January 30, 2013

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

Re: ET Docket No. 08-59, Amendment of the Commission's Rules to Provide Spectrum for the Operation of Medical Body Area Networks ("MBANS")

Dear Ms. Dortch,

On January 28, 2013, representatives of Philips Healthcare ("Philips"), GE Healthcare ("GE"), and the Aerospace and Flight Test Radio Coordinating Council ("AFTRCC") ("Joint Parties") discussed issues in their Petition for Reconsideration in a meeting with staff of the Commission's Office of Engineering and Technology. Participants are listed in the attachment to this filing.

For purposes of the discussion, the issues in the Joint Parties' Petition for Reconsideration were discussed in the order presented in the Petition.

- The definition of "healthcare facility" should be narrowed so as to include only "a hospital or other establishment that offers beds for use beyond a 24-hour period in rendering medical treatment, including government hospitals such as Veterans Administration hospitals."
    - The parties emphasized that fewer patients need monitoring at smaller clinics and offices used for less critical care, and patients will have full access to MBANs using the upper unrestricted 2390-2400 MHz band due to the smaller size and reduced patient concentration at such facilities. Significantly, the proposed standard for MBAN use, IEEE 802.15.6, will support approximately 18 patients in a typical office setting using the 10 MHz of the upper band before any frequency re-use methods are applied.
    - Use of the AMT spectrum (2360-2390 MHz) in such settings therefore not only is unnecessary, but would significantly multiply opportunities for interference; create a major coordination burden; and likely complicate efforts to resolve instances of interference, should any occur, given the general lack of on-site IT and radio spectrum expertise at doctors' offices and clinics not offering in-patient service (beds for 24-hour care).

- Definition of MBAN should be amended to include "one or more sensors."

- Definition of "body-worn device" should be clarified or modified so as to not exclude bedside devices such as IV pumps, bedside monitors, etc. that can and should participate in the patient's MBAN network to enhance care and record-keeping.

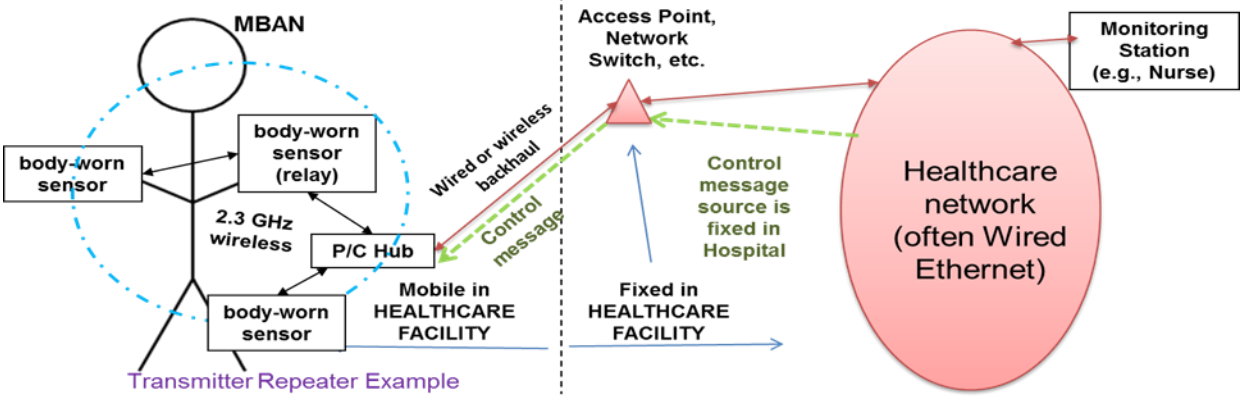
- Topology should not be limited in the unrestricted 2390-2400 MHz band. The current limitation is unnecessary and limits MBAN capabilities. Control messages and other limitations needed to ensure coexistence with AMT in the shared 2360-2390 MHz band are not necessary in the upper unrestricted band. Devices that operate in both bands can be tested and authorized separately for each band.

- Topology restrictions in the shared 2360-2390 MHz spectrum should be amended to permit beneficial flexibility while maintaining controls needed to prevent interference to AMT. We request treatment similar to that in the MedRadio rules for interference management only and would allow P/C to P/C communication for interference management while excluding P/C-to-P/C transmission of a 'control message.' Prohibiting transmission of 'control messages' from one P/C to another P/C will help ensure compliance with the FCC's prohibition on outdoor MBAN use in 2360-2390 MHz band. This change would enhance spectrum efficiency by allowing more devices to share the same frequency and is consistent with the IEEE 802.15.6 standard, which includes two-hop star topology. Device compliance can be assured during the equipment authorization process.

- In the shared 2360-2390 MHz band, allow limited communication between a maximum of two body-**worn devices** to relay information from/to the P/C or hub/coordinator. Allowing this configuration would help networks cope with the body-worn low power devices or link interruption and is consistent with the IEEE 802.15.6 standard, which includes two-hop star topology. See example diagram E1.

- In the shared 2360-2390 MHz band, separate concept of hub/coordinator from the P/C device. This would allow either a P/C or one body-worn device in the MBAN to act as a hub/coordinator transmitter. See example diagram E2.

