

The best wireless troubleshooting solution just got better

Sanjole's WaveJudge, the first over-air monitor solution to give you real-time visibility into the interaction between protocol and physical layers in wireless transmissions, has gone modular and is now more scalable, customizable, and cost-effective than ever.

Called the WaveJudge 5000, our newest over-air, wireless communications analyzer gives you greater capabilities and ease in testing and troubleshooting, while upholding renowned Sanjole test features that have and will enable users to:

- Understand the interactions between the mobile station or user equipment and the base station at all layers
- Identify complex causes of interoperability problems
- Improve the performance of the overall wireless connection
- Verify base station behavior from an over-the-air interface, including complex antennae and modulation schemes
- Evaluate the impact on performance of MIMO, beamforming and scheduling
- Capture wireless conditions in the field for replay in the lab
- Accurately identify anomalies that affect throughput and delay

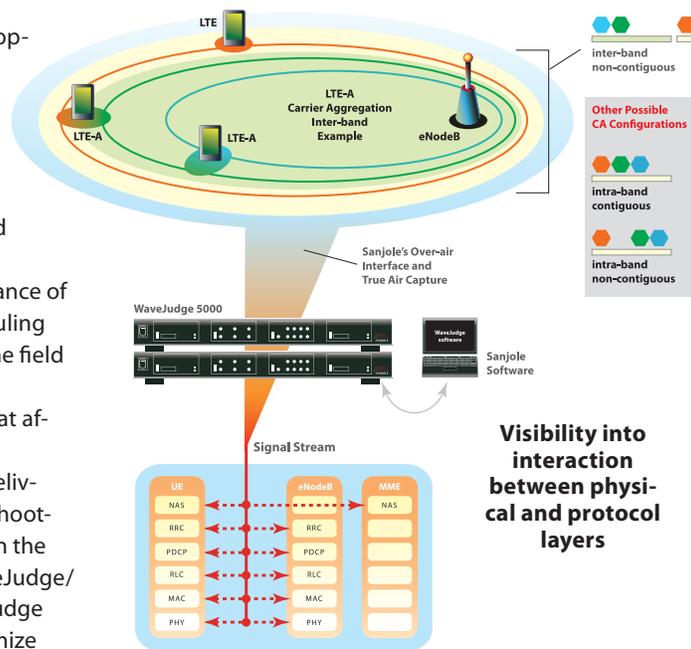
From the beginning, Sanjole has delivered solutions that collapse troubleshooting from days to minutes. Building on the power of the capabilities of the WaveJudge/IntelliJudge product line, the WaveJudge 5000 now also enables you to customize your troubleshooting platform to address demanding and evolving challenges with greater ease and efficiency:

Need more ports to test higher-order

MIMO? The WaveJudge 5000 can support up to 32 truly synchronized ports in each coherent set. Test 8x4, 8x2, or 4x4 MIMO configurations and incorporate multiple layers beyond the current two-layer scheme. For large-scale testing, up to 64 chassis (up to 256 modules) can be daisy-chained per system.

Need more bandwidth to test carrier aggregation?

The WaveJudge 5000 can support up to five instances of CA with 40 MHz channels.



Visibility into interaction between physical and protocol layers

Need more memory for data capture to troubleshoot timing or functionality? The WaveJudge 5000 RAM and SSD memory can store hours of IQ data, with flexible configuration options for tracking long-term trends or to isolate intermittent anomalies. Depending on your application, IQ captures can be invaluable in recreating the wireless channel and providing in depth physical analysis.

Need to perform tests using a large number of antennae that must be sample-and phase-locked? The WaveJudge 5000 ports are truly synchronized, allowing you to avoid time-consuming

WaveJudge 5000 features & benefits

Identify & analyze

- DL Assignment and UL grant analysis
- Scheduling errors
- DL/UL timing offsets
- Resource block assignments
- Subcarrier energy usage
- L1-L3 usage
- MIMO type and rank comparison
- MIMO decodes
- Handover issues
- Synchronization and reference signal errors
- Network entry failures

Solve

- Interference questions
- Cell synchronization
- Mobile to cell miscommunication
- Optimization and efficiency issues
- Finger pointing / engineering confusion
- Deployment delays

tangents such as troubleshooting alignment issues between devices.

Need to detect and eliminate transient errors regardless of the layer in which they occur? The WaveJudge 5000 helps

WaveJudge 5000

you isolate problem areas by taking advantage of real-time triggering on lower and upper layer events, errors, messages, and message content.

Other advanced features include programmable frequency, useful when developing systems for multiple markets; an internal system-wide master clock to ensure proper sample count and timestamp alignment regardless of module or chassis density and configuration; and the latest in DSP cores, FPGA density, and technology-specific accelerators, to power through real-time testing.

Competence & confidence today & tomorrow

As wireless technology marches forward to 5G, technologies such as carrier aggregation, higher-order MIMO, coordinated multipoint, and beamforming arise to meet the ever-increasing demand for speed, quality, and reliability in wireless communications. The WaveJudge 5000 modular platform provides the flexibility and scalability needed to enable coverage of current RF profiles of LTE networks, while giving users the adaptability and readiness for evolving spectrum.

As the ultimate authority in wireless troubleshooting, the WaveJudge 5000 is clearly the must-have tool for success in troubleshooting and solving current and evolving wireless development and deployment issues.

Call for a demonstration

To inquire about a demonstration or for more information about the WaveJudge 5000, please call Sanjole at 1-808-457-1452 or email sales@sanjole.com.

Specifications

Modulation Formats

- OFDMA/SC-FDMA with BPSK, QPSK, 16QAM, 64QAM, Zadoff-Chu

Port Triggers

- Manual Trigger In
- Trigger on Boolean Phrase (Ex. Power > -20 dBm)

Traces

- Constellation
- Time Domain Power
- EVM vs. SubCarrier
- EVM vs. Symbol Time
- MIMO Rank per subcarrier
- MIMO Rank per symbol
- Spectral Flatness (Frequency Domain)
- Amplitude Flatness (Time Domain)
- CCDF, PAPR
- Spectral Power
- Amplitude, Phase, Frequency during synchronization signal
- Impulse Response

Statistics

- RCE
- RCE Peak
- Reference signal RCE
- Carrier and Sampling Clock Frequency Error
- IQ Offset
- CFI Error Rate
- Payload Bits
- RSSI, RSRP, RSRQ

Protocol Analyzer Decodes

- MAC
- RLC
- PDCP
- RRC
- NAS
- TCP/IP (WireShark supported decodes available)

About Sanjole

Sanjole is a leader in 4G, WIFI and 5G testing with expertise in innovative wireless technology. Sanjole provides problem solving capabilities from inside the wireless network through over-the-air analysis tools that provide visibility into events spanning multiple layers. Sanjole has been involved from the very beginning of LTE as a test vendor in the LTE/SAE Trial Initiative (LSTI) events for both fixed and wireless devices. Our work with the WiMAX Forum and 3GPP, participation in the Small Cell Forum, TETRA, WIFI Alliance and extensive experience in interoperability trials, enable deep insight into the complex technical issues specific to the LTE and 4G community.

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