



Figure 4–34 *Hammering Guy Line Stakes*

- 11** Attach a radio to the electronics carrier.
- 12** Uncoil an Ethernet cable, attach one end to a radio unit and the other end to the PoE. Form a service loop (extra cable) by looping the Ethernet cable over the top of the radio unit. If you are installing two radios on the mast, refer to *“Installing Two Radios on the Mast”* on page 69 for cabling and configuration instructions.
- 13** Ensure that all directional antennas, when raised, are pointed correctly. The radio unit should be facing toward the recording truck.
- 14** Thread guy lines through the guy line collar on the electronics carrier and thread through cleats on the bottom mast tube.

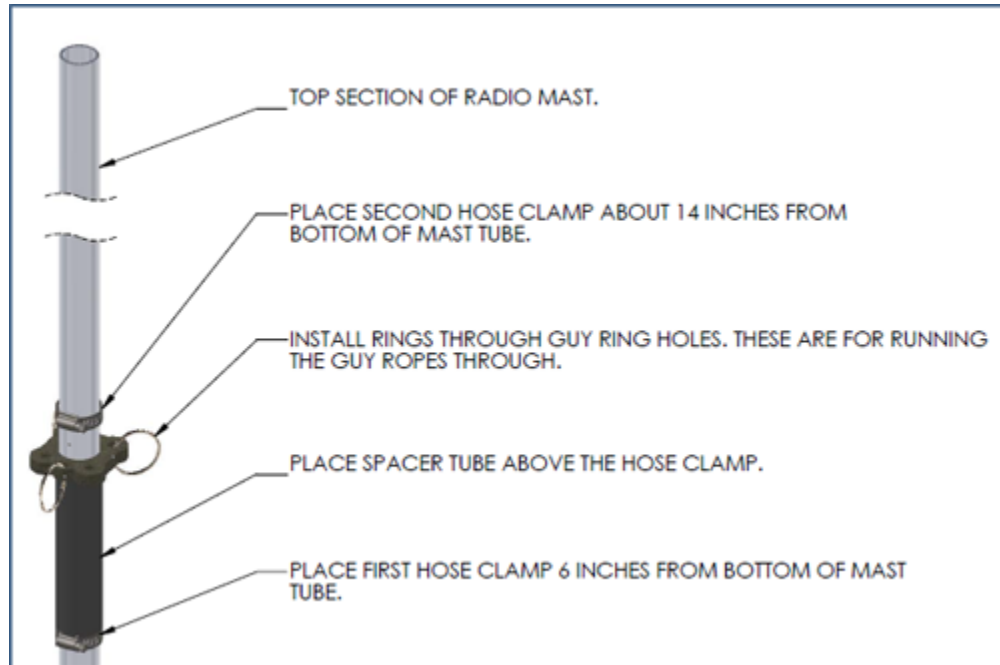


Figure 4–35 Guy Line Collar



Figure 4–36 Threading Guy Lines Through Cleats

- 15 Secure the two lines that angle away from the line of the mast into the cleats at the marks on the rope. The third rope which is in line with the mast will be secured after the mast is raised.

- 16** While holding the free guy line, lift / walk the mast to a vertical position and secure the line into the cleat.



Figure 4–37 Walking the Mast to Vertical 1



Figure 4–38 Walking the Mast to Vertical 2



Figure 4–39 Walking the Mast to Vertical
3



Figure 4–40 Securing the Guy Line to the Cleat

- 17** Adjust all lines to bring the mast to a vertical position.
- 18** Ensure that each line is firmly seated in each cleat, loosely wrap lines around mast and secure at the large cleat on the base.



Figure 4–41 Tightening Guy Lines in Cleats



Figure 4–42 Wrapping Lines Around the Mast



Figure 4–43 Securing Lines to Large Cleat



Figure 4–44 Backhaul Antenna Erected

- 19** Check to make sure that the antennas are aimed properly.
- 20** Uncoil an Ethernet cable. Attach one end to the BSU and the other end to the PoE.
- 21** Check Ethernet status lights, if not green or flashing green remove Ethernet cable from the PoE, count to five and re-insert.
- 22** If status does not change to green or flashing green report the condition.

4.5 Installing Two Radios on the Mast

When you are installing a remote backhaul, there can be two radios on the mast as shown in the following figure:

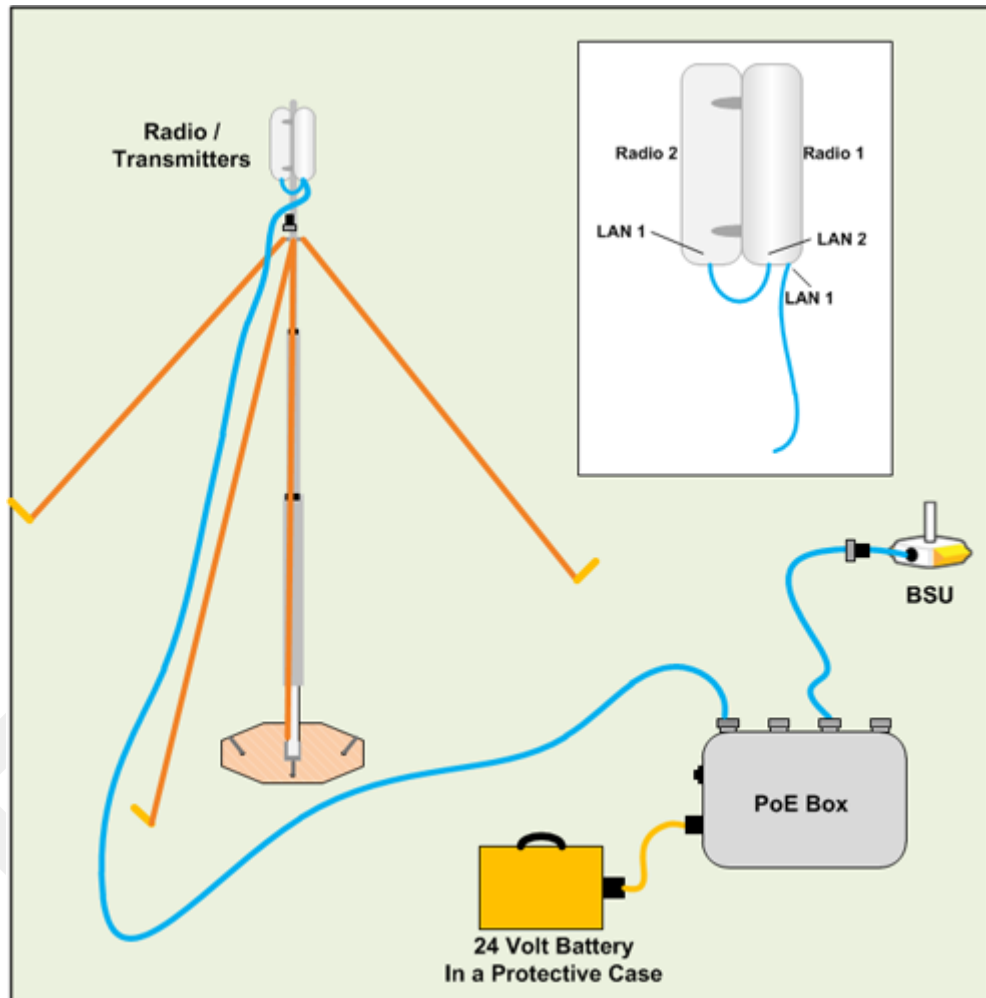


Figure 4–45 Two-Radio Installation

To install two radios on the mast:

- 1 Prerequisites:
 - TBD
 - The radios are configured to allow the PoE option (see *step 11 on page 56*).
 - The radios are BOTH configured as mesh POINTS (see *step 6 on page 54*).
- 2 Attach two radios to the mast. Refer to the deployment instructions for the location at which to aim the radio. One should point towards the recording

truck (uplink), and the other should point towards the next remote backhaul location (downlink).

- 3 Connect the two radios with a short Ethernet cable: Radio1/LAN 2 to Radio 2/LAN 1.
- 4 Connect Radio 1/LAN 1 to the PoE.

4.6 Removing the Backhaul Equipment

TBD

4.7 Use Cases or Example Deployments

This section shows a few example deployments.

