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| Re: | IEEE 802.16 Session #48 |
| Abstract | This contribution proposes the updates of IEEE 802.16g D8 document in order to obtain loading information from the Base Station |
| Purpose | Update 802.16g draft obtain uplink and downlink loading information |
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# DL and UL loading parameters information

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## 1. Introduction

In order for MS to enter 802.16 network for the first time, MS shall obtain DCD and UCD then will commence network entry procedure by initiating the initial ranging procedure. Before ranging with a particular BS, the MS shall obtain the DL and UL loading information form the DCD and UCD broadcast messages and take the loading report into consideration when selecting a particular BS. The loading condition is not the only factor for BS selection, however it is an important information when load balancing is required prior to network entry.

## 2. Proposed Text Change

***Remedy 1:***

Factor the loading information on the Down Link.

*[In 6.3.9.2 Obtain downlink parameters, Modify the text]:*

### 6.3.9.2 Obtain downlink parameters

The MAC shall search for the DL-MAP MAC management messages. The SS achieves MAC synchronization once it has received at least one DL-MAP message and is able to decode the DL-Burst Profiles contained therein. An SS MAC remains in synchronization as long as it continues to successfully receive the DL-MAP and DCD messages for its channel upon network entry only and the Non-pre-assigned DL radio resources in the DCD message are higher than or equal to the available_DL_radio_resources_system_parameter. If the reported Non-pre-assigned DL radio resources are less than the available_DL_radio_resources_system_parameter, the SS/MS should continue scanning to find another channel until all channels are scanned. If all channels are scanned, the MS should choose the most appropriate channel to perform initial ranging according to section 6.3.9.5 based on conditions that include RSSI, CINR and the available Non-pre-assigned DL/UL radio resources of all channels. If the Lost DL-MAP Interval (Table 342) has elapsed without a valid DL-MAP message or the T1 interval (Table 342) has elapsed without a valid DCD message, an SS shall try to reestablish synchronization. The process of acquiring synchronization is illustrated in Figure 56. The process of maintaining synchronization is illustrated in Figure 57. (language change: add MS and SS section to explain better – perform MAC HO function 6.3.25 or 22?. SS initial entry )

(Note to Editor: Need to modify Figure 57 – see below)

***Remedy 2:***

Factor the loading information on the Uplink Link.

*[In 6.3.9.3 Obtain uplink parameters, Modify the text]:*

#### 6.3.9.3 Obtain uplink parameters

After synchronization, the SS/MS shall wait for a UCD message from the BS in order to retrieve a set of transmission parameters for a possible uplink channel. These messages are transmitted periodically from the BS for all available uplink channels and are addressed to the MAC broadcast address.

If no uplink can be found after a suitable timeout period, or if the Non-pre-assigned UL radio resources in the UCD message are lower than the available_UL_radio_resources_system_parameter, then the SS shall continue scanning to find another downlink channel. The process of obtaining uplink parameters is illustrated in Figure 58. (Editor: need to change Figure 58 – see below)

The SS shall determine from the channel description parameters whether it may use the uplink channel. If the channel is not suitable or the Non-pre-assigned UL radio resources are lower than the available_UL_radio_resources_system_parameter, then the SS shall continue scanning to find another downlink channel. If the channel is suitable, the SS shall extract the parameters for this uplink from the UCD. Then, the SS shall wait for a bandwidth allocation map for the selected channel. It may begin transmitting

uplink in accordance with the MAC operation and the bandwidth allocation mechanism.

If after scanning all channels the SS does not find a channel of which the Non-pre-assigned DL radio resources are greater than or equal to the available_DL_radio_resources_system_parameter and the Non-pre-assigned UL radio resources are greater than or equal to the available_UL_radio_resources_system_parameter, the SS will choose the most appropriate channel to perform initial ranging according to section 6.3.9.5 based on conditions that include RSSI, CINR and the Non-pre-assigned DL/UL radio resources of all channels.

The SS shall perform initial ranging at least once, per Figure 60 and Figure 61. If initial ranging is not successful, the procedure is restarted from scanning to find another downlink channel.

The SS MAC is considered to have valid uplink parameters as long as it continues to successfully receive the UL-MAP and UCD messages. If at least one of the messages is not received within the time intervals specified in Table 342 or the Non-pre-assigned UL radio resources are lower than the available_UL_radio_resources_system_parameter, the SS shall not use the uplink. This is illustrated in Figure 59.

