



## Opti Max2100 1 GHz Segmentable Cabinet Node Technical Specifications

### General Specifications

| Characteristic                              |   | 85/105 Split  |            | 65/85 MHz Split                    |            | 42/54 MHz Split                    |   |                          |    |                          |  |
|---|---|---|------------|------------------------------------|------------|------------------------------------|---|--------------------------|----|--------------------------|--|
| Downstream<br>Optical                       | Optical Input Level Range                       | -6 to 3 dBm without optical AGC; -6 to 0 dBm or -3 to +3 dBm with optical AGC |            |                                    |            |                                    |   |                          |    |                          |  |
|   | Optical Input Wavelength, nm                    | 1290 to 1600  |            |                                    |            |                                    |   |                          |    |                          |  |
|   | Equivalent Input Noise, pA/Hz <sup>0.5</sup>    | 5   |            |                                    |            |                                    |   |                          |    |                          |  |
|   | Optical Input Testpoint Level, V/mW             | 1 ± 10%   |            |                                    |            |                                    |   |                          |    |                          |  |
| Downstream RF                               | Operating Passband                              | 105 to 1002 MHz   |            | 85 to 1002 MHz                     |            | 54 to 1002 MHz                     |   |                          |    |                          |  |
|   | Output Level @ 1002 MHz dBmV, min. <sup>1</sup> | See Note 1  |            | See Note 1                         |            | See Note 1                         |   |                          |    |                          |  |
|   | Factory Aligned Tilt <sup>2</sup> , dB          | 5 ± 1.0   |            | 5 ± 1.0                            |            | 5 ± 1.0                            |   |                          |    |                          |  |
|   | Flatness <sup>3</sup> , typ./max.               | ±0.6/±1.2 dB (from 110 to 1002 MHz)   |            | ±0.6/±1.2 dB (from 90 to 1002 MHz) |            | ±0.6/±1.2 dB (from 60 to 1002 MHz) |   |                          |    |                          |  |
|   | Return Loss, @ 40 MHz, dB, min.                 | 18.0-1.5 dB/octave  |            | 18.0-1.5 dB/octave                 |            | 18.0-1.5 dB/octave                 |   |                          |    |                          |  |
|   | Port to Port isolation, dB, typ.                | >60   |            | >60                                |            | >40                                |   |                          |    |                          |  |
|   | Thermal Level Stability <sup>4</sup> , dB, max. | ±1.5  |            | ±1.5                               |            | ±1.5                               |   |                          |    |                          |  |
|   | Optical AGC Accuracy, dB, max <sup>5</sup>      | ±0.75   |            | ±0.75                              |            | ±0.75                              |   |                          |    |                          |  |
| RF Output Testpoint, dB                     | -20 ± 0.75                                      |   | -20 ± 0.75 |                                    | -20 ± 0.75 |                                    |   |                          |    |                          |  |
| Performance                                 | Channel Performance <sup>6</sup>                | 60 PAL <sup>7,8</sup>   |            | 42 CENELEC <sup>9</sup>            |            | 60 PAL <sup>10,11</sup>            |   | 42 CENELEC <sup>12</sup> |    | 79 NTSC <sup>13,14</sup> |  |
|   | Frequency, MHz                                  | 1002/870/47   |            | 870/47                             |            | 1002/870/47                        |   | 870/47                   |    | 1002/870/550/54          |  |
|   | Output Level, dBμV                              | 114/112/100   |            | 112.5/104.5                        |            | 114/112/100                        |   | 112.5/104.5              |    | —                        |  |
|   | Output Level, dBmV                              | —   |            | —                                  |            | —                                  |   | —                        |    | 54/52/47/39              |  |
|   | Carrier to Noise Ratio, 5 MHz, dB/dBm input     | 57/ >-5.5   |            | 57.5/ >-6.0                        |            | 57/ >-5.5 dBm                      |   | 57.5/ >-6.0              |    | —                        |  |
|   | Carrier to Noise Ratio, 4 MHz, dB/dBm input     | —   |            | —                                  |            | —                                  |   | —                        |    | 58/ >-5.5                |  |
|   | Composite Triple Beat, -dBc                     | 73  |            | 68                                 |            | 73                                 |   | 68                       |    | 71 dBc                   |  |
|   | Composite 2IM, -dBc                             | 69  |            | 65                                 |            | 69                                 |   | 65                       |    | 66                       |  |
|   | Cross Modulation, per NCTA std, -dB             | 68  |            | 68                                 |            | 68                                 |   | 68                       |    | 68                       |  |
| Composite Intermod. Noise, dB <sup>15</sup> | 59  |   | —          |                                    | 59         |                                    | — |                          | 61 |                          |  |

