RADIO ADVISORY BOARD OF CANADA
CONSEIL CONSULTATIF CANADIEN DE LA RADIO

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(Submitted by email)

Subject: SRSP-521, Draft Issue 1

Dear Josette Gallant,

1.0 Introduction

1. In July 2023, Innovation, Science & Economic Development (ISED or the Department) requested that RABC review the draft first issue of Standard Radio System Plan (SRSP) - 521 – *Technical Requirements for Non-Competitive Local Licensed Services, including Fixed and/or Mobile Systems, and Flexible Use Broadband Systems, in the Band 3900 - 3980 MHz*. The Board assigned the review of the standard to its Advanced Wireless Services subcommittee. Interested stakeholders from the aviation community were also invited to participate as guests in the review.
2. There are three primary stakeholder groups with input into the proposed SRSP – aviation stakeholders, members with interest in Fixed Satellite Services (FSS), and members with interest in flexible-use Non-Competitive Local Licensed (NCL) operations. Each of these three groups' concerns is addressed below.

3. RABC, with reference to SPB-001-23 and other ISED policies, fully understands that the Department will decide on the technical characteristics and associated licensing policies of NCL based on the environment in which these systems may operate.

2.0 Aviation Stakeholders

4. In paragraph 46, ISED indicates that interference with radio altimeters is not expected. However, Transport Canada (TC) is concerned that the operational requirements in Table 1 will not preclude interference with aircraft. The current fleet of aircraft operating in Canada has a wide range of tolerances to fundamental emissions in the 3900 - 3980 MHz frequency range. While TC is discussing SRSP-521 with ISED, at this time TC cannot conclude that interference with radio altimeters is not expected. The absence of an elevation mask and exclusion zones around airports is a contributing factor, in addition to 10 of the 35 airports with protection zones in SRSP-520 being in rural/remote areas and thus subject to Medium Power deployment under SRSP-521. Transport Canada is considering requiring minimum standards of radio altimeter tolerance to emissions such as these, which would facilitate wider NCL deployment without creating a risk of interference. A difference in deployment requirements in the vicinity of the 35 airports with protection zones could also be considered, to ensure no interference is possible above the obstacle clearance surface at those airports within the deployment limits permitted by the rules (as opposed to typical deployments). Transport Canada will request additional discussions with ISED and provide separate comment directly to ISED, as required, by the 8 September deadline.

5. Prior to 1 January 2026, when SRSP-520 Issue 3 terminates certain spectrum mitigation measures, protection measures for radio altimeters should be put in place where required to prevent interference with the current fleet of aircraft, and not just the subset of more 5G tolerant aircraft which are not expected to encounter interference with the protection and exclusion zones in SRSP-520. Some examples of spectrum mitigation measures which could be considered are: protection and/or exclusion zones around all airports (not just those with protection zones under SRSP-520); indoor-only deployment near airports; reduced power limits near airports; or antenna height restrictions.

6. Should ISED implement higher power limits and antenna heights, as proposed by members with interest in flexible-use NCL operations, further mitigation measures may be required. The RABC is not opposed to including in SRSP-521, some of the mitigation measures described in SRSP-520. If ISED proposes to implement further mitigation measures to protect existing services including FSS, fixed, and Aeronautical Radio Navigation Service (radio altimeters), the RABC requests that ISED provide the RABC with further opportunity for comment.

3.0 Members with interest in flexible-use NCL operations

7. RABC members with interest in flexible-use NCL operations propose the increases in power and antenna heights described in this section. These proposals are based on both current deployments reflecting existing fixed wireless use cases in other portions of the 3 GHz band, and the anticipated requirements of new use cases such as enterprise campus networks and private networks supporting the automation of agriculture, manufacturing and mining. In addition, these members provide some observations regarding the proposed technical assumptions for coexistence analysis.