(Editor: need to change Figure 59 – see below)

Figure 57 – Maintaining downlink synchronization

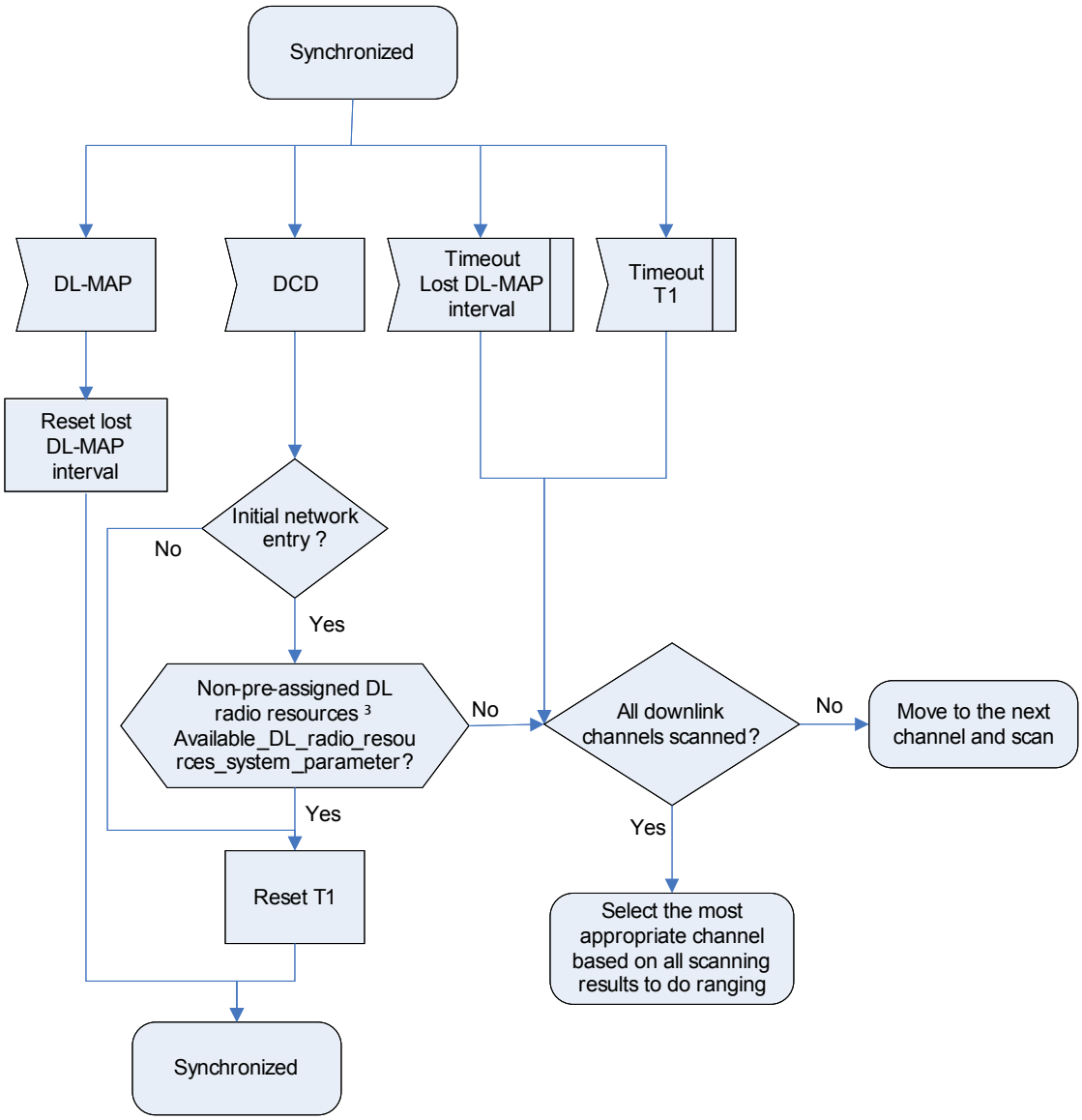


