



Spectrum Management and Telecommunications

Radio Standards Specification

# **Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD)**

## Preface

Radio Standard Specification 287, Issue 3, *Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD)*, replaces RSS-287, Issue 2, dated March 2014.

Main changes are listed here:

- modified section 1 to add references for automatic identification system (AIS) and digital selective calling (DSC)
- added section 2.1, *Coming into force*
- modified section 2.3 to introduce the AIS and DSC frequencies
- removed section 2.3.5 *Transport Canada (Marine Safety) Documents* and replaced with section 3.2.3
- removed section 2.3.6 *National Search and Rescue Secretariat (NSS) Document* and moved the text to section 3.4.3
- modified sections 3, 4, and 6 to segregate the requirements by device type
- modified section 7.3 to include the DSC frequency
- made editorial changes and clarifications, as appropriate

Inquiries may be submitted by one of the following methods:

1. Online using the [General Inquiry](#) form. In the form, select the Directorate of Regulatory Standards radio button and specify “RSS-287” in the General Inquiry field.
2. By mail to the following address:  
  
Innovation, Science and Economic Development Canada  
Engineering, Planning and Standards Branch  
Attention: Regulatory Standards Directorate  
235 Queen Street  
Ottawa ON K1A 0H5  
Canada
3. By email to [consultationradiostandards-consultationnormesradio@ised-isde.gc.ca](mailto:consultationradiostandards-consultationnormesradio@ised-isde.gc.ca)

Comments and suggestions for improving this standard may be submitted online using the [Standard Change Request](#) form, or by mail or email to the above addresses.

All documents related to spectrum and telecommunications are available on ISED’s [Spectrum Management and Telecommunications](#) website.

Issued under the authority  
of the Minister of Innovation, Science and Industry

---

Martin Proulx  
Director General  
Engineering, Planning and Standards Branch

## Contents

1.	Scope .....	1
2.	General Information .....	2
2.1	Coming into force .....	2
2.2	Licensing Requirements .....	2
2.3	Transmitter Frequency Configurations .....	2
2.4	Applicable Standards and Related Documents .....	3
2.4.1	ISED Documents .....	3
2.4.2	COSPAS/SARSAT Documents .....	3
2.4.3	Transport Canada Civil Aviation Documents .....	3
2.4.4	Technical Standard Order (TSO) .....	4
3.	General Requirements .....	4
3.1	RSS-Gen Compliance .....	4
3.2	EPIRB Requirements .....	4
3.2.1	Approved Test Facilities .....	4
3.2.2	Requirements relating to 406-406.1 MHz Certification .....	4
3.2.3	Transport Canada Requirements .....	4
3.3	ELT Requirements .....	5
3.3.1	Approved Test Facilities .....	5
3.3.2	Declaration of Compliance (DOC) .....	5
3.4	PLB Requirements .....	5
3.4.1	Approved Test Facilities .....	5
3.4.2	Requirements relating to 406-406.1 MHz Certification .....	6
3.4.3	NSS Requirements .....	6
4.	Labelling Requirements .....	7
4.1	General .....	7
4.2	EPIRB .....	7
4.3	ELT .....	7
4.4	PLB .....	7
4.5	MSLD .....	7
5.	Type Designator .....	7
6.	Measurement Methods for Equipment Operating with 121.5 / 243 MHz Frequency .....	8
6.1	Transmitter Frequency and Output Power Stability for all devices .....	8
6.2	Other measurement methods used with EPIRB, PLB and MSLDs .....	8
6.2.1	Transmitter Output Power (Radiated) .....	9
6.2.2	Transmitter Unwanted Emissions .....	9
6.2.3	Modulation Factor and Audio Sweep .....	9
6.2.4	Spectrum Characteristics .....	9
7.	Transmitter and Receiver Standard Specifications .....	10
7.1	ELT .....	10
7.2	EPIRB and PLB .....	10
7.3	MSLD .....	10
7.4	121.5 MHz and 243 MHz Transmitter Excluding ELT .....	10
7.4.1	Modulation Characteristics .....	10
7.4.2	Transmitter Frequency Stability .....	11
7.4.3	Transmitter Output Power (Radiated) .....	11

