

**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> COMBAT PASSIVE / ACTIVE HEADSETS	
<b>Solicitation No. - N° de l'invitation</b> W8486-149688/A	<b>Date</b> 2014-05-22
<b>Client Reference No. - N° de référence du client</b> W8486-149688	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HN-458-65151	
<b>File No. - N° de dossier</b> hn458.W8486-149688	<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 2014-06-20</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> Lee, Carlos	<b>Buyer Id - Id de l'acheteur</b> hn458
<b>Telephone No. - N° de téléphone</b> (819) 956-3490 ( )	<b>FAX No. - N° de FAX</b> (819) 953-4944
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF NATIONAL DEFENCE CFSD MONTREAL 6363 RUE NOTRE DAME ST E. MONTREAL Quebec H1N3V9 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**

Electrical & Electronics Products Division  
11 Laurier St./11, rue Laurier  
7B3, Place du Portage, Phase III  
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>



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM Destination Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
1	NSN - NNO: 5965-99-488-9737 COMBAT PASSIVE HEADSET PASSIVE HEADSET TO BE USED IN THE PRESENCE OF HIGH EMC FIELDS • P/N: RA 195/1037 • NSCM: K1057 (Racal Acoustics Ltd, Hailsham, Harrow, GB) • or Equivalent • Any Bidder offering an equivalent or alternate part number must provide two (2) samples for testing and evaluation purposes. Specification sheets alone is not sufficient. • Contains two options to purchase an additional 500 units per year • Unit Price Year 1: _____ • Option Unit Price Year 1: _____ • Option Unit Price Year 2: _____ • P/N Offered: _____ • NSCM Offered: _____ • Name of Manufacturer: _____	WB941	W1941	300	Each	\$ XXXXXXXXXXXX	See Herein	



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM Destination Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
1	• Delivery Date offered:_____							



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM Destination	Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
2	NSN - NNO: 5965-99-676-6986 COMBAT ANR HEADSET ACTIVE ANR HEADSET TO BE USED IN BISONS' COMMAND POST DRIVER AND COMMANDER POSITIONS WHEN A/C IS RUNNING • P/N: RA195/1038 • NSCM: K1057 (Racal Acoustics Ltd, Hailsham, Harrow, GB) • or Equivalent • Any Bidder offering an equivalent or alternate part number must provide two (2) samples for testing and evaluation purposes. Specification sheets alone is not sufficient. • Contains two options to purchase an additional 500 units per year • Unit Price Year 1: _____ • Option Unit Price Year 1: _____ • Option Unit Price Year 2: _____ • • P/N Offered: _____ • NSCM Offered: _____ •	WB941	W1941	700	Each	\$	XXXXXXXXXXXX	See Herein	



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM Destination Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
2	Name of Manufacturer: _____ • Delivery Date Offered: _____							

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## **PART 1 - GENERAL INFORMATION**

### **1. Security Requirement**

There is no security requirement associated with the requirement.

### **2. Requirement**

The contractor must provide the goods in accordance with the technical requirements and in the quantities stated herein.

#### **2.1 Delivery Requirement**

Delivery is requested to be completed by August 29, 2014.

### **3. Debriefings**

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) calendar days

#### 1.1 SACC Manual Clauses

SACC Reference	Section	Date
A9033T	Financial Capability	2012-07-16
B1000T	Condition of Material	2007-11-30

### 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.

### **3. Enquiries - Bid Solicitation**

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) 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.

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## 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 ( 2 hard copies)

Section II: Financial Bid (1 hard copy)

Section III: Certifications ( 1 hard copy)

Section IV: Additional Information ( 1 hard copy)

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 are encouraged to:

- 1) use paper containing fibre certified as originating from a sustainably-managed forest and/or 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.

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## 1.1 Equivalent Products

1. Products that are equivalent in form, fit, function and quality to the item(s) specified in the bid solicitation will be considered where the Bidder:
  - (a) designates the brand name, model and/or part number of the substitute product;
  - (b) states that the substitute product is fully interchangeable with the item specified;
  - (c) provides complete specifications and descriptive literature for each substitute product with the bid;
  - (d) provides compliance statements that include technical specifics showing the substitute product meets all mandatory performance criteria that are specified in the bid solicitation; and
  - (e) clearly identifies those areas in the specifications and descriptive literature that support the substitute product's compliance with any mandatory performance criteria.
2. Products offered as equivalent in form, fit, function and quality will not be considered if:
  - (a) the bid fails to provide all the information requested to allow the Contracting Authority to fully evaluate the equivalency of each substitute product; or
  - (b) the substitute product fails to meet or exceed the mandatory performance criteria specified in the bid solicitation for that item.
3. In conducting its evaluation of the bids, Canada may, but will have no obligation to, request bidders offering a substitute product to demonstrate, at the sole cost of bidders, that the substitute product is equivalent to the item specified in the bid solicitation.

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## 1.2 Samples (DND)

Canada requests two (2) samples from the Bidder in order to determine its equivalency in form, fit, function, quality and performance to the item specified in the bid solicitation.

The Bidder must provide two (2) samples to the Technical Authority, transportation charges prepaid, and without charge to Canada with their bid proposal and/or precedent to contract award. The sample submitted by the Bidder will remain the property of Canada and will not be considered as part of the deliverables in any resulting contract. If a special tool set is required to perform the maintenance on the headset (see Annex "A" paragraph 6.5.2), a complete tool set shall be provided to perform the maintenance requirement with the two headsets. If the sample does not meet the requirements of the bid solicitation or the Bidder fails to comply with the request of the Contracting Authority, the bid will be declared non-responsive.

## 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.

## 1.3 Exchange Rate Fluctuation

The requirement does not offer exchange rate fluctuation risk mitigation. Requests for exchange rate fluctuation risk mitigation will not be considered. All bids including such provision will render the bid non-responsive.

## Section III: Certifications

### 1.4 Certifications

Bidders must submit the certifications required under Part 5.

## Section IV: Additional Information

### 1.5 Additional Information

#### 1.5.1 Delivery Offered

While delivery is requested as indicated above, the best delivery that could be offered is\_\_\_\_\_.

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## **1.5.2 Contractor Representatives**

Name and telephone number of the person responsible for :

### **General enquiries**

Name:

Telephone:

Facsimile:

E-mail:

### **Delivery follow-up**

Name:

Telephone:

Facsimile:

E-mail:

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## **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.

### **Evaluation Criteria**

All bids must be completed in full and provide all of the information requested in the bid solicitation to enable full and complete evaluation.

#### **1.1 Technical Evaluation**

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

The following Mandatory requirements must be submitted with the bid for evaluation

Technical compliance (description of items as stated herein);  
Completion of Annex C - Compliancy Matrix

#### **1.2 Financial Evaluation**

The RFP takes into account pricing for each of the 3 years. The EUP will be determined as follows: Sum of unit prices of the initial year plus the two (2) option years divided by total number of possible years (3 years).

**Example:**

<b>Number of Years</b>	<b>Unit Price</b>
1	\$10.00
Option Year 1	\$11.00
Option Year 2	\$12.00

EUP is calculated as follows:

(Year 1 + Option Year 1 + Option Year 2) / 3 years

EUP = (\$10.00 + \$11.00 + \$12.00) / 3

EUP = \$33.00 / 3

EUP = \$11.00

**1.2.1 Pricing Basis**

The bidder must quote firm unit prices in Canadian dollars, DDP Delivered Duty Paid (destination), Applicable Taxes extra, as applicable. Freight charges to destination and all applicable Custom duties and Excise taxes must be included.

**2. Basis of Selection**

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 Evaluation Unit Price (EUP) on an aggregate basis will be recommended for award of a contract.



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## 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

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.

#### 1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from Human Resources and Skills Development Canada (HRSDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed annex [Federal Contractors Program for Employment Equity - Certification](#), before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex [Federal Contractors Program for Employment Equity - Certification](#), for each member of the Joint Venture.

## **2. Additional Certifications Precedent to Contract Award**

The certifications listed below should be completed and submitted with the bid, but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Requirement

The contractor must provide the goods in accordance with the technical requirements and in the quantities stated herein.

#### 2.1 SACC Manual Clauses

SACC Reference	Section	Date
B1501C	Electrical Equipment	2006-06-16
B7500C	Excess Goods	2006-06-16

#### 2.2 Optional Goods

The Contractor grants to Canada the irrevocable option to acquire additional units, up to a maximum of 500 units per year of the goods described within 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, in whole or in part, through a contract amendment.

The Contracting Authority may exercise the option within twenty four (24) months after contract award by sending a written notice to the Contractor.

