

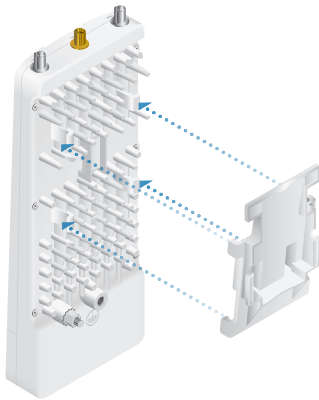
Mount to a RocketDish Antenna

This section applies only to the airFiber AF-4X and AF-5X radios.

Note: If you are mounting the AF-4X or AF-5X on a RocketDish equipped with the AF-5G-OMT-S45 Conversion Kit, the *Universal Bracket* is not needed. Refer instead to the *Mount to an airFiber X Antenna* section for instructions.

The RocketDish RD-5G30 antenna is shown in this section:

1. Position the *Universal Bracket* over the back of the airFiber radio with the bracket clips over the radio mounting tabs.
2. Push the bracket onto the airFiber radio until it locks in place.



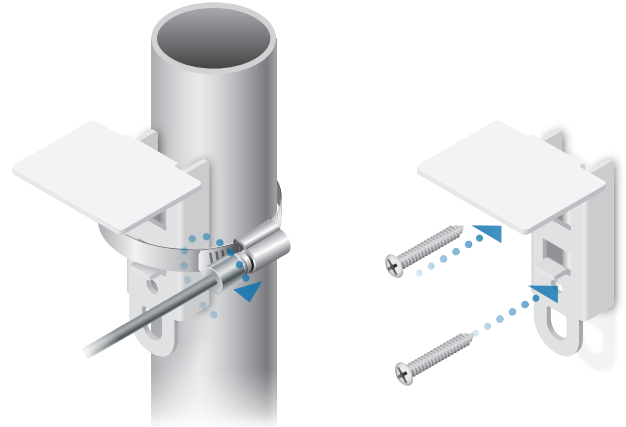
3. Attach the airFiber radio to the RocketDish mounting bracket.
 - a. Align the mounting tabs on the Universal Bracket with the RocketDish mounting bracket.
 - b. Slide the airFiber radio down to lock it into place.



Mount the External GPS Antenna

Locate a mounting point that has a clear view to the sky, and is above and as far away as possible from the airFiber X radio.

1. Attach the *GPS Antenna Mount* to the pole using the metal strap, or attach it to a wall using the appropriate fasteners (not included).



2. Place the *External GPS Antenna* on the mount.

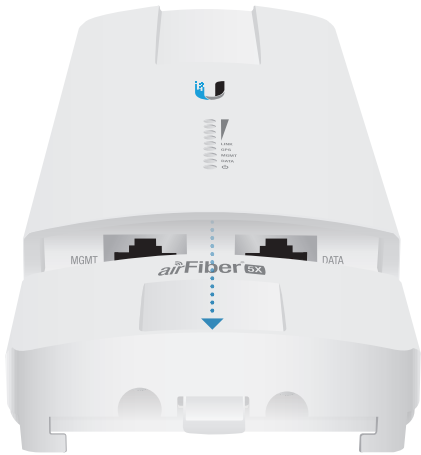


3. Secure the cable of the *External GPS Antenna* to the mount with a *Cable Tie*.



Connecting Power over Ethernet

1. Lift the release latch on the bottom of the airFiber X radio and slide the *Port Cover* off.



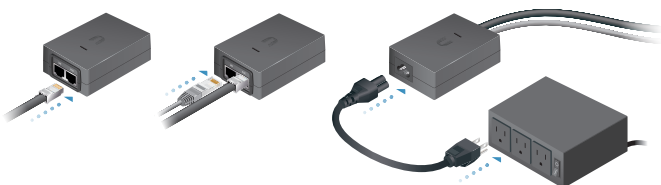
2. Connect an outdoor, shielded Ethernet cable to the *DATA* port.



