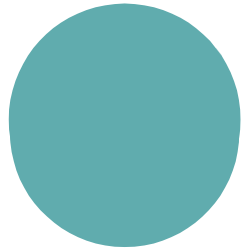


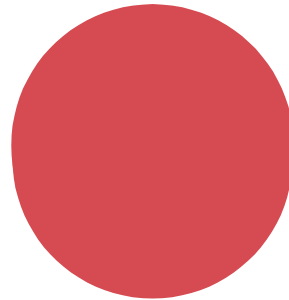


Energistyrelsen



# **Information Memorandum**

## **Annex F**



**Draft 3.5 GHz Licence**

**1500 MHz, 2100 MHz, 2300 MHz, 3.5 GHz and 26 GHz  
Auction**

**2021**

# Annex F: Draft licence in the 3.5 GHz frequency band

A draft licence and the associated technical information are indicated below:

- A draft licence to use frequencies in the frequency band 3410-3800 MHz (3.5 GHz frequency band) and annexes containing technical conditions for using these frequencies, and legal conditions.

**[Licensee]****Licence [no.] to use frequencies in the frequency band [3410-3800] MHz**

Following an auction, [name of licence holder] (hereinafter referred to as the licensee) is granted a licence to use the following radio frequencies (band limits):

[xxx-xxx] MHz	Base station transmitting and receiving frequency
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The licence is issued in pursuance of section 10 of the Act on Radio Frequencies, cf. Consolidated Act No. 1100 of 10 August 2016 (Frequency Act), as changed by Act no. 1833 of 8 December 2020.

*Licence terms and conditions*

The licence shall enter into force on 1 June 2021 and expire on 31 January 2042.

Upon expiry, the licence shall lapse without further notice.

Pursuant to section 10(3) and sections 14 and 15 of the Frequency Act, the following terms and conditions shall apply to the licence:

- 1) The frequencies may be used throughout Denmark, which shall mean Danish land territory and Danish territorial waters, cf. Executive Order No. 242 of 21 April 1999 on Delimitation of Danish Territorial Waters (as subsequently amended).
- 2) However, during the period until 1 January 2023 the frequencies may not be used by base stations within a radius of 4 km from the coordinate (10E00 41 / 57N29 17, WGS84 datum).
- 3) The maximum permissible equivalent isotropically radiated power (EIRP) per antenna from a base station not using an active antenna system (AAS):  $P \text{ (e.i.r.p.)} \leq 68 \text{ dBm/5 MHz}$ .
- 4) The maximum permissible total radiated power (TRP) per cell from a base station using an active antenna system (AAS):  $P \text{ (trp)} \leq 47 \text{ dBm /5 MHz}$ .

- 5) Base station emissions shall comply with the relevant harmonised standard in the ETSI EN 301 908 series applicable to the technology chosen.
- 6) The use of frequencies in the band [xxx-xxx] MHz shall be subject to the licensee complying with the technical requirements that appear from the Annex to Commission Implementing Decision (EU) 2019/235 of 24 January 2019 on amending Decision 2008/411/EC as regards an update of relevant technical conditions applicable to the 3400-3800 MHz frequency band. As for the out-of-band requirement below 3400 MHz, which appears from Table 6 of the Implementing Decision, the licensee shall comply with the technical requirements specified for situation A.
- 7) TDD with the following synchronisation scheme is to be used:
  - a. DL/UL pattern: DDDSU (4:1)  
(D = downlink, S = Special subframe, U = uplink)
  - b. Configuration of special subframe: 10:2:2  
(10 x downlink : 2 x gap : 2 x uplink)
  - c. Cyclic prefix: normal
  - d. Subcarrier spacing: 30 kHz
  - e. Time base: UTC as described in Recommendation ITU-R TF.460
  - f. Radio frames are synchronised to the UTC second, which corresponds to phase synchronisation as defined by ITU-T. The typical measurement signal is 1 pps (pulse per second). The rising edge represents the beginning of the UTC second. The DL/UL pattern, as described above, starts at the beginning of a radio frame.
  - g. A maximum deviation from UTC as described in Recommendation ITU-T G.8271, i.e. a maximum deviation from UTC of +/- 1.5 µs at the radiation point of the transmitter antenna.

The conditions will be evaluated by the Danish Energy Agency every fifth years throughout the licence period and be adjusted on that basis, subject to notice being given.

- 8) The use of frequencies in the band [xxx-xxx] MHz is subject to the licensee, to coordinate the frequency use with other licensees in the band 3400-3800 MHz, as no frequencies have been allocated for guard bands.
- 9) However, subject to agreement with holders of licences in frequency bands adjacent to the present licence, the licensee may depart from the technical requirements mentioned in clauses 5, 6 and 7 regarding unwanted emissions within the frequency band concerned and the TDD synchronisation scheme. This is based on the condition that technical conditions in relation to other licensees and neighbouring countries are

complied with, and that the agreement does not affect frequency users other than the parties to the agreement.

