

**Bilag 1**

[KUNDE]  
[ADRESSE]  
[POSTNR./BY]

Dato: [DATO MÅNED ÅR]  
Kundenummer: [KUNDENUMMER]  
Tilladelsesnummer: H101787

**Grænsekoordineringsaftale mellem Danmark og Sverige for frekvensbåndet 452,5 – 457,5 MHz og 462,5 – 467,5 MHz**

Agreement between the Danish Energy Agency and the Swedish Post and Telecom Authority concerning the use of the frequency bands 452.5 – 457.5 MHz and 462.5 – 467.5 MHz for Land Mobile Service Stations in the border areas.

# Agreement between the Danish Energy Agency, and the Swedish Post and Telecom Authority concerning the use of the frequency bands 452.5–457.5 MHz and 462.5–467.5 MHz for Land Mobile Service Stations in the border areas

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May 2017

## **1. Principles and definitions**

- 1.1. This agreement covers the coordination of the base stations. The user equipment, or terminals, are allowed to be used on non-interference basis, in accordance with ITU RR 4.4.
- 1.2. This agreement is based on the concept of field strength levels and in the case when LTE systems are used preferential PCIs as defined in Annex 1.
- 1.3. For the purpose of this agreement the border of Denmark and Sweden respectively is defined as the coastline, excluding the islands of Flakfortet, Middelgrund, Peberholmen and Saltholmen in Denmark and excluding the island of Ven in Sweden.
- 1.4. The latest version of ITU-R P.1546 "Method for point-to-area predictions for terrestrial services in the frequency range 30–3000 MHz" shall be used for predictions of field strength values.

## **2. Use of frequencies without coordination by administrations**

- 2.1. Denmark may use the frequency band 462.5–467.5 MHz without coordination with Sweden, if the predicted field strength produced by a base station does not exceed the field strength thresholds, defined in Annex 2, for 10 % of the time and 50 % of the locations.
- 2.2. Sweden may use the frequency band 462.5–467.5 MHz without coordination with Denmark, if the predicted field strength produced by a base station does not exceed the field strength thresholds, defined in Annex 2, for 10 % of the time and 50 % of the locations.

## **3. Coordination procedure**

- 3.1. Establishment of agreements between operators shall be encouraged to the extent possible. Subject to agreement between operators other technical characteristics can be used for the band 462.9625–467.5 MHz, e.g. other field strength limits or propagation models.
- 3.2. Any case of interference for the band 462.9625–467.5 MHz shall as far as possible be resolved among the operators concerned. If not resolved, or in case of unequal access to the spectrum band, assistance might be sought from the administrations.

## **4. Revision and cancellation**

- 4.1. This agreement may be revised upon mutual agreement of the two administrations.
- 4.2. This agreement may be cancelled with a notice of at least twelve months from any of the two parties.

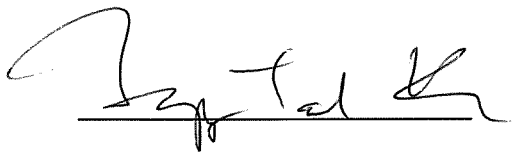
**5. Enter into force**

- 5.1. This agreement is valid from the date of a signing.
- 5.2. This agreement has been drawn in two identical copies, one for Denmark and one for Sweden.

Place København

Date May 4, 2017

For the Danish Energy Agency



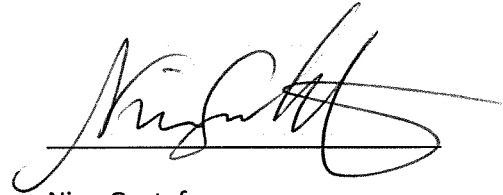
Jeppe Tanderup Kristensen

Senior Adviser, Center for Telecoms

Place Höpenhamn

Date May 3<sup>rd</sup> 2017

For the Swedish Post and Telecom Authority



Nina Gustafsson

Acting Head of Section for Spectrum Development

Spectrum Department, PTS

## ANNEX 1

### PREFERENTIAL PHYSICAL-LAYER CELL IDENTITIES (PCI) FOR LTE

PCI division may be used in border areas to improve coverage and service when channel centre frequencies are aligned. The PCIs are divided between the administrations according to the following table:

PCI	Set A 0 to 83	Set B 84 to 167	Set C 168 to 251	Set D 252 to 335	Set E 336 to 419	Set F 420 to 503
Country	Denmark	Denmark	Denmark	Sweden	Sweden	Sweden

## ANNEX 2

### FIELD STRENGTH THRESHOLDS AT THE BORDER

Applicable band	462.9625–467.5 MHz	462.5–467.5 MHz	462.5–462.9625 MHz
	Overlapping carriers <sup>[1,2]</sup> (Rx antenna at 3 m height)	LTE carriers with centre frequencies aligned and non-preferential codes used (Rx antenna at 3 m height)	To protect narrowband PMR/PAMR used close to the border. (Rx antenna at 10 m height)
Field strength (dB $\mu$ V/m)	$55^{[3]} + 10 \log_{10}(BW^{[4]}/5)$	$29^{[5]} + 10 \log_{10}(BW^{[4]}/5)$	$20^{[6]} + 10 \log_{10}(BW^{[4]}/0.025)$
<sup>[1]</sup> Carriers with not aligned centre frequencies, e.g. LTE <sup>[2]</sup> LTE carriers with centre frequencies aligned and using preferential codes. <sup>[3]</sup> Value based on ECC REC(15)01 <sup>[4]</sup> Bandwidth in MHz <sup>[5]</sup> Value based on ECC REC(08)02 <sup>[6]</sup> Value based on ECC REC T/R 25-08			