

Regulation

ON COLLECTIVE FREQUENCIES FOR LICENCE-EXEMPT RADIO TRANSMITTERS AND ON THEIR USE

Issued in Helsinki on 4 November 2009

The Finnish Communications Regulatory Authority (FICORA) has, under Section 7, Subsection 2 of the Act on Radio Frequencies and Telecommunications Equipment of 16 November 2001 (1015/2001), prescribed as follows:

General provisions

Section 1

Scope of application

This Regulation applies to the following radio transmitters, which conform with the requirements set out in Sections 21 a or 45 of the Act on Radio Frequencies and Telecommunications Equipment, and which operate only on the collective frequencies assigned in the Annex:

- 1) cordless CT1 telephones taken into use on 31 December 2003 at the latest, cordless CT2 telephones taken into use on 31 December 2004 at the latest, and DECT equipment;
- 2) mobile terminals and other terminals for GSM, UMTS and digital broadband mobile networks ;
- 3) LA telephones (national Citizen Band equipment) which have been approved according to the regulations of 25 March 1981 by the General Directorate of Posts and Telecommunications and taken into use on 31 December 1992 at the latest;
- 4) PR 27 telephones;
- 4A) CB telephones;
- 5) non-specific short range devices except radio transmitters on the collective frequency 468.200 MHz and which have not been taken into use on 31 December 2007 at the latest;
- 6) telecommand equipment for use with scale model aircraft;
- 7) equipment for automatic vehicle identification for railways (AVI);

- 8) wide-band data transmission equipment (WAS/RLAN);
- 8A) Broadband fixed wireless access (BFWA);
- 9) low-power alarms for security and safety and social alarms;
- 10) equipment for detecting movement and equipment for alert;
- 11) radio frequency identification devices (RFID);
- 12) on-site paging systems;
- 13) wireless loudspeakers, equipment for in-ear monitoring, headphones, hearing aids, helmet radio telephones and radio microphones;
- 14) ultra low-power medical implants;
- 15) satellite telephones;
- 15A) terminal equipment for satellite systems;
- 16) Inmarsat B, C, D, M, M4¹ , BGAN, Inmarsat phone² , EMS MSSAT, EMS PRODAT, SpaceChecker S-SMS, Thuraya and other stations complying with Decision ECC/DEC/(02)11, except stations aboard vessels in international traffic;
- 17) Arcanet stations and OmniTRACS stations within the EUTELTRACS system;
- 18) terminal equipment for fixed wireless access networks which is connected to a central switching exchange and for which the Finnish Communications Regulatory Authority has granted a licence referred to in Section 7 of the Act on Radio Frequencies and Telecommunications Equipment;
- 19) terminals belonging to the VIRVE (Finland's Public Authority Network) emergency services network;
- 20) PMR446 telephones;
- 20A) digital PMR446 equipment;
- 21) road transport and traffic telematics;
- 22) HEST³ and LEST⁴ satellite terminals;
- 23) terminals of the GSM-R network of the Finnish State Railways;
- 24) mobile satellite earth stations on the collective frequency 14 - 14.5 GHz placed on board an aircraft (AES);
- 25) low-power FM transmitters;
- 26) Orbcomm satellite terminals; and
- 27) UWB equipment.

¹ Also called GAN, Global Area Network

² Also called Inmarsat Mini-M

³ High EIRP satellite terminals

⁴ Low EIRP satellite terminals

Section 2

Possession and use of radio transmitters

No licence, as referred to in Section 7 of the Act on Radio Frequencies and Telecommunications Equipment, is required for the possession and use of the radio transmitters mentioned in Section 1 above. The provisions set out below must be obeyed in the use of these radio transmitters.

Special provisions on use

Section 3

Cordless telephones, DECT, wide-band data transmission equipment (WAS/RLAN) and Broadband fixed wireless access (BFWA)

1. Only antennas with which it was attested that the equipment meets the essential requirements may be connected to the equipment. However, an antenna with a maximum gain of 12 dBi may be connected to DECT equipment.
2. An amplifier must not be connected between the equipment and the antenna or the base station and the antenna, if it is not attested that the equipment combination complies with requirements.

Section 4

Mobile terminals, other terminals for GSM, UMTS and digital broadband mobile networks , satellite telephones, Inmarsat B, C, D, M, M4¹ , BGAN and phone² , EMS-MSSAT, EMS-PRODAT, SpaceChecker S-SMS, Thuraya, other stations complying with Decision ECC/DEC/(02)11, Arcanet and OmniTRACS stations, HEST satellite terminals and terminals of the GSM-R network of the Finnish State Railways

1. These terminals must not be used on board airborne aircraft or in any other equipment used in aviation, with the exception of terminal equipment for GSM 1800 Mobile network, the use of which is allowed on board airborne aircraft equipped with a base station according to ECC Decision ECC/DEC/(06)07.
2. HEST satellite terminals must not be used within 500 metres of an airfield (from the protective fence).

