

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Proposed Content of SDD Subclause 11.4.6 regarding Coexistence	
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Re:	IEEE 802.16m-08/016r1 (“Call for Contributions on Project 802.16m System Description Document (SDD)”)	
Abstract	This contribution proposes content for subclause 11.4.6 of the Draft IEEE 802.16m System Description Document (IEEE 802.16m-08/003r1). As compared to the proposal in the TGM Frame Structure Rapporteur Group Output (C802.16m-08/118r1), 802.16 would not be required to sacrifice as much transmission time in the name of coexistence.	
Purpose	To be discussed and adopted by TGM as the content of subclause 11.4.6 of IEEE 802.16m-08/003r1.	
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Proposed Content of SDD Subclause 11.4.6 regarding Coexistence

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1 Introduction

The Draft IEEE 802.16m System Description Document (IEEE 802.16m-08/003r1) includes an empty subclause 11.4.6 on “Coexistence Supports in Frame Structure.” This contribution proposes suitable content.

This document is a followup to IEEE C802.16m-08/229 (“Proposed Revision of TGM Frame Structure Rapporteur Group Output (C802.16m-08/118r1) regarding Coexistence”). That document explains the coexistence issue in greater detail than presented here. It also provides calculations demonstrating how this method is less wasteful of 802.16 resources than other alternatives.

2 Proposed content of 11.4.6

11.4.6 Coexistence ~~Supports in Frame Structure~~ with alternative radio access technologies

In TDD systems, coexistence between cells may be facilitated by synchronizing and aligning TDD radio frames to avoid simultaneous BS and MS transmissions in adjacent cells or adjacent channels. By considering the frame structure design, such synchronization can allow for coexistence with potentially interfering cells using TDD technology not based on IEEE 802.16

The examples below demonstrate procedures that can be used to coexist with two particular TDD radio interfaces. In both cases, the alternate technology includes multiple frame structure options. The 802.16 operator is not expected to arrange for coexistence with an arbitrary frame structure, because some will require inefficiency on the part of one operator or the other. These examples illustrate particular choices of parameters on both radio interfaces in order to enable coexistence without extreme inefficiencies.

These examples require the ability to idle one or more 802.16m symbols at the end of a subframe.

11.4.5.1 Coexistence with UTRA LCR-TDD (TD-SCDMA)

Coexistence between IEEE 802.16m TDD and UTRA LCR-TDD (TD-SCDMA) is illustrated in Figure 11.4.6-1 for a special case: the 802.16m TDD frame with a 5:3 DL:UL ratio and TD-SCDMA with a 4:3 DL:UL ratio. The 5 ms 802.16m radio frame consists of eight 6-symbol subframes, each symbol $\sim 102.86 \mu\text{s}$ duration, for the 5, 10, or 20 MHz channels with $\text{CP}=1/8 T_u$. Note that, as shown in Figure 11.4.6-1, coexistence between IEEE 802.16m TDD and UTRA LCR-TDD (TD-SCDMA) is facilitated by idling the last three OFDMA symbols in the DL. This use of idle symbols can be generalized to other DL:UL ratios. For example, with a 6:2 DL:UL ratio on the 802.16m TDD frame and a 5:2 DL:UL ratio on the TD-SCDMA frame, only two 802.16m symbols would need to be idled.

