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**Reverse Link Variable Data Rates
with Dedicated RA (Reverse Activity)**

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Outline

- Introduction
- Current Mechanism
- Proposed Mechanism
- Conclusion

Introduction

- Main concerns for 1x-EV : **focused on forward link**
- Increasing FL throughput :
 - AMC (Adaptive Modulation & Coding)
 - Hybrid ARQ (AAIR)
- Increasing RL throughput
 - **Nothing special has been presented**
 - **About 1Mbps with 8PSK modulation** is defined in Qualcomm's proposal and 1xtreme proposal
- Fast RL data rate adaptation technique with more granularity may be required
- In this proposal, **a mechanism of Reverse link variation with dedicated type of RA (Reverse Activity) bits** was presented

Current Mechanism (1X-EV DO)

- 1x-EV DO : p-persistent based variable data rate
 - mobile itself can increase or keep RL data rate with p-persistent random function if combined busy bit is 0
 - mobile itself can also decrease RL data rate with p-persistent random function if combined busy bit is 1
- Some points to be discussed in current mechanism
 - Every mobile has the same probability of increasing or decreasing the RL data rate regardless of its location, fading, multipath loss and shadowing
 - It may be very difficult even for the mobiles near the center of cell to reach maximum RL data rate
 - Other cell interference can not be controlled in a cell

Proposed Mechanism

- BS controls each mobile's reverse link data rates by using a **type RA(Reverse Activity) bit**
- Mobiles near the center of a cell are controlled to have a higher probability of increasing the reverse link data rates compared to those far from the center of cell. In this way, the interference between cells can be minimized.
- BS sets RA bit to
 - ‘ 1’ to inform certain mobiles to increase RL data rates
 - ‘-1’ to inform certain mobiles to decrease RL data rates
 - ‘ 0’ to inform certain mobiles to keep RL data rates constant
- To support this mechanism, a Forward Common RACH (F-CRCCH) should be required. It has a similar structure as that of F-CPCCH.
- RA bit will be updated every 20 ms.

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