### 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.

#### 3.1 General Conditions

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

### 3.2 SACC Manual Clauses

<b>SACC Reference</b>	<b>Section</b>	<b>Date</b>
C2800C	Priority Rating	2013-01-28
C2801C	Priority Rating - Canadian Contractors	2011-05-16

## 4. Term of Contract

### 4.1 Delivery Date

All the deliverables must be received on or before \_\_\_\_\_ (Delivery as offered and as accepted will be inserted at contract award).

## 5. Authorities

### 5.1 Contracting Authority

The Contracting Authority for the Contract is:

**Carlos Lee**

Public Works and Government Services Canada

Acquisitions Branch

Logistics, Electrical, Fuel and Transportation Directorate

"HN" Division

7B3, Place du Portage, Phase III

11 Laurier Street

Gatineau, QC, K1A 0S5

Telephone: (819) 956-3490

Facsimile: (819) 953-4944

E-mail address: Carlos.lee@pwgsc-tpsgc.gc.ca

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 Contractor's Representative

Name and telephone number of the person responsible for:

### General Enquiries

Name: will be inserted at contract  
 Telephone: will be inserted at contract  
 Facsimile: will be inserted at contract  
 E-mail: will be inserted at contract

### Delivery Follow-up

Name: will be inserted at contract  
 Telephone: will be inserted at contract  
 Facsimile: will be inserted at contract  
 E-mail: will be inserted at contract

## 6. Payment

### 6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm unit prices as specified in the contract. Customs duties are included and Applicable Taxes are extra.

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 Limitation of Price

SACC Manual clause C6000C (2011-05-16) Limitation of Price

### 6.3 Multiple Payments

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

## 6.4 SACC Manual Clauses

SACC Reference	Section	Date
G1005C	Insurance	2008-05-12

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

National Defence Headquarters  
 MGen George R. Pearkes Building  
 101 Colonel By Drive  
 Ottawa, ON  
 K1A 0K2  
 Attention: Michael Nixon DLP 3-3-1-1

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

Department of Public Works and Government Services  
 "HN" Division  
 7B3 Place du Portage, Phase III  
 11 Laurier Street  
 Gatineau, QC  
 K1A 0S5  
 Attention: Carlos Lee

## 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 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and HRSDC-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "FCP Limited Eligibility to Bid" list. The imposition of such a sanction by HRSDC will constitute the Contractor in default as per the terms of the Contract.

## 9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

## 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) 2010A (2013-04-25) General Conditions - Goods (Medium Complexity);
- (c) Requirement;
- (d) Annex A, Federal Contractors Program for Employment Equity - Certification
- (e) Annex B, Enhanced ANR Headset Specifications with Passive Attenuation and Active Noise Reduction (ANR) System
- (f) Annex C, Compliancy Matrix
- (g) the Contractor's bid dated \_\_\_\_\_

## 11. Defence Contract

## SACC Manual clause A9006C (2012-07-16) Defence Contract

**12. SACC Manual Clauses**

<b>SACC Reference</b>	<b>Section</b>	<b>Date</b>
D5540C	ISO 9001:2008 Quality Management Systems - Requirements (Quality Assurance Code Q)	2010-08-16
D5510C	Quality Assurance Authority (Department of National Defence) - Canadian-based Contractor	2012-07-16
D5515C	Quality Assurance Authority (Department of National Defence) - Foreign-based and United States Contractor	2010-01-11
D5606C	Release Documents (Department of National Defence) - Canadian-based Contractor	2012-07-16
D5605C	Release Documents (Department of National Defence) - United States-based Contractor	2010-01-11
D5604C	Release Documents (Department of National Defence) - Foreign-based Contractor	2008-12-12

**12.1 NATO Commercial and Government Entity Code (NCAGE) Traceability**

Material supplied for the items specified in this contract is subject to investigation by Canada. Material which can neither be demonstrated by the contractor as having originated directly from the NCAGE specified for the item in this contract, nor as supplied with the specific written permission of this specified NCAGE, are subject to the following action by Canada.

Canada may either:

- (a) terminate the contract for default with respect to that item, return the item to the Contractor at the Contractor's risk and expense, and demand and receive from the Contractor (who shall forthwith so pay) all reprourement and other costs incurred by Canada, including any increased costs required for the purpose of expediting production; or
- (b) retain the item, and demand and receive from the Contractor (who shall forthwith so pay) the difference between the Contractor's costs relating to the item, as determined by Canada, and the costs which, in Canada's opinion, the Contractor would have incurred had it obtained and supplied an item which did not differ in any way from that specifically required under the contract.



## 12.2 Release Documents - Distribution

The Contractor must prepare the release documents in a current electronic format and distribute them as follows:

- a. One (1) copy mailed to consignee marked: "Attention: Receipts Officer";
- b. Two (2) copies with shipment (in a waterproof envelope) to the consignee;
- c. One (1) copy to the Contracting Authority;
- d. One (1) copy to:

National Defence Headquarters  
Mgen George R. Pearkes Building  
101 Colonel By Drive  
Ottawa, ON, K1A 0K2  
Attention: Michael Nixon DLP 3-3-1-1

- e. One (1) copy to the Quality Assurance Representative;
- f. One (1) copy to the Contractor; and
- g. For all non-Canadian contractors, one (1) copy to:

DQA/Contract Administration  
National Defence Headquarters  
Mgen George R. Pearkes Building  
101 Colonel By Drive  
Ottawa, ON, K1A 0K2  
E-mail: ContractAdmin.DQA@forces.gc.ca.

## 13. SACC Manual Clauses (Delivery)

SACC Reference	Section	Date
D2000C	Marking	2007-11-30
D2001C	Labelling	2007-11-30
D6010C	Palletization	2007-11-30
D3010C	Dangerous Goods/Hazardous Products	2012-07-16
B1505C	Shipment of Hazardous Materials	2006-06-16
D9002C	Incomplete Assemblies	2007-11-30

### 13.1 Shipping Instructions - Delivery at Destination

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

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

### 13.2 Preparation For Delivery

Preparation for delivery for headsets shall be in accordance with the latest issue of the Canadian Forces packing specifications D-LM-008-036/SF-000. Each headset shall be packed in a single carton with the aide mémoire included. The contractor shall strap, and if necessary wrap, shipments on standard 48 in. x 40 in. wood or fibreboard pallets supplied without cost to Canada by the Contractor. Total height including pallet shall not exceed 42 in for delivery.

### 13.3 Shipping - Scheduling

The Contractor must deliver the goods to Canadian Forces (CF) Supply Depots by appointment only. The Contractor or its carrier must arrange delivery appointments by contacting the Depot Traffic Section at the appropriate location shown below. The consignee may refuse shipments when prior arrangements have not been made.

25 CF Supply Depot Montreal

Montreal, Qué.

Telephone: 1-866-935-8673 (toll free), or  
514-252-2777, ext. 2363 / 4673 / 4282

**ANNEX "A"****FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY -  
CERTIFICATION**

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with such request by Canada will also render the bid non-responsive or will constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit HRSDC-Labour's website.

Date: \_\_\_\_\_ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- ( ) A1. The Bidder certifies having no work force in Canada.
- ( ) A2. The Bidder certifies being a public sector employer.
- ( ) A3. The Bidder certifies being a federally regulated employer being subject to the Employment Equity Act.
- ( ) A4. The Bidder certifies having a combined work force in Canada of less than 100 employees (combined work force includes: permanent full-time, permanent part-time and temporary employees [temporary employees only includes those who have worked 12 weeks or more during a calendar year and who are not full-time students]).
- A5. The Bidder has a combined workforce in Canada of 100 or more employees; and
- ( ) A5.1. The Bidder certifies already having a valid and current Agreement to Implement Employment Equity (AIEE) in place with \_\_\_\_\_ HRSDC-Labour.

**OR**

- ( ) A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to HRSDC-Labour. As this is a \_\_\_\_\_

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condition to contract award, proceed to completing the form Agreement to  
Implement Employment Equity (LAB1168), duly signing it, and transmit it to  
HRSDC-Labour.

B. Check only one of the following:

( ) B1. The Bidder is not a Joint Venture.

**OR**

( ) B2. The Bidder is a Joint Venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

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Amd. No. - N° de la modif.

File No. - N° du dossier

hn458W8486-149688

Buyer ID - Id de l'acheteur

hn458

CCC No./N° CCC - FMS No/ N° VME

W8486-149688

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**ANNEX B**

**ENHANCED ANR HEADSET SPECIFICATIONS**

**WITH**

**PASSIVE ATTENUATION AND**

**ACTIVE NOISE REDUCTION (ANR) SYSTEM**

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## 1.0 SCOPE

### 1.1 Identification

This Statement Of Work (SOW) establishes the specifications and test requirements for a Headset ENHANCED ACTIVE NOISE REDUCTION (EANR) procurement. The EANR headset shall incorporate passive noise attenuation and an Active Noise Reduction (ANR) System. The EANR headset will be used in modified Bison fighting vehicles with a cooling turbine and an Electronic Counter Measure (ECM) device. It should be noted that the headset connection is done through a coiled extension cable named a "drop-cord ". This drop cord (not included as part of this spec) provides a 2.4 meter extension capability and uses a Nexus quick disconnect connector to connect to the headset. The headset shall operate and fit comfortably with different types of protecting headgear including the CG634 soldiers and CVCMH helmets with the IRIS communication system.

