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Spectrum Management and Telecommunications
Standard Radio System Plan

Technical Requirements for Land Mobile and Fixed Radio Services Operating in the Bands 406.1-430 MHz and 450-470 MHz

Canada

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Contents

Preface

Standard Radio System Plan SRSP-501, issue 6, *Technical Requirements for Land Mobile and Fixed Radio Services Operating in the Bands 406.1-430 MHz and 450-470 MHz*, replaces SRSP-501, issue 5, *Technical Requirements for Land Mobile and Fixed Radio Services Operating in the Bands 406.1-430 MHz and 450-470 MHz*, dated October 2004 (revised in December 2017).

The following are the main changes:

1. Removed mentions of the redeployment plan policy.
2. Added requirements for minimum spectrum efficiency.
3. Added requirements in relation to protection of the mobile satellite service (MSS), distress and safety systems, in the band 406-406.1 MHz.
4. Added provisions related to geographic separation between co-channel systems.
5. Other updates, including editorial changes and clarifications.

Issued under the authority of the Minister of Industry

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Wen Kwan
Director General
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1. Intent

1. This Standard Radio System Plan (SRSP) outlines the minimum technical requirements to ensure efficient spectrum utilization for land mobile and fixed point-to-point systems operating in the bands 406.1-430 MHz and 450-470 MHz.

2. General

2. This SRSP is intended to support the design of radio systems by specifying characteristics related only to efficient spectrum use. It is not to serve as a comprehensive guide for equipment design and/or selection.

3. Radio systems that conform to the requirements contained in this SRSP will take priority in licensing and coordination over non-standard systems proposed for operation in these frequency bands. However, the adoption of more spectrally efficient technologies is strongly encouraged. Alternative channelization approaches may be considered if they result in improved spectrum efficiency. Such systems would be granted authorization on a standard basis.

4. Even if a system complies with the requirements of this SRSP, Innovation, Science and Economic Development Canada (ISED) may still require adjustments to radio or auxiliary equipment at any radio stations or systems whenever harmful interference is caused to any radio station or system. According to the *Radiocommunication Act*, "harmful interference" refers to an adverse effect of electromagnetic energy from any emission, radiation or induction that:

(a) endangers the use or functioning of a safety-related radiocommunication system; or

(b) significantly degrades or obstructs, or repeatedly interrupts, the use or functioning of radio apparatus or radio-sensitive equipment.

5. Coordination between licensees may be required when interference occurs between systems. Such potential conflicts should be prevented or resolved through mutual arrangements between the affected parties following consultation and coordination. Licensees should consult ISED for the most up-to-date list of licensees in the area.

6. If parties are unable to resolve potential conflicts between radio systems, they should notify ISED. Following consultations with the involved parties, ISED will determine the necessary modifications and set a timeline for their implementation to address the conflict.

7. Guidelines for the operation of non-standard systems are outlined in Spectrum Utilization Policy SP Gen, *General Information Related to Spectrum Utilization and Radio Systems Policies*. New channel assignments operating in the bands 406.1-430 MHz and 450-470 MHz should follow the band allocations defined within this SRSP. Existing systems licensed as standard prior to the issuance of this SRSP may continue to operate as standard systems. New systems and expansion or replacement of existing systems using band allocations that differ from the standard allocations defined within this SRSP may be authorized as standard assignments on a case-by-case basis; however, this is at the discretion of the local ISED office and additional justification may be required.

8. Equipment used for land mobile or fixed systems operating in the bands 406.1-430 MHz and 450-470 MHz shall be certified in accordance with the current version of Radio Standard Specification RSS-119, *Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz*.

9. ISED reserves the right to limit protection to licensed radio receivers only to the extent of the bandwidth of the transmitters whose emissions they are licensed to receive. Licensees and/or applicants should use receiver selectivity characteristics or filters that improve the receiver's ability to reject harmful interference. See Guidelines GL-09, *Guidelines on External Filtering for Land Mobile Radio Systems*, for additional details.

10. Single frequency operation utilizing the base/repeater transmit frequency (known as talk around) beyond the service area of a paired frequency system may be permitted on a case by-case basis as an adjunct to the paired frequency system. Such operation may be permitted within the authorized service area at the discretion of the system operator and will be on a non-interference basis to the other users in the case of a service provider in the land mobile service.

11. Systems which employ a base station as an automatic repeater station shall transmit on frequencies identified as base transmit frequencies. Subscriber dispatcher stations (often referred to as control stations) operating through an automatic repeater station shall transmit on frequencies identified as mobile transmit frequencies.

12. One way communication systems are permitted. In bands indicated for single frequency use, one-way systems will be given the same priority as two-way systems.

