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Medical Wi-Fi Device Testing

For "Life and Death" Mobility

Medical professionals often make life and death decisions on the spot, or on the fly. Increasingly, they do so based on vital patient data from mobile heart monitors, infusion pumps, imaging systems, and other devices, as well as status updates sent wirelessly from laptops, smartphones, and other mobile devices used by medical staffs.

For medical equipment manufacturers, the growing reliance on mobility means a paradigm shift in test methodologies ito ensure Wi-Fi-enabled devices will perform as expected in the unlicensed 802.11 bands. Manufacturers must proactively assess and demonstrate:

- How well devices connect, roam, and perform in hospitals and other congested live environments
- Interoperability with leading access points (APs), WLAN infrastructures and other mobile healthcare systems
- How varying traffic profiles and application mixes will impact performance
- Whether issues stem from the network or client devices
- Reliability when patients' lives are at stake

By analyzing Wi-Fi-enabled client devices in real-world, multi-client environments, medical device manufacturers can address performance, interoperability, and coexistence issues before releasing products to market. Along with ensuring performance, thorough testing reduces field failures and call backs, and ensures a faster time to market.

The Solution

IxVeriWave solutions enable medical equipment manufacturers to test patient monitors, infusion pumps, mobile X-ray solutions and other devices in a hospital setup in the presence of other typical network users such as smartphones, tablets, video cameras, and other mobile healthcare systems. Ixia's WaveTest Wi-Fi Traffic Generator and Performance Analyzers create and populate real-world networking scenarios, with WaveClient and dedicated test tools and suites used to:

- Benchmark and baseline device performance under real-world load conditions
- Replicate complex Wi-Fi ecosystems to uncover and analyze performance issues
- Recreate WLAN networks to analyze the roaming characteristics and interoperability of Wi-Fi-enabled client devices
- Evaluate performance at the RF, state, and application levels of Wi-Fi-enabled devices
- Generate and assess the impact of channel and environmental interference
- Create "what-if" scenarios to analyze client behavior

IxVeriWave solutions enable users to complete extensive sets of tests targeted at development, quality assurance (QA), and regression testing. Testing can be conducted in a repeatable, timely, and automated format.

Ixia's medical equipment assessment solutions include the following IxVeriWave software and hardware components as well as highly cost-effective testing as a service (TaaS) that fast-tracks evaluation and time-to-market.

IxVeriWave Solution Component	Function and Benefits
WaveClient	Simulates and measures performance from the perspective of heart monitors, infusion pumps, medical imaging solutions, as well as laptops, "computers on wheels," (COWs), smart-phones, etc. Assesses interoperability and aids in optimizing clients for live wireless networking environments.
WLAN Roaming Test	Enables device manfucturers to analyze the ability of Wi-Fi-enabled devices to seamlessly and predictably roam between WLAN access points.
WaveTest Traffic Generator / Performance Analyzer	Generates ecosystem traffic and conditions for assessing performance in a controlled RF environment as well as future prospective "what if" scenarios.

Using IxVeriWave, device manufactures can:

- Evaluate the effect of distance on devices' ability to maintain reliable connections in the presence of other traffic using the same access point and while roaming from one AP to another in a clean and repeatable environment
- Determine the application's ability to support required performance and maintain accurate data while co-existing with similar and other devices;
- Determine devices' ability to cope with mixed 802.11 traffic loads

Recommended testing using IxVeriWave includes:

- **Device connectivity testing** to evaluate performance at normal operational ranges from the nearest AP and in the presence of VoIP phone calls and data traffic
- **Roaming performance testing** to verify the roaming behavior of the device between two APs in the presence of other mobile clients
- **Hospital deployment testing** to quantify performance of the application in a hospital environment and verify that applications do not degrade network performance