



## CHP Max5000™ Dual Input Front Fiber 1 GHz Forward Path Transmitters (GFX(V)-DF) Technical Specification

### Specifications

#### Optical

Optical Wavelength	1310nm $\pm$ 10nm
Optical Output Power	See CNR vs. Link Budget Tables

#### RF

Bandwidth	
Operational Range	54 to 1002MHz
Analog Channel Range	54 to 550MHz
Digital Channel Range	550 to 1002MHz
Response Flatness, typ.	$\pm$ 0.5dB
Input Return Loss	16dB
Port-to-Port Isolation, typ.	60dB, 54 to 870MHz 50dB, 870 to 1002MHz
Port-to-Port Gain Variation, typ./max.	$\pm$ 0.5 dB/ $\pm$ 1.0dB

#### Powering

Power Consumption, max.	17.4W
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#### Performance

Channel Plan	79 NTSC channels (up to 75 256-QAM channels)
Input RF Power	
Analog Channels (Notes 1 and 2)	15 dBmV/ch
Digital QAM Channels	9dBmV/ch
Composite Second Order (Notes 1 and 3)	-65dBc
Composite Triple Beat (Note 1)	-70dBc

#### Mechanical

Optical Connector	SC/APC
RF Connector	F-type
RF Input Testpoint (Note 4)	-20 $\pm$ 1.0dB
Dimensions W x H x D in (cm) (Note 5)	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight	2.75lbs (1.24kg)

## Specifications

### Environmental

Operational Temperature (Note 6)	32 to 122°F (0 to 50°C)
Storage Temperature	-40 to 158°F (-40 to 70°C)
Humidity, noncondensing, max.	85%

### Notes:

- Distortions are measured using only CW analog carriers per SCTE recommendation by standard RF test methods. Performance shown represents typical performance for ≥85% of production units tested over typical Corning SMF-28 fiber (or equivalent). For minimum CSO and CTB, subtract 2dB from typical.
- OMI is 3.9% at 79 NTSC channel loading.
- CSO performance for NTSC channels is for the in-band (high-side) beats.
- Relative to main port with 0 dB pad and 0 dB EQ.
- Includes handles and connectors.
- Temperature measured at transmitter module's air inlet.

## CNR vs. Link Budget: CHP-GFXx-DF Series Dual Input Front Fiber 1 GHz Transmitters

	Analog Loading	Digital Loading
<b>NTSC</b>	79 channels, 54 to 550MHz	up to 75 channels 256-QAM, 550 to 1002MHz (6dB below analog)

  

Variable Output Transmitter					
	CHP-GFXV-DF-04	CHP-GFXV-DF-06	CHP-GFXV-DF-08	CHP-GFXV-DF-10	CHP-GFXV-DF-12
<b>Output Power Tunable Range (dBm)</b>	2.0 to 4.0	4.0 to 6.0	6.0 to 8.0	8.0 to 10.0	10.0 to 12.0
<b>Output Power (dBm)</b>	4.0	6.0	8.0	10.0	12.0
<b>Fiber Length (km)</b>	7.0	13.0	15.0	15.0	20.0
<b>Optical Loss Budget (dB)</b>	<b>CNR (dB) for part fiber/part passive link (typical)</b>				
<b>2</b>	—	—	—	—	—
<b>3</b>	55.0	—	—	—	—
<b>4</b>	54.2	—	—	—	—
<b>5</b>	53.6	54.0	—	—	—
<b>6</b>	—	53.5	—	—	—
<b>7</b>	—	52.8	53.8	—	—
<b>8</b>	—	—	53.2	—	—
<b>9</b>	—	—	52.6	53.8	—
<b>10</b>	—	—	—	53.2	—
<b>11</b>	—	—	—	52.6	53.9
<b>12</b>	—	—	—	—	53.2
<b>13</b>	—	—	—	—	52.6

## Fixed Output Transmitter

	CHP-GFX-DF-13	CHP-GFX-DF-14	CHP-GFX-DF-15
<b>Optical Output Power (dBm)</b>	13	14	15
<b>Fiber Length (km)</b>	20	20	20
<b>Optical Loss Budget (dB)</b>	<b>CNR (dB) for part fiber/part passive link (typical)</b>		
<b>12</b>	53.4	—	—
<b>13</b>	52.8	53.4	—
<b>14</b>	52.2	52.8	53.4
<b>15</b>	51.5	52.2	52.8
<b>16</b>	50.6	51.5	52.2
<b>17</b>	—	50.6	51.5
<b>18</b>	—	—	50.6

### Notes:

- Optical output power specified before transmitter's bulkhead.
- CNR variation is  $\pm 0.5$  dB within the tunable range if the receiver optical input power is adjusted to the same power level.
- The variable optical output power range can be extended 0.5 dB above and below the specified range, but distortions, as specified on the previous page, are not guaranteed in this extended range.
- CNR is measured using only CW analog carriers per SCTE test procedures. Performance shown is ambient. Subtract 0.5 dB for performance over full temperature range.
- OMI is automatically maintained within the tunable range except when operating in the custom manual mode.
- Specifications measured using typical receiver with 0.85 mA/mW, 7 pA/Hz<sup>0.5</sup> performance.
- All performance specified for 79 NTSC channels at 15 dBmV/channel and 450 MHz of digital loading at 6 dB below equivalent video channels.

## Ordering Information

<b>C</b>	<b>H</b>	<b>P</b>	<b>-</b>	<b>G</b>	<b>F</b>	<b>X</b>	<b>1</b>	<b>x</b>	<b>-</b>	<b>D</b>	<b>F</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>S</b>
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1 Forward Transmitter Type	
blank	Fixed output transmitter series
V	Variable output transmitter series

4 Connector Type	
S	SC/APC

2-3 Optical Output Level		
04	Variable optical output power of 2 to 4 dBm in 0.25 dB steps	a
06	Variable optical output power of 4 to 6 dBm in 0.25 dB steps	a
08	Variable optical output power of 6 to 8 dBm in 0.25 dB steps	a
10	Variable optical output power of 8 to 10 dBm in 0.25 dB steps	a
12	Variable optical output power of 10 to 12 dBm in 0.25 dB steps	a
13	13.0 dBm fixed optical output power	b
14	14.0 dBm fixed optical output power	b
15	15.0 dBm fixed optical output power	b
a) Select "V" in #1 block, <b>Forward Transmitter Type</b> .		
b) Leave the #1 block, <b>Forward Transmitter Type</b> , blank if ordering a fixed output transmitter.		

Contact your ARRIS sales professional to discuss how our exciting new 1GHz products can add value to your network. See the CHP Max5000 Converged Headend Platform data sheet for additional ordering information.

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