Valuation methods for spectrum in the 26GHz band represent an evolution of current best practice

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Mark Colville and Gentiana Shiko

mmWave spectrum valuations need to account for local and band-specific factors

The value of mmWave spectrum (such as that in the 26GHz band) is dependent on many factors that are specific to individual operators. Carrying extra mobile broadband (MBB) traffic (using mmWave spectrum) is unlikely to lead to significant changes in ARPU in a market where consumers commonly use unlimited data packages. However, using mmWave spectrum may also improve the quality of connection, which can have customer retention benefits for operators in countries where competition is strongly focused on network-quality-related factors.

The scope for using mmWave spectrum to increase ARPU is limited, so MNOs are under financial pressure to deliver and maintain a high quality of service (QoS) in a cost-efficient manner against the backdrop of rapid growth in data traffic. The bandwidth available in mmWave bands such as the 26GHz band can help MNOs to meet demand in traffic hotspots and can enable them to innovate and access new market segments. As a result, appetite for 26GHz spectrum among MNOs is growing, and many regulators are keen to bring the spectrum to the market quickly. Indeed, several auctions for spectrum in the 26GHz band have already taken place in Europe,[1] and regulators in a number of other European countries are preparing[2] to carry out such auctions in the near future.

MNOs that are partaking in any spectrum auction must carry out a detailed valuation exercise, and auctions for spectrum in the 26GHz band are no exception. However, calculating an accurate valuation for such spectrum continues to be challenging, partly because the commercial use cases remain somewhat uncertain.

A traditional spectrum valuation approach considers the savings that can be made in network costs as a result of deploying the spectrum (the 'technical value') and the commercial performance improvements that are realised due to improved network performance (the 'commercial value'). In our view, this approach continues to provide the best foundation for valuing spectrum in the 26GHz band. However, each value component needs to carefully account for both the local context and the idiosyncrasies of mmWave spectrum, including, but not limited to, the following.

- **The high capacity but limited propagation** (and hence coverage) of mmWave spectrum means that spectrum in the 26GHz band is best-suited to a localised/hotspot-based deployment model, which requires careful consideration of both the specific areas that will be covered and the proportion of customers that are likely to benefit from a 26GHz deployment. Identifying these areas is not trivial and may require a detailed market analysis of customer preferences at a local level. As such, even nationwide licences may benefit

1 Auctions for spectrum in the 26GHz band have successfully taken place in Croatia, Finland, Greece, Italy, Slovenia and Spain; there have been administrative awards in Germany.

2 Regulators in Austria, Estonia, Montenegro, Slovakia, Sweden and the UK are actively consulting or have set a date for the award of spectrum in the 26GHz band in 2023.

from consideration at a regional or geotype level for valuation purposes, provided that sufficiently granular data is available to support such analysis.

- **Network architecture and hence cost structures will be different** for mmWave deployments than for deployments using lower-frequency spectrum bands; there may be a greater reliance on small cells than on the macro network.

- **The regional topography and its impact on the cost of spectrum deployment** must be considered alongside the MNO's strategy for each location, the impact of co-existence restrictions and the potential for cost savings via approaches such as network sharing.

- **Commercial value from the existing customer base may be increasingly important.** We believe that the deployment of spectrum in the 26GHz band is unlikely to increase ARPU, but it can support a higher QoS, which may improve customer retention in the mid-to-long term.

- **The commercial value from alternative use cases needs to be considered** alongside the ability to support MBB services at traffic hotspots. The attractiveness of novel use cases will vary by geography, but could include applications such as 5G fixed-wireless access (FWA)/fixed–mobile convergence (FMC), private 5G networks, ultra-reliable low-latency (URLL) industrial applications and indoor-only MBB solutions.

Moreover, it is important to consider that the novel uses of mmWave spectrum may be of commercial interest to other industry stakeholders as well as MNOs when using valuations to formulate auction strategies. For example, 5G FWA could be attractive to existing mobile network virtual operators (MVNOs), cable companies and other fixed operators.

Valuations may need to take account of regional licensing

MNOs typically value national licences, but mmWave bands may be better suited to a regional licensing approach, such as is being proposed in the UK. The valuation of spectrum awarded using regional licences can follow two broad approaches.

- Valuations can be made at a national level and then regionalised, although this can potentially miss complementarities of lots between regions (for example, arising from a perception of widespread service improvement, or in relation to economies of scale) as well as regional specificities.

- Valuations can be made at a regional level, which allows full flexibility and the greatest accuracy, but can also be onerous in terms of data requirements and timescales.

In theory, a detailed geo-analysis could be undertaken for the valuation of regional spectrum licences. This includes:

- analysis of population/traffic densities based on granular geographic information system (GIS) data
- identification, definition and analysis of areas where spectrum is to be awarded on a regional basis
- overlay of other GIS layers of interest (such as transport networks) to analyse coverage.

A price benchmarking exercise can help to validate the outputs, regardless of the valuation approach taken. Standard approaches to normalising benchmarks, including those for bandwidth, population, licence duration and additional annual licence fees, remain appropriate. However, the value of spectrum in the 26GHz band is very dependent on local factors, so benchmarking may also need to be sensitive to award conditions (such as

coverage/deployment/QoS obligations, the amount of bandwidth available, relative bandwidth scarcity and reserve prices) and local market factors (such as population density, geographic topology, ARPU, historic take-up of new services and willingness to pay for higher-QoS services) that may have influenced prices in past auctions.

Long licence durations and uncertainties over future use cases mean that there will always be a degree of uncertainty in the valuation of mmWave spectrum, but we believe that a careful approach can still offer substantial insights when preparing for spectrum auctions. Analysys Mason has already supported a number of stakeholders with mmWave spectrum valuations and auction preparation. For more information, please contact Mark Colville or Gentiana Shiko.