

# HX WCS Mid-Power DAS Remote Unit

CORNING

## features and benefits |

|  |  |
|--|--|
| <b>Service platform</b>                  | Accommodates LTE and provides SISO/MIMO configuration for the WCS band   |
| <b>Cost-effective high power</b>         | Optimizes and reduces the number of antennas required to cover open areas by offering up to 33 dBm (2 W) composite power per frequency band          |
| <b>Scalability</b>                       | Supports either SISO or MIMO service in a single compact enclosure   |
| <b>Operator-grade operation</b>          | Advanced signal handling and management ensures operator-grade performance in multioperator deployments  |
| <b>Design and deployment flexibility</b> | Antenna splitting schemes are possible due to the higher power output capability   |
| <b>Backward compatible</b>               | Connects to existing MA1000/MA2000 and HX remote units to allow common antenna overlay<br><br>Shares a common headend and EMS in a single deployment |
| <b>Monitoring and Web management</b>     | All status LEDs are located on front panel<br><br>Web management via the SC-450 controller (v7.2 and higher)   |

HX WCS is a mid-power, remote solution designed to be integrated into existing MA1000 and MA2000 distributed antenna systems (DAS) already deployed in the field. It is a fiber-fed, compact, and scalable multiservice platform designed to complement the MA1000/MA2000 and other HX versions while providing complete RF open space coverage for large-scale public venues such as campuses, stadiums, convention centers, hotels, airports, and train stations.

Using low-loss fiber optic cabling, remote units can cover distances of up to 2 km from the BTS signal sources at the headend.

HX WCS requires minimum addition of hardware to the headend (WCS BTSC) and uses existing fiber and antenna overlay.

HX provides a comprehensive indoor coverage solution for varying site requirements, supporting everything from high-rise buildings and campus topologies to stadiums and airports. HX MIMO takes full advantage of MIMO technology by using spatial multiplexing to deliver higher spectral efficiency and preventing the degradation of quality while significantly increasing throughput on the same spectrum.



