

Rationale for Modification to Experimental License WA2XSO

Lucent Technologies plans to conduct experiments focused on achieving unprecedented spectral efficiencies using new wireless technology based on breakthrough research at Bell Laboratories.

Specifically we:

1. will prototype a system based on the new technology
2. assess the diverse and as yet not well understood multipath environment of the outdoors
3. exploit a new understanding of both environment and technology to demonstrate in field tests the extraordinary spectral efficiency that this technology promises.

Recent research at Bell Laboratories has shown that a rich-scattering wireless channel is capable of enormous theoretical capacities if the multipath propagation is properly exploited through the use of an appropriate processing architecture. A wireless communication architecture called BLAST (Bell Laboratories Layered Space-Time) has been formulated in order to realize these capacities. Initial experiments in a laboratory facility have indicated that spectral efficiencies on the order of 20 - 40 bps/Hz can be realized at realistic SNRs and error rates. Wireless spectral efficiencies of this magnitude are unprecedented, and are unattainable using traditional techniques. New ground has been broken with potential for BLAST to become a paradigm-shifting wireless communication technology that may drive new applications, which were unthinkable at conventional spectral efficiencies. The experiments we plan to conduct are aimed at moving this technology from inside a building to representative outdoor environments, between buildings, and with link distances up to a few miles.

A contract for support of this effort with the Defense Advanced Research Projects Agency (DARPA) is pending.