

## **Draft Meeting Report AMR Noise Suppression Sub-group Meeting #11**

### **1 Introduction**

The agenda in Tdoc SMG11 115/00 was approved and is provided as Annex 1. The list of documents considered during the meeting is provided as Annex 2.

### **2 Allocation of Documents to Agenda Items**

The list of documents is recorded in Annex 2.

### **3 Draft Report of Last Meeting**

The NS-related sections of the SMG11/S4 report from the previous meeting, TD 94R/0 was presented. It was noted that TD94R/00 does not explicitly state that the AMR/NS report from the last meeting (contained in Annex of TD94R/00) was approved.

### **4 Deliverables to SMG**

#### **4.1 Requirements Specification**

##### **4.1.1 Review of Requirements**

TD92 - v1.0.0 of the Recommended Minimum Performance Specification was reviewed requirement by requirement. The following points were noted, which will be incorporated in an updated draft (v1.1.0).

It was noted with regard to Section 5.1 that the position of Motorola remains that embedded solutions (the definition of which is precisely defined in Section 5.1) should be allowed. The action was taken to check the position of Matra Nortel on this issue.

In Section 5.5 it was agreed that the wording of the test method for measuring voice activity factor (VAF) is altered such that the original sentence

" w is required to be less than the maximum of y and x "

is altered to

"w is required to be not significantly more than the maximum of y and x"

in order to make this more consistent with the wording of the first sentence in this section. It should be noted that the setting of limits on VAF increase, and associated confidence interval, is awaiting proposals. When such proposals are agreed, the current wording should be altered accordingly.

In relation to Section 6.1.4, TD117 was taken proposing the inclusion of requirements on SNR improvement. The proposals were agreed with changes to the wording to account for confidence intervals. Nokia requested time to check that they agree with the stated values within the agreed text of the requirement..

In the Table of Section 7, references to 12dB are changed to 15dB in line with the current working assumptions for the test plan.

An additional sub-section of Section 7 will be drafted to state that the noise suppresser shall not alter average speech level. A test methodology should also be defined to check this. Ericsson volunteered to draft text.

It is noted that Section 11 (DTMF transparency) is a requirement that should be tested.

TD112 contains a proposed replacement to the current Annex 1 on objective performance measure methodology. The included equation changes are to line up with the version of the tool used in the selection phase. It was agreed to replace the current Annex 1 with this text.

TD111 was presented for information, covering the inclusion of VAD/DTX testing within the test plan. This is proposed to check if, in order to avoid VAF increases, solutions introduce unacceptable speech distortion (e.g. clipping). This is referred to SQ.

#### **4.1.2 Discussion on Possible Mandatory Requirements**

In line with the request from SMG, a short discussion on what requirements might be considered for mandatory status was undertaken. It was noted that the original scope of the work item covered the optional example solution only. Since there is no example optional solution, it was noted that the interpretation for the purposes of this discussion would be that any mandatory requirements cover all AMR-applied noise suppresser solutions in the uplink.

It was noted that possible areas for setting mandatory requirements cover the bit exactness criterion of Section 5.1 and the Network Control Aspects of Section 4.1.

In terms of the network control aspect, the following three aspects potentially impacting speech quality were identified.

- (a) The speech quality effects of switching NS on/off in call (transient effects of switching, and static difference in speech quality before/after the switch).
- (b) Ability to turn mobile-based NS off if this is perceived to be adversely affecting speech quality
- (c) The ability to turn NS off to avoid tandem noise suppression.

(b) was considered by some delegates to be setting a difficult precedent, since to date no other feature has been identified with the potential need for this level of control (e.g. MS based acoustic echo mitigation is not controlled in this way). Additionally it was noted that the report to SMG stated that one outcome of the NS selection process was the conclusion that noise suppression does provide significant benefit, and that this should eliminate the need for control as defined in (b)

In relation to (c), it was noted that such control capability should be extended to all AMR-applied NS, not just mobile station applied NS. Indeed, since the most appropriate place for uplink NS is at source (i.e. in the mobile station), it may be appropriate to recommend that network based noise suppression should be turned off in tandem NS situations. Therefore any defined signalling should be capable of identifying that NS is applied wherever the application of NS takes place (network or mobile station) as well as allowing ON/OFF commands to be issued. The matter is possibly complicated by the fact that NS applied at the near end of an MS to MS call affects quality at the remote end. Therefore it may be required that the remote end of the network should be allowed to control the application of NS at the near end. If this is the case, the roaming case should also be accounted for in the signalling.

## **4.2 Technical Report (covering the Selection Phase)**

The first draft technical report in TD 116/00 was presented in some detail. A number of editorial matters were noted. Additionally the following more substantive points were noted.

In Section 6, clarification will be added that there was an original intention to use weighted FOMs, and since no agreements were reached on weightings, the weighted FOMs are identical to the unweighted FOMs.

For the FOMs 6a, 6b, 6c, it was agreed that the figures will be changed to reflect averages (i.e. division by the number of values added together) rather than the current accumulated values.

In Section 8 it was noted that the standalone delay for NS1 is missing. Mitsubishi agreed to look into this.

For Section 10 (Objective Performance measures) it was agreed that an agreed format is required to present the summary of results for all candidates. It was noted that TD46/00 includes a proposal that could be used as a basis. It was noted that Annex E should contain the full set of results in a common format yet to be proposed and agreed.

Ericsson volunteered to generate a table summarising the downlink (feasibility study) results for insertion into Section 11.

A request for contributions for progressing the annexes was made.

## **5 AOB**

TD122/00 was introduced, which contains revised versions of three reports from COMSAT covering their work during the selection phase. It was noted that the revisions are already accounted for in the Global Analysis spreadsheet.

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**Draft Agenda**  
**AMR Noise Suppression Sub-group Meeting #11**

|   |   |                   |
|---|---|-------------------|
|   |   | Tdocs (/00)       |
| 1 | Approval of Agenda  |                   |
| 2 | Allocation of Documents to Agenda Items                             |                   |
| 3 | NS related sections of previous meeting report<br>(Puerto Vallarta) | 94R               |
| 4 | Deliverables to SMG   |                   |
|   | 4.1 Requirements Specification                                      | 92, 111, 112, 117 |
|   | 4.2 Technical Report  | 46, 116           |
| 5 | AOB   | 122               |

## Annex 2

### List of Documents for the 10th Meeting of the AMR Noise Suppression Subgroup

| <b>TDOC (/00)</b> | <b>TITLE</b>   | <b>SOURCE</b>      |
|-------------------|--|--------------------|
| 46                | Summary of objective measures for AMR NS candidates  | Ericsson           |
| 92                | Digital cellular telecommunications system (Phase 2+); Minimum Performance Requirements for Noise Suppressor Application to the AMR Speech Encoder, v1.0.0 | SMG11              |
| 94R               | Draft Report of the Joint meeting SMG11#14 / 3G S4#9   | SMG11/S4 Secretary |
| 111               | Inclusion of a VAD/DTX experiment in the AMR/NS minimum performance specification  | Nokia              |
| 112               | Objective measures for characterising the SNR improvement and noise power level reduction produced by NS algorithms  | Nokia              |
| 116               | Technical Report: Digital cellular telecommunication system (Phase 2+); Results of the AMR Noise Suppression Selection Phase v.0.1.0                       | Editor             |
| 117               | Proposed Addition to AMR/NS Requirements concerning SNR Improvement  | Motorola           |
| 122               | Selection Phase Listening Laboratory Reports (revised - 3 documents)   | COMSAT             |