Re: Comments in regards to FCC 04-186; Unlicensed Operation of the TV Bands below 900Mhz

Introduction: PocketiNet Communications is a regional Wireless Internet Service Provider (WISP) in the state of Washington. We have been operational since 2000 and deliver high quality broadband services to businesses and residences that would normally either not have an option or provide an option to DSL/Cable/T1 services.

Throughout our network we have deployed Point to Multipoint unlicensed systems that operate in 900Mhz, 2.4Ghz, 5.3 & 5.8Ghz spectrum. I can tell you that we are currently (& have been for some time) out of spectrum to deploy additional capacities in our service areas. In fact, the promise of WiMax technology does us no good simply because there is no spectrum capacity left to deploy on this platform. In short, there is a spectrum crisis that must be solved soon if we are to be able to grow our business.

As a company we have searched out licensed opportunities where we can, but the reality, when it comes to MMDS/ITFS, WCS or other licensed bands is that they are mostly all in the control of large carriers that are "sitting" on the spectrum and not utilizing it today.

1. **Why utilizing unused TV Spectrum is a good idea:** In most of the US because of the protected contours of the TV band plan and the rural nature (particularly in the West) most UHF/VHF channels are unused. Due to the propagation nature of spectrum at this frequency it could provide broadband alternatives both in a mobile and fixed environment to rather large areas without the need of many tower repeater sites. Currently the unlicensed 900Mhz bands in most areas suffer from "blead over" from old legacy paging systems & cellular operations and thereby become very noisy to utilize, if at all. The propagation at this frequency would be quite good otherwise and gives us a taste for what possibilities could exist in the TV spectrum for broadband.
2. **Co-existence between unlicensed devices and DTV channels**: In our particular group, our lead RF Engineers come from TV/Radio RF backgrounds and understand the concept of friendly coexistence and coordination. In the NPRM 04-113, it states that broadcasters are concerned over the possible interference to the fragile DTV transition period. Today, most if not nearly all TV operations are simulcasting on their DTV channel today and have been for some time. The DTV channels incorporate the latest ATSC transmission digital technology and any unlicensed devices (with the proper sensing technology) that operate on an adjacent channel should not cause any concern. Let's keep this in perspective that DTV broadcasts with millions of watts

ERP, compared to a mobile device that is limited to 100 mW TPO or eve a fixed device at 1 watt. Even using the proposed F(50,50) protection for adjacent channels should cause no concern to the DTV transmission.

3. **New synergies between broadcasters and service providers:** Cellular commercial operators are gearing up today with DVB-H technology to deliver multiple channels (~30) across cellular spectrum to their mobile users. The question needs to be asked is this the best use of spectrum to deploy mobile IPTV? Theoretically, this same type of IPTV could be provisioned on an unlicensed TV channel using similar modulation techniques to DVB-H. Further, I believe that there could be a nice opportunity for service providers to work directly with broadcasters to enable two-way interactive services to their viewers. Because of the large licensed transmission path of the DTV channel, part of the available unused spectrum could be utilized for many applications such as broadband, streaming IP video, or other data services. Working with a service provider a theoretical DTV receiver could transmit return data either on an existing ISM network or another unused unlicensed DTV channel. Local broadcasters could also utilize this spectrum for mobile ENG feeds that are temporary in nature throughout the area as well as remote video feeds.
4. **Mobile and fixed operation for broadband:** In a fixed operation, I believe the commission's idea of base station registration as noted in the 3650 Mhz band is a good idea for unlicensed operation. Any service provider that is building a business around use of unlicensed spectrum recognizes the potential danger of un-coordinated interferers to their plant. Thus, having a registration process gives everyone public notice and a database of such activity in an area as well as the licensed broadcaster. To that extend, I personally would like to see that registration process done in other ISM bands.
    a. Fixed Access Operation: Due to the complexity of involving broadcasters to broadcast a telemetry database that must be kept up to date it would seem that a device that senses the spectrum would be more efficient and allow for any DTV channel changes dynamically. This circuitry easily exists today and could be incorporated nicely into the devices. Using the same circuitry the device could operate in rural areas where the sensing device would operate at higher power levels where it didn't sense a broadcast station above a predetermined threshold.
    b. Mobile Operation: Since the portable mobile device will communicate with the base station (PMP mode) why not have the base station control the mobile device whether or not it is registered to transmit (since the base station dynamically senses

the spectrum for a TV channel)? Therefore, it should not be able to transmit or cause interference to a nearby DTV receiver if the base station doesn't authorize it (which is usually in a higher place and receives a better signal for sensing). Upon activation of the mobile device the base station would authenticate back to the device and allow it to transmit. Authentication would also provide dynamic registration of the device including model, MAC, and manufacturer.

In closing, I strongly endorse the Commission in support of using unused TV spectrum for broadband use throughout the US. As stated above, we as WISP's need additional spectrum to promote the further adoption of broadband into rural areas and provide competition to the LEC's.