

UMTS Forum

Title: Response to OFCOM UWB consultation

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UMTS Forum Response

To the OFCOM Consultation on UWB (ultra wideband)

The Forum represents a significant group of spectrum users, which are directly interested in the development of public mobile networks, including UMTS/IMT-2000 and, especially, the related spectrum topics. The UMTS Forum gathers all the kinds of players involved in third generation mobile systems, including equipment manufacturers, operators, administrations, service providers and software developers.

The UMTS Forum welcomes the opportunity to comment to the OFCOM consultation concerning the position to adopt in Europe on ultra wideband devices in 3.1 – 10.6 GHz:

Q1: Are these the appropriate topics to be consulting on?

UMTS Forum welcomes OFCOM initiative to gather opinion on UWB, since its possible introduction would have a negative impact on the use in both licensed and license-exempt spectrum. UMTS Forum urges OFCOM to ensure that the UK remains aligned with harmonized European approach and does not conclude before the technical and socio-economic studies are completed by international bodies.

Q2: Do you agree with this analysis of our statutory duties? Are there any important factors that have been omitted?

We agree with the outline of Ofcom's statutory duties. However consideration of future demand for spectrum should also include an estimate of the demands of other systems. Therefore, there is a responsibility of OFCOM to ensure optimal use of spectrum, which again would imply the need for OFCOM to consider other usage that might emerge in the lifetime of UWB.

We agree also that allowing UWB can promote competition in short range high bit rate communication offerings, provided they do not interfere with existing and future radio services. Such benefits would however be reduced if noise rises harming other radio services. Competition in other radio services could actually reduce as a result of UWB. For example, if investment in future mobile high bit rate, wide area communications or BFWA is deterred, this could have a significant impact on competition in future broadband services.

Q3: Do you agree with the economic study? Are there other studies that Ofcom should be conducting?

We agree with Ofcom (paragraph 4.2.1) that the Mason study is incomplete in that it didn't consider the impact on future radio systems, and welcome the further work in this respect.

Indeed this could completely change the conclusions, especially if mobile services are to be permitted below 5GHz by 2020. The impact on HSDPA (a high speed downlink service that could be deployed in existing IMT-2000 bands) was also not included, despite the standard being well advanced at the time of the Mason study. The impact to HSDPA can be significant as published studies have shown the throughput is such that it is particularly vulnerable to noise increases.

We also see some difficulty in the promotion of 'ETSI mask', as this kind of mask is not under discussion in other bodies discussing UWB issues and it seem not to have any chance to be the European mask in the end. Especially, ETSI seems not to propose this kind of mask e.g. in ECC TG3 discussions and it is unclear, what is the status of this 'mask'. In this context we see no evidence for Ofcom's prediction (4.2.8 (4)) that even after the new work is completed the draft 'ETSI mask' will be optimal.

We do not agree that restricting UWB to the 'upper' band above 6GHz would incur a 5 years delay. In fact at least one manufacturer already markets chips that operate to 7GHz. It is true that there would be increased path loss and noise figure (approx. 1-2 dB), leading to reduced range and data rate, in the absence of a compensatory power increase. This should, however, be insignificant for the short operational distances that UWB is mainly targeted. We do not agree that upper band chip sets would be only for the UK market. It is highly likely that other countries, especially in Europe, will follow such a regulation. Besides, such chips could also be used in USA.

In conclusion whether restricting UWB above 6GHz is value destructive or constructive depends whether you take a long or short term view. In the long term, it is very likely to be constructive.

We support the proposal of further work in areas listed in the consultation document.

Q4: Is there a better way that future use of spectrum could be taken into account?

It should be noted that the interference study is applicable in 2.6 GHz band (UMTS/IMT-2000 expansion band) as in the 2 GHz core bands, as the used technologies will be the same. So the -85 dBm/MHz limit should be used in 2.6GHz band as well.

Regarding the future services, it is true that UWB could be taken in to account by spectrum bids. It does not, however, annul the fact that the increased noise level will impact on the other spectrum usage, e.g. in the expected future wide area mobile networks ("4G") the coverage will be decreased significantly, which would then decrease the value and the feasibility of the spectrum for mobile networks.

We share the view that UWB could be an integral part of 4G, but this does not eliminate the need to consider the impact of *independent* UWB systems on future wide area mobile systems (4G), and other services. In an integral system there are a number of means to reduce the interference, e.g. using UWB in other frequency band or avoid using UWB at the same time with the mobile system.

Q5: What is the most appropriate solution to the potential interference from UWB to BFWA?

The most appropriate solution is to use UWB above 6 GHz.

Q6: Would it be possible to achieve sufficient isolation between radio astronomy and UWB through practical methods of physical separation?

No comment.

Q7: Are there any other options that we should consider?

The most appropriate option to consider is to implement UWB above 6 GHz. This would eliminate the interference problem in the lower bands and it is expected that in the bands above 6GHz there will be feasible mitigation techniques to overcome these interference problems, especially, related to fixed service.

Q8: Are there any major technical studies that we have omitted?

No comment.

Q9: Have we made an accurate assessment of the existing studies?

Even with the understanding that the existing interference calculations represent the very worst case analysis, your assessment of the existing studies seems to be very optimistic. There is need for more detailed study of the interference probability and impact of UWB interference in general. There should be a clear understanding on the possible mitigation techniques before relying them to solve the calculated interference problems. Especially, distinction indoor/outdoor, limitation in duty cycle and differentiation LBR (Low Bit Rate)/HBR (High Bit Rate) should be studied.

Q10: Do you agree that we should seek a common European framework for the introduction of UWB?

Yes, we fully support the aim of common European framework. In addition, the proposed 'ETSI mask' could be studied in the impact analysis carried out by ECC TG3.

Q11: Have we proposed the most appropriate mask? Will it be possible to deliver equipment conforming this mask?

For the reasons given above, we do not believe that the proposal is optimal. As you have indicated in the consultation report, some of the existing services, including UMTS/IMT-2000 expansion band at 2.6 GHz, BFWA at 3.4 GHz and radioastronomy, seem not to be adequately protected against interference from UWB. Based on the compatibility studies done by ECC TG3, most of the other services are not protected either. We still see a number of benefits in implementing UWB above 6 GHz, if appropriate mitigation techniques can be found.

Q12: To what extent should we define parameters such as those listed above? What is the most appropriate definition for each of these parameters?

We prefer a common European approach in determining the additional parameters for UWB. The suitable mitigation techniques should be decided in ECC TG3.

Q13: Is our proposed approach to the international bodies appropriate?

We believe that participation in the work in ECC TG3 is the best way to progress the UWB framework development, as all the technical work is carried out in ECC TG3.

Q14: How should we best deal with the precedent potentially set by our proposed approach to UWB?

The protection of the existing services should be taken as the first priority when introducing these new spectrum usage schemes. If the existing recommendations and rules for the protection of existing services are too tight, the exceptions to the agreed recommendations and rules should be done in agreement with both sides. Also, the impact of the possible mitigation needs to be accepted by all relevant parties.

It should be noted that the current UWB technology may not be the most innovative in terms of really benefiting from the large, ultrawide bandwidth. Also, the idea of not causing interference seems not to be true based on the existing compatibility studies. Taking regulatory decisions that support lower PSD level could encourage the UWB industry to develop their technology to a more appropriate direction to really fulfil the idea of underlying technology.

Q15: What should Ofcom's role be in setting and monitoring EMC standards?

No comment.