

# Agreement between the Danish Energy Agency and the Swedish Post and Telecom Authority concerning the use of the frequency band 2300-2400 MHz

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January 2018

## 1. Principles and definitions

- 1.1 The frequency band 2300-2400 MHz is harmonized for mobile/fixed communications networks (MFCN), in accordance with CEPT ECC Decision (14)02.
- 1.2 This agreement is based on the concept of field strength levels on borderlines in accordance with ECC REC (14)04.
- 1.3 This agreement covers the coordination of TDD (Time Division Duplex) and downlink only base stations. User equipment, or terminals, are allowed to be used on non-interfering basis, in accordance with ITU RR 4.4.
- 1.4 For the purpose of this agreement the borderline 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.
- 1.5 The latest version of Recommendation ITU-R P. 1546 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 3000 MHz" shall be used for prediction of field strength values.

## 2. Use of frequencies without coordination by administrations

- 2.1 Denmark may use the frequency band 2300-2400 MHz without coordination with Sweden, if the cumulative interfering field strength produced by an individual base station does not exceed 30 dB( $\mu$ V/m)/5 MHz.
- 2.2 Sweden may use the frequency band 2300-2400 MHz without coordination with Denmark, if the cumulative interfering field strength produced by an individual base station does not exceed 30 dB( $\mu$ V/m)/5 MHz.
- 2.3 For base stations that are synchronized<sup>1</sup> between Denmark and Sweden or deployed as downlink only on both sides of the border, the following applies:
  - 2.3.1 Denmark may use the frequency band 2300-2400 MHz without coordination with Sweden, if the cumulative interfering field strength produced by an individual base station does not exceed 65 dB( $\mu$ V/m)/5 MHz within the Swedish borderline or beyond and 49 dB( $\mu$ V/m)/5 MHz at a distance of 6 km inside the Swedish borderline or beyond.

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<sup>1</sup> Synchronized TDD base stations operate aligned in time, so that there is no overlap between DL and UL transmission.

- 2.3.2 Sweden may use the frequency band 2300-2400 MHz without coordination with Denmark, if the cumulative interfering field strength produced by an individual base station does not exceed 65 dB( $\mu$ V/m)/5 MHz within the Danish borderline or beyond and 49 dB( $\mu$ V/m)/5 MHz at a distance of 6 km inside the Danish borderline or beyond.
- 2.4 Field strength values are defined within a reference block of 5 MHz. In cases of other frequency block sizes a value of  $10 \times \log_{10}$  (frequency block size [in MHz]/5 MHz) dB should be added to the field strength values.
- 2.5 The field strength values in this agreement are based on a receiving antenna height of 3 m above the ground, 10 % of the time and 50 % of location.

**3. Use of Physical-Layer Cell Identities (PCI)**

In the case when LTE systems or 5G NR are used, preferential PCIs as defined in Annex 1 to this agreement shall be used.

**4. Coordination procedure**

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

**5. Revision and cancellation**

- 5.1 This agreement may be cancelled with a notice of at least twelve months from any of the two parties.
- 5.2 This agreement may be cancelled without notice or revised, if mutual understanding is reached between the administrations.

**6. Enter into force**

- 6.1 This Agreement shall enter into force from March 1, 2019.
- 6.2 This agreement has been drawn in two identical copies, one for Denmark and one for Sweden.

Place

Place

Date

Date

For the Danish Energy Agency

For the Swedish Post and Telecom Authority

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Director of Spectrum Management

Head of Section for Spectrum Development,

## ANNEX 1 - PREFERENTIAL PHYSICAL-LAYER CELL IDENTITIES (PCI) FOR LTE and 5G NR

PCI division, according to table below, shall 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 tables:

Table A1. PCI division for LTE

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

Table A2. PCI division for 5G NR<sup>2</sup>

PCI	Set A 0 to 83 504-587	Set B 84 to 167 588-671	Set C 168 to 251 672-755	Set D 252 to 335 756-839	Set E 336 to 419 840-923	Set F 420 to 503 924-1007
Country	Denmark	Denmark	Denmark	Sweden	Sweden	Sweden

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<sup>2</sup> According to working document for revision of ECC REC (14)04