

GoBeam 5100/6100 Installation Guide





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Regulatory Information

FCC-15 User Information

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:
2. This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of a Class B 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 residential environment, this equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur.

To meet regulatory restrictions, the outdoor access point must be professionally installed.

The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using its antennas. Any changes or modifications not expressly approved by GoNet Systems could void the user's authority to operate the equipment.

The antennas used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Notices

Read and understand the following before installation.



- Equipment surfaces may become hot during operation. Do not touch hot surfaces of the system. Touching a hot surface may result in serious personal injury, including burning of skin or flesh.



- The GoBeam 5100/6100 is intended to be grounded. Ensure that the GoBeam 5100/6100 is connected to earth ground during normal use.



- This product must be connected to a power-over-Ethernet (PoE) IEEE 802.3af compliant power source or an IEC60950 compliant limited power source.
- This unit is not intended for use in marine environments.
- Use 48Vdc LPS (according IEC/EN/UL 60950-1 section 2.5) power supply as power injector.

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Introduction

GoBeam 5100/6100 are GoNet Systems, carrier-grade access points offering superior range and capacity by combining GoNet Systems MIMO xRF™ beam-forming and the latest 802.11n Wi-Fi standard.

GoBeam 5100/6100 are effective solutions for cellular operators deploying large scale mobile data offload and Wi-Fi access applications in dense urban conditions. The GoBeam family of access points is designed to enable mix & match according to the specific deployment needs.

Interference mitigation that includes patented 3G & Wi-Fi channel filter enables the GoBeam 5100/6100 access points to be co-located with 3G BTS without performance degradation for the AP or the 3G BST. GoBeam access points deliver a winning business value by enabling cellular operators to leverage their existing network assets and reduce CAPEX and OPEX.

The GoBeam 6100 provides high-performance from rooftop and pole mounting while the GoBeam 5100 delivers cost-effective Omni-directional, street-level coverage.

- GoBeam 6100 - 120° sector access point
- GoBeam 5100 – 360° Omni access point



GoBeam Model Numbers

GoBeam model numbers are marked with a suffix according to compliance standards. Table 1 summarizes the different suffixes. For example the J in GoBeam 5100J indicates Japan.

Table 1. Model Number Suffixes

Suffix	Represents
F	FCC
M	MII
E	ETSI
I	Israel
J	Japan



GoBeam 5100

The GoBeam 5100 delivers street-level coverage and provides capacity enhancements in dense metro areas over an 802.11b/g/n channel, while meshing traffic over an 802.11a/n radio.

The GoBeam 5100 delivers Omni-directional (360°) coverage while retaining full xRF smart antenna engine functionality for enhanced capacity and range.

GoBeam 5100 Features

- Robust IP67 rated weather-proof extended Wi-Fi solution.
- Separate access & backhaul radios delivering unmatched bandwidth.
- xRF™ smart antenna engine for unmatched (360°) coverage and capacity enhancements.
- Optional advanced automatic mesh.
- Designed for streetlight, wall, or pole deployment.
- Support for all standard security schemes.

GoBeam 5100 Package Components

Table 2. GoBeam 5100 Package Contents

DESCRIPTION	QTY
Included	
GoBeam 5100 unit	1
Wall/Poll Mount Kit Assembly	1
Connectors Kit	1
GoBeam 5100 Access Antenna 2.4GHz 7.4dBi Gain, Omni (P/N: MBW-ANT-2407S)	4
Antenna Support Plate	1
Optional	
802.11a/n 5Ghz 10dBi Omni Mesh Antenna P/N: MBW-ANT-5810 (5.8Ghz) or P/N: MBW-ANT-5410 (5.4Ghz)	2
802.11a/n 4.9Ghz 8.5dBi Omni Mesh Antenna P/N: MBW-ANT-4910 (For model GoBeam 5100J (4.9) only)	2
Power Injector with power cable	1



GoBeam 6100

The GoBeam 6100 is designed for mounting on cellular towers, roof-tops and poles. The GoBeam 6100 complements the GoBeam 5100. The GoBeam 6100 is equipped with one xRF™-powered beam forming 802.11b/g/n radio for high-performance access and coverage.

The GoBeam 6100 delivers sector access (120°) coverage while retaining full xRF smart antenna engine functionality for enhanced capacity and range.

GoBeam 6100 Features

- Robust IP67 rated weather-proof extended Wi-Fi solution.
- Separate access & backhaul radios delivering unmatched bandwidth.
- xRF™ smart antenna engine for unmatched (120°) coverage and capacity enhancements.
- Optional advanced automatic mesh.
- Designed for mounting on cellular towers, roof-tops and poles.
- Support for all standard security schemes.

GoBeam 6100 Package Components

Table 3. GoBeam 6100 Package Contents

DESCRIPTION	QTY
Included	
GoBeam 6100 unit	1
Wall/Pole Mount Kit Assembly	1
Connectors Kit	1
Optional	
802.11a/n 5Ghz 10dBi Omni Mesh Antenna P/N: MBW-ANT-5810 (5.8Ghz) or P/N: MBW-ANT-5410 (5.4Ghz)	2
802.11a/n 4.9Ghz 8.5dBi Omni Mesh Antenna P/N: MBW-ANT-4910 (For model GoBeam 6100J (4.9) only)	2
Power Injector with power cable	1

GoBeam 5100/6100 Safety Information

RF Exposure



This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.



The antenna(s) used for this transmitter must be fixed-mounted on indoor or outdoor permanent structures with a separation distance indoor network device.



The antennas used have an N-Type connector in compliance with FCC 15.203 Antenna Requirement.

The purpose of the lightning protection is to protect people and equipment located indoors from lightning that might strike the GoBeam 5100/6100 or its outdoor cables. Therefore, the lightning protector device should be installed indoors, as close as possible to the point where the cables enter the building.

The lightning protector can also be installed outdoors, as long as the cables that go from the lightning protector to the indoors are well protected from lightning between the box and the building entrance.

Verify that you have shared grounding. GoNet Systems offers a lightning protector that can be ordered separately.

Installation Codes

This device must be installed according to the latest version of the country national electrical codes. For North America, equipment must be installed in accordance to the applicable requirements in the US National Electrical Code and the Canadian Electrical Code.



The device must be professionally installed

Information de sécurité pour GoBeam 5100/6100

Exposition aux fréquences RF

Cet équipement est conforme aux limites d'exposition aux rayonnements RF de la FCC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et une partie de votre corps.

