

# “U” Series Amplifiers

## Single-Band Amplifier Covers 10 kHz–1,000 MHz Frequency Band



### AR “U” (Universal) Series Amplifiers 10 kHz-1,000 MHz

AR has done it. We figured out a way to take a single amplifier and enable it to span the entire frequency range of 10 kHz–1,000 MHz. We did it with our 1, 2.5, 5, 10, 25, and 50 RF amplifiers and our 100, 250, and 500 watts have a frequency range of 100 kHz–1,000 MHz.

They’re compact, affordable, high performance, and very reliable. These “U” Series amplifiers can serve unlimited applications across multiple industries. Just imagine the possibilities.

### 1U1000



#### 1 watt CW, 10 kHz–1,000 MHz

|  |  |
|--|--|
| Rated Output Power                     | 1 watt min.  |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        |  |
| Typ. 1.5 watts / min. 1 watt           |  |
| Power Output @ 1 dB compression        |  |
| Typ. 1.5 watts / min. 1 watt           |  |
| Flatness                               | ±0.8 dB typ., ±1.0 dB max.   |
| Frequency Response                     | 10 kHz–1,000 MHz instantaneously   |
| Gain (at max. setting)                 | 30 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |
| Third Order Intercept Point            | 42 dBm typ.  |
| Noise Figure                           | 8 dB max., 6 dB typ.   |
| Harmonic Distortion                    | Minus 20 dBc max. at 1 watt, minus 30 dBc typ.   |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) |  |
| 90–264 VAC                             |  |
| 50/60 Hz, 50 watts                     |  |
| Connectors                             |  |
| RF Input                               | Type N female on front panel   |
| RF Output                              | Type N female on front panel   |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | 4.5 kg (11 lb.)  |
| Size (WxHxD)                           | 26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.   |
| Export classification                  | EAR99  |

### 2.5U1000



#### 2.5 watts CW, 10 kHz–1,000 MHz

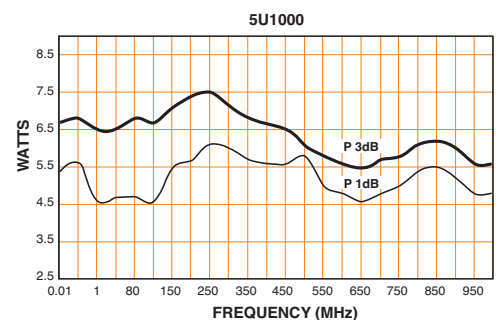
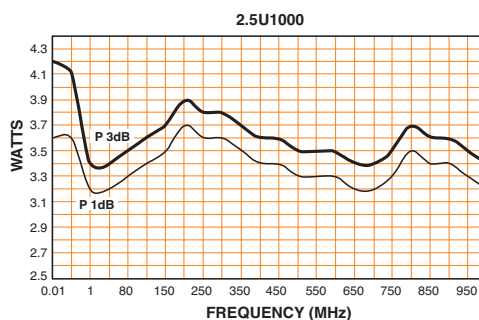
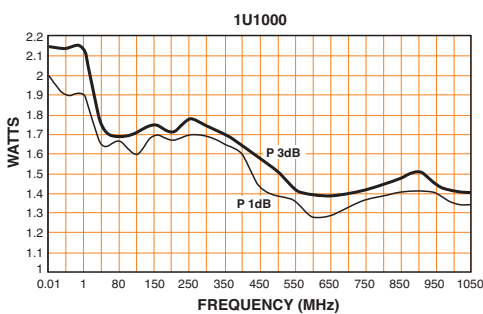
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|--|--|
| Rated Output Power                     | 2.5 watts min.   |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        |  |
| Typ. 3.0 watts / min. 2.5 watts        |  |
| Power Output @ 1 dB compression        |  |
| Typ. 2.5 watts / min. 2 watts          |  |
| Flatness                               | ±0.8 dB typ., ±1.0 dB max.   |
| Frequency Response                     | 10 kHz–1,000 MHz instantaneously   |
| Gain (at max. setting)                 | 33 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |
| Third Order Intercept Point            | 45 dBm typ.  |
| Noise Figure                           | 8 dB max., 6 dB typ.   |
| Harmonic Distortion                    | Minus 20 dBc max. at 2 watts   |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) |  |
| 90–264 VAC                             |  |
| 50/60 Hz, 50 watts                     |  |
| Connectors                             |  |
| RF Input                               | Type N female on front panel   |
| RF Output                              | Type N female on front panel   |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | 4.5 kg (11 lb.)  |
| Size (WxHxD)                           | 26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.   |
| Export classification                  | EAR99  |

