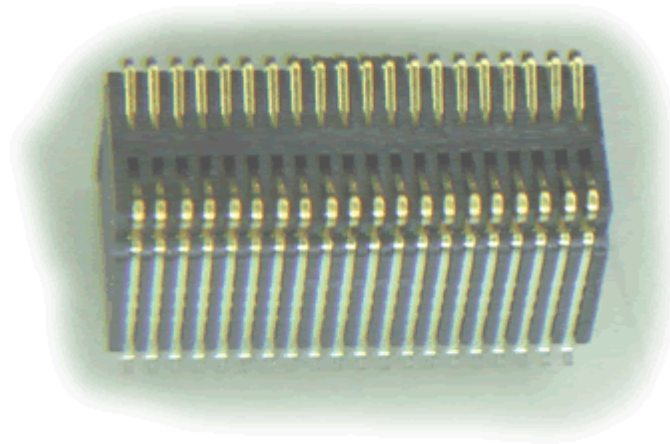




Project Number: NA		Tracking Code: TC0242-NA-0020	
Requested by: Mark Eting		Date: 10/14/2002	Product Rev: NA
Part #: FSI-120-10-L-D-AB		Lot #: 426998-1	Tech: Troy Cook Eng: John Tozier
Part description: One Piece Interface Connector			Qty to test: 50
Test Start: 10/31/2002	Test Completed: 12/13/2002		



**TC0242-NA-0020 Summary Report (Old TC0242—0765)**

**PART DESCRIPTION**

**FSI-120-10-L-D-AB**

## CERTIFICATION

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

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### SCOPE

To perform the following tests: 10,000 Cycles durability with Contact Heights.

### 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 testing were cleaned according to TLWI-0001:
  - a) Sample test boards are to be ultrasonically cleaned after test lead attachment, preparation and/or soldering using the following process.
  - b) Sample test boards are immersed into Branson 3510 cleaner containing Kyzen Ionox HC1 (or equivalent) with the following conditions:
    - i) Temperature: -----55° C +/- 5° C
    - ii) Frequency:-----40 KHz
    - iii) Immersion Time: -----5 to 10 Minutes
    - iv) Sample test boards are removed and placed into the Branson 3510 cleaner containing deionized water with the following conditions:
      - v) Temperature:-----55° C +/- 5° C
      - vi) Frequency:-----40 KHz
      - vii) Immersion Time: -----5 to 10 Minutes
      - viii) Sample test boards are removed and placed in a beaker positioned on a hot plate with a magnetic stirrer containing deionized water warmed to 55° C +/- 5° C for 1/2 to 1 minute
  - c) Upon removal, the sample test boards are rinsed for 1/2 to 1 minute in room temperature free flowing deionized water.
  - d) After the final rinse, the sample test boards are dried in an air-circulating oven for 10 to 15 minutes at 50° C +/- 5° C
  - e) Sample test boards are then allowed to set and recover to room ambient condition prior to testing.
- 4) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 5) Any additional preparation will be noted in the individual test procedures.

**FLOWCHARTS**

<b>TEST STEP</b>	<b>GROUP A 30 Min Durability</b>	
<b>01</b>	Contact Ht	
<b>02</b>	Life Cycles	
<b>03</b>	Contact Ht	

Thermal Aging = EIA-364-17, 105 deg C, Condition 'C' for 500 hours

Humidity = EIA 364-31, Method III excluding Steps 7a , 7b

Test time Condition "B" for 240 Hours

<b>TEST STEP</b>	<b>Group A 200 Test Points</b>
<b>01</b>	LLCR-1
<b>02</b>	<b>500 CYCLES</b>
<b>03</b>	LLCR-2
<b>04</b>	<b>500 CYCLES</b>
<b>05</b>	<b>500 CYCLES</b>
<b>06</b>	LLCR-3
<b>07</b>	<b>500 CYCLES</b>
<b>08</b>	<b>500 CYCLES</b>
<b>09</b>	<b>500 CYCLES</b>
<b>10</b>	LLCR-4
<b>11</b>	<b>500 CYCLES</b>
<b>12</b>	<b>500 CYCLES</b>
<b>13</b>	<b>500 CYCLES</b>
<b>14</b>	<b>500 CYCLES</b>
<b>15</b>	LLCR-5
<b>16</b>	<b>500 CYCLES</b>
<b>17</b>	<b>500 CYCLES</b>
<b>18</b>	<b>500 CYCLES</b>
<b>19</b>	<b>500 CYCLES</b>
<b>20</b>	<b>500 CYCLES</b>
<b>21</b>	LLCR-6
<b>22</b>	<b>500 CYCLES</b>
<b>23</b>	<b>500 CYCLES</b>
<b>24</b>	<b>500 CYCLES</b>
<b>25</b>	<b>500 CYCLES</b>
<b>26</b>	<b>500 CYCLES</b>
<b>27</b>	LLCR-7

**ATTRIBUTE DEFINITION**

Following is a brief, simplified description of attributes.

**CONTACT HEIGHT:**

- 1) Heights above the surrounding plastic surface were measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).
- 2) Typically, all contacts on the connector are measured.

**SUPPLEMENTAL TESTS: LLCR Durability to 10,000 Cycles**

Daughter cards were used for 500 cycles and then replaced

- 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)  $\leq +5.0$  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)  $>+50$  to  $+2000.0$  mOhms: ----- Unstable
  - f)  $>+2000$  mOhms: ----- Open Failure

**RESULTS****Contact Height**

- **Durability 10,000 Cycles**
  - **Initial**
    - **Min** ----- 0.0313 in
    - **Max** ----- 0.0346 in
  - **After Durability**
    - **Min** ----- 0.0306 in
    - **Max** ----- 0.0335 in

