



July 15, 2016

Via Electronic Filing

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

Re: *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:

Led by the multi-stakeholder Wireless Innovation Forum (WinnForum), industry has been making great progress toward consensus standards to implement the Commission's Part 96 rules for the new Citizens Broadband Radio Service (CBRS). A single issue, however, has stalled that process. One major wireless carrier has insisted that the Spectrum Access System (SAS) it uses should be permitted to keep registration information for the carrier's CBRS devices secret from all other SASs as well as from the public. The resulting impasse is blocking adoption of SAS-to-SAS protocols and threatens to delay the Commission's certification of SASs, thus preventing progress toward commercial use of the 3.5 GHz band.

The position that SASs need not share registration information with other SASs is directly contrary to Commission orders. A non-sharing SAS would violate the Part 96 rules and compromise the ability to conduct interference analyses in the 3.5 GHz band. It would reduce the utility of this spectrum for wireless broadband, particularly for General Authorized Access (GAA) devices, and weaken key interference protections for incumbent government and satellite users, as well as utilities, wireless Internet service providers (WISPs), and other commercial broadband operators.

Given the gating nature of this issue, the fact that months of discussion have not produced industry agreement, and the existence of clear Commission rules and orders on the very point at issue, the Commission should take constructive action as quickly as possible. Specifically, Commission staff should reaffirm to all prospective SAS providers at the earliest opportunity that a non-sharing SAS, which does not disclose Priority Access License (PAL) or GAA registration data to other SASs, is not permissible and cannot be certified under Part 96.

1. The Commission Already Has Ruled that Information Sharing Is Required

Sharing of location and other CBRS device (CBSD) registration data among SASs has been a point of discussion since early on in this proceeding. As early as 2014, it was argued that the data required for CBSD registration—geographic location, antenna height above the ground, and so on—constitutes “commercially sensitive information” that should not be shared beyond the registering SAS. A commenter specifically requested that the Commission “make clear that . . . all data that is collected by the SAS . . . will be maintained confidentially by the SAS as the FCC’s agent.”¹

The Commission, though, has repeatedly rejected that position. In its *First Report and Order*,² the Commission emphasized the need for each SAS to have consistent, accurate information on all CBSDs in order to perform its core functions: “Because a CBSD will only be required to contact a single SAS,” the Commission explained, “there is a need for SASs to share accurate registration information so that each SAS has the same, current view of the radio environment.”³ The Commission added that because “transparency is a key element of the authorization framework” established by Part 96, “certain information must be made available to the public—and other SAS Administrators—consistent with usual Commission practices.”⁴

The *Second Report and Order* reiterated these findings, stating that accurate location information from all CBSDs is essential for each SAS to coordinate interactions between and among users in the band and protect incumbent users from harmful interference.⁵ In response to commenters wanting to obscure the specific CBSD locations behind SASs’ internal calculations, the Commission explained that “the CBSD is the best source of its own location information.”⁶

Indeed, the information-sharing requirement is clear on the face of the Part 96 rules themselves. Under Rules 96.39 and 96.45, all SASs approved by the Commission must maintain a database containing accurate location information on *all* CBSDs, including geographical location and antenna height above the ground.⁷ Under Rule

¹ See Comments of AT&T at 31-32 (filed July 14, 2014).

² See *In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3700 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd. 3959 (2015) (*First Report and Order*).

³ *Id.*, ¶ 360.

⁴ *Id.*, ¶ 327.

⁵ *In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3700 MHz Band*, Order on Reconsideration and Second Report and Order, 31 FCC Rcd. 5011, ¶¶ 109, 122 (2016) (*Second Report and Order*).

⁶ *Id.*, ¶ 117.

⁷ 47 C.F.R. § 96.39(a) (“The CBSD must provide the SAS upon its registration with its geographic location, antenna height above ground level”); 47 C.F.R. § 96.45(d) (“When registering with an SAS, Category B CBSDs must transmit all information required under

96.55, these data must be visible not only to other SASs but also to the general public, although identities of the relevant licensees must be obfuscated in public disclosures.⁸ Under Rule 96.63, each SAS administrator must regularly update the required device-specific information.⁹ There can be no question, therefore, that the registering SAS must share the required CBSD information with other SASs. That should be the end of the matter.

