Enhanced Observed Time Difference (E-OTD)

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Aerial Communications
About Aerial

- PCS A & B block Licensee
- GSM technology
- License for 28 million pops in 6 MTA’s
  - Minneapolis, Columbus, Kansas City, Pittsburgh, Houston & Tampa/Orlando
E-OTD Overview

- Triangulation based technique
- Handset based solution
- Does not use GPS in handset
- ALI methodology provided for in GSM
- Enhancement to handset software required
E-OTD - Extension of GSM

- GSM network is unsynchronized.
- Mobiles must synchronize with each BTS.
- Base stations regularly emit a synchronization burst.
- Mobiles monitor synchronization bursts of serving and all neighbor cells.
- Mobiles “Pre-Synchronize” with all neighbors to be prepared for handover.
- E-OTD builds on and extends this functionality.
E-OTD - How it Works

• Mobile listens to bursts sent from neighboring BTSs
• Mobile records burst arrival times
• Position is triangulated from:
  • Coordinates of BTSs
  • Arrival time of burst from each BTS
  • Timing differences between BTSs
E-OTD - Site Implementation

LMU Must Measure the Transmission Time of the Burst
E-OTD - Handset Implementation

- No Change to Existing Antenna Structure
- No Change to Existing DSP or RF Hardware
- Software Modification Required to Enhance Existing Measurements Process

Mobile Must Precisely Measure the Arrival Time of Burst
Potential E-OTD Vendors

- Motorola
- Nokia
- Nortel
- Siemens
- Alcatel
- Cambridge Positions Systems (CPS)