



Frequencies for wireless microphones

This is how it works in Austria, Australia, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Norway, The Netherlands, New Zealand, Norway, Portugal, Romania, Slovenia, Spain, South Korea, Sweden, Switzerland, USA and United Kingdom

Prolight + Sound, Frankfurt, Germany, April 2016, Rev 5

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Austria

Mandatory application

- 174 - 216 MHz, max. 50 mW ERP
- 230 - 250 MHz, max. 50 mW ERP
- 470 - 694 MHz, max. 50 mW ERP
- 694 - 703 MHz, 733 -758 MHz, 788 -790 MHz,
20 mW e.i.r.p. or max. 90 mW e.i.r.p. for body-worn wireless microphones:
Note: values under consideration but likely to be adopted.
- 823 - 826 MHz, max. 20 mW e.i.r.p. or
max. 100 mW e.i.r.p. for body-worn wireless microphones
- 826 - 832 MHz, max. 100 mW ERIP
- 1350 - 1400 MHz 20 mW EIRP or max. 50 mW e.i.r.p for body-worn wireless micro-
phones. Note: values under consideration but likely to be adopted.
- 1492 - 1518 MHz, 50 mW e.i.r.p.
Note: in 1427 - 1492 MHz, 1518 - 1525 MHz are Frequency ranges under consideration.

For all frequency ranges above an application is mandatory with a maximum allocation of 10 years.

License exempt frequencies

- 863 - 865 MHz, max. 10 mW ERP
- 1785-1805 MHz, max. 50 mW e.i.r.p. for body-worn wireless microphones
otherwise max. 20 mW e.i.r.p.

Fees

Fees of € 53 per transmitter will be levied.

<http://www.bmvit.gv.at/telekommunikation/recht/aut/verordnungen/tkgv.html>

Further information

- Contact addresses of the four responsible Local Telecommunication Offices:
<http://www.bmvit.gv.at/telekommunikation/organisation/nachgeordnet/fmb/index.html>
- Downloadable application form on the website of the bmvit web space:
<http://www.bmvit.gv.at/telekommunikation/formulare/downloads/pmse.pdf>
- Wireless interfaces:
<http://www.bmvit.gv.at/telekommunikation/marktueberwachung/fsb/index.html>

Australia

Current status

Wireless audio devices operate under a "Class Licence", meaning that no special approvals or licence is required to operate equipment that meets the following frequency and power specs.

- Use of free frequencies (no approval needed) from 174 - 230 MHz, (max. e.i.r.p. 3 mW)
- Use of free frequencies (no approval needed) between 520 - 694 MHz, (max e.i.r.p. 100mW)
- Use of free frequencies (no approval needed) between 1785 - 1800 MHz, (max e.i.r.p. 100mW)

Operation on the frequencies shown above is as a secondary service, sharing with DTV transmission, on the basis that you do not operate outdoors on the same frequency as a DTV service licenced in the location, and that you operate on a "no interference – no protection" basis.

Application can be made to operate outdoors on the same frequency as a DTV service licenced in the location for special events.

Note that DTV channels are allocated on a "Block Planning" approach in Australia, with 6 consecutive channels, each 7 MHz wide, allocated to each DTV market. This means that in any location there will be at least one complete block of 42 MHz fully occupied by DTV transmission. In some locations more than 1 Block is in use – refer to www.frequencyfinder.com.au for up to date information about VHF & UHF DTV frequency allocation in any area of Australia

Approval can be requested to operate on higher power levels within these bands for defined "Special Events"

Belgium

Generally approved

- * 202 - 209 MHz, Radio microphones, max 50 mW ERP
- * 518 - 526 MHz, Radio microphones, max 50 mW ERP
- * 534 - 542 MHz, Radio microphones, max 50 mW ERP, except province of Hainaut

Additional information:

- from 1st Jan 2017 the operation of devices in 694 - 790 MHz isn't allowed any more.
- from 1st Jan 2020 there will be no longer license granted for 694 - 790 MHz.

- * 823 - 826 MHz, Radio microphones,
20 mW e.i.r.p for hand-held and 100 mW e.i.r.p. for body worn
- * 826 - 832 MHz, Radio microphones, 100mW e.i.r.p.
- * 863 - 865 MHz, Radio microphones, 10 mW ERP
- * 1795 - 1805 MHz, Radio microphones,
20 mW e.i.r.p. for hand-held and 50mW e.i.r.p. for body-worn

Individual assignment

- * 174 - 216 MHz, In-ear monitor systems and Radio microphones, max 50 mW ERP
- * 470 - 790 MHz, In-ear monitor systems and Radio microphones, max 50 mW ERP
- * 1492 – 1518 MHz, max 50 mW, indoor use only

How to get a short- or long-term license for?