2. Commission Licensees Routinely Share Information About Their Licensed Devices

Nor is there any policy basis for failing to implement the clear requirements of the CBRS rules. Resistance to sharing CBSD information appears to be driven by concerns that sharing could reveal proprietary business information of CBRS operators. But holders of FCC spectrum authorizations routinely have to disclose the geographic locations and other information about their fixed radio equipment as a condition of gaining access to public spectrum resources. Location information and other registration data are viewable through the Commission's Universal Licensing System (ULS), International Bureau Filing System (IBFS), and Experimental Licensing System (ELS), as well as third-party databases. These databases present carrier information alongside that of other operators.¹⁰

The Commission has addressed this very issue under the Freedom of Information Act (FOIA). In the *Quad Communications* case, for instance, the Wireless Telecommunications Bureau rejected arguments for keeping the locations of Specialized Mobile Radio equipment confidential, noting that "public interest considerations favoring openness in Commission licensing proceedings compelled disclosure."¹¹ The full Commission agreed, explaining that information about the

section 96.39 plus the following additional information: antenna gain, beamwidth, azimuth, downtilt angle, and antenna height above ground level").

⁸ 47 C.F.R. § 96.55(a)(3) ("SAS Administrators must make CBSD registration information available to the general public, but they must obfuscate the identities of the licensees providing the information for any public disclosures").

⁹ 47 C.F.R. § 96.63 ("Each SAS Administrator designated by the Commission must: (a) Maintain a regularly updated database that contains the information described in section 96.55").

¹⁰ See, e.g., Locations Summary for regular license WQXU727, held by AT&T Mobility Spectrum LLC, <http://wireless2.fcc.gov/UlsApp/UlsSearch/licenseLocSum.jsp?licKey=3821920> (last visited July 13, 2016); application for experimental license WI2XHR, held by T-Mobile License LLC, https://apps.fcc.gov/oetcf/els/reports/442_Print.cfm?mode=current&application_seq=70635&license_seq=71341 (last visited July 13, 2016).

¹¹ *In the Matter of Larry D. Henderson and Robert S. Benz d/b/a Quad Communications on Request for Inspection of Records; In the Matter of Gelico, Inc., Debtor in Possession on Request for Confidential Treatment of Documents*, Memorandum Opinion and Order, 15 FCC Rcd. 17073, ¶ 3 (2000). Customer Proprietary Network Information requirements for

location of the licensee's radio sites and operations was publicly disclosable under the FOIA to further "openness and fairness in our licensing proceedings."¹² So, too, information sharing is required to effectuate the public interest in shared use of the 3.5 GHz band. Unlike the FOIA context, moreover, sharing of CBSD information among SASs would be done subject to confidentiality and use protections established through the Part 96 rules and industry agreement.

3. Information Sharing Is Required to Implement the CBRS Framework

It has been suggested that, rather than sharing the required registration information, a non-sharing SAS could provide other SASs a set of "heat maps" that record the sum of power received from that SAS's CBSDs at each geographical location, as received by a (physically unrealizable) non-directional isotropic antenna. To create this map, the non-sharing SAS would combine CBSD information known only to it. While such a tool might be useful in limited circumstances, it is no substitute for accurate location data, which includes a CBSD's geographical coordinates, antenna height, and status of being indoors or outdoors. These data are critical to interference analysis, which helps SASs avoid conflicting CBSD assignments, protect band incumbents, and maximize shared use of spectrum.

