Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Support of legacy terminals in a 16m TDD system with four switching points**
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Re:	The call for contributions on "The entire content of IEEE 802.16m-08/003r1" (Frame structure)
Abstract	Multiple sections of the documents contain text proposals in support of comment submitted separately on the proposed frame structure baseline content in document C802.16m-08/118r1.
Purpose	Propose text changes to the SDD in support of a comment to IEEE 802.16m-08/003r1 (SDD) submitted separately
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Support of legacy terminals in a 16m TDD system with four switching points

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If a 16m system with four switching points per radio frame is deployed on the same carrier frequency and in the same geographical area as a legacy system, this would create severe interference problems (unless some special arrangement is done such as blanking out parts of the legacy frames). A new 16m system with four switching points per radio frame should therefore be deployed with sufficient separation either geographically or in frequency from legacy systems. Similarly, when a legacy system is upgraded to a 16m system with four switching points per radio frame, all base stations need to be upgraded at the same time.

A 16m system with four switching points can, however, support legacy terminals. This has been noted in a number of contributions, e.g. in C802.16m-07/242r1, C80216m-07_263, C80216m-07/215, C80216m-07_235, and C80216m-08_095r1.

This was also noted in the Orlando meeting in comment 62 in the commentary database C80216m-08_247 and in the accompanying contribution C802.16m-08/245. The comment was approved and the sentence "There shall only be two switching points in each TDD radio frame when supporting legacy systems" was modified to "In the case of coexistence with legacy systems, two switching points may be selected in each TDD radio frame." as proposed in the comment.

In the current SDD it is, however, not illustrated how a legacy terminal is supported in a 16m system with four switching points. Here we propose to include a figure and associated text to do that.

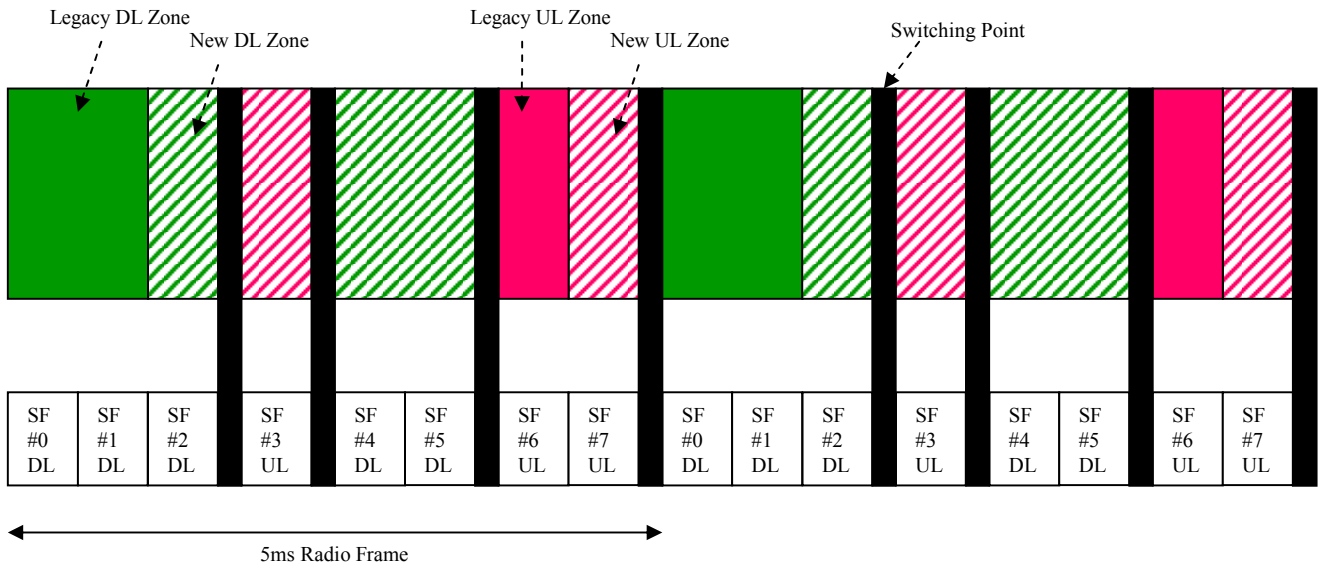**----------TEXT PROPOSAL for section 11.4.4.1 in IEEE 802.16m-08/003r1-----------**

11.4.4.1 Time Zones in TDD

As was mentioned earlier, the concept of time zones applies to TDD mode (see Figure 13 and Figure X), as well. The following constraints apply:

In a mixed deployment, The allocation of time zones in the TDD duplex mode shall be as shown in Figure 13 and Figure X for the two and four switching point case respectively. The duration of the zones may vary. Every frame shall start with a preamble and the MAP followed by legacy DL zone since legacy terminals/relays expect 802.16e zones in this region. In the case of coexistence, the UL portion shall start with legacy UL zone since legacy BS/terminals/relays expect 802.16e UL control information be sent in this region. Here the coexistence is defined as a deployment where legacy and new BSs co-exist on the same frequency band and in the same or neighboring geographical areas and in this case, four switching points should not be used. In a green-field deployment, the legacy zones can be removed.

Switching points should be synchronized across network to reduce inter-cell interference.

The switching points would require use of idle symbols to accommodate the gaps. In case of TDD operation with the generic frame structure, the last symbol in the slot immediately preceding a downlink-to-uplink/uplink-to-downlink switching point may be reserved for guard time and consequently not transmitted.

Legacy DL Zone

New DL Zone

Legacy UL Zone

New UL Zone

Switching Point

| SF #0 DL | SF #1 DL | SF #2 DL | SF #3 UL | SF #4 DL | SF #5 DL | SF #6 UL | SF #7 UL | SF #0 DL | SF #1 DL | SF #2 DL | SF #3 UL | SF #4 DL | SF #5 DL | SF #6 UL | SF #7 UL |

5ms Radio Frame

Figure X Time zones in a TDD system with four switching points per radio frame.

----------------------------END OF TEXT PROPOSAL------------------