



Utilities' Spectrum Challenge: 6 GHz Microwave & Proposal for Mobile Operations

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SUMMARY

The radio portion of the electromagnetic spectrum is needed to enable wireless applications for utilities, public safety, and telecommunications providers, among others. This radio spectrum is subdivided into various "bands" (measured by "hertz") that have different properties. Utilities often operate their own "private" communications networks (which, in this case, means networks not operated by telecommunications providers, typically to ensure optimal reliability for critical infrastructure sectors such as utilities). Such utilities have, in some cases, purchased or otherwise gained access to certain bands of spectrum to enable wireless applications.

A company, Higher Ground, has filed an application (File Number, SES-LIC-20150516-00357) with the Federal Communications Commission (FCC) and has requested a waiver of the Part 101 rules in order to operate a nationwide mobile network in the 5925-6425 MHz band. Specifically, Higher Ground plans to operate about 50,000 C-Band mobile earth stations to support Internet of Things (IoT) applications, and it plans to control these devices through a spectrum database that it will manage and operate. The Utilities Technology Council (UTC) is concerned that the proposed service will interfere with existing utility microwave systems in the band, and that the spectrum database will not effectively control Higher Ground's devices and prevent them from causing interference to utility microwave systems. UTC and numerous other microwave licensees have opposed Higher Ground's application at the FCC.

BACKGROUND

Utilities use the 6 GHz band for a variety of mission critical operations to support the safe, reliable and effective delivery of essential electric, gas and water services. These systems need to meet high standards of performance, because any failure of their operations can have severe and widespread consequences for public and worker safety, as well as operational integrity and security. The microwave systems serve as the backbone for a variety of utility applications, such as supervisory control and data acquisition (SCADA) networks that utilities use to monitor and control substations and valves, as well as security and transfer-trip protection circuits that protect against external threats and isolate faults on the grid. These microwave systems also support voice applications, including utility nuclear emergency telecommunications systems. In addition, such systems are used for both primary and redundant communications.

The 6 GHz band is where many utilities migrated their microwave systems after they were forced to relocate when the FCC reallocated the 2 GHz band to make way for commercial mobile radio services in the 1990s. If the FCC grants Higher Ground's application and waiver, the threat of interference to utilities from the proposed mobile network would likely force utilities to relocate their systems again to another band, which would, in turn, disrupt existing systems and impose additional costs on utilities. For all of these reasons, interference to these 6 GHz microwave systems from Higher Ground's proposed operations is a major concern for utilities.

Higher Ground proposes to operate a nationwide mobile network in the 6 GHz band, despite FCC rules that prohibit mobile operations in the 6 GHz band. This is one reason that the company has filed a waiver request as part of its application. In addition, Higher Ground seeks a waiver of the FCC's rules that require that applicants obtain frequency coordination prior to the filing of their applications with the FCC. Instead of coordinating its operations in advance through authorized frequency coordinators, Higher Ground is proposing to circumvent the coordination process, claiming that it will use its own spectrum database to control its operations and prevent interference to microwave systems.

UTC POSITION

The Utilities Technology Council (UTC) opposes the FCC application and proposed waiver by Higher Ground because, if granted, the proposed operations threaten to cause significant and widespread interference to utility microwave communications systems in the 6 GHz band. UTC doubts that Higher Ground will be able to mitigate potential interference by using its spectrum database because the underlying assumptions for the spectrum database have been shown to be flawed. Moreover, the database is untested and has not been demonstrated to be effective. Finally, it would be very difficult to trace the interference that would be caused by Higher Ground's proposed operations. There would be no advance coordination with incumbent licensees to notify them that Higher Ground would be operating in the same area, and utilities would not be able to easily source the interference due to the mobile nature of the operations. In such a scenario, by the time utilities detected the interference and investigated it, the mobile devices might not be transmitting anymore in that area. Given that utilities rely on their microwave systems to support mission critical communications, the potential interference from Higher Ground presents an unreasonable risk to safety, reliability and security.

UTC believes that the Commission should consider the relief that Higher Ground is seeking only by conducting a rulemaking proceeding instead of considering Higher Ground's application and waiver. This is not a minor waiver of the FCC rules that Higher Ground is proposing – it would allow nationwide operations in the 6 GHz band despite restrictions against mobile operations. It would also allow these operations to transmit without prior coordination, which would threaten to cause significant interference to microwave incumbent systems. Moreover, a rulemaking is necessary to give adequate notice and an opportunity to comment on the proposed relief by all of the affected stakeholders.

ABOUT UTC

The Utilities Technology Council (UTC) is a global trade association dedicated to serving critical infrastructure providers. Through advocacy, education and collaboration, UTC creates a favorable business, regulatory and technological environment for companies that own, manage or provide critical telecommunications systems in support of their core business.

History: UTC was founded in 1948, to advocate for the allocation of additional radio spectrum for power utilities. Over the last 68 years, UTC has evolved into a dynamic organization that represents electric, gas and water utilities, as well as natural gas pipelines, critical infrastructure companies and other industry stakeholders.

UTC Contact

Brett Kilbourne, VP & Deputy General Counsel
Email: Brett.Kilbourne@utc.org