7.4.4	Transmitter Unwanted Emissions .....	11
7.4.5	Spectrum Characteristics .....	12
8.	Authorization to Perform Radiation Tests .....	12
Annex 1 –	Addresses .....	14

DRAFT

## 1. Scope

- a) This Radio Standard Specification (RSS) document sets out the requirements for certification of:
- emergency position indicating radio beacons (EPIRBs);
  - emergency locator transmitters (ELTs);
  - personal locator beacons (PLBs); and
  - maritime survivor locator devices (MSLDs).
- b) EPIRBs are for carriage on ships, ELTs are for carriage on aircraft, and PLBs are for use by persons who may need to send a distress signal on the 406 MHz dedicated distress frequency band via satellite systems and are intended and designed to provide the standardized capabilities necessary to transmit alert and location information via coded messages to be relayed through the COSPAS-SARSAT system to Search And Rescue (SAR) agencies.

MSLDs are devices worn on the person while aboard a vessel, that are intended and designed to provide limited proximity alerting and locating capability. The device will transmit low-power alerting and homing signals to an appropriate directional receiver on board a vessel in the devices' vicinity to facilitate the distressed user's rescue.

**Important Note:** MSLDs DO NOT comply with Transport Canada (TC) and National Search and Rescue Secretariat (NSS) minimum performance standards governing EPIRBs and PLBs, respectively, and are NOT intended or designed to provide the standardized capabilities necessary to transmit alerts via satellites. MSLDs are NOT considered to be EPIRBs or PLBs by ISED, in agreement with the Transport Canada and the National Search and Rescue Secretariat.

- c) Automatic Identification System (AIS) is a maritime navigation safety communication system standardized by the ITU and adopted by the International Maritime Organization (IMO) that:
- automatically provides vessel information (including the vessel's identity, type, position, course, speed, navigation status and other safety-related information) to appropriately equipped shore stations, other ships and aircraft;
    - i. automatically receives such information from similarly fitted ships;
    - ii. monitors and tracks ships; and
    - iii. exchanges data with shore-based facilities
- d) Digital Selective Calling (DSC) is a type of synchronous system developed by the ITU-R that is used to establish contact with a station or groups of stations automatically by means of radio equipment.
- e) MSLDs, EPIRBs and PLBs with added capabilities, such as AIS and DSC, are to be used on a non-interference basis to the COSPAS-SARSAT satellite system.

- f) In an emergency situation, the radio beacon is turned on either automatically, such as a water-activated switch in an EPIRB or an inertia switch in an ELT, or manually by the user for all types of beacons transmitting on the 406 MHz frequency.
- g) The manufacturing, importation, or sale of EPIRBs and PLBs operating only on 121.5 MHz or/and 243 MHz is prohibited.
- h) ELTs shall be certified only if the equipment has, at a minimum, operating frequencies of 121.5 MHz and 406 MHz.

## 2. General Information

Equipment covered by this RSS is classified as Category I equipment. Either a Technical Acceptance Certificate (TAC) issued by the Certification and Engineering Bureau of Innovation, Science and Economic Development Canada (ISED) or a certificate issued by a recognized Certification Body (CB) is required, pursuant to subsection 21(1) of the [Radiocommunication Regulations](#).

### 2.1 Coming into force

This standard will be in force as of the date of its publication on Innovation, Science and Economic Development Canada's (ISED) website.

However, a transition period of six months from the publication date will be provided. During this period, compliance with RSS-287, issue 2, or RSS-287, issue 3, will be accepted. After this period, only applications for the certification of equipment under RSS-287, issue 3 will be accepted. Furthermore, after this transition period, equipment manufactured, imported, distributed, leased, offered for sale, or sold in Canada shall comply with RSS-287, issue 3.

