

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

In the Matter of)	
)	
Unlicensed Use of the 6 GHz Band)	ET Docket No. 18-295
)	
Expanding Flexible Use in Mid-Band Spectrum)	GN Docket No. 17-183
Between 3.7 and 24 GHz)	

PETITION FOR RECONSIDERATION

Jeffrey S. Cohen
Chief Counsel
cohenj@apointl.org

Mark S. Reddish
Senior Counsel
reddishm@apointl.org

APCO International
1426 Prince St
Alexandria, VA 22314
(571) 312-4400

May 28, 2020

Contents

I. Introduction and Summary	1
II. To Protect Public Safety Communications, the Commission Must Vacate the Rules Expanding Unlicensed Use of the 6 GHz Band.....	3
a. The Order Improperly Fails to Consider the Impacts to Public Safety.....	4
b. The Order Fails to Implement Reasonable Measures Necessary for Preventing Interference to Public Safety Communications	5
i. The Locations of Standard Power Access Points Will Not Be Known Well Enough to Prevent Them from Operating in Public Safety Exclusion Zones	5
ii. The Approach to Limiting Interference from Low Power Devices Will Not Be Effective	7
c. The Order Fails to Include a Method for Promptly Eliminating Interference to Public Safety Communications	8
d. Several Elements of the Order Will Make Resolving Interference More Difficult.....	11
i. Unlicensed Access Points Should Not Be Permitted Without Control of an AFC	11
ii. The Requirements on AFC Operators Are Inadequate	12
III. If the Commission Declines to Vacate the Rules, It Must Take Immediate Steps to Protect Public Safety Communications.....	13
IV. Conclusion	14

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

In the Matter of)	
)	
Unlicensed Use of the 6 GHz Band)	ET Docket No. 18-295
)	
Expanding Flexible Use in Mid-Band Spectrum)	GN Docket No. 17-183
Between 3.7 and 24 GHz)	

PETITION FOR RECONSIDERATION

Pursuant to Section 1.429 of the Commission’s rules,¹ the Association of Public-Safety Communications Officials-International, Inc. (APCO)² hereby seeks reconsideration of several aspects of the Order in the above-captioned proceeding.³

I. Introduction and Summary

In adopting the Order, the Commission failed its purpose of promoting public safety.⁴ Interference to public safety communications is certain to arise from the approach to expanding unlicensed use of the band. Other than acknowledging that incumbent use includes public safety communications, the Order ignores public safety’s reliance on the 6 GHz band and fails to consider that interference will result in irreparable harm to the public’s and first responders’ safety. The Commission did not explain its basis for ignoring public safety’s concerns.

¹ 47 C.F.R. § 1.429.

² Founded in 1935, APCO is the nation’s oldest and largest organization of public safety communications professionals. APCO is a non-profit association with over 35,000 members, primarily consisting of state and local government employees who manage and operate public safety communications systems – including 9-1-1 Emergency Communications Centers (ECCs), emergency operations centers, radio networks, and information technology – for law enforcement, fire, emergency medical, and other public safety agencies.

³ Unlicensed Use of the 6 GHz Band, Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, ET Docket No. 18-295, GN Docket No. 17-183, *Report and Order and Further Notice of Proposed Rulemaking*, FCC 20-51 (rel. Apr. 24, 2020) (“Order”).

⁴ One of the Commission’s primary objectives is to “make available, so far as possible, to all people of the United States ... a ... wire and radio communication service . . . for the purpose of promoting safety of life and property.” 47 U.S.C. § 151.

Setting aside technical disagreements, the Order suffers from indefensible shortcomings. The rules lack effective measures for preventing interference. The ability to prevent interference from standard power access points depends on an automated frequency coordination (AFC) system's ability to define exclusion zones that restrict unlicensed transmissions in locations that could interfere with incumbent users. Yet, the AFC will lack the location information necessary for preventing interference from these devices.

