

WILKINSON ) BARKER ) KNAUER ) LLP

1800 M STREET, NW  
SUITE 800N  
WASHINGTON, DC 20036  
TEL 202.783.4141  
FAX 202.783.5851  
WWW.WBKLaw.COM  
JENNIFER B. TATEL  
202.383.3344  
JTATEL@WBKLAW.COM

August 26, 2019

**VIA ECFS**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation  
*TerreStar Corporation Request for Temporary Waiver of Substantial  
Service Requirements for 1.4 GHz Licenses, WT Docket No. 16-290*

Dear Ms. Dortch,

On August 22, 2019, on behalf of TerreStar Corporation (“TerreStar”), Doug Brandon, Craig Chobor, and John Dooley of TerreStar, and Bryan Tramont and the undersigned of Wilkinson Barker Knauer LLP, met with Chairman Ajit Pai, his legal advisor Aaron Goldberger, and Tom Johnson of the Commission’s Office of General Counsel, as well as Commissioner Brendan Carr and his legal advisor Joseph Calascione. During both meetings, we reiterated points made in TerreStar’s unopposed Petition for Reconsideration, as well as in subsequent filings and the attached presentation, in support of the pending Petition for Reconsideration before the Wireless Telecommunications Bureau regarding its prior denial of an extension of the substantial service deadlines for TerreStar’s 1.4 GHz spectrum licenses.

As discussed during the meetings, TerreStar was firmly committed to the construction and deployment of a fully compliant smart grid network from the time it acquired the majority of its licenses in 2008, with the first equipment for this use approved in 2009. By late 2013, TerreStar was in the advanced stages of deploying its smart grid application and had already produced a diverse FCC-certified Smart Grid transceiver ecosystem, built and certified eight separate device classes, all consistent with existing technical rules, and completed initial deployments with three large utilities. It was not until then that FCC staff urged TerreStar to address possible but undefined interference concerns with users of WMTS in the immediately adjacent 1.4 GHz band. During the conversations that followed, TerreStar first learned from the wireless medical telemetry community that TerreStar’s smart grid service, although fully

August 26, 2019

Page 2

compliant with all FCC rules including out of band emission rules, was fundamentally incompatible with life-critical WMTS devices using adjacent spectrum.

As TerreStar explained during the meetings, the interference issue confronting TerreStar was not a result of out of band emissions. TerreStar's smart grid network and equipment were fully compliant with the general out of band emissions limits and specific out of band emission field strength limits that apply to TerreStar's 1.4 GHz spectrum. Instead, the problem was caused by fundamental emissions. Interference caused by a fundamental emission cannot be remedied by the service causing the interference. It is due to the receiver passband filter of the adjacent band service being too wide. In the 1.4 GHz band, the WMTS devices had been designed to listen across TerreStar's band. The design of the receiver passband filter was not subject to FCC approval, nor was it known publicly. No amount of due diligence by TerreStar could have uncovered the WMTS interference issues as it was working to deploy smart grid technology. Indeed, WMTS devices were only certified beginning in 2011.

Following extensive testing, which was the subject of many discussions with the FCC between 2014 and 2017, TerreStar concluded that no exclusion zones, filtering, band plan modifications, or other mitigation efforts could address this interference problem and that its planned smart grid deployment would jeopardize the life critical patient monitoring networks at thousands of registered health care facilities across the country. TerreStar also concluded that the provision of a fixed service was not a viable option, as fixed base stations would still have deleterious effects on WMTS receivers. In fact, fixed services would disable WMTS systems over very long distances due to the typically high effective radiated powers of their fundamental emissions. These conclusions were supported by the wireless medical telemetry community, as evidenced in filings before the Commission.<sup>1</sup> Rather than jeopardizing life critical patient monitoring networks at thousands of registered health care facilities across the country, TerreStar stepped up to develop a mutually beneficial solution that would create tremendous benefits for public health.

