CEPT Report 004

Report from CEPT to the European Commission in response to the Mandate to:

REVIEW THE FREQUENCY BAND 169.4 – 169.8 MHz

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FINAL REPORT FROM CEPT IN RESPONSE TO THE EC MANDATE ON THE REVIEW OF THE FREQUENCY BAND 169.4 – 169.8 MHz

0 SUMMARY

In July 2003 the Commission issued a Mandate to CEPT to review the various possible harmonised applications for the band 169.4 to 169.8 MHz in the light of Community policies, since the CEPT/ECC a year before had raised the question regarding the continued need of the EU Council Directive of 9 October 1990 (90/544/EEC) on the ERMES paging system due to the very limited deployment of this system in Europe. This Directive as well as ERC Decision (94)02 designate this band for the ERMES systems, and list referred frequencies within this band that should be made available according to commercial demand for the ERMES system.

The WG FM of the CEPT/ECC established a project team to carry out this work. The FM group and the project team undertook extensive consultations to collect information on the current and planned use of the band and to gather proposals for applications that could be implemented in the band. This was done by means of letters and questionnaires to administrations, organisations, users, operators, interested parties etc. and using the ERO web side as well as a work shop in Copenhagen hosted by ERO. The information received confirmed the limited implementation of the ERMES system. Based on the proposals for applications a limited list of preferred applications was drawn up taking into account the EC Mandate that states that applications for the assistance to persons with disabilities, including from a cross disability respective, and for judicial co-operation should be included.

To implement the proposed applications an ECC Decision has been developed containing a frequency plan and the channel arrangement for the 169.4 – 169.8 MHz band. This Decision provides for the implementation of six applications, including the continued use by paging systems, asset tracking for judicial co-operation and hearing assistive devices and social alarms to assist the disabled or frail. Due to the complexities associated with facilitating so many potential uses, an overall solution was developed rather than a list of options. However, it should be noted that the whole band is made available for the applications suggested in the EC Mandate on either an exclusive, preferred or alternative basis. The six applications are:

- Hearing aides (two exclusive channels);
- Social alarms (two exclusive channels);
- Tracking or tracing systems;
- Meter reading systems;
- Paging systems;
- PMR systems.

The ERC Decision on ERMES is proposed to be abrogated, and the future need of the ERC Decision on license exemption of ERMES receivers has been raised with the appropriate working group within ECC responsible for this Decision.

1 INTRODUCTION

In May 2003 the EC issued a mandate to CEPT (see Annex 1) to review the future applications for the band 169.4 – 169.8 MHz in the light of the Community policy regarding "assistance to persons with disabilities, in a cross disability perspective, or judicial co-operation". The Mandate was issue since the ECC in March 2002 had raised the question of the continued need of the EU Council Directive of 9 October 1990 on the frequency bands designated for the coordinated introduction of pan-European land-based public radio paging in the Community (90/544/EEC) (i.e. the ERMES system) in light of the very limited deployment of ERMES system in Europe. The WG FM of the ECC had also started to consider possible other applications for the frequency band in question.

2 BACKGROUND

The EU Council Directive 90/544/EEC designates the band 169.4 – 169.8 MHz for the pan-European paging systems ERMES and lists four preferred frequencies in the band that shall have priority and be protected. The same frequency band is also designated for the same system within CEPT in accordance with ERC Decision (94)02, and ERC Decision (98)23 make ERMES receivers license exempt within CEPT. To ease the implementation of the ERMES system the CEPT Recommendation T/R 25-07 was adopted. This recommendation also contains a frequency plan multilaterally agreed between several Central-European countries and list four preferred frequency channels for each of these countries.

Since these regulatory provisions were adopted, the need for paging systems in Europe has changed, and in some countries public paging systems have been closed down or will be closed down in the near future. In these countries the need for delivery of short information or alert messages has been fulfilled by other technologies such as SMS – Short Message Service over GSM. However, in other countries there is still a market for the paging application, and paging systems using the ERMES standard as well as other technologies are in operation. Other frequency bands to the 169.4 – 169.8 MHz bands are also used for paging applications within Europe.

3 COLLECTION OF INFORMATION AND USE OF THE 169.4 – 169.8 MHZ BAND

When the WG FM started to consider the possible replanning of the 169.4 – 169.8 MHz band, first of all there was a need to get information on the implementation of the ERMES systems in Europe and the license status of these systems. The European Radiocommunications Office – ERO was given the task to conduct a survey among CEPT administrations, and this survey was carried out at the end of 2001.

The main results of the survey in 2001 may be summarised in the following way:

- 30 administration responded to the questionnaire;
- Some licenses for paging systems including ERMES (February 2002) are still valid and will expire in the period 2004 – 2012, in some countries these licenses cannot be withdrawn for legal reasons before the agreed expire date;
- some paging systems including ERMES were operational in the band;
- 19 administrations indicated that the 169 MHz band should continue to be treated on a harmonised European basis and a total of 18 administrations indicated that also national solutions should be made available, whereas 10 administrations indicated that only national solutions should be found.

The WG FM also decided to collect proposals for applications that could be implemented in the band instead of the ERMES systems. A letter asking for proposals was drafted and distributed to CEPT administrations, organisations including such as ETSI, ENTO and EICTA, user groups and all other interested parties. An e-mail reflector on the ERO FTP server was established to ensure wide distribution of the letter.

At first the proposals for applications were considered by the WG FM in its September 2002 meeting, and at that time is was decided to establish a project team under WG FM to continue the detailed work regarding the review of the 169.4 – 169.8125 MHz band. The Terms of Reference for the project team – FM PT42 include:

- Collect information on existing and possible future usage of the band;
- Identify future application that could benefit from that harmonised status of the band;
- Develop and propose technical and regulatory provisions as appropriate for the band.

