



## AmpWave™ Microcell Installation

Figure 4 shows a block schematic of the installation procedure for the Microcell Ampwave™ Installation.

Your Kit should include the following equipment:

- A. MCELL2411A – Microcell Assembly, 11 Mbps (2). This unit is a fully weather proof enclosure and includes the 11 Mbps Access Point, Amplifier, and surge protector. The unit has a N-type connection for attaching the antenna (1). The antenna is attached via a small length of LMR400 Cable (3) supplied with your kit.
- B. At the bottom of the MCELL2411A there is a special sealed connector (4) which allows the cable assembly – MCEL CAB (5) to be connected between the Microcell and the AC/DC converter unit – MCEL PSA (8)
- C. An RJ45 Cable (7) connects to the switch or hub.
- D. A 120V AC Power cord (9) plugs into DC/DC converter.
- E. Bolts with hardware to mount Microcell to tower or mast (Supplied)
- F. Antenna –
- G. Hub
- H. Non-metallic clamps, or tie-wraps, or tape

### Detailed Instructions:

Pretesting of system prior to permanent installation on Mast or Tower.

1. Connect the large circular connector of the cable to the Microcell (MCELL2411A). Make sure the keys line up and push the connector into the Microcell Socket. Turn the retaining ring until resistance is felt, then push the connector again into the socket. Turn the retaining ring and repeat until the connector is seated in the socket.
2. Connect the DB9 Connector (smaller connector) to the Power Supply Box (MCEL PSA).
3. Plug the AC cord into a 120 VAC outlet. At this time the green LED should be illuminated on the Power Supply, and the amber LED should be illuminated on the Microcell.
4. The Microcell is in Access Point Mode when shipped and the Red LED should flash on the Power Supply and also on the Microcell.
5. A PC or Laptop with the Ethernet card on NIC should be loaded with the Access Point utility, which comes with the Microcell.

6. Connect the PC or Laptop to the RJ45 Connector of the Power Supply with a LAN Cable. You should have a link indication on your PC or Laptop. If no link is indicated use a crossover cable for the connection and verify link.
7. Double Click on the AP utility Icon. A scan should start and after completion an AP icon should appear. Double Click on the AP Icon and a password request window should appear. Enter “default”, lower case, and no quotes.
8. The 11 Mbps Wireless AP window should appear
9. Continue to follow the instructions for configuring of the network parameters.
10. After familiarizing yourself with configuring the Microcell in a local environment, you may dismantle and permanently install as follow.

**Detailed Instructions:**

**Final Location – Mast or Tower**

1. The Microcell, Antenna, bolts, LMR400 Cable, Cat5 Cable, Tie-wraps (or non-metallic clamp, or tape) are hoisted to the permanent location of the unit.
2. The Microcell is affixed to the mast or pole using the Clamps and bolts supplied. Insure that Microcell is mounted securely to the mast or pole.
3. Follow the instructions for mounting the Antenna, instructions below.
4. Connect the large circular connector of the cable to the Microcell (MCELL2411A). Make sure the keys line up and push the connector into the Microcell Socket. Turn the retaining ring until resistance is felt, then push the connector again into the socket. Turn the retaining ring and repeat until the connector is seated in the socket. The cable should have a service loop applied 5-10" from connectors. Note: the connector is water tight and does not need tape.
5. The cable should be run down the mast or pipe, and attached every 5' with non-metallic clamps, tie-wraps, or tape.
6. The Standard N-Connectors at each end of the LMR400 cable, (connecting the Antenna to the Microcell), should be taped to insure environmental integrity.
7. The Lug near the circular connector of the Microcell is for grounding. A minimum 12 gauge copper wire should be connected here to a low impedance ground.
8. Once back on the ground, connect the DB9 Connector (smaller connector) to the Power Supply Box (MCELPSA).
9. Plug the AC cord into a 120 VAC outlet. At this time the green LED should be illuminated on the Power Supply, and the amber LED should be illuminated on the Microcell.
10. The Microcell is in Access Point Mode when shipped and the Red LED should flash on the Power Supply and also on the Microcell.
11. A PC or Laptop with the Ethernet card on NIC should be loaded with the Access Point utility, which comes with the Microcell.
12. Connect the PC or Laptop to the RJ45 Connector of the Power Supply with a LAN Cable. You should have a link indication on your PC or Laptop. If no link is indicated use a crossover cable for the connection and verify link.
13. Double Click on the AP utility Icon. A scan should start and after completion an AP icon should appear. Double Click on the AP Icon and a password request window should appear. Enter “default”, lower case, and no quotes.