Paratonnerre pour GoBeam 5100/6100

Un paratonnerre est nécessaire lorsque le point d'accès GoBeam 5100/6100 est installé à l'extérieur et lié à un network intérieur par un câble Ethernet.

La fonction du paratonnerre est de protéger les personnes et équipement situés en intérieur des éclairs qui pourraient frapper le GoBeam 5100/6100 ou son câble extérieur. Par conséquent, le paratonnerre doit être installé en intérieur le plus près possible du point où le câble de liaison pénètre le bâtiment.

Le paratonnerre peut aussi être installé en extérieur à la condition que les câbles à l'intérieur du bâtiment soient protégés des éclairs entre le point d'accès et l'entrée du bâtiment.

Vérifier que la prise de terre est partagée. GoNet Systems met à disposition à la vente un paratonnerre.

Codes d'installation

Ce dispositif doit être installé conformément à la dernière version des codes électriques nationaux du pays concerné. Pour l'Amérique du Nord, l'équipement doit être installé conformément aux exigences applicables dans le US National Electrical Code et le Code canadien de l'électricité.

L'appareil doit être installé par un professionnel.

Installation

The installation process for the GoBeam 5100/6100 is described below. The differences between the GoBeam 5100 and the GoBeam 6100 installation process are noted.

Specific installation may require different Power/Ethernet connections. See Cable Connections, page 21 for more details.

Installation Process

Installing the GoBeam 5100/6100 involves the following steps:

1. Performing a Site Survey.
2. Assembling and Mounting.
3. Mounting the GoBeam 5100/6100 unit.
4. Connecting the cables.
5. Powering up the unit and configuring the software.
6. Performing a Post-installation Testing Procedure to verify connectivity and operation.

Site Survey

Most wireless LANs include many access points installed in various locations in an overlapping radio-cell pattern. It is important to carefully identify each access point's position and the assignment of its radio channels. Therefore, a site survey becomes an essential first step before physically deploying the GoBeam 5100/6100.

Installation of the access points requires backhaul. The backhaul connection can be a mesh configuration, an Ethernet-wired connection, or a third-party solution. When using any method other than a wired connection, keep in mind the GoBeam 5100/6100 requires good reception on its backhaul side in order to avoid limiting the performance of the access-channel.

Conclude the site survey with a detailed plan of the GoBeam system deployment. The system deployment plan should include GoBeam 5100/6100 mounting points and the routes for the power and backhaul cables.




Assembling the GoBeam 5100 Antennas

The GoBeam 5100 supports either four or six antennas.

- Four Wi-Fi antennas used for user access, which operate on the 2.4 GHz band, marked A1 to A4 (MBW-ANT-2407S).
- Two optional antennas are used for the mesh networking connections, which operate on the 5 GHz band, marked B1 and B2.

GoBeam 5100 Wi-Fi antennas

-  To mount the Wi-Fi antennas on the GoBeam 5100:
1. Attach the four 2.4 GHz band antennas to terminals A1 to A4 and screw all antennas into place by hand. Rotate each antenna at its metallic base. The antennas should rotate easily. Tighten the antenna by hand only. Do not apply excessive force by using any tool, as this may damage the unit.

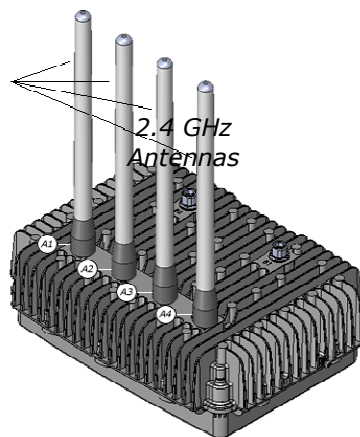


Figure 1: GoBeam 5100 2.4 GHz Band Antennas Installation

2. Insert the four 2.4 GHz band antennas into the Antenna Support Plate. The antennas must be inserted evenly, so that the plate is level and all the antennas are protruding the same amount. The purpose of the support plate is to stabilize the antennas and keeps them aligned at all times. The plate is meant to fit tightly. Use a bit of force if necessary.

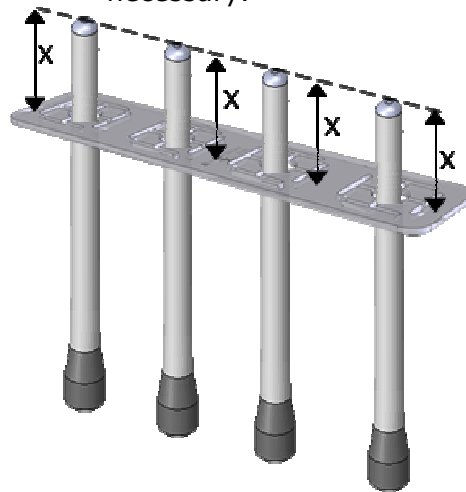


Figure 2: Antenna Support Plate Installation

GoBeam 5100 Mesh antennas

The mesh antennas are optional and assembly is described below in Attaching Mesh Antennas, page 20.

Assembling and Mounting the GoBeam 5100/6100

The universal mount is used to attach and secure the GoBeam 5100/6100 to a wall, a streetlight arm, or a variety of poles.

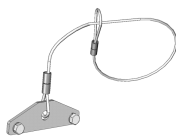
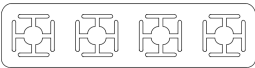
The GoBeam 5100/6100 mounting consists of the following stages and should be performed in the following order:

1. Connect the GoBeam 5100/6100 unit to the brackets using the 'L' adaptor.
2. Secure the mounting brackets to a streetlight arm, wall, or pole.
3. Assemble the GoBeam 5100/6100 unit to the bracket.
4. Ground the GoBeam 5100/6100 unit.
5. Adjust the GoBeam 5100/6100 unit.
6. For pole mounting, install the security cable.

Table 4 lists the universal mount parts. Differences between the GoBeam 5100/6100 are indicated.

Table 4. Mounting Kit Part List




Item No.	Description	Qty	Picture
A	Wall/Pole Bracket	1	
B	Clamping Bracket	1	
C	'L' Adapter Wall/Pole Mount	1	
D	'T' Adapter Wall/Pole Mount	1	
E	Hex Bolt M8x70	2	
F	Hex Bolt M8x40	1	
G	Hex Bolt M8x25	1	
H	Flat Washer M8	4 (6100) 3 (5100)	
I	Spring Washer M8	4 (6100) 3 (5100)	
J	Nut M8	1	

Item No.	Description	Qty	Picture
K	Safety Cable	1	
L	Antenna Support Plate	1	

Hardware and Connectors Installation Tools

The following tools are required to mount the GoBeam 5100/6100.