### 1.2 Purpose

**1.2.1** The purpose of the EANR Headset is to reduce high ambient-noise levels present with the modified Bison vehicle, to a level below 85 dB SPL. The majority of the noises of the cooling turbine are above the ANR frequency capability, so very high passive attenuation is required by the headset to achieve our goal. A high performance directional microphone is also required to minimize the surrounding noise when the intercom is activated.

**1.2.2** The headset will be used in high RF ambient fields generated by Electronic Counter Measure (ECM) devices and RF communication radios. These high ambient fields will vary from 20 V/m to 45 V/m depending on the frequencies. The EANR headset shall be designed with RF suppression circuits to minimize these effects such that when operating on the vehicle at the commander or the driver positions with the IRIS communication system, the threshold of noise induced on the voice channel shall not jeopardize or make communication difficult to comprehend. **Canada can not disclose any data or the operation procedures or the installation details of the ECM due to its classification and its operation restrictions.**

## 2.0 APPLICABLE DOCUMENTS

### 2.1 Government Documents

The following documents form part of this specification to the extent specified herein. Contractor wishing to view documents must be Defence Logistics Information Service (DLIS) certified at <http://stinet.dtic.mil/index.html>.

#### STANDARDS:

##### Military

MIL-STD-188-114A	Electrical Characteristics of Digital Interface Circuits (30 September 1985) (CHG Notice 1, 13 December 1991)
MIL-STD-202F	Test Methods for Electronic and Electrical Component Parts (CHG Notice 14, 06 February 1998)
MIL-STD-449D	Radio Frequency Spectrum Characteristics, Measure Of (Notice 1, 18 May 1976)
MIL-HDBK-454A	General Guidelines for Electronic Equipment (03 November 2000)
MIL-STD-461E	Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment (20 August 1999)

MIL-HDBK-781A Reliability Test Methods, Plans, and Environments for Engineering, Development Qualification, and Production, Handbook for (01 April 1996)

MIL-STD-810F Environmental Engineering Considerations and Laboratory Tests (CHG Notice 1, 01 November 2000)

MIL-STD-1472F Human Engineering (23 August 1999)

Federal

FED-STD-595B Colors Used in Government Procurement (15 December 1989) (CHG Notice 1, 11 January 1994)

#### SPECIFICATIONS:

Military

MIL-F-14072D Finishes for Ground Based Electronic Equipment (04 October 1990)

MIL-C-26482G Connectors, Electrical, (Circular, Miniature, Quick Disconnect, Environment Resisting), Receptacles and Plugs, General Specification For (05 September 1975)

MIL-PRF-26542E Microphone, and Microphone Assemblies, Dynamic General Specification For (30 May 1997)

MIL-C-3885F Cable Assemblies and Cord Assemblies, Electrical (04 December 1985)

MIL-C-39029D Contacts, Electrical Connector, General Specification For (02 May 1988)

MIL-E-55119A(EL) Electro-Acoustical Transducer Equipments (18 September 1963)

Federal

QSTAG-244 Nuclear Survivability Criteria for Military Equipment (Ed 3, Amdt 1, 06 June 1983)

QSTAG 307 Characteristics of 28VDC Electrical Systems in Military Vehicles (01 December 1982)

#### OTHER PUBLICATIONS:

DCIEM Report No. 75-R-1114 Anthropometric Survey of Canadian Forces Personnel (1974)

D-02-002-001/SG-001 Identification Marking of Canadian Military Property (CHG/MOD 1 – 1986-02-19)

D-LM-008-036/SF-000 Department of National Defence Minimum Requirements for Manufacturer's Standard Pack (CHG/MOD 1 - 1986-07-15)

### 3.0 REQUIREMENTS

#### 3.1 System Definition

**3.1.1 General Description.** Canada requires the use of a headset with ANR and improved passive noise-reduction for a specific application. This headset will be used specifically on the IRIS communication system mounted in a Bison vehicle equipped with a high RPM cooling turbine and ECM RF Device. After evaluating different alternatives, Canada opted for a headset having the characteristics of the EANR headset since our Slimgard Headsets cannot meet this specific application. The headset shall fit under the combat CG634 soldiers and CVCMH helmets used by Canada.

**3.1.2 Headset Features.** The EANR headset procured under this contract shall include the following features: high passive noise reduction, a talk through circuit, an ANR circuit, and additional EMC/EMI protection. The ANR and Talk Through Circuit (TTC) circuits shall be assembled inside the earshells of the headset. The headset shall incorporate a dual function switch selecting the intercom, or a radio on the IRIS communication system. The dual function switch shall be mounted on the headset main cable assembly connecting to the drop cord. The length of the cord leaving the headset earshell shall be as specified in paragraph 5.2.

**3.1.2.1 ECM Compatibility.** The EANR headset shall be designed to minimize its susceptibility to Electronic Counter Measure (ECM) device used on the Bison vehicle. It shall be capable of functioning normally when the Bison is driven and the ECM is turned on. Partial interference can occur on the EANR headset when operated with the ECM, but communications must remain legible.

**3.1.3.1 Headset Interfaces.** The EANR headset shall be constructed following the guidelines in the basic schematic provided in Figure 1. The component design shall match Figure 1 interconnections for the Drop Cable connecting the headset to the IRIS interfaces.

**3.1.3.2 Wiring.** The headset shall be wired according to the functions depicted in Figure 1. The headset wiring shall provide for the dual-channel (radio in one ear and intercom in the other) or monaural operation (both radio and intercom heard in both ears) with the ANRS through the selection of dual-channel or monaural operation via the CI to which the headset is connected. The microphone wire shall be shielded to prevent any pick-up from adjacent wires or induced RF. The overall headset earshells and main cable shall be shielded and grounded to the connector outer shell. All cables entering or leaving a component of the headset shall be fitted with a strain relief to reduce cable wear.

**3.2 IRIS Compatibility Requirements.** The Headset shall operate and meet the interface specifications of the IRIS Control Indicator (CI) using the Iris Radio System common connector as specified in paragraph 4.5 and Figure 1. The EANR headset shall operate correctly with Canadian drop cords used in the CF when connected to the IRIS System. The microphone design shall meet the requirements of section 3.5. The earphone design shall meet the requirements of section 3.4. The headset shall operate from the power supplied by the CI as specified in section 4.7. The Headset regulators and filters shall reject any noise pick-up from the external supply source to prevent audible pick-up on the microphone and earphone audio circuits.

#### 3.3 Physical Characteristics

**3.3.1 Performance Characteristics.** The Headset shall meet or exceed the following criteria:

**3.3.2 Headset with Active Noise Reduction System.** The EANR headset will be used in high ambient-noise environments (up to 115 dB Sound Pressure Level (SPL)) with noise characteristics in the high end of the audio band. From this requirement the communication components of the headset shall include two earphones mounted in two rigid earshells, ANR circuits, a flexible boom-mounted microphone, and a PTT switch mounted on the main cable assembly.

### **3.3.3 Headset Earshell**

**3.3.3.1 Headset Earshell Dimensions.** The headset earshells shall not exceed the dimension illustrated in the templates shown in Figure 2 and 3. The Canadian Forces (CF) are using a multitude of apparatus that are fitted with the headset or adapted to the size of the Slimgard headset; changing any of the dimensions would imply major redesigns of these different apparatus. To maintain our equipment readiness, none of dimensions listed in Figure 2 and 3 shall be exceeded. Canada shall use the templates built from the dimensions listed in Figure 2 and 3 to ensure compliance to these requirements.

**3.3.3.2 Templates Figure 2.** The template in Figure 2 shall be used to ensure that the headset maximum dimensions can fit within the limited space under the soldier helmet. The headset left and right ear-cups, with the support mechanism removed, shall fit in between the template on a flat surface. If the headset fails to fit within the template, the bid will be non compliant.

**3.3.3.3 Template Figure 3.** The templates of Figure 3 shall be used to ensure that the maximum and minimum dimensions of the headset ear pad can accommodate our soldiers without exceeding the maximum width. The templates in Figure 3 have a middle depth gauge of 13 mm. The design depth of the ear pad shall be greater than 13 mm in depth. The depth gauges shall be used to verify this requirement. The templates shall also be used to check ear pad overall separations. The vertical and horizontal templates shall be used to check the distance between ear pad sides. The templates shall be inserted with the template groves resting on the pad, at mid-section of each axis, the templates shall fit with some space left at one or both pad sides.

