

STATEMENT OF COMMISSIONER GEOFFREY STARKS

Re: *Spectrum Horizons*, ET Docket No. 18-21; *James Edwin Whedbee Petition for Rulemaking to Allow Unlicensed Operation in the 95-1,000 GHz Band*, RM-11795 (proceeding terminated).

One of the defining features of our human experience is our curiosity: the drive to understand why the apple falls from the tree or to see what's on the other side of the mountain. It is fitting then that this proceeding is entitled "Spectrum Horizons," as we prepare to explore uncharted territory in our spectrum. The spectrum we open today was once thought to be too high frequency for any mainstream use. But we now see that it has the potential to change lives for the better. Terahertz spectrum imaging could change the way doctors and researchers understand biological processes on the cellular, and smaller, level.¹ Doctors may be able to use this technology to conduct non-invasive cancer screening tests, meaning earlier detection and more lives saved.² In security settings, terahertz spectroscopy can be used to identify dangerous materials and weapons, meaning threats to safety can be identified without body scans.³

Opening previously unused bands of spectrum can spur unexpected innovation. In the most authentic sense, we step into the unknown today. While today's action is bold, we also must act smartly. As we modernize our approach to these bands, we should also modernize our approach to a problem that will demand our attention: harmful interference. It's happened before. As we have authorized new technologies or the use of new bands of spectrum, we have encountered unexpected interference, whether it is interference to wireless calls from consumer signal boosters⁴ or LED lights,⁵ unauthorized operations in the recently-authorized Citizens Band Radio Service (CBRS) band⁶ or interference to weather radar operations from unlicensed wireless broadband transmission systems.⁷ In each instance, unexpected interference issues required the Commission to investigate the situation and respond, whether with enforcement actions, policy changes, or both.

Thus, as we look to the future today, we should consider how we will address the interference issues that will inevitably arise. This comports well with a core mission of the Commission and one of my overall goals: to support rules that are clear and well-defined so that if any infractions occur, we can

¹ Trends in Biotechnology, *Biomedical Applications of Terahertz Spectroscopy and Imaging*, [https://www.cell.com/trends/biotechnology/fulltext/S0167-7799\(16\)30027-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0167779916300270%3Fshowall%3Dtrue](https://www.cell.com/trends/biotechnology/fulltext/S0167-7799(16)30027-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0167779916300270%3Fshowall%3Dtrue) (last visited Mar. 13, 2019).

² The Optical Society, *New Terahertz Imaging Approach Could Speed Up Skin Cancer Detection*, https://www.osa.org/en-us/about_osa/newsroom/news_releases/2017/new_terahertz_imaging_approach_could_speed_up_skin/ (last visited Mar. 13, 2019).

³ Engineering and Physics Sciences Research Council, *Winner of the 2003/04 Research Councils' Business Plan Competition – 24 February 2004*, <https://web.archive.org/web/20140315232115/http://www.epsrc.ac.uk/newsevents/news/2004/Pages/rcukbusinessplan.aspx> (last visited Mar. 13, 2019).

⁴ *Use and Design of Signal Boosters*, Report and Order, 28 FCC Rcd 1663, 1667, para. 3 (2013).

⁵ *LED Sign Marketers Must Comply With FCC Rules*, Public Notice, DA 19-90 (2019).

⁶ See *EB Proposes Fine for Unauthorized Operation in the 3650-3700 MHz band*, Notice of Apparent Liability, DA 19-64 (2019).

⁷ *Enforcement Bureau Takes Action to Prevent Interference to FAA-Operated Terminal Doppler Weather Radars Critical to Flight Safety*, Public Notice, Advisory, DA 12-459, 27 FCC Rcd 10800, 10800-801 (2012).

address it and hold any violators accountable. To that end, I would like to highlight two important points: the Commission's interference resolution capabilities and its spectrum management policies.

First, the FCC has a critical role in detecting and resolving interference issues. Once the Commission authorizes service in a band, parties can and do reasonably expect that their operations in that band will be free from harmful interference in violation of our rules. Our talented staff in the Office of Engineering and Technology (OET) work hard to set technical standards to ensure just that. And, where needed, the Enforcement Bureau's hard-working agents and attorneys investigate and take appropriate action.

But the Commission's staff cannot investigate without the necessary tools and training. Today we open up bands above 95 GHz, including terahertz bands ranging up to 3 THz. The plain fact of the matter, though, is that I have serious questions about the Enforcement Bureau's tools to detect interference in these and other high-frequency bands. In fact, we are not currently capable of policing a significant amount of millimeter wave spectrum – the very high-frequency bands critical for 5G. I am concerned that without dedicated and sufficient resources to developing 21st Century enforcement tools against interference, our efforts to promote 5G will be undermined.

This is not to say that the Commission has erred in making these bands available. To the contrary, the Commission has a statutory responsibility to identify new spectrum bands and apply innovative policy ideas to maximize spectrum efficiency. But the bands we discuss today could be critical to both private health and public safety. More broadly, we owe it to the American people and our employees to ensure that we can be an effective “cop on the beat” in every spectrum neighborhood. That means devoting the funds necessary for the equipment and training that will allow our staff to identify and fully resolve interference issues in all the bands subject to our jurisdiction.

Second, we must continue to evaluate whether we should reconsider our approach to spectrum management, for both new and existing bands. Spectrum is the foundation for innovation, and as we make more spectrum available, we must ensure that our rules maximize the use of all our bands. How do we get the most out of our new and existing spectrum? OET has already asked that question. In February 2017, in response to a recommendation from the agency's Technological Advisory Council (TAC), OET sought comment on whether the agency should adopt a policy statement setting forth spectrum management guidance and principles.⁸ Through its recommendation, the TAC made clear that, if we are to use our spectrum in the most efficient manner, we must address some hard questions, including:

- Is our current definition of harmful interference appropriate?
- Should we reconsider what constitutes an acceptable level of interference?
- How should the Commission assess the risk of harmful interference?
- When the Commission assesses interference disputes, have we unreasonably favored the operations of incumbents over those of new entrants?
- Should the Commission provide researchers with access to interference case data to identify interference trends and other issues?

⁸ *Comment Sought on Tech. Advisory Council's Spectrum Recommendations*, Public Notice, 32 FCC Rcd 10160, 10160 (2018).

The comment period in this proceeding closed more than a year ago. I welcome the opportunity to tackle these questions head on, as we must modernize our spectrum policy to serve our current and future spectrum needs.

Opening spectrum once thought commercially unusable is good policy. It will encourage innovation and the deployment of new technologies that will change lives for the better. Before we cross over that spectrum horizon, we must make sure we are equipped and prepared for the journey. The Enforcement Bureau needs the resources and training to investigate fully and resolve interference in all bands subject to FCC jurisdiction. And I look forward to hearing from experts inside and outside the agency about how to make the most of our spectrum resources.

Finally, my thanks to the staff of OET for their hard work in identifying and setting standards for new bands of spectrum, and for their work on this item.