Tdoc S4/SMG11 (00)0192

Source: **SMG11/S4 Secretary**

Title: **Draft Report of the Joint meeting SMG11#15 / 3G S4#10**

Joint TSG-S4#10 & SMG11#15
Draft Meeting Report

1. Opening of the meeting

The Chairmen SMG11 & S4 opened the Joint SMG11/S4 meeting, kindly hosted by Nokia at Helsinki, Finland, and illustrated the practical arrangements. The meeting was co-chaired by the **SMG11 Chairman[1] & TSG-S4 Chairman[2],** K. Jarvinen and A. Ohana, respectively. The secretary was P. Usai. The list of participants is given in Annex 3.

2. Approval of the agenda and registration of documents

The revised Agenda (Tdoc 96/00R1) and the revised schedule (Tdoc 97/00R2) were approved. The documents were allocated to Agenda Items (see Annexes 1 & 2).

3. Approval of Previous Meeting Report

Tdoc 94/00R2 "**Revised Report of the Joint SMG11#13 / TSG-SA WG4 (Codec) meeting #8**" was approved. It was reminded that all documents on transferred specifications or related to Joint SMG11/S4 Work items (to be approved) should be submitted directly to TSG-SA, and not to SMG Plenary. The following action points were reviewed:

A. P. 1 - TR containing the Feasibility Phase for both AMR and AMR-WB (on going, closed during this meeting, c/o Chairman S4)

A.P. 2 - ENS to check the amount of ROM in the channel coding. Already closed.

A.P. 3 - A reply to N2 to be provided on proposed OoBTC Stage 2 specification (included in Tdoc 446/99 "**LS to S4 on Out-of-Band Transcoder Control**"); if felt necessary. It was felt not necessary and the A. P. was closed.

A.P. 4 - A reply to R4 to be provided (Tdoc 20/00 "**LS on handover signalling robustness**") at next meeting, if needed. It was felt not necessary and the A. P. was closed.

A.P. 5 - SQ Chairman will check whether Noise samples for the WB qualification phase can be provided by ARCON. Fulfilled and closed (but the procedure of delivery t.b.d. c/o WB Sub-group)

Tdoc 95/00 "**S4#9 Meeting Outcome**" was presented by S4 Chairman. Noted.

4. Reports/Liaisons from other groups/meetings (SMG11 Part)

4.1 TSG-SA/SMG

Tdoc 101/00 "**Report from SMG#31 on SMG11 matters**" was presented by the SMG11 Chairman. Noted.

4.2 Liaisons from other 3GPP Working Groups

Tdoc 102/00 "**Answer to LS from TSG-SA4 Codec on Delay Figures**" from TSG-R3, was presented by Mr. A. Ohana. It was left for the discussion in A. I. 12.4.

Tdoc 103/00 "**Response Liaison Statement on procedure for TrFO break**" from TSG-R3, was presented by Mr. A. Ohana. It was noted.

---

[1] SMG11 Chairman **Kari Jarvinen** Tel: 358 3272 5854 Mob: 358 50 555 0 999
Nokia Research Fax: 358 3272 5888
Mailing Address: Nokia Research Center, P.O. Box 100 (Visiokatu 1), FIN-33721 Tampere, Finland
Email: kari.ju.jarvinen@nokia.com

[2] 3G TSG-S4 Chairman **Alain Ohana** Tel: 1 972 517 0709
GSM North America Fax: 1 972 517 0709
Mailing Address: PO Box 868075, Plano, TX 75086-8075, USA Email: alain.ohana@pcs.bls.com

Tdoc 105/00 "**Liaison Statement on Harmonization of TFO and TrFO**" from TSG-N2, was presented by Mr. A. Ohana. It was left for the discussion in A.I. 9 on TFO.

Tdoc 107/00 "**Stage 2 description for TrFO break**" from TSG-N2, was presented by Mr. A. Ohana. It was left for the discussion in A.I. 9 on TFO.

Tdoc 104/00 "**Response to LS on Iu User-plane Initialisation at Inter MSC-HO**" from TSG-R3, was presented by Mr. A. Ohana. It was noted.

Tdoc 108/00 "**Working plan to complete OoBTC in R99 e-mail approved**" from TSG-S2, was presented by Mr. A. Ohana. It was noted.

Tdoc 106/00 "**Response to LS on the working plan to complete OoBTC in R99**" from TSG-N2, was presented by Mr. A. Ohana. It was noted.

Tdoc 109/00 "**Reply to Liaison on TIPHON Quality of Service**" from TSG-S2/SMG12, was presented by Mr. A. Ohana. It was noted.

Tdoc 110/00 "**Answer to liaison statement from N1 "LS on questions on the CR 10r1 to TS 23.107"**" from TSG-S2/SMG12, was presented by Mr. A. Ohana. It was noted.

4.3 Liaisons from other Groups

Tdoc 99/00 "**Letter from Lucent on Patent submission related to TTY**" from Lucent Technologies, was presented by Mr. A. Ohana. It was noted.

Tdoc 118/00 "**LS on Co-operation on basic operators**" from ITU-T SG16, was presented by Mr. R. Drogo de Iacovo. A possible reply was left for next meeting. **A. P. 1**.

Tdoc 119/00 "**Parameters for variable bit rate voice codec operation and information on channel models**" from ITU-T SG16, was presented by Mr. R. Drogo de Iacovo. It was noted. A possible reply was left for next meeting. **A. P. 2**.

Tdoc 100/00 "**Communication on 16 kbit/s wideband speech coding**" from ITU-T Q.20/16 (Rapporteur R. Drogo De Iacovo), was presented by Mr. R. Drogo de Iacovo. It was left for the AMR-WB discussion. A. Ohana asked whether 3GPP2 replied to the previous LS from Q. 20/16 and it was clarified that 3GPP2 seem not to be involved in the WB coding issue. The next SG16 meeting will be held in November 2000 (when a new structure of ITU-T for the Study Period 2001-2004 is likely to be already in force), and will review the ITU-T qualification test results. The ITU-T tests will be conducted using an internationally co-ordinated set of experiments. It was also clarified that in case 3GPP would like to candidate their WB selected candidate algorithm, then 3GPP will be asked to share the cost of the ITU-T WB exercise. Reply will be provided in time for the Q. 20/16 November meeting. **A.P. 3**.

5. GSM Phase 2, Release '96, '97 & '98 matters

No documents were produced under this A.I. Two possible documents from Alcatel on the issue of raising the RLR value was left for the discussion in the SQ Sub-Group.

Sub-Working Sessions:

The Sub-Group Chairmen were requested to illustrate the intended work for this meeting. The Plenary meeting was then suspended; the ad-hoc sessions then started, and the output was discussed in the Plenary session SMG11/S4 resumed on Thursday March 2nd , 2000.

Plenary Session: Start Thursday March 2, 9:00 AM

6. AMR Noise suppression SWG Session

See Section 11 and Annex 8.

7. AMR Wideband Codec SWG Session

Tdoc 126/00 "**Draft Agenda for the AMR-WB#4 meeting**", from AMR-WB Chairman, was appproved.

It was felt usefult to debate in the first part of the AMR Wideband Codec SWG Session the issues in common with the SQ ones; therefore a Joint AMR-WB and SQ was started (see Annex 7).

Funding: the issue was debated and the funding commitment up to 150 kEuro per candidate, related to the selection and characterisation phases, was requested to be provided by May 31st, 2000; this was agreed. It was clarified that this commitment will be applicable ONLY to the candidates admitted to the selection phase. Candidates failing to send the commitment will be automatically eliminated. Moreover, it was agreed that the funding for the selection and characterisation phases will be equally shared among the qualified candidates.

Tdoc 173/00 "**AMR wideband performance requirements (WB-3) version 2.0**" (with revision marks removed) was agreed during the Joint SMG11/S4 Plenary and will be presented to TSG-SA for approval.

Tdoc 87/00 "**Permanent project document WB-4: Design Constraints, v. 1.0**" will be presented for information and approval to TSG-SA Plenary.

Tdoc 164/00 "**Qualification Rules for AMR-WB (WB-5a version 0.3)**" was presented by Mr I. Varga. Some editorial changes were agreed and the document was updated in Tdoc 183/00 "**Qualification Rules for AMR-WB (WB-5a version 0.3R)**" with all revision marks "accepted".

Tdoc 151/00 "**Draft report AMR-WB#4 meeting**" was presented by the AMR-WB Chairman, Mr. I. Varga (see Annex 6). During the presentation, the following documents were treated:

Tdoc 166 "**Processing Functions for WB-AMR Subjective Experiments (WB-7a) version 0.2**" was presented by the AMR-WB Chairman, Mr. I. Varga. Noted as to be updated in Tdoc 184/00 "**Processing Functions for WB-AMR Subjective Experiments (WB-7a) version 0.3**".

Tdoc 179/00 "**Usage of Error patterns for WB-AMR Subjective Experiments**" from Ericsson, was presented by Mr. S. Bruhn. This document will become a new Section in Tdoc 184/00.

Moreover, "low level batch/ shell scripts" were proposed to be provided (mandatory to be used during the qualification phase), confirmation (and date) of delivery of such scripts was kindly offered by Nokia, and an answer will be given by March 10th, 2000; the scripts to be included in Section 9 of Tdoc 184/00.

Tdoc 162/00R "**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 1.0 (without revision marks)**" was approved as far as regards the present status (open issues were still noted to exist in this v. 1.0 and were cross-checked with the open issues in Tdoc 151/00).

At the end of the discussion, Tdoc 151/00, i.e. the **Report AMR-WB#4 meeting**, was approved and is attached to this report in Annex 6.

Tdoc 152/00 "**Draft communication to ITU-T Q.20/16**" was presented by Mr. I. Varga. The approval was postponed until next meeting in October, since ITU-T Q.20/16 meeting is foreseen in November 2000 (see **A. P. 3**).

Tdoc 165/00 "**AMR Wideband Codec Development Project Deliverables for the Qualification Phase (WB-6a) v. 0.2**" was presented by Mr. I. Varga. A date was changed in item 7 (20th March, 2000). The issues of Indipendent Distributor, NDAs and transfer means were debated; solution to be found by March 10th , 2000. **A. P. 7**. The Table of Deliverables was reviewed and updated.

Delivery dates were clarified to be intended as Date of arrival/receipt of the Delivery. Date of June 1st, 2000 (Ascension Day) was changed into May 31st, 2000. An Error Patterns Suppliers and another Delivery line for the Analysis was added. Executables of each candidate will be sent by owners only to ETSI as a separate delivery. NDA aspects were felt of relevant importance for the success of the exercise, and all Companies were invited to collaborate to solve possible disputes (text, Forum, signature, etc.). IPR Template will be provided by ETSI.

The document was updated in Tdoc 189/00 "**AMR Wideband Codec Development Project Deliverables for the Qualification Phase (WB-6a) v. 0.3**".

Tdoc 183/00 "**Qualification Rules for AMR-WB (WB-5a version 0.3R)**" was presented by Mr. I. Varga. The document was updated. The (revised) version was produced in Tdoc 191/00 "**Qualification Rules for AMR-WB (WB-5a version 0.4)**".

8. SQ SWG Session:

The SQ Chairman, Mr. P. Usai reported verbally on the activity of the SQ Sub-Group during the Joint SMG11#15 /S4#10 meeting (see also Section 13.3, and the Report in Annex 7).

9. TFO SWG Session: Start Tuesday February 29, 9:00AM

Tdoc 136/00 "Draft **Report of the TFO Ad Hoc session during S4#10/SMG11#15**" was presented by the TSG-S4 Chairman, who also chaired the ad-hoc session. Input documents for the "default codec set" were asked to be provided as well for A.P. 6 in the report. A sentence was modified and the revised version of the report was approved in Tdoc 136/00R (see Annex 9).

