

**TESTIMONY OF MICHAEL AMAROSA  
VICE PRESIDENT, TRUEPOSITION, INC**

**BEFORE THE  
SUBCOMMITTEE ON COMMUNICATIONS  
COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION  
UNITED STATES SENATE**

**E 911**

**October 16, 2001**

Good morning Mr. Chairman and Members of the Subcommittee. My name is Michael Amarosa and I am Vice President of TruePosition, Inc.

It is a privilege to appear before the Subcommittee to discuss the implementation of E 911 and Public Safety. The originally scheduled hearing date, September 11, 9/11, was symbolic. It reflected how important 911 is to public safety and how citizens facing an emergency can get help faster. Sadly, September 11 now stands for a great deal more. Among a great many consequences, the attack of September 11th on the World Trade Center and the Pentagon makes public safety technologies, such as enhanced 911 services for mobile phones, even more important to our country.

Our company, TruePosition, has committed its very existence to wireless location technology. We began working on wireless location technology years before the Federal Communications Commission considered wireless E 911, and have invested more than \$150 million following issuance of the FCC's mandate in 1996. This investment has produced a commercially available location technology that complies fully with requirements established by the FCC. After years of research, development and real world testing, we are working with the public safety community and with carriers, both large and small, to make E 911 a reality and to meet the FCC

deadline.

E 911 has been at the center of my professional career. I spent 24 years working in public safety. Among other things, I was responsible for the largest 911 center in the Nation, that of the New York City Police Department, as Deputy Commissioner for Technological Development. The NYPD today receives more than 11.3 million 911 calls annually – that breaks down to more than 30,000 911 calls per day, 25%-30% of which are made from wireless phones.

It was my responsibility to bring to public safety a range of technologies that helped police officers, firefighters and emergency service workers do their jobs more effectively and efficiently. Location information is fundamental to this effort and saving lives. Summoning help from a wireless phone frequently takes place in circumstances where callers are simply unable to describe their location. Regrettably this often leads to tragic results. But with wireless E 911, the child who knows only enough to dial 911, the traumatized victim who cannot remain on the line, and the traveler who cannot convey where he is, can be located and police, fire or emergency services dispatched.

In early September, when a vehicle containing four young men driving on the winding roads near Bear Mountain, New York crashed and toppled down a deep slope, their wireless call for help was made. Yet, it was hours, after an extensive search, before they could be located. This tragedy conveys clearly that E 911 is more than expediting assistance to the individual in need of help, it may be the only way an individual can be located.

## **AGREEMENTS WITH CARRIERS**

I am here today to tell you that wireless location technology works and that TruePosition is ready to deploy its system. On August 30, 2001, TruePosition entered into an agreement with

Cingular Wireless LLC that represents the most definitive and extensive commitment to the rollout of E 911 to date. I also am pleased to tell you that we have additional deployment agreements with MoviStar Puerto Rico, a joint venture between ClearComm and Telefonica Moviles of Spain.

The comprehensive agreement with Cingular Wireless LLC to provide TruePosition's network-based technology in Cingular's digital TDMA/analog AMPS markets will bring location information to the Nation's second largest wireless carrier. We anticipate deploying our technology on at least two thousand of Cingular's digital TDMA/analog AMPS cell sites by the end of 2002. TruePosition understands that this will permit Cingular to address all presently outstanding requests from 911 Centers (referred to as public safety answering points or so-called PSAPs) for location information that meets the FCC's rules ("Phase II" information). From that point forward, Cingular will be capable of deploying TruePosition's Phase II solution in its digital TDMA/analog AMPS networks dependent on the PSAP requests, consistent with the FCC's requirements. TruePosition's technology will supply location information for digital TDMA subscribers, analog subscribers and roamers. The commitment by Cingular and TruePosition is a distinct and tangible demonstration that E 911 is a reality.

