

MODEL  
**CHP MAX**  
**HEADEND OPTICS**  
**PLATFORM**

**CHP-GMOD**  
**1 GHz 1550 nm**  
**EXTERNALLY MODULATED TRANSMITTERS**



## FEATURES

- Reach more customers with intermediate (65 km) and long (100 km) range performance models
- Optimize link performance with adjustable SBS
- WDM and DWDM wavelength options
- Support Multiple Optical Architectures including Broadcast/Narrowcast Overlay and RFOG
- Simplified installation and control with ARRIS CORView™ Element Management System solution



## PRODUCT OVERVIEW

CHP 1 GHz 1550 nm dual output externally modulated transmitters (CHP-GMOD) provide a variety of solutions for fiber-challenged long distance applications. Designed for use with the CHP EDFA series of optical amplifiers, the CHP GMOD simplifies applications by providing low-noise, high-powered forward transmission for geographical distances of up to 100 km.

### Reduce CAPEX/OPEX

Advanced adjustable SBS from 12 to 18 dBm optimizes link performance with minimal inventory, providing both CAPEX and OPEX savings. Laser options enable 1555± 5 nm for WDM, 1545 ± 1 nm for Red/Blue, and 1550 ITU channels for DWDM applications.

**Conserve Footprint, Add New Services**

The CHP Max5000® headend chassis can accommodate up to five double-width CHP-GMODs (for a total of up to 100 double-width modules in a standard 40RU rack) to reduce footprint as operators expand services. CHP-GMODs are hot-swappable and can be monitored through the CORView™ Element Management Software or CHP Craft GUI. Remote management is accessible through the SNMP HMS-compliant interface for external connection to an element management system.

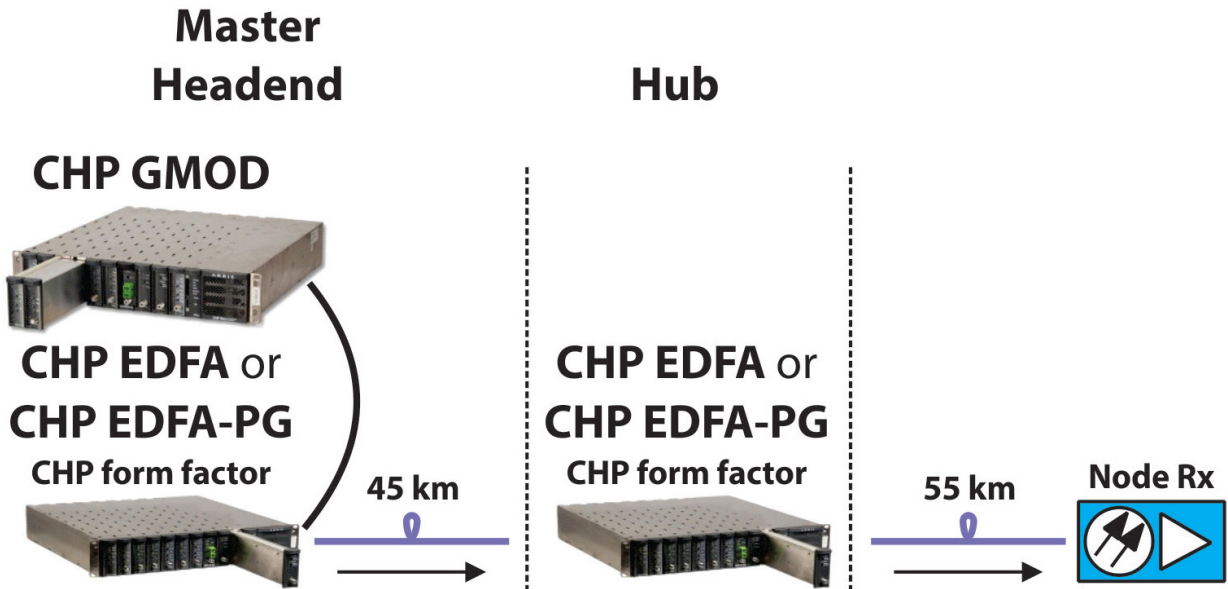
**OPTIONS**

Advanced 1 GHz technology and adjustable SBS from 12 to 18 dB for maximum performance and minimal inventory

Laser options support standard 1555 +/- 5 nm, 1545 +/- 1 nm, and DWDM for various fiber challenged applications