### 5U1000



#### 5 watts CW, 10 kHz–1,000 MHz

|  |  |
|--|--|
| Rated Output Power                     | 5 watts min.   |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        |  |
| Typ. 5.0 watts / min. 4.5 watts        |  |
| Power Output @ 1 dB compression        |  |
| Typ. 4 watts / min. 3.5 watts          |  |
| Flatness                               | ±1.3 dB typ., ±1.5 dB max.   |
| Frequency Response                     | 10 kHz–1,000 MHz instantaneously   |
| Gain (at max. setting)                 | 37 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |
| Third Order Intercept Point            | 46 dBm typ.  |
| Noise Figure                           | 8 dB max., 6 dB typ.   |
| Harmonic Distortion                    | Minus 20 dBc max. at 3.5 watts   |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) |  |
| 90–264 VAC                             |  |
| 50/60 Hz, 70 watts                     |  |
| Connectors                             |  |
| RF Input                               | Type N female on front panel   |
| RF Output                              | Type N female on front panel   |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | 4.5 kg (11 lb.)  |
| Size (WxHxD)                           | 26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.   |
| Export classification                  | EAR99  |



# RF Solid State Amplifiers

## 10 kHz–1,000 MHz

### 10U1000



#### 10 watts CW, 10 kHz–1,000 MHz

|  |   |
|--|---|
| Rated Output Power   | 15 watts typ., 10 watts min.                  |
| Input for Rated Output   | 1.0 milliwatt max.                            |
| Power Output @ 3 dB compression  | 40 dB min.                                    |
| Typ. 15 watts / min. 10 watts  |   |
| Power Output @ 1 dB compression  | 20 dB min.                                    |
| Typ. 12 watts / min. 10 watts  |   |
| Flatness   | ±1.0 dB typ., ±1.5 dB max.                    |
| Frequency Response   | 10 kHz–1,000 MHz instantaneously              |
| Gain (at max. setting)   | 40 dB min.                                    |
| Gain Adjustment (continuous range)   | 20 dB min.                                    |
| Input Impedance  | 50 ohms, VSWR 2.0:1 max.                      |
| Output Impedance   | 50 ohms, nominal                              |
| Mismatch Tolerance   |   |
| Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |   |
| Modulation Capability  |   |
| Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |   |
| Third Order Intercept Point  | 50 dBm typ.                                   |
| Noise Figure   | 8 dB typ.                                     |
| Harmonic Distortion  | Minus 20 dBc max. at 10 watts                 |
| Spurious   | Minus 73 dBc typ.                             |
| Primary Power (selected automatically)   |   |
| 100–240 VAC  |   |
| 50/60 Hz, 150 watts  |   |
| Connectors   |   |
| RF Input   | Type N female                                 |
| RF Output  | Type N female                                 |
| Remotes Package  |   |
| IEEE-488   | 24-pin female                                 |
| RS-232   | 9-pin subminiature D (female)                 |
| Fiber optic  | ST Conn Tx and Rx RS-232                      |
| USB 2.0  | Type B  |
| Ethernet   | RJ-45   |
| Safety Interlock   | 15-pin subminiature D                         |
| Cooling  | Forced air (self-contained fans)              |
| Weight   |   |
| With Cabinet   | 17.7 kg (41 lb.)                              |
| Without Cabinet  | 9.5 kg (23 lb.)                               |
| Size (WxHxD)   |   |
| With Cabinet   | 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. |
| Without Cabinet  | 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.   |
| Export classification  | EAR99   |