A copy of RSS-287, issue 2, is available upon request by email to [consultationradiostandards-consultationnormesradio@ised-isde.gc.ca](mailto:consultationradiostandards-consultationnormesradio@ised-isde.gc.ca)

### 2.2 Licensing Requirements

Equipment covered by this RSS is exempt from licensing requirements pursuant to section 15 of the [Radiocommunication Regulations](#). For further information, consult ISED's [Licensing Exemptions](#)

### 2.3 Transmitter Frequency Configurations

The equipment shall comply with the following configurations:

- EPIRB:** 406 MHz primary transmitter with homing frequency on 121.5 MHz and/or 243 MHz, and optional AIS locating signal on 161.975 MHz or 162.025 MHz, as well.
- ELT:** 406 MHz primary transmitter with homing frequency on 121.5 MHz, and optional homing frequency on 243 MHz as well.
- PLB:** 406 MHz with homing frequency on 121.5 MHz and/or 243 MHz, and optional AIS locating signal on 161.975 MHz or 162.025 MHz, as well.
- MSLD:** Homing frequency on 121.5 MHz, and optional AIS locating signal on 161.975 MHz or 162.025 MHz, and optional \*DSC closed loop communication, channel 70, on 156.525 MHz, as well.

\*Closed loop DSC uses an addressed message for a closed group of users.

## 2.4 Applicable Standards and Related Documents

The equipment shall comply with the standards listed in this section, where applicable. These documents can be obtained at the addresses listed in Annex 1.

### 2.4.1 ISED Documents

[CPC-2-3-07: Obtaining Identities in the Maritime Mobile Service](#)

### 2.4.2 COSPAS/SARSAT Documents

[C/S T.001: Specification for COSPAS-SARSAT 406 MHz Distress Beacons](#)

[C/S T.007: COSPAS-SARSAT 406 MHz Distress Beacons Type Approval Standard](#)

[C/S S.007: Handbook on Beacon Regulations Canada](#)

[C/S G.005: COSPAS-SARSAT Guidelines on 406 MHz Beacon Coding, Registration and Type Approval](#)

The above documents can be obtained from the COSPAS-SARSAT [website](#).

### 2.4.3 Transport Canada Civil Aviation Documents

[Canadian Aviation Regulations](#) Part VI, Section 605.38

[Airworthiness Manual \(AWM\) Chapter 551](#): Aircraft Equipment and Installation, Section 551.104, prescribing the Canadian standards of airworthiness for the design and installation of Emergency Locator Transmitter (ELT) equipment.



#### **2.4.4 Federal Aviation Administration Technical Standard Orders (TSO)**

**TSO-C126:** *406 MHz Emergency Locator Transmitter (ELT)*

**TSO-C126a:** *406 MHz Emergency Locator Transmitter (ELT)*

**TSO-C126b:** *406 MHz Emergency Locator Transmitter (ELT)*

### **3. General Requirements**

#### **3.1 RSS-Gen Compliance**

RSS-287 shall be used in conjunction with RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#), for general specifications and information relevant to the equipment for which this standard applies. Should there be any discrepancies between the requirements in this standard and RSS-Gen, the requirements in this standard shall govern.

#### **3.2 EPIRB Requirements**

##### **3.2.1 Approved Test Facilities**

- a) Tests to show compliance to COSPAS-SARSAT standards for the 406 MHz transmitter shall be carried out by a test facility that has been approved by COSPAS-SARSAT. A list of COSPAS-SARSAT approved test facilities can be obtained from the COSPAS-SARSAT [website](#).
- b) Battery and reliability tests for EPIRB shall be carried out by a test facility approved by Transport Canada (Marine Safety) or a country that is a signatory to the SOLAS Convention. Addresses of such test facilities are obtainable from these organizations.

##### **3.2.2 Requirements relating to 406-406.1 MHz Certification**

In addition to the requirements in the test report specified in RSS-Gen, the certification application of EPIRB devices that transmit on 406.0-406.1 MHz shall include documentation to show that the equipment is certified by a test facility recognized by one of the COSPAS-SARSAT Partners and that the equipment complies with the requirements in COSPAS-SARSAT Standards [C/S T.001](#) and [C/S T.007](#).

##### **3.2.3 Transport Canada Requirements**

EPIRBs require verification from Transport Canada (TC) that they meet TC's operational requirements before the applicant can submit the equipment to ISED for certification under this RSS. TC requirements can be found in the [Navigation Safety Regulations, 2020](#).

