

Rev:A00

Fast Z & RF Arbitrary Waveform Generation Module



The second-generation fast Z & RF arbitrary waveform generation module is developed based on a high-performance RF SoC chip. It can output high-speed DC- or RF-pulses with a bandwidth of DC-2.5 GHz, which are programmable for rapid biasing, parametric control, and fast resetting of qubits. The module can provide up to 24 independent output channels within a 1U standard rack, with each channel offering independent hardware distortion compensation. 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	ZRFC2411A001B
Output channels	19-inch standard 1U rack providing 24 fast pulse output channels
Output interface	SMA 50 Ohm DC coupled
DAC vertical resolution	14 bit
DAC sampling rate	Supports 2 Gsps - 8 Gsps, with 200Msps step-adjustable
Output frequency range	DC-2.5 GHz, instantaneous bandwidth \geq 2 GHz
DC pulse amplitude	1.5 Vpp
Output noise spectrum density	\leq -138 dBm/Hz
Single-tone SFDR	\leq -55 dBc @ 50 MHz - 2.0 GHz (excluding HD2, HD3)
Waveform length	\geq 60 us @ 8 Gsps
Channel isolation	\geq 52 dBc
Other	Built-in hardware pre-distortion compensation for pulse edge correction Built-in high-performance x86 processor, capable of local waveform computation and generation