### 25U1000



#### 25 watts CW, 10 kHz–1,000 MHz

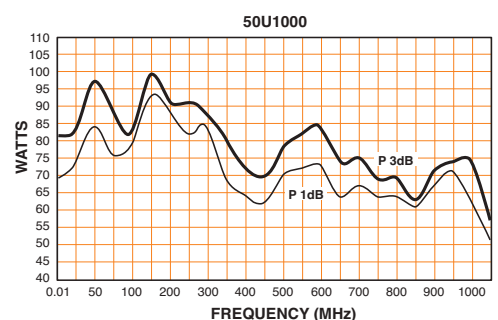
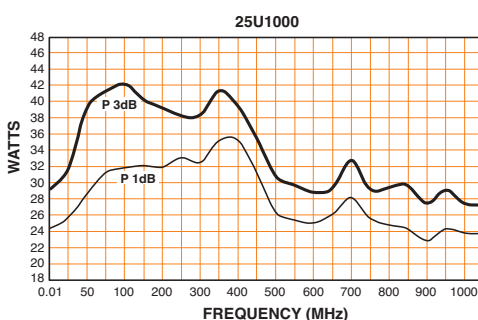
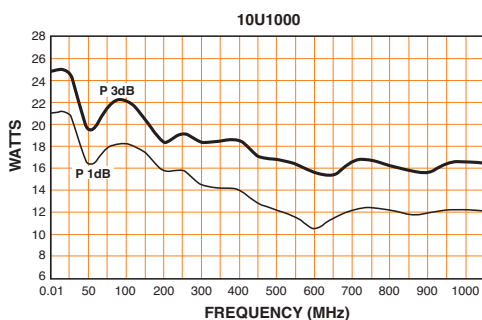
|  |   |
|--|---|
| Rated Output Power   | 30 watts typ., 25 watts min.                  |
| Input for Rated Output   | 1.0 milliwatt max.                            |
| Power Output @ 3 dB compression  | 44 dB min.                                    |
| Typ. 30 watts / min. 25 watts  |   |
| Power Output @ 1 dB compression  | 20 dB min.                                    |
| Typ. 25 watts / min. 20 watts  |   |
| Flatness   | ±1.0 dB typ., ±1.5 dB max.                    |
| Frequency Response   | 10 kHz–1,000 MHz instantaneously              |
| Gain (at max. setting)   | 44 dB min.                                    |
| Gain Adjustment (continuous range)   | 20 dB min.                                    |
| Input Impedance  | 50 ohms, VSWR 2.0:1 max.                      |
| Output Impedance   | 50 ohms, nominal                              |
| Mismatch Tolerance   |   |
| Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |   |
| Modulation Capability  |   |
| Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |   |
| Third Order Intercept Point  | 52 dBm typ.                                   |
| Noise Figure   | 8 dB typ.                                     |
| Harmonic Distortion  | Minus 20 dBc max. at 20 watts                 |
| Spurious   | Minus 73 dBc typ.                             |
| Primary Power (selected automatically)   |   |
| 100–240 VAC  |   |
| 50/60 Hz, 200 watts  |   |
| Connectors   |   |
| RF Input   | Type N female                                 |
| RF Output  | Type N female                                 |
| Remotes Package  |   |
| IEEE-488   | 24-pin female                                 |
| RS-232   | 9-pin subminiature D (female)                 |
| Fiber optic  | ST Conn Tx and Rx RS-232                      |
| USB 2.0  | Type B  |
| Ethernet   | RJ-45   |
| Safety Interlock   | 15-pin subminiature D                         |
| Cooling  | Forced air (self-contained fans)              |
| Weight   |   |
| With Cabinet   | 17.7 kg (41 lb.)                              |
| Without Cabinet  | 9.5 kg (23 lb.)                               |
| Size (WxHxD)   |   |
| With Cabinet   | 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. |
| Without Cabinet  | 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.   |
| Export classification  | EAR99   |

