TITLE
HIGH RELIABILITY **LOW LOSS COAXIAL** **CABLE ASSEMBLIES** ——————— **USER HANDBOOK**

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DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1 -	04/11/2004	Creation
1 A	20/01/2005	Cancelled SHF2.4MS and SHF3MS in the tables
2 -	17/06/2008	Updated with SHF2.4MS and SHF3MS in the tables.
2 A	09/11/2010	Updated to add note on the marking sleeves
3 -	22/06/2016	Updated to have only an English version
4 -	13/03/2019	Updated to add more information for SMP Lock cable assemblies

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1. OBJECT

This document gives the mounting recommendations applicable to any type of SHF cable assembly on the equipment of satellites in order to preserve the whole of their initial characteristics.

2. CARE AND HANDLING

The SHF cable assemblies have high electrical performances, any mistake in handling methods can generate irremediable degradations of performances

The cable assembly should not have blows, deformations, flat areas or other defects visible with naked eyes.

Before integration the interface of the connector will be free from all detachable particles, or pollution.

The area of link between cable and connector protected by a heat-shrinkable sleeve shall not be subjected to abnormal stress.

A light torsion of the cable is authorized within the limit of the values given in the table here-after.

The technical data sheets of the cable assemblies or the table 1 below specify 2 values of bending radius of the cable, namely:
- Static bend radius
  - It authorizes the bending only once, the straightened of the cable is not allowed.
- Dynamic bend radius
  - It authorizes 5 bending / unbending in the same zone of the cable without any degradation of its performances.

For swept versions:

The swept at the extremity of the cable assembly shall not be used to maintain it manually or to block its rotation during the mating or unmating of the connector on the equipment. Indeed, there is a risk of deformation of the swept. However a modification of the angle of approximately + or - 5° is acceptable during integration phase.

The assembly of the connectors on the equipment shall be carried out using 2 keys, one with a torque wrench regulated with the value requested in the Technical Data Sheets or the table 2 to ensure the locking of the coupling nut, the other placed on the flats of the back of the connector to avoid its rotation.

3. BEND RADIUS OF CABLE ASSEMBLIES

TABLE 1

	SHF 2.4 MS	SHF 3MS	SHF 4.8MS	SHF5MS	SHF 8MS
Minimum static bend radius (mm)	15	15	25	25	40
Minimum dynamic bend radius (mm)	20	25	50	50	80
Torsion per meter of cable	± 90°				

4. COUPLING TORQUE OF MATING CONNECTORS

TABLE 2

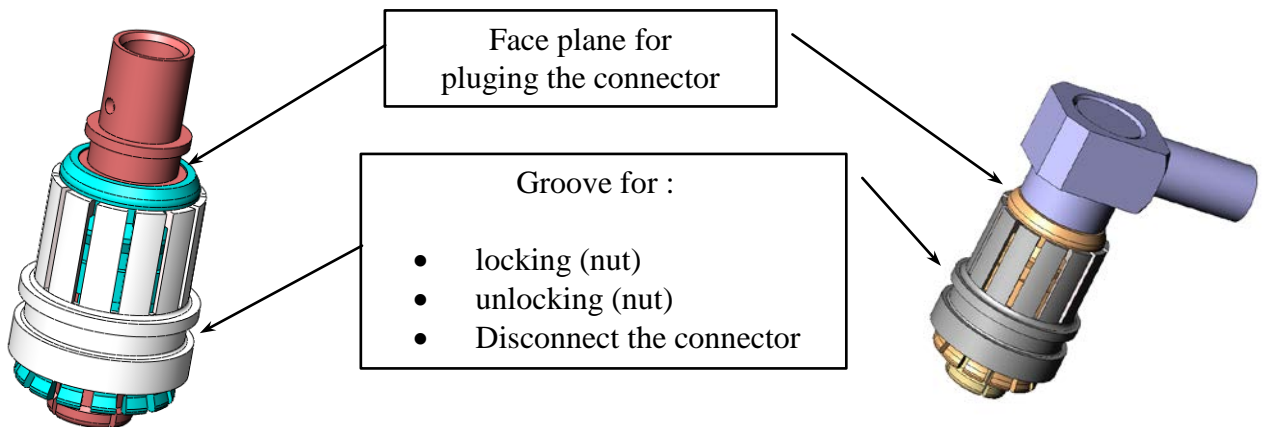| SMA	SMA2.9	TNC	SMP/SMP LOCK
80 -120 N.cm	80-115 N.cm	265 N.cm	N.A.

