

Status: approved

Place: Brussels,
Date: 1987.06.09 - 12
Participants: see annex 1
Agenda: see annex 2
Documents: see annex 3

1 OPENING OF THE MEETING

Mr Tastenoy opened the meeting by wishing the GSM group welcome to Brussels and giving some information on practical matters. The Chairman welcomed the representatives of ECTEL and the industry people attending GSM for the first time.

2 APPROVAL OF THE AGENDA

The approved agenda appears as Annex 2 to this report.

3 LISTING OF DOCUMENTS

(ref. annex 3)

The documents to be considered during the meeting were GSM Doc's 49/87 - 82/87.

4 REPORT FROM GSM MEETING No 13

The report was corrected and approved. The number of the document is GSM 82/87.

5 REPORTS FROM SUBGROUPS AND OTHER BODIES

a WP1

Mrs Alvernhe introduced Doc 61/87 asking GSM for guidance concerning the use of Equipment Identities, "classmarks" and regular inspections. Some clarification regarding classmarks was given. This concept means a type of information concerning a particular MS, which can change from *one* call to another, eg the use of external terminal equipment during an individual call.

Mr Audestad offered the assistance of WP3 in the elaboration of Rec 02.11 "Service Accessibility".

b WP2

GSM considered Doc 62/87 which did not cause any questions for clarification.

c WP3

Mr Audestad introduced Doc 57/87, and informed the meeting that the specification of MAP is now almost ready. The recommendations are expected to be approved in October by SPS-SIG. He also asked Administrations to submit contributions on test loads for the MSC. Reference was made to the CCITT Q-series of recommendations.

On a question regarding the Mobile Management Entity (MME) and how its interfaces will be specified, Mr Audestad explained that the MME is a functional unit and that the specifications on it will deal with the protocols between the different OSI layers.

d COST 207/TR3

Doc 73/87 was introduced by Mr Natvig. On a question he explained that the figure of 5 ms delay difference between the RPE-LPC and the RPE-LPT codecs refer purely to the framing delay difference between the two codecs. The larger figure mentioned in earlier reports includes also the delay differences due to different processors.

e COST 207

Doc 65/87 was considered. On a question regarding the resolutions of the various measurements, Mr Failli answered that the resolutions of the experiments were comparable and that the puls-width used in the experiments was in the order of a few ns.

f SEG

Doc 56/87 was considered. As a clarification it was explained that the end-to-end encryption mentioned on top of page 2 of the document refers to the user's possibility to encrypt data, not speech. However, it was pointed out that some teleservices are not transparent for end-to-end encryption.

The delegation of FRG declared their willingness to disclose the details of their candidate encryption algorithm provided that other Administrations do the same, and that their proposal will get a fair treatment, for instance it will not be rejected due to legal problems.

g Permanent Nucleus

The report of the PN, Doc 54/87, was considered. The document did not give rise to any comments.

h Possible other documents

Doc 64/87 from WP3 was considered. It was noted that the simulations mentioned in the document are based on the assumption that the total bandwidth of the system will be able to accommodate 1000 channels, a goal which is not yet proved to be achievable.

Regarding "deregistration" GSM has not decided to introduce this feature. In Rec 03.01 this feature is assumed to be optional to the network operator. The result of the simulations takes into account the effect of the reduced amount of unsuccessful calls resulting from the deregistration.

Doc 70/87 from DIEG was considered. No comments to the report were made at this stage.

Documents 67/87, 72/87, 74/87 and 75/87, all dealing with propagation and delay profiles, were considered. No discussion took place, except for a clarification on Doc 72/87 concerning the fact that neither of the two modulation schemes compared included any channel coding.

Doc 63/87 on system complexity was considered. The meeting agreed that the viability of hand-held equipment is of crucial importance for the commercial success of the GSM system, but views were divided whether this type of equipment is needed already at the opening of the service.

