Delivered Electronically

Marlene H. Dortch

Federal Communications Commission

Office of the Secretary

445 12th Street, SW

Washington, DC 20554

Re: *Use of C Band (3.7-4.2 Ghz) spectrum for purposes other than satellite down link service.*

GN Docket Nos. 18-122, 17-183

Dear Ms. Dortch:

I have been in the Communications business since the mid 70’s. Started in CB radio, then opened a 2-way radio business, and then migrated into a statewide Paging company. We now own and operate a rural area “Fixed” Wireless Internet Service Provider (WISP). Although we have about 1000 customers, we are still considered a small business. As such we have to rely on ourselves to use our spectrum resources to the best possible advantage. Most of what we use is “unlicensed” 2.4 and 5.1-5.8 Ghz. We also have some “Grandfathered” Part 90, 3.65 Ghz licenses, and are slowly installing “licensed” Part 101 11 Ghz PtP backhauls.

As a small business WISP, I have been extremely frustrated with the FCC, as far as allowing us to get access to spectrum that we could actually put to good use to provide Internet service to many rural areas. Most of the spectrum ends up being put up for auction, and goes to the cellular carriers. In fact, as I look back over the many years that I have been in the communication business, I see that a large majority of the spectrum has been auctioned and has gone to the cellular industry. Many bands were cleared out to make way for this, we lost the 2 Ghz PtP microwave bands, and lots of UHF Broadcast spectrum has been cleared and auctioned away. Although the auctions have made lots of (one time) money for the Government, they have not allowed “Recurring” money to the Government. It seems that once spectrum is auctioned off, it is gone from the public domain forever! Those that have the most money can buy this spectrum and sit on it. Just putting in the minimum needed to satisfy any buildout requirements. Spectrum that is “licensed” by the FCC has “recurring” money coming into the Government, and the spectrum is returned to the public at the end of the license term, and allows for additional licenses at the then going rate for the current value of the said spectrum. This gives the most value to the Government (and public) on an on-going basis, and it is in the Public Interest because it allows the normal public citizen to license and have access to it. Something the Auctions never seem to accomplish .

I am glad to see that under the “Ray Baum” act, that the FCC might now look at ways to get spectrum into the hands of those that can put it to good use doing what the FCC and Congress has stated that they want to happen, “Get good Broadband service to rural areas” ! As a WISP, I can do that.

**UN-LICENSED**

Under the “Ray Baum” act, there is a mandate to provide an additional 100 Mhz of “un-licensed” spectrum. More un-licensed spectrum is needed, as the current un-licensed bands are full. I would however suggest to the FCC that before any additional spectrum is put to that use, that a complete overhaul of how it can be used should take place. The current 2.4 and 5 Ghz un-licensed spectrum is fast becoming the haunting days of the CB band. There seems to be NO concern by the Router manufacturer’s, and the providers of attached Un-licensed WiFi access points (to cable, satellite, and DSL services) regarding other users in the band or even following the specified Part 15 technical requirements for using the bands. The Router manufacturers seem to be in a race to see who can sell the biggest, (and widest user of bandwidth) and highest power router to the naïve public, telling them that it will provide their “Exclusive” WiFi use, and will increase their Internet speeds. We have many times installed a new customer that was told that getting a new 1200 Mhz “Tri-band” router would improve their selected internet speed package of 3 Mbps download. Most of these routers are sold, with programming defaults set to the widest bandwidth, and the highest power outputs available on them. Other service providers are using WiFi home devices that use 80, or 160 Mhz of bandwidth to provide services that could work just as well on much smaller spectrum. Their attitude towards a WISP seems to be that if we are using all the available spectrum, then you can’t and we won’t have your competition. Last week as we were installing a new Access point, we scanned for available 5 Ghz frequencies to use, and saw a Satellite TV device that was actually using the UNII-2b frequencies (5350-5470 Mhz). It would do well if the FCC re-visited the Part 15 rules, and mandated that the use of the band required that you use the minimum power and bandwidth, by default, that was actually needed.

As far as allocating additional “Un-licensed” spectrum, I would suggest the use of the UNII-2b band (5350-5470 Mhz) for INDOOR equipment ONLY. At *reduced* power limits, and DFS restrictions, this would protect Government users, and allow 120 Mhz for these in Home WiFi devices. Also the 3.3-3.4 Ghz band could be allocated. This is currently being used by the amateur service. Many of the other Un-licensed bands are already shared with the amateur service. Although the spectrum from 3.0-3.4 Ghz could also be looked at. DFS may be required on these frequencies to help share it with Government users.

**COMMERCIAL MOBILE**

Under the act, an additional 100 Mhz is to be allocated to the Cellular Industry. With what seems to be a hi-jacking of the CBRS band by the cellular Industry, (to the extent that the FCC should re-name it the “Cellular Broadband Radio Service”), I have to ask, when is enough spectrum for the cellular Industry really enough?

With that personal comment aside, I would suggest that an additional 100 Mhz (3.4-3.5 Ghz) be added to the CBRS band as PAL use, and that the GAA channels in the 3.65-3.7 Ghz area be eliminated, and replaced by PAL use. This would give the Cell Industry the entire 3.4-3.7 Ghz. area for “Exclusive” Commercial Mobile use.

