

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

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

Comments of Sony Electronics Inc.¹

Sony Electronics Inc. (“Sony”) respectfully submits the following comments on the Further Notice of Proposed Rulemaking in the above-referenced proceeding.²

1. Frequency Assignments (§ 96.13)

In order to balance the needs of Priority Access Licensees (“PAL”) and General Authorized Access (“GAA”) users, to foster a robust GAA ecosystem, and to promote efficient spectrum use, the Commission has proposed rules that would require the spectrum access system (“SAS”) to dynamically assign PAL channels and GAA bandwidth in real time in any given geographic area.³ After accounting for usage by any incumbent and PAL users, the SAS would assign bandwidth in varying amounts and at varying spectral locations to individual GAA users.⁴

Sony supports this approach. Dynamic frequency assignment and variable GAA bandwidth and frequency assignment will best serve the goals of the Commission in this proceeding. In addition, Sony believes that the proposed rules should not preclude a SAS from assigning overlapping or identical frequencies to multiple GAA users, provided that the technical

¹ Sony Electronics Inc. is a U.S.-based research, development, marketing and sales subsidiary of Sony Corporation. Sony entities design, manufacture, and sell mobile products throughout the world, and have conducted extensive research and testing of next-generation wireless services, including the 3.5 GHz small-cell services that are the subject of this proceeding.

² Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 Band, GN Docket No. 12-354, *Further Notice of Proposed Rulemaking*, 29 FCC Rcd 4273 (2014) (*FNPRM*).

³ *FNPRM*, ¶ 28.

⁴ *Id.*, ¶ 33.

characteristics of the affected end-user citizens broadband radio service devices (“CSBDs”) permit such co-channel operations and asks that the Commission clarify rules pertaining to this usage.

2. Aggregation of Priority Access Licenses (§ 96.29)

Sony disagrees with the Commission’s proposal to allow PAL licensees to hold up to 30 authorizations, for a total of 30 MHz, in a given census tract at a given time,⁵ and requests instead that the rules establish a PAL aggregation limit of 20 MHz, with no consideration given to the availability of GAA or other, similar spectrum. This lower aggregation will better facilitate competition and innovation – a stated goal of this proceeding – by allowing a minimum of two PAL licensees to operate in those census tracts that have a maximum of 20 MHz of incumbent operations. By contrast, a 30 MHz aggregation limit would allow a single PAL licensee to dominate operations by holding up to 50% more of the available spectrum than any other licensee.

3. Contained Access Facilities (§ 96.35)

Sony objects to the FNPRM’s proposal to create a separate category of GAA users with special authorization to operate on an exclusive basis within Contained Access Facilities,⁶ and asked that the proposal to authorize such Contained Access Users (“CAUs”) be discarded. Sony believes that special authorizations for CAUs would have the effect of limiting, or in some cases eliminating, the spectrum available for GAA use in a given geographic area. In situations where a CAU might require exclusive spectrum access, to would always have the ability purchase or lease PAL licenses. Adding what amounts to a fourth tier to the 3.5 GHz authorization and interference protection framework will needlessly complicate operations in the band.

⁵ *Id.*, ¶ 55.

⁶ *Id.*, ¶¶ 58-61.

4. Citizens Broadband Radio Service Devices General Requirements (§ 96.36)

The FNPRM proposes that CBSDs transmit certain operation and identification information to the SAS, including the following: (1) geographic location; (2) antenna height above ground level; (3) requested authorization status; (4) unique FCC identification number; (5) user contact information; and (6) unique serial number.⁷ CBSDs would be required to report any changes to this information within 60 seconds of the change occurring.⁸ In addition, the FNPRM would require CBSDs to measure and report on their local signal level environment.⁹

Sony supports each of these proposed requirements, but requests that the Commission clarify that a SAS may require CBSDs to provide information about the local signal environment upon request by the SAS, at any time, and based on any criteria set by the SAS, rather than only in those situations where the CBSD “experience[s] interference in exceeding a threshold as set by an SAS.”¹⁰ Allowing a SAS flexibility to choose alternative criteria for when CBSDs must report on the local signal environment will help ensure more efficient channel assignment and selection for both PAL and GAA operations.

In addition, Sony asks that the Commission authorize CBSDs to meet its obligations under proposed rule § 96.36 – i.e., sending operation and identification information, and responding to SAS queries – by communicating indirectly with the SAS through a separate CBSD via a secure link.

⁷ *Id.*, ¶ 62.

⁸ *Id.*, ¶¶ 63, 65.

⁹ *Id.*, ¶ 66.

¹⁰ *Id.*, at 72, proposed rule § 96.36(d).

5. General Radio Requirements (§ 96.38)

Sony supports the proposed general radio requirements in the FNPRM,¹¹ but suggests that in order to realize timely control of spectrum utilization, SAS operators be allowed to require CBSDs to report the status of their operations either upon request from the SAS, or on a regular schedule set by the SAS.

6. Spectrum Access System Purposes and Functionality (§ 96.43)

Sony agrees with the general approach to SAS database operations in the FNPRM. By codifying only high-level SAS requirements, and by allowing for the authorization of multiple SASs, the proposed rules allow database administrators freedom to implement different spectrum management algorithms, consistent with the rules, and therefore compete to provide the best overall system performance. Operators and end users will ultimately benefit from more efficient spectrum use. To enable this multiple-SAS environment, the proposed rules will need to define an interface to facilitate communication and to ensure strong interoperability among SAS databases.

Sony suggests that the Commission's rules require SAS databases to implement two additional functions. First, to better protect higher tiers from interference, and to better manage coexistence among PAL licensees and GAA users, each SAS should store the actual operational information of CBSDs and End User Devices registered with it. Second, to help realize the competitive efficiencies of multiple SAS databases, the rules should provide for secure transmission of information between SASs, as well as between the SAS and CBSDs.

¹¹ *Id.*, ¶¶ 69-89.

7. Protections for Fixed Satellite Service Earth stations (FSS Earth Stations in the 3.5 GHz Band)

Finally, in response to the FNPRM's proposed requirement that CBSDs avoid causing harmful interference to Fixed Satellite Service ("FSS") earth stations,¹² Sony agrees that certain mitigation strategies could be employed to minimize or eliminate geographic protection areas around these operations. Specifically, a Complementary Cumulative Distribution Function (CCDF) of the aggregate power flux density could be to ensure that interference limits are not exceeded. In support of this conclusion, Sony submits the attached Annex, which documents the simulation of three location-specific transmission power calculation methods for protection of these incumbent operations, and compares the performance results based on each method. The results demonstrate that: 1) without taking into account aggregate interference, FSS Earth Stations cannot be protected from the harmful interference of multiple CBSDs; 2) by using alternative mitigation methods, FSS Earth Stations can be protected from the harmful interference of multiple CBSDs; and 3) use of one particular alternative mitigation method will allow an increase in the maximum output power level of CBSDs while protecting FSS Earth Stations from the harmful interference of multiple CBSDs.

Respectfully submitted,

_____/s/_____

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July 14, 2014

Annex

¹² *Id.*, ¶ 150.