13 Applications for new licences or amendments must include administrative, operational and technical information to ISED. Licence applications can be made on the Radio Licensing Services webpage under the section, *Apply for and manage radio licences*. For additional guidance, see Radio Standards Procedure RSP-101, *Licence Application Submission Procedure for Planned Radio Stations Below 960 MHz*. Upon request from ISED, applicants and licensees shall provide additional information of their radio systems, such as technical parameters.

3. Related documents

14. The current issues of the following documents are applicable and are available on the Spectrum management and telecommunications website.

CPC-2-0-03	*Radiocommunication and Broadcasting Antenna Systems*
CTFA	*Canadian Table of Frequency Allocations*
GCA	*General coordination agreement between Canada and the United States of America on the use of the radio frequency spectrum by terrestrial radiocommunication stations and earth stations*
GL-04	*Channel Loading Guidelines*

GL-09	*Guidelines on External Filtering for Land Mobile Radio Systems*
ITU-R Resolution 205	ITU-R Resolution **205 (REV.WRC-19)** – *Protection of systems operating in the mobile-satellite service in the frequency band 406-406.1 MHz*
RP-Gen	*General Spectrum Policy Principles and Other Information Related to Spectrum Utilization and Radio System Policies*
RP-003	*Policy Guidelines for Mobile Radio Trunked Systems*
RP-004	*Policy for the Licensing of Very Low Capacity Point to Point Links in the Band 30-890 MHz*
RP-013	*Spectrum Utilization Policy on the Use of Certain Public Correspondence Bands in Canada (GLMRS)*
RP-014	*Radio Systems Policy RP-003 and RP-005 relevant to the Level of Mobile Systems and also the Definition of a Cellular Mobile Radio Service as originally set out in October, 1982*
RSP-100	*Certification of Radio Apparatus and Broadcasting Equipment*
RSP-101	*Licence Application Submission Procedure for Planned Radio Stations Below 960 MHz*
RSS-Gen	*General Requirements for Compliance of Radio Apparatus*
RSS-102	*Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)*
RSS-119	*Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz*
RSS-210	*Licence-Exempt Radio Apparatus: Category I Equipment*
SP Gen	*General Information Related to Spectrum Utilization and Radio Systems Policies*
SP 30-896 MHz, Part I	*Spectrum Allocation and Utilization in Certain Bands in the Range 30.01 - 896 MHz*
SP 30-896 MHz, Part II	*Spectrum Utilization Policy for the Mobile, Broadcasting and Amateur Services in the Frequency Range 30-896 MHz*

SP 450 MHz	*Spectrum Utilization Policy for the Frequency Bands 450-451 MHz and 455-456 MHz and also Part of the 150 MHz Band Used in Support of Broadcasting Operations and the Frequency Band 409-410 MHz and 420-421 MHz Used by the Mobile Radio Service*
SP 462/467 MHz	*Spectrum Utilization Policy to Permit Licence-Exempt Devices in the Land Mobile Frequency Sub-bands 462/467 MHz*
TRAA	*Treaty Series 1962 No.15 — Coordination and Use of Radio Frequencies — Exchange of Notes between Canada and the United States of America* *Arrangement A − Arrangement between the Department of Transport and the Federal Communications Commission for the Exchange of Frequency Assignment Information and Engineering Comments on Proposed Assignments along the Canada-United States borders in certain bands above 30 Mc/s* *Arrangement E − Arrangement between the Department of Communications of Canada and the National Telecommunications and Information Administration and the Federal Communications Commission of the United States Concerning the Use of the 406.1 MHz to 430 MHz Band in Canada-United States Border Areas* *Statement of Intent of the Federal Communications Commission of the United States of America and the Department of Industry of Canada Related to the Sharing and Use of the Frequency Bands 454.6625-454.9875 MHz and 459.662-459.9875 MHz for Mobile and fixed Services along the United States-Canada Border*

CPC - Client procedures circular
CTFA - Canadian table of frequency allocations
GCA - General coordination agreement
GL - Guidelines
ITU-R - International Telecommunication Union Radiocommunication Sector
RP - Radio systems policy
RSP - Radio standards procedure
RSS - Radio standards specification
SP - Spectrum utilization policy
TRAA - Terrestrial Radiocommunication Agreements and Arrangements

4. International coordination

15. Usage of the frequency band 406.1-430 MHz in the border area is subject to the international agreement Arrangement E, *Arrangement between the Department of Communications of Canada and the National Telecommunications and Information Administration and the Federal Communications Commission of the United States Concerning the Use of the 406.1 MHz to 430 MHz Band in Canada-United States Border Areas*.

