Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, DC 20554

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| In the Matter of | ) | |
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| 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, and | ) | ET Docket No. 14-165 |
| | ) | |
| 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 Auctions | ) | GN Docket No. 12-268 |

To: The Commission

**REPLY COMMENTS OF THE WMTS COALITION**

Dale Woodin

Executive Director
The American Society for Healthcare Engineering of the American Hospital Association

155 North Wacker Drive
Suite 400
Chicago, IL 60606

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## EXECUTIVE SUMMARY

The Commission's principal focus in this proceeding must be on developing rules that will ensure that the operation of unlicensed devices in Channel 37 does not cause harmful interference to any WMTS system. The various commenters urging smaller protection distances, higher power levels and the allowance of personal portables in Channel 37 have gone down the wrong path in seeking to maximize the marketplace for unlicensed devices at the expense of adequately protecting WMTS licensees from interference. Parties who have suggested that the Commission's bases for calculation of protection distances around WMTS systems are too conservative have used assumptions about the environment in which WMTS systems are operating that have no supporting factual evidence. To the contrary, the Commission's calculations also failed to appropriately characterize the WMTS operating environment for most hospitals, resulting in separation distances that are clearly inadequate to protect WMTS from co-channel unlicensed operations.

Parties have also suggested an approach that would consider the individual characteristics of each WMTS licensee's deployment in determining each WMTS system's protection zone, using information that is not currently in any database. Such an approach would be unduly burdensome on WMTS licensees, unrealistic in terms of the work that would be needed to provide the required data into the databases, and grossly optimistic in terms of the ability of the WMTS licensees, database managers or other third parties to achieve even close to the level of precision that would be needed to protect WMTS systems from interference using a site-by-site individualized analysis.

Parties urging the Commission to allow personal/portable TVWS devices to operate in Channel 37 continue to rely on still untested and untried geolocation technology that will be used

in what the proponents hope will be a huge consumer market for TVWS devices. It does not disparage these devices for the Commission to acknowledge, and take into account in its analysis of interference potential, that rigorous quality controls throughout the product lifecycle (including during design, supply chain, manufacturing, installation, service, post-market surveillance and corrections) cannot be assured in such a market. Even a very miniscule failure rate spread over millions of personal portables would result in numerous potential incidents of interference to WMTS patient monitoring.

Finally, the proposal to allow Class A wireless microphones – but not other unlicensed devices -- to operate in Channel 37 consistent with appropriate protection distances and power levels may warrant further consideration, particularly if it would satisfy the Commission's objective of expanding the use of Channel 37 in those areas where it is not being utilized for WMTS.

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To: The Commission

## REPLY COMMENTS OF THE WMTS COALITION

The WMTS Coalition hereby replies to those commenters who discussed the FCC's proposals in the above-referenced proceeding[1] for allowing unlicensed devices to operate in Channel 37. Those commenters who suggested that the Commission's proposals do not go far enough in authorizing unlicensed devices to utilize the 608-614 MHz band ("Channel 37") have either misstated what the Commission's statutory and policy obligations are or mischaracterized the environment in which WMTS systems are operating. As a result, these parties urge adoption of proposals that are clearly inadequate for protecting WMTS licensees from interference, and which must therefore be rejected by the Commission. Rather, the Commission must re-evaluate

[1] 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, 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 Auctions, *Notice of Proposed Rulemaking*, 29 FCC Rcd.12248 (2014) ("NPRM").

the method and assumptions it has used for developing rules for the operation of unlicensed devices in Channel 37 in order to assure that interference will not occur to any WMTS licensee using this band for critical patient care.

## I. THE COMMISSION'S GOAL MUST BE TO DEVELOP RULES THAT PROTECT ALL LICENSED WMTS SYSTEMS FROM INTERFERENCE, AND NOT SIMPLY TO SATISFY THE ALLEGED NEEDS OF UNLICENSED DEVICE MANUFACTURERS FOR DEVELOPING A MARKET FOR THEIR PRODUCTS.

