WR-G31DDC *'EXCALIBUR'*

Overview

The award-winning WiNRADiO WR-G31DDC *'EXCALIBUR'* is a high-performance, low-cost, direct-sampling, software-defined, shortwave receiver with a frequency range from 9 kHz to 50 MHz. It includes a *real-time* 50 MHz-wide spectrum analyzer and 2 MHz-wide instantaneous bandwidth available for recording, demodulation and further digital processing.

The receiver's superior performance results from its innovative, direct-sampling, digital down-converter architecture along with the use of leading-edge components and design concepts. These all result in a very high IP3, wide dynamic range, excellent sensitivity, selectivity and tuning accuracy. These key features create a receiver in a class of its own, with wide application potential, at a very affordable price.

Features

- 9 kHz to 49.995 MHz continuous frequency range
- Direct sampling
- Digital down-conversion
- 16-bit 100 MSPS A/D conversion
- 50 MHz-wide, real-time spectrum analyzer
- 2 MHz recording and processing bandwidth
- Three parallel demodulator channels
- Waterfall display functions
- Audio spectrum analyzer
- Audio and IF recording and playback
- Recording with pre-buffering
- EIBI, HFCC and user frequency databases support
- Very high IP3 (+31 dBm)
- Excellent sensitivity (0.35 μV SSB, 0.16 μV CW)
- Excellent dynamic range (107 dB typ.)
- Selectable medium-wave filter
- USB 2.0 interface

The receiver's robust front-end is equipped with an ultra-high-linearity amplifier which results in exceptional strong-signal performance. An advanced dithering technique eliminates spurious signals without significantly increasing the receiver's noise floor. The superior 16-bit 100 MSPS analog-to-digital converter provides exceptional performance over an extremely wide range of signals.

The entire 2 MHz DDC (digitally-down-converted) bandwidth is available for recording and demodulation. Three demodulators allow the simultaneous reception of three signal frequencies within the 2 MHz bandwidth.

Software

The WR-G31DDC software provides an elegant and logical graphical user interface. There are several spectrum analyzer configurations including the 50 MHz full span with 1.5 kHz resolution. The fully-zoomable display can be viewed in either the standard or waterfall mode.

The down-converted portion is highlighted and can be selected either via keyboard or by the mouse cursor and then displayed in another window, within which three independent receiver channels can exist. For any channel, the receiver's selectivity, IF shift, passband tuning, notch, and other functions can be adjusted, and the audio spectrum of the demodulated signal can be observed.

The digital down-converter provides 21 selectable output bandwidths ranging from 20 kHz to 2 MHz. The receiver's selectivity can be adjusted with 1 Hz resolution. The bandpass audio filter's low and high cut-off frequencies are graphically adjustable, as is the notch filter and noise blanker.

The parameters of all three independent channels can be set separately, allowing each to be recorded simultaneously and independently. Recording and playback are also provided at the output of the digital down-converter, where an entire 2 MHz spectrum band can be recorded for later demodulation. Pre-buffering prevents signal loss at the start of a transmission.

In spite of the receiver's ground-breaking architecture, the software still remains simple and intuitive to use, containing all the features generally expected in modern receivers such as noise blanking, memories, scheduler, squelch (level, voice or noise activated), numerous tuning options, and a wide choice of demodulation modes, including user-defined and optional DRM.

A flexible scheduler function allows unattended recording of each channel at specified dates and times, and the built-in support for HFCC, EIBI and user-defined frequency databases ensures effortless storage and maintenance of frequencies.

The software-defined architecture allows easy software upgrades for demodulation and decoding requirements. Component variations and aging are greatly diminished in a software-defined receiver, assuring long-term premium performance.

Developer support is also provided, making it possible for third-party programmers to develop application software based on the Excalibur hardware plaform.

What's included?

The standard WR-G31DDC package includes:

- WR-G31DDC receiver
- Application software
- Comprehensive user's manual
- Low-noise linear power supply
- USB cable
- BNC-to-SMA adapter

System requirements:

- PC with 2 GHz dual core CPU or faster
- One free USB 2.0 socket
- Windows XP/Vista/7