

**PDL Tab contacts with alternate material (5-705757-1)****1. INTRODUCTION**

1.1. Purpose

Testing was performed on PDL Tab Contacts with alternate material (5-705757-1) to determine its conformance to the requirements of product specification 108-5410 Revision K.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of PDL Tab Contacts with alternate material (5-705757-1). Testing was performed at the Shanghai Electrical Components Test Laboratory between 34Mar2020 and 15Apr2020. The test file number for this testing is on file and maintained at the TE Shanghai Electrical Components Test Laboratory under TP-20-00216-RECORD.

1.3. Conclusion

All part numbers listed in Paragraph 1.4 conformed to the electrical, mechanical, and environmental performance requirements of product specification 108-5410 Revision K.

1.4. Test Specimens

Test Group	Quantity	Part Number	Description
1	20	368571-1 (2369504-1)	PDL Plug 3P
	20	368572-1 (2369505-1)	PDL Cap 3P
	20	1-368575-1 (2369506-1)	PDL Plug 4P
	20	1-368587-1 (2369507-1)	PDL Cap 4P
	20	368576-1 (2369508-1)	PDL Plug 6P
	20	2005253-1 (2369509-1)	PDL Cap 6P
	260	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
	260	177917-1 (2369503-1)	PDL Tab Contact L (Mat'l 5-705757-1) 20AWG
2	20	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
	20	177917-1 (2369503-1)	PDL Tab Contact L (Mat'l 5-705757-1) 20AWG
3	20	368571-1 (2369504-1)	PDL Plug 3P
	20	368572-1	PDL Cap 3P

		(2369505-1)	
	20	1-368575-1 (2369506-1)	PDL Plug 4P
	20	1-368587-1 (2369507-1)	PDL Cap 4P
	20	368576-1 (2369508-1)	PDL Plug 6P
	20	2005253-1 (2369509-1)	PDL Cap 6P
	120	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
	120	177917-1 (2369503-1)	PDL Tab Contact L (Mat'l 5-705757-1) 20AWG
4	20	368571-1 (2369504-1)	PDL Plug 3P
	20	368572-1 (2369505-1)	PDL Cap 3P
	20	1-368575-1 (2369506-1)	PDL Plug 4P
	20	1-368587-1 (2369507-1)	PDL Cap 4P
	20	368576-1 (2369508-1)	PDL Plug 6P
	20	2005253-1 (2369509-1)	PDL Cap 6P
	260	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
5	20	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
	20	177917-1 (2369503-1)	PDL Tab Contact L (Mat'l 5-705757-1) 20AWG
	20	2232902-1 (2369501-1)	PDL Rec Contact S 24AWG
	20	177916-1 (2369502-1)	PDL Tab Contact S (Mat'l 5-705757-1) 24AWG
6	3	368571-1 (2369504-1)	PDL Plug 3P
	3	368572-1 (2369505-1)	PDL Cap 3P
	3	1-368575-1 (2369506-1)	PDL Plug 4P
	3	1-368587-1 (2369507-1)	PDL Cap 4P

	3	368576-1 (2369508-1)	PDL Plug 6P
	3	2005253-1 (2369509-1)	PDL Cap 6P
	39	2232901-1 (2369500-1)	PDL Rec Contact L 20AWG
	39	177917-1 (2369503-1)	PDL Tab Contact L (Mat'l 5-705757-1) 20AWG

Figure 1

1.5. Test Sequence

Test or Examination	Test Groups (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Connector Mating Force	1					
Low Level Contact Resistance (LLCR)	2,5					
Connector Un-mating Force	3,6					
Durability operation	4					
Contact Mating Force		1				
Contact Un-mating Force		2				
Contact Insertion Force			1			
Contact Retention Force			2			
Housing Locking Strength				1		
Crimp Tensile Strength					1	
Temperature Rising						1



NOTE

- a) See Paragraph 1.4.
- b) Numbers indicate sequence in which tests shall be performed.

Figure 2

1.6. Environmental Conditions

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

- Temperature: 15°C to 35°C
- Relative Humidity: 20% to 80%

2. SUMMARY OF TESTING

2.1.