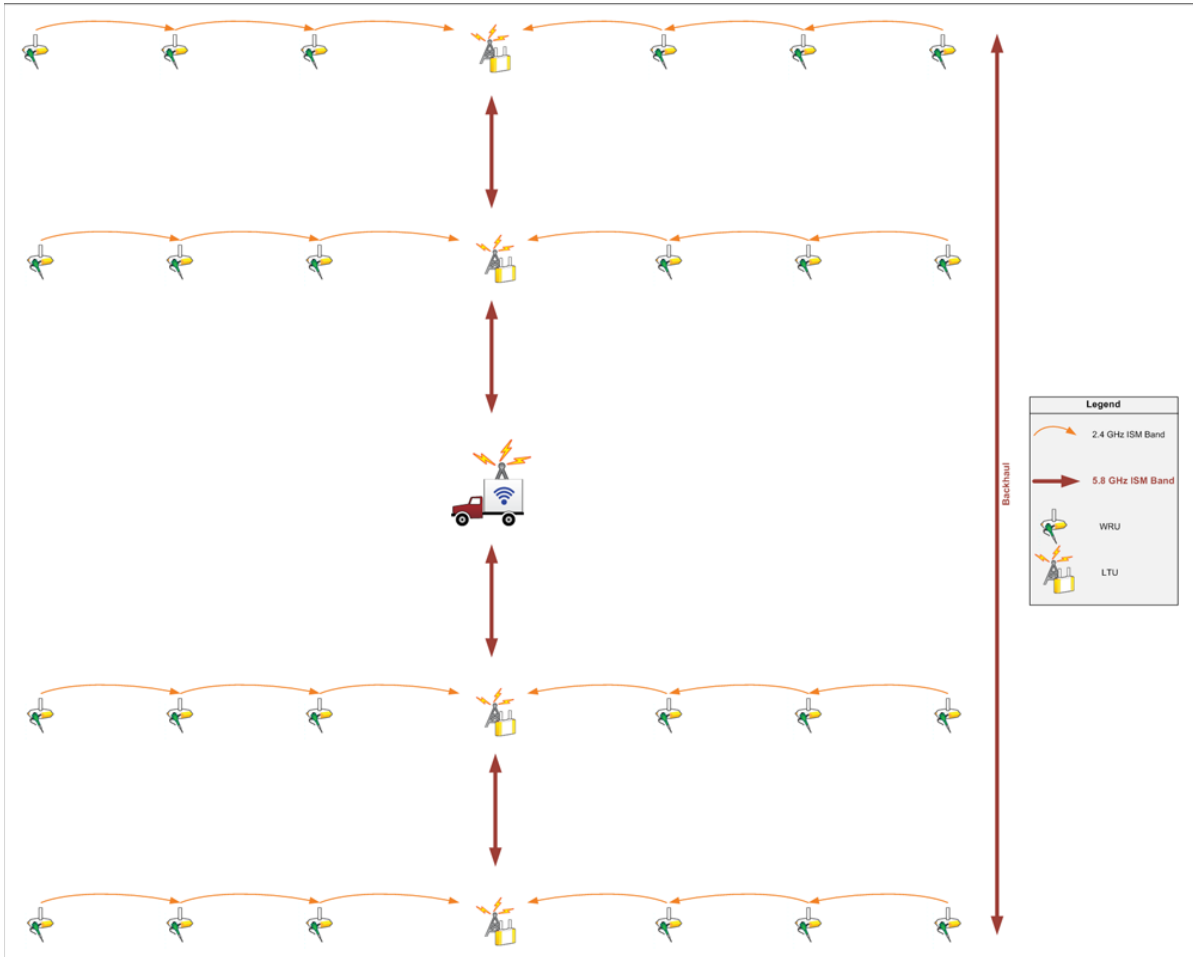


Figure 4-46 2D Single Backhaul

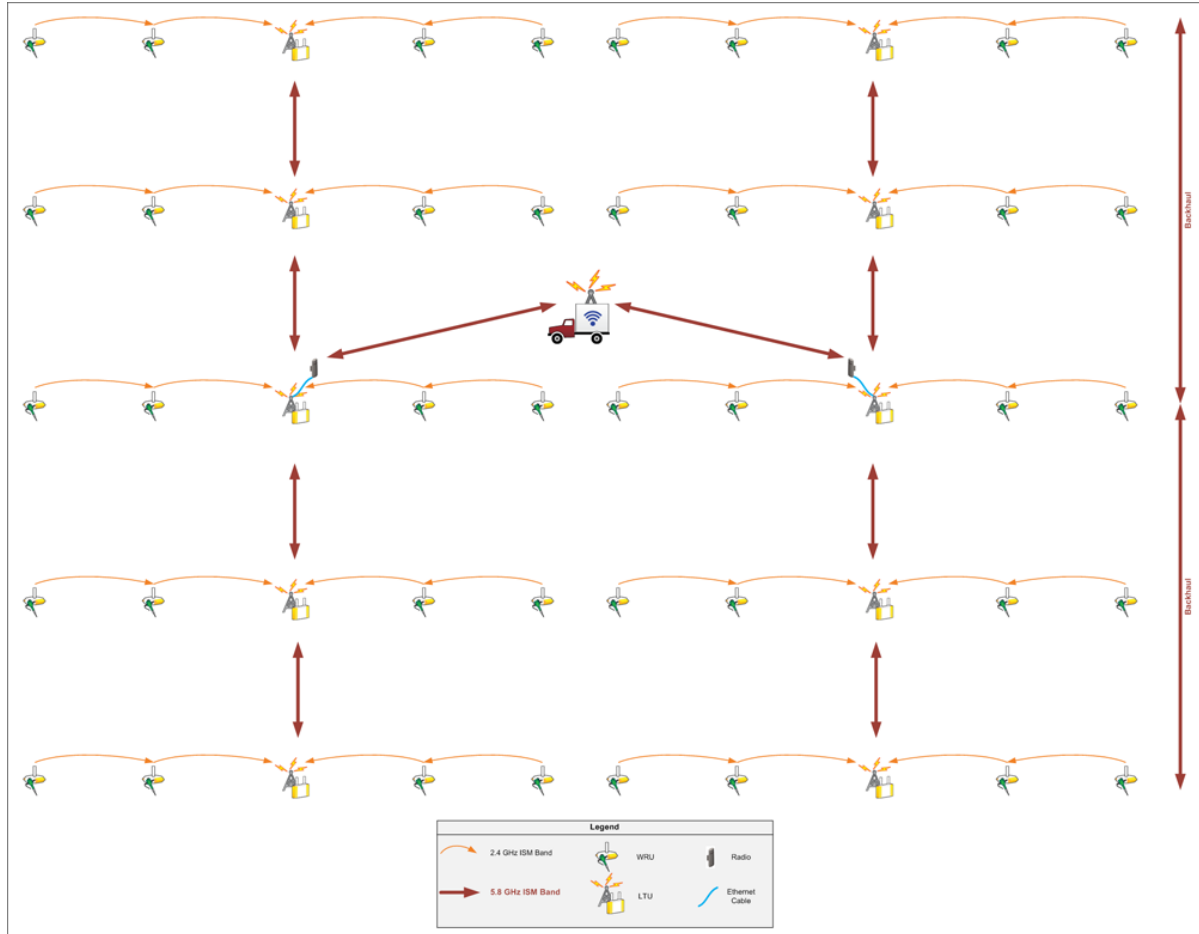


Figure 4-47 3D Dual Backhaul, Two Root Nodes

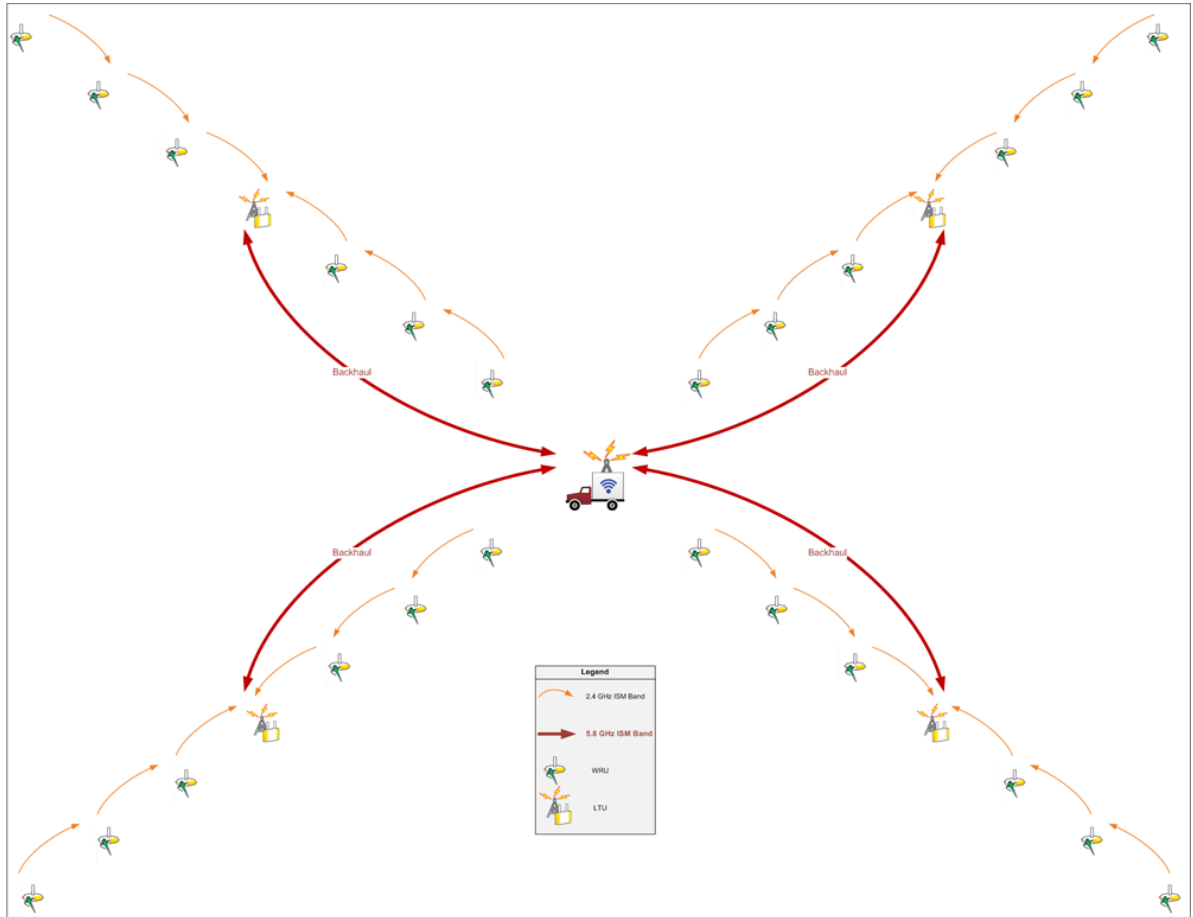


Figure 4–48 2D Single Backhaul, Star Configuration

5.1 Overview

This chapter describes how to prepare (undeploy) the ground electronics for transport at the end of a project (demobilization).

