

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**  
**11 Laurier St. / 11, rue Laurier**  
**Place du Portage , Phase III**  
**Core 0A1 / Noyau 0A1**  
**Gatineau, Québec K1A 0S5**  
**Bid Fax: (819) 997-9776**

**REQUEST FOR PROPOSAL  
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> TWO-WAY PORTABLE RADIOS & ACCESS.	
<b>Solicitation No. - N° de l'invitation</b> 47064-137609/B	<b>Date</b> 2013-07-12
<b>Client Reference No. - N° de référence du client</b> 1000307609	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$QD-015-23879	
<b>File No. - N° de dossier</b> 015qd.47064-137609	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2013-08-09</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Watts, Michael	<b>Buyer Id - Id de l'acheteur</b> 015qd
<b>Telephone No. - N° de téléphone</b> (819) 956-0555 ( )	<b>FAX No. - N° de FAX</b> (819) 956-0636
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> CANADA BORDER SERVICES AGENCY 79 BENTLEY AVE OTTAWA Ontario K2E 6T7 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Defence Communications Division. (QD)  
11 Laurier St./11, rue Laurier  
Place du Portage, Phase III, 8C2  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

## TABLE OF CONTENTS

### PART 1 - GENERAL INFORMATION

1. Security Requirement
2. Statement of Work
3. Debriefings

### PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions
2. Submission of Bids
3. Enquiries - Bid Solicitation
4. Applicable Laws

### PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

### PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures
2. Basis of Selection

### PART 5 - CERTIFICATIONS

1. Mandatory Certifications Required Precedent to Contract Award
2. Additional Certifications Required with the Bid

### PART 6 - RESULTING CONTRACT CLAUSES

1. Security Requirement
2. Statement of Work
3. Standard Clauses and Conditions
4. Term of Contract
5. Authorities
6. Payment
7. Invoicing Instructions
8. Certifications
9. Applicable Laws
10. Priority of Documents
11. SACC Manual Clauses
12. Preparation for Delivery
13. Consignee

#### List of Annexes:

- |         |  |
|---------|--|
| Annex A | Statement of Work (SOW)                      |
| Annex B | Prices, Deliverables and Optional Quantities |
| Annex C | Evaluation Matrix                            |

Solicitation No. - N° de l'invitation  
47064-137609/B

Amd. No. - N° de la modif.  
015qd

Buyer ID - Id de l'acheteur  
015qd

Client Ref. No. - N° de réf. du client  
1000307609

File No. - N° du dossier  
015qd47064-137609

CCC No./N° CCC - FMS No/ N° VME

---

This bid solicitation cancels and supersedes previous bid solicitation number 47064-137609/A dated 2013-05-13 with a closing of 2013-06-07 at 02:00 PM. A debriefing or feedback session will be provided upon request to bidders/offerors/suppliers who bid on the previous solicitation.

## **PART 1 - GENERAL INFORMATION**

### **1. Security Requirement**

There is no security requirement associated with the requirement.

### **2. Statement of Work**

The Canada Border Services Agency (CBSA) has a requirement for two way radios and accessories, that must meet the technical requirements per the attached Statement of Work (SOW) and that are compatible with the legacy Personal Alarm Security System (PASS) equipment currently in use by CBSA.

B4007T (2006-06-16) Statement of Work

The Work to be performed is detailed under Article 2 of the resulting contract clauses.

### **3. Debriefings**

After contract award, bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

## **PART 2 - BIDDER INSTRUCTIONS**

### **1. Standard Instructions, Clauses and Conditions**

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2013-06-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days  
Insert: ninety (90) days

Solicitation No. - N° de l'invitation  
47064-137609/B

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

Client Ref. No. - N° de réf. du client  
1000307609

File No. - N° du dossier  
015qd47064-137609

015qd

CCC No./N° CCC - FMS No/ N° VME

---

## 2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Due to the nature of the bid solicitation, bids transmitted by facsimile to PWGSC will not be accepted.

There is a **mandatory requirement** (SOW 7.0) for each bidder to provide a prototype radio and accessories **with the bid package, pre-programmed** per the PASS Six/Seven Tone Specifications and ready for testing by CBSA.

There is a **mandatory requirement** (SOW 2.0.1.12) that the radio must be type-approved by Industry Canada for use in Canada and the Industry Canada **type-approval number for the proposed radio must be clearly indicated in the bid.**

### 2.1 SACC Clauses

A0031T (2010-08-16) Basis of Selection - Mandatory Technical Criteria

## 3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than seven (7) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

## 4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

## PART 3 - BID PREPARATION INSTRUCTIONS

### 1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid ( 3 hard copies)

Section II: Financial Bid ( 2 hard copies)

Section III: Certifications ( 2 hard copies)

Solicitation No. - N° de l'invitation  
47064-137609/B

Amd. No. - N° de la modif.  
015qd

Buyer ID - Id de l'acheteur  
015qd

Client Ref. No. - N° de réf. du client  
1000307609

File No. - N° du dossier  
015qd47064-137609

CCC No./N° CCC - FMS No/ N° VME

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Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

### **Section I: Technical Bid**

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

It is requested that bidders provide a copy of Annex C - Evaluation Matrix with their Technical Bid and state "Compliant" or Non-compliant" in the space provided to signify that they are either compliant or non-compliant with each mandatory requirement in the SOW.

### **Supporting Documentation (SD)**

Bidders must demonstrate their compliance with the mandatory technical requirements in the SOW by providing supporting documentation where indicated by SD in Annex C - Evaluation Matrix. Supporting Documentation (SD) must be documents such as technical brochures, drawings, specifications, etc. detailing the performance capability of the equipment being proposed.

By providing a bid, the Bidder is confirming it is in full compliance with the mandatory technical requirements in the SOW, summarized and marked with "SD" (Supporting Documentation) or "CS" (Compliance Statement) in Annex C - Evaluation Matrix.

Note: Per Standard Instructions - Goods or Services - Competitive Requirements 2003 (2013-06-01), Article 05, Para 7. "Unless specified otherwise in the solicitation, Canada will evaluate only the documentation provided with a bidder's bid. Canada will not evaluate information such as references to Web site addresses where additional information can be found, or technical manuals or brochures not submitted with the bid."

Annex C "Evaluation Matrix" will be used by Canada to document Compliant or Non - Compliant for each mandatory technical requirement.

### **Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Applicable Taxes must be shown separately.

Solicitation No. - N° de l'invitation  
47064-137609/B

Amd. No. - N° de la modif.  
015qd

Buyer ID - Id de l'acheteur  
015qd

Client Ref. No. - N° de réf. du client  
1000307609

File No. - N° du dossier  
015qd47064-137609

CCC No./N° CCC - FMS No/ N° VME

---

**1.1 Exchange Rate Fluctuation**  
C3011T (2010-01-11) Exchange Rate Fluctuation

**1.2 SACC Manual Clauses**  
C9000T (2010-08-16) Pricing

**1.3 The bidders must provide firm unit prices, including firm unit prices for the optional quantities that remain valid until March 31, 2014, in accordance with the requirements detailed in Annex B. Optional quantities may be exercised, in whole or in part, until March 31, 2016.**

**Per the Basis of Payment, an Economic Price Adjustment (EPA) will be applicable to the firm unit prices of the optional quantities for orders placed subsequent to March 31, 2014.**

**1.4 Delivery**

While delivery is requested by 6 weeks after receipt of a contract, the best delivery that we could offer is \_\_\_\_\_ weeks.

