7 June 2012

Response from Nokia[1] and Nokia Siemens Networks[2] to

UK Ofcom Consultation

"Securing long term benefits from scarce spectrum resources - A strategy for UHF bands IV and V"

[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 (NSN) is the world's specialist in mobile broadband. From the first ever call on GSM, to the first call on LTE, NSN operates at the forefront of each generation of mobile technology. NSN global experts invent the new capabilities our customers need in their networks. NSN provides the world's most efficient mobile networks, the intelligence to maximize the value of those networks, and the services to make it all work seamlessly. With an unswerving focus on quality, efficiency and reliability NSN helps its customers meet the demands of a world seeking universal connectivity and content. NSN delivers the innovations in mobile technology and services that enable people and businesses everywhere to do more than ever before.

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BASIC DETAILS

Consultation title: Securing long term benefits from scarce spectrum resources - A strategy for UHF bands IV and V

To (Ofcom contact): UHFframework@ofcom.org.uk

Representing (self or organisation/s): Nokia, Nokia Siemens Networks

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	X	Name/contact details/job title	
Whole response		Organisation	
Part of the response		If there is no separate annex, which parts?	

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. X

Name

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Nokia and Nokia Siemens Networks (NSN) welcome this opportunity to respond to the "Public Consultation on Securing long term benefits from scarce spectrum resources - A strategy for UHF bands IV and V". We would like to address the following questions:

Future mobile broadband spectrum requirements

Question 1: Do you agree that meeting the future growth in demand for mobile broadband capacity will deliver significant benefits to citizens and consumers?

Mobile communications, including mobile broadband communications, have played an important role in the economic and social development of developed countries and have even more positive impacts on growth economies. It has facilitated economic growth, helped to mitigate the digital divide, improved quality of life and facilitated the creation of new industries. These impacts have been evidenced by several studies in the past[3]. Also, recognizing the importance of mobile broadband, the ITU and UNESCO announced (in May 2010) the establishment of the UN Broadband Commission (http://www.broadbandcommission.org), which has stated *"The benefits of broadband are profound – in opening up young minds to new horizons through educational technologies; in empowering women to expand their opportunities through genuine choices; in improving awareness of hygiene and healthcare; and in helping family breadwinners find work, a better salary or return on their goods. Through broadband, the provision of public services is transformed to make them global public goods for the global good. Greater access to the Internet and broadband applications and services help accelerate achievement of internationally-agreed development goals, including the Millennium Development Goals (MDGs)."*

Question 2: Do you agree that additional harmonised mobile broadband spectrum will play an important role in meeting the future growth in demand for mobile broadband capacity? What are your views on the overall quantity of harmonised spectrum that will be required to meet future demand? How does this compare with the expected increase in spectrum for mobile use discussed in this section?

Because consumers are increasingly mobile and businesses are globally oriented, spectrum for mobile broadband (MBB) should be harmonized to the greatest extent possible to facilitate economies of scale, better user experiences and roaming.

The overall quantity of spectrum that will be required to meet future demand will be defined by detailed studies, but a working assumption in markets like the US and EU have been of the order of **500MHz** by the year 2020. Detailed studies will be done by the ITU in its next study period (2012-2015) when preparation towards WRC-15 takes place (WRC-15 has an Agenda Item 1.1 to look for more spectrum for IMT and other MBB applications).

Several regional or national BB plans (i.e., National Broadband Plans in USA and India, RSPP in the European Union) are typically looking for around 500MHz of additional spectrum for MBB by year 2020. Other regions like Latin America, Asia and Africa are considering the same.

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[3] Analysys Mason
http://www.analysysmason.com/ec_digital_dividend_study
GSMA
http://serving.webgen.gsm.org/5926DA9A-2DD6-48E7-BAD4-50D4CD3AF30A/projects/Spectrum/DigitalDividend/DDtoolkit/economic-impact.html
Spectrum Value Partners
http://www.valuepartners.com/downloads/PDF_Comunicati/Media%20e%20Eventi/2008/Spectrum-Getting-the-most-out-of-the-digita-dividend-2008.pdf

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Question 3: Do you agree that additional harmonised spectrum provided by the 700 MHz band could play an important role in meeting the future growth in mobile broadband capacity?

Yes, due to the propagation conditions, that spectrum is excellent, especially, for coverage provision and for indoor penetration. It can also contribute to the high-bit mobile broadband capacity delivery, depending on how much bandwidth there is available for IMT and Mobile Broadband use.

Question 4: Do you agree that the value of the role played by the 700 MHz band in meeting the future growth in mobile broadband capacity would be greater if it becomes available before other capacity enhancing techniques have been exhausted at existing mobile sites?

The 700MHz band (like also 800MHz band) is a key spectrum band for mobile broadband and it should be made available for IMT and Mobile Broadband use as soon as possible. Today, operators have challenges is fulfilling the EC and national broadband targets to provide high bit services everywhere. Spectrum below 1GHz is likely to have a significant role in this.

Question 5: What timing of 700MHz release would maximise the benefits associated with its use for mobile broadband?

