COSPAS-SARSAT ACCEPTANCE

OF 406 MHz BEACON

TYPE APPROVAL TEST FACILITIES

C/S T.008

Issue 2 – Revision 1

December 2016

COSPAS-SARSAT ACCEPTANCE OF 406 MHz BEACON TYPE APPROVAL TEST FACILITIES

HISTORY

Issue	Revision	Date	Comments
1	-	December 1993	Approved by CSC-11
1	1	November 1995	Approved by CSC-15
1	2	October 2000	Approved by CSC-25
2	-	November 2005	Approved by CSC-35
2	1	December 2016	Approved by CSC-57

TABLE OF CONTENTS

Page

LIST OF ANNEXES

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

1.1 Purpose

The purpose of this document is to set the technical criteria and state the procedures a test facility must follow when applying to become a Cospas-Sarsat accepted 406 MHz beacon type approval test facility.

1.2 Scope

Section 1 states the contents of this document and references; section 2 states the Cospas Sarsat policy and outlines the acceptance process. Section 3 describes the acceptance process in detail.

Annex A lists the required measurement accuracies of the parameters measured at a Cospas-Sarsat accepted test facility.

Annex B is an application form which is to be completed and submitted to start the acceptance process by Cospas-Sarsat.

1.3 Reference Documents

a) C/S T.001 Specification for Cospas-Sarsat 406 MHz Distress Beacons

b) C/S T.007 Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard

c) ISO-17025 General requirements for the competence of calibration and testing laboratories

- END OF SECTION 1 -

2. COSPAS-SARSAT ACCEPTANCE OF 406 MHZ BEACON TEST FACILITIES

2.1 Policy

Test facilities may apply to become a Cospas-Sarsat accepted type approval facility by following the procedures described in this document. The test facility must be independent of any beacon manufacturer.

Test facilities that are accepted by the Cospas-Sarsat Council are entitled to perform tests on 406 MHz distress beacons for the purpose of having a Cospas-Sarsat Type Approval Certificate issued by the Cospas-Sarsat Secretariat. A list of Cospas-Sarsat accepted type approval test facilities is maintained by the Secretariat.

2.2 Costs

The direct costs (i.e. travel, accommodation, laboratory testing, etc.) associated with carrying out this Cospas-Sarsat acceptance procedure will be borne by the applicant facility.

2.3 Required Capabilities of Test Facility

The test facility must be capable of performing all tests on a 406 MHz beacon in accordance with the applicable issue of C/S T.007. The antenna tests may be performed at a different location, but the responsibility of meeting the requirements still lies with the test facility. The measurement accuracy requirements of the test facility are listed in Table A-1 in Annex A of this document.

The Quality Assurance Programme prepared and used by the test facility must meet the requirements of ISO-17025.

2.4 Summary of Beacon Test Facility Acceptance Process

The acceptance process, illustrated in Figure 2.1 and described in detail in section 3, evaluates the applicant's test facility technical capabilities and Quality Assurance Programme.

a) The applicant's test facility would have its Quality Assurance Programme assessed by a national accreditation organization. The test facility must meet the Cospas-Sarsat requirements which are given in Table A-1 of Annex A and the requirements of ISO-17025.

b) The test facility would submit its application form (see Annex B) plus the required technical data (see section 3.2) to the Secretariat.

c) The submission would then be reviewed by an ad-hoc technical team consisting of the Secretariat and technical experts designated by the Cospas-Sarsat Council.

d) An on-site technical visit would then be conducted by one of the team members to observe tests being performed, including antenna tests.

e) A complete set of type approval tests are then performed according to C/S T.007 and to the requirements of C/S T.001 on a test beacon provided by the applicant or borrowed from Cospas-Sarsat.

f) If the test beacon had not been previously tested by an accepted test facility, it would subsequently be tested at one of the accepted facilities, with the costs borne by the applicant.

g) Upon completion of the tests, a test report will be written and sent to the Secretariat by the applicant, and by the reference test facility, as applicable. The reports will be reviewed by the technical team and their findings will be provided to the applicant, to the Cospas-Sarsat Parties and to the Joint Committee for review and recommendations to the Council.

h) If the documentation demonstrates that the test facility meets the Cospas-Sarsat requirements, the Cospas-Sarsat Parties may grant interim acceptance of the facility until the formal review by the Joint Committee and Council has been completed.

i) Following acceptance by the Council, the facility will need to provide on an annual basis, a letter confirming that their Quality Assurance technical status is still maintained.

2.5 Cospas-Sarsat Acceptance

When the procedure has been successfully completed and the test facility has been accepted by the Cospas-Sarsat Council, the name of the facility will be included in the list of accepted test facilities which is maintained by the Cospas-Sarsat Secretariat.

2.6 Other Capabilities

The applicant test facility may also wish to provide Cospas-Sarsat with a description of its capabilities for testing 406 MHz beacons to national or other international standards.