Doc 66/87, which compares the RPE-LPC and the RPE-LTP codecs with respect to complexity was considered. The French Administration emphasised that both codecs are implementable on one chip and claimed that the two codecs are equivalent from a complexity point of view. On a question regarding the error robustness of the RPE-LTP codec, Mr Ghillebaert explained that the French Administration is currently performing simulations in order to assess this issue, and that the results so far seem to indicate that the difference between the two algorithms is small.

As a result of the discussions on Doc's 63/87 and 66/87 GSM asked the PN to organise a number of ad-hoc meetings for studies of the viability of hand-held MS's in the GSM system. A first meeting will be convened at the CNET premises in Lannion on September 16-17. Terms of Reference for the meetings can be found in Doc 79/87. An invitation is contained in Doc 81/87.

Doc 71/87 on the specification of a frequency hopping algorithm was considered. GSM noted the intention of France to provide contributions on this matter.

On Doc 76/87 the remark was made that it could be difficult to realize different tariffs for different speech coder rates. On a question regarding the possibility of a conflict during the optimization, GSM confirmed the earlier decision that the optimisation shall be done for the 16 kbit/s codec, but not at the expense that the 8 kbit/s solution shall not be viable.

Doc 50/87 on optional features was considered. Mr Audestad mentioned that the options "Mobile stations with priority" and "Mobile stations with preference" (page 4) has been deleted and a new option "IMSI Detach" has been added.

Mr Lehnich spoke in favour of going through an "option pruning exercise" at some stage in the project, taking away something like 80% of the options. Too many options will load the signalling capacity. The statement of Mr Lechnich received considerable support from several delegates. In this context Mr Temple suggested that WPI should study and list the selling features of the GSM system. Such a list could be used later during the option pruning.

Doc 68/87 was introduced by Mr Silberhorn who explained the background of the paper and the discussions within the quadripartite group since the Madeira meeting. It was stressed that the agreement of the Memorandum of Understanding was not restricted to the members of the quadripartite but open to all Administrations who wished to join it. The document could still be influenced.

GSM considered Doc 69/87 from FRG, taking note of the intention of DBP to be represented partly by DETECON in the future.

6 DISCUSSION AND DECISIONS

a Services and Facilities

WP1 is considering the possibility to transfer the International Mobile Equipment Identity (IMEI) at every call set-up. This function would serve two purposes, one to trace stolen equipment, the other to trace and block malfunctioning equipment. After some discussion on the subject GSM concluded that:

- Other reasons given for transmission of IMEI, such as protecting subscribers from being unduly charged, are taken care of by the authentication function proposed by SEG, and do not justify transmission of IMEI.
- WP3 has specified a function by which the network can request the MS to send its IMEI. This exchange of information takes place after allocation of dedicated channel resources (ie not on the CCCH). The function provides the basic prerequisites, needed for the moment, for the network operators to retrieve the information at suitable occasions.
- In the light of the above, since the matter is not considered a high priority matter and since it is not the prime responsibility of a network operator to keep track of stolen equipment, GSM decided to postpone further discussions till a later occasion.

On the question of "classmarks" several speakers requested further information, in particular concerning the relationship between the classmarks and the concept of "category" used by WP3. The delegation of UK promised to submit contributions on the subject at the next meetings of WP1, WP2 and WP3.

The idea to have regular inspections of the MS's was discussed. Considering that with the GSM system we are now aiming for a very large market, most Administrations were doubtful about the practicality of this idea, and did not wish to see it as a mandatory routine for all networks. In this context the attention was drawn to the possibility indicated by the PN to simplify testing by having the MS to generate itself a certain number of parameters reflecting crucial quality parameters of the equipment.

b Access technique, modulation and channel coding

On the subject of frequency hopping the following clarifications were made:

- A proposal for a frequency hopping algorithm has been presented in WP2.
- The proposed frequency hopping scheme does not apply to the BCCH, for the reason that the BCCH carries control information for the frequency hopping itself.
- The overhead signalling due to frequency hopping consists of a few octets in the BCCH and possibly one octet in the CCCH.

