Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Federal Communications Commission Seeks	)	**ET Docket No. 06-89**
Seeks Public Comment On Creation Of a	)	
Spectrum Sharing Innovation Test-Bed	)	

REPLY COMMENTS OF PROGENY LMS, LLC

Progeny LMS, LLC ("Progeny") respectfully submits these reply comments in the above-captioned proceeding on the Federal Communications Commission's ("FCC") evaluation of issues related to the creation of a Spectrum Sharing Innovation Test-Bed("test-bed").[1] Progeny supports the President's Spectrum Policy Initiative's call to optimize the use of spectrum assets between federal and non-federal users and the efforts of the FCC, in conjunction with the National Telecommunications and Information Administration ("NTIA"), to implement a test-bed pilot project as an important component of the nation's spectrum strategy for the 21st century.[2] The Commission's Public Notice sought comments on how to implement the

[1] *Federal Communications Commission Seeks Public Comment On Creation Of A Spectrum Sharing Innovation Test-Bed,* Public Notice, ET Docket No. 06-89, rel. June 8, 2006 (*Public Notice).*

[2] *Presidential Memorandum on Spectrum Policy for the 21st Century,* 69 Fed. Reg. 1568 (January 6, 2004).

test-bed, which represents a joint effort between NTIA and the FCC to evaluate innovative methods for spectrum sharing among disparate users of the finite radio spectrum.[3]

I. Introduction

Progeny supports the concept of a test-bed as a valuable regulatory tool. A test-bed can provide structured processes and factual results to support more informed spectrum policy development. Thus, the test-bed is an important way to advance one of the original goals outlined by the Presidential Memo on Spectrum Policy to "facilitate policy changes to create incentives for more efficient and beneficial use of spectrum and to provide a higher degree of predictability and certainty in the spectrum management process as it applies to incumbent users."[4]

In particular, Progeny lauds the technical approach embraced by the test-bed proposal to address potential sharing opportunities between federal and non-federal users. Increased demand for finite spectrum resources makes enhanced sharing opportunities critical. The important questions the

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[3] *See* Public Notice, page 1. These goals also are outlined in the U.S. Department of Commerce, Spectrum Policy for the 21st Century – The President's Spectrum Policy Initiative: Report 1: Recommendations of the Federal Government Spectrum Task Force 26 (June 2004) (President's Federal Spectrum Policy Report) available at http://www.ntia.doc.gov/reports/specpolini/presspecpolini_report1_06242004.pdf.

[4] *See* Presidential Memo on Spectrum Policy, Memorandum for the Heads of Executive Departments and Agencies, Subject: Spectrum Policy for the 21st Century, rel. June 5, 2003.

test-bed pilot can examine, such as dynamic spectrum access techniques, are at the heart of many spectrum policy decisions the federal government has faced over the last several years and will need to confront into the future as demand for radio spectrum continues to grow. The test-bed puts those questions in an objective, technical framework, which best advances public interest considerations for efficient spectrum use.

Progeny has a long-standing interest in the types of flexibility and enhanced sharing issues that are raised for consideration in the Commission's Public Notice.[5] The 902-928 MHz Multilateration Location and Monitoring Service band in which Progeny is licensed to operate provides an excellent example of a complex spectrum sharing hierarchy. The 902-928 MHz band is allocated among the following federal and non-federal users: (1) Federal radiolocation systems and Industrial, Scientific and Medical (ISM) equipment may provide service on a primary basis.[6] (2) Federal fixed and mobile services are secondary to federal radiolocation systems and ISM equipment.[7] (3) LMS licensees are secondary to federal users and ISM devices, and may not cause interference to and must tolerate interference

[5] Progeny is the largest commercial license-holder of M-LMS licenses at 902-928 MHz, with 8 MHz of bandwidth in Economic Areas (EAs) covering a United States population of 235 million.

[6] 47 C.F.R. §§ 2.106, 18.301, 18.111(c).

[7] 47 C.F.R. §§ 2.106 n. G11.

from, these users and devices.[8] (4) Amateur radio operations may operate on a secondary basis to LMS. [9] (5) Unlicensed devices are authorized under Part 15.[10] Progeny has consistently taken the view that greater spectrum flexibility will be successfully achieved in this band if the Commission relies upon objective technical rules to protect against interference.

II. Specific Comments Further the Test Bed Goals

Progeny supports the views of several commenters in this proceeding that test-beds are a useful tool to further validate cutting edge technical solutions to sharing scenarios. For example, Shared Spectrum Company recommends that the test-bed focus on advancing the further development of dynamic sharing and cognitive radio technologies.[11] The test-bed's effectiveness would be optimized if it is focused on furthering the development of technologies designed for increased spectrum efficiency, including advanced smart antennas and cognitive radio technology.

III. Provision of Multiple Test Beds

[8] 47 C.F.R. § 90.353(a).

[9] 47 C.F.R. § 97.301.

[10] 47 C.F.R. § 97.361.

[11] *See* Comments of Shared Spectrum Company (*SSC Comments*) at 5.

