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Response to ICP-ANACOM on Public Consultation on the Digital Dividend from Nokia[1] and Nokia Siemens Networks[2]

Nokia and Nokia Siemens Networks (NSN) are pleased to take this opportunity to comment on plans of the ICP-ANACOM regarding the future usage digital dividend from the 470-862 MHz frequency band. The focus of our response is, in particular, on the mobile use in the band 790-862 MHz and mobile TV use, although digital dividend can contain also other 'freed' spectrum than the planned IMT band 790-862 MHz.

General

Nokia and NSN fully support the CEPT work regarding the regulatory framework for the IMT usage of the frequency band 790-862 MHz. This band is the most interesting new IMT band, as it is the only new mobile frequency band that is below 1 GHz facilitating cost efficient coverage building also in less populated areas. A harmonized band plan is an essential element in the success of this band, as it facilitates cost efficient equipment in a timely manner. Any variation from the preferred channel arrangement (as agreed in the draft ECC decision in ECC PT1 meeting 27-29.4.2009) can risk the potential benefits of the band, especially when it comes to the equipment availability and cost efficiency. The Block Edge Masks (BEM) provide sufficient level of technology neutrality allowing any mobile or fixed technology that fits in the BEM.

For mobile TV, Nokia and NSN prefer DVB-H technology. This technology is based on open, proofed standards and a wide range of interoperable products is available both on the network and on the terminal side. Mobile TV using DVB-H is is already licensed in a number of countries and it facilitates best the availability of mobile TV service, if only one multiplex is available for mobile TV.

In addition to the mobile band 790-862 MHz and mobile TV usage, there may be other opportunities, which are not commented here.

Detailed answers to the questionnaire are below:

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[1] ***About Nokia***
Nokia is a world leader in mobile communications, driving the growth and sustainability of the broader mobility industry. Nokia connects people to each other and the information that matters to them with easy-to-use and innovative products like mobile phones, devices and solutions for imaging, games, media and businesses. Nokia provides equipment, solutions and services for network operators and corporations.

[2] ***About Nokia Siemens Networks***
Nokia Siemens Networks is a leading global enabler of communications services. The company provides a complete, well-balanced product portfolio of mobile and fixed network infrastructure solutions and addresses the growing demand for services with 20,000 service professionals worldwide. Nokia Siemens Networks is one of the largest telecommunications infrastructure companies with operations in 150 countries. The company is headquartered in Espoo, Finland. www.nokiasiemensnetworks.com

1. What is the desired impact of using the digital dividend at the economic and social levels, among others?

Mobile use in the band 790-862 MHz facilitates cost-efficient coverage building in large areas of low population density. This would help in the provision of high bit rate services in those areas, in line with e.g. the EU telecommunications policy. The biggest benefit of this band is the good propagation characteristics, which supports larger cell sizes. Good propagation characteristics benefit most truly mobile services, where coverage is the issue. More aspects related to the economic and social value can be seen e.g. in the Spectrum Value Partner study "Getting the Most out of the Digital Dividend"[3] .

2. What role do you consider the EU should have in the coordination of the ways to use the digital dividend? Which possible harmonization level, in which frequencies and for which type of service do you consider would be desirable by the E.U.?

A harmonized band plan is essential, especially, for public mobile networks to achieve sufficient economies of scale to facilitate cost efficient equipment. All other possible usage/services benefit also from harmonization (common spectrum, agreed band plans etc.), so, EU should support spectrum harmonization in order to benefit most of the digital dividend.

3. Do you consider that the use of the digital dividend overall should favour (i) strengthening the television service in diversity and quality (such as more television services and programmes, HDTV, regional and local television, etc.), (ii) new convergent services and multimedia (for example, mobile cellular services, emergency services etc.) (iv) other services?

Nokia and NSN believe that the 7 national coverages reserved for all countries in RRC-06 should cover the broadcasting use, including the evolution of BC technology. The band 790-862 MHz should be reserved for IMT.

4. How do you evaluate and quantify (with as much detail as possible) the socioeconomic impact of the different ways of allocating the digital dividend, particularly the one you support in the response to the previous question?

See the Spectrum Value Partner study[3].

