

VIAVI XEdge + OneAdvisor 800: Complementary 5G EMF Measurement Tools



XEdge



OneAdvisor 800

Overview

Accurately assessing electromagnetic field (EMF) exposure from 5G cell sites requires measuring not only baseline signals but also emissions under real traffic load. 5G base stations transmit *Synchronization Signal Blocks (SSBs)* continuously as reference signals, but actual user data is carried in *dynamic traffic beams* that appear when the network is active. To capture true worst-case EMF levels, testing must include those traffic-driven transmissions. VIAVI provides two complementary solutions to meet this need: **XEdge** and **OneAdvisor 800 Wireless**. XEdge generates controlled 4G/5G load traffic on a live network, while OneAdvisor 800 is a portable RF and Signal Analyzer that measures the resulting RF field strength from both the control signals and the traffic beams.

Used together, these tools enable realistic, traffic-based EMF measurements under live 5G conditions, giving a complete and accurate picture of exposure for compliance and optimization efforts.

XEdge – Controlled 4G/5G Traffic Generation

XEdge is a dedicated hardware probe that acts as a high capacity 4G/5G user device to generate network traffic on demand. It can initiate high-speed data sessions (up to ~6 Gbps throughput) on specified 5G bands, effectively simulating real-world user load on the cell. The XEdge probe supports multiple carriers/technologies and is remotely managed via a cloud-based controller interface. This allows precise scheduling and configuration of traffic patterns – for example, locking onto a particular 5G band and starting a continuous download or speed test at a chosen time. Such programmability means test conditions are deterministic and repeatable: the same traffic scenario can be run multiple times with consistent parameters. In essence, XEdge places the network under a controlled, **deterministic load**, providing the “active usage” condition necessary for realistic EMF testing in 5G environments.

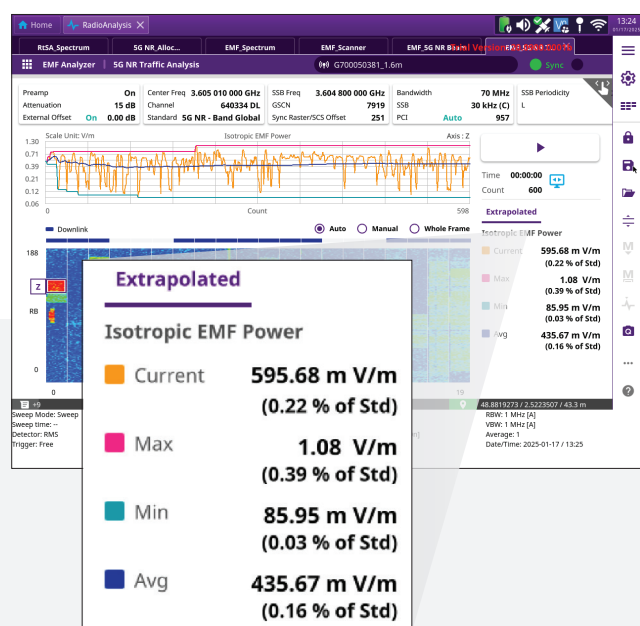
OneAdvisor 800 – 5G EMF Measurement (portable RF and Signal Analyzer)

OneAdvisor 800 is a portable RF and Signal Analyzer that measures the electromagnetic field strength of 5G signals in the environment. It is essentially a 5G scanner/receiver that can distinguish between the always-on reference signals and the on-demand traffic signals. Using *code-selective analysis*, OneAdvisor 800 can separately capture the power of the cell's broadcast SSBs (Synchronization Signal Blocks) **and** the power of the traffic carrying beams which use Physical Resource Blocks (PRBs) for user data. Notably, the OneAdvisor 800 EMF analyzer option was extended to measure these **user traffic beams**, since they can significantly **increase** the RF emission levels during high data throughput sessions. In practice, this means the OneAdvisor 800 can show both the baseline field level from SSB (coverage beacon) and the added EMF contribution when the cell is serving heavy traffic. The instrument provides results in absolute field units (e.g., V/m) and can extrapolate or compare against safety limits, giving clear PASS/FAIL indications for compliance. By capturing EMF data per beam and per channel, OneAdvisor 800 offers a technically credible view of a site's RF emissions during both idle and loaded conditions.

