

RADIALL DETAIL SPECIFICATION FOR SHF COAXIAL CABLE ASSEMBLY

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DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1 -	04/05/2003	Creation – Replacement of specification R23SHFS-TDS
1A	19/02/2004	Change of the capacitance and propagation time values on cable assemblies SHF 2.4MS, SHF3MS, SHF5MS, SHF8MS. Change of the phase stability values on SHF8MS Change of the propagation time values on SHF13S
1B	30/04/2004	SHF LW cable assemblies data sheets added (SHF5MS LW and SHF8MS LW)
1C	02/11/2004	Change of the weight SHF 2.4MS cable 14g ⇒ 18g Change of the weight SHF 3MS cable 32g ⇒ 35g Change of the minimum bend radius SHF 2.4 MS 15mm ⇒ 10 mm Change of the minimum bend radius SHF 3 MS 10mm ⇒ 15 mm Change of the minimum bend radius SHF 3 MS 20mm ⇒ 25 mm VSWR values of cable assemblies TNC high power changed: DC/3 GHz 1.20 ⇒ DC/4.2 GHz 1.20 3 / 8 GHz 1.35 ⇒ 4.2 / 8 GHz 1.35
2 -	31/01/2005	SHF2.4MS and SHF3MS cancels.
2A	07/07/2005	Added SHF5MS TNC reference in table I
2B	11/10/2005	Added Power Handling curve in figure 1a for SHF5MS TNC (category IV)
2 C	20/06/2006	Added SHF2.4MS, SHF3MS and SMA2.9 configurations for cable assemblies SHF3MS and SHF5MS. SHF13MS cancelled.
2 D	05/12/2007	Correction of the cable type in Table 1: SHF8MS applicable for references beginning by R23009xxxxxxx instead of SHF8MS + SHF8MSLW
3 –	24/10/2012	Updated with new Radiall codification (see RAD-GEN-CSHF-001 Issue 4/-)
3 A	16/10/2018	Updated to add new cable assemblies type with SMPL connectors
3 B	03/06/2019	Updated to correct the Power Handling graph for SMA2.9 cable assemblies
3 C	10/09/2020	Updated to correct the RF Power Handling graph for SHF2.4MS & SHF3MS, and update Table 1 with new categories of Power Handling



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REVISION OR ISSUE	DATE	CHANGE
4 - Draft	16/03/2022	Updated with new type of cable assemblies: cable LPV.086'' with SMA and SMPL cable .047'' with SMPML
4 -	16/05/2022	Updated to valid issue 4/-

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1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, and test and inspection data for RF Coaxial cable assemblies. It shall be read in conjunction with RADIALL Generic Specification RAD-GEN-CSHF-001, the requirements of which are supplemented herein.

1.2 TYPE VARIANTS

For each type of cable assembly, the full electrical and physical characteristics are given in individual Technical Data Sheet (TDS)

1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the cable assembly specified herein, are as scheduled in TDS.

1.4 POWER DERATING INFORMATION

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

1.5 PHYSICAL DIMENSIONS

The physical dimensions of the cable assembly specified herein are shown in TDS.

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 detail specification RAD-DET-CONN-008.

2. APPLICABLE DOCUMENTS

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

- (a) RADIALL Generic Specification RAD-GEN-CSHF-001 for RF Coaxial cable assembly.
- (b) RADIALL Generic Specification RAD-GEN-CONN-001 for RF coaxial connector.
- (c) RADIALL Detail Specification RAD-DET-CABL-002 for RF SHF cable
- (d) RADIALL Detail Specification RAD-DET-CONN-008 for RF coaxial connector SHF type

3. REQUIREMENTS

3.1 MECHANICAL -ELECTRICAL

Mechanical and electrical requirements listed in generic specification are defined in the TDS

3.2 MARKING

The marking of all cable assemblies shall be in accordance with the definition of generic specification