As detailed in prior filings, grant of TerreStar's waiver request is warranted under Section 1.925 of the Commission's rules and will best serve the public interest. First, grant of TerreStar's requested waiver would make more spectrum available for live-saving medical telemetry services, more quickly than otherwise possible. TerreStar has committed to deploy to at least 50 large healthcare facilities within 18 months of grant of its Petition for Reconsideration and to all large healthcare facilities across the country within 36 months of grant. Expeditious grant of the pending Petition for Reconsideration will allow TerreStar to ensure that this critical, life-saving technology is available nationwide.

---

<sup>1</sup> See, e.g., Petition for Reconsideration of Philips Healthcare, WT Docket No. 16-290 (filed Nov. 13, 2017) (documenting its numerous meetings with TerreStar and the Commission regarding the interference issue and potential remedies).

August 26, 2019

Page 3

Furthermore, grant of TerreStar's requested waiver would provide Channel 37 WMTS users an additional option for capacity while also solving the existing congestion issues in the 1.4 GHz WMTS spectrum that is currently available. The waiver will create an interference-free environment for WMTS spectrum that does not have the adjacent and co-channel interference threats that are currently associated with Channel 37. The combined 1.4 GHz WMTS and commercial bands will yield a resource that is significantly larger than the existing Channel 37 allocation, permitting increased clinical monitoring, the integration of encryption, and expansion in the number of patients that can be serviced by each medical telemetry system in all deployed facilities. The commercial portion of the band will also permit vendors to offer services currently prohibited by the Part 95 rules, including mobile use of WMTS, deployment in rural clinics and home care environments, and integration of voice and audio for advanced telemedicine applications.

Finally, grant of TerreStar's requested waiver would enable greater future use of the neighboring 1300-1390 MHz spectrum. Today, dense wireless network deployment between 1300 and 1390 MHz may be considered incompatible with existing WMTS networks. This is especially true if the planned use for such a commercial allocation relates to 5G network topologies, which are characterized by high cellular site densities in populated areas near hospitals. As of 2018, there were approximately 8,500 hospital deployments in the 1.4 GHz band in virtually all inhabited parts of the United States. In granting TerreStar's waiver request, new incentives will motivate manufacturers to improve receiver performance and gradually upgrade the ecosystem with new hardware, making future wireless deployment between 1300 and 1390 MHz more feasible.

This letter is being filed electronically in accordance with Section 1.1206(b)(1) of the Commission's rules.

Sincerely,

/s/

Jennifer B. Tatel

Attachment



TerreStar Medical

# Promoting Rapid Deployment of Enhanced Wireless Medical Telemetry

August 22, 2019

# TerreStar Medical's Impossible Position

- TerreStar Medical was placed in an impossible position because of a problem created by the FCC: TerreStar's fully compliant service was fundamentally incompatible with another fully compliant service in adjacent spectrum.
- After significant investment in its smart grid application, TerreStar learned in early 2014 that its service was fundamentally incompatible with life-critical WMTS devices using adjacent spectrum. The particular types of filters used by WMTS devices make them susceptible to severe "desense" from fundamental emissions in the adjacent band.
- After testing demonstrated that fundamental emissions from TerreStar's smart grid network would disable life-critical patient monitoring at thousands of hospitals, it became clear that one of the services had to yield. Although TerreStar was in a later stage of deploying its smart grid application, WMTS devices had already been extensively deployed in the neighboring spectrum. TerreStar stepped up to develop a mutually beneficial solution that would create tremendous benefits for public health.

# TerreStar Medical's Impossible Position

- TerreStar took immediate steps to solve the problem, worked closely with staff from the Bureau, as well as licensees of the adjacent WMTS spectrum, to pursue a different use—one that promises to deliver better medical care to millions of patients across America.
- Recognizing that this change would delay TerreStar Medical's build out, the company promptly informed the Bureau that it would need to recover the time lost to meet the substantial-service deadline. TerreStar Medical formally requested a temporary waiver or extension of the substantial-service requirements.
- However, TerreStar Medical's request was denied. TerreStar Medical is now seeking reconsideration of the Bureau's decision.