See above (it should be made available for IMT and Mobile Broadband use as soon as possible). Timing should be in line with the broadband target timing.

Future DTT spectrum requirements

Question 6: Do you agree that DTT will continue to play an important role in providing universal low cost access to PSB content over at least the next decade?

DTT will be important but its relative importance depends on the development of other platforms (cable TV, IPTV, tablet based TV apps, smartphone TV, etc.). The trend towards these other platforms is evident already now in many countries and the younger generation, especially, seems to prefer to consume PSB content using non-DTT platforms.

Question 7: Do you agree that, absent major changes in available spectrum, DTT would continue to remain attractive to viewers and deliver important benefits to citizens and consumers over at least the next decade?

DTT is today popular in the UK and it is likely to continue to be an important TV delivery channel for the future. Broadcast TV's most popular programmes achieve far more viewers today than 'on-demand' applications using IP networks, e.g. BBC iPlayer. However it is likely that some 'less popular' channels will move to an "on demand" or IP multicast delivery mechanism, especially, when the pricing of the spectrum used by DTT becomes closer to their market value. These mechanisms are much more efficient and cost effective for smaller audiences and are increasingly being supported by new 'connected TVs'. In any case we do not foresee growth in demand for DTT, and consequently requirement for spectrum, beyond the current levels.

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Question 8: What are your views on the future technical evolution of the DTT platform? Are there other relevant factors affecting future DTT spectrum requirements that we should consider as we develop an approach to secure benefits from UHF band IV and V over the long term?

We do believe that also DTT can evolve, and this is why there needs to be some flexibility for the future to take this likely technology evolution into account, e.g. not to fix the future plans only for use of DVB-T2. Also, it is expected that evolution of DTT comes earlier, if there are clear targets set by regulators to improve spectrum efficiency of DTT– e.g. plans and time schedule (how and when more BC spectrum could be opened for other services). Single Frequency Network (SFN) could offer a major step in spectrum efficiency improvement. Multi Frequency Network (MFN) could, e.g., be retained only for those MUXes, if regional delivery is required.

It is noted that IPTV has only started and is in the beginning of its lifecycle, and it may be too early to estimate exactly how it will change the way, how people watch TV content. However, especially young people seem to prefer this type of watching. Taking into account how rapidly changes happen in IT world, it is certainly too early to conclude today that IPTV will not be significant in the next decade.

Question 9: Do you agree that a longer term approach to secure benefits from UHF band IV and V should consider how to safeguard benefits delivered by the DTT platform?

Consideration should be put on defining which and how many MUXes should be available freely to everyone. We support that the free public channels should continue to be available via DTT but majority of pay TV programs should preferably be delivered using other media.

E.g. Finland just published plans to reserve four MUXes for DTT after year 2017: two MUXes are reserved for PSB and one of those continues with the DVB-T transmissions until year 2026 (there will be a review of this need on year 2020) and one is reserved for DVB-T2. Other two MUXes are reserved as 'commercial' BC and 700MHz is planned for mobile broadband. Without commenting the Finnish plan in details, there might be a need for a wider European discussion about the future need of DTT vs other usage.

Other uses of UHF bands IV and V

Question 10: Are there other material factors affecting the future requirements of PMSE that we should consider as we develop an approach to secure long term benefits from UHF band IV and V?

In our opinion, it would be beneficial to look for optimal spectrum for PMSE considering that the communication distance with PMSE is typically pretty short and higher spectrum bands (than UHF) should therefore be suitable for PMSE. Also, the technology used in PMSE needs to be updated to respond to the developments of today.

Question 11: Are there other material factors affecting the future requirements of Local TV that we should consider as we develop an approach to secure long term benefits from UHF band IV and V?

The business case and demand for local TV services is still unproven, however, these niche services can be more effectively provided by IPTV via "on-demand" or multicast mechanisms.

Question 12: Are there other material factors affecting the future requirements of WSD applications that we should consider as we develop an approach to secure long term benefits from UHF band IV and V?

In our opinion, WSD should be enabled as long as DTT and PMSE are deployed in this band. WSD use will enhance the overall utilization of the UHF spectrum, where DTT is deployed with MFN.

Question 13: Aside from WSDs, are there other innovative ways in which to use UHF bands IV and V to deliver services and, therefore, material benefits to users

No, in addition to innovations and benefits emerging from Mobile Broadband and WSD, we do not currently foresee any other innovative ways in which to use UHF bands.

Question 14: Are there other material factors affecting the future requirements of emergency services applications that we should be aware of as we develop an approach to secure long term benefits from UHF band IV and V?

In our opinion, no dedicated exclusive spectrum from 700 MHz band should be allocated to emergency (PPDR) services. However, depending on how much spectrum is released due to Digital Dividends, PPDR-obligations could be considered in a license/auction-process, if there is a national need for that.

Our view is that it should be carefully considered, whether this PPDR broadband needs could be satisfied through cooperation with commercial LTE operators: there are possibilities to give PPDR special rights for the use of capacity and this would help to cover the high building costs of dedicated network. The most safety critical communication could remain in the current (evolved) TETRA network and the broadband content could be sent in commercial network.

