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PRODUCT SPECIFICATION

VERTICAL MODULAR JACKS

1.0 SCOPE

This Product Specification covers the 1.27 mm (.050 inch) centerline (pitch) printed circuit board (PCB) modular jack connector series with selective gold and tin plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Low Profile Vertical Modular Jacks 42410

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings (SDA-42410-****) for information on dimensions, materials, plating and markings.

2.3 SAFETY AGENCY APPROVALS

UL File Number.....E107635
CSA File Number.....LR19980

3.0 REFERENCE DOCUMENTS

FCC Rules and Regulations, Part 68, Subpart F
REA Bulletin 345-81, PE-76; Specification for modular telephone set hardware
ANSI/EIA/TIA-568
IEC-60603-7
UL 1863
MIL-STD-202; General requirements for test specifications

4.0 RATINGS

4.1 VOLTAGE

56.5 V DC
150 V_{RMS} AC (Ringing voltage only)

4.2 CURRENT

1.5 Amps @ 25°C

4.3 TEMPERATURE

Operating: - 40°C to + 85°C
Nonoperating:* - 40°C to + 85°C
*Packaging materials should not exceed + 50°C

REVISION: C3	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 12/15/2008	TITLE: PRODUCT SPECIFICATION VERTICAL MODULAR JACKS	SHEET No. 1 of 5
DOCUMENT NUMBER: PS-42410	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: FSMITH



PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA . (Measurement locations in Section 7.0)	45 milliohms Maximum including wire leads; 20 milliohms MAXIMUM Measured at Plug. [initial]
2	Insulation Resistance	Unmated connector, mounted to a PCB: apply a voltage of 100 VDC between adjacent terminals and between terminals to ground.	500 Megohms MINIMUM
3	Dielectric Withstanding Voltage	Mate connectors: apply a voltage of 1000 VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 5 mA
4	Temperature Rise	Mate connectors: measure the temperature rise at the rated current after: 96 hours	Temperature rise; +30°C MAXIMUM

REVISION: C3	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 12/15/2008	TITLE: PRODUCT SPECIFICATION VERTICAL MODULAR JACKS	SHEET No. 2 of 5
DOCUMENT NUMBER: PS-42410		CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL
		APPROVED BY: FSMITH	



PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Insertion and Withdrawal Forces	Mate & un-mate connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	22 N (5 lbf) MAXIMUM insertion force 22 N (5lbf) MAXIMUM withdrawal force
6	Durability (Preconditioning)	Mate connectors up to 50 cycles at a maximum rate of 20 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)
7	Reseating	Mate connectors 3 cycles manually.	10 milliohms MAXIMUM (change from Initial)
8	Vibration (Random)	Mate connectors and vibrate per EIA-364-28 Test Condition D.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
9	Shock (Mechanical)	Mate connectors and shock at 30 g's with half sine wave (11 millisecond) shocks in the ±X, ±Y, ±Z axis (30 shocks total)	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
10	PCB Separation Forces	Apply a load normal to the plane of the PCB on the plug at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	4.5 N (1 lbf) MINIMUM withdrawal force before soldering 45 N (10 lbf) MINIMUM withdrawal force after soldering
11	Effectiveness of Connector Coupling Device	Apply an axial pullout force on the plug of 50N (11lb) for 60 seconds at a rate of 10 lb/second maximum.	Discontinuity <1 microsecond

REVISION: C3	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 12/15/2008	TITLE: PRODUCT SPECIFICATION VERTICAL MODULAR JACKS	SHEET No. 3 of 5
DOCUMENT NUMBER: PS-42410	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: FSMITH



PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

	DESCRIPTION	TEST CONDITION	REQUIREMENT
12	Shock (Thermal)	Mate connectors; expose to 10 cycles of: -55°C to +85°C 30 minutes dwell	10 milliohms MAXIMUM (Change from Initial) & Visual: No Damage
13	Humidity (Steady State)	Mate connectors; expose to temperature of 40±2°C with a relative humidity of 93% for 21 days. Note: Remove surface moisture & air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (Change from Initial) & Dielectric Withstanding Voltage: No Breakdown at 1000 VAC & Insulation Resistance: 500 Megohms MINIMUM & Visual: No Damage
14	Temperature Life	Mate connectors; expose to 90°C±2°C for 456 hours.	10 milliohms MAXIMUM (Change from Initial) & Visual: No Damage
15	Climatic Sequence	Test performed with mated connectors: A: Dry Heat 85°C for 16 hrs. B: Damp Heat (24 Cycles) Increase from 25°C 80% relative humidity to 65°C 50% relative humidity (30 min.), dwell at 65°C (1 hour), and lower to 25°C (30 min.), dwell at 25°C (1 hour). C: Cold -40°C for 2 hours D: Damp heat (24 cycles) Repeat step B	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 1000 VAC & Insulation Resistance: 500 Megohms MINIMUM & Visual: No Damage
16	Solderability	Dip solder tails in flux and immerse in solder bath at 235±5°C for 5±0.5 seconds	Solder Wetting Visual: 95% of immersed area must show no voids, pin holes.

REVISION: C3	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 12/15/2008	TITLE: PRODUCT SPECIFICATION VERTICAL MODULAR JACKS	SHEET No. 4 of 5
DOCUMENT NUMBER: PS-42410	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: FSMITH

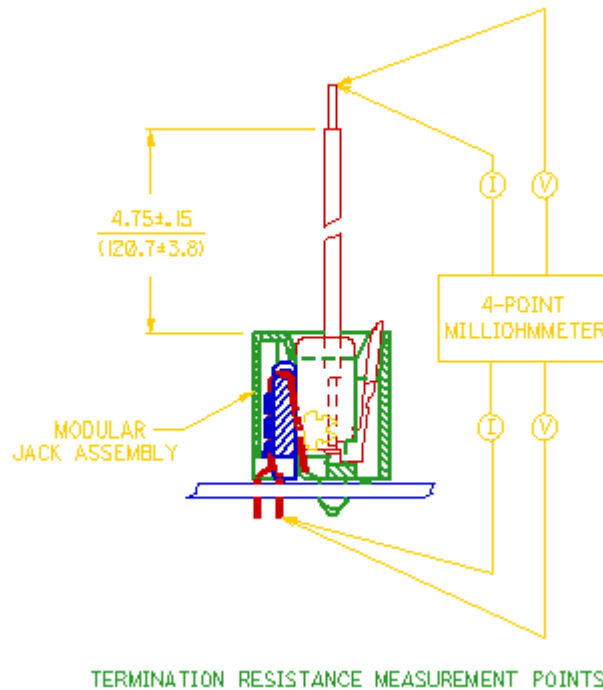


PRODUCT SPECIFICATION

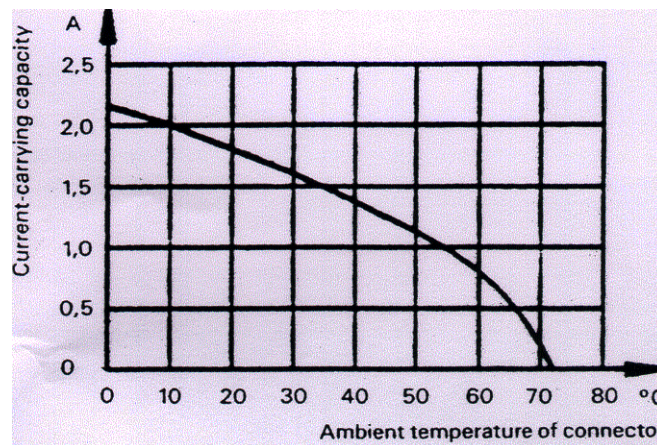
6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
See appropriate sales drawings for packaging descriptions.