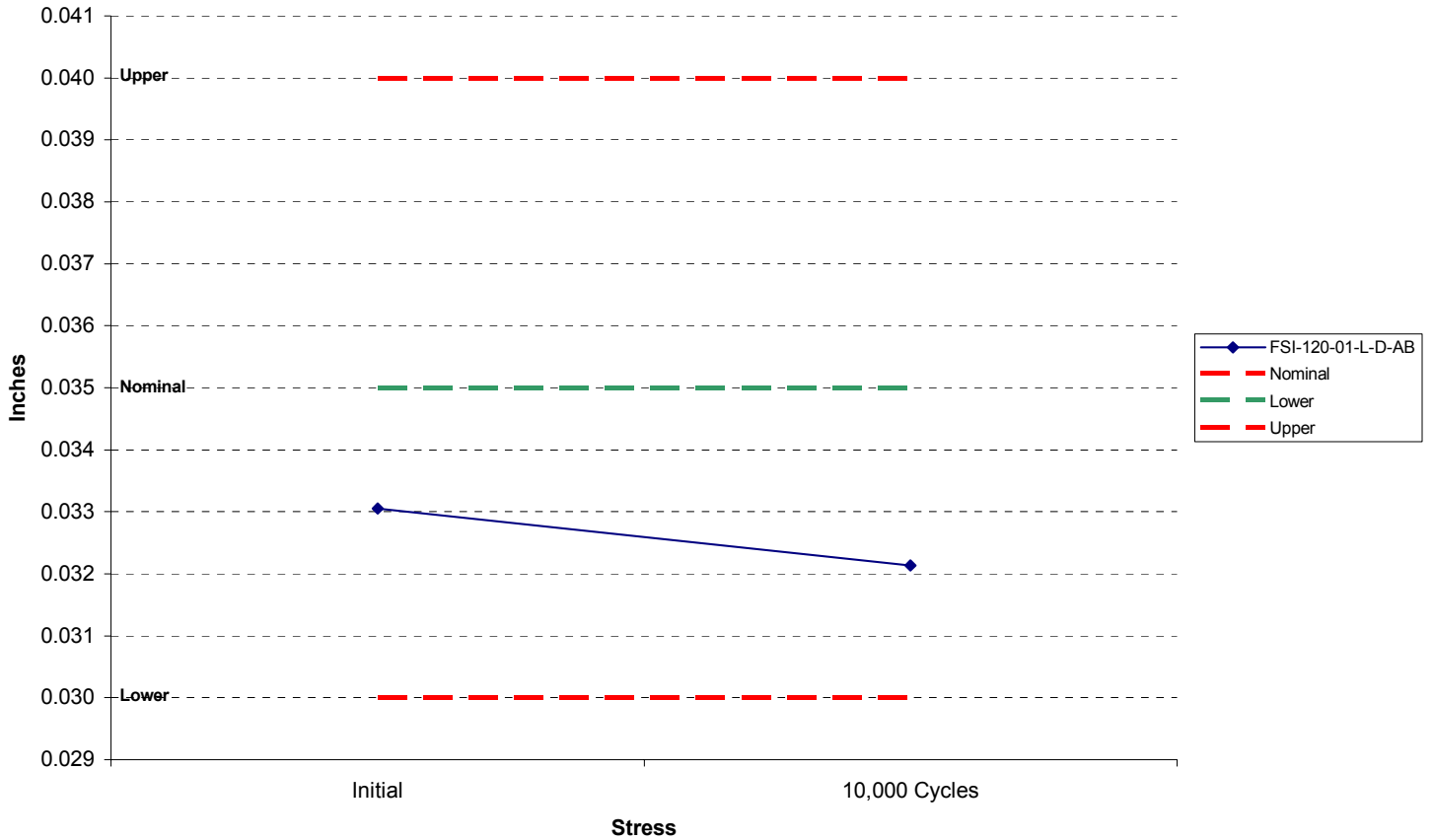
**LLCR Durability to 10,000 Cycles (200 LLCR test points)**

- **Initial** ----- 24.7 mOhms Max
- **Durability 500 Cycles**
  - **<= +5.0 mOhms** ----- 200 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 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Durability 1,500 Cycles**
  - **<= +5.0 mOhms** ----- 200 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 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Durability 3,000 Cycles**
  - **<= +5.0 mOhms** ----- 200 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 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Durability 5,000 Cycles**
  - **<= +5.0 mOhms** ----- 200 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 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Durability 7,500 Cycles**
  - **<= +5.0 mOhms** ----- 196 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 4 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Durability 10,000 Cycles**
  - **<= +5.0 mOhms** ----- 193 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 mOhms to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

### DATA SUMMARIES

#### CONTACT HEIGHT (10,000 Cycles):

Height Measurements (Averages)



#### Measurements in inches

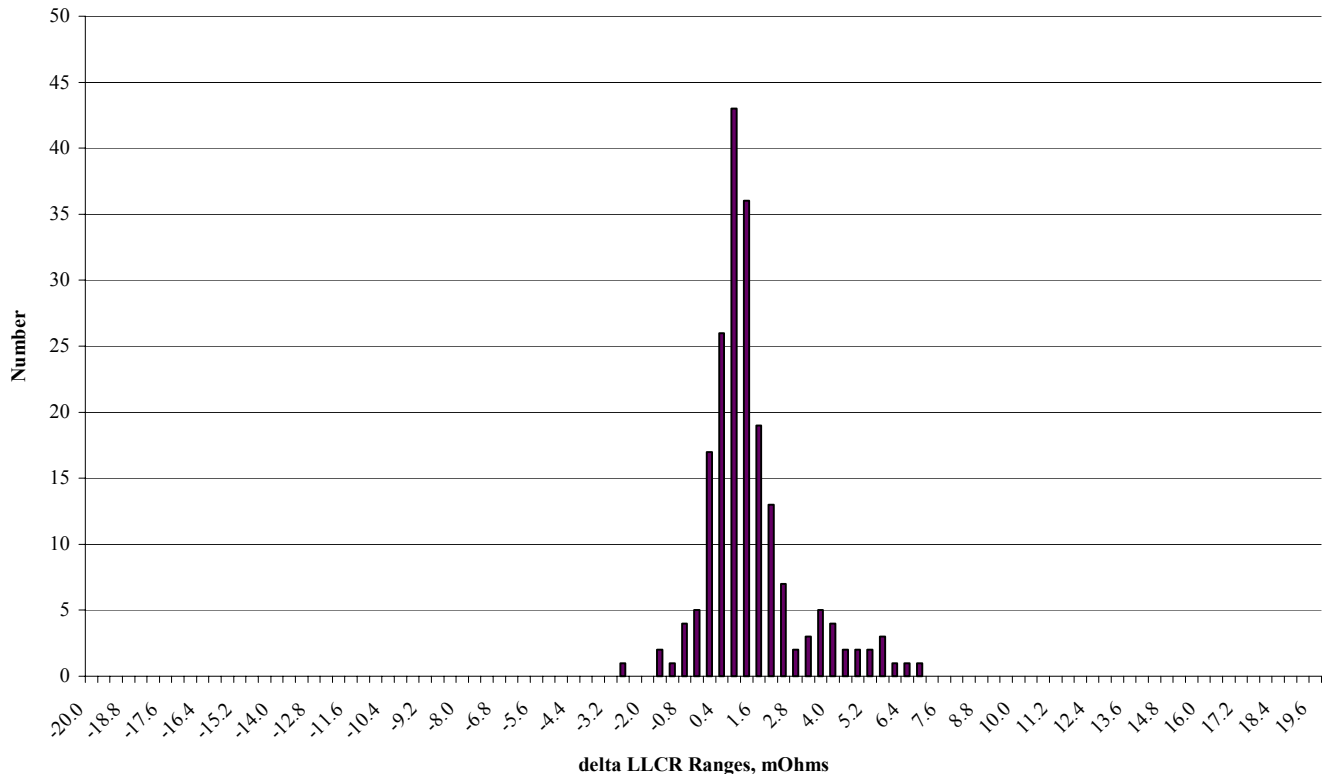
	Initial		10,000 Cycles	
	B1	B2	B1	B2
<b>Minimum</b>	0.0322	0.0313	0.0313	0.0306
<b>Maximum</b>	0.0346	0.0345	0.0335	0.0334
<b>Average</b>	0.0332	0.0329	0.0322	0.0321
<b>St. Dev.</b>	0.0007	0.0008	0.0006	0.0007
<b>Count</b>	40	40	40	40