**The maximum acceptable delivery schedule (excluding options) is ten (10) weeks after receipt of a contract. Any proposal offering a delivery schedule in excess of ten (10) weeks after receipt of a contract will be considered non-compliant and be given no further consideration.**

### **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **1. Evaluation Procedures**

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) The evaluation team will determine first if there are three (3) or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than three responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

### **1.1 Technical Evaluation**

#### **1.1.1 Mandatory Technical Criteria**

The mandatory technical criteria are identified by the word "must" in Annex A - SOW, and identified in Annex C - Evaluation Matrix.

**1.2 Financial Evaluation**

*SACC Manual Clause A0222T (2013-04-25), Evaluation of Price*

**1.3 Evaluated Price**

The Evaluated Price will equal the sum of the individual "Extended Price" for the Required Quantities plus the sum of the individual "Optional Item Extended Price" for the Optional Quantities, all assessed on a DDP destination basis, excluding GST/HST.

Evaluated Price = Sum of Column A + Sum of Column B (See Annex B)

**1.4 Evaluation of Delivery**

The maximum acceptable delivery schedule (excluding options) is ten (10) weeks after receipt of a contract. Any proposal offering a delivery schedule in excess of ten (10) weeks after receipt of a contract will be considered non-compliant and be given no further consideration.

**2. Basis of Selection****2.1 A0272T (2010-08-16) Basis of Selection - Multiple Items**

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price on an aggregate basis will be recommended for award of a contract.

**PART 5 - CERTIFICATIONS**

Bidders must provide the required certifications and documentation to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default, if any certification made by the Bidder is found to be untrue whether during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with this request will also render the bid non-responsive or will constitute a default under the Contract.

**1. Mandatory Certifications Required Precedent to Contract Award****1.1 Code of Conduct and Certifications - Related documentation**

**1.1.1** By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions 2003. The related documentation therein required will assist Canada in confirming that the certifications are true.

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## 2. Additional Certifications Required with the Bid

Bidders must submit the following duly completed certifications with their bid.

### 2.1 Canadian Content Certification

#### 2.1.1 SACC Manual clause A3050T (2010-01-11) Canadian Content Definition

#### 2.1.2 SACC Manual clause A3063T (2010-01-11) Canadian Content Certification

This procurement is conditionally limited to Canadian goods.

Subject to the evaluation procedures contained in the bid solicitation, bidders acknowledge that only bids with a certification that the good(s) offered are Canadian goods, as defined in clause A3050T, may be considered.

Failure to provide this certification completed with the bid will result in the good(s) offered being treated as non-Canadian goods.

The Bidder certifies that:

( ) a minimum of 80 percent of the total bid price consist of Canadian goods as defined in paragraph 1 of clause A3050T.

For more information on how to determine the Canadian content for a mix of goods, a mix of services or a mix of goods and services, consult Annex 3.6.(9), Example 2, of the Supply Manual.

## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Statement of Work

The Contractor must provide the Canada Border Services Agency (CBSA) with two way radios and accessories, compatible with the legacy Personal Alarm Security System (PASS) equipment currently in use by CBSA, all in accordance with the provisions of this contract including the technical requirements per the attached Statement of Work (SOW) Annex "A".

### 3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual*

(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Solicitation No. - N° de l'invitation  
47064-137609/B

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

Client Ref. No. - N° de réf. du client  
1000307609

File No. - N° du dossier  
015qd47064-137609

015qd

CCC No./N° CCC - FMS No/ N° VME

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### 3.1 General Conditions

2010A (2013-04-25), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

## 4. Term of Contract

### 4.1 Delivery Date

All the deliverables (excluding optional quantities) must be received on or before \_\_\_\_\_ (*insert the date*).

### 4.2 Period of the Contract

A9022C (2007-05-25) Period of the Contract

The period of the Contract is from date of Contract award to March 31, 2016.

### 4.3 Optional Goods

The Contractor grants to Canada the irrevocable option to acquire the optional goods described at Annex "B" Prices, Deliverables and Optional Quantities of the Contract under the same conditions and at the prices and/or rates stated in the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option, in whole or in part, at any time before March 31, 2016 by sending a written notice to the Contractor.

## 5. Authorities

### 5.1 Contracting Authority (CA)

The Contracting Authority for the Contract is:

Name: Michael Watts  
Title: Supply Team Leader  
Public Works and Government Services Canada  
Acquisitions Branch  
Directorate: Electronic, Munitions and Tactical Systems Procurement Directorate  
Defence Communications Division (QD)  
Address: 8C2, Place du Portage III  
11 Laurier St  
Gatineau, Que  
K1A 0S5  
Telephone: 819 956-0555  
Facsimile: 819 956-0636  
E-mail address: michael.watts@pwgsc.gc.ca

Solicitation No. - N° de l'invitation

47064-137609/B

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

015qd

Client Ref. No. - N° de réf. du client

1000307609

File No. - N° du dossier

015qd47064-137609

CCC No./N° CCC - FMS No/ N° VME

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The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

## 5.2 Technical Authority (TA)

The Technical Authority for the Contract is:

Name:

Title:

Organization:

Address:

Telephone :

Facsimile:

E-mail address:

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

## 5.3 Contractor's Representative

Name:

Title:

Address:

Telephone:

Facsimile:

E-mail address:

## 6. Payment

### 6.1 Basis of Payment

C0207C (2013-04-25) **Basis of Payment - Firm Price, Firm Unit Price(s) or Firm Lot Price(s)**

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid the firm unit prices as specified in Annex B for a cost of \$ \_\_\_\_\_ (subject to an EPA adjustment on the optional quantities per 6.2 below). Customs duties are **included** and Applicable Taxes are extra.

Solicitation No. - N° de l'invitation

47064-137609/B

Amd. No. - N° de la modif.

File No. - N° du dossier

015qd47064-137609

Buyer ID - Id de l'acheteur

015qd

CCC No./N° CCC - FMS No/ N° VME

1000307609

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Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

## **6.2 Economic Price Adjustment (EPA) on the Optional Quantities**

For the period from 1 April 2014 to 31 March 2016, an Economic Price Adjustment for the optional quantities of each item will be applied as follows to establish the firm unit prices for the applicable Fiscal Year (FY - April 1 to March 31) period.

For each Fiscal Year period starting 1 April 2014, an economic price adjustment (EPA) will be used to determine the escalation rate (positive or negative) to be applied to the previous FY years firm unit prices. The EPA will be determined based on the "All items - CPI" in The Consumer Price Index, Major Components, Selected Sub-groups and Special Aggregates, not seasonably adjusted, Ontario, Statistics Canada - Catalogue no. 62-001, Table 9-6 for the period of 1 January to 31 December of the previous year.

Starting 1 April 2014, and 1 April 2015, the firm unit prices for each optional item shall equal the existing firm unit price times the "All items - CPI" for the period of 1 January to 31 December of the previous calendar year.

## **6.3 Multiple Payments**

*SACC Manual* clause H1001C (2008-05-12) **Multiple Payments**

## **6.4 SACC Manual Clauses** by reference

SACC Manual Clause C2000C (2007-11-30) **Taxes - Foreign-based Contractor** (If applicable)

## **6.5 D4001C (2008-12-12) Shipping Instructions - Delivery at Destination**

Goods must be consigned to the destination specified in the Contract and delivered:

Delivered Duty Paid (DDP) Ottawa, Ontario Incoterms 2000 for shipments from a commercial contractor.

## **7. Invoicing Instructions**

H5001C (2008-12-12) **Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

2. Invoices must be distributed as follows:

- a. The original and one (1) copy must be forwarded to the following address for certification and payment.

