ORBIT

OrBand™

AL-7107

Maritime Stabilized VSAT System

On-Site Change of System's Configuration

C-Band FEED with 100W BUC | Ku-Band FEED with 40W BUC

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Contents

	This information is important and should be noted.
	Information given in this message warns of a hazard.
	Information given in this warning refers to the only safe method of installation or operation and must be adhered to.

1 INTRODUCTION

1.1 Purpose

This Technical Note details the Mechanical, Wiring and Software procedure required for System's Configuration Change (C-Band 100W to/from Ku-Band 40W) for OrBand™ AL-7107.

1.2 Principle

The OrBand™ AL-7107 system operation Band is determined by two components:

- System Feed
- System BUC

Each one includes several components as is described below.

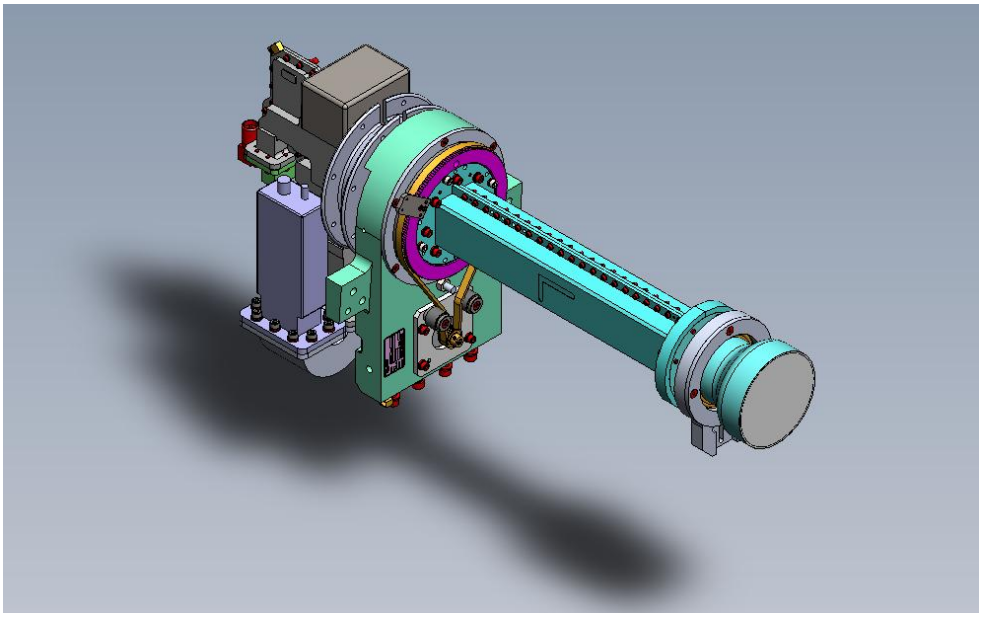
Use the following table for Locktite and Torque values:

Screw Type	Torque	Locktite
M8	$25^{N}/_{m}$	270
M6	$10.2^{N}/_{m}$	270
M5	$6^{N}/_{m}$	241
M4	$2.5^{N}/_{m}$	241
M3	$1.35^{N}/_{m}$	241

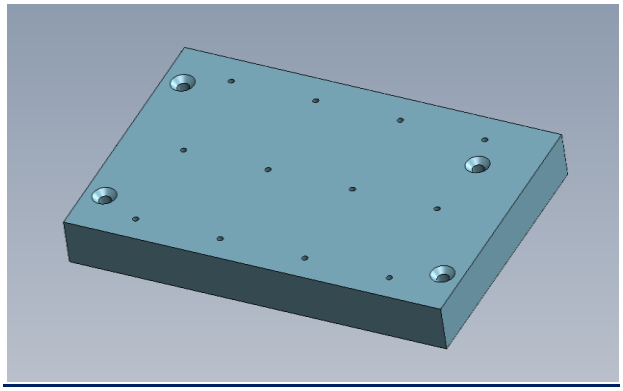
1.3 C-Band with BUC 100W (Agilis) Configuration

This configuration includes the following components:

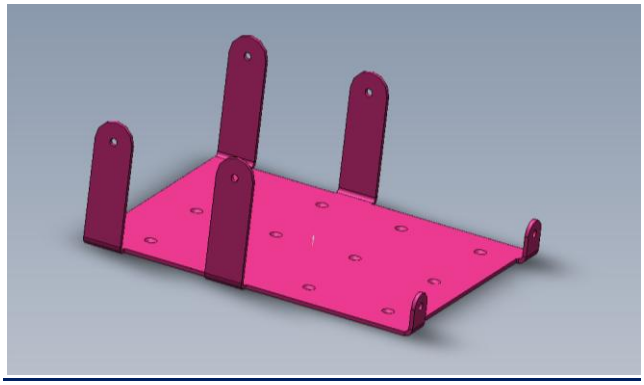
- C-Band Feed Assembly: RF Package (LNB, OMT, WG, Feed Horn and RF Adaptors), Hall sensor (Zero Sensor), Pol-Skew Motors and Encoder.



- BUC Adaptor: Connect the BUC support to the System's Arm.



- BUC Support: Hosting the BUC and connecting it to the BUC Adaptor.

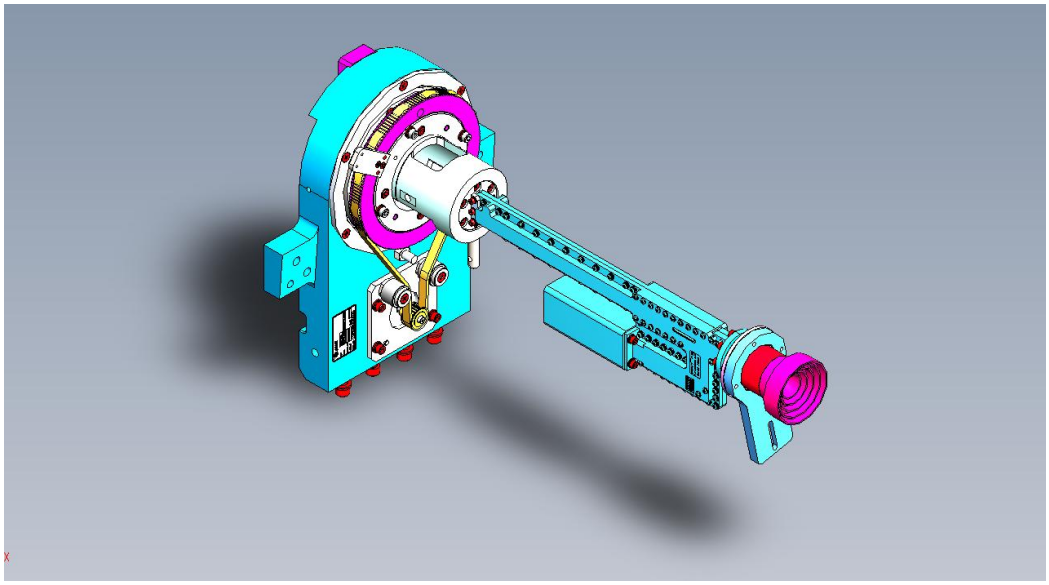


- Cables (Power and M&C) and C Band RF Cable – No Picture attached

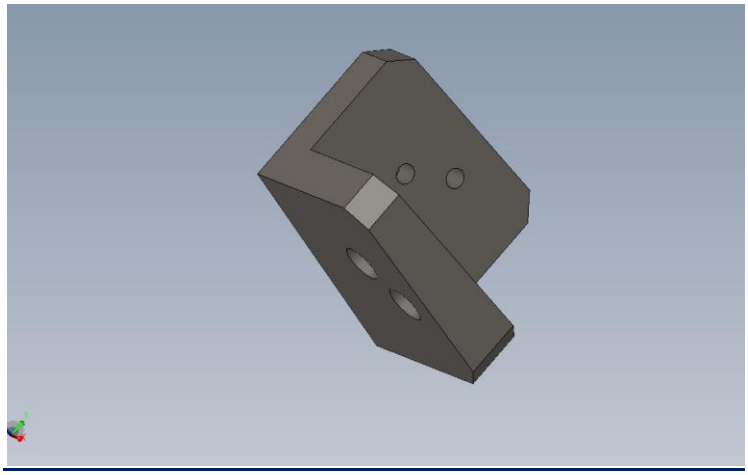
1.4 Ku-Band with 40W BUC (Agilis) Configuration

This configuration includes the following components:

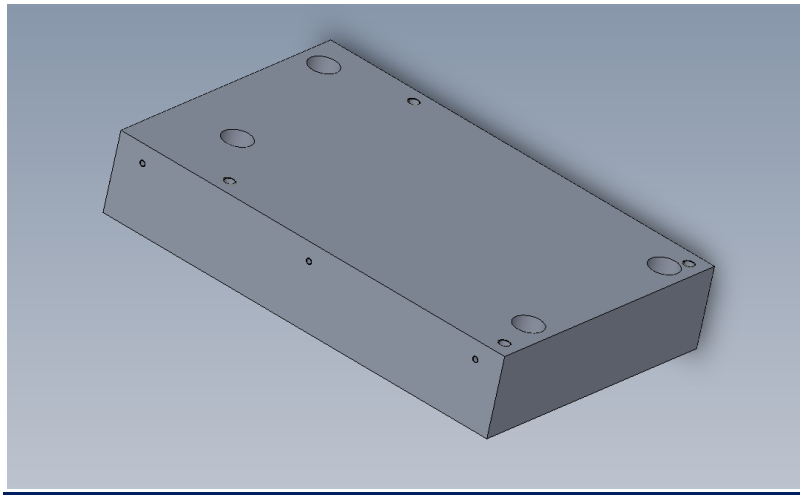
- Ku-Band Feed Assembly: RF Package (LNB, OMT, Feed Horn and RF Adaptors), Rotary-Joint, RF Cables, Hall sensor (Zero Sensor), Pol-Skew Motors and Encoder.



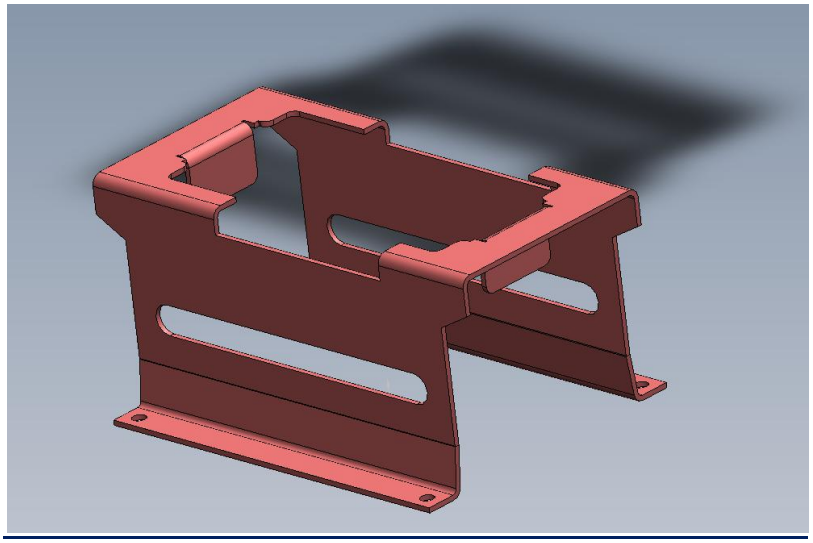
- Balancing Counter weight (2 x 2.5Kg)



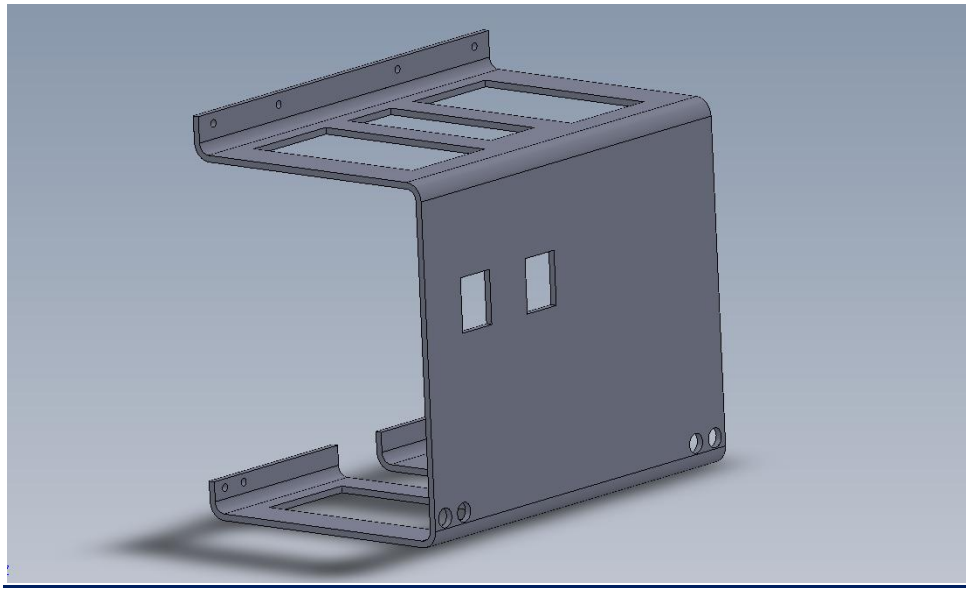
- BUC Adaptor: Connect the BUC support to the System's Arm.