Section 5

LA radio telephones, PR 27 telephones and CB telephones

1. These telephones must not be used on board airborne aircraft or in any other equipment used in aviation.
2. An amplifier must not be connected between the telephone and its antenna, if it is not attested that the equipment combination complies with requirements.
3. With these telephones a separate antenna with a maximum gain of 3 dBd may be used.
4. The country-specific settings of the CB telephone must not be changed to work on other frequencies and transmitter power than referred to in item 4A in the Annex.

Section 6

Satellite earth stations placed on board an aircraft

1. A satellite earth station on the collective frequency 14 - 14.5 GHz, placed on board on aircraft must not be used within 100 metres of an airfield runway or a control tower.

Section 7

Other radio transmitters to which this Regulation must apply

1. Radio transmitter must not be used on board airborne aircraft or in any other equipment used in aviation, unless allowed on any collective frequency defined in the Annex to this Regulation.
2. An amplifier must not be connected between a radio transmitter and its antenna, if it is not attested that the equipment combination complies with requirements.

Miscellaneous provisions

Section 8

Period of validity

This Regulation enters into force on 4 November 2009 and will remain in force until further notice.

This Regulation sets aside the Regulation bearing the same title (FICORA 15Y/2008 M) issued on 19 December 2008.

Section 9

Information and publication

This Regulation is included in the Series of Regulations issued by the Finnish Communications Regulatory Authority and it can be obtained from the FICORA Customer Service Office:

Visiting address	Itämerenkatu 3 A, HELSINKI
Postal address	PO Box 313 FI-00181 HELSINKI
Tel. national	09 6966 500
Tel. international	+358 9 6966 500
Fax national	09 6966 410
Fax international	+358 9 6966 410
Website	http://www.ficora.fi

The Decisions and Recommendations of the European Radiocommunications Committee (ERC) and the European Electronic Communications Committee (ECC), referred to in this Regulation, can be obtained at the website of the European Radiocommunications Office (ERO), address <http://www.ero.dk>.

Helsinki 4 November 2009

On behalf of Director-General
Director of Administration

Jorma Koivunmaa

Director

Kirsi Karlamaa

**COLLECTIVE FREQUENCIES ASSIGNED BY THE FINNISH
COMMUNICATIONS REGULATORY AUTHORITY FOR THE RADIO
TRANSMITTERS REFERRED TO IN SECTION 1**

The Radio Frequency Regulation and its Annex, The Frequency Allocation Table, (Regulation 4) must also be obeyed in the use of the radio transmitters mentioned below.

Effective radiated power

The effective radiated power of a radio transmitter is the sum of transmitter power and antenna gain subtracted by the attenuation of transmission line. The effective radiated power is defined in W ERP - units by comparison to dipole antenna (gain dBd) or W EIRP - units by comparison to isotropic antenna (gain dBi).

Freedom from interference on collective frequency

There are several users on a collective frequency. Therefore there may appear interference on collective frequencies caused by other licence-exempt or licensed radio transmitters.

**1 CORDLESS CT1 TELEPHONES TAKEN INTO USE ON 31
DECEMBER 2003 AT THE LATEST, CORDLESS CT2 TELEPHONES
TAKEN INTO USE ON 31 DECEMBER 2004 AT THE LATEST, AND
DECT EQUIPMENT**

CT1 phones, fixed part	959.0125 MHz + (0...39) x 25 kHz
CT1 phones, portable part	914.0125 MHz + (0...39) x 25 kHz
CT2 phones	864.150 MHz + (0...39) x 100 kHz
DECT equipment	1881.792 MHz + (0...9) x 1.728 MHz

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2 MOBILE TERMINALS AND OTHER TERMINALS FOR GSM, UMTS AND DIGITAL BROADBAND MOBILE NETWORKS

Digital broadband 450 mobile network	452.425 - 456.925 MHz
GSM	880.200 MHz + (0...173) x 200 kHz
	1710.200 MHz + (0...373) x 200 kHz
UMTS	882.400 MHz + (0...151) x 200 kHz
	1712.400 MHz + (0...351) x 200 kHz
	1902.400 MHz + (0...76) x 200 kHz
	1922.400 MHz + (0...276) x 200 kHz
Digital broadband 2000 mobile network	2010 - 2025 MHz
Digital broadband 2500 mobile network	2500 - 2620 MHz
Digital broadband 3500 mobile network	3410 - 3590 MHz

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3 LA TELEPHONES APPROVED ACCORDING TO THE REGULATIONS OF 25 MARCH 1981 BY THE GENERAL DIRECTORATE OF POSTS AND TELECOMMUNICATIONS AND TAKEN INTO USE ON 31 DECEMBER 1992 AT THE LATEST

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	26.965 MHz	9	27.065 MHz	16	27.155 MHz
2	26.975 "	10	27.075 "	17	27.165 "
3	26.985 "	11	27.085 "	18	27.175 "
4	27.005 "	11A	27.095 "	19	27.185 "
5	27.015 "	12	27.105 "	20	27.205 "
6	27.025 "	13	27.115 "	21	27.215 "
7	27.035 "	14	27.125 "	22	27.225 "
8	27.055 "	15	27.135 "		

Transmitter power ≤ 5 W and effective radiated power of equipment with integral antenna ≤ 1 W ERP.

Channel spacing 10 kHz.