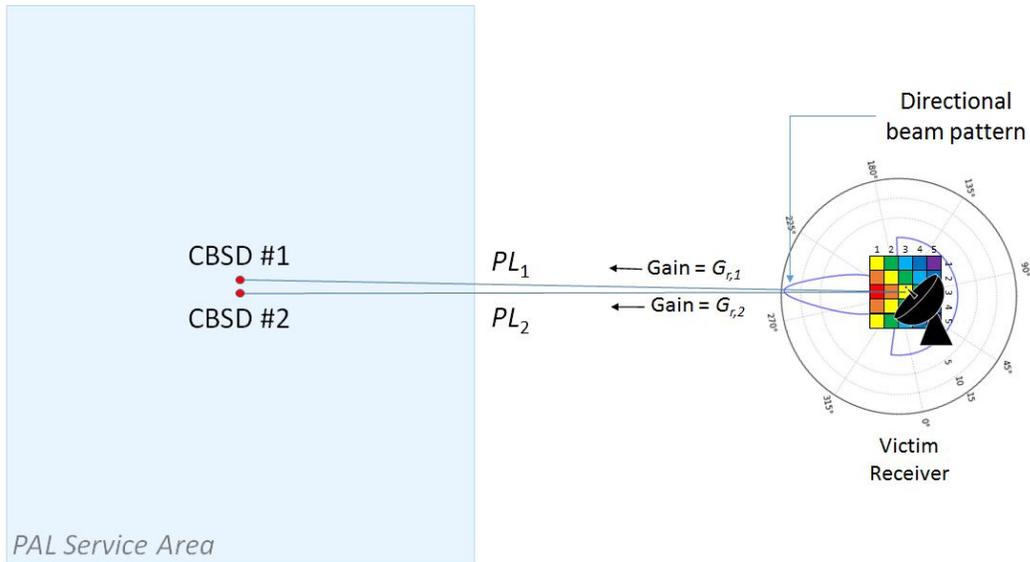
Among other deficiencies, heat maps do not provide information on the direction from which the various components of interference arrive at each point in the map, nor can they easily account for variations in the antenna height of systems affected by the interfering signals. Without these inputs, calculation of interference is generally impossible. For instance, directional information is needed to calculate received interference power into directional receive antennas, while antenna height is needed in urban settings to know whether a building or other obstruction between two devices will prevent harmful interference between them.

Consider the following example: a victim receiver (denoted by the dish antenna) is roughly oriented towards two CBSDs within the same PAL service area, as illustrated in the two images below. Behind the receiver icon, placed on the right in each image, is a hypothetical heat map reflecting power detected at various points around the receiver. In one instance, the two CBSDs are close to one another and both are within the receiver's beam (Figure 1), and in the other, they are far apart and neither is in the receiver's line of sight (Figure 2).

telecommunications carriers are not relevant to SASs' information sharing, as operating a SAS is not a telecommunications service subject to section 222 of the Communications Act, and, in any event, information sharing among SASs is required by Commission rules.

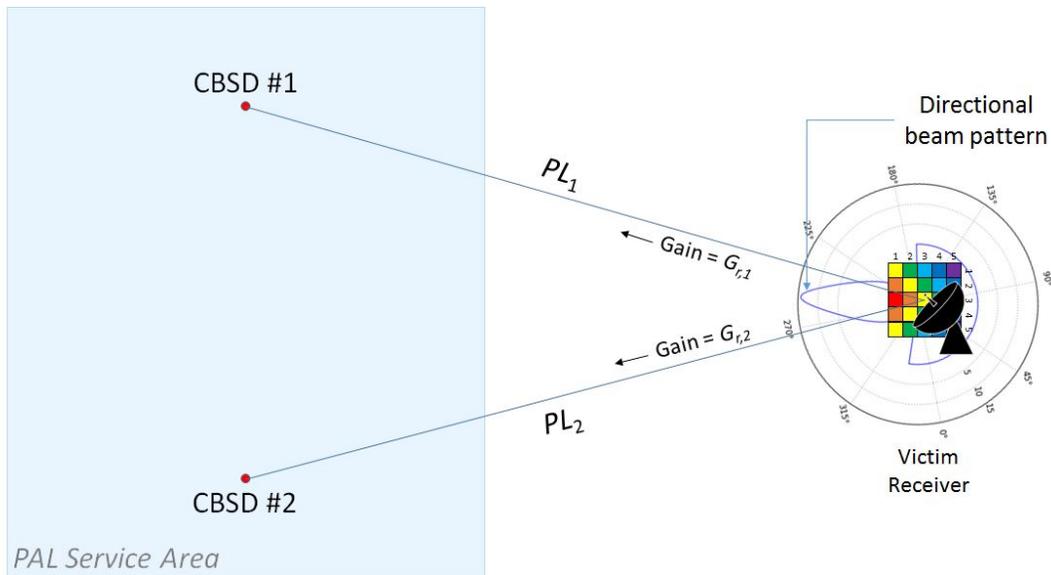
¹² *Id.* at ¶ 11.