8. RABC members with interest in flexible-use NCL operations note that there are no alternative bands available to displaced WBS operators that are capable of providing the same degree of outdoor coverage as the 3 GHz band. The licence-exempt 5 GHz and 6 GHz bands and millimetre wave bands do not fully support the use cases outlined above due to their propagation characteristics and power limitations. The TVWS band does not support high capacity systems, and is not available for use in many parts of Canada.

9. ISED's proposed power limitations do not support outdoor deployments in licence area sizes proposed by ISED in areas that may have clutter or obstructions, for example areas with moderate to heavy tree cover.

10. As RSS-198 is for equipment certification (which should ensure unwanted transmitter emissions protect incumbent services) and SRSP-521 is for operational requirements (including the protection of incumbent services), RABC members with interest in flexible-use NCL operations believe that appropriate operational requirements such as power levels, antenna heights etc. can be defined in SRSP-521 while ensuring protection of incumbent

services. RABC members with interest in flexible-use NCL operations do not propose any changes to the proposed coexistence measures to protect FSS earth station operations described in section 9.1 of this SRSP-521, or to the unwanted transmitter emissions limits defined in the published RSS-198. RABC members with interest in flexible-use NCL operations would welcome the opportunity to discuss any additional mitigation measures required to protect fixed-satellite systems with satellite system operators.

11. These proposals by members with interest in flexible-use NCL operations are intended to support ISED's expected use cases described in SPB-001-23 at paragraph 40:

> *ISED expects that the use cases for NCL licensing would include, but not be limited to:*
>
> - *adding targeted capacity for fixed wireless access systems in rural, remote, and northern communities, including Indigenous communities*
> - *private broadband networks on enterprise campuses (e.g. universities/colleges, stadiums, shopping centres, office buildings)*
> - *private networks to support vertical industrial uses, including automation, in industries such as agriculture, manufacturing, and mining.*

12. These proposals by members with interest in flexible-use NCL operations are intended to meet ISED's expectation described in SPB-001-23 at paragraph 85:

> *Therefore, ISED expects that higher permissible power in the context of NCL licensing would still be significantly lower than the levels permitted in commercial mobile bands.*

3.1. Low Power E.I.R.P.

13. The equipment vendors with interest in flexible-use NCL operations note that the low power level of 14 dBm/MHz hinders spectrum users from benefiting from any type of outdoor base station consistent with industry standards.

14. The 3GPP standard for a medium range base station is defined with a conducted power of less than or equal to 38 dBm/carrier.[1]

15. The members with interest in flexible-use NCL operations propose that ISED permit an e.i.r.p. of 37 dBm/MHz for low power systems. This proposal is based on the 3GPP standard[2] for a medium range base station operating over a 10 MHz carrier (equivalent to 28 dBm/MHz conducted power) using an antenna with minimal gain (12 dBi), resulting in an e.i.r.p. of 40 dBm/MHz; 37 dBm/MHz is the maximum power permitted by RSS-198.

16. For comparison, RSS-192 allows an e.i.r.p. of 61 dBm/MHz for non-AAS systems and a TRP of 47 dBm/MHz for AAS systems (3900-3980 MHz systems are not expected to use AAS systems). The proposed e.i.r.p. limit of 37 dBm/MHz for non-AAS is 24 dB (250 times) lower than the e.i.r.p. permitted in commercial mobile bands. In the opinion of RABC members with interest in NCL operations, this represents a significantly lower power level as described by ISED in SPB-001-23.

17. The experience of users of fixed wireless networks in the 3 GHz band suggests that effective outdoor operations in urban and semi-urban environments can be achieved in many deployment scenarios with an e.i.r.p. of 37 dBm/MHz. A brief analysis of the station data in the 3650-3700 MHz band, which is primarily used for fixed wireless applications, suggests that approximately 90% of existing stations operate at levels below 37 dBm/MHz e.i.r.p., whereas there are no existing deployments with an e.i.r.p. below 14 dBm/MHz (0.025 W/MHz). New use cases, like outdoor industrial and public safety applications with broadband needs, will not be served by an e.i.r.p. limit below 37 dBm/MHz.

