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Spectrum Management

Radio Systems Policy

Policy Guidelines for Mobile Radio Trunked Systems

See also

DGTP-009-95 Radio Systems Policies RP-003 and RP-005 Relevant to the Level of Usage of Mobile Systems and Also the Definition of a Cellular Mobile Radio Service as Originally Set Out in October, 1982

DGTP-004-95 Spectrum Utilization Policy for the Mobile, Broadcasting and Amateur Services in the Frequency Range 30-896 MHz, Part II (SP 30-896 MHz, Part II)

SMSE-001-05 Redeployment Plan (100-500 MHz) - Temporary Moratorium of Phase 2 Radio Equipment Certification and Licensing Requirements
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1. Intent

This document contains the radio systems policy guidelines for the authorization of all new mobile radio trunked¹ systems or refurbishment of any existing discrete channel mobile systems in any of the frequency bands between 30 and 960 MHz used for land mobile service.

2. Introduction

Gazette Notice DGTN 003-82/DGTR 009-82 entitled, "Proposed Policy for the Licensing of Mobile Radio Trunked Systems" was published for comment in the *Canada Gazette*, Part I on June 3, 1982. After review and analysis of comments, this policy was finalized as an Annex to the paper entitled "Implementation of the mobile service, including trunked radio systems, in the band 406.1-410 MHz, 420-430 MHz, 806-821 MHz and 851-866 MHz" and its public release was announced in the *Canada Gazette*, Part I on January 1, 1983.

3. Policy

3.1 Since trunked systems are expected to be spectrally more efficient (allowing a greater number of mobiles/channels to obtain service in comparison with conventional systems) and since they are expected to provide improved quality of service (e.g. reduced waiting time, privacy, no manual monitoring of channels required for access), operation of such systems will be encouraged in major urban areas and any other areas determined by a Regional Office of the Department where there is, or there is forecast to be, intensive mobile radio use of the bands. Generally, in areas within a circle radius 120 km around the indicated Census Metropolitan Areas (Vancouver, Victoria, Calgary, Edmonton, Windsor, London, Kitchener, Hamilton, Toronto, St. Catherines/Niagara Falls, Oshawa, Montreal), new mobile system applications **requiring more than three** channels for communication within the first three years of operation in any mobile frequency band between 30-960 MHz must use trunking as a condition of licence except as noted below.

Furthermore, in these metropolitan areas, for current licensees using more than three discrete channels to cover the same service area, trunking will be encouraged if major systems revision, such as replacement of equipment or integration of several discrete channel systems is proposed.

For systems with specialized requirements whose applicants can satisfy the Department that trunking would not be expected to increase spectrum utilization or for systems where applicants can satisfy the Department that trunking would not be appropriate for their usage, trunking will not be a condition of licence. Applications for such systems will be processed on a case by case basis.

In the areas of moderate mobile use (Saskatoon, Regina, Winnipeg, Thunder Bay, Sudbury, Ottawa-Hull, Quebec, Chicoutimi, Sherbrooke, Saint John, Halifax, St. John's), trunking of

¹ A trunked mobile radio is one in which the communications traffic may pass through any one of the "trunked group of channels" selected automatically by the system.

channels is encouraged in all mobile frequency bands between 30-960 MHz for systems requiring more than three channels but not made a condition of licence.

3.2 In addition to the standard application form, the applicant for a trunked radio system should provide the following information:

- (a) Justification for the need of the system, i.e. purpose and need for the system and any other information which would support need for the proposed system.
- (b) Systems description, including technical and operational details.
- (c) Number of channels required initially and a growth plan for the system in terms of expected number of channels, number of mobile or portable units to be served at the end of each year for a five year period after start of operation of the system.
- (d) Implementation plans for the proposed system in terms of expected dates for start and completion of construction.
- (e) Expected quality of service in terms of average waiting time or some other suitable parameter based on user traffic characteristics.
- (f) Information concerning existing systems authorized to the applicant in terms of number of channels, channel loading, area of operations.

Applications will be processed on a first-come-first-served basis depending on the availability of channels in the area for the proposed service.

3.3 For trunked systems, in all bands between 30-960 MHz, the minimum number of frequencies assigned will be four and the maximum number five. The system authorized are expected to be installed and in operation within one year from the date of granting of licence. The frequencies authorized should at least achieve a loading of 70% of the minimum loading criteria during the term of the licence (see Annex A for loading guidelines). In cases of non-compliance, appropriate corrective action will be taken by the Department.

In the 800 MHz band, additional trunked frequency pairs may be authorized to those licensees whose systems have achieved a loading of ninety percent or more of the loading criteria referred to above or to those licensees who can similarly justify additional channels.

3.4 In the 421-430 MHz band, only one system with a maximum of five duplex channels will be authorized to a licensee in a given area. Applicants anticipating eventual system growth to exceed five channels should plan their operations in the 806-890 MHz band.

3.5 Since the use of trunked systems is in its formative stages, the Department would greatly appreciate information regarding the actually realized spectrum efficiency and operational advantages of such systems. For this reason, the Department will require trunked system licensees to provide a brief annual report for the first licence term (five years) for all trunked radio systems licensed prior to April, 1984. This requirement may be waived by the regional director. This report would contain information on:

- number of subscribers served;

- user's reaction to system features, quality of service, additional cost in comparison with non-trunked systems;
- technical performance of the system;
- any changes in the original application submitted to the Department;
- other relevant technical and operational information which would help in orienting departmental policies and standards concerning trunked systems to the best advantage of the public and industry.

4. Supplementary Information

- Gazette Notice DGTR-022-82, DGTN-010-82 entitled, "Implementation of the Mobile Service, including trunked radio systems, in the bands 406.1-410 MHz, 420-430 MHz, 806-821 MHz, and 851-866 MHz".
- Provisional Standard Radio System Plan 501 (SRSP 501) entitled, "Technical Requirements for Land Mobile and Fixed Radio Services operating in the Bands 406.1-430 MHz and 450-470 MHz Issue 2.
- Provisional Standard Radio System Plan 502 (SRSP 502) entitled, "Technical Requirements for Land mobile and Fixed Radio Services Operating in the Bands 806-821 MHz, and 851-866 MHz, Issue 1".

5. Implementation

These policy guidelines are effective January 1, 1983.

Issued under the authority of
the Minister of Communications

V. Hill
Director General
Telecommunications Policy Branch

Annex A**Channel Sharing and Loading Guidelines**

In existing mobile bands, channels are usually assigned one at a time to users until no assignable channels remain (horizontal loading). Additional users are then added on a shared basis to lightly loaded channels. Vertical loading will be employed in the new mobile bands. Each new channel will be loaded to a prescribed minimum level and until this minimum is reached, new channels will not be assigned in that area. This requires that most channels will be shared from the outset. However, in continuance of past practice, public safety services (services involving safety of life and property) will not be required to share channels with users of other services and may generally employ lower levels of loading than other users.

Loading Guidelines for Trunked Radio Systems

The basic loading guidelines for trunked systems in the new 400 and 800 MHz bands follow:

User Category	Mobiles Per Channel
Safety Services	50
Other Applicants	90

