



January 14, 2011

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

Dear Ms. Dortch:

On January 13, 2011, representatives of the Aerospace & Flight Test Radio Coordinating Council ("AFTRCC"), Philips Healthcare ("Philips") and GE Healthcare ("GE") met with staff from the Commission's Office of Engineering and Technology, Wireless Telecommunications Bureau, and Office of Strategic Planning & Policy Analysis. The meeting participants are listed in Attachment A to this letter.

The purpose of the meeting was to present to the Commission a comprehensive proposal jointly agreed-upon by AFTRCC, Philips and GE for resolving the spectrum sharing issues raised in ET Docket No. 08-59. The proposal employs a combination of propagation prediction methods, traditional co-ordination registration and unique electronic key and beacon approaches that together would enable reliable sharing of the 2360 - 2390 MHz band between primary aeronautical mobile telemetry ("AMT") operations and new secondary medical body area network service ("MBANS") telemetry operations in healthcare facilities. In addition, the 2390 - 2400 MHz is proposed for use by MBANS devices on a secondary basis.

The details of the proposal are contained in the slide presentation enclosed as Attachment B to this letter. The complete proposed draft rules upon which this joint industry proposal is based are at Attachment C to this letter.

This proposal represents the culmination of 15 months of discussion, analyses, and negotiation among and between the named parties. The parties strongly urge timely adoption of their proposal and are available to the Commission and its staff to discuss any aspect of their proposal. Swift adoption of the joint proposal would ensure continued interference - free AMT operations while enabling an exciting new category of wireless medical devices that promise to improve significantly the quality of patient care and monitoring.

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Swift adoption of the proposal also would go a long way toward achieving many of the health-related objectives of the Commission's National Broadband Plan. Finally, the joint proposal should serve as a template for other parties to follow in other spectrum proceedings by utilizing sound spectrum analytical tools and modern technologies to more efficiently employ the nation's scarce spectrum resources.

This letter and its attachments are being filed electronically in ET Docket No 08-59 and emailed to the Commission participants detailed in Attachment A.

Respectfully,



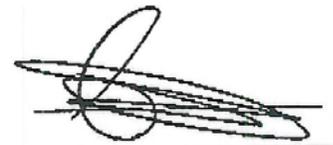
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Attachments: (A) Attendees  
(B) Presentation  
(C) Proposed Rules

# **ATTACHMENT A**

Attendees at FCC meeting January 13, 2011

## **FEDERAL COMMUNICATIONS COMMISSION**

### Office of Engineering and Technology

Julius Knapp  
Bruce Romano  
Geraldine Matisé  
Walter Johnston  
Rashmi Doshi  
Mark Settle  
Jamison Prime  
William Hurst  
Peter Georgiou  
Brian Butler  
Steve Martin  
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### Office of Strategic Planning & Policy Analysis

Kerry McDermott

### Wireless Telecommunications Bureau

Scot Stone

## **AEROSPACE & FLIGHT TEST RADIO COORDINATING COUNCIL (AFTRCC)**

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Tom Fagan (Vice-Chair, AFTRCC)  
Dan Jablonski (Consultant to AFTRCC; Johns Hopkins University,  
Applied Physics Laboratory)  
Frank C. Weaver (Boeing)  
Joe Cramer (Boeing)  
Giselle Creeser (Lockheed Martin)  
Marc Ehudin (Textron)  
Bruce Olcott (Counsel to Boeing; Squire, Sanders & Dempsey, LLP)  
Danny Hankins (Cessna)  
Chip Yorkgitis (Counsel to Raytheon; Kelley Drye & Warren LLP)

## **GE HEALTHCARE**

Ari Fitzgerald (Counsel to GE Healthcare; Hogan Lovells US LLP)  
Neal Seidl (GE Healthcare)  
David Davenport (GE Global Research)

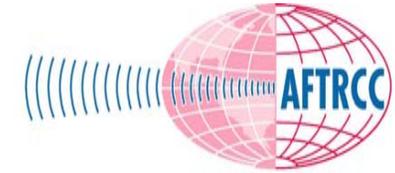
## **PHILIPS HEALTHCARE**

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Monisha Ghosh (Philips Research North America)  
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GE Healthcare

**PHILIPS**  
sense and simplicity



AEROSPACE & FLIGHT TEST RADIO COORDINATING COUNCIL®

# AFTRCC, Philips & GE Proposal for Secondary Use of Primary AMT Spectrum by MBANS, FCC Docket 08-59

Aerospace and Flight Test Radio Coordinating Council (AFTRCC)  
Philips Healthcare (Philips)  
GE Healthcare (GEH)

January 13, 2011

# Introduction

- AFTRCC, Philips and GE together have pioneered a unique approach to spectrum sharing that permits using the 2360–2390 MHz AMT primary spectrum by medical body area network service (“MBANS”) devices without fear of interference.
- Proposal achieves many of the health-related objectives of the Commission’s National Broadband Plan.
- Proposal centers on the use of proven propagation analytical software tools, coupled with MBANS automated device features to protect AMT in compliance with ITU-R Rec. M.1459 while maximizing access to AMT spectrum for indoor use at healthcare facilities.