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4 PR 27 TELEPHONES

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	26.965 MHz	14	27.125 MHz	27	27.275 MHz
2	26.975 "	15	27.135 "	28	27.285 "
3	26.985 "	16	27.155 "	29	27.295 "
4	27.005 "	17	27.165 "	30	27.305 "
5	27.015 "	18	27.175 "	31	27.315 "
6	27.025 "	19	27.185 "	32	27.325 "
7	27.035 "	20	27.205 "	33	27.335 "
8	27.055 "	21	27.215 "	34	27.345 "
9	27.065 "	22	27.225 "	35	27.355 "
10	27.075 "	23	27.255 "	36	27.365 "
11	27.085 "	24	27.235 "	37	27.375 "
12	27.105 "	25	27.245 "	38	27.385 "
13	27.115 "	26	27.265 "	39	27.395 "
				40	27.405 "

Transmitter power ≤ 4 W and effective radiated power of equipment with integral antenna ≤ 4 W ERP.

Only frequency modulation⁵.

Channel spacing 10 kHz.

⁵ FM, G3E

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4A CB TELEPHONES

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	26.965 MHz	14	27.125 MHz	27	27.275 MHz
2	26.975 "	15	27.135 "	28	27.285 "
3	26.985 "	16	27.155 "	29	27.295 "
4	27.005 "	17	27.165 "	30	27.305 "
5	27.015 "	18	27.175 "	31	27.315 "
6	27.025 "	19	27.185 "	32	27.325 "
7	27.035 "	20	27.205 "	33	27.335 "
8	27.055 "	21	27.215 "	34	27.345 "
9	27.065 "	22	27.225 "	35	27.355 "
10	27.075 "	23	27.255 "	36	27.365 "
11	27.085 "	24	27.235 "	37	27.375 "
12	27.105 "	25	27.245 "	38	27.385 "
13	27.115 "	26	27.265 "	39	27.395 "
				40	27.405 "

Transmitter power and effective radiated power (ERP) of equipment with integral antenna:

- 1) at frequency modulation⁵ ≤ 4 W,
- 2) at double-sideband modulation⁶ carrier power ≤ 1 W and
- 3) at single-sideband modulation⁷ modulation peak power ≤ 4 W.

Channel spacing 10 kHz.

⁶ AM DSB, A3E

⁷ SSB, J3E and R3E

5 NON-SPECIFIC SHORT RANGE DEVICES⁸

Voice applications and other short range audio applications and video applications are allowed only on frequencies above 2.4 GHz, unless stated otherwise.

The use of non-specific short range devices is allowed in an aircraft. In the frequency bands where channel spacing is defined, the centre frequency of the first channel is at a distance of channel spacing/2 from the lower frequency band edge.

26.825 MHz	Transmitter power of equipment using an external antenna \leq 500 mW and effective radiated power of equipment with integral antenna \leq 100 mW ERP. Channel spacing 10 kHz.
26.845 "	
26.865 "	
26.885 "	
26.905 "	
26.925 "	
26.935 "	
26.945 "	
26.995 "	
27.045 "	
27.095 "	
27.145 "	
27.195 "	
27.255 "	
26.957 – 27.283 MHz	Effective radiated power \leq 10 mW ERP. Voice and audio applications are allowed.
40.660 – 40.790 MHz	Transmitter power of equipment using an external antenna \leq 500 mW and effective radiated power of equipment with integral antenna \leq 100 mW ERP.

⁸ Non-specific short-range devices are, among others, equipment for control, alarm, telemetry, telecommand and data transmission, social alarms and video applications. ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annexes 1 and 8, and applicable parts of ERC Decisions ERC/DEC/(01)03, ERC/DEC/(01)10 and ERC/DEC/(01)12. Commission Decision 2009/381/EC.

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40.660 – 40.700 MHz	Effective radiated power \leq 10 mW ERP. Voice and audio applications are allowed.
138.200 – 138.450 MHz	Effective radiated power \leq 500 mW ERP. Duty cycle \leq 10%. ⁹
433.050 – 434.790 MHz	Effective radiated power \leq 25 mW ERP. Duty cycle \leq 10 % ^{9, 10}
433.050 – 434.790 MHz	Effective radiated power \leq 1 mW ERP. Power spectral density of transmission below - 13 dBm/10 kHz ERP for broadband transmitters. No restrictions on duty cycle.
434.040 – 434.790 MHz	Effective radiated power \leq 10 mW ERP. Channel spacing max. 25 kHz. No restrictions on duty cycle.
468.200 MHz	Transmitter power \leq 500 mW and effective radiated power \leq 500 mW ERP. Total bandwidth of emission max. 25 kHz. New equipment to be taken into use on 31 December 2007 at the latest.
863.000 - 870.000 MHz ¹¹	Effective radiated power \leq 25 mW ERP. Duty cycle \leq 0.1% ⁹ or an appropriate access protocol ¹² .

⁹ The duty cycle is defined as the ratio, expressed as a percentage, of the maximum transmitter "on" time, relative to a one hour period.

¹⁰ The duty cycle \leq 10 % entered into force for radio transmitters to be placed on the market from 1 April 2003, no restrictions on the duty cycle before that.

