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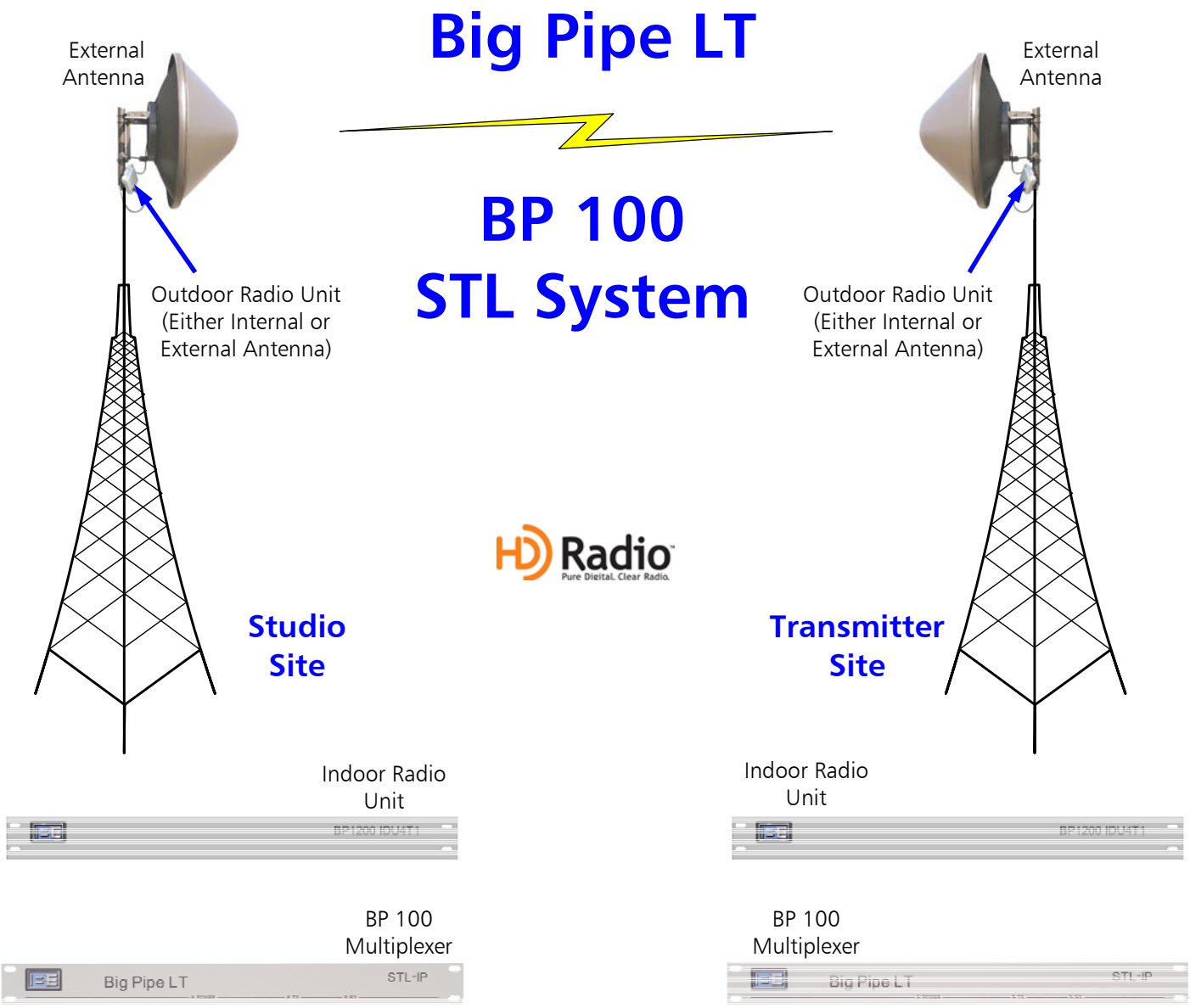

Big Pipe LT STL System
Quick Installation Guide

597-1200-001 Revision E
11/25/09

Big Pipe LT BP 100 STL System
Quick Installation Guide

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Table of Contents

1 About this Quick Installation Guide

Please note that the instructions in this Quick Installation Guide provide the necessary information for the installation of the Big Pipe LT STL System. This document should be used in conjunction with the BP1200 Radio User's Guide, BP100 Audio Multiplexer User's Guide, and the Link Configurator (which are all are on the Big Pipe LT CD). Additionally, included in the shipment from B.E. will be a System Drawing for your specific configuration which you will also need to reference during the installation process.

2 Prepare for the Installation of the Big Pipe LT System

2.1 Verify Contents of Shipment

Multiplexer:

- ☐ BP100 Audio Multiplexer (Qty dependent upon configuration)
- ☐ Kit, BP100LT Connector Accessory (1 Kit per BP100 Audio Multiplexer)

(IDU) Indoor Radio Unit:

- ☐ IDU for BP 1200, Ethernet, Table Top Unit

  - or -

- ☐ IDU for BP 1200, Ethernet, 4xT1, Rack Mount Unit

(ODU) Outdoor Radio Unit:

- ☐ BP 1200 Outdoor Radio Unit (1 per each end of link)

Note: Depending upon your system's configuration, Outdoor Radio Units will be equipped with either an Internal Antenna or will have a Type N port for connection to an External Antenna.

Software / Documentation:

- ☐ CD, Big Pipe LT (1 per link)

System Drawing:

- ☐ System Drawing for your specific configuration.

Cabling:

- ☐ Cable, Outdoor, CAT-5, Ethernet, RJ-45 (1 per each end of link)
- ☐ Cable, RF, ODU to Antenna (1 per each end of link if using External Antennas)

Lightning Protection:

- ☐ Lightning Protector, Ethernet (1 per each end of link)
- ☐ Lightning Arrestor, Type N Female to Type N Female (1 per each end of link)
- ☐ Connector, UG-57B/U, Type N Male to Type N Male (1 per each end of link)

Antennas:

Note: If your system requires External Antennas, they are typically shipped from the Antenna manufacturer directly to your site.

2.2 Sort the Equipment by Location and I.P. Address Labels

After unpacking the equipment from B.E., it is important to properly sort the equipment by I.P. Address to group a Multiplexer, an IDU, and an ODU as they were setup and tested at the factory. There is a label on each unit as noted stating the site location, I.P. Address, and Subnet Mask.

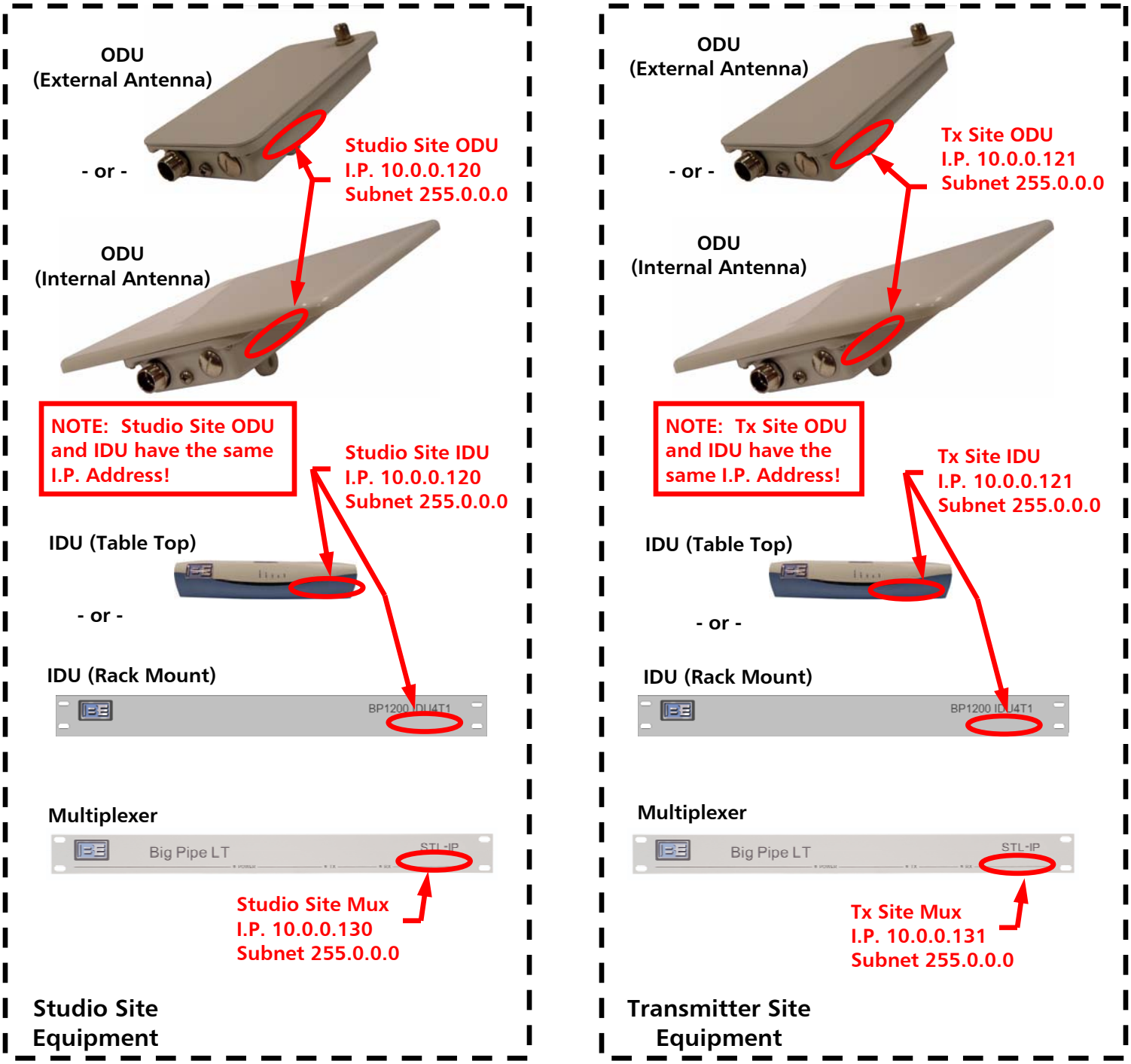


Figure 1 – Sort Equipment by I.P. Address Labels

2.3 Tools / Items Needed For Installation (NOT supplied by B.E.)

- ☐ Personal Computer running Windows 2000 or XP and have a CD drive
- ☐ Wire Stripping / Crimping Tool (for Ethernet Lightning Protector connections)
- ☐ Ohmmeter / Voltmeter (for Ethernet Lightning Protector connections)
- ☐ Straight-thru Ethernet Cable (for connecting PC to IDU)
- ☐ Crossover Ethernet Cable (for connecting PC to BP100LT Multiplexer)
- ☐ Qty (2) 13mm Wrenches (for installing Radio Mounting Bracket)
- ☐ Ethernet Cabling and Switches (for IDU to Multiplexer connections)
- ☐ AES Audio Cable (for use with the supplied XLR connectors for Audio Input/Output connections to the Multiplexer units)
- ☐ Grounding materials for ODU, IDU, and Lightning Arrestors
- ☐ Rack Hardware

2.4 Typical Big Pipe LT STL System

Figure 2 shows a "typical" Big Pipe LT STL System. Reference the documentation for your specific system for additional information.