Tdoc 159/00 "**LS on Harmonisation of TFO and TrFO Response to LSs N2-000012, R3-000402, N2B000325**" was presented by Mr. K. Hellwig. It was agreed and it will be sent to TSG-N2 and TSG-R3, Cc to TSG-S2. Nortel Networks asked the S4 Chairman to clarify the position of N2 and R3 on the issue, which was done.

10. Postponed Liaisons

Tdoc 174/00R "**Reply to TSG-N1 on ACS and ICM**" was presented by Mr. K. Hellwig. It was revised into Tdoc 174R/00 and forwarded immediately to TSG-N1 and TSG-R3, Cc to TSG-N2B and TSG-R2.

11. AMR Noise suppression SWG Session

Tdoc 142/00 "**Draft Meeting Report AMR Noise Suppression Sub-group Meeting #11**" from AMR-NS Rapporteur, was presented by Mr. S. Aftelak. It was requested to record that the previous report was formally approved. In Sect. 4.1.1 Nortel Networks re-stated their position that an embedded solution should be allowed, and remarked that no increase at all in Voice Activity Factor should be allowed. Ericsson felt an embedded solution should not be allowed. Tellabs asked to discuss network control, which was left for the discussion on the text of the technical specification. The report was approved (see Annex 8).

Tdoc 170/00 "**Minimum Performance Requirements for Noise Suppresser Application to the AMR Speech Encoder (GSM 06.77 version 1.2.0)**" was presented by Mr. S. Aftelak. Tellabs and FT asked that network control should be made mandatory, which was supported also by Nortel Networks, that asked as well that bit-exactness be made mandatory. Motorola felt instead that network control should not be mandatory. The NS Rapporteur asked possibly to clarify the situation before next meeting; to the purpose, the TSG-S4 Chairman reminded that a LS to SMG2-WPA was asking them to provide the signaling to de-activate the NS, but Motorola pointed out that this would not mean the function, although provided, should be consudered by all means as mandatory, unless, of course, full consensus is reached in the future on this point.

12. Release 99 Work Items

12.1 AMR (excluding 3G Characterization)

Tdoc 127/00 "**Adaptive Multi-Rate (AMR) Speech Codec; Study Phase Report (GSM TR 06.76 v. 0.1.0)**" was agreed to be raised to version 2.0.0 and produced at next TSG-SA for approval.

Tdoc 128/00R "**AMR Wideband Speech Codec Feasibility Study Report (3G TR 26.901 v. 0.1.0)**" was requested to be edited in Sect. 5.1 Table 3, which was agreed. The revised document was agreed to be raised to version 2.0.0 and produced at next TSG-SA for approval.

Tdoc 158/00 "**CR 26.102 004 on Introduction of determination of QoS parameters used at RAB assignment**" was presented by Mr. K. Hellwig. The approval of this document was postponed until the following day.

Tdoc 160/00 "**CR 26.102 - 003 rev1 on Introduction of Time Alignment**" was presented by Mr. N. Naka. Mr. F. Gabin asked to check the consistency with the previous CR. The approval was postponed until the following day.

Tdoc 161/00 "**LS on AMR modes & Supported Subflow Combinations**", from TSG-N1, was presented by the S4 Chairman. K. Hellwig felt the indication to the MS in DL not needed. F. Gabin felt the RNC might not support all modes, due to spreading factor reasons. NTT DoCoMo felt Initial Codec Mode not needed (which would imply a CR to TS 26.103), and asked to communicate it to TSG-N1 (at least for Release 99). Nortel Network could not accept this proposal. The decision

from S4 was formulated in Tdoc 174/00 which was revised in Tdoc 174/00R and agreed. It was sent immediately To TSG-N1 and TSG-R3, Cc to TSG-N2B and TSG-R2.

Tdoc 139/00 "**CR 001 to 26.101** Correction of indices in Annex B table captions" was agreed, and will be produced at next TSG-SA for approval.

Tdoc 140/99 "**CR 002 to 26.101** Addition of comfort noise bit ordering" was agreed, and will be produced at next TSG-SA for approval.

Tdoc 141/99 "**CR 003 to 26.101** Correction of table indexing for AMR Core Frame class division example" was agreed, and will be produced at next TSG-SA for approval.

Tdoc 168/00 "**CR 004 to 26.101** Clarification of bit transmission order for AMR frame structure parameters for AMR IF1" was agreed, and will be produced at next TSG-SA for approval.

Tdoc 163/00 "**Use of AMR 12.2 in EFR applications**" from Ericsson, was presented by Mr. E. Ekudden. The document contained the background for updating the EFR specifications to allow implementations using the bit-exact AMR 12.2 kbit/s mode with a modified DTX and CNG system. In case the general principle for this update is accepted, new test vectors for DTX would be provided by Ericsson. Alcatel supported the proposal. The 5 ms extra delay implied in the proposal were felt acceptable, in view of the benefit achievable. Nortel Network asked whether removing the look-ahead part from AMR would be feasible with minor cost, then saving the additional delay. This was felt not to be the case by Ericsson. The principle of the proposal was endorsed, and CRs are awaited at next meeting. The Chairman will present the proposal to next TSG-SA Plenary in his report.

Tdoc 123/00 "**TX- and RX-Types Identifiers**" from Siemens, was presented by Mr. I. Varga. It was clarified the document was proposing a change to the ANSI-C code, for which two CRs will be prepared in Tdoc 175/00 and 176/00. Later on, it was clarified the CRs will be presented at next meeting; the two Tdocs 175/00 and 176/00 were WITHDRAWN.

12.2 AMR Floating Point ANSI C-Code

Tdoc 124/00 "**Real time factor measurements of the AMR floating point codec**", from Siemens, was presented by Mr. T. Fingscheidt. This document presented results of real time factor measurements of the AMR floating point code v0.2.1, and the AMR fixed point code v7.3.0. FT, Motorola and Nortel Networks will report asap on the status of their verification work, and problems detected will be communicated to Nokia. The completion of the WI was deferred to next meeting in June.

Tdoc 171/00 "**Verification of the AMR floating point**" from Texas Instruments, was presented by Ms. S. Dauphin. Texas Instruments performed the verification of items #1 (verification of the format and correctness of the C-code) and #10 (stability of the codec over time). No comments were made on this document.

Then the Chairman TSG-S4 summarised the situation, and asked whether S4 should ask TSG-SA to consider this specification as part of Release 99 or Release 2000. The S4 Committee agreed to provide Tdoc 82/00 "**Updated description of ANSI-C code for the floating-point AMR speech codec v. 0.3**" to TSG-SA for information.

12.3 Multimedia: 3G.324M, QoS for Speech and Multimedia

Tdoc 172/00 "**On using v.80 in 3G-32YM terminals**" from Nokia, was presented by Mr. P. Haavisto. Ericsson asked for some more time to review the document; the discussion was postponed until the following day.

Tdoc 125/00 "**Support of MIME sub-elements for audio and video**" from Siemens, was presented by Mr. T. Fingscheidt. MPEG-4 visual simple profile level 1 and AMR/EFR using TS 26.101 (Annex A) format was included as possible non-mandatory formats for video and audio. MMS allows to include different media objects by using the MIME (Multipurpose Internet Mail Extension) technology. In detail the format is defined by the subtype of the appropriate MIME element. In order to guarantee a unique mapping and to promote these two codecs/formats, Siemens proposed to register the appropriate subtypes at IANA. Siemens also asked the S4 experts to actively support the registration process at IANA. After discussion, the issue was left to

be dealt with directly by Siemens.

12.4 Transmission Planning in 3G Networks

Tdoc 102/00 "**Answer to LS from TSG-SA4 Codec on Delay Figures**" was briefly addressed by TSG-S4 Chairman. S4 invited input contributions to provide a reply at next meeting. **A.P. 4.**

Tdoc 157/00 "**TS 26.915 v. 0.0.2**" from Tellabs, was presented by Mr. I. Goetz. It was agreed to update the document in Tdoc 181/00 and raise it to v. 1.0.0. It will be provided to TSG-SA for information. Although it is presented for the first time to TSG-SA, it will be requested its approval for Release 99.

12.5 3G Audio-Visual Terminal Characteristics

Mr. I. Goetz summarized the output of the drafting group meeting (see Annex 7). A further drafting meeting will be organized by Tellabs (date to be provided next week). **A.P. 5**.

Tdoc 146/00 "**Echo Loss Measurements Using Various Kinds of Signals and Procedures**", from Head acoustics and Alcatel, was presented by Mr. H. Gierlich. Mr. J-F. Labal proposed to produce 4 CRs to GSM 03.50 (Releases 96/97/98/99), which will be considered in Tdocs 185/00 to 188/00.

12.6 Others

13. Release 2000 Work Items

Tdoc 113/00 "**Framework of Packet-based Multimedia Communications. Document for: Proposal**" from Matsushita, was presented by Mr. R. Hakenberg. The presenter pointed out that, at last IP workshop, co-operation was invited between IETF and 3GPP. A LS was proposed to be provided in Tdoc 182/00.

13.1 Multimedia H.323 Based

13.2 AMR Tandem Free Operation/Transcoder Free Operation

See Section 9 and the approved report in Annex 9.

13.3 SQ Report (including 3G AMR Characterization)

The SQ Chairman pointed out the 3G AMR characterizarion could not progress due to the lack of EPs (see also the discussion of Tdoc 169/00), and the confirmation of the exact funding; an open issue is also the request from TTA to include the Korean language in the tests. For the report of the SQ ad-hoc meeting, see Annex 7.

Tdoc 169/00 "**Radio Channel Simulator for 3GPP AMR Characterisation**"" from NTT DoCoMo, was presented by Mr. Y Yamaguchi. For the task to evaluate how AMR performs over 3G RAN, S4 has tried to get realistic error patterns of 3G radio channel, but not succeeded yet. Meanwhile, NTT DoCoMo is developing its own radio channel simulator for the internal evaluation purpose, and it could be applicable for 3GPP AMR characterisation as well. For the acceleration of AMR characterisation, NTT DoCoMo is considering to take part in channel error insertion for 3GPP AMR characterisation using their radio channel simulator voluntarily.

13.4 Wideband Codec

See Section 7 and the approved report in Annex 6.

Mr. Benito Carnero announced that the candidate COBASCA decided to WITHDRAW. This will leave up to eight candidates for the qualification phase.

14. New Work Items

Tdoc 154/00 "**Requirements and Objectives for Global Text Telephony**" from Ericsson, was presented by Mr. K. Hellwig. Noted. Before any further action, it was felt that the new proposed WI would need to be presented to TSG-S1, TSG-T2 and TSG-S2 as well, and approved by TSG-SA.

15. Postponed Issues

Tdoc 177/00 "CR 26.102 - 003 rev2 on Introduction of Time Alignment" from NTT DoCoMo and 178/00 "CR 26.102 004 rev1 on Introduction of determination of QoS parameters used at RAB assignment" from Ericssson were previously in contradiction and modified.

Tdoc 178/00 "**CR 26.102 004 rev1 on Introduction of determination of QoS parameters used at RAB assignment**" was agreed.

Tdoc 177/00 "**CR 26.102 - 003 rev2 on Introduction of Time Alignment**" was agreed.

Tdocs 185/00 "**CR 03.50-A019 (R96) on addition of a new optional artificial ear Type for acoustic tests**" until Tdoc 188/00 "**CR 03.50-A022 (R99) on addition of a new optional artificial ear Type for acoustic tests**" were presented by Mr. J-F Labal. Background for the CR can be found in Tdoc 145/00. The CRs were commented whether appropriate for R96 to R98, or just a matter for SMG7; after discussion, the CRs were agreed.

Tdoc 180/00 "**Draft LS to TSG-T on ITU-T V.80 support for 3G terminals**" was presented from Mr. P. Haavisto. It was agreed.