16. Usage of the frequency band 450-470 MHz in the border area is subject to the international agreement Arrangement A, *Arrangement between the Department of Transport and the Federal Communications Commission for the Exchange of Frequency Assignment Information and Engineering Comments on Proposed Assignments along the Canada-United States borders in certain bands above 30 mc/s* and the *Statement of Intent of the Federal Communications Commission of the United States of America and the Department of Industry of Canada Related to the Sharing and Use of the Frequency Bands 454.6625-454.9875 MHz and 459.6625-459.9875 MHz for Mobile and fixed Services along the United States-Canada Border*.

17. All channel usage in the Canada-United States border area will be assigned based on the technical and operational requirements and at the discretion of the regional office, depending on local requirements. Within the border area, there are distinct channel designations (i.e. primary, secondary, and shared) for each country, with corresponding conditions of use and protections, and with coordination requirements applied when cross-border interference may occur or shared spectrum is used.

18. Outside the border areas, there are no restrictions on either country. However, when a possibility exists that assignments outside the border areas may result in harmful interference to the radio services of the other country, a special coordination process may be initiated.

19. The international agreements are subject to change from time to time. Conditions may be added during the term of a licence if required to align with the provisions of international agreements between the Government of the United States and the Government of Canada.

5. Channelling plan

20. Frequency assignments shall be in accordance with the channeling plan outlined in this section, as detailed in figures A1 to A3 of annex A. The preferred type of usage is the paired frequency system (duplex) except for those sub-bands designated for single frequency use (simplex). The base station transmitting frequencies and corresponding mobile station transmitting frequencies are illustrated in the above cited figures.

21. For land mobile and fixed radio services, channels shall be spaced 25 kHz, 12.5 kHz or 6.25 kHz apart. Series A, B and C are the designated centre frequencies for the 406.1-430 MHz band. Series D, E and F are the designated centre frequencies for the 450-470 MHz band.

22. Channels will be assigned according to the required bandwidth of the system. Systems shall meet a spectrum efficiency requirement of at least one voice channel (or 9.6 kbps data rate for digitally modulated systems) in a 12.5 kHz channel spacing. Systems are encouraged, when possible, to meet a spectrum efficiency requirement of the equivalent of at least one voice channel in a 6.25 kHz channel spacing.

23. To improve spectrum efficiency, frequency reuse is required in systems or networks where many frequencies may be licensed to one licensee. Preference will be given to more spectrally efficient systems.

24. The centre frequencies of each series can be determined by the formulas below, where n is the channel number. Series A/D, B/E and C/F are designated for the channels of bandwidth 25 kHz, 12.5 kHz and 6.25 kHz respectively.

25. For 406.1 - 430 MHz:

$A_n = 406.1 + 0.01250 + (n–1) * (0.02500)$ MHz for $1 \leq n \leq 956$
$B_n = 406.1 + 0.01250 + (n–1) * (0.01250)$ MHz for $1 \leq n \leq 1912$
$C_n = 406.1 + 0.00625 + (n–1) * (0.00625)$ MHz for $1 \leq n \leq 3824$

26. For 450 - 470 MHz:

$D_n = 450.0 + 0.01250 + (n–1) * (0.02500)$ MHz for $1 \leq n \leq 800$
$E_n = 450.0 + 0.01250 + (n–1) * (0.01250)$ MHz for $1 \leq n \leq 1600$
$F_n = 450.0 + 0.00625 + (n–1) * (0.00625)$ MHz for $1 \leq n \leq 3200$

27. The frequency channels in tables 1 (series B and C) and 2 (series E and F) below are located at frequency block edges and are thus not part of any one frequency block designated for simplex or duplex operation. These channels will be considered last for assignment and any assignments on these channels will be made on a case-by-case basis at the discretion of ISED's regional offices with proper consideration for the impact on the adjoining frequency blocks.

Table 1: Frequency channels (series B and C) to be assigned last for 25 kHz backward compatibility

Band edge (MHz)	**409**	**410**	**414**	**415**	**419**	**420**	**421**	**425**	**426**
Series B	B232	B312	B632	B712	B1032	B1112	B1192	B1512	B1592
Series C	C464	C624	C1264	C1424	C2064	C2224	C2384	C3024	C3184

Table 2: Frequency channels (series E and F) to be assigned last for 25 kHz backward compatibility

Band edge (MHz)	**451**	**453.025**	**454**	**455.025**	**456**	**458.025**	**459**	**460.025**	**464.025**	**465.025**	**469.025**
Series E	E80	E242	E320	E402	E480	E642	E720	E802	E1122	E1202	E1522
Series F	F160	F484	F640	F804	F960	F1284	F1440	F1604	F2244	F2404	F3044

28. The band 406-406.1 MHz is dedicated to MSS for distress and safety applications in accordance with footnote **5.265** of the Canadian Table of Frequency Allocations. In order to facilitate the protection of these applications, in accordance with the International Telecommunication Union Resolution **205 (REV.WRC-19)**, channels in the frequency band 406.1-406.2 MHz may be assigned after all other channel assignments have been considered. In general, assignments may be made in this frequency band only if there are no other channels available in a given area.

