



Frequently Asked Questions about:

**Dual Pole Radio Mount
(DPRM)**

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Introduction

DragonWave AirPair and Horizon were designed from the ground up to meet the critical needs demanded by carrier class customers. With a native IP design and ultra low latency, DragonWave solutions are optimized for next generation services. Developed specifically for customers with rapid scalability requirements, AirPair and Horizon are flexible bandwidth platforms which can scale via a simple software license key. In a small frame application such as VoIP, AirPair can scale from 10 to 250 Mbps, while Horizon Compact can scale from 10 to 400 Mbps across a single radio link.

For bandwidth requirements where a single radio system can not satisfy customer demands, DragonWave would recommend evaluating the Dual Pole Radio Mount (DPRM) to double capacity. As this configuration enables a customer to leverage the installed antenna, minimizing additional CAPEX and OPEX expenditures while 2x the capacity.

DPRM

The DPRM is an orthomode transducer designed to interface with either an AirPair or Horizon Compact radio directly to the existing DragonWave Dual Pole high performance antenna. The DPRM is installed between the antenna and two radios, enabling the doubling of capacity on a single link through cross-polarization. One radio will use vertical polarization, and the second radio will use horizontal polarization. To minimize link budget reduction, different channels are recommended for the two polarizations.

Parameter	Performance Specification
DPRM Dimensions	7.5 in wide x 7.5 in high x 12 in depth
Weight	9 lbs
Wind Loading	Survival wind load of 125 mph: 45 lbf ¹
Supported Configurations	1+1, 2+0
Insertion Loss (Vertical Port)	.25 dB maximum ²
Insertion Loss (Horizontal Port)	.75 dB maximum ³
Connector – Vertical Port	Radio Port
Connector – Horizontal Port	Radio Port
Connector – Antenna Port	Antenna Port
Channel Use	Adjacent or separated Cross-Polarized Channels
Frequency Support	L6, U6, 7, 8, 11,13,15,18,23, 24 DEMS, 26, 28, 38 GHz ²

¹This should be added to the Fs for the Antenna (note: this does not get added to the Fa antenna force as the DPRM is shielded by the antenna).

²In Pathloss 4.0, this is accounted for in miscellaneous coupler loss of 0.25dB per end for Vertical port.

³In Pathloss 4.0, this is accounted for in miscellaneous coupler loss of 0.75dB per end for Horizontal port.

⁴Does not support 24 GHz UL.

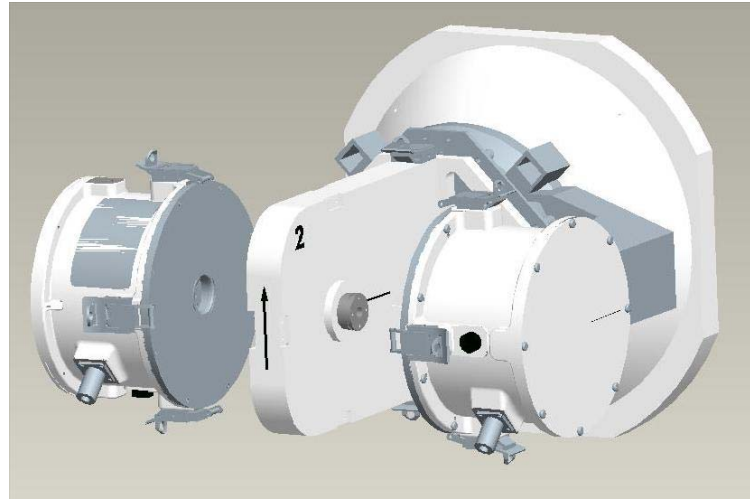


Figure 1 – DPRM Mechanical Drawings

What is the link engineering loss associated with the DPRM coupler?

