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Title	**Power control for inter-cell interference mitigation**
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Source(s)	Mariana Goldhamer E-mail: mariana.goldhamer@alvarion.com Alvarion ltd. 21A, Ha Barzel Street Tel Aviv
Re:	16m Call for Contributions on Power control
Abstract	Proposed 802.16m power rules for interference mitigation
Purpose	Actions: 1. Modification of ToC 2. Capture of the text in the SDD
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Power control for inter-cell interference mitigation

Mariana Goldhamer
Alvarion Ltd.

Introduction

The interference mitigation is optimal when using dedicated frequency and time resources at cell edge, for each of the strong interfering sectors. In the same time, the maximum frequency efficiency is obtained when at least part of resources are used in a shared mode.

We define the power control rules for the coordinated inter-cell interference mitigation, presented within the contribution [1]. This approach assumes:
- Allocation of resources for shared and dedicated OFDMA SETs
- Inter-cell coordination for dynamic modification of these resources.
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Fig. 1 is a high level illustration of this approach for the down-link operation.
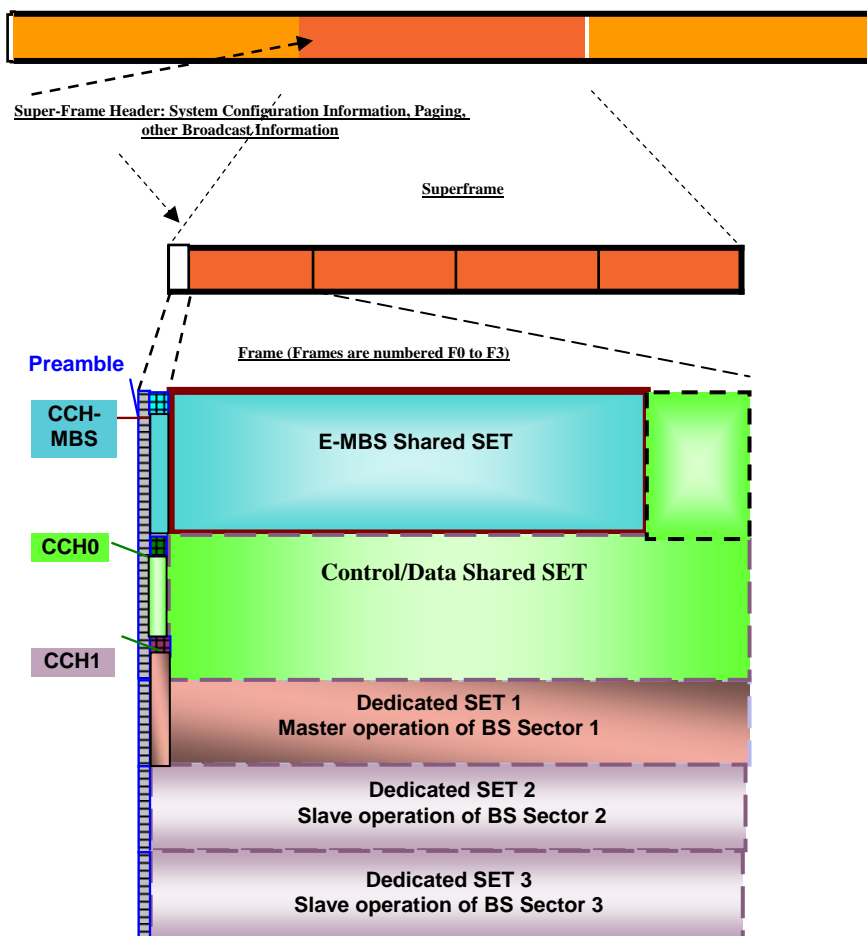

Fig. 1 Downlink channel splitting in SETs, as seen by BS Sector 1

From here insert text for SDD

11.4.8.x   Power control rules

Fig. xx provides an example of Shared and Master/Slave partitions, for a three sectors deployment.

Fig. xx presents an example of the power distribution between sectors. The Master SETs can use a high power density, while the Slave SETs use a limited power density. The Shared Control/Data SET may be also limited to a certain level of power density. The power density of the E-MBS SET transmissions should be higher, as generally the H-ARQ is not used for broadcast services.
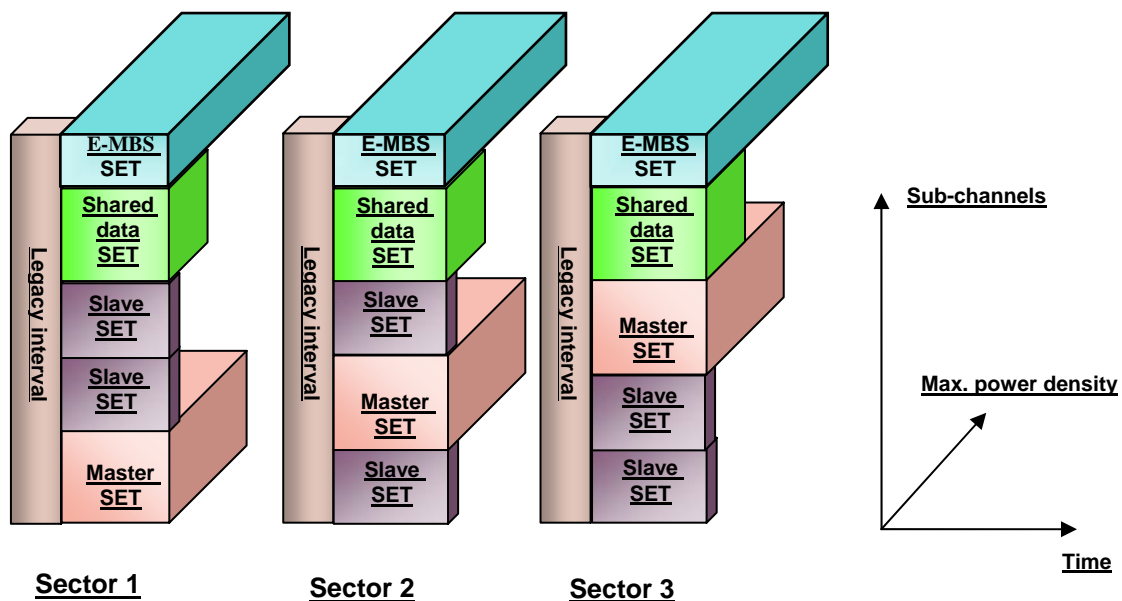

