

**Remarks of FCC Commissioner Michael O’Rielly
Before the Mobile World Congress Americas 2019
Everything Policy Track
October 23, 2019**

Thank you, Jamie, for that very kind introduction, and thank you for your almost two decades of friendship. My deep appreciation also to CTIA and GSMA for inviting me to join you here today. It is truly a pleasure to be with you all at one of the premier communications conferences of the year.

My comments on this lovely Los Angeles day are intended to serve as a precursor to a full and exciting upcoming panel on UAVs. This topic may seem a little out of place for someone from the Federal Communications Commission, but if you stay with me, I think we can take a circular flight that just may touch upon a few key elements that have some connection with UAVs. I am going to start by talking about spectrum policy, weave through infrastructure, and then end with wireless power charging. Like I said, a circular path.

Domestic Spectrum Issues

The simple truth is that any UAV worth its weight requires the use of spectrum. Think about how effective a tethered UAV really would be. Thankfully, the FCC is focused on releasing and repurposing more spectrum, via various means, for new commercial services. A myriad of new bands is now or soon will be in the market to meet the insatiable demands of American consumers. So, I’d like to delve into some of the particulars of recent Commission spectrum activity.

It should be terrific news to everyone that the Commission has auctioned the 24 and 28 GHz millimeter wave bands for commercial use and will hold the 37/39/47 GHz auction in December. High-band will deliver so much capability and functionality in terms of capacity, speed, and latency. At the same time, I am excited about Commission progress in the mid bands, especially 3.5 GHz. After years of painstaking work, it is great to finally see the wireless sector use this first-of-its-kind, three-tiered structure to access and provide innovative offerings on this underused spectrum, while protecting the government users. We now get to see where the market takes it. It does seem like private networks and large-scale 5G services, when the standard is finalized, are very likely to show the versatility of this band. While unlicensed-like opportunities are available now, the PAL auction soon will place licenses into the hands of those that want them most.

Next up is the C-Band, where the satellite licensees are willing to relinquish a good portion of the 500 megahertz between 3.7 to 4.2 GHz, while accommodating their customers receiving video and audio content in the remaining satellite spectrum. The Commission is close to completing its review, and an item should be voted in the next month or two to repurpose part of the band. As I set out early in my discussion of this band, we need a sufficient amount of spectrum, around 300 megahertz makes the most sense; a fair and transparent assignment process, which I believe can be accomplished quickly; and safeguards to ensure that current spectrum users – mostly broadcasters and cable providers – continue to get service. While not my priority, it is also possible that an auction can generate money for the U.S. Treasury. To be clear, our primary objective should be to ensure that the spectrum gets into the hands of those who can put it to use as quickly as possible in order to compete not just domestically but internationally as well.

C-Band, along with 3.5 GHz, will provide a solid anchor in the mid bands, but even more is needed. So, I have turned my attention to the bands right below 3.5 GHz: the 3.1 to 3.55 GHz band. The federal government users have been told by Congress to study these bands, but this process has been painfully drawn out. After signaling that they would relinquish the upper portion of the band from 3.45 to 3.55 GHz, the Department of Defense (DoD), instead, did an unnecessary sharing feasibility study. This is spectrum that should have already been turned over for commercial use, and DoD should have been studying the lower 3.1 to 3.45 GHz, but that appears to have not even started yet. I emphatically argue that the top 100 megahertz should be reallocated immediately, and while the lower portion of this band may present challenges, the requisite study needs to get done quickly, not years from now, so that we know what is there and what protections will be needed.

International Spectrum Policy and World Radiocommunication Conference

Let's take this flight globally, if you will. These domestic millimeter wave and C-Band reallocation efforts line up with international efforts to allocate 5G spectrum. And, this year's Mobile World Congress Americas is fortuitously scheduled right before the quadrennial World Radiocommunication Conference (WRC) starts next week.

The WRC is usually something only a few insiders pay attention to, but this year it has received greater press attention and rightfully so given its importance in helping to set spectrum policy for the next decade or two.

Shortly after November 22nd, when the conference comes to a close, I will measure our ultimate success based on whether we have secured a favorable spectrum environment for next-generation wireless services – both licensed and unlicensed.

We have to ensure that unnecessarily restrictive technical protections are not adopted, under the guise of protecting users in adjacent bands, that could hamper 5G operations. Additionally, because spectrum is at a premium, many entities also want access to spectrum that has been designated for 5G in the U.S. While I am an advocate for maximizing the use of every megahertz, we must protect 5G networks from harmful interference. Ultimately, wireless providers – big and small, 5G or IOT, urban or rural – must have the ability to operate at appropriate power levels and with feasible technical requirements to invest, innovate, and deploy their envisioned networks

We also must come out of WRC-19 with a solid future mid-band agenda in place. Currently, the Americas region is supporting the study of spectrum from 3.3 GHz to 15.35 GHz, with specific bands to be determined later. However, it does not include bands the FCC was seeking, such as 3.1 to 3.3 GHz. That is a mistake and something that can be fixed in Egypt.

