Cell/PCS Remote Hub Unit

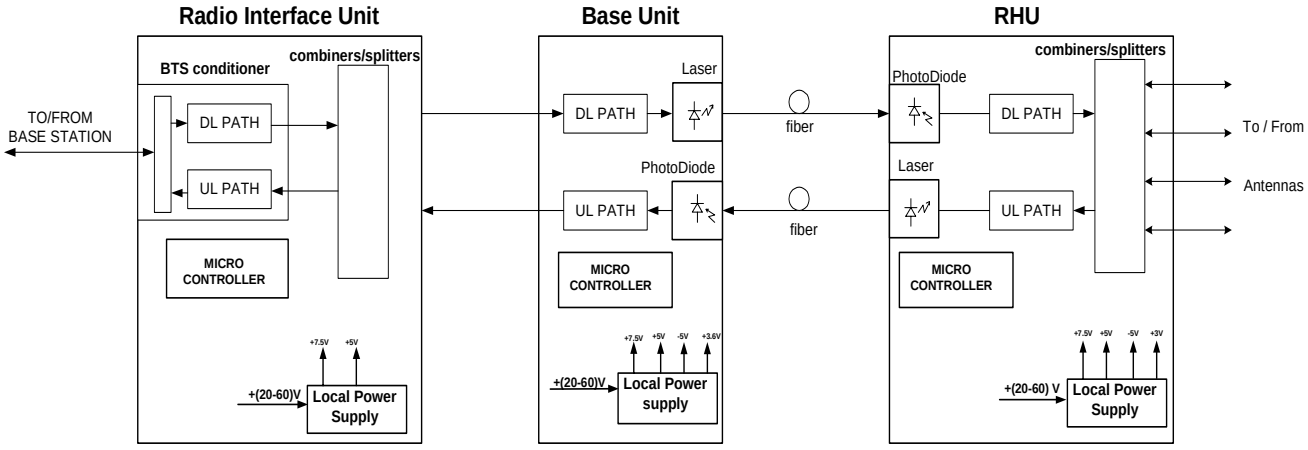
PRODUCT DESCRIPTION and

DESCRIPTION OF THE CIRCUIT FUNCTIONS AND BLOCK DIAGRAM.

The following is a copy of description of the circuit functions and block diagram of MobileAccess 1000

MobileAccess1000 SYSTEM DESCRIPTION

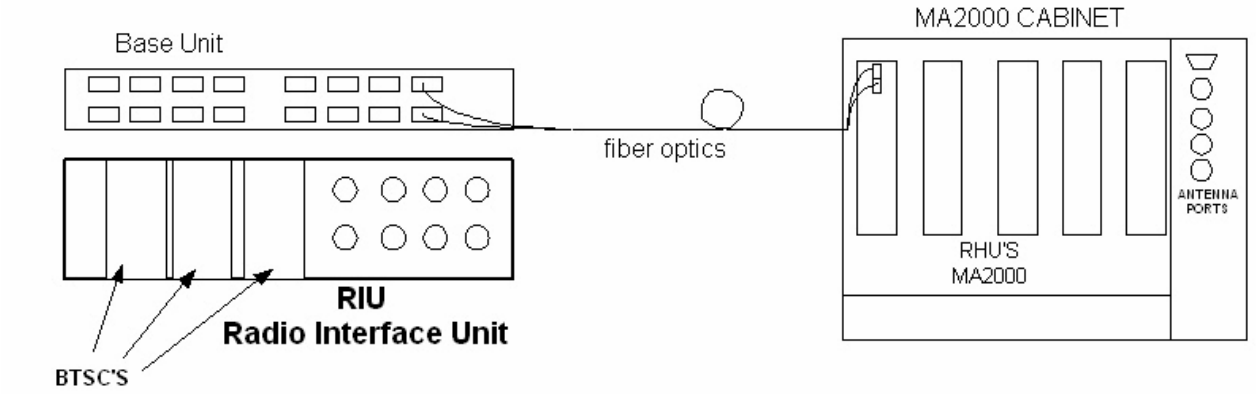
The MobileAccess1000 system (MA1000) intended to provide in-building coverage and capacity for mobile telephone services. These qualities achieved by linking the Base Station to distributed antennas inside the buildings through the MA100.
The system includes two major components, a Base Unit, which interfaces typically with microcell equipment, and Remote Units, which are distributed throughout the building and are hubs for antennas.
The signals in the forward direction (downlink) from the microcell to the mobile telephones are carried via optical fibers from the Base Unit to the Remote Units.
The signals in the reverse direction (Uplink) from the mobile to the microcell are similarly carried along a different fiber to the Base Unit.
Other relative system components are the optional RIU and controller units.
The RIU (Radio Interface Unit) is attended to control the levels of the inputs/output signals to/from the Base Unit including an AGC function.
The controller is a unit attended to control the components mentioned above in all aspects of the of the variety controlled/monitored functions of the system.
Functionally, the system behaves as a repeater, with gain/attenuation as appropriate. No signal processing/modification, or RF modulation takes place in the system.
The base unit is connected via coaxial cable (and attenuators, splitters…) to the microcell equipment, or an off-air repeater. The remote unit ports connect via coaxial cables to indoor antennae, which we do not supply.