Table 5. Mounting Tools and Equipment



Description	Picture
Combination Wrench (7 mm)	 7 mm
Combination Wrench (13 mm)	 13 mm
Torque Wrench	



All hardware and tools used for assembling and mounting the GoBeam 5100/6100 are Metric.

Mounting Adapters

When mounting to a pole, the required mounting adapter is based on the position of the pole. Installation to a horizontal pole requires using the 'L' adapter. Installation to a vertical pole requires using the 'T' adapter.

-  To assemble the 'L' adaptor [C] to the GoBeam 5100/6100 unit:
 -  Attach the 'L' adapter to the GoBeam 5100/6100 using an M8x25 hex bolt [G], a spring washer [I], and a flat washer [H], as illustrated in Figure 3.

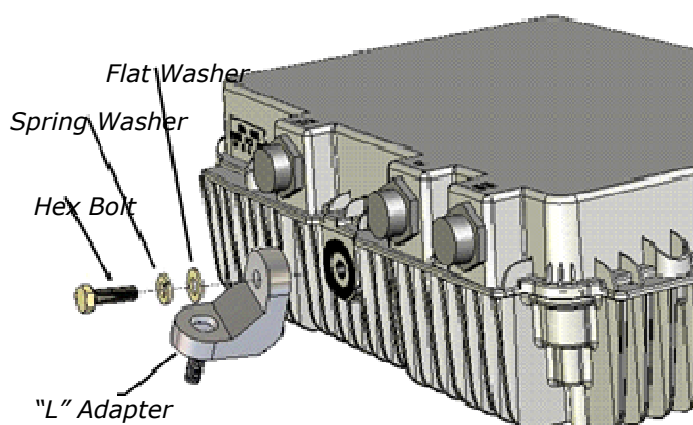


Figure 3. Mount 'L' Assembly

- ☞ To assemble the 'T' adaptor [D] to the GoBeam 6100 unit:
- Attach the 'T' adapter to the GoBeam 6100 using an M8x25 hex bolt [G], a spring washer [I], and a flat washer [H], as illustrated in Figure 4.

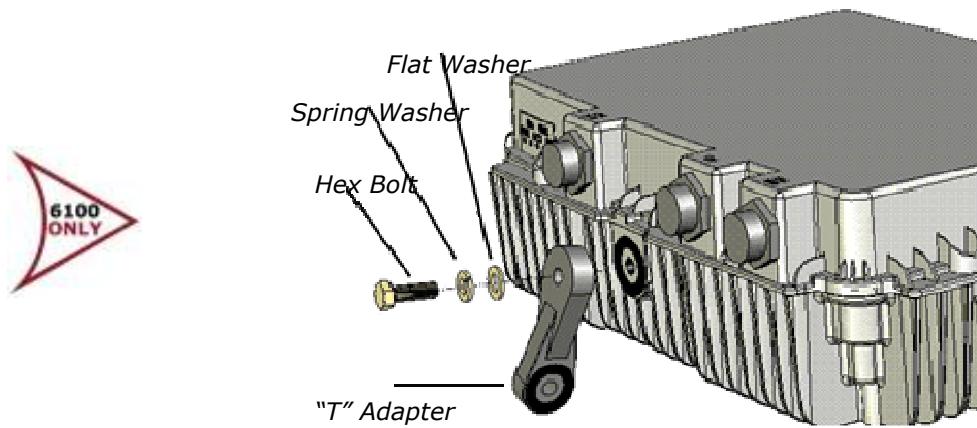



Figure 4. Mount 'T' Assembly

Mounting Brackets

-  To secure the mounting brackets:
1. Select an optimal mounting location on the pole or wall.
Select the highest mounting location with minimal obstacles to the antennas for optimal performance.



When mounting the GoBeam 5100/6100, the pole or wall mounting must support a minimum of 61.6 lbs (28 kg). In addition, the pole or wall mounting must support the wind loads from the GoBeam 5100/6100. For example, the wind load at a wind velocity of 100 mph (160 km/h) is 24.2 lbs (11 kg) and the wind load at a wind velocity of 165 mph (264 km/h) is 66.1 lbs (30 kg).



Lorsque vous montez la GoBeam 5100/6100, le poteau ou le montage mural doit supporter d'un minimum de 61.6 lbs (28 kg). En outre, le montage sur le poteau ou sur le mur doit appuyer les surcharges dues au vent de la GoBeam 5100/6100 (par exemple, 24.2 lbs (11 kg) pour la vitesse du vent de 100 mph (160 km/h), 66.1 lbs (30 kg) pour l'énergie éolienne Vitesse de 165 mph (264 km/h)).

2. Installation of the mounting brackets to a streetlight arm or a pole differs according to the diameter of the pole, as illustrated in Figure 5.

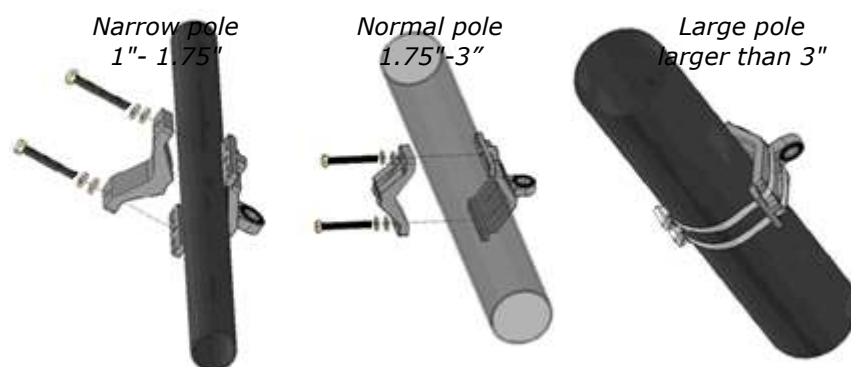
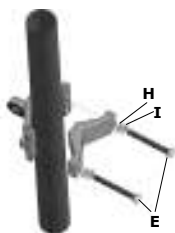
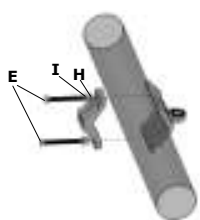


Figure 5. Pole Bracket Assembly

*Narrow pole
1" - 1.75"*



*Normal pole
1.75" - 3"*



*Large pole
larger than 3"*



For narrow poles (1"–1.75" diameter):

1. Place the two brackets, [A] and [B], around the pole at the approximate height where you wish to place the unit. When placing the clamping bracket [B], the small notch side should be in contact with the pole.
2. Use two M8x70 hex bolts [E] spring washers [I] and flat washers [H], insert them through both brackets and tighten them around the pole so that the two brackets are securely fastened.



