

Comments of
Bell Canada,
Inukshuk Wireless Partnership &
Rogers Communications Partnership

Decisions on the Transition to Broadband Radio Service (BRS)
in the Band 2500-2690 MHz and Consultation
on Changes Related to the Band Plan (DGSO-001-10)

September 10, 2010

Introduction

1. The Department has issued a consultation paper titled **Decisions on the Transition to Broadband Radio Service (BRS) in the Band 2500-2690 MHz and Consultation on Changes Related to the Band Plan – DGSO-001-10** (“the Consultation Paper”). In the Consultation Paper, the Department has invited comments on its proposals regarding the band plan for the band 2500-2690 MHz (“the Band”).
2. Bell Canada, Inukshuk Wireless Partnership, and Rogers Communications Partnership (collectively “Inukshuk”) are pleased to provide the following comments regarding the issues under consideration in the Consultation Paper.
3. Inukshuk has taken significant risks and made substantial investments in developing the band so that the benefits of fixed wireless broadband services can be extended across Canada. Inukshuk’s fixed wireless broadband network is the largest of its kind in Canada if not the world. We have invested several hundred million dollars in extending our network to approximately 7.5 million Canadian households, covering 70% of the households within the cities and communities in Inukshuk’s detailed deployment schedule, or about 63% of the households in our MCS licence areas. Significantly, we provide fixed wireless broadband service (up to 3 Mbps) in 45 cities and over 200 rural markets.
4. Inukshuk exceeded the implementation of spectrum usage condition of its MCS licences, despite the substantial risk and ongoing uncertainty surrounding the final policy, technology and band plan. We are committed to making further substantial investments in the Band in order to leverage all of the advantages of an internationally compatible band plan for advanced new mobile broadband services.

5. As outlined in more detail below, Inukshuk believes that the licensing of the Band on the basis of the prevailing international band plan represents a significant and unique opportunity for Canada with respect to the deployment and adoption of advanced new mobile broadband services. In order to make the most of this opportunity, the Department should take the following specific actions with respect to the Band.

- Harmonize the Canadian BRS band plan with the international band plan in the interest of global roaming and economies of scale.
- Restrict TDD systems to the TDD portion of the Band except where incumbents need to operate on a transitional basis. Displace any such systems only where necessary and given a reasonable period of time.
- Establish mandatory guard band blocks in the unpaired TDD segment of the Band to prevent harmful interference.
- Provide for spectrum exchanges and swaps to create paired spectrum assignments.
- Adopt Inukshuk's mapping proposals (refer to paragraphs 44 – 50) so that incumbents will have access to additional contiguous spectrum for future growth.
- Maintain and license the TDD segment as a single block so that it may be fully exploited in the most efficient manner.

6. Following are Inukshuk's detailed comments.

A Significant Opportunity for Mobile Broadband Services

7. Inukshuk believes that the licensing of the Band on the basis of the prevailing international band plan represents a significant opportunity for Canada with respect to the deployment of advanced new mobile broadband services. Due to its sheer size and global acceptance, the Band is uniquely positioned to

address the surging demand for mobile broadband services and to drive further adoption of these vitally important services.

8. The proposed reconfiguration of the Band is urgently required. Mobile data traffic is currently forecasted to double every year through 2014, increasing 39 times between 2009 and 2014.¹ This is largely due to the combined availability of advanced new mobile broadband networks, consumer smart phone devices and lap-top computer modems that are capable of exploiting the new networks.² Data-intensive applications that were not even contemplated several years ago, such as YouTube, are driving significantly higher volumes of usage than traditional mobile voice services.³
9. The growth in mobile data usage and its profound effect on the volume of traffic carried on wireless networks is compelling carriers to consume more radio spectrum than ever before. While next generation mobile broadband technologies are opening up new opportunities for innovation and productivity, they also require wider contiguous blocks of spectrum than have been required to support earlier generations of mobile technologies.
10. Earlier generations of technology use relatively narrow blocks. For example, GSM uses 200 kHz channels; CDMA uses 1.25 MHz channels; and UMTS/HSPA uses 5 MHz channels.
11. The next generation of 4G wireless technologies, such as LTE⁴ and WiMAX, that will be used to support mobile broadband services will require much