5.1 Sub-allocation channelling plan for the bands 406.1-410 MHz and 420-430 MHz

29. A sub-allocation channelling plan is outlined below, including national sub-allocations. Frequency assignments will begin 12.5 kHz above the lower band edge for the 25 kHz and 12.5 kHz channel spacing plans, and 6.25 kHz from the lower band edge for the 6.25 kHz channel spacing plan. The detailed geographic availability and sub-allocation channelling plan for these bands are illustrated in figures A1 and A2.

30. Portions of the available spectrum in the bands 406.1-410 MHz and 420-430 MHz which are not specifically designated for particular purposes are assignable for appropriate uses on a regional or local consideration.

31. For simplex Block A, the band 406.1-409 MHz is sub-allocated for single frequency operation.

32. For duplex Block D, the band 421-425 MHz paired with 426-430 MHz are sub-allocated for two-frequency operation. The base station transmitting frequencies are in the band 421-425 MHz while the corresponding mobile station transmitting frequencies are in the band 426-430 MHz. The spacing between associated mobile and base station frequencies in the 421-425/426-430 MHz bands is normally 5 MHz.

33. On regional or local considerations, short spaced paired assignments may be made in the band 406.1-409 MHz (simplex Block A) to meet spectrum demands.

National frequency systems

34. The band 421.000-422.175 MHz paired with 426.000-427.175 MHz is sub-allocated for national land mobile radio systems. This will provide a total of 47 primary paired frequency channels of 25 kHz spacing, a total of 93 primary paired frequency channels of 12.5 kHz spacing or a total of 187 primary paired frequency channels of 6.25 kHz spacing which will be reserved for users with national requirements.

35. For simplex Block B, the band 425.500-426.000 MHz is sub-allocated for national land mobile radio systems for single frequency operation. This band will provide a total of 20 channels of 25 kHz spacing, a total of 39 primary frequency channels of 12.5 kHz spacing, or a total of 79 primary frequency channels of 6.25 kHz spacing which will be reserved for users with national requirements.

36. A national land mobile frequency assignment will be considered if the operational function satisfies the following requirements: operational necessity for the mobile and/or portable radio equipment to travel and be used on a regular basis, normally within all regions of the country AND operational necessity for the mobile and/or portable radio equipment to operate on the same frequency(s) at all operating locations or to provide response to unpredictable emergencies of national geographic scope and concerns.

Trunked mobile radio systems

37. A trunked mobile radio system is one in which the communications traffic may pass through any one of the "trunked groups of channels" selected automatically by the system. The bands 422.175-422.675 MHz and 427.175-427.675 MHz are sub-allocated for trunked radio systems employing up to five

channels per group with a 50 kHz spacing between channels of the same trunked group.

Conventional mobile radio systems

38. Assignments for conventional systems may be made from the available spectrum in a given area. In general, assignments will be made commencing at the upper end and working downward.

5.2 Sub-allocation channelling plan for the bands 409-410 MHz and 420-421 MHz

39. For duplex Block A, the band 409-410 MHz paired with 420-421 MHz is sub-allocated for two-frequency operation providing 40 primary paired frequency channels of 25 kHz spacing, 79 primary paired frequency channels of 12.5 kHz spacing, or 159 primary paired frequency channels of 6.25 kHz spacing depending on the geographical location. The base station transmitting frequencies are in the band 420-421 MHz while the corresponding mobile station transmitting frequencies are in the band 409-410 MHz. The spacing between associated mobile and base station frequencies in the 409-410/420-421 MHz bands is normally 11 MHz.

40. Duplex Block A, currently allocated for use by medium capacity mobile radiotelephone services, is additionally allocated to mobile radio dispatch services under Spectrum Utilization Policy SP 450 MHz, *Spectrum Utilization Policy for the Frequency Bands 450-451 MHz and 455-456 MHz and also Part of the 150 MHz Band Used in Support of Broadcasting Operations and the Frequency Band 409-410 MHz and 420-421 MHz Used by the Mobile Radio Service*. Details on the application of the policy are provided in the policy itself and in Radio systems policy RP-013, *Spectrum Utilization Policy on the Use of Certain Public Correspondence Bands in Canada (GLMRS)*.

41. On regional or local considerations, duplex Block A may be assigned for trunked radio systems (see definition in section 5.1), based on a 100 kHz spacing between channels of the same trunked group.