Tdoc 182/00 "**Draft LS to IETF on Audio/Video Transport Working Group**" from Matsushita was presented by Mr. R. Hakenberg. It was commented from NTT DoCoMo that the first example on possible applications given in the text may not be supported by NTT. The Chairman S4 felt some aspects not related to TSG-S4 work only, and suggested Matsushita to present the LS directly at TSG-SA, and Ericsson supported this position. Matsushita declared they were ready to modify the text to satisfy the NTT concern.

Conclusion: Matsushita accepted the advice to present the LS directly to TSG-SA Plenary.

Tdoc 190/00 "**Response to liaison statement T1-00006 from TSG-SA4**" from TSG-T1 was presented by TSG-S4 Chairman. It was noted.

16. Review of the future work plan (next meeting dates, hosts)

Future Joint and/or ad hoc meeting dates:

?-? April 2000 Ad-hoc on acoustic performance of terminals (date to be fixed by Tellabs by March 6th, 2000)

17-19 May 2000 Ad-hoc onTFO

5-9 June 2000 Possible host: Nortel Networks, Alcatel, FT (to be confirmed)

4-8 Sep 2000

23-27 Oct 2000

20-24 Nov. 2000

17. Any Other Business

Close of meeting: Friday March 3, Before 5:00 pm

Thee Chairman S4 announced that he will resign after the June Joint meeting. A new election will take place according to the 3GPP rules.

The Chairman thanked all the participants and the Host for the perfect Organization. The meeting was closed at 1 p.m.

ANNEX 1 - Agenda

Source: **SMG11 Chairman[3] & TSG-S4 Chairman[4]**

Title: **Proposed Meeting Agenda**

Document for: **Approval**

Agenda Item: **2**

TSG-S4#10 & SMG11#14 Proposed Meeting Agenda

1.	**Opening of the meeting:** Monday February 28, 9:00AM	
2.	**Approval of the agenda and registration of documents**	96,97
3.	**Approval of Previous Meeting Report**	94R2,95
4.	**Reports/Liaisons from other groups/meetings**	
4.1	TSG-SA/SMG	101
4.2	3GPP Working Groups	102>NetworkPlanning,104,108/10 6 103/105+107>TFO,109,110
4.3	Other Groups	99,100>Wideband,118,119
5.	**GSM Phase 2, Release '96, '97 & '98 matters**	185,186,187,188
	<u>Sub-Working-Group Sessions</u>:	
6.	**AMR Noise suppression SWG Session**	115 Sel. Res.: 116,122 Requir: 92>143>170(P), 111,112, 117,137,150
7.	**AMR Wideband Codec SWG Session**	126,100,87,90> 98>,114>,120>,488R/99,129,71 138,149,,144,
8.	**SQ SWB Session:**	145,146
9.	**TFO SWG Session:** Start Tuesday February 29, 9:00AM	132,45,121,133,134,499/99>135 103/105/107>159(P), 68>160(P)
	<u>Plenary Session</u>: Start Thursday March 2, 9:00 AM	
10.	**Postponed Liaisons**	161>AMR, 190
11.	**AMR Noise suppression SWG Session Outcome**	142,170
12.	**Release 99 Work Items**	
12.1	AMR (excluding 3G Characterization)	127,128R 139,140,141,168 158>178,160>177,161>174R 163,123>~~175/176~~
12.2	AMR Floating Point ANSI C-Code	171,124
12.3	Multimedia: 3G.324M, QoS for Speech and Multimedia	172>180,125
12.4	Transmission Planning in 3G Networks	102,157>181
12.5	3G Audio-Visual Terminal Characteristics	148,149,153,155,~~156~~,146
12.6	Others	
13.	**Release 2000 Work Items**	

---

[3] **Kari Jarvinen** Tel: 358 3272 5854 Mob: 358 50 555 0 999
Nokia Research Fax: 358 3272 5888
Mailing Address: Nokia Research Center, P.O. Box 100 (Visiokatu 1), FIN-33721 Tampere, Finland
Email: kari.ju.jarvinen @nokia.com

[4] **Alain Ohana** Tel: 1 972 517 0709
BellSouth Mobility DCS & GSM North America Alliance Fax: 1 972 517 0709
Mailing Address: PO Box 868075, Plano, TX 75086-8075, USA Email: alain.ohana@pcs.bls.com

13.1	Multimedia H.323 Based	113>182
13.2	AMR Tandem Free Operation/Transcoder Free Operation	136R,135, 159R
13.3	SQ Report (including 3G AMR Characterization)	169
13.4	Wideband Codec	151,131>173,152,162R 164>183,165>189 166+179>184>191,167

14. New Work Items 154,

15. Postponed Issues

16. Review of the future work plan (next meeting dates, hosts)

17. Any Other Business

Close of meeting: Friday March 3, Before 4:00 pm

Annex 2 - List of documents

SMG11/S4 document list (2000)		
Document number (SMG11/S4 / 00)	**Title SMG11#15 & S4#10 Plenary**	**Source**
94R2	Draft Report Joint meeting SA4#9 & SMG11#14	Secretary
95	S4#9 Meeting Outcome	TSG-S4 Chairman
96	S4#10/SMG11#15 Proposed Agenda	TSG-S4 Chairman
97	S4#10/SMG11#15 Proposed Schedule	TSG-S4 Chairman
98	AMR-WB Qualification Rules v0.2	TSG-S4 Chairman
99	Letter from Lucent on Patent submission related to TTY	Lucent Technologies
100	Communication on 16 kbit/s wideband speech coding	ITU-T Q.20/16 Rapporteur
101	Report from SMG#31 on SMG11 matters	SMG11 Chairman
102	Answer to LS from TSG-SA4 Codec on Delay Figures	TSG-R3
103	Response Liaison Statement on procedure for TrFO break	TSG-R3
104	Response to LS on Iu User-plane Initialisation at Inter MSC-HO	TSG-R3
105	Liaison Statement on Harmonization of TFO and TrFO	TSG-N2
106	Response to LS on the working plan to complete OoBTC in R99	TSG-N2
107	Stage 2 description for TrFO break	TSG-N2
108	Working plan to complete OoBTC in R99 e-mail approved	TSG-S2
109	Reply to Liaison on TIPHON Quality of Service	TSG-S2/SMG12
110	Answer to liaison statement from N1 "LS on questions on the CR 10r1 to TS 23.107"	TSG-S2
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
113	Framework of Packet-based	Matsushita

	Multimedia Communications	
114	Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.4	Nokia
115	Draft Agenda AMR Noise Suppression Sub-group Meeting #11	Motorola
116	Results of the AMR Noise Suppression Selection Phase (GSM 06.78 version 0.1.0)	Motorola
117	Proposed Addition to AMR/NS Requirements concerning SNR Improvement	Motorola
118	LS on Cooperation on basic operators	ITU-T SG 16
119	Parameters for variable bit rate voice codec operation and information on channel models	ITU-T SG 16
120	AMR Wideband Codec Development Project Deliverables for the Qualification Phase (WB-6a) v. 0.1	Editor (S. Aftelak)
121	TFO for AMR: Painting the shortcut grey	Siemens
122	Revised NS reports from COMSAT	COMSAT
123	Tx- and Rx- Types Identifiers	Siemens
124	Real time factor measurements of the AMR floating point codec	Siemens
125	Support of MIME sub-elements for audio and video	Siemens
126	Draft Agenda for the AMR-WB#4 meeting	Siemens
127	Adaptive Multi-Rate (AMR) Speech Codec; Study Phase Report (GSM TR 06.76 v. 0.1.0)	Editor
128R	AMR Wideband Speech Codec Feasibility Study Report (3G TR 26.901 v. 0.1.0)	Editor
129	AMR-WB 7 Processing functions v. 0.11	Editor
130	Proposal for AMR-NS test plan (CCR)	Motorola
131	AMR-WB Performance Requirements WB-3 v. 2.0 (with revision marks)	Editor
132	TFO Sub Working-Group Agenda	TSG-S4 Chairman
133	Nortel proposal for AMR TFO	Nortel Networks
134	CR 08.62-A002 TFO Messages for AMR	Ericsson

135	Draft CR to Inband Tandem Free Operation (TFO) of Speech Codecs; (GSM 08.62 version 7.0.0 Release 1998)	TFO Sub-group
136R	Report of the TFO Ad Hoc session during S4#10/SMG11#15	TSG-S4 Chairman
137	Draft for the PC experiment and proposed DCR testing for the NS test plan	France Telecom /CNET
138	Clarification of WCDMA channel simulator settings for application E	Ericsson
139	CR 001 to 26.101	Nokia
140	CR 002 to 26.101	Nokia
141	CR 003 to 26.101	Nokia
142	Draft Meeting Report AMR Noise Suppression Sub-group Meeting #11	Rapporteur AMR-NS
143	Minimum Performance Requirements for Noise Suppresser Application to the AMR Speech Encoder (GSM 06.77 version 1.1.0)	Editor
144	Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.5	Nokia
145	Need of a new artificial ear for GSM terminals	Alcatel
146	Echo Loss Measurements Using Various Kinds of Signals and Procedures	Head acoustics, Alcatel
147	Proposed Addition to TS 26.131 and TS 26.132	HEAD acoustics, T-NOVA Berkom
148	Proposal for a change of tolerance masks in TS 26.131	HEAD acoustics
149	Proposal for WCDMA channel error pattern file format and error insertion device	Ericsson
150	Proposal for AMR-NS test plan (ACR)	Ericsson
151	Draft report AMR-WB#4 meeting	AMR-WB Rapporteur
152	Draft communication to ITU-T Q.20/16	AMR-WB Rapporteur
153	Terminal audio characteristics	Nokia
154	Requirements and Objectives for Global Text Telephony	Ericsson
155	Comments to TS 26.132 v0.0.3	Bosch Telecom Danmark
156	TS 26.132 v. 0.0.3	Tellabs

157	TS 26.915 v. 0.0.2	Tellabs
158	CR 26.102-004 on Introduction of determination of QoS parameters used at RAB assignment	Ericsson
159	LS on Harmonisation of TFO and TrFO Response to LSs N2-000012, R3-000402, N2B000325	TSG-S4
160	CR 26.102 - 003 rev1 on Introduction of Time Alignment	NTT DoCoMo
161	LS on AMR modes & Supported Subflow Combinations	TSG-N1
162R	Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 1.0	Nokia
163	Use of AMR 12.2 in EFR applications	Ericsson
164	Qualification Rules for AMR-WB (WB-5a version 0.3)	Editor
165	AMR Wideband Codec Development Project Deliverables for the Qualification Phase (WB-6a) v. 0.2	Editor
166	Processing Functions for WB-AMR Subjective Experiments (WB-7a) version 0.2	Editor
167	AMR wideband development overview (WB-1)	Editor
168	CR 26.101 004	Nokia
169	Radio Channel Simulator for 3GPP AMR Characterisation	NTT DoCoMo
170	Minimum Performance Requirements for Noise Suppresser Application to the AMR Speech Encoder (GSM 06.77 version 1.2.0)	Editor
171	Verification of the AMR floating point	TI
172	On using v.80 in 3G-32YM terminals	Nokia
173	AMR wideband performance requirements (WB-3) version 2.0	Siemens
174R	Draft Reply to TSG-N1 on ACS and ICM	S4
175	CR 06.73-A022 on Tx- anRx- Types Identifiers WITHDRAWN	Siemens
176	CR 26.073 002 on Tx- anRx- Types Identifiers WITHDRAWN	Siemens
177	CR 26.102 - 003 rev2 on Introduction of Time Alignment	NTT DoCoMo
178	CR 26.102 004 rev1 on Introduction of determination of QoS parameters used	Ericsson

	at RAB assignment	
179	Usage of Error Patterns for WB-AMR Subjective Experiments	Ericsson
180	Draft LS to TSG-T on ITU-T V.80 support for 3G terminals	S4
181	TS 26.915 v. 1.0.0	S4
182	Draft LS to IETF on Audio/Video Transport Working Group	Matsushita
183	Qualification Rules for AMR-WB (WB-5a version 0.3R)	Editor
184	Processing Functions for WB-AMR Subjective Experiments (WB-7a) version 0.3	Editor
185	CR 03.50-A019 (R96) on addition of a new optional artificial ear Type for acoustic tests	Alcatel
186	CR 03.50-A020 (R97) on addition of a new optional artificial ear Type for acoustic tests	Alcatel
187	CR 03.50-A021 (R98) on addition of a new optional artificial ear Type for acoustic tests	Alcatel
188	CR 03.50-A022 (R99) on addition of a new optional artificial ear Type for acoustic tests	Alcatel
189	AMR Wideband Codec Development Project Deliverables for the Qualification Phase (WB-6a) v. 0.3	Editor
190	Response to liaison statement T1-00006 from TSG-SA4	T1
191	Qualification Rules for AMR-WB (WB-5a version 0.4)	Editor
192	Draft report SMG11#15 & S4#10	Secretary