# Spectrum Proposal

- Healthcare facilities with no radio Line-of-Sight (“NLOS”) to an AMT ground station register with MBANS coordinator; AMT coordinator has access to database.
- If healthcare facility within radio Line-of-Sight (“LOS”) of AMT receiver, propagation analysis that considers geographic and building features will be employed to determine signal levels at AMT receiver; relevant features include blockage effects of local terrain and buildings, attenuation of healthcare facility windows and walls, etc.
- MBANS access to 2360-2390 MHz primary AMT spectrum permitted if signal at AMT receiver complies with Rec. M.1459 protection levels; operation managed by coordinator registration combined with electronic key/beacon system incorporated in MBANS system.
- Provision also made for time-limited access to unoccupied AMT channels on a coordinated basis for healthcare facilities that do not meet Rec. M.1459 protection levels.

## Spectrum Proposal (cont.)

- Our unique approach uses an electronic key to ensure only authorized access to the 2360-2390 MHz spectrum.
- This proposal furthers the broadband and healthcare IT objectives outlined in the Commission's National Broadband Plan.
- Healthcare facilities required to file a predefined Transition Plan with the MBANS coordinator as a condition of coordination that manages re-channelization out of AMT spectrum if needed to accommodate primary AMT use.
- Our solution is consistent with the NPRM.
- While AFTRCC, Philips and GE support this proposal, AFTRCC approval is subject to federal users' review and approval.

# MBANS Under Part 95

- AFTRCC, Philips and GE have prepared draft rules to propose to the Commission.
- Proposal designed to protect primary AMT users while providing sufficient stability for secondary MBANS users.
- Proposal is crafted as a new subpart to FCC Part 95 as proposed in ET Docket 08-59.
- License-by-rule approach for MBANS, similar to existing WMTS rules.
- MBANS devices would be subject to equipment certification under Part 2 of the FCC's rules.
- MBANS devices would operate in 2360-2390 MHz on a secondary basis with specific electronic control and coordination requirements.
- MBANS devices would also operate in 2390-2400 MHz on a secondary basis with somewhat higher power without need for specific electronic control or coordination.
- Proposal includes specific definitions to protect AMT and secondary medical users, as discussed below.

# Definitions

- Maximum EIRP for MBANS devices in 2360-2390 MHz to be the lesser of 1 mW and  $10 \cdot \log(B)$  dBm, where (B) is 20 dB emission bandwidth.
- Maximum EIRP for MBANS devices in 2390-2400 MHz to be the lesser of 20 mW and  $16 + 10 \cdot \log(B)$  dBm, where (B) is 20 dB emission bandwidth.
- Emission bandwidth of MBANS devices limited to 5 MHz.
- MBANS devices must employ an unrestricted contention-based protocol that can avoid co-frequency interference whether or not the other signal(s) use the same protocol.
- MBANS devices using 2360-2390 MHz must employ electronic key/beacon mechanism to control operation.
- MBANS device must automatically cease transmissions in 2360-2390 MHz if device moves outdoors; this is accomplished by electronic beacon.

# MBANS Coordination

- Healthcare facilities can access 2360-2390 MHz if NLOS with registration and semi-automatic electronic key delivery.
  - ~ 94% of hospitals in above category.
- Healthcare facilities can access 2360-2390 MHz if LOS, provided MBANS devices meet protection loss criteria, with registration and semi-automatic electronic key delivery.
  - Fewer than ~ 6% of hospitals in above category.
- Healthcare facilities also able to access unoccupied 2360-2390 MHz channels if LOS on coordinated basis with registration and automatic electronic key delivery.
  - Fewer than ~ 2% of hospitals in above category.
- MBANS devices can access 2390-2400 MHz without restrictions.

# MBANS Protection

- AMT protection achieved with MBANS devices operating in radio NLOS to AMT receiver location.
- AMT protection achieved in LOS situations when protection criterion realized, as defined below.
  - AMT protection loss criterion is derived from ITU-R Rec. M.1459 to limit the maximum aggregate MBANS signal received from all MBANS devices by each AMT receive station in its main antenna beam.
  - Protection criterion is the total path loss to the AMT receive antenna and must be  $149 + 10 \cdot \log(T/(1\text{mW/MHz}))$  dB or better, where T is the average transmission power spectrum density within the AMT bandwidth aggregated from all LOS MBANS operations at the location radiated in the direction of the AMT receive antenna in mW/MHz.

