SIAE Microelettronica SpA:
Answers to Ofcom Consultation on the future management approach for the 70 / 80 GHz bands

Introduction

Please find below our answers to Ofcom questions.

We would like to particularly draw the attention to answer to Question 2 a) arguing on the proposed "unbalanced" sizes of the two segments for coordinated and uncoordinated segments.

Specific Ofcom Questions answers

Question 1:
Do you have any additional information to provide to that presented in this consultation that you believe Ofcom should consider? If so please provide clearly evidenced views. Are there any other issues that you believe Ofcom should have considered?

SIAE Microelettronica comment under Question 1:

1) Spectral efficiency: There is no evidence that the issue of spectral efficiency of systems in the coordinated segment has been discussed. If the target for this segment is "high capacity" and "high density" links, it seems logic that poor efficiency equipment (i.e. those of ETSI class 1) would not be recommendable. It is underlined that, in bands below 50 GHz widely used in coordinated way, only ETSI class 2 (QPSK/4QAM) and above (nQAM) are present (and where class 1 were originally present, as in 23 and 38 GHz, they have been deleted long time ago).
The introduction of class 1 in the ETSI EN 302 217-2-2 for 70/80 GHz band has been done for a form of "grandfathering" of first generation equipment, possibly still appropriate for self coordinated market, but not for a brand new opening of the proposed coordinated "4G backhauling" market.
Therefore, we believe that the opening of the coordinated segment only to equipment of minimum ETSI class 2 equipment (i,e. Class 1 only if provided by adaptive modulation equipment) would be beneficial for future successful use of the band.

2) Sub-Channels 62.5 and 125 MHz initial availability: While the wider channels (250 MHz and more) are specifically described as initial availability "in the lowermost" part of the coordinated segment, no similar indication is present for these narrower sub-channels.
We believe that also the initial availability of the smaller sub-channels should be already prefixed (ETSI TM4 has approved the revision of EN 302 217 for those smaller channels and the formal approval process has now started).
We believe that, good practice in band management suggests that those smaller channels should be initially confined "in the uppermost" part of the coordinated segment.

Question 2:
a)Do you agree with our proposals to offer a mixed solution that allows stakeholders to choose between the currently available self coordinated authorisation approach and a new Ofcom coordinated approach for the band?

b) Do you agree with the segmented band plan with the split of 2 x 2 GHz and 2 x 2.5 GHz for Ofcom coordinated and self coordinated approaches respectively?

c) Is the guard band size of 250 MHz considered appropriate between the two approaches?

SIAE Microelettronica answers to Question 2:

a) We agree under the present assumptions; however, we believe also that, in long term, the self coordinated part would not reach the same utilisation factor of the coordinated portion.

b) We do not agree: "asymmetric size" segmentation is not appropriate; the best solution would be to have two equally built segment of 2 x 2.25 GHz (i.e. exactly in the middle of the 71-76 GHz and 81-86 GHz sub-bands).

Rationale for that is that very soon, when the backhauling market will be fully in place, the equipment for the self-coordination market will become exactly the same. Therefore, considering that, in principle, the difference between self-coordination and coordination is only of administrative nature, there should be no difference in the size of the two segments, in particular if the CEPT channel plan is adopted, which also provides symmetric arrangements in the two segments.

The small proposed shift of the segmentation, rendering it "symmetrical", would have the following impact on the two segments:

– In symmetrical segmentation CEPT channel plan perfectly fits in both segment.

– Also the coordinated segment will have 3 full channels of 750 MHz size. This channel size is that immediately above the present assumption of 250/500 MHz and would be the next natural choice for equipment designers of multi-gigabit links with higher NQAM systems (efficient equipment, i.e. ETSI Class 2, for 1 Gbit/s within 750 MHz, are already available on the market). Having 3 channels available instead of 2 would greatly enhance the planning options in congested nodes.
In Figure 1 (see end of the document) we graphically show the perfect balancing of this solution.

– The only reason for having 2 x 2.5 GHz in the self coordinated segment seems likely related only to the present existence of some equipment registered for 2500 MHz size.
On the other hand, we believe that those are equipment with minimal efficiency (i.e. ETSI class 1 equipment), which, for the reasons above and technological steps in the coordinated market, might rapidly evolve into more efficient design at least to be "squeezed" into the 2000 MHz maximum possibly available also in the more attractive coordinated market.
Therefore, having symmetric 2 x 2250 MHz available in both segments might be best solution. Existing systems should not be impacted, but a "permanent grandfathering" of one of them, only in the self coordinated segment, seems not paying-back the reduced possibility of 750 MHz and other channels availability in the coordinated segment.
A more consistent grandfathering can be more profitably obtained through temporary (e.g. few years) permission of further registration of 2500 MHz systems (i.e. using also the guard band) in the self coordinated segment. See graphical view in Figure 1; it should also be considered that, with the increasing link density also in the self-coordinated segment, such systems will experience more and more difficulty in finding co-channel interference free conditions.

c) Yes. In particular if the CEPT channel plan is also adopted. This implies that channels larger than 1000 MHz would have also larger guard-band towards similar systems in the other segment.

Question 3:
a) For the Ofcom coordinated part of the band, do you agree with the proposal to make available channels of 500 MHz and 250 MHz (with smaller channels being made available when the standards are completed) and to make these channels available in up to 1 GHz bandwidth in the first instance?

b) Is there a requirement for channel sizes greater than 500 MHz in the coordinated block? Please submit evidence to support your view.