7.0 GAGES AND FIXTURES



8.0 OTHER INFORMATION



Connector De-Rating Curve

REVISION: C3	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 12/15/2008	TITLE: PRODUCT SPECIFICATION VERTICAL MODULAR JACKS	SHEET No. 5 of 5
DOCUMENT NUMBER: PS-42410	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: FSMITH



TEST SUMMARY

STANDARD & LOW PROFILE VERTICAL MODULAR JACKS

1.0 SCOPE

This Test Summary covers the 1.27 mm (.050 inch) centerline (pitch) printed circuit board (PCB) modular jack connector series with selective gold and tin plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Low Profile Vertical Modular Jack	42878
Vertical Modular Jack	42410

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, plating and markings.

2.3 PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

PS-42878 Product Specification for Low Profile Vertical Modular Jacks
 PS-42410 Product Specification for Vertical Modular Jacks

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

3.1 TESTING PROCEDURES AND SEQUENCES

Reference Appendix A and B

3.2 OTHER DOCUMENTS AND SPECIFICATIONS

FCC Rules and Regulations, Part 68, Subpart F
 REA Bulletin 345-81, PE-76; Specification for modular telephone set hardware
 ANSI/EIA/TIA-568
 IEC-60603-7
 UL 1863
 MIL-STD-202; General requirements for test specifications
 EIA-364-1000

4.0 QUALIFICATION

Laboratory conditions and sample selection are in accordance with **EIA-364** and **IEC-60603-7**.

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 1 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

5.0 PERFORMANCE

5.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
1	Contact Resistance (Low Level)	Initial (Including wire leads)	45 milliohms MAXIMUM	32.42 mΩ	27.41 mΩ	39.95 mΩ
		After Durability (Preconditioning) [Item #6]	10 milliohms MAXIMUM*	0.17 mΩ	-0.34 mΩ	1.30 mΩ
		After Reseating, after Temperature Life [Item #7]	10 milliohms MAXIMUM*	0.73 mΩ	-0.11 mΩ	2.86 mΩ
			No Damage	No Visual or Dimensional Change		
		After Vibration [Item #8]	10 milliohms MAXIMUM*	0.11 mΩ	-0.59 mΩ	0.84 mΩ
			No Discontinuity	Discontinuity < 1 microsecond		
		After Shock (Mechanical) [Item #9]	10 milliohms MAXIMUM*	-0.01 mΩ	-0.68 mΩ	0.94 mΩ
			No Discontinuity	Discontinuity < 1 microsecond		
		After Thermal Shock [Item #12]	10 milliohms MAXIMUM*	0.34 mΩ	-0.95 mΩ	1.04 mΩ
			No Damage	No Visual or Dimensional Change		
		After Humidity (Steady State) [Item #13]	10 milliohms MAXIMUM*	-0.05 mΩ	-0.97 mΩ	0.37 mΩ
			No Damage	No Visual or Dimensional Change		
		After Temperature Life [Item #14]	10 milliohms MAXIMUM*	0.39 mΩ	-0.03 mΩ	1.60 mΩ
			No Damage	No Visual or Dimensional Change		
After Climatic Sequence [Item #15]	10 milliohms MAXIMUM*	0.15 mΩ	-0.79 mΩ	1.14 mΩ		
	No Damage	No Visual or Dimensional Change				

* change from initial

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 2 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	RESULTS
2	Insulation Resistance	Initial	500 Megohms MINIMUM	PASS
		After Thermal Shock [Item #12]	500 Megohms MINIMUM	PASS
			No Damage	No Visual or Dimensional Change
		After Humidity (Steady State) [Item #13]	500 Megohms MINIMUM	PASS
			No Damage	No Visual or Dimensional Change
		After Climatic Sequence [Item #15]	500 Megohms MINIMUM	PASS
No Damage	No Visual or Dimensional Change			
3	Dielectric Withstanding Voltage	Initial	1000 Volts AC MINIMUM	PASS
			Current Leakage: 5 milliamps MAXIMUM	
		After Thermal Shock [Item #12]	1000 Volts AC MINIMUM	PASS
			Current Leakage: 5 milliamps MAXIMUM	
		After Humidity (Steady State) [Item #13]	1000 Volts AC MINIMUM	PASS
			Current Leakage: 5 milliamps MAXIMUM	
After Climatic Sequence [Item #15]	1000 Volts AC MINIMUM	PASS		
	Current Leakage: 5 milliamps MAXIMUM			

