NI PXI-5621 Specifications

DC-Coupled High-Speed Digitizer

This document lists the specifications of the NI PXI-5621 digitizer. These specifications are warranted at 0 °C to 50 °C ambient unless otherwise specified, and include a 10 minute warm-up time from ambient conditions. All specifications are subject to change without notice.

Note Visit `ni.com/manuals` for the most current specifications and product documentation.

General Specifications

Number of channels 1

Resolution ..... 14 bits

Sample rate range ..... 1 kS/s to 64 MS/s

Onboard memory

- Not using DDC ..... 32 MS
- Using DDC (complex data) ..... 16 MS

Input

Signal level

- Nominal ..... 0 dBm (±0.316 V_p)
- Full-scale ..... +10 dBm (±1.000 V_p)
- Maximum with dither enabled ..... +8 dBm (±0.794 V_p)
- Non-operating
  - Maximum input level ..... +20 dBm (±3.16 V_p)
  - Maximum DC input voltage .... ±3.0 V

Input impedance ..... 50 Ω nominal

Coupling ..... DC

NATIONAL INSTRUMENTS

DC offset.....±1 mV (calibrated)

Analog bandwidth (–3 dB range) .....0 Hz to 36 MHz

Amplitude accuracy.....±0.5 dB

VSWR

0 MHz to 25 MHz.....<1.5:1

25 MHz to 32 MHz.....<3:1

Dither (can be disabled)
frequency range .....150 Hz to 4 MHz

Frequency

Internal sample clock

Frequency .....64/*n* MHz, where $1 < n < 2^{16}$

Accuracy.....<±25 ppm

Phase noise

Offset	Density
100 Hz	<–100 dBc/Hz
1 kHz	<–120 dBc/Hz
10 kHz	<–130 dBc/Hz
100 kHz	<–130 dBc/Hz

Residual FM .....<2 Hz_{pk-pk} in 10 ms

Amplitude

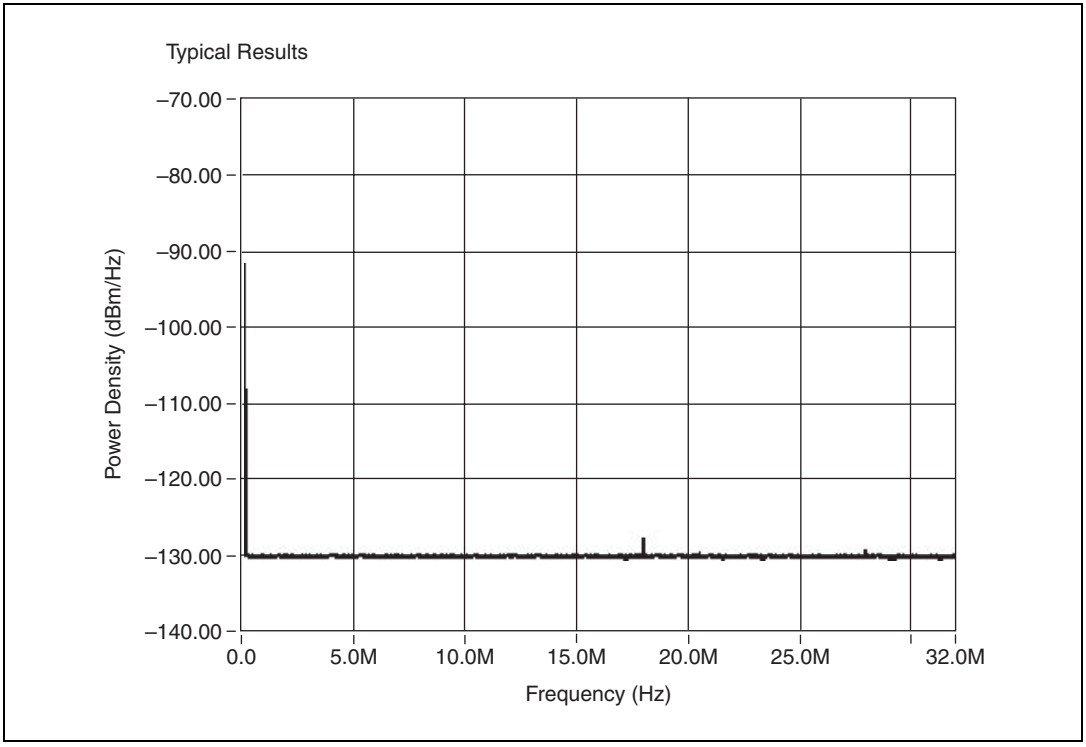

Figure 1. Noise Density (Dither Disabled, Input Terminated)

