



**Wireless Innovation Forum's Comments to  
the FCC and NTIA regarding the Public  
Notice and Request for Comments on the  
Model City for Demonstrating and  
Evaluating Advanced Spectrum Sharing  
Technologies**

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

In the matter of	)	
	)	
Model City for	)	
Demonstrating and	)	ET Docket No. 14-99
Evaluating Advanced	)	
Spectrum Sharing	)	
Technologies	)	

**COMMENTS OF THE WIRELESS INNOVATION FORUM ON THE FEDERAL COMMUNICATIONS COMMISSION AND NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION MODEL CITY FOR DEMONSTRATING AND EVALUATING ADVANCED SHARING TECHNOLOGIES**

The Wireless Innovation Forum (Forum) is a US based international non-profit organization driving technology innovation in commercial, civil, and defense communications around the world. Forum members bring a broad base of experience in Software Defined Radio (SDR), Cognitive Radio (CR) and Dynamic Spectrum Access (DSA) technologies in diverse markets and at all levels of the wireless value chain to address emerging wireless communications requirements through enhanced value, reduced total life cost of ownership, and accelerated deployment of standardized families of products, technologies, and services.

The members of the Forum commend the FCC and NTIA on their model city proposal, as they have long believed in the establishment and utilization of real world Spectrum Test Beds and Test Cities to mature and validate technologies that will increase spectrum efficiency<sup>1</sup>. As you know, industry and academia have been researching techniques that could conceivably improve spectrum efficiency through improved sharing techniques; however, experimentation

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<sup>1</sup> <http://groups.winnforum.org/p/cm/ld/fid=355>

with these technologies is difficult given the need to protect incumbent operations. In many situations, critical services are using this spectrum and any disruption in service could cause significant harm.

Test-Beds provide an environment in which new technologies can be evaluated to prove their efficacy in improving spectrum utilization. In order to achieve this objective, the Test-Bed should focus specifically on (1) the capabilities of spectrum sharing technologies, (2) ways to reliably identify harmful interference, (3) measuring spectrum efficiency, (4) determining ways to increase spectrum efficiency, and (5) investigation of new efficient technologies as well as (6) the potential value to the economy and society. In addition, Test-Bed experiments must be executed in a controlled and repeatable manner in order to reliably detect and report incidents of harmful interference and avoid conflicts between simultaneous uncoordinated experiments. If done properly, these experiments could lead to improved spectrum sharing mechanisms that enhance interference avoidance capabilities while enabling increased spectrum efficiency.<sup>2</sup> The members of the Forum believe that government sponsorship and funding should be made available to facilitate real world spectrum Test-Beds and overcome existing barriers to spectrum sharing by adjacent and co-channel incumbent spectrum holders.

The members of the Forum further believe that the Test-Bed concept should allow for the progression from testing in a controlled environment to trial deployments in a “real-world” trial city environment that more closely aligns with the intended deployment area and target market. The members of the Forum support the development of Corporative Research and Development Agreements (CRADA) and Other Transaction Agreements to support industry and academic participation in development and deployment of Test-Beds and Test Cities. This approach would

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<sup>2</sup> Comments of the Software Defined Radio Forum, Creation of a Spectrum Sharing Innovation Test-Bed, ET Docket No. 06-89 (2006); [http://www.ntia.doc.gov/files/ntia/sharecomment\\_007.pdf](http://www.ntia.doc.gov/files/ntia/sharecomment_007.pdf)

provide opportunities for wireless system and applications developers to trial and assess the capabilities of their innovative technologies in more complex environments. By adopting this two stage approach, the Forum believes the gaps between experimental development and the release of a new market offering can be narrowed by comprehensively addressing the technical hurdles that need to be overcome thereby reducing the time to market. In addition, the Test City approach would help increase market and investor confidence and serve as a valuable innovation showcase for wireless communications technologies and companies.

The members of the Forum recommend that innovations in the following areas, extracted from the Forum's 'Top 10 Most Wanted Wireless Innovation', be evaluated in the proposed model city<sup>3</sup>:

1. Innovation #3: Receiver Performance Specifications
2. Innovation #4: Low Cost Wide Spectral Range RF Front-End (Multi-octave Contiguous) (Tx,Rx)
3. Innovation #5: Techniques to Minimize Power Amplifier Spectral Regrowth in Non-contiguous Spectral Environment
4. Innovation #7: Context Aware Cognitive Radio
5. Innovation #8: Interference Mitigation Techniques
6. Innovation #9: Standardized Computer Interpretable Policy Language for Cognitive Radio
7. Innovation #10: Flexible Regulatory Framework for Temporary, Cooperative and Opportunistic Access

As noted in the Public Notice, a key to success in establishing Test Beds and Test Cities is easy access to experimental spectrum licenses for industry and academia. Experiments, including test-beds are necessary part of the innovative environment to develop multiband, cognitive radios and DSA technologies to improve spectral efficiency. It is critical to experiment with a wide variety of technologies in order to maximize this promise. To allow this, industry and academia should be provided the maximum flexibility to engage in a wide variety of

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<sup>3</sup> [http://groups.winnforum.org/winnforum\\_top\\_ten](http://groups.winnforum.org/winnforum_top_ten)

experiments. Experimental licenses are necessary for spectrum experiments to protect licensees from interference. The members of the Forum commend the Commission on the recent modifications to the experimental licensing rules as these changes help ensure experimental licenses are issued quickly and are flexible to accommodate unique situations that will arise when experimenting with agile multi-band, cognitive radio and dynamic spectrum access technologies.

In closing, the members of the Forum offer the following for consideration: In recent comments filed by the Wireless Innovation Forum in the matter of “Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550 to 3650 MHz Band” (GN Docket 12-354), the Forum proposed the formation of a Multi-stakeholder Committee supporting a number of work groups advancing spectrum sharing technologies relevant in this proceeding<sup>4</sup>. Once formed, the Forum proposes that this Multi-stakeholder Group would host workshops at appropriate times to bring together participants in the model city deployment to share lessons learned with the broader community and define areas for additional exploration. The Forum’s further proposes to publish the results of these workshops in our Dynamic Spectrum Sharing Annual Report, the inaugural edition of which will be available this fall.

Respectfully submitted,

Bruce Oberlies  
President and Chair  
Wireless Innovation Forum

Dated: 29 August 2014

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<sup>4</sup> <http://groups.winnforum.org/d/do/7518>

