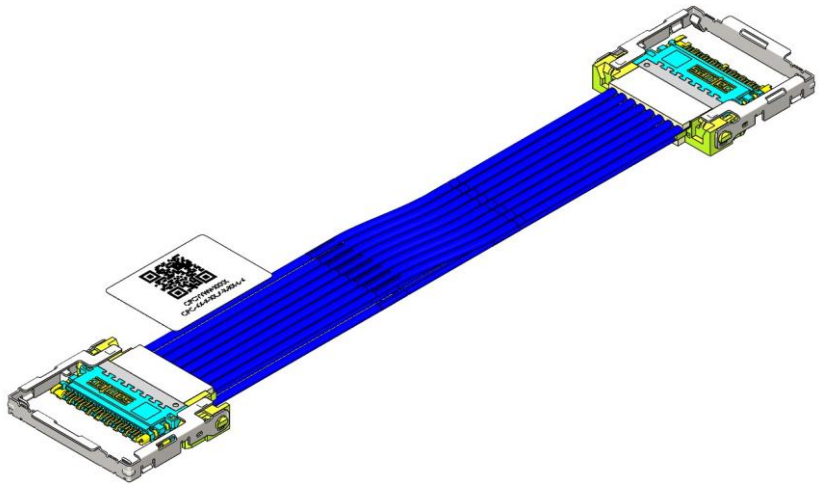
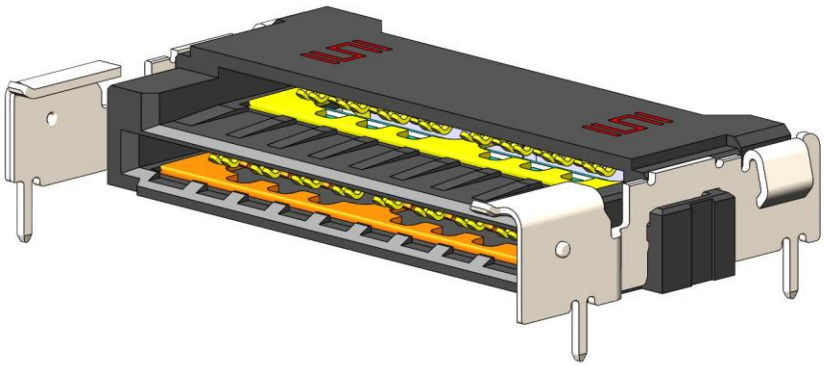
Project Number: Mixed Flowing Gas Test Report	Tracking Code: CR-1417202_Report_Rev_1
Requested by: Emmanuel Davis	Date: 7/31/2026
Part #: CPC-16-X-XX.X-2-XX-L-1/ CPI-16-01-2-S-RA-0-L-XR	
Part description: CPI/CPC	Tech: Keney Chen
Test Start: 2/27/2026	Test Completed: 5/8/2026





Mixed Flowing Gas TEST REPORT

CPI/CPC
CPC-16-X-XX.X-2-XX-L-1/ CPI-16-01-2-S-RA-0-L-XR

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
7/10/2026	**1**	**Initial test**	**KC**

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to IS0 10012-l and ANSI/NCSL 2540-1, as applicable.

SCOPE

To perform the following tests: Design Qualification test. Please see test plan.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

1) All materials were manufactured in accordance with the applicable product specification.
2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to CO-SC-WI-3029.
4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
5) The automated procedure is used with aqueous compatible soldering materials.
6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
7) Any additional preparation will be noted in the individual test sequences.
8) Solder Information: Lead Free
9) Samtec Test PCBs used: PCB-112987-TST、PCB-112210-TST

FLOWCHARTS

Mixed Flowing Gas

Group 1

CPC-16-X-XX.X-2-XX-L-1

CPI-16-01-2-S-RA-0-L-XR

8 Assemblies

Step	Description
1.	Plating Thickness Verification (4)
2.	LLCR (1)
3.	Cycles Quantity = 20 Cycles
4.	LLCR (1) Max Delta = 15 mOhm
5.	Mixed Flowing Gas Unmated (3) Duration = 7 Days
6.	LLCR (1) Max Delta = 15 mOhm
7.	Cycles Quantity = 1 Cycles
8.	LLCR (1) Max Delta = 15 mOhm
9.	Mixed Flowing Gas Mated (2) Duration = 7 Days
10.	LLCR (1) Max Delta = 15 mOhm
11.	Cycles Quantity = 1 Cycles
12.	LLCR (1) Max Delta = 15 mOhm

(1) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

(2) Mixed Flowing Gas Mated = EIA-364-65
Environmental Conditions = Class IIA

(3) Mixed Flowing Gas Unmated = EIA-364-65
Environmental Conditions = Class IIA

(4) Plating Thickness Verification
Measure, verify, and document plating thickness on both male and female (one group only)
Plating thickness to be measured on loose pins used during assembly

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

MATING/UNMATING:

1) Reference document: EIA-364-13, *Mating and Unmating Forces Test Procedure for Electrical Connectors*.
2) The full insertion position was to within 0.003" to 0.004" of the plug bottoming out in the receptacle to prevent damage to the system under test.
3) One of the mating parts is secured to a floating X-Y table to prevent damage during cycling.

