

24.4.2020

Explanatory notes to Regulation 4 Z/2020 M

Radio Frequency Regulation

EXPLANATORY NOTES TO REGULATION 4 Z/2020 M

Contents

PART A Key changes	3
1 Changes.....	3
1.1 Radio Frequency Regulation.....	3
1.2 Changes to Regulation 4 Y/2019 M.....	3
2 Amendment history	3
PART B Section-specific explanations and guidelines for application	4
1 Objective of the Regulation	4
2 Scope of application.....	4
3 Use of radio frequencies	4
4 Entry into force.....	5
5 Information and publication	5
6 Annex Frequency Allocation Table	5
PART C Other matters related to the subject matter of the Regulation	6
1 Concepts and references.....	6
2 Abbreviations	8
PART D Legislation.....	10
1 Legal basis of the Regulation.....	10

PART A Key changes

1 Changes

1.1 Radio Frequency Regulation

The Radio Frequency Regulation lays down, under section 96 of the Act on Electronic Communications Services (917/2014), provisions on the use of radio frequencies for different purposes. In addition, the Regulation lays down provisions on the most important radio-technical characteristics required of radio equipment using the frequency bands. Radio frequencies, frequency bands and sub-bands are allocated for different purposes of use in the Frequency Allocation Table which is annexed to the Regulation.

The Regulation observes international decisions, regulations and recommendations on radio frequency use. The Regulation also takes into consideration the Decree on Radio Frequency Usage and the Frequency Plan, issued by the Government by virtue of section 95(1) of the Act on Electronic Communications Services.

1.2 Changes to Regulation 4 Z/2020 M

The Frequency Allocation Table annexed to the Radio Frequency Regulation contains changes in several frequency bands. The changes are based on European frequency decisions and recommendations and on planned changes in purposes of use. For further details on the changes, see Annex 1 at the end of this document.

2 Amendment history

The first version of the Regulation was issued by FICORA and entered into force in 2002. It was issued by virtue of the Radio Act (1015/2001) which entered into force at the beginning of that year. The Regulation that now enters into force is issued by the Finnish Transport and Communications Agency Traficom by virtue of the Act on Electronic Communications Services (917/2014) and it is the 27th version of the Regulation.

PART B Section-specific explanations and guidelines for application

1 Objective of the Regulation

The Radio Frequency Regulation has four main objectives that need to be safeguarded:

- sufficiently interference-free use of radio frequencies
- efficient use of radio frequencies
- appropriate use of radio frequencies
- fair availability of radio frequencies.

2 Scope of application

The Regulation is applied to the radio frequency spectrum 8.3 kHz–400 GHz.

The Regulation is applied to radio equipment operating on the frequency bands allocated to different purposes of use. They must meet the requirements of this Regulation related to the purpose of use of the frequency band for transmitting and receiving frequencies, channel spacing, bandwidth of transmission, duplex separation, transmitted powers and other corresponding radio characteristics (radio interfaces).

The Regulation is also applied to electrical appliances other than radio equipment that are designed to generate radio waves and are used for scientific, industrial, medical or other corresponding purposes. This equipment is referred to as ISM equipment.

3 Use of radio frequencies

The purpose of the section is to refer to the Frequency Allocation Table annexed to the Radio Frequency Regulation. The actual substantive provisions on the allocation of radio frequencies, frequency bands and sub-bands for different purposes of use are in the Frequency Allocation Table. The radio interface requirements and the frequency bands designated for ISM equipment, including the terms of use, are also included in the Frequency Allocation Table.

The second paragraph of the section contains a clarification according to which the references to harmonised standards issued under the repealed Radio and Telecommunication Terminal Equipment Directive also refer to the harmonised standards issued under the Radio Equipment Directive (2014/53/EU) which apply to the radio transmitters in question. In the Frequency Allocation Table, references to the harmonised standards issued under the Radio Equipment Directive are for informative purposes. If radio equipment complies with the harmonised standards published in the Official Journal of the European Union, it is considered to meet the essential requirements covered by the standards.

4 Entry into force

The Regulation enters into force on 24 April 2020. The Regulation will remain in force until further notice but usually it is updated at least annually. The Regulation repeals the previous version of the Regulation bearing the same title.