The ratio overhead/useful transmission capability expressed in terms of signalling channels/traffic channels is presently analysed by WP3 and L1EG.

The statement on pages 9 and 10 of Doc 62/87, that WP2 does not recommend a concerted and coordinated validation program at this stage, refer to the coordination of the hardware used for the validation, and is due to the fact that some Administrations have already started activities in this area and that a coordinated activity would delay the process since several aspects (baseband signals, frequencies, etc) would have to be agreed.

The proposal of WP2 to change the present Working Assumption on the modulation from ADPM to GMSK was discussed. Mr Maseng claimed, based on the measurements presented in Doc 72/87 that the ADPM modem gives improved area coverage leading to reduced infrastructure costs. This opinion was not supported by several speakers who claimed that the problems to which Mr Maseng was referring could be efficiently remedied by increased equalizing time and channel coding. GSM therefore decided to adopt the WP2 proposal.

GSM considered the conclusions of COST 207 in the field of propagation. Some Administrations strongly emphasised the requirement that the GSM system must be able to reuse the recently built up infrastructures now used for the analogue 900 MHz systems. These constitute tremendous investments.

Concerning the equalizer, GSM agreed - in the light of the evidence presented by COST 207 - to change the earlier Working Assumption of 20 us minimum equalizing capability to 16 us. In this context it was noted that, when coming to a final recommendation and when stabilising the Series 11 Rec's, it will be necessary to be more specific on this requirement, ie if it should apply to all MS's and whether a lower value could be used on an interimistic basis during an introduction period, in order to overcome implementation difficulties. The meeting agreed that considerations of this type should be discussed with WG TE in order to not get into conflict with the legal aspects of the NETS.

COST 207 undertook to incorporate the results of the propagation measurements carried out in Norway and France into their final report. The results will be presented in the same way as before. The meeting noted that it is not possible to calculate a coverage factor from the present Working Assumptions, since the channel coding has not yet been defined.

c Signalling and protocols

Mr Audestad urged the Administrations to study Rec's 03.05 and 03.06 and state whether they wished WP3 to continue the work in this field and - if so - to contribute by providing figures for the various parameters.

Report 03.01 was approved by GSM.

On the subject of accounting for the use of SS no7, GSM decided that WP1 (after receiving some more background information from WP3) should contact WG PGT to discuss the matter and submit a contribution. It was noted that the technical means to collect the necessary information for accounting for the use of SS no7 can be provided.

GSM decided that the GSM chairman should contact the chairman of WG NA to raise the question of the need for a liaison between GSM and the new subworking group NA2 which deals with numbering matters.

On the subject of approval of recommendations, GSM decided that all Rec's that the WP's consider mature for an approval by GSM should be distributed so that all members would have a copy of the recommendation at least two weeks in advance of the GSM meeting, together with a note stating that the particular recommendation is submitted for GSM approval. It was also noted that the GSM Action Plan informs of the schedule for the approval of the recommendations. GSM noted that an approval does not mean that the recommendation is freezed in the sense that it can not still be subject to minor amendments in order to obtain full alignment with new recommendations. Recommendations for which several WP's or Expert Groups are responsible should always be submitted to and approved by the secondarily responsible body before the GSM approval.

d Speech coding

In view of the facts presented in Doc's 73/87 and 66/87, GSM decided to adopt the RPE-LTP codec as the only Working Assumption. This decision was from the UK part accepted on condition that a current study in the UK did not produce alarming results concerning power consumption and complexity. If this situation would arise the problem should be discussed by GSM possibly at an extra meeting.

Mr Natvig drew the attention to the problem of degradation of the speech due to frame stealing and the application of voice activity detection devices. No decision was made concerning the use of voice activity detection. On the question of frame stealing however, GSM decided to adopt as a Working Assumption that this should only take place in conection with hand-over and clear down if needed.

