

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of )  
 )  
Petition to Adopt Service Rules for Unmanned ) RM-11798  
Aircraft Systems (“UAS”) Command and )  
Control in the 5030-5091 MHz Band )

**REPLY COMMENTS OF CTIA**

Thomas C. Power  
Senior Vice President and General Counsel

Scott K. Bergmann  
Senior Vice President, Regulatory Affairs

Jackie McCarthy  
Assistant Vice President, Regulatory Affairs

Melanie Tiano  
Director, Cybersecurity and Privacy

**CTIA**  
1400 Sixteenth Street, NW  
Suite 600  
Washington, DC 20036  
(202) 785-0081

June 13, 2018

## EXECUTIVE SUMMARY

The wireless industry is an active participant in the unmanned aviation systems (“UAS”) industry, and is engaged with the Federal Aviation Administration (“FAA”), the Federal Communications Commission (the “Commission”) and the National Aeronautics and Space Administration (“NASA”) to advance use of networked cellular to support safe and reliable drone operations, including operations beyond visual line-of-sight. In these reply comments to the Aerospace Industries Association (“AIA”) petition for service rules for the 5030-5091 MHz band (the “AIA Petition”), CTIA makes clear that its concerns regarding the AIA Petition are shared among many in the UAS industry.

First, commenters agree that the AIA Petition lacks clarity and cannot be acted upon by the Commission as written. The record demonstrates that a diverse set of UAS stakeholders, from those with interests in small UAS, to large stratospheric platforms, to AIA members themselves, are puzzled by the ambiguity in the AIA Petition. The Commission cannot base a Notice of Proposed Rulemaking (“NPRM”) on a petition that has left a diverse stakeholder group uncertain as to the petition’s most basic recommendations.

Should the Commission move forward with an NPRM, commenters agree that it is important for the Commission to recognize that there are many spectrum bands available to support UAS communications functions, and the Commission should take care with service rules for the 5030-5091 MHz band to ensure that these rules do not have unintended consequences for other spectrum bands that can support UAS. CTIA strongly disagrees with Boeing’s statements that no frequency bands other than 5030-5091 MHz are available for control-non-payload (“CNPC”) communications. Many other spectrum bands are suitable for UAS command and control functions, including the commercial wireless bands that enable 4G LTE and 5G (often referred to as “networked cellular”).

Commenters also agree that the Commission should propose flexible service rules for the 5030-5091 MHz band. Lockheed Martin (an AIA member) correctly noted that “prescriptive service rules – establishing explicit, measured endurance capabilities or weight and other aircraft dimensions” are not necessary to ensure efficient use of this spectrum. Beyond flexibility, the Commission also should consider the role of autonomy in UAS and how autonomy impacts spectrum requirements.

There also is agreement in the record that the Commission should reject AIA’s requested Pilot in Command (“PIC”) licensing requirement. Boeing (an AIA member) notes its uncertainty regarding the scope of a PIC requirement, stating that perhaps the requirement only should apply to UAS operations that employ the 5030-5091 MHz band, not all UAS operations on any frequency. However, the definition of UAS proposed by AIA is so broad that the proposed PIC requirement seemingly would apply to all UAS. Commenters agree that the FAA, not the Commission, should address any UAS operator licensure requirements.

Finally, the Commission should reject calls to reserve the 5030-5091 MHz spectrum for “safety-of-life” communications. Such a limitation is undefined, is not required by the spectrum band’s allocation, and could effectively reserve use of the band for a narrow category of UAS operations (i.e., AIA’s members that might, one day, fly large unmanned aircraft flying at high altitudes). The Commission should not reserve this valuable UAS spectrum for one UAS use case. The Commission’s first foray into UAS service rules should provide flexibility to accommodate the ever-evolving nature of UAS operations, and CTIA stands ready to assist the Commission in these efforts.