3. Connect the other end of the cable from the *DATA* port to the Ethernet port labeled **POE** on the *airFiber PoE Adapter*.

! WARNING: Use only the included *airFiber PoE Adapter*, Model: **GP-H240-100G-4**. Failure to do so can damage the unit and void the product warranty.

4. Connect an Ethernet cable from your LAN to the adapter's **LAN** port.
5. Connect the *Power Cord* to the adapter's power port. Connect the other end of the *Power Cord* to a power outlet.



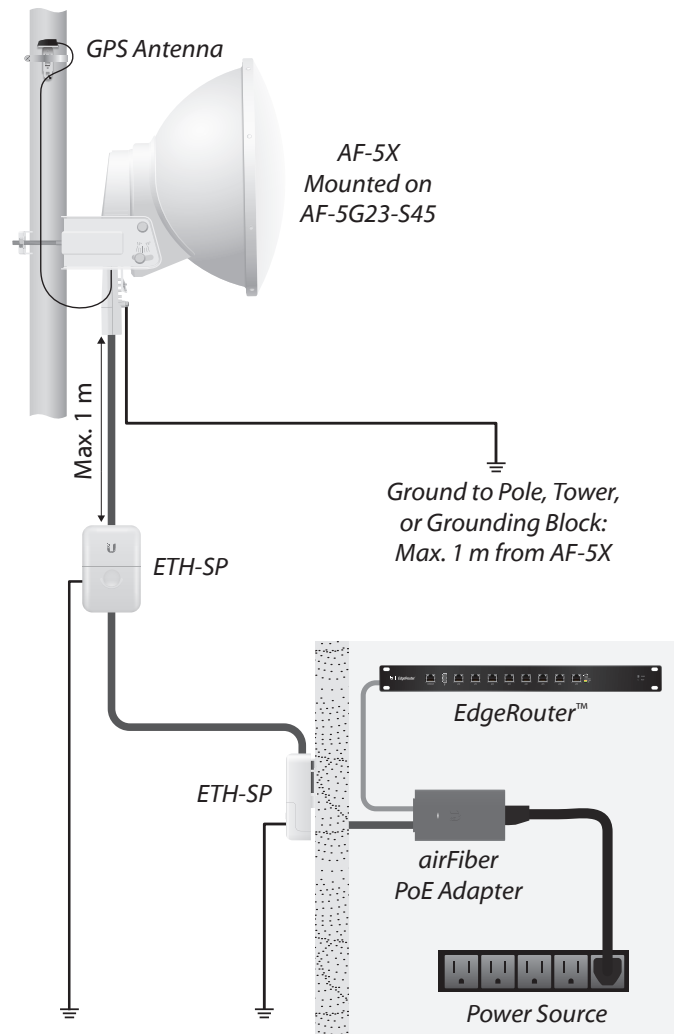
Mount the PoE Adapter (Optional)

1. Remove the *Mounting Bracket* from the adapter, place the bracket at the desired location, and mark the two holes.
2. Pre-drill the holes if necessary, and secure the bracket using two fasteners (not included).
3. Align the adapter's slots with the tabs of the *Mounting Bracket*, and then slide the adapter down.



Surge Protection


For added protection, install two surge suppressors, such as the Ubiquiti Ethernet Surge Protector, model ETH-SP, at the end of each link. Install the first surge protector within one meter of the airFiber *DATA* port, and install the second surge protector at the ingress point of the location housing the wired network equipment.



Alignment



Tips

- To accurately align the airFiber X radios for best performance, you **MUST** align only one end of the link at a time.
- You may need to use additional hardware to compensate for issues such as the improper orientation of a mounting pole or significant elevation differences between airFiber X radios.