¹¹ Sub-bands 868.600-868.700 MHz, 869.200-869.250 MHz, 869.250-869.300 MHz, 869.300-869.400 MHz, 869.650-869.700 MHz are not included, because these sub-bands are intended for low-power alarms for security and safety and social alarms (see section 9 of the Annex).

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868.000 - 868.600 MHz	Effective radiated power \leq 25 mW ERP. Duty cycle \leq 1% ⁹ or an appropriate access protocol ¹² . Voice and audio applications are allowed.
868.700 - 869.200 MHz	Effective radiated power \leq 25 mW ERP. Duty cycle \leq 0.1% ⁹ or an appropriate access protocol. Voice and audio applications are allowed.
869.400 – 869.650 MHz	Effective radiated power \leq 500 mW ERP. Channel spacing 25 kHz. Duty cycle \leq 10% ⁹ or an appropriate access protocol ¹² . The frequency band may be used as 1 channel for high-speed data transmission. Voice and audio applications are allowed.
869.700 – 870.000 MHz	Effective radiated power \leq 5 mW ERP. Voice applications allowed with an appropriate access protocol ¹² together with an automatic carrier time-out timer.
2400.000 – 2483.500 MHz	Effective radiated power \leq 10 mW EIRP.
5725 – 5875 MHz	Effective radiated power \leq 25 mW EIRP.
24.00 – 24.25 GHz	Effective radiated power \leq 100 mW EIRP.
61.00 – 61.50 GHz	Effective radiated power \leq 100 mW EIRP.
122 – 123 GHz	Effective radiated power \leq 100 mW EIRP.
244 – 246 GHz	Effective radiated power \leq 100 mW EIRP.

¹² One appropriate access protocol is defined in ETSI Standard EN 300 220.

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Collective frequency bands with restrictions relating to individual pieces of equipment:

230.000 – 231.000 MHz	Collective frequency band for social alarms whose conformity with the essential requirements has been attested based on an application that has arrived before 1 August 1997, and which have been taken into use on 30 June 1998 at the latest, <i>and</i> for non-specific short range devices whose conformity with the essential requirements has been attested based on an application that has arrived before 31 December 1997, and which have been taken into use on 31 December 1998 at the latest. Effective radiated power \leq 500 mW ERP.
868.150 – 868.650 MHz	Effective radiated power \leq 500 mW ERP for non-specific short range devices whose conformity with the essential requirements has been attested based on an application that has arrived before 31 July 1998, and which have been taken into use on 31 December 1998 at the latest.

6 TELECOMMAND EQUIPMENT FOR USE WITH SCALE MODEL AIRCRAFT¹³

35.000 MHz	35.080 MHz	35.160 MHz
35.010 "	35.090 "	35.170 "
35.020 "	35.100 "	35.180 "
35.030 "	35.110 "	35.190 "
35.040 "	35.120 "	35.200 "

¹³ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 8, ERC Decision ERC/DEC/(01)11

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35.050 "	35.130 "	35.210 "
35.060 "	35.140 "	35.220 "
35.070 "	35.150 "	

Effective radiated power \leq 100 mW ERP.

Channel spacing 10 kHz.

7 EQUIPMENT FOR AUTOMATIC VEHICLE IDENTIFICATION FOR RAILWAYS (AVI)¹⁴

2447.0 MHz 2448.5 MHz 2450.0 MHz 2451.5 MHz 2453.0 MHz

Effective radiated power \leq 500 mW EIRP.

Channel spacing 1.5 MHz.

8 WIDE-BAND DATA TRANSMISSION EQUIPMENT (WAS/RLAN)¹⁵

2400.000 – 2483.500 MHz	Effective radiated power \leq 100 mW EIRP.
5150.000 – 5250.000 MHz	Effective radiated power \leq 200 mW EIRP, power spectral density of transmission has to be \leq 10 mW/1 MHz EIRP. Only indoor use permitted.
5250.000 – 5350.000 MHz	Effective radiated power \leq 200 mW EIRP, power spectral density of transmission has to be \leq 10 mW/1 MHz EIRP. Only indoor use permitted.
5470.000 – 5725.000 MHz	Effective radiated power \leq 1 W EIRP, power spectral density of transmission has to be \leq 50 mW/1 MHz EIRP.
57.0 - 66.0 GHz	Effective radiated power \leq 40 dBm EIRP, power spectral density of transmission has

¹⁴ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 4.

¹⁵ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 3 and ERC Decision ERC/DEC/(01)07 and ECC Decision ECC/DEC/(04)08. Commission Decisions 2005/513/EC, 2007/90/EC and 2009/381/EC.

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57.0 - 66.0 GHz	to be 13 dBm/MHz EIRP. Only indoor use permitted. Effective radiated power \leq 25 dBm EIRP, power spectral density of transmission has to be \leq -2 dBm/MHz EIRP. Fixed outdoor installations not permitted.
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RLAN equipment operating in the bands 5250 - 5350 MHz and 5470 - 5725 MHz must employ transmit power control which provides a mitigation factor of at least 3 dB on the maximum permitted output power of the systems. If transmit power control is not in use, the maximum permitted mean EIRP and the corresponding mean EIRP density limits must be reduced by 3 dB.