## MBANS Transition Plan

- Roles and responsibilities of healthcare facility, vendor, and MBANS coordinator.
- Contacts for healthcare facility and vendor.
- Description of how MBANS systems will respond to re-channeling requirement.
- How to assess interference or interference potential.
- How to handle notification within 24 hours of interference complaint.
- How to handle new AMT sites within 7 days of notice.
- Plan execution timeline & verification.

## MBANS Coordinator

- For all healthcare facilities using 2360-2390 MHz, MBANS Coordinator:
  - Keeps MBANS database up-to-date with changes reflected within 24 hours.
  - Maintains file of transition plans.
  - Communicates changes in AMT spectrum status to vendor and/or healthcare facility.
  - Monitors execution of transition plan (e.g., verifies execution of electronic key changes at hospital; MBANS system will provide secure electronic verification information for database update purposes).

## Healthcare Facility & Vendor Roles

- Vendors develop transition plan in collaboration with healthcare facility and deliver the transition plan to the MBANS coordinator.
- Healthcare facility and/or vendor is responsible for MBANS re-channeling.
- Vendor can re-channel healthcare facility as final contingency in the transition plan upon request from healthcare facility and/or MBANS coordinator.
- The transition plan must describe how to deal with interference to AMT within 24 hours.

# Conclusion

- Proposal is designed to minimize interference impacts and address AMT concerns. It does not infringe on primary user rights or constrain primary user development, thereby protecting flexibility of mobile AMT users.
- Proposal would strengthen role of MBANS coordinator and rely upon unique electronic key and mandated transition plan to protect AMT primary uses.
- Proposal would ensure stability for health care facilities through well-engineered coordination and planning, thereby maximizing MBANS secondary access to AMT primary spectrum.
- Strong, rapid response facilitated by transition plan requirement in rare event of interference to AMT.
- Adoption of detailed proposal as submitted would enable the operations of both services in an effective manner.
- While AFTRCC, Philips and GE support this proposal, AFTRCC approval is subject to federal users' approval.

## Conclusion (cont.)

- Proposal is consistent with the current NPRM, so a further NPRM not needed.
- AFTRCC, Philips and GE have developed a coordination approach to manage spectrum access that includes scientific analysis of the effects of terrain, building blockage and MBANS signal aggregation.
- We ask the Commission to adopt the proposed draft rules to maintain the structure of the parties' agreement.
- Two important industries have come together to better use the scarce radio spectrum to serve the public good.
- We look forward to working with the Commission constructively as our proposal is considered.

## ATTACHMENT C

### **Rules Proposal for the Medical Body Area Network Service (“MBANS”)**

Subpart M is added to read as follows:

#### **Subpart M—Medical Body Area Network Service (MBANS)**

##### **§ 95.1601 Scope.**

This part sets out the regulations governing operation of Medical Body Area Network Services (“MBANS”) devices in the 2360-2390 MHz and 2390-2400 MHz bands.

##### **§ 95.1603 Definitions.**

(a) **Healthcare Facility.** 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.

(b) **Duly authorized healthcare professional.** A physician or other individual authorized under state or federal law to provide health care services using prescription medical devices.

(c) **Total Path Loss.** The power attenuation of an MBANS signal as it propagates from a healthcare facility to an AMT receive antenna, including all of the effects associated with distance and the interaction of the propagating wave with the objects in the environment between the antennas, such as terrain and building blockages.

(d) **Contention-based protocol.** A protocol that allows multiple devices to share the same spectrum by defining the events that must occur when two or more transmitters attempt to simultaneously access the same channel and establishing rules by which a transmitter provides reasonable opportunities for other transmitters to operate on the same channel. Such a protocol may consist of procedures for initiating new transmissions, procedures for determining the state of the channel (available or unavailable), and procedures for managing retransmissions in the event of an occupied channel.

(e) **Electronic key/beacon.** An electronic frequency authorization/certificate generated by the MBANS coordinator for each registered healthcare facility to authorize MBANS devices within the specified healthcare facility to access some or all of the 2360-2390 MHz band, or to de-authorize such access.

(f) **Restricted contention-based protocol.** A contention-based protocol that can avoid co-frequency interference with other devices using the same protocol.

(g) **Unrestricted contention-based protocol.** A contention-based protocol that can avoid co-frequency interference with other devices whether or not the other devices use the same protocol.

(h) MBANS master transmitter. An MBANS transmitter responsible for frequency selection within an MBANS network.

(i) MBANS slave transmitter. An MBANS transmitter within an MBANS network for which the transmit frequency is determined by an associated MBANS master transmitter.