3.2. Medium Power E.I.R.P.

18. The proposed maximum e.i.r.p. of 37 dBm/MHz will result in loss of service and reduction in service quality for numerous rural consumers who are currently served by WBS networks. There is no band available for existing WBS users that will provide these rural consumers with their existing service levels. The proposed maximum e.i.r.p. of 37 dBm/MHz will also

[1] 3GPP Technical Standard 38.104, at Section 6.2.1. Note that 3900-3980 MHz falls within band n77 as defined in Table 5.2-1
[2] Ibid.

severely restrict the utility of the NCL band for new use cases, including private wireless networks in rural areas.

19. RABC members with interest in flexible-use NCL operations propose that ISED permit an e.i.r.p. of 48 dBm/MHz for medium power systems. While this exceeds the e.i.r.p. limit of RSS-198, these members note that ISED has previously permitted power levels in an SRSP that are higher than in the corresponding RSS. For example, RSS-197 describes an e.i.r.p. limit of 1 W/MHz, while the corresponding SRSP-303.65 permits e.i.r.p. of 60 W/MHz in low population areas. An e.i.r.p. limit of 48 dBm/MHz will permit continuity of service to rural consumers across Canada, and will support new rural use cases.

20. For comparison, SRSP-520 allows an e.i.r.p. of 61 dBm/MHz. The proposed e.i.r.p. limit of 48 dBm/MHz is 13 dB (20 times) lower than the e.i.r.p. permitted in commercial mobile bands. In the opinion of RABC members with interest in NCL operations, this represents a significantly lower power level as described by ISED in SPB-001-23.

21. The equipment vendors with interest in flexible-use NCL operations note that, while ISED has described e.i.r.p. limits for both active antenna systems (AAS) and non-active antenna systems (non-AAS), active antenna systems currently operate at a minimum e.i.r.p. of 57 dBm/MHz, and so cannot be used under the proposed e.i.r.p. limits for the NCL band. It is unlikely that AAS systems will become available at lower power levels in the near future.

22. ISED highlighted the objectives for allocating spectrum for NCL licensed use in the NCL decision (SPB-001-23). Part of those objectives included supporting the creation and expansion of wireless applications in industry verticals, such as agriculture, mining, manufacturing, healthcare, public safety, and transportation, as well as the development of 5G services by existing users, that can enable wireless broadband services in various regions across the country. ISED's proposed power levels will not support the rural use cases defined by the policy framework.

3.3. Maximum Antenna Heights

23. ISED has proposed maximum antenna heights of 10m above ground level for low power systems, and 30m above ground level for high power systems.

24. The members with interest in flexible-use NCL operations propose maximum antenna heights of 30m for low power systems and 175m for medium power systems.

25. A brief analysis of the station data in the 3650-3700 MHz band, which is primarily used for fixed wireless applications, shows approximately 2,000 stations with an antenna height between 30m and 50m above ground level. Operators normally position antennas as low as possible on a tower, while high enough to allow clearance over nearby obstacles and clutter. Many customers connected to these stations can be expected to lose service if the maximum antenna height is set at 30m. Approximately 90% of all WBS stations have antenna heights below 50m. Electricity Canada reports that, in the case of utilities, approximately 80% of the WBS stations have antenna height below 50m, and the remaining 20% have heights in excess of 50m up to in some cases up to 175m.

26. An antenna height restriction of 10m would severely restrict the utility of the NCL band in all areas, as well as in more rural areas that fall within metropolitan and urban Tier 5 service areas. An antenna height of 175m will allow for NCL systems to function in areas with high tree cover, urban and rural terrain, and street canyons.

3.4. Proposed modified Table 1

27. RABC members with interest in flexible-use NCL operations propose the following Table 1. These members also propose that ISED delete the proposed paragraphs 20 and 21 in the draft SRSP-521, since these paragraphs are redundant.

