

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

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

**REQUEST FOR STAY**

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## SUMMARY

Petitioners request an immediate temporary stay of any equipment authorization of unlicensed 6 GHz low-power indoor (“LPI”) devices, pending Commission adoption of Petitioners’ Petition for Rulemaking and its development of rules that are proven to prevent interference from these devices to licensed microwave systems in the 6 GHz band. This stay should apply both to 6 GHz LPI devices that the Commission has already authorized, as well as any pending or future applications for authorization of 6 GHz LPI devices. The stay is necessary to prevent the imminent risk of irreparable harm from the interference that these unlicensed 6 GHz LPI devices are certain to cause to incumbent licensed systems in the band. In that regard, recent real-world interference tests have revealed that beacon signals by 6 GHz LPI devices will be constantly transmitting and will cause interference to licensed microwave systems. Further, these tests have proven that even a single 6 GHz LPI device will cause harmful interference to a licensed microwave system from distances of 4.5 kilometers away. Given that the Commission has already authorized 6 GHz LPI devices, an immediate stay is necessary to prevent these devices from causing harmful interference to licensed microwave systems. Finally, a temporary stay will not significantly harm the interests of other stakeholders, and the public interest favors granting the stay immediately to protect public safety and critical infrastructure industries who provide essential services to the public at large.

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**REQUEST FOR STAY**

The Utilities Technology Council (“UTC”), the Edison Electric Institute (“EEI”), the American Public Power Association (“APPA”), the National Rural Electric Cooperative Association (“NRECA”), the American Gas Association (“AGA”), the American Water Works Association (“AWWA”), the American Petroleum Institute (“API”), the Nuclear Energy Institute (“NEI”), the Association of American Railroads (“AAR”), the Association of Public-Safety Communications Officials-International (“APCO”), the International Association of Fire Chiefs (“IAFC”) and the National Public Safety Telecommunications Council (“NPSTC”) (collectively the “Petitioners”) hereby request that the Commission issue a temporary stay pursuant to 47 C.F.R. §1.43 of any equipment authorization of unlicensed 6 GHz low power indoor (“LPI”) devices, including the marketing, sale and importation of such devices already authorized by the Commission as well as any such devices authorized going forward.<sup>1</sup> Petitioners request that the

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<sup>1</sup> 47 C.F.R. §1.43. *See* 47 C.F.R. §2.901 et. seq., Subpart J – Equipment Authorization Procedures. *See also* 47 C.F.R. §2.803 Marketing of radiofrequency devices prior to equipment authorization (stating that in general “No person may market a radio frequency device [prior to equipment authorization],” including the “sale or lease, or offering for sale or lease, including advertising for sale or lease, or importation, shipment, or distribution for the purpose of selling or leasing or offering for sale or lease.”) *And see* 47 C.F.R. §2.939 Revocation or withdrawal of equipment authorization (providing that “The Commission may revoke any equipment authorization:

- (1) For false statements or representations made either in the application or in materials or response submitted in connection therewith or in records required to be kept by § 2.938.
- (2) If upon subsequent inspection or operation it is determined that the equipment does not conform to the pertinent technical requirements or to the representations made in the original application.

stay remain in effect until such time that the Commission has completed a further rulemaking to develop new rules for the operation of unlicensed operations in the 6 GHz band in response to a Petition for Rulemaking that has been simultaneously filed with the Commission by Petitioners in this proceeding.<sup>2</sup> As explained in the Petition for Rulemaking, the results of real-world interference testing of unlicensed 6 GHz LPI devices which have been submitted on the record prove that these devices will cause significant and widespread interference to licensed microwave systems in the band.<sup>3</sup>

As described more fully below and in accordance with Section 1.429(k) of the Commission’s rules, an immediate stay of the certification of any unlicensed 6 GHz LPI devices is required to protect licensed microwave systems from harmful interference. First, there is a significant likelihood of success on the merits that the Commission will grant the Petition for Rulemaking, based on the real-world test results that unlicensed 6 GHz LPI devices will cause harmful interference to licensed microwave systems in the band. Second, petitioners will suffer irreparable harm absent the grant of preliminary relief. Third, other interested parties will not be

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- (3) If it is determined that changes have been made in the equipment other than those authorized by the rules or otherwise expressly authorized by the Commission.
  - (4) Because of conditions coming to the attention of the Commission which would warrant it in refusing to grant an original application.