- 10) The licensee shall comply with such agreements as might be concluded any time between Denmark and other countries on the use of 3400-3800 MHz, including coordination agreements with Germany and Sweden.
- 11) [Until 31 May 2025 the licensee shall meet requests for lease of frequencies in the 3740-3800 MHz frequency band, cf. Annex 1. Agreements shall be made within the framework of the template for a contract to be used for leasing frequencies in the 3740-3800 MHz band, cf. Annex 4.

Lessees of frequencies in 3740-3800 MHz shall comply with the technical conditions in force at any time as specified in the present frequency licence, cf. clauses 2-7. If the licensee departs from the technical conditions in clauses 5-7 of the frequency licence, cf. clauses 8-9 of the licence, these will be the conditions to be complied with by the lessees. The licensee shall notify lessees of this, giving at least one year's notice. Furthermore, the licensee shall notify lessees without undue delay of any changes in the licensee's licence terms that are notified by the Danish Energy Agency.]

- 12) The licensee shall fulfil the coverage obligations specified in Annex 3 to this licence.
- 13) As instalments on the licence price, the licensee shall pay DKK [amount] to the Danish Energy Agency or the authority responsible at the time, each year during the period from [2022 to 2030 / 2024 to 2032], both years inclusive. This amount is the total instalment for the frequency licences issued to the licensee in the [1500 MHz, 2100 MHz, 2300 MHz, 3.5 GHz and 26 GHz frequency bands]. Thus the amount appears from each individual licence, but shall be paid once only.
- 14) In case of failure to pay an instalment in due time, interest shall accrue from the due date until the date on which payment is effected, in accordance with the Act on Interest<sup>1</sup>.
- 15) The licensee shall provide at any time a demand guarantee in relation to the Danish State, issued by a bank or insurance company which does not control, nor is controlled by, the licensee, nor is controlled by a person who controls the licensee, and which is registered in the European Economic Area and has a minimum long-term debt rating from Standard & Poors or Fitch Rating of at least A or from Moody's Investors Service Limited of at least A2. The guarantee shall at any time be for an amount equivalent to the sum of three annual instalments payable on the licence price, cf. clause 68 in the Decision by the Danish Energy Agency of 22 December 2020 on the

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<sup>1</sup> Consolidated Act No. 459 of 13 May 2014 on Interest Accruing on Delayed Payments etc.

1500 MHz, 2100 MHz, 2300 MHz, 3.5 GHz and 26 GHz Auction, cf. Annex 2, however in such a manner that the guarantee shall be reduced by the instalments that are paid over the last three years of the repayment period. The guarantee shall be effective from the date of issue of the licence and shall at any time be effective in the period when the following three instalments fall due for payment. Other terms appear from the guarantee payable on demand as signed by the licensee.

- 16) The licensee shall notify the Danish Energy Agency, or the authority responsible at the time in question, without undue delay in the event that the bank or insurance company that has provided the guarantee mentioned above no longer has the credit rating stated.

*Further details*

The licence shall be subject to the provisions of Acts and Executive Orders that specify rules for holders of frequency licences. At the time of issuing the licence, the provisions of the following Executive Orders are particularly relevant:

- Executive Order No. 1849 of 8. december 2020 on Licences to Use Radio Frequencies, and
- Executive Order No. 1129 of 1 December 2009 on the Transfer and Return of Certain Licences to Use Radio Frequencies.

The frequencies may only be used in radio equipment that complies with the Act on Radio Equipment and Electromagnetic Matters and rules issued in pursuance thereof, including requirements for the use of radio equipment that complies with the essential requirements and the regulated interfaces.

Under section 21 of the Frequency Act, the licence may be transferred in its entirety without prior approval. Transfer or return of part of the licence shall be subject to approval by the Danish Energy Agency, cf. section 1 of Executive Order No. 1129 of 1 December 2009 on the Transfer and Return of Certain Licences to Use Radio Frequencies.

Under section 5 of Executive Order No. 1849 of 8. december 2020 on Licences to use Radio Frequencies, the licensee shall notify the Danish Energy Agency of its plans to lease or transfer the licence or parts thereof before such lease or transfer takes place. Information about current plans for lease or transfer will be published in the Frequency Register on the Danish Energy Agency's website.

The Danish Energy Agency will collect frequency charges, cf. section 50 of the Frequency Act. The charges are fixed annually in the Finance Act. An invoice for the frequency charge will be sent separately.

The Danish Energy Agency shall revoke the licence if the licensee fails to pay frequency charges due, cf. section 25 of the Frequency Act.