Tdoc S4/SMG11 (00)0192

Annex 3 - List of participants

0-SMG11#15 Participant List

Title	FirstName	LastName	Company	SDO	Country	Email	Telephone	Fax	Arrival	Departure
Mr.	Klemens	Adler	Alcatel	ETSI	Germany	k.adler@alcatel.de	49 711 821 44207	49 711 821 40017	2/26/00	3/03/00
Dr.	Steve	Aftelak	Motorola	ETSI	UK	aftelaks@ecid.cig.mot.com	44 1793 566261	44 1793 566225	2/27/00	3/03/00
Mr.	Andrew	Bright	Nokia	ETSI	Finland	andrew.bright@nokia.com	+358 3272 5897		3/01/00	3/01/00
Dr.	Stefan	Bruhn	Ericsson	ETSI	Sweden	stefan.bruhn@ericsson.com	46 8 4044926	46 8 7575550	2/27/00	3/03/00
Mr	Bo	Burman	Ericsson	ETSI	Sweden	Bo.burman@era.ericsson.se		46 8 757 5550	2/27/00	3/03/00
Mr.	Benito	Carnero	STMicroelectronics	ETSI	Switzerland	Benito.carnero@st.com	41 22 929 2993	41 22 929 29 70	2/27/00	3/03/00
Mrs.	Servanne	Dauphin	Texas Instruments	ETSI	France	s-dauphin@ti.com	33 4 93 22 21 96	33 4 93 22 2516	3/01/00	3/03/00
Mr.	Ekkehard	Diedrich	T-Nova Berkom	ETSI	Germany	Ekkehard.Diedrich@telekom.de	49 30 3497 2416	49 30 3497 2417	3/01/00	3/01/00
Mr.	Rosario	Drogo De Iacovo	CSELT S.p.A.	ETSI	Italy	rosario.drogodeiacovo@cselt.it	39 011 228 6221	39 011 228 6207	2/27/00	3/03/00
Mr.	Stephane	Dufosse	Alcatel	ETSI	France	stephane.dufosse@bsf.alcatel.fr			3/01/00	3/01/00
Mr.	Erik	Ekudden	Ericsson	ETSI	Sweden	erik.ekudden@era.ericsson.se	+46 8 757 2168	+46 8 757 5550	2/28/00	3/03/00
Dr.	Anders	Eriksson	Ericsson Radio Systems AB	ETSI	Sweden	anders.eriksson@era-t.ericsson.se	48 8 757 25 91	46 8 757 55 50	2/28/00	3/01/00
Mr	Tim	Fingscheidt	Siemens AG	ETSI	Germany	tim.fingscheidt@mch.siemens.de	49 89 722 57 658	49 89 722 46 489	2/27/00	3/03/00
Dr.	Kyrill	Fischer	T-Nova Deutsche Telekom Berkom	ETSI	Germany	kyrill.fischer@telekom.de	49 6151 83 4309	49 6151 89 9838	2/28/00	3/03/00
Mr.	Frederic	Gabin	Nortel Networks	ETSI	France	fgabin@nortelnetworks.com	33 1 39 44 48 22	33 1 39 44 50 12	2/27/00	3/04/00
Dr.	Christian	Gerlach	Alcatel	ETSI	Germany	Cgerlach@rcs.se.de	49 711 821 32200	49 711 821 32302	2/27/00	3/03/00
Dr.	Hans W.	Gierlich	Head acoustics	ETSI	Germany	h-w-gierlich@head_acoustics.de	49 2407 57722	49 2407 57799	2/29/00	2/03/00
Mr.	Ian	Goetz	Tellabs	ETSI	UK	Ian.goetz@tellabs.com	44 1494555837	44 1494555812	2/29/00	3/03/00
Mr.	Kazimierz	Gofron	Motorola	T1	USA	gofron@ccrl.mot.com	1 847 576 2757	1 847 576 8378	2/29/00	3/03/00
Dr.	Petri	Haavisto	Nokia	ETSI	Finland	petri.haavisto@nokia.com	358 3 272 5836	358 3 272 5897	2/28/00	3/03/00
Mr.	Rolf	Hakenberg	Panasonic Europen Laboratories	ETSI	Germany	Hakenberg@panasonic.de	49 6103 766 162	49 6103 766144	1/03/00	3/03/00
Mr.	Karl	Hellwig	Ericsson Eurolab Deutschland GmbH	ETSI	Germany	Karl.Hellwig@eed.ericsson.se	49 911 5217 300	49 911 5217 961	2/27/00	3/03/00

0-SMG11#15 Participant List

Title	FirstName	LastName	Company	SDO	Country	Email	Telephone	Fax	Arrival	Departure
Mr.	Harri	Honko	Nokia	ETSI	Finland	harri.honko@nokia.com	358 40 533 1437	358 3 2725 241	3/01/00	3/03/00
Mr.	Daiji	Ido	Matsushita Communication Industrial	ARIB	Japan	daiji.Ido@yrp.mci.mei.co.jp	81 468 40 5169	81 468 40 5183	3/01/00	3/04/00
Mr.	Seppo	Ingalsuo	Nokia Mobile Phones	ETSI	Finland	seppo.ingalsuo@nokia.com	358 10 505 6781	358 10 505 6777	2/29/00	3/03/00
Mr.	Kari	Jarvinen	Nokia	ETSI	Finland	kari.ju.jarvinen@nokia.com	358 3 272 5854	358 3 272 5888	2/27/00	3/03/00
Mr.	Steven	Kendall	Motorola	ETSI	UK	Stevek@europe27.mot.com	44 1256 790 454	44 1256 790 190	2/27/00	3/03/00
Mr.	Yutaka	Machida	Matsushita Comm. Industrial Co., Ltd.	ARIB	Japan	Yutaka.machida@yrp.mci.mei.co.jp	81 468 40 5169	81 468 40 5183	3/01/00	3/04/00
Mr.	Jean Francois	Labal	Alcatel	ETSI	France	jean-francois.labal@art.alcatel.fr	33 1 55 66 61 96	33 1 55 66 35 61	2/27/00	3/03/00
Mr.	Kimio	Miseki	Toshiba Corporation	ARIB	Japan	kimio.miseki@toshiba.co.jp	81 44 548 5350	81 44 520 5864	2/27/00	3/03/00
Mr.	Akihiro	Miyazaki	Matsushita Electric Industrial	ARIB	Japan	Akihiro@isl.mei.co.jp	81 6 6900 9192	81 6 6900 9193	3/01/00	3/03/00
Mr.	Atsushi	Murashima	NEC	ARIB	Japan	Atsushi@ccm.CL.nec.co.jp	81 44 856 8485	81 44 856 2232	2/27/00	3/04/00
Mr.	Nobuhiko	Naka	NTT DoCoMo	TTC	Japan	nob@spg.yrp.nttdocomo.co.jp	81 468 40 3515	81 468 40 3788	2/27/00	3/04/00
Mr.	Alain	Ohana	BellSouth Mobility DCS	T1	USA	alain.ohana@pcs.bls.com	1 972 517 0709	1 972 517 0709	2/27/00	3/04/00
Mr.	Pasi	Ojala	Nokia Mobile Communications	ARIB	Japan	Pasi.s.ojala@nokia.com	81 3 5510 0972	81 3 5510 0801		
Mr.	Erkki	Paajanen	Nokia	ETSI	Finland	Erkki.paajanen@nokia.com	358 3 272 5635	358 3 272 5899	2/28/00	3/02/00
Dr.	Erdal	Paksoy	Texas Instruments	ETSI	USA	paksoy@ti.com	1 214 480 3943	1 972 761 6969	2/28/00	3/05/00
Mr.	Bob	Perez	Tellabs Operations, Inc.	ETSI	USA	bob.perez@tellabs.com	1 630 378 6525	1 630 378 6718	2/27/00	3/03/00
Ms.	Maria Rita	Premoli	Siemens ICN	ETSI	Italy	Mariamargherita.Premoli@icn.siemens.it			3/01/00	3/03/00
Mrs.	Catherine	Quinquis	France Telecom CNET	ETSI	France	catherine.quinquis@cnet.francetelecom.fr	33 2 96 05 14 93	33 2 96 05 35 30	2/27/00	3/04/00
Mr.	Clemens	Suerbaum	Siemens	ETSI	Germany	clemens.suerbaum@icn.siemens.de	49 89 722 42418	49 89 722 29098	2/28/00	3/02/00
Mr.	Shinya	Takahashi	Mitsubishi Electric Corporation	ETSI?	Japan	takahashi@isl.melco.co.jp	81 467 41 2073	81 467 41 2136	2/27/00	3/04/00
Mr.	Philippe	Thierion	Nortel Networks	T1	USA	pthierio@ nortelnetworks.com	33 1 39 44 43 32	33 1 39 44 50 12	2/28/00	3/03/00
Mr.	Paolo	Usai	ETSI	ETSI	France	paolo.usai@etsi.fr	33 4 92 94 42 66	33 4 9365 2817	2/27/00	3/03/00
Mr.	Janne	Vainio	Nokia	ETSI	Finland	Janne.m.vainio@nokia.com	358 3 272 5212	358 3 272 5888	2/27/00	3/03/00
Dr.	Imre	Varga	Siemens AG	ETSI	Germany	imre.varga@mch.siemens.de	49 89 722 47537	49 89 722 46489	2/27/00	3/03/00

0-SMG11#15 Participant List

Title	FirstName	LastName	Company	SDO	Country	Email	Telephone	Fax	Arrival	Departure
Mr.	Hiroyuki	Yamaguchi	NTT DoCoMo	ARIB	Japan	hyama@spg.yrp.nttdocomo.co.jp	81 468 40 3515	81 468 40 3788	3/01/00	3/04/00
Mr.	Tadashi	Yonezaki	Matsushita Communication Industrial	ARIB	Japan	tadashi.yonezaki@yrp.mci.mei.co.jp	81 468 40 5417	81 468 40 5183	2/27/00	3/04/00

Annex 4 - List of Action Points

A. P. 1. Tdoc 118/00 "**LS on Co-operation on basic operators**" from ITU-T SG16, A possible reply was left for next Joint meeting SMG11/S4.

A. P. 2. Tdoc 119/00 "**Parameters for variable bit rate voice codec operation and information on channel models**" from ITU-T SG16. Reply was left for next Joint meeting SMG11/S4.

A. P.3. Tdoc 100/00 "**Communication on 16 kbit/s wideband speech coding**" from ITU-T Q.20/16. A reply was left to be provided in time for next Q. 20/16 meeting in November 2000.

A.P. 4. Tdoc 102/00 "**Answer to LS from TSG-SA4 Codec on Delay Figures**". S4 delegates to forward input contributions in order to provide a reply at next Joint SMG11/S4 meeting.