The test report sent to TC shall contain the following:

- (i) the signature of the testing and supervising officers;
- (ii) the name of the signing persons;
- (iii) phone and facsimile numbers;
- (iv) the full name and address of the testing facility; and
- (v) proof that the facility is an approved test facility.

Proof of compliance submitted to Transport Canada-Marine Safety shall be in the form of documentation issued by a classification society or by a recognized independent testing establishment. See Annex 1 for Transport Canada-Marine Safety's contact information.

The acceptance letter issued by TC, confirming that the equipment has met TC requirements, shall be included as part of the certification application sent to the Certification and Engineering Bureau (CEB) or a recognized CB.

If applicable, ISED or the appropriate Certification Body shall evaluate the evaluation results for the homing transmitter.

Inquiries concerning TC's requirements should be directed to [Manager, Navigation Safety and Radiocommunications](#) listed in Annex 1.

### **3.3 ELT Requirements**

#### **3.3.1 Approved Test Facilities**

Tests to show compliance to COSPAS-SARSAT standards for the 406 MHz transmitter shall be carried out by a test facility that has been approved by COSPAS/SARSAT. A list of COSPAS-SARSAT approved test facilities can be obtained from the [COSPAS-SARSAT website](#).

#### **3.3.2 Declaration of Compliance (DOC)**

The certification application for an ELT device shall provide, in the test report specified in RSS-GEN, a DOC stating that the device meets all the applicable requirements from section 104 of AWM chapter 551 and the applicable TSO standards for its operating frequencies.

### **3.4 PLB Requirements**

#### **3.4.1 Approved Test Facilities**

- a) Tests to show compliance to COSPAS-SARSAT standards for the 406 MHz transmitter shall be carried out by a test facility that has been approved by COSPAS/SARSAT. A list of COSPAS-SARSAT approved test facilities can be obtained from the [COSPAS-SARSAT website](#).

- b) Battery and reliability tests for PLBs shall be carried out by a test facility approved by the National Search and Rescue Secretariat. Addresses of such test facilities are obtainable from these organizations.

### 3.4.2 Requirements relating to 406-406.1 MHz Certification

In addition to the requirements in the test report specified in RSS-Gen, the certification application of PLB devices that transmits on the 406.0-406.1 MHz shall include documentation to show that the equipment is certified by a test facility recognized by one of the COSPAS-SARSAT Partners and that the equipment complies with the requirements in COSPAS-SARSAT Standards [C/S T.001](#) and [C/S T.007](#).

### 3.4.3 NSS Requirements

The applicant shall refer to the National Search and Rescue Secretariat, [Performance Standard for 406 MHz Personal Locator Beacon \(PLB\)](#), as amended from time to time.

PLB devices require verification from The National Search and Rescue Secretariat and confirmation that it meets requirements in the [NSS 406 megahertz MHZ Personal Locator Beacon](#) before the applicant can submit the equipment to ISED for certification under this RSS.

The test report sent to NSS shall contain the following:

- (i) the signature of the testing and supervising officers;
- (ii) the name of the signing persons;
- (iii) phone and facsimile numbers;
- (iv) the full name and address of the testing facility; and
- (v) proof that the facility is an approved test facility.

Proof of compliance submitted to NSS shall be in the form of documentation issued by a classification society or by a recognized independent testing establishment. See Annex 1 for contact information.

NSS will provide a recommendation letter to the applicant, confirming that the equipment has met NSS Standards, to include as part of the certification application sent to the Certification and Engineering Bureau (CEB) or a recognized CB.

If applicable, ISED or the appropriate Certification Body shall evaluate the evaluation results for the homing transmitter.

Inquiries concerning the NSS document should be directed to [NSS COSPAS-SARSAT](#) listed in Annex 1.

## 4. Labelling Requirements

This section is directed to labelling requirements.

### 4.1 General

In addition to the labelling requirements in RSS-Gen, the equipment shall be labelled with the following:

- (a) Each device shall also be labelled with its type designator, as listed in Section 5.
- (b) Each device shall be labelled with its class type, as listed in Section 6.1 where applicable.