For normal poles (1.75"–3" diameter):

1. Place the two brackets, [A] and [B], around the pole at the approximate height where you wish to place the unit. When placing the clamping bracket [B], the large notch side should be in contact with the pole.
2. Use two M8x70 hex bolts [E] spring washers [I] and flat washers [H], insert them through both brackets and tighten them around the pole so that the two brackets are securely fastened.



For large poles (larger than 3" in diameter):

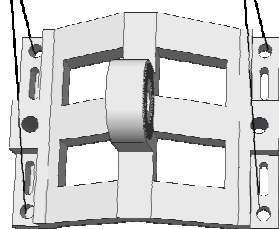
1. The wall/pole bracket [A] and two 9/16" (14mm) wide stainless steel hose clamps (not supplied with mounting kit) are used. The hose clamps must be the appropriate size to fit around the pole and bracket.
2. Open the each hose clamp by rotating the screw on the clamp counterclockwise. There may be additional resistance just before the clamp is completely open. This is normal and you should continue rotating the screws until the clamps are open.
3. Insert the band of each clamp through both slots and over the bracket [A].
4. Place the bracket [A] and hose clamps around the pole at the approximate height where you wish to place the unit.
5. Close each clamp by reinserting the band under the screw and rotate the screw clockwise.
6. Position the bracket in the appropriate location and tighten the clamps around the pole so that the bracket is securely fastened.



For wall mounting:

1. Fasten the wall/pole bracket [A] to the wall using four 3/16" (5mm) bolts. Use the appropriate bolts and fasteners, which is dependent on the material of the wall. Wall-mounting bolts and fasteners are not supplied with the mounting kit.
2. Place the wall/pole bracket [A] at the appropriate location where you wish to place the unit. Using the four holes at the corners of the bracket, mark the location where the fasteners need to be installed.
3. Install the four fasteners in the wall.

Wall Mounting Bracket




4. Insert the four bolts through the bracket and securely fasten the bracket to the wall.

Mounting the GoBeam 5100/6100 on a horizontal pole

When mounting to a pole, the required mounting adapter is based on the position of the pole.

Installation on a horizontal pole requires using the 'L' adapter.

 To mount the GoBeam 5100/6100 unit to a horizontal pole:

1. After assembling the brackets, mount the GoBeam 5100/6100 unit on to the bracket as shown in Figure 6. Use a flat washer [H], a spring washer [I] and a nut [J].

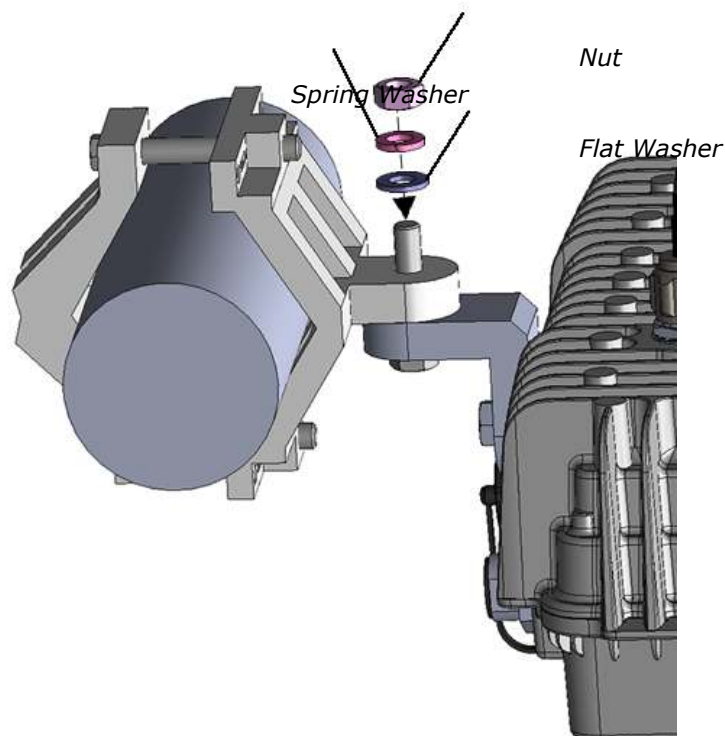



Figure 6. Unit Horizontal Pole Mounting

2. Once the GoBeam 5100/6100 unit is mounted, release the bolts slightly and adjust the GoBeam 5100/6100 unit to enhance the coverage and bypass interference. When the unit is adjusted, firmly close all bolts, applying 120 inch-lbs of torque.

Mounting the GoBeam 6100 on a vertical pole

Installation on a vertical pole requires the 'T' adapter.

 To mount the GoBeam 6100 unit on a vertical pole:

1. After assembling the brackets, mount the GoBeam 6100 unit onto the bracket as shown in Figure 6. Use a bolt [F], flat washer [H], spring washer [I] and nut [J].

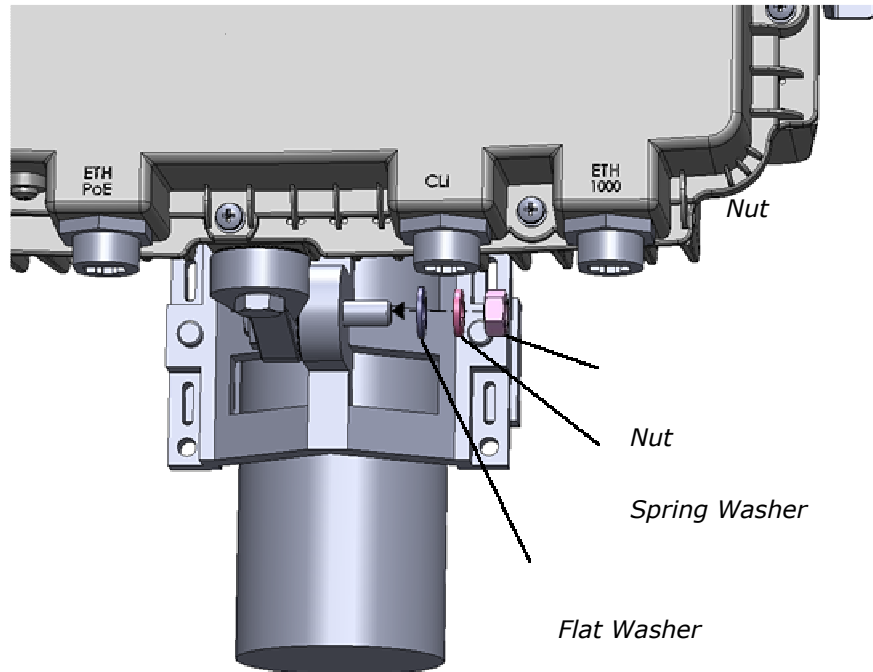


Figure 7. GoBeam 6100 Unit Vertical Pole Mounting

2. Once the GoBeam 6100 unit is mounted, release the bolts slightly and adjust the GoBeam 6100 unit to enhance the coverage and bypass interference. When the unit is adjusted, firmly close all bolts, applying 120 inch-lbs of torque.