**APPLICATIONS**

**100km Single Channel Application**



**SPECIFICATIONS**

RF						
Bandwidth	40 to 1002 MHz					
Input Power	39 ± 3 dBmV total power 23 dBmV/channel @ 40 NTSC channels 20 dBmV/channel @ 80 NTSC channels 18.5 dBmV/channel @ 112 NTSC channels					
Flatness	Without EDC: ± 0.5 dB, max. 40 to 879 MHz; ± 0.75 dB, max. 40 to 1002 MHz With EDC: ± 0.5 dB, 40 to 550 MHz; ± 0.75 dB, 40 to 1002 MHz					
Impedance	75Ω					
Return Loss	17 dB, min., all ports (40 to 870 MHz) 16 dB min., all ports (870 to 1002 MHz)					
Residual Spurs	< 65 dBc					
Number of Inputs	1					
Common Optical						
Wavelength	1545 ± 1 nm; 1555 ± 5 nm; ITU channels 21, 23, 25, 27, 29, 39					
Line Width, max.	0.6 MHz					
Output Power, Ports 1 and 2	8 dBm					
Laser RIN	< -157 dBc/Hz					
Return Loss	> 55 dB					
Modulation Index	3% min. per channel / 80 channels					
SBS Suppression	Variable 12 dB to 18 dB					
Number of Outputs	2					
<b>Medium Haul Performance <sup>1</sup></b>	<b>80/112 NTSC Channel Loading +300 MHz QAM to 870 MHz (450 MHz QAM to 1002 MHz) <sup>2, 3, 5, 6</sup></b>		<b>Split Band 40 Low/40 High NTSC Ch. for 40 NTSC +300 MHz QAM to 870 MHz (450 MHz QAM to 1002 MHz) <sup>2, 3, 7</sup></b>		<b>Split Band 60 Low/20 High NTSC Ch. for 60 NTSC +450 MHz QAM to 1002 MHz <sup>2, 4, 8</sup></b>	
Link Budget	65 km		65 km		50 km	
Channels	80	112	40 low	40 high	60 low	20 high
CNR	52.5 (51.5) dB	51 (50) dB	55.2 (54) dB	55.2 (54) dB	54.5 dB	54.5 dB
CTB	-66 dBc	-66 dBc	-70 dBc	-70 dBc	-68 dBc	-68 dBc
CSO	-66 dBc	-66 dBc	-70 dBc	-70 dBc	-69 dBc	-69 dBc
XMOD, max.	-66 dBc	-66 dBc	-70 dBc	-70 dBc	-70 dBc	-70 dBc

**SPECIFICATIONS (CONTINUED)**

<b>Low Haul Performance</b> <sup>1</sup>	<b>80/112 NTSC Channel Loading +300 MHz QAM to 870 MHz (450 MHz QAM to 1002 MHz)</b> <sup>2,3,5,9</sup>		<b>Split Band 40 Low/40 High NTSC Ch. for 40 NTSC +300 MHz QAM to 870 MHz (450 MHz QAM to 1002 MHz)</b> <sup>2,3,10</sup>		<b>Split Band 60 Low/20 High NTSC Ch. for 60 NTSC +450 MHz QAM to 1002 MHz</b> <sup>2,4,11</sup>	
Link Budget	100 km		100 km		90 km	
Channels	80	112	40 low	40 high	60 low	20 high
CNR	49.8 (48.8) dB	47.5 (46.5) dB	52.3 (51.3) dB	52.3 (51.3) dB	52.5 (51.5) dB	52.5 (51.5) dB
CTB	-66 dBc	-65 dBc	-70 dBc	-70 dBc	-68 dBc	-68 dBc
CSO	-65dBc (with EDC)	-65dBc (with EDC)	-70 dBc	-70 dBc	-69 dBc	-69 dBc
XMOD, max.	-66 dBc	-66 dBc	-70 dBc	-70 dBc	-70 dBc	-70 dBc
<b>Powering</b>						
Power Consumption	40 W, max.; 12 V at 1.6 A, max.					
<b>Physical and Environmental</b>						
Dimensions (W x H x D), double-width module:	6.35 x 8.7 x 43.87 cm (2.5 x 3.4 x 17.27 in)					
Operating Temperature Range:	0 to 50°C (32 to 122°F)					
Operating Humidity, non-condensing:	10 to 90%					

**Notes:**

1. Specifications are worst case and are for both output ports. Reference receiver: 7 pA/Hz0.5. Reference receiver input: 0 dBm. SBS suppression: 12 to 18 dBm. GMOD performance is no worse than CTB performance as specified per the channel plan.
2. Specifications are based on a reference receiver.
3. Reference maximum channel loading: QAM channel loading is -6 dBc relative to analog carriers.
4. Reference maximum channel loading: QAM channel loading is -2 dBc relative to analog carriers.
5. 64 PAL channel performance is equivalent to 80 NTSC channel performance. 42 CENELEC channel CSO and CTB performance is equivalent to 80 NTSC channel performance. 42 CENELEC channel CNR performance is 1.0 dB higher than 80 NTSC channel performance.
6. 16 dBm EDFA, 65 km fiber, 0 dBm at receiver.
7. 16 dBm EDFA, 65 km fiber, 2 dBm at receiver.
8. 16 dBm EDFA, 65 km fiber, 3 dBm at receiver.
9. 16 dBm EDFA, 45 km fiber, 16 dBm EDFA, 55 km fiber, 0 dBm at receiver.
10. 16 dBm EDFA, 45 km fiber, 16 dBm EDFA, 55 km fiber, 2 dBm at receiver.
11. 16 dBm EDFA, 45 km fiber, 16 dBm EDFA, 55 km fiber, 3 dBm at receiver.

**RELATED PRODUCTS**

CHP Chassis	Optical Patch Cords
Power Supplies	Optical Passives
Control Module	Installation Services

**Note:** Specifications are subject to change without notice.

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