<sup>2</sup> Petition for Rulemaking by the Utilities Technology Council (“UTC”), the Edison Electric Institute (“EEI”), the American Public Power Association (“APPA”), the National Rural Electric Cooperative Association (“NRECA”), the American Gas Association (“AGA”), the American Water Works Association (“AWWA”), the American Petroleum Institute (“API”), the Nuclear Energy Institute (“NEI”), the Association of American Railroads (“AAR”), the National Association of Broadcasters (“NAB”), APCO International (“APCO”), the International Association of Fire Chiefs (“IAFC”) and the National Public Safety Telecommunications Council (“NPSTC”) in ET Docket No. 18-295 (filed Dec. 7, 2021)(hereinafter “Petition for Rulemaking”).

<sup>3</sup> *Id.* at 4, n.3, *citing* Letter from Larry Butts, Manager, Telecom Engineering, Southern Company Services, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission in ET Docket No. 18-295 and GN Docket No. 17-183 (filed June 23, 2021); *and see* Attachment A: Test Report on the Effects of 6 GHz Unlicensed RLAN Units on Fortson to Columbus Microwave Link June 21, 2021, *available at* <https://www.fcc.gov/ecfs/filing/106231367519302> (“6 GHz Interference Report”).

harmful if the stay is granted. Fourth and finally, the public interest favors grant of the stay.<sup>4</sup>

Each of these four requirements for the grant of a stay are demonstrated more fully below and in the Petition for Rulemaking that is herein incorporated by reference.

**I. THERE IS A SUBSTANTIAL LIKELIHOOD OF SUCCESS ON THE MERITS THAT THE COMMISSION WILL GRANT THE PETITION FOR RULEMAKING.**

As explained in the Petition for Rulemaking, the Commission may not authorize unlicensed operations in the 6 GHz band unless there is an insignificant risk of interference to licensed systems in the band.<sup>5</sup> In its Report and Order, the Commission concluded that the risk of interference to licensed microwave systems from 6 GHz LPI devices operating at or below 5 dBm/MHz PSD was “insignificant” based mainly on the interference analyses that were submitted by proponents of unlicensed operations.<sup>6</sup> Specifically, the Commission relied heavily on a Monte Carlo simulation submitted by CableLabs, which the Commission claimed “more accurately capture[d] the sporadic nature of access point transmissions and the probabilistic nature of co-channel operation.”<sup>7</sup> The Commission found the “CableLabs’ study persuasive because it uses actual airtime utilization data for hundreds of thousands of Wi-Fi access points

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<sup>4</sup> See Protecting the Privacy of Customers of Broadband and other Telecommunications Services, WC Docket No. 16-106, *Order Granting Stay Petition in Part*, FCC 17-19 (rel. Mar. 1, 2017)(citing *Washington Metropolitan Area Transit Commission v. Holiday Tours, Inc.*, 559 F.2d 841 (D.C. Cir. 1977)(“*Holiday Tours*”); *Virginia Petroleum Jobbers Ass’n v. Federal Power Comm’n*, 259 F. 2d 921, 924 (D.C. Cir. 1958)(“*VA Petroleum Jobbers*”).

<sup>5</sup> See 47 U.S.C. §§301 and 302 (together require the Commission to license any transmitter and prohibit harmful interference to any licensed operation.)

<sup>6</sup> See *Unlicensed Use of the 6 GHz Band*, Report and Order, ET Docket No. 18-295 at ¶110 (stating that “[b]ased on our experience with unlicensed operations and interference analyses as well as our engineering judgment, we find that 5 dBm/MHz PSD will both adequately protect all incumbents in the band from harmful interference as well as offer enough power to unlicensed devices, commensurate with the levels in the other U-NII bands, to sustain meaningful applications especially when using wider bandwidths. At this power limit and with the other constraints imposed on these operations, we find the risk of harmful interference to incumbent operations to be insignificant.”)