**3.3.3.4 Earshell Shielding.** The interior of the earshells shall be fabricated or coated with a conductive material to reduce the ANR and TTC assembly susceptibilities to the ECM high RF energy. The interior earshell assemblies shall be connected to the ground shield of the quick disconnect connector. The exterior earshell assemblies shall be isolated from the shield connection. The cable assemblies feeding the different components shall be designed with RF suppression devices to minimize susceptibility to the ECM RF pulses. Canada reserves the right to test the proposed headset with an ECM device to ensure compliancy to this statement. **When the ECM is on**, the Bison's commander and driver, using the headsets, shall be able to communicate with and without the intercom activated. **Excessive noise shall not be heard on the headset.**

**3.3.3.5 Earshell Articulation (Vertical).** The mechanical arrangement of the earshell shall allow vertical angular movement around the axis greater than +/- 12 degrees.

**3.3.3.6 Earshell Articulation (Horizontal).** The mechanical arrangement of the earshell articulation shall allow greater than +/- 8 degrees of angular movement around the horizontal axis.

**3.3.3.7** The moveable parts of the headset assembly shall ensure that the unit can be worn comfortably with a CG634 soldiers helmet, or any other headgear currently used by the CF. The different headset assemblies shall be adjusted to fit the requirements of the headgears for the different percentile sizes as per DCIEM Report No. 75-R-1114 for 50<sup>th</sup> percentile ground troops as per paragraph 5.1, and shall be comfortable to wear for period of up to six hours.

### 3.3.4 Neckband and Headband

**3.3.4.1 Neckband and Headband.** The neckband shall be worn around the back of the neck. The headband shall consist of an attachment assembly fitting over the in-service CG634 soldiers' helmet. The neckband and headband assembly shall be attached to the rigid earshells.

**3.3.4.2 Neckband Parts.** The size of the neckband mechanism and neckpad shall be as small as possible, and maintain its position on the head of the soldier, when fitted with the different helmets. Inter-earphone connecting cord(s) shall be part of the neckband assembly. The neckband pad shall be easily replaceable.

**3.3.4.3 Sliding Action.** The sliding action of the neckband and headband assemblies, used for positioning the earshells over the ears, shall be smooth and uniform throughout the entire extension. The tension provided on the adjustment slides shall be adequate to retain the headset in its position under a steady-state acceleration g-force level of 2. When the Bison's commander and driver are operating their vehicle, the headset shall remain in place and be comfortable.

**3.3.4.4 Neckband and Headband Finish.** A black non-reflective finish shall be used to colour the metallic components and cabling of the headset.

### 3.4 Earphone Specifications:

**3.4.1 Earphones.** Two earphones shall be provided with the EANR headset. The earphones shall have the following characteristics.

**3.4.2 Sensitivity.** The sensitivity of the earphone shall, at the inner pad, be equal to or greater than 100 dB SPL reference 20mPA/ 1V<sub>RMS</sub> at 1000 Hz.

**3.4.3 Frequency Response.** The earphone frequency response shall be less than 18 dB in variation from the lowest measurement to the highest measurement, when 1 V<sub>RMS</sub> is applied over the frequency band of 300 to 2000 Hz.

**3.4.4 Harmonic Distortion.** The total harmonic distortion in the output of the earphone shall be less than 15% within the range of 500 to 3000 Hz, when a 1 V<sub>RMS</sub> signal is applied at the earphone pin connector.

**3.4.5 Impedance.** The impedance of the earphones, measured at the earphone terminals in the headset connector, shall be matched to 300 ohms  $\pm 25\%$  at the reference frequency of 1 kHz.

**3.4.6 Talk Through Circuit.** When activated, the TTC circuit shall allow the ambient sound to be heard directly at the ear transducers. The CI shall provide power to the TTC. The audio level inside ear-cup shall not exceed 92 dBA, when the TTC is active. The compression gain of the TTC amplifier shall start at 85 dBA with an exponential growth. It shall not exceed 92 dBA when the external sound level is 110 dB SPL.

**3.4.7.1 Active Noise Reduction.** The minimum total acoustic attenuation of the ANRS/ear-cup shall meet the specifications shown in Figure 4, using an approved artificial ear method. Bidders shall provide attenuation graph(s).

**3.4.7.2** Canada reserves the right to ensure compliance by performing steady state measurements in its laboratory. If performed, measurements will be done by injecting directional signals to the headset at fixed frequencies; and then measuring the differences between the sound level inside and outside of the ear-cup-with the headset powered on. The average minimum steady state attenuation measured shall be equal or greater than 30 dB at each frequency (200, 400, 800, 1000, 2000 and 3000 Hz).

**3.4.8 Intelligibility.** Speech intelligibility testing shall be carried out by the TA using qty two (2) EANR headsets talking back and forth on a IRIS system while on the intercom and radio modes. The EANR headset shall not degrade the voice quality of communications in any form, or generate any spurious noises on the communication link or the headset itself, while operating close to communication equipment. Canada reserves the

right to repeat the Intelligibility test with the ECM or Bison vehicle. Failure to maintain the voice quality, shall result in the headset being declared none compliant.

**3.4.9 Rigid Ear-Cups.** If the ear-cup is constructed of more than one piece, the pieces shall be permanently joined together. All seams shall be smooth. The earshells shall conform to the profile shown in Figure 2 to fit under the in-service CG634 soldiers' helmet. DND has been using the CG634 helmet for the last 5 years, and has built its future CVCMH crew-helmet specifications around the dimensions of Figure 2; therefore, no dimensions changes will be allowed. The interior of the earshells shall be coated with a conductive material and bounded to the common ground wire to minimize the effects of the high ECM RF fields surrounding the vehicle.

**3.4.10 Ear Cushion.** The ear cushion shall be easily replaceable. The cushion shall form a seal around the ear when using the headset as per paragraph 4.6. The wearing of eyeglasses shall not degrade the cushion seal. The internal cushion material shall be made from a foam-padding. Liquid padding type cushions shall be rejected.

### 3.5 Microphone Specifications:

**3.5.1 Microphone and Boom Assembly.** A microphone boom shall be provided. The microphone boom and microphone shall be integrated in one assembly. It shall be mounted and fixed to one of the ear-cups with a water proof sleeve or water proof gasket. The boom-arm assembly shall be semi-rigid and shall permit the proper positioning of the microphone with respect to the user's mouth. The microphone shall be fitted with a windscreen to minimise pickup of wind noise.

**3.5.2 Boom-Arm Finish.** The boom-arm shall be coloured black as per paragraph 6.2 at the time of moulding.

**3.5.3 Electret Microphone.** An electret noise-cancelling microphone shall be installed on the microphone boom.

**3.5.4 Sensitivity.** The sensitivity of the microphone shall be equal or better than -62 dB reference 1 V<sub>RMS</sub> when a sound pressure of 94 dB SPL excites the microphone placed at 10 to 12 mm from the 1 KHz signal. An audio analyser set to high impedance input (See Figure 5) shall measure the output signal. Canada reserves the right to test, in its own laboratory, the samples provided and verify compliance to this specification.

**3.5.5 Frequency Response.** The microphone frequency response at sea level from 300 to 3000 Hz shall vary less than or equal to 17 dB from the lowest measurement to the highest measurement, when 1 Pa (reference 1V/Pa) is applied on the microphone in an open circuit mode.

**3.5.6 Impedance.** The output impedance of the microphone shall be compatible to the input impedance of the audio port common to all Iris Radio System equipment with microphone sensitivity specified in paragraph 3.5.4. This impedance shall be between 130 to 350 ohms at 1 kHz.

**3.5.7 Total Harmonic Distortion.** The total harmonic distortion in the output of the microphone at 100, 1000 and 4000 Hz, shall be less than 4% with an input 94 dB SPL.

**3.5.8 Noise Cancellation.** The noise-cancelling performance of the microphone shall be determined by comparing how the microphone performs in both the near-field and the free-field state. The microphone shall provide at least 13 dB of ambient noise cancellation at 200 Hz, decreasing as it approaches the 1 kHz boundary.

**3.5.9 Moisture Barrier.** An integral moisture barrier shall be naturally provided as part of the microphone element. This moisture barrier shall render the device a splash-proof assembly.

### 3.6 Press-To-Talk (PTT) Switch

**3.6.1 Make-Break Sequence.** A three-position PTT switch shall be provided on the main cable assembly. The Intercom and Normal positions shall have a lock mechanism allowing the switch to remain selected. The Intercom circuit shall include a 22 kΩ resistor, see wiring diagram Figure 1 for detail. The Radio selection on the switch shall return to the Normal selection when released. The microphone contacts shall "make" either before or at the same time as the control contacts make. The control contacts shall either "break" before or at the same time as the microphone contacts break.