(j) Beacon. An electronic signal that must be received by MBANS master transmitters to convey authorized MBANS frequency information to all MBANS devices and to enable MBANS transmissions in the 2360-2390 MHz band. When an MBANS device cannot receive its associated beacon signal, it must automatically cease all radio transmissions in the 2360-2390 MHz band and operate only on default spectrum outside the 2360-2390 MHz band.

(k) MBANS control point. A single device or application present at each authorized MBANS location that validates and decodes electronic keys, propagates authorized MBANS frequency information to all MBANS master transmitters and generates verification codes as proof of electronic key deployment.

(l) Automatic electronic key deployment. A mechanism for electronic key deployment by which the MBANS control point automatically (without human intervention) communicates with the electronic key database maintained by the MBANS Coordinator.

(m) Semi-automatic key deployment. A mechanism for electronic key deployment by which authorized MBANS frequency information is communicated from the MBANS control point to all MBANS master transmitters automatically, but communication of electronic keys and/or verification codes between the MBANS control point and the electronic key database maintained by the MBANS coordinator is not fully automatic.

(n) Standard electronic key. A unique electronic key granted to a registered healthcare facility that meets the AMT protection criteria, has no specified time limit, does not self expire, and shall be revoked whenever the healthcare facility no longer meets the AMT protection criteria.

(o) Time-limited electronic key. A unique and renewable electronic key that self-expires (without human intervention) at a pre-designated time, and that may be granted to a healthcare facility that fails to meet AMT protection criteria but can operate on a non-interfering provisional basis with AMT receivers as agreed by the MBANS and aeronautical telemetry coordinators. A time-limited electronic key is renewable for healthcare facilities if coordination continues to be valid.

(p) Transition plan. An MBANS re-channeling plan for a healthcare facility that defines the responsibilities and execution process for the healthcare facility to vacate the AMT spectrum due to changes in its coordination and/or interference. A compliant transition plan must be delivered to the MBANS coordinator as a condition of registration to use any portion of the 2360-2390 MHz band. The transition plan must specify the measures necessary to meet the transition requirements compliant with these rules, and must expressly authorize the healthcare facility's MBANS equipment vendor and the MBANS coordinator, respectively, to re-channel the healthcare facility's MBANS operations out of 2360-2390 MHz if necessary to remain compliant with these rules.

(q) Electronic key database. An electronic database that shall be maintained by the MBANS coordinator consisting of information regarding all 2360-2390 MHz frequency assignments and contact information for management of all healthcare facilities authorized to operate MBANS devices. The information contained in such database shall be made readily available to the aeronautical telemetry coordinator.

#### **§ 95.1605 Eligibility.**

Operation of MBANS devices is permitted by rule and without an individual license. Duly authorized health care professionals are permitted by rule to operate MBANS transmitters pursuant to this Subpart. In addition, any person is authorized to operate MBANS transmitters if prescribed by a duly authorized healthcare professional. Manufacturers of MBANS transmitters, their representatives, and the MBANS and aeronautical telemetry coordinators and their representatives are authorized to operate MBANS transmitters for the purpose of developing, testing and demonstrating such equipment. Operations that comply with the requirements of this Subpart may be conducted under manual or automatic control and on a continuous basis; provided, however, that MBANS transmissions in the 2360 – 2390 MHz band shall automatically default to spectrum outside the 2360-2390 MHz band when an MBANS transmitter is moved outdoors from a healthcare facility or other building, either intentionally or unintentionally (cf. 95.1615(d)).

#### **§ 95.1607 Authorized locations.**

(a) 2360-2390 MHz: Use of MBANS devices is restricted to indoor operation within a healthcare facility registered with the MBANS coordinator, provided the facility is located where CB station operation is permitted under § 95.405, subject to § 95.1615. An MBANS device or network may not be operated in the 2360-2390 MHz band outside the confines of a healthcare facility EXCEPT in cases of a medical emergency declared by duly authorized governmental authorities, and then only after emergency coordination in accordance with § 95.1615.

(b) 2390-2400 MHz: MBANS operation is authorized anywhere CB station operation is authorized under § 95.405, consistent with § 95.1605.

#### **§ 95.1609 Station Identification.**

An MBANS transmitter is not required to transmit a station identification announcement.

#### **§ 95.1611 Station inspection.**

All MBANS apparatus must be made available for inspection upon request by an authorized FCC representative.

#### **§ 95.1613 Permissible communications.**

(a) MBANS transmitters may transmit data signals. All voice communications between devices, including digitized voice, are prohibited.

(b) Except for the purposes of development, testing and demonstration per § 95.1605, MBANS transmitters may transmit only information used for monitoring, diagnosing or treatment of patients by duly authorized healthcare professionals.

(c) MBANS transmitters may be interconnected with other communications systems and networks, including but not limited to, the public switched telephone network.

