

May 1, 2014

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

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

Dear Ms. Dortch:

On April 29, 2014, Matthew Grubis, Chief Engineer for Communications and Informatics, GE Healthcare; Michael Fitzpatrick, Senior Manager and Senior Counsel, GE; Orrin Marcella, Manager of Government Relations, GE Healthcare Americas; Neal Seidl (by telephone) of GE Healthcare, and Ari Fitzgerald, counsel to GE Healthcare, held three meetings with Federal Communications Commission (“Commission” or “FCC”) officials. The first meeting was with Renee Gregory, Legal Advisor to Chairman Tom Wheeler. The second meeting was held with Louis Peraertz, Legal Advisor to Commissioner Mignon Clyburn. The third meeting was held with Brendan Carr, Legal Advisor to Commissioner Ajit Pai. At each meeting, the parties discussed the attached slide presentation and why the Commission should both refrain from permitting unlicensed devices to operate in Channel 37 until technical limits can be developed that fully protect wireless medical telemetry service (“WMTS”) operations and impose a coordination requirement for mobile base stations operating near Channel 37. The parties also discussed the attached list of FCC proceedings, including the Commission’s most recent 5 GHz proceeding used to allow unlicensed devices to operate co-channel with incumbent services outdoors in the U-NII-1 band, at the meetings with Mr. Peraertz and Mr. Carr, noting that the Commission has not in the past indicated that unlicensed devices will be allowed to operate co-channel with previously licensed incumbent services without first indicating the technical rules that would apply to the unlicensed operations to protect the incumbent services from interference, and provided the same list of proceedings to Jonathan Sallett, Acting Commission General Counsel.

Consistent with section 1.206(b)(2) of the Commission’s rules, please associate this letter with the above-referenced docket.

Respectfully submitted,

/s/ Ari Q. Fitzgerald

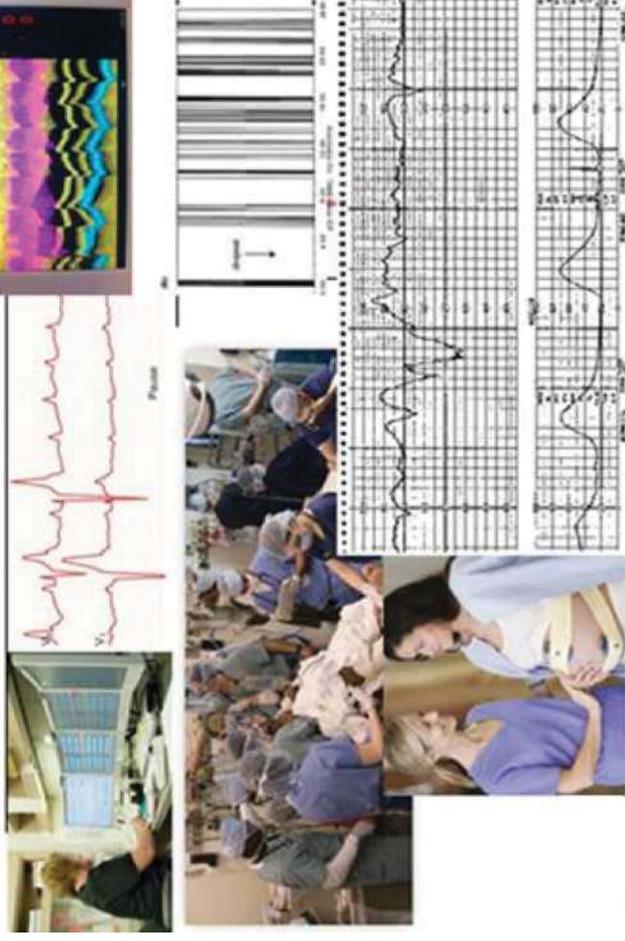
#### Attachments

cc: Renee Gregory  
Louis Peraertz  
Brendan Carr  
Jonathan Sallett

# Impact of the Incentive Auction Proceeding on WMTS Use in Channel 37

Presentation to the FCC  
GN Docket No. 12-268

April 29, 2014



# Agenda

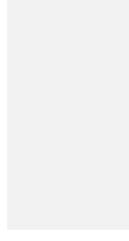
1. Introduction to WMTS
2. WMTS's Low Tolerance for Interference
3. Interference Mitigation Review
4. Part 27 Mobile Downlink Concerns
5. Request

