MA2000 IDEN-SMR TSX

Operational Description

REV: A01

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1   About MA2000 TSX series

MobileAccess**2000** Tri-Service Package (MA2000 TSX) series are compact, easily installable remote-end enclosures that provide carrier-grade indoor coverage for a number of services over a single, broadband architecture.

TSX supports three services, where TSX units that are already installed in the field can be upgraded to support another service. A wide range of services are supported, including 2G, 3G, and 4G mobile voice and data services, where the combination of services supported by each unit is model dependent.

The TSX Unit is displayed below.

MA2000 TSX

Figure 1-1. MA2000 TSX

TSX units are securely located in the telecommunication closets at each remote location. The units receive the head-end RF service signals via low-loss fiber, filter and reconvert the signals to RF. The RF services are combined and distributed via a passive combiner (SCU-4) to the broadband antennas.
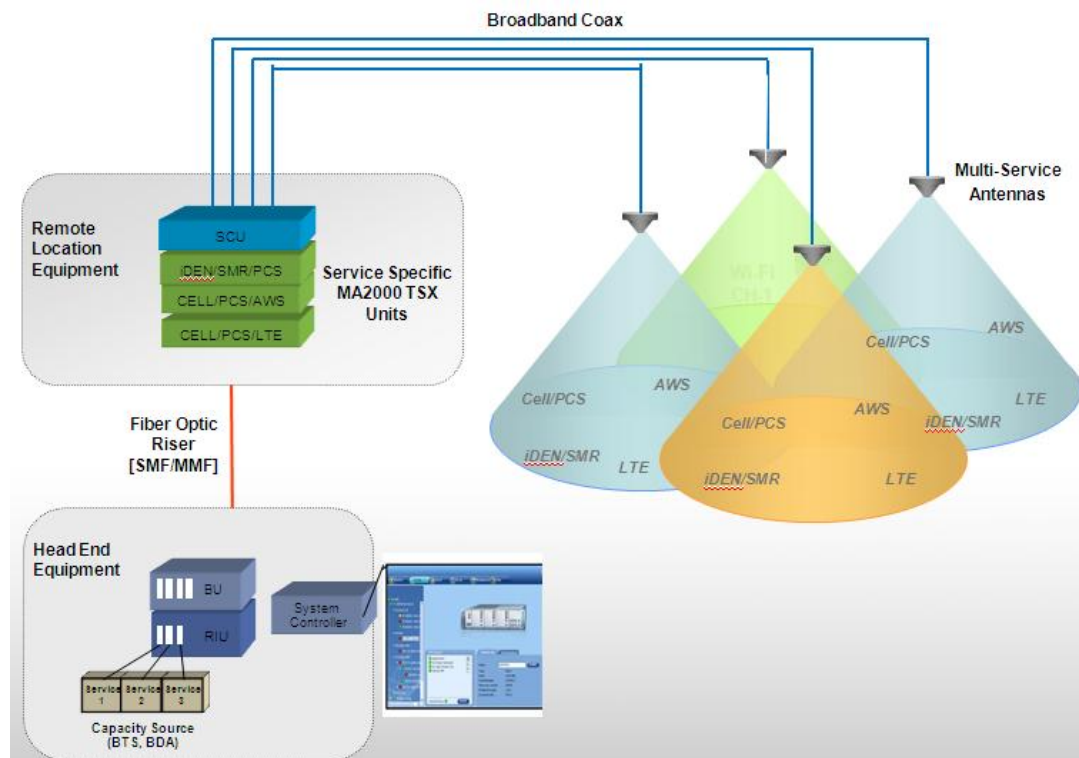

Figure 1-2. MobileAccesss2000 TSX System Architecture

1.1 Features and Capabilities

- Multi-operator platform - accommodates multiple operator requirements separately, yet cost-effectively across one common infrastructure. Pre-assembled modular service packs improve neutral host ROI for the 1st carrier in, as well as the 2nd and 3rd.

- Multi-service platform that accommodates virtually any mix of wireless services, eliminating the need for separate cabled networks for each. Services include: *GSM, CELL, PCS, iDEN, LMR, SMR, Public Safety, AWS, 700 MHz LTE, Paging, UMTS, DCS, WMTS, and more.*

- Modular design – enables seamless service upgrades with the addition of a conditioning card in the head-end and self-contained service packs in IDF/Telco/IT closets at remote-ends.

- All active components are located in the communication closet/room

- Carrier grade management – Built-in signal grooming and an Element Management System (EMS) offer end-to-end visibility and proactive alarming, ideal for large scale, multi-operator environments.

- Local and remote end-to-end monitoring and control through interface to SC-450 controller

- Conditioning and monitoring of input RF signals at the head-end through interface to MA-RIU

- Scalable Media and MIMO Upgrades - Additional services leverage the existing coaxial cabling and antenna grid without disrupting work spaces or existing services. Fiber links extend a single capacity source across multiple buildings in campus environments. Multi-MIMO upgrades are simple with modular elements.