**§ 95.1615 Spectrum use.**

(a) The spectrum authorized for MBANS operation pursuant to §§ 2.106 and §95.1601 of this chapter is available on a shared basis only and will not be assigned for the exclusive use of any entity.

(b) Operation is subject to the condition that MBANS transmitters do not cause harmful interference to, and must accept interference from, stations authorized to operate on a primary basis in the 2360-2400 MHz band.

(c) All MBANS transmitters must employ an unrestricted contention-based protocol.

(d) An MBANS system utilizing frequencies in the 2360-2390 MHz band must employ an electronic key/beacon mechanism that (i) automatically disables MBANS transmissions in the 2360 – 2390 MHz band in the event an MBANS transmitter is moved outdoors from a registered healthcare facility; (ii) enables MBANS transmissions in specific portions of the 2360-2390 MHz band for all master and slave MBANS transmitters located at the same registered healthcare facility; (iii) provides a verification mechanism confirming that the electronic key is in effect and that the current MBANS operating frequency is within the band authorized by the electronic key; and (iv) is capable of commanding or being commanded to cease all operations over any and all frequencies in the 2360-2390 MHz band. Electronic key/beacon control is not required for MBANS devices permanently configured to operate only in the 2390-2400 MHz band.

(e) Use of MBANS devices outside the buildings of healthcare facilities, such as to provide for home and ambulance healthcare, shall be limited to the 2390-2400 MHz band. Such operations may be conducted without coordination.

(f) The MBANS coordinator shall be required as a condition of its certification by the Commission to: (i) register healthcare facilities; (ii) timely manage and update the MBANS electronic key database in order to effect default/re-channeling, in accordance with these Rules; and (iii) ensure that transition plans are compliant with Section 95.1603(p). The MBANS coordinator shall ensure that hospitals with time-limited electronic keys automatically lose access to any portion of spectrum that, notwithstanding any prior MBANS coordination, becomes unusable for MBANS operations due to changes in AMT operations prior to the scheduled expiration of a time-limited key.

(g) The following additional conditions shall apply to MBANS operations in the 2360-2390 MHz band:

(A) MBANS devices may be operated beyond line of sight (“LOS”) from the nearest AMT receiving antenna as determined by the MBANS coordinator without prior coordination but with prior notification, and the provision of registration information including geographic coordinates, by the MBANS coordinator to the aeronautical telemetry coordinator. Healthcare facilities in this category can use standard electronic keys with semi-automatic deployment.

(B) MBANS devices may be located within LOS of an AMT receive antenna utilizing frequencies in the 2360-2390 MHz band only if the location, operation, and estimated number of co-frequency devices operating within a building or aggregation of closely located buildings has been analyzed and recommended by the MBANS coordinator, and upon review that analysis and recommendation is concurred in by the aeronautical telemetry coordinator. In reviewing the analysis, the aeronautical telemetry coordinator shall concur with any such location and operation that it determines to be non-interfering using ITU-R Recommendation M. 1459 and other good engineering practices as determined by a methodology agreed to jointly by the MBANS coordinator and the aeronautical telemetry coordinator. Healthcare facilities in this category can use standard electronic keys with semi-automatic deployment.

(C) In any instance in which agreement is not reached based on the engineering analysis referenced in (B), upon request of the MBANS coordinator the parties shall cooperate in good faith to obtain and/or review measurements from the location in question. If the aeronautical telemetry coordinator concurs, the operation shall be permitted where the total path loss is demonstrated by those measurements to provide protection of the AMT receive antenna in question to a level of  $149 + 10 \cdot \log(T/(1\text{mW/MHz}))$  dB or better, where T is the average transmission power spectrum density within the AMT bandwidth aggregated from all LOS MBANS operations at the subject location radiated in the direction of the AMT receive antenna in mW/MHz. Healthcare facilities in this category can use standard electronic keys with semi-automatic deployment.

(D) If, despite completion of the steps referenced above, LOS is determined to exist for a particular proposed MBANS location, the aeronautical telemetry coordinator shall, upon request and in good faith, consider means to permit limited operation of the MBANS devices on some or all of the 2360-2390 MHz spectrum for some or all of the time. For example, if an AMT receiver uses 2370-2380 MHz, upon request by the MBANS coordinator, the aeronautical telemetry coordinator shall determine whether 2360-2370 and 2380-2390 MHz, or some subset thereof, could be used practicably for MBANS operations. Similarly, if AMT use is not anticipated for a given period of hours, days, weeks or months, the aeronautical telemetry coordinator shall seek means to permit operation by MBANS transmitters during the period that AMT is not anticipated to be using the spectrum; provided, however, that in any such case the MBANS devices to be deployed have a means to reliably limit their operation to the period coordinated; and provided further, that the devices can be re-channelled by remote access through electronic means to 2390-2400 MHz. The

MBANS coordinator shall update the electronic key database to reflect the re-channeling specified by the aeronautical coordinator upon 24 hours notice. Healthcare facilities in this category can use ONLY time-limited electronic keys with automatic electronic key deployment and shall have a predefined compliant transition plan on file with the MBANS coordinator.