Type of Licence	**Maximum permissible e.i.r.p. (dBm/MHz)**	**Maximum antenna height above ground level (m)**	**Applicable area type**
Indoor	20	N/A	N/A
Low power outdoor	37	30	Metro, urban, rural, remote
Medium power outdoor	48	175	Rural, remote

3.5. General guidelines for the coexistence between NCL licensed systems

28. To maximize the use of the spectrum and reduce possible harmful interference conflicts between NCL licensed systems and other out of band systems, the NCL automated licensing

systems should allow users to provide and discover information on outdoor base stations, repeaters and fixed equipment locations, height, licence power level and antenna characteristics.

29. Members with interest in use of the NCL band expect that in the foreseeable future, 5G NR will be the key technology with an emerging equipment ecosystem compatible with this spectrum. To reduce interference between adjacent channels in the 3.5GHz range, GSMA recommends implementing TDD synchronization at national and international levels wherever possible. The recommended frame structure is optimized for download traffic.

30. Electricity Canada notes that new private wireless use cases for this spectrum (like industrial and public safety applications) have an uplink-heavy or balanced usage profile that differs from the download-heavy profile of wireless internet service providers (WISPs) and the competitive flexible use broadband systems operating in the 3800 MHz band. The different uplink/downlink balance of these two user groups will make it difficult for these users to co-ordinate successfully while making optimal use of the spectrum.

3.6. Technical Assumptions Coexistence Analysis

31. In paragraph 25, ISED proposed to use the technical assumption that base stations are distributed uniformly within the relevant NCL licence areas including at the licence area boundaries. In Table A1 ISED specifies that that base stations would be assumed to use an omnidirectional antenna pattern, or a sectoral pattern for medium power stations.

32. It would be impractical to place an omnidirectional base station at the edge of the licence area if it is anticipated that all subscriber devices would be located within the licence area. It is foreseeable that a licensee would place a sector antenna at the edge of a licence area, with the main beam of the sector pointing entirely within the licence area. It should not be anticipated that an operator would place an antenna at the edge of a licence area with either an omnidirectional antenna, or a directional antenna with any portion of the main beam directed outside of the licence area, since such an installation would contravene the rules and intent of the NCL licensing policy.

3.7. Editorial Suggestions

33. The following editorial suggestions have been proposed for clarity.

34. Paragraph 27:

> *In an effort to balance the need to maximize the use of the spectrum while avoiding potentially overly restrictive technical requirements, currently, the NCL ~~licensed~~ **licensing** system~~s~~ does not assess interference potential between adjacent channel NCL licensed systems. (…)*

35. Paragraph 34:

> *In addition, for the purposes of this SRSP, "non-transitioned" earth stations ~~which~~ **that** may continue to operate in the 3700-4200 MHz band **after the FSS transition deadline (March 31, 2025)** are defined as: (…)*

36. Paragraph 37:

> *An earth station is ~~not~~ **no longer** considered as non-transitioned if its corresponding satellite operates only in the 4000-4200 MHz band.*

37. Paragraph 40:

> *NCL licensees operating fixed or base stations in the 3900 MHz band are required to protect existing site-approved or generic FSS earth stations licensed to only operate in the 4000-4200 MHz band in all areas, as long as these earth stations meet the receiver filter parameters provided in Annex D. ~~Earth station licensed only operations in 4000-4200 MHz do not include non-transitioned earth stations (for which section 9.1.1 would apply).~~ **This section excludes non-transitioned earth stations licensed to operate in the 3700-4200 MHz band (for which section 9.1.1 would apply)**. Although the protection of these earth station operations will be taken into account in the NCL licensing system, in the event of interference conflicts, these earth stations are to be protected to an I/N threshold of -10 dB. Consequently, NCL licensees will be required to implement appropriate mitigation measures to meet such requirement.*