5. In your opinion is the digital dividend suitable for a homogenous use all over the national territory or should a more varied use be considered depending on the area of the country?

For the band 790-862 MHz, the most sensible way is to use the whole band in all of the country for IMT. Otherwise significant parts of spectrum and geographical areas need to be used for guard bands/areas. There may be other usages, where mobility and coverage are not so essential, where regional/local usage is ok.

6. What do you consider to be the appropriate spectrum distribution for the several types of use? Or do you consider it is more appropriate to adopt a technological and/or service neutrality criteria and that the market should decide on its potential uses?

[3] http://www.spectrumstrategy.com/Pages/GB/perspectives/Spectrum-Getting-the-most-out-of-the-digita-dividend-2008.pdf

790-862 MHz should be reserved for IMT (or Mobile/fixed in line with the draft ECC decision). Other possible parts of digital dividend could be assigned for certain purposes or the usage can be regulated by e.g. band plans and BEM. This would not regulate any specific technology but allow all technologies fulfilling the same technical limits.

7. Should technological and/or service neutrality criteria be adopted, how can it be implemented in terms of the regulation of spectrum use and of equipments? Please justify. And which selection procedure do you consider the most appropriate – tender, auction, other? Please justify.

See the reply in Q6. Regarding licensing, the selection procedure should be transparent and equal, i.e. allowing new and existing operators to participate.

8. In this context, what conditions do you think should be ensured for high definition television broadcasting, based in the use of the designated digital dividend spectrum, namely what overall bandwidth could/should be reserved for that purpose?

No comment

9. What schedule and what mode for the release/allocation of the corresponding spectrum.

No comment

10. What other television programme services, as well as uses, such as higher high definition (e.g. Ultra HDTV) or three-dimensional television, do you suppose could require, in the long run, the use of the spectrum now under analysis?

No comment

11. Given this framework and based on the coverage use planned in the scope of GE06, what conditions do you consider should be created for mobile television services in the "*broadcast*" mode? What is the number of coverages needed for that purpose?

Nokia and NSN see that one national multiplex for DVB-H can provide the required capacity for mobile-TV services. However, the regulatory approach should be such that it is guaranteed that on the service level it is possible to have several content providers opening the platform for normal competition.

12. What is the schedule and the model suited for the allocation of rights of frequency use for mobile television services?

Nokia and NSN see that the DVB-H mobile-TV market is starting up right now in several European countries and thus the infrastructure and devices will be widely available. Also we believe that the market and interest to start mobile-TV services in Portugal exists already today and therefore we believe that the allocation of frequencies should happen as soon as possible.

Nokia and NSN have the opinion that the "beauty contest" -type of regulation is the best to allocate frequencies for mobile-TV use. However, it is very important that the regulatory environment defines the

roles of the whole value chain and different players in a way that a successful market entry is possible. Just allocating the frequency license to one company, but forgetting the rest of the business model will lead to unsatisfactory results. A good, positive example of a successful regulatory environment is the Austrian case.

13. Do you consider that the use of frequencies for mobile television should be limited to the DVB-H technology? What advantages/disadvantages do you associate to that option?

Yes, Nokia and NSN see that the DVB-H provides the best possibilities to start the mobile-TV market. DVB-H is widely deployed, truly open and tested standard and has a large community of equipment suppliers. Choosing anything else would delay the market start significantly and diminish the possibilities for a successful market deployment. Based on the experience we have on the DVB-H we don't see any disadvantages on this approach. The claimed benefits on the network cost on some other solutions are not the key point in mobile-TV deployment, the challenges lie in the business models.

14. Do you consider that the market will be interested in the release of coverage planned for this type of reception in the scope of GE06? If so, in which terms?

Yes, Nokia and NSN see that the market is very interested in the possibility to start business on mobile-TV. Nokia has had discussions with all major players in Portugal and has got positive indications. The problems so far has been the lack of released coverage (= frequencies).

15. What spectrum do you consider admissible to reserve, in what way and with what geographical distribution, for the provision of television services under a more limited coverage, such a regional or local coverage?