¹ *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update – 2009-2014*, Cisco Systems Inc., February 9, 2010, p. 1.

http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html

² *HSPA to LTE-Advanced: 3GPP Broadband Evolution to IMT-Advanced (4G)*, Rysavy Research/3G Americas, September 2009, p. 11.

http://www.rysav.com/Articles/2009_09_3G_Americas_RysavyResearch_HSPA-LTE_Advanced.pdf

³ *Ibid*, p. 5.

⁴ Long Term Evolution.

wider channels in order to achieve the data speeds, quality of service and spectral efficiency that they promise to deliver.

12. While LTE and WiMAX can operate with relatively narrow channels, they will deliver greater efficiencies when operating with wider channels of up to 20 MHz. In other words, the wider the channel, the greater the data speeds and spectral efficiencies.⁵ For this reason, industry experts have recommended that regulators licence 4G⁶ spectrum “*in as wide radio channels as possible*”.⁷ In light of the efficiencies associated with wider channels, the ITU has recommended that IMT-Advanced radio interface technologies provide support for: “*scalable bandwidth up to and including 40 MHz*”.⁸ Accordingly, while LTE will support channel widths of up to 20 MHz, LTE-Advanced will support channel widths of up to 40 MHz.⁹
13. On the other hand, block sizes of less than 10 MHz, such as 5 MHz, are not adequate to unleash the spectral efficiencies and data speeds promised by new mobile broadband technologies. Segmenting spectrum into small blocks will undermine the efficiency and effectiveness of new technologies and the competitiveness of Canadians that require next generation applications. Therefore, wireless service providers must be licensed with adequate contiguous blocks of spectrum before Canada can fully unlock the future of mobile broadband services.

⁵ *Net Neutrality Regulatory Proposals: Operational and Engineering Implications for Wireless Networks and the Consumers They Serve*, Rysavy Research, January 14, 2010, pp. 8-9.

http://www.rysavy.com/Articles/2010_01_Rysavy_Neutrality.pdf

⁶ “4G” or Fourth Generation mobile services are known more formally as “IMT-Advanced” (International Mobile Telecommunications-Advanced).

⁷ *Transitioning to 4G: 3GPP Broadband Evolution to IMT-Advanced*, Rysavy Research/3G Americas, September 2010, p. 22.

⁸ *Report ITU-R M.2134: Requirements related to technical performance for IMT-Advanced radio interface(s)*, 2008, p. 5.

⁹ *HSPA to LTE-Advanced*, *supra* note 2, p. 94 and p. 98.

http://www.rysavy.com/Articles/2009_09_3G_Americas_RysavyResearch_HSPA-LTE_Advanced.pdf

See also *Report ITU-R M.2134*, *supra* note 8.

14. Restricting a licensee such as Inukshuk from harnessing an adequate amount of wideband contiguous blocks of BRS spectrum will impair its ability to deliver the network performance and user experience that are necessary to satisfy existing demand and to further stimulate mobile data adoption and usage.
15. The imperative of licensing relatively wide contiguous blocks of spectrum is underscored in an environment where globally harmonized mobile spectrum is scarce. Wider channels will drive greater spectral efficiency¹⁰, and will allow scarce mobile spectrum to be used as efficiently as possible, thereby maximizing the economic and social benefits that can be derived from the spectrum.¹¹

Proposal to harmonize with ITU band plan

16. Inukshuk fully supports the Department's proposal to harmonize with the international band plan which is based on Report ITU-R M.1036, Frequency Arrangement C1.
17. The international band plan has been widely adopted which means that the use of the Band will be virtually global in nature. This will mean that consumer devices will have truly global roaming capabilities. Because of its size, this band is also poised to be one of the key bands in the development of 4G technologies such as LTE. Spectrum managers in several countries have already licensed, or are in the process of licensing, the Band for this purpose, on the basis of the international band plan.¹²

¹⁰ *Spectrum Shortfall Consequences*, Rysavy Research, April 21, 2010, p. 10.

