Norwegian Communications Authority

Exemption from liability: This is an unofficial translation of the Regulations concerning general authorisations for the use of radio frequencies. The Norwegian Communications Authority (Nkom) therefore takes no responsibility for any mistakes that may occur, and refers to the announced Norwegian version as the current version.

Regulations concerning general authorisations for the use of radio frequencies (General Authorisations Regulations)

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Contents

Chap. I. Introductory provisions

Section 1. *Geographical range of application*

The Regulations do not apply to use of frequencies in the range of 2 GH–32 GHz in the geographical area within a 20 km radius of the centre of Ny-Ålesund. The Regulations nevertheless apply to use of frequencies in this area for mandatory maritime and aeronautical security-related equipment on board vessels and aircraft.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 2. *Definitions*

(1) *Transmission time:* The time a radio transmitter is active, expressed in percent of one hour.

(2) *Maximum occupied bandwidth:* The part of the signal spectrum which contains 99 percent of the mean power.

(3) *Channel separation:* The distance between the centre frequencies in two adjacent channels.

(4) *Equivalent isotropic radiated power (e.i.r.p.):* The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain).

(5) *Maximum mean power e.i.r.p. spectral density*: Specified as e.i.r.p. of the unit bandwidth is the maximum average power per unit bandwidth radiated in the direction of the maximum level under the specified conditions of measurement. Can also be expressed as e.r.p., where average spectral density is stated relative to a lossless half-wave dipole antenna. A lossless half-wave dipole antenna has a gain of 2.15 dBi. This gives the following relationship between e.i.r.p. and e.r.p.: e.i.r.p. = e.r.p. + 2.15 dBi.

(6) *Peak power:* Specified as e.i.r.p., contained within a 50 MHz bandwidth at the frequency at which the highest mean radiated power occurs, radiated in the direction of the maximum level under the specified conditions of measurement.

(7) *Harmonised standard:* A European standard developed by the standards organisation the European Telecommunications Standards Institute (ETSI), and which has been adopted on the basis of a request made by the Commission, for the implementation of the Union's harmonisation regulations.

(8) *Ultra-Wideband (UWB):* Technology for short range communication that generates and transmits radio frequency energy that spreads over a frequency range wider than 50 MHz. UWB may overlap several frequency bands allocated to various types of radio communication services.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 2a. *References from the Regulation to requirements laid down in standards*

(1) Where this Regulation refers to a standard, it means the version of the standard listed in the Official Journal of the European Union under the Radio Equipment Directive 2014/53/EU.

(2) Any standard referred to in this Regulation that is not published in the Official Journal of the European Union under the Radio Equipment Directive 2014/53/EU means versions of the standard published by ETSI.

(3) Where this Regulation refers to requirements in a standard, it means the requirements regarding frequency use in the standard. Alternative techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are also permitted.

0 Added by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 3. *Interference*

Use of radio frequencies pursuant to these Regulations is not protected against interference from other lawful use of radio frequencies, unless provided for under these Regulations. Frequency use pursuant to these Regulations shall be arranged so as not to reduce the quality of services operated in accordance with individual frequency licences.

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 4. *Use of frequencies below 8.3 kHz and above 3000 GHz*

Use of frequencies in the electromagnetic frequency spectrum below 8.3 kHz and above 3000 GHz is authorised on the condition that it does not interfere with other legal frequency use.

0 Amended by the Regulations of 28 April 2014 no. 591.

Chap. II. Frequency use that must be registered (light licensing)

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 5. *Light licensing for point-to-point radio lines*

(1) Use of the 73.625–75.875 GHz and 83.625–85.875 GHz frequency bands is authorised for point-to-point fixed links for fixed outdoor installations in accordance with the tables in this paragraph. Both Frequency Division Duplexing (FDD) and Time Division Duplexing (TDD) systems are permitted. FDD and TDD are not permitted at the same location. Moreover, if using FDD use of both high and low transmission frequencies at the same location is not permitted. Maximum permitted radiated power is 85 dBm e.i.r.p. Maximum permitted power supplied to the antenna is 30 dBm. Minimum antenna gain is 38 dBi. Radio equipment must comply with the EN 302 217-2 standard. Antennas must comply with the EN 302 217-4 standard. The power flux density at the border between Norway and neighbouring states shall not exceed –122.5 dBW/m² measured with a reference bandwidth of 1 MHz.
The following conditions apply:

a) The transmitter must not be operated until it has been registered with the Norwegian Communications Authority. The registration form can be found on the Norwegian Communications Authority's website. Registration of the communication lasts for five years from the end of the calendar year in which registration took place. The licence expires without further notice from the Norwegian Communications Authority.

b) New uses of the frequency band must not interfere with existing use already registered with the Norwegian Communications Authority. Radio astronomy must be protected from interference from systems in the 76–86 GHz frequency band.

c) The holder of the transmission licence shall pay a sector fee to the Norwegian Communications Authority pursuant to the Regulations of 20 March 2017 no. 386 relating to sector fees and administrative charges to the Norwegian Communications Authority.

(2) Use of the centre frequencies in the table is authorised in accordance with section 5(1).

Maximum permitted occupied bandwidth per channel: 62.5 MHz		
73656.25/83656.25 MHz	73718.75/83718.75 MHz	73781.25–83781.25 MHz
73843.75/83843.75 MHz	73906.25/83906.25 MHz	73968.75/83968.75 MHz
74031.25/84031.25 MHz	74093.75/84093.75 MHz	74156.25/84156.25 MHz
74218.75/84218.75 MHz	74281.25/84281.25 MHz	74343.75/84343.75 MHz
74406.25/84406.25 MHz	74468.75/84468.75 MHz	74531.25/84531.25 MHz
74593.75/84593.75 MHz	74656.25/84656.25 MHz	74718.75/84718.75 MHz

74781.25/84781.25 MHz	74843.75/84843.75 MHz	74906.25/84906.25 MHz
74968.75/84968.75 MHz	75031.25/85031.25 MHz	75093.75/85093.75 MHz
75156.25/85156.25 MHz	75218.75/85218.75 MHz	75281.25/85281.25 MHz
75343.75/85343.75 MHz	75406.25/85406.25 MHz	75468.75/85468.75 MHz
75531.25/85531.25 MHz	75593.75/85593.75 MHz	75656.25/85656.25 MHz
75718.75/85718.75 MHz	75781.25/85781.25 MHz	75843.75/85843.75 MHz
Maximum permitted occupied bandwidth per channel: 125 MHz		
73687.5/83687.5 MHz	73812.5/83812.5 MHz	73937.5/83937.5 MHz
74062.5/84062.5 MHz	74187.5/84187.5 MHz	74312.5/84312.5 MHz
74437.5/84437.5 MHz	74562.5/84562.5 MHz	74687.5/84687.5 MHz
74812.5/84812.5 MHz	74937.5/84937.5 MHz	75062.5/85062.5 MHz
75187.5/85187.5 MHz	75312.5/85312.5 MHz	75437.5/85437.5 MHz
75562.5/85562.5 MHz	75687.5/85687.5 MHz	75812.5/85812.5 MHz
Maximum permitted occupied bandwidth per channel: 250 MHz		
73750/83750 MHz	74000/84000 MHz	74250/84250 MHz
74500/84500 MHz	74750/84750 MHz	75000/85000 MHz
75250/85250 MHz	75500/85500 MHz	75750/85750 MHz
Maximum permitted occupied bandwidth per channel: 500 MHz		
73875/83875 MHz	74375/84375 MHz	74875/84875 MHz
75375/85375 MHz		
Maximum permitted occupied bandwidth per channel: 750 MHz		
74000/84000 MHz	74750/84750 MHz	75500/85500 MHz
Maximum permitted occupied bandwidth per channel: 1000 MHz		
74125/84125 MHz	75125/85125 MHz	
Maximum permitted occupied bandwidth per channel: 1250 MHz		74250/84250 MHz
Maximum permitted occupied bandwidth per channel: 1500 MHz		74375/84375 MHz
Maximum permitted occupied bandwidth per channel: 1750 MHz		74500/84500 MHz
Maximum permitted occupied bandwidth per channel: 2000 MHz		74625/84625 MHz
Maximum permitted occupied bandwidth per channel: 2250 MHz		74750/84750 MHz

0 Repealed by the Regulations of 24 Nov. 2015 no. 1359, added by the Regulations of 24 Nov. 2015 no. 1359 as amended by the Regulations of 27 March 2017 no. 389 (in force 3 April 2017), amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. III. Short-range devices

Section 6. *Cordless telephones*

Use of the 1880–1900 MHz frequency band is authorised for Digital Enhanced Cordless Telecommunications (DECT) as described in the EN 301 406 standard. The nominal transmit power is maximum 250 mW (24 dBm) and antenna gain of up to 2 dBi for omnidirectional antennas and up to 6 dBi for directional antennas.

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 7. *Meter reading*

(1) Use of the 169.400–169.475 MHz frequency bands is authorised for meter reading systems as described in the EN 300 220-4 standard. Maximum permitted radiated power is 500 mW e.r.p. Maximum permitted occupied bandwidth is 50 kHz. Maximum transmission time is 10 percent.

(2) Use of the centre frequencies 444.675 MHz, 444.700 MHz and 444.725 MHz is authorised for meter reading systems. Maximum permitted radiated power is 500 mW e.r.p. Maximum permitted occupied bandwidth is 25 kHz. Bandwidth of 75 kHz is permitted for the channel with the centre frequency 444.700 MHz. Maximum transmission time is 20 percent.

(3) Use of the 870–875.6 MHz frequency band is authorised for sensors as described in the EN 303 204 standard. Maximum permitted radiated power is 500 mW e.r.p. with maximum transmission time of 2.5 percent and APC (Adaptive Power Control) is required. Maximum permitted occupied bandwidth is 200 kHz. Sensors include measurement systems for water, gas, electricity, meteorological instruments, pollution measurement, environment data, such as levels of allergens, electromagnetic pollution and actuators (controlling devices for street lights, traffic lights, etc.). Maximum transmission time of up to 10 percent may be allowed for network relay points forming part of metropolitan and rural area networks if APC and Listen Before Talk are in use. In addition, either mitigation techniques as described in harmonised standards or coordination must be implemented in geographical areas with a high number of these kinds of networks.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 7a. (Repealed)

0 Added by the Regulations of 24 Nov. 2015 no. 1359, repealed by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 8. ***Non-specific short-range devices***

(1) Use of the 6765–6795 kHz frequency band is authorised as described in the EN 300 330 standard. Maximum permitted magnetic field strength is 42 dBµA/m measured at a distance of 10 metres.

