

Consultation title	Implementing Ofcom's decisions on the 57 – 71 GHz band
Organisation name	Qualcomm UK Ltd

Response

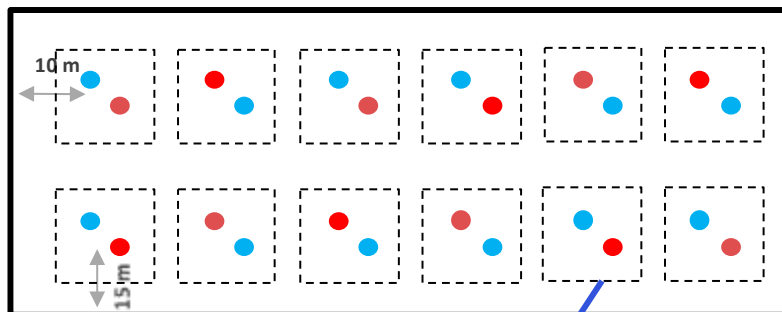
Question 1: Do you have any comments on the drafting of the Proposed Regulations in Annex A1?

Confidential? No

The transmit EIRP limit for 57-64 GHz is 40 dBm. There are reasons however, to consider higher transmit EIRP to improve efficiency of the spectrum utilization:

1. DL Tx EIRP of 40 dBm limits use cases for 60 GHz. Non-line of sight range is around 20m. Robustness to beam imperfections, blocking, mobility may be limited by EIRP.
2. Other bands in the mmW range may allow higher transmit powers
3. Features like MU-MIMO may require increased EIRP

To illustrate the benefit of the increased EIRP, we consider initial 3GPP NR unlicensed Rel-15 simulations assumptions with dense deployment of nodes belonging to 2 different operators/networks. The distance among base stations (gNBs)/access points belonging to the same operator/network was set to 10 m. The deployment is illustrated in the figure below. Assuming baseline density (10m x 10m room size), the building size is 120 m x 50 m.



12 + 12 Nodes → 2 operator

10 m x 10 m
box – No Walls

The system simulations parameters are summarized in the table below:

Parameters	
Carrier freq. / BW	60 GHz / 2.16 GHz
Tx Power	gNB: 14 dBm → 40 dBm EIRP baseline 50 , 60 dBm optional UE: 8 dBm → 25 dBm EIRP (Considering UE PA limitations)
Antenna arrays	gNB: 128 ant. elem {16x8} with two pols UE: 16 ant. elem {4x4} with two pols → 2 such panels
Number of UEs per NB	{3}
Traffic	Mix of 50% DL / 50% UL. Full buffer

The simulation results indicate that only single operator/network is present there is 73% increase in throughput when EIRP is increased from 40 dBm to 50 dBm. Additional 20% gain is observed when EIRP is further increased to 60 dBm. UL transmit power was unchanged.

When 2 operators/networks are present, there is no loss in performance to either operator when base station(gNB)/access point EIRP is increased from 40 dBm to 60 dBm. Moreover, system throughput is increased by 66% when EIRP is increased from 40 dBm to 50 dBm irrespective of the medium access scheme (with or without "listen-before-talk"). Additional 10% gain is observed when EIRP is further increased to 60 dBm.

The conclusion from the simulation results is that increased EIRP at the base station/access point can significantly improve the performance irrespective of the medium access scheme. It is therefore recommended to consider increasing the EIRP limit for the fixed node (base station/access point) deployments.