Industry Canada

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Spectrum Management

Standard Radio System Plan

Technical Requirements for Narrowband Personal Communications Services in the Bands 901-902 MHz, 930-931 MHz and 940-941 MHz

Canada

Aussi disponible en français — PNRH-509

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1. Intent

1.1 This Standard Radio System Plan (SRSP) states the minimum technical requirements to operate narrowband personal communications services (PCS) for the purpose of efficient spectrum utilization in the bands 901-902 MHz, 930-931 MHz and 940-941 MHz.

1.2 Radio systems conforming to the requirements contained in this SRSP will take priority in licensing and coordination over non-standard systems.

1.3 The arrangements for non-standard systems are outlined in the Spectrum Policy SP-GEN (see 3.1.4).

2. General

2.1 Equipment used for narrowband PCS systems operating in the above bands must comply with the technical standard RSS-134.

2.2 Notwithstanding the fact that a system satisfies the requirements of this SRSP, the Department shall require adjustment to radio and auxiliary equipment in radio stations whenever harmful interference[1] is caused to any radio station operating in accordance with Departmental regulations or standards.

3. Related Documents

3.1 The current issues of the following documents are applicable:

3.1.1 **Radio Standards Procedure, RSP 100** - Radio Equipment Certification Procedure.

3.1.2 **Radio Standards Procedure, RSP 101** - Application Procedure for Planned Radio Stations Operating on Frequencies below 960 MHz.

[1] For the purpose of this SRSP, harmful interference means interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with regulations and technical requirements laid down by Industry Canada under the *Radiocommunication Act*.

3.1.3 **Radio Systems Policy, RP GEN** - Spectrum Policy Principles and Other Information Related to Spectrum Utilization and Radio Policies.

3.1.4 **Spectrum Utilization Policy, SP GEN** - General Information Related to Spectrum Utilization and Radio Systems Policies.

3.1.5 **Spectrum Utilization Policy, SP 896 MHz** - Spectrum Utilization Policy for the Fixed, Mobile, Radiolocation and Amateur Services in the Band 896-960 MHz.

3.1.6 **Canada Gazette Notice No. DGTP-007-94 -** Proposal for Implementation of Narrowband Personal Communications Services in the 900 MHz Range.

3.1.7 **Radio Standards Specifications, RSS 134 (Provisional)** - Narrowband PCS in the 900 MHz Band.

3.1.8 **Client Procedures Circular, CPC-2-0-03 -** Environmental Process, Radiofrequency Fields and Land-Use Consultation.

4. Band Plan

4.1 The frequency bands will be channelized as shown in Figures 1 to 4 to provide for fourteen channels of 50 kHz at 940-940.7 MHz paired with 50 kHz channels at 901-901.7 MHz; sixteen channels of 50 kHz at 930.2-931 MHz paired with 12.5 kHz channels at 901.7-901.9 MHz; ten channels of 50 kHz unpaired at 930-930.2 MHz and 940.7-941 MHz; and eight channels of 12.5 kHz unpaired at 901.9-902 MHz; for a total of 48 channels.

4.2 Except as provided for in paragraphs 4.3 and 4.4 below, in the border area (within approximately 120 km of the Canada/U.S. border) Canada and the U.S. each have the use of 24 channels on a primary basis as specified in Figure 2.

4.3 In the Toronto/Buffalo region, defined as the area within 120 km of the Canada/U.S. border and between 81 and 71 degrees West longitude, Canada has primary use of 29 channels as specified in Figure 3.

4.4 In the Detroit/Windsor region, defined as the area within 120 km of the Canada/U.S. border and between 85 and 81 degrees West longitude, Canada has primary use of 13 channels as specified in Figure 4.

4.5 It should be noted that the band 902-928 MHz, as stated in SP 896 MHz Section 3.4, is allocated to the radiolocation service on a primary basis in Canada. These radiolocation operations may take place along Canada's coastline including the coasts of Hudson Bay and James Bay and up the St. Lawrence River as far as Rimouski, Quebec. Marine radar in this band could have an effect on the adjacent narrowband PCS of 901-902 MHz.

4.6 Adjacent channel considerations should be taken into account when using the PCS bands 930-931 MHz and 940-941 MHz in order to avoid causing interference into systems operating in adjacent bands. Applicants planning to use these PCS bands should contact the local Industry Canada office prior to finalization of their sites for base stations.

5. Technical Criteria

5.1 Stations transmitting in the 901-902 MHz band and all mobile stations in the 930-931 MHz and 940-941 MHz bands are limited to 7 watts effective radiated power (ERP) (11.5 watts EIRP).