Average noise density
(dither disabled) ..... <–129 dBm/Hz

Signal-to-noise ratio (9 dBm signal, full bandwidth),
excluding dither below 9 MHz..... >62 dB

Harmonic distortion (single tone, 0 dBm signal;
includes aliased harmonic distortion)

4 MHz to 15 MHz,
dither enabled..... <–77 dBm

0 MHz to 32 MHz,
dither disabled..... <–71 dBm

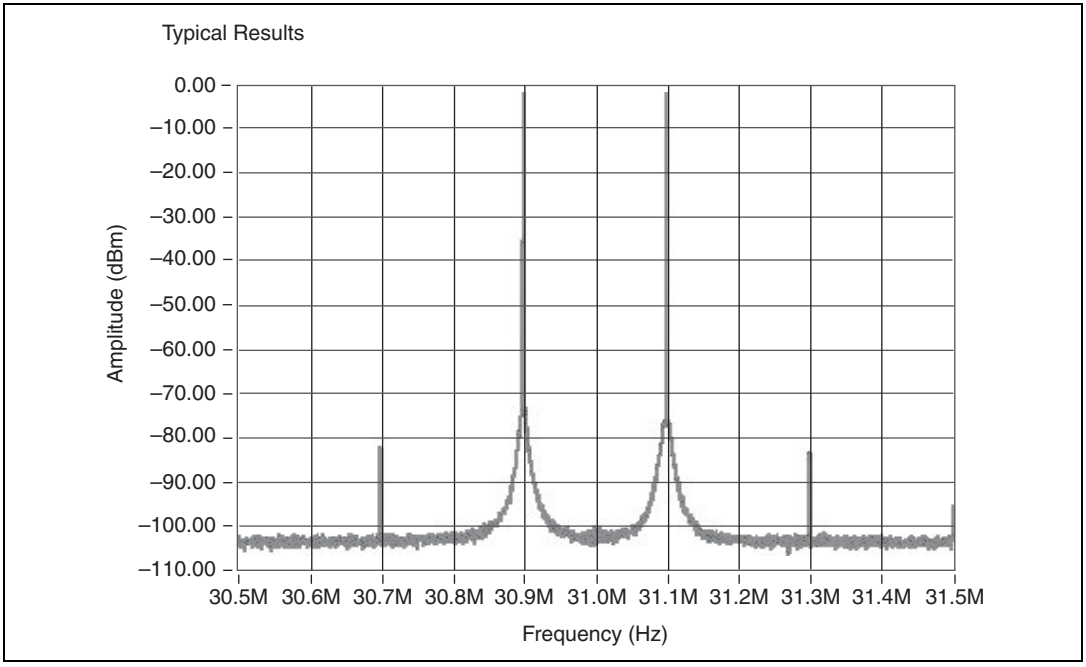

Figure 2. Intermodulation Distortion

Intermodulation distortion
(2-tone, 0 dBm signals, 200 kHz separation)

