



## **Regulation of local networks in 3.8-4.2 GHz**

Version 02

January 2023

Disclaimer: This is a translation of our regulation document written in norwegian, dated January 2023.  
In case of conflict, the norwegian version applies.

## Introduction

The regulation of local networks in the 3.8-4.2 GHz band is designed to meet local needs for standalone private networks and to support local possibilities for fixed wireless access providers.

There are no special restrictions concerning who may apply for licences for local networks, but it is a prerequisite that the resources will be used to establish networks within geographically delimited areas. The establishment of networks covering large geographical areas is not permitted. The resources may furthermore not be used to expand the coverage or capacity of public nationwide mobile networks.

Norway is one of the first countries in Europe to facilitate local networks in the 3.8-4.2 GHz band. In Europe, CEPT<sup>1</sup> has commenced harmonisation of the band under [a mandate from the European Commission](#). The Norwegian Communications Authority (Nkom) is following this work closely and contributing experience from our regulation and Norwegian operators' use of the band. The European framework is scheduled for completion in the course of 2024. EU harmonisation may entail obligations for Norway, as part of the EEA. Nkom assesses the development in Europe to mean that future European harmonisation conditions will not have major consequences for already established use in Norway.

### Changes from version published on 1 September 2022

The biggest changes from the previous published version:

- Defined area of use of the medium-power class (chapter 4.4)
- Inclusion of power requirements for terminal equipment (chapter 4.5)
- Introduction of mobile network codes for local networks under Norway's country code 242 (chapter 9)
- Adjustment of annual sector fees (chapter 10)
- Increased maximum duration of licences from 5 to 10 years (chapter 11)

---

<sup>1</sup> European Conference of Postal and Telecommunications Administrations (46 European countries).

## Table of Contents

<b>Introduction .....</b>	<b>2</b>
<b>1 Who can apply and what licences can be used for .....</b>	<b>4</b>
<b>2 Application processing.....</b>	<b>6</b>
<b>3 Bandwidth and frequency placement .....</b>	<b>6</b>
<b>4 Power levels in 3.8-4.2 GHz.....</b>	<b>7</b>
4.1 General.....	7
4.2 Low-power.....	9
4.3 Medium-power.....	10
4.4 Area of use for medium-power and exemptions (urban settlement restriction).....	11
4.5 Maximum EIRP for connected devices.....	13
<b>5 Deadline for implementing allocated frequency resources .....</b>	<b>13</b>
<b>6 Synchronisation requirements .....</b>	<b>13</b>
<b>7 Device registration requirements.....</b>	<b>14</b>
<b>8 Interference calculations performed by Nkom .....</b>	<b>14</b>
8.1 Protection of other services .....	17
8.1.1 Satellite earth stations .....	17
8.1.2 Aeronautical altimeters.....	18
<b>9 Mobile network codes .....</b>	<b>18</b>
<b>10 Sector fee .....</b>	<b>20</b>
<b>11 Duration.....</b>	<b>20</b>

---

## 1 Who can apply and what licences can be used for

There are no special restrictions concerning who may apply for licences for local networks, but it is a prerequisite that the resources will be used to establish networks within geographically delimited areas. The establishment of networks covering large geographical areas is not permitted. The resources may furthermore not be used to expand the coverage or capacity of public nationwide mobile networks.

There are several possible implementations of local non-public networks (NPN<sup>2</sup>), and these can be divided into two categories:

1. Standalone isolated networks (SA-NPN<sup>3</sup>)
2. Connected to a public network (PNI-NPN<sup>4</sup>)

Figure 1 illustrates the first category, while Figure 2, 3 and 4 illustrate variants of the second category (Source: 5G-ACIA<sup>5</sup>).

Nkom only permits SA-NPN. This excludes the sharing of radio equipment and frequency resources between local networks and public mobile networks.

<b>1</b>	Use of the 3.8-4.2 GHz frequency band will cover local requirements in non-public networks and applications within a geographically delimited area. The resources are not permitted to be used to expand the coverage or capacity of public nationwide mobile networks.
<b>2</b>	Only the SA-NPN (Standalone Non-Public Network) network configuration is permitted, and sharing of radio equipment and frequency resources between local networks and public mobile networks is thus not permitted.

<sup>2</sup> Non-Public Network.

<sup>3</sup> Standalone NPN.

<sup>4</sup> Public Network Integrated NPN.

<sup>5</sup> [5G-ACIA NPN](#) for Industrial Scenarios.