The form you can download from:

<http://www.bipt.be/en/consumers/radio/radio-networks> (French or Dutch)

Retour address: radiovergunningen@bipt.be / fax : +32 2 226 87 97

Fees

Price for one unit with 50 mW = €33,88 for one year

For temporary use minimum period is one month: price is 33,88/12

Link to Belgian administrations homepage where PMSE user can apply for a license

<http://www.bipt.be/en/consumers/radio/radio-networks/mobile-networks/application-form-to-obtain-a-license-for-the-use-of-private-radio-communications-stations>

More information is at

Belgisch Instituut voor postdiensten en telecommunicatie

Dienst Radiovergunningen

Ellipse Building – Gebouw C

Koning Albert II-laan 35

1030 BRUSSEL

Denmark

No license required

In the Danish frequency plan some frequency bands have been allocated to be used for wireless microphones. In all of those bands the frequencies can be used without a licence (licence exemption).

- 32 - 39,4 MHz, 10 mW ERP, 50 kHz - Only some frequencies are allowed
- 138,2 - 142,070 MHz, 50 mW ERP, 200 kHz - Only some frequencies are allowed
- 470 - 790 MHz, 50 mW ERP, 200 kHz - White spaces only
Note: the 700 MHz use is noted to be changed from 2020
- 823 - 832 MHz, 100 mW e.i.r.p. 200 kHz - Handheld only 20mW in 823-826 MHz
- 863 - 865 MHz, 10 mW ERP, 200 kHz
- 1785 – 1804,8 MHz, 50 mW e.i.r.p., 200 kHz - Handheld only 20mW

Link to administrations homepage regarding Wireless Microphones

<http://www.ens.dk/en/Telecom-and-Spectrum/Spectrum/Wireless-Microphones>

Danish radio interface (No 00 025) for audio PMSE

http://www.ens.dk/sites/ens.dk/files/TelecomSpectrum/025_radio_interface1.pdf

Further Information

- <http://danishbusinessauthority.dk/spectrum-resources-wireless-mics>
- Online tool to find legal location specific whitespaces
<http://danishbusinessauthority.dk/wireless-mics-470-790-mhz>

Finland

No license required

- 823 - 832 MHz
- 863 - 865 MHz
- 1785 – 1804,8 MHz

To get further information see FICORA's regulation on collective frequencies for license-exempt radio transmitters: <https://www.viestintavirasto.fi/en/steeringandsupervision/actsregulationsdecisions/regulations/regulation15regulationoncollectivefrequenciesforlicence-exemptradiotransmittersandontheiruse2011337fin.html>

Individual assignment

FICORA is noting on their homepage:

"A radio licence issued by FICORA is always needed for a wireless microphone, i.e. a radio microphone, unless the device is exempted from licensing on the basis of FICORA's regulation. At the beginning of 2017, there will be changes in the frequency bands used by radio microphones. Therefore, users of wireless radio microphones should pay attention to the information issued about the changes and ensure from a manual or a retailer whether their own devices are subject to licence."

- 174 - 223 MHz
- 470 - 694 MHz
- 694 - 789 MHz, until the 31th December 2016

Applying for a licence for a wireless microphone

FICORA's electronic services: <https://www.viestintavirasto.fi/en/ourservices/contactus/radiolicencesandfrequencies.html>

In addition, one can download a traditional form: <https://www.viestintavirasto.fi/en/ourservices/all-forms/wirelessmicrophonesandcameras.html>

Fees

FICORA: *"The fee charged for a radio licence, on the basis a decree in force, is €18 per year for one microphone. The price of the licence is differentiated according to the number of devices so that 2 to 4 microphones cost €25.91 and e.g. 9 to 14 microphones €116.60 per year. When the number of microphones is 100 pcs. or more, the price remains the same, i.e. €1,230.73 per year."*

Link to administrations homepage regarding Wireless Microphones

<https://www.viestintavirasto.fi/en/ficora/news/2015/radiomicrophoneuser-areyourlicencematter-sinorder.html>

France

License exempt frequencies

The access to spectrum for PMSE (wireless microphones, In-Ear monitor systems, talk-back applications) is subject to a licence-exempt regime, authorized by the national regulatory authority ARCEP (Autorité de régulation des communications électroniques et des postes).

