

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >		
Title	Femtocell Interference Mitigation by Autonomously Adjusting Radio Resource Parameters		
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Re:	TGm SDD: Femtocells; in response to the TGm Call for Contributions and Comments 802.16m-08/040 for Session 58		
Abstract	This contribution proposes a text to be added for the support for Femtocell in the IEEE 802.16m SDD. The text describes method for the Femtocell to autonomously adjust the Radio Resource Parameters in order to mitigate the effect of interference.		
Purpose	To be discussed and adopted by TGm for use in the IEEE 802.16m SDD		
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Femtocell Interference Mitigation by Autonomously Adjusting Radio Resource Parameters

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Introduction

The IEEE 802.16m-07_002r6 SRD requires support for Femtocells. This contribution proposes a text to be added for the support for Femtocell in the IEEE 802.16m SDD. The text describes method for the Femtocell to autonomously adjust the Radio Resource Parameters in order to mitigate the effect of interference.

Proposed Text

Insert the following sections under section 17 on Support for Femtocell in the IEEE 802.16m SDD:

17.x Interference Mitigation by Autonomously Adjusting the Radio Resource Parameters

17.x.1 Measurements

The Femtocell shall measure the interference from surrounding macro/micro cells or neighboring Femtocells for the mitigation via a DL Receiver function. The DL Receiver function can periodically be switched from a DL transmitter function for the Femtocell within one antenna. Some of the measurement can be also collected through MS attached to the Femtocell.

The measurement items are:

- DL co-channel or adjacent channel carrier reception power of pilot channel or all channels from macro/micro cells or neighboring Femtocells or other access systems.
- Cell information such as neighboring cells or transmit power of pilot channel broadcasted by macro/micro cells or neighboring Femtocells

17.x.2 Carrier Frequency Selection

The Femtocell BS shall select the carrier frequency to avoid the mutual interference between macro/micro cells and Femtocells or among Femtocells based on the measurement result of surrounding reception power. In a hierarchical cell structure where a Femtocell is set in a micro cell which is set in a macro cell, the Femtocell shall also select the carrier frequency to avoid the interference to the higher prioritized cell (micro cell) based on the measurement result of surrounding reception power and cell information.

17.x.3 DL/UL Tx Power Setting

The Femtocell shall set the DL maximum transmit power and UL maximum allowed transmit power for camping MSs in such a way that the coverage of Femtocell will be maximized while the interference impact to the surroundings will be constant. The DL maximum transmit power and the UL maximum allowed transmit

power for camping MSs should be set based on the reception power from the surrounding macro/micro cell. As the reception power decrease, which means the Femtocell will locate at close to edge of the macro/micro cell, the DL maximum transmit power should be small in order to mitigate the DL interference to macro/micro cell while the UL maximum allowed transmit power for camping MSs should be large to compensate for the UL interference from the macro/micro cell. When indoor penetration loss is large, these parameters may be compensated for the loss based on the measurement difference between indoor and outdoor reception power like Figure 1.

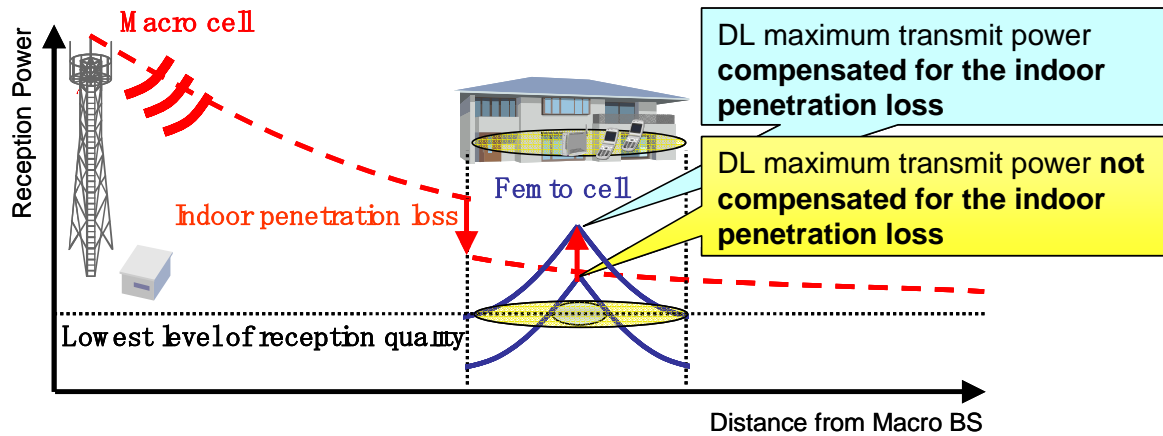


Figure 1: Compensation for the indoor penetration loss in transmit power setting