14. The 11 Mbps Wireless AP window should appear
15. Continue to follow the instructions for configuring of the network parameters.
  - a. AOM5
  - b. AOM8
  - c. INET-AOM-10
  - d. INET-ANT-15
  - e. APN-7

**The FCC warning relate to all Antennas used. Please refer to instructions in your kit.**

**WARNING:** The AMPDNET™ Antenna should be installed only by an experienced antenna installer familiar with local building and safety codes and, wherever necessary, licensed by appropriate government regulatory bodies. Failure not to do so, may void the Product Warranty, as well as expose the end user to legal and financial liabilities. Amplidyne, Inc., it's agents, resellers, or distributors, are not liable of injury, damage or violation of government regulations associated with the installation of the antenna.

The installer is responsible for ensuring that the public is not exposed to radio energy levels in excess of the FCC guidelines. Those guidelines imply that no human may conceivably be found within one foot of the front of the antenna. If such a situation is likely to occur, the installer is responsible for placing the appropriate caution signs to warn the public. Amplidyne, Inc., it's agents, resellers, or distributors are not liable for exposure to excessive RF energy levels due to improper antenna installation.

The Maximum Permissible Exposure guidelines are 1 foot (30cm) for the AMPDNET™ unit, as based on the National Council on Radiation Protection and Measurement (NCRP). If the antenna is in an accessible area, an appropriate warning sign must be installed in the appropriate place by the installer.

**WARNING:** Using an antenna or cable other than those supplied or recommended for use with the AMPDNET™ units, whether installer indoors or outdoors, could cause degradation of the system and could void your authority to operate this equipment. In addition, the use of unauthorized antennas or external amplifiers violates Federal Law and FCC's regulations. This may void the Product Warranty, as well as expose the end user to legal and financial liabilities.

**WARNING:** The AMPDNET™ Antenna emits high radio frequency energy levels. In order to comply with FCC RF Exposure requirements the antenna must be installed in a manner that will provide a minimum separation distance of 1 foot, (30 cm) between the antenna and all persons.

#### Example of Omni Directional

The Omni directional antenna available for use with the AMPDNET™ Central Site equipment is intended for external mounting and should be used when full 360-degree coverage is desired. When this antenna is mounted on a mast, it must be located as high as possible in order to avoid any other object located beside it. The OMNI antenna has a very narrow vertical beam width. Both the height and distance separation between the 2 sites must be taken into consideration when selecting the antenna in order to maximize the coverage area.

Following are the steps required to install the antenna for the AMPDNET™ System.

To install the Omni Antenna:

1. Mount the antenna using the enclosed brackets, following the instructions included with the antenna and cable kit that you purchased.

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## **POWER COMPLIANCE**

The system, if required by regulation, performs transmits power adjustment based on the installed antenna and cable. The antenna filter unit, if required, goes between the tension release cable and the antenna cable and is used to limit the AMPDNET™ emissions to comply with your country's requirements.

Make sure that you enter the correct antenna and cable parameters in the antenna configuration software so that it complies with your country's requirements. In addition, do not attempt to dispense with the use of the filter in conjunction with the AMPDNET™ units. Incorrect antenna parameters and/or dispensing with the use of the filter may cause the system to malfunction and invalidate your warranty.

## **LIGHTNING PROTECTION**

It is highly recommended that you connect the shield/enclosure of the antenna and/or cable to a ground before the entrance to the building. This will provide some lightning arrestor. Such devices protect the AMPDNET™ Microcell, as well as the life of any person in contact with the wireless access unit if the antenna is struck by lightning.