4 MHz to 15 MHz,
dither enabled .....<–86 dBm

0 MHz to 32 MHz,
dither disabled .....<–78 dBm

Residual responses
(input terminated) .....<–75 dBm

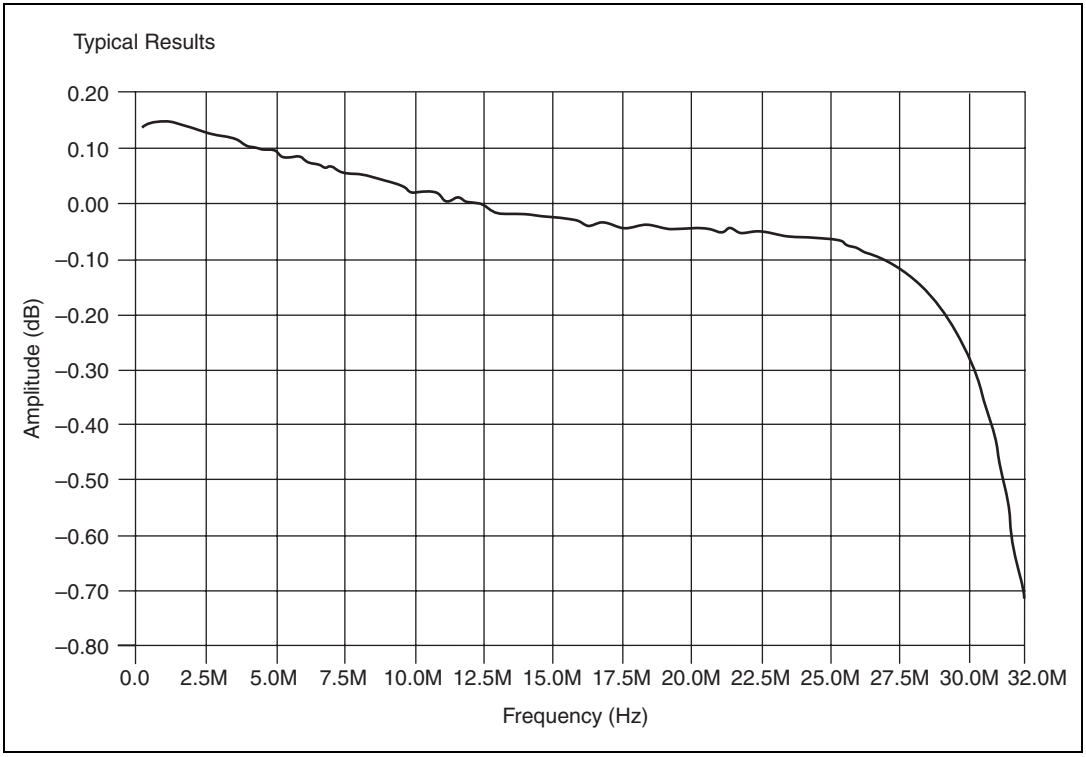

Figure 3. Frequency Response (0.1 MHz to 32 MHz)

Frequency response (4 MHz to 25 MHz)