5.3 Sub-allocation channelling plan for the bands 410-420 MHz and 450-470 MHz

42. For duplex Block C, the band 410-419 MHz is sub-allocated as outlined below and is illustrated in figure A1. The sub-band 410-414 MHz paired with 415-419 MHz is sub-allocated for two frequency mobile radio operations with the base station transmitting in the 410-414 MHz band and the mobile station transmitting in the 415-419 MHz band. The spacing between associated mobile and base stations is normally 5 MHz.

43. On regional or local considerations, frequencies in the sub-bands 413-414 MHz and 418-419 MHz may be assigned to single frequency operations.

44. For duplex Block B, the sub-band 414-415 MHz paired with 419-420 MHz is allocated on a primary basis to fixed systems. Mobile radio services may be assigned on a secondary basis as per section 5.4. The spacing between associated mobile and base stations is normally 5 MHz with the mobile station transmitting in the band 419-420 MHz.

45. The band 450-470 MHz is available to mobile radio services on a primary basis, except as indicated otherwise. The detailed sub-allocation plan for this band is illustrated in Figure A3.

46. For simplex Blocks C, D, E and F, the sub-bands 453.025-454 MHz, 458.025-459 MHz, 464.025-

465.025 MHz and 469.025-470 MHz are sub-allocated for single frequency operations, respectively.

47. For duplex Blocks E, F and G, the sub-bands 451-453.025 MHz paired with 456-458.025 MHz, 460.025-464.025 MHz paired with 465.025-469.025 MHz and 454.0-455.025 MHz paired with 459-460.025 MHz are sub-allocated for two-frequency operations, respectively. The spacing between associated mobile and base station frequencies is normally 5 MHz with the mobile station in the upper frequency sub-bands.

Utilization of the sub-bands 450-451 MHz and 455-456 MHz

48. The sub-bands 450-451 MHz and 455.025-456 MHz are allocated for land mobile services to support broadcast undertakings in accordance with the SP 450 MHz. These frequencies may be available for assignments to general land mobile services under the discretion of the regional office and in accordance with the current SRSP.

49. On regional or local considerations, land mobile services that operate with larger bandwidth to support broadcasting undertakings may be assigned, provided that radio equipment is certified, in accordance with RSP-101.

Railway frequency in the 452.9000-452.9500 MHz and 457.9000-457.9500 MHz bands

50. Although these bands are included in this SRSP, they are assigned to the railways and are not subject to the channelling plans prescribed in this SRSP. These bands are assigned by means of a spectrum licence to the Railway Association of Canada on an exclusive basis within the geographical area consisting of a corridor bounded 70 km on each side of railway lines.

51. Beyond this geographical area, railway frequencies may be available for assignment to land mobile services according to this SRSP and provided that the railway service is protected within the railway's geographical area of operation.

Frequencies designated for Family radio service (FRS) and General mobile radio service (GMRS) use

52. FRS, GMRS, and GMRS-M devices certified in accordance with RSS-210, *Licence-Exempt Radio Apparatus: Category I Equipment*, are allowed to operate on the frequencies listed in table 3. A moratorium on any further licensing of the frequencies, as shown in table 3, to new land mobile systems is in effect as referenced in SP 462/467 MHz, *Spectrum Utilization Policy to Permit Licence-Exempt Devices in the Land Mobile Frequency Sub-bands 462/467 MHz*.

Table 3 – Frequencies designated for FRS, GMRS and GMRS-M device use

Mobile channels with corresponding centre frequencies				Frequency (MHz) FRS/GMRS channel		Mobile channels with corresponding centre frequencies				Frequency (MHz) FRS/GMRS channel	
25 kHz	**12.5 kHz**	**6.25 kHz**	**Freq (MHz)**			**25 kHz**	**12.5 kHz**	**6.25 kHz**	**Freq (MHz)**		
		F2007	462.54375	462.55000 GMRS1 (shared with GMRS-M)				F2807	467.54375	467.5000 GMRS16	
	E1004	F2008	462.55				E1404	F2808	467.55		
		F2009	462.55625		462.56250 GMRS2 FRS1			F2809	467.55625		467.56250 FRS8
D501	E1005	F2010	462.5625			D701	E1405	F2810	467.5625		
		F2011	462.56875	462.57500 GMRS3				F2811	467.56875	467.57500 GMRS17	
	E1006	F2012	462.575				E1406	F2812	467.575		
		F2013	462.58125		462.58750 GMRS4 FRS2			F2813	467.58125		467.58750 FRS9
D502	E1007	F2014	462.5875			D702	E1407	F2814	467.5875		
		F2015	462.59375	462.60000 GMRS5				F2815	467.59375	467.6000 GMRS18	
	E1008	F2016	462.6				E1408	F2816	467.6		
		F2017	462.60625		462.61250 GMRS6 FRS3 (shared with GMRS-M)			F2817	467.60625		467.61250 FRS10
D503	E1009	F2018	462.6125			D703	E1409	F2818	467.6125		
		F2019	462.61875	462.62500 GMRS7				F2819	467.61875	467.62500 GMRS19	
	E1010	F2020	462.625				E1410	F2820	467.625		
		F2021	462.63125		462.63750 GMRS8 FRS4 (shared with GMRS-M)			F2821	467.63125		467.63750 FRS11
D504	E1011	F2022	462.6375			D704	E1411	F2822	467.6375		
		F2023	462.64375	462.65000 GMRS9				F2823	467.64375	467.65000 GMRS20	
	E1012	F2024	462.65				E1412	F2824	467.65		

