

Qualcomm response to ITST consultation on the draft 2.5 GHz auction documents

Introduction

Qualcomm views the 2.6 GHz band as critically important for the deployment and capacity extension of high speed mobile broadband networks with the resulting positive impacts on productivity, employment and competitiveness in European countries. Indeed The 2.6 GHz band represents a unique opportunity for the deployment of LTE networks with 20 MHz FDD channel bandwidth, to achieve maximum technology performances. Therefore, Qualcomm considers that the optimal structure for the award of the FDD portion of 2.6 GHz would be based on 3 licenses, each comprising 2x20 MHz and one license comprising 2x10 MHz spectrum.

In this context, we highly appreciate ITST decision to adopt the harmonized CEPT band plan for the award of the 2.6 GHz band. Indeed, the adoption of the technical conditions for spectrum usage, including the FDD / TDD channeling arrangement, defined by CEPT in ECC Decision(05)05, is of vital importance for the timely development of mobile broadband standards and mass market products in this spectrum.

Adopting the 2.6 GHz harmonised band plan

Qualcomm considers that spectrum harmonization in Europe is necessary to provide clarity, and generally having a predictable regulatory framework in place to be able to develop technologies and services in a timely manner. We support technology neutrality and we believe that the IMT-2000 framework as established by the ITU is consistent with this principle while enabling global collaboration taking into account the interests of administrations, operators and manufacturers in order to reach spectrum harmonization and compatibility.

In the context of the 2.6 GHz band, Qualcomm views ITST's decision to adopt the harmonized CEPT band plan as critically important. Any other choice would have been detrimental to the development of mobile services in Denmark as it would have lead to "Danish only" terminals.

Indeed, it will be highly difficult for an FDD handset to operate in both the harmonized ECC channelling arrangement and a national specific FDD/TDD band plan with one Transmit/Receive (Tx/Rx) chain while protecting the unpaired spectrum from transmit Tx interference. An FDD terminal with roaming capabilities between the ECC and a national specific FDD/TDD band plan would require a second set of PA/Duplexer/LNA, which would ultimately impact the consumers as it may lead to specific handsets requiring more complex implementation resulting in higher cost, higher power consumption, bigger form factor and shorter coverage due to higher filter insertion loss.

Qualcomm therefore strongly supports ITST decision to adopt the CEPT band plan as defined in ECC Decision(05)05 which comprises 2 x 70 MHz of FDD and 50 MHz of TDD spectrum.

The 2.6 GHz band plan and CEPT Report 131

The European Commission decision 2008/477/CE was adopted based on the technical conclusions of the CEPT Report 19. This report focused exclusively on the interference scenarios from base station to base station. Neither the CEPT Report 19 nor the European Commission decision 2008/477/CE take into account the interference and implementation constraints linked to terminals. The ECC Report 131 has studied such constraints and identified technical conditions of access to the band for terminals.

The ECC Report 131 identifies some mobile station to mobile station interference issues at the border of each frequency blocks, especially at the FDD/TDD border but also between unsynchronized TDD blocks. The interference-free coexistence of terminals in the band 2500-2690 MHz imposes severe emission restrictions at the FDD/TDD domains borders. These constraints go well beyond the 3GPP standards defined filtering capabilities of terminals and request additional filtering, in the form of specific RF components (RF filters). It is critical for operators to ensure both an interference-free environment but also the availability of mass market equipment, which can only occur through the adoption of single Europe-wide technical conditions of access to spectrum.

Following the conclusions of the CEPT report 19 and ECC Report 131, the 2570-2575 MHz and 2615-2620 MHz frequency blocks can only be used under very stringent technical restrictions. Furthermore, the emission limits defined to protect adjacent frequency blocks indicate that these two frequency blocks will correspond to the RF-filters transition bands of the equipments and therefore will be subject to severe interference.

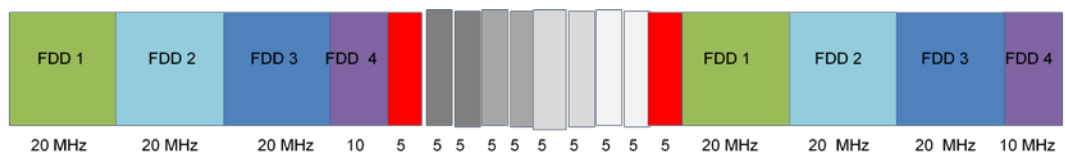
Such constraints raise major questions regarding the value of such bands, as well as the availability of equipments capable of operating in such bands. Following these considerations, Qualcomm recommends to identify these bands as guard bands between FDD and TDD blocks, rather than simply restricted blocks.

Qualcomm would therefore:

- Welcome the selection by ITST of the harmonized band plan. Any deviation from this band plan would have severely impacted the availability of equipments and terminals in the band,
- Recommends considering carefully the conclusions of the ECC Report 131, taking into account the requirement for operators to operate in an interference free environment, under a single Europe-wide adopted set of technical conditions of access to spectrum. In particular, Qualcomm recommends identifying the 2570-2575 MHz and 2615-2620 MHz blocks as guard bands to reduce the interference risks between FDD and TDD networks.

Optimal FDD bandwidth in the 2.6GHz band

The 2.6 GHz band represents a unique opportunity for the deployment of LTE networks with 20MHz channel bandwidth. This 2x20 MHz channelization will enable to achieve the promises of the LTE technology, i.e. support for a large number of simultaneous users and reduced price of the Mbit/s. Therefore, Qualcomm supports to structure the award in order to enable the emergence of 3 licenses of 2x20 MHz and one license of 2x10 MHz, as represented in the Figure below.



Qualcomm therefore supports ITST award procedure proposal as it fully allows the emergence of three 20MHz FDD frequency blocks.
