**Multi-Frame Concept for MMR Operation**

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For discussion and approval of inclusion of the proposed text into the P802.16j baseline document.

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**Basic ideas**

- **Multi-frame structure**
  
  *LMF*: length of Multi Frame

  - (Variable) length of multi-frame structure (LMF)
    * Max hop dist of active RSs + 1, or
    * 2 X Max hop dist of MSs with UL traffic
  - Separate hop channels for bursts of different hop counts
  - No collision around RSs
  - Same MAP relayed everywhere → no interference

<table>
<thead>
<tr>
<th>Frame</th>
<th>LMF = 3</th>
<th>LMF = 1</th>
<th>LMF = 1</th>
<th>LMF = 4</th>
<th>LMF = 2</th>
<th>LMF = 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>frame</td>
<td>frame</td>
<td>frame</td>
<td>frame</td>
<td>frame</td>
<td>frame</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignment (hop based)</th>
<th>frame control information</th>
<th>RS Command</th>
<th>HC1</th>
<th>HC2</th>
<th>HC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame i</td>
<td>PR</td>
<td>FCH MAP</td>
<td>BS ?</td>
<td>RS 1</td>
<td>BS ? MS 1</td>
</tr>
<tr>
<td>Frame i+1</td>
<td>PR</td>
<td>FCH MAP</td>
<td>RS 1</td>
<td>RS 2</td>
<td>BS ? MS 1</td>
</tr>
<tr>
<td>Frame i+L-1</td>
<td>PR</td>
<td>FCH MAP</td>
<td>-</td>
<td>-</td>
<td>BS ? MS 1</td>
</tr>
</tbody>
</table>

**Forward to MS**

- **UL access & control**
  - `UL access & control`
  - `PR 1.7 BS`
  - `MS 1.7 BS`

**Backward to MMR (BS)**

- **UL access & control**
  - `UL access & control`
  - `PR 1.7 BS`
  - `MS 1.7 BS`

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**Identical at every frame excluding frame number:**

- RS control information
- May be different contents

**Should be the same contents:**

- Only for one hop access
- Never used for relay channel
- RS control information
- Should be the same content

**May be different contents:**

- For including access data from MSs
An example
no collisions at receiver because of the same signals

frame control information (FCH, MAP, ...)

shaded areas are receive mode
else transmit mode

RC : RLY-CMD
RP : RLY-RPT

Multi-frame period with length 3