

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
TerreStar Corporation Request for Temporary) WT Docket No. 16-290
Waiver of Substantial Service Requirements)
for 1.4 GHz Licenses)
)

ORDER ON RECONSIDERATION

Adopted: April 30, 2020

Released: April 30, 2020

By the Chief, Mobility Division, Wireless Telecommunications Bureau:

I. INTRODUCTION

1. In 2008, TerreStar Corporation (TerreStar) acquired 64 commercial wireless licenses in the 1.4 GHz Band (Licenses) through secondary market transactions. Each of the Licenses had a ten-year initial term ending April 23, 2017, and a requirement under section 27.14(a) of the Commission’s rules to provide substantial service throughout each license area by the end of the term.¹ TerreStar failed to meet the Commission’s construction requirements, and the Mobility Division (Division) of the Wireless Telecommunications Bureau (Bureau) denied TerreStar’s request for a waiver/extension of time concerning the Commission’s construction requirements.² In addition to denying the Waiver Request, the Division found that TerreStar had not demonstrated substantial service by April 23, 2017, and the Licenses terminated automatically. TerreStar, the American Society for Healthcare Engineering of the American Hospital Association (ASHE), GE Healthcare, and Philips Healthcare (Philips) all filed petitions seeking reconsideration of the *Order*.³

2. Based on an evaluation of new information regarding the interference potential to the wireless medical telemetry service (WMTS) and the need for additional WMTS spectrum for the benefit of public health and safety, as well as the recent commitment of TerreStar to “provide spectrum capacity and frequency planning and coordination services, free of charge, outside of registered WMTS healthcare facilities in support of any future national public health emergency declared by the U.S. Department of

¹ 47 CFR § 27.14(a); *see also id.* § 27.13(c)-(d) (specifying a license term of no more than ten years). *See also Amendments to Parts 1, 2, 27 and 90 of the Commission’s Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, WT Docket No. 02-8, Report and Order, 17 FCC Rcd 9980 (2002) (adopting service rules for the 1.4 GHz Band) (*1.4 GHz Service Rules Order*).

² *TerreStar Corporation Request for Temporary Waiver of Substantial Service Requirements*, WT Docket No. 16-290, Order, 32 FCC Rcd 7480 (WTB MD 2017) (*Order*); *TerreStar Corporation Request for Temporary Waiver of Substantial Service Requirements*, WT Docket No. 16-290 (filed Aug. 12, 2016) (seeking a waiver under 47 CFR §§ 1.3, 1.925(b)(3)(ii), and in the alternative, an extension of time under 47 CFR § 1.946(e)) (Waiver Request).

³ *Petition for Reconsideration of TerreStar Corporation*, WT Docket No. 16-290 (filed Nov. 9, 2017) (*TerreStar Petition*); *Petition for Reconsideration of the American Society for Healthcare Engineering of the American Hospital Association*, WT Docket No. 16-290 (filed Nov. 9, 2017) (*ASHE Petition*); *Petition for Reconsideration of GE Healthcare*, WT Docket No. 16-290 (filed Nov. 9, 2017) (*GE Healthcare Petition*); *Petition for Reconsideration of Philips Healthcare*, WT Docket No. 16-290 (filed Nov. 13, 2017) (*Philips Petition*) (collectively, *Petitions*).

Health and Human Services,”⁴ the Division finds on reconsideration that it serves the public interest to grant TerreStar a limited, conditional waiver to allow TerreStar additional time to deploy its proposed WMTS operations. The Division finds that these unique circumstances, taken together, make application of the rule in this case contrary to the public interest. This grant of relief to TerreStar will mitigate interference concerns and address the need for expanded spectrum capacity for life-critical medical telemetry.⁵

II. BACKGROUND

3. *1.4 GHz Band.* The commercial 1.4 GHz Band includes the unpaired 1390-1392 MHz band, and the A and B Blocks of the paired 1392-1395 MHz and 1432-1435 MHz bands.⁶ In 2002, the Commission established fixed and mobile allocations for the 1.4 GHz Band⁷ and adopted governing service rules.⁸ In taking this action, the Commission decided to license operations in this band as a part 27 Wireless Communications Service, thereby applying the technologically neutral regulatory and licensing framework of part 27 to these operations. One of the Commission’s goals was to allow 1.4 GHz Band licensees the flexibility to pursue a variety of business plans while affording adjacent users sufficient protection from interference.⁹ The Commission auctioned all 64 Licenses in 2007; the initial 10-year term for each License ended on April 23, 2017.¹⁰

4. The 1.4 GHz Band spectrum is adjacent to spectrum that is used for WMTS.¹¹ Specifically, the 1.4 GHz Band spectrum at 1390-1395 MHz is adjacent to the WMTS spectrum at 1395-1400 MHz, and the 1.4 GHz Band spectrum at 1432-1435 MHz is adjacent to the WMTS spectrum at 1427-1432 MHz.¹² WMTS systems are used to monitor patients’ health at thousands of hospitals and other medical facilities throughout the country. They include devices to measure patients’ life-critical

⁴ Letter from Bryan N. Tramont, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, at 3 (filed April 17, 2010) (TerreStar April 17, 2020 *Ex Parte*).

⁵ In addition to the applications for waiver/extension of time associated with TerreStar’s Waiver Request, TerreStar timely filed applications seeking renewal of its 64 Licenses. *See* Appendix attached hereto. Upon termination of the Licenses, all of these applications were dismissed. In light of the relief we provide today, we direct the staff of the Division to reinstate the applications to pending status and process them consistent with the terms of this Order on Reconsideration and the Commission’s rules.

⁶ Specifically, the A Block consists of 1392-1393.5 MHz and 1432-1433.5 MHz, while the B Block consists of 1393.5-1395 MHz and 1433.5-1435 MHz.

⁷ The Commission allocated certain spectrum bands, including spectrum in the 1.4 GHz Band, for non-federal use, effectuating the transfer of spectrum from the federal government pursuant to statutory requirements. *See Reallocation of the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands, et al.*, ET Docket No. 00-221, Report and Order and Memorandum Opinion and Order, 17 FCC Rcd 368 (2002) (allocating the 1.4 GHz Band to fixed and mobile services (with the exception of aeronautical mobile) on a primary basis).

⁸ *See id.* *See also, generally, 1.4 GHz Service Rules Order.*

⁹ *1.4 GHz Service Rules Order*, 17 FCC Rcd at 9998.

¹⁰ *Auction of 1.4 GHz Band Licenses Closes; Winning Bidders Announced for Auction No. 69*, Public Notice, 22 FCC Rcd 4714 (WTB 2007). The Licenses include 52 Major Economic Area (MEA) licenses in the 1390-1392 MHz segment and 12 paired Economic Area Grouping (EAG) licenses in the 1392-1395 MHz and 1432-1435 MHz segments, establishing a nationwide footprint. *See also Wireless Telecommunications Bureau Grants 1.4 GHz Band Licenses*, Public Notice, 22 FCC Rcd 7537 (WTB 2007) (granting 10-year terms commencing Apr. 23, 2007).

¹¹ *See infra* para. 5.

¹² Also, spectrum at 608-614 MHz, which corresponds to TV channel 37, was allocated to WMTS on a co-primary basis with radio astronomy. It is non-adjacent to the 1.4 GHz Band.

health parameters, including oxygen saturation, blood pressure, respiration, and electrocardiogram, among others. WMTS devices are also used for monitoring fetal heart rate and other activity in the womb prior to and during the birthing process. The physiological data of multiple patients can be transmitted simultaneously via a radio link to a remote location equipped with a specialized radio receiver, such as a nurses' station, allowing early detection of life-threatening developments and enabling timely medical intervention. The mobility afforded by these wireless devices, in contrast to tethered devices, allows patients to ambulate during recovery while still being monitored. Medical telemetry devices can reduce health care costs by helping to speed patient recovery time and reduce the duration of hospital stays. Under the Commission's rules, only eligible health care providers within a health care facility are permitted to operate WMTS devices.¹³

5. To address concerns that medical telemetry devices were increasingly at risk of harmful interference from television broadcasters and private land mobile licensees, the Commission established three WMTS bands in 2000, allocating 14 megahertz to WMTS on a primary basis: 608-614 MHz, 1395-1400 MHz, and 1427-1432 MHz.¹⁴ In doing so, the Commission justified making an exception to its typical approach of non-service specific, flexible allocations in order "to protect the public safety by providing spectrum where medical telemetry equipment can operate without interference."¹⁵ The Commission recognized, however, that the three WMTS bands each have significant constraints, such that the entire 14-megahertz allocation was and is unlikely to be available in any individual market, and the allocation could only ensure that 6 megahertz would be available for WMTS in all locations.¹⁶

6. *TerreStar's Licenses.* TerreStar did not participate in the 2007 auction, but it subsequently acquired the Licenses in the secondary market in 2008. TerreStar reports that it first planned to provide mobile coverage via a mixed terrestrial-satellite service in 2009. It filed for Chapter 11 bankruptcy a year later, however, and in June 2011, it sold its 2 GHz Mobile Satellite Service (MSS) spectrum.¹⁷ Prior to and after its financial restructuring, TerreStar entered into multiple lease agreements with different entities, and at some point, it decided to focus on developing a WiMAX smart grid network.¹⁸ TerreStar explains that it met with FCC staff in late 2013 "to discuss a regulatory change

¹³ See 47 CFR § 95.1103(a), (b). See also *Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, ET Docket No. 99-255, Report and Order, 15 FCC Rcd 11206 (2000) (*WMTS R&O*). The Commission's rules governing existing WMTS operations are codified in part 95, subpart H. WMTS equipment must be registered with the FCC's frequency coordinator, which maintains a database of all WMTS equipment identified by location, operating frequency, emission type, and power output. *Id.* at 11216. The database provides a record of the frequencies used by each facility or device to assist operators in selecting frequencies and avoiding interference, with the frequency coordinator notifying registered operators of potential frequency conflicts. See *Amendments of Parts 2 and 95 of the Commission's Rules To Create a Wireless Medical Telemetry Service*, ET Docket No. 99-255, Order, 16 FCC Rcd 4543 (WTB PSPWD 2001) (designating ASHE to serve as frequency coordinator for WMTS) (*WMTS Frequency Coordinator Order*).