Figure 58 – Obtaining uplink parameters

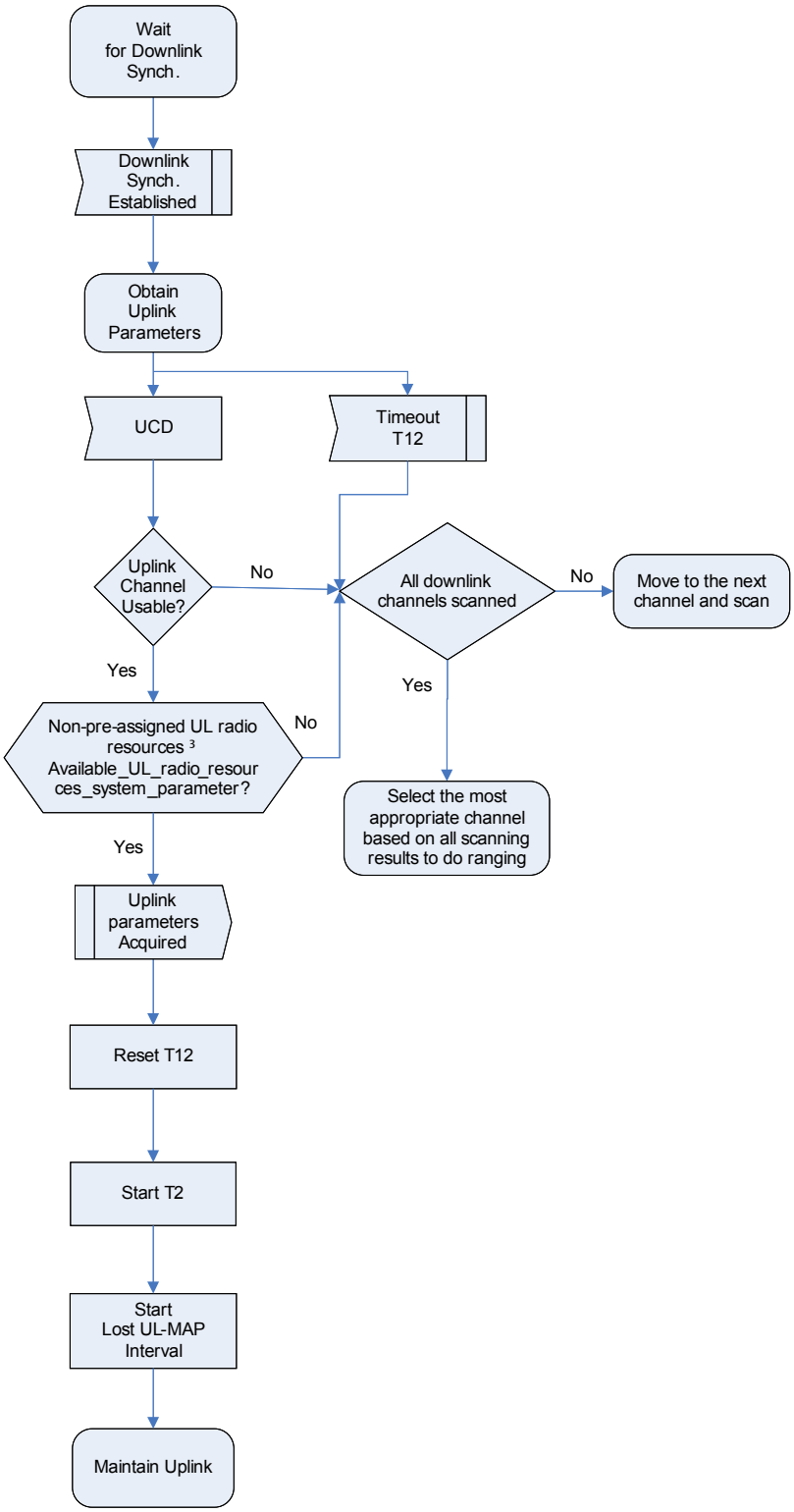
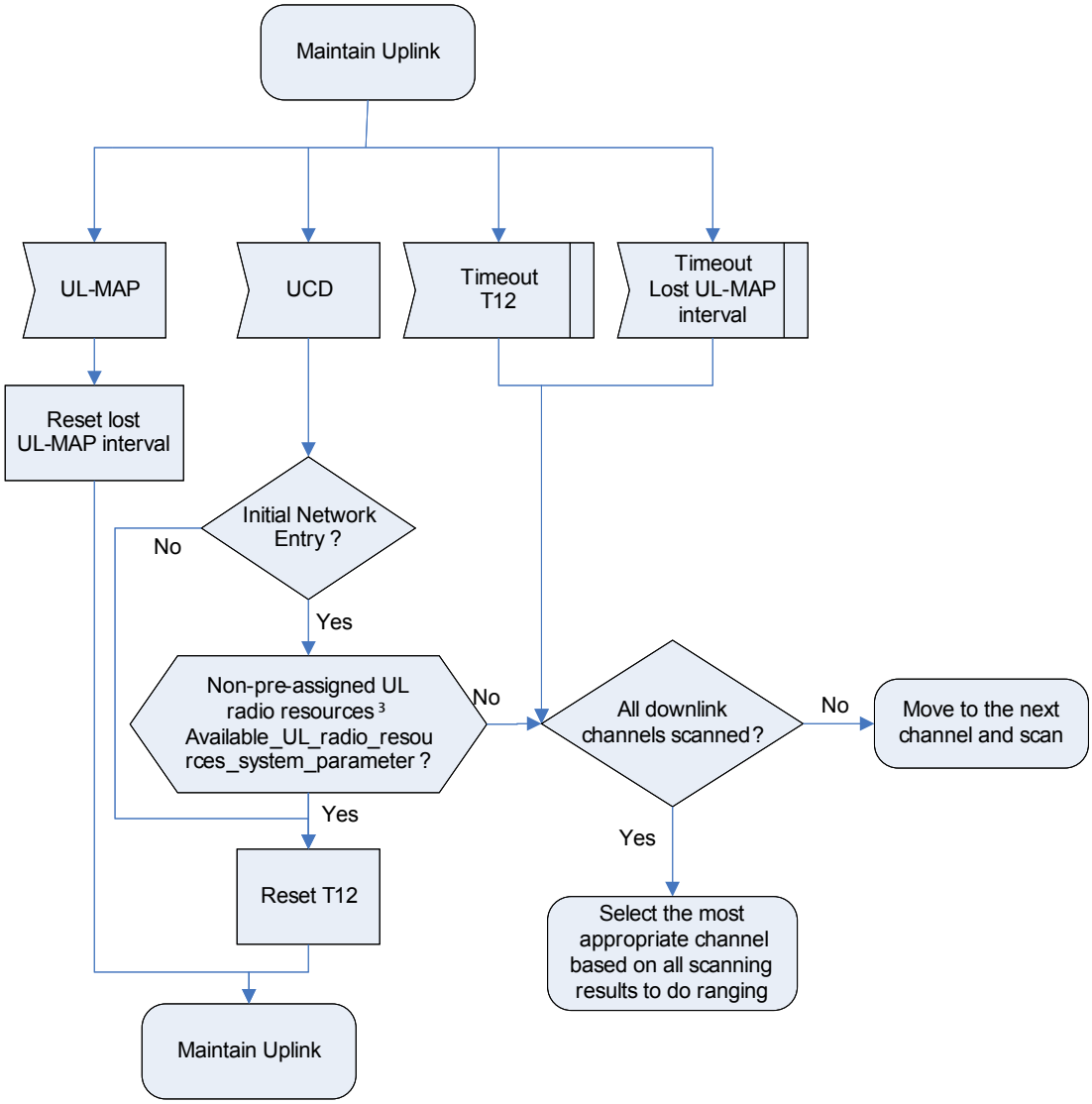