5. MATING / UNMATING THE CONNECTORS SMP LOCK

FOR SMP LOCK STRAIGHT AND RIGHT ANGLE CONNECTOR:

Recommended tool: R282.868.290 to plug and to lock the connector (can also be plugged manually)
R282.868.330 to unlock and to unplug the connector (to unplug manually is not recommended, risk to damage the cable at the rear of the connector.

*SMP LOCK STRAIGHT:*   *SMP LOCK RIGHT ANGLE:*

Face plane for pluging the connector

Groove for :

- locking (nut)
- unlocking (nut)
- Disconnect the connector

WARNING: It is forbidden to push or pull the cable manually at the rear of the connector to plug or unplug the connector.
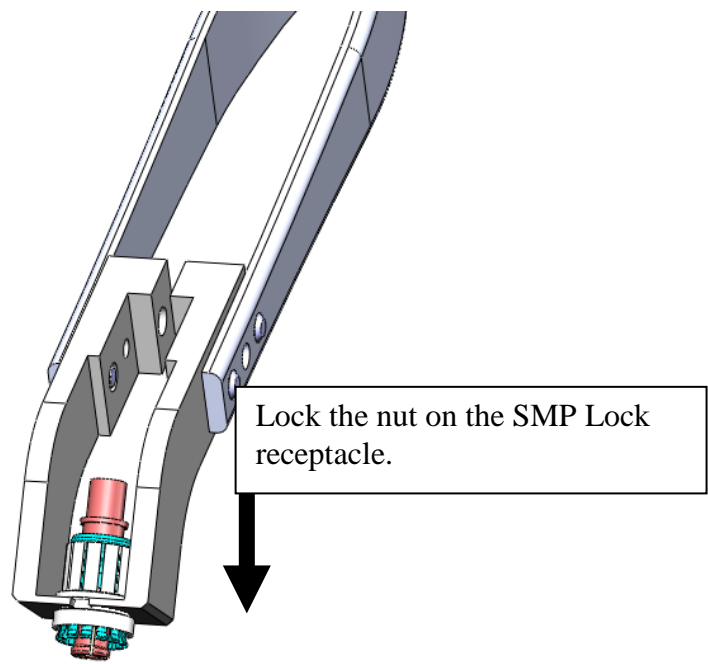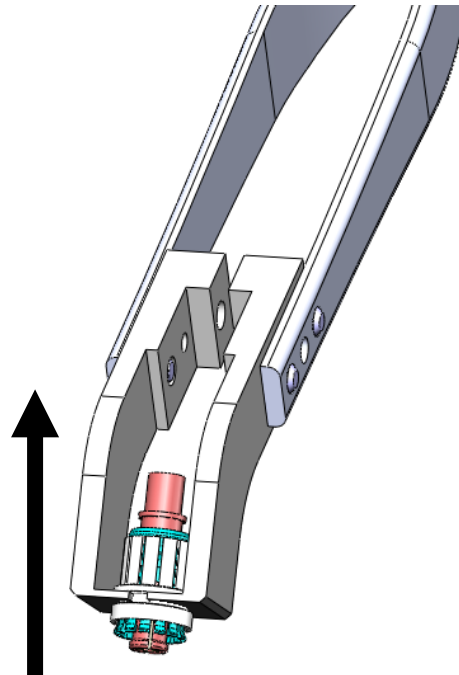
SMPL
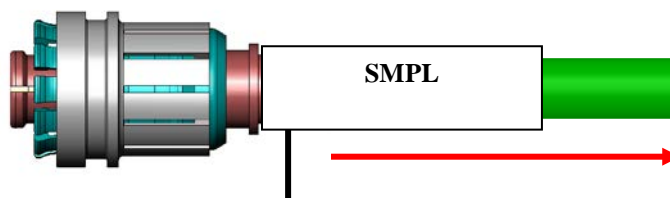
Prohibited area to push or pull the cable manually