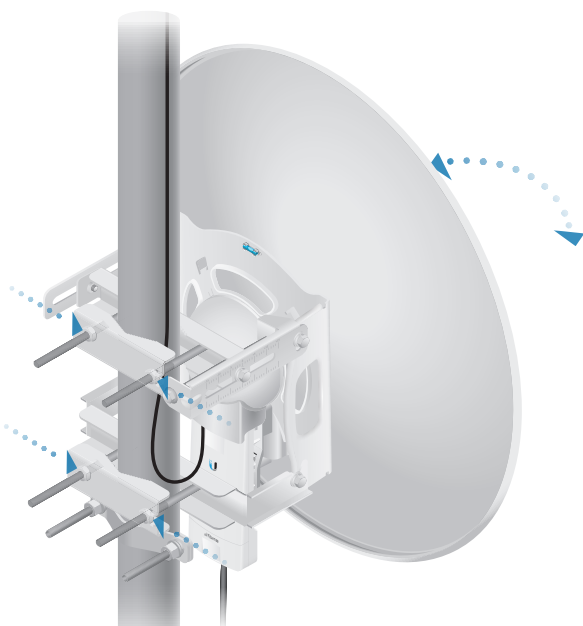
 **Note:** If you have AF-5X radios mounted in an airFiber Multiplexer (AF-MPx4 or AF-MPx8), perform the procedure in **“Establishing a Link” on page 9** on one radio only. This will help ensure maximum success in registrations. Refer to **“AF-5X and airFiber Multiplexer” on page 45** for additional information on airFiber Multiplexer installation.

Establishing a Link

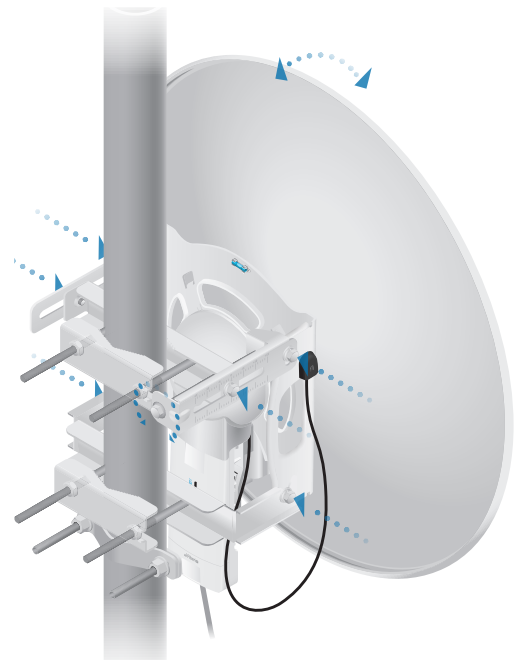
Adjust the positions of the *Master* and the *Slave* to establish a link.


-  **Note:** The *Master* must be aimed first at the *Slave* because the *Slave* does not transmit any RF signal until it detects transmissions from the *Master*.
-  **Note:** The airFiber X antenna AF-5G30-S45 is shown in the following steps. Instructions for other antennas are similar. For complete details, refer to the Quick Start Guide for your specific model.

1. **Master** Visually aim the *Master* at the *Slave*. To adjust the *Master's* position:
 - a. Loosen the four pole clamp nuts, and rotate the airFiber antenna on the pole to align the azimuth.



- b. Loosen the six elevation bolts, and use the hex nut on the elevation rod to adjust the elevation.




 **Note:** Do NOT make simultaneous adjustments on the *Master* and *Slave*.

2. **Slave** Visually aim the *Slave* at the *Master*. To adjust the *Slave's* position:
 - a. Loosen the four pole clamp nuts, and rotate the airFiber antenna on the pole to align the azimuth.
 - b. Loosen the six elevation bolts, and use the hex nut on the elevation rod to adjust the elevation.
3. Check to see if a link is established. Ensure that the *LINK* LED is solidly lit green and the *Signal* LEDs of the *Slave* are displaying signal levels.



4. **Slave** Aim the *Slave* at the *Master* to achieve the strongest signal level on the *Master*.

