

## KEYSIGHT TECHNOLOGIES (AGILENT HP)

# E4421B

The Keysight / Agilent (formerly HP) E4421B is a 3 GHz analog RF signal generator from the ESG-A series. It provides excellent frequency, level control, and comprehensive analog modulation capabilities (AM, FM, Phase, and Pulse) making it ideal for receiver and component testing. Designed with a flexible architecture, it offers options for both mechanical and electronic attenuators.

## SPECIFICATIONS

### Frequency

|                      |            |
|----------------------|------------|
| Minimum Frequency    | 250 kHz Hz |
| Maximum Frequency    | 3 GHz Hz   |
| Frequency Resolution | 0.01 Hz    |

### Output

|                      |                                                      |
|----------------------|------------------------------------------------------|
| Maximum Output Power | +13 dBm dBm                                          |
| Output Power Range   | -136 dBm to +13 dBm (frequency and option dependent) |
| Phase Noise          | <-116 dBc/Hz (at 20 kHz offset, 1 GHz carrier)       |

### Modulation

|                                   |                               |
|-----------------------------------|-------------------------------|
| Modulation                        | AM, FM, Phase, Pulse          |
| Sweep Modes                       | Step (Frequency, Power), List |
| Internal Modulation Source (Sine) | 0.1 Hz to 50 kHz              |

### General

|                               |                           |
|-------------------------------|---------------------------|
| Reference Oscillator          | 10 MHz (Internal)         |
| Interfaces                    | GPIO (IEEE-488.2), RS-232 |
| Display                       | LCD                       |
| Recommended Calibration Cycle | 2 years                   |

### Physical

|                    |                             |
|--------------------|-----------------------------|
| Power Supply       | 90 to 254 VAC, 45 to 440 Hz |
| Dimensions (W×H×D) | 426 × 133 × 432 mm          |
| Weight             | 12.7 kg kg                  |

### Frequency Specifications

|                              |        |
|------------------------------|--------|
| Internal Reference Frequency | 10 MHz |
|------------------------------|--------|

## Amplitude and Output Power

|                               |            |
|-------------------------------|------------|
| Output Impedance              | 50 ohms    |
| Amplitude Resolution          | 0.02 dB    |
| Reverse Power Protection (RF) | Up to 50 W |

## Internal Modulation Source

|                                              |                  |
|----------------------------------------------|------------------|
| Frequency Range                              | 0.1 Hz to 50 kHz |
| Internal LF Generator Frequency Range (Sine) | 0.1 Hz to 50 kHz |
| Internal LF Generator Resolution             | 0.1 Hz           |

## Front and Rear Panel Connectivity

|                         |                 |
|-------------------------|-----------------|
| RF Output Connector     | Type-N (female) |
| 10 MHz Reference Input  | BNC (female)    |
| 10 MHz Reference Output | BNC (female)    |

## General and Environmental

|                       |               |
|-----------------------|---------------|
| Operating Temperature | 0 °C to 55 °C |
| Max Power Consumption | 200 W         |

## Performance

|                           |         |
|---------------------------|---------|
| Frequency Switching Speed | < 50 ms |
| Amplitude Switching Speed | < 50 ms |

## Spectral Purity

|               |                                               |
|---------------|-----------------------------------------------|
| Harmonics     | ≤ -30 dBc (output ≤ +4 dBm)                   |
| Sub-harmonics | None for ≤ 1000 MHz; ≤ -40 dBc for > 1000 MHz |

## Environmental

|                     |                  |
|---------------------|------------------|
| Storage Temperature | -40 °C to +71 °C |
|---------------------|------------------|

## Amplitude Modulation

|                |           |
|----------------|-----------|
| AM Depth Range | 0 to 100% |
| AM Resolution  | 0.1%      |

## Frequency Modulation

|                                   |                                                  |
|-----------------------------------|--------------------------------------------------|
| Maximum FM Deviation (2 to 3 GHz) | 4 MHz                                            |
| Maximum FM Deviation (1 to 2 GHz) | 2 MHz                                            |
| FM Resolution                     | 0.1% of deviation or 1 Hz (whichever is greater) |

## Pulse Modulation

|                                 |          |
|---------------------------------|----------|
| Pulse Modulation On/Off Ratio   | > 80 dB  |
| Pulse Modulation Rise/Fall Time | < 150 ns |

**Sweep**

|              |          |
|--------------|----------|
| Sweep Points | 2 to 401 |
|--------------|----------|

**Inputs & Outputs**

|                            |                    |
|----------------------------|--------------------|
| External Modulation Inputs | EXT 1, EXT 2 (BNC) |
|----------------------------|--------------------|

**TECHNOLOGY**

Analog RF Signal Generation

**APPLICATIONS**

Receiver Test, Component Test, Local Oscillator

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.