Such use is allowed in the following bands, and is restricted to professional users.

- 174 - 223 MHz, max. 50mW ERP
- 470 - 694 MHz, max. 50 mW ERP
- 694 - 789 MHz, max. 50 mW ERP (until the 1st of July 2019)
Note: Arcep Decision n° 2015-0830 will be updated soon to clarify the transitional use within the band 694-790 MHz by PMSE equipment until 1 July 2019 It will contain the list of cities and the associated dates of reallocations beyond which the PMSE use will be restricted
- 786 - 789 MHz, max. 12 mW ERP
- 823 - 826 MHz, max. 20 mW e.i.r.p. or
max. 100 mW e.i.r.p. for body-worn wireless microphones
- 826 - 832 MHz, max. 100 mW e.i.r.p.
- 1785 - 1800 MHz, max. 50mW e.i.r.p. for body-worn wireless microphones
otherwise max. 20mW e.i.r.p.

Question

What the effect of change in 800 and 700 MHz?

See: <http://www.arcep.fr/index.php?id=10887&L=1>

Further Information

Link to France administrations homepage (in English) where PMSE user can apply for a license, see: <http://www.arcep.fr/index.php?id=10887&L=1>

Additional information about regulation for PMSE audio can be found on ARCEP: <http://www.arcep.fr/?id=10887>

Germany

Generally approved

- 32,475 - 34,325 and 36,610 - 38,125 MHz, 10 mW (ERP), permit 53/2015
- 174 - 230 MHz, 50 mW (ERP), permit 59/2015
- 823 - 832 MHz, 82/100mW (e.i.r.p.), permit 2/2015
- 863 - 865 MHz, 10mW (ERP), permit 47/2013
- 1785 - 1805 MHz, 82mW (e.i.r.p.), permit 3/2015
- 1880 – 1900 MHz, 250 mW (ERP), permit 25/2015, DECT only

A further objective is the additional provision of alternative frequencies for use by wireless microphones in the frequency bands 694 - 790 MHz, 1452 - 1492 MHz and 1492 - 1518 MHz (BNetzA Official Bulletin 04/2015).

Individual assignment

- Single frequencies in 34,25 to 38,05 MHz, 50 mW (ERP), see VVnöml
- 470 - 608 MHz, 50 mW (ERP)
- 614 - 703 MHz, 50 mW (ERP)
- 733 - 823 MHz, 50 mW (ERP)
- 1452 - 1492 MHz, 50 mW (e.i.r.p.); also used for mobile downlink by SDL
- 1492 - 1518 MHz, 50 mW (e.i.r.p.); indoor only

Fees for a "PA system" (wireless microphone systems)

- Non recurrent fee is € 130.00 per application. This amount includes one-time administration costs regardless of the number of wireless microphones that are used in the system (wireless station).
- An additional frequency use and EMC contribution (TKG & EMVG) is currently about € 9.00 per transmitter per year.
- Any change to an existing license is currently 65.00 € or 130 €.

Administrative provisions relating to frequency assignments in the private land mobile radio (VVnöml)

http://www.bundesnetzagentur.de/cln_1411/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Frequenzen/Firmennetze/Betriebsfunk/betriebsfunk-node.html

(in German language only)

General licenses (Allgemeinzuteilung)

<http://www.bundesnetzagentur.de/allgemeinzuteilungen> (in German language only)

PMSE Programme Making and Special Events (Drahtlose Mikrofone)

www.bundesnetzagentur.de/drahtlosemikrofone (in German language only)

Short-term frequency assignment

http://www.bundesnetzagentur.de/cln_1412/EN/Areas/Telecommunications/Companies/FrequencyManagement/FrequencyAssignment/ShortTermFrequencyUsage/shorttermfrequencyusage_node.html

Payment for frequency changeover (700 MHz & 800 MHz)

<http://www.apwpt.org/international-news/germany/aktuelle-entschaedigungsdiskussion/index.html>
(in German language only)

Greece

Generally approved

- 174-216 MHz, BW=50kHz, max. >50 mW ERP, Wireless Microphones
- 470–786 MHz, max. >50 mW ERP, Wireless Microphones

