

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

In the Matter of)	
)	
AURA Network Systems OpCo, LLC and)	ULS File Nos. _____
A2G Communications, LLC)	
Request for Waiver)	
)	
WAIVER – EXPEDITED ACTION REQUESTED)	

REQUEST FOR WAIVER

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Pursuant to Section 1.925(b)(3) of the Federal Communications Commission’s (“Commission’s”) rules,¹ AURA Network Systems OpCo, LLC (“AURA”) and A2G Communications, LLC (“A2G”) (collectively, “Petitioners”) respectfully request waiver of three Part 22 provisions for the licenses and applications listed in Appendix A.² More specifically, Petitioners request waiver of Section 22.805 to allow the transmission of *data* as well as *sound* to the broadest base of aviation subscribers possible, consistent with market demand, when operating on Air-Ground Radio Telephone Automated Service (“AGRAS”) channels between 454.675-454.975 MHz and 459.675-459.975 MHz (the “450 MHz AGRAS band”).³ Additionally, Petitioners request that the Commission waive two other rules—the U.S. spacing and channel limitations in Section 22.813 and the minimum power requirement for transmitters in Section 22.809—that impede efficient operation of the new nationwide network.⁴

Waiver of these obsolete, unnecessary restrictions will serve the public interest by providing AURA with the flexibility to efficiently manage its network and put the long-

¹ 47 C.F.R. § 1.925(b)(3); *see also* 47 C.F.R. § 1.3 (permitting waiver of rules “for good cause shown”).

² *See* Appendix A

³ *See* 47 C.F.R. § 22.805.

⁴ *See* 47 C.F.R. §§ 22.813, 22.809.

underutilized 450 MHz AGRAS band to its highest and best use. More specifically, waiver will allow the transmission of mission-critical voice and data services to the aviation sector more broadly, consistent with the market-based principles that guided the Commission's 2005 update to the AGRAS rules.⁵ As an aviation band featuring advantageous propagation characteristics to create a secure, nationwide network, the 450 MHz AGRAS band offers the Commission a unique opportunity to advance the U.S. government's goal of integrating rapidly-evolving, innovative aviation services into the national airspace. Accordingly, Petitioners request expedited processing of their request pursuant to Section 1.925(b)(4).⁶

I. INTRODUCTION

A. Effectively occupying the 450 MHz AGRAS band nationwide, AURA is diligently constructing a network to provide service under existing regulations, but targeted regulatory relief would improve efficiency and utilization of the band, also enabling the provision of UAS services.

A2G holds sixty-six (66) active AGRAS licenses. AURA is the long-term *de facto* transfer lessee of the spectrum licensed to A2G and, additionally, holds one AGRAS license in the 450 MHz AGRAS band.⁷ Through A2G's licenses and AURA's license, Petitioners are the only incumbent licensees in the 450 MHz AGRAS band, and AURA is the only operator.

⁵ See *Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, et al.*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 4403, ¶ 52 ("We seek to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications.") ("*2005 AGRAS Order*"). Please note that the Commission adopted the *2005 AGRAS Order* on December 15, 2004, but released the item on February 22, 2005. For convenience, AURA refers to the item by its release date.

⁶ 47 C.F.R. § 1.925(b)(4) ("Applicants requiring expedited processing of their request for waiver shall clearly caption their request for waiver with the words "WAIVER—EXPEDITED ACTION REQUESTED.").

⁷ See, e.g., ULS Lease No. L000040262 (lease for Call Sign KCC793); Call Sign WRFE609 (licensed to an AURA officer).

AURA was founded in 2019 by seasoned communications and aviation industry professionals in order to provide voice *and* data capabilities to the aviation community via a nationwide, purpose-built, private, ultra-reliable, secure network. AURA notes that, given the bandwidth limitations in the 450 MHz AGRAS band, it does not intend to use this spectrum to provide broadband data services similar to those offered in the 800 MHz AGRAS band. The 450 MHz AGRAS band's propagation characteristics, bandwidth, and lack of other incumbents, however, make it perfectly suited for command and control and non-payload communications, which are less data-intensive. In pursuit of this goal, AURA has worked diligently to build out the 450 MHz AGRAS spectrum by: (1) designing its nationwide network; (2) signing leases to locate ground stations throughout the nation; (3) purchasing necessary equipment for its network (*e.g.*, radios, antennas, coaxial cables, connectors, surge arrestors, power, and backhaul); (4) organizing crews to prepare and install network equipment at individual site locations; (5) installing network equipment at site locations; and (6) filing site modification applications, when original site locations were no longer viable.⁸ Despite the impact of COVID-19 on its radio supply chain, AURA has continued to construct sites with available equipment and anticipates the completion of construction of its network by September 28, 2020.

In addition to serving manned aircraft, AURA has the capacity, expertise, and desire to serve Unmanned Aircraft Systems ("UAS")—including public safety, commercial, and large UAS—for beyond visual line of sight ("BVLOS") and other expanded operations, as well as future Urban Air Mobility ("UAM") applications, High-Altitude Long Endurance ("HALE")

⁸ See ULS File No. 0009031401, Exhibit A, at 2 (Apr. 1, 2020) (outlining steps taken to construct facilities at site locations); *see also, e.g.*, ULS File No. 0009025986 (modification application to change transmitter location for Call Sign WQZP763).

operations, public aircraft operations, and more.⁹ As discussed below, waiver of certain FCC rules would provide regulatory certainty and enable AURA to provide these services, satisfying market demand.

B. The Commission can achieve America’s established UAS goals by permitting UAS use in the 450 MHz AGRAS band, which is ideally suited for command and control and non-payload communications.

The U.S. government has long recognized that regulatory flexibility will enable successful integration of UAS into the national airspace.¹⁰ Acknowledging that spectrum is critical to such integration, Congress passed the FAA Reauthorization Act of 2018, which “require[d] the Administrator of the Federal Aviation Administration (FAA), the National Telecommunications and Information Administration (NTIA), and the Commission[] to submit . . . a report that examines whether to allow the provision of certain UAS communications on the spectrum bands identified in the [FAA Reauthorization] Act (or others, if necessary).”¹¹ Pursuant to this mandate, the Commission sought comment on UAS use in the L Band (960-1164 MHz), C Band (5030-5091 MHz), and any other potentially suitable bands.¹² Commenters, including AURA, cited numerous challenges associated with using the L Band and C Band for

⁹ These would include but not be limited to UAS operations regulated under 14 C.F.R. Parts 91, 107, 133, 135, and 137.

