23 February, 2011

The Honorable Julius Genachowski
Chairman, the Federal Communications Commission
Room 8-B201
445 12th Street, SW
Washington, DC 20554

Subject: Comments on FCC File Number SAT-MOD-20101118-00239 - LightSquared Subsidiary LLC Request for Modification of Its Authority for an Ancillary Terrestrial Component

Dear Mr. Genachowski,

We are deeply concerned that the above-referenced application by LightSquared is fundamentally incompatible with existing GPS uses and would have far-reaching consequences for large portions of the population. The Global Positioning System, or GPS, was first launched more than 30 years ago and is now a critical and extremely reliable part of our national infrastructure.

The application would allow LightSquared to transmit radio signals that would be one billion or more times more powerful than GPS signals as received on earth from a network of ground stations, potentially causing severe interference. This would render millions of GPS receivers useless – including those used by U.S. Federal and Local Government agencies, first responders, airlines, agriculture, and everyday consumers in their cars and on hand-held devices. Furthermore, the band where LightSquared is being allowed to broadcast is the same as is presently being used by the differential service providers, such as OmniSTAR, and the broadcasts will overpower these signals, rendering them useless.

Initial tests indicate that each LightSquared ground station will cause varying levels of interference with GPS within miles of the ground stations, and LightSquared plans to build as many as 40,000 such ground stations. If GPS is interfered with, critical private and public sector activity will be adversely affected, including:

- **Public Safety:** Public safety depends on GPS technology daily because first responders such as law enforcement, fire fighters, and emergency medical personnel rely on it day-in and day-out to provide critical instant location and route information. Disruptions to the GPS transmission pose a serious threat to public safety.

- **Homeland Security:** GPS equipment is widely used by the Departments of Defense, Interior, Transportation, Commerce and Homeland Security. Federal, state, and local government employees rely on GPS equipment in disaster response, public safety, and security and in the management of our national assets and infrastructure, as do emergency services for rapid response, dispatch, and accident investigation.

- **Consumers:** Millions of Americans use GPS-enabled consumer devices in their cars and on their cell phones and other hand-held devices as vital, reliable every day navigational tools.

- **Aviation:** GPS receivers used in thousands of aircraft could be jammed within miles of LightSquared’s transmissions. GPS, together with the Wide Area Augmentation System or WAAS (which will also be affected) has long been approved by the Federal Aviation Administration (FAA) for aircraft navigation and FAA-approved GPS instrument approaches now provide a
landing system option at the many U.S. airports not equipped with land-based instrument landing systems. GPS also plays a critical role in the FAA Next Generation Air Transportation System, which will modernize air traffic control and address the nation’s need for expanded air traffic capacity without compromising air safety.

- **Transportation:** GPS equipment is used in critical asset management activities for our national road and rail infrastructure, improving efficiency, lowering costs and enabling better decision making. The Federal Rail Administration’s Positive Train Control mandate further drives the use of GPS to prevent train-to-train collisions, derailments, and casualties or injuries to railway workers. In addition, GPS is used to help fleets lower fuel consumption and improve their carbon footprint.

- **Agriculture:** Farmers use GPS to improve efficiency and crop yields, reduce environmental impact and comply with U.S. Agriculture reporting regulations.

- **Forestry:** The U.S. Forestry industry and Forest Service use GPS in forest land management and for Forest Automation Systems which improve logging efficiency and reduce environmental harm.

- **Engineering and Construction:** The U.S. building, construction, and civil engineering industry – one of the economic sectors most severely impacted by the recent recession – has made large investments in the use of GPS technology to modernize and automate construction sites, machines and processes. GPS is also used to monitor the movement of physical infrastructure such as bridges, dams, mines, and other natural and manmade structures. Disruption to this service could negatively impact positive economic and societal improvements.

- **Surveying, Mapping, and Land Management:** Interruption of the national geodetic infrastructure would disrupt surveying and mapping activities necessary for land title transactions, land development, building and civil engineering activity, and accident investigations. It would also disrupt the field creation, maintenance, and use of geographic information systems (GIS) databases that underpin our national digital mapping infrastructure.

- **Utilities:** Utility services nationwide including electricity, water, gas and telecommunications depend on GPS signals in a number of ways. This includes synchronizing networks, maintaining and managing infrastructure and coordinating rapid responses to network outages and incidents – activities that are all essential to restoring disrupted services as quickly as possible.

- **Natural Resources:** Natural resources industries engaged in the exploration, production and distribution of energy and minerals rely on the GPS service throughout their operations.

- **Disaster Management and Scientific Research:** High-accuracy GPS networks are deployed along crustal faults and around volcanoes. In the U.S, the data is used to study and better understand the crustal movements that cause seismic hazards such as earthquakes and volcanic eruptions. In addition to disaster prevention and relief, GPS is also used for weather services and scientific research.

In recognition of the potential interference to GPS receivers, the FCC, as part of its January 26, 2011 modification order, required the establishment of a working group to bring together LightSquared and the GPS community. This working group will study the interference concerns, identify measures to prevent interference and produce a report for FCC review no later than June 15, 2011.

The GPS industry is committed to working with LightSquared, FCC, NTIA and other interested parties in this working group process. However, we believe that additional safeguards are needed. We recommend:
1. The FCC must make clear that LightSquared’s license modification is contingent on the outcome of the mandated study. That study must be overseen by a strong neutral observer, not by an interested party.

2. The FCC should make clear that LightSquared and their investors should not proceed to make any investment in operating facilities prior to a final FCC decision.

3. Further, the FCC’s finding that “harmful interference concerns have been resolved” must mean “resolved to the satisfaction of pre-existing GPS providers and users.”

4. Resolution of interference has to be the obligation of LightSquared, not the extensive GPS user community of millions of citizens. LightSquared must bear the costs of preventing interference emanating from their devices — GPS users or providers should not have to bear any of the consequences of LightSquared’s actions.

5. This is a matter of critical national interest. There must be a reasonable opportunity for public comment of at least 45 days on the report produced by the working group and further FCC actions on the LightSquared modification order should take place with the approval of a majority of the commissioners, not at the bureau level.

LightSquared’s planned use of these high-powered terrestrial networks in the frequency immediately adjacent to the GPS frequency is unproven and unprecedented. Therefore, it is imperative that the LightSquared system not be deployed unless it can be conclusively guaranteed through independent, authoritative, verified and thorough analysis and testing, that the GPS system is fully protected from radio interference.

Respectfully submitted,

Edward Saade
President, Fugro EarthData