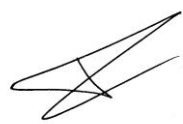





**Titre / Title**

**HIGH RELIABILITY**

**RF COAXIAL CONNECTORS**  
**for**  
**SMP Lock connectors**

**GENERIC SPECIFICATION**

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	GENERIC SPECIFICATION		
	REF. : RAD-GEN-CONN-003		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 2/ 21

## DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1/-	07/10/2015	Initial edition
1 A	08/11/2016	Add the number of mating life for endurance in para 9.14

**TABLE OF CONTENTS**

**1. INTRODUCTION ..... 5**

1.1 SCOPE ..... 5

**2. APPLICABLE DOCUMENTS..... 5**

**3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS ..... 5**

**4. REQUIREMENTS ..... 6**

4.1 GENERAL..... 6

4.1.1 *Specifications*..... 6

4.1.2 *Conditions and Methods of Test* ..... 6

4.1.3 *Manufacturer’s Responsibility for performance of Tests and Inspections* ..... 6

4.2 DELIVERABLE COMPONENTS..... 6

4.2.1 *Lot failure* ..... 6

4.2.2 *Testing and Lot Acceptance Levels*..... 6

4.3 MARKING ..... 6

4.4 MATERIALS AND FINISHES..... 6

**5. INCOMING INSPECTION..... 7**

5.1 INCOMING DOCUMENTATION INSPECTION:..... 7

5.2 EXTERNAL VISUAL INSPECTION: ..... 7

5.3 DIMENSIONS CHECK..... 7

**6. FINAL PRODUCTION TESTS ..... 9**

6.1 GENERAL..... 9

6.2 TEST METHODS AND CONDITIONS ..... 9

6.3 FAILURE CRITERIA ..... 9

6.3.1 *Parameter Limit Failure*..... 9

6.3.2 *Other failures*..... 9

6.4 FAILED COMPONENTS ..... 9

6.5 LOT FAILURE ..... 9

6.6 DOCUMENTATION ..... 9

**7. BURN-IN AND ELECTRICAL MEASUREMENTS (CHART III)..... 10**

**8. QUALIFICATION APPROVAL AND LOT ACCEPTANCE TESTS..... 10**

8.1 QUALIFICATION TESTING ..... 10

8.1.1 *General*..... 10

8.1.2 *Distribution within the Qualification Test Lot*..... 10

8.2 LOT ACCEPTANCE TESTING..... 10

8.2.1 *General*..... 10

8.2.2 *Distribution within the Sample Lot for Lot Acceptance Testing* ..... 10

8.2.3 *Lot Acceptance Level 2 Testing (LAT2)*..... 10

8.2.4 *Lot Acceptance Level 1 Testing (LAT1 or Qualification)*..... 11

8.3 LOT FAILURE ..... 11

8.4 DOCUMENTATION ..... 11

**TEST METHODS AND PROCEDURES..... 14**

9.1 INSULATION RESISTANCE ..... 14

9.2 DIELECTRIC WITHSTANDING VOLTAGE ..... 14

9.3 CONTACT ENGAGEMENT AND SEPARATION FORCES..... 14

9.4 ENGAGEMENT AND SEPARATION FORCES ..... 14

9.5 CENTRE CONTACT RETENTION ..... 14

9.6 SEAL TEST..... 14

9.6.1 *Hermetically Sealed Connectors* ..... 14



**GENERIC SPECIFICATION**

**REF. : RAD-GEN-CONN-003**

**Date:**  
November 8<sup>th</sup>, 2016

**ED/REV:**  
1 A

**PAGE:**  
4/ 21


9.6.2	<i>Leakage (Barrier-sealed Connectors)</i> .....	14
9.6.3	<i>Leakage (Panel-sealed Connectors)</i> .....	15
9.7	EXTERNAL VISUAL INSPECTION.....	15
9.8	VIBRATION.....	15
9.8.1	<i>Mounting</i> .....	15
9.8.2	<i>Procedure</i> .....	15
9.8.3	<i>Final Measurements</i> .....	15
9.9	MECHANICAL SHOCK.....	15
9.10	CABLE RETENTION FORCE (CABLE CONNECTORS ONLY).....	16
9.11	CABLING AND CRIMPING CAPABILITY (CABLE CONNECTORS ONLY).....	16
9.12	RF MEASUREMENTS: VSWR AND INSERTION LOSS.....	16
9.13	CORROSION.....	19
9.14	ENDURANCE (MATING LIFE).....	19
9.15	RF LEAKAGE (FOR BULLET OR ADAPTOR ONLY).....	19
9.16	DIMENSION CHECK.....	19
9.17	THERMAL CYCLING.....	20
9.18	POWER TEST.....	20
9.19	DESTRUCTIVE PART ANALYSIS.....	20
<b>10</b>	<b><u>DATA DOCUMENTATION</u></b> .....	<b>20</b>
10.1	CERTIFICATE OF CONFORMITY.....	20
10.2	PRODUCTION CONTROL DATA.....	20
10.3	FINAL PRODUCTION TEST DATA (CHART II).....	20
10.4	BURN-IN AND ELECTRICAL MEASUREMENT DATA (CHART III).....	21
10.5	QUALIFICATION / LOT ACCEPTANCE TEST DATA (CHART V).....	21
10.6	FAILED COMPONENTS LIST AND FAILURE ANALYSIS REPORT.....	21
10.7	LIST OF TEST REFERENCES.....	21
10.8	DOCUMENTATION DELIVERED FOR FLIGHT MODELS.....	21
10.9	DOCUMENTATION DELIVERED FOR QUALIFICATION / LAT.....	21
<b>11</b>	<b><u>PACKAGING AND DESPATCH</u></b> .....	<b>21</b>

*LIST OF CHARTS*

<b>CHART I - TESTING LEVELS</b> .....	8
<b>CHART II - FINAL PRODUCTION TESTS</b> .....	12
<b>CHART III - BURN-IN AND ELECTRICAL MEASUREMENTS (Not applicable)</b> .....	12
<b>CHART IV - QUALIFICATION TESTS</b> .....	13
<b>CHART V - LOT ACCEPTANCE TESTS</b> .....	13

*LIST OF TABLE and FIGURES*

<b>FIGURE II (a) - SWEPT FREQUENCY TEST SET-UP – VECTORIAL METHOD (2 PORTS)</b> .....	17
<b>FIGURE II (b) - SWEPT FREQUENCY TEST SET-UP – VECTORIAL METHOD (1 PORT)</b> .....	18
<b>FIGURE III (a) – VECTOR METHOD OF RF INSERTION LOSS MEASUREMENT</b> .....	18
<b>FIGURE III (b) – CABLE ASSEMBLY FOR RF INSERTION LOSS MEASUREMENT</b> .....	19

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 5/ 21

## 1. INTRODUCTION

### 1.1 SCOPE

This specification defines the general requirements for procurement and delivery of RF Coaxial connectors based on SMP Lock type.