SMPL

To plug: with Tool n°282.868.290

To connect the connector (can also be plugged manually)
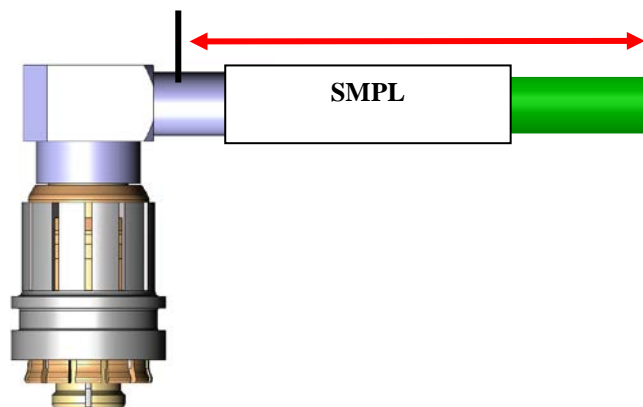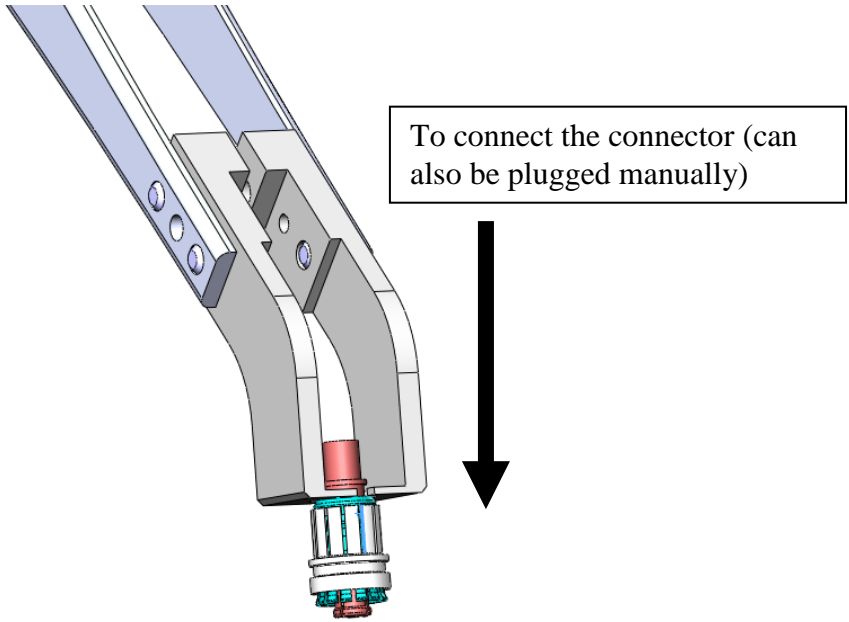
To Lock: with Tool n°282.868.290

Lock the nut on the SMP Lock receptacle.

To Unlock and to unplug: with Tool n°282.868.290

1- Unlock the nut
2- Disconnect the connector

To Unlock and to unplug within a limited area: with Tool n°282.868.330

1st step: Positioning the tool into the SMP groove

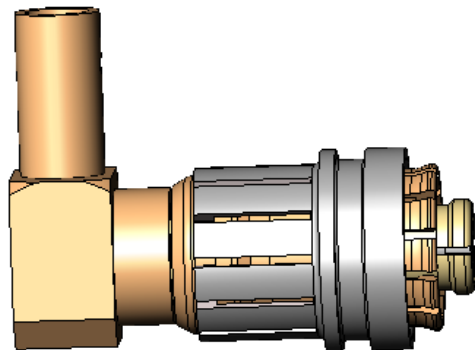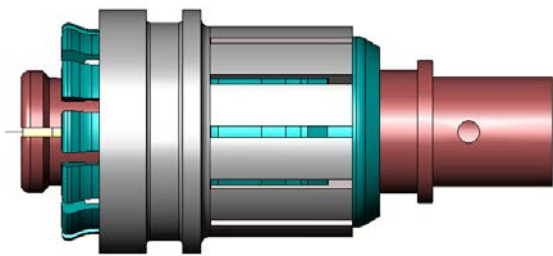
2nd step: Push at the stop position (flange)

3rd step: And press more to unplug the connector
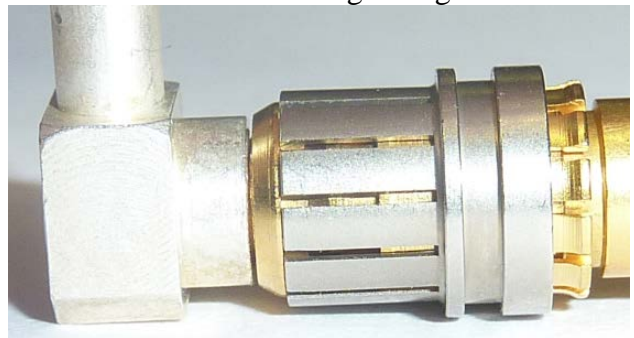