¹¹ See e.g. *The Benefit of the Wireless Telecommunications Industry to the Canadian Economy*, OVUM, April 2010, pp. 24-29 and *The Future Deployment of Mobile Broadband Services – 2.5 GHz in Australia*, Network Strategies, June 15, 2010, pp. 47-55.

¹² For example, Denmark, Finland, Germany, Hong Kong, Netherlands, Norway, Singapore and Sweden have already licensed the 2500 MHz band for BRS. Austria, Brazil, France, South Africa and the U.K. are in the process of licensing the band.

18. Harmonization of the Canadian band plan with the globally adopted band plan will be essential if Canadians are to benefit from the global ecosystem for wireless network technology and consumer devices that are already developing for the Band. Globally harmonized network technology and consumer devices will provide Canadian service providers and consumers with the broadest array of alternatives, the most advanced features and the lowest cost..
19. On the other hand, harmonization with the U.S. band plan will not generate any of these benefits. While the U.S. and ITU band plans might resemble each other at a very high level, the starting frequency, block sizes, duplex spacing, pairing and guard bands associated with the U.S. band plan are different than those in the international band plan. We would note that these are not trivial differences.
20. Simply put, the U.S. band plan is out of step with global developments. It was built out of a series of compromises in 2002 which are no longer relevant since equipment has evolved towards global markets. While Inukshuk would agree that, historically, Canada has harmonized with U.S. band plans (and for good reason), we strongly believe that, in this case, this would be a grave mistake. We believe that the U.S. will likely migrate towards the globally adopted band plan. Otherwise, it will risk being left behind as other countries deploy mobile broadband services on the basis of a globally harmonized band plan, and with the benefit of industry standardized mobile broadband network technology and consumer devices.
21. In any event, most of the BRS spectrum in the U.S. is controlled by one entity (Clearwire) which has about 120 MHz in approximately 100 major metropolitan areas and it therefore has the ability to *de facto* control the extent to which services are implemented in conformity with the U.S. band

plan, or with some other prevailing band plan. In fact, a recent public disclosure by Clearwire strongly suggests that it will harmonize its use of the Band with the international band plan in order to take advantage of economies of scale and the robust device and application ecosystem that is developing for the Band internationally.¹³

22. For these reasons, the overwhelming view of the stakeholders within the Stakeholder Proposal Development (“SPD”) process in 2009 was that the new Canadian band plan should not be harmonized with the U.S. band plan. The consensus was that the Department should harmonize the band plan with the band plan recommended in Report ITU-R M.1036.¹⁴ Inukshuk strongly supports this position.

Whether TDD systems should be permitted to operate in the FDD portion of the band plan and under what conditions

23. Inukshuk believes that the Department should not permit the operation of TDD systems in the FDD portion of the band plan, except in certain circumstances. The ongoing operation of TDD systems in the FDD portion of the band will require the use of additional guard bands to avoid harmful interference against FDD systems and it will reduce the amount of useable spectrum with which to provide mobile broadband services. By definition, this would not be an efficient use of this globally harmonized spectrum. For these reasons, no new TDD systems should be permitted to operate in the FDD portion of the band.