3.3 MATERIAL AND FINISHES

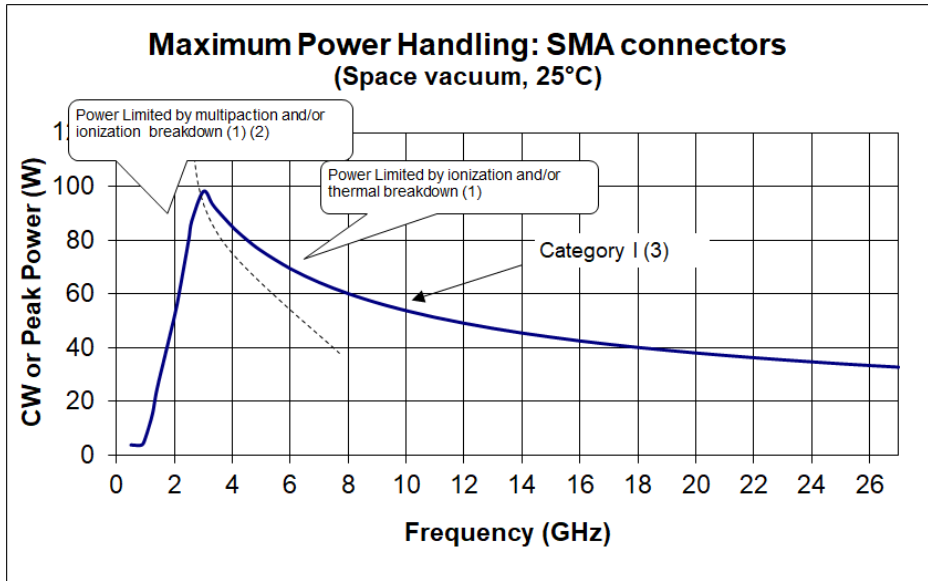
The material and finishes are defined in the detail specifications (cable & connector). For each TDS of cable assembly a declared material list are available.

3.4 ASSEMBLIES PROCESS

The internal process is defined for each cable assembly type and available if required.

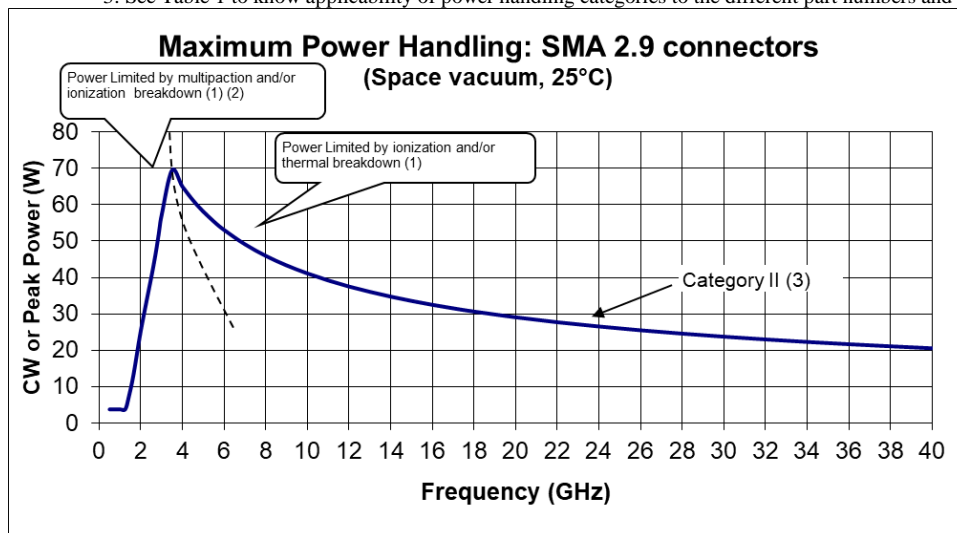
Figure 1- POWER derating information for SHF4.8MS, SHF5MS and SHF8MS

FIGURE 1(a) POWER VERSUS FREQUENCY



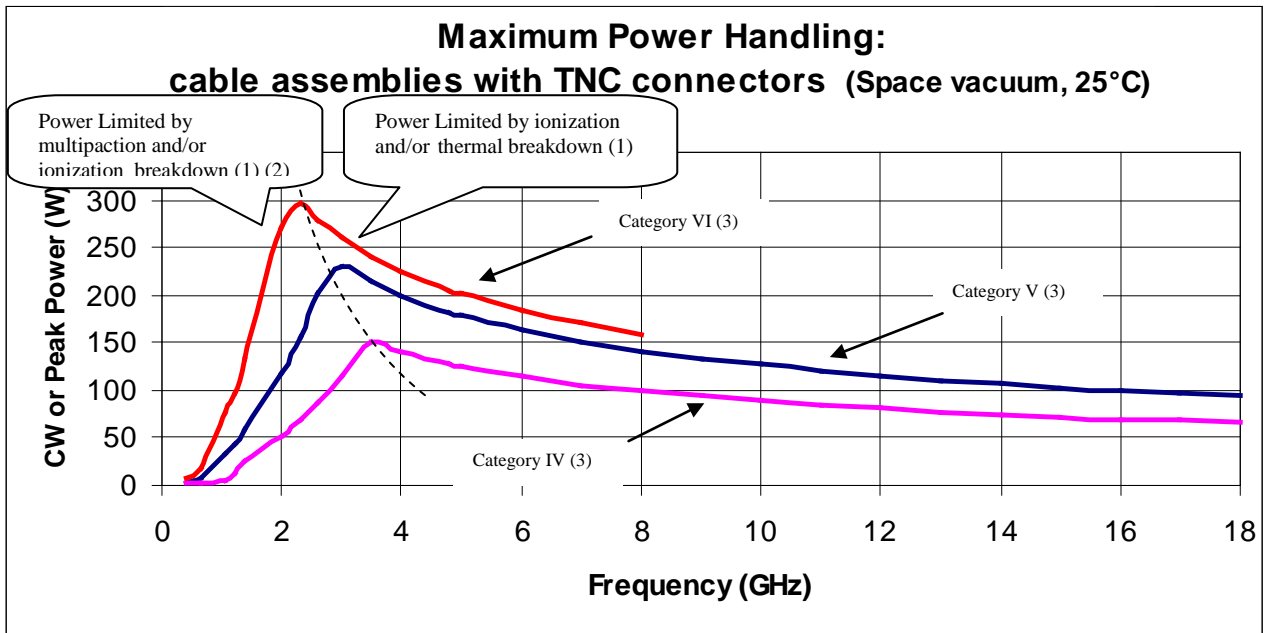
Notes:

- 1: Load VSWR is better than 1,30:1
- 2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA
- 3: See Table 1 to know applicability of power handling categories to the different part numbers and



Notes:

- 1: Load VSWR is better than 1,30:1
- 2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA
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Notes:

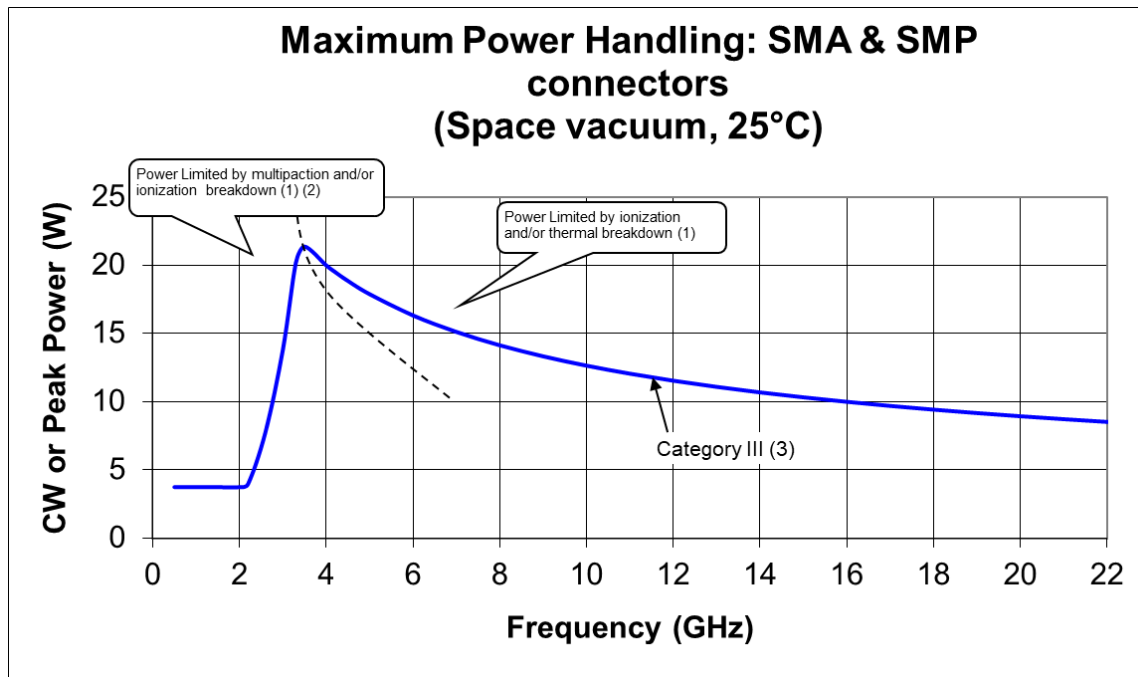
1: Load VSWR is better than 1,30:1

2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA

3: See Table 1 to know applicability of power handling categories to the different part numbers

Figure 2- POWER derating information for SHF2.4MS, LPV.086”

FIGURE 2(a) POWER VERSUS FREQUENCY



Notes:

