



Mini-FAKRA Connectors

1 SCOPE

1.1 Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) mini-FAKRA connectors. The detail PN and description are as follow.

LN	TEPN	Description
1	2474520-X	MINI FAKRA PLUG R/A FOR PCB WITH HOUSING
2	2474521-X	MINI FAKRA Jack FOR CABLE WITH HOUSING
3	2484052-2	Mini FAKRA series (four-cell) female head straight, L=600mm
4	2484052-1	Mini FAKRA series (four-cell) female head straight, L=305mm
5	2484060-1	Mini FAKRA series (four-cell) female head straight, L=305
6	2484061-1	Mini FAKRA series (four-cell) female head straight, L=305
7	2484062-1	Mini FAKRA series (four-cell) female head straight, L=305
8	2484063-1	Mini FAKRA series (four-cell) female head straight, L=305
9	2484064-1	Mini FAKRA series (four-cell) female head straight, L=305
10	2477736-X	MINI FAKRA PLUG R/A FOR, PCB WITH HOUSING
11	2477757-X	MINI FAKRA PLUG DOUBLE R/A FOR PCB WITH HOUSING

1.2 Qualification

When tests are performed on the subject product line, procedures specified in this Product Specification shall be used. All inspections shall be performed using 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 TE Connectivity (TE) Documents

- 109-1: General Requirement for Test Specification.
- 109-197: Test Specification (TE Test Specification vs EIA and IEC Test Methods)
- 109 Series: Test Specifications as indicated in Table 2

2.2 Industry Document

- MIL-PRF-39012: Performance Specification for Radio Frequency Coaxial Connectors
- MIL-STD-202H: Test Method Standard Electronic and Electrical Component Parts

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 Materials

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

3.3 Ratings

- Temperature Range: -40°C to +105 °C
- Nominal Impedance: 50 ohms

3.4 Qualification Test

3.4.1 General Test

No.	Test Item	Test Requirement	Test Condition & Instrument
1	Product Examination	According to the drawing	Visual, dimensional and functional per applicable quality inspection plan SAE/USCAR-2 Rev 6, 5.1.8

3.4.2 Electrical Test

No.	Test Item	Test Requirement	Test Condition & Instrument
1	Nominal Impedance	50±5ohms	MIL-PRF-39012, paragraph 3.1 Network Analyzer TDR mode
2	Voltage Standing Wave Ratio (VSWR)	For PCB mount connector: 1.25 Max.@DC 0– 3 GHz 1.35Max.@DC 3GHz – 6 GHz 1.65Max.@DC 6GHz – 9GHz For cable end connector: 1.15 Max.@DC 0– 3 GHz 1.25Max.@DC 3GHz – 6 GHz 1.45Max.@DC 6GHz – 12GHz 1.68Max.@DC 12GHz – 15GHz	SAE/USCAR17 4.4.2 Network Analyzer
3	Insertion Loss (IL)	For PCB mount connector: 0.15*sqrt (F(GHz)) (DC-9GHz) For cable end connector: 0.15*sqrt (F(GHz)) (DC-15GHz)	SAE/USCAR17 4.4.2; Network Analyzer
4	Dielectric Withstanding voltage	800V/AC/60S	SAE/USCAR17 4.3.2 Dielectric withstand voltage test
5	Insulation Resistance	1000 MΩ/Min	SAE/USCAR17 4.4.1 Insulation Resistance Test
6	Contact Resistance	Center Conductor : 5.0 mΩ MAX	SAE/USCAR17 4.3.1 Contact Resistance Teste
		Outer Conductor:5.0 mΩ MAX	

3.4.3 Mechanical Test

No.	Performance item	Test Specification	Test Condition & Instrument
1	Mating Force	45 N /MAX	SAE/USCAR-2 5.4.2 Insertion/Withdraw Force tester
2	Disengagement Force	5N/Min	SAE/USCAR-2 Rev 6, 5.4.2 Insertion/Withdraw Force tester
3	Connector Disengaged With Lock	110N/Min	SAE/USCAR-2 5.4.2 Insertion/Withdraw Force tester
4	Un-mating Force With Lock Disengaged	80 N/Min	SAE/USCAR17 4.2.3 Insertion/Withdraw Force
5	Durability	50 cycles/Min	SAE/USCAR-2 5.1.7

3.4.4 Environmental Test

No.	Performance items	Test Specification	Test Condition & Instrument
1	Salt Spray Test	No corrosion, blackening, foaming, and coating detachment, contact resistance $\leq 40\text{m}\Omega$	GB/T2323-17 Temp: $35\pm 1^\circ\text{C}$ Humidity: 95~98%, Total testing time: 48 hours Salt spray testing machine
2	High temperature exposure	After the experiment, the appearance and product performance should meet the requirements	Test temperature : 105°C Test time : 1008H SAE/USCAR-2 5.6.3 High temperature test chamber
3	Thermal Shock	After the experiment, the appearance and product performance should meet the requirements	Shock temperature : $-40^\circ\text{C}\sim 105^\circ\text{C}$ Number of cycles : 100 Temperature conversion time : 1min/Max SAE/USCAR-2 5.6.1 Thermal shock testing machine
4	Temperature/Humidity Cycling	After the experiment, the appearance and product performance should meet the requirements	Number of cycles : 40 SAE/USCAR-2 5.6.2 Temperatue&Humidity Chamber
5	Vibration/Mechanical Shock	1.Electrical disconnection did not exceed one microsecond 2.After the experiment, the appearance and product performance should meet the requirements	SAE/USCAR-2 5.4.6 Vibration Measurement Instrument

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. All test groups shall each consist of a minimum of 3 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified.

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 specified. 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 resubmittal.

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.

Changed list

REV	DATE (DD-MM-YY)	CATEGORY	ADDITIONS, DELETIONS, CHANGES
1	07-NOV-2024	All	Preliminary version