
USRP-2022 Specifications

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Map

USRP-2922 Specifications

Definitions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

Characteristics describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- **Typical** specifications describe the performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are **Characteristics** unless otherwise noted.

Conditions

Specifications are valid at 25 °C unless otherwise noted.

Transmitter

| | |
|--|------------------------------------|
| Frequency range | 400 MHz to 4.4 GHz |
| Frequency step | <1 kHz |
| Maximum output power (P_{out}) | 50 mW to 100 mW (17 dBm to 20 dBm) |
| Gain range ^[1] | 0 dB to 31 dB |
| Gain step | 0.5 dB |
| Frequency accuracy | 2.5 ppm |
| Maximum instantaneous real-time bandwidth^[2] | |
| 16-bit sample width | 20 MHz |

| | |
|--|------------------------------|
| 8-bit sample width | 40 MHz |
| Maximum I/Q sampling rate^[3] | |
| 16-bit sample width | 25 MS/s |
| 8-bit sample width | 50 MS/s |
| DAC | 2 channels, 400 MS/s, 16 bit |
| DAC spurious-free dynamic range (sFDR) | 80 dB |

Receiver

| | |
|--|------------------------------|
| Frequency range | 400 MHz to 4.4 GHz |
| Frequency step | <1 kHz |
| Gain range ^[4] | 0 dB to 31.5 dB |
| Gain step | 0.5 dB |
| Maximum input power (P_{in}) | 0 dBm |
| Noise figure | 5 dB to 7 dB |
| Frequency accuracy | 2.5 ppm |
| Maximum instantaneous real-time bandwidth^[5] | |
| 16-bit sample width | 20 MHz |
| 8-bit sample width | 40 MHz |
| Maximum I/Q sample rate^[6] | |
| 16-bit sample width | 25 MS/s |
| 8-bit sample width | 50 MS/s |
| Analog-to-digital converter (ADC) | 2 channels, 100 MS/s, 14 bit |
| ADC sFDR | 88 dB |

Power

| | |
|---------------------------------------|--|
| Total power, typical operation | |
| Typical | 12 W to 15 W |
| Maximum | 18 W |
| Power requirement | Accepts a 6 V, 3 A external DC power connector |



Note You must use either the power supply provided in the shipping kit, or another UL listed ITE power supply marked **LPS**, with the USRP-2922.

Physical Characteristics

| | |
|----------------------------|--|
| Physical dimensions | |
| (L × W × H) | 15.875 cm × 4.826 cm × 21.209 cm (6.25 in. × 1.9 in. × 8.35 in.) |
| Weight | 1.193 kg (2.63 lb) |

Environment

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

Indoor use only.

Operating Environment

| | |
|-------------------------|--|
| Operating temperature | 23 °C ± 5 °C |
| Relative humidity range | 10% to 90%, noncondensing (tested in accordance with IEC 60068-2-56) |

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.

CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)
- 2014/53/EU; Radio Equipment Directive (RED)
- 2014/34/EU; Potentially Explosive Atmospheres (ATEX)

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.)

¹ The output power resulting from the gain setting varies over the frequency band and among devices.

² Instantaneous bandwidth depends on many factors including, but not limited to, network configuration and host computer performance. Actual data throughput may be chipset dependent.

³ I/Q sampling rate depends on many factors including, but not limited to, network configuration and host computer performance. Actual data throughput may be chipset dependent.

⁴ The received signal amplitude resulting from the gain setting varies over the frequency band and among devices.

⁵ Instantaneous bandwidth depends on many factors including, but not limited to, network configuration and host computer performance. Actual data throughput may be chipset dependent.

⁶ I/Q sample rate depends on many factors including, but not limited to, network configuration and host computer performance. Actual data throughput may be chipset dependent.