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