

PRELIMINARY
NOT FOR PRIME TIME

APPENDIX 0 LOW BAND POLARIZATION CONVENTIONS

This appendix documents the standards, or conventions, used to define the polarization alignment of the 74 MHz and P-band dipoles and receivers on the VLA antennas.

Definitions: The low band receiver system uses **linear polarization**, not circular. The two orthogonal axes are called XLP and YLP.

XLP (=LCP) is the axis parallel to the antenna elevation axis and the axis that remains **horizontal** to the ground with the antenna pointed. XLP is processed as **LCP** in the LO/IF system. XLP is the 74 MHz **N-S axis** elements.

YLP (=RCP) is the axis that is **vertical** with the antenna pointed towards the zenith. It is referenced to the quadrapod leg with the apex ladder. YLP is processed as **RCP** in the LO/IF system. YLP is the 74 MHz **E-W axis** elements.

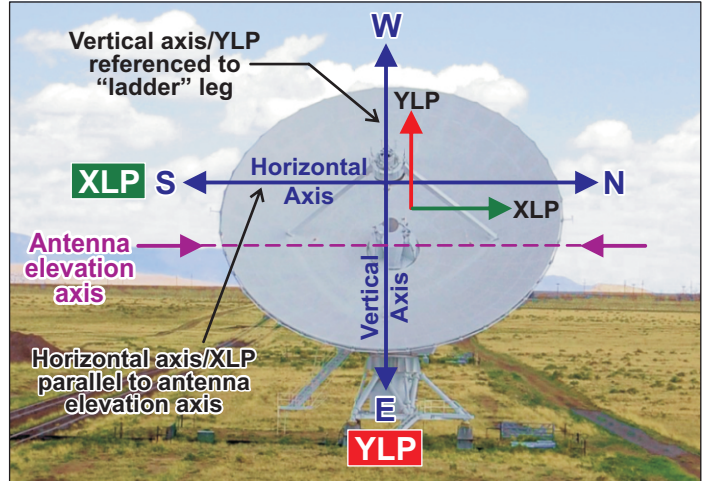


FIG. 1 – Low-band Coordinate Systems

P-BAND POLARIZATION

The **P-band dipoles** are permanently mounted underneath the subreflector with elements aligned with the quadrapod legs within about 5° for proper polarization as shown in **Fig. 2**.

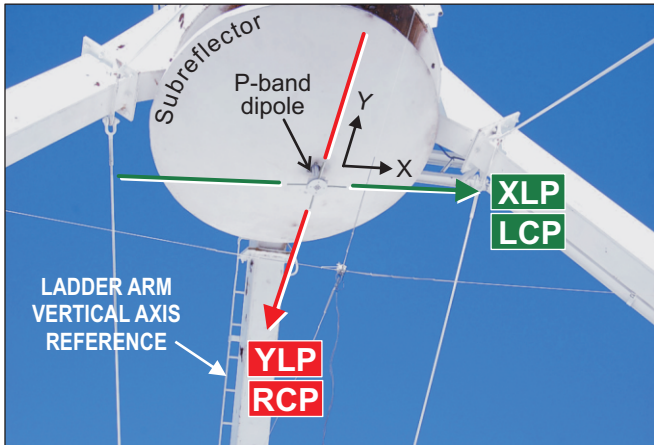


FIG. 2 – P-Band dipole polarization alignment

P-band polarization alignment is verified by observing N-connectors on top of the P-band assembly are parallel with receiver enclosure as shown in **Fig. 3**. There is no visual verification of proper polarization looking at the subreflector or from the dish surface.

Left-hand connectors are **XLP/LCP** and **right-hand** connectors are **YLP/RCP**. Red tape on cables normally indicates RCP/YLP (Fig. 3).

