

Corning Optical Communications Wireless LTD

1000-CELL-PCS4E-HL

Operational Description

Remote Hub Unit (RHU): The RHU is a service specific module that performs optical to RF conversion on signals received from the BU. The signals are then filtered and amplified for transport across broadband coax to the antenna. Uplink signals from the antenna are then converted to optical signals before being transmitted back to the BU. Each RHU supports up to two services.

Remote Hub Unit

**Supported Services
Ports**

Two services per RHU. Refer to RHU model number for specific service support.

Power

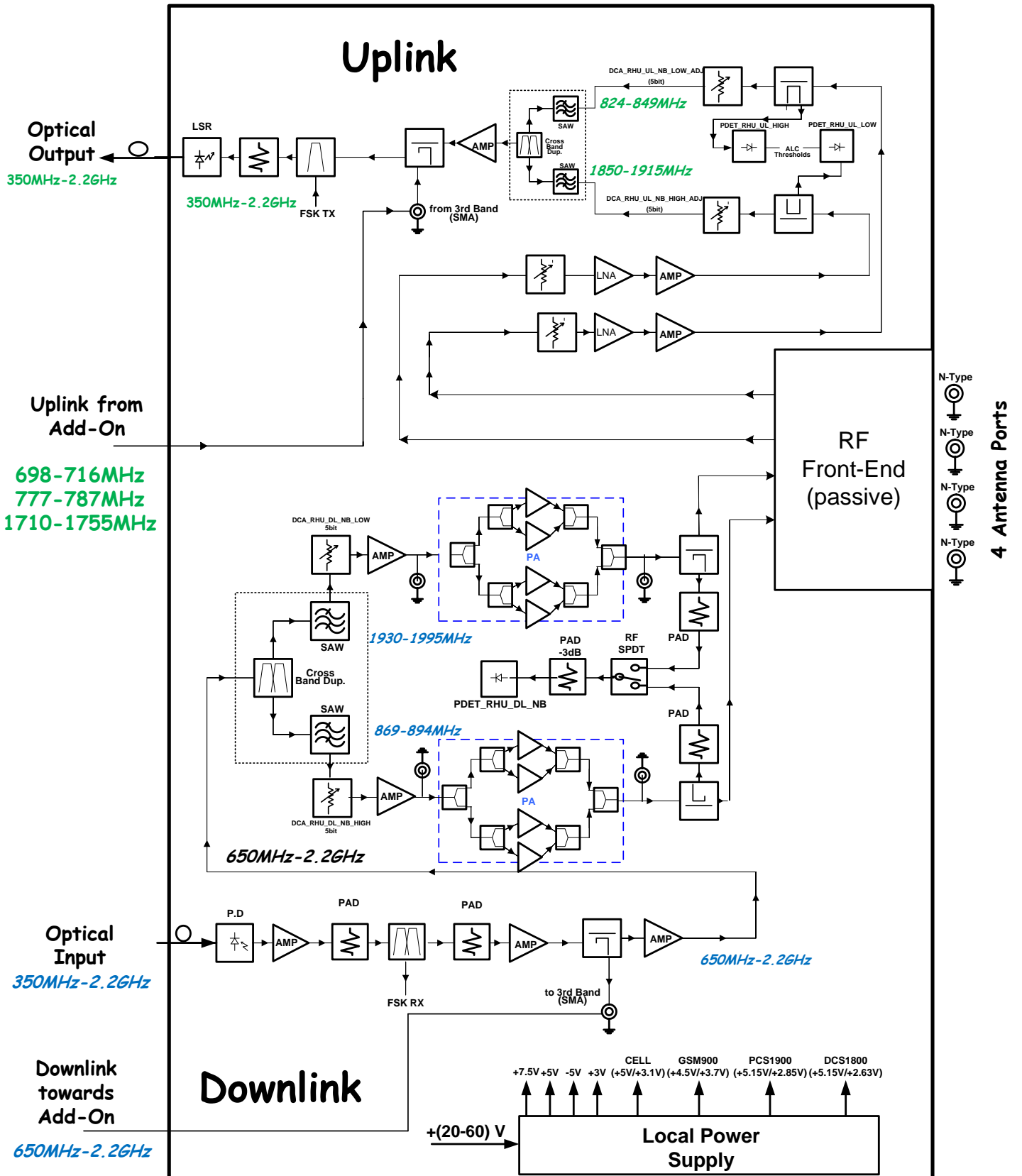
Optical Port to BU: One SC/APC
To Add-On: Two SMA 50Ω connectors (One DL / One UL)

**Physical
Characteristics**

Input Power: 20 to 48V DC
Power Consumption: 29W
Dimensions: 27.9 cm x 22.0 cm x 4.5 cm (10.98" x 8.66" x 1.77")
Weight: 2.8 Kg (6.2 Lb)



Simplified block Diagram



OPERATION DESCRIPTION

The DL path is coming from BU by optical connection, filtered by DL BPF. Then gain is adjusted at the adjustable gain Amp, then amplified by Power Amplifier. At this stage the signal is passed thru coupler to the Antenna port thru RF Front-End. The sampled and detected signal is used for output power adjustment.

The UL path starts at the right side that comes from Antenna's. It is passing through passive RF-Front End, amplified by LNA then post LNA amplifier, to the UL Band Pass filter, then it passes to the BU thru an optical port. UL path has a coupler and a detector immediately after LNA, where the detected signal is used for UL limiter to protect the input from strong interferences.

In addition to this, the unit consists of Power Supply section that feeds all the parts and digital control area that manages all indications and alarms, communications etc.

OVER POWER PROTECTION MECHANISM

Since there are signal paths, the system has two different protection paths as well.

1. UL Input signal protection.
2. DL Output signal protection

UL Input signal protection – UL Limiter

UL Path can face a strong input signal that comes from passing by mobile phone users. If this mobile phone, from some reason is located too close to antenna, there might be need of protection. This protection is implemented by Input limiter.

The UL detector is calibrated, during production phase to measure the UL input signal. This calibration is stored into the unit. When a signal appears at the antenna port, and this signal is stronger than the threshold of -40dBm, the DSA (Digital Step Attenuator) loss is increased to protect the input stages of the RHU. When the strong interfering signal is reduced, or disappeared, the Limiter is released.

DL Output signal protection – DL Limiter

DL Path detector is also calibrated during the production phase, so it could read the output power level. During the life of the system, the output power is measured and compared to the required output power. When, from some reason, the output signal trying to rise above the required output signal level, the DSA (Digital Step Attenuator that is located before the PA stage) loss is increase in order to keep the output power that was defined at the commissioning stage.

When the strong signal is reduced back, the Limiter is released, and the output power returns to the required level.