



C4 CMTS Product Handling

ARRIS Technical Services

Created by:



Outline of Presentation

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ESD HANDLING PRECAUTIONS

All Arris front and rear cards, having ESD sensitive devices on them, must be handled only at ESD protected work stations and/or in ESD safe environments.

- Unpacking and handling of assemblies will be done by operators wearing a wrist strap connected to the common ground of the surface where the assembly will be placed or to the common ground of the chassis into which the assembly will be installed or from which the assembly is to be removed.
- Assemblies will be handled by the edges and will not be brought into contact with any operator's clothing at any time.
- When the assembly is being unpacked it will remain sealed in the ESD protective bag until the operator is ready to prepare it for installation into a chassis or for work at an ESD protected workstation.
- As soon as an assembly is removed from a chassis it will be immediately inserted into an ESD protective bag and sealed.

An assembly will never be placed into its box until it has first been packaged into an ESD protective bag.

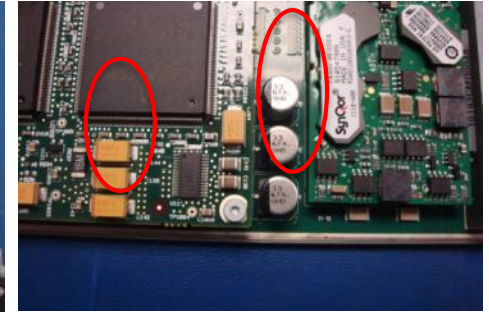
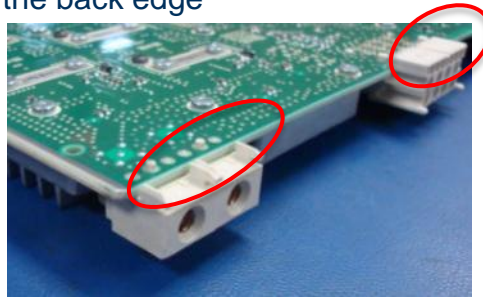
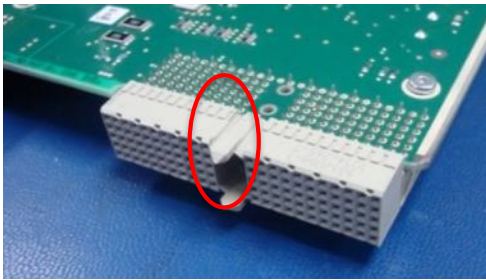


Carefully support the center of the assembly

Identification of Handling Dangers

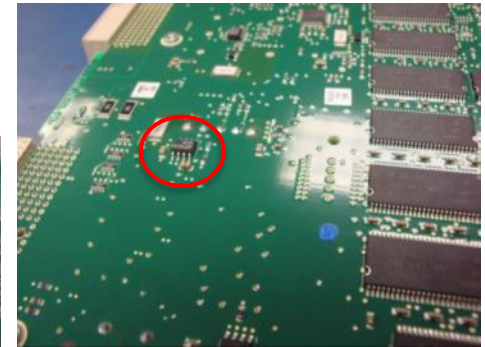
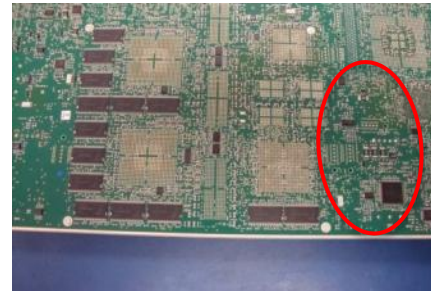
Parts mounted at the edge of the assembly

- Connectors at the corners
- Tall or large components near edges
- Connector guides along the back edge



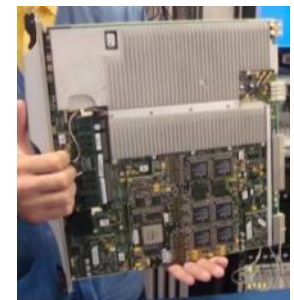
Parts mounted on the secondary side of the assembly