A.P. 5. Mr. I. Goetz to organize an ad-hoc drafting meeting in Tellabs to continue the work on TS 26.132 (date to be provided next week). He will also take care to link with the Rapporteur (P. Barrett) to progress TS 26.131.

A. P. 6. Secretary to delete WB-9 permanent document in the ETSI server.

A. P. 7. AMR-WB Deliverables: about the still open issues of Indipendent Distributor, NDAs and transfer means, a solution to be found by March 10th , 2000.

Annex 5 - Output documents

Tdocs approved at Joint meeting SMG11#14 & S4#10, to be presented at next TSG-SA:

Tdoc 6/00 "**CR 06.75-A002 v. 7.1.0 Threshold and hysteresis for Exp.s 4A and 4B**"

Tdoc 7/00 "**CR 06.75-A003 Introduction of Annex D**"

Tdoc 50/00 "**CR 08.62-A002 rev1 on TFO Message Extendibility**"

Tdoc 67/00 "**CR 26.102 - 002 on Introduction of different RFCS set on Iu userplane**"

Tdoc 23/00 "**CR to GSM 06.73 (v.7.3.0) - Title: Avoidance of pulse cancellation in FCB excitation**" R98

Tdoc 32/00 "**CR 001 to GSM 26.073 (v.3.0.0) - Title: Avoidance of pulse cancellation in FCB excitation**" R99

Tdoc 91/00R "**CR 001 rev1 to 26.102 on QoS Attributes for RAB assignment**"

Tdoc 83/00 "**3G TS 26.912 v. 2.0.0 QoS for Speech and Multimedia Codec - Quantitative performance evaluation of H.324 Annex C over 3G**"

New documents approved at this meeting:

Tdoc 173/00 "**AMR wideband performance requirements (WB-3) version 2.0**" was agreed and will be presented to TSG-SA for approval.

Tdoc 87/00 "**Permanent project document WB-4: Design Constraints, v. 1.0**" will be presented for information and approval to TSG-SA Plenary.

Tdoc 127/00 "**Adaptive Multi-Rate (AMR) Speech Codec; Study Phase Report (GSM TR 06.76 v. 0.1.0)**" was agreed to be raised to version 2.0.0 and will be presented to TSG-SA for approval.

Tdoc 128/00R "**AMR Wideband Speech Codec Feasibility Study Report (3G TR 26.901 v. 0.1.0)**" was agreed to be raised to version 2.0.0 and will be presented to TSG-SA for approval.

Tdoc 139/00 "**CR 001 to 26.101** Correction of indices in Annex B table captions" was agreed, and will be presented to next TSG-SA for approval.

Tdoc 140/99 "**CR 002 to 26.101** Addition of comfort noise bit ordering" was agreed, and will be presented to next TSG-SA for approval.

Tdoc 141/99 “**CR 003 to 26.101** Correction of table indexing for AMR Core Frame class division example” was agreed, and will be presented to next TSG-SA for approval.

Tdoc 168/00 “**CR 004 to 26.101** Clarification of bit transmission order for AMR frame structure parameters for AMR IF1” was agreed, and will be presented to next TSG-SA for approval.

Tdoc 181/00 “**TS 26.915 v. 1.0.0**” was agreed, and will be provided to TSG-SA for information. Although it is presented for the first time to TSG-SA, it will be requested its approval for R99.

Tdoc 82/00 “**Updated description of ANSI-C code for the floating-point AMR speech codec v. 0.3**” will be presented to TSG-SA for information.

Tdoc 178/00 “**CR 26.102 004 rev1 on Introduction of determination of QoS parameters used at RAB assignment**” was agreed, and will be presented to next TSG-SA for approval.

Tdoc 177/00 “**CR 26.102 - 003 rev2 on Introduction of Time Alignment**” was agreed, and will be presented to next TSG-SA for approval.

Tdocs 185/00 “**CR 03.50-A019 (R96) on addition of a new optional artificial ear Type for acoustic tests**” until Tdoc 188/00 “**CR 03.50-A022 (R99) on addition of a new optional artificial ear Type for acoustic tests**” were agreed, and will be presented to next SMG Plenary for approval.

LS approved at the Joint SMG11#15 & S4#10 meeting

Tdoc 159/00 "**LS on Harmonisation of TFO and TrFO Response to LSs N2-000012, R3-000402, N2B000325**", to N2 and R3, Cc S2.

Tdoc 174/00R "**Reply to TSG-N1 on ACS and ICM**" was agreed and sent during the meeting (on Thursday March 2nd , 2000).

Tdoc 180/00 "**LS to TSG-T on ITU-T V.80 support for 3G terminals**" with attachment (Tdoc S4-000172) to TSG-T.

Annex 6 - Draft Report WB ad-hoc meeting#4

Joint TSG-S4#10 - SMG11#15 Meeting ***Tdoc S4/SMG11 (00)00151***

February 28-March 3, 2000, Helsinki, Finland

Title:	**Report on the AMR-WB#4 Subgroup Meeting**
Source:	**Rapporteur**
Agenda Item:	**7**

1. General

The agenda was approved and the documents were allocated to the agenda items (see Annex A). The first part of the meeting was held as a joint meeting with SQ.

Tdoc 100/00 "**Communication on 16 kbit/s wideband speech coding**" was already presented at the Plenary. Mr. R. Drogo summarized the item relevant for the discussion in the ad-hoc group.

Talker dependency requirements, transmission of DTMF, and S/N values + measurements methods for the background noise conditions were the items felt worth-considering. The bit rate issue was felt the only one correlated with design constraints.

2. Design constraints (WB-4)

First, the design constraints permanent document was briefly presented by Mr. K. Jarvinen (Tdoc S4-00087, v.1.0). The document was felt completed for the AMR-WB qualification phase (and fulfilling the new bit rate constraints set by ITU-T).

3. Performance requirements (WB-3)

As a next item, the performance requirements permanent document was addressed by the AMR-WB chairman (Tdoc 90/00, v.1.2).

One open issue in the Notes to Table 1a and 1b was raised from Motorola on the evaluation of C/I under 13 dB in terms of intervals of interest. It was proposed to task the Analysis laboratory to study and propose a statistical approach (formula) to be applied to the results. For clean speech, it was proposed to adopt a curve in terms of PoW % and ask the performance of the WB candidate not to increase the number of "dissatisfied customers". Erdal asked a MOS curve from GSM 06.75 to be adopted instead than PoW values. F. Gabin commented a reference curve should be identified, to fix what graceful

degradation is allowed to WB candidate. E. Ekudden asked to stick to the original proposal of measuring difference in performance (if a suitable statistical approach can be identified by SQ experts).

Debate took place at length: the conclusion was that F. Gabin asked to rephrase the requirement in Note 1, and this was agreed.

Another question was requested to be answered by S. Kendall on Table 2 on dynamic conditions, about “typical” conditions; after the clarification that several profiles will be employed in the tests, covering a range of C/I values, the requirement was accepted to be left as is.

About the Notes to Table 5a and 5b for application E, Motorola asked to clarify the meaning, whether the Notes are intended to be design constraints, and this was confirmed to apply to all phases, while simulation parameters were requested to be further elaborated, and this was an additional issue, for which Ericsson will forward a contribution

Finally, the requirements for application C and D in background noise were proposed to be set to 64 kbit/s for No errors, and the Objective was deleted, which was agreed.

For consistency reasons, the Notes to Tables 4a and 4b were modified as for Note 1.

Mr. K. Fischer asked to modify Table 3b to bring it in line with Table 1b, adopting the PoW criterium for tandeming in background noise conditions. Mr. E. Ekudden and Mr. J. Vainio remarked the present requirements were discussed at length at last meeting and asked not to change the existing requirements. The requirement was left as is.

An editorial change was requested in table 5a and 5b, i.e. to replace “0.0%” by “-“, which was agreed.

The issues raised by the ITU-T document for the Talker dependency requirement (in the sense to align the requirements with the ones for different input level), transmission of DTMF tones (as a requirement instead than an objective), and S/N values + measurements methods for the background noise conditions were addressed by Mr. R. Drogo de Iacovo. Talker Dependency requirement was left unchanged and DTMF requirement was left as an Objective (transparency), while the request on S/N values + measurements methods for the background noise conditions was felt not a performance requirement issue and left for the discussion on the processing task.

All brackets “[ ]” in Tdoc 90/00 were agreed to be removed, and WCDMA simulation issues were moved to the processing functions document.

The whole document was agreed (it will be revised in Tdoc 131/00, v.2.0).

Note that a further change was agreed in Note 5 belonging to Tables 5a and 5b:

Note 5: The least significant bits shall be subjected to the residual error profile. The number of bits in this class shall be 50% of the total bits per frame.

This change is incorporated in the final Tdoc 173/00 of the **„AMR-WB Performance requirements (AMR-WB-3) v.2.0“** which was agreed in the AMR-WB subgroup.

4. Processing functions

The permanent document WB-7a v. 0.11 (Tdoc 129/00) for the qualification phase was produced by the Editor (P. Barrett, BT), and was presented by the AMR-WB Chairman. The document was reviewed in detail.
A “background noise weighted P.341 filter” (to take into account the wideband equivalent of the SM filtering function in the narrowband domain will possibly be provided by correspondence. If agreed (within one week time, i.e. by March 10th, 2000), the new filtering characteristics will be adopted; otherwise the presently described procedure will be adopted.

The option for the inclusion of a possible post-processing filter for wideband signals (to “mask” the output from all the processing stages in the same way for all proponents) was left open until March 10th, 2000. If proposals will be made and agreed, such post-processing stage will be adopted; otherwise, no wideband post-processing will take place.

One open issue: the tandeming of AMR-WB will need the insertion of a transcoding stage, to simulate the realistic situation; to the purpose, Nortel Networks proposed to insert a further encoding-decoding G.722 stage. This proposal is to reflect realistic conditions. An alternative proposal (i.e. not to insert any encoding-decoding stage) got the support of Ericsson, Nokia, Siemens and FT. No change was agreed for the qualification phase.

Functions of data base laboratory and listening laboratory were agreed. A deadline (March 10th, 2000) was set for the check of the add function provided by BT (filename “add.c”).

Ericsson will provide the EID (Error Insertion device for the WCDMA).

The document 129/00R “**AMR-WB-7a Processing functions v. 0.12**” was revisited after the approval of the AMR-WB Qualification Test Plan.

Tdoc 149/00 was presented by Ericsson. Based on this document, an Annex D was added to the processing functions document on file format of WCDMA channel errror files. Annex E describes the functionality of the WCDMA EID.

Tdoc 138/00 was presented by Ericsson on WCDMA channel simulator settings for application E testing. Annex F was added to the processing functions document.

Significant progress was achieved on Sections 6,7,8 as well. Section 6 is related to Background Noise Files. Arcon was identified as the potential source for providing the noise files; this is to be confirmed. It was left for clarification whether Arcon is able to provide the files in an encrypted format by winzip.

Section 7 considering Error Insertion Device for Application E was completed; Ericsson was volounteering to provide the WCDMA EID in C source code.

Section 8 related to Error Patterns for applications A, B, E was completed; Nortel Networks was volounteering to provide the error patterns for applications A and B, Ericsson volounteered to provide the channel error files for UL and Nokia for DL conditions.

The document 166/00 "**AMR-WB-7a Processing functions v. 0.2**" was produced. The oustanding issues are listed on page 4 in the document: verification of add.c; „background noise weighted P.341 filter"; potential postprocessing for WB signals. Note that comments related to the oustanding issues are required on the reflector by March 10 at the latest.

5. Test plans for the AMR-WB Qualification Phase

Permanent document AMR-WB-8a v. 0.4 (Tdoc 114/00) was presented by Mr. J. Vainio. Open issues were listed and most solved.

