Compact All-in-One Handheld Signal Analyzer for 5G/LTE Field Testing

April 25, 2025

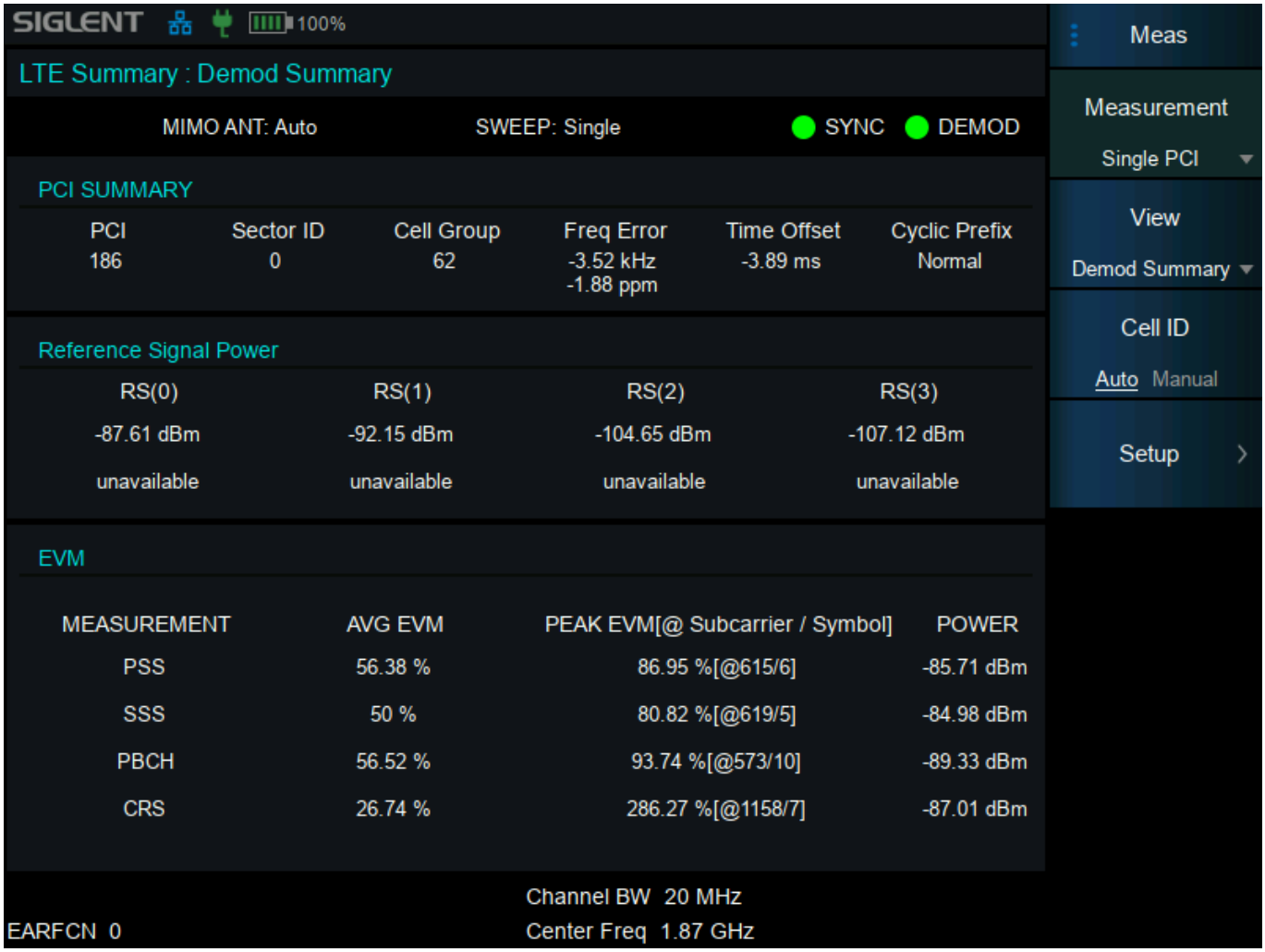
Siglent introduces the **SHA860A series**, a next-generation handheld signal analyzer designed to revolutionize 5G/LTE field testing. Combining spectrum analysis, vector network analysis, and cable/antenna testing into a single portable platform, the SHA860A delivers unparalleled versatility for base station deployment, maintenance, and on-site troubleshooting. Key specifications include a 9 kHz to 7.5 GHz frequency range (usable from 5 kHz), 110 MHz real-time analysis bandwidth, and advanced capabilities such as 5G NR/LTE OTA testing, real-time spectrum analysis, pulse analysis, IQ data acquisition, and GPS-synchronized indoor/outdoor mapping and so on.

