

Agenda Item: 8.7
Source: Ericsson
Title: Receiver dynamic range measurement in 25.141
Document for: Approval

1. Introduction

This paper proposes some changes for the Base station conformance testing (FDD) TS 25.141 V2.0.1. The aim for this paper is to propose a test, which verifies the receiver dynamic range requirement in TS 25.104 V3.0.0.

2. Motivation for the receiver dynamic range test method

The test shall verify that the BS receiver satisfies the receiver dynamic range specified in TS 25.104. There is only a need to test the upper limit of the range as the lower limit is covered by the sensitivity test in TS 25.141 paragraph 7.2. The test shall verify the performance of the upper dynamic range limit by increasing the wanted signal (C) 30 dB above the reference sensitivity level and adding an AWGN signal (I) 30 dB above the noise floor of the receiver. The wanted signal is given by:

$$C = KT + B + EB/N_0 + NF + M + 30 = -174 + 10 \log(12.2 * 10^3) + 4.3 + 5 + 2 + 30 = -92 \text{ dBm} \quad [1]$$

The AWGN signal level is given by:

$$I = KT + B + NF + 30 = -174 + 66 + 5 + 30 = -73 \text{ dBm}$$

The receiver shall satisfy a BER requirement of <0.1% under this test condition. This will verify the BS receiver's ability to receive a signal when the distortion in the reception channel has risen 30 dB above the noise floor.

3. Text proposal for paragraph "7.3 Dynamic range"

7.3.1 Test conditions and measurement method

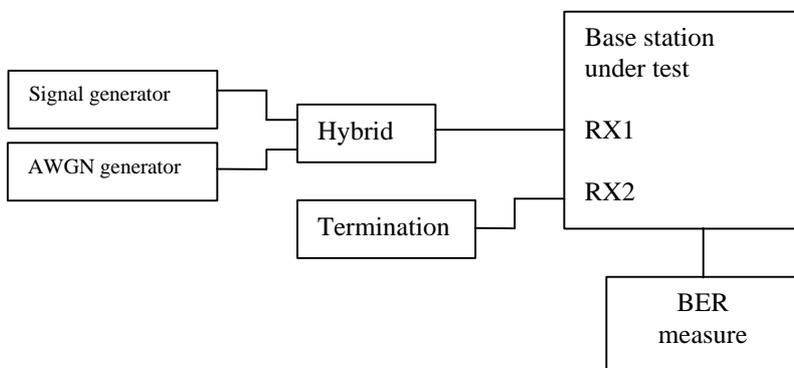


Fig. 7.3-1 Measuring system set-up for dynamic range

1. Connect the test equipment according to Fig. 7.3-1.
2. Adjust the signal generator for the wanted signal to -92 dBm

3. Adjust the AWGN generator level to -73 dBm and set the frequency to the same frequency as the tested channel.
4. Measure the BER for the tested service and verify that it is below the specified level
5. Repeat the measurement for the other RX port

7.3.1 Minimum requirement

The BS shall meet the minimum requirements stated in table n.

Table n : Dynamic range

Parameter	Level	Unit
Data rate	12.2	kbps
BER	$<10^{-3}$	
Wanted signal	-92	dBm
Interfering AWGN signal	-73	dBm

4. References

- [1] "Required EB/N_0 for Voice channel (12.2kbps, BS for FDD)", Tdoc R4-(99)373