The optional AMPDNET™ lightning arrestor has the same connector arrangement as the antenna cable segment (male/male). As a result, it can be installed between any two-cable segments (the antenna and the tension release cable are also considered cables for this purpose). However, the best location for the arrestor is just before the cable's entrance to the building. In either case, the arrestor must be mounted outside the building. The arrestor that comes built into the Microcell is self-resetting, meaning that maintenance is not needed, even following a lightning strike. Follow the installation instructions provided for the arrestor and ensure that the grounding solution is in accordance with these instructions.

Warning: A lightning arrestor should be installed on any antenna mounted outdoors. Failure to do so may void the product. Amplidyne, Inc., it's agents, resellers, or distributors, are not liable for injury or damage caused by lightning striking the antenna.

## **SECTION B**

### **Installing Instructions**

**Rev. 1**

Omnidirectional Antennas

#### **Mounting:**

For optimal performance these antennas must be mounted on top of the antenna supporting structure (tower, pole, etc.) above all other objects (lightning rod, obstruction lights, other antenna, etc.). In areas where severe lightning can be a problem, a thin lightning rod can be mounted several wave lengths away from the antenna. If the antenna is mounted on the side of the tower or above the top of the tower but in the vicinity of other antennas or a lightning rod, then this will result in a "scalloped" azimuth pattern with nulls or a slightly offset pattern.

Some antenna models have a very narrow beamwidth and must be mounted carefully. The antennas must be mounted in a true vertical (plumb) position in order to assure omnidirectional coverage in the horizontal (azimuth) plane. In a point-to-multipoint system where a high gain antenna is installed on top of a high mountain, the system designer should make sure that the signal does not merely "pass over" the close-in subscribers situated in the valley below.

The antennas are mounted to a customer supplied support mast having an outside diameter of 1.75 to 4.0 inches (45 to 102 mm) using the clamps supplied with the antenna.

**Lightning Protection:**

The antenna is a DC ground for lightning protection. The mounting clamps "ground" the antenna to the support mast. The support mast must in turn, be grounded using practices supplied/approved by the customer.

**Weatherproofing:**

All connections between the antenna connector and the transmission line must be weatherproofed. This can be done using the procedure outlined in application No.2.

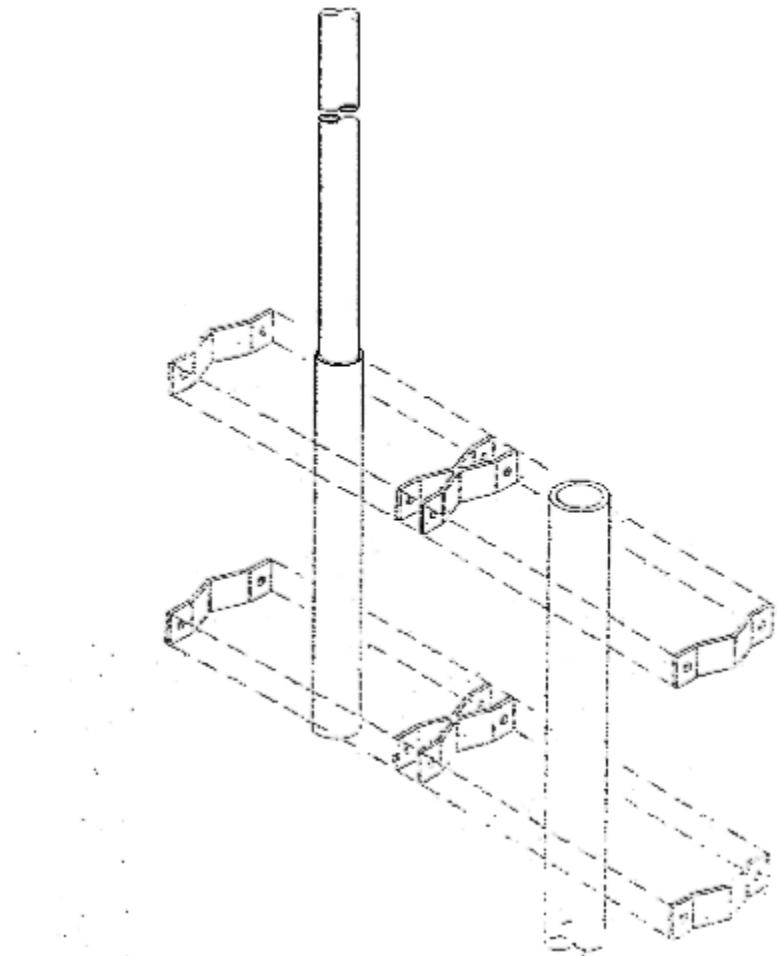
**Drainage:**

Since the radome on the antenna is not pressurized, there is a drain hole in the connector base plate. This drain must be kept open so that any moisture accumulating inside the radome will be able to drain properly.