¹⁰ See, e.g., Unmanned Aircraft Systems Integration Pilot Program, 82 Fed. Reg. 50,301 (Oct. 30, 2017) (stating in Presidential memorandum that, “[t]o promote continued technological innovation and to ensure the global leadership of the United States in this emerging industry, the regulatory framework for UAS operations must be sufficiently flexible to keep pace with the advancement of UAS technology”); Elaine Chao, Secretary, Dept. of Transp., Opening Remarks at the UAS Integration Pilot Program Selection Announcement, <https://bit.ly/2xK6Fth> (May 9, 2018) (“There must be a path forward for the safe integration of drones if our country is to remain a global aviation leader and reap the safety and economic benefits drones have to offer.”).

¹¹ *Wireless Telecommunications Bureau and Office of Engineering and Technology Seek Comment on Unmanned Aerial System Operations in the 960-1164 MHz and 5030-5091 MHz Bands, Pursuant to Section 374 of the FAA Reauthorization Act of 2018*, Public Notice, 34 FCC Rcd 11038 (2019) (“FAA Reauthorization PN”).

¹² See *id.* at 1-2.

command and control and non-payload communications (“CNPC”) links, especially at low altitudes.¹³

The 450 MHz AGRAS band does not suffer from these problems and is ideal for UAS CNPC links for multiple reasons: (1) it already features an aviation allocation to accommodate air-to-ground communications; (2) as the only operator in the band, AURA can ensure that its service offerings are free from interference and thereby provide a more reliable, deterministic aviation-grade service; (3) compared to the C Band, the 450 MHz AGRAS band’s propagation characteristics make it highly cost-effective for providing nationwide coverage (including in rural areas) for low-altitude, BVLOS, and other expanded operations; and (4) the band can be used to securely offer UAS CNPC services on a specialized, private carrier, and nationwide basis, reducing the likelihood of network security issues and harmful interference that could plague other UAS CNPC band alternatives.

The 450 MHz AGRAS band presents the Commission with a unique opportunity to break from the status quo that, to date, has relied on the granting of experimental licenses to UAS operators,¹⁴ and quickly leverage an under-utilized aviation band to unlock the UAS industry’s

¹³ See Comments of AURA Networks, GN Docket No. 19-356, RM-11798, at 2-5 (Dec. 26, 2019) (discussing coordination issues with incumbents in the L Band and globally harmonized use of the C Band for aviation, which lends itself to medium- and long-distance UAS travel at high altitudes); *see also* Comments of The Boeing Company, GN Docket No. 19-356, at 7-8 (Dec. 23, 2019) (“UAS use of L-Band spectrum presents significant challenges given the prevalence of manned aviation operations in the band.”); Comments of Airbus Urban Mobility, GN Docket No. 19-356, at 5 (Dec. 26, 2019) (discussing difficulty of “find[ing] usable spectrum in the [L Band] due to all of the current uses, including ‘navigation aids, surveillance systems and collision avoidance systems’ for manned-aircraft”); Comments of CTIA, GN Docket No. 19-356, at 9 (Dec. 26, 2019) (The C Band’s propagation “suffers severe losses in non-line of sight conditions, such as low-altitude UAS flying below local clutter of buildings and trees.”) (“CTIA Comments”).

¹⁴ See, e.g., See Call Signs WI2XHD (licensing experimental operations in the 5030-5040 MHz segment of the C band); WI2XSE (licensing experimental operations in the 2206-2283 MHz band); WI2XJL (licensing experimental operations in the 5260-5850 MHz band); WH2XDQ

universally acknowledged potential. The FAA recently stated that the “commercial UAS sector is dynamic and . . . demonstrating powerful stages of growth,” which has led the agency to “anticipate[] that the growth rate . . . will remain high over the next few years.”¹⁵ Industry surveys agree, predicting exponential market growth.¹⁶ Most recently, the COVID-19 pandemic has highlighted the clear value proposition of autonomous, contact-free, and remote transportation technology solutions, including UAS.¹⁷

The market also has specifically shown significant interest in use of the 450 MHz AGRAS band for CNPC links. Although it has not commenced commercial operations, AURA

(licensing experimental operations in the 5250-5850 MHz band); and WI2XPN (licensing experimental operations at 122.80 MHz and 122.90 MHz). The use of experimental licenses for UAS has created an administrative burden on licensees and the Commission’s Office of Engineering and Technology (“OET”), which must process these applications. For example, a search in OET’s Experimental Licensing System yields 685 granted and expired Unmanned Aerial Vehicle (UAV) applications for new licenses, renewed licenses, and STAs, the overwhelming majority of which were filed in the last five years.

¹⁵ Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2020-2040*, at 50, <https://bit.ly/34qyxP1>.

¹⁶ See Pamela Cohn, et al., *Commercial Drones are Here: The Future of Unmanned Aerial Systems*, McKinsey & Company (Dec. 5, 2017), <https://mck.co/2VyyKgc> (estimating that UAS use for corporate and consumer applications “will have an annual impact of \$31 billion to \$46 billion” for U.S. GDP in 2026”) (“McKinsey Study”); PwC, *Clarity From Above: PwC Global Report on the Commercial Applications of Drone Technology*, at 4 (May 2016), <https://pwc.to/2Vv6pau> (estimating global market value of UAS-powered solutions at over \$127 billion) (“PwC Study”); BIS Research, *Global Urban Air Mobility (UAM) Market: Focus on Aircraft Type, Infrastructure, Use Case, Operation, and Travel Range – Analysis and Forecast, 2023-2035* (2019), <https://bit.ly/2yABMaK> (predicting the global UAM market to generate \$5.32 billion in 2023 and grow at a compound annual growth rate (CAGR) of 26.2% from 2023-2035) (“BIS Research Study”).