		F2025	462.65625		462.66250 GMRS10 FRS5 (shared with GMRS-M)			F2825	467.65625		467.66250 FRS12
D505	E1013	F2026	462.6625			D705	E1413	F2826	467.6625		
		F2027	462.66875	462.67500 GMRS11				F2827	467.66875	467.67500 GMRS21	
	E1014	F2028	462.675				E1414	F2828	467.675		
		F2029	462.68125		462.68750 GMRS12 FRS6 (shared with GMRS-M)			F2829	467.68125		467.68750 FRS13
D506	E1015	F2030	462.6875			D706	E1415	F2830	467.6875		
		F2031	462.69375	462.70000 GMRS13				F2831	467.69375	467.70000 GMRS22	
	E1016	F2032	462.7				E1416	F2832	467.7		
		F2033	462.70625		462.71250 GMRS14 FRS7			F2833	467.70625		467.71250 FRS14
D507	E1017	F2034	462.7125			D707	E1417	F2834	467.7125		
		F2035	462.71875	462.72500 GMRS15				F2835	467.71875	467.72500 GMRS23	
	E1018	F2036	462.725				E1418	F2836	467.725		
		F2037	462.73125					F2837	467.7312		

5.4 Very low capacity fixed links in the 400 MHz band

53. The licensing of very low capacity fixed links in the bands below 890 MHz is governed by Radio Systems Policy RP-004, *Policy for the Licensing of Very Low Capacity Point to Point Links in the Band 30-890 MHz*. Fixed links will be assigned on a primary basis in the sub-bands 414-415 MHz and 419-420 MHz (duplex Block B, see section 5.3) and may be assigned on a secondary basis (no interference, no protection) with respect to land mobile services in the other sub-bands included in this SRSP, except as stipulated under the provisions of RP-013, *Spectrum Utilization Policy on the Use of Certain Public Correspondence Bands in Canada (GLMRS)*.

54. The maximum number of RF channels (frequencies) assignable will depend on the nature of the service and the geographic location of the proposed fixed system as described in RP-004.

55. Systems having up to 6 multiplexed voice channels and a total necessary bandwidth of not more than 90 kHz in each direction may be authorized in some areas at the discretion of the regional office, if spectrum is available.

56. Systems requiring more than 6 multiplexed voice channels and bandwidths in excess of 90 kHz in each direction are not normally assignable except on a special case basis.

57. Fixed system equipment with a necessary bandwidth greater than 16 kHz (greater than a voice channel) must be certified in accordance with the requirements of section 1.4 and appendix B of RSP-101.

6. Channel sharing and loading guidelines

58. This section outlines the technical criteria for channel sharing and channel loading guidelines.

6.1 Channel sharing

59. The assignment of a frequency or frequencies to a holder of a radio authorization does not confer a monopoly on the use of the frequency or frequencies, nor shall a radio authorization be construed as conferring any right of continued tenure in respect of the frequency or frequencies (see section 40 of the *Radiocommunication Regulations*).

6.2 Loading guidelines

60. ISED will apply the guidelines found in GL-04, *Channel Loading Guidelines*, in determining loading of communications channels, and thus, of radio channels.

61. In the frequency assignment process, these guidelines may be utilized in conjunction with current observed channel occupancy data (obtained with automatic occupancy measuring equipment) to determine whether additional channels are required. Such observations will also be used to assess the general loading criteria and the inherent trade-off between sound spectrum management and acceptable grades of service.

62. ISED is using this approach to make frequency assignments but may also take into account other considerations when assessing the number of radio channels to be assigned to a system. Applicants are encouraged to provide as much traffic related data as possible with their application.

7. Technical criteria

63. This section pertains to the technical requirements for establishing land mobile and fixed point-to-point systems.

7.1 Radiated power limits for land mobile systems

64. The maximum effective radiated power (ERP) shall be 125 watts for base stations. Furthermore, the ERP of both the base stations and mobile stations shall be limited to that which is necessary to providing a balanced radio system (mobile talk-back capability) over the desired service area or at the required level of service, as governed by system requirements.