Individual assignment

- 29,7-47,050 MHz, maximum transmitted power up to 10mW ERP, Wireless Microphones
- 174-216 MHz, maximum transmitted power up to 50 mW ERP, Wireless Microphones
- 470–786 MHz, maximum transmitted power up to 50mW ERP, Wireless Microphones
- 786-789 MHz, BW=200kHz, up to 12mW ERP, Wireless Microphones
- 823-826 MHz, BW=200kHz, (e.i.r.p) up to 20mW restricted to mobile devices or (e.i.r.p) up to 100mW restricted to body worn microphones
- 826-832 MHz, BW=200kHz, (e.i.r.p) up to 100mW, Wireless Microphones
- 863–865 MHz, up to 10 mW ERP, Wireless Microphones
- 1785–1804,8 MHz, (e.i.r.p) up to 20 mW restricted to mobile devices or up to 50 mW restricted to body worn microphones

Italy

Generally approved

- 863 – 865 MHz, Radio microphones, max 10 mW ERP

Individual assignment

- 174 - 230 MHz, Radio microphones, max 50 mW ERP
- 470 - 786MHz, Radio microphones, max 50mW ERP
- 786 - 790MHz, Radio microphones, max 12mW ERP
- 1785 – 1805 MHz, Radio microphones, max 20 mW e.i.r.p. or
max 50 mW e.i.r.p. for body-worn

How to get a short- or long-term license?

One can find specific form on the following link:

<http://www.sviluppoeconomico.gov.it/images/stories/documenti/richiesta%20autorizzazione%20temporanea%20GB.pdf>

Fees for a license

Find some information by using this link:

<http://www.sviluppoeconomico.gov.it/index.php/it/comunicazioni/ispettorati-territoriali-e-altri-organismi>

Note: fees might vary depending the region

Mail contact address of Italian administrations

frq.temp@mise.gov.it

The Netherlands

Current status

With the Dutch newspaper "Staatscourant Nr. 3750" an updated frequency allocation plan was published on March 4, 2015. Subcategory 8 refers to radio transmission equipment intended for low power wireless audio connections (PMSE). The use of free frequencies (no approval needed) is permit in this tuning ranges:

- 195 - 202 MHz, \leq ERP 50mW
- 470 - 556 MHz, \leq ERP 50mW
- 558 - 564 MHz, \leq ERP 50mW
- 566 - 572 MHz, \leq ERP 50mW
- 574 - 580 MHz, \leq ERP 50mW
- 582 - 588 MHz, \leq ERP 50mW
- 590 - 596 MHz, \leq ERP 50mW
- 598 - 604 MHz, \leq ERP 50mW
- 614 - 791 MHz, \leq ERP 50mW
- 823 - 826 MHz, hand-held \leq e.i.r.p. 20mW, body-worn \leq e.i.r.p 100mW
- 826 - 832 MHz, \leq e.i.r.p 100mW
- 863 - 865 MHz \leq ERP 10mW
- 1785 - 1805 MHz, portable \leq e.i.r.p. 20mW, body-worn \leq e.i.r.p 50mW

Information

[Nationaal Frequentieplan 2014](#) (Dutch)

[Programme Making and Special Events](#) (Dutch)

[Application-form-events](#) (E)

Norway

No license required

In the Norwegian frequency plan some frequency bands have been allocated to be used for wireless microphones. In all of those bands the frequencies can be used without a licence (licence exemption).

- 41 - 43,6 MHz, 10 mW ERP
- 510 - 790 MHz, 50 mW ERP White spaces only
- 823 - 832 MHz, 100 mW e.i.r.p. Handheld only 20mW in 823-826 MHz
- 863 - 865 MHz, 10 mW ERP
- 1492 - 1518 MHz, 50 mW e.i.r.p. Only indoor use
- 1785 - 1804.8 MHz, 50 mW e.i.r.p. Handheld only 20mW

Further Information

- Wireless microphones information
<http://eng.nkom.no/technical/temporary-licenses/wireless-microphones/wireless-microphones>
- Online tool to find legal location specific whitespaces
<http://finnsenderen.no/traadlos>

New Zealand

Generally approved

Wireless audio devices are permitted to operate in New Zealand between the frequencies of 510 MHz and 606 MHz and between 622 MHz and 698 MHz, under class licence provisions which limit maximum e.i.r.p. to 250 mW and can operate on blocks used by DTV on the "no interference – no protection" basis.