¹⁷ See, e.g., Adele Peters, The First Long-Distance Drone Deliveries in the U.S. are Bringing PPE to Healthcare Workers, *Fast Company* (May 27, 2020), <https://bit.ly/2XSXOhU>; Jed Pressgrove, *Drones Become Part of Local U.S. Responses to COVID-19*, *Government Technology* (Apr. 22, 2020), <https://bit.ly/3gQmXSP>; Christopher Mims, *The Scramble for Delivery Robots Is On and Startups Can Barely Keep Up*, *The Wall Street Journal* (Apr. 25, 2020), <https://on.wsj.com/2zAwexr>; Ben Sampson, Coronavirus: Thales and Skyparts Conduct Drone Delivery Trial in Scotland, *Aerospace Testing International* (May 26, 2020), <https://bit.ly/2ZVGgEj>.

has received inquiries from utilities and multiple businesses—including large multinationals—regarding the status of its network build and operational timeline. Given this market demand, the 450 MHz AGRAS band creates an extraordinary opportunity for the Commission to quickly and successfully address Congress’ mandate to identify spectrum for UAS and, more importantly, enable a reliable UAS CNPC solution.

C. Waiver is the appropriate vehicle for regulatory relief, and Petitioners’ request satisfies the Commission’s waiver standard.

1. Precedent clearly demonstrates that the Commission has broad authority to choose between granting a waiver request or implementing rule changes via a rulemaking, and the scope of Petitioners’ request demonstrates that waiver is the appropriate vehicle for regulatory relief.

The D.C. Circuit has noted that, when deciding whether to provide regulatory relief through waiver instead of rule changes via a rulemaking, the Commission is simply “charged with administration in the ‘public interest.’”¹⁸ By extension, the D.C. Circuit highlighted how the Commission’s “discretion to proceed in difficult areas through general rules is intimately linked to the existence of a safety valve procedure [*i.e.*, the waiver process] for consideration of an application for exemption based on special circumstances.”¹⁹ When discussing its broad discretion to choose between the waiver process and a rulemaking, the Commission has explicitly rejected the argument that a waiver request is “*inapplicable* to services in which there is only one [licensee]”²⁰ and, where there is only one licensee operating in the service, such

¹⁸ *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (“*WAIT Radio*”).

¹⁹ *Id.*

²⁰ *DISH Network Corporation Petition for Waiver of Sections 27.5(j) and 27.53(h)(2)(ii) of the Commission’s Rules and Request for Extension of Time*, 28 FCC Rcd 16787, ¶ 54 (2013) (emphasis added).

requests “should be treated as a petition for rulemaking.”²¹ The Commission therefore has the authority and flexibility to exercise its discretion by “tak[ing] into account . . . more effective implementation[s] of overall policy.”²² Because Petitioners’ request involves a particular, individualized case that need not carry over to potential future parties operating in the 450 MHz AGRAS band, a request for waiver, rather than a rulemaking, represents a more effective implementation of federal and Commission policy for the reasons stated below and is therefore the more appropriate vehicle for regulatory relief.²³

First, the Petitioners do not seek revisions that constitute a rule change affecting all potential future use of the 450 MHz AGRAS band, but instead request a few minor, modernizing rule accommodations that can be most efficiently addressed through a waiver. The 450 MHz AGRAS band comprises a mere 650 kHz, which only AURA has the authority to use, and other parties have shown no interest in the band for years.²⁴ Additionally, the band’s other current rules are well designed for aviation use. In this case, there is no need to make sweeping rule revisions that would affect multiple parties and are typically made through a rulemaking process

²¹ *Id.* ¶ 50.

²² *Reform of Certain Part 61 Tariff Rules, Petitions for Limited Waiver of Rule 61.74(a)*, Notice of Proposed Rulemaking and Interim Waiver Order, 33 FCC Rcd 10212, n. 32 (2018) (citing *WAIT Radio*, 418 F.2d at 1159).

²³ *See, e.g., supra* Section I.B (discussing federal and Commission policy regarding UAS integration into the national airspace).

²⁴ For example, in the docketed proceeding seeking comment on a joint waiver request from previous licensees in the 450 MHz AGRAS band, only two other parties filed, both of whom supported waiver to enable upgraded, more affordable communications in the band. *See* Comments of Dana B. Fisher, WT Docket No. 09-44 (May 13, 2009); Letter from David L. Davidson, Vice President, Corporate Jet Partners, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 09-44 (May 20, 2009). Since that time, the only entities other than Petitioners that held 450 MHz AGRAS licenses elected not to renew them. In addition, during the past ten years, not one party filed a single comment or pleading related to the numerous license applications to add channels and modify licenses in this band that Petitioners submitted and the Commission placed on public notice.

that entails the preparation of a notice of proposed rulemaking, a comment cycle, and a Commission-level order,²⁵ all of which would take a significant amount of time and Commission resources that could be allocated to other matters. Second, Petitioners' targeted waiver request is consistent with the Commission's longstanding market-oriented AGRAS policies²⁶ and would expeditiously address the immediate need for UAS spectrum, which the U.S. government and market have recognized.²⁷ In sum, designating the Commission's limited resources to a rulemaking that updates the use of only 650 kHz of spectrum directly affecting only one operator would be far less efficient than a waiver and would unnecessarily impede the commercial availability of valuable UAS services.

In an analogous circumstance involving AGRAS, the Commission has opted to waive its rules rather than initiate a rulemaking, despite the existence of only one operator, AC BidCo, LLC ("AC BidCo"), providing that particular service. When it revised the AGRAS rules governing the 800 MHz band in 2005, the Commission acknowledged the need to consider a waiver when "market conditions and other factors" warranted such action.²⁸ Based on the assertion that changed market conditions justified combining a three-megahertz license and a one-megahertz license into one four-megahertz license, the Commission waived spectrum aggregation limits for AC BidCo, which allowed the company to become the only AGRAS

²⁵ See 47 C.F.R. §§ 1.401 *et seq.* (establishing process governing rulemaking proceeding, including the release of a notice of proposed rulemaking, notice and comment, etc.).