**TABLE OF CONTENTS**

I. COMMENTERS AGREE THAT THE AIA PETITION LACKS CLARITY AND SHOULD NOT BE ACTED UPON BY THE COMMISSION AS WRITTEN.....2

II. COMMENTERS AGREE THAT IT IS IMPORTANT FOR ANY FORTHCOMING NPRM TO RECOGNIZE THAT THERE ARE MANY SPECTRUM BANDS AVAILABLE TO SUPPORT UAS COMMUNICATIONS FUNCTIONS. ....4

III. COMMENTERS AGREE THAT THE COMMISSION SHOULD PROPOSE FLEXIBLE SERVICE RULES FOR THE 5030-5091 MHZ BAND.....6

IV. COMMENTERS AGREE THAT THE COMMISSION SHOULD REJECT AIA’S REQUESTED PIC LICENSING REQUIREMENT.....8

V. CALLS TO RESERVE THE 5030-5091 MHZ SPECTRUM FOR “SAFETY-OF-LIFE” COMMUNICATIONS SHOULD BE REJECTED.....10

VI. CONCLUSION.....12

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of )  
 )  
Petition to Adopt Service Rules for Unmanned ) RM-11798  
Aircraft Systems (“UAS”) Command and )  
Control in the 5030-5091 MHz Band )

**REPLY COMMENTS OF CTIA**

CTIA hereby replies to the comments filed in the above-captioned proceeding. The record demonstrates that CTIA’s concerns regarding the AIA petition for service rules for the 5030-5091 MHz band<sup>1</sup> (the “AIA Petition”) are shared among many in the UAS industry. The Commission’s first foray into UAS service rules should provide flexibility to accommodate the ever-evolving nature of UAS operations. There are many problems with the AIA Petition that must be addressed before an NPRM can be issued in this matter.

First, commenters agree with CTIA that the AIA Petition lacks clarity and should not be acted upon by the Commission as written. Commenters also agree that it is important for any forthcoming NPRM to recognize that there are many spectrum bands available to support UAS communications functions including the commercial wireless bands, that the Commission should propose flexible service rules for the 5030-5091 MHz band, and that the Commission should reject AIA’s requested Pilot in Command (“PIC”) licensing requirement. Moreover, calls in the record to reserve the 5030-5091 MHz spectrum for as yet undefined “safety-of-life” communications should not be advanced in an NPRM.

---

<sup>1</sup> *Petition To Adopt Service Rules for Unmanned Aircraft Systems (“UAS”) Command and Control in the 5030-5091 MHz Band*, RM-11798, Petition for Rulemaking (filed Feb. 8, 2018).

**I. COMMENTERS AGREE THAT THE AIA PETITION LACKS CLARITY AND SHOULD NOT BE ACTED UPON BY THE COMMISSION AS WRITTEN.**

A diverse set of UAS stakeholders, from those with interests in small UAS, to large stratospheric platforms, to AIA members themselves, joined CTIA in pointing out that the AIA Petition is troublingly vague with respect to a number of its fundamental proposals, and should not be acted upon by the Commission as written. As CTIA noted in its comments, “[t]he vague nature of the AIA Petition makes it unclear if AIA is suggesting either: (a) an overly broad approach that would require all UAS to utilize the 5030-5091 MHz band for command and control links under Part 87 rules; or (b) an extremely narrow approach by reference to standards developed by the Radio Technical Commission for Aeronautics (‘RTCA’) that would reserve this band only for UAS that are transitioning in and out of Class A airspace, above 18,000 feet.”<sup>2</sup> The Small UAV Coalition highlighted a similar inconsistency, noting the ambiguity and potential overbreadth of the AIA Petition: “[T]he petition is not clear on whether this band is to be used only for safety-of-life communications but is not the exclusive band for such communications, or whether this band is intended to be the exclusive spectrum for [Control and Non-Payload Communications] CNPC.”<sup>3</sup> CTIA agrees with the Small UAV Coalition that it is problematic that “[t]he petition does not state whether the Commission actions it seeks would apply to all UAS operations, regardless of airspace or altitude. There is nothing in the petition that differentiates controlled airspace from uncontrolled airspace, or distinguishes UAS operations based on

---

<sup>2</sup> Comments of CTIA, RM-11798, at 7 (filed May 29, 2018) (“CTIA Comments”).

<sup>3</sup> Comments of the Small UAV Coalition, RM-11798, at 5 (filed May 25, 2018) (“The Small UAV Coalition Comments”).

altitude.”<sup>4</sup> Ambiguity regarding these basic questions makes the AIA Petition difficult to evaluate, and even more difficult for the Commission to act upon.