38. Paragraph 44 (addition of commas on last line):

> *Use of channels that include block A1 (3900-3910 MHz) are on a no-protection, no-interference basis with respect to flexible use services in the 3650-3900 MHz (3800 MHz) band. The NCL licensees shall not claim protection from, nor cause interference to existing, modified or new flexible use systems in the 3800 MHz band. In the event of interference conflicts to/from flexible use services in the 3800 MHz band, NCL licensed systems could be required to implement appropriate mitigation measures to resolve interference conflicts (e.g. TDD synchronization, lowering of transmitting power, etc.). Otherwise, the NCL system will need to shut down to resolve interference conflicts to, or accept interference from, the flexible use system.*

4.0 Members with interest in FSS services

4.1. Use of FSS systems in Canada

39. FSS is an important component of telecommunications infrastructure that provides various satellite-based communication services, including broadband internet, television broadcasting, data transmission, and telecommunication services. FSS satellites also play a crucial role in connecting remote and underserved areas, providing reliable communication links, and supporting various industries.

40. Scientists, governments and Indigenous nations use satellite data to make the best possible decisions to meet the needs of communities in the North and diversify the local economy while simultaneously preserving biodiversity.

41. Telecom Decision CRTC 2016-127 paragraph 1 notes that “Satellite services are available across Canada, but certain satellite services are particularly important in rural and remote communities that are not served by terrestrial transport networks. In fact, satellite services are often the only means of obtaining voice, Internet, and broadcasting services in many of these communities, referred to as satellite-dependent communities.”

42. Telecom Decision CRTC 2016-127 paragraph 2 also states that “Of interest in this decision are fixed satellite services (FSS), which provide transport (or backhaul) capabilities through

which a satellite in a geostationary orbit is linked to earth stations or other types of antennas (such as small direct-to-home satellite dishes) that are in fixed locations on the Earth's surface."

43. In the case of Canada, FSS satellite services are significant for several reasons:

a) **Connecting Remote and Northern Communities:** Canada is a vast country with many remote and sparsely populated areas, particularly in the northern regions. FSS satellites enable the provision of essential communication services, such as internet access and telephony, to these remote communities where traditional terrestrial infrastructure may be difficult or expensive to deploy.

b) **Emergency and Disaster Response:** FSS satellites can play a critical role in emergency and disaster situations by providing communication capabilities when terrestrial networks are damaged or unavailable. This is particularly important in a country as geographically diverse as Canada, where natural disasters like wildfires, earthquakes, and floods can disrupt traditional communication networks.

c) **Resource Development and Exploration:** Canada has significant natural resource extraction and exploration activities, including mining, oil and gas, and forestry, often taking place in remote locations. FSS satellite services enable efficient communication between remote work sites and central operations, facilitating data transfer, monitoring, and coordination.

d) **Indigenous Connectivity:** Many Indigenous communities in Canada are located in remote areas where traditional communication infrastructure may be lacking. FSS satellite services can help bridge the digital divide and provide these communities with access to educational, healthcare, and economic opportunities.

e) **Telemedicine and Healthcare:** FSS satellites enable telemedicine and telehealth services, allowing healthcare professionals to remotely diagnose and treat patients in underserved or remote regions. This is especially important in a country like Canada, where access to medical services can be challenging in certain areas.

f) **Broadcasting and Media:** FSS satellites are crucial for delivering television and radio broadcasting services to both urban and remote areas. They facilitate the

distribution of media content across the country, ensuring that Canadians have access to a diverse range of news, entertainment, and cultural programming.

g) **Agriculture and Environmental Monitoring:** FSS satellites can be used for precision agriculture and environmental monitoring, helping farmers manage their crops and land resources more efficiently. They also support environmental monitoring initiatives by providing data on land use, deforestation, climate change, and more.

h) **Business Connectivity:** FSS satellites enable reliable and high-speed communication for businesses operating in remote or underserved areas. This connectivity is essential for maintaining supply chains, conducting remote operations, and staying connected with clients and partners.

i) **FSS satellites play an important role in security of the country**: It allows for the secure transmission of data and information between different locations, and can be used to monitor activity in remote areas. In addition, satellite communication can be used to provide intelligence gathering capabilities, allowing for the collection of data from a variety of sources. Satellites provide a secure, encrypted signal which can be used for military operations.

