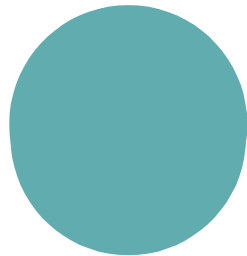


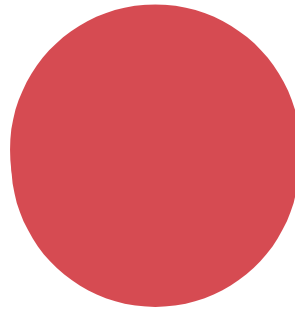


Energistyrelsen



# **Information Memorandum**

## **Annex W**



**Germany 3400-3800 MHz synchronisation**

**2021**



# Federal Republic of Germany

Bundesnetzagentur • Postfach 80 01 • 55003 Mainz

Danish Energy Agency  
Carsten Niebuhrs Gade 43  
1577 Copenhagen V  
Denmark

Ihr Zeichen, Ihre Nachricht vom  
*Votre référence, votre lettre du*  
Your reference, your letter of

Mein Zeichen, meine Nachricht vom  
*Ma référence, ma lettre du*  
My reference, my letter of  
224-2 B 5972-2

+49 61 31

Mainz

18-31 52

12.02.2020

## Cross-border synchronisation of TDD mobile networks in the 3400-3800 MHz band

Dear Sir/Madam

Germany's auction for the award of spectrum in the 3400-3700 MHz band to operators of national mobile networks ended on 12 June 2019.

Frequency blocks were allocated to network operators as follows:

3400 MHz	3490 MHz	3540 MHz	3610 MHz	3700 MHz
Vodafone	1&1 Drillisch	Telefónica	Telekom	

In accordance with the President's Chamber Decision (BK1-17/001) of 26 November 2018, synchronisation of the national mobile networks operated in TDD mode is to be agreed under operator arrangements between the mobile network operators.

Spectrum in the 3700-3800 MHz sub-band is assigned upon application for local broadband wireless networks.

The German mobile network operators have informed the Bundesnetzagentur that it is expedient in the interests of efficient spectrum use to synchronise network operation between adjacent assignment holders and have therefore agreed on the following synchronisation parameters:

...

Bundesnetzagentur für  
Elektrizität, Gas,  
Telekommunikation, Post  
und Eisenbahnen

Fax Bonn  
+49 228 14-88 72

Email  
poststelle@bnetza.de  
Internet  
<http://www.bundesnetzagentur.de>

Kontoverbindung  
*Adresse bancaire*  
Bank details  
Bundeskasse Trier  
BBk Saarbrücken  
BIC: MARKDEF1590  
IBAN: DE 81 590 000 00 00 590 010 20

Dienstgebäude  
*Bureau /Office*  
Canisiusstr. 21  
55122 Mainz  
Fax Mainz  
+49 61 31 18-56 00

Behördensitz/Siège/Seat  
Bonn  
Tulpenfeld 4  
53113 Bonn  
☎ +49 228 14-0

- DL/UL pattern: DDSU (4:1)  
(D = downlink, S = special subframe, U = uplink)
- Special subframe slot configuration: 10:2:2  
(10 x downlink : 2 x gap : 2 x uplink)
- Cyclic prefix: normal
- Subcarrier spacing: 30 kHz
- Time base: UTC in accordance with Recommendation ITU-R TF.460
- The radio frames are to be synchronised to the UTC second, which corresponds to phase synchronisation according to ITU-T. The typical measuring signal is 1pps (pulse per second). The rising edge represents the beginning of the UTC second. The DL/UL pattern given above starts with the beginning of a radio frame.
- The minimum standards to ensure synchronisation performance according to Recommendation ITU-T G.8271.1 apply, in other words a maximum deviation from UTC of +/-1500 ns at the radiation points of the 3.4-3.7 GHz transmitting antennas of each mobile network operator applies.

In addition, the mobile network operators have asked the Bundesnetzagentur to inform the frequency administrations in Germany's neighbouring countries of the synchronisation parameters agreed in Germany in order to support the synchronised network operation in cross-border mobile network coordination with operators in the neighbouring countries.

We would therefore be very grateful if you could provide us with information about the rights of use awarded in your country for spectrum in the 3.4-3.8 GHz band and about the synchronisation parameters agreed by the operators or specified by your administration.

Once we have received this information, we can consider how the best possible coverage can still be achieved in border regions in cases where different synchronisation parameters are used in neighbouring countries.

Solutions could be agreed on and documented under bilateral and multilateral arrangements between the mobile network operators involved.

Please do not hesitate to contact Mr Tobias Schnetzer by telephone on the number above or by email at [tobias.schnetzer@bnetza.de](mailto:tobias.schnetzer@bnetza.de) if you have any questions or need any further information.

Yours faithfully



Franke