Fixing the problem with location requirements for standard power access points will not cure the flaws in the Commission's approach to preventing interference. The Commission should extend the AFC requirement to low power devices. Instead the rules permit low power access points to operate without coordination by an AFC system, in part based on an assumption that limiting these devices to indoor operation decreases their likelihood of interfering with incumbent users. However, the Order did not include sufficient measures to ensure low power access points are restricted to indoor operation only. Further, by permitting low power access points to operate on the same frequencies as standard power access points, it will be impossible to determine if an AFC is effective at preventing interference from standard power access points.

Not only does the Order fail to implement sufficient measures to prevent interference from occurring, it also fails to impose requirements upon the new unlicensed entrants to promptly identify and eliminate interference, and to demonstrate these capabilities in advance. Instead, the Commission abdicates its responsibility to protect public safety in favor of placing unjustified hope in industry stakeholders to voluntarily address numerous difficult issues after the fact. Eliminating interference caused by unlicensed devices requires a time- and resource-intensive process, and several aspects of the Order will make eliminating interference more difficult. Further, the Order lacks adequate requirements for the designation, testing, data

retention, and discontinuance policies of prospective AFC operators. Unleashing hundreds of millions of unlicensed devices in this manner will create an unacceptable and likely irreversible risk to public safety communications.

If the Commission continues on this course, first responders and the public they are dedicated to protecting will suffer irreparable harm. Accordingly, APCO requests that the Commission vacate the rules expanding unlicensed use of the 6 GHz band. At a minimum, the Commission should revise the rules to ensure effective measures are in place to protect public safety communications, including field testing in advance under worst-case, real-world conditions.

II. To Protect Public Safety Communications, the Commission Must Vacate the Rules Expanding Unlicensed Use of the 6 GHz Band

The Order fails to address several fundamental issues, including basic measures to prevent, identify, and promptly eliminate harmful interference to public safety communications. These defects ignore the real-world consequences to public safety agencies that depend on this band to carry out their life-saving work. Many of the issues described herein were included in APCO's initial comments and a detailed ex parte letter APCO filed after the draft Order was released.⁵ Despite significant public safety concerns, the Commission adopted a final Order without addressing many serious shortcomings and failed to even acknowledge APCO's ex parte filing and other cautions offered by the public safety community.⁶ Thus, the Commission has

⁵ Letter from Jeffrey S. Cohen, Chief Counsel, APCO International, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295, GN Docket No. 17-183 (Apr. 10, 2020) ("APCO ex parte").

⁶ Letter from Kimberly J. Wagner, Executive Director, Major County Sheriffs of America, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295, GN Docket No. 17-183 (Apr. 16, 2020).

committed a clear error in failing to fulfill its statutory obligation to consider important public safety issues.⁷ This likely constitutes reversible error.⁸

Reconsideration is required as the Order suffers from a number of major deficiencies. The Order fails to consider the impacts to public safety, lacks reasonable measures to prevent interference, lacks a process for quickly identifying and eliminating sources of interference, and includes elements that will make developing such a process more difficult.

a. The Order Improperly Fails to Consider the Impacts to Public Safety

As APCO pointed out, expanding unlicensed use of the band as proposed will result in interference to incumbent users. The Commission does not deny that interference will occur.⁹ Indeed, interference is a statistical certainty given the sheer number of unlicensed devices expected to operate in a band that is already heavily used. Yet, other than acknowledging that incumbent use includes public safety communications, the Order ignores public safety's reliance on the 6 GHz band for mission critical communications and the potential for interference to result in irreparable harm to the public's and first responders' safety. The Order even neglects to acknowledge the impact of interference to public safety as part of the cost/benefit analysis.¹⁰ The costs to public safety must be weighed against the benefits of expanding unlicensed access to spectrum.

⁷ The Commission has an obligation to consider impacts to public safety. *See Mozilla Corp. v. FCC*, 940 F.3d 1 at 93 (D.C. Cir. 2019).

⁸ *Id.* at 100 (stating that with regard to the Commission's Restoring Internet Freedom Order "The Commission's disregard of its duty to analyze the impact of the 2018 Order on public safety renders its decision arbitrary and capricious in that part and warrants a remand with direction to address the issues raised.").