7.2 Radiated power limits for fixed point-to-point systems

65. Unless otherwise justified, fixed point-to-point systems shall use directional antennas with a minimum gain of 9 dB with respect to a half-wave dipole. Horizontally polarized antennas shall be used in all cases unless operational requirements justify vertical polarization.

66. The maximum ERP shall be limited to that which is required to achieve system reliability requirements and shall not exceed 125 watts.

7.3 Geographic separation between co-channel systems

67. The geographic separation between co-channel base stations will be calculated based on a non-overlap of the 38 dBµV/m protected contour of the existing station and the 21 dBµV/m interference contour of the proposed station.

68. For public safety systems, a carrier to interference ratio (C/I) of 20 dB will be used to calculate the interference contour of the new station. The protected contour of the existing public safety base station will remain at 38 dBµV/m but the interference contour of the new station will be at 18 dBµV/m.

69. The protected contour of the existing station is calculated based on a probability of service of 50% of the time for 50% of the locations at the edge of the contour.

70. The interference contour is calculated using the probability that the interfering signal level used is not exceeded more than 10% of the time (in other words, 90% of the time it is below the threshold) for 50% of the locations.

71. It is recognized that coverage requirements are a function of operational characteristics and the technology deployed. ISED may accept the use of a different methodology to evaluate separation between co-channel base stations, on a case-by-case basis and at the discretion of

ISED's regional offices.

72. Applicants are invited to include adequate technical details in support of their proposed wireless networks to allow a compatibility analysis with existing and future assignments. These details should include, but are not limited to; the required service area, the predicted radio coverage, and the design parameters used, including the minimum C/I ratio. Analyses should be prepared using terrain based models.

Annex A — Frequency band plan

This annex contains the frequency band plan for land mobile and fixed service systems operating in the 406.1-430 MHz and 450-470 MHz bands.

Figure A1 — Plan for assignments of frequencies to land mobile and fixed service systems in the 406.1-421 MHz band

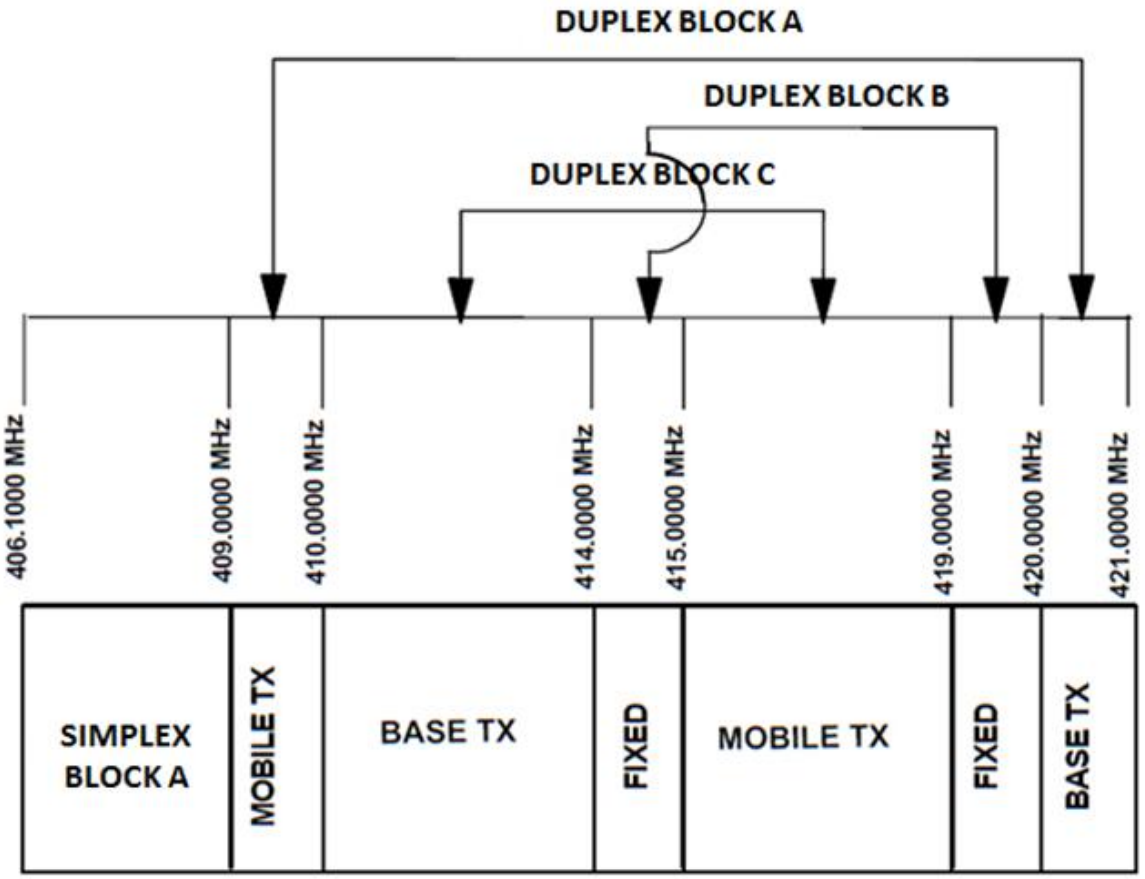

Figure A2 — Plan for assignments of frequencies to land mobile and fixed service systems in the 421-430 MHz band