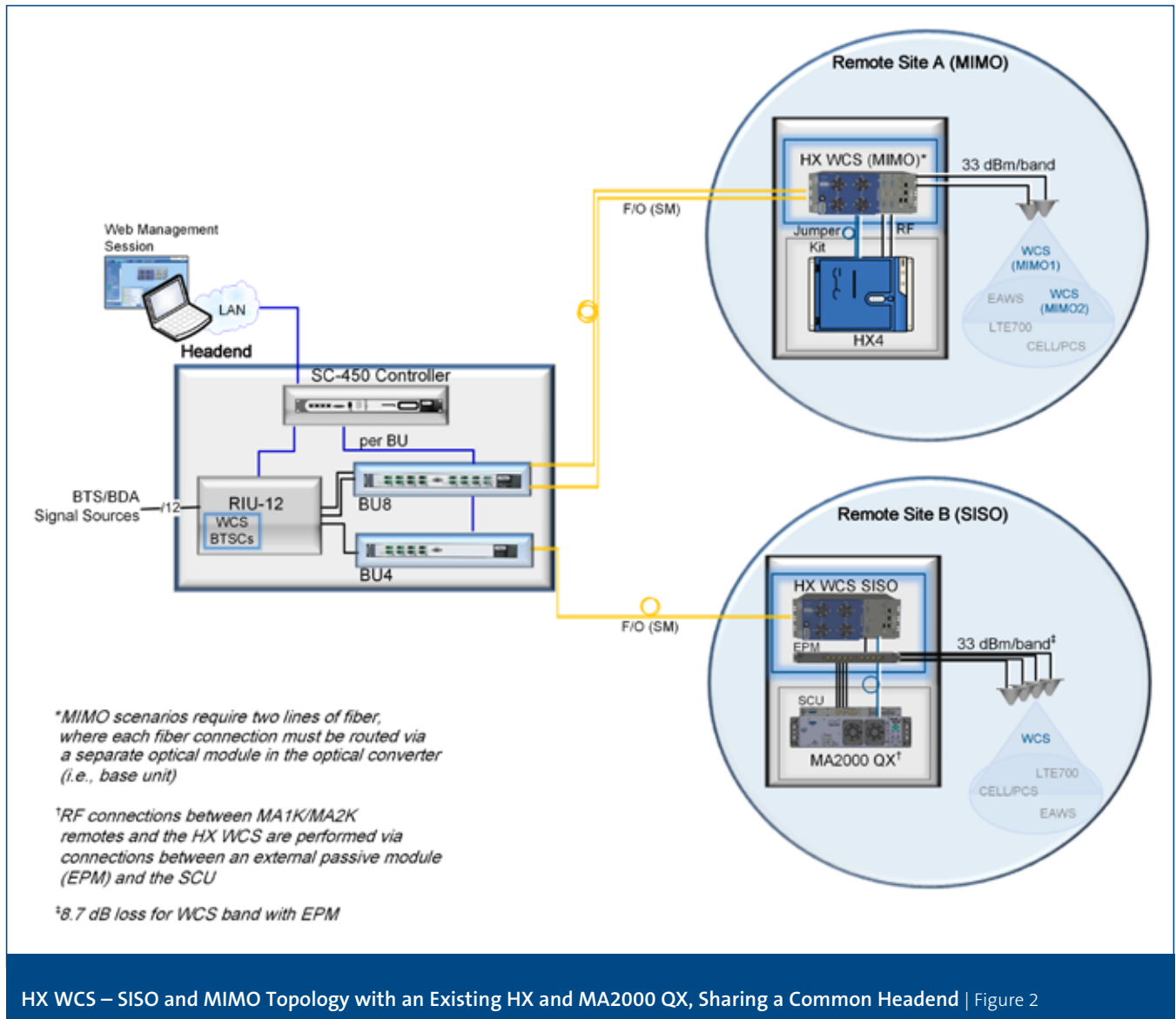
HX WCS Remote Unit | Figure 1

# HX WCS Mid-Power DAS Remote Unit



## system description |

Figure 2 shows an example of SISO and MIMO scenarios in a system topology where the HX WCS is connected to existing HX and MA2000 QX remotes. The HX WCS is installed between the existing remote unit (e.g., HX, MA2000 QX) and the optical converter unit (i.e., BU) and interfaces them both via fiber connections.



# HX WCS Mid-Power DAS Remote Unit



## system description | (continued)

HX WCS provides a complete solution consisting of HX remote units at the remote locations and headend elements.

In the downlink, at the headend, the BTS or BDA signal is conditioned by the RIU, ensuring a constant RF level. The conditioned signal is then converted by the optical converter unit (BU/OCH) to an optical signal for transport over single-mode or multimode fiber to the HX remote units, which are located at the remote locations. In the uplink, the process is reversed.

The HX remote unit (SISO/MIMO) consists of a compact enclosure that houses the RF module, power elements, and the required interfaces. The RF module supports the WCS band. An interface duplexing port is located on the remote to allow additional HX remotes to be connected so that the services from all HX remotes can be combined into one antenna port.

The system controller (SC-450 v7.2) enables local and remote management from a single, centralized location.



# HX WCS Mid-Power DAS Remote Unit



## specifications |

### Supported Services

| Services  | Frequency Range (MHz) |               |               |
|-----------|-----------------------|---------------|---------------|
|           | Band                  | Uplink (UL)   | Downlink (DL) |
| LTE 2300* | 2.3 GHz               | 2305-2315 MHz | 2350-2360 MHz |

\*LTE complies with 3GPP TS 36.106 V10.6.0 (2012-12) table 9.1 unwanted emission.

### RF Parameters per Service

| RF Parameter                                | LTE 2300 MHz |           |
|---|--------------|-----------|
|   | DL           | UL        |
| Frequency Range (MHz)                       | 2350-2360    | 2305-2315 |
| Maximum Output Power per Antenna Port (dBm) |              |           |
| 1 Operator (composite)                      | 33           |           |
| 2 Operators                                 | 30           |           |
| 4 Operators                                 | 27           |           |
| 8 Operators                                 | 24           |           |
| Mean Gain (dB)*                             | 33           | 31        |
| Pin (dBm)*                                  | 0            |           |
| Input IP3 (dBm) AGC OFF Typical             |              | -13       |
| Maximum Intermod Distortion (dBm)           | -13          |           |
| NF (dB) at Maximum Gain                     |              | 6         |
| RF Output Port Impedance                    | 50 Ohm       |           |
| Gain Flatness/Ripple (dB)†                  | +/- 1.5      |           |

\*Factory-set mean gain BU without RIU. May be field adjusted using controller system.

†Gain flatness/ripple is specified for the non-duplexed port of the system.