RLAN equipment operating in the bands 5250 - 5350 MHz and 5470 - 5725 MHz must use mitigation techniques complying with the detection, operational and response requirements described in Standard EN 301 893.

8A BROADBAND FIXED WIRELESS ACCESS (BFWA)¹⁶

5725.000 - 5795.000 MHz	Effective radiated power \leq 4 W EIRP, power spectral density of transmission has to be \leq 23 dBm/1 MHz EIRP.
5815.000 - 5850.000 MHz	Effective radiated power \leq 4 W EIRP, power spectral density of transmission has to be \leq 23 dBm/1 MHz EIRP.

Equipment operating in the bands 5725 - 5795 MHz and 5815 - 5850 MHz must use mitigation techniques complying with the detection, operational and response requirements described in Standard EN 302 502.

¹⁶ ECC Recommendation ECC/REC/(06)04

9 LOW-POWER ALARMS FOR SECURITY AND SAFETY AND SOCIAL ALARMS¹⁷

In the frequency bands where channel spacing is defined, the centre frequency of the first channel is at a distance of channel spacing/2 from the lower frequency band edge.

142.250 MHz	Effective radiated power \leq 1 mW ERP. Total bandwidth of emission \leq 25 kHz.
169.4000 - 169.4750 MHz	Meter reading systems. Effective radiated power \leq 500 mW ERP. Channel spacing \leq 50 kHz. Duty cycle \leq 10 %. ⁹
169.4000 - 169.4750 MHz	Asset tracking and tracing systems. Effective radiated power \leq 500 mW ERP. Channel spacing \leq 50 kHz. Duty cycle \leq 1 %. ⁹
169.4750 - 169.4875 MHz	Only social alarms. Effective radiated power \leq 10 mW ERP. Channel spacing 12.5 kHz. Duty cycle \leq 0.1%. ⁹
169.5875 - 169.6000 MHz	Only social alarms. Effective radiated power \leq 10 mW ERP. Channel spacing 12.5 kHz. Duty cycle \leq 0.1%. ⁹
868.600 – 868.700 MHz	Effective radiated power \leq 10 mW ERP. Channel spacing 25 kHz. Duty cycle \leq 1%. ⁹ . The frequency band may be used

¹⁷ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annexes 2 and 7. ECC Decision ECC/DEC/(05)02. Commission Decisions 2005/928/EC, 2008/673/EC and 2009/381/EC.

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as 1 channel for high-speed data transmission.

869.250 – 869.300 MHz	Effective radiated power \leq 10 mW ERP. Channel spacing 25 kHz. Duty cycle \leq 0.1%. ⁹
869.300 – 869.400 MHz	Effective radiated power \leq 10 mW ERP. Channel spacing 25 kHz. Duty cycle \leq 1.0%. ⁹
869.650 – 869.700 MHz	Effective radiated power \leq 25 mW ERP. Channel spacing 25 kHz . Duty cycle \leq 10%. ⁹
869.200 – 869.250 MHz	Only for social alarms. Effective radiated power \leq 10 mW ERP. Channel spacing 25 kHz. Duty cycle \leq 0.1%. ⁹

10 EQUIPMENT FOR DETECTING MOVEMENT AND EQUIPMENT FOR ALERT¹⁸

2400.000 – 2483.500 MHz	Effective radiated power \leq 25 mW EIRP.
9500 – 9975 MHz	Effective radiated power \leq 25 mW EIRP. Restrictions relating to individual pieces of equipment: Effective radiated power \leq 500 mW EIRP for equipment for detecting movement and equipment for alert whose conformity with requirements has been attested based on an application that has arrived before 31 December 1998 and which have been taken into use on 31 December 1999 at the latest.

¹⁸ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 6, ERC Decision ERC/DEC/(01)08. Commission Decision 2009/381/EC.

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10.45 – 10.50 GHz	Effective radiated power \leq 500 mW EIRP.
13.40 – 14.00 GHz	Effective radiated power \leq 25 mW EIRP.
17.1 – 17.3 GHz	Ground based synthetic aperture radars (GBSAR). Effective radiated power \leq 26 dBm EIRP. Appropriate access protocol ¹⁹ .
24.00 – 24.25 GHz	Effective radiated power \leq 100 mW EIRP. Restrictions relating to individual pieces of equipment: Effective radiated power \leq 500 mW EIRP for equipment for detecting movement and equipment for alert whose conformity with requirements has been attested based on an application that has arrived before 31 December 1998 and which have been taken into use on 31 December 1999 at the latest.
4.5 - 7.0 GHz	Tank level probing radars. Spectral power density outside the tank \leq -41.3 dBm/MHz EIRP. Effective radiated power inside the tank \leq +24 dBm EIRP.
8.5 - 10.6 GHz	Tank level probing radars. Spectral power density outside the tank \leq -41.3 dBm/MHz EIRP. Effective radiated power inside the tank \leq +30 dBm EIRP.
24.05 - 27.00 GHz 57 - 64 GHz 75 - 85 GHz	Tank level probing radars. Spectral power density outside the tank \leq -41.3 dBm/MHz EIRP. Effective radiated power inside the tank \leq +43 dBm EIRP.

