

16m Assignment A-MAP Design

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Source:

Hyunkyu Yu, Taeyoung Kim, Jaeweon Cho
Heewon Kang, Hokyu Choi

Voice: +82-31-279-4964

E-mail: hk.yu@samsung.com

Samsung Electronics Co., Ltd

416 Maetan-3, Suwon 443-770, Korea

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IEEE 802.16m-09/0020, “Call for Contributions on Project 802.16m Amendment Working Document (AWD) Content”

Target topic: “15.3.6 Downlink control structure”.

Base Contribution:

None

Purpose:

To be discussed and adopted by TGM for the 802.16m amendment.

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Outline

- **SLS Environment**
- **SLS Results**
- **Conclusion and Proposed Text**

- **Current AWD: 15.3.6.3.2.2 Assignment A-MAP**
 - For a given system configuration, assignment A-MAP IEs can be encoded with two different effective code rates. The exact code rates are TBD.
→ *Need to decide the exact code rate*

SLS Environments

▪ Explicit Method vs. Implicit Method

- EMD: IEEE 802.16m-08/004r5

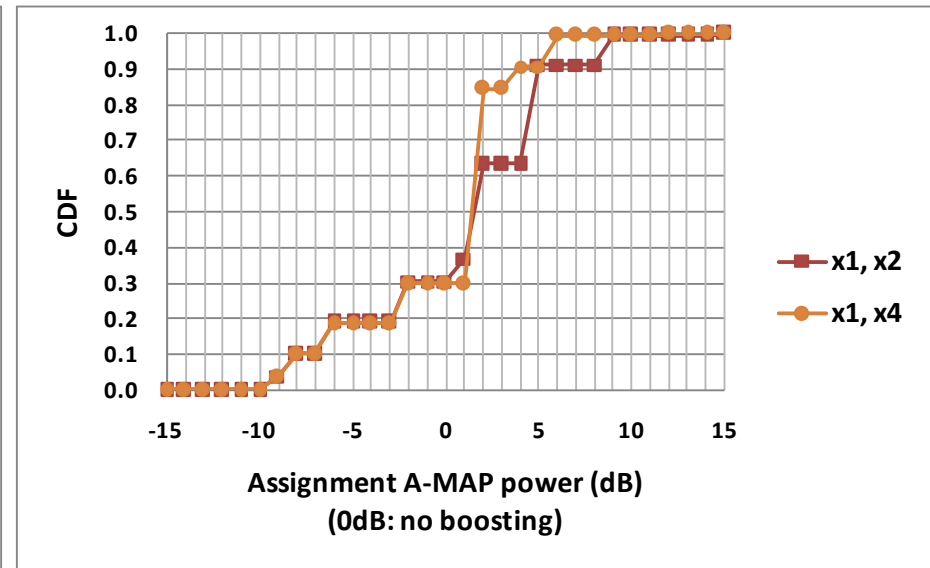
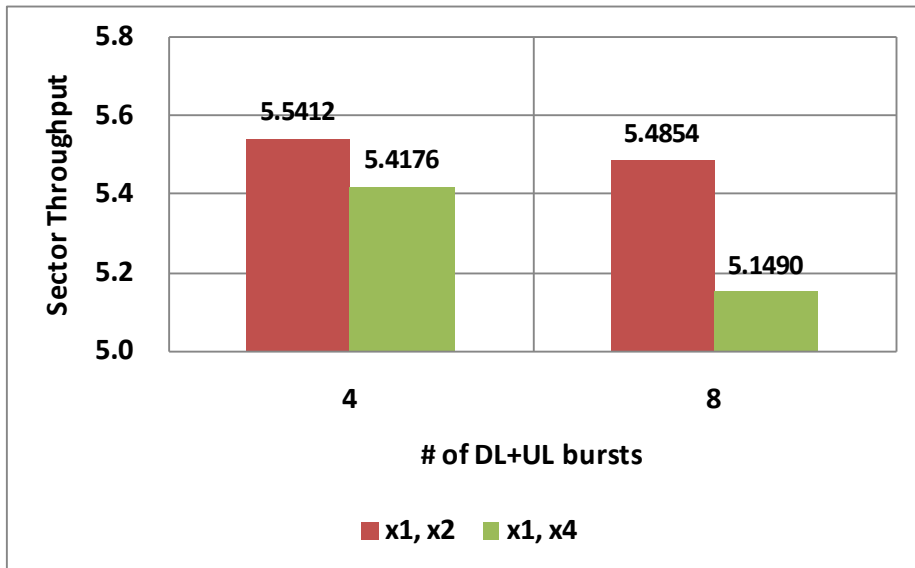
| Index | Value |
|------------------------------|---|
| Deployment Scenario | Baseline / Open rural macrocell |
| MCS for Assignment A-MAP | - QPSK 1/2, QPSK 1/4 - QPSK 1/2, QPSK 1/8 |
| HARQ | Asynchronous (DL) |
| Scheduler | Proportional fairness |
| # of Users per Sector | 20 |
| # of Scheduled Users | 2, 4 per subframe (4, 8 for both DL and UL) |
| Antenna Configuration | SIMO 1x2 |
| Channel Model | Mixed (Ped B-3kmph-60%, Veh A-30kmph-30%, Veh A-120kmph-10%) |
| Channel Estimation | Real channel estimation (Channel estimation impairment) |
| CQI Reporting Period | 8 frames |
| Other Simulation Assumptions | EMD baseline |