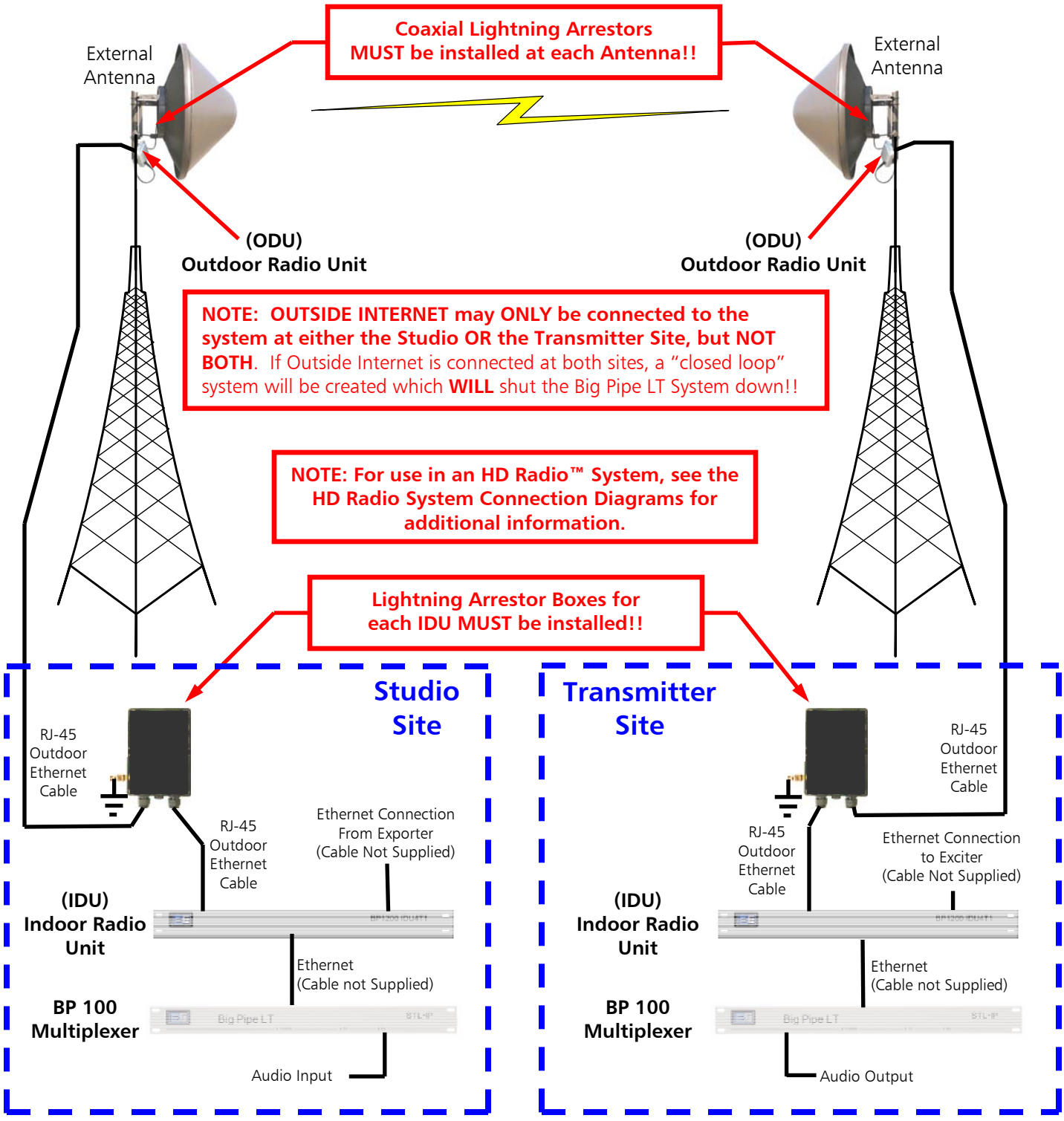


Figure 2 – Typical Big Pipe LT STL System Installation

3 Installation

3.1 Install FA2000 Radio Manager Software on a PC

It is strongly suggested that you have the latest **FA2000 Radio Manager Software** installed on your PC. Please note that FA2000 Radio Manager Software will communicate with older revision levels of radio software however the feature set may be limited.

Step 1 – Download **FA2000 Radio Manager Software** from the BE website, unzip, and install into a folder (C:\FA2000\) on the root disk. Then Navigate to C:\FA2000\Setup and run the setup.exe file. Note: The ODU / IDU software is contained within the **FA2000 Radio Manager Software.**

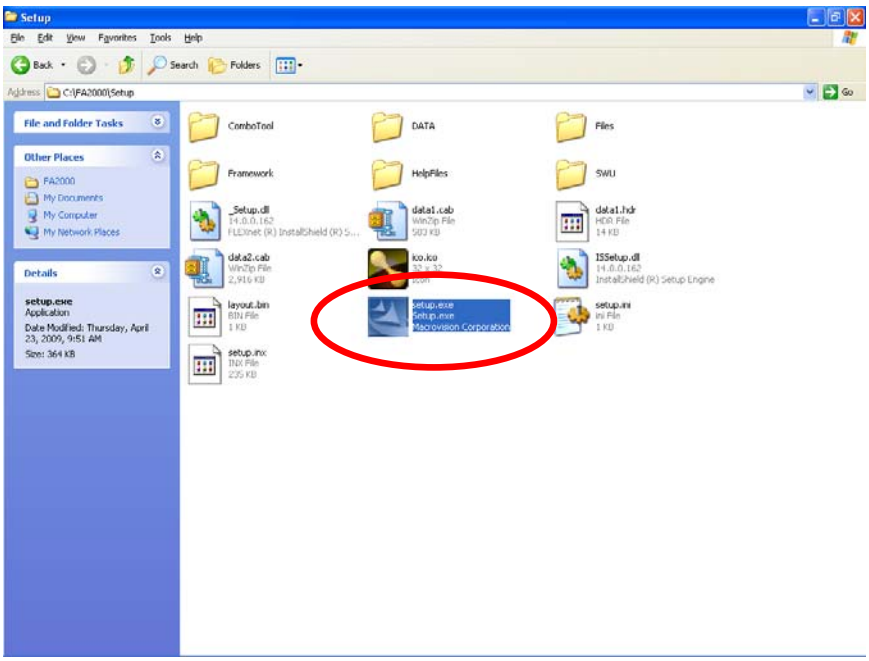


Figure 3 – C:\FA2000\Setup Directory, Setup.exe File

Step 2 – Follow on screen prompts.

Step 3 – When the **InstallShield Wizard** is complete, select **Finish**.

Figure 4 – Installation Complete

3.2 Install External Antennas

If your system requires External Antennas, install them at each end of the link on a tower or building structure at the appropriate elevation and azimuth orientation to achieve line of sight alignment.

3.2.1 Install Coaxial Lightning Arrestor at External Antenna Inputs

If your system requires External Antennas, there will be Qty (2) Coaxial Lightning Arrestors and Qty (2) N-Type Adapters included in the shipment from B.E.
The Coaxial Lightning Arrestors **MUST** be installed at each end of the link at the Antenna Input as illustrated below!

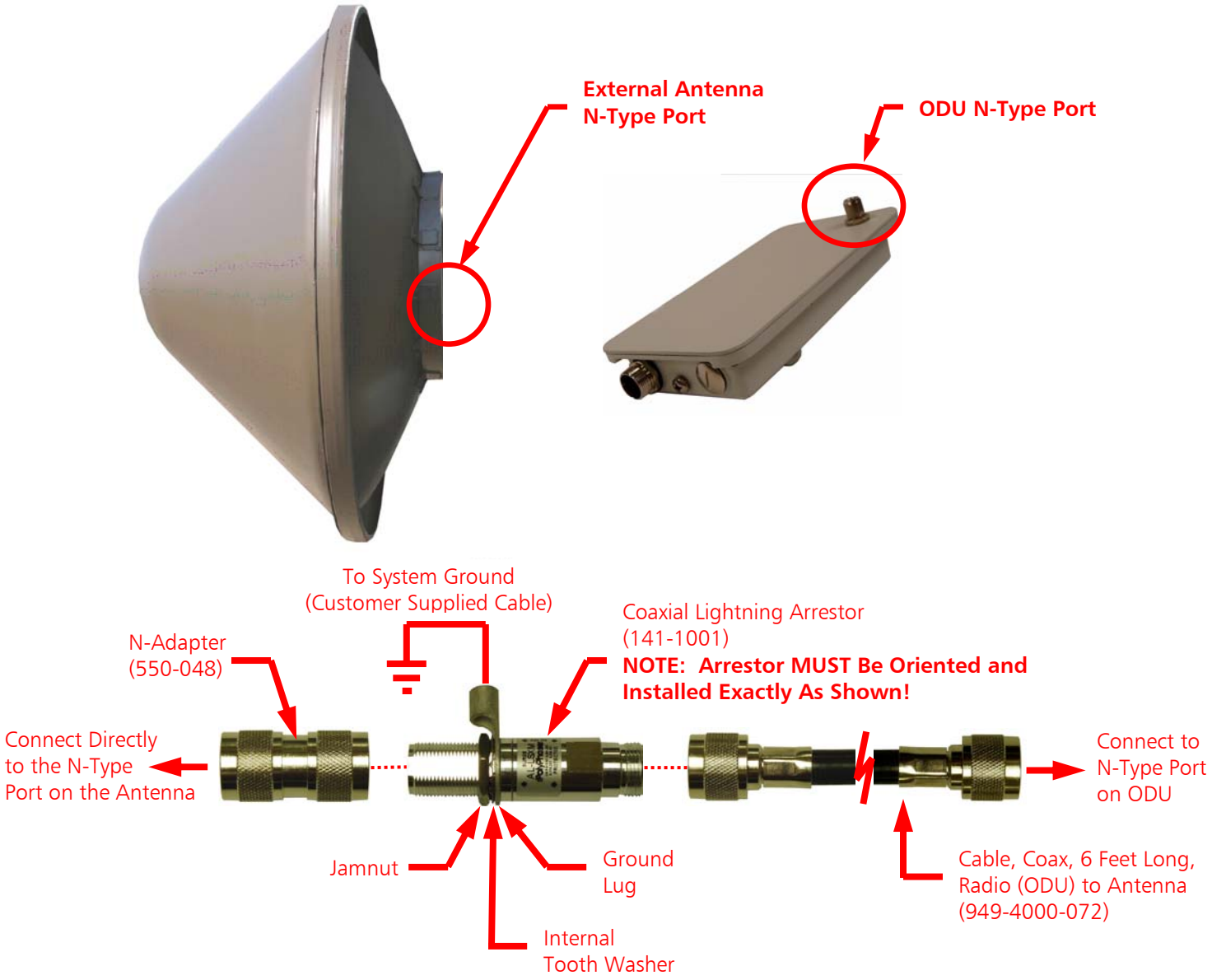


Figure 5 – Coaxial Lightning Arrestor Connections (Typical Each End of the Link)

3.3 Install the Outdoor Radio Units (ODUs)

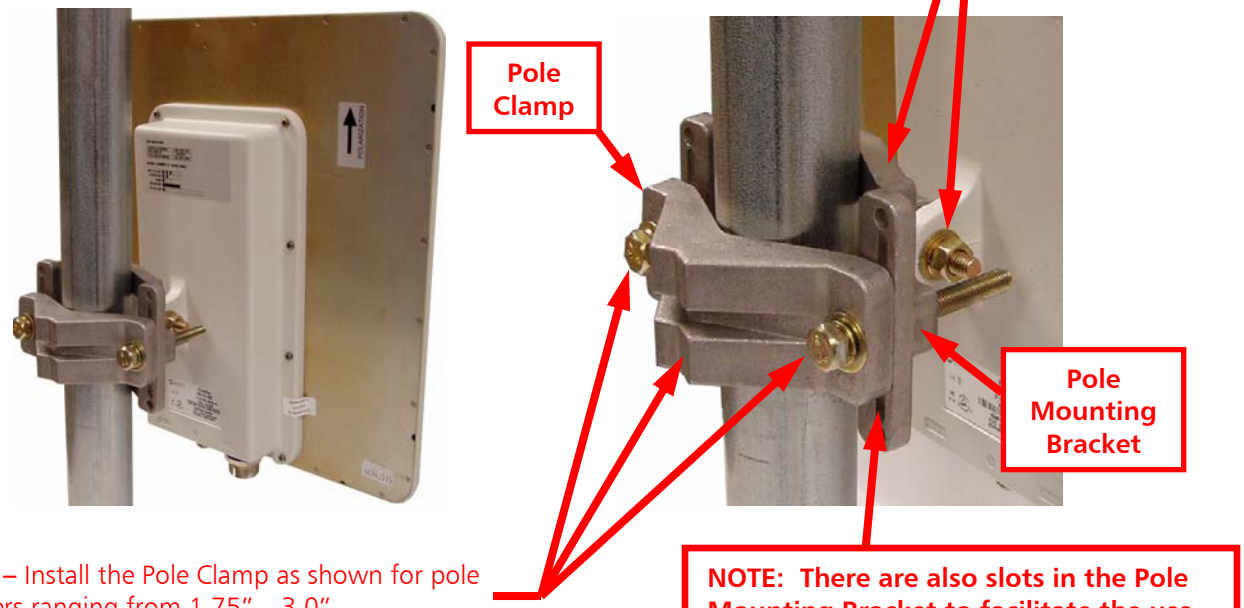
3.3.1 External Antenna ODUs

Install an ODU at each end of the link on the tower or building structure close enough to the External Antenna to enable connection with a 6 foot RF cable.

