FILE 0231-EX-ST-2007: EXHIBIT B

Experiment Seeks to Investigate Significantly More Accurate Geolocation Technology—Potential Benefits to Wireless 911 Emergency Calling Service

The requested experimental license and Special Temporary Authority (STA) would permit Shared Spectrum Corporation (SSC) to investigate significantly more accurate geolocation technology for in-building and urban environments where GPS is unreliable and other methods less accurate. SSC and the projects sponsors, DARPA and Boeing, believe that this research and experimentation, under the Robust Surface Navigation (RSN) program that is discussed in greater detail below, could have a strong, positive impact on next-generation wireless 911 emergency calling service technology—a subject of key importance to the FCC and many others.

Wireless 911 Service

Section 20.18 of the FCC's rules, 47 C.F.R. §20.18, sets forth various requirements for the provision of 911 emergency calling service by Commercial Mobile Radio Service (CMRS) providers, excluding mobile satellite service (MSS) operators. At the present time, covered CMRS providers must "provide to the designated Public Safety Answering Point [(PSAP)] Phase II enhanced 911 service, *i.e.* , the location of all 911 calls by longitude and latitude in conformance with Phase II accuracy requirements. *Id.*, at (e). Generally, covered CMRS providers must use either a network-based or a handset-based technology to identify the location of an emergency caller. *Id*., at (f) and (g).

The same rule specifies the level of accuracy that must be provided by covered CMRS providers. For those providers using network-based technologies, they are required to identify the location of an emergency call within 100 meters for 67 percent of calls and within 300 meters for 95 percent of calls. *Id*., at (h)(1). Those using handset-based technologies must identify the caller's location to within 50 meters for 67 percent of calls and within 150 meters for 95 percent of calls. *Id*., at (h)(2). Finally, the rule states: "For the remaining 5 percent of calls, location attempts must be made and a location estimate for each call must be provided to the appropriate PSAP." *Id*., at (h)(3).

Experience has shown that compliance with these requirements is not simple. The Commission has granted numerous waivers to service providers that could not comply with the requirements within specified time periods. *See, e.g., In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems* and *Petitions for Waiver of Enhanced 911 Phase II Requirements*, Order, 22 FCC Rcd 4835 (2007). Indeed, on some occasions, the FCC has even proposed to fine CMRS providers for failing to meet these standards. *E.g., AT&T Wireless Services, Inc*., Notice of Apparent Liability for Forfeiture, 17 FCC Rcd 9903 (2002). In 1999, the Commission bemoaned the limits of technology on the ability to ensure wireless access to 911 emergency service. *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Second Report & Order, 14 FCC Rcd 10954, at ¶3 (1999). Perhaps, newer technology might enable CMRS providers to comply with the Commission's requirements more efficiently and more effectively.

Moreover, even where wireless 911 has been deployed, in many instances it is not viewed as sufficiently accurate for public safety purposed. Most CMRS customers and public safety officials would quickly agree that today's wireless 911 technology is certainly better than reliance on only hardwired telephones. "Callers driving on the highway can report a forest fire or a highway accident while they drive along, instead of having to get to a land line." Lee Shearer, "As Cell Calls Surge, 911 Must Pick Up" Online Athens (GA) (June 11, 2006), available online at http://onlineathens.com/stories/061106/news_20060611084.shtml (visited June 17, 2007) ("*Cell Calls Surge*"). However, many public safety officials still believe today's wireless 911 system "still falls far short of what emergency call centers would ideally like." *Id.*

According to the *Cell Calls Surge*, "Accuracy within a radius of 150 yards or so is usually all you need in a rural area, said Keith Kelley, 911 communications administrator for Athens-Clarke County. But it won't let emergency operators know which apartment a call is coming from in a high-rise apartment complex, Kelley said." Mr. Kelly continued: "That's one more reason why it can be critical for callers to give their location when they make an emergency call on a wireless phone." *Id.*[1]

There are, however, many instances where a wireless 911 caller does not know or cannot give her or his exact or even approximate location.[2] Thus, there is a need for improved technology that would provide more location accuracy for wireless 911 calls, at a still affordable price. Improvement in technology requires the very type of experimentation proposed by SSC's request for an experimental license and STA.