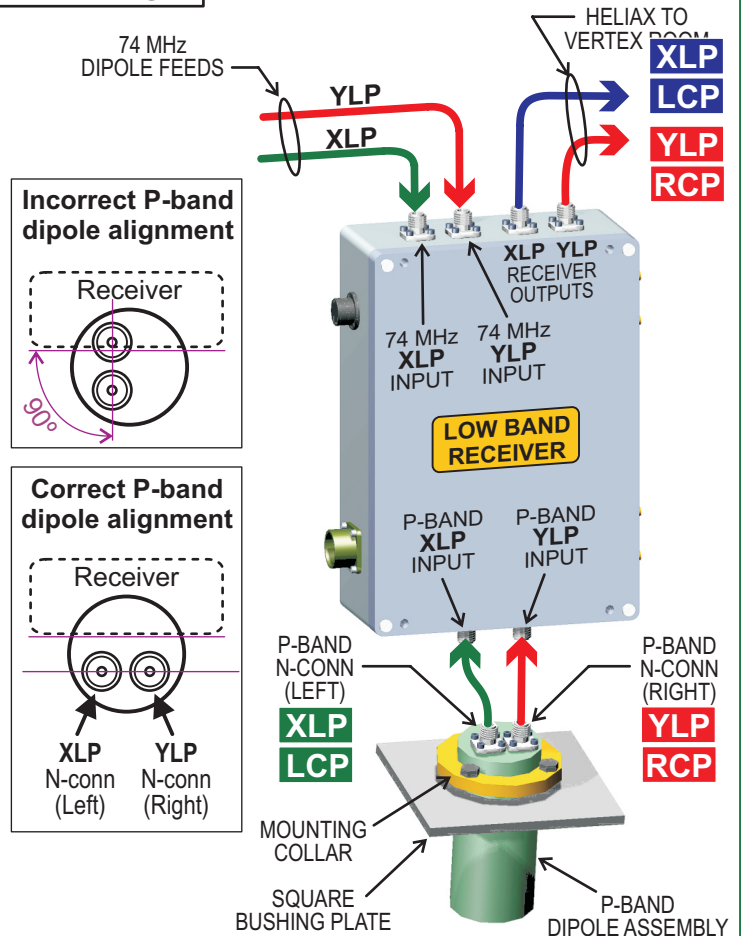


FIG. 3 – P-band dipole and receiver convention

74 MHz POLARIZATION

The **74 MHz dipoles** are deployed when needed and suspended underneath the subreflector by support ropes, ensuring orthogonal alignment to the quadrapod legs.

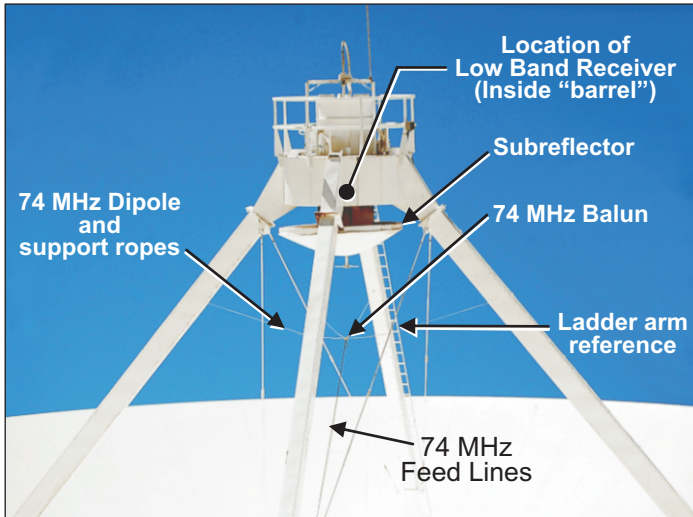


Fig. 4 – 74 MHz dipole components

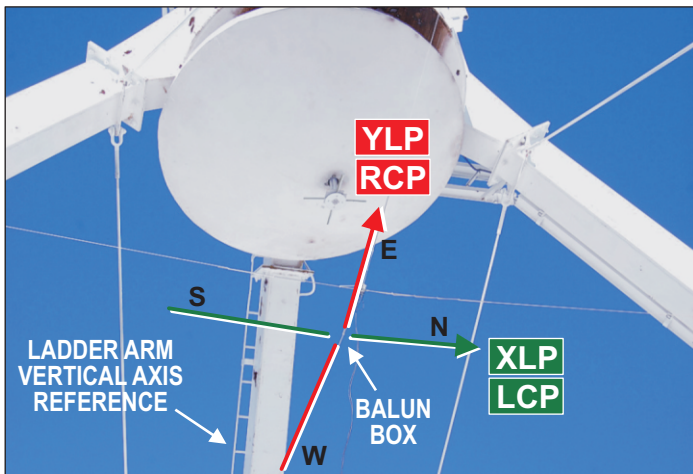


FIG. 5 – 74 MHz dipole polarization alignment

74 MHz polarization alignment is established when the dipoles are deployed with the “west” axis, as indicated on the balun box, is connected to the “ladder” quadrapod leg via the support ropes.

RF connectors on the balun boxes are keyed to ensure proper polarization as follows:

XLP/LCP is the N-type connector

YLP/RCP is the TNC connector

See FIG. 9 next page.