Considering the possibility that the RPE-LTP codec might be able to support DTMF signalling, GSM decided to postpone further studies in WP3 on alternative solutions for transmission of mobile terminated DTMF signals. The ability of the codec to permit transmission of such signals must be studied by SCEG when basic hardware is available. It is also assumed that the protocols designed by WP3 do not exlude the possibility to add necessary terminal adaptor arrangements.

e Security

GSM considered the proposals of SEG put forward in Doc 56/87, coming to the following conclusions:

- Protection of Identities: The question whether this function should be optional or mandatory is still not resolved and will be taken up for discussion at the next GSM meeting. The question when a change of TMSI should take place needs further studies by WP3 and SEG. The possibility to reallocate TMSI only by using dedicated radio channel resources will be investigated.
- Authentication: GSM decided as proposed by SEG.
- Protection of Signalling: GSM decided as proposed by SEG. However further studies are needed to define what signalling elements need to be protected.
- Protection of User Data: Although the majority of the Administrations were in favour of the proposal of SEG, GSM was not able to reach a unanimous agreement on this subject. The delegation of UK wished to see this service as a supplementary service, offered on subscription basis. They also claimed that a general provision of the service would decrease the overall security level. Thus, WP1 was asked to study the problem from a service point of view. WP3 was asked to study the technical possibilities of switching the service on and off. It was noted that a by-pass mechanism might be needed also due to legal complications, delayed introduction of the service and other reasons. Procedures by which the algorithm could be changed should also be included. The final decision on the provision of the service will be taken later when these studies have been completed.
- Algorithms: The proposal of SEG to develop a common GSM algorithm was rejected by GSM for the reason that this process was believed to be too slow, and besides it would not help to solve the legal problems.

GSM decided that SEG should form a group of algorithm experts, with the task to make a choice from those candidate algorithms whose originators were prepared to:

- a disclose the algorithm to the expert group
- b later disclose the algorithm to the national authorities as required in the various countries
- c sign a statement giving guarantee for royalty free use
- d take necessary steps to ensure the availability of second sources

GSM agreed that the first priority of the algorithm expert group would be to agree on the common algorithms used for signalling and user data protection. The algorithm for authentication could be treated as a national matter, provided that legal circumstances will not prevent this. Since the strength of the national authentication algorithms could then vary, GSM confirmed that in any case, each network operator will be liable for its own customers concerning charging matters.

GSM also discussed to what extent it was desirable to keep the algorithm secret to manufacturers and others. Although GSM found this to be a desirable objective, the conclusion was that it would not be possible in the long run to maintain the secrecy of the algorithm, and that GSM would have to accept this. The security of the system would thus have to rely on the strength of the algorithm and the keys.

- Legal problems: The nature of the legal problems with regard to encryption were explained by the chairman. After some discussion on the problem, during which it was noted that the device used for authentication might legally be treated differently from the other encryption devices, GSM concluded that the only possible way of action was to decide as soon as possible on the common algorithm and then to address appropriate national authorities to find out what the situation is in the different countries.

f Equipment specifications

Doc 52/87 was introduced by the representatives of the PN. Most of the discussion following on the presentation was focused on the draft Rec 11.30 annexed to the document.

Some criticism was given from the WP3 representatives on a number of points regarding Rec 11.30. As a general remark it was stated that the present draft reflects implementation dependent solutions and as it is written now it reduces the number of alternative solutions. As an example of this, figure 5 of draft Rec 11.03, in which the HLR and the VLR have been shown as integrated parts of the MSC, was mentioned.

In the work of WP3 and SPS-SIG the approach used by CCITT has been adopted, ie to specify the system in terms of logical units instead of physical units, thus leaving the physical architecture to be specified by the network operator with the tendering documents. WP3 strongly emphasised the need to maintain that philosophy, claiming that it was the only one acceptable for the network operators and the manufacturers, which in fact also need a flexible approach.