SLS Results (1/2)

Baseline Test Scenario

| | 1/2, 1/4 | 1/2, 1/8 |
|-------------------------|---|---|
| Spectral Efficiency | - Higher sector throughput | - Lower sector throughput |
| Outage (Boosting level) | - Meet outage requirement - Slightly Higher boosting level | - Meet outage requirement - Lower boosting level |

OH gap **2.23%** **6.13%**



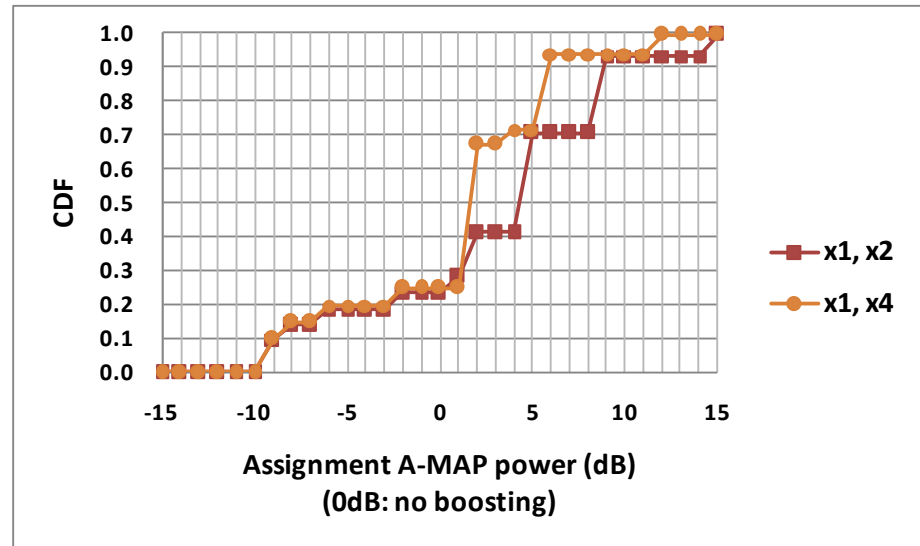
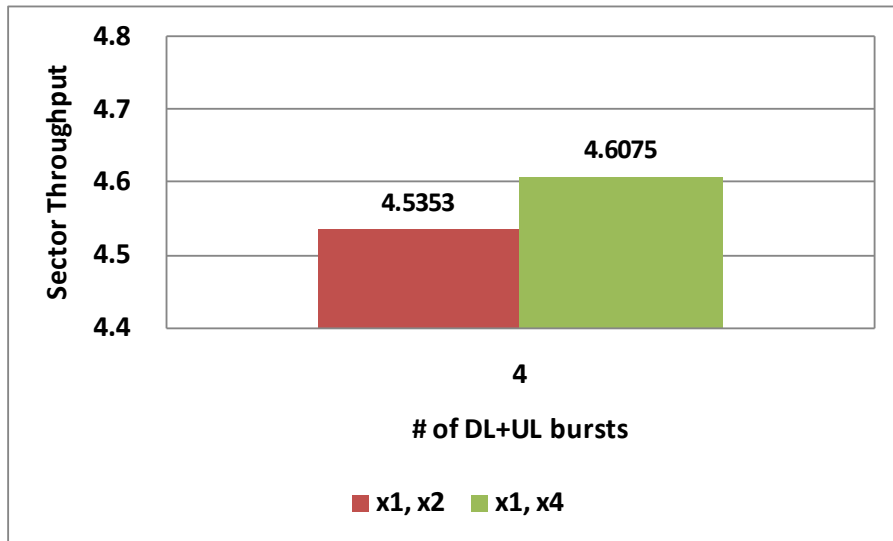
SLS Results (2/2)

Open Rural Macrocell (Optional)

| | 1/2, 1/4 | 1/2, 1/8 |
|-------------------------|--|---|
| Spectral Efficiency | Lower (similar) sector throughput | Higher (similar) sector throughput |
| Outage (Boosting level) | - Meet outage requirement - Higher boosting level | - Meet outage requirement - Lower boosting level |

OH gap

1.57%



Conclusion

- To meet both high spectral efficiency and outage requirement efficiently,
- Propose to use Two MCS sets signaled by SFH
 - 0b0: (1/2, 1/4), 0b1: (1/2, 1/8)
 - According to cell size, etc

Text Proposal (1/2)

----- Text Start -----

15.3.6.3.2.2 Assignment A-MAP

The Assignment A-MAP (A-A-MAP) shall include one or multiple A-A-MAP-IEs and each A-A-MAP-IE is encoded separately.

...

After rate matching and repetition, the encoded bit sequences shall be modulated using QPSK. For a given system configuration, assignment A-MAP IEs can be encoded with two different effective code rates. ~~The exact code rates are TBD.~~ The set of code rates is (1/2, 1/4) or (1/2, 1/8), and explicitly signaled by SFH.

Text Proposal (2/2)

15.3.6.4.1.2 S-SFH IE

...

Table 656—S-SFH SP2 IE

| Channel | Contents | Size (bits) |
|--------------------|---|-------------|
| S-SFH Sub-packet 2 | Sector ID | |
| | Periodicity of A-MAP | |
| | A-MAP Transmission format | <u>1</u> |
| | Sub-frame configuration (DL/UL ratio) | |
| | ⋮ | |
| | UL A-MAP relevance | |
| | Uplink_Burst_Profile | |

----- Text End -----