### 50U1000



#### 50 watts CW, 10 kHz–1,000 MHz

|  |   |
|--|---|
| Rated Output Power   | 70 watts typ., 50 watts min.                  |
| Input for Rated Output   | 1.0 milliwatt max.                            |
| Power Output @ 3 dB compression  | 47 dB min.                                    |
| Typ. 70 watts / min. 50 watts  |   |
| Power Output @ 1 dB compression  | 45 dB min.                                    |
| Typ. 60 watts / min. 45 watts  |   |
| Flatness   | ±1.5 dB typ., ±2.0 dB max.                    |
| Frequency Response   | 10 kHz–1,000 MHz instantaneously              |
| Gain (at max. setting)   | 47 dB min.                                    |
| Gain Adjustment (continuous range)   | 20 dB min.                                    |
| Input Impedance  | 50 ohms, VSWR 2.0:1 max.                      |
| Output Impedance   | 50 ohms, nominal                              |
| Mismatch Tolerance   |   |
| Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. |   |
| Modulation Capability  |   |
| Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.                                   |   |
| Third Order Intercept Point  | 57 dBm typ.                                   |
| Noise Figure   | 8 dB typ.                                     |
| Harmonic Distortion  | Minus 20 dBc max. at 45 watts                 |
| Spurious   | Minus 73 dBc typ.                             |
| Primary Power (selected automatically)   |   |
| 100–240 VAC  |   |
| 50/60 Hz, 250 watts  |   |
| Connectors   |   |
| RF Input   | Type N female                                 |
| RF Output  | Type N female                                 |
| Remotes Package  |   |
| IEEE-488   | 24-pin female                                 |
| RS-232   | 9-pin subminiature D (female)                 |
| Fiber optic  | ST Conn Tx and Rx RS-232                      |
| USB 2.0  | Type B  |
| Ethernet   | RJ-45   |
| Safety Interlock   | 15-pin subminiature D                         |
| Cooling  | Forced air (self-contained fans)              |
| Weight   |   |
| With Cabinet   | 17.7 kg (41 lb.)                              |
| Without Cabinet  | 9.5 kg (23 lb.)                               |
| Size (WxHxD)   |   |
| With Cabinet   | 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. |
| Without Cabinet  | 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.   |
| Export classification  | EAR99   |

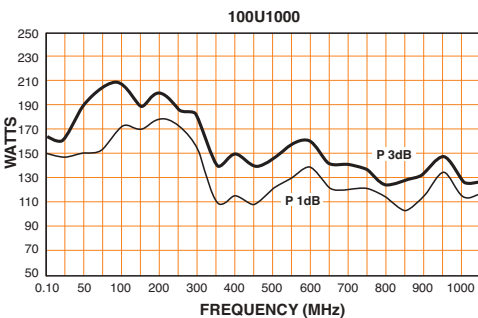


## 100U1000



### 100 watts CW, 100 kHz to 1,000 MHz

|  |  |
|--|--|
| Rated Output Power                     | 120 watts typ., 100 watts min.   |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        | Typ. 120 watts / min. 100 watts  |
| Power Output @ 1 dB compression        | Typ. 100 watts / min. 85 watts   |
| Flatness                               | ±1.5 dB typ., ±2.0 dB max.   |
| Frequency Response                     | 100 kHz–1,000 MHz instantaneously  |
| Gain (at max. setting)                 | 50 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.   |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.   |
| Third Order Intercept Point            | 60 dBm typ.  |
| Noise Figure                           | 8.5 dB typ.  |
| Harmonic Distortion                    | Minus 20 dBc max. at 100 watts<br>Minus 30 dBc typical at 100 watts  |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) | 100–240 VAC<br>50/60 Hz, 700 watts   |
| Connectors                             | RF Input Type N female<br>RF Output Type N female  |
| Remotes Package                        | IEEE-488 24-pin female<br>RS-232 9-pin subminiature D (female)<br>Fiber optic ST Conn Tx and Rx RS-232<br>USB 2.0 Type B<br>Ethernet RJ-45<br>Safety Interlock 15-pin subminiature D |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | With Cabinet 35 kg (77 lb.)<br>Without Cabinet 24 kg (52 lb.)  |
| Size (WxHxD)                           | With Cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in.<br>Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.  |
| Export classification                  | EAR99  |