Installing the Safety Cable

Once the GoBeam 5100/6100 unit is mounted, install the safety cable.

1. Wrap the safety cable around the pole and insert the mounting plate through the cable loop.
2. Attach the mounting plate to the GoBeam 5100/6100 unit using the hexagonal bolts, as shown below.

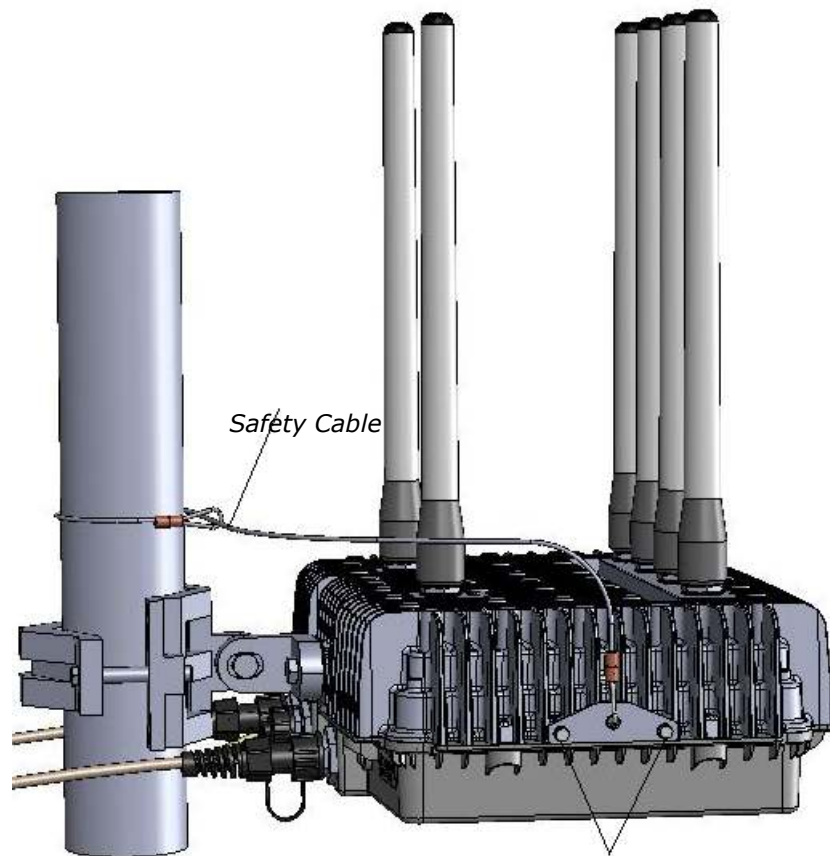


Figure 8. GoBeam 5100 Safety Cable Installation

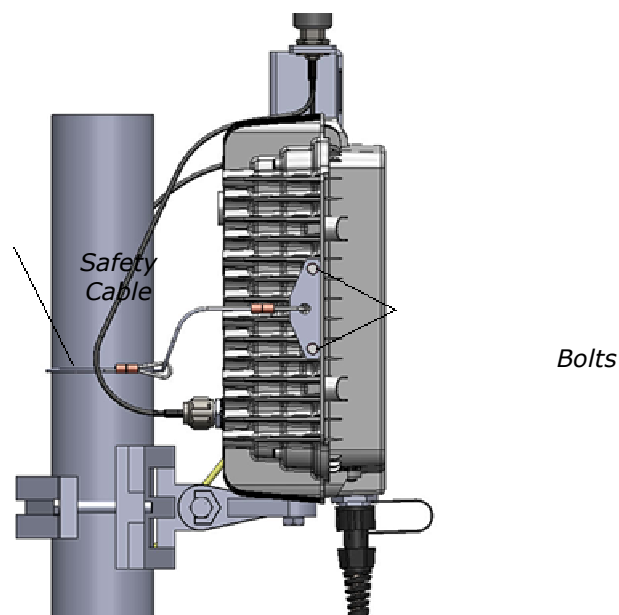
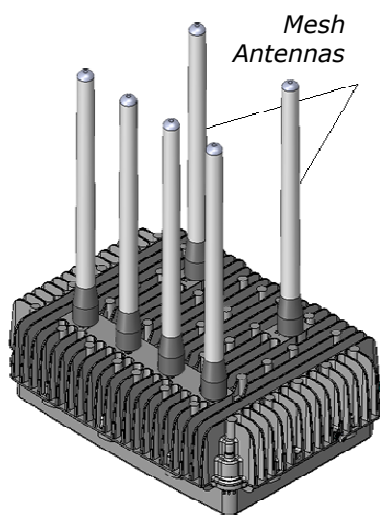



Figure 9. GoBeam 6100 Safety Cable Installation

Assembling the Optional Mesh Antennas








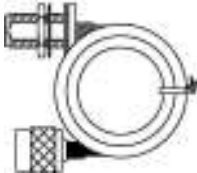
The Mesh Antennas are optional. For the GoBeam 5100, assemble the mesh antennas at the same time as the other antennas. For the GoBeam 6100, assembly of the antennas will usually be done after the L-bracket is mounted on the pole.

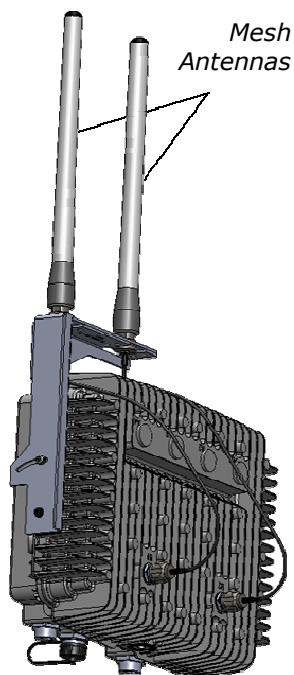
Table 6. GoBeam 5100 Mesh Antenna Kit Part List

Item No.	Description	Qty	Picture
A	Mesh Antenna	2	

The mesh antennas look similar to the access antennas supplied with the GoBeam 5100. When assembling mesh antennas, check that you are not using an access antenna (marked with label MBW-ANT-2407S). Table 2 lists all the antennas and their model numbers.

