

From: Gary Gallien

To: Anthony Serafini

Date: August 07, 2009

Subject:

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Message:

This experimental work is being performed for the Developmental Planning Directorate of the U.S. Air Force Space and Missile Systems Center (SMC) under contract FA8802-09-C-001. The Directorate has directed that The Aerospace Corporation investigate methods for using standards-based wireless networking technology to form networks in space within and between groups of satellites. This unique, non-commercial, research-oriented experiment is necessary to test the performance of a commercial WiMAX wireless network to establish WiMax (IEEE standard 802.16) utility for future space applications. Initial experiments have been performed under a Special Temporary Authority (STA) license, and were used to determine single- and multiple-user connect and disconnect processes, and single and multiple user throughput levels at several distances. An experimental license is now being requested to allow additional experiments to more fully characterize this application of WiMAX equipment. These additional experiments will include (a) testing with a mix of realistic traffic that would be representative of an operational space-based Local Area Network (SbLAN); (b) further tests with multiple user terminals at varying distances from the base station to acquire higher-fidelity throughput and Quality-of-Service (QoS) information under higher traffic loads, (c) Assess the information security built into the IEEE 802.16 standard and (d) emulate the end-to-end system by adding a network link with a long delay between the base station and the ground station.