# Grant of TerreStar Medical's unopposed waiver request will allow the FCC to best achieve its goals.

- More Spectrum for Medical Telemetry Services: There is a well-documented need for additional medical telemetry spectrum as recognized by the U.S. Department of Veterans Affairs, American Telemedicine Association, AHA, Philips Healthcare, GE Healthcare, elected officials, and others.
- Speed of Deployment: TerreStar Medical's proposed WMTS solution provides the best and only opportunity for rapid deployment of additional spectrum for medical telemetry. Within 18 months of approval, TerreStar Medical will demonstrate deployment to at least 50 large healthcare facilities and within 36 months, TerreStar Medical will demonstrate deployment to all large healthcare facilities across the country – more than 2000 facilities – with a priority on VA facilities.
- End of Uncertainty: Grant of TerreStar Medical's waiver request will be final agency action, ending regulatory uncertainty and preventing court litigation.

# TerreStar Has Been Actively Working Towards Use of the Band Since 2009

*TerreStar's initial smart grid build out plans were not "real."*

- **REALITY:** Prior to the discovery of interference issues in early 2014, TerreStar was in an advanced stage of its smart grid buildout process.
  - From 2009 until the discovery of WMTS interference, TerreStar worked closely with standards-setting bodies, device and component manufacturers, including Airspan and Cisco, and utilities to set standards and create a broad ecosystem for its 1.4 GHz smart grid networks.
  - TerreStar produced a diverse FCC-certified Smart Grid transceiver ecosystem and built and certified 8 separate device classes, all consistent with existing technical rules.
  - TerreStar developed an enhanced high security/high reliability air interface standard, WiGRID, specifically for its 1.4 GHz smart grid networks.
  - TerreStar entered into spectrum lease arrangements with major utilities such as Pepco and FirstEnergy Service Company for early deployments of 1.4 GHz smart grid networks.
  - By 2013, as the only broadband smart grid resource, there was a significant demand for 1.4 GHz smart grid systems, representing a massive market opportunity for TerreStar.



# Interference-Free Environment for WMTS

*There is no interference issue in the 1.4 GHz band under the existing rules.*

- **REALITY:** The FCC's equipment authorization rules resulted in deployment of wireless medical telemetry equipment that is incompatible with adjacent licensed uses.
  - The interference issue that exists **is not caused by non-compliance with existing rules** and is outside of TerreStar's control. It is instead the result of insufficient receiver selectivity by incumbent WMTS networks. The existing rules do not require providers to account for potential adjacent-band interference with fundamental in-band transmissions. The receivers deployed by the WMTS community were poorly designed but already extensively deployed.
  - Had TerreStar pursued its initial plan of deploying smart grid technology in its licensed spectrum, as it could have done under the FCC's rules, WMTS receivers would have experienced harmful interference in essential communications. These essential communications carry real-time vital signs of critical patients at thousands of major hospital facilities. Harmful interference has serious clinical consequences.
  - No amount of due diligence would have discovered the interference issue. And nothing that TerreStar could do to its own operations (e.g. filters, exclusion zones, etc.) would remedy the WMTS susceptibility to adjacent band "desense." The problem is in the fundamental design of WMTS receivers.
  - As repeatedly demonstrated in the record, adding this 1.4 GHz spectrum to the spectrum available for medical telemetry is the best, safest, and fastest and really only solution for all stakeholders.

