

1 **SCOPE**

1.1 **Introduction**

This specification covers performance, tests and quality requirements for Tyco Electronics series “Probes” for Pico Coax Switches. These connectors are primarily intended to be used in mobile phone production environment and / or test lab environment.

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 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 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, this specification shall take precedence.

2.1 **Tyco Electronics documents**

- PN: 619361 Probe for volume production usage
- PN: 619384 Probe for repair center usage
- PN: 619383 Adaptor 90°, SMPM – SMA Jack
- 501-71013 Final qualification test report

2.2 **Commercial Standards**

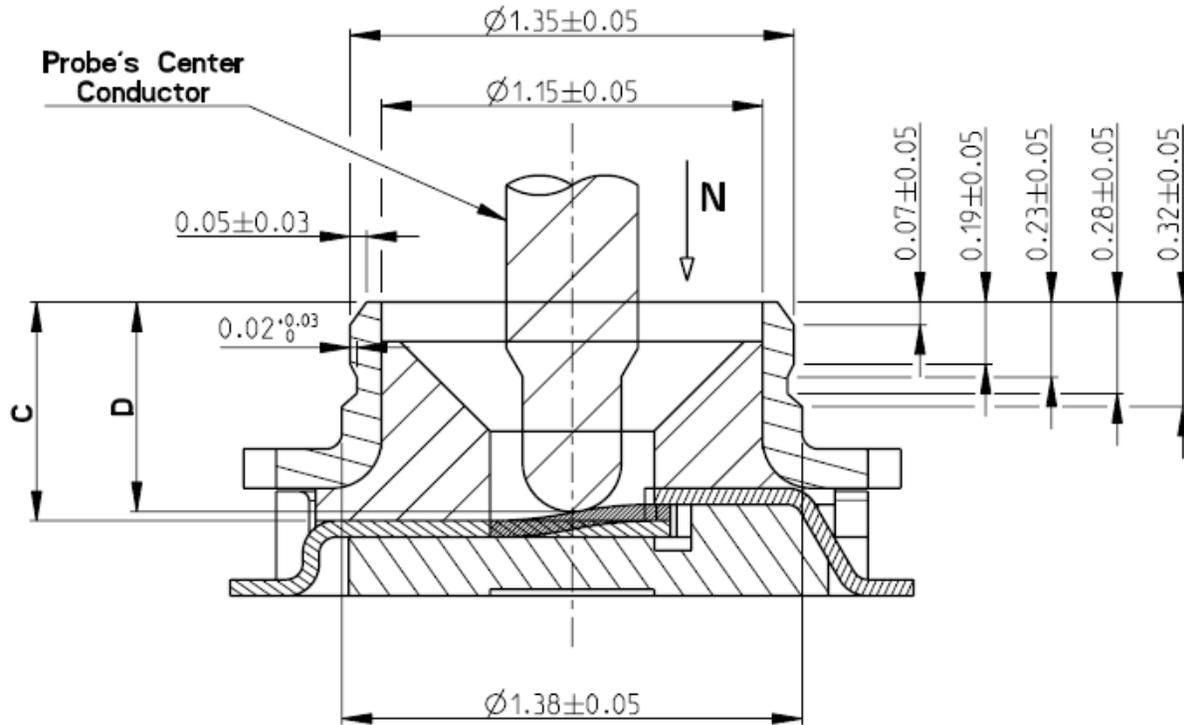
- MIL-STD-348 SMPM Specification
- IEC 169-15 SMA Specification
- IEC 61169 Radio-frequency connectors
- IEC 60068 Environmental Testing

