1.85mm/2.4mm/2.92mm/3.5mm Series High Frequency Coaxial Cable Assembly

1. SCOPE

The 1.85mm/2.4mm/2.92mm/3.5mm interface cable assembly is designed to meet the rising performance needs of in microwave applications requiring high performance.
This specification gives an overview of all relevant specifications or requirements related to 1.85mm/2.4mm/2.92mm/3.5mm series Cable Assembly

1.1. Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) 1.85mm/2.4mm/2.92mm/3.5mm series high frequency coaxial cable assembly of nominal characteristic impedance 50 ohms and have an operating frequency range of up to 67GHz

1.2. Qualification

All components for the cable assembly, connectors, over-mold and cable were subject to their individual design objectives and were qualified accordingly.
This document addresses the total cable assembly
When tests are performed on the subject product line, procedures specified in table 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. TE Connectivity (TE) Documents

TEC-109-201	Component heat resistance to lead-free reflow soldering.
501-160053	Qualification Test Report (1.85mm/2.4mm/2.92mm/3.5mm series RF cable assembly)
109–197	Test Specification (TE Test Specification vs EIA and IEC Test Methods)

2.2 Commercial Standards and Specifications

IEC 61984	International Standard – Safety Requirements and Tests	
IEC 60335	International Standard – Safety of Household and Similar Appliance	
IEC 60512	International Standard – Connectors for Electronic Equipment – Tests and Measurements	
IEC 60695	International Standard – Fire Hazard Testing	
UL 1977	Safety Standards – Component Connectors for Use in Data, Signal, Control, and Power Applications	
EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications	
IEC 60966-1	Radio-frequency and coaxial cable assemblies: General requirements and test methods	
IEC 61169-32	1.85MM	Interface dimensions specifications

IEC 61169-40	2.40MM	Interface dimensions specifications
IEC 61169-35	2.92MM	Interface dimensions specifications
IEC 61169-23	3.50MM	Interface dimensions specifications
ISO 21207		Corrosion tests in artificial atmospheres -- Accelerated corrosion tests involving alternate exposure to corrosion-promoting gases, neutral salt-spray and drying
IEEE287		Standard for precision coaxial connectors (DC to 110GHz)

2.3 Reference Documents

109-1		General Requirements for Testing
102-950	102-950	Qualification of Separable Interface Connectors

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 TE drawing.

3.2.1 Housing:

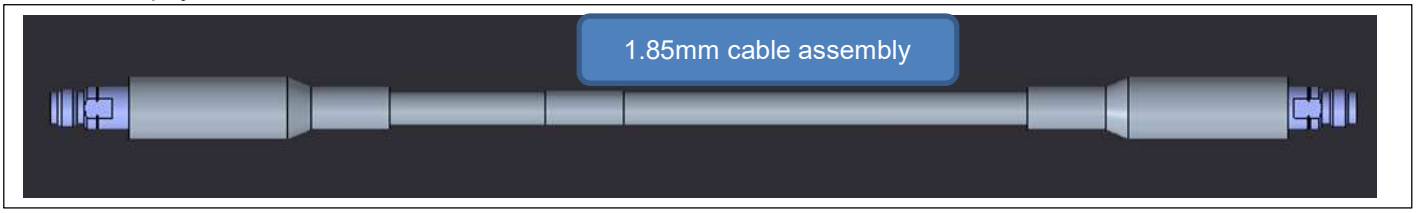
3.2.2 Contacts:

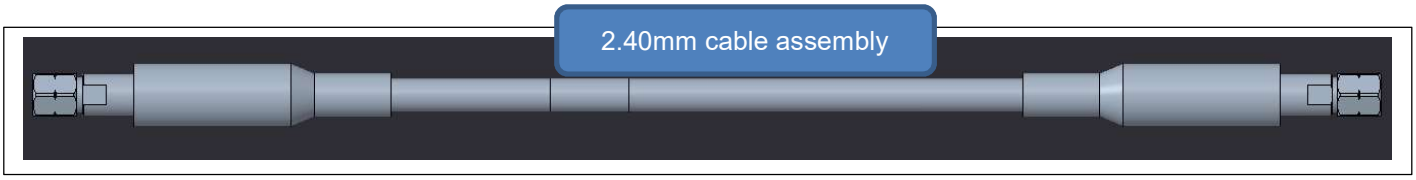
3.3 Ratings

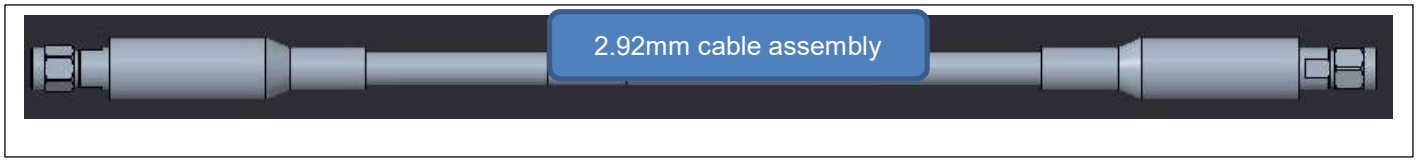
3.3.1 500 VAC RMS at sea level
3.3.2 Temperature Range: -45 to 85 °C
3.3.3 Characteristic Impedance: 50 ohms Nominal
3.3.4 Frequency Range: DC to 67 GHz

