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

In the Matters of
Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354

PETITION FOR RECONSIDERATION OF MOTOROLA SOLUTIONS INC.

Motorola Solutions, Inc. (“Motorola Solutions”), pursuant to Section 1.429 of the Federal Communications Commission’s Rules, hereby submits this Petition for Reconsideration of the Report and Order to establish new rules for shared use of the 3550-3650 MHz band.\(^1\) While Motorola Solutions is generally supportive of the FCC’s actions to enable commercial and consumer use of the 3550-3700 MHz band, certain modifications of the adopted regulatory framework are necessary to maximize use of this spectrum.

Motorola Solutions has been an active participant in the development of the Petition for Reconsideration also being submitted today in this same proceeding by the Wireless Innovation Forum (“WinnForum”). Motorola Solutions fully supports the recommendations contained in the Forum’s Petition for Reconsideration for the reasons expressed therein. Motorola Solutions files its own petition for reconsideration to confirm this support and to seek reconsideration on one additional matter not addressed by the Forum related to the issuance of Priority Access Licenses in census tracts with minimal demand.

I. INTRODUCTION

The Report and Order establishes a regulatory and licensing framework to allow commercial and consumer use in the 3550-3650 MHz band previously available for Federal Government use only. The Report and Order extends this newly adopted framework into the adjacent 3650-3750 MHz band to create a contiguous 150 MHz block at 3550-3700 MHz (“3.5 GHz band”). The 3.5 GHz band is assigned to the Citizens Broadband Radio Service (“CBRS”) and regulated under new Part 96 of the Commission’s Rules.

As adopted, the CBRS consists of two access tiers — Priority Access and General Authorized Access (GAA). Priority Access Licenses (PALs) will provide authority to use a 10 megahertz channel in a single census tract for three years and will be assigned in up to 70 megahertz of the 3550-3650 MHz portion of the band. Priority Access operations will receive interference protection from GAA operations. GAA use will be allowed throughout the 3.5 GHz band and will receive no interference protection from other CBRS users. All CBRS devices (“CBSDs”) will be assigned frequencies dynamically by a Spectrum Access System (“SAS”). All CBRS users must protect the Incumbent Tier of users in the band (Federal radar installations, fixed satellite services and grandfathered commercial users in the 3650-3700 MHz sub-band).

Motorola Solutions has participated in this proceeding since its inception in 2012. In general, Motorola Solutions has expressed support for the Commission’s innovative proposals for the Citizens Band Radio Service stating that flexible operating rules and protocols will facilitate a wide range of commercial, consumer, public/life-safety, critical infrastructure, enterprise and other types of application. In large measure, the rules adopted in the Report and Order, as appropriately modified based on the recommendations contained in this petition as

II. MOTOROLA SOLUTIONS SUPPORTS THE WIRELESS INNOVATION FORUM PETITION FOR RECONSIDERATION.

Motorola Solutions has been an active participant in the development of the petition for reconsideration being submitted today by the Wireless Innovation Forum and is well familiar with the recommendations contained therein. In summary, that petition asks the Commission to modify its adopted framework for the 3.5 GHz band as follows:

- Modify the reconfiguration response time specified in Part 96.15(b)(4) from 60 seconds to 600 seconds;
- Raise the conducted and EIRP power levels for both indoor and outdoor uses;
- Remove the elevation reporting requirement for CBSD’s and instead have the SAS compute the elevation based on reported location; and
- Modify the PAL protection criteria to only protect a PAL licensee’s operational area.

Motorola Solutions supports WinnForum’s recommendations and urges the Commission to modify its rules appropriately. Specifically, Motorola Solutions agrees with the Forum that modifying the required channel vacation period from 60 seconds to 600 seconds for all PAL and GAA users when an incumbent user is detected in a particular area is necessary given the complexity of networked systems likely to operate in the band. Motorola Solutions further agrees with the Forum that the majority of PAL and GAA users would be cleared within 300 seconds, but that the additional time is warranted to ensure an orderly transition in the most complex cases. This should not result in an increased potential for interference as the mobile incumbents in the band (e.g., naval radar systems) are relatively slow moving, and will be detected several tens of kilometers away from the coastline, giving adequate time for all secondary users to vacate the band before causing any disruption to incumbent communications.
Motorola Solutions also supports increasing the conducted and radiated power levels for all classes of CBSDs, as recommended in WinnForum’s Petition. The combination of higher conducted and radiated power levels is needed to address the differing deployment scenarios envisioned for both urban and rural environments. Should the Commission be concerned about the potential for higher interference in urban or densely populated areas, it could consider establishing a new sub-category of devices that would be allowed to operate at higher proposed power levels in all but well defined urban areas. When deployed in rural environments, this new category of CBSDs would be allowed to operate at the higher power levels, as proposed in the WinnForum petition.

Motorola Solutions supports WinnForum’s recommended modification of CBSD location and elevation reporting requirements to ease the burdens placed on such equipment. In particular, Motorola Solutions agrees with the fundamental recommendation to allow SAS databases to compute the elevation at the CBSD-reported location rather than having the CBSD provide that information to SAS. There are a variety of terrain databases available, such as the National Elevation Dataset (“NED”) that would meet necessary elevation accuracy requirements.

Finally, Motorola Solutions agrees with WinnForum that PAL interference protection should be based on actual operational deployments, and not census tract boundaries as provided

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3 For example, an urban area could be defined as any census tract overlapping a city with a population of greater than 50,000 inhabitants or an urbanized area with a population of greater than 100,000 inhabitants. CBSDs operating outside of these areas at the recommended higher power levels could be termed as Category B suburban (non-rural) devices, in addition to the even higher transmit power level Category B rural devices.