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 3 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

5.2 MECHANICAL PERFORMANCE RESULTS

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
5	Connector Mate and Unmate Forces	Initial Mating	22 N MAXIMUM (5 lb _f) MAXIMUM	7.69 N (1.72 lb _f)	6.27 N (1.41 lb _f)	8.88 N (1.99 lb _f)
		Final Mating	22 N MAXIMUM (5 lb _f) MAXIMUM	7.28 N (1.63 lb _f)	5.70 N (1.28 lb _f)	10.02 N (2.25 lb _f)
		Initial Unmating	22 N MAXIMUM (5 lb _f) MAXIMUM	3.92 N (0.88 lb _f)	1.32 N (0.30 lb _f)	10.36 N (2.32 lb _f)
		Final Unmating	22 N MAXIMUM (5 lb _f) MAXIMUM	2.95 N (0.66 lb _f)	1.61 N (0.36 lb _f)	4.86 N (1.09 lb _f)
6	Durability (Preconditioning)	See ITEM 1 [TREATMENT: After Durability (Preconditioning)]				
7	Reseating	See ITEM 1 [TREATMENT: After Reseating]				
8	Vibration	See ITEM 1 [TREATMENT: After Vibration]				
9	Shock (Mechanical)	See ITEM 1 [TREATMENT: After Shock (Mechanical)]				
10	PCB Separation Forces	Unsoldered	4.5 N MINIMUM (1 lb _f) MINIMUM	PASS		
11	Effectiveness of Connector Coupling Device	After Climatic Sequence [Item #15]	No Discontinuity	Discontinuity < 1 microsecond		

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 4 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

5.3 ENVIRONMENTAL PERFORMANCE RESULTS

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
12	Shock (Thermal)	See ITEM 1, 2 [TREATMENT: After Thermal Shock]				
13	Humidity (Steady State)	See ITEM 1, 2 & 3 [TREATMENT: After Humidity (Steady State)]				
14	Temperature Life	See ITEM 1 [TREATMENT: After Humidity (Cyclic)]				
15	Climatic Sequence	See ITEMS 1, 2 & 3 [TREATMENT: After Climatic Sequence]				
16	Solderability	Final	95% Coverage MINIMUM		Coverage > 95%	

6.0 FIXTURES AND TEST EQUIPMENT

7.0 OTHER INFORMATION

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 5 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

APPENDIX A

TEST SEQUENCES

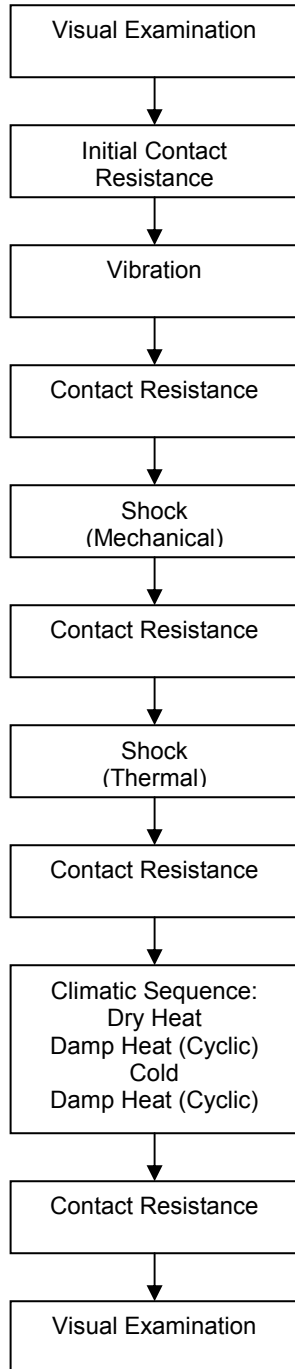
REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 6 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



