

Corning® Optical Network Evolution (ONE™) Solutions Five-Band Remote Access Unit (RAU5x)



features and benefits |

Multi-frequency/multiservice platform	Support for up to five SISO services or seven with RF expansion module (RxU2325): CELL/ESMR, PCS, LTE 700, AWS+AWS-3, 2.5 GHz TDD, and WCS.
Multioperator-optimized platform	Services from a number of operators can be distributed by the same unit
Operator-grade performance	Advanced signal handling, radio frequency (RF) filtering, and management ensures operator-grade performance
Fiber optic savings	All services routed to an RAU5x unit are routed over a single fiber optic pair
Ethernet support	Supports “plug in” Gigabit Ethernet module (GEM) providing support for connected IP devices (Wi-Fi APs, IP Phones etc.) with Ethernet pass-through and PoE
Simple installation and maintenance	All connections and status LEDs located on front panel Easy-to-install mounting bracket
Array of mounting options	Wall/ceiling mount Back-to-back wall mount (supports two RAU5x units) Ceiling mid-mount
Management and control	Alarm forward to NOC or standard EMS via single-network management protocol (SNMP), software-controlled output power, and optical link auto gain control

The five-band remote access unit (RAU5x) is a compact, fiber-fed, indoor coverage remote for the Corning® optical network evolution (ONE™) solutions.

RAU5x is a multiservice remote that distributes up to seven single-input, single-output (SISO) services. The RF services are received over optic cables and converted for distribution over external vertical, directional, omnidirectional antennas via external QMA antenna ports. In addition, the RAU5x enclosure can host the Gigabit Ethernet module (GEM) enabling offload, expansion, and effective use of Wi-Fi resources.

Management and configuration options are provided for each RAU5x service via a web session to the headend control module (HCM) installed at the headend site.



RAU5x | Figure 1

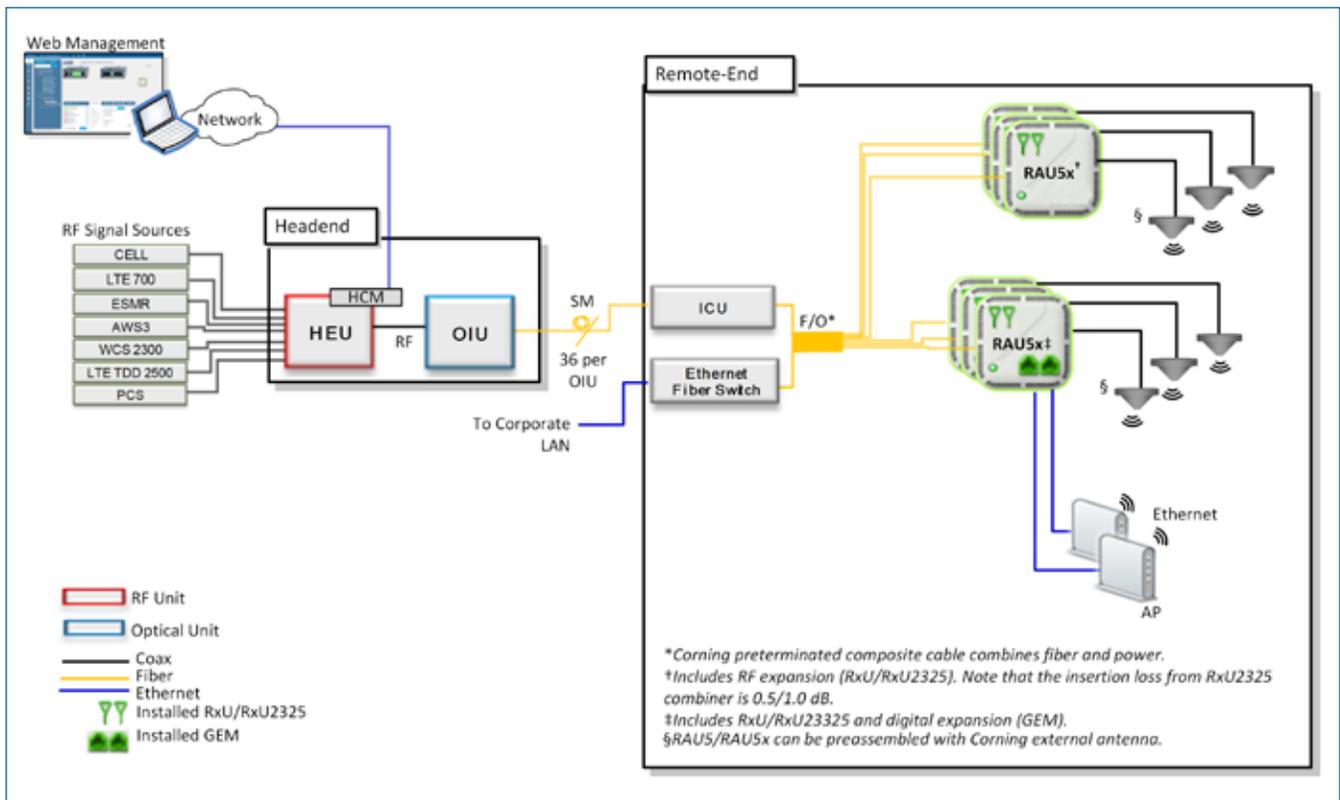
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system description |

RAU5x distributes the wireless and Ethernet services received over the fiber optic infrastructure from the Corning® optical network evolution (ONE™) solutions headend.