Independent Distributor	The independent distributor is supposed to redistribute the speech samples received from the test laboratories to the different candidates, hiding to each candidate which other candidates are included in their own test.
Independent Distributor	Must be identified. Should the Independent Distributor sign NDAs with the different candidate test laboratories? This issue was moved to the Deliverables discussion.
Noise Laboratory	Arcon will deliver the noise samples. The open question is, whether the old noise samples can be used or do we require new samples.The Noise Laboratory is likely to require NDAs for the release of noise samples
Error Patterns	Identify who will deliver the EP was left open
Listening Environment	Section to be completed for wideband experiments was discussed
Analysis laboratory	Needed
Processing Tables	First draft exists, to be checked and approved
Randomizatio n Tables	First draft exists, to be checked and approved
Naming Convention	To be completed
Schedule	To be discussed in the Deliverable session

In particular:

Independent Distributor:	tbd
Noise Laboratory:	Arcon tbc; files be provided in winzip encrypted format tbc
Analysis Laboratory:	tbd
Schedule	see Qualification Deliverables permanent document
Tables	tbv by SQ experts

Note that FT/CNET clarified they are not any more members of the Cobasca Consortium.

“Mono-aural listening” means that the sound is presented to one ear and the other ear is subject to the surrounding background noise (Hoth spectrum), i.e. the second hear is in open air. The listening level will be set at -15 dB Pa (79 dB SPL).

It was agreed to allow, for the combination of sentences to produce speech samples, that listening laboratories re-utilise, if needed, one sentence in more than one speech sample.

The values from Exps. 1a and 1b will be used for the check of performance requirements for the differences at C/I values (MOS at 13 dB - MOS at 10 dB, MOS at 13dB -MOS at 7 dB, MOS at 13 dB - MOS at 4 dB). This was agreed.

Annex D (schedule) was moved to the Qualification Deliverables document.

The document was updated in Tdoc 144/00 “**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.5**”.

The group discussed the impact of number of candidates. It was understood that the maximum number of candidates is nine. In order to be prepared for the potential event of withdrawals, the group identified that withdrawals impact Table 5.1 only. Therefore, similar tables were added for situations with candidates less than nine to have a fallback solution.

The document was updated in Tdoc 162/00 “**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.5**”.

6. Funding

The issue of funding was debated and the funding commitment (up to 150 kEuro as a first estimate, tbc) per candidate, related to the selection and characterisation phases, was found needed by May 31st, 2000; this was agreed. It was clarified that this commitment will be applicable ONLY to the candidates admitted to the selection phase. Candidates failing to send the commitment will be automatically eliminated.

7. Qualification rules

Permanent document **„AMR-WB Qualification Rules (AMR-WB-5a) v.0.2“** (Tdoc 98/00) was prepared by A. Ohana. It was presented and the on-line editing work was led by the AMR-WB chairman.

The document was reviewed in detail. Rule 1 was agreed. Regarding rule 2a, the list of test sets was completed as follows:

List of test sets for Rule 2a:	
Set #1: all conditions	(39)
Set #2: all clean conditions	(13)
Set #3: all background noise conditions	(26)

Set #4: all	conditions	of	application	A	(15)
Set #5: all	conditions	of	application	B	(12)
Set #6: all conditions of application C, D, E (12)					

Rule 2a was also agreed. Then, rule 2b was discussed and some changes were introduced and agreed. A change is related to defining a severe failure leading to an exclusion, as follows:

> Any candidate failing severly in more than 10% of the test conditions contained in any of the following test sets will be excluded.

List	of	test	sets	for	Rule	2b:
Set #1: all			conditions			(39)
Set #2: all		clean		conditions		(13)
Set #3: all	background		noise		conditions	(26)
Set #4: all	conditions	of	application		A	(15)
Set #5: all	conditions	of	application		B	(12)
Set #6: all conditions of application C, D, E (12)						

> The 10% threshold should be computed for each test set across the conditions tested by all listening laboratories performing an experiment included in this test set.
>
> A severe failure is defined by more than 6dBq MOS score difference or ΔPoW > 15% if applicable.
>
> This criteria will only apply if either the equivalent Q value of the codec under test or the equivalent Q value of the reference codec is in the linear region of the MNRU curve and the test results in:
>
> - ΔMOS<-0.5 for any ACR test
> - ΔMOS <-1 for any DCR test based on MOS
> - ΔMOS <-1 as well as ΔPoW > 15% for any DCR test based on PoW
> - (ΔMOS = Codec MOS - Reference Codec MOS)

For this purpose, the definition of ΔPoW was felt needed and this was given in Annex C. Annex A contains some examples for application of rule 2b; an example 4 was added for illustrating the application of rule 2b regarding ΔPoW related criteria. The group agreed to the modified form of rule 2b, to Annex A and C.

Next, rule 3 was discussed (FOMs). The group felt that it is not more relevant to distinguish between unweighted and weighted ΔMOS since all weights are 1 or 0. Therefore, the weighted FOM was kept only. FOM number of failures was improved to becoming number of majority failures. A new FOM was added reflecting to the use of PoW criteria. The group agreed to the use of the following FOMs:

- Number of majority Failures (2 failures out of 3 tests)
- Weighted ΔMOS (ΔMOS = Codec MOS - Reference MOS)
- Weighted ΔdBq (ΔdBq = Codec dBq - Reference dBq)
- Unweighted ΔPoW percentages (for the relevant conditions)

Some further corrections were introduced. Moreover, the balance factor for experiments 2a and 2b was changed to 0.5 in order to keep the weights of experiment 1 and 2 as a whole in balance. The group agreed to rule 3 as given in the final version of the subgroup editing work.

As a next step, the Section describing the selection procedure was reviewed and agreed.

The updated permanent document **„AMR-WB Qualification Rules (AMR-WB-5a) v.0.3“** was produced and agreed in Tdoc 164/00.

8. Qualification deliverables

Permanent document **„AMR-WB Qualification Deliverables (AMR-WB-6a) v.0.1“** (Tdoc 120/00) was prepared and presented by the editor S. Aftelak. On-line editing work was led by the AMR-WB chairman. Significant progress was achieved on the document: it was clarified which NDAs were needed; which level of approval was needed for each permanent document; what tasks have to be performed during the qualification phase; the deadlines were discussed and edited on-line. The group was asked to take the updated version of the document for further consideration and to verify it for consistency.

The updated **„AMR-WB Qualification Deliverables (AMR-WB-6a) v.0.2“** is included in Tdoc 165/00.

9. AMR-WB overview

Permanent document **AMR-WB overview v.0.1** (Tdoc 314/99) was addressed by the AMR-WB chairman. Some editorial changes and clarifications were introduced. The updated version 0.2 is included in Tdoc 167/00.

During the review, it was agreed to use the AMR-9 permanent document for complexity and delay evaluation of AMR-WB candidate proposals. It is reproduced in Tdoc 71/00. Therefore, there is no need for an AMR-WB permanent document for complexity evaluation. Mr. Usai was requested to remove WB-9 from the server as soon as possible.

Annex A:

Agenda for the AMR-WB#4 Meeting and allocation of document numbers

1. Approval of the agenda 126
2. Allocation of documents to agenda items

3. Reports/liaisons from/to other groups 100, 151
4. Design constraints (WB-4) 87
5. Performance requirements (WB-3) 90, 131, 173
6. Selection rules (WB-5) 98, 164
7. Qualification phase deliverables (WB-6) 120, 165
8. Joint SQ / AMR WB items:
   - 8.1. Processing functions (WB-7) 129, 138, 149, 166
   - 8.2. Test methods and test plan (WB-8) 114, 144, 162
   - 8.3. Funding of selection and characterization phase testing
   - 8.4. Organization for qualification phase for candidates, host labs and test labs (NDA etc.)
9. Standard process and project plan (WB-2) 99-488R
10. Documents and editors (WB-1) 99-314, 167
11. AOB 71

Annex 7 - SQ ad-hoc meeting#19 report

Joint SQ & AMR-WB session

It was felt usefult to debate in the first part of the AMR Wideband Codec SWG Session the issues in common with the SQ ones; therefore a Joint AMR-WB and SQ was started.

Tdoc 100/00 "**Communication on 16 kbit/s wideband speech coding**" was already presented at the Plenary. Mr. R. Drogo summarized the item relevant for the discussion in the ad-hoc group.

Talker dependency requirements, transmission of DTMF, and S/N values + measurements methods for the background noise conditions were requested to be considered. The bit rate issue was felt the only one correlated with Tdoc 87/00 "**Permanent project document WB-4: Design Constraints, v. 1.0**" that was briefly presented by Mr. K. Jarvinen. The document was felt completed for the AMR-WB qualification phase (and fulfilling the new bit rate constraints set by ITU-T).

Tdoc 90/00 "**AMR-WB Performance Requirements WB-3 v. 1.2**" was addressed by the AMR-WB Chairman. One open issue in the Notes to Table 1a and 1b was raised from Motorola on the evaluation of C/I under 13 dB in terms of intervals of interest. It was proposed to task the Analysis laboratory to study it and propose a statistical approach (formula) to be applied to the results. For clean speech, it was proposed to adopt a curve in terms of PoW % and ask the performance of the WB candidate not to increase the number of "dissatisfied customers". Mr. Paksoy asked a MOS curve from GSM 06.75 to be adopted instead than PoW values. F. Gabin commented a reference curve should be identified, to fix what graceful degradation is allowed to WB candidate. E. Ekudden asked to stick to the original proposal of measuring difference in performance (if a suitable statistical approach can be identified by SQ experts).

A debate took place on the matter: the conclusion was that F. Gabin asked to rephrase the requirement in Note 1, and this was agreed.

Another clarification was requested by S. Kendall about Table 2 on dynamic conditions, i.e. the meaning of "typical" conditions; after the clarification that several profiles will be employed in the tests, covering a range of C/I values, the requirement was accepted to be left as is.

About the Notes to Table 5a and 5b for application E, Motorola asked to clarify the meaning, i.e. whether the Notes are intended to be design constraints, and this was confirmed to apply to all phases, while simulation parameters were requested to be further elaborated, and this was an additional issue, for which Ericsson will forward a contribution

Finally, the requirements for application C and D in background noise were proposed to be set to 64 kbit/s for No errors, and the Objective be deleted (which was agreed).

For consistency reasons, the Notes to Tables 4a and 4b were modified as for Note 1.

Mr. K. Fischer asked to modify Table 3b to bring it in line with Table 1b, adopting the PoW criterium for tandeming in background noise conditions. Mr. E. Ekudden and Mr. J. Vainio remarked the actual requirements were discussed at length at last meeting, and asked not to change them, which was accepted.

An editorial change was requested in table 5a and 5b, i.e. to replace "0.0%" by "-", which was agreed.

The issues raised by the ITU-T document about the Talker dependency requirement (in the sense to align the requirements with the ones for different input level), the transmission of DTMF tones (as a requirement instead than an objective), and the S/N values + measurements methods for the background noise conditions, were addressed by Mr. R. Drogo de Iacovo. Talker Dependency requirement was left unchanged, and DTMF requirement was left as an Objective (transparency), while the request on S/N values + measurements methods for the background noise conditions was felt not a performance requirement issue, and was left for the discussion on the processing task.

All brackets "[ ]" in Tdoc 90/00 were agreed to be removed, and WCDMA simulation issues were moved to the processing functions document.

The whole document was agreed (it will be revised in Tdoc 131/00).

Tdoc 129/00 "**AMR-WB 7 Processing functions v. 0.11**" was produced by the Editor (P. Barrett, BT), and was presented by the AMR-WB Chairman. The document was reviewed in detail.

A "background noise weighted P.341 filter" (to take into account the wideband equivalent of the ΔSM filtering function in the narrowband domain) will possibly be provided by correspondence. If agreed (within one week time, i.e. by March 10th, 2000), the new filtering characteristics will be adopted; otherwise the existing procedure will be adopted.