The Danish Energy Agency may decide that a licensee who has the possibility of offering electronic communications network in an area using spectrum, shall accommodate any reasonable request of giving access to the licensee's existing passive infrastructure or entering into an agreement on roaming for offer of electronic communications services in the area, cf. section 22 a of the Frequency Act.

In certain cases the Danish Energy Agency may modify terms in the licence or revoke the licence, cf. section 23 and section 24 of the Frequency Act.

If the licensee grossly violates the Frequency Act, rules laid down in pursuance of the Act, or terms in the licence, cf. section 26 of the Frequency Act, the Danish Energy Agency may revoke the licence.

Upon return of its licence to the Danish Energy Agency, the licensee may terminate future rights and obligations not yet due by paying not later than the date of return an amount equivalent to 30% of the licence price, or, if payment of a smaller amount of the licence price is outstanding, then such smaller amount. Thus a return of the licence shall not imply that the licence price will be repaid.

The Danish Energy Agency may impose on the licensee the sanctions that follow from the Danish Energy Agency's Decision of 22 December 2020 on the 1500 MHz, 2100 MHz, 2300 MHz, 3.5 GHz and 26 GHz Auction, appended as Annex 2 to this licence. Annex 2 thus specifies the sanction options that may be adopted in case of violation of the payment terms of this licence and for matters relating to the auction process if the Danish Energy Agency becomes aware of such violations after issuing this licence, refer in particular to clauses 81-82 and 86-93 in Annex 2.

Relevant Acts and Executive Orders may be found on the Danish Energy Agency's website under: <http://www.ens.dk>

No supplement to the licence will be issued if the rules mentioned above are changed.

In regard to matters relating to the licence, the venue applicable to the licensee shall be in Denmark. If the venue of a licensee is not in Denmark, the agreed venue of the licensee will be the Danish Energy Agency's venue.

Danish Energy Agency, [dd Mm 2021]

Janni Torp Kjærgaard

/Maria Schmidt Jensen

## **Annex 1: Leasing obligation**

### **Terms**

Until 31 May 2025, at the latest, the licensee shall meet requests to lease frequencies in the 3740-3800 MHz frequency band.

Agreements to lease frequencies shall be made within the framework of the template for a contract to be used for leasing frequencies in the 3740-3800 MHz band, cf. Annex 4.

### **Supervision**

The licensee shall forward, not later than 31 January each year, a survey to the Danish Energy Agency specifying the lease agreements there are into force on the 31 December. The survey must at least contain information about lessee, location, geographical extent and agreed rental price.



## **Annex 2: Decision by the Danish Energy Agency of 22 December 2020 on the 1500 MHz, 2100 MHz, 2300 MHz, 3.5 GHz and 26 GHz Auction**

[Reference is made to Annex B to the Information Memorandum.]

## **Annex 3: Coverage obligation for using frequencies in the frequency band [xx MHz]**

### **Terms**

The licensee shall ensure a population coverage of 60% not later than 31 December 2023.

The licensee shall ensure a population coverage of 75% not later than 31 December 2025.

The coverage obligation shall be fulfilled by using frequencies governed by this licence.

### **Supervision and documentation for fulfilling the coverage obligation**

The licensee shall provide documentation that the coverage obligation has been fulfilled. This implies that the licensee shall submit documentation to show that a public mobile service is provided to the percentage of population specified above.

The licensee shall submit documentation to the Danish Energy Agency for fulfilling the 2023 coverage obligation not later than 1 April 2024 and for fulfilling the 2025 coverage obligation not later than 1 April 2026.

The documentation shall be prepared using the following method.

#### ***Method for documentation of coverage obligation***

For each base station used for providing services in the 3.5 GHz frequency band it is determined in which of three geotypes (urban, suburban, open country) the base station is located.

Depending on the geotype, the base station is assigned a coverage radius of:

- Urban: 560 m
- Suburban: 1,300 m
- Open country: 2,340 m

On the basis of the overall coverage radii the population coverage is determined.

As a data basis for classification into geotypes the file Geotyper.zip, which is included in Annex 5, shall be used. Geotyper.zip contains ESRI Shape files that divide Denmark into the three respective geotypes. As a data basis for the population covered within the coverage area, the file Befolkning.zip, which is included in Annex 5, shall be used. Befolkning.zip contains a semicolon-separated file, which contains a list of addresses (access address ID, street name, house number, postal code and coordinate in ETRS89 UTM32) as well as the weight of the address for the calculation.

## **Annex 4: Template for contract for leasing frequencies in the 3740-3800 MHz frequency band**

[Reference is made to Annex M to the Information Memorandum.]

## **Annex 5: Data for calculation of population coverage**

[Reference is made to Annex Z to the Information Memorandum.]

"Bilag Z - Datagrundlag 3,5 GHz dækningskrav.zip" SHA3-256:

f4e16ba838e317b2312e0ae306706d7949431920227880dbf10d03552426d293