¹⁴ See *WMTS R&O* at 11206, 11210. The channels in 1427-1432 MHz are shared by WMTS and non-WMTS devices such as utility telemetry devices. See 47 CFR §§ 90.259(b), 95.2363(a)(3).

¹⁵ See *WMTS R&O*, 15 FCC Rcd at 11211.

¹⁶ *Id.* at 11210.

¹⁷ Waiver Request at 3-4.

¹⁸ It is unclear when TerreStar began to develop plans for its proposed WiMAX system. In its Waiver Request, TerreStar stated that, "[f]ollowing financial difficulties and sale of its 2 GHz MSS spectrum, [it] explored plans for the widespread deployment of a high-power 802.16 WiMAX network for smart grid applications." Waiver Request at i. As noted, TerreStar sold its MSS spectrum in 2011. TerreStar states in a later filing that it started exploring a smart grid application for its spectrum as early as 2009. See Letter from Bryan N. Tramont, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, Attach. at 2 (filed Oct. 6, 2017) (TerreStar Oct. 6, 2017 *Ex Parte*).

normalizing power limits across the 1.4 GHz band and that the FCC suggested meeting with WMTS stakeholders.¹⁹ TerreStar asserts that, in early 2014, it initiated contact with ASHE and others in the WMTS community to discuss its WiMAX-based smart grid proposal, and at that point, it claims, it first learned of WMTS receiver characteristics that made WMTS operations vulnerable to high-power smart grid transmitters.²⁰ TerreStar reports that it spent the better part of the subsequent two years talking with the WMTS community about concerns regarding the proposed smart grid deployment and attempting to develop an application that would not cause interference to WMTS in the adjacent bands.²¹ According to TerreStar, based on these discussions and its own analysis of interference risk, TerreStar determined that a commercial medical telemetry operation—one that would supplement the adjacent spectrum dedicated for WMTS—would be the “best and most productive use” of TerreStar’s commercial 1.4 GHz spectrum.²²

7. *TerreStar’s 2016 Waiver Request.* In August 2016, TerreStar filed its Waiver Request, seeking a three-year waiver of its section 27.14(a) substantial service performance requirement. TerreStar argued that it satisfied the requirements for a waiver under sections 1.925(b)(3)(ii) and 1.3 of the Commission’s rules.²³ Specifically, it argued that waiver relief would enable it to make its 1.4 GHz Band spectrum available nationwide for WMTS use, thus expanding capacity for WMTS, and that such expansion would deliver substantial public interest benefits by improving the quality of medical care for millions of patients throughout the country, while permitting TerreStar to deploy without causing harmful interference to WMTS and other neighboring services.²⁴ TerreStar argued that its previously planned WiMAX smart grid network posed a serious threat of harmful interference to WMTS and other entities in frequency bands adjacent to or near its 1.4 GHz spectrum. Its proposed solution entailed a new plan to supplement existing medical telemetry services within health care facilities by offering such services over its unpaired band and upper portions of its paired A and B Blocks.²⁵ TerreStar stated that, although wireless medical telemetry operations “are also technically feasible in TerreStar’s lower A and B Block spectrum at 1392-1395 MHz, the Commission’s . . . emissions and field strength limits preclude the use of the spectrum at health care facilities, to protect WMTS systems above 1395 MHz from interference.”²⁶ Denial of its request for relief, TerreStar contended, would be contrary to the public interest, as TerreStar would be left with “little choice but to deploy high-power 802.16 WiMAX facilities in an effort to satisfy

¹⁹ TerreStar Oct. 6, 2017 *Ex Parte*, Attach. at 2.

²⁰ See Waiver Request at 6.

²¹ See, e.g., *id.* at 6. For instance, TerreStar attempted to acquire spectrum at auction in late 2014 and early 2015 for potential pairing with downlink-only spectrum “to form a new, paired frequency band for FDD LTE operations,” which it believed would not pose interference issues to WMTS, but it failed in that attempt. See Supplemental Comments of TerreStar, WT Docket No. 16-290, at 18-19 (filed June 7, 2017) (TerreStar June 7, 2017 *Ex Parte*). In April 2016, TerreStar and Philips met with FCC staff to present a proposal on a potential reformation of the 1.4 GHz Band to provide additional spectrum for WMTS, and to develop a future 1.3 GHz commercial band, pursuant to which TerreStar would be moved to new frequencies in the 1.3 GHz band. See Email from John A. Dooley, Jarvinian, dated April 13, 2016, to Brian Regan, Wireless Telecommunications Bureau.

²² E.g., Waiver Request at 7.

²³ See *id.* at 12-13 (citing 47 CFR §§ 1.3, 1.925(b)(3)(ii)).

²⁴ *Id.* at 23-26.

²⁵ *Id.* at 2, 7.

²⁶ *Id.* at 16. TerreStar proposed to use its lower A and B Block spectrum to establish new medical telemetry services, potentially including mobile medical telemetry service (e.g., in ambulances), in-home medical telemetry, and rural telemedicine applications, as well as for WMTS research and development. It further proposed to implement a national registration and frequency coordination framework for WMTS equipment to operate in the commercial 1.4 GHz spectrum, similar to that used today in the existing WMTS bands. *Id.* at 16, 19.

its substantial service requirements.”²⁷ Such systems, TerreStar argued, although fully compliant with the Commission’s rules, would threaten harmful interference to WMTS and other services in nearby spectrum, “potentially harm[ing] patients and health care vendors by degrading . . . life-critical communications.”²⁸

8. TerreStar explained that, in order to deploy, instead, a robust national system to supplement existing WMTS operations, it would need to complete the deployment in several developmental phases, including increasing the frequency range of existing medical telemetry equipment, safety and efficacy testing, equipment certification and system installation, and it asserted that these processes “would likely take more than three years to complete industry-wide.”²⁹ TerreStar anticipated that, by the end of a three-year waiver period, there would be “robust deployment” of medical telemetry equipment in each of its license areas, “covering thousands of health care facilities throughout the United States.”³⁰ As an alternative to requesting a waiver of section 27.14(a), TerreStar requested a three-year extension of the April 23, 2017, construction deadline under section 1.946(e) of the Commission’s rules.³¹

9. In response to the Bureau’s 2016 request for comment on TerreStar’s Waiver Request,³² WMTS device manufacturers GE Healthcare and Philips submitted comments generally supporting the Waiver Request.³³ They also agreed with TerreStar’s assessment that development of the spectrum for WMTS use would take three years to allow TerreStar, equipment manufacturers, and health care facilities to work through various deployment processes and issues.³⁴ While ASHE initially voiced concerns and asked that the Commission grant a more limited waiver,³⁵ it subsequently—after TerreStar provided additional clarification—filed an *ex parte* urging the Bureau to grant the full relief requested.³⁶

10. TerreStar subsequently submitted numerous *ex parte* filings that, like the Waiver Request, emphasized TerreStar’s arguments concerning the public interest benefits of granting a waiver or extension, including protection of life-critical WMTS operations from the threat of harmful interference, and the expansion of WMTS spectrum capacity to increase the number of patients and types of health

²⁷ *Id.* at 14.

²⁸ *Id.* at 23.

²⁹ *Id.* at 26-27.

³⁰ *Id.* at 29-30.

³¹ *Id.* at 13 n.28 (citing 47 CFR § 1.946(e)).

³² See *Wireless Telecommunications Bureau Seeks Comment Regarding TerreStar Corporation’s Request for Relief of Certain 1.4 GHz Construction Requirements*, WT Docket No. 16-290, Public Notice, 31 FCC Rcd 9798 (WTB 2016).

³³ See GE Healthcare Comments at 1; Philips Comments at 1.

³⁴ *Id.* at 2; GE Healthcare Comments at 4 (arguing that “it could take up to three years for TerreStar, equipment manufacturers, and healthcare providers to develop, test, and deploy wireless medical telemetry systems that can viably operate on TerreStar’s 1.4 GHz spectrum.”).

³⁵ ASHE Comments at 2-3. As noted above, ASHE was designated by the Bureau to serve as the frequency coordinator for the WMTS bands. See *WMTS Frequency Coordinator Order*, 16 FCC Rcd at 4543.

³⁶ See TerreStar Reply Comments at 5-11 (filed Oct. 14, 2016); Letter from Lawrence J. Movshin, Counsel for ASHE, to Amanda Huetinck, Mobility Division, WTB, FCC, WT Docket No. 16-290 (filed Nov. 10, 2016). ASHE submitted additional *ex parte* filings to reiterate its support for TerreStar’s WMTS deployment business model. See *Order*, 32 FCC Rcd at 7482 n.20 (citations to the additional ASHE *ex partes* omitted).

parameters monitored and to make spectrum available for enhanced encryption of patient data.³⁷ In a footnote in its *ex parte* filed June 7, 2017, TerreStar mentioned for the first time a concern that the vulnerability of WMTS receivers stems in large part from their use of wide passband filters that offer little protection from adjacent-band operations.³⁸ It did not elaborate on this point or provide technical information to support it, however, either in that *ex parte* or in subsequent filings prior to release of the *Order*.

11. *The Division's Order.* Based on the record provided, the Division found that TerreStar had failed to demonstrate that its WiMAX smart grid operations would have caused harmful interference to WMTS, or that TerreStar otherwise was unable to develop a technical solution to meet its construction deadline for the Licenses.³⁹ The Division concluded that TerreStar failed to demonstrate under section 1.925(b)(3)(ii) that there were unique or unusual circumstances that made application of section 27.14(a) inequitable, unduly burdensome, or contrary to the public interest, so as to justify a waiver of the construction deadline.⁴⁰ The Division also found that TerreStar was not entitled to a waiver for “good cause” under section 1.3.⁴¹ Additionally, the Division found that TerreStar had not demonstrated an existing shortage of WMTS spectrum capacity “sufficient to warrant good cause to grant its extensive request for relief.”⁴²

12. The Division also rejected TerreStar’s alternative request for an extension of the construction deadline under section 1.946(e). It found that TerreStar had failed to substantiate its argument that the circumstances preventing it from complying with its performance requirement were beyond its control.⁴³ The Division reasoned that TerreStar was on notice from the outset of the possible effects of adjacent-band incumbency on 1.4 GHz operations, as well as the technical requirements with which it would need to comply in order to accommodate the operations of incumbent licensees in those adjacent bands. The Division, observing that TerreStar was obligated to investigate all factors that might bear on the Licenses and to determine the viability of any planned service offering prior to acquiring the

³⁷ See, e.g., TerreStar Reply Comments; TerreStar June 7, 2017 *Ex Parte*; Letter from Regina M. Keeney, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290 (filed Sept. 20, 2017) (TerreStar Sept. 20, 2017 *Ex Parte*).

