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CNAS L13628

EN IEC 62680-1-3 Test Report

24B01N000451-001-COM

For

Type-C Receptacle Connector

Company Name: SHENZHEN ZDT TECHNOLOGY CO.,LTD

Product Name: USB TYPE C FEMALE 16PIN SMT SINK 1.60

Model Name: CF178-16SLB15R-01

Hardware Version: A

Issued Date: 2024-04-02

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

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NO.24B01N000451-001-COM

REPORT HISTORY

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24B01N000451-001-COM	V1	First release	2024-04-02



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1. Test Laboratory

1.1. Testing Location

Location: SAICT

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000

1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 25-85%RH
Atmospheric pressure 86-106kPa

1.3. Project Data

Testing Start Date: 2020-03-05

Testing End Date: 2024-03-28

1.4. Signature

Su Kun

Prepared this test report

Wang Yang

Reviewed this test report

Wei Ming

Approved this test report

2. Client Information

2.1. Applicant Information

Company Name: SHENZHEN ZDT TECHNOLOGY CO.,LTD
Address : The No. 3 Industrial Road, Eighth industrial zone,
Xitou, Songgang, Baoan district, Shenzhen City
City: Shenzhen
Country: China
Telephone: 0755-29420399

2.2. Manufacturer Information

Company Name: SHENZHEN ZDT TECHNOLOGY CO.,LTD
Address: The No. 3 Industrial Road, Eighth industrial zone,
Xitou, Songgang, Baoan district, Shenzhen City
City: Shenzhen
Country: China
Telephone: 0755-29420399



3. Unit Under Test (UUT) Information

3.1. About UUT

Description:	USB2.0 Type-C Receptacle Connector
Brand Name:	SHENZHEN ZDT TECHNOLOGY CO.,LTD
Marking Name:	USB TYPE C FEMALE 16PIN SMT SINK 1.60
Model Name:	CF178-16SLB15R-01
Hardware Version:	A

3.2. Statements

The [USB TYPE C FEMALE 16PIN SMT SINK 1.60], [CF178-16SLB15R-01], manufactured by [SHENZHEN ZDT TECHNOLOGY CO.,LTD] is only for conformance test.

The original report number is [ZDT-DG-04102001] (Test by GRL test Lab)

3.3. Sample Coding

Test Group	Number of Plug/Receptacle	Qty of Specimen
Group A-1	UT01aa to UT10aa	10 pcs
Group A-2	UT11aa to UT20aa	10 pcs
Group A-3	UT21aa to UT30aa	10 pcs
Group A-4	UT31aa to UT50aa	20 pcs
Group A-7	UT51aa to UT60aa	10 pcs
Group B-5	UT61aa to UT63aa	3 pcs

4. Reference Documents

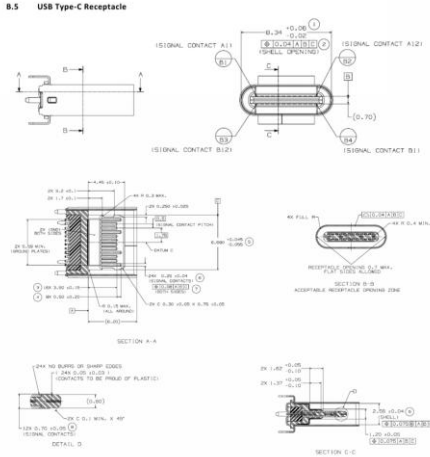
1. EN IEC 62680-1-3:2022, Universal serial bus interfaces for data and power-Part 1-3: Common components – USB Type-C Cable and Connector Specification
2. Universal Serial Bus Type-C Connectors and Cable Assemblies Compliance Document Revision 2.1b:2021

5. USB Type-C Compliance Requirements

5.1. DC Electrical

Clause	Test Item	Test Procedure	Requirement
3.7.8.1	Low Level Contact Resistance (LLCR)	EIA 364-23 The low level contact resistance (LLCR) measurement is made across the plug and receptacle mated contacts and does not include any internal paddle cards or substrates of the plug or receptacle. The test boards shall be provided with the connectors to be tested. • Measure at 20 mV (max) open, circuit at 100 mA.	The following requirements apply to the power and signal contacts: • 40 mΩ (max) initial for VBUS, GND and all other contacts. • 50 mΩ maximum after initial easurement.

5.2. Mechanical

Clause	Test Item	Test Procedure	Requirement																																								
3.2.1	Critical Dimensions	B.5 USB Type-C Receptacle  Figure B-5 USB Type-C Receptacle Using SECTION A-A	Table B-5 Receptacle Critical Dimensions for Receptacles Using SECTION A-A in Figure B-5 <table border="1"> <thead> <tr> <th>Description</th><th>Dimension</th><th>+ Tol.</th><th>- Tol.</th></tr> </thead> <tbody> <tr> <td>1. Receptacle inside opening</td><td>8.54</td><td>0.06</td><td>0.02</td></tr> <tr> <td>2. Receptacle inside opening position tolerance</td><td>0.04 with datum A/B/C</td><td>n/a</td><td>n/a</td></tr> <tr> <td>3. Receptacle signal pin length</td><td>3.50</td><td>0.15</td><td>0.15</td></tr> <tr> <td>4. Pin length datum</td><td>0.50</td><td>0.20</td><td>0.20</td></tr> <tr> <td>5. Tongue width</td><td>6.400</td><td>0.040</td><td>0.005</td></tr> <tr> <td>6. Contact width</td><td>0.25</td><td>0.04</td><td>0.04</td></tr> <tr> <td>7. Contact width position tolerance</td><td>0.08 with datum A/B/C</td><td>n/a</td><td>n/a</td></tr> <tr> <td>8. Tongue thickness</td><td>0.70</td><td>0.05</td><td>0.05</td></tr> <tr> <td>9. Receptacle inside thickness</td><td>2.50</td><td>0.04</td><td>0.04</td></tr> </tbody> </table> Notes: 1. All values are in millimeters.	Description	Dimension	+ Tol.	- Tol.	1. Receptacle inside opening	8.54	0.06	0.02	2. Receptacle inside opening position tolerance	0.04 with datum A/B/C	n/a	n/a	3. Receptacle signal pin length	3.50	0.15	0.15	4. Pin length datum	0.50	0.20	0.20	5. Tongue width	6.400	0.040	0.005	6. Contact width	0.25	0.04	0.04	7. Contact width position tolerance	0.08 with datum A/B/C	n/a	n/a	8. Tongue thickness	0.70	0.05	0.05	9. Receptacle inside thickness	2.50	0.04	0.04
Description	Dimension	+ Tol.	- Tol.																																								
1. Receptacle inside opening	8.54	0.06	0.02																																								
2. Receptacle inside opening position tolerance	0.04 with datum A/B/C	n/a	n/a																																								
3. Receptacle signal pin length	3.50	0.15	0.15																																								
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8. Tongue thickness	0.70	0.05	0.05																																								
9. Receptacle inside thickness	2.50	0.04	0.04																																								
3.8.1.1	Insertion force	EIA 364-13 The insertion force test shall be done at a maximum speed of 12.5 mm (0.492") per minute.	Within the range from 5 N to 20 N. This requirement does not apply to the plugs that are used for direct docking without a cable.																																								
3.8.1.2	Extraction force	EIA 364-13 The extraction force test shall be done at a maximum speed of 12.5 mm (0.492") per minute.	Within the range of 8 N to 20 N, measured after a preconditioning of five insertion/extraction cycles (i.e., the sixth extraction). After an additional twenty-five insertion/extraction cycles, the extraction force shall be measured again (i.e., the thirty-second extraction) and the extraction force shall be within: a) 33 % of the initial reading, and b) within the range of 8 N to 20 N. The extraction force shall be within the range of 6 N to 20 N after 10,000 insertion/extraction cycles. This requirement does not apply to the plugs that are used for direct docking without a cable.																																								

