

Source : Netherlands PTT Administration

Title : Public Mobile Communications Systems in the 900 MHz band

### Considerations

1. Most European countries presently have national systems for public mobile communication working in the 150 MHz band. Due to the rapid growth in the number of users and the high volume of traffic per subscriber, capacity is insufficient almost everywhere. A number of countries have therefore decided to introduce in the near future mobile communications systems in the 450 MHz band. The planned systems in the 450 MHz band are intended for national use and in some cases for international use covering a small number of countries. It is expected that the capacity of these systems in a number of countries will be sufficient until the 1990s.
2. During the WARC'79 part of the 900 MHz band was made free for Mobile Services, because in the allocated bands only a limited and insufficient number of frequencies were available for these services. Expansion into frequency bands above 1 GHz cannot be considered as radio-propagation conditions make these bands unsuitable for land mobile services. Therefore, the 900 MHz band represents the last opportunity for the coming decades to achieve a form of harmonization in the field of the land mobile services for European purposes.
3. Work done by CEPT
  - 3.1. Within the CEPT the ELT working group (sub-group DNS in particular) initiated a study about future mobile communications systems in Europe. The study deals, among other things, with a mobile communications service offering contiguous wide area communications coverage. It points out that the available frequency space within the 900 MHz band covers the needs. Attention is paid in the study to matters such as :
    - market analyses;
    - new mobile services system concepts;
    - frequency needs;
    - interface to and impact upon fixed and other mobile radio services.
  - 3.2. Besides the Commission T has set up a plan of action for the CEPT for new services. Resulting from this plan SF has drafted a dedicated plan for international mobile services which has been approved by the Commission T. As part of this plan Working Group R has studied applications in the available

frequency bands. As a result the frequency band 862-960 MHz can be recommended for allocation to the new international mobile services.

4. Use should be made of expected progress in technical developments when creating favourable conditions for an advanced mobile service for the 1990s. It should be endeavoured to apply modern techniques.

Some of the characteristics of the service might be :

- fully automatic traffic handling, whatever the location of the mobile station;
- location registration for roaming purposes;
- switching call-in-progress;
- high degree of frequency efficiency;
- where necessary, small-cell structure;
- digital speech transmission;
- data transmission;
- privacy by means of scrambling;
- various facilities comparable with those of the Public Switched Telephone Network.

5. In view of the foregoing the activities within the CEPT should be enlarged to include studies for the creation of some kind of harmonised public automatic mobile service in Europe, operating in the 900 MHz band and which would have to be operational in the 1990s. It should be possible for mobile stations to be used in whatever European country they happen to be and thus stimulating the activities in Europe in the field of international mobile services in the 1990s.

This has to result in :

- better service for the users than can be realized by handling via the various national networks
- avoidance of difficulties in respect of the frequency coordination among the participating countries;
- prevention of problems in respect of the frequency coordination with other users of the 900 MHz band.

6. To this end the following aspects should be studied, ~~by the relevant CEPT groups:~~

~~a. Question SF-24~~

- Operational requirements and facilities from the point of view of both system usage and system exploitation, such as :
  - grade of service objectives (blocking probability waiting time, etc);
  - quality objectives (speech quality, signalling reliability etc);
  - privacy of conversation;
  - subscriber facilities (abbreviated dialling, call transfer, call charge meter etc);
  - system facilities (barring of number, switching-call-in-progress, location registration etc);
  - type of communication (telephony, data, facsimile etc).
- Market and traffic expectations, such as :
  - subscriber categories (normal, priority user, payphone, portable etc);
  - number of subscribers per category;
  - traffic per subscriber (busy hour, holding times, distribution fixed-to-mobile and mobile-to-fixed, geographic density etc).

~~b. Question R-33~~

- Technical characteristics of the radio equipment, such as:
  - speech processing and modulation;
  - signalling coding and modulation;
  - modulation methods for other types of communication;
  - transmitter/receiver characteristics.

note: Recommendation T/R 36 and the draft Recommendation on the use of the 900 MHz band should be used as a basis

- Technical requirements for type approval and methods of measurement
- Radionetwork configuration, such as:
  - cell structure;
  - method of access;
  - channel assignment strategy;
  - switching call-in-progress function;
  - location registration aspects.
- Frequency planning and coordination methods
- Legal aspects related to the use of mobile radio equipment in the participating CEPT countries.

~~c. Question CS-11~~

- Interface(s) to be defined for a public mobile communication system with the public switched telephone network.
- Signalling system(s) for interworking between a public mobile communication system and the public switched telephone network.
- Numbering plan(s) and routing arrangements (including network management) for the interworking of the mobile system and public switched telephone network.
- Technical arrangements for the provision of the user facilities and for meeting the operational requirements, such as roaming (including location registration).

7. Proposed activity by CEPT

~~7. CCH should be entrusted with the task of coordinating the activities within the CEPT in the field of mobile services and be invited to produce a plan of action. A special group should be nominated which shall report to CCH. The plan of action should aim at ensuring that compatible mobile systems can be put into use in the early 1990s.~~

Priority "a" should be assigned to the studies.  
The question should be listed as CCH 3.

"Harmonization of the technical and operational characteristics of a public mobile communications systems in the frequency range 890-960 MHz".