



FAKRA-Compliant 50-Ohm Coaxial Male Header Printed Circuit (PC) Board Assemblies

1. SCOPE

1.1. Contents

This specification covers performance, tests and quality requirements of TE FAKRA Next Generation printed circuit board (PCB) connectors.

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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 114-32108: Application Specification
- 501-TBD: Qualification Test Report (TBD)

2.2. Industry Documents

- SAE/USCAR-2 Rev 6 Automotive testing specification
- SAE/USCAR-17 Rev 4 FAKRA testing specification
- JEDEC JESD22-B102E Test Methods and Procedures for Solid State Devices Used in Transportation/Automotive Applications

2.3. Reference Document

- [109-197](#) Test Specification (TE Test Specification vs EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Ratings

Voltage	Current	Temperature
800 VAC	1 amp maximum	-40 to 105°C

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Visual Inspection	Meets requirements of product drawing and Application Specification	SAE/USCAR-2 Rev 6, 5.1.8.3
Final examination of product	Meets visual requirements.	SAE/USCAR-2 Rev 6, 5.1.8.3
ELECTRICAL		
Contact Resistance	40mΩ maximum for signal and ground contacts.	SAE/USCAR-17 Rev 4, 4.3.1.2
Circuit Continuity Monitoring	No loss of electrical continuity for > 1μs	SAE/USCAR-2 Rev 6, 5.1.9.3
Dielectric Withstanding Voltage	≥800VAC	SAE/USCAR-17 Rev 4, 4.3.2.2
Voltage Standing Wave Ratio (VSWR)	SWR ≤ 1.4 0 to 2 GHZ SWR ≤ 1.5 2 to 3 GHz	SAE/USCAR Rev 4, 4.4.2.2
MECHANICAL		
Solderability Dip Test	Examined at 8x with 95% solder coverage	JEDEC JESD22-B102E, Method 1
Polarization Effectiveness	Force to achieve center contact continuity ≥ 80N	SAE/USCAR-2 Rev 6, 5.4.4.3
Connector Engagement Force	Mating Force ≤ 25 N (1 Position) Mating Force ≤ 45 N (2 Position)	SAE/USCAR-2 Rev 6, 5.4.2.3-A
Connector Disengage with Lock Enabled	Force to disengage ≥ 110 N	SAE/USCAR-2 Rev 6, 5.4.2.3-B
Force to Disengage Lock	Force to disengage lock ≥6N and ≤51N	SAE/USCAR-2 Rev 6, 5.4.2.3-C
Connector Disengage Force with Lock Disabled	Force ≤75N	SAE/USCAR-2 Rev 6, 5.4.2.3-B
Connector to Connector Audible Click	67dB for unconditioned parts 65dB for conditioned parts	SAE/USCAR-17 Rev 4, 4.2.4.3
Connector Drop Test	See note.	SAE/USCAR-2 Rev 6, 5.4.8.3
Mechanical Pull and Sideload	Force ≥ 110 N Axial Force ≥ 75 N Sideload	SAE/USCAR-17 Rev 4, 4.2.1.2
ENVIRONMENTAL		
Vibration/Mechanical Shock	No loss of electrical continuity VSWR check before and after	SAE/USCAR-2 Rev 6, 5.4.6.3
Thermal Shock	See note	SAE/USCAR-17 Rev 4, 4.5.1.4 Cycle from -40°C to +105°C
Temperature/Humidity Cycling	See note	SAE/USCAR-2 Rev 6, 5.6.2.3 Cycle from -40°C to +85°C
High Temperature Exposure	See note	SAE/USCAR-2 Rev 6, 5.6.3.3 Hold at +105°C



NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

Figure 1

3.4. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)										
	1	2	3	4	5	6	7(c)	8(c)	9(c)	10(c)	11
	TEST SEQUENCE (b)										
Initial examination of product	1	1	1	1	1	1	1	1	1	1	1
Contact Resistance							2,5	2,5	2,4	2,4	
Circuit Continuity Monitoring						4	4	4			
Dielectric Withstanding Voltage							6	6	5	5	
Voltage Standing Wave Ratio (VSWR)						2,5	2,5	2,5	2,4	2,4	
Solderability Dip Test											2
Polarization Effectiveness											
Connector Engagement Force	2	2	2								
Connector Disengage with Lock Enabled	3										
Force to Disengage Lock		3									
Connector Disengage Force with Lock Disabled			3								
Connector to Connector Audible Click				2							
Connector Drop Test					2						
Mechanical Pull and Sideload						3					
Vibration/Mechanical Shock							3				
Thermal Shock								3			
Temperature/Humidity Cycling									3		
High Temperature Exposure										3	
Final examination of product	4	4	4	3	3	6	7	7	6	6	3


NOTE

- (a) Connector housings and contacts shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production. Test groups 1-3 shall have 5 samples, group 4 shall have 16, group 5 shall have 3, groups 6 and 7 shall have 10 samples and groups 8-11 shall have 20 samples.
- (b) Numbers indicate sequence in which tests are performed.
- (c) For contact resistance and VSWR test split the test group in half with half of the samples going to contact resistance and the other half to VSWR