

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)
)
Amendment of Part 15 of the Commission’s Rules for) ET Docket No. 14-165
Unlicensed Operations in the Television Bands,)
Repurposed 600 MHz Band, 600 MHz Guard Bands)
and Duplex Gap, and Channel 37, and)
)
Amendment of Part 74 of the Commission’s Rules for)
Low Power Auxiliary Stations in the Repurposed 600)
MHz Band and 600 MHz Duplex Gap)
)
Expanding the Economic and Innovation)
Opportunities of Spectrum Through Incentive) GN Docket No. 12-268
Auctions)
)
To: The Commission)

REPLY OF THE WMTS COALITION

The WMTS Coalition (“Coalition”)¹ hereby replies to the “Oppositions to Petitions for Reconsideration” filed by Google, Inc. (“Google”) and Microsoft Corporation (“Microsoft”) in the above-referenced proceeding. Contrary to these parties’ suggestion, the Coalition’s requests for reconsideration of several points in the Report and Order (the “R&O”) in these proceedings² are neither inappropriately nor untimely raised. To the contrary, both Google and Microsoft

¹ The WMTS Coalition is a coalition consisting of the American Society for Healthcare Engineering of the American Hospital Association (“ASHE”) (a personal membership group of the American Hospital Association (“AHA”)) representing hospitals and other users of WMTS in the delivery of healthcare services; the Association for the Advancement of Medical Instrumentation (“AAMI”), representing manufacturers and others interested in the development of medical devices, generally; and several of the principal manufacturers of wireless medical telemetry devices. This Reply represents the general consensus positions of the Coalition.

² *Amendment of Part 15 of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*, Report and Order, 30 FCC Rcd 9551 (2015) (the “R&O”).

continue to rely on their unsupported – and incorrect -- understandings of WMTS system characteristics and the operating environment in which these systems provide critical patient care in order to justify their views that the adopted separation distances are appropriately protective (or even unnecessarily) overprotective and do not require reconsideration.

Both Microsoft and Google argue that Section 1.429(l)(3) of the FCC’s rules warrants rejection of the Coalition’s Petition since, in their view, the issues identified by the Coalition, have “been fully considered and rejected by the Commission.”³ But a review of the Coalition’s Petition demonstrates that the Coalition has identified significant material errors and omissions by the Commission in determining the appropriate separation distances and how they can be dependably enforced. These errors and omissions include incorrect assumptions about WMTS system characteristics and the environments in which they operate and failure to consider credible concerns about the reliability of critical geolocation/database functionality that will reside within the TVWS devices. These material errors and omissions led to the adoption of significantly smaller separation distances and more relaxed dependability assurance measures than are necessary to ensure that WMTS licensees will not suffer interference from unlicensed devices. They fully justify reconsideration under Section 1.429(l)(1).⁴

Ironically, both Google and Microsoft highlight several of these same issues in their Opposition – but rather than acknowledge that the R&O erred in misconstruing or failing to consider record evidence in reaching critical conclusions, they simply accept that these conclusions and the underlying assumptions and reasoning were appropriate.⁵ Whether either

³ Microsoft at 11 n. 31; Google at 10 n. 33, 19 n. 67.

⁴ See 47 C.F.R. §1.429(l)(1).

⁵ Two examples can be highlighted to demonstrate the lack of merit to these parties’ claims. Microsoft (at 4-5) and Google (at 20) claim that the Commission fully considered arguments that the Commission erred in assuming an antenna height for WMTS transmitters of 10 meters above ground. As the Coalition

side of this debate is correct is, of course, the very purpose of the reconsideration that the Coalition seeks.

Indeed, fundamental to both parties' Oppositions (and a significant problem with the analysis in the R&O) is their effort to characterize the "typical" hospital environment that they believe will be protected by the separation distances – but without any foundation for their characterization. For example, Microsoft claims that "[t]he large majority of facilities are between one and five stories tall, meaning that most WMTS systems are installed at or below the third floor, or 10 meters."⁶ While Microsoft provides no basis for this broad generalization, the record evidence in this proceeding showed that a substantial percentage of hospitals are not only taller than five stories, but also deploy some part of their WMTS systems at floors higher than the third floor. Additionally, as the Coalition has repeatedly explained, interference received by WMTS DAS antennas on high floors will impact the monitoring of patients on *all* floors.