(E) In the event a healthcare facility or the MBANS coordinator is notified of MBANS interference to an AMT receive antenna, the MBANS system shall immediately cease transmission in the 2360-2390 MHz band and instead shall be defaulted to 2390-2400 MHz notwithstanding any prior coordination or transition plan. Each MBANS system shall have the capability to be defaulted by electronic key accessible to the MBANS coordinator to 2390-2400 MHz or to a portion of the 2360-2390 MHz band that has been coordinated. The MBANS coordinator shall update the electronic key database to reflect the desired operation. A predefined compliant transition plan shall be on file with the MBANS coordinator.

(F) In the event AMT operations are planned for a location not previously used for this purpose and such location is within LOS of an existing MBANS-equipped healthcare facility, the AMT operator shall consider whether there is a location NLOS of the MBANS-registered healthcare facility which would suit its (the AMT operator's) purposes. If the AMT operator determines in its discretion that an alternative location is not practical, then upon no less than 7 days' notice to the MBANS coordinator, the healthcare facility's MBANS operations shall be defaulted to the 2390-2400 MHz band. Upon receipt of such notice, the healthcare facility may also seek coordination with the new or mobile AMT facility in accordance with subsections (A) through (E) and (G) of this Subsection, as appropriate. To facilitate coordination, the affected MBANS-registered healthcare facility shall disclose to the MBANS and AMT coordinators the channels in use. Until and unless successfully coordinated, the healthcare facility shall utilize only frequencies in the 2390-2400 MHz band.

(G) Secondary operation by MBANS devices in 2390-2400 MHz is permitted pursuant to these rules. If this band is inadequate for MBANS operations, then subject to the coordination procedures required by these Rules MBANS will be accommodated in the 2360-2390 MHz band as follows: first in the 2360-2370 MHz subband, next in the 2380-2390 MHz subband, and lastly in the 2370-2380 MHz subband.

(H) The requesting healthcare facility shall bear responsibility for reasonable costs incurred by the aeronautical telemetry coordinator in effecting the coordination referenced in subsections (A) through (G), above.

(I) Initial or re-coordination, as appropriate, shall be required if physical changes are made to a previously registered healthcare facility that affects line-of-sight to an AMT receive antenna.

(J) If a healthcare facility discontinues use of any portion of the 2360-2390 MHz band, the MBANS coordinator shall be notified within 7 days and its database so updated.

(K) As used in these Rules, the aeronautical telemetry coordinator shall refer to Aerospace and Flight Test Radio Coordinating Council (“AFTRCC”). AFTRCC, in consultation with U.S. Government authorities for Federal AMT receivers, shall coordinate MBANS use for the AMT community. The MBANS coordinator shall refer to [ \_\_\_\_\_ ] (“MBANS coordinator”). The MBANS coordinator shall coordinate MBANS use for the healthcare community.

**§ 95.1617 Antennas.**

No MBANS transmitter in the 2360-2390 MHz band shall be configured for outdoor use.

**§ 95.1619 Labeling requirements.**

(a) MBANS master transmitters shall be labeled as provided in Part 2 of this chapter and as an additional requirement shall bear the following statement in a conspicuous location on the device: “This device may not interfere with primary stations and must accept any interference received, including interference that may cause undesired operation.”

(b) Where an MBANS master transmitter is constructed in two or more sections connected by wire and marketed together, the statement specified in this section is required to be affixed only to one section.

(c) The statement specified in this section, the FCC Identifier associated with the transmitter and the information required by Section 2.925 of this chapter may be placed in the instruction manual for the transmitter in lieu of being placed directly on the transmitter in a conspicuous location (on the first page in all caps) if it cannot be placed conspicuously on the transmitter or one of its component sections.

**§ 95.1621 Marketing limitations.**

Transmitters intended for operation in the MBANS may be marketed and sold only for those uses described in § 95.1613.