Canada Border and Services Agency (CBSA)  
Science and Engineering  
79 Bentley Ave.  
Ottawa, ON  
K2E 6T7

Att: Tanya Emery  
Phone 613 954-0273

b. One (1) copy must be forwarded to the **Contracting Authority** identified under the section entitled "Authorities" of the Contract.

c. One (1) copy must be forwarded to the consignee.

## 8. Certifications

### 8.1 Compliance

Compliance with the certifications and related documentation provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification, provide the related documentation or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

### 8.2 SACC Manual Clauses

A3060C (2008-05-12) **Canadian Content Certification** (if applicable)

## 9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in \_\_\_\_\_. (*Insert the name of the province or territory as specified by the Bidder in its bid, if applicable*)

## 10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the general conditions 2010(A) (2013-04-25) General Conditions - Goods (Medium Complexity);
- (c) Annex A, Statement of Work;
- (d) Annex B, Prices, Deliverables and Optional Quantities
- (e) the Contractor's bid dated \_\_\_\_\_ (*insert date of bid*) (*If the bid was clarified or amended, insert at the time of contract award: " , as clarified on \_\_\_\_\_ " or " , as amended on \_\_\_\_\_ " and insert date(s) of clarification(s) or amendment(s)*)

## 11. SACC Manual Clauses

B7500C (2006-06-16) Excess Goods  
 B4019C (2007-11-30) United States Military Specifications and Standards  
 D2000C (2007-11-30) Marking  
 D2001C (2007-11-30) Labelling  
 D9002C (2007-11-30) Incomplete Assemblies  
 G1005C (2008-05-12) Insurance

Solicitation No. - N° de l'invitation

47064-137609/B

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

015qd

Client Ref. No. - N° de réf. du client

1000307609

File No. - N° du dossier

015qd47064-137609

CCC No./N° CCC - FMS No/ N° VME

---

**12. Preparation for Delivery**

Preservation and packaging shall be in accordance with best Commercial Standards.

**13. Consignee**

Canada Border Services Agency  
Science and Engineering  
79 Bentley Ave.  
Ottawa, Ontario  
Canada  
K2E 6T7

Att: David Coutts



**47064-137609 Annex A**

**STATEMENT OF WORK  
FOR THE SUPPLY  
OF  
TWO-WAY PORTABLE RADIOS AND ACCESSORIES  
FOR THE  
CANADA BORDER SERVICES AGENCY**



## TABLE OF CONTENTS

<b>1. INTRODUCTION</b> .....	<b>4</b>
1.1. SCOPE .....	4
1.2. BACKGROUND .....	4
1.3. TECHNICAL AUTHORITY .....	4
<b>2.0 REQUIREMENTS</b> .....	<b>4</b>
<b>2.0.1 GENERAL</b> .....	<b>4</b>
2.0.2 Transmitter Specifications .....	5
2.0.3 Receiver Specifications .....	5
2.0.4 Antenna.....	6
2.0.5 Battery .....	6
2.0.6 Remote Speaker Microphone.....	6
2.0.7 Desktop Charger .....	6
2.0.8 Heavy-Duty Leather Case and Belt Loop .....	7
<b>3.0 PASS SIX/SEVEN TONE SPECIFICATIONS</b> .....	<b>7</b>
3.0.1 Standard Voice Call.....	7
3.0.2 Alarm Signalling .....	8
3.0.3 Modified EEA Tone Set.....	8
3.0.4 Lead-In Delay .....	9
3.0.5 Repeat Tone.....	9
3.0.6 Group Tone .....	9
3.0.7 Conventional Mode.....	9
3.0.8 Talkaround Channel & ALLCALLs .....	9
<b>4.0 VOICE AND ALARM CALLS</b> .....	<b>10</b>
4.0.1 General.....	10
4.0.2 Voice Calls .....	11
4.0.3 Alarms.....	12
4.0.4 Talkaround .....	12
4.0.5 Conventional Mode (non-PASS 6/7 TONE) .....	12
<b>5.0 TECHNICAL EVALUATION</b> .....	<b>13</b>
5.0.1 Stage 1 Requirements Compliance .....	13
5.0.2 Stage 2 Prototype Evaluation.....	13
<b>6.0 TESTING</b> .....	<b>13</b>
6.0.1 Test Number 1: PASS 6/7 TONE Decode to RTI Equipment (Non-Alarm Condition).....	14
6.0.2 Test Number 2: Valid TONE Decode Between Prototype and CBSA Legacy Radio .....	14
6.0.3 Test Number 3: Transmit and Receive Between Radios with Different COIs.....	14
6.0.4 Test Number 4: Busy Channel Lock-Out (BCLO).....	15
6.0.5 Test Number 5: ALLCALL.....	15
6.0.6 Test Number 6: Alarm Initiation – Standard Channel.....	15
6.0.7 Test Number 7: Alarm Initiation – Talkaround Channel .....	16
<b>7.0 PROTOTYPE</b> .....	<b>16</b>
<b>8.0 EQUIPMENT QUANTITIES</b> .....	<b>17</b>



**9.0 DELIVERY SCHEDULE..... 18**

**10.0 OPTION TO BUY MORE EQUIPMENT..... 18**



## 1. INTRODUCTION

### 1.1. Scope

The purpose of this Statement of Work (SOW) is to describe the technical and operational requirements for the purchase of conventional two-way portable radios and accessories designed to work with the Personal Alarm Security System (PASS) equipment currently in use by the Canada Border Services Agency (CBSA).

### 1.2. Background

The CBSA installed the PASS system at over 130 sites, including land border crossings and some airports across Canada. The PASS system provides the CBSA officers with radio communication for use during their day-to-day operations and an instant, manually triggered, emergency alarm.

The radio equipment supplied by the contractor must be fully compatible with existing two-way radios (legacy PASS equipment which consists of Tait T5020 and Kenwood TK3180 portable radios) and alarm decoders. The PASS firmware is customized for the CBSA's needs.

### 1.3. Technical Authority

To be advised at contract award.

## 2.0 REQUIREMENTS

### 2.0.1 GENERAL

- 2.0.1.1 The radio must operate between 400 and 470 megahertz including 400 and 470 megahertz.
- 2.0.1.2 The mode of operation must be Frequency Modulation (FM), analog and fully compatible with legacy FM two-way radios in use by the CBSA
- 2.0.1.3 The radio must be Intrinsically Safe (IS) and certified IS by either the Canadian Standards Association (CSA) or Factory Mutual (FM). [Class 1, Division 1, Groups C, D, T4 (minimum)]
- 2.0.1.4 The radio must meet MIL-STD 810 C,D,E,F for standards relating to temperature, shock, humidity, dust and vibration.
- 2.0.1.5 The radio must meet International Protection Standard IP 54 for dust and water protection standards.
- 2.0.1.6 The radio must have at least 350 programmable channels (minimum).



- 2.0.1.7 The radio must be programmable without dismantling the radio.
- 2.0.1.8 The radio must operate with legacy PASS equipment.
- 2.0.1.9 The radio must be fully programmable via Windows-based (Windows 7™) software utilizing the serial port (USB2.0). The manufacturer's programming software and programming cable must be provided
- 2.0.1.10 The radio must have a programmable button clearly marked (colour other than black) that is used as an emergency button for initiating an instant alarm signal.
- 2.0.1.11 The radio must have at least one programmable button (other than the emergency button) for locking and unlocking the keyboard.
- 2.0.1.12 The radio must be type-approved by Industry Canada for use in Canada. The type-approval number must be clearly indicated with the bid.
- 2.0.1.13 The dimensions of the radio with the rechargeable battery attached must not exceed: 65mm wide X 155mm high X 50 mm deep. The dimensions stated do not include the antenna.
- 2.0.1.14 The radio display must have alpha-numeric text programmed on a channel-by-channel basis to indicate channel number and at least 8 characters in addition to the channel number;
- 2.0.1.15 The display must have a battery status "gas gauge" indication to help the user anticipate when the battery is about to require recharging;
- 2.0.1.16 The radio must have a full keyboard (minimum of 12 keys) to permit selection of channels. The keypad must also permit the transmission of dual tone multiple frequency (DTMF) tones.

