

Task Statement

Assessment of LightSquared Terrestrial Broadband System Effects on GPS Receivers and GPS-dependent Applications

Scope

At the direction of the Executive Steering Group (ESG) of the National Executive Committee for Space-Based Positioning, Navigation, and Timing, herein referred to as the EXCOM, and with facilitation by the National Coordination Office (NCO), the National Space-Based PNT Systems Engineering Forum (NPEF) is tasked to conduct an assessment of the effects of LightSquared's planned deployment of terrestrial broadband systems to Global Positioning System (GPS) receivers and GPS-dependent systems and networks. The NPEF should engage with: 1) The LightSquared Working Group established at the direction of the Federal Communications Commission (FCC) and 2) GPS manufacturing and applications communities through relevant industry bodies (e.g. the U.S. GPS Industry Council and RTCA, Inc.). The NPEF is to investigate, assess, and determine the range of effects to GPS use based on operationally relevant scenarios that represent the current installed user base. While the NPEF tasks are to be conducted in cooperation with all involved entities to the extent possible, the NPEF is requested to produce an independent report to the ESG and EXCOM.

Background

Reference FCC Order DA 11-133, in the matter of LightSquared Subsidiary LLC "Request for Modification of its Authority for an Ancillary Terrestrial Component," adopted and released January 26, 2011 and NTIA January 12, 2011 letter to FCC Chairman.

Methodology and Assessment

1. Document LightSquared's Ancillary Terrestrial Component (ATC) and related user equipment signals and antenna specifications and characteristics, GPS receiver specifications and characteristics (e.g., Radionavigation-Satellite Service (RNSS) receiver characteristics submitted to the International Telecommunication Union (ITU)), and future spectrum environment considerations.
2. In cooperation with the LightSquared Working Group, develop a baseline model characterization of the planned initial and fully deployed broadband network, including ATC locations and siting assumptions/limitations. Identify user handset planning assumptions as appropriate.
3. In conjunction with federal and commercial GPS technical experts, develop operational scenarios representative of the full range of anticipated effects to GPS receiver use (including characterization by existing GPS receiver categories where possible) as well as deployed federal and commercial GPS-dependent systems or networks. The scenarios assessed shall consider federal and state government and commercial communities' current and planned use of GPS and GPS applications.
4. Develop appropriate metrics to quantitatively and qualitatively assess performance degradations from both technical and operational perspectives.
5. Analyze the expected and potential effects on GPS use for each of the developed scenarios including both current and future spectrum environment (e.g. 2025) considerations.

6. Coordinate simulation activities to further assess effects on GPS usage under various scenarios.
7. Coordinate work plan, test planning, and field test activities with the FCC, LightSquared, NTIA and the EXCOM departments and agencies to measure emissions and determine representative technical and operational GPS receiver effects as a function of distance from a LightSquared terrestrial base station

Schedule and Deliverable

The NPEF is to complete the work under this Task Statement by May 31, 2011. An interim update will be provided to the ESG/EXCOM through the NCO Director by March 31, 2011. The final deliverable report will be produced in a publicly releasable version and For Official Use Only version as appropriate. The reports will detail the planned broadband system effects on GPS use and include details on potential technical and operational mitigation options for interoperability between the planned LightSquared network and federal and commercial GPS-dependent users, systems and networks. The report will include field measurements from the LightSquared ATC stations and mobile handset and an analysis of representative GPS receiver performance. Any classified concerns will be briefed to the NCO and ESG for discussion in an appropriate forum and venue. Issues of proprietary data will be handled on a case-by-case basis.