



Electronic Communications Committee (ECC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

Revised ERC Recommendation 25-10

FREQUENCY RANGES FOR THE USE OF TEMPORARY TERRESTRIAL AUDIO AND VIDEO SAP/SAB LINKS (INCL. ENG/OB)

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

INTRODUCTION

Temporary terrestrial audio and video links are used for a number of applications, relating to services ancillary to programme making (SAP) and broadcasting (SAB). The range of applications covered by SAP/SAB spans from theatrical productions and corporate events to various levels of broadcasting contribution activities. SAP/SAB also include the links of the narrower category known as Electronic News Gathering and Outside Broadcasting (ENG/OB). The definitions of various types of audio and video SAP/SAB links, as used for the purpose of this recommendation are given in the **Annex 1**. For more detailed description of concept of SAP/SAB and ENG/OB links, please refer to ECC Report 02.

It is important to note that a number of SAP/SAB uses, in particular those of News Gathering, happen at unpredictable times and locations and necessitate a very rapid response time. In such cases, it is very important that the delay and the procedures for frequency co-ordination and licensing are limited to the minimum. On the other hand, some of the SAP/SAB uses, such as Outside Broadcasting are normally planned in advance of an event. Frequency assignments for such events may take longer times, in particular when frequencies have to be "borrowed" from other users of radio spectrum because the demand exceeds the daily operational SAP/SAB requirements. Additional information on SAP/SAB licensing and other regulatory aspects may be found in ERC Report 34.

The use of SAP/SAB equipment may not be fully harmonised across the CEPT countries due to divergent national frequency plans and differing SAP/SAB requirements. The Recommendation therefore pursues the concept of the tuning ranges – that is the frequency bands, from where CEPT countries may assign specific sub-bands or particular frequencies for SAP/SAB links subject to availability, actual demand and sharing arrangements with primary services using those bands. Ideally, SAP/SAB equipment should be capable of being operated within the whole tuning range and even beyond, to be suitable for operation in different countries.

Where possible the Recommendation identifies preferred sub-bands - the sub-bands within the tuning ranges, where higher prospects of pan-European usage of particular SAP/SAB links may be expected. These sub-bands are identified as either those, which are most widely used for SAP/SAB today, or as occupying certain gaps in spectrum use by primary services, such as separation gaps between the "go-return" duplex legs in fixed service channelling arrangements, etc. If SAP/SAB equipment is not capable of covering the whole tuning range, then it should be capable of operating at least within the preferred sub-band to ensure the best opportunity for international use.

"The European Conference of Postal and Telecommunications Administrations,

considering

- a) that there is increasing demand for audio and video SAP/SAB applications at national and international events in CEPT member countries;
- b) that there is also demand for introduction of digital technologies for various SAP/SAB applications;
- c) that the current SAP/SAB equipment has rather limited tuning ranges and bandwidth adaptation facilities;
- d) that the digital SAP/SAB equipment, which is now being introduced, may potentially increase the efficiency of spectrum use, e.g. by increasing the number of co-located devices in a given frequency band;

- e) that the future digital video SAP/SAB links should be capable of operating with the channel bandwidth of 10 MHz or less;
- f) that broadcasters, programme makers and SAP/SAB service providers increasingly need to operate across the national borders;
- g) that co-ordination may be required to ensure that there is no interference between SAP/SAB and other systems and services;
- h) that in exceptional cases and in a well-controlled licensing environment administrations may decide to use additional frequency bands than those identified in this recommendation, subject to appropriate frequency clearance and co-ordination procedures;
- i) that when selecting particular channels for SAP/SAB links, care should be taken to limit the possibility of interference to passive services, which operate in the bands (see ITU RR No. 5.340) adjacent to the SAP/SAB tuning ranges indicated in Annex 2 of this recommendation;
- j) that in many CEPT countries frequency authorisations are normally required for operating SAP/SAB equipment, this issue being addressed in the ERC Report 34;
- k) that in many CEPT countries temporary audio and video SAP/SAB links have, for many years, successfully shared frequency bands with other civil and military radiocommunication applications;
- l) that in addition to a frequency authorisation, the airborne use of SAP/SAB equipment may require approval from the national civil aviation authorities;
- m) that lack of harmonised frequency tuning ranges creates difficulties for broadcasters, programme makers and SAP/SAB service providers when operating in other CEPT member countries;
- n) that identification of harmonised frequency tuning ranges will facilitate the development of standardised equipment;
- o) that additional demand for SAP/SAB frequencies during large scale events may require temporary loan of frequencies from other services, sometimes also outside the specified tuning ranges;
- p) that SAP/SAB equipment with widest possible switching and tuning ranges would provide operators with the greater chance of getting their demand satisfied;
- q) that the current and future spectrum demand for SAP/SAB equipment is analysed in the ECC Report 02;
- r) that the typical application scenarios and technical characteristics of SAP/SAB equipment are described in detail in ERC Report 38 (video links) and ERC Report 42 (audio links);
- s) that although not specifically addressed in this recommendation, service links, such as talk-back applications, form an integral part of SAP/SAB use and administrations may consider dealing with those applications in the same manner as recommended below in *recommends 2*;

recommends

- 1) that CEPT administrations should assign frequencies for audio and video SAP/SAB links from the tuning ranges identified in Annex 2;
- 2) that CEPT administrations should use simple and timely procedures for issuing frequency authorisations for temporary use of SAP/SAB equipment;
- 3) that CEPT administrations should encourage manufacturers to develop SAP/SAB equipment with the widest possible switching and tuning ranges."