<sup>7</sup> *Id.* at ¶116.

along with a statistical model for building entry loss.”<sup>8</sup> Despite objections to the activity factor used in CableLabs’ study, the Commission agreed with CableLabs’ estimates and found that “the CableLabs study is the best evidence in the record of the impact that unlicensed low-power indoor devices will have on incumbent operations—and it demonstrates that such operations will not cause harmful interference.”<sup>9</sup>

The results of the real-world interference tests fundamentally call into question the basis for the Commission’s rules for 6 GHz LPI devices, including and particularly the activity factor from the CableLabs study upon which the Commission primarily relied in developing its rules. As described in the Petition for Rulemaking and as reported on the record in this proceeding, these real-world test results reveal that unlicensed 6 GHz LPI devices transmit beacon signals nearly constantly, and these beacon signals alone are capable of interfering with nearby licensed microwave systems – independent from any data transmissions by these devices. Importantly, the activity factor of the beacon signals transmitted by an unlicensed 6 GHz LPI device is orders of magnitude greater than the activity factor that was used in the CableLabs Monte Carlo analyses. Moreover, these beacon signals start transmitting as soon as the 6 GHz LPI device is powered-up, and they do not appear to be subject to contention-based protocols, which the Commission cited as a factor that would supposedly limit the potential for interference to licensed microwave systems. Finally, the proponents of unlicensed operations were uniquely positioned to know or should have known about these beacon signals, yet they never mentioned the presence of beacon signals at any point in this proceeding until after the real-world interference test results were submitted on the record – and even then, they fail to deny that

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<sup>8</sup> *Id.* at ¶118.

<sup>9</sup> *Id.* at ¶120.



beacon signals will cause the interference that was discovered through the real-world tests.<sup>10</sup>

The results of the real-world interference tests demonstrate there is a substantial likelihood of success on the merits that the Commission will need to conduct a further rulemaking to develop new rules for unlicensed 6 GHz LPI devices to determine whether they do not pose a substantial risk of interference to licensed microwave systems in the 6 GHz band. As explained above, the fundamental basis of the Commission's rules for unlicensed 6 GHz LPI devices is flawed because the Commission never considered the impact of beacon signals. Worse, the flawed data was provided by the proponents, who demonstrated a startling lack of candor in failing to disclose the impact of interference from beacon signals, which they knew or should have known would be used by unlicensed 6 GHz LPI devices to communicate from an access point to client devices. Coupled with their outright refusal to cooperate on interference testing in the 6 GHz multi-stakeholder group ("MSG") and their intransigence to even consider interference testing within the scope of the MSG, it appears that proponents failed to sufficiently inform everyone, including the Commission, about the interference potential of these devices.

The results of actual field testing of commercially available unlicensed 6 GHz LPI devices demonstrate that these beacon signals will in fact have a material and significant impact on licensed microwave systems. Moreover, the interference test results represent changed circumstances that require that the Commission conduct a further rulemaking to develop new rules that are proven effective at protecting licensed microwave systems based upon accurate and

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<sup>10</sup> Instead, proponents of unlicensed operations merely attempt to allay interference concerns by asserting that multi-band unlicensed devices will not use the 6 GHz band to transmit beacon signals to communicate with their associated client devices, which itself is a specious and unsubstantiated claim that, even if true, says nothing about the interference from 6 GHz LPI devices that do not operate in other bands. *See* Letter from Paul Margie, Counsel for Apple, Broadcom, Cisco, Facebook, Google, Hewlett Packard Enterprise, and Microsoft to Marlene H. Dortch, Secretary, Federal Communications Commission in ET Docket No. 18-295 (filed Oct. 14, 2021), *attaching* "Technical Response to Southern/EPRI June 2021 Test Report".

substantial evidence on the record through real-world interference testing and mitigation techniques, including requiring automated frequency coordination (“AFC”) or some other mitigation technique for unlicensed 6 GHz LPI devices. For all these reasons, there is a substantial likelihood of success on the merits of the need for the Commission to conduct a further rulemaking in response to the results of the real-world interference testing of unlicensed 6 GHz LPI devices.