24. However, the ongoing operation of incumbent TDD systems in the FDD portion of the band should be permitted on a transitional basis. As discussed

¹³ *Clearwire Announces New 4G LTE Technology Trials Expected to Yield Unmatched Wireless Speeds in the U.S.*, August 4, 2010. <http://newsroom.clearwire.com/phoenix.zhtml?c=214419&p=irol-newsArticle&ID=1456462&highlight=>

¹⁴ *Stakeholder Proposal Development: Incumbents’ Views on the 2500-2690 MHz Band Plan for Broadband Radio Service (BRS)*, October 2009, p. 2.

below, incumbents will require time to migrate their extensive systems to the new band plan and this will mean that flexibility will be required until these migrations are completed. Unless and until other BRS licensees require access to the spectrum in question, incumbent operators should not be required to undertake the cost of migrating their systems to another part of the band. This would be consistent with the longstanding approach taken by the Department with respect to the transition of incumbent systems on a “where necessary” basis. The Department could require an incumbent operator to implement a 5 MHz guard band in cases where its TDD system will cause harmful interference to a new FDD system in the same area. This would allow the two systems to co-exist until the incumbent operator has completed its migration.

25. Similar flexibility will be required in the case of very remote TDD systems that are unlikely to affect any other operators. For example, SSI Micro operates TDD systems in the far north and it is doubtful that these TDD systems will have any adverse impact on future FDD operators, except where such new FDD systems are deployed in the same remote areas. The Department should permit SSI Micro to continue to operate its TDD systems in the FDD portion of the band, until new FDD systems are licensed in the same area.

Whether guard bands should be reserved by IC or form part of the unpaired TDD block

26. Inukshuk fully supports the creation of two 5 MHz guard band blocks at 2570-2575 MHz and 2615-2620 MHz. The use of this spectrum for guard bands is required so that TDD and FDD systems can co-exist in the band and so that BRS licensees will be able to provide services that are of high quality and reliable. The importance of 5 MHz guard bands is reflected in a 2008 European Commission decision, which states the following in this regard:

*To achieve compatibility a separation of 5 MHz is needed between the edges of spectrum blocks used for unrestricted TDD (time division duplex) and FDD operation (frequency division duplex) or in the case of two unsynchronized networks operating in TDD mode.*¹⁵

27. Absent the use of 5 MHz guard bands, TDD systems will likely interfere with and overwhelm FDD base stations and consumer devices operating in the same area. As noted in greater detail below, this interference will translate into a diminished quality of service and lower data speeds for Canadian consumers. It is for these reasons that the use of two 5 MHz guard bands to avoid harmful interference between TDD and FDD systems was also provided for in the recent licensing of the Band in several European countries.¹⁶

28. Inukshuk also fully supports the Department's proposal to source the two guard bands from the TDD portion of the band, and we note that this would be consistent with a 2007 ITU recommendation and a 2005 European Conference of Postal and Telecommunications Administrations ("CEPT") decision regarding the Band.¹⁷

29. Inukshuk does not support the notion that these guard band blocks should be reserved by the Department. This spectrum should form part of the unpaired block and should be used by TDD operators to avoid interfering with FDD base stations and consumer devices. The use of this spectrum for any purpose other than to prevent harmful interference between licensed TDD and FDD systems would be counter productive to the objective of licensing the Band for advanced new mobile broadband services.

¹⁵ *European Commission Decision on the harmonization of the 2 500- 2 690 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community*, June 13, 2008, par. 8.

¹⁶ Including Austria, Denmark, Finland, Netherlands, Sweden and U.K. See *Fixed or Flexible? A Survey of 2.6 GHz Spectrum Awards*, dot.econ, June 2010, p. 9. <http://www.dotecon.com/publications/dp1001.pdf>

¹⁷ See *CEPT Electronic Communications Committee (ECC) Decision of 18 March 2005 on harmonised utilisation of spectrum for IMT-2000/UMTS systems operating within the band 2500 – 2690 MHz*, (ECC/DEC/(05)05), p. 7 and *Recommendation ITU-R M.1036-3*, 2007, Table 3.