5.2 In major urban areas (see Annex 1), and any other areas determined by a Regional or District Office of the Department where there is intensive use of the 930-931 MHz and 940-941 MHz bands, base stations will be limited to 1600 watts ERP (2.6 kW EIRP) and an effective antenna height above average terrain (EHAAT) of 180 meters.

5.3 The effective height of the antenna above average terrain (EHAAT) is the average of the antenna heights above the average terrain (HAAT) for eight radials spaced every 45 degrees of azimuth starting with true north. The height of the antenna above average terrain (HAAT) is the height of the radiation centre of the antenna above the average elevation of the terrain between 3 to 16 km from the antenna.

5.4 A reduction in the above ERP is required for base station antenna heights in excess of 180 meters EHAAT as described in the table below. Notwithstanding the above, the ERP levels as specified in Section 5.2 may be maintained for the antenna main lobe provided that the ERP on the horizontal plane is reduced by the value given in the table below. This can be accomplished by such means as beam tilting.

Antenna height up to: (EHAAT) (meter)	180	210	240	270	300	360	400	>400
Power reduction: (dB)	0.0	2.9	4.1	5.1	6.0	7.6	8.5	9.0

5.5 In other areas of moderate spectrum usage (see Annex 1), or at any location outside those defined above in Section 5.2, the ERP may be up to a maximum of 2500 watts ERP (34 dBW) (4.1 kW EIRP).

Issued under the authority of the
Minister of Industry

R.W. McCaughern
Acting Director General
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Annex 1

Urban Areas of Intensive Spectrum Use

1.1 Areas of intensive spectrum use:

These areas are generally within 75 miles (120 km) of the centers of:

Item	Metropolitan Area
1.	Calgary, Alta.
2.	Edmonton, Alta.
3.	Hamilton, Ont.
4.	Kitchener, Ont.
5.	London, Ont.
6.	Toronto, Ont.
7.	Vancouver, B.C.
8.	Victoria, B.C.
9.	Windsor, Ont.
10.	Montreal, Que.
11.	Oshawa, Ont.
12.	St. Catherines/Niagara Falls, Ont.

1.2 Other areas:

These areas are generally within 75 miles (120 km) of the centers of:

1.	Chicoutimi-Jonquière, Que.
2.	Halifax, N.S.
3.	Ottawa-Hull, Ont., Que.
4.	Quebec, Que.
5.	Regina, Sask.
6.	Saint John, N.B.
7.	Saskatoon, Sask.
8.	St. John's, Nfld.
9.	Sherbrooke, Que.
10.	Sudbury, Ont.
11.	Thunder Bay, Ont.
12.	Winnipeg, Man.

