Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: **Application for a variation to 3G licences (and consequent proposal to vary draft 2GHz MSS/CGC Base station licences)**

To (Ofcom contact): **Cliff Mason**

Name of respondent: **Alasdair Philips**

Representing (self or organisation/s): **Powerwatch (UK NGO)**

Address (if not received by email): alasdair@powerwatch.org.uk

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http://www.powerwatch.org.uk

Alasdair Philips
Powerwatch
2 Tower Road
Sutton near Ely
CB6 2QA

email: alasdair@powerwatch.org.uk

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Ofcom Consultation response regarding Variation in 3G Licences

Q/. Are there any reasonable grounds why Ofcom should not grant the request to vary the five Wireless Telegraphy Third Generation Mobile Licences by increasing the permitted maximum in-band EIRP to 68dBm as soon as practicable? If so, please explain your reasoning for this.

1. Background to our response:

1.1 The UK Health & Safety Executive's guiding principle is "As Low As Reasonably Practicable" (ALARP). "*Reasonably practicable"* implies that a judgement must be made, balancing any risk and the sacrifice involved when considering measures necessary to meet ALARP. http://www.hse.gov.uk/risk/theory/alarp.htm

1.2 ALARP was the approach recommended by the Independent Expert Group on Mobile Phones (IEGMP) in their 'Stewart Report' published in April 2000:
"We recommend that in making decisions about the siting of base stations, planning authorities should have the power to ensure that the RF fields to which the public will be exposed will be kept to the lowest practical levels that will be commensurate with the telecommunications system operating effectively." The IEGMP Stewart Report 'Mobile Phones and Health' paragraph 1.43 in "Advice to Government" and paragraph 6.61

1.3 It should be noted that the NRPB reaffirmed this approach in 2004: "*The Board* [NRPB] *believes that the main conclusions reached in the Stewart Report in 2000 still apply today and that a precautionary approach to the use of mobile phone technologies should continue to be adopted.*" Documents of the NRPB Vol.15 No.5, 2004. 'Mobile Phones and Health'.
Executive Summary, paragraph 19

1.4 The UK Government and the Regional Assemblies welcomed the 2000 IEGMP Report and said they would adopt its precautionary stance. They stated: "*Mobile phone operators already keep their RF power outputs to the lowest possible levels commensurate with effective service provision.*" Annex paragraph 100, English Planning Guidance PPG8, August 2001

1.5 This Consultation document raises the question of whether Ofcom is properly regulating the mobile phone networks operators by auditing their compliance with the ALARP policy set out above.

2. Ofcom's Consultation Document:

2.1 In 3.5 it states: "*The maximum power levels in the original licences were set with reference to the radio equipment that was being developed commercially at that time. 3G standards and technology have evolved significantly since then and the base stations that are now commercially available are able to utilise higher powers than older models.*"

2.1.1 Powerwatch notes that documents published by leading government appointed bodies show that there is significant enough concern for public health, that minimising public exposure should be considered both a material planning consideration and a specific factor with regards to minimising RF outputs. It would seem therefore consistent for Ofcom to only permit such an increase in allowed power if a strongly supported case could be made that, without it, public service could not be adequately maintained. Powerwatch is most concerned about the year-on-year rise in background modulated microwave energy levels in our communities. From an EMC viewpoint (relating to equipment *and* people) RF energy used for communication purposes should be kept to the lowest levels commensurate with an adequate quality communications system. More base-station (BS) power would only help downstream data. Upstream data from the handset to the BS would not be helped at all.

2.1.3 With great effort being undertaken by most industries to maximise energy efficiency and minimise their impact on climate change, the premise of 'increasing power because we can' appears to be at complete odds with current corporate social responsibility priorities elsewhere. If this increase cannot be explicitly justified on other grounds (such as maintenance of service - which it has not been), the default position should surely be one of minimising power usage in the interests of global responsibility?"

2.2 In 3.8 it states: "*Vodafone has told Ofcom that permitting a higher maximum licensed power would enable it (and other operators) to optimise their networks allowing the flexibility to serve more effectively a wider area and community with better in-building penetration.*"

2.2.1 We would expect to see the detailed efficiency calculations and data that support this anecdotal statement - these are not supplied.

2.2.2 Mobile phone communications work both ways; from the handset to the base-station and vice-versa. If more power is needed to allow the BS to communicate with the handset, then the handset will be forced to operate at higher power to communicate to the BS. Pico- and femto-cells are better ways to provide good UMTS service inside "difficult to penetrate" buildings. They are preferable from an EMC perspective as the handsets can then operate at much lower power.

2.2.3 H3G's '3' network operates at less than half the current EIRP power level of the Vodafone network (see below in section 3). Is there good evidence that '3's coverage and data quality is inadequate?

2.2.4 Does Ofcom assess '3's quality of service provision as adequate? If not, have they formally communicated this? Such evidence should be in the public domain.

2.3 7.5 states: "*The imposition of maximum power levels in 3G Licences was set with reference to the capability of equipment then available, some 10 years ago*."

2.3.1 We do not believe that this was the basis of setting the maximum power for the Third Generation Licences. We understood that this was set after consideration of a complex mix of EMC issues, the GSM (2G) licence level and at a level that would be appropriate to work well with the handset power. Ofcom should provide written archive evidence that the reason given in 7.5 was the recorded reason that governed the setting of the maximum level at 62 dBm.