Figure 1



Calculation of interference level into a victim receiver that uses a directional antenna pointed toward both of the CBSDs.

Figure 2



Calculation of interference level into a victim receiver that uses a directional antenna pointed toward neither of the CBSDs.

Using reasonable antenna patterns these two situations could result in a difference of up to 20 dB in received interference power, a value large enough to affect SAS determinations of whether or not the CBSDs would cause harmful interference to

the receiver. Yet both situations produce the same heat map, and so any SAS relying solely on that map could not distinguish between them. Thus it would not be able to perform accurate interference analysis to manage the CBSDs.

Nor could a SAS effectively respond to concerns about harmful interference. As added by the *Second Report and Order*, Rule 96.53(o) requires all SAS operators “[t]o receive reports of interference and requests for additional protection from Incumbent Access users and promptly address interference issues.”¹³ But only the non-sharing SAS would be able to identify the operators of the CBSDs it authorizes. SAS providers that lack location information and other relevant data about operational CBSDs could not reliably fulfill the requirements of Rule 96.53(o). They could not determine which CBSDs might be causing harmful interference to incumbents, or even which SAS approved potentially interfering devices. Because SAS providers could not resolve interference issues, naval radars and other incumbent operations would be at greater risk of interference, and incumbent operators would have little choice but to present their concerns directly to the Commission.

Finally, certifying a non-sharing SAS would undermine the reliability of all SASs. Because no other SAS would have information on all registered CBSDs, all other SASs would be dependent on heat maps or other forms of aggregated information provided by the non-sharing SAS. Thus, every SAS would be dependent on information received from the non-sharing SAS. The non-sharing SAS would need to update and distribute its aggregated information constantly for use by the other SASs. A failure in the non-sharing SAS or its connectivity therefore would become a failure in every SAS, and CBRS registrations could be frozen as a result. The beneficial redundancy achieved through information sharing would be lost.

4. Information Sharing Is Needed for Equitable Certification of SASs

Allowing a non-sharing SAS to operate alongside Part 96-compliant SASs would complicate SAS certification and undermine the CBRS service overall. In order to be certified, other SASs would need to demonstrate the ability to interpret the non-sharing SAS’s representations of data. That would add a new requirement for SAS providers that is found nowhere in the Commission’s Part 96 rules or orders, and as explained above, it’s unlikely the new procedure would be workable at all.

In fact, allowing a non-sharing SAS would be fundamentally unfair: Because the non-sharing SAS would need information about all CBSDs, it would establish an asymmetric relationship with other SASs, accepting more data than it shares. Other SAS providers likely would resist sharing more data than they receive in return, causing a new area of disagreement that could spread to incumbent FSS operators, who are required to disclose precise location data to all SASs in order to qualify for interference protection under Rule 96.17. To avoid these problems, the Commission should quickly

¹³ See *Second Report and Order*, Appendix A, ¶ 19.

and firmly shut the door on the concept of a non-sharing SAS.

5. Some Restrictions on Use and Sharing of Device Information Are Appropriate

Rejecting the notion of a non-sharing SAS is not to say that all restrictions on data sharing among SASs are unreasonable. Such restrictions simply must not undermine the Part 96 framework (or otherwise harm the public), and they must apply evenhandedly to all SASs. There could, for instance, be a three-tiered approach to registration data comprising: (1) data that is shared with the general public consistent with Rule 96.55(a)(3); (2) data that must be exchanged with other SASs in order for each SAS to function; and (3) data that need not be shared by the registering SAS. CBSD location data would be included in the second category and subject to restrictions on use and disclosure as agreed by industry. Such a regime would protect the integrity of the SAS system and the legitimate interests of all parties without requiring public disclosure of data that genuinely deserves protection.

To allow the development of such an industry-wide approach and put the CBRS back on track, the Commission should reiterate for all prospective SAS providers that CBSD registration data, including latitude, longitude, height, indoor status, and antenna characteristics (where applicable) must be shared among all SASs.

Sincerely,

A handwritten signature in blue ink, appearing to read "Austin C. Schlick", written over a horizontal line.

Austin C. Schlick
Director, Communications Law
Google Inc.