



Deploying VoFi: Technologies, Architectures, Strategies
Testing for Carrier Grade Wi-Fi

Jeff Abramowitz
May 23, 2007

Carrier-Grade Performance for a Wi-Fi Handset

Carrier Requirements

- Excellent Call Quality
- No Dropped Calls
- Long Battery Life

Testing Requirements

- Voice Quality AND Data Throughput
- Cabled Environment AND Open Air testing
- Interference and Loading Effects on Handset Performance
- Impaired Channel versus Unimpaired Channel Testing

Can you
hear me
now?



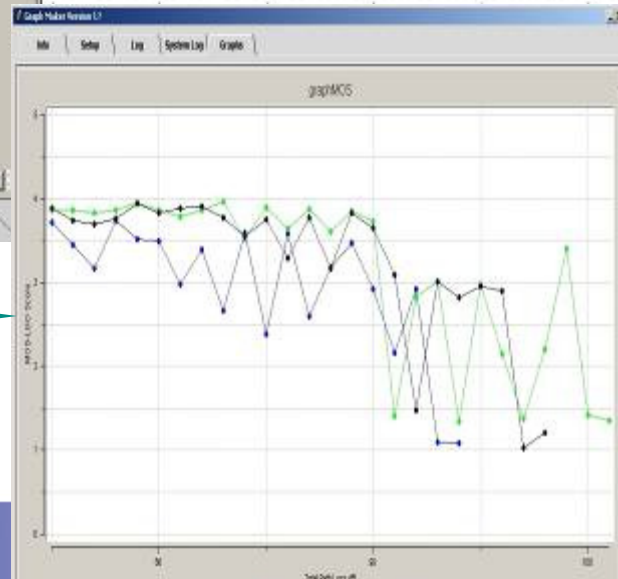
Wi-Fi Certification Provides only a Baseline for Wi-Fi Product Performance

MOS Score vs. Range (attenuation)

