



# CHP Max5000 CORWave™ 1 GHz Forward Path Transmitter Technical Specification

## Implementation Requirements for Four-Wavelength Applications

Implementation Requirements	Four Wavelength Application
<b>Unique Requirements</b>	
Recommended wavelengths (note 1)	MW01-1291, MW02-1293, MW03-1295, MW04-1290
Maximum launch power/wavelength	11 dBm (4 wavelengths)
<b>Common Requirements</b>	
Analog broadcast content	Must use identical analog content
Digital broadcast content	Can use different, digitally modulated narrowcast content
Analog RF input level	13.5 to 15 dBmV/channel
Digital RF input level	7.5 to 9 dBmV/channel
Maximum RF input cable length difference to transmitters	100 feet

### Notes

- ARRIS recommends to deploy MW01-1291 as the first wavelength.

## Transmitter Specifications

<b>Optical</b>	
Optical Wavelength	MW01-1291, MW02-1293, MW03-1295, MW04-1290
Optical Output Power	4, 6, 8, 10, 13 dBm (Refer to CNR vs. Link Budget Tables)
<b>RF</b>	
Bandwidth	
Operational Range	54 to 1002 MHz
Analog Channel Range	54 to 550 MHz
Digital Channel Range	550 to 1002 MHz
Response Flatness, P-V, typ./max.	1.0/2.0 dB
Input Return Loss	16 dB
Port-to-Port Isolation	≥60 dB, 54 to 870 MHz, ≥50 dB, 870 to 1002 MHz
Port-to-Port Gain Variation, typ./max.	±0.5 dB/±1.0 dB
<b>Powering</b>	
Power Consumption, max.	17.4 W

## Transmitter Specifications

### Performance

Channel Plan	78 NTSC channels and up to 75 256-QAM channels
Input RF Power	
Analog Channels (Notes 1 and 2)	15.0 dBmV/ch
Digital QAM Channels	9.0 dBmV/ch
Composite Second Order, typ. (Notes 1 and 3)	-63 dBc
Composite Triple Beat, typ. (Note 1)	-70 dBc

### Mechanical

Optical Connector	SC/APC
RF Connector	F-type
RF Input Test Point (Note 4)	-20 ± 1.0 dB
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	2.75 lbs (1.24 kg)

### 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. CSO performance is for the transmitter only. CSO specifications for CORWave transmitter is obtained over specified fiber links. The typical system CSO is -60 dBc assuming an 11 dBm launch per wavelength for a four-wavelength system.
- OMI is 3.9% at 78 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-MWxx-xxxx-xx-S 1 GHz CORWave Transmitters

	-04	-06	-08	-10	-13
<b>Output Power (dBm)</b>	4.0	6.0	8.0	10.0	13.0
<b>Fiber Length (km)</b>	7.0	13.0	15.0	15.0	25.0
<b>Optical Loss Budget (dB)</b>	<b>CNR (dB) for part fiber/part passive link (typical)</b>				
<b>3</b>	54.5	—	—	—	—
<b>4</b>	54.0	—	—	—	—
<b>5</b>	53.4	53.9	—	—	—
<b>6</b>	52.7	53.3	—	—	—
<b>7</b>	51.8	52.7	53.8	—	—
<b>8</b>	—	52.0	53.2	—	—
<b>9</b>	—	51.1	52.6	53.8	—
<b>10</b>	—	—	51.9	53.2	—
<b>11</b>	—	—	51.0	52.6	—
<b>12</b>	—	—	—	51.9	53.4
<b>13</b>	—	—	—	51.0	52.8
<b>14</b>	—	—	—	—	52.2
<b>15</b>	—	—	—	—	51.5
<b>16</b>	—	—	—	—	50.6

#### Notes:

- Optical output power specified before transmitter's bulkhead.
- CNR is measured using only CW analog carriers per SCTE test procedures. Performance shown is ambient. Subtract 0.5 dB for performance over full temp. range.
- Specifications measured using typical receiver with 0.85 mA/mW, 7 pA/Hz<sup>0.5</sup> performance.
- Performance valid for 78 NTSC modulated channels at 15 dBmV/channel and 450 MHz of QAM loading at 6 dB below equivalent video channels.
- Multiple forward wavelengths on a single fiber requires specific application considerations, please contact ARRIS for system design guidance.

## Ordering Information

				<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>		<b>10</b>	<b>11</b>		<b>12</b>
<b>C</b>	<b>H</b>	<b>P</b>	<b>-</b>	<b>M</b>	<b>W</b>	<b>x</b>	<b>x</b>	<b>-</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>-</b>	<b>x</b>	<b>x</b>	<b>-</b>	<b>S</b>

1-9	CWDM Optical Wavelength
MW01-1291	MultiWave #01 - 1291 nm (first wavelength to be deployed)
MW02-1293	MultiWave #02 - 1293 nm
MW03-1295	MultiWave #03 - 1295 nm
MW04-1290	MultiWave #04 - 1290 nm

10-11	Optical Output Level
04	Fixed optical output power of 4 dBm
06	Fixed optical output power of 6 dBm
08	Fixed optical output power of 8 dBm
10	Fixed optical output power of 10 dBm
13	Fixed optical output power of 13 dBm

12	Connector Type
5	SC/APC