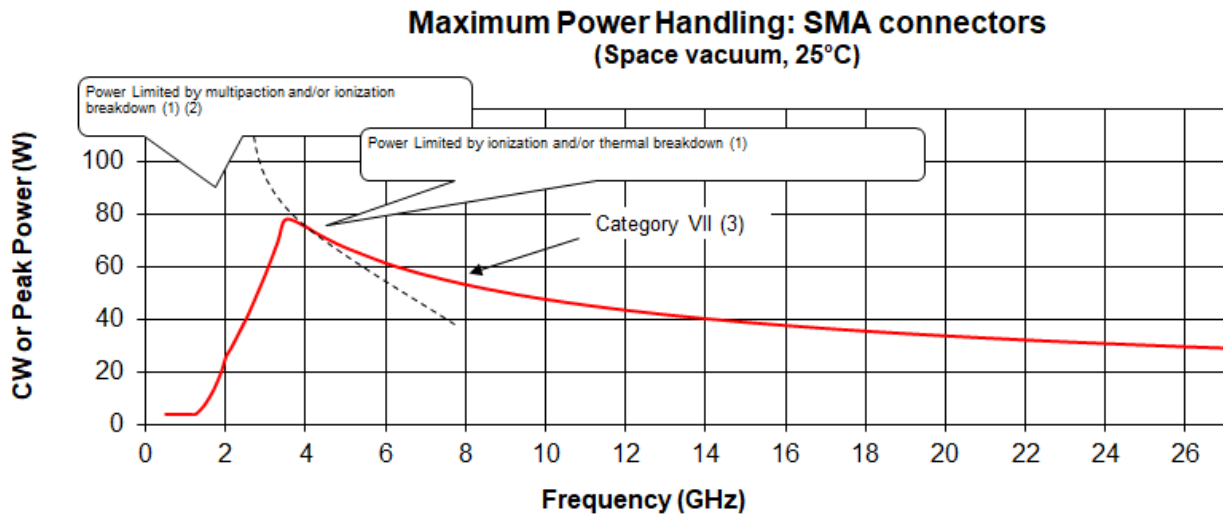
1: Load VSWR is better than 1,30:1

2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA

3: See Table 1 to know applicability of power handling categories to the different part numbers

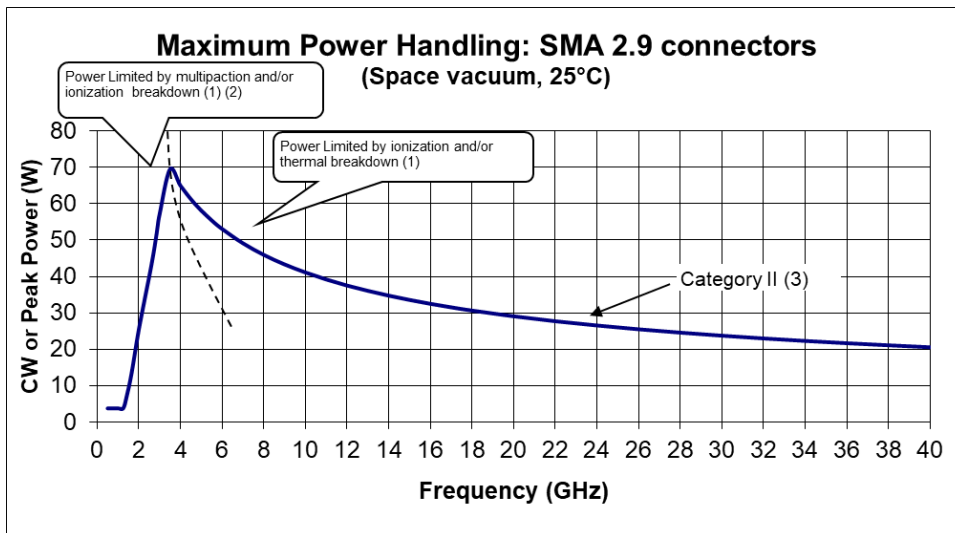
Figure 3- POWER derating information for SHF3MS

FIGURE 3(a) POWER VERSUS FREQUENCY



Notes:

- 1: Load VSWR is better than 1,30:1
- 2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA
- 3: See Table 1 to know applicability of power handling categories to the different part numbers

