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Source(s)	Mariana Goldhamer	E-mail:	<a href="mailto:mariana.goldhamer@alvarion.com">mariana.goldhamer@alvarion.com</a>
	Alvarion Ltd. 21A, Ha Barzel Street Tel Aviv		
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Abstract			
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# Allocations for the control channels of the Relay access cells

*Mariana Goldhamer*

Alvarion Ltd.

## Introduction

The deployment of the Relay cells should be seen in the context of the other cell categories presented in the SDD. The reception of the control channels (preambles, FCH, MAPs) is critical for the relay operation, however no special attention has been given for their resource allocation.

It is assumed that an operator can provision the different Base Stations to belong to one of the following categories:

- Cat.1 – Protected cells, for example macro-cells;
- Cat.2 – Regular cells, for example micro-cells; Relay cells are belonging to this category.
- Cat.3 – Cells including BSs or MSs having the ability of creating harmful interference to the MSs of the other cells, as femto cells. The requirements for the Femtocell operation are detailed in [1].

Overlapping deployment scenarios are possible between these types of cells. With the exception of the femto-cells, which may not belong to the mobile operator, the BS-MS interference can be simply resolved by the hand-over of the MS to the BS which is creating interference to it. In case of the femtocells, the hand-over is limited to those situations where user's access is allowed by the target cell. Due to this, the most important scenario to be resolved is the overlapping between femto-cells and the other cells.

Contribution IEEE c802.16m-08/1351 details the rules of resource allocation for these overlapping different cells.

The Relay control channels are proposed to use the OFDMA area reserved for the Reuse 2/3 operation (see fig. 45 of the SDD, clause 20.1. The Relays can operate in this area in Reuse 1/3 mode.

## SDD TEXT

*Insert at the end of clause 11.4.4:*

### Support for the Control Channels for Relays in Frame Structure

It is required to provide the assignment of the main control channels, as FCH (Frame Control Header, MAPs, sounding, etc.) such to avoid interference. The general FFR concept for avoiding interference is presented in fig. 45, SDD clause 20.1. The control channels shall be placed according to fig. xx, as follows:

- Controls channels for macro cells are placed in the Reuse 1/3 area of the first Frame within the superframe;
- Control channels for Cat. 2 systems use reuse 1/3 and are placed in the Reuse 1/3&2/3 area; this area can be used by Cat. 1 systems in reuse 2/3 if the Cat. 2 systems are not deployed in the frequency channel.
- Control Channels for Cat. 3 systems are placed in the 2<sup>nd</sup> Frame of the Superframe, avoiding the Reuse 1/3 allocation reserved for Cat. 1 systems.

The allocation of the control channels in other frames is FFS.

Fig. xx illustrates the allocation of the control channels:

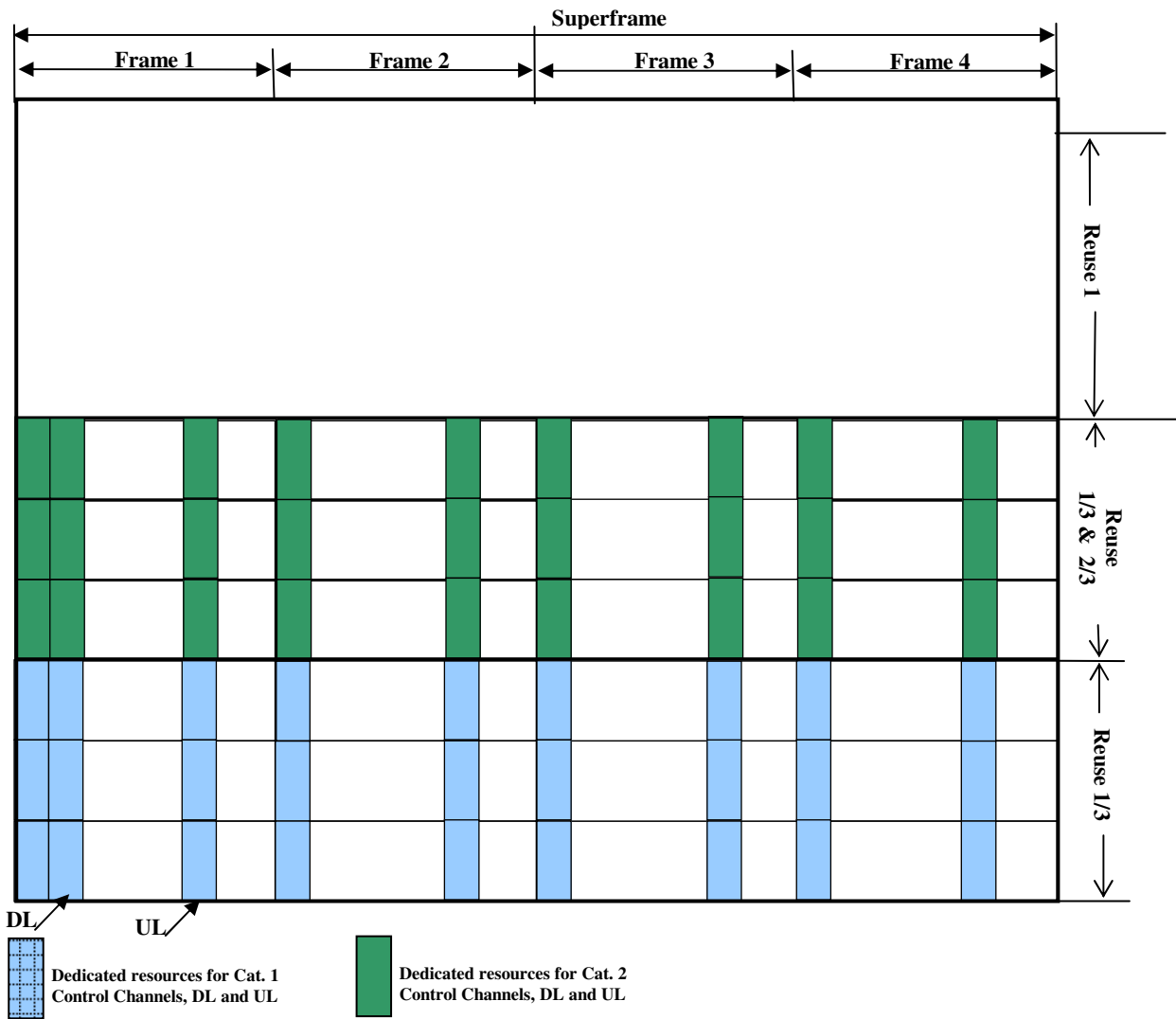


Fig. xx Control channels allocations for Relays and Macro BS

**End text insertion**

[1] IEEE L802.16-08/053 Liaison statement from WiMAX Forum to IEEE 802.16 on Femtocell requirements