The RAU5x is a service-specific module supporting five SISO services that performs optical to RF conversion of signals received from the optical interface unit (OIU). Signals are automatically filtered, amplified, and distributed via external antennas. Uplink (UL) signals are then converted to optical signals before being transmitted back to the OIU.



Example of Corning Optical Network Evolution (ONE) Solutions RAU5x Deployment | Figure 2

Corning® Optical Network Evolution (ONE™) Solutions Five-Band Remote Access Unit (RAU5x)



specifications |

Supported Services

Technology	Frequency Range (MHz)		
	Service/Band	Uplink (UL)	Downlink (DL)
LTE	700 MHz	698-716 777-787	728-746 746-756
CDMA/WCDMA*/ TDMA/GSM/LTE	ESMR 800/CELL 850	817-824/824-849	862-869/869-894
WCDMA*/LTE	AWS 3 1700	1710-1780	2110-2180
CDMA/WCDMA*/TDMA/GSM/LTE	PCS 1900	1850-1915	1930-1995
LTE	WCS 2300	2305-2315	2350-2360
LTE	2500 TDD	2496-2690	

*WCDMA service is based on 3GPP2 CDMA 2000 standards. LTE service may be deployed in the future due to frequency reformatting planned by the carriers.

System Level RF Parameters per Service

Low-Band Services

Service/Band	LTE 700 MHz		ESMR800/ CELL 850 MHz	
	DL	UL	DL	UL
RF Parameter				
Frequency Range (MHz)	728-746 746-756	698-716 777-787	862-869/ 869-894	817-824/ 824-849
Maximum Output Power Per Antenna Port (dBm)*	15		15	
Insertion Loss from RxU2325 Combiner (if installed)	0.5/1.0 dB		0.5/1.0 dB	
Maximum Input Power (dBm)	0 to 37		-10 to 37/ 0 to 37	
Typical Antenna Gain (dBi)	0		0.5	
Horizontal Polarization Omni @ 34-45 degrees	-2 to 0		-2 to 0	
UL Gain (dB)		-19 to 15		-19 to 15
Input IP3 (dBm) AGC OFF Typical		-5		-5
Input IP3 (dBm) AGC ON Typical		5		5
SFDR† (dB)		60		64
Maximum Intermod Distortion (dBm)	-13		-13	
UL NF‡(dB)		12		12
Gain Flatness/Ripple (dB)	±2.0		±2.0	

*Insertion loss from RxU2325 combiner (if installed) = 0.5/1.0 dB.

†SFDR calculated with bandwidth of 1.23 MHz for the CELL and PCS and with 5 MHz for the LTE and AWS

‡Typical for single-remote access unit

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specifications | (continued)

System Level RF Parameters per Service (continued)

High-Band Services

Service/Band	AWS+AWS3 1700 MHz		PCS 1900 MHz	
	DL	UL	DL	UL
Frequency Range (MHz)	2110-2180	1710-1780	1930-1995	1850-1915
Maximum Output Power Per Antenna Port (dBm)	20		20	
Insertion Loss from RxU2325 Combiner (if installed)	0.5/1.0 dB		0.5/1.0 dB	
Maximum Input Power (dBm)	0 to 37		0 to 37	
Typical Antenna Gain (dBi)	2.5		3	
Horizontal Polarization Omni @ 34-45 degrees	-1 to 1		-1 to 1	
UL Gain (dB)		-19 to 15		-19 to 15
Input IP3 (dBm) AGC OFF Typical		-5		-5
Input IP3 (dBm) AGC ON Typical		5		5
SFDR* (dB)		60		64
Maximum Intermod Distortion (dBm)	-13		-13	
UL NF†(dB)		12		12
Gain Flatness/Ripple (dB)	±2.0		±2.0	

RxU2325 Add-On Module Services

Service/Band	WCS 2300 MHz		LTE 2500 MHz	
	DL	UL	DL	UL
Frequency Range (MHz)	2350-2360	2305-2315	2496-2690 (DL/UL combined)	
Maximum Output Power Per Antenna Port (dBm)	18‡ (minimum)		18‡ (minimum)	
Maximum Input Power (dBm)	0 to 37		0 to 37	
Typical Antenna Gain (dBi)	2.5		2.5	
Horizontal Polarization Omni @ 34-45 degrees	-1 to 1		-1 to 1	
UL Gain (dB)		-19 to 15		-19 to 15
Input IP3 (dBm) AGC OFF Typical		-6		-6
Input IP3 (dBm) AGC ON Typical		5		5
SFDR* (dB)		60		60
Maximum Intermod Distortion (dBm)	-13		-13	
UL NF†(dB)		12		12
Gain Flatness/Ripple (dB)	±2.0		±2.0	

*SFDR calculated with bandwidth of 1.23 MHz for the CELL and PCS and with 5 MHz for the LTE and AWS.

