Introduction

Wireless Facilities, Inc. ("WFI"), also referred to herein as "Applicant", is an engineering firm based in Reston, VA. WFI desires to test certain equipment to determine various aspects of equipment performance in the provision of broadband services.

In the context of the current project, WFI proposes to study the characteristics of wireless channels in the field environment for the purposes of channel modeling and propagation analysis. Through the use of various types of equipment proposed by several vendors, along with close work with educational institutions, WFI will determine the viability of the indoor or outdoor use of frequencies between 90 GHz and 100 GHz.

Characterizing the wireless channel at various high-order frequencies remains crucial to understanding the potential for the provision of broadband services. WFI's evaluation and development of equipment will involve a series of RF measurements from equipment operating indoors and outdoors to identify propagation impairments.

Research is currently underway with several manufacturers to determine the best approach in regard to test equipment and antenna types. Although a clear determination of the test equipment to be used will be essential before developing a complete test plan, we can at this point make some assumptions as to the performance and characteristics of such a test set.

Regardless of the test set utilized, the goals will be the same for determining propagation impairments in this first round of RF testing, whereas propagation loss is the key component WFI will examine.

Discussion

By this application, Applicant seeks Commission consent for the testing and experimentation of a data communications system using millimeter wave spectrum. In this experiment, Applicant seeks to test in the 90 GHz to 100 GHz band for private and commercial uses.

WFI Requests Authority for Private Use.

Applicant seeks to test the viability of millimeter wave spectrum (above 90 GHz) for private commercial operations. In this aspect of the experiment, WFI's objective is to establish a millimeter wave communications system capable of carrying viable data communications in a variety of weather conditions. Applicant particularly wishes to test, specifically, whether "off-the-shelf" equipment available on the market which can produce millimeter waveforms at frequencies above 90 GHz. WFI desires to independently test the viability of such equipment for in high-speed data transmissions.

Public Interest

The proposed experiment is important to the public interest. The experiment will enable WFI to fulfill its to become an important part of the next generation of communications systems. Specifically, WFI aspires to contribute to the continued development of the nation's communications network through the results of these studies. Public interest considerations, in the grant of the instant proposal, are significant to many sectors of the U.S., and WFI, as a technology agnostic company, is well positioned to provide independent evaluation and verification of various types of equipment available on the market today to provide communications services.

Pursuant to Section 5.63 of the Commission's Rules, this experiment will contribute to the development, extension, and expansion of the use of wireless frequencies because, heretofore, such ultra high band frequencies have been unusable by the private sector. Further, the use of such frequencies has not been thoroughly investigated.

While significant testing has begun in a laboratory environment, and in conjunction with educational and corporate entities, with respect the potential technological applications, WFI believes that real-world testing will yield positive results. If successful, the Commission and the Public will be served by the use of additional spectrum available at 90 GHz and above.

Geographic Area of Study

Testing in the instant proposal takes place on Reston, Virginia at locations in and around 1840 Michael Faraday Drive, Reston, VA 20190. WFI also respectfully requests that such studies take places in additional areas within the Washington / Northern Virginia Major Trading Area ("MTA") in such areas where harmful interference will not occur to existing facilities.[1]

[1] The term "Major Trading Area" is pursuant to definitions by Rand McNally Corporation.

Program of Research and Experimentation Proposed

WFI requests authority to test off-the-shelf equipment produced by various manufacturers for the purpose of studying the potential for commercial data communications over millimeter wave frequencies. This research will take place in the Washington MTA, based at the corporate facilities in Reston, VA.

Objectives to be Accomplished

WFI's objectives, in obtaining an experimental license, are to measure and verify the performance of off-the-shelf equipment for use in the transmission of data across millimeter wave frequencies. Through such testing, WFI intends to validate not only the performance of transmission, amplification, and antenna equipment, but also demonstrate the viability of such applications.

Contribution to the Development of the Radio Art

Millimeter wave frequencies are not widely used, however, WFI believes that a variety of companies have improved equipment performance. As such, WFI will not only test existing equipment, but also evaluate both the performance of such systems to determine ways in which improved communications systems can be developed. This work includes not only a technical evaluation, but also studies on the underlying telecommunications principles used to transmit digital data.

The work is significant as the recent rush to utilize wireless frequencies continues. As the airwaves continue to be utilized, the necessity to develop technologies applicable in a variety of frequencies remains critical to the future success of U.S. telecommunications. In the study and development of millimeter wave technology, through the evaluation of current off-the-shelf equipment, WFI studies will result in not only suggestions for the improvement of equipment, but ultimately in the enabling of network operators to offer improved service and reduced costs to users.