



December 7, 2010

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: ET Docket No. 04-186

Dear Ms. Dortch:

Pursuant to Section 1.1206(b)(2) of the Commission's Rules, this is to notify you that on December 7, 2010, Stu Overby, Phil Bolt, Tony Cecchin, David Gurney and I, all with Motorola, met with Julius Knapp, Chief of the Office of Engineering and Technology, along with the following members of the OET staff: Ira Keltz, Walter Johnston, Rashmi Doshi, Robert Weller, Hugh Van Tuyl, Geraldine Matise, Karen Rackley Ansari, Bruce Romano and Steve Jones, regarding the above captioned proceedings.

During the meeting we discussed the information in the attached slides related to the transmit spectral mask applicable to fixed devices operating in the TV White Space (TVWS) spectrum. As described in the presentation, we believe the current TVWS transmit spectral mask significantly impacts the commercial viability of rural wireless broadband deployments due to increased device costs and that the mask can be relaxed while still providing equivalent protection to incumbents through increased adjacent channel separation and a simple modification to the geo-location database.

Pursuant to the Commission's Rules, one copy of this notice is being filed electronically with the Commission. If you require any additional information please contact the undersigned at (202) 371-6929.

Sincerely,
/s/ Barry Lambergman
Barry Lambergman
Director, Government Affairs

Attachment

Cc: Julius Knapp, Ira Keltz, Walter Johnston, Rashmi Doshi, Robert Weller, Hugh Van Tuyl, Geraldine Matise, Karen Rackley Ansari, Bruce Romano and Steve Jones



Delivering on the Promise of Cost-Effective Rural Broadband with TVWS

December 7, 2010

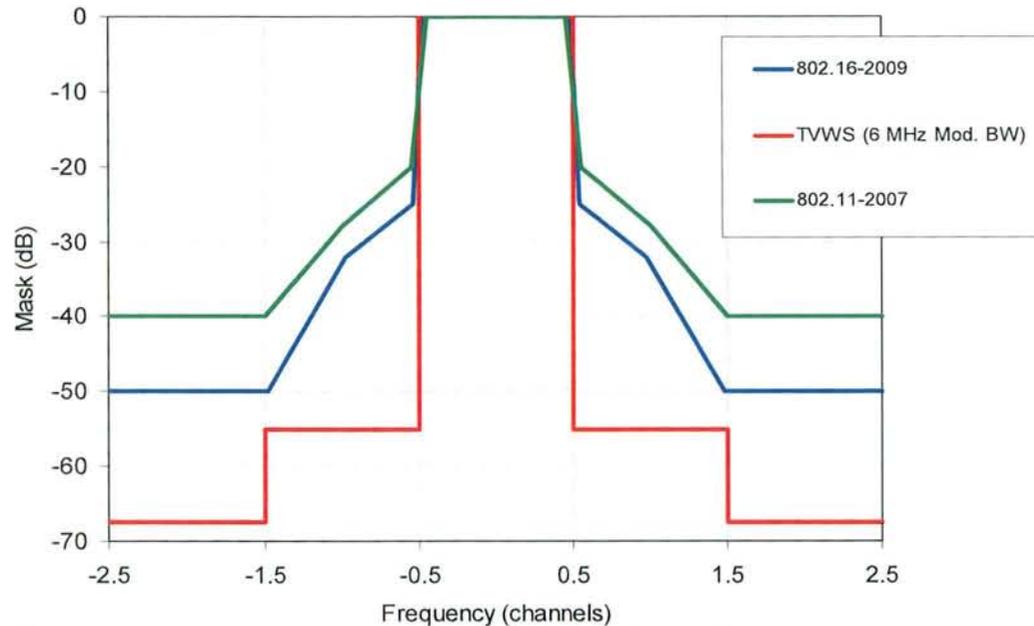


TV White Space – OOB for Fixed Devices

- ▶ Current TVWS Transmit Spectral Mask precludes use of existing broadband wireless solutions
- ▶ Current TVWS Transmit Spectral Mask rules significantly impact commercial viability of rural wireless broadband deployments due to increased costs
- ▶ We propose an option to resolve these problems while maintaining equivalent interference protection.



Transmit Spectral Mask Comparison by Technology



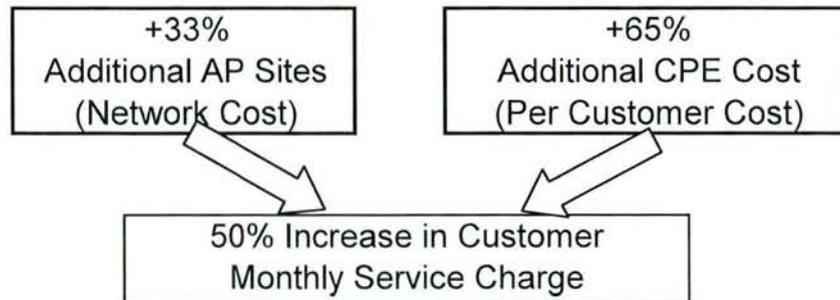
- ❑ The TVWS transmit spectral mask is tighter than those utilized in existing commercial wireless broadband solutions:
 - ~30 dB tighter than WiMax mask in the adjacent channel
 - ~35 dB tighter than 802.11a mask in the adjacent channel
- ❑ Very tight mask, especially for fixed TVBDs, that operate at higher power levels
 - Must also meet absolute 15.209(a) emissions levels in alternate channel
- ❑ Current TVWS Rules preclude use of existing wireless broadband solutions without significant commercial impacts...