Moreover, we must ensure that we have more unlicensed spectrum. Specifically, WRC must not take steps to undermine the Commission's recent activity on 6 GHz that would open it up for unlicensed use while protecting existing users. This band already has a mobile allocation, but some seek to study it for IMT, which is really an effort by countries, which are looking to catch up or pushing different technologies, to delay U.S. innovation in order to gain a competitive edge. We know that opening this band for such discussion, may ultimately lead to technical restrictions intended to protect favored industries overseas. Considering all of the amazing benefits from unlicensed spectrum, this would not be in the best interest of the U.S. or the world community.

Infrastructure

To have a successful commercial UAV marketplace, the proper regulatory framework must be in place. For UAVs, it's a key point for debate whether this will ultimately be created or led at the local, county, state or national level. But, the option of a localized structure doesn't work for the communications services of the future. We cannot have an environment where every local councilman can impose their beliefs, costs, mandates, and restrictions on Internet access. And the Internet is exactly what 5G is really going to be: heavy data intensive services, with voice feature thrown in as add-ons.

To prevent harmful bifurcation and the shredding of uniform communications services, the Commission has moved multiple important items on infrastructure deployment, with a particular emphasis on small cell siting. While these are in various stages of judicial review, there are other actions we can take to alleviate the barriers to infrastructure siting, especially for macro towers. I have discussed various options with the Chairman and Commissioner Carr, who is leading this project, and I hope there will be a further item by the end of the year.

In August and September, CTIA and WIA filed a series of petitions to formally tee up some of these issues. Both entities have requested various clarifications of 6409(a), because some localities are intentionally ignoring the law's intent by misinterpreting the Commission's rules. The requests in these petitions provide a great starting point for a notice on ways to facilitate the construction and modification of macro towers, along with providing additional relief for small cells.

While some treat macro towers as last year's news, this is short-sighted. Macro towers will continue to be the primary means for providing service to many Americans, especially with the emphasis on mid band spectrum. It makes no sense, especially economically, to fill rural, or even suburban America, with small cells when larger, more powerful equipment can be used. I look to the CTIA members and the tower industry to raise siting concerns and share even more ideas on how to relieve the burdens on those wishing to construct, expand, and replace macro towers.

Also, an interesting point was raised in the 6 GHz proceeding about how modern construction materials may attenuate signals at a higher rate than we account for in our spectrum analyses. Due to modern building codes and energy efficiency standards, builders are using materials and techniques, such as metal coated windows, stone, cement and brick siding, and metal foil barriers in roof lining and insulation, that make it more difficult for signals from outdoor wireless networks to enter buildings and those from internal systems, such as Wi-Fi, to escape the confines of modern construction projects. If the radio waves are not able to permeate modern walls and windows, different indoor and outdoor operations may exist on the same bandwidth without causing harmful interference to one another. This is an issue that the Commission should explore, and I ask the wireless industry to help the Commission determine how building materials can facilitate spectrum reuse.

Wireless Power Charging

Lastly, there can be no UAVs, or communication devices for that matter, without power. With billions upon billions – and perhaps trillions – of additional wireless devices expected to be deployed over the next few years, be it smartphones, IoT sensors, or whatever, providing sustainable and reliable power will be a challenge. I suggest to you that power likely will function differently in the future. For many devices, plugs with outlets and disposable batteries are likely to be replaced with wireless power

charging. This is not only because of the nightmare of trying to service such a mass of gadgets, but also the simple mechanics of reducing weight and improving functionality.

I know what you're thinking: we've been promised wireless charging for years, and it's never lived up to the hype. But it's now finally become a near necessity. Simple mathematics makes it hard to see where there are sufficient components to manufacture enough wiring and long-lasting batteries to meet overall demand. And, this doesn't account for the shortage of rare earth elements and the geopolitical fight developing in that area. So, the race will be on to produce and deploy wireless power charging, with multiple players in the market and I'm sure more to come.

What should we expect from wireless charging? Will it be the stuff that some speculate are used to power droids in Star Wars? Maybe. But it could also be devices that emit short distance periodic bursts of low energy. The physical distance could be a few inches or maybe meters. For larger devices, it may mean charging pads scattered throughout a fly zone, allowing such devices to self charge at will. Think of this like a bee colony traveling to and from its hive, harvesting flower nectar.

Undoubtably, this is fairly early in the process but, from a regulatory standpoint, we better figure out all of the complications and barriers before the device explosion occurs. The Commission may be the right entity to guide, design, or manage the overall structure. Alternatively, we could be a bystander to others, whether private or public. I give you a word of caution, however, consider how easy it has been to get all manufacturers of wireless equipment to use common chargers. Do we really want consumers to deal with a multitude of problems from that mess again?

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So, there you have it. I tried to stay faithful to the upcoming discussion of UAVs while also outlining some important matters at the FCC. Hopefully, I didn't lose too many of you along the way. I thank you so much for your attention.