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SDR 2400T2R4

K-Band | Two-Channel Tx / Four-Channel Rx | Kit or Embedded

Kit

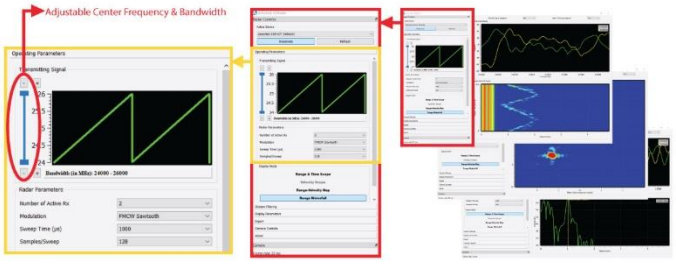
Embedded

SDR 2400T2R4 is an advanced low-power and compact software-defined radar with a two-channel transmitter and a four-channel receiver in K-band. It is designed to support digital beamforming and MIMO capabilities for applications in direction of arrival (DOA) measurement, radar interferometry, digital beamforming and MIMO phased-array radar. It is suitable for human activity monitoring, occupancy sensing, gesture sensing, and tracking of 3-D trajectory.

The RF module is implemented with phase-locked loop (PLL) to achieve great linearity in frequency modulations. The center frequency and the bandwidth of transmitted signals are selectable and adjustable within a wide frequency band of 24-26 GHz. The signals are transmitted in a time division multiplexing manner.

The FPGA-based processor module functions as a micro controller, processor and power management unit and offers ultimate design flexibility with industry-leading programmable logic. It has four 40-MSPS ADCs to support the four receiving channels. A high-speed USB peripheral controller enables digitized raw data streaming to a memory storage for post-processing. It interfaces with the RF Module with a 24-pin flat flex cable (FFC) to form a standalone system.

The graphical user interface (GUI) allows the flexibility and adjustability in selecting desired signal waveform, center frequency, bandwidth, sampling rate, filtering, display parameters, and record/export I/Q data.



Typical output power of the transmitter is 22 dBm. Six single-ended SMA female connectors are installed for easy connection to external antenna units.

Specifications

Specification	Min.	Typ.	Max.	Units
No. of Tx/No. of Rx	Two-channel Tx/Four-channel Rx			
Waveforms	FMCW Sawtooth/FSK/CW			
Typical Frequency Limits	24		26	GHz
Typical Bandwidth	0		2000	MHz
FMCW Sweep Time	0.125/0.25/0.5/1/2/4/8 (ms)			
Number of Samples/Sweep	8/16/32/64/128/256/512/1024/2048/4096			
Tuning Voltage	0		5	V
Tuning Sensitivity @RF Port		0.8		GHz/V
Transmit Power	21	22	23	dBm
SSB Phase Noise @1MHz offset		-99		dBc/Hz
Noise Figure		12		dB
Maximum input power		5		dBm
IIP3		-4		dBm
IIP_{1dB}		-12		dBm
Supply voltage	4.75	5	5.25	V
Supply current	2070	2140		mA
Operating temperature	-40		85	C^{o}
Dimensions	L=138 W=103 H=30			mm

Features

- K-band 24-26 GHz
- Two-channel transmitter
- Four-channel receiver
- Flexibility & adjustability in selecting center frequency and bandwidth
- Moderate output power
- Low phase noise
- Single +5V DC supply voltage
- Low power consumption
- SMA connectors for external antennas
- Fractional-N phase-locked loop for VCO nonlinearity compensation

Embedded Version Available

- Embedded Linux OS
- Custom-designed battery management system – up to **4 hours** on a single charge
- 7-inch touch-screen display
- Remotely controllable – suitable for field trials