

3.5.3 AP Termination

A 50 Ω termination is required on each unused AP port. The type of termination is vendor specific.

Vendor	Model	Termination
Cisco	1242	RP-TNC 50 ohm terminators
Aruba	AP-70	RP-SMA 50 ohm terminators
Trapeze	MP-422	RP-SMA 50 ohm terminators
Colubris	MAP-330	RP-SMA 50 ohm terminators
Meru	AP-200	RP-SMA 50 ohm terminators

3.5.4 IDF Access Point Planning

MobileAccess recommends that each independent IDF Telecom closet is adequately planned for installation of the access points to increase the amount of isolation and reduce the amount of RF leakage between access points.

MobileAccess recommends the following options for access point installation:

- Wall Mounting of MobileAccess supported Access Point
- Rack-Mounting of MobileAccess supported Access Points

Utilizing the mounting hardware distributed from each supported access point vendor, Access point can be mounted on a wall within the IDF or telecom closet and connected with the appropriate low-loss jumper cables to the appropriate 860 WLAN module interface ports.

MobileAccess has also found that mounting the access points in a 19" rack system has proven to be effective against RF leakage between access points. In this configuration, *two access points can be installed per 19" shelving unit which takes up 1U of space per two access points.*

4 Installation

This chapter contains the installation and connection procedures for various installation configurations. The MobileAccess 860 WLAN Module and system architecture may be installed in the following configurations:

4.1 Accessory Kits

Verify that the supplied accessory kit corresponds to your installation. The accessory kits include a bracket, the required cables and accessories.

Part Number	Description
AK-860-1000	RHU 1000 860 WLAN Accessory Mounting Kit
AK-860-1200	RHU 1200 860 WLAN Accessory Mounting Kit
AK-860-MDLT	Modulite 860 WLAN Accessory Mounting Kit
AK-860-2000	MRC 2000 860 WLAN Accessory Mounting Kit
AK-860-2000L	MRC 2000L 860 WLAN Accessory Mounting Kit
AK-860-SA	Stand alone Mounting Kit
AK-860-PS-9.8V-75W	(Optional) Redundant Power Supply Kit

4.2 Access Point Installation (Recommendation)

MobileAccess recommends that each independent IDF Telecom closet is adequately planned for installation of the access points to increase the amount of isolation and reduce the amount of RF leakage between access points. MobileAccess recommends the following options for access point installation:

- Wall Mounting of MobileAccess supported Access Point
- Rack-Mounting of MobileAccess supported Access Points

Utilizing the mounting hardware distributed from each supported access point vendor, Access point can be mounted on a wall within the IDF or telecom closet and connected with the appropriate low-loss jumper cables to the appropriate 860 WLAN module interface ports.

MobileAccess has also found that mounting the access points in a 19" rack system has proven to be effective against RF leakage between access points. In this configuration as detailed in the picture below, two access points can be installed per 19" shelving unit which takes up 1U of space per two access points.



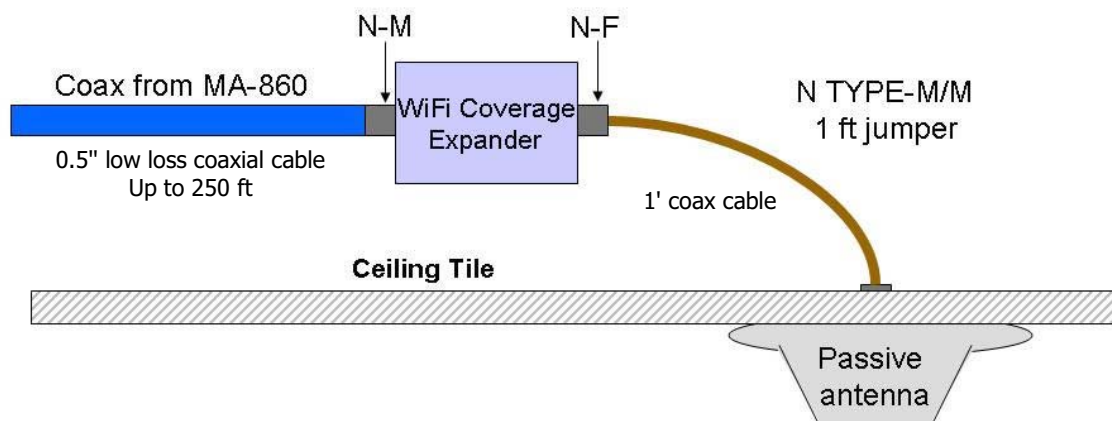
4.3 Wi-Fi Coverage Expander (WCE) Installation

Note: It is assumed the antennas have already been installed at the remote locations.