3.3.2 Internal Antenna ODUs

If your system is using Internal Antenna ODUs, install them at each end of the link on a tower or building structure at the appropriate elevation and azimuth orientation to achieve line of sight alignment.

STEP 1 – Attach the Pole Mounting Bracket to the Radio as shown. Using (2) 13mm wrenches, install the M8 X 40 bolt, (1) flat washer on one side and (1) flat washer, (1) lock washer, and (1) nut on the other side as shown.



STEP 2 – Install the Pole Clamp as shown for pole diameters ranging from 1.75" – 3.0".

Flip the Pole Clamp over for smaller pole diameters ranging from 1.0" to 1.75".

In either case, use a 13mm wrench to install (2) M8 X 70 Bolts, (2) Lock Washers, and (2) Flat Washers as shown

Figure 6– Typical ODU Mounting (Internal Antenna ODU shown)

3.4 Install / Locate the Indoor Radio Units (IDUs)

3.4.1 Rack Mount IDUs

If your system is using Rack Mount IDUs, install the "Studio" IDU at the Studio Site and the "Transmitter" IDU at the Transmitter Site in 19" EIA equipment racks.

3.4.2 Table Top IDUs

If your system is using Table Top IDUs, locate the "Studio" IDU at the Studio Site and the "Transmitter" IDU at the Transmitter Site.

3.5 Connect Chassis Ground and Power to the IDU

3.5.1 Rack Mount IDU Chassis Ground and Power Connections

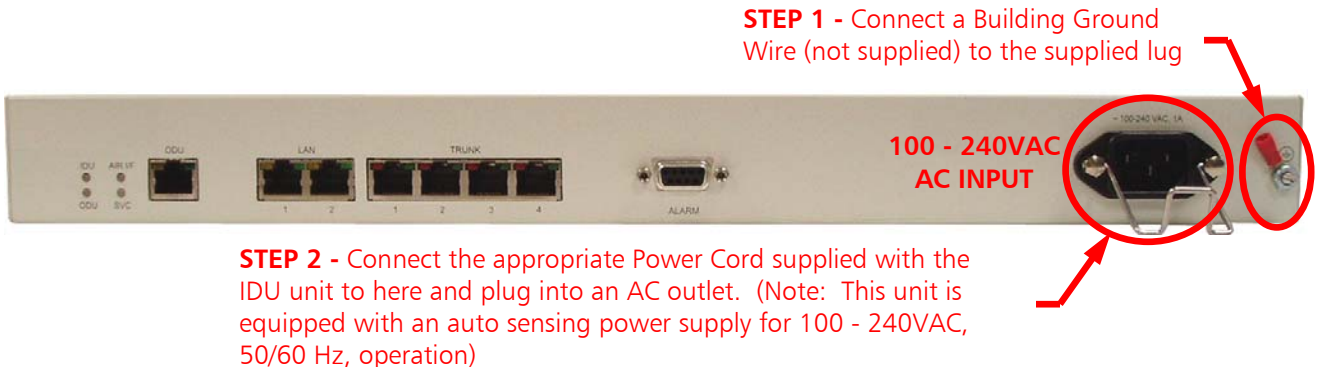


Figure 7 – Rack Mount IDU Chassis Ground and Power Connections

3.5.2 Table Top IDU Chassis Ground and Power Connections

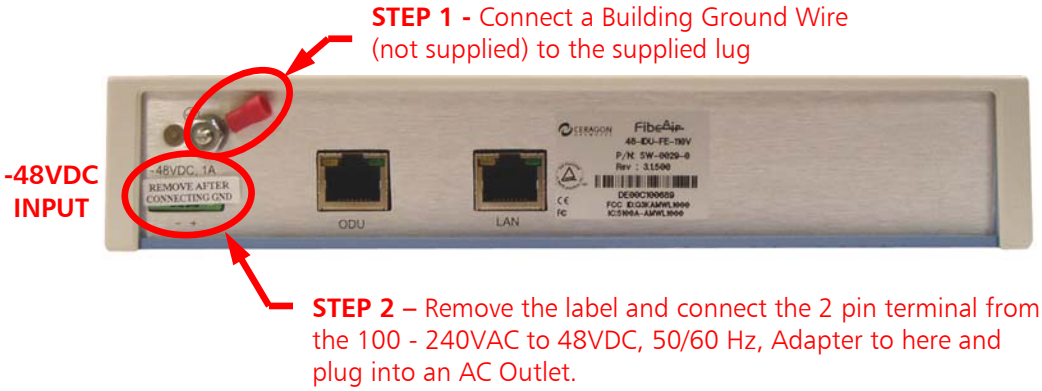


Figure 8 – Table Top IDU Chassis Ground and Power Connections

3.6 IDU to ODU Outdoor Ethernet Cable Connection

Included in the shipment from B.E. will be 2 rolls of Outdoor Ethernet Cables with weather proof RJ-45 connectors (1 for the Studio Site, 1 for the Transmitter Site). This cable provides the Ethernet Data path between the IDU and ODU. Additionally, the ODU receives its Power from the IDU via this cable.

At each site, connect the cable to the ODU and run down the tower and connect to the IDU. Once the link is established and the system has been proven, we will later cut these cables inside the Studio and Transmitter Site Buildings, and install the Ethernet / Power Lightning Protectors.

Once this connection is made, the ODU buzzers should start.

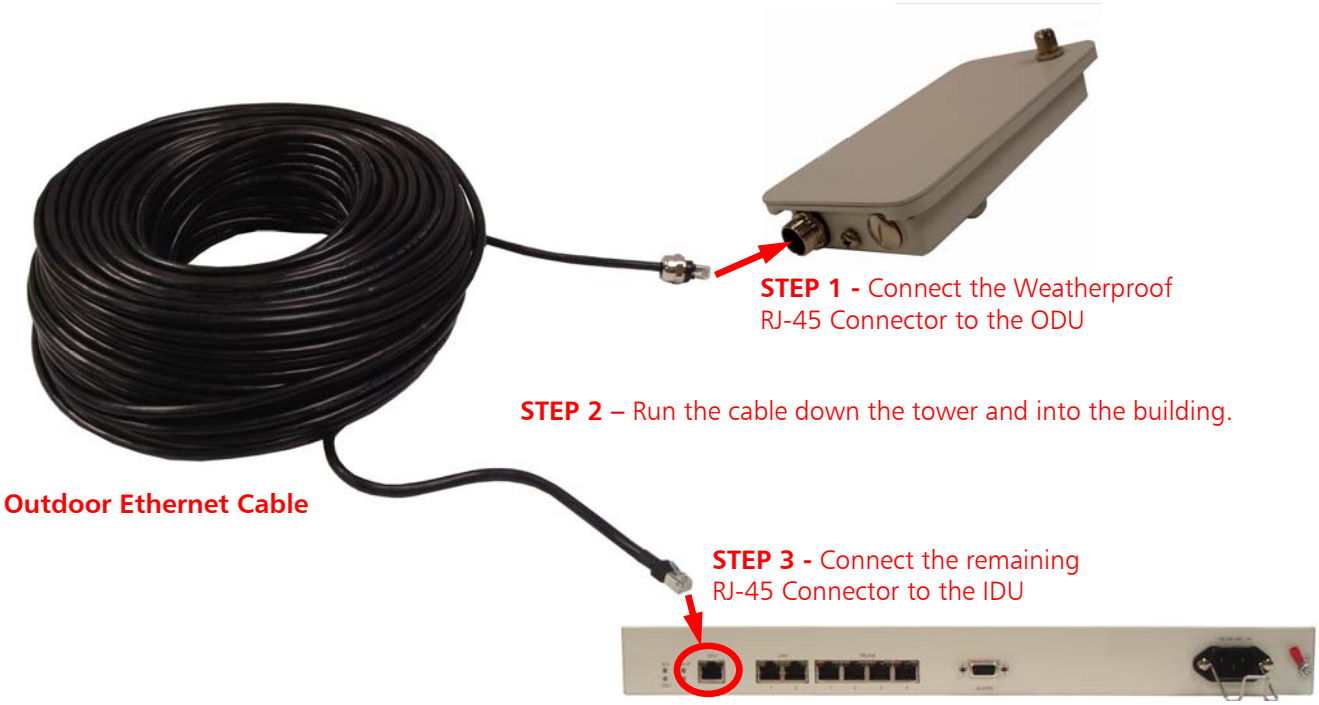


Figure 9 – Outdoor Ethernet Cable with Weatherproof RJ-45 Connectors

Hint - If the supplied Outdoor Ethernet Cables are extra long and you desire to shorten, accumulate the excess cable where you plan to install the Ethernet Lightning Protection Box. The excess cable may be removed later when installing the Lightning Protection Box.

3.6.1 Rack Mount IDU to ODU Outdoor Ethernet Cable Connection

Figure 10 – Rack Mount IDU (ODU Connection Port)

3.6.2 Table Top IDU to ODU Outdoor Ethernet Cable Connection

Figure 11 – Table Top IDU to ODU Connection

3.7 Link Alignment

Before starting the alignment process, ensure the following has been completed.

- ☐ IDUs have been installed and have a chassis ground connection, power connection, and an Ethernet Connection to the ODU using the Outdoor Ethernet Cable.
- ☐ External Antennas (if required) have been installed at the proper elevation and azimuth orientation at each end of the link to achieve line of sight alignment.
- ☐ Coaxial Lightning Protectors have been installed at the input of the External Antennas (or input of the Internal Antenna ODUs) at each end of the link.
- ☐ Outdoor Radio Units (for External Antennas) have been installed and have the RF Cable connected from the ODU to the Coaxial Lightning Arrestor at the input of the External Antenna.

3.7.1 Coarse Tuning Link Alignment by the ODU Buzzers

WARNING! DO NOT POSITION YOURSELF DIRECTLY IN FRONT OF A LIVE OUTDOOR RADIO UNIT OR ANTENNA!

NOTE: Ideally, you should have 1 person on the tower at each site for Antenna (ODU) adjustment and 1 person monitoring the RSS (Received Signal Strength) value at the PC connected to an IDU at one end of the link. All 3 people **MUST** be able to communicate by cell phone or some other means. The Outdoor Radio Units are equipped with a buzzer to aid in the alignment process.

Buzzer Sequence	**Description**
(* = buzzer on) (_ = buzzer off)	
*_*_*_____	Best Signal so far
*_*_____	Signal quality increased
*_____	No change in signal
**********	Signal quality decreased
*_____	No air link

Figure 12 – ODU Buzzer Sequence

STEP 1 – Adjust the External Antenna (or ODU with Internal Antenna) at one end of the link horizontally (side to side) until the "Best Signal so far" buzzer sequence is achieved.

STEP 2 – Adjust the External Antenna (or ODU with Internal Antenna) at the same end of the link vertically (up and down) until the "Best Signal so far" buzzer sequence is achieved.

STEP 3 – Adjust the External Antenna (or ODU with Internal Antenna) at the other end of the link vertically (up and down) until the "Best Signal so far" buzzer sequence is achieved.

STEP 4 – Adjust the External Antenna (or ODU with Internal Antenna) at the same end of the link horizontally (side to side) until the "Best Signal so far" buzzer sequence is achieved.

Repeat the above process at each end of the link as needed.

3.8 Connect a PC to an IDU at Either End of the Link

Once the Antennas, ODUs, IDUs have all been installed, connect a Straight-Thru Ethernet cable from your PC to an IDU at either the Studio or Transmitter Site.

3.8.1 PC to Rack Mount IDU Connection

Figure 13 – Rack Mount IDU (LAN Connection Port)

3.8.2 PC to Table Top IDU Connection

If using Table Top IDUs in your system, it will be necessary to connect your PC to the IDU via a Gigabit Ethernet Switch as shown below since table top IDU only has one LAN port.

