Agreement between the German Federal Network Agency and the Swedish Post and Telecom Authority concerning the use of the frequency bands 451.0–457.5 MHz and 461.0–467.5 MHz for Land Mobile Service Stations in the border areas

September 2020

1. **Principles and definitions**

1.1. This agreement covers the coordination of base stations for broadband (BB), and narrowband (NB) land mobile services. The user equipment (terminals) are allowed to be used on non-interference basis, in accordance with ITU-R RR 4.4.

1.2. This agreement is based on the concept of field strength levels on borderlines and in the case when LTE systems are used preferential PCIs as defined in Annex 1.

1.3. Information about the use of the frequency band in Germany and Sweden are provided in Annex 2. Figure 1 shows the usage of the different parts of the band. A map showing the location of the principal sites in north-eastern Germany used for different services in the band is given in figure 2.

1.4. For the purpose of this agreement the borderline of Germany and Sweden respectively is defined as the coastline of the other country according ITU Digitized World Map (IDWM)\(^1\).

1.5. The latest version of ITU-R P.1546 “Method for point-to-area predictions for terrestrial services in the frequency range 30–4000 MHz” shall be used for predictions of field strength values.

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

2.1. Germany may use the frequency band 455.74–457.5 MHz without coordination with Sweden, if the predicted mean field strength produced by a base station does not exceed the field strength thresholds as specified in Annex 3.

2.2. Sweden may use the frequency band 455.74–457.5 MHz without coordination with Germany, if the predicted mean field strength produced by a base station does not exceed the field strength thresholds as specified in Annex 3.

2.3. Germany may use the frequency band 461.0–467.5 MHz without coordination with Sweden, if the predicted mean field strength produced by a base station does not exceed the field strength thresholds as specified in Annex 3.

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\(^1\) Remark:
For public mobile service the coastlines serve as borderlines in accordance with ECC-Recommendations. But for PMR usually separate coordination lines in the sea are agreed, e.g. sea-border or border of the exclusive economic zone (EEZ) to respect offshore radio installations, e.g. wind platforms or oil rigs, etc.
2.4. Sweden may use the frequency band 461.0–467.5 MHz without coordination with Germany, if the predicted mean field strength produced by a base station does not exceed the field strength thresholds as specified in Annex 3.

2.5. The field strength values referred to in 2.1 to 2.4 in this agreement are based on 10% of the time and 50% of the locations.

3. **Coordination procedure**

3.1. 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.

3.2. 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.

3.3. 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.

4. **Resolution of interference**

4.1. A complaint in case of harmful interference shall be based on the median values of measurements of field strength, performed at agreed receiving antenna height at least on two different occasions over a range of at least 100 m along the border.

4.2. 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.

5. **Revision and cancellation**

5.1. This agreement may be revised, e.g. in the light of technical and/or administrative developments, upon mutual agreement of the two administrations.

5.2. This agreement may be cancelled with a notice of at least twelve months from any of the two parties.

6. **Enter into force**

6.1. This agreement is valid from 1st January 2021.

6.2. This agreement has been drawn in two identical copies, one for Germany and one for Sweden.
Place

Date

For the German Federal Network Agency

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For the Swedish Post and Telecom Authority

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Jens Franke

Head of Frequencies for Mobile Services Department

Nina Gustafsson

Head of Section for Spectrum Development
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:

<table>
<thead>
<tr>
<th>Country</th>
<th>Set A (0 to 83)</th>
<th>Set B (84 to 167)</th>
<th>Set C (168 to 251)</th>
<th>Set D (252 to 335)</th>
<th>Set E (336 to 419)</th>
<th>Set F (420 to 503)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>Sweden</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Sweden</td>
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</tbody>
</table>
Figure 1. This illustration shows that the band 451.0–457.5 MHz and 461.0–467.5 MHz is used for LTE 450 and for NB PMR in Sweden, and in Germany for technology neutral BB and NB PMR (mixed simplex and duplex usage in both lower and upper part), UIC (railway communication) and paging. It is the DL uses that needs to be coordinated in this case.
Figure 2. This illustration shows the location of the principal sites in north-eastern Germany used for different services in the band 451.0–457.5 MHz and 461.0–467.5 MHz. The type of services are indicated by the colours:

- Technology neutral BB
- Paging
- Railway communication
- PMR (country-wide)
## ANNEX 3

### FIELD STRENGTH THRESHOLDS AT THE BORDER

#### For 462.5–465.74 MHz

<table>
<thead>
<tr>
<th>Field strength (dBµV/m)</th>
<th>Overlapping carriers(^{[1,2]}) (Rx antenna at 3 m height)</th>
<th>LTE carriers with centre frequencies aligned and non-preferential PCI (Rx antenna at 3 m height)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(55^{[3]} + 10 \times \log_{10}(BW^{[4]}/5))</td>
<td>(29^{[3]} + 10 \times \log_{10}(BW^{[4]}/5))</td>
</tr>
</tbody>
</table>

\(^{[1]}\) BB carriers with not aligned centre frequencies, e.g. LTE or CDMA  
\(^{[2]}\) LTE carriers with centre frequencies aligned and using preferential PCI.  
\(^{[3]}\) Value based on ECC REC(15)01  
\(^{[4]}\) Bandwidth in MHz  
\(^{[5]}\) Value based on ECC REC(08)02

#### For 465.74–467.40 MHz

<table>
<thead>
<tr>
<th>Field strength (dBµV/m)</th>
<th>To protect simplex NB PMR/PAMR-UL used close to the border from MFCN-DL. (Rx antenna at 10 m height)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(14^{[6]} + 10 \times \log_{10}(BW^{[4]}/0.025))</td>
</tr>
</tbody>
</table>

\(^{[4]}\) Bandwidth in MHz  
\(^{[6]}\) Value based on ECC REC T/R 25-08

#### For 461.0–462.5 and 467.4–467.5 MHz

<table>
<thead>
<tr>
<th>Field strength (dBµV/m)</th>
<th>To protect duplex NB PMR/PAMR used close to the border. (Rx antenna at 10 m height)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(20^{[6]} + 10 \times \log_{10}(BW^{[4]}/0.025))</td>
</tr>
</tbody>
</table>

\(^{[4]}\) Bandwidth in MHz  
\(^{[6]}\) Value based on ECC REC T/R 25-08

#### For 455.74–457.40 MHz

<table>
<thead>
<tr>
<th>Field strength (dBµV/m)</th>
<th>To protect MFCN-UL from simplex NB PMR/PAMR-DL used close to the border. (Rx antenna at 10 m height)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(20^{[6]})</td>
</tr>
</tbody>
</table>

\(^{[6]}\) Value based on ECC REC T/R 25-08