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Title: Updated Link Simulation Results for MSRD**

**Document for: Discussion**

## **1. Introduction**

This contribution provides updated simulation results for the MSRD work item in accordance with the agreed upon scenarios in [1]. The simulation results for the PDTCH have been updated from the results provided in previous contributions [2, 3]. The simulation results for traffic channel speech have not been provided previously.

## **2. Traffic Channel Speech**

Simulation results for traffic channel speech can be found in Tables 1a and 1b, respectively, for the prescribed sensitivity and interference test scenarios. The receiver sensitivity associated with an FER of 1% is characterized in Table 1a for the TU50nFH and HT100nFH channel fading profiles. Similarly, the signal-to-interference ratio with respect to the dominant interferer sufficient for an FER of 1% can be found in Table 1b for DTS-1, 2, and 5. As suggested in [1], the power of the dominant interferer is assumed to be -70 dBm.

## **3. PDTCH Performance**

Simulation results provided previously in [2, 3] have been updated here in Tables 2a and 2b. The receiver sensitivity associated with a particular BLER has been provided in Table 2a for the TU50nFH and HT100nFH channel fading profiles. As suggested in [1], the sensitivities given for CS-4 and MCS-4 given in Table 2a for the HT100nFH channel correspond to a BLER of 30%. In Table 2b, the performance MSRD receiver is characterized for test scenarios DTS 1, 2 and 5. The values in this table indicate the signal-to-interference ratio with respect to the dominant interferer required to achieve the indicated BLER. As in Section 2, the power of the dominant interferer is assumed to be -70 dBm.

## **4. Conclusions**

The results presented in this contribution should be taken into consideration in setting the performance specifications for Mobile Station Receive Diversity.

## **5. References**

- [1] Nokia, Outcome of Phone Conference on MSRD Test Scenarios, 16 March 2006.
- [2] Motorola, GP-060734, Link Performance of CS 1-4 and MCS 1-4 with MSRD, GERAN #29, San Jose Del Cabo, Mexico, 24-28 April 2006.

- [3] Motorola, GP-061179, Further Link Simulation Results for MSRD, GERAN #30, Lisbon, Portugal, 27-30 June 2006.

TCH/AFS	Sensitivity			
	TU50 nFH		HT100 nFH	
	AGI= 0 dB Corr=0	AGI= 6 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 6 dB Corr=0.7
<b>GSM850 &amp; GSM900</b>				
TCH/FS (FER)				
TCH/AFS 12.2 (FER)	-106.5	-102.5	-105.5	-101.5
TCH/AFS 7.4 (FER)	-109.0	-105.5	-108.5	-104.5
TCH/AFS 5.9 (FER)	-110.0	-107.0	-110.0	-106.5
TCH/AHS 7.4 (FER)	-104.5	-100.5	-101.5	-96.5
TCH/AHS 5.9 (FER)	-106.0	-102.5	-104.0	-99.0
<b>DCS1800 &amp; PCS1900</b>				
TCH/FS (FER)				
TCH/AFS 12.2 (FER)	-107.0	-103.5	-105.0	-101.0
TCH/AFS 7.4 (FER)	-109.5	-106.0	-108.0	-104.5
TCH/AFS 5.9 (FER)	-111.0	-107.5	-110.0	-106.0
TCH/AHS 7.4 (FER)	-104.5	-100.5	-102.0	-96.5
TCH/AHS 5.9 (FER)	-106.0	-102.0	-104.0	-99.0

**Table 1a: Simulation Results for MSRD Sensitivity with Traffic Channel Speech**

TCH/AFS	Interference					
	DTS-1		DTS-2		DTS-5	
	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7
<b>GSM850 &amp; GSM900</b>						
TCH/FS (FER)						
TCH/AFS 12.2 (FER)	-14.5	-12.5	0.5	0.5	0.5	0.5
TCH/AFS 7.4 (FER)	-18.0	-16.0	-2.5	-2.0	-2.5	-2.5
TCH/AFS 5.9 (FER)	-20.0	-17.5	-3.5	-3.5	-4.0	-3.5
TCH/AHS 7.4 (FER)	-11.0	-9.5	3.0	3.0	3.0	3.0
TCH/AHS 5.9 (FER)	-14.0	-12.0	1.0	1.0	1.0	1.0
<b>DCS1800 &amp; PCS1900</b>						
TCH/FS (FER)						
TCH/AFS 12.2 (FER)	-11.5	-11.0	-0.5	0.0	-0.5	-0.5
TCH/AFS 7.4 (FER)	-15.5	-14.5	-3.0	-2.5	-3.0	-3.0
TCH/AFS 5.9 (FER)	-17.0	-16.0	-4.5	-4.0	-4.5	-4.5
TCH/AHS 7.4 (FER)	-8.0	-7.0	3.0	3.0	3.0	3.0
TCH/AHS 5.9 (FER)	-10.5	-9.5	1.0	1.5	1.0	1.0