6. Test Procedure

For the DC electrical, Mechanical and Environmental compliance requirements of Type-C connector, refer to the grouping and test methods in the EIA364.1000.01 standard to implement the test.

Group A-1	
No.	Test Item
A-1-1	Low level contact resistance
Group A-2	
No.	Test Item
A-2-1	Low level contact resistance
Group A-3	
No.	Test Item
A-3-1	Low level contact resistance
Group A-4	
No.	Test Item
A-4-1	Low level contact resistance
Group A-7	
No.	Test Item
A-7-2	Low level contact resistance
A-7-4	Insertion force
A-7-5	Extraction force
Group B-5	
No.	Test Item
B-5-1	Critical Dimensions

7. Test Result Summary

Test Item	Clause	Result
Construction	3.2.1 (6)	Pass
Critical Dimensions	3.2.1 (8)	Pass
Low level contact resistance	3.7.8.1	Pass
Insertion force	3.8.1.1	Pass
Extraction force	3.8.1.2	Pass



8. Test Detail

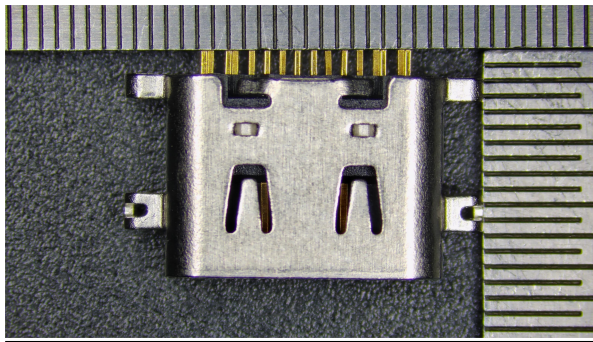
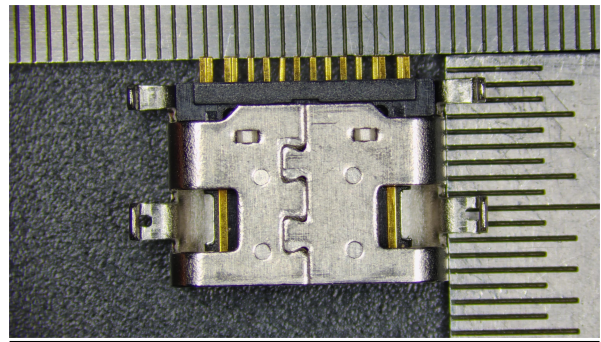
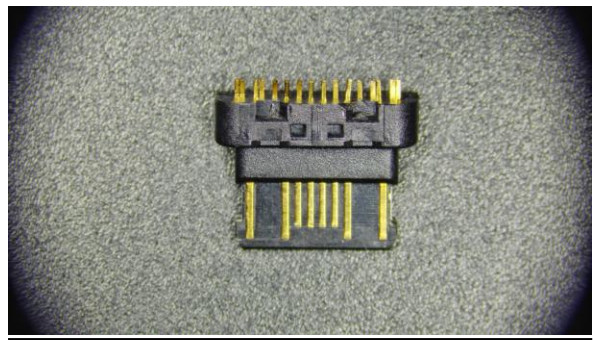
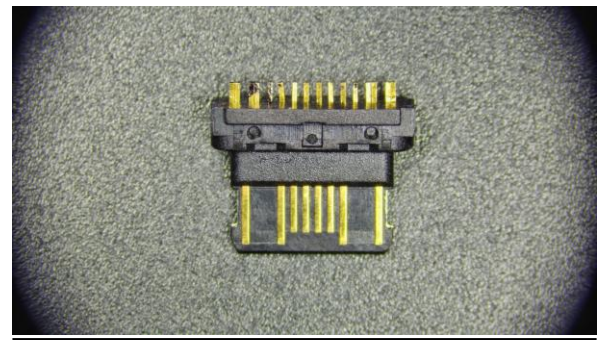
8.1. Clause 3.2.1 (6) Construction

Construction			
Testing Period	Measure environment	Test Engineer	Test Result
2024/03/08-2024/03/08	Temp. 22.4 °C / 54.6 %RH	Huang Siwei	Pass

EMC ground return path			
Description	Sample Coding		
	UT69aa	UT70aa	UT71aa
1.EMC spring	Y	Y	Y
2.EMC pad	N	N	N
3.Solid bumps	Y	Y	Y
4.Distance between the bumps	N/A	N/A	N/A
Result	Pass	Pass	Pass
Note: Receptacle configurations with a conductive shell. The requirements apply to the receptacle contact dimensions shown in ALTERNATE SECTION A-A Figure B-5. Receptacle configuration with respect to mounting surface: Right angle.			

Number of pins: 16

<u>A1</u>	<u>A2</u>	<u>A3</u>	<u>A4</u>	<u>A5</u>	<u>A6</u>	<u>A7</u>	<u>A8</u>	<u>A9</u>	<u>A10</u>	<u>A11</u>	<u>A12</u>
✓	N/A	N/A	✓	✓	✓	✓	✓	✓	N/A	N/A	✓
<u>B12</u>	<u>B11</u>	<u>B10</u>	<u>B9</u>	<u>B8</u>	<u>B7</u>	<u>B6</u>	<u>B5</u>	<u>B4</u>	<u>B3</u>	<u>B2</u>	<u>B1</u>
✓	N/A	N/A	✓	✓	✓	✓	✓	✓	N/A	N/A	✓

Tongue photograph**A Side****B Side****A Side****B Side**

**8.2. Clause 3.2.1 (8) Critical Dimensions**

B-5-1 Critical Dimensions			
Testing Period	Measure environment	Test Engineer	Test Result
2024/03/08-2024/03/08	Temp. 22.4 °C / 54.6 %RH	Huang Siwei	Pass

