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June 8, 2010

Mr. Richard J. Orsulak
Emergency Planning and Public Safety Division
Office of Spectrum Management
National Telecommunications and Information Administration
U.S. Department of Commerce
Washington, D.C. 20005

Re: TruePosition, Inc., Response to Notice of Inquiry
Preventing Contraband Cell Phone Use in Prisons
Docket No. 100504212-0212-01

Dear Mr. Orsulak:

Please find attached TruePosition's submission in response to the National Telecommunications and Information Administration's Notice of Inquiry (NOI) addressing *Preventing Contraband Cell Phone Use in Prisons,* Docket No. 100504212-0212-01.

TruePosition would be pleased to provide further information in relation to matters raised in the NOI or in our submission. If in need of further information, please contact me at 212.301.2814 or electronic mail at Michael.Amarosa@TruePosition.com.

Respectfully,

Michael Amarosa
Senior Vice President- Public Affairs

Copy to:

Mr. Edward Drocella
Spectrum Engineering and Analysis Division
Office of Spectrum Management
National Telecommunications and Information Administration

Wireless Location Technology Capability- an Important Element in Preventing Contraband Cell Phone Use in Prisons

TruePosition, headquartered in Berwyn, Pennsylvania, is the leading provider of location determination and intelligence solutions for public safety and national security worldwide. TruePosition offers a portfolio of industry-leading location technologies, future-proof platform products, innovative applications and comprehensive networking and systems services to enable carrier-grade location solutions for private entities and government agencies to protect citizens and property, combat crime, and save lives.

TruePosition believes that jamming alone is neither effective nor risk free in eliminating illicit cell phone use in correctional institutions. Effective prevention can evolve by implementing network location and other wireless technologies that are currently available and can be deployed on a cost effective basis.

The Notice of Inquiry

The National Telecommunications and Information Administration (NTIA) has commenced an inquiry (NOI) addressing the technical approaches to prevent contraband cell phone use in prisons. Congress directed NTIA to develop, in coordination with the Federal Communications Commission (FCC), the Federal Bureau of Prisons (BOP), and the National Institute of Justice (NIJ), a plan to investigate and evaluate how wireless jamming, detection and other technologies can assist law enforcement and corrections responsibilities in federal and state prisons. The NOI requests information on technologies able to reduce or eliminate contraband cell phone use without negatively affecting commercial wireless and public safety services. NTIA has preliminarily identified three categories of contraband cell phone intervention: jamming, managed network access, and detection. TruePosition's comments are directed to the critical role of detecting and locating contraband cell phones in prisons and the technology available to support this effort.

The Challenges Faced by Corrections and Law Enforcement

Wireless technology has revolutionized communication — creating a level of convenience and connectivity never seen before. Unfortunately, this revolution also has a dark side, as criminals and terrorist use wireless technology to coordinate activities and carry out their deeds. In a prison environment, contraband cell phones allow inmates to plan and instigate illegal activities, thereby threatening correctional officers and the well being of the institution. The record is clear as to how the life and property of citizens are frequently endangered. Yet, wireless location technology can make a tangible difference in detecting and confiscating contraband cell phones and stopping their use.

Any effective initiative against contraband cell phones in prison must integrate the three elements NTIA references- detection, managed access and jamming. It must comprehend the realities of radio waves and be able to keep pace with evolving wireless services. Jamming can encroach upon legal, and at times, critical citizen use of the radio spectrum. Managed access must be able to encompass the expanding broadband and other advanced wireless services. The path must recognize the limited resources of corrections and law enforcement agencies. It must do more than discover where and when a contraband cell phone is being used but determine the expanse and type of criminal activity.

Detection Technologies

Detection and location or "geolocation" technologies are fully engaged in addressing the FCC's requirement for locating wireless callers to 911. Technology determining the location of a device to expedite emergency response is similarly capable of detecting the use and location of contraband cell phones in a prison. TruePosition believes that current forward looking location technology and its accompanying services can contribute to significant improvements in detecting, finding and deterring contraband cell phones.