Table 7. GoBeam 6100 Mesh Antenna Kit Part List



Item No.	Description	Qty	Picture
A	Mesh Antenna	2	
B	Omni Antenna L-Brackets	1	
C	Screw M4	2	
D	Flat Washer M4	2	
E	Spring Washer M4	2	
F	Antenna Cable	2	



Installation Tools

The following tools are required to mount the mesh antenna on a pole.

Table 8. Antenna Mounting Tools

Description	Picture
Combination Wrench (18 mm)	 18 mm
Torque Wrench	



Attaching Antenna Cables to L-Bracket

1. Select an optimal mounting location on the pole. Select the highest mounting location with minimal obstacles to the antennas for optimal performance.
2. Attach each antenna cable [F] to the L-bracket [B], as illustrated in Figure 10.
 - a) Remove the nut and lock washer from the antenna connector.
 - b) Insert the connector through the hole in the bracket.
 - c) Reassemble the lock washer and nut to the connector.
 - d) Tighten the nut to 45 inch-lbs of torque.



Figure 10. Attaching Antenna Cables to L-Bracket



Mounting the L-Bracket to the Chassis

Mount the L-bracket to the unit as illustrated in Figure 11.

1. Attach the L-bracket to the chassis as shown. Before screwing the bracket tight, tilt it so that it is vertical. The Mesh antennas must be mounted vertically in respect to the ground.
2. Attach the other ends of the antenna cable [F] to terminals B1 & B2 on the GoBeam 6100 unit. Tighten the connector by hand. Do not apply excessive force by using any tool, as this may damage the unit.

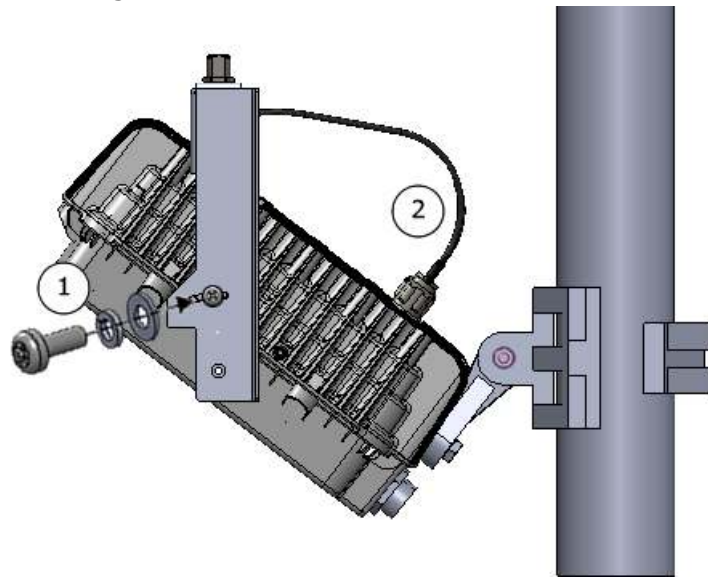
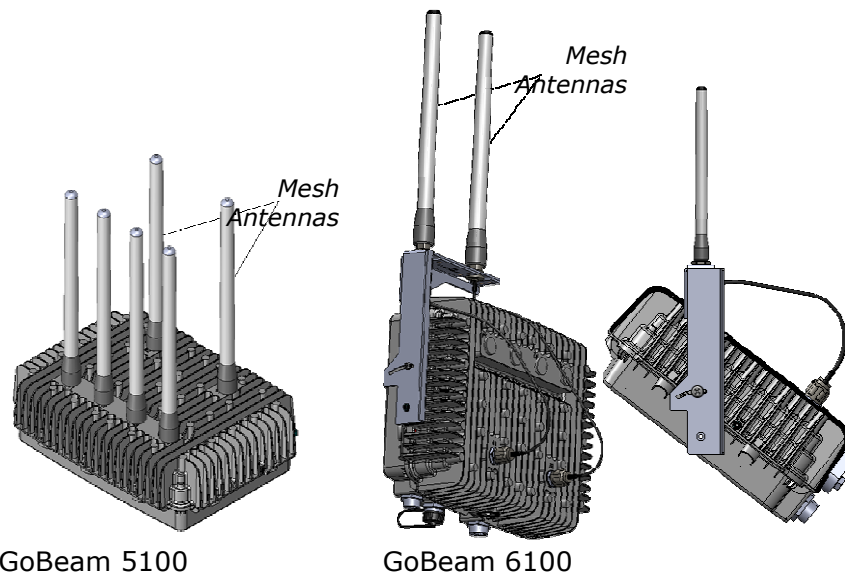


Figure 11. Mounting L-Bracket and attaching Antenna Wires

Attaching Mesh Antennas

- ✎ Attach each mesh antenna to the unit as follows:
 1. Screw the antenna into place by hand by rotating the antenna at its metallic base. The antenna should rotate easily.
 2. Tighten the antenna by hand only. Do not apply excessive force by using any tool, as this may damage the antenna and connector.



GoBeam 5100

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Figure 12. Attaching Mesh Antennas

Cable Connections

When the GoBeam 5100/6100 is properly adjusted, the connectors are located at the bottom of the unit.

Cable requirements are often unique to the location and deployment topology of each installation. As a result of this limitation, the Ethernet and grounding cables are not included in the installation kit.

The following cables are required to install the GoBeam 5100/6100 unit and should be connected in the following order:

- **Grounding Cable** – Provides the necessary electrical safety functions.
- **Power over Ethernet (PoE) Cable** – Supplies 48 VDC power to the GoBeam 5100/6100 unit and a 10/100 Ethernet connection to a wired network.
- **RS-232/RJ45 Console Cable** – Provides a connection from the GoBeam 5100/6100 unit to a console (laptop computer) for configuration. This cable is not provided with the GoBeam 5100/6100 unit.



It is recommended that the GoBeam 5100/6100 be pre-configured prior to installation.