At the time of writing no DTV channels are planned to operate between 622 MHz and 698 MHz from March 11th, 2015, however the lower block between 526 MHz – 606 MHz is used for DTV throughout most of the country. TV Channels in New Zealand are 8 MHz wide, and in some places frequencies of operation start at 510 MHz.

Operation under the General User Licence is as a secondary service, sharing with DTV transmission, on the basis that you do not operate on the same frequency as a DTV service licenced in the location, and that you operate on a "no interference – no protection" basis.

From 11 March 2015, radio microphones (and other wireless audio devices such as in-earpieces) are no longer permitted to operate in the 698-806 MHz frequency range (the 700 MHz band).

Note 1: 502 MHz to 510 MHz may also be used with the maximum power limit of -10 dBW e.i.r.p. which is equivalent to around 100 mW.

Operation under the class licence means there is no need to apply for a licence to operate equipment that complies, and there are no fees or charges applicable.

Further Information

Further information can be found here:

- <http://www.rsm.govt.nz/cms/policy-and-planning/projects/radio-microphone-changes>
- <http://www.retune.co.nz>
- <http://www.wunz.co.nz>

Portugal

Generally approved

- 863 – 865 MHz, Radio microphones, 10 mW ERP, 07/SRD/POR
- 1795 – 1804,8 MHz, Radio microphones, 20 mW e.i.r.p., 07/SRD/POR
Note: 07/SRD/POR is suggested to be updated in next time

Individual assignment

- 174 - 230 MHz, if ERP > 50 mW
- 470 - 750 MHz, if ERP > 50 mW, In-ear monitor systems and Radio microphones
- 758 - 786 MHz, if ERP > 50 mW, In-ear monitor systems and Radio microphones

How to get a short- or long-term license?

Any request for license should be addressed to ANACOM using our virtual desk, available at: https://www.anacom.pt/bvirtual/bvru/index.do?do=/acesso_direto.do&languageId=1

Fees for a short-term license

For temporary licences, the value of the usage fees to be collected is reached by using the following formula: Applicable annual fee x (no. of days of licence validity / 360 days). For occasional audio links, the applicable annual fee is as follows:

SAP/SAB -Annual fee	
Audio links (per frequency)	€ 2 250,00

We would also like to point out that minimum and urgency (when applicable) fees will be applied. See below:

- Minimum Fee: The value of 50 euros is the minimum value of spectrum fee applicable to stations or networks of each Radiocommunications Service/Application to be used for temporary events.
- Urgency Fee: If the application for temporary licensing is not submitted to ANACOM up to ten days prior to the date on which it is proposed the radio licence should come into force, the applicable fee will be increased by 50% of its value, with a minimum of 75 euros.

Link to Table of Frequency Allocation (eQNAF), which is electronic format

<http://www.anacom.pt:8000/eqnaf/content/freqPortalSearch.do?search=currentSearch&change-Language=EN>

More information is at: [Station license exemptions](#)

Romania

In the Romanian frequency plan some frequency bands have been allocated to be used for wireless microphones. In all those bands the frequencies can be used without a license (license exemption).

Short Range Devices/Radio microphones

- 27.9 - 30.3 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 30.5 - 32.15 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 32.45 - 33.1 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 33.6 - 34.975 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 37.5 - 40.02 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 40.66 - 41.015 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 44.5 - 45.2 MHz, 10 mW ERP, 50 kHz – on a tuning range basis
- 863 - 865 MHz, 10 mW ERP
- 174 - 216 MHz, 50 mW ERP – in accordance with Annex 10 of ERC/REC 70-03; On a tuning range basis; Geographical restrictions for the sharing usage with the TV Broadcasting; It is needed to contact the National Spectrum Management Authority (ANCOM)
- 470 -862 MHz, 50 mW ERP - in accordance with Annex 10 of ERC/REC 70-03; On a tuning range basis; Geographical restrictions for the sharing usage with the TV Broadcasting; It is needed to contact the National Spectrum Management Authority
- 1785 - 1800 MHz, 20 mW EIRP (50 mW EIRP restricted to body worn equipment)

Wireless audio/multimedia applications

- 87.5 - 108 MHz, 50 nW ERP, 200 kHz – when audio signals are not present, apparatus must employ a transmission time out of facility. Pilot tones that ensure continuity of transmission are not permitted
- 863 - 865 MHz, 10 mW ERP
- 864.8 - 865 MHz, 10 mW ERP
- 1795 - 1800 MHz, 20 mW EIRP