SIAE Microelettronica answers to Question 3:

a) We agree, but we suggest considering also the opportunity of the 750 MHz channel(s) option, e.g. 1 channel immediately available and the other(s) when needed (see Figure 1 at the end of the document).
Rationale is that equipment for 750 MHz for 1 Gbit/s (i.e. ETSI Class 2) are readily available on the market and 750 MHz would be the next step for higher efficiency design.

b) See above answer a) and our comment on Question 1 about spectrally efficient systems.

Question 4:
a) Are there any aspects of the current self coordinated licensing and link registration process that could benefit from improvements? Please provide specific information and reasons for how your suggestions would improve the process.

b Should Ofcom consider mandating the CEPT channel plan, ECC/REC/(05)07 for the self coordinated block? Explain clearly the reasons to support your view.

c) Are the technical parameters shown on the register sufficient to enable self coordination? Should Ofcom consider presenting additional parameters on the register? If so, which parameters and why?

SIAE Microelettronica answers to Question 4:

a) We believe that the aspect of the confidence that self coordination has been effectively carried on should be improved. A possibility is that in the registration process the following be required:

– A file containing the actual interference evaluation should be up-loaded (e.g. containing the list of nearby links from the Ofcom data base that have been taken into consideration, with the expected level of interference to/from those links); this is similar to the US-FCC approach for the 70/80/90 GHz band. For aligning those evaluations, Ofcom might wish also to establish an area around the new site where nearby terminals to be considered should be identified.

– Ofcom should reserve the authority of denying (or cancelling) the registration (with consequent immediate shut down of the system) whenever that file shows a non appropriate interference evaluation (even if no interference is, yet, claimed).
Rationale is that interference in fixed links is not easily identified unless it creates real blocking of the victim; usually, this is hardly the case, but smaller, still “unacceptable”, interference is more subtle to detect but would still impair expected availability of the victim link.

b) Yes. Rationale is that if a channel plan is beneficial for high density deployment of coordinated networks, there is no reason why this would not happen also in self-coordinated networks (technical aspect is the same). In addition, as discussed above equipment addressing the self coordinated market could, in short time, not be distinguishable from those for coordinated applications (see graphical solution in Figure 1 at the end of the document).

c) We do not have direct experience on the registration**. However, the technical parameters for registering self coordinated links should be exactly the same that are used by Ofcom for the coordination process.**

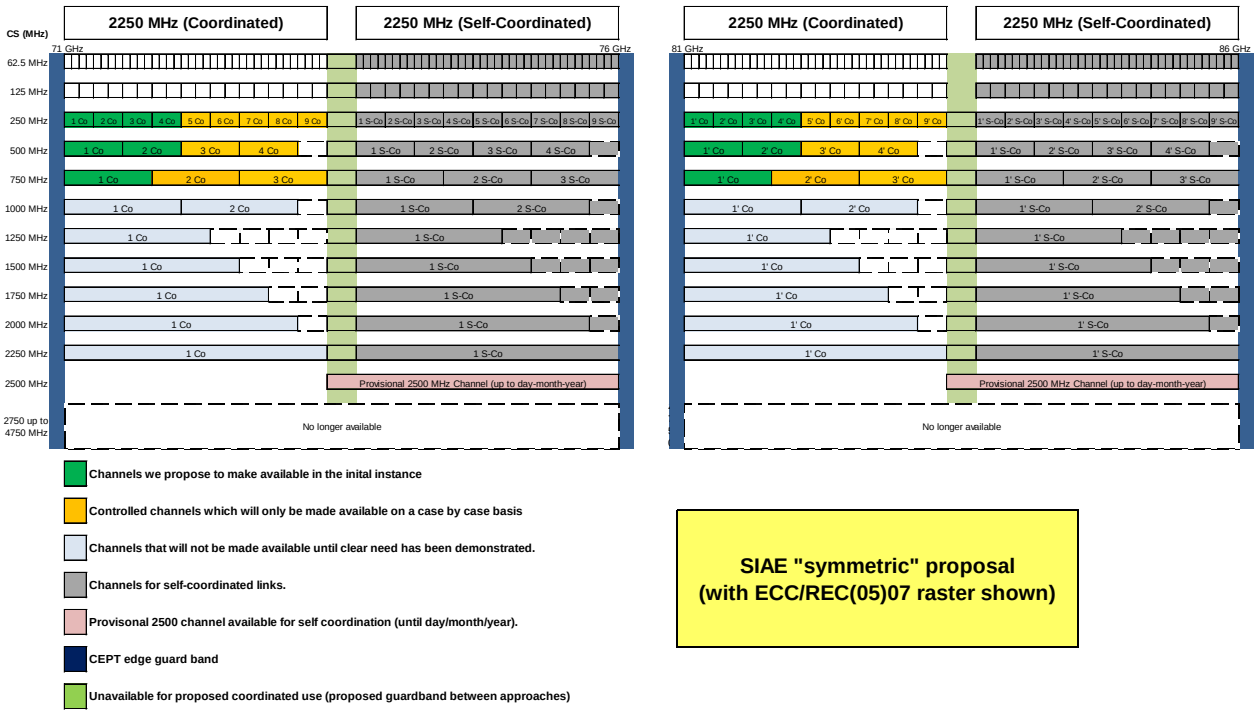

Figure 1: SIAE Proposal (see answer to Questions 2b, 3a and 4b)

Figure 2: Original Ofcom proposal under consultation