However, the provisions on the use of the sub-band 2300 - 2320 MHz in the Frequency Allocation Table of the Regulation enter into force on 15 June 2020.

5 Information and publication

The Regulation is included in the Series of Regulations issued by the Finnish Transport and Communications Agency and it is available on Traficom's website at <https://www.traficom.fi>. The Regulation can also be obtained from Traficom's registry.

6 Annex Frequency Allocation Table

The Frequency Allocation Table concerns the radio frequency spectrum 8.3 kHz–400 GHz. The Frequency Allocation Table contains provisions on the allocation of different radio frequencies, frequency bands and sub-bands for different purposes of use. The table also contains the requirements for transmitting and receiving frequencies and the used channel spacing. The Table also contains provisions on radio transmitters' bandwidth of transmission, duplex separation, transmitted powers and other corresponding radio characteristics.

The Frequency Allocation Table annexed to the Regulation applies also to electrical equipment that are used for scientific, industrial, medical or other similar purposes and designated to generate radio frequency energy (ISM equipment).

The Frequency Allocation Table also takes into consideration the Radio Regulations of the International Telecommunication Union (ITU) which have been implemented in Finland by Decree 12/2000.

National frequency decisions and the European Commission's decisions on the use of the radio spectrum are also implemented by virtue of the Radio Frequency Regulation and the Frequency Allocation Table. In addition, the European spectrum use plan (ERC Report 25) has been taken into account in the Frequency Allocation Table.

Regulated interfaces are also included in the Frequency Allocation Table of the Radio Frequency Regulation. For radio transmitters, the interfaces are conditions on licence granting and exemption from licensing.

The EU Commission has been notified of the Regulation in accordance with Directive 98/34/EC. The European Communications Office ECO maintains the Frequency Information System (EFIS) which contains information on spectrum use in European countries.

PART C Other matters related to the subject matter of the Regulation

1 Concepts and references

Explanations of concepts and references used in the Radio Frequency Regulation and the Frequency Allocation Table are listed below:

Frequency band, Services in Finland Frequency band and services in use or intended to be used in this frequency band in Finland. The frequency bands and services are based on the Radio Regulations (RR) and the European Frequency Allocation Table (ERC Report 25).

Sub-band, its width and usage Sub-bands, their width and intended use. In mobile and fixed services, the centre frequencies of the extreme channels are the lower and upper limits of a sub-band. In other radio services, the sub-band limits form the limits for the given usage.

Mode of traffic Mode of traffic of a sub-band is either simplex (use of one frequency) or duplex (use of two frequencies).

Class of station Class of station is based on the Radio Regulations (RR). In land mobile service, for instance, the class of station of a base station is FB.

Direction Defines the direction of transmission, i.e. whether the frequency is used for transmitting (TX) or receiving (RX) or both (TXRX).

Channel width States the frequency separation between the centre frequencies of two adjacent channels.

Bandwidth States the bandwidth allowed for a transmission using the channel (i.e. necessary bandwidth).

Class of emission Determines, for instance, type of modulation and type of information to be transmitted.

Duplex separation and paired band The corresponding frequency band (paired band) is situated at the distance given by the duplex separation either on higher frequencies (+) or on lower frequencies (-) than the band given in the table.

Standard type Gives information on the most essential properties of radio link equipment (e.g. DRS 34/18000= capacity 34 Mbit/s, frequency range 18000 MHz or FM 4/419 = modulation FM, capacity 4 speech channels and frequency range 419 MHz).

Radiated power The sum of the transmitter power and the antenna gain subtracted by the attenuation of the transmission lines is the radio transmitter's radiated power. The maximum radiated power is stated as W ERP units when it is compared to a dipole antenna (gain dBd) or as W EIRP units when it is compared to an isotropic antenna (gain dBi).

Radio Regulations, RR The mandatory (binding) Annex to the Constitution and Convention of the International Telecommunications Union (ITU Radio Regulations).

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

Output power of radio link If no maximum output power is mentioned for the transmitter of a radio link, the value given in the standard reference is applicable. The standard reference concerning the radiation pattern envelope of a radio link antenna defines the required maximum side lobe attenuation, which can be relaxed depending on the usage environment of the system in question.

