



**RF COAXIAL CONNECTORS, TNC,  
VERY HIGH POWER, 50 OHMS  
(FEMALE INTERFACE)  
BASED ON TYPE TNC-VHP**

**ESCC Detail Specification No. 3402/027**

|         |            |
|---------|------------|
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## 1 GENERAL

### 1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for RF Coaxial Connectors, Type TNC-VHP, 50 Ohms (Female Interface). It shall be read in conjunction with ESCC Generic Specification No. 3402, the requirements of which are supplemented herein.

### 1.2 TYPE VARIANTS

A list of the type variants of the connectors specified herein, which are also covered by this specification, is given in Table 1(a).

For each type variant, specific electrical, mechanical and other relevant characteristics are given in individual Figures 2(b) at the end of this specification.

### 1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the connectors specified herein, are as scheduled in Table 1(b).

### 1.4 PARAMETER DERATING INFORMATION

The derating information applicable to the connectors specified herein is shown in Figure 1.

### 1.5 PHYSICAL DIMENSIONS

The physical dimensions of the connectors specified herein are shown in Figure 2.

### 1.6 STANDARD TEST CONNECTOR INTERFACE

Whenever gauges are required for mating with the connectors under test, their physical dimensions shall be in accordance with those specified in Figure 3.

**TABLE 1(a) – TYPE VARIANTS**

| Variant Number | Description (1)  |
|----------------|--|
| 01             | Square Flange Female Receptacle, Round Post Termination                      |
| 02             | Square Flange Female Receptacle, for PCB Transmission Line with Ø Pin 1.73mm |

**NOTES:**

1. The Variants are described in Figure 2(b).

**TABLE 1(b) - MAXIMUM RATINGS**

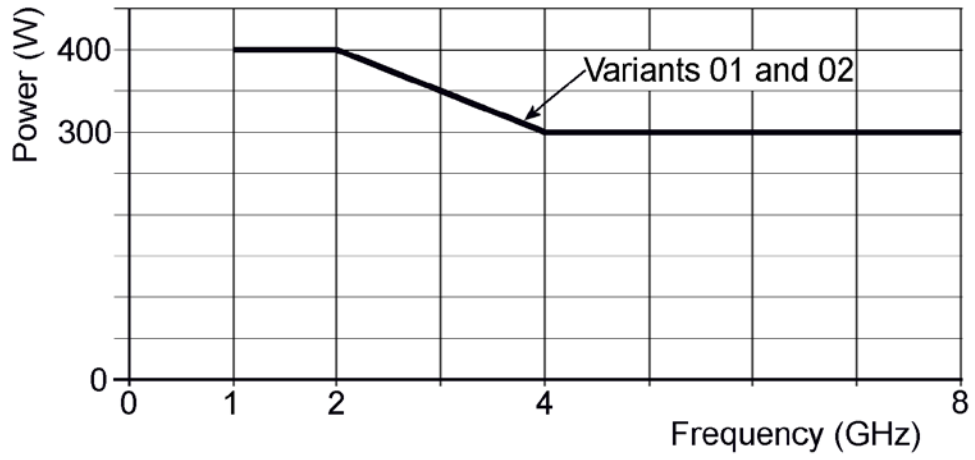
| Characteristics             | Symbols   | Maximum Ratings                    | Units       | Remarks                                 |
|-----------------------------|-----------|------------------------------------|-------------|---|
| RF Power (Continuous)       | $P_{rf}$  | 400                                | W           | Notes 1, 2, 3                           |
| Nominal Impedance           | Z         | 50                                 | $\Omega$    | -                                       |
| Operating Frequency Range   | f         | DC to 8                            | GHz         | -                                       |
| Operating Voltage           | $V_{op}$  | 500                                | Vrms        | -                                       |
| Corona Level                | $P_{co}$  | 120                                | W           | RF power level without corona breakdown |
| Operating Temperature Range | $T_{op}$  | See Figure 2(b)                    | $^{\circ}C$ | $T_{amb}$                               |
| Storage Temperature Range   | $T_{stg}$ | As per Operating Temperature Range | $^{\circ}C$ | -                                       |

**NOTES:**

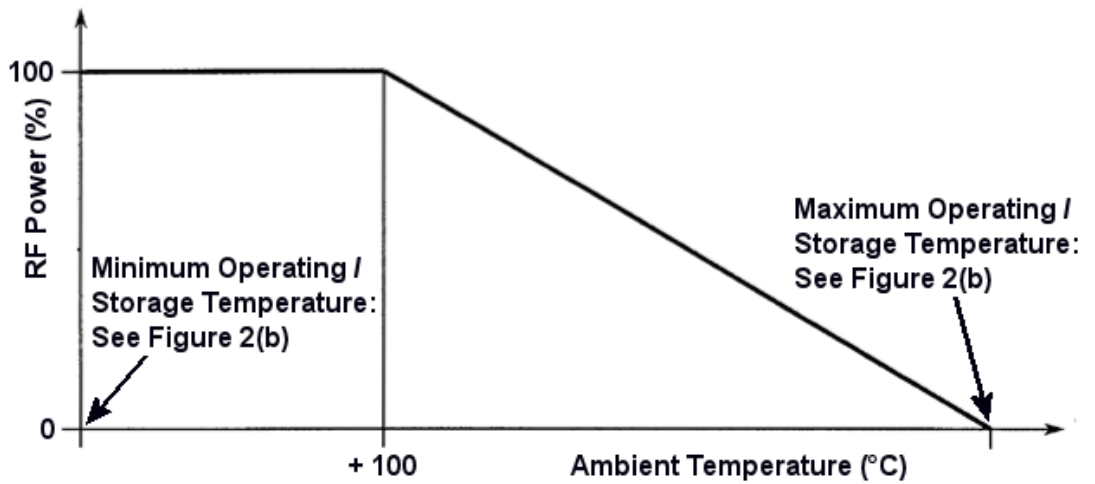
1. Derating with pressure is not required for  $\leq 1.5\text{mPa}$ .
2. At  $f = 2\text{GHz}$ . For  $f > 2\text{GHz}$ , derate as shown in Figure 1(a). Load VSWR is better than 1.3.
3. At  $T_{amb} = +100^{\circ}C$ . For  $T_{amb} > +100^{\circ}C$ , derate as shown in Figure 1(b). For operation under vacuum,  $T_{amb}$  shall be the temperature of the equipment the component is mounted on.