²⁶ See 2005 AGRAS Order ¶ 52 (seeking "to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications").

²⁷ See *supra* Section I.B.

²⁸ 2005 AGRAS Order ¶ 42; see also *id.* ¶ 52 ("We seek to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications.").

licensee in the 800 MHz band.²⁹ The Commission also waived two technical regulations regarding emission limits and frequency stability,³⁰ but only as to “internal boundaries” (*i.e.*, boundaries common to the two merging applicants). The Commission concluded that such waivers would not frustrate the underlying purpose of the rules because they were “unnecessary if a single licensee holds both Air-Ground licenses and provides service across all four megahertz.”³¹

This precedent is wholly apposite to the case at hand. Both waiver requests concern a narrow swath of low-frequency AGRAS spectrum where propagation and competitive considerations initially led the Commission to adopt licensing and technical limitations that dictated a particular industry structure. Furthermore, as is the case here, a single entity that unified the band requested a waiver of obsolete AGRAS rules because substantial technological and market changes created strong marketplace incentives for the entity to optimize use of the spectrum.³²

2. Petitioners’ request satisfies the Commission’s waiver standard.

The Commission may grant a request for waiver if the applicant shows that: (1) “[t]he underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest;” or

²⁹ See ULS File No. 0005185165 (granting assignment of Call Sign WQFX729 from Live TV, LLC to AC BidCo, LLC).

³⁰ See 47 C.F.R. §§ 22.861 (regarding emission limits), 22.863 (regarding frequency stability).

³¹ *Application of AC Bidco, LLC, Gogo Inc., and LiveTV, LLC for Consent to Assign Commercial Aviation Air-Ground Radiotelephone (800 MHz band) License, Call Sign WQFX729*, Memorandum Opinion and Order, 28 FCC Rcd 3362, ¶ 27 (2013).

³² See ULS File No. 0005185165, Public Interest Statement and Request for Waivers, at 2 (May 4, 2012) (“[M]arket conditions now favor common control of the . . . spectrum based on consumer expectations[,] . . . and vibrant competition by satellite providers quells any concern about competitive harm.”).

(2) “[i]n view of the unique or unusual factual circumstances of the instant case, application of the rule(s) [identified for waiver] would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”³³

As discussed in more detail below,³⁴ the Commission’s waiver standard is satisfied in this instance because a waiver would serve the public interest by removing obsolete or unnecessary restrictions that otherwise prevent AURA from providing valuable voice *and* data services to manned and unmanned aircraft, consistent with market demand.

II. WAIVER OF SECTION 22.805 WOULD FOSTER THE PUBLIC INTEREST BY PERMITTING AURA TO SERVE THE BROADEST BASE OF AVIATION SUBSCRIBERS POSSIBLE, CONSISTENT WITH MARKET DEMAND, IN THE 450 MHZ AGRAS BAND.

Section 22.805 of the Commission’s rules requires that operators in the 450 MHz AGRAS band provide “radiotelephone service to airborne mobile subscribers in general aviation aircraft.”³⁵ The rule has at least two distinct elements that require waiver or clarification to enable the spectrum’s highest and best use: (1) the requirement that operators provide “radiotelephone service,” which is arguably limited to the transmission of sound; and (2) the requirement that operators transmit communications to “airborne mobile subscribers in general aviation aircraft.” As discussed below, technological innovation requires waiver or clarification of these components to enable AURA to provide important data services for which the 450 MHz AGRAS band is ideally suited. Relief would allow AURA to offer service expeditiously to the broadest base of aviation subscribers possible, including but not limited to manned aircraft

³³ 47 C.F.R. § 1.925(b)(3); *see also* 47 C.F.R. § 1.3 (“Any provision of the rules may be waived by the Commission on its own motion or on petition if good cause therefor is shown.”); *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990).

³⁴ *See infra* Sections II-IV.

³⁵ 47 C.F.R. § 22.805.

operators, commercial and large UAS operators, UAM operators, HALE operators, and public aircraft operators. An overly restrictive application of Section 22.805 would be contrary to the public interest, and the unique circumstances of AURA’s case warrant waiver.

A. Section 22.805’s use of the phrase “radiotelephone service” warrants waiver to create regulatory certainty for the offering of data services.

Section 22.805 states that licensees in the 450 MHz AGRAS band may provide “radiotelephone service.”³⁶ The Commission defines “radiotelephone service” as the “[t]ransmission of *sound* from one place to another by means of radio.”³⁷ However, Section 22.805 is located in Part 22, Subpart G, of the Commission’s rules, which is titled “Air-Ground Radiotelephone Service.” The Commission defines “air-ground radiotelephone service” as the provision of “radio *telecommunications service*,” which presumably includes the transmission of sound and data.³⁸ Thus, Section 22.805’s use of the phrase “radiotelephone service” (which is limited to the transmission of sound) is in tension with the provision’s location in a subpart titled “Air-Ground Radiotelephone Service” (which permits the transmission of sound and data), rendering it unclear whether an operator in the 450 MHz AGRAS band can provide both sound *and* data services.

³⁶ *Id.*

³⁷ 47 C.F.R. § 22.99 (emphasis added).

³⁸ *Id.* (emphasis added). The Commission defines “radio telecommunications service” as a service “provided by the use of radio, including radiotelephone, radiotelegraph, paging and facsimile service.” *Id.* The inclusion of “radiotelegraph, paging and facsimile service” suggests that “radio telecommunications service” includes more than the mere transmission of “sound” and thus includes data.

Additionally, while “air-ground radiotelephone service” formally requires the provision of services “to subscribers in aircraft,” AURA also requests waiver of this limitation with regards to Section 22.805 to promote aviation services provided to subscribers not physically located in aircraft. *See infra* Section II.B.