³⁸ See TerreStar June 7, 2017 *Ex Parte* at 16-17, n.32. See also Letter from Regina M. Keeney, Counsel for TerreStar Corporation, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, at 4 (filed June 14, 2017) (TerreStar June 14, 2017 *Ex Parte*). We note that, in its Waiver Request, TerreStar presented the passband filters as a helpful feature in support of its argument that deployment of WMTS in TerreStar’s spectrum would be efficient because, *inter alia*, “the existing WMTS ecosystem . . . make[s] WMTS operations technically and operationally feasible” there. Waiver Request at 14. Specifically, TerreStar stated that “many WMTS devices have front-end passband filters sufficiently wide that the equipment can operate on spectrum adjacent to the dedicated WMTS spectrum at 1427-1431.5 MHz.” *Id.*

³⁹ The Division found that TerreStar was on notice of the rules’ requirements and restrictions, including the power and field strength restrictions and coordination requirements designed to protect WMTS and other adjacent-band operations prior to acquiring the Licenses, and that it was TerreStar’s failure to develop and deploy a non-interfering solution in a timely manner that resulted in the need to request relief in meeting its performance obligations under section 27.14(a). *Id.* at 7487, para. 15.

⁴⁰ *Id.*

⁴¹ *Id.*, para. 16 (explaining that the test for good cause under section 1.3 is virtually identical to the test for obtaining a waiver under section 1.925, which TerreStar had failed to meet).

⁴² *Id.* Noting that “whether there is a need to devote additional spectrum to WMTS, particularly on a nationwide basis, is an open question,” the Division concluded that the record of this proceeding provided an insufficient basis on which to address that issue). *Id.* (citing, at n.54, *FCC Seeks Comment and Data on Actions to Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies*, GN Docket No. 16-46, Public Notice, 32 FCC Rcd 3660 (2017), in which the Commission seeks comment on a variety of issues related to broadband-enabled health care solutions, including future spectrum and wireless infrastructure needs).

(continued....)

Licenses, concluded that TerreStar's subsequent decision to move forward with the acquisition, "as well as its decisions regarding choice and deployment of service offerings in light of such factors, were all voluntary business strategies."⁴⁴ And it added that voluntary business decisions are not circumstances beyond the licensee's control within the meaning of section 1.946.⁴⁵ Pursuant to section 1.946(c), in the absence of any agency action extending TerreStar's performance requirement deadline or otherwise relieving TerreStar of its construction obligations, all 64 Licenses automatically terminated as of April 23, 2017.⁴⁶

13. *TerreStar's Petition for Reconsideration.* TerreStar alleges that the Division erred in not recognizing the public interest benefits that would result from grant of the Waiver Request. TerreStar argues that waiver relief would serve the public interest by "protecting existing and future WMTS operations in the adjacent band from potential interference."⁴⁷ It explains that, based on discussions with WMTS industry representatives, it determined that "commercial wireless medical telemetry was the only realistic possibility that would not result in serious harm to WMTS systems," and therefore it had suspended smart grid deployment. It also asserts that "similar part 27 compliant uses of the 1.4 GHz band were deemed unsafe."⁴⁸ TerreStar further contends that, contrary to the Division's finding, it had "conclusively demonstrated that its initial smart grid plan could not be implemented without causing harmful interference to WMTS." It added that it would have provided additional demonstration or technical information prior to release of the *Order* if staff had requested it.⁴⁹ TerreStar argues that, while the technical service rules adopted for the Band related solely to out-of-band emissions or the field strength of out-of-band emissions, the interference issue it discovered in 2014 "was a direct result of the wide passband filtration selected by WMTS device manufacturers," which rendered WMTS receivers susceptible to interference from fundamental (in-band) emissions from TerreStar's adjacent spectrum.⁵⁰

14. The Petition argues that the Division also erred in finding that TerreStar was not faced with unique or unusual circumstances that made application of the rule inequitable under the waiver standard.⁵¹ TerreStar asserts that it is unique for a fully rule-compliant service to cause harmful interference to a neighboring service that is also fully compliant with our rules, "particularly when one service is critical to safety of life."⁵² On this basis, TerreStar argues that the threat of interference from its earlier-planned smart grid network to WMTS in the adjacent band—where both services would be operating in compliance with their respective Commission rules—constitutes unique circumstances that

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The Division declined, in light of that ongoing proceeding, "to address the question of whether, as a general matter, WMTS operators require access to additional spectrum in the 1.4 GHz Band or other bands." *Id.*

⁴³ *Id.* at 7487-88, para. 17.

⁴⁴ *Id.*

⁴⁵ *Id.* (citations omitted).

⁴⁶ See 47 CFR § 1.946(c).

⁴⁷ TerreStar Petition at 2.

⁴⁸ *Id.* at 9 (adding that use of its spectrum for WMTS "permanently removes interference threats from other uses of the band viewed as significant hazards to WMTS systems."). See also *id.* at ii.

⁴⁹ *Id.* at 15-16 (citations to TerreStar filings in the docket omitted).

⁵⁰ *Id.* at 7, 13. See also *id.* at 14 (citing, at n.58, several TerreStar *ex parte* letters (citations omitted) filed prior to release of the *Order*).

⁵¹ *Id.* at iii, 2, 11.

⁵² *Id.* at iii, 15-16 (adding, at 15, that while Commission rules "typically prevent these types of harmful interference, . . . here the rules fail to do so.").

make application of section 27.14(a)'s performance requirement inequitable under section 1.925(b)(3)(ii).⁵³

15. TerreStar reiterates its argument that the requested waiver relief will serve the public interest by providing additional spectrum capacity for WMTS.⁵⁴ TerreStar asserts that increasing the amount of WMTS spectrum at hospitals available would permit an increase in “the number of monitored patients and the types of patient metrics that may be monitored,” as well as enhanced cybersecurity to protect patient data at medical institutions.⁵⁵ TerreStar further argues that smaller health care facilities, telemedicine sites, and remote clinics in communities without major hospitals would have access to WMTS on TerreStar's 1.4 GHz spectrum.⁵⁶ In this context, TerreStar also asserts that it has shown “good cause” why its requested waiver relief serves the public interest.⁵⁷

16. The Petition also disputes the Division's determination that TerreStar's need for an extension under section 1.946(e) was not due to circumstances beyond its control.⁵⁸ TerreStar contends that the Commission's authorization of “sensitive WMTS operations in the 1.4 GHz spectrum, and the mass deployment of these life-saving devices” beginning in 2011 were circumstances outside of TerreStar's control.⁵⁹ These circumstances, TerreStar argues, “created a life-critical medical service on immediately-adjacent frequencies that complies with the FCC's rules but would be susceptible to destructive interference . . .”—an interference issue that, TerreStar asserts, it could not have predicted.⁶⁰ Finally, TerreStar argues that the *Order* failed to distinguish TerreStar's circumstances from other cases in which waiver relief was granted, and that it relied on “faulty factual premises” to conclude that TerreStar had not shown it was entitled to relief.⁶¹

17. TerreStar also submitted various late-filed supplements⁶² which, while repeating many of the arguments in the Petition, also present new information and legal arguments.⁶³ Most notably, on July 17, 2018, TerreStar submitted an *ex parte* letter attaching a summary of what TerreStar states was a technical study conducted in 2014 to assess the compatibility of its smart grid service with WMTS in the

⁵³ *Id.* at 15. In its Waiver Request, TerreStar had mentioned “unique adjacency” of its 1.4 GHz spectrum and WMTS spectrum to support its argument that public interest benefits would accrue from using its spectrum for WMTS. *See* Waiver Request at 13-14.

⁵⁴ TerreStar Petition at 3-5, 17 (arguing that the need for expanded WMTS spectrum is “well-demonstrated” and “unrefuted” in the record).

⁵⁵ *Id.* at 17-18.

⁵⁶ *Id.* at 4 (adding that “the odds of surviving an in-hospital cardiac arrest are twice as high for monitored patients” (citing Letter from Timothy J. Cooney on behalf of ASHE to Chairman Ajit Pai, FCC, WT Docket No. 16-290 (filed July 14, 2017) (ASHE July 14, 2017 *Ex Parte*)), 17-18.

⁵⁷ *Id.* at 18 (citing 47 CFR § 1.3).

⁵⁸ *Id.* at 12-14.

⁵⁹ *Id.* at 12. *See also id.* at ii, 2.

⁶⁰ *Id.* at 2, 12.

⁶¹ *Id.* at 21-25.

⁶² *See* 47 CFR § 1.106(f) (“The petition for reconsideration *and any supplement thereto* shall be filed within 30 days from the date of notice of final Commission action . . .”) (emphasis added).