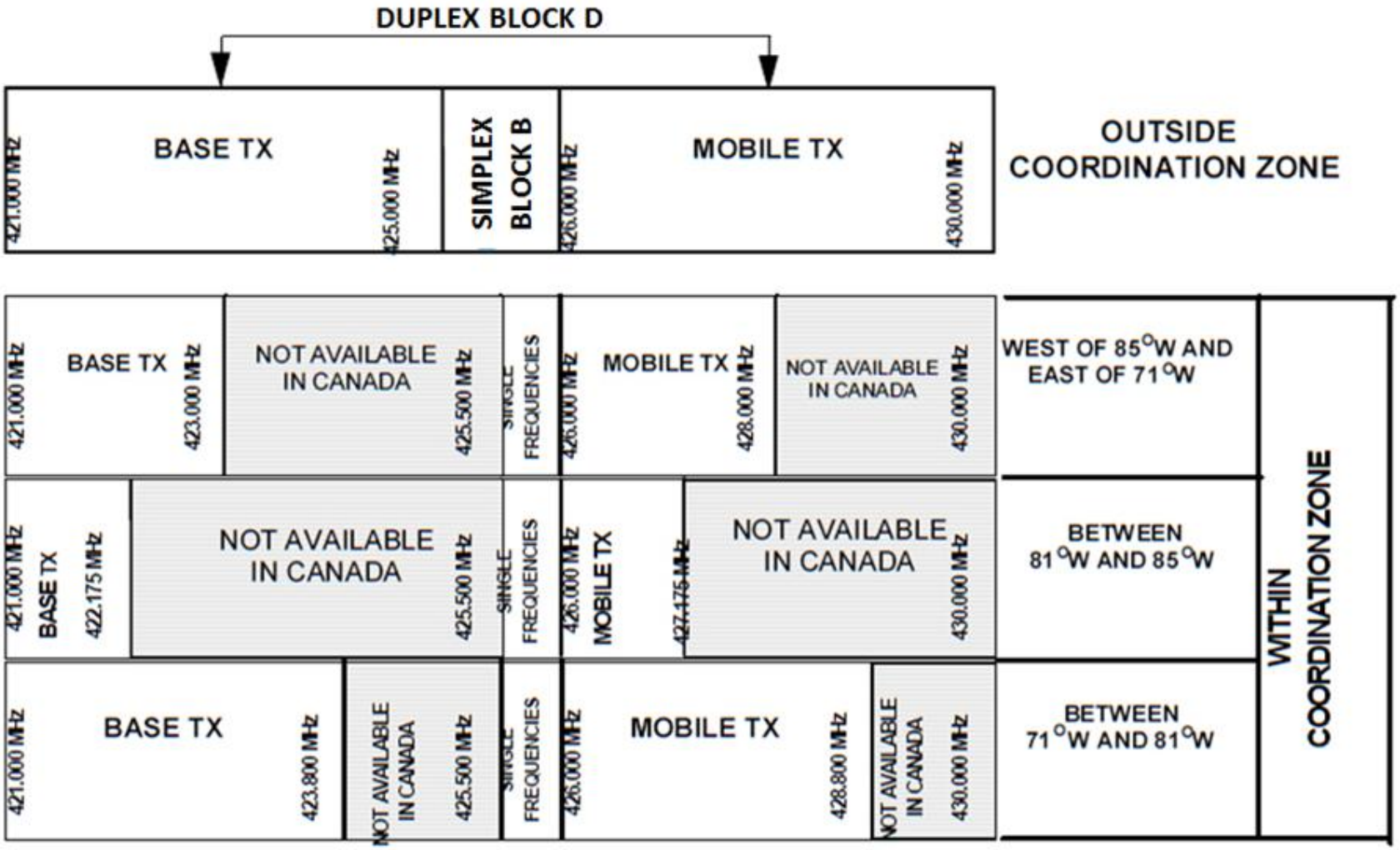

Figure A3 — Plan for assignments of frequencies to land mobile and fixed service systems in the 450-470 MHz band