ORIGINAL

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August 17, 1999

VIA HAND DELIVERY

Ms. Magalie Roman Salas, Secretary
Federal Communications Commission
Experimental Licensing Branch
445 12th Street, S.W.
Washington, DC 20554

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

Dear Ms. Salas:

Submitted herewith on behalf of Spike Technologies, Inc. ("Spike"), licensee of the above-captioned experimental facility, is an original and one copy the station's annual progress report as required by the terms of its authorization. This is Spike's fifth progress report filing.

Please contact the undersigned if there are any questions.

Respectfully submitted,

E. Lawrence Zoll

cc: Carl Huie, OET

Enclosure

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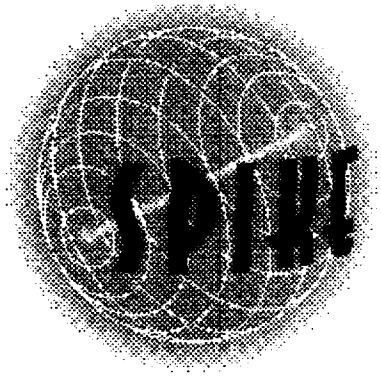
Spike Technologies, Inc.

Experimental License

Progress Report No. 5



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 in a highly competitive marketplace for delivery of communications services.

In July 1996 Spike was granted an experimental license to test its systems using MMDS and ITFS spectrum in the vicinity of the Company's Nashua, New Hampshire technical facility. The license specified that Spike was 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. The second of such reports was filed in July 1997 ("the July 1997 Report"), and focuses on equipment integration issues, macro cell size, the pending two-way ruling and future development plans. The third report was filed in January 1998 (" the January 1998 Report"), and provides information on equipment design and test improvements, type acceptance and the current two-way rulemaking proceeding, CLEC certification activity and International efforts. The fourth report was filed in July, 1998 ("the July 1998 Report"), and discussed developments in the areas of: Equipment design and testing, expansion of system operations, CLEC certification, International efforts, Type acceptance and the two-way rulemaking proceeding.

The experimental license was renewed for a second two-year term effective August 1998, and now requires annual reporting.

Summary of Items from the Prior Reports

Throughout the January 1997 Report, we touched on various technical issues, and in many cases we mentioned our approaches going forward in these respective areas. By January, 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. We were less clear on what system-level issues might arise, although we knew they were certain to surface.

By June 1997, we were well focused on system level issues including the integration of computer networking equipment with the broadband RF equipment. Additional modem prototypes suitable for bi-directional broadband data transmission had still not yet become available.

By January 1998, we had improved our transceiver design and the equipment type acceptance process was underway. Necessary system performance parameters, to ensure robust operation, were becoming clear and our first international system was installed in South America. We also began the process for certification as a Competitive Local Exchange Carrier (CLEC).

By July 1998, we had obtained CLEC certification and expanded our South American installation to service a larger subscriber base. We continued our involvement in regulatory issues and submitted additional comments for the 2-way rulemaking. We also received a grant of equipment authorization (type certification) for our initial transceiver design.

Since the last report, we have continued to make significant progress in several areas including equipment design and testing, international efforts and our continued involvement in regulatory issues. This report will focus on these areas in addition to planned future activities.

HARDWARE DESIGN AND TEST

Transceiver Design

The second iteration of our 2.5 GHz transceiver design has been completed. The transceivers are now completely enclosed by a metallic housing allowing improved isolation sector to sector in our multi sector system. The enclosures are provided with molded-on fins for improved heat dissipation. More importantly, with the new design, the addition of digital circuitry and software control now allows remote programming, additional diagnostic capabilities, and ease in performance monitoring, faster service response and prevention of repeated and/or unnecessary tower climbing by service personnel. Additional improvements in phase noise and linearity are also allowing integration work with higher order QAM modulation modems.
The latest transceiver forms the basis for additional development work on higher frequency transceivers for the 3.5 GHz band. We hope to further explore use of this equipment in relation to the 3650-3700 MHz band and the current FCC NPRM (ET Docket No. 98-237).

Modem Equipment

Most of our efforts have continued to include the QPSK (or QAM 4) symmetrical modems we have been using all along. These modems continue to perform reliably with more than adequate throughput.
We have implemented modem upgrades to the newest firmware version that has several improvements and enhancements, including Y2K readiness. The new modem software is coupled with new management software, which runs an increased number of modems and exhibits higher data throughput.
We are also pursuing integration with DOCSIS compliant, high order modulation (QAM16, QAM64) modems.
This is quite challenging, as commercially available modems designed for wired cable plants and DOCSIS compliance, do not account for the characteristics introduced by a wireless transmission link.
We were able to accomplish a significant amount of work on modems incorporating Direct Sequence-Code Division Multiple Access (DS-CDMA) and achieved German Homologation (type approval) of our new 3.5GHz system.