Test data: (Unit:mm)			
B-5-1 Critical Dimensions – Receptacle			
Description	Sample Coding		
	UT61aa	UT62aa	UT63aa
1.Receptacle inside opening (8.32~8.40)	8.370	8.373	8.370
2.Receptacle insider opening position tolerance (0.04 with datum A/B/C)	0.023	0.024	0.001
3.Receptacle signal pin length (3.35~3.65)	3.455	3.488	3.478
4.Pin length delta (0.30~0.70)	0.513	0.515	0.521
5.Tongue width (6.635~6.735)	6.6863	6.6726	6.6842
6.Contact width (0.21~0.29)	0.264	0.261	0.270
7.Contact width position tolerance (0.08 with datum A/B/C)	0.078	0.051	0.073
8. Tongue thickness (0.65~0.75)	0.743	0.738	0.749
9.Receptacle inside thickness (2.52~2.60)	2.559	2.565	2.554

**8.3. Clause 3.7.8.1 Low level contact resistance**

A-1-1 Low level contact resistance			
Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 24.1 °C / 60.7 %RH	Huang Siwei	Pass
Test condition	Mated; Maximum open circuit voltage 20 mV; Test current 100 mA.		
Criteria	≤40 mΩ (Initial)		

A-1-1 Low Level Contact Resistance (mΩ)												
Sample Coding	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
UT01aa	21.5	N/A	N/A	23.7	20.1	21.2	21.6	20.8	17.1	N/A	N/A	16.9
UT02aa	21.6	N/A	N/A	23.9	20.6	20.8	20.8	20.5	16.9	N/A	N/A	16.5
UT03aa	21.9	N/A	N/A	23.6	20.5	22.5	21.8	21.0	17.1	N/A	N/A	17.0
UT04aa	22.1	N/A	N/A	24.1	20.8	21.6	21.1	21.1	17.9	N/A	N/A	17.5
UT05aa	21.6	N/A	N/A	24.0	20.5	21.7	20.6	20.4	17.3	N/A	N/A	17.1
UT06aa	22.1	N/A	N/A	23.9	21.0	21.8	21.7	21.2	17.8	N/A	N/A	18.5
UT07aa	22.0	N/A	N/A	24.2	21.8	21.0	21.1	21.4	17.9	N/A	N/A	17.7
UT08aa	21.4	N/A	N/A	23.5	20.1	20.7	20.5	20.4	17.1	N/A	N/A	16.7
UT09aa	22.0	N/A	N/A	23.8	20.6	21.6	21.1	20.9	17.2	N/A	N/A	17.2
UT10aa	21.8	N/A	N/A	24.3	20.7	21.2	21.4	20.7	17.5	N/A	N/A	16.8
Sample Coding	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
UT01aa	21.1	N/A	N/A	19.6	20.5	20.9	20.7	20.9	19.7	N/A	N/A	18.9
UT02aa	21.5	N/A	N/A	20.1	20.5	20.3	20.8	20.7	19.6	N/A	N/A	18.9
UT03aa	21.5	N/A	N/A	19.9	20.4	20.3	20.6	21.3	19.7	N/A	N/A	19.0
UT04aa	21.9	N/A	N/A	20.2	20.8	20.9	21.1	21.2	20.2	N/A	N/A	19.3
UT05aa	21.1	N/A	N/A	19.8	20.6	20.9	20.9	20.6	19.7	N/A	N/A	18.8
UT06aa	21.9	N/A	N/A	20.3	21.1	21.3	21.8	21.2	20.7	N/A	N/A	19.4
UT07aa	21.8	N/A	N/A	20.3	21.3	21.5	21.7	21.0	20.2	N/A	N/A	19.4
UT08aa	21.4	N/A	N/A	20.0	22.3	22.5	20.6	22.3	19.9	N/A	N/A	18.9
UT09aa	21.3	N/A	N/A	19.8	20.5	20.8	20.7	20.6	19.8	N/A	N/A	19.1
UT10aa	21.8	N/A	N/A	20.1	20.6	21.2	20.9	20.8	19.8	N/A	N/A	19.2

**A-2-1 Low level contact resistance**

Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 24.1 °C / 60.7 %RH	Huang Siwei	Pass
Test condition	Mated; Maximum open circuit voltage 20 mV; Test current 100 mA.		
Criteria	≤40 mΩ (Initial)		

A-2-1 Low Level Contact Resistance (mΩ)

Sample Coding	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
UT11aa	21.7	N/A	N/A	23.8	20.5	20.7	20.6	20.3	17.0	N/A	N/A	16.7
UT12aa	21.7	N/A	N/A	23.6	20.4	20.4	20.3	20.6	17.5	N/A	N/A	16.8
UT13aa	21.9	N/A	N/A	24.7	20.7	21.3	21.2	20.9	17.2	N/A	N/A	16.9
UT14aa	21.9	N/A	N/A	23.7	20.6	21.2	20.9	20.6	17.5	N/A	N/A	17.0
UT15aa	22.2	N/A	N/A	24.7	20.9	21.8	22.2	21.4	17.7	N/A	N/A	17.2
UT16aa	21.4	N/A	N/A	23.6	20.5	21.2	20.5	20.4	17.1	N/A	N/A	16.6
UT17aa	22.2	N/A	N/A	25.0	21.2	21.3	21.7	21.3	17.6	N/A	N/A	19.6
UT18aa	21.4	N/A	N/A	23.8	20.3	20.6	21.0	20.6	17.0	N/A	N/A	16.6
UT19aa	21.3	N/A	N/A	23.9	20.7	20.7	20.6	20.7	17.5	N/A	N/A	17.1
UT20aa	21.5	N/A	N/A	23.4	20.5	20.4	20.1	20.2	17.2	N/A	N/A	16.9
Sample Coding	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
UT11aa	21.1	N/A	N/A	19.9	20.8	21.0	21.2	20.8	19.6	N/A	N/A	18.7
UT12aa	21.3	N/A	N/A	19.8	20.5	20.6	20.6	20.5	19.7	N/A	N/A	18.7
UT13aa	21.7	N/A	N/A	20.1	20.6	20.8	21.3	21.0	20.7	N/A	N/A	19.3
UT14aa	21.5	N/A	N/A	20.0	20.5	21.8	21.0	22.1	19.9	N/A	N/A	19.0
UT15aa	21.9	N/A	N/A	20.2	20.9	21.4	21.6	21.0	20.4	N/A	N/A	19.1
UT16aa	21.2	N/A	N/A	19.8	20.3	21.6	20.8	20.6	19.7	N/A	N/A	18.9
UT17aa	22.4	N/A	N/A	20.4	20.9	27.4	21.4	21.0	20.4	N/A	N/A	19.3
UT18aa	21.8	N/A	N/A	19.6	20.6	21.7	22.1	20.5	19.9	N/A	N/A	18.7
UT19aa	21.7	N/A	N/A	20.1	20.7	22.4	20.7	20.8	20.0	N/A	N/A	19.1
UT20aa	20.8	N/A	N/A	19.6	20.3	20.6	20.4	20.7	19.4	N/A	N/A	18.6



A-3-1 Low level contact resistance

Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 24.1 °C / 60.7 %RH	Huang Siwei	Pass
Test condition	Mated; Maximum open circuit voltage 20 mV; Test current 100 mA.		
Criteria	≤40 mΩ (Initial)		

A-3-1 Low Level Contact Resistance (mΩ)