Good Phone

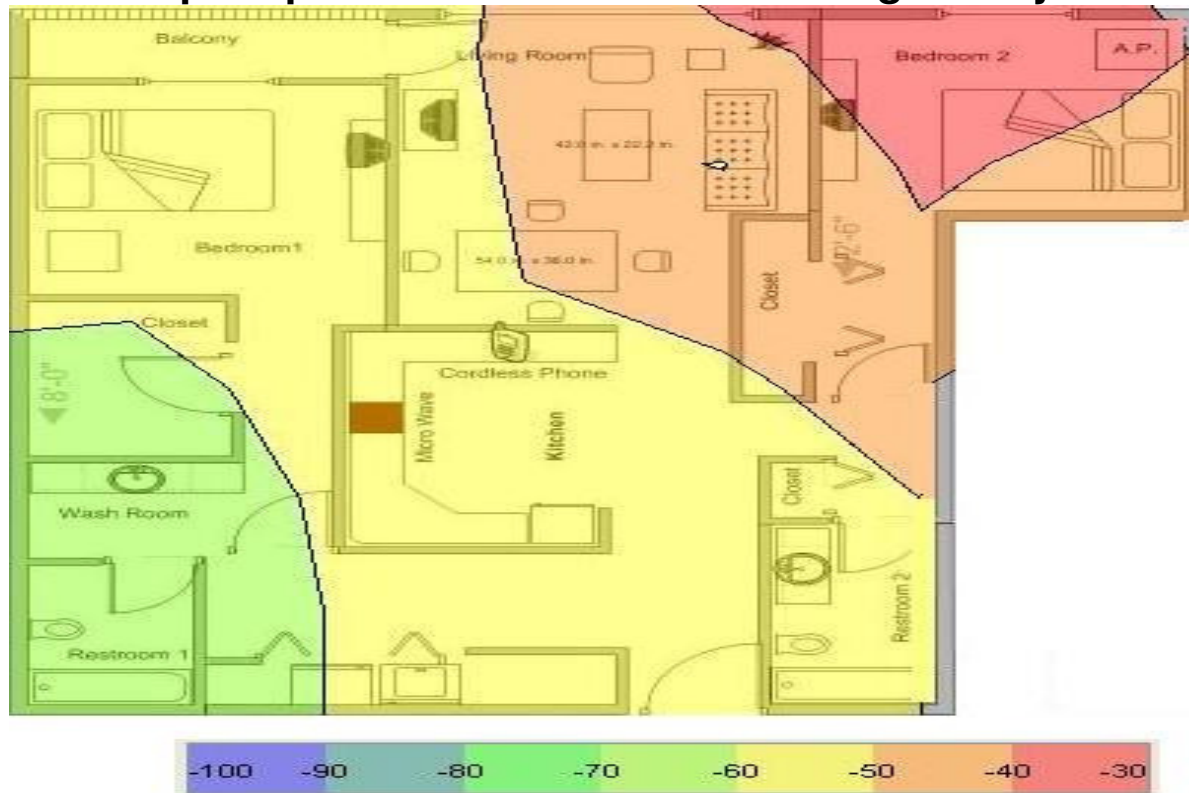


Bad Phone



Coverage in the Presence of Environmental Variations is Critical

Sample Apartment Used for RF Coverage Analysis

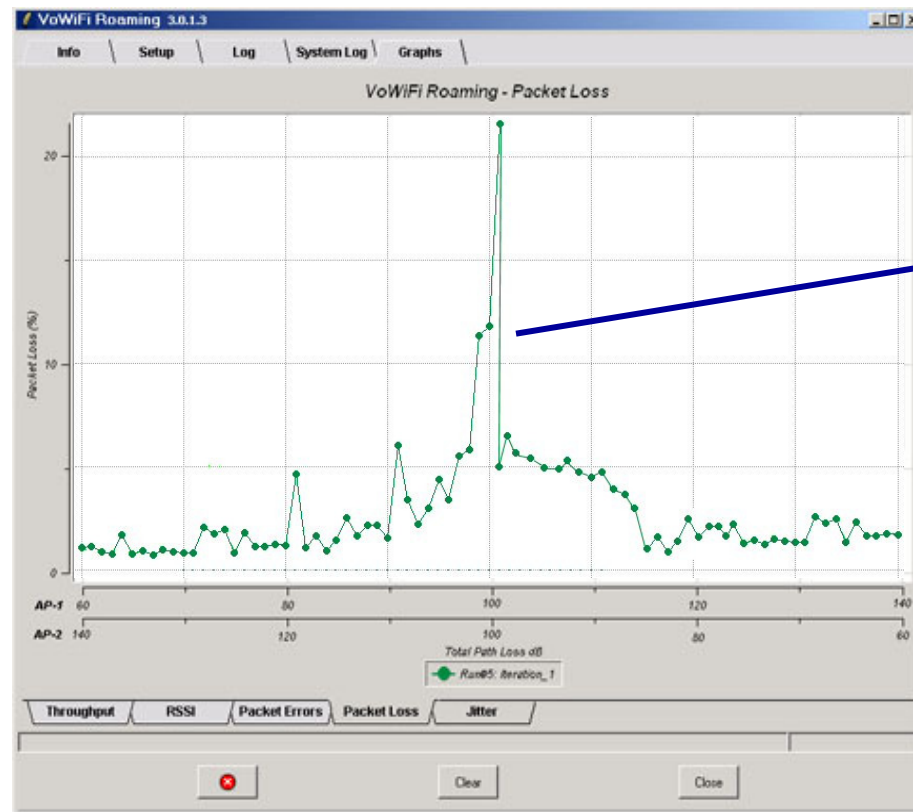


Signal strength of the access point in dBm for the apartment.

***Traditional Testing is not Repeatable or Scalable,
Automated, Controlled Tests across Varied Environments is Required***

Voice Handoff Stresses Roaming Algorithms

Packet Loss (%)