A WCE unit is installed near each antenna. The WCE can be installed in the following configurations:

- Tie-Wrap / Wire-Tie to a fixture
- Wall Mounted – using four screws
- In-line with the coax cables

The WCE will be connected on one side to a 0.5" low loss coaxial cable (typically running to a remote wiring closet), and to the Passive Broadband Antenna usually through a jumper (flexible 1' coax cable). The following sections illustrate each type of WCE installation.



4.3.1 WCE Tie to Fixture Installation

Use the two mounting slots used to affix the unit to any available building infrastructure via a wire-tie or tie-strap.



4.3.2 WCE Wall Mounted Using Four Screws

Secure the WCE using four standard drywall screws (3/16" in diameter).



4.3.3 In Line with Coax Cables

WCE's light design enables connecting it between the two coax cables without additional support.

NOTE: The bending moment for 1/2" coax cable = 3lbs per foot.

4.4 860 WLAN Module Installation

MA 860 can be mounted in the following configurations:

- Standalone – mounted directly on the wall with four screws
- Mounted onto an MA 1000 RHU
- Mount as add-on to an MA 1000 RHU with an MA 1200 add-on unit
- Add-on to a MA 2000 system

To install the unit

- Depending on your installation mount the unit on the IDF or telecom Closet wall (standalone installation) or assemble it onto the MA system (when converged with other MA systems)
- Record location and serial number of MA860 unit

4.5 MA-860 Unit Installation and Connections

MobileAccess MA-860 is typically installed in the IDF or Telecom Closet of each floor to which WLAN coverage is to be supported. The accessories, mounting and installation procedures vary depending on the installation configuration.