2 MA2000 TSX Solution

The MobileAccess**2000** TSX solution is comprised of the head-end and remote end elements described in this section.

Note: Third-party equipment is sold separately (i.e. cabling, antennas).
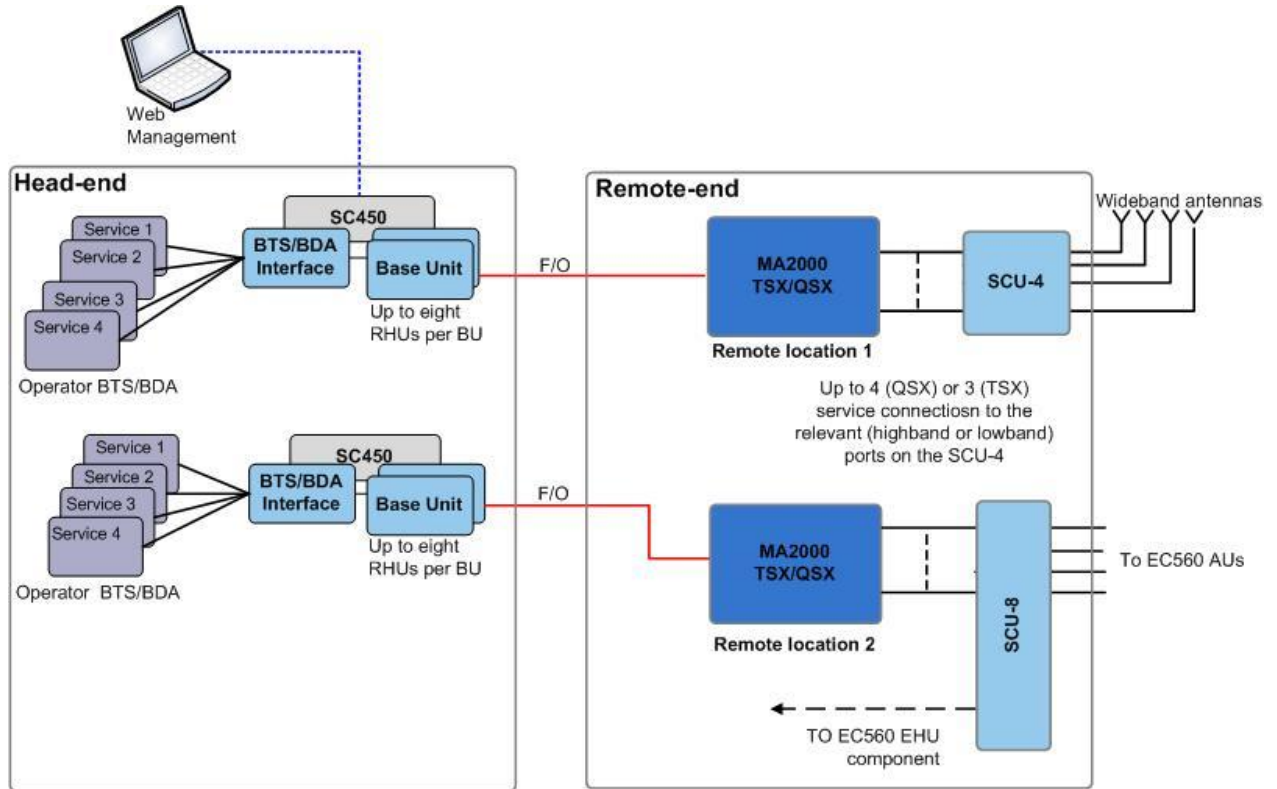

Figure 2-1. MA2000 TSX Diagram

2.1.1 Head-End Equipment

At the head-end MobileAccess elements provide interface to the wireless service provider's network, where the signals can be conditioned through an active interface and transported over optic fiber to the remote end.

- **Radio Interface Unit (RIU):** The RIU adjusts the RF signal source from a number of host base-transceiver stations (BTS) or bi-directional amplifiers (BDA) and feeds the conditioned RF signals to the MobileAccess DAS coverage systems
- **Base Unit (BU):** The BU converts RF Downlink (DL) signals received from the RIU into an optical signal and transports them to/from the MobileAccess**2000** TSX units at the remote site.
- **SC-450 System Controller:** The system controller enables centralized remote management and control of all MobileAccess**2000** elements at the site.

2.1.2 Remote-End Equipment

At the remote end, the MA2000 TSX units reconvert the optical signal to RF signals which are amplified, filtered and distributed via a passive service combiner unit over the broadband antenna infrastructure. The output of multiple TSX/QSX units can be combined to provide a full multi-service solution over a common fiber/coax antenna infrastructure.

