

To the FCC re RM-11715  
 March 23, 2014

In response to the Petition for Rulemaking from Mimosa Networks, Inc., whereby Mimosa is requesting the commission to pursue broadband spectrum allocation away from Part 97 Amateur Radio use for the purpose of increasing commercial opportunities for selling wideband internet access to consumers;

This filer is opposed to this allocation due to the damage it would cause to the future of the amateur radio service. A large radio amateur movement is underway that will make good use of the microwave spectrum allocated to them in the form of a totally commercial free national broadband data network, providing once again an emergency backup system that can provide communications of voice, data, and video, without the need of any commercial infrastructure nor with any profit motivation. One implementation of this system is known as the Broadband Hamnet, a form of ad-hoc meshnet formed completely of independent and volunteer network nodes, most with backup power and redundancy. Now commonplace on the 2.4 GHz band due to modification of commercial equipment, it will spread by simple frequency conversion to other microwave bands, as it is well on its way to national coverage. Sharing of the ham microwave bands with other data users will severely reduce the data bandwidth available for this purpose, as well as raise the noise floor for other amateur uses of the band.

The amateur radio community, which has existed in this country for 100 years, has provided an amazing public service in free communications services for public events and in times of emergency. Furthermore, the amateur radio hobby has been the major means by which new radio engineers pick their careers, with the government supporting and integrating this opportunity to learn and practice the electronics and radio art into the wide public and private use of the radio spectrum. It is rare to find a radio engineer who did not get his or her start in this hobby, one of the few hobbies that are federally licensed.

In the past, it has been the radio amateurs who have come through when all else fails, with their installed base of radio repeaters and networks, international location and mapping systems (APRS), and other services, without any tax dollars or public support. This type of volunteer non-commercial activity is what makes services like The Red Cross, Habitat for Humanity, the ACLU, Wikipedia, Student Conservation Association, the American Cancer Society, AmeriCore, and many others a huge asset to the public, which the government could not possibly afford to provide. 300 amateur radio operators will provide equipment and radio message handling skills to the 2014 Boston Marathon, having the only network that survived the onslaught and overload of the public cellular system when events of 2013 unfolded. And the amateur radio community does this at a high technical level, foreign to the understanding of the general public. There is a rich history of the amateur community providing the expertise needed in times of war and public disaster. I personally am employed to provide electronic and radio design capabilities for valuable military tools, and I started many years ago as a ham radio operator. I am very grateful to the FCC for the amazing opportunity provided by amateur radio licensing, and the supporting band protection from the money-talking auctions and petitions such as this one. Without this support, a national asset would be lost.

It should also be obvious that allocating even a shared use of the spectrum when both are for digital data services, would eliminate this same effective data bandwidth from amateur usage. When it comes to "sharing" spectrum with modern modulation technologies, it is noise floor that gets taken away, and range and bandwidth fall. Sharing is equivalent to "taking away" spectrum in this discussion. There is no shared policy that would prevent the future use of this spectrum for mesh networking in the ham community from being lessened by broadband data users. Even if the Part 97 use was primary, when the primary amateur mesh networks builds out, license free usage of the band would become difficult and start to fail, and political arguments would occur. No one reads the "must accept interference, even that which interferes with operation" warning labels, or believes they are "borrowing" the usage of someone else's spectrum to make their home or business

computer work.

In addition to the digital data networking use of the band by amateur radio operators, there are other uses of the band by amateurs, as part of the development and experimentation that hams do in all their bands. There are impressive very weak signal systems used on the band, and contests occur several times each year on this band using these techniques. Hams are moving more to digital weak signal modes on the bands, and 10 GHz is no exception, taking advantage of the signal processing capabilities of laptop PCs and cell phones, and the integrating capabilities of the Fast Fourier Transform to obtain amazing communications capabilities with MFSK modulation below the noise floor of normal radios. Hams actually share their bands amongst themselves with their multiple technologies which might be otherwise interfering. The amateur radio community has an impressive track record of self-regulation, establishing band plans that are not legally binding but universally respected, that allocate the bands to the multiple uses possible, avoiding interference amongst their own users, and this exists even in the microwave bands, including 10 GHz. Adding in an outside entity with commercial motivations would ruin this protection that the community establishes, another reason that sharing between data services is just not practical.

Furthermore, it is hopeless to consider 500 MHz of spectrum useful for backbone operations. Tens of gigabits/sec are needed for the public internet network, and it has been fiber optic that has been the enabler technology for the world's internet, creating one or more new virtual world-wide radio spectrums, that never leave the glass fiber. Wireless can be a part of this ever increasing bandwidth only for the last 5000 feet or less, where re-use of channels allows the support of individual users at high speeds. Fiber is a cheap and reliable and weatherproof technology for backbones that commercial services can build out, and amateur radio people cannot. To consider the spectrum of this proposal as having backbone value is similar to the Internet-over-power lines fiasco, or the claim that land based cell sites next to the GPS band will not cause interference, and probably many other politically motivated "technical" issues the FCC has faced.

Mimosa's filing claims that re-allocating this valued ham radio band would "benefit wireless Internet service providers, mobile wireless carriers, and telecommunications equipment providers." This is not completely in the best interest of the public, the FCC's real purpose. Though end users profit from these enterprises, it's a different use of the word "profit" that Mimosa is after, something that ignores the public interest served by Amateur Radio operators. It is the FCC's role to balance these motivations, and protect the non-profit use that has great long term payback in development of skills and technologies and backup infrastructure that ham radio provides. Our pioneering bands may seem underutilized now, but the very utilized bands we have were also sparsely populated before technologies advanced. If you listen in on other parts of the microwave spectrum, it all sounds underutilized, there is no special availability in this band that is unique. These bands must be protected for a healthy future of America's technology. Once it's gone, it is very unlikely to come back, and a wide future is lost for the gain of a few commercial petitioners. Please, maintain the status of all of our amateur bands, and even consider their expansion and further protection as has been done in the past.

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