DragonWave recommends that the insertion loss listed above is included when designing DPRM into a link. It is also recommended that the link is designed with the horizontal availability of the second channel in mind. If a simulation tool like Pathloss is being used, it is recommended to introduce this as miscellaneous loss within the Branching Network TR-TR (apply appropriate insertion loss from the above table). If the DragonWave link engineering tool is used, select in Step #3 that the DPRM combiner will be used and it will include the coupler loss and horizontal availability

When should the DPRM coupler be designed into the network?

DragonWave recommends that core network links should be analyzed Day 1 with a DPRM coupler included. This ensures there is adequate margin (correct sized antenna is purchased, licensed and tower lease arranged) is built into a link for future DPRM scalability whether the coupler is deployed Day 1 or not.

Assuming the DPRM is installed Day 1, what is the process in adding the second radio path?

Essentially, this is similar to installing a new DragonWave radio link, minus installing and aligning the antenna. DragonWave includes a “cap” which is shipped with the DPRM and protects the Horizontal port. The “cap” on the DPRM is removed and the second radio is clipped into place ensuring that it is in the Horizontal polarized position. Appropriate cable is secured to radio unit and connected to the modem (cable will depend on whether it us an AirPair IDU or ODU modem), grounding installed and cable run to equipment facility. Once the new radio link is connected, follow the “Initial Configuration of AirPair System” to configure the system.



If Horizon Compact is being deployed on the 2nd radio link, the same steps are followed, the Horizon Compact system is directly mounted on the DPRM feeder horn and secured via clips to the DPRM. Cat5e cable is connected to the Horizon Compact which connects from Port 1 on the new Horizon Compact unit to Port 2 on the vertically mounted Horizon Compact.

The above steps will not affect existing traffic on the first link.

What are the service implications of not installing the DPRM Day 1?

Service interruption will be experienced when installing the DPRM coupler, as the live radio link will need to be turned off while being installed. Depending on the speed of install, expect an outage from 1 to 15 minutes.

Do I need to obtain leasing approval from the tower operator?

In most cases, the leasing agreement with the tower operator is written in terms of the antenna size and quantity. Given the addition of a DPRM coupler does not modify this formula; there are no additional leasing costs incurred for adding this equipment on the tower. With either AirPair ODU or Horizon Compact, zero collocation foot print is required, so there would also be no additional rack space required for this system upgrade.

Is there any benefit to deploy the vertical and horizontal radio's on the same channel?

No, license regulators generally require that a license be purchased per channel and per polarity (ie. channel pair 24.787 & 25.795GHz – 28MHz). Therefore the addition of a second radio link will require a new license be purchased whether it is at the same channel or not. In some jurisdictions, the process is quicker to obtain the horizontal polarity license if you already have the vertical one.

Can the vertical and horizontal radio's be deployed on the same channel if required?

Yes, but there is a more significant impact to the link budget. This can be determined by using the DragonWave link engineering tool, and selecting the “X-Pol co-channel bandwidth doubling option”

Do the vertical and horizontal radio's need to operate within the same band?

No, there is no link engineering benefit for both radios to operate on the same frequency band (i.e. both in 23 GHz Band X operating at different channels) or within different bands (i.e. 23 GHz C and the other 23 GHz D). From an operations and sparing perspective it is recommended that the same radio bands be used.

Is the same DPRM coupler capable of supporting Horizon Compact and AirPair?



Yes, the DPRM coupler is common and can be used with Horizon Compact and/or AirPair. Therefore there are essentially three possible mounting configurations:

1/ AirPair + AirPair: AirPair radio's mounted on both vertical and horizontal ports, which would deliver a committed information rate over the air of 400 Mbps (56 MHz channel).

2/ AirPair + Horizon Compact: an AirPair radio mounted on one port and Horizon Compact on the other, which would deliver a committed information rate over the air of 570 Mbps (56 MHz channel).

3/ Horizon Compact + Horizon Compact: Horizon Compact's mounted on both vertical and horizontal ports, which would deliver a committed information rate over the air of 800 Mbps (56 MHz channel).