## **Conforming amendments to other Parts of the FCC's Rules**

Section 1.1307 is amended by revising paragraph (b)(2) to read as follows:

### **§ 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.**

(b) \* \* \* \* \*

(2) Mobile and portable transmitting devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services (PCS), the Satellite Communications Services, the Wireless Communications Service, the Maritime Services (ship earth stations only), the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service authorized under Parts 22, 24, 25, 27, 80, and 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 2.1091 and 2.1093 of this chapter. Unlicensed PCS, unlicensed NII and millimeter wave devices are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 15.253(f), 15.255(g), 15.319(i), and 15.407(f) of this chapter. Portable transmitting equipment for use in the Wireless Medical Telemetry Service (WMTS) is subject to routine environment evaluation as specified in §§ 2.1093 and 5.1125 of this chapter. Equipment authorized for use in the Medical Implant Communications Service (MICS) as a medical implant transmitter (as defined in Appendix 1 to Subpart E of Part 95 of this chapter) **or equipment authorized for use in the Medical Body Area Network Service (MBANS) as an MBANS transmitter for attachment to the body** is subject to routine environmental evaluation for RF exposure prior to equipment authorization, as specified in § 2.1093 of this chapter by finite difference time domain computational modeling or laboratory measurement techniques. Where a showing is based on computational modeling, the Commission retains the discretion to request that specific absorption rate measurement data be submitted. All other mobile, portable, and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure under §§ 2.1091, 2.1093 of this chapter except as specified in paragraphs (c) and (d) of this section.

1. Section 2.1093 is amended by revising paragraph (c) to read as follows:

### **§ 2.1093 Radiofrequency radiation exposure evaluation: portable devices.**

\* \* \* \* \*

(c) Portable devices that operate in the Cellular Radiotelephone Service, the Personal Communications Service (PCS), the Satellite Communications Services, the General Wireless Communications Service, the Wireless Communications Service, the Maritime Services, the Specialized Mobile Radio Service, the 4.9 GHz Band Service, the Wireless Medical Telemetry Service (WMTS), the Medical Implant Communications Service (MICS), **and the Medical Body Area Network Service (MBANS)**, authorized under subpart H of part 22 of this chapter, parts 24, 25, 26, 27, 80 and 90 of this chapter, subparts H, I **and M** of part 95 of this chapter, and unlicensed personal communication service, unlicensed NII devices and millimeter wave devices authorized under subparts D and E, §§ 15.253, 15.255 and 15.257 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use.

\* \* \* \* \*

2. The Table of Frequency Allocations in Section 2.106 is amended by revising the entries for 2360-2390, 2390-2395 and 2395-2400 MHz, and adding footnote NG186 to read as follows:

International Table	United States Table		FCC Rule Parts
*****	Federal Table (MHz)	Non-Federal Table (MHz)	
*****	2360-2390 MOBILE US276 RADIOLOCATION G2 G120 Fixed	2360-2390 MOBILE US276	Aviation (87) Personal (95)
*****	2390-2395 MOBILE US276	2390-2395 MOBILE US276 AMATEUR	Aviation (87) Amateur (97) Personal (95)
*****	2395-2400 G122 US276	2395-2400 AMATEUR US276	Amateur (97) Personal (95)

**NON-FEDERAL GOVERNMENT (NG) FOOTNOTES**

US276 Except as otherwise provided for herein, use of the band 2360-2395 by the mobile service is limited to aeronautical telemetering and associated telecommand operations for flight testing of aircraft, missiles or major components thereof. The following three frequencies are shared on a co-equal basis by Federal and non-Federal stations for telemetering and associated telecommand operations of expendable and reusable launch vehicles, whether or not such operations involve flight testing: 2364.5 MHz, 2370.5 MHz, and 2382.5 MHz. All other mobile telemetering uses shall not cause harmful interference to, or claim protection from interference from, the above uses.

The 2360-2395 and 2395-2400 MHz bands also are allocated on a secondary basis for fixed and mobile use limited to Medical Body Area Network Service (MBANS) devices. MBANS devices are authorized by rule on the condition that they do not cause harmful interference to, and must accept interference from, stations authorized to operate on a primary basis in these bands.

3. Section 95.401 is amended by adding paragraph (h) to read as follows:

**§ 95.401 (CB Rule 1) What are the Citizens Band Radio Services?**

\* \* \* \* \*

(h) Medical Body Area Network Service (MBANS) — a low power radio service used for the transmission of non-voice data to and from medical devices for the purposes of

monitoring, diagnosing and treating patients by duly authorized health care professionals. The rules for this service are contained in subpart M of this part.

4. Section 95.601 is amended by revising the last sentence in the text to read as follows:

**§ 95.601 Basis and purpose.**

The Personal Radio Services are the GMRS (General Mobile Radio Service)—subpart A, the Family Radio Service (FRS)—subpart B, the R/C Radio Control Radio Service)—subpart C, the CB (Citizens Band Radio Service)—subpart D, the Low Power Radio Service (LPRS)—subpart G, the Wireless Medical Telemetry Service (WMTS)—subpart H, the Medical Implants Communication Service (MICS)—subpart I, the Multi-Use Radio Service (MURS)—subpart J, Dedicated Short-Range Communications Service On-Board Units (DSRCS-OBUs)—subpart L, and Medical Body Area Network Service (MBANS)—subpart M.