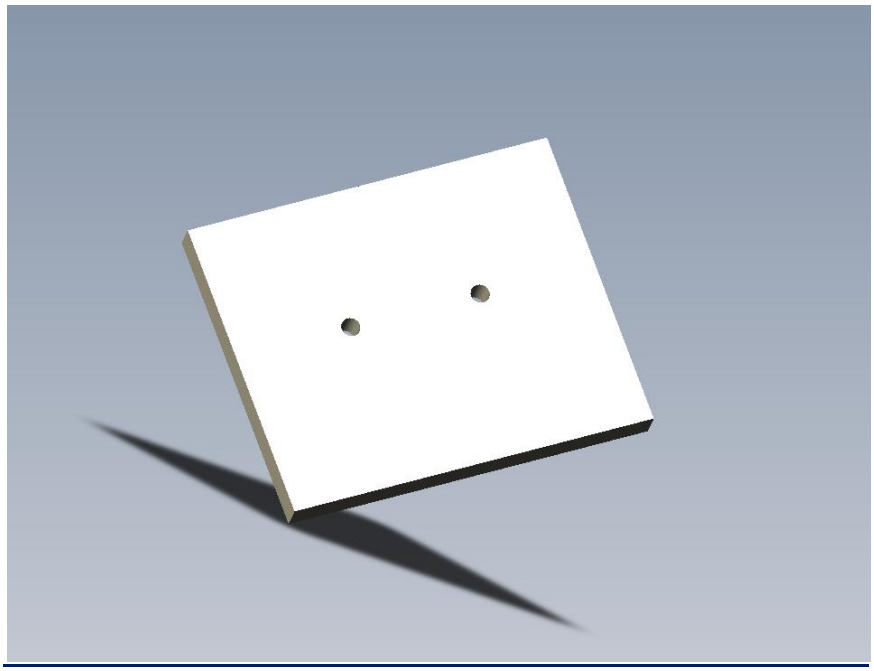
- BUC Support: Hosting the BUC and connecting it to the BUC Adaptor.



- Power supply Cover and Power Supply (including wiring)



- Power Supply Balancing Counter weight (1Kg)

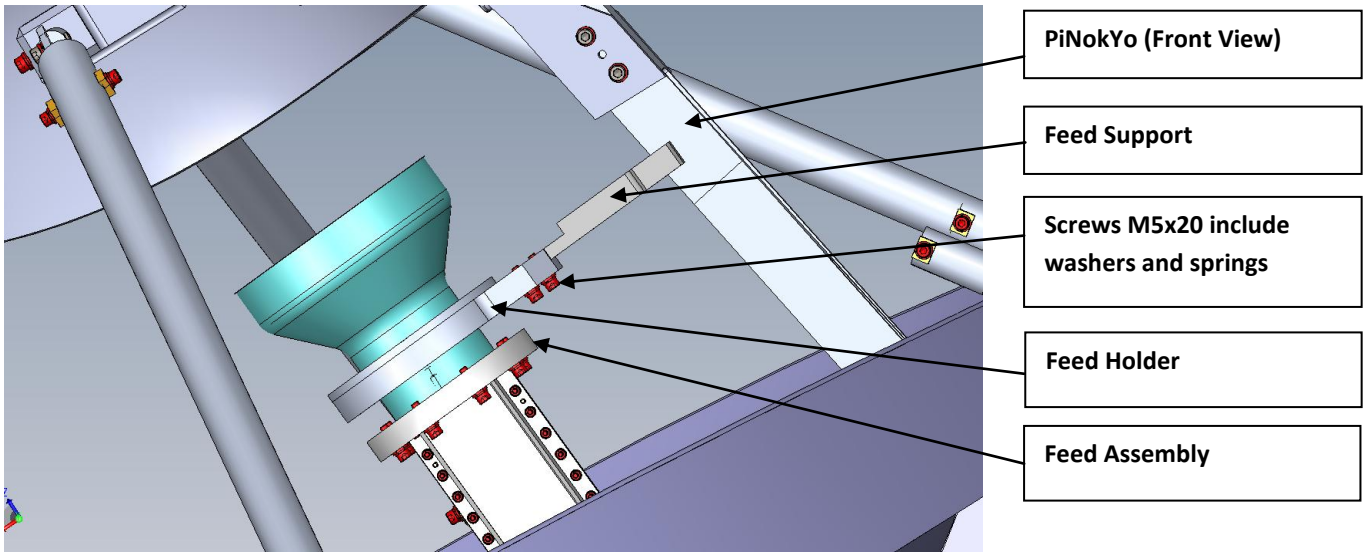


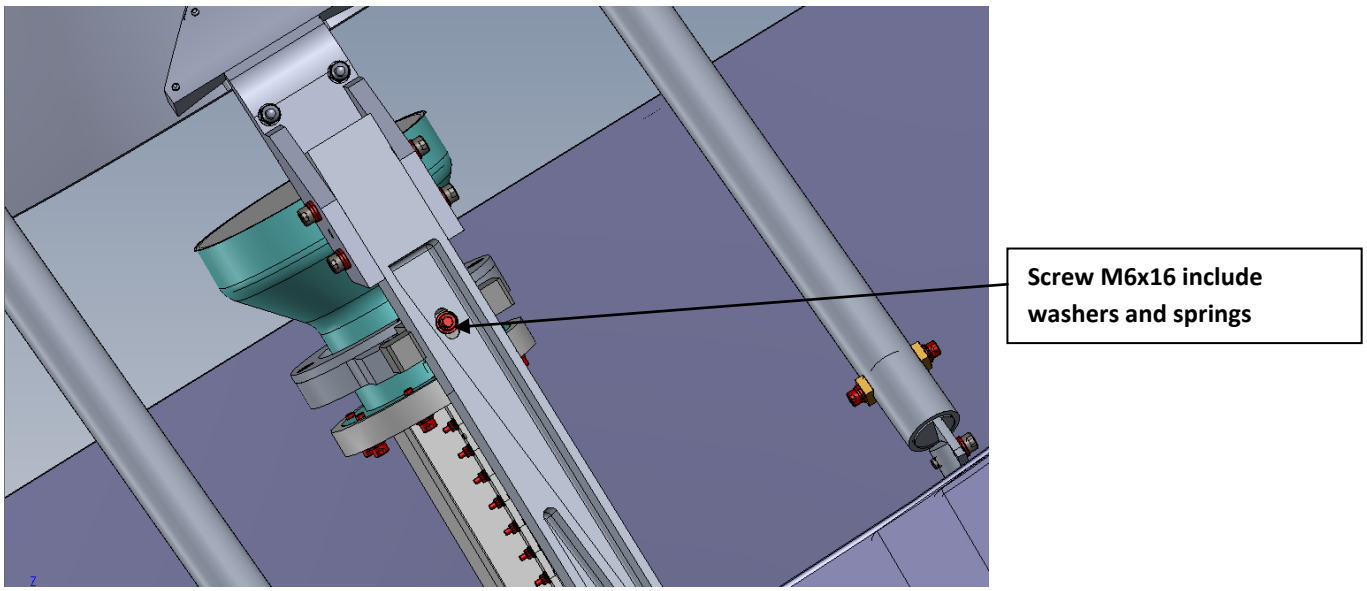
- Cables (Power and M&C) and Ku Band RF Cable - No Picture attached

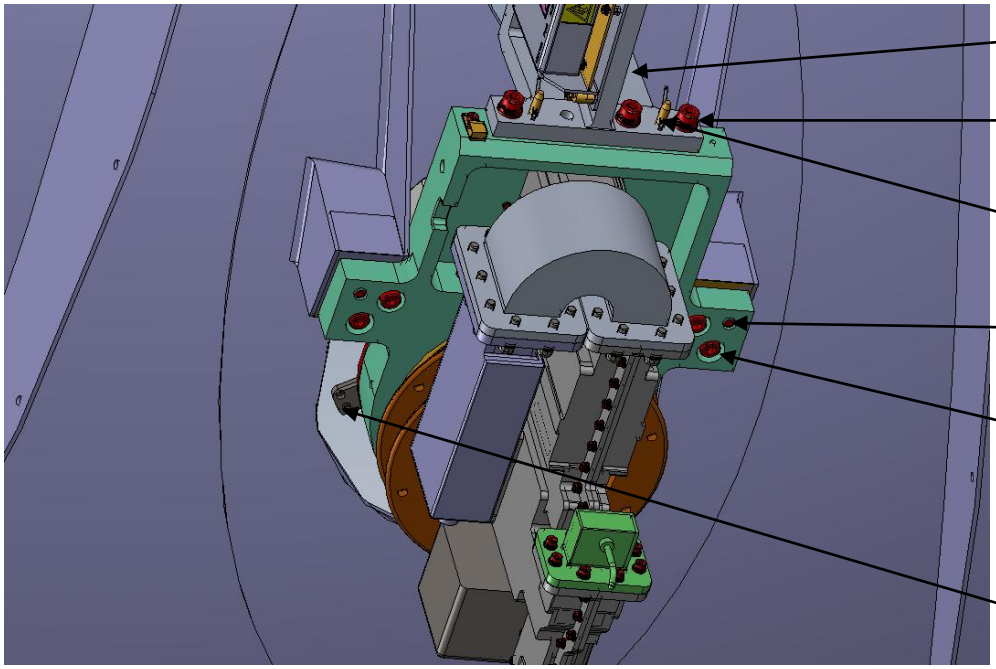
2 ASSEMBLY AND DISASSEMBLY OF FEED

2.1 Mechanical Overview of Feed Assembly

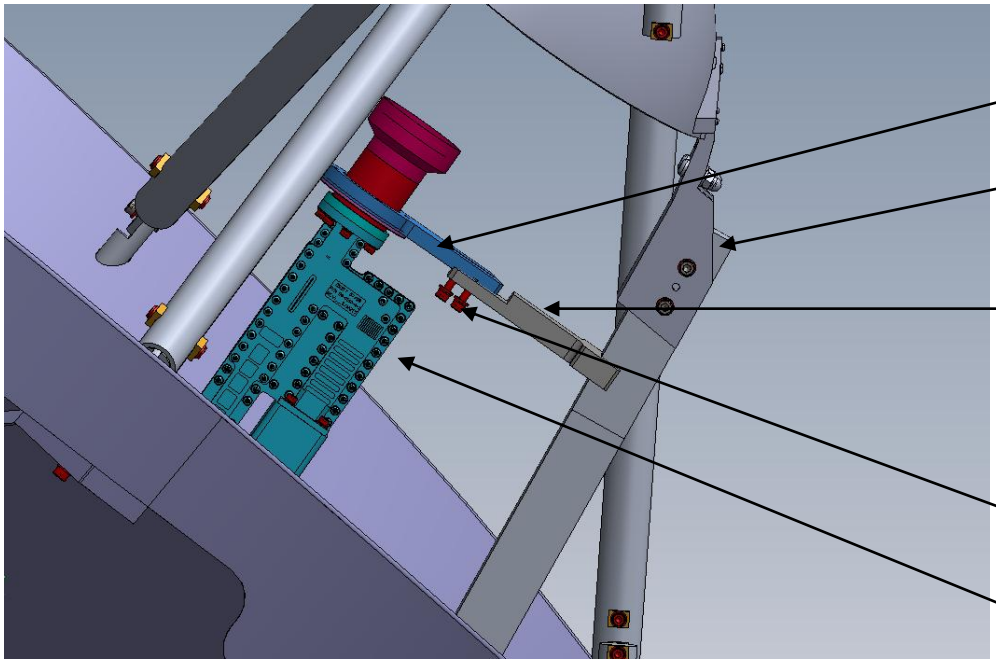
The following pictures show the mechanical assemblies of the C-Band feed on the Main Dish. The same Mechanical Interface exists for the Ku-Band feed.