⁶³ *See, e.g.*, Letter from Eugene Scalia, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, and Attach. (filed Jan. 29, 2018); Letter from Eugene Scalia, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, at 1 (filed May 4, 2018); Letter from Bryan N. Tramont, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290, at 1 (filed Aug. 20, 2019).

adjacent band.⁶⁴ TerreStar asserts that, based on the study, it “confirmed the existence and severity of the WMTS interference problem and concluded that it was caused by insufficient receiver selectivity, not regulatory non-compliance.”⁶⁵ TerreStar reiterates its earlier assertion that the wide passband filtration in existing WMTS receivers “caus[es] even fully compliant fundamental commercial emissions to interfere with and significantly desense the WMTS receiver.”⁶⁶ It further asserts that widespread deployment of networks using such WMTS devices “makes the probability of patient harm from monitoring disruption extremely high.”⁶⁷

18. *Petitions Filed by ASHE, GE Healthcare, and Philips.* The Petitions filed by ASHE, GE Healthcare, and Philips generally support and reaffirm arguments put forward by TerreStar. ASHE asserts that the *Order* failed to consider the “substantial public interest benefits” that would result from additional contiguous WMTS spectrum capacity.⁶⁸ Specifically, it claims that TerreStar’s proposed use of its 1.4 GHz spectrum for WMTS would increase capacity by about 67%, and that this additional capacity would: (1) allow health care facilities to increase not only the number of monitored patients, but also the types of health data that could be monitored, and (2) help meet health care facilities’ need for increased bandwidth for enhanced data security (i.e., encryption).⁶⁹ ASHE also argues that the Division erred in finding insufficient record evidence to determine that TerreStar’s smart grid network would cause harmful interference to WMTS, and it agrees with TerreStar that the susceptibility of WMTS to interference from the adjacent 1.4 GHz Band is “a unique circumstance.”⁷⁰ According to ASHE, “[e]ven a small level of interference could result in the failure of the WMTS system to monitor critical care patients for some period of time, placing those patients at significant health risk.”⁷¹

19. Philips and GE Healthcare likewise highlight the public interest benefits of waiver relief and agree that additional WMTS spectrum capacity is needed for hospitals.⁷² Philips asserts that the “benefits to improved patient outcomes that WMTS brings to hospital patients, and the ready incorporation of data into patient electronic health records . . . that is enabled by WMTS have resulted in increasing demand for WMTS.”⁷³ According to Philips, “the point already has been reached that clinician requests for additional monitoring functions often cannot be accommodated,” and that “new data encryption and security requirements can only be added by cutting back current monitoring functions.”⁷⁴ Philips also argues that granting the requested waiver relief would result in “the delivery of more and

⁶⁴ Letter from Bryan N. Tramont, Counsel for TerreStar, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 16-290 (filed July 17, 2018) (TerreStar July 17, 2018 *Ex Parte*), attaching a presentation entitled “1.4 GHz Commercial and WMTS Co-Existence, Summary of Medical Telemetry Interference and Failure Analysis” (TerreStar 2018 Interference Presentation).

⁶⁵ TerreStar July 17, 2018 *Ex Parte* at 1.

⁶⁶ *Id.* at 2; *see also* TerreStar 2018 Interference Presentation at 9.

⁶⁷ TerreStar July 17, 2018 *Ex Parte* at 2.

⁶⁸ ASHE Petition at 2-3.

⁶⁹ *Id.* at 8.

⁷⁰ *Id.* at 9-10.

⁷¹ *Id.* at 7. ASHE further asserts that the Division erroneously found the record evidence insufficient to determine that more spectrum is necessary to meet the needs of hospitals. *Id.* at 9-10; *see also id.* at 2-3.

⁷² GE Healthcare Petition at 1-3; Philips Petition at 2-3, 6 (noting “the need to implement robust security on the wireless monitoring data streams.”).

⁷³ Philips Petition at 5.

⁷⁴ *Id.* at 4.

better healthcare to underserved populations and helping to contain healthcare costs.”⁷⁵ It further argues that “Smart Grid and many other similarly-configured commercial operations would present unacceptable potential for destructive interference” to WMTS systems deployed at hospitals.⁷⁶ No other parties submitted petitions for reconsideration, or filed oppositions to the issues raised in the petitions filed by TerreStar, ASHE, GE Healthcare, and Philips.⁷⁷

III. DISCUSSION

20. Under section 1.925(b)(3) of the Commission’s rules, parties seeking a waiver must show that either: (i) the underlying purpose of the rule would not be served or would be frustrated by application to the instant case and that grant of the requested waiver would be in the public interest, or (ii) in view of unique or unusual factual circumstances of the instant case, application of the rule would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.⁷⁸ After review of the record on reconsideration, we find Petitioners have adequately demonstrated unique circumstances that, taken together, make application of the rule in this case contrary to the public interest.⁷⁹ Accordingly, we grant in part the TerreStar, ASHE, and GE Healthcare petitions for reconsideration of the *Order*, and we grant TerreStar a limited and conditional waiver of the substantial service construction requirement under section 27.14(a) associated with the Licenses, to the extent discussed below.⁸⁰

21. The Division denied TerreStar’s request for relief based in part on a determination that TerreStar had failed to demonstrate that it would have caused interference to WMTS if it operated a WiMAX network as permitted by the rules or that it was otherwise unable to develop a technical solution enabling it to meet its construction obligation.⁸¹ We reconsider this conclusion in light of TerreStar’s July 17, 2018 presentation describing its 2014 study of the potential of the planned WiMAX system to cause harmful interference in WMTS receivers.⁸²

22. As an initial matter, we note that this evidence faces two procedural hurdles. First, it was not presented at any time during the pendency of the original request. Section 1.106(c) of the

⁷⁵ *Id.* at 3.

⁷⁶ *Id.* at 8 (emphasis removed).

⁷⁷ Certain former minority shareholders of TerreStar have submitted comments in this docket regarding the TerreStar bankruptcy proceeding. That proceeding and claims associated with the bankruptcy are not germane to the issue here, which is whether TerreStar has demonstrated, including in the license term post-bankruptcy, that it has met the standard for a waiver. We thus decline to address their claims, as the Commission “has consistently declined to consider what is, in essence, a collateral attack on a bankruptcy court determination” *Applications of Arlie L. Davison and Associates, Inc. et al.*, Memorandum Opinion and Order, 11 FCC Rcd 15382, 15388-89 (1996). See also, e.g., *Broadband PCS Spectrum*, Order, 14 FCC Rcd 6561, 6563 (1999); *Station KDEW(AM)*, Memorandum Opinion and Order, 11 FCC Rcd 13683, 13687 (1996); *Final Analysis Communications Services, Inc.*, Order and Authorization, 17 FCC Rcd 16062, 16065 (IB SD 2002); *Applications of TV Active, LLC*, Order on Reconsideration, 16 FCC Rcd 18938, 18944 (WTB PSPWD 2001).

⁷⁸ 47 CFR § 1.925(b)(3).

⁷⁹ Because we grant relief on this ground, we do not reach any of the additional arguments made for reconsidering the *Order*.

⁸⁰ We find that the Philips Petition is untimely. Under section 1.106(f) of the Commission’s rules, the due date for reconsideration petitions in this matter was November 9, 2017. See 47 CFR § 1.106(f). Philips filed its Petition on November 13, 2017. Nevertheless, we will consider it as an informal comment on the remaining petitions and consider its assertions and arguments in that light. See 47 CFR § 1.41.

⁸¹ See *Order*, 32 FCC Rcd at 7487, para. 15.

⁸² See TerreStar 2018 Interference Presentation.

Commission's rules provides that a petition for reconsideration that relies on facts or arguments not previously presented may be granted only if: (1) the facts or arguments relate to events that have occurred or circumstances that have changed since the last opportunity to present such matters to the Commission; (2) the facts or arguments were unknown to the petitioners until after the last opportunity to present them to the Commission and could not have been discovered earlier through ordinary diligence; or (3) consideration of the facts or argument is required in the public interest.⁸³ While the supplement does not meet either of the first two prongs, we find that the public interest requires consideration of factual evidence demonstrating a potential for harmful interference to safety-of-life services. Accordingly, this evidence meets the third prong for consideration under section 1.106(c).

23. The evidence faces a second procedural hurdle, however, as TerreStar also failed to present this supplemental evidence within the time period for supplements to a petition for reconsideration under section 1.106(f).⁸⁴ This provision specifies that a "petition for reconsideration *and any supplement thereto* shall be filed within 30 days from the date of public notice of the final Commission action"⁸⁵ That deadline expired on November 9, 2017, well before the July 17, 2018 date of the supplemental submission.

24. The Commission has discretion to permit late-filed supplements to timely-filed reconsideration petitions if a petitioner presents sufficient justification,⁸⁶ and here, TerreStar has met that burden. The evidence, involving WMTS receiver characteristics, the interference testing performed, and the potential for interference to WMTS services, involves purely factual information and implicates important public health considerations. Accordingly, we accept and consider the presentation.

25. The presentation includes specific evidence that WMTS receivers operating in the 1395-1400 MHz and 1427-1432 MHz bands provide insufficient selectivity that, while not violating any Commission regulation, provides little attenuation of emissions in the bands adjacent to these licensed WMTS bands, including in TerreStar's frequencies.⁸⁷ The presentation also provides details of the testing process and results showing that, as a result of their unusual vulnerability to emissions generated outside the operating band of WMTS receivers, such receivers could experience intermittent signal link failure from TerreStar's in-band emissions (*i.e.*, its emissions within its own licensed frequencies) in cases where TerreStar's base or mobile transmitters were in close proximity to such receivers.⁸⁸ Based on our analysis of this evidence, we conclude that a WiMAX or other mobile broadband system in TerreStar's licensed spectrum, even if it complied with the 1.4 GHz technical rules, would have presented a significant risk of harmful interference to safety-of-life WMTS systems unanticipated by the Commission's 1.4 GHz rules.⁸⁹

⁸³ See 47 CFR § 1.106(c).

⁸⁴ See TerreStar July 17, 2018 *Ex Parte* at n.2. In its submission, TerreStar asked the Commission to accept the filing to "fill any gap in the record" on interference, and it argued that its failure to submit the evidence earlier was excusable because its prior filings included the conclusions of the analysis and an explanation of the problem, and "[t]he Commission never requested the full analysis" prior to releasing the *Order*. See *id.* at 2-3 and n.2. While we find this argument unpersuasive, we nevertheless accept the submission for the reasons discussed below.

⁸⁵ 47 CFR § 1.106(f) (emphasis added).

⁸⁶ *C.f. Review of the Emergency Alert System*, EB Docket No. 04-296, Order on Reconsideration, 34 FCC Rcd 5382, 5386 n.33 (2019) (accepting supplements to a timely filed petition for reconsideration).

