

Figure 4: Measured CO₂ concentration time series on Level 1 at the O2 Arena during the music awards event at 18% of usual occupancy capacity.

3.3 Effect of occupancy levels

It has been demonstrated that higher occupancy levels drive an increase in CO₂ concentration (Figure 3 and Figure 4), as this is the only significant factor believed to change between events (the ventilation systems were otherwise operated identically). At the Crucible Theatre, where CO₂ concentration was monitored in toilets during 46 events from 8 to 88% of the venue's usual occupancy capacity, the effect of occupancy on maximum CO₂ concentration is apparent in all toilets, but especially the frequently visited toilets (those which are easily accessible due to proximity to the auditorium entrance: AS7, AS8, AS9) (Figure 5). At low occupancy events, e.g., around 10%, all maximum CO₂ concentrations were below 800 ppm, but the trend line indicates maximum CO₂ concentrations of over 2000 ppm might be expected in some toilets (AS8) at fully occupied events (Figure 5).

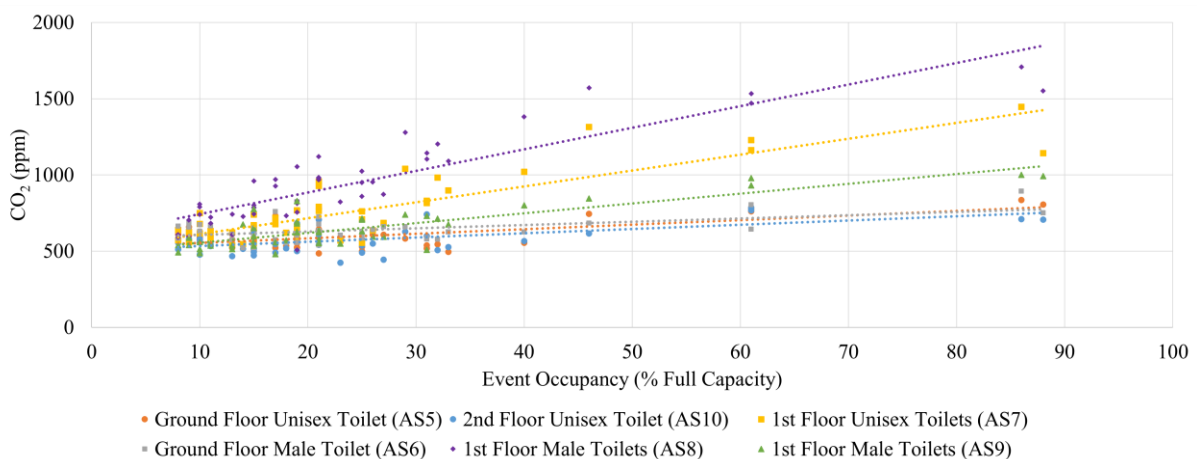


Figure 5: Event occupancy versus maximum CO₂ concentration in toilets at the Crucible Theatre.