**3.6.2 Actuating Force.** The force necessary to operate the PTT switch shall be between 2.8 and 11.0 Newtons.

**3.6.3 Endurance.** The PTT switch shall be capable of a minimum of 500,000 "make-break" operations, as specified in paragraph 3.9.1 of MIL-E-55119A (EL).

**3.6.4 Press-To-Talk.** The PTT switch shall be positioned in such a way that it may be intentionally locked in the Intercom (IC) mode. Radio transmissions shall be possible only with the PTT switch depressed.

**3.6.5 PPT Operation.** The toggle switch shall be easily operable when using arctic mitts.

**4.0 General.** The following general performance requirements apply to the Headset.

**4.1 Pull and Jerk.** The Headset shall withstand a force of 80 Newton for 15 minutes on the bail-out connector, and a 4.45 Newton jerk repeated 12 times without damage. The cord shall not pull out more than 0.791 mm (1/32") from the headset assembly, the PTT switch assembly, or the connector.

**4.2 Insulation Resistance.** The insulation resistance of the Headset shall be greater than 10 megohms between the connector pins and all external metal parts of the Headset, with the exception of the ground connection pin E.

**4.3. Operation.** The Headset shall transmit and receive intelligible voice signals without buzzing, rattling, or producing other spurious sounds, even when exposed to the high RF field generated by the radios on board the different vehicles under different adverse conditions. Radios are different than ECM devices and different parameters apply for the ECM equipment.

**4.4 Cable and Cord Assemblies.** All cord assemblies of the Headset shall meet the requirements of MIL-C-3885F.

**4.5 Connector.** The headset connector shall use a Nexus AP-107 connector. The Headset connector shall be rugged, watertight, and durable. It shall permit connection/disconnection as specified in MIL-C-26482G (Connector) and MIL-C-39029D (Contacts).

**4.6 Operating Conditions.** The operation of the EANR headset shall be stable under all operating conditions (e.g., noise, vibration, temperature, etc) of the Armoured Fighting Vehicle (AFV). Sufficient margins of stability shall be incorporated into the circuitry to prevent instability, such as low-frequency oscillation if the circumaural seal of the Headset is not completely effective. There shall be no degradation or feedback or instability in the performance of the overall AFV communications system should one or more Headset units be left connected to the system but not worn by personnel.

**4.7 Power Requirement.** The EANR headset circuits shall draw their currents from voltage supplied by the CI or the CSB boxes. The current draw shall be less than 200 mA when 24 Volts dc is applied through pin C of the quick disconnect connector, and less than 120 mA when the circuits have stabilized. The Headset power supply filtration shall be sufficient to prevent any audible noise being heard at the microphone or earphone outputs.

## **5.0 Physical Characteristics**

**5.1 Fit.** The Headset assembly shall be fully adjustable with the median position of all adjustments corresponding to the head dimensions specified in DCIEM Report No. 75-R-1114 for 50<sup>th</sup> percentile ground troops. The Headset shall adjust to fit 1 to 99 percentile ground troops (of the above DCIEM report) as a minimum, including personnel wearing approved eyeglasses.

**5.2 Headset Cable Assembly.** The length of the main cable assembly (headset to switch and switch to connector) shall be 80 cm  $\pm$  12 cm, and terminated with a Nexus connector AP107 (not including connector). The Headset shall be compatible with the current coiled extension cable assembly NSN 5595-99-702-0644 part number 553492.

**5.3 Quick Disconnect.** The Headset assembly associated with the CI shall provide a quick-disconnect (bail-out) feature between the Headset main cable and the coiled extension cable.

**5.4 Boom-Microphone Adjustment.** The Headset boom microphone adjustment shall allow movement from 90 degrees below the mouth and 90 degrees above the mouth, and directly touching the mouth to 6 cm away from the mouth.

**5.5 Fillers.** The ear-cup fillers shall be installed in such a way that it does not get in contact with the user's ears. The filler patches shall be integrated to the earshell design so that they can be removed from the earshell cavities and replaced without damage to the fillers or earshell assembly. The filler material shall not be glued to the earshell.

**5.6 PTT Switch Assembly Maximum Dimensions.** The PTT Assembly Switch shall not exceed the following dimensions: 9 cm long by 9 cm wide by 5 cm depth. The dimensions include the toggle switch lever and the clothing clip.

**5.7 Clothing Clip.** The Headset cable assembly shall be fitted with a clothing clip on the PTT switch assembly. The pressure exerted by the rubber jaws of the clothing clip shall be between 8.0 and 15.0 Newton. The clothing clip jaws shall be strong enough to secure the PTT switch assembly with the drop cord extension attached, and shall permit the PTT switch to be vertically oriented.

**5.8 Weight.** The weight of the Headset shall not exceed 1.1 kg (excluding the coiled extension cable).

## **6.0 General**

**6.1 Metals.** Metals used for the Headset shall be of the proper alloy and hardness necessary to meet the environmental and operational requirements. Metals shall be of a corrosion-resistant type or shall be treated in accordance with MIL-F-14072D, type 1 (exposed).

**6.2 Colour.** The colour of the Headset shall comply with the requirements of: FED-STD-595B (Colour Guide) Colour Green 34130 with a non-reflecting finish. All metallic and cabling assemblies shall be black none-reflective colour from the FED-STD-595B master colour list.

**6.3.1 Physical Comfort.** The Headset shall not cause dermatitis attributable to the selection, processing, or fabrication of components. The integrated neckband and headband shall not create pressure points that would prevent users from wearing the headset for a continuous period of six hours. The Headset shall comfortably remain on the soldier's head for a period of six hours without constant adjustment while the vehicle is on the move.

**6.3.2 6 hours Continuous Bison Operations.** The EANR headset shall be comfortable to wear for a continuous 6 hour without causing skin rash, skin irritation, or pressure points to the soldier while performing his duty as driver or commander on the Bison vehicles. The headset design and mechanism shall maintain the specified hearing protection during the entire 6 hour period.

**6.4.1 Reliability.** The Headset shall have a Mean Time Between Failure (MTBF) of at least 12,000 hours. This requirement must be met while the equipment is in use in its normal mode of operation in a battlefield environment. The reliability program shall be defined in accordance with MIL-HDBK-781A.

**6.4.2 Maintainability.** The Headset components shall be quickly and easily replaced with minimum special skills, and training. If a special tool(s) is or are required to extract the component in the assembly, one tool set shall be provided for every 20 headsets being procured under this SOW. All internal circuit assemblies used in the headset shall be interconnected to the harness using clip-on connectors, allowing the easy replacement of circuit assemblies. The headset shall have a:

- a. Mean Time to Service Restoral (MTSR) of no greater than 20 minutes. MTSR is defined as the mean time to restore service following a failure that results in a service outage of the entire headset, the microphone, the Velcro or any external part; and



b. Mean Time to Repair at First Line (MTTR1) of no greater than 60 minutes. MTTR1 is defined as the mean time required for fault diagnosis, isolation, rectification and testing of the complete functionality. First line repair shall include replacement of the microphone assembly, earphone speaker, ANR assembly or the PTT Switch. A Crown technician with minimal training, using the supplier maintenance reference sheets and the tool set if applicable, shall test the MTTR1 headset requirement by changing the Microphone Assembly (in 60 min or less), and the Earphone speaker (in 60 min or less) in one of the earshells.

**6.5 Transportability.** The Headset shall be capable of being transported without damage by all commercial and armed forces means including transportation as loose stores without requiring any additional wrapping or preparation.

**7.0 Environmental Conditions.** The Headset shall meet the environmental conditions specified in this SOW.

**7.1 Environmental Extremes.** In order to operate under all climatic environmental extremes encountered by Canadian Forces, the Headset shall conform to the following environmental extremes IAW MIL-STD-810F or an equivalent standards used by any of the ABCA Forces:

- a. High Temperature      Method 501.4, Procedure II to +48°C operating;
- b. Low Temperature      Method 502.4, Procedure II to -30° C operating;
- c. Solar Radiation      Method 505.4, Procedure I, Hot-Dry temperature conditions (Table 505.4-I);
- d. Humidity      The Headset shall withstand humidity testing of Method 507.4;
- e. Fungus      Method 508.5;
- f. Sand and Dust      Method 510.4, Procedure I and Procedure II;
- g. Shock      The Headset shall withstand the following shock tests of Method 516.5;  
  
                                  Procedure I (Functional Shock),  
  
                                  Procedure IV (Transit Drop),  
  
                                  Procedure V (Crash Hazards), and  
  
                                  Procedure VI (Bench Handling);

**7.2 Performance Requirements.** The Headset, after being submitted to the environmental extreme conditions, shall meet the following requirements:

- a. Visual Inspection. No evidence of physical damage that would cause a malfunction;
- b. Sensitivity and Frequency Response. No more than  $\pm 4$  dB variation at any frequency from initial reading (Localized excursions up to  $\pm 6$  dB are permitted. A localized excursion is defined as a portion of the frequency response having  $>4$  dB variation, and having a bandwidth of no more than 1/3 octave.) ; and
- c. Impedance at 1000hz, no more than  $\pm 5\%$  variation from initial reading.

