



Opti Max3100 1 GHz 2 x 2 Segmentable Node Technical Specification

General Node Specifications

| General Node Specifications | | |
|---|---------------------------------------|------------------------------|
| Number of Active RF/AC Ports | 4 | |
| AC Current Passing, A (All Ports) | 15 | |
| Physical Dimensions, (W x H x D), in (cm) | 15.5 x 9.1 x 7.9 (39.4 x 23.1 x 20.1) | |
| Weight, 2 x2 configuration, lbs (kg) | 25 (11.3) | |
| Operating Temperature Range, °C | -40 to 60 | |
| Forward Path Specifications | | |
| Optical Specifications | | |
| Optical Input Wavelength, nm | 1290 to 1600 | |
| Optical Input Range, dBm | -3 to 3; circuit resiliency to 5dBm | |
| RF Specifications | | |
| Operating Passband, MHz | 54/70/85 to 1002 | |
| Output Level @ 1002MHz, -3dBm input, 3.5% OMI, dBmV, min. | 53.5 | |
| Level Stability, dB, max. | ±1.5 | |
| Gain Slope, dB (Note 1) | 9.5, 11.5, 12.5, 14.5, 16.5 ± 1.0 | |
| Flatness @ Gain Slope, dB | ±1.5 | |
| Return Loss, dB, min. (all RF ports) | 16.0 | |
| Port to Port Isolation @ 1002MHz, dB, typ. | 60 | |
| NTSC Channel Performance (Notes 2, 3, and 4) | 79 Channels (42/54MHz split) | 76 Channels (55/70MHz split) |
| Reference Frequency, MHz | 1002/870/550/54 | 1002/870/550/70 |
| Output Level, dBmV | 53.5/51.2/45.7/37 | 53.5/51.2/45.5/37 |
| Carrier to Noise Ratio, 4MHz, 75 Ohm, dB | 57, 0dBm input | 57, 0dBm input |
| Composite Triple Beat, -dBc | 73 | 73 |
| Composite 2IM, -dBc | 67 | 67 |
| Cross Modulation (per NTCTA std.), -dB | 70 | 70 |
| Composite Intermodulation Noise, dB (Note 5) | 62.5 | 62.5 |
| Composite Intermodulation Noise, dB (Note 6) | — | 68.5 |

General Node Specifications (Continued)

| PAL/CENELEC Channel Performance | 60 PAL Channels (65/85 MHz split) (Notes 2, 3, and 7) | 42 CENELEC Channels (65/85 split) (Notes 2, 3, and 8) |
|--|--|--|
| Reference Frequency, MHz | 1002/600/85 | 870/85 |
| Output Level, dBmV | 53.5/46.3/37 | 53/45 |
| Carrier to Noise Ratio, 5 MHz, 75 Ohm, dB | 57, 0dBm input | 49 |
| Composite Triple Beat, -dBc | 73 | 62 |
| Composite 2IM, -dBc | 69 | 62 |
| Cross Modulation (per NTCTA std.), -dB | 70 | — |
| Composite Intermodulation Noise, dB (Note 5) | 63 | — |

| Return Path Specifications | |
|-----------------------------------|---------------|
| RF Specifications | |
| Operating Passband, MHz | 5 to 42/55/65 |
| Optimum RF Input Level, dBmV/6MHz | 12 |
| Gain Slope, dB | ±1.0 |
| Flatness @ Gain Slope, dB | ±1.0 |
| Level Stability, dB | ±2.5 |
| Return Loss, dB (all RF ports) | 16.0 |
| Port to Port Isolation, dB, typ. | 50 |