Figure 59 – Maintain uplink parameters



***Remedy 3:***
Revise the description of DCD configuration change count.

*[In section 6.3.2.3.1 Downlink Channel Descriptor (DCD) message under Table 15, modify the text]:*

A BS shall generate DCDs in the format shown in Table 15, including all of the following parameters:

**Configuration Change Count**
Incremented by one (modulo 256) by the BS whenever any of the values of this channel descriptor change, except for the Frame Number for the OFDM PHY and for the case that the Non-pre-assigned DL radio resources change but do not cross the available_DL_radio_resources_system_parameter. If the value of this count in a subsequent DCD remains the same, the SS can quickly decide that the remaining fields have not changed and may be able to disregard the remainder of the message.
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***Remedy 4:***
Revise the description of UCD configuration change count.

*[In section 6.3.2.3.3 Uplink Channel Descriptor (UCD) message, modify the text]:*

A BS shall generate UCDs in the format shown in Table 17, including all of the following parameters:

**Configuration Change Count**
Incremented by one (modulo 256) by the BS whenever any of the values of this channel descriptor change, except that the Non-pre-assigned UL radio resources change but do not cross the available_UL_radio_resources_system_parameter. If the value of this count in a subsequent UCD remains the same, the SS can quickly decide that the remaining fields have not changed and may be able to disregard the remainder of the message. This value is also referenced from the UL-MAP message.

***Remedy 5 (for discussion per previous comments):***
Revise the description of DCD message.

*[In section 6.3.2.3.1 Downlink Channel Descriptor (DCD) message, modify the first paragraph]:*
A DCD shall be transmitted by the BS at a periodic interval (configurable per Table 342) to define the characteristics of a downlink physical channel.

***Remedy 6 (for discussion per previous comments):***
Revise the description of UCD message.

*[In section 6.3.2.3.3 Uplink Channel Descriptor (UCD) message, modify the first paragraph]:*
A UCD shall be transmitted by the BS at a periodic interval (configurable per Table 342) to define the characteristics of an uplink physical channel.

***Remedy 7:***

Revise the description of cell selection during idle mode.

*[In section 6.3.24.2 Cell Selection, modify the text]:*

**6.3.24.2 Cell selection**

At MS Idle Mode Initiation, an MS may engage in cell selection to obtain a new Preferred BS. A Preferred BS is a Neighbor BS that the MS evaluates and selects as the BS with the best air interface DL properties, which may include the RSSI, CINR, and Non-pre-assigned DL radio resources. The Preferred BS may be the MS's previous Serving BS. In all other respects, cell selection is similar to 6.3.22.2.1.