¹⁹ One appropriate access protocol is defined in ETSI Standard EN 300 440.

Collective frequency bands with restrictions relating to individual pieces of equipment:

10.50 – 10.55 GHz	Collective frequency band for equipment for detecting movement and equipment for alert whose conformity with the essential requirements has been attested based on an application that has arrived before 31 December 1997, and which have been taken into use on 31 December 1998 at the latest. Effective radiated power \leq 500 mW EIRP.
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11 RADIO FREQUENCY IDENTIFICATION DEVICES (RFID)²⁰

865.000 – 865.600 MHz	Effective radiated power \leq 100 mW ERP. Channel spacing 200 kHz. ²¹
865.600 – 867.600 MHz	Effective radiated power \leq 2 W ERP. Channel spacing 200 kHz. ²¹
867.600 – 868.000 MHz	Effective radiated power \leq 500 mW ERP. Channel spacing 200 kHz. ²¹
865.000 - 868.000 MHz	Frequency bands of the interrogator: 865,600 - 865,800 MHz 866,200 - 866,400 MHz 866,800 - 867,000 MHz 867,400 - 867,600 MHz Effective radiated power of the interrogator \leq 2 W ERP.
2446.0 – 2454.0 MHz	Effective radiated power \leq 500 mW EIRP. Effective radiated power \leq 4 W EIRP only indoors and duty cycle \leq 15 %. ²²

²⁰ ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 11. Commission Decisions 2006/804/EC and 2009/381/EC.

²¹ Access protocol and channelling are based on standard EN 302 208-2 V1.1.1.

²² The duty cycle must be \leq 15 % during any 200 ms period (i.e. 30 ms on, 170 ms off)

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12 ON-SITE PAGING SYSTEMS

27.720 MHz	27.820 MHz	27.920 MHz
27.740 "	27.840 "	27.940 "
27.760 "	27.860 "	30.300 "
27.780 "	27.880 "	40.680 "
27.800 "	27.900 "	

Transmitter power ≤ 5 W and effective radiated power of equipment with integral antenna ≤ 5 W ERP.

Channel spacing 10 kHz.

Collective frequencies for on-site paging systems up to and including 31 December 2004:

26.965 MHz	Transmitter power ≤ 5 W and effective radiated power of equipment with integral antenna ≤ 5 W ERP. Channel spacing 10 kHz.
27.075 "	
27.255 "	
27.400 "	

Collective frequencies with restrictions relating to individual pieces of equipment:

27.450 MHz	Collective frequencies only for on-site paging systems that have been taken into use on 1 January 1989 at the latest.
27.490 MHz	
	Transmitter power ≤ 5 W and effective radiated power of equipment with integral antenna ≤ 5 W ERP.
	Channel spacing 10 kHz.

13 WIRELESS LOUDSPEAKERS, EQUIPMENT FOR IN-EAR MONITORING, HEADPHONES, HEARING AIDS, HELMET RADIO TELEPHONES AND RADIO MICROPHONES²³

In frequency bands where the channel spacing is defined, the centre frequency of the first channel must be at a distance of channel spacing/2 from the lower edge of the frequency band.

31.100 MHz	33.500 MHz	Effective radiated power \leq 10 mW ERP.
32.100 "	36.700 "	Total bandwidth of emission max. 200
32.900 "	37.100 "	kHz.
42.400 –	43.600 MHz	
169.4000 - 169.4750 MHz		Channel spacing \leq 50 kHz. Effective radiated power \leq 10 mW ERP. Hearing aids. Shared use with short range devices.
169.4875 - 169.5875 MHz		Channel spacing \leq 50 kHz. Effective radiated power \leq 10 mW ERP. Only hearing aids.
863.000 - 865.000 MHz		Effective radiated power \leq 10 mW ERP.
864.800 - 865.000 MHz		Effective radiated power \leq 10 mW ERP. Channel spacing max. 50 kHz. Narrow band analogue voice devices.

²³ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annexes 10 and 13, ECC Decision ECC/DEC/(05)02. Commission Decisions 2005/928/EC, 2008/673/EC and 2009/381/EC.

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14 ULTRA LOW-POWER MEDICAL IMPLANTS²⁴

30.0 – 37.5 MHz	Applications for blood pressure measuring. Effective radiated power \leq 1 mW ERP. Duty cycle \leq 10 %.
401.000 - 402.000 MHz	Effective radiated power \leq 25 μ W ERP and an appropriate access protocol or duty cycle \leq 0.1 % and radiated power \leq 250 nW ERP. Channel spacing \leq 25 kHz. The centre frequency of the first channel must be at a distance of channel spacing/2 from the lower frequency band edge.
402.000 – 405.000 MHz	Effective radiated power \leq 25 μ W ERP. Channel spacing \leq 25 kHz. The centre frequency of the first channel must be at a distance of channel spacing/2 from the lower frequency band edge.
405.000 - 406.000 MHz	Effective radiated power \leq 25 μ W ERP and an appropriate access protocol or duty cycle \leq 0.1 % and radiated power \leq 250 nW ERP. Channel spacing \leq 25 kHz. The centre frequency of the first channel must be at a distance of channel spacing/2 from the lower frequency band edge.