| Powering Requirements (Note 9) | DC Current (A, max.) | DC Power | AC I/P Current | AC I/P Power |
|--|-----------------------------|-----------------|-----------------------|---------------------|
| | @ 24V | (W) | @ 60/90V (A) | (W) |
| 1 x 4/4 x 1 w/ 1310/1550 new DFB NRT | 2.71 | 65.04 | 1.28/0.85 | 76.52 |
| 1 x 4/4 x 1 w/ 1310 legacy DFB NRT | 2.93 | 70.32 | 1.38/0.92 | 82.73 |
| 1 x 4/4 x 1 w/ 1310/1550 CWDM DFB NRT | 3.08 | 73.92 | 1.45/0.97 | 86.96 |
| 1 x 4/4 x 1 Redundant w/ 1310/1550 new DFB NRT | 3.21 | 77.04 | 1.51/1.01 | 90.64 |
| 1 x 4/4 x 1 Redundant w/ 1310 legacy DFB NRT | 3.66 | 87.84 | 1.72/1.15 | 103.34 |
| 1 x 4/4 x 1 Redundant w/ 1310/1550 CWDM NRT | 3.96 | 95.04 | 1.86/1.24 | 111.81 |
| 2 x 2 w/ 1310/1550 new DFB NRT | 3.41 | 81.84 | 1.60/1.07 | 96.28 |
| 2 x 2 w/ 1310 legacy DFB NRT | 3.86 | 92.64 | 1.82/1.21 | 108.99 |
| 2 x 2 w/ 1310/1550 CWDM NRT | 4.16 | 99.84 | 1.96/1.31 | 117.46 |

Notes:

1. Typical slope is 6.5dB with no EQ installed. Slope is defined as the difference between the highest and lowest specified frequency on a straight line determined by applying a best fit/least squared formula to the measured response. Slope can be reconfigured via plug-in equalizers.
2. The distortion values listed are for the node only. To obtain a particular link performance, combine the listed node performance values with the applicable transmitter performance values.
3. At the specified operational tilt of 16.5 dB, the maximum output level for 870 MHz or 1002 MHz loading is 56.5 dBmV at the highest frequency.
4. Analog channels occupying the 54 to 550 MHz (42/54 MHz split) or 70 to 550 MHz (55/70 MHz split) frequency range with digitally compressed channels or equivalent broadband noise to 1002 MHz at levels 6 dB below equivalent video channels.
5. Systems operating with digitally compressed channels or equivalent broadband noise from 550 to 1002 MHz at levels 6 dB below equivalent video channels will experience a composite distortion (CIN) appearing as noise in the 54 to 550 MHz frequency spectrum.
6. Systems operating with digitally compressed channels or equivalent broadband noise from 550 to 870 MHz at levels 6 dB below equivalent video channels will experience a composite distortion (CIN) appearing as noise in the 70 to 550 MHz frequency spectrum.
7. Analog channels occupying the 85 to 600 MHz frequency range with digitally compressed channels or equivalent broadband noise to 1002 MHz at levels 6 dB below equivalent video channels.
8. According to EN50083-3, 42 CENELEC channel loading, and with diplex filter and 8 dB slope. Measured with 5% OMI, -6 dBm optical input, 113 dBµV (53 dBmV) RF output level, no optical AGC.
9. Value Max transponder and daughter card add 55 mA @ 24VDC current draw. All values assume the use of a 1 GHz NOR receiver; the use of a legacy NOR will increase the DC current draw by 140 mA each.

Specifications subject to change without notice.

1310nm and 1550nm DFB Return Transmitter Specifications

Optical Specifications

| | |
|-----------------------------|--|
| Laser Type | Isolated Uncooled DFB |
| Transmission Wavelength, nm | NRT-1310DFB: 1310 ± 20 NRT-1550DFB: 1550 ± 25 |
| Output Power, dBm | 3.0 ± 1.0 |
| Connector Types | SC/APC, FC/APC, SC/UPC, FC/UPC |

RF Specifications

| | |
|---|----------|
| Bandwidth, MHz | 5 to 200 |
| Impedance, Ohm | 75 |
| Return Loss, from max. gain to 8dB of attenuation, dB | 17 |
| Flatness, with respect to gain slope, max., dB | ±0.75 |
| Gain Slope, max., dB | ±0.5 |
| Level Stability, over temp., dB | ±2.5 |
| Manual Gain Control Range | > 8dB |
| Reverse Spurious, -dBc | < 50 |
| RF Testpoint Insertion Loss, dB (Note 1) | -9 ± 0.5 |