The TETRA network is a closed eco-system and is unable to support new broadband applications required by the PPDR authorities. The UK Tetra network provides better coverage than current commercial mobile networks due to its operation at 400MHz and below band IV. Basic TETRA services can be complemented by commercial mobile radio solutions especially if they are permitted to operate in band IV. Coverage and prioritisation obligations can be attached to one of the band IV licenses to ensure that any commercial service in the band is fit-for-purpose for the PPDR authorities.

Securing long term benefits for citizens and consumers

Question 15: Do you agree that the approach that is most likely to secure significant benefits from UHF band IV and V over the long term is one that enables the release of the 700 MHz band for mobile broadband whilst also ensuring the role of the DTT platform is safeguarded?

Yes. We also believe that CEPT should develop a strategy for the future (until something like year 2030) use for the UHF band taking into account the IMT/MBB needs, DTT needs and the expected changes in the user behavior and advances in technologies.

The 700MHz band (like also 800MHz band) is a key spectrum band for mobile broadband and it should be made available for IMT and Mobile Broadband use as soon as possible. Due to the propagation conditions, that spectrum is excellent, especially, for coverage provision and for indoor penetration. It can also deliver high-bit mobile broadband capacity, depending on how much bandwidth there is available for IMT and Mobile Broadband use.

DTT platform will remain as a platform for consumers in those areas that cannot be served by other platforms (cable TV, IPTV, tablet based TV apps, smartphone TV, etc.). However, the importance of DTT platform, compared to other platforms, will decrease as those other platforms to deliver the PSB content

to citizens will increase. This trend is evident already now in many countries and, especially young generation prefers to consume PSB content via those other ways and not by using DTT.

Question 16: Do you believe there is a material risk that the DTT platform will have insufficient spectrum to continue to deliver important benefits (including providing universal low cost access to PSB content) if the 600MHz band is not used for DTT when the after clearance of the 700 MHz band?

As the future needs of broadcasting are unclear, we support a wider (European-wide) discussion on the overall strategy for the UHF band. This includes the long-term use of 600MHz band.

Question 17: Do you believe that using the 600 MHz band for DTT after clearing the 700 MHz band would reduce the risk that the DTT platform will not be able to continue to provide important citizen and consumer benefits?

See the response to Q16.

Question 18: Do you agree that the future benefits for citizens and consumers of enabling the release of the 700 MHz band whilst maintaining the role of DTT are likely to outweigh the loss in benefits of the 600 MHz band not being able to be used for other services in the long term?

Actually, the overall planning of how much spectrum is needed for DTT in UHF-band need to be carefully considered as PSB content can now and future be delivered by other platforms (cable TV, IPTV, tablet based TV apps, smartphone TV, etc.). In recent years, UHF-band has been planned in bit-by-bit which has already now fragmented upper part of UHF-band as there are different bands (like 694-790MHz, 698-806MHz, 790-862MHz) and different band plans (like 3GPP band variants 12,13,14,17,20,28) for IMT/Mobile Broadband. So careful overall long-term planning is needed for full UHF band 470-862MHz.

Question 19: Have we identified correctly the possible short-term uses of the 600 MHz spectrum? Are there other short-term uses we should consider?

Yes, we agree that the listed short-term usages look the most potential ones.

Question 20: Which option(s) for releasing 600 MHz in the short term would maximise its value whilst supporting our proposed longer term objectives?

Taking into account the investment costs, the proposed a) (PMSE), b) (WSD) and c) (short-term DTT, especially, to help the technology transition from DVB-T1 to DVB-T2) look the most potential short-term usages. Care should be taken that the short-term users are aware that the licenses are short-term only, e.g. PMSE equipment should have a wider tuning range and a decision about the long-term spectrum for PMSE is needed. There seems to be two types of short-term here: so we agree that the 'new' short-term usage can begin in short term. However, the new short-term usage should not limit the execution of possible long term strategy in the future.

The wider impacts of changing the use of the 700MHz band

Question 21: Do you agree that the wider impacts of a future change of use of the 700MHz band could be managed to prevent them having a detrimental impact on consumers and the services operating in this band?

Yes. We agree with the proposed plan.

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Proposed approach for securing future benefits and next steps

Question 22: Do you agree that the approach set out in this consultation is likely to secure significant benefits for citizens and consumers over the long term?

We agree with the main conclusions that 700MHz should be assigned for mobile broadband and the lower part of UHF band should remained in broadcasting use. The 600MHz band can provide useful flexibility in the transition phase, when releasing 700MHz band for MBB. As the future needs of broadcasting are unclear, we support a wider (European-wide) discussion on the overall strategy for the UHF band. This includes the long-term use of 600MHz band.

Question 23: Have we correctly identified the main areas of future work that could follow this consultation process subject to its outcome?

Yes, the main areas for future work are sufficiently listed; in addition it would be good to execute careful overall long-term planning for full UHF band 470-862MHz including the possible evolution of DVB technologies and the change in TV users' behavior towards adoption of other delivery mechanisms, such as IPTV. The availability of 700MHz for MBB may also accelerate that adoption.