5.2 Removing the WRU from the Field

This section describes the process to ready the WRU for movement to a new physical location or to remove it in preparation for demobilization.

To undeploy the WRU:

- 1 Prerequisites:
 - The WRU is assembled with battery, geophone, and antenna
 - The WRU is in an active, transitional, or ready state
- 2 Pick up the WRU and point the geophone connector end towards the sky as shown in the following figure. All of the LEDs illuminate:

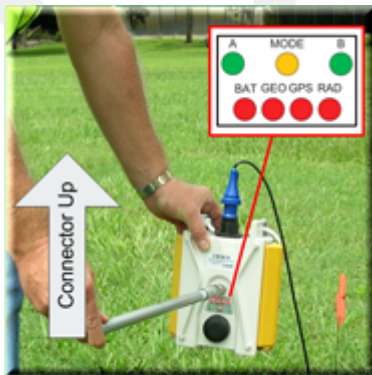


Figure 5–1 Power Off the Unit

- 3 Place the unit flat in the transportation vehicle as shown in the following figure. The unit shuts down. The LEDs on the top of the unit are off.



Figure 5–2 Undeployed Unit

- 4 Optional: Remove batteries, antenna, or geophone as described in “Disassemble the WRU” on page 75.

5.3 Disassemble the WRU

This section describes the process to disassemble the WRU prior to demobilization.

To disassemble the WRU:

- 1 Undeploy the equipment as described in “Removing the WRU from the Field” on page 74.
- 2 Remove the antenna from the unit using nylon grip pliers.

TBD

Figure 5–3 Removing the Antenna

Demobilization

Disassemble the WRU

- 3 Remove the geophone from the unit.

Image showing geophone installation TBD.

Figure 5–4 Removing the Geophone

- 4 Remove the batteries from the unit.
 - Press the catch on the battery latch.
 - Lift the lever, but do not lift the bail from the molded area on the battery.
 - Continue to lift the lever using the bail to push the battery out of the connector.

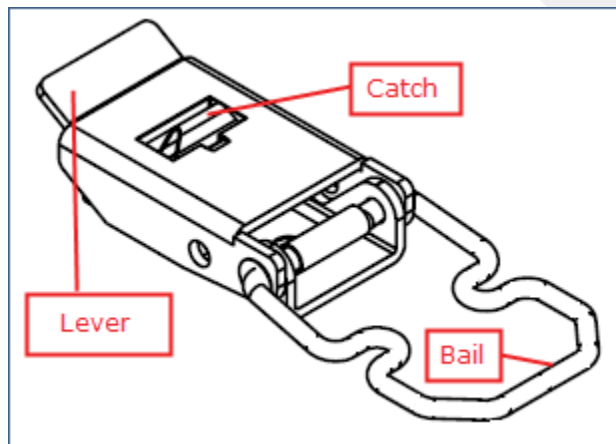


Figure 5–5 Removing the Battery

- 5 Secure the equipment in the transport vehicle.



Testing and Maintaining the Equipment

6.1 Overview

This chapter describes internal and external tests for the ground equipment.



WARNING

In order to comply with FCC radio frequency (RF) exposure requirements, the RT 1000 units must be installed so that a minimum separation distance of 20 cm is maintained between the antenna(s) and all persons at all times during normal operation.

6.2 Testing the Layout

TBD

6.2.1 Line Tests

TBD

6.2.2 Source Control Tests

TBD

6.2.3 Acquisition Parameter Testing

TBD

6.2.4 Built-In-Self-Test (BIST)

TBD

6.3 Maintaining the Equipment

TBD

6.3.1 Units

TBD

6.3.2 Antennas

TBD

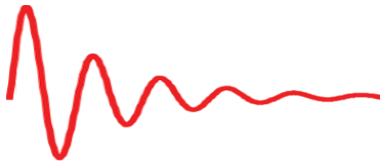
6.3.3 Geophones

TBD

6.3.4 Cautions

TBD

Draft



Troubleshooting and Tips

7.1 Best Practices

This section provides some tips on working with the equipment.

7.1.1 24 Ah Batteries

In order to maintain the best possible communication channel, observe the following tips:

- ◆ Place a fully charged 24 Ah battery on the backhaul every day.
- ◆ Keep extra 24 Ah batteries charged up at the staging area.
- ◆ Store 24 Ah batteries at the staging area when not in use. Deep discharging of the batteries can shorten their lifespan considerably.

7.1.2 Fluidmesh Radios

If you are having trouble communicating with the Fluidmesh radios, check the following:

- ◆ Try sending a ping command in a CMD window to the IP address of the radio.
- ◆ If you are trying to connect directly with a computer, make sure you have configured a private network (see “Create a Private Network” on page 43).
- ◆ Ensure that you have configured the radios as follows:
 - FM1100 = mesh POINT (remote backhaul)
 - FM3100 = mesh END (central backhaul)

NOTE

If you configure two FM1100 radios on the same mast to be a mesh POINT and a mesh END, they will communicate over the switch and lock everything else out of the communication loop. They must both be configured as mesh POINTs.

- ◆ It takes one full minute to see the alignment statistics in the Fluidmesh GUI (from the browser), so be sure to wait for it.

7.1.3 PoE

When temperature swings are extreme, or weather is severe, store the PoE boxes in the recording truck at night.

To ensure a protected connection, be sure to use an Ethernet cable with a protective shell (65-0051) when connecting Ethernet cables to the PoE (see *Figure 4–8 Protective Ethernet Connector on page 34*).



CAUTION

Do not allow the PoE battery to remain connected at a voltage of 22V or less. Damage to the equipment could occur.

7.1.4 Urban Environments

The following could impact your configuration in urban environments:

- ◆ You may need to use repeaters when crossing a road.
- ◆ You may need to adjust WRU placement and antenna strength when crossing a road.
- ◆ You will need to consider the presence of power lines and buildings when placing WRUs and backhaul components.

