



Lab 9.6.2 Using the Bridge Range Calculation Utility

Estimated Time: 15 minutes

Number of Team Members: Students will work in teams of two or individually

Objective

The student will learn how to use the Cisco Bridge Range Calculation Utility to determine bridge distances based on the following:

- Type of bridge
- Antenna
- Cables
- Splitter
- Other applicable wireless connectors

Scenario

Cisco makes it easy to calculate bridge distances by using the Cisco distance calculations spreadsheet that is available from the Cisco Web site.

These values are for line-of-sight and provide a 10dB fade margin, which helps assure that the calculations will work.

Preparation

The student should download the Cisco Bridge Range Calculation Utility at the following link:

http://www.cisco.com/application/vnd.ms-excel/en/us/guest/products/ps458/c1225/ccmigration_09186a00800a912a.xls

Outdoor Bridge Range Calculation Utility

for
FCC, ISTC and other similar approvals areas
and
ETSI and similar (max +20dBm EIRP) areas.

Directions for use.

1. Select the proper page based upon your approvals for installation locations.
2. Select Product Being used for both sides of the link.
3. Select Datarate being used
4. Select power setting (if applicable) for both sides of the link (ETSI Calculation only)
5. Select antenna used on each side . If using something other than Cisco/Aironet antennas, enter the gain factor in dBi.
6. Select cables being used on each side. If using something other than Aironet cable, enter the loss/100 ft
7. REMEMBER These are THEORETICAL calculations.
8. LINE OF SITE IS REQUIRED!



Cisco Wireless training

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Address: http://www.cisco.com/warp/public/cc/pd/wlwc/ao340ap/prodit/obrc_jn.xls

Links: My Yahoo! Yahoo! Mail Yahoo! News Yahoo! Customize Links Free Hotmail RealOne Player Windows Media Windows

A2 For Cisco Aironet 2.4GHz Outdoor Links ONLY

	A	B	C	D	E	F	G	H	X	Y	Z	A
1	Cisco Systems											
2	For Cisco Aironet 2.4GHz Outdoor Links ONLY											
3	Models Supported- Cisco Aironet BR350, BR340, BR500, WGB350, WGB340, PCI350 and PCI340											
4												
5	Regulatory Domain-----> North America/FCC Select this from Power Regulatory Domain page											
6												
7												
8												
9	Site 1 Site 2											
10	Select Product #1 -----> AIR-BR350 Select Product #2 -----> AIR-BR350											
11	Select Power level-----> 100 Select Power level-----> 100											
12												
13	Select Datarate-----> 18Mbps											
14												
15	Select Antenna 1 here-----> 13.5dBi Yagi Select Antenna 2 Here-----> 13.5dBi Yagi											
16												
17	For other Antenna- Enter Gain Here--> 6 For other Antenna- Enter Gain Here--> 6											
18												
19	Select Cable 1-----> 100ft ULTRA LOW loss Select Cable 2-----> 100ft ULTRA LOW loss											
20												
21	For 'OTHER' Cable											
22	Enter Cable Loss/100 ft here-----> 4.4 Enter Cable Loss/100 ft here-----> 4.4											
23	Enter in Length Here-----> 100 Enter in Length Here-----> 100											
24												
25	Effective Isotropic Radiated Power --> 29.1 Effective Isotropic Radiated Power --> 29.1											
26												
27												
28												
29	Max Distance (w/ 10dB Fade Margin)-----> 2.8 Miles 4.6 Kilometers											
30												
31	Earth Bulge at above distance-----> 5 feet 1.5 Meters											

Step 1 Use the Cisco bridge range calculation worksheet

- Download, Install and Open the bridge range calculation utility.
- Select the product line being used. If using APs outdoors, the same procedures can be followed.
- Next select the proper antenna for both sites:
- For other non-Cisco antennas, enter the gain in dBi. If the gain is provided in dBd, simply add 2.14 to the number to convert to dBi.
- Then select the cable used on both sites.
 - If using something other than standard Cisco antennas, enter in the length and cable loss per 100 ft. in the appropriate place. For Cisco cables this is 6.7dB /100 feet at 2.4Ghz.
 - If a different cable is being used, contact the cable vendor for this information.
- Add any other losses due to splitters, connectors and so forth into the misc. column.
- The figure example uses the following:
 - 20dBm, or 2.4 GHz, for the transmitter power
 - 13.5 dBi yagis antennas
 - 2 cables of 20 feet each

The screenshot shows a worksheet with two identical columns for Site 1 and Site 2. The inputs are as follows:

Site 1	Site 2
Select Antenna 1 here----> 13.5dBi Yagi	Select Antenna 2 Here----> 13.5dBi Yagi
For other Antenna- Enter Gain Here--> 6	For other Antenna- Enter Gain Here--> 6
Select Cable 1-----> 100ft ULTRA LOW loss	Select Cable 2-----> 100ft ULTRA LOW loss
For 'OTHER' Cable Enter Cable Loss/100 ft here-----> 4.4	For 'OTHER' Cable Enter Cable Loss/100 ft here-----> 4.4
Enter in Length Here-----> 100	Enter in Length Here-----> 100
Effective Isotropic Radiated Power--> 29.1	Effective Isotropic Radiated Power--> 29.1
Max Distance (w/ 10dB Fade Margin)-----> 2.8 Miles 4.6 Kilometers	

A red box highlights the '2.8 Miles' result, with a red arrow pointing to it from below.

The Bridge range calculation tool gives a maximum distance of approximately 2.8 miles.

- What is the maximum distance when changing the data rate to 5.5Mbps?

- What is the maximum distance when changing the data rate to 2Mbps?

- What is the maximum distance when changing the data rate to 1Mbps?

- What is an easy way to extend the maximum distance while using the same power settings and antenna?