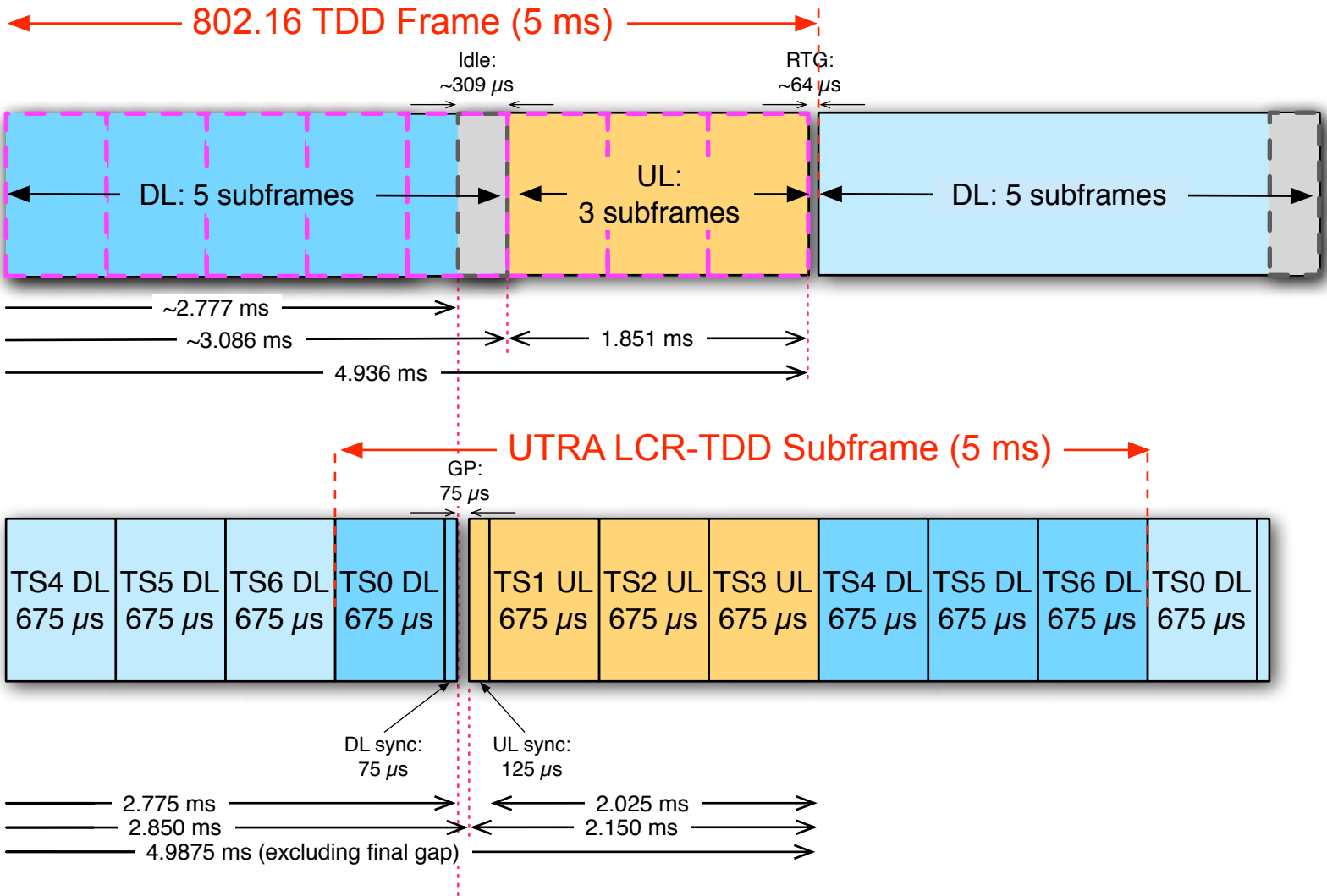


Figure 11.4.6-1: Alignment of IEEE 802.16m TDD frame with UTRA LCR-TDD frame

11.4.5.2 Coexistence with E-UTRA TDD (LTE-TDD)

Efficient coexistence between IEEE 802.16m TDD and E-UTRA TDD (TD-LTE) should also be possible. Figure 11.4.6-2 shows an example for a case of both the 802.16m TDD frame and the LTE-TDD frame with 4:4 DL:UL ratio. Note that a particular configuration of DwPTS/GP/UpPTS is assumed in the LTE-TDD frame in order to enable the coexistence. LTE-TDD, as specified in ITU-R Recommendation M.1457-8, does not limit the choice of these parameters, provided that they sum to 1 ms. Other versions of LTE-TDD may limit the choice. This may require a different set of parameters for efficient coexistence.

