

**STATEMENT OF COMMISSIONER AJIT PAI,
APPROVING IN PART AND CONCURRING IN PART**

Re: *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177; *Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5–28.35 GHz and 37.5–40 GHz Bands*, IB Docket No. 15-256; *Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42–43.5 GHz Band*, RM-11664; *Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 to Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, WT Docket No. 10-112; *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5–38.5 GHz, 40.5–41.5 GHz and 48.2–50.2 GHz Frequency Bands*; *Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5–42.5 GHz Frequency Band*; *Allocation of Spectrum in the 46.9–47.0 GHz Frequency Band for Wireless Services*; and *Allocation of Spectrum in the 37.0–38.0 GHz and 40.0–40.5 GHz for Government Operations*, IB Docket No. 97-95.

A decade ago, the smartphone didn't exist. Today, over 70% of American consumers cradle them in the palms of their hands, and an artist like Adele is subjected to intense scrutiny when she uses a flip phone to say "Hello" in a music video.¹ Not long ago, cars, appliances, and other machines were analog islands unto themselves. Today, we are at the dawn of the Internet of Things, with 15 billion Internet-connected devices and 50 billion expected by 2020. Many years ago, wireless was a fraction of all IP traffic, and only spectrum below 3 GHz was thought to be suitable for mobile. Today, the forecast is that wireless devices will account for two-thirds of all IP traffic, and the vistas for spectrum extend up into the triple digits. Changes like these are forcing everyone to rethink our wireless networks and to start planning for our 5G future.

Thankfully, American entrepreneurs and innovators are rising to meet the challenge of our highly interconnected world. They are investing in the research and development necessary for the United States to extend its leadership in the mobile space to the next generation of wireless technologies. I have seen these efforts firsthand—from Samsung's 5G research lab near Dallas, Texas, to Intel's demonstration of its millimeter wave technology here at the FCC's headquarters. And just this week, Verizon completed the technical specifications for its 5G deployment, which should help accelerate the technological push forward.

Today, the FCC does its part to pace the wireless revolution. In this *Order*, we open up over 10 GHz of high-band spectrum for innovative mobile use. In the *Further Notice*, we start the process of bringing perhaps twice that much spectrum online. And on many of the most important policy questions, we supply answers that should allow American consumers to continue to enjoy a mobile experience that is the envy of the world.

I want to highlight just a few of those decisions.

First, I'm glad that we're including a number of additional spectrum bands in our *Further Notice*. In particular, I'm pleased that we now have the votes to examine the 12,500 MHz of spectrum in the 24 GHz, 32 GHz, 42 GHz, 70 GHz, and 80 GHz bands. Commissioner O'Rielly and I urged our colleagues

¹ See, e.g., "11 people coming to terms with Adele using a flip phone in the Hello video," *Metro.co.uk* (Oct. 23, 2015), available at <http://metro.co.uk/2015/10/23/11-people-coming-to-terms-with-adele-using-a-flip-phone-in-the-hello-video-5459142/#ixzz4EKF4RPwD> ("Adele's stunning video for her comeback single Hello might have taken the world by storm – but it has left viewers with just one question: just why is she using a flip phone?").

to include those bands in last year's *Notice*. In our view, the Commission should have teed up as many bands as possible and let innovators and entrepreneurs tell us what might work. Happily, our persistence has paid off. The Commission speaks with one voice today in promoting the potential of those 12,500 MHz of spectrum for flexible, mobile use.

Likewise, I want to take a minute to thank my colleagues for agreeing to expand the *Further Notice* to include spectrum bands above 95 GHz. Getting to this point was no small feat. Petitioners asked the FCC to adopt service rules for these bands years ago. (It shouldn't have taken this long for us to move forward, especially since we have the duty under section 7 of the Communications Act to "determine whether any new technology or service proposed in a petition or application is in the public interest within one year after such petition or application is filed."²) In the meantime, other countries, as well as companies here in the United States, have been looking for ways to put this spectrum to more productive use. I've been told that our lack of service rules might be holding us back. Now, one might think that these bands are way out there (spectrally speaking), but that's not a reason to artificially restrict their use. Again, let's get the spectrum out there and let the engineers help us decide. I'm happy to report that we were able to reach a compromise that puts these bands on the table.

Second, I'm glad that we are now placing an even greater emphasis on fostering investment and innovation in the millimeter wave bands. For instance, the *Order* abandons the so-called "hybrid" licensing scheme that the 2015 *Notice* proposed for the 37 GHz band. In my view, that complex regime would have inhibited investment and innovation in the band. We also appropriately leave behind the complicated performance metrics proposed in the 2015 *Notice*. At the time, I urged my colleagues to include questions about more straightforward approaches. The *Order* now adopts those simpler, well-established methods of determining whether licensees are putting their spectrum to use. We also adopt renewal expectancies for the licensed bands, which should help encourage investment. And in another positive step, the *Further Notice* now seeks comment on whether we should apply our traditional licensing mechanisms to the additional spectrum bands, rather than experimenting with far more complicated regimes.

