



HUAWEI

Response to the PTS consultation on 2.3 GHz and 3.5 GHz bands (March 2020)

“Andra samrådet av förslag till beslut att begränsa antalet tillstånd i 3,5 GHz- och 2,3 GHz-banden och allmän inbjudan till ansökan (dnr 18-8496)”

Huawei welcomes the opportunity to provide our comments in this second round consultation on the 5G spectrum access in the 2.3 MHz and 3.5 MHz bands in Sweden.

Huawei expressed its detailed views on PTS' plans to open the 2.3 GHz and 3.5 GHz bands for 5G in its response to the earlier PTS consultation *“Samråd av förslag till beslut att begränsa antalet tillstånd i 3,5 GHz- och 2,3 GHz-banden och allmän inbjudan om ansökan (dnr 18-8496)”* submitted in July 2019. In our response to the current consultation we re-inforce some of the key elements of our position and provide some additional comments.

We would like to emphasize the great importance of availing large contiguous blocks of at least 80-100 MHz per operator in *mid-band spectrum* for the successful launch of 5G in Sweden, and welcome the timely initiative of PTS to open the 2.3 GHz and 3.5 GHz bands for 5G in the same timeframe. We also note that the licenses will be issued for a period of 25 years. Such a duration would ensure the necessary business conditions for long-term investment in nation-wide deployments of 5G networks. We continuously recommend regulators in Europe awarding licenses in the whole primary 5G band 3400-3800 MHz on a national basis. We believe that such an approach would ensure a successful, yet future-proof, launch of 5G in Europe.

We welcome the intention of PTS to consider awarding the 2300-2380 MHz band as a *single spectrum lot* of 80 MHz, along with the 3.5 GHz band, on a national basis and in a common auction. Such a scheme would allow all potential spectrum users to acquire sufficient amount of contiguous mid-band spectrum for a cost-efficient deployment of their 5G networks. Later, around the years 2023-2025, we expect that additional 100-200 MHz of contiguous mid-band spectrum per operator will be required to respond to the growing demand of high-speed mobile connectivity on a city-wide scale.

We support PTS's proposal for synchronized operations in both 2.3 GHz and 3.5 GHz bands, and the flexibility of the frame structure selection based on operators' agreements. We believe that the proposed *DDDSU default frame structure* is the right choice for the 3.5 GHz primary 5G band; it is well supported across the ecosystem, it effectively responds to the DL-intensive traffic trends and delivers improved beamforming coverage.

In the 2.3 GHz band, we believe that PTS applies the best approach by leaving to the market to decide on the preferred technology (i.e. either LTE or NR). Subsequently, we believe it is up to the market to agree on the synchronisation scheme, as PTS proposes. We note that the LTE ecosystem in the 2.3 GHz band (both infrastructure and the terminal base) is very advanced, which would allow the licensees to exploit this advantage in some years to come, gradually migrating to NR (the current technology solutions such as CloudAir would allow operators to support both LTE and NR in the meantime). In the case the licence winner(s) decide to deploy 5G-NR networks from the beginning, such a decision would be supported by 5G-NR ecosystem which will be ready already in the year 2020 (3GPP band class n40). In the case of NR-only environment in the 2.3 GHz band we welcome the proposed *DDDSU “default” frame structure* due to the reasons mentioned above.

We re-inforce our earlier recommendation to PTS not to include *in-block power limits* in the licences of the future users of 2.3 GHz and 3.5 GHz bands since this would lead to reduced performance and/or increased cost of 5G networks, while co-existence with users in adjacent spectrum can be achieved without this restriction.

We further remind that over restrictive conditions, such as indoor use only, the low 24 dBm/20 MHz TRP limit in the 3400-3420 MHz portion along with the stringent -59 dBm/MHz limit below 3400 MHz,



for non-AAS 5G systems would not be justified. If such restrictions are deemed necessary, they should be applied at relevant geographical locations only.

We recommend PTS to engage early with the neighbouring countries on *5G cross-border coordination* so as to maximise the efficient use of spectrum on both sides of the border. To optimise the spectrum efficiency along the borderline, we recommend to have only one frame structure across CEPT countries. We believe the default 5G-NR frame structure chosen by PTS has the potential to become the common choice across the Scandinavian countries. To this extend, we recommend PTS to actively engage in the recently established ECC PT1 Work Item (“Frame structures to facilitate TDD cross-border coordination in the frequency band 3400-3800 MHz”).