

# Agilent 89411A

## 21.4 MHz Downconverter

Data Sheet

Specifications describe warranted performance over the temperature range of 0°C to 55°C (except where noted) and include a 30-minute warm-up from ambient conditions unless otherwise noted.

### Definitions

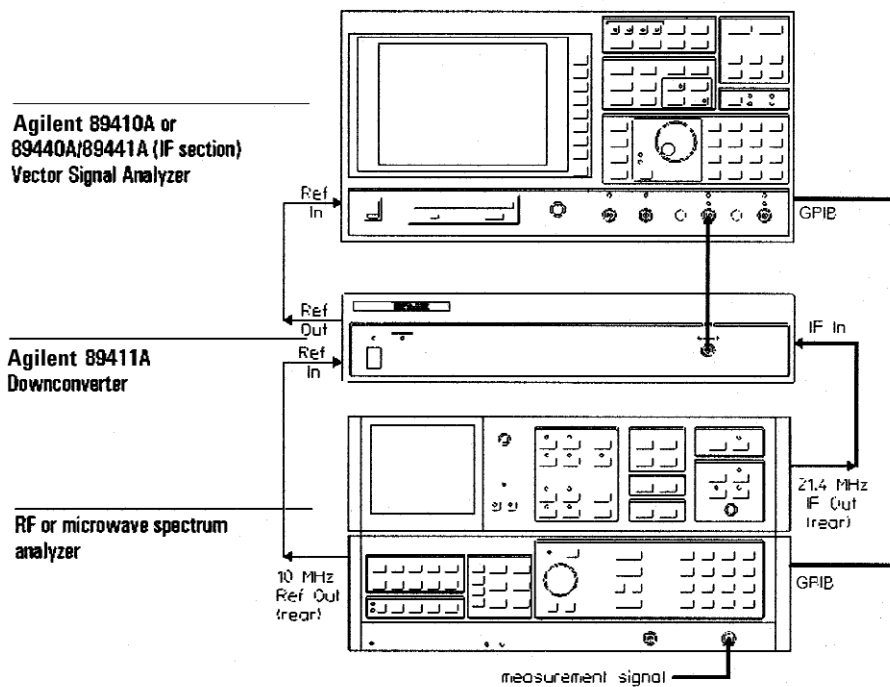
**CF** = Center frequency

**dBc** = dB relative to input signal level

**dBfs** = dB relative to full scale amplitude

**FS or fs** = Full scale; synonymous with input range

**RH** = Relative humidity



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## Input

|  |                    |
|--|--------------------|
| Input impedance (nominal)                      | 50 ohm             |
| Input center frequency                         | 21.4 MHz           |
| Input frequency span                           | $\pm 3.6$ MHz      |
| Full scale input amplitude<br>(no attenuation) | -20 dBm            |
| Input attenuation<br>(switch selectable)       | 0, 5, 10, or 15 dB |

## Output

|  |               |
|--|---------------|
| Output impedance (nominal)   | 50 ohm        |
| Output center frequency  | 5.6 MHz       |
| Conversion gain (with 0 dB<br>attenuation, at 5.6 MHz)   | 5 dB          |
| Conversion gain accuracy<br>(including attenuator) over<br>limited temperature range of<br>20°C to 30°C    | $\pm 0.75$ dB |
| Output bandwidth (nominal)   | 8 MHz         |
| Output flatness (Relative to<br>gain at 5.6 MHz for inputs<br>within $\pm 3.6$ MHz of center<br>frequency) | $\pm 1.5$ dB  |

## Dynamic range

|  |                     |
|--|---------------------|
| Third-order intermodulation<br>distortion (with two signals<br>at -6 dBfs)                               | $\leq -70$ dBc      |
| Spurious responses within<br>band input signal at full scale   | $\leq -80$ dBc      |
| Residual responses relative<br>to full scale. Applies over<br>output frequency range of 2<br>to 9.6 MHz. | $\leq -80$ dBfs     |
| Out-of-band residual<br>responses relative to full scale   | $\leq -60$ dBfs     |
| Noise floor  | $\leq -115$ dBfs/Hz |

## Phase noise

|               |                    |
|---------------|--------------------|
| 100 Hz offset | $\leq -110$ dBc/Hz |
| >1 kHz offset | $\leq -115$ dBc/Hz |

## 10 MHz reference

|                      |                   |
|----------------------|-------------------|
| Required input level | > 0 dBm, < +5 dBm |
| Output level         | $\geq 0$ dBm      |

## General

|   |  |
|---|--|
| Safety standards                                | CSA Certified for<br>Electronic Test and<br>Measurement<br>Equipment per<br>CSA C22.2, No. 231 |
| This product is designed<br>for compliance to   | UL1244<br>IEC348, 1978   |
| EMI/RFI Standards                               | CISPR 11, ISM1-A   |
| Acoustics (fan)                                 | LpA <50 dB   |
| Environmental operating<br>restrictions         |  |
| Class A2 survival vibration<br>and shock        |  |
| Class B2 otherwise                              |  |
| Ambient temperature<br>(Unless otherwise noted) | 0°C to 55°C  |
| Maximum humidity at<br>0°C to 40°C              | 95% RH at 40°C<br>noncondensing  |
| Maximum altitude                                | 2300 meters (7,500 feet)   |
| Storage and transport<br>restrictions           |  |
| Ambient temperature                             | -40°C to 75°C  |
| Maximum humidity                                | 95% RH at 40°C<br>noncondensing  |
| Maximum altitude                                | 4600 meters (15,000 feet)  |
| AC power  |  |
| 110/120 VAC operation                           | 90 - 132 Vrms, 47 - 440 Hz   |
| 220/240 VAC operation                           | 198 - 264 Vrms, 47 - 63 Hz   |
| Maximum power<br>dissipation                    | 100 VA maximum   |
| Fuse  |  |
| 110/120 VAC operation                           | 1 amp normal blow  |
| 220/240 VAC operation                           | 500 milliamp normal blow   |
| Warm-up time                                    | 30 minutes   |
| Weight  | 9.1 kg (20 lb) net<br>11.8 kg (26 lb) shipping   |
| Dimensions                                      |  |
| Height  | 90 mm (3.5 in)   |
| Width   | 426 mm (16.75 in)  |
| Depth   | 520 mm (20.5 in)   |

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Printed in U.S.A. 9/00

5962-7210E



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