Sample Coding	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
UT21aa	21.9	N/A	N/A	24.7	21.1	21.4	21.7	20.9	17.5	N/A	N/A	16.8
UT22aa	22.4	N/A	N/A	23.5	20.1	21.4	20.3	21.3	17.9	N/A	N/A	16.4
UT23aa	22.5	N/A	N/A	25.0	21.4	21.7	20.7	21.1	17.6	N/A	N/A	17.2
UT24aa	22.0	N/A	N/A	23.8	21.4	20.1	21.1	21.0	17.2	N/A	N/A	16.5
UT25aa	22.5	N/A	N/A	23.5	21.0	21.6	21.4	20.8	17.8	N/A	N/A	16.2
UT26aa	22.7	N/A	N/A	24.4	21.4	20.5	20.5	21.9	17.2	N/A	N/A	16.3
UT27aa	21.0	N/A	N/A	24.1	20.2	21.3	21.5	21.5	17.5	N/A	N/A	16.6
UT28aa	22.5	N/A	N/A	23.1	20.0	22.0	21.6	20.7	17.7	N/A	N/A	17.0
UT29aa	22.8	N/A	N/A	24.1	20.5	20.1	20.5	20.7	17.3	N/A	N/A	16.8
UT30aa	22.2	N/A	N/A	23.2	21.3	21.7	21.1	20.8	17.4	N/A	N/A	17.2
Sample Coding	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
UT21aa	21.1	N/A	N/A	20.2	20.9	21.2	20.7	20.2	20.5	N/A	N/A	19.8
UT22aa	21.7	N/A	N/A	19.9	20.4	20.3	20.5	21.7	20.9	N/A	N/A	19.6
UT23aa	21.3	N/A	N/A	20.5	20.0	21.8	21.9	20.7	20.2	N/A	N/A	20.0
UT24aa	21.2	N/A	N/A	20.9	20.5	21.3	20.9	21.6	19.1	N/A	N/A	19.0
UT25aa	21.9	N/A	N/A	20.6	21.0	20.2	21.9	21.1	19.2	N/A	N/A	18.2
UT26aa	21.9	N/A	N/A	19.9	20.6	21.0	20.7	20.9	19.5	N/A	N/A	18.3
UT27aa	21.2	N/A	N/A	20.3	20.8	21.7	20.9	20.2	20.7	N/A	N/A	19.7
UT28aa	22.0	N/A	N/A	19.2	20.3	21.1	21.6	21.0	20.5	N/A	N/A	19.8
UT29aa	21.7	N/A	N/A	19.6	20.4	21.1	20.1	21.6	20.8	N/A	N/A	19.4
UT30aa	21.3	N/A	N/A	19.7	20.5	21.5	20.7	20.4	19.0	N/A	N/A	19.8

**A-4-1 Low level contact resistance**

Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 24.1 °C / 60.7 %RH	Huang Siwei	Pass
Test condition	Mated; Maximum open circuit voltage 20 mV; Test current 100 mA.		
Criteria	≤40 mΩ (Initial)		

A-4-1 Low Level Contact Resistance (mΩ)

Sample Coding	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
UT31aa	22.8	N/A	N/A	23.3	20.3	21.2	20.9	21.0	17.6	N/A	N/A	16.9
UT32aa	21.1	N/A	N/A	24.8	21.4	20.6	21.6	20.5	17.6	N/A	N/A	17.3
UT33aa	21.1	N/A	N/A	23.9	21.1	21.0	20.7	21.5	17.8	N/A	N/A	16.2
UT34aa	22.3	N/A	N/A	24.0	21.4	21.3	21.5	20.9	17.6	N/A	N/A	16.5
UT35aa	22.3	N/A	N/A	23.5	20.2	20.0	21.7	20.4	17.7	N/A	N/A	16.6
UT36aa	21.8	N/A	N/A	23.5	20.3	21.1	21.5	21.0	17.2	N/A	N/A	16.3
UT37aa	21.7	N/A	N/A	24.9	20.5	21.4	21.9	20.3	17.4	N/A	N/A	16.4
UT38aa	21.4	N/A	N/A	23.4	20.8	20.5	21.3	21.7	17.7	N/A	N/A	17.3
UT39aa	21.5	N/A	N/A	23.2	21.4	20.5	21.0	21.9	17.9	N/A	N/A	16.6
UT40aa	22.4	N/A	N/A	24.5	21.2	21.6	20.5	20.3	17.0	N/A	N/A	17.1
UT41aa	22.5	N/A	N/A	24.4	20.2	20.1	20.5	21.5	17.9	N/A	N/A	17.2
UT42aa	21.8	N/A	N/A	24.0	20.4	20.2	21.0	21.3	17.8	N/A	N/A	17.4
UT43aa	22.6	N/A	N/A	24.4	20.1	21.4	21.3	21.5	17.7	N/A	N/A	17.0
UT44aa	22.5	N/A	N/A	24.1	20.5	21.2	21.0	20.6	17.8	N/A	N/A	16.4
UT45aa	22.1	N/A	N/A	24.0	20.4	21.6	20.7	21.5	17.6	N/A	N/A	16.5
UT46aa	22.9	N/A	N/A	23.4	20.3	21.2	22.0	20.5	18.0	N/A	N/A	16.4
UT47aa	21.0	N/A	N/A	23.3	20.8	20.6	20.3	21.9	17.3	N/A	N/A	16.7
UT48aa	21.4	N/A	N/A	24.0	20.0	21.2	20.6	20.4	17.4	N/A	N/A	16.1
UT49aa	22.9	N/A	N/A	23.1	20.3	20.0	21.3	22.0	17.5	N/A	N/A	16.8
UT50aa	22.5	N/A	N/A	24.1	20.5	20.2	20.8	20.7	17.3	N/A	N/A	17.3