REQUIREMENTS

2.3 Design and Construction

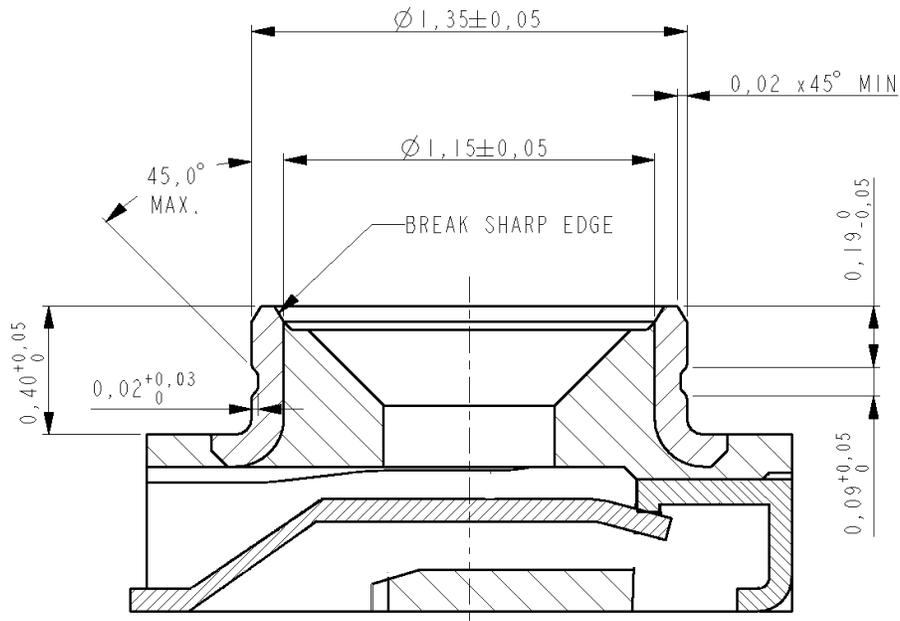
Products shall be of design, construction and physical dimensions specified on the applicable customer and product drawing.

General definition of probe counterparts = Pico Coax Connectors:



- C = 0.68 ± 0.15 mm: Distance from top interface to terminal surface; switch open
- D = 0.63mm (Reference only): Distance from top interface to terminal surface; switch closed
- Terminal movement to open the switch is 0.05mm (Reference only), at center axis
- Force (N) to open the switch: max 1.2N

Additional alternative definition of probe counterparts = Pico Coax Connectors:



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: 50Ohm
- Frequency: 0 to 11 GHz
- Temperature: Ambient

2.6 Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in clause 2.7. 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
<u>Return loss</u> Volume production probe	-10 dB: Dc - 3GHz -8 dB: >3GHz – 6 GHz -5 dB: >6GHz – 11 GHz	IEC 61169-1-1 Clause 9.2.1
<u>Return loss</u> Repair centre probe	-15 dB: Dc - 3GHz -13 dB: >3GHz – 6 GHz -8 dB: >6GHz – 11 GHz	IEC 61169-1-1 Clause 9.2.1
<u>Return loss</u> Adaptor 90°, SMPM – SMA	-20 dB: Dc - 3GHz -15 dB: >3GHz – 11 GHz	IEC 61169-1-1 Clause 9.2.1

Mechanical

Test Description	Requirement	Procedure
<u>Mating cycles</u> Volume production probe	1'000'000	10-20mm/s ~ 2 cycles/min
<u>Mating cycles</u> Repair centre probe	500	
<u>Mating cycles</u> Adaptor 90°, SMPM – SMA Jack	100	
<u>Engagement force</u> Repair centre probe	Max. 40N	
<u>Disengagement force</u> Repair centre probe	Min. 10N	
<u>Center contact force at locking position</u> Repair centre probe	Min. 1.8N	

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.

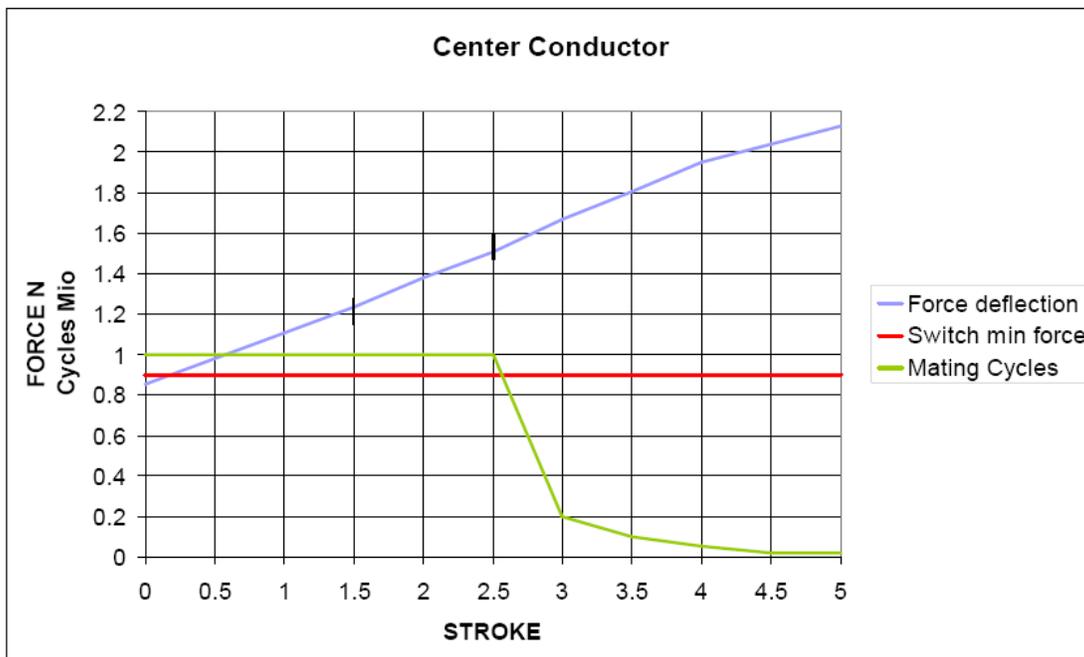
2.8 Product Qualification and Requalification Test Sequence