**DATA SUMMARIES Continued****SUPPLEMENTAL TESTS:****LLCR Durability to 10,000 Cycles**

- 1) A total of 200 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)  $\leq +5.0$  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)  $>+50$  mOhms:----- Unstable
  - f)  $>+2000$  mOhms:----- Open Failure

mOhm values	Actual Initial	Delta 500 Cycles	Delta 1500 Cycles	Delta 3000 Cycles	Delta 5000 Cycles	Delta 7500 Cycles	Delta 10000 Cycles
Average	20.4	0.0	0.4	0.4	0.8	1.1	1.1
St. Dev.	0.8	0.6	0.9	0.9	1.1	1.5	1.5
Min	17.7	-2.7	-5.5	-3.9	-3.7	-2.5	-3.0
Max	24.7	1.5	3.0	3.9	4.6	7.2	6.5
Count	200	200	200	200	200	200	200

Count  
10,000 Cycles



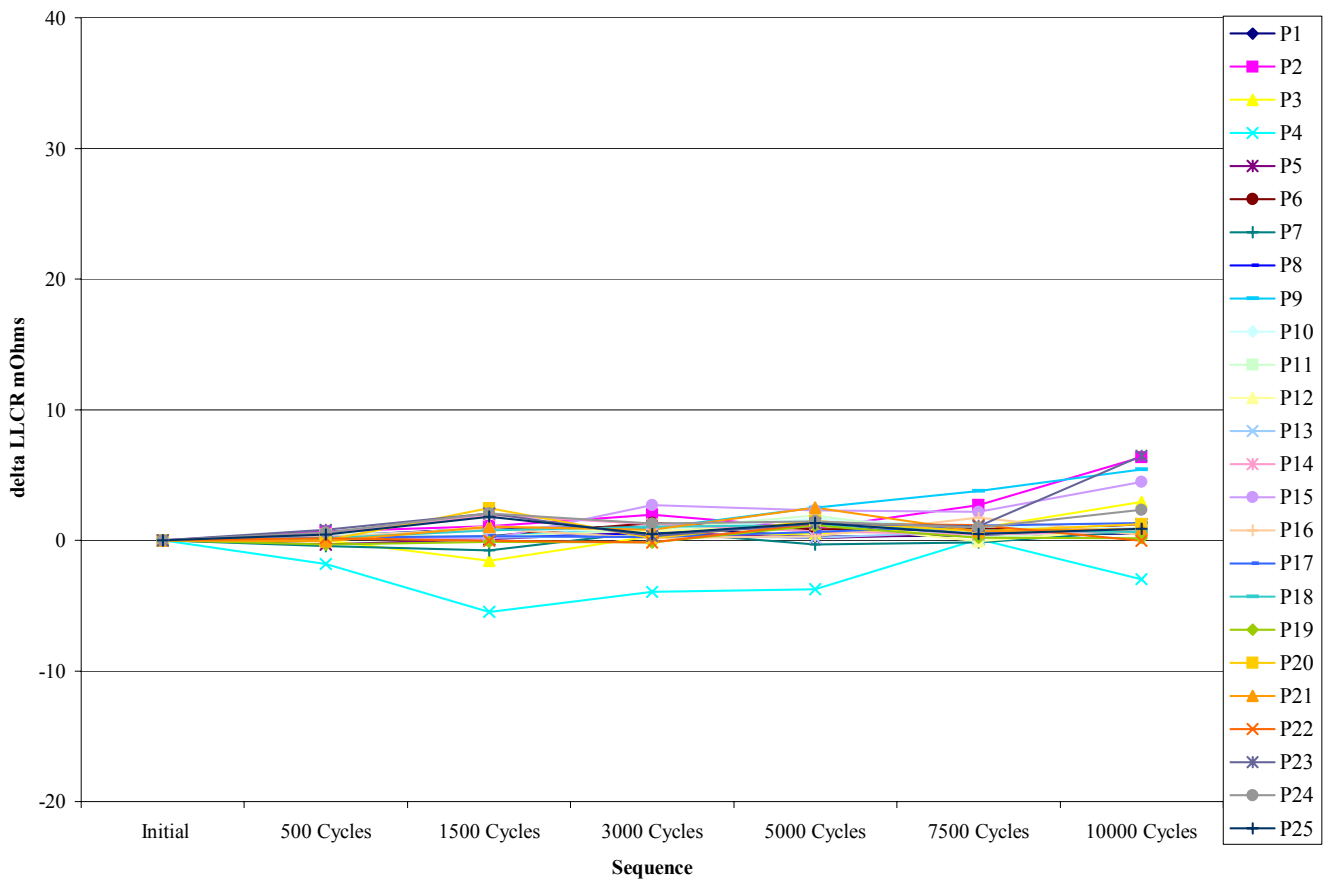






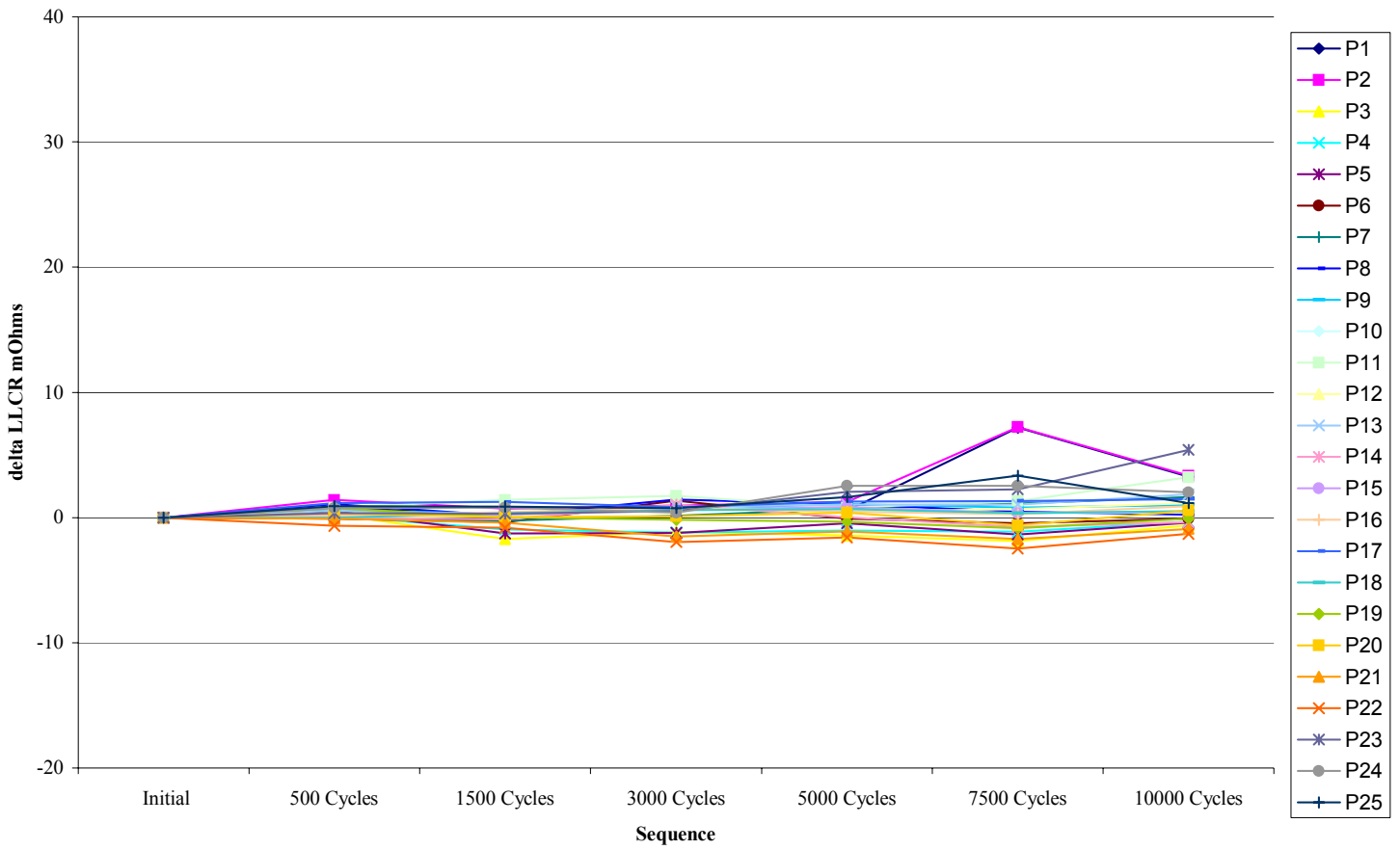
**DATA SUMMARIES Continued**

**Board #4**



### DATA SUMMARIES Continued

#### Board #5

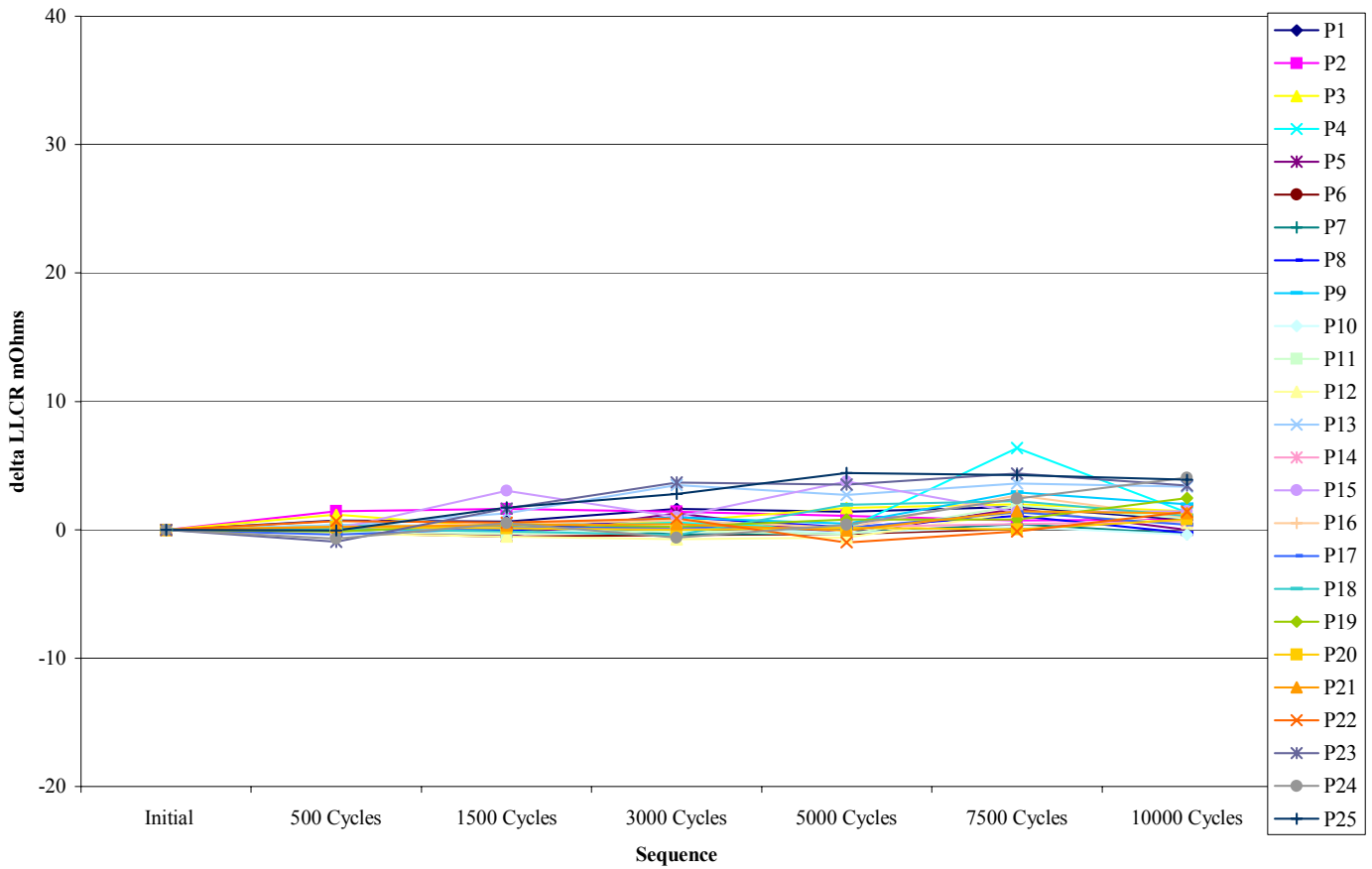






