

Wideband Microwave Digital Receiver



FEATURES

- ▶ Tuning range: 0.5 to 18 GHz (26.5 GHz optional)
- ▶ Tuning speed: Contact factory for information
- ▶ 1GHz IF with 500 MHz BW and 160 MHz or 140 MHz IF with 80 MHz BW
- ▶ Supports independent and phase coherent operation
- ▶ Integrated digitizer provides digital output over VITA-49, 10 GigE interface

iRF introduces the iWR-6500 Wideband Digital Receiver, a member of the WIDERAIL/LITERAIL family of Wideband Digital Microwave Tuners/Receivers. WIDERAIL solutions focus on ELINT/Wideband COMINT applications. The unit provides frequency tuning from 0.5 to 18 GHz. The pre-detected IF outputs of 1 GHz (500 MHz BW) and either 160 or 140 MHz (80 MHz BW) are provided to interface with existing post processing architectures.

The iWR-6500 offers superior spur free dynamic range (>60 dB single-tone) in the microwave frequency range while maintaining low power consumption. The standard unit is configured to support single or multi-channel, phase coherent applications. All local oscillators and reference signals are available on the rear panel for daisy chained interconnection of multiple units. This capability enables monopulse DF, cross-polarization, interference cancellation, and

“N” channel DF. The operating mode can be selected from master/slave or independent via ethernet control.

The compact package houses iRF's SMART RF Deck and the iDSP SMART Processor module. The iDSP Processor performs digitization of either the 1 GHz and 160 MHz (alternately 140 or 70 MHz) IFs with 14- and 16-bit precision respectively. The iDSP processor is a dual ARM core Zynq-based FPGA which offers significant programmable resources. The Linux based operating system provides web based services of user GUIs and control. The baseband I/Q digital output is an SFP+, 10 GigE, VITA - 49, and can be time-stamped when proper timing signals are provided to the unit. The 10 GigE port supports approximately 8 Gigabits real-time payload transfers inclusive of overhead.

Single or multi-channel, A/C powered rack mount configurations of the iWR-6500 are also available.

SPECIFICATIONS (AT 25° C)

Frequency Range: 0.5 to 18 GHz

Max signal amplitude: +20 dBm without damage

Noise Figure: 15 dB, max. 13 dB typ.

Input IP3: +3 dBm typ., +2 dBm min.

Second order input intercept point: >+50 dBm

IF Outputs: 160 MHz, 140 MHz optional, 1 GHz

IF Bandwidths: 500 MHz @ 1 GHz, 80 MHz @ 160 MHz or 140 MHz

Image and IF Rejection: >70dB, min.

Frequency stability: < ±1 ppm

Tuning Speed: Contact factory for more details

Turning Resolution: 1 kHz

Integrated Phase Noise: < 0.4° rms (100 Hz to 10 MHz) typ.

Single Tone Spurious Free Dynamic Range: > 55 dB, 60 dB typ.

RF to IF Gain: +20 dB, ± 1dB

RF Attenuation: 0 to 20 dB, 10 dB steps (optional)

IF attenuation: 0 to 30 dB, 1dB steps (independent control for each IF output)

LO leakage: < -90 dBm

Internally generated spurious: <-90 dBm (effective input level)

Phase Coherent: Through use of daisy chained LOs

Linear Dynamic Range: > 90 dB in a 1MHz BW

Passband Flatness: ±1.5 dB across 80% of BW

DIGITAL IF DATA

ADC options: 250 MS/sec 16 bit OR 1.33 GS/sec 14-bit

80 MHz BW Output data rate, 16-bit complex I/Q
106.6 MS/sec for 160 MHz IF, 93.3 MS/sec for 140 MHz IF, 125 MS/sec, optional 100MHz BW

500 MHz BW Output data rate, 14-bit complex I/Q
666.6 MS/sec
VITA-49 packets divided over 2 10GbE ports

Output data format: VITA-49 over 10G Ethernet

Digital transceiver support: SFP+ Cage compatible

Time stamp: Per VITA-49, valid with time reference

Power: +12 VDC, nom. (+9 to +16 VDC)

MECHANICAL

Operating Temperature Range: -10°C to +70°C

Power Consumption: 45W typ. (w/ NB ADC)

Weight: 5 lbs.

Dimensions: 1.6H x 5.5W x 10D