

**2 Pin Wire to Wire Connector****1. Purpose:**

This is qualification test. The purpose of this test is to evaluate the performance of 2 Pin Wire to Wire Connector. Testing was performed on below products to determine it compliance with the requirements of product specification 108-137020.

**2. Scope:**

This is test report for 2 Pin Wire to Wire Connector. Testing was performed at TE Connectivity Shanghai Electrical Components Test Laboratory between June 01st, 2016 and July 29th, 2014.

**3. Conclusion:**

The product met the electrical, mechanical, and environmental performance requirements of TE product specification 108-137020.

**4. Test samples:**

Samples were taken randomly from current production. The following part numbers were used for test:

Description	Product Part No.
Plug 2 Pin Wire to Wire Connector	2271180-1
Receptacle 2 Pin Wire to Wire Connector	2271183-1
2 Pin Wire to Wire Connector (Mated)	2271203-1

**5. Test Method****5.1 Examination of Product**

Visual, dimensional and functional per applicable inspection plan.

Requirements: Meets requirements of product drawing

Test Method: In accordance with EIA-364-18

**5.2 Contact Resistance**

Subject the specimen to maximum allowed rating current (3A) and measure the contact resistance.

Requirements: 25mΩ Max.

Test Method: EIA-364-06

**5.3 Insulation resistance**

Unmated connector with 100V DC between adjacent contacts for 1 min.

Requirements: 100 MΩMin.

Test Method: EIA-364-21

**5.4 Dielectric strength**

Unmated connector with 2200 V AC between adjacent contacts for 1 min. Leakage current 0.5mA

Requirements: No breakdown.

Test Method: EIA-364-70

#### 5.5 Current rating

Measured at maximum rated current with series all contacts.

Current: 5A Max. (18AWG) ; 4 A Max.(22AWG)

Requirement: Temperature rise should be 30°C Max.

Test method: EIA-364-70

#### 5.6 Durability

Mating and unmating specimens for 10 cycles at a max rate of 500 cycles per hour.

Requirement: No mechanical damage; No change to performance; Contact resistance: 25mΩ Max;

Test method: EIA-364-09

#### 5.7 Vibration, Random

Subject mated specimens to 3.10G's rms between 20~500HZ. Fifteen minutes in each of 3 mutually perpendicular planes.

Requirements: Discontinuity max 1  $\mu$  s

Test method: EIA-364-28, Test Condition VII, Condition D

#### 5.8 Mechanical shock

Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Requirements: Discontinuity max 1  $\mu$  s

Test method: EIA-364-27, Condition H

#### 5.9 Wire insertion force

Measuring max force during wire insertion operation. Operating speed : 10mm/minute.

Requirements: 15N Max for 18 AWG Solid Wire and 22AWG Solid Wire

30N Max for Tin Dipped 18 AWG stranded wire (16 strands) and 22AWG stranded wire (7 strands)

Test method: EIA-364-13

#### 5.10 Wire retention force

Measuring max force during wire pull out operation. Operating speed : 10mm/minute.

Requirements: 44.5N Min. for 18 AWG solid wire or Tin dipped 18 AWG stranded wire (16 strands)

35.6N Min. for 22 AWG solid wire or Tin dipped 22 AWG stranded wire (7 strands)

Test method: EIA-364-13

#### 5.11 Mating force

Measure force necessary to mate specimens at a max rate of 12.7mm per minute.

Requirements: 40 Max.

Test method: EIA-364-13

#### 5.12 Unmating force

Measure force necessary to unmate specimens at a max rate of 12.7mm per minute.

Requirements: 8N Min.

Test method: EIA-364-13

#### 5.13 Thermal Shock

Subject specimens to 25 cycles between -40 and 105°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.

Requirements: Contact resistance 25mΩ Max.

Test method: EIA-364-32, Test Condition VII

#### 5.14 Humidity (cycling Temperature)

Subject specimens to 10 cycles (10 days) between 25 °C and 65 °C at 80 to 100% RH.

Requirements: Contact resistance 25mΩ Max.

Test method: EIA-364-31, Method III

#### 5.15 Temperature life

Subject mated specimens to 105 °C for 250 hours. Measure resistance without opening the mating.

Requirements: Contact resistance 25mΩ Max.

Test method: EIA-364-17, Method B, Test Condition 4.