# Since Discovering Interference, TerreStar Medical Has Been Working Towards a Solution

*TerreStar has not been working towards a solution since it discovered the WMTS receiver issues in 2014.*

- **REALITY:** Since discovery of the interference issues, TerreStar Medical has been in active pursuit of a solution, making significant investments in WMTS in partnership with FCC staff.
  - TerreStar first learned in early 2014 that its RF compliant smart grid operations could cause significant harmful interference to new adjacent-band medical telemetry systems (first certified in 2011). Extensive laboratory and field tests confirmed that compliant smart grid operations would have a deleterious impact on these WMTS devices and systems at health care facilities, causing failure of life-critical patient monitoring networks.
  - TerreStar Medical began actively pursuing alternative plans for use of its spectrum by meeting and working cooperatively with WMTS vendors and ASHE; moving forward with initial application development and testing; and collaborating with FCC staff. In the following year, TerreStar Medical worked to develop a lease and registration system for spectrum access that provides equal access to commercial spectrum without the requirement for health care facilities to alter their procurement practices.
  - By April 2017, TerreStar Medical agreed to a number of aggressive performance milestones that would be included as conditions on a waiver grant giving TerreStar Medical more time to deploy its solution in light of delays caused by the interference issue; TerreStar Medical filed license renewal applications for its licenses.

# Satisfying the Need for Additional WMTS Spectrum

*WMTS does not need additional spectrum in the immediate future.*

- **REALITY:** There is a well-documented need for additional medical telemetry spectrum.
  - While all hospitals must confront the limitations of wireless medical telemetry, looming capacity shortfalls are especially challenging for VA Medical Centers due to strict cybersecurity mandates, which will require WMTS networks to meet the FIPS 140-2 standard through integration of strong encryption. Such encryption will consume approximately 50% of the existing medical telemetry network capacity. Additional commercial spectrum for WMTS would prevent the VA from having to reduce the number of patients they can monitor.
  - WMTS is vitally important to improving patient outcomes and reducing the costs of our health care system. Current systems are not permitted to transmit video or audio, nor are they allowed to be mobile or outside registered hospitals.
  - The number of locations that use WMTS is expected to increase significantly in the future as hospitals seek to better address the problems raised by an aging population.
  - More commercial spectrum for wireless medical telemetry would significantly increase both the number of patients that can be monitored and the depth and types of data that clinicians can capture. More monitored patients with richer patient data means higher rates of survivability.

# A Win for the FCC and WMTS

- TerreStar Medical is a real company with firm commitments that will provide for the rapid deployment of additional spectrum for WMTS.
  - TerreStar Medical has the infrastructure and relationships to deploy immediately – with full equipment certification and availability within six months of approval.
  - TerreStar Medical has committed to quicker build than anyone else could accomplish and is willing to commit to interim buildout benchmarks and associated penalties.
  - The additional capacity provided by TerreStar Medical will not only allow hospitals to monitor more critical care patients, but also materially increase the types of patient monitoring, allowing for higher rates of survivability.
  - TerreStar Medical has developed a ready-to-launch registration portal that will ensure simple and equal access to medical telemetry spectrum for all vendors and healthcare facilities:  
<https://www.terrestarmedical.com/registration-portal-1>.

# What a Grant Would Mean

- **Fastest Build of WMTS:** TerreStar Medical's proposed wireless medical telemetry solution provides the only opportunity for rapid deployment of additional spectrum for WMTS. Within 18 months of approval, TerreStar Medical will demonstrate deployment to at least 50 large healthcare facilities and within 36 months, TerreStar Medical will demonstrate deployment to more than 2000 major healthcare facilities across the country.
- **More Spectrum for Medical Telemetry Services:** For the VA and other Federal hospital systems with cybersecurity mandates, expanded capacity is essential to prevent patient monitoring loss. Commercial spectrum would prevent loss, permanently safeguard patient monitoring at the nation's hospitals, while significantly expanding the number of patients that can be effectively monitored.
- **End of Regulatory and Legal Uncertainty:** Grant of TerreStar Medical's unopposed waiver request will be final agency action, ending regulatory uncertainty and preventing court litigation.

# **John Dooley**

TerreStar Medical

[john.dooley@terrestarmedical.com](mailto:john.dooley@terrestarmedical.com)

# **Doug Brandon**

TerreStar Corporation

[doug.brandon@terrestar2.com](mailto:doug.brandon@terrestar2.com)