5G NR OTA Measurement

During 5G base station deployment, operators require precise validation of network quality and beam performance. The SHA860A's 5G NR OTA mode demodulates signals to extract key parameters, including frequency, physical cell identity (PCI), SSB index, frequency error, and error vector magnitude (EVM) for the SSB portion, visualized via constellation diagrams. This functionality is vital for optimizing 5G Non-Standalone (NSA) deployments, ensuring seamless coordination between LTE and 5G networks.

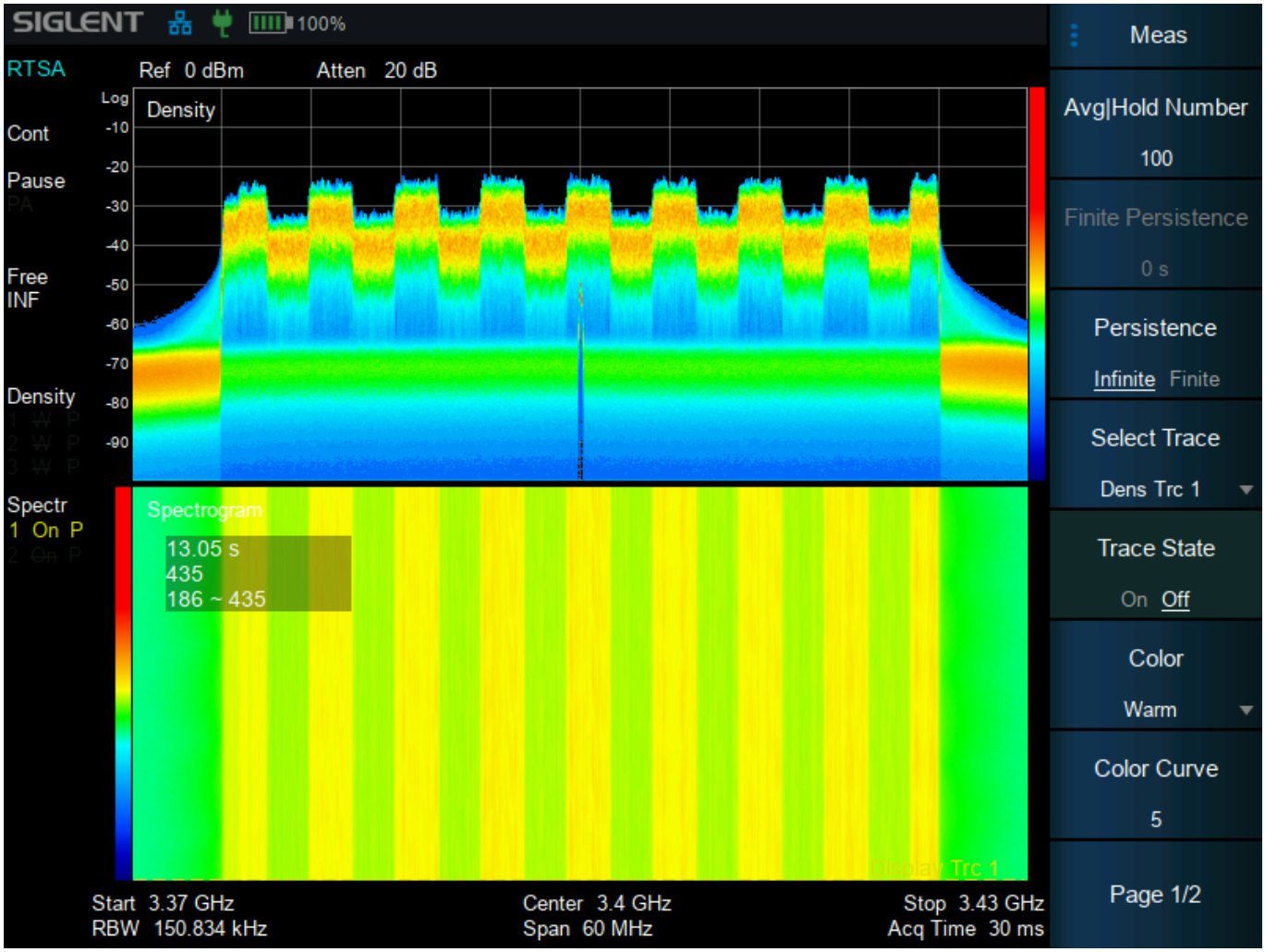
LTE FDD/TDD OTA Measurement

The LTE OTA testing feature provides comprehensive demodulation metrics such as PCI, sector ID, cell group, frequency error, time offset, synchronization status, and power levels (PSS/SSS/CRS/PBCH), alongside EVM measurements and constellation diagrams. By analyzing signal quality, channel performance, and interference across multiple cells, technicians can implement targeted strategies to enhance network efficiency and user experience.



