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SPECIFICATIONS

USRP-2920

Software Defined Radio Device

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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 expected performance met by a majority of the models.
- *Nominal* specifications describe parameters and attributes that may be useful in operation.

Specifications are *Characteristics* unless otherwise noted.

Conditions

Specifications are valid at 25 °C unless otherwise noted.

NATIONAL INSTRUMENTS

Transmitter

Frequency range	50 MHz to 2.2 GHz
Frequency step	<1 kHz
Maximum output power (P_{out})	
50 MHz to 1.2 GHz	50 mW to 100 mW (17 dBm to 20 dBm)
1.2 GHz to 2.2 GHz	30 mW to 70 mW (15 dBm to 18 dBm)
Gain range[1]	0 dB to 31 dB
Gain step	1.0 dB
Frequency accuracy[2]	2.5 ppm
Maximum instantaneous real-time bandwidth[3]	
16-bit sample width	20 MHz
8-bit sample width	40 MHz
Maximum I/Q sample rate[4]	
16-bit sample width	25 MS/s
8-bit sample width	50 MS/s
Digital-to-analog converter (DAC)	2 channels, 400 MS/s, 16 bit
DAC spurious-free dynamic range (sFDR)	80 dB

Receiver

Frequency range	50 MHz to 2.2 GHz
Frequency step	<1 kHz
Gain range[5]	0 dB to 31.5 dB
Gain step	0.5 dB
Maximum input power (P_{in})	0 dBm

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

2 *Frequency accuracy* is based on temperature-compensated crystal oscillator (TCXO) vendor specifications and is not measured. Alternatively, you can incorporate an external reference source to provide a more precise frequency Reference Clock and to achieve better frequency accuracy.

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

4 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.

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

Noise figure	5 dB to 7 dB
Frequency accuracy[6]	2.5 ppm
Maximum instantaneous real-time bandwidth[7]	
16-bit sample width	20 MHz
8-bit sample width	40 MHz
Maximum I/Q sample rate[8]	
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

Caution The protection provided by this product may be impaired if it is used in a manner not described in this document.

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-2920.

[6] *Frequency accuracy* is based on temperature-compensated crystal oscillator (TCXO) vendor specifications and is not measured. Alternatively, you can incorporate an external reference source to provide a more precise frequency Reference Clock and to achieve better frequency accuracy.

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

[8] 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.

Physical Characteristics

If you need to clean the module, wipe it with a dry towel.

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

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 UL and other safety certifications, refer to the product label or the *Online Product Certification* 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
- AS/NZS CISPR 11: Group 1, 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 *Online Product Certification* section.

CE Compliance CE

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)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and 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.

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 *Minimize Our Environmental Impact* 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.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers 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*.

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