When properly deployed with the “W” axis to the ladder arm:

XLP is the N-S or horizontal axis

YLP is the E-W or vertical axis.

E-W and **N-S** axes is legacy nomenclature specific to the dipoles, not to any antenna coordinates.

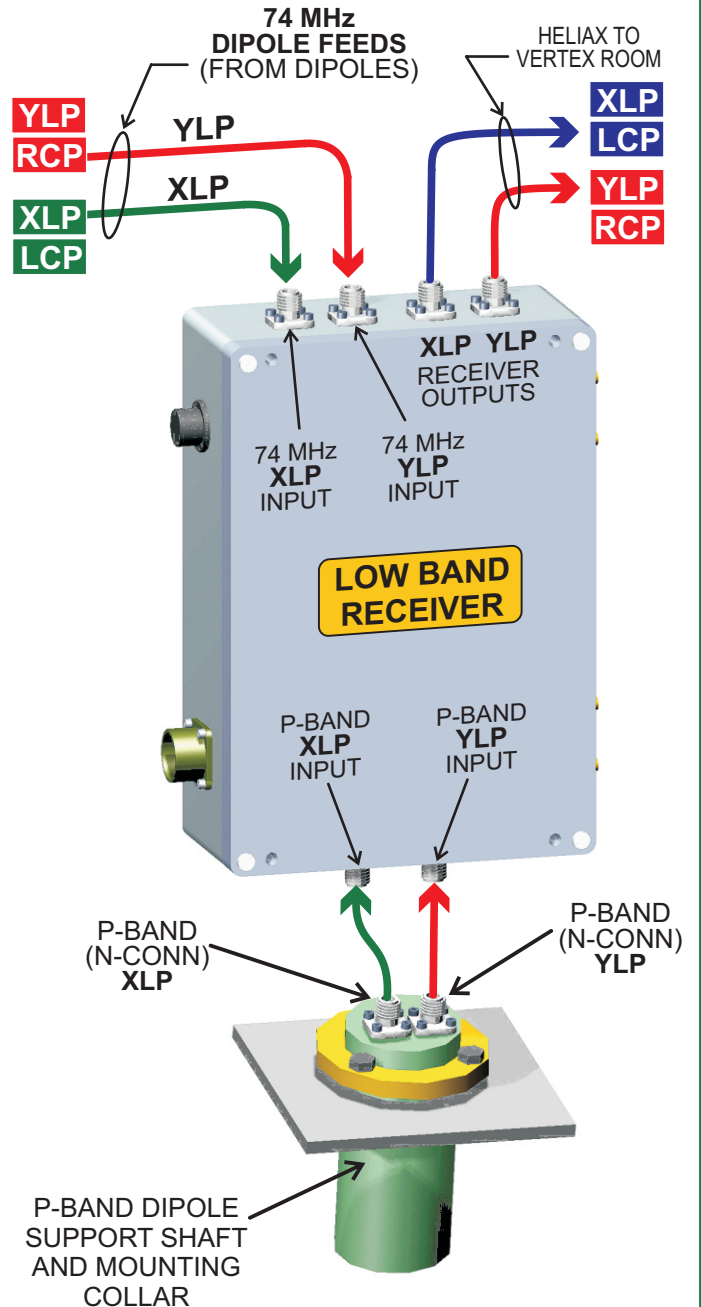


FIG. 6 – 74 MHz dipole and receiver convention

BALUN BOX POLARIZATION

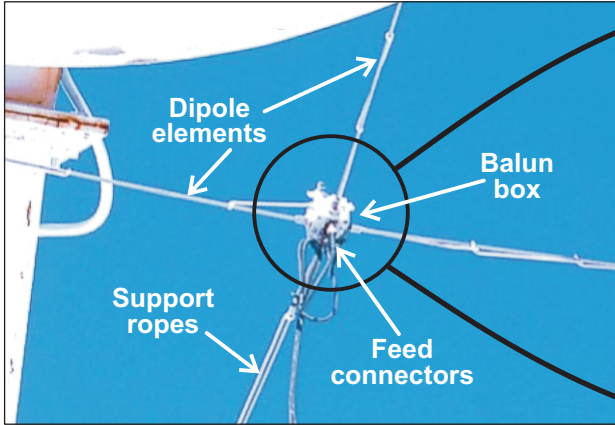


FIG. 7 – Deployed 74 MHz dipoles & balun box

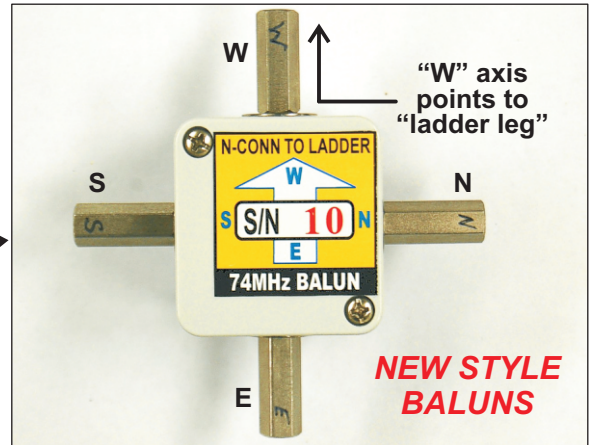