7.1.5 Ethernet Cables

Use CAT6 quality cables.

To ensure a protected connection, be sure to use an Ethernet cable with a protective shell (65-0051) when connecting Ethernet cables to the PoE (see *Figure 4–8 Protective Ethernet Connector on page 34*).

7.1.6 Antennas

When placing or selecting antennas in, consider the following:

- ◆ In areas where there is a steep inclination, smaller gain antennas may provide a better signal.
- ◆ In areas where there is a steep inclination, try to reduce the inclination by going up or down at an angle rather than straight up or down.
- ◆ Use repeaters to cover overpass and steep inclination situations.
- ◆ If you need more signal strength, use an extender with a riser to elevate the antenna.



Batteries

This chapter provides information about the batteries and battery requirements.

8.1 Lithium Ion Battery Specifications

The RT 1000 uses one or two custom intelligent lithium-ion batteries with self-contained charging circuitry that protects the batteries from overcharge, discharge, short circuits, or extreme temperature charging.

Battery specifications are shown in the following table:

Table 8–1 Lithium Ion Battery Specifications

Voltage	Nominal	3.7 VDC
	Shut-off	2.8 VDC
	Full (90%) charge	4.1 VDC
Full (90%) charge mAh	Approximately 12,000 mAh at nominal voltage	
Full (90%) charge mWh	Approximately 44,400 mWh at nominal voltage	
Connector	5-pin	
LED	One LED that indicates charging status when connected to the charging station as follows	<ul style="list-style-type: none"> • Green – Charged • Red – Charging • Amber – Transitional phase between charging and charged, or charge temperature limits exceeded
Label	One bar code serial number label	

Table 8–1 Lithium Ion Battery Specifications

Temperature		
Temperature	Operating	From -50°C to +75°C
	Charging	From 0°C to +45°C
	Ambient Storage	<ul style="list-style-type: none"> ▶ From -20°C to +45°C for a maximum period of one month ▶ From -20°C to +35°C for a maximum of 6 months, after which time the battery packs will need to be recharged to above 50% capacity

8.2 Lithium Ion Battery Charger

The lithium ion battery charger is designed to operate from a single 10 A, 120 VAC service line.

The power supply to charge the battery pack is a 5VDC regulated voltage supply.



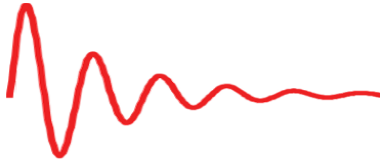
Figure 8–1 Battery Charger



Figure 8–2 Serial Number Label and LED Indicator

8.3 BSU Battery

TBD



Legal Information

A.1 FCC Rules and Regulations Compliance

The Federal Communications Commission (FCC) regulates the use of antennas in the "Code of Federal Regulations – Title 47, Part 15 – Radio Frequency Devices, Subpart C – Intentional Radiators, Section 15.203 Antenna Requirement."



NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

When used as intended, the RT 1000 complies with FCC Section 15.203 requirements as follows:

- ◆ The RT 1000 antennas shall be installed and handled by professionals specifically designated for this purpose.
- ◆ Changes or modifications not expressly approved by Wireless Seismic, Inc. can void the users's authority to operate the equipment.
- ◆ The RT 1000 shall be used with only the supplied antennas (*Table A-1*) attached to the WRU or BSU with an integrated type N male connector.

Table A-1 Antenna Specifications

Model	Frequency (MHz)	Gain	Vertical Bandwidth	Weight	Dimension (Length x Diameter)
WSI 65-0067	2400-2485	9 dBi	14°	0.8 lbs 0.5 kg	27 x 0.6 in 690 x 15 mm
WSI 6060-001-01	2400-2485	7 dBi	18°	0.6 lbs 0.3 kg	21 x 0.6 in 540 x 15 mm

Table A-1 Antenna Specifications (cont.)

Model	Frequency (MHz)	Gain	Vertical Bandwidth	Weight	Dimension (Length x Diameter)
WSI 65-0023	2400-2485	5 dBi	25°	0.5 lbs 0.2 kg	12 x 0.6 in 355 x 15 mm
WSI 65-0025	2400-2485	2 dBi @ 2.4	120°	1.6 oz 45.4 g	7.6 x 0.5 in 193 x 12.7 mm

 **WARNING**

In order to comply with FCC radio frequency (RF) exposure requirements, the RT 1000 units must be installed so that a minimum separation distance of 20 cm is maintained between the antenna(s) and all persons at all times during normal operation.

The Base Station Unit has been granted FCC equipment authorization under the FCC Identifier YZO-00400.

The Wireless Remote Unit has been granted FCC equipment authorization under the FCC Identifier YZO-00100.



Fluidmesh Radio Specifications

The information in this chapter is reproduced here for your convenience from the Fluidmesh data sheet available at the following location:

http://www.fluidmesh.com/press-room/product-literature/doc_details/160-fluidmesh-mito-series

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B.1 The Fluidmesh Mito Series

The Fluidmesh® MITO Series is a MIMO-based tri-band wireless Ethernet product line designed and manufactured specifically for multi-service backhaul applications.

MITO - The Revolution in Wireless Backhauling

With the MITO product line, Fluidmesh has developed a revolutionary wireless backhaul solution that is capable of offering extreme performances with a small form factor. MITO is a unique 2x2 MIMO solution with integrated directional antennas which has allowed Fluidmesh to break the mould and create a product line that is a game changer in the wireless backhauling arena. You won't need to install external antennas. You won't need to deal with coaxial cables, lightning suppressors, and grounding. The Fluidmesh

1100 MITO and the Fluidmesh 3100 MITO have an integrated radio-antenna solution with an outdoor rated enclosure that is slightly bigger than two decks of cards. The Fluidmesh 1100 MITO mounts a 2x2 MIMO patch antenna and can be used to create point to point, point to multipoint, and mesh networks providing unparalleled performances and a compact form factor. The Fluidmesh 3100 MITO mounts a 2x2 MIMO sector antenna and is designed for medium and large point to multipoint deployments with up to 150 clients.

Tri-band Radio operating at 4.9 GHz, and 5.1-5.8 GHz

The Fluidmesh MITO Series features one tri-band radio and can operate at 4.9 GHz, and 5.1-5.8 GHz and modulate up to 300 Mbps. The preferred frequency can be easily selected through a web based interface.

