<table>
<thead>
<tr>
<th>Project</th>
<th>IEEE 802.16 Broadband Wireless Access Working Group <a href="http://ieee802.org/16">http://ieee802.org/16</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Refinement of Sleep Mode</td>
</tr>
<tr>
<td>Date Submitted</td>
<td>2005-06-14</td>
</tr>
<tr>
<td>Source(s)</td>
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<td>Yigal Eliaspur Intel Corp. <a href="mailto:yigal.eliaspur@intel.com">yigal.eliaspur@intel.com</a></td>
</tr>
<tr>
<td>Re:</td>
<td>IEEE P802.16e/D8-2004</td>
</tr>
<tr>
<td>Abstract</td>
<td>This contribution proposes some changes on Sleep mode</td>
</tr>
<tr>
<td>Purpose</td>
<td>Discuss and adopt this contribution</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
1 Problem Statement

The MOB-SLP-REQ/RSP messages have several problems as follows.

- In MOB-SLP-REQ, 4 bit-long Listening window breaks byte-alignment of the other fields. It need to be byte aligned, i.e. 8 bit-long for the consistency with one in MOB-SLP-RSP.
- In MOB-SLP-RSP, the field "Sleep-approved" is used to allow or reject the MSS’s respective sleep request of Power Saving Classes. But it does not exist. It is need to be added.
- The MOB-TRF-IND SDU has defined a mode (FMT), however this mode does not appear in the relevant table.

2 Suggested Remedy

[Change the ‘Listening window’ in Table 108c Sleep-Request (MOB_SLP-REQ) message format on Page 91, Line 7 as follows]

Table 108c—Sleep-Request (MOB_SLP-REQ) message format

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Size (bits)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening-window</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>final-sleep window</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>}</td>
<td></td>
</tr>
</tbody>
</table>

[Change the Table 108d Sleep-Response (MOB_SLP-RSP) message format on Page 93, Line 4 as follows]

Table 108d—Sleep-Response (MOB_SLP-RSP) message format

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Size (bits)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```plaintext
MOB_SLP-RSP_Message_Format() {
    Management message type = 51 8
    Number of Classes 8
    for (i = 0; i < Number_of_Classes; i++) {
        Length of Data 8
        Sleep_Approved 1
        Definition 1
        Operation 1
        Power_Saving_Class_ID 6
        if(Sleep_Approved == 1) {
            Start_frame_number 6
            Reserved 2
        } else {
            REQ-duration 8
        }
        if (Operation = 1) {
            if (Definition = 1) {
                Power_Saving_Class_Type 2
                Direction 2
                if (Sleep_approved == 0) {
                    REQ-duration 8
                }
                initial_sleep_window 8
                listening_window 8
                final_sleep_window_base 10
                final_sleep_window_exponent 3
                TRF-IND_required 1
                Traffic_triggered_wakening_flag 1
                Reserved 1
                if (TRF-IND_required) {
                    SLPIID 10
                    Reserved 2
                }
            }
            Number_of_CIDs 4
            for (i = 0; i < Number_of_CIDs; i++) {
                CID 16
            }
            if (SHO or FBSS capability enabled) {
                Maintain_Active_Set_and_Anchor_BS_ID_BSID 1
                if (Maintained_Active_Set_and_Anchor_BS_ID_BSID) {
                    SHO_FBSS_duration(s) 3
                }
            }
        }
    }
    Padding variable
    if (Operation = 1) {
    }
}
```
Power Saving Class TLV encoded information

\}
\}
\} else {
\
REQ-duration
8
\
\}

TLV encoded information variable

Parameters shall be as follows:

**Length_of_Data**
Number of bytes in following specification of Power Saving Class

**Sleep_Approved**
1 = Indicates that BS approves the MSS’s Activation/Deactivation Request of the Power Saving Class.
0 = Indicates that BS disapproves the MSS’s Activation/Deactivation Request of the Power Saving Class.

In case of the unsolicited MOB_SLP-RSP, there is included Information of only the Power Saving Class with Sleep_Approved = 0 in it.

In case of the MOB_SLP-RSP transmitted from BS in unsolicited manner, it shall include information of only the Power Saving Class with Sleep_Approved = 1.

**Definition**
1 = Definition of Power Saving Class present

**Operation**
1 = Activation of Power Saving Class
0 = Deactivation of Power Saving Class (for types 1 and 2 only; used only with Definition = 0)

**Power_Saving_Class_ID**
Assigned Power Saving Class identifier. The ID shall be unique within the group of Power Saving Classes associated with the MS. This ID may be used in further MOB_SLP-REQ/RSP messages for activation/deactivation of Power Saving Class

...[Change the Table 108e—Traffic-Indication (MOB_TRF-IND) message format on Page 97, Line 54 as follows]

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Size (bits)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOB_TRF-IND_Message_Format() {</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management message type = 52</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>FMT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>if(FMT == 0) {</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLPID Group Indication bit-map</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Traffic Indication Bitmap variable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>} else {</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Num-Pos</td>
<td>8</td>
<td>Number of CIDs following</td>
</tr>
<tr>
<td>for (i=0; i &lt; Num-Pos; i++) {</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Basic CIDs</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLV encoded items variable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>