(2) Use of the 13.553–13.567 MHz frequency band is authorised as described in the EN 300 330 standard. Maximum permitted magnetic field strength is 42 dBµA/m measured at a distance of 10 metres.

(3) Use of the 26.957–27.283 MHz frequency band is authorised as described in the EN 300 220 standard. Maximum permitted radiated power is 10 mW e.r.p.

(4) Use of the 26.990–27.000, 27.040–27.050, 27.090–27.100, 27.140–27.150 and 27.190–27.200 MHz frequency bands is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 100 mW e.r.p. Maximum transmission time is 0.1 percent.

(5) Use of the 40.660–40.700 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Video applications are permitted.

(6) Use of the 138.20–138.45 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is 1 percent, unless Listen Before Talk (LBT) as described in the EN 300 220-2 standard is used.

(7) Use of the 169.4000–169.4750 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 500 mW e.r.p. Maximum permitted occupied bandwidth is 50 kHz. Maximum transmission time is 0.1 percent.

(8) Use of the 169.4000–169.4875 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is 0.1 percent, unless LBT as described in the EN 300 220-2 standard is used.

(9) Use of the 169.4875–169.5875 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is 0.001 percent, except from 00:00 a.m. to 06:00 a.m. local time, when maximum transmission time is 0.1 percent. This applies unless LBT as described in the EN 300 220-2 standard is used.

(10) Use of the 169.5875–169.8125 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is less than 0.1 percent, unless LBT as described in the EN 300 220-2 standard is used.

(11) Use of the 433.050–434.790 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is less than 10 percent.

(12) Use of the 433.050–434.790 MHz frequency band is authorised as described in the EN 300 220-2 standard with a maximum permitted radiated power of 1 mW e.r.p. For signals with a bandwidth above 250 kHz, the spectral density shall be less than –13 dBm/10 kHz. Voice applications are permitted with advanced mitigation techniques.

(13) Use of the 434.040–434.790 MHz frequency band is authorised as described in the EN 300 220-2 standard with a maximum permitted radiated power of 10 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz. Voice applications are permitted with advanced mitigation techniques.

(14) Use of the 863–865 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 25 mW e.r.p. Maximum transmission time is 0.1 percent. Maximum transmission time can exceed 0.1 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used.

(15) Use of the 865–868 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 25 mW e.r.p. Maximum transmission time is 1 percent. Maximum transmission time can exceed 1 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used.

(16) Use of the 868.000–868.600 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 25 mW e.r.p. Maximum transmission time is 1 percent. Maximum transmission time can exceed 1 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used.

(17) Use of the 868.700–869.200 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 25 mW e.r.p. Maximum transmission time is 0.1 percent. Maximum transmission time can exceed 0.1 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used.

(18) Use of the 869.400–869.650 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 500 mW e.r.p. Maximum transmission time is 10 percent. Maximum transmission time can exceed 10 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used. The frequency band may also be used as a single channel for data transmission systems.

(19) Use of the 869.700–870.000 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 5 mW e.r.p. Maximum permitted radiated power is 25 mW e.r.p. if transmission time is less than 1 percent. Maximum transmission time can exceed 1 percent if techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards are used.

(20) Use of the 870–876 MHz and 915–921 MHz frequency bands is authorised. Maximum permitted radiated power is 25 mW e.r.p. with a maximum transmission time of less than 0.1 percent. Maximum permitted occupied bandwidth is 200 kHz.

(21) Use of the 870–875.8 MHz frequency band is authorised. Maximum permitted radiated power is 25 mW e.r.p. with a maximum transmission time of less than 1 percent. Maximum permitted occupied bandwidth is 600 kHz.

(22) Use of the 915.2–920.8 MHz frequency band is authorised as described in the EN 300 220-2 standard. Maximum permitted radiated power is 25 mW e.r.p. and 100 mW e.r.p. for use of the centre frequencies 916.3 MHz, 917.5 MHz, 918.7 MHz and 919.9 MHz. Maximum transmission time is 1 percent, with the exception of

RFID tag emissions responding to RFID interrogators operating on the centre frequencies 916.3 MHz, 917.5 MHz, 918.7 MHz and 919.9 MHz. Maximum permitted occupied bandwidth is 600 kHz, and maximum permitted occupied bandwidth for the channels with the centre frequencies 916.3 MHz, 917.5 MHz, 918.7 MHz and 919.9 MHz is 400 kHz.

(23) Use of the 2400.0–2483.5 MHz frequency band is authorised. Maximum permitted radiated power is 10 mW e.i.r.p.

(24) Use of the 5725–5875 MHz frequency band is authorised. Maximum permitted radiated power is 25 mW e.i.r.p.

(25) Use of the 24.00–24.25 GHz, 61.0–61.5 GHz, 122–123 GHz and 244–246 GHz frequency bands is authorised. Maximum permitted radiated power is 100 mW e.i.r.p. Use of the 122.00–122.25 GHz frequency band is authorised with a maximum permitted mean spectral density of 10 dBm/250 MHz e.i.r.p. and maximum –48 dBm/MHz at elevation angles above 30 degrees

(26) Use of the 57–64 GHz frequency band is authorised with a maximum permitted radiated power of 100 mW e.i.r.p. and a permitted transmit power limit of 10 dBm. Maximum permitted mean spectral density is 13 dBm/MHz.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 9. ***Radio Frequency Identification Devices***

(1) Use of the 13.553–13.567 MHz frequency band is authorised for Radio Frequency Identification Devices (RFID) and Electronic Article Surveillance (EAS) as described in the EN 300 330 standard. Maximum permitted magnetic field strength is 60 dBµA/m measured at a distance of 10 metres.

(2) Use of the 865–868 MHz frequency band is authorised for Radio Frequency Identification Devices (RFID) as described in the EN 302 208 standard. Maximum permitted radiated power on the channels with the centre frequencies 865.7 MHz, 866.3 MHz, 866.9 MHz and 867.5 MHz is 2 W e.r.p., and maximum permitted occupied bandwidth is 200 kHz.

(3) Use of the 915–921 MHz frequency band is authorised for Radio Frequency Identification Devices (RFID) as described in the EN 302 208 standard when RFID tag emissions are expected to be close to the RFID interrogator. Maximum permitted radiated power on the channels with the centre frequencies 916.3 MHz, 917.5 MHz, 918.7 MHz and 919.9 MHz is 4 W e.r.p., and maximum permitted occupied bandwidth is 400 kHz.

(4) Use of the 2446–2454 MHz frequency band is authorised for Radio Frequency Identification Devices (RFID) as described in the EN 300 440 standard. Maximum permitted radiated power is 500 mW e.i.r.p. For indoor use, maximum permitted radiated power is 4 W if frequency hopping is used and the time the transmitter is active does not exceed 15 percent in a period of 200 milliseconds.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 10. ***Low power FM transmitters***

Use of the 87.5–108.0 MHz frequency band is authorised for wireless audio equipment as described in the EN 301 357 standard. Maximum permitted radiated power is 50 mW e.r.p.

Chap. IV. Data transmission systems

Section 11. ***Wireless networks***

(1) Use of the 863–868 MHz frequency band is authorised for data transmission as part of a computer network. Maximum permitted radiated power is 25 mW e.i.r.p. Maximum permitted occupied bandwidth is 1 MHz. Maximum permitted transmission time is 10 percent for network access points and 2.8 percent for other devices.

(2) Use of the 865.6–865.8 MHz, 866.2–866.4 MHz, 866.8–867.0 MHz and 867.4–867.6 MHz frequency bands is authorised for computer networks. Maximum permitted radiated power is 500 mW e.r.p. Maximum transmission time is 10 percent for network access points and 2.5 percent for other devices. Maximum permitted occupied bandwidth is 200 kHz. Adaptive Power Control (APC) is required. Alternatively, other techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards can be used.

(3) Use of the 2400.0–2483.5 MHz frequency band is authorised for data transmission systems with Frequency Hopping Spread Spectrum (FHSS) as a mitigation technique as described in the EN 300 328 standard. Maximum permitted radiated power is 100 mW e.i.r.p. and 100 mW per 100 kHz e.i.r.p. spectral density. For spread spectrum techniques other than FHSS, maximum permitted spectral density is 10 mW/MHz e.i.r.p.

(4) Use of the 5150–5350 MHz frequency band is authorised for indoor data transmission with a maximum permitted radiated power of 200 mW e.i.r.p. as described in the EN 301 893 standard. For use other than indoor, mean spectral density in the 5150–5350 MHz frequency band is limited to 10 mW/MHz e.i.r.p. in any 1 MHz area. Wireless Access Systems (WAS) and Radio Local Area Networks (RLAN) that operate in the 5250–5350 MHz frequency band shall implement Transmit Power Control (TPC) that on average provides a mitigation factor of at least 3 dB compared to the maximum permitted radiated power. If TPC is not in use, maximum permitted radiated power is 3 dB lower than stipulated in the first and second sentence. The radio equipment shall implement Dynamic Frequency Selection (DFS) as specified in the EN 301 893 standard.

(5) Use of the frequency band 5470–5725 MHz is authorised for wireless data transmission with a maximum permitted radiated power of 1 W e.i.r.p. Maximum mean spectral density shall not exceed 50 mW/MHz e.i.r.p. in any 1 MHz band. WAS and RLAN that operate in the 5470–5725 MHz frequency band shall implement TPC that on average provides a mitigation factor of at least 3 dB compared to the maximum permitted radiated power. If TPC is not in use, the maximum permitted radiated power and spectral density limits set forth in the first and second sentences shall be reduced by 3 dB. The radio equipment shall implement DFS as specified in the EN 301 893 standard.

(6) Use of the 5725–5795 MHz and 5815–5850 MHz frequency bands is authorised for wireless data transmission systems with a maximum permitted radiated power of 4 W e.i.r.p. Maximum mean spectral density shall not exceed 200 mW/MHz e.i.r.p. in any 1 MHz band. The radio equipment shall implement DFS as specified in the EN 302 502 standard. The radio equipment shall implement TPC, which provides, on average, a mitigation factor of at least 3 dB. If TPC is not in use, the maximum permitted radiated power and spectral density limits set forth in the first and second sentences shall be reduced by 3 dB. The power flux density at the border between Norway and neighbouring states shall not exceed –122.5 dB/m² measured with a reference bandwidth of 1 MHz unless otherwise determined in a co-ordination agreement.

