

FCC Opens Proceeding to Reinvigorate Opportunities for TV White Space Devices

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On February 28, 2020, at its Open Meeting, the FCC voted to commence a rulemaking to examine the rebalancing of many technical rules governing the deployment of fixed and certain mobile, unlicensed white space devices in the television bands (in and around the 600 MHz range) to increase opportunities for relatively long-distance connectivity in rural and underserved areas, such as for wireless broadband solutions or applications associated with the Internet of Things ("IoT"), although there are no application restrictions on white space devices *per se*. The rule changes are proposed only in those frequencies below TV channel 35, and so exclude the 600 MHz duplex gap and the 600 MHz service band. The text of the [Notice of Proposed Rulemaking](#) ("NPRM") was promptly released on March 2. Comments are due 30 days after Federal Register publication with replies due sixty days after publication, which has not yet occurred.

Part 15 of the FCC's rules allow unlicensed white space devices to operate at locations on frequencies not in use by licensed services. Twelve years ago, the FCC authorized unlicensed white space device operations for the first time on television channels not being used locally by broadcasters and associated service licensees. The devices are required to obtain a list of available channels and power levels for use at their particular location from FCC-approved entities that maintain accessible databases. Fixed devices must also incorporate geo-location capability. Portable devices must include geo-location and database access capabilities or, alternatively, acquire a list of available channels via another device with geo-location ability and access to a database. While several orders in the intervening years have been designed to increase flexibility and promote additional opportunities for deployment of such devices, such as relaxed technical accommodations for devices in rural and underserved areas, their use has fallen somewhat below initial aspirations.

Last May, Microsoft Corporation filed a petition for rulemaking requesting that the FCC provide yet additional flexibility for white space device operations. Many commenters filed in support, but the National Association of Broadcasters ("NAB") raised concerns, as did stakeholders with interests in Wireless Medical Telemetry Service ("WMTS") operations on Channel 37 and proponents of wireless microphones using spectrum not being used by other licensed services.

Proposed New Power and Height Limits for White Space Devices in "Less Congested" Areas

Now, after the NAB and Microsoft have worked together to resolve most of their differences, the FCC proposes to permit fixed white space devices in spectrally "less congested" areas over larger distances through using higher transmit powers (16 v. 10 W EIRP) and deploying antennas at greater heights above average terrain (up to 500 meters from a maximum of 250 meters) - while

maintaining the existing one-watt transmitter conducted power limit for fixed devices and proposing certain adjustments when higher gain antennas are used. This flexibility would come with the need to maintain greater separation distances from authorized services, although the FCC also invites comment about even greater flexibility in powers used and antenna heights and whether coordination or notification procedures should be adopted in combination with the proposed relaxed requirements.

Given the foregoing proposals, the FCC, in the NPRM, additionally inquires whether it should relax the limit on antenna height above ground level, including potentially in all areas within the United States. But current power and height limits would remain in Channel 36, which the FCC believes would be adequate to protect WMTS and Radio Astronomy operations in Channel 37.

As an overarching matter, the FCC also inquires whether it should change the definition of “less congested” areas which now are those areas where, within the band of intended operation, at least half of the TV channels that will continue to be allocated and assigned only for broadcast service are unused for broadcast and other protected services, and are thus available for white space device use. For example, the FCC asks whether “less congested” areas should be defined, in part, based on population density.

In conjunction with these proposals, the FCC will consider making additional changes to the protection criteria for operations in the TV bands other than broadcasting, such as TV translator receive sites, Low Power TV (including Class A) receive sites, Multichannel Video Programming Distributor (“MVPD”) receive sites, fixed Broadcast Auxiliary Service (“BAS”) links, the private land mobile radio and commercial mobile radio services (“PLMRS” and “CMRS”), and licensed wireless microphones.

Potential Operation of White Space Devices on Mobile Platforms in Geo-Fenced Locations

Additionally, the NPRM proposes to permit higher-power operation of white space devices on TV Channels 2-35 on mobile platforms inside “geo-fenced” areas (within “less congested” areas) enforced by incorporated geo-location capabilities, *e.g.*, GPS coupled with a database, and new operational requirements, such as prohibiting operation on board aircraft or satellites to limit the potential for interference. The FCC seeks comment on a wide variety of other questions related to permitting wider deployment of white space devices on mobile platforms, including limitations on the size of the area over which a higher-power mobile device could operate, changes to the databases used for white space devices, and other possible safeguards.

Prospective Changes That Might Propose Use of White Space Devices for IoT

The FCC also hopes to facilitate innovative narrowband IoT services by considering certain changes to the power spectral density (“PSD”) limits applicable to white space devices in the TV bands. Matters raised by the NPRM include a revised definition of “narrowband” white space devices and spectrum utilization limits, while the FCC leans toward permitting manufacturers and standards groups to develop their own protocols to prevent multiple devices from transmitting simultaneously and interfering with each other without a regulatory mandate. As with all of the other areas under consideration in the proceeding, the FCC asks whether there are other rule modifications needed to promote narrowband operations while ensuring protection of authorized services that operate in the TV bands from harmful interference potentially caused by narrowband white space devices.

Possible Flexibility for White Space Devices to Operate Adjacent to Occupied TV Channels

Further, the FCC seeks comment about higher-power white space device operation within the service contour of an adjacent-channel TV station. Generally, white space device operations above 40 milliwatts EIRP must generally operate outside the protected contours of adjacent-channel TV stations, although fixed white space devices may operate within the protected contour of adjacent-channel TV stations with a power level of 100 milliwatts EIRP when the white space device operates in a six-megahertz band centered on the boundary of two contiguous vacant channels, which requires three contiguous vacant channels available for use. Microsoft noted that these conditions are not always present and the FCC should therefore consider other ways to permit higher-power operation of white space devices when adjacent TV channels are occupied, such as more sophisticated location-determining computer models (*e.g.*, Longley-Rice) and consideration of improved selectivity in next-generation TV receivers. NAB opposes any consideration of this matter – the primary area where Microsoft and the broadcasters could not reconcile their differences over Microsoft’s proposals.

Interest in Microsoft’s proposals has already been considerable, with almost two dozen parties commenting. There is every reason to expect that a similar level of participation will emerge during the rulemaking. Manufacturers of white space devices, developers of agricultural, mining, construction, and other IoT applications, and potential users of these devices should be especially interested, as well as broadcasters and those operating in the authorized services in the TV bands.