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**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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DCR No.	CHANGE DESCRIPTION
1809	Specification upissued to incorporate changes per DCR.

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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
03	Square Flange Female Receptacle, for PCB Transmission Line with Ø Pin 1.73mm – Alternate Design

NOTES:

- 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	Ω	-
Operating Frequency Range	f	DC to 8	GHz	-
Operating Voltage	V_{op}	500	V _{rms}	-
Corona Level	P_{co}	120	W	RF power level without corona breakdown
Operating Temperature Range	T_{op}	See Figure 2(b)	°C	T_{amb}
Storage Temperature Range	T_{stg}	As per Operating Temperature Range	°C	-

NOTES:

- Derating with pressure is not required for $\leq 1.5\text{mPa}$.
- At $f = 2\text{GHz}$. For $f > 2\text{GHz}$, derate as shown in Figure 1(a). Load VSWR is better than 1.3.
- At $T_{amb} = +100^\circ\text{C}$. For $T_{amb} > +100^\circ\text{C}$, 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
(APPLICABLE TO ALL VARIANTS)**

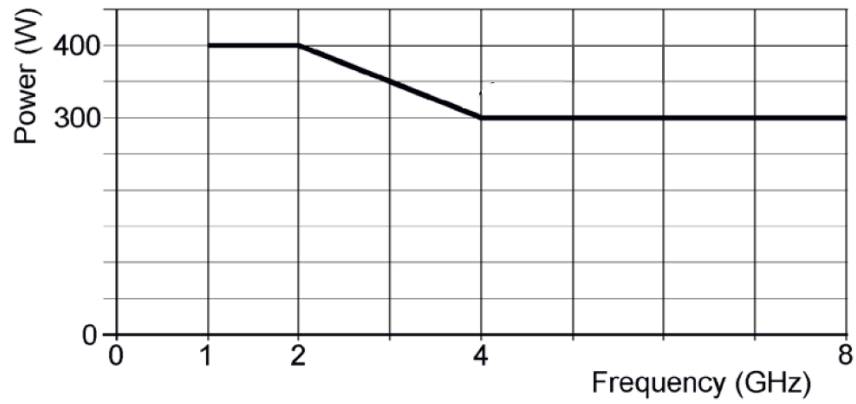


FIGURE 1(b) – RF POWER VERSUS AMBIENT TEMPERATURE

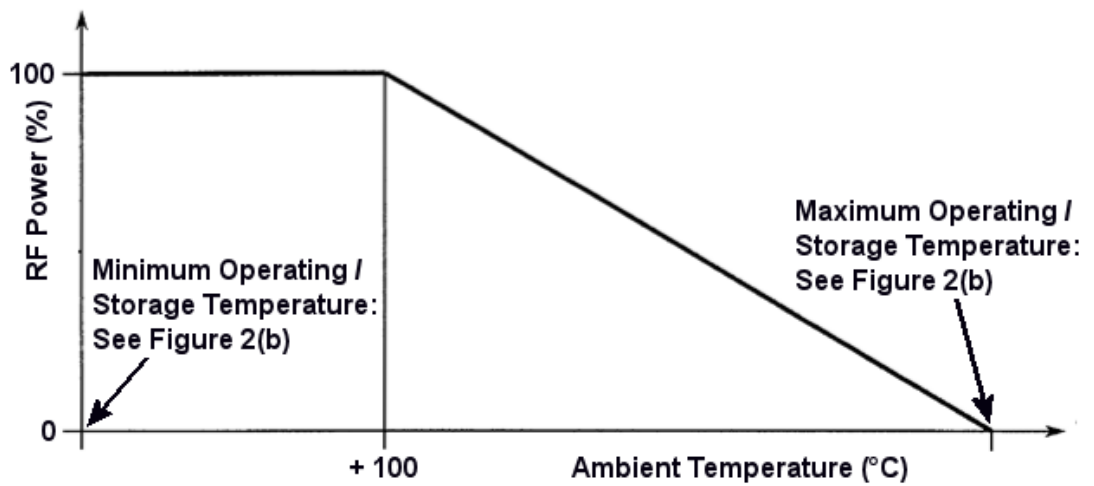
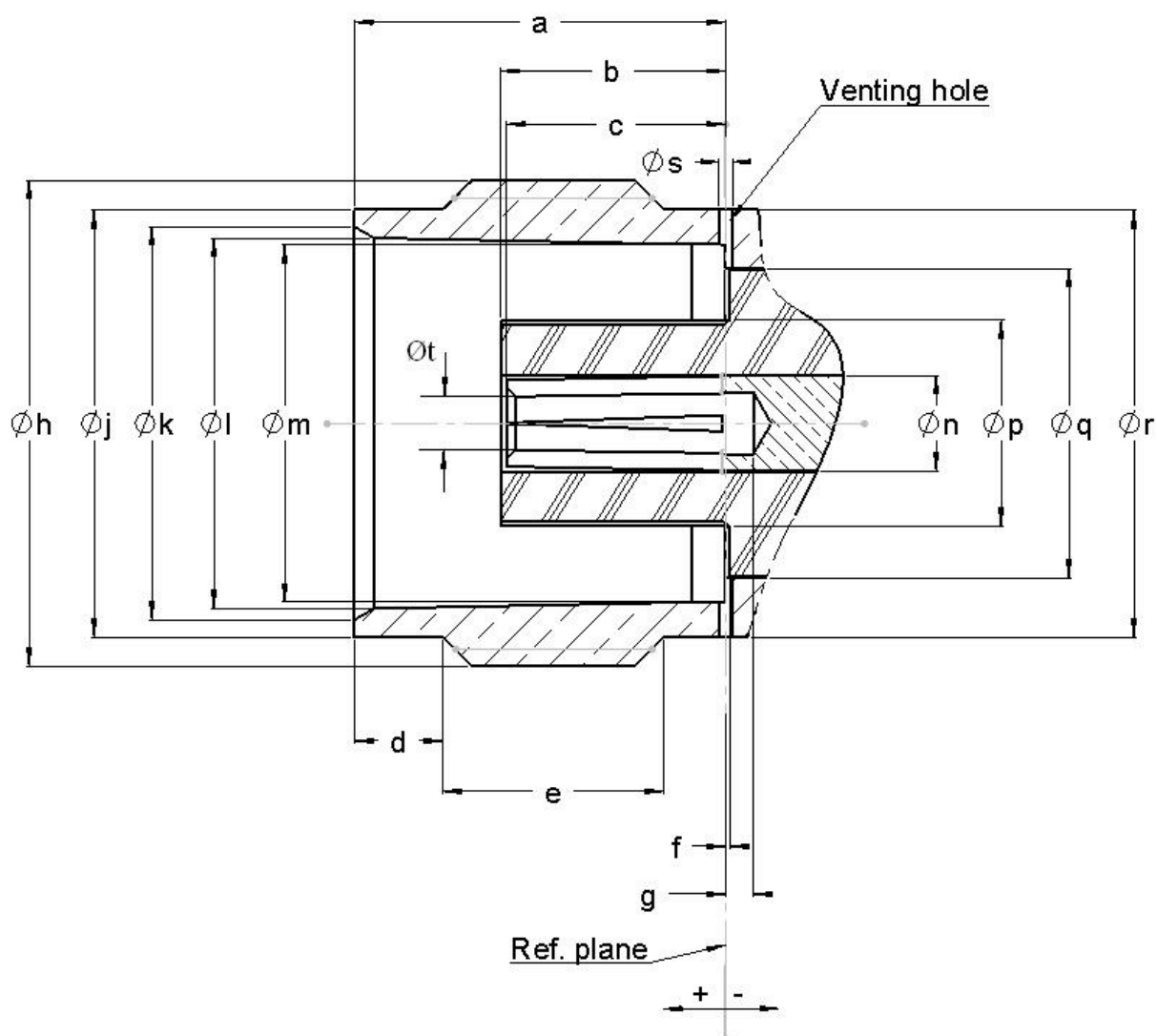