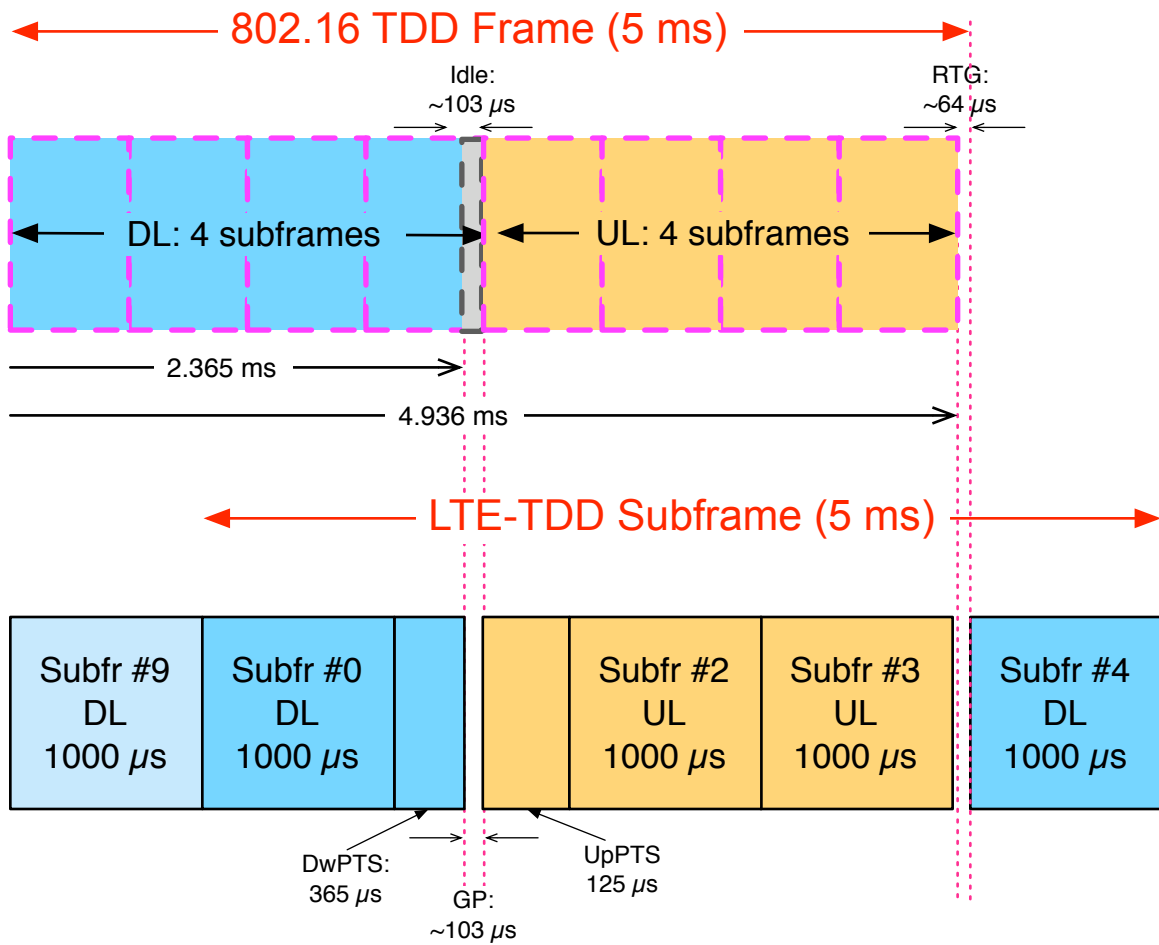


Figure 11.4.6-2: Alignment of IEEE 802.16m TDD frame with E-UTRA TDD frame