These connectors are selected from RADIALL standard connectors and manufactured in accordance with Space use requirements described in this specification, i.e:

- They have same design as standard product from Radiall data base but selected to be space compatible for outgassing, process, technology,....
- In order to follow the design improvement of standard products, RADIALL reserves the right to update design and manufacturing process of products covered by this specification without prior notification.

This specification contains the appropriate inspection and test schedules and also specifies the data documentation requirements.

The qualification test and LAT test are performed only with customer order.

## 2. APPLICABLE DOCUMENTS

- The following documents form part of, and shall be read in conjunction with this specification. The relevant issues shall be those in effect on the date of placing the purchase order.
  - ECSS-Q-70-02, A Thermal Vacuum Test for the Screening of Space Materials
  - ECSS-Q-70-71: Data for selection of space materials and processes
  - IEC Publication N° 60068, Basic Environmental Testing Procedures
  - IEC Publication N° 60169-1, RF Coaxial Connectors, General Requirements and Measuring Methods
  - IEC Publication N° 60410, Sampling Plans and Procedures for Inspection by Attributes
  - IEC Publication N° 61726 Cable assemblies, cables, connectors and passive microwave components
    - Screening attenuation measurement by the reverberation chamber method
  - MIL-PRF-39012 Generic Specification for Connectors, Coaxial, Radio frequency
  - MIL STD 348B Department of defense interface standard radio frequency connector interfaces
  - ESA-SCC 21300 Terms, Definitions, Abbreviations, Symbols and Units
  - ESA-SCC 21700 General Requirements for the Marking of SCC Components
  - ESA-SCC 24800 Resistance to solvents of Marking, Materials and Finishes

## 3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

The terms, definitions, abbreviations, symbols and units specified in ESA/SCC Basic Specification N° 21300 shall apply.

## 4 REQUIREMENTS

### 4.1 **GENERAL**

The test requirements for qualification approval of a component shall comprise Final Production Tests (see Chart II) and Qualification Testing (see Chart V).

The test requirements for procurement of components so qualified shall comprise Final Production Tests (Chart II) together with a level Acceptance Testing (see Chart V) to be specified by the orderer.

#### 4.1.1 Specifications

For qualification approval, procurement (including lot acceptance testing) and delivery of components in conformity with this specification, the specifications listed in Section 2 of this document shall apply in total otherwise specified herein or in the Detail Specification.

#### 4.1.2 Conditions and Methods of Test

The conditions and methods of test shall be in accordance with this specification and the Detail Specification.

The visual examination shall be in accordance with MIL-PRF-39012 specification.

#### 4.1.3 Manufacturer's Responsibility for performance of Tests and Inspections

The manufacturer shall be responsible for the performance of tests and inspections required by the applicable specifications. These tests and inspections shall be performed at manufacturer premises.

### 4.2 **DELIVERABLE COMPONENTS**

Each delivered component shall be traceable to its production lot. Components delivered to this specification shall have completed satisfactorily all tests to the testing level specified in the purchase order.

#### 4.2.1 Lot failure

Lot failure may occur during Qualification Testing (Chart V) or lot Acceptance Testing (Chart V).

Should such failure occur during procurement, the manufacturer shall notify the Orderer in writing within 5 working days, giving details of the number and mode of failure and the suspected cause.

#### 4.2.2 Testing and Lot Acceptance Levels

This specification defines the testing severity and the different tests applicable to the components (see Chart I).

For Lot Acceptance testing, 2 levels are possible (see Chart V). The Lot Acceptance levels are designated 1, and 2 and are comprised of tests as follows :

- Level 2 (LAT2): Electrical and Endurance Subgroup plus Quality Assurance Subgroup.
- Level 1 (LAT1): Environmental and Mechanical Subgroup plus Electrical and Endurance Subgroup plus Quality Assurance Subgroup.


The Lot Acceptance level shall be specified in a purchase order.

### 4.3 **MARKING**

All components, procured and delivered to this specification shall be marked only on the primary package, not on the connectors due to small size of them.

### 4.4 **MATERIALS AND FINISHES**

All non-metallic materials and finishes that are not within a hermetically sealed enclosure, of the components specified herein shall meet the outgassing requirements as outlined in ECSS-Q-70-02. Specific requirements for materials and finishes are specified in the Detail Specification.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 7/ 21

**5 INCOMING INSPECTION**

**5.1 Incoming documentation inspection:**

Required documentation submitted by the sub-suppliers (C of C, material certificate ...) shall be reviewed.

**5.2 External visual inspection:**

The samples shall be selected in accordance to MIL-STD-105E; inspection shall be done using Single sampling plan, Level III, 1.0 AQL

Visual inspection shall be performed in accordance to MIL-PRF-39012.