As mentioned before, the MA1000 system consists of two main RF components and an optional interface unit:
The Radio Interface Unit has a place to a three BTSC units (Base Station Conditioner) Inside it.
Each BTSC can support different communication bands areas (such as cellular frequencies, PCS frequencies, UMTS frequencies etc.). The signals from/to the BTS conditioners are combined/splitted (DL/UL respectively) inside the RIU to 8 inputs/outputs in order to support up to 32 Remote Hub Units (up to 128 antennas) in the other side of the optical link.
Each output of the RIU is connected to an Uplink path in the Base Unit, which converts the RF signal to light and transmits it through the optical link to the Remote Hub Unit.
The RHU (Remote Hub Unit) converts the light back to RF signal and after amplifications, transmits the signal to four antennas.
In the Uplink path, the signals transmitted from the mobile telephones, received by the RHU.
The RHU amplifies the signals and converts the signals into light.
The light received by the BU and converted back to RF signals.
The signals, after amplification, can be directly connected to the microcell (or the Base Station), or through the Radio Interface Unit.
All products controlled by a microcontroller located inside these units.
Some parameters are dynamically controlled, such as “AGC like mechanism” in order to prevent overload signals or the Lasers bias, and some of the parameters are only for monitoring (antennas configurations, signal strength received by the system etc).
This digital section is only for internal monitoring of the units functions.
A communication between the Base Unit and RHU unit is performed by communication through the optical link.