2.4 7.3 states: "*Received signal strength decreases as the distance to the base station increases and with obstructions on the signal path, so increasing the transmission power at individual sites should indeed lead to improvements to consumer data rates across wider areas and inside buildings.*"

2.4.1 Where is the data showing the comparative HSPA performance in practice of the existing five networks?

2.4.2 Where is the trial data showing change in HSPA data performance v.s. a 3 dB and a 6 dB increase in BS EIRP? We assume that such trial work has been carried out. The results should have been published in the public domain ***before*** this consultation was started. These would need to show clearly that, in actual real practice, and extra 3 dB of BS power would solve existing problems, and to solve them in a better way that using more pico- and femto-cells or moving to the 900 MHz part of the spectrum.

2.4.3 How would the effectiveness of this proposal to increase the licenced power compare with the effectiveness of alternative changes such as increasing the number of pico- and femto- cells in buildings? Where is the data to support this? This should include ALARP information.

2.4.4 More urgent consideration should be given to migrating UMTS additionally to the 900 MHz GSM frequencies and limiting GSM to the 1800 MHz band. This would give a much more consistent better coverage for UMTS/3G compared with just increasing BS power.

2.5 In 7.8 Ofcom states: "*We can see no reason why the variation should not be applied as soon as possible. We therefore propose, subject to the responses to this consultation, to issue a statement and, if appropriate, the variation, shortly after the close of the consultation period.*"

2.5.1 At at time when everyone is being urged to reduce power and use it in more energy efficient ways so as to reduce our carbon footprint, it seems extraordinary that Ofcom so readily seems to want to agree with Vodafone's request to be allowed to increase their UMTS BS power without presenting detailed arguments to explain their reasoning.

2.5.2 At a time when various European Governments are tightening (reducing) permitted levels of BS signals in public areas to well below ICNIRP permitted levels it seems inappropriate to take this attitude.

2.5.3 Ofcom's suggestion that the Third Generation Licence conditions are changed to allow an extra 6 dB is clearly not in line with the ALARP policy as supported by the Government and set out at the start of this response, nor with overall network energy efficiencies. Ofcom and the network operators should more fully investigate greater use of pico- and femto-cells that would provide coverage inside difficult buildings and also allow the handsets to operate at much lower powers. That would be a much better engineering solution and would also be more in line with the application of the Precautionary Principle as required by EU and UK law. It is premature to authorise the license relaxation without these comparisons being done, costed accordingly, and available in the public domain.

2.5.4 If a power increase were to be allowed, it should be for very specific purposes in a limited number of situations only - e.g. for remote rural macrocell base-stations. It should not be to generally increase signals inside buildings.

3. Our brief UMTS BS EIRP investigation and comments:

3.1 Ideally, Ofcom's base-station database should be fully analysed for the existing BS EIRPs and the analysis published. This would show how much EIRP margin is currently not being used by the network operators.

This data is not in the public domain in a form that can be analysed, so we used Ofcom's Sitefinder current base-station data for areas in two cities and 5 other areas, logging the EIRP data for over 300 macrocell UMTS base-stations. All UMTS BS data was taken for each pseudo-random Sitefinder 'displayed square' examined and this returned totals of between 48 (T-Mobile) and 66 (H3G) base-stations per Operator. We tried to pick areas that would be likely to need high power levels due to the wide area covered or a high density of substantial buildings.

The average powers were as follows:

H3G	24.1 dBW	(54.1 dBm)	from 66 BS
O2	27.6 dBW	(57.6 dBm)	from 59 BS
Orange	27.9 dBW	(57.9 dBm)	from 56 BS
T-M	18.6 dBW	(48.6 dBm)	from 48 BS
Vodafone	28. 4 dBW	(58.4 dBm)	from 52 BS

All these average powers could already be more than doubled by the network operators under their existing Third Generation Mobile Licences.

3.2 The figures we obtained were analysed into 1 dB bands as percentages of base-stations:

EIRP	3	O2	Or	T-M	V
dBm	%	%	%	%	%
47				6	
48				40	
49				46	
50			5	8	
51					
52		2	7		
53	36				
54	64				
55					
56		20			2
57		46	16		27
58		18	29		40
59		12	30		31
60		-	13		
61		2			
62					

3.3 Vodafone already has a 3 to 6 dB permitted power margin that it could use. Because of the dispute with the Information Commissioner, it is unclear if the T-Mobile figures are current. If they are, then they operate the most efficient system at power levels well below (about one-eighth) that of some of the other Licence holders. If not, then '3' (H3G) has the most efficient system, with all of its base-stations operating between 23 and 25 dBW (53 to 55 dBm).

3.4 If H3G can operate its network satisfactorily at less than half the current EIRP power level that Vodafone, O2 and Orange use, then this difference should be investigated and explained. They seem to have very similar numbers of BS per area served. Even these operators still have about another 3 dB margin they could use to increase their EIRPs under their current Third Generation Licences.

3.5 Ofcom's Question 2:
"Are there any reasonable grounds why Ofcom should not also apply the increased permitted maximum in-band EIRP to future 2 GHz MSS/CGC licences? If so, please explain your reasoning for this."

3.5.1 We see no reason why these should not be restricted to 32 dBW (62 dBm) as for the current third generation mobile phone providers. It is difficult to see why the terrestrial parts of the calls cannot be handled by the existing UK networks under roaming agreements. It seems wholly unnecessary to roll out what will effectively be two more UK terrestrial networks at higher permitted power just to cope with extended satellite phone services. That is neither energy efficient nor making best use of existing visible base-station infrastructure.

16th March 2010
Alasdair Philips
Director
Powerwatch.