LOCKED / UNLOCKED POSITION
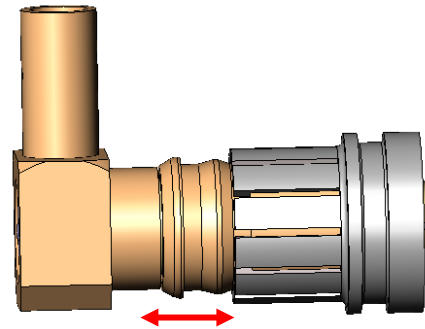
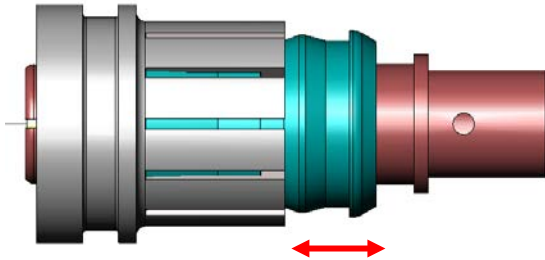SMP Lock connector in UNLOCKED position

Real view on SMP Lock Straight

Real view on SMP Lock Right Angle
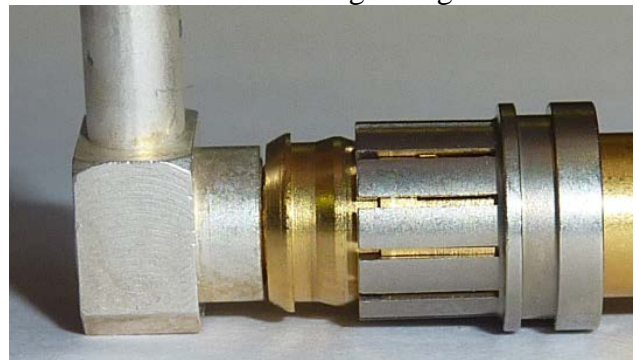
SMP Lock connector in LOCKED position

This area should be in gold color when the SMP Lock connector is locked
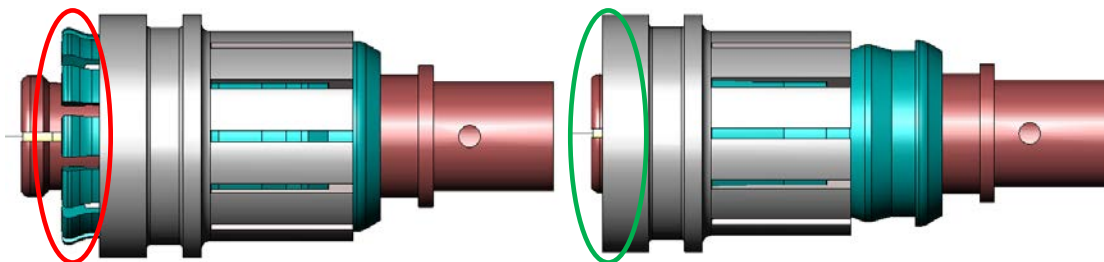
Real view on SMP Lock Straight

Real view on SMP Lock Right Angle

Visual criteria to validate the perfect locking of the connector:
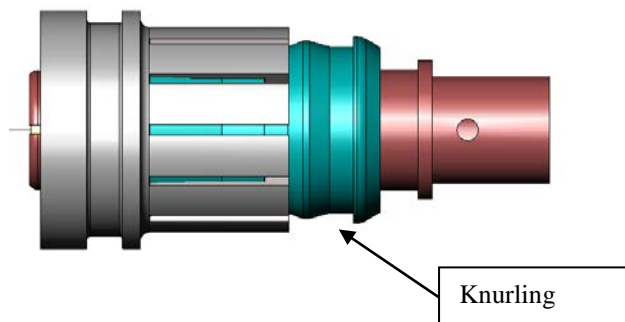
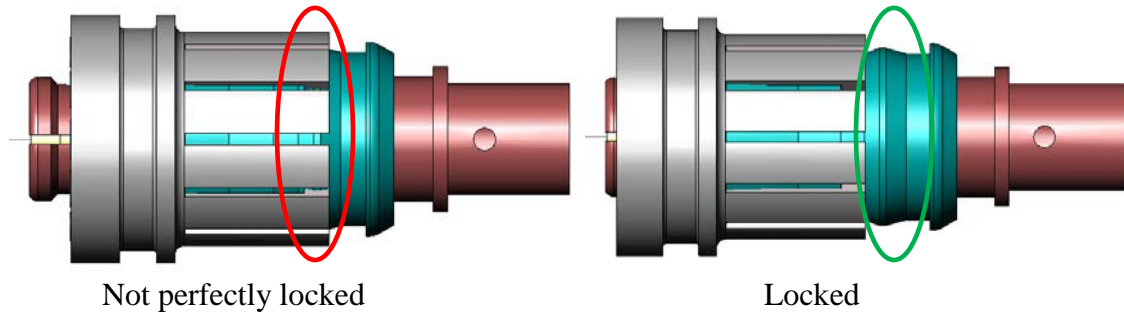➢ The locking petals of the connector shall be completely covered by the cap