## 2.0.2 Transmitter Specifications

- 2.0.2.1 The radio must have a programmable high power setting of 4 watt minimum and a low power setting of 1 watt maximum.
- 2.0.2.2 The spurious response must be 70 decibels or better.
- 2.0.2.3 The channel bandwidths must be programmable between Wide (25 kilohertz) and Narrow (12.5 kilohertz).
- 2.0.2.4 The audio distortion for both wide and narrow channels must be 3 percent or better.

## 2.0.3 Receiver Specifications

- 2.0.3.1 The receiver must have sensitivity characteristics of 0.25 microvolts wide band or better and 0.28 microvolts narrow band or better at 12 decibels Signal to Noise and Distortion (SINAD).
- 2.0.3.2 The receiver must have a selectivity characteristic of 70 decibels wide band or better and 63 decibels narrow band or better.
- 2.0.3.3 The receiver must have an intermodulation distortion characteristic of 70 decibels or better.
- 2.0.3.4 The receiver must have a spurious response characteristic of 70 decibels or better.
- 2.0.3.5 The receiver must have the audio output characteristic of at least 500 milliwatts with less than 3 percent distortion or better.



## **2.0.4 Antenna**

- 2.0.4.1 The antenna must be of the rubberized, short, stubby variety and must be trimmed and capped for operation between 400 and 430 Megahertz.

## **2.0.5 Battery**

- 2.0.5.1 The battery must be of Nickel-Metal-Hydrate (NiMH) or Lithium-Ion (Li-Ion) chemistry.
- 2.0.5.2 The battery must be certified to meet IS standards for Class 1, Division 1, Groups C, D and T4 (minimum)
- 2.0.5.3 The IS battery certification must have been issued by the Canadian Standards Association (CSA) or Factory Mutual (FM) and marked on each battery.
- 2.0.5.4 The battery must be capable of powering the radio on high power for at least 9 hours based on a (5,5,90) duty cycle (Transmit 5 percent; Receive 5 percent and Standby 90 percent).

## **2.0.6 Remote Speaker Microphone**

- 2.0.6.1 The remote speaker microphone must have a clip on the back.
- 2.0.6.2 The remote speaker microphone must have a 2.5 mm receptacle capable of receiving a 2.5 millimetre diameter plug for an earpiece to be plugged in which is monaural (the CBSA shall provide its own earpieces). The 2.5 millimetre receptacle must be integral to the microphone and not require a conversion adapter.
- 2.0.6.3 The remote speaker microphone must have an emergency button (colour other than black) on it that can be used to initiate an instant alarm signal.
- 2.0.6.4 The remote speaker microphone must have a volume control on the remote speaker microphone itself.
- 2.0.6.5 The remote speaker microphone must be IS-rated that meets standards for Class 1, Division 1, Groups C, D and T4 (minimum) environments (CSA or FM certified and approved by the manufacturer of the radio for use with the radio).

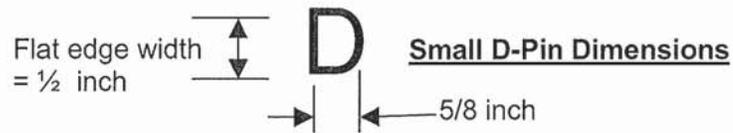
## **2.0.7 Desktop Charger**

- 2.0.7.1 The desktop charger must provide a full charge to the rechargeable battery within 3 hours.
- 2.0.7.2 The desktop charger must incorporate lights that indicate either a charge in progress or a charge cycle that is completed.
- 2.0.7.3 The desktop charger must operate on a standard alternating current power receptacle (115 volts alternating current, 15 Amp circuit).
- 2.0.7.4 The desktop charger must be capable of charging the battery by itself or when attached to a radio.



**2.0.8 Heavy-Duty Leather Case and Belt Loop**

- 2.0.8.1 A heavy-duty black leather case must be provided that holds the radio and battery securely.
- 2.0.8.2 The case must accommodate the connector of the speaker microphone while the radio is sitting in the case.
- 2.0.8.3 The case must have a small D-pin on it that mates with the belt loop designed to fit a wide police-style service belt.



The case must swivel about the belt loop via the D-pin connection.

- 2.0.8.4 The belt loop must accommodate a police-style service belt that is 2.5 inches wide

**3.0 PASS Six/Seven Tone Specifications**

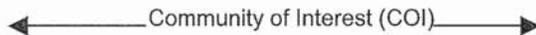
The PASS six/seven tone set permits the establishment of separate talkgroups that share the same frequency as well as providing information to the alarm decoder about which radio triggered the alarm.

All radios supplied by the contractor must have the firmware installed to meet all these specifications.

**3.0.1 Standard Voice Call**

For a normal voice call (non-alarm), the following sequence of tones occurs at the very beginning of a transmission.

Tone 1	Tone 2	Tone 3	Tone 4	Tone 5	Tone 6
Region Code	CBSA Port Location	Group Within Port	Hex A Group "G"	Hex E Repeat "R"	Hex A Group "G"



Tones 1 through 3 Community of Interest (COI) can be any digit between 0 thru 9 as represented by the tone set (reference SOW 3.0.3). The COI represents the talkgroup code and each channel in the radio can be assigned a specific three-digit COI. Each channel must have the capability to have a different COI as programmed by the CBSA.

Tone 4 is Group 1055 Hz; Tone 5 is Repeat 2110 Hz and Tone 6 is Group 1055 Hz.





For example, a radio transmitting 5 0 1 G R G must be able to communicate with other radios on the same frequency that are associated with the 501 COI code. All other radios on that frequency set-up for a different COI code must stay silent (muted).

### 3.0.2 Alarm Signalling

In the event that an alarm is triggered by the radio, the tone sequence is 7 tones long.

Tone 1	Tone 2	Tone 3	Tone 4	Tone 5	Tone 6	Tone 7
Region Code	CBSA Port Location	Group Within Port	Radio ID Digit 1	Radio ID Digit 2	Radio ID Digit 3	Hex C 2247 Hz « Alarm »

Note that tones 4, 5 & 6 no longer have the Group-Repeat-Group tones and now contain the three-digit radio ID number. Each radio is assigned a discrete three-digit number and that ID is sent to the alarm decoding equipment for display to identify which radio triggered the alarm.

The first three tones tell the alarm equipment which region, port and group within the port triggered the alarm and causes a message to that effect to be displayed on the alarm decoder display.

For instance if a radio were to transmit 5 0 1 3 5 8 “Hexadecimal C”; this would translate in the alarm decoder as:

- 5 = Region 5 (Northern Ontario Region)
- 0 = Macdonald-Cartier International Airport
- 1 = Traffic Group
- 358 = Radio 358

Hexadecimal C means previous six tones were associated with an alarm.

The alarm equipment would take the tone string 501358 Hex C and translate it to display: **OTTTFC358**.