⁸⁷ See TerreStar 2018 Interference Presentation at 4-11.

⁸⁸ See *id.* at 20-32.

⁸⁹ The relevant technical restrictions in the 1.4 GHz rules were primarily, although not exclusively, designed to reduce the risk of interference from a 1.4 GHz Band licensee's out-of-band emissions into the WMTS bands. See, e.g., 47 CFR § 27.53(j)(1) (establishing limits on "the power of any emission outside the licensee's frequency band(s)"); *1.4 GHz Service Rules Order*, 17 FCC Rcd at 10054-55, paras. 205-06 (limiting the permissible field strength that non-WMTS facilities "may radiate into the WMTS bands"); 47 CFR § 27.804. To the extent the

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We are further persuaded that, because the risk of interference arises from the unusual vulnerability of WMTS receivers to an adjacent-band licensee's in-band emissions, the risk would have been difficult for TerreStar to eliminate, particularly with regard to itinerant transmissions from TerreStar's mobile devices operating near hospitals or other health care facilities using WMTS receivers.⁹⁰ Given the safety-of-life nature of the WMTS operations, we find TerreStar reasonably determined not to move forward with its previously planned deployment.

26. As the Division discussed in the *Order*, it is a licensee's responsibility to conduct its due diligence, to assure that it can timely construct and meet service requirements, and to confirm that the spectrum is suitable for the licensee's business plans and needs. It is also true that the Commission's rules generally do not contemplate waiving rules (including those involving deadlines) for types of considerations that licensees should take into account as part of this type of due diligence.⁹¹ We note, however, that the public interest in each case must be evaluated in light of the specific circumstances presented. In this case, although we continue to find that TerreStar could have been more diligent in investigating the potential for harmful interference to WMTS receivers,⁹² we find that unique circumstances, taken together, support a waiver. In particular, we take into account that TerreStar was prepared to meet its substantial service construction requirement with a rule-compliant system, but that it reasonably determined that its original deployment plan, while permissible under the Commission's rules, had the significant potential to disrupt safety-of-life WMTS systems in adjacent bands. In addition, a waiver in this case will facilitate a consensus solution between TerreStar and WMTS stakeholders to provide additional capacity for important life-saving medical telemetry services while resolving these potential interference threats that were unanticipated by the Commission's rules. In cases of harmful interference involving two systems that are both compliant with their service rules, the Commission generally has sought to rely in the first instance on the affected parties to resolve the issue through

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Commission specifically addressed potential interference to WMTS from another licensee's in-band emissions, the concern arose in those cases where other licensees were themselves operating in the same spectrum as WMTS, *e.g.*, utility telemetry. Because these licensees operate partially co-channel with WMTS, their in-band emissions are also within the WMTS licensed band, and rules such as the field strength limits were adopted to address this concern. *See id.*; *see also id.* at 10054, para. 202 (addressing potential for co-channel interference from mobile telemetry). Other measures were adopted to address the potential for in-band interference between two 1.4 GHz Band licensees operating in the same spectrum but in adjacent geographic areas. *See id.* at 10028, paras. 118-19 (addressing "In-Band Interference Control" on flexible use licensees "to limit co-channel interference between licensees operating in adjacent geographic service areas."). The Commission did not, however, specifically address the potential for interference to WMTS operations from a 1.4 GHz licensee's emissions that are wholly outside of WMTS bands (*e.g.*, TerreStar's 1.4 GHz in-band emissions). *Cf., e.g., id.* at 10052, para. 196 (finding that, "[u]nlike co-channel [telemetry] operations, we believe that the potential for harmful interference to WMTS arising from primary telemetry operations *in the adjacent band* is minimal. Therefore, we decline to prohibit mobile operations for primary telemetry.") (emphasis added). We also note that, when these rules were adopted in 2001, WMTS systems for the bands adjacent to the 1.4 GHz commercial bands—although authorized the year before—had not yet been developed, and thus, while the Commission had substantial evidence that WMTS receivers that would be used in these adjacent bands were sensitive as a general matter, it did not, at the time of the rulemaking, have data on the specific passbands in these WMTS receivers, and the extent to which such passbands would make these WMTS receivers vulnerable to emissions in the neighboring 1.4 GHz bands.

⁹⁰ *See, e.g.,* TerreStar June 7, 2017 *Ex Parte* at 17; TerreStar Sept. 20, 2017 *Ex Parte*, Attach. at 7. In establishing Incentive Auction rules for 600 MHz, the Commission addressed the particular interference challenge of mobile devices transmitting in bands adjacent to WMTS incumbents licensed at Channel 37 of that band by limiting operations in WMTS-adjacent spectrum to television or wireless downlink, thereby "eliminat[ing] the possibility of (continued....)

mutually satisfactory arrangements.⁹³ We find the waiver will promote this important policy, as evidenced by the broad support TerreStar's waiver request has received from WMTS stakeholders.

27. In light of these determinations and the totality of the record, we find that the public interest benefits that will result from the waiver outweigh the interests in enforcement of the rule and accordingly justify relief. The record supports the conclusion that the additional spectrum capacity from TerreStar's Licenses will help to meet growing WMTS needs and promote important innovations in WMTS services. The demand for WMTS spectrum capacity is reflected in the growing number of WMTS deployments. ASHE reports that the total number of 1.4 GHz WMTS deployments had increased about 20 percent per year since 2013, and that, as of May 1, 2017, 1.4 GHz WMTS had 8,061 deployments in 1,979 hospitals, with a total of 309,059 transmitters.⁹⁴ ASHE further reports that 130 hospitals have registered more than 500 transmitters/access points and nineteen hospitals have registered more than 1,000 transmitters/access points.⁹⁵ The record supports the conclusion that this substantial and growing demand is increasingly leading to or threatening congestion in the 1.4 GHz WMTS spectrum, particularly at large hospitals or in areas with a concentration of health care facilities, and that congestion will increasingly be a constraint on greater use of licensed WMTS in the 1.4 GHz spectrum.⁹⁶ The record also supports the conclusion that spectrum limitations are constraining WMTS services from inclusion or expansion of important innovations, including the broader adoption of signal encryption to help ensure the cyber-security of wireless medical telemetry.⁹⁷

28. The ongoing challenges associated with the COVID-19 outbreak have further demonstrated the need for new WMTS spectrum options. The outbreak has resulted in a substantial rise in the number of patients who need medical telemetry monitoring in hospitals, and has also made apparent the urgent need for new options to support remote health care and medical telemetry monitoring in non-traditional settings where WMTS cannot currently be deployed, such as in makeshift emergency hospitals, nursing homes, home monitoring environments, and other places where quarantined critical care patients must reside outside of major medical facilities.⁹⁸ We agree with TerreStar that a waiver will

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mobile devices, which can operate anywhere, transmitting on nearby frequencies in close proximity to [radio astronomy] and WMTS installations." *Expanding the Econ. & Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6692, para. 289 (2014). The severity of the solution adopted in that case (prohibiting mobile transmission in the spectrum) suggests the challenging nature of the problem. *See also 1.4 GHz Service Rules Order*, 17 FCC Rcd at 10051-52, para. 195 (prohibiting mobile telemetry use in spectrum co-channel with WMTS to address threat of interference).

⁹¹ *See Order*, 32 FCC Rcd at 7483-84, paras. 9-10.

⁹² TerreStar argues that it could not have discovered the potential for interference to 1.4 GHz WMTS earlier in part because the "development of this WMTS hardware occurred years after the 1.4 GHz auctions and TerreStar's acquisition of 1.4 GHz licenses." TerreStar Petition at 13; *see also id.* at 14 ("The Bureau cannot reasonably expect a licensee to predict future design decisions by component or system manufacturers who are providing equipment in abutting bands"). We find, however, that TerreStar's assertion regarding the timing of the development of 1.4 GHz WMTS systems is not accurate. A search of the Office of Engineering and Technology (OET) Equipment Authorization database, which is publicly available, shows that by the time TerreStar acquired the Licenses, a number of 1.4 GHz WMTS devices had already been developed and certified. *See* FCC OET Laboratory Division Equipment Authorization System (EAS) webpage, <https://apps.fcc.gov/oetcf/eas/>. We also note that neither GE Healthcare nor Philips, both manufacturers of WMTS equipment, support TerreStar's assertions regarding the initial timing of 1.4 GHz WMTS development. We are further unpersuaded by TerreStar's excuse that, even after development of the 1.4 GHz WMTS receivers, the receiver information was not in the public domain. We find that a reasonable licensee should have known from the start, even without specific WMTS 1.4 GHz passband information, that a relatively high-powered system deployed near hospitals, even one compliant with technical requirements, might potentially cause problematic interference to WMTS, given both the general sensitivity of WMTS receivers (well-documented in public forums, including the 1.4 GHz service rules proceeding) and the use of

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help to address both of these concerns in pandemic situations like COVID-19 or other national health emergencies.⁹⁹ It will enable the development and use of WMTS in non-traditional settings outside hospitals and help to ensure that traditional health care facilities have the spectrum capacity to meet a surge of additional monitoring demands that may occur in such emergencies.¹⁰⁰

29. We therefore are persuaded that additional spectrum is needed to meet the growing demand by WMTS operators for spectrum capacity, and we find that a limited waiver of section 27.14(a) will enable TerreStar to provide WMTS stakeholders near-term access to spectrum that addresses WMTS demand and rapidly increases the capacity, availability, reliability, and security of WMTS systems at health care facilities and other settings across the country. Relief will facilitate continued innovation and development of medical telemetry operations as well.

30. While TerreStar's proposal is not the only potential solution to addressing the spectrum needs of licensed wireless medical telemetry, we find that the proposal has unique advantages. Because the TerreStar spectrum is adjacent or nearly adjacent to WMTS spectrum at issue, WMTS operations can make more efficient use of it than other spectrum bands where band edges would require interference mitigation. Further, because WMTS receiver passbands effectively extend over TerreStar's spectrum, the Petitioners indicate that support for TerreStar's spectrum can be integrated into currently deployed WMTS equipment rapidly and without WMTS hardware changes.¹⁰¹

31. In sum, we conclude on reconsideration that a limited and conditional¹⁰² waiver of section 27.14(a) is warranted based on the totality of factors in this unique situation in which granting relief would: (1) facilitate a consensus solution to eliminate the significant potential for disruption to safety-of-life patient monitoring services that technically compliant operations in the adjacent band might cause, and (2) rapidly and significantly contribute to the expansion of medical telemetry operations, offering substantial public interest benefits.

