Advancing the art, science, and enjoyment of Amateur Radio

April 17, 2023

Via E-Filing

National Telecommunications and Information Administration
Washington, DC 20230

Re: NTIA-2023-0003, Docket No. 230308-0068
Development of a National Spectrum Strategy

Comments of ARRL, The National Association for Amateur Radio

ARRL, the National Association for Amateur Radio (ARRL) represents the interests of the 765,000 FCC-licensed amateur radio operators domestically and, through participation in the International Amateur Radio Union (IARU), internationally at the International Telecommunications Union (ITU). Amateur Radio operators utilize spectrum ranging from 135.7 kHz through 250 GHz, *i.e.,* from 2200 meters through 1 millimeter (mm). A substantial portion of spectrum allocated for amateur use is on a secondary basis shared with primary services.[1]

[1] Amateur spectrum allocations are listed at 47 C.F.R. § 97.301. Sharing arrangements for specific bands are specified at 47 C.F.R. § 97.303.

Our nation's future technological progress, innovation, and competitive economic status rely in no small part on making the best and most intense use of the scarce spectrum resource. Sound spectrum policy therefore is essential as wireless uses and demands expand exponentially. ARRL therefore is pleased that NTIA has undertaken this effort to develop and implement a National Spectrum Strategy (NSS) that takes into account all users of the spectrum.

Summary

The fundamentally important aspect of a National Spectrum Strategy across all industries and users is that it further the national interest by examining and creating a strategy by which more intensive spectrum use will be enabled. It is essential to have a strategy to accommodate the constantly increasing number of users and diversity of services while continuing to provide adequately for existing users and services.

We commend the NTIA for soliciting input from the diverse array of stakeholders who rely upon spectrum to provide wireless services such as amateur radio, commercial cellular, private communications, satellite relay and broadband, aircraft and maritime, terrestrial and satellite broadcast, scientific research, license-free wireless LANS and WANS, and many more, as well as military and federal government users within the traditional NTIA ambit.

There are significant gains to be achieved by improving spectrum management, and the NSS hopefully will provide a path to more efficient and intensive use. These comments address the spectrum regulatory situation as it affects the Amateur Radio Services[2] and expands upon remarks made at the Public Listening Session in Washington on March 30.

[2] The Amateur Radio Services are composed of the Amateur Service, the Amateur-Satellite Service, and the Radio Amateur Civil Emergency Service, 47 C.F.R. § 97.3(a)(2).

Secondary Sharing

The suggestions contained herein focus on regulatory and engineering sharing mechanisms that already exist and have a history of providing for more intensive use of the spectrum by a variety of users without causing harmful interference. We recognize and applaud the potential that innovative technologies represent and that in the future promise opportunities for more intense spectrum sharing. But while these new and exciting possibilities and being developed and tested there are many sharing mechanisms already in existence that have been developed over the years that should continue to be used to permit sharing until better mechanisms are available.

Spectrum capacity not used today is lost forever. Below we provide a synopsis of sharing mechanisms successfully employed by amateurs and others on secondary spectrum. We strongly urge policymakers to continue to employ existing methods to permit sharing unless and until better sharing mechanisms are available.

Much of the amateur spectrum is shared, especially in the bands most desired today by commercial users. Recent FCC decisions have departed from the traditional sharing methods described below. "Exclusive" always should be equivalent to "primary status" in spectrum allocation regulation, and not be used inappropriately to clear spectrum to let it lie fallow over significant geographic areas. The recent FCC decision in the 3.3-3.5 GHz band is of great concern among amateurs because it removed spectrum important to continued amateur experimentation and development while leaving spectrum (at 3.45 – 3.5 GHz) to lie fallow. Adoption of proven sharing techniques to provide exclusive primary status to commercial licensees while allowing secondary amateur uses to exist when and where that spectrum is not being used would have provided for better utilization of this spectrum.

Amateurs are used to be being the "spectrum gleaners" in high-demand bands. There is very high demand for spectrum in the top 15-20 urban areas of the country, but that leaves large swaths of spectrum unused. Indeed, FCC construction requirements implicitly recognize this fact by considering "full build-out" to be completed well short of overall intense use throughout the entire licensed area and for all the spectrum licensed. An effective spectrum strategy will include recommendations for allowing secondary use of spectrum unused by the primary user, subject to the primary user reclaiming it at any later time for its own use. Operators in the amateur services, for example, have identifiable licensees who have a spotless history of technically resolving potential interference situations or ceasing operations when called upon by the primary licensee. Since the amateur service is a non-compensatory experimental and investigatory service, there are no "paying customers" that are displaced when such events occur.[3]