No comment

16. What is the best way to have access to the possibility to use the mentioned spectrum (tender, auction, other) and what release schedule?

No comment

17. What spectrum do you consider admissible to reserve, in what way and with what geographical distribution, for the provision of digital audio broadcasting services?

No comment

18. Do you consider that the possible allocation of some of the available networks to Media Groups would make T-DAB"s development viable, since the several radios held by these Groups have analogue technology that could be hosted in the same *multiplexer*?

No comment

19. Traditionally, the audio broadcasting service has been free for subscribers. With the possibilities offered by digital technologies will there be room for paid services? What kind?

No comment

20. DMB and DAB-IP technologies enable video broadcasting. Do you consider that some of the planned networks should be released for this technology? How many? In what context?

No comment

21. What is the best way to have access to the possibility to use the mentioned spectrum (tender, auction, other) and what release schedule?

No comment

22. What is the digital dividend's contribution for the development of Next Generation Networks, and what will be their impact on its use?

No comment

23. In the medium and long run, will the digital dividend spectrum be more suited for supporting the provision of electronic communications services (i) mainly under mobility, (ii) also contemplating the use at a fixed location or (iii) regardless, for any type of use?

The band 790-862 MHz characteristcs would be best utilized in mobile networks, as the propagation charasteristics of this UHF spectrum suit well to to coverage provision for mobile networks.

24. In your opinion, how will mobile services evolve and what are your forecasts for mobile broadband consumption? Please justify.

Observations show that the mobile data traffic is increasing at a tremendous growing rate. The trend is that users want all those services that are today available in fixed networks to be available also in mobile environment. In support of this, mobile services will also have to offer higher user rates to satisfy the end-user demand for a great user experience. In addition, mobile networks can be more cost-efficient for the provision of high bit rate services in rural areas than wire-line based offering. We strongly believe that Internet should be available everywhere and to everyone. Users do not care, how it is provided.

25. In your opinion, what will be the impact of mobile Internet access on the growing ubiquity of broadband Internet access, on the economic, social and cultural scenes?

See the answer to Q24.

26. What bandwidth do you consider necessary for this type of applications in the short, medium and long run? Please justify.

There will be requirements both for capacity extensions and coverage provisioning, and very high bit rates are unlikely to be available in all places. Some studies show that 1-2 Mbit/s user bit rates can already give a reasonable user experience. In lower bands (below 1 GHz) 10 MHz channel bandwidths may be sufficient to achieve it. However, in higher bands (and hot spots) up to 100 MHz channel bandwidths may be needed to offer sufficient capacity.

27. According to the CEPT 22 report, it will be virtually impossible, considering the level of interferences produced by GE06"s digital entries, for a country to start using this sub-band without the previous agreement of the adjacent countries. Under these circumstances, do you consider that sub-band 790-862 MHz should be released in Portugal for mobile broadband applications, regardless of its release in the adjacent countries?

Nokia and NSN believe that all European countries will decide to use the band 790-862 MHz for IMT at some point of time. Having the same timing would help cross border coordination.

28. Should this release occur before 9 December 20023, it will require DTT networks operating in this sub-band to change the corresponding radio channels. What do you think will be the impact of that transition and in what way can it be minimized?

No comment

29. In this context, do you consider that spectrum should be allocated for the exclusive use of this type of applications? What are the reasons? In what band? What bandwidth do you consider necessary? Please justify.

No comment

30. In this context, do you consider that spectrum should be allocated for the exclusive use of this type of applications? What are the reasons? In what band? What bandwidth do you consider necessary? Please justify.

No comment

31. What is the evolution you foresee for the use of these equipments in Portugal? Do you consider that it is advantageous to allocate spectrum exclusively for the use of this type of applications? In what band? What bandwidth do you consider necessary? Please justify.

No comment

32. What do you consider to be the current development state of these technologies? What conditions to you consider should be fulfilled in order to make its use possible? Please justify.

No comment

33. What other applications, services and technologies do you consider that could now or in the future be specifically supported on the digital dividend"s frequency bands?

No comment

34. Do you consider that it is desirable to allow long-run pilot-tests of technologies and services using the digital dividend"s spectrum? In any domain, specifically?

No comment