The option for the inclusion of a possible post-processing filter for wideband signals (to "mask" the output from all the processing stages in the same way for all proponents) was left open until March 10th, 2000. If proposals will be made and agreed, such post-processing stage will be adopted; otherwise, no wideband post-processing will take place.

On one more open issue, i.e. whether the tandeming of AMR-WB would need the insertion of a transcoding stage, to simulate the realistic situation, Nortel Networks proposed to insert a further encoding-decoding G.722 stage. This proposal was made to reflect realistic conditions. An alternative proposal (i.e. not to insert any encoding-decoding stage) got the support of Ericsson, Nokia, Siemens and FT. No change was agreed (for the qualification phase).

Functions of data base laboratory and listening laboratory were agreed. A deadline (March 10th,2000) was set for the check of the add function provided by BT (filename "add.c").

Ericsson will provide the EID (Error Insertion device for the WCDMA). EPs issue and Background Noise files, EID for AMR-WB, and G.722 availability were still open issues to be solved.

The document 129/00R "**AMR-WB 7 Processing functions v. 0.12**" will be revisited after the approval of the AMR-WB Qualification Test Plan.

Tdoc 114/00 "**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.4**" from Nokia, was presented by Mr. J. Vainio. Open issues in the following list were (mostly) solved.

Independent Distributor	The independent distributor is supposed to redistribute the speech samples received from the test laboratories to the different candidates, hiding to each candidate which other candidates are included in their own test.
Independent Distributor	Must be identified. Should the Independent Distributor sign NDAs with the different candidate test laboratories? This issue was moved to the Deliverables discussion.
Noise Laboratory	Arcon will deliver the noise samples. The open question is, whether the old noise samples can be used or do we require new samples.The Noise Laboratory is likely to require NDAs for the release of noise samples
Error Patterns	Identify who will deliver the EP was left open
Listening Environment	Section to be completed for wideband experiments was discussed
Analysis laboratory	Needed
Processing Tables	First draft exists, to be checked and approved
Randomization Tables	First draft exists, to be checked and approved
Naming Convention	To be completed
Schedule	To be discussed in the Deliverable session

In particular:

Independent Distributor:	tbd
Noise Laboratory:	Arcon, list of files, NDA and format tbd
Analysis Laboratory:	tbd
Schedule	tbd

Note that FT/CNET clarified they are not any more members of the Cobasca Consortium.

“Mono-aural listening” meaning was clarified, i.e. the sound is presented to one ear and the other ear is subject to the surrounding background noise (Hoth spectrum), which means the second hear is “in open air”. The listening level will be set then at -15 dB Pa (79 dB SPL).

It was agreed to allow, for the combination of sentences in order to produce speech samples, that listening laboratories re-utilise, if needed, one sentence in more than one speech sample.

The values from Exps. 1a and 1b will be used for the check of performance requirements for the differences at C/I values (MOS at 13 dB - MOS at 10 dB, MOS at 13dB -MOS at 7 dB, MOS at 13 dB - MOS at 4 dB). This was agreed.

Annex D was moved to the Deliverable document.

The document was updated in Tdoc 144/00 “**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.5**” and further in Tdoc 162/00 “**Test plans for the AMR-WB Qualification Phase (AMR-WB-8a) v. 0.5 (without previous revision marks)**”.

Joint SQ & AMR/NS session

Tdoc 142/00 “**Draft Meeting Report AMR Noise Suppression Sub-group Meeting #11**” was briefly presented by Mr. S. Aftelak. In Sect. 6.1.4 Nokia requested time to see whether they can agree the stated values within the agreed text of the requirement (or whether this should be just an Objective).

Tdoc 143/00 “**Minimum Performance Requirements for Noise Suppresser Application to the AMR Speech Encoder (GSM xx.xx version 1.1.0**” was presented by Mr. S. Aftelak. A question was raised on the use of a Modified ACR test to check the requirement “no degradation of Speech and no Undesirable Effects in Residual Noise in Conditions with Background Noise (*residual noise = background noise after AMR/NS)*”. Alternative methods could be investigated, if time and resources would be made available, to progress the methodology. The document is the basis to produce the test plan needed to test future possible NS proposals.

Requirements and objectives assessed by Objective measures were treated, as concerns the impact on active speech level. The use of the P.56 algorithm was commented, and it was felt it would work reasonably well in most conditions. Normalisation of listening levels for the processed material was felt appropriate, although may even not be needed.

Tdoc 111/00 “**Inclusion of a VAD/DTX experiment in the AMR/NS minimum performance specification**” from Nokia, was presented by Mr. E. Pajanen. It requested to check that the VAF would not be increased by the NS device.The reaction in the NS Sub-group was favourable, and it is proposed that the AMR/NS specification shall include a subjective test to assess the performance of the AMR/NS solutions in conjunction with VAD/DTX in both clean and noisy speech, to ensure that speech clipping is not introduced/increased. It was pointed out that this is not a brand new requirement and then should be tested, either in a separate ar in as part of a wider experiment.

Tdoc 122/00 “**Revised NS reports from COMSAT**” was noted and will be used for the production of the TR on the “Results from the AMR-NS selection phase”.

Tdoc 137/00 “**Draft for the PC experiment and proposed DCR testing for the NS test plan**” from FT/CNET, was presented by Ms. C. Quinquis. Two experiments were proposed, and are listed in the following table:

Experiment #1	**Degradation in Clean Speech (Pair Comparison Test)** No degradation in clean speech.
Experiment #2 **sub-exp. #2a** (car noise) **sub-exp. #2b** (street noise) **sub-exp. #2c** (babble noise)	**Artefacts and Clipping Effects in Background Noise Conditions (Modified DCR)** No artefacts in residual noise, and No speech clipping and no reduction in intelligibility.

On Exp. 1, a comment was made that NS in the DL is not relevant (i.e. the tandeming case not required to be tested, as concerns the check of requirements). It was commented the elimination of the tandeming case would reduce the size of the experiment and the possible "boring effect". The redrafted PC experiment will be included in the final test plan to check the requirement "No degradation in clean speech".

Exp. 2 was clarified to use a modified set of instructions and noisy speech samples as differences. Benefits of the DCR vs ACR methods were debated. The lack of a proper methodology to test "No artefacts in residual noise, and no speech clipping and no reduction in intelligibility" was stressed by Motorola, and Mr. H. Gierlich suggested to use both Quality and Degradation rating scales in one ACR test (to detect, and how annoying was the perceived effect, if any), following P.832 ITU-T Recommmendation. Nokia, Motorola and Ericsson felt, due to the rather demanding time scale, a rather conservative approach should be followed (using the ACR test proposed at the latest meeting). Anyway, Motorola stated to be in favour to further study the issue, since they believe the present methodolody is not good enough. Anyway, for the completion of Draft GSM 06.77 and the related test plan, it was felt difficult to reach consensus on a suitable method in the limited time frame left, i.e. by next meeting. FT/CNET stated their position that they consider the ACR method inappropriate to the purpose. Conclusion: the issue was left open.

Tdoc 150/00 "**Proposal for AMR-NS test plan (ACR)**" from Ericsson, was presented by Mr. A. Eriksson. These ACR experiments were prepared to test requirements 4.5.1.3 and 4.5.1.4 in the associated Section in Stage 1 Description (TS GSM 02.76 v. 2.0.0), i.e. No artefacts in residual noise, and No speech clipping and no reduction in intelligibility. These ACR experiments asked for three types of acoustic background noise. The reduction of the number of conditions in each sub-experiment was discussed. It was pointed out that, since this experiment is not aimed to verify the improvement in terms of dB, some conditions could be removed and AMR at 5.9 kbit/s added.

Conclusion: SQ invited to continue the discussion on the SQ reflector, to try to converge by next meeting on the choice of a unique method and draft the experimental design to be inserted in the NS test plan.

Tdoc 130/00 "**Proposal for AMR-NS test plan (CCR)**" from Motorola, was presented by Mr. S. Aftelak. The document proposed to reduce the total number of conditions to 48 (24 of A/B comparison, 24 of B/A comparison) per experiment, and to reduce from 4 to 2 experiments by combining 'SNR' and 'SNR+9' experiments. The Table of conditions was discussed. It was proposed to add two condotions (ideal references for Babble noise at 3 and 6 dB), which was felt feasible (to be discussed on the reflector).

Joint meeting SQ & Drafting session on 3G UE acoustic requirements and test methods

Tdoc 146/00 "**Echo Loss Measurements Using Various Kinds of Signals and Procedures**" from Head acoustics, Alcatel, was presented by Mr. H. Gierlich.

From the test conducted the following results could be concluded:

1. Measurements over the DAI interface lead to comparable TCL values for all test

signals except artificial voice where already the insufficient signal to noise ratio gets obvious.

2. Comparison of measurements over DAI and RF interface show that the measurement using the pn-sequence with a low crest factor of 6 dB give comparable results for both DAI and RF measurements.

3. Analysis of the measurement dynamics show that the best measurement dynamics is provided by the pn-sequence with a low crest factor and a swept sine signal. Both provide a sufficient high enough measurement dynamics in order to reliable measure TCL of 46 dB.

The document concluded that the pn-sequence provides both sufficient measurement dynamics and comparable measurement results to the reference measurement conducted over the DAI interface. This conclusion applies for both, GSM terminals and UMTS terminals.

Alcatel felt the use of a pseudo-noise (PN) signal a good improvement for the echo loss measurement. Benefits of the PN signal were emphasised (dynamics and fast measurement).

Potential CRs to GSM 03.50 were asked to be accompanied by a document illustrating the background for the change.

Tdoc 155/00 "**Comments to TS 26.132 v0.0.3**" from Bosch Telecom Danmark, was presented by Mr. I. Goetz. Bosch Telecom have 3 major concerns regarding the new specification for the 3GPP devices:

1) Only using the air interface for measurements.

2) Using HATS for the measurements.

3) Making complex requirements to external hands-free devices

The backgroung for the concern was formulated by means of an exaustive list of reasons for it.

Based on this, Bosch Telecom supports the use of DAI in 3GPP terminals for most reliable and wide range measurements. Measurements via air interface may still be optional as in GSM standards.

Bosch Telecom support the use of LRGP measurement on 3GPP terminals. To provide conformity with GSM standards a type 3.2 low leak coupler should be used. This provides common acoustic specifications for dual-mode GSM/UMTS terminals as well.

Bosch Telecom can NOT support the use of HATS for Terminal and integrated hands-free testing.

A number of comments were given, e.g. Motorola asked to have LRGP measurement as an alternative, Nokia supported LRGP use, Alcatel felt GSM and UMTS terminals could be measured with different couplers than type 3.2, and felt difficult to get reproducible measurements using HATS, which was contended by HEAD acoustics, that also commented that from the performance point of view felt the use of the air interface (involving the complete set) practicable. Mr. I. Goetz, chairing the Drafting session on TS 26.131 and 26.132, felt that in 3G the nature of specifications on acoustical aspects could be different than in GSM, and asked how TS 26.131 and 26.132 could be structured, considering that DAI does not exist (and Nokia would not support to specify one DAI for AMR-WB, implying a 16 kHz synchronization). Mr. H. Gierlich proposed to accept both options for air/DAI interface (for which any interested Organisation could propose a way forward for 3G), as well as for the use of HATS and the LRGP. The Rapporteur proposed to re-draft TS 26.132 following such advice, and to convene to the purpose an ad-hoc meeting in mid-April (in UK). Date to be proposed on the S4 relector by the following week (asap).

Tdoc 156/00 "**TS 26.132 v. 0.0.3**" was provided for information. It will be redrafted including the changes proposed at this meeting and agreed through the reflector S4.

Tdoc 157/00 "**TS 26.915 v. 0.0.2**" was provided to SQ for information and comments.

Tdoc 145/00 “**Need of a new artificial ear for GSM terminals**” from Alcatel, was presented by Mr. J-F Labal.