**FIGURE 1 - PARAMETER DERATING INFORMATION**

**FIGURE 1(a) - POWER VERSUS FREQUENCY**



**FIGURE 1(b) - RF POWER VERSUS AMBIENT TEMPERATURE**

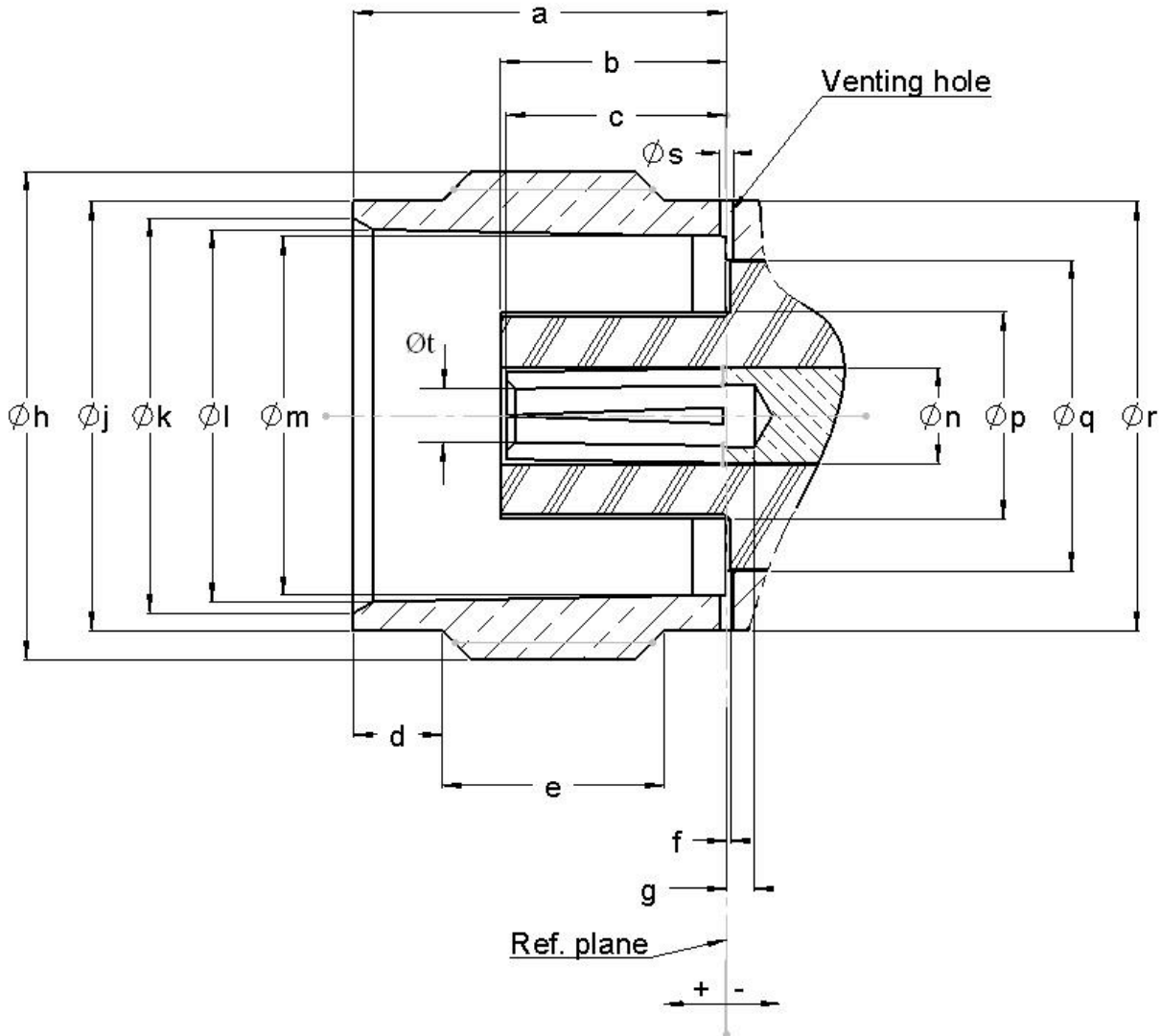




**FIGURE 2 – PHYSICAL DIMENSIONS**

**FIGURE 2(a) – INTERFACE DIMENSIONS**

**TNC FEMALE INTERFACE**

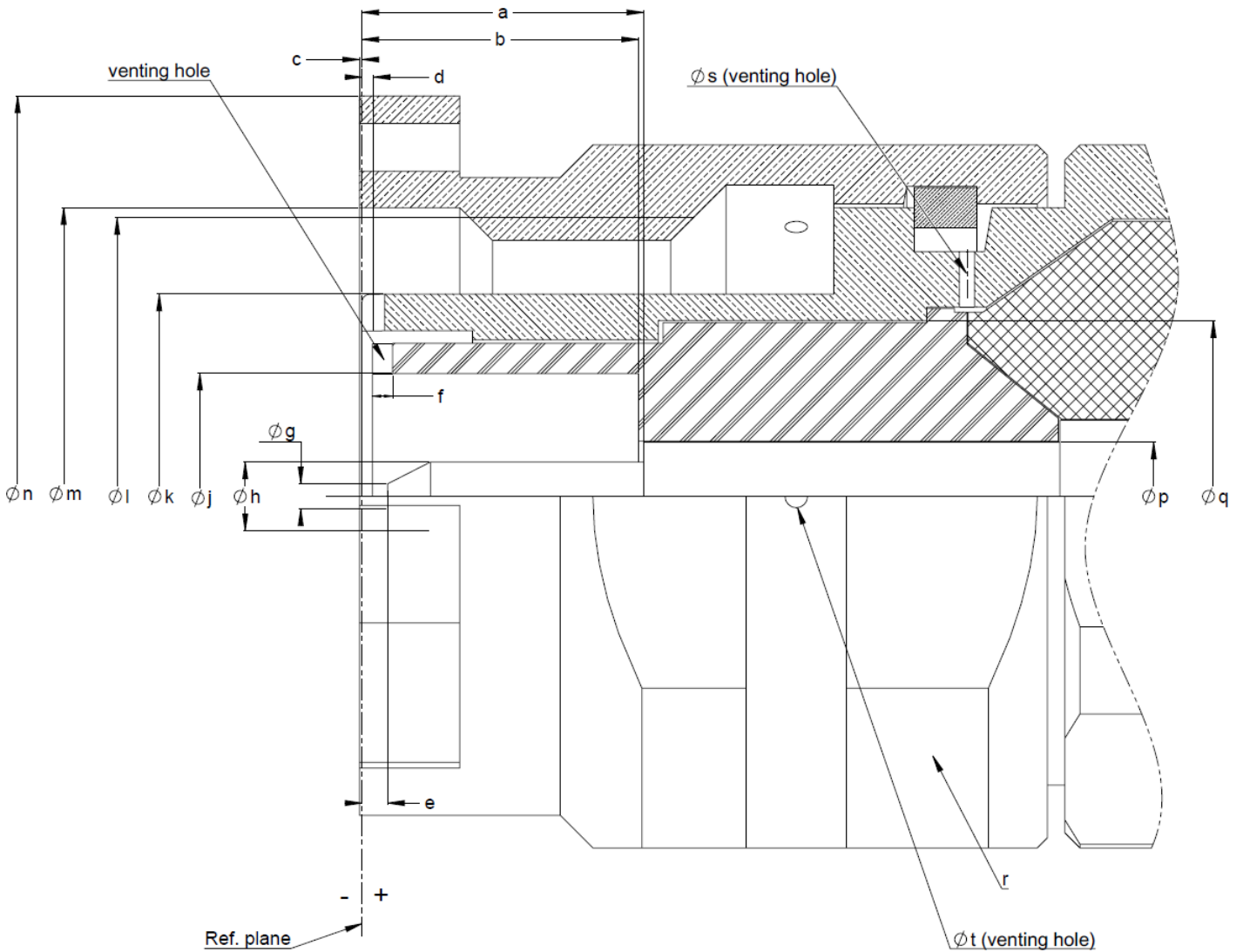


| Symbols | Dimensions (mm) |       | Remarks |
|---------|-----------------|-------|---------|
|         | Min             | Max   |         |
| a       | 8.36            | 8.46  |         |
| b       | 4.97            | 5.23  |         |
| c       | 4.72            | 5.22  |         |
| d       | 1.8             | 2.2   |         |
| e       | 4.75            | 5.25  |         |
| f       | -0.1            | +0.05 |         |
| g       | 0.08            | 1.18  |         |
| Øh      | 7/16-28 UNEF-2A |       |         |
| Øj      | 9.61            | 9.68  |         |

| Symbols | Dimensions (mm) |       | Remarks      |
|---------|-----------------|-------|--------------|
|         | Min             | Max   |              |
| Øk      | 8.8             | 9     |              |
| Øl      | 8.32            | 8.46  |              |
| Øm      | 8.1             | 8.15  |              |
| Øn      | 2.14            | 2.18  |              |
| Øp      | 4.62            | 4.72  |              |
| Øq      | 6.975           | 7.025 |              |
| Ør      | 9.61            | 9.68  |              |
| Øs      | 0.25            | 0.35  | Venting hole |
| Øt      | 1.4             | 1.45  |              |

FIGURE 3 - MATING GAUGE DIMENSIONS

TNC MALE INTERFACE



| Symbols | Dimensions (mm) |             | Remarks      |
|---------|-----------------|-------------|--------------|
|         | Min             | Max         |              |
| a       | 5.35            | 5.85        |              |
| b       | 5.42            | 5.78        |              |
| c       | +0.3            | -0.55       |              |
| d       | 0.15            | 0.45        |              |
| e       | 0.1             | 0.9         |              |
