Titre / Title
RF LOADS FIXED COAXIAL **DC – 31.5 GHz** **SMP-Lock series** **DETAIL SPECIFICATION**

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DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1/-	16/05/2018	Initial edition
1/A	08/08/2019	Updated to canceled the coupling proof torque test in Table 6: Not Applicable for SMP series
1/B	23/12/2019	VSWR updated for Male Load (variant 25)

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LIST OF TABLES AND FIGURES

1. SCOPE

This Detail Technical Sheet details the ratings and electrical characteristics for RF Load Fixed SMP-Lock series, 0 – 31.5 GHz

2. APPLICABLE DOCUMENT

The following documents shall be read in conjunction with this specification:

RAD-GEN-ATCH-002: General Specification: Attenuators and Loads RF Fixed Coaxial

3. TYPE VARIANT

Variant of the basic type covered by the relevant Generic Specification are given Table 1.

Table 1: *Type variants*

VARIANT	VSWR	
	0 ≤ F ≤ 22 GHz	22 ≤ F ≤ 31.5 GHz
24	≤ 1.20	≤ 1.30
	0 ≤ F ≤ 18 GHz	18 ≤ F ≤ 31.5 GHz
25	≤ 1.20	≤ 1.35

4. MAXIMUM RATINGS

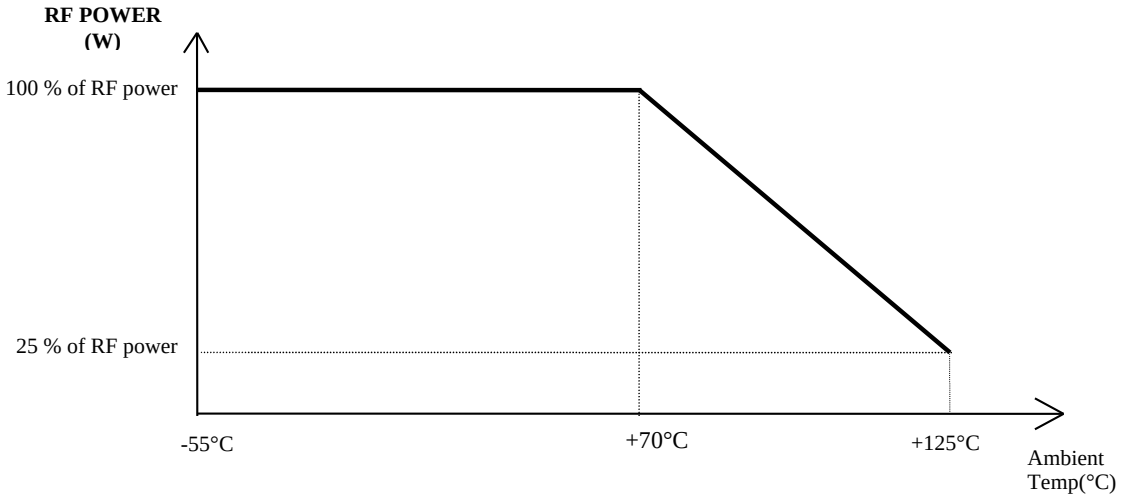
Maximum Ratings of the basic type covered by the relevant Generic Specification are given Table 2.

Table 2: *Maximum ratings*

N°	Characteristics	Symbol	Maximum Rating		Unit
			Min	Max	
1	RF Power	P	-	1	W (1)
2	Peak Power (at 25°) (2)	Pp	-	100	W
3	Operating Temperature Range	T_{op}	-55	+125	°C
4	Storage Temperature Range	T_{stg}	-55	+125	°C
5	Frequency Range	F	0	31.5	GHz
6	Impedance	Z	47.5	52.5	Ohms
7	RF Leakage (3)	E	-85	-	dBi

NOTES:
(1) See Figure 1.
(2) Duration 1µs, cyclic rate 1ms
(3) For variant 24, requirement to use a SMP Male receptacle Full detent or SMPL Male receptacle (Limited detent).

FIGURE 1 – *Parameter Derating Information*



RF POWER VERSUS TEMPERATURE

5. ELECTRICAL MEASUREMENTS

The parameters to be measured at room temperature are scheduled in Table 1. Unless otherwise specified, the measurements shall be performed at T_{amb} = +22 ± 3 °C.
The measurement shall be performed with six points of frequency:

Variant 24 & 25: 4GHz – 10GHz – 17.5GHz – 24GHz - 31.5GHz.