### 3.0.3 Modified EEA Tone Set

Tone Number	Frequency (Hz)	Designation
0	1981	0
1	1124	1
2	1197	2
3	1275	3
4	1358	4
5	1446	5
6	1540	6
7	1640	7
8	1747	8
9	1860	9
Hex A	1055	'G' Group Digit
Hex B	930	Not Used





Hex C	2247	'A' Alarm Digit
Hex D	991	Not Used
Hex E	2110	'R' Repeat Digit
Hex F	2400	

Each tone period is 40 milliseconds. Thus it takes 240 milliseconds to generate the six tones for a normal voice call.

It takes 280 milliseconds to generate 7 tones when an alarm has been initiated.

### 3.0.4 Lead-In Delay

A lead-in delay is used prior to sending the six or seven tone sequence to allow all components in the communications path to stabilize. The lead-in delay is 1500 milliseconds.

### 3.0.5 Repeat Tone

A repeat tone is inserted whenever the tone sequence contains consecutive tones of the same frequency.

### 3.0.6 Group Tone

The last three digits of a standard voice call (6 tones long) are always the group digits (Group-Repeat-Group). This is the basis of group selection in a PASS six/seven tone environment.

### 3.0.7 Conventional Mode

The contractor must supply radios that will allow the CBSA to have some channels designated as conventional non-PASS 6/7 TONE channels. Any channel designated as a conventional (non-PASS 6/7 tone) channel is identified by setting tone 2 and tone 3 of the six-tone sequence to Hex F and Hex E respectively. Whenever a channel is configured as conventional (FE), the radio does not send the six-tone sequence for that channel. The CBSA shall accept other methods for establishing a conventional channel (non-6/7 tone) as long as individual channels can be configured as conventional at the discretion of the CBSA through the radio's programming software.

### 3.0.8 Talkaround Channel & ALLCALLs

The contractor must supply radios that will support the following requirements. When a repeater fails, the CBSA still wishes to be able to communicate in simplex mode from radio-to-radio whilst still permitting the generation of an alarm sequence. Tones 2 and 3 are set to Hex F (FF) to indicate that the channel in question is a talkaround (6/7 tone) channel. During a normal radio call, the six-tone sequence is: the region code followed by G-R-G-R-G. (for example: 5GRGRG)

During an alarm initiation, a fixed auxiliary byte (tones 2 and 3 associated with the CBSA port location and the group within the port) is used for alarm decoding. This byte would be set once for each radio and would only be used in the event of a talkaround channel being used (Tones 2 & 3 of COI for the talkaround channel=FF)



The tone 2, tone 3 (Hex FF) is also used as an ALLCALL and any radio on the same frequency, regardless of what COI it is associated with, will open up when a radio transmits a COI with tone 2 and tone 3 representing Hex FF.

A means of programming the first tone of the COI (Region) must also be provided. This can be set once for any radio by programming or it can be programmed channel by channel.

**Sample Channel Profile**

Chan Nbr	Group	TX Freq. (MHz)	CTCSS TX (Hz)	RX Freq. (MHz)	CTCSS RX (Hz)	COI	COI as decoded by Alarm Equipment
01	Ottawa Macdonald-Cartier International Airport (OMCIA) Traffic	415.0100	203.5	410.0100	203.5	501	OTTTFC Region 5
02	OMCIA Commercial	415.0100	203.5	410.0100	203.5	504	OTTCOM Region 5
03	OMCIA TalkAround	410.0100	203.5	410.0100	203.5	5FF	Alarm COI set by Auxilliary Byte If Aux Byte = 01 then msg = OTTTFC in Region 5
04	OMCIA Conventional	410.0115	100.0	410.0115	100.0	FE	Non-PASS 6/7 tone Channel
05	OMCIA ALL CALL	415.0100	203.5	410.0100	203.5	5FF	To make broadcast to radios on CH 1 and 2 in this example in Region 5

CTCSS = Continuous Tone Coded Squelch System

**4.0 Voice and Alarm Calls**

**4.0.1 General**

The radio must be capable of sending voice and alarm calls. The PASS network is designed such that user equipment, which is not involved in a call is normally muted. This means that the audio path to the speaker is shut-off by the PASS signaling unit (PASS 6/7 TONE decoder).

When a radio initiates a call or receives a call with the correct Continuous Tone Coded Squelch System (CTCSS) and PASS 6-tone sequence present, it will become unmuted.





When a call is placed, all radios on the same COI channel become unmuted and can talk to each other until they end the call. The call is terminated when no one transmits for a predetermined length of time. The length of time can be changed, but is generally set to two seconds after the busy light goes out (loss of signal). The PASS 6/7 TONE provides COI signaling and the CTCSS provides protection from co-channel users.

#### **4.0.2 Voice Calls**

To initiate a voice call the user selects the desired destination COI by selecting a channel that will provide a match to the called-radio's COI.

Each programmed channel corresponds to a different COI.

If the selected channel is clear, the radio user presses and holds the push-to-talk (PTT) button for approximately one second. This causes the radio to transmit the appropriate PASS 6/7 TONE code along with the CTCSS sub-audible carrier.

The call originator will hear a progress tone, which consists of three short beeps. This is the "Go Ahead" signal to begin speaking. The called radio will emit a medium length single beep (~ 1 second long) known as the CALL Tone and the called radio becomes unmuted.

The conversation can then go back and forth fairly quickly without waiting for the go-ahead delay each time.

The radio must have AUTO MUTING capability so that it can automatically mute its own audio at the end of a call. Auto muting is based on a timer which is reset to zero each time the radio receives the correct carrier frequency and CTCSS or if the PTT is pressed. When the signal drops out, the auto-mute timer starts counting and the radio will mute when it reaches the preprogrammed value of between zero and four seconds. This ensures all users are eventually returned to a muted state upon completion of a call. It also allows the users short pauses in the conversation without having to re-initiate the call and suffer the associated time delays.

If the channel is already in use by one COI group, a call cannot be made by another new COI group until the current one finishes. All other users, which are not part of the current COI call (muted) are prevented from transmitting. If a non-current COI user attempts to place a call, they will hear a continuous tone while the PTT is pressed (Busy Channel Lock Out or BCLO).



### 4.0.3 Alarms

Alarms must be initiated by double-pressing the alarm button on the radio or on the remote speaker microphone (two presses within eight seconds).

This causes the alarm code PASS 6/7 TONE sequence to be transmitted (7 tones). The coded sequence is channel dependent. The exception to this is the generation of an alarm while on a talkaround channel. One alarm code is utilized for all the talkaround channels on a particular radio (auxiliary byte or tones 2 & 3 of COI)

The alarm code must contain the three-digit COI (Region Code, Port Code, Group code) for the channel in question, the three-digit radio ID number and the alarm tone. If an alarm is triggered while on the talkaround channel, the COI consists of the region tone, tones 2 & 3 (auxiliary byte preset in the radio), the three digit radio ID and the alarm tone.

The alarm decoding equipment receives this PASS seven-tone string and decodes it to present an alarm message such as: OTTTF267.

Once the alarm is sent, the alarming radio will remain in whatever state it was in prior to the alarm (muted or unmuted). The alarm sequence will be continuously transmitted every thirty seconds until the power to the radio is turned off.

Voice calls must still be capable of being sent and received during an alarm initiation to permit other users to verify that the alarm is valid with the alarm radio user.

### 4.0.4 Talkaround

Talkaround is used to permit local radio communications in the event that the repeater fails.

When the talkaround channel is used, the COI is the region code and the ALLCALL code 'FF'. The presence of 'FF' for tones 2 & 3 of the COI tells all other radios to unmute provided they're on the same frequency.

An alarm sent while in talkaround mode will use the fixed auxiliary byte for the radio in question. Each radio will have **one auxiliary byte** programmed associated with the home port of the user. The auxiliary byte is only active when an alarm is signaled while in talkaround.