32. Further, we waive section 27.804 of the Commission's rules on our own motion to further

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WMTS for patient care, and at least taken the step of reaching out to WMTS manufacturers to determine whether there was an issue, as TerreStar belatedly did in 2014.

⁹³ See, e.g., 47 CFR § 95.325 (providing that operators of Personal Radio Service stations, including WMTS stations, that experience interference should first attempt to eliminate the interference by means of mutually satisfactory arrangements); see also 47 CFR § 27.64. We note, however, that the Commission retains authority to impose license modifications or require operational modifications to address the interference concern, if necessary. See, e.g., 47 U.S.C. §§ 303(f) (authority to make regulations necessary to prevent interference), and 316 (authority to modify licenses where such action will promote the public interest, convenience, and necessity). See also, e.g., *Promoting Interoperability in the 700 MHz Commercial Spectrum*, WT Docket No. 12-69, Report and Order and Order of Proposed Modification, 28 FCC Rcd 15122, 15138, para. 34 (2013) (revising technical rules for existing 700 MHz D and E Block licensees due, in part, to "the substantial record evidence now compiled in this proceeding concerning . . . the likely harmful interference from higher power D and E Block operations to the services actually now deployed in the B and C Blocks").

⁹⁴ See ASHE Petition at 7. ASHE further reports that, between May 1, 2017 and September 30, 2017, there was an increase of 46 hospitals with 1.4 GHz deployments and 12,200 additional transmitters/access points, for a total of 2,025 hospitals with 321,259 transmitters/access points as of September 30, 2017. See *id.* Available evidence corroborates this data about the demand for WMTS. Specifically, a Commission staff inquiry to Comsearch in a separate matter determined that, as of April 2019, the number of hospitals with 1.4 GHz deployments had increased to 2,132, with over 372,000 transmitters deployed. We note that this does not include the WMTS transmitters deployed in the 600 MHz band, of which there were over 137,000 as of April 2019. Overall, as of April 2019, more than half a million WMTS transmitters had been deployed in a total of 3,886 hospitals.

⁹⁵ See ASHE Petition at 7. To the extent that the WMTS stakeholders have presented new factual evidence in their petitions regarding the growing WMTS demand for spectrum to meet safety-of-life patient monitoring operations, we find that consideration of this evidence is required in the public interest. See 47 CFR § 1.106(c).

facilitate WMTS use in this band.¹⁰³ Section 27.804 imposes a field strength limit restriction to protect WMTS operating in the band immediately adjacent to TerreStar's lower A and B Block spectrum at 1392-1395 MHz; this restriction effectively precludes the use of WMTS in TerreStar's 1392-1395 MHz segment.¹⁰⁴ TerreStar indicates that, notwithstanding the restriction, WMTS operations are "technically feasible" there.¹⁰⁵ Because TerreStar, ASHE, GE Healthcare, and Philips all stress the immediate and growing need for more spectrum for WMTS, we conclude that it serves the public interest to waive section 27.804 to allow all eight megahertz of TerreStar's spectrum in the 1.4 GHz Band to be used for WMTS. We recognize that WMTS operations in the 1392-1395 MHz spectrum potentially could result in interference to WMTS in the immediately adjacent band because of the WMTS receiver characteristics discussed above. WMTS operations in the commercial 1.4 GHz spectrum at 1392-1395 MHz nonetheless present far lesser interference concerns to adjacent-band WMTS because they are like services, using compatible devices, and TerreStar has indicated that it would implement a frequency coordination framework similar to that in use today in the adjacent WMTS bands.¹⁰⁶ We emphasize that careful frequency coordination for the commercial 1.4 GHz spectrum will be required to take into account the potential for interference into the adjacent WMTS bands. As a further condition to the grant of this waiver, TerreStar will be responsible for ensuring coordination and for taking immediate and necessary steps to eliminate any harmful interference following notification from WMTS users notwithstanding coordination prior to deployment of the devices. Notwithstanding our waiver of section 27.804, operations in the 1.4 GHz Band must protect adjacent-band WMTS at all times.¹⁰⁷

IV. CONDITIONS

33. To address our goals and concerns in granting relief, we find that it serves the public

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⁹⁶ For example, Philips asserts that all 170 Veterans Affairs (VA) hospitals currently use WMTS systems and that spectrum is already exhausted at some facilities and nearing exhaustion at others. *See* Philips Petition at 7. It further confirms that certain other health care facilities such as Mayo Clinic are also at full capacity. *See id.* Steward Health Care, a national health care services organization that, *inter alia*, owns and operates 18 community hospitals across four states, states that, "[w]ith an increasing number of wireless medical telemetry devices being utilized at Steward's hospitals, we are beginning to see signs of spectrum congestion and interference between these monitoring devices" and that "we expect that our wireless medical systems will only become more densely distributed in our facilities over time, as our patient population continues to become older and more subject to acute medical issues." Letter from John Polanowicz, Steward Health Care System LLC, to Chairman Ajit Pai, FCC, WT Docket No. 16-290, at 2 (filed July 13, 2017). *See also* ASHE July 14, 2017 *Ex Parte* at 2 (stating that "the 1.4 GHz band has been the subject of significant technical innovations" and "[a]s a result of such innovations and hospitals' increasing reliance on WMTS, ASHE understands that some areas with a concentration of health care facilities are experiencing WMTS saturation due to a lack of 1.4 GHz spectrum.").

⁹⁷ *See* Philips Petition at 7 (stating that "[d]elivering new clinical features and better encryption is hindered by the lack of spectrum."); ASHE Petition at 8 (stating that "additional channel capacity would allow health care facilities to increase the number of patients and the types of patient metrics that may be monitored."). ASHE states that the difficulty of incorporating encryption overhead within the existing spectrum constraints directly affects VA and Department of Defense hospitals where encryption of wireless device signals is currently mandated, but is "an issue that more broadly will affect hospitals across the country, particularly as concerns about cybersecurity and demands for increased IT security continue to rise." *Id.* *See also* Philips Petition at 6-7 (stating that "[a]nother factor greatly affecting the capacity concerns of 1.4 GHz WMTS providers is the need to implement robust security on the wireless monitoring data streams. Digital hacking at some hospitals has raised data security concerns, and all wireless . . . communication must increase security through more robust encryption," and the spectrum needed "roughly *doubles* in order to meet the security encryption requirements" applicable to VA hospitals) (emphasis in original). Philips states that "the point already has been reached that clinician requests for additional monitoring functions often cannot be accommodated" and that "new data encryption and security requirements can only be added by cutting back current monitoring functions." *Id.* at 4. It further states that its bedside monitors currently cannot support a number of other features due to spectrum limitations. *See id.* at 5 and n.5 (stating, *inter alia*, that "a bedside monitor will continue to collect and store a patient's data even if it is temporarily disconnected from the
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interest to impose several conditions. We are adopting stringent performance milestones to ensure that TerreStar makes rapid and demonstrable progress in the deployment of WMTS operations. We find that concrete metrics related to actual WMTS operations will best ensure that satisfactory deployment occurs by the end of the waiver period, as set forth in the list of Conditions, below. These conditions include the termination of Licenses for failure to meet a specified milestone. At the end of the waiver period, TerreStar will be required to demonstrate operational deployments in at least 2,000 health care facilities nationwide, and such deployments must include at least ten health care facilities in each Major Economic Area (MEA) and in areas equivalent to MEAs in each Economic Area Grouping (EAG).¹⁰⁸ We will require TerreStar to file progress reports, and we will use those reports to determine whether TerreStar has met these performance benchmarks.

34. In addition, because TerreStar and the other Petitioners have persuaded us, on reconsideration, that non-WMTS use of the 1.4 GHz Band would place WMTS in the adjacent bands at significant risk of harmful interference and that there is a crucial need for expanded capacity for medical telemetry services, we find that it serves the public interest to require that all the spectrum in the 1.4 GHz Band be used exclusively for WMTS. Given that this need for expanded WMTS spectrum is only expected to grow as more patients and types of health data warrant monitoring and as the need for encryption of such data grows more acute, we further find that it serves the public interest to require that WMTS-exclusive use continue indefinitely in the 1.4 GHz Band. It would undermine our objectives in granting the instant relief if we were to provide a waiver period for the deployment of WMTS in the 1.4 GHz Band, only to have such deployment, including the costly investment made by health care facilities, potentially disrupted or abandoned and replaced by other, possibly incompatible applications after TerreStar satisfies its performance milestones.¹⁰⁹ Such a result would be contrary to the public interest. When the Commission dedicated spectrum exclusively for WMTS in 2000, it acknowledged that it was making an exception to its typical approach of non-service-specific, flexible allocations, but it justified the exception “to protect the public safety by providing spectrum where medical telemetry equipment can operate without interference.”¹¹⁰ Here, we are similarly persuaded by the evidence submitted by

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network” but “there is not sufficient spectrum bandwidth to upload this data to the Central Station when it reconnects, so the system cannot maintain a complete patient record.”).

⁹⁸ See TerreStar April 17, 2020 *Ex Parte* at 2-3; see also <https://www.fcc.gov/coronavirus>; Peter Antall, M.D., *One way to limit spread of coronavirus: remote diagnosis* (Feb. 20, 2020), <https://medcitynews.com/2020/02/one-way-to-limit-spread-of-coronavirus-remote-diagnosis/> (stating that “it’s clear that remote diagnosis and monitoring through telehealth can help ensure U.S. residents who may have been exposed to the virus receive necessary medical attention and ongoing observation.”); Eric Wicklund, *Coronavirus Scare Gives Telehealth an Opening to Redefine Healthcare* (Mar. 5, 2020), <https://mhealthintelligence.com/news/coronavirus-scare-gives-telehealth-an-opening-to-redefine-healthcare> (stating that “home monitoring and medical tricorders are another promising approach to care.”) (quoting Jason Hallock, Chief Medical Officer for SOC Telemed).