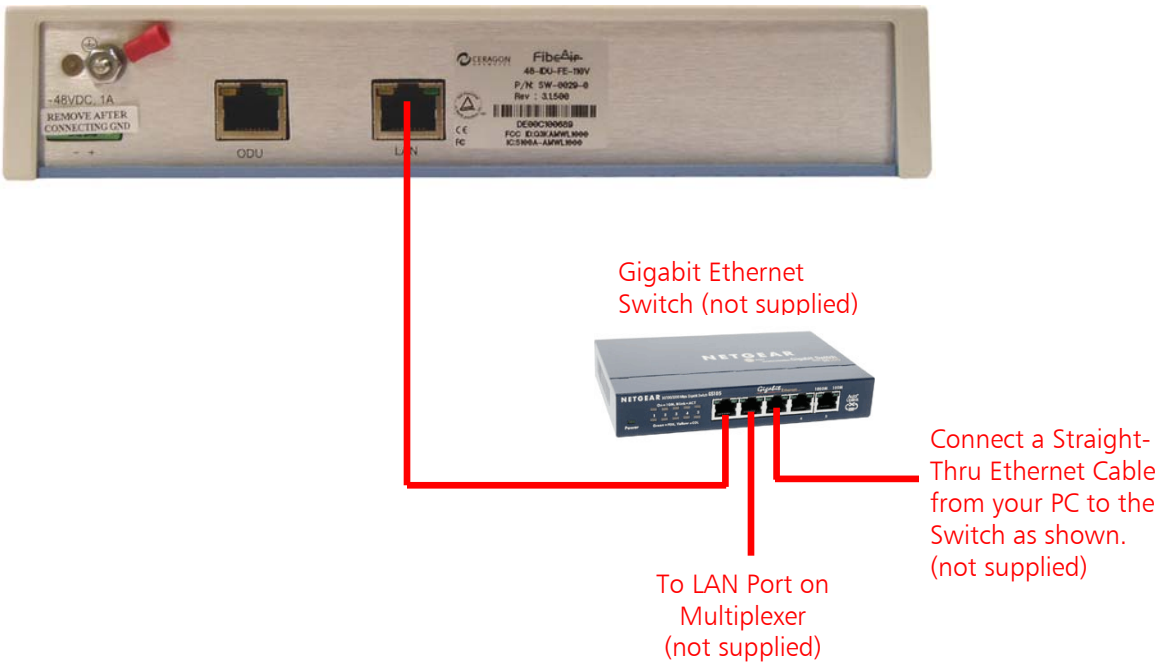


Figure 14 – Table Top IDU (LAN Connection Port)

3.9 Configure the I.P. Address of your PC

Step 1 – To establish communication via I.P. with the IDUs and ODUs, your PC must be setup in the same I.P. family. On your PC go to **Start -> All Programs -> Accessories -> Communications ->** and select **Network Connections**.

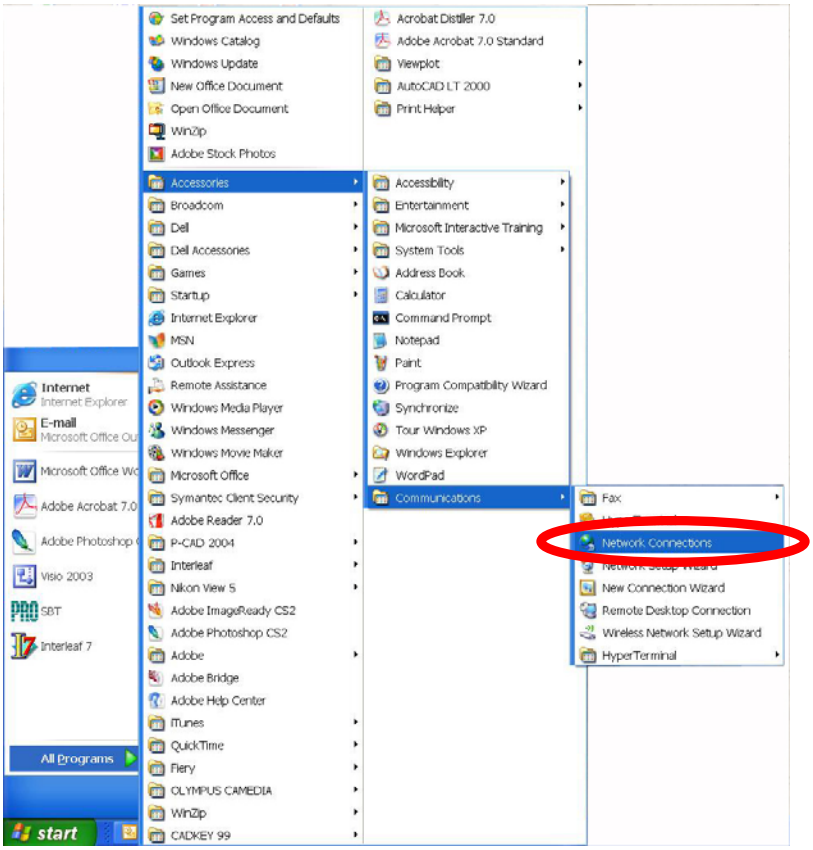


Figure 15 – Network Connection Menu Access

Step 2 – Right click on Local Area Connection and select **Properties.**

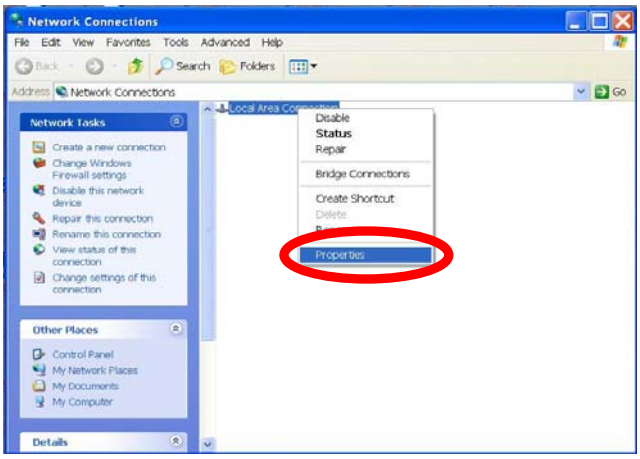


Figure 16 – Local Area Connection Properties

Step 3 – Since the I.P. address of the IDU we are connected to is either 10.0.0.120 (Studio Site) or 10.0.0.121 (Transmitter Site) with a subnet mask of 255.0.0.0, we configure the PC with an IP of 10.0.0.1 and 255.0.0.0 for the Subnet Mask.

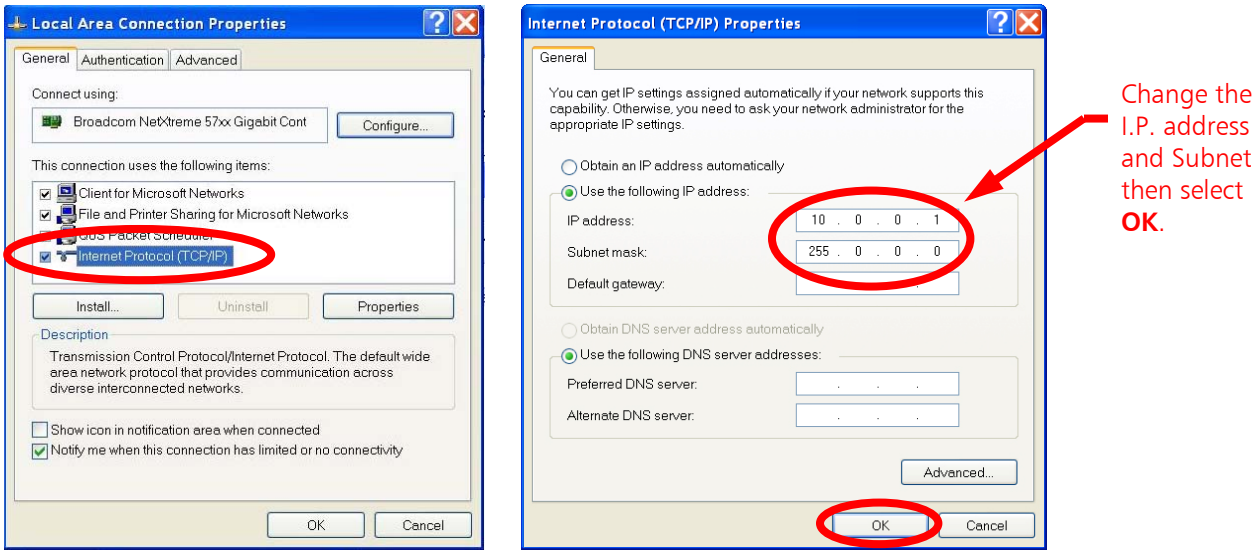


Figure 17 – Configure the IP Address of the Personal Computer

3.10 Launch the FA2000 Radio / Link Management Application

Launch the FA2000 Application (installed earlier) by double clicking the icon on the Desktop of your PC.

Either enter the I.P. Address of the IDU (**10.0.0.120** or **10.0.0.121**) that you are connected to, or select **Local Connection** using the list arrow.

Next, enter **admin** for the Password and select **OK,** and the **FA2000 Radio Manager Main Menu** will appear.

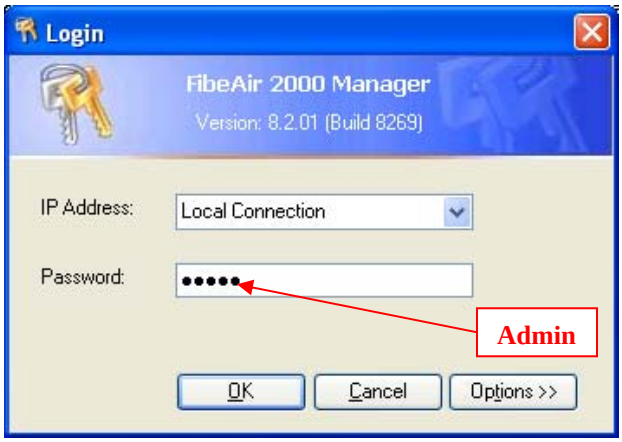


Figure 18 – FA2000 Radio Manager Login

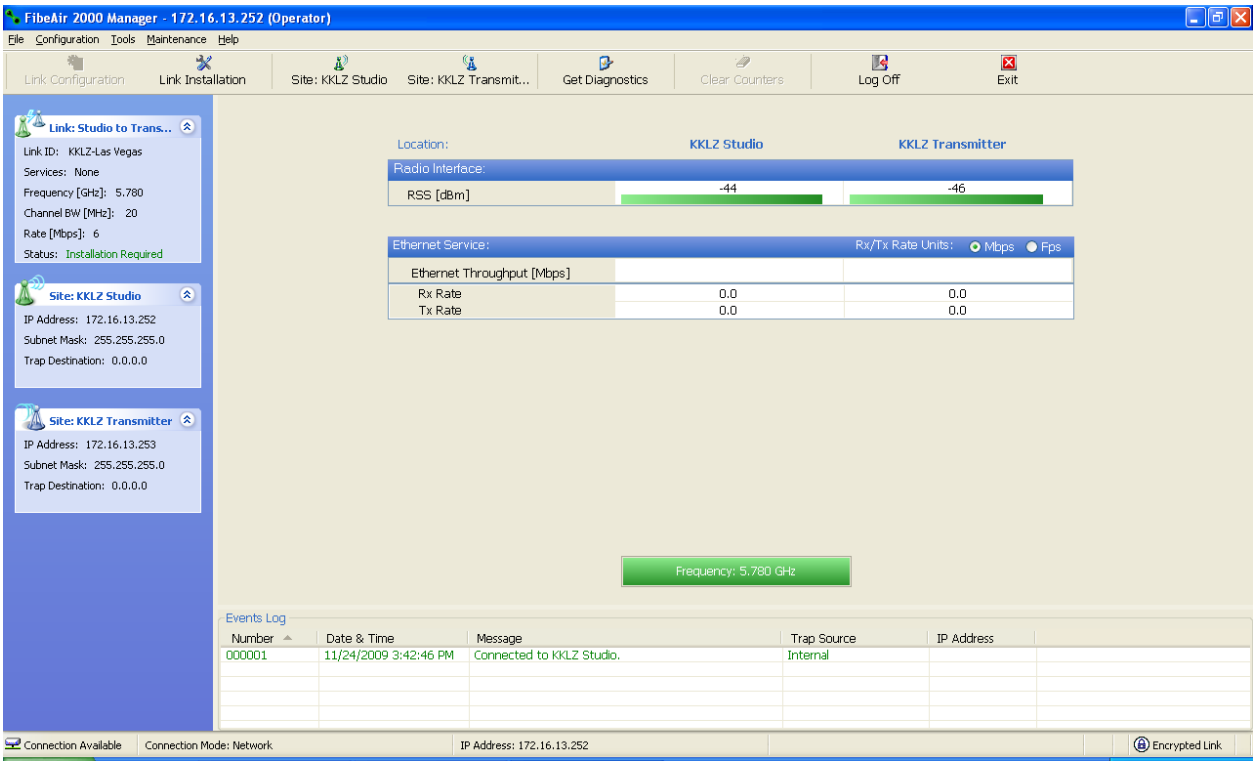


Figure 19 – FA2000 Radio Manager Main Menu

3.11 Fine Tuning Link Alignment by Peaking the RSS Levels

WARNING! DO NOT POSITION YOURSELF DIRECTLY IN FRONT OF A LIVE OUTDOOR RADIO UNIT OR ANTENNA!

