

Rev:A00

Integrated Quantum Direct Readout Module



The integrated quantum direct readout module can provide up to 12 quantum readout excitation channels and 12 direct digitizing & processing channels within a 1U standard rack, maintaining good synchronization between excitation and reception to ensure long-term stability of quantum state readout. A single module supports simultaneous demodulation, determination, and statistics for up to 192 quantum bits, and supports quantum feedback. A built-in CPU is used for processing the waveform computation tasks of the channels within the module, meeting the needs of scalable expansion.

Technical requirements

Item	Specifications
Model	QROC1211A001A
Channels	19-inch standard 1U rack providing 12 microwave direct synthesis channels and 12 microwave direct digitizing & processing channels
Output/Input interface	SMA 50 ohm AC coupled
DAC/ADC channel vertical resolution	14 bit
DAC sampling rate	adjustable in 200 Msps steps within the range of 5 Gsps - 9.8 Gsps
ADC sampling rate	adjustable in 200 Msps steps within the range of 2.0 Gsps - 4.8 Gsps
Output frequency range	3 GHz-12 GHz, with instantaneous bandwidth ≥ 3.5 GHz
Output power	≥ -12 dBm @ 3.2 GHz-6.5 GHz ≥ -15 dBm @ 6.0GHz-7.8GHz
Output phase noise	≤ -95 dBc/Hz @ 4.0 GHz, 1 kHz offset ≤ -90 dBc/Hz @ 8.0 GHz, 1 kHz offset
Single-tone SFDR	≤ -55 dBc @ 4.0 GHz-8.0 GHz
Waveform length	≥ 32 us @ 8 Gsps
Channel isolation	≥ 52 dBc
Other	Handwave demodulation and determination up to 32 mode's/channel feedback with a delay of rooms build-in x86 processor