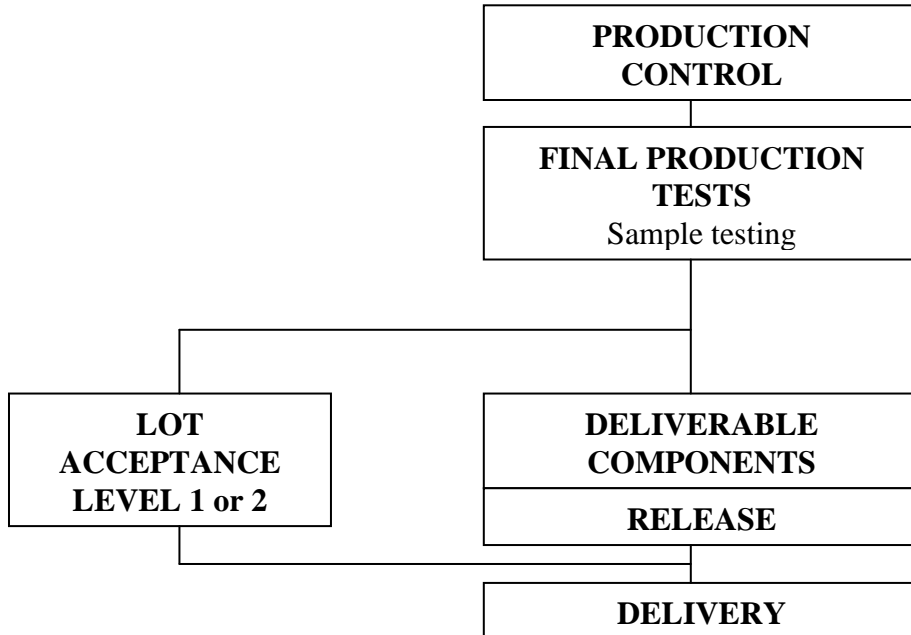
After 3 lots with non conformance, the supplier is allowed to review its sampling plan and to use Single sampling plan, Level II, 1.0 AQL

**5.3 Dimensions Check**


The samples shall be selected in accordance to MIL-STD-105E; Key characteristics shall be controlled using Double sampling plan, Level II, 0.4 AQL

After 3 lots with non conformance, the supplier is allowed to review its sampling plan and to use Double sampling plan, Level I, 0.4 AQL

**CHART I - TESTING LEVELS**





	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 9/ 21

**6 FINAL PRODUCTION TESTS**

**6.1 GENERAL**

Unless otherwise specified in the Detail Specification, all components used for qualification testing and all components for delivery including those submitted to lot Acceptance tests shall be subjected to tests and inspections in accordance with Chart II.

Unless otherwise specified in the Detail Specification, the tests shall be performed in the order shown. Any components that do not meet requirements shall be removed from the lot and at no future time be re-submitted to the requirements of this specification.

The samples shall be selected in accordance with Chart II. If one or more defects are found, the lot shall be screened for that particular defect and defects parts removed. A new sample of parts shall be selected in accordance with Chart II and all final production tests performed again.

If one or more defects are found in the second sample; the lot shall be rejected.

**6.2 TEST METHODS AND CONDITIONS**

The applicable test methods and conditions are specified in the paragraphs referenced in Chart II of this specification.

**6.3 FAILURE CRITERIA**

*6.3.1 Parameter Limit Failure*

A component shall be counted as a limit failure if 1 or more parameters exceed the limits shown in Table 2 of the Detail Specification. Any component, which exhibits a limit failure prior to the final production test sequence, shall be rejected, but not counted when determining lot rejection.

*6.3.2 Other failures*

A component shall be counted as a failure in any of the following cases :

- (a) Mechanical failure
- (b) Handling failure
- (c) Lost component

**6.4 FAILED COMPONENTS**


A component shall be considered as a failed component if it exhibits 1 or more of the failure modes described in Para. 6.3 of this specification.

**6.5 LOT FAILURE**

In case of lot failure, the Manufacturer shall act in accordance with the requirements specified in paragraph. 4.2.1 of this specification.

**6.6 DOCUMENTATION**

Data documentation of Final Production Test data shall accordance with the requirements of Para. 10.3 and 10.8 of this specification.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 10/ 21

**7 BURN-IN AND ELECTRICAL MEASUREMENTS (CHART III)**

Not applicable.

**8 QUALIFICATION APPROVAL AND LOT ACCEPTANCE TESTS**

**8.1 QUALIFICATION TESTING**

*8.1.1 General*

Qualification testing shall be in accordance with the requirements of Chart V of this specification. The tests to Chart V shall be performed on the specified sample, chosen at random from components, which have successfully passed the tests in Chart II. This sample constitutes the Qualification Test lot.

The Qualification Test lot is divided into subgroups and all components assigned to a subgroup shall be subjected to the entire test in that subgroup, in the sequence show.

Components shall be serialised prior to Chart V testing.

The applicable test requirements are detailed in the paragraphs referenced in Chart V.

*8.1.2 Distribution within the Qualification Test Lot*

A sample of 12 or 15 connectors shall be submitted to qualification testing (Chart V).

Where a Detail Specification covers a range or series of components that are considered similar. Then the qualification test lot shall be comprised of component types so selected that they adequately represent all of the various mechanical, structural and electrical peculiarities of the procured range or series.

The selected distribution shall be agreed by the orders.

**8.2 LOT ACCEPTANCE TESTING**

*8.2.1 General*

The sample sizes of the 2 lot acceptance levels are specified in Chart V.

All components assigned to a subgroup shall be subjected to all of the tests of that subgroup in the sequence shown.

The test of Chart V shall be performed on the specified sample which shall have been chosen.

The applicable test requirements are detailed in the paragraphs referenced in Chart V.

*8.2.2 Distribution within the Sample Lot for Lot Acceptance Testing*


Where a Detail Specification covers a range or series of components that are considered similar, then it may be necessary that the sample for lot acceptance testing be comprised of component types so selected that they adequately represent all of the various mechanical, structural and electrical peculiarities of the procured range or series.

The distribution of the component types will normally vary from procurement to procurement and shall be specified by the Orders.

*8.2.3 Lot Acceptance Level 2 Testing (LAT2)*

For the Electrical and Endurance Subgroup, the following shall apply :

- (a) Components, selected from the Electrical an Endurance Subgroup, shall be serialised prior to the tests.
- (b) The tests in this subgroup are considered to be destructive and therefore components so tested shall not form part of the delivery lot.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 11 / 21

**8.2.4** Lot Acceptance Level 1 Testing (LAT1 or Qualification)

Lot Acceptance Level 1 Testing shall comprise the tests for LAT2 (Electrical and Endurance Subgroup) plus tests on an Environmental and Mechanical Subgroup. For the Quality Assurance, Electrical and Endurance Subgroups, the requirements and conditions for LAT2 (see Para. 8.2.3) respectively shall apply.