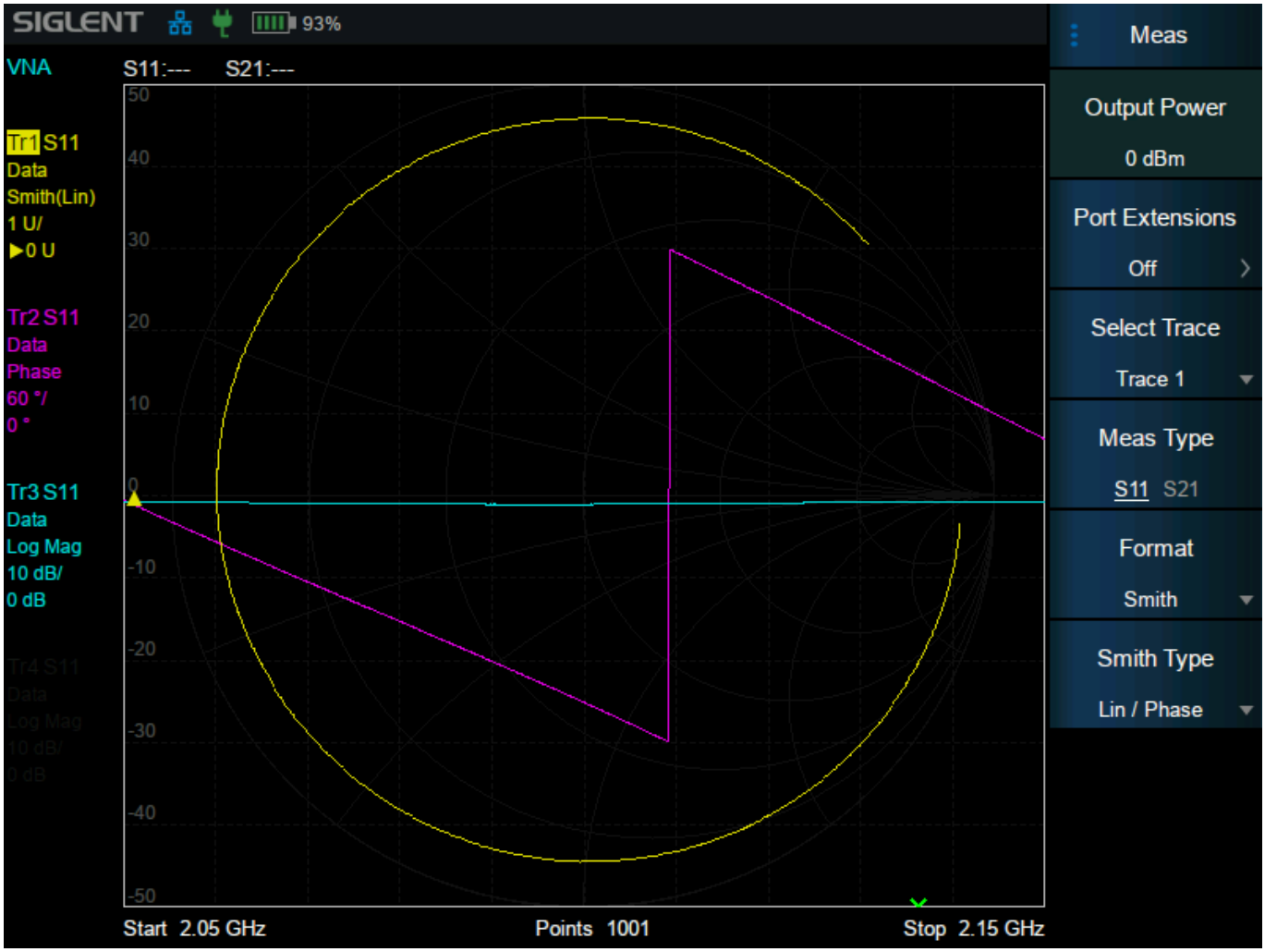
Real-Time Spectrum Analysis

With a 110 MHz real-time bandwidth and 300,000 FFT/s processing speed, the SHA860A captures transient signals as short as 3.51 µs at 100% Probability of Intercept (POI). Advanced tools like frequency mask triggering (FMT), Density, 3D, Spectrogram, and Power vs. Time (PvT) displays enable multi-dimensional analysis of complex signals, ideal for interference hunting and spectrum monitoring in dynamic 5G environments.