When the FCC decided that unlicensed devices would be authorized to use Channel 37, the Commission committed to developing rules that would protect WMTS and Radio Astronomy licensees from interference. The Commission has consistently recognized the importance in the healthcare ecosystem of WMTS systems. In fact, Channel 37 was set aside for WMTS expressly "to protect the public safety by providing spectrum where medical telemetry equipment can operate without interference."[2] Because most hospitals will not have RF engineers on staff, any incident of interference is likely to be prolonged as it is investigated, potentially for days or even weeks, during which time the care of patients, many of whom are in critical situations, will suffer. To the extent the Commission allows unlicensed operations in Channel 37, the Commission's principal focus must therefore be on developing requirements that will ensure that the operation of unlicensed devices does not cause harmful interference to any WMTS licensee's system.[3]

Unfortunately, the proponents for the operation of unlicensed TV White Space devices ("TVWS" or "WSD") in Channel 37 do not focus on this fundamental obligation, but instead seek principally to assure that there is sufficient spectrum available in all areas of the country for

[2] *Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, Report and Order, ET Docket 99-255, 15 FCC Rcd 11206 (2000) (*WMTS Report and Order*) at para 11.

[3] *See* 47 C.F.R. § 15.19(a)(3).

the profitable marketing of their anticipated products. These parties argue that unless the FCC is very liberal in allowing the band to be used by unlicensed devices, the agency "could render Channel 37 unusable for unlicensed broadband operations in many parts of the country—a needless impairment of consumer broadband."[4] Microsoft, for example, leaves no ambiguity as to what it believes the Commission's primary purpose should be:

> WSD manufacturers and network operators require three nationwide, usable 600 MHz white space channels to make the 600 MHz band commercially viable for unlicensed technologies. Unlicensed operation on Channel 37 is essential to achieve this goal. . . . WSD manufacturers and network operators are counting on Channel 37 as one of the three white space channels that will be available nationwide after the incentive auction and repack. If the channel is entirely unavailable in urban centers, the WSD ecosystem will suffer.[5]

For these commenters, the risks to patient health and safety resulting from inadequate interference protection rules are apparently of secondary importance to the Commission's consideration, as long as a commercially viable market for their unlicensed products has been established. In this regard, these commenters view of the Commission's public interest obligations are simply wrong.

Clearly, and contrary to the views of Microsoft and other commenters, in authorizing unlicensed use of these bands the Commission's statutory and policy objective must first be to protect licensed WMTS services from harmful interference. And that is true even if the resulting rules may deny access to Channel 37 for unlicensed use in many areas of the country by only providing unlicensed devices access where WMTS (and Radio Astronomy) licensees are not

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[4] Comments of Microsoft Corporation, ET Docket No. 14-165 and GN Docket No. 12-268 ("Microsoft") at19. See also Comments of Google Inc., ET Docket No. 14-165 and GN Docket No. 12-268 ("Google") at 31: "[The proposals] would place the channel out of reach for most Americans, greatly compromising a benefit the Commission is working to achieve."

[5] Microsoft at 23.

using the band. To the extent that the unlicensed proponents have suggested rules that are likely, if not certain, to put the primary licensed services in peril of harmful interference from unlicensed users, adoption of such rules is clearly at odds with any rational view of the Commission's public interest obligations. Rather, the rules adopted in this proceeding must be premised on allowing unlicensed devices to share the spectrum only in those areas where they can do so without any possible threat of interference.

## II. THE PROPONENTS OF UNLICENSED SERVICES UNDERESTIMATE THE SIZE OF GENERIC PROTECTION ZONES AND/OR THE DIFFICULTY AND EXPENSE OF DETERMINING SITE-BY-SITE PROTECTION ZONES.

It is clear that the various commenters urging smaller protection distances, higher power levels and the allowance of personal portables in Channel 37 have gone down the wrong path in seeking to maximize the marketplace for unlicensed devices at the expense of adequately protecting WMTS licensees from interference. Rather, the Coalition believes that the more appropriate analysis has been provided by GE Healthcare ("GEHC") in its comments and supporting appendices.[6] GEHC has demonstrated that the separation distances proposed by the Commission are clearly inadequate to protect WMTS from co-channel unlicensed operations.[7] The Coalition agrees with GEHC that if the Commission chooses to go forward with its proposal to allow sharing of Channel 37, it should first revise its methodology to correct the errors and flaws identified by GEHC. Then, having devised new technical standards that can protect WMTS operations, the Commission should seek comment on those new standards.[8]

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[6] Comments of GE Healthcare, ET Docket No. 14-165 and GN Docket No. 12-268, April 4, 2015 ("GEHC Comments"), at 2, 6-14.

[7] GEHC has properly noted the FCC failure to justify deviating from the free-space propagation model in calculating a more accurate estimate of the distance needed to prevent interference to WMTS from unlicensed devices under the realistic scenario of line-of-sight propagation. *Id.* at 10.

[8] *Id.* at 2.