44. In summary, FSS satellite services are important to Canada due to its vast and diverse geography, as well as its need to connect remote communities, support critical industries, and ensure communication resilience in emergency situations. These services contribute to economic development, social inclusion, security, and overall national connectivity. Furthermore, C-band has higher availability than other FSS frequency bands that it allows the continued use of existing installed equipment.

4.2. Concerns regarding proposal of NCL operators

45. RABC members with interest in FSS services raise the following concerns regarding any increase of the in-band power limit over that the limit proposed by ISED in Table 1 of the draft SRSP-521 provided to RABC for consultation.

46. In the RABC response to the RSS-198 consultation, members with interest in flexible-use NCL operation requested increases to the in-band power of NCL by over 200 times greater

than the values initially given by ISED in draft RSS-198 (issued May 1, 2023), in order to bring them in line with the devices operating in 3800 MHz.[3]

47. Now, in the RABC response to the consultation dealing with SRSP-521, the members with interest in flexible-use NCL operation request an increase of the in-band power respectively 13 (for the medium range) and 200 (for the lower range) times greater than the values initially defined by ISED in Table 1 of the SRSP-521 draft.[4]

48. RABC members with interest in FSS services note that the requested increase for the medium power in outdoor applications is higher than the level defined in the latest RSS-198 recently issued by ISED.

49. The justification given by members with interest in use of the NCL band for the power increase is to enable the transition of existing WBS deployments from 3650-3700 MHz to the NCL band, and to address the fixed wireless use cases stated by ISED in the policy decision[5] (SPB-001-23).

50. RABC members with interest in FSS services believe that the justification used to increase power in order to facilitate WBS transition in NCL Band is not appropriate especially when one notes paragraph 142 of the policy Decision SLPB-002-21:

> "ISED had made other bands available that could assist WBS operators to reach the 50/10 Mbps target, including existing licence-exempt or lightly licensed frequency bands with low regulatory barriers that could facilitate the delivery of applications similar to those in the current WBS band".

51. RABC members with interest in FSS services believe that the maximum permissible e.i.r.p. as provided in Table 1 of the SRSP-521 are consistent with the intended usage in NCL band that is expected to be localised with low power as per following policy statements/decisions:

[3] For reference, ISED proposed an e.i.r.p. limit of 37 dBm/MHz. The NCL group proposed an e.i.r.p. limit of 61 dBm/MHz, a difference of 24 dB or a ratio of 252.
[4] For reference, ISED proposed an e.i.r.p. limit of 14 dBm/MHz for low-power systems and the NCL group proposes an e.i.r.p. limit of 37 dBm/MHz, a difference of 23 dB or a ratio of 199.5. ISED proposed an e.i.r.p. limit of 37 dBm/MHz for medium-power systems and the NCL group proposes an e.i.r.p. limit of 48 dBm/MHz, a difference of 11 dB or a ratio of 12.6.
[5] Paragraph 40, SPB-001-23.

- "Specific values of the maximum permissible power levels for NCL licensing will be established through the development of relevant technical rules on a band-by-band basis." (Paragraph 350 decision SPB-001-23).
- "ISED views the development of a non-competitive local (NCL) licensing framework as a way to provide a broad range of users, including businesses and industry verticals, with the opportunity to acquire licences in localized areas across the country." (Paragraph 9 of decision SPB-001-23).
- "ISED will apply measures to NCL licensing processes to support local access and limit foreclosure to ensure that NCL licensing remains localized, such as small licence area sizes, lower power levels, fees, and expeditious deployment requirements sufficient to ensure local use and access." (Decision 6 in SPB-001-23).