| f       | 0.35 x 0.35     | 0.45 x 0.45 | Venting hole |
| Øg      | 0.35            | 0.65        |              |
| Øh      | 1.32            | 1.37        |              |
| Øj      | 4.88            | 4.92        |              |

| Symbols | Dimensions (mm) |       | Remarks      |
|---------|-----------------|-------|--------------|
|         | Min             | Max   |              |
| Øk      | 8.03            | 8.09  |              |
| Øl      | 7/16-28 UNEF-2B |       |              |
| Øm      | 11.4            | 11.6  |              |
| Øn      | -               | 16    |              |
| Øp      | 2.14            | 2.18  |              |
| Øq      | 6.975           | 7.025 |              |
| r       | -               | 14    | Square       |
| Øs      | 0.25            | 0.35  | Venting hole |
| Øt      | 0.4             | 0.5   | Venting hole |

## 2 APPLICABLE DOCUMENTS

The following documents form part of this specification and shall be read in conjunction with it:

- (a) ESCC Generic Specification No. [3402](#) for RF Coaxial Connectors.
- (b) ESCC Generic Specification No. [3408](#) for RF Cable Assemblies.

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

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESCC Basic Specification No. [21300](#) shall apply.

## 4 REQUIREMENTS

### 4.1 GENERAL

The complete requirements for procurement of the connectors specified herein are stated in this specification and ESCC Generic Specification No. [3402](#). Deviations from the Generic Specification applicable to this specification only, are listed in Para. 4.2.

Deviations from the applicable Generic Specification and this Detail Specification, formally agreed with specific Manufacturers on the basis that the alternative requirements are equivalent to the ESCC requirements and do not affect the components' reliability, are listed in the appendices attached to this specification.

### 4.2 DEVIATIONS FROM GENERIC SPECIFICATION

#### 4.2.1 Deviations from Special I-Process Controls

None.