5.1. HIGH AND LOW TEMPERATURE ELECTRICAL MEASUREMENTS

Characteristics	Symbol	Test Method and Conditions	Maximum Rating		Unit
		(Note 1)	Min	Max	
Temperature coefficient of Resistance	TC_R	DC test reference temperature	-	3×10^{-4}	Ω/Ω/°C

Note 1: Measurements shall be performed during LAT or Qualification test

6. CONNECTORS REPEATABILITY:

Not applicable for loads.

7. OPERATING LIFE

7.1. PARAMETER DRIFT VALUES

The parameter drift values applicable to burn-in are specified in Table 3 of this specification. Unless otherwise stated, measurements shall be performed at T_{amb} = +22 ± 3°C. The parameter drift value (Δ) applicable to the parameters scheduled, shall not be exceeded. In additional to these drift value requirements for a given parameter, the appropriate limit value specified in Table 1 shall not be exceeded.

7.2. CONDITIONS FOR OPERATING LIFE

The condition for operating life is given in Table 4. After test, a visual inspection shall be performed and no damage shall be appeared.

Table 3: *Parameter drifts values for Operating Life*

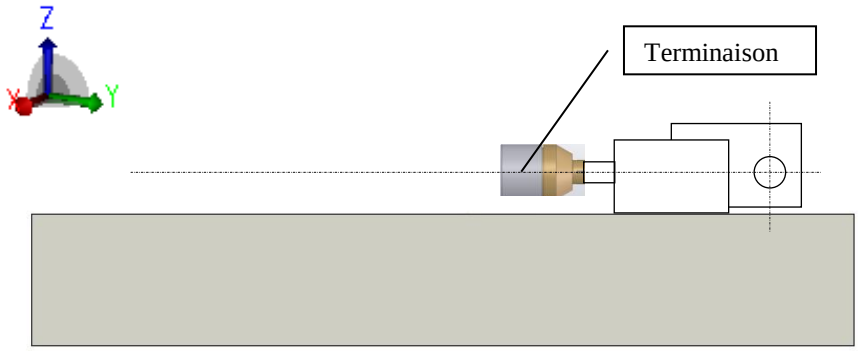
N°	Characteristics	Symbol	Test condition	Limits	Unit
1	Resistance change	ΔR	As per Table 1	250	mΩ
2	VSWR change	$\frac{\Delta VSWR}{VSWR}$	As per Table 1	±5	%

Table 4: *Conditions for Operating Life testing*

N°	Characteristics	Symbol	Limits	Unit	Note
1	RF Power	P_{in}	1	W	-
2	Frequency	F	DC(1) or 10	GHz	-
3	Ambient Temperature	T_{amb}	+25	°C	-

NOTES: (1) The dissipated power at DC or in frequency is the same.
For variant 24 & 25, uses only DC

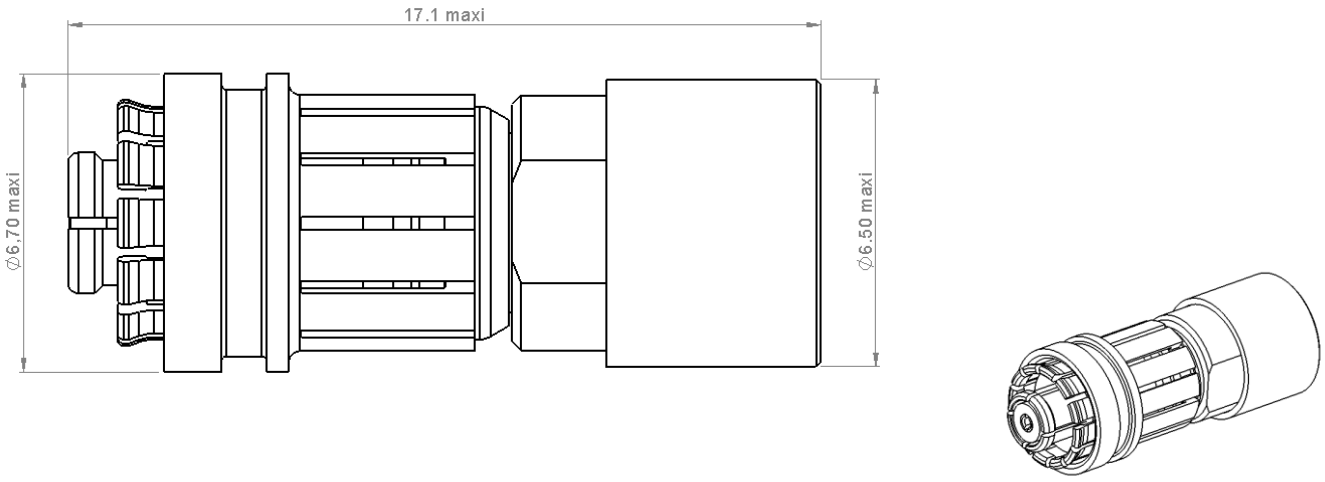
FIGURE 2 – Circuit for electrical measurement



