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Title: **Interference Configurations Applicable to Initial ARP Simulations**
Document for: **Discussion**

1. Introduction

This contribution suggests several configurations for consideration while specifying ARP performance requirements [1].

2. Interfering Scenarios

While care must be taken to ensure fidelity with the models of the feasibility study in modelling interference, signal generation is inevitably limited by practical considerations which restrict the complexity of the test apparatus. A set of potential interferer configurations to be applied to ARP receivers might then follow the interferer examples of Table 1 below.

While only the dual- and tri- discrete interferer scenarios attempt to mimic configurations from the feasibility study, single co-channel and single adjacent-channel configurations are also suggested due to their historical inclusion in Table 2 of TS 45.005. Indeed, the familiarity of testing groups worldwide with both single interferer tests may serve as an initial introduction to the benefits of ARP.

	Power relative to Ic1 interferer						
Interference Configuration	Ic1	Ic2	Ic3	Icr	Ia1	Iar	Iawgn[1]
Single Co-channel	0	-	-	-	-	-	-
Single Adj-Channel	-	-	-	-	Inf	-	-
Dual-discrete Config1[2]	0	-10.4	-	-	-	-	-14.0
Tri-discrete Config1	0	-10.4	-	-	2.7	-	-17.6
Dual-discrete Config2	0	-6	-	-	-	-	-5.5
Tri-discrete Config2	0	-6	-	-	4.0	-	-6.1

Table 1 – Proposed interference configuration for ARP receivers.

3. Additional Considerations

TSC: Interferer TSC assignment should follow that utilised in the feasibility study. That is, the interfering signal TSC's should be randomly selected on a burstwise basis from a range of [1, 7] for Ic1 and [0, 7] for all other discrete interferer sources.

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[1] *AWGN measurement follows that proposed by Ericsson in [4].*

[2] *It is proposed that initial simulations be conducted for both the dual- and tri-discrete interferer models, but that – after an initial round of simulations – only one model for each of Configurations 1 and 2 is selected for further work.*

Channel Models: While channel models for the eventual performance requirements may focus on non-hopping scenarios such as TU50 No FH, it is proposed we continue at the present stage with the TU03 Ideal FH model used in the conventional receiver performance alignment process.

Logical Channel: As agreed during the ARP conference call of 5th May 2004, simulations should carried out with the TCH/AFS5.9 logical channel.

Frequency Offset: Frequency offset should not be required for these initial simulations; however a single separate test could be included at a later date to ensure robustness.

Synchronous/asynchronous Scenarios: While much focus has remained on synchronous cases due to test equipment limitations, testing in asynchronous environments is important not only to prove robustness but also because a large fraction of current GSM networks operate asynchronously. As such, it is proposed that

a) configuration 1 simulations be carried out under both synchronous and asynchronous conditions, and

b) configuration 2 simulations should be carried out under synchronous conditions only.

Delay Variation: A fixed delay should be specified per interferer over the range [-2,5] symbols and [-156.25,156.25] symbols for synchronous and asynchronous simulations respectively.

4. References

[1] GP-041217, Rapporteur, "Outcome of SAIC/ARP offline session", 3GPP TSG GERAN#19, Cancun, Mexico, April. 19-23, 2004

[2] GP-040870, Motorola, "Observations on Interfering Signal Simplification for ARP Testing" 3GPP TSG GERAN#19, Cancun, Mexico, April. 19-23, 2004

[3] GP-040934, Rapporteur, "Draft Feasibility study on Single Antenna Interference Cancellation (SAIC) for GSM networks", 3GPP TSG GERAN#19, Cancun, Mexico, April 19-23, 2004

[4] GP-041042, Ericsson, "Link level interference models for advanced receiver performance (ARP) requirements" 3GPP TSG GERAN#19, Cancun, Mexico, April. 19-23, 2004