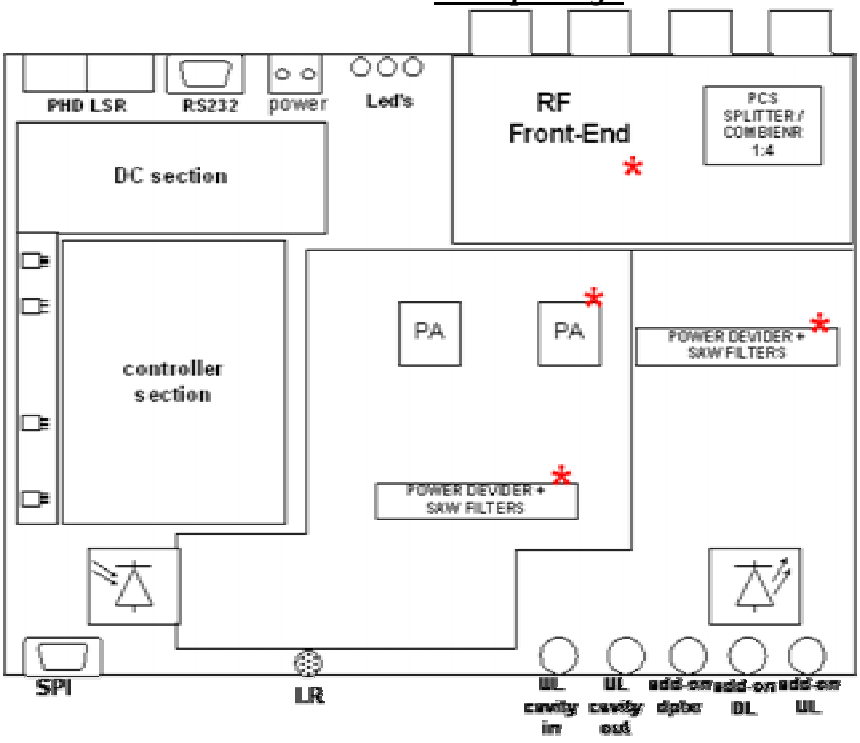
The CELL/PCS RHU intended to provide two bands of cellular operation.
The Cell band operates between 869-894MHz for DL and 824-849MHz for UL.
The PCS band operates between 1930-1990MHz for DL and 1850-1910MHz for UL.

The Cell/PCS RHU can be put in a MA2000 cabinet.
This structure enables multi band operations in one cabinet due to high filtering
The RHU's passively changed to allow high external filtering.
All the RHU's outputs (up to five inside one cabinet) combined to 4 antenna ports (instead of 4 antenna ports to each regular MA1000 RHU's).

