

# Agreement between the Finnish Communications Regulatory Authority and the Swedish Post and Telecom Authority concerning the use of the 3.6 GHz (3400-3800 MHz) frequency band

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March 2018

## 1. Principles and definitions

- 1.1 The 3.6 GHz band, as referred to in this agreement, corresponds to the frequencies from 3400 MHz to 3800 MHz, which are harmonized for mobile/fixed communications networks (MFCN), in accordance with EC Decision 2008/411/EC and EC Implementing Decision 2014/276/EU as well as CEPT ECC DEC (11)06.
- 1.2 This agreement is based on the concept of field strength levels on borderlines in accordance with ECC REC (15)01. In the case when LTE systems are used, preferential PCIs as defined in Annex 1 shall be used.
- 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 Zones F and S referred to in the following paragraphs are defined in Annex 2.

## 2. Use of frequencies without coordination by administrations

- 2.1 Finland may use the 3.6 GHz band without coordination with Sweden, if the predicted mean field strength produced by a base station does not exceed 32 dB( $\mu$ V/m)/5 MHz, calculated for 10 % of the time, at a height of 3 m above the ground within Zone S, see Annex 2.
- 2.2 Sweden may use the 3.6 GHz band without coordination with Finland, if the predicted mean field strength produced by a base station does not exceed 32 dB( $\mu$ V/m)/5 MHz, calculated for 10 % of the time, at a height of 3 m above the ground within Zone F, see Annex 2.
- 2.3 For base stations that are synchronized<sup>1</sup> between Finland and Sweden or deployed as downlink only on both sides of the border, the following applies:
  - 2.3.1 Finland may use the 3.6 GHz band without coordination with Sweden, if the predicted mean field strength produced by a base station does not exceed 67 dB( $\mu$ V/m)/5 MHz within Zone S and 49 dB( $\mu$ V/m)/5 MHz at a distance of 6 km inside Zone S, calculated for 10 % of the time, at a height of 3 m above the ground see Annex 2

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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 3.6 GHz band without coordination with Finland, if the predicted mean field strength produced by a base station does not exceed 67 dB( $\mu$ V/m)/5 MHz within Zone F and 49 dB( $\mu$ V/m)/5 MHz at a distance of 6 km inside Zone F, calculated for 10 % of the time, at a height of 3 m above the ground see Annex 2
- 2.4 Field strength values are defined within a reference block of 5 MHz. In cases of other frequency block sizes a value of  $10 \times \log_{10}(\text{frequency block size [in MHz]}/5)$  dB should be added to the field strength values.

### **3. General**

- 3.1 A complaint in case of harmful interference shall be based on the median values of measurements of field strength, performed at 3 meter of receiving antenna height at least on two different occasions over a range of at least 100 m along the border.
- 3.2 In the presence of interference, the report of harmful interference shall be presented in accordance with Appendix 10 of the Radio Regulations. The other administration shall take all possible steps in order to eliminate the interference.
- 3.3 The latest version of Recommendation ITU-R P. 452 "Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz" shall be used for prediction of field strength values.

### **4. Coordination procedure**

- 4.1 If an intended frequency assignment has to be coordinated, the period of coordination shall not exceed 45 days from the date of the receipt of a written request and 20 days after a reminder. A request may be sent by e-mail to the administration's official e-mail address. If no reply is received after 65 days after the initial request the frequency assignment shall be considered as coordinated.
- 4.2 The exchange of the coordination information between the administrations shall be in electronic form and sent by e-mail or by other electronic means as appropriate or agreed bilaterally.
- 4.3 Preliminary coordination may take place between the operators concerned. The results of such preliminary coordination have to be covered by operators' arrangements, which must be approved by 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 revised or cancelled without notice, if mutual understanding is reached between the administrations.

**6. Enter into force**

- 6.1 This Agreement shall enter into force from 1 January 2019.

This agreement has been drawn in two identical copies, one for Finland and one for Sweden.