This tension appears to be a result of historical circumstance. The Commission adopted Section 22.805 on its own motion when it reorganized its Part 22 rules in 1994.³⁹ At the time, the Commission would have had no reason to amend the rule’s language or otherwise clarify the operations that were permitted in the 450 MHz AGRAS band. In its last major AGRAS update in 2005, the Commission noted its desire to “adopt a flexible regulatory framework that will enable licensees to provide air-ground communications services using any existing or future technology that can fit within their assigned spectrum block.”⁴⁰ Since then, data services’ popularity and utility have increased dramatically. The prevalence of packet-based technologies has turned voice service (*i.e.*, the “transmission of sound”) into a data service, effectively nullifying the technological distinction between “radiotelephone service” and “air-ground radiotelephone service.” In a waiver granted to A2G and the previous operators in the 450 MHz AGRAS band to facilitate construction of a new nationwide network, the Commission acknowledged this fact, noting the new network in the 450 MHz AGRAS band would “rely on modern digital technology” rather than the “standardized duplex analog technology originally employed to provide telephone service.”⁴¹

³⁹ See *Revision of Part 22 of the Commission’s Rules Governing the Public Mobile Services*, Notice of Proposed Rulemaking, 7 FCC Rcd 3658, ¶ 2 (1992) (proposing to revise the Part 22 rules after “the Mobile Services Division . . . established an internal task force to study revising Part 22 of [the Commission’s] rules.”) (“*Part 22 Reorganization NPRM*”); *Revision of Part 22 of the Commission’s Rules Governing the Public Mobile Services, Amendment of Part 22 of the Commission’s Rules to Delete Section 22.119 and Permit the Concurrent Use of Transmitters in Common Carrier and Non-Common Carrier Service, Amendment of Part 22 of the Commission’s Rules Pertaining to Power Limits for Paging Stations Operating in the 931 MHz Band in the Public Land Mobile Service*, Report and Order, 9 FCC Rcd 6513, ¶ 1 (1994) (“[W]e revise in its entirety Part 22 of our Rules, which governs the Public Mobile Services.”) (“*Part 22 Reorganization Order*”).

⁴⁰ *2005 AGRAS Order* ¶ 2.

⁴¹ Letter from Roger S. Noel, Chief, Mobility Division, Wireless Telecommunications Bureau, to Albert Gencarella, President, Stratophone, LLC, and Michael R. Carper, Senior Vice President

In addition to historical obsolescence, the Commission’s general spectrum policies counsel in favor of waiving this aspect of Section 22.805. The Commission has clearly expressed its “goal of establishing comprehensive, sound, and flexible spectrum policies, enabling innovations and investment to keep pace with technological advances, and maintaining U.S. leadership in deployment of next-generation services in the long-term.”⁴² In its *FAA Reauthorization PN*, the Commission extended this goal to UAS operations.⁴³ A narrow interpretation of an obsolete restriction to forbid the transmission of data is therefore contrary to the Commission's spectrum policy objectives and past actions—including its past revisions to its rules for AGRAS in other bands—and contrary to the public interest.

B. Waiver of Section 22.805’s requirement that service be provided to “airborne mobile subscribers in general aviation aircraft” will allow AURA to offer safe, reliable CNPC links to the broadest base of aviation subscribers possible.

In addition to specifying service as the transmission of sound (*i.e.*, “radiotelephone service”), Section 22.805 states that the channels in the 450 MHz AGRAS band are allocated for the provision of service to “airborne mobile subscribers in general aviation aircraft.”⁴⁴

Petitioners request waiver of this requirement so that the network can transmit data and sound to the broadest possible base of aviation subscribers, including aviation subscribers on the ground, consistent with market demand. As previously stated, the Commission has expressed its desire to revamp AGRAS by “adopt[ing] a flexible regulatory framework that will enable licensees to

Corporate Development, SkyTel Spectrum, LLC, ULS File No. 0004552869, at n.3 (July 27, 2016) (“*2016 Letter Decision*”).

⁴² *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd 6373, ¶ 1 (2017).

⁴³ See *FAA Reauthorization PN* at 2 (seeking comment on “additional actions [the Commission] might take to promote the safe and robust use of licensed, commercial spectrum for UAS operations”).

⁴⁴ See 47 C.F.R. § 22.805 (permitting provision of AGRAS to subscribers “*in general aviation aircraft*”) (emphasis added).

provide air-ground communications services using any existing or future technology that can fit within their assigned spectrum block.”⁴⁵ Here, Section 22.805’s requirement that operators provide service to “airborne mobile subscribers in . . . aircraft” unnecessarily limits operators’ flexibility to satisfy market demand by requiring a person’s presence onboard the aircraft.

This limitation is not characteristic of the AGRAS rules more generally, but is rather a byproduct of Section 22.805’s adoption more than twenty-five years ago, well before the rules could have anticipated the commercial feasibility of UAS. For example, the Commission defines “airborne station” as “[a] *mobile* station in the Air-Ground Radiotelephone Service authorized for *use on aircraft* while in flight or on the ground” and “ground station” as “a *stationary* transmitter [in the Air-Ground Radiotelephone Service] that provides service to airborne mobile stations.”⁴⁶ As these definitions make plain, critical AGRAS provisions focus on the equipment’s location, not the subscriber’s. Waiver of the Section 22.805’s subscriber location clause would be consistent with the focus of these other provisions and would serve the public interest by allowing AURA to offer services that keep pace with technological innovation. By extension, waiver would create a more flexible, technology-neutral regulatory framework that allows market forces to dictate the scope of commercial services offered in the 450 MHz AGRAS band.

Finally, Section 22.805 also specifies that service be to “general aviation aircraft.”⁴⁷ While the Commission has avoided formally defining “general aviation,” it has noted that “general aviation aircraft” includes “private aircraft such as small single engine craft and

⁴⁵ 2005 AGRAS Order ¶ 2.

⁴⁶ 47 C.F.R. § 22.99 (emphasis added).

⁴⁷ 47 C.F.R. § 22.805.

corporate jets,”⁴⁸ distinguishing “general aviation” from “commercial aviation.”⁴⁹ Similar to other obsolete clauses in Section 22.805, this restriction has not kept pace with technological innovation or the Commission’s market-oriented AGRAS policies. Today, general aviation pilots may choose from multiple communications technologies at a wide range of prices, including radios that operate in the VHF “airband” (108-137 MHz) and satellite-based services.⁵⁰ Furthermore, enabling UAS stakeholders to use the 450 MHz AGRAS band will not raise safety issues. Therefore, there is no policy justification for limiting the aircraft that the 450 MHz AGRAS band may serve, and waiver is justified to allow AURA to increase competition in aviation communications and provide service to a broader base of aircraft.