FIGURE 2 – PHYSICAL DIMENSIONS

FIGURE 2(a) – INTERFACE DIMENSIONS

TNC FEMALE INTERFACE

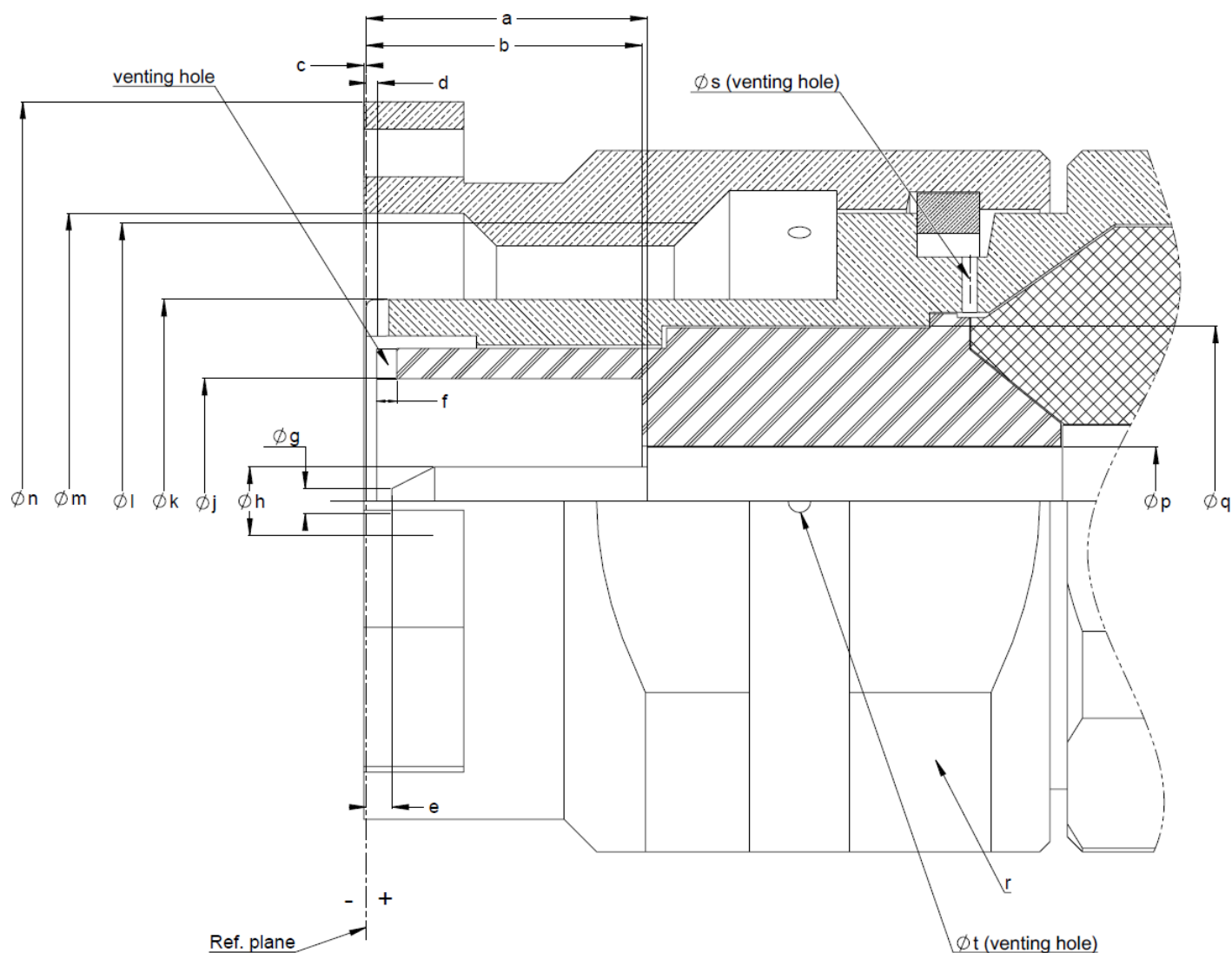


Symbols	Dimensions (mm)		Remarks
	Min	Max	
a	8.36	8.46	
b	4.97	5.23	
c	4.72	5.22	
d	1.8	2.2	
e	4.75	5.25	
f	-0.1	+0.05	
g	0.08	1.18	
Øh	7/16-28 UNEF-2A		
Øj	9.61	9.68	

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 In-Process Controls**

None.

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

- (a) Para. 9.4, Coupling Proof Torque: shall not be performed on connectors with a female contact (only during Chart II).