The document stated that the Type 3.4 artificial ear provides much more realistic conditions than the traditional LRGP setup using type 1 artificial ear. The measurements between the Type 1 or 3.2 and Type 3.4 artificial ear differ significantly.

It was suggested to add to the list of allowed artificial ears in Recommendations 03.50 and 11.10 the Type 3.4 [and 3.3] artificial ear(s).

The document was noted and will be taken into account in the work for the Harmonisation GSM/UMTS acoustic specifications.

Tdoc 147/00 “**Proposed Addition to TS 26.131 and TS 26.132**” from HEAD acoustics, T-NOVA Berkom, was presented by Mr. H. Gierlich. The purpose of this contribution is to provide a minimum set of additional measurements and performance requirements for TS 26.131 and TS 26.132 based on the more fundamental parameters and requirements found in ITU-T Recommendation P.340, P.501 and P.502. It was commented that nowadays Loudness Rating and TCL is not any more the only transmission parameters to take into consideration, and a new set of parameters could be considered, taking into account the most recent findings and subjective tests performed. From the design perspective, the introduction of objective measurements could be useful. At the next ad-hoc drafting meeting, the introduction of the new parameters will be considered.

Tdoc 148/00 “**Proposal for a change of tolerance masks in TS 26.131**” from HEAD acoustics, proposed to replace the current tolerance mask in TS 26.131 in section 5.3.2. Another proposal was contained in Tdoc 153/00 “**Terminal audio characteristics**” from Nokia. Interpretation of the mask requirement was requested to be taken into account by Nokia. The Rapporteur asked to consider the “combination” of the two proposed masks on the reflector.

Other aspects contained in Tdoc 153/00 “**Terminal audio characteristics**” were presented by Mr. A. Bright (Nokia). The discussion was left to be continued on the reflector.

Annex 8 - AMR/NS ad-hoc meeting

Joint TSG-S4#10 - SMG11#15 Meeting
Helsinki, Finland **S4/SMG11 Tdoc 142 /00**
February 28th - March 3rd 2000

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 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.

Contact Details NS: Steve Aftelak
Motorola
Tel: +44 1793 566261
Fax: +44 1793 566225
Email: aftelaks@ecid.cig.mot.com

Joint TSG-S4#10 - SMG11#15 Meeting
Helsinki, Finland **S4/SMG11 Tdoc 115/00**
February 28th - March 3rd 2000

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 (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

TDOC (/00)	TITLE	SOURCE
46	Summary of objective measures for AMR NS candidates	Ericsson
92	Digital cellular telecommunications system (Phase 2+); Minimum Performance Requirements for Noise Suppresser 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

Annex 9 - AMR/TFO ad-hoc meeting

Source:	**TSG-S4 Chairman[5]**
Title:	**Report of the TFO Ad Hoc session during S4#10/SMG11#15**
Document for:	**Information**
Agenda Item:	**13.2**

The TFO Ad Hoc session took place on February 29 and March 1, 2000. The meeting was chaired by the TSG-S4 Chairman temporarily acting as the TFO Chairman. The meeting agenda was established and approved in session. It is reported in Annex 1. The list of documents reviewed or relevant to the TFO session is provided in Annex 2. Annex 3 contains the list of participants.

1. Report from other Forum/Liaisons:

No document or report was available as part of this Agenda Item.

2. TFO Release 98:

The Release 98 was not further discussed. The CR prepared at the last plenary (Tdoc S4-000050 including the CR002Rev1 on the GSM 08.62 v7.0.0) is supposed to be presented at the next TSG-SA plenary in March 2000.

3. TFO Release 2000:

The primary objective of the meeting was to review and update the CR introducing AMR TFO in the GSM08.62, which approval was postponed by TSG-SA#6 to Release 2000. The second objective was to establish how the proposal for a simplified option presented by Ericsson in Tdoc S4-000045 at the last TSG-S4 meeting could be introduced in the standard. For information, the simplified option requires that the network equipment supports all AMR codec modes and the full range of allowed number of Codec Modes in the Active Codec Set. A significant simplification of the TFO decision process and of the Codec Configuration Resolution algorithm can then be expected. Ericsson view is that the TFO Procedures in TRAU, BTS and BSC could also be substantially simplified and potential TFO interruptions would be reduced.

Siemens presented Tdoc S4-000121 proposing to introduce two additional 'shortcuts' in cases when the network would be limited to the 4 lowest Full Rate modes or the 3 lowest Half Rate modes. This proposal was based on the fact that TFO is expected to be all the more beneficial for the lower modes and it could then be interesting to define a simplified version of the TFO protocol allowing to establish TFO over these modes only. It was however commented that AMR benefits were primary achieved by the capability to use a set a codec modes scanning the full range of operational C/I conditions, including the highest codec rates operating in low error conditions. Consequently, it was decided to keep this proposal as a potential future evolution, but to concentrate on the completion of the standard without any additional option.

Nortel Networks commented in Tdoc S4-000133 that the introduction of the new option was only simplifying the decision process (TFO is always possible since both sides support all codec modes) and to concentrate the discussion on the Codec Configuration Mismatch resolution. It was indicated that in this new option, a default codec set would have to be agreed and that should be the full extent of the codec mismatch resolution. The issue was then to agree on a default codec set, but no proposal was made at this meeting.

Ericsson presented document S4-000134 proposing a new text for section 6 of the 08.62 (TFO Message Structure) introducing AMR support. The proposal includes the possibility for the TRAU

[5] **Alain Ohana**
BellSouth Mobility DCS & GSM North America Alliance
Mailing Address: PO Box 868075, Plano, TX 75086-8075, USA
Tel: 1 972 517 0709
Fax: 1 972 517 0709
Email: alain.ohana@pcs.bls.com

to indicate the support of the full set of AMR codec modes with the transmission of the first TFO_REQ message. This proposal was endorsed by the TFO sub-group and it was decided to include this version of section 6 in the future R2000 CR to the 08.62.

The remaining of the meeting was spent reviewing the existing CR introducing AMR in the 08.62 (Tdoc 499/99). The first 9 sections were reviewed in detail and updated when required and possible. A number of other points were identified for further review and discussion over the reflector until the next drafting session (see action list). Tdoc S4-000135 contains the last version of the working draft agreed during the sub-working group.

The following action points must be completed or progressed before or at the next drafting session:

AP1: Port the content of the working draft CR on the updated version of the 08.62 after the update of the specification by MCC following TSG-SA#7. Update the figures as required.
Resp: Rapporteur

AP2: Provide input for section 5.2.2 providing AMR 8/kbit/s Frame Structure. **Resp: A.Ohana**

AP3: Comment the possibility to remove any mention or recommendation to freeze the codec adaptation before Handover. **Resp: All**

AP4: Comment the possibility to not use the Time Alignment field to transport Status Information (*Handover_Soon*). **Resp: All**

AP5: Provide inputs for a CR to the GSM05.09 allowing the Codec Mode Indication to span more than one step in some specific cases in relation to TFO, before the next SMG2 meeting in early April 2000.
Resp: All

AP6: Provide inputs for a normative Annex describing the simplified implementation of the TFO protocol when the network equipment supports all codec modes. Provide inputs on the default codec set. **Resp: All**

AP7: Provide recommendations on the re-organization of the 08.62 to make it applicable to GSM and 3G (Transposition to TS 28.062). **Resp: All**

4 Transcoder Free Operation:

The group reviewed the exchange of Liaison Statements between TSG-R3 and TSG-N2 on the resolution of the problem identified at TrFO break (Tdocs S4-000103, S4-000105 & S4-000107). The sub-group also agreed to propose to the plenary to send a Liaison to TSG-R3 and TSG-N2 supporting any tentative to harmonize TFO and TrFO so that both protocols would be transparent to the UTRAN and respectfully asking to be informed of the final date of the joint meeting where these issues would be discussed. The draft Liaison is included in Tdoc S4-000159.

The group shortly discussed the CR003 to the TS26.102 proposed by NTT DoCoMo in Tdoc S4-000068. It was indicated that a revision 1of this CR would be available for the plenary.

5. Miscellaneous:

It was decided to schedule another drafting session for May 17-19, 2000 (Starting May 17 at 13:00) with the objective to progress the CR on the introduction of AMR TFO as part of Release 2000. The Chairman agreed to set up this drafting session and to find possible hosting locations.

Finally, the chairman renewed his call for candidates to the position of TFO sub-group chairman.

Source: **TSG-S4 Chairman**[6]

Title: **TFO Sub Working-Group Meeting Agenda**

Document for: **Approval**

Agenda Item: **9.2**

TFO Ad-Hoc Session Agenda

9.1 Opening of the meeting: Tuesday February 29, 2000

9.2 Approval of the agenda and registration of documents 132

9.3 Report from other Forum/Liaisons

9.4 TFO Release 98

9.5 TFO Release 2000

9.5.1 Stage 1 / Stage 2

9.5.2 AMR TFO support in GSM 45,121,133,134,499/99>135

9.5.3 AMR TFO support in 3G

9.6 Transcoder Free Operation 103/105/107>159,68>xxx

9.7 Any Other Business

---

[6] **Alain Ohana**
BellSouth Mobility DCS & GSM North America Alliance
Mailing Address: PO Box 868075, Plano, TX 75086-8075, USA
Tel: 1 972 517 0709
Fax: 1 972 517 0709
Email: alain.ohana@pcs.bls.com

Annex 2: TFO Ad Hoc Session - Document List

Tdoc.	Title	Source	Agenda Item
499/99	CR to GSM 08.6: Introduction of AMR TFO	Ericsson & Nortel Networks	9.5.2
S4-000068	CR 003 on TS26.102; Time Alignment	NT DoCoMo	9.6
S4-000103	Liaison Statement on procedure for TrFO break	TSG-R3	9.6
S4-000105	Liaison Statement on Harmonization of TFO and TrFO	TSG-N2	9.6
S4-000107	Stage 2 description for TrFO break	TSG-N2	9.6
S4-000121	TFO for AMR: Painting the shortcut grey	Siemens	9.5.2
S4-000132	Agenda TFO Session	Acting Chairman	9.2
S4-000133	Proposal for AMR TFO	Nortel Networks	9.5.2
S4-000134	TFO Messages for AMR	Ericsson	9.5.2
S4-000135	CR to 08.62 for Introduction of AMR TFO; Working Draft	TFO Sub-Group	9.5.2

Annex 3: TFO Ad Hoc Session - List of Participants

First Name	Last Name	Company	SDO	Country	Email	Telephone	
lemens	Adler	Alcatel SEL	ETSI	Germany	k.adler@alcatel.de	49 711 821 44207	49 711 40017
arl	Hellwig	Ericsson Eurolab Deutschland GmbH	ETSI	Germany	karl.hellwig@eed.ericsson.se	49 911 5217 300	49 911
azimierz	Gofron	Motorola Inc.	T1	USA	gofron@ccrl.mot.com	1 847 576 2757	1 847 5
abuhiko	Naka	NTT DoCoMo	ARIB	Japan	nob@spg.yrp.nttdocomo.co.jp	81 468 40 3515	81 468
lain	Ohana	BellSouth Mobility DCS	T1	USA	alain.ohana@pcs.bls.com	1 972 517 0709	1 972 5
enrik	Lepänaho	Nokia	ETSI	Finland	Henrik.lepanaho@nokia.com	358 9511 65070	358 95
ob	Perez	Tellabs Operations, Inc.	ETSI	USA	bob.perez@tellabs.com	1 630 378 6525	1 630 3
lemens	Suerbaum	Siemens	ETSI	Germany	clemens.suerbaum@icn.siemens.de	49 89 722 42418	49 89 7
hilippe	Thierion	Nortel Networks	T1	France	pthierion@nortelnetworks.com	33 1 39 44 43 32	33 1 39