The same is true for the PCS digital CDMA subscribers of MoviStar Puerto Rico. The commercial rollout will provide FCC-compliant location coverage wherever TruePosition's system is deployed in this region with a population of over 3.8 million people. This agreement will also ensure that MoviStar's digital CDMA subscribers have access to Enhanced 911. Additionally, we are in active discussions with several other carriers to deploy our network based solution.

## **WIRELESS ENHANCED E911 TECHNOLOGY**

The need for Enhanced 911 or E 911 has been recognized for several years. It originates from the dichotomy that when a person calls 911 from a traditional phone, public safety agencies can automatically determine the individual's location; yet if the same person calls from a wireless phone, a public safety agency must rely on the caller to provide an accurate location. As more than 43 million wireless calls to 911 are made annually from existing wireless phones, the need to implement E 911 is critical. The Nation should be at the threshold of a tremendous upgrade in how fast public safety agencies can respond to individuals in need.

As I mentioned, TruePosition has made substantial investments in developing the technology and implementing it. TruePosition holds 14 U.S. patents in the technology, encompassing methods, processes and apparatus for calibrating a wireless location system that yields extremely accurate measurements. We have completed system testing of more than 500 cell sites in a variety of environments. Recently, we have conducted extensive tests of our system in the Philadelphia, Pennsylvania, Wilmington, Delaware and New York City metropolitan areas. The New York City test involved a challenging environment for radio propagation as almost half of the test calls were made inside of multi-story buildings in midtown Manhattan. Standard digital CDMA mobile phones were used to make more than 30,000 test calls in an area covered by 30 cell sites. A rigorous test plan published by the CDMA Development Group (CDG) to determine the performance of TruePosition's technology was employed. The system demonstrated sub-100 meter location results in a variety of indoor, outdoor, pedestrian, and moving vehicle scenarios. The test results demonstrated compliance with FCC requirements. Accurate and reliable location information is not

in the future. It is now.

## **TRUEPOSITION'S LOCATION TECHNOLOGY**

TruePosition's technology allows all existing cellular (digital and analog) and PCS phones to be located without any adjustment to the consumer's handset. All existing phone sets can be located on our system, within the requirements set by the FCC. TruePosition's architecture supports technologies currently used by more than 95% of the 650,000,000 wireless phones worldwide. We developed and tested our system in all types of geographic areas, RF environments and other conditions. Our technology encompasses the four major air interfaces: analog AMPS, digital CDMA, digital TDMA and most recently, GSM.

TruePosition's Wireless Location System (WLS) is an end-to-end hardware, software, and services platform that offers a single system for collecting, managing and distributing location data and an integrated user interface to facilitate installing, managing, and operating the system. The WLS operates as an overlay to a carrier's network, requiring minimal changes to the existing network infrastructure. The system has a negligible impact on cell sites and does not create additional traffic for the network. The WLS is network-based, and as stated, there is no modification necessary to consumer handsets. Millions of subscribers can now be covered.

The TruePosition system determines a wireless phone's geographical location by collecting and processing the RF signals transmitted by the phone. When a signal is transmitted -- when a phone call is placed -- the system gathers information about the signal from nearby mobile base stations. The data are transmitted to a processor that analyzes the information and computes the position of the caller by using TruePosition's patented Time Difference of Arrival (TDOA) and Angle

of Arrival (AOA) algorithms. For a 911 call, the TruePosition system then determines the location of the call and delivers the information so that the appropriate PSAP can dispatch assistance to the caller.

One fundamental of TruePosition's network based system is that upon implementation, location information can be transmitted to the appropriate 911 center by all wireless phones using the network, not simply those that have been recently purchased. Customers do not have to purchase new handsets nor is any retrofitting needed for location information to be transmitted. The challenge of legacy equipment, the millions of phones in use throughout the country, is resolved through the network solution.

#### **THE FCC'S OCTOBER 1, 2001 DEADLINE**

Under FCC rules, wireless telephone carriers were required to provide Automatic Location Identification (ALI) beginning October 1, 2001, as part of the Phase II E911 implementation schedule. There are separate accuracy requirements and deployment schedules for network-based and handset-based technologies. The Appendix sets forth the FCC's rules and the apparent changes approved in the FCC's recent waiver decisions.