The project team had its first meeting in October 2002 and used as its starting point the information obtained by the WG FM and ERO. However, it quickly became apparent that further detailed information regarding the proposed applications as well as the current use of each frequency channel in the 169.4 – 169.8 MHz band was needed. Two new questionnaires were prepared and widely distributed to interested parties using the same e-mail reflector at the ERO FTP server. With regard to these questionnaires on the use of the ERMES band 26 administrations replied and the information is summarised in Annex 2 to this report (Updated at ECC Meeting November 2004). As it can be seen the frequency usage is very different from country to country, and the current applications are mostly paging (both ERMES and other systems) and private mobile radio (i.e. PMR). The latter application includes both private and governmental users as well as preferential users such as police, rescue- and security organisations. From the information received it can be seen that in some countries no frequency channel is available for new applications whereas in other countries all channels are available. In fact no single frequency channel is available throughout CEPT for any new application in the next year or so, and this has to be taken into account when new applications are proposed and when the time scale for the implementation of these applications are considered.

There are many reasons for the diverse use of the frequency band 169.4 -169.8125 MHz, and the main reason is the fact that the band was in heavy use when the ERMES system

was introduced in the beginning of the 1990s. Furthermore, the EU Council Directive (90/544/EEC) specifies that frequencies for the ERMES system shall be selected from this band in accordance with commercial requirements and lists four preferred channels. The frequency plan in ERC Recommendation T/R 25-07 lists four preferential frequencies in each CEPT country in order to facilitate border co-ordination for the ERMES system. Thus administrations made an effort to make these frequencies available according to commercial demand and the required number of licenses for ERMES systems in each country. Other paging systems as well as other applications were allowed use the band when the need for ERMES systems was satisfied. This diverse use of the frequency channels has to be taken into account when new applications are proposed and will put some limitation on the implementation of these applications.

In the beginning of 2003 the ERO hosted an open workshop where one of the two subjects for discussion was the review of the 169.4 – 169.8125 MHz band. This workshop was well attended by representatives from industry and users. The initial work of FM PT42 was presented including the applications suggested so far and the collected information of the frequency usage. A representative from the EU Commission presented their views on the future use of the band and industry representatives gave detailed presentations of the systems that they were proposing for implementation in the band. The comments and proposals raised in the presentations and the following discussion were taken back to FM PT42 and used in its further work.

4 PROPOSED APPLICATIONS

The consideration of possible new applications for the band 169.4 – 169.8125 MHz in FM PT42 was based, as mentioned before, on the information collected by WG FM and took account of the discussion at the ERO workshop. The information came from industry, user groups, operators and CEPT administrations, and included proposals from manufacturers of equipment for aids for hearing impaired, meter reading systems and equipment for tracking and tracing systems lost or stolen items. The proposed applications with similar technical were group together and resulted in a comprehensive list of applications as follows:

- Meter reading systems;
- Alarm, control tracing and asset tracking systems;
- New technologies for digital PMR systems (voice and data);
- Temporary PMR systems (analogue voice);
- Paging systems;
- Aids for hearing impaired,
- Sound broadcasting systems using the DRM (Digital Radio Mondiale) standard;
- Emergency systems.

The sound broadcasting systems and emergency systems were considered not to be candidate applications for the frequency band 169.4 – 169.8125 MHz since other frequency bands are allocated to these applications, in particular the band 380 – 400 MHz is allocated to emergency systems by ERC Decision (96)01.

The application for new technologies for digital PMR systems were also excluded since there was no agreed description of this developing technology, although it was hoped to have this completed by the conclusion of the review of this band, and it was felt that the digital PMR application would require much more spectrum than was available in this band if it were successful. Therefore these systems should be implemented in bands allocated to PMR systems, see ECC Report 25 "Strategies for the European use of the frequency spectrum for PMR/PAMR applications" adopted by the WG FM in May 2003.

It was decided that the band 169.4 – 169.8125 MHz was not be used for alarm and control systems in general since the density of these units could be very high. Therefore only social alarm systems similar to those operating in the band 869.20-869.25 MHz according to ERC Decision (97)06 should be allowed in order to alleviate the some of the propagation problems that have been identified with the social alarm systems operating in the 800 MHz band.

The analysis of the remaining applications revealed an approximately equal split between conventional high power applications and low power short range devices. Accordingly it was decided to divide the band in a low power part (i.e. lower power than say 1 Watt) and a high power part (i.e. higher than say 10 Watt) and to identify preferred and alternative applications for these two parts.

The EC Mandate specifically stresses that applications for persons with disabilities, with a cross disability perspective, should be accommodated in the 169.4 – 169.8125 MHz band. Aids for hearing impaired (or assistive listening devices) should therefore be included in the band. The social alarm application will also assist the frail elderly or disabled to summon assistance when in distress. The Mandate also mentions applications for juridical co-operation; tracing and asset tracking systems are such an application and should also be included. Meter reading systems is not mentioned in the EC Mandate, but manufacturers of this kind of equipment have for a long time sought VHF frequencies for this applications due to advantageous propagation characteristics, and this application was mentioned in many of the proposals received in the consultation process. It is therefore good reasons for the inclusion of this application. Furthermore, meter reading systems and systems for tracing and tracking are systems with extremely low duty cycle and they can easily share a frequency band with other similar low power systems, see section 6 on sharing studies. The existing applications such as paging and PMR systems should also be included since some of these systems cannot be moved out of the band without great technical difficulties or excessive financial implications.

For these reasons the following applications are proposed for implementation in the band 169.4 -169.8 MHz:

- **Aids for hearing impaired**

  So far there have been no harmonised bands for these kinds of self-provided systems, and frequencies have been designated according to national frequency tables with the result that these systems operate on many different frequencies throughout Europe. This again leads to segmentation of the market and more expensive equipment for the users of such systems. The increased mobility of people and equipment gives rise to an increased demand for some harmonised spectrum for self-provided aids for the hearing impaired, and a part of the band 169.4 – 169.8125 MHz band should be set aside for this purpose. Harmonised channels would be particularly useful for hearing-impaired travellers to other

countries or visitors to public places, e.g. theatres, cinemas, sports-centres etc. where one transmission is broadcasted to a large number of people. However, the propagation characteristics of the VHF band are not well suited for guidance systems within buildings where a high frequency re-use is required. In this case systems based on inductive loop technology is better suited and many such systems have been deployed. This application also include what is called Assistive Listening Devices, these are personal communication systems designed to overcome the obstacles of noise, distance, and poor acoustics that have a considerable impact with understanding of speech. Such systems consist of a microphone (that also works as a transmitter) and a receiver to plug into the hearing aid. The system can focus directly on the person's speech, suppress the surrounding noise and send the speech signal directly to the hearing aid. A normal situation can be for example a busy restaurant with lots of people talking. Even with highly advanced and effective hearing aids, the hearing impaired will still find it difficult to follow the conversation with all the background noise. With a FM-system he/she is able to hear and understand the people he/she wants to hear, without all the noise and distraction of other conversations. FM-systems are used in restaurants, meetings at work, in classrooms, at conferences, in the family car etc, and it is obvious that channels used for FM-systems should be harmonised in Europe. It must be emphasised that FM-systems are crucial for teaching hearing impaired children. In some cases even more than the 400 kHz band under review in the project team are needed, and national solutions have to be considered to satisfy these requirements. It is outside the EC Mandate and the Terms of Reference of the project team to consider frequencies outside the band 169.4 – 169.8125 MHz;

- **Social alarms**

  The social alarm application is intended to assist persons, in particular elderly or disabled people to summon assistance, when they are in a distress situation. This application requires reliable telecommunication systems and networks, although it should not be considered as a safety of life service as defined in the Radio Regulations. A number of measures are taken in order to ensure the highest level of reliability, as is practically feasible, when designing and operating these systems. In 1997 the ERC adopted ERC/DEC/(97)06 that designates the frequency band 869.20-869.25 MHz for the use of social alarm systems in accordance with CEPT Recommendation CEPT/ERC/REC 70-03 on SRDs. However, at that time it was pointed out that a lower frequency range would have been better suited for this purpose because of wider coverage and better penetration in buildings, but no such harmonised frequency band within CEPT could be found at that time. Parts of the band 169.4 – 169.8 MHz would be well suited for some types of social alarm systems;

- **Tracing and asset tracking systems**

  In the beginning 1998 the ERO prepared, following a Work Requirement (no. 48400) in accordance with the "EC-ERO Framework Contract", the "Report on Alarm Systems for Tracing Lost or Stolen Items" This report among other things describes various tracing and tracking systems operating in different frequency bands. One of the recommendations in this report is that some frequencies should be designated in the VHF band for alarm systems used for tracing lost or stolen items. The WG FM has previously made an unsuccessful attempt to harmonise frequencies for this purpose. There is a

growing demand for systems for tracing lost or stolen (such as vehicles, cars, boats, valuables, etc.), and the trade in stolen items has become an international problem;

- **Meter reading systems**

  There is an increasing demand from utility companies among others for remote reading of meters for water usage, electricity etc. Since such meters are often installed in buildings or underground and the upper part of the VHF band is particularly useful for this purpose. Meter reading equipment includes facilities for remote status monitoring and service commands

- **Applications for temporary use**

  Applications for temporary use include mostly PMR systems that are licensed for short periods from say a day or two up to about a few months is to assist organisation of entertainment and other special events. The main purpose for harmonising frequencies for this is to ease the licensing procedures during international events for which it is impossible to change frequencies of the transceivers during border crossing. Especially due to the fact that there is a need to use these frequencies from high altitude for wide area distribution of information implying long interference ranges and need for strict regulations. In between such events the frequencies may be used temporarily on a national basis. This application should be an alternative to the preferred applications in the high power part of the band;

- **Paging systems**

  Simplex paging systems using a base station with the mobile as a receiver only using different protocols including in some case the ERMES protocol. Existing paging systems should be allowed to remain in operation as long as required or as long as the licences for these systems are valid, and develop as the technology progresses.

The proposed usage of the band 169.4 -169.8125 MHz is a compromise which seeks to gain the maximum benefit from a limited amount of spectrum (only 400 kHz) given the constraints of existing use both within the band and either side. It is recognised that the effects of these constraints cannot be completely eliminated in all cases. The bands on either side are used for PMR (base/mobile/simplex) and therefore end channels are to some extent subject to interference and constraints. Additionally as noted during ERMES planning there is a potential interaction between in particular ERMES channel 14 and TV transmission above 174 MHz, see ERC Report 22. It also has to be recognised that this frequency band has never been harmonised in the same way as say the SRD or GSM bands in particular.

However, the higher power transmissions for asset tracking and tracing and temporary use or PMR are of similar power levels to adjacent bands and there is no advantage in placing all lower power applications towards the middle of the band. The low power applications least able to withstand interference are nevertheless placed in this position with the social alarm channels on either side of the hearing aids channels in order to improve immunity of the latter. This arrangement will increase the probability that at least one social alarm channel is free of interference and ensure that both channels are not blocked by the same incumbent high power system.

The SRD manufacturers expressed a strong preference for a continuous band for meter reading and asset tracking and tracing, but recognised advantages with the proposed split for social alarms. The meter reading and associated network management application can coexist with the low power part of asset tracking and tracing application as both require low duty cycles for each polled device, and polling is relatively infrequent. The devices should adopt coexistence techniques to improve their ability to pass messages and avoid interference to other devices.

The band split between the low power part and the high power part was chosen to best accommodate the existing paging systems that are difficult to retune and the individual high-power preferred channels were additionally selected to place the highest power paging where they are least likely to cause interference.

It is noted that in many cases the 169.4-169.8125 MHz band does not necessarily provide a complete solution for any of the chosen applications. It should rather be seen as either providing a seed channel for use alongside national provisions for aids for the hearing impaired, possibly for use together with channels in other bands (for say tracking, asset tracking and meter reading applications) and together with many more channels assigned in the case of temporary use or PMR. In these cases, the harmonised status of the band is used to achieve greater equipment mobility and cross-border use.

