

Agreement between the German Federal Network 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

April 2017

1. Principles and definitions

- 1.1. This agreement covers the coordination of base stations for broadband (BB), wideband (WB) 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. The channeling arrangement of current WB-CDMA usage in Germany is provided in figure 3. Evolution from CDMA-1.25 MHz to LTE-1.4 MHz within the Blocks of 1.5 MHz of the existing channeling arrangement is foreseen in future.
- 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 30–3000 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 462.5–467.5 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.

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 462.5–467.5 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 the date of signing.
- 6.2. This agreement has been drawn in two identical copies, one for Germany and one for Sweden.

Place *Painz*
Date *29/05/2017*
For the German Federal Network Agency

Place *Stockholm*
Date *April 24th 2017*
For the Swedish Post and Telecom Authority

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	Sweden	Germany	Germany	Germany	Sweden	Sweden

ANNEX 2

SPECTRUM USAGE IN GERMANY AND SWEDEN AS OF DECEMBER 2016

Germany

Sweden

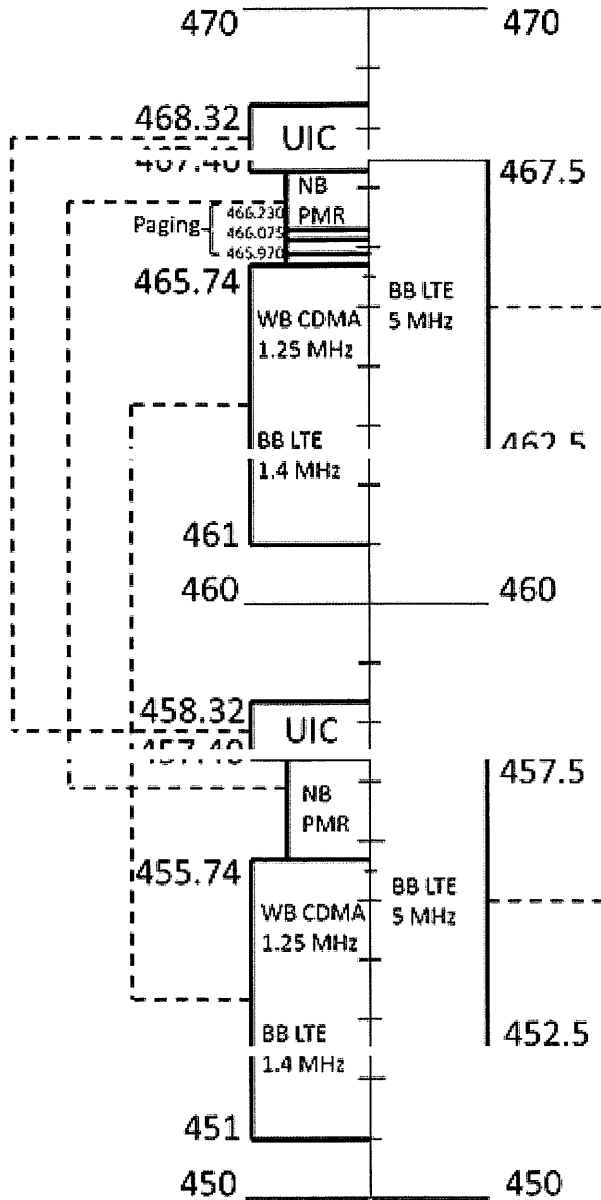


Figure 1. This illustration shows that the band 452.5–457.5 MHz and 462.5–467.5 MHz (highlighted in yellow) is used for LTE 450 in Sweden and in Germany for BB LTE (1.4 MHz), WB CDMA (1.25 MHz), NB PMR (mixed simplex and duplex usage in both lower and upper part), UIC (railway communication) and paging. It is the DL uses that needs to be coordinated in this case.