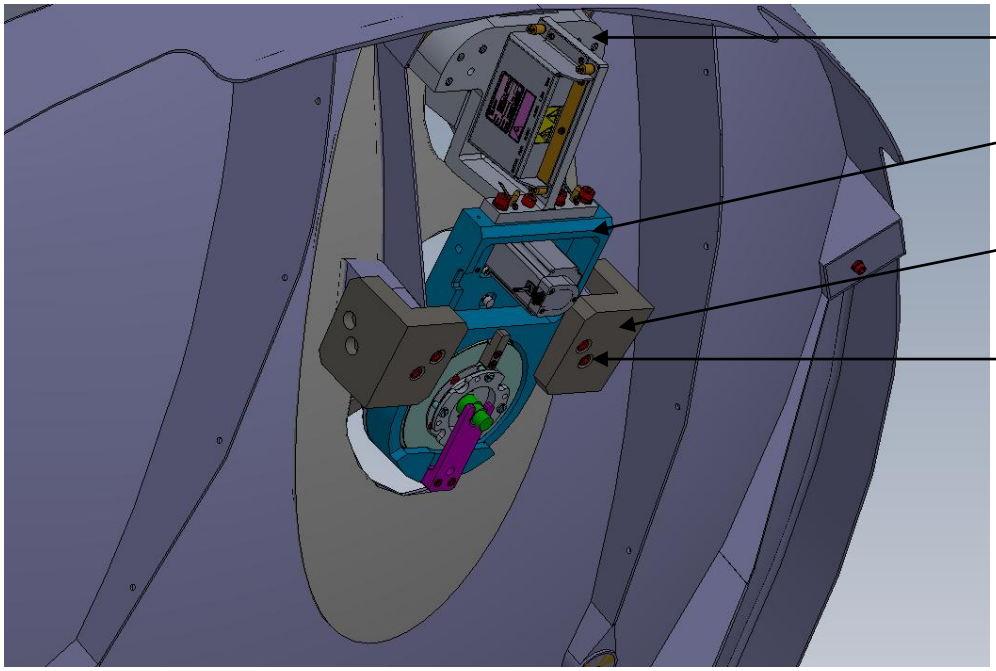






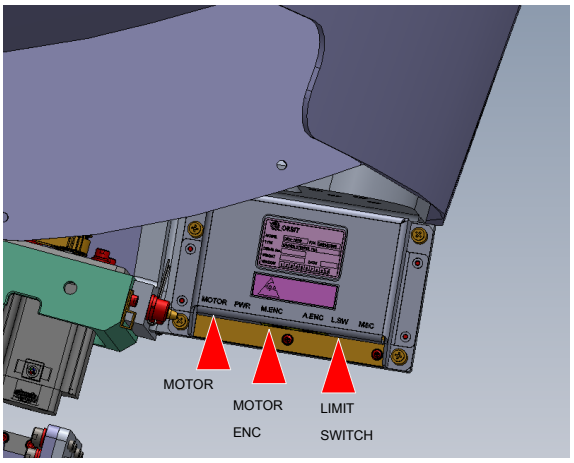
The following pictures are related to the Ku-Band Feed Only.

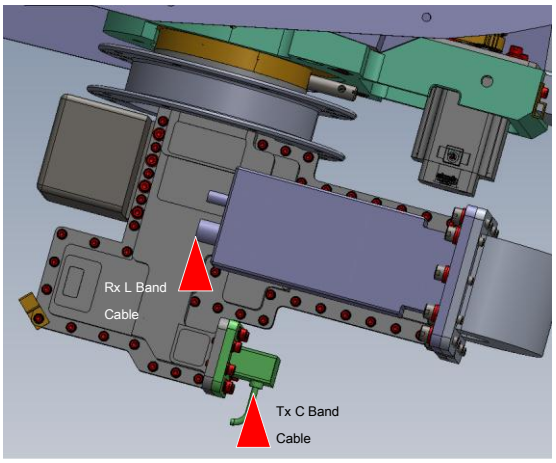



PiNokYo (Back View)
Feed Assembly
Balancing Counter weight
Screws M8x50 include washers and springs

2.2 Disassembly of C-Band Feed

- *STEP 1*: Disconnect the relevant cables (related to the Feed cables) including:
  - Pol-Skew Motor (MOTOR)
  - Pol-Skew Motor Encoder (M.ENC)
  - Hall Sensor (Zero Sense) (L.SW)
  - Rx "RED" Cable
  - Tx "BLUE" Cable (C Band Cable)





- *STEP 2*: Release the screw M6x16 connecting the Feed Support to the PiNokYo
- *STEP 3*: Release the 2 screws M5x20 connecting the Feed Support to the Feed Holder.
- *STEP 4*: Release the Removable Alignment Pins from their location.
- *STEP 5*: Release the 3 screws M8x25 connecting the Feed Assembly to the PiNokYo.

Two technicians are required for the next step. Before performing the next step make sure to hold the feed with both hands

- *STEP 6*: Release the 4 screws M8x25 connecting the Feed Assembly to the Main Dish.
- *STEP 7*: Jiggle the feed and pull it out of its place (release from the Feed Alignment Pins). **Be careful not to harm the feed with the narrower Main Dish opening.**

2.3 Assembly of C-Band Feed

- *STEP 1*: Jiggle the feed into its place using the two Feed Alignment Pins. Place the Feed carefully not to harm the feed with the narrower Main Dish opening.
- *STEP 2*: Secure the 4 screws M8x25 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the Feed Assembly to the Main Dish.

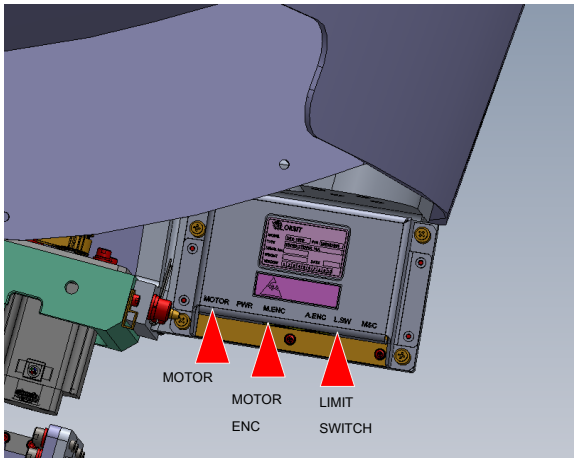
For screws up to M5 (including M5) - use Loctite 241

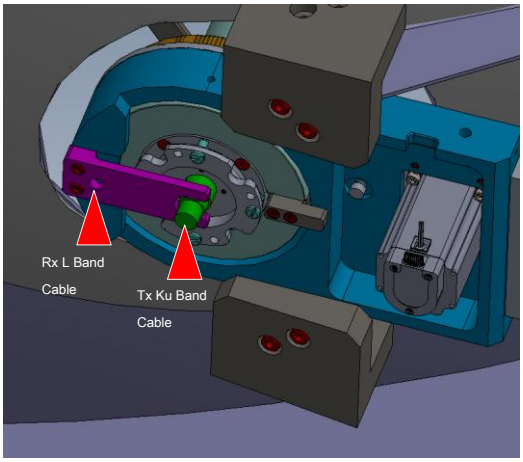
For Screws of M6 and Above – use Loctite 270

- *STEP 3*: Secure the 3 screws M8x25 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the Feed Assembly to the PiNokYo.
- *STEP 4*: Insert the Removable Alignment Pins to their location and secure using cotter pins.
- *STEP 5*: Secure the 2 screws M5x20 (Torque: $6^{N}/_{m}$, Locktite 241) connecting the Feed Support to the Feed Holder.
- *STEP 6*: Secure the screw M6x16 (Torque: $10.2^{N}/_{m}$, Locktite 270)connecting the Feed Support to the PiNokYo
- *STEP 7*: Connect the relevant cables (related to the Feed cables) including:
    - Pol-Skew Motor (MOTOR)
    - Pol-Skew Motor Encoder (M.ENC)
    - Hall Sensor (Zero Sense) (L.SW)
    - Rx "RED" Cable
    - Tx "BLUE" Cable (C Band Cable)

2.4 Disassembly of Ku-Band Feed

- *STEP 1*: Disconnect the relevant cables (related to the Feed cables) including:
    - Pol-Skew Motor (MOTOR)
    - Pol-Skew Motor Encoder (M.ENC)
    - Hall Sensor (Zero Sense) (L.SW)
    - Rx "RED" Cable (Connected to a F-type to F-Type Adaptor)
    - Tx "BLUE" Cable (Ku Band Cable)





- *STEP 2*: Release the screw M6x16 connecting the Feed Support to the PiNokYo
- *STEP 3*: Release the 2 screws M5x20 connecting the Feed Support to the Feed Holder.
- *STEP 4*: Release the Removable Alignment Pins from their location.
- *STEP 5*: Release the 3 screws M8x25 connecting the Feed Assembly to the PiNokYo.

Two technicians are required for the next step. Before performing the next step make sure to hold the feed with both hands

- *STEP 6*: Release the 4 screws M8x50 connecting the Feed Assembly to the Main Dish.
- *STEP 7*: Carefully remove the Ku band feed Balancing Counter weight.
- *STEP 8*: Jiggle the feed and pull it out of its place (release from the Feed Alignment Pins). Be careful not to harm the feed with the narrower Main Dish opening.

2.5 Assembly of Ku-Band Feed

- *STEP 1*: Jiggle the feed into place using the two Feed Alignment Pins. Place the Feed carefully not harming it with the narrower Main Dish opening.
- *STEP 2*: Carefully place the Ku band feed Balancing Counter weight.
- *STEP 3*: Secure the 4 screws M8x50 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the Feed Assembly to the Main Dish.

For screws up to M5 (including M5) - use Loctite 241

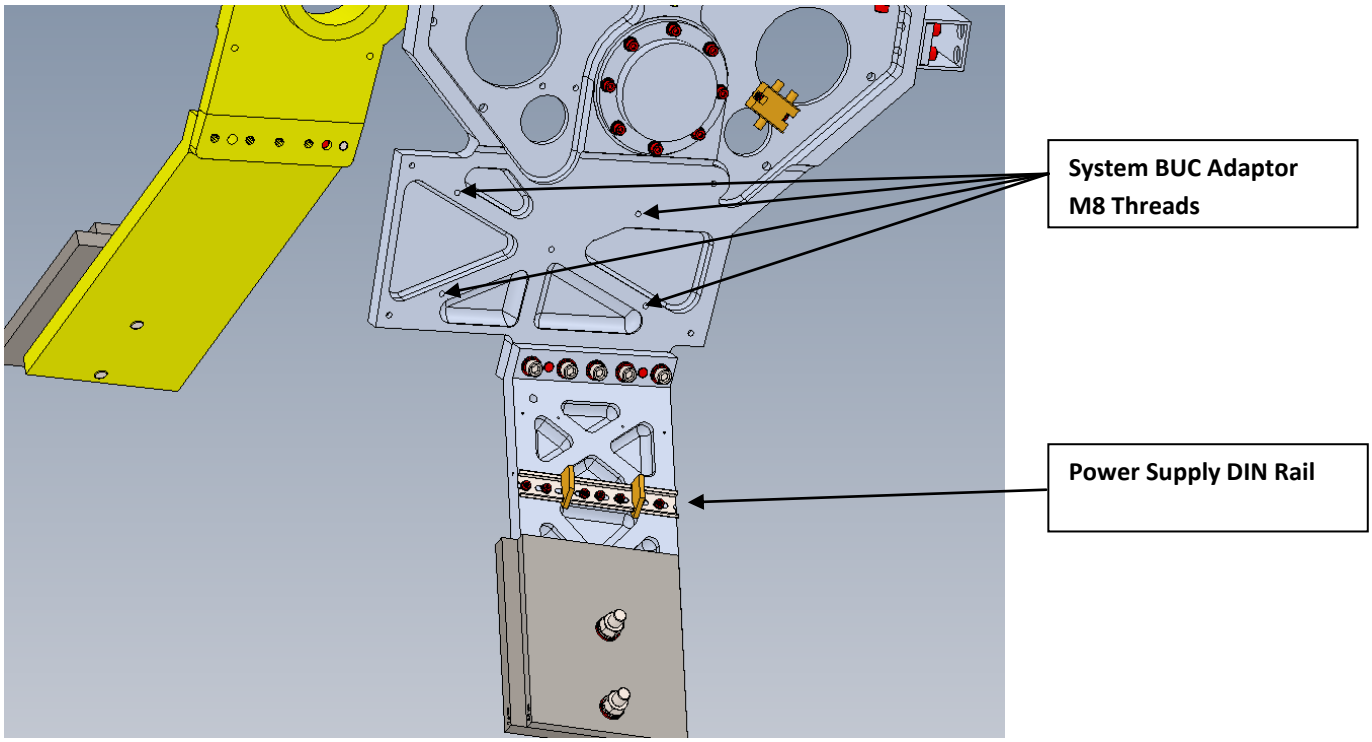
For Screws of M6 and Above – use Loctite 270