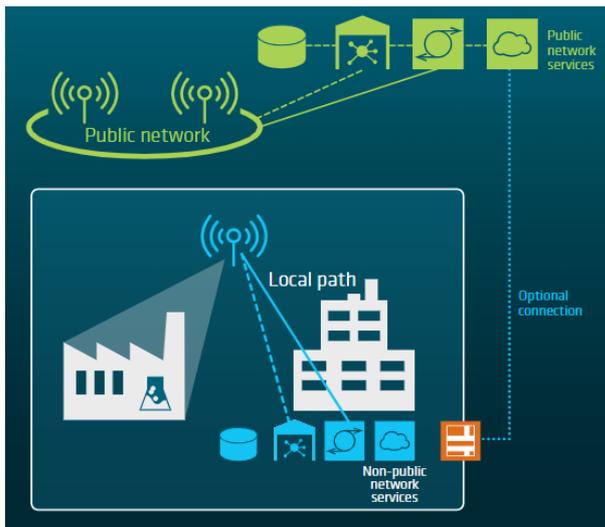


Figure 1: Isolated network (SA-NPN)

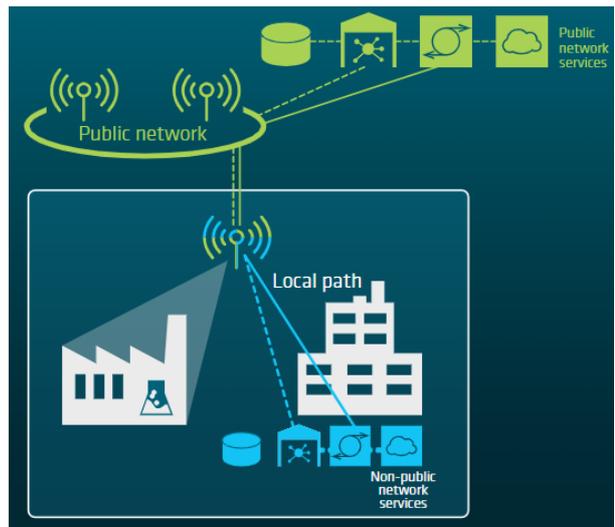


Figure 2: Shared radio access network

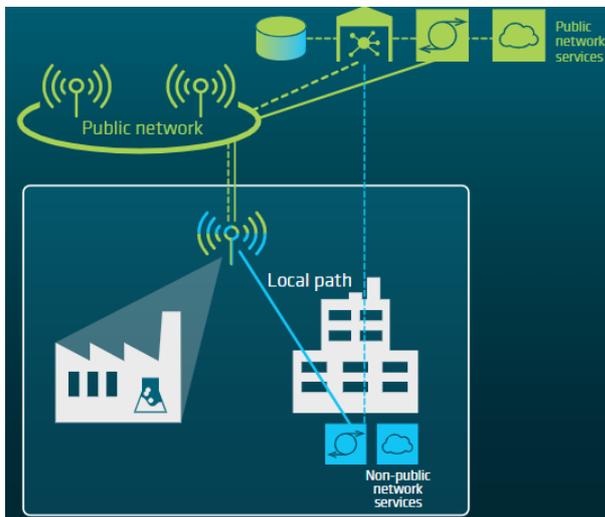


Figure 3: Shared radio access network with control plan

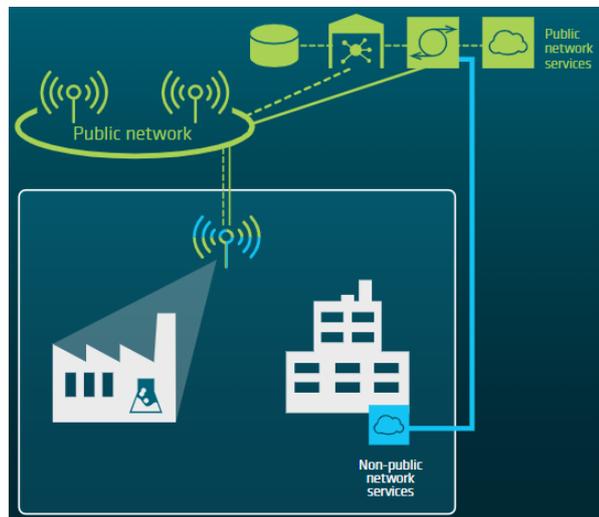


Figure 4: NPN in public network

## 2 Application processing

Applications concerning local networks are processed on an ongoing basis. For each application received, Nkom will perform coexistence calculations between local mobile networks and satellite earth stations. Assessments will also be made in relation to coexistence with aeronautical altimeters above 4200 MHz and public mobile networks below 3800 MHz, to ensure their adequate protection. It is the applicant's own responsibility to plan and calculate coverage and interference within their own mobile network. Allocations will be made on an ongoing basis, and new applications will be assessed against existing licences.

3

Applications concerning local networks are processed on an ongoing basis. Applications for new local networks or expansion of existing local networks in areas where local networks have already been established, or near airports and satellite earth stations, may require adjustments concerning the application that are to the disadvantage of the applicant and might ultimately result in rejection of the application.

## 3 Bandwidth and frequency placement

To secure frequency resources for several different local networks in the same geographical area, and to facilitate efficient frequency use, Nkom offers licences with the 20, 40, 60 and 80 MHz bandwidths. The applicant must justify bandwidth requirements in the application.