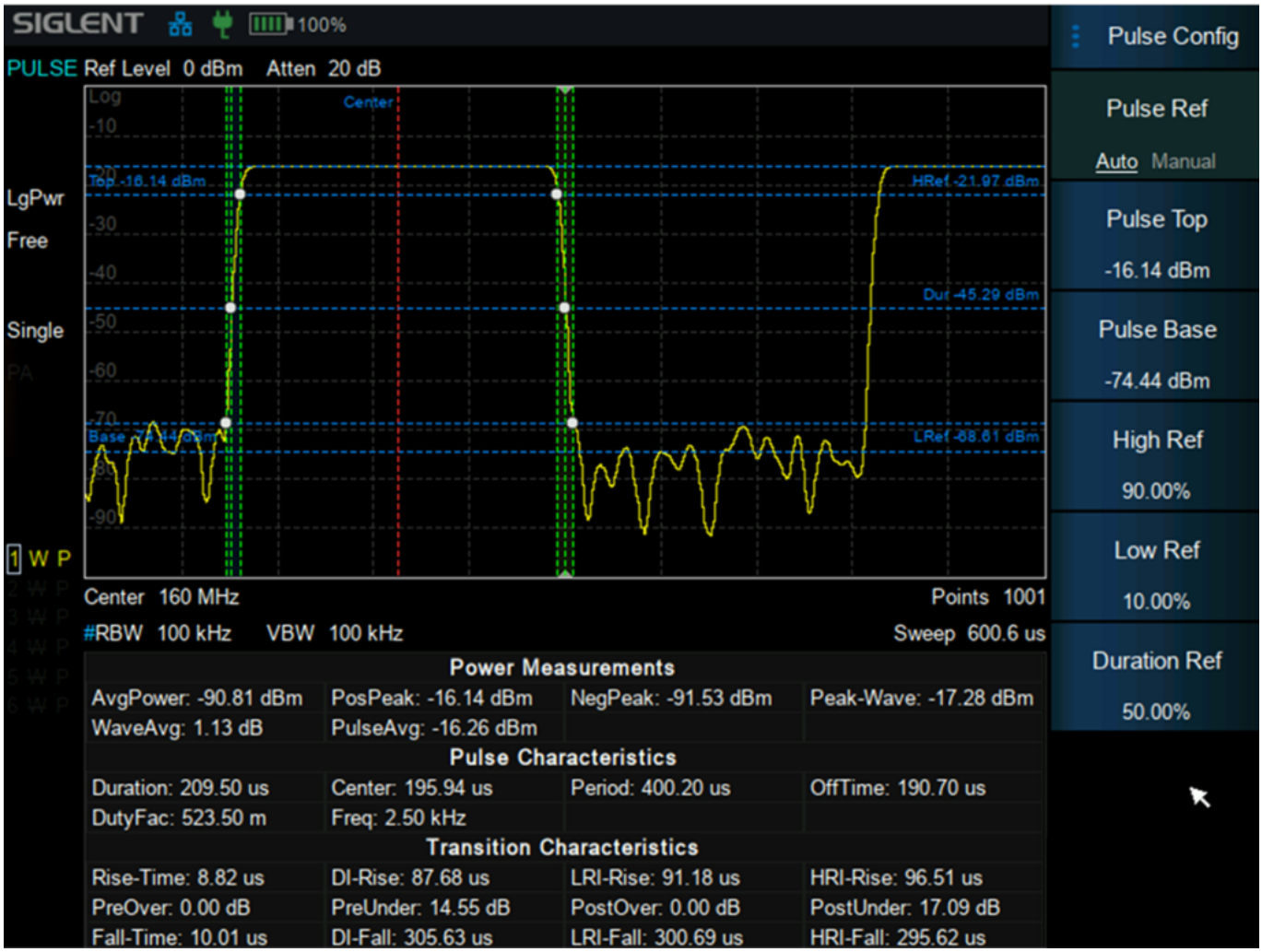
Cable and Antenna Test

Component faults compromise base station performance, leading to coverage gaps and signal strength degradation. The SHA860A streamlines maintenance with rapid single-port cable loss, return/insertion loss, VSWR, and distance-to-fault measurements. An optional upgrade adds 1-Path 2-Port vector network analyzer functionality, supporting S11/S21 testing, Smith chart displays, and a remarkable 114 dB dynamic range for precise amplitude/phase response analysis.