5. Section 95.603 is amended by adding paragraph (i) to read as follows:

**§ 95.603 Certification required.**

(i) Each MBANS transmitter marketed for use within the United States must be certificated in accordance with subpart J of part 2 of this chapter.

6. Section 95.605 is amended by revising the text to read as follows:

Any entity may request certification for its transmitter when the transmitter is used in the GMRS, FRS, R/C, CB, IVDS, LPRS, MURS, MICS, or MBANS following the procedures in part 2 of this chapter.

7. Section 95.626 is added to read as follows:

**§ 95.626 MBANS Transmitter Frequencies**

MBANS transmitters may operate on any frequency within the 2360-2400 MHz band, subject to locations authorized in accordance with § 95.1607 and provided that the out-of-band emissions are attenuated in accordance with § 95.635.

8. Section 95.631 is amended by adding paragraph (1) to read as follows:

**§ 95.631 Emission types.**

(1) An MBANS transmitter may emit any emission type appropriate for data communications in this service. All voice communications between devices, including digitized voice, are prohibited.

9. Section 95.633 is amended by adding paragraph (h) to read as follows:

**§ 95.633 Emission bandwidth.**

(h) For transmitters in the MBANS:

(1) The maximum authorized emission bandwidth is 5 MHz.

(2) Narrower emission bandwidths may be employed, provided that the unwanted emissions are attenuated as provided in § 95.635 and the transmitter power complies with the limits specified in § 95.639(j).

(3) Emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier. Compliance with the emission bandwidth limit is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

10. Section 95.635 is amended by revising paragraph (b) and adding paragraph (e) to read as follows:

**§ 95.635 Unwanted radiation.**

(b) The power of each unwanted emission shall be less than TP as specified in the applicable paragraphs listed in the following table:

Transmitter	Emission type	Applicable paragraphs (b)
*****  MBANS  *****	*****  As specified in paragraph (g)  *****	*****    *****

(g) For MBANS transmitters, emissions shall be attenuated in accordance with the following:

(4) Emissions more than 500 kHz outside of the MBANS band (2360-2400 MHz) shall be attenuated to a level no greater than the following field strength limits.

Frequency (MHz)	Field strength (uV/m)	Measurement distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
960 and above	500	3

Note — At band edges, the tighter limit applies.

(5) The emission limits shown in the above table are based on measurements employing an average detector using per ANSI C63.4 standard.

(6) The emissions from an MBANS transmitter must be measured to at least the second harmonic of the highest fundamental frequency designed to be emitted by the transmitter.

(7) Emissions within the MBANS band (2360-2400 MHz) more than 2.5 MHz away from the center frequency of the spectrum the transmission is intended to occupy, must be attenuated below the transmitter output power by at least 20 dB. Compliance with this limit is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

11. Section 95.639 is amended by adding paragraph (j) to read as follows:

**§ 95.639 Maximum transmitter power.**

\* \* \* \* \*

(j) In the MBANS, the following limits apply:

(8) The following power limits apply to MBANS transmitters:

for MBANS transmitters operating within the subband 2360-2390 MHz, the maximum EIRP over the emission bandwidth shall not exceed the lesser of 1 mW or  $10 \cdot \log(B)$  dBm, where B is the 20 dB emission bandwidth in MHz.

for MBANS transmitters operating within the subband 2390-2400 MHz, the maximum EIRP over the emission bandwidth shall not exceed the lesser of 20 mW or  $16 + 10 \cdot \log(B)$  dBm, where B is the 20 dB emission bandwidth in MHz.

(9) The antenna associated with any MBANS transmitter must be supplied with the transmitter and affixed directly to the transmitter without use of any connecting device, and shall be considered part of the transmitter subject to equipment authorization. Compliance is based on measurements using a peak detector function and measured at the maximum transmit power level of the MBANS device..

(10) Compliance with the maximum EIRP is to be determined by measuring the radiated field from the equipment under test using ANSI C63.4-2003 and/or ANSI C63.4-2009, *American National Standard for Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz*. (incorporated by reference, see § 15.38 and Public Notice DA 09-2478 released Nov. 25, 2009) at 3 meters using a calibrated antenna and calculating the radiated power. Alternative techniques acceptable to the Commission may be used. Measurements are to be made over the 20 dB emission bandwidth of the device. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

12. Section 95.649 is amended by revising the text to read as follows:

**§ 95.649 Power capability.**

No CB, R/C, LPRS, FRS, MICS, MURS, WMTS, or MBANS unit shall incorporate provisions for increasing its transmitter power to any level in excess of the limits specified in § 95.639.

13. Appendix 1 to Subpart E of Part 95—Glossary of Terms is revised to read as follows:

The definitions used in part 95, Subpart E are:

MBANS. Medical Body Area Network Service.

MBANS transmitter. A transmitter authorized to operate in the MBANS.