As a general rule, Nkom will not require synchronisation in local networks (see chapter 6). To avoid interference with public mobile networks operating in the frequency band below 3800 MHz, a 40-MHz (3800-3840 MHz) protection band will therefore be required.

Internationally, there are ongoing studies of the risk of interference with radar altimeters in aircraft operating at 4200-4400 MHz. Until these studies have been concluded, Nkom will limit the allocation for medium-power outdoor base stations to the lower half of the 3.8-4.2 GHz band. On processing applications at or near airports, and near helicopter landing sites, Nkom will make assessments concerning placement in the frequency band, maximum radiated power, antenna location and antenna height.

To facilitate that more parties have the opportunity to use frequencies within a given geographical area, there is a need for flexibility regarding the placement of local networks within the entire 3.8-4.2 GHz band. Nkom therefore reserves the right to move a licence holder's allocated frequency range to

another placement within 3800-4200 MHz. Nkom is also aware that there is currently a shortage of base stations in the market that support the entire band, and will take this into account as far as possible during a transitional phase.

<b>4</b>	Licences are granted with bandwidths of 20, 40, 60, or 80 MHz.
<b>5</b>	The applicant must justify the bandwidth requirement in the application.
<b>6</b>	The equipment used during the regulation must support the entire 3800-4200 MHz frequency band, to facilitate effective frequency assignment of local networks. Until equipment that supports the entire frequency band is generally available, Nkom will be able to permit the use of equipment with restrictions to the frequency range supported. The equipment’s tuning range must be stated in the application.
<b>7</b>	Nkom may change a licence holder's allocated frequency range to another placement within 3800-4200 MHz if this is necessary to facilitate efficient use, including that more parties have the opportunity to implement frequencies in this band within a given geographical area.

**4 Power levels in 3.8-4.2 GHz**

**4.1 General**

In the regulation of 3.8-4.2 GHz, two different permitted power levels have been established for base stations: low-power and medium-power. Low-power licences are granted as a site licence, while medium-power licences are granted as transmitter licences (one licence per base station).

Low-power gives the flexibility to place as many base stations as required within a delimited geographical area, hereinafter referred to as *the licence area*. The licence area is defined as a geographical position (stated in the application) and with a radius of 50 metres (Figure 5). The number and location of base stations within the licence area is unlimited and flexible. Nkom chooses the solution with a circle of a fixed radius so as to be able to make reliable interference calculations, while providing flexibility for the operators. Other solutions, such as the outline of a given building or a fenced area, impede interference calculations, since Nkom does not know where the base stations are located within this area. The licence area is not equivalent to the coverage area, and the location of connected devices is not limited to the licence area.

For medium-power, a licence is granted for each base station (Figure 6), where the geographical position of the individual base station is stated in the application.