References to standards The standard references are for informative purposes only and they do not set compulsory requirements for placing of equipment on the market. When there are references to standards or other comparable specifications in the Radio Frequency Plan, this implies that they have been used as assumptions for equipment performance in an interference analysis concerning a new frequency assignment or as a technical basis for compatibility studies between different radio communications services or as a technical basis for coordination agreements with other countries. Standard references may in some cases also be used to define a channel access procedure, the use of which is a condition for the use of certain frequency bands.

The standard references do not specify the version of the standard. Reference means the latest version published in the Official Journal of the European Union. A reference to a harmonised standard issued under the Radio and Telecommunication Terminal Equipment Directive (1999/5/EY) is also a reference to the standards issued under the Radio Equipment Directive (2014/53/EU) which repealed the Radio and Telecommunication Terminal Equipment Directive. These standards apply to the radio transmitters in question.

2 Abbreviations

The abbreviations used in the Radio Frequency Regulation mean the following:

AVI	Automatic Vehicle Identification
BGAN	Broadband Global Area Network
BWA	Broadband Wireless Access
CENELEC	European Committee for Electrotechnical Standardization
CEPT	The European Conference of Postal and Telecommunications Administration
CS	Central Station
DAB	Digital Audio Broadcasting
DEC	Decision
DECT	Digital European Cordless Telecommunication system
DGPS	Differential GPS
DME	Distance Measuring Equipment
DRS	Digital Radio System
DSC	Digital Selective Calling
ECA	European Common Allocation
ECC	Electronic Communications Committee
E-GSM	Extended Global System for Mobile Telecommunication
EIRP	Equivalent Isotropically Radiated Power
EN xxx	European Norm xxx
ENG/OB	Electronic News Gathering/Outside Broadcasting
EPIRB	Emergency Position-Indicating Radio Beacon
ERC	European Radiocommunications Committee
ETSI	European Telecommunications Standards Institute
EC	European Community
FM	Frequency Modulation
FWA	Fixed Wireless Access
FWS	Fixed Wireless Systems
GBAS	Ground Based Augmentation System
GMDSS	Global Maritime Distress and safety System
GSM	Global System for Mobile Telecommunication
HEST	High EIRP Satellite Terminals
HDFSS	High Density Fixed Satellite Service
IALA	International Association of Lighthouse Authorities
ICAO	International Civil Aviation Organisation
ILS	Instrumental Landing System
IMT-2000	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical applications
ITU-R	International Telecommunication Union, Radiocommunication sector
LA	AM/DSB CB
LEST	Low EIRP Satellite Terminals
LR	Radiolocation Land Station
MLS	Microwave Landing System
MVDS	Multipoint Video Distribution System
MWS	Multimedia Wireless Systems
NMT	Nordic Mobile Telephone
OB	Outside Broadcasting

OR	Off-Route
PMP	Point-to-Multipoint
PMR	Professional /Private Mobile Radio
R	Route
REC	Recommendation
RES	Resolution
RHA68	Tiedote "Harrastuskäyttöön varatut kanavat taajuusalueella 68 – 71 MHz" Announcement "Channels in the 68 - 71 MHz frequency band reserved for hobby usage" Meddelande "för fritidsbruk reserverade kanaler inom frekvensbandet 68 -71 MHz"
RLAN	Radio Local Area Network
RR	Radio Regulations
RR AP30B	Appendix 30B of the ITU Radio Regulations
RTTT	Road transport and traffic telematics
SAR	Search And Rescue, Synthetic Aperture Radar
S-DAB	Satellite Digital Audio Broadcasting
S-PCS	Satellite Personal Communication System
S-SMS	Satellite Short Message System
SRD	Short Range Devices
SRR	Short range radar
SSR	Secondary Surveillance Radar
TETRA	Terrestrial Trunked Radio
THK	Telehallintokeskus
TAC	Telecommunications Administration Centre
TFC	Teleförvaltningscentralen
T-DAB	Terrestrial Digital Audio Broadcasting
TRAFICOM	Liikenne- ja viestintävirasto Traficom Transport- och kommunikationsverket Traficom Finnish Transport and Communications Agency (Traficom)
TS	Terminal Station, Technical Specification
TV	Television
UTRAN TDD	UMTS Terrestrial radio access network, time division duplex
UTRAN FDD	UMTS Terrestrial radio access network, frequency division duplex
UWB	Ultra Wideband
VDL	VHF digital link
VIRVE	Finland's Public Authority Network, emergency services network.
VLBI	Very Long Baseline Interferometry
WLAN	Wireless Local Area Network
WLL	Wireless Local Loop
VOR	VHF Omnidirectional Radio Range