#### 4.2.2 Deviations from final Production Tests (Chart II)

None.

#### 4.2.3 Deviations from Burn-in Tests (Chart III)

Not applicable.

#### 4.2.4 Deviations from Qualification Tests (Chart IV)

- (a) The following additional subgroup test sequence shall be performed on a mated pair of connectors during Qualification Tests; no failures are allowed:
  - i. Multipaction: Para. 4.3.10.
  - ii. RF Power Handling: Para. 4.3.11.
  - iii. Corona: Para. 4.3.12.
  - iv. External Visual Inspection: Para. 9.8 of the Generic Specification.
- (b) Para. 9.17, Corona Level: shall not be performed.

#### 4.2.5 Deviations from Lot Acceptance Tests (Chart V)

The following additional subgroup test sequence shall be performed on a mated pair of connectors during Lot Acceptance Tests as part of the Environmental/Mechanical Subgroup; no failures are allowed:

- (a) Multipaction: Para. 4.3.10.
- (b) RF Power Handling: Para. 4.3.11.
- (c) Corona: Para. 4.3.12.
- (d) External Visual Inspection: Section 9 of the Generic Specification.

**NOTE:**

Testing per this additional subgroup is not required to be performed on ESCC qualified components if there is no change in the material, process and design of the component since initial qualification, subject to technical justification being provided by the Manufacturer and agreed by the ESCC Executive.

### 4.3 ENVIRONMENTAL, MECHANICAL AND ENDURANCE REQUIREMENTS

#### 4.3.1 Dimension Check

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The dimensions of the connectors specified herein shall conform to those shown in Figures 2(a) and 2(b) of this specification.

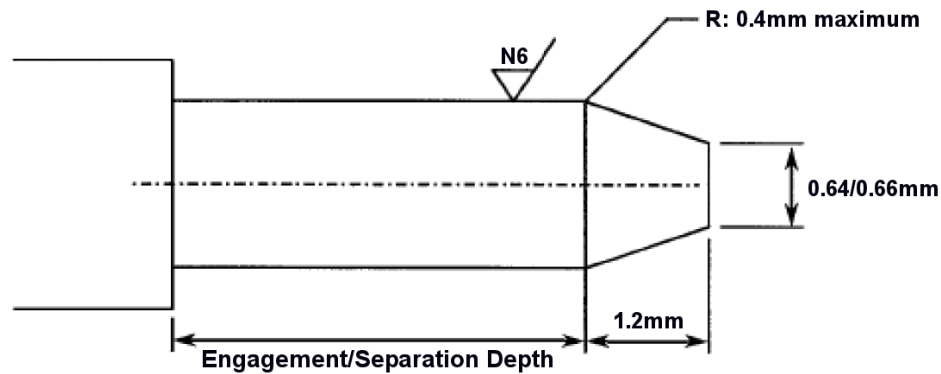
#### 4.3.2 Weight

The maximum weight of the connectors specified herein shall be as specified in Figure 2(b).

#### 4.3.3 Contact Engagement and Separation Forces

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The following details shall apply:

- (a) Oversize Test Pin (See Figure 4):
  - Steel test pin diameter: 1.384/1.388mm
  - Insertion depth: 2/2.5mm
  - Number of insertions: 3
- (b) Maximum Diameter Test Pin (See Figure 4):
  - Steel test pin diameter: 1.372/1.376mm
  - Engagement depth: 3/3.5mm
  - Engagement force:  $\leq 9\text{N}$
- (c) Minimum Diameter Test Pin (See Figure 4):
  - Steel test pin diameter: 1.308/1.321mm
  - Separation depth: 3/3.5mm
  - Separation force:  $\geq 0.56\text{N}$

**FIGURE 4 – TEST PINS CONFIGURATION****4.3.4 Coupling Proof Torque**

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The applied torque shall be 339N.cm.

**4.3.5 Mating and Unmating Forces**

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The maximum torque during mating and unmating shall not exceed 22.6N.cm.

Whenever a test is performed on mated pairs of connectors, the pairs shall be torqued at 265N.cm.

**4.3.6 Centre Contact Retention**

The requirements for this test are specified in Section 9 of ESCC Generic Specification No. 3402. The test conditions are given in Figure 2(b). After testing, the connector interface dimensions shall be within the limits of Figure 2(a).

**4.3.7 Cable Retention Force**

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The test conditions shall be as specified in Figure 2(b).

**4.3.8 Endurance**

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The test conditions shall be as follows:

- Number of cycles: 500 for Qualification Tests (Chart IV); 100 for Lot Acceptance Tests (Chart V).
- Rate: 12 cycles/minute maximum.

**4.3.9 Residual Magnetism**

The applicable test requirements are specified in Section 9 of ESCC Generic Specification No. 3402. The residual magnetism shall not exceed 20 gamma.

**4.3.10 Multipaction**

Multipaction shall be performed as specified in Section 8 of ESCC Generic Specification No. 3408. The multipaction classification applicable to these components is type 2. The test requirements are specified in Figure 2(b) herein.

#### 4.3.11 RF Power Handling

RF Power Handling shall be performed as specified in Section 8 of ESCC Generic Specification No. 3408. The following test conditions shall apply:

(a) Test temperature:  $T_{amb} = +100^{\circ}\text{C}$ .

#### 4.3.12 Corona

Corona shall be performed as specified in Section 8 of ESCC Generic Specification No. 3408. The test requirements are specified in Figure 2(b) herein.

### 4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the connectors specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

#### 4.4.1 Material and Plating

(a) Shell:

- Material: Beryllium copper
- Plating: Gold 2.5 $\mu\text{m}$ , over copper 2.5 $\mu\text{m}$

(b) Centre Contact:

- Material: Beryllium copper
- Plating: Gold 2.5 $\mu\text{m}$ , over copper 2.5 $\mu\text{m}$

(c) Insert:

- Material: PTFE and Fluoroloy H

### 4.5 MARKING

#### 4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESCC Basic Specification No. 21700 and the following paragraphs. Each component shall be marked in respect of:

- (a) The ESCC qualified components symbol (for ESCC qualified components only).
- (b) The ESCC Component Number.
- (c) Traceability Information.