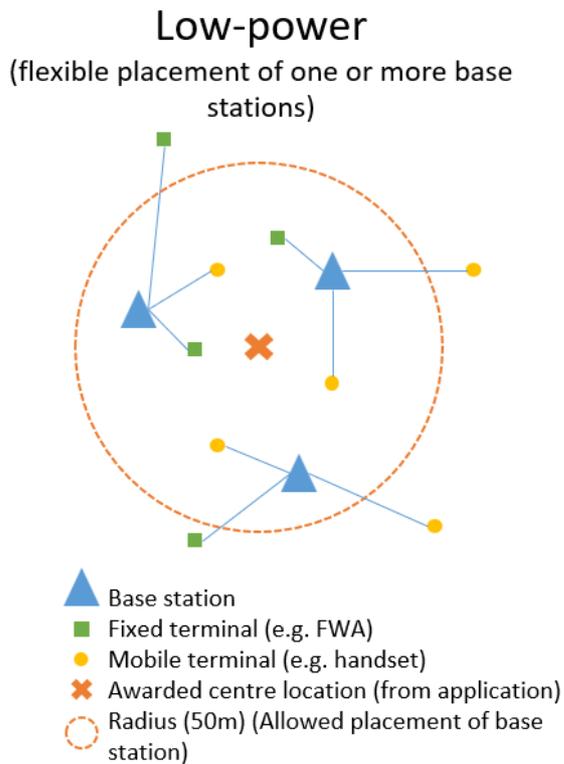


Figure 5

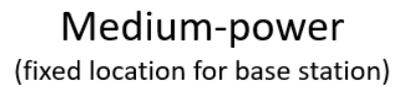
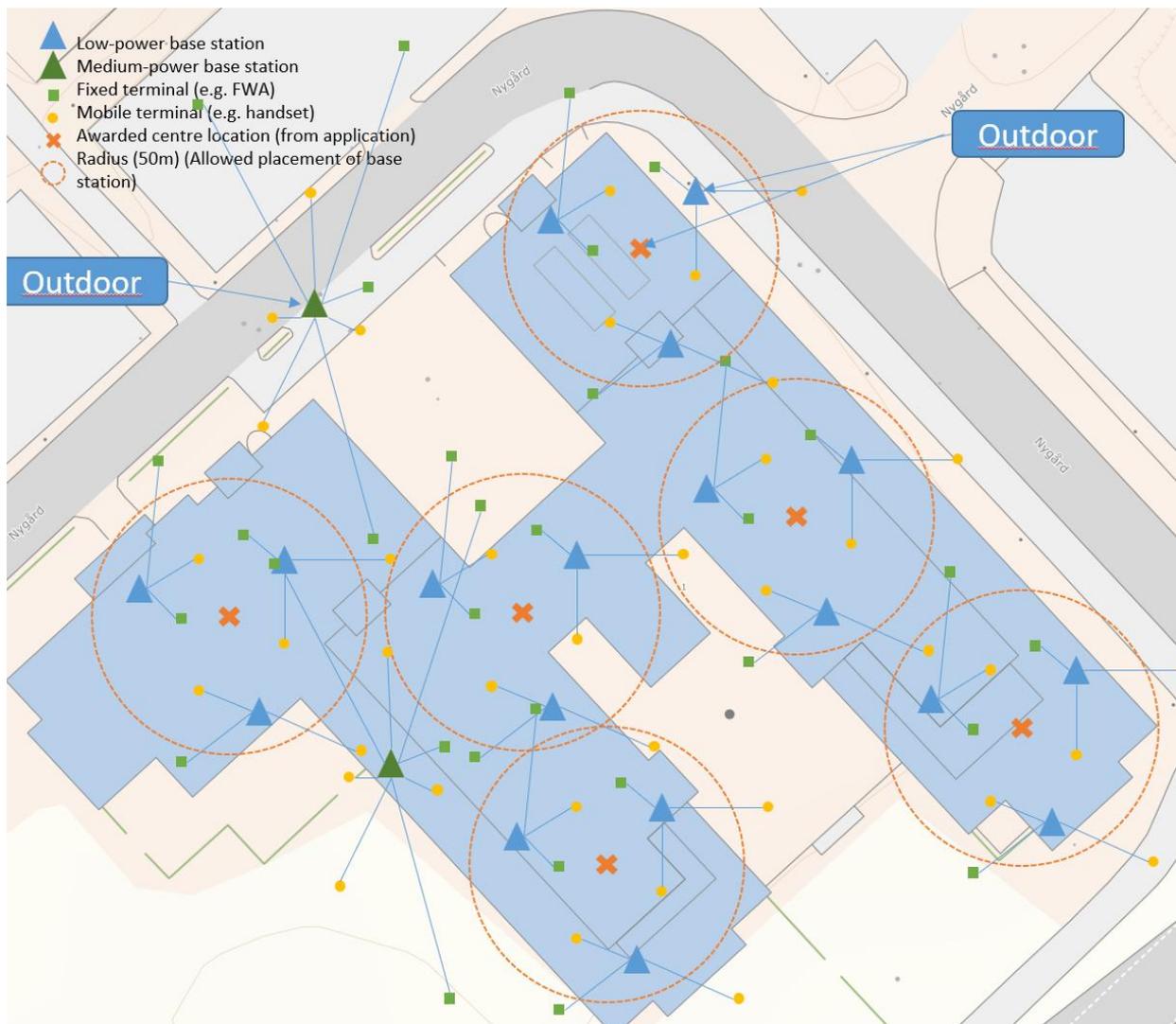


Figure 6

Building loss is a significant factor in interference calculations. Nkom uses a building loss of 12 dB in its calculations, in cases where only indoor placement of base stations is applied for.

For low-power use, a distinction is made between actual indoor use, where all base stations in a licence area are solely placed indoors; and outdoor use, where one or more base stations in a licence area are placed outdoors. For medium-power, either indoor or outdoor placement must be stated for each individual base station.

Multiple licence areas/locations and combinations may be applied for. For example, an indoor facility may require six low-power licence areas, see Figure 7.



*Figure 7: Multiple low-power licence areas combined, and how the uppermost licence area is deemed outdoors (if one or more low-power base stations are outdoors, the entire licence area is deemed outdoors)*

## 4.2 Low-power

Low-power entails a maximum permissible power spectral density of **18 dBm/5 MHz EIRP** for the base stations. See Table 1 for equivalent isotropically radiated power (EIRP) for different bandwidths.

The maximum permitted antenna height for outdoor low-power antennas is 10 metres above the ground. The maximum antenna height is set on the basis of the centre location applied for. Indoors, there is no height restriction (Nkom uses an antenna height of 5 metres in its calculations).

Bandwidth	EIRP	EIRP
<b>20 MHz</b>	24 dBm	0.25 W
<b>40 MHz</b>	27 dBm	0.50 W
<b>60 MHz</b>	29 dBm	0.76 W
<b>80 MHz</b>	30 dBm	1.01 W

Table 1: Maximum EIRP across the entire low-power bandwidth

<b>8</b>	For low-power, flexibility is given to locate as many base stations as required within a delimited geographical area (the licence area). The licence area is defined as a centre location and a radius of 50 metres.
<b>9</b>	Low-power entails a maximum permitted power spectral density of 18 dBm/5 MHz EIRP for the base stations.
<b>10</b>	The maximum permitted antenna height for low-power is 10 metres above ground (relative to the licence's centre location) for outdoor antennas. For indoor antennas, there is no height restriction.
<b>11</b>	For low-power applications, an indoor network must be applied for when all base stations within the licence area applied for are placed indoors, and an outdoor network must be applied for if one or more base stations are placed outdoors.