 **Note:** Refer to **“Signal LEDs” on page 2** for details on the signal values.

 **Note:** Maximum signal strength can best be achieved by iteratively sweeping through both azimuth and elevation.

5. **Master** Aim the *Master* at the *Slave* to achieve the strongest signal level on the *Slave*.

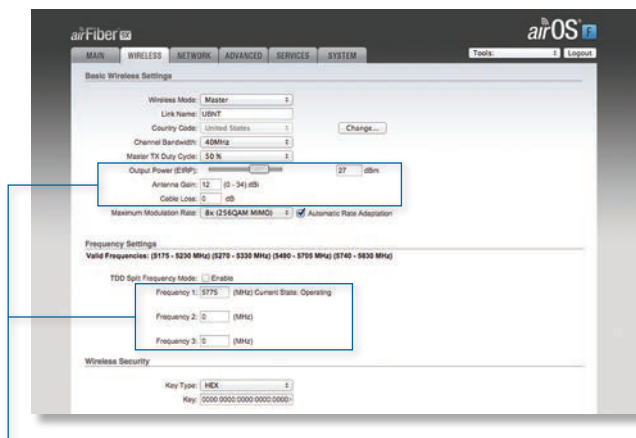
6. Repeat steps 4 and 5 until you achieve an optimal link, with all four *Signal* LEDs solidly lit. This ensures the best possible data rate between the airFiber X radios.
7. Lock the alignment on both airFiber antennas by tightening all the nuts and bolts.
8. Observe the *Signal* LEDs of each airFiber X radio to ensure that the values remain constant while tightening the nuts and bolts. If any LED value changes during the locking process, loosen the nuts and bolts, finalize the alignment of each airFiber antenna again, and retighten the nuts and bolts.

Refer to the following chapters of this User Guide for details on the airFiber Configuration Interface:

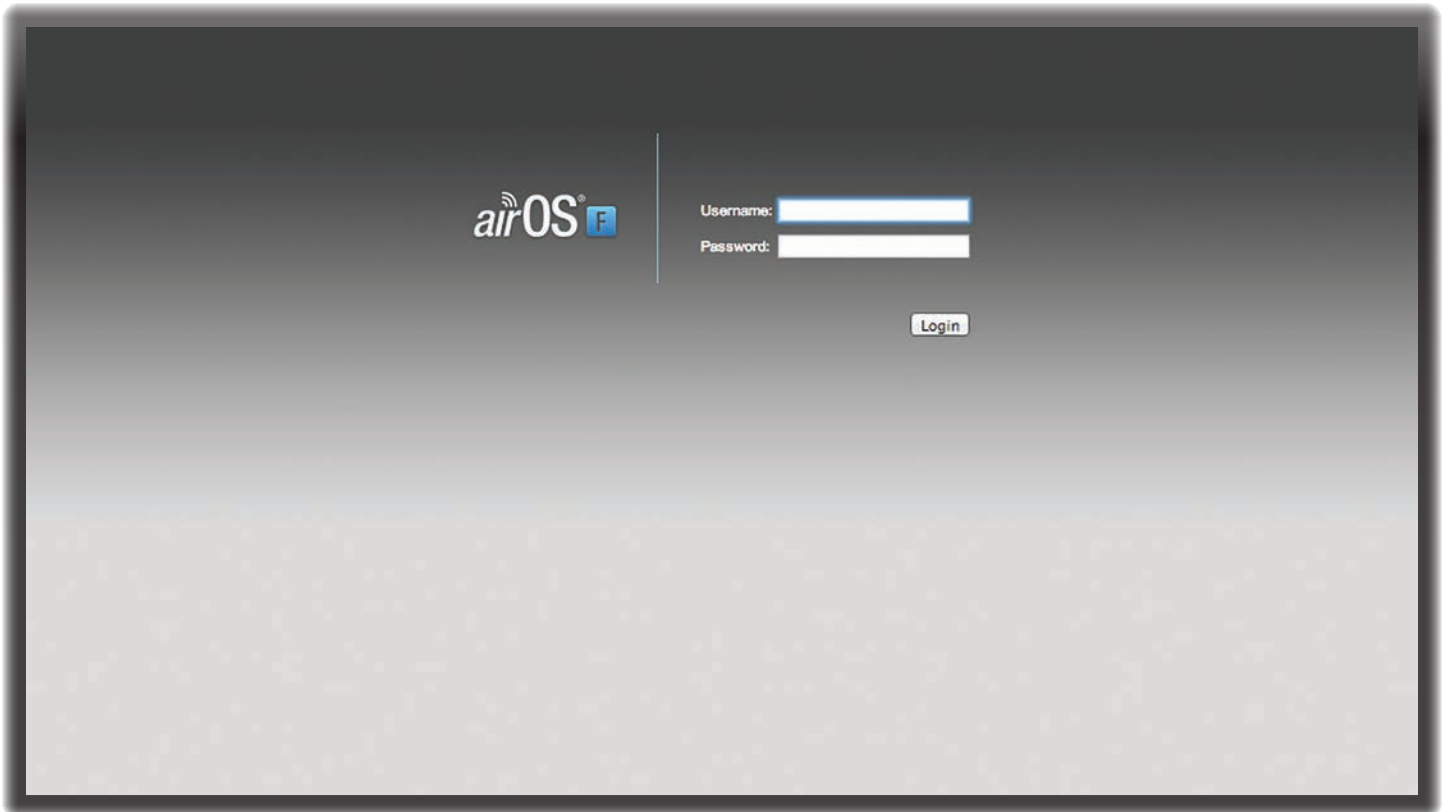
- **“Main Tab” on page 13**
- **“Wireless Tab” on page 17**
- **“Network Tab” on page 21**
- **“Advanced Tab” on page 23**
- **“Services Tab” on page 27**
- **“System Tab” on page 31**
- **“Tools” on page 35**

