cycles (Measure 1 <sup>st</sup> 3 Cycles)	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact
14	Durability	EIA-364-09C (EIA/ECA-364-13D)	+ 200 Cycles (Measure 1 <sup>st</sup> 3 Cycles)	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact
15	Dust	EIA/ECA-364-91A	Composition 1 (Benign)	No Damage
16	Reseat	EIA/ECA-364-13D	Method A, 1 Cycle (Measure)	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact
17	Thermal Disturbance	EIA/ECA-364-110	Cond. A, Dur. A	No Damage

<sup>1</sup> 8 hr Cycle Profile: 2 hour Ramps, 2 hour Dwells

<sup>2</sup> 500 hour Test Duration

<sup>3</sup> Samples were held rigidly during mechanical shock and vibration treatments to remove mass loading by the test boards.

<sup>4</sup> Frequency was extended down to 10 Hz and truncated to a maximum of 500 Hz.

<sup>5</sup> PSD was adjusted to yield an acceleration level of 5.3g<sub>rms</sub>.

<sup>6</sup> Duration was 2 hours.

<sup>7</sup> Discontinuity Monitoring per EIA/ECA-364-46B

## TEST RESULTS: ATCS Receptacle / ATCS Header

### Group # 1 (Temperature Life) Test Results, ATCS Receptacle / ATCS Header

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.46 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	30 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.56 N/Contact Max. Mate 0.38 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	0.8 m $\Omega$ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	2.5 m $\Omega$ Max. Change	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass

**Group # 2a (Dielectric) Test Results, ATCS Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Initial	$\geq 1 \text{ G}\Omega$	Pass
3	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Initial	No Arc or Leak $\geq 5 \text{ mA}$	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	$\geq 1 \text{ G}\Omega$	after Thermal Shock	$\geq 1 \text{ G}\Omega$	Pass
6	DWV	No Arc or Leak $\geq 5 \text{ mA}$	after Thermal Shock	No Arc or Leak $\geq 5 \text{ mA}$	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Final	$\geq 1 \text{ G}\Omega$	Pass
9	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Final	No Arc or Leak $\geq 5 \text{ mA}$	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 2b (Thermal Shock / Humidity), ATCS Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.57 N/Contact Max. Mate 0.42 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	28 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.44 N/Contact Max. Mate 0.35 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	0.5 m $\Omega$ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Thermal Shock	2.4 m $\Omega$ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Dust	2.4 m $\Omega$ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Humidity	1.1 m $\Omega$ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.41 N/Contact Max. Mate 0.42 N/Contact Min. Unmate	NA NA
13	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Reseat	1.3 m $\Omega$ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	1.2 m $\Omega$ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), ATCS Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.56 N/Contact Max. Mate 0.45 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	26 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.48 N/Contact Max. Mate 0.41 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	0.9 m $\Omega$ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Preconditioning	0.7 m $\Omega$ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 $\mu\text{s}$	Mechanical Shock	No Discontinuity > 1 $\mu\text{s}$	Pass
9	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Mech. Shock	1.9 m $\Omega$ Max. Change	Pass
10	Vibration	No Discontinuity > 1 $\mu\text{s}$	Vibration	No Discontinuity > 1 $\mu\text{s}$	Pass
11	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Vibration	2.0 m $\Omega$ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.25 N/Contact Max. Mate 0.15 N/Contact Min. Unmate	NA NA
13	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	0.8 m $\Omega$ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), ATCS Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	$\leq 55 \text{ m}\Omega$	Initial	28 m $\Omega$ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.61 N/Contact Max. Mate 0.41 N/Contact Min. Unmate	NA NA
4	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	1.5 m $\Omega$ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Preconditioning	1.2 m $\Omega$ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.33 N/Contact Max. Mate 0.26 N/Contact Min. Unmate	NA NA
8	LLCR	$\leq 10 \text{ m}\Omega$ Change	before MFG	3.3 m $\Omega$ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	$\leq 10 \text{ m}\Omega$ Change	7 d MFG	3.5 m $\Omega$ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	$\leq 10 \text{ m}\Omega$ Change	14 d MFG	3.5 m $\Omega$ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.26 N/Contact Max. Mate 0.27 N/Contact Min. Unmate	NA NA
14	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	2.9 m $\Omega$ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**FCI Receptacle / FCI GXT™ Plated Header**

**Group # 1 (Temperature Life) Test Results, FCI Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.43 N/Contact Max. Mate 0.28 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	29 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.49 N/Contact Max. Mate 0.33 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.5 mΩ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	Final	7.3 mΩ Max. Change	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass

**Group # 2a (Dielectric) Test Results, FCI Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	≥ 1 GΩ	Initial	≥ 1 GΩ	Pass
3	DWV	No Arc or Leak ≥ 5 mA	Initial	No Arc or Leak ≥ 5 mA	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	≥ 1 GΩ	after Thermal Shock	≥ 1 GΩ	Pass
6	DWV	No Arc or Leak ≥ 5 mA	after Thermal Shock	No Arc or Leak ≥ 5 mA	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	≥ 1 GΩ	Final	≥ 1 GΩ	Pass
9	DWV	No Arc or Leak ≥ 5 mA	Final	No Arc or Leak ≥ 5 mA	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 2b (Thermal Shock / Humidity), FCI Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.43 N/Contact Max. Mate 0.34 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	29 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.43 N/Contact Max. Mate 0.33 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.5 mΩ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Thermal Shock	3.8 mΩ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	≤ 10 mΩ Change	after Dust	2.0 mΩ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	≤ 10 mΩ Change	after Humidity	1.3 mΩ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.35 N/Contact Max. Mate 0.40 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	after Reseat	1.5 mΩ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	≤ 10 mΩ Change	Final	1.9 mΩ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), FCI Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.60 N/Contact Max. Mate 0.45 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	29 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.48 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.2 mΩ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Preconditioning	2.2 mΩ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 μs	Mechanical Shock	No Discontinuity > 1 μs	Pass
9	LLCR	≤ 10 mΩ Change	after Mech. Shock	4.2 mΩ Max. Change	Pass
10	Vibration	No Discontinuity > 1 μs	Vibration	No Discontinuity > 1 μs	Pass
11	LLCR	≤ 10 mΩ Change	after Vibration	7.4 mΩ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.25 N/Contact Max. Mate 0.17 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	Final	2.4 mΩ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), FCI Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	≤ 55 mΩ	Initial	29 mΩ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.47 N/Contact Max. Mate 0.37 N/Contact Min. Unmate	NA NA
4	LLCR	≤ 10 mΩ Change	after Durability	0.3 mΩ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	≤ 10 mΩ Change	after Preconditioning	1.7 mΩ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.25 N/Contact Max. Mate 0.17 N/Contact Min. Unmate	NA NA
8	LLCR	≤ 10 mΩ Change	before MFG	2.5 mΩ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	≤ 10 mΩ Change	7 d MFG	8.7 mΩ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	≤ 10 mΩ Change	14 d MFG	2.1 mΩ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.18 N/Contact Max. Mate 0.23 N/Contact Min. Unmate	NA NA
14	LLCR	≤ 10 mΩ Change	Final	4.7 mΩ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**FCI Receptacle / ATCS Header**

**Group # 1 (Temperature Life) Test Results, FCI Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.56 N/Contact Max. Mate 0.39 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	28 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.54 N/Contact Max. Mate 0.34 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.9 mΩ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	Final	1.7 mΩ Max. Change	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass



**Group # 2a (Dielectric) Test Results, FCI Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Initial	$\geq 1 \text{ G}\Omega$	Pass
3	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Initial	No Arc or Leak $\geq 5 \text{ mA}$	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	$\geq 1 \text{ G}\Omega$	after Thermal Shock	$\geq 1 \text{ G}\Omega$	Pass
6	DWV	No Arc or Leak $\geq 5 \text{ mA}$	after Thermal Shock	No Arc or Leak $\geq 5 \text{ mA}$	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Final	$\geq 1 \text{ G}\Omega$	Pass
9	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Final	No Arc or Leak $\geq 5 \text{ mA}$	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 2b (Thermal Shock / Humidity), FCI Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.57 N/Contact Max. Mate 0.40 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	28 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.49 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	0.9 m $\Omega$ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Thermal Shock	1.6 m $\Omega$ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Dust	1.6 m $\Omega$ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Humidity	0.8 m $\Omega$ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.37 N/Contact Max. Mate 0.42 N/Contact Min. Unmate	NA NA
13	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Reseat	1.5 m $\Omega$ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	2.1 m $\Omega$ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), FCI Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.67 N/Contact Max. Mate 0.55 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	28 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.53 N/Contact Max. Mate 0.44 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	2.3 mΩ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Preconditioning	1.3 mΩ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 μs	Mechanical Shock	No Discontinuity > 1 μs	Pass
9	LLCR	≤ 10 mΩ Change	after Mech. Shock	2.0 mΩ Max. Change	Pass
10	Vibration	No Discontinuity > 1 μs	Vibration	No Discontinuity > 1 μs	Pass
11	LLCR	≤ 10 mΩ Change	after Vibration	1.6 mΩ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.27 N/Contact Max. Mate 0.20 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	Final	0.7 mΩ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), FCI Receptacle / ATCS Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	≤ 55 mΩ	Initial	28 mΩ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.55 N/Contact Max. Mate 0.38 N/Contact Min. Unmate	NA NA
4	LLCR	≤ 10 mΩ Change	after Durability	0.5 mΩ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	≤ 10 mΩ Change	after Preconditioning	2.4 mΩ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.27 N/Contact Max. Mate 0.17 N/Contact Min. Unmate	NA NA
8	LLCR	≤ 10 mΩ Change	before MFG	3.4 mΩ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	≤ 10 mΩ Change	7 d MFG	3.5 mΩ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	≤ 10 mΩ Change	14 d MFG	3.4 mΩ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.23 N/Contact Max. Mate 0.26 N/Contact Min. Unmate	NA NA
14	LLCR	≤ 10 mΩ Change	Final	3.5 mΩ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**ATCS Receptacle / FCI GXT™ Plated Header**