Table 9 lists the GoBeam 5100/6100 Connectors Kit parts:



Table 9. Connectors Kit Part List

Item No.	Description	Qty	Picture
A	Ring Terminal	1	
B	Ground Screw	1	
C	Lock Washer	2	
D	Waterproof RJ45 connector	2	

Cable Installation Tools

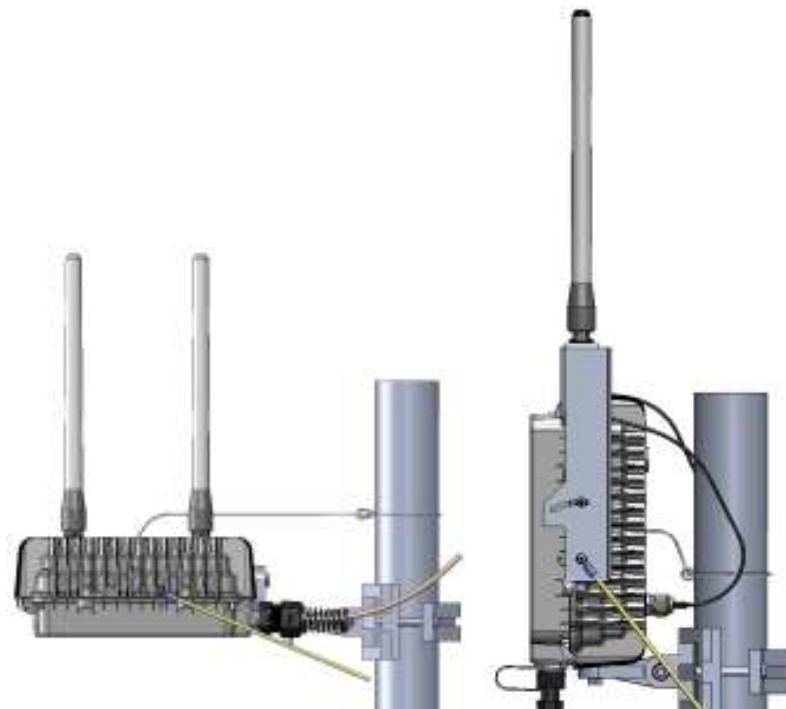
The following special tools are required to install and connect cables related to the GoBeam 5100/6100.

Table 10. Cable Installation Tools and Equipment

Description	Picture
#2 Phillips Screwdriver	
RJ45 Crimp Tool	 HT-210A

Grounding Cable


Connect a grounding wire to the grounding screw at the side of the GoBeam 5100/6100 unit, near the grounding icon. A 10 AWG grounding cable is required to ground the GoBeam 5100/6100 unit.



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Figure 13. Grounding Connection

-  To ground the GoBeam 5100/6100 unit:
1. Crimp the ring terminal [A] contained in the GoBeam 5100/6100 Connectors Kit to the grounding cable.
 2. Attach the solder-less ring terminal [A] to the side of the GoBeam 5100/6100 unit using the grounding screw [B] and lock washers [C].
 3. Connect the other end of the grounding cable to a proper ground adhering to local and national electrical codes.



Connect the 10 AWG grounding cable before connecting any other cables. When removing the GoBeam 5100/6100, the grounding cable should be the last cable removed.



Connecter la prise de terre 10 AWG avant de connecter tout autre câble. Pendant la désinstallation du GoBeam 5100/6100, la prise de terre doit être le dernier câble retiré.

Power over Ethernet (PoE) Connection

The Power over Ethernet (PoE) connection supplies the GoBeam 5100/6100 unit with power and includes an Ethernet connection. This connection is used for wired backhaul connection or an interface to a third party wireless backhaul solution. Use outdoor rated CAT5 shielded cables or better. The outer diameter of the Ethernet cable must be 4.8 – 7 mm.

When using CAT5 shielded 24 AWG cables, the cable can be up to 60 meters. When using CAT5 shielded 22 AWG cables, the cable can be up to 100 meters.

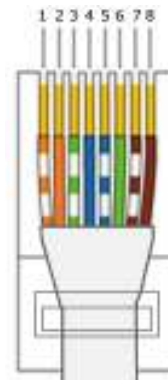
The following diagram illustrates how the PoE cable should be assembled prior to connecting it to the GoBeam 5100/6100 unit:



Figure 14. Ethernet Cable Connector

Table 11. PoE 10/100 Ethernet Cable Connector and Pinout

Pin #	Signal
1	Data
2	Data
3	Data
4	48V (+)
5	48V (+)
6	Data
7	48V (-)
8	48V (-)



The unit requires a PoE power injector.



To wire the PoE connection:

1. Build the PoE cable as described above.
2. Using the PoE cable, connect the RJ45 connector to the PoE port on the GoBeam 5100/6100. Then assemble and

- tighten the sealed RJ45 connector to the GoBeam 5100/6100 unit.
3. Connect the other end of the PoE cable to the Radio port on the power injector.
4. For Ethernet 10/100 connect the Ethernet cable from the Ethernet network to the Ethernet port on the power injector. For 1G, use the Eth 1000 port as shown in Figure 16.
5. Connect the AC power to the power injector.

The following diagrams illustrate the wiring from the power injector to the GoBeam 5100/6100 unit.

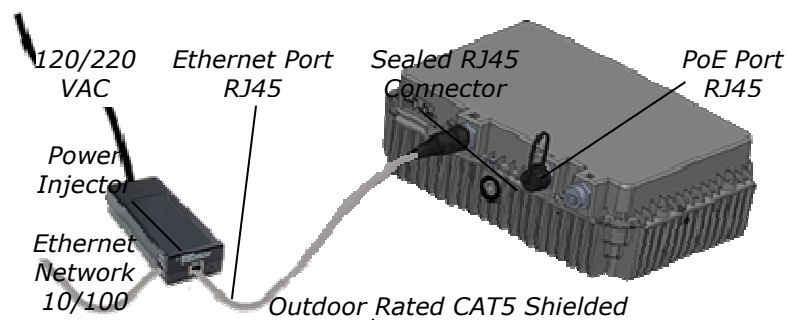


Figure 15. Ethernet 10/100 Mbps Connection

When using 1Gbps Network connection, use the Eth 1000 port as shown in Figure 16.