**NOTE: THESE MODELS CANNOT BE MOUNTED IN THE INVERTED POSITION.**  
**ANTENNAS MUST BE MOUNTED WITHIN 1 DEGREE VERTICAL.**

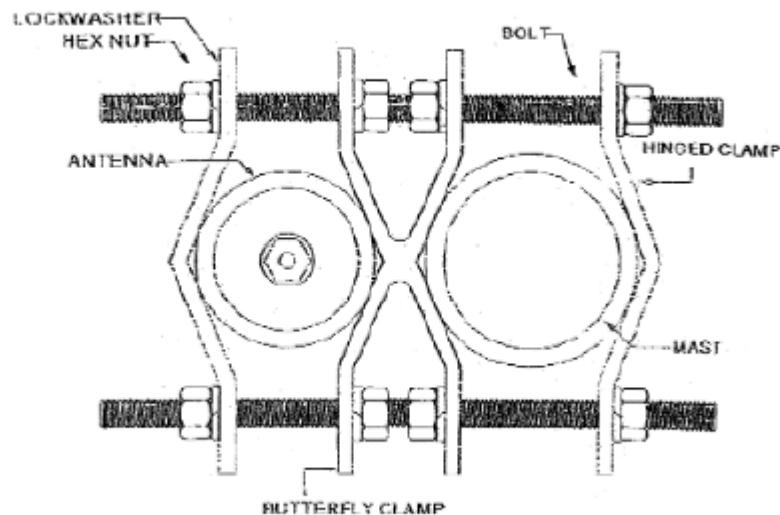
**MOUNTING DIAGRAM**  
Rev. 1

NOTE: a) Clamps supplied will mount to a 1.75"-4" pipe.



## MOUNTING DIAGRAM (TOP VIEW)

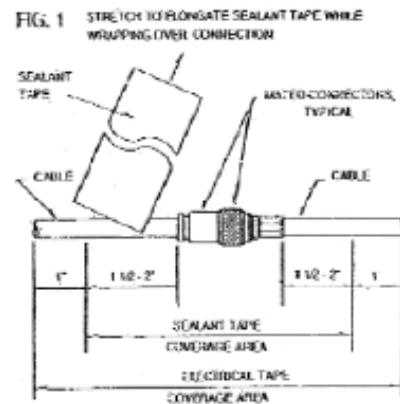
NOTE: a.) Clamps supplied will mount to a 1.75" – 4" O.D. Pipe.



*Most antenna problems are caused by coaxial cable connections that loosen due to vibration, allowing moisture to penetrate the connector interface. We recommend that all outdoor cable connections be weatherproofed using a procedure similar to the one described below. To facilitate the task the sealant tape is supplied with each antenna shipped, (the customer is responsible for providing the electrical tape).*

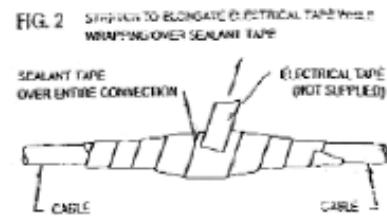
#### Step 1.

Beginning as shown in Figure 1 by overlapping half-width, wrap sealant tape over entire connection.



#### Step 2.

Firmly press on the sealant tape. Sealing it to the connection, itself and the cable jackets, as shown in Figure 2.



### STEP 3.

While overlapping half-width, wrap electrical tape (not supplied) over the entire sealant tape connection. While stretching tape, begin at one end of formed sealant tape and work towards on end approximately one inch beyond end of sealant tape. Insure tight electrical tape coverage over cable jacket. Without breaking electrical tape, reverse direction and wrap to other end, again extending approximately one-inch beyond end sealant tape. Again insure tight coverage onto cable jacket. Reverse direction again and wrap electrical tape to center of connection and cut.