Impact of Current Rule: Increased TV Device Cost & Reduced Capacity

| Design Impact | Capacity Impact | Customer Device Cost Impact |
|--|-----------------|-----------------------------|
| Reduce Occupied Bandwidth | -25% | |
| Custom Tx Circuitry replaces standard broadband Tx Circuitry | | +40% |
| Higher Power PA to compensate for higher Backoff | | +20% |
| Additional Thermal Heat sinks | | +5% |

Total Impact



WISP must charge higher monthly fee to compensate for higher network and CPE costs



Current Rule- Alternative: Utilize Existing Technology with Large Guard Bands

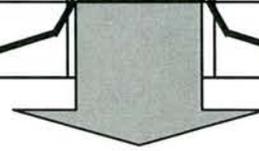
| TV | Adj Chan | Avail Chan | Adj Chan | TV |
|----|----------|------------|----------|----|
| X | X | | X | X |



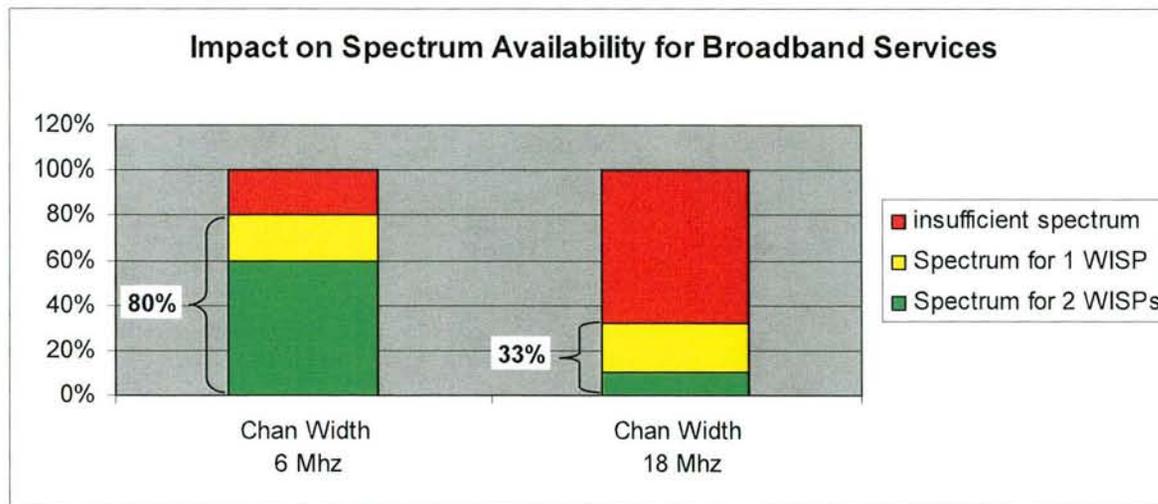
Use < 2/6 MHz of TV Channel
Severe Capacity Limitation
Not Economically Viable

OR

| TV | Adj Chan | Avail Chan | Avail Chan | Avail Chan | Adj Chan | TV |
|----|----------|------------|------------|------------|----------|----|
| X | X | | | | X | X |



Use ~ 5/6 MHz of 1 TV Channel
Waste 2 TV Channels for Roll Off
Requires 3 Contiguous Available Channels



Notes:

- ▣ Based on Channel Availability (per Spectrum Bridge Database) for sample of 65 rural WISPs
- ▣ Assumes 3 Channel Frequency Plan (1x3x3) for Fixed Network



Proposed Solution: Modify Transmit Mask for Fixed Devices and Maintain Incumbent Protection

- ▣ Geo-location databases can easily accommodate a relaxed spectral mask for Fixed TVBDs:
 - Fixed TVBDs cannot utilize adjacent channels (inside of contour), but can use adjacent channels outside of protected contours
 - Relax the mask for Fixed Devices
 - Increase adjacent channel separation to ensure equivalent protection as current rules at the edge of the protected contour
 - Solution could be readily implemented through the database:
 - Simple modification to geo-location database (i.e., a change of constant Required Separation values) – transparent to TVBDs
 - Option: new class of Fixed Device- existing class has tight mask and less separation; add new class with relaxed mask and greater separation
 - TVBD OOBE (adjacent channel splatter) dominates the interference protection computations...
 - Can also protect additional services (e.g., wireless mics, etc.) using similar techniques...



Proposed Transmit Mask and Adjacent Channel Separation Modifications

- ▣ A relaxation of the transmit mask to -47.8 dBr (measured in 6MHz BW on-channel / 100KHz BW off-channel) results in the following modified adjacent channel keep-out zones:

| Antenna Height of Fixed Unlicensed Device | Required separation distance (km) from Digital or Analog TV (Full Service or Low Power) Protected Contour | | |
|---|---|---|--|
| | Co-Channel Separation Distance (No Change) | Adjacent Channel Separation Distance (for existing mask) | Adjacent Channel Separation Distance (for relaxed mask) |
| Less than 3 m | 6.0 km | 0.1 km | 0.8 km |
| 3 m – Less than 10 m | 8.0 km | 0.1 km | 1.4 km |
| 10 m – Less than 30 m | 14.4 km | 0.74 km | 2.5 km |

- Notes:**
 - All values rounded to the nearest 100 m increment
 - Same assumptions utilized for D/U ratios and polarization mismatch as in current rules
 - TVBD adjacent channel emissions (OOBE) dominate interference protection computations with relaxed mask
 - TM-91/Egli propagation models used (which match F(50,10) curves propagation modeling for 30 m antenna height case)



Benefits of Proposal

- ▶ Supports the FCC policy objective and promise of bringing cost-effective broadband to rural areas
- ▶ Allows for the application of existing wireless broadband technology solutions to TVWS
- ▶ Provides the ability to leverage mass market devices for low cost, high performance solutions
- ▶ Continues to provide equivalent protection to incumbents
- ▶ Implementing by adding as another class of Fixed Device also provides option to tailor a solution to the environment