A-4-1 Low Level Contact Resistance (mΩ)												
Sample Coding	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
UT31aa	21.1	N/A	N/A	20.1	20.2	21.7	21.1	21.4	20.8	N/A	N/A	19.8
UT32aa	21.5	N/A	N/A	19.4	20.8	21.0	21.5	20.3	19.3	N/A	N/A	18.9
UT33aa	21.4	N/A	N/A	20.3	20.9	21.3	21.5	21.7	20.4	N/A	N/A	18.5
UT34aa	21.7	N/A	N/A	19.6	20.0	21.6	21.6	20.9	20.8	N/A	N/A	20.0
UT35aa	21.2	N/A	N/A	20.9	20.7	20.5	20.4	21.6	20.5	N/A	N/A	18.9
UT36aa	21.8	N/A	N/A	21.0	20.0	21.7	20.2	20.8	19.8	N/A	N/A	18.8
UT37aa	21.8	N/A	N/A	20.5	20.4	20.1	20.5	20.1	20.1	N/A	N/A	18.8
UT38aa	21.1	N/A	N/A	19.2	20.0	21.9	20.6	21.1	19.1	N/A	N/A	18.2
UT39aa	21.1	N/A	N/A	20.7	20.3	21.0	20.5	21.3	19.6	N/A	N/A	19.7
UT40aa	21.6	N/A	N/A	20.6	20.7	20.5	21.2	20.9	19.6	N/A	N/A	19.4
UT41aa	21.3	N/A	N/A	20.2	20.1	21.6	21.7	21.7	19.6	N/A	N/A	18.8
UT42aa	21.6	N/A	N/A	19.0	20.9	21.6	21.2	21.2	19.1	N/A	N/A	19.6
UT43aa	22.0	N/A	N/A	19.8	20.1	20.8	20.0	20.1	19.3	N/A	N/A	19.7
UT44aa	21.4	N/A	N/A	19.5	21.0	20.2	20.8	20.3	19.4	N/A	N/A	18.7
UT45aa	21.1	N/A	N/A	20.3	20.5	21.2	20.5	20.3	19.3	N/A	N/A	18.1
UT46aa	22.0	N/A	N/A	20.7	20.4	21.3	22.0	20.6	20.0	N/A	N/A	19.3
UT47aa	21.4	N/A	N/A	20.8	20.9	20.1	20.3	21.7	19.4	N/A	N/A	19.3
UT48aa	21.5	N/A	N/A	19.4	20.8	20.3	22.0	21.9	20.6	N/A	N/A	18.5
UT49aa	21.5	N/A	N/A	20.5	20.4	20.7	20.6	21.3	20.5	N/A	N/A	19.0
UT50aa	21.7	N/A	N/A	19.8	20.1	21.6	20.9	21.7	20.0	N/A	N/A	19.0

**A-7-2 Low level contact resistance**

Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 24.1 °C / 60.7 %RH	Huang Siwei	Pass
Test condition	Mated; Maximum open circuit voltage 20 mV; Test current 100 mA.		
Criteria	≤40 mΩ (Initial)		

Test data:**A-7-2 Low Level Contact Resistance (mΩ)**

Sample Coding	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
UT51aa	22.2	N/A	N/A	23.6	21.8	20.3	20.2	20.0	17.9	N/A	N/A	16.2
UT52aa	21.6	N/A	N/A	23.1	21.0	20.9	21.2	21.8	17.4	N/A	N/A	16.9
UT53aa	22.5	N/A	N/A	24.1	21.5	21.8	21.0	20.3	17.4	N/A	N/A	17.9
UT54aa	21.2	N/A	N/A	23.5	20.8	21.7	21.0	20.6	17.5	N/A	N/A	17.3
UT55aa	22.8	N/A	N/A	23.9	20.4	20.1	20.1	21.6	17.1	N/A	N/A	17.9
UT56aa	22.2	N/A	N/A	25.0	20.2	20.0	21.3	21.9	17.0	N/A	N/A	17.2
UT57aa	22.3	N/A	N/A	24.9	22.0	22.0	20.8	20.3	17.5	N/A	N/A	16.7
UT58aa	22.6	N/A	N/A	24.1	21.2	20.9	21.5	20.7	18.0	N/A	N/A	16.8
UT59aa	21.1	N/A	N/A	24.3	21.2	21.1	20.8	21.9	17.6	N/A	N/A	16.7
UT60aa	21.7	N/A	N/A	24.8	20.1	20.1	21.3	20.7	17.4	N/A	N/A	17.3
Sample Coding	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
UT51aa	23.0	N/A	N/A	19.8	20.6	21.1	21.0	21.5	19.5	N/A	N/A	19.4
UT52aa	21.3	N/A	N/A	19.4	20.1	21.8	20.5	20.3	19.8	N/A	N/A	18.7
UT53aa	22.6	N/A	N/A	19.8	20.8	20.8	20.5	21.8	19.7	N/A	N/A	18.5
UT54aa	22.0	N/A	N/A	19.5	20.8	21.9	21.1	20.1	19.8	N/A	N/A	19.5
UT55aa	22.9	N/A	N/A	19.1	20.2	20.4	20.2	21.0	20.6	N/A	N/A	18.7
UT56aa	21.4	N/A	N/A	19.8	20.5	21.4	21.6	20.4	19.5	N/A	N/A	19.7
UT57aa	21.3	N/A	N/A	20.4	20.2	21.2	20.9	21.3	19.3	N/A	N/A	19.1
UT58aa	22.5	N/A	N/A	19.2	21.0	21.5	20.9	21.7	19.5	N/A	N/A	19.2
UT59aa	22.0	N/A	N/A	19.5	20.8	21.8	21.0	20.5	19.7	N/A	N/A	18.5
UT60aa	22.8	N/A	N/A	20.3	21.0	21.5	20.2	20.4	20.7	N/A	N/A	19.1

8.4. Clause 3.8.1.1 Insertion force

A-7-4 Insertion Force			
Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 21.6 °C / 66.4 %RH	Zhan Weilong	Pass
Test condition	Speed: 12.5mm/min; Insertion depth: 4.8mm.		
Criteria	Insertion force:5N~20N		

Test data:					
A-7-4 Insertion Force					
Sample Coding	UT51aa	UT52aa	UT53aa	UT54aa	UT55aa
Insertion force (N)	10.3	11.9	18.4	18.9	19.2
Sample Coding	UT56aa	UT57aa	UT58aa	UT59aa	UT60aa
Insertion force (N)	9.9	18.5	10.2	12.2	16.8