⁹⁹ TerreStar April 17, 2020 *Ex Parte* at 2.

¹⁰⁰ In assessing the public interest benefits in this regard, we also take note of TerreStar’s commitment to provide spectrum capacity and support during future national public health emergencies declared by the U.S. Department of Health and Human Services free of charge. See TerreStar April 17, 2020 *Ex Parte* at 3.

¹⁰¹ TerreStar Petition at 10; Philips Petition at 4 (stating that “[t]he location of this spectrum allows unique efficiencies as compared to spectrum located elsewhere. Using these bands for WMTS does not require imposition of restrictions and interference mitigation techniques at what otherwise would be band edges that would have to be protected both by WMTS and by the adjoining service provider(s).”). See also TerreStar June 14, 2017 *Ex Parte* at 6 (stating that “because TerreStar’s spectrum is adjacent to the WMTS frequencies already dedicated to wireless medical telemetry, this action will enable TerreStar to efficiently make available five additional megahertz of spectrum for wireless medical telemetry on a nationwide basis in hospitals and other health care facilities,” and asserting that “[t]his capacity would be available for existing medical telemetry equipment via a firmware update (and equipment certification)”).

Petitioners that, despite the Commission's intent when it adopted flexible rules for the commercial 1.4 GHz Band, non-WMTS use of this band at this time would carry a significant risk of interference to WMTS in the adjacent bands, with potentially life-threatening implications for the patients being monitored by these devices. Accordingly, we are imposing a condition to require that TerreStar's 1.4 GHz spectrum be used exclusively for WMTS in the interest of promoting public health and safety.

35. We therefore condition the waiver relief granted to TerreStar for its 1.4 GHz Band Licenses on the following:¹¹¹

- *Requirement to Deploy WMTS.* All Licenses shall be used exclusively for the deployment of WMTS operations.¹¹² This condition does not preclude wireless medical telemetry operations in vehicles or outside of health care facilities.¹¹³ Additionally, in accordance with the goals of this Order on Reconsideration, TerreStar must use a significant portion of the spectrum associated with each of its Licenses for the deployment of WMTS operations.¹¹⁴

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¹⁰² Our grant of relief is subject to several conditions designed to ensure that TerreStar proceeds with deployment of its Licenses in a manner that is timely and consistent with the goals of this Order on Reconsideration.

¹⁰³ See 47 CFR § 1.3.

¹⁰⁴ 47 CFR § 27.804. TerreStar's lower A and B Block spectrum in the 1.4 GHz Band is immediately adjacent to operations in the WMTS spectrum band at 1395-1400 MHz, rendering such operations more vulnerable to interference from any out-of-network operations, including WMTS. In particular, the use of mobile operations in the lower A and B segment would pose new challenges with regard to interference to adjacent-band WMTS operations. The upper A and B Block spectrum (1432-1435 MHz band), in contrast, is separated from WMTS spectrum by 500 kHz (WMTS transmitters are never permitted to operate on a primary basis at 1431.5-1432 MHz). See 47 CFR § 95.2363(a)(3).

- *Protection of Part 95 WMTS.* Operations in the 1390-1392 MHz band and the A and B Blocks of the paired 1392-1395 MHz and 1432-1435 MHz bands must protect adjacent part 95 WMTS operations at all times.
- *Frequency Conversion.* By January 30, 2021, TerreStar must file a progress report in ULS demonstrating that it has completed the frequency conversion and related modification of all WMTS devices that will be deployed in its 1.4 GHz spectrum to meet its Final Deployment

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¹⁰⁵ See, e.g., Waiver Request at 16.

¹⁰⁶ See, e.g., *id.* at 19. As noted, TerreStar has proposed to use the 1392-1395 MHz spectrum potentially to establish wireless medical telemetry services, such as mobile medical telemetry (e.g., in ambulances) and in-home medical telemetry. See *supra* note 26. See also TerreStar April 17, 2020 *Ex Parte* at 3 (noting that in national health care emergencies such as the COVID-19 pandemic, medical monitoring could be extended to makeshift emergency hospitals, nursing facilities converted to critical care facilities, home monitoring environments, and other places where quarantined critical care patients must reside outside of major medical facilities). In its more recent *ex parte* filings, TerreStar has referred to such wireless medical telemetry uses in vehicles or non-health care facilities as “enhanced wireless medical telemetry.” Although we are providing relief to expand spectrum capacity for WMTS in health care facilities, nothing in this Order on Reconsideration should be read as precluding the provision of this enhanced wireless medical telemetry (using the commercial 1.4 GHz spectrum for medical monitoring in vehicles or outside of health care facilities) so long as careful frequency coordination takes place and adjacent-band WMTS operations are protected. The applicable part 27 rules do not prohibit such use, in contrast to the part 95 rules governing the adjacent-band WMTS. See 47 CFR § 95.2333. Accordingly, we waive section 27.804 to facilitate the provision of WMTS as well as enhanced wireless medical telemetry in vehicles or in locations outside of health care facilities.

¹⁰⁷ While the relief we are providing seeks to reduce interference stemming from operations in the 1.4 GHz Band, we note that radar and aeronautical mobile telemetry operations exist in bands adjacent to the 1.4 GHz Band and should be taken into account when deploying and coordinating WMTS devices.

¹⁰⁸ TerreStar holds overlapping EAG licenses and MEA licenses.

¹⁰⁹ See, e.g., Philips Reply Comments at 3 (filed Oct. 14, 2016) (emphasizing the specific build-out benchmarks should be “accompanied by a longer-term commitment for continued access and the regulatory certainty needed as a basis for commitment of services and equipment.”).

¹¹⁰ See *WMTS R&O*, 15 FCC Rcd at 11211. The Commission decided that WMTS equipment would be licensed by rule rather than requiring individual licenses for each WMTS equipment operator, enabling WMTS spectrum to be shared among medical telemetry users.

¹¹¹ TerreStar previously expressed a commitment to many of these conditions. See, e.g., TerreStar June 14, 2017 *Ex Parte* at 8-9 (stating: “TerreStar has agreed to [certain] interim and final performance milestones that will . . . enable the Commission to terminate TerreStar’s . . . licenses early in this process in the event of insufficient progress by TerreStar[,]” and specifying five milestones); TerreStar Petition at 11.

¹¹² We understand TerreStar expects that new technology may allow it to deploy additional services in this spectrum. As such, we provide that once TerreStar has satisfactorily met its Final Deployment Obligation, TerreStar may file a letter certifying as such as well as a full technical demonstration of how such additional uses will not cause harmful interference to in-band or adjacent-band WMTS, or otherwise undermine or prevent the continued provision of WMTS (including in vehicles and locations outside of health care facilities) on its 1.4 GHz spectrum. The Bureau will release a Public Notice seeking comment on any such letter and TerreStar may commence deployment of such additional services 90 days after release of that Public Notice absent an affirmative finding by the Bureau that such additional services will cause harmful interference to WMTS. Should TerreStar file such a letter at the same time as it completes its Final Deployment Obligation, the Bureau would seek comment on both issues in a single Public Notice.

¹¹³ While we condition relief on the use of TerreStar’s Licenses for WMTS, TerreStar’s commercial 1.4 GHz spectrum remains governed by part 27 of the Commission’s rules. See *supra* note 106.

Obligation. Failure to meet this frequency conversion deadline will result in the automatic termination, without further Commission action, of all Licenses.

- *Testing.* By April 30, 2021, TerreStar must file a progress report in ULS demonstrating that it has completed safety and quality testing of all WMTS devices that will be deployed in its 1.4 GHz spectrum to meet its Final Deployment Obligation. Failure to meet this testing deadline will result in the automatic termination, without further Commission action, of all Licenses.
- *Equipment Certification.* By October 30, 2021, TerreStar must file a progress report in ULS demonstrating that device makers have received the necessary FCC equipment certification to operate on TerreStar's 1.4 GHz spectrum for all WMTS equipment that TerreStar plans to use to meet its Final Deployment Obligation. Failure to meet this equipment certification deadline will result in the automatic termination, without further Commission action, of all Licenses.
- *Frequency Coordination.* Operations on the spectrum at 1390-1392 MHz and the A and B Blocks of the paired 1392-1395 MHz and 1432-1435 MHz spectrum are subject to prior coordination with a frequency coordinator designated by the FCC for WMTS operations.
- *Initial Deployment.* By April 30, 2022, TerreStar must file a progress report in ULS demonstrating operational deployments, using WMTS equipment, to at least 50 large health care facilities that have extensive patient monitoring. Such progress report must show that operational deployments include the use of a significant portion of applicable frequencies for WMTS deployment. Failure to meet this Initial Deployment deadline will result in the automatic termination, without further Commission action, of all Licenses.
- *Interim Deployment.* By January 30, 2023, TerreStar must file a progress report in ULS demonstrating operational deployments in at least 50 percent of health care facilities with WMTS systems that have been registered with the designated frequency coordinator as of the release date of this Order on Reconsideration. Such progress report must show that operational deployments include the use of a significant portion of applicable frequencies for WMTS deployment. Failure to meet this Interim Deployment deadline will result in the automatic termination, without further Commission action, of all the Licenses.
- *Final Deployment Obligation.* By July 30, 2023, TerreStar must demonstrate operational deployments in at least 2,000 health care facilities nationwide and must also demonstrate that the operational deployments include the use of a significant portion of applicable frequencies for WMTS deployment. The deployment must include at least ten health care facilities in each Major Economic Area (MEA) for MEA-based Licenses, as well as in each area equivalent to an MEA for Economic Area Grouping (EAG)-based Licenses.¹¹⁵ If an MEA or area equivalent to an MEA contains fewer than 50 health care facilities, TerreStar must demonstrate operational deployments to at least 20 percent of the facilities in that MEA or MEA-equivalent area. No later than August 14, 2023, TerreStar must file a notification of construction for each License in ULS, demonstrating compliance with these metrics in terms

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¹¹⁴ We do not require that TerreStar make all spectrum associated with each of its Licenses available for WMTS as there may be, for example, technical issues that prevent them from using certain frequencies in given markets.