C. Granting Petitioners’ waiver request is consistent with the Commission’s longstanding AGRAS policy and recent stakeholder advocacy.

Continued application of the obsolete restrictions in Section 22.805 is contrary to the public interest because it contravenes longstanding Commission policy regarding AGRAS and spectrum-based communications services more generally. When it updated the AGRAS rules for the 800 MHz band in 2005, the Commission stated that its goal was “to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications. Accordingly, [in the 800 MHz AGRAS band] a new licensee may provide *any type of air-ground service (i.e., voice telephony, broadband Internet, data, etc.)* to aircraft of any type, and serve any

⁴⁸ 2005 AGRAS Order ¶ 86.

⁴⁹ See 47 C.F.R. § 22.853 *et seq.* (AGRAS rules governing “Commercial Aviation Air-Ground Systems” operating in the 800 MHz band).

⁵⁰ See, e.g., Garmin, *GTR 200*, <https://bit.ly/2MntZ3t> (last visited June 9, 2020) (commercially available VHF radio); Flightline, *FL-760A*, <https://bit.ly/2U20OHs> (last visited June 8, 2020) (commercially available VHF radio); Yaesu, *FTA-250L*, <https://bit.ly/2MpT79W> (last visited June 9, 2020) (commercially available VHF radio); Inmarsat, *SwiftBroadband*, <https://bit.ly/2XYuTsA> (last visited June 9, 2020) (satellite-based voice and data service for flight crews and passengers); Inmarsat, *SB-S*, <https://bit.ly/2XS1WyF> (last visited June 9, 2020) (satellite-based IP connection for operations and safety communications).

or all aviation markets.”⁵¹ Innovations in the past fifteen years justify extending the same principle and operating conditions to the 450 MHz AGRAS band. Because Petitioners’ spectrum portfolio covers the 450 MHz AGRAS band nationwide, granting Petitioners’ waiver request would accomplish precisely that without impacting the interests of other licensees.⁵²

Other stakeholders agree that the Commission’s 2005 market-based approach is needed now to realize the safe, reliable use of UAS for expanded operations.⁵³ The FAA predicts that commercial use of UAS will triple by 2023, with more than 835,000 commercial UAS aircraft.⁵⁴ As noted above, industry surveys anticipate exponential growth,⁵⁵ and the repercussions of the COVID-19 outbreak are expected to increase UAS use over the long term, as automation and remote transportation technology provide solutions to communities in need. This projected rapid growth demonstrates why “[t]he UAS industry and its federal partners cannot wait years for adoption of . . . service and technical rules.”⁵⁶

⁵¹ 2005 AGRAS Order ¶ 52 (emphasis added).

⁵² While the Commission referenced providing broadband service via AGRAS in 2005, AURA acknowledges that the 450 MHz clarifies that “modernized AGRAS” in the 450 MHz AGRAS band does not include broadband services.

⁵³ See Reply Comments of CTIA, GN Docket No. 19-356, at 7 (Jan. 27, 2020) (“L-Band and C-Band spectrum will play a *supplemental* role in the UAS ecosystem.”) (emphasis added).

⁵⁴ Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2019-2039*, at 46, <https://bit.ly/2UWlrpp> (“[W]e project that the non-model fleet by 2023 will likely . . . be three times larger than the current number of non-model aircraft.”).

⁵⁵ See McKinsey Study (estimating that UAS use for corporate and consumer applications “will have an annual impact of \$31 billion to \$46 billion” for U.S. GDP in 2026”); PwC Study at 4 (estimating global market value of UAS-powered solutions at over \$127 billion); BIS Research Study (predicting the global UAM market to generate \$5.32 billion in 2023 and grow at a compound annual growth rate (CAGR) of 26.2% from 2023-2035).

⁵⁶ CTIA Comments at 10.

To increase competition among those offering service to UAS, “[u]se of spectrum other than the L-Band and C-Band will . . . be vital.”⁵⁷ As discussed above,⁵⁸ the 450 MHz AGRAS band is an ideal choice. Moreover, grant of Petitioners’ waiver request would be consistent with the Commission’s ongoing efforts “to promote flexible use spectrum rules that . . . encourage[] innovation . . . without imposing unnecessary restrictions.”⁵⁹ By the same token, continued application of the obsolete and unnecessary restrictions in Section 22.805 would be contrary to the public interest, justifying waiver in this instance.

III. WAIVER OF SECTION 22.813 WOULD ALLOW EFFECTIVE MANAGEMENT OF THE NEW 450 MHZ AGRAS NETWORK WITHOUT JEOPARDIZING AVIATION.

Section 22.813 contains two subsections. Section 22.813(a) prohibits the Commission from granting applications for proposed ground transmitter locations unless the ground transmitter location is “at least 800 kilometers (497 miles) from the antenna location of the nearest co-channel ground transmitter in the United States.”⁶⁰ Section 22.813(b) states that the Commission “may grant an application requesting assignment of a communication channel pair . . . if there are no more than five different communication channel pairs already assigned to ground transmitters . . . within a 320 kilometer (199 mile) radius of the proposed antenna

⁵⁷ *Id.*; see also Comments of Lockheed Martin Corporation, GN Docket No. 19-356, at 4-5 (Dec. 26, 2019) (The Commission, NTIA, and FAA should “convene . . . to identify other spectrum resources that would be suitable to support the variety of UAS operations contemplated for future deployment.”); Comments of T-Mobile USA, Inc., GN Docket No. 19-356, at 4 (Dec. 23, 2019) (“Additional spectrum is . . . essential to ensuring that UAS is managed properly at all altitudes and geographies.”); Comments of Phirst Technologies, LLC, GN Docket No. 19-356, at 3 (Dec. 20, 2019) (The Commission “should actively evaluate the suitability of other spectrum bands for UAS. More spectrum—beyond the L-band and C-band—will be needed to ensure UAS safety via reliable and robust communications links.”).