4.5.1 Standalone Wall Mount Installation

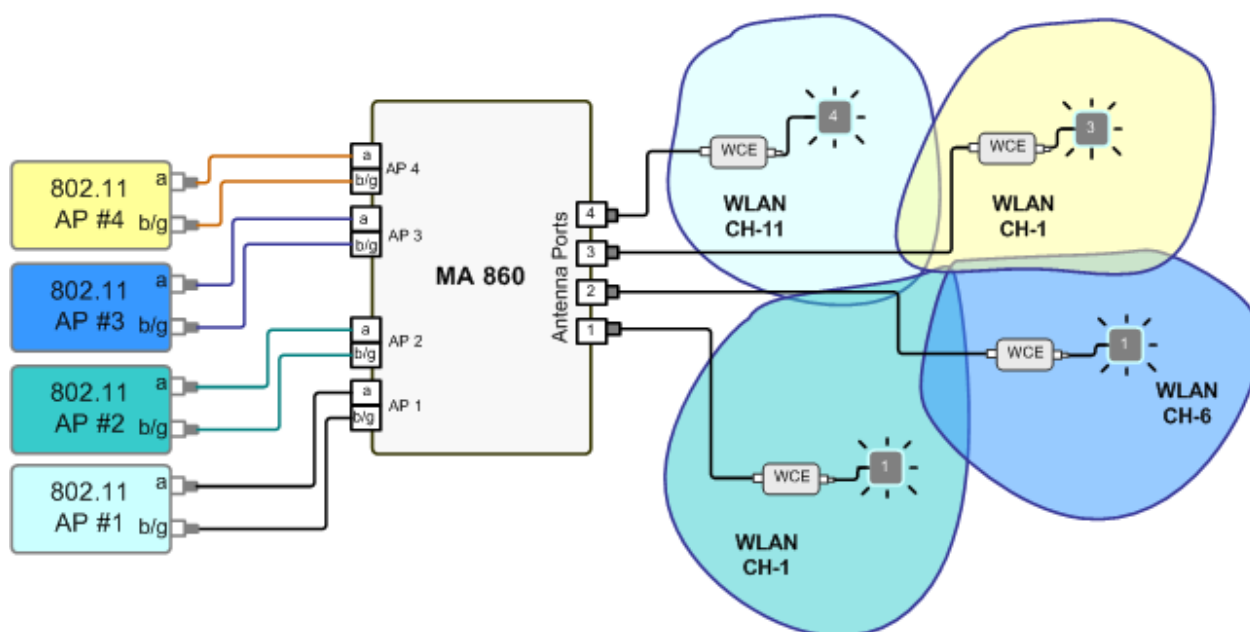


Figure 4-1. MA-860 Standalone Installation Configuration

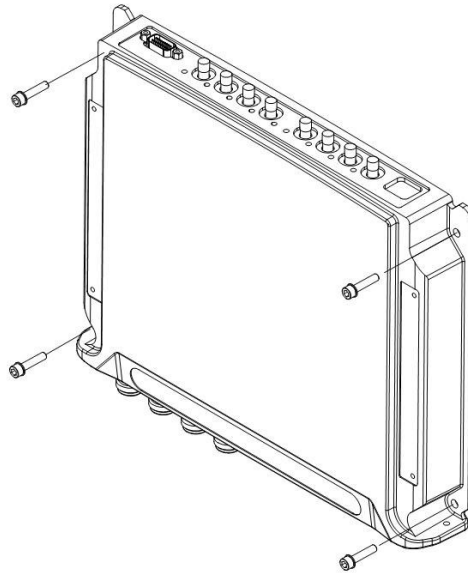
NOTE: It is recommended to record the location of the units and IP address according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

Although it is not required for a stand-alone installation, it is recommended to set the supplied cable **705102101** aside (usually used when MA-860 is installed in an add-on configuration). You will need it if you want to upgrade your system to provide additional coverage options.

ATTENTION: Use SMA wrench for the SMA connectors, do not over tighten the connectors.

To install MA 860 wallmount standalone configuration

1. Mount the MA-860 on the wall using four screws. When mounting, consider the following:
 - The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.



2. Connect the **power** (section 4.7).
3. Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

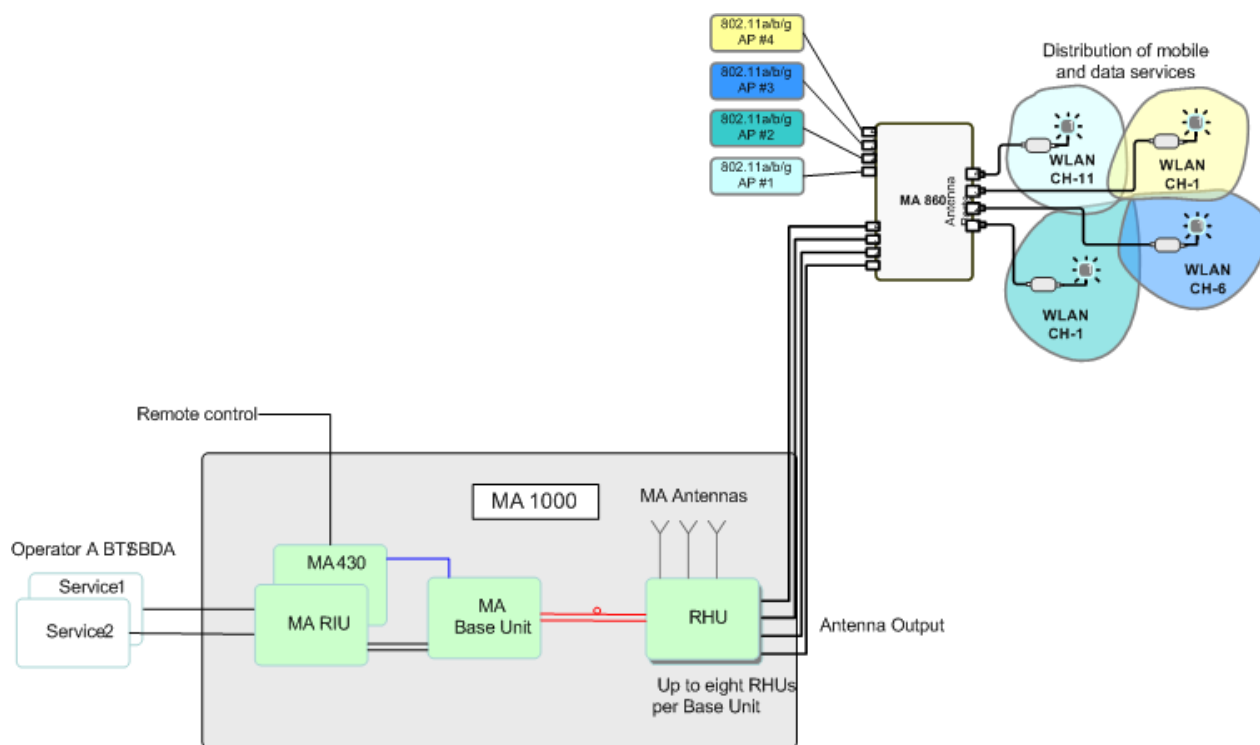
NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

4. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
 - Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
5. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.
6. Connect the RJ45 network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units and IP according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

4.5.2 Add-on to an MA 1000 System Installation

In this type of installation, the MA-860 and MA 1000 RHU are assembled together with a *bracket* between them.



NOTE: It is recommended to mount the MA-860 to the wall, and the MA 1000 on top of the MA 860 (with a bracket between them). However, if a previous MA 1000 RHU is present, you may install the MA-860 on top of the existing MA 1000 RHU (with a bracket between them.)

To assemble an RHU 1000 onto an MA 860

1. Assemble the supplied bracket to the top of the MA-860, where the notched side of the bracket is towards the rear of the unit. Secure the bracket to the MA-860 unit using the four supplied screws.



Figure 4-2. MA-860 and Bracket Assembly

2. Mount the MA-860 and bracket assembly to the wall. When mounting, consider the following:
 - The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.
3. Mount the MA 1000 RHU to the bracket using the four provided screws.

- For antenna sensing support (RHU 1000 version 3.1 and higher), connect between the **Control** connectors at the rear of both units using cable **705102101**.

NOTE: For antenna sensing support in RHU 1000 version 3.0 and lower, upgrade to a higher version according to the *MA 860 Upgrade Procedure Guide*.



- Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

- Connect the network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

5. Connect the **MA 1000 antenna** ports and the **MA-860 Mobile Services** ports using the four SMA to N-type cables *supplied in the accessory kit*.

NOTE: Be sure the connectors are closed at a 45 degree angle so as not to place stress on the cables.



6. Connect the **power** (section 4.7).
7. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
 - Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
8. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.

4.5.3 Add-on to an MA 1000 with MA 1200

In this type of installation, the MA-860 and MA 1000/1200 assembly are separated by a bracket.

NOTE: It is recommended to mount the MA-860 to the wall, and the MA 1000/1200 assembly on top of the MA 860 (with a bracket between them). However, if a previous MA 1000/1200 assembly exists, you may install the MA-860 on top of the existing assembly, (with a bracket between them.)

To assemble an RHU 1000 onto MA 860

1. Assemble the supplied bracket to the top of the MA-860, where the notched side of the bracket is towards the rear of the unit. Secure the bracket to the MA-860 unit using the four supplied screws.



Figure 4-3. MA-860 and Bracket Assembly

2. Mount the MA-860 and bracket assembly to the wall. When mounting, consider the following:
 - The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.
3. Assemble the MA 1000/1200 assembly to the MA-860 bracket.
4. For antenna sensing support (RHU 1000 version 3.1 and higher), connect between the **Control** connectors at the rear of both units using cable **705102101**.

NOTE: For antenna sensing support in RHU 1000 version 3.0 and lower, upgrade to a higher version according to the *MA 860 Upgrade Procedure Guide*.



5. Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

6. Connect the network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

7. Connect the **MA 1000 antenna** ports and the **MA-860 Mobile Services** ports using the four SMA to N-type cables *supplied in the accessory kit*.

NOTE: Be sure the connectors are closed at a 45 degree angle so as not to place stress on the cables.



Figure 4-4. Connection of MA-860 and MA 1000 Service Ports

8. Connect the **power** (section 4.7).
9. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
 - Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
10. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.

4.5.4 Add-on to an MA 2000 System

MA-860 may be integrated into the MA 2000 system using one of the following installations:

- Installing it directly on the MA 2000 RC top panel (using the supplied plate);
- Mounting it on a rack (using the supplied plate);
- Wall-mount near the MA 2000 cabinet.

NOTE: The coax outputs of the cabinet are connected to the appropriate ports on the MA-860 and the **antennas are connected directly to the MA-860 module.**

4.5.4.1 MA-860 RC 2000 Assembly

1. Assemble two side brackets to the plate sides as illustrated in Figure 4-5.
2. Assemble the MA-860 module to the supplied bracket using the four screws and washers as illustrated below.

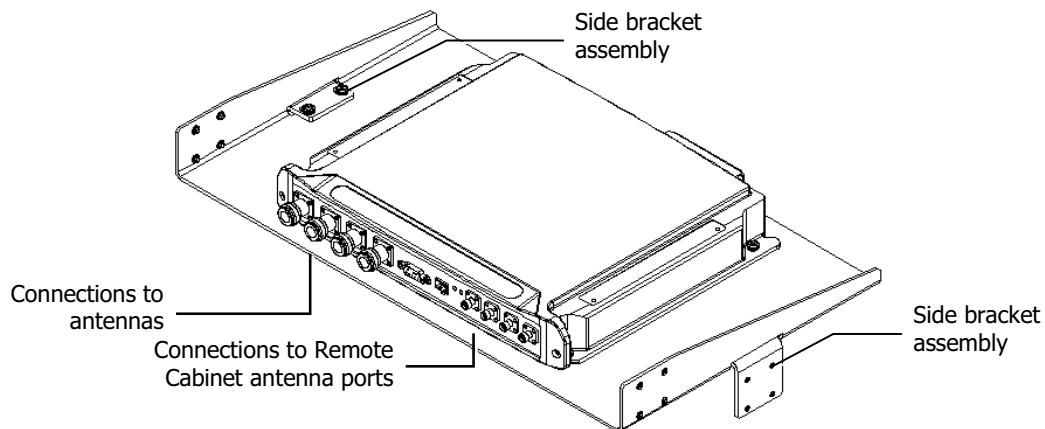


Figure 4-5. MA-860 Rack Installation

3. Assemble the plate to the MA 2000 RC by securing the brackets to the cabinet sides as illustrated below.

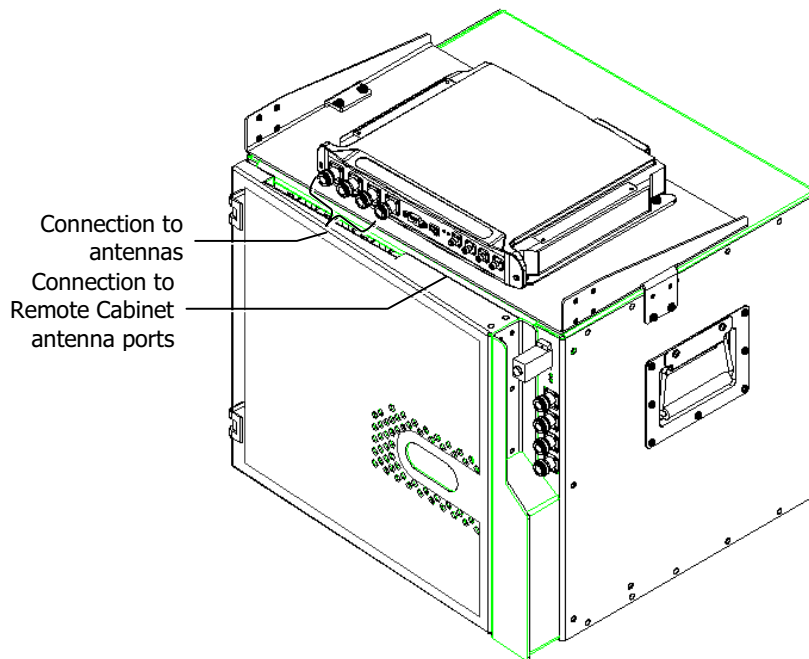


Figure 4-6. Illustration of MA-860 Mounted on MA 2000 RC

4. Connect the RC antenna ports to the MA-860 front panel port connectors as illustrated below.

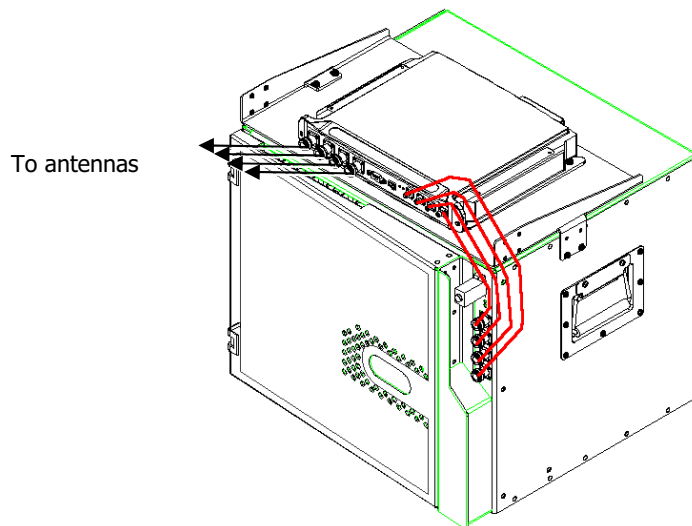


Figure 4-7. Illustration of RC Antenna port connections

5. Connect the antennas to the **MA-860 antenna ports**.

4.5.4.2 MA-860 Rack Mount

1. Assemble the side brackets as illustrated in Figure 4-5.
2. Assemble the MA-860 module to the supplied bracket using the four screws and washers.
3. Mount the assembly in the rack using the side brackets.

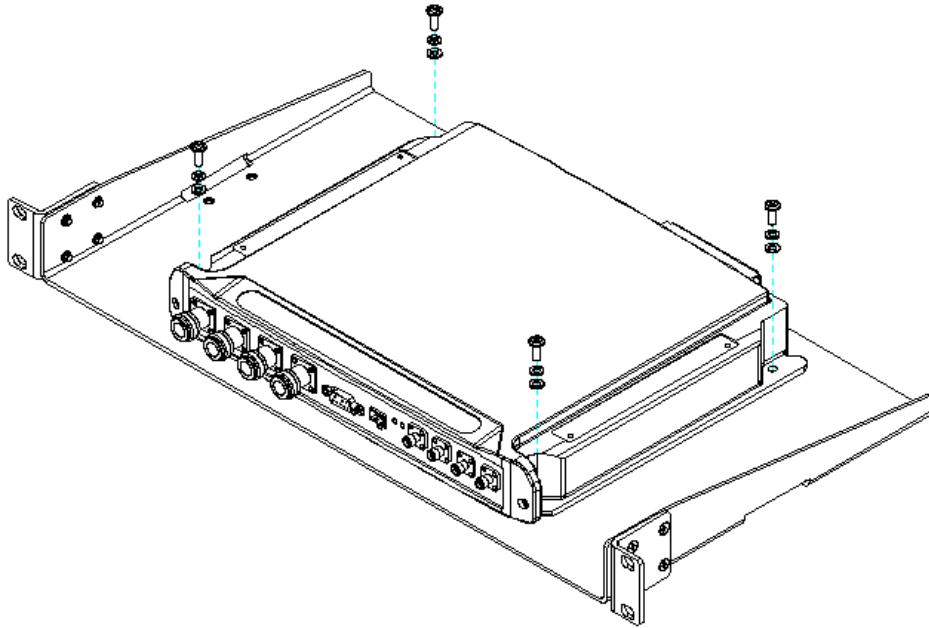


Figure 4-8. MA-860 to Bracket Installation

4. Connect the RC antenna ports to the SMA connectors on the MA-860 front panel.
5. Connect the antenna to the **MA-860** antenna ports.