Relative
(to response at 15 MHz)..... <±0.25 dB

Absolute ..... <±0.6 dB

Absolute
(using calibration table) ..... <±0.5 dB

Phase

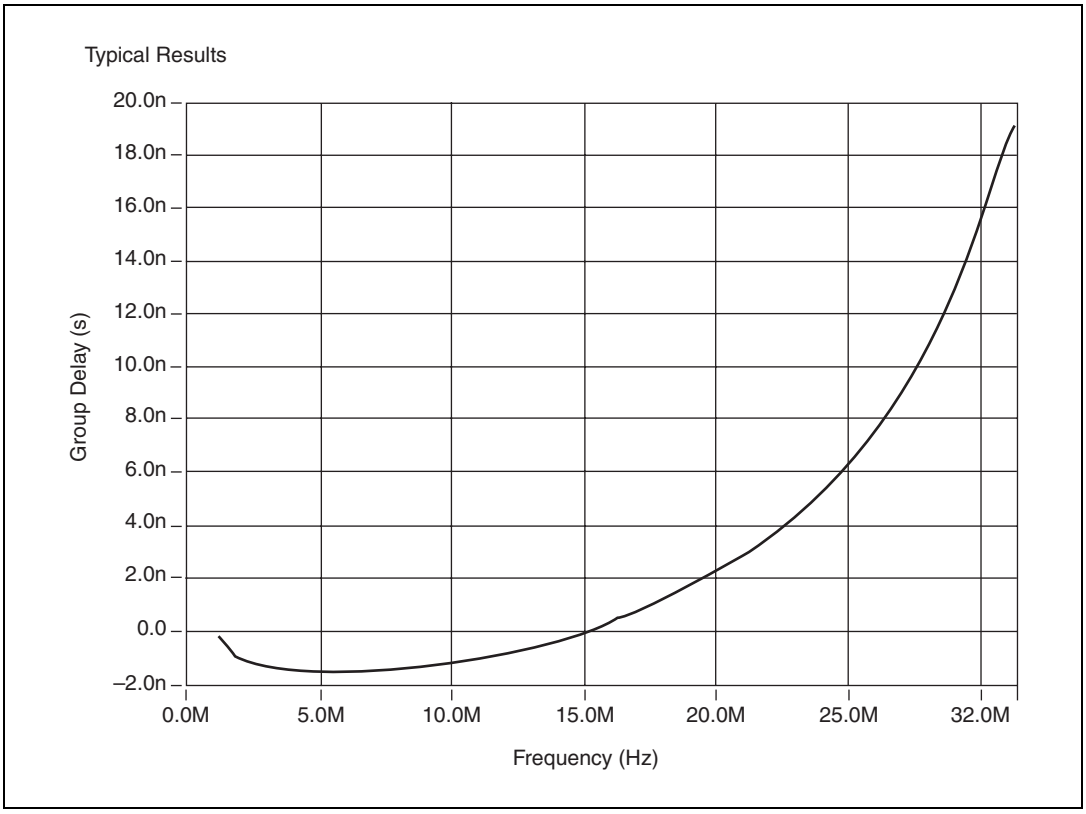

Figure 4. Group Delay versus Frequency

Group delay variation
(5 MHz to 25 MHz) .....9 ns_{pk-pk}

Group delay variation
(0.5 MHz to 30 MHz) .....26 ns_{pk-pk}

DDC

Decimation rate.....32 to 4,096

DDC tuning resolution.....0.014901 Hz

Triggering

Modes ..... Immediate, software, digital edge, analog edge, analog window, analog hysteresis

Sources ..... PFI 1, PXI<0..7>, PXI Star, CH 0

Export ..... PFI 1, PXI<0..7>

Slope ..... Rising, falling

Pretrigger depth ..... Up to 32 MS

Posttrigger depth ..... Up to 32 MS

Minimum pulse width ..... 100 ns

PFI 1 Input/Output

PFI 1 connector ..... SMB jack

Trigger level ..... TTL

Maximum input voltage ..... 5.5 V

External Frequency Reference Input

Connector (REF CLK IN) ..... SMA female

Impedance ..... 50 Ω nominal

Input amplitude ..... –5 to +15 dBm

Maximum non-operating input level ..... +20 dBm

Maximum DC input voltage ..... ±3.5 VDC

Frequency range ..... 10 MHz ±40 ppm

Crosstalk from reference input ..... <–85 dB

Calibration

Calibration interval ..... 1 year

Environmental Specifications

Warm-up time ..... 10 minutes

Operating environment

- Ambient temperature ..... 0 °C to 50 °C
- Humidity ..... 10% to 90%, noncondensing

Storage environment

- Storage temperature ..... –20 °C to 70 °C
- Humidity ..... 5% to 95%, noncondensing

Maximum altitude ..... 2,000 m

Pollution Degree 2

Indoor use only

Power Requirements

+3.3 VDC (±5%) ..... <650 mA

+5 VDC (±5%) ..... <1.5 A

+12 VDC (±5%) ..... <650 mA

–12 VDC (±5%) ..... <75 mA

Maximum Working Voltage

Channel-to-earth ..... 2.23 V operating,
3.0 V non-operating;
Installation Category I

Dimensions

NI 5621 (1 PXI slot) ..... 10 cm by 16 cm by 2.0 cm
(3.9 in. by 6.3 in. by 0.8 in.)

Weight

NI 5621 ..... 223 g (7.8 oz.)

Conductive Immunity

When tested as specified in EN 61000-4-6 at 3 V_{rms}, the spurious response is within specifications except at the test frequency. A spurious signal of up to –45 dBm may appear at the test frequency.

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the product label or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

Emissions ..... EN 55011 Class A at 10 m
FCC Part 15A above 1 GHz

Immunity ..... EN 61326:1997 + A2:2001, Table 1

CE, C-Tick, and FCC Part 15 (Class A) compliant

Note For full EMC compliance, operate this device with shielded cabling. In addition, all covers and filler panels must be installed.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

Low-Voltage Directive (safety).....73/23/EEC

Electromagnetic Compatibility
Directive (EMC).....89/336/EEC

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

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