Q1: Have all the possible victims of interference been correctly identified and quantified as far as possible?

Response: No comment

Q2: Have the costs and benefits been correctly captured? In particular, are the costs of interference to WLANs appropriately assessed?

Response: No comment

Q3: Are there any other mechanisms that could be used to restrict device operation to appropriate areas? Of the schemes set out which should be preferred?

Response:

We oppose the option of location aware devices. We support license exempt or registration scheme.

Since increasing power limits benefit the rural deployment most, where the population density and economic development level is normally lower than in big metropolitan areas, the increased device cost due to the introduction of location-detection will discourage the use of the devices and counter-serve the purpose of technological and economic development in these regions.

Q4: Should we move from specifying radiated power to specifying conducted power?

Response:

We support limiting conducted power to antenna to a relatively low level (for example to 24dBm) while increasing overall EIRP limit. This will effectively control level of interference in the transmit frequency band, as well as curb out of band emission level. Also this approach will encourage use of high gain antennas, which improves system gain from increased receive signal level (RSL) from antenna amplification rather than from increased conducted power level.

We also propose separately regulate EIRP limits based on system deployment, allowing higher EIRP for directional transmission. This will encourage use of high gain, narrow beam antennas to promote frequency re-use and reduce interference area.

The following is a calculation showing for equivalent affected area to the same level of field strength, for a point-to-multipoint system with 40dBm EIRP, when using a 3° narrow beam antenna, EIRP can go up as high as 57.8 dBm .

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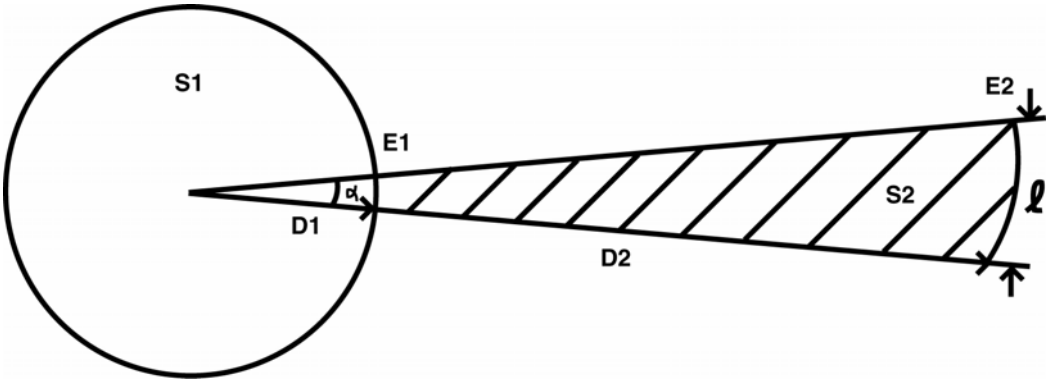
let α=3°



E – field strength

$$E = \frac{\sqrt{30PG}}{D} = \frac{\sqrt{30EIRP}}{D}$$

let E1 = E2 and S1 = S2

$10\log EIRP_1 = 40$ dBm seek: $10\log EIRP_2$

$$\frac{\sqrt{30EIRP_1}}{D1} = \frac{\sqrt{30EIRP_2}}{D2} \Rightarrow D1^2 \bullet EIRP_2 = D2^2 \bullet EIRP_1$$

$$\pi D1^2 = \frac{1}{2} D2\,\ell = \frac{1}{2} D2 \frac{4\pi R \cdot 3D2}{360} = D2^2/60$$

$D1^2 \bullet EIRP_2 = D2^2 \bullet EIRP_1$

$60\ D1^2 = D2^2$

$D1^2\ EIRP_2 = 60 D1^2\ EIRP_1 \Rightarrow EIRP_2 = 60\ EIRP_1$

$10\log EIRP_2 = 10\log 60 + 10\log EIRP_1$

$10\log EIRP_2 = 10\log 60 + 10\log EIRP1$

$= 17.78 + 40 = 57.78$ dBm

Q5: For 2.4GHz which of these options do you favour? Are there other viable options that should be considered? Or should regulations be left unchanged?

Response:

We oppose option 2 for reasons stated in our response to Q3.

For option 1 and 3, we support increasing EIRP to 10W, but we propose reducing conducted power to lower level, e.g. 24 dBm, for reasons presented in our response to Q4. We also propose higher EIRP for point to point transmission for reasons presented in response to Q4.

Q6: For 5GHz should Ofcom increase the power to 4W EIRP at 5.8GHz in accordance with ECC Recommendation and as set out in the draft IR2007? Should Ofcom open the database for public access to facilitate coordination?

We support increasing EIRP to 4W for 5.8GHz. We also propose further higher EIRP for point to point transmission. A registration system is a good way to provide users visibility of the deployed systems in an interested region. It enables better system engineering and private coordination among users. This overall will enhance frequency reuse to allow best use of the limited resource.