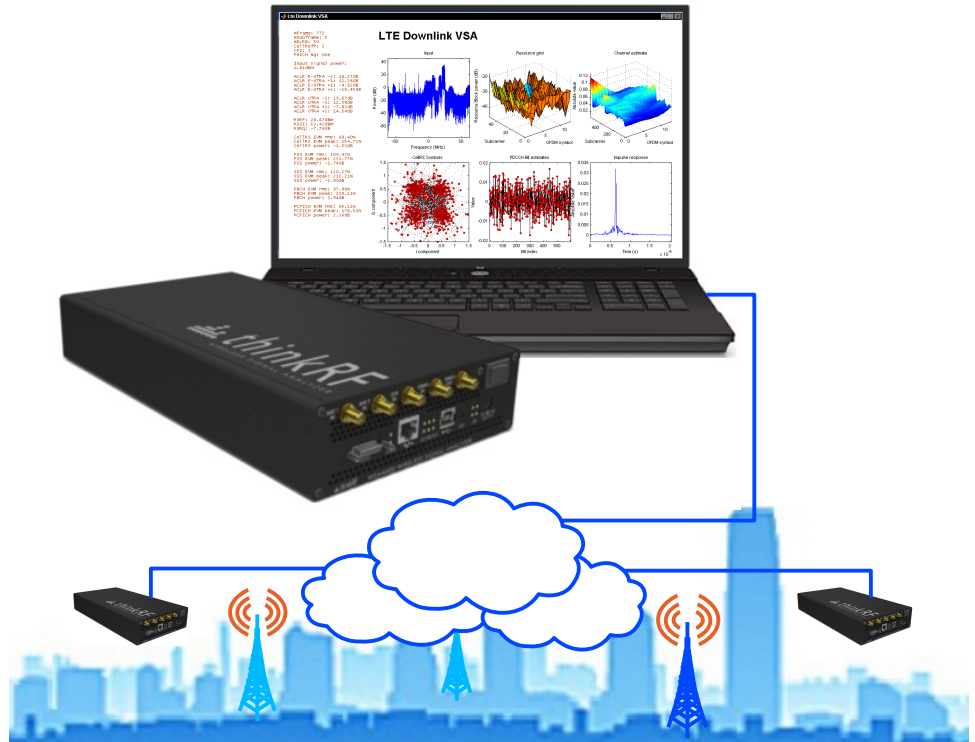


# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

**A software-defined wireless signal analyzer designed for stand-alone, remote and/or distributed wireless signal analysis, monitoring and intelligence**

## Industry Leading

- Integrated RF receiver, digitizer and analyzer
- Patent-pending software-defined RF receiver technology
- 100 kHz to 10 GHz tuning with 100 MHz IBW and 200 GHz/sec scan rate
- Real-time sophisticated search and loss-less capture of signals of interest
- Integrated GPS and digital signal processor
- Support for direction finding and geo-location
- 3G, 4G LTE, Wi-Fi, WiMax, White Space, SIGINT/COMINT, CEW, TSCM and spectrum monitoring application ready
- Stand-alone, remote and/or distributed deployment



## Contents

Technology overview	page 2-3
Application overview	page 4-5
Specifications	page 6

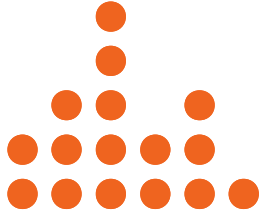
The ThinkRF WSA4000 Wireless Signal Analyzer is a high-performance software-defined RF receiver, digitizer and analyzer. It is designed for stand-alone, remote and/or distributed wireless signal analysis, monitoring and intelligence applications.

ThinkRF has patent-pending software-defined RF receiver technology that provides industry leading combined sensitivity, tuning range, instantaneous bandwidth and sweep rate. Combined with deep fast real-time caching and sophisticated capture control, the WSA4000 provides reliable monitoring of entire bands of communications and unparalleled comprehensive wireless signal analysis.

The WSA4000 is ideal for monitoring, management and surveillance of transmitters, whether they are in-building or spread across a geographic area.