Further on, the distinction between "Integrated network" and "Overlay network" made in the beginning of Rec 11.30 was considered irrelevant. A lot of hybrid configurations exist.

After some discussion on the subject, during which it was mentioned that higher level groups of the CEPT have urged the working groups to try to achieve a higher degree of harmonisation, which could comprise coordination on the physical aspects of network implementation, GSM nevertheless decided to support the approach advocated by the WP3 representatives as described above.

The PN was asked to revise Rec 11.30 in the light of the discussion and to submit a new version for consideration by WP3 in order to obtain full alignment of the two groups involved. This should preferably be done before the next Rec 11.30 meeting now scheduled for September.

Regarding the system description, which now appears both in 01.02 and 11.05, GSM agreed that these documents should be merged together. Since the content of the document is purely descriptive the best place to put it was found to be in the Series 01 Rec's.

Finally several GSM delegates expressed their appreciation of the work of the PN on the Series 11 Rec's, noting with satisfaction that with the present drafts - taking into account the comments made during the discussion - the role of these recommendations has now been clarified and their importance recognised. The meeting concluded that a structure covering all aspects of a full equipment specification, as it is done in the present drafts, is a useful instrument to detect missing aspects of the other recommendations, to clearly indicate which aspects of the system should be considered as GSM-matters and national matters respectively and to help Administrations to finalise their tendering specifications.

**g Other questions presented
under agenda item 5**

The proposed mandate for DIEG (Doc 70/87) was approved by GSM. The PN offered program management support for the group. Mr Hillebrand undertook to chair the next two meetings of the group. After that, a permanent chairman should be appointed by GSM.

GSM decided to endorse the proposal of France (Doc 71/87) to specify the frequency hopping scheme. The main part of this task will fall in the WP2 area.

Mr Mallinder suggested that a new report "Recommendation Review Report" should be added to the list of GSM Reports. GSM decided to endorse the proposal.

7 NEW EXPERT GROUPS AND SUB WORKING PARTIES

GSM had a brief discussion on the procedure of setting up new sub-working parties, coming to the conclusion that it would be sufficient if the GSM chairman inform the chairman of CCH before the first meeting of the new subworking party. Information on the actual organisation of GSM, such as the one in the diagram of Doc 55/87, should be brought along.

8 SYSTEM VERIFICATION

Doc 51/87 from the PN was considered. The ideas of the document received strong support and it was noted that the proposed validation program would fit well into the implementation program outlined in the MoU.

The comment was made that the verification of Radio Subsystem layer 2 should be done together with layer 1 by VSS A1 instead of by VSS A2 as now indicated in table 3 of the document. VSS A1 would then verify the channel structure and the capability of the channels to carry the messages, but the messages themselves would not be included in that verification sub-system.

The meeting concluded that each Administration should be responsible for building up their own verification system. A coordinating committee should be established and report regularly to GSM. The attention was drawn to the need for clarifying the responsibilities of GSM and those Administrations which will join the common verification program. The PN was asked to continue the work in this area.

9 OPERATION AND MAINTENANCE

Mr Mallinder introduced the report, Doc 53/87. No major discussion took place on the subject. It was suggested that a minimum set of O&M functions should be specified for the BS. Information on the volume of this type of information has been sent to WP3/BSEG.

Mr Mallinder ended his presentation by asking the Administrations to allocate more resources to this task.

10 PN GENERAL QUESTIONS AND DOMESTIC MATTERS

Doc 60/87 was considered by a Heads of Delegation meeting. The decisions on the matter are reported in Doc 80/87 point 4.

11 PATENT QUESTIONS

GSM considered Doc 77/87. Mr Mallinder explained that the "licencing", mentioned in the Description of Activity, means an activity for which the industry is responsible, although the Administrations are involved to some extent.

Mr Lehnich expressed his personal opinion that industry is used to a situation where patent rights are spread among several industries and that industry will most probably find solutions to this problem.