Installer Compliance Responsibility

Devices must be professionally installed and it is the professional installer’s responsibility to make sure the device is operated within local country regulatory requirements.



The *Output Power*, *Antenna Gain*, *Cable Loss*, and *Frequency* fields are provided to the professional installer to assist in meeting regulatory requirements.



Chapter 3: Navigation

The airFiber Configuration Interface is an advanced operating system capable of powerful wireless and routing features, built upon a simple and intuitive user interface foundation.

The airFiber X radio uses the airFiber Configuration Interface for easy configuration and management via a web browser.

There are two ways to access the airFiber Configuration Interface:

- **Management Port** Enabled by default. Use a direct connection to the *Management* port for out-of-band management.
- **In-Band Management** Enabled by default. In-band management is available through the local *Data* port or the *Data* port at the other end of the link. You can disable it on the *Network* tab. (See **“Management Network Settings”** on page 21 for more details.)

Accessing the airFiber Configuration Interface

Connect to the airFiber Configuration Interface.

1. Make sure that your host machine is connected to the LAN that is connected to the *Management* port on the airFiber X radio.
2. Configure the Ethernet adapter on your host system with a static IP address on the 192.168.1.x subnet (for example, 192.168.1.100).

3. Launch your web browser. Type **http://192.168.1.20** in the address field and press **enter** (PC) or **return** (Mac).



4. Upon initial login, the *Terms of Use* appear on the login screen. Enter **ubnt** in the *Username* and *Password* fields, and select the appropriate choices from the *Country* and *Language* drop-down lists. Check the box next to *I agree to these terms of use*, and click **Login**.



Note: U.S. product versions are locked to the U.S. Country Code to ensure compliance with FCC regulations.

5. The airFiber Configuration Interface will appear, allowing you to customize your settings as needed.

Product Verification


The airFiber Configuration Interface will verify whether a product is genuine or counterfeit.

For a genuine airFiber X radio, the airFiber Configuration Interface will display a Genuine Product logo in the lower left corner of the screen.