Schematic for Vibration and Shock test

8. MECHANICAL DIMENSION

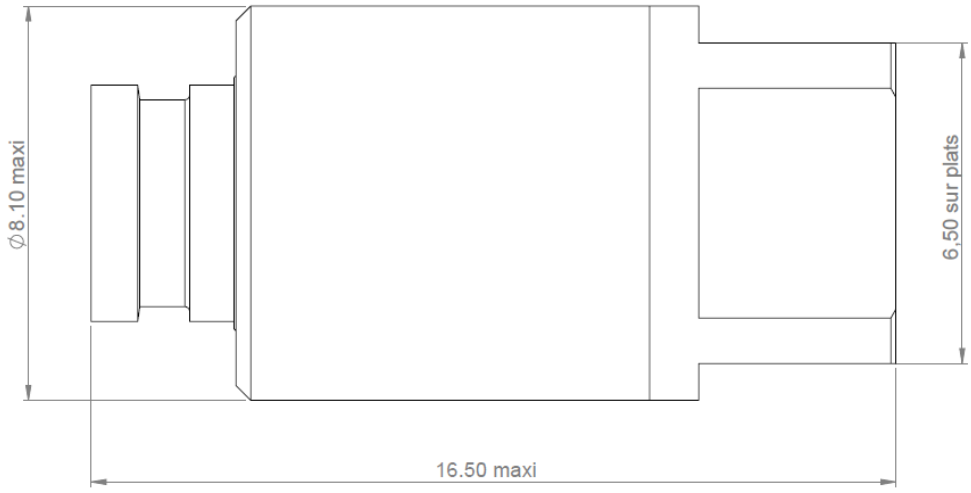
8.1. DIMENSION FOR VARIANT 24:

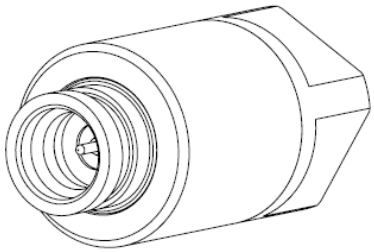


All dimensions are in millimetres (mm)

Connector:	SMP Lock Female interface per MIL-STD 348B, notice 6, figure 326-1
Weight:	≤ 3.20 grams

8.1. DIMENSION FOR VARIANT 25:





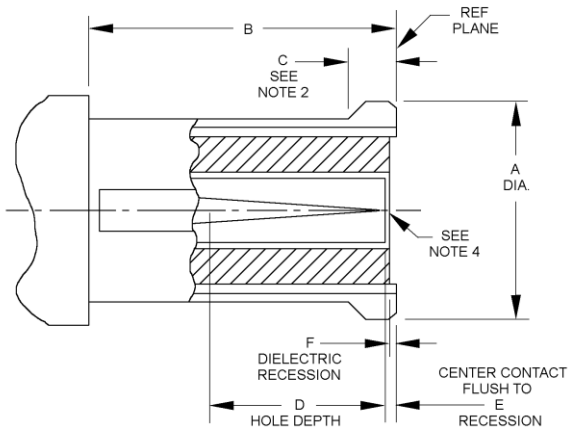
All dimensions are in millimetres (mm)

Connector: SMP Lock Male interface per MIL-STD 348B, notice 6, figure 326-1
Weight: ≤ 5.5 grams

8.2. INTERCHANGEABILITY FOR SMP

8.2.1. SMP Female: MIL-STD 348B, NOTICE 6, FIGURE 326-1

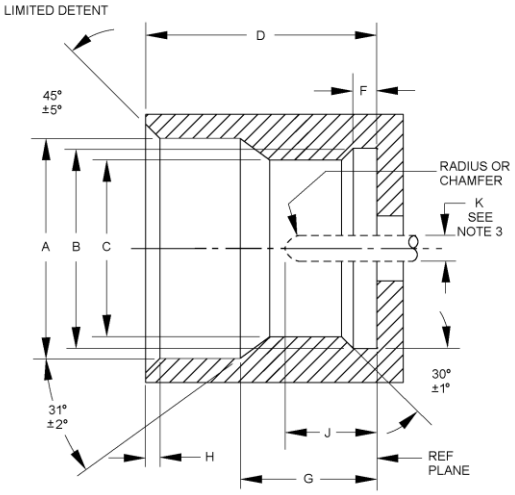
Variant 24



Letter	Inches (mm)	
	Minimum	Maximum
A	----	.135 (3.43)
B	.112 (2.84)	----
C	.018 (0.46)	.025 (0.64)
D	.070 (1.78)	----
E	.000	.008 (0.20)
F	.000 (0.00)	----

NOTES:
1. Dimensions are in inches. Metric equivalents are given for information purposes only.
2. Form and dimension of outer conductor to meet electrical and mechanical requirements.
3. Interface shall meet the force to engage and disengage requirements in accordance with DSCC drawing 94007.
4. Dimension to meet force to engage and disengage in accordance with specification or drawing.