- Some parts are a little taller than others
- Very small parts are exposed and easily damaged



Weight and size of the assembly requires two hand handling at all times

- Horizontally, hands on opposite sides
- Vertically, hands on front panel and bottom side



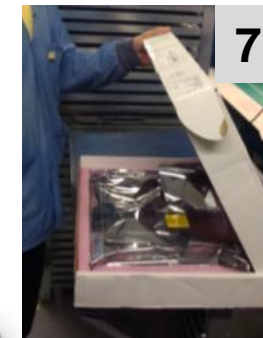
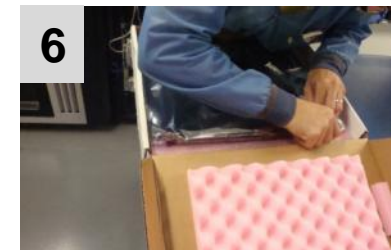
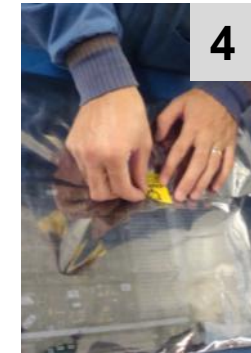
Never handle an assembly by holding only the faceplate

Shipping Packaging

1. Supporting the bottom center of the PCB, carefully slide the assembly into an ESD protective bag.
2. Place a desiccant package into the ESD bag along one side of the assembly.
3. Lay the assembly on a solid flat surface and carefully fold over the ESD bag.
4. Apply an adhesive ESD warning label to seal the ESD bag closed.
5. Holding the correct size Arris packing box open, gently lay the assembly in the cut-out opening for the board.

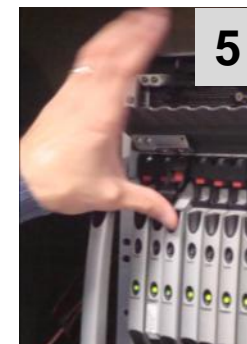
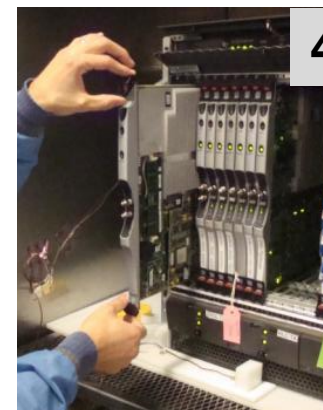
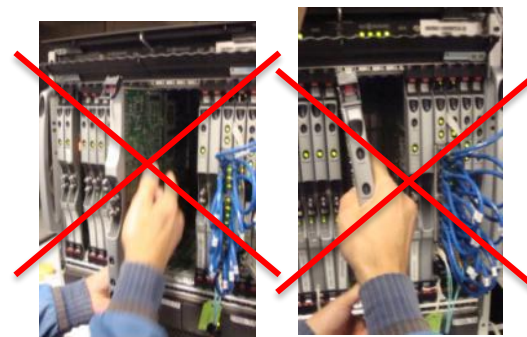
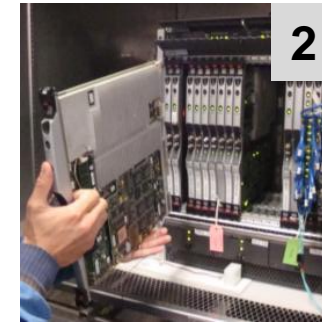
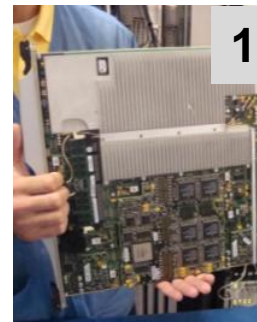
Do Not package assemblies in any box other than the proper size Arris packing box that has pink foam insert padding on all sides of the assembly.

6. Being careful to place the rear edge connectors into the foam insert first, align the latching tabs to seat down into the foam.
7. Close the packing box making sure to tuck all of the flaps inside the box.