Place *HELSINKI*

Place *Stockholm*

Date *3 APRIL 2018*

Date *21 mars 2018*

For the Finnish Communication Regulatory Authority

For the Swedish Post and Telecom Authority

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ANNEX 1 - PREFERENTIAL PHYSICAL-LAYER CELL IDENTITIES (PCI) FOR LTE

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 table:

| PCI     | Set A<br>0 to 83 | Set B<br>84 to 167 | Set C<br>168 to 251 | Set D<br>252 to 335 | Set E<br>336 to 419 | Set F<br>420 to 503 |
|---------|------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| Country | Finland          | Finland            | Finland             | Sweden              | Sweden              | Sweden              |

## ANNEX 2 - Definition of protected zones

### 1. In Finland

#### Zone F

The land border between Sweden and Finland.

The coastline of Finland.

At Ahvenanmaa/Åland:

- A line between Norrskär (60° 32' 24" N, 20° 12' 30" E), Ådskär (60° 21' 03" N, 19° 31' 17" E), Västerön (60° 14' 17" N, 19° 28' 30" E), Askö (59° 59' 20" N, 19° 59' 19" E) and Kalskär (59° 47' 51" N, 20° 57' 50" E)

At Vaasa/Vasa:

- A line between Mickelsöarna (63° 28' 30" N, 21° 44' 40" E), Lappöarna (63° 22' 03" N, 21° 11' 00" E) and Bergö (62° 58' 41" N, 21° 06' 59" E)

At Oulu/Uleåborg:

- Hailuoto (65° 02' 23" N, 24° 33' 04" E)

### 2. In Sweden

#### Zone S

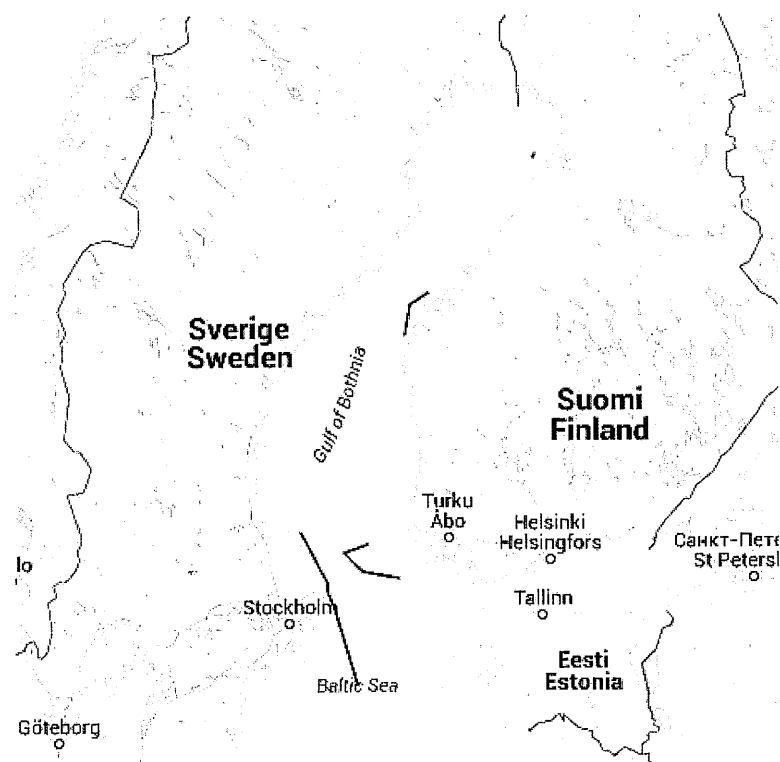
The land border between Finland and Sweden.

The coastline of Sweden.

At the coast of Uppland and Stockholm archipelago:

- A line between Argos grund (60° 37' 42" N, 18° 21' 47" E), Simpnäsklubb (59° 53' 34" N, 19° 04' 46" E), Söderarm (59° 45' 10" N, 19° 24' 21" E), Svenska högarna (59° 26' 38" N, 19° 30' 06" E) and Huvudskär (58° 47' 46" N, 18° 34' 13" E)

*Note: Geographical coordinates in WGS 84.*



*Illustration of Zone S and Zone F*