

Item 4(G) — Necessary Bandwidth; Item 10 — Narrative Statement

Necessary Bandwidth

The necessary bandwidth was determined by the desire to provide voice-quality and enhanced data services, such as ISDN and video, and the fixed wireless access system was designed utilizing the inherent benefits associated with broadband frequency allocation. A minimum chip rate of 4.16×10^6 is required. The chip rate is .832 of the channel spacing and therefore the channel spacing required is equal to the chip rate divided by .832 ($5 \times 10^6 = 5,000$ kHz).

Program of Research

Applicant has been operating under Special Temporary Authorization ("STA"), call sign WA9XCB, and seeks to conduct the same program of research and experimentation beyond the current expiration date of the STA. For reference, a copy of the STA grant is attached. Applicant will continue testing the technical and economic viability of using a wireless system to provide voice and data services for competitive local exchange carrier ("CLEC") services. Grant of the subject application will enable Applicant to continue such tests as foliage conditions change.

The pilot wireless telephone access project has been taking place in Northwest Iowa. In addition to Applicant, the pilot participants are: Northwest Rural Electric Cooperative, Northeast Nebraska Telephone Company (licensee of F Block PCS station KNLH285, Sioux City, Iowa BTA, Market No. B421), Pioneer Holdings LLC, and Northwest Iowa Power Cooperative ("NIPCO") (incumbent microwave licensee operating on the subject frequencies in the subject area). The purpose of the pilot is to conduct experiments using fixed wireless access radio systems to provide telephone service to rural communities via a CLEC. The ultimate goal of the participants is to provide CLEC voice and data services and give consumers a choice in local phone and Internet access services. Frequency propagation studies are being conducted prior to the start of the pilot to precisely determine the extent of the expected coverage range and the studies need to be continued beyond the expiration date of the STA.

The operation will utilize a fixed access wireless radio system to provide telephone service to pilot subscribers within a 10 mile radius of NIPCO's Eagle substation in Sioux County, Iowa (six miles at 43 degrees from Hawarden, IA). All radio stations, referred to as remote network terminals, will be fixed stations which will be located inside the pilot subscribers premises, with fixed antennas, connected via coax cable mounted externally.

Applicant has the concurrence of both the licensee of the PCS Block F market and the local incumbent microwave licensee as both are participating in the subject tests.

Objectives

The following objectives will guide the experiment:

- Demonstrate that all transmitters reliably transmit intended signals.
- Demonstrate that the level of unintended radiation from equipment is within regulatory guidelines.
- Demonstrate that a subscriber unit will successfully establish a link with a base station.
- Demonstrate that a base station will successfully establish a link with multiple subscriber units.
- Determine the quality of the links established between the base station and subscriber units.
- Determine the maximum distance over which a base station will establish a link with a subscriber unit.
- Determine the maximum distance over which a subscriber unit will establish a link with a base station.
- Determine the maximum number of subscriber units that can simultaneously establish a link with a base station.
- Determine the maximum number of subscriber units with which a base station can simultaneously establish a link.
- Determine the impact on performance of subscriber-unit movement.
- Determine the impact on performance of terrain and building blockage.
- Determine the impact on performance of weather.
- Determine the impact on performance of stationary and moving reflectors.
- Determine the impact on performance of age.
- Determine the length of time over which a two-way link can be maintained.
- Identify equipment malfunctions and design errors.

Contribution of Experiment to the Art of Radio

By using fixed wireless access radio systems to provide voice and data service to rural communities via a CLEC, consumers will be given a choice in local phone and Internet access services and will no longer be forced to rely on a single source of wireline access. Ultimately, such service will allow for new telephone and Internet access where even wireline service may not be available or economically viable.

Item 5 — Area of Operation

The proposed experimentation will consist of one base station located at the following coordinates (in NAD27):

43-04-01 N Latitude, 096-24-01 W Longitude

The remote units will operate within a 10 mile radius of the above-stated coordinates for the base station which is located at the Northwest Iowa Power Cooperative's Eagle substation in Sioux County, Iowa (six miles at 43 degrees from Hawarden, Iowa). Operations will be confined to the Sioux City, Iowa BTA, in the counties of Plymouth, O'Brien, and Ida. All remote stations, referred to as remote network terminals, will be fixed stations which will be located inside the pilot subscribers' premises, with fixed antennas, connected via coaxial cable mounted externally.