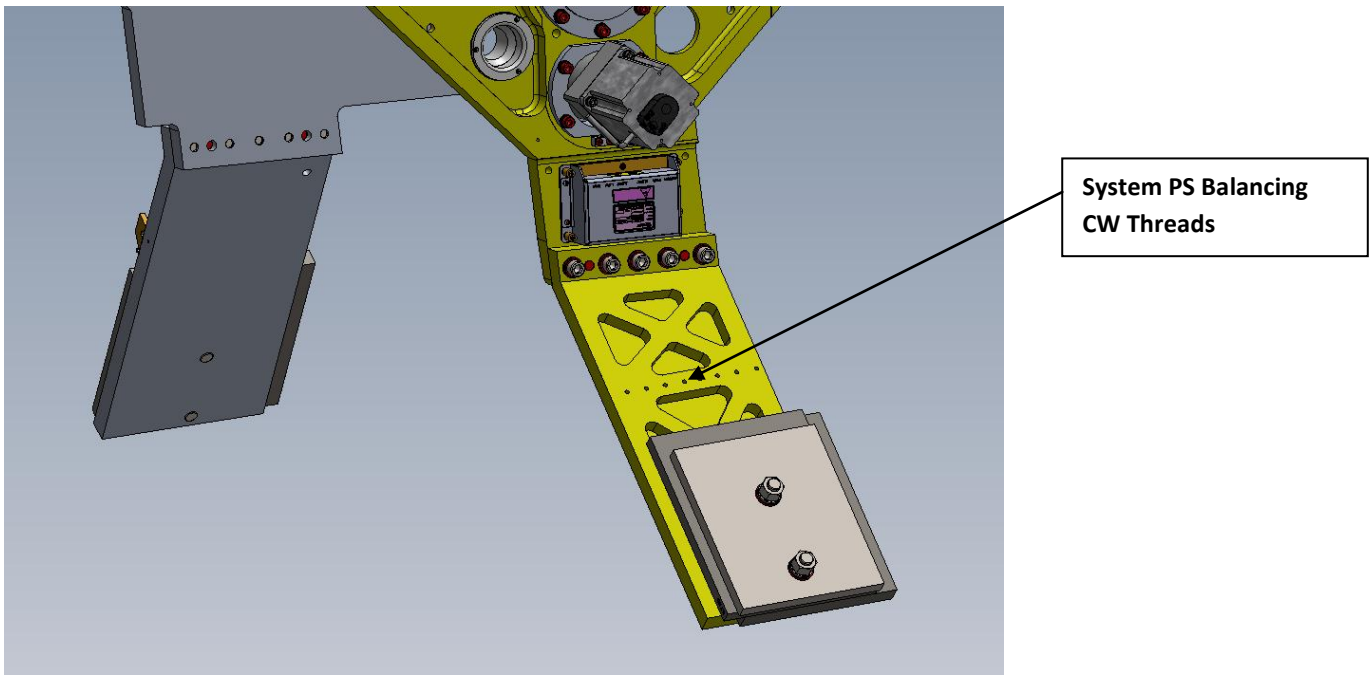
- *STEP 4*: Secure the 3 screws M8x25 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the Feed Assembly to the PiNokYo.
- *STEP 5*: Insert the Removable Alignment Pins to their location.
- *STEP 6*: Secure the 2 screws M5x20 (Torque: $6^{N}/_{m}$, Locktite 241) connecting the Feed Support to the Feed Holder.
- *STEP 7*: Secure the screw M6x16 (Torque: $10.2^{N}/_{m}$, Locktite 270) connecting the Feed Support to the PiNokYo
- *STEP 8*: Connect the relevant cables (related to the Feed cables) including:
    - Pol-Skew Motor (MOTOR)
    - Pol-Skew Motor Encoder (M.ENC)
    - Hall Sensor (Zero Sense) (L.SW)
    - Rx "RED" Cable (Connected to a F-type to F-Type Adaptor)
    - Tx "BLUE" Cable (Ku Band Cable)

3 ASSEMBLY AND DIS-ASSEMBLY OF BUC

3.1 Mechanical Overview

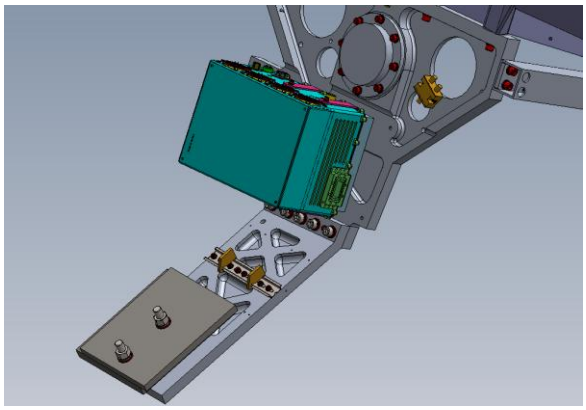
The following pictures show the mechanical structure of the different BUCs, on the system Arm.



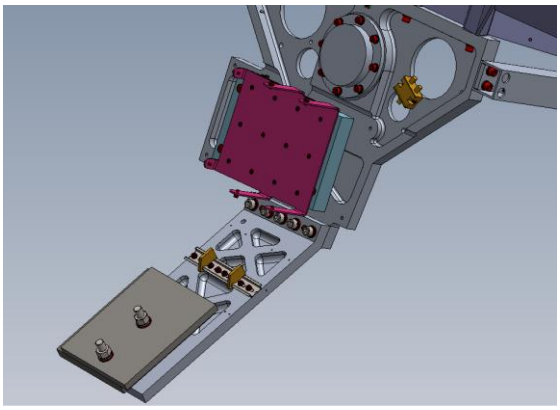


3.2 Disassembly BUC C-Band 100W

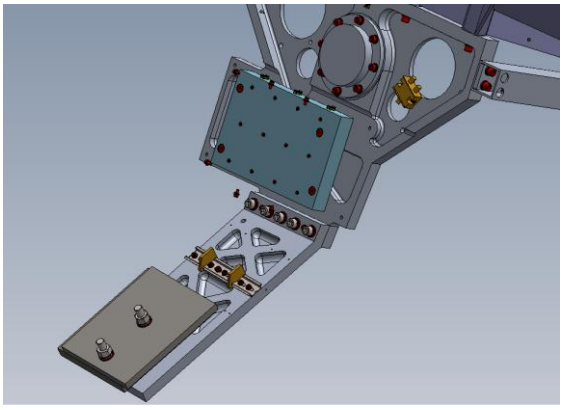
- *STEP 1*: Disconnect the relevant cables (related to the BUC cables) including:
    - Tx L-Band "RED" Cable
    - Tx "BLUE" Cable (C Band Cable)
    - BUC M&C Cable (from the D-Type side)
    - BUC Power Cable (From the Molex Side)
- *STEP 2*: Release the 6 screws M5X12 connecting the BUC to the BUC Support.



- *STEP 3*: Release the 12 screws M4X10 connecting the BUC Support to the BUC Adaptor.

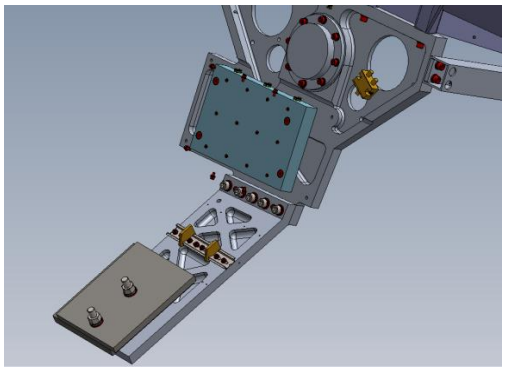


- *STEP 4*: Release the 4 screws M8X50 connecting the BUC Adaptor to the System Arm.

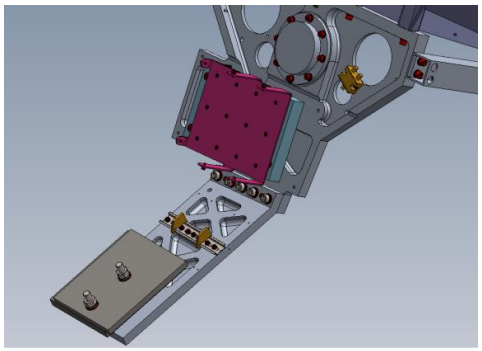


3.3 Assembly of BUC C-Band 100W

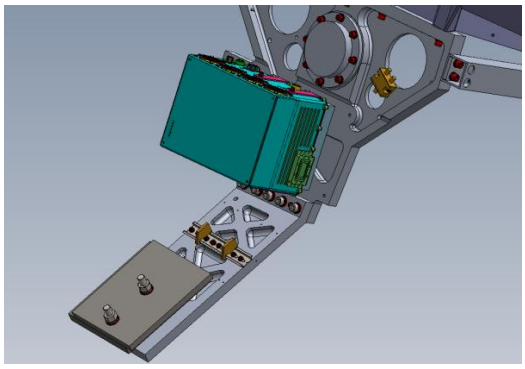
- *STEP 1*: Secure the 4 screws M8X50 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the BUC Adaptor to the System Arm.



- *STEP 2*: Secure the 12 screws M4X10 (Torque: $2.5^{N}/_{m}$, Locktite 241) connecting the BUC Support to the BUC Adaptor.



- *STEP 3*: Secure the 6 screws M5X12 (Torque: $6^{N}/_{m}$, Locktite 241) connecting the BUC to the BUC Support.

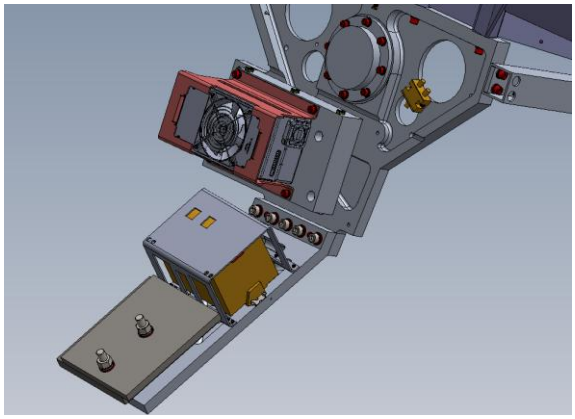
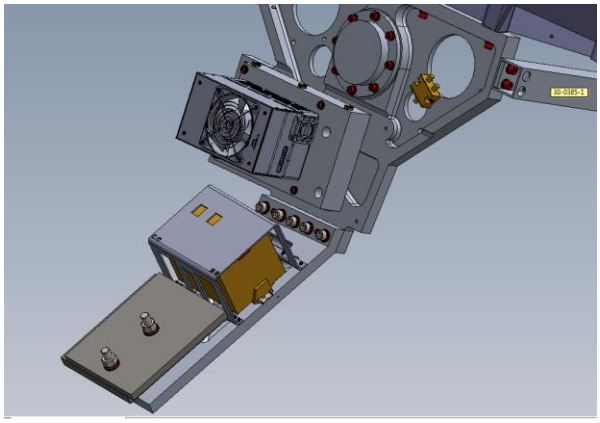


- *STEP 4*: Connect the relevant cables (related to the BUC cables) including:
    - Tx L-Band "RED" Cable
    - Tx "BLUE" Cable (C Band Cable)
    - BUC M&C Cable (from the D-Type side)
    - BUC Power Cable (From the Molex Side)

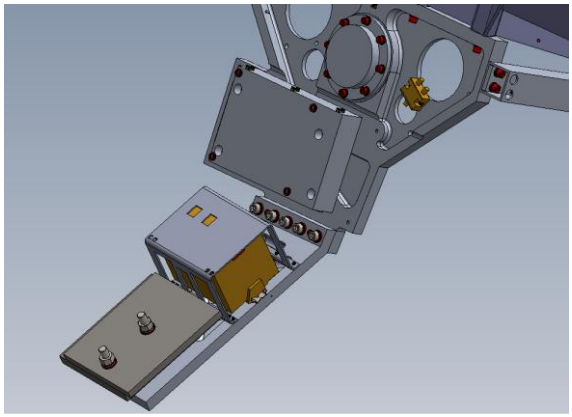
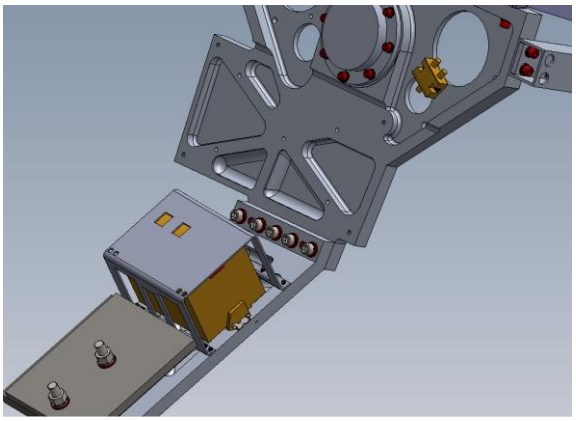
3.4 Disassembly of BUC Ku-Band 40W

- *STEP 1*: Disconnect the relevant cables (related to the BUC cables) including:
    - Tx L-Band "RED" Cable
    - Tx "BLUE" Cable (Ku Band Cable)
    - BUC M&C Cable (from the 9 pins D-Type)
    - BUC Power Cable (from the 2 pins Molex)

- *STEP 2*: Release the 4 screws M8X20 connecting the BUC Support to the BUC Adaptor.