(7) Use of the 57–66 GHz frequency band is authorised for wireless data transmission systems as described in the EN 302 567 standard. Maximum permitted mean power is 40 dBm e.i.r.p. Maximum permitted spectral power density is 13 dBm/MHz. Fixed outdoor installations are excluded. Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards shall be applied.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 12. ***Fixed links***

(1) Use of the 5725–5795 MHz and 5815–5850 MHz frequency bands is authorised for point-to-point fixed links with a maximum permitted radiated power of 200 W e.i.r.p. Maximum permitted power supplied to the antenna is 1 W. Maximum mean spectral density shall not exceed 10 W/MHz e.i.r.p. The term “point-to-point

operation" excludes all kinds of point-to-multipoint, omnidirectional applications and multiple co-located transmitters transmitting the same information (sector antennas). The radio equipment shall implement Dynamic Frequency Selection (DFS) as specified in the EN 302 502 standard. The power flux density at the border between Norway and neighbouring states shall not exceed –122.5 dB/m² measured with a reference bandwidth of 1 MHz unless otherwise determined in a co-ordination agreement.

(2) Use of the frequency band 57.1–65.9 GHz is authorised for point-to-point fixed links for fixed outdoor installations. Maximum permitted radiated power is 55 dBm e.i.r.p. Minimum antenna gain is 30 dBi. Radio equipment which fulfils the requirements in the EN 302 217-2 standard is authorised with a maximum permitted power of 10 dBm supplied to the antenna. The power flux density at the border between Norway and neighbouring states shall not exceed –122.5 dB/m² measured with a reference bandwidth of 1 MHz.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 13. *Transport and traffic telematics devices*

(1) Use of the 5795–5815 MHz frequency band is authorised for road tolling applications as described in the standards EN 300 674-2-1 and EN 300 674-2-2. Maximum permitted radiated power from the fixed location is 2 W e.i.r.p. Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards must be used.

(2) The frequency band 5875–5905 MHz is authorised for Intelligent Transport Systems (ITS) traffic safety applications as described in the EN 302 571 standard. Maximum spectral density is 23 dBm/MHz e.i.r.p. and maximum permitted radiated power is 33 dBm e.i.r.p. Maximum occupied bandwidth per channel is 10 MHz. Transmit Power Control (TPC) that results in a regulation area of 30 dB shall be applied.

(3) Use of the frequency band 63–64 GHz is authorised for Intelligent Transport Systems (ITS) traffic safety applications. Use of the frequency band is authorised as described in the EN 302 686 standard. Maximum permitted radiated power is 40 dBm e.i.r.p.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. V. Wireless audio and video devices

Section 14. *Wireless microphones*

(1) Use of the following frequency bands is authorised for wireless microphones as described in the EN 300 422-1, EN 300 422-2, and EN 300 422-3 standards:

a) 41.0–43.6 MHz. Maximum permitted radiated power is 10 mW e.r.p. Amplitude modulation is not permitted.

b) Use of vacant frequencies in the 510–790 MHz band is authorised. Vacant frequencies are listed on the internet service[1] provided by the Norwegian Communications Authority. Maximum permitted radiated power is 50 mW e.r.p.

c) 823–826 MHz. Maximum permitted radiated power is 20 mW e.i.r.p. Maximum occupied bandwidth per channel is 200 kHz. For body worn equipment maximum permitted radiated power is 100 mW e.i.r.p.

d) 826–832 MHz. Maximum permitted radiated power is 100 mW e.i.r.p. Maximum occupied bandwidth per channel is 200 kHz.

e) 863–865 MHz. Maximum permitted radiated power is 10 mW e.r.p. Use of the frequency band is authorised as described in the EN 301 357 standard.

f) 1492–1518 MHz.[2] Restricted to indoor use with a maximum permitted radiated power of 50 mW e.i.r.p.

(2) Use of the frequency band 1785–1805 MHz is authorised for handheld radio microphones as described in the EN 300 422-1, EN 300 422-2 and EN 300 422-3 standards and as specified in the table.

Frequency range	***Maximum permitted e.i.r.p. spectral density for handheld radio microphones***
<1785 MHz	–17 dBm/200 kHz
1785–1785.2 MHz	4 dBm/200 kHz
1785.2–1803.6 MHz	13 dBm/channel
1803.6–1804.8 MHz	10 dDm/200 kHz, with a limit of 13 dBm/channel
1804.8–1805 MHz	–14 dBm/200 kHz
>1805 MHz	–37 dBm/200 kHz

(3) Use of the frequency band 1785–1805 MHz is authorised for body worn equipment and wireless microphones with Spectrum Scanning Procedure (SSP) implemented in the frequency band 1785–1804.8 MHz, as described in the EN 300 422-2 and EN 300 422-3 standards and as specified in the table.

Frequency range	***Maximum permitted e.i.r.p. spectral density for body worn microphones***
<1785 MHz	–17 dBm/200 kHz
1785–1804.8 MHz	17 dBm/channel
1804.8–1805 MHz	0 dBm/200 kHz
>1805 MHz	–23 dBm/200 kHz

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

1 www.finnsenderen.no.

2 This frequency band is going to be harmonised in Europe for use in mobile services and will no longer be regulated in the General Authorisations Regulations.

Section 15. *Assistive listening devices for the hearing impaired*

(1) Use of the 169.4–174.0 MHz frequency band is authorised for assistive listening devices (ALD) for the hearing impaired as described in the EN 300 422-4 standard. Maximum permitted radiated power is 10 mW e.r.p. For the 169.4000–169.4750 MHz and 169.4875–169.5875 MHz bands, maximum permitted radiated power is 500 mW e.r.p. Maximum occupied bandwidth per channel is 50 kHz.

(2) Use of vacant frequencies in the 173.965–216 MHz frequency band is authorised for Assistive Listening Devices (ALD) for the hearing impaired as described in the EN 300 422-4 standard. Vacant frequencies are listed on the internet service[1] provided by the Norwegian Communications Authority. Maximum permitted radiated power is 10 mW e.r.p. Maximum occupied bandwidth per channel is 50 kHz.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

1 www.finnsenderen.no.

Section 16. *Wireless audio equipment*

(1) Use of the 863–865 MHz frequency band is authorised for wireless audio and multimedia streaming devices. Maximum permitted radiated power is 10 mW e.r.p. Use of the frequency band is authorised as described in the EN 301 357 standard.

(2) Use of the 1795–1800 MHz frequency band is authorised for wireless audio and multimedia streaming devices. Maximum permitted radiated power is 20 mW e.i.r.p. Use of the frequency band is authorised as described in the EN 301 357 standard.

0 Amended by the Regulations of 24 November 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 17. ***Mobile video links***

Use of the centre frequencies 2327 MHz and 2390 MHz is authorised for mobile video links with a maximum permitted radiated power of 2 W e.i.r.p. Maximum occupied bandwidth per channel is 8 MHz.

Chap. VI. Inductive systems

Section 18. ***Inductive systems***

(1) Use of the 9–90 kHz frequency band is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 72 dBµA/m measured at a distance of 10 metres.

(2) Use of the 119–135 kHz frequency band is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 66 dBµA/m measured at a distance of 10 metres.

(3) Use of the 90–119 kHz, 135–140 kHz, 6765–6795 kHz, 13.553–13.567 MHz and 26.957–27.283 MHz frequency bands is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 42 dBµA/m measured at a distance of 10 metres.

(4) Use of the 140.0–148.5 kHz frequency band is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 37.7 dBµA/m measured at a distance of 10 metres.

(5) Use of the 148.5–5000.0 kHz frequency band is authorised for inductive systems as described in the EN 300 330 and EN 302 536 standards. Maximum permitted field strength is –15 dBµA/m at a distance of 10 metres for systems that use bandwidths up to 10 kHz. Maximum permitted field strength is –5 dBµA/m at a distance of 10 metres for systems that use bandwidths above 10 kHz.

(6) Use of the 400–600 kHz frequency band is authorised for Radio Frequency Identification Devices (RFID) as described in the EN 300 330 standard. Maximum permitted field strength is –8 dBµA/m measured at a distance of 10 metres.

(7) Use of the 3155–3400 kHz frequency band is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 13.5 dBµA/m measured at a distance of 10 metres.

(8) Use of the 5–30 MHz frequency band is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is –20 dBµA/m at a distance of 10 metres for systems that use bandwidths up to 10 kHz. Maximum permitted field strength is –5 dBµA/m at a distance of 10 metres for systems that use bandwidths above 10 kHz.

(9) Use of the 7.4–8.8 MHz and 10.2–11.0 MHz frequency bands is authorised for inductive systems as described in the EN 300 330 standard. Maximum permitted field strength is 9 dBµA/m measured at a distance of 10 metres.

(10) Use of the 13.553–13.567 MHz frequency band is authorised for Radio Frequency Identification Devices (RFID) and Electronic Article Surveillance (EAS) as described in the EN 300 330 standard. Maximum permitted field strength is 60 dBµA/m measured at a distance of 10 metres.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. VII. Medical applications

Section 19. ***Medical implants***

(1) Use of the 9–315 kHz frequency band is authorised for medical implants as described in the EN 302 195 standard. Maximum permitted field strength is 30 dBμA/m measured at a distance of 10 metres. Maximum transmission time is 10 percent.

(2) Use of the 30.0–37.5 MHz frequency band is authorised for medical membrane implants for blood pressure measurements. Maximum permitted radiated power is 1 mW e.r.p. Maximum transmission time is 10 percent. The frequencies are authorised for use as specified in the EN 302 510 standard.

(3) Use of the 401–402 MHz and 405–406 MHz frequency bands is authorised for active medical implants. The provision only applies to systems used for providing non-voice digital communications between active medical implants and/or body-worn devices and other devices external to the human body used for transferring non-time critical individual patient-related physiological information. Frequency use is entitled to protection against interference caused by the use of devices for short-range communication that is otherwise permitted by these Regulations. Channel separation is 25 kHz. Individual transmitters may combine adjacent 25 kHz channels for increased bandwidth up to 100 kHz. Maximum permitted radiated power is 25 μW e.r.p. The frequencies are authorised for use as described in the EN 302 537 standard. As an alternative to the use of techniques to mitigate interference as described in harmonised standards, a transmission time of 0.1 percent may be used.