⁹ *See* Order para. 176 ("We encourage the multi-stakeholder group to address any issues it deems appropriate regarding interference detection and mitigation in the event that an incumbent licensee believes it may be experiencing harmful interference from standard-power or indoor low-power operations. These issues would include procedures and processes that could be followed if an incumbent licensee has, or potentially has, an interference complaint."). *See also id.* para 230 ("As explained above, the technical and operational rules are designed to minimize the potential interference to incumbent licensed uses.").

¹⁰ *See id.* paras. 229-30.

As further evidence of failing to consider public safety, the Order overlooks the need to protect public safety links operating under an emergency Special Temporary Authority (STA). As APCO pointed out, STAs are an important use of the band for public safety, particularly in the wake of major disasters.¹¹ The Order addresses other types of temporary authorization, requiring operators to register the details of their operations in ULS to receive protection from standard power unlicensed devices,¹² but that approach would not be workable for public safety's STAs. Emergency STAs can be obtained in times of crisis, without filing in ULS until after the new channel is in use. Public safety agencies should not be asked to forfeit this tool for emergency response.¹³ The Commission must ensure that public safety communications are protected, particularly during times of urgent need, regardless of any inconvenience this might present to the new unlicensed entrants.

b. The Order Fails to Implement Reasonable Measures Necessary for Preventing Interference to Public Safety Communications

The Order states that the rules are designed to “minimize” interference to incumbent licensed users,¹⁴ but the rules are unlikely to be effective because the Commission failed to account for APCO's concern¹⁵ that the location information necessary for preventing interference from standard power access points will be inadequate and many devices will be operating outside of the control of an AFC system.

i. The Locations of Standard Power Access Points Will Not Be Known Well Enough to Prevent Them from Operating in Public Safety Exclusion Zones

¹¹ Comments of APCO at 11; APCO ex parte at 6.

¹² Order para. 32.

¹³ Requiring public safety agencies to update ULS in order to receive protection from unlicensed 6 GHz devices would not be an effective solution, as this would essentially strip away the benefit of flexible and swift deployments for mission critical communications pursuant to an emergency STA.

¹⁴ Order para. 230.

¹⁵ APCO ex parte 2-3.

The ability to prevent interference from standard power access points depends on an AFC's ability to define exclusion zones that restrict unlicensed transmissions in locations that could interfere with incumbent users. While there has been debate over how to define exclusion zones,¹⁶ there is no doubt that they will be wholly ineffective if the AFC does not know where standard power access points are. However, the Order neglects to establish location accuracy requirements for these devices and merely requires coordinates to be reported with a 95% confidence level.¹⁷ This sets a requirement for how estimated locations should be described to an AFC, not a requirement for how close the estimate must be to the true location. Of the millions of standard power access points expected to be deployed, one in twenty could be installed in the worst possible location for a public safety microwave receiver and authorized by an AFC to operate at full power in the same channel being used by public safety.

For the AFC to protect incumbent users, it needs accurate information about access point locations. The Commission must set a stringent location requirement in terms of a certain number of meters of uncertainty.¹⁸ The specific number of meters required for the uncertainty value should be established following thorough testing of the AFC and propagation models used to calculate incumbent exclusion zones. Without real-world data on the margin of error and effectiveness of exclusion zones for preventing access points from operating in areas that threaten incumbent users, any decision on an acceptable level of error in the access point locations would be arbitrary.

¹⁶ See Order para. 62.

¹⁷ *Id.* para. 41.

¹⁸ APCO's intent is not to suggest that the Commission need do nothing more than establish an appropriate uncertainty value to accompany the 95% confidence requirement. Doing so would still not resolve the concern that permitting access points to operate with less than 100% confidence in the location information provided to the AFC would mean they could be authorized by an AFC to operate at full power on the same channel being used by public safety and in the worst location possible for a microwave receiver.

The Order contains additional shortcomings specific to the vertical location information required for standard power access points. As the Order states, an AFC needs to know the height of an access point “to accurately calculate exclusion zones to protect fixed service receivers.”¹⁹ First, it’s unclear if the vertical location information would be subject to the 95% confidence requirement described above or any accuracy requirements at all.²⁰ Second, as explained above, even if vertical location information is subject to the 95% confidence requirement, that would not constitute an “uncertainty” requirement on how close to the device’s true vertical height the location estimate would need to be. Third, in requiring vertical information to be provided as a height above ground level, the Order fails to explain whether or how an AFC will be able to compare the height of an unlicensed device to the height of the incumbents that it must avoid interfering with. Ground level height varies with terrain and therefore is not sufficient for comparing the absolute heights of public safety microwave equipment and nearby access points potentially located within the exclusion zone.