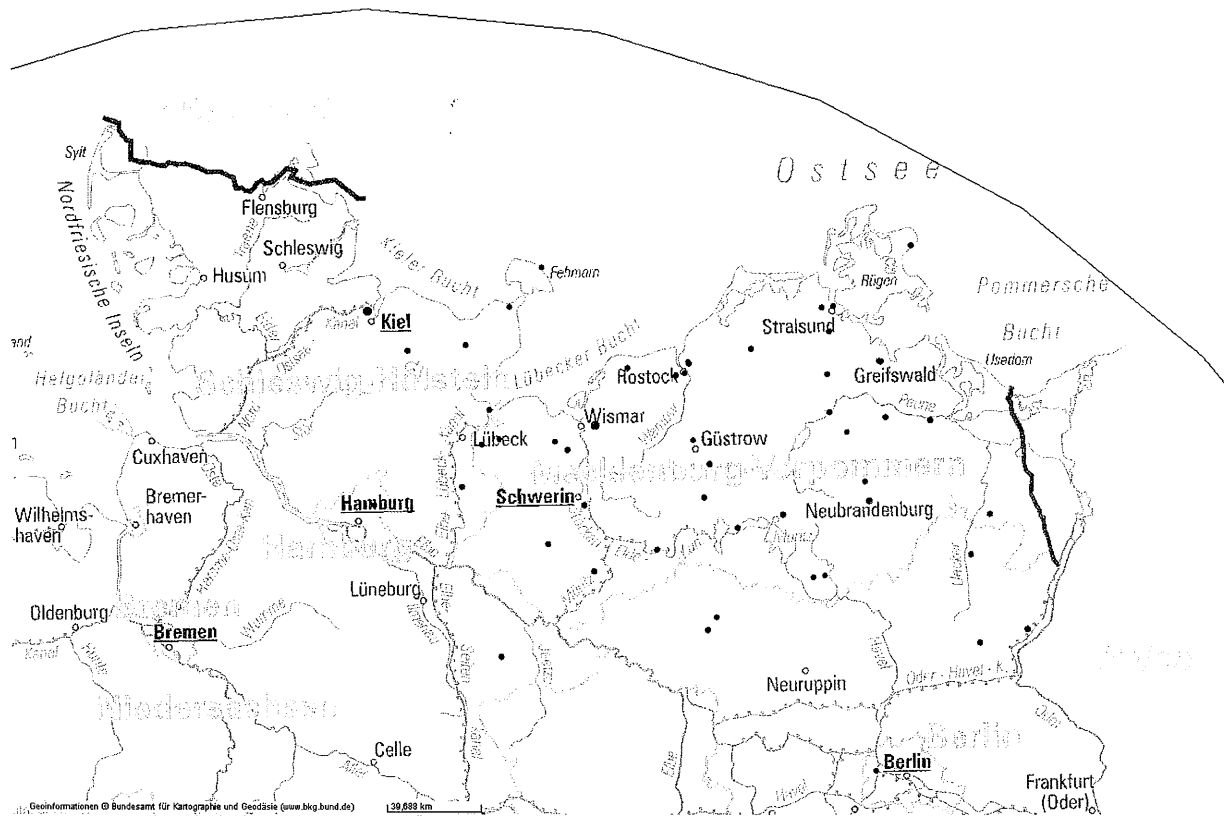


Figure 2. This illustration shows the location of the principal sites in north-eastern Germany used for different services in the band 452.5–457.5 MHz and 462.5–467.5 MHz. The type of services are indicated by the colours:

- WB-CDMA or LTE-1.4
- Paging
- Railway communication
- PMR (country-wide)