- **MA2000 TSX:** The MA2000 TSX delivers coverage for three RF services

- **Service Combiner Unit (SCU):** A passive module that combines the services from the TSX or QSX and forwards the combined signals to a single broadband antenna infrastructure. Two models are available, depending on the site topology:
    - SCU-4 –supports four (4) Low Band and four (4) High Band connections, used in site topologies where only TSX/QSX services are distributed over the broadband antennas, mounted on top of the TSX/QSX enclosure.
    - SCU-8 - required for site topologies with EC560 solutions (interfaces between the TSX/QSX solution and the EC560 Antenna Units), includes eight (8) Low Band and eight (8) High Band connections, mounted in 19" rack. *The SCU-8 is an integral component of the EC560 solution and the installation procedure is described in the EC560 User Manual.*

2.2 MA2000 TSX Interfaces

This section provides a description of the MA2000 TSX unit internal views and relevant connection interfaces. Refer to the *MA2000 User Manual* for detailed description of internal components (RHU and Add-On).

You will be required to connect:

- Optic fiber to ***internal RHU*** optic port
- The filter outputs to the Service Combiner Unit (SCU).
- Either AC or DC power
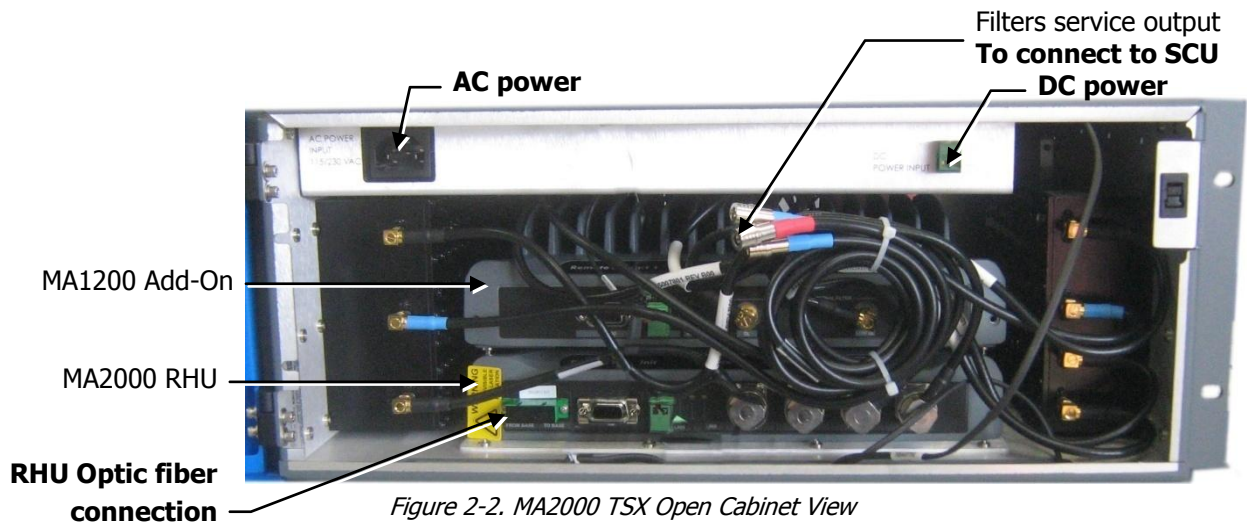
The **TSX** internal view is given below.

Figure 2-2. MA2000 TSX Open Cabinet View

2.3 SCU-4 Interfaces

This section describes the SCU-4 interfaces:

- Front Panel - consists of a total of eight QMA ports that support 4 low band (P1-P4) and 4 high band (P5-P8) connections to the TSX/QSX solution(s).

- Rear Panel (not shown) – includes the RF antenna connectors that interface to the broadband antennas.
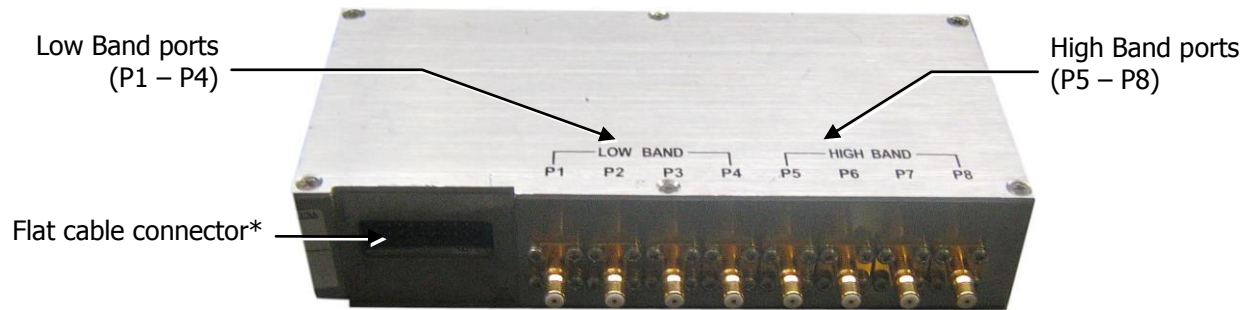
Low Band ports (P1 – P4)

High Band ports (P5 – P8)

Flat cable connector*

Figure 2-3 SCU-4 (Front Panel)

NOTE: The flat cable connector is used for connecting the SCU-4 to an Antenna Monitoring Unit (AMU). See relevant AMU Quick Installation Sheet for details.