15 SATELLITE TELEPHONES²⁵

1610.0 – 1621.35 MHz	Globalstar
1621.35 – 1626.5 MHz	Iridium

²⁴ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, Annex 12, ERC Decision ERC/DEC/(01)17. Commission Decision 2009/381/EC.

²⁵ ERC Decisions ERC/REC/(97)03 and ERC/DEC/(97)05

15A TERMINAL EQUIPMENT FOR SATELLITE SYSTEMS²⁶

1980 - 2010 MHz

16 INMARSAT-B, C, D, M, M4¹, BGAN, INMARSAT-PHONE². EMS-MSSAT-. EMS-PRODAT-. SPACECHECKER S-SMS-, THURAYA-²⁷ AND OTHER STATIONS COMPLYING WITH DECISION ECC/DEC/(02)11

1626.5 – 1645.5 MHz

1646.5 – 1660.5 MHz

17 ARCANET STATIONS AND OMNITRACS STATIONS WITHIN THE EUTELTRACS SYSTEM²⁸

14.00 – 14.25 GHz

18 TERMINAL EQUIPMENT FOR FIXED WIRELESS ACCESS NETWORKS

3410 – 3590 MHz

10.150 – 10.240 GHz / 10.500 – 10.590 GHz

24.549 – 25.333 GHz / 25.557 – 26.341 GHz

19 TERMINALS BELONGING TO THE VIRVE (FINLAND'S PUBLIC AUTHORITY NETWORK) EMERGENCY SERVICES NETWORK

380.0125 MHz + (0...199) x 25 kHz (380.0125 – 384.9875 MHz)

Direct Mode Operation (DMO):

380.0125 MHz + (0...239) x 25 kHz (380.0125 – 385.9875 MHz)

390.0125 MHz + (0...239) x 25 kHz (390.0125 – 395.9875 MHz)

²⁶ ERC Decisions ERC/DEC/(97)03 and ERC/DE/(97)05 and ECC/DEC/(06)09. Commission Decisions 2007/98/EC and 2009/449/EC and Decision No. 626/2008/EC of the European Parliament and of the Council.

²⁷ ERC Decisions ERC/DEC/(98)12 (Inmarsat-D), ERC/DEC/(98)13 (Inmarsat-C), ERC/DEC/(98)14 (Inmarsat-M), ERC/DEC/(98)18 (EMS-Prodats), ERC/DEC/(98)19 (EMS-MSSAT), ERC/DEC/(98)29 (Inmarsat Mini-M), ERC/DEC/(99)18 (Inmarsat-B), ERC/DEC/(99)20 (Inmarsat-M4), ERC/DEC/(01)22 (Space-Checker), ERC/DEC/(01)25 (Thuraya)

²⁸ ERC Decisions ERC/DEC/(98)17 (ARCANET) and ERC/DEC/(98)15 (Euteltracs-Omnitracs)

Use allowed in an aircraft and other equipment used in aviation.

20 PMR446 TELEPHONES²⁹

446.00625 MHz + (0...7) x 12.5 kHz

Effective radiated power ≤ 500 mW ERP.

Total bandwidth of emission 12.5 kHz.

20A DIGITAL PMR446 EQUIPMENT³⁰

446.10625 MHz + (0...7) x 12.5 kHz

Effective radiated power ≤ 500 mW ERP. Channel spacing 12.5 kHz.

446.103125 MHz + (0...15) x 6.25 kHz

Effective radiated power ≤ 500 mW ERP. Channel spacing 6.25 kHz.

21 ROAD TRANSPORT AND TRAFFIC TELEMATICS³¹

5795 – 5805 MHz

Road toll systems. Effective radiated power ≤ 8 EIRP.

21.650 – 26.650 GHz

Automotive Short Range Radars (SRR). The spectral power density of UWB transmission ≤ -41.3 dBm/MHz EIRP, except for frequencies below 22 GHz where the spectral power density is ≤ -61.3 dBm/MHz EIRP, and spectral density measured as peak value 0 dBm/50 MHz EIRP. 24.05 – 24.25 GHz narrowband component, peak power 20 dBm EIRP. Duty cycle ≤ 10 % for peak emission higher than

²⁹ ERC Decisions CEPT/ERC/DEC/(98)/25 and CEPT/ERC/DEC/(98)/26

³⁰ ECC Decision ECC/DEC/(05)/12

³¹ Short range devices, ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 5

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– 10 dBm EIRP. New radars must be taken into use on 30.6.2013 at the latest.³²

76.00 – 77.00 GHz

Effective radiated power:

Peak power \leq 316 W EIRP.

Average power \leq 100 W EIRP.

Average power for pulsed radars \leq 225 mW EIRP.

77 – 81 GHz

Automotive Short Range Radars (SRR). The spectral power density \leq -3 dBm/MHz EIRP and peak power \leq 55 dBm EIRP. The spectral power density \leq -9 dBm/MHz EIRP outside a vehicle.³³

22 HEST and LEST SATELLITE TERMINALS³⁴

HEST satellite terminals

14.0 – 14.25 GHz

29.5 – 30.00 GHz

Effective radiated power \leq 50 dBW EIRP.

