



Hogan Lovells US LLP  
Columbia Square  
555 Thirteenth Street, NW  
Washington, DC 20004  
T +1 202 637 5600  
F +1 202 637 5910  
[www.hoganlovells.com](http://www.hoganlovells.com)

Ari Q. Fitzgerald  
Partner  
D +1 202 637 5423  
[Ari.Fitzgerald@hoganlovells.com](mailto:Ari.Fitzgerald@hoganlovells.com)

July 31, 2015

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Room TW-A325  
Washington, D.C. 20554

Re: ET Docket No. 14-165, *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*

GN Docket No. 12-268, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*

Dear Ms. Dortch:

On July 29, 2015, the undersigned, Counsel to GE Healthcare, and Larry Movshin, Counsel to the WMTS Coalition, (collectively, the "Parties") met with Ira Keltz, Deputy Chief of the Office of Engineering and Technology ("OET"), to discuss protecting Wireless Medical Telemetry Service ("WMTS") operations on Channel 37 from harmful interference.

In the meeting, the Parties highlighted the inherent security vulnerabilities in TV White Space ("TVWS") device operations. Of particular concern is the fact that the critical Whitespace Spectral Access System ("WSAS") functionality (*e.g.*, geopositioning, database interface, radio control and security functions) residing in these devices will be software-based, undoubtedly including many open-source and commercial off-the-shelf software components.<sup>1</sup> Likewise, most of the TVWS devices are likely to be low-cost consumer-grade devices, subject to

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<sup>1</sup> Reply Comments of GE Healthcare, ET Docket No. 14-165, GN Docket No. 12-268, at 9-10 ("GEHC Reply Comments").

manipulation by third parties or the device owners themselves.<sup>2</sup> Indeed, the Commission itself has recognized such concerns as they relate to software defined radios.<sup>3</sup>

Because under the Commission's proposed rules the continued interference-free operation of thousands of safety-of-life WMTS systems will depend on the reliable and secure operation of the WSAS, the WSAS will itself become a safety-critical system. Therefore, no matter what distance- or location-based separation rules the Commission adopts to protect Channel 37 WMTS operations from harmful interference, in order to dependably prevent unauthorized operations at locations near WMTS it must ensure the *end-to-end* reliability and security of the entire WSAS that will implement and enforce those separation rules, including not only the databases but also the WSAS functionality (*e.g.*, geopositioning, database interface, radio control and security functions) that resides within the consumer devices.

To better ensure that TVWS devices cannot be manipulated, the Parties requested that the Commission institute more thorough and robust enforcement of its rules including Section 15.709(a)(6), which requires TV bands devices ("TVBD") to "incorporate adequate security measures to prevent the TVBD from accessing databases not approved by the FCC and to ensure that unauthorized parties can not [sic] modify the TVBD or **configure its control features to operate inconsistent with the rules and protection criteria** set forth in this subpart."<sup>4</sup>

The FCC's existing device certification regime, which is essentially limited to black-box type testing and manufacturer attestation regarding the technical specifications of the device, is inadequate to ensure that sufficient security measures are in place.<sup>5</sup> The National Association of

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<sup>2</sup> See, *e.g.*, Thorin Klosowski, *How to Jailbreak your iPhone: The Always Up-to-Date Guide [iOS 8.1]*, Lifehacker.com (Oct. 31, 2014), <http://lifehacker.com/5771943/how-to-jailbreak-your-iphone-the-always-up-to-date-guide-ios-61>. "Jailbreaking" certain smartphones has become a ubiquitous practice by which individuals modify the security controls on their devices to install their own modifications to the device software that are otherwise not allowed by the operating system.

<sup>3</sup> *Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies; Authorization and Use of Software Defined Radios*, Report and Order, 20 FCC Rcd 5486 ¶¶ 54-61 (2005) (requiring manufacturers to take steps to ensure that only software that has been approved with a software defined radio can be loaded into the radio); see also 47 C.F.R. § 2.944; GEHC Reply Comments at 10.

<sup>4</sup> 47 C.F.R. § 15.709(a)(6). Should the Commission not address the concerns outlined by this letter in its Part 15 Order through changes to its rules, device certification procedures, and/or enforcement practices and guidelines, GEHC and the WMTS Coalition are interested in engaging with the Commission to develop rule or procedural solutions to ensure that robust security features are an integral part of the end-to-end WSAS, including TVWS devices.

<sup>5</sup> GEHC Reply Comments at 10.

Broadcasters (“NAB”)<sup>6</sup> recently found rampant false device registrations – including, most alarmingly, false device location information upon which the effectiveness of the geolocation/database scheme depends entirely. Such false registrations demonstrate that many existing devices are inherently insecure (and thus do not comply with 15.709(a)(6)) and that the Commission’s current certification process is ineffective in preventing violative devices from reaching the market. For example, at least one manufacturer makes its “professional installer manual” freely available on its website, so that any user can modify critical information (such as geolocation information upon which WSAS functionality depends) without authorization or authentication.<sup>7</sup>

Pursuant to Section 1.1206(b)(1) of the Commission’s rules, I am submitting a copy of this letter into the proceeding record.

Sincerely,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald  
Counsel to GE Healthcare

cc: Ira Keltz

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<sup>6</sup> See Letter from Patrick McFadden, Vice President Spectrum Policy, National Association of Broadcasters, to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11745, ET Docket No. 14-165, Attachment at 1 (June 25, 2015).

<sup>7</sup> See ACRS 2.0 Professional Installer Manual, *available at*: [http://www.adaptrum.com/acrs2launch/content/acrs20\\_professional\\_installer\\_02062014.pdf](http://www.adaptrum.com/acrs2launch/content/acrs20_professional_installer_02062014.pdf).