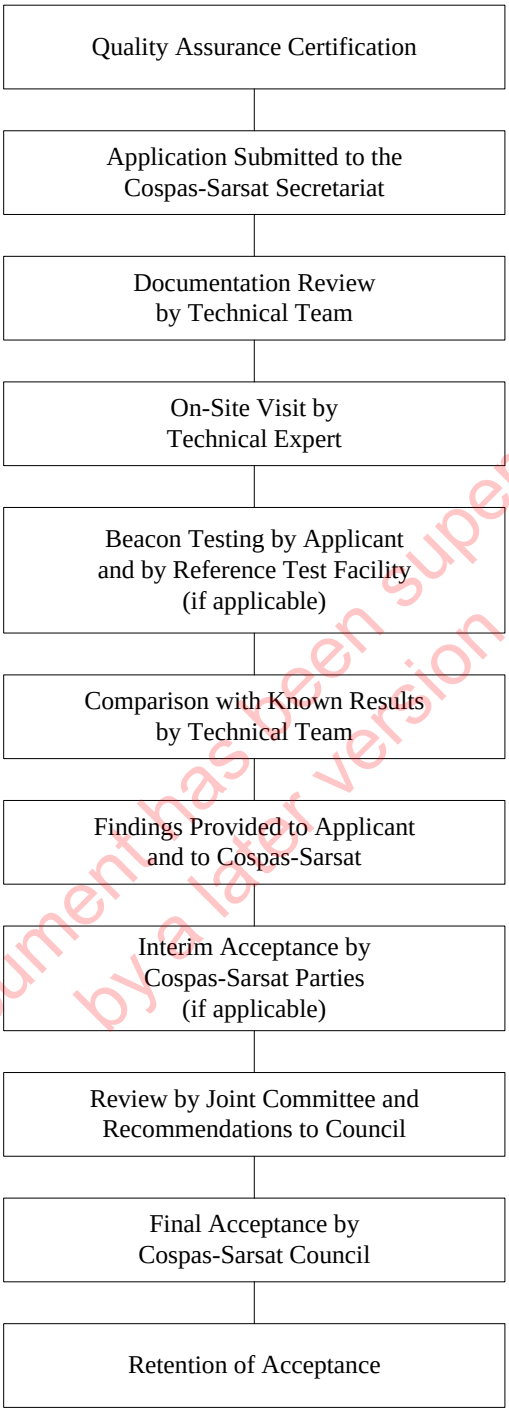

Figure 2.1: Process to Become a Cospas-Sarsat Accepted 406 MHz Beacon Type Approval Test Facility

- END OF SECTION 2 -

3. 406 MHZ BEACON TEST FACILITY ACCEPTANCE PROCESS

3.1 Quality Assurance

The applicant must obtain certification from a national accreditation organization that its test facility meets the quality assurance requirements defined in ISO-17025.

3.2 Application Package

The application form provided in Annex B of this document is to be completed and submitted to the Cospas-Sarsat Secretariat.

The application package must include a letter or certificate from a national accreditation organization in the applicant's country confirming that the applicant's Quality Assurance Programme meets the requirements defined in ISO-17025. The name and address of this accreditation organization must also be given.

Further, the application package must also include the following technical data:

a) a list of test equipment required to perform Cospas-Sarsat testing, serial number and model number;

b) test equipment calibration reports;

c) test equipment traceability to National Standards;

d) a description of software to be used (if applicable);

e) calibration reports and traceability of environmental chambers (if applicable); and

f) a copy of technical procedures they intend to use during approval testing.

The completed application package is to be submitted to the Cospas-Sarsat Secretariat who will verify that the necessary information is included in the package.

3.3 Technical Review

Upon submission of the completed application package, the Cospas-Sarsat Secretariat will send a copy to the technical experts appointed by the Cospas-Sarsat Council to work with the Secretariat. These experts will review the technical material and provide recommendations on whether or not to proceed to the next step.

Once the recommendations indicate that the applicant test facility meets the basic requirements, an on-site technical visit is arranged.

3.4 On-Site Technical Visit

A technical expert on beacon testing then visits the applicant test facility. Some tests, including antenna tests, are to be performed on a beacon to demonstrate to the technical expert the capabilities of the test facility. The technical expert will verify the following:

a) the availability of the required test equipment;

b) witness the operation of the test equipment and antenna test range;

c) the test equipment and environmental chambers are calibrated and traceable to national standards;

d) assess the use of applicable procedures; and

e) evaluate the procedures, data sheets and results for completeness and accuracy.

A report will be made by the technical experts to Cospas-Sarsat confirming that the test facility is now ready to proceed to the next step.

3.5 Beacon Test

The test facility will perform a full set of Cospas-Sarsat tests that include antenna tests on a 406 MHz beacon, which may be operated from an external power supply, and subsequently provides the test report to Cospas-Sarsat for review and analysis. The test report is to be written in the format described in C/S T.007.