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

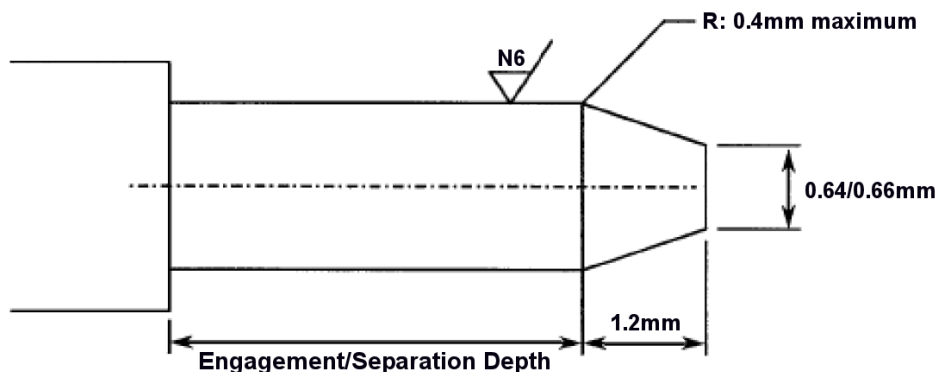
The maximum weight of the connectors specified herein shall be as specified in Figure 2(b).

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 2.5µm, over copper 2.5µm
- (b) Centre Contact:
 - Material: Beryllium copper
 - Plating: Gold 2.5µm, over copper 2.5µm
- (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: Variants 02 and 03): 340202702B

- Detail Specification Number: 3402027
- Type Variant (see Table 1(a)): 02 (as applicable)
- 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 $T_{amb} = +22 \pm 3^{\circ}\text{C}$.

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

Characteristics	Symbols	Test Method and Conditions	Limits		Units
			Min.	Max.	
Insulation Resistance	R_i	ESCC No. 3402 500Vdc	5000	-	MΩ
Voltage Proof (Dielectric Withstanding Voltage)	V_P	ESCC No. 3402	Figure 2(b)	-	V
Voltage Proof Leakage Current	I_{VPL}	ESCC No. 3402 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 $T_{amb} = +22 \pm 3^{\circ}\text{C}$.

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

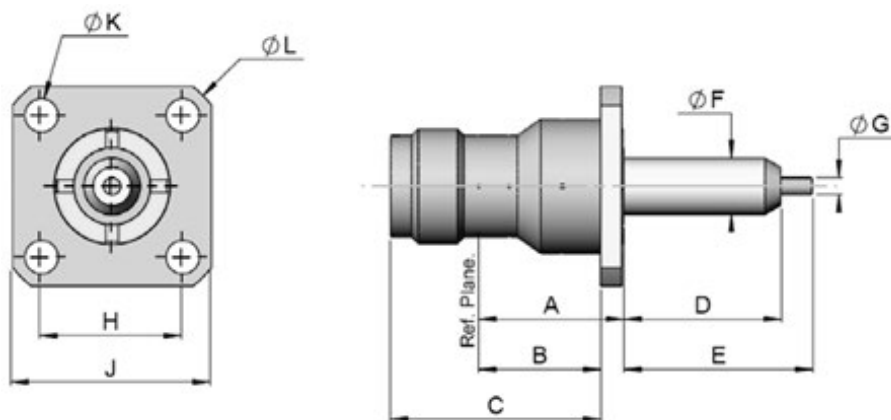
ESCC Generic Spec. No. 3402		Measurements and Inspections		Symbols	Limits		Units
Environmental, Mechanical and Endurance Test (1)	Test Method and Conditions	Identification	Conditions		Min.	Max.	
Contact Resistance	Para. 9.9	Contact Resistance	Centre Contact (20mV 10mA) Shell (20mV 10mA)	- -	- -	4 4	mΩ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

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.	
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_i	Table 2	-	-
		Voltage Proof	Table 2	V_P	Table 2	-	-
		Voltage Proof Leakage Current	Table 2	I_{VPL}	-	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_i	Table 2	-	-
		Voltage Proof	Table 2	V_P	Table 2	-	-
		Voltage Proof Leakage Current	Table 2	I_{VPL}	-	Table 2	-
		Contact Resistance	Centre Contact (20mV 10mA)	-	-	4	mΩ
			Shell (20mV 10mA)	-	-	4	mΩ
		External Visual Inspection	ESCC No. 3402	-	-	-	-
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_i	Table 2	-	-
		Voltage Proof	Table 2	V_P	Table 2	-	-
		Voltage Proof Leakage Current	Table 2	I_{VPL}	-	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. 3402	-	-	-	-
Permanence of Marking	Para. 9.27	-	-	-	-	-	-
Multipaction	Para. 4.3.10 of this spec.	-	-	-	-	-	-

