# PXI-2544 Specifications

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# PXI-2544 Specifications

This document lists specifications for the PXI-2544. All specifications are subject to change without notice.

| | |
|---|---|
| Topology | 8 × 1 multiplexers |

## About These Specifications

**Specifications** characterize the warranted performance of the instrument under the following operating conditions:

- Chassis is powered on
- Calibration adjustment cycle maintained
- 50 Ω termination connected to unused I/O front panel connectors

**Typical Specifications** are specifications met by the majority of the instrument under the stated operating conditions and are tested at 23 °C ambient temperature. Typical specifications are not warranted.

Nominal values (or supplemental information) describe additional information about the product that may be useful, including expected performance that is not covered under **Typical Specifications**. Nominal values are not covered by warranty.

All voltages are specified in DC, $AC_{pk}$, or a combination unless otherwise specified.

Clean devices and terminal blocks by brushing off light dust with a soft, nonmetallic brush. Remove other contaminants with a soft, lint-free, dampened cloth. Do not use detergent or chemical solvents. The unit must be completely dry and free from contaminants before returning to service.

## Input Characteristics

| | |
|---|---|
| Minimum input frequency | 10 MHz |
| Characteristic impedance ($Z_0$) | 50 Ω nominal |
| Coupling | AC |
| Maximum safe DC input voltage | ±8V |

## Maximum Safe Continuous RF Power

| | |
|---|---|
| Chassis power ON | +30 dBm |
| Chassis power OFF | +20 dBm |

## RF Performance Characteristics

Values in parentheses are typical.

| | |
|---|---|
| **Insertion loss** | |
| ≤2.4 GHz | <4.5 dB (<3.2 dB) |
| ≤6 GHz | <6.3 dB (<5.2 dB) |
| ≤6.6 GHz | <7.2 dB (<6.0 dB) |
| Insertion loss thermal coefficient | α = 3,402 ppm/°C |

Use the following equation to calculate the insertion loss at a given temperature:

$IL_T = IL_{T0}(1 + \alpha(T - T_0))$ $IL_T = IL_{T0}(1 + \alpha(T - T_0))$

| | |
|---|---|
| where | **IL** is insertion loss in dB |
| | **T** is the temperature at which the property is being measured in °C |
| | $\mathbf{T_0}$ is the reference temperature in °C |
| | **α** represents insertion loss temperature coefficient in ppm/°C |

| Frequency | Flatness / 200 MHz | Flatness / 1 GHz |
|---|---|---|
| 10 MHz to 5 GHz | <0.30 dB | <0.8 dB |
| 5 GHz to 6 GHz | <0.32 dB | <1.0 dB |
| 6 GHz to 6.6 GHz | <0.47 dB | <1.3 dB |

Table 1. PXI-2544 Flatness (Typical)

**Voltage standing wave ratio (VSWR)**

| | |
|---|---|
| 10 MHz ≤ **x**≤3.5 GHz | <1.9 (<1.5) |
| 3.5 GHz < **x**≤6 GHz | <1.9 (<1.4 ) |
| 6 GHz < **x**≤6.6 GHz | <2.2 (<1.6) |

**CH-COM isolation**

| | |
|---|---|
| ≤2.4 GHz | >77 dB (>95 dB) |
| ≤6 GHz | >65 dB (>77 dB) |
| ≤6.6 GHz | >61 dB (>72 dB) |

**CH-CH isolation**

| | |
|---|---|
| ≤2.4 GHz | >77 dB (>95 dB) |
| ≤6 GHz | >62 dB (>82 dB) |
| ≤6.6 GHz | >56 dB (>76 dB) |

| | |
|---|---|
| Typical channel-to-channel skew | <10 ps |
| Typical propagation delay | 1100 ps |
| **Input 1 dB compression** | |
| Minimum | >27 dBm |
| Typical | >32 dBm |

Refer to the following figures for typical insertion loss, typical VSWR, and typical isolation, respectively.