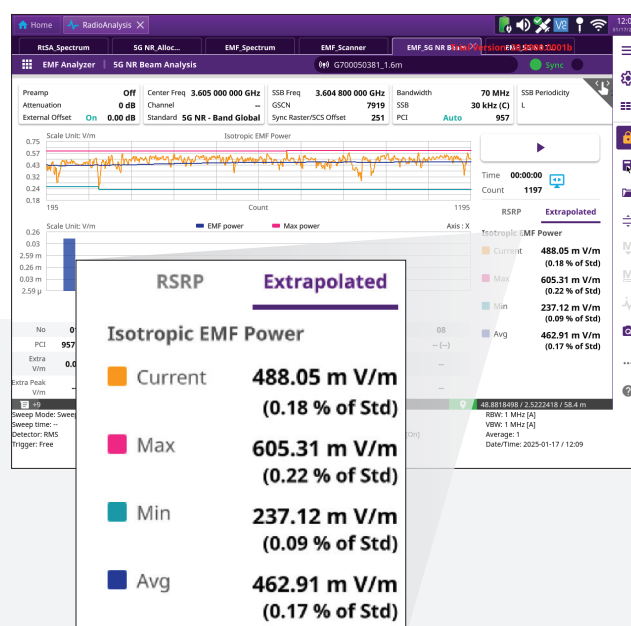
Why Use XEdge and OneAdvisor Together

SSB vs. Traffic Beams: In 5G networks, base stations transmit low-level SSB signals periodically for synchronization and broadcast – these are present even with no users connected. An EMF measurement taken in an idle network (SSB-only) will reflect this baseline signal, which is relatively constant. However, such SSB-only measurements **miss the additional exposure** that occurs when the cell carries user data. When users or simulated devices demand data, the base station schedules traffic on many PRBs, forming focused data beams that can drive the transmitter closer to its peak power. In other words, real user activity triggers **extra RF output** beyond the always-on beacon level. Relying solely on SSB-based readings (with no load) therefore **underestimates** real-world peak EMF levels, because it ignores the bursty, higher-power emissions during active data transfer.

Traffic-Loaded Testing for Realistic EMF: By combining XEdge with OneAdvisor 800, we ensure that those otherwise hidden traffic emissions are accounted for. XEdge generates the necessary high-speed data sessions on the network so that the base station engages its data beams and significant PRB allocation. Meanwhile, OneAdvisor 800 records the EMF levels in real time during these sessions – capturing the true impact of heavy 5G usage on field strength. The two devices work in tandem without needing any physical integration; the workflow is simply to run the XEdge load and then OneAdvisor 800 measures the outcome concurrently. This approach creates a live 5G “stress test” in a controlled manner, and the scanner measures both the baseline (SSB) and the active traffic beam radiation side by side. **As a result, the combined setup reveals realistic EMF exposure levels under actual network conditions**, which is essential for accurate safety assessments, regulatory compliance checks, and network optimization. In summary, XEdge provides the stimulus (traffic load) and OneAdvisor 800 provides the observation (EMF measurement), giving stakeholders a complete and factual understanding of 5G site emissions during peak operation.



5G NR Traffic Analysis



5G NR Beam Analysis

Figure 1: The OneAdvisor 800 EMF Analyzer interface comparing baseline vs. traffic-loaded EMF measurements. The **left** panel (“5G NR Traffic Analysis”) shows the field strength across 5G NR resource blocks during a high-speed data session generated by XEdge – note the multiple PRBs in use and the higher measured field levels (peaking around ~1 V/m). The **right** panel (“5G NR Beam Analysis”) displays the EMF from only the SSB reference signals with no user traffic, which is significantly lower. This visual contrast highlights how activating 5G traffic (left) increases the EMF exposure compared to idle conditions (right), underscoring the importance of traffic-based testing.

Key Benefits of Combined Use

- **Full Compliance Testing:** Using both tools together ensures **worst-case 5G usage scenarios** are measured, providing reliable data to demonstrate compliance with national or ICNIRP EMF safety limits. Regulators and customers gain confidence that measurements reflect actual peak field exposure, not just idle-state values.
- **Accurate Safety Assurance:** By capturing real-world EMF levels under load, the solution verifies that public and worker exposure remains within safe limits even during high traffic. This helps mobile operators and enterprises proactively ensure **safety** in dense urban deployments or private 5G installations.
- **Network Optimization Insights:** Combining XEdge network performance data with OneAdvisor 800 EMF readings yields a **holistic view** of how traffic patterns affect RF emissions. Engineers can identify if certain cell configurations or beamforming settings cause higher EMF and adjust them, optimizing the network's performance and its EMF footprint.
- **Ease of Use and Efficiency:** Both XEdge and OneAdvisor 800 are user-friendly and support automated operation. The XEdge probe can run unattended tests via remote commands, while the OneAdvisor captures data with one-button simplicity. No specialized RF expertise is required to operate the combined solution – field teams can easily execute a traffic-load test and get instant PASS/FAIL EMF results. This streamlined workflow (generate traffic, measure EMF) saves time and labor in site testing.
- **Controlled and Repeatable Testing:** The methodology is highly **repeatable**. XEdge programmable traffic generation means the **same load conditions** can be recreated on demand, whether for a single site or across multiple sites, ensuring consistent test conditions for apples-to-apples comparisons. This deterministic approach improves the credibility of results and allows benchmarking (e.g., measuring EMF before and after network changes) with confidence.

In summary, **XEdge and OneAdvisor 800 are complementary tools** – XEdge drives the network to reveal realistic 5G emission levels, and OneAdvisor 800 captures those levels with precision. Together, they enable operators, safety regulators, and engineering teams to obtain a complete and accurate assessment of EMF exposure under live 5G conditions, all through a convenient and reliable testing process. This combined approach helps ensure 5G deployments meet compliance obligations, maintain public safety, and optimize performance without guesswork.



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