WR-G315e

High Performance Software-Defined Wideband Receiver

- 9 kHz - 1800 MHz frequency range

- Software-defined DSP demodulation

- Excellent sensitivity

- High dynamic range

- Continuously adjustable IF bandwidth

- Excellent suppression of internal spurii

- Real-time spectrum analyzer

- Graphical IF shift, audio and notch filters

- Noise blanker

- Audio and IF recording and playback

- Test and measurement facilities

The WiNRADiO WR-G315e receiver is a USB-controlled software-defined high-performance wideband receiver (9 kHz to 1800 MHz).

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

The receiver is extremely sensitive, making it possible to comfortably read CW signals well under -130 dBm input levels, yet featuring a respectable dynamic range making the receiver resistant to strong signal overload.

The high sensitivity is also matched by that of the S-meter: The calibrated S-meter shows the received signal levels in dBm, µV or S-units, down to the receiver noise floor. The IF bandwidth of the receiver is continuously adjustable from 1 Hz to 15 kHz, in 1 Hz steps.

Several WR-G315e receivers can be controlled by a single PC, which provides an ideal solution for high-performance multi-channel surveillance and monitoring systems.

As the last IF and demodulation processing are entirely software-defined, additional demodulation or decoding modes can be easily added by a mere software change.

In addition to audio recording, the receiver can also record a 20 kHz wide spectrum at the IF level, making it possible to thoroughly analyze a signal, and experiment with extracting a weak signal with different filter settings for the best reception.

The receiver is lightweight and portable, an ideal accessory for laptop and notebook computers. Every modern portable computer can be quickly and easily converted into a powerful monitoring and surveillance station with minimum fuss.

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Hardware

The construction of the WiNRADiO WR-G315e receiver is truly ground breaking and innovative: The remarkably compact receiver connects to the computer via a standard USB interface which facilitates the receiver control as well as transfer of the demodulated audio. The enclosure is very well shielded against interference, making it possible for the receiver to operate in a noisy computer environment.

The receiver is supplied with an external AC/DC power adapter, working in linear mode to avoid even the slightest possibility of interference emanating from the power supply.

Software

The WR-G315e software contains numerous advanced features, many tuning and scanning options, virtually unlimited memories and a rich on-line help facility.
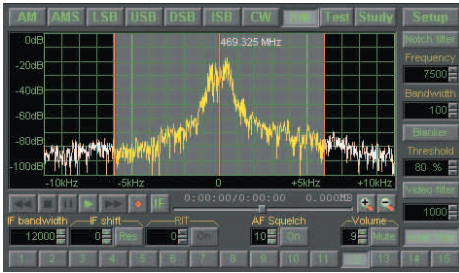
Demodulator with real-time spectrum display

There are numerous modulation modes, variable IF bandwidth 1 Hz to 15 kHz, two spectrum analyzers with 16 Hz resolution, graphically controlled IF shift, notch and audio filter and noise blanker. The built-in recorder can record and play back demodulated audio as well as the IF signal, which means that it is possible to "re-receive" the same signal again and again with different IF filter bandwidths, notch and audio filter, noise blanking or demodulator settings, to arrive at the best possible reception of a weak or interference-prone signal.
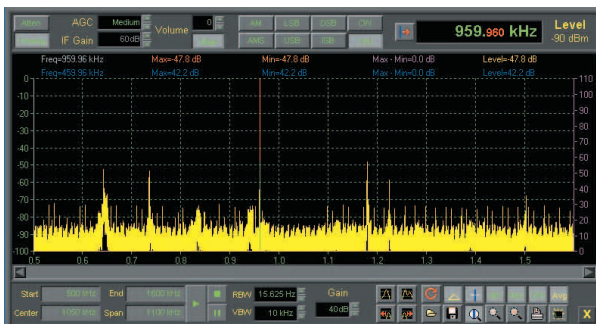
One of the many integrated spectrum analysis functions

The signal test facility can perform various measurements on the received signal including frequency accuracy, amplitude modulation depth, frequency deviation, THD (total harmonic distortion) and SINAD.

There is also a unique research and education function making it possible to explore interactive block diagrams of the software-defined demodulator, for each demodulation mode, and observe demodulation taking place on real-time signals using two integrated spectrum analyzers and a vector voltmeter.

Options

The modular design of both the receiver software and hardware allows the receiver to be customized to suit special customer requirements.

Many options are available for the G315e receiver, such as DRM demodulation option, remote control client/server option and others. Please visit our Web site **www.winradio.com** for the latest news of all the available options.

Specifications

Receiver type	DSP-based SDR with DDS-based dual-conversion superheterodyne front-end
Frequency range	9 kHz - 1800 MHz
Tuning resolution	1 Hz
Mode	AM, AMS, LSB, USB, DSB, ISB, CW, NFM
Image rejection	1.8-150 MHz: 60 dB typ. 150-1800 MHz: 50 dB typ.
Spurious-free dynamic range	90 dB
IP3	preamp off: +14.5 dBm @ 50 kHz preamp on: +4 dBm @ 50 kHz
Phase noise	-148 dBc/Hz @100 kHz
Internal spurious	Less than equivalent antenna input of -105 dBm
RSSI accuracy	2 dB
RSSI sensitivity	-137 dBm
Bandwidth	1 - 15000 Hz (adjustable in 1 Hz steps)
Scanning speed	500 steps/s @ 1 kHz steps

Sensitivity	Mode	0.15-500 MHz	500-1800 MHz
(AM/SSB/CW 10 dB S/N)	AM, AMS *(30% modulation)*	-108 dBm (0.89 µV)	-104dBm (1.4µV)
	AM, AMS *(80% modulation)*	-116dBm (0.35µV)	-112dBm (0.56µV)
	LSB, USB, ISB, DSB	-119dBm (0.25µV)	-115dBm (0.40µV)
	CW	-126dBm (0.11µV)	-122dBm (0.18µV)
(NFM 12dB SINAD)	NFM	-113dBm (0.50µV)	-109dBm (0.80µV)

Note: Below 150 kHz,the sensitivity gradually drops. Typical figures (CW) are: 100 kHz: -124 dBm 50 kHz: -118 dBm 25 kHz: -116 dBm 10 kHz: -110 dBm

Intermediate frequencies	IF1: 109.65 MHz IF2: 12 kHz
Tuning accuracy	1 ppm (25℃ ± 2℃)
Frequency stability	0.5 ppm (0 to 60℃)
Antenna input	50 ohm (SMA connector)
Interface	USB 1.0 and 2.0 compatible
Power	6W (12V DC)
Dimensions	Length: 166 mm (6.5") Width: 97 mm (3.8") Height: 41 mm (1.6")
Weight	430 g (15.1 oz)
System requirements	IBM PC compatible (CPU 500 MHz or higher), USB port, Windows 98/ME/2000/XP

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

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