Antenna Development

Construction of two new laboratories at Spike's Nashua facility is advancing and nearing the final completion stages. One lab will house two shielded antenna chambers (tapered and near-field) for high frequency measurements and analysis. The other lab is intended for research, study of tolerance issues and improving equipment performance at high frequencies.

SYSTEM DESIGN AND TEST

We are in the process of upgrading the Nashua 2.5 GHz system to the latest version equipment. We have applied for authorization in the Experimental Radio Service for the purpose of developing 2-way wireless communications systems and equipment for use in the 3.5 GHz band to facilitate implementation of broadband bi-directional wireless local loop, high-speed internet access, Wide Area Network ("WAN") connectivity and videoconferencing services. Spike's program of experimentation will feature the use of its new 3.5 GHz transceiver and associated integration equipment. Although this system is currently designed to operate in the 3400-3600 MHz band, Spike is seeking authority to conduct experiments in the entire 3400-3700 MHz band on a non-interfering basis. Our present system employs FDD (Frequency Division Duplexing) using different channels for communications in upstream and downstream directions. Operation of the existing system will allow us to test modifications necessary for evaluation of the 3650-3700 MHz band, which will requireTDD (Time Division Duplexing) operation. The 3650-3700 MHz band is addressed in the Notice of Proposed Rulemaking and Order, In the Matter of Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band, ET Docket No. 98-237, Released December 18, 1998.

System Operations

We have expanded our coverage by adding subscribers for our market and system tests. This will allow us to gather additional information on subscriber site capability and system performance. Implementation of the remotely controlled subscriber's transceivers will allow monitoring of the improved system capability, and remote diagnostics will continue to provide valuable information .

International

On July 14, 1999, at the New Orleans, LA, WCA Booth #119, Spike Technologies announced the completion of the first phase of a new Broadband Wireless Local Loop (BWLL) installation in Caracas, Venezuela.
Red Platino, an official Venezuelan government agency focusing on the development of state-of-the-art IT infrastructure for the Venezuelan government, represents the second Spike customer installation in Venezuela. Spike's first Venezuelan installation, in Merida, was recognized with a SuperQuest award for Best Remote Access Solution at the 1998 SuperComm show in Atlanta.
Red Platino was given the formidable task of interconnecting dozens of government agencies with a reliable high-bandwidth local loop in the capital city of Caracas. After a stringent evaluation process and examining the existing Spike Technologies wireless system in Merida, Red Platino concluded that the PRIZM Broadband Delivery System (BDS) was the best solution for its infrastructure needs.
"Our mission was to construct a reliable high speed network for the official national government telecommunications," said Alejandro Bermudez, Director, Information Technology, Red Platino. "The Spike PRIZM system is very quick, up to 10 MBPS in each sector, and we have received positive feedback from the government offices we have connected at this time. Currently we have over 50

locations online, with multiple users in each location. Our goal is to network over 400 locations. The Ministry of Defense is one example of a government agency going through this network. It connects over 750 computers to a single subscriber unit."
Video conferencing and high speed Internet access are two of the main applications Red Platino is employing with the PRIZM BDS. Bermudez added, "We very much like the versatility of wireless. We can change a subscriber in less than two hours. It is just a matter of taking an antenna off of one roof and moving it to another. Right now we are in the middle of negotiations to roll out a second base station in Caracas and intend to extend coverage to the entire state in the near future."
Phase one of a system deployment in Warsaw, Poland, is currently under way. The system is intended for data transfer, video conferencing and Internet access. Phase two to expand the system is scheduled for the end of August 1999, which will bring additional subscribers to the system network.
A system is operating in Ghana, Africa, and serves as the wireless interface between a banking institution and
its ATM facilities within the coverage area.
These are some examples of the public benefits obtained through the use of our technology. This technology was, and continues to be, developed and expanded under our granted experimental license.

FCC Regulatory Matters

We have continued our involvement in regulatory issues and have submitted additional comments on the NPRM MM docket 97 -217, addressing 2-way communication enhancement of the MDS and ITFS services.
As part of such effort, we had the opportunity to personally submit additional comments on the same subject during our visit to the Commission's facilities in March 1999. At that time, we presented an overview of Spike's products, present company status and future goals. We plan to vigorously continue our participation and involvement in pertinent matters.

Future Activity

Spike plans to continue exploring operation in multiple frequency bands.
Experimentation with TDD (Time Division Duplexing) protocols is also anticipated.
The technical efforts we have discussed will be explored both domestically and internationally. We must continue identifying multi-user system capacity and interference parameters. Further evaluation of new modulation methods and system architectures will prove invaluable.

If any Commission member has questions, please feel free to contact me.
Sincerely,

Christopher Moritz
Director
Systems Engineering and Government Affairs
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