Applications include but are not limited to spectrum analysis, wireless network management and interference mitigation; cognitive radio and white space spectrum sensing, enterprise wireless signal intrusion detection (WSID); government spectrum licensing monitoring and enforcement; technical security counter measures (TSCM) and military communications and signals intelligence (COMINT/SIGINT and CEW).





# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

## Technical Overview

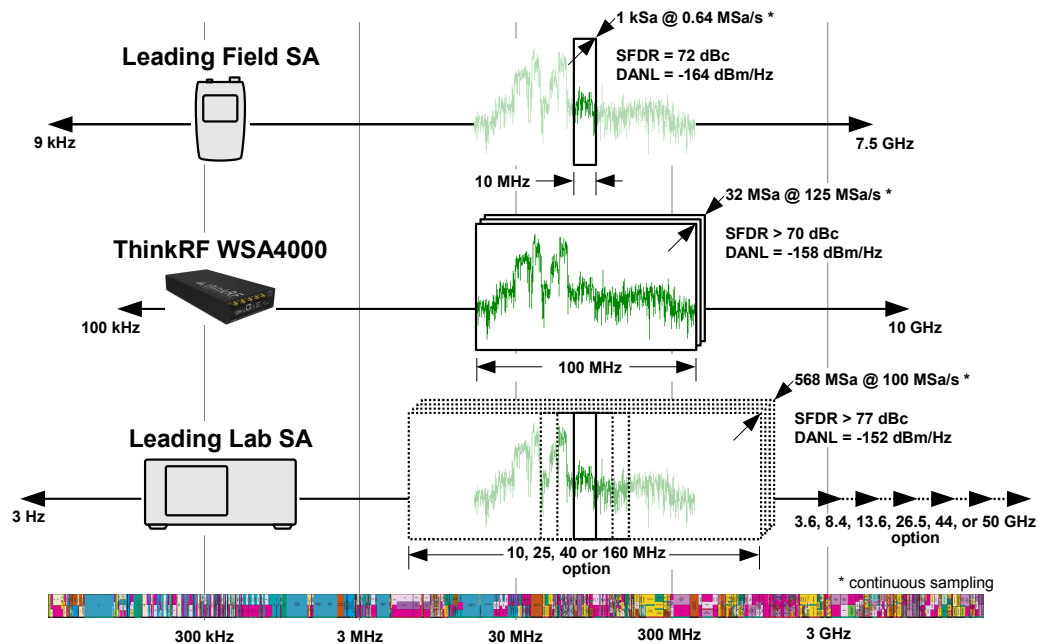
The ThinkRF WSA4000 Wireless Signal Analyzer is a high-performance and integrated software-defined RF receiver, digitizer and analyzer specifically designed for stand-alone, remote and distributed wireless signal analysis.

### Key Features

- Integrated RF receiver, digitizer and analyzer
- Patent-pending software-defined RF receiver technology
- 100 kHz to 10 GHz tuning
- 100 MHz IBW
- 200 GHz/sec user-definable scan
- Real-time sophisticated triggering and capture control
- Loss-less capture of signals of interest
- Optional OMAP digital signal processor
- Integrated GPS
- Support for direction finding and geo-location
- Gigabit Ethernet and USB connectivity
- Standard APIs

### Patented High-Performance Radio Front End

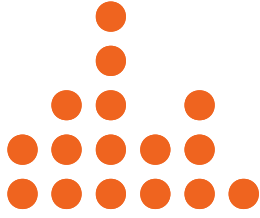
ThinkRF has a patent-pending software-defined RF receiver that provides the performance of high-end lab spectrum analyzers at a low cost that enables large-scale deployment. The WSA4000's radio front end provides the major benefit of a direct-conversion receiver's wide instantaneous bandwidth, while extending the frequency range using super-heterodyne techniques to enable greater RF coverage.



### Unparalleled Wireless Signal Analysis Performance

The WSA4000 has an industry leading combination of wide instantaneous bandwidth, sensitivity, tuning range, deep fast real-time caching and sophisticated capture control thereby providing reliable monitoring of entire bands of communications and unparalleled comprehensive wireless signal analysis.