### 4.2 EPIRB

Labelling required by Transport Canada (Marine Safety) for EPIRBs (see document IMO Resolution MSC.471(101)), may be combined with the labelling requirements in RSS-Gen and Section 4.1 and put into a single label.

### 4.3 ELT

Labelling required by Transport Canada (Civil Aviation) for ELTs (see *Airworthiness Manual*, Section 551.104), may be combined with the labelling requirements in RSS-Gen and Section 4.1 and put into a single label.

### 4.4 PLB

Labelling required by NSS for PLBs (see document [406 megahertz \(MHz\) Personal Locator Beacon](#)), may be combined with the labelling requirements in RSS-Gen and Section 4.1 and put into a single label.

### 4.5 MSLD

The sale packaging and user manual of MSLDs shall indicate clearly the following or equivalent bilingual statement:

*This radio device is designed to only provide an effective alerting and locating capability in close proximity to a vessel. This radio beacon is NOT an EPIRB. Cette radiobalise est conçue uniquement dans le but de fournir une fonction d'alerte et de localisation efficace à proximité immédiate d'un navire. Cette radiobalise n'est PAS une RLS.*

## 5. Type Designator

An appropriate type designator (see list below) shall be appended as a suffix to the technical acceptance certification number to indicate the class of the device.

Suffix	Abbreviated Definition
--------	------------------------

E1	EPIRB, float free
E2	EPIRB, manual activation
PL	PLB
A	ELT, automatically ejected
AD	ELT, automatic deployable
F	ELT, Fixed
AF	ELT, automatic fixed
AP	ELT, automatic portable
W	ELT, water activated
S	ELT, survival
DT	ELT, Distress Tracking
X	MSLD
X1	MSLD + AIS
X2	MSLD + DSC
X3	MSLD + AIS + DSC

## 6. Measurement Methods for Equipment Operating with 121.5 / 243 MHz Frequency

### 6.1 Transmitter Frequency and Output Power Stability for all devices

The output power and frequency stability measurements described below shall be carried out at (i.e. just before) the end-of-life battery test that is required by TC or NSS. Other tests, such as the out-of-band emissions test, can be carried out at any time.

The output power and unmodulated carrier frequency shall be measured at the antenna connector and under the conditions specified below. A sufficient stabilization period at each temperature shall be used prior to each frequency measurement:

- (a) at 10 degree intervals of temperatures between the temperatures listed below and at the manufacturer's rated supply voltage, and
- (b) at +20°C temperature and ±15% supply voltage variations.

The equipment shall be tested at the following temperature ranges:

**ELT, EPIRB and PLB:** Class 0: -55°C to +70°C  
Class 1: -40°C to +55°C  
Class 2: -20°C to +55°C

**MSLDs** shall be tested from -20°C to +55°C.

### 6.2 Other measurement methods used with EPIRB, PLB and MSLDs

### 6.2.1 Transmitter Output Power (Radiated)

The transmitter shall be modulated by an A3X signal as described in Section 7.4.1(a). The resolution bandwidth of the spectrum analyzer shall be wide enough to include all significant modulation products. The bandwidth used shall be reported.

The radiated power of a 121.5 or 243 MHz transmitter is required only in the main beam (i.e. antenna pattern is not required).

### 6.2.2 Transmitter Unwanted Emissions

The transmitter unwanted emissions shall be measured at room temperature and this temperature shall be recorded. The transmitter shall be modulated with an audio sweep signal as described in Section 7.4.1(a).

### 6.2.3 Modulation Factor and Audio Sweep

The transmitter shall be modulated with an A3X signal as described in Section 7.4.1(a) and its output displayed on the oscilloscope.