(4) Use of the 402–405 MHz frequency band is authorised for active medical implants. Frequency use is protected against interference caused by the use of devices for short-range communication that is otherwise permitted by these Regulations. Channel separation is 25 kHz. Individual transmitters may combine adjacent channels for increased bandwidth up to 300 kHz. Maximum permitted radiated power is 25 μW e.r.p. Other techniques to access spectrum or mitigate interference, including bandwidths greater than 300 kHz, can be used provided they result at least in an equivalent performance to the techniques described in the EN 301 839 standard, to ensure compatible operation with the other users and in particular with meteorological radiosondes.

(5) Use of the 2483.5–2500.0 MHz frequency band is authorised for active medical implants as described in the EN 301 559 standard. Peripheral units are for indoor use only. Maximum permitted radiated power is 10 mW e.i.r.p. Channel separation is 1 MHz. Maximum transmission time is 10 percent. The equipment shall implement a spectrum access mechanism as described in the applicable harmonised standard or an equivalent spectrum access mechanism. The frequency band may also be used as a single channel for data transmissions.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359. 28 June 2018 no. 1084 (in force 1 July 2018).

Section 20. ***Medical telemetry***

(1) Use of the centre frequencies in the table is authorised for medical telemetry. Maximum permitted radiated power is 10 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

441.750 MHz	441.775 MHz	441.800 MHz	441.825 MHz	441.850 MHz
441.875 MHz	441.900 MHz	441.925 MHz	441.950 MHz	441.975 MHz

(2) Use of the 2483.5–2500 MHz frequency band is authorised for Medical Body Area Network Systems (MBANS), indoor only, within healthcare facilities as described in the standard EN 303 203. Maximum permitted radiated power is 1 mW e.i.r.p. with a maximum transmission time of less than 10 percent. Maximum permitted occupied bandwidth is 3 MHz.

(3) Use of the 2483.5–2500 MHz frequency band is authorised for Medical Body Area Network Systems (MBANS), indoor only, within the patient's home as described in the standard EN 303 203. Maximum permitted radiated power is 10 mW e.i.r.p. with a maximum transmission time of less than 2 percent. Maximum permitted occupied bandwidth is 3 MHz.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. VIII. Alarm systems

Section 21. *Various alarm systems*

(1) Use of the 868.6–868.7 MHz frequency band is authorised for alarm systems as described in the EN 300 220 standard. Maximum occupied bandwidth per channel is 25 kHz. Maximum permitted radiated power is 10 mW e.r.p. Transmission time is less than 1.0 percent. The frequency band may also be used as a single channel for data transmission systems.

(2) Use of the 869.250–869.300 MHz frequency band is authorised for alarm systems as described in the EN 300 220 standard. Maximum occupied bandwidth per channel is 25 kHz. Maximum permitted radiated power is 10 mW e.r.p. Transmission time is less than 0.1 percent.

(3) Use of the 869.300–869.400 MHz frequency band is authorised for alarm systems as described in the EN 300 220 standard. Maximum occupied bandwidth per channel is 25 kHz. Maximum permitted radiated power is 10 mW e.r.p. Transmission time is less than 1.0 percent.

(4) Use of the 869.650–869.700 MHz frequency band is authorised for alarm systems as described in the EN 300 220 standard. Maximum occupied bandwidth per channel is 25 kHz. Maximum permitted radiated power is 25 mW e.r.p. Transmission time is less than 10 percent.

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 22. *Social alarms*

Use of the 869.200–869.250 MHz frequency band is authorised for social alarms as described in the EN 300 220-3-1 standard. Maximum occupied bandwidth per channel is 25 kHz. Maximum permitted radiated power is 10 mW e.r.p. Maximum transmission time is 0.1 percent.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. IX. Devices for detecting position, velocity and other characteristics

Section 23. *Devices for detecting movement, level, position and velocity*

(1) Use of the 2400–2483.5 MHz frequency band is authorised for radio determination devices as described in the EN 300 440 standard. Maximum permitted radiated power is 25 mW e.i.r.p.

(2) Use of the 4.5–7.0 GHz, 8.5–10.6 GHz, 24.05–27.00 GHz, 57–64 GHz and 75–85 GHz frequency bands is authorised for Tank Level Probing Radar (TLBR) as described in the EN 302 372 standard. Maximum permitted spectral density is –41.3 dBm/MHz e.i.r.p., measured outside the tank. In the 10.6–10.7 GHz protective band, spectral density on the outside of a closed tank shall not exceed –60 dBm/MHz e.i.r.p. Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards must be used.

(3) Use of the 9200–9500 MHz, 9500–9975 MHz and 13.4–14.0 GHz frequency bands is authorised for radio determination devices as described in the EN 300 440 standard. Maximum permitted radiated power is 25 mW e.i.r.p.

(4) Use of the 10.5–10.6 GHz frequency band is authorised for radio determination devices as described in the EN 300 440 standard. Maximum permitted radiated power is 500 mW e.i.r.p.

(5) Use of the 24.05–24.25 GHz frequency band is authorised for radio determination devices as described in the EN 300 440 standard. Maximum permitted radiated power is 100 mW e.i.r.p.

(6) Use of the 17.1–17.3 GHz frequency band is authorised for ground-based systems as described in the EN 300 440 standard. Maximum permitted radiated power is 26 dBm e.i.r.p.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 24. ***Differential GPS***

(1) Use of the centre frequencies 419.4375 MHz, 419.4625 MHz, 419.5375 MHz and 419.5625 MHz is authorised for differential GPS. Maximum permitted radiated power is 25 W. Maximum occupied bandwidth per channel is 25 kHz. The field strength at the border between Norway and neighbouring states shall not exceed 20 dBµV/m. For the centre frequency 419.4625 MHz, maximum permitted radiated power is 25 W at the national border between Norway and Finland and the national border between Norway and Sweden.

(2) The centre frequencies 440.550 and 441.000 MHz may be used for differential GPS. Maximum permitted radiated power is 500 mW e.i.r.p. Maximum occupied bandwidth per channel is 25 kHz. The field strength at the border between Norway and neighbouring states shall not exceed 20 dBµV/m.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 25. ***Automotive Short Range Radar***

(1) Use of the following frequency bands is authorised for Short Range Radar (SRR) as described in the EN 302 858 standard:

a) 24.050–24.075 GHz with maximum permitted radiated power of 100 mW e.i.r.p.

b) 24.075–24.150 GHz with maximum permitted radiated power of 0.1 mW e.i.r.p. With techniques to access spectrum and mitigate interference as described in the standard EN 302 858, maximum permitted radiated power is 100 mW e.i.r.p.

c) 24.150–24.250 GHz with maximum permitted radiated power of 100 mW e.i.r.p.

(2) Use of the 24.05–24.25 GHz frequency band is authorised for narrowband transmission. Maximum permitted radiated power is 20 dBm e.i.r.p. If transmission time is above 10 percent, maximum power shall be –10 dBm e.i.r.p.

(3) Use of the 24.250–24.495 GHz frequency band is authorised for SRR as described in the EN 302 858 standard. Maximum permitted radiated power is –11 dBm e.i.r.p. and maximum transmission time is 0.25 percent per second per 25 MHz.

(4) Use of the 24.495–24.500 GHz frequency band is authorised for SRR as described in the EN 302 858 standard. Maximum permitted radiated power is –8 dBm e.i.r.p. and maximum transmission time is 1.5 percent per second per 5 MHz.

(5) Use of the 24.250–24.500 GHz frequency band is authorised for SRR as described in the EN 302 858 standard. For frequency use for forward-oriented radars, maximum permitted radiated power is 20 dBm e.i.r.p. and maximum transmission time is 5.6 percent per second per 25 MHz. For frequency use for rearward-facing radars, maximum permitted radiated power is 16 dBm e.i.r.p. and maximum transmission time is 2.3 percent per second per 25 MHz.

(6) Until 1 January 2022, the 24.25–26.65 GHz frequency band is authorised for use for SRR as described in the EN 302 288 standard in vehicles type-approved before 1 January 2018. Maximum spectral density is 0 dBm/50 MHz e.i.r.p.

(7) Use of the 76–77 GHz frequency band is authorised for ground-based vehicle and infrastructure systems as described in the EN 301 091-1, EN 301 091-2 and EN 301 091-3 standards. Maximum permitted peak is 55 dBm e.i.r.p. Maximum permitted mean power is 50 dBm e.i.r.p. Maximum permitted mean power is 23.5 dBm e.i.r.p. for pulsed radars.

(8) Use of the 77–81 GHz frequency band is authorised for SRR as described in the EN 302 264 standard. Maximum permitted peak is 55 dBm e.i.r.p. Maximum permitted mean spectral density is –3 dBm/MHz e.i.r.p. Spectral density outside the vehicle shall not exceed –9 dBm/MHz e.i.r.p.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 25a. *Short range radar for rotorcraft*

Use of the 76–77 frequency band is authorised for obstacle detection radars for rotorcraft as described in the EN 303 360 standard. Maximum permitted peak is 30 dBm e.i.r.p. Maximum mean permitted spectral density is 3 dBm/MHz. Maximum permitted transmission time is 56 percent per second.

0 Added by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 26. *Active radar reflectors*

Use of the 2900–3100 MHz and 9200–9500 MHz frequency bands is authorised in accordance with the frequency use and technical parameters defined in ITU-R Recommendation M.1176-1. Maximum permitted radiated power is 10 W e.i.r.p.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 27. *Navigational radar for use on vessels*

(5) Use of the 2900–3100 MHz and 9225–9500 MHz frequency bands is authorised for navigational radars on vessels.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 28. *Radar-SART for use on vessels in distress*

Use of the 9200–9500 MHz frequency band is authorised for Radar-SART on vessels in distress as described in ITU-R Recommendation M.628-5.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 29. *AIS-SART for use on vessels in distress*

Use of the 161.975 MHz and 162.025 centre frequencies is authorised for AIS-SART on vessels in distress as described in IEC 61097-14. Maximum permitted occupied bandwidth is 25 kHz.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 30. *Homing devices*

(1) Use of the 456.9–457.1 kHz frequency band is authorised for homing devices as described in the EN 300 718-2 standard. Maximum permitted field strength is 7 dBµA/m at a distance of 10 metres.