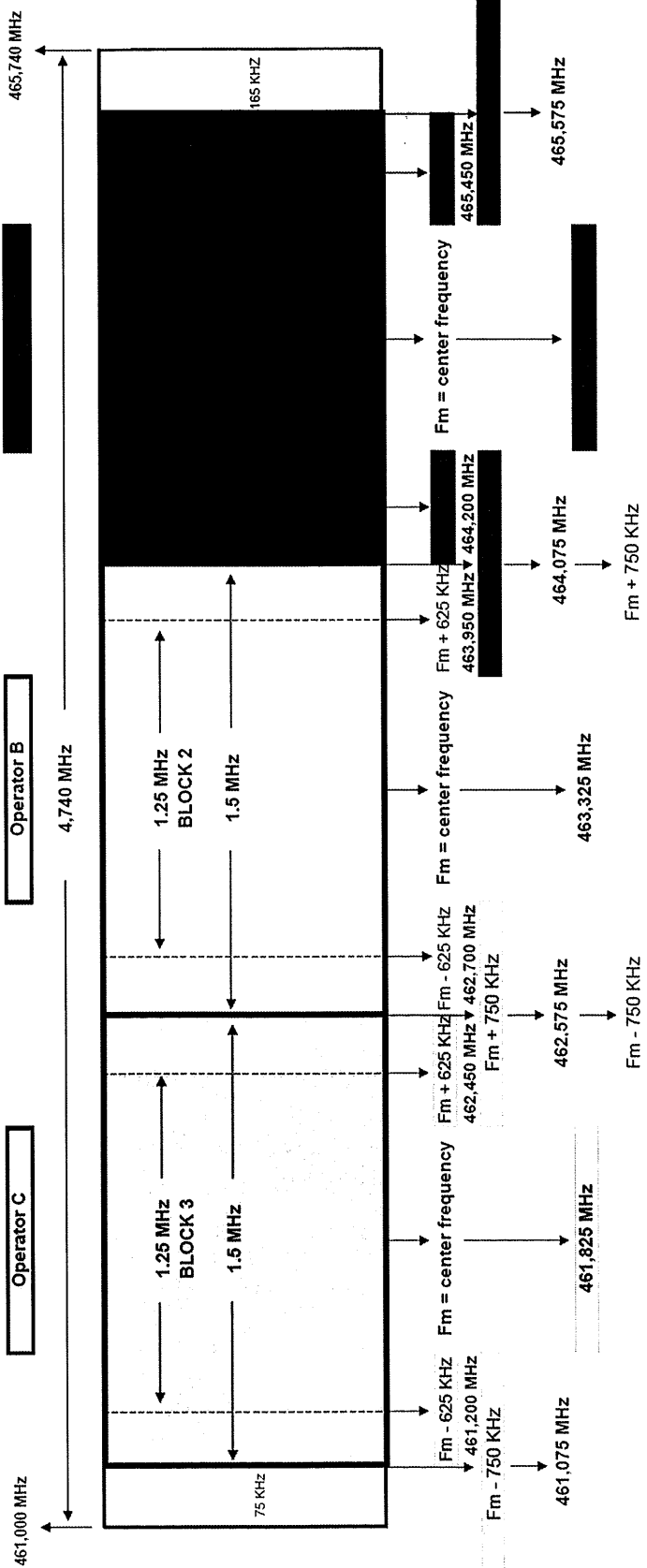


Figure 3. Wideband CDMA DL channeling arrangement in 461.00–465.74 MHz in Germany

ANNEX 3

FIELD STRENGTH THRESHOLDS AT THE BORDER

For 462.5–465.74 MHz

	Overlapping carriers ^[1,2] (Rx antenna at 3 m height)	LTE carriers with centre frequencies aligned and non-preferential PCI (Rx antenna at 3 m height)
Field strength (dBμV/m)	$55^{[3]} + 10 \times \log_{10}(BW^{[4]}/5)$	$29^{[5]} + 10 \times \log_{10}(BW^{[4]}/5)$
^[1] BB or WB 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

	To protect simplex NB PMR/PAMR-UL used close to the border from MFCN-DL. (Rx antenna at 10 m height)
Field strength (dBμV/m)	$14^{[6]} + 10 \times \log_{10}(BW^{[4]}/0.025)$
^[4] Bandwidth in MHz ^[6] Value based on ECC REC T/R 25-08	

For 467.4–467.5 MHz

	To protect duplex NB PMR/PAMR used close to the border. (Rx antenna at 10 m height)
Field strength (dBμV/m)	$20^{[6]} + 10 \times \log_{10}(BW^{[4]}/0.025)$
^[4] Bandwidth in MHz ^[6] Value based on ECC REC T/R 25-08	

For 455.74–457.40 MHz

	To protect MFCN-UL from simplex NB PMR/PAMR-DL used close to the border. (Rx antenna at 10 m height)
Field strength (dBμV/m)	$20^{[6]}$
^[6] Value based on ECC REC T/R 25-08	