- (i) Measure and record the peak and trough voltages of the RF envelope of the modulated carrier to determine the modulation factor, which is the ratio of the difference to the sum of the carrier levels at the peaks and troughs of the modulated RF envelope, i.e.:

$$\text{Modulation Factor} = \frac{V_{peak} - V_{trough}}{V_{peak} + V_{trough}}$$

- (ii) Measure and record the direction of the audio sweep.
- (iii) Measure and record the highest and the lowest audio frequencies of the sweep.
- (iv) Measure and record the audio sweep repetition rate.
- (v) Measure and record the modulation duty cycle (see definition in Section 7.4.1(e)).
- (vi) Modulate the transmitter with voice and CW (carrier wave) if the beacon is equipped with this feature. Provide a diagram of the modulated signal in the time domain, properly labelled to show the duration of each mode (A3X, A3E, N0N) of modulation.

### 6.2.4 Spectrum Characteristics

The spectrum characteristics described in Section 7.4.1(d) are to be measured.

The transmitter shall be modulated with an A3X signal, as described in Sections 7.4.1(a) and (d).

Set the resolution bandwidth of the spectrum analyzer to 60 Hz for 121.5 MHz transmitters and to 120 Hz for 243 MHz transmitters. If a spectrum analyzer of the correct resolution bandwidth is not available, use a narrower bandwidth and sum the powers over the desired band. Record all measurements.

If the beacon design is such that the type of modulation is changed during transmission (e.g. from A3E to NON), describe the test and verify that the carrier frequency shift complies with Section 7.4.1(d).

## **7. Transmitter and Receiver Standard Specifications**

### **7.1 ELT**

ELTs shall comply with all the requirements in the standard AWM 551.104 and with the applicable TSO standards for its operating frequencies.

### **7.2 EPIRB and PLB**

EPIRB and PLB transmitters using 406 MHz shall comply with the technical requirements in COSPAS-SARSAT Standards listed in either Section 3.2.2 or 3.4.2 as appropriate.

### **7.3 MSLD**

MSLDs with operating frequencies of 161.975 MHz, 162.025 MHz or 156.525 MHz shall comply with the requirements in Section 5 of [RSS-182](#), where applicable.

### **7.4 121.5 MHz and 243 MHz Transmitters Excluding ELTs**

#### **7.4.1 Modulation Characteristics**

The modulation technique for each carrier is described as follows:

- (a) The type of emission shall be A3X (described below), with periods of voice modulation or no modulation (CW) permitted, as described below.

During A3X transmissions, the emissions shall have the distinctive characteristic achieved by amplitude modulating the carrier with an audio frequency sweeping upwards or

downwards for EPIRBs and upwards for PLBs, over a range of not less than 700 Hz within the band 300 Hz to 1600 Hz, at a sweep repetition rate between 2 and 4 Hz.

- (b) The modulation factor for A3X modulation shall be at least 85% and not more than 100%, i.e. over-modulation is not permitted.
- (c) The transmission shall be continuous, except in the case of a homing transmitter when it may be interrupted for up to two seconds during the transmission of the 406 MHz burst.
- (d) The A3X modulation must have a clearly defined carrier frequency distinct from the modulation sideband components. For this, at least 30% of the total power emitted during any transmission shall be contained within  $\pm 30$  Hz of the carrier frequency in the case of the 121.5 MHz beacon, and  $\pm 60$  Hz of the carrier frequency in the case of the 243.0 MHz beacon.

Additionally, if the type of modulation is changed during transmission, the carrier frequency shall not shift by more than  $\pm 30$  Hz and  $\pm 60$  Hz for the 121.5 MHz and 243.0 MHz transmitters, respectively.

- (e) Modulation Duty Cycle: Modulation Duty Cycle is the ratio of the positive modulation duration, measured at the half-amplitude points on the modulation signal envelope to the period of the audio modulating frequency. This duty cycle shall be between 33% and 55%.

#### **7.4.2 Transmitter Frequency Stability**

The carrier frequency shall not depart by more than 0.005% ( $\pm 50$  ppm) from that measured at 20°C and the rated supply voltage. If the 121.5 MHz and 243 MHz frequencies are derived from the same oscillator circuitry, it is not necessary to repeat the frequency stability test for the other frequency.

#### **7.4.3 Transmitter Output Power (Radiated)**

The average output power of EPIRBs and PLBs shall not be less than 50 mW when the transmitter is used as a primary beacon and not less than 25 mW when used as a homing transmitter. The output power of MSLDs shall be less than 25 mW.