8.5. Clause 3.8.1.1 Extraction force

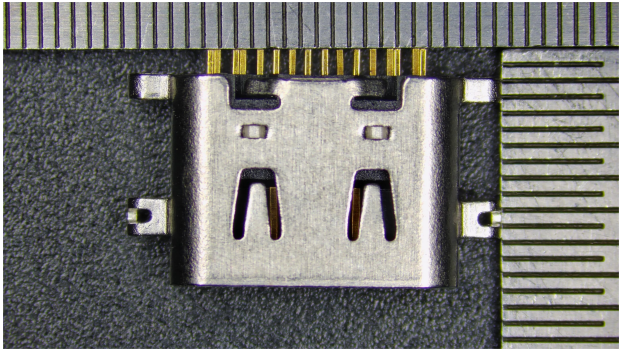
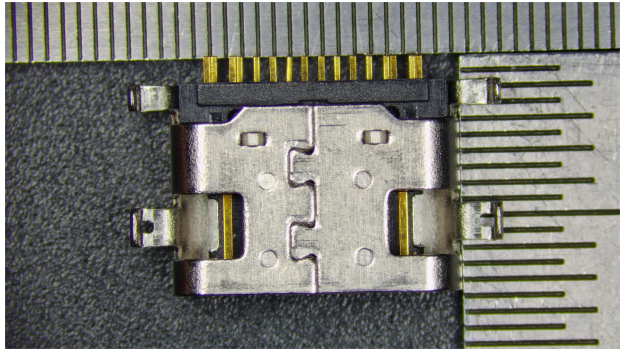
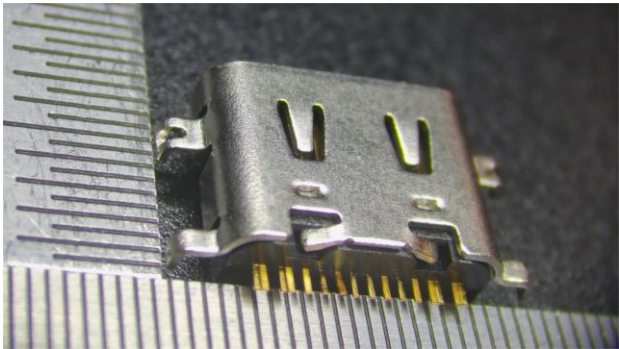
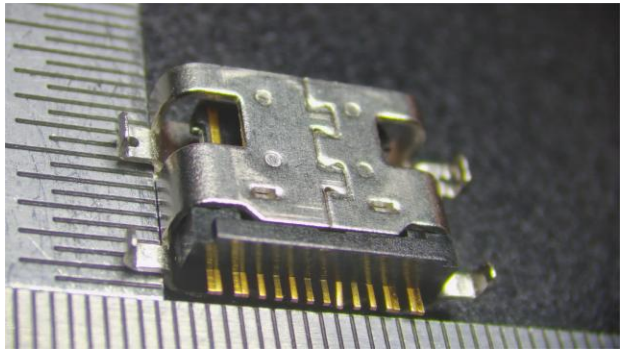
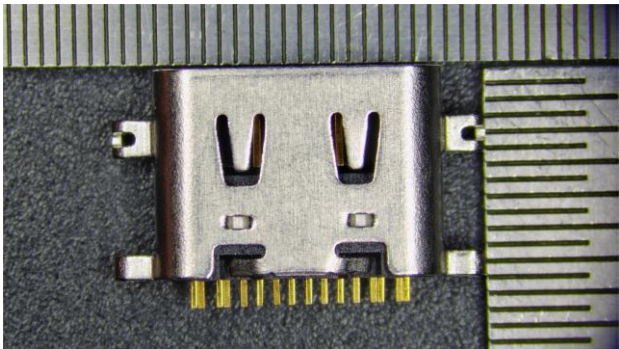
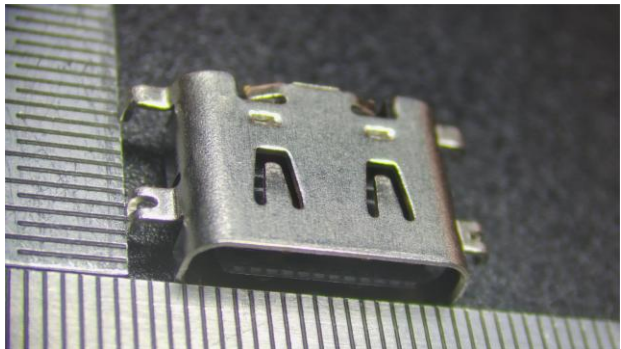
A-7-5 Extraction Force			
Testing Period	Measure environment	Test Engineer	Test Result
2024/03/28-2024/03/28	Temp. 21.6 °C / 66.4 %RH	Zhan Weilong	Pass
Test condition	Speed: 12.5mm/min; Extraction depth: 4.8mm.		
Criteria	Extraction force: 8N~20N(Initial reading)		

Test data:					
A-7-5 Extraction Force					
Sample Coding	UT51aa	UT52aa	UT53aa	UT54aa	UT55aa
Extraction force (N)	13.7	19.3	18.2	12.9	17.2
Sample Coding	UT56aa	UT57aa	UT58aa	UT59aa	UT60aa
Extraction force (N)	13.1	16.3	12.4	16.0	18.6

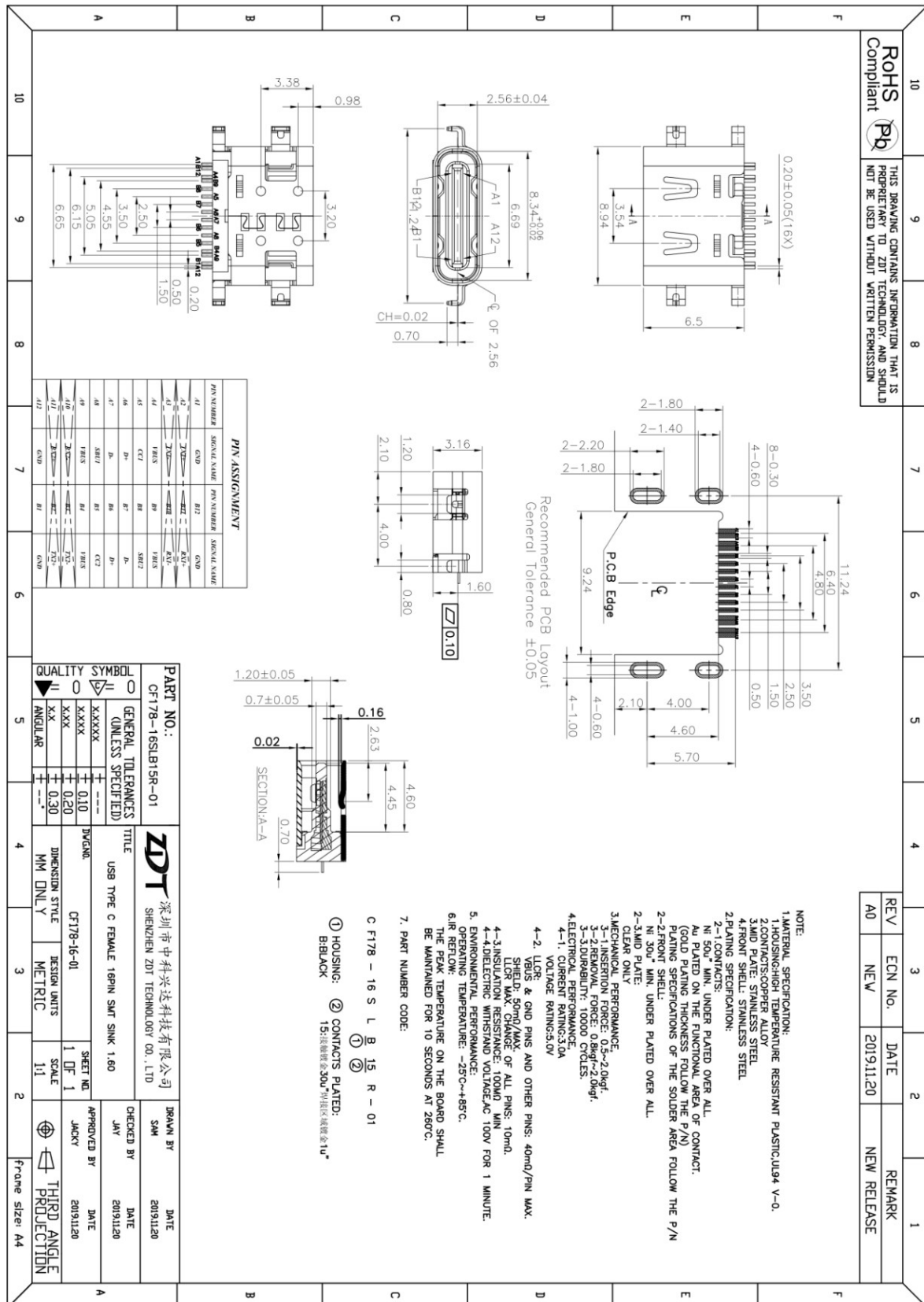
9. Test Equipments Utilized

Name	Model	Serial number	Calibration Date	Expire Date
4-axis Tester	YH-8812WEXT	17068812429	2023.11.27	2024.11.26
4-axis Tester	YH-8812WEXT	17068812430	2023.11.27	2024.11.26
Microscope	MM-400/L	3413948	2023.11.27	2024.11.26
Micro-ohmmeter	RM3545	170938239	2023.11.27	2024.11.26