On a question which Administrations were prepared to carry out patents searches concerning the physical layer on the radio path, the Administrations of UK, France and Italy declared their intention to do this. FRG and Netherlands will investigate the possibility.

Regarding item 3 of section 2.0 on publishing of the GSM standards, GSM decided to support the view expressed in the document.

The rules described in Doc 73/87 Annex 2, concerning disclosure of information on the speech codec, were supported by GSM.

12 ACTION PLAN, HANDLING OF DOCUMENTS, INDUSTRY INVOLVEMENT

Doc's 23/86 Rev 2 and 2/87 were considered by a Heads of Delegation meeting. The decisions on the matters are reported in Doc 80/87 points 2 and 3 respectively.

Mr Haase introduced Doc 55/87 which contains the up-dated version of the GSM Action Plan. The new issue takes into account all amendments occurring before May 15. Some new amendments to the list of recommendations were decided by the meeting, namely:

Report 03-01 is approved by GSM

Rec 11.05 is deleted

Rec 11.30 should address the MSC only

Rec 11.31 should address the HLR (new)

Rec 11.32 should address the VLR (new)

More Rec's in the 11.30 series might be needed for things like the Authentication Centre and other data bases.

13 SUMMARY OF DECISIONS

A summary covering most of the decisions made during the meeting was presented and corrected. The summary is included in this report under as items 6a-6e.

14 FUTURE MEETINGS

The following meeting schedule was agreed:

Meeting no 15: 12/10 - 16/10 1987, London

Meeting no 16: 14/12 - 18/12 1987, the Hague

Meeting no 17: 25/1 - 29/1 1988. Note: This has later been changed to February 1-5, 1988.

15 ANY OTHER BUSINESS

Reports to ECTEL from the Paris trials

Doc 59/87 was considered by a Heads of Delegation meeting. The decisions on the matter are reported in Doc 80/87 point 1 which was accepted by ECTEL.

Man-machine Interface

Doc 58/87 outlines the scope and philosophy of the MMI specifications. The PN was encouraged to study and take into account the existing CCITT recommendations on the subject.

Cooperation with INMARSAT

GSM decided to contact INMARSAT in order to discuss the possibility of interworking at some level between the GSM service and the INMARSAT Standard C service. Doc 78/87 is a letter to INMARSAT on the subject.

GSM seminar

The chairman asked the delegates to consider the possibility to have a GSM seminar during 1988. This seminar should be dedicated to the GSM system and cover all aspects of it. For time planning purposes the chairman recalled that EUROCOM will take place in June 88 and DRM III in late September 88.

Report from IWP 8/13

Mr Tompkins reported that IWP 8/13 has adopted a lot of the GSM services and facilities. However, USA has made it clear that the GSM system will not be adopted in Region 2.

Mr Audestad added that the CCITT is now adopting several recommendations which are based on GSM material.

16 CLOSING OF THE MEETING

The chairman closed the meeting by thanking the Administration of Belgium for their kind hospitality and nice meeting arrangements.

List of participants

Chairman:	T. Haug
Secretary:	T. Beijer
Austria:	E. Tallowitz
Belgium:	L. Taghon
Denmark:	A. Foxman E. Mortensen H. Olsen
Finland:	M. Pasanen
France:	P. Dupuis B. Ghillebaert M. Alvernhe A. Maloberti
FRG:	A. Silberhorn F. Hillebrand F. Pernice
Greece:	Y. Vassilaras
Italy:	R. Failli M. Sentinelli A. Corsi
Netherlands:	D. Hoefsloot C. Geus
Norway:	P. Blikrud B. Löken J. Natvig J. Audestad T. Maseng
Portugal:	O. Reis Luis
Spain:	C. Lluch
Sweden:	G. Fremin J. Uddenfeldt

Switzerland:	R. Klingler
United Kingdom:	S. Temple D. M. Barnes E. W. Beddoes T. Callaway R. Potter R. W. Tompkins A. Cox
Permanent Nucleus	B. Mallinder E. Haase R. Hagedoorn
ECTEL-TMS	K. Lehnich J. Gelas F. Grassot