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.	
RF Power Handling	Para. 4.3.11 of this spec.						
During Testing		VSWR	ESCC No. 3402	-	Figure 2(b)	-	-
		Insertion Loss	ESCC No. 3402	-	Figure 2(b)	-	-
Final Measurement		Insulation Resistance	Table 2	R_i	Table 2	-	-
		Voltage Proof	Table 2	V_P	Table 2	-	-
		Voltage Proof Leakage Current	Table 2	I_{VPL}	-	Table 2	-
		VSWR	ESCC No. 3402	-	Figure 2(b)	-	-
		Insertion Loss	ESCC No. 3402	-	Figure 2(b)	-	-
Corona	Para. 4.3.12 of this spec.						
During Testing		VSWR	ESCC No. 3402	-	Figure 2(b)	-	-
		Insertion Loss	ESCC No. 3402	-	Figure 2(b)	-	-
Final Measurement		Insulation Resistance	Table 2	R_i	Table 2	-	-
		Voltage Proof	Table 2	V_P	Table 2	-	-
		Voltage Proof Leakage Current	Table 2	I_{VPL}	-	Table 2	-
		VSWR	ESCC No. 3402	-	Figure 2(b)	-	-
		Insertion Loss	ESCC No. 3402	-	Figure 2(b)	-	-
External Visual Inspection	Para. 9.8	External Visual Inspection	ESCC No. 3402	-	-	-	-

NOTES

- 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

NOTES:

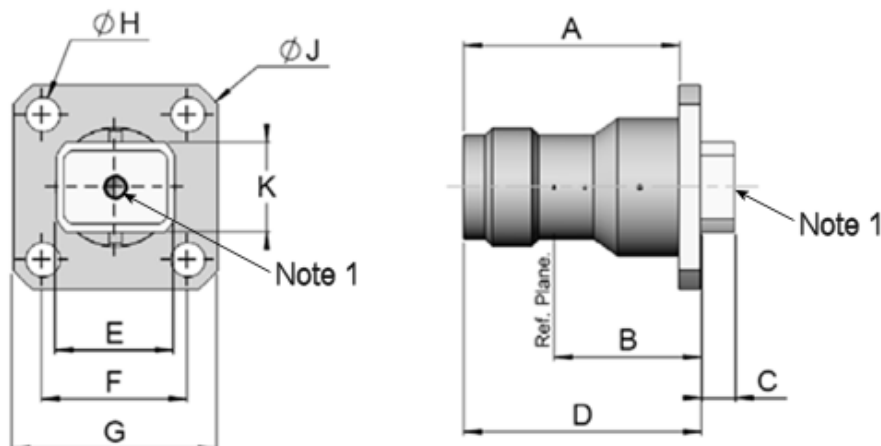
- Lengths D and E are variable; see Para. 4.5.2.1(a).
The tolerance on specified length is $\pm 0.1\text{mm}$.

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	

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

Mechanical Characteristics	Values	Units
Centre Contact Retention Force (Axial)	≥ 27.2	N
Centre Contact Retention Torque (Rotational)	≥ 2.8	N.cm
Cable Retention Force (Axial)	Not applicable	N
Cable Retention Torque (Rotational)	Not applicable	N.cm
Weight	≤ 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:

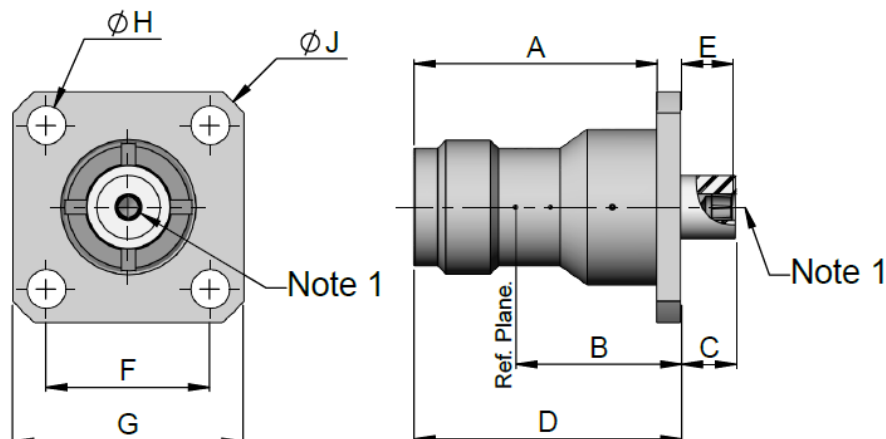
- Accept pin Ø 1.73mm.