### DATA SUMMARIES Continued

#### Board #8



**DATA****CONTACT HEIGHT (Durability 10,000 Cycles):****Measurements in inches**

<b>Test Date:</b>	10/31/2002	11/18/2002
<b>Operator:</b>	TC	TC
<b>Temp (C):</b>	23	23
<b>Humidity (RH):</b>	45%	29%

Used In:

Sample#	Initial		10,000 Cycles	
	B1	B2	B1	B2
1	0.03277	0.03380	0.03172	0.03274
2	0.03246	0.03413	0.03183	0.03339
3	0.03320	0.03447	0.03207	0.03344
4	0.03257	0.03314	0.03182	0.03263
5	0.03292	0.03371	0.03179	0.0326
6	0.03224	0.03288	0.03129	0.03246
7	0.03240	0.03323	0.03158	0.03229
8	0.03223	0.03295	0.03138	0.03231
9	0.03263	0.03297	0.03175	0.03222
10	0.03304	0.03297	0.03232	0.03226
11	0.03311	0.03321	0.0321	0.0326
12	0.03287	0.03268	0.0321	0.03209
13	0.03229	0.03270	0.03164	0.03184
14	0.03253	0.03190	0.03187	0.03123
15	0.03261	0.03223	0.03176	0.03133
16	0.03266	0.03227	0.03188	0.03131
17	0.03242	0.03252	0.03178	0.03184
18	0.03262	0.03268	0.03195	0.03165
19	0.03267	0.03228	0.03169	0.03141
20	0.03311	0.03301	0.03231	0.03204
21	0.03321	0.03133	0.03219	0.03059
22	0.03387	0.03164	0.03265	0.03072