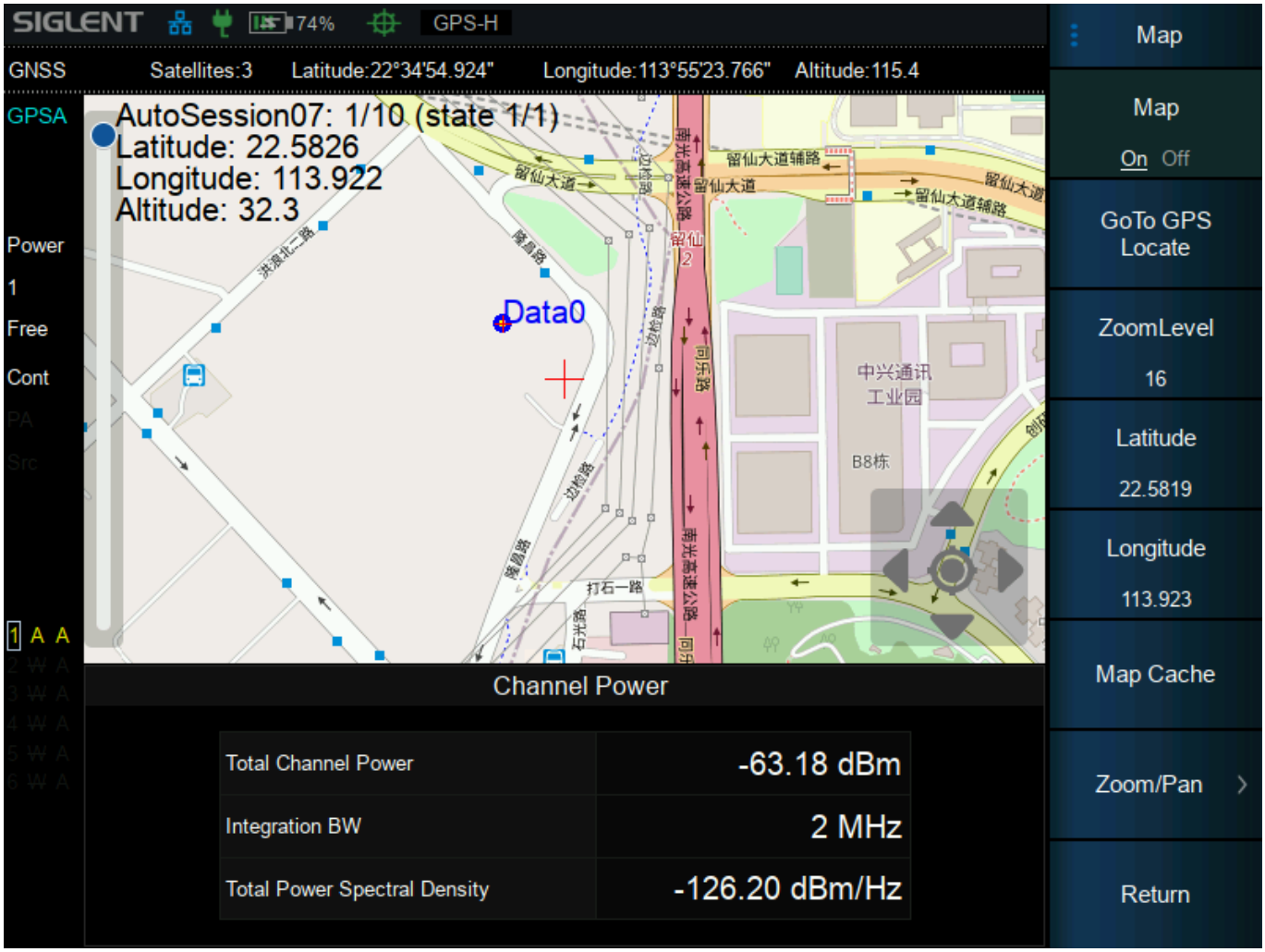
Pulse Profile Analysis

The pulse analysis function featuring 10,001 measurement points to evaluate power, pulse transitions, and signal characteristics using multiple detection modes (positive/negative peak, sample, average, and conventional). This ensures rigorous validation of RF device performance in real-world conditions.