Similarly, Google suggests – again without any foundation for its claim -- that "hospitals are often constructed of commercial-grade materials that shield radio signals more than average walls and windows."⁷ This claim is intended to support its opposition to the need for the separation distances to protect hospitals at their most vulnerable location, suggesting that the

noted in its Petition (at 11-12 and in Exhibit A), the record evidence showed that almost 45% of the registered hospitals deploy WMTS antenna systems above 10 meters and over 100 hospitals deploy WMTS systems above 30 meters. Microsoft's suggestion now that "a small number of hospitals are taller than five floors" (Microsoft at 5) simply repeats the failure to consider the record evidence – even worse, it is entirely unsupported by any factual basis. Similarly, the Coalition sought reconsideration of the assumption that taller buildings will tend to be located only in those urban areas with a cluttered propagation environment, in light of the hundreds of photos and letters from WMTS licensees that clearly refuted that assumption. The Coalition was entitled to raise this material error as the basis for reconsideration.

⁶ Microsoft at 5.

⁷ Google at 8.

Coalition’s concerns “are not ‘likely in actual deployments.’”⁸ Neither of Google’s statements is supported by factual evidence. Like Microsoft, Google seeks to have the Commission reject the Coalition members’ actual knowledge of hospitals physical environments and the WMTS system deployments in favor of their own “expectations” about these factors – which are, simply stated, incorrect.⁹

Both Google and Microsoft also dismiss the Coalition’s concern about the Commission’s reliance on the TVWS geolocation/database technology. Google suggests that the Coalition’s concerns are outside the scope of this proceeding, citing the *TVWS Database NPRM*,¹⁰ released well after the Coalition’s Petition, as the appropriate venue for these concerns. Microsoft goes further, suggesting that “the Commission has already considered arguments that *databases* are not sufficiently reliable to protect WMTS, and found them meritless.”¹¹ However the Coalition repeatedly stressed prior to the *R&O* that the greatest risks are likely not only from the databases per-se, but also from the *device software* that will be equally critical to the geolocation/database scheme (but much more diverse and challenging to control, compared to the central databases).

⁸ Google at 7.

⁹ Similarly, these parties continue to urge a relatively burdensome waiver process for WMTS licensees who recognize that the adopted separation distances will not provide adequate protection in all directions by referencing the registration and coordination obligations imposed on other Commission licensees. *See, e.g.* Google at 10-11. But WMTS licensees are not like Fixed Satellite Service licensees, Part 101 licensees, or broadcasters who are licensed wireless microphone users; each of these categories are sophisticated users of wireless telecommunications services. Hospitals “licensed by rule” to operate WMTS systems are in the primary business of providing health care, and the Commission expressly made the WMTS a “license by rule” service in recognition that the burden of individually licensing each system would overwhelm the healthcare community. Because it is the unlicensed community that seeks to encroach into previously protected spectrum on a non-interfering basis, any burdensome tasks needed to allow such encroachment clearly should fall on that community, and not incumbent WMTS licensees. Indeed, if Google is so confident that the time needed to determine and register perimeters can be done in a few minutes, perhaps it could simply provide the required information for all incumbent WMTS licensees in relatively short order.

¹⁰ Google at 22 citing *Amendment of Part 15 of the Commission's Rules for Unlicensed White Space Devices*, Notice of Proposed Rulemaking and Order, ET Docket No. 16-56, RM-11745, FCC 16-23 (rel. Feb. 26, 2016) (“*TVWS Database NPRM*”)

¹¹ Microsoft at 11 (emphasis added).

And the Commission now has also acknowledged this concern (*i.e.*, the security and integrity of device-provided location information) in the *TVWS Database NPRM*.¹² Thus reconsideration is warranted to properly consider these critical questions.

A fundamental flaw in the parties' arguments is the premise that *WMTS licensees are not entitled to protection from interference in all situations where it is likely to be suffered*. To be clear, the Coalition recognizes that "spectrum sharing" to maximize spectrum use is the policy of the Commission, even in Channel 37. But as the Commission has consistently emphasized, the separation distances established in this proceeding must protect *all* WMTS systems from *any* harmful interference. Unlike reception to television or commercial mobile services, or to many other licensed wireless systems, the Coalition has demonstrated that *any* loss of WMTS monitoring data presents a real danger to critical care patients being monitored— and potentially for a significant period of time if the interference cannot be quickly resolved. The Commission should recognize from the few incidents of DTV interference to wireless medical telemetry systems that led to the creation the WMTS that a very conservative approach is, in fact, not only entirely appropriate, but essential, to assuring that interference will not occur to incumbent WMTS licensees.

