iRF introduce 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 decreases to 100MHz for frequencies below 1.25GHz. 160MHz, 140MHz NBIF Output: 80MHz min.
Frequency stability: 2ppm standard, ±5ppb 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° RMS, ≤26.5 GHz: 0.5° RMS
Single Tone Spurious Free Dynamic Range:
>55dB, >60dB typ. for ≤20dBm input
50dB typical: 7.4-7.5GHz
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: ≤-90dBm
Exceptions: 5.2GHz: -85dBm, 3.9GHz: -75dBm, 1.25GHz: -70dBm, <1.05GHz: -50dBm
Internally generated spurious: ≤-90dBm EIL
>1.25GHz: -85dBm max., ≤1.25GHz: -80dBm max.
Phase Coherent: Through use of daisy chained LOs
Linear Dynamic Range: ≥ 90dB in a 1MHz BW
<18GHz. ≥ 87dB in a 1MHz BW 18-26.5GHz
Passband Flatness: ±1dB typical over centered 80MHz BW, ±1.5dB max.
±1.5dB typical over 500MHz BW. ±3dB 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 for140 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