

Spectrum Management

Client Procedures Circular

Determinations of Harmful Interference with respect to Radio-Sensitive Equipment

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Principle

Both users of the radio frequency spectrum and users of radio-sensitive equipment (RSE) have a right to have a reasonable expectation that they may enjoy the use of their equipment. When those rights conflict, one requires a resolution process.

Mandate

Paragraph 5(1)(l) of the *Radiocommunication Act* (RA) states:

"... the Minister may ... make determinations as to the existence of harmful interference and issue orders to persons in possession or control of radio apparatus, interference-causing equipment or radio-sensitive equipment that the Minister determines to be responsible for the harmful interference to cease or modify operation of the apparatus or equipment until such time as it can be operated without causing or being affected by harmful interference;"

Definitions

"Radio-sensitive" equipment is defined in the *Radiocommunication Act* as:

"... any device, machinery or equipment, other than radio apparatus, the use or functioning of which is or can be adversely affected by radiocommunication emissions".

Section 2 of the *Radiocommunication Act* defines "harmful interference" as:

"... an adverse effect of electromagnetic energy from any emission, radiation or induction that

- (a) endangers the use or functioning of a safety-related radiocommunications system, or
- (b) significantly degrades or obstructs, or repeatedly interrupts, the use or functioning of radio apparatus or radio-sensitive equipment."

Table 1 describes three types of equipment. For the application of the values in that table, and *for only that table*, we have developed the following definitions:

"broadcasting receivers" means equipment for the reception of broadcast sound and television signals, e.g. stereo receivers/tuners, clock radios, televisions, etc.;

"associated equipment" means devices associated with broadcasting receivers, e.g. audio/video recorders and playback devices;

"radio-sensitive equipment" means all other non-radio electronic equipment, e.g. baby monitors, telephones, electric organs, home security systems, computers, guitar amplifiers, etc.

Background

Canadians' ever increasing demand for access to the radio frequency spectrum has led to elevated levels of radio frequency energy in urban areas. Those energy levels often cause radio-sensitive equipment to fail or malfunction.

There are two opposing views on the subject of radio-sensitive equipment. To the owner of this equipment, the problem exists only when a certain radio transmitter is used. Therefore, the onus for resolving the problem should lie with the owner/operator of the transmitter.

To the users of the radio transmitter, the problem exists only because the affected device was manufactured without adequate shielding. Furthermore, the radio users often have licences, issued by the Department, authorizing the use of their transmitters. In other cases, certain types of radio apparatus, such as General Radio Service or Citizen Band radios, are exempt from the licensing requirements of the *Radiocommunication Act*. Both categories of radio users believe that, as long as they operate in accordance with the terms and conditions of their licences or of their exemption from licensing, any electronic equipment, that is not designed to receive their transmissions, has no place responding to those transmissions.

One would expect that such opposing opinions are bound to conflict and they frequently do. The Department receives approximately 1400 complaints of this nature annually.

To assist departmental inspectors in making determinations of harmful interference, the Department has produced Electromagnetic Compatibility Advisory Bulletin 2 (EMCAB-2), *Criteria for Resolution of Immunity Complaints involving Fundamental Emissions of Radiocommunications Transmitters*. EMCAB-2 sets out field strength values (see Table 1 below), that may be used by inspectors to help to determine if a problem results from a radio transmitter's usage or from the consumer equipment's lack of immunity. The Minister's determination will be based upon the measured levels of radio frequency energy at the site concerned and upon whether they exceed the values shown in Table 1.

Table 1

Type of Equipment	Field Strength Criterion	
	dbuv/m	V/m
Broadcasting Receivers	125	1.83
Associated Equipment	125	1.83
Radio-Sensitive Equipment	130	3.16

Procedure

Areas of Responsibility

Since a consumer's use of equipment is closely linked to its operating environment, which is affected by nearby users of radio apparatus, it is unlikely that focussing on a single aspect of the issue will produce a solution. Effective resolution must be based upon cooperation between both parties.

Consumers, particularly in urban areas where radio frequency spectrum usage is high, should insist, through the marketplace, that manufacturers design consumer goods for this new radio frequency environment. Furthermore, consumers must ensure that their installation and use of such equipment is according to the manufacturer's specifications. Complainants, whose equipment does not meet the immunity levels described in Table 1, should either upgrade their equipment to those levels or otherwise render it immune to the local radio frequency environment if they expect to have conflict-free use of that equipment.

Radio users must accept the reality that high power radio transmitters, in urban areas, are likely to interfere with radio-sensitive devices. Having accepted this reality, urban radio users should consider methods of reducing the levels of radio frequency energy, to which they expose their neighbours' electronic items.

Role of the Complainant

There are a number of steps that complainants must follow before requesting that the Department make a determination of harmful interference.

The simplest solution often involves the complainant discussing the problem with the operator of the radio apparatus suspected of causing the interference. Many of these operators are quite knowledgeable in resolving such problems and will offer their services freely to assist complainants in improving the immunity of the affected equipment.

Complainants should also contact the manufacturer/importer/supplier of the affected

equipment for assistance in resolving the problem.

There are also self-help videos, multi-media packages and pamphlets available to aid complainants in identifying and resolving such problems.

Should complainants be unable or unwilling to employ the self-help tools, described above, they should contact a trained service technician to identify the source of the problem and assist in its resolution. Likewise, complainants, who have applied the information in the self-help guides and been unsuccessful in resolving the problem, should consult a trained service technician.

The Department will not respond to requests from the public to make a formal determination of harmful interference unless the complainants can demonstrate that they have explored all other possible avenues of resolving the problem.

If the complainant satisfies the Department that all possible solutions have been unsuccessfully explored, the Department will decide if a formal determination of harmful interference is required.

If a determination reveals that the measured field strength does not exceed the levels shown in Table 1 or if problems continue after the required changes have been made to the operating parameters of the transmitter, the onus will shift to the complainant to improve the immunity of the affected equipment.

Role of the Radio User

Radio users are encouraged to work with complainants in resolving problems without recourse to the Department. Failure by radio users to provide such cooperation may result in the Department imposing additional terms and conditions upon the users' authorization to operate the radio apparatus. Such terms and conditions may include, but are not limited to, limiting the users' radiated power, hours of operation or choice of operating frequencies. In extreme cases, it may result in suspension or revocation of the users' authorization.

If the Department decides that a determination of harmful interference is necessary and that the determination reveals that the measured field strength exceeds the levels shown in Table 1, the Department will require the operator of the transmitting station to reduce the station's radiated field strength, at the measurement point, to those levels. While the station operator will normally be left to decide how to reduce the field strength to the specified level, the Department may provide direction to the operator on how this should be achieved.

Role of the Department

One of the Department's roles is to maximize interference free access by Canadians to the radio frequency spectrum. At the same time, we must minimize the impact of radio frequency spectrum usage upon other Canadians.

The Department fully expects complainants and operators of transmitters to cooperate in resolving the radio-sensitive equipment problem themselves. Should one party or the other refuse to cooperate, we may either impose restrictions on the operators of the transmitters or advise the complainants that they must either improve the immunity of their equipment or accept the consequences of their inaction. In some instances, the Department may decide on a combination of the two options.

As a last resort, the Department may decide to make a determination of harmful interference. As indicated previously, this determination may result in the application of new terms and conditions upon the radio user's authority to operate the radio apparatus or in a notification to the complainant that the affected equipment is lacking in immunity to radio frequency energy.

Fees for Making Determinations of Harmful Interference

Where the Department has decided that it is necessary to make such a determination, the Department shall charge the party requesting the determination a fee of \$80 for this service. Payment may be made in cash, by cheque or credit card.