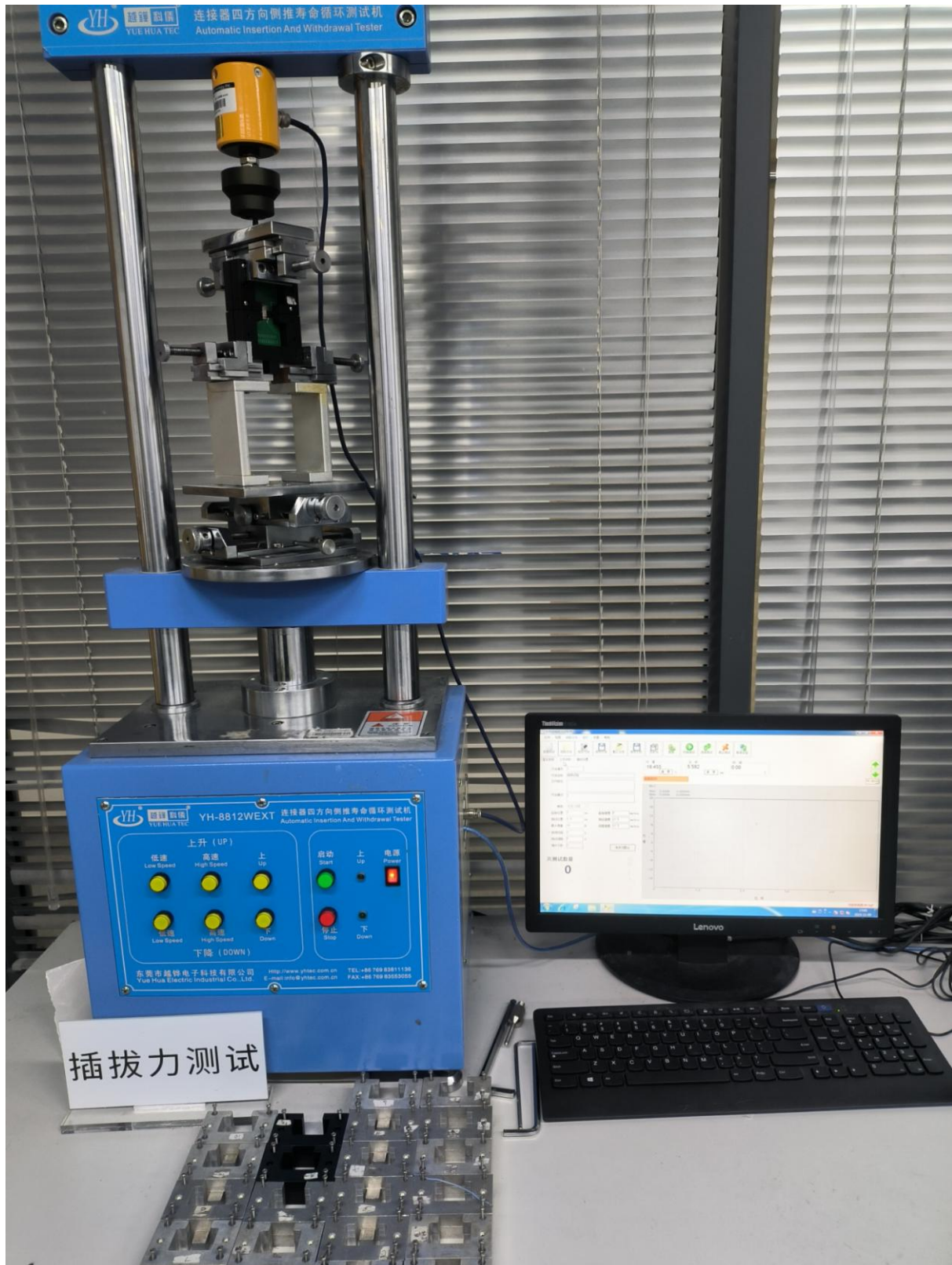
ANNEX A: UUT photograph

	
Top	Buttom
	
Top	Buttom
	
Receptacle	Receptacle

ANNEX B: Drawing



ANNEX C: Insertion Force & Extraction Force Test Layout



ANNEX D: The original test report [ZDT-DG-04102001]**USB Type-C Connector
Compliance Test Report**

Apr.16,2020

Customer ID	SHEN ZHEN ZDT TECHNOLOGY CO.,LTD
GRL Project Number	ZDT-DG-04102001
Customer Contact	Address: No43B, NO2 industrial estate, Xitian, Gongming Town, Guangming District, Shenzhen Tel : 0755-29420399 Email: liuqingsheng@zdtconn.com
Product Marketing Name	USB TYPE C FEMALE 16PIN SMT SINK 1.60
Product Model Name	CF178-16SLB15R-01
Product TID	3379
Product Type	☒ USB Type-C Receptacle ☐ USB Type-C Plug
Scope of Testing	USB Type-C Connector Compliance Test
Test Results	PASS
GRL Test Engineer	Jack Tan
GRL Reviewer	Jesson Li

LEGAL DISCLAIMER:

1. This test report is subject to Granite River Labs Inc. Standard Terms & Conditions, and does not guarantee the quality or functionality of the device tested, compliance with any specifications, or interoperability with other products. Customer is solely responsible for the quality, functionality, interoperability, and specification conformance of Customer's products.
2. This report is based on the information Customer has supplied to GRL and Customer's representation of the device tested. Test result is valid only to the original tested device model.

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1. Project Summary

This USB Type-C Connector Compliance Test Report performs the DC electrical, Mechanical and Environmental Compliance tests.