#### **7.4.4 Transmitter Unwanted Emissions**

The average power of unwanted emissions in a 300 Hz resolution bandwidth shall be attenuated below the level of the average transmitter power P (dBW) by:

- (a) at least 25 dB on any frequency removed from the centre of the authorized bandwidth by more than 50%, up to and including 100% of the authorized bandwidth; and



(b) at least 30 dB on any frequency removed from the centre of the authorized bandwidth by more than 100%

where the authorized bandwidth is set at 25 kHz with the transmit frequency at the centre of the bandwidth.

#### 7.4.5 Spectrum Characteristics

The total power in the reference bandwidth (see Section 6.2.4) shall not drop by more than 5 dB below the transmitter mean output power that is measured by a wideband meter (see Section 6.1 or 6.2.1), indicating that at least 30% of the power resides within the band  $f_c \pm 30$  Hz (at 121.5 MHz) and within the band  $f_c \pm 60$  Hz (at 243 MHz), where  $f_c$  is the carrier frequency.

### 8. Authorization to Perform Radiation Tests

Before carrying out any tests at offset frequencies or at distress frequencies in Canada that involve radiation of signal into the air (including any tests not performed in a properly shielded room, whether the antenna is attached to the device or not), prior authorization from the offices/agencies nearest to where radiation testing is to be conducted shall be obtained. The agencies are listed below (see addresses in Annex 1 for the nearest office/agency):

- NAV CANADA Area Control Centres (ACC)
- NAV CANADA Air Traffic Control Agencies
- Canadian Mission Control Centre (CMCC) at CFB Trenton, Ontario (406 MHz devices only)
- Joint Rescue Coordination Centres (JRCC)

**Note:** The local NAV CANADA office should be contacted for up-to-date telephone numbers of the above-mentioned personnel/agencies. In informing each party, the testing officer shall provide the following information several days in advance: name, telephone number, date and duration of the test (test time shall be as short as possible), and location of the test site.

The agencies' written consent to the test shall be submitted to the local ISED office for the purpose of issuing the authorization to use the radio frequency.

Unless there are valid reasons to use distress frequencies, only offset frequencies may be authorized as follows:

- 121.100 to 121.450 MHz; 121.550 to 121.900 MHz;
- 242.200 to 242.900 MHz; 243.100 to 243.800 MHz;
- 406.000 to 406.99 MHz (in accordance with CMCC authorization and COSPAS-SARSAT technical directives, see C/S T.007).

Great care shall be taken not to accidentally radiate in the forbidden bands (121.5 MHz  $\pm$ 50 kHz and 243 MHz  $\pm$ 100 kHz).

No activation of operationally-coded 406 MHz devices is permitted without prior registration in the appropriate National Beacon Registry.

DRAFT

## Annex 1 – Addresses

The following addresses are relevant to this document. The addresses, especially telephone and fax numbers, are subject to change without notice:

- (1) Canadian Mission Control Centre (CMCC)  
P.O. Box 1000, Canadian Forces Base Trenton, 8 Wing  
Astra, ON  
K0K 3W0  
Duty Officer Tel: (613ci) 965-2026/fax: (613) 965-7045  
Tel: 1-877-406-7671  
Fax: 1-877-406-3298  
Email: [cbr@sarnet.dnd.ca](mailto:cbr@sarnet.dnd.ca)
- (2) COSPAS/SARSAT Secretariat  
1250 René-Lévesque Boulevard West  
Suite 4215  
Montréal, QC  
H3B 4W8  
Tel: (514) 500-7999  
Fax : (514) 500-7996  
Email : [mail@406.org](mailto:mail@406.org)  
Website : <http://406.org>
- (3) International Civil Aviation Organization  
Document Sales Unit  
999 University Street  
Montréal, QC  
H3C 5H7  
Tel: (514) 954-8219  
Fax: (514) 954-6077  
E-mail: [icaohq@icao.int](mailto:icaohq@icao.int)  
Web support: [web@icao.int](mailto:web@icao.int)
- (4) International Maritime Organization  
4 Albert Embankment  
London, England, SE1 7SR  
Tel: +44 (0) 22 7735 7611  
Fax: +44 (0) 22 7587 3210
- (5) International Telecommunication Union  
Publication Sales  
Place des Nations, CH-1211  
Geneva 20, Switzerland  
Tel : +41 22 730 6141 (English)  
Fax: +41 22 730 5194  
E-mail: [sales@itu.int](mailto:sales@itu.int)

