Title:

Mr

Forename:

Samsung Electronics

Additional comments:

Question 1:Do you have any comments on Analysys Mason?s approach to quantifying the network cost savings and performance benefits?:

[no comment]

Question 2:Do you have any comments on the other benefits we have identified including the likely magnitude or how they may be quantified?:

[no comment]

Question 3:Do you agree with our assessment of the likely benefits of changing use of the 700 MHz band?:

Yes.

Question 4:Do you have any comments on our analysis of the implications change of use of the 700 MHz band would have for the DTT platform?:

OFCOM's assessment seems rather to assume that the natural evolution should go towards 6 multiplexes operated for different economical reasons. There are several reasons why such a reduction of multiplexes could not occur:
- A transition of multiplexes to T2 could not be further operated because of market conditions, so that MPEG-2 needs to continue to be operated, not only for the public broadcasting services
- Additional channels start a simulcast process to continue the T2 transition to HD
- More channels want to broadcast in HD than assumed. HD is supposed to become a standard in the next decade.

In this context, Samsung Electronics would like to draw the attention about some assumption taken in the context of a partial T2 transition. It seems like a further reduction of data rate is assumed and that reshuffling of services is seen as trivial. Samsung Electronics would encourage further studies on:
- the impact on quality of a further reduction of data rate
- different reshuffling scenarios over the remaining multiplexes

For the assessment of costs, Samsung Electronics believes that associated costs should rather consider 8 multiplexes associated with its impact on household installations in order to be on the safe side.

In establishing the future evolution of DTT, Samsung Electronics is of the view that a T2/AVC shall be fostered in the interested of all parties, as it can potentially ease the release of the 700 MHz and increase the likeliness of a decrease of number of multiplexes. Such a

transition shall however only be performed with providing additional value to the consumers like an extended HD offer.
In doing so, Samsung Electronics proposes:
- Regulatory measures to facilitate simulcast should be put in place to encourage simulcast to HD (additional multiplexes in large cities, licensing provisions etc.)
- Regulatory measure to switch over to T2/AVC at that a time set depending on the take up of T2/AVC as a result of the first measure.

Additionally,
- In the supporting document on the future of DTT, OFCOM considers that DTT will continue to play an important role until 2030 since IPTV cannot replace DTT.
- Undoubtedly, Ultra High Definition will become widespread in the next decade in TV households, if not earlier. A distribution via IPTV, satellite and cable is certainly possible, but
- if, following OFCOM - a high number of households will still only access the DTT platform, OFCOM should set the conditions to allow these households to access UHD.
- Hence OFCOM should give the DTT platform the possibility to introduce UHD services. One possibility could be the use of additional multiplexes after a successful T2/AVC transition. At the same time, Samsung Electronics notes that OFCOM highlights the benefits for the mobile industry to access a spectrum for developing new technologies. Such a benefit applies equally for DTT, i.e. HEVC/T2 or UHD.
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Overall, in the same manner that Samsung Electronics welcomes OFCOM's proactive role for an improvement of delivery of mobile broadband services with the 700 MHz release, Samsung Electronics encourages a more proactive role of OFCOM conditions to improve delivery of DTT services.
Therefore, Samsung Electronics encourages OFCOM to include in their 700 MHz release plan a vision for an extended T2/AVC HD offer and possibilities to introduce UHD.

Question 5:Do you agree with our assessment of the likely costs of upgrading DTT transmission infrastructure?:

Samsung Electronics considers that the range of costs may be underestimated.
Samsung Electronics notes that OFCOM assumptions are suggesting a migration to 6 multiplexes. Samsung Electronics encourages OFCOM to instead assume 8 multiplexes for their cost calculations, because the number of 6 multiplexes should not be seen as given. A higher number of multiplexes will certainly have a larger impact on reorienting aerials and number of additional sites needed.
Additionally, Samsung Electronics would like to stress that there is a direct relationship between the spectrum available for a given capacity to be achieved and the costs of infrastructure. This is independently valid whether mobile and broadcast spectrum is assessed. However, OFCOM only took into account this factor as a benefit on the mobile side. Following this logic:
- Reducing the spectrum for a constant number of multiplexes of 8 will lead to higher costs of infrastructure for DTT.
- Reducing the number of multiplexes in a constant spectrum amount decreases the costs of infrastructure.
These aspects should be adequately reflected in the cost / benefit analysis for DTT.

Question 6:Do you have any comments on our assessment of the timeframes within which it might be possible to complete a DTT replan?:

Samsung Electronics suggests the following:
- Encouraging licensing measures for T2/AVC/HD and study the possibility of some additional coverage transmitters in large cities to foster the DTT transition to DVB-T2/AVC/HD
- OFCOM should work closely with the antenna installation industry for encouraging antenna installers to install aerials for the band 470 - 694 MHz filtering out the band 698 - 790/862 MHz in areas were no frequency beyond 700 MHz is used. This will ensure an early replacement with preventive measures to LTE 700 interference.