Once the External Antennas (or ODUs with Internal Antennas) have been aligned using the buzzers, go through the same process to fine tune the alignment monitoring the RSS value at the PC connected to an IDU at one end of the link.

NOTE: The RSS level at each end of the link should be -60dBm or better (i.e. -50dBm is better) for a reliable link!

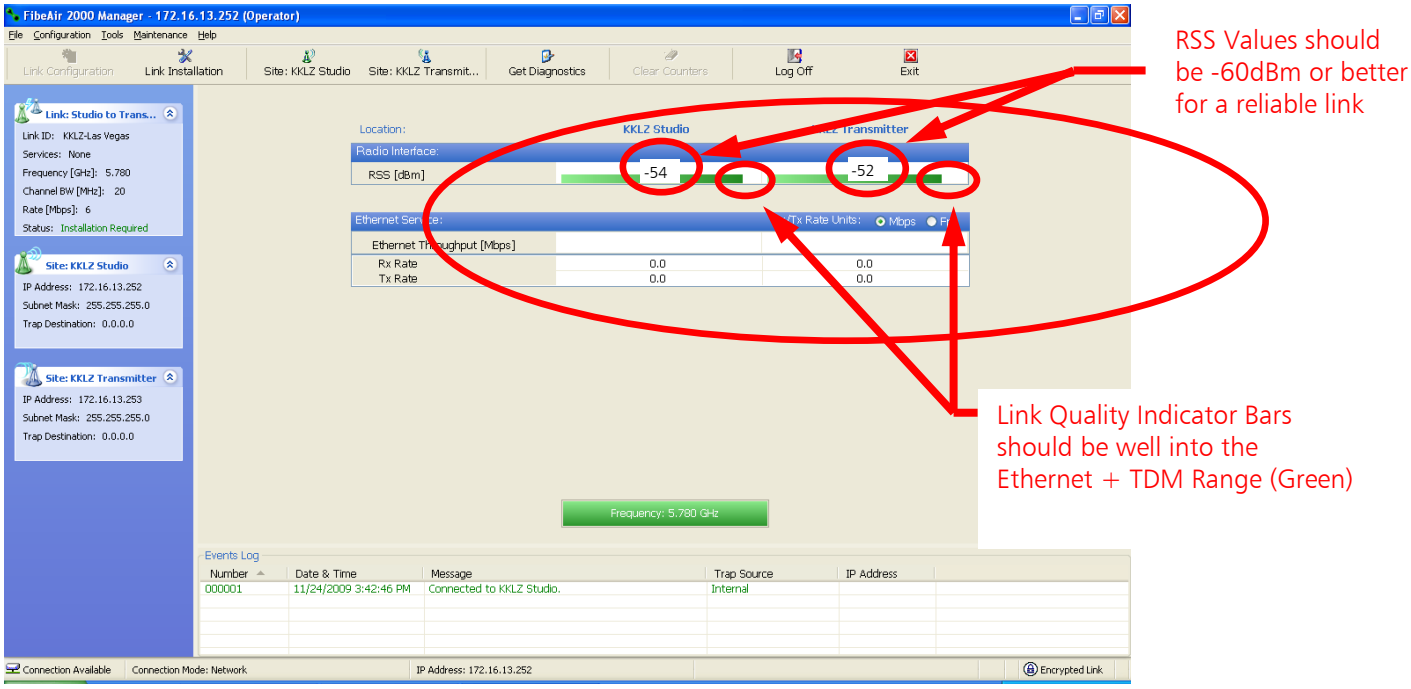


Figure 20 – Monitoring RSS Levels

STEP 1 – Adjust the External Antenna (or ODU with Internal Antenna) at one end of the link horizontally (side to side) until the RSS levels are peaked.

STEP 2 – Adjust the External Antenna (or ODU with Internal Antenna) at the same end of the link vertically (up and down) until the RSS levels are peaked.

STEP 3 – Adjust the External Antenna (or ODU with Internal Antenna) at the other end of the link vertically (up and down) until the RSS levels are peaked.

STEP 4 – Adjust the External Antenna (or ODU with Internal Antenna) at the same end of the link horizontally (side to side) until the RSS levels are peaked.

STEP 5 – Tighten all Antenna (or ODU) mounting hardware.

3.12 Installation of the Link in the FA2000 Radio Manager

After the External Antennas (or ODUs with Internal Antennas) have been aligned and peaked for the best RSS value possible, it is now necessary to "Install" the link using the FA2000 Radio Manager.

STEP 1 – From the FA2000 Radio Manager Main Menu, select **Link Installation**.

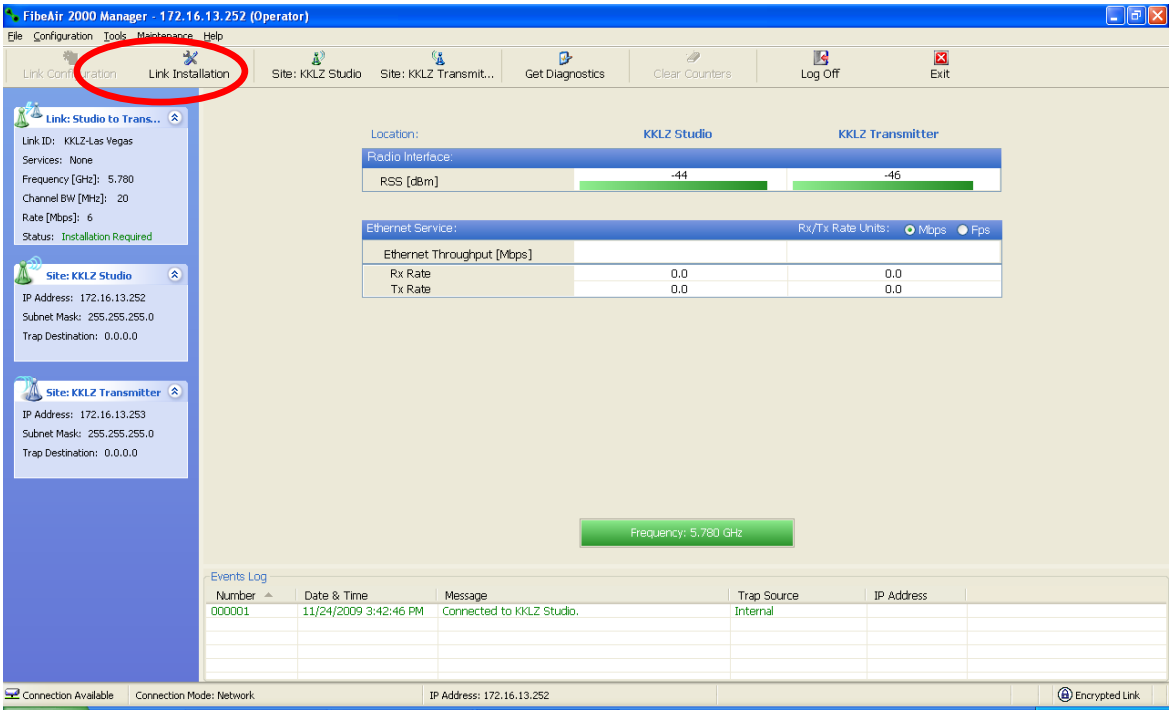


Figure 21 – FA2000 Radio Manager Main Menu

STEP 2 – Select **Next**.

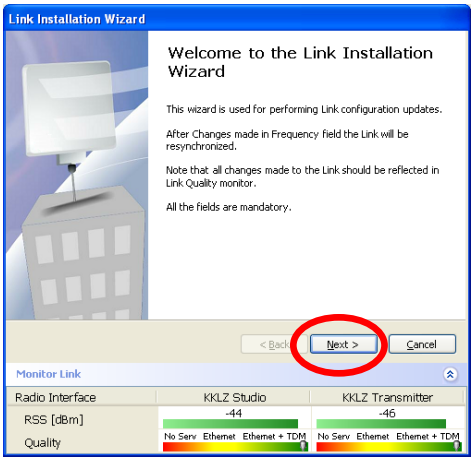


Figure 22 – Link Installation Wizard Menu #1

STEP 3 – Fill in the SSID with your call letters, Link Name, and Site 1 and Site 2 as shown below, and then select **Next**.

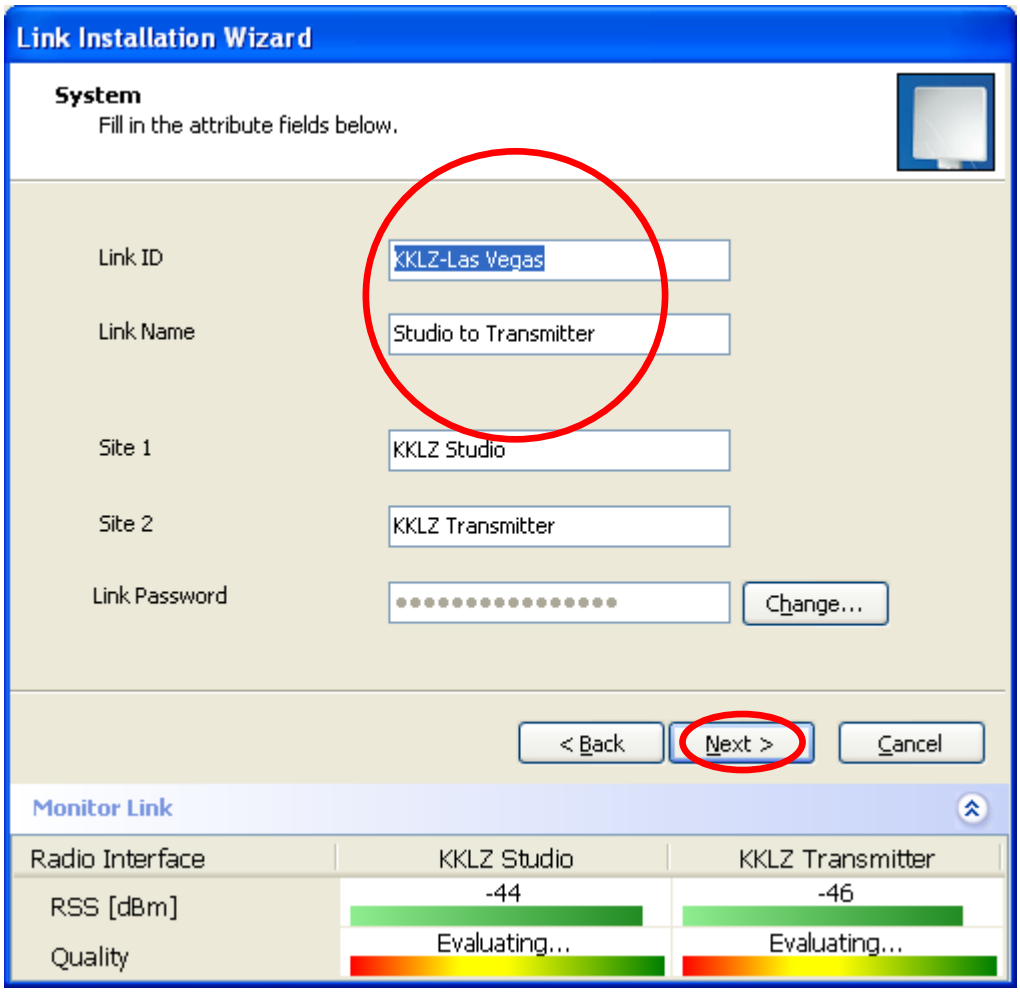


Figure 23 – Link Installation Wizard Menu #2

STEP 4 – The FA2000 Radio Manager will now evaluate the link. The system will evaluate the Link and automatically select the best Frequency.