23	0.03376	0.03179	0.03256	0.0307
24	0.03434	0.03162	0.03321	0.03119
25	0.03404	0.03212	0.0327	0.03139
26	0.03325	0.03239	0.03181	0.03169
27	0.03400	0.03246	0.03277	0.03177
28	0.03430	0.03258	0.0331	0.03118
29	0.03431	0.03322	0.03337	0.0321
30	0.03455	0.03337	0.03347	0.03271
31	0.03401	0.03322	0.03285	0.03264
32	0.03385	0.03374	0.03304	0.03264
33	0.03388	0.03329	0.03269	0.03216
34	0.03400	0.03362	0.03306	0.0328
35	0.03399	0.03310	0.03259	0.03196
36	0.03274	0.03385	0.03162	0.03294
37	0.03316	0.03294	0.03187	0.03194
38	0.03296	0.03384	0.03229	0.03297
39	0.03270	0.03404	0.03173	0.03301
40	0.03220	0.03384	0.03148	0.0325

**DATA Continued****SUPPLEMENTAL TESTS:****LLCR Durability to 10,000 Cycles**

Date	Oct. 31 2002	Nov. 01 2002	Nov. 04 2002	Nov. 05 2002	Nov. 06 2002	Nov. 08 2002	Nov. 12 2002
Room Temp C	21	21	21	21	21	23	23
RH	47%	41%	39%	46%	42%	36%	37%
Name	Troy Cook	Troy Cook	Troy Cook	Troy Cook	Troy Cook	Troy Cook	Troy Cook