### 4.3 Medium-power

Medium-power entails a maximum permitted power spectral density of **36 dBm/5 MHz EIRP** for the base stations. To achieve efficient geographical reuse of the frequency resources, the applicant is obliged to state the required EIRP in the application, up to the maximum permitted power. See Table 2 for EIRP for each bandwidth selected.

Bandwidth	EIRP	EIRP
<b>20 MHz</b>	42 dBm	16 W
<b>40 MHz</b>	45 dBm	32 W
<b>60 MHz</b>	47 dBm	48 W
<b>80 MHz</b>	48 dBm	64 W

Table 2: Maximum EIRP across the entire medium-power bandwidth

There are no restrictions to the antenna height for medium-power, but Nkom will engage in dialogue with the applicant in cases where Nkom considers the location or height of the antenna applied for to be problematic for the efficient reuse of frequency resources.

For medium-power, operators must state the antenna gain. Antenna gain is significant to the calculation of interference with the base station applied for as victim. The maximum permitted antenna gain applied for is subject to an upward limit of 16 dBi.

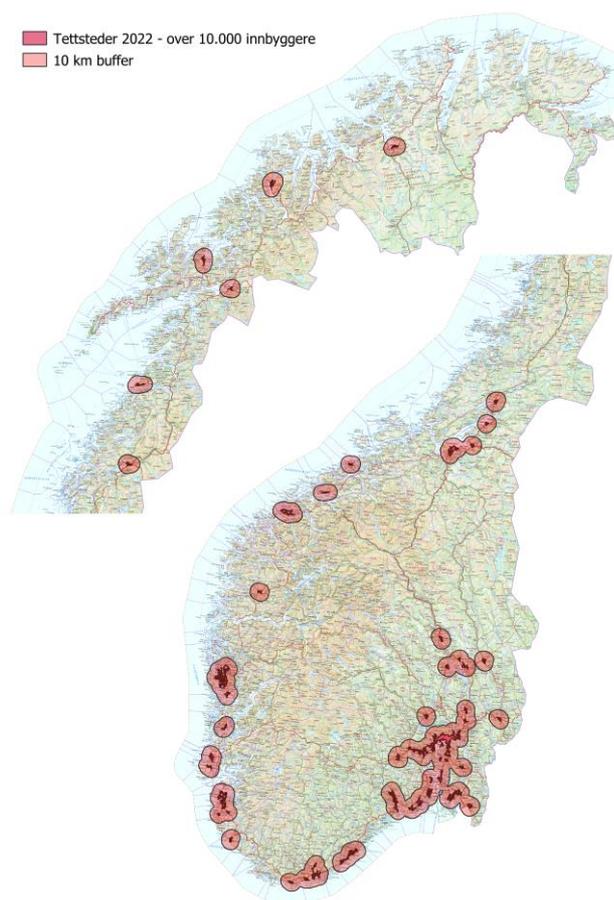
<b>12</b>	For medium-power, a licence is granted for a base station at a geographical point.
<b>13</b>	Medium-power entails a maximum permitted power spectral density of 36 dBm/5 MHz EIRP for the base stations. To achieve efficient reuse of the frequency resources, the applicant is obliged to state the required EIRP in the application, up to the maximum permitted radiated power. After issuing a transmitter licence, the maximum permitted radiated power is stated in the applicable licence.
<b>14</b>	There are no limitations to the maximum permitted antenna height for medium-power. Antenna height must be stated in the application. Nkom reserves the right to engage in dialogue with the applicant in cases where Nkom considers the location or height of the antenna applied for to be problematic for the efficient reuse of frequency resources.
<b>15</b>	It is stated in the application whether the base station is to be located indoors or outdoors.
<b>16</b>	For medium-power, antenna gain is stated, subject to an upward limit of 16 dBi.

**4.4 Area of use for medium-power and exemptions (urban settlement restriction)**

Medium-power significantly increases the interference level in a geographical area compared to low-power, which results in a significantly greater distance for reuse of frequency resources. A medium-power base station with high antenna gain will also be more vulnerable to interference from other local networks in the area than a low-power base station with low antenna gain. These factors impede the densification of local networks within a geographical area. Restrictions are therefore placed on where medium-power is permitted.

Medium-power base stations and connected devices are not permitted to be set up in areas lying within a zone of 10 km outside urban settlements with more than 10,000 inhabitants. This is shown in the map in Figure 8 (also available digitally on Nkom’s website).

Nkom defines urban settlements in accordance with Statistics Norway's definition of urban settlements<sup>6</sup>, and uses map documentation from Geonorge<sup>7</sup> in its allocation.