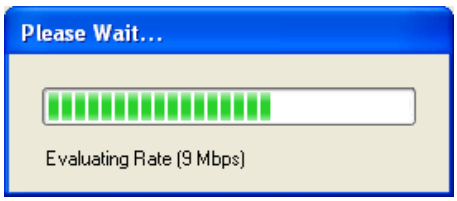


Figure 24 – Link Evaluation

STEP 5 – The Frequency Menu will now appear. If the **Automatic Channel Selection** box is checked as shown below, the system will select the "best" frequency from the "Available Channels List". If there are specific channels that you want to avoid for some reason, un-check them in the "Available Channels List" and select **Next**.

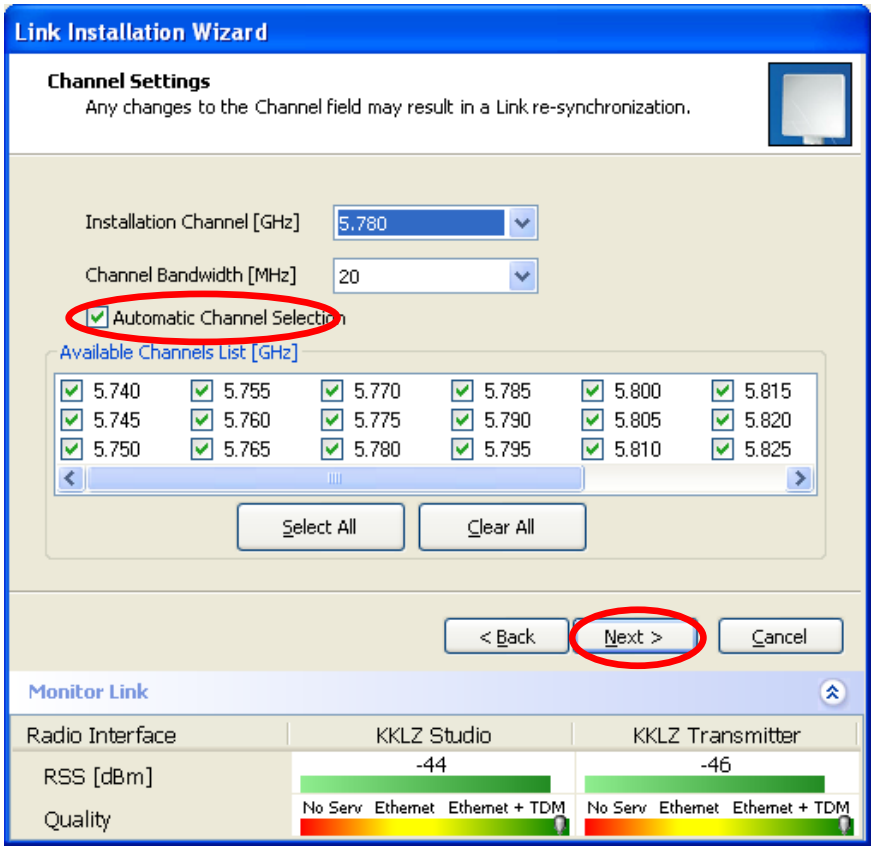


Figure 25 – Link Installation Wizard Menu #2

STEP 8 – For most installations select **Ethernet Only** from the list. If your system has been configured for additional T1 lines, select the appropriate setting (see the System Drawing from B.E.).

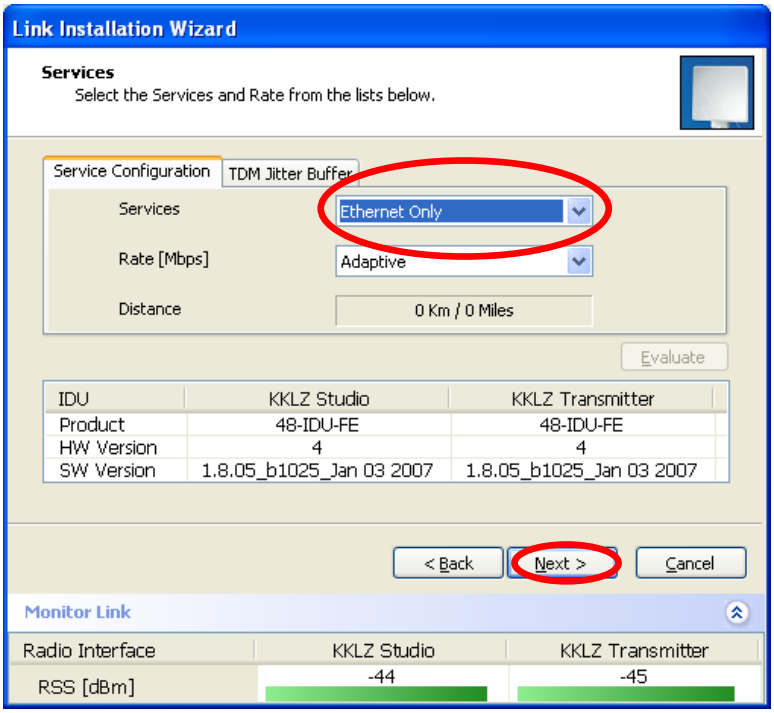


Figure 26 – Select Service Type

STEP 8a – If you select a T1 or E1 service type in Step 8, the following TDM Parameter Configuration screen will appear. Select the appropriate settings and select **Next**.

STEP 9 – The system will now evaluate the selected service type.

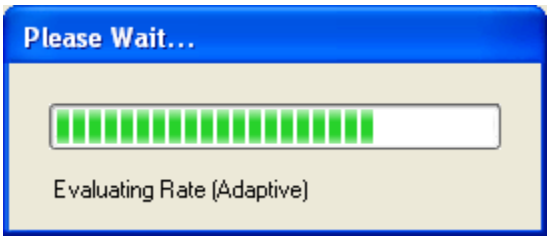


Figure 27 – Service Type Evaluation

STEP 10 – Select **DONE** to complete the Link Installation.

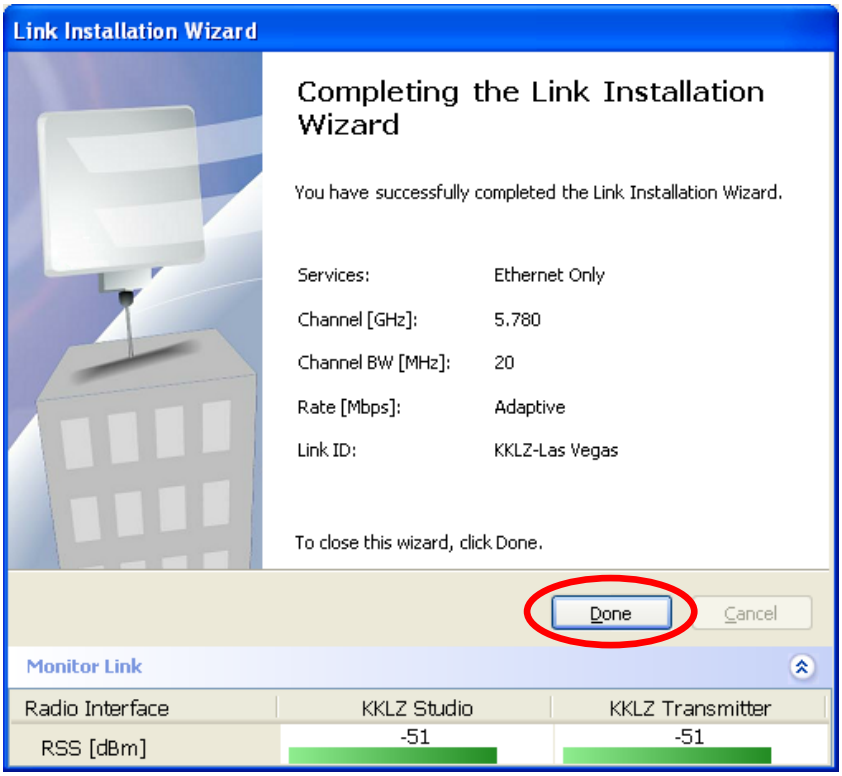


Figure 28 – Link Installation Complete

4 Install Ethernet Lightning Protection

Now that the link has been established, it is now necessary to install the Ethernet Lightning Protectors at each end of the link inside the Studio and Transmitter Site buildings.

STEP 1 – Power OFF the IDUs by unplugging them.

STEP 2 – Mount an Ethernet Lightning Protector at each end of the link in the Studio and Transmitter buildings near the equipment racks.

STEP 3 – Connect a chassis ground wire (supplied by customer)

STEP 4 – Cut the Ethernet Cable and install into the box as shown at each site. You may remove excess cable if desired to allow for a neatly dressed system.

STEP 5 – Power the both of the IDUs back ON.

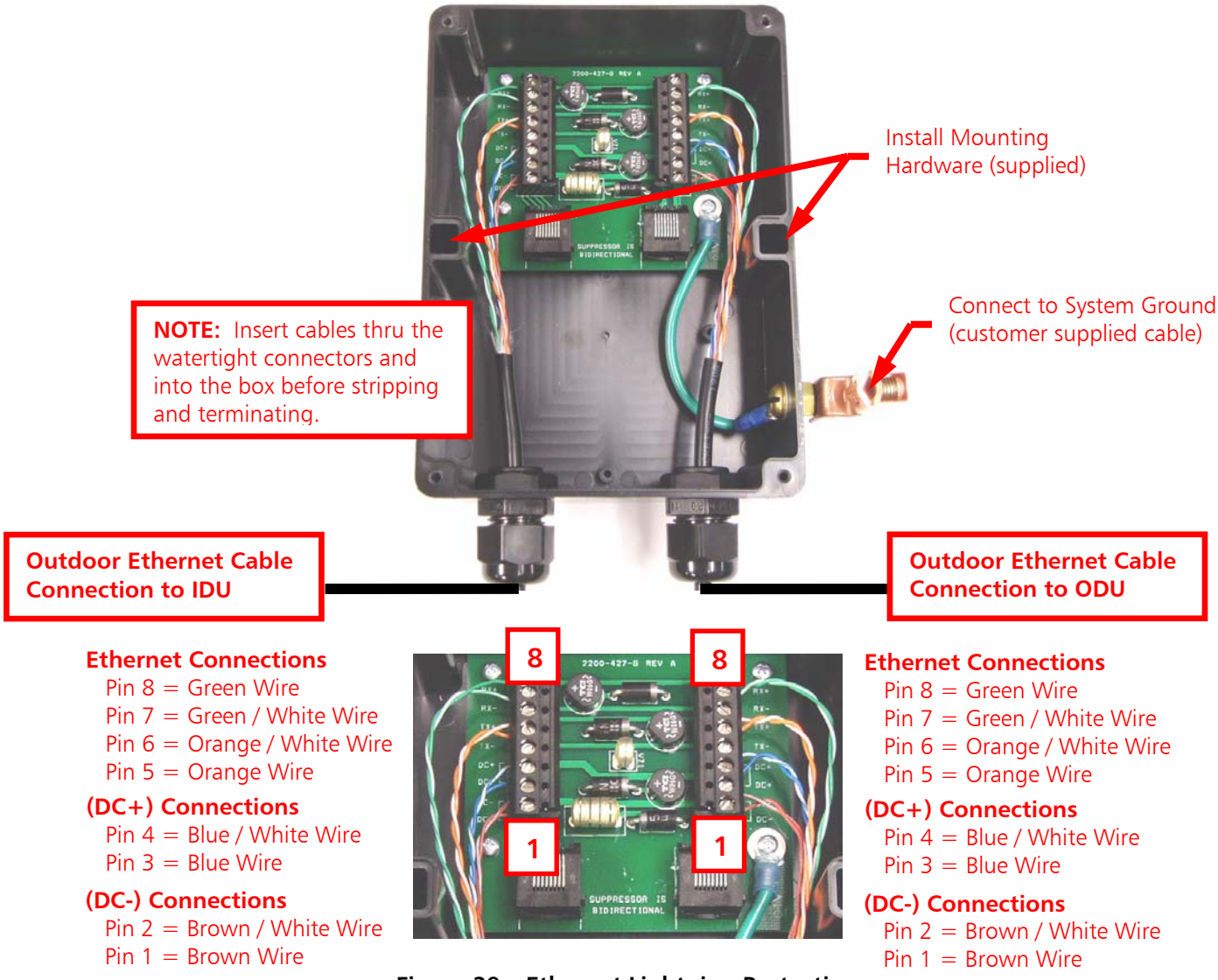


Figure 29 – Ethernet Lightning Protection

5 Studio Site BP100 Multiplexer to IDU Connections

Once the link has been established, you are now ready to connect a BP100 Multiplexer at each end of the link.