For the Environmental Subgroup, the following shall apply :

- (a) Components, selected from the Electrical and Endurance Subgroup, shall be serialised prior to the tests.
- (b) The tests in this subgroup are considered to be destructive and therefore components so tested shall not form part of the delivery lot.

**8.3 LOT FAILURE**

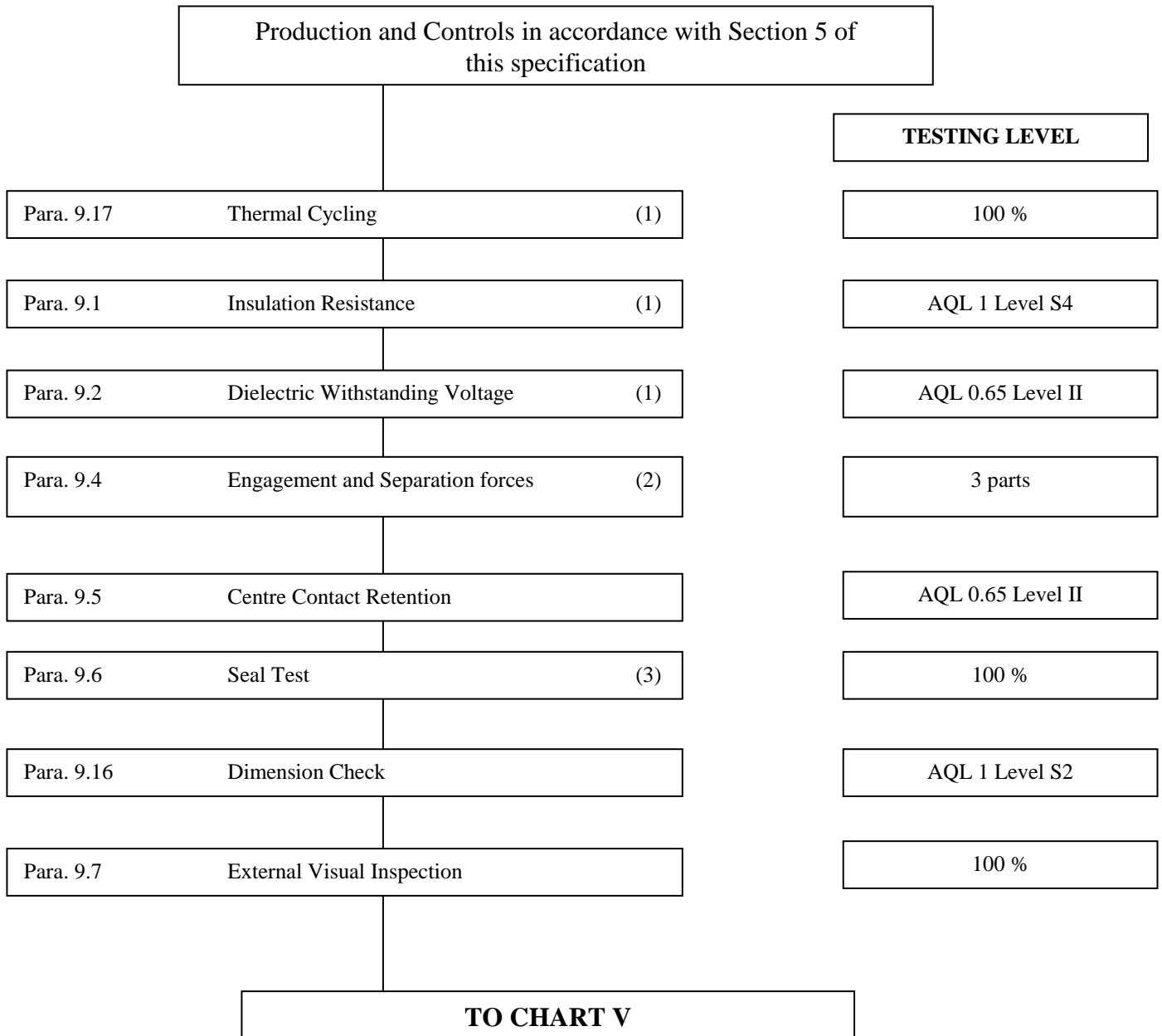
A lot shall be considered as failed if the allowable number of failures according to Chart V of this specification, as relevant, has been exceeded.

In the case of lot failure, the Manufacturer shall act in accordance with paragraph. 4.2.1 of this specification.

**8.4 DOCUMENTATION**

For qualification testing and LAT, the test data shall be documented in accordance with the requirements of Para. 10.5 and 10.9 of this specification..

**CHART II - FINAL PRODUCTION TESTS**



**NOTES:**

1. Not applicable to Variants where the centre contact and insulator are not mounted in the connector for delivery.
2. Applicable only for SMP Male connector (to validate Limited or Full Detent forces)
3. Applicable only for hermetical connectors.

