20 May 2015

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Acceptance of Multi-Stakeholder Group requests called out in Report and Order Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354.

Dear Ms. Dortch,

In its Report and Order establishing rules for the Citizens Broadband Radio Service ("CBRS") in the 3550 MHz band, the Commission observed that "a multi-stakeholder group focused on the complex technical issues raised by this proceeding could provide us with a wealth of valuable insights and useful information."[1] The Wireless Innovation Forum commends the Commission for providing industry the opportunity to develop answers to the questions and issues raised in the CBRS rules. As the Commission is aware, the Wireless Innovation Forum's Spectrum Sharing Committee ("SSC") was specifically formed to develop the solutions and standards that will encourage rapid development of the CBRS ecosystem, protect incumbent operations, and benefit all potential stakeholders in the band.[2] And as the Commission is aware, the SSC benefits from participation of a broad based group that includes wireless carriers, network equipment manufacturers, potential SAS Administrators, satellite operators, existing 3650-3700 MHz band licensees, and other parties with an interest in the 3550 MHz band.

The SSC has formed four work groups that work collaboratively to develop the reports, recommendations and standards necessary to establish a commercial CBRS ecosystem. These work groups were presented to the Commission previously and are as follows:

- Work Group 1: Operations and Functional Requirements
- Work Group 2: Security Requirements
- Work Group 3: Protocol Specifications
- Work Group 4: Testing and Certification

In addition, the committee has formed multiple sub-groups/task groups, including a Joint WG1/WG3 architecture group and a FSS Incumbent protection Subgroup under WG1. Participation in these work groups and task groups currently encompasses some 111 participants from over 40 different organizations.

In the recently released Report and Order, the commission proposed a number of areas where a multi-stakeholder group could take action in supporting the band. The four committee work groups have reviewed these "call outs" and welcome the opportunity to support the Commission in the following areas:

[1] FCC 15-47 at Paragraph 416.
[2] Reference Ex Parte filing dated 26 February 2015

Paragraph	Call Out	Work Group
59	We acknowledge that SAS Administrators, potential licensees, and other industry stakeholders will need to develop various implementation details to facilitate development of the Citizens Broadband Radio Service. As described elsewhere in this *Report and Order*, we believe that many of these issues can be addressed during the SAS Approval Process and through the efforts of a multistakeholder group.	WG1
195	We recognize that ensuring compliance with this limit at the boundary is likely challenging on a real-time basis and there are legitimate questions relative to how to develop appropriate predictive models. We also recognize that the use of an aggregate metric could be challenging in a multi-user environment.[449] We encourage any multi-stakeholder group formed to address technical issues raised by this proceeding to consider how this limit should be applied.	WG1
214	For example, it might be possible that instead of the bright-line urban/rural distinction implemented in these initial rules, industry stakeholders (perhaps working through a multi-stakeholder forum) could agree on a "congestion metric" and associated methodology for SASs to reduce CBSD power levels in high-demand areas. We intend to continue an informal dialog with stakeholders on this topic and welcome the submission of additional technical analysis or reports of technological developments that can inform us going forward.	WG1
222	Given the importance of accurate reporting by professional installers, we strongly encourage the SAS and user community, through multi-stakeholder fora or industry associations, to develop programs for accrediting professional installers who receive training in the relevant Part 96 rules and associated technical best practices.	WG4 in partnership with another organization TBD
234	We encourage multi-stakeholder groups to consider the issues raised by the registration rules described in this section, including acceptable contact intervals between CBSDs and SASs, and to suggest appropriate operational parameters.	WG1
237	We encourage industry to develop detailed metrics regarding issues like received signal strength, packet error rate, and technology specific parameters of signal and interference metrics. These metrics could be developed by an industry multistakeholder group. Such guidance could be incorporated in the SAS Approval process described in section IIIH)(3)(b) or incorporated independently by authorized SAS Administrators, subject to Commission review.	WG3
240	We encourage the industry to develop best practices for end-to-end security that can be validated in the equipment and SAS certification processes.	WG2
268	We also require SAS Administrators to implement protocols to respond to directions from the President of the United States or	WG3

	another designated federal entity to manually discontinue operations of its associated CBSDs in a given area pursuant to 47 U.S.C. § 606. SAS Administrators must also implement protocols to manually discontinue operations of their associated CBSDs in response to enforcement actions taken by the Commission.	
289	We agree with Federated Wireless, Google, Motorola Solutions, SIA, the Wireless Innovation Forum, and others, that a multi-stakeholder process could provide insight into the technical factors and interference limits between coexisting services in the 3.5 GHz Band.	WG1
319	We continue to believe that a "light touch" regulatory approach is appropriate for this band and that the rules should include only the high-level requirements necessary to ensure the effective development and operation of fully functional SASs. We agree with commenters that support collaborative, industry-wide efforts to create standards and best practices governing SAS operations. The Commission will assist these efforts through the SAS Administrator approval process, as set forth in III(H)(3)(b). We also believe that an active multi-stakeholder group could help develop industry consensus around the best methods of meeting the SAS requirements.	All
346	We require potential SAS Administrators to develop and demonstrate that their systems include robust communications and information security features during the SAS Approval process.[745] CBSDs shall demonstrate compliant security features during the equipment authorization process. These security protocols will be subject to the Commission's review and approval, with input from NTIA and DoD. We anticipate that given the immense value of industry-wide interoperability, groups – such as the types of multi-stakeholder groups discussed in section III(K) – will develop security models that SAS Administrators may consider, subject to Commission review.	WG2
438	We seek comment on what propagation model(s) are best suited for SAS-based protections of FSS. We solicit measurement results that validate model parameters for combined short range and long range propagation scenarios, involving indoor and outdoor propagation channels. What model(s) are the most accurate in accounting for urban clutter and other environmental factors such as rain attenuation, ducting, etc., and most suitable for modeling statistical variations to support analysis – including possible Monte-Carlo analysis – of many potential interfering sources? In order to generate the same exclusion distances between CBSDs and any individual FSS earth stations in 3650-3700 MHz, we expect each SAS to enforce the same minimum separation distance and we tentatively conclude that each SAS must use the same propagation model. We seek comment and objective analysis from anyone who believes otherwise.	WG1

440	We also invite comment as to whether we can establish a default earth station protection area based on an assumed minimum earth station receiving system gain-to-temperature ratio (G/T) and minimum antenna elevation angle, and what the assumed values of the G/T and elevation angle should be. CBSD operation outside of such a default protection area would be assumed not to cause interference to earth stations receiving in the 3700-4200 MHz band. Such a default protection area would be adjusted by the SAS to accommodate the actual operating characteristics of earth stations that are registered in order to achieve additional protection.	WG1

Details of specific deliverables against these call outs will be provided to the Commission at a later date. We are happy to answer any questions related to this material, so please feel free to contact us at any time.

Sincerely,

Digitally signed by Leonard G Pucker II
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Date: 2015.06.08 11:03:49 -07'00'

Lee Pucker
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