Note:

Please check the CEPT web site (<http://www.CEPT.org>) for the up to date position on the implementation of this and other ECC Decisions.

Annex 1

DEFINITIONS OF AUDIO AND VIDEO SAP/SAB LINKS

For the purposes of this recommendation, the following definitions of audio and video SAP/SAB links were assumed:

Radiomicrophone	Handheld or body worn microphone with integrated or body worn transmitter.
In-ear monitor	Body-worn miniature receiver with earpieces for personal monitoring of single or dual channel sound track.
Portable audio link	Body worn transmitter used with one or more microphones, with a longer operating range capabilities than that of radiomicrophones.
Mobile audio link	Audio transmission system employing radio transmitter mounted in/on motorcycles, pedal cycles, cars, racing cars, boats, etc. One or both link terminals may be used while moving.
Temporary point-to-point audio link	Temporary link between two points (e.g. part of a link between an OB site and a studio), used for carrying broadcast quality audio or for carrying service (voice) signals. Link terminals are mounted on tripods, temporary platforms, purpose built vehicles or hydraulic hoists. Two-way links are often required.
Cordless camera	Handheld or otherwise mounted camera with integrated transmitter, power pack and antenna for carrying broadcast-quality video together with sound signals over short-ranges.
Portable video link	Handheld camera with separate body-worn transmitter, power pack and antenna.
Mobile airborne video link	Video transmission system employing radio transmitter mounted on helicopters, airships or other aircraft.
Mobile vehicular video link	Video transmission system employing radio transmitter mounted in/on motorcycles, pedal cycles, cars, racing cars or boats. One or both link terminals may be used while moving.
Temporary point-to-point video links	Temporary link between two points (e.g. part of a link between an OB site and a studio), used for carrying broadcast quality video/audio signals. Link terminals are mounted on tripods, temporary platforms, purpose built vehicles or hydraulic hoists. Two-way links are often required.
Talk-back	For communicating the instructions of the director instantly to all those concerned in making the programme; these include presenters, interviewers, cameramen, sound operators, lighting operators and engineers. A number of talk-back channels may be in simultaneous use to cover those different activities. Talk-back usually employs constant transmission.
Telecommand/remote control	Radio links for the remote control of cameras and other programme making equipment and for signalling.

For more complete picture of SAP/SAB applications and links between them, see ECC Report 02.

Annex 2

RECOMMENDED FREQUENCY RANGES FOR USE BY AUDIO AND VIDEO SAP/SAB LINKS

Type of link	Recommended frequencies		Technical parameters
	Tuning ranges	Preferred sub-bands	
Radio microphones and In-ear monitors	174-216 MHz 470-862 MHz 1785-1800 MHz (Note 1)	1785-1800 MHz	ERC/REC 70-03
Portable audio links and Mobile audio links and Temporary point-to-point audio links	VHF/UHF (Note 2)	None	ERC REP 42
Cordless cameras	2025-2110/2200-2500 MHz 10.0-10.60 GHz 21.2-24.5 GHz 47.2-50.2 GHz	10.3-10.45 GHz 21.2-21.4 GHz, 22.6-23.0 GHz and 24.25-24.5 GHz	ERC REP 38
Portable video links	2025-2110/2200-2500 MHz 2500-2690 MHz (Note 4) 10.0-10.60 GHz	10.3-10.45 GHz	ERC REP 38
Mobile video links (airborne and vehicular)	2025-2110/2200-2500 MHz 2500-2690 MHz (Note 4) 3400-3600 MHz (Note 5)		ERC REP 38
Temporary point-to-point video links	Fixed service bands (Note 6) 10.0-10.68 GHz (Note 3) 21.2-24.5 GHz	10.3-10.45 GHz 21.2-21.4 GHz, 22.6-23.0 GHz and 24.25-24.5 GHz	ERC REP 38

Note 1: The band 863-865 MHz is available for radio microphones, however due note should be taken that it is used also for non-professional and consumer radio applications (cordless audio, etc.).

Note 2: Depending on application scenario, channel width and required transmitter power, the portable, mobile and temporary point-to-point audio links may be accommodated either in the frequency bands 174-216 MHz/470-862 MHz identified for professional radio microphones (typically for low power/wideband applications) or in other VHF/UHF bands, including Private Mobile Radio (PMR) bands (typically for high power/narrowband applications).

Note 3: Only occasional temporary point-to-point links should be allowed in the frequency band 10.6-10.68 GHz. Studies have concluded that even limited deployment of cordless cameras and portable video links in the band 10.6-10.68 GHz will result in interference to the EESS (passive) services using this band (see ECC/REP17).

Note 4: The band 2500-2690 MHz will not be available for video SAP/SAB links after the introduction of UMTS/IMT-2000 (see ECC/DEC/(02)06).

Note 5: In countries where the band 3400-3600 MHz is widely used for Fixed Wireless Access (FWA), availability of this band for mobile video SAP/SAB links may be restricted.

Note 6: Temporary point-to-point video links are often accommodated in the traditional fixed services' bands, following the same channel arrangements as the FS links.