**CHART III - BURN-IN AND ELECTRICAL MEASUREMENTS (Not applicable)**

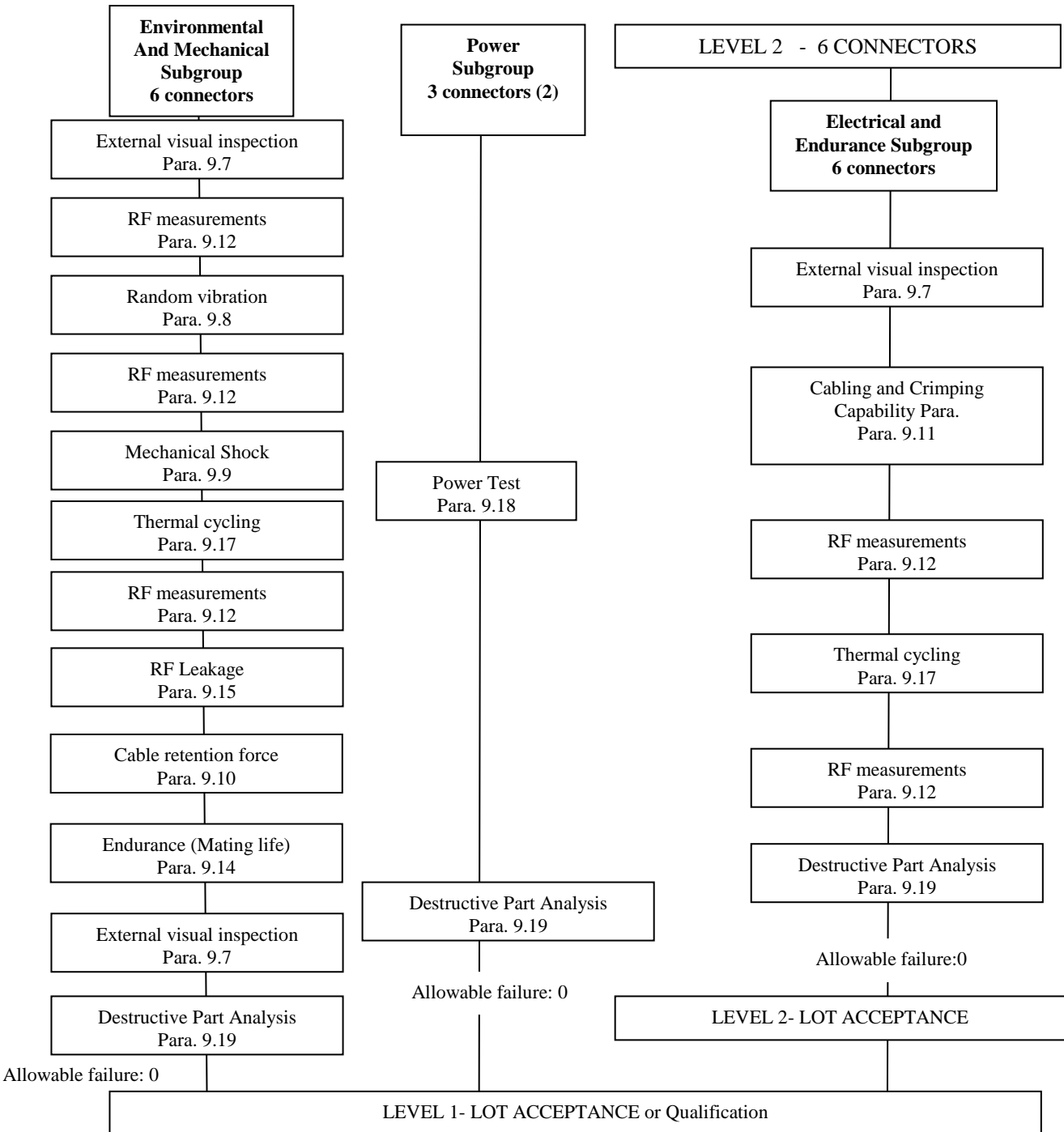
Not Applicable

**CHART IV - QUALIFICATION TESTS**


Shall be performed in Chart V

**CHART V – LOT ACCEPTANCE TESTS**

LEVEL 1- 12 or 15 CONNECTORS (1)



Note: (1) A sample of 15 connectors shall be used if Power test is applicable, otherwise 12 connectors  
 (2): The power test is applicable only if specified on the Technical Data Sheet of the connector.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 14/ 21

## **TEST METHODS AND PROCEDURES**

### **9.1 INSULATION RESISTANCE**

The insulation resistance shall be measured on the uncabled connectors between the centre contact and the body under a voltage of 500 Vdc. The measurements shall be read after 1 minute of voltage application. The limit is given in the Technical Data Sheet of the connector.

### **9.2 DIELECTRIC WITHSTANDING VOLTAGE**

The connectors shall be tested under the following conditions:

- (a) The maximum relative humidity shall be 50%.
- (b) Precautions shall be taken to prevent air-gap breakdowns.
- (c) The test voltage specified in Table 2 of the Detail Specification shall be applied instantaneously.
- (d) The points of application of the test voltage shall be between the centre contact and the shell of the uncabled connectors.
- (e) The duration of application of the test voltage shall be 1 minute.
- (f) The leakage current shall be lower than 2mA under voltage specified in the Technical Data Sheet of the connector

### **9.3 CONTACT ENGAGEMENT AND SEPARATION FORCES**

#### In-process Control

The female contact shall be tested as follows.

A force, which is gradually increased, shall be applied with force speed not exceeding 1 mm/second until the steel test pin properly engages with, or separated from, the female connectors. The polished steel test pins shall be defined in the Detail Specification. The oversize test pin shall be engaged and separated from each female contact 3 times. Then, the engagement force shall be measured with the maximum diameter test pin. Subsequently, the minimum diameter test pin shall be engaged and separated once to measure the withdrawal force. The engagement and separation forces shall meet the requirements of the Detail Specification.

### **9.4 ENGAGEMENT AND SEPARATION FORCES**

For SMP Male connector only:

A force, which is gradually increased, shall be applied with force speed not exceeding 1 mm/second until the properly engaged and separated from the female connectors. The engagement and separation forces shall meet the requirements of the Detail Specification to validate the Limited or Full detent forces.

### **9.5 CENTRE CONTACT RETENTION**

Axial forces as specified in the Technical Data Sheet of the connector shall be applied, first in one direction and then in the other, to the centre contact on assembled connector only (not applicable for connector unassembled), using an appropriate method. The inner contact shall be inspected after the forces have been applied in one direction and again after the forces have been applied in the opposite direction to determine if the contact has been displaced from the specified interface dimensions.

### **9.6 SEAL TEST**

#### 9.6.1 Hermetically Sealed Connectors

The leakage rate shall not exceed  $10^{-8}$  cubic centimetres per second of helium under a vacuum of  $10^{-5}$  Torr.

