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CPE INSTALLATION MANUAL Chapter 2

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SITE REQUIREMENTS:

- General. Each subscriber site must meet the following criteria:
 - Located within the ISP Direct coverage area (this can be determined by the network manager using the Network Propagation Tool).
 - Has a suitable location for antenna mounting (usually a rooftop or tower with Line of Sight (LOS) to the base station).
 - Provides a suitable location for the IDU for connection to the customer LAN, with standard power outlet (95-250VAC, 47 - 63 Hz) available.
- Initial Site Check. The ISP Direct network manager performs the initial site check using the Network Propagation Tool. If the subscriber site is within the coverage area, the network manager provides the following information to the installer:
 - Bearing and range from subscriber site to base station.
 - Probable antenna type.
- Site Survey. The installer performs a site survey with the appropriate client contact. You'll need permission from the building manager or owner regarding the antenna and IDU locations, and the RF cable run between the two. Record the appropriate information on the Clearwire™ [Site Survey Sheet](#).
 1. Identify the IDU installation location. Keep in mind these considerations:
 - a. There must be an AC outlet within 6 feet.
 - b. The RF cable must be run to the outside antenna.
 - c. The IDU must be connected to the customer's LAN.
 2. Identify the antenna installation location. Install the Outdoor Unit and Antenna for Compliance with FCC RF Safety Regulations. The Outdoor Unit (P/N: 24001-2) is mechanically and permanently secured to the antenna as one complete assembly. The whole assembly is, at all times, required to be installed on the roof of the building pointing outward, or on an antenna tower located outside of the building. The minimum height above the ground is twelve feet. The installation will be carried out, as mentioned, by professional technical staffs according to Clearwire's installation procedures. Consider the following:

- a. Maximize antenna performance by keeping clear of obstructions.
 - b. Minimize visual impact if possible.
 - c. RF cable run and identify a building access point.
3. Perform a radio test to confirm a link to the ISP.
 - a. As close as possible to the selected antenna location, set up a test antenna of the same type recommended by the network manager.
 - b. Connect the antenna to the test IDU. Using a GPS receiver or magnetic compass, point the antenna toward the bearing of the base station.
 - c. Power up the test IDU and check the front panel LEDs. The PWR and CPU LEDs should be lit, and both FAULT LEDs should be off. If all three RADIO status LEDs (RX, TX and LINK) are lit, the link is good. If not, try any or all of the following;
 1. Slowly rotate the antenna to maximize signal strength.
 2. Move the antenna location to avoid interference or obstructions. This may include raising the antenna height.
 3. Perform the Antenna Null Steering procedure (see appendix I)
 4. Try to establish a link to a different base station, if available.
 5. Try a higher gain antenna type.
 - d. Once a link is established, contact the network manager to perform a relay to client "ping" test. If successful, this indicates a good subscriber site with a suitable antenna location. Record the successful antenna location, type and bearing. If a link and "ping" test cannot be established, another antenna location may be needed, or the subscriber may have to wait for a closer base station to be established.
4. Map out the RF cable run. Identify drilling locations, conduit runs, drop ceilings, etc. as needed. Determine the minimum length of cable required. Select the appropriate cable part number in accordance with [Table 2-1](#).

REQUIRED TOOLS AND EQUIPMENT:

The CPE installer should have the following tools and equipment:

- Site Survey Equipment – Test IDU, each of three antenna types (high gain reflector, high and low gain panels), connecting cables, GPS locator or magnetic compass, cell phone or radio, electrical extension cord.
- Antenna Installation Equipment - **TBD**
- Site Configuration Equipment - laptop computer or PC with terminal emulation application, RS-232 serial cable.

Clearwire™ SITE SURVEY SHEET

Subscriber/Site Name:			
Street Address:			
Subscriber Contact	Name:	Phone:	
Building Contact	Name:	Phone:	
ANTENNA Sketch Location:		Describe Location:	
Antenna Type:	___ High Gain Panel	___ High Gain Reflector	___ Low Gain Panel
Bearing to Base Station: _____		Distance to Base Station: _____	
Signal Path Obstructions:			
IDU Sketch Location:		Describe Location: Distance from Cable Entry to IDU: _____ Distance from IDU to PC/Server/Hub/Router: _____ 110 VAC Available? _____ Plug Strip Required: _____ Shelf Required: _____ Notes:	
RF CABLE Sketch Cable Run:		Building Cable Entry: Distance From Antenna to Cable Entry: IDU Location Cable Entry: Distance from Building Entry to IDU Location: Distance from IDU Cable Entry to IDU: Total Cable Length: _____ Clearwire™ Cable Part Number: _____	
Clearwire™ Installer	Name:	Phone:	Date:

CABLE SELECTION:

Select the proper RF cable part number for the length required according to [Table 2-1](#).

WARNING: DO NOT SPLICE, SHORTEN OR LENGTHEN CABLE. KEEP THE CAP ON.

Cable Length (ft)	Clearwire™ Cable Part Number	Cable Outer Diameter (in.)
0 – 30	9714-2890	.216"
30 – 60	9714-2891	.200"
60 – 80	9714-2892	.240"
80 – 100	9714-2893	.300"
100 – 150	9714-2894	.405"
150 – 200	9714-2895	.500"
200 – 250	9714-2896	.590"
250 - 400	9714-2897	.870"

Table 2-1. RF Cable Selection