PART D Legislation

1 Legal basis of the Regulation

The Radio Frequency Regulation has been issued under section 96 of the Act on Electronic Communications Services. The provision is the following:

"Traficom issues regulations on the use of radio frequencies for different purposes, with due consideration to the international regulations and recommendations on radio frequency use as well as the Government Decree issued pursuant to section 95(1). The regulation shall contain information on the intended use of frequency bands and on the most important radio-technical characteristics required of radio equipment using the frequency bands.

Traficom shall re-examine regulations issued pursuant to subsection 1, if it is possible to assign additional frequencies for the activity subject to a licence referred to in section 95(3) or if a telecommunications operator or other party representing frequency band user groups presents a justifiable request for re-examination.

When issuing regulations on the use of frequencies suitable for the provision of electronic communications services, Traficom shall comply with technology and service neutrality.

Traficom may, in the regulation referred to in subsection 1, derogate from:

- 1) technology neutrality of network and communications services if this is necessary to:
 - a) avoid harmful interference;
 - b) protect public health against electromagnetic fields;
 - c) ensure technical quality of the service, common use of radio frequencies or the fulfilment of general interest objectives; and
- 2) service neutrality, if this is necessary to:
 - a) ensure the safety of human life;
 - b) promote social, regional or geographical cohesion;
 - c) avoid inefficient use of frequencies; and
 - d) promote cultural and linguistic diversity as well as media pluralism.

When preparing the regulations referred to in subsection 1, Traficom must work in cooperation with the Ministry of Transport and Communications. If a regulation concerning use of an individual frequency band could have a significant effect on the general development of the communications market, the frequency plan for the frequency band in question will require

confirmation by a Government Decree issued pursuant to section 95(1).

In order to promote common use of radio frequencies, provided there is justifiable cause, Traficom may also permit other radio communications than those which accord with the purpose of use for a radio frequency band assigned by a Government Decree pursuant to section 95(1) or by a regulation as referred to in subsection 1 if these other radio communications would not restrict use of the frequency band for its primary purposes nor cause interference in the radio communications appropriate to the primary purposes."

The Radio Frequency Regulation relates to the Government Decree on radio frequency usage and on the frequency plan (1246/2014) issued under section 95 of the Act on Electronic Communications Services. The Regulation must not be in conflict with this Decree.

The body of law issued on the use of frequencies also includes Ficora Regulation 70 on the use frequencies intended for television and radio operations and Finnish Transport and Communications Agency Traficoms Regulation 74 on the use of frequencies intended for radio operations subject to programming licence.

The Frequency Allocation Table also observes the Radio Regulations of the International Telecommunication Union (ITU).

The European Commission's decisions on the use of frequencies are also implemented by virtue of the Radio Frequency Regulation. In addition, the European spectrum use plan (ERC Report 25) has been taken into consideration in the Regulation.

The Radio Frequency Regulation also defines regulated interfaces. With regard to radio transmitters, the interfaces are prerequisites for granting a radio licence or exempting from licensing.

ANNEX 1

Amendments made to the Radio Frequency Regulation 4 since 9 January 2019

Fixed service

Radiolinks have been removed from the following sub-bands:

- 1353.750 - 1371.250 MHz (17.500 MHz)
- 1495.750 - 1513.250 MHz (17.500 MHz)
- 5875 - 5925 MHz (50 MHz)
- 25.347 - 25.431 GHz (0.084 GHz)
- 26.355 - 26.439 GHz (0.084 GHz)

From radio systems for fixed wireless access networks, the following sub-bands have been removed:

- 24.549 -25.333 GHz (0.784 GHz)
- 25.557-26.341 GHz (0.784 GHz)