5 FREQUENCY PLAN AND REGULATORY PROVISIONS

In order to encourage the deployment of new applications, provisions are needed to place curbs on existing systems and new systems for non-preferred applications where these may adversely affect deployment of the other applications. Therefore ECC Decision (YY)XX has been developed to facilitate the implementation of these applications in the band 169.4 – 169.8125 MHz within CEPT. This Decision also includes a detailed frequency plan and a channelling arrangement and is in Annex 2 to this report. Preferred and alternative applications, taken from the list of proposed application above, have been identified for the high power and low power part of the band. This should ensure a flexible use of the band, but still give some core frequency channels for these applications to allow a Europe-wide market to develop, while taking due account of the existing systems in the band and the fact that some of these systems cannot be moved without great technical burden on the operators of these systems.

The current situation in the 169.4 – 169.8125 MHz band is an example of harmonisation which has not worked as intended, resulting in spectrum being under-used in some countries, and used for a wide range of other systems in others. To avoid the repetition of such a situation, it is appropriate to introduce a review process with relatively short intervals. This approach also retains the initial benefits of harmonisation in stimulating new applications.

The EC Mandate suggests that a list of optional applications for the band 169.4 – 169.8125 MHz should be made, however, it was thought be more appropriate to develop a definite list of preferred applications for implementation in the band. The main reason for this was first of all the very diverse use of the band, and the fact that the band would not be a fully harmonised band in the usual sense for the foreseeable future. This is due to the current operation of existing systems such as ERMES (being operated in accordance with the EU Directive and ECC Decision) and other systems, and the fact that the licenses for these systems will in some cases not expire until 2010 or even later.

Furthermore, care has to be taken when allocating frequencies to applications in order to avoid compatibility problems, and this is particularly important when new applications are introduced into bands where other systems are in operation. The national frequency authorities need a reasonable degree of freedom in order not to put undue constraint on operators existing systems.

6 SHARING STUDIES

To investigate the compatibility between the proposed applications in the band 169.4 – 169.8125 MHz sharing studies have been carried out. These studies were done by the WG SE and the report was provisionally approved by WG SE in May 2004 and forwarded to WG FM for possible comments. The report was then finally approved by WG SE in October 2004.

The sharing study was a technical study based on minimum coupling loss, and three scenarios were studied:

- Compatibility between social alarms and high power applications;
- Sharing between SRDs and asset tracking/tracing with the aim of determining the maximum power of the latter to ensure sharing between these systems;
- Sharing between SRDs and hearing aids knowing that SRDs are considered to be the main application in the shared part of the band.

For the purpose of the sharing study SRD only refer to specific application proposed for implementation in this band i.e. hearing aids, social alarms, low power tracking devises and meter reading systems, since the band is not proposed to be used for non-specific short range devises (SRDs).

The sharing studies were done on a technical basis, and with this perspective some compatibility problems have been identified. If social alarm systems and hearing aids are co-located (i.e. worn by the same person) there is a risk of blocking if the social alarm receiver is manufactured according the current ETSI standard. If co-location with hearing aids is foreseen, the performance of the social alarm receiver should be improved, or social alarms operating in the band 869.20-869.25 MHz according to ERC/DEC/(97)06 should be used instead.

Regarding the other applications in the low power part of the band, the short range device data systems generally have a low duty cycle therefore the different systems should be able to coexist. In addition the tracking/tracing systems are likely to be mobile; therefore the risk of interference to metering receivers is likely to be low. For automatic metering reading systems, there is a potential of co-channel interference with the tracking/tracing systems, however, if suitable coding is used then the risk of interference is further reduced.

Since the sharing studies are done on a technical basis, there may be other mitigating factors which have not been considered which will actually reduce the risk of interference between applications or systems. Such factors include additional building loss, especially in built-up areas, also antenna off-beam loss for directional antennas. Also usage patterns and duty cycle has not been taken into consideration.

Based on the results of the sharing studies it have been agreed that the proposed applications may be implemented in the frequency band 169.4 -169.8125 MHz since the risk interference between the different applications is acceptably low. However, the national frequency authorities should take due care of the identified compatibility problems.

7 CONCLUDING REMARKS

The project team within the WG FM carrying out the review of the band 169.4 – 169.8 MHz held its last meeting 8 – 9 June this year and at this meeting finalised the draft CEPT Report on response to the EC Mandate, the new draft ECC Decision on the frequency plan for the band 169.4 – 168.8125 MHz and the consequential new draft ECC Decision on the abrogation of the ERC Decision (94)02 on ERMES.

The project team also considered a letter from the Commission drawing attention to the fact that the implementation of any harmonised change of the use within EU of the frequency band allocated to ERMES can only take place after the modification of the Directive of the Council 90/544/EEC on ERMES. Otherwise, the EU Member States would be faced with the adoption of an ECC Decision which would possibly be in contradiction with European Community law. It is the intention of the Commission to propose to the Council and the European Parliament the withdrawal of the EEC Directive on ERMES and to replace it with a Decision adopted by the Commission with the assistance of the RSC taking into account the results of the EC Mandate to CEPT.

During the meeting of WG FM 22 – 24 September the output documents from the project team were considered. Furthermore, input document to this meeting clearly demonstrated that more frequency channels were needed for hearing aids than those channels designated in the new ECC Decision, in particular more channels was needed for what is called Assistive Listening Devices - ALD. These devises are used in normal schools where hearing impaired student gives the transmitter to the teacher and are thus able to follow class. Here a number of channels in the number of 6 to 9 are needed to avoid interference from one classroom to another. In special schools teaching requires that each student (often 5 – 8) in a class has his or her own channel to be able to receive personal instructions from the teacher. Two different means were proposed to cater for this increased requirements; either to partly solve the problem by allocating four more channels for hearing aids on a non-interference non-protected basis in high power part of the band in question or to instruct the SRD Maintenance Group of the WG FM to identify one or more tuning ranges from were frequency channels for hearing aids could be selected. These possible tuning ranges could preferable in frequency bands below say 300 MHz and should include the channels designated for this application in the new ECC Decision.

