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May 11, 2011

Bernard J. Gruber, Col, USAF
Director
Global Positioning Systems Directorate
Front Office
483 N. Aviation Blvd.
Los Angeles AFB, CA 90245-2808

Karen Van Dyke
Director, Positioning, Navigation, and Timing (Acting)
DOT/Research and Innovative Technology Administration (RITA)
1200 New Jersey Avenue, SE
Washington, DC 20590

Thomas J. Nagle, SMC/GPC
Program Manager, Civil Applications
GPS Directorate, Los Angeles AFB
Building 271, Room B2-548
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El Segundo, CA 90245-2808

Dear Colonel Gruber, Ms. Van Dyke and Mr. Nagle:

In March 2011 I was informed of a company called LightSquared that is asking for FCC approval to build a nationwide 4G wireless network. There is concern from major GPS providers that LightSquared's frequency interferes with GPS signals necessary for routine 911 caller location.

I was asked by the Federal Aviation Agency (FAA) to coordinate first responder representatives from fire, EMS and law enforcement for testing of the LightSquared network in a live sky testing environment at Holloman AFB, New Mexico on April 15 – 16, 2011. The objective of the test was to determine if any level of interference to GPS signals were a result of LightSquared testing.

The attached reports are provided by law enforcement, EMS and fire first responders who participated in the field test. Law enforcement was represented by New Mexico State Police personnel Mike De Fausell and Officer Daniel Vaughan of New Mexico State Police District 4 office in Las Cruces. Mike is a subject matter expert in communications technology with an emphasis on radio. The attached reports verify there was a negative effect on the GPS equipment.

EMS and Fire reports are from local government first responders from Otero County. They represent typical fire and EMS field equipment. See the attached report from Otero County Emergency Manager Paul Quairoli detailing anomalies in GPS reception.

In conclusion the attached reports substantiate concerns that the LightSquared network will cause interference to GPS signals and jeopardize 911 and public safety nationwide.

If you have any questions, please feel free to contact me at 505-827-4804 or bill.range@state.nm.us.

Sincerely,

Bill Range

Bill Range, ENP, PMP
New Mexico E-911 Program Director
Department of Finance and Administration, Local Government Division

Attachments

LightSquared Test

On April 15, 2011, at approximately 2354, we experienced system failure when we parked under the LightSquared tower. Once the power was shut off at the tower, we left the tower site. When we got to the turn off for the dirt road, the system came back up and the Alamogordo office was able to see us moving again.

Our system has cell phone connectivity, radio connectivity, and satellite connectivity. Our mobile data terminal will automatically select and connect to the strongest signal. The GPS is only over the satellite transceiver.

When the tests were started again our GPS positions were skewed. When the LightSquared tower was turned off the system would normal out.

I believe it was approximately 0400 when they began the high dual five test, the GPS positions were skewed and remained skewed even after power was turned off. As they began the next tests, we started getting GPS reading from the Alamogordo office every ten minutes. These GPS readings continued to be incorrect the rest of the test period. We asked the Alamogordo office to send the GPS readings with the time via the MDC so there would be a record of the information.

We were unable to get the system to normal out until we were leaving Holloman AFB on April 16, 2011 at approximately 0700; we did another reset of the equipment. At that point the system began to function correctly.

My times and GPS reading were given to Captain Justin Deifel, USAF at the closing briefing.

Submitted by:

Mike De Fausell
New Mexico State Police
District Four Communications

These were the results of the LightSquared testing on equipment used by Otero County's emergency responders:

1. Testing on the AVL used on ambulances was in some test modes not affected, but in most modes affected by either showing a stationary vehicle in motion at 9 mph, 16 mph or losing track of the vehicle in its entirety. As the vehicle locating system does not have high resolution or "in detail" zoom features, the vehicle appears to stay at one location. The closer the vehicle is moved toward the Lightsquared antenna, effects of the 4G network on the system get worse.

2. Trimble GPS equipment tested was found to be the most susceptible to the 4G signal and almost from the moment the system was turned on seemed to be compromised. During the testing process the unit was limited to only being able to see 7 satellites at any location and upon moving just 50 yards from our position at the test site towards the tower were diminished to 3 or 4 satellites and at 60 yards unable to establish any satellite connections. (This is still approximately 1/8 of a mile from the tower)

3. Several Garmin hand held devices were tested with varying results, but all were affected as follows:
    a. Garmin Nuvi 255 – retained contact with most satellites but had a very difficult time establishing elevations, most fluctuations were in the decimal second range but showed during path tracking that the device was moving up to 200 feet in a random "figure 8" pattern. When approaching the tower, the signal eventually is lost.
    b. Garmin Etrex - Same results as above but path tracking on this model show a "U" shaped pattern.

Paul Quairoli
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