



Stephen A. Wilkus
Technical Supervisor
JW9153000

Lucent Technologies Inc.
Room: HOH 1L-117
791 Holmdel-Keyport Rd
Holmdel, NJ 07733-400

Telephone 732. 888.7108
Facsimile 732.888.7099

EMAIL wilkus@lucent.com

Wednesday, June 14, 2000

Douglas Young
Federal Communications Commission
2000 M Street NW Suite 230
Washington, DC 20554-1300

Dear Mr. Young,

Lucent Technologies desires to conduct experiments focused on achieving unprecedented spectral efficiencies using a new wireless technology based upon breakthrough research at Bell Laboratories. Specifically we:

1. will prototype a full power mobile base station based on the new technology
2. Assess the diverse and as yet not well known multipath environment of the mobile outdoors channel
3. Exploit a new understanding of both environment and technology to demonstrate in field tests the spectral efficiency of this technology.

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 communications architecture called BLAST¹ (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 communications 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.

Experiments will be conducted with multiple base station equipment located in and around the town of Holmdel, NJ so that interference between base stations can be evaluated. The tallest of these base stations will be located on a hill at 300 ft. above sea level, on an extendible tower that reaches just above treetop height, with experiments conducted at lower heights as well in order to explore the resultant multipath characteristics. Mobile units will be driven throughout the area but within 10km of the nearest base station.

Base stations equipment will be relocated later in the experiment to actual cellular base station sites (yet to be selected) but within the states of New York and New Jersey.

Sincerely,

¹ "Layered Space-Time Architecture for Wireless Communication in a Fading Environment When Using Multi-Element Antennas," Gerard J. Foschini, Bell Labs Technical Journal, Autumn 1996, page 41-59.

Stephen A. Wilk