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WR-G65DDCe *'Excalibur Sigma'*

(Preliminary information)

Overview

The WiNRADiO WR-G65DDC 'EXCALIBUR Sigma' is a top performance, direct-sampling, software-defined, wide-band, two-in-one HF/VHF receiver with two frequency ranges from 1 kHz to 88 MHz and from 118 MHz to 190 MHz. The receiver has two independent and mutually exclusive inputs, one per each range. It includes a real-time 88 MHz wide spectrum analyzer (72 MHz in VHF range) and up to 64 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-conversion architecture along with the use of leading-edge components and design

Features

- 1 kHz to 88 MHz and 118 MHz to 190 MHz frequency range
- Direct sampling
- Digital down-conversion
- 16-bit 210 MSPS A/D converter
- 88/72 MHz wide, real-time spectrum analyzer
- 64 MHz recording and processing bandwidth
- Ready for phase-coherent applications
- Continuously adjustable filter bandwidth down to 1 Hz
- Waterfall display functions and audio spectrum analyzer
- Audio and IF recording and playback
- Recording with pre-buffering
- Very high IP3 (+38 dBm)
- Excellent sensitivity (Noise figure 6 dB)
- Excellent dynamic range (111 dB)
- Excellent frequency stability (0.1 ppm)
- User-configurable preselection filters
- Selectable low-noise preamplifier
- Test and measurement functions
- USB 3.0 and 1 Gb Ethernet (with PoE) data interfaces
- Numerous data and signal hw options
- Self-diagnostics with BIT and thermal management

The receiver interfaces to a Windows-compatible PC via USB 3.0, or 1 Gb Ethernet

concepts. These all result in excellent sensitivity, selectivity and dynamic range, highly accurate and stable tuning, and perfect demodulation. These key features create a receiver in a class of its own, with wide application potential, with many operational and instrumentation features not usually found on receivers of any price category.

The entire 64 MHz DDC (digitally down-converted) bandwidth is available for recording and demodulation, and ideal for hopping frequencies analysis. Three demodulators allow the simultaneous reception and decoding of radio signals within the entire band.

The receiver's robust front-end is equipped with an ultra-high-linearity amplifier which results in exceptional strong-signal performance while at the same time offering excellent sensitivity.

The WR-G65DDCe also features optional external reference clock inputs and outputs, coherence clock input, 1PPS pulse input as well as an FPGA interface, ready for phase-coherent system configurations such as in high performance interferometer direction finding applications. In addition, stereo analog output is also possible, as well as wide audio (10 Hz-150 kHz). The special data port offers numerous possibilities which include GPIO (general purpose I/O), HSP (high speed data output), or traditional RS232 interface.

LAN port with PoE (Power over Ethernet functionality according to IEEE 802.3at standard).

The receiver is very well shielded against interference, making it possible to operate in a noisy computer environment. Its modest power requirements are less than 12 watts. While connected via LAN interface, thanks to PoE built-in functionality, the receiver can be operated and powered via a long Ethernet cable connection.

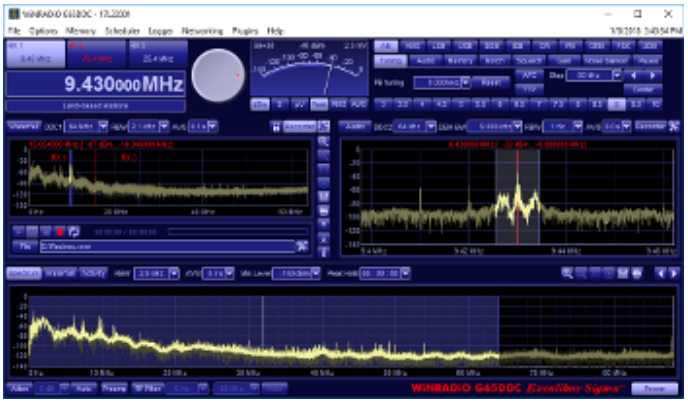
Yet again, this is the first time a receiver of such advanced specification and unique combination of features is being offered to the general marketplace.

The receiver is intended for government, military, security, surveillance, broadcast monitoring, industrial and demanding consumer applications.

Easily installed to any modern computer with the USB or Ethernet LAN interface, the Excalibur Sigma receiver represents an excellent multi-purpose mobile and stationary solution for advanced HF/VHF monitoring and surveillance.

Software

In spite of the receiver's ground-breaking architecture and powerful functionality, the user interface still remains simple and intuitive to use, with a rich on-line help facility. The control software contains 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 ready-for-digital communication modes. The parameters of all demodulator channels can be set separately,



(Click on panel to enlarge.)

The WR-G65DDC control software provides a highly functional and logical user interface. There are several spectrum analyzer configurations available, including the 88/72 MHz full span with 2.8 kHz resolution. The scalable spectrum display can be viewed in either the standard or waterfall mode.

The digital down-converter provides 36 selectable output bandwidths ranging from 20 kHz to 64 MHz. The receiver's selectivity can be adjusted with 1 Hz resolution.

Recording and playback are also provided at the output of the digital down-converter, whereby a 64 MHz wide spectrum chunk can be recorded for later demodulation and post-processing.

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 64 MHz spectrum band can be recorded for later demodulation. Pre-buffering prevents signal loss at the start of a transmission. A flexible scheduler function allows unattended recording of each channel at specified dates and times.

There is also a unique "pause" function, making it possible to pause reception and resume it when convenient. This is very useful in case the receiver is left unattended for a period of time.

A "toolbox" full of various test and measurement tools, such as frequency error, SINAD, THD and modulation meters, logger and scheduler, complement the entire package and make it possible to use this product as a measuring receiver, replacing much more expensive (and often less capable or accurate) conventional test equipment.

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.

System requirements:

- PC with 2 GHz quad core CPU or faster
- One free USB 3.0 or Ethernet socket
- Windows Vista, 7, 8 or 10

See also:
- **Detailed Technical Specifications**

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