Fig. xx – Example of possible power density distribution for SETs

As can be seen in fig. xx, the dedicated Master SETs use a high power density in order to provide coverage at the cell margin, while the Slave SETs use a lower power such to avoid creating interference to the systems utilizing the same SET as Master.

In case of using Advanced Antenna Techniques (like DL transmit beamforming with nulling, collaborative MIMO and others) for inter-cell interference mitigation or for cooperative data transmission, it is suitable to increase the power for the used sub-channels in Shared or Slave allocations, such that the coverage will be extended to cover the cell margin.

The following example (fig. yy) shows a case of power increase for a part of a Shared SET, dedicated for AAT-based interference cancellation, as well for AAT using the dedicated (Master) SETs allocated for Sector 1 within the same OFDMA allocation used as Slave by sectors 2 and 3.
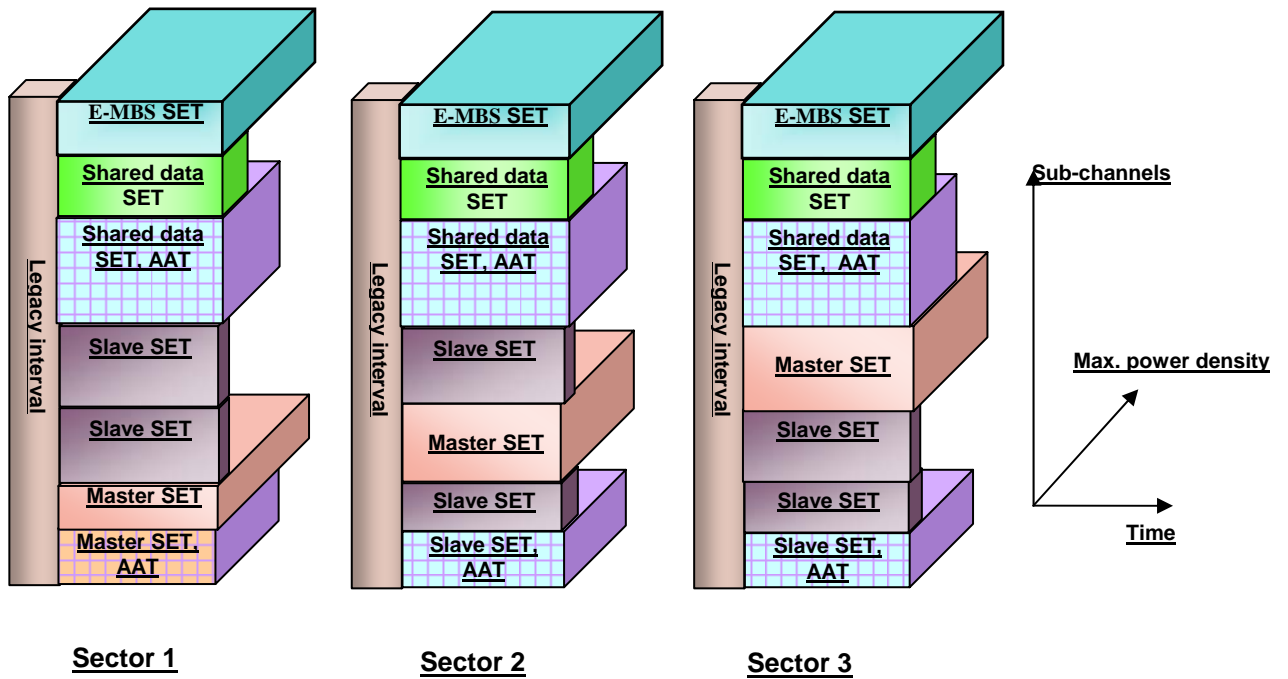
Fig. yy – Example of possible power density distribution for SETs using Advanced Antenna Techniques

Note that for keeping the same cell size the BS total power should be increased.

End text insertion

References

[1] Mariana Goldhamer, IEEE C802.16m-08/602: Coordinated approach for inter-cell interference management