**Group # 1 (Temperature Life) Test Results, ATCS Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.60 N/Contact Max. Mate 0.25 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	27 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.47 N/Contact Max. Mate 0.30 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	1.8 m $\Omega$ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	9.3 m $\Omega$ Max. Change <sup>1</sup>	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass

<sup>1</sup> Two (2) signal contacts exhibited resistance change  $> 10 \text{ m}\Omega$ . One signal contact exhibited a resistance change of 11.9 m $\Omega$ ; When re-measured, the contact resistance change was 6.7 m $\Omega$ . The second contact exhibited a resistance change of 24.4 m $\Omega$ ; When re-measured, the contact resistance change was 36.7 m $\Omega$ . Part unmated & inspected with debris & out of position pin found. Re-mated and re-measured, the contact resistance change was 5.0 m $\Omega$ .

**Group # 2a (Dielectric) Test Results, ATCS Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Initial	$\geq 1 \text{ G}\Omega$	Pass
3	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Initial	No Arc or Leak $\geq 5 \text{ mA}$	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	$\geq 1 \text{ G}\Omega$	after Thermal Shock	$\geq 1 \text{ G}\Omega$	Pass
6	DWV	No Arc or Leak $\geq 5 \text{ mA}$	after Thermal Shock	No Arc or Leak $\geq 5 \text{ mA}$	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Final	$\geq 1 \text{ G}\Omega$	Pass
9	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Final	No Arc or Leak $\geq 5 \text{ mA}$	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 2b (Thermal Shock / Humidity), ATCS Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.48 N/Contact Max. Mate 0.41 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	27 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.45 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	2.3 mΩ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Thermal Shock	5.2 mΩ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	≤ 10 mΩ Change	after Dust	3.3 mΩ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	≤ 10 mΩ Change	after Humidity	5.8 mΩ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.30 N/Contact Max. Mate 0.34 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	after Reseat	3.5 mΩ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	≤ 10 mΩ Change	Final	3.6 mΩ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), ATCS Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.58 N/Contact Max. Mate 0.50 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	26 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.47 N/Contact Max. Mate 0.42 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.6 mΩ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Preconditioning	3.5 mΩ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 μs	Mechanical Shock	No Discontinuity > 1 μs	Pass
9	LLCR	≤ 10 mΩ Change	after Mech. Shock	3.6 mΩ Max. Change	Pass
10	Vibration	No Discontinuity > 1 μs	Vibration	No Discontinuity > 1 μs	Pass
11	LLCR	≤ 10 mΩ Change	after Vibration	6.3 mΩ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.26 N/Contact Max. Mate 0.19 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	Final	6.3 mΩ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), ATCS Receptacle / FCI GXT™ Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	≤ 55 mΩ	Initial	27 mΩ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.52 N/Contact Max. Mate 0.38 N/Contact Min. Unmate	NA NA
4	LLCR	≤ 10 mΩ Change	after Durability	0.3 mΩ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	≤ 10 mΩ Change	after Preconditioning	4.6 mΩ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.27 N/Contact Max. Mate 0.15 N/Contact Min. Unmate	NA NA
8	LLCR	≤ 10 mΩ Change	before MFG	3.0 mΩ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	≤ 10 mΩ Change	7 d MFG	2.7 mΩ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	≤ 10 mΩ Change	14 d MFG	2.6 mΩ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.19 N/Contact Max. Mate 0.21 N/Contact Min. Unmate	NA NA
14	LLCR	≤ 10 mΩ Change	Final	4.0 mΩ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**FCI Receptacle / FCI Au Plated Header**

