Liaison To:	**T1P1 (Asok Chatterjee Chairman T1P1)**
From:	**3GPP TSG-S4**
cc:	**TSG-SA**
Subject:	**Response to the T1P1 Liaison on "Requirements for Telephony Support for the Hearing Impaired"**

In response to the recent T1P1 request to review the Lucent proposal to provide the hearing impaired with access to emergency services (Liaison T1P1 9p102771/S4-99428) and assess the impact of that solution on the EFR and AMR speech codecs, S4 would like to inform T1P1 that:

> Lucent Technologies and Ericsson presented their respective proposals during our recent SMG11/TSG-S4 meeting held in Kyoto, Japan on December 6-10, 1999.

> The Lucent presentation (S4-99460) included an overview of the technical characteristics of the proposal as well as performance data in terms of Baudot characters error rate and complexity of the solution.

> After the presentation, S4 members asked Lucent to provide clarifications on the following points:

>> - The performances tables were expressed in Character Error Rate (CER) as a function of C/N. Lucent was asked to check the correspondence with CER performance in terms of C/I.

>> - It was asked if frequency hopping was used for the simulation and to provide information on the typical propagation scenarios used for the tests (Typical urban or static?).

>> - It was also indicated that the comparison with the performance of an unmodified AMR speech codec should be performed for a C/I range more representative of the normal operational conditions of a GSM system. For example, this comparison should include comparative performance data in the range 10-20 dB C/I instead of 1-10 dB C/I, especially in a Half Rate channel.

Regarding the impact of the solution on the EFR and AMR speech codec, the preliminary discussion identified the following points of concern:

> The interoperability performances appear to degrade for the lower codec modes in Full Rate (6.7 and below). This means that a modified AMR handset would present worse performances for these lower rates when operating with an unmodified network, or vice versa. This effect is not true for the highest codec modes.

> It appears that the impact would be more consequential if only two modes were modified (12.2 and 7.4 for example) instead of a systematic modification of all modes. A modification involving only two modes would require further study especially in the area of the codec adaptation and Tandem Free Operation.

Lucent offered to provide during the meeting a software version of their proposal implemented on the AMR speech codec modes. This will give the possibility to all S4 members to further evaluate this proposal and analyze the possible impact on their respective products.

It is S4 understanding that any further action on that matter would require some directions to be given by TSG-S1 and TSG-SA.