Moreover, as CTIA noted in its comments, the AIA Petition is not at all clear about the proposed eligible users of the band. It appears, although it is not explicitly stated, that the AIA Petition seeks to limit use of the band to larger unmanned aircraft at higher altitudes.<sup>5</sup> Lockheed Martin (an AIA member) provided some clarity on this issue by directly asking the Commission to ensure “that adequate spectrum resources are implemented to support dedicated command and control frequency channels for the safe and reliable operation of *larger unmanned aircraft*.”<sup>6</sup> However, as discussed in Section V, *infra*, the Commission should not reserve valuable UAS spectrum for one use case or one user type, particularly in view of the rapid development of this industry.

Indeed, the lack of clarity in the AIA Petition was noted by commenters with interests in large, high-altitude UAS, who were also uncertain as to the scope and applicability of AIA’s recommendations, as well as by groups with interests in small UAS, such as the Small UAV Coalition. The Elefante Group, a provider of large, stratospheric broadband platforms, was uncertain about the AIA proposals and filed comments seeking to ensure that its proposed operations would not be excluded from the band.<sup>7</sup> AIA members themselves disagreed about the goals of the AIA Petition, with Boeing advocating for “real-time video”<sup>8</sup> uses of the band –

---

<sup>4</sup> *Id.*

<sup>5</sup> CTIA Comments at 8-9.

<sup>6</sup> Comments of Lockheed Martin Corporation, RM-11798, at 2 (filed May 29, 2018) (emphasis added) (“Lockheed Martin Comments”).

<sup>7</sup> Comments of Elefante Group, RM-11798, at 2 (filed May 29, 2018) (“Elefante Group Comments”).

<sup>8</sup> Comments of the Boeing Company, RM-11798, at 9 (filed May 29, 2018) (“Boeing Comments”).

payload communications – and Lockheed Martin asserting that “[t]he Commission should not consider payload or other non-safety communications operations in this valuable spectrum.”<sup>9</sup>

In view of the critical ambiguities identified by various UAS stakeholders, and even AIA members, the AIA Petition does not provide a suitable framework for service rules in this band. Instead, the Commission should enact service rules that enable use of other UAS spectrum options, provide sufficient flexibility to allow use of the 5030-5091 MHz band by all UAS that require it, and do not impose the 5030-5091 MHz band on all UAS operators.

**II. COMMENTERS AGREE THAT IT IS IMPORTANT FOR ANY FORTHCOMING NPRM TO RECOGNIZE THAT THERE ARE MANY SPECTRUM BANDS AVAILABLE TO SUPPORT UAS COMMUNICATIONS FUNCTIONS.**

Commenters joined CTIA in urging the Commission to recognize that the 5030-5091 MHz band is one of many spectrum solutions available to support UAS communications functions. Lockheed Martin noted that “a host of spectrum resources are being contemplated and developed to satisfy low-altitude urban and suburban operations.”<sup>10</sup> The Small UAV Coalition encouraged the Commission to continue exploring the many spectrum solutions available to support UAS communications.<sup>11</sup> As CTIA noted in its comments, “[t]he Commission should be mindful as it approaches the AIA Petition not to create precedent with this one band, including regulation under Part 87, which will obstruct the ability to use other spectrum bands, and other Commission rule parts, for UAS.”<sup>12</sup>

---

<sup>9</sup> Lockheed Martin Comments at 4.

<sup>10</sup> *Id.* at 3.

<sup>11</sup> The Small UAV Coalition Comments at 3.

<sup>12</sup> CTIA Comments at 7.



CTIA strongly disagrees with Boeing’s statements that no frequency bands other than 5030-5091 MHz are available for safety-of-life or CNPC communications.<sup>13</sup> As CTIA stated in its comments, many other spectrum bands can support UAS command and control functions, including commercial wireless technology that supports 4G LTE and forthcoming 5G networks.<sup>14</sup> A spectrum band need not be exclusively allocated by the International Telecommunications Union (“ITU”) or the Commission for UAS in order to be used or useful for critical UAS communications. These statements are emblematic of the narrow, manned-aviation-centric views reflected in the AIA Petition. The Commission must ensure its service rules in the 5030-5091 MHz band do not foreclose use of other UAS spectrum options.