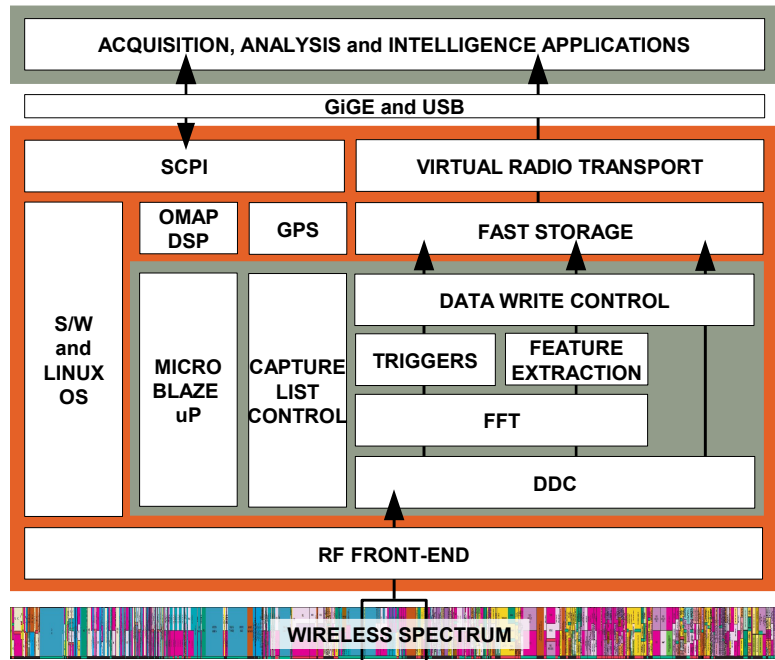


# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

## Technical Overview (cont'd)

### Fast and Flexible Capture Control

The WSA4000 has embedded capture control combined with fast deep caching that enables the configuration of sophisticated flexible and fast signal searches, sweeps, triggering and captures of only the signals of interest.



### Geo-Location and Direction Finding Support

The WSA4000 supports both direction-finding and trilateration-based transmitter geo-location. It provides clock synchronization for AOA direction finding, and time synchronization of networked WSA4000s, accurate time-stamping and accurate signal RSSI for power-based trilateration. It also has an optional integrated GPS with 1PPS.

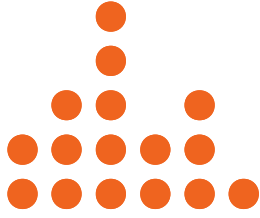
### Digital Signal Processing and Demodulation

The WSA4000 supports an optional OMAP (Open Multimedia Application Platform) system on a chip (SoC) with embedded ARM DSP available for user applications. DSP applications such as demodulation are further supported by integration with MATLAB®, Octave and other third-party tools.

### High-Speed Connectivity and Standard Network Interface Protocols

The WSA4000 provides Gigabit Ethernet for stand-alone, remote and distributed applications. Standard network interface protocols include VITA 49 Radio Transport (VRT) and Standard Commands for Programmable Instruments (SCPI) standard protocols. Effective signal search and user-defined triggers combined with high speed connectivity ensures that the WSA4000 is network efficient.





# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

## Application Overview

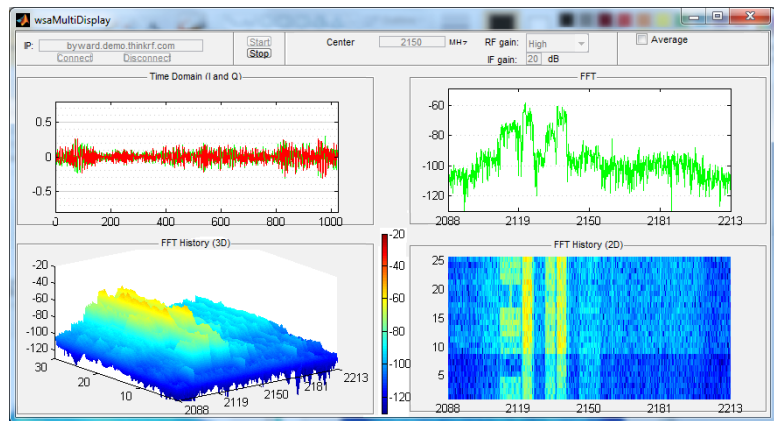
The WSA4000 Wireless Signal Analyzer supports standard APIs and is designed for easy integration with third-party applications. The following are examples of different applications that the WSA4000 supports.