52. RABC members with interest in FSS services believe that increasing the NCL in-band power will severely limit the deployment of the next-generation satellite users in the 4000-4200 MHz band due to potential adjacent band interference. The reason is that each new FSS facility will not be protected from the existing NCL licensees already deployed in the same area.

53. To ensure the protection of FSS earth stations, excessive in band and unwanted emissions levels can only protect earth stations when an appropriate exclusion zone is mandated.

54. As a result, RABC members with interest in FSS services request ISED keep unchanged the maximum permissible e.i.r.p. as provided in Table 1 of the SRSP.

55. Noting the application of NCL in 3900-3980 MHz to serve localized markets, an NCL operator could apply for multiple licences if the operator wishes to serve larger areas than provided in SPB-001-23 and SRSP-521.

4.3. References to other standards

56. RABC members with interest in FSS services believe technical standards are governed by corresponding policy decisions. It is therefore inappropriate to compare technical standards governed by different policy decisions, such as SRSP-303.65 (applicable to WBS licensees

and governed by decision SLPB-002-21) and SRSP-521 (applicable to NCL licensees and governed by SPB-001-23).

57. RABC members with interest in FSS services believe that it is not appropriate to compare SRSP-303.65 (applicable to WBS licensees) with SRSP-521 (applicable to NCL licensees) in any form. WBS and NCL licensees are governed by different standards (SRSP-303.65 vs SRSP-521), must comply with different policy decisions (SLPB-002-21 vs SPB-001-23) and must respect different coexistence requirements (also, it is not expected that current WBS operations in 3650-3700 MHz band operating under SRSP-303.65 to impact Radio Altimeters in contrast to devices operating in 3900-3980 MHz). Similarly, it is inappropriate to compare RSS-198 and SRSP-521 (applicable to NCL licensees) to RSS-192 and SRSP-520 (applicable to flexible use commercial licensees).

58. Noting the operation of NCL devices in metropolitan and rural areas where many FSS earth stations are also deployed, the members with interest in FSS services are concerned about the unwanted emissions from these devices into FSS earth stations in the adjacent bands – particularly given that the frequency separation with the FSS frequency band is only 20 MHz. As a result, to ensure the protection of FSS Earth stations, excessive in band and unwanted emissions level can only work when an appropriate exclusion zone is mandated.

4.4. Concerns regarding antenna heights

59. RABC members with interest in FSS services raise the following concerns regarding any increase of the antenna height provided in Table 1 of the current SRSP-521 draft.

60. These members understand that increasing the antenna height beyond the recommended values in the draft SRSP-521 will increase the in band and out of band interference into other services (including Fixed Services (FS), Radio Altimeter, and FSS) unless ISED develops an appropriate mechanism such as an exclusion zone to protect other services. NCL operators could secure multiple licences to increase the range if they wish so. As a result, FSS operators request ISED to reduce the height of the antennas in Table 1 of SRSP-521, if possible, in order to improve sharing and compatibility with incumbent services. This approach would also increase the number of localized NCL licences in a given area, serving likely a larger group of citizens.

61. RABC members with interest in FSS services are pleased that ISED has not increased the power limits of NCL equipment in the published issue 1 of RSS-198. However, these members trust that ISED would reduce the height of antennas from the values given in the draft SRSP-521 (Table 1) in order to improve sharing and compatibility with the incumbent operators (including FS and FSS) so that the integrity of their services could be preserved. Please see below our suggested changes in Table 1 of the SRSP-521:

Table 1: Technical and operational requirements for fixed and base stations using non-AAS or AAS

Type of licence	Outdoor		Applicable area type	Area size limit per licence (km^2)
	Maximum permissible e.i.r.p. (dBm/MHz)	Maximum antenna height above ground level (m)		
Low power	14	Less than 10	Metro, urban, rural, remote	Up to 15
Medium power	37	Less than 30	Rural, remote	Minimum 75, up to 165

4.5. Recommendations regarding coexistence rules

62. RABC members with interest in FSS services have the following recommendations regarding the interference-to-noise (I/N) threshold used for defining the coexistence rules in sections 9.1.1 and 9.1.2.