**II. PETITIONERS WILL SUFFER IMMINENT AND IRREPARABLE HARM ABSENT A STAY OF EQUIPMENT CERTIFICATION OF ALL 6 GHZ LPI DEVICES, INCLUDING DEVICES THAT HAVE ALREADY BEEN CERTIFIED.**

Given that 6 GHz LPI devices have already been certified by the Commission and additional applications are pending approval, petitioners will suffer imminent and irreparable harm from unlicensed 6 GHz LPI devices that will endanger, seriously degrade, obstruct, or repeatedly interrupt licensed microwave operations in the band.<sup>11</sup> The petitioners herein represent a broad cross section of organizations representing licensed microwave system incumbents in the band, including public safety, energy and water companies, and commercial communications service providers. Owing to the critical communications that are carried over these licensed microwave systems, incumbent licensees require these systems to maintain high levels of reliability and they design, build and maintain their systems to be highly resilient.<sup>12</sup> As

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<sup>11</sup> See 47 C.F.R. § 15.3 (defining “harmful interference” as “any emission, radiation or induction that endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunications service [authorized by the Commission].”)

<sup>12</sup> See Petition for Stay of APCO International in ET Docket No. 18-295 at 6-7 (filed May 28, 2020)(describing how public safety uses microwave communications systems in the 6 GHz band for mission critical systems that support operational needs such as dispatching first responders and maintaining voice communications during incidents, and stating that “Disruption to these systems could have dire consequences. Assistance to the public could be delayed. Law enforcement officers, emergency medical technicians, and firefighters might lack the ability to transmit emergency calls for assistance and other information essential for protecting life and property to the impact from interference.”) See also *Id.* at n. 18, citing *Mozilla Corp. v. FCC*, 940 F.3d 1, 8(D.C. Cir. 2019)(stating “whenever public safety is involved, lives are at stake,” and the potential harms “during a public safety emergency are

such, significant investments have been made by incumbent licensees in these microwave systems to ensure reliability and resiliency, and interference from unlicensed 6 GHz LPI operations threatens to undermine these investments. Moreover, incumbent licensees lack alternative communications options, if their 6 GHz licensed microwave systems are rendered ineffective because of interference from unlicensed 6 GHz LPI devices.

Potential interference from unlicensed 6 GHz LPI devices to licensed microwave systems can directly and indirectly threaten the safety of law enforcement, fire and rescue, and emergency medical service personnel, as well as electric, gas and water utility and railroad personnel, who respond to emergencies and work in hazardous environments.<sup>13</sup> In addition, potential interference can threaten operational reliability, safety and security of critical infrastructure, which rely on microwave systems to monitor and control the flow of water and gas and the balance of power that is being delivered by critical infrastructure systems at any given time. Any communications interruption or outage on these microwave systems due to interference from unlicensed operations can have catastrophic consequences for these licensees and the public that depends upon the services they provide.<sup>14</sup>

The most recent interference testing – conducted with FCC-certified, commercial off-the-shelf devices operating under real-world conditions – proves that the current rules will allow

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irreparable.”)

<sup>13</sup> *Id.*

<sup>14</sup> Petitioners further note that any degradation in the performance and reliability of fixed microwave links relied on by public safety, critical infrastructure, and communications entities as a result of unlicensed operations in the 6 GHz band would be contrary to the Commission’s efforts towards improving the reliability and resiliency of communications networks during emergencies. *See Resilient Networks; Amendments to Part 4 of the Commission’s Rules Concerning Disruptions to Communications; New Part 4 of the Commission’s Rules Concerning Disruptions to Communications*, PS Docket Nos. 21-346 and 15-80, ET Docket No. 04-35, Notice of Proposed Rulemaking, FCC 21-99 (rel. Oct. 1, 2021).

unlicensed LPI devices to cause harmful interference to licensed microwave systems in the 6 GHz band. Further, this interference will be widespread and nearly constant, potentially occurring anytime, anyplace and by anyone.<sup>15</sup> The harmful interference will be impractical to trace and mitigate against, and it will interrupt mission critical communications, threatening the safety of life, health, and property, as well as the delivery of essential services to the public. Accordingly, petitioners and the incumbent licensees that they represent will suffer irreparable harm if the Commission does not grant a stay of equipment certification of any 6 GHz LPI devices, including those devices that have already been certified by the Commission.