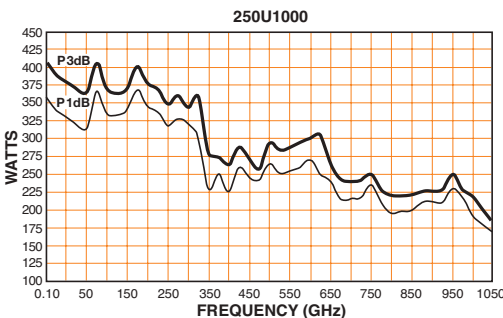


## 250U1000



### 250 watts CW, 100 kHz to 1,000 MHz

|  |  |
|--|--|
| Rated Output Power                     | 0.1–650 MHz: 275 watts typ., 250 watts min.<br>650–1,000 MHz: 225 watts typ., 200 watts min.   |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        | 0.1–650 MHz: 265 watts typ., 240 watts min.<br>650–1,000 MHz: 215 watts typ., 190 watts min.   |
| Power Output @ 1 dB compression        | 0.1–650 MHz: 250 watts typ., 210 watts min.<br>650–1,000 MHz: 200 watts typ., 175 watts min.   |
| Flatness                               | ±1.5 dB typ., ±2.0 dB max.   |
| Frequency Response                     | 100 kHz–1,000 MHz instantaneously  |
| Gain (at max. setting)                 | 54 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.   |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.   |
| Third Order Intercept Point            | 62 dBm typ.  |
| Noise Figure                           | 8.5 dB typ.  |
| Harmonic Distortion                    | Minus 20 dBc max. at 200 watts<br>Minus 30 dBc typical at 200 watts  |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) | 100–240 VAC<br>50/60 Hz, 1,100 watts   |
| Connectors                             | RF Input Type N female<br>RF Output Type N female  |
| Remotes Package                        | IEEE-488 24-pin female<br>RS-232 9-pin subminiature D (female)<br>Fiber optic ST Conn Tx and Rx RS-232<br>USB 2.0 Type B<br>Ethernet RJ-45<br>Safety Interlock 15-pin subminiature D |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | With Cabinet 45 kg (99 lb.)<br>Without Cabinet 34 kg (74 lb.)  |
| Size (WxHxD)                           | With Cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in.<br>Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.  |
| Export classification                  | EAR99  |



## 500U1000



### 500 watts CW, 100 kHz to 1,000 MHz

|  |  |
|--|--|
| Rated Output Power                     | 0.1–350 MHz: 650 watts typ., 500 watts min.<br>350–650 MHz: 525 watts typ., 400 watts min.<br>650–1,000 MHz: 400 watts typ., 325 watts min.  |
| Input for Rated Output                 | 1.0 milliwatt max.   |
| Power Output @ 3 dB compression        | 0.1–350 MHz: 650 watts typ., 500 watts min.<br>350–650 MHz: 500 watts typ., 375 watts min.<br>650–1,000 MHz: 375 watts typ., 300 watts min.  |
| Power Output @ 1 dB compression        | 0.1–350 MHz: 550 watts typ., 400 watts min.<br>350–650 MHz: 450 watts typ., 325 watts min.<br>650–1,000 MHz: 350 watts typ., 275 watts min.  |
| Flatness                               | ±2.0 dB typ., ±2.5 dB max.   |
| Frequency Response                     | 100 kHz–1,000 MHz instantaneously  |
| Gain (at max. setting)                 | 57 dB min.   |
| Gain Adjustment (continuous range)     | 20 dB min.   |
| Input Impedance                        | 50 ohms, VSWR 2.0:1 max.   |
| Output Impedance                       | 50 ohms, nominal   |
| Mismatch Tolerance                     | 100% of rated power without foldback up to 6.0:1 mismatch above which may limit to 250 watts reflected power. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. See Application Note—Importance of Mismatch Tolerance for Amplifiers Used in Susceptibility Testing. |
| Modulation Capability                  | Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.   |
| Third Order Intercept Point            | 65 dBm typ.  |
| Noise Figure                           | 8 dB typ.  |
| Harmonic Distortion                    | <20 dBc for the output power at 1 dB compression min. limit<br><17 dBc for the output power at 3 dB compression min. limit<br>Minus 73 dBc typ.  |
| Spurious                               | Minus 73 dBc typ.  |
| Primary Power (selected automatically) | 200–240 VAC<br>50/60 Hz, 2,100 watts max.  |
| Connectors                             | RF Input Type N female<br>RF Output Type N female  |
| Remotes Package                        | IEEE-488 24-pin female<br>RS-232 9-pin subminiature D (female)<br>RS-232 Fiber optic Type ST<br>USB 2.0 Type B<br>Ethernet RJ-45<br>Safety Interlock 15-pin subminiature D   |
| Cooling                                | Forced air (self-contained fans)   |
| Weight                                 | With Cabinet 79.4 kg (175 lb.)<br>Without Cabinet 60.8 kg (134 lb.)  |
| Size (WxHxD)                           | With Cabinet 50.3 x 38.1 x 74.9 cm / 19.8 x 15.0 x 29.5 in.<br>Without Cabinet 48.3 x 35.6 x 74.9 cm / 19 x 14.0 x 29.5 in.  |
| Export classification                  | EAR99  |