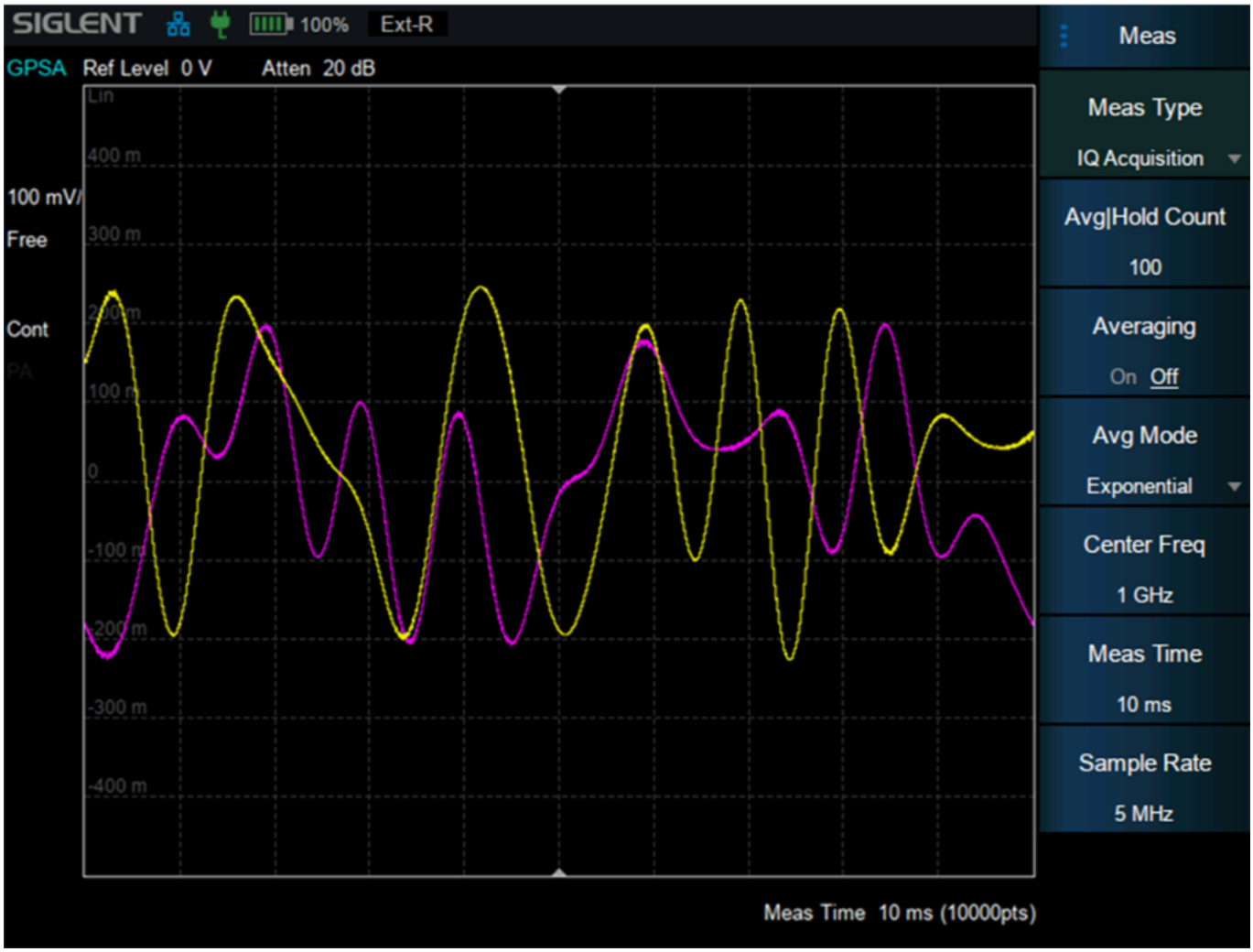
Indoor/Outdoor Mapping

Beyond base station testing, identifying 5G/LTE coverage in specific areas is crucial. The indoor/outdoor mapping feature enables technicians to locate base stations, track antenna orientation/height, and identify weak coverage or high-interference zones. With data logging, playback, and ±0.01 ppm accuracy post-GPS lock, it simplifies network optimization in both indoor and outdoor environments.



IQ Data Acquisition

Signal and spectrum analyzer with IQ data acquisition function is a common signal acquisition tool. Equipped with 1 GB RAM, 300 MHz sample rate, and 110 MHz bandwidth, the SHA860A provides a powerful combination of specifications, functions and portability for users collecting data in the field environment. Users can transmit and store IQ data via USB or LAN for offline analysis, so as to reproduce signals and visualize spectrum details with unmatched clarity.



The Siglent SHA860A consolidates critical 5G/LTE testing tools into a single handheld device, empowering technicians to validate beam performance, detect interference, and optimize networks with precision. Its excellent real-time bandwidth, GPS mapping, and comprehensive OTA capabilities accelerate deployments while ensuring reliable service delivery, enabling technicians to tackle complex field challenges with unmatched precision and convenience.

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