Optimized Prodigy Transmission Protocol for maximum Reliability

The Fluidmesh MITO Series employs Prodigy, Fluidmesh's proprietary high performance 'intelligent' transmission protocol, built to overcome the limits of standard license-free protocols and to deliver a wireless infrastructure with a higher level of reliability. Prodigy was developed to transmit any IP-compatible

traffic including data, video, and voice. At the base of our innovative transmission protocol, there is a traffic optimization algorithm that allows every Fluidmesh device to assign a specific level of priority and reliability to every packet transmitted. This process allows the wireless network to automatically adjust its transmission parameters based on the type of traffic transmitted. The overall result is a better, more reliable, multi-service wireless infrastructure.

Compact Design for Easy Installation

The Fluidmesh MITO Series has a compact form factor designed for low visual impact deployments. The integrated panel antenna makes for easy installation and supports a range of up to 30 miles in line of sight. The provided low-power POE injector guarantees a straight-forward set-up.

FluidThrottle™

The Fluidmesh MITO Series is based on the innovative FluidThrottle™ technology which allows the user to limit the total cost of ownership of the wireless network by paying only for the amount of bandwidth required. Additional throughput can be easily achieved by upgrading the system with software plug-ins in case the bandwidth requirements increase over time. This solution makes Fluidmesh the most cost-effective and flexible wireless solution provider in the market.

FluidMAX™

The Fluidmesh MITO Series supports the patent-pending FluidMAX™ technology and can be used to create Point-to-Point, Point-to-Multipoint, and Mesh architectures. Thanks to FluidMAX™, the Fluidmesh MITO Series can operate with a centralized medium access control protocol, or with a distributed medium access control protocol, depending on the network layout. That means that our units can operate in either CSMA or TDMA. The decision is made automatically by the network based on its layout and requires no user intervention.

EasyMesh® Platform and FMQuadro Interface

The Fluidmesh MITO Series includes EasyMesh™. The EasyMesh technology allows the user to set the same range of private IP addresses across the entire network. The Fluidmesh MITO Series also includes the FMQuadro™ web interface which allows the user to configure, monitor, and troubleshoot the wireless network in real time without the need of additional software or a server. The unit comes with a built-in spectrum analyzer, a real-time bandwidth monitoring tool, and a wizard to facilitate the configuration of the system.

AES-128 Encryption Support (FIPS-197 Compliant)

The Fluidmesh MITO Series includes support for 128 bit AES Encryption at the link-level which can be used for FIPS-197 compliance. Because AES Is Implemented in hardware, there is no loss in terms of performance when AES is enabled.

Simple Network Management Protocol (SNMP) Support

The Fluidmesh MITO Series supports SNMP version 3. The Simple Network Management Protocol allows the user to centrally manage the mesh devices with a SNMP server and to receive automatic alarms in case of network failure.

B.2 Fluidmesh 1100 with MITO Technology

RADIO

- ◆ Frequency Bands: 5.15-5.25 and 5.725-5.825 GHz (US, FCC)
5.470-5.725 GHz (Europe, ETSI)
4.940 - 4.990 GHz (US,FCC)
- ◆ Modulation: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- ◆ Modulation speed: Up to 300 Mbps
- ◆ TX Power: Up to 27 dBm, depending on configuration and regulatory constraints
- ◆ AX Sensitivity 5GHz: -96dB@6.5Mbps; -75dB@300Mbps
- ◆ Antenna Type: 2x2 MIMO
- ◆ Antenna Gain: 14.6-16.1 dBi
- ◆ Antenna Polarization: Dual Linear
- ◆ Cross-pol Isolation: 22dB minimum
- ◆ Max VSWR: 1.6:1
- ◆ H-pol Beamwidth: 43 deg.
- ◆ V-pol Beamwidth: 41 deg.
- ◆ Elevation Beamwidth: 15 deg.

ELECTRICAL

- ◆ Power input: Passive PoE 15V DC, 0.8A, (pairs 4,5+; 7,8 return)
- ◆ Power consumption: Max 8W
- ◆ Power over Ethernet Injector: Included, 90/260V 50/60 Hz AC input

ENVIRONMENTAL

- ◆ Operating Temperature: -30°C to +80°C
- ◆ Storage Temperature: -30°C to +80°C
- ◆ Humidity: 95% condensing
- ◆ Weather Rating: IP65
- ◆ Wind Survivability: 120 mph
- ◆ Shock & Vibration: ETSI 300-019-1.4

PHYSICAL

- ◆ Interfaces: Two (2) Internal Ethernet
10/100BaseT autosensing, RJ45
- ◆ Dimensions (mm): 294 (h) X 80 (w) X 30(d)
- ◆ Weight (Kg): 0.4
- ◆ Enclosure material: Outdoor UV Stabilized Plastic

OPTIONAL SOFTWARE PLUG-INS

- ◆ Ethernet Capacity Plug-in up to 1 Mbps (included)
- ◆ Ethernet Capacity Plug-in up to 2.5 Mbps
- ◆ Ethernet Capacity Plug-in up to 5 Mbps
- ◆ Ethernet Capacity Plug-in up to 10 Mbps
- ◆ Ethernet Capacity Plug-in up to 30 Mbps
- ◆ Ethernet Capacity Plug-in up to 60 Mbps
- ◆ Unlimited Wired Ethernet Capacity Plug-in (up to 100 Mbps)
- ◆ 802.1Q VLAN Support
- ◆ AES-128 Encryption

B.3 Fluidmesh 3100 with MITO Technology

RADIO

- ◆ Frequency Bands: 5.15-5.25 and 5.725-5.825 GHz (US, FCC)
5.470-5.725 GHz (Europe, ETSI)
4.940 - 4.990 GHz (US,FCC)
- ◆ Modulation: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- ◆ Modulation speed: Up to 300 Mbps
- ◆ TX Power: Up to 27 dBm, depending on configuration and regulatory constraints
- ◆ AX Sensitivity 5GHz: -96dB@6.5Mbps; -75dB@300Mbps
- ◆ Antenna Type: 2x2 MIMO
- ◆ Antenna Gain: 14.6-17.1 dBi
- ◆ Antenna Polarization: Dual Linear
- ◆ Cross-pol Isolation: 22dB minimum
- ◆ Max VSWR: 1.5:1
- ◆ H-pol Beamwidth: 72 deg.
- ◆ V-pol Beamwidth: 93 deg.
- ◆ Elevation Beamwidth: 8 deg.

