

**Comments by Nokia Siemens Networks (NSN) on TRAI Consultation Paper
'Auction of Spectrum', No. 04/2012 dated, 7 March, 2012**

D-700 MHz band

Q9. Should the refarming of spectrum in 800/900 MHz bands be dealt independently or should a comprehensive approach be adopted linking it with the availability and auctioning of 700 MHz band?

Q10. Which of the two approaches outlined above be adopted?

Comments

(i) We agree that the sub-1 GHz bands have excellent propagation characteristics (cf., para 3.35/page 74); providing wide coverage, specially suiting spread out areas . For optimal utilization of the spectrum, it may need to be ensured that the technologies deployed in the band are compatible and enable interference free operations with no spectrum wastages, like guard bands etc.

(ii) For the sake of wide competition and keeping in view the geographical diversity in our vast country, participation of largest possible number of licensees may be most desirable.

Q11. When should 700 MHz spectrum be auctioned?

Comments

The auction could be planned for 2H 2012. Some factual inputs in this context may be of interest,

(i) the band plans/frequency arrangements for this frequency band approved by ITU Working Party 5D/Study Group – 5 (SG-5) are under circulation for approval within the notice period of three months by Radio Communication Assembly (RA-2012/mid-Jan 2012) and as such ITU approval is expected by end April 2012.

(ii) the internationally recognized standardization body '3GPP' has targeted release of the specifications/standards for equipment and eco-system for newer and better technologies for providing mobile broadband services (like LTE etc) by June 2012. These specifications are being based on the frequency arrangements/band plans as finalized by International Telecom Union Study Group – ITU SG 5 for approval of RA-12, and also harmonized by the Asia Pacific Telecommunity (APT) for Region-3 (includes India). Commercial availability of equipment and eco-system is expected by 1H 2013.

(iii) Australia and New Zealand are at advanced stage of auction of 700 MHz band (698-806 MHz) for 'IMT' services with a clear roadmap for auctions this year, commercial launch late 2013.

Q13. How much spectrum in 700 MHz band should be put to auction initially and what should be the amount of spectrum which a licensee should be allowed to win in that auction?

Comments

We believe that the whole spectrum band (698-806 MHz), in conformity with the ITU-R recommended APT frequency arrangements/band plans for the band should be considered for auction.

- The block size of the spectrum for auction could be 5 MHz; this bandwidth would be compatible for deployment of newer & better technologies like UMTS/HSPA or LTE. This approach, which satisfies the standardized minimum channel width (5 MHz) for newer and better technologies, may bring in the desired flexibility for the operators in bidding for the needed number of blocks, also in long term planning for optimum utilization of spectrum including the likely challenges during re-shufflings/redistribution of spectrum as well as migration to 4G technologies, as and when so needed in future.

C. Spectrum Refarming

TRAI Observations, para 3.22/page 65

Comments

It has been mentioned by the Authority that spectrum of license holders in 800 MHz band could be replaced by spectrum in 1900 MHz/450 MHz band (c.f. para 3.22/page 65).

We believe that it would be erroneous to consider the frequency allocations in 1900 MHz band 1850-1910 MHz (UL)/paired with 1930-1990 MHz (DL), as this band (part or whole) is not considered compatible for co-existence with the ITU-R recommended UMTS (3G)/WCDMA frequency band 1920-1980 MHz (UL)/paired with 2110-2170 MHz (DL) for 'IMT' (3G) services. It may kindly be noted that the IMT band 1920-1980 MHz/2110-2120 MHz band had already been auctioned (2010) and deployed in the country by the licensees for IMT/3G/WCDMA mobile services. It would be fair to ensure that their networks are fully safeguarded from possible harmful interferences from the non-compatible 1900 MHz band plan.

The main problem of interference (in-band as well as out-of-band) in the two incompatible bands (often referred as mixed band plan) is that the co-existence involves 'duplex reversal' i.e., there would be 'UL' of

UMTS WCDMA band (1920-1980 MHz) →← 'DL' of 1900 MHz band. The harmful interference by co-existence of the two incompatible band plans is inevitable.

In case part of the 1900 MHz band, namely 1900-1910 MHz (uplink)/paired with 1980-1990 MHz (downlink) is considered for implementation in the country for co-existence with the ITU-R recommended frequency band, for IMT, 1920-1980 MHz (uplink), it will imply the same non-compatibility/severe harmful interference issues (BS to BS & MS to MS) mentioned above i.e., there will be 'UL' (1920-1980 MHz) band →← 'DL' (1980-1990 MHz) band interference, around 1980 MHz (both in-band and out-of-band emissions).

The suggested arrangement would give rise to an unmanageable and incompatible situations between base stations of the 1900 MHz band downlink (aggressor) and the base stations of the IMT/WCDMA core band (victim) around the frequency 1980 MHz. The proposed incompatible operations between both BS-BS and MS-MS of the different operations would be causing an irrevocable co-existence impediment for quality grade IMT 3G/WCDMA (including mobile broadband) services. The implications for 'IMT' are deep and grave.

The Authority had examined the involved technical issues in detail and recommended several years back (2005) that implementation of 'mixed band plan' was not considered feasible due to involved harmful interference between the two bands and that allocation of 1900 MHz may not be desirable in the country.

It is recognized globally that a country should not implement a mixed arrangement using ITU-R recommended IMT band on one hand and the 1900 MHz band on the other hand, due to the involved severe harmful interference by incompatibility in co-existence.