### Applications

- Wireless data acquisition
- Real-world spectral analysis
- MATLAB® and Octave
- Wireless network management
- RF interference mitigation
- 3G, 4G LTE, WiMax basestation and handset development
- Cognitive radio and whitespace research
- Transmitter geo-location
- Spectrum compliance monitoring
- Wireless intrusion detection
- Technical security counter measures
- CEW and signals intelligence
- Ultra-wideband signal capture

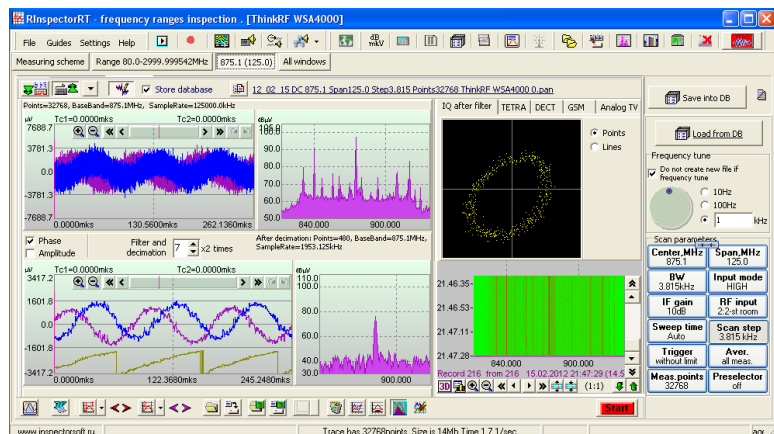
### Data Acquisition and Spectral Analysis with MATLAB® or Octave

With the WSA4000 RF signals can be digitized and the IQ data passed directly to MATLAB®, Octave and/or MATLAB® communications system or signal processing toolboxes.



### Spectral Analysis Test & Measurement

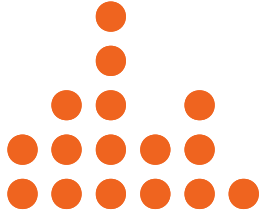
The WSA4000 is ideal for wireless research and development for applications such as basestation and handset development and whitespace research.



### Ultra-Wideband Signal Capture

Multiple WSA4000s can be operated via a common clock reference (which may be provided by one of the WSA4000s) on multiple bands simultaneously to provide real-time capture of ultra-wideband signals or spectrum activity.



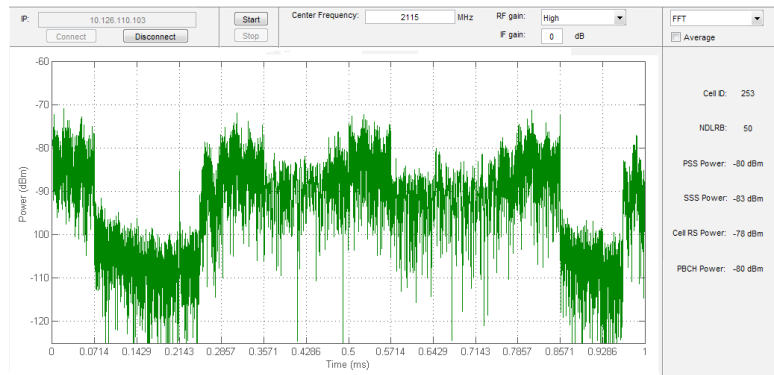


# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

## Application Overview (cont'd)

### Analysis of any Telecommunications Wireless Deployment

The WSA4000 is an ideal tool for dealing with RF interference mitigation, drive and field testing for wireless deployments including LTE, 3G/4G, WiFi off-load/mesh and white-space networks. The WSA4000 may be deployed stand-alone, remote or distributed multiple units.

