DIGITAL RoamAbout Building to Building

Site Preparation Guide

Part Number: EK-DEIWC-SP. A01

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This manual describes the site preparation required for installing the RoamAbout outdoor antenna.

Revision/Update Information: This is a new document.

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Site Evaluation

Overview

This manual describes the site requirements that are needed for the successful installation of the DIGITAL RoamAbout building-to-building antenna. It is intended for sales engineers or site evaluators.

The outdoor antenna uses RF antenna technology, which lets you extend your LAN from building to building. Use the DIGITAL RoamAbout outdoor antenna as a solution when connecting buildings across distances as an alternative to costly T1 leased lines.

Before you start the installation process, ensure that all the requirements described here are met.

Requirements

Lightning protection

A lightning rod must be placed close to the antenna mast or wall bracket. This is required to protect the antenna from direct lightning strikes.

Grounding system

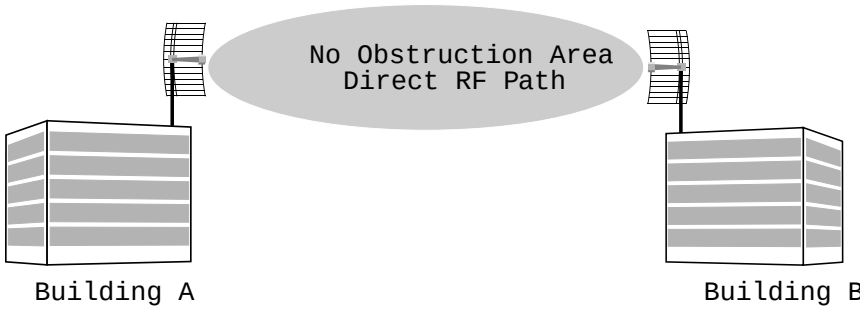
Direct earth grounding of the antenna and the lightning arrestor is necessary to protect the installation from lightning and the build-up of static electricity. The wireless device and the lightning arrestor must be connected to the same ground. The antenna and the mounting structure require a separate earth ground connection.

Check with a certified antenna installer to make sure the antenna is properly grounded.

Line of sight

Spread spectrum systems for LANs are complete point-to-point systems and require a clear line of sight from location to location. Zone widths of the beam depend on the distance between the antennas. The defined radius is a tube-shaped area which is widest at its center. The table below shows the zone radius required at 2.4 GHz.

Figure 1: Clear Line of Sight



Antenna height requirements (mast):

- At least 5 feet (1.5 meters) above the roof line if you are mounting it on a roof.
- High enough to achieve a line of sight if you are mounting it on the wall of a building.

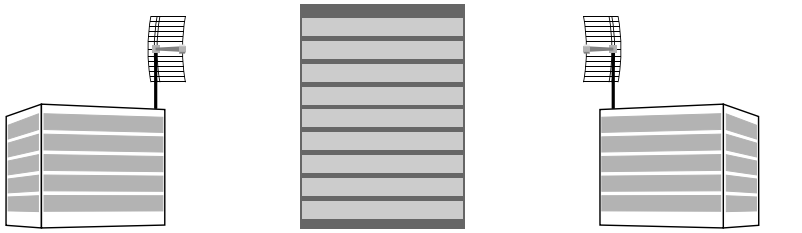
Note: The installer is responsible for local building codes.

Distance between Antennas	Defined Radius	Minimum Antenna Height
1 mile (1.6 km)	23 ft (7 m)	33 ft (9.9 m)
2 miles (3.2 km)	32.6 ft (10 m)	42.6 ft (13 m)
3 miles (4.8 km)	40 ft (12 m)	50 ft (15 m)
5 miles (8.0 km)	51.6 ft (16 m)	61.6 ft (18.8 m)
10 miles (16.1 km)	72.9 ft (22.2 m)	82.9 ft (25 m)
20 miles (31.4 km)	103 ft (31.4 m)	113 ft (43.4 m)
Antennas must be mounted at least 10 ft (3 m) higher above the ground than the defined radius for any given distance.		

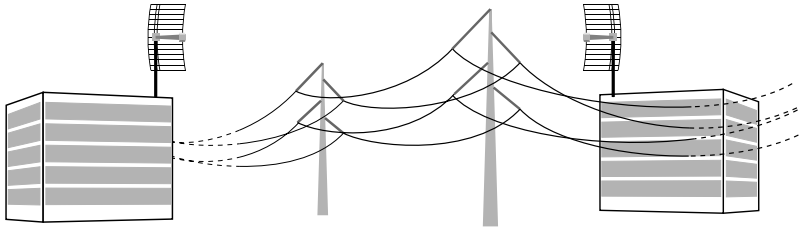
Line of sight is defined as:

- No obstacles in the direct path between the two antennas
- No obstacles within a defined radius around the antenna beam
- Clear of neighboring buildings, trees, power lines, and other obstructions

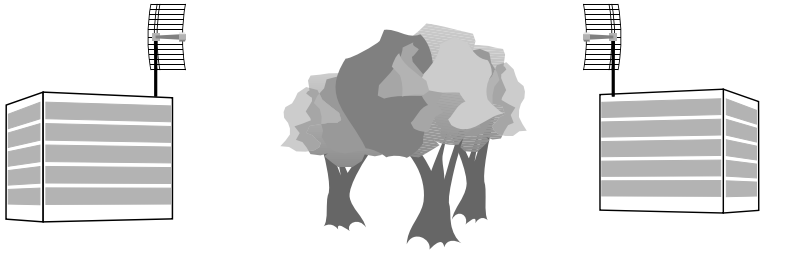
Figure 2: Representations of Antennas and Potential Obstacles to Line of Sight (not to scale)



Building blocking the line of sight

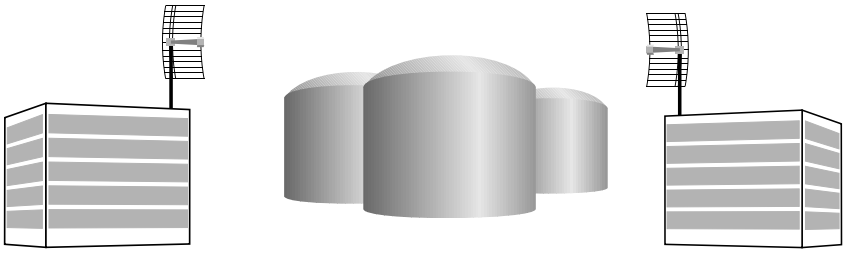


Power lines blocking the line of sight



Trees blocking the line of sight

LKG-10711-97MF



Large metal drums which are common in industrial areas.

LKG-10715-97MF

Factors that may reduce antenna range

Large reflecting surfaces that are parallel or partly perpendicular to the radio signal cause reflections of the radio signal. Examples of reflecting surfaces are metallic glass buildings, crowded parking lots, water, moist earth, moist vegetation, and above-ground power or telephone lines.

Because surrounding objects such as trees, power lines, other antennas, and the like seriously reduce efficiency of the antenna, it is very important to mount the antenna as high and clear of obstacles as possible.

Ensure that the cable between the antenna and lightning arrestor is at least 3 feet (0.9 meters) away from high-voltage or high-current cable.

Reviewing the site preparation checklist

Lightning protection

- √ Determine the mounting location for the lightning rod (positioned near the antenna).
- √ Ensure an earth ground location for the antenna structure and lightning arrestor.

Mounting requirements

- √ Determine the type of mounting that is required (tripod, wall mount, etc.)
- √ Consider that three guy wires are needed for each 10-foot (3 meter) section of the mast; for example, 20 feet of mast requires six guy wires.

Line of sight

- √ Determine the mounting location for the antenna.
- √ Ensure that the back of the antenna is clear.
- √ Ensure that remote and local antennas can see each other.
- √ Ensure that no obstacles are in the direct path or within the defined zone of the two sites.
- √ Consider whether any RF interference is present.

Installation Requirements

- √ Determine the best location for the Access Point.
- √ Determine the length of cable required from the antenna to the Access Point.
- √ Ensure the location has an accessible Ethernet connection.
- √ Ensure the location has accessible power.
- √ Determine the distance between buildings.

Required Data for Antenna Vendor

The following distances are required before contacting Digital's antenna partner:

Distance between the buildings: _____

Cable length needed at building A: _____

Cable length needed at building B: _____

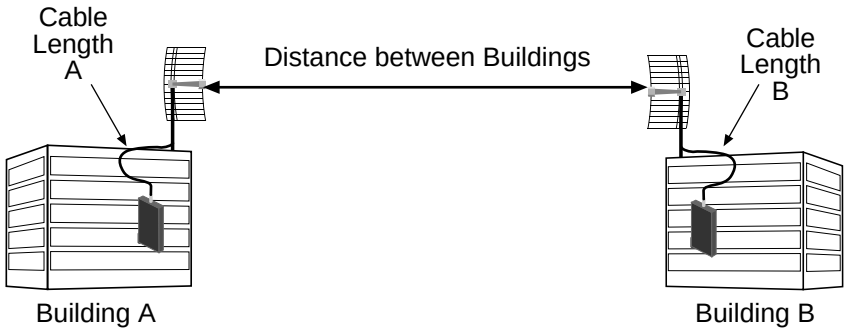
Height of building A: _____

Height of building B: _____

All possible obstacles which can interfere with the defined radius. _____

_____

_____



Internal hardware requirements needed per building (U.S. variants)