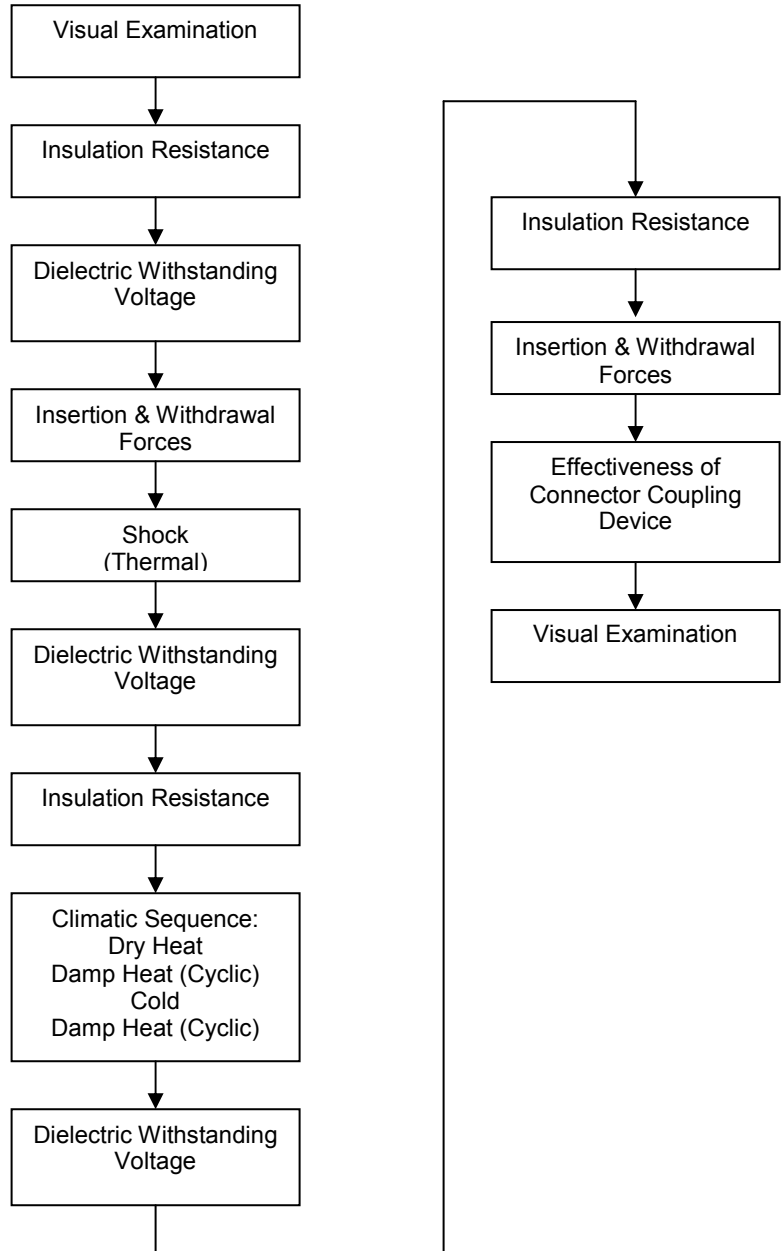
TEST SUMMARY

A.1 TEST SEQUENCES

SEQUENCE 1



SEQUENCE 2



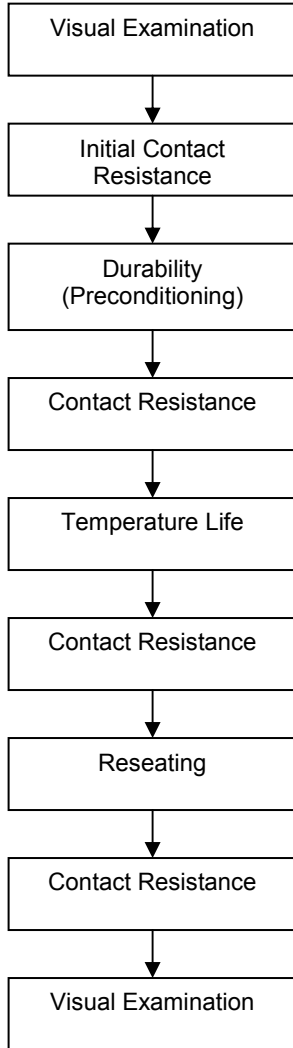
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DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