For any product that is not an official Ubiquiti product, the airFiber Configuration Interface will display a counterfeit warning. Please contact Ubiquiti at support@ubnt.com regarding this product.



 **Note:** For product models introduced prior to 2012, the airFiber Configuration Interface will NOT display any logo in the lower left corner of the screen.

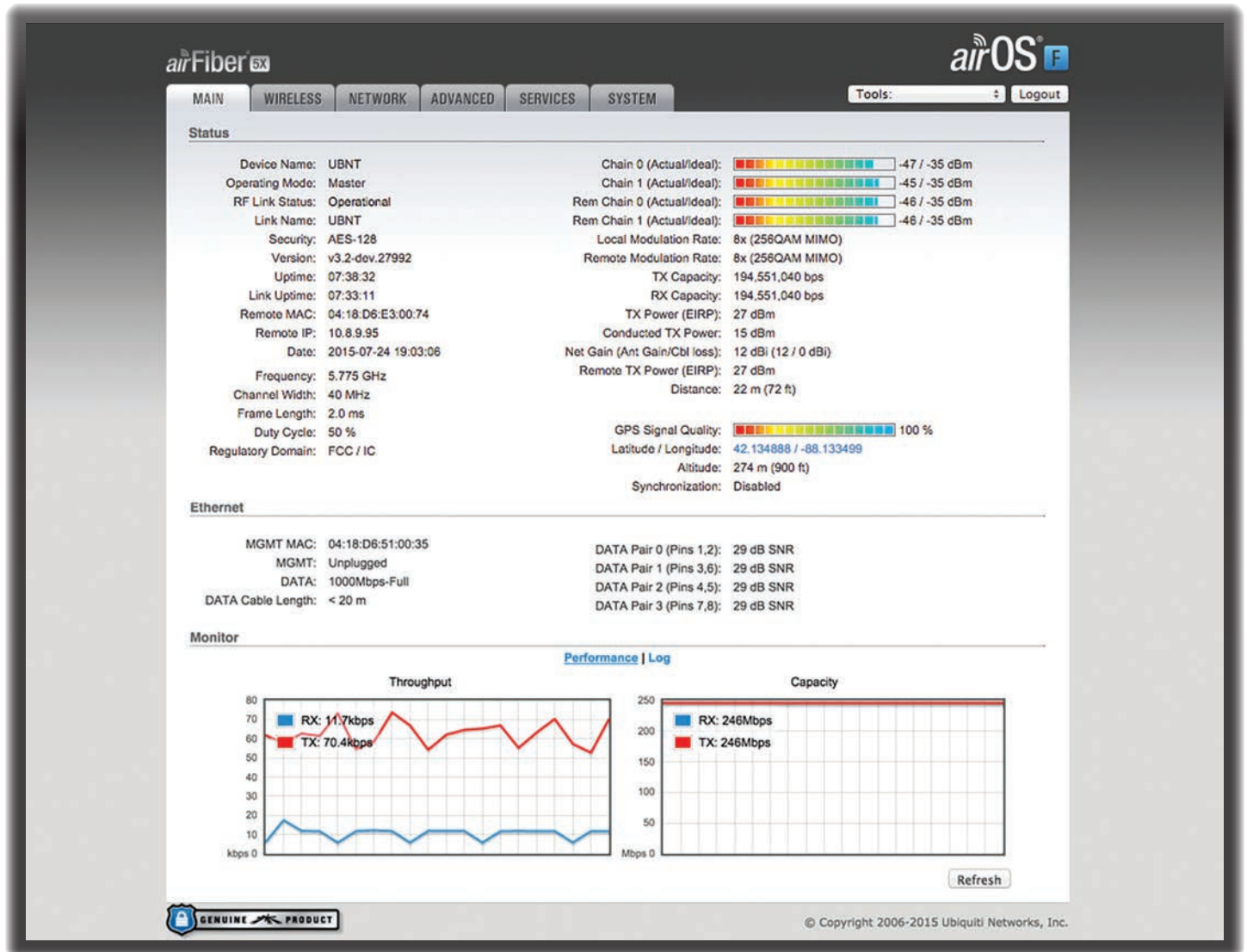
Interface Tabs

The airFiber Configuration Interface contains six main tabs, each of which provides a web-based management page to configure a specific aspect of the airFiber X radio. This User Guide covers each tab with a chapter. For details on a specific tab, refer to the appropriate chapter.

