1 SCOPE

1.1 Introduction

This specification covers performance, tests and quality requirements for Tyco Electronics series “F” 75 ohm connectors. These connectors are primarily intended for use in the 75 ohm broadband communications industry. The connector family contains male and female connectors, straight and right angle variants for cable or soldered connection on printed circuit boards.

1.2 Qualification

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

2 APPLICABLE DOCUMENTS

The herein described connectors shall meet the requirements of IEC 61169-24. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the document applies. In the event of conflict between the requirements in this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements in this specification and referenced documents, especially the IEC 61169-24, this specification (108-71082) shall take precedence.

2.1 Tyco Electronics documents

- 619315 F Jack 90° J PCB Solder
- 619316 F Plug Straight Grip Ring
- 619317 F Jack Straight PCB Solder
- 619374 F Jack Straight PCB Solder
- 619338 F Jack Straight Grip Ring

- Test Report: 501-19137

2.2 Commercial Standards

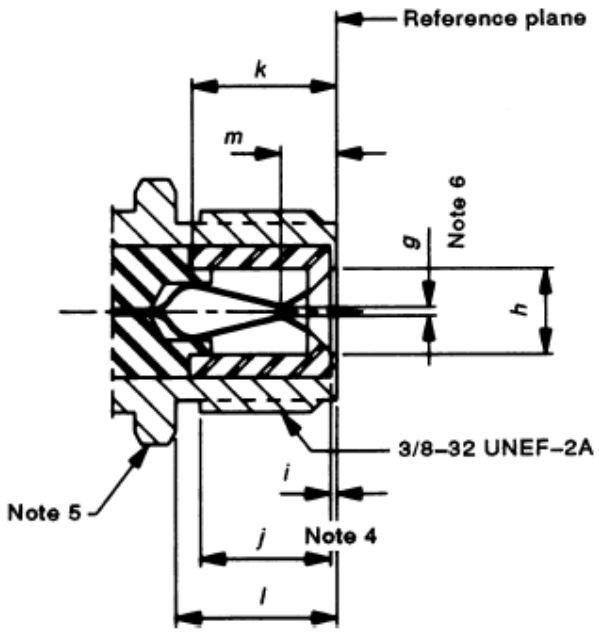
- IEC 61169-24: Type F Connectors
- IEC 61169: Radio-frequency connectors.
  Part 1: General requirement and measuring methods
- IEC 60068: Environmental Testing.
- IEC 60512: Basic testing procedure and measuring methods
- IPC / JEDEC Standard: JESD22-B106D: Standard for wave soldering

REQUIREMENTS

2.3 Design and Construction

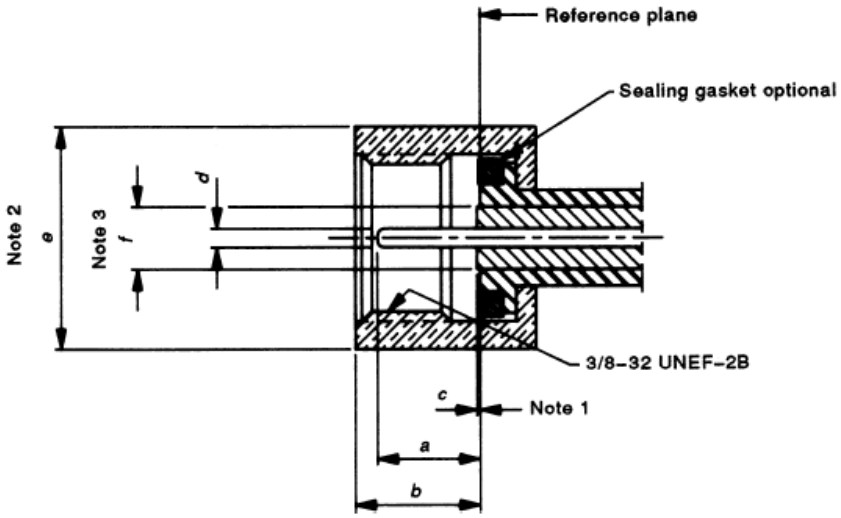
Products shall be of design, construction and physical dimensions specified on the applicable customer and product drawing.

Interface dimensions F Jack, female:



Reference	mm		in	
	Min.	Max.	Min.	Max.
g	–	–	–	–
h	3,86	–	0,152	–
i	0,30	–	0,012	–
j	5,56	–	0,219	–
k	7,0	–	0,273	–
l	7,59	–	0,299	–
m	–	4.9	–	0,185

Interface dimensions F Plug, male:



Reference	mm		in	
	Min.	Max.	Min.	Max.
a	4,95	6,86	0,195	0,270
b	–	7,29	–	0,287
c	–	0,25	–	0,010
d	0,51	1,63	0,020	0,064
e	–	12,95	–	0,510
f	–	3,8	–	0,149

Dimensions “m” and “a” could be different to above indications, if a minimum contact overlap is maintained and all other requirements in this specification are guarantied.

2.4 Materials and finish

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

2.5 Ratings

- Characteristic Impedance: 75Ohm
- Frequency: 0 to 1 GHz
- Temperature: -40°C to 70°C
- Current: 1.0 Amp
- Climatic category: -40/70/10

2.6 Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all measurements shall be performed at ambient environmental conditions per IEC 61169.