*Figure 8: Map of urban settlements with a population exceeding 10,000 as at 1 January 2022, including a 10 km zone around these urban settlements.*

In special situations, Nkom may grant exemptions from this restriction (such as ports, large industrial areas, etc.), if the advantages are assessed to exceed the disadvantages. Grounds must be given for applications for exemptions. A longer processing time must be expected for such applications.

17

Use of medium-power is limited to areas beyond 10 km from urban settlements with a population of 10,000 or more. This limitation also applies to the location of connected devices. Any exemption from this regulation will be assessed individually for each case.

<sup>6</sup> <https://www.ssb.no/befolkning/folketall/statistikk/tettsteders-befolkning-og-areal>

<sup>7</sup> <https://kartkatalog.geonorge.no/metadata/tettsteder/173f4a15-dead-4f82-b92e-f37396b72cea>

## 4.5 Maximum EIRP for connected devices

Nkom sets requirements for the maximum EIRP for connected devices. For mobile and nomadic devices, the requirement is 28 dBm TRP, while for permanently installed devices, the requirement is 28 dBm EIRP. This is in line with the European regulation of mobile networks within 3400-3800 MHz.

18

The maximum radiated power for mobile devices is 28 dBm TRP.

The maximum radiated power for fixed installed devices is 28 dBm EIRP.

## 5 Deadline for implementing allocated frequency resources

To ensure efficient utilisation of the frequencies, Nkom will require that all transmission points allocated are implemented in accordance with the licence within 12 months of the licence's entry into force.

The licence holder must be prepared to document that the entire licence has been implemented within 12 months of the start-up date, see Section 10-3 of the Norwegian Electronic Communications Act. Failure to comply with the implementation requirement might result in Nkom removing unused transmission points from the licence. At the advance request of the licence holder, Nkom may extend the deadline on specific grounds.

19

All allocated transmission points must be implemented in accordance with the licence within 12 months of the licence coming into force.

## 6 Synchronisation requirements

Nkom will permit unsynchronised networks and innovative framework structures (uplink and downlink conditions). At the same time, local and synchronised networks can be placed closer to each other in the frequency spectrum (small frequency separation) than unsynchronised local networks. A local, synchronised network with an identical framework structure and technical parameters to the national and public mobile networks can also be placed closely down to 3800 MHz, thereby minimising or eliminating the need for the protective band named in chapter 3.

In areas where local networks are in high demand, in the longer term it may be necessary to require synchronisation in the area. In such cases, new local networks will have to adapt to the existing networks in this area.

20

Nkom permits unsynchronised networks, but may require synchronisation between different local networks, if necessary. The synchronisation regime in already established networks takes precedence.

## 7 Device registration requirements

To ensure that the local network does not become part of a regional or national network, roaming devices are not permitted in local networks in the 3.8-4.2 GHz band. Nkom requires holders to create and update an overview of all devices registered for connection to the network, together with the address of the location or building within which they must operate.

21

Roaming devices are not permitted in the local network using the 3.8-4.2 GHz band.

22

Holders of a local network licence are obliged to maintain an updated overview of all devices registered for connection to the network, together with the address of the location or building within which the devices operate.

## 8 Interference calculations performed by Nkom

Calculation of interference is by calculating I/N (Interference over Noise) for the base station applied for, as potentially both interferer and victim. Other base stations at the same location, which are part of the local network applied for, are ignored in the calculations. It is the applicant's responsibility to plan and calculate coverage and interference within their own mobile network.

To compensate for the free placement of low-power base stations within the licence area, within a 50-metre radius, 2 dB is added to the maximum permitted EIRP in the interference calculations. I/N for low-power is also reduced by 1 dB for the same reason (already subtracted in Table 3 below).

Nkom uses an omnidirectional antenna diagram in its interference calculations. This provides flexibility for the applicant concerning the antennas' boresight. This will also give a worst-case scenario in

Nkom’s calculations, and lower spectrum utilisation than would be possible if the antennas’ boresight was taken into account. This approach may be reassessed at a later date, if this is deemed necessary.

For low-power, a receiver antenna gain of 0 dBi is used. For medium-power, the receiver antenna gain stated in the application is used as the basis for the interference calculations, with upward limitation to 16 dBi.

Antenna height as stated in the application is used in interference calculations. For low-power, the permitted antenna height is subject to upward limitation to 10 metres above the licence area's centre point that is located outdoors. There is no requirement to specify the indoor antenna height. Nkom uses an antenna height of 5 metres for all interference calculations indoors.

For sole indoor use, a building loss of 12 dB is used for both transmission and reception.

The propagation model used is **ITU-R P.452 (v17)** for 20% of the time in interference calculations.

In the I/N calculations, Nkom uses the values defined in Table 3.