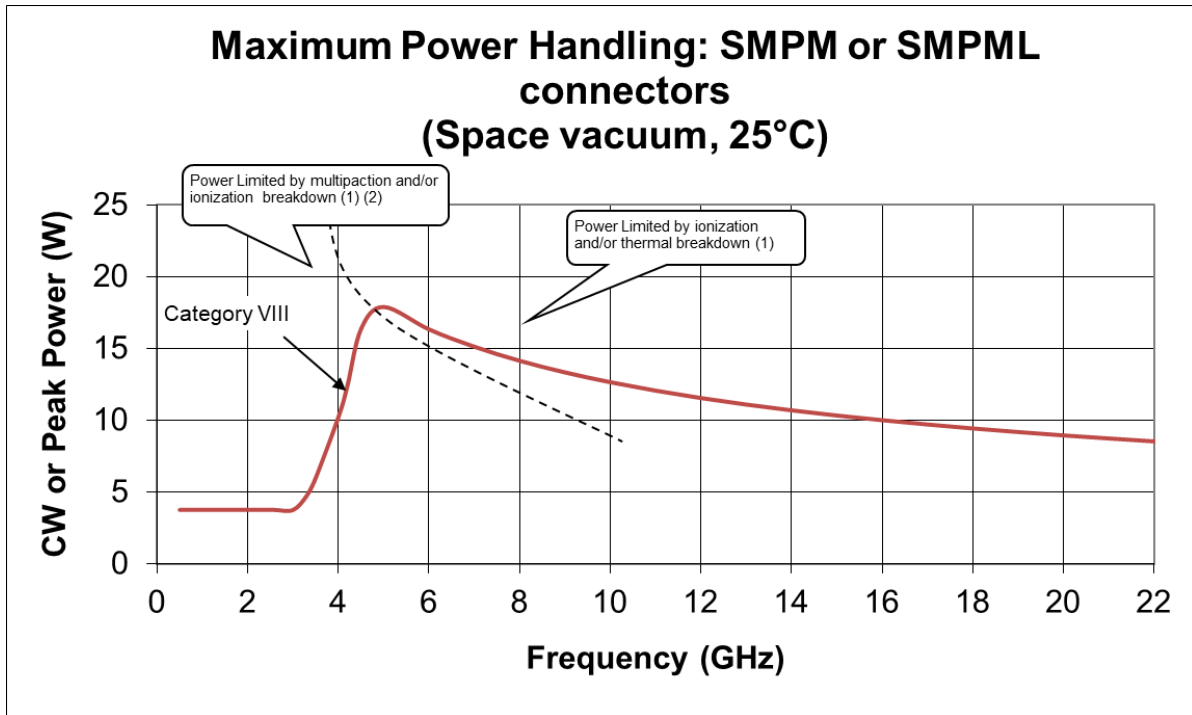


Notes:

- 1: Load VSWR is better than 1,30:1
- 2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA
- 3: See Table 1 to know applicability of power handling categories to the different part numbers and

Figure 4- POWER derating information for SHF .047”

FIGURE 3(a) POWER VERSUS FREQUENCY



Notes:

1: Load VSWR is better than 1,30:1

2: The part of the curve limited by multipaction takes into account a 6 dB margin as recommended by ESA

3: See Table 1 to know applicability of power handling categories to the different part numbers