⁵⁸ See *supra* Section II.B (stating why the 450 MHz AGRAS band is “ideal for UAS CNPC links”).

⁵⁹ Comments of the Small UAV Coalition, GN Docket No. 19-356, at 5 (Dec. 26, 2019).

⁶⁰ 47 C.F.R. § 22.813(a).

location.”⁶¹ Consistent with the previous waiver the Commission granted on its own motion to enable initial construction of the new network using the 450 MHz AGRAS band,⁶² Petitioners request that the Commission extend the waiver of these provisions, which was granted to A2G and its predecessor entities, to enable efficient ongoing development and operation of the new network on a prospective basis.

As it noted in the *2010 Waiver Order*, the Commission added Section 22.813’s technical criteria in 1992 “to replace the allotment table that previously fixed the location of base stations and regulated the channels available to operate at each location.”⁶³ Section 22.813(a) was “designed to protect co-channel licensees from harmful interference,” while Section 22.813(b) was “intended to ensure that channels [we]re available to bridge any regional gaps in service.”⁶⁴ In the *2010 Waiver Order*, the Commission granted a waiver of these requirements on its own motion. More specifically, the Commission waived Section 22.813(a) “solely with respect to [A2G and its predecessor entities’] own facilities” in order to provide the parties “with flexibility in locating channels in the new network” while also protecting co-channel licensees from “unacceptable interference.”⁶⁵ The Commission waived Section 22.813(b) so that the parties “[could] effectively manage and operate the new network.”⁶⁶ The Commission noted that “[b]y having access to all available channels at each site, [the parties] will have greater flexibility to

⁶¹ 47 C.F.R. § 22.813(b).

⁶² See *Joint Request by Stratophone, LLC and SkyTel Spectrum LLC for Waiver of Certain Air-to-Ground Radiotelephone Service Licensing Rules for General Aviation*, Order, 25 FCC Rcd 8581, ¶¶ 22-26 (2010) (“*2010 Waiver Order*”).

⁶³ *Id.* ¶ 22.

⁶⁴ *Id.*

⁶⁵ *Id.* ¶ 24.

⁶⁶ *Id.* ¶ 25.

allocate channels based on the amount of traffic in the various regions.”⁶⁷ This flexibility was “generally enjoyed by operators of competing commercial systems and [was] ‘important in responding to dynamic subscriber demands.’”⁶⁸ Accordingly, the Commission concluded that strict application of Section 22.813 would “not serve the public interest.”⁶⁹

The same rationales continue to apply here. Petitioners now have licenses giving AURA nationwide exclusive use of the 450 MHz AGRAS band. No other entities may operate in the 450 MHz AGRAS band,⁷⁰ so a waiver of Section 22.813 would not risk harmful interference to co-channel users. Waiver would provide the necessary flexibility to locate channels in the new network as needed, and sufficient market-driven incentives exist to encourage efficient, safe operation that satisfies demand.

Recently, Petitioners filed a series of modification applications to move existing licenses short distances based on the unavailability of previous locations and a better understanding of AURA’s nationwide network requirements.⁷¹ These proposed modifications are typical of network design changes in all large-scale wireless network deployments and, if granted, would allow construction and operation of a more efficient network.⁷² The applications have remained

⁶⁷ *Id.*

⁶⁸ *Id.* (quoting Stratophone and SkyTel’s waiver request).

⁶⁹ *Id.*

⁷⁰ In 2016, there was one other licensee in the 450 MHz AGRAS band. *See* Call Signs KTS242 and WXS369 (licensed to Mobile Radio Communications, Inc.). The licensee has since let its licenses lapse, and A2G, the entity with which AURA has entered into *de facto* transfer leases, has filed an application for the area those licenses covered, which AURA intends to lease. *See* ULS File Nos. 0008842417.

⁷¹ *See* Appendix B.

⁷² *See, e.g.*, ULS File No. 0009025986 (modification application to change transmitter location for Call Sign WQZP763).

pending, however, due to the restrictions imposed by Section 22.813.⁷³ Petitioners have separately sought a waiver of the Section 22.813 requirements to facilitate the expedited processing of these applications and to enable final construction of the sites.⁷⁴ As this recent experience makes clear—and as the Commission highlighted when it previously granted waiver of the provision—Section 22.813 can prevent the efficient construction and operation of a nationwide network.⁷⁵ Accordingly, strict application of Section 22.813 on an ongoing basis would not serve the public interest, warranting a waiver of the provision consistent with the relief granted in the *2010 Waiver Order*.

IV. WAIVER OF SECTION 22.809’S MINIMUM TRANSMITTING POWER REQUIREMENTS WOULD ALLOW GROUND STATION AND AIRBORNE TRANSMITTERS TO TRANSMIT AT LESS THAN THEIR RESPECTIVE 50-WATT AND 4-WATT MINIMUM REQUIREMENTS.

Section 22.809 establishes a 50-watt minimum effective radiated power requirement for ground station transmitters and a 4-watt minimum transmitter power output requirement for airborne mobile transmitters.⁷⁶ Pursuant to Section 1.925(b)(3) of the Commission’s rules, Petitioners request waiver of Section 22.809’s minimum power requirements in order to permit ground station transmitters to operate at less than 50 watts and airborne mobile transmitters to operate at less than 4 watts. Advancements in technology have rendered these minimum power

⁷³ See Appendix B. Petitioners note that the Commission placed the pending site modification applications on public notice in April 2020. See *Wireless Telecommunications Bureau Site-by-Site Accepted for Filing*, Public Notice, Report No. 14866, at 30-35 (rel. Apr. 1, 2020); *Wireless Telecommunications Bureau Site-by-Site Accepted for Filing*, Public Notice, Report No. 14883, at 32-37 (rel. Apr. 8, 2020).

⁷⁴ See Appendix B (listing licenses with pending site modification applications).

⁷⁵ See *2010 Waiver Order* ¶ 23 (waiving Section 22.813); see also *2016 Letter Decision* at 6-7 (discussing waiver of Section 22.813 in *2010 Waiver Order*).