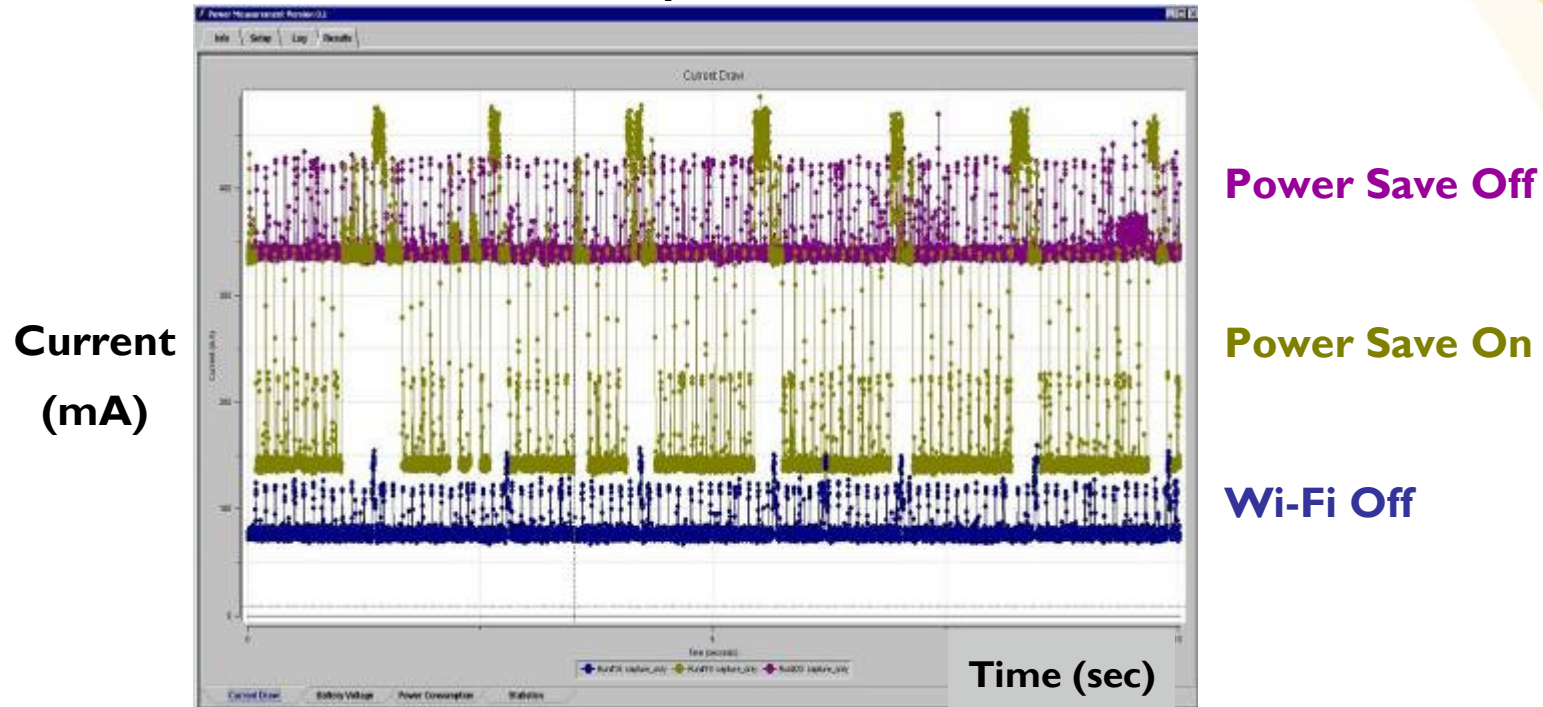


Connection is lost at ~10% packet error rate



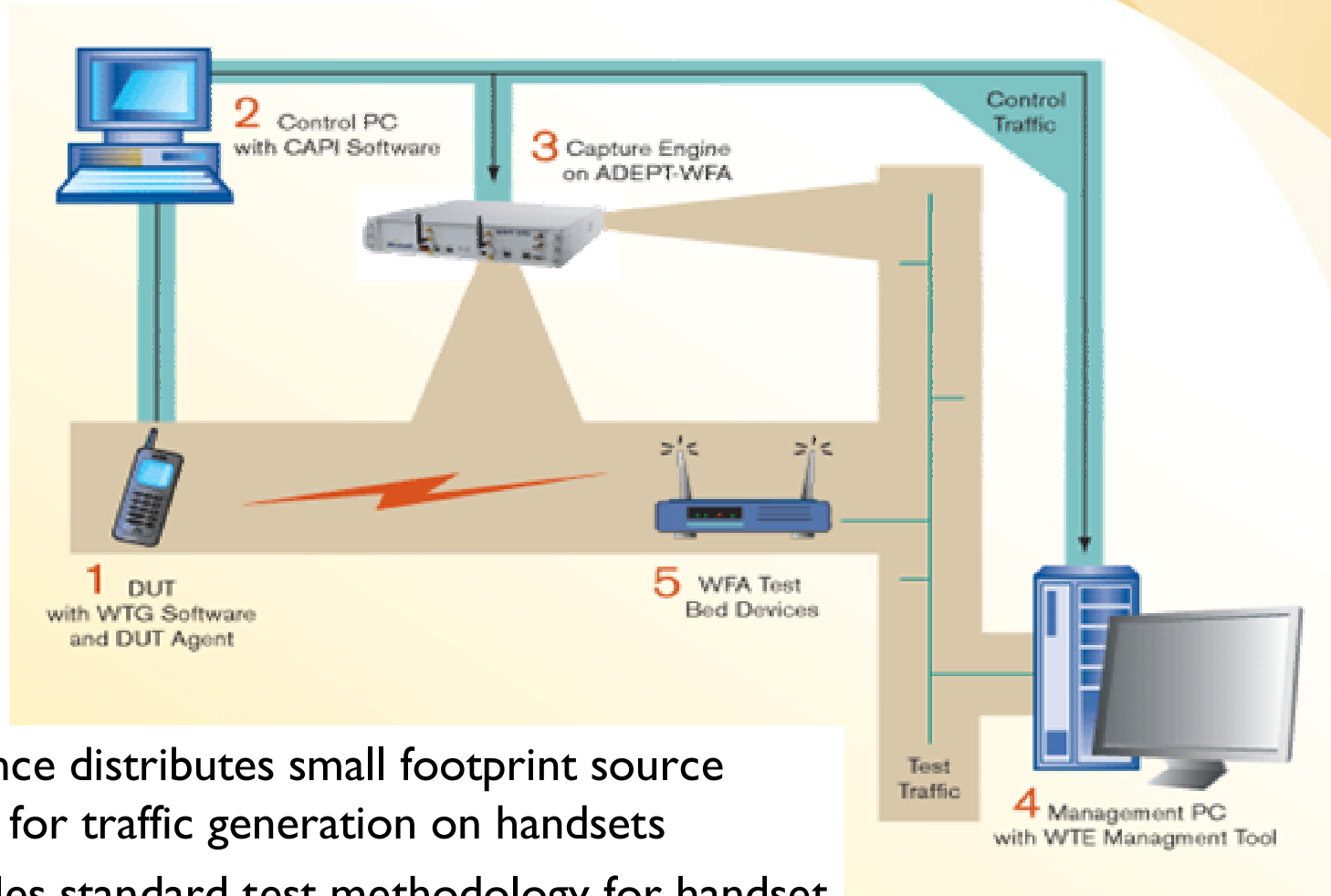
Users Care About Standby and Talk-Time

Power Consumption over Time



**Battery Life Depends on Power Save Modes and Use Profile -
Current VoWi-Fi Products Do Not Meet User Expectations**

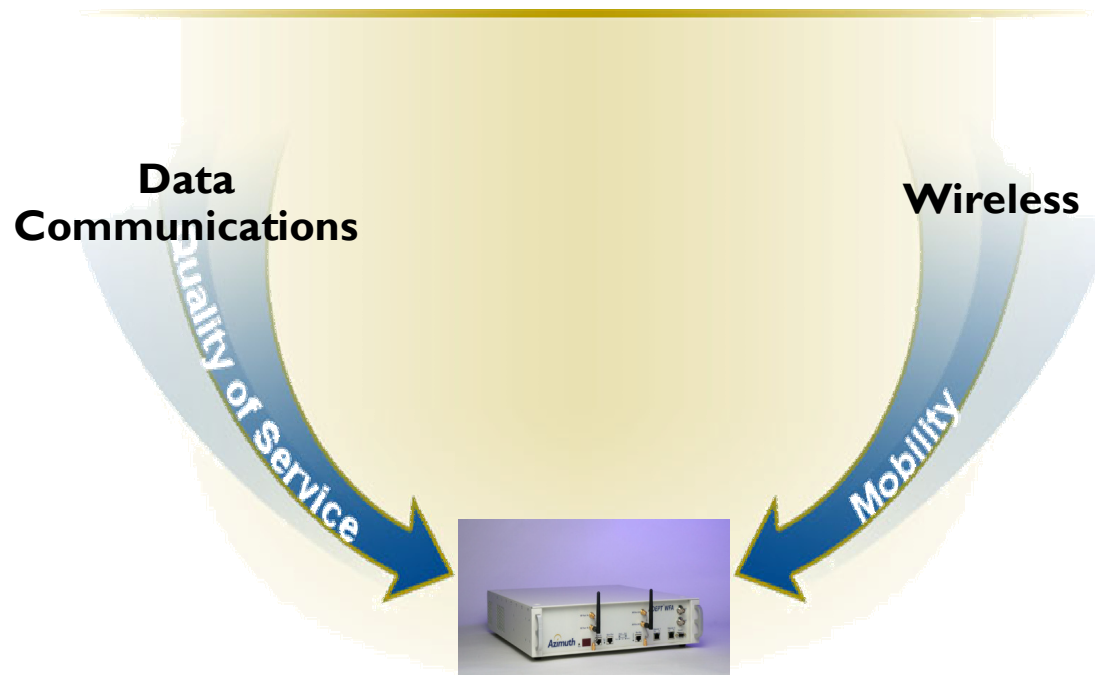
Wi-Fi Alliance Test Engine Methodology



- Alliance distributes small footprint source code for traffic generation on handsets
- Enables standard test methodology for handset certification and performance testing

Automated Test Tools Are Available

- Wi-Fi Certification Ensures Interoperability
- Performance Testing can Optimize User Experience
 - Voice Quality over Distance and Roaming
 - Battery Life and Power Consumption



Summary

- Voice is a demanding application that stretches performance expectations of Wi-Fi
- Thorough performance testing is critical to achieving Carrier-Grade Wi-Fi
- Look for performance results that test call quality, dropped calls, and battery life



**Yes,
I hear
you!**



Thank You!

jeffa@azimuthsystems.com