Figure 5- Power versus temperature

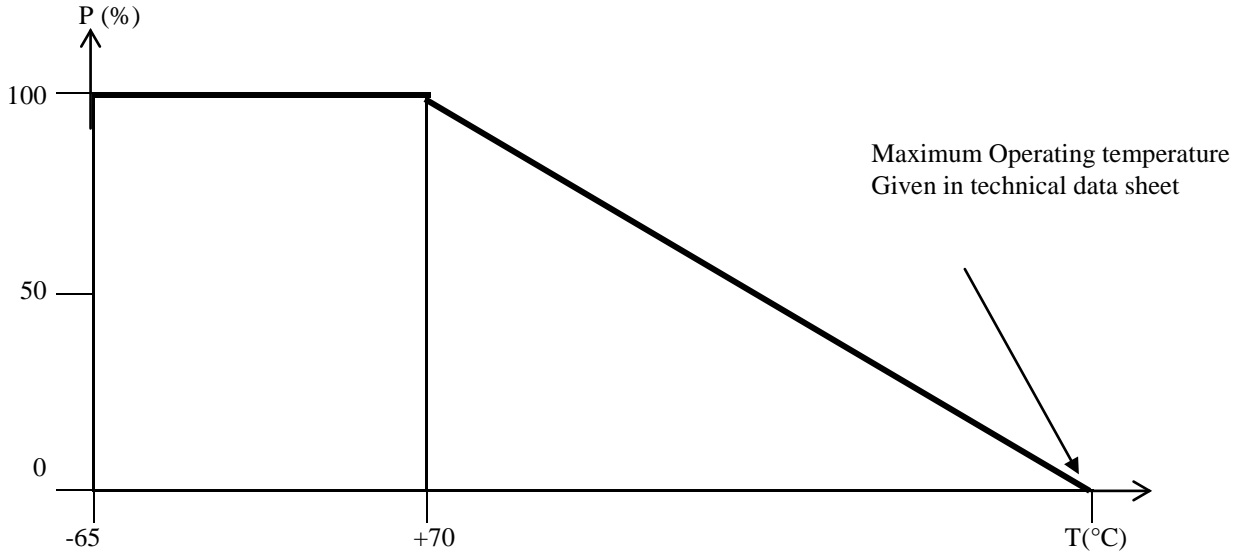


TABLE 1 - TYPE VARIANTS LIST

CABLE TYPE	RADIALL Part Numbers	DESIGNATION	POWER HANDLING CATEGORY
SHF 2.4MS PFA	R230021010BBBBB	SMPL Female straight* / SMPL Female Straight*	III
	R230021011BBBBB	SMPL Female straight* / SMPL Female Right Angle*	III
	R230021110BBBBB	SMPL Female Right Angle* / SMPL Female Straight*	III
	R230021111BBBBB	SMPL Female Right Angle* / SMPL Female Right Angle*	III
	R230024040BBBBB	SMA plug straight – SMA plug straight	III
	R230024240BBBBB	SMA plug swept - SMA plug straight	III
	R230024042BBBBB	SMA plug straight - SMA plug swept	III
	R230024242BBBBB	SMA plug swept - SMA plug swept	III
	R230024140BBBBB	SMA plug right angle - SMA plug straight	III
	R230024041BBBBB	SMA plug straight - SMA plug right angle	III
	R230024141BBBBB	SMA plug right angle - SMA plug right angle	III
	R230024142BBBBB	SMA plug right angle - SMA plug swept	III
	R230024241BBBBB	SMA plug swept - SMA plug right angle	III
	R230024043BBBBB	SMA plug straight– SMA jack straight	III
	R230024340BBBBB	SMA jack straight – SMA plug straight	III
	R230024343BBBBB	SMA jack straight – SMA jack straight	III
	R230024143BBBBB	SMA plug right angle – SMA jack straight	III
	R230024243BBBBB	SMA plug swept – SMA jack straight	III

* Connector with venting hole



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CABLE TYPE	RADIALL Part Numbers	DESIGNATION	POWER HANDLING CATEGORY
SHF 3MS ETFE	R230031010BBBBB	SMPL Female straight* / SMPL Female Straight*	III
	R230031011BBBBB	SMPL Female straight* / SMPL Female Right Angle*	III
	R230031110BBBBB	SMPL Female Right Angle* / SMPL Female Straight*	III
	R230031111BBBBB	SMPL Female Right Angle* / SMPL Female Right Angle*	III
	R230034040BBBBB	SMA plug straight* – SMA plug straight*	VII
	R230034240BBBBB	SMA plug swept* - SMA plug straight*	VII
	R230034042BBBBB	SMA plug straight* - SMA plug swept*	VII
	R230034242BBBBB	SMA plug swept* - SMA plug swept*	VII
	R230034140BBBBB	SMA plug right angle - SMA plug straight*	VII
	R230034041BBBBB	SMA plug straight* - SMA plug right angle	VII
	R230034141BBBBB	SMA plug right angle - SMA plug right angle	VII
	R230034142BBBBB	SMA plug right angle - SMA plug swept*	VII
	R230034241BBBBB	SMA plug swept* - SMA plug right angle	VII
	R230035050BBBBB	SMA2.9 plug straight – SMA2.9 plug straight	II
	R230035250BBBBB	SMA2.9 plug swept – SMA2.9 plug straight	II
R230035052BBBBB	SMA2.9 plug straight – SMA2.9 plug swept	II	
R230035252BBBBB	SMA2.9 plug swept – SMA2.9 plug swept	II	
SHF 3MS PFA	R230044040BBBBB	SMA plug straight* – SMA plug straight*	VII
	R230044240BBBBB	SMA plug swept* - SMA plug straight*	VII
	R230044042BBBBB	SMA plug straight* - SMA plug swept*	VII
	R230044242BBBBB	SMA plug swept* - SMA plug swept*	VII
	R230044140BBBBB	SMA plug right angle - SMA plug straight*	VII
	R230044041BBBBB	SMA plug straight* - SMA plug right angle	VII
	R230044141BBBBB	SMA plug right angle - SMA plug right angle	VII
	R230044142BBBBB	SMA plug right angle - SMA plug swept*	VII
	R230044241BBBBB	SMA plug swept* - SMA plug right angle	VII
	R230045050BBBBB	SMA2.9 plug straight – SMA2.9 plug straight	II
	R230045250BBBBB	SMA2.9 plug swept – SMA2.9 plug straight	II
	R230045052BBBBB	SMA2.9 plug straight – SMA2.9 plug swept	II
R230045252BBBBB	SMA2.9 plug swept – SMA2.9 plug swept	II	