Not locked   Locked

➢ And, at the rear of connector, the petals of the cap shall be after knurling:

Knurling

Not perfectly locked   Locked

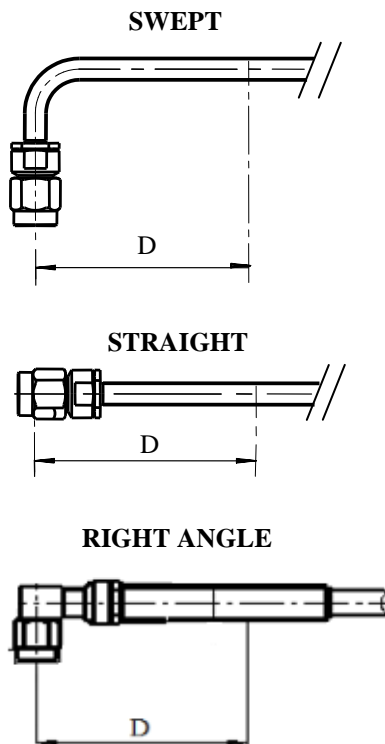## 6. BENDING DISTANCE OF CABLE / CONNECTOR

Example : SMA connectors

Note : For other connector bending distances, see Technical Data Sheets

SWEPT

STRAIGHT

RIGHT ANGLE

CABLE	D (mm)		
	Straight	Swept	Right angle
SHF 2.4MS	35	N.A.	52
SHF 3MS	32	25	40
SHF 4.8MS	52	60	N.A.
SHF 5MS	37	35	41
SHF 8MS	50	38	N.A.

7. NOTE ON THE MARKING SLEEVES

1ST CASE : CABLE ASSEMBLY WITH TWO MARKING SLEEVES AT EACH END

In case there are only two marking sleeves (at each end of the cable assembly), these sleeves are fixed and should not move.

2ND CASE : CABLE ASSEMBLY WITH THREE MARKING SLEEVES

In case there are three marking sleeves (one at each end of the cable assembly and a third at the middle), the two marking sleeves at each end are fixed and could not move. The marking sleeve on the middle is free to be able to move it along the cable in function of the fixing points on the equipment.
Radiall installs three marking sleeves when there is a special marking required by the customer: a reference of the cable and special marking for each port of the cable assembly.
The customer can shrink the middle sleeves if he wishes.
To shrink the marking sleeve, use a hot air generator fitted with an adaptor on the end.
When the new sleeve is placed at the right position on the cable, set the hot air generator thermostat between 150°C to 160°C maximum. The thermal sleeve should be shrinked homogenously along the cable. Check if it is possible to rotate the thermal sleeve around the cable. If yes, please heat again. If no, the shrinking of sleeve is good.

8. CLAMPING METHODS OF CABLE ASSEMBLIES
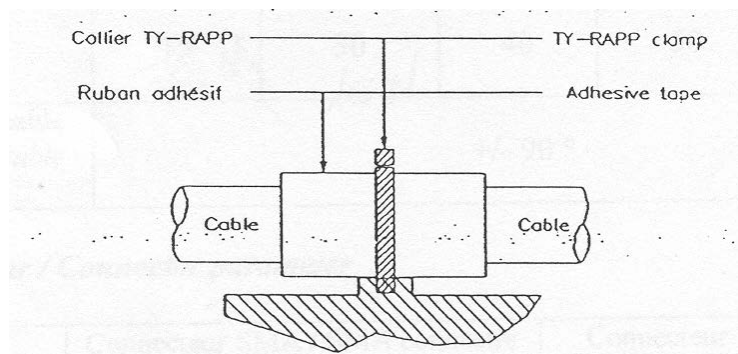
USED MATERIALS

- Adhesive tape :
  - o Material : glass fiber
  - o Thickness : 0.1 mm
  - o Width : > 20 mm

- Ty-rapp clamp :
  - o Material : for Space use
  - o Width : 2 mm

- Method :
  - o Roll up 6 turns minimum of adhesive tape around the cable, to attach the cable on its support under an adequate force to fix the cable without damaging it.
  - o The distance between the TY-RAPPs should be 15 – 20cm.