ELECTRICAL

- ◆ Power input: Passive PoE 24V DC,
1A, (pairs 4,5+; 7,8 return)
- ◆ Power consumption: Max 8W
- ◆ Power over Ethernet Injector: Included, 90/260V 50/60 Hz AC input

ENVIRONMENTAL

- ◆ Operating Temperature: -30°C to +75°C

- ◆ Storage Temperature: -30°C to +75°C
- ◆ Humidity: 95% condensing
- ◆ Weather Rating: IP65
- ◆ Wind Survivability: 120 mph
- ◆ Shock & Vibration: ETSI 300-019-1.4

PHYSICAL

- ◆ Interfaces: One (1) Internal Ethernet
10/100BaseT autosensing, RJ45
- ◆ Dimensions (mm): 370 (h) X 80 (w) X 70(d)
- ◆ Weight (Kg): 1.6
- ◆ Enclosure material: Anodized Aluminum

OPTIONAL SOFTWARE PLUG-INS

- ◆ Ethernet Capacity Plug-in up to 10 Mbps
- ◆ Ethernet Capacity Plug-in up to 30 Mbps
- ◆ Ethernet Capacity Plug-in up to 60 Mbps
- ◆ Unlimited Wired Ethernet Capacity Plug-in (up to 100 Mbps)
- ◆ 802.1Q VLAN Support
- ◆ AES-128 Encryption

B.4 MITO Series General Characteristics

NETWORK

- ◆ Protocols: UDP, TCP, IP, RTP, RTCP, RTSP, HTIP, HTIPS, ICMP, ARP
- ◆ Medium Access Control (MAC) Protocols: Centralized Polling-based, Distributed CSMA/CA-based
- ◆ Web-based interface for remote management
- ◆ Multicast support
- ◆ UPnP support
- ◆ NMP support
- ◆ 802.1Q VLAN Support

SECURITY

- ◆ Full VPN compatibility
- ◆ Full compatibility with all encryption and authentication standards (AES, 3DES, RSA, HTIPS, SSL, etc.)
- ◆ AES-128 (FIPS-197 Compliant) Link-level Encryption

APPROVALS

- ◆ FCC CFR 47 Part 15, class B
- ◆ Industry Canada RSS 210

- ◆ CEI!

SUPPLIED ACCESSORIES

- ◆ PoE Injector with US/EU/UK Power Cord
- ◆ Pole Mounting Kit (i.e. Pole Mounting Kit Max O.D. 2 in.)

WARRANTY

- ◆ Two (2) years on parts and labor
- ◆ Three (3) years optional extended warranty plan with advanced replacement
- ◆ Five (5) years optional extended warranty plan with advanced replacement

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C

LED Indicators

This chapter provides the possible LED status and error indicators for WRUs and BSUs.

Table C-1 WRU LED Status Indications

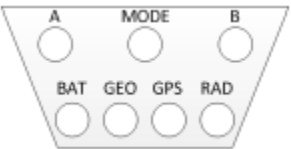
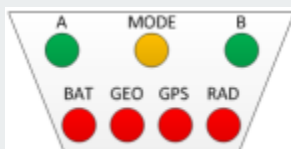


LED Indicators	Summary	Description
	Undeployed	No lights are on; the unit is undeployed.
	Geo Down Tilt Detected	All LEDs are on solid
	Battery test in progress	Flashing: <ul style="list-style-type: none"> • MODE • BAT
	Battery A in use	A flashing

Table C-1 WRU LED Status Indications (cont.)

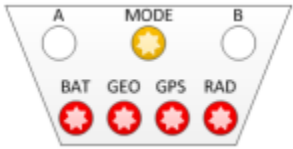
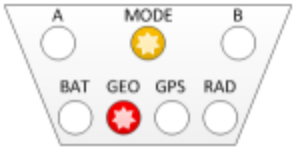
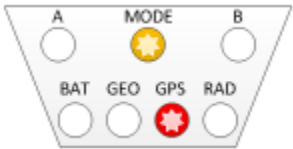
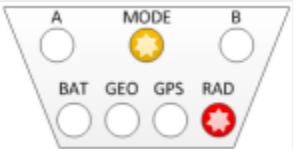
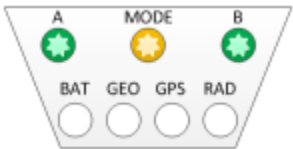
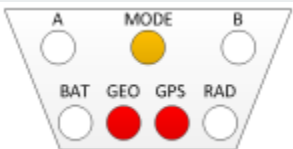
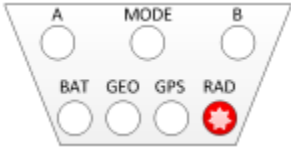
LED Indicators	Summary	Description
	Self test in progress	Flashing: <ul style="list-style-type: none"> • MODE • BAT • GEO • GPS • RAD
	Geophone test in progress	Flashing: <ul style="list-style-type: none"> • MODE • GEO
	Acquiring GPS fix	Flashing: <ul style="list-style-type: none"> • MODE • GPS
	Neighbor discovery in progress	Flashing: <ul style="list-style-type: none"> • MODE • RAD
	Neighbor discovered	Flashing: <ul style="list-style-type: none"> • A • MODE • B
	Continue (lay flat to move to next test)	Solid: <ul style="list-style-type: none"> • MODE • GEO • GPS <p>NOTE: To skip a test during the self-test process, tilt the unit vertical (geophone down) until you see this triangle of LEDs. Tilt the unit back to horizontal to continue.</p>

Table C–1 WRU LED Status Indications (cont.)

LED Indicators	Summary	Description
	Sleeping	RAD flashing

Error LEDs remain persistent throughout the self-discovery process and are turned off upon completion. If certain self-tests fail, it is possible that the WRU will power down.

Table C–2 WRU LED Error Indications


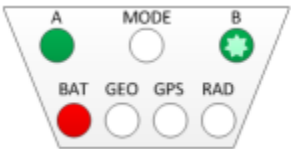
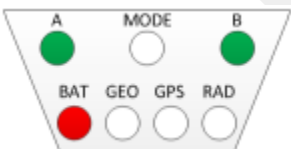
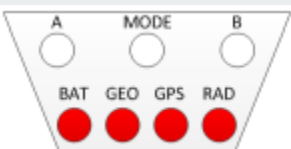
LED Indicators	Summary	Description
	Single battery failure (B)	A flashing Solid: <ul style="list-style-type: none"> • B • BAT
	Single battery failure (A)	B flashing Solid: <ul style="list-style-type: none"> • A • BAT
	Both batteries failure	Solid: <ul style="list-style-type: none"> • A • B • BAT
	Self test failure	Solid: <ul style="list-style-type: none"> • BAT • GEO • GPS • RAD

Table C–2 WRU LED Error Indications (cont.)