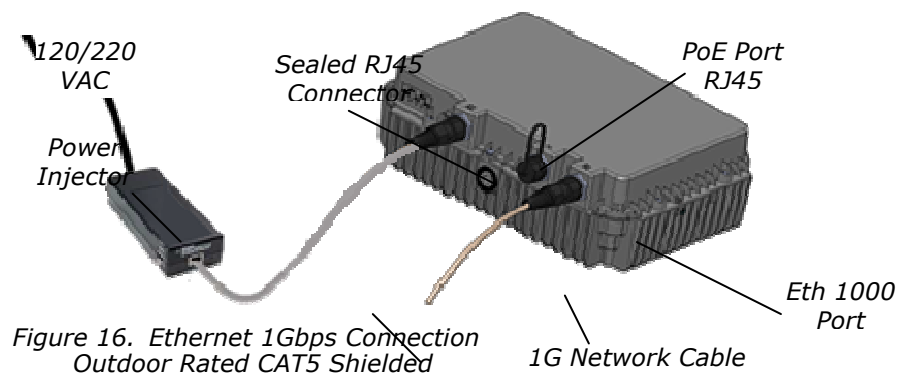
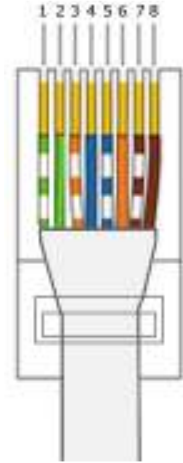


Figure 16. Ethernet 1Gbps Connection
Outdoor Rated CAT5 Shielded

Table 12. 1Gbps Network Cable Connector and Pinout

Pin #	Signal	Color
1	BI_DA+	white and green
2	BI_DA-	green
3	BI_DB+	white and orange
4	BI_DC+	blue
5	BI_DC-	white and blue
6	BI_DB-	orange
7	BI_DD+	white and brown
8	BI_DD-	brown



Serial Connection

Figure 17 illustrates the CLI cable connections used to connect the GoBeam 5100/6100 to a notebook computer. This connection is typically used for the initial configuration. For more information regarding the configuration, see the *GoBeam CLI Configuration Guide*. For more information regarding the RS232 on RJ45 cable, see Wiring Specifications.

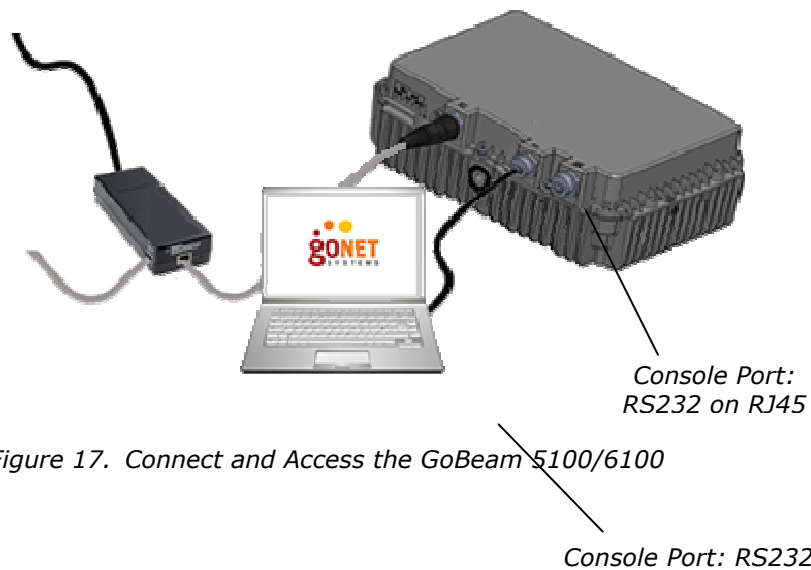


Figure 17. Connect and Access the GoBeam 5100/6100


-  To initialize the GoBeam 5100/6100 via an RS-232 serial connection:
 - Connect the cable and open a Terminal session. Set the following parameters in the terminal:

Table 13. Terminal Session Parameters

Parameter	System Requirement
Data Bits	8
Baud Rate:	115200
Stop Bits	1
Parity	none



Some laptops may not have an RS-232 serial port. If a serial port is not available, you may use a USB to serial converter.



Power Up and Software Configuration

Since the GoBeam 5100/6100 unit is normally mounted in places that make it inconvenient to configure after mounting, it is recommended that wireless communication be established with the unit prior to installation, so that the unit can later be configured and monitored from the ground.

To verify communications when installing the GoBeam 5100/6100 unit, the Mesh-Gateways must be installed and powered up first.

The LEDs on the GoBeam 5100/6100 unit indicate the status of communications between the GoBeam 5100/6100 unit and the network. See Table 14 for more information on the LED indicators.

The ACT LED on the Mesh-Gateway should be checked to verify that wired communications have been established. The BH1 LED on the Mesh-Gateway should be checked to verify that wireless communications have been established.

When powering up a Mesh-Node, the BH1 LED should be lit to verify that the GoBeam 5100/6100 unit's wireless communication is connected. The BH1 LED indicator will light up after the boot is completed.

Table 14. LED Indicators

LED	Function	
PWR	Green –	There is power to the unit.
	Unlit –	There is no power to the unit.
STA	Green –	The operational status of the GoBeam 5100/6100 unit is normal.
	Red –	The GoBeam 5100/6100 unit is in a failure state.
	Unlit –	There is no power to the unit.
ACT	Green –	When the LED is on, there is a communication connection. When the LED is flashing, traffic is flowing through the GoBeam 5100/6100 unit.
	Unlit –	There is no communication connection.
BH1	Green –	On a Mesh-Gateway, the mesh functionality is activated.
	Unlit –	On a Mesh-Node, the GoBeam 5100/6100 is connected to the mesh. On a Mesh-Gateway, the mesh functionality is not activated or no Ethernet link is available. On a Mesh-Node, the GoBeam 5100/6100 is not configured or failed to connect to the mesh.

Terminology

Table 15. Terminology

Acronym	Explanation
802.11	A family of specifications related to wireless networking, including: 802.11a/n, 802.11b, 802.11g and 802.11n.
AP	Access Point. The hub of a wireless network. Wireless clients connect to the access point, and traffic between two clients must travel through the access point.

Wiring Specifications

Table 16. Console Port Signaling & Cabling with DB-9 Adapter

Console Port (DTE)	RJ45 - RJ45 Straight Cable		RJ-45 to DB-9 Terminal Adapter		Console Device
Signal	RJ45 Pin	RJ45 Pin	RJ45 Pin	DB-9 Pin	Signal
No connection	1	1	1	8	CTS
No connection	2	2	2	6	DSR
No connection	3	3	3	5	GND
GND	4	4	4	5	GND
RxD	5	5	5	3	TxD
TxD	6	6	6	2	RxD
No connection	7	7	7	4	DTR
No connection	8	8	8	7	RTS