FIG. 8 – Balun Box - top/label side (label faces UP to subreflector)

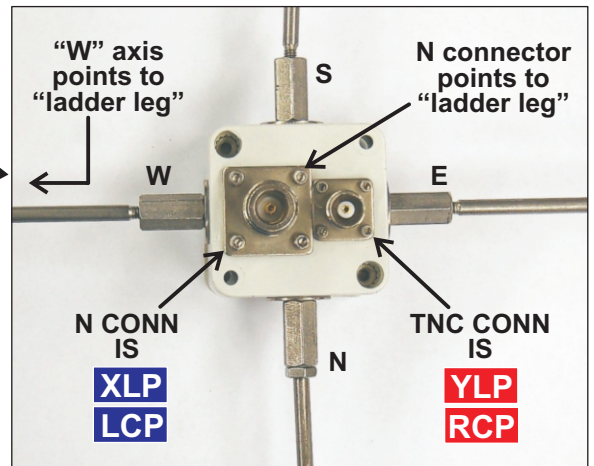
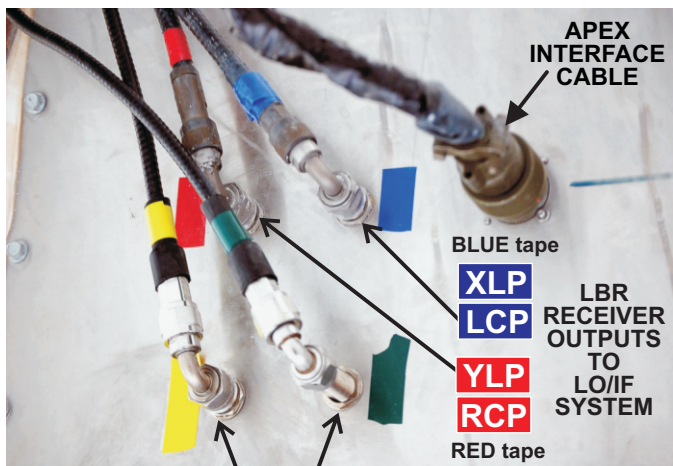


FIG. 9 – Balun Box - feed connector side (connectors face DOWN to feed horns)

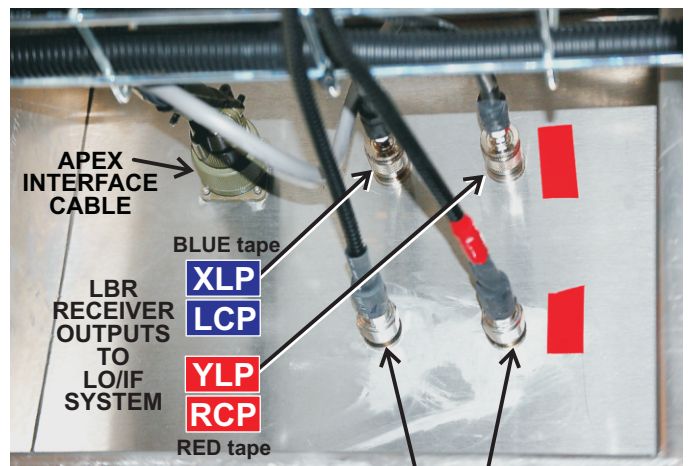
POLARIZATION CABLE MANAGEMENT

FIG.10 – CONNECTOR PLATE (OUTSIDE VERTEX RM.)

FIG.11 – CONNECTOR PLATE (INSIDE VERTEX RM.)



YLW tape or RED tape **YLP** **XLP** GRN tape
 74 MHz DIPOLE FEEDS TO APEX & RECEIVER



XLP **YLP**
 74 MHz DIPOLE FEEDS TO APEX & RECEIVER