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# PXI-2543

# Specifications

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2022-07-06



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# PXI-2543 Specifications

This document lists specifications for the PXI-2543. All specifications are subject to change without notice.

## PXI-2543 Specifications

**Specifications** characterize the warranted performance of the instrument under the stated operating conditions. Data in this document are **Specifications** unless otherwise noted.

**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.

All voltages are specified in DC, AC<sub>pk</sub>, or a combination unless otherwise specified.



**Caution** The protection provided by the PXI-2543 can be impaired if it is used in a manner not described in this document.



**Note** Device relays might change state momentarily during electrostatic discharge.

## Topology

Topology	Dual 4 × 1 multiplexers
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## Input

Minimum input frequency	10 MHz
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Characteristic impedance ( $Z_0$ )	50 $\Omega$ , nominal
Coupling	AC
Maximum safe DC input voltage	$\pm 8$ V

## Maximum Safe Continuous RF Power<sup>[1]</sup>

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

## RF Performance

<b>Insertion loss</b>	
$\leq 2.4$ GHz	<4.1dB <3.4 dB, typical
$\leq 6$ GHz	<5.8 dB <5.1 dB, typical
$\leq 6.6$ GHz	<7.0 dB <6.1 dB, typical
Insertion loss thermal coefficient	$\alpha = 2050$ ppm/ $^{\circ}$ C

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

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

where

- **IL** is insertion loss in dB
- **T** is the temperature at which the property is being measured in °C
- **T<sub>0</sub>** is the reference temperature in °C
- **α** represents the insertion loss temperature coefficient in ppm/°C

#### Voltage standing wave ratio (VSWR)

≤2.4 GHz	<1.7
	<1.5, typical
≤6 GHz	<1.8
	<1.5, typical
≤6.6 GHz	<2.4
	<1.6, typical

#### CH-COM isolation

≤2.4 GHz	>70 dB
	>84 dB, typical
≤6 GHz	>61 dB
	>74 dB, typical
≤6.6 GHz	>59 dB
	<72 dB, typical

#### CH-CH isolation

≤2.4 GHz	>69 dB
	>90 dB, typical
≤6 GHz	>58 dB
	>74 dB, typical
≤6.6 GHz	>53 dB
	<71 dB, typical
Bank-to-bank crosstalk	<-90 dB, typical
Channel-to-channel skew	<10 ps, typical
Propagation delay	1,720 psi, typical
Input 1 dB Compression	>27.6 dBm, minimum
	>32.0 dBm, typical

Figure 1. Insertion Loss, Typical

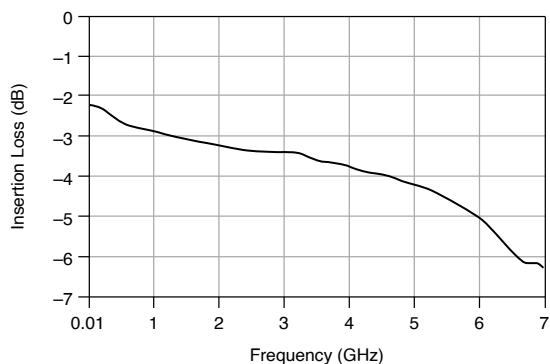


Figure 2. VSWR, Typical

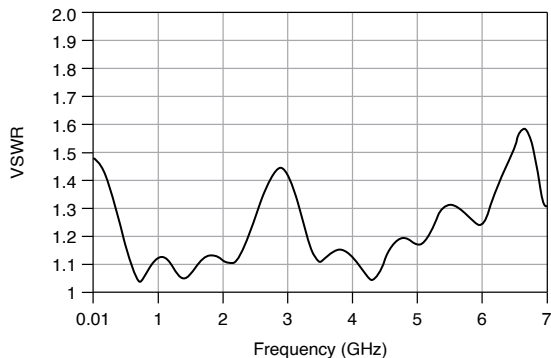
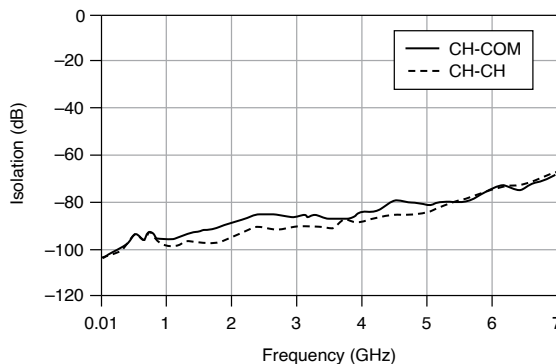


Figure 3. Isolation, Typical



## Linearity

### Second-order harmonic distortion (Input IP2 (IIP2))<sup>[2]</sup>

IP2 (input) >+89 dBm, typical

### Third-order intermodulation distortion (Input IP3 (IIP3))<sup>[3]</sup>

IP3 (input) >+54 dBm, typical

## Dynamic

Maximum switch operate time<sup>[4][5]</sup>

76  $\mu$ s

## Trigger

<b>Input trigger</b>	
Sources	PXI trigger lines <0...7>
Minimum pulse width <sup>[6]</sup>	150 ns
<b>Output trigger</b>	
Destinations	PXI trigger lines <0...7>
Pulse width	Software-selectable: (1 $\mu$ s to 62 $\mu$ s)

## Physical

Switch type	FET
<b>Front panel connectors</b>	
I/O	10 SMA jacks, female
Triggers	2 SMB jacks, female
<b>Power requirement</b>	
PXI	0.6 W at 5 V
	0.6 W at 3.3 V
PXI Express	0.4 W at 12 V
	1 W at 3.3 V



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	774 g (27.3 oz)

## Environment

Operating temperature	0 °C to 55 °C
Storage temperature	-20 °C to 70 °C
Relative humidity	5% to 85%, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m

Indoor use only.

## Shock and Vibration

Operational Shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)
<b>Random Vibration</b> Operating 5 Hz to 500 Hz, 0.3 g <sub>rms</sub>  Nonoperating 5 Hz to 500 Hz, 2.4 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)	

## 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](https://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](https://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

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**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](https://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](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)

<sup>1</sup> NI recommends against switching active RF signals. As a relay actuates, the channel is momentarily unterminated. Some RF sources can be damaged by reflections if their outputs are not properly terminated. Refer to your RF source documentation for more information.

<sup>2</sup> 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.

<sup>3</sup> Measurements performed with two 10 dBm input tones = 1 MHz apart. This specification is based on both experimental and calculated data.

<sup>4</sup> Switch operate time is defined as the time from TRIG IN falling to 10% to when the output reaches 90% of final value.

<sup>5</sup> Certain applications may require additional time for proper settling. For information about including additional settling time, refer to the **NI Switches Help**.

<sup>6</sup> The PXI-2543 can recognize trigger pulse widths less than 150 ns if you disable digital filtering. Refer to the **NI Switches Help** for information about disabling digital filtering.