CTIA agrees with the Small UAV Coalition that the Commission should not address the 5030-5091 MHz band as a “primary or exclusive spectrum band for non-payload safety-of-life communications.”<sup>15</sup> As noted, many other bands can supply command and control links, including the commercial wireless bands. However, CTIA disagrees with the Small UAV Coalition that the Commission should wait to “to review the data from the use of [] experimental licenses” before acting on the 5030-5091 band.<sup>16</sup> The United States proposal to the 2012 World Radio Conference, adopted by the ITU, recommended that “[t]he 5030-5091 MHz band is an appropriate band to satisfy the terrestrial, line-of-sight, spectrum requirements for the command and control of UASs in non-segregated airspace,”<sup>17</sup> and the Commission has allocated the spectrum for this use. While it is appropriate for the Commission to consider service rules for the

---

<sup>13</sup> Boeing Comments at 7 (“Boeing would be fine with having other frequency bands also available for such purposes, but none have been identified”).

<sup>14</sup> CTIA Comments at 1.

<sup>15</sup> The Small UAV Coalition Comments at 3.

<sup>16</sup> *See id.* at 3.

<sup>17</sup> *U.S. Proposals for WRC-12, First Tranche, Agenda Item 1.3.*

band, such rules should enable use of other spectrum options for UAS, provide sufficient flexibility to allow use of the 5030-5091 MHz band by all UAS that require it (including small UAS, aircraft that will enable Urban Air Mobility (“UAM”), and unmanned stratospheric platforms), and avoid imposing the 5030-5091 MHz band on all UAS operators.

### **III. COMMENTERS AGREE THAT THE COMMISSION SHOULD PROPOSE FLEXIBLE SERVICE RULES FOR THE 5030-5091 MHZ BAND.**

Lockheed Martin, Integrity Communications Solutions Inc. (“Integrity”), Elefante Group, and the Small UAV Coalition joined CTIA in noting the importance of flexible service rules for the 5030-5091 MHz band.<sup>18</sup> Commenters noted the importance of flexibility, the need to consider of the role of autonomy, and the question of whether limitations to “line-of sight” flight are warranted.

As CTIA stated in its comments, the Commission’s flexible approach to UAS spectrum “should be consistent with its approach to spectrum allocations and service rules, valuing flexibility and neutrality as to users and technologies.”<sup>19</sup> The Small UAV Coalition agreed, explaining that “UAS integration into the NAS [national airspace] is still very nascent. Therefore, the Commission can best serve those efforts by maintaining a flexible, light-touch approach to UAS spectrum.”<sup>20</sup> Lockheed Martin echoed a similar theme, stating that “in light of the rapid development of different communication architectures to support various operational environments . . . prescriptive service rules – establishing explicit, measured endurance capabilities or weight and other aircraft dimensions” are not necessary to ensure efficient use of

---

<sup>18</sup> CTIA Comments at 10; Lockheed Martin Comments at 3; Comments of Integrity Communications Solutions Inc., RM-11798, at 2 (filed May 29, 2018) (“Integrity Communications Solutions Comments”); Elefante Group Comments at 2.

<sup>19</sup> CTIA Comments at 10.

<sup>20</sup> The Small UAV Coalition Comments at 8.

this spectrum.<sup>21</sup> Lockheed Martin further encouraged the Commission to develop “a flexible licensing and service framework that could readily be expanded to implement the next phase of the RTCA MOPS [minimum operational performance standards] and permit uninterrupted C2 [command and control] services in support of both long-endurance and long-distance flight missions.”<sup>22</sup> CTIA agrees that flexible service rules are necessary, but as CTIA explained in its initial comments, “the Commission should adopt service and eligibility rules for the 5030-5091 MHz spectrum that are flexible and allow for use of this spectrum by other types of UAS and UAM,” not only large, high altitude UAS for long-endurance or long-distance flight.<sup>23</sup>

Beyond flexibility, the Commission’s rules also should account for the role of autonomy and its impact on UAS spectrum requirements. CTIA agrees with Integrity that autonomy is an important factor to consider when developing flexible service rules for UAS. As Integrity put it, autonomy “could allow multiple concurrent drone operations in one location while maintaining safety of flight and priority.”<sup>24</sup> Moreover, a “higher level of autonomy requires less bandwidth for safety of flight allowing more concurrent drone operations in one location.”<sup>25</sup> Indeed, spectrum efficiencies realized by autonomous UAS may mitigate AIA’s and Boeing’s concerns regarding the limited supply of spectrum in this band.<sup>26</sup>

---

<sup>21</sup> Lockheed Martin Comments at 3.

