

(a) The complete program of research and experimentation proposed including description of equipment and theory of operation.

The test gateway, a VSAT (very small aperture terminal), will be used with a gateway (hub) test bed, which is covered under separate license (E010104).

The 1.0 meter antenna will be located on the same site as E010104, an international transmit/receive earth station licensed to Intelsat LLC and located at its headquarters building in Washington, D.C. It will operate using the same 14.0-14.5 GHz transmit band and 10.95-11.2 GHz and 11.45-12.2 GHz receive bands licensed for E010104. Testing will be in conjunction with an Intelsat satellite in the AOR. Analysis associated with the E010104 shows that there will be no harmful radiofrequency interference into any other lawfully operating earth station. In the extremely unlikely event that interference should occur, Intelsat LLC will cease operations immediately. Intelsat LLC agrees to accept any interference in the downlink frequency band.

The gateway-VSAT system is a next generation system employing a TDM/MF-TDMA star topology. The gateway-to-VSAT (downstream) link is TDM while the VSAT-to-gateway (upstream) link is MF-TDMA. New features of this system include a DOCSIS-based (Data over Cable System Interface Specification) media access control (MAC) and real-time, automated, dynamic physical layer adaptation. The research and experimentation program is to validate the performance of the system in both its present status and when upcoming upgrades/releases are issued.

(b) The specific objectives sought to be accomplished.

Validation of performance parameters including: E_b/N_0 ; dynamical physical layer (modulation, error coding, symbol rate); proper uplink power control with respect to changing physical layer configuration: TDM efficiencies; MF-TDMA efficiencies; operation of modified DOCSIS MAC protocol in a satellite environment; overall system response to expected end user traffic profiles; overall system response and automatic frequency control in "real world" atmospheric conditions.

(c) How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art or is along a line not already investigated.

Proper performance of above-stated objectives will result in much more efficient utilization of satellite bandwidth as measured in end user through put (bits per second) and will promote the development of satellite technologies, in furtherance of the public interest.

Include as an exhibit a narrative statement describing the applicant.

The applicant is an LLC.