mOh m values		Actual	Delta	Delta	Delta	Delta	Delta	Delta
Board	Position	Initial	500 Cycles	1500 Cycles	3000 Cycles	5000 Cycles	7500 Cycles	10000 Cycles
1	P1	18.8	-0.4	2.6	0.7	4.6	3.4	2.1
1	P2	19.2	-0.7	1.8	0.3	1.4	2.0	4.9
1	P3	20.3	-0.2	1.1	0.8	0.2	1.2	0.4
1	P4	20.1	-0.1	0.9	0.4	1.0	0.9	1.5
1	P5	20.6	-0.6	0.1	0.0	-0.2	0.2	0.3
1	P6	20.7	-0.1	1.1	-0.1	0.2	0.6	0.7
1	P7	20.7	-0.1	0.4	0.6	0.0	0.5	-0.3
1	P8	20.3	0.5	0.6	0.9	0.7	0.3	0.8
1	P9	20.4	1.2	0.8	1.1	0.8	0.2	0.4
1	P10	19.8	0.1	0.8	0.8	0.5	1.3	0.1
1	P11	20.1	0.3	1.4	0.3	0.0	0.8	0.3
1	P12	20.1	0.2	1.9	0.6	0.6	0.9	1.0
1	P13	20.2	0.0	1.6	0.9	0.5	4.6	2.9
1	P14	20.2	-0.2	1.0	-0.1	0.0	1.9	0.3
1	P15	20.0	0.5	1.4	0.3	0.9	5.1	1.8
1	P16	20.8	0.3	0.8	0.2	0.4	1.4	0.7
1	P17	20.0	0.3	1.1	0.5	0.3	1.6	1.7
1	P18	20.5	-0.1	0.7	-0.1	0.4	0.6	-0.3
1	P19	20.1	0.0	0.9	0.2	0.3	0.2	0.7
1	P20	20.3	-0.1	0.8	0.1	0.5	1.5	0.1
1	P21	20.0	-0.1	1.0	0.1	0.5	0.3	1.6
1	P22	20.5	-0.2	0.7	0.1	1.2	0.0	0.2
1	P23	19.5	0.8	1.3	0.7	2.3	1.8	1.0
1	P24	18.6	0.1	1.8	0.2	3.1	3.7	1.2
1	P25	18.5	-0.2	2.1	-0.1	0.4	2.9	0.6
2	P1	21.1	-0.2	0.1	0.9	1.2	3.3	1.2
2	P2	21.2	-0.3	0.8	2.1	1.3	3.7	3.8
2	P3	20.9	0.1	0.7	0.7	1.8	2.1	1.8
2	P4	20.9	0.4	0.9	-0.2	1.0	1.7	1.7
2	P5	21.5	-0.1	0.3	-0.2	1.3	-0.2	0.9
2	P6	20.7	-0.1	0.8	-0.5	0.6	1.6	1.9
2	P7	20.6	0.1	1.1	0.8	1.7	1.5	1.6
2	P8	20.2	0.4	1.1	0.6	1.9	2.3	1.2
2	P9	20.6	0.4	1.3	0.1	0.9	1.9	2.0

Tracking Code: TC0242-NA-0020

Part #: FSI-120-10-L-D-AB

Part description: One Piece Interface Connector

2	P10	20.2	0.5	1.5	0.2	2.0	5.0	2.1
2	P11	20.7	0.5	1.8	0.3	1.0	0.7	0.1
2	P12	21.1	0.8	0.4	-0.1	1.7	2.1	1.9
2	P13	21.5	0.7	1.4	-0.2	2.3	2.7	0.5
2	P14	21.7	-0.1	0.9	-0.6	0.4	0.0	-0.6
2	P15	20.3	0.6	0.8	1.2	2.0	2.1	2.3
2	P16	21.3	-0.3	1.7	-0.6	1.1	-0.3	-0.7
2	P17	20.3	0.3	1.2	0.8	1.4	2.0	1.2
2	P18	20.1	0.7	0.8	1.2	1.1	1.5	1.0
2	P19	20.4	0.6	0.8	1.0	1.1	2.0	0.7
2	P20	20.8	0.1	1.0	1.2	0.8	1.8	0.9
2	P21	20.6	-0.1	1.3	0.5	0.7	4.0	0.0
2	P22	20.8	0.0	0.5	1.2	0.5	3.0	0.8
2	P23	20.7	-1.7	-0.2	-0.1	0.5	1.7	1.0
2	P24	20.5	-1.6	-0.4	0.1	1.6	0.9	1.4
2	P25	21.0	-2.7	-0.8	-1.3	1.1	0.8	5.7
3	P1	20.0	0.0	-0.8	1.1	1.7	0.0	1.3
3	P2	20.1	0.4	-0.4	0.6	1.2	0.0	3.0
3	P3	19.7	0.6	1.2	-0.3	0.6	0.2	-0.5
3	P4	19.9	0.9	0.4	0.1	0.6	0.5	0.5
3	P5	20.3	0.4	0.4	0.3	1.3	2.3	0.8
3	P6	20.1	0.3	0.2	0.0	0.8	0.3	1.2
3	P7	20.6	0.1	0.3	0.2	0.5	0.9	1.5
3	P8	20.3	0.4	0.3	0.5	0.9	0.4	0.6
3	P9	20.2	0.5	0.4	0.0	1.0	0.3	0.7
3	P10	20.5	0.1	-0.1	-0.1	0.5	0.6	0.1
3	P11	20.6	-0.1	0.2	0.3	0.5	0.1	0.6
3	P12	21.0	0.1	1.2	0.2	0.4	0.2	0.2
3	P13	21.1	-0.1	0.1	0.3	0.5	0.2	2.1
3	P14	20.2	0.0	0.3	0.2	0.7	1.3	1.7
3	P15	20.7	-0.1	0.2	-0.1	-0.1	0.2	0.3
3	P16	20.2	-0.1	0.9	0.9	0.8	0.8	1.2
3	P17	20.4	-0.1	0.1	0.5	0.5	0.7	0.6
3	P18	20.3	-0.3	0.7	0.3	0.6	1.5	1.2
3	P19	20.2	-0.4	0.4	-0.3	0.1	0.4	0.3
3	P20	20.6	-0.7	0.2	-0.4	-0.2	0.6	0.6
3	P21	20.0	-0.7	0.3	-1.0	-0.7	0.8	0.9
3	P22	19.9	-0.8	0.4	-0.9	-0.5	0.6	0.8
3	P23	20.3	0.2	-0.8	0.4	1.7	0.2	4.0
3	P24	20.0	0.2	-0.8	1.0	1.0	-0.2	0.8
3	P25	19.3	0.1	-0.7	0.1	1.3	-0.2	2.4
4	P1	17.7	0.3	0.9	1.1	0.3	0.4	0.5
4	P2	17.8	0.7	1.1	2.0	0.9	2.7	6.4
4	P3	20.3	0.0	-1.6	0.3	0.5	0.9	3.0
4	P4	24.7	-1.8	-5.5	-3.9	-3.7	0.1	-3.0
4	P5	20.3	-0.3	0.1	0.6	0.2	0.5	1.2
4	P6	19.9	0.1	0.3	1.3	0.8	0.9	0.5
4	P7	20.7	-0.4	-0.8	0.7	-0.3	-0.2	0.7
4	P8	19.7	0.2	0.3	0.5	1.2	0.5	0.9
4	P9	19.8	0.2	0.3	0.9	2.5	3.8	5.4