**Group # 1 (Temperature Life) Test Results, FCI Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.55 N/Contact Max. Mate 0.32 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	28 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.51 N/Contact Max. Mate 0.33 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.7 mΩ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	Final	2.0 mΩ Max. Change	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass

**Group # 2a (Dielectric) Test Results, FCI Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Initial	$\geq 1 \text{ G}\Omega$	Pass
3	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Initial	No Arc or Leak $\geq 5 \text{ mA}$	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	$\geq 1 \text{ G}\Omega$	after Thermal Shock	$\geq 1 \text{ G}\Omega$	Pass
6	DWV	No Arc or Leak $\geq 5 \text{ mA}$	after Thermal Shock	No Arc or Leak $\geq 5 \text{ mA}$	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Final	$\geq 1 \text{ G}\Omega$	Pass
9	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Final	No Arc or Leak $\geq 5 \text{ mA}$	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 2b (Thermal Shock / Humidity), FCI Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.48 N/Contact Max. Mate 0.40 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	28 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.43 N/Contact Max. Mate 0.33 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	1.0 m $\Omega$ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Thermal Shock	2.3 m $\Omega$ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Dust	2.0 m $\Omega$ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Humidity	1.8 m $\Omega$ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.41 N/Contact Max. Mate 0.43 N/Contact Min. Unmate	NA NA
13	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Reseat	2.2 m $\Omega$ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	1.4 m $\Omega$ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), FCI Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.67 N/Contact Max. Mate 0.49 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	28 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.50 N/Contact Max. Mate 0.38 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.8 mΩ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Preconditioning	0.5 mΩ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 μs	Mechanical Shock	No Discontinuity > 1 μs	Pass
9	LLCR	≤ 10 mΩ Change	after Mech. Shock	2.4 mΩ Max. Change	Pass
10	Vibration	No Discontinuity > 1 μs	Vibration	No Discontinuity > 1 μs	Pass
11	LLCR	≤ 10 mΩ Change	after Vibration	2.9 mΩ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.29 N/Contact Max. Mate 0.20 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	Final	0.9 mΩ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), FCI Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	≤ 55 mΩ	Initial	29 mΩ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.57 N/Contact Max. Mate 0.37 N/Contact Min. Unmate	NA NA
4	LLCR	≤ 10 mΩ Change	after Durability	1.4 mΩ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	≤ 10 mΩ Change	after Preconditioning	0.8 mΩ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.30 N/Contact Max. Mate 0.21 N/Contact Min. Unmate	NA NA
8	LLCR	≤ 10 mΩ Change	before MFG	1.7 mΩ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	≤ 10 mΩ Change	7 d MFG	3.0 mΩ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	≤ 10 mΩ Change	14 d MFG	4.7 mΩ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.22 N/Contact Max. Mate 0.24 N/Contact Min. Unmate	NA NA
14	LLCR	≤ 10 mΩ Change	Final	6.8 mΩ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**ATCS Receptacle / FCI Au Plated Header**

**Group # 1 (Temperature Life) Test Results, ATCS Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.50 N/Contact Max. Mate 0.30 N/Contact Min. Unmate	NA NA
3	LLCR	$\leq 55 \text{ m}\Omega$	Initial	27 m $\Omega$ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.48 N/Contact Max. Mate 0.32 N/Contact Min. Unmate	NA NA
5	LLCR	$\leq 10 \text{ m}\Omega$ Change	after Durability	1.3 m $\Omega$ Max. Change	Pass
6	Temperature Life	No Damage	Temperature Life	No Damage	Pass
7	LLCR	$\leq 10 \text{ m}\Omega$ Change	Final	6.1 m $\Omega$ Max. Change	Pass
8	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass

**Group # 2a (Dielectric) Test Results, ATCS Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Initial	$\geq 1 \text{ G}\Omega$	Pass
3	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Initial	No Arc or Leak $\geq 5 \text{ mA}$	Pass
4	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
5	Insulation Resistance	$\geq 1 \text{ G}\Omega$	after Thermal Shock	$\geq 1 \text{ G}\Omega$	Pass
6	DWV	No Arc or Leak $\geq 5 \text{ mA}$	after Thermal Shock	No Arc or Leak $\geq 5 \text{ mA}$	Pass
7	Humidity	No Damage	Humidity	No Damage	Pass
8	Insulation Resistance	$\geq 1 \text{ G}\Omega$	Final	$\geq 1 \text{ G}\Omega$	Pass
9	DWV	No Arc or Leak $\geq 5 \text{ mA}$	Final	No Arc or Leak $\geq 5 \text{ mA}$	Pass
10	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass



**Group # 2b (Thermal Shock / Humidity), ATCS Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.46 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	27 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.46 N/Contact Max. Mate 0.34 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.7 mΩ Max. Change	Pass
6	Thermal Shock	No Damage	Thermal Shock	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Thermal Shock	5.7 mΩ Max. Change	Pass
8	Dust	No Damage	Dust	No Damage	Pass
9	LLCR	≤ 10 mΩ Change	after Dust	3.3 mΩ Max. Change	Pass
10	Humidity	No Damage	Humidity	No Damage	Pass
11	LLCR	≤ 10 mΩ Change	after Humidity	3.9 mΩ Max. Change	Pass
12	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Humidity	0.32 N/Contact Max. Mate 0.37 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	after Reseat	1.2 mΩ Max. Change	Pass
14	Thermal Disturb	No Damage	Thermal Disturb	No Damage	Pass
15	LLCR	≤ 10 mΩ Change	Final	1.3 mΩ Max. Change	Pass
16	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 3 (Mechanical Shock / Vibration), ATCS Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Initial	0.49 N/Contact Max. Mate 0.46 N/Contact Min. Unmate	NA NA
3	LLCR	≤ 55 mΩ	Initial	26 mΩ Max.	Pass
4	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.49 N/Contact Max. Mate 0.36 N/Contact Min. Unmate	NA NA
5	LLCR	≤ 10 mΩ Change	after Durability	0.6 mΩ Max. Change	Pass
6	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
7	LLCR	≤ 10 mΩ Change	after Preconditioning	0.7 mΩ Max. Change	Pass
8	Mechanical Shock	No Discontinuity > 1 μs	Mechanical Shock	No Discontinuity > 1 μs	Pass
9	LLCR	≤ 10 mΩ Change	after Mech. Shock	1.6 mΩ Max. Change	Pass
10	Vibration	No Discontinuity > 1 μs	Vibration	No Discontinuity > 1 μs	Pass
11	LLCR	≤ 10 mΩ Change	after Vibration	1.3 mΩ Max. Change	Pass
12	Durability	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Durability	0.27 N/Contact Max. Mate 0.21 N/Contact Min. Unmate	NA NA
13	LLCR	≤ 10 mΩ Change	Final	1.5 mΩ Max. Change	Pass
14	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

**Group # 4 (MFG), ATCS Receptacle / FCI Au Plated Header**

Step #	Test	Requirement	Step Description	Result	Comments
1	Visual Exam	No Detrimental Cond.	Initial	No Detrimental Cond.	Pass
2	LLCR	≤ 55 mΩ	Initial	27 mΩ Max.	Pass
3	Durability Precond.	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	Preconditioning	0.45 N/Contact Max. Mate 0.33 N/Contact Min. Unmate	NA NA
4	LLCR	≤ 10 mΩ Change	after Durability	0.2 mΩ Max. Change	Pass
5	Thermal Precond.	No Damage	Preconditioning	No Damage	Pass
6	LLCR	≤ 10 mΩ Change	after Preconditioning	2.8 mΩ Max. Change	Pass
7	Mating Force Unmating Force	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after Preconditioning	0.27 N/Contact Max. Mate 0.18 N/Contact Min. Unmate	NA NA
8	LLCR	≤ 10 mΩ Change	before MFG	6.4 mΩ Max. Change	Pass
9	MFG	No Damage	7 d Unmated Hdr & Rcpt	No Damage	Pass
10	LLCR	≤ 10 mΩ Change	7 d MFG	3.7 mΩ Max. Change	Pass
11	MFG	No Damage	+ 7 d Mated Connector Pair	No Damage	Pass
12	LLCR	≤ 10 mΩ Change	14 d MFG	1.5 mΩ Max. Change	Pass
13	Reseat	Read & Record Mate Force/ Contact Read & Record Unmate Force/Contact	after MFG	0.21 N/Contact Max. Mate 0.23 N/Contact Min. Unmate	NA NA
14	LLCR	≤ 10 mΩ Change	Final	5.9 mΩ Max. Change	Pass
15	Visual Exam	No Detrimental Cond.	Final	No Detrimental Cond.	Pass

Revision Record			
Revision Level	Revision Date	Pages Changed	Description of Changes
A	17 May 2011	All	Original release