<sup>22</sup> *Id.*

<sup>23</sup> CTIA Comments at 10. Additionally, CTIA questions Lockheed Martin’s assertion that “use of the C-band for C2 operations will be self-limiting, by way of the specific equipage requirements for unmanned aircraft, and that many flights utilizing C-band C2 links are likely to be conducted by operators seeking to access higher altitudes, flying aircraft capable of longer endurance missions.” Lockheed Martin Comments at 3. As noted by CTIA in its comments, the “Commission [] should not reserve the 5030-5091 MHz band for one narrow use case, UAS transitioning to and from Class A airspace...These types of aircraft may not operate as unmanned vehicles for many years...the RTCA standard on which the AIA Petition relies for its proposed service rules for the 5030-5091 MHz band is overly restrictive, leaving out the majority of UAS operations contemplated today.” CTIA Comments at 9.

<sup>24</sup> Integrity Communications Solutions Comments.

<sup>25</sup> *Id.*

<sup>26</sup> See AIA Petition at 12; Boeing Comments at 10.

Finally, commenters agree that uses in the band should not be limited to “line-of-sight” UAS operations. As the Small UAV Coalition noted, the “utility of this spectrum would be reduced significantly if it would be used only for line-of-sight operations.”<sup>27</sup> CTIA disagrees with Boeing’s inflexible view of the band and its suggestion that the 5030-5091 MHz allocation “expressly limited the use of the band to line-of-sight communications.”<sup>28</sup> The Commission’s *Allocation Order* references the U.S. submission to the 2012 World Radiocommunication Conference (“WRC-12”), asserting that the band “would be *appropriate* to satisfy the terrestrial, line-of-sight, spectrum requirements for command and control of UAS in non-segregated airspace,”<sup>29</sup> not that the band is *limited* to line-of-sight. The *Allocation Order* also emphasizes comments that allocation of the band should be flexible and accommodate future uses of the band by low-altitude small UAS and beyond line-of-sight operations.<sup>30</sup> There is no basis in the record for Boeing’s claim that use of the band must be *limited* to line-of-sight communications.

#### **IV. COMMENTERS AGREE THAT THE COMMISSION SHOULD REJECT AIA’S REQUESTED PIC LICENSING REQUIREMENT.**

Commenters joined CTIA in urging the Commission to reject AIA’s proposed PIC licensing requirement. The Small UAV Coalition agreed with CTIA, explaining that “such a regime would be unnecessarily restrictive; just as the FCC places spectrum management in the hands of cellular operators and not every person who owns a cell phone, it is not necessary for all

---

<sup>27</sup> The Small UAV Coalition Comments at 4.

<sup>28</sup> Boeing Comments at 7.

<sup>29</sup> *Amendment of Parts 2, 15, 80, 90, 97, and 101 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference* (Geneva, 2012), ET Docket No. 15-99, Report and Order, FCC 17-33, at ¶ 41 (2017) (emphasis added) (“*Allocation Order*”).

<sup>30</sup> *Id.* at ¶ 42.

UAS operators to be FCC-licensed since the actual spectrum licensees will manage the spectrum used by the UAS operators.”<sup>31</sup>

Other commenters point out that the AIA Petition fails to articulate the scope of its proposal. Boeing (an AIA member) questions “whether PICs would be required to secure a Commercial Radio Operator license from the FCC for any UAS operation or just those that employ the 5030-5091 MHz band.”<sup>32</sup> Boeing states that “AIA likely intended the latter, but this too could be resolved in a rulemaking.”<sup>33</sup> More clarity is needed to understand exactly what AIA proposes. The Commission should not propose adopting such a vaguely defined PIC requirement or applying an FCC licensure requirement to all UAS.