FIGURE 3

ELECTRICAL TAPE WRAPPED TIGHTLY AGAINST CABLE JACKET, TYPICAL BOTH ENDS



## MICROCELL INSTALLATION

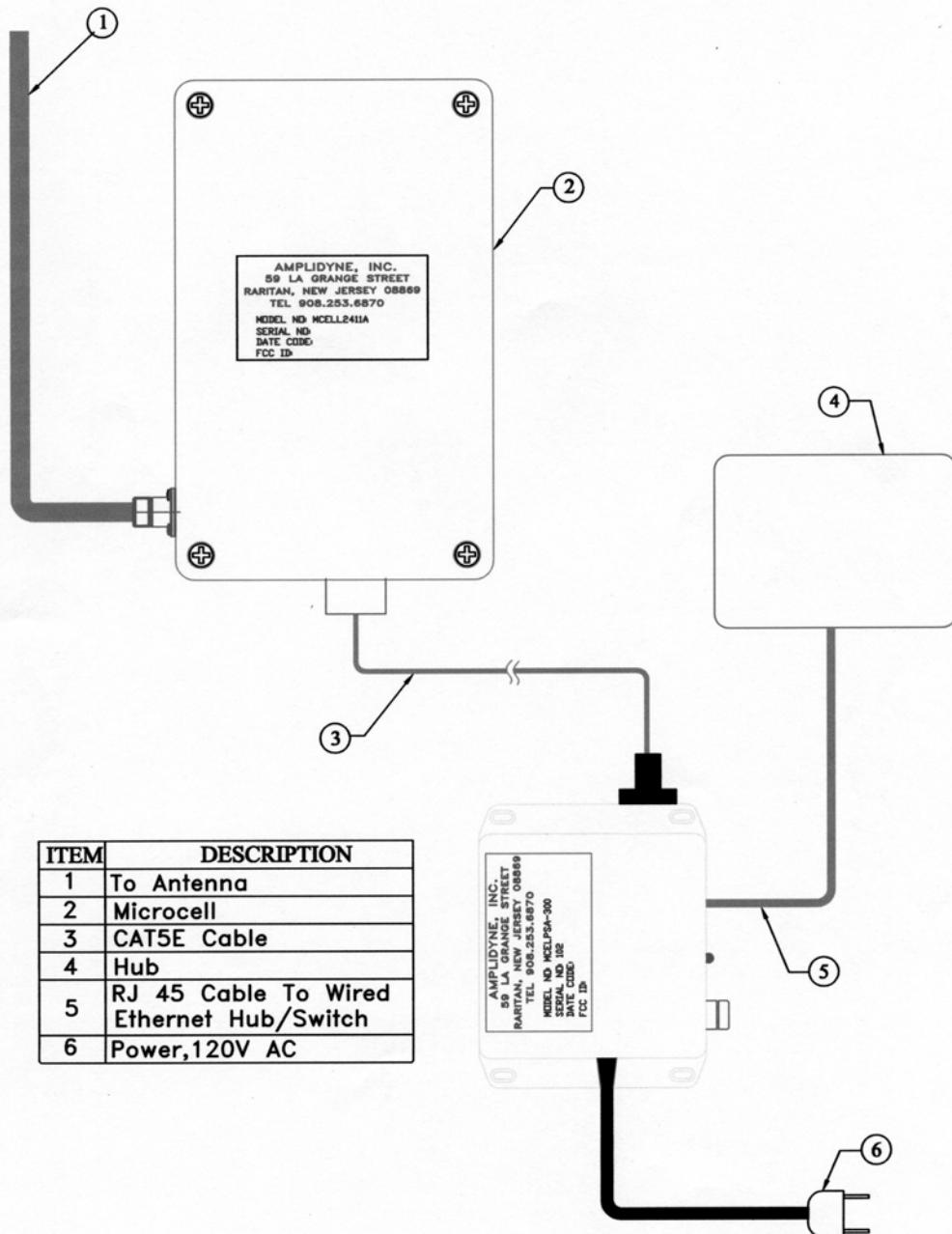


Figure 4 – Block Schematic of Microcell