†Typical for single remote access unit

‡20 dBm if only one of the services is operating

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specifications | (continued)

Environmental

Operating Temperature	-5° to +50°C (23° to 122°F)
Storage Temperature	-20° to 85°C (-4° to 185°F)

Standards and Approvals

Laser Safety	FDA/CE 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 and IEC 60825-1
EMC	CE EN 301 489, EN 55022, EN 61000 FCC 47 CFR Part 15, 22, 24, 27
Safety	UL 60950 IEC 60825-1:2007 IEC 60825-2:2010 CAN/CSA-C22.2 No.60950-1-03 Fire Safety UL 2043

Optical

Optical Output Power	< 9 dBm
Maximum Optical Budget	5 dB
Back Reflectance	-60 dB
Optical Connector	LC APC SM
Fiber Type	Corning® SMF-28® fiber or compatible
Wavelength	1310 ± 10 nm (@ 25°C)

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specifications | (continued)

Physical Specifications

Supported Services	SISO: CELL/ESMR, PCS, AWS+AWS-3, 700 LTE With RxU2325: 2.3 GHz WCS and 2.5 GHz TDD bands
Interface Connections	Two LC APC single-mode fiber connectors; UL and DL Two DC power inputs ports; main and secondary in case of PoE clients Two QMA RF ports; for External cavity filter (In/Out) use LTE and CELL filters One broadband external antenna QMA connector (connected antenna must have a return loss of 12 dB) One RJ45 MGMT (local) connection GEM interface – power and digital
Antenna	Omnidirectional (15-degrees down from horizon)
Power Consumption	For Main Power Input: Input Range: 37-57 VDC RAU5x: 44.5 V; 50 W RAU5x + RxU2325: 44.5; 76 W RAU5x + RxU + GEM: 44.5 V; 78 W
Management	Managed via the headend control module (HCM)
Physical Characteristics (Enclosure and Modules)	Mounting: Wall/ceiling (horizontal mount) Mounting bracket included in the installation kit Mid-mount (acoustic ceiling) – separately ordered kit Dimensions (H x W x D): Without external antenna: 3.6* x 12.9 x 10.4 in (90 x 327 x 264 mm) <i>*3.6-in (90 mm) without standard mounting bracket; 4.4-in (111 mm) with standard mounting bracket</i> With external antenna and skirt: 6.1 x 13.1 x 13.1 in (154 x 338 x 338 mm) Weight : RAU5x only (no external antenna or plug-in modules): 10 lbs (4.5 kg) RAU5x and GEM: 11.1 lbs (5.03 kg) RxU2325: 3.08 lbs (1.4 kg) External antenna: 3.7 lbs (1.7 kg)
Environment	Ambient Temperature: Wall-mountable installations: 45°C (113°F) Ceiling-mountable installations: 50°C (122°F)

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Mounting Options |

Wall-Mountable Installation



RAU5x Wall-Mountable Option – Two Units per Bracket | Figure 3

Mid-Mountable Installation



RAU5x (including external antenna)
Mid-Mountable Installation | Figure 4



RAU5x (including external antenna)
Mid-Mountable Installation – Lowered View | Figure 5

Corning® Optical Network Evolution (ONE™) Solutions Five-Band Remote Access Unit (RAU5x)



ordering information |

RAU5x Remotes

Part Number	Description
RAU5XUS	Remote Access Unit, five-band remote supporting: ESMR 800/CELL 850, LTE 700, AWS+AWS3 1700, and PCS 1900
RAU5XUS-A	Remote Access Unit, supporting five bands and broadband antenna. ESMR 800/CELL 850, LTE 700, AWS+AWS3 1700, and PCS 1900 With antenna assembled (P/N: RAU5US-ANT)

RAU5x Accessories

Part Number	Description
RAU5US-ANT	Broadband Antenna Module for RAU5x
BR-RAU5US-Wall	Remote Bracket for wall-mountable installation; supports up to two RAU5x units back-to-back
BR-RAU5US-TOP	RAU5x Bracket for floating ceilings tile, mid-mountable installation
BR-RAU5US-CAP	Cover Plate for “Top ceiling” RAU5x bracket (BR-RAU5US-TOP) – for installations including RAU5x without Corning external antenna

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