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ORIGINAL

July 24, 1997

VIA HAND DELIVERY

William F. Caton, Acting Secretary
Federal Communications Commission
Experimental Licensing Branch
2000 M Street, NW
Suite 230, MS 1300E1
Washington, D.C. 20554

Re: Spike Technologies, Inc.
Experimental Station WA2XCV
Nashua, New Hampshire
Progress Report

Dear Mr. Caton:

Yesterday, Spike Technologies, Inc., by counsel, filed a facsimile copy of its Progress Report pursuant to Section 5.204(a) of the Commission's Rules in connection with the above-referenced experimental facility.

Attached hereto is the original, signed Progress Report, along with a date-stamped copy of yesterday's filing for the convenience of Commission staff.

Please contact undersigned counsel if there are any questions.

Very truly yours,

E. Lawrence Zolt

cc (via Hand Delivery): H. Franklin Wright, OET
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Progress Report 2

Introduction

Spike Technologies is a microwave equipment provider with technical facilities in Nashua, New Hampshire. Spike's technical strengths include a proprietary sectored antenna system that creates a multitude of narrow, individually-focused beams, resulting in greatly increased capacity through frequency reuse, two-way capabilities, and the ability to reduce interference to and from the system by positioning the beams accordingly.

In late 1995, Spike began developing equipment for bi-directional delivery of digital services such as Internet, data connectivity, videoconferencing and telephony over MMDS channels. These services will enable the wireless cable operator to more effectively compete against the traditional cable operator.

In July 1996 Spike was granted an experimental license to test its systems using MMDS spectrum in the vicinity of the Company's Nashua, New Hampshire technical facility. The license specifies that Spike is required to submit semi-annual reports of its progress to the Commission. The first of such reports was filed in January 1997 ("the January 1997 Report"), and contains details of Spike's accomplishments in both technical and market development issues.

This is the second of Spike's semi-annual updates to the FCC, and is drafted with the assumption that the reader has already seen the January 1997 Report. In order to avoid repetition, we will refer to that report as appropriate.

Summary of Action Items from the January 1997 Report

Throughout the January 1997 Report, we touched on various technical issues, and in many cases we mentioned our tactics going forward in these respective areas. To save time, we will summarize the items from that report.

By January 1997, we had made significant progress in our component-level designs, and our planned enhancements for our components were fairly clear. We needed to add diagnostic capabilities to our transceivers, so they could be monitored remotely. Also, we needed to examine additional modem designs, to explore different modulation techniques. But we were less clear on what system-level issues might arise, although we knew they were certain to surface.

Our progress during the past six months has focused mostly on system-level issues. We did make some design changes to our transceivers, but the diagnostic enhancements must be made in concert with overall system modifications, so we moved our attention to those system issues. Unfortunately, additional modem prototypes suitable for bidirectional broadband data transmission have not become available, despite promises from several manufacturers. So our system-level testing is still based on the QPSK symmetrical modems we used six months ago. We are quite comfortable with these modems, and their reliability has allowed us to move forward aggressively on several fronts.

This report will focus on several issues: (i) Integration of computer networking equipment with the broadband RF equipment; (ii) macro cell size issues; (iii) the pending two-way ruling and our system; (iv) future development plans.

Network Integration

Our early development focused mostly on the RF/microwave portion of the system. Originally we underestimated the complexities of integrating the RF gear with the computer networks. This task is actually quite daunting, and the scarcity of personnel with backgrounds in both areas does not help. But we have managed to make significant progress in this area.

Two-Way Rulemaking

On February 10, 1997, a Petition for Rulemaking ("the Petition") was filed by several MMDS groups. It contains a technical study that outlines some issues and concerns that must be considered when assessing the interference potential of a two-way system. Our system overcomes a significant portion of these concerns.

The Petition indicates that numerous subscribers transmitting simultaneously can create an interference hazard because the signals are additive, and even if they are low in power, they can add to create the equivalent of a very strong undesired signal.

The nature of our multiple access technique is such that only one subscriber transmits at a time within a given sector. So with 20 sectors, we have a maximum of 20 subscribers transmitting simultaneously. Each of these subscribers uses a directional antenna aimed inward toward the base station, further reducing signal levels leaving the protected area. For subscribers near the perimeter of the coverage area, special antennas with low backlobes can be used. So clearly, our multiple access techniques, combined with our directional subscriber antennas, serve to reduce unwanted interference.

Future Developments

Digital Repeaters

We have begun development of a digital repeater that can extend the range of a base station in a given direction. This repeater actually demodulates the RF signal, reducing it to digital information, and then creates an entirely new RF signal that represents the same info. The alternative would be to downconvert the RF signal, and then upconvert the resultant baseband signal for retransmission. Unfortunately, this approach adds unwanted noise to the signal, making it difficult for the RF modems to operate properly. Our fully digital repeaters have been tested internally, and we will notify the Commission of any further developments in this regard.

Telephony

Our system is capable of providing broadband data to numerous subscribers, but we have been seeking additional technology to allow our system to provide telephone services. We are now testing a software-based approach that will allow our system to function as a backbone for a variety of telephone services. Our ultimate goal is to provide the best system for data and telephony. We are not focusing on video at this time, as we believe the business model for video is very different than for telephony or data.

Network Management Software

Most devices on the network can be monitored using the Simple Network Management Protocol (SNMP). Each such device contains a chip that sends vital information back to the network management software. A systems administrator can view a map of the network, identifying any defective devices and disconnecting them as needed. As networks become larger and more complex, this software becomes a necessity.

Two-way wireless systems will require specially modified network management software. Because the bandwidth within a sector is shared, it is important to monitor the usage within each sector to see who is hogging the bandwidth. Good network management software can keep a count of how much data each user transfers. This can relate directly to billing, because if usage can be monitored, a usage-sensitive rate structure can be developed. We are now using the management software that is provided by the RF modem manufacturer, but we feel that additional development can add significant functionality to the management capabilities of the system. Specifically, our systems administrator should be able to keep

track of all vital RF modem parameters, all transceiver performance issues, and all repeater traffic statistics. We have begun internal development in this regard.

Please call with any questions (212) 924-5000

Sincerely,

7/23/97

Douglas F. Carey
President
Spike Technologies, Inc.