



## Appendix B

# Antenna Options

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When selecting antennas, consider the following factors. You should have determined these during your planning stage, as described in Chapter 2, “Preparing to Install the SubSpace 2001.”

- Frequency range—Are you operating on an L-band frequency (902- to 928-MHz) or an S-band frequency (2400- to 2483.5-MHz)?
- Omnidirectional or directional—Do you need an omnidirectional or directional antenna? If you need an omnidirectional antenna, should the orientation be horizontal or vertical? Generally, directional antennas will have more antenna gain (the ability to amplify signals) for their size and cost than omnidirectional antennas.

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**Note** Some countries prohibit the use of omnidirectional antennas in wireless networks. Consult your local regulations.

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- Antenna gain—How much antenna gain will you need? Based on your link analysis and knowledge of local regulations, select an antenna that has an appropriate amount of gain for your system. Avoid using an antenna with too much gain because the antenna might radiate excessive power and hear signals that are not intended for its part of the network.
- Severe duty—Do you need a severe-duty antenna? Use severe-duty antennas in areas with environmental extremes, such as exceedingly high or low temperatures, wind, rain, or blowing dust and sand. If you are installing the antenna on a mountain top, you probably need a severe duty antenna, because mountain tops are often prone to high winds, temperature extremes, ice, and other extreme conditions.

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**Note** Sometimes, you only need to protect the antenna with a radome or a tough, electronically transparent cover. You should also plan to use hardline or semirigid coaxial cable in areas with environmental extremes.

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This appendix lists antenna options based on these factors; it does not include a complete list of your antenna options, nor does it recommend particular antennas.

## B.1 L-Band Antenna Options

Table B-1 lists omnidirectional antennas in the L-band (902- to 928-MHz) frequency range.

**Table B-1 Omnidirectional L-Band Antennas**

Manufacturer	Model	Gain (dBd)	Severe Duty
Vertical Antennas			
Comet	FP-19	13	Limited
Comet	CFC-771	5	Limited
Antenna Specialists	ASPG-973	10	Yes
Antenna Specialists	ASPJ-977	8.5	Yes
Antenna Specialists	ASPG-955	3	Yes
Celwave	PD-1110	9	Yes
Celwave	PD-10017	10	Yes
Celwave	PD-10022-3	0	Yes
Celwave	PD-1610-4	3	Yes
Horizontal Antennas			
Scala	SL11-915/DT2 <sup>1</sup>	11.4	Yes

1. Cardioid pattern

Table B-2 lists directional antennas in the L-band (902- to 928-MHz) frequency range.

**Table B-2 Directional L-Band Antennas**

Manufacturer	Model	Gain (dBd)	Severe Duty
Comet	PYA-913	12	Limited
Scala	TY-900	10	Yes
Scala	RY-900 <sup>1</sup>	10	Yes (severe weather)
M2	902-10EZ	12.6	No
M2	902-16EZ	14.7	No
M2	902-14WL	19	No (downtilt variable)
Swiech	COY33CM9EL	10	No
Antenna Specialists	ASP-2891 <sup>1</sup>	16	Yes
Antenna Specialists	ASP-2892 <sup>1</sup>	13	Yes
Antenna Specialists	ASPG-962	10	No
Celwave	PD-10108-2	10	Yes
Celwave	PD-10108D-2 <sup>2</sup>	13	Yes

1. Radome antenna

2. Phased array antenna

## B.2 S-Band Antenna Options

Table B-3 lists omnidirectional antennas in the S-band (2400- to 2483.5-MHz) frequency range.

**Table B-3 Omnidirectional S-Band Antennas**

Manufacturer	Model	Gain (dBd)	Severe Duty
Vertical Antennas			
Comet	GP-24	10	No
RFS/Cablewave	V010-2325	12	Yes
Horizontal Antennas			
RFS/Cablewave	HOA24-10	12	Yes
RFS/Cablewave	HOA24-15	17	Yes

Table B-2 lists directional antennas in the S-band (2400- to 2483.5-MHz) frequency range.

**Table B-4 Directional S-Band Antennas**

Manufacturer	Model	Gain (dBd)	Severe Duty
Lance	2521	18	No
Lance	2536	23	No (parabolic)
Lance	2548	30	No (parabolic)
Lance	2572	34	No (parabolic)