4.6 Add-on to MA WMTS-CH System

Figure-4-9 shows the architecture of an installation supporting the indoor distribution of WMTS, together with mobile and data services over a common coax and antenna infrastructure. Existing or new MA 1000/2000 installations can be converged with WMTS installations through MA SMU.

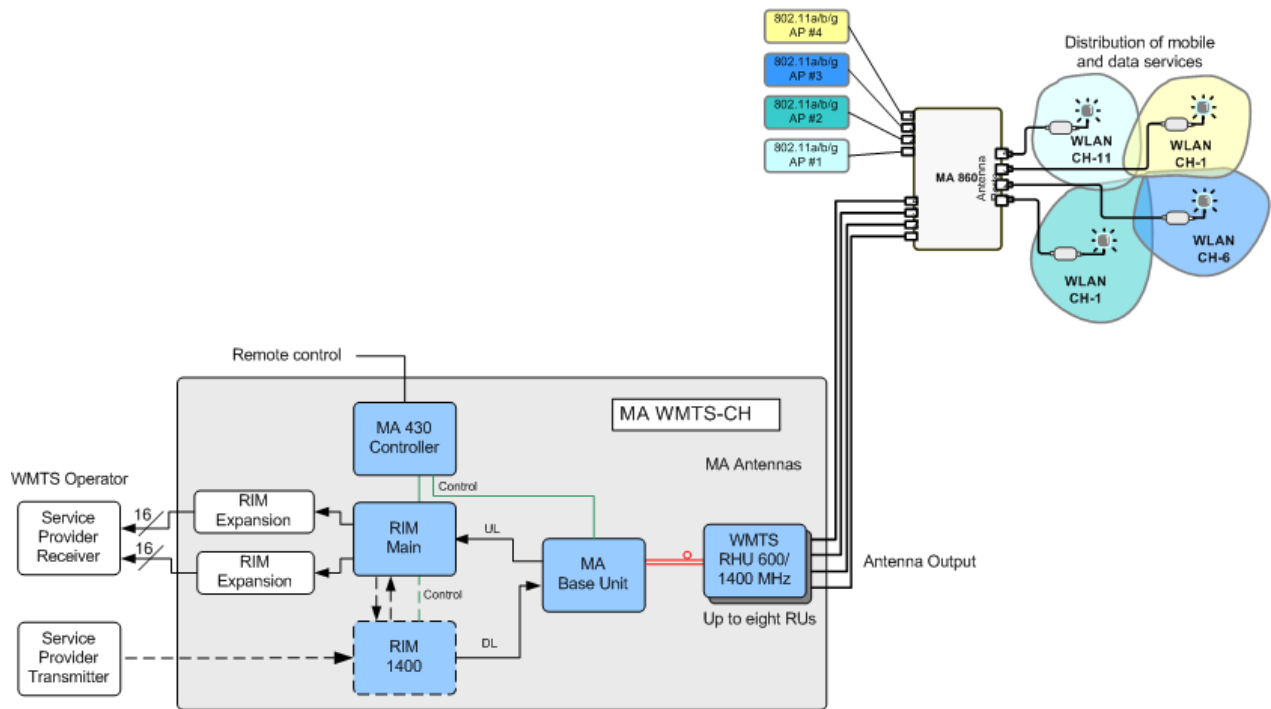


Figure-4-9 –Architecture of MA WMTS System Converged with MA 1000 System Services

4.7 Connecting Power to the MA860

MA 860 is powered by a Main power supply mounted near the unit in the provided bracket. An option for a redundant PS is also available.

In case a redundant power supply is installed with the unit, both (Main and Redundant) power supplies are connected to the MA 860 power connector using the splitter cable.

4.7.1 Power Supplies and Accessories

Shown below are the PS accessories (*redundant PS not shown*).