Figure 1. Narrowband PCS Bandplan

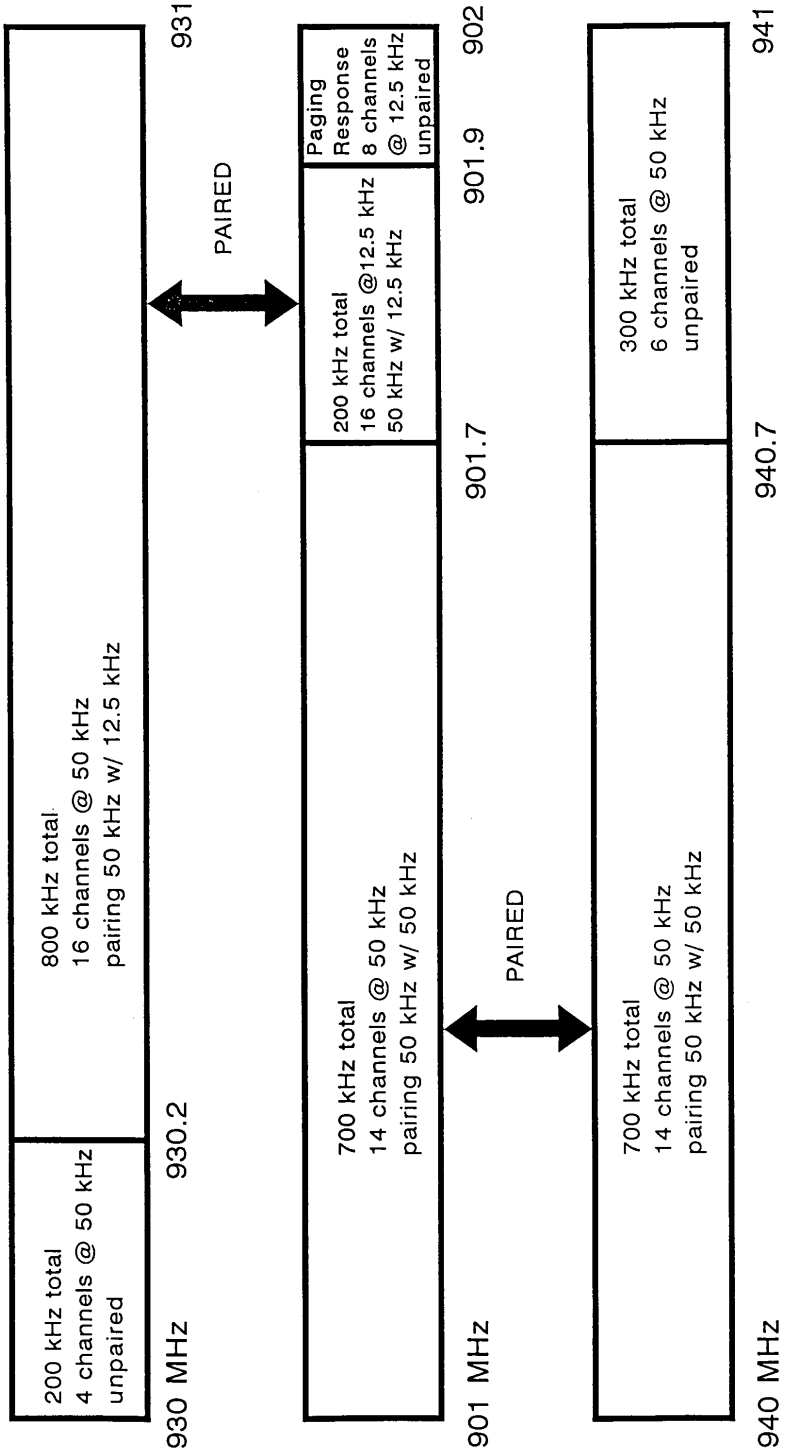
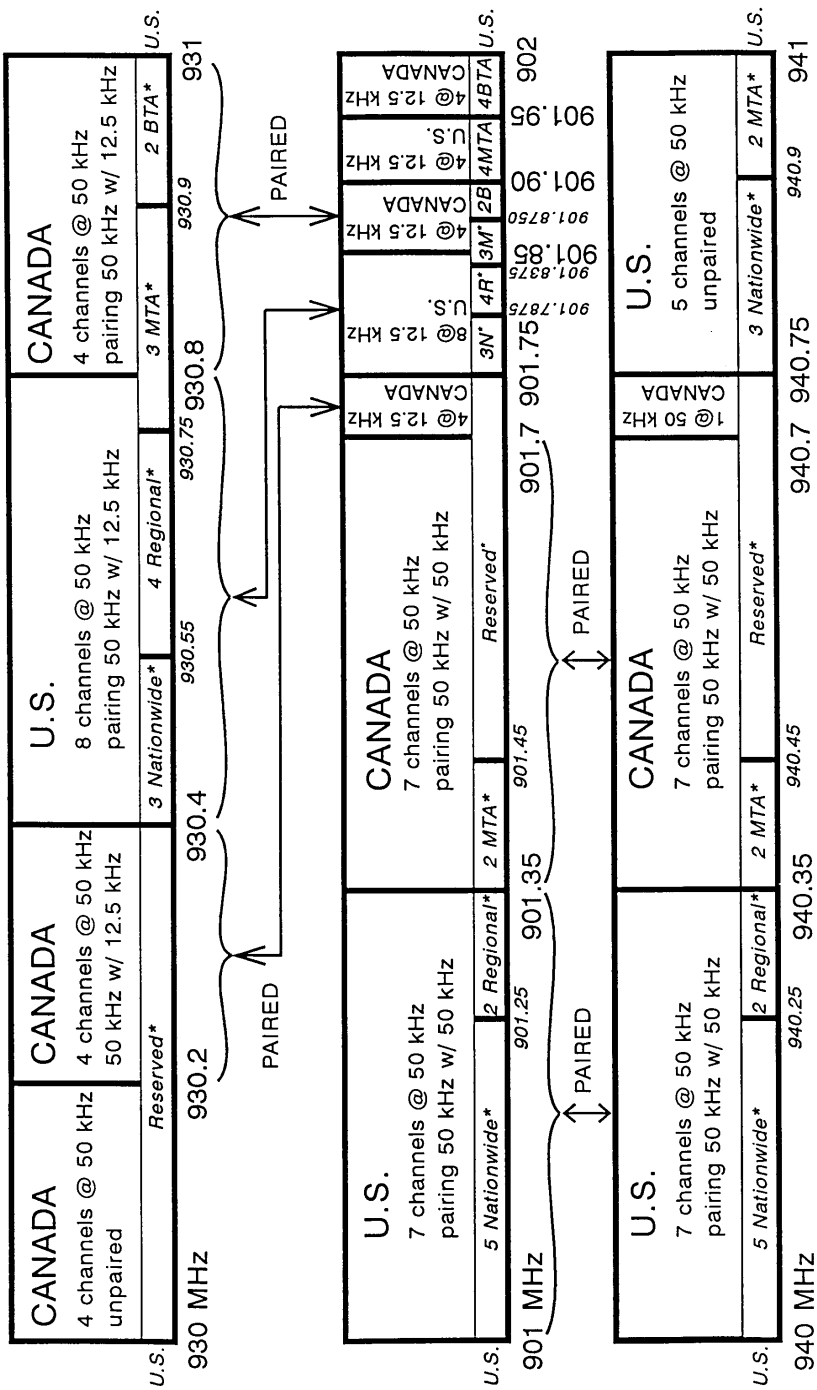


