



FEATURES

- Tuning range: 0.5 to 26.5 GHz (Extendable to 44 GHz)
- Tuning speed: Contact factory for information
- 1 GHz 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 26.5 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 or 160 MHz (alternately 140 or 70 MHz) IFs with 12- 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 26.5 GHz

Max signal amplitude: +20 dBm without damage

Noise Figure: <18GHz: 15dB max., 13dB typ.
Above 18GHz, 3dB degradation

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

Second order input intercept point: >+50 dBm

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

IF Bandwidths: 1GHz WBIF Output: 500MHz for
tuned frequencies above 1.25GHz. Bandwidth de-
creases to 100MHz for frequencies below 1.25GHz
160MHz, 140MHz NBIF Output: 80MHz min.

Image and IF Rejection: <18GHz: ≥ 70 dB, 18-
26.5GHz: 70dB typical, 60dB min.

Frequency stability: 2ppm standard, ± 5 ppb higher
stability option

Tuning Speed: Contact factory for more details

Turning Resolution: 1 kHz

Integrated Phase Noise: (100 Hz to 100 MHz) typ.
 ≤ 18 GHz: $< 0.45^\circ$ RMs, ≤ 26.5 GHz: 0.5° RMs

Single Tone Spurious Free Dynamic Range:
 > 55 dB, > 60 dB typ. for ≤ -20 dBm input
50dB typical: 7.4-7.5GHz

RF to IF Gain: +20 dB, ± 1 dB

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
Exceptions: 5.2GHz: -85dBm, 3.9GHz: -75dBm,
1.25GHz: -70dBm, < 1.05 GHz: -50dBm

Internally generated spurious: : ≤ -90 dBm EIL
 > 1.25 GHz: -85dBm max., ≤ 1.25 GHz: -80dBm max.

Phase Coherent: Through use of daisy chained LOs

Linear Dynamic Range: ≥ 90 dB in a 1MHz BW
 < 18 GHz. ≥ 87 dB in a 1MHz BW 18-26.5GHz

Passband Flatness: ± 1 dB typical over centered
80MHz BW. ± 1.5 dB max.
 ± 1.5 dB typical over 500MHz BW. ± 3 dB max.

DIGITAL IF DATA

ADC options: 250 MS/sec 16 bit OR 1.33 GS/sec
12-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, 8-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)

OPERATING INFORMATION

Operating Temperature Range: 0°C to +50°C

Power Consumption: 50W typ. (w/ WB ADC)

Weight: 5lbs

Dimensions: 1.6H x 5.5W x 10D