### 4.0.5 Conventional Mode (non-PASS 6/7 TONE)

At least one channel is set-aside on each radio to permit conventional communications without the PASS 6/7 TONE feature.

When the COI tones 2 & 3 are set to FE, this is the indication to the radio that it is on a conventional channel and no PASS 6/7 TONE tones are transmitted or expected to be received.

As described in SOW para 3.0.7, the CBSA must accept other methods to declare individual channels as conventional as long as there can be both PASS 6/7 TONE and non-PASS 6/7 TONE channels on the same radio at the discretion of the CBSA.



## 5.0 TECHNICAL EVALUATION

### 5.0.1 Stage 1 Requirements Compliance

The CBSA Technical Authority shall review each bid against the Requirements for compliance (SOW Section 2.0 Requirements).

Any specifications found to be outside the tolerances specified in this document shall render the bid non-compliant and it will be removed from further consideration.

### 5.0.2 Stage 2 Prototype Evaluation

Those bids that are technically compliant (passed stage 1) will then have their prototype radio tested using the test suite identified in SOW Section 6.0 Testing.

If the supplied prototype radio is not found to be fully operational in the CBSA's PASS environment to the satisfaction of the Technical Authority, the bid will be declared non-compliant and will be removed from further consideration.

## 6.0 TESTING

Channel Profile for prototype radio to be configured by bidder:  
The CBSA reserves the right to modify the profile as required.

Channel Number	Channel Display Message	Transmit Frequency (MHz)	Transmit CTCSS (Hz)	Receive Frequency (MHz)	Receive CTCSS (Hz)	Region Code (COI Tone 1)	COI Tones 2 & 3
01	OTTTFC	415.0125	203.5	410.0125	203.5	5	81
02	OTT TA	410.0125	203.5	410.0125	203.5	5	FF
03	OTTFRT	415.0125	203.5	410.0125	203.5	5	87
04	OTT CV	410.0125	203.5	410.0125	203.5		FE

**Note 1:**

Auxiliary Byte In Radio (For use when alarm happens while in Talkaround):  
Region Code : 5  
COI Tones 2&3: 84 (Aux Byte)  
Prototype Radio ID (for alarm identification) : 397

**Note 2 :**

Ch 1 and 3 are repeater channels for an analog repeater (narrow band 12.5 kHz channel) at the CBSA Telecom Lab in Ottawa.

**Note 3:**

The testing of all the buttons/functions of the remote speaker microphone is independent of the testing of similar buttons/functions on the radio itself. The stated required results must be the same when operating a button/function on the remote speaker microphone as compared to the equivalent button/function on the radio itself.



### **6.0.1 Test Number 1: PASS 6/7 TONE Decode to RTI Equipment (Non-Alarm Condition)**

#### *6.0.1.1 Purpose:*

The prototype radio must be tested using CH 1 and CH 2 for a valid PASS 6/7 TONE decode on the alarm equipment.

#### *6.0.1.2 Test Method & Required Results:*

The prototype must be keyed (press PTT and release) on CH 1 and the alarm decoder must display 581.

The prototype must be keyed (press PTT and release) on CH 2 and the alarm decoder must display 5AA. In talkaround, the auxiliary byte does not get transmitted unless an alarm is initiated. A straight voice call on a talkaround channel will yield 5GRGRG, which is decoded in the alarm equipment as 5AA.

*It is understood that the bidders will not have access to an alarm decoder to verify this functionality, but if they can make two of their own radios communicate with each other using the prescribed COIs in the table above, the alarm equipment is also likely to decode the COI correctly.*

### **6.0.2 Test Number 2: Valid TONE Decode Between Prototype and CBSA Legacy Radio**

#### *6.0.2.1 Purpose:*

The prototype must be evaluated for its ability to generate the appropriate PASS 6/7 TONE tones on a standard voice call with CBSA legacy radio equipment.

#### *6.0.2.2 Test Method & Required Results:*

A CBSA legacy radio must be configured with the identical channel profile to the prototype.

The prototype must be on CH 1.

The CBSA legacy radio must be on CH 1. A voice call must be made in each direction to test the PASS 6/7 TONE decoding capability.

The radio transmitting must emit three short beeps to signal it is OK to begin speaking (allowing for the PASS 6/7 TONE tones to be transmitted) and the receive radio must emit a single beep of one second duration to signal an incoming call.

All beep levels must be low, as these radios will ultimately be used with earpieces. A single short pulse beep must be heard once the mute timer setting has been reached and the radios have gone back to a muted state. The mute timing must be adjustable and is typically between 0 and 4 seconds.

(As long as each radio responds before the mute timer has run-out, only one PASS 6/7 TONE delay need be incurred per conversation.)

### **6.0.3 Test Number 3: Transmit and Receive Between Radios with Different COIs**

#### *6.0.3.1 Purpose:*

To verify that two radios on the same frequency, but different COIs, will not hear each other.

#### *6.0.3.2 Test Method & Required Results*

The prototype must be on CH1 and the CBSA legacy radio must be on CH 3.

A radio call must be made on the prototype radio and no audio should come through on the CBSA legacy radio (muted). A light indication on the CBSA legacy radio must indicate the frequency is in use, but no voice call of any kind should be heard.



The CBSA legacy radio must make a transmission on CH 3 and the prototype radio (CH 1) must indicate frequency activity by means of a light, but no voice call must be heard on the prototype.

#### **6.0.4 Test Number 4: Busy Channel Lock-Out (BCLO)**

##### *6.0.4.1 Purpose:*

To verify that two radios on the same frequency, but different COIs, cannot transmit over each other (except during an alarm initiation).

##### *6.0.4.2 Test Method & Required Results*

The prototype must be on CH 1 and the CBSA legacy radio must be on CH 3. A radio call must be made on the prototype radio. When the busy channel light illuminates on the CBSA legacy radio, the CBSA legacy radio will be keyed and its transmitter should be blocked and the CBSA legacy radio should emit a busy channel lock out tone while the PTT is pressed.

A radio call must be made from the CBSA legacy radio (CH3) to the prototype (CH1).

The activity light must be illuminated on the prototype. An attempt to key the PTT must be made on the prototype while the CBSA legacy radio is transmitting. The prototype must emit a busy channel lock-out tone while the PTT is pressed.

**It should be noted that while busy channel lock-out is a required feature for normal voice calls, BCLO must in no way impede the ability for the radio to transmit an alarm sequence. (i.e. alarms must always be transmitted when initiated regardless of the BCLO state of the radio)**

The CBSA legacy radio must be keyed on CH 3. The prototype radio must indicate activity on the frequency, but remain muted. While in the BCLO condition, the alarm button on the prototype must be pressed two times in eight seconds. A 7-tone PASS 6/7 TONE sequence must be transmitted over top of the BCLO condition.

#### **6.0.5 Test Number 5: ALLCALL**

##### *6.0.5.1 Purpose:*

To test the radio's ability to make group-wide calls regardless of what COI a particular radio is set for on a particular common frequency.

##### *6.0.5.2 Test Method & Required Results*

The prototype must be on CH 2 and the CBSA legacy radio must be on CH 1. A voice call must be made on the prototype and the CBSA legacy radio must become unmuted and receive the call.

The prototype must be on CH 1 and the CBSA legacy radio must be on CH 2. The CBSA legacy radio must make a voice call and the prototype must become unmuted and receive the call.

The transmitting radio must emit 3 short beeps as a go-ahead sequence and the receive radio must emit a 1 second long tone as an incoming call notification.

#### **6.0.6 Test Number 6: Alarm Initiation – Standard Channel**

##### *6.0.6.1 Purpose:*

To verify the alarm functionality of the prototype with existing CBSA alarm decoders.