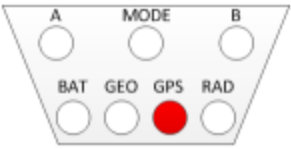
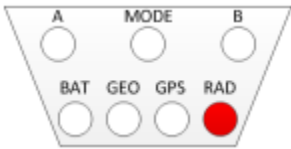
LED Indicators	Summary	Description
	Geophone failure	GEO solid
	No GPS fix	GPS solid GPS fix within 10 m within 1 min not found
	No neighbor detected	RAD solid If this is the first WRU deployed, this is the expected condition.

Table C–3 BSU LED Discipline Indications

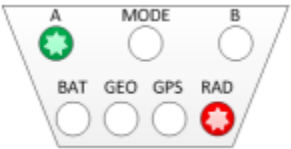
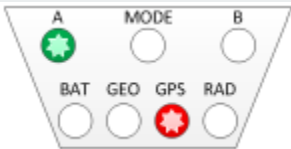





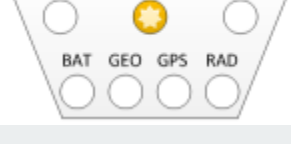
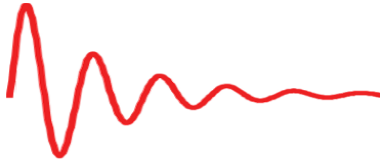
LED Indicators	Summary	Description
	Disciplining to radio	Flashing: <ul style="list-style-type: none"> • A • RAD
	Disciplining to GPS	Flashing: <ul style="list-style-type: none"> • A • GPS

Table C-3 BSU LED Discipline Indications (cont.)

LED Indicators	Summary	Description
	Disciplining	A flashing
	Disciplined to radio	Flashing: <ul style="list-style-type: none"> • B • RAD
	Disciplined to GPS	Flashing: <ul style="list-style-type: none"> • B • GPS
	Disciplined	B flashing
	Incorrectly dropped out of cycle mode	Flashing: <ul style="list-style-type: none"> • A • B • BAT • RAD
	Armed	MODE flashing



Weighted Mast

This section describes the mast that uses weights to maintain stability.

D.1 Specifications

Tripod Weight = 50 lbs (22.73 kg)

Minimum mast height = 53" (includes 6" for mounting)

Base size = 48" (1.2m) x 48" (1.2m)

Supports up to 12 – 16" x 8" blocks

Pre-galvanized steel frame

Accepts up to 2.5" mast (not included)



Figure D-1 Weighted Mast

D.2 Hardware Supplied

The following hardware is supplied with the tripod mast:

- ◆ 4 - Bolt, Carriage 1/4 - 20 x 3/4"
- ◆ 12 - Bolt, Carriage 1/4 - 20 x 5/8"
- ◆ 4 - Bolt, 1/4 - 20 x 3/4" Hex Head
- ◆ 4 - Bolt, 1/4 - 20 x 1/2" Hex Head
- ◆ 24 - Nut, 1/4 - 20
- ◆ 24 - Lock washer, 1/4 Int. tooth

D.3 Assembly Instructions

This section provides instructions and illustrations for assembly of the tripod.

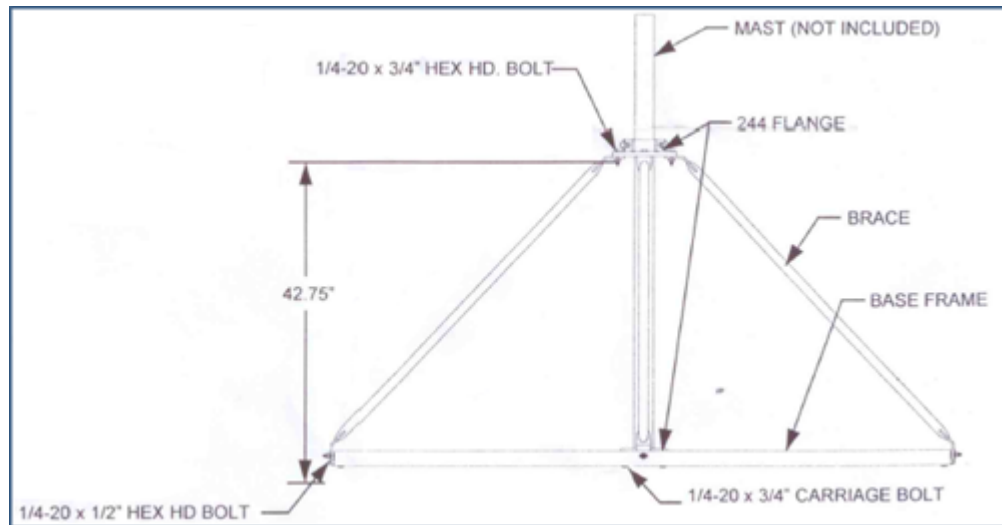


Figure D-2 Tripod Assembly – Front View

To assemble the tripod:

- 1** Assemble one 244 Flange to the Center Support Plate using four 1/4-20 x 3/4" carriage Bolts, Lock washers and Hex Nuts. Make sure to assemble the Bolts with the Heads on the underside of the frame. Hex Nut should be on the top side of the frame.
- 2** Assemble Base Frame and Center Support Plate using twelve 1/4-20 x 5/8" carriage Bolts, Lock washers and Hex Nuts. Make sure to assemble the Bolts with the Heads on the underside of the frame. Hex Nut should be on the top side of the frame.
- 3** Assemble the four (4) Braces to the upper support flange using four 1/4-20x3/4 Hex Head Bolts, Lock washers and Nuts.
- 4** Assemble the other end of the braces to the base frame using the four (4) 1/4-20 x 1/2" Hex Head Bolts, Lock washers, and Nuts.
- 5** Insert Bolts into upper and lower flange.
- 6** Slide the mast (not included) into position and tighten securely and weigh.

Wade Antenna Ltd.
Ontario, Canada



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