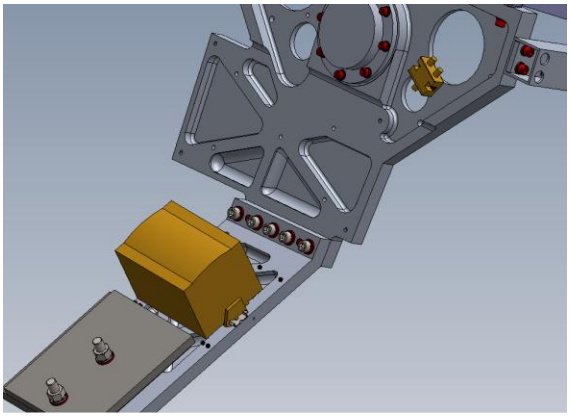



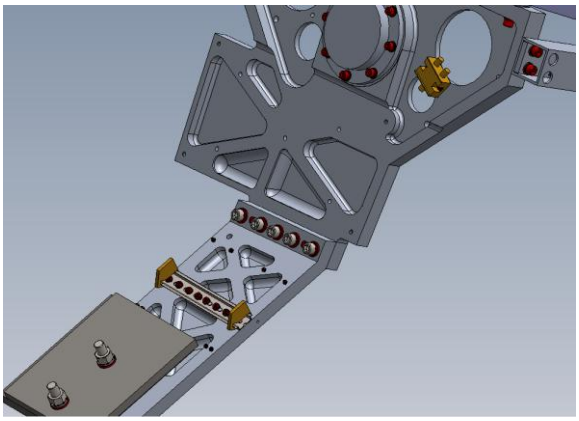
- *STEP 3*: Release the 4 screws M8X45 connecting the BUC Adaptor to the System Arm.

- *STEP 4*: Disconnect the relevant cables of Power Supply cables including:
    - PS AC Power Input Cable (from the 3 pins Molex)

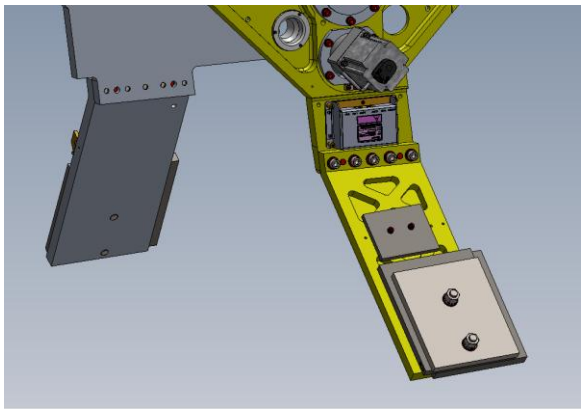
- *STEP 5*: Release the 8 screws M3X10 connecting the Power Supply Cover to the System Arm.

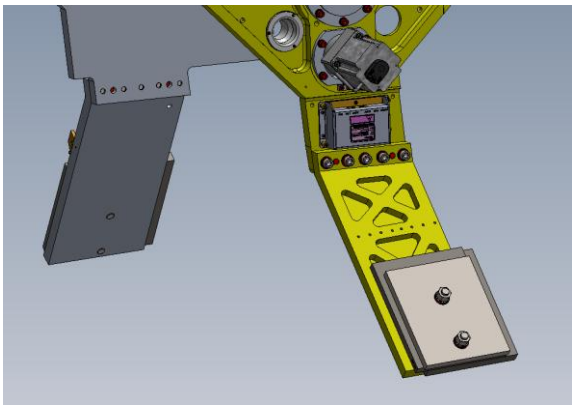




- *STEP 6*: Using a Screwdriver pulling down the Power Supply clip, release the Power Supply from his place on the DIN rail.

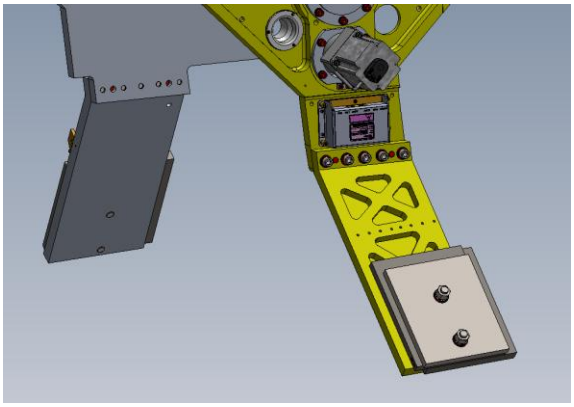
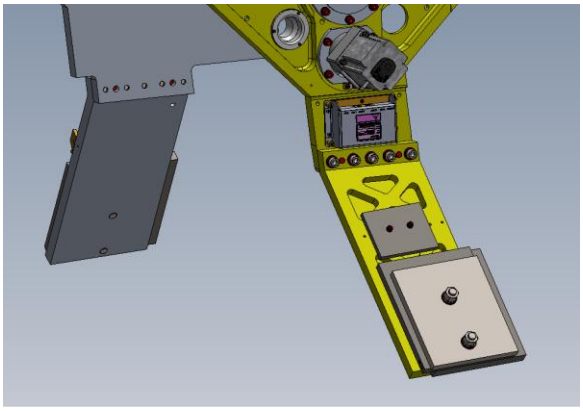
- *STEP 7*: Release the 2 screws M6x20 connecting the Power Supply Balancing Counter weight.



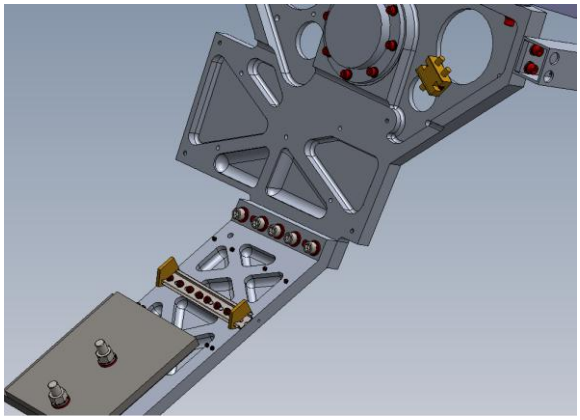
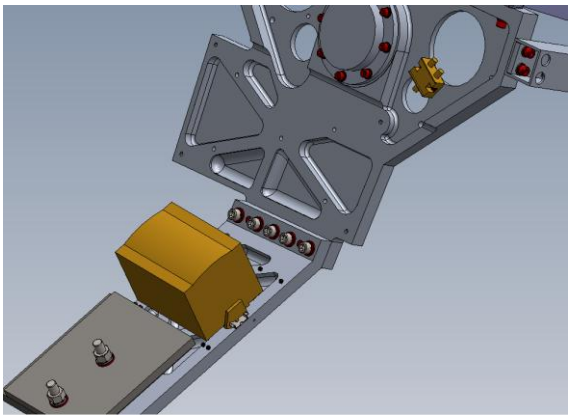


3.5 Assembly of BUC Ku-Band 40W

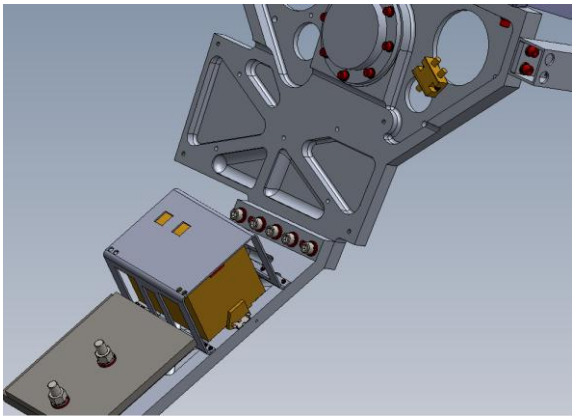
- *STEP 1*: Secure the 2 screws M6x20 (Torque: 10.6$^{N}/_{m}$, Locktite 270) connecting the Power Supply Balancing Counter weight

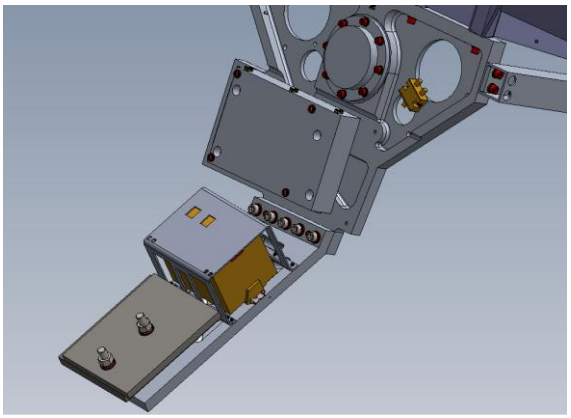
- *STEP 2*: Place the Power Supply on the DIN rail.

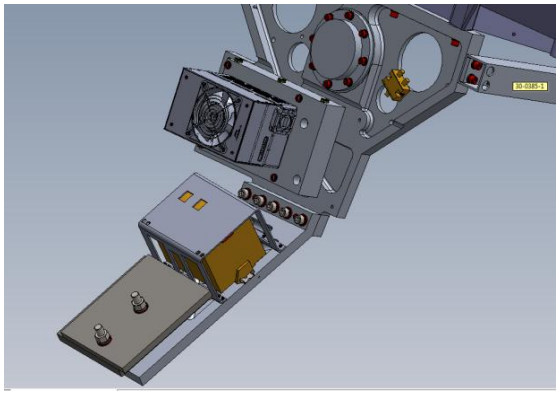
- *STEP 3*: Secure the 8 screws M3X10 (Torque: 1.35$^{N}/_{m}$, Locktite 241) connecting the Power Supply Cover to the System Arm.

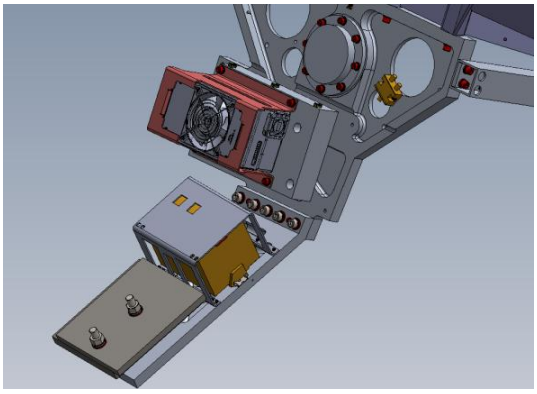


- *STEP 4*: Connect the relevant cables of Power Supply cables including:
    - PS AC Power Input Cable (from the 3 pins Molex)
- *STEP 5*: Secure the 4 screws M8X45 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the BUC Adaptor to the System Arm.



- *STEP 6*: Secure the 4 screws M8X20 (Torque: $25^{N}/_{m}$, Locktite 270) connecting the BUC Support to the BUC Adaptor.



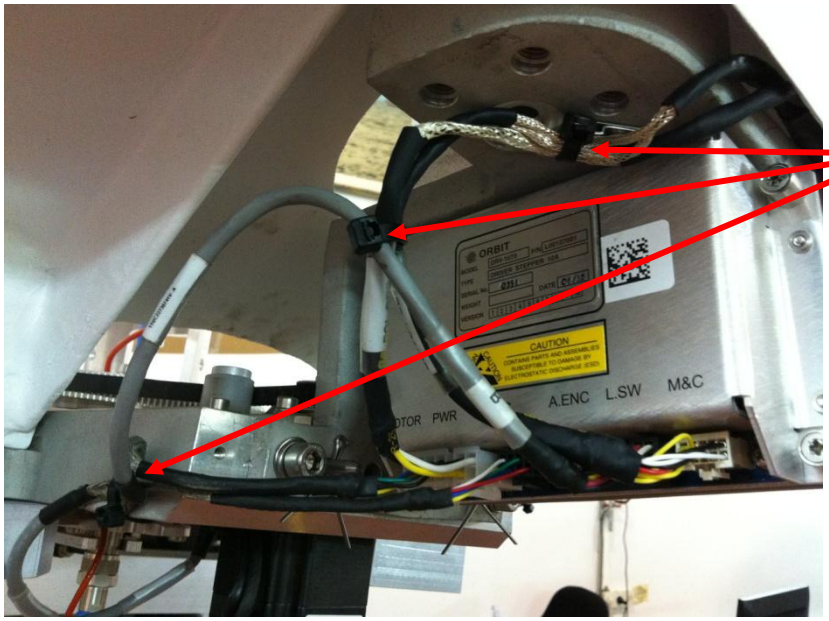


- *STEP 7*: Connect the relevant cables (related to the BUC cables) including:
    - Tx L-Band "RED" Cable
    - Tx "BLUE" Cable (Ku Band Cable)
    - BUC M&C Cable (from the 9 pins D-Type)
    - BUC Power Cable (from the 2 pins Molex)