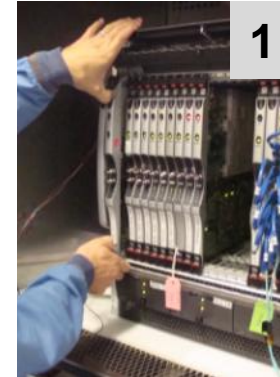
General Front Card Installation

1. Supporting the bottom edge of the assembly with one hand and guiding the assembly with the other on the faceplate verify that the assembly is in the correct orientation for insertion into the card cage.
2. Very carefully align the bottom edge of the assembly with the card cage guides and then rock the assembly forward to align the top edge of the assembly with the card cage guides.
3. Before sliding the assembly all of the way into the chassis take time to visually verify that the assembly is lined up and inserted into the correct card cage slots on both the top and bottom.
4. Pressing evenly on both the top and bottom latch mechanisms slide the assembly into the mating connectors on the backplane in the chassis and make sure it seats completely.
5. Press the latch levers to make sure they lock in position and have properly seated in the card cage flange.



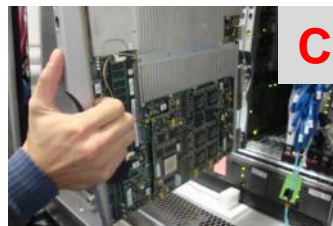
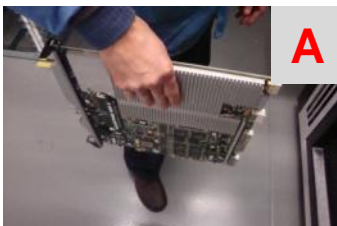
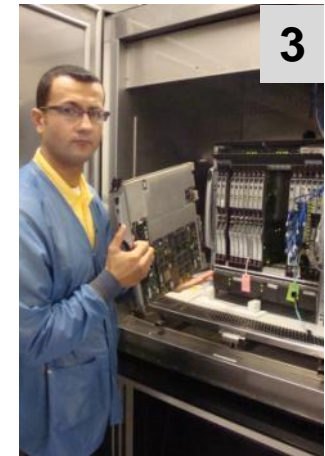
General Front Card Removal

1. **Unlock the latch levers by pressing on the red release on both the top and the bottom latch.**
2. **By pulling gently and evenly on the top and bottom latches work the assembly free of the connectors on the backplane. Slide the assembly forward by pulling on the faceplate until it is almost fully out of the card cage.**
3. **Remove the assembly by supporting the bottom edge with the left hand while guiding it out of the card cage with the right hand guiding the faceplate.**



Do Not handle front cards in the following ways:

- A. Hanging at your side while holding onto the faceplate or any edge**
- B. Holding horizontal with one or two hands on the faceplate**
- C. Holding vertical by only the faceplate with one or two hands**



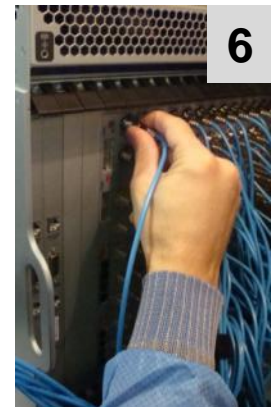
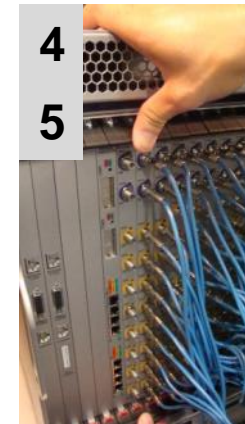
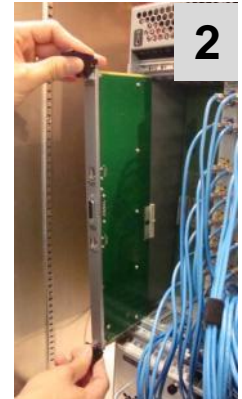
General Rear Card Installation

1. Position yourself to have a clear view for aligning the assembly with the correct card cage slots.
2. Carefully tilt the assembly in order to align the bottom of the PCB with the correct card cage slot.
3. Straighten the assembly and make sure to align the assembly vertically by sliding the top edge of the PCB into the correct top slot in the card cage.