- (6) National Search and Rescue Secretariat (NSS)  
COSPAS-SARSAT section  
26975 Laurier Avenue West Slater Street, 94th Floor  
Ottawa, ON  
K1A 0P8K2  
Tel: (613) 992-6667  
Fax: (613) 996-3746  
E-mail: [ps.questions-questions.sp@canada.ca](mailto:ps.questions-questions.sp@canada.ca) and/or [ps.questions-questions.sp@canada.ca](mailto:ps.questions-questions.sp@canada.ca)
- (7) Joint Rescue Coordination Centres (JRCCs), East to West:
- |  |  |
|--|--|
| Joint Rescue Co-ordination Centre<br>Halifax<br>Canadian Forces Base, Halifax<br>P.O. Box 99000 Stn Forces<br>Halifax, NS<br>B3K 2X0<br>Tel: (902) 427-2104<br>Fax: (902) 424-2114     | Joint Rescue Co-ordination Centre<br>Trenton<br>Canadian Forces Base Trenton, 8<br>Wing<br>P.O. Box 1000<br>Astra, ON<br>K0K 3W0<br>Tel: (613) 965-3870<br>Toll Free: (800) 267-7270 |
| Joint Rescue Co-ordination Centre<br>Victoria<br>Canadian Forces Base, Esquimalt<br>P.O. Box 17000 Stn Forces<br>Victoria, BC<br>V9A 7N2<br>Tel: (250) 413-8933<br>Fax: (250) 413-8932 |  |
- (8) Transport Canada Civil Aviation  
Attention: Manager, Avionics and  
Electrical Systems Engineering (AARDD/A)  
Place de Ville, Tower "C"  
330 Sparks Street  
Ottawa, ON  
K1A 0N8  
Tel: (613) 952-4328  
Fax: (613) 996-9178
- (9) Transport Canada (Marine Safety)  
Place de Ville, 10<sup>th</sup> Floor  
330 Sparks Street  
Ottawa, ON  
K1A 0N5  
Tel: (613) 991-3134

Fax: (613) 993-8196  
E-mail : [marinesafety@tc.gc.ca](mailto:marinesafety@tc.gc.ca)

10) NAV CANADA Area Control Centre (ACC)

Gander Area Control Centre  
Tel: 1-888-672-2052  
Email: [tocqxacc@navcanada.ca](mailto:tocqxacc@navcanada.ca)

Moncton Area Control Centre  
Tel: 1-888-672-2051  
Email: [mrccqm@navcanada.ca](mailto:mrccqm@navcanada.ca)

Montréal Area Control Centre  
Tel: 1-877-533-3281  
Email: [tocmontreal@navcanada.ca](mailto:tocmontreal@navcanada.ca)

Toronto Area Control Centre  
Tel: 1-800-268-4986  
Email: [toctoronto@navcanada.ca](mailto:toctoronto@navcanada.ca)

Winnipeg Area Control Centre  
Tel: 1-877-672-2994  
Email: [tocywg@navcanada.ca](mailto:tocywg@navcanada.ca)

Edmonton Area Control Centre  
Tel: 1-877-672-2934  
Email: [egacctoc@navcanada.ca](mailto:egacctoc@navcanada.ca)

Vancouver Area Control Centre  
Tel: 1-877-987-8622  
Email: [tocvancouver@navcanada.ca](mailto:tocvancouver@navcanada.ca)

11) Manager, Navigation Safety and Radiocommunications  
Marine Safety, Transport Canada  
Tower C, Place de Ville  
330 Sparks Street, 10th Floor  
Ottawa ON K1A 0N8  
Email: [TC.NavRadio.TC@Tc.gc.ca](mailto:TC.NavRadio.TC@Tc.gc.ca)