WHITE PAPER

Co-Pilot Beacons: A Solution for E911 and Location Based Services

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Table of Contents

Executive Summary..... 3

Product Overview..... 3

Operational Description..... 4

Architecture Overview..... 4

Design..... 7

Implementation..... 10

Conclusion.....12

Acronyms and Definitions.....12

Executive Summary

With the increasing use of wireless phones and the continued demand for in-building coverage, quick, reliable, and accurate location of mobile devices for both public safety and location based services (LBS) is a must. Typical methods used in macro cellular handset location determination do not work adequately for in-building and DAS (Distributed Antenna System) simulcasting applications. CSI's Co-Pilot Beacon (CPB) facilitates E911 and other LBS for in-building and/or DAS-based installations of CDMA2000/1xEV-DO cellular networks. This white paper will further describe the problem, the solution, and explain how to implement the Co-Pilot Beacon in an in-building system design.

Product Overview

Pilot beacons have traditionally been used by CDMA carriers for facilitating hard hand downs between carrier frequencies, and to a lesser extent, hand downs from CDMA to analog channels. By transmitting the pilot, page, and sync channels as a "guide" for the mobile device, the chance of completing a handoff between carrier frequencies is greatly increased.

Under typical indoor conditions and outdoor DAS applications, methods for location determination, such as direct reception of GPS by the mobile device or triangulation using the signals from multiple base stations, do not meet accuracy requirements.

By properly locating CPBs, mobile devices quickly and reliably receive fixed location references that allow the network to determine a handset or mobile device's specific location. The position information can then be used to aid the GPS receiver in acquiring signals, if they are present, or it can be used directly as a position report until more accurate information becomes available. The CPB system can then provide location information to emergency personnel (within FCC mandated Phase II parameters), ensuring a timely response.

Benefits

- 100% handset compatibility with all CDMA phones
- Ability to optimize location resolution for the needs of the site by simply adjusting the number of CPBs installed
- Compatible with virtually all indoor and outdoor repeater/DAS solutions
- Offer full coverage for all of a provider's CDMA channels from a single Co-Pilot Beacon

Applications

The CSI CPB is designed to facilitate better location accuracy for CDMA in-building systems and for outdoor simulcasted DASs. An augmented system utilizing CPBs can accurately locate mobile users and provide this information to the Public Service Answering Point (PSAP), facilitating dispatch to first responders. The CPB provides an optimal solution that will meet requirements for location determination in each of the following applications…

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