Google, Broadcom and Microsoft, on the other hand, all suggest that the Commission's bases for calculation of protection distances around WMTS systems are much too conservative. But these parties' attacks are based on assumptions that have no supporting factual evidence. For example, Google asserts that the FCC's proposal "overstates the required separation distances around medical facilities in most real-world situations, where closely spaced structures, dense vegetation, or terrain will reduce signal propagation."[9] But Google provides no factual evidence to support its view of "real-world situations." Broadcom blithely suggests, also without specific evidence of actual hospital environments, that "free-space propagation conditions are very unlikely to exist between a WMTS site and TVWS transmitter" and that the FCC "can safely assume that the TVWS signal will be obstructed by the exterior wall of the hospital and potentially the exterior wall of the structure in which the TVWS device is located."[10]

In fact, however, the WMTS Coalition and GEHC have already demonstrated, and will continue to place into the record additional evidence that shows, that the assumptions made by these parties are wrong. For example, as the Coalition noted, many WMTS licensees operate

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[9] Google at 19. Google purports to support its analyses with the Declaration of one of its system engineers, Donald Breslin. See Google Comments, Appendix A. Mr. Breslin's declaration suffers from the same broad assumptions about the hospital environment in which a WMTS system will be operating without any factual support on which such assumptions can be confirmed. For example, Mr. Breslin states (at page 4 of his Declaration) that "on our campus in Mountain View, California, Google conducted tests of exterior wall loss for commercial office buildings that are representative of hospital construction," without providing any basis for his determination of what a "representative hospital construction" in which a WMTS system is operating might be. Similarly he speculates (at page 6 of his Declaration) that "it is safe to assume that at least one additional commercial building wall will be intervening between the hospital and the nearest white space device," without noting even a single shred of evidence that this is likely to be the case for any significant percentage of hospitals in which WMTS systems are operating.

[10] Comments of Broadcom Corporation, ET Docket No. 14-165 and GN Docket No. 12-268 ("Broadcom") at23. See also Comments of Wi-Fi Alliance, ET Docket No. 14-165 and GN Docket No. 12-268, at 30 ("the TM 91-1 model underestimates building penetration loss, fails to adequately account for antenna heights, and fails to account for urban clutter loss.").

antennas that are located in windowed hospital rooms, where very little building loss will exist between the outdoor TVWS device transmitter and the indoor WMTS antennae. Contrary to the assumptions made by Broadcom, the WMTS database indicates that a significant number of WMTS systems are located on very high floors in the hospitals, where it is likely that no commercial buildings will exist to "intervene" between the TVWS device and the WMTS receivers, and where the impact of dense vegetation or terrain will have little impact on signal propagation from a TVWS device similarly located on higher ground, a rooftop or other structure.[11]

While none of Google, Broadcom or Microsoft provided real world evidence of the WMTS operating environment, GEHC did. Working in cooperation with ASHE and its technical partner Comsearch, GEHC conducted interference analyses at Inova Mount Vernon Hospital, in suburban Alexandria, Virginia. As noted in Appendices A and B attached to the GEHC comments, Inova Mount Vernon is six stories tall, has WMTS coverage on all floors, and has over 200 WMTS antennas installed with three antenna fields aggregated back to a central location on the 6th floor via the WMTS Distributed Antenna System ("DAS"). Since there are multiple instances of WMTS antennas located in patient rooms with windows on any given floor, the receiving antenna were placed in patient rooms generally mirroring the environment in which the Inova WMTS system operates.[12] As these tests demonstrated, and contrary to the

[11] In addition to the pictures contained in the test report attached to the GEHC comments (discussed infra) – which clearly show no intervening vegetation or buildings within miles of the WMTS system in many directions -- the Coalition attaches hereto as Exhibit A pictures taken from another urban hospital, this one located in downtown New Orleans, again demonstrating significant distances to the nearest "vegetation or buildings" in several directions.

[12] As GE Healthcare noted, the conditions in its test did not fully reflect realistic worst-case scenarios in several respects: only a single interferer was simulated and the victim telemetry transmitters were not positioned at the true outer limit of coverage area. Moreover, antenna diversity due to WMTS DAS field redundancy likely greatly limited the impact from

unsupported assumptions of Microsoft, Google and Broadcom, free space or near free space path loss can be expected from unlicensed devices located outdoors at near ground level to the perimeter of a hospital. More importantly, even this single test demonstrates that the protection criteria for WMTS systems currently proposed by the FCC are insufficient to avoid harmful interference to WMTS licensees.[13]