Because AFCs will lack the location information needed to prevent unlicensed devices from operating in exclusion zones, the framework for protecting incumbent operations will fail. That the Order does not account for such a fundamental aspect of preventing interference to public safety communications speaks to the need for reconsideration.

ii. The Approach to Limiting Interference from Low Power Devices Will Not Be Effective

Allowing low power access points to operate without being subject to an AFC is likely to cause interference to public safety communications. Preventing outdoor operation will be difficult, if not impossible. As APCO warned, the Order’s strategies for limiting these devices to

¹⁹ Order para. 44.

²⁰ The rules require 95% confidence for “geo-location” capabilities, but the Order separates the geo-location capabilities from the antenna height reporting requirements. *See id. paras.* 40-45.

indoor use, such as requiring that devices are labeled as “for indoor use only” and prohibiting weather-proofing,²¹ will not prevent consumers from placing these devices on balconies, rooftop decks, or any other outdoor location that suits their needs. Having failed to address APCO’s concerns, the Commission relies on hope that consumers will be aware of and follow the rules. This is not an effective method of preventing interference to public safety communications. Similarly, the Order’s prohibition on operating these devices (as well as standard power access points) in moving vehicles seems to rest on hope that consumers will not decide to operate them there.²² The Commission needs to reconsider requirements for unlicensed devices to, for example, detect operation outside of buildings or when in motion.

c. The Order Fails to Include a Method for Promptly Eliminating Interference to Public Safety Communications

Dealing with interference, particularly from unlicensed devices, is a long, resource-intensive process.²³ In the Notice of Proposed Rulemaking, the Commission rightly asked what requirements are necessary to ensure that any instances of harmful interference resulting from expanded unlicensed use of the 6 GHz band can be resolved expeditiously.²⁴ Despite this being one of the most important issues for public safety, the Order establishes no requirement to ensure interference can be quickly identified and eliminated. Instead, the Order encourages – but does not require – the industry to convene a group of interested stakeholders to address interference

²¹ *Id.* para. 107.

²² *See id.* paras. 207-13.

²³ Just recently the Commission proposed forfeitures upon wireless internet service providers for interference caused by unauthorized use of U-NII devices that “could be potentially life threatening.” This was only after an exhaustive, labor- and time-consuming process to identify and eliminate the interfering source. *See* Buzzer Net LLC San Juan, Puerto Rico, *Notice of Apparent Liability for Forfeiture and Order*, DA 20-439, (rel. Apr. 22, 2020); *see also* WiFi Services Caribbean, Inc San Juan, Puerto Rico, *Notice of Apparent Liability for Forfeiture and Order*, DA 20-433 (rel. Apr. 22, 2020).

²⁴ Unlicensed Use of the 6 GHz Band, Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, ET Docket No. 18-295, GN Docket No. 17-183, *Notice of Proposed Rulemaking*, FCC 18-147 (rel. Oct. 24, 2018) para. 86.

detection and mitigation as part of a slate of other topics.²⁵ Given the lack of any mandate from the Commission and the unlicensed proponents' pattern of failing to respond to public safety's concerns, APCO has little confidence that this group would adequately address interference concerns. The Commission should impose requirements upon the new unlicensed entrants to promptly identify and eliminate interference, and to demonstrate these capabilities in advance of permitting them to operate in a band that is heavily encumbered by public safety incumbents. This testing should include an evaluation of methods to protect public safety from access points that are not reporting accurate locations,²⁶ as well as methods of detecting when devices prohibited from outdoor or vehicular use are operating in violation of the rules.