This would provide 300 Mhz of spectrum for 5G service. Going forward, the entire 3.1-3.4 Ghz spectrum could also be added to the CBRS with SAS doing the coordination with Government users. This would provide an additional 300 Mhz in the long term, providing a total of 600 Mhz for 5G use.

**FIXED WIRELESS BROADBAND**

Real spectrum for “Point to Multi-Point Fixed Wireless” has never been fully provided by the Government. Other than a small segment of the 3.65-3.7 Ghz band, (which has now been eliminated), it has been left up to WISP’s providing this service to rely on the Un-licensed spectrum to provide this service. Even with massive amounts of interference on these un-licensed bands, WISP’s have been able to provide the Public with affordable Broadband in areas that other providers can’t or won’t cover.

The 3.7-4.2 Ghz. band is an area of spectrum that if provided to WISP’s on a “licensed” basis, would greatly benefit the public, especially in the rural areas.

The band is currently home to a few “Point to Point Part 101 microwave users”, with 20 mhz channels being allocated. Most WISP’s only use 20 mhz wide channels to provide their current Point to Multi-Point broadband services. As more advanced backhaul, such as fiber, is being deployed across the nation, a lot of these 4 Ghz. backhaul links are being decommissioned.

The other use for this band is “C-Band” Satellite. This band was originally the main satellite download spectrum for many of the Cable TV and other entities to transport and provide video services with. A majority of those uses have now been shifted to the 11 ghz. bands. The cost and use of smaller size dishes that are used there has been a major factor in promoting that migration. The FCC currently has a database that shows the location of existing C band stations that would need to be protected.

For many previous years the C-band Satellite users and the Part 101 microwave users have been able to effectively share the use of this band. I do not see why that can’t still continue to happen if “Fixed Point to Multi-Point” use would also be allowed?

Currently, the FCC has stated that there are NO Federal users on this band, so to try to speculate under the mandate of the Ray Baum act as to what would be needed to protect Federal users on these frequencies would be senseless. If any Federal Users did decide, in the future, to use this band, you could not now know on what bandwidths, Modulation schemes, or locations that use would be to try to protect them.

As far as protecting the Non-Federal C Band and Part 101 users, the use of a “Band Coordinator”, similar to what is currently being used for the Part 101 service could be used. To help keep the costs down for smaller businesses, I would suggest a 2 tier coordination structure. A simple coordination, that could be used if the new user is beyond “x” number of miles from an existing C band location or Part 101 link point. A more advanced technical coordination for those new users that are within “x” number of miles of a current C band or Part 101 location, which would require more detailed calculations to plot out and provide interference protection to the existing users.

Coordination of this band would be easy to accomplish for Fixed Wireless use, as all locations that needed to be coordinated are at “Fixed” locations. Technical interference calculations could easily be done, and over the use of the license period should not change.

Coordination of this band for “Mobile” use would be a nightmare, as you would have the ever changing locations of the mobile locations to deal with. Requiring any fixed locations to implement a system like the SAS to control mobile users, would put an additional hardship on smaller businesses. And the SAS may not be able to control interference from mobile devices within protected areas, as they hunt for their base station to connect to.

I recommend that the 3.7-4.2 Ghz. band be setup as a new “Fixed Wireless Broadband Service”. With the new service allowing only “Point to Multi-point” use. Coordinating and licensing a physical “Base Station” (Access Point) location, with @100 “Fixed Customer Subscriber units” (CPE’s) connected to the base station, all operating within @10 miles radius of the Base station location. This would be similar to how the current Part 90, two way radio repeaters are coordinated and licensed. A license would be issued for 10 years. User could re-new license for additional 10 year period.

I suggest that ONLY directional antennas be allowed to be used. This would help protect against interference to protected users, allow for easier coordination of the frequencies, and allow more frequency re-use of the precious spectrum. Each new user should only be allowed to license for up to Four 20 mhz channels at a single “Starter” location (based on North-East-South-West sector antennas). There should be the requirements that the equipment will be installed and operating within 1 year of the issue of the license (unless there is a delay in manufacturing and FCC certification of the equipment), and that the license can NOT be transferred, sold, or leased to any other party within that one year build-out period. This will help keep speculators out, and make sure the spectrum goes to those that can use it. A licensee should be able to apply for and license additional channels at their original base station location, once they provide the band coordinator with sufficient documentation that an existing antenna being used is providing 70% of the maximum available throughput on that channel!

The current EIRP power for Part 101 PtP licensees on the band is 55 Dbm. For Point to Multi-point use, I recommend that Transmitter power be limited to 27 Dbm (.5 watt), and an EIRP of 47 Dbm (50 watt) maximum, with base directional antennas limited to 20 Dbi maximum. Antennas on Customer subscriber units should have no gain limit on required directional antennas, but should have the same EIRP limit of 47 Dbm (50 watt).

As a “Grand-Fathered licensee” of the 3.65-3.70 Ghz spectrum, I and many others would be happy to immediately exchange our Part 90 NN licenses/locations for comparable “licensed” spectrum in the 3.7-4.2 Ghz band. This would immediately clear the old 3.65 band for CBRS use.

I hope my suggestions and recommendations are helpful in the FCC structuring this new band, and I hope that they can provide us WISPs with the needed spectrum to help us provide better services to the public in rural areas.

Thank you,

Wayne Markis

President

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