Question 7:Do you have any comments on our assessment of the loss of value from existing DTT services in case of change of use for the 700 MHz band?:

Section 9 of the consultation document points out that a proportion of secondary TV sets would move to another platform. This undoubtedly implies a loss of attractiveness of DTT which has to be quantified as a loss of value.
Furthermore, OFCOM assumes that DTT will remain an important delivery mode up to 2030, because many households will not have IPTV. Assuming a future deployment of UHD on other delivery platforms, there is certainly estimated loss of value, if spectrum is not available to cover those transmissions.

Question 8:Do you have any comments on our analysis of the implications of potential changes for DTT viewers and for the platform? Are there any effects that may be important to viewers that we should consider further?:

The assumed number of multiplexes is subject to discussion (Please see question 4).

Question 9:Do you have any comments on our consideration of consumer information and support measures and on the factors we should focus on in the next stages of work?:

- Migration to 470 - 694 MHz aerials as soon as possible (Please see question 6)
- Encourage the upgrade to T2/AVC by attractive new services (Please see question 6)

Question 10:Do you have views on the activities that Ofcom and other stakeholders could undertake now to help ensure that DTT equipment that consumers might buy in the coming years is as future-proof as possible?:

- Regulatory measures towards T2/AVC can be considered at later stage if/when a complete switch over to T2/AVC is acceptable to the public (see question 6) with the promise of a better offer with improved quality of picture for instance.
- In general, Samsung Electronics considers that better immunity of DTT and mobile devices is beneficial; however measures to address potential interference cases shall be proportionate to the issue. Samsung Electronics notes that OFCOM considers only a very minor population to be concerned by LTE700 interference, which can be easily solved by addition of a filter. Based on this assumption, Samsung Electronics draws the conclusions that there is no need for OFCOM to intervene regarding immunity of receivers.
- Furthermore, Samsung Electronics would like to draw OFCOM's attention to the fact conclusion of TTP' reports were commented by DTG RF and are therefore still to subject to debate.

Question 11:Do you have any comments on our assessment of the impact change of use of the 700 MHz band would have on PMSE?:

[no comment]

Question 12:Do you have any comments on the mitigations for loss of access to the 700 MHz band including whether we have correctly identified the replacement bands suitable for further study and whether we have correctly identified actions that the PMSE industry could adopt to improve spectrum efficiency?:

[no comment]

Question 13:Do you have any comments on our assessment of the impact of the change of use of the 700 MHz band on the TVWS availability?:

[no comment]

Question 14:Do you agree with our use of the Spackman method for discounting both the costs and benefits of change of use?:

[no comment]

Question 15:Do you agree with our approach of estimating the cost of early replacement or should we be considering the full cost? Do you have any comments on how we have estimated the costs of early equipment replacement? :

[no comment]

Question 16:Do you agree with our overall assessment of the costs of change of use of the 700 MHz band?:

As depicted in question 5, Samsung Electronics believes that the estimated of costs are largely assuming only 6 multiplexes. It may be a natural evolution of the DTT platform or even the most pragmatic solution but this should not be de facto constraint on the DTT platform development.
Therefore, a scenario with 8 multiplexes should be assumed as well. In that case, the number of installations with antenna upgrade would be rather higher.
Samsung Electronics has no concrete figures concerning the replacement cycle of aerials, but it appears that 15 years seems to be too optimistic. Many aerials in British households seem to be much older.

Question 17:Do you have any comments on our assessment of the impact of earlier or later change of use of the 700 MHz band?:

It seems like a large amount of costs associated with DTT is based on an assessment assuming a change of use in 2022.

Whilst Samsung Electronics thinks that an earlier change is possible, it is highly dependent on the willingness of broadcasters and consumers to upgrade to T2/AVC. Samsung Electronics therefore reiterates the view that OFCOM should create a licensing framework to improve the T2/AVC/HD offer.
Conversely, with the current assessment of a natural evolution, an earlier date of release seems to be more difficult to achieve.

Question 18:Do you agree with our proposal that we should make the 700 MHz band available for mobile broadband?:

Yes, but as explained in question 4 Samsung Electronics would like OFCOM to play a more proactive role with a long term DTT vision and its evolution (i. e. UHD) , given the fact that OFCOM recognizes that DTT will play an important role until at least 2030.

Question 19:Do you agree with our proposal that we should seek to implement this change at the earliest possible opportunity?:

Samsung Electronics supports a change of use at the earliest possible opportunity. Samsung Electronics defines here "earliest possible opportunity" as either the timeline which serves the assumptions made in the consultation documents or earlier but with additional measures to accelerate the 700 MHz release without impacting DTT households:
- Any measure to accelerate T2/AVC/HD transition
- Subsidies to T2 receivers
- Systematic upgrading of antennas for the 700 MHz release

Question 20:If, as a result of this consultation, we decided to go ahead with the proposed changes, what factors and evidence should we take into account when considering whether to hold an auction near to the time of availability of the spectrum or earlier?:

[no comment]