# Introduction to WMTS

- Channel 37 wireless medical telemetry service (“WMTS”) equipment is routinely used in hospitals and other healthcare facilities in fetal monitoring and cardiac rehabilitation.
- By allowing healthcare providers to continually monitor their patients’ physiological data, WMTS equipment plays a critical role in patient care.
- WMTS enhances patient mobility and comfort, reduces medical complications, creates workflow efficiencies, and significantly decreases healthcare costs.

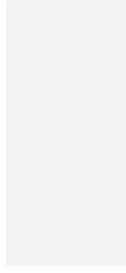


Imagination at work



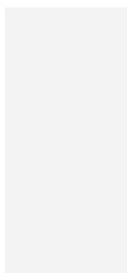
# As a critical safety service, WMTS cannot tolerate interference

- Just one instance of interference to WMTS could wipe out patient monitoring for a large portion of a facility's WMTS devices, overwhelm its staff, and endanger its patients.
- Channel 37 is generally a very “quiet” band, and existing systems have been designed to take advantage of this (*i.e.*, with very low transmit power and multi-day battery life); if even low-level extrinsic interference is introduced, it could negatively affect WMTS's reliability.
- A single unlicensed device transmitting at the fixed TVBD EIRP limit of 18.6 dBm/100 kHz could cause significant desensitization to WMTS facilities within 21 km.
- A single unlicensed device transmitting at the portable TVBD EIRP limit of 2.6 dBm/100 kHz could cause significant desensitization to the WMTS facility within 3.3 km.



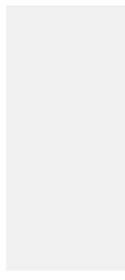
# Interference mitigation techniques being considered may not protect WMTS from unlicensed devices

- The use of exclusion zones and geo-location databases is particularly problematic.
- Very large exclusion zones would be needed to protect Channel 37 WMTS from realistic worst-case scenarios (line of sight propagation), which may cause large portions of major urban areas to be unavailable for unlicensed use.
- The geo-location database concept remains largely untested, and serious concerns exist regarding the reliability and security of the devices, databases and device-database access protocols.
- Google's database, for instance, uses only hard-coded URLs and lacks secure authentication, which makes it vulnerable to security and reconfiguration threats.



# Part 27 Mobile Downlink Coordination

- The proposed 3 MHz guard band between mobile downlinks and Channel 37 will not be sufficient to prevent interference in all cases.
- Mobile base stations located very near to WMTS installations will require more stringent emission limits than those proposed in the NPRM.
- Rather than impose more stringent limits on all mobile base stations, a more efficient approach would be to adopt a case-by-case approach.
- For instance, the rules could require Part 27 licensees to check the WMTS database before deploying a mobile base station and make accommodations when necessary.
- To provide further flexibility, the rules could exempt from such coordination mobile base stations that meet an optional, more stringent emissions mask (e.g., by simply adding extra filtering between transmitter and antenna).



# Request

We ask that the FCC refrain from indicating that unlicensed devices will be permitted to operate in Channel 37 until technical limits are developed that are shown to fully protect WMTS, and impose a coordination requirement for mobile base stations operating near Channel 37.