Google and Microsoft also argue that the Commission should reject calls for the Commission to establish an institutional review board (IRB) to ensure patient safety with respect to the investigational trial deployments that it now intends to use to "validate and, if needed,

¹² See *TVWS Database NPRM* at 2 ¶ 12: "[t]he success of the database access paradigm in preventing harmful interference to licensed and other protected services thus depends in significant part on the accuracy of the location data provided to a database by the white space devices it serves," and at 6 ¶ 17: "incorrect data for fixed white space devices increases the likelihood of interference and diminishes our ability to resolve any interference that may occur, and we must therefore take corrective actions to improve conditions as deployment of unlicensed white space devices grows . . . [I]t is important to improve the quality and integrity of the information in the databases to avoid the potential of harmful interference to protected services."

adjust” its rules by exploring the effects on hospitals’ actual WMTS systems that are in use for critical patient monitoring.¹³ Both parties argue that the Coalition should have suggested establishing an IRB earlier in the proceeding and also that an IRB must not be necessary for the Commissions trials because the Coalition did not mention such a consideration with respect to its own testing. Both arguments are unfounded.

First, the Coalition did not know that the Commission was considering these types of investigational trials involving WMTS patients prior to the R&O because the Commission never suggested such trials. With respect to the necessity for an IRB for the Commission’s investigational trials versus in the Coalition’s testing, the two are easily distinguished. The Coalition’s testing was designed to prevent any possibility of disrupting patient monitoring by isolating the interference energy to a subset of the WMTS frequencies that were not in use for monitoring actual patients, and the Coalition further employed directional antennas to ensure that significant interference energy was not radiated towards other hospitals.¹⁴ By contrast, the investigational trials that the Commission now envisions would apparently involve actual TVWS devices transmitting across the entire WMTS band near hospitals where the same frequencies are in use for monitoring of actual patients. Indeed, the Commission seems to tacitly acknowledge the possibility of interference occurring at hospitals when it anticipates the need to “adjust our approach so that critical WMTS systems do not experience harmful interference.”¹⁵

¹³ R&O at 9643 ¶ 221.

¹⁴ To ensure validity, the Coalition testing did employ the participating hospitals’ actual WMTS antenna infrastructures. It is also important to note that, although Microsoft and Google criticized the Coalition’s use of directional transmit antennas and the Commission adopted that criticism as part of its rationale for discounting the Coalition’s test results, the Coalition had, in fact, reduced the conducted transmit power to properly adjust for the transmit antenna gain and accurately simulate TVWS device radiated power spectral density.

¹⁵ R&O at 9643 ¶ 221. Even the FCC’s own optimistic TM91-1 propagation model suggests that received interference will often substantially exceed the immunity levels of WMTS systems.

On reconsideration, the Commission should not ignore the significant amount of evidence in the record that the R&O failed to appropriately consider in calculating the adopted separation distances – hundreds of hospitals’ letters describing the environment in which their WMTS systems are operating; pictorial representations of over 100 hospitals showing the variety of surrounding terrain and building clutter in which each individual hospital is located; and test results in three different hospital settings that demonstrate at least one direction in which interference occurred. That same evidence demonstrates that these are not merely “hypothetical” or “worst possible scenarios” that are unlikely in actual deployments,¹⁶ but instead an appropriately representative sample of what are likely to be the most vulnerable circumstances for a significant number of WMTS installations. It is those likely vulnerabilities that the Commission must protect from interference.

¹⁶ Both Microsoft and Google take a similar tactic in arguing that the Commission’s use of a 3m antenna height for personal portables is appropriate, since the only way that these devices could be used at higher heights would be if they were indoors, in which case “building loss will more than offset any additional signal propagation that would have come from increased elevation.” Microsoft at 5-6, Google at 5. Although insisting that urban hospitals will be surrounded by tall buildings that will shield the WMTS system from interfering signals, these parties simply refuse to acknowledge that personal portable devices will likely be operating in those same tall buildings. Far from being the “extreme case” as these parties claim, it is hardly unrealistic to expect that these portable devices will often be used across the street and at the very same height as the WMTS system antennas, with very little building loss between transmitter and receiver.

In sum, neither Microsoft nor Google has provided any valid substantive or procedural basis for rejecting the merits of the Coalition's request for reconsideration of the R&O.

Respectfully submitted,

THE WMTS COALITION

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CERTIFICATE OF SERVICE

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