#### 9.6.2 Leakage (Barrier-sealed Connectors)

Connectors shall be subjected to an air pressure of 2.1 kg/cm<sup>2</sup> applied to one end, and the whole assembly immersed in water or isopropyl alcohol at a temperature of +15 to +25°C.

The connectors shall remain immersed for 2 minutes maximum and there shall be no bubbles emanating from the other end.

9.6.3 Leakage (Panel-sealed Connectors)

Panel-sealed specimens shall be mounted in a normal manner in a suitable test jig. The mating end of the connectors shall be sealed with the appropriate mating connector and the whole assembly immersed in water or isopropyl alcohol at a temperature of +15 to +25°C.  
An air pressure of 2,1 kg/cm<sup>2</sup> shall be applied to one end of the assembly for 2 minutes maximum, and there shall be no bubbles emanating from the connectors.

9.7 **EXTERNAL VISUAL INSPECTION**

External visual inspection shall be performed according to MIL-PRF 39012 specification.

9.8 **VIBRATION**

9.8.1 Mounting

The specimens shall be mechanically connected to the vibration generator either directly or by means of a fixture as specified below. Mounting fixtures shall be such that they enable the specimen to be vibrated in 3 mutually perpendicular axes in turn, which should be so chosen that fault are most likely to be revealed.

If the component is provided with specific means of mounting, they shall be used as specified in the Technical Data Sheet and any additional restraining straps should be avoided.

Unless otherwise specified, components not provided with specific mounting means shall be clamped by the body.

If external connections, necessary for measuring and supply purposes, are specified in the Technical Data Sheet, they should add the minimum restraint and mass.

9.8.2 Procedure

The random vibration level shall be applied on each axis (X, Y and Z)

Range (Hz)	Level
20 -100	+6dB/oct
100-1000	0.67g <sup>2</sup> /Hz
1000-2000	-3dB/oct
Global :33grms duration: 60s per axis	

Tolerances frequency: ± 1.5dB for 20 Hz ≤ f ≤ 300 Hz,  
± 3 dB for 300 Hz ≤ f ≤ 2000 Hz  
± 1dB overall.


Frequencies: ±2%

9.8.3 Final Measurements

After vibration, the components shall be visually inspected and there shall be no evidence of damage.

9.9 **MECHANICAL SHOCK**

Not Applicable.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 16/ 21

**9.10 CABLE RETENTION FORCE (cable connectors only)**

- (a) The connector shall be assembled to its test cable as specified in the Detail Specification. It shall be firmly fixed and a movable sleeve attached to the cable. The sleeve shall then be moved away from the fixed connector longitudinally and gradually, and in such a manner that the cable remains unbent and untwisted. A scale for measuring the retention force (see Detail Specification) shall be attached to the sleeve. The force shall be maintained for 30 seconds minimum.
- (b) The assembly, still under tension, shall be tested for continuity, using a simple low voltage lamp circuit, and shall then be examined for mechanical failure, loosening or rupture.
- (c) With the connector still in the fixed position, the cable shall be held at a point 50 times the diameter of the cable from the connector and a torque shall be applied in both directions as specified in the Detail Specification.
- (d) This test is only application to connectors designed to accept flexible cables. The cable shall then be bent at a radius of 10 times the diameter of the cable, starting at the connector, at an angle of  $90 \pm 5^\circ$  from the axis of the connector, then reversed  $180 \pm 10^\circ$ .

This procedure shall be repeated 4 times prior to re-test and re-examination as specified in point (b) above.

**9.11 CABLING AND CRIMPING CAPABILITY (cable connectors only)**

The solderability test Ta of IEC Publication N° 60068-2-20 shall be performed on parts to be soldered as applicable (Method 2, size B).

The connector shall be assembled and crimped or soldered to the cable as specified in the Detail Specification, using the manufacturer’s approved crimping tools and cabling procedure.

There shall be 2 cable assemblies with male connectors at each end and 2 cable assemblies with female connectors at each end. These 4 cable assemblies shall have identical lengths. These cable assemblies shall be equipped with identical male connectors or identical female connectors when the scalar measurement method is chosen.

- (a) The assembly shall be carried out without particular difficulty (for crimp-connectors only).
- (b) The crimps shall be examined under X10 magnification and shall be free from cracks.
- (c) Solder joints shall be examined under X10 magnification, They shall be bright and show a good wetting.
- (d) Interface and external dimensions shall conform to those shown in Figure 2 of the Detail Specification.
- (e) Insulation resistance and dielectric withstanding voltage shall meet the requirements of the Detail Specification.

**9.12 RF Measurements: VSWR and Insertion Loss**

**VSWR:** The reflection coefficient or VSWR shall be measured in accordance with the vectorial methods :

- Vectorial method (test set-up shown in Figure II (a) or II (b))

Across the full frequency range by the swept frequency technique or, alternatively, at fixed frequencies, equally spaced points (7 minimum) across the frequency range and one for the worst case value. The measured values shall not exceed those given in the Technical Data Sheet of the connector.

For flange mounted connectors, the rear part of the connector may be machined off to allow direct assembly of a coaxial test set-up to the rear part of the connector.

The VSWR or reflection coefficient of 1 connector is determined by using the temporal response (time domain) and a function called “GATE” to isolate the connector which must be connected to the standard precision adapter N°3 (see figure II (a) or II (b)). For the measurement of the other connector, the cable assembly must be reversed.