STEP 1 – Mount the BP100 Multiplexer into a 19" Equipment Rack at each end of the link.

STEP 2 – Connect AC Power to the Multiplexer ensuring that the Power Indicator on the front panel of the Multiplexer illuminates GREEN.

STEP 3 – Connect a Straight-Thru Ethernet cable (not supplied) from the Network port on the Multiplexer to the IDU LAN #1 port (if using a Rack-Mount IDU), or the LAN Port (if using a Table Top IDU).

STEP 4 – Connect an Audio Input to either DIGITAL AUDIO IN (for AES) **OR** ANALOG L & R (for Analog Audio), but NOT both!

STEP 5 – Connect to the Audio Outputs (if desired). Back Channel Audio is available on BOTH the DIGITAL AUDIO OUT (for AES) and ANALOG L & R (for Analog Audio) ports.

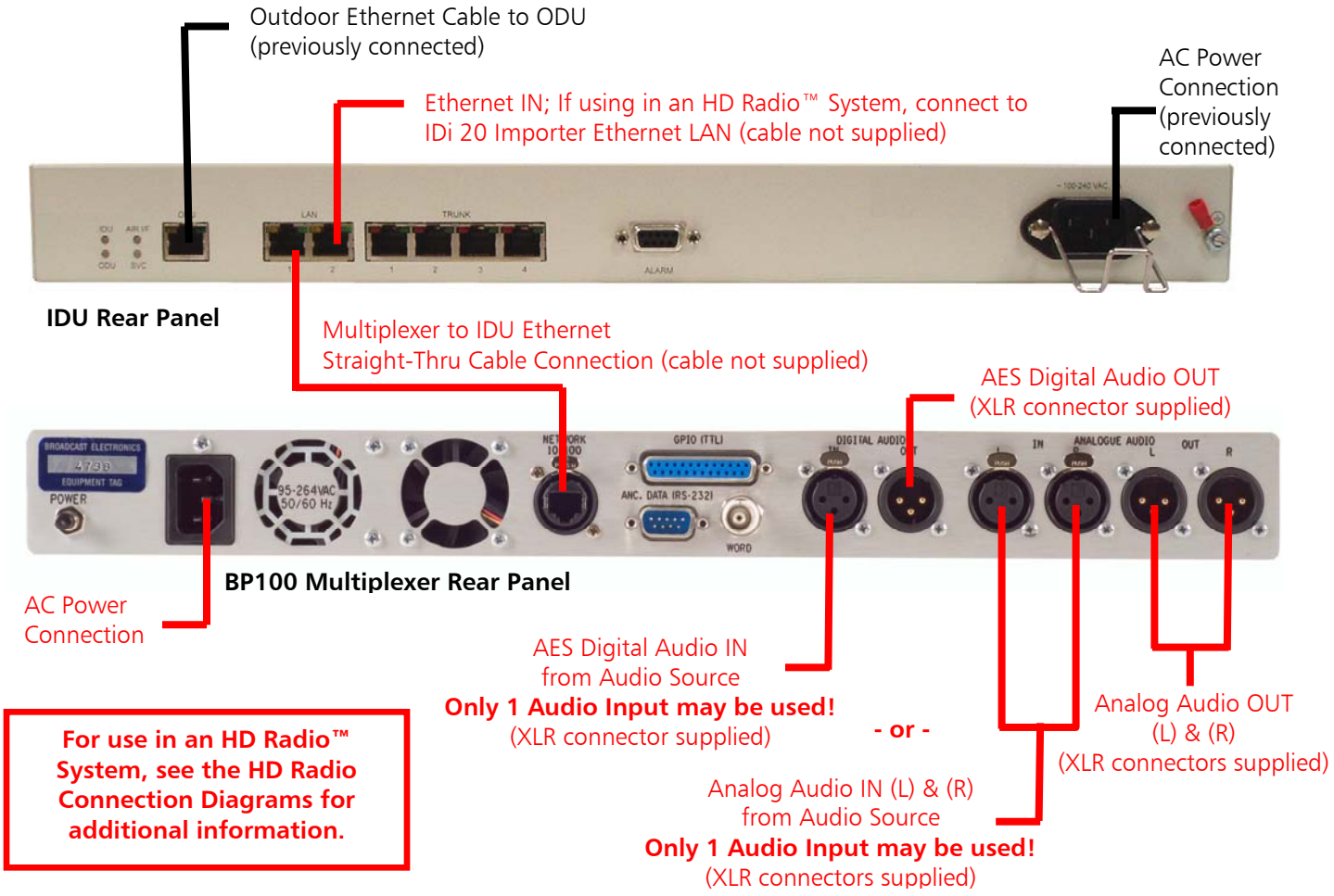


Figure 30 – Studio Site Multiplexer / IDU Connection

6 Transmitter Site BP100 Multiplexer to IDU Connections

Once the link has been established, you are now ready to connect a BP100 Multiplexer at each end of the link.

STEP 1 – Mount the BP100 Multiplexer into a 19" Equipment Rack at each end of the link.

STEP 2 – Connect AC Power to the Multiplexer ensuring that the Power Indicator on the front panel of the Multiplexer illuminates GREEN.

STEP 3 – Connect a Straight-Thru Ethernet cable (not supplied) from the Network port on the Multiplexer to the IDU LAN #1 port (if using a Rack-Mount IDU), or the LAN Port (if using a Table Top IDU).

STEP 4 – Connect to the Audio Outputs. Audio is available on BOTH the DIGITAL AUDIO OUT (for AES) and ANALOG L & R (for Analog Audio) ports.

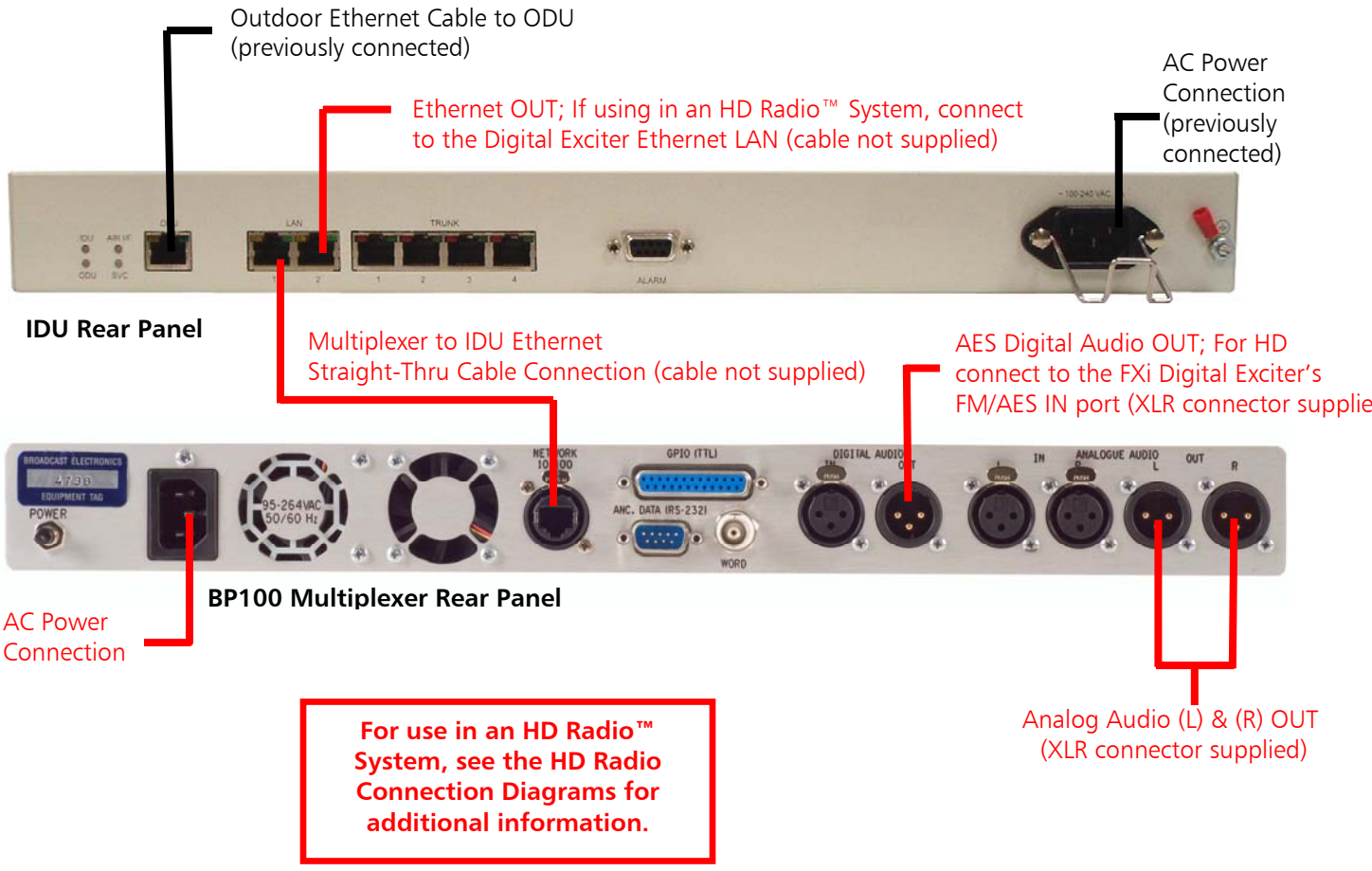


Figure 31 – Transmitter Site Multiplexer / IDU Connection

7 Additional BP100 Multiplexer Information

7.1 Big Pipe LT Multiplexer Front Panel Features

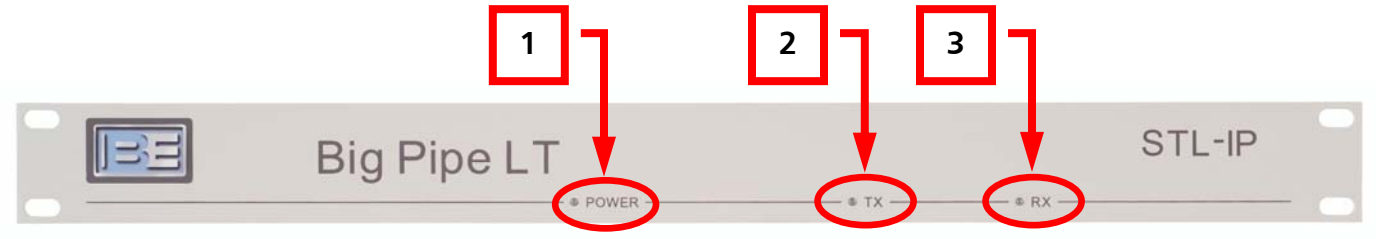


Figure 32 – Big Pipe LT Front Panel Features

1) **POWER** – will illuminate RED during system initialization; will illuminate GREEN when system is ready and the system status is OK.

2) **TX –** will illuminate RED when device is not transmitting (no connection or error); will illuminate GREEN when the device is transmitting OK.

3) **RX –** will illuminate RED when device is not receiving (no connection or error); will illuminate GREEN when the device is receiving OK (framed on incoming audio).