4.5.2 The ESCC Component Number

Each component shall bear the ESCC Component Number which shall be constituted and marked as follows:

Example (for variable configuration: Variant 01): 340202701B13D002D5

- Detail Specification Number: 3402027
- Type Variant (see Table 1(a)): 01
- Testing Level: B
- Characteristic code: Length of Contact (Dim. E = 13.0mm): 13D0 (as required)
- Characteristic code: Length of Insert (Dim. D = 2.5mm): 02D5 (as required)

Example (for fixed configuration: Variant 02): 340202702B

- Detail Specification Number: 3402027
- Type Variant (see Table 1(a)): 02
- Testing Level: B

4.5.2.1 Characteristics Codes

Characteristics to be codified as part of the ESCC Component Number (as applicable) shall be as follows:

- (a) For Variant 01, the length of the contact and the insert (See Figure 2(b) Dimensions E and D respectively) shall be expressed by means of the following codes. The unit quantity shall be mm.

| Length (mm) | Code |
|-------------|------|
| XX.X        | XXDX |

4.5.3 Traceability Information

Each component shall be marked in respect of traceability information in accordance with the requirements of ESCC Basic Specification No. 21700.

4.6 ELECTRICAL MEASUREMENTS

4.6.1 Electrical Measurements at Room Temperature

The parameters to be measured in respect of electrical characteristics are scheduled in Table 2. Unless otherwise specified, the measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}C$ .

**TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE**

| Characteristics                                 | Symbols          | Test Method and Conditions | Limits      |      | Units |
|---|------------------|----------------------------|-------------|------|-------|
|   |                  |                            | Min.        | Max. |       |
| Insulation Resistance                           | R <sub>I</sub>   | ESCC No. 3402<br>500Vdc    | 5000        | -    | MΩ    |
| Voltage Proof (Dielectric Withstanding Voltage) | V <sub>P</sub>   | ESCC No. 3402              | Figure 2(b) | -    | V     |
| Voltage Proof Leakage Current                   | I <sub>VPL</sub> | ESCC No. 3402<br>Note 1    | -           | 2    | mA    |

**NOTES:**

1. Measured during Voltage Proof.

**TABLES 3, 4 AND 5**

Not applicable.

4.7 ENVIRONMENTAL, MECHANICAL AND ENDURANCE TESTS

4.7.1 Measurements and Inspections on Completion of Environmental, Mechanical and Endurance Tests

The parameters to be measured on completion of environmental tests are scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}C$ .

**TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL, MECHANICAL AND ENDURANCE TESTS**

| ESCC Generic Spec. No. 3402                      |                            | Measurements and Inspections  |                            | Symbols          | Limits   |         | Units |
|--|----------------------------|-------------------------------|----------------------------|------------------|--|---------|-------|
| Environmental, Mechanical and Endurance Test (1) | Test Method and Conditions | Identification                | Conditions                 |                  | Min.   | Max.    |       |
| Contact Resistance                               | Para. 9.9                  | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -  | 4       | mΩ    |
|  |                            |                               | Shell (20mV 10mA)          | -                | -  | 4       | mΩ    |
| Vibration  | Para 9.10                  | Monitor Contacts              | -                          | -                | No intermittent contact, open or short circuit |         | -     |
| During last cycles                               |                            | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -  | 4       | mΩ    |
| Final Measurements                               |                            | Visual Examination            | -                          | -                | -  | -       | -     |
| Shock or Bump                                    | Para. 9.11                 | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -  | 4       | mΩ    |
|  |                            | Visual Examination            | -                          | -                | -  | -       | -     |
| Rapid Change of Temperature                      | Para. 9.12                 | After recovery                |                            |                  |  |         |       |
|  |                            | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -  | 4       | mΩ    |
|  |                            | Voltage Proof                 | Table 2                    | V <sub>P</sub>   | Table 2  | -       | -     |
|  |                            | Voltage Proof Leakage Current | Table 2                    | I <sub>VPL</sub> | -  | Table 2 | -     |
| Visual Examination                               | -                          | -                             | -                          | -                | -  | -       |       |
| Climatic Sequence<br>Low Air Pressure            | Para. 9.13                 | Voltage Proof                 | 150Vrms at 44mbar          |                  | No Breakdown or flashover                      |         | -     |
|  |                            | After recovery                |                            |                  |  |         |       |
|  |                            | Insulation Resistance         | Table 2                    | R <sub>i</sub>   | Table 2  | -       | -     |
|  |                            | Voltage Proof                 | Table 2                    | V <sub>P</sub>   | Table 2  | -       | -     |
|  |                            | Voltage Proof Leakage Current | Table 2                    | I <sub>VPL</sub> | -  | Table 2 | -     |
|  |                            | External Visual Inspection    | ESCC No. 3402              | -                | -  | -       | -     |



