

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

<b>In the Matter of</b>	)	
	)	
<b>GE HEALTHCARE</b>	)	<b>ET Docket 08-59</b>
	)	
<b>Proposed Allocation of Spectrum at 2360-2400 MHz for Wireless Medical Body Sensor Networks</b>	)	

**To: The Chief, Office of Engineering and Technology  
Via the OFFICE OF THE SECRETARY**

**COMMENTS OF ARRL, THE NATIONAL ASSOCIATION  
FOR AMATEUR RADIO**

ARRL, the national association for Amateur Radio (ARRL), by counsel and pursuant to the Public Notice, DA 08-953, released April 24, 2008, hereby respectfully submits its comments in response to the proposal of GE Healthcare (GE) filed originally as written *ex parte* comments in response to a *Notice of Inquiry* in the pending “MedRadio” proceeding, ET Docket 06-135 on or about December 27, 2007. GE proposes that the band 2360-2400 MHz be allocated on a secondary basis for “Body Sensor Networks” (BSNs).<sup>1</sup> These systems are apparently to be used for wireless patient monitoring. They are very short-range networks consisting of multiple body-worn sensors and nodes, connected via wireless to nearby hub stations at medical facilities and

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<sup>1</sup> ARRL believes that the Commission properly treated this proposal as a rulemaking petition separate from the proposal in the MedRadio proceeding. The Commission’s Notice of Inquiry in that proceeding addressed quite different issues, to-wit: the expanded use of radiofrequency (RF) wireless devices at or near 401-406 MHz in the Medical Implant Communications Service (MICS). The GE proposal is quite different, dealing with a different frequency band entirely. The GE proposal, submitted initially as *ex parte* comments, was sufficiently distinct from the MedRadio issues that it justified being treated as a stand-alone proposal.

in homes as well. In the interests of the Amateur Radio Service, which has a primary allocation at 2390-2400 MHz, ARRL states as follows.

1. ARRL does not, frankly, expect a significant amount of harmful interference to Amateur operations at 2390-2400 MHz from BSNs. The GE proposal, however, makes some erroneous assumptions about Amateur uses in these bands, and the interference potential of the devices to Amateur Radio stations in residential areas is not known. GE's proposal is for the allocation of the entire 2360-2400 MHz band for BSN devices, but in any given area, only 20 MHz of that band would be used. The proposal specifically mentions Amateur Radio and claims that, because the band 2390-2400 MHz is "designed (sic) for fast scan video, high rate data, packet, control and auxiliary applications" and not weak signal communications, it is well-suited for sharing with the BSN systems. This is a misconception on GE's part. The fact is that there are no limitations on the type of Amateur uses to be made in these bands.<sup>2</sup> The band may in fact be used in some areas for weak signal communications, on a completely unpredictable basis. The uses of this band by radio amateurs, though guided overall by a national band plan, are very much subject to local variation dictated by custom and usage. Weak signal Amateur communications utilize long propagation paths, very low received signal levels, and very high transmitted signal levels. The band is also used for long distance data, voice and television communications using relatively weak received signal levels. All of these operations optimally utilize tall antennas located in residential areas. Because BSNs would be

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<sup>2</sup> In summarizing the uses of the 2390-2400 MHz Amateur allocation, GE apparently has consulted ARRL's *Repeater Directory* for a list of general uses of the 2390-2400 MHz band. The Amateur uses listed in the general band plan for the 2390-2400 MHz segment include fast-scan TV, high-rate data, packetized data, and control and auxiliary links. The most recent *Repeater Directory* (2007-2008) and, it is believed, all prior iterations of this publication, note at the top of the section listing the band plan for the 2300-2310 and 2390-2450 MHz bands specifically, that "this bandplan is a general recommendation. Spectrum usage can be different depending on location and regional coordination differences. Please check with your Frequency Coordinator for information."

deployed not only at medical facilities but also in residential environments, the compatibility analysis, not made by GE to date, should include an anticipated close geographic proximity between BSNs and all different types of residential Amateur Radio operation. It is improper to make assumptions such as those contained in the GE *ex parte* comments, and the Commission should not rely on the assertion of GE in making any decisions in this proceeding. Furthermore, because of the growing use of 2400-2450 MHz for short-range wireless broadband, and other unlicensed uses, some Amateur uses of that segment of the band will inevitably migrate to the 2390-2400 MHz segment. It is, therefore, inappropriate to use existing activity as a predictor of future Amateur activity in the 2390-2400 MHz band, for purposes of determining compatibility of a new device or service in the same band.

2. ARRL is far more concerned, however, about potential interference to BSNs from licensed Amateur Radio operation in the 2390-2400 MHz band. The ramifications of radiofrequency interference (RFI) to these systems in terms of danger to medical patients are obvious, and potentially severe. ARRL endorses the filing made February 4, 2008 in the MedRadio Docket about this issue by the Aeronautical Flight Test Telemetry Coordinating Council (AFTRCC). ARRL would suggest, however, that the potential for interference from Amateur Radio operations, which are in this band occasionally itinerant and mobile, but most often fixed in residential areas, to BSNs operated at a patient's residence would be far more of a problem than interference caused to BSNs by flight test telemetry operation. BSNs, which GE states will "become ubiquitous," must, according to GE, "be capable of reliably conveying unprocessed life-critical monitoring data to devices that are responsible for processing and primary alarming. In these scenarios, if

the link were lost, a serious event such as arrhythmia or hypoxia could go unalarmed.”<sup>3</sup>

If GE’s products in fact require “extremely reliable” communications links with a predictable quality of service, they will not find that in the 2390-2400 MHz band and should look elsewhere. Amateur Radio operation is unpredictable, and at the substantial transmitted power levels and exceptionally high antenna gain figures used by radio amateurs in this band, there will be no reliability of BSNs in this segment, and the results of such interference would be potentially disastrous, as GE itself notes.

3. Alternatives to the 2390-2400 MHz band for BSNs would perhaps be medical telemetry bands. They should not in any case utilize a band actively used for mobile applications. Furthermore, high microwave bands might be appropriate for BSNs, but not in the vicinity of 2 GHz, which has exceptionally long-distance propagation characteristics. The BSNs need the protection of a safety service and there are bands set aside for the purpose and those should be used. Alternatively, it is unclear to ARRL why GE could not make use of the bands 608-614 MHz, 1395-1400 MHz or 1427-1429.5 MHz in the Part 95, subpart H Wireless Medical Telemetry Service, which seems to be well-suited to BSN applications, or in the MICS on bands other than 2390-2400 MHz.

Accordingly, ARRL, the National Association for Amateur Radio, respectfully

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<sup>3</sup> See, *GE Ex Parte* comments, at pages 7,8 and 12.

requests that the Commission not proceed with the proposal of GE Healthcare as proposed in the 2390-2400 MHz band.

Respectfully submitted,

**ARRL, THE NATIONAL ASSOCIATION  
FOR AMATEUR RADIO**

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May 27, 2008