(2) Use of the centre frequencies 142.050 MHz, 142.275 MHz and 142.325 MHz is authorised for homing devices. Maximum permitted radiated power is 500 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

(3) Use of the 155.450 MHz and 155.475 MHz frequencies is authorised for homing devices. Maximum permitted radiated power is 2 W e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. X. Ultra-wideband

Section 31. *Ultra-wideband equipment*

Use of frequencies for indoor use of Ultra-Wideband (UWB) equipment is authorised as described in the table. Outdoor use is allowed only if it is not attached to a fixed installation, a fixed infrastructure or a fixed outdoor antenna, or equipment mounted in aircraft or model aircraft. Equipment using ultra-wideband technology which meets the conditions in the table shall also be allowed in road and rail vehicles.

Frequency range	*Maximum permitted mean e.i.r.p. spectral density*	*Maximum permitted peak e.i.r.p. (measured over 50 MHz)*
Below 1.6 GHz	–90 dBm/MHz	–50 dBm
1.6–2.7 GHz	–85 dBm/MHz	–45 dBm
2.7–3.1 GHz	–70 dBm/MHz	–36 dBm
31–3.4 GHz	–70 dBm/MHz (–41.3 dBm/MHz with LDC or DAA)	–36 dBm (0 dBm with LDC or DAA)
3.4–3.8 GHz	–80 dBm/MHz (–41.3 dBm/MHz with LDC or DAA)	–40 dBm (0 dBm with LDC or DAA)
3.8–4.8 GHz	–70 dBm/MHz (–41.3 dBm/MHz with LDC or DAA)	–30 dBm (0 dBm with LDC or DAA)
4.8–6 GHz	–70 dBm/MHz	–30 dBm
6–8.5 GHz	–41.3 dBm/MHz	0 dBm
8.5–9.0 GHz	–65 dBm/MHz (–41.3 dBm/MHz with DAA)	–25 dBm (0 dBm with DAA)
9.0–10.6 GHz	–65 dBm/MHz	–25 dBm
Above 10.6 GHz	–85 dBm/MHz	–45 dBm
Low Duty Cycle (LDC): Methods and parameters must comply with the EN 302 065-1 standard. Detect and Avoid (DAA): Methods and parameters must comply with the EN 302 065-1 standard.		

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 31a. *Ultra-wideband devices installed in road and rail vehicles*

Use of frequencies is authorised for ultra-wideband technology installed in road and rail vehicles as described in the table.

Frequency range	*Maximum permitted mean e.i.r.p. spectral density*	*Maximum peak e.i.r.p. (measured over 50 MHz)*
Below 1.6 GHz	–90 dBm/MHz	–50 dBm
1.6–2.7 GHz	–85 dBm/MHz	–45 dBm
2.7–3.1 GHz	–70 dBm/MHz	–36 dBm

31–3.4 GHz	–70 dBm/MHz (–41.3 dBm/MHz with LDC + ext.lim.) (–41.3 dBm/MHz with TPC + DAA + ext.lim.)	–36 dBm (0 dBm/MHz with LDC + ext.lim.) (0 dBm/MHz with TPC + DAA + ext.lim.)
3.4–3.8 GHz	–80 dBm/MHz (–41.3 dBm/MHz with LDC + ext.lim.) (–41.3 dBm/MHz with TPC + DAA + ext.lim.)	–40 dBm (0 dBm/MHz with LDC + ext.lim.) (0 dBm/MHz with TPC + DAA + ext.lim.)
3.8–4.8 GHz	–70 dBm/MHz (–41.3 dBm/MHz with LDC + ext.lim.) (–41.3 dBm/MHz with TPC + DAA + ext.lim.)	–30 dBm (0 dBm/MHz with LDC + ext.lim.) (0 dBm/MHz with TPC + DAA + ext.lim.)
4.8–6.0 GHz	–70 dBm/MHz	–30 dBm
6.0–8.5 GHz	–53.3 dBm/MHz (–41.3 dBm/MHz with LDC + ext.lim.) (–41.3 dBm/MHz with TPC + ext.lim.)	–13.3 dBm (0 dBm/MHz with LDC + ext.lim.) (0 dBm/MHz with TPC + ext.lim.)
8.5–9.0 GHz	–65 dBm/MHz (–41.3 dBm/MHz with TPC + DAA + ext.lim.)	–25 dBm (0 dBm/MHz with TPC + DAA + ext.lim.)
9.0–10.6 GHz	–65 dBm/MHz	–25 dBm
Above 10.6 GHz	–85 dBm/MHz	–45 dBm
Low Duty Cycle (LDC): Methods and parameters must comply with the EN 302 065-3 standard. Detect and Avoid (DAA): Methods and parameters must comply with the EN 302 065-3 standard. Transmit Power Control (TPC): Methods and parameters must comply with the EN 302 065-3 standard. External Limit (ext. lim.): Maximum permitted spectral density measured on the outside of road and rail vehicles is –53.3 dBm/MHz, as described in the EN 302 065-3 standard.		

0 Added by the Regulations of 28 April 2014 no. 591, amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 31b. ***Location tracking systems type 1 (LT1)***

(1) Use of the frequencies as specified in the table is authorised for location tracking systems type 1 (LT1). LT1 are systems intended for general location tracking of people and objects. Outdoor use is allowed only if it is not attached to a fixed installation, a fixed infrastructure or a fixed outdoor antenna, or equipment mounted in aircraft or model aircraft. Equipment using ultra-wideband technology which meets the conditions in the table shall also be allowed in road and rail vehicles.

Frequency range	***Maximum permitted mean e.i.r.p. spectral density***	***Maximum permitted peak e.i.r.p. (measured over 50 MHz)***
Below 1.6 GHz	–90 dBm/MHz	–50 dBm
1.6–2.7 GHz	–85 dBm/MHz	–45 dBm
2.7–3.4 GHz	–70 dBm/MHz	–36 dBm
3.4–3.8 GHz	–80 dBm/MHz	–40 dBm
3.8–6.0 GHz	–70 dBm/MHz	–30 dBm
6.0–8.5 GHz	–41.3 dBm/MHz	0 dBm

8.5–9.0 GHz	–65 dBm/MHz (–41.3 dBm/MHz with DAA)	–25 dBm (0 dBm at DAA)
9.0–10.6 GHz	–65 dBm/MHz	–25 dBm
Above 10.6 GHz	–85 dBm/MHz	–45 dBm
Detect and Avoid (DAA): Methods and parameters must comply with the EN 302 065-2 standard.		

(2) In the frequency band 8.5–9.0 GHz, when using the mitigation technique Detect and Avoid as specified in the standard EN 302 065-2, maximum permitted mean e.i.r.p. spectral density is –41.3 dBm/MHz and maximum peak e.i.r.p. measured over 50 MHz is 0 dBm.

0 Added by the Regulations of 24 Nov. 2015 no. 1359, amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 32. *Applications for ground- and wall-probing radar*

Frequencies listed in the table are authorised for applications used for Ground- and Wall-Probing Radar (GPR/WPR), as described in the EN 302 066 standard. The maximum permitted signal levels are stipulated in the table. In addition to the requirements in the table, maximum permitted spectral density is –75 dBm/MHz e.i.r.p. for devices operating in the frequency bands for Radio Navigation Satellite Services (RNSS) 1164–1215 MHz and 1559–1610 MHz.

Frequency range	***Maximum permitted mean e.i.r.p. spectral density for undesired emission***
30–230 MHz	–65 dBm/MHz
230–1000 MHz	–60 dBm/MHz
1000–1600 MHz	–65 dBm/MHz
1600–3400 MHz	–51.3 dBm/MHz
3400–5000 MHz	–41.3 dBm/MHz
5000–6000 MHz	–51.3 dBm/MHz
6000–12400 MHz	–65 dBm/MHz

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 33. *Building Material Analysis devices*

(1) Use of frequencies for Building Material Analysis (BMA) devices is authorised as described in the table. BMA devices are defined as devices that are used to detect objects within a building structure or to determine the physical properties of a building material. BMA devices must fulfil the following requirements:

a) Transmitter-On only if manually operated with a non-locking switch (e.g. it may be a sensor for the presence of the operator's hand) plus being in contact or close proximity to the investigated material and the emissions being directed into the direction of the object (e.g. measured by a proximity sensor or imposed by the mechanical design);

b) The BMA transmitter must switch-off after maximum 10 seconds without movement;

c) The total radiated power spectral density must be 5 dB below the maximum mean power spectral density limits in the table below.

Outdoor use is allowed only if it is not attached to a fixed installation, a fixed infrastructure or a fixed outdoor antenna, or equipment mounted in aircraft or model aircraft. Equipment using ultra-wideband technology which meets the conditions in the table shall also be allowed in road and rail vehicles.
The signal from BMA devices must be kept to a minimum and must not exceed the maximum power limits specified in the table below with the BMA unit tested on a representative wall as defined in the EN 302 065-4 standard.

Frequency range	*Maximum permitted mean e.i.r.p. spectral density*	*Maximum permitted peak e.i.r.p. (measured over 50 MHz)*
Below 1.73 GHz	–85 dBm/MHz (–70 dBm/MHz in 1.215–1.730 GHz with LBT)	–45 dBm/MHz
1.73–2.20 GHz	–65 dBm/MHz	–25 dBm/MHz
2.20–2.50 GHz	–50 dBm/MHz	–10 dBm/MHz
2.50–2.69 GHz	–65 dBm/MHz (–50 dBm/MHz with LBT)	–25 dBm/MHz
2.69–2.70 GHz	–55 dBm/MHz	–15 dBm/MHz
2.70–3.40 GHz	–70 dBm/MHz (–50 dBm/MHz with LBT)	–30 dBm/MHz
3.40–4.80 GHz	–50 dBm/MHz	–10 dBm/MHz
4.8–5.0 GHz	–55 dBm/MHz	–15 dBm/MHz
5.0–8.5 GHz	–50 dBm/MHz	–10 dBm/MHz
Above 8.5 GHz	–85 dBm/MHz	–45 dBm/MHz

(2) Devices implementing Listen Before Talk as described in the EN 302 065-4 standard may be used in the 1.215–1.730 GHz frequency band with a maximum mean spectral density of –70 dBm/MHz.

(3) Devices implementing Listen Before Talk as described in the EN 302 065-4 standard may be used in the 2.50–2.69 GHz and 2.70–3.40 GHz frequency bands with a maximum permitted mean spectral density of –50 dBm/MHz.

