RF TEST PROBE

1 SCOPE

1.1 Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) RF TEST PROBE adaptor or cable assembly. This products are designed include test probe adaptor and test probe cable assembly.
This connector achieves the application as Antenna, intelligent terminal equipment market, Like WiFi, NFC, RFID, GPS, Bluetooth and so on.

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

- 109–197: Test Specification (TE Test Specification vs EIA and IEC Test Methods)

2.2 Industry Document

- EIA 364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC 60512: Electromechanical Components for Electronic Equipment; Basic Testing Procedures and Measuring Methods Part 1: General
- IEC 60169-1: Radio-frequency connectors. Part 1: General requirements and measuring methods
- IEC 60068: Basic Environmental Testing Procedures for Electric Components and Electronic Equipment

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: -40ºC to +85 ºC
- Frequency Range : DC to 9 GHz
  (DC to 6 GHz for 2408014-1)
- Nominal Impedance: 50 ohms
- Insertion Loss (Not including board):
  <0.6 dB (up to 6GHz)
  <0.8 dB (6GHz to 9GHz)
- Insertion Loss for cable assembly: 2408023-1/2408024-1/2408027-1
  <(1.6+a*0.4)dB (a = L/100mm)
- VSWR (Not including board):
  < 1.3 (Up to 6GHz)
  < 1.5 (6GHz to 9GHz)
- Working Voltage: 170 VAC RMS at sea level
- Voltage withstanding: 500 Vrms
- Insulation resistance: >500 MΩ

3.4 Characteristic Values

- PNs included:
  - For test probe adaptor: 2408012-1/ 2408014-1/ 2408016-1/ 2408018-1/ 2408020-1/ 2408021-1/ 2408022-1
  - For test probe cable assembly: 2408023-1/ 2408024-1/ 2408027-1

3.5 Performance and Test Description

Products is designed to meet the electrical, mechanical and environmental performance requirements specified in Table 1(See section 3.6). Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.6 Test Requirements and Procedures Summary (Table 1)

Test Description	Requirement	Procedure
Visual Inspection	Meets visual requirements.	EIA-364-18/ IEC 61169-1:2013 sub-clause 9.1.1; Visual inspection.
ELECTRICAL		
Low Level Contact Resistance (LLCR).	With Gold/Silver-plated target board: Center contact: <=50 milliohms after 30 cycles <=80 milliohms after 10000 cycles Outer Contact: <=20 milliohms after 30 cycles <=50 milliohms after 10000 cycles	EIA-364-23/ IEC 61169-1:2013 subclause 9.2.3; Subject specimens to 30 mA maximum and 20 mV maximum open circuit voltage. See Figure 1
Insulation Resistance.	500 MΩ minimum (initial)	EIA-364-21/ EIA-364-21/IEC 61169-1:2013 sub-clause 9.2.5;

Test Description	Requirement	Procedure
Withstanding Voltage.	500V at sea level	EIA-364-20, Condition I / IEC 61169-1:2013 sub-clause 9.2.6; Requested volts AC (rms) at sea level. One minute hold with no breakdown or flashover.
Insertion Loss	<0.6 dB (Up to 6GHz) <0.8 dB (6GHz to 9GHz) (In accordance with 3.3)	IEC 62037-1:2012 See Figure 2-1
VSWR	< 1.3 (Up to 6GHz) < 1.5 (6GHz to 9GHz) (In accordance with 3.3)	EIA-364-108/ IEC 61169-1:2013 sub-clause 9.2.1; See Figure 2-1
Insertion Loss for cable assembly	<(1.6+a*0.4)dB (a = L/100mm)	IEC 62037-1:2012 See Figure 2-2
MECHANICAL		
Mechanical Endurance	10000 cycles Meet the requirement of normal force No damage to parts	IEC 61169-1:2013 sub-clause 9.3.15; Mate and un-mate specimens for 30/5000/10000 cycles at a rate of 12 cycles per minute.
Random Vibration	No electrical discontinuity greater than 1 µs.	1.15g eff 10Hz-500Hz 4 hours per axis, on the 3 axes.
Mechanical Shock	No electrical discontinuity greater than 1 µs	Mated Conn. (10 G) Waveform: Half sin Curve Duration: 11 m sec. Number of Drops: 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops
ENVIRONMENTAL		
Thermal Shock	No damage to parts	EIA-264-32D Method A test condition I or equivalent
Temperature and humidity Cycle	No damage to parts	EIA-364-31B, Condition III Mated specimens were exposed to 10 cycles of humiditytemperature cycling. Each cycle lasted 24 hours and consisted of cycling the temperature between 25°C and 65°C twice while maintaining high humidity.
Salt Spray or MFG	48H salt spray, Without corrosion	EIA-364-26 Condition B or EIA-364-65B class IIA
Temperature life	No damage to parts	125°C, 250h

(End of table 1)

3.7 Product Qualification and Requalification Test Sequence (Table 2)

Test or Examination	Test Group (a)		
	1	2	3
Initial examination of product	1	1	1
LLCR	2,7	2,4	2,11,
Insulation Resistance	3,8		3,15,
Withstanding Voltage	4,9		4,12,16,
Durability		3	
Vibration			5
Shock			7
Center contact captivation	5		
Thermal Shock			9,
Moisture resistance			13,
Corrosion Test/Salt Spray	6		
Final examination of product	10	5	6,8,10,14,17

(End of table 2)

NOTE

(a) See paragraph 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

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. Each test group shall consist of a minimum of 2 Specimens.

B. Test Sequence
Qualification inspection shall be verified by testing specimens as specified in table 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.

Changed list

REV	DATE (DD-MM-YY)	CATEGORY	ADDITIONS, DELETIONS, CHANGES
1	05-MAY-2022	All	Preliminary version