# HX WCS Mid-Power DAS Remote Unit



specifications | (continued)

## RF Parameters for “Wideband RU” External Input Port

| RF Parameters   |                                |
|-----------------|--------------------------------|
| Frequency Range | 698-2170 MHz                   |
| Insertion Loss  | 0.5 dB                         |
| Isolation       | 60 dB minimum at 2500-2690 MHz |
| Return Loss     | 18 dB minimum                  |
| Power Rating    | 100 W average                  |

## Optical Specifications

|  |                        |
|--|------------------------|
| Maximum Optical Budget                         | 3 dBo                  |
| Optical Connector                              | SC APC                 |
| Wavelength                                     | 1310 ± 10 nm (at 25°C) |
| Maximum Distance Between BU and Remote Cabinet | 2 km                   |

## Physical Specifications

### Interfaces

#### Chassis:

- One 4.3-10 type duplexed antenna (“ANT”) port per multiplexer
- One 4.3-10 type duplexed wideband (“WB RU”) port per multiplexer (one for SISO and two for MIMO configurations) for interfacing external “RF In” source
- One SMA-type female 50 Ohm port for DL test port per multiplexer (one for SISO and two for MIMO configurations)
- One female RJ45 local craft port
- One D-type 9-pin female console port (engineering GUI)
- One 6-pin pluggable terminal block DC connector; three VCC and GND pairs
- One two-hole grounding lug compatible with 6 AWG wire
- One DB-9 female external alarm connector for external dry contact alarm connections

#### Module:

- Four SC APC optical connectors
- Two SMA UL/DL extension port connectors (future option)

# HX WCS Mid-Power DAS Remote Unit



## specifications | (continued)

### Physical Specifications (continued)

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|                            |   |
|----------------------------|---|
| <b>Power</b>               | <ul style="list-style-type: none"><li>• Maximum power consumption: 90 W (SISO models), 150 W (MIMO models)</li><li>• Power input: 34-48 VDC</li></ul>   |
| <b>Physical Dimensions</b> | <ul style="list-style-type: none"><li>• Mounting: 19-in - rack and wall</li><li>• Dimensions (H x W x D): 7.0 x 19 x 15.4 in (176.5 x 492 x 392 mm)</li><li>• Weight:<ul style="list-style-type: none"><li>- SISO services configuration: 35 lbs (15.7 kg)</li><li>- MIMO services configuration: 55.11 lbs (25 kg)</li></ul></li></ul> |
| <b>Cooling Feature</b>     | Active heat dissipation (fan)   |

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### Environmental Specifications

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|                           |   |
|---------------------------|---|
| <b>Temperature</b>        | <ul style="list-style-type: none"><li>• Operating: -40° to +65°C (-40° to 149°F)</li><li>• Storage: -40° to 85°C (-40 to 185°F)</li></ul> |
| <b>Humidity</b>           | 10 to 95 percent, non-condensing  |
| <b>Ingress Protection</b> | IP20; with outdoor enclosure: GR487   |
| <b>NEBS OSP Class</b>     | Class 2   |

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### Standards and Approvals

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|                     |  |
|---------------------|--|
| <b>Laser Safety</b> | <ul style="list-style-type: none"><li>• CDRH 21 CFR 1040.10, 1040.11 (except for deviations per notice No. 50)</li><li>• IEC 60825-1, Amendment 2</li><li>• EN 60825-1</li></ul> |
| <b>Safety</b>       | <ul style="list-style-type: none"><li>• EN 60950; UL 60950</li><li>• CAN/CSA-C22.2 No. 60950</li></ul>   |
| <b>RoHS</b>         | RoHS 6 compliant   |

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# HX WCS Mid-Power DAS Remote Unit



## ordering information |

### HX WCS Remotes

| Supported Services | Part Number      | Description  |
|--------------------|------------------|--|
| <b>WCS SISO</b>    | HX-WCS-SISO-NU   | HX SISO-Only Remote with support for WCS band (non-MIMO upgradable in the field) |
| <b>WCS SISO</b>    | HX-WCS-SISO-PLUS | HX SISO Remote with support for WCS band (MIMO upgradable in the field)          |
| <b>WCS MIMO</b>    | HX-WCS-MIMO      | HX MIMO Remote with support for WCS band   |

### RIU Conditioner Modules

| Part Number             | Description                     |
|-------------------------|---------------------------------|
| <b>RIU-BTSC-WCS</b>     | RIU-4 Conditioner for WCS band  |
| <b>RIU-12-CNDTR-WCS</b> | RIU-12 Conditioner for WCS band |

### Upgrade Kits

| Kit               | Part Number   | Description                                      |
|-------------------|---------------|--|
| <b>WCS Module</b> | HX-WCS-MODULE | HX WCS Band Module for upgrade from SISO to MIMO |

### Accessory Kits

| Part Number                | Description  |
|----------------------------|--|
| <b>AK-HX-1K2K-HXN-COMB</b> | HX Accessory Kit combining MA1000/2000 and HX, external passive module (EPM) |

# HX WCS Mid-Power DAS Remote Unit

The logo consists of a solid blue square with the word "CORNING" written in white, uppercase, sans-serif font centered within it.

notes |

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