## FIRST DRAFT

Decisions of the CEPT/CCH/GSM meeting in Madeira 16-20 February 1987 concerning the recommended technical standard for a pan European digital cellular radio system

- 1. The meeting of the CEPT/CCH/GSM in Madeira 16-20 February 1987 has been required to take decisions on a number of important points of principles concerning the technical standard for a pan European digital cellular radio system.
- 2. These decisions have been taken on the basis of an agreed set of conclusions of the extensive technical studies and practical trials carried out by experts participating in the work of GSM. These conclusions are given in Table 1 attached.
- 3. GSM has decided that <u>digital</u> cellular radio has advantages over analogue cellular radio in meeting the minimum requirements of a pan European cellular radio systems and should be adopted for the CEPT recommended standard.
- 4. GSM has decided that Time Division Multiple Access
  TDMA has advantages over Frequency Division Multiple
  (FDMA) and should be adopted for the CEPT recommended standard.
- 5. GSM has decided that <u>Narrowband TDMA</u> has advantages over Broadband TDMA and should be adopted for the CEPT recommended standard. France and Germany at the time of the Madeira CEPT/CCH/GSM meeting could not support this decision and therefore made a reservation on this point.

not acapted

- 6. GSM has decided upon a set of working assumptions for the particular characteristics of a narrowband TDMA pan European digital cellular radio systems. These working assumptions will be used in a manner which has been agreed by GSM for the pur pose of optimisation and specification of detailed parameters and in the case of mobile stations, for the world wide consultation obligation agreed at the meeting of the CEPT Telecommunications Commission and Technical Recommendations Applications Committee in Odessa in 1986.
- 7. The "set of working assumptions" for the base station air interface requirements are given in annex 1. The "set of working assumptions" for the mobile station air interface requirements are given in annex 2. The characteristics are largely the same in both cases but are given separately due to the fact that the Technical Recommendations Applications committed has flagged a pan European digital cellular mobile radio terminal equipment as a prospective European Telecommunications Standard (NET) However a difference may be noted in that GSM has decided that a frequency hopping capability will be a mandating feature for mobile stations but network operators will have the freedom to implement or not frequency hopping in all or certain of the base stations.
- 8. GSM has decided that every effort will now be made to complete sufficient detailed definitions of the recommended standard such that those CEPT Administrations who so wish can commence procurement action at the end of 1987 in order to allow systems to have been implemented by 1991.

TABLE 1 - Conclusions of the technical studies regarding relative advantages of the various radio sub system alternatives for a pan European cellular radio system against major factors used as criteria in the evaluation.

	Analogue/Digital	FDMA/TDMA	NB/WB TDMA
Speech Quality	Comparable	Comparable	Comparable
Spectrum   Efficiency	Comparable	Comparable	NB
Infrastructure   & Mobile Cost	Digital	TDMA	NB
HP Viability	Digital	TDMA.	NB
Flexibility for New Services	Digital	TDMA	Comparable
Risk	Analogue	FDMA	NB
Spectrum Management	Comparable	FDMA	NB

abbreviations:

FDMA

Frequency Division Multiple Access

TDMA

Time Division Multiple Access

NB

Narrowband

WB

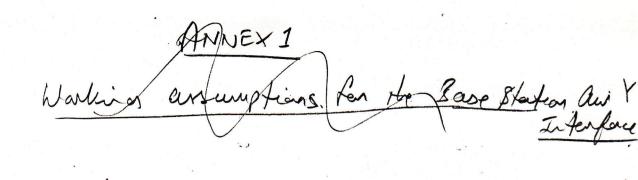
Wideband

HP

Handportable Mobile Terminal Equipment

MNEX 1 CEPT/CCH/GSM 20 February 1987 TRAFT RECOMMENDATION Some characteristics of base stations meeting the air interfree (MS-BS) regruvements of the public 900 texts pan Surgean digital cellular vadrir system Base stations of a 900 MHz European drystal cellular verdier system shall meet the following requirements at the air interface (MS-BS): I date: the values given are the working assumptions for the commencement of the optimisations phase.

Stabilized values will be agreed following according to the definitions of "working assumption" and the gradience vagneed by come to its interpretations, I



Traffic Channels:

- 1608ths gross but rate on a fullrate channel.

- 848ths gross But rate on a half rate channel.

Multiple access

- Eight full vote channels/carrier per ToreA frame.

- 16. Half rate chamels will be able becomedated in the frame structure

Modulation

- nRC modulation well be used

Equalisation

- Otherst 20 psec delay spread will be catered for Speech Coding - a c/I performence of better than 10-12 all is required,

Speech Coding

will use an RPE-LPC coder with a frame length using a multiple of 5m Sec.

DIMF - 1 " Well be proprided using the Dm channel

Dota Services - will be provided via digital transmission on a traffic elamel.

Frequercy Happins - Will be a specified but optional Lature fleep made - A facility well be specified for

ANNEX L CEPT CCH GSM 20 February 1987 DRAFT RECOMMENDATION L'Characteristics of Mobile stutions meeting the air interface (MS-BS) regumenents of the 700 mgen European drystal cellular rudio The following characteristics anyther allular radio mystem )

Mobile stations I shall need the Sollowing at the sollowing requirements of the air interface (MS-BS): I note: the values given are the working (commencement of the) assumptions upon ser the getinistation phase and world write consultation. Stabilised values will be agreed following the optimisations and specifications where any (on the values she below) and taking into account that comments received diving the world will consultation.]

ANNER 21

## Warling arrumptions for the Mobile Station air interform

## Traffic Channels

- 16 KBHS. gross bit rote an a Rullrote channel.
- & UBIT/s noximum gross bit rade on a half rate channel.

## multiple access

- Eight full rote channels/carrier for TDMA frame with interleavings
- Sixteen half rate chemnels will be able to be accommedated within the frame structure.

- nRC modulation will be used. Modulation

Spectrum Efficiency - a GI performance of 10-1208 is required, the conview speech Codies

- will use an RPE-LPC codes with a frame length wing a multiple of 5 mSec.

DIMF will be provided using the DM channel

Double Generices - Will be provided using terminal adapter was a traffic channel using digital transmission.

Frequercy Happins - This capability is mandatory for options implementation.

RF Power Control. - Is a nardatary Leature.

Hard Portable - The peak RF Power is limited to 5 walt ERP.

Fleep Mode - specified by optional implementary.