| ESCC Generic Spec. No. 3402                      |  | Measurements and Inspections  |                            | Symbols          | Limits                    |             | Units |    |
|--|--|-------------------------------|----------------------------|------------------|---------------------------|-------------|-------|----|
| Environmental, Mechanical and Endurance Test (1) | Test Method and Conditions               | Identification                | Conditions                 |                  | Min.                      | Max.        |       |    |
| Cable Retention Force                            | Para. 9.14 and Para. 4.3.7 of this spec. | Continuity                    | -                          | -                | -                         | -           | -     |    |
|  |  | Visual Examination            | -                          | -                | -                         | -           | -     |    |
| Coupling Proof Torque                            | Para. 9.4 and Para. 4.3.4 of this spec.  | Interface Dimensions          | -                          | -                | Figure 2(a)               |             | -     |    |
|  |  | Visual Examination            | -                          | -                | -                         | -           | -     |    |
| Mating/Unmating Forces                           | Para. 9.5                                | Torque                        | Para. 4.3.5                | -                | -                         | Para. 4.3.5 | -     |    |
| Seal Test  | Para. 9.7                                | Not applicable                | Not applicable             | -                | -                         | -           | -     |    |
| External Visual Inspection                       | Para. 9.8                                | External Visual Inspection    | ESCC No. 3402              | -                | -                         | -           | -     |    |
| Cabling and Crimping Capability                  | Para. 9.15                               | Visual Examination            | ESCC No. 3402              | -                | -                         | -           | -     |    |
|  |  | Dimensions                    | ESCC No. 3402              | -                | Figures 2(a) & 2(b)       |             | -     |    |
|  |  | Insulation Resistance         | Table 2                    | R <sub>I</sub>   | Table 2                   | -           | -     |    |
|  |  | Voltage Proof                 | Table 2                    | V <sub>P</sub>   | Table 2                   | -           | -     |    |
|  |  | Voltage Proof Leakage Current | Table 2                    | I <sub>VPL</sub> | -                         | Table 2     | -     |    |
| VSWR or Reflection Coefficient                   | Para. 9.16                               | VSWR                          | -                          | -                | Figure 2(b)               |             | -     |    |
| RF Insertion Loss                                | Para. 9.19                               | Insertion Loss                | -                          | -                | Figure 2(b)               |             | -     |    |
| Endurance  | Para. 9.18 and Para. 4.3.8 of this spec. | Mating/Unmating Forces        | Para. 4.3.5                | -                | -                         | Para. 4.3.5 | -     |    |
|  |  | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -                         | 4           | mΩ    |    |
|  |  |                               | Shell (20mV 10mA)          | -                | -                         | 4           | mΩ    |    |
|  |  | Visual Examination            | -                          | -                | -                         | -           | -     |    |
| Corrosion  | Para. 9.20                               | Visual Examination            | -                          | -                | No exposure of base metal |             | -     |    |
| Residual Magnetism                               | Para. 9.21                               | Magnetism                     | -                          | -                | -                         | Para. 4.3.9 | -     |    |
| Soldering Proof                                  | Para. 9.22                               | Interface Dimensions          | -                          | -                | Figure 2(a)               |             | -     |    |
|  |  | Mating/Unmating Forces        | Para. 4.3.5                | -                | -                         | Para. 4.3.5 | -     |    |
|  |  | Insulation Resistance         | Table 2                    | R <sub>I</sub>   | Table 2                   | -           | -     |    |
|  |  | Voltage Proof                 | Table 2                    | V <sub>P</sub>   | Table 2                   | -           | -     |    |
|  |  | Voltage Proof Leakage Current | Table 2                    | I <sub>VPL</sub> | -                         | Table 2     | -     |    |
|  |  | Contact Resistance            | Centre Contact (20mV 10mA) | -                | -                         | -           | 4     | mΩ |
|  |  |                               | Shell (20mV 10mA)          | -                | -                         | -           | 4     | mΩ |
|  |  | External Visual Inspection    | ESCC No. 3402              | -                | -                         | -           | -     | -  |

| ESCC Generic Spec. No. <a href="#">3402</a>      |                               | Measurements and Inspections              |                               | Symbols                       | Limits           |             | Units   |    |
|--|-------------------------------|---|-------------------------------|-------------------------------|------------------|-------------|---------|----|
| Environmental, Mechanical and Endurance Test (1) | Test Method and Conditions    | Identification                            | Conditions                    |                               | Min.             | Max.        |         |    |
| RF Leakage                                       | Para. 9.23                    | RF Leakage                                | -                             | -                             | Figure 2(b)      |             | -       |    |
| High Temperature Storage                         | Para. 9.24                    | After 1 to 2 hours Mating/Unmating Forces | Para. 4.3.5                   | -                             | -                | Para. 4.3.5 | -       |    |
|  |                               | Insulation Resistance                     | Table 2                       | R <sub>I</sub>                | Table 2          | -           | -       |    |
|  |                               | Voltage Proof                             | Table 2                       | V <sub>P</sub>                | Table 2          | -           | -       |    |
|  |                               | Voltage Proof Leakage Current             | Table 2                       | I <sub>VPL</sub>              | -                | Table 2     | -       |    |
|  |                               | Centre Contact Retention                  | Para. 4.3.6                   | -                             | -                | -           | -       |    |
|  |                               | Interface Dimensions                      | -                             | -                             | Figure 2(a)      |             | -       |    |
|  |                               | Contact Resistance                        | Centre Contact (20mV 10mA)    | -                             | -                | -           | 4       | mΩ |
|  |                               |   | Shell (20mV 10mA)             | -                             | -                | -           | 4       | mΩ |
| External Visual Inspection                       | ESCC No. <a href="#">3402</a> | -   | -                             | -                             | -                | -           |         |    |
| Permanence of Marking                            | Para. 9.27                    | -   | -                             | -                             | -                | -           |         |    |
| Multipaction                                     | Para. 4.3.10 of this spec.    | -   | -                             | -                             | -                | -           |         |    |
| RF Power Handling                                | Para. 4.3.11 of this spec.    | During Testing                            | VSWR                          | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
|  |                               |   | Insertion Loss                | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
|  |                               | Final Measurement                         | Insulation Resistance         | Table 2                       | R <sub>I</sub>   | Table 2     | -       | -  |
|  |                               |   | Voltage Proof                 | Table 2                       | V <sub>P</sub>   | Table 2     | -       | -  |
|  |                               |   | Voltage Proof Leakage Current | Table 2                       | I <sub>VPL</sub> | -           | Table 2 | -  |
|  |                               |   | VSWR                          | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
| Insertion Loss                                   | ESCC No. <a href="#">3402</a> | -   | Figure 2(b)                   | -                             |                  |             |         |    |
| Corona   | Para. 4.3.12 of this spec.    | During Testing                            | VSWR                          | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
|  |                               |   | Insertion Loss                | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
|  |                               | Final Measurement                         | Insulation Resistance         | Table 2                       | R <sub>I</sub>   | Table 2     | -       | -  |
|  |                               |   | Voltage Proof                 | Table 2                       | V <sub>P</sub>   | Table 2     | -       | -  |
|  |                               |   | Voltage Proof Leakage Current | Table 2                       | I <sub>VPL</sub> | -           | Table 2 | -  |
|  |                               |   | VSWR                          | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |
|  |                               |   | Insertion Loss                | ESCC No. <a href="#">3402</a> | -                | Figure 2(b) | -       |    |