Low-power		Medium-power	
I/N	NF	I/N	NF
-5 dB	13 dB	-6 dB	10 dB

*Table 3: Values for interference calculations between local networks (N = KTB + NF)*

Furthermore, Nkom applies the following spectrum masks as a function of bandwidth (BW) in its interference calculations, for transmission in Table 4 and for reception in Table 5 and Table 6, respectively.

Offset centre frequency [MHz]	Gain [dB]
-2.5 x BW	-53
-BW/2-10	-53
-BW/2-5	-53
-BW/2-5	-45
-BW/2	-45
-BW/2	0
0	0
BW/2	0
BW/2	-45
BW/2+5	-45
BW/2+5	-53
BW/2+10	-53
2.5 x BW	-53

Table 4: Tx mask for low-power and medium-power – all bandwidths

Offset centre frequency [MHz]	Low-power gain [dB]	Medium-power gain [dB]
-2.5 x BW	-54.1	-57.1
-BW/2-5	-54.1	-57.1
-BW/2-5	-45.1	-48.1
-BW/2	-45.1	-48.1
-BW/2	0	0
0	0	0
BW/2	0	0
BW/2	-45.1	-48.1
BW/2+5	-45.1	-48.1
BW/2+5	-54.1	-57.1
2.5 x BW	-54.1	-57.1

Table 5: Rx mask for low-power and medium-power – 20 MHz bandwidth

Offset centre frequency [MHz]	Low-power gain [dB]	Medium-power gain [dB]
-2.5 x BW	-48.1	-51.1
-BW/2-19	-48.1	-51.1
-BW/2-19	-39.1	-42.1
-BW/2	-39.1	-42.1
-BW/2	0	0
0	0	0
BW/2	0	0
BW/2	-39.1	-42.1
BW/2+19	-39.1	-42.1
BW/2+19	-48.1	-51.1
2.5 x BW	-48.1	-51.1

Table 6: Rx mask for low-power and medium-power – bandwidths exceeding 20 MHz

## 8.1 Protection of other services

### 8.1.1 Satellite earth stations

A few satellite earth stations in Norway operate in the 3.4-4.2 GHz frequency band. It has been decided to protect these earth stations in connection with the allocation of the 3.4-3.8 GHz band for public mobile networks. The same conditions are applied on allocation of licences for local networks in 3.8-4.2 GHz.

Satellite earth stations are protected by a protection area, i.e. a defined area around the satellite earth station where the field strength from base stations for local networks near the earth station may not exceed a defined field strength requirement.

Table 7 provides an overview of satellite earth stations to be protected, and the field strength requirement applied to protection calculations. For applications for local networks within 3.8-4.2 GHz, Nkom will perform calculations to ensure compliance with the field strength requirements. In cases where field strength requirements are exceeded, and it is not possible for the applicant to take measures to reduce the field strength to below the requirement, the application will be rejected.

The geographical extent of areas where it will not be possible to establish local networks around a satellite earth station will depend on the ground conditions.

Station	Position	Protection area [radius]	Field strength requirements 20 m above ground level
Andøya	69° 13' N 16° 06' E	50 m	-142.6 dBW/m <sup>2</sup> /MHz
Eik	58° 32' N 06° 28' E	150 m	-142.6 dBW/m <sup>2</sup> /MHz
Sætra	58° 31' N 06° 32' E	50 m	-142.6 dBW/m <sup>2</sup> /MHz
Nittedal (Note 1)	60° 08' N 10° 48' E	200 m	-142.6 dBW/m <sup>2</sup> /MHz
Eggemoen	60° 13' N 10° 17' E	400 m	<u>In sector 118°-108°:</u> -142.6 dBW/m <sup>2</sup> /MHz  <u>In sector 108°-118°:</u> -160 dBW/m <sup>2</sup> /MHz
Fauske	67° 14' N 15° 18' E	150 m	-125 dBW/m <sup>2</sup> /MHz
<b>Note 1:</b> The protection requirement for a satellite earth station at Nittedal will cease on 1 January 2024.			

Table 7: Protection of satellite earth stations within 3800-4200 MHz. Coordinates in the table are stated with reduced resolution. All zones are measured from the actual location of a station/area.

### 8.1.2 Aeronautical altimeters

Internationally, there are ongoing studies of the risk of interference with radar altimeters in aircraft operating at 4200-4400 MHz. Until these studies have been concluded, Nkom will limit the allocation for medium-power outdoor base stations to the lower half of the 3.8-4.2 GHz band.

On processing applications at or near airports, and near helicopter landing sites, Nkom will make assessments concerning placement in the frequency band, maximum radiated power, antenna location and antenna height.

As international studies reach conclusions on protection conditions, these will be included in Nkom's interference calculations. This is then expected to facilitate better utilisation of the frequency resources.

## 9 Mobile network codes

MNC is used to identify a mobile network. MNC is one of three elements of an IMSI (International Mobile Subscriber Identity). The IMSI number is used to identify a user/subscription in the mobile network. MNC points to the operator which issued this subscription. The other elements of an IMSI are MCC (Mobile Country Code) and MSIN (Mobile Subscription Identification Number). This means: MCC + MNC + MSIN = IMSI.