Microsoft, Google and Broadcom have also separately suggested a very different approach for minimizing the protection areas in which unlicensed devices may not operate while ostensibly retaining protection of individual WMTS licensees from interference. Instead of a uniform protection distance (no matter where that line may be drawn), they urge a rule that considers the individual characteristics of each WMTS licensee's deployment using information that is not currently in any database. To make this approach work, these parties would:

- require each WMTS licensee to register the perimeter of its site with either ASHE or one of the Commission's approved TVWS database providers;
- require those same WMTS licensees and database operators to collaborate to determine protection contours for each venue that was designed to reflect the line-of-sight characteristics in the area surrounding the WMTS system as it exists at that moment in time; and then
- allow the TVWS databases then to apply separation distances to these revised perimeters and surrounding characteristics in

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interference observed in the test. Because the primary purpose of DAS field redundancy is to mitigate single-point failures in DAS hardware and allow the system to continue to operate safely and effectively until such failure can be corrected, if interference were allowed to degrade system margin on the backup field, sudden and severe outages would be expected to occur in the event of hardware failure on the primary field.

[13] The Coalition is continuing its work with its member entities in order to provide additional record evidence of other "real world" environments in which WMTS systems are currently, or are likely in the future to be, operating, in order to establish more appropriate protection distances sufficient for safe operation of fixed TVWS devices under the variety of conditions in which they might be able to impact WMTS operations.

> determining when and where an unlicensed device could operate on Channel 37 (and presumably at what power).[14]

This approach does have the advantage of acknowledging that there likely will be many situations in which there will be no impediments to signals from the TVWS device being received by the WMTS antennae in a hospital. But the Coalition opposes adoption of such an approach as being unduly burdensome on WMTS licensees, unrealistic in terms of the work that would be needed not only by incumbent WMTS licensees, but also by all future WMTS licensees, and unrealistically optimistic in terms of the ability of the WMTS licensees, database managers or other third parties to achieve the level of precision needed to protect WMTS systems.

Google's suggestion that this approach can be handled by each WMTS licensee in a matter of minutes is both unrealistic in terms of the burden of the task, and, most importantly, inappropriate in terms of the target for such burden. To support its conclusions, Google relies on the "experience" of Mr. Andy Lee, a highly trained engineer in Google's Spectrum Database program.[15] Based on his own test using Google Earth to perform the steps that a WMTS site operator would undertake, Mr. Lee avers that "submitting WMTS site perimeters will require a small amount of work on the part of WMTS site operators" to add site information to a database in which each perimeter was represented by a polygonal shape that tracks the outline of the WMTS site's overall footprint.[16] From this "test" Mr. Lee opines that "once a user is familiar

[14] Google Comments at 22-23.

[15] *Id.*, Appendix B ("Lee Declaration").

[16] *Id.* at 3.

with the process, entering a single WMTS site perimeter should take no more than approximately 10-20 minutes."[17]

It is virtually impossible from his declaration to judge the validity of his conclusion, since Mr. Lee does not discuss how many WMTS systems he mapped in this test, the nature of the WMTS systems involved (*i.e.*, single hospital building, multi-building campus), the nature of the environment in which the systems were located (*e.g.*, rural, urban, suburban), or what training is necessary for a hospital employee to become sufficiently "familiar with the process."[18] The Coalition, however, doubts that Mr. Lee's "test" provides any valid basis on which the Commission could conclude that hospital personnel within each WMTS health care facility could complete the effort in 10-20 minutes.[19]

Nor does this clearly difficult task even start to achieve the depth of information that would be needed for each WMTS system in order to provide the full "picture" of the WMTS system's vulnerability to interference from an unlicensed TVWS device. Google clearly recognizes that these perimeter measurements are only part of the issue of interference protection. As Google (and Mr. Lee) go on to discuss, this plan contemplates that "parties could collaborate to adjust those perimeters based on line-of-sight information where that information is available. For example, the actual perimeter of a WMTS site would be adjusted outward if a

[17] *Id.*

[18] Moreover, there is no certainty that each (or even most) hospitals have someone who is relatively expert in, familiar with, and has access to, the necessary "tools" for this analysis, one of several assumptions that seems to underlie Mr. Lee's determination that it could be done easily once familiarity was achieved.