The Small UAV Coalition correctly observed that “AIA requests that the Commission require UAS PICs to secure an operator license under the FCC's Commercial Radio Operator Program. This broad request, which would appear to apply to all UAS operators, regardless of the type of operation or spectrum band used, is at odds with the rest of the petition, which is limited to the 5030-5091 MHz band and UAS CNPC operations.”<sup>34</sup> CTIA agrees that “[w]hether such a broad departure from the otherwise narrow scope of the petition was intentional merits confirmation or clarification.”<sup>35</sup>

CTIA also agrees with the Small UAV Coalition’s assessment that the developing sophistication of autonomous operations brings into question the necessity of the PIC licensing requirement: “[t]he petition assumes that all UAS operations will be conducted by a...PIC, and

---

<sup>31</sup> *Id.* at 8.

<sup>32</sup> Boeing Comments at 7-8.

<sup>33</sup> *Id.*

<sup>34</sup> The Small UAV Coalition Comments at 6-7.

<sup>35</sup> *Id.* at 7.

assumes that the PIC will be an individual person. The petition does not address autonomous operations, likely to be widely available in the near future, nor does it address how the PIC operator license concept will apply to highly automated UAS operations.”<sup>36</sup>

As CTIA noted in its initial comments, “[t]he FAA has jurisdiction over aircraft operations and operators, and the Commission should not confuse these issues in spectrum regulations, as the AIA Petition suggests.”<sup>37</sup> Instead, “the Commission [] should defer to the FAA as the expert agency with respect to aircraft definitions, and operator qualifications and certifications.”<sup>38</sup> The Small UAV Coalition agreed, stating that the “FAA has a primary role in determining the qualifications of remote pilots. If it is indeed the intent of the AIA Petition to seek a broad requirement that all UAS operators be FCC-licensed, such a request would exceed the scope of the FCC's authority.”<sup>39</sup>

The record demonstrates that AIA’s proposed PIC requirement is ill-conceived in multiple respects, is not within the province of the Commission, and should not be entertained.

**V. CALLS TO RESERVE THE 5030-5091 MHZ SPECTRUM FOR “SAFETY-OF-LIFE” COMMUNICATIONS SHOULD BE REJECTED.**

AIA and its members Boeing and Lockheed Martin ask the Commission to reserve the 5030-5091 MHz band for “safety-of-life” communications. Such a limitation is undefined, is not required by the band’s allocation to aeronautical mobile (route) service (“AM(R)S”), and could effectively reserve use of the band for AIA’s members that might, one day, fly large unmanned

---

<sup>36</sup> *Id.* at 6.

<sup>37</sup> CTIA Comments at 19-20.

<sup>38</sup> *Id.*

<sup>39</sup> The Small UAV Coalition Comments at 7.

aircraft at higher altitudes. The Commission should not reserve this valuable UAS spectrum for one UAS use case.

As CTIA noted in its comments, although the AM(R)S is “‘reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes,’ these concepts – safety and regularity of flight – apply to all UAS.”<sup>40</sup> The undefined, but seemingly narrower, “safety-of-life” standard appears to be an attempt to exclude classes of UAS from the band. The Commission should reject this effort. Under the FAA’s Part 107 rules, small UAS do not require airworthiness certifications because safety-of-life is not at risk. However, as the FAA continues to expand operations over people and beyond visual line-of-sight, more operations and types of UAS could change the risk profile. Aircraft used for UAM, for example, will have human passengers and thus safety-of-life will be a concern. It is important that the Commission not adopt false limitations such as “safety-of-life” that exclude its use by small UAS or UAM, whether intentionally or unintentionally.

To be clear, RTCA, the FAA, and the Commission do not have a commonly accepted definition of “safety-of-life” communications. The CNPC standards working group at RTCA does not define “safety-of-life” in its Terms of Reference.<sup>41</sup> The Commission does not refer to “safety-of-life” in its Part 87 rules, instead referring to “safety and regularity of flight.”<sup>42</sup> The FAA regulations include a number of variations on the concept of “safety”, including “safety and efficiency” of flight,<sup>43</sup> and “safe operation” of aircraft,<sup>44</sup> but do not provide a definition for

---

<sup>40</sup> CTIA Comments at 13 (*citing* 47 C.F.R. § 87.5).

<sup>41</sup> RTCA Special Committee 228, *Terms of Reference* (Sept. 21, 2017), available at: [https://www.rtca.org/sites/default/files/sc-228\\_sept\\_2017\\_tor.pdf](https://www.rtca.org/sites/default/files/sc-228_sept_2017_tor.pdf).