Several commenters suggest that the Commission should establish multiple test beds.[12] For example, Motorola suggests that NTIA and the FCC create two test-beds, one below 1 GHz and one above 4 GHz. Software Defined Radio Forum (SDRF), which notes that the "allocation of spectrum for specific experiments should be sufficiently flexible to accommodate a variety of types of experiments",[13] contends that voice interoperability between Federal and non-Federal bands may require some narrowband channels below 1 GHz, while experiments around video channel degradation "could use channel sizes from 1.25 MHz to 5 MHz."[14]

In general, multiple test-beds are likely to further the Commission's efforts in understanding the different types of sharing that can occur in particular frequencies and using different applications. However, Progeny notes that it may be useful for the Commission to limit the initial scope of the pilot program to a limited number of test-beds to refine mechanisms and procedures for collecting and analyzing data. Finding the right formula for the logistical aspects of the program in the initial phase of the pilot program by focusing on a limited data set will help to provide a template for the remainder of the test-bed project.

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[12] SSC Comments at 7. Comments of Software Defined Radio Forum at 5 (*SDRF Comments*). Comments of Terrestar Networks at 3 (*Terrestar Comments)*. Comments of Motorola at 4 (*Motorola Comments)*.

[13] SDRF Comments at 7.

[14] *Id.*

IV. The Test Bed Should Focus on Advanced Technologies that Facilitate Spectrum Sharing

The Shared Spectrum Company comments cite the Commission's outlook on cognitive radios in a 2005 Report and Order that concluded that cognitive radios have "the potential to initiate a new era in radio frequency spectrum utilization."[15] ArrayComm believes that smart antenna technology also has "the potential to further improve spectral efficiency."[16] These innovations have the potential to "foster development of a wide range of broadband, military/homeland security, and public safety applications."[17]

Progeny agrees that the test-bed should test advanced technologies that are designed for spectrum-efficient applications. In particular, two promising technologies, smart antennas and cognitive radios, have potential to enable the type of sharing opportunities that the test-bed hopes to validate. These technologies are designed to coexist with other radio services in the same band. The Commission should use the test-bed to facilitate ways to technically validate advanced technologies that offer great possibility of increased spectrum sharing.

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[15] SSC Comments at 4 (*quoting* Facilitating Opportunities for Flexible, Efficient and Reliable Spectrum Use Employing Cognitive Radio Technologies, *Report and Order*, ET Docket No. 03-108 (2005) ¶ 36) .

[16] Comments of ArrayComm at 2 (*ArrayComm Comments)*.

[17] SSC Comments at 3.

V. The Commission should grant Test-Bed Participants Maximum Flexibility

SDRF noted that in order to maximize the promise of the development of new spectrally efficient technologies, "participant(s) should be provided maximum flexibility to engage in a wide variety of experiments."[18] Motorola echoes SDRF's call for flexibility.[19] Cingular believes that "flexibility should be encouraged so that simultaneous tests of incompatible air interfaces and access technologies are possible."[20] Further, Cingular does not want the test-bed to operate under criteria that would inhibit such testing on a simultaneous basis.[21]

The Commission should allow participants to test a wide range of applications in the test-bed. Progeny agrees that the participants should be allowed to experiment with maximum flexibility. Participants should be given the opportunity to test out a wide range of theories. These participants will still have to operate within technical parameters laid out by the Commission to mitigate harmful interference. However, participants should be allowed to test any technology using any service as long as they operate within a sound technical framework.

VI. Participants Should Not Cause Harmful Interference to Incumbent Users

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[18] SDRF Comments at 8.

[19] Motorola Comments at 10.

[20] Comments of Cingular at 6 (*Cingular Comments*).

[21] *Id.*

As a threshold consideration, participants should design their tests to mitigate harmful interference to incumbent users.[22] Test-bed participants should adhere to this principle as the fundamental essence of the test-bed is premised on co-existence between different users. As the Shared Spectrum Company has proposed, "clear and detailed requirements [should] be established to ensure that proposed sharing technologies can protect incumbents from harmful interference."[23] If interference does occur, the participant should modify its testing equipment to prevent further interference. The Commission should encourage the test-bed participant to work with the incumbent user to resolve the cause of the interference.

VII. Conclusion

Progeny congratulates the Commission for moving forward with the test-bed as a critical aspect of spectrum management policy changes for the 21st century. To this end, Progeny encourage the Commission to move forward expeditiously with the creation of pilot programs to test important ideas about sharing and analyze how advanced spectrum-dependent technologies can better advance the goals of spectrum sharing and efficient and effective spectrum use. Increased user demands on the radio-frequency

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[22] Many commenters have noted the need to protect incumbent users from harmful interference. *See* SDRF Comments at 4. Comments of ARRL at 7. Comments of Shure Incorporated at 3. Cingular Comments at 2.

[23] Shared Spectrum Comments at 7-8.

spectrum, a finite resource, will only increase the relevance of the test-bed program over time.

Respectfully,

_/s/ Janice Obuchowski_____
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July 24, 2006