## 8.0 Design and Construction

**8.1 Materials and Parts.** All vendor supplied materials and parts used in the Headset shall be new (unused) and of controlled quality.

**8.2.1 Electromagnetic Compatibility (EMC)/Electromagnetic Interference (EMI).** All elements of the ANRS headset shall meet the electromagnetic emission and susceptibility requirements for the control of electromagnetic interference set out in MIL-STD-461E for Army configuration as per Table IV and the related standard in the MIL-STD-188 series. These requirements shall be tested for and verified by the applicable test procedures set out in MIL-STD-449D as specified in this SOW. Any filters or other equipment not specifically identified in this specification, but which is implicitly required for the proper operation of the system, shall be provided as part of the EANR. The headset shall meet the following relevant clauses of MIL-STD-461E, for an Army platform or an equivalent standard used by any of the ABCA Forces:

- a. CE-102;
- b. RE-102, Radiated Emissions, Electric Field, 14 kHz to 512 MHz;
- c. RS-103, Radiated Susceptibility, Electric Field, 1 to 80 MHz, 50 V/m, and 80 to 1000 MHz, 20V/m, using AM modulation at 90% or square wave modulated 100%.

**8.2.2** The shielding on headset shall be sufficient to prevent the destruction of any of the components on the headset assemblies when it is submitted to the RS-103 test with fields of 50 V/m modulated in AM at 90% or equivalent square wave at 100% modulation. The headset will operate in combat in high RF fields and withstand the EMC conditions. DLCSPM reserves the right to test the samples provided from 1 to 1000 MHz with an AM modulated at 90% by a 1 kHz signal at 50 V/m (1 to 80 MHz) and 20 V/m (above 80 MHz). The headsets tested to EMC tests shall operate normally at the end of the tests.

**8.3 Nameplates and Product Marking.** Nameplates and product markings for the Headset shall conform to the specifications of MIL-STD-454L, Requirement 67 and D-02-002-001/SG-001. The NATO Stock Number (NSN) and the Part Number (PN) shall be inscribed on the headset main cable assembly to ensure proper identification.

**8.4 Workmanship.** Workmanship on the Headset shall conform to the specifications of MIL-HDBK-454A, Requirement 9.

**8.5 Human Engineering.** Ergonomics shall be a major factor in equipment design and configuration to achieve maximum operational effectiveness and to minimise stress and discomfort as specified herein. Except where specifically excluded, equipment shall be easily operated by a user under battlefield conditions wearing environmental clothing or nuclear, biological and chemical (NBC) protective clothing/equipment. The human engineering criteria and principles in MIL-HDBK-454A, Requirement 62, and MIL-STD-1472F shall be used as guidelines. In particular the following sections of MIL-STD-1472F shall apply:

- a. paragraph 4.4, Human Engineering Design;
- b. paragraph 4.10, Design for NBC Contamination Survivability;
- c. paragraph 5.3.9, Operator Comfort and Convenience;
- d. paragraph 5.4, Controls; and
- e. paragraph 5.5, Labelling;

## 9.0 Documentation

### 9.1 Documentation Requirements. Documentation for the Headset shall include the following:

- a. Users guide/aide mémoire with every headset;
- b. Security/Safety instructions as applicable;
- c. Detailed Maintenance Manual and Parts List; one (1) E-copy;
- d. List of Recommended Spare Parts, Recommended Quantity and Price per Item; and
- e. Block Diagram or Drawings of the headset with all its components with interconnections.

**9.2 Authorization to Duplicate.** The contractor shall provide to the Crown a letter authorizing the Crown to duplicate and or to translate in whole or in part for DND usage any of the documentations, manuals, drawings and data provided, on paper or electronic formats, under this SOW.

## 10.0 Testing

**10.1 Responsibility for Testing.** Responsibility for testing the Headset rests solely with the contractor. The contractor shall conduct all the SOW tests to ensure that the EANR headset is able to meet or exceed the requirements of this SOW. The supplier shall provide as proof of compliancy a completed Compliancy Test Matrix Document stating the results of their tests with details on the achieved measurements, with a column stating Pass or Fail. The Compliancy Test Matrix Document shall follow the format of Annex B. For each of the requirements listed in the SOW, the supplier shall include the reference paragraphs, and location of the pertinent information supplied in their proposal to comply with each line item of the matrix. Failing to submit the filled in matrix results, and location in the documentation of the references, the contractor shall be declared non-compliant.

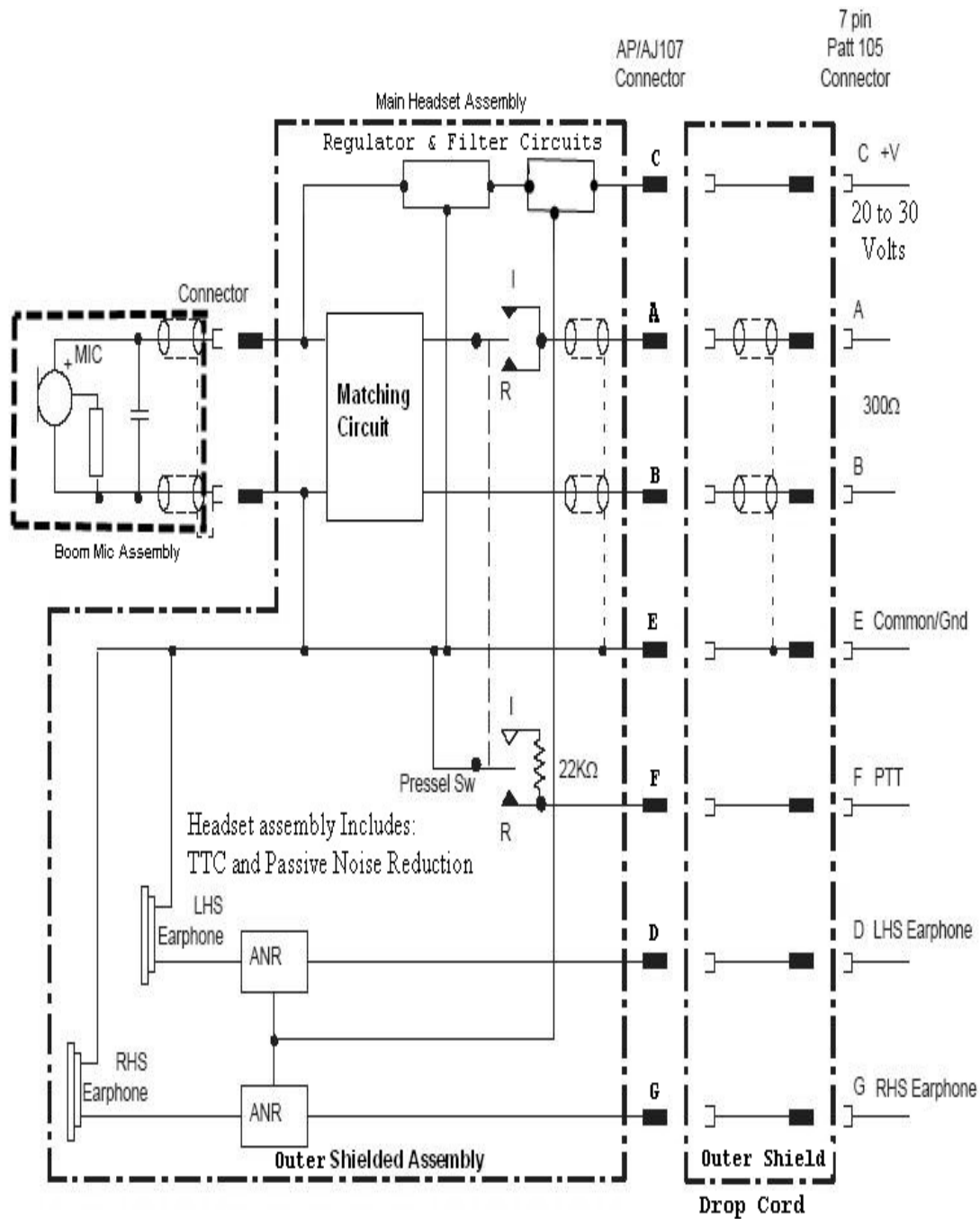
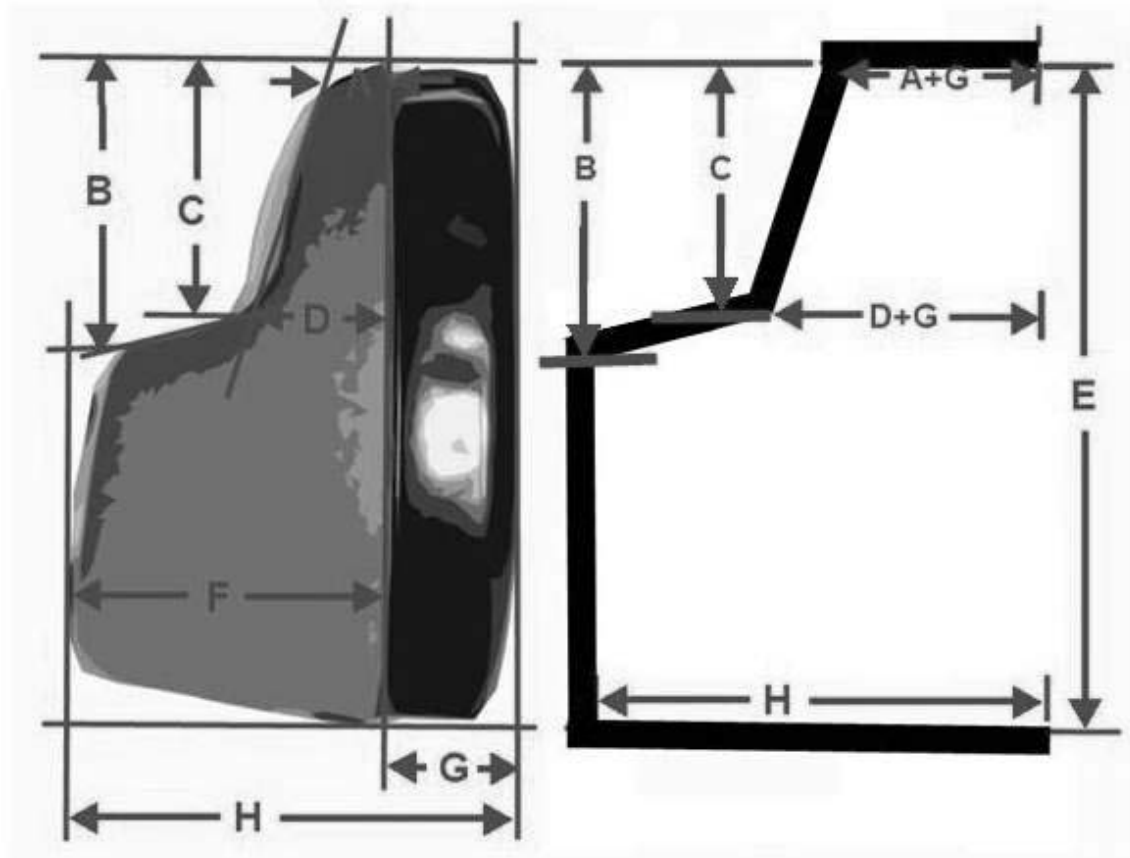