Absent reconsideration of the rules, when interference occurs, the only information available to public safety agencies will be that the microwave link has stopped providing the mission critical communications it was designed for. Fixed service systems are not designed to detect interference and are incapable of attributing it to a particular source. Attempting to identify the source(s) of interference, especially coming from unlicensed devices, will be a long, expensive process. Meanwhile, the public safety agency may have few if any options to meet its mission critical communications needs. Microwave links typically span twenty-five to thirty-five miles, and as much as fifty miles, and therefore could be impacted by transmissions within a very large geographic area. Thousands of apartment buildings, businesses, schools, and houses might hold a source of interference. Given the "sporadic and bursty nature of Wi-Fi transmissions," as the Commission describes them,²⁷ and the fact that devices will be growing in vast numbers and

²⁵ Order paras. 174-80.

²⁶ Even if the Commission were to establish adequate location requirements for unlicensed devices by resolving APCO's concern that, by design, the rules permit 5% of the device locations reported to an AFC to be incorrect, unlicensed entrants must have a method for addressing cases in which devices fail to comply with stringent uncertainty requirements.

²⁷ Order para. 142.

changing the frequencies they're using, it might not be possible for public safety agencies to readily identify the source(s) of interference (nor should public safety bear this burden). As attempts to resolve harmful interference drag on, without certainty of how long it will take or whether the result will be a termination of interference, public safety will suffer irreparable harm.

The AFC is not a mechanism for detecting and promptly eliminating sources of interference. At best, the AFC will be able to avoid authorizing standard power access points to use certain frequencies after it has become clear that doing so causes interference. Even this limited capability, however, requires reconsideration by the Commission. The Order does not specify the steps access point owners and AFC operators are required to take or procedures for public safety to report interference and have the interference promptly addressed. It is unclear whether an AFC operator must act following a complaint directly from public safety, or only from direction by the Commission. Further, public safety agencies will be unable to determine the location of a source of interference or the type of device at issue – a standard power device operating subject to an AFC or a low power indoor device. It's unclear how devices, particularly when indoors, will be identified absent the transmission of digital identifying information, which the Commission declined to require.²⁸ Resolving interference for either standard power or low power devices will likely require manual, time-consuming, and labor-intensive direction-finding, and even the need to enter private homes and businesses in proximity to the source of interference. Even with the most optimistic expectations, the Order would impose significant expenses to conduct an extremely time-consuming process for attempting to eliminate interference, expenses that should not be borne by public safety agencies.

²⁸ See *id.* para. 228.

The Order's omission of a mechanism for quickly resolving interference is inexplicable.²⁹

The Commission has a responsibility to protect public safety. It should not abdicate this responsibility and hope an industry-led group will solve the problems unlicensed operations will cause.³⁰ For the Citizens Broadband Radio Service cited so frequently as a model for the 6 GHz spectrum sharing approach, the Commission established a token requirement for an AFC to demonstrate the ability to promptly respond to complaints.³¹ The lack of at least a comparable measure for protecting life-safety communications in the 6 GHz band further evidences the need for reconsideration of the Order. The Commission must ensure effective mechanisms are in place without imposing new burdens upon public safety users.

d. Several Elements of the Order Will Make Resolving Interference More Difficult

Not only does the Order lack a process for resolving interference, several elements will make developing such a process more difficult.

i. Unlicensed Access Points Should Not Be Permitted Without Control of an AFC

Opening the entire 6 GHz band for unlicensed low power access points to operate without being controlled by an AFC will create many problems. As noted above, the Order does not impose sufficient conditions to ensure that devices will be limited to indoor operations or

²⁹ The lack of a process cannot be attributed to a lack of suggestions. For example, APCO pointed out that AFCs could maintain (and share with one another) records of the transmissions and frequencies used by standard power access points. Then, public safety agencies could provide logs of disruptions that the AFCs could compare to their own records to check for correlations with unlicensed transmissions. *See* Comments of APCO 9, 19. Under the Order, however, this will not be feasible because neither AFCs nor devices will be required to keep the records necessary for this process. In any event, this approach would not by itself be an adequate mechanism for quickly resolving interference. This overlooked suggestion is an example of the Order's failure to consider mechanisms for quickly resolving interference.

³⁰ To make matters worse, some problems would likely be beyond the group's ability to solve. For example, as soon as the rules are effective, lower power devices can be deployed for indefinite operation across the entire band, regardless of any interference mitigation techniques developed by the group.