**III. OTHER PARTIES WILL NOT BE HARMED BY GRANTING A STAY, AND THE PUBLIC INTEREST FAVORS GRANTING A STAY OF ANY 6 GHZ LPI EQUIPMENT CERTIFICATION.**

While incumbents face irreparable harm if a stay of any 6 GHz LPI equipment certification is not granted, proponents of unlicensed operations will not be significantly harmed by a temporary stay. As described more fully below, the only harm from granting a stay would be to the pecuniary interests of proponents of unlicensed operations, which would only be transitory and not permanent, nor significant. Moreover, the public interest clearly favors granting a stay of any 6 GHz LPI equipment certification. The public interest would be better served by protecting public safety personnel and essential energy and water services as well as railroad services, rather than allowing unlicensed 6 GHz LPI devices to cause interference to the licensed microwave systems that support these first responders and essential services.

As much as proponents of unlicensed operations attempt to promote the importance of 6 GHz LPI devices, the reality is that these devices are only designed to provide wireless

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<sup>15</sup> See Letter from Donald J. Evans, Counsel for the Fixed Wireless Communications Coalition to Marlene H. Dortch, Secretary, Federal Communications Commission in ET Docket No. 18-295, Attachment A at 3 (filed Dec. 19, 2019)(stating the uncontrolled RLAN “devices could transmit anywhere, anytime, - regardless of FS receivers nearby.”)

connectivity for in-premises applications, such as routers for home entertainment and gaming. Moreover, the market development of these 6 GHz LPI devices is still early stage and only a small fraction of the estimated total number of these devices have been sold so far. A stay would only affect a relatively small number of devices already in the commercial marketplace, and proponents will still be able to achieve their commercial sales expectations once the Commission has developed new rules for unlicensed 6 GHz LPI devices that are proven effective at preventing interference to licensed microwave systems in the 6 GHz band. It is far better to grant a stay than to allow these unlicensed 6 GHz LPI devices to cause interference that would threaten the safety of first responders and essential energy and water personnel, as well as the operational reliability, safety and security of critical infrastructure systems, such as railroads and utilities.

A stay of equipment certification of 6 GHz LPI devices would also be consistent with Commission precedent. During the introduction of LTE-U, the Commission did not approve any commercial LTE-U equipment until an “industry-driven process to enable fair coexistence between LTE-U and other technologies in the unlicensed bands” was completed.<sup>16</sup> Only then did the Commission authorize LTE-U devices when “voluntary industry testing has demonstrated that both these devices and Wi-Fi operations can co-exist in the 5 GHz band.”<sup>17</sup> By comparison with this precedent, the circumstances here are even more compelling to warrant staying equipment certification and requiring manufacturers to provide sample equipment for testing, because the interference concerns with unlicensed 6 GHz LPI devices are based on real-world

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<sup>16</sup> See e.g., Letter from Chairman Tom Wheeler to Senators Schatz, Blumenthal, Udall, Markey, Cantwell, and McCaskill Regarding LTE-U Technologies (March 1, 2016) (found at: <https://www.fcc.gov/document/chairman-response-regarding-lte-u-technologies>). See also M. Macagnone, *FCC's Wheeler Pushes Industry to Set LTE-U Standards*, LAW360, Sept. 9, 2015 (found at: <https://www.law360.com/articles/700762>).