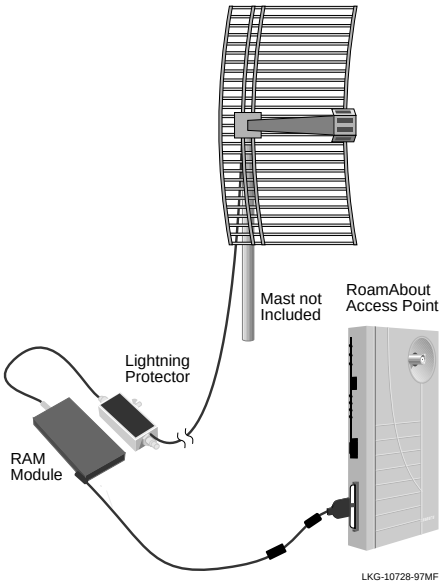
RoamAbout Access Point with RAM	DEIAP–RC (standalone)
RoamAbout Access Point with RAM (DES version)	DEIAP–RD (availability TBD)

Antenna options

The antennas that you can use include parabolic directional, yagi directional, and omni.

Figure 3: Antenna options

Parabolic directional antenna



Antenna Specifications

Gain	24 dbi
Size	24 in x 36 in
Weight	5 lbs
Color	Aluminum
Mount	Vertical or horizontal
Wind survival	150 mph
Wind surface area	.287 ft

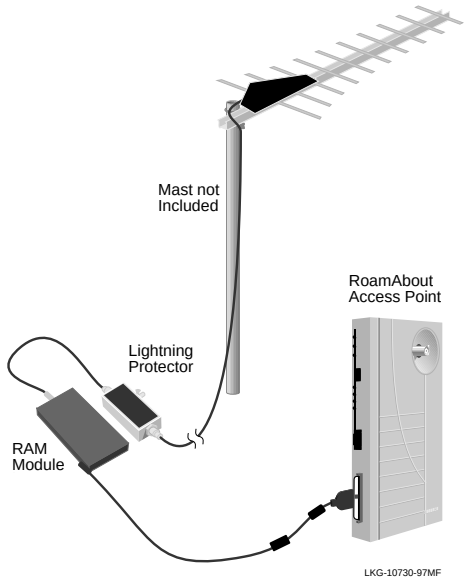
RAM Specifications

Size	5 in x 2.7 in x 0.7 in

Access Point Specifications

Size	1.25 in x 10.75 in x 5 in
Weight	1.5 lb

Yagi directional antenna



Specifications

Gain	14 dbi
Elements	10
Length	21 in
Width	3 in
Weight	8 oz
Mount	Vertical or horizontal
Color	Aluminum

RAM Specifications

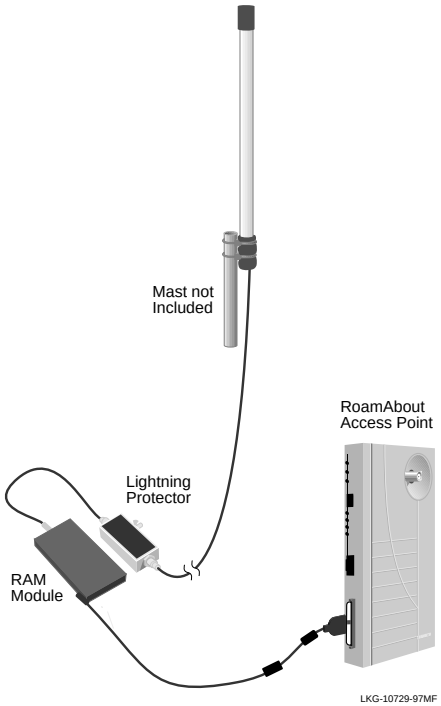
Size	5 in x 2.7 in x 0.7 in

Access Point Specifications

Size	1.25 in x 10.75 in x 5 in
Weight	1.5 lb

Reviewing the site preparation checklist

Omni antenna



Specifications

Gain	6 dbi
Height	13.5 in
Diameter	1 in
Weight	6 oz
Color	White

RAM Specifications

Size	5 in x 2.7 in x 0.7 in

Access Point Specifications

Size	1.25 in x 10.75 in x 5 in
Weight	1.5 lb

Call TTI Wireless, DIGITAL's antenna partner, for a custom antenna solution:

Phone: 1-888-953-9111
8 a.m. to 5 p.m.
WWW: http://www.rflink.com

Additional information

Additional information is available on the World Wide Web (WWW).

DIGITAL RoamAbout

Americas:	http://www.networks.digital.com/dr/wireless
Asia Pacific:	http://www.networks.digital.com.au/dr/wireless
Europe:	http://www.networks.europe.digital.com/dr/wireless

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Americas:	http://www.networks.digital.com
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