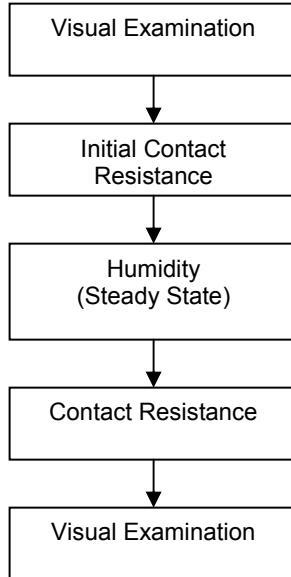
TEST SUMMARY

A.1 TEST SEQUENCES (continued)

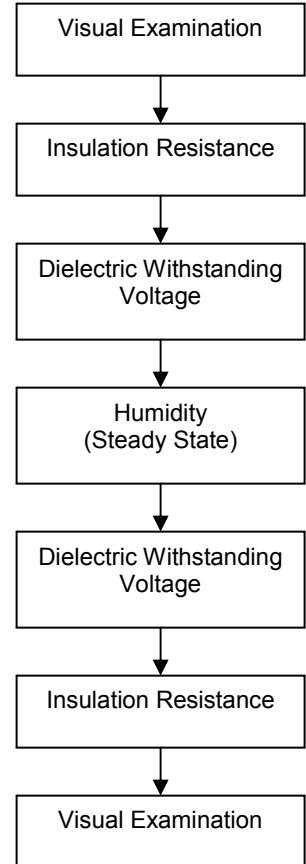
SEQUENCE 3



SEQUENCE 4



SEQUENCE 5



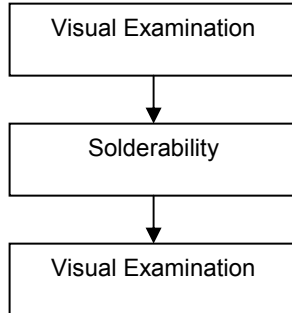
REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 8 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



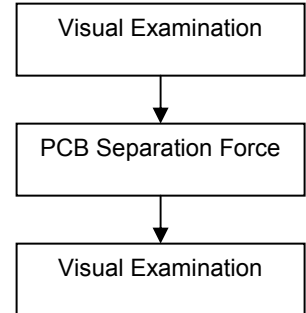
TEST SUMMARY

A.1 TEST SEQUENCES (continued)

SEQUENCE 6



SEQUENCE 7



REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 9 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

APPENDIX B

TEST SEQUENCE FORMAT

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 10 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH



TEST SUMMARY

ITEM	TEST	Test Groups						
		1	2	3	4	5	6	7
N/A	Visual Examination	•	•	•	•	•	•	•
1	Contact Resistance	•		•	•			
2	Insulation Resistance		•			•		
3	Dielectric Withstanding Voltage		•			•		
4	Current Rating							
5	Insertion and Withdrawal Force		•					
6	Durability (Preconditioning)			•				
7	Reseating			•				
8	Vibration	•						
9	Shock (Mechanical)	•						
10	PCB Separation Force							•
11	Effectiveness of Connector Coupling Device		•					
12	Shock (Thermal)	•	•					
13	Humidity (Steady State)				•	•		
14	Temperature Life			•				
15	Climatic Sequence	•	•					
16	Solderability						•	
	Number of Samples	20	10	10	20	20	10	20
	Number of Defects Permitted	0	0	0	0	0	0	0

REVISION: A	ECR/ECN INFORMATION: EC No: UCP2009-1545 DATE: 2008/12/15	TITLE: TEST SUMMARY FOR STANDARD & LOW PROFILE VERTICAL MODULAR JACKS	SHEET No. 11 of 11
DOCUMENT NUMBER: TS-42878-001	CREATED / REVISED BY: JKLOSTERMEIER	CHECKED BY: JBELL	APPROVED BY: F. SMITH