Portable VoIP and 911 Services

Moreover, the need for better technology goes beyond CMRS users. The FCC's rules also require providers of interconnected Voice over Internet Protocol (VoIP) service to provide access to 911 service as well. 47 C.F.R. §9.5. Since VoIP service can also be portable (*i.e.*, used from any geographic location with a broadband connection to the Internet), it also raises location accuracy issues that are not dissimilar to those associated with CMRS services. Indeed, the

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[1] "There is currently no means of getting the 'Z' coordinate from wireless 911 calls. Emergency call centers will be able to get street addresses but will be unable to discern what floor a call originated from in a high-rise building. This limitation has the potential to delay responses to 911 calls and thereby negatively affect patient care." The New York State Wireless Enhanced 911 Project: Lessons Learned (undated), available online at http://www.its.dot.gov/pubsafety/new_york_state_wireless_enhanced_lessons_learnd.htm (visited June 17, 2007). The "Z" coordinate is the third point in determining a specific location in three-dimensional space. Use of just the "X" and "Y" coordinates provides only a two-dimensional location.

[2] The extreme case is one where a specially trained beagle, Belle, bit down on her owner's (Mike Weaver) wireless phone's "9 key," which had been programmed to dial 911 during a medical emergency, as Weaver was in the throes of a "diabetic seizure, lying unconscious on his kitchen floor in Ocoee, Florida." The emergency dispatchers were able to hear only barking, but were fortunately able to trace Weaver's location. Leef Smith, "Saved by the Belle, a Beagle Who Rang 911" *The Washington Post*, June 19, 2006), available online at http://www.washingtonpost.com/wp-dyn/content/article/2006/06/18/AR2006061800857.html (visited June 17, 2007). This happy result may not have been possible had Weaver lived in a high-rise condominium complex.

Commission just recently proposed a new rule that would require VoIP service providers offering portability to their customers to "employ an automatic location technology that meets the same accuracy standards that apply to services provided by circuit switched commercial mobile radio services (CMRS) carriers." *Wireless E911 Location Accuracy Requirements; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling*; and *911 Requirements for IP-Enabled Service Providers*, Notice of Proposed Rulemaking, FCC 07-108, at ¶3 (rel. June 1, 2007).

Interestingly, in the same Notice, the Commission asked for public comments on the question: "How best can [wireless 911 location] accuracy be improved in both the short term and the future?" *Id*., at ¶11. One way for such improvements to occur might well be through the research and experimentation to be conducted by SSC using the requested experimental license and STA.

Robust Surface Navigation

DARPA describe its RSN program as follows:

> [RSN] will provide the U.S. Warfighter with the ability to geo-locate and navigate effectively when the Global Positioning System (GPS) is unavailable due to hostile action (*e.g*., jamming) or *blockage by structures* and foliage. The RSN program will develop the procedures and technologies for geo-location of stationary assets and navigation of mobile platforms by exploiting signals of opportunity and/or specialized signals from satellite, airborne, and terrestrial assets. The use of widely available, powerful, and economically important (and thus dependable) signals of opportunity will provide a robust non-GPS capability. Signals of opportunity can also be augmented when necessary by purpose- deployed signal-emitting beacons. RSN will use the greater strength and diversity of these opportunistic and intentional signals to provide coverage when GPS is denied due to lack of penetration and when severe multi-path is a problem, or when GPS is jammed or denied globally. (emphasis added.) http://www.darpa.mil/sto/space/rsn.html (visited June 18, 2007).

RSN focuses on creating a capability to allow military operations to have GPS-level navigation functions in GPS-denied areas, including conditions of GPS denial world-wide. http://robust-surface-navigation-rsn.idilogic.aidpage.com/robust-surface-navigation-rsn/. (visited June 18, 2007). This new technology could also have key application in urban settings where accurate location requires the availability of the "Z" coordinate for military, homeland security, law enforcement and 911 emergency calling service.