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| **Project** | IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16> |
| **Title** | **Action Item from Session #46: Text and Figure fixing comment 544** |
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| **Re:** | **IEEE 802.16 Working Group Letter Ballot #24, on P802.16h/D1** |
| **Abstract** | **This contribution proposes to enhance adaptive channel selection using 2-hop BS working channel ID to increase spatial efficiency.** |
| **Purpose** | **To consolidate the working document** |
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**Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.**

**Action Item from Session #46: Text and Figure fixing comment 544**

**----Enhancements to the Optimization of channel Distribution**

**By**

**Liwen Chu**

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**Introduction**

In November meeting, the part 1 of contribution S80216h-06_101 (slide2 to slide 8) was accepted by the 16h task group. But the editorial change indication is not provided in S80216h-06_101. Here we provide editorial change indication for the part 1 of the idea proposed in S80216h-06_101.

The following is the summary of the part 1 of contribution S80216h-06_101. One of the basic coexistence mechanisms of 802.16h is the adaptive channel selection. The IBS (initializing BS) finds a less interfering or less used frequency to work on. The algorithm in the current draft [1] randomly selects a non-interfering channel as IBS's working channel if there is at least one non-interfering channel. This may decrease frequency efficiency, as described in S80216h-06_101 ([2]). We provide an enhancement to the algorithm in draft [1] to increase the frequency efficiency. The key idea is that an IBS selects one of its 2-hop OBS's (operating BS) working channels which are the IBS's non-interfering channels as its working channel. If the IBS cannot find any such a non-interfering channel, it randomly selects one of its non-interfering channels as the working channel.

## 15.4.1.1 How to select a "free" channel (for ACS and DFS)

***Update texts as follows (changes marked red):***

After Scanning before interference identification, the IBS should try to figure out whether it interferes with other systems in each of these candidate channels. In the initialization phase of an IBS, its neighbors will send their current working channel ID, neighbor's working channel IDs, OCSI allocation and subframe allocation using CXP messages, as well as a flag having alternative channels. The IBS maintains the channel information of all 1-hop and 2-hop neighbors in the BS information table.

If there is neither interference detected nor interference victims found in some channel by the IBS, the channel is marked as a "free" channel of the IBS. When the IBS can find non-interfering channels at the initialization phase, it shall select its working channel as follows:

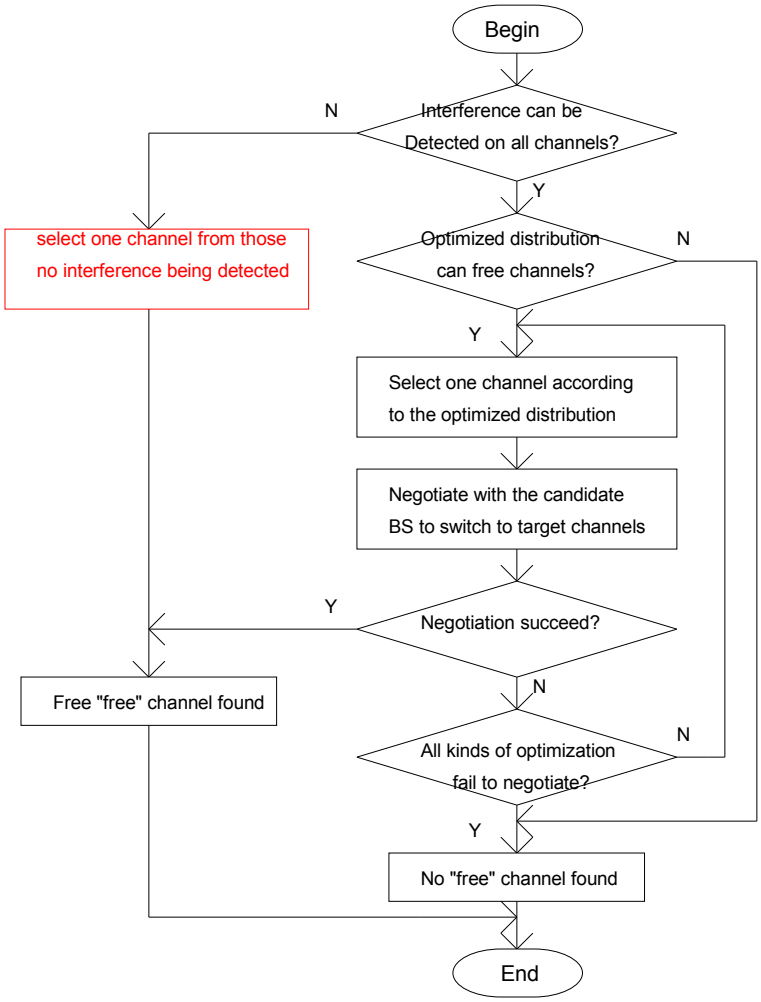
> If the IBS can find non-interfering channels that are also its 2-hop neighbors' working channels, it randomly selects one from those non-interfering channels as its working channel.
>
> Otherwise the IBS randomly selects one from all available non-interfering channels as its working channel.

When the IBS cannot find any non-interfering channel, the IBS should figure out whether a "free" channel can be vacated by optimized channel distribution, as described in 15.4.1.2.

The process of ACS is shown in Figure h 38. The ACS process concludes with either one of two possible results: a) a "free" channel is validated with or without channel distribution optimization, or b) no "free" channel.

If a "free" channel is validated, it means default interference-free master slot is to be used; otherwise, the IBS needs to share the channel with coexistence neighbors, as described in 15.4.2.1.

***Change Figure h38 as follows:***




## 15.4.1.2 Optimization of Channel Distribution

***Insert the following red text:***

In the initialization phase of an IBS, its neighbors will send their current working channel ID, neighbor's working channel IDs, OCSI allocation and subframe allocation using CXP messages, as well as a flag having alternative channels. The IBS maintains the channel information of all 1-hop and 2-hop neighbors in the BS information table.

## Reference

[1] IEEE P802.16h/D1: Working Document for P802.16h

[2] IEEE S80216h-06_101: Enhancements to the optimization of channel distribution