Figure 1. Typical Insertion Loss

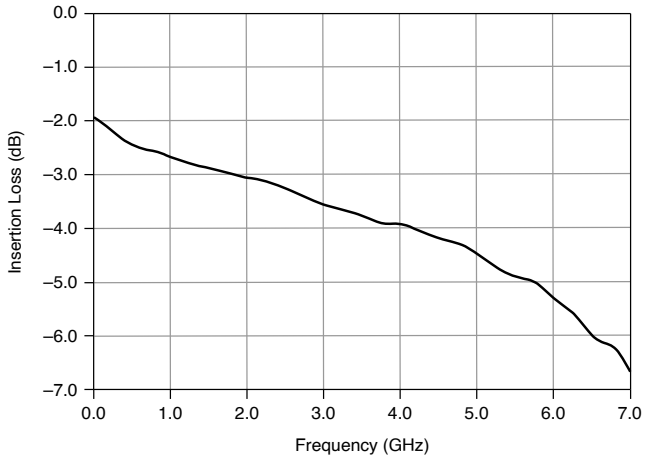


Figure 2. Typical VSWR

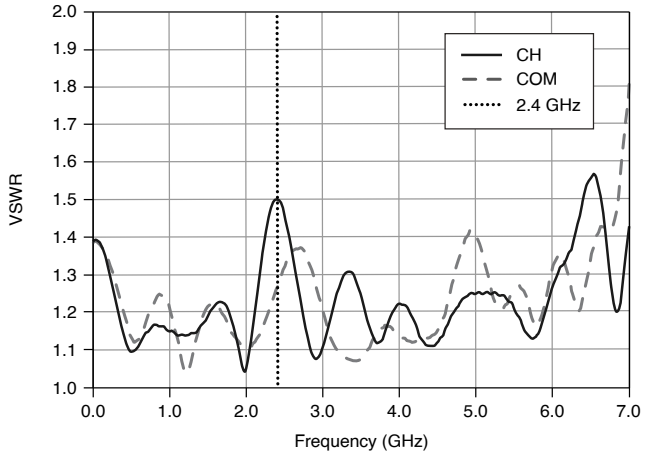
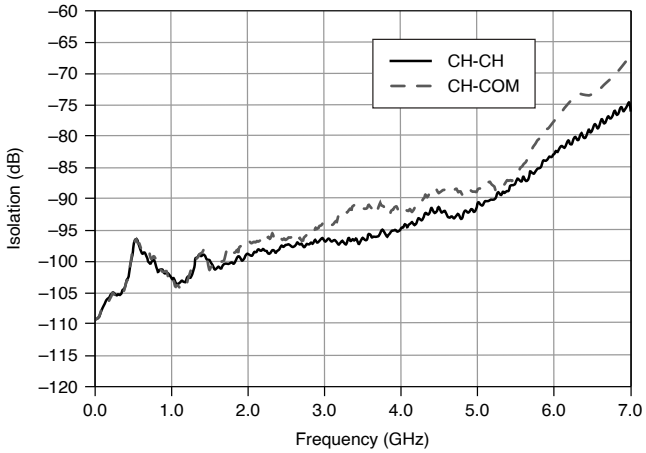



Figure 3. Typical Isolation




## Linearity

# Second-order harmonic distortion (Input IP2 (IIP2))

| | |
|---|---|
| Typical IP2 (input) | >+91 dBm |

**Note** Measurements are performed with single CW tones, ranging from -26 dBm to +10 dBm at the RF input. This specification is based on both experimental and calculated data.

## Third-order intermodulation distortion (Input IP3 (IIP3))

| | |
|---|---|
| Typical IP3 (input) | >+56 dBm |

**Note** Measurements performed with two 10 dBm input tones = 1 MHz apart. This specification is based on both experimental and calculated data.

## Dynamic Characteristics

| | |
|---|---|
| **Relay Operate Time** | |
| Typical | 1 ms |
| Maximum | 3.3 ms |
| Simultaneous drive limit | 90 relays |
| Expected mechanical relay life | $1 \times 10^8$ cycles |
| **Expected electrical relay life** | |
| ≤30 mV, ≤10 mA resistive | $2.5 \times 10^6$ cycles |
| 30 V, 1 A | $5 \times 10^5$ cycles |
| 30 V, 2 A | $1 \times 10^5$ cycles |
| 60 VDC, 1 ADC resistive | $1 \times 10^5$ cycles |

**Note** Relays are field replaceable. Refer to the **NI Switches Help** at ni.com/manuals for more information about replacing a failed relay.

## Trigger Characteristics

| | |
|---|---|
| **Input trigger** | |
| Sources | PXI trigger lines 0 –7, front panel |
| Minimum pulse width | 150 ns |

| | |
|---|---|
| **Front panel input voltage** | |
| Minimum | -0.5 V |
| $V_L$ maximum | +0.7 V |
| $V_H$ minimum | +2.0 V |
| Nominal | +3.3 V |
| Maximum | +5.5 V |

| | |
|---|---|
| **Output trigger** | |
| Destinations | PXI trigger lines 0–7, front panel |
| Pulse width | Programmable (1 µs to 62 µs) |

| | |
|---|---|
| Front panel nominal voltage | 3.3 V TTL, 8 mA |

## Physical Characteristics

| | |
|---|---|
| Switch type | FET |

**Front panel connectors**

| | |
|---|---|
| I/O | 9 SMA jacks, female |
| Triggers | 2 SMB jacks, female |

**Power requirement**

**PXI**

| | |
|---|---|
| 5 V | 0.1 W |
| 3.3 V | 0.6 W |

**PXI Express**

| | |
|---|---|
| 12 V | 0.6 W |
| 3.3 V | 0.9 W |

| | |
|---|---|
| Dimensions (L × W × H) | 3U, one slot, PXI/cPCI module, PXI Express compatible 21.6 cm × 2.0 cm × 13.0 cm (8.5 in. × 0.8 in. × 5.1 in.) |
| Weight | 538 g (19 oz) |

## Environment

| | |
|---|---|
| Maximum altitude | 2,000 m (800 mbar) (at 25 °C ambient temperature) |

| | |
|---|---|
| Pollution Degree | 2 |

Indoor use only.

## Operating Environment

| | |
|---|---|
| Ambient temperature range | 0 °C to 40 °C |
| Relative humidity range | 10% to 90%, noncondensing |

## Storage Environment

| | |
|---|---|
| Ambient temperature range | -40 °C to 71 °C |
| Relative humidity range | 5% to 95%, noncondensing |

### Shock and Vibration

| | |
|---|---|
| Operating shock | 30 g peak, half-sine, 11 ms pulse |
| **Random vibration** | |
| Operating | 5 Hz to 500 Hz, 0.3 $g_{rms}$ |
| Nonoperating | 5 Hz to 500 Hz, 2.4 $g_{rms}$ |

## Compliance and Certifications

### Safety Compliance Standards

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

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

**Note** For safety certifications, refer to the product label or the Product Certifications and Declarations section.

### Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

**Note** In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia, and New Zealand (per CISPR 11), Class A equipment is intended for use only in heavy-industrial locations.

**Note** Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

**Note** For EMC declarations, certifications, and additional information, refer to the Product Certifications and Declarations section.

## Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

## Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the **Engineering a Healthy Planet** web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

### EU and UK Customers

- Waste Electrical and Electronic Equipment (WEEE)—At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

## 电子信息产品污染控制管理办法（中国 RoHS）

- 中国 RoHS— NI 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 NI 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)