[19] *See* Lee Declaration at 3.

hospital faced an open field, but would track the building closely if there were obstructions—such as tall buildings—in the immediate vicinity of the site."[20]

Thus, beyond even the significant task of mapping of the perimeter, the WMTS licensee would also need to fill the database with specific information about the entire landscape surrounding the WMTS system – presumably based on the outermost location of each WMTS receiving antenna. Mr. Lee may try to minimize this effort by reference to one or more "Google-developed" tools, but the real world application of such a task would essentially require the WMTS licensee to determine and then characterize into a database at each WMTS antenna location what the surrounding environment looked like – and presumably update that information as the surrounding environment changed. Indeed, neither Google nor Mr. Lee discusses, much less considers, just how far away from the WMTS facility this mapping would be made; in the case of a 20-30 story WMTS licensee hospital, would the topography be mapped 3, 4 or 10 miles away? And if so, how often would this information need to be updated to account for changes?[21] Mr. Lee describes taking into account the open field next door to a hospital, but the impact on the potential for interference lies well beyond the immediate surroundings, particularly for WMTS systems that are located on the higher floors of multi-story hospitals.

In short, the Coalition seriously doubts that Mr. Lee or the other proponents of this approach have adequately analyzed the amount of effort that would be needed on the part of the

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[20] *Id*.

[21] To be truly accurate, the mapping of each WMTS system in the database would need to be regularly updated as changes in the surrounding neighborhood (*e.g*., old buildings torn down, new buildings erected, trees cut down or grown taller) were made. For example, the pictures in Exhibit A hereto show a crane in the distance, which may be in place to demolish an existing building or to construct a new one - -either of which activities would impact the information contained in the database. Who would be responsible for those updates? Clearly, the vast majority of WMTS licensees do not have the resources to engage in the initial "mapping" much less the regular updating.

over 2500 hospitals currently operating WMTS systems on Channel 37 (or each hospital that may newly deploy a Channel 37 WMTS system anywhere within its campus) to enter this information into a database. There is no record evidence to support the assertion that "this work could easily be accomplished for all relevant WMTS sites registered in the current WMTS database before the end of the 39-month implementation period for 600 MHz band wireless operations."[22]

To the contrary, the Coalition sees this as a herculean task, requiring significant time and effort to truly map, and regularly update, the external characteristics "surrounding" each WMTS system. The Coalition doubts that there are personnel within the typical WMTS licensee whose "job description" includes, or whom the Commission should be burdening with, this type of task, either upon the initial updating of the database proposed by Mr. Lee or with a new WMTS registration, or on a regular basis to account for changes in the surrounding areas. Nor could the Commission rely on third parties to do so, with any confidence as to the accuracy of the data on which interference protection must rely.[23] In short, the public interest will not be served by requiring health care facilities to incur such burdens themselves solely to improve the marketability of undefined unlicensed products that Google, Microsoft or Broadcom may choose to produce in the future.

[22] Lee Declaration at 3-4

[23] What Google and Mr. Lee are proposing ultimately is a highly complex frequency coordination process similar to that which would normally be used within a licensed service to protect incumbent licensees from interference from newer licensed systems. Before the Commission imposes such costs and burdens on the healthcare system, it must conduct a comprehensive cost-benefit analysis and impose any costs on the cost-causers, that is, the new entrants.

## III. THE COMMISSION SHOULD NOT ALLOW UNLICENSED MOBILE DEVICES TO OPERATE IN CHANNEL 37 UNTIL AFTER EXPERIENCE IS GAINED WITH UNLICENSED FIXED DEVICES.

The Coalition also disagrees with those who urge the Commission to allow personal/portable TVWS devices to operate in Channel 37. They posit that technology used in both Mode I and Mode II devices will be more than adequate to assure that these devices do not penetrate appropriately established separation distances. These parties continue to rely on still untested and untried geolocation technology that will be used in TVWS devices, and principally relied on in consumer-grade Mode II devices.

This reliance is particularly poorly placed in this case. As GEHC and the Coalition have explained in prior filings in these proceedings, the Commission has very limited experience with geolocation databases for unlicensed fixed devices, and no experience using such databases for personal-portable devices.[24] Yet the Commission's proposed rules would place the assurance of interference-free operation of WMTS systems entirely on the reliable and secure operation of these geolocation technologies. As the Coalition has previously noted, and Google, Microsoft and Broadcom now confirm, the hoped-for market for the TVWS devices that will be operating in Channel 37 would consist of millions of disparate, consumer-grade devices. The critical geo-positioning, database interface, and the radio control and security functions residing in these devices, are likely to be software-based, undoubtedly including many open-source and commercial off-the-shelf software components.[25] It does not disparage these devices for the Commission to acknowledge, and take into account in its analysis of interference potential, that rigorous quality controls throughout the product lifecycle (including during design, supply chain,

[24] GEHC at 18

[25] As GEHC has noted, the Commission has never claimed that its device certification program is adequate to ensure the dependable and secure operation of these critical functions in TVWS device software.

manufacturing, installation, service, post-market surveillance and corrections) cannot be assured in such a market.