In the following discussion in the WG FM on these two proposals were supported, however, concerns with both solutions were also expressed, and no agreement could be reached. As a compromise it was agreed to adopt the new draft ECC Decision on the frequency band 169.4 – 169.8125 MHz and the consequential draft ECC Decision to the abrogation of ERMES as proposed by the project team with only minor changes agreed by the FM meeting. Furthermore it was also agreed to instruct the SRD MG as a matter of urgency to identify tuning ranges and if possible other harmonised channels for hearing aids including ALD than those designated in the new ECC Decision. It was pointed out that due to the legal problem highlighted by the Commission it would be some time

before at least the 25 EU Member State could implement the new Decision, there would be some time for the SRD MG look into the matter of tuning ranges.

The question of the continued need for and possible abrogation of ERC Decision (98)23 on license exemption for ERMES receivers has been raised with the WG RA.

ANNEX 1

EUROPEAN COMMISSION
Directorate-General Information Society

Communications Services
Implementation/Committees

Brussels, 7 July 2003
DG INFSO/B3

Subject: MANDATE TO CEPT TO REVIEW FUTURE POSSIBLE APPLICATIONS FOR THE BAND 169.4-169.8 MHZ IN THE LIGHT OF COMMUNITY POLICIES

Title

A mandate to CEPT in order to review the various possible harmonised applications for the band 169.4 to 169.8 MHz in the light of Community policies.

Purpose

To collect information on the current and future possible uses of the 169.4-169.8 MHz band; to identify a list of alternative options for the use of the band taking into account Community policies ; and to develop and propose technical and regulatory provisions for such applications.

Justification

Pursuant to Article 4 of the Radio Spectrum Decision[1], the Commission may issue mandates to the CEPT for the development of technical implementing measures with a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum; such mandates shall set the task to be performed and the timetable therefore.

In most Member States, the use of the band 169.4 to 169.8 MHz (i.e. 16 channels – including 4 core channels) which was reserved by Directive 90/544/EEC[2] for European land-based public radio paging (ERMES) applications has severely diminished to such a point that in some Member States this band is not used at all for ERMES applications.

Therefore, there is a need to consider modifying the current designation of this band to ERMES in the Community, while preserving the harmonised character , in order to ensure a more efficient use of this radio spectrum. This could be subject to appropriate transition measures until expiry or termination of remaining licenses in the sixteen channels for current ERMES or other applications. Such re-allocation may require appropriate legislative action pursuant to Article 251 of the EC Treaty due to the need to modify or repeal Directive 90/544/EC.

For that purpose, the various possible alternative harmonised uses should be reviewed, taking into consideration relevant alternative Community policies.

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[1] Decision 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJ L 108 of 24.4.2002, p.1.

[2] Council Directive of 9 October 1990 on the frequency bands designated for the co-ordinated introduction of pan-European land–based public radio paging in the Community, OJ L 310 of 9.11.1990, p. 28.

Background

The new EU regulatory regime for electronic communications lays down certain rules as to radio spectrum allocation and assignment. Pursuant to Article 9 par. 1 of the Framework Directive[3], allocation and assignment of radio frequencies by national regulatory authorities must be based on objective, transparent, non-discriminatory and proportionate criteria. Moreover, pursuant to Article 8 of the same Directive, national regulatory authorities shall take the utmost account of the desirability of making regulations technologically neutral and shall promote competition in the provision of electronic communications networks and services by encouraging efficient use and ensuring the effective management of radio frequencies. Any measure should encourage the most efficient operation and greatest uptake of the band in order to optimise use of the scarce resource.
When reviewing the alternative possible allocations at European level, account should be taken of existing Community policy objectives and benefits arising from pan-European portability of use across national boundaries. In the case of the band 169.4 to 169.8 MHz, such policies may include not only traditional Information Society types of applications but also applications related to assistance for disabled people or judicial co-operation.

European Community regulation such as the Universal Service Directive[4] specifically recognises the needs of disabled users[5]. This was also confirmed by the Vitoria Informal Council of Ministers in charge of telecommunications[6] and by the eEurope 2005 action plan adopted by the European Council of 21-22 June 2002 in Seville[7]. Various applications in the ERMES band could benefit people with disabilities, such as for example Assistive Listening Devices (ALD), social alarms, guidance in public buildings and audiodescription in public places. Considering that there are a variety of applications, a cross disability perspective should be taken.

Other potential uses of the ERMES bands could include stolen goods tracking systems in the framework of Community judicial co-operation in civil and criminal matters policy, as defined by Articles 29 et seq. of the EU Treaty.
It is possible that certain applications deserving priority may only fit in the ERMES band. However, even deserving applications may differ in their suitability to the band, considering co-existence with existing users, match with band characteristics, and adaptability to other bands. Therefore, when reviewing the possible alternative applications for the 169.4 to 169.8 MHz band, it is necessary for each possible application to evaluate co-existence issues and the possibility of using alternative

[3] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L 108, 24.4.2002, p.33.

[4] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

[5] Article 8 of the Framework Directive requires Member States to promote the interests of the citizens of the European Union by inter alia "addressing the needs of special social groups, in particular disabled users".

[6] The Vitoria Informal Council of Ministers in charge of telecommunications stated that "accessibility to all kinds of electronic services provided by any means, including those based on broadband internet access, 3G mobile communications or digital TV should be ensured for people with disabilities and for older persons".

[7] The eEurope 2005 action plan adopted by the European Council of 21-22 June 2002 in Sevilla underlined the importance of access for all citizens to online public services, TV and mobile phones in particular broad band access, spectrum policies and multi-platform content.

bands, so as to facilitate a decision by the responsible authorities as to the final choice of application or series of applications in the ERMES band.

Order and Schedule

The CEPT is hereby mandated to

(1) collect information on the existing use, including time scales, of the band 169.4 to 169.8 MHz from European Community Member States, acceding countries and EEA Members- , as well as possible future spectrum usage of the same band within these countries;

(2) on that basis, identify possible future applications for the band 169.4 to 169.8 MHz that would benefit from the harmonised status of the band, taking into account coexistence with other existing services and gradual transition from remaining ERMES services, possible use of alternative bands and the need to optimise the use of radio spectrum; the possibilities of accommodating applications to implement European Community policies, such as assistance to persons with disabilities, in a cross disability perspective, or judicial co-operation should be investigated;

(3) develop and propose a limited list of options for the operation of the applications identified under point 2 within the 169.4-169.8 MHz band on a harmonised basis, with an indication of preferences and justifications, as well as technical and regulatory provisions as appropriate;

(4) present its results to the European Commission and the Radio Spectrum Committee by 31 March 2004 at the latest.