While inserting the assembly make sure to keep the neighboring cables from dragging along the top or bottom sides of the PCB.

4. Pressing evenly on both the top and bottom latch mechanisms slide the assembly into the mating connectors on the backplane in the chassis and make sure it seats completely.
5. Press the latch levers to make sure they lock in position and have properly seated in the card cage flange.
6. Carefully align the RF cable onto the correct female F connector and tighten to no more than 6 in-lbs of torque.

To prevent damage to the F connectors from over-tightening use a torque calibrated driver for cable attachment.

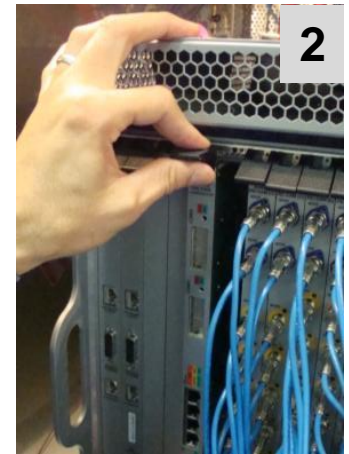
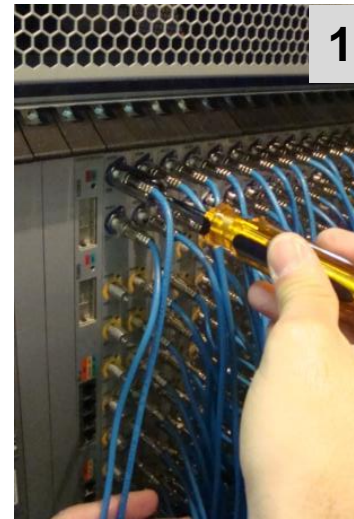


General Rear Card Removal

1. Carefully disconnect all cables from the card to be removed.
2. Release both the top and bottom latches on the card.
3. Carefully remove the card by gently pulling evenly on the top and bottom latches.

Cautions to observe while removing the assembly:

1. Make sure to keep the neighboring cables from dragging along the top or bottom sides of the PCB.
2. Be careful to keep the board lined up in the slot in order to insure that components on the assembly do not touch any neighboring hardware.
3. As the assembly exits the chassis card cage make sure not to allow the rear connectors on the assembly to come in contact with any neighboring hardware.



Multiple Assembly Installation

▪ Multiple Front Card Installation

- To minimize the risk of component damage always begin installation of assemblies from the right (highest slot number) when facing the front of the chassis.
- Inserting the assemblies into the chassis watch carefully to make sure that there is no contact made between the neighboring assembly components until the faceplates seal together.



▪ Multiple Rear Card Installation

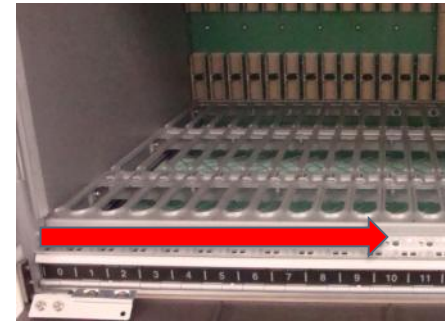
- To minimize the risk of component damage always begin installation of assemblies from the left (highest slot number) when facing the rear of the chassis.



Multiple Assembly Removal

▪ Multiple Front Card Removal

- To minimize risk of component damage always begin removal of assemblies from the left most assembly (lowest slot number) and move to the right (highest slot number).
- Removing the assemblies from the chassis watch carefully to make sure that there is no contact made between the neighboring assembly components.



▪ Multiple Rear Card Removal

- To minimize risk of component damage always begin removal of assemblies from the right most assembly (lowest slot number) and move to the left (highest slot number).