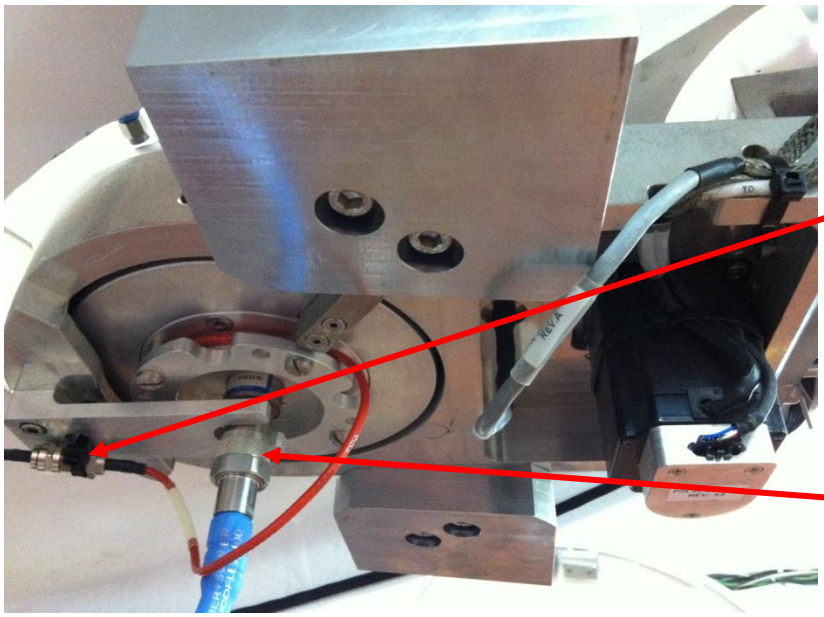
4 WIRING PICTURES

4.1 Ku Band BUC and Feed Wiring

Attach below the wiring after the assembly of the Ku Band BUC and Feed



Secure the cables using a tire up



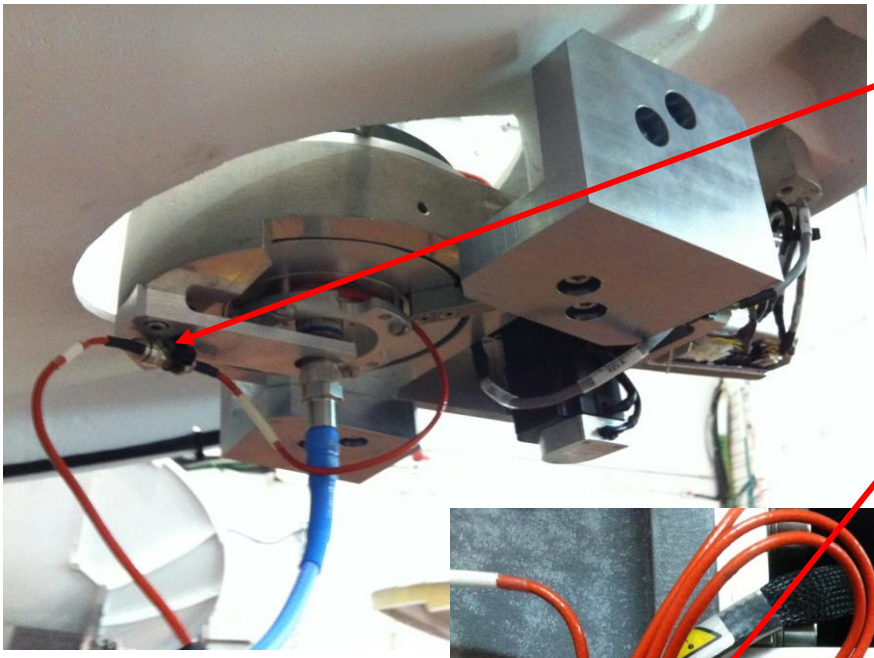
Secure the Rx Cable F-Type connector using tire up

PLEASE NOTE: Connect and disconnect the cable carefully.

Take care of securing the RF connectors properly

PLEASE NOTE that the Ku Cable is not flexible as the C Cable.

DO NOT over bend the RF Cable.

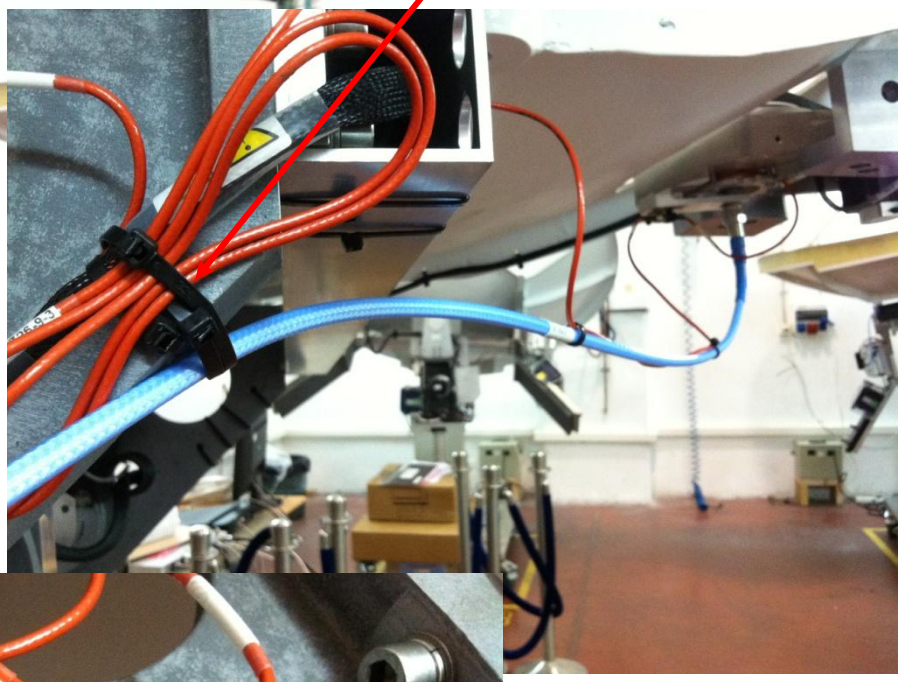


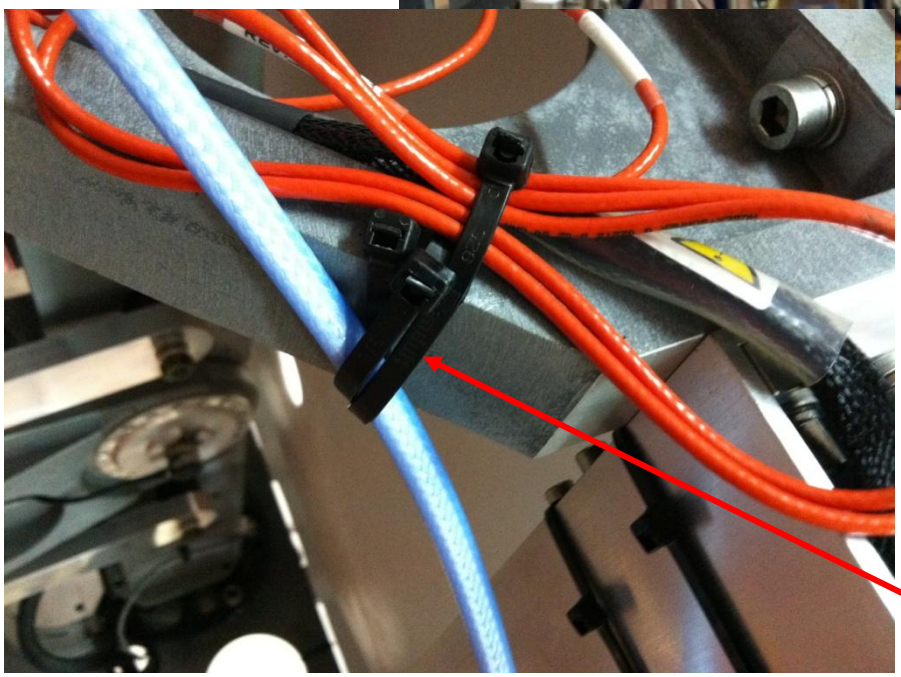
Secure the Rx Cable, F-Type connector using tire up.

PLEASE NOTE: Connect and disconnect the cable carefully.

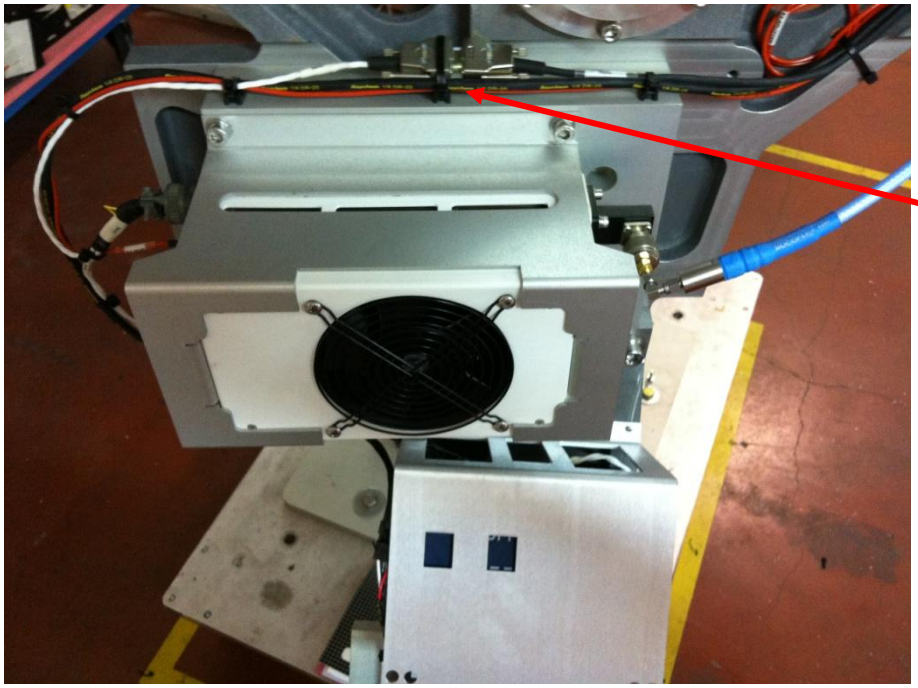
Secure the Tx and Rx Cables using tire up.

DO NOT over bend the Rx Cable.

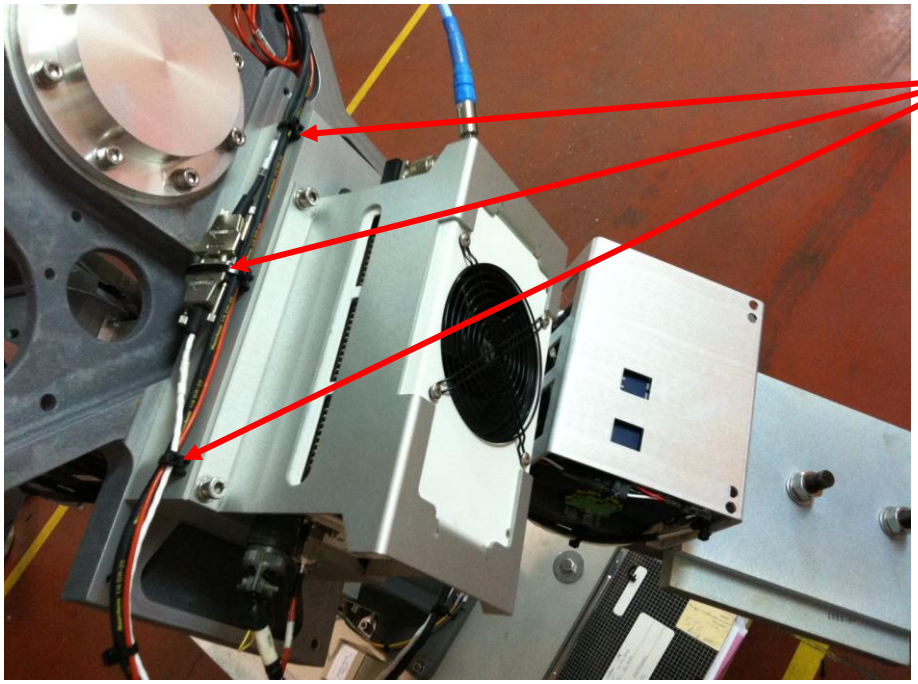




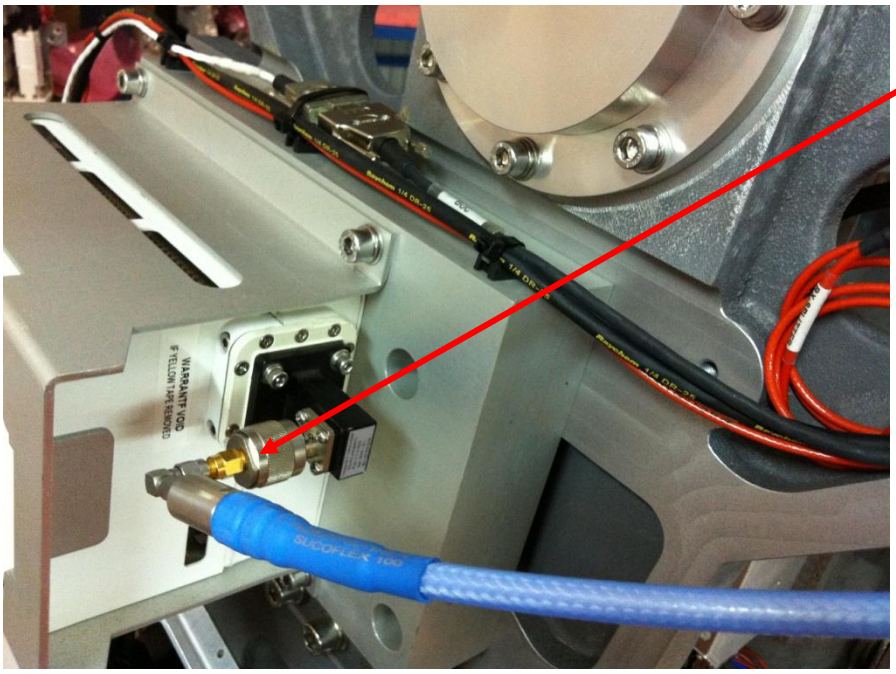
Secure the Tx and Rx Cables using tire up