- **Main** The **“Main Tab” on page 13** displays device status, statistics, and network monitoring links.
- **Wireless** The **“Wireless Tab” on page 17** configures basic wireless settings, including the wireless mode, link name, frequency, output power, speed, and wireless security.
- **Network** The **“Network Tab” on page 21** configures the management network settings, Internet Protocol (IP) settings, management VLAN, and automatic IP aliasing.
- **Advanced** The **“Advanced Tab” on page 23** provides more precise wireless interface controls, including advanced wireless settings and advanced Ethernet settings.
- **Services** The **“Services Tab” on page 27** configures system management services: Ping Watchdog, Simple Network Management Protocol (SNMP), servers (web, SSH, telnet), Network Time Protocol (NTP) client, Dynamic Domain Name System (DDNS) client, system log, and device discovery.
- **System** The **“System Tab” on page 31** controls system maintenance routines, administrator account management, location management, device customization, firmware update, and configuration backup. You can also change the language of the web management interface.

Each page also contains network administration and monitoring tools:

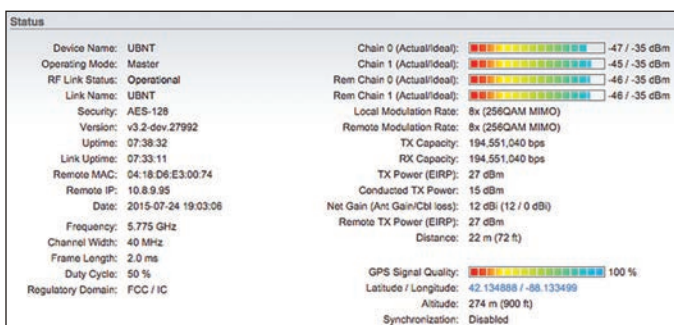
- **“Align Antenna” on page 35**
- **“Discovery” on page 36**
- **“Ping” on page 36**
- **“Traceroute” on page 36**
- **“airView” on page 36**



Chapter 4: Main Tab

The *Main* tab displays a summary of the link status information, current values of the basic configuration settings, network settings and information, and traffic statistics.

Status



Device Name Displays the customizable name or identifier of the device. The Device Name (also known as host name) is displayed in registration screens and discovery tools.

Operating Mode Displays the mode of the airFiber X radio: *Slave*, *Master*, or *Reset*.

RF Link Status Displays the status of the airFiber X radio: *RF Off*, *Syncing*, *Beaconing*, *Registering*, *Enabling*, *Listening*, *Operational*, *DFS CAC*, or *RADAR Detected*.

Note: Most of the RF Link Statuses map to specific flash rates of the *Link Status* LED (See **“LEDs” on page 2** for more details.)

Status	Flash Rate of LED
RF Off	Off
Syncing	Short Flash (1:3 on/off cycle)
DFS countries only:	
• DFS CAC • RADAR Detected	
Beaconing	Normal Flash (1:1 on/off cycle)
Registering	Long Flash (3:1 on/off cycle)
Operational	On

The following applies to the AF-5X only:

When the AF-5X operates in a DFS country and within a valid DFS band for that country, it performs a Channel Availability Check (CAC) before operating. The rules vary by country and frequency, but in general:

- **FCC domains** If the AF-5X operates in a DFS band (5.2 GHz or 5.4 GHz band), the AF-5X performs a 60-second check on the *Master* only.
- **ETSI domains** For most frequencies, the AF-5X performs a 60-second check on the *Master* and *Slave*; however, if it operates in the 5600-5650 MHz range, then the AF-5X performs a 10-minute check.