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CABLE TYPE	RADIALL Part Numbers	DESIGNATION	POWER HANDLING CATEGORY
SHF 4.8MS ETFE	R230051010BBBBB	SMPL Female Straight* / SMPL Female Straight*	III
	R230051012BBBBB	SMPL Female Straight* / SMPL Female Swept*	III
	R230051210BBBBB	SMPL Female Swept* / SMPL Female Straight*	III
	R230051212BBBBB	SMPL Female Swept* / SMPL Female Swept*	III
	R230053030BBBBB	SMA plug straight* – SMA plug straight*	I ⁽¹⁾
	R230053032BBBBB	SMA plug swept* - SMA plug straight*	I ⁽¹⁾
	R230053230BBBBB	SMA plug straight* - SMA plug swept*	I ⁽¹⁾
	R230053232BBBBB	SMA plug swept* - SMA plug swept*	I ⁽¹⁾
	R230055050BBBBB	SMA2.9 plug straight – SMA2.9 plug straight	II ⁽²⁾
	R230055250BBBBB	SMA2.9 plug swept – SMA2.9 plug straight	II ⁽²⁾
	R230055052BBBBB	SMA2.9 plug straight – SMA2.9 plug swept	II ⁽¹²⁾
	R230055252BBBBB	SMA2.9 plug swept – SMA2.9 plug swept	II ⁽¹²⁾

* Connector with venting hole

Note (1): Limited at 26.5GHz, frequency range of SMA connectors

Note (2): Limited at 31.5GHz, frequency range of SHF4.8MS



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CABLE TYPE	RADIALL Part Numbers	DESIGNATION	POWER HANDLING CATEGORY
	R230064040BBBBB	SMA plug straight* - SMA plug straight*	I
	R230064042BBBBB	SMA plug straight* - SMA plug swept*	I
	R230064240BBBBB	SMA plug swept* - SMA plug straight*	I
	R230064242BBBBB	SMA plug swept* - SMA plug swept*	I
	R230064041BBBBB	SMA plug straight* - SMA plug right angle	I
	R230064140BBBBB	SMA plug right angle / SMA plug straight*	I
	R230064241BBBBB	SMA plug swept* - SMA plug right angle	I
	R230064142BBBBB	SMA plug Right angle – SMA plug swept*	I
	R230064141BBBBB	SMA plug right angle - SMA plug right angle	I
	R230064043BBBBB	SMA plug straight* – SMA jack straight	I
	R230064143BBBBB	SMA plug right angle – SMA jack straight	I
SHF	R230064243BBBBB	SMA plug swept* - SMA jack straight	I
5MS	R230065050BBBBB	SMA2.9 plug straight – SMA2.9 plug straight	II ⁽¹⁾
FEP	R230065250BBBBB	SMA2.9 plug swept – SMA2.9 plug straight	II ⁽¹⁾
	R230065052BBBBB	SMA2.9 plug straight – SMA2.9 plug swept	II ⁽¹⁾
	R230065252BBBBB	SMA2.9 plug swept – SMA2.9 plug swept	II ⁽¹⁾
	R230066040BBBBB	TNC plug straight - SMA plug straight*	I
	R230066240BBBBB	TNC plug swept - SMA plug straight*	I
	R230066041BBBBB	TNC plug straight - SMA plug right angle	I
	R230066241BBBBB	TNC plug swept - SMA plug right angle	I
	R230066042BBBBB	TNC plug straight - SMA plug swept*	I
	R230066242BBBBB	TNC plug swept - SMA plug swept*	I
	R230066060BBBBB	TNC plug straight - TNC plug straight	IV
	R230066062BBBBB	TNC plug straight –TNC plug swept	IV
	R230066260BBBBB	TNC plug swept - TNC plug straight	IV
	R230066262BBBBB	TNC plug swept - TNC plug swept	IV