There are specific examples of sharing regulations that are worthy of consideration for broad inclusion in a spectrum strategy focused on making more and better use of the existing spectrum. Perhaps the most useful example is the flexible provision adopted by the FCC when it re-allocated 1.9 GHz spectrum to the Personal Communications Service. Although it provided a

[3] The basis and purpose of the Amateur Radio Services are set out at 47 C.F.R. § 97.1: (a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications. (b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art. (c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art. (d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts. (e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

payment reimbursement method for incumbents (the first of its kind), it also allowed existing fixed microwave users to remain operating on the new commercial primary users' spectrum unless and until the new primary user intended to use the spectrum in the same geographic area and the fixed microwave user would be reasonably expected to cause harmful interference to the primary user. This flexible standard is perhaps the "gold standard" in regulation for providing for maximum spectrum use.

This provision is found at 47 C.F.R. § 101.79(a): "(a) FMS licensees will maintain primary status in the 1850–1990 MHz, 2110–2150 MHz, and 2160–2200 MHz bands unless and until an ET licensee requires use of the spectrum. ET licensees are not required to pay relocation costs after the relocation rules sunset. Once the relocation rules sunset, an ET licensee may require the incumbent to cease operations, provided that the ET licensee intends to turn on a system within interference range of the incumbent, as determined by TIA TSB 10–F (for terrestrial-to-terrestrial situations) or TIA TSB 86 (for MSS satellite-to-terrestrial situations) or any standard successor. ET licensee notification to the affected FMS licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the FMS licensee must turn its license back into the Commission, unless the parties have entered into an agreement which allows the FMS licensee to continue to operate on a mutually agreed upon basis."

Methods used by radio amateurs to share spectrum with primary users traditionally have relied upon communication among the parties subject to spectrum rights clearly specified by the FCC's rules. For example, amateur secondary use of certain bands is governed by 47 C.F.R. §97.303(b): "Amateur stations transmitting in the 70 cm band, the 33 cm band, the 23 cm band, the 5 cm band, the 3 cm band, or the 24.05–24.25 GHz segment must not cause harmful

interference to, and must accept interference from, stations authorized by the United States Government in the radiolocation service." We are not aware of any difficulty or complaint with the sharing arrangement under this provision (which included the 3.3-3.5 GHz band).

Another example is one that requires the ARRL to keep a record of secondary amateur operations in the 219 MHz band so that the primary user can locate and notify the user(s) if necessary. The rule is 47 C.F.R. § 303(l)(3): "No amateur station may transmit unless the licensee has given written notification of the station's specific geographic location for such transmissions in order to be incorporated into a database that has been made available to the public. The notification must be given at least 30 days prior to making such transmissions. The notification must be given to: The American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111–1494."

Yet another example of a successful sharing arrangement governs amateur secondary use of low-frequency bands below that AM radio band. Utilities are the primary user. Radio amateurs are required to notify the United Telecom Council (UTC) at least 30 days before commencing operation on these frequencies. 47 C.F.R. § 97.303(g) provides: "(1) Amateur stations in the 135.7–137.8 kHz (2200 m) and 472–479 kHz (630 m) bands shall only operate at fixed locations. Amateur stations shall not operate within a horizontal distance of one kilometer from a transmission line that conducts a power line carrier (PLC) signal in the 135.7–137.8 kHz or 472–479 kHz bands. Horizontal distance is measured from the station's antenna to the closest point on the transmission line. (2) Prior to commencement of operations in the 135.7–137.8 kHz (2200 m) and/or 472–479 kHz (630 m) bands, amateur operators shall notify the Utilities Telecom Council (UTC) of their intent to operate by submitting their call signs, intended band or bands of operation, and the coordinates of their antenna's fixed location. Amateur stations will be

permitted to commence operations after the 30-day period unless UTC notifies the station that its fixed location is located within one kilometer of PLC systems operating in the same or overlapping frequencies."

Conclusion

The above secondary sharing methods are specifically provided in the FCC's rules and have been highly successful. There are, of course, many other iterations – such as wireless medical devices, wireless microphones, and select public safety operations that long have been permitted within the primary television broadcast bands by virtue of being "engineered in" by rules that specify technical and operating requirements designed for sharing purposes.

Primary commercial and government users have a right to be free of harmful interference. A National Spectrum Strategy must provide for workable sharing arrangements based on clear spectrum rights if it is to maximize use of our national spectrum resource. No swath of valuable spectrum must be left unused because regulators mistakenly equate "licensing" with "use."

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