Example E1: MBAN in Healthcare



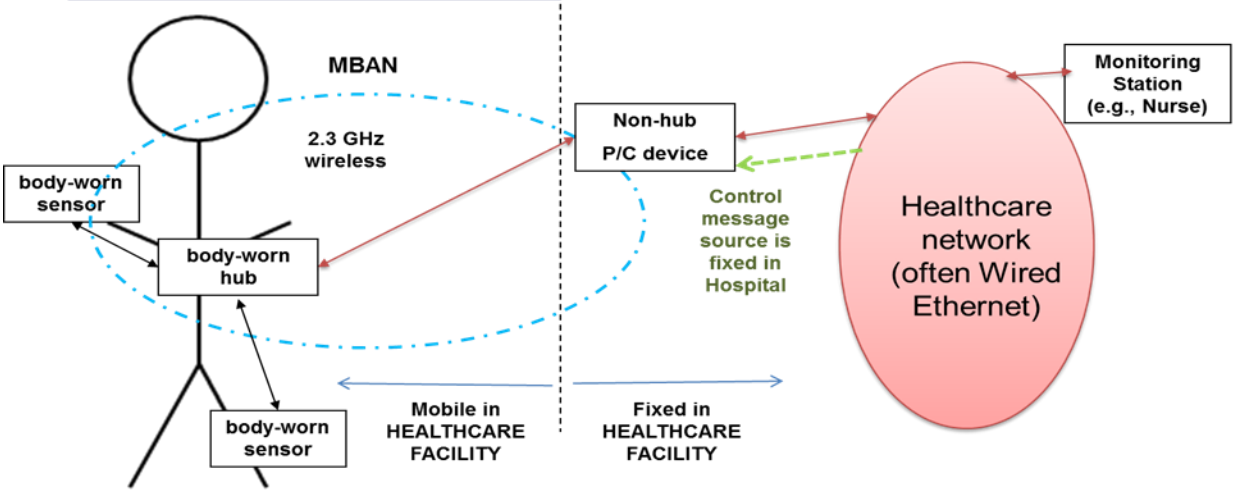
Note: A transmitter repeater is device that can measure patient data and relay other sensor data. All of which can be configured on the body.

This is an example of a possible MBAN configuration. Multiple configurations are possible.

The Control message limits MBAN programmer/control transmitters and body-worn devices to coordinated portion of 2360-2390 MHz band; any failure to deliver the Control message causes MBAN devices to use default spectrum outside 2360-2390 MHz band. If body-worn device loses communication with P/C it will cease operation in 2360-2390 MHz

Terms:
P/C Hub = MBAN device having programmer/ control and hub/coordinator functions
Sensors = non-hub MBAN body-worn devices.

Example E2: MBAN in Healthcare



The Control message limits MBAN programmer/control transmitters and body-worn devices to coordinated portion of 2360-2390 MHz band; any failure to deliver the Control message causes MBAN devices to use default spectrum outside 2360-2390 MHz band. If body-worn device loses communication with P/C it will cease operation in 2360-2390 MHz

Terms:
Non-hub P/C device = MBAN device with programmer/control function only
Body-worn hub = MBAN body-worn device with hub/coordinator function only
Sensors = non-hub MBAN body-worn devices.

- All MBAN devices, including body-worn devices, should be required to cease transmitting in the 2360-2390 MHz band in the absence of a control message at the P/C. In addition, body-worn devices should be required to stop transmitting in 2360-2390 MHz if they lose communication (which may possibly occur through a hub or relay) with their controlling P/C.

- Current Section 95.1209 appears to limit MBAN body-worn device transmissions to a one-to-one poll from the P/C. MBAN protocols based on IEEE 802.15.6 are likely to use more efficient MAC techniques, such as TDMA, and communication with the P/C may be via a hub. Section 95.1209 therefore should be modified to allow use of the more efficient MAC techniques.

- Section 95.1223(a) should be clarified or amended to make express the healthcare facilities' responsibility to immediately cease transmissions on any frequencies causing interference to AMT operations.

- Registration should be per MBAN site, not per-device, with type(s) and count(s) of P/C devices as attributes of the registration.

- MBAN devices, such as disposable sensors, should not be registered or require coordination separate from the P/C transmitters.

- Sections 95.1223(c) and 95.1225(b)(2) should be amended to provide, or it should otherwise be clarified, that the MBAN coordinator must work with the AMT coordinator on LOS findings and MBAN facility changes.

- Section 95.1213 should be amended to permit reasonable accommodation of MBAN device antennas in the unrestricted upper band (2390-2400 MHz), such as allowing outside antennas up to 5 feet above a building, so as to permit MBAN use on high-rise apartment balconies and to facilitate coverage on residential grounds.

- Section 95.1213 should be amended to provide that only permanently-affixed antennas are permitted for MBAN devices that operate in the shared spectrum (2360-2390 MHz). This limitation would eliminate the possibility of inadvertent increases in radiated power and the attendant increase in interference potential.

- The labeling requirement contained at Section 95.1225(b)(2) should be strengthened and required to be prominently displayed in ALL CAPS in user documents.

Finally, Commission staff and Messrs. Keane and Yorkgitis discussed arrangements that AFTRCC contemplates for effecting its part of the coordination of MBAN systems with AMT facilities, having in mind the anticipated volume of such proposals.

Pursuant to Section 1.1206 of the Commission's Rules, this letter is being electronically filed in Docket ET 08-59 and a copy emailed to each FCC staff participant. Please refer any questions to David Siddall at the address below.

Respectfully submitted,

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Attachments

ATTACHMENT

Attendees at FCC Meeting January 28, 2013

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Brian Butler
Steve Jones
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