* Connector with venting hole

Note (1): Limited at 26.5GHz, frequency range of SHF5MS



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CABLE TYPE	RADIALL Part Numbers	DESIGNATION	POWER HANDLING CATEGORY
SHF 8MS ETFE	R230084040BBBBB	SMA plug straight* - SMA plug straight*	I ⁽¹⁾
	R230084042BBBBB	SMA plug straight *- SMA plug swept *	I ⁽¹⁾
	R230084240BBBBB	SMA plug swept * - SMA plug straight *	I ⁽¹⁾
	R230084242BBBBB	SMA plug swept *- SMA plug swept*	I ⁽¹⁾
	R230086060BBBBB	TNC plug straight* - TNC plug straight*	V
	R230086062BBBBB	TNC plug straight* - TNC plug swept*	V
	R230086260BBBBB	TNC plug swept* - TNC plug straight*	V
	R230086262BBBBB	TNC plug swept* - TNC plug swept*	V
	R230084060BBBBB	SMA plug straight* - TNC plug straight*	I
	R230084062BBBBB	SMA plug straight* - TNC plug swept*	I
	R230084260BBBBB	SMA plug swept *- TNC plug straight*	I
	R230084262BBBBB	SMA plug swept* - TNC plug swept*	I
	R230087070BBBBB	TNC high power straight* - TNC high power straight*	VI ⁽²⁾
	R230087071BBBBB	TNC high power straight* - TNC high power right angle*	VI ⁽²⁾
	R230087170BBBBB	TNC high power right angle* - TNC high power straight	VI ⁽²⁾
	R230087171BBBBB	TNC high power right angle* - TNC high power right angle*	VI ⁽²⁾
	R230088080BBBBB	<i>TNC Very High Power plug straight* - TNC Very High Power plug straight*</i>	(3)
	R230088081BBBBB	<i>TNC Very High Power plug straight* - TNC Very High Power plug right angle*</i>	(3)
	R230088180BBBBB	<i>TNC Very High Power plug right angle* - TNC Very High Power plug straight*</i>	(3)
	R230088181BBBBB	<i>TNC Very High Power plug right angle* - TNC Very High Power plug right angle*</i>	(3)
	R230088083BBBBB	<i>TNC Very High Power plug straight* - TNC Very High Power jack straight*</i>	(3)
	R230088380BBBBB	<i>TNC Very High Power jack straight* - TNC Very High Power plug straight*</i>	(3)
	R230088383BBBBB	<i>TNC Very High Power jack straight* - TNC Very High Power jack straight*</i>	(3)
	R230088087BBBBB	<i>TNC Very High Power plug straight* - TNC Very High Power jack right angle*</i>	(3)
R230088780BBBBB	<i>TNC Very High Power jack right angle* - TNC Very High Power plug straight*</i>	(3)	
R230088787BBBBB	<i>TNC Very High Power jack right angle* - TNC Very High Power jack right angle *</i>	(3)	
R230088183BBBBB	<i>TNC Very High Power plug right angle* - TNC Very High Power jack straight *</i>	(3)	
R230088783BBBBB	<i>TNC Very High Power jack right angle* - TNC Very High Power jack straight *</i>	(3)	

Note (1): Limited at 18GHz, frequency range of SHF8MS

Note (2): Limited at 8GHz, frequency range of TNC High Power

Note (3): The configurations TNC Very High Power are available only under ESCC specification 3408 and ESCC3408/001. See these specifications for more details of Power Handling capabilities



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SHF 8MS FEP	R230094040BBBBB	SMA plug straight* - SMA plug straight*	I ⁽¹⁾
	R230094042BBBBB	SMA plug straight *- SMA plug swept *	I ⁽¹⁾
	R230094240BBBBB	SMA plug swept* - SMA plug straight*	I ⁽¹⁾
	R230094242BBBBB	SMA plug swept *- SMA plug swept*	I ⁽¹⁾
	R230096060BBBBB	TNC plug straight* - TNC plug straight*	V
	R230096062BBBBB	TNC plug straight* - TNC plug swept*	V
	R230096260BBBBB	TNC plug swept* - TNC plug straight*	V
	R230096262BBBBB	TNC plug swept* - TNC plug swept*	V
	R230094060BBBBB	SMA plug straight* - TNC plug straight*	I
	R230094062BBBBB	SMA plug straight* - TNC plug swept*	I
	R230094260BBBBB	SMA plug swept *- TNC plug straight*	I
	R230094262BBBBB	SMA plug swept* - TNC plug swept*	I
	R230097070BBBBB	TNC high power straight* - TNC high power straight*	VI ⁽²⁾
	R230097071BBBBB	TNC high power straight* - TNC high power right angle*	VI ⁽²⁾
	R230097170BBBBB	TNC high power right angle* - TNC high power straight*	VI ⁽²⁾
	R230097171BBBBB	TNC high power right angle* - TNC high power right angle*	VI ⁽²⁾

* Connector with venting hole

Note (1): Limited at 18GHz, frequency range of SHF8MS

Note (2): Limited at 8GHz, frequency range of TNC High Power



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SHF .047"MS FEP	R230112020BBBBB	SMPML Female straight / SMPML Female Straight	VIII
	R230112021BBBBB	SMPML Female straight / SMPML Female Right Angle	VIII
	R230112120BBBBB	SMPML Female Right Angle / SMPML Female Straight	VIII
	R230112121BBBBB	SMPML Female Right Angle / SMPML Female Right Angle	VIII
LPV .086" FEP	R230124040BBBBB	SMA plug straight* – SMA plug straight*	III
	R230121010BBBBB	SMPL Female straight* / SMPL Female Straight*	III
	R230121011BBBBB	SMPL Female straight* / SMPL Female Right Angle*	III
	R230121110BBBBB	SMPL Female Right Angle* / SMPL Female Straight*	III
	R230121111BBBBB	SMPL Female Right Angle* / SMPL Female Right Angle*	III

* Connector with venting hole