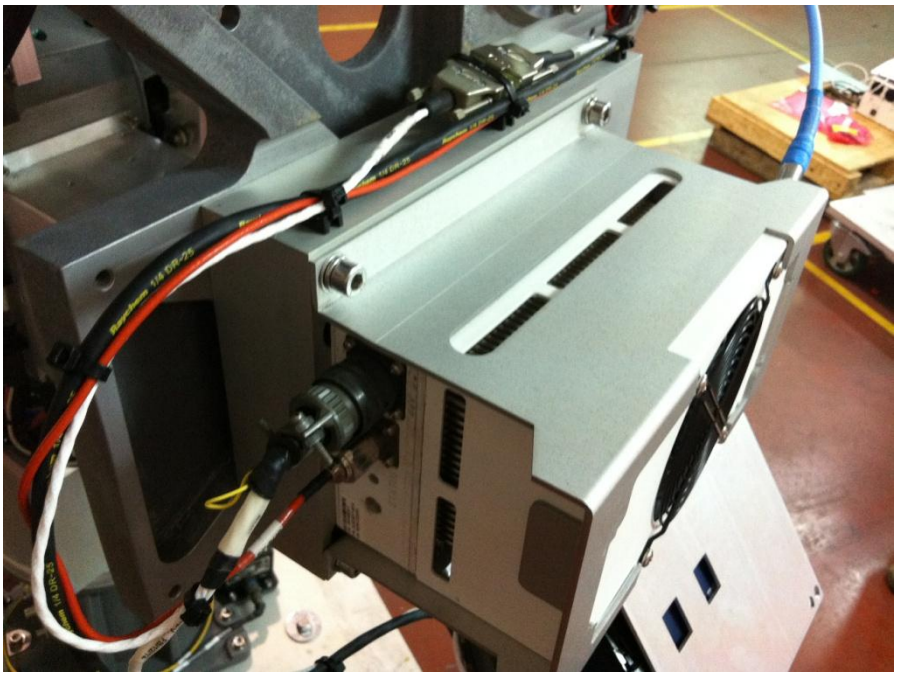
Attached the D-Type connectors using their screws. Secure the connectors using tire up to the BUC adaptor Tie Mounts.

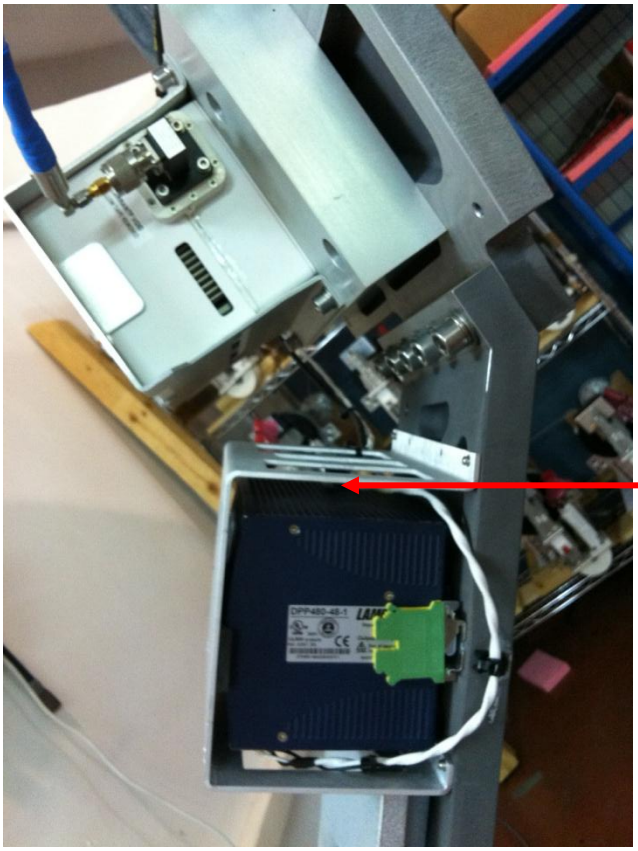


Attach the D-Type connectors using their screws. Secure the connectors using tire up to the BUC adaptor Tie Mounts.

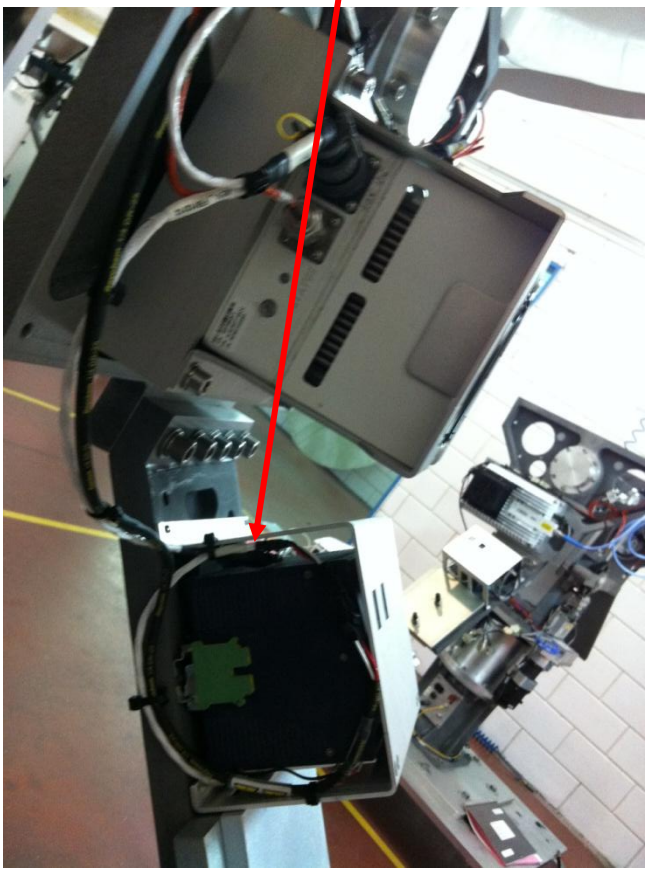


Take care of securing the RF connectors properly



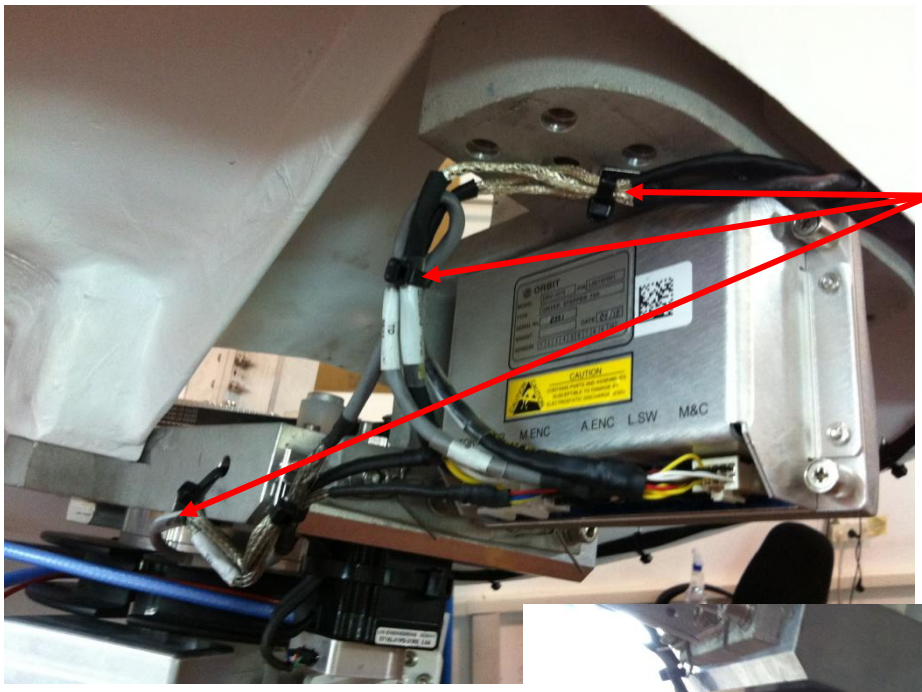


Secure the MOLEX connector of the <u>AC Input cable</u> and <u>DC output cable</u> (connected to the Power supply) properly to the Power supply cover.

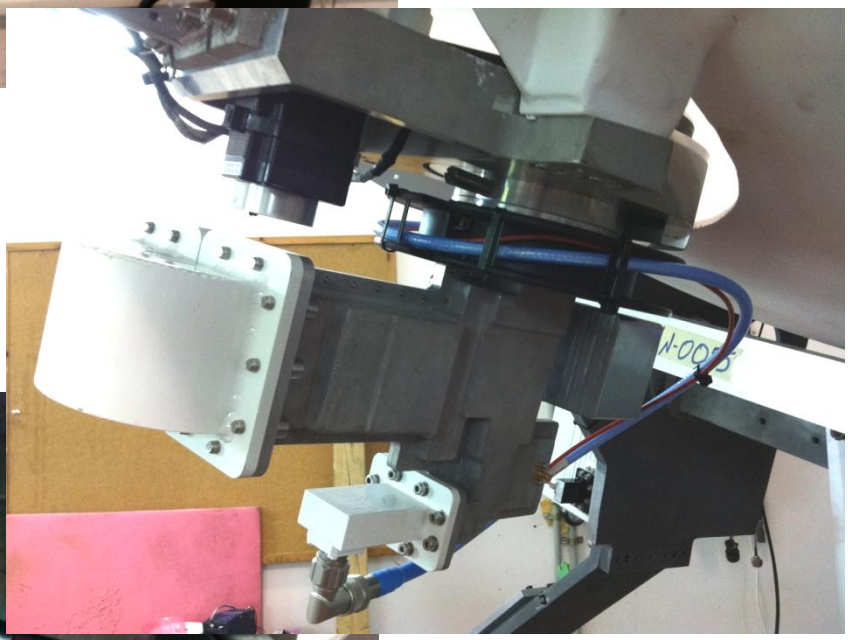


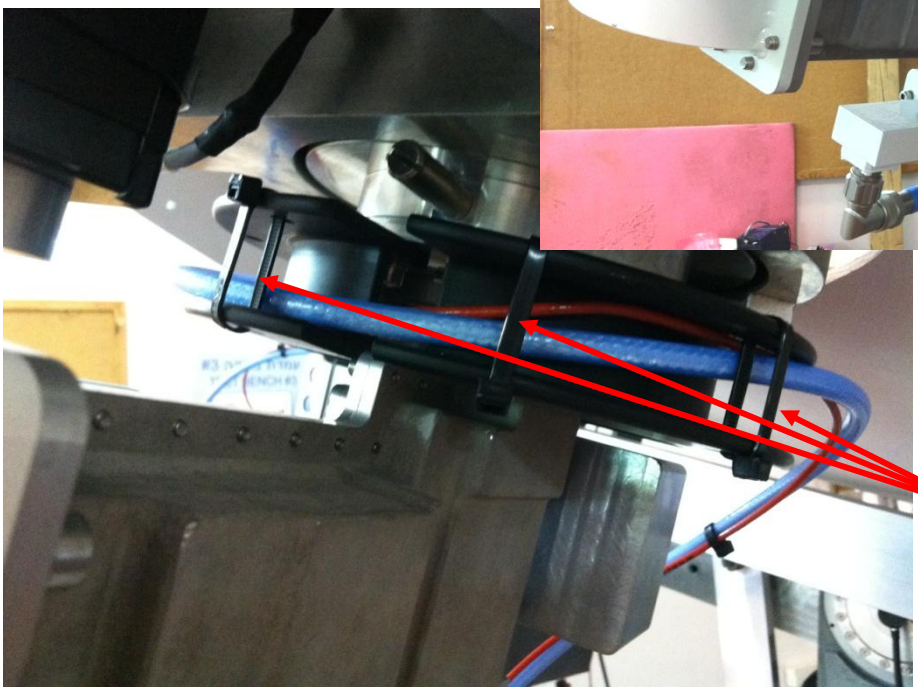
4.2 C Band BUC and Feed Wiring

Attach below the wiring after the assembly of the C Band BUC and Feed.