## FCC Rulemakings to Allow Co-Channel Operation of Unlicensed Devices in Spectrum Used for Licensed Services

### First U-NII Proceeding (1996-1997)

- Notice of Proposed Rulemaking<sup>1</sup>
  - Proposed to allow U-NII devices to operate at 5.15-5.35 GHz and 5.725-5.875 GHz.
- Report and Order<sup>2</sup>
  - Found that, with appropriate technical requirements, U-NII devices can operate on these bands while protecting primary operations.
  - Amended Part 15 to allow U-NII devices to operate at 5.15-5.25 GHz (U-NII-1), 5.25-5.35 GHz (U-NII-2A), and 5.725-5.825 GHz (U-NII-3).
  - Adopted technical standards to prevent interference to licensed services.

### Second U-NII Proceeding (2003)

- Notice of Proposed Rulemaking<sup>3</sup>
  - Proposed to allow U-NII devices to operate at 5.47-5.725 GHz.
- Report and Order<sup>4</sup>
  - Found that, with new technical requirements, U-NII devices can operate on this band while protecting incumbent systems.
  - Amended Part 15 to allow U-NII device operation at 5.47-5.725 GHz (U-NII-2C).
  - Modified technical standards to prevent interference to licensed services.

### Third U-NII Proceeding (2013-2014)

- Notice of Proposed Rulemaking<sup>5</sup>
  - Sought comment on allowing U-NII devices to operate at 5.35-5.47 GHz (U-NII-2B) and 5.85-5.925 GHz (U-NII-4).
- First Report and Order<sup>6</sup>
  - Allowed outdoor U-NII operations in the U-NII-1 band after finding that it could do so while protecting licensed Mobile Satellite Service operations from harmful interference.
  - Declined to act with regard to the U-NII-2B or U-NII-4 bands because of interference concerns.
    - **“Due to the ongoing [technical] analyses, the Commission is not addressing those bands in this First R&O.”**

---

<sup>1</sup> *Amendment of the Commission’s Rules to Provide for Unlicensed NII/SUPERNet Operations in the 5 GHz Frequency Range*, ET Docket No. 96-102, Notice of Proposed Rulemaking, 11 FCC Rcd 7205 (1996).

<sup>2</sup> *Amendment of the Commission’s Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, Report and Order, 12 FCC Rcd 1576 (1997).

<sup>3</sup> *Revision of Parts 2 and 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 03-122, Notice of Proposed Rulemaking, 18 FCC Rcd 11581 (2003).

<sup>4</sup> *Amendment of the Commission’s Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, Report and Order, 18 FCC Rcd 24484 (2003).

<sup>5</sup> *Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, Notice of Proposed Rulemaking, 28 FCC Rcd 1799 (2013).

<sup>6</sup> *Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, First Report and Order, FCC 14-30 (rel. Apr. 1, 2014)

### **Ultra-Wideband Proceeding (1998-2002)**

- Notice of Inquiry<sup>7</sup>
  - Initiated investigation into the possibility of permitting the operation of ultra-wideband (“UWB”) systems on an unlicensed basis under Part 15 in bands used for licensed services.
- Notice of Proposed Rulemaking<sup>8</sup>
  - Proposed to amend Part 15 to allow the use of UWB devices on an unlicensed basis.
- Public Notice<sup>9</sup>
  - Requested comment on two NTIA studies regarding the potential for UWB systems to cause harmful interference to authorized services.
- Report and Order<sup>10</sup>
  - Found that, with appropriate technical standards, UWB devices can operate using spectrum occupied by existing radio services without causing interference.
  - Amended Part 15 to allow UWB devices in spectrum occupied by existing radio services.
  - Established technical standards that “may be overprotective” and stated that the FCC would revisit those rules in the future.

---

<sup>7</sup> *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmissions Systems*, ET Docket No. 98-153, Notice of Inquiry, 23 FCC Rcd 16376 (1998).

<sup>8</sup> *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket No. 98-153, Notice of Proposed Rulemaking, 15 FCC Rcd 12086 (2000).

<sup>9</sup> *Comments Requested on Test Data*, ET Docket No. 98-153, Public Notice, 16 FCC Rcd 2265 (2001).

<sup>10</sup> *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, ET Docket No. 98-153, 17 FCC Rcd 7435 (2002).