Tracking Code: TC0242-NA-0020

Part #: FSI-120-10-L-D-AB

Part description: One Piece Interface Connector

4	P10	20.0	0.4	0.8	0.7	1.6	1.0	0.9
4	P11	19.8	0.4	0.3	0.8	1.9	0.3	0.8
4	P12	20.0	-0.1	1.1	0.7	1.2	-0.1	0.9
4	P13	20.9	0.3	0.2	0.4	0.2	0.7	0.6
4	P14	20.2	0.5	1.9	1.2	0.7	0.4	0.7
4	P15	20.3	0.3	0.1	2.7	2.3	2.2	4.5
4	P16	20.4	0.2	0.9	0.2	0.3	1.7	0.4
4	P17	19.9	0.2	0.3	0.2	0.6	1.1	1.3
4	P18	20.0	0.1	0.8	1.1	1.2	0.7	0.6
4	P19	20.1	-0.3	-0.1	-0.2	1.1	0.2	0.2
4	P20	19.9	0.0	2.4	0.1	1.5	0.7	1.3
4	P21	20.4	-0.1	1.1	0.8	2.5	0.7	0.9
4	P22	20.8	0.2	0.0	-0.1	1.3	1.2	0.0
4	P23	18.9	0.8	2.1	0.3	1.3	1.1	6.5
4	P24	18.1	0.6	2.1	1.3	1.4	1.0	2.3
4	P25	18.2	0.4	1.8	0.5	1.3	0.5	0.9
5	P1	18.2	0.8	0.2	0.9	0.6	7.2	3.3
5	P2	18.1	1.4	0.7	1.0	1.3	7.2	3.4
5	P3	20.0	0.3	-1.7	-1.1	-1.4	-1.9	-0.6
5	P4	19.8	0.2	-0.9	-1.2	-1.0	-1.1	-0.3
5	P5	20.0	0.5	-1.3	-1.2	-0.5	-1.4	-0.4
5	P6	20.0	-0.1	-0.4	1.3	-0.1	-0.5	-0.1
5	P7	20.0	0.0	-0.3	0.1	0.7	1.1	1.7
5	P8	19.9	1.1	0.1	1.5	1.1	0.5	0.2
5	P9	20.0	0.6	0.3	0.7	1.1	0.8	1.0
5	P10	20.1	0.1	0.1	0.8	0.6	0.3	0.4
5	P11	19.8	0.8	1.4	1.7	0.8	1.3	3.2
5	P12	19.9	0.1	0.1	0.7	0.5	0.7	1.1
5	P13	20.1	0.5	0.3	0.9	1.0	1.0	1.9
5	P14	21.5	0.0	-0.1	1.0	0.0	-0.7	-0.4
5	P15	19.9	0.2	0.2	0.6	0.8	0.4	0.5
5	P16	20.3	0.1	0.4	0.8	0.5	0.3	0.9
5	P17	20.1	1.1	1.3	0.9	1.3	1.3	1.5
5	P18	21.2	0.0	0.3	0.6	0.7	0.4	0.5
5	P19	20.4	0.8	0.0	-0.2	-0.3	-0.9	-0.1
5	P20	20.2	0.4	0.0	0.1	0.4	-0.6	0.6
5	P21	20.1	-0.1	-0.4	-1.5	-1.1	-1.7	-0.9
5	P22	20.9	-0.7	-0.8	-2.0	-1.6	-2.5	-1.3
5	P23	19.1	0.3	0.3	0.5	2.0	2.3	5.4
5	P24	18.5	0.7	0.8	0.4	2.5	2.6	2.0
5	P25	18.0	0.9	0.9	0.8	1.6	3.3	1.2
6	P1	20.9	-0.5	-2.0	-2.2	-1.3	0.0	2.4
6	P2	20.7	0.0	-0.3	2.1	4.3	5.0	5.1
6	P3	18.4	0.3	1.0	1.1	0.8	1.1	0.7
6	P4	19.6	-0.6	1.1	1.0	1.7	1.3	0.7
6	P5	18.9	-0.1	1.0	0.8	1.1	0.5	0.4
6	P6	20.7	-0.3	-0.2	0.1	0.8	1.3	0.2
6	P7	20.2	0.1	-0.2	0.4	-0.1	2.0	0.8
6	P8	20.5	-0.4	-0.3	0.0	-0.2	0.7	0.9
6	P9	20.5	-0.2	0.4	0.3	0.5	1.3	0.9

