



The Satellite Users Interference Reduction Group Releases Findings of Field Test Report on C-band Sharing;

Satellite and WiMax Spectrum Sharing Not Compatible Report Finds

Punta Gorda, FL, March 3, 2008 – The Satellite Users Interference Reduction Group (SUIRG) announced today the formal findings of a field test on the compatibility of Fixed Satellite Services (FSS) and WiMAX services sharing the C-band spectrum. The test, conducted in the latter quarter of 2007, conclusively demonstrated that WiMax communications pose a significant interference threat to satellite signals transmitted in the C-band frequency.

SUIRG, a non-profit association comprised of both private and public sector satellite organizations, is dedicated to combating the increasing and costly problem of satellite radiofrequency interference (RFI). The field test was performed with support from several key industry organizations. Its purpose was to validate previous tests and to provide conclusive results on the incompatibility of C-band spectrum sharing between fixed frequency service (FSS) satellite transmissions and WiMAX services.

The primary objective of the plan was to measure interference levels generated by fixed WiMAX transmissions into an FSS satellite receiving station. The method employed taking measurements of C/N (carrier/noise), I/N (interference/noise), BER (bit error rate), and spectrum plots of a satellite down link video channel. Testing was performed in 2 phases:

- Phase 1: The FSS antenna remained in a fixed location while a WiMAX base unit was moved to several locations operating at various angles and distances from the FSS antenna to simulate subscriber waveforms. This test modeled WiMAX subscribers in a nomadic deployment affecting FSS. Tests conducted within the immediate area (up to 1 km away) showed that the digital signal was rendered unacceptable for use.
- Phase 2: The WiMAX base antenna was fixed at a height of approximately 50 meters on top of a water tower. The FSS antenna was positioned at several different locations and at various angles and significantly greater distances from the WiMAX antenna (up to 12 km) than during Phase 1 testing. This was to model WiMAX base units being deployed on cellular towers.

The results of the testing showed that the WiMAX transmit signal could cause significant problems to a satellite digital signal well in excess of 12 km distance. At the extreme measurement distance, the video program was fully operational with the WiMAX carrier centered on the video carrier. However, the data BER was degraded from a nominal 10^{-8} to a BER of 10^{-4} . This is an unacceptable quality of service in the digital telecommunications industry.

Subsequent calculations based on the initial measured data, and scaling with ITU criteria for WiMAX output power along with additional path loss, resulted in a required separation distance of 278 km to reduce the level of interference to meet the -10 dB specification. Combining the two analyses, from a flat non-blocking terrain to a wooded hilly terrain, results show that the criteria whereby FSS antennas cannot co-exist with WiMAX systems ranges from 50 to over 200 km dependent upon the local terrain and the WiMAX output levels.

“The C-band is in many ways the lifeline of the satellite industry and protecting that spectrum from the threat of interference posed by sharing it with Broadband Wireless Access services is of paramount importance,” said Robert Ames, SUIRG President. “The tremendous support of the SUIRG member companies and the industry as a whole in making this test a viable platform to aid decision makers at WRC-07 was extremely gratifying. The results of the test are a firm testament to the need for clearly defined spectrum allocation.”

The full text of the WiMax frequency sharing with FSS earth stations Field Test Report and detailed Test Plan & Procedures are available on the SUIRG website at www.suirg.org.

ABOUT SUIRG

SUIRG is an international assembly of parties with representation from both the private and public sector organized to combat the increasing and costly problem of satellite RF interference. Members disseminate information and actively pursue programs to reduce radio frequency interference incidents.

Formed over ten years ago as an informal group working to reduce radio interference, SUIRG incorporated as a 501(c) (6) trade association in September 2003. The Group’s membership is comprised of satellite operators, users, uplinkers, service providers, equipment vendors, and other organizations with a stake in combating radio frequency interference. SUIRG also collects interference incident data from satellite operators on its web site to clearly define the specific areas that need focus to reduce the number of incidents.

SUIRG’s objective is to stop interference before it starts, pursuing a number of remedies, among them: signal Identification, which involves working with uplink equipment vendors to modify their equipment to provide a unique ID for cross-reference in a database when interference occurs; uplink training, procedures and certification; improved detection and identification tools, and continuous sharing of information and solutions among the SUIRG membership.

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