PLANNING FOR ANTENNA AND RF TRANSMISSION LINE INSTALLATION

In general, the larger the antenna used with the radio, the better the link performs. Larger antennas have narrower beamwidth and higher gain, which yield better link performance (higher fade margin, better availability) and improve immunity to interference (due to the narrower beamwidths). This is especially important for multi-link installations (hub sites) and for locations with potential interference sources nearby.

However, larger antennas are more costly to purchase and install than smaller antennas and, in some cases, require special installation equipment and more robust mounting structures (due to increased weight and wind loading). You should consider all of these factors when selecting an antenna.

Prior to installation, determine the specific antenna location and mounting. The transmission line should be kept as short as possible, so when line-of-sight placement of antennas allow flexibility, it is always desirable for the equipment to be located closer to the antenna.

This advanced planning, combined with the decision about where the RFU is to be mounted, yields the transmission line requirements.

Note: In areas where transmitted output power restrictions apply, the use of larger antennas benefits narrow beamwidths and receive gain. However, you could be required to reduce output power to meet regulations. Only directional antennas should be used with these radios; typically flat-panel or solid-parabolic antennas. As a general guideline, Proxim Corporation recommends a maximum 3 dB beamwidth of 10 degrees for directional systems.

The following tables list various transmission lines, and then antenna types, performance, and manufacturers.

Within the USA and Canada, antennas other than those illustrated in these tables can be used with this radio, but must be of the same type (flat panel or solid parabolic), dimensions, and gain as those listed in the table. Antennas with gain less than 23.5 dBi are not approved for use within the USA or Canada. Consult governmental regulations or Proxim Corporation for applications outside of the USA or Canada.

For further information regarding antenna installation and adjustment, see “Installing and Adjusting the Antenna” on page 18.

RF Transmission Line (Antenna to RFU)				
Type	**Manufacturer**	**Model**	**Loss***	**Notes**
½-inch foam coaxial	Andrew	LDF 4-50	6.1 dB	Add –0.25 dB per connector
5/8-inch foam coaxial	Andrew	LDF 4.5-50	4.7 dB	Add –0.25 dB per connector
Waveguide	Andrew	EW-52	1.2 dB	Does not include transitions
½-inch foam coaxial	Times Microwave	LMR-600	7.3 dB	Add –0.25 dB per connector
5/8-inch foam coaxial	Times Microwave	LMR-900	4.9 dB	Add –0.25 dB per connector
* per 100 ft. @ 5.8 GHz RF Frequency				

Note: Due to potential moding problems, the use of 7/8-inch coaxial cable is NOT recommended for use with these radios above 5 GHz.

Antenna Manufacturer Information			
Antenna Type	**Manufacturer**	**Model Number**	**Mid-Band Gain (dBi)**
1-foot flat panel	Tripoint Global Andrew RFS	DFPD1-52 FPA5250D12-N MA0528-23AN	23.5 23.6 23.0
2-foot flat panel	Tripoint Global Andrew RFS	DFPD2-52 FPA5250D24-N MA0528-28AN	28.0 28.2 28.0
2-foot parabolic	Tripoint Global Tripoint Global Radio Waves Andrew RFS	QF2-52 HQF2-52 SP2-5.2 P2F-52 SPF2-52A	28.5 28.1 28.3 29.4 27.9
3-foot parabolic	Radio Waves Andrew RFS	SP3-5.2 P3F-52 SPF3-52A	31.4 33.4 31,4
4-foot parabolic	Tripoint Global Tripoint Global Andrew Radio Waves RFS RFS	QF4-52 HQF4-52 P4F-52 SP4-52 SPF4-52A SDF4-52A	34.2 33.9 34.9 34.6 33.9 33.9
6-foot parabolic	Tripoint Global Tripoint Global Radio Waves Andrew RFS RFS	QF6-52 HQF6-5 SP6-5.2 P6F-52 SPF6-52A SDF6-52A	37.5 37.2 37.7 37.6 37.4 37.4
8-foot parabolic	Tripoint Global Tripoint Global	SSP8-52A HSSP8-52	39.8 39.6

The formula for determining maximum output power setting for 5.725-5.850 GHz Radio Transmitters (@EIRP=54.5 dBm) is:

Max Tx (dBm) is the lesser of 24.5 dBm and 54.5 - G + FL

where:

G = Antenna Gain
Tx = the output power measured at the antenna input
FL = feeder loss including loss of connectors

Note: EIRP shall never exceed 54.5 dBm. This is for the compliance to the CFR 47 Part 1.1310 for RF exposure.