Continue to next page

# Technical Specifications

**General Specifications**

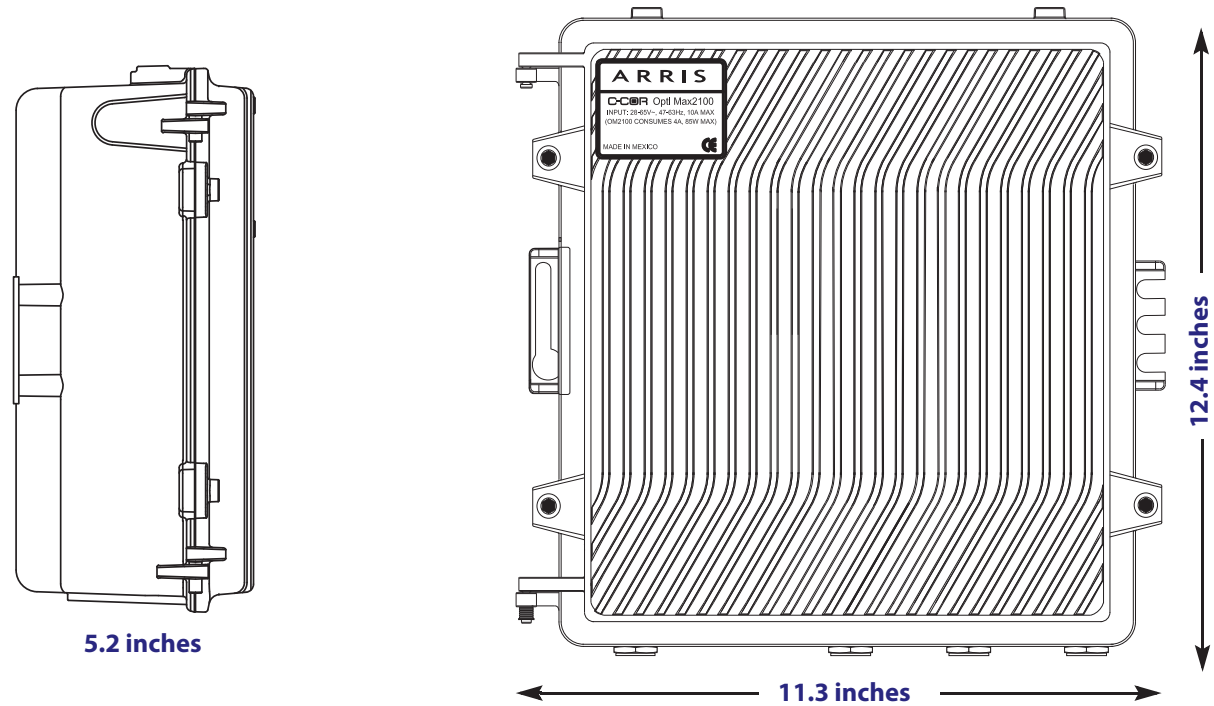
| Characteristic                    | 85/105 Split                                       | 65/85MHz Split  | 42/54MHz Split  |   |
|-----------------------------------|--|---|---|---|
| <b>Upstream RF</b>                | Operating Passband                                 | 5 to 85MHz  | 5 to 65MHz  | 5 to 42MHz  |
|                                   | Isolated DFB Lasers                                | 1310 ± 20nm (0±1 or 3±1 dBm);<br>1550 ± 25 nm (3±1 dBm)       | 1310 ± 20nm (0 and +3dBm);<br>1550 ± 25nm (+3dBm)             | 1310 ± 20nm (0 and +3dBm);<br>1550 ± 20nm (+3 dBm)            |
|                                   | Isolated CWDM DFB Lasers                           | 1471 to 1611 nm<br>(8 CWDM channels, 20nm spacing)            | 1471 to 1611 nm<br>(8 CWDM channels, 20nm spacing)            | 1471 to 1611 nm<br>(8 CWDM channels, 20nm spacing)            |
|                                   | RF Input Level                                     | 70dBµV (10dBmV) to port;<br>66dBµV (6dBmV) to TX, per carrier | 70dBµV (10dBmV) to port; 66dBµV<br>(6dBmV) to TX, per carrier | 70dBµV (10dBmV) to port; 66dBµV<br>(6dBmV) to TX, per carrier |
|                                   | RF Input Testpoint, dB                             | -20dB ± 0.75  | -20dB ± 0.75  | -20dB ± 0.75  |
|                                   | Optical Power Testpoint, V/mW                      | 1 ± 10%   | 1 ± 10%   | 1 ± 10%   |
|                                   | NPR Dynamic Range, NPR/dB                          | 35/15   | 35/15   | 35/17   |
|                                   | BER Dynamic Range, (QPSK/QAM-16), dB <sup>16</sup> | 43/33   | 43/33   | 45/35   |
| <b>Powering</b>                   | AC Input Voltage                                   | 28 to 65VAC rms (remote), 110-230VAC (local)                  |   |   |
|                                   | AC Current Passing, all ports                      | 10A   |   |   |
|                                   | Power Consumption                                  | 99W max. for fully configured node                            |   |   |
| <b>Physical and Environmental</b> | Connectors   |   |   |   |
|                                   | Optical Fiber Patch Cord Entry Option              | PG16, 5/8-inch UNEF   |   |   |
|                                   | Optical Connector Option                           | SC/APC, FC/APC  |   |   |
|                                   | RF Output Port Options                             | 5/8-inch UNEF, IEC, 3.5/12, F-type (female), PG11             |   |   |
|                                   | RF Testpoints                                      | mini SMB (P/N 1504945)  |   |   |
| Operating Temperature Range       | -20 to 60°C  |   |   |   |