##### *6.0.6.2 Test Method & Required Results*

The prototype must be on CH 1.



The alarm button (as described in SOW para 2.0.1.10 of Requirements, General and SOW para 2.0.6.3 of Remote Speaker Microphone) must be pressed two times within eight seconds.

*(The twice in eight seconds pattern for alarm initiation is a CBSA standard and will not be deviated from)*

The CBSA alarm equipment must register the PASS 6/7 TONE 7 tone sequence and display OTTTFC397. The alarm decoder must receive the correct PASS 6/7 TONE tones.

The prototype radio must automatically retransmit the alarm PASS 6/7 TONE sequence every thirty seconds until the alarm radio is turned off.

#### **6.0.7 Test Number 7: Alarm Initiation – Talkaround Channel**

##### *6.0.7.1 Purpose:*

To verify that the auxiliary byte portion of the COI has been programmed along with the region code and utilized in the event of an ALLCALL (Talkaround) Channel alarm initiation.

##### *6.0.7.2 Test Method & Required Results*

The prototype must be on CH 2.

An alarm must be initiated on the prototype radio.

The alarm decoder will receive the region code and auxiliary byte (584) and the radio number to display on the decoder: OTTCOM397.

## **7.0 PROTOTYPE**

- 7.0.1 All bidders must supply a prototype radio package for evaluation complete with antenna as described in SOW paragraph 2.0.4.1, two batteries, charger, heavy-duty black leather case and belt loop and remote speaker microphone. Program software and interface cable must also be provided.
- 7.0.2 The prototype radio package must be delivered with the bid package.
- 7.0.3 All equipment and software/cabling that the bidder has provided for evaluation will be returned by courier at the CBSA's expense. The bidder must identify each item with a contact name and return courier address (no P.O. boxes) and contact phone number.
- 7.0.4 The prototype radio must be pre-programmed with the channel profile listed at the beginning of paragraph 6 Testing.



## 8.0 EQUIPMENT QUANTITIES

Equipment Details	Quantities	Optional quantities
Intrinsically Safe radio;	500	3000
Antenna which is rubberized, short, stubby variety and must be trimmed and capped for operation between 400 and 430 Megahertz;	500	3000
Intrinsically Safe Rechargeable Battery;	1000	6000
Intrinsically Safe Remote Speaker/Microphone complete with 2.5mm receptacle for ear-piece;	500	3000
Single unit desktop battery charger;	500	3000
Black heavy-duty leather case and belt loop (Small D Pin);	500	3000
Programming Software and Windows PC interface cable kit (USB2.0 Serial)	10	--



## **9.0 DELIVERY SCHEDULE**

See the Contract.

## **10.0 OPTION TO BUY MORE EQUIPMENT**

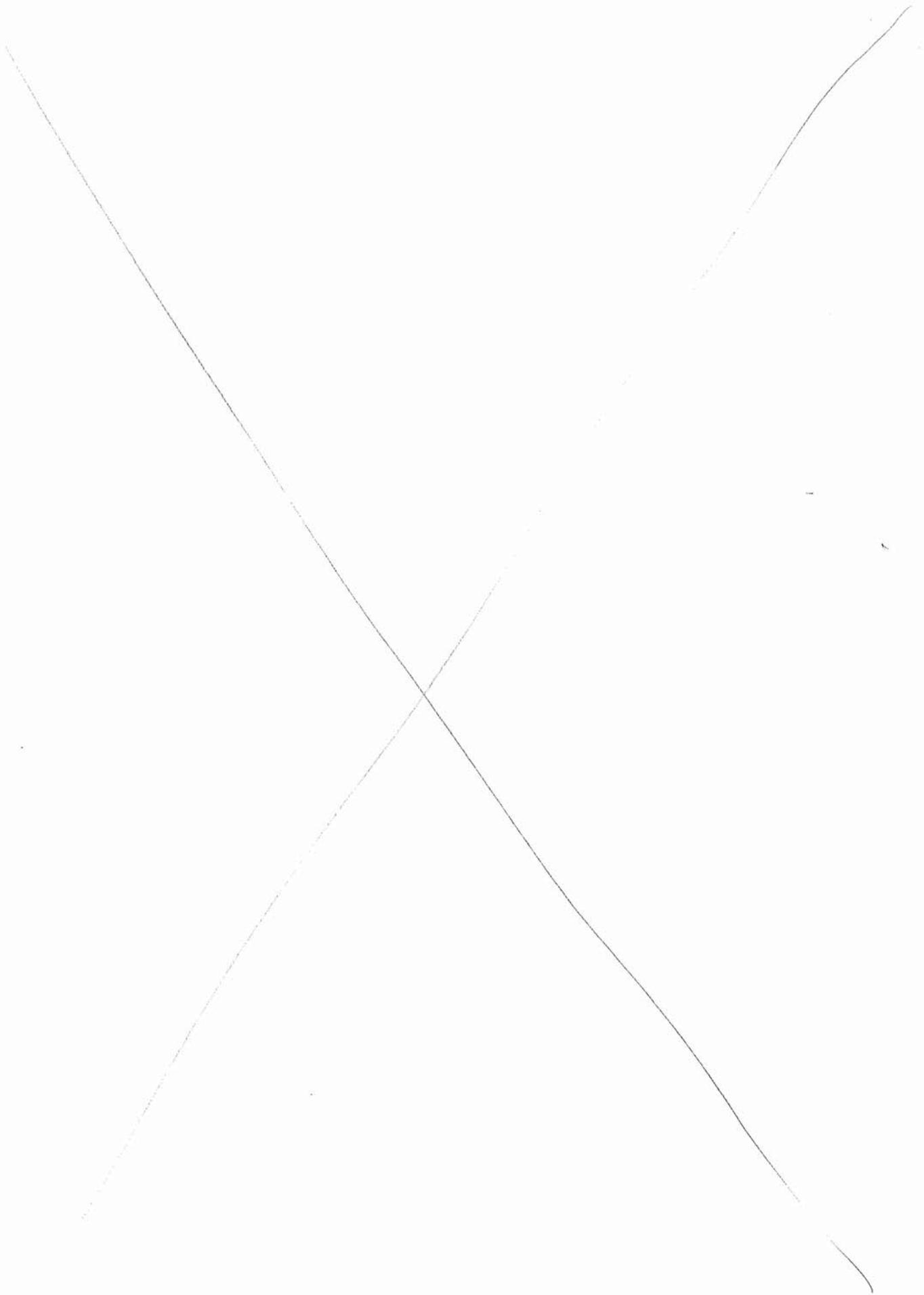
Options to purchase additional quantities of the equipment are listed in SOW paragraph 8 Equipment Quantities, under the column "Optional Quantities". This amount represents the maximum amount in addition to the initial contractual quantities that CBSA reserves the option to purchase, at its discretion, up to March 31, 2016.

