

# Annex 15 - evidence from the UK's 4G auction shows market share is important

Evidence from the 4G auction suggests that market share is a more important determinant of auction outcomes than capacity constraints. Otherwise less capacity-constrained MNOs would have bid lower values for 2.6GHz spectrum in the 4G auction. This can be tested as follows:

- Three has assessed how capacity-constrained each MNO was at the time of the 4G auction; and
- Three has analysed the incremental bids made by MNOs for additional 2.6GHz spectrum in the auction (over and above the spectrum portfolio held by each MNO prior to the 4G auction).

Table 1 presents MNOs' share of mobile data traffic per MHz prior to the UK's 4G auction.<sup>1</sup>

**Table 1: Three and O2 UK were the most capacity-constrained MNOs**

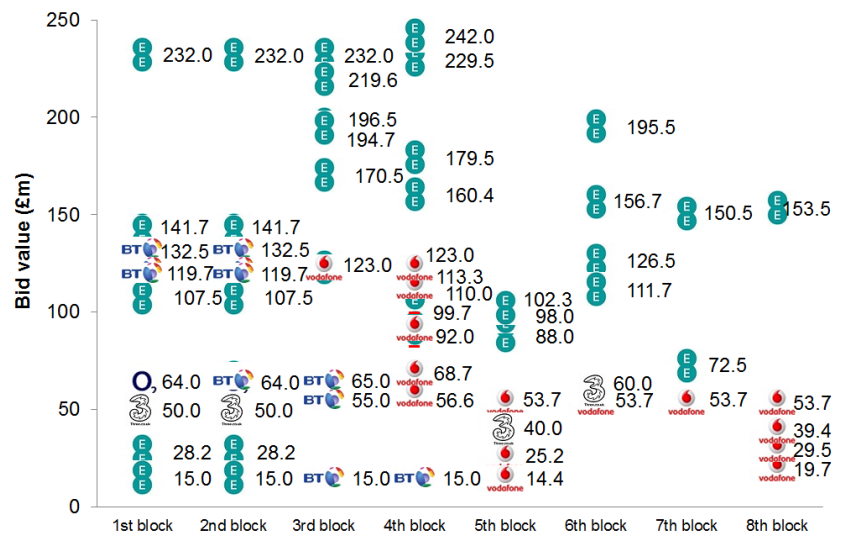
Feb 2013	900MHz (2xMHz)	1800MHz (2xMHz)	2.1GHz (2xMHz)	Total (2xMHz)	Share of traffic	Share of traffic /MHz
Three		15	15	29.6	43%	14.5
O2	17	6	10	33.2	17%	5.1
Vodafone	17	6	15	38.0	16%	4.2
EE		45	20	65.0	24%	3.7
<b>Total</b>	<b>35</b>	<b>72</b>	<b>59</b>	<b>165.8</b>	<b>100%</b>	

<sup>1</sup> Congestion in mobile networks is driven primarily by data usage. Before the take up of smartphones and the related rapid growth of data traffic, the benchmark for capacity was MHz per customer because a voice call used the same amount of capacity for all customers and MNOs generally enjoyed very similar levels of voice usage per customer. Today there is a large variation in data usage between different customer groups served by the MNOs, hence MHz per customer is no longer an appropriate indicator of capacity constraints. By contrast, total data usage forecasts correlate closely with congestion forecasts.

Before the 4G auction, Three was by far the most capacity-constrained MNO followed by O2. Both carried more traffic per MHz than Vodafone, and significantly more than EE. However, the least capacity-constrained MNO, EE, bid by far the highest incremental values for 2.6GHz spectrum, EE won a disproportionately large amount of 2.6GHz spectrum (2x35MHz out of 2x70MHz) and was only prevented by the overall cap from winning more.

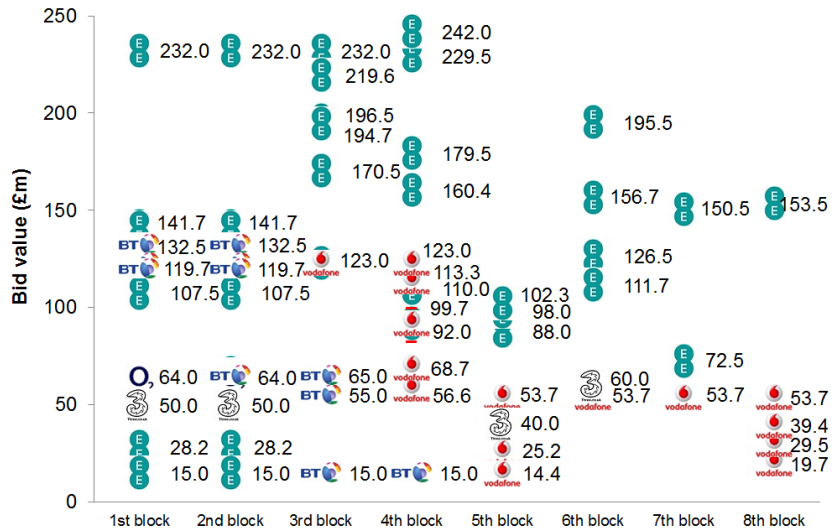
Figure 1 shows MNOs' incremental bid values for 2.6GHz paired (in combination with fixed amounts of 800MHz and 2.6GHz unpaired). For example, EE's £153.5m bid for an eight 2.6GHz paired block compares EE's bids for eight 2.6GHz paired blocks (i.e. in combination with no other spectrum) with its bid for seven 2.6GHz paired blocks (£850m - £696.5m = £153.5m)

**Figure 1: Incremental bid values for paired 2.6GHz (with fixed amounts of all other spectrum)**



EE's incremental values for 2.6GHz paired were generally much higher than those of any other MNO. Figure 2 presents the corresponding incremental bid values for the unpaired 2.6GHz spectrum.

**Figure 2: Incremental bid values for unpaired 2.6GHz (with fixed amounts of all other spectrum)**



There are two possible explanations for the level of these bids:

- First, EE may have had a much larger intrinsic value for 2.6GHz;
- Alternatively, EE bid strategically to deny 2.6GHz spectrum to Three.