Performance Specifications (Note 2)

| | 42/54MHz split | 55/70MHz split | 65/85MHz split |
|--|----------------|----------------|----------------|
| Optimum Transmitter Input, dBmV/6MHz (dBmV/Hz) | 6 (-62) | 6 (-62) | 6 (-62) |
| Optimum Testpoint Level, dBmV/6MHz (dBmV/Hz) | -3 (-71) | -3 (-71) | -3 (-71) |
| NPR/Dynamic Range, dB (Note 3) | 41/12 | 35/13 | 39/12 |
| NPR Peak, dB (Notes 3 and 4) | 48 | 45 | 47 |
| BER Dynamic Range (Note 3) | | | |
| QPSK @ 10 ⁻⁶ , dB | 45 | 43 | 43 |
| 16-QAM @ 10 ⁻⁶ , dB | 35 | 33 | 33 |

Powering Specifications

| | |
|------------------------|----------|
| Input Voltage, VDC | 24 ± 0.5 |
| Current Draw, max., mA | 225 |

Environmental Specification

| | |
|---|----------------------------|
| Operating Temperature, within Opti Max3100 node | -40 to 60°C (-40 to 140°F) |
|---|----------------------------|

1. RF testpoint is -9dB referenced to transmitter input with transmitter set fully clockwise to maximum gain (minimum attenuation).
2. Performance specs measured while installed in an Opti Max3100 node with a receiver causing low degradation to performance (≤0.5dB).
3. Measured over 6dB fiber link using 40MHz NPR loading.
4. Typical NPR performance measurements taken at room temperature.
5. These return transmitters are also compatible with the OM3000 node.

Specifications subject to change without notice.

CWDM Return Transmitter Specifications

Optical Specifications

| | |
|---|--|
| Laser Type | Isolated Uncooled DFB |
| Transmission Wavelengths, nm ± 6.5 nm | 1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611 |
| Output Power, dBm | 3.0 \pm 1.0 |
| Connector Types | SC/APC, FC/APC, SC/UPC, FC/UPC |

RF Specifications

| | |
|--|--------------|
| Bandwidth, MHz | 5 to 200 |
| Impedance, Ohm | 75 |
| Return Loss, from max. gain to 8 dB of attenuation, dB | 17 |
| Flatness, with respect to gain slope, max., dB | ± 0.75 |
| Gain Slope, max., dB | ± 0.5 |
| Level Stability, over temp., dB | ± 2.5 |
| Manual Gain Control Range | > 8 dB |
| Reverse Spurious, -dBc | < 50 |
| RF Testpoint Insertion Loss, dB (Note 1) | -9 \pm 0.5 |

| Performance Specifications (Note 2) | 42/54 MHz split | 55/70 MHz split | 65/85 MHz split |
|---|------------------------|------------------------|------------------------|
| Optimum Transmitter Input, dBmV/6 MHz (dBmV/Hz) | 6 (-62) | 6 (-62) | 6 (-62) |
| Optimum Testpoint Level, dBmV/6 MHz (dBmV/Hz) | -3 (-71) | -3 (-71) | -3 (-71) |
| NPR/Dynamic Range, dB (Note 3) | 35/15 | 35/13 | 33/15 |
| NPR Peak, dB (Notes 3 and 4) | 45 | 45 | 44 |
| BER Dynamic Range (Note 3) | | | |
| QPSK @ 10^{-6} , dB | 45 | 43 | 43 |
| 16-QAM @ 10^{-6} , dB | 33 | 33 | 33 |

Powering Specifications

| | |
|------------------------|--------------|
| Input Voltage, VDC | 24 \pm 0.5 |
| Current Draw, max., mA | 600 |

Environmental Specification

| | |
|---|----------------------------|
| Operating Temperature, within Opti Max3100 node | -40 to 60°C (-40 to 140°F) |
|---|----------------------------|

1. RF testpoint is -9 dB referenced to transmitter input with transmitter set to maximum gain (minimum attenuation).
2. All performance specifications measured while installed in an Opti Max3000 node with an optical receiver causing low degradation to performance (≤ 0.5 dB).
3. Measured over 6 dB fiber link using 40 MHz NPR loading.
4. Typical NPR performance measurements taken at room temperature.
5. These return transmitters are also compatible with the OM3000 node.

Specifications subject to change without notice.

Ordering Information

To configure a product that meets your specific needs, or for any questions, please contact your ARRIS Sales Professional. You may also use our Product Wizard, located at support.arris.com (User ID and password required). If you do not have a user ID and password or have forgotten your password, please use the Sign In Help section indicated.

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