Figure 2. Narrowband PCS
General Canada/U.S. Channel Plan



**NOTE: *Nationwide (N), Regional (R), MTA (M) and BTA (B) refers to the U.S. channel plan*

Figure 3. Narrowband PCS
Channel Plan for Toronto/Buffalo Region

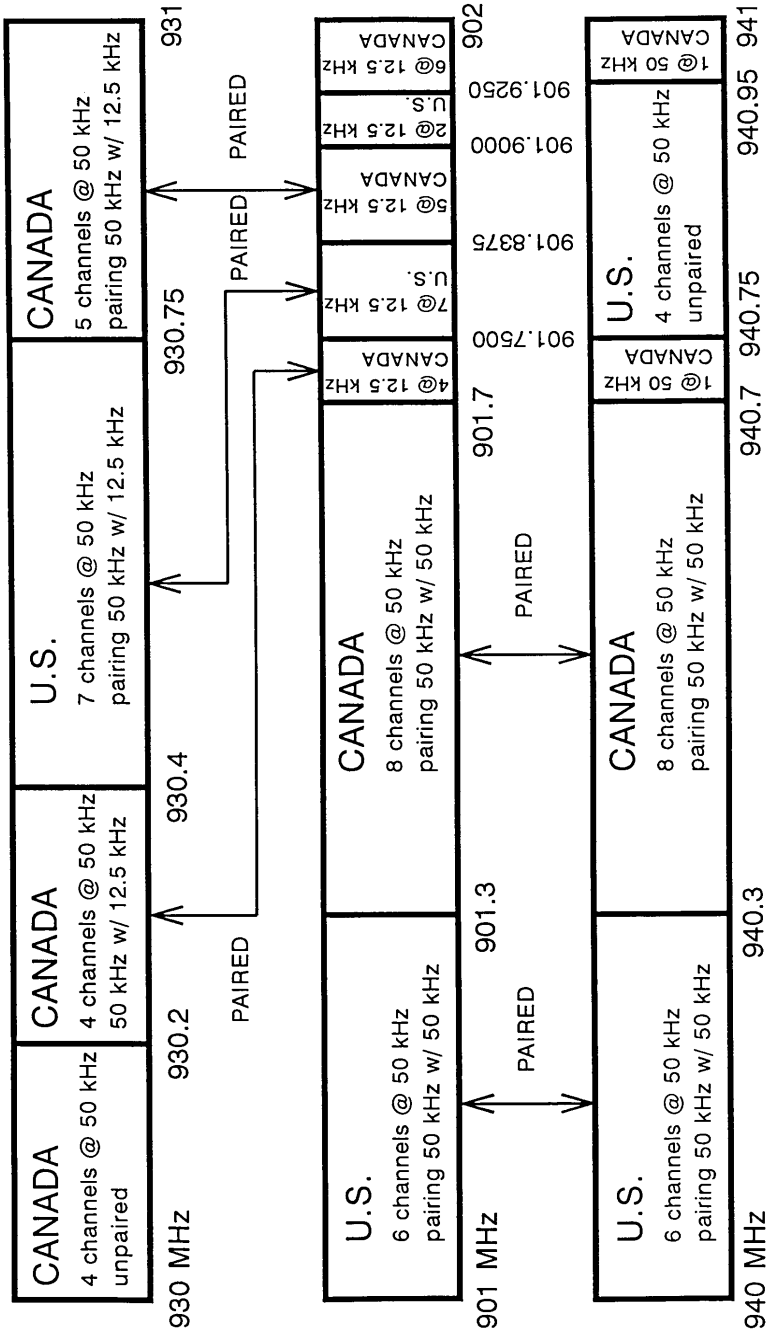


Figure 4. Narrowband PCS
Channel Plan for Detroit/Windsor Region