Further information

Further information can be found here:

http://www.ancom.org.ro/en/romanian-regulation_2719

Slovenia

Generally approved

- 174 - 230 MHz, 50 mW ERP.
- 470 - 786 MHz, 50 mW ERP., In-ear monitor systems and Radio microphones
- 786 - 789 MHz, 12 mW ERP., In-ear monitor systems and Radio microphones
- 823 - 826 MHz, Radio microphones, 20mW/ body worn restricted to 100mW ERP, bandwidth max. 200 kHz
- 826 - 832 MHz, Radio microphones, 100 mW ERP, bandwidth max. 200 kHz
- 863 - 865 MHz, Radio microphones, 10 mW ERP.
- 1795 - 1805 MHz, Radio microphones, 20 mW e.i.r.p. body worn restricted to 50 mW e.i.r.p.

Also all other bands, stated in document have technical limitations written in ERC/REC 70-03, 2014/641/EU - Commission implementing decision of EU on PMSE and subclasses SC86 and SC48 for continuous transmissions.

All above radio equipment is allowed to operate on license - exempt and non-interference basis.

P to P analogue audio links are used in 1518 MHz - 1530 MHz frequency band and they should comply with EN 302 217 EU harmonized standard. For this audio analogue links, our agency is issuing licences (max bandwidth is 500 kHz).

Further information

One can get additional information regarding other usage of radio spectrum in Slovenia at: http://www.akos-rs.si/files/Zakonodaja/podzakonski_akti/NURF-3-3a-3b.NUPB.Akos.pdf

Spain

Licence required

470 - 786 MHz, >20 mW ERP, 200 kHz, see [IR201 and IR216](#)

License exempt frequencies

- 174 - 194.6 MHz, 50 mW ERP, see [IR98](#)
- 470 - 786 MHz, up to 20 mW ERP, 200 kHz, see [IR201 and IR216](#)
 - There should not be any interference to other emissions from the same band.
 - For use in interior public spaces, multimedia productions, artistic and sport events, of temporary character.
 - Compatible with TV service in the zone of use.
- 823 - 832 MHz, 20mW e.i.r.p. hand-held , 100mW e.i.r.p. body-worn, 200 kHz, see [IR201 and IR216](#)
- 863 - 865 MHz, 10mW ERP, see [IR98](#)
- 1785 - 1800 MHz, 20mW hand-held and 50 mW e.i.r.p. body-worn, see [IR98](#)

Further information

- [Cuadro Nacional de Atribución de Frecuencias \(CNAF\)](#)
- UN36: 470 - 786 MHz
- UN118: 863 - 865 MHz
- UN119: 1785 - 1800 MHz
- UN-95, UN-106 and UN-127: 174 - 194.6 MHz
- UN151: 823 - 832 MHz

South Korea

Licence required

- 470 - 698 MHz, 50 mW, ERP, for broadcast and fixed sites only

Fees per year

- One-time fee for 5 years: about 12 € (converted)
- In addition, per link and year: about 10 € (converted)

License exempt frequencies

- 925 - 937.5 MHz, 30 mW, ERP

Sweden

Licence required - Generally approved

- 174 - 240 MHz, 50mW ERP
- 470 - 790 MHz, 50mW, ERP
- 1785 - 1800 MHz, 20mW ERP, Handheld TX
- 1785 - 1800 MHz 50mW ERP, Body Worn TX

License exempt frequencies

- 41 - 43,6 MHz, 10mW,
- 823 - 826 MHz, 10mW ERP, Handheld TX
- 823 - 826 MHz, 50mW ERP, Body worn TX
- 826 - 832 MHz, 50mW ERP
- 863 - 865 MHz, 10mW ERP

Fees per year

- 230 SEK per transmitter
- Max 2300 SEK per system

Current activity

- The government announced, the band 694-790 MHz will not be available after January 1st, 2017.