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)	dB _i
Voltage Proof	≥ 1500	V _{rms}
Corona	$\geq P_{\infty}$ at 1GHz (see Table 1(b))	W
Multipaction Threshold (pulse width 20µs; PRF: 1kHz)	≥ 2000 at 1GHz	W _{pp}

Mechanical Characteristics	Values	Units
Centre Contact Retention Force (Axial)	≥ 27.2	N
Centre Contact Retention Torque (Rotational)	≥ 2.8	N.cm
Cable Retention Force (Axial)	Not applicable	N
Cable Retention Torque (Rotational)	Not applicable	N.cm
Weight	≤ 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	-

VARIANT 03 - SQUARE FLANGE FEMALE RECEPTACLE, FOR PCB TRANSMISSION LINE WITH Ø PIN 1.73mm
(ALTERNATE DESIGN)



Symbols	Dimensions (mm)		Remarks
	Min	Max	
A	19.9	20.3	
B	13.6	13.8	
C	4.4	4.6	
D	21.9	22.2	
E	4.15	4.35	
F	13.45	13.55	
G	18.9	19.1	
ØH	3.1	3.3	4 holes
ØJ	24.3	24.6	

NOTES:

1. Accept pin Ø 1.73mm.

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

Mechanical Characteristics	Values	Units
Centre Contact Retention Force (Axial)	≥ 27.2	N
Centre Contact Retention Torque (Rotational)	≥ 2.8	N.cm
Cable Retention Force (Axial)	Not applicable	N
Cable Retention Torque (Rotational)	Not applicable	N.cm
Weight	≤ 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
Para. 4.2.4 Deviations from Qualification Tests (Chart IV)	Para. 8.1 and Chart IV: 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.
Para. 4.2.5 Deviations from Lot Acceptance Tests (Chart V)	Para. 8.2 and Chart V: 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. 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. <u>CHART F4 – QUALIFICATION AND MAINTENANCE OF QUALIFICATION</u> (total 20 connectors representative of the connector range) • <u>Subgroup I</u> (8 connectors; 24 month period) ○ Endurance: 50 mating/unmating cycles ○ Vibration: sine and random (Table 6 requirements are not applicable) ○ Mechanical Shock (Table 6 requirements are not applicable) ○ Rapid Change of Temperature ○ Endurance: 450 mating/unmating cycles ○ Permanence of Marking ○ External Visual Inspection ○ DPA (on 2 connectors) • <u>Subgroup II</u> (6 connectors; 12 month period) ○ RF Insertion Loss ○ VSWR ○ Coupling Proof Torque ○ Mating/Unmating Forces ○ Contact Resistance ○ External Visual Inspection • <u>Subgroup III</u> (4 connectors per type; 24 month period) ○ Residual Magnetism ○ Soldering Proof ○ RF Leakage ○ High Temperature Storage ○ External Visual Inspection • <u>Subgroup IV</u> (2 connectors; 24 month period) (Note 1) ○ Multipactor ○ Power Handling ○ Corona ○ External Visual Inspection <u>NOTES:</u> 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.

Items Affected	Description of Deviations
Para. 4.3.11 RF Power Handling	Due to test equipment limitations, RF Power Handling may be performed at a reduced RF Power of 355W at 2GHz (instead of at the specified rated RF Power of 400W at 2GHz). Note: The required performance of the components specified herein up to the specified rated RF Power: 400W at 2GHz, was confirmed during the initial ESCC Qualification in 2018 by the use of simulation techniques. The simulated results correlate with the real qualification test results at 355W at 2GHz. There have been no changes in the material, process and design of the components since the initial qualification.