TruePosition has followed the FCC's actions attentively since the Commission took up E911. We have participated actively during the FCC's formulation of its E911 rules. We have provided our views on the policy and technical issues at stake. TruePosition has structured its technology's implementation on real life settings that are drawn from the FCC's rules. Substantial investment has been directed to complying with the FCC's rules regarding accuracy requirements and the implementation deadlines that were established. We have worked at length with carriers and

public safety agencies to improve our technology and to show that it complies with the FCC's policies and rules. This is an important reason why TruePosition's technology works.

Last week, the FCC announced that it had reached decisions on petitions seeking waivers of its E911 rules. Those decisions provide several carriers additional time and other relief from the FCC's rules. In any environment where investment responds to a regulatory mandate, where resources and expertise is committed to meet deadlines and specifications, clarity and consistency are vital. If rules are changed facilely, let alone unnecessarily, investment is disrupted, competition distorted and, most significantly, the policy pursued undermined.

The Nation's experience in wireline 911, where location information of the caller is simultaneously available to the 911 center, demonstrates plainly the enormous benefits that accrue. Individuals needing help can be located, help can arrive faster, and the overall ability of public safety agencies to respond more effectively is enhanced significantly. Moreover, the experience with wireline E911 has proven to be an effective and important law enforcement instrument. As the Nation confronts the challenges that have been become all too clear since September 11, 2001, E 911 will have an even more critical role. If our country is going to have a satisfactory level of E 911 service, carriers, the Congress, the FCC, and other relevant parts of our government must make it happen.

## **SUMMARY**

Bringing E 911 to all Americans will require the full cooperation of government, carriers, and technology providers and public safety agencies. The result will be more efficient and effective emergency services, property and lives saved, and a greater sense of security for all of our citizens.

## APPENDIX

### HISTORY AND SUMMARY OF REGULATORY REQUIREMENTS

Through several actions since 1996, the FCC's wireless 911 rules have sought to improve the reliability of wireless 911 services and to provide emergency services personnel with location information. The wireless 911 rules apply to all cellular licensees, broadband Personal Communications Service (PCS) licensees, and certain Specialized Mobile Radio (SMR) licensees.

#### *PHASE I E 911 REQUIREMENTS* (FCC Order June 1996)

As of April 1, 1998, or within six months of a request by the designated PSAP, whichever is later, covered carriers are required to provide to the PSAP the telephone number of the originator of a 911 call and the location of the cell site or base station receiving a 911 call.

#### *PHASE II E 911 REQUIREMENTS* (FCC Orders September 1999, minor adjustments August 2000)

Wireless carriers are required to provide Automatic Location Identification (ALI) as part of Phase II E 911 implementation beginning October 1, 2001. The FCC has established separate accuracy requirements and deployment schedules for network-based and handset-based technologies. The E 911 Phase II requirements are as follows:

- **Handset-Based ALI Technology:** Wireless carriers who employ a Phase II location technology that requires new, modified or upgraded handsets (such as GPS-based technology) may phase-in deployment of Phase II subject to the following requirements:

Without respect to any PSAP request for Phase II deployment, the carrier shall:

1. Begin selling and activating ALI-capable handsets no later than October 1, 2001;
2. Ensure that at least 25 percent of all new handsets activated are ALI-capable no later than December 31, 2001;
3. Ensure that at least 50 percent of all new handsets activated are ALI-capable no later than June 30, 2002; and

4. Ensure that 100 percent of all new digital handset activated are ALI-capable

no later than December 31, 2002 and thereafter.

5. By December 31, 2005, achieve 95 percent penetration of ALI-capable handsets among its subscribers.

Once a PSAP request is received, the carrier shall, in the area served by the PSAP, within 6 months or by October 1, 2001, whichever is later:

1. Install any hardware and/or software in the CMRS network and/or other fixed infrastructure, as needed, to enable the provision of Phase II E 911 service; and
2. Begin delivering Phase II E 911 service to the PSAP.