The result of this mandate can be made applicable in the European Community pursuant to Article 4 of the Radio Spectrum Decision.
In implementing this mandate, the CEPT shall, where relevant, take the utmost account of Community law applicable.

* * *

ANNEX 2

Summary of the current use of the band 169.4 -169.8 MHz (revised November 2004):

	1 169.425	**2** 169.450	**3** 169.475	**4** 169.500	**5** 169.525	**6** 169.550	**7** 169.575	**8** 169.600	**9** 169.625	**10** 169.650	**11** 169.675	**12** 169.700	**13** 169.725	**14** 169.750	**15** 169.775	**16** 169.800
AUT	PMR08	PMR08	PMR08	PMR08	PMR08	PMR08	PMR08	PMR08	PMR08							PMR08
BEL	TMP03	TMP03	TMP03	TMP03	TMP03	TMP03	TMP03	TMP03	ERM18	TMP03	TMP03	TMP03	TMP03	TMP03	TMP03	TMP03
CY	ERM	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]	ERM[1]
CZ	ERM09	ERM				PMR07		PMR07	PMR07	PMR07	PMR07	ERM			PMR07	PMR07
DE																GOVXX[1]
DK	PMR07	PMR07		PMR07	PMR07	PMR07	PMR07		PMR07		PMR07		PMR03	PMR04		PMR07
EST																
FI[2]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]	PMR[3]				PMR[3]
FR[3]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]		TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]	TMPXX[4]
GRC								ERM15		ERM15		ERM15		ERM15		
HNG																
IRL4					OTHXX6								OTHXX6			

[1] Germany: The frequency is not available since it overlaps with an allocation for governmental communication.
[2] Finland: New licenses are only given for short time use, and refarming will be considered if a new ECC Decision is implemented in Finland.
[3] France: These channels are occasionally used for temporary networks to satisfy day to day demands. In addition, it can be noted that two other uses may occur, as indicated in the French national table of frequency:
- use by Ministry of Defence limited to operation of sea acoustic buoy;
- intermittent needs by Ministry of Defence for radiolocation in the band 164.80-174 MHz after agreement of other institutional users (National Authorities and Ministries).

[4] Ireland: All frequencies are available for new services on modification or withdrawal of EC Directive 90/544.

	1 169.425	**2** 169.450	**3** 169.475	**4** 169.500	**5** 169.525	**6** 169.550	**7** 169.575	**8** 169.600	**9** 169.625	**10** 169.650	**11** 169.675	**12** 169.700	**13** 169.725	**14** 169.750	**15** 169.775	**16** 169.800
IT	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX	ERM12	PMRXX	ERM12	PMRXX	ERM12	PMRXX	ERM12	PMRXX	PMRXX
LIE	ERMXX											ERMXX				
LUX																
MA	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX	PMRXX									
MC			PMR04													
NL			PAG10	PAG10	PAG10					PAG12		PAG10		ERM06		
NOR	PMRXX	PMRXX	PMRXX	PMR05	PMR05	PMR05	PMR05	ERM03	ERM03	PMR05	ERM03	ERM03	PMR05	PMR05	PMR05	PAG04
P	EMR[5]	ERM[7]	ERM[7]	ERM[7]	GOVXX	GOVXX	GOVXX	GOVXX		ERM[7]				ERM[7]	ERM[7]	
SLA	PMR07	PMR07			PMR07	PMR12					PMR11					
SLK						PMR08		PMR07	PMR07	PMR08	PMR08	PMR09	PMR07	PMR07	PMR08	
S[6]	PMR07[8]	PMR07[8]	PMR07							ERMXX[8]						PAGXX[8]
SUI	ERM07			PAG07		PMRXX		PMRXX				ERM07				
UKR	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	GOVXX	ERM06	GOVXX
UK					PAGXX											

[5] Portugal: The channels will be available for other applications after the withdrawal of Directive 90/544/ECC.
[6] Sweden: No decision have been taken with regard to the future use of channels 1, 2, 10 and 16 after the expire of current licenses by the end of 2006, however, channels 1 and 2 will probably be available from January 2007

Legend:

ERM	=	ERMES paging systems
GOV	=	The channel is used for governmental communication
PAG	=	Paging systems other than ERMES
PMR	=	Public mobile radio systems
OTH	=	Means other services than those mentioned above
TMP	=	Temporary networks, see note 4

Where no application is given the channel in currently not being used, and it is therefore immediately available for new applications.

The number after the service denominator gives the year when the channel could be available for a new application, (e.g. “03” means that the channel could be available immediately or during 2003). “XX” means that the license for that particular channel is not time limited, that the channel will not be available for a new application in the foreseeable future or that no decision have been taken.

ANNEX 3

ELECTRONIC COMMUNICATIONS COMMITTEE

ECC Decision
of 18 March 2005
on the use of the
Frequency Band 169.4 – 169.8125 MHz

(ECC/DEC/(05)02)

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ECC Decision addresses the frequency band 169.4 – 169.8125 MHz. This particular band has previously been designated for the European Radio Messaging System (ERMES) by the ERC/DEC(94)02, as well as by the EU Council Directive 90/544/EEC of 9 October 1990. In most European countries the paging systems have not reached the expected market penetration, and in some countries the demand for paging systems is actually decreasing. Therefore this Decision identifies additional applications for this frequency band.

2 BACKGROUND

The ERC/DEC(94)02 designated the frequency band 169.4125 -169.8125 MHz for ERMES and divides the band into 16 frequency channels for these systems. The EU Council Directive 90/544/EEC also designated the band 169.4 – 169.8 MHz for the same purpose and states that these systems should have priority over and protection from other systems in the same band. The EU Directive also listed four preferred frequency channels for ERMES. Since the adoption of the ERC Decision and EU Directive the requirement for paging systems within Europe has changed. Therefore the ERO and the Frequency Management Working Group of the ECC collected information on the deployment of ERMES and other paging systems (in 1999 the European Commission recommended the end of exclusive use of the ERMES standard in the 169 MHz channels) in the frequency band 169.4 – 169.8125 MHz within Europe as well as the use of this band by other radio applications..