⁷⁶ See 47 C.F.R. §§ 22.809(a) (“The effective radiated power of ground stations . . . must not be less than 50 watts.”), 22.809(b) (“The transmitter power output of mobile airborne mobile transmitters . . . must not be less than 4 watts.”).

requirements unnecessary.⁷⁷ For example, modern digital technologies (*e.g.*, Wi-Fi, 3G, 4G, 5G, the 802.xx family, satellite communications) feature some form of dynamic power control, which improves overall system capacity and efficiency by limiting the power of any end-user terminal to the minimum power level necessary to deliver the required quality of service.⁷⁸ By forcing ground station and airborne mobile transmitters to operate at higher power than is necessary, Section 22.809 limits the number of subscribers that can be served by the system and would prevent the network from achieving the full benefits of the digital technology installed as part of the new network build out. Application of the rule therefore is contrary to the public interest, justifying its waiver.

V. CONCLUSION

For the reasons stated above, strict application of Sections 22.805, 22.813, and 22.809 of the Commission's rules would not serve the public interest. Modern technology, new market demands, and the unique circumstances surrounding AURA's nationwide exclusive use of the 450 MHz AGRAS band render strict enforcement of these provisions inappropriate, unnecessary, or both. As a result, continued application of the rules would harm innovation and competition in aviation services, including UAS, when Congress has instructed the Commission, the FAA, and NTIA to identify spectrum for UAS use and the Executive Branch has prioritized its integration into the national airspace. Given its favorable propagation characteristics, approval for aviation use, and nationwide licensing by Petitioners, the 450 MHz AGRAS band represents ideal spectrum for the operation of UAS CNPC links while continuing to serve more traditional

⁷⁷ See, *e.g.*, 2016 Letter Decision at n.3 (recognizing that upgrades to AGRAS networks in the 450 MHz AGRAS band “will rely on modern digital technology” rather than the “standardized duplex analog technology originally employed to provide telephone service”).

⁷⁸ Failure to limit end-user terminal power in digital systems increases interference, which inherently reduces capacity.

operations. Grant of Petitioners' waiver request would provide the necessary flexibility to implement these solutions and serve the broadest base of aviation subscribers possible.

Respectfully submitted,

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APPENDIX A
Licenses Subject to Petitioners' Waiver Request

	Call Sign	Licensee
1.	KCC793	A2G Communications LLC
2.	KEC932	A2G Communications LLC
3.	KED350	A2G Communications LLC
4.	KGC405	A2G Communications LLC
5.	KGC406	A2G Communications LLC
6.	KNKC473	A2G Communications LLC
7.	KNKI632	A2G Communications LLC
8.	KNKI838	A2G Communications LLC
9.	KNKJ550	A2G Communications LLC
10.	KNKK614	A2G Communications LLC
11.	KNLW652	A2G Communications LLC
12.	KOR443	A2G Communications LLC
13.	KPE495	A2G Communications LLC
14.	KQD306	A2G Communications LLC
15.	KQD611	A2G Communications LLC
16.	KRM991	A2G Communications LLC
17.	KRS662	A2G Communications LLC
18.	KSC881	A2G Communications LLC
19.	KSJ612	A2G Communications LLC
20.	KSW213	A2G Communications LLC
21.	KUC859	A2G Communications LLC
22.	KUC941	A2G Communications LLC
23.	KUC982	A2G Communications LLC
24.	KUC995	A2G Communications LLC
25.	KUD227	A2G Communications LLC
26.	KUO576	A2G Communications LLC
27.	KWB376	A2G Communications LLC
28.	KWH337	A2G Communications LLC
29.	KWT848	A2G Communications LLC
30.	KWT849	A2G Communications LLC
31.	KWT909	A2G Communications LLC
32.	KWT939	A2G Communications LLC
33.	KWU423	A2G Communications LLC
34.	KWU424	A2G Communications LLC
35.	KWU425	A2G Communications LLC
36.	KWU426	A2G Communications LLC
37.	KWU427	A2G Communications LLC
38.	KWU428	A2G Communications LLC
39.	KWU429	A2G Communications LLC
40.	KWU431	A2G Communications LLC
41.	KWU510	A2G Communications LLC

	Call Sign	Licensee
42.	WPON853	A2G Communications LLC
43.	WPQP209	A2G Communications LLC
44.	WQKQ290	A2G Communications LLC
45.	WQZP762	A2G Communications LLC
46.	WQZP763	A2G Communications LLC
47.	WQZP764	A2G Communications LLC
48.	WQZP765	A2G Communications LLC
49.	WQZP766	A2G Communications LLC
50.	WQZP767	A2G Communications LLC
51.	WQZP769	A2G Communications LLC
52.	WQZP770	A2G Communications LLC
53.	WQZP771	A2G Communications LLC
54.	WQZP772	A2G Communications LLC
55.	WQZP773	A2G Communications LLC
56.	WXS445	A2G Communications LLC
57.	WRFE609	Michael Gagne ¹

Applications for New Licenses Subject to Petitioners' Waiver Request

	ULS File No.	Licensee
58.	0008842417	A2G Communications LLC
59.	0009042649	Michael Gagne
60.	0009044234	Michael Gagne

¹ Petitioners note that Michael Gagne is an officer for AURA Network Systems OpCo, LLC.

APPENDIX B

Licenses with Pending Site Modification Applications

	Call Sign	ULS File No.
1.	KEC932	0009026944
2.	KED350	0009026965
3.	KGC406	0009026969
4.	KNKJ550	0009026970
5.	KNKK614	0009026972
6.	KUC859	0009026947
7.	KUC995	0009026974
8.	KUO576	0009026978
9.	KWU424	0009026981
10.	KWU425	0009026983
11.	KWU431	0009026570
12.	WPON853	0009026559 ¹
13.	WQZP762	0009026033
14.	WQZP763	0009025986
15.	WQZP766	0009026024
16.	WQZP767	0009026020
17.	WQZP769	0009026014
18.	WXS445	0009026086

¹ Petitioners note that ULS File No. 0009026559 for WPON853 requested both modification of the site location and renewal of the license.