The compliance test is based on the following documents:

- *Universal Serial Bus Type-C Cable and Connector Specification Release 2.0 August 2019*
- *Universal Serial Bus Type-C Connectors and Cable Assemblies Compliance Document, Revision 1.2, August 22, 2017.*
- *EIA Standard EIA-364*

GRL

**2. Test Summary**

Group B-1		
B-1-3 : 4-Axis Continuity	No discontinuities greater than 1 microsecond duration in any of the four orientations tested.	PASS
Group B-5		
B-5-1 : Critical Dimension	Meet all critical dimension requirements defined in Compliance Document	PASS
B-5-2 : EMC Shielding Spring Inspection	No EMC shielding spring finger tip of the USB Full-Featured Type-C plug or USB 2.0 Type-C plug shall be exposed in the plug housing opening of the unmated Type-C plug.	PASS

**3. Test Equipment**

Mechanical Equipment			
Equipment Name	Model No	Calibration Date	Due Date
Mating/Un-mating Tester	ZL-2809	2019-07-18	2020-07-17
Discontinuity Tester	TS-713	2020-03-17	2021-03-16
Image measuring instrument	3020	2020-03-16	2021-03-15

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**4. Primary Qualification Approval Testing**

Test Group	Number of Specimens(pcs)	Sample No.
Group B-1	8	b1_1 ~b1_8
Group B-5	3	b5_1 ~b5_3

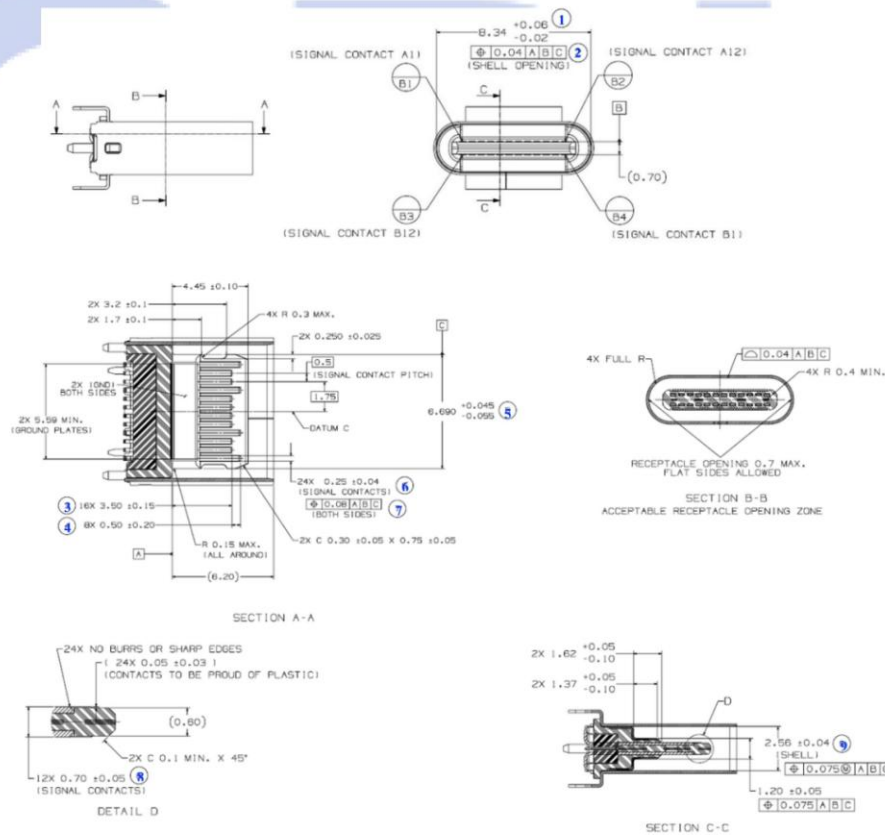
5. Test Result**5.1. Test Group B-1**

Group B-1		
B-1-3 : 4-Axis Continuity	No discontinuities greater than 1 microsecond duration in any of the four orientations tested.	PASS

5.2. Test Group B-5

Group B-5		
B-5-1 : Critical Dimension	Meet all critical dimension requirements defined in Compliance Document	PASS
B-5-2 : EMC Shielding Spring Inspection	Visually inspect EMC shielding spring finger tip that No exposed in the receptacle housing opening.	PASS

Figure B-1 USB Type-C receptacle



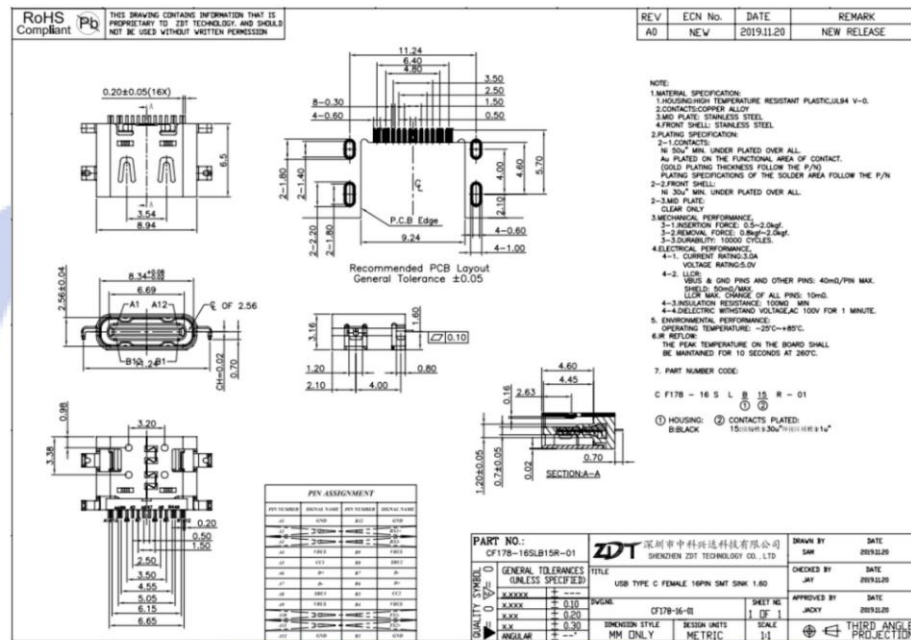
5.2.1. B-5-1 Critical Dimensions

B-5-1 Critical Dimensions (Unit: mm)							
Description\ Samples No	b5_1	b5_2	b5_3	DIMENSION	+TOL	-TOL	P/F
1. Receptacle inside opening	8.335	8.331	8.335	8.34	0.06	0.02	Pass
2. Receptacle insider opening position tolerance	0.02	0.01	0.02	0.04 with datum A/B/C	n/a	n/a	Pass
3. Receptacle signal pin length	3.531	3.502	3.577	3.50	0.15	0.15	Pass
4. Pin length delta	0.543	0.506	0.497	0.50	0.20	0.20	Pass
5. Tongue width	6.722	6.714	6.718	6.690	0.045	0.055	Pass
6. Contact width	0.254	0.232	0.244	0.25	0.04	0.04	Pass
7. Contact width position tolerance	0.03	0.01	0.01	0.08 with datum A/B/C	n/a	n/a	Pass
8. Tongue thickness	0.694	0.711	0.710	0.70	0.05	0.05	Pass
9. Receptacle inside thickness	2.571	2.564	2.572	2.56	0.04	0.04	Pass
Notes :							
1. All dimensions are in millimeters.							

USB Type-C Connector Compliance Test Report

GRL Project: ZDT-DG-04102001
Apr.16, 2020

Appendix A : Drawing



Appendix B : Product Photo

--End of Report--

*****END OF REPORT*****