4 The National Elevation Dataset (NED) has an rms elevation error of 1.55 meters. See http://ned.usgs.gov/faq.html.

5 For example, operational PAL CBSD deployments could be protected to the 40 dBμ service contour level, based on the operating parameters of each active CBSD (e.g., transmitter
by Section 96.41(d). WinnForum’s petition lays out well the deficiencies and unintended consequences of the Report and Order’s approach and provides compelling evidence for implementing the requested change.

III. THE COMMISSION SHOULD ISSUE PAL LICENSES IN CENSUS TRACT’S HAVING ONLY A SINGLE APPLICANT.

Motorola Solutions supports the goal of having a robust eco-system of users and diverse applications in the 3.5 GHz innovation band. Several of the anticipated applications will require higher quality of service (QoS) levels than are typically associated with unlicensed or quasi-unlicensed spectrum (e.g. the GAA tier). Only PAL users in the 3.5 GHz band are guaranteed interference protection from other secondary (PAL and GAA) users of the band; such protection is often required to assure high QoS levels and consistent communications system performance necessary for certain applications.

Under rule Section 96.29(d), PALs will only be issued if two or more parties are interested in a PAL for a particular census tract, even though the Commission has the authority to issue a license if only a single party is interested in a PAL for a particular census tract. Motorola Solutions believes that there will be a significant number of users that desire or require

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power level, antenna height and pattern, etc.) as well as terrain data using generally accepted propagation models. The -80 dBm/10 MHz co-channel interference level would need to be met at the edge of the service contour, and the -40 dBm/10 MHz adjacent channel interference level would need to be met within the service contour (at 99% of the locations). Motorola Solutions recommends that systems be afforded interference protection once they have registered operational deployments with the database, up to one week in advance of actual operations or field testing of the deployment.

6 47 C.F.R. § 96.29 (d): When there is only one application for initial Priority Access Licenses in a License Area that is accepted for filing for a specific auction, no PAL will be assigned for that License Area, the auction with respect to that License Area will be canceled, and the spectrum will remain accessible solely for shared GAA use until the next filing window for competitive bidding for PALs.

7 See Report and Order at ¶137.
the interference protection that the PAL access tier provides, though in areas where only a single party is interested in obtaining such a license. Such users may include small businesses, wireless internet service providers, larger enterprises, manufacturing, critical infrastructure, smart cities, government, hospitals, etc. Applications benefitting from enhanced interference protection could range from high value wireless video surveillance (e.g., at a power sub-station, hospital, or government building), to critical telemetry or monitoring (e.g., in manufacturing operations), to paid broadband internet access service. Unfortunately, because GAA users have no expectation or right to interference protection under Section 96.35(c), the GAA tier is insufficient for supporting users that require QoS level assurances (i.e., interference protection from other secondary users).

Many of these non-competitive, sole applicant party PAL uses are likely to occur in less densely populated areas (e.g., wireless internet service providers) or over relatively small operational areas (e.g., a business or hospital campus network). Assigning single applicant PAL licensees is unlikely to negatively affect the inventory of spectrum available for GAA use. Therefore, overall spectrum utilization efficiency will not be harmed. In fact, the single interested party PAL will serve to improve overall spectrum utilization efficiency, by allowing interference-sensitive applications to be fielded in geographic areas where there are less than two parties expressing interest in PALs. Otherwise, those communications applications will not be fielded under the current rules for the band (in the GAA tier), very likely leaving the spectrum lying fallow or under-utilized.

8 47 C.F.R. § 96.35(c): General Authorized Access Users shall have no expectation of interference protection from other General Authorized Access Users operating in accordance with this part. See also Report and Order at ¶155.
Motorola Solutions urges the Commission to issue PALs to a single interested party in census tracts where less than two parties are interested in such licenses.\(^9\) The proposed PAL license should be under the same terms as other PAL licenses (e.g., provide interference protection from lower tier users, allow for three-tier sharing of spectrum, \textit{etc.}). The single interested party would be expected to pay a reasonable licensing/administrative fee for such PAL use, and may be expected to pay a reasonable fee to a SAS database provider for interference protection. Our specific modification to Section 96.29(d) is as follows:

When there is only one application for a Priority Access License in a License Area that is accepted for filing for a specific auction, a single PAL will be assigned for that License Area under the customary PAL terms, the auction with respect to that License Area will be canceled, and the spectrum will remain accessible for shared three-tier GAA use in any areas where it is not being utilized by the PAL licensee, until the next filing window for competitive bidding for PALs.

Should the Commission be concerned about limiting the amount of PAL spectrum licensed by a single interested party, it could further limit the number of channels that could be obtained in this manner (e.g., to two or four channels per census tract). Such an approach would leave a minimum of 130 MHz (or 110 MHz) of spectrum for GAA use, a more than adequate amount. If additional concerns about limiting the granting of these types of licenses remain, the Commission could limit the ability of a single party to acquire these types of PAL licenses over a given larger geographic area. The proposed single interested party PAL rule modification will serve to further develop the equipment, service, and overall 3.5 GHz band eco-system, improve overall spectrum utilization, and will better serve the public interest.

\(^9\) Motorola Solutions takes no issue with the competitive bidding rules detailed in Section 96.29(a) of the Rules where more than one applicant for PALs exists in a census tract.
IV. CONCLUSION

In conclusion, Motorola Solutions believes that the 3.5 GHz band has great potential to be a highly innovative band that supports a wide variety of higher quality of service communications applications (in PAL spectrum), as well as more opportunistic communications services (in GAA spectrum). The recommended modifications to CBSD transmit power levels, channel vacation time periods, location reporting requirements, PAL interference protection methodology, and single interested party PAL issuance are all critical to the development of the 3.5 GHz band eco-system, and can help to increase spectrum utilization levels, making the 3.5 GHz band both a regulatory and market success.

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