Third, I am glad that the relief we're providing today is not limited solely to traditional mobile technologies. Earlier this year, I had the pleasure of visiting with Google's Advanced Technology and Projects (ATAP) group.³ One of the most intriguing things they showed me was Project Soli. Founder and team lead Ivan Poupyrev described how Project Soli has created a sensing technology that uses miniature radar to detect the smallest of hand gestures. Imagine being able to control your smartphone, watch, or virtually any similar device with a slight movement of your clasped thumb and index finger.⁴ Imagine the benefits that these technologies could bring to individuals with disabilities. One testbed is in the 60 GHz band, which is technically well-suited for enabling machines to "see" subtle physical gestures. So I'm glad that my colleagues agreed with my suggestion to take additional steps today that will make it easier for entrepreneurs at ATAP and elsewhere to experiment with joining the physical and digital worlds.

None of this is to say that I agree with every decision the Commission makes today. Take the cybersecurity section of the *Order*. We lack the expertise and authority to dive headlong into this issue, and I don't think *any* agency should take a band-by-band approach to cyber. These are issues that are

² Communications Act § 7(b).

³ See <https://twitter.com/AjitPaiFCC/status/684905286843248640>.

⁴ See "Welcome to Project Soli," <https://www.youtube.com/watch?v=0QNiZfSsPc0>. Developers are already thinking about more advanced use cases. See, e.g., "Project Soli App Developers Showcase," https://www.youtube.com/watch?v=H41A_IWZwZI.

better left for security experts to handle in a more comprehensive way. However, I do appreciate that my colleagues revised portions of the cybersecurity discussion in light of some of my concerns. Another area where I would have taken a different approach is mobile spectrum holdings. As I've emphasized, experience shows that markets distorted by preemptive government dictates don't ultimately benefit consumers. Nonetheless, because we could be years away from any high-band spectrum auctions, I hope that we'll have time to correct course before these limits apply. I also would have struck a slightly different balance when it comes to spectrum held by the federal government. We must continue to be as aggressive as possible when it comes to identifying and freeing up spectrum bands that could serve American consumers. But none of the concerns I've just expressed overshadow the merits of the broader compromise that we reached today, so I will be concurring with these portions of the decision.

Additionally, one observation. Today, we put in place a key piece of the 5G puzzle. But as important as it is, it is only one piece. Another critical one, given the imperative for "densified," higher-capacity networks, is infrastructure. Last year, I laid out my vision for a regulatory framework that will ensure our wireless leadership continues into the 5G future.⁵ In addition to opening up these spectrum bands, that plan includes removing the barriers to infrastructure deployment. That means completing our small cell proceeding. That means pressing ahead on the IP Transition. And that means giving providers large and small the maximum incentive and flexibility to invest in fiber and other building blocks of tomorrow's networks. I look forward to working with my colleagues on doing just that.

Finally, I want to say a word about the professional staff of the FCC—the engineers, lawyers, and others who put in the countless hours necessary to move this proceeding forward. You deserve tremendous credit. It is one thing for us to pontificate; it's quite something else for you to produce. And produce you did: In less than two years, you pushed this proceeding from a *Notice of Inquiry* to an *Order*, and this country from virtually no high-band, mobile spectrum to over 10 GHz of it. In the regulatory context, that is moving at the speed of light. I know that it took a lot of negotiating and a good deal of compromise with federal users, and I want to commend you for your efforts. When the United States hopefully takes the worldwide lead in 5G technologies, it will be due in no small part to the incredible efforts you made—efforts that match the speed of change in the marketplace itself. So thank you.

Thank you to the staff of the Wireless Telecommunications Bureau, including Simon Banyai, Stephen Buenzow, Chris Helzer, Tim Hilfiger, Paul Malmud, Charles Mathias, Catherine Matraves, Elizabeth McIntyre, Gary Michaels, Charles Oliver, Matthew Pearl, Paul Powell, Brian Regan, John Schauble, Jim Schlichting, Catherine Schroeder, Blaise Scinto, Christian Segura, Karen Sprung, Joel Taubenblatt, and Nancy Zaczek.

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⁵ Remarks of FCC Commissioner Ajit Pai at 4G Americas' Technology Symposium (Nov. 5, 2015), <http://go.usa.gov/xxWu3>.

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