## Prices, Deliverables and Optional Quantities

Column B

Column A

Description	Required Quantities	Firm Unit Price	Extended Price	Optional Quantities	Firm Unit Price (subject to EPA adjustment starting April 1/14)	Optional Item Extended Price
Intrinsically Safe Two-Way Portable Radio, preprogrammed for PASS use, and compliant with all the SOW requirements.	500			3,000		
Antenna per SOW 2.0.4.	500			3,000		
Intrinsically Safe Rechargeable Battery per SOW 2.0.5	1,000			6,000		
Intrinsically Safe Speaker/Microphone per SOW 2.0.6	500			3,000		
Single unit desktop (battery) charger per SOW 2.0.7	500			3,000		
Black Heavy-Duty Leather Case and Belt Loop per SOW 2.0.8	500			3,000		
Programming Software and Windows PC interface cable kit (USB2.0 Serial) per SOW 2.0.1.9	10			NA		
Totals excluding GST/HST	NA	NA		NA	NA	
			Sum of Column A			Sum of Column B



**47064-137609 ANNEX C**  
**TWO-WAY PORTABLE RADIOS AND ACCESSORIES**  
**FOR THE CANADA BORDER SERVICES AGENCY**  
**EVALUATION MATRIX**

**REQUIREMENTS**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.1.1	Frequency Range	400 to 470 MHz (including 400 and 470 MHz)	SD	
2.0.1.2	Modulation Type	Frequency Modulation (FM)	CS	
2.0.1.3	Intrinsically Safe	CSA or FM Class 1 Div 1 Groups C, D, T4 (minimum)	CS	
2.0.1.4	Military Spec.	MIL-STD 810 C, D, E, F	SD	
2.0.1.5	Dust and Water Protection	International Protection Std - IP 54	CS	
2.0.1.6	Number of Channels	350 Programmable Channels minimum	SD	
2.0.1.7	Programmable	Program without disassembling radio	CS	
2.0.1.8	Works with Legacy PASS equipment	PASS Testing per SOW Section 6.0	CBSA test results apply.	
2.0.1.9	Program via USB port	Software works with Windows 7/USB	CS	
2.0.1.10	Emergency button	On body of radio in colour other than black	CS	
2.0.1.11	Keyboard Lock	Button other than emergency button for locking/unlocking radio's keyboard	CS	
2.0.1.12	Industry Canada Type Approval	Industry Canada Type Approval Number identified with bid package	Number	
2.0.1.13	Dimensions	Not to exceed: 65 mm X 155 mm X 50 mm (not including antenna)	CS	
2.0.1.14	Radio Display	Alpha-Numeric Text, at least 8 characters + channel number	CS	
2.0.1.15	Battery Status	"Gas gauge" style battery charge indicator	SD	
2.0.1.16	Keyboard	Keyboard consists of a minimum of 12 keys and generate DTMF tones	SD	

**47064-137609 ANNEX C**  
**TWO-WAY PORTABLE RADIOS AND ACCESSORIES**  
**FOR THE CANADA BORDER SERVICES AGENCY**

**EVALUATION MATRIX**

**TRANSMITTER SPECIFICATIONS**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.2.1	Programmable High and Low Power settings	Hi Power 4 watts min; Lo Power 1 watt max.	CS	
2.0.2.2	Spurious response	70 decibels or better	CS	
2.0.2.3	Channel Bandwidth - programmable	Selectable 25 kilohertz (Wide) or 12.5 kilohertz (Narrow)	CS	
2.0.2.4	Audio Distortion for both wide and narrow channels	3 percent or better for both wide and narrow channels	CS	

**RECEIVER SPECIFICATIONS**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.3.1	Sensitivity characteristics	Wide Band 0.25 microvolts or better, Narrow Band 0.28 microvolts or better, both at 12 decibels SINAD	CS	
2.0.3.2	Selectivity characteristics	Wideband 70 decibels or better Narrow Band 63 decibels or better	CS	
2.0.3.3	Intermodulation Distortion	Characteristic of 70 decibels or better	CS	
2.0.3.4	Spurious Response	Characteristic of 70 decibels or better	CS	
2.0.3.5	Audio Output characteristic	At least 500 milliwatts with less than 3 percent distortion or better	CS	

**47064-137609 ANNEX C**  
**TWO-WAY PORTABLE RADIOS AND ACCESSORIES**  
**FOR THE CANADA BORDER SERVICES AGENCY**

**EVALUATION MATRIX**

**ANTENNA**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.4.1	Antenna Characteristics	Rubberized, Short, Stubby variety and must be trimmed and capped for operation between 400 and 430 Megahertz	CS	

**BATTERY**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.5.1	Chemistry	Nickel-Metal-Hydride or Lithium-Ion	CS	
2.0.5.2	Intrinsically Safe	Class 1, Division 1, Groups C, D and T4 (minimum)	CS	
2.0.5.3	Intrinsically Safe Certification	Factory Mutual (FM) or Canadian Standards Association (CSA)	CS	
2.0.5.4	Battery Life & Duty Cycle	At least 9 hours on high power at 5, 5, 90 duty cycle	CS	

**REMOTE SPEAKER MICROPHONE**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.6.1	Clip on Back	Clip on back of microphone	CS	
2.0.6.2	Ear Piece Receptacle	2.5mm receptacle integral to the Microphone Body	CS	
2.0.6.3	Emergency Button	Colour other than black on microphone	CS	
2.0.6.4	Volume Control	Volume Control on the remote speaker microphone body	CS	
2.0.6.5	Intrinsically Safe	Class 1, Division 1, Groups C, D and T4 (minimum) certified by CSA or FM and approved for use with the radio	CS	

**47064-137609 ANNEX C**  
**TWO-WAY PORTABLE RADIOS AND ACCESSORIES**  
**FOR THE CANADA BORDER SERVICES AGENCY**

**EVALUATION MATRIX**

**DESKTOP CHARGER**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.7.1	Charge Time	Full charge within 3 hours	CS	
2.0.7.2	Lights	Lights to indicate charge status	CS	
2.0.7.3	Power Source	115 volts alternating current, (15A circuit)	CS	
2.0.7.4	Charge Configuration	Battery by itself or when attached to radio	CS	

**HEAVY DUTY (BLACK) LEATHER CASE AND BELT LOOP**

Paragraph Reference	Requirement to Be Evaluated	Specification	Supporting Documentation (SD) Compliance Statement (CS)	Compliant or non-compliant
2.0.8.1	Case Characteristics	Colour: Black and hold radio + battery securely	CS	
2.0.8.2	Speaker Microphone Connector	Accommodate speaker microphone connector with the radio in the case	CS	
2.0.8.3	D-Pin	Small D pin on the case that allows the case to swivel	CS	
2.0.8.4	Belt Loop	Accommodate a police-style service belt that is 2.5 inch wide	CS	

**47064-137609 ANNEX C**  
**TWO-WAY PORTABLE RADIOS AND ACCESSORIES**  
**FOR THE CANADA BORDER SERVICES AGENCY**

**EVALUATION MATRIX**

**TESTING**

Paragraph Reference	Requirement to Be Evaluated	Specification	PASS Pre-programmed Prototype radios to be provided for test.	Compliant or non-compliant
6.0.1	PASS 6/7 Tone Decode to RTI Equipment	Check for valid COI decodes per SOW 6.0.1.2	CBSA test results apply	
6.0.2	Valid Tone Decode between the proposed radio and CBSA Legacy radios	Prototype radio works with Legacy radio per SOW 6.0.2.2	CBSA test results apply	
6.0.3	Transmit and receive between radios on the same frequency but different COIs	Radios should not unmute with different COIs and CBSA radios frequency in use light should illuminate per SOW 6.0.3.2.	CBSA test results apply	
6.0.4	Busy Channel Lock-Out	BCLO functions per SOW 6.0.4.2	CBSA test results apply	
6.0.5	All Call: Make group-wide calls on a common frequency regardless of COIs in use	ALLCALLs functions per SOW 6.0.5.2	CBSA test results apply	
6.0.6	Alarm Initiation- Standard channel: verify alarm function of radio with existing CBSA alarm decoders	Triggers alarm fm Std channel	CBSA test results apply	
6.0.7	Alarm Initiation- Talkaround channel	Triggers alarm on talkaround channel	CBSA test results apply	