

Source: Motorola
Title: Considerations on Frequency Offset Testing
Document for: Discussion

1. Introduction

During DARP conference calls held between GERAN#20 and #21, it was agreed to investigate the need to specify an interferer-only frequency offset test in TS45.005. Several test scenarios have been agreed for DARP performance specification [1]. This contribution presents performance results for these scenarios.

2. Discussion

Simulations were carried out both in the GERAN configuration scenario and single co-channel interferer scenario for one type of DARP receiver considered by Motorola during the feasibility study. A frequency offset of ± 90 Hz (i.e. the maximum BTS frequency error envisaged by TS 45.008 for 1800MHz) was applied to each co- or adjacent-channel interferer on a pseudo-random basis, independently between each bursts and interferers. Figure 1 shows the performance results for TCH/AFS12.2 in the TU03 channel with ideal frequency hopping, at a carrier frequency of 1800MHz.

Results for the multi-interferer GERAN configuration indicated little, if any, discernable impact on performance. Approximately 1dB of performance loss was observed for the single co-channel interference case.

While it is not possible to exclude the possibility that a test configuration could be found where interferer frequency offset has a greater impact, the following observations can be made on the basis of the data presented:

- a) for the multi-interferer configuration, the applied interferer frequency offset had a negligibly small bearing on performance,
- b) for the single-interferer configuration, the observed variation in performance was considerably less than the variation in performance reported so far by different companies to GERAN in the absence of interferer frequency offset (around 6 dB [2]).

3. Conclusions

Simulation results in this contribution suggest that even the most extreme frequency offset envisaged by TS 45.008 had little if any impact on multi-interferer performance. Even in scenarios constructed to emphasise the impact of interferer frequency offset (such as the single co-channel interferer) there was a much larger difference in performance observed among companies' reported results without interferer frequency offset. Accordingly, so far, the specification of a frequency offset test may not appear to be an essential component of a complete DARP test suite.

4. References

- [1] GP-04XXXX, Rapporteur, "Meeting minutes of SAIC/DARP telephone conference July 20th 2004", 3GPP TSG GERAN#21, Montreal, Canada, August 24-27, 2004
- [2] GP-041573, Rapporteur, "SAIC/ARP", 3GPP TSG GERAN#20, Bilbao, Spain, June 21-25, 2004

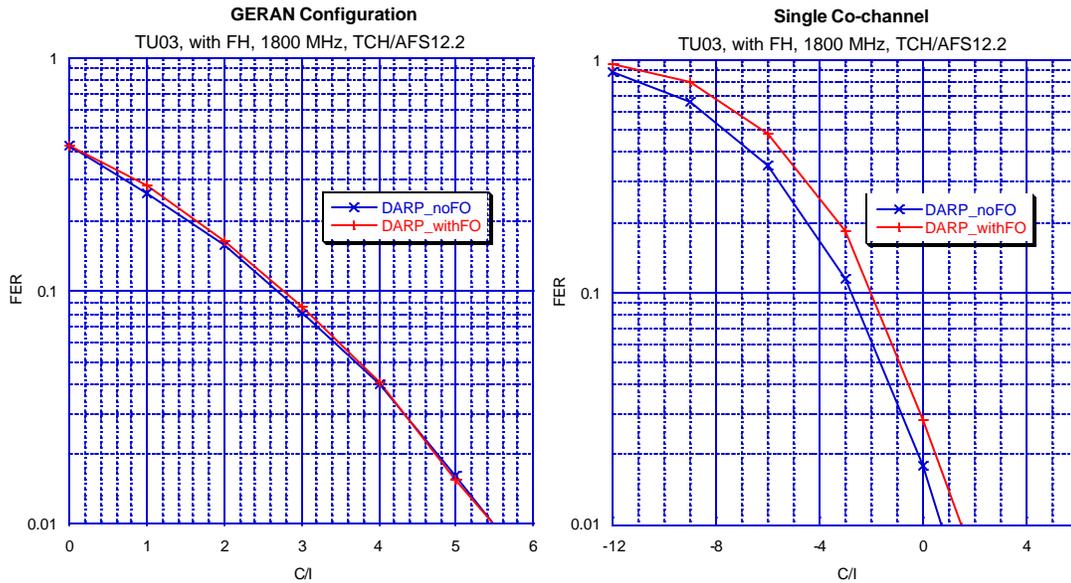


Figure 1 – DARP performance with and without interferer frequency offset.