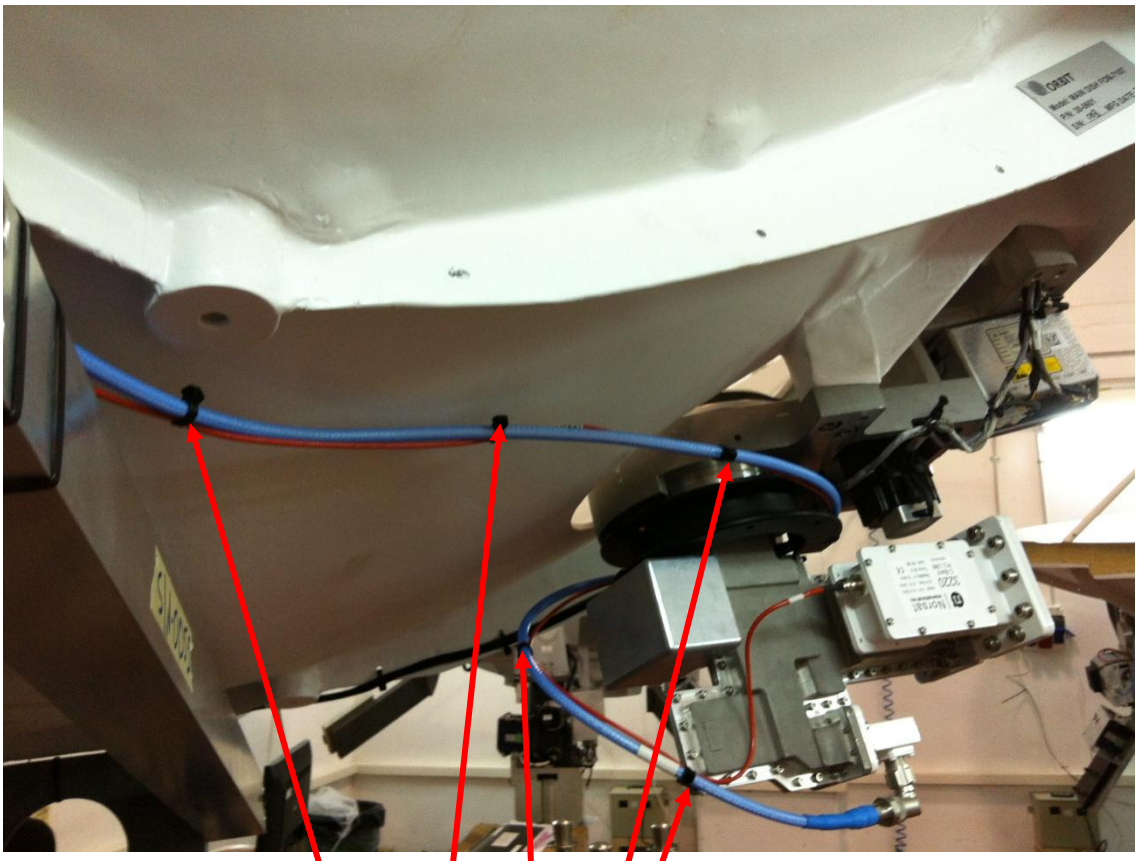


Secure the cables using a tire up





Secure the Rx and TX cables on the Feed Cable wrap using 3 tire up as shown

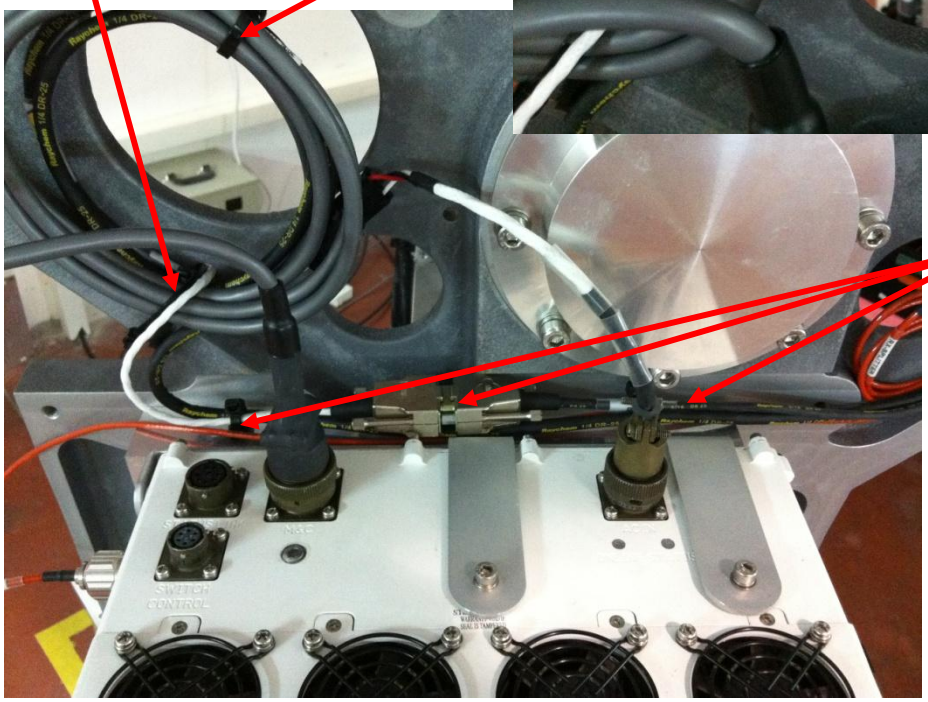


Secure the Rx and TX cables using tire up as shown

Take care of securing the RF connectors properly using 90deg (RA) N-Type adaptor

Secure the MOLEX of the AC Power cable to the system arm as shown.

Secure AC Power and M&C cables leftovers to the system arm as shown.



Attach the D-Type connectors using their screws. Secure the connectors using tire up to the BUC adaptor Tie Mounts.

5 BILL OF MATERIAL

5.1 BUC Ku-Band 40W

Part Number	Part Description	Quantity	Used for…
30-0392	COUNTERWEIGHT FOR BUC 20W AL-7107	1	PS CW
31-1465	SUPPORT FOR 40W BUC AL-7107	1	BUC Support
31-1619-9-1	CABLE POWER AND M&C TO BUC 40W (AGILIS) AL-7107	1	BUC M&C and PWR
H04018074502	SCKT HEX SCR M8X45 STST A2 DIN-7991	4	For BUC Adaptor
H06016062002	SCKT SCR LOWHEAD M6X20 STST	2	For PS CW
H06018072001	SCKT CAP SCR M8X20 STST	4	For BUC Support
H20216091072	FLAT RD WASHER M6 SS 316	2	For PS CW
H20218091001	FLAT RD WASHER M8 STST	4	For BUC Support
H28216091072	HELIC SPR WASHER M6 SS 316	2	For PS CW
H28218091002	HELIC SPR WASHER M8 ST.ST.	4	For BUC Support

PS related Parts which are assembled / connected

Part Number	Part Description	Quantity	Used for…
E22000021	POWER SUPPLY 48V 10A 480W	1	PS
K03000009	RUB 3M 9471+PORON 40 FOR PSU	0.1	For PS
31-1400-9-1	CABLE POWER 220V ADAPTER PS4 TO PS4 AL-7107	1	PS PWR In
31-1401-9-1	CABLE 48V ADAPTER BUC TO PS4 AL-7107	1	PS PWR Out

BUC Adaptor related parts which are assembled / connected

Part Number	Part Description	Quantity	Used for…
32-0195	ADAPTOR PLATE FOR BUC 40W AGILIS	1	BUC Adaptor
H06014060802	SCKT HEX SCR LOWHEAD M4X8 STST A2 DIN-7984	3	For Tie Mount
TM2-S6-0	TIE MOUNT #6 BLACK	3	Tie Mount

5.2 Feed Ku-Band

Part Number	Part Description	Quantity	Used for…
L00727006	FEED Ku-BAND LINEAR CROSS-POL W/LNB AL-7107	1	Ku Feed
32-0592	COUNTER WEIGHT 2.6KG (AL-7107)	1	Ku Feed CW
H06018075002	SCKT CAP SCR M8X50 ST.ST.	4	For Ku Feed CW
H20218091001	FLAT RD WASHER M8 STST	4	For Ku Feed CW
H28218091002	HELIC SPR WASHER M8 ST.ST.	4	For Ku Feed CW
H06018072502	SCKT CAP SCR M8X25 ST.ST.	3	For Feed
H20218091001	FLAT RD WASHER M8 STST	3	For Feed
H28218091002	HELIC SPR WASHER M8 ST.ST.	3	For Feed
31-0107	PIN CLEVIS FOR AL-7107-ANT.	2	Alignment Pin
M12000092	COTTER PIN 3/32 x 1 1/4 ST.ST	2	For Alignment Pin
H20216091072	FLAT RD WASHER M6 SS 316	1	For Feed Support
H28216091072	HELIC SPR WASHER M6 SS 316	1	For Feed Support
H06016061612	SCKT SCR LOWHEAD M6X16 ST8ZP	1	For Feed Support
H20215091002	FLAT RD WASHER M5 STST	2	For Feed Support
H28215091002	HELIC SPR WASHER M5 ST.ST.	2	For Feed Support
H06015072002	SCKT CAP SCR M5X20 ST.ST	2	For Feed Support
30-0508	SUPPORT FEED2 AL-7107	1	Feed Support

RF Cable related Parts which are assembled / connected

Part Number	Part Description	Quantity	Used for…
E11000109	SUCOFLEX106 N-Type M-STR TO SMA M-STR 115CM	1	RF Cable
2088-1230-02	ADAPTER SMA MALE/FEM R.A	1	For RF Cable
33N-SMA-50-1	ADAPTER N-MALE TO SMA-FEM STR	1	For RF Cable

5.3 BUC C-Band 100W

Part Number	Part Description	Quantity	Used for…
31-1285	SUPPORT BUC 100W	1	BUC Support
31-1454-9-1	CABLE ADAPTOR BUC 100W(AGILIS) TO AL-7107	1	BUC M&C
31-1618-9-1	CABLE POWER FOR BUC 100W (AGILIS) AL-7107	1	BUC PWR
53N-50-0-4	N type to N type 90° adapter	1	For RF Cable
H04014071002	SCKT FH90 SCR M4X10 STST	12	For BUC Support
H04018075002	SCKT HEX SCR M8X50 STST A2 DIN-7991	4	For BUC Adaptor
H06015071202	SCKT CAP SCR M5X12 STST	6	For BUC Support
H20215091002	FLAT RD WASHER M5 STST	6	For BUC Support
H28215091002	HELIC SPR WASHER M5 ST.ST.	6	For BUC Support

BUC Adaptor related parts which are assembled / connected

Part Number	Part Description	Quantity	Used for…
31-1286	ADAPTER PLATE FOR BUC 100W	1	BUC Adaptor
TM2-S6-0	TIE MOUNT #6 BLACK	3	Tie Mount
H06014060802	SCKT HEX SCR LOWHEAD M4X8 STST A2 DIN-7984	3	For Tie Mount

5.4 Feed C-Band

Part Number	Part Description	Quantity	Used for…
L00727003	FEED C-BAND LINEAR W/LNB AL-7107	1	Ku Feed
E11000055	RF CABLE STR N-TYPE PLUG 2.1M 18GHz CF106P	1	RF Cable
H06018072502	SCKT CAP SCR M8X25 ST.ST.	7	For Feed
H20218091001	FLAT RD WASHER M8 STST	7	For Feed
H28218091002	HELIC SPR WASHER M8 ST.ST.	7	For Feed
31-0107	PIN CLEVIS FOR AL-7107-ANT.	2	Alignment Pin
M12000092	COTTER PIN 3/32 x 1 1/4 ST.ST	2	For Alignment Pin
H20216091072	FLAT RD WASHER M6 SS 316	1	For Feed Support
H28216091072	HELIC SPR WASHER M6 SS 316	1	For Feed Support
H06016061612	SCKT SCR LOWHEAD M6X16 ST8ZP	1	For Feed Support
H20215091002	FLAT RD WASHER M5 STST	2	For Feed Support
H28215091002	HELIC SPR WASHER M5 ST.ST.	2	For Feed Support
H06015072002	SCKT CAP SCR M5X20 ST.ST	2	For Feed Support
30-0508	SUPPORT FEED2 AL-7107	1	Feed Support

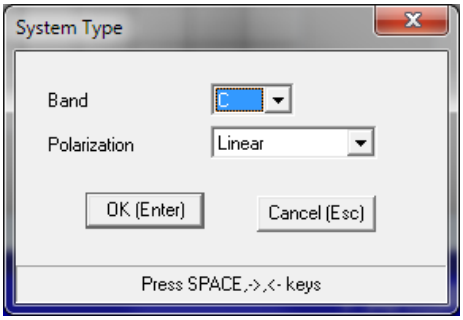
6 SOFTWARE – CHANGE BETWEEN BANDS

6.1 General

When changing the system configuration band, a simple setup in the MtsVLink software should be done in order to allow proper operation.

6.2 Choosing System Type

- System type can be set using: Operation Screen→Config→System Type



- System type "Band" options are: C, X, Ku and Ka
- System type "Polarization" options are: Linear, Circular and Linear/Circular

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Note

Do not forget to choose the correct Satellite, Polarization, LNB Operation voltage and the correct Tracking frequency.