The information obtained showed (as of January 2002) that ERMES systems only remained operational in a few European countries. However, there were some countries in which paging systems were in operation, or licences were still in force. In some cases these licences cannot be withdrawn for legal reasons. On the other hand the information showed that in most countries some channels were available for other applications, and in several countries all 16 channels were available.

In recent years more emphasise has been put on the question of designation of harmonised frequency bands for several existing or new services, and therefore the WG FM has agreed to reconsider the use of the band 169.4 -169.8 MHz, and many applications have been proposed for this frequency band. Based on information from administrations and interested parties it has been agreed that the following existing and new applications should be implemented in this band.

- **Meter reading systems**
  There is an increasing demand from utility companies among others for remote reading of meters for water usage, electricity etc. Since such meters are often installed in buildings or underground the upper part of the VHF band is particular useful for this purpose. Meter reading equipment includes facilities for remote status monitoring and service commands.

- **Tracing and asset tracking systems**
  In the beginning 1998 the ERO prepared, following a Work Requirement (no.48400) in accordance with the "EC-ERO Framework Contract", the "Report on Alarm Systems for Tracing Lost or Stolen Items" This report among other things describes various tracing and tracking systems operating in different frequency bands. One of the recommendations in this report is that some frequencies should be designated in the VHF band alarm systems used for tracing lost or stolen items. The WG FM has previously made an unsuccessful attempt to harmonise frequencies for this purpose. There is a growing demand for systems for tracing lost or stolen (such as vehicles, car, boat, valuables, etc.), and the trade in stolen items has become an international problem.

- **Social alarms**
  The social alarm application is intended to assist persons, in particular elderly or disabled people summon assistance, when they are in a distress situation. This application requires reliable telecommunication systems and networks. A number of measures are taken in order to ensure the highest level of reliability, as is practically feasible, when designing and operating these systems. In 1997 the ERC adopted ERC/DEC/(97)06 that designates the frequency band 869.20-869.25 MHz for the use of social alarm systems in accordance with CEPT Recommendation CEPT/ERC/REC 70-03 on SRDs. However, at that time it was pointed out that a lower frequency range would have been better suited for this purpose because of wider coverage and better penetration in buildings, but no such harmonised frequency band within CEPT could be found. Parts of the band 169.4 – 169.8125 MHz would be well suited for some types of social alarm systems.

- **Aids for hearing impaired**

So far there have been no harmonised bands for these kinds of systems and frequencies have been designated according to national frequency tables with the result that these systems operate on many different frequencies throughout Europe. This again leads to segmentation of the market and more expensive equipment for the users of such systems. The increased mobility of people and equipment gives rise to an increased demand for some harmonised spectrum for aids for the hearing impaired, and a part of the band 169.4 – 169.8125 MHz band should be set aside for this purpose. Even so there would still be a need for other frequencies designated on a national basis to satisfy all the requirements for these kinds of systems.

- **Applications for temporary use**
  Applications for temporary use include mostly PMR systems that are licensed for short periods from say a day or two up to about a few months is to assist organisation of entertainment and other special events. The main purpose for harmonising frequencies for this is to ease the licensing procedures during international events for which it is impossible to change frequencies of the transceivers during border crossing. Especially due to the fact that there is a need to use these frequencies from high altitude for wide area distribution of information implying long interference ranges and need for strict regulations. In between such events the frequencies may be used temporarily on a national basis. This application should be an alternative to the preferred applications in the high power part of the band.

- **Paging system**
  Simplex paging systems using a base station with the mobile as a receiver only using different protocols including in some case the ERMES protocol. Existing paging systems should be allowed to remain in operation as long as required or as long as the licences for these systems are valid, and develop as the technology progresses.

The European Commission has issued a Mandate to CEPT to review the frequency band 169.4 – 169.8125 MHz in the light of the Community policy. The Mandate specifies that the regulation of this band should be technology neutral and reflect European Community policies such as applications for assistance to persons with disabilities and judicial co-operation (i.e. tracking of stolen goods).

3 REQUIREMENT FOR AN ECC DECISION

The allocation or designation of frequency bands for use by a service or system under specified conditions in CEPT member countries is laid down by law, regulation or administration action. A commitment by CEPT member countries to implement an ECC Decision will provide a clear indication that the required frequency bands will be made available on time and on a European-wide basis. The amount of spectrum requirements and dates of availability will be reviewed from time to time. ERO should collect and make publicly available information from administrations about the implementation of this ECC Decision.

ECC Decision
of 18 March 2005

on the use of the Frequency band 169.4 – 169.8125 MHz

(ECC/DEC/(05)02)

The European Conference of Postal and Telecommunications Administrations,

considering

a) that harmonised spectrum can provide the best conditions for the introduction of new or emerging pan-European applications;

b) that the use of the band 169.4 – 169.8125 MHz is to a certain extent harmonised within Europe and that this harmonisation should at least be maintained or if possible extended. Changes to the usage of this band should be made in a way that is consistent with the Mission Statement of the ECC;

c) that when introducing new applications in the band 169.4 – 169.8125 MHz account should be taken of the existing applications in this band such as paging and PMR, and that these existing applications should be allowed to remain in operation as long as required or as long as the licences for these applications are valid;

d) that CEPT Recommendation T/R 25-07 regarding the band 169.4125 – 169.8125 MHz remains in force in relation to the paging and other incumbent systems that remain operational in the band;

e) that existing paging systems cannot be re-allocated due to great technical problems or heavy cost implications;

f) that the preferred high power paging channels were chosen to include those channels known to be used by existing paging systems. Channel 9 should be avoided to protect low power devices and channel 14 due to incompatibility with broadcasting;

g) that development to existing systems or the creation of new systems for non-preferred applications on a national basis should be minimised, and in any case be implemented in such a manner as not to constrain the harmonised implementation of the preferred applications;

h) that new paging systems in particular could preferentially use PMR/PAMR bands as identified in ERC Report 25;

i) that the compatibility studies assuming worst case conditions indicate possible areas of interference between the proposed applications, but the actual usage of these applications will alleviate the situation, see ECC Report no. 55;

j) that the designation of spectrum to one or more particular applications should only be done on a technological neutral basis;

k) that the EC has given the CEPT a mandate to review the band 169.4 – 169.8125 MHz in the light of the Community policy.