2.7 Test Requirements and Procedures

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing and customer drawing	IEC 61169-1 Clause 9.1.2, 9.1.3 Visual and dimensional inspection shall comply with product and customer drawing.
Final examination of product.	Meets visual requirements.	IEC 61169-1 Clause 9.1.2, IEC 605112-1-1, Test 1a

Electrical

Test Description	Requirement	Procedure
Current temperature	1A @ 30°C max over ambient	IEC 60512-5-1, Test 5a
Insulation resistance	300MΩ	IEC 61169-1 Clause 9.2.5 IEC, 60512-3-1. Test 3a
Voltage proof	750 Vrms	IEC 61169-1 Clause 9.2.6 IEC 60512-4-1, Test 4a
Centre contact resistance	< 30 mΩ	IEC 61169-1 Clause 9.2.3 IEC 60512-2-1, Test 2a
Outer contact resistance	< 30 mΩ	IEC 61169-1 Clause 9.2.3 IEC 60512-2-1, Test 2a
Return loss: Jack 90° PCB solder F Plug Straight Grip Ring Jack PCB solder and F Jack Straight Grip Ring	 -14 dB to 1GHz -20 dB to 1GHz -16 dB to 1GHz	IEC 61169-1-1 Clause 9.2.1

Mechanical

Test Description	Requirement	Procedure
Gage retention force General: Only for 619338:	 0.3N 0.2N	See IEC 61169-24 Clause 3.2, instead gage C with Ø 1.25±0.01
Coupling torque	 0.46-0.69Nm 1.7Nm	IEC 61169-1 Clause 9.3.6
Mechanical test on cable Cable pulling	 90N	IEC 61169-1 Clause 9.3.8
Tensile strength of coupling mechanism	300N	IEC 61169-1 Clause 9.3.11
Bending moment	2Nm	IEC 61169-1 Clause 9.3.12

Environmental

Test Description	Requirement	Procedure
Humidity	Damp Heat, Steady State.+40°C, 90-95%RH, 96 hours	IEC 60068-2-3
Climatic sequence	-40/70/21	IEC 61169-1 Clause 9.4.2
Salt mist	Duration: 48 hours, Temperature: 35±2°C, Salt solution: 5±1%	IEC 61169-1 Clause 9.4.6
Mechanical endurance	100 cycles	IEC 61169-1 Clause 9.5
Solderability for PCB connectors	No dewetting spots > 5%, total dewetting < 10% of the soldering area	IEC 6068-2-20, Test Ta, meth. 1 (IEC 61169-1 Clause 9.3.2)

Figure 1 (end)

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 2.

2.8 Product Qualification and Requalification Test Sequence

Table 2

Test or Examination	Test group							
	1	2	3	4	5	6	7	
	Test sequence (*)							
Initial examination of product	1	1	1	1	1	1	1	
Current temperature						3		
Insulation resistance		2						
Voltage proof		3						
Centre contact resistance		4, 7	2, 5	2, 5	2, 6			
Outer contact resistance		5,8	3, 6	3, 6	3, 7			
Return loss						2		
Gage retention force					4			
Coupling torque, proof	2							
Cable pulling, **	3							
Tensile strength of coupling mechanism	4							
Bending moment	5							
Humidity		6						
Climatic sequence			4					
Salt mist				4				
Mechanical endurance					5			
Solderability test							2	
Final examination of product	6	9	7	7	8	4	3	

NOTE: (*) Numbers indicate sequence in which tests are performed.
(**) Only cable connectors

Table 3

Test Group	Number of samples – mating letter*				
	619315-2/-3	**619374-1/-2**	**619317-1/-2**	**619338-1/-2**	**619316-1**
	Jack 90° PCB	Jack fat, PCB	Jack thin, PCB	Cable Jack, low loss	Cable Plug
1 Mechanical	3a				3a
		3b			3b
			3c		3c
				3d	3d
2 Humidity	3a				3a
		3b			3b
			3c		3c
				3d	3d
	3x -2, 3x -3	3x -1, 3x -2	3x -1, 3x -2	3x -1, 3x -2	3
3 Climatic	3a				3a
		3b			3b
			3c		3c
				3d	3d
	3x -2, 3x -3	3x -1, 3x -2	3x -1, 3x -2	3x -1, 3x -2	3
4 Salt Mist	3a				3a
		3b			3b
			3c		3c
				3d	3d
	3x -2, 3x -3	3x -1, 3x -2	3x -1, 3x -2	3x -1, 3x -2	3
5 Gage, Endurance	3a				3a
		3b			3b
			3c		3c
				3d	3d
6 RF, Derating	3a **				3abcd ***
		3b **			
			3c **		
				3d ***	
7 Solderability	3	3	3	-	-
Total QTY	-2: 30 -3: 9	-1: 30 -2: 9	-1: 30 -2: 9	-1: 24 -2: 9	-1: 75

NOTES:

1. (*) The samples with the same letter must be mated together during the test. The samples without letter must be tested alone.
2. If not indicated all dash numbers of the product can be used
3. 619338-1/-2 and 619316-1 soldered on cable: LOFAR, MBA 1.13/4.8 FB Highscreen 90dB
4. (**) PCB Jacks soldered on PCB
5. (***) Cable assy F – SMA Jack)

2.9 PCB Application

Wave solder compliance with lead free solder paste in accordance to IPC / JEDEC Standard: JESD22-B106D

3 QUALITY ASSURANCE PROVISIONS

3.1 Requalification Testing

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

3.2 Acceptance

Acceptance is based on verification that product meets requirements of Para 3. Failures attributed to equipment, test set-up, customer supplied components or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification.
Testing to confirm corrective action is required before resubmittal.

3.3 Quality Conformance Inspection

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