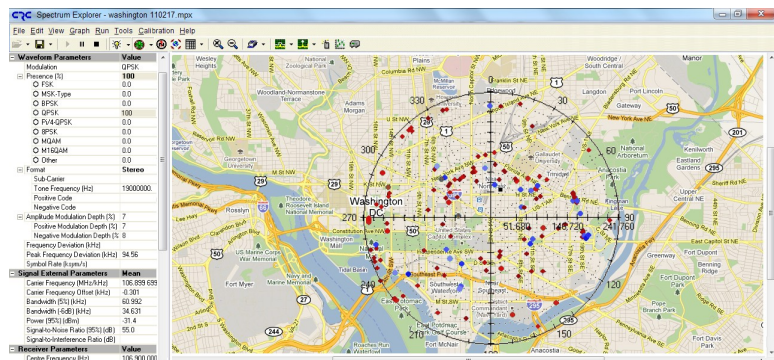


### Wireless Intrusion Detection with Geo-location

The WSA4000 has the capability to support receive signal strength (RSSI) based geo-location and is ideal for the monitoring of in-building wireless communications, enforcement of wireless policy, wireless intrusion detection and TSCM applications.

### Spectrum Monitoring with Direction Finding

The WSA4000 has the capability to support time difference of arrival (TDOA) and angle of arrival (AOA) direction finding (DF). It is thus ideal for the monitoring, management and surveillance of transmitters across a geographic area for military and government spectrum licensing applications.



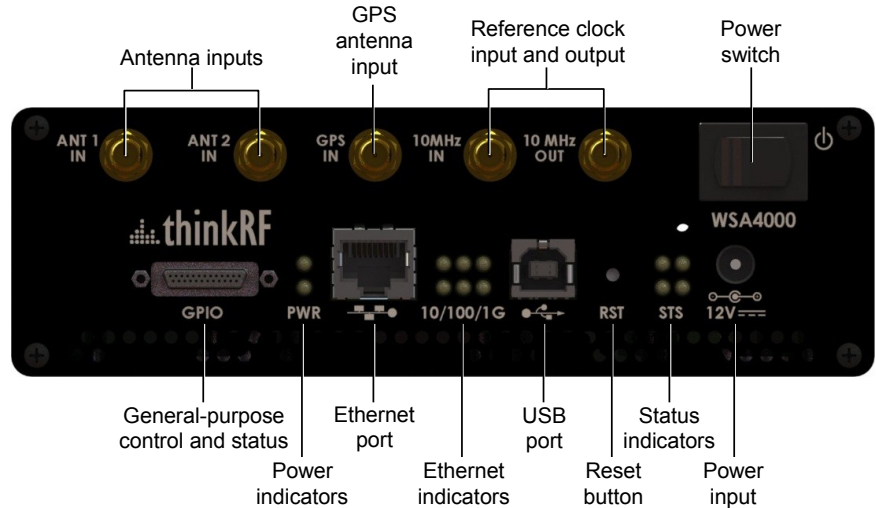
### Signals and Communications Intelligence

The WSA4000's real-time sophisticated triggering, loss-less capture of signals of interest and integrated signal processing provides a powerful platform for CEW, SIGINT and COMINT applications.



# ThinkRF WSA4000-108 RF Receiver/Digitizer/Analyzer

## Front Panel Connectors



### Ordering Information

#### Order Number

WSA4000-108-options

#### Options

- d ● OMAP DSP
- g ● GPS with 1PPS
- r ● Reference Clock I/O
- n ● no options

### Contact Us

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Product specifications and descriptions in this document are subject to change without notice.

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## Specification Overview \*

### Tuning and Bandwidth

Frequency range .....	100 kHz to 10 GHz
Tuning resolution .....	1 Hz
Tuning speed .....	< 500 $\mu$ s
Maximum instantaneous bandwidth .....	100 MHz

### Options

OMAP DSP, GPS with 1PPS, 10 MHz Reference Clock I/O

### Physical

Power Supply .....	+12Vdc
Power Consumption .....	< 18 watts
Operating Temperature Range .....	0°C to +50°C
Non-operating Temperature Range .....	-40°C to +85°C
Enclosure Dimensions .....	11.7 (L) x 6.5 (W) x 2.1 (H) inches

\* Please contact ThinkRF for detailed specifications.