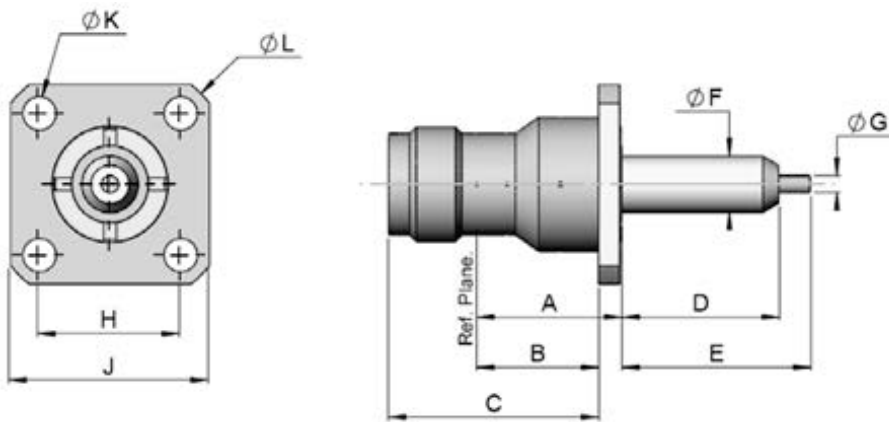
| ESCC Generic Spec. No. 3402                      |                            | Measurements and Inspections |               | Symbols | Limits |      | Units |
|--|----------------------------|------------------------------|---------------|---------|--------|------|-------|
| Environmental, Mechanical and Endurance Test (1) | Test Method and Conditions | Identification               | Conditions    |         | Min.   | Max. |       |
| External Visual Inspection                       | Para. 9.8                  | External Visual Inspection   | ESCC No. 3402 | -       | -      | -    | -     |

**NOTES**

1. The tests in this Table refer to either Chart IV or V and shall be used as applicable.

**FIGURE 2(b) – TYPE VARIANTS CHARACTERISTICS**

**VARIANT 01 - SQUARE FLANGE FEMALE RECEPTACLE, ROUND POST TERMINATION**



| Symbols | Dimensions (mm) |       | Remarks |
|---------|-----------------|-------|---------|
|         | Min             | Max   |         |
| A       | 13.65           | 13.85 |         |
| B       | 11.55           | 11.75 |         |
| C       | 19.9            | 20.1  |         |
| D       | 7.5             | 20    | Note 1  |
| E       | 7.5             | 30    | Note 1  |
| ØF      | 5.31            | 5.41  |         |
| ØG      | 1.59            | 1.69  |         |
| H       | 13.45           | 13.55 |         |
| J       | 18.9            | 19.1  |         |
| ØK      | 3.1             | 3.3   | 4 holes |
| ØL      | 24.4            | 24.6  |         |

**NOTES:**

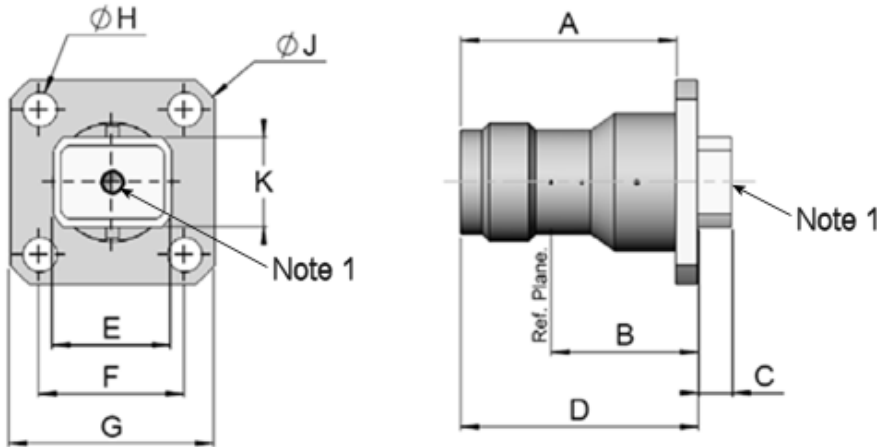
- Lengths D and E are variable; see Para. 4.5.2.1(a).  
The tolerance on specified length is ±0.1mm.

| Electrical Characteristics                           | Values                                     | Units            |
|--|--|------------------|
| Voltage Standing Wave Ratio (VSWR)                   | $\leq 1.1 + 0.02 \times f$ (GHz)           | -                |
| RF Insertion loss                                    | $\leq 0.04 \times \sqrt{f}$ (GHz)          | dB               |
| RF Leakage   | $\leq -115 + f$ (GHz)                      | dB <sub>i</sub>  |
| Voltage Proof  | $\geq 1500$                                | V <sub>rms</sub> |
| Corona   | $\geq P_{\infty}$ at 1GHz (see Table 1(b)) | W                |
| Multipaction Threshold (pulse width 20µs; PRF: 1kHz) | $\geq 2000$ at 1GHz                        | Wpp              |

| Mechanical Characteristics                   | Values         | Units |
|--|----------------|-------|
| Centre Contact Retention Force (Axial)       | $\geq 27.2$    | N     |
| Centre Contact Retention Torque (Rotational) | $\geq 2.8$     | N.cm  |
| Cable Retention Force (Axial)                | Not applicable | N     |
| Cable Retention Torque (Rotational)          | Not applicable | N.cm  |
| Weight                                       | $\leq 18$      | g     |

| Other Characteristics                    | Values                 | Units |
|--|------------------------|-------|
| Operating Temperature Range              | -65 to +165            | °C    |
| Leakage Rate (Panel-sealed Connectors)   | Not applicable         | -     |
| Leakage Rate (Hermetic Sealed Connector) | Not applicable         | -     |
| Solderability                            | On centre contact only | -     |
| Soldering Proof                          | Applicable             | -     |
| Cables used                              | Not applicable         | -     |