(4) To protect the radio astronomy bands 2.69–2.70 GHz and 4.8–5.0 GHz, the total radiated spectral density shall be below –65 dBm/MHz when BMA devices use these frequencies.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 34. ***Material sensing devices***

(1) Use of frequencies for material sensing devices that employ Ultra-Wideband Technology (UWB) is authorised as described in the table. Material sensing devices are devices used to detect objects within a structure or to determine the physical properties of a material.
Material sensing devices for fixed installations shall fulfil the following requirements:

a) The transmitter must switch off if the machine is not running (‘running sensor’);
b) The transmitter shall implement a TPC with a dynamic range of 10 dB, as described in the harmonised standard EN 302 065-4;
c) The transmitter shall be attached to a fixed installation.

Material sensing devices for mobile installations shall fulfil the following requirements:

a) Transmitter-On only if manually operated with a non-locking switch (e.g. it may be a sensor for the presence of the operator’s hand) plus being in contact or close proximity to the investigated material and the emissions being directed into the direction of the object (e.g. measured by a proximity sensor or imposed by the mechanical design);
b) The transmitter must switch off automatically if the machine is not running (‘running sensor’).

Outdoor use is allowed only if it is not attached to a fixed installation, a fixed infrastructure or a fixed outdoor antenna, or equipment mounted in aircraft or model aircraft. Equipment using ultra-wideband technology which meets the conditions in the table shall also be allowed in road and rail vehicles.
The signal from material sensing devices must be kept to a minimum and must not exceed the maximum power limits specified in the table below. Mobile material sensing devices, tested on a representative wall as defined in the EN 302 065-4 standard, must comply with the limits given in the table below.

Frequency range	*Fixed installations*		*Mobile installations*
	Maximum permitted mean e.i.r.p. spectral density	*Maximum permitted mean e.i.r.p. spectral density in the horizontal plane (–20° to 30° elevation)*	*Maximum permitted mean e.i.r.p. spectral density in the horizontal plane*
Below 1.73 GHz	–85 dBm/MHz		–85 dBm/MHz
1.73–2.20 GHz	–65 dBm/MHz	–70 dBm/MHz	–70 dBm/MHz
2.20–2.50 GHz	–50 dBm/MHz		–50 dBm/MHz
2.50–2.69 GHz	–65 dBm/MHz	–70 dBm/MHz	–65 dBm/MHz (–50 dBm/MHz with LBT)
2.69–2.70 GHz	–55 dBm/MHz	–75 dBm/MHz	–70 dBm/MHz
2.70–2.90 GHz	–50 dBm/MHz	–70 dBm/MHz	–70 dBm/MHz
2.90–3.40 GHz	–50 dBm/MHz	–70 dBm/MHz	–70 dBm/MHz (–50 dBm/MHz with LBT)
3.40–3.80 GHz	–50 dBm/MHz	–70 dBm/MHz	–50 dBm/MHz
3.80–4.80 GHz	–50 dBm/MHz		–50 dBm/MHz
4.80–5.00 GHz	–55 dBm/MHz	–75 dBm/MHz	–55 dBm/MHz
5.00–5.25 GHz	–50 dBm/MHz		–50 dBm/MHz
5.25–5.35 GHz	–50 dBm/MHz	–60 dBm/MHz	–60 dBm/MHz
5.35–5.60 GHz	–50 dBm/MHz		–50 dBm/MHz
5.60–5.65 GHz	–50 dBm/MHz	–65 dBm/MHz	–65 dBm/MHz
5.650–5.725 GHz	–50 dBm/MHz	–60 dBm/MHz	–60 dBm/MHz
5.725–8.500 GHz	–50 dBm/MHz		–50 dBm/MHz
8.50–10.60 GHz	–65 dBm/MHz	–65 dBm/MHz	
Above 10.60 GHz	–85 dBm/MHz	–85 dBm/MHz	

The peak power (in dBm) measured in a bandwidth of 50 MHz shall be less than a limit that is obtained by adding a conversion factor (25 dB) to the 'maximum mean power spectral density' (in dBm/MHz) limit.

(2) For the 2.69–2.70 GHz, 3.40–3.80 GHz and 4.80–5.00 GHz frequency bands, transmission time shall not exceed 10 percent of one second.

(3) In the 2.50–2.69 GHz and 2.90–3.40 GHz frequency bands, a maximum mean spectral density of –50 dBm/MHz is authorised for devices implementing Listen Before Talk as described in the EN 302 065-4 standard.

(4) For the 2.50–2.69 GHz and 4.80–5.00 GHz frequency bands, the maximum radiated spectral density shall be 10 dB lower than the maximum permitted spectral density. For the 3.40–3.80 GHz frequency band, maximum radiated spectral density shall be 5 dB lower than maximum permitted spectral density.

(5) In mobile applications, the following requirements apply to the total radiated spectral density:

a) In the frequency bands 2.50–2.69 GHz and 4.80–5.00 GHz, total radiated spectral density shall be 10 dB lower than the maximum permitted mean e.i.r.p. spectral density in the horizontal plane in the table above;

b) In the frequency band 3.4–3.8 GHz, total radiated spectral density shall be 5 dB lower than the maximum permitted mean e.i.r.p. spectral density in the horizontal plane in the table above.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 35. ***Level Probing Radars (LPR) using Ultra-Wideband Technology***

(1) Use of the 6.0–8.5 GHz, 24.05–26.50 GHz, 57–64 GHz and 75–85 GHz frequency bands is authorised for Level Probing Radars (LPR) using Ultra-Wideband Technology (UWB). The use must comply with the technical requirements listed in the table. The antenna of the device must be directed downwards at all times.

Frequency range	***Maximum permitted mean e.i.r.p. spectral density (dBm/MHz)***	***Maximum permitted peak e.i.r.p. (dBm measured over 50 MHz)***	***Antenna's maximum beam opening (degrees)***	***Maximum permitted mean e.i.r.p. spectral density for a hemisphere (dBm/MHz)***
	A	**B**	**C**	**D**
6.0–8.5 GHz	–33	+7	12	–55
24.05–26.50 GHz	–14	+26	12	–41.3
57–64 GHz	–2	+35	8	–41.3
75–85 GHz	–3	+34	8	–41.3

(2) The mean e.i.r.p. spectral density of the main beam of the LPR is the mean power per unit of bandwidth in the direction in which the emission is at its maximum.

(3) The peak power e.i.r.p. in the main beam is the power over a bandwidth of 50 MHz measured at the frequency with the highest mean radiated power. If the bandwidth is measured in x MHz, the level listed in the table in the first subsection shall be scaled down by a factor corresponding to 20log (50/x) dB.

(4) The maximum beam opening of the antenna is defined at –3 dB compared to the maximum gain. The table in the first subsection indicates the total opening angle. The antenna's gain at an elevation angle above 60 degrees compared to the direction of the main beam can at most be –10 dBi.

(5) The maximum mean e.i.r.p. spectral density limit for a hemisphere around the LPR includes both the antenna's side lobes and reflections from the material being probed. If the measured values for the installation comply with the limits for maximum mean e.i.r.p. spectral density and maximum peak power e.i.r.p. in the table in the first subsection, the requirement for the mean e.i.r.p. spectral density limit for a hemisphere will be considered met.

(6) In order to use the devices in accordance with the table in the first subsection, interference mitigation measures must have been implemented to limit emission in all directions, regardless of the height of the installation and reflecting materials below the LPR. A practical method is to implement adaptive power control with a dynamic range of 20 dB. Alternative solutions that provide equivalent interference mitigation may also be used. Mitigation techniques such as adaptive power control and other equivalent technical solutions are described in the EN 302 729 harmonised standard.

(7) LPR using the frequencies 6.6 GHz, 24 GHz and 75 GHz is not authorised within a radius of 4 kilometres of antenna installations for radio astronomy without individual authorisation. The installation height of a LPR may not exceed 15 metres within a radius from 4 to 40 kilometres.

(8) The table shows limits for undesired emission from LPR that employs Ultra-Wideband Technology and operates in the 6.0–8.5 GHz frequency range. For LPR using Ultra-Wideband Technology that operates in the other frequency ranges, the limit for undesired emission is at least 20 dB lower than the values specified in the table in the first subsection. For LPR using Ultra-Wideband Technology that operates in the 24.05–26.50 GHz frequency range, the limit for undesired emission in the 23.6–24.0 GHz passive band is at least 30 dB less than the limits specified in the table in the first subsection of this provision.

Frequency range	***Maximum permitted mean e.i.r.p. spectral density (dBm/MHz)***	***Maximum permitted mean e.i.r.p. spectral density for a hemisphere (dBm/MHz)***
Below 1.73 GHz	–63	–85
1.73–2.70 GHz	–58	–80
2.70–5.00 GHz	–48	–70
5.00–6.00 GHz	–43	–65

8.50–10.60 GHz	–43	–65
Above 10.60 GHz	–63	–85

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 35a. *Use of ultra-wideband on board aircraft*

(1) Use of frequencies for devices for ultra-wideband on board aircraft is authorised in Norwegian airspace as described in the table.

Frequency range	***Maximum permitted mean e.i.r.p. spectral density***	***Maximum permitted peak e.i.r.p. (measured over 50 MHz)***
Below 1.6 GHz	–90 dBm/MHz	–50 dBm
1.6–2.7 GHz	–85 dBm/MHz	–45 dBm
2.7–3.4 GHz	–70 dBm/MHz	–36 dBm
3.4–3.8 GHz	–80 dBm/MHz	–40 dBm
3.8–6.0 GHz	–70 dBm/MHz	–30 dBm
6.0–6.650 GHz	–41.3 dBm/MHz	0 dBm
6.650–6.6752 GHz	–62.3 dBm/MHz	–21 dBm
6.6752–8.5 GHz	–41.3 dBm/MHz	0 dBm
8.5–10.6 GHz	–65 dBm/MHz	–25 dBm
Above 10.6 GHz	–85 dBm/MHz	–45 dBm

(2) In order to protect the Fixed Satellite Service (FSS) and Meteorological Satellite Service, the following power limits apply to use of frequencies in the 7.25–7.75 GHz frequency band: –51.3 – 20*log (10 [km]/x[km])(dBm/MHz) for altitudes of over 1000 metres, where x is the aircraft's altitude above ground level in kilometres. The limit is –71.3 dBm/MHz for altitudes of up to 1000 metres above ground level.

(3) In order to protect the Meteorological Satellite Service, the following power limits apply to use of frequencies in the 7.75–7.9 GHz frequency band: –44.3 –20*log (10[km]/x[km]) (dBm/MHz) for altitudes of over 1000 metres, where x is the aircraft's altitude above ground level in kilometres. The limit is –64.3 dBm/MHz for altitudes of up to 1000 metres above ground level.