Test or Examination	Test group			
	1	2	3	
	Test sequence (*)			
Initial examination of product	1	1	1	
Return loss: Volume production probe	2,4			
Return loss: Repair centre probe		2,7		
Return loss: Adaptor 90°, SMPM – SMA			2,4	
Mating cycles: Volume production probe	3			
Mating cycles: Repair centre probe		6		
Mating cycles: Adaptor 90°, SMPM – SMA Jack			3	
Engagement force : Repair centre probe		3		
Disengagement force : Repair centre probe		4		
Center contact force at locking position: Repair centre probe		5		
Final examination of product	5	8	5	

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

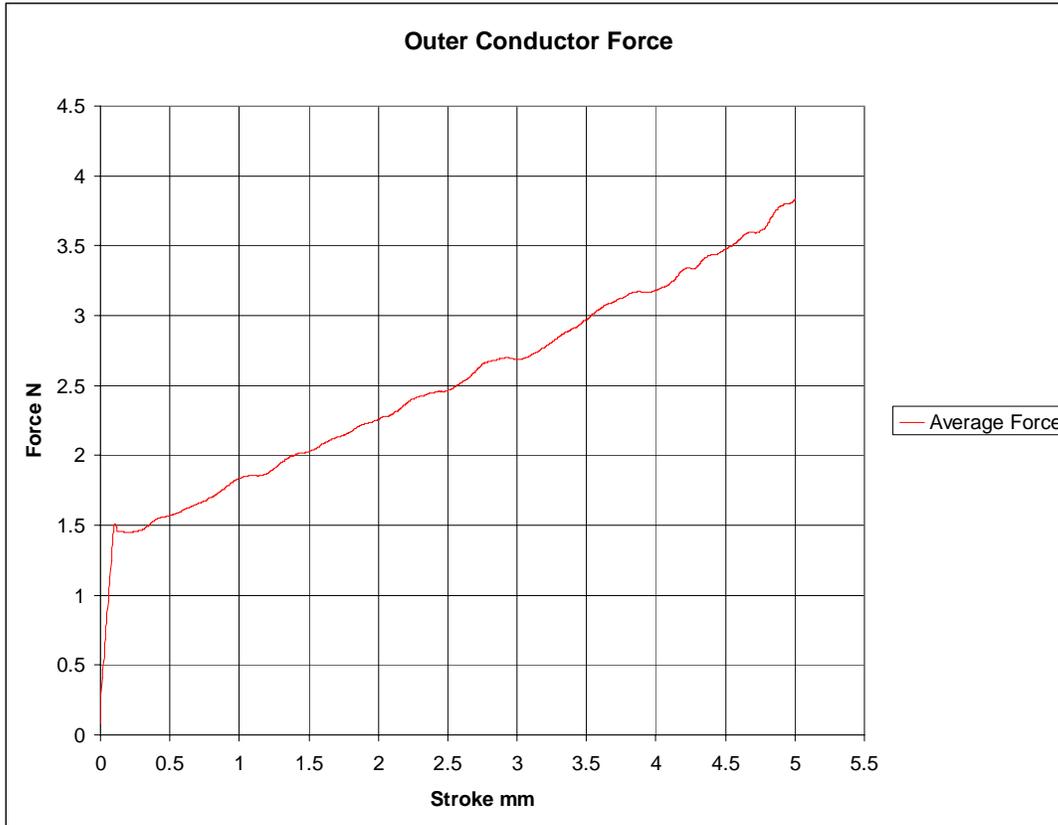
2.9 Volume production test probe, PN 619361, force diagrams

2.9.1 Center Contact



For reference only

2.9.2 **Outer Contact**



For reference only

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 re-submittal.

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.