¹¹⁵ We find that it serves the public interest to apply a metric to the smaller geographic areas defined by MEAs to help ensure that deployments are more widely dispersed and not highly concentrated in select portions of the much larger geographic areas defined by EAGs or the nation.

of the number of operational WMTS deployments to health care facilities.¹¹⁶ Failure to file such notifications demonstrating that TerreStar serves at least 2,000 health care facilities nationwide by this deadline will result in the automatic termination, without further Commission action, of all of the Licenses. Notwithstanding TerreStar's satisfaction of the nationwide requirement by this deadline, for each MEA-based License for which TerreStar fails to demonstrate that it serves the requisite number of health care facilities per MEA, the authorization for that License will automatically terminate without further Commission action. For each EAG-based License for which TerreStar fails to demonstrate that it serves the requisite number of health care facilities per MEA-equivalent area, authority to serve that area will automatically terminate without further Commission action.

- *Continuity of WMTS Operations and Coverage.* After July 30, 2023, operational deployments of WMTS in the 1390-1392 MHz band and the A and B Blocks of the paired 1392-1395 MHz and 1432-1435 MHz bands will be required to continue to at least the same number of health care facilities nationwide and at least the same number of health care facilities in each MEA and in each MEA-equivalent area as that required for the condition Final Deployment Obligation. Deployments must also continue to include use of a significant portion of the spectrum associated with each License for WMTS operations. If TerreStar fails to maintain coverage such that WMTS service does not continue to at least 2,000 health care facilities nationwide, it must provide written notice to the Commission, and its authorizations for all the Licenses will automatically terminate, without further Commission action. Likewise, if TerreStar fails to maintain coverage in any MEA or MEA-equivalent area, it must provide written notice to the Commission, and its authorization for that MEA or MEA-equivalent area will automatically terminate without further Commission action.¹¹⁷
- *National Public Health Emergencies.* TerreStar must provide spectrum capacity and frequency planning and coordination services, free of charge, outside of registered WMTS health care facilities in support of any national public health emergency declared by the U.S. Department of Health and Human Services, including (but not limited to) facilitation of WMTS services to makeshift emergency hospitals, nursing facilities converted to critical care facilities, home monitoring environments, and other places where quarantined critical care patients must reside outside of major medical facilities.¹¹⁸

36. All requirements and conditions listed above will also apply to any assignee or transferee of any of the Licenses.

V. ORDERING CLAUSES

37. Accordingly, IT IS ORDERED that, pursuant to sections 4(i) and 405 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), and 405, and sections 1.41, 1.106(c), 1.106(f), 1.925(b)(3)(ii), 27.14(a) and 27.804 of the Commission's rules, 47 CFR §§ 1.41, 1.106(c), 1.106(f), 1.925(b)(3)(ii), 27.14(a) and 27.804, the Petitions for Reconsideration filed by TerreStar

¹¹⁶ See 47 CFR § 1.946(d).

¹¹⁷ The applicable EAG License will be modified to reflect the termination of authorization for any MEA-equivalent area for which TerreStar fails to demonstrate that it has met the Final Deployment Obligation, or has failed to maintain coverage to the requisite number of health care facilities.

¹¹⁸ See TerreStar April 17, 2020 *Ex Parte* at 3. For example, the Secretary of the Department of Health and Human Services may, under section 319 of the Public Health Service Act, determine that: a) a disease or disorder presents a public health emergency; or b) that a public health emergency, including significant outbreaks of infectious disease or bioterrorist attacks, otherwise exists. See 42 U.S.C. § 247d.

Corporation, the American Society for Healthcare Engineering of the American Hospital Association, and GE Healthcare on November 9, 2017, ARE GRANTED IN PART, to the extent described herein.

38. IT IS FURTHER ORDERED that, pursuant to sections 4(i) and 405 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i) and 405, and sections 1.925(b)(3)(ii) and 27.14(a) of the Commission's rules, 47 CFR §§ 1.925(b)(3)(ii) and 27.14(a), the Request for Temporary Waiver of Substantial Service Requirements, filed by TerreStar Corporation on August 12, 2016, IS GRANTED to the extent described, and subject to the conditions imposed, herein.

39. IT IS FURTHER ORDERED that, pursuant to section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and sections 1.106(c), 1.106(f), and 1.925(b)(3)(ii) of the Commission's rules, 47 CFR §§ 1.106(c), 1.106(f), and 1.925(b)(3)(ii), the staff of the Mobility Division of the Wireless Telecommunications Bureau SHALL REINSTATE the Licenses identified in the Appendix, consistent with this Order on Reconsideration and the Commission's rules.

40. IT IS FURTHER ORDERED that, pursuant to section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and sections 1.106(c), 1.106(f), and 1.925(b)(3)(ii) of the Commission's rules, 47 CFR §§ 1.106(c), 1.106(f), and 1.925(b)(3)(ii), the staff of the Mobility Division of the Wireless Telecommunications Bureau SHALL REINSTATE TO PENDING STATUS AND PROCESS the Applications for Extension of Time to Construct filed by TerreStar Corporation on August 12, 2016, and identified in the Appendix, consistent with this Order on Reconsideration and the Commission's rules.

41. IT IS FURTHER ORDERED that, pursuant to section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and sections 1.106(c), 1.106(f), 1.925(b)(3)(ii), and 1.949 of the Commission's rules, 47 CFR §§ 1.106(c), 1.106(f), 1.925(b)(3)(ii), and 1.949, the staff of the Mobility Division of the Wireless Telecommunications Bureau SHALL REINSTATE TO PENDING STATUS AND PROCESS the Applications for Renewal filed by TerreStar Corporation on April 21, 2017, and identified in the Appendix, consistent with this Order on Reconsideration and the Commission's rules.

42. IT IS FURTHER ORDERED that, pursuant to section 1.106(f) of the Commission's rules, 47 CFR § 1.106(f), the Petition for Reconsideration filed by Philips Healthcare on November 13, 2017, IS DISMISSED.

43. This action is taken under delegated authority pursuant to sections 0.131 and 0.331 of the Commission's rules, 47 CFR §§ 0.131, 0.331.

FEDERAL COMMUNICATIONS COMMISSION

Roger S. Noel
Chief, Mobility Division
Wireless Telecommunications Bureau

APPENDIX

TerreStar Licenses and Applications Seeking Waiver/Extension, Renewal

Call Sign	Market Code	Request for Waiver/Extension File Number	Request for Renewal File Number
WQGU885	EAG001	0007375830	0007746765
WQGU886	EAG001	0007375831	0007746790
WQGU887	EAG002	0007375832	0007746770
WQGU888	EAG002	0007375833	0007746775
WQGU889	EAG003	0007375834	0007746783
WQGU890	EAG003	0007375835	0007746791
WQGU891	MEA001	0007375836	0007746792
WQGU892	MEA002	0007375837	0007746793
WQGU893	MEA003	0007375838	0007746794
WQGU894	MEA004	0007375839	0007746795
WQGU895	MEA005	0007375840	0007746789
WQGU896	MEA006	0007375841	0007746796
WQGU897	MEA007	0007375842	0007746776
WQGU898	MEA008	0007375843	0007746769
WQGU899	MEA009	0007375844	0007746797
WQGU900	MEA010	0007375845	0007746784
WQGU901	MEA011	0007375846	0007746734
WQGU902	MEA012	0007375847	0007746735
WQGU903	MEA013	0007375848	0007746773
WQGU904	MEA014	0007375849	0007746771

Call Sign	Market Code	Request for Waiver/Extension File Number	Request for Renewal File Number
WQGU905	MEA022	0007375850	0007746766
WQGU906	MEA023	0007375851	0007746736
WQGU907	MEA024	0007375852	0007746737
WQGU908	MEA025	0007375853	0007746777
WQGU909	MEA026	0007375854	0007746738
WQGU910	MEA027	0007375855	0007746739
WQGU911	MEA030	0007375856	0007746740
WQGU912	MEA050	0007375857	0007746785
WQGU913	MEA052	0007375858	0007746782
WQGU914	EAG004	0007375859	0007746741
WQGU915	EAG004	0007375860	0007746767
WQGU916	EAG005	0007375861	0007746742
WQGU917	EAG005	0007375862	0007746743
WQGU918	EAG006	0007375863	0007746778
WQGU919	EAG006	0007375864	0007746744
WQGU920	MEA015	0007375865	0007746745
WQGU921	MEA016	0007375866	0007746746
WQGU922	MEA017	0007375867	0007746772
+WQGU923	MEA018	0007375868	0007746747
WQGU924	MEA019	0007375869	0007746786
WQGU925	MEA020	0007375870	0007746768
WQGU926	MEA021	0007375871	0007746748
WQGU927	MEA028	0007375872	0007746749

Call Sign	Market Code	Request for Waiver/Extension File Number	Request for Renewal File Number
WQGU928	MEA029	0007375873	0007746750
WQGU929	MEA031	0007375874	0007746751
WQGU930	MEA032	0007375875	0007746779
WQGU931	MEA033	0007375876	0007746787
WQGU932	MEA034	0007375877	0007746752
WQGU933	MEA035	0007375878	0007746753
WQGU934	MEA036	0007375879	0007746754
WQGU935	MEA037	0007375880	0007746755
WQGU936	MEA038	0007375881	0007746756
WQGU937	MEA039	0007375882	0007746757
WQGU938	MEA040	0007375883	0007746780
WQGU939	MEA041	0007375884	0007746758
WQGU940	MEA042	0007375885	0007746788
WQGU941	MEA043	0007375886	0007746759
WQGU942	MEA044	0007375887	0007746760
WQGU943	MEA045	0007375888	0007746761
WQGU944	MEA046	0007375889	0007746762
WQGU945	MEA047	0007375890	0007746763
WQGU946	MEA048	0007375891	0007746781
WQGU947	MEA049	0007375892	0007746764
WQGU948	MEA051	0007375893	0007746774