- Network-Based ALI Technology: As of October 1, 2001, within 6 months of a PSAP request, carriers employing network-based location technologies must provide Phase II information for at least 50 percent of the PSAP's coverage area or population.

Within 18 months of a PSAP request, carriers must provide Phase II information for 100 percent of the PSAP's coverage area or population.

The FCC has adopted the following standards for Phase II location accuracy and reliability:

- For handset-based solutions: 50 meters for 67 percent of calls, 150 meters for 95 percent of calls;
- For network-based solutions: 100 meters for 67 percent of calls, 300 meters for 95 percent of calls.

*PUBLIC SAFETY ANSWERING POINT REQUIREMENTS (FCC Order November 1999)*

The E 911 Phase I requirements, and certain of the Phase II requirements, are applicable to wireless carriers only if the designated PSAP has requested the service and is capable of receiving and using the information provided. There is no prerequisite that a cost recovery mechanism for wireless carriers be in place before carriers are obligated to provide E 911 service in response to a PSAP request. The PSAP, however, must have the means of covering the costs of

receiving and using the E 911 information to make a valid request for E 911 service. The FCC's rules do not mandate any specific state action nor specify any particular mechanism for funding the technology and service capabilities necessary to enable the PSAP to make a valid service request.

## APPENDIX

### COMPARISON OF FCC HANDSET REQUIREMENTS AND THE WAIVER REQUIREMENTS

FCC RULES	VERIZON WAIVER	SPRINT WAIVER	AT&T (GSM) WAIVER	CINGULAR (GSM) WAIVER	NEXTEL WAIVER
Begin selling ALI-capable handsets by October 1, 2001	<b>No October 1, 2001 requirement</b>	Begin selling ALI-capable handsets by October 1, 2001 (same as rule)	<b>AT&amp;T must follow the handset deployment schedule, but has reduced accuracy requirements for 2 years.</b>	Begin selling ALI-capable handsets by October 1, 2001 (same as rule)	Begin selling ALI-capable handsets by October 1, 2002 (one year after rule)
<b>25%</b> of all new handsets must be ALI-capable by December 31, 2001	Begin selling ALI-capable handsets by December 31, 2001 (three months after rule)	<b>25%</b> of all new handsets must be ALI-capable by July 31, 2002 (six months after rule)		<b>25%</b> of all new handsets must be ALI-capable by December 31, 2001 (same as rule)	<b>10%</b> of all new handsets must be ALI-capable by December 31, 2002 (one year after rule, 15% less)
<b>50%</b> of all new handsets activated must be ALI-capable by than June 30, 2002	<b>25%</b> of all new handsets must be ALI-capable by July 31, 2002 (six months after rule)	No <b>50%</b> benchmark		<b>40%</b> of all new handsets activated must be ALI-capable by than March 31, 65% by June 30, 2002 (June requirement exceeds rule by 15%)	<b>50%</b> of all new handsets activated must be ALI-capable by than December 1, 2003 (18 months after rule)
<b>100%</b> of all new handsets must be ALI-capable by December 31, 2002	<b>50%</b> of all new handsets activated must be ALI-capable by than March 31, 2003 (nine months after rule)	<b>100%</b> of all new handsets must be ALI-capable by December 31, 2002 (same as rule)		<b>100%</b> of all new handsets must be ALI-capable by September 30, 2002 (three months earlier than rule)	<b>100%</b> of all new handsets must be ALI-capable by December 1, 2004 (two years after rule)
By <b>December 31, 2005</b> , achieve 95 percent penetration of ALI-capable handsets	<b>100%</b> of all new handsets must be ALI-capable by December 31, 2003 (one year after rule)	By <b>December 31, 2005</b> , achieve 95 percent penetration of ALI-capable handsets (same as rule)		By <b>December 31, 2005</b> , achieve 95 percent penetration of ALI-capable handsets (same as rule)	By <b>December 31, 2005</b> , achieve 95 percent penetration of ALI-capable handsets (same as rule)

Source: FCC Fact Sheet

