WiNRADiO®

AVENTAS INC

Embedded Computing, Timing and Telemetry Products

WR-G528e CHEETAH Miniature Wide-Band Phase Coherent Tuner Front-End

Overview

The WiNRADiO WR-G528e is a miniaturized, versatile, USB-interfaced high-performance receiver front-end with dual application capability.

A single WR-G528e module can be utilized as a compact, single-channel front-end suitable for fast signal intercept, acquisition and monitoring applications. When two identical modules are interconnected to share a common frequency reference (either internal or external), they can form a basis of a dual-channel phase-coherent direction-finding system with excellent phase and amplitude matching characteristics.

The WiNRADiO WR-G528e is designed to be a front-end of choice for demanding Software-Defined Radio (SDR) applications wherever an instantaneous IF bandwidth greater than 20 MHz, small size, low power and low cost are required. It can be deployed in fixed, land mobile, or airborne installations.

Features

- Input frequency range 0.01-3000 MHz
- Single or dual-channel phase-coherent applications
- IF output 70 MHz
- IF bandwidth 22 MHz
- Excellent phase and amplitude matching
- 1 ppm frequency stability or 10 MHz external reference
- Small size and weight
- Low power consumption
- High dynamic range
- Fast tuning speed
- USB 2.0 and RS-232 interface

For frequencies above 30 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 by an internal relay in order to minimize images and spurious mixing products. Filters are specially selected to ensure flat phase response and a digitally controlled attenuator is employed in the front-end.

For frequencies 0.01 to 30 MHz, the amplified bypass output is available for a direct connection to a DSP back-end.

A dual-channel phase-coherent system based on two identical, interconnected WR-G528e modules 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 the two channels.

Input frequency range	0.01-30 MHz (direct input section), 30-3000 MHz (heterodyne section), internally switchable
Tuning resolution	10 MHz
Output frequency	70 MHz
Output bandwidth	22 MHz
Gain	30 dB typ.
Noise figure	12 dB typ. @ 1500 MHz
Internal spurii	TBA*
IF rejection	>TBA
Image rejection	>40 dB
Maximum input level	TBA
Attenuation control	0-30 dB front-end attenuator digitally switchable in 1 dB steps (30-3000 MHz path only)

IP3	TBA
Input impedance	50 ohm (SMA connector)
Output impedance	50 ohm (SMA connector)
Amplitude ripple	3 dB typ.
Phase ripple	3 degrees typ.
Phase adjustment range	20 degrees
Phase adjustment resolution	0.1 degrees
Channel-to-channel isolation	>80 dB
Total phase noise	-86 dBc/Hz @ 10 kHz (1500 MHz)
Tuning speed	5 ms typ.
Settling speed	0.8 ms / MHz typ.
Frequency stability	1 ppm (or external reference)
External reference	10 MHz
LO1	3945 to 6915 MHz
	(externally accessible at 0 dBm via SMA output)
LO2	3845 MHz (externally accessible at 0 dBm via SMA output)
Operating voltage	12 V DC ±5%
Power consumption	5 W typ.
Control interface	USB 2.0 or RS-232C
Dimensions	91 x 68 x 47 mm (3.6" x 2.7" x 1.9")
Weight	330 g (11.6 oz)
Operating temperature	-10º to +60º C
Humidity	20-90% non-condensing

** As a result of the heterodyne process, a small number of spurii exist on certain frequencies.*

Specifications are subject to change without notice due to continuous product development and improvement.

AVENTAS INC

1131 Rockingham Dr. Suite 110 Richardson, TX 75080
Dallas – 972.231.7337 **Austin** – 512.832.1070 **Houston** – 713.228.5400
Toll Free – 800.460.9653 Fax – 972.231.5973
www.aventasinc.com info@aventasinc.com