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# CIR-8500

## X-Band Circular LHCP / RHCP Dish Feed

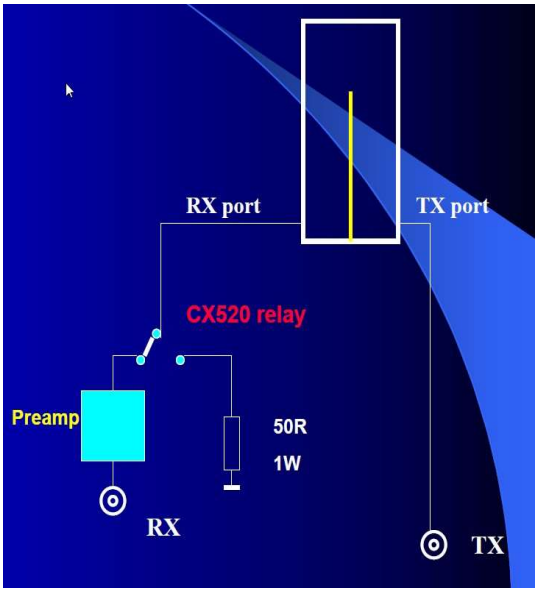
Tuneable between: 8GHz – 9GHz

**X-Band Circular Polarization:**

For many operations mode is standard is to transmit in RHCP and receive in LHCP. RH=right hand; LH=left hand and refers to which direction the RF wave rotates. The easiest way to visualize it is by thinking of how a nut rotates on a bolt on RH thread vs LF thread. The reason two senses of CP are required is that CP is reversed upon reflection from the surface of the Dish.

**To generate a circular polarized signal there are two basic methods:**

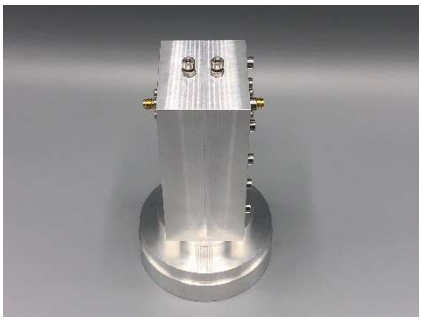
1) using a hybrid to feed two probes inside a horn at right angles to each other with RF phased by 90-degrees, or
2) using this septum feed horn which has a stepped center plate running down the middle of a section of waveguide (either square or cylindrical shape).
This plate is called the septum and it separates two probes inside the horn. One is used for RHCP and the other for LHCP and the nature of the septum is that is produces circular polarization of both senses but opposite at each probe.

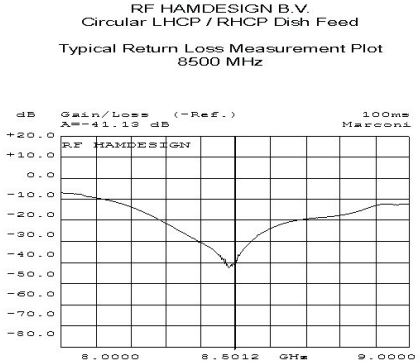



**This Circular dish feed:**

In this Circular dish feed the two polarities are produced without need of external 90degree hybrids (which add loss) and this eliminates use of high power TR relays.

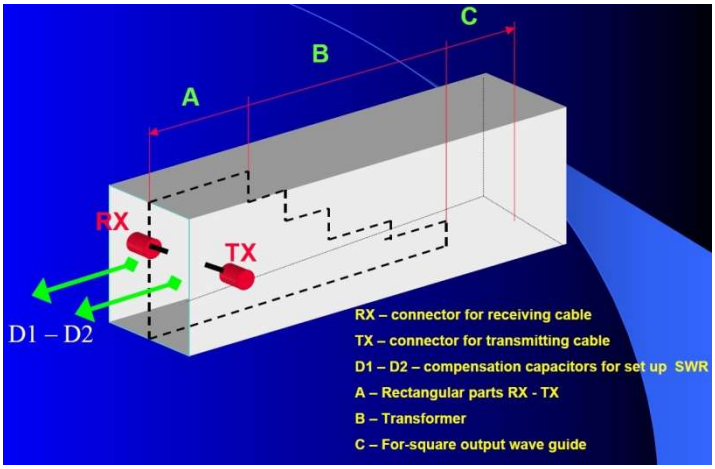
The Port Isolation of this Circular Dish feed is >20dB, in this case it is the best option to add a coax relay to 1 of the ports if on the other port will be transmitted. The relay can be a simple low cost relays which has a good isolation when switched to ground by a 50Ohm Load when transmit is active. Now the Preamplifier (LNA) is protected by the Transmit signal. Refer to the drawing right on this page.





**How does a Dual Mode Circular Dish feed Work ?**

The LHCP and RHCP ports are tuned to your requested frequency by maximal return Loss. it can be recommended to fine tune the dish feed after you placed the feed in front of the dish, if you start with this, best is to use of a scalar network analyzer to setup the ports for minimum VSWR.
Refer picture right how the Dish feed is build and uses the inside parts of the wave guide.




**Scalar ring:**
The mounted scaler ring is really a choke ring and used to control RF fields at the open-end of the horn and is optimized for Prime Focus dishes F/D=0.40-0.45 (F/D = ratio depth Dish / diameter)

**Ready to use:**
This Circular Dual Mode Dish feed is ready to use, supplied including measurement plot, LHCP and RHCP ports are labeled. (Refer attached measurement report)

**Dish Feed Bracket:**
RF HAMDESIGN offers a CNC Milled dish feed bracket (P/N:CLX-8500) for model CIR-8500 which is used to mount the dish feed in front of the dish.
Model CLX-8500 is configured to use with a 4-Leg Dish feed support.

**Specifications CIR-8500, X-Band Circular Dish Feed**

| **Description** | **X-Band 8 – 9GHz** |
|---|---|
| F/D=0.45 | Prime Focus |
| Return loss LHCP / RHCP port | >27 dB |
| Isolation RX <> TX port | > 20 dB |
| Supplied incl Measurement plot | Yes |
| Illumination angle for feed (-10dB) | 117 degrees |
| Weight Circular dish feed, CIR-8500 | 1,20 Kg |
| Connector LHCP / RHCP Port | SMA Female |
| Overall Dimensions CIR-8500 | 155 x 90 mm |
| CNC Milled Aluminum Material | AW-5083 H111 |

**CLX-8500 Dish Feed Bracket:**
The way to mount your dish feed in front of your Prime Focus Dish, Easy to mount in a 4-Leg Dish feed support system.

**Specifications CLX-8500 Mounting Bracket**

| **Description** | |
|---|---|
| Weight CNC Milled Dish Feed Bracket | 0,68 Kg |
| Overall Dimensions | 205 x 105 mm |
| Mounting in front of Prime Focus Dish by | 4-Leg Support |
| Material: Aluminum / Stainless steel | Supplied including mounting hardware |
| CNC Milled Aluminum Material | AW-5083 H111 |