Information

- Info: <https://www.pts.se/sv/Bransch/Radio/Radiotillstand/Anvandning-av-tradlosa-mikrofoner/>
- Application form: <https://www.pts.se/upload/Ovrigt/Radio/Radiotillstand/ansbl-horselhjalpmedel-tradlosa-mikrofoner.pdf>

Switzerland

No mandatory concession, no licensing fee

The table below indicates the authorized power and the technical regulations for each frequency band in which wireless microphones and In-Ear monitor systems can be operated (wireless microphones can be operated without a license in Switzerland):

Frequency band	Maximum transit power	Technical regulations	Remarks
31.4 - 39.6 MHz	100 mW ERP	RIR1009-01	Use only in the channels indicated in RIR 1009-01
174 - 223 MHz	50 mW ERP	RIR1009-02	
470 - 786 MHz	50 mW ERP	RIR1009-10	The use of the 694-790 MHz frequency band could be limited after 2018.
477 - 782 MHz	250 mW ERP	RIR1009-11	Use only in the channels indicated in RIR 1009-11. The use of the 694-790 MHz frequency band could be limited after 2018.
786 - 789 MHz	12 mW ERP	RIR1009-17	Use only possible until ca. end of 2018.
823 - 826 MHz	20 mW EIRP (ca. 12 mW ERP)	RIR1009-18	100 mW EIRP (ca. 60 mW ERP) for wireless microphones carried on the body
826 - 832 MHz	100 mW EIRP (ca. 60 mW)	RIR1009-13	
863 - 865 MHz	10 mW ERP	RIR1009-05	
1785 - 1800 MHz	20 mW EIRP (ca. 12 mW)	RIR1009-09	50 mW EIRP (ca. 30 mW ERP) for wireless microphones carried on the body
1800 - 1804.2 MHz	20 mW EIRP (ca. 12 mW)	RIR1009-09	New frequency band from 1.1.2015 50 mW EIRP (ca. 30 mW ERP) for wireless microphones carried on the body

Notes:

- The use of radio microphones in the bands 789 - 823 MHz and 832 - 862 MHz is forbidden.
- Some frequency bands for non-specific applications may also be used for the operation of radio microphones. Technical regulations RIR 1008 define the frequency bands and radio parameters for these non-specific applications.

Frequency coordination

PMSE users can register equipment on a voluntary basis to the database provided by a third party in order to coordinate frequency use at events: [PMSE Database](#)

Further Information

[Radio microphones](#) (E) / [Drahtlose Mikrofone](#) (D) / [Microphones sans fil](#) (F) / [Microfoni senza filo](#) (I)

United States

Licensed and Unlicensed Operation Permitted

It is permissible to operate wireless microphones and in ear monitoring systems on either a licensed or unlicensed basis in several bands. In the television broadcasting bands, a power limit of 50 mW applies for unlicensed operation; licensed microphones and in ear monitor transmitters may operate with up to 250 mW.

Wireless microphones may operate on locally unused television channels within the VHF and UHF television broadcasting bands between 54-72, 76-88, 174-216, and 470-698 MHz. Locally unused television channels may be determined by consulting one of the wireless microphone manufacturers' online frequency finders, or the web site of one of the FCC approved database operators. Currently, the first locally unused television channel above and below UHF channel 37 is reserved for use by wireless microphones, but these reserved channels are being eliminated by the FCC.

Licensed users may register channels they intend to use with one of the FCC approved database operators to receive interference protection from White Space Devices operating in the TV bands. In the future, unlicensed users will no longer be able to register with a database. The FCC made this decision because they expanded licensing eligibility.

In addition to the television bands, wireless microphones can also operate in one of the license-exempt (ISM) bands at 902 - 928 MHz, 2400 - 2483.5 MHz, or 5725 - 5850 MHz as well as the UPCS (DECT) band at 1920 - 1930 MHz. Microphones operating in these bands have different technical requirements than those for use in the television bands. These bands are shared with other devices, and can be congested at certain times and places.

The situation for wireless microphone operation in the U.S. is currently in flux due to the upcoming Incentive Auction of UHF (600 MHz) television band frequencies, which is planned to start on 29 March, 2016. Much less UHF spectrum is expected to be available after the upper part of the TV broadcast band is "repurposed". However, the FCC intends to permit wireless microphones to operate in portions of the new duplex gap and guard bands that will be created as a result of the auction. In addition, additional spectrum will become available in the 900 MHz, 1.5 GHz, and 7 GHz ranges for licensed users. Technical standards and operating requirements are currently being developed for operation in these bands. Further decisions on these matters are expected later in 2016.

United Kingdom

Preliminary remark

'Site' License required and issued where frequencies are not used for broadcasting in a given geographical location – access could be for a limited period or on a long-term basis.

