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| Re: | This contribution is a response to the Call for Contributions from the 802.16 Coexistence Group regarding Broadband Wireless Access (BWA) systems. |
| Abstract | This contribution provides a description of band plans for the US Bands A&B LMDS spectrum. |
| Purpose | This contribution recommends that the described LMDS band plans be adopted for BWA systems. |
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# Proposed Band Plans for LMDS Bands A/B

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This paper recommends a band plan to satisfy the spectral requirements of Local Multipoint Distribution Systems (LMDS) operating in bands A and B in the USA. The proposed band is suitable for LMDS markets throughout the world. In particular, the plan harmonizes with the LMCS band in Canada, where a number of systems are currently operational throughout the country, including near Canada/US bordering cities such as the Greater Toronto Area.

Harmonizing band plans represents an effective method for promoting co-existence between adjacent licensed systems, i.e. co-ordinating deployments such that all base stations transmit in the same part of the band and all subscriber radios transmit in their respective duplexed portion of the band. The proposed band plan is illustrated in Figure 1.

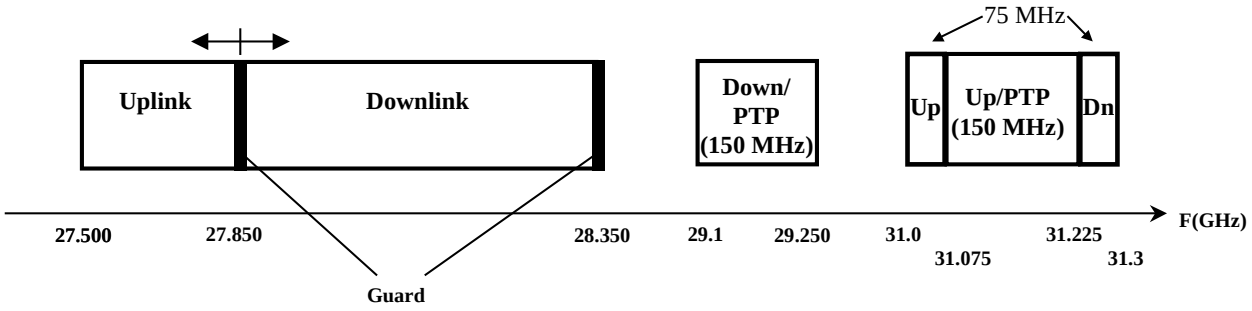


Figure 1 Proposed band plan for Bands A and B.

As shown, the bottom 350 MHz (27.5-27.85) and upper 150 MHz (31.075-31.225) of band A are dedicated to the upstream traffic (subscriber to base station) while the remaining spectrum is used for the downstream direction. Depending on the level of asymmetry desired, the up/down split may be moved left to right to provide higher or lower asymmetry, respectively. This plan is similar to the Canadian band currently in place where the lower portion of the LMCS spectrum is for upstream traffic and the upper portion is for downstream (note the LMCS band is 27.35-28.35 GHz). A harmonized band plan allows similar radio designs to be employed for both countries.

An optional guard band of 10-50 MHz can be used between the up and down stream traffic to accommodate desensitization that may occur between the transmitter and receiver at the base station. This assumes cross-polarization is employed and that an orthomode transducer (OMT) is implemented at the subscriber radio to diplex the transmit and receive signals onto a common antenna. OMTs offer better than 55 dB of port to port isolation, which is sufficient for the transmit power levels and noise emitted from typical CPE radios. For co-polarized systems, a larger guard band will likely be required. An optional guard band may also be placed at the upper end of the dowsntream spectrum to help meet out-of-band emissions limits, which is particularly applicable to multi-carrier transmitters with intermod regrowth. Note that multi-carrier systems are highly desirable to minimize the amount of radios required on a roof top to fill a given spectrum license.

The rationale for placing the upstream traffic in the lower part of the 850 MHz band is based on the following:

1) to harmonize with the Canadian LMCS band plan for easier coordination and for allowing similar radios to be manufactured yielding greater economies of scale. In Canada, the upstream was orginally assigned to the lower part of the band primarily to address sharing with space science satellite systems overlapping in the 27.35-27.5 GHz region. Subscriber radios, with automatic power control (to address rain fading), radiate well below the satellite's protection criterion, hence, pose no interference problem. Base stations are still being discussed under ITU-R 7D/9D.

2) the upstream traffic is traditionally allocated to the lower part of the band where free space losses (FSL) are slightly lower, providing a slight advantage to subscriber transmitters that are typically power limited.

For the B Band, the lower 75 MHz (31.0-31.075 GHz) is recommended for upstream while the upper 75 MHz (31.225-31.3 GHz) is recommended for the downstream. Again, in the absence of any other compelling reason, the lower portion of the spectrum is traditionally chosen for the upstream transmitter.

If in-band point to point radios are used, they can be allocated to the two upper blocks of band A as shown in the figure.