Before the
National Telecommunications and Information Administration
U.S. Department of Commerce
Washington, DC 20230

In the Matter of	)	
	)	
The President's Spectrum Policy Initiative	)	Docket No. 060602142-6142-01
Spectrum Sharing Innovation Test-Bed	)	

To: National Telecommunications and Information Administration, U.S. Department of Commerce

COMMENTS OF CINGULAR WIRELESS LLC

Cingular Wireless LLC ("Cingular"), by its attorneys, hereby responds to the *Notice of Inquiry* seeking comment on the creation of a test-bed to evaluate innovative methods for spectrum sharing among federal and non-federal users ("*Notice*").[1] Cingular has been proactively working with homeland security and public safety officials to develop applications that would permit federal use of CMRS networks.[2] The availability of a test-bed program could facilitate additional efforts at federal/commercial spectrum sharing provided the following criteria govern:

- The test-bed should not be deployed in congested spectrum or spectrum allocated pursuant to competitive bidding;
- The test-bed should be controlled by the government and should not become a vehicle for endorsing a single, proprietary technology; nor should it be focused on opportunistic sharing between licensed and unlicensed devices;

[1] *The President's Spectrum Policy Initiative Spectrum Sharing Innovation Test-Bed*, Docket No. 060602142-6142-01, *Notice of Inquiry*, 71 Fed. Reg. 33282 (June 8, 2006) ("*Notice*").

[2] For example, on May 2, 2006 at Rash Field in the Inner Harbor of Baltimore, Maryland, Cingular participated in a demonstration of public safety applications available over a commercial IP multimedia subsystem ("IMS"). IMS permits the sharing of different media during a single transmission — *i.e.*, numerous applications such as voice communications, video feeds, and file transfers can be utilized simultaneously.

- The test-bed should be available for a wide variety of tests utilizing a variety of technologies; and

- Prior to gaining access to the test-bed, a party must (i) demonstrate that the experiment will not cause harmful interference to any incumbent operator, (ii) describe the purpose of the test, and (iii) provide pre-experiment assumptions and predictions. This information, as well as any and all results from the test-bed experiments and demonstrations, should be publicly available.

INTRODUCTION

The instant proceeding arises out of a May 29, 2003 Executive Memorandum establishing the "Spectrum Policy Initiative" ("SPI") which called for an analysis of spectrum use by the Federal government and recommendations for promoting "more efficient and beneficial use of [this] spectrum without harmful interference to critical incumbent users."[3] The impetus for the SPI was the recognition that spectrum is a limited resource and that the Federal government may not be utilizing spectrum efficiently at a time when demand is increasing tremendously.[4] The SPI sought to "unlock the economic value and entrepreneurial potential" of government spectrum, while also protecting incumbent government operations.[5] In particular, the SPI charged the Department of Commerce with developing recommendations for permitting access to federal spectrum by state and local governments and the private sector.[6] The SPI also directed the Department of Commerce to facilitate policy changes that would create "a higher

[3] White House Executive Memorandum, *Improving Spectrum Management for the 21st Century* (Nov. 2004); 69 Fed. Reg. 1568, 1569 (Jan. 9, 2004) ("Presidential Memorandum").

[4] *Id.* ("focus on improving spectrum management policies and procedures to stimulate more efficient and beneficial use of Government spectrum").

[5] *Id.* at 1568.

[6] *Id.* at 1569-70.

degree of predictability and certainty in the spectrum management process as it applies to incumbent users."[7]

In June 2004, the Department of Commerce issued two reports in response to the SPI. Both reports recommended that the FCC and NTIA jointly develop a Spectrum Sharing Innovation Test-Bed to study the feasibility of spectrum sharing among federal and non-federal users. The instant proceeding was initiated to evaluate the test-bed concept.[8]

I. THE TEST-BED PROGRAM SHOULD BE USED TO EVALUATE JOINT USE OF SPECTRUM BY FEDERAL AND NON-FEDERAL USERS AND SHOULD BE DEPLOYED IN NON-CONGESTED SPECTRUM

The Administration correctly observes that the test-bed program may not be successful if the objectives of the program are not properly established.[9] Test-beds that merely permit the evaluation of new technologies will not be informative unless the tests are designed to achieve a common goal. The objective of the test-bed program, however, was clearly spelled-out by the Department of Commerce — to study the feasibility of federal and non-federal users sharing the same spectrum.[10] Accordingly, the program should be limited to technologies designed to facilitate spectrum sharing between federal and non-federal users.[11]

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[7] *Id.* at 1569.