(4) Alternative techniques to access spectrum and mitigate interference, such as the use of shielded windows, that provide at least equivalent performance to the techniques described in the second and third subsections, are permitted as described in the EN 302 065-5 standard.

(5) Aircraft registered in Norway that fly outside of Norwegian airspace are authorised to use frequencies for devices for UWB as described in the table in section 35a(1), if permission is granted by the administration in the other state whose airspace is being used. Frequency use shall comply with Norwegian obligations to other states.

0 Added by the Regulations of 28 April 2014 no. 591, amended by the Regulations of 17 June 2014 no. 811, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. XI. Remote control

Section 36. *Remote control*

(1) Use of the centre frequencies in the table is authorised as described in the EN 300 220-2 standard for all types of remote control. Maximum permitted radiated power is 100 mW e.r.p. Maximum occupied bandwidth per channel is 10 kHz.

26.995 MHz	27.045 MHz	27.095 MHz	27.145 MHz	27.195 MHz

27.255 MHz	40.665 MHz	40.675 MHz	40.685 MHz	40.695 MHz

(2) Use of the centre frequencies in the table is authorised as described in the EN 300 220-2 standard for the remote control of model aircraft. Maximum permitted radiated power is 100 mW e.r.p. Maximum occupied bandwidth per channel is 10 kHz.

35.000 MHz	35.010 MHz	35.020 MHz	35.030 MHz	35.040 MHz	35.050 MHz
35.060 MHz	35.070 MHz	35.080 MHz	35.090 MHz	35.100 MHz	35.110 MHz
35.120 MHz	35.130 MHz	35.140 MHz	35.150 MHz	35.160 MHz	35.170 MHz
35.180 MHz	35.190 MHz	35.200 MHz	35.210 MHz	35.220 MHz	35.230 MHz
35.240 MHz	35.250 MHz	35.260 MHz	35.270 MHz	35.280 MHz	35.290 MHz
35.300 MHz					

(3) Use of the centre frequencies in the table is authorised as described in the EN 300 220-2 for the remote control of model vehicles and model boats. Maximum permitted radiated power is 100 mW e.r.p. Maximum occupied bandwidth per channel is 10 kHz.

35.310 MHz	35.320 MHz	35.330 MHz	35.340 MHz	35.350 MHz	35.360 MHz
35.370 MHz	35.380 MHz	35.390 MHz	40.705 MHz	40.715 MHz	40.725 MHz
40.735 MHz	40.745 MHz	40.755 MHz	40.765 MHz	40.775 MHz	40.785 MHz
40.795 MHz					

(4) Use of the centre frequencies 142.400 MHz and 440.700 MHz is authorised as described in the EN 300 220-2 standard for the remote control of traffic lights. Maximum permitted radiated power is 500 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

(5) Use of the centre frequencies in the table is authorised as described in the EN 300 220-2 standard for the remote control of cranes. Maximum permitted radiated power is 100 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

440.725 MHz	440.750 MHz	441.325 MHz	441.550 MHz
441.575 MHz	441.600 MHz	441.625 MHz	441.725 MHz

0 Amended by the Regulations of 24 November 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. XII. Satellite terminals and satellite earth stations for stationary and mobile use

0 Heading amended by the Regulation of 28 April 2014 no. 591.

Section 37. *Terminals for monitoring and tracking*

Terminals connected to satellite systems for monitoring and tracking are authorised to use the 148.125–149.900 MHz and 401.580–401.690 MHz frequency bands.

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 38. *Terminals for mobile satellite services*

Terminals for mobile satellite services (MSS) are authorised to use the 1610–1645.5 MHz, 1646.5–1660.5 MHz, 1670–1675 MHz and 1980–2010 MHz frequency bands Use of the 1645.5–1646.5 MHz frequency band is authorised for emergency services.

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 39. *Satellite earth stations*

(1) This provision applies to satellite earth stations that operate in a satellite network. The provision does not apply to Svalbard and the Antarctic. It is a requirement that the satellite earth station is controlled by a Network Control Facility. The provision applies to both stationary and mobile use.

(2) Satellite earth stations are authorised to use the 14.00–14.50 GHz frequency band for Fixed Service Satellites (FSS). Maximum permitted radiated power is 60 dBW e.i.r.p.

(3) Satellite earth stations that operate in a geostationary satellite network are authorised to use the 27.5000–27.8285 GHz, 28.4445–28.8365 GHz and 29.4525–29.5000 GHz frequency bands as described in the EN 303 978 standard. Maximum permitted radiated power is 60 dBW e.i.r.p. The distance between frequency bands used for satellite earth stations and frequency bands used for fixed services must be at least 10 MHz. To protect fixed services in the adjacent 27.8285–28.4445 GHz, 28.8365–28.9485 GHz and 28.9485–29.4525 GHz frequency bands, the maximum radiated power in these bands shall not exceed –35 dBW/MHz in a direction of more than 7 degrees from the main axis of the direction of the beam. For satellite earth stations on mobile installations on land, in territorial sea or in internal waters, this threshold applies if the direction of the beam is less than 3 degrees above the horizontal plane of the earth station.

(4) Satellite earth stations that operate in a non-geostationary satellite network are authorised to use the 27.5000–27.8285 GHz and 28.4445–28.8365 GHz frequency bands as described in the EN 303 979 standard. Maximum permitted radiated power is 60 dBW e.i.r.p. The distance between frequency bands used for satellite earth stations and frequency bands used for fixed services must be at least 10 MHz. To protect fixed services in the adjacent 27.8285–28.4445 GHz, 28.8365–28.9485 GHz and 28.9485–29.1000 GHz frequency bands, the maximum radiated power in these bands shall not exceed –35 dBW/MHz in a direction of more than 7 degrees from the main axis of the direction of the beam. For satellite earth stations on mobile installations on land, in territorial sea or in internal waters, this threshold applies if the direction of the beam is less than 3 degrees above the horizontal plane of the earth station.

(5) Satellite earth stations can use the 29.50–30.00 GHz frequency band as described in the EN 303 978 standard for geostationary satellite networks and as described in the EN 303 979 standard for non-geostationary satellite networks. Maximum permitted radiated power is 60 dBW e.i.r.p.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. XIII. Citizens band, baby monitors and pagers

Section 40. *Citizens band*

(1) Use of the 26.960–27.410 MHz frequency band, with the exception of channels with the centre frequencies of the band as detailed in section 36(1), is authorised with a channel separation of 10 kHz, and as described in the EN 300 433 standard. For angle-modulated Citizens Band (PR 27) the maximum permitted radiated power is 4 W e.r.p., for double sideband modulation maximum permitted radiated power is 4 W e.r.p. (measured as an RMS value), and for single sideband modulation maximum permitted radiated power is 12 W e.r.p. (measured as a peak envelope power).

(2) Use of the centre frequencies 444.600 MHz, 444.650 MHz, 444.800 MHz, 444.825 MHz, 444.850 MHz and 444.975 MHz is authorised for handheld mobile radio (KDR 444) as described in the EN 300 296 standard. Maximum permitted radiated power is 500 mW e.r.p. The radio equipment shall have an integrated antenna. Maximum occupied bandwidth per channel is 25 kHz.

(3) Use of the 446.000–446.200 MHz frequency band is authorised for handheld mobile radio (PMR 446) as described in the EN 303 405 standard. The radio equipment shall have an integrated antenna. Maximum permitted radiated power is 500 mW e.r.p. Channel separation for analogue mobile radio devices is 12.5 kHz. Channel separation for digital mobile radio devices is 6.25 kHz or 12.5 kHz.

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 41. *Baby monitors*

(1) Use of the centre frequencies 40.710 MHz, 40.720 MHz, 40.730 MHz and 40.740 MHz is authorised for baby monitors. Maximum permitted radiated power is 25 mW e.r.p. Maximum occupied bandwidth per channel is 10 kHz.

(2) Use of the 83.2125–83.3125 MHz frequency band is authorised for baby monitors. Maximum permitted radiated power is 10 mW e.r.p. Maximum occupied bandwidth per channel is 25 kHz.

0 Amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 42. *Transmitting point for pagers*

Use of the centre frequency 449.750 MHz is authorised for pager systems. Maximum permitted radiated power is 5 W e.r.p. Maximum occupied bandwidth is 25 kHz.

Chap. XIV. Use of devices for mobile communication on board vessels and aircraft

0 Amended by the Regulations of 28 April 2014 no. 591.

Section 43. *Use of GSM on board vessels in Norwegian waters*

(1) Mobile systems on board vessels may use the 880–915 MHz (uplink), 925–960 MHz (downlink), 1710–1785 MHz (uplink) and 1805–1880 MHz (downlink) frequency bands for GSM in Norwegian territorial waters starting from 2 nautical miles outside the baseline. Only indoor antenna(s) shall be used between 2 and 12 nautical miles outside the baseline.

(2) For base stations on board vessels, a maximum permitted spectral density measured outdoors with reference to 0 dBi antenna gain of –80 dBm/200 kHz applies. For mobile terminals controlled by the vessel's base station, a maximum radiated power of 5 dBm in the 900 MHz band and 0 dBm in the 1800 MHz band applies.

(3) Frequency use shall comply with the EN 301 502 and EN 301 511 standards or similar specifications. For the use of GSM systems the following thus applies:

a) Between 2 and 3 nautical miles from the baseline, receiver sensitivity and the threshold level for interruption (the ACCMIN value and min. RXLEV) for mobile terminals shall be equal to or higher than –70 dBm/200 kHz. Between 3 and 12 nautical miles from the baseline, this value shall be equal to or higher than –75 dBm/200 kHz.
b) DTX (discontinuous transmission) shall be activated in the mobile communication system's uplink direction.
c) The base station's timing advance value shall be set to the lowest level possible.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 43a. ***Use of UMTS on board vessels in Norwegian waters***

(1) Mobile systems on board vessels may use the 1 920–1 980 MHz (uplink) and 2110–2170 MHz (downlink) frequency bands for UMTS in Norwegian territorial waters starting from 2 nautical miles outside the baseline. Only indoor antenna(s) shall be used between 2 and 12 nautical miles outside the baseline. Only bandwidth up to 5 MHz (duplex) can be used.

(2) For mobile terminals controlled by the vessel's base station, a maximum radiated power of 0 dBm/5 MHz applies.

