TSG-RAN Working Group 4 (Radio) meeting #5   **TSGW4#5(99)272**
Miami 14th –16th of June 1999

Agenda Item: 8.3

Source: NOKIA

Title: BS Receiver dynamic range

Document for: Discussion

1. INTRODUCTION

This document proposes a definition of dynamic range of the receiver. It is needed to define a sufficient dynamic rage for BS receiver in order to ensure satisfactory functionality with all signal levels. Nokia definition is based on approximation of minimum and maximum signal level.

Nokia proposes that receiver dynamic range should not be based on RX sensitivity but to the input signal minimum and maximum levels. Nokia proposal for dynamic range is 64 dB. This figure is outcome from following formula:

Maximum signal level – Minimum signal level = Dynamic range, where

Maximum signal level is: Terminal max. output – MCL = 21 dBm – 65 dB = - 44 dBm and

Minimum signal level is: Thermal noise level : kTB = -108 dBm, where k = Boltzman constant, T= 290 K, B = 4.096 MHz

$\Rightarrow$ Dynamic range: -44 dBm – (-108) dBm = 64 dB.

Nokia has used -44 dBm as assumption of the maximum input level because it will be very unlikely that this level is exceed in normal situation even when higher power classes are taken into use.

2. TEXT PROPOSAL FOR '7.4. DYNAMIC RANGE'

7.4 Dynamic range

The receiver dynamic range is the input power range at each BS antenna connector over which the [FER/BER] does not exceed a specific rate.

The receiver dynamic input power range has to meet 64 dB range based on Thermal noise floor for 5 MHz band.

The static [BER/FER] reference performance as specified in clause 7.3.1 should be met over a receiver input range of [30] dB above the specified reference sensitivity level for [channel type ffs].

<The effect of applying mast head LNAs to the dynamic range specification is ffs.

3. CONCLUSION

Requirements and definitions for BS Receiver dynamic range have been proposed to be used in TS 25.104 specification.