Test Group	Test Item	Test Specimen	Unit	Min	Max	Ave	Requirement	Judgment
1	Connector Mating Force	3P	N	7.2	10.5	8.6	29.4 Max	OK
		4P		10.7	27.5	19.6	39.2 Max	OK
		6P		18.0	33.5	28.0	58.8 Max	OK
	Low Level Contact Resistance (Initial)	3P	mΩ	2.36	2.87	2.60	10 Max	OK
		4P		2.30	2.84	2.59		OK
		6P		2.51	2.85	2.67		OK
	Connector Un-mating Force	3P	N	8.6	11.3	9.5	5.88 Min	OK
		4P		8.9	11.9	10.6	7.84 Min	OK
		6P		15.6	20.5	17.7	11.76 Min	OK
	Durability operation (30 cycles)	3P	-	-	-	-	No physical damage	OK
		4P		-	-	-		OK
		6P		-	-	-		OK
	Low Level Contact Resistance (Final)	3P	mΩ	2.52	3.15	2.74	20 Max	OK
		4P		2.46	3.03	2.65		OK
		6P		2.20	2.79	2.57		OK
	Connector Un-mating Force	3P	N	6.2	8.8	7.2	5.88 Min	OK
		4P		8.3	9.9	9.1	7.84 Min	OK
		6P		12.7	15.8	14.1	11.76 Min	OK
2	Contact Mating Force	Rec and Tab Contact	N	1.8	2.9	2.3	9.8 Max	OK
	Contact Un-mating Force (1 st)		N	1.3	2.6	2.0	0.58 Min	OK
	Contact Un-mating Force (25 th)		N	0.6	1.1	0.8	0.39 Min	OK
3	Contact Insertion Force	3P Plug	N	4.5	4.9	4.7	6.86 Max	OK
		3P Cap		3.2	4.6	3.9		OK
		4P Plug		3.9	4.8	4.4		OK
		4P Cap		3.3	4.2	3.8		OK
		6P Plug		3.8	4.7	4.2		OK
		6P Cap		3.5	4.6	4.1		OK
	Contact Retention Force	3P Plug	N	57.7	63.7	61.6	41.6 Min	OK
		3P Cap		56.2	64.2	60.0		OK
		4P Plug		54.9	64.8	61.5		OK
		4P Cap		54.1	63.2	59.0		OK
		6P Plug		58.9	65.5	62.1		OK
		6P Cap		52.7	62.3	57.9		OK

4	Housing Locking Strength	3P	N	94.1	103.8	99.0	34.3 Min	OK
		4P		64.5	77.1	69.4	34.3 Min	OK
		6P		69.3	75.9	73.6	44.1 Min	OK
5	Crimp Tensile Strength	2369500-1 on 20AWG	N	99.9	120.3	111.9	58.8 Min	OK
		2369501-1 on 24AWG		33.5	45.0	37.1	29.4 Min	OK
		2369502-1 on 24AWG		31.7	37.9	34.5		OK
		2369503-1 on 20AWG		83.2	95.4	88.1	58.8 Min	OK
6	Temperature Rising	3P on 20AWG_6A	$\Delta^{\circ}\text{C}$	14.7	17.3	15.7	30 Max	OK
		4P on 20AWG_6A		14.2	20.4	17.5		OK
		6P on 20AWG_5A		14.7	16.6	15.3		OK

Figure 3

3. TEST METHODS

3.1 Connector Mating Force

EIA-364-13, Method A

Operation Speed: 100 mm/min

Measure the force required to mate connectors without locking latches.

3.2 Low Level Contact Resistance (LLCR)

Testing was performed in accordance with EIA 364-23 using a test current of 100 mA and a test voltage limited to 20mV.

3.3 Connector Un-mating Force

EIA-364-13, Method A

Operation Speed: 100 mm/min

Measure the force required to unmate connectors without locking latches.

3.4 Durability operation

EIA-364-9

Manually mate and unmate connectors for 30 cycles.

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- 3.5 Contact Mating Force
EIA-364-37, Method A
Operation Speed: 100 mm/min
Measure force required to mate contact.
- 3.6 Contact Un-mating Force
EIA-364-37, Method A
Operation Speed: 100 mm/min
Measure force required to unmate contact.
- 3.7 Contact Insertion Force
EIA-364-5
Measure the force required to insert contact into housing.
- 3.8 Contact Retention Force
EIA-364-29, Method A
Operation Speed: 100 mm/min
Measure the axial force required to remove contact crimped with wire from the housing.
- 3.9 Housing Locking Strength
EIA-364-98
Operation Speed: 100 mm/min
Ensure that locking latches are fully engaged.
- 3.10 Crimp Tensile Strength
EIA-364-8
Operation Speed: 100 mm/min
Apply an axial pull force to the crimped wire.
Contact to be secured to the tester. Insulation barrel crimp to be disabled.
- 3.11 Temperature Rising
EIA-364-70, Method 1
Measure the temperature rise above ambient created by the energizing current.
Measurement must be taken at a place where there is no influence from air convection.
Contacts to be assembled in housing with all circuits connected. The thermocouple is to be attached to the contact in the center circuit. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C.