

**ECC PT1 #64****Manchester, United Kingdom, 14-16 January 2020**

**Date issued:** 20 December 2019

**Source:** France

**Subject:** Follow up ECC REC 15 01 : cross-border of 5G MFCN networks at 3.4-3.8 GHz

Group membership required to read? (Y/N)

N
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**Summary:**

ECC PT1 has updated the ECC REC 15 01 with a new annex (Annex 6) addressing 5G :”practical approaches for cross-border coordination of synchronised and unsynchronised MFCN TDD systems in the 3400-3800 MHz”.

Current ECC PT1 work during the update of ECC REC 15 01 and drafting of annex 6 revealed that due to low field strength, un-synchronisation of TDD networks at the border would result in large corridors on each side of the border line where only limited service or even no service could be offered (ECC Report 296 indicates a separation distance of 60 km between AAS BS). Any improvement of the field strength will not change this main conclusion.

Nevertheless, the development of 5G in 3400-3800 MHz is a priority in number of CEPT countries. Un-synchronisation of TDD networks at the border will drastically impact the 5G deployment at the border of CEPT countries (including main cities next to border). Especially within CEPT where the size of the countries is in average much smaller than in other regions in the world, this would result in limited services or even no service in the whole country or at least in significant parts of these countries, including large urban areas close to, or even crossing the borders.

This impact at the border is a strategic issue to be addressed with no delay due to current on-going authorisations process in number of CEPT countries (see 5G observatory). Even if the introduction of TDD synchronisation at national level is managed differently among CEPT countries (either mandated by administrations or under the agreement of mobile operators), cross-border coordination remains under the responsibility of administrations.

Therefore a cross border coordination based on synchronisation shall be preferred. It appears that :

- The most efficient solution to ensure an efficient usage of spectrum at the border of CEPT countries would be a single frame across CEPT countries compatible with 5G and LTE systems. At this stage, at national level, two different frames (one compatible with non 5G systems and the other one not compatible) seems under selection process within CEPT countries (synchronised operations).
- DL symbol blanking seems an alternative solution for the synchronisation between countries in case of different frame structures are implemented at the border. Nevertheless it is not yet available and will depend on the ecosystem to develop this feature. In addition, manufacturers have claimed that this feature could be developed only if there a limited number frame structures (i.e 2) due the complex impact on vendors signalling implementation.

In consequence ECC PT1 should engage with no delay harmonisation of one preferred frame compatible with 5G and LTE systems (or two frames) to ensure the most efficient usage of the spectrum at the border of CEPT countries taken into account that 4G networks will still remain in operation in next years in number of

CEPT countries.

As one single frame compatible with 5G and LTE systems is the most efficient solution to ensure an efficient usage of spectrum at cross border, ECC/PT1 should ask GSMA (ie, all operators) whether this approach could be realistically achieved in Europe.

In the case where two different frames at the border may be used, ECC PT1 should ensure that DL symbol blanking feature could be made available for future 5G BS in a timely manner and in a multi vendors environment.

### **Proposal:**

Further to the update of ECC REC 15 01, to ensure an efficient usage of spectrum at the border of CEPT countries, France invites ECC PT1 to consider an urgent follow up action in order to ensure that one preferred frame compatible with non 5G systems (LTE) and 5G systems (or two) TDD frame(s) is (are) harmonised across CEPT countries (see proposed work item in annex)

As one single frame compatible with 5G and LTE systems is the most efficient solution to ensure an efficient usage of spectrum at cross border, ECC/PT1 should ask GSMA (ie, all operators) whether this approach could be realistically achieved in Europe.

In the case where two different frames at the border, ECC PT1 should consider relevant action to ensure that DL symbol blanking feature could be made available for future 5G BS in a timely manner and in a multi vendors environment. This solution could be appropriate also to manage future transition towards one single frame at the border of CEPT countries. In consequence, any relevant action to be launched at European standardisation level (ETSI) shall be also identified. ETSI should be informed accordingly.

ECC PT1 shall consider and submit for approval to ECC with short time schedule to develop the harmonisation measure the proposed draft WI in annex.

### **Background:**

- Updated ECC REC 15 01 and its annex 6
- No ETSI standard is yet available on DL symbol blanking for NR
- 5G initiatives at EU level in 3.4-3.8 GHz see 5Gobservatory  
<https://5gobservatory.eu/5g-spectrum/national-5g-spectrum-assignment/>
- Cross border agreements are under the responsibility of administrations
- Different approaches in CEPT countries concerning TDD synchronisation either
  - TDD synchronisation is mandated by an administration (frame structure, clock, slot S)
  - Or MFCN mobile operators are free to decide between themselves on TDD synchronisation to be established at national level. administrations are maintaining a possibility to intervene ex post in case of lack of agreement between authorised MFCN operators

Reference	Subject	Scope	Start Date	End Date	Status	Remarks	Deliverable	Triggered By
PT1_XX	Harmonised TDD networks synchronisation in the frequency band 3400-3800 MHz	To identify harmonised approach for TDD networks synchronisation in frequency band 3400-3800 MHz in order to ensure an efficient usage of spectrum at border of CEPT countries	03-20 (ECC MARCH 2020)	11-20 (ECC November 2020)		<p>Unsynchronised TDD networks in border areas result in large corridor between CEPT countries.</p> <p>Synchronisation of TDD networks needs to be addressed to ensure an efficient usage of the spectrum at the borders of CEPT countries.</p> <p>NR frame structure compatible with LTE allows the compatibility between legacy systems (LTE, Wimax) and NR. A preferred frame compatible with 5G and LTE systems (or two frames) ensures the most efficient usage of the spectrum at the border of CEPT countries.</p>	ECC Decision	ECC PT1