LEST satellite terminals

14.0 - 14.25 GHz

29.5 - 30.00 GHz

Effective radiated power \leq 34 dBW EIRP.

23 TERMINALS OF THE GSM-R NETWORK OF THE FINNISH STATE RAILWAYS

876.2000 MHz + (0...19) x 200 kHz

Direct Mode Operation (DMO):

876.0125 MHz + (0...4) x 12.5 kHz

³² ECC Decision and Commission Decision 2005/50/EC also include further terms for taking equipment into use.

³³ Commission decision 2004/545/EC and ECC Decision ECC/DEC/(04)03

³⁴ ECC Decisions ECC/DEC/(06)03 (HEST) and ECC/DEC/(06)02 (LEST)

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- 24 MOBILE SATELLITE EARTH STATIONS ON THE COLLECTIVE FREQUENCY 14 - 14.5 GHZ PLACED ON BOARD AN AIRCRAFT (AES)³⁵**
- 14 - 14.5 GHz Effective radiated power \leq 50 dBW EIRP.
- 25 LOW-POWER FM TRANSMITTERS³⁶**
- 87.5 - 108 MHz Effective radiated power \leq 50 nW ERP.
- 26 ORBCOMM SATELLITE TERMINALS³⁷**
- 148.00 - 150.05 MHz
- 27 UWB DEVICES³⁸**
- 3.1 - 4.8 GHz UWB devices using low duty cycle (LDC). Power spectral density \leq -41.3 dBm/MHz EIRP. Fixed installed equipment for indoor use and for use in automotive and railway vehicles only.
- 3.1 - 4.8 GHz UWB equipment using DAA mitigation techniques. Power spectral density of transmission \leq -41.3 dBm/MHz EIRP. Fixed installed equipment for indoor use and for use in automotive and railway vehicles only. Fixed installed equipment in automotive and railway vehicles must employ transmit power control (TPC) or have a power spectral density of \leq -53.3 dBm/MHz EIRP.

³⁵ ECC Decision ECC/DEC/(05)11

³⁶ ERC Recommendation CEPT/ERC/REC 70-03, applicable parts of Annex 13. European Commission Decision 2009/381/EC.

³⁷ ERC Decisions ERC/DEC/(99)05 and ERC/DEC/(99)06

³⁸ ECC Decisions ECC/DEC/(06)04, ECC/DEC/(06)12 and ECC/DEC/(07)01 and European Commission Decisions 2007/131/EC and 2009/343/EC. Placing on the market of UWB equipment requires the use of a Notified Body until the relevant harmonized standard has been published. The power spectral density outside the frequency bands mentioned are defined in the Commission Decisions 2007/131/EC and 2009/343/EC.

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4.2 - 4.8 GHz	Power spectral density \leq -41.3 dBm/MHz EIRP. New devices must be taken into use on 31 December 2010 at the latest. For devices without mitigation technique, to be taken into use after this date, the power spectral density is \leq -70 dBm/MHz EIRP. Fixed installed equipment for indoor use for use in automotive and railway vehicles only. Fixed installed equipment in automotive and railway vehicles must employ transmit power control (TPC) or have a power spectral density of \leq -53.3 dBm/MHz EIRP.
6.0 - 8.5 GHz	Power spectral density \leq -41.3 dBm/MHz EIRP. Fixed installed equipment for indoor use and for use in automotive and railway vehicles only. Fixed installed equipment in automotive and railway vehicles must employ transmit power control (TPC) or have a power spectral density of \leq -53.3 dBm/MHz EIRP.
8.5 - 9.0 GHz	UWB equipment using DAA mitigation techniques. Power spectral density of transmission \leq -41.3 dBm/MHz EIRP. Fixed installed equipment for indoor use and for use in automotive and railway vehicles only. Fixed installed equipment in automotive and railway vehicles must employ transmit power control (TPC) or have a power spectral density of \leq -53.3 dBm/MHz EIRP.

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2.2 - 8.0 GHz

Building material analyses (BMA) devices using UWB technology. Power spectral densities (EIRP) in different sub-bands:

- 50 dBm/MHz in band 2.2 - 2.5 GHz
- 65 dBm/MHz in band 2.5 - 2.69 GHz³⁹
- 55 dBm/MHz in band 2.69 - 2.7 GHz⁴⁰
- 82 dBm/MHz in band 2.7 - 3.4 GHz³⁹
- 50 dBm/MHz in band 3.4 - 4.8 GHz
- 55 dBm/MHz in band 4.8 - 5.0 GHz⁴⁰
- 50 dBm/MHz in band 5.0 - 8.0 GHz

³⁹ If an access protocol is used, -50 dBm/MHz is allowed in the frequency bands 2.5-2.69 GHz and 2.7-3.4 GHz. An appropriate access protocol is defined in standard EN 302 435.

⁴⁰ Total radiated power in the frequency bands 2.69-2.7 GHz and 4.8-5.0 GHz must be below -65 dBm/MHz EIRP. Total radiated power is defined in standard EN 302 435.