**Table 1b: MSRD Simulation Results for Traffic Channel Speech with DTS 1, 2, and 5**

PDTCH	Sensitivity			
	TU50 nFH		HT100 nFH	
	AGI= 0 dB Corr=0	AGI= 6 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 6 dB Corr=0.7
<b>GSM850 &amp; GSM900</b>				
CS-1	-107.0	-103.5	-106.5	-102.5
CS-2	-105.0	-101.5	-103.5	-99.0
CS-3	-103.5	-99.5	-101.5	-96.5
CS-4	-97.5	-93.5	-96.5 **	-91.5 **
MCS-1	-106.0	-102.5	-105.0	-100.5
MCS-2	-105.0	-101.5	-103.5	-99.5
MCS-3	-102.5	-99.0	-100.0	-95.0
MCS-4	-98.0	-94.0	-97.5 **	-92 **
MCS-5	-99.0	-96.0	-98.5	-94.5
MCS-6	-96.5	-93.5	-96.0	-91.5
MCS-7	-92.0	-89.0	-90.0	-85.5
MCS-7 30% BLER			-92.0	-87.5
MCS-8	-88.0	-84.0	-83.0	-76.5
MCS-8 30% BLER	-90.5	-87.0	-87.0	-82.5
MCS-9	-83.5	-79.0		
MCS-9 30 % BLER	-87.0	-83.0	-82.5	-75.5
<b>DCS1800 &amp; PCS1900</b>				
CS-1	-107.5	-104.0	-106.0	-102.0
CS-2	-105.0	-102.0	-103.5	-99.0
CS-3	-103.5	-100.0	-101.0	-96.5
CS-4	-97.5	-93.5	-95.5	-90.0
MCS-1	-106.5	-103.0	-104.5	-100.0
MCS-2	-105.5	-102.0	-103.5	-99.0
MCS-3	-102.5	-99.0	-99.5	-94.0
MCS-4	-98.0	-94.0	-93.0	-87.5
MCS-5	-99.5	-96.0	-98.5	-94.0
MCS-6	-97.0	-94.0	-95.5	-91.0
MCS-7	-92.5	-89.0	-88.5	-84.0
MCS-7 30% BLER			-91.5	-86.5
MCS-8	-87.5	-83.5		
MCS-8 30% BLER	-90.5	-86.5	-85.0	-79.5
MCS-9	-82.5	-77.5		
MCS-9 30% BLER	-86.0	-82.0		

\*\* 30% BLER

**Table 2a: Simulation Results for MSRD Sensitivity with the PDTCH**

PDTCH	Interference					
	DTS-1		DTS-2		DTS-5	
	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7	AGI= 0 dB Corr=0	AGI= 0 dB Corr=0.7
<b>GSM850 &amp; GSM900</b>						
CS-1	-16.0	-14.0	-0.5	-0.5	-0.5	-0.5
CS-2	-13.0	-11.0	2.0	2.5	2.0	2.0
CS-3	-11.0	-9.0	3.5	3.5	4.0	4.0
CS-4	-2.0	0.0	10.0	10.0	10.5	10.5
MCS-1	-14.5	-12.5	0.5	1.0	1.0	1.0
MCS-2	-13.5	-11.0	2.0	2.0	2.0	2.0
MCS-3	-9.5	-7.0	5.0	5.0	5.0	5.0
MCS-4	-2.5	-1.0	9.5	9.5	10.0	10.0
MCS-5	-9.5	-8.0	6.5	6.5	7.0	7.0
MCS-6	-7.5	-5.5	8.5	8.5	9.0	9.5
MCS-7	-1.5	0.0	13.5	13.5	13.5	14.0
MCS-7 30% BLER						
MCS-8	7.0	8.5	18.5	19.0	19.0	19.5
MCS-8 30% BLER	0.5	2.0	15.5	15.5	15.5	15.5
MCS-9	15.5	17.0	23.5	24.0	24.5	25.0
MCS-9 30 % BLER	6.5	8.0	19.0	19.5	19.5	20.0
<b>DCS1800 &amp; PCS1900</b>						
CS-1	-13.5	-12.5	-0.5	-0.5	-1.0	-0.5
CS-2	-10.0	-9.5	1.5	2.0	2.0	2.0
CS-3	-8.0	-7.0	3.5	3.5	3.5	4.0
CS-4	2.0	2.5	10.5	10.5	11.0	11.0
MCS-1	-11.5	-10.5	0.5	0.5	1.0	1.0
MCS-2	-10.0	-9.5	1.5	2.0	2.0	2.0
MCS-3	-6.5	-5.5	5.0	5.0	5.0	5.0
MCS-4	1.0	1.5	10.0	10.0	10.5	10.5
MCS-5	-8.0	-6.5	6.0	6.5	6.5	6.5
MCS-6	-5.5	-4.0	8.5	8.5	9.0	9.0
MCS-7	1.5	2.5	13.5	14.0	14.0	14.0
MCS-7 30% BLER						
MCS-8	10.5	13.0	19.0	20.0	19.5	20.0
MCS-8 30% BLER	3.5	6.0	15.5	16.0	16	16.5
MCS-9	19.0	23.0	23.5	26.5	24.5	27.0
MCS-9 30% BLER	10.0	13.5	19.5	21.0	20.0	22.0

**Table 2b: MSRD Simulation Results for the PDTCH with DTS 1, 2, and 5**