While the AF-5X is performing this check, the *RF Link Status* displays *DFS CAC*, and the *RF Link Timeout* is displayed.

If radar is detected, the *RF Link Status* displays *RADAR Detected*, and the *RF Link Timeout* is displayed.

RF Link Timeout (Available only if the *RF Link Status* is *DFS CAC* or *RADAR Detected*.) During the *DFS CAC* or *RADAR Detected* state, the *RF Link Timeout* counts down the time remaining before the airFiber X radio can move to the next RF link state.

Link Name Displays the name of your link.

Security AES-128 is enabled at all times.

Version Displays the airFiber Configuration Interface software version.

Uptime This is the total time the device has been running since the latest reboot (when the device was powered up) or software upgrade. The time is displayed in days, hours, minutes, and seconds.

Link Uptime This is the total time the airFiber link has been continuously operational. The time is displayed in days, hours, minutes, and seconds.

Remote MAC Displays the Management Ethernet MAC address of the remote airFiber X radio.

Remote IP Displays the Management Ethernet IP address of the remote airFiber X radio.

Date Displays the current system date and time. The date and time are displayed in YEAR-MONTH-DAY HOURS:MINUTES:SECONDS format. The system date and time is retrieved from the Internet using NTP (Network Time Protocol). The NTP Client is enabled by default on the *Services* tab. The airFiber X radio doesn't have an internal clock, and the date and time may be inaccurate if the NTP Client is disabled or the device isn't connected to the Internet.

Frequency (Available if split frequencies are not enabled.) Displays the current frequency. The airFiber X radio uses the radio frequency specified to transmit and receive data.

TX Frequency (Available if split frequencies are enabled.) Displays the frequency that the airFiber X radio uses to transmit data.

RX Frequency (Available if split frequencies are enabled.) Displays the frequency that the airFiber X radio uses to receive data.

Channel Width Size of the channel in MHz.

Frame Length Displays the currently configured frame length of the radio: *2.0ms*, *2.5ms*, *4.0ms*, or *5ms*. Longer frame lengths result in higher throughput for a given configuration, but also result in slightly higher latency.

Duty Cycle Displays the duty cycle.

Regulatory Domain Displays the regulatory domain (*FCC/IC*, *ETSI*, or *Other*), as determined by country selection.

Chain 0/1 (Actual/Ideal) Displays the actual and ideal power levels (in dBm) of the received signal for each chain.

The actual number indicates the current RX signal strength. The ideal number is the RX signal strength of a perfectly aligned link. These two numbers indicate exactly how many dB out of alignment the system is.

When the link is aimed correctly, the bar graphs are full-scale. If the bar graphs are not full-scale, they indicate that your link is not optimally aimed.

Rem Chain 0/1 (Actual/Ideal) Displays the actual and ideal power levels (in dBm) of the received signal for each chain of the remote airFiber X radio. The bar graphs will display as full-scale once the link is aimed correctly.

Local Modulation Rate Displays the modulation rate:

- 8x (256QAM MIMO)
- 6x (64QAM MIMO)
- 4x (16QAM MIMO)
- 2x (QPSK MIMO)
- 1x (½ Rate QPSK xRTTM*)
- ¼x (¼ Rate QPSK xRT)

*xtreme Range Technology

If *Automatic Rate Adaptation* is enabled on the *Wireless* tab, then *Local Modulation Rate* displays the current speed in use and depends on the *Maximum Modulation Rate* specified on the *Wireless* tab and current link conditions.

Remote Modulation Rate Displays the modulation rate of the remote airFiber X radio:

- 8x (256QAM MIMO)
- 6x (64QAM MIMO)
- 4x (16QAM MIMO)
- 2x (QPSK MIMO)
- 1x (½ Rate QPSK xRT)
- ¼x (¼ Rate QPSK xRT)

TX Capacity Displays the potential TX throughput, how much the airFiber X radio can send, after accounting for the modulation and error rates.