#### 6. Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C      Relative Humidity: 25% to 75%

7. Test Sequence

Test group	a	b	c	d	e	f
Examination of product	1, 6	1, 13	1, 8	1, 10	1, 4	1
Contact resistance	2, 5	3, 8, 11		4, 7	2	
Insulation resistance			3, 6			
Withstanding Voltage			2, 7			
Current rating					3	
Random vibration	4					
Mechanical shock	3					
Durability		5				
Mating force		2, 6		2, 8		
Unmating force		4, 7		3, 9		
Thermal shock		9	4			
Wire insertion force						2
Wire retention force						3
Humidity -temperature cycling		10	5			
Temperature life				5		
Sample size	5	5	5	5	5	5

8. Test Result

Group	Test Item	N	Condition	Test Result			Requirement	Judgment
				Max	Min	Ave		
A	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Contact resistance	5	Initial	9.55	8.46	9.10	<25mΩ	Pass
	Mechanical Shock	5	Final	No discontinuities of 1 microsecond or longer duration occurred			No abnormalities	Pass
	Random Vibration	5	Final	No discontinuities of 1 microsecond or longer duration occurred			No abnormalities	Pass
	Contact resistance	5	Final	12.56	10.14	11.83	<25mΩ	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
B	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Mating force	5	Initial	17.38	14.12	16.54	<40N	Pass
	Contact resistance	5	Initial	11.13	8.24	9.68	<25mΩ	Pass
	Unmating force	5	Initial	19.81	16.21	18.41	>8N	Pass
	Durability		Final	No physical damage occurred			No abnormal	Pass

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	Mating force	5	Final	11.90	8.75	9.97	<40N	Pass
	Unmating force	5	Final	12.26	10.07	11.35	>8N	Pass
	Contact resistance	5	Final	10.57	8.79	9.73	<25mΩ	Pass
	Thermal Shock	5	Final	No physical damage occurred			No abnormalities	Pass
	Humidity (cycling Temperature	5	Final	No physical damage occurred			No abnormalities	Pass
	Contact resistance	5	Final	14.08	10.49	12.20	<25mΩ	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
C	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Withstanding Voltage	5	Initial	No breakdown			No abnormalities	Pass
	Insulation resistance	5	Initial	6.80E+11	4.85E+11	6.01E+11	>100MΩ	Pass
	Thermal shock	5	Final	No physical damage occurred			No abnormalities	Pass
	Humidity (cycling Temperature	5	Final	No physical damage occurred			No abnormalities	Pass
	Withstanding Voltage	5	Final	No breakdown			No abnormalities	Pass
	Insulation resistance	5	Final	7.64E+9	5.97E+9	6.57E+9	>100MΩ	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
D	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Mating force	5	Initial	28.21	21.21	25.30	<40N	Pass
	Unmating force	5	Initial	24.50	17.55	22.57	>8N	Pass
	Contact resistance	5	Initial	9.88	8.49	9.24	<25mΩ	Pass
	Temperature life	5	Final	No physical damage occurred			No abnormalities	Pass
	Contact resistance	5	Final	10.04	8.54	9.23	<25mΩ	Pass
	Mating force	5	Final	13.58	11.70	12.85	<40N	Pass
	Unmating force	5	Final	15.91	11.93	13.02	>8N	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass

E	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Contact resistance	5	Final	6.01	4.25	5.04	No abnormalities	Pass
	Current rating (18AWG@5A)	5	Final	14.54	11.59	13.10	<30°C	Pass
	Current rating (22AWG@4A)	5	Final	26.67	23.00	25.18	<30°C	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
F	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Wire insertion force (18AWG solid)	5	Final	14.34	11.28	12.50	<15N	Pass
	Wire insertion force (18AWG Tin dipped)	5	Final	19.28	16.31	18.02	<30N	Pass
	Wire insertion force (22AWG solid)	5	Final	11.37	7.60	9.50	<15N	Pass
	Wire insertion force (22AWG Tin dipped)	5	Final	16.54	9.56	11.77	<30N	Pass
	Wire retention force (18AWG solid)	5	Final	81.19	66.19	74.52	>44.5N	Pass
	Wire retention force (18AWG Tin dipped)	5	Final	98.56	90.16	93.31	>44.5N	Pass
	Wire retention force (22AWG solid)	5	Final	44.94	41.28	43.04	>35.6N	Pass
	Wire retention force (22AWG Tin dipped)	5	Final	48.44	44.06	45.93	>35.6N	Pass

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