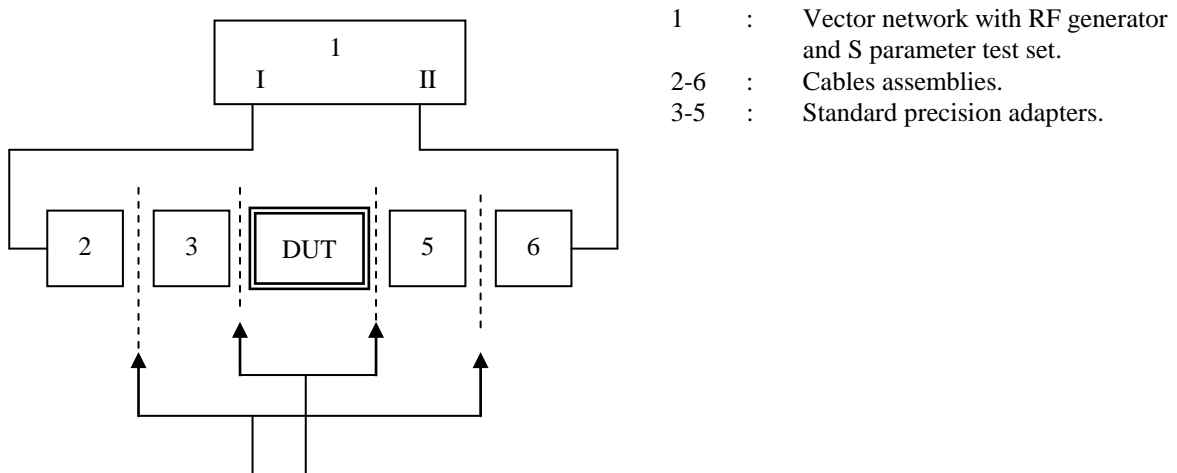


**Insertion Loss:** The connectors shall be tested as shown in Figure III (a). Insertion loss of a mated connector set is defined as the increase of a loss due to insertion of a mated connector set in a cable. This includes the reflection losses to the cable and dissipating losses in the pair.

Procedure :

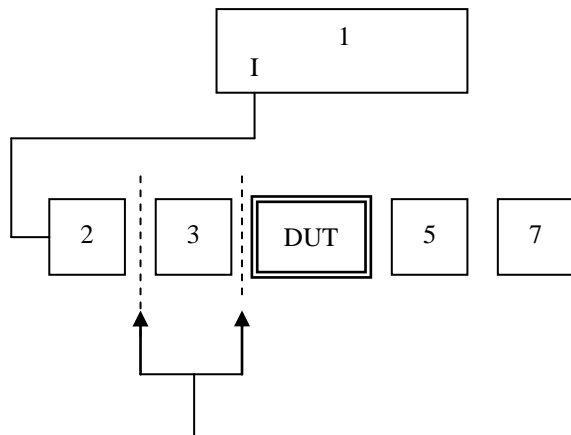
- For lot acceptance tests (Chart V): use 1 of the 2 male cable assemblies and 1 of the 2 female cable assemblies from the VSWR measurement (cable assembly of Figure III (b)).
- Measures the electrical length of the cable assembly (length L1) (a time reflectometer may be used to measure the electrical length).
- The equipment is calibrated. The insertion losses of the cable assembly are measured and the values are recorded.
- The connector pair is inserted at the point P of the cable assembly, as shown in Figure III (b), the length (L2) is adjusted so that the electrical length is identical to cable assembly to within  $\lambda \text{ min}/20$  (min is the wavelength at the highest test frequency in the frequency range).
- The equipment is calibrated and the insertion losses of the cable assembly, including connector pair under test, are measured. The values are recorded.
- Subtract the insertion loss of cable assembly measured earlier to obtain the insertion loss of the connector pair.
- The insertion loss of 1 connector shall be the insertion loss of the connector pair divided by 2.
- Measurement shall be performed across the full frequency range by the swept frequency technique or, alternatively, at fixed frequencies, equally spaced points (7 minimum) across the frequency range.
- For flange mounted connectors, the rear part of the connector may be machined off to allow direct assembly of a coaxial test set-up to the rear part of the connector.

**FIGURE II (a) - SWEEPED FREQUENCY TEST SET-UP – VECTORIAL METHOD (2 PORTS)**



Possible calibration planes of full two ports calibration.

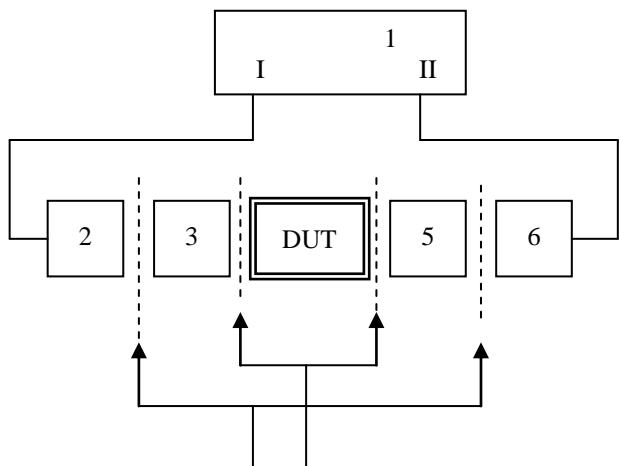
**FIGURE II (b) - SWEPT FREQUENCY TEST SET-UP – VECTORIAL METHOD (1 PORT)**



- 1 : Vector network with RF generator and S parameter test set.
- 2 : Cables assemblies.
- 3-5 : Standard precision adapters.
- 7 : Precision termination (reflection coefficient better than 0.017 (-35 dB) in the test frequency range).


Possible calibration planes of S11 calibration (reflection).

**FIGURE III (a) – VECTOR METHOD OF RF INSERTION LOSS MEASUREMENT OF MATED CONNECTORS**

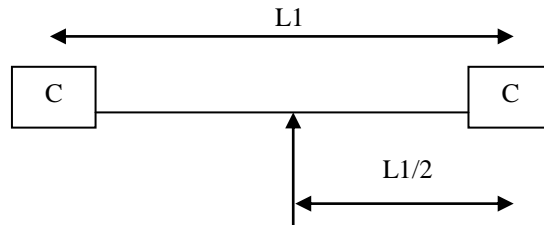


- 1 : Vector network with RF generator and S parameter test set.
- 2-6 : Cables assemblies.
- 3-5 : Standard precision adapters

Possible calibration planes of full two ports calibration.

	GENERIC SPECIFICATION		
	REF. : RAD-GEN-CONN-003		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 19/ 21

**FIGURE III (b) – CABLE ASSEMBLY FOR RF INSERTION LOSS MEASUREMENT OF MATED CONNECTORS**



Point of insertion of connector pair to be measured.

**NOTES:**

1. The connector (c) at each end of the cable assembly must have a reflection coefficient better than 0.1 (-20 dB) in the test frequency range.
2. The connector pair to be measured must be inserted at the point P (distance = L1/2).