(3) Maximum permitted radiated power from base stations, measured outdoors on deck, is –102 DBm/5 MHz (Common Pilot Channel).

(4) Frequency use shall comply with the EN 301 908-1, EN 301 908-2 EN 301 908-3 and EN 301 908-11 standards or similar specifications. For the use of UMTS systems the following thus applies:

a) Between 2 and 12 nautical miles from the baseline, the quality criteria (minimum required received signal level in the cell) shall be equal to or higher than –87 dBm/5 MHz.

b) The Public Land Mobile Network selection timer shall be set to 10 minutes.

c) The timing advance parameter shall be set according to a cell range for the distributed antenna system equal to 600 m.

d) The Radio Resource Control user inactivity release timer shall be set to 2 seconds.

(5) The centre frequency for the channels shall not be aligned with the centre frequency for the land-based mobile networks.

0 Added by the Regulations of 28 April 2014 no. 591, amended by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 43b. ***Use of LTE on board vessels in Norwegian waters***

(1) Mobile systems on board vessels may use the 1710–1785 MHz (uplink), 1805–1880 MHz (downlink), 2500–2570 MHz (uplink) and 2620–2690 MHz (downlink) frequency bands for LTE in Norwegian territorial waters starting from 4 nautical miles outside the baseline. Only indoor antenna(s) shall be used between 4 and 12 nautical miles outside the baseline. Only bandwidth up to 5 MHz (duplex) can be used per frequency band (1800 MHz and 2600 MHz).

(2) For mobile terminals controlled by the vessel's base station, a maximum radiated power of 0 dBm applies.

(3) Maximum permitted radiated power from base stations, measured outdoors on deck, is –98 DBm/5 MHz (equivalent to –120 dBm/15 kHz).

(4) Frequency use shall comply with the EN 301 908-1, EN 301 908-2 EN 301 908-3 and EN 301 908-11 standards or similar specifications. For the use of LTE systems the following thus applies:

a) Between 4 and 12 nautical miles from the baseline, the quality criteria (minimum required received level strength in the cell) shall be equal to or higher than –83 dBm/5 MHz (equivalent to –105 dBm/15 kHz).

b) The Public Land Mobile Network selection timer shall be set to 10 minutes.

c) The timing advance parameter shall be set according to a cell range for the distributed antenna system equal to 400 m.

d) The Radio Resource Control user inactivity release timer shall be set to 2 seconds.

(5) The centre frequency for the channels shall not be aligned with the centre frequency for the land-based mobile networks.

0 Added by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 43c. ***Use of devices for mobile communication on board vessels registered in Norway outside of Norwegian territorial waters***

(1) Vessels registered in Norway that sail outside of Norwegian territorial waters can while sailing use the frequency bands specified in sections 43, 43a and 43b for mobile communication.

(2) Frequency use shall be arranged so as not to cause harmful interference to land-based mobile networks.

(3) Frequency use shall comply with Norwegian obligations to other states. If necessary, the operator of the system shall also obtain a licence from the authority in the foreign state.

0 Added by the Regulations of 28 June 2018 no. 1084 (in force 1 July 2018).

Section 44. ***Use of devices for mobile communication on board aircraft in Norwegian airspace***

(1) Aircraft in Norwegian airspace may use the following bands and technologies for devices for mobile communication on board.

Technology	***Frequency band***	***System information***
GSM 1800	1710–1785 MHz (uplink) 1805–1880 MHz (downlink)	GSM systems that comply with GSM standards published by ETSI, in particular, EN 301 502, EN 301 511 and EN 302 480, or equivalent standards.
UMTS 2100 (FDD)	1920–1980 MHz (uplink) 2110–2170 MHz (downlink)	UMTS systems that comply with UMTS standards published by ETSI, in particular, EN 301 908-1, EN 301 908-2, EN 301 908-3 and EN 908-11 or equivalent standards.
LTE 1800 (FDD)	1710–1785 MHz (uplink) 1805–1880 MHz (downlink)	LTE that complies with LTE standards published by ETSI, in particular EN 301 908-1, EN 301 908-13, EN 301 908-14 and EN 301 908-15 or equivalent standards.

(2) The following operational requirements must be met:

a) Transmission from the systems is only permitted at altitudes of 3000 metres above the ground or higher.

b) The aircraft's GSM base station (BTS) must limit the transmit power of all associated GSM mobile terminals transmitting in the 1800 MHz band to a nominal value of 0 dBm/200 kHz at all stages of communication, including initial connection to the base station.

c) The aircraft's LTE base station (Node B) must limit the transmit power of all associated LTE mobile terminals transmitting in the 1800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication.

d) The aircraft's UMTS base station (Node B) must limit the transmit power of all associated UMTS mobile terminals transmitting in the 2100 MHz band to a nominal value of –6 dBm/3.84 MHz at all stages of communication. The maximum number of associated UMTS mobile terminals shall not exceed 20.

(3) The maximum permitted radiated power from the mobile terminals measured outside the aircraft shall not exceed the values in the table below:

Metres above the ground	*Maximum permitted e.i.r.p. outside the aircraft from GSM mobile terminal measured in dBm/200 kHz*	*Maximum permitted e.i.r.p. outside the aircraft from LTE mobile terminal measured in dBm/5 MHz*	*Maximum permitted e.i.r.p. outside the aircraft from UMTS mobile terminal measured in dBm/3.84 MHz.*
3000	–3.3	1.7	3.1
4000	–1.1	3.9	5.6
5000	0.5	5	7
6000	1.8	5	7
7000	2.9	5	7
8000	3.8	5	7

(4) Mobile communication terminals should, when receiving within the frequency bands in the table below, be prevented from attempting to register with UMTS networks on the ground. This is done by using one or both of the following methods:

a) Including a network control unit (NCU) to raise the noise floor inside the cabin within the defined frequency bands.

b) Extra shielding on the fuselage to attenuate signals entering and leaving the cabin.

Frequency band (MHZ)	*Systems on the ground in the band*
925–960 MHz	UMTS (and GSM, LTE)
2110–2170 MHz	UMTS (and LTE)

(5) The operator of the equipment for aircraft mobile communications may also decide to implement an NCU pursuant to section 44(4) for the following frequency bands:

Frequency band (MHz)	*Systems on the ground in the band*
460–470 MHz	LTE or other nationally regulated technologies
791–821 MHz	LTE
1805–1880 MHz	LTE and GSM
2570–2620 MHz	LTE
2620–2690 MHz	LTE

(6) The combined maximum permitted radiated power from the aircraft's base station(s) measured outside the aircraft shall not exceed the values in the table below:

Metres above the ground	*Maximum e.i.r.p. outside the aircraft from the NCU and the aircraft's base station (in dBm/channel)*		
	NCU	*Aircraft's base station(s)*	*NCU and aircraft's base station(s)*
	Band: 900 MHz	*Band: 1800 MHz*	*Band: 2100 MHz*
	Channel bandwidth = 3.84 MHz	*Channel bandwidth = 200 kHz*	*Channel bandwidth = 3.84 MHz*
3000	–6.2	–13.0	1.0
4000	–3.7	–10.5	3.5
5000	–1.7	–8.5	5.4
6000	–0.1	–6.9	7.0
7000	1.2	–5.6	8.3
8000	2.3	–4.4	9.5

(7) If the operator chooses to implement an NCU for the frequency bands listed in section 44(5), in addition to section 44(6), the combined maximum radiated power from the NCU and the aircraft's base station(s), e.i.r.p., measured outside the aircraft vessel, must not exceed the values in the table below:

Metres above the ground	*Maximum e.i.r.p. outside the aircraft from the NCU and the aircraft's base station(s)*			
	460–470 MHz	*791–821 MHz*	*1805–1880 MHz*	*2570–2690 MHz*
	dBm/1.25 MHz	*dBm/10 MHz*	*dBm/200 kHz*	*dBm/4.75 MHz*
3000	–17.0	–0.87	–13.0	1.9
4000	–14.5	1.63	–10.5	4.4
5000	–12.6	3.57	–8.5	6.3
6000	–11.0	5.15	–6.9	7.9
7000	–9.6	6.49	–5.6	9.3
8000	–8.5	7.65	–4.4	10.4

0 Amended by the Regulations of 28 April 2014 no. 591, 24 Nov. 2015 no. 1359, 28 June 2018 no. 1084 (in force 1 July 2018).

Section 45. *Use of mobile communication on board Norwegian-registered aircraft outside Norwegian airspace*

Aircraft registered in Norway that fly outside of Norwegian airspace can use frequencies for mobile communication on the conditions laid down in section 44. Frequency use shall comply with Norwegian obligations to other states. If necessary, the operator of the system shall also obtain a licence from the authority in the foreign state.

0 Amended by the Regulations of 28 April 2014 no. 591.

Chap. XV. Automatic vehicle identification for railways and train control systems

Section 46. *Automatic vehicle identification for railways and train control systems*

(1) Use of the 984–7484 kHz frequency band is authorised for railway purposes and as described in the EN 300 330 and EN 302 608 standards. The centre frequency is 4234 kHz. Maximum permitted field strength is 9 dBµA/m measured at a distance of 10 metres. Transmission time is less than 1 percent.

(2) Use of the 7.3–23.0 MHz frequency band is authorised for railway purposes and as described in the EN 302 609 standard. The centre frequency is 13.547 MHz. Maximum permitted field strength is –7 dBµA/m measured at a distance of 10 metres. Maximum field strength is specified in a bandwidth of 10 kHz (mean distribution in any length of 200 metres of the loop).

(3) Use of the 27.090–27.100 MHz frequency band is authorised for Balise and Loop/Euroloop as described in the EN 300 330 and EN 302 608 standards. Maximum permitted field strength is 42 dBµA/m measured at a distance of 10 metres.

(4) Use of the 76–77 frequency band is authorised for the detection of obstacles when using radar sensors for level crossings as described in the EN 301 091-3 standard. Maximum permitted radiated peak power is 55 dBm e.i.r.p. Mean maximum power shall be 50 dBm or 23.5 dBm for pulsed radars.

0 Amended by the Regulations of 28 April 2014 no. 591, 28 June 2018 no. 1084 (in force 1 July 2018).

Chap. XVI. Concluding provisions

Section 47. ***Entry into force***

This Regulation shall enter into force on 19 January 2012. On the same date, the Regulations of 2 June 2009 no. 580 concerning general authorisations for the use of radio frequencies is repealed.