Whether the guard bands should be considered for future use by licence-exempt wireless systems

30. For the reasons outlined above, Inukshuk is opposed to the future use of the guard band blocks by licence-exempt systems. The use of this spectrum by licence-exempt systems will increase the likelihood that harmful interference will affect licensed BRS systems, and it will be counter productive to the objectives of licensing the Band. We note that the 2008 European Commission decision warns against the use of guard band spectrum for other purposes since such use would be “*subject to an increased risk of interference*”.¹⁸ This decision followed the release of a technical report which, among other things, concluded that “*a frequency separation of 5 MHz is needed between an FDD uplink block or unsynchronized TDD block with another TDD block*”.¹⁹ Inukshuk has undertaken its own technical analysis and has confirmed that 5 MHz guard bands will be required to mitigate harmful interference imposed by TDD systems on FDD systems.²⁰

31. The use of guard bands for the sole purpose of avoiding interference will be essential for the orderly rollout of reliable and high quality new mobile broadband services. If the two guard bands are not used solely to prevent harmful interference, the operation of licence-exempt systems, or any other systems, in the guard bands will result in a lower quality of service, more dropped calls and slower data speeds for the services provided by licensed BRS operators. This in turn will impede the further adoption of mobile broadband services and it will curtail the economic and social benefits that can be derived from the spectrum.

¹⁸ *Supra* note 15.

¹⁹ *CEPT Report 19 – Report from CEPT to the European Commission in response to the Mandate to develop least restrictive technical conditions for frequency bands addressed in the context of WAPECS*, CEPT ECC, December 2007, p. 41.

²⁰ Inukshuk has shared this technical analysis with the Department.

32. Any interference imposed by licence-exempt systems will also result in a less efficient use of licensed spectrum, since BRS operators will have no alternative other than to implement additional guard band blocks to protect their systems. We also believe that it will be virtually impossible, if not impractical, for BRS licensees, or the Department, to address interference issues with licence-exempt operators, given that their identities will be unknown to BRS licensees and the Department.

Spectrum Exchanges and Swaps

33. The Department has proposed the exchange of spectrum blocks on either a mandatory or voluntary basis so that incumbent MCS and MDS licensees will have paired spectrum blocks. Where the Department holds MCS or MDS spectrum, spectrum exchanges would be mandatory. Where both the MCS and MDS spectrum has been licensed, spectrum swaps between MCS and MDS licensees would be voluntary.

34. As noted in greater detail below, Inukshuk is opposed to the way Industry Canada is proposing to map incumbents in the new band plan. However, Inukshuk fully supports the principle of spectrum exchanges and swaps so that incumbent MCS and MDS licensees will have paired spectrum. Inukshuk supports mandatory exchanges where the Department holds MCS or MDS spectrum, and voluntary swaps where MCS and MDS operators are licensed in the same area. In the latter case, the parties should be permitted to agree to swapping arrangements within 3 months. If the parties cannot agree within this timeframe, then spectrum swaps should be mandated by the Department. Otherwise, the introduction of new services using paired spectrum may be delayed indefinitely.

35. The need for such spectrum exchanges and swaps highlights one of several deficiencies in the Department's 2006 policy titled *Policy Provisions for the*

Band 2500-2690 MHz to Facilitate Future Mobile Service (DGTP-002-006), dated March 30, 2006 (“the 2006 Policy”).

36. Specifically, the 2006 Policy did not provide that incumbents would be licensed with paired blocks of spectrum. It presented MCS and MDS licensees with the prospect of being stranded with only one of two paired blocks in the FDD portion of the band. Having only one of two paired blocks would make it impossible for licensees to implement FDD-based services. As evidenced in recent auctions of the Band in several other countries, there is significant interest in paired spectrum.²¹ This underscores the extent to which the 2006 Policy has been overtaken by technological developments and is therefore outdated.

37. While service providers around the world will be able to plan and implement advanced new technology and services using their licensed paired spectrum in the Band, incumbent Canadian MCS and MDS licensees, who have already invested hundreds of millions of dollars to develop the band, would be left with the uncertainty of whether they will be able to acquire any of the repatriated paired segment in the upcoming auction. Therefore, spectrum exchanges and swaps must be provided for in a new policy, so that incumbent licensees will not be precluded from implementing advanced new mobile broadband services using FDD technology.