**9.13 CORROSION**

Unmated and uncabled connector shall be submitted to test Ka of IEC Publication N° 60068-2-11 for 48 hours.

After the test, the connectors shall be inspected and expose no base metal on the interface or mating surface. They shall meet the requirements of the Technical Data Sheet of the connector.

**9.14 ENDURANCE (Mating Life)**

Each connector under test shall be mated with a typical production mating connector as per this specification. The connector shall be submitted to the number of cycles of mating and unmating specified below. The connector and its mating part shall be completely mated and completely unmated during this cycle. It is permitted to shake or blow debris on interface surfaces at intervals of not less than 20 cycles. Solvents and tools shall **not** be used for cleaning.

After this test, the mating and unmating forces, the connectors shall be visually examined and, except for contact, shall show no evidence of physical damage.

For SMPL Limited Detent:	Nb of cycle for qualification:	500 cycles
	Nb of cycle for Lot Acceptance:	100 cycles

**9.15 RF LEAKAGE (for bullet or adaptor only)**

The connector shall be tested in reverberant chamber according to test method defined in IEC Publication N° 61726. The limit is given in the Technical Data Sheet.

**9.16 DIMENSION CHECK**

See MIL-PRF 39012 Specification and the Technical Data Sheet. If 1 failure occurs, the complete lot shall be checked.

### 9.17 THERMAL CYCLING

**For Chart II:** The components shall be subjected to test Nb of IEC Publication N° 60068-2-14. The number of cycles shall be 5 with 15 minutes at each operating temperature (see Technical Data Sheet), temperature rate shall be 5°C/mn max. The connectors under test shall be maintained with the adequate pair of connectors.

**For Chart V:**

**For sub-group “Environmental and mechanical”:** The components shall be subjected to test Nb of IEC Publication N° 60068-2-14. The number of cycles shall be 10 with 15 minutes at each operating temperature (see Technical Data Sheet), temperature rate shall be 5°C/mn max. The connectors under test shall be maintained with the adequate pair of connectors.

**For sub-group “Electrical and endurance”:**

**-For Qualification (1st procurement):** The components shall be subjected to test Nb of IEC Publication N° 60068-2-14. The number of cycles shall be 500 with 15 minutes at each operating temperature (see Technical Data Sheet), temperature rate shall be 5°C/mn max. The connectors under test shall be maintained with the adequate pair of connectors.

**- For Lot Acceptance test:** The components shall be subjected to test Nb of IEC Publication N° 60068-2-14. The number of cycles shall be 100 with 15 minutes at each operating temperature (see Technical Data Sheet), temperature rate shall be 5°C/mn max. The connectors under test shall be maintained with the adequate pair of connectors.

### 9.18 POWER TEST

This test will be done on the connector used under power (see Technical Data Sheet). The multipactor, power handling and corona test (if required) shall be performed according to Power test procedure.

### 9.19 DESTRUCTIVE PART ANALYSIS

Each connector had been cut and put into clear epoxy. After drying, each sample had been polished to the centre of the conductor part. The following points were examined:

- position of the insulators in the connector,
- fitting of all the parts,
- damages or deformations on parts.

## 10 DATA DOCUMENTATION

### 10.1 CERTIFICATE OF CONFORMITY

The Certificate Of Conformity shall include as a minimum:

- (a) Reference to the Radial Detail Specification including issue.
- (b) Reference to the applicable Radial Generic Specification, including issue.
- (c) Radial Part Number, Designation and Quantity.
- (d) Date Code
- (e) Purchase order reference.
- (f) Information relative to any additions to this specification and/or the Detail Specification.
- (g) Manufacturer’s name and address.
- (j) Signature on behalf of Manufacture.


### 10.2 PRODUCTION CONTROL DATA

Shall not be supplied.

### 10.3 FINAL PRODUCTION TEST DATA (Chart II)

A test result summary shall be compiled showing the total number of components submitted to, and the total number rejected after, each test, measurement and inspection of Chart II.

The final production test data shall form an integral part of the data documentation package.

	<b>GENERIC SPECIFICATION</b>		
	<b>REF. : RAD-GEN-CONN-003</b>		
	<b>Date:</b> November 8 <sup>th</sup> , 2016	<b>ED/REV:</b> 1 A	<b>PAGE:</b> 21/ 21

**10.4 BURN-IN AND ELECTRICAL MEASUREMENT DATA (Chart III)**

Not applicable.

**10.5 QUALIFICATION / LOT ACCEPTANCE TEST DATA (Chart V)**

All data shall be referenced to the relevant serial numbers. Detailed records shall be provided of the components submitted to each test in each of the subgroups and of those rejected.

Detailed data shall be provided of all electrical measurements made in accordance with the Detail Specification, as and where application.

**10.6 FAILED COMPONENTS LIST AND FAILURE ANALYSIS REPORT**

The failed component list and failure analysis report shall provide full details of:

- (a) The reference number and description of the test or measurement performed as defined in this specification and/or the Detail Specification.
- (b) The serial number (if application) of the failed component.
- (c) The failed parameter and the failure mode of the component.  
Detailed failure analysis, if requested

**10.7 LIST OF TEST REFERENCES**

This list shall include all Manufacturers' references or codes, which are necessary to correlate the test data provided with the applicable tests specified in the tables of the Detail Specification.

**10.8 DOCUMENTATION DELIVERED FOR FLIGHT MODELS**

The Flight model connectors will be delivered with:

- (a) Certificate of Conformity
- (b) Final production test data (Chart II),see Para. 10.3

**10.9 DOCUMENTATION DELIVERED FOR QUALIFICATION / LAT**

The Qualification or LAT, the connectors will be delivered with:

- (a) Qualification/LAT report see Para 10.5
- (b) List of equipment used,

**11 PACKAGING AND DESPATCH**

Devices shall be packaged separately so that they suffer to change any characteristic or loss of inherent reliability during shipment and in a manner acceptable to a common carrier.

Any damage resulting from faulty packing shall be the responsibility of the manufacturer.