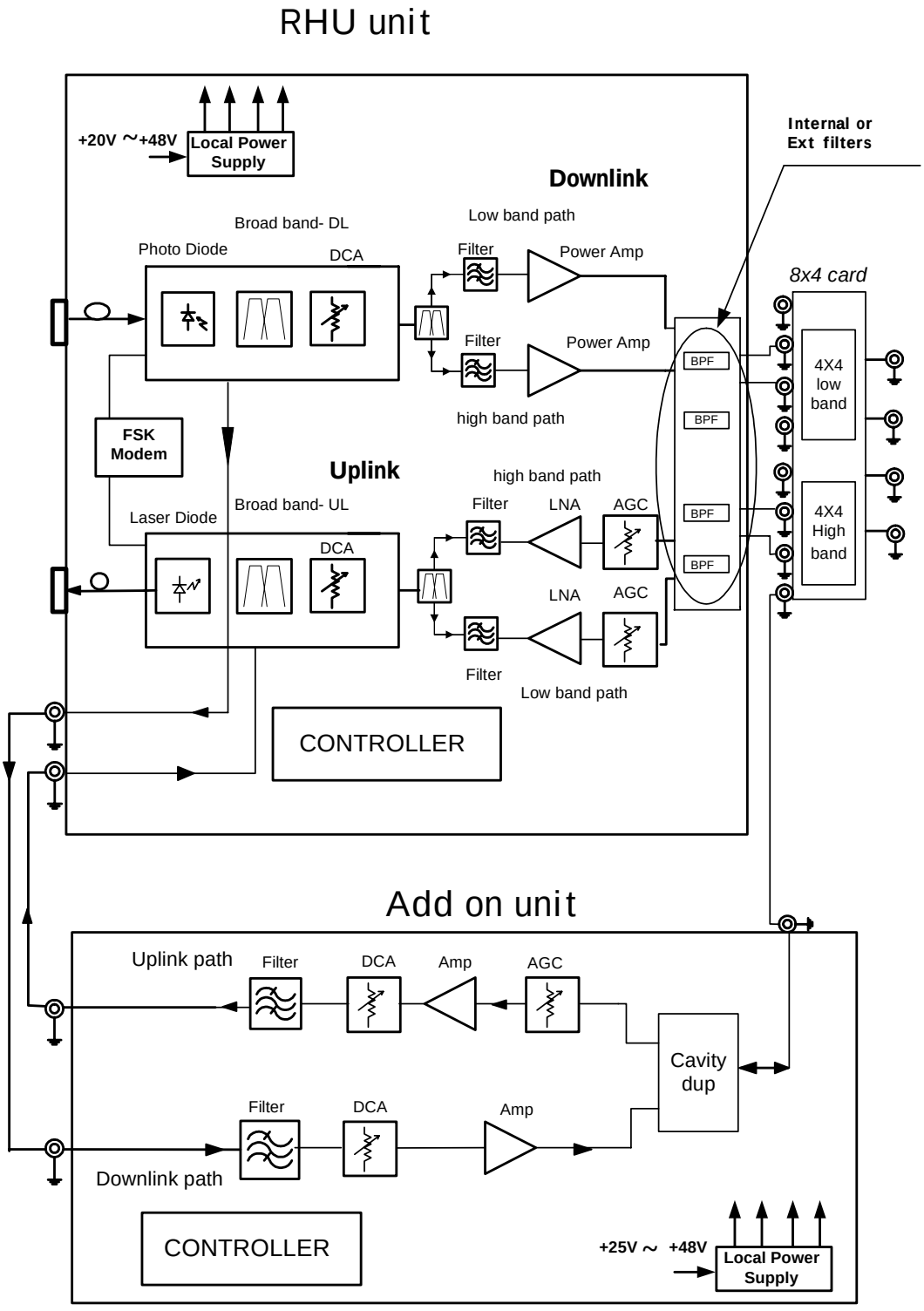


MA2000 CELL/PCS results

Concept design



Block Diagram MA 2000



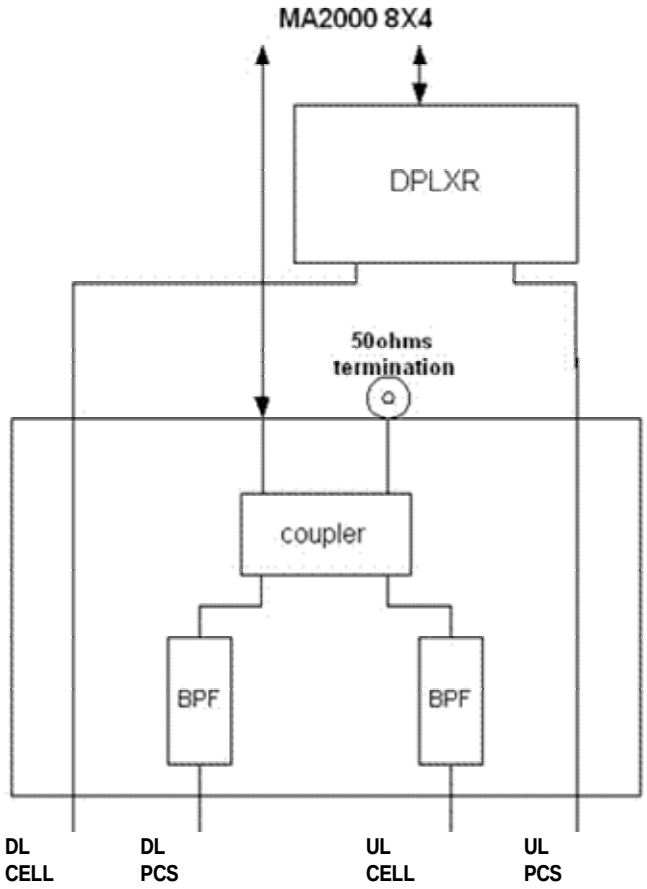
MA2000 Implementation

Advantages:

- **front panel connections only (N-type X 3).**
- **cost effective-one cavity duplexer**
- **no internal coax is required**
- **standard PCB MA2000 RF Front End**

Disadvantages:

- **non standard duplexer TBD**
- **two ports of 8/4 are required even only one service in use**



For more information refer to the MA1000/MA2000 datasheets and user's manuals.