Thus, the virtual certainty of some level of device failure, or simply the lack of adequate geolocation capability within buildings, added to the critical element in these devices of ***mobility*** significantly increases the possibility that these types of devices could operate within the protection zone still utilizing Channel 37 – creating a significant risk of interference to WMTS. Even a very small failure rate spread over millions of devices would result in numerous potential incidents of interference to WMTS patient monitoring.[26]

Nor is the case any stronger for allowing Mode I devices to operate in Channel 37. While it is true that they are supposed to have a limited range around the master, the portability of these products makes them a significantly greater risk than the risk involved with fixed devices when technology fails. While the Coalition remains highly concerned that even fixed devices, which are supposed to be professionally installed,[27] present some threat of interference operating at conservatively established protection distances, at least if interference occurs, it can be traced to the fixed locations (which are required to be registered in the TVWS database). That will not be the case with mobile devices, and there is simply no basis for authorizing mobile use of Channel 37 at this time. With respect to opening up Channel 37 to potential interference from unlicensed uses, the Commission should walk (initially authorizing fixed devices only) before it runs.

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[26] Despite this potential threat from consumer-grade products, the proponents of mobile unlicensed devices do not address how interfering devices will be quickly shut down.

[27] Even fixed devices present serious concerns for the Coalition, as the rules relating to identification of the location of these devices are clearly not "air-tight." For example, under the current rules there are little or no requirements controlling the qualifications of the professional installers and the quality of their work. And under current rules, professionally installed fixed devices may omit automated geolocation function (*e.g.*, GPS) and rely on manual location configuration by the installer when accessing the database for permission to transmit. Obviously this approach is prone to inadvertent, if not intentional miscalculation of location.

## IV. WIRELESS MICROPHONES MAY BE A BETTER SHARING PARTNER FOR CHANNEL 37.

The Coalition finds some merit in the comments of Sennheiser Electronic Corporation, which suggests allowing Class A wireless microphones – but not other unlicensed devices -- to operate in Channel 37 consistent with appropriate protection distances and power levels. As Sennheiser notes,

> [i]nstead of allocating [Channel 37] to white space use, one that in ten years after approval still has not produced any significant deployment or a certified mobile device, the public interest would be better served by allowing licensed Class A users to share Channel 37 with RAS and WMTS. . . . Wireless microphones have a demonstrated history of successfully avoiding protected television service contours, and in this same way will be able to avoid RAS and WMTS installations.

The Coalition certainly agrees that the public interest is not served by allowing unlicensed TVWS devices into Channel 37. The Coalition also appreciates the success that Class A wireless microphone users – being licensed, professional users, specifically those eligible for Part 74 licensing – have had in operating only outside FCC designated protection zones. The Coalition also understands that the wireless microphones Sennheiser seeks to permit in Channel 37 have a relatively limited scope of use and location (*e.g.*, theaters, film sets, news events), and so would be less likely to be used in closer proximity to WMTS facilities. Moreover, any such use would still need to be limited to areas outside an appropriately calculated protection zone, because assurance against interference would be no less important for WMTS licensees. While the Coalition remains concerned by the mobile and itinerant nature of the use of wireless microphones, which could result in harmful interference that could not be easily identified and cured, the experience of Part 74 licensees with a coordination regime using a database like the ASHE database gives the Coalition some hope that sharing with a limited group of wireless microphones may create less risk of interference than the proposal to permit

unlicensed TVWS devices generally to share this critical channel. As such, the Coalition sees Sennheiser's proposal as one that warrants further consideration, particularly to the extent that it would satisfy the Commission's objective of expanding the use of Channel 37 in those areas where it is not being utilized for WMTS.

## V. CONCLUSION

The Commission must consider first how to protect all (not just "typical") WMTS licensees from any possibility of interference from unlicensed users and, only when that objective has been reached, establish the guidelines for operation of other secondary uses of Channel 37. The Commission must reject the pleas of those who would urge less caution solely to expand the marketability of their unlicensed devices.

Respectfully submitted,

THE WMTS COALITION

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By: Dale Woodin

Executive Director
The American Society for Healthcare Engineering
of the American Hospital Association

155 North Wacker Drive
Suite 400
Chicago, IL 60606

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# EXHIBIT A