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- Minimum output level with EQ installed and an optical input of -6dBm: 3.5% OMI = 111 dBµV; 4.0% OMI = 112dBµV; 4.5% OMI = 113 dBµV; 5.0% OMI = 114dBµV. Nodes configured with optical AGC will maintain these output levels over the optical input range.
- Linear tilt with 5dB onboard EQ energized and no plug-in EQ. Tilt is measured from 48 to 1002MHz and is determined using a best fit/least squares formula.
- Measured with respect to tilt from 110 to 1002MHz (85/105 split), 90 to 1002MHz (65/85 split), or 60 to 1002MHz (42/54 split).
- Reference to 23°C with a fixed optical input.
- Output level variation with respect to output level at -3dBm input.
- The distortion values listed are for the node only. To obtain a particular link performance, combine the listed node performance values along with the applicable transmitter performance values.
- Analog channels occupying the 105 to 600MHz (85/105 split), 85 to 600MHz (65/85 split), or 54 to 550MHz (42/54 split) frequency range with digitally compressed channels or equivalent broadband noise to 1002MHz at levels 6dB below equivalent video channels.
- Node configured with a GEQL-1GHZ-100 and the onboard 5dB EQ energized. Optical input of -5.5dBm, 4.5% OMI (85/105 and 65/85 split) or 0dBm, 3.9% OMI (42/54 split). Nodes configured with optional optical AGC will require an OMI of 5% to operate at the listed output levels.
- According to EN50083-3, CENELEC 42-channel loading, with 8dB of tilt from 47 to 870MHz. Optical input of -6dBm, 5% OMI. Specification expressed as a distortion value at the reference output level.
- Analog channels occupying the 85 to 600MHz frequency range with digitally compressed channels or equivalent broadband noise to 1002MHz at levels 6dB below equivalent video channels.
- Node configured with a GEQL-1GHZ-100 and the onboard 5dB EQ energized. Optical input of -5.5dBm, 4.5% OMI. Nodes configured with optional optical AGC will require an OMI of 5% to operate at the listed output levels.
- According to EN50083-3, CENELEC42-channel loading, with 8dB of tilt from 47 to 870MHz. Optical input of -6dBm, 5% OMI. Specification expressed as a distortion value at the reference output level.
- Analog channels occupying the 54 to 550MHz frequency range with digitally compressed channels or equivalent broadband noise to 1002MHz at levels 6dB below equivalent video channels.
- Node configured with a GEQL-1GHZ-110, TLC receiver module and the onboard 5dB EQ energized. Optical input of 0dBm, 3.9% OMI. Nodes configured with optional optical AGC will require an OMI of 5% to operate at the listed output levels.
- Systems operating with digitally compressed channels or equivalent broadband noise from 600 to 1002MHz (65/85 or 85/105 split) or 550 to 1002MHz (42/54 split) will experience a composite distortion (CIN) appearing as noise in the 85 to 600MHz frequency spectrum.
- BER dynamic range is specified for BER 10<sup>-6</sup> without error correction.

## Opti Max2100 1GHz Segmentable Cabinet Node Technical Specification

Refer to the Opti Max2100 Technical Overview Document or the Opti Max2100 Equipment Manual (P/N 1503247) for complete specifications. Specifications are subject to change without notice.



### Opti Max2100 Dimensions

| Characteristic         | Specification                                    |
|------------------------|--|
| Uncrated (H x W x D)   | 12.4 x 11.3 x 5.2 inches (31.4 x 30.3 x 13.2 cm) |
| Crated (H x W x D)     | 16.0 x 13.5 x 7.0 inches (40.6 x 34.3 x 17.8 cm) |
| Crated weight, approx. | 16.06 lbs. (7.28 kg)                             |

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