DECIDES

1. that the band 169.4 – 169.8125 MHz shall be divided into a low power part and a high power part;

2. that the frequency usage of the band 169.4 – 169.8125 MHz is as shown in Annex 1 to this Decision;

3. that the preferred applications in the low power part of band 169.4 -169.8125 MHz are as follows:

    a. Aids for hearing impaired (exclusive use);

    b. Social alarms (exclusive use);

    c. Meter reading systems (non-exclusive use);

    d. Low power transmitters for tracking and asset tracing systems (non-exclusive use).

4. that the preferred applications for the high power part of the band 169.4 – 169.8125 MHz are as follows:

    a. High power transmitters for tracking and asset tracing systems;

    b. Existing paging systems or paging systems relocating from other channels in the band.

5. that alternative applications should be implemented in such a manner as not to constrain the harmonised implementation of the preferred applications;

6. that the alternative applications for the band 169.4 - 169.8125 MHz are:

    a. for the non-exclusive, low power part of the band, aids for the hearing impaired;

    b. on a national basis in the high power part of the band, tracing, paging, temporary use or PMR;

7. that existing paging systems and PMR systems in the band 169.4 – 169.8125 MHz, not in accordance with the frequency plan in Annex 1, may be allowed to remain in operation as long as required or as long as the licences for these services are valid;

8. that the maximum radiated power in the low power part of the band 169.4 – 169.8125 MHz shall be limited to 0.5 Watt erp;

9. that the maximum duty cycles for the meter reading systems and tracing and asset tracking system (low power part) are <10 % and <1 % respectively;

10. that this Decision shall enter into force on 18 March 2005[1] and shall be reviewed four years from this date depending on the deployment of the above mentioned applications;

11. that the CEPT Member administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the ERO when the Decision is nationally implemented.

Note:
Please check the ERO web site (www.ero.dk) under “Documentation / Implementation” for the up to date position on the implementation of this and other ECC Decisions.

[1] The EU Member States will only be able to implement this ECC Decision when the EU Council Directive 90/544/EEC has been withdrawn.

Frequency plan for the 169.4 - 169.8125 MHz band

<table>
<tr><td colspan="10">Low power applications</td><td rowspan="5">“Guard band”</td><td colspan="16">High power applications</td></tr>
<tr><td colspan="6">Specific low power applications</td><td>So. al.</td><td colspan="2">Hearing aids</td><td>So. al.</td><td colspan="2">Trac.</td><td>Paging</td><td>Paging</td><td>Paging</td><td>Trac.</td><td>Trac.</td><td>Paging</td><td colspan="2">Trac.</td></tr>
<tr><td colspan="6">Hearing aids</td><td colspan="4">Exclusive use</td><td colspan="16">These channels could be used on a national basis for high power application such as paging, tracing, temporary use or PMR.</td></tr>
<tr><td colspan="6">12.5</td><td>12.5</td><td colspan="2">50</td><td>12.5</td><td colspan="16">12.5 (1)</td></tr>
<tr><td>1a</td><td>1b</td><td>2a</td><td>2b</td><td>3a</td><td>3b</td><td>4a</td><td colspan="2">4b+5+6a</td><td>8b</td><td>9a</td><td>9b</td><td>10a</td><td>10b</td><td>11a</td><td>11b</td><td>12a</td><td>12b</td><td>13a</td><td>13b</td><td>14a</td><td>14b</td><td>15a</td><td>15b</td><td>16a</td><td>16b</td></tr>
</table>

Legend:

- 1st row: category application, i.e. low power applications or high power applications;
- 2nd row: preferred applications:
  Specific low power applications see *decides* 3c and 3d
  So. al. means social alarm systems see *decides* 3b
  Hearing aids see *decides* 3a
  Trac. means tracking and tracing system (high power part) see *decides* 4a
  Paging see *decides* 4b
- 3rd row: alternative applications, see *decides* 5 and 6;
- 4th and 5th rows: channel raster (in kHz) and channel number.

(1): Due to the possibility of using any high power channel for the temporary use application. However, to facilitate border coordination, systems using 25 kHz channels should respect the channel raster starting from the lower edge of the channel 9.

Channelling arrangement for the band 169.4 – 169.8125 MHz

12.5 kHz bandwidth		25 kHz bandwidth		50 kHz bandwidth	
Ch. no	**Centre freq.**	**Ch. no**	**Centre freq.**	**Ch. no**	**Centre freq.**
1a	169.406250	1	169,412500		
1b	169.418750			“0”	169.437500
2a	169.431250	2	169.437500		
2b	169.443750				
3a	169.456250	3	169.462500		
3b	169.468750				
4a	169.481250	4	169.487500		
4b	169.493750			“1”	169.512500
5a	169.506250	5	169.512500		
5b	169.518750				
6a	169.531250	6	169.537500		
6b	169.543750			“2”	169.562500
7a	169.556250	7	169.562500		
7b	169.568750				
8a	169.581250	8	169.587500		
8b	169.593750				
12.5 kHz “guard band”					
9a	169.618750	9	169.62500		
9b	169.631250				
10a	169.643750	10	169.65000		
10b	169.656250				
11a	169.668750	11	169.67500		
11b	169.681250				
12a	169.693750	12	169.70000		
12b	169.706250				
13a	169.718750	13	169.72500		
13b	169.731250				
14a	169.743750	14	169.75000		
14b	169.756250				
15a	169.768750	15	169.77500		
15b	169.781250				
16a	169.793750	16	169.80000		
16b	169.806250				