Variant 25



Letter	Inches (mm)	
	Minimum	Maximum
A	.139 (3.53)	.145 (3.68)
B	.124 (3.15)	.126 (3.20)
C	.119 (3.02)	.121 (3.07)
D	.108 (2.74)	.112 (2.84)
E	----------	----------
F	.0205 (0.521)	.0235 (0.597)
G	.073 (1.85)	.077 (1.96)
H	.003 (0.08)	.008 (0.20)
J	.045 (1.14)	.055 (1.40)
K	.014 (0.36)	.016 (0.41)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information purposes only.
3. Pin may not be shipped with shroud, refer to applicable specification.

Table 5: *Radiall Part Number*

Variant	Radiall Reference	Designation
24	R4042L5660	RF fixed load SMP Lock Female DC - 31.5GHz
25	R4042L0660	RF fixed load SMP Lock Male DC - 31.5GHz

Table 6: *Measurements and inspections on completion of environment and endurance tests*

N°	Radiall Generic Spec. RAD-GEN-ATCH-002		Measurements and Inspections		Symbol	Limits		Unit
	Environmental and Endurance Test (1)	Test Method and Conditions	Identification	Conditions		Min	Max	
01	Vibration	Para. 13.2.6 and figure 2 of this specification	**Initial measurements** Impedance VSWR **During Last Cycle** Intermittent contact **Final measurement** Visual Examination Resistance change VSWR change	 Table 2 Table 2 >0.5ms No open or short circuits No damage Table 3 Table 3	 Z VSWR - - ΔR ΔVSWR	 Record values Record values - - - –5	 - 250 +5	 Ω - - - mΩ %
02	Shock	Para 13.2.7 and figure 2 of this specification	**Initial measurements** Impedance VSWR **Final measurement** Visual Examination Resistance change VSWR change	 Table 2 Table 2 No damage Table 3 Table 3	 Z VSWR - ΔR ΔVSWR	 Record values Record values - - –5	 250 +5	 Ω - - mΩ %
03	Rapid Change of Temperature	Para 13.2.8 of Generic specification	**Initial measurements** Impedance VSWR **Final measurement** Visual Examination Resistance change VSWR change	 Table 2 Table 2 After recovery time of 24±2hrs No damage Table 3 Table 3	 Z VSWR - ΔR ΔVSWR	 Record values Record values - - –5	 250 +5	 Ω - - mΩ %
04	Climatic sequence	Para 13.2.9 of Generic specification Dry heat: para 13.2.9.1 of Generic specification Cold heat: para 13.2.9.3 of Generic specification	 Resistance drift (2) Resistance drift (2) **Final measurement** Visual Examination Resistance change VSWR change	 At +125°C, At -55°C, After recovery time between 1 hr and 24 hrs No damage Table 3 Table 3	 TC_R TC_R - ΔR ΔVSWR	 - -5	 3.10^{-4} 3.10^{-4} 250 +5	 Ω/Ω/°C Ω/Ω/°C - mΩ %
05	Coupling proof torque	Para 13.2.10 of Generic specification	Interface dimensions	Para 13.2.11	-	Not Applicable		-
06	Mating and unmating forces	Para 13.2.11 of Generic specification	Torque	Para 13.2.11	-	Not Applicable		N.cm
07	Operating Life	Para 13.2.12 of Generic specification and table 3 and 4 of this specification	**Initial measurements** Impedance VSWR **Final measurement** Visual Examination Resistance change VSWR change	 Table 2 Table 2 No damage Table 3 Table 3	 Z VSWR - ΔR ΔVSWR	 Record values Record values - - –5	 250 +5	 Ω - - mΩ %
08	RF leakage	Para 13.2.13 of Generic specification	**RF leakage**	Table 2	E	-	-	dBi
09	Peak power	Para 13.2.14 of Generic specification and table 2 of this specification	**Final measurement** Impedance	Table 2	Z	Table 1		
10	Permanence of marking	Para 13.2.16 of Generic specification	**Final measurement** Visual Examination	No corrosion or obliteration of marking	-	-		-

Notes:

(1) The tests in this table refer to either para 11 and 12 of Generic specification and shall be used as applicable

(2) Measurement to be made on 2 samples only.