Proposed SFBC to replace STBC in IEEE 802.16m

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Purpose:

Re: cfc DL MIMO part

STBC is not suitable for control channel transmission

– STBC is not suitable for FCH transmission?

  • Most of us agree that FCH should be transmitted in the first OFDM symbol, no way to use STBC in this case.

– STBC is not suitable for MAP transmission

  • One, two or three OFDM symbols can be used to transmit MAP. It is configured by FCH. Obviously, in this case, STBC can not be used.

STBC is not suitable for data transmission in both regular/irregular subframe

- Not suitable for irregular subframe
  - Rational: only 5 OFDM symbols for irregular subframe, at least one OFDM symbol can not be paired.

- Not suitable for regular subframe
  - Rational: one or two OFDM symbols will be used for MAP message transmission. When the number used for MAP is odd, some of the remaining OFDM symbols can not get paired

Most of proposed pilot pattern does not support STBC

- Unified Pilot Pattern for different Pilot pattern may be used (6"No" and 7"Yes" according to PHY Rapporteur group statistic [2])
- However, in order to efficient support STBC, the pilots subcarrier in the adjacent OFDM symbols shall be paired.
- Currently, few pilots pattern has such feature. If we are mandatory to support STBC, we need redesign a new pilot pattern for it.

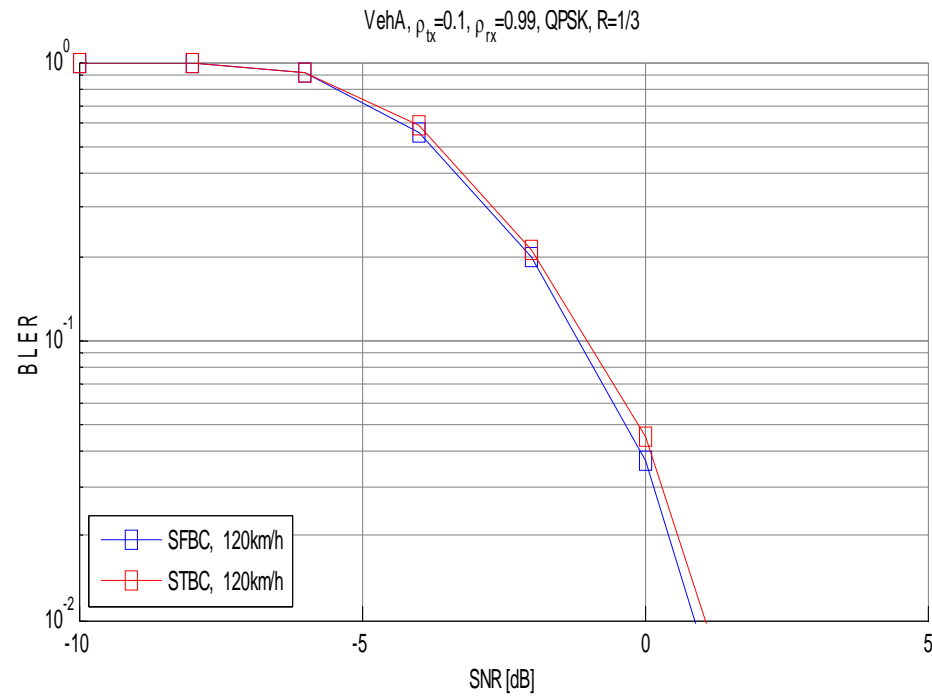# SFBC has almost the same performance over STBC in most cases

Figure 5: BLER for SFBC and STBC (Vehicular A, 120 km/h) [1]

Proposed text

x.x.x SFBC definition

x.x.x SFBC for control channel

  SFBC should be used for FCH and MAP transmission

x.x.x SFBC for data channel

  SFBC could be used for data transmission.

Reference

- [1]. ***R1-062476***, *Comparison of transmit diversity schemes for E-UTRA in noise and interference limited scenarios,*

- [2] ***C80216mDL_PHY-08_028r2, Table of 802.16m DL PHY structure discussion items, Apostolos Papathanassiou, Changhoi Koo, Ron Murias, Rapp group chairs***