Figure 1. Basic ANR Headset Configuration.



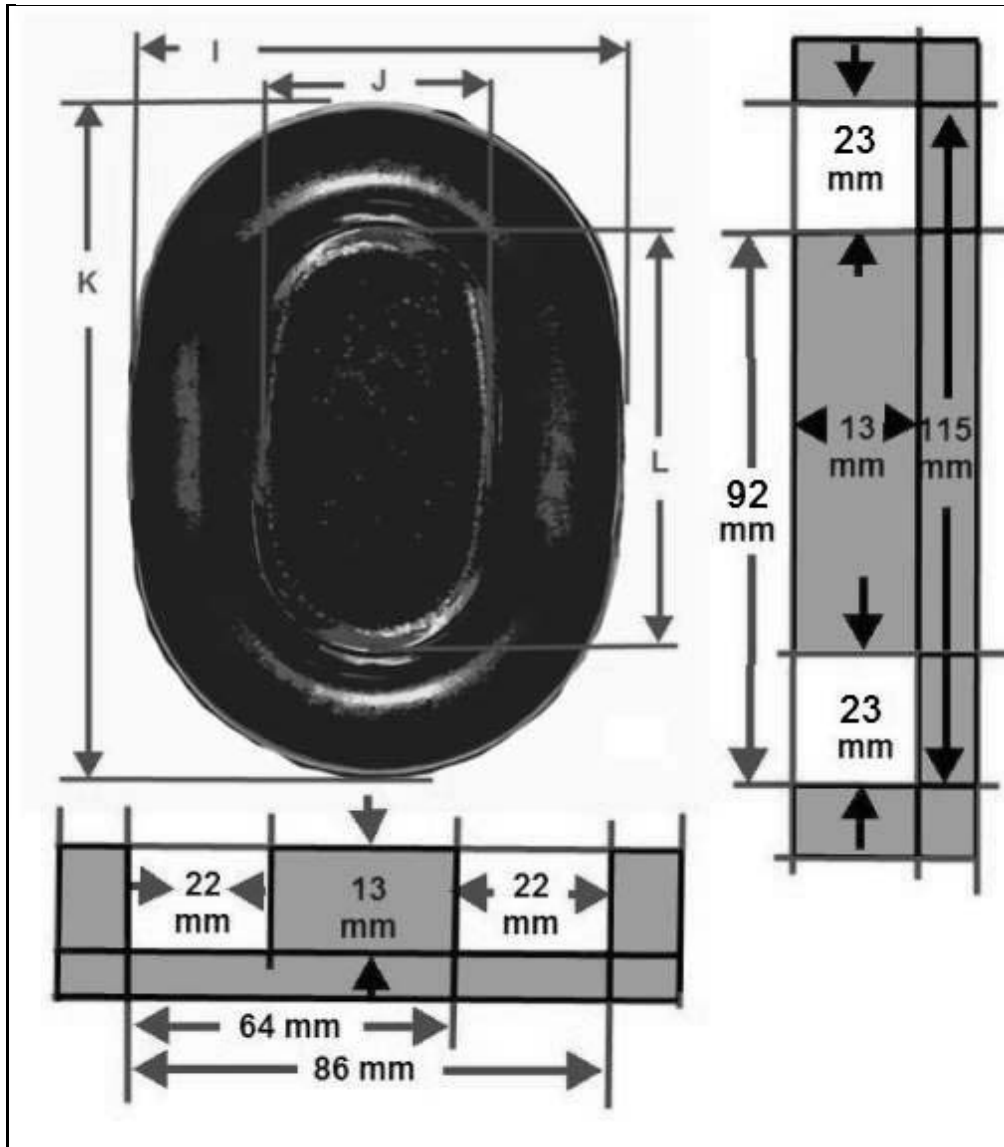
**Figure 2. Headset Earshell Maximum Dimensions and Template**

**Notes: All measurements are in mm.**

**All measurements shall be equal or less.**

**E= 114 mm; H= 74 mm; G approx. 19 mm but A+G= 33 mm and D+G= 44mm;**

**B= 56 mm; C= 42 mm; and F= 55mm.**

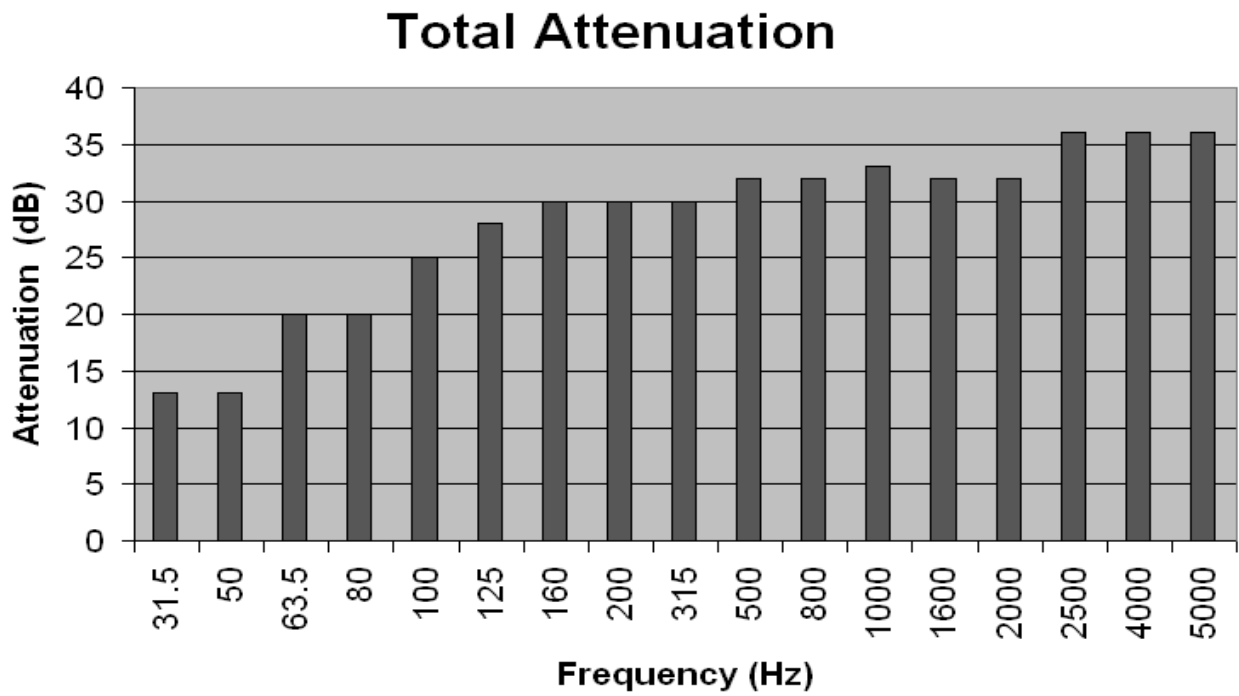


**FIGURE 3. Headset Earshell Maximum Dimensions, Inside View and Templates**

**Notes:** All measurements are in mm.

All measurements shall be equal or less.