LLCR:

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   a. <= +5.0 mOhms: ----------Stable
   b. +5.1 to +10.0 mOhms:----------Minor
   c. +10.1 to +15.0 mOhms: ----------Acceptable
   d. +15.1 to +50.0 mOhms: ----------Marginal
   e. +50.1 to +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

Mixed Flowing Gas:

1) EIA-364-65B, *Mixed Flowing Test Procedure For Electrical Connectors Contacts And Sockets*.
2) To adequately evaluate the risk of corrosion, the Mixed Flowing Gas test shall be done with the gas mixtures in below table.

Table 1 - Environmental classes

Class	Relative humidity, %	Temperature, °C	Concentration, ppb			
			Cl_2	NO_2	H_2S	SO_2
I	Discontinued as a test procedure.					
II	Superseded by class IIA					
IIA	70 ± 2	30 ± 1	10 ± 3	200 ± 50	10 ± 5	100 ± 20
III	Superseded by class IIIA					
IIIA	70 ± 2	30 ± 1	20 ± 5	200 ± 50	100 ± 20	200 ± 50
IV	75 ± 2	40 ± 2	30 ± 5	200 ± 50	200 ± 20	N/A

3) The mated and unmated exposure is done in parallel for qualification at Class II A conditions.
4) Exposure time for mated and unmated is 14 days

RESULTS

LLCR Mixed Flowing Gas Group (256 signal and 16 ground LLCR test points)

Signal Pin

- **Initial ---------- 179.97 mOhms Max**

Ground Pin

- **Initial ---------- 10.01 mOhms Max**
- **Durability, 20 Cycles**
  - **<= +5.0 mOhms ---------- 272 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**
- **14 Days Total Mixed Flowing Gas (with All 8 Samples Unmated During Exposure)**
  - **<= +5.0 mOhms ---------- 265 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 7 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**
- **1 Cycle**
  - **<= +5.0 mOhms ---------- 263 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 9 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**
- **14 Days Total Mixed Flowing Gas (with All 8 Samples Mated During Exposure)**
  - **<= +5.0 mOhms ---------- 247 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 25 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**
- **1 Cycle**
  - **<= +5.0 mOhms ---------- 249 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 23 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

DATA SUMMARIES

LLCR Mixed Flowing Gas Group

1) A total of 256 signal and 16 ground points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   a. <= +5.0 mOhms: ----------Stable
   b. +5.0 to +10.0 mOhms: ----------Minor
   c. +10.1 to +15.0 mOhms: ----------Acceptable
   d. +15.1 to +50.0 mOhms: ----------Marginal
   e. +50.1 to +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type						
Date	4/14/2026	4/14/2026	4/22/2026	4/22/2026	4/29/2026	4/29/2026
Room Temp (Deg C)	22	22	22	22	22	22
Rel Humidity (%)	50	50	50	50	50	50
Technician	Keney Chen	Keney Chen	Keney Chen	Keney Chen	Keney Chen	Keney Chen
mOhm values	Actual **Initial**	**Delta 20 Cycles**	**Delta 7 Days MFG**	**Delta 1 Cycle**	**Delta 14 Days MFG**	**Delta 1 Cycle**
	Pin Type: Signal 1					
Average	176.81	1.16	1.51	1.85	2.22	2.51
St. Dev.	1.58	0.87	1.30	1.47	2.08	1.96
Min	171.47	0.00	0.00	0.00	0.01	0.02
Max	179.97	4.32	7.83	7.99	9.69	9.78
Summary Count	256	256	256	256	256	256
Total Count	256	256	256	256	256	256
	Pin Type: GND 1					
Average	9.08	0.19	0.54	0.61	0.79	0.85
St. Dev.	0.42	0.09	0.28	0.27	0.37	0.38
Min	8.34	0.03	0.17	0.12	0.30	0.18
Max	10.01	0.37	0.99	1.10	1.56	1.38
Summary Count	16	16	16	16	16	16
Total Count	16	16	16	16	16	16

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
20 Cycles	**272**	**0**	**0**	**0**	**0**	**0**
7 Days MFG	**265**	**7**	**0**	**0**	**0**	**0**
1 Cycle	**263**	**9**	**0**	**0**	**0**	**0**
14 Days MFG	**247**	**25**	**0**	**0**	**0**	**0**
1 Cycle	**249**	**23**	**0**	**0**	**0**	**0**

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: TCT-04
Description: Dillon Quantrol TC21 25-1000 mm/min series test stand
Manufacturer: Dillon Quantrol
Model: TC2 I series test stand
Serial #: 04-1041-04
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 05/29/2026, Next Cal: 05/29/2027

Equipment #: MO-11
Description: Switch/Multimeter
Manufacturer: Keithley
Model: 3706
Serial #: 120169
Accuracy: See Manual
… Last Cal: 09/11/2025, Next Cal: 09/11/2026

Equipment #: HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 019808
Accuracy:
… Last Cal: 05/15/2026, Next Cal: 05/15/2027

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/18/2025, Next Cal: 07/18/2026

Equipment #: HZ-TCT-01

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 9/26/2025, Next Cal: 9/25/2026

Equipment #: DG-MFG-01
Description: Mixed Flow Gas Chamber
Manufacturer: Yamasaki
Model: GH-180
Serial #: 715
Accuracy: Last Cal: 12/5/2025, Next Cal: 12/4/2026