7.2 Big Pipe LT Multiplexer Rear Panel Features

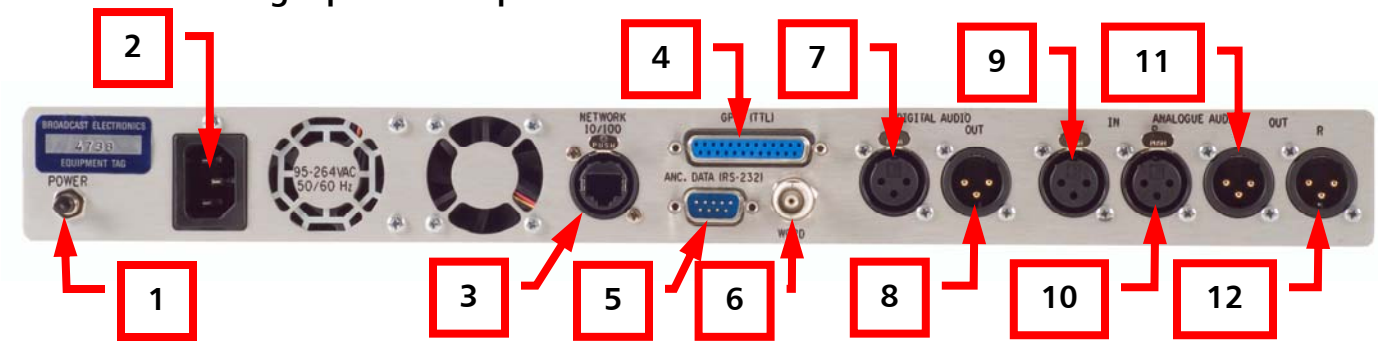


Figure 33 – Big Pipe LT Rear Panel Connections / Features

PLEASE NOTE: The BP100 Multiplexer may ONLY be configured with (1) Audio Input (AES IN is always the default Audio Input on the Studio Multiplexer) and (2) Audio Outputs (the Audio Output is the same on AES OUT and ANALOG OUT L and ANALOG OUT R).

1) **POWER RESET** – Power Reset Switch.
2) **AC LINE CORD** – AC Line Cord connection port (Note: Multiplexers are equipped with auto sensing power supplies for 95 - 264VAC operation).
3) **ETHERNET** – Connect to LAN port on IDU,
4) **GENERAL PURPOSE IN OUT (GPIO) PORT** – See Multiplexer GPIO section of this document.
5) **SERIAL** – RS-232 Serial Port; See Multiplexer RS-232 Serial Port section of this document.
6) **WORD CLOCK** – Word Clock BNC input.
7) **AES IN** – Digital Audio XLR input; mating XLR connector supplied.
8) **AES OUT** – Digital Audio Output; mating XLR connector supplied.
9) **ANALOG AUDIO IN** – Analog Audio XLR input; mating XLR connector supplied.
10) **ANALOG AUDIO IN** – Analog Audio XLR input; mating XLR connector supplied
11) **ANALOG AUDIO OUT (L)** – Analog Audio (L) XLR output; mating XLR connector supplied.
12) **ANALOG AUDIO OUT (R)** – Analog Audio (L) XLR output; mating XLR connector supplied.

7.3 Audio Cable Connections

Each Multiplexer is shipped with an Accessory Kit that contains XLR Connectors for Audio connections (AES Audio cable is NOT supplied).

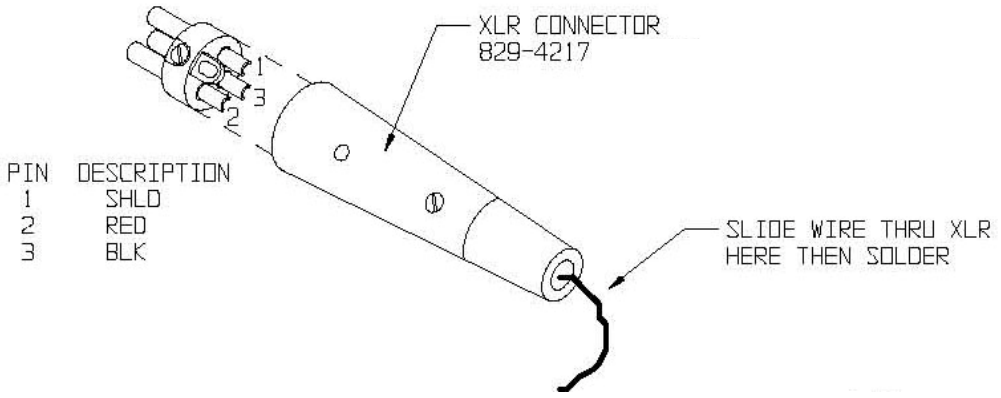


Figure 34 – Male XLR Connector Pinout

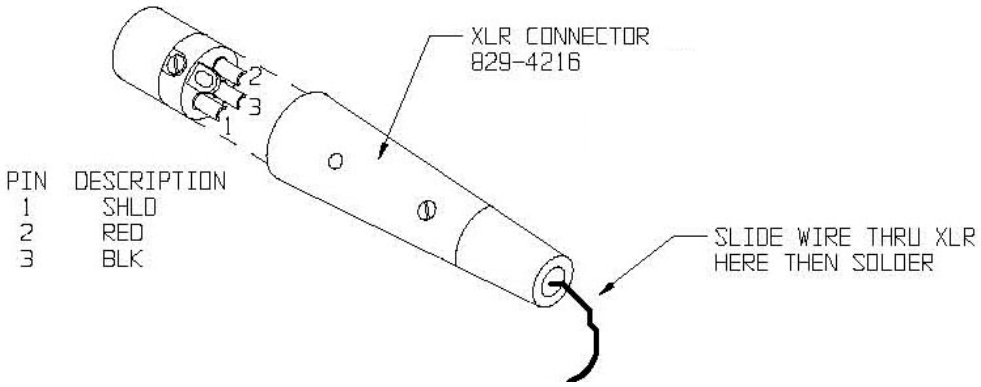


Figure 35 – Female XLR Connector Pinout

8 Multiplexer Automatic Startup

The Multiplexers are configured at the factory. As soon as the necessary connections are made, data will be processed and transmitted over the link.

8.1 Manually Starting the Multiplexers

If the Multiplexers DO NOT start automatically, use the following procedure to start them.

STEP 1 – Ensure that the IDUs and Multiplexers are all powered ON.

STEP 2 – Ensure that all connections are properly made.

STEP 3 – Connect a Cross Over Ethernet Cable from a PC to a LAN Port on one of the Multiplexers in your system.

STEP 4 – Ensure that your PC is on the same I.P. family as the Multiplexers (see section 3.9).

STEP 5 – Launch Internet Explorer, and type in the Multiplexer I.P. address 10.0.0.130 (if connected to the Studio Site Multiplexer) or 10.0.0.131 (if connected to the Transmitter Site Multiplexer).

Select **Connections** -> **Start**

Figure 36 – Manual Multiplexer Startup

STEP 6 – Disconnect the Cross Over Ethernet Cable from the Multiplexer and the PC.

9 Changing Multiplexer I.P. Addresses and Subnet Masks

Refer to the BP100 Audio Multiplexer User's Guide for information on changing the I.P. Address and Subnet Mask.

10 Multiplexer GPIO Port Connections

Refer to the BP100 Audio Multiplexer User's Guide for information on the "General Purpose In Out" connection port. Included in the shipment from B.E. is a 25 pin D-Sub Solder Cup connector and back shell for these connections (cable not supplied).

11 Multiplexer RS-232 Serial Port Connections

Refer to the BP100 Audio Multiplexer User's Guide for pin out information of the RS-232 Serial Port. Included in the shipment from B.E. is a 9 pin D-Sub Solder Cup connector and back shell for these connections (cable not supplied).

NOTE: The BP100 Audio Multiplexer is a "DTE" device. If connecting to another "DTE" device, a Null Modem Cable (not supplied) is required.

If connecting to a "DCE" device, a Straight-thru Cable (not supplied) is required.

This is true for both ends of the link.

12 Terms and Definitions

AAS	Advanced Application Services
AES/EBU	Audio Engineers Society/European Broadcast Union
AM	Amplitude Modulation
CRC	Cyclic Redunancy Code
DI	Decoder Identification Setting
DPS	Dynamic Program Service
EASU	Exciter Auxiliary Service Unit
EOC	Ensemble Operations Center
FM	Frequency modulation
GPIO	General Purpose In Out
IBOC	In-Band On-Channel
MF	Medium Frequency
MPA	Main Program Audio
MPS	Main Program Service
NVRAM	Non Volatile Random Access Memory
PS	Program Service
PAD	Program Associated Data
PTY	Program Type
PTYN	Program Type Name
PI	Program Identification
QoS	Quality of Service
SIS	Station Information Service
SPS	Supplemental Program Service
VHF	Very High Frequency
WAN	Wide Area Network
LAN	Local Area Network
CM	Connection Manager
LP	Logistics Processor
RDi	Broadcast Electronics' RDS Subcarrier Generator
RDS	Radio Data System (European Standard)
RBDS	Radio Broadcast Data System (U.S. Standard)
RSS	Received Signal Strength
IDi	Broadcast Electronics' brand name for an Importer
FSi	Broadcast Electronics' IBOC Signal Generator
FXi	Broadcast Electronics' Digital Exciter
XPi	Broadcast Electronics' Digital Exporter

Figure 37 - Terms and Definitions

13 RF Technical Services Contact Information

RF Technical Services -

Telephone: (217) 224-9617
E-Mail: rfservice@bdcast.com
Fax: (217) 224-6258

14 Typical HD Radio™ System Connection Diagram

The following HD Radio System Connection Diagram illustrates 2nd Generation HD Radio System Architecture and how the Big Pipe LT will connect into such a system.

Studio Site

Big Pipe LT STL

IDU

To ODU

IDU to ODU Ethernet (cable supplied by customer)

BP100
Multiplexer

Note: Spare XLR Connectors
Supplied with Multiplexer

IDU to ODU
Outdoor Ethernet Cable
(supplied by B.E.)

ODU / External
Antenna
Mounted on
Tower

Studio Site
Antenna Tower
(supplied by others)

STL May Be
Uni-Directional

AES/EBU
(cable typically
supplied with XPi)

Ethernet / HDC Audio
(cable supplied by customer)

XPi 10

Ethernet / HDC Audio
(cable supplied by customer)

* AES Splitter
809-0830

* **FM/HD Audio Processor**

Input (FM) Output 1 (HD) Output 2 Ext. Sync In

AES/EBU

NOTE:
Audio Processor MUST
be set-up for External Sync.

(AVMPS)

LAN
(If Used)

* Gigabit Ethernet
Switch

AES/EBU IN

(AVSPS)

IDi 20
(with ASI 5111 Card)

Ethernet

Keyboard Mouse Monitor

* *IDi 20*
GUI Screen

AES/EBU, Out 2

AES/EBU, Out 1

Word Clock In

LAN / Ethernet Feeds
(cables supplied by customer)

AudioVAULT
(with VX882-HR Card)

Ethernet

Keyboard Mouse Monitor

* **AudioVAULT**
GUI Screen

Transmitter Site

Big Pipe LT STL

ODU / External
Antenna
Mounted on
Tower

Transmitter Site
Antenna Tower
(supplied by others)

IDU to ODU
Outdoor Ethernet Cable
(supplied by B.E.)

IDU

IDU to ODU Ethernet (cable supplied by customer)

BP100
Multiplexer

Note: Spare XLR Connectors
Supplied with Multiplexer

Ethernet / HDC Audio
(cable supplied by customer)

AES/EBU
(cable typically
supplied with FXi)

FXi 60/250
With Exgine Card

RF Output

* FM+HD or HD Only
To Linear Transmitter

NOTE: Use Category 6 cables and Gigabit Ethernet Switch for all studio & transmitter site Ethernet / HDC Audio connections shown in this configuration.

- Cable Legend -

- Supplied with Big Pipe LT STL System
- Supplied in XPi 10 Exporter Installation Kit (979-0544-100)
- Supplied in FXi 60/250 Exciter Installation Kit (979-0600-100)
- Ethernet Cables, Switches, and HUBs to be Supplied by the Customer
- Supplied by B.E. with the IDi 20 Data Importer and/or the Audio Vault

Broadcast Electronics, Inc.

Big Pipe LT STL used in a typical HD Radio™ System with Audio Processing and the XPi 10 Exporter located at the Studio Site

Figure 46

* : Equipment may not be manufactured by Broadcast Electronics, Inc.