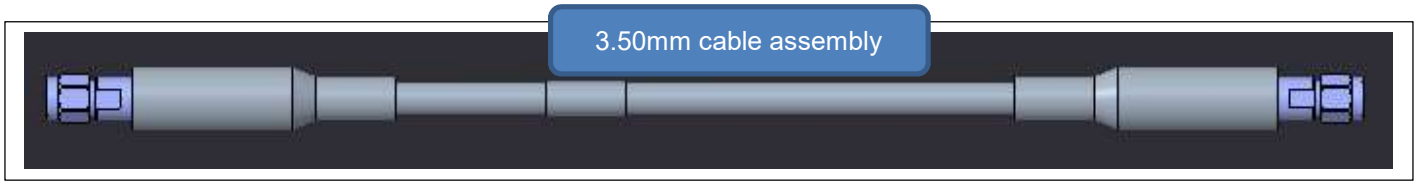
3.4 Performance Requirements and Test Description

Cable assembly of 1.85mm/2.4mm/2.92mm/3.5mm plug and socket, accurate and stable for all needs with guaranteed low loss value, RF leakage and VSWR due to smallest form factor, good mechanical and physical stable characteristic.









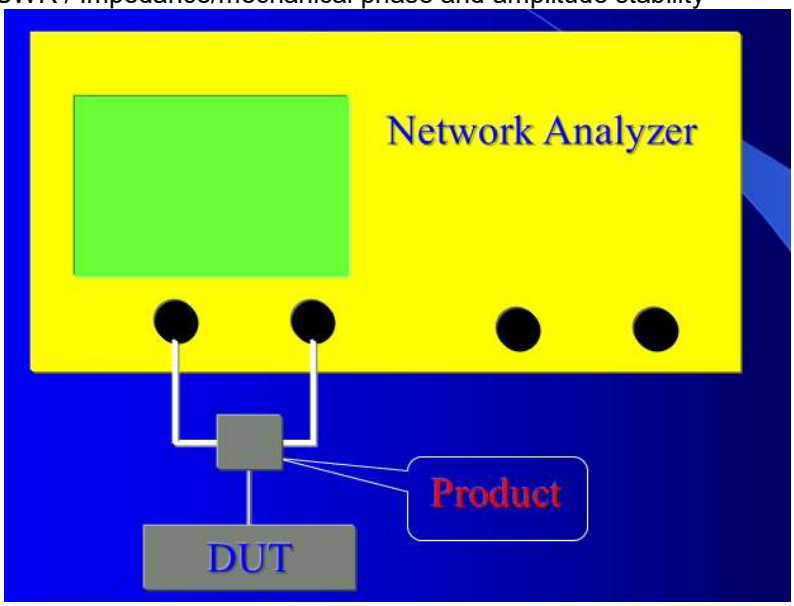
3.5 Peformance and Test Description

Products is designed to meet the electrical, mechanical and environmental performance requirements specified in upper Figure. 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
Initial examination of product	Meets requirements of product drawing.	EIA-364-18/IEC 61169-1 Visual and dimensional (Certificate of Conformance) inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18/IEC 61169-1 Visual inspection.
ELECTRICAL		
Impedance	50ohm normal	EIA-364-108/ IEC 60966-1. Measurement is made using a time domain reflectometer with input step applied to the cable assembly through an air line acting as an impedance reference.
Insertion loss	Before and after mechanical test: 0.1 x √ f +Cable attenuation Max See Detail product drawing	EIA-364-101/IEC60966-1 Requested all attenuation in figure 4
VSWR	Before and after mechanical test, The value can meet specification requirement	EIA-364-108/IEC 60966-1 Time domain gated around specimen under test in figure 4
Mechanical phase stability	Before and after mechanical: The value can meet specification requirement	IEC60966-1 Measurements shall be made using a suitable network analyser, a slotted line may be used where frequency and accuracy requirements permit
Mechanical amplitude stability	Before and after mechanical: The value can meet specification requirement	IEC60966-1 Measurements shall be made using a suitable network analyser, a slotted line may be used where frequency and accuracy requirements permit
MECHANICAL		
Mechanical compatibility	The dimensions of the mating face shall be in accordance with the mating face drawings prescribed in the specification.	IEC 61169/IEC 61169-1 Use compatibility gauges
Flexure test	Before and After test, VSWR, IL, Mechanical phase stability and mechanical amplitude stability can meet specification requirement	IEC 60966-1 The test shall be performed using a fixture and load 300g
Cable crushing test	Before and After test, VSWR, IL, Mechanical phase stability and mechanical amplitude stability can meet specification requirement	IEC 61169/IEC 61169-1 Load force 1000N/25mm, keep 1min
Cable pulling test	Cable can endure specification defined pulling force, after test no any damage for cable assembly, and interface can meet standard requirement	IEC 61169/IEC 61169-1 Load a force(over 30lbs) on cable

3.7 Insertion Loss / VSWR / Impedance/mechanical phase and amplitude stability



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 Table 1.*

3.8. Product Qualification and Requalification Test Sequence (Table 2)

Test or Examination	Test Group *(a)*		
	1	2	3
	Test Sequences *(b)*		
Initial Examination of Product	1	1	1
Visual inspection	2	2	2
Interface dimensions	3	3	3,6
VSWR/IL	5,7	5,7	
Mechanical phase stable	8	8	
Mechanical amplitude stable	9	9	
Mechanical Compatibility	4	4	4
Flexure test	6		
Cable crushing test		6	
Cable pulling test			5

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 5

Specimens.

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.

REV	DATE (DD-MM-YY)	CATEGORY	ADDITIONS, DELETIONS, CHANGES
1	08-July-2020	All	Preliminary version
2	15-July-2020	All	Used the latest template