VARIANT 02 - SQUARE FLANGE FEMALE RECEPTACLE, FOR PCB TRANSMISSION LINE WITH Ø PIN 1.73mm



| Symbols | Dimensions (mm) |       | Remarks |
|---------|-----------------|-------|---------|
|         | Min             | Max   |         |
| A       | 19.9            | 20.1  |         |
| B       | 13.6            | 13.8  |         |
| C       | 3.05            | 3.25  |         |
| D       | 21.9            | 22.1  |         |
| E       | 10.95           | 11.05 |         |
| F       | 13.45           | 13.55 |         |
| G       | 18.9            | 19.1  |         |
| ØH      | 3.1             | 3.3   | 4 holes |
| ØJ      | 24.4            | 24.6  |         |
| K       | 8.2             | 8.4   |         |

**NOTES:**

1. Accept pin Ø 1.73mm.

| Electrical Characteristics                           | Values                                 | Units            |
|--|--|------------------|
| Voltage Standing Wave Ratio (VSWR)                   | $\leq 1.1 + 0.02 \times f$ (GHz)       | -                |
| RF Insertion loss                                    | $\leq 0.04 \times \sqrt{f}$ (GHz)      | dB               |
| RF Leakage   | $\leq -115 + f$ (GHz)                  | dBi              |
| Voltage Proof  | $\geq 1500$                            | V <sub>rms</sub> |
| Corona   | $\geq P_{co}$ at 1GHz (see Table 1(b)) | W                |
| Multipaction Threshold (pulse width 20µs; PRF: 1kHz) | $\geq 2000$ at 1GHz                    | Wpp              |

| Mechanical Characteristics                   | Values         | Units |
|--|----------------|-------|
| Centre Contact Retention Force (Axial)       | $\geq 27.2$    | N     |
| Centre Contact Retention Torque (Rotational) | $\geq 2.8$     | N.cm  |
| Cable Retention Force (Axial)                | Not applicable | N     |
| Cable Retention Torque (Rotational)          | Not applicable | N.cm  |
| Weight                                       | $\leq 16$      | g     |

| Other Characteristics                    | Values         | Units |
|--|----------------|-------|
| Operating Temperature Range              | -65 to +165    | °C    |
| Leakage Rate (Panel-sealed Connectors)   | Not applicable | -     |
| Leakage Rate (Hermetic Sealed Connector) | Not applicable | -     |
| Solderability                            | Not Applicable | -     |
| Soldering Proof                          | Not Applicable | -     |
| Cables used                              | Not applicable | -     |

**APPENDIX A**  
**AGREED DEVIATIONS FOR RADIAL (F)**

| Items Affected                                 | Description of Deviations   |
|--|---|
| Deviations from Qualification Tests (Chart IV) | <p>Para. 8.1 and Chart IV:<br/>The test requirements applicable to Qualification Testing may be replaced by testing in accordance with Radial test specification RAD-GEN-CONN-004 as specified in the PID and indicated in Chart F4 below. For each subgroup, the sample size is given in Chart F4. No failures are allowed.</p>  |
| Deviations from Lot Acceptance Tests (Chart V) | <p>Para. 8.2 and Chart V:<br/>The test requirements applicable to Lot Acceptance Level 1 Testing (LA1) performed for the purposes of maintenance of qualification may be replaced by testing in accordance with Radial test specification RAD-GEN-CONN-004 as specified in the PID and indicated in Chart F4 below. For each subgroup, the sample size and the period between successive subgroup testing are given in Chart F4. No failures are allowed.</p> <p>Note: The test methods and requirements for each test in Chart F4 are as specified in the PID. Unless otherwise specified, the measurements and inspections required (as applicable) to the tests of Chart F4 shall be as specified in Table 6 of the Detail Specification.</p> <p><b>CHART F4 – QUALIFICATION AND MAINTENANCE OF QUALIFICATION</b><br/>(total 20 connectors representative of the connector range)</p> <ul style="list-style-type: none"> <li>• <u>Subgroup I</u> (8 connectors; 24 month period)             <ul style="list-style-type: none"> <li>○ Endurance: 50 mating/unmating cycles</li> <li>○ Vibration: sine and random (Table 6 requirements are not applicable)</li> <li>○ Mechanical Shock (Table 6 requirements are not applicable)</li> <li>○ Rapid Change of Temperature</li> <li>○ Endurance: 450 mating/unmating cycles</li> <li>○ Permanence of Marking</li> <li>○ External Visual Inspection</li> <li>○ DPA (on 2 connectors)</li> </ul> </li> <li>• <u>Subgroup II</u> (6 connectors; 12 month period)             <ul style="list-style-type: none"> <li>○ RF Insertion Loss</li> <li>○ VSWR</li> <li>○ Coupling Proof Torque</li> <li>○ Mating/Unmating Forces</li> <li>○ Contact Resistance</li> <li>○ External Visual Inspection</li> </ul> </li> <li>• <u>Subgroup III</u> (4 connectors per type; 24 month period)             <ul style="list-style-type: none"> <li>○ Residual Magnetism</li> <li>○ Soldering Proof</li> <li>○ RF Leakage</li> <li>○ High Temperature Storage</li> <li>○ External Visual Inspection</li> </ul> </li> <li>• <u>Subgroup IV</u> (2 connectors; 24 month period)(Note 1)             <ul style="list-style-type: none"> <li>○ Multipactor</li> <li>○ Power Handling</li> <li>○ Corona</li> <li>○ External Visual Inspection</li> </ul> </li> </ul> <p><b>NOTES:</b></p> <p>1. Applicable only during maintenance of qualification if there is a change of design or a change of sub-contractor since qualification, or if ordered by the Orderer.</p> |