³¹ *See* 47 CFR 96.53(o). Note that in the CBRS, an automated frequency coordination system is referred to as a spectrum access system. The CBRS approach is otherwise a very different model as compared to what is required in the 6 GHz band to ensure public safety incumbents are protected.

otherwise prevent misuse of these devices. This deficiency, combined with the incredible number of devices expected to flood the marketplace, creates an unacceptable and likely irreversible risk to public safety communications. It is insufficient to rest on assumptions that interference will occur with relative infrequency.

As APCO explained, even opening the U-NII-6 and U-NII-8 bands (which are not the primary portions used by public safety) for indoor-only low power access points, without requiring the use of a frequency coordination system, poses a threat to public safety communications.³² When these devices cause interference, it will be nearly impossible for the Commission or public safety agencies to identify and mitigate the interfering source, let alone determine whether the interference is coming from a low power access point rather than a standard power access point that is not being effectively limited by an AFC. Interference from these sources would present a threat to mission-critical communications with no apparent solution.

ii. The Requirements on AFC Operators Are Inadequate

Despite APCO's concerns, the Order does not define a clear process for designating AFC operators. Important details such as the appropriate AFC system test procedures were deferred for development at a later date.³³ The scope, conditions, and extent of the required testing are relevant for assessing the Order's impact on public safety. For example, should the Commission require AFC testing to be conducted in cooperation with incumbent users, public safety agencies might face additional costs.

The data maintained by AFC operators will be important for resolving interference complaints. As APCO suggested, AFC operators should be required to store information about

³² Comments of APCO at 15-16.

³³ See Order at para. 50.

registered devices for a length of time that is sufficient for effective interference investigation and mitigation. Instead, the Order would impose an arbitrary period of three months.³⁴

Additionally, as explained above, it will be important for AFC operators to maintain records of the frequencies used for each transmission by an access point.³⁵

The Order also fails to impose sufficient requirements on AFC operators that seek to discontinue services. While an AFC operator that no longer wishes to provide services would be required to transfer its data to another designated AFC,³⁶ this requirement only preserves the data if the operator acts in good faith and has the resources to do so. The Commission ignored suggestions for additional safeguards such as requiring AFC operators to post a bond as a condition of the approval to provide services. For an AFC operator going out of business, return of the bond could provide an effective incentive for completing the required data transfer.

III. If the Commission Declines to Vacate the Rules, It Must Take Immediate Steps to Protect Public Safety Communications

The Commission must ensure adequate protections are in place for public safety communications before permitting any new unlicensed operations. At a minimum, the Commission should:

- Evaluate the impacts to public safety in the cost/benefit analysis.
- Protect emergency STA operations from the expanded unlicensed use.
- Require both standard power and low power access points to operate subject to an AFC.
- Establish clear and stringent requirements to ensure location information for unlicensed devices is accurately known to the AFC, and ensure that the AFC is able to compare this information to properly-defined exclusion zones.
- Ensure devices intended for indoor operation will only operate indoors and that no access points are able to be used when in motion.
- Require an AFC to be capable of promptly identifying and eliminating potential sources of interferences following a complaint from a public safety agency.

³⁴ *Id.* at para. 86.

³⁵ *See supra* n. 29.

³⁶ *See* Order at para. 54.

- Require prospective AFC operators to conduct field testing under worst-case, real-world conditions (including with anticipated placements and numbers of both standard power and low power access points) to demonstrate the conditions likely to cause interference to public safety microwave receivers from standard power and low power devices.
- Expand unlicensed operations in phases, beginning with a small portion of the band and permitting additional portions to become available only after the AFC and technical requirements have been shown to protect public safety communications.

IV. Conclusion

For the foregoing reasons, the Commission should reconsider its 6 GHz rules to the extent described above.

Respectfully submitted,

APCO INTERNATIONAL

By:

Jeffrey S. Cohen
Chief Counsel
(571) 312-4400 ext. 7005
cohenj@apcointl.org

Mark S. Reddish
Senior Counsel
(571) 312-4400 ext. 7011
reddishm@apcointl.org

May 28, 2020