Geolocation is the process of determining the location of a point in a coordinate system by measuring the distances from the point of unknown location (that of the contraband cell phone) to three or more points of known location. Graphically, in two dimensions, the location of the unknown point can be visualized as the common intersection of three circles whose centers are at the location of the known points and whose radii are the measured distances. Radiolocation uses the properties of radio waves to measure the distances from the unknown point to the known points. The specific property used is the velocity of radio wave propagation. Radio waves propagate, i.e. travel, at a constant velocity. The distance between two points can be determined by measuring the time it takes a radio wave to travel between the two points and multiplying by the velocity of propagation of radio waves to derive the distance and therefore the location of the contraband cell phone.

Network based geolocation technologies are the means to detect and locate contraband cell phones within prison facilities. What the technology provides is ability to identify and track any mobile phone or device in real time, with extremely high accuracy and reliability in any environment. Through data collection, activity and behavior can be monitored over time to build detailed profiles and identify those associated with the illicit activity. Network based location

technology enables corrections officials and law enforcement to identify the location of a contraband cell phone, track its use, retrieve the device and prosecute those engaged in illegal conduct.

In the US market, there are two technologies providing location capability to mobile devices. One is the Advanced Global Positioning System (AGPS), which relies on the orbiting GPS satellites where the cell phone not only must possess the technology but where the user is allowed to turn off the location capability. The second is network based location technology, referred to as Uplink Time Difference of Arrival (UTDOA) which measures the radio wave to the cell phone via multiple auxiliary receivers collocated with the wireless network's base stations. These auxiliary receivers are known as Location Measurement Units (LMU) and are very accurately time synchronized to each other. No user interaction is required.

In the context of the NOI, it is vital to recognize the significant differences between AGPS and network based UTDOA technologies. In AGPS, as noted, the user is able to remove the location capability from the receiver for purposes other than 911. In contrast, network UTDOA technology allows any device to be detected and tracked when it is engaged.

Further, as AGPS receivers obtain their signals from satellites 26,560 km away, the signals strength is fairly low. GPS receivers- the cell phone- used indoors suffer additional attenuation, i.e. reduction in power, of the GPS satellite signals by the materials that buildings are constructed of. When a radio wave impinges upon building material, a portion of its power will be reflected and the remaining portion will be refracted into the building material. Reflection and refraction of radio waves results in attenuation of the radio wave and, ultimately, an even lower power signal arriving at the cell phone. The attenuation of GPS satellite signals by buildings constructed of metal, concrete and metal tinted glass, all attributes of corrections facilities, is too great. AGPS indoor location capability will fail at a prison.

The radio waves UTDOA measures are reduced in power by attenuation from building materials, yet UTDOA provides accurate and reliable location of cell phones even when indoors. As the distances between the transmitter, i.e. and receiver, i.e. the LMU and cell phone, is far less than with GPS, there is much less energy loss due to spherical spreading of the propagating radio wave. More significantly, the power output of the cell phone can be varied and controlled by the wireless network and dynamically adjusted many times per second to assure reliable communications. When the loss between the transmitter and receiver increases because of attenuation by building materials, the network commands the cell phone to increase its output power to compensate for the additional attenuation to achieve reliable communications. If a handset can communicate with its wireless network from indoors then UTDOA can reliably and accurately locate it.

Network based location technology provides more than reliable location information for corrections officials to detect and find the contraband cell phone. It will provide comprehensive information relating to the details of the criminal conduct. Using non-intrusive interfaces with the wireless networks signaling links, the system extracts location information for all mobile phones of the monitored network. It will present a comprehensive compilation of valuable information that corrections and law enforcement officials need. It allows monitoring of activity

and behavior over time to build detailed profiles and to identify those whom prison contraband cell phone users associate with. It can identify how – and by whom – contraband devices are being smuggled into facilities. The technology can be implemented as a passive overlay within the wireless mobile network operator's existing communications network.

Summary

TruePosition urges NTIA, with the FCC, BOP and NIJ, to pursue a comprehensive approach to detecting and halting illegal cell phone use in prisons. Integrated with other elements, currently available network location technology can provide prison officials and law enforcement an expansive ability to stay ahead of the criminal enterprises they must confront.