- 470 - 606 MHz, max. 50 mW ERP
- 614 - 790 MHz, max. 50 mW ERP
- 823 – 832 MHz, max. 50 mW ERP
- 960 – 1164 MHz – details to be confirmed¹
- 1785 - 1800 MHz, max 50 mW ERP

'Shared' License required – annual renewal

- 606 - 614 MHz, max. 50 mW ERP

License exempt frequencies

- 863 - 865 MHz, max. 10 mW ERP
- 173.8 - 175 MHz max 50 mW ERP

¹ 960 – 1164 MHz is also referred to as the 'Aeronautical' band. The band was opened for sharing with audio PMSE in March 2016. The opening up of this band is currently unique to the UK. As the Aeronautical Band is assigned globally, it might be possible, ultimately, for the same band to be opened up in other countries around the world. However, this will depend on the decisions of National Administrations and National Air Safety Agencies, at the very least. Additionally, despite Ofcom UK's view that 'sharing is possible' in this band, it is still very unclear just how usable the band will ultimately prove to be. So despite Ofcom UK's statement on the band, much work still needs to be done to establish the quantity and quality of spectrum availability. Finally, as this is a completely 'new' band for audio PMSE, at time of writing, no audio PMSE equipment currently exists that can tune to part or all of the band.)

Running Activities

- 790 - 862 MHz paired with 2.6 GHz spectrum – licences now sold by Ofcom and 4G services are now being deployed. 823 – 832 MHz mandated for audio PMSE use by the European Commission. However, quality and usability of spectrum can vary hugely depending on the application. For example, events where there are large numbers of spectators with 4G phones can seriously degrade the quality of the band. BEIRG (British Entertainment Industry Radio Group) in constant contact with UK regulator Ofcom. Having regular high level meetings with Philip Marnick (Group Director of Spectrum) along with Helen Hearn and Vaughan John (Secretary of FM51).
- BEIRG/APWPT talking to Ofcom to try to identify alternative frequency bands outside of UHF bands IV/V for future PMSE use. One outcome of these long-term ongoing discussions has been the 'release' of 960-1164 MHz for audio PMSE. However, a jointly agreed PMSE industry/regulatory national measurement campaign has yet to be set up. Consequently, there is still deep industry concern about the actual real-world usability of the band, especially outdoors.
- Ofcom have now allowed UK mobile operator Everything Everywhere to deploy LTE 4G services (re-farm) into the band adjacent to 1785 - 1800 MHz. This has yet to happen.
- Ofcom UK "do not consider it appropriate to impose licence restrictions on the use of any portions of the 832 - 862 MHz block to protect SRD's" and "We believe the most appropriate mitigations are those available to the makers and users of SRD devices themselves". Therefore, no protection for users of wireless microphones in the 863 - 865 MHz band from interference generated by the new 4G services to be launched in the 800 MHz band.
- European Commission has mandated the duplex gaps 832 - 862 MHz and 1785 - 1805 MHz, but no protection from LTE services on offer. Not sufficient spectrum to meet the needs of professional PMSE services.
- Ofcom now see white space devices as a great vehicle to deliver new services to citizens and consumers, impact on PMSE could be catastrophic. The framework for their introduction into UK TV Whitespace was approved at the end of 2015. BEIRG continues to monitor the situation very closely.
- Ofcom have taken the responsibility for licensing PMSE operation back 'in-house'. For details of how to licence; <http://licensing.ofcom.org.uk/radiocommunication-licences/pmse/>

APWPT - What is our focus?

Secure in long-term production frequencies and the required spectrum quality.

APWPT - What happens now?

In many countries, a decision regarding the 2nd digital dividend has yet to be made.
-> We want to work actively alongside this development

In countries where a decision has been made, we are working for a quick implementation.

- We are working for planning security.
- In many countries and committees, we are supporting a discussion of the facts.

The entire industry must now adjust to a new situation and, if need be, invest in suitable tools and methods.

APWPT - Activities?

- Inform decision makers on political and regulatory level on PMSE application and spectrum needs.
- Inform PMSE user on the status and trends in the spectrum discussion.
- Secure PMSE protection against interferers in international organisations on standardisation, e.g. EFSC, ETSI, ECC/CEPT and ITU-R.

APWPT – How get further information?

There is more information in the Internet at www.apwpt.org.

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