



European Radiocommunications Committee (ERC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

ERC RECOMMENDATION (00)04

HARMONISED FREQUENCIES AND FREE CIRCULATION AND USE FOR METEOR SCATTER APPLICATIONS

Recommendation adopted by the Working Group "Frequency Management" (WGFM)

INTRODUCTION

Meteor burst or scatter refers to a unique means of long distance communication, ranging from 500 up to 1500 kilometres, via reflections by ionised gas trails in the upper atmosphere. These gas trails are generated by the burn up of small meteors impacting on the earth's atmosphere. The typical meteor trail is only available for a few hundreds of milliseconds. Due to this nature communication is only possible in short intervals. The delay between the appearance of two consecutive trails ranges from seconds to minutes, depending on the time of the year and the time of day. Meteor scatter communication is feasible using frequencies between 30 and 50 MHz.

Data communication utilising meteor scatter can be established by a network of VHF radio systems. With a network consisting of a relatively small number of powerful base stations large areas can be covered for communication with remote mobile and/or fixed stations. In areas with a high level of environmental noise auxiliary stations using line-of-sight propagation may be added to support the meteor scatter communication network.

Such networks can support a variety of data communication services for road transport and telemetry applications. Services like fleet management, two-way data communication, tracking, alarm messaging and remote measuring can be offered.

Individual CEPT administrations were faced with the request from manufacturers and service providers to open up spectrum for such an application. Due to the requirement for free circulation and cross border operation of mobile equipment it became indispensable to identify a harmonised band for Meteor Scatter Applications.

In order to introduce this type of service and category of equipment within CEPT, the ERC decided that harmonised conditions should be developed, as far as possible.

The designation of a harmonised band will form the basis for the free circulation of Meteor Scatter terminals within Europe and will furthermore facilitate the mutual recognition of conformity assessment, where relevant.

Implementation of this Recommendation by CEPT administrations will provide a clear indication that the required frequency bands will be available on time and on a European-wide basis to the extend possible.

"The European Conference of Postal and Telecommunications Administrations,

considering

- a) that meteor scatter applications can provide for low cost data services over long distances and in remote areas;
- b) that there is a need for a European-wide harmonised frequency band for such type of applications;
- c) that European harmonisation will reduce difficulties in border areas;
- d) that harmonisation of technical and regulatory measures will enable administrations an easy introduction of Meteor Scatter Applications;
- e) that in a deregulated environment long range data communications by means of meteor scatter can encourage competition which may be beneficial to the user;
- f) that compatibility with TV-broadcasting reception, cordless telephones and wireless microphones has been studied within CEPT (ERC Report 93). The results of the studies show that no harmful interference is expected to the studied systems if the Meteor Scatter systems are operated in accordance with the technical conditions of Annex 3 to this Recommendation ;
- g) that the compatibility of systems having technical conditions different to those given in Annex 3 may be studied within CEPT which may result in inclusion of additional technical conditions in Annex 3 to this Recommendation;
- h) that in accordance with ERC Report 25 in the "major utilisation" column the band 39.0–39.2 MHz is noted for meteor scatter applications;
- i) that due to the pan-European communication distances possible with meteor scatter communications, it is not practical for frequencies to be shared between meteor scatter systems in the same service area;
- j) that Administrations have the right to exercise spectrum/frequency management which may affect the number of service suppliers, in conformity with their international trade obligations and to European Community legislation as far as EU Member States are concerned;
- k) that allocations, assignment and technical co-ordination of frequencies must be done in an objective, timely, impartial, transparent and non-discriminatory manner, and should not be more burdensome than necessary under international rules, in particular, to ensure the efficient use of the frequency spectrum;

recommends

- 1) to designate the band 39.0 – 39.2 MHz for the use of meteor scatter applications with a channelling arrangement as given in Annex 1 to this Recommendation;
- 2) that the ERO shall keep a record of assignments of meteor scatter systems as given in Annex 2 to this Recommendation and make this information publicly available e.g. on the ERO web site;
- 3) that administrations should assign frequencies to operators of meteor scatter systems after consulting the ERO record of assigned frequencies and coverage areas of base- and auxiliary stations, and inform the ERO on the assignment made;
- 4) that, if required on the basis of relevant co-ordination agreements (e.g. Vienna agreement), base and auxiliary stations should be co-ordinated by the administrations on whose territory they are located;
- 5) that the base and auxiliary stations should be licensed by the administration on whose territory they are located and that administrations should notify the ERO if the license is cancelled;
- 6) that Meteor Scatter applications should comply with the technical conditions as given in Annex 3 to this Recommendation;
- 7) that administrations should permit the free circulation and use of remote mobile stations of systems that have been co-ordinated and licensed in accordance with Recommends 3, 4, 5 and 6;
- 8) that remote mobile stations, which are permitted free circulation and use, shall not claim protection from other systems."

Note:

Please check the ERO web site (<http://www.ero.dk>) for the up to date position on the implementation of this and other ERC Recommendations.

Annex 1

**ON HARMONISED FREQUENCIES AND FREE CIRCULATION AND USE
FOR METEOR SCATTER APPLICATIONS**

Channelling arrangement



center frequencies: $39.0 + n(0.025)$ MHz where $n= 1,2,3,4,5,6,7$

Annex 2

ON HARMONISED FREQUENCIES AND FREE CIRCULATION AND USE FOR METEOR SCATTER APPLICATIONS

With regard to Recommends 2, the following list comprises the minimum data held by ERO and made publicly available e.g. on the ERO web site:

- Country
- Operator
- License period
- Channels
- Center frequencies
- Type of stations (including ERP)
- Geographical co-ordinates of base- and auxiliary stations
- Coverage area
- Designation of emission
- Burst duration

Annex 3

ON HARMONISED FREQUENCIES AND FREE CIRCULATION AND USE FOR METEOR SCATTER APPLICATIONS

Within CEPT the compatibility of a Meteor Scatter application at 39 MHz with TV-broadcasting reception, cordless telephones and wireless microphones has been studied. The results of the studies show that no harmful interference is expected to the systems that were under investigation if the Meteor Scatter application is operated in accordance with the technical conditions and the guidelines listed below:

System specifications of Meteor Scatter application	
Channel spacing	25 kHz
Max. output power base station (e.r.p.)	17.5 kW
Max. output power auxiliary station (e.r.p.)	100 W
Max. output power remote mobile station (e.r.p.)	50 W
Max. burst duration*	100 ms
Min. repetition period remote mobile station*	10 s
Max. number of messages / day / remote mobile station	24
Applicable standard	EN 300-113

* The Meteor Scatter application applies a “receive-before-transmit procedure”. A remote mobile station can therefore only transmit when the propagation path to a base or auxiliary station is open, reducing the chance of interference substantially.