The beacon testing can be performed in either of two ways:

a) the test facility can acquire its own beacon, on which it conducts the tests and then provides the beacon to one of the designated Cospas-Sarsat test facilities for a subsequent verification test, which the applicant would pay for; or

b) alternatively, the applicant could arrange, on a bilateral basis, to borrow from one of the other accepted test facilities a test beacon having known, previously measured, characteristics. The applicant would then perform the full set of tests on this beacon and prepare a test report.

3.6 Review of Beacon Test Report

The test report, duly signed by the test facility's authorized official should then be submitted to the Cospas-Sarsat Secretariat.

The Cospas-Sarsat Secretariat and the technical experts will review the test report and compare the results generated by the applicant's test facility with those of the verification test facility, taking into account the measurement accuracies of the two test facilities.

If there is a significant difference between the two sets of test results, some additional tests may be requested.

3.7 Report and Recommendations to Cospas-Sarsat

A report is prepared jointly by the Secretariat and the technical experts. Their findings will be provided to the Applicant, to the Cospas-Sarsat Parties and to the Joint Committee for its review and recommendation as appropriate to the Cospas-Sarsat Council.

If the documentation demonstrates that the test facility meets the Cospas-Sarsat requirements, the Cospas-Sarsat Parties may grant interim acceptance of the facility until the formal review by the Joint Committee and Council has been completed.

Following acceptance of the test facility by the Cospas-Sarsat Council, the Secretariat will notify the applicant of the Council decision. If the process is successful, the applicant's name will then be included in the list of Cospas-Sarsat accepted type approval test facilities maintained by the Secretariat.

3.8 Retention of Test Facility Acceptance

The retention of test facility acceptance is the responsibility of the test facility. This will be accomplished by supplying to the Cospas-Sarsat Secretariat:

- a letter submitted annually by May stating their intention to retain Cospas-Sarsat acceptance and confirming that their test facility continues to meet Cospas-Sarsat requirements; and
- a reassessment of the facility's Quality Assurance Programme by a national accreditation organization every five years.

In addition, the Cospas-Sarsat Council reserves the right to request:

- that a technical expert (designated by the Council) be entitled to visit the test facility periodically;
- that a test be conducted every two years (at no cost to Cospas-Sarsat) on a beacon provided by Cospas-Sarsat; and
- a technical audit by Cospas-Sarsat every five years.

- END OF SECTION 3 -

ANNEXES TO
COSPAS-SARSAT ACCEPTANCE
OF 406 MHz BEACON
TYPE APPROVAL TEST FACILITIES

ANNEX A – MEASUREMENT ACCURACY REQUIREMENTS

Table A-1: Measurement Accuracy Requirements for Cospas-Sarsat 406 MHz Beacon Type Approval Test Facilities

Parameter	Beacon Requirement	Test Facility Accuracy
Repetition Time	50 sec ± 2.5 sec	± 0.01 sec
Total Transmission Time	440 ms ± 4.4 ms, or 520 ms ± 5.2 ms	± 1.0 ms
First Burst Delay	≥ 47.5 sec (for beacons other than ELTs when activated automatically by G-switch / deformation) ≤15.0 sec (for ELTs when activated automatically by G-switch / deformation)	± 1 sec ± 1 sec
CW Preamble	160 ms ± 1.6 ms	± 1.0 ms
Bit Rate	400 bps ± 4 bps	± 0.6 bps
Nominal Frequency	see C/S T.001 Section 2.3.1	± 100 Hz
Frequency Stability	see C/S T.001 Section 2.3.1	< 1 x 10^{-10}
Transmitted Power	5 W ± 2 dB	± 0.5 dB
Spurious Power Level	see mask in C/S T.001	± 2 dB
Carrier Rise Time	< 5 ms	± 0.5 ms
Power Level 1 ms Before Burst	< - 10 dBm	± 2 dB
Modulation Rise	150 µs ± 100 µs	± 25 µs
Modulation Symmetry	≤ 0.05	< 0.01
Phase Modulation	1.1 rad ± 0.1 rad	± 0.04 rad
Temperature (near beacon)	various	± 2°C
Antenna Measurement	see C/S T.007 Annex B	± 3 dB

- END OF ANNEX A -

ANNEX B – APPLICATION

APPLICATION TO BECOME A COSPAS SARSAT ACCEPTED 406 MHz BEACON TYPE APPROVAL TEST FACILITY

Applicant Test Facility:
(name, address, etc.) _____

National Accreditation Organization:
(name, address, etc.) _____

DECLARATION OF APPLICANT:

The _____ test facility located at _____ applies to become a Cospas-Sarsat accepted test facility and provides the enclosed documentation and quality assurance certification. I hereby agree to provide the technical information required by Cospas-Sarsat, as defined in documents C/S T.007 and C/S T.008.

_____ _____
Date Signature of Test Facility Representative

- END OF ANNEX B -

- END OF DOCUMENT -

Cospas-Sarsat Secretariat
1250 Boul. René-Lévesque West, Suite 4215, Montréal (Québec) H3B 4W8 Canada
Telephone: +1 514 500 7999 / Fax: +1 514 500 7996
Email: mail@cospas-sarsat.int
Website: www.cospas-sarsat.int