I= 85 mm; J= 43 mm; K = 114 mm and L= 72 mm;



**FIGURE 4, Headset Minimum Total Acoustic Attenuation**

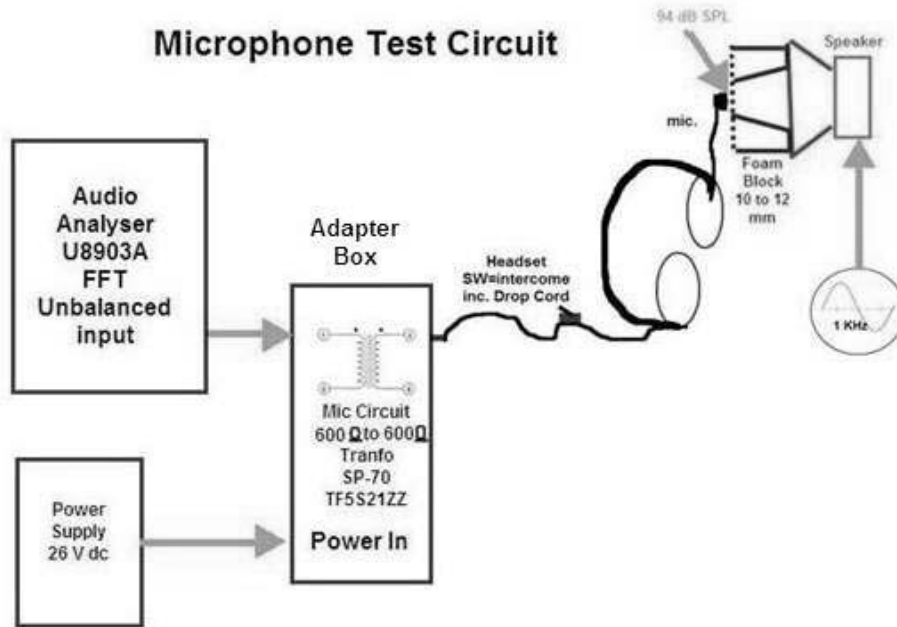


Figure 5,

**Microphone Test Set-up**



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**List of Abbreviations**

AFV	Armoured Fighting Vehicle
AM	Amplitude Modulation
ANRS	Active Noise Reduction system
CE	Conducted Emissions
CF	Canadian Forces
CFSD	Canadian Forces Supply Depot
CI	Control Indicator
CSB	Communication Selector Box
CVCMH	Combat Vehicle Crew Modular Helmet
dB	Decibel
dBA	Decibel SPL fitted for curve A
DLCSPM	Director Land Command System Program Management
DLIS	Defence Logistics Information System
DND	Department of National Defence
ECM	Electronic Counter Measures
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EANR	Enhanced Active Noise Reduction
Hz	Hertz
IAW	In Accordance With
Iris	(not an acronym) name of communication system fielded by PMO TCCCS
LHS	Left Hand Side
MTSR	Mean Time to Service Restoral
MTTR1	Mean Time To Repair at 1st Line
NBC	Nuclear Biological Chemical
NSN	NATO Stock Number
Pa	Pascal
PN	Part Number
PTT	Push to Talk
PVC	Polyvinyl Chloride
QA	Quality Assurance
RE	Radiated Emissions
RF	Radio Frequency
RHS	Right Hand Side
RPM	Revolutions Per Minute
SOW	Statement of Work
SPL	Sound Pressure Level
TA	Technical Authority
TTC	Talk Through Circuit
Vrms	Volt Root Mean Square

### Annex C - Compliancy Matrix

Specification	Page Reference (Please indicate where in your proposal this specification is met)	Comments
<b>3.1 System Definition</b>		
3.1.1 General Description		
3.1.2 Headset Features		
3.1.2.1 ECM Compatibility		
3.1.3.1 Headset Interfaces		
3.1.3.2 Wiring		
3.2 IRIS Compatibility Requirements		
<b>3.3 Physical Characteristics</b>		
3.3.1 Performance Characteristics		
3.3.2 Headset with Active Noise Reduction System		
<b>3.3.3 Headset Earshell</b>		
3.3.3.1 Headset Earshell Dimensions		
3.3.3.2 Templates Figure 2		
3.3.3.3 Template Figure 3		
3.3.3.4 Earshell Shielding		
3.3.3.5 Earshell Articulation (Vertical)		
3.3.3.6 Earshell Articulation (Horizontal)		
3.3.3.7		
<b>3.3.4 Neckband and Headband</b>		
3.3.4.1 Neckband and Headband		
3.3.4.2 Neckband Parts		
3.3.4.3 Sliding Action		
3.3.4.4 Neckband and Headband Finish		
<b>3.4 Earphone Specifications</b>		
3.4.1 Earphones		

3.4.2 Sensitivity		
3.4.3 Frequency Response		
3.4.4 Harmonic Distortion		
3.4.5 Impedance		
3.4.6 Talk Through Circuit		
3.4.7.1 Active Noise Reduction		
3.4.7.2		
3.4.8 Intelligibility		
3.4.9 Rigid Ear-Cups		
3.4.10 Ear Cushion		
<b>3.5 Microphone Specifications</b>		
3.5.1 Microphone and Boom Assembly		
3.5.2 Boom-Arm Finish		
3.5.3 Electret Microphone		
3.5.4 Sensitivity		
3.5.5 Frequency Response		
3.5.6 Impedance		
3.5.7 Total Harmonic Distortion		
3.5.8 Noise Cancellation		
3.5.9 Moisture Barrier		
<b>3.6 Press-To-Talk (PTT) Switch</b>		
3.6.1 Make-Break Sequence		
3.6.2 Actuating Force		
3.6.3 Endurance		
3.6.4 Press-To-Talk		
3.6.5 PPT Operation		
<b>4.0 General</b>		
4.1 Pull and Jerk		
4.2 Insulation Resistance		
4.3. Operation		
4.4 Cable and Cord Assemblies		
4.5 Connector		
4.6 Operating Conditions		
4.7 Power Requirement		
<b>5.0 Physical Characteristics</b>		

5.1 Fit		
5.2 Headset Cable Assembly		
5.3 Quick Disconnect		
5.4 Boom-Microphone Adjustment		
5.5 Fillers		
5.6 PTT Switch Assembly Maximum Dimensions		
5.7 Clothing Clip		
5.8 Weight		
<b>6.0 General</b>		
6.1 Metals		
6.2 Colour		
6.3.1 Physical Comfort		
6.3.2 6 hours Continuous Bison Operations		
6.4.1 Reliability		
6.4.2 Maintainability		
6.5 Transportability		
<b>7.0 Environmental Conditions</b>		
7.1 Environmental Extremes		
a) High Temperature		
b) Low Temperature		
c) Solar Radiation		
d) Humidity		
e) Fungus		
f) Sand and Dust		
g) Shock		
7.2 Performance Requirements		
a) Visual Inspection		
b) Sensitivity and Frequency Response		
c) Impedance at 1000hz		
<b>8.0 Design and Construction</b>		
8.1 Materials and Parts		
8.2.1 Electromagnetic Compatibility (EMC)/Electromagnetic Interference (EMI)		

8.22		
8.3 Nameplates and Product Marking		
8.4 Workmanship		
8.5 Human Engineering		
a) paragraph 4.4, Human Engineering Design		
b) paragraph 4.10, Design for NBC Contamination Survivability		
c) paragraph 5.3.9, Operator Comfort and Convenience		
d) paragraph 5.4, Controls; and		
e) paragraph 5.5, Labelling		
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