[8] *See Notice*, 71 Fed. Reg. at 33282-83.

[9] *Id*. at 33283.

[10] *See* National Telecommunications and Information Administration, U.S. Department of Commerce *Spectrum Policy for the 21st Century – The President's Spectrum Policy Initiative: Report 2 Recommendations From State and Local Governments and Private Sector Responders*, at 23 (June 2004) ("Spectrum Policy for the 21st Century").

[11] Test-beds should not be utilized to evaluate the possibility of authorizing additional commercial operations into existing commercial allocations. The test-bed also should not be used to evaluate the interference temperature concept. The Department of Commerce properly separated this concept from the test-bed proposal. The FCC's Spectrum Policy Task Force ("SPTF") and Telecommunications Advisory Committee ("TAC"), as well as NTIA, all have concluded that additional study is required before this concept can be implemented. *See, e.g.,*

Moreover, the test-bed program is an outgrowth of the SPI which seeks to "promote the more efficient and beneficial use of spectrum without harmful interference" to incumbents.[12] Consistent with this objective, test-beds should be implemented in a manner that protects incumbent users.[13] The best way to achieve this objective is to deploy test-beds in areas where there are relatively few incumbent users, which requires an analysis of both spectrum bands and geography. To that end, the Administration rightfully requests comments on what steps should be taken to protect incumbent users in the candidate frequency bands.[14]

The first step in identifying test-bed locations that would minimize potential interference should be the elimination of congested spectrum at potential locations. This requires the elimination of most "commercial" spectrum below 5 GHz (with the possible exception of very rural areas) given the wide recognition that this spectrum is extremely congested.[15] The optimal location for test-beds is within spectrum located above 5 GHz.

Spectrum Policy for the 21st Century at 19; *Spectrum Policy Task Force*, ET Docket No. 02-135, *Report*, at 5, 28 (Nov. 2002) ("SPTF Report"); FCC Technological Advisory Council II, Second Meeting Report at 8-9 (Nov. 23, 2001) ("FCC TAC II Second Report"). In particular, the SPTF and TAC concluded that a comprehensive study of the noise floor was necessary prior to implementing the concept in any manner, even on a trial basis. *See, e.g.*, SPTF Report at 5, 28; FCC TAC II Second Report at 8-9.

[12] Presidential Memorandum, 69 Fed. Reg. at 1569.

[13] *Id*.

[14] *See Notice*, 71 Fed. Reg. at 33283.

[15] *See Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems; Implementation of Section 309(j) of the Communications Act -- Competitive Bidding*, WT Docket No. 96-18, *Notice of Proposed Rule Making*, 11 F.C.C.R. 3108, 3139 (1996) (stating that with this rulemaking the Commission plans to encourage more efficient use of spectrum in congested areas, such as PCS); *Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band and Implementation of Section 309(j) of the Communications Act – Competitive Bidding 800 MHz SMR*, PR Docket No. 93-144, *Further Notice of Proposed Rulemaking*, 10 F.C.C.R. 7970, 7985 (1994) (noting that SMR spectrum is significantly more congested than broadband or cellular); Spectrum Policy Task Force, Report of the Spectrum Rights and

In addition to identifying the spectrum location for the test-beds, geographic parameters must be established. The Administration asks whether steps should be taken to protect incumbent users, and whether any geographic limitations should apply to the test-bed.[16] The Administration must limit the test-bed to rural areas to minimize the risk of harmful interference to incumbents. Because fewer incumbents will be located in these areas, limiting test-beds to rural areas will minimize the risk of harmful interference to incumbents.