<sup>42</sup> 47 C.F.R. § 87.5.

<sup>43</sup> *See, e.g.*, 14 C.F.R. § 91.139.

<sup>44</sup> *See, e.g.*, 14 C.F.R. § 3.5.

“safety-of-life.” Neither the AIA Petition nor the comments submitted by AIA members provide a definition of “safety-of-life.” Indeed, even AIA’s own members cannot agree on the meaning of “safety-of-life,” with Lockheed Martin and Boeing presenting contradictory arguments as to whether this term would encompass video payload communications, as noted above.<sup>45</sup> Thus, the Commission should not introduce an NPRM that proposes to limit UAS communications in the 5030-5091 MHz band to a non-existent concept.

## **VI. CONCLUSION**

As active participants in the UAS industry, CTIA and its members work to support the rapid development and growth of the industry by ensuring flexible spectrum policies and standards that will enable UAS operations of all kinds. The record in this proceeding underscores the importance and widespread recognition of the concerns raised by CTIA regarding the AIA Petition. The Commission should carefully consider whether action on the AIA Petition is premature, or advisable, given the lack of clarity about what AIA is proposing. As commenters have made clear to the Commission, the AIA Petition’s lack of clarity, unnecessary and overbroad proposed PIC licensing requirement, and inflexible, unduly restrictive proposal to limit use of the 5030-5091 MHz band to particular use cases all contravene the Commission’s longstanding goal of adopting flexible, technology-neutral rules.

The Commission should take notice of comments by CTIA and others that the UAS and UAM industries are developing rapidly, and the Commission must ensure that any service rules for the 5030-5091 MHz band neither require use of this band, nor preclude its use by any class of UAS and UAM. Additionally, the Commission should ensure that any rules it adopts for this

---

<sup>45</sup> See Boeing Comments at 9; Lockheed Martin Comments at 4.



band, or any regulatory framework, will not inhibit or burden use of other spectrum bands for UAS. The Commission's first foray into service rules for UAS should provide flexibility to accommodate the ever-evolving nature of UAS operations, and CTIA stands ready to assist the Commission in these efforts.

Respectfully submitted,

/s/ Jackie McCarthy

Jackie McCarthy

Assistant Vice President, Regulatory Affairs

Thomas C. Power

Senior Vice President and General Counsel

Scott K. Bergmann

Senior Vice President, Regulatory Affairs

Melanie Tiano

Director, Cybersecurity and Privacy

## CERTIFICATE OF SERVICE

I, Jackie McCarthy, Assistant Vice President, Regulatory Affairs, CTIA, hereby certify that I have on this 13th day of June, 2018, caused to be served true and correct copies of the reply comments of CTIA in the Matter of Petition to Adopt Service Rules for Unmanned Aircraft Systems (“UAS”) Command and Control in the 5030-5091 MHz Band, RM-11798, upon the following persons via the United States Postal Service:

David Silver  
Vice President, Civil Aviation  
Aerospace Industries Association  
1000 Wilson Blvd., Suite 1700  
Arlington, VA 22209

Audrey L. Allison  
Vice President, Global Spectrum  
Management  
The Boeing Company  
929 Long Bridge Drive  
Arlington, VA 22202

Bruce A. Olcott  
Kaytlin L. Roholt  
Jones Day  
51 Louisiana Ave. NW  
Washington, D.C. 20001

Gregory S. Walden  
Aviation Counsel  
Small UA V Coalition  
2001 K Street NW 4th Floor  
Washington, DC 20006

Jennifer A. Warren  
Vice President, Technology Policy &  
Regulation  
Lockheed Martin Government Affairs  
2121 Crystal Drive, Suite 100  
Arlington, VA 22202

Bryan Conner  
Integrity Communications Solutions Inc.  
118 North Tejon St., Suite 202  
Colorado Springs, CO 80903

Chris DeMarche  
Chief Operating Officer  
Elefante Group, Inc.  
4725 South Monaco Street, Suite 330  
Denver, CO 80237

Edward A. Yorkgitis, Jr.  
Kelley Drye & Warren, LLP  
3050 K Street, NW, Suite 400  
Washington, DC 20007

/s/ Jackie McCarthy  
Jackie McCarthy  
Assistant Vice President, Regulatory  
Affairs