Tracking Code: TC0242-NA-0020

Part #: FSI-120-10-L-D-AB

Part description: One Piece Interface Connector

6	P10	20.3	0.0	0.5	0.1	0.2	0.6	0.2
6	P11	20.9	0.6	0.4	0.5	-0.3	0.4	0.8
6	P12	20.1	-0.2	-0.1	-0.1	0.4	1.0	0.4
6	P13	20.9	-0.1	-0.2	-0.7	-0.4	0.3	0.1
6	P14	20.6	-0.1	0.2	-0.2	0.7	0.3	0.6
6	P15	20.2	0.0	0.5	0.4	0.8	1.3	1.4
6	P16	20.8	-0.5	-0.3	-0.5	-0.2	0.0	0.6
6	P17	21.1	-0.7	-0.2	-0.8	-0.1	-0.5	-0.2
6	P18	20.8	-0.5	0.7	0.5	0.1	0.4	0.1
6	P19	21.2	-0.9	0.3	1.2	0.6	-1.2	-1.0
6	P20	21.0	-0.4	0.2	0.3	0.5	0.1	-0.8
6	P21	20.5	-1.8	-1.1	0.0	0.4	-1.7	-1.9
6	P22	20.8	-2.5	-1.1	-0.3	-0.1	-2.1	-1.9
6	P23	20.7	0.8	0.6	0.6	0.7	0.7	1.6
6	P24	21.2	0.7	0.0	-0.4	-0.5	-0.1	0.7
6	P25	21.1	0.5	-1.4	-2.0	-1.5	0.6	-0.9
7	P1	20.2	-0.1	0.5	0.4	0.6	0.6	0.3
7	P2	20.3	-0.2	0.4	0.7	2.4	1.5	1.2
7	P3	20.1	0.0	-1.5	-1.3	0.7	-0.3	1.1
7	P4	20.0	0.1	-0.3	-0.3	0.7	1.1	0.9
7	P5	19.7	0.6	-0.7	-0.9	0.5	0.8	1.2
7	P6	20.3	-0.3	-0.6	-0.5	-0.1	-0.2	0.2
7	P7	20.1	0.1	-0.4	-0.1	0.4	1.5	0.7
7	P8	20.2	0.0	-0.4	-0.2	0.2	0.5	0.5
7	P9	20.3	0.1	-0.6	-0.4	0.2	1.2	1.2
7	P10	19.9	0.1	-0.2	0.5	0.8	1.0	0.6
7	P11	21.5	-0.7	-1.0	-1.0	-0.6	-0.1	-0.3
7	P12	20.3	0.1	-0.2	-0.5	0.1	0.4	0.2
7	P13	20.3	0.2	-0.2	-0.1	0.1	0.3	0.4
7	P14	21.7	0.0	-0.5	-0.7	-0.7	-0.5	-0.1
7	P15	20.3	0.3	0.5	2.0	4.2	4.2	4.3
7	P16	20.9	-0.2	-0.2	-0.1	0.1	0.7	-0.2
7	P17	20.6	0.0	1.3	3.9	4.1	4.5	4.4
7	P18	20.8	-0.3	0.0	0.3	0.1	0.4	0.3
7	P19	20.9	-1.4	1.4	3.2	4.1	3.9	3.6
7	P20	20.5	-0.4	1.7	0.3	1.1	-1.0	1.2
7	P21	19.6	-0.6	-0.5	-0.7	1.1	-0.9	5.2
7	P22	19.6	-0.9	-0.6	-1.1	0.9	-1.2	-0.2
7	P23	20.7	-0.8	2.4	0.0	1.8	0.5	-0.3
7	P24	20.3	-0.2	1.2	0.8	2.2	2.4	0.3
7	P25	20.4	-1.0	1.2	1.1	2.2	2.6	1.2
8	P1	21.6	0.7	0.6	1.6	1.4	1.8	0.8
8	P2	20.6	1.5	1.6	1.4	1.1	0.7	0.8
8	P3	20.8	1.2	0.2	0.7	1.7	2.0	1.4
8	P4	20.3	0.3	0.1	0.6	0.1	6.4	1.3
8	P5	21.6	-0.2	-0.5	1.3	-0.3	1.6	0.0
8	P6	21.4	-0.3	-0.5	-0.4	-0.3	0.1	0.8
8	P7	21.9	-0.2	0.5	-0.4	-0.3	0.4	-0.3
8	P8	20.5	0.2	-0.1	1.0	0.2	1.1	-0.3
8	P9	20.6	0.3	0.3	1.0	0.5	2.9	2.0

Tracking Code: TC0242-NA-0020

Part #: FSI-120-10-L-D-AB

Part description: One Piece Interface Connector

8	P10	20.5	0.3	-0.3	0.2	-0.3	0.2	-0.4
8	P11	21.0	-0.2	-0.3	-0.1	-0.4	1.9	0.9
8	P12	21.6	-0.3	-0.5	-0.7	-0.6	1.3	0.5
8	P13	22.3	0.3	1.3	3.5	2.7	3.6	3.4
8	P14	21.4	0.0	0.2	0.1	0.2	0.4	0.7
8	P15	21.3	0.1	3.0	1.0	3.8	1.4	1.5
8	P16	20.7	0.2	0.5	0.7	0.2	2.7	1.0
8	P17	20.9	-0.4	0.1	0.2	0.1	1.4	0.4
8	P18	21.3	0.1	-0.1	-0.4	1.9	2.2	1.1
8	P19	20.8	-0.1	0.4	0.2	0.8	0.8	2.5
8	P20	20.6	0.2	0.1	0.0	0.1	0.0	0.8
8	P21	20.8	0.2	0.4	0.4	-0.1	1.5	1.3
8	P22	21.5	0.7	0.5	0.9	-1.0	-0.1	1.4
8	P23	22.0	-0.9	1.6	3.7	3.5	4.4	3.4
8	P24	21.3	-0.7	0.5	-0.6	0.4	2.4	4.0
8	P25	21.4	0.0	1.7	2.8	4.4	4.3	3.9

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** THL-01**Description:** Temperature/Humidity Chart Recorder**Manufacturer:** Dickson**Model:** THDX**Serial #:** 9316255**Accuracy:** Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).

... Last Cal: 7/15/02, Next Cal: 7/15/03

**Equipment #:** MO-01**Description:** Micro-Ohmmeter**Manufacturer:** Keithley**Model:** 580**Serial #:** 0772740**Accuracy:** See Manual

... Last Cal: 6/25/02, Next Cal: 6/25/03

**Equipment #:** MO-03**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0791975**Accuracy:** See Manual

... Last Cal: 6/25/02, Next Cal: 6/25/03

**Equipment #:** TCT-03**Description:** Dillon Quantrol TC2 Test Stand**Manufacturer:** Dillon Quantrol**Model:** TC2**Serial #:** 02-1033-03**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Displacement: +/- 5 micrometers.

... Last Cal: 03/21/02, Next Cal: 03/21/03

**Equipment #:** LC-2500N(icell)**Description:** 2500 N Load Cell for Dillon Quantrol**Manufacturer:** Dillon Quantrol**Model:** icell**Serial #:** 01-0132-01**Accuracy:** .10% of capacity .10% of capacity

... Last Cal: 3/21/02, Next Cal: 3/21/03

**Equipment #:** TCT-02**Description:** Dillon Quantrol TC2 Test Stand**Manufacturer:** Dillon**Model:** PCM**Serial #:** 280769**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Displacement: +/- 5 micrometers.

... Last Cal: 8/15/01, Next Cal: 8/31/03

Tracking Code: TC0242-NA-0020

Part #: FSI-120-10-L-D-AB

Part description: One Piece Interface Connector

**Equipment #:** LC-5N

**Description:** 5 N Load Cell

**Manufacturer:** Dillon

**Model:** TC2 Load Cell

**Serial #:** 5370

**Accuracy:** +/- 0.2% of Full Scale +/- 1 LSC

... Last Cal: 5/6/02, Next Cal: 5/6/03

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