63. Comment re Paragraph 39 of SRSP-521:

> After March 31, 2025, NCL licensees operating fixed or base stations in the 3900-3980 MHz band are required to protect "non-transitioned" FSS earth stations operations in the 3700-4200 MHz band. Although the protection of these earth station operations will be taken into account in the NCL licensing system, in the event of interference conflicts, these earth stations are to be protected to an interference-to-noise (I/N) threshold of ~~-10~~ **-12** dB. Consequently, NCL licensees will be required to implement appropriate mitigation measures to meet such requirement.

64. Comment re Paragraph 40 of SRSP-521:

> NCL licensees operating fixed or base stations in the 3900 MHz band are required to protect existing site-approved or generic FSS earth stations licensed to only operate in the 4000-4200 MHz band in all areas, as long as these earth stations meet the receiver filter parameters provided in

> Annex D. Earth station operations in 4000-4200 MHz do not include non-transitioned earth stations (for which section 9.1.1 would apply). Although the protection of these earth station operations will be taken into account in the NCL licensing system, in the event of interference conflicts, these earth stations are to be protected to an I/N threshold of ~~-10~~ *-12* dB. Consequently, NCL licensees will be required to implement appropriate mitigation measures to meet such requirement.

65. Furthermore, RABC members with interest in FSS services noted that ISED considers an I/N of 0 dB in the automated NCL licensing system in order to facilitate coexistence between licensees operating on the same frequency block. These members recommend ISED implement also an I/N of -12 dB in the automated NCL licensing system (Annex A) in order to protect at the same time, the other services (in-band and in the adjacent bands).

66. All recommendations and concerns raised by RABC members with interest in FSS services have been expressed in order to protect the other services (in-band and in the adjacent band) and in particular the FSS operations. These members believe that all emissions coming from NCL band (such as fundamental, OOB and unwanted emissions) should be considered in the tool for ensuring the protection of the incumbent services.

67. Regardless of ISED's decision, NCL licensees in the 3900-3980 MHz must strictly protect the FSS earth stations in the 3700-4000 MHz and 4000-4200 MHz bands that remain entitled to protection to the same extent that auctioned flexible use licensees in 3700-3900 MHz will have to protect such stations under SRSP-520. Allowing higher NCL power levels and antenna heights will make it more challenging for NCLs meet the applicable protection levels, potentially increasing the separation distances required to protect FSS earth stations. By the same token, by increasing NCL power levels and antenna heights, compatibility between co-frequency NCLs in adjacent areas may become more challenging, especially when the maximum license areas remain unchanged. This will likely lead to fewer co-frequency NCLs that may have to be situated further away from protected FSS earth stations and from each other. FSS stakeholders would like to ask ISED to consider whether such a result would remain consistent with its vision for NCL licensing in this band.

4.6. Further editorial comments

68. RABC members with interest in FSS services have the further editorial comments.

69. Comment re **Paragraph 22** of SRSP-521 (proposed additional text is shown in blue):

> The maximum permissible e.i.r.p for all indoor base stations is limited to 20 dBm/MHz **when a minimum of 16 dB building attenuation is assumed** with no maximum antenna height limit.

70. Comment re **Paragraph 37** of SRSP-521:

> RABC members with interest in FSS services notes that the paragraph 37 of SRSP-521 is also contained in others SRSPs (303.65 and 520). Those members recommend ISED to keep paragraph 37 unchanged for ensuring consistency between the different SRSPs.
>
> An earth station is not considered as non-transitioned if its corresponding satellite operates only in the 4000-4200 MHz band.

5.0 Conclusion

71. The Board has now completed its review. We appreciate having had the opportunity to review the proposed standard.

Sincerely,

J. David Farnes
General Manager