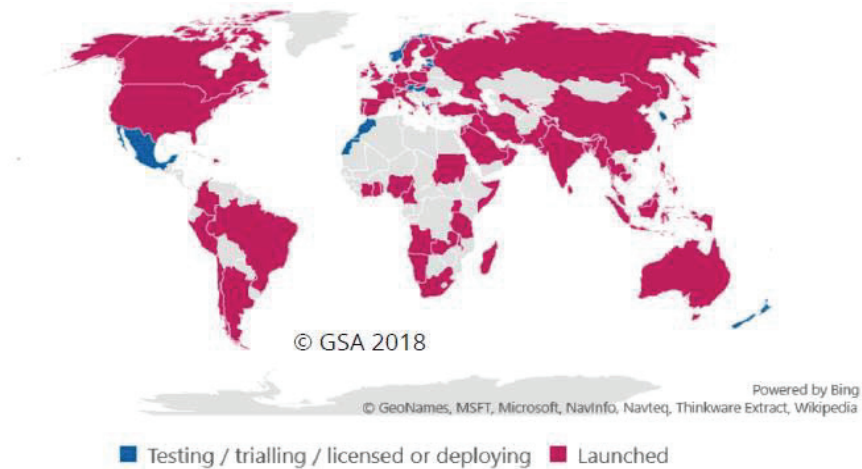


The figure below, from the GSA, shows TDD licences and launches as of November 2018:



**Figure 6: TDD licences and launches (source: GSA)**

The majority of submissions received support the use of TDD for new IMT deployment.

### 5.7.2 Flexible spectrum utilisation

Unpaired spectrum is much easier to release than paired spectrum. This benefit is becoming increasingly important as the globally available supply of spectrum falls, meaning the process of releasing new spectrum can be greatly accelerated by designating it as unpaired TDD.

Capacity benefits of unpaired spectrum are realised in the size of available TDD spectrum bands often allocated in large blocks. From a capacity perspective, this is an advantage over the typical  $2 \times 10$  MHz configuration found in paired FDD spectrum. The current LTE bandwidth limit is 20 MHz and most equipment could spread power of  $\sim 80$  W over  $\sim 40$  MHz bandwidth depending on the frequency range. Therefore, 40 MHz assignments per operator might be cost-efficient, but this would be hard to assign in multi-operator environments. Therefore, it might be advantageous to have one wholesale operator or active Radio Access Network (RAN) sharing involving a number of mobile network operators in TDD spectrum.

In addition, the unpaired TDD spectrum band should not be fragmented with FDD spectrum due to the requirement of a guard band of  $\sim 5$  MHz between the bands, which is generally taken from the TDD spectrum. Instead of guard bands, the boundary ranges might be used indoors only due to higher penetration losses. Special spectrum assignments for TDD could be used within the duplex gap larger than 15 MHz.