For radio links in the 71-74 GHz and 74-76 GHz frequency bands, 250 MHz, 1 GHz, 2 GHz, 500 MHz and 1,5 GHz channels have been added to the following sub-bands:

- 71.250-75.750 GHz (4.500 GHz)
- 71.625-75.125 GHz (3.500 GHz)
- 72.125-74.625 GHz (2.500 GHz)
- 71,375-75,375 GHz (4,000 GHz)
- 71,875-74,375 GHz (2,500 GHz)

For radio links in the 81-74 GHz and 84-86 GHz frequency bands, 250 MHz, 1 GHz, 2 GHz, 500 MHz and 1,5 GHz channels have been added to the following sub-bands:

- 81.250-85.750 GHz (4.500 GHz)
- 81.625-85.125 GHz (3.500 GHz)
- 82.125-84.625 GHz (2.500 GHz)
- 81.375-85.375 GHz (4,000 GHz)
- 81.875-84.375 GHz (2,500 GHz)

The following technical information has been added for the 430.025-430.975 MHz sub-band: Fixed station (FX) TXRX, 2 W ERP / 1 W.

Mobile service

New ECC Decision ECC/DEC/(19)02 on land mobile systems has been added, and references to decisions ECC/DEC/(06)06 and ECC/DEC/(06)04 have been removed, as the new decision replaces these decisions. Decision ECC/DEC/(19)02 applies to the frequency bands 68-87.5 MHz, 146-174 MHz, 406.1-410 MHz, 410-430 MHz, 440-450 MHz and 450-470 MHz.

Mobile service has been removed from the 862-863 MHz sub-band because the sub-band is allocated to non-specific short-range devices (SRD).

GSM-R has been removed from the sub-bands 880.100-914.900 MHz and 921.100-924.900 MHz, and a comment has been added that a usage plan is under preparation.

The use of GSM900 and IMT on the sub-bands 880.100-914.900 MHz and 925.100-959.900 MHz as well as 1710.100-1784.900 MHz and 1805.100-1879.900 MHz have been combined and the use has been allocated to digital mobile networks.

The use of sub-bands 1920-1980 MHz and 2110-2170 MHz has been allocated to digital mobile networks instead of IMT.

A comment that a usage plan is under preparation has been added on the sub-bands 1427-1452 MHz and 1452-1492 MHz as well as 1492-1518 MHz.

Comments on the ECC Decision ECC/DEC/(17)06 and the European Commission Decision (EU) 2015/750 have been added to the sub-bands 1427-1452 MHz and 1492-1518 MHz.

IMT has been removed from the 1900-1920 MHz sub-band and a comment that a usage plan is under preparation has been added.

Secondary allocation for mobile service has been added to private local radio networks based on mobile technology for a limited user group (Private LTE). Entry into force 15 June 2020.

A comment on the ECC Decision ECC/DEC/(05)05 has been added to the sub-bands 2500-2570 MHz, 2570-2620 MHz and 2620-2690 MHz.

Commission Implementing Decision (EU) 2019/235 has been added to the comments for the 3400 - 3800 MHz sub-band.

Primary allocation for mobile service has been added to the frequency bands 24.250-27.00 GHz and 27.000-27.500 GHz.

Use for terrestrial systems capable of providing electronic communications services has been added to the sub-bands 24.250-27.00 GHz and 27.000-27.500 GHz, and a comment about licence-exempt terminals, Finnish Transport and Communications Agency Regulation 15, ECC Decision (18)06 and Commission Implementing Decision (EU) 2019/784 has been added to the comment field.

Satellite communications

The allocation of frequencies to different terminals has been specified in the 14-14.5 GHz frequency band, and a reference to ECC Decision ECC/DEC/(18)04 has been added to the 14-14.25 GHz sub-band.

References to duplex bands of satellite terminals have been removed from the 13.5-14.5 GHz frequency band, and corresponding amendments have been made to the 10.7 GHz - 12.75 GHz band.

References to standards EN303980, EN302977 and EN302448 have been added to the 14-14.25 GHz frequency band.

References to ECC Decisions ECC/DEC/(18)05 and ECC/DEC/(18)04 have been added to the 10.7-12.75 GHz frequency band, and a reference to ECC Decision ECC/DEC/(05)11 to the frequency bands 10.7-11.7 and 12.5-12.75 GHz.