CEPT-CCH-GSM
Meeting no 14
Brussels, 1987.06.09 - 12

AGENDA

- 1 Opening of the meeting
- 2 Approval of the agenda
- 3 Listing of documents
- 4 Report from GSM meeting no 13
- 5 Reports from subgroups and other bodies
 - a WP1
 - b WP2
 - c WP3
 - d COST 207/TR3
 - e COST 207
 - f SEG
 - g PN
 - h Possible other documents
- 6 Discussion and decisions
 - a Services and Facilities
 - b Access technique, modulation and channel coding
 - c Signalling and protocols
 - d Speech coding
 - e Security
 - f Equipment specifications
 - g Other questions presented under agenda item 5
- 7 New Expert Groups and SWP's
- 8 System verification
- 9 Operation and Maintenance
- 10 PN general questions and domestic matters
- 11 Patent Questions
- 12 Action Plan, Handling of documents, Industry Involvement
- 13 Summary of decisions
- 14 Future meetings
- 15 Any other business
- 16 Closing of the meeting

CEPT-CCH-GSM
 Meeting no 14
 Brussels, 1987.06.09 - 12

EXTRACT FROM GSM DOCUMENT LIST

<u>Doc No</u>	<u>Title</u>	<u>Source</u>
49/87	Notes of the joint meeting between the speech coding experts group and the panel of patent experts: the Hague, 4 February 1987	GSM PN
50/87	Introduction of optional features in the GSM system	GSM PN
51/87	System verification and issues for early consideration	GSM PN
52/87	Draft table of contents for the Series 11 Rec's	GSM PN
53/87	Report on the development of O&M Rec's (Series 12 Recommendations)	GSM PN
54/87	Status report of the GSM PN	GSM PN
55/87	Report 00-03, Review 4: GSM Action Plan	GSM PN
56/87	Report of SEG	SEG
57/87	Status Report of GSM WP3, May 1987	GSM WP3
58/87	Report on the work on GSM 02.30: Man-Machine Interface of the Mobile Station	GSM PN
59/87	Letter to GSM from ECTEL	ECTEL
60/87	GSM Program Management Information	GSM PN
61/87	Status Report of GSM WP1, May 1987	GSM WP1
62/87	Status Report of GSM WP2, May 1987	GSM WP2

<u>Doc No</u>	<u>Title</u>	<u>Source</u>
63/87	System Complexity	Sweden
64/87	Report 03.01	GSM WP3
65/87	13th report of the working group on propagation	COST 207
66/87	Comparative merits of the original RPE-LPC codec and of the compromise RPE-LTP codec	France
67/87	Propagation measurements in Grenoble	France
68/87	Declaration of the ministers on the introduction of a Pan European public digital cellular radio communication network	FRG F I UK
69/87	Support of GSM work in Germany	FRG
70/87	Report of GSM WP3/IDEG Meeting, Bonn 20-22 May 1987	WP3 IDEG
71/87	Implementation of frequency hopping	FRG F I UK
72/87	Multipath measurements at 949 MHz	Norway
73/87	Status Report of the SCEG	SCEG
74/87	Some considerations about the sensitivity required for measuring the impuls respons of wide-band radio channels	Switzerland
75/87	First results of delay profile measurements in mountainous areas of Switzerland	Switzerland
76/87	An evolutionary path for GSM speech coders	UK
77/87	Relevant points from Patent Panel meeting	PN
78/87	Interconnection of terrestrial and satellite land mobile networks	FRG F I UK AU
79/87	Terms of Reference to the PN for ad-hoc meetings for review of hand portable viability	PN
80/87	Report of the Heads of Delegation meeting	GSM
81/87	Invitation to two ad-hoc meetings to be held in Paris	PN
82/87	Report of GSM meeting No 13 (Funchal)	GSM