38. It is clear therefore that a new and more up-to-date policy must be brought into force, incorporating spectrum exchanges and swaps, so that incumbent MCS and MDS licensees will have paired spectrum blocks that will allow them to plan for and implement new mobile broadband services. Otherwise, Canada will have missed the significant opportunity presented by the Band and it will undoubtedly fall behind the rest of the world in terms of mobile broadband deployment and adoption.

²¹ See *Fixed or Flexible?*, *supra* note 16, p. 26 and Annex 1.

Proposal To Map Incumbents Into The New Band Plan

39. Inukshuk has serious concerns with the extent to which the Department's proposals for mapping incumbents have been unnecessarily constrained by the 2006 Policy; a policy that has become outdated as a result of the considerable number of technology advancements and international developments that have taken place since that time. While the current consultation is intended to position Canada so that it can harness the benefits of an internationally harmonized band plan, proposals based on the outdated 2006 Policy are counter-productive to this objective.

40. As noted above, the 2006 Policy called for harmonization with the U.S. band plan and it failed to provide that incumbent operators would be licensed with paired spectrum. Another aspect of the 2006 Policy that has been overtaken by technological developments, and that makes it unreasonable, is that it dictated the specific sub-bands that must be returned to the Department by incumbent MCS and MDS licensees. Without having ever consulted with the industry on the appropriateness of doing so, the Department has specifically stipulated that MCS licensees must return the sub-band 2535-2568 MHz and MDS licensees must return the sub-band 2657-2690 MHz. As a further reward for their substantial investments in the band, incumbent MCS and MDS licensees will be required to accept spectrum from the TDD portion of the band, irrespective of whether they actually want it or require it to provide services and to satisfy their business plans.

41. In this regard, the 2006 Policy is completely out of step the approach taken in the U.S., where incumbent licensees were permitted to retain all of their licensed spectrum and were free to introduce advanced new mobile broadband services at any time. For example, as noted above, Clearwire has assembled about 120 MHz of BRS spectrum covering approximately 100

major metropolitan areas in the U.S. and has been able to introduce mobile broadband services at will, without the burden of having to return any spectrum to the Federal Communications Commission (FCC), much less spectrum that is required to deploy paired FDD technology and services.

42. By limiting the amount of paired spectrum that incumbent licensees may retain, and forcing them to retain unpaired spectrum, the 2006 Policy arbitrarily and unreasonably limits the amount of contiguous paired spectrum that incumbents will have. Further, there is a risk that the incumbents will not be able to successfully acquire an adequate amount of additional contiguous paired spectrum in the upcoming auction. In either case, incumbent licensees will be prevented from maximizing the spectral efficiency and data speeds that will be required to satisfy burgeoning demand for mobile broadband services.

43. Clearly, the 2006 Policy is no longer relevant in the current context, and the Department should be prepared to consider a more sensible approach to mapping incumbents in the new band plan.

Inukshuk's Mapping Proposals

44. In contrast to the Department's outdated 2006 Policy and subsequent proposals, Inukshuk's mapping proposals will harmonize Canada with the prevailing international band, recognize the substantial investments made by incumbent licensees, and reflect the importance of licensing adequate paired spectrum blocks with which to satisfy the surging demand for mobile broadband services that is expected to continue over the next several years.

45. It is also important to note that under these proposals the Department would repatriate more spectrum than it would under its current proposals. Finally, it would establish the conditions whereby prospective TDD operators will be

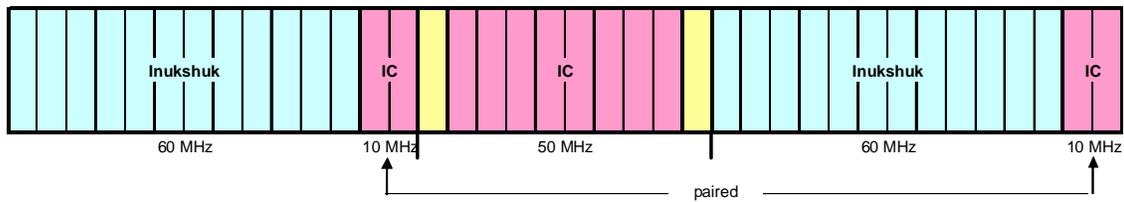
able to compete for the entire 50 MHz²² unpaired TDD segment of the band in all regions of Canada, in the upcoming auction. This would be a far more efficient use of TDD spectrum and would allow TDD operators to provide greater speeds than will be possible if the Department divides the TDD block between two operators.

