

Source: Siemens
Title: BS Modulation Accuracy for TDD mode
For: Discussion and Approval

Introduction

This document proposes to use the same definition for the modulation accuracy in TDD mode as for FDD mode.

Discussion

In [1] and [2], the modulation accuracy is defined on the Error Vector Magnitude on chip level EVM_{chip} instead of symbol level EVM_{symbol} . By this, the extra transmitted power in the signal bandwidth due to the error vector is independent of the spreading factor. Because variable spreading factors are possible in FDD and TDD mode, the same definition as for FDD should be used for TDD mode.

The value for EVM_{chip} is based on a maximum value of 12.5 % for EVM_{symbol} , which is a typical requirement for EVM in other cellular systems [3]. The minimum spreading factor (Q) for TDD considered is 1. To guarantee EVM_{symbol} of 12.5 % independent of the spreading factor, EVM_{chip} has to be 12.5 %. The worst-case additional power transmitted in this case is 0.067 dB. A value of 12.5 % is defined for the BS in FDD mode, too.

The modulation accuracy based on EVM_{chip} does not give any indication of how the error power is distributed in the code domain. Therefore a peak code domain error should be defined and specified like in FDD mode.

Text proposal for “TS25.105 6.8.2 Modulation Accuracy”

6.8.2 Modulation Accuracy

The modulation accuracy is a measure of the difference between the measured waveform and the theoretical modulated waveform (the error vector). It is the square root of the ratio of the mean error vector power to the mean reference signal power expressed as %. The measurement interval is one timeslot.

6.8.2.1 Minimum Requirement

The Modulation accuracy shall not be worse than ± 12.5 %.

6.8.2b Peak Code Domain Error

The code domain error is computed by projecting the error vector power onto the code domain at the maximum spreading factor. The error power for each code is defined as the ratio to the mean power of the reference waveform expressed in dB. And the Peak Code Domain Error is defined as the maximum value for Code Domain Error. The measurement interval is one timeslot.

6.8.2b.1 Minimum Requirement

The peak code domain error shall not exceed [] dB.

References

- [1] Ericsson, Nokia; “Uplink Modulation Accuracy”, 3GPP RAN WG4 Tdoc (99) 111
- [2] Hewlett Packard Ltd; “Uplink and Downlink Modulation Accuracy”, 3 GPP RAN Tdoc (99) 107
- [3] Ericsson; “Reference for Modulation Accuracy”, 3 GPP RAN Tdoc (99) 220