References to standards EN303980, EN302977 and EN302448 have been added to the 10.7-12.75 GHz frequency band, and a reference also to standard EN302186 to the frequency bands 10.7-11.7 GHz and 12.5-12.75 GHz.

A reference to the ECC Decision ECC/DEC/(10)01 has been added to the comment column concerning the frequency band 10.609-10.637 GHz.

The text "All emissions prohibited (RR 5.340)" has been added to the comment column concerning the frequency band 10.680-10.700 GHz.

A reference to the ECC Decision ECC/DEC/(10)02 has been added to the comment column of the Radio astronomy column concerning the frequency band 31.300-31.500 GHz.

The text "All emissions prohibited (RR 5.340)" and a reference to the ECC Decision ECC/DEC/(10)02 have been added to the comment column of the Earth exploration satellite column concerning the frequency band 31.300-31.500 GHz.

The word "(PASSIVE)" has been added after the phrase "EARTH EXPLORATION SATELLITE" in the column "Frequency band Services in Finland" concerning the frequency band 31.300-31.500 GHz.

Aeronautical mobile

A new comment "133.325 MHz national common frequency for remote pilots of unmanned aircraft (drone/RPA/UA)" has been added.

The following comment has been updated in the VHF band for aviation: "The user of radio equipment used in aviation must have a radio telephone operator's certificate issued by the Finnish Transport Safety Agency." -> "The user of radio equipment used in aviation must have a radio telephone operator's certificate issued by the Finnish Transport and Communications Agency Traficom."

UWB equipment

Amendments required by Commission Decision (EU) 2019/785 have been made to section 'Ultra-wideband equipment (UWB) and wide-band data transmission equipment (WAS/RLAN) 57-71 GHz' in the annex to the Regulation.

Amateur radio communications

Allocations to amateur radio in the 1240-1300 MHz frequency band have been removed.

Two duplex frequency pairs 144.9750/145.5750 MHz and 144.9875/145.5875 MHz have been added to 12.5 kHz repeater stations.

Radiolocation

Use in accordance with ITU-R M.1227 (Wind Profiler Radars) in the 1270 -1295 MHz sub-band has been combined with radiolocation in the 1260-1300 MHz sub-band by a comment.

Radionavigation

Aeronautical radionavigation in the 1260-1300 MHz frequency band has been corrected to radionavigation in accordance with the Radio Regulations.

Transport and traffic telematics

The 5905-5925 MHz frequency band has been added to intelligent transport systems in accordance with ECC Decision ECC/DEC/(08)01.

The following amendments required by Commission Decision (EU) 2019/1345 have been made:

- The 5855-5875 MHz frequency band has been added to intelligent transport systems, and tachograph, weight and dimension applications have been added to the 5795-5815 MHz frequency band.
- The 24.250-24.500 GHz frequency band has been removed from automotive radars. Automotive radars operating on this frequency band have not been placed on the market.
- The use of the 63-64 GHz frequency band has been amended to allow placing new equipment on the market until 1 January 2020. A new frequency band for corresponding applications is 63.72-65.88 GHz.

The 24.050-24.250 GHz frequency band has been added to equipment in accordance with standard EN 302 858.

Short-range radio transmitters

The following additions required by Commission Decision (EU) 2019/1345 have been made:

- New frequency bands 13.553-13.567 MHz, 862-863 MHz have been added to non-specific short-range radio transmitters.
- The restriction concerning power spectral density has been removed from non-specific short-range radio transmitters in the 57-64 GHz frequency band.
- In the 57-71 GHz frequency band, additions for wide-band data transmission systems have been made to section 'Ultra-wideband equipment (UWB) and wide-band data transmission equipment (WAS/RLAN) 57-71 GHz' in the annex to the Regulation.
- A minimum value of 600 kHz for channel spacing has been added to wide-band data transmission systems in the 863-868 MHz frequency band.
- The 430-440 MHz frequency band has been added to medical data acquisition systems (capsule endoscopy).

Moreover, any references to allowing voice, audio and video applications have been removed from the 863-870 MHz frequency band because they are specified in Regulation 15 by the Finnish Transport and Communications Agency.