46. It should also be noted that, over the past few years, Inukshuk has invested substantially in evolving its network and it took all of the technology and regulatory risks involved. Inukshuk also took further risks in acquiring the spectrum of Look Communications and Craig Wireless. Unlike other companies, Inukshuk took these risks as opposed to simply sitting back and waiting for the auction of BRS spectrum. The Industry Canada mapping proposals penalize companies, such as Inukshuk, that took the risk and made investments to provide Canadians with access to broadband services, including rural broadband services. Mapping proposals designed to penalize companies for being forward thinking may well deter them from making such investments in the future.

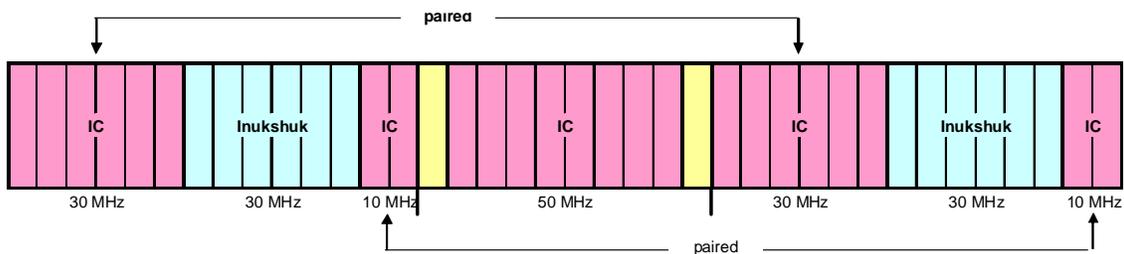
47. As the only incumbent MCS and MDS licensee that is national in scope, and that has made wide scale investments to develop the Band, Inukshuk believes that it should be permitted to determine the extent to which its licensed MCS and MDS spectrum will be exchanged for paired and unpaired spectrum. We propose the following plan for mapping Inukshuk into the new band plan:

²² This includes 40 MHz of useable spectrum and two 5 MHz guard bands.

Where Inukshuk holds MCS and MDS spectrum



Where Inukshuk holds only MCS or only MDS spectrum



48. As noted above, our proposed mapping would result in the Department repatriating and auctioning more BRS spectrum than under the Department's proposals. Specifically, where Inukshuk holds both MCS and MDS spectrum, the Department would repatriate 10+10 MHz of paired spectrum and 50 MHz of unpaired spectrum. Where Inukshuk holds only MCS or only MDS spectrum, the Department would repatriate a total of 80 MHz of paired spectrum and 50 MHz of unpaired spectrum.

49. We believe that this proposed mapping is also justified on the basis that it would provide Inukshuk with a reasonable opportunity to acquire additional paired spectrum in the upcoming auction. Under Inukshuk's proposal, it could acquire additional contiguous spectrum by bidding on the 30 MHz FDD block, or the 10 MHz FDD block. Inukshuk will require additional spectrum in order to satisfy future demand for mobile broadband services and to achieve larger spectral efficiencies, faster data speeds and more reliable service levels.

This in turn will drive greater adoption and more profound social and economic benefits than will be possible if the Department's proposals are adopted, since Inukshuk's proposals allow for the licensing very large contiguous blocks of spectrum in both the FDD and TDD portion of the Band.