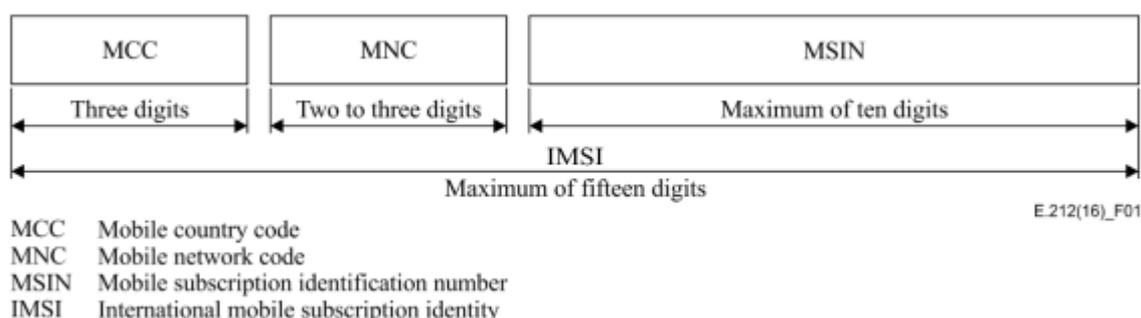


Figure 9: Structure and format of IMSI, source: ITU-T recommendation E.212.

MNC is a resource managed by Nkom, cf. Section 31 of the Norwegian Number Regulations and Section 7-1 of the Norwegian Electronic Communications Act. Nkom awards MNC under MCC 242 granted by ITU in accordance with the ITU standard, E.212. MSIN is then allocated by the SIM card owner/issuer.

Nkom has investigated how number resources for local mobile networks should best be managed. Operators requiring guidance and mobile network codes can find detailed information on [our website for number resources](#).

Internationally, in the E.212 standard ITU has allocated **MCC code 999** for internal use within a private mobile network and there is no application or registration obligation for the use of this code. Users can choose 2- or 3-digit MNC under MCC 999. Since there is no registration obligation, the codes will not be unique.

For resources under Norway's country code **MCC-code 242** Nkom has now allocated five MNCs, 70-74, with various registration and reuse requirements, for local networks. The following principles are applied:

- 242-70: MNC for shared use for testing purposes, with no registration requirement.
- 242-(71-73): MNCs for shared use for non-public networks and testing purposes, with requirements for application and geographical delimitation.
- 242-74: MNCs for shared use for non-public networks and testing purposes, with requirements for application, but without geographical delimitation.

MNC 71, 72 and 73 will be awarded as IMSI series, as follows: MCC + MNC + the first four digits of MSIN.

Example of allocation of an IMSI series for non-public networks and testing purposes:

242 71 0001 000000 – 242 71 0001 999999

As a general rule, the allocation of an IMSI series requires a frequency licence, and terms for the allocation of an IMSI series are linked to terms and limitations in the frequency licence. If the applicant wishes to be allocated a network code under MCC code 242, this must be stated on the application form.

In dialogue with national and international operators, Nkom has been informed of the challenges regarding the use of new MNCs under MCC code 242, and the use of MCC code 999 in some types of handsets. These handsets only accept MCC/MNC combinations that are pre-approved for the devices. The applicant must take these circumstances into account.

## 10 Sector fee

Parties that are granted licences in the 3.8-4.2 GHz band for local networks must pay an annual sector fee to Nkom, cf. Section 12-1 of the Norwegian Electronic Communications Act. For low-power applications, the sector fee is calculated per licence area included in the frequency licence. For medium-power applications, the sector fee is calculated per base station covered by the licence. For 2023, the annual sector fee will be calculated in accordance with Table 8.

Bandwidth	Low-power	Medium-power
20 MHz	NOK 200	NOK 1,000
40 MHz	NOK 400	NOK 1,400
60 MHz	NOK 800	NOK 2,200
80 MHz	NOK 1,600	NOK 3,800

*Table 8: Annual sector fee*

The table's rates for the annual sector fee are determined on the basis of the expected costs for Nkom's work in connection with the processing of applications for the issue of licences and Nkom's work on the establishment of the licence regime. The rates may be adjusted in the future, when Nkom has gained experience with the use of resources for this work.

**23** Licence holders must pay an annual sector fee to Nkom.

## 11 Duration

The licences will be granted for a duration of up to 10 years. Nkom may set a duration that is shorter than 10 years. This may, for example, be relevant when the applicant wishes to establish test locations without offering a network service. The required duration is stated on the application form.

The international harmonisation process for the band has been ongoing for some time and work is underway towards harmonisation of the band in line with the regulation proposed by Nkom. Nkom assesses that any binding EU decisions with which Norway must comply within the licences' ten-year lifetime can be observed without this entailing major changes to the current regulation of the band and the terms for the licences issued.

To ensure licence holders sufficient predictability, Nkom will issue licences with a duration of up to 10 years. The required duration must be stated on the application form.