The Administration should reject any proposals for a nationwide test-bed. Such an approach would limit the number of simultaneous experiments possible on the same spectrum band. Moreover, it would be extremely difficult to assess the interference potential to incumbents from a nationwide test-bed.

II. THE TEST-BED SHOULD BE CONTROLLED BY THE GOVERNMENT AND SHOULD NOT BECOME A VEHICLE FOR ENDORSING A SINGLE, PROPRIETARY TECHNOLOGY

The test-bed program was proposed by the Department of Commerce in response to the SPI because:

> Spectrum policymakers must not only anticipate, but must also help create an environment for important new technology developments. . . . In order to explore the real-world potential of increased technical cooperation between government and industry, NTIA and the FCC should establish a pilot program to allow for sharing in two segments of approximately 10 MHz. This approximately 20 MHz of spectrum would provide a field to test the potential of new technologies that increase the efficient use of spectrum through increased sharing.[17]

Responsibilities Working Group, at 13 (Nov. 15, 2002) (noting the rapid proliferation of PCS); SPTF Report at 10 (noting that some bands, such as those used by cellular base stations, are heavily used).

[16] *See Notice,* 71 Fed. Reg. at 33283.

[17] Spectrum Policy for the 21st Century at 23.

The use of test-beds also would improve the ability of the United States to maintain global leadership in communications technology, a key goal of the SPI.[18] Global leadership can be maintained by constant innovation and experimentation, which would be possible under the test-bed program. The program will have little impact on global leadership, however, if it allows only limited simultaneous testing. The ability to quickly trial numerous new technologies is critical to the ability of the United States to remain at the forefront of communications policy and technology. Accordingly, the test-bed program should be designed to permit simultaneous tests of a wide variety of technologies.

Flexibility should be encouraged so that simultaneous tests of incompatible air interfaces and access technologies are possible. For example, it should be possible to conduct a test in one area utilizing Frequency Division Duplex access, while a test evaluating the merits of Time Division Duplex access is being conducted simultaneously in another test-bed. Criteria should not be established that would inhibit the ability to test a wide variety of incompatible technologies on a simultaneous basis.

The test-bed program was proposed to facilitate collaboration between the government and industry and increase technical cooperation in the development of new technologies.[19] Consistent with this goal, the test-beds should be controlled by the government and should not be available to test proprietary technologies.[20] The test-bed program should be used to share information throughout the government and private sector in order to promote the development of new, efficient technologies designed through a public/private partnership.

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[18] *See* Presidential Memorandum, 69 Fed. Reg. at 1569.

[19] *See* Spectrum Policy for the 21st Century at 23.

[20] *See Notice*, 71 Fed. Reg. at 33284.

To facilitate the collaboration envisioned by the Department of Commerce for the test-bed program, any party seeking to utilize a test-bed should be required to provide a detailed description of the proposed experiment and objectives to the FCC and NTIA. This submission should be publicly available and specify the following:

- Test objective;
- Pre-test assumptions;
- Control criteria;
- Detailed analysis describing why the test will not cause interference to incumbents; and
- Predicted results.

Moreover, once the experiment has been completed,[21] the test-bed user(s) should be required to report its technical results and conclusions to the FCC and NTIA. These findings, which again should be publicly available, could be incorporated into the report requested by the Department of Commerce summarizing the results of the test-bed program.[22]

[21] The test-beds should not be utilized to conduct experiments of an indefinite duration. Cingular suggests that test duration should not exceed twelve months.

[22] *See* Spectrum Policy for the 21st Century at 23. Of course, the FCC and NTIA should have the discretion to withhold information that may undermine national security.

CONCLUSION

For the foregoing reasons, the Administration should establish test-beds that are designed to operate on frequencies above 5 GHz in rural areas. Moreover, the test-bed program should permit multiple, simultaneous tests of incompatible technologies and should be designed to foster collaboration between and among the private sector and Federal Government.

Respectfully submitted,

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