<sup>17</sup> See *Chairman Pai Statement on Commission Authorization of First LTE-U Devices*, Feb. 22, 2017 (found at: <https://www.fcc.gov/document/chairman-pai-statement-fcc-authorization-first-lte-u-devices>).

testing and warrant serious review, considering the importance of licensed microwave systems to protecting public safety and critical infrastructure.<sup>18</sup>

In addition, the Commission’s rules clearly provide for revocation of equipment authorization “[f]or false statements or representations made either in the application or in materials or response submitted in connection therewith ...” As described herein and in the Petition for Rulemaking, proponents of unlicensed operation including applicants for equipment authorization failed to disclose that 6 GHz LPI devices transmit beacon signals, either as part of their applications for equipment authorization or in any of their comments and purported studies throughout the course of the Commission’s proceeding leading up to the 6 GHz Order. Moreover, these proponents and applicants deliberately attempted to block the MSG from conducting interference testing of these devices, which would have revealed that these beacon signal transmissions pose a significant risk of causing interference to licensed microwave systems in the 6 GHz band. Accordingly, revocation of equipment authorization of 6 GHz LPI devices already granted by the Commission is consistent with section 2.939 of the Commission’s rules and the public interest, given applicants’ failure to disclose transmissions of beacon signals by 6 GHz LPI devices and their attempts to prevent real-world testing that would have revealed the potential of beacon signals to cause interference to licensed microwave systems in the 6 GHz band.

#### **IV. CONCLUSION**

Given that real-world testing has proven that there is a significant risk of interference from unlicensed 6 GHz LPI devices, the Petitioners respectfully request that the Commission

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<sup>18</sup> In the LTE-U and LAA context, of course, sharing in the 5 GHz band involved existing unlicensed operations with no expectation of harmful interference protection, whereas incumbents here in the 6 GHz band are primary licensed providers entitled to full protection from interfering unlicensed operations.

adopt a temporary stay of any equipment certification until such time that further testing has been conducted and new rules are developed that effectively prevent unlicensed 6 GHz LPI devices from causing harmful interference to licensed microwave systems. Commission grant of a temporary stay is appropriate and consistent with Commission precedent.<sup>19</sup>

These unlicensed 6 GHz LPI devices pose an imminent risk of harmful interference to licensed operations that would cause irreparable harm to Petitioners. There is a substantial likelihood of success on the merits by Petitioners based on the facts and the law at issue. Moreover, the balance of the harms clearly weighs in favor of granting a temporary stay to protect the reliability of the mission-critical communications that are carried over these licensed microwave systems. Meanwhile, the commercial interests of proponents of unlicensed operations will only be delayed, not substantially harmed, while further testing is conducted, and new rules are developed. In addition, the public interest would be served by granting a temporary stay because doing so will protect against interference that threatens the safe, reliable, and secure delivery of essential services to the public provided by electric, gas, and water utilities as well as by public safety, broadcast television, telecommunications, and broadband service providers. The time to act is now before these LPI devices cause harmful interference to licensed microwave systems and before they become widely available on a commercial basis. It will be too late to fix the interference after it occurs, and there will be too many devices to pull off the market if the Commission continues to certify 6 GHz unlicensed equipment.

In addition, the Commission should immediately adopt a temporary stay of any further equipment certification of 6 GHz LPI devices, pending further testing and the development of

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<sup>19</sup> See *Supra n. 10-12*. Where the Commission stayed any LTE-U operations until an “industry-driven process to enable fair coexistence between LTE-U and other technologies in the unlicensed bands” was completed. See also *Washington Metropolitan Area Transit Commission v. Holiday Tours, Inc.*, 559 F.2d 841 (D.C. Cir. 1977); *Nken v. Holder*, 556 U.S. 418 (2009); and *Scripps-Howard Radio, Inc. v. FCC*, 316 U.S. 4 (1942).

rules that are proven to prevent harmful interference to licensed microwave systems from unlicensed 6 GHz LPI devices. Such a stay is supported based on the imminent harm posed by these unlicensed devices to licensed microwave systems as well as the likelihood of success on the merits by Petitioners. A temporary stay is necessary to prevent interference to licensees now that unlicensed 6 GHz LPI devices are commercially available, and this delay will not materially harm the commercial interests of proponents of unlicensed operations. Finally, the public interest will be served by a temporary stay to address the imminent threat from 6 GHz LPI interference to the safety of life, health, and property, as well as the delivery of essential services to the public.

Respectfully,

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