



Embedded Computing, Timing and Telemetry Products

WR-G527e Wide-Band Phase Coherent Tuner Front-End

Overview The WiNRADiO WR-G527e is a versatile receiver platform of USB-interfaced modular building blocks suitable for high-performance signal intercept, acquisition and monitoring applications, precision direction finding and beam-forming.

The WiNRADiO WR-G527e is designed to be a compact, low-cost front-end of choice for Software-Defined Radio applications wherever an instantaneous IF bandwidth greater than 20 MHz is required. The robust, low-power tuner can be deployed in fixed, land mobile, or airborne installations, and is able to support single-channel as well as multi-channel phase-coherent applications with excellent phase and impedance matching between channels.

Features

- Input frequency range 0.01-3000 MHz
- Output frequency 70 MHz
- IF bandwidth 22 MHz
- Very low phase noise
- Low phase and amplitude distortion
- High frequency stability 0.01 ppm
- High dynamic range
- Very fast tuning speed
- Single or multichannel operation
- USB interface

For frequencies above 20 MHz, the receiver is based on a double-conversion process, where the incoming frequency is down-converted to the output frequency 70 MHz, which is provided as a filtered output ready to be digitized. The IF paths are switchable in order to minimize images and spurious mixing products. Filters are specially selected to ensure flat phase response and digitally controlled attenuators are employed in the front-end as well as in the IF path.

For frequencies 0.1 to 30 MHz, an amplified bypass output is available for a direct connection to a DSP back-end.

The entire system features an excellent phase stability and flatness throughout the entire frequency range, with minimum amplitude and phase distortion, as well as minimum amplitude and phase mismatch between channels.

WR-G527e/TM The WR-G527e/TM tuner module can be used either as a front-end for a single-channel receiver, or a multichannel phase-coherent receiver system with excellent phase matching (typically 3 degrees across the entire frequency range) between channels.



For HF frequencies 0.1 to 30 MHz, the tuner relies on a direct-amplified path without any frequency conversion. For higher frequencies, the tuner employs dual frequency conversion. There is also a digitally-controlled attenuator 0-30 dB in the front end, and a secondary 20 dB attenuator in the IF path.

WR-G527e/RMF The WR-G527e/RMF is an ultra-fast DDS-based reference oscillator and distributor module suited for phase-coherent multichannel systems, capable of driving up to eight WR-G527e/TM tuner modules. The reference oscillator features a very high frequency accuracy and stability of 0.01 ppm, thanks to a built-in OCXO. Higher frequency stability is possible using an optional external frequency reference input.



The module's superior phase noise performance and fast tuning speed allows it to be used in high-performance search receivers and other demanding single-channel or phase-coherent multi-channel applications.