50. In the event that the Department will not adopt Inukshuk's proposed mapping, and where Inukshuk holds only MCS or only MDS spectrum, we believe that the Department should either license Inukshuk with the entire TDD block or with an additional 10+10 MHz of FDD spectrum. This would ensure that the full 50 MHz of TDD spectrum will be licensed to a single operator in a given area and will result in the most efficient use of this block for the provision of mobile broadband services. Splitting the block between two operators will result in a less efficient use of the spectrum, slower data speeds and less reliable services. In short, splitting the block into smaller segments will squander the tremendous opportunity that is presented by this relatively large spectrum block.

Whether an additional guard band and technical rules should be mandated for co-existence of two TDD operators in the same geographic area

51. As stated above, incumbent MCS and MDS licensees should not be forced to accept spectrum from the TDD portion of the band but should be permitted to determine the extent to which their licensed MCS and MDS spectrum will be exchanged for paired and unpaired spectrum. In the event that the Department insists on forcing incumbent licensees to accept TDD spectrum, and where two incumbent licensees will be required to share the TDD block, Inukshuk recommends that the Department allow the parties to mutually agree upon arrangements to avoid interference. If the parties cannot agree, a third 5 MHz guard band and technical rules should be mandated by the Department. Given the potential complexity of synchronizing two TDD systems, the Department must not require the parties to agree to such synchronization arrangements.

52. In areas where there is only one incumbent licensee in the TDD block, Inukshuk recommends that the Department license 20 MHz of TDD spectrum plus a 5 MHz guard band to the incumbent licensee and 15 MHz of TDD spectrum plus two 5 MHz guard bands to any new licensee that acquires TDD spectrum in the same geographic area. The Department could define these provisions in the forthcoming auction framework policy for the auction of BRS spectrum.

Timing aspects related to physical migration to the new band plan and timing required for all spectrum swaps

53. As noted above, incumbent licensees may need to operate TDD systems in the FDD part of the band for some time. Inukshuk believes that incumbents should be displaced from their existing spectrum assignments only “where necessary” to accommodate new BRS systems by other licensees. Incumbents should be given a minimum period of 12 months starting from the issuance of a displacement notice by the Department. The Department should issue displacement notices after having reviewed and approved displacement requests from BRS licensees. Inukshuk notes that this would be consistent with the transition policy adopted by the Department for the Personal Communications Services (PCS) band²³ and the Advanced Wireless Services (AWS) band²⁴, although in the case of these bands the Department has provided a notification timeframe of either 12 or 24 months, depending on the geographic area in question.

54. Licensees should be provided with a period of 3 months to agree to spectrum swaps. If the parties cannot agree within this timeframe, the parties should

²³ *Displacement of Fixed Service Stations Operating in the 2 GHz Frequency Range to Accommodate Licensed Personal Communications Services (PCS)*, CPC-2-1-09, Issue 2, July 2008.

²⁴ *Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services*, DGTP-002-07, February 2007.

be required by the Department to swap spectrum blocks so that they can be licensed with paired spectrum blocks.

Conclusion

55. As outlined above, the licensing of the Band on the basis of the prevailing international band plan represents a significant and unique opportunity for Canada with respect to the deployment and adoption of advanced new mobile broadband services. As the only incumbent MCS and MDS licensee that is national in scope and that has made wide scale and significant investments to develop the Band, Inukshuk respectfully submits that the Department should take the following specific actions with respect to the Band.

- Harmonize the Canadian BRS band plan with the international band plan in the interest of global roaming and economies of scale.
- Restrict TDD systems to the TDD portion of the Band except where incumbents need to operate on a transitional basis. Displace any such systems only where necessary and given a reasonable period of time.
- Establish mandatory guard band blocks in the unpaired TDD segment of the Band to prevent harmful interference.
- Provide for spectrum exchanges and swaps to create paired spectrum assignments.
- Adopt Inukshuk's mapping proposals so that incumbents will have access to additional contiguous spectrum for future growth.
- Maintain and license the TDD segment as a single block so that it may be fully exploited in the most efficient manner.

56. Inukshuk appreciates this opportunity to share its views with the Department.

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