
JACK ASSEMBLY, RIGHT ANGLE, PANEL MOUNT, PCB, FAKRA

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics jack assembly, right angle, panel mount, PCB, FAKRA.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. Tyco Electronics Documents

- 109-11: Test Specification (Solderability Dip Test)

2.2. Industry Standards

- SAE/USCAR-2, Revision 4 May 2004: Performance Standard for Automotive Electrical Connector Systems
- SAE/USCAR-17, Revision 3, Dec 2011: Performance Specification for Automotive RF Connector Systems

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- Voltage: 60 VDC
- Current: 1 ampere
- Temperature: -40 to 105°C
- Characteristic Impedance: 50 ohms
- Frequency Range: 0 to 6.0 GHz

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per SAE/USCAR-2.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Visual inspection.	SAE/USCAR-2, 5.1.8.4. No defects	SAE/USCAR-2, 5.1.8.3.
ELECTRICAL		
Dry circuit resistance.	SAE/USCAR-17, 4.3.1.3. 40 milliohms maximum for signal and ground contacts.	SAE/USCAR-17, 4.3.1.2.
Voltage standing wave ratio.	SAE/USCAR-17, 4.4.2.3. 1.40 maximum from 0 to 2 GHz. 1.50 maximum from 2 to 3 GHz.	SAE/USCAR-17, 4.4.2.2.
Isolation resistance.	SAE/USCAR-17, 4.4.1.3. 100 megohms maximum.	SAE/USCAR-17, 4.4.1.2.
Dielectric withstanding voltage.	SAE/USCAR-17, 4.3.2.3. 800 volts AC.	SAE/USCAR-17, 4.3.2.2.
MECHANICAL		
Solderability, dip test.	Solderable area shall have a minimum of 95% solder coverage.	AMP Spec 109-11-5 Test Method B Subject contacts to solderability.
Connector engagement force.	SAE/USCAR-17, 4.2.2.3. 40 N maximum.	SAE/USCAR-17, 5.4.2.3.
Connector disengagement force with lock disabled.	SAE/USCAR-17, 4.2.2.3. 35 N maximum.	SAE/USCAR-17, 5.4.2.3.
Polarization effectiveness.	SAE/USCAR-17, 4.2.3.3. 80 N maximum with no center contact continuity.	SAE/USCAR-17, 5.4.4.3.
Connector-to-connector audible click, unconditioned.	SAE/USCAR-2, 5.4.7.4. 7 dB above recorded ambient.	SAE/USCAR-2, 5.4.7.3.
Connector-to-connector audible click, conditioned.	SAE/USCAR-2, 5.4.7.4. 5 dB above recorded ambient.	SAE/USCAR-2, 5.4.7.3.
Figure 1 (continued)		
Connector drop test.	SAE/USCAR-2, 5.4.8.4.	SAE/USCAR-2, 5.4.8.3.

Test Description	Requirement	Procedure
	No defects.	
Mechanical pull test- 110N axial	SAE/USCAR-17, 4.2.1.3. No defects or loss of continuity.	SAE/USCAR-17, 4.2.1.2.
Mechanical pull test- 75N off-angle	SAE/USCAR-17, 4.2.1.3. No defects or loss of continuity.	SAE/USCAR-17, 4.2.1.2.
Connector cycling.	SAE/USCAR-2, 5.1.7.5. No defects.	SAE/USCAR-2, 5.1.7.4.
Vibration/mechanical shock.	SAE/USCAR-2, 5.4.6.4. No defects.	SAE/USCAR-2, 5.4.6.3.
Header pin retention.	SAE/USCAR-2, 5.7.1.4. 24 N minimum.	SAE/USCAR-2, 5.7.1.3.
Connector Disengage Force – Step 6.	SAE/USCAR-2, 5.4.2.4 70 N Information only.	SAE/USCAR-17, 5.4.2.3.
ENVIRONMENTAL		
Thermal shock.	SAE/USCAR-2, 5.6.1.4.	SAE/USCAR-2, 5.6.1.3. -40 to 85°C.
Temperature-humidity cycling.	SAE/USCAR-2, 5.6.2.4.	SAE/USCAR-2, 5.6.2.3. -40 to 85°C.
High temperature exposure.	SAE/USCAR-2, 5.6.3.4.	SAE/USCAR-2, 5.6.3.3. 85°C.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)											
	G	H	J	K	N	O	Q	R	S	U	W	
	Test Sequence (b)											
Visual inspection	1,4	1,3	1,3	1,3	1, 5	1,7	1,7	1,9	1,7	1,3	1,3	
Dry circuit resistance						2(A), 5(A)	2(A), 5(A)	2(A), 6(A)	2(A), 5(A)			
Voltage standing wave ratio					2,4	2(B) 5(B)	2(B) 5(B)	2(B) 6(B)	2(B) 5(B)			
Isolation resistance								3,7				
Dielectric withstanding voltage						6	6	8	6			
Solderability dip test											2	
Connector engagement force	2											
Connector disengagement force with lock disabled	3(A)											
Polarization effectiveness		2										
Connector- to-connector audible click, unconditioned			2(A)									
Connector-to-connector audible click, conditioned			2(B)									
Connector drop test				2								
Mechanical pull test-110 N axial					3(A)							
Mechanical pull test-75 N off-angle					3(B)							
Connector cycling						3	3	4	3			
Vibration/mechanical shock						4						
Header pin retention										2		
Connector Disengage Force – Step 6.	3(B)											
Thermal shock							4					
Temperature-humidity cycling								5				
High temperature exposure									4			

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (A), (B) Separate into 2 banches from one test group.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test group G shall consist of 15 jack and plug assemblies. Test group H shall consist of 18 mated pairs. Test group J shall consist of 16 mated pairs. Test group K shall consist of 10 jack . Test groups N shall consist of 10 jack and plug assemblies. Test groups O,Q,R and S shall each consist of 20 jack and plug assemblies. Test groups U shall consist of 10 jack assemblies. Test group W shall consist of 20 jack assemblies.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.