



RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
**Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada**
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
B3J 1T3
Nova Scotia
Bid Fax: (902) 496-5016

**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

THIS DOCUMENT CONTAINS A SECURITY
REQUIREMENT.

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Atlantic Region Acquisitions/Région de l'Atlantique
Acquisitions
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
B3J 3C9
Nova Scot

Title - Sujet Underwater Acoustic Array System	
Solicitation No. - N° de l'invitation W7707-175994/A	Date 2018-07-19
Client Reference No. - N° de référence du client W7707-17-5994	
GETS Reference No. - N° de référence de SEAG PW-\$HAL-208-10462	
File No. - N° de dossier HAL-7-79079 (208)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-09-05	Time Zone Fuseau horaire Central Daylight Saving Time CDT
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: LeBlanc, JoAnne	Buyer Id - Id de l'acheteur hal208
Telephone No. - N° de téléphone (902) 440-0279 ()	FAX No. - N° de FAX (902) 496-5016
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF NATIONAL DEFENCE SEE HEREIN DARTMOUTH NOVA SCOTIA B3A3C5 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

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

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TITLE: UNDERWATER TOWED ACOUSTIC ARRAY SYSTEM

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation document is divided into six parts plus attachments and annexes as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment, the Security Requirement Check List (SRCL); the Electronic Payment Instruments, DND 626 Task Authorization Form, the Federal Contractors Program for Employment Equity – Certification, and other annexes.

1.2 Summary

Defence Research and Development Canada - Atlantic Research Centre (DRDC - ARC) Underwater Warfare acoustic research program has a requirement for one non-developmental naval shipboard passive directional Underwater Towed Acoustic Array System (UTAAS) with a two octave bandwidth. UTAAS will be used as a receiver in multi-static active and continuous active sonar experiments and trials. These trials will be performed in the littorals and in deep water. UTAAS will be deployed from research vessels and Royal Canadian Navy (RCN) warships.

The Contractor must perform non-warranty support for preventative maintenance, fault diagnosis, and repair on as and when required basis for 5 one-year periods. This will take place one year from date of contract award.

The period for this contract will begin upon contract award, and completion of all milestones will be 15 months from date of contract award. The non-warranty service & support of maintenance and repair will be on an "as and when requested" basis over 5 one-year periods.

There are security requirements associated with this requirement. For additional information, consult Part 6 - Security, Financial and Other Requirements, and Part 7 - Resulting Contract Clauses. For more information on personnel and organization security screening or security clauses, Bidders should refer to the Industrial Security Program (ISP) of Public Works and Government Services Canada (<http://ssi-iss.tpsgcpgwgc.gc.ca/index-eng.html>) website.

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The requirement is subject to the provisions of the Canadian Free Trade Agreement on Internal Trade (CFTA).

The requirement is subject to a preference for Canadian goods and/or services.

This procurement is subject to the Controlled Goods Program. The *Defence Production Act* defines Canadian Controlled Goods as certain goods listed in Canada's Export Control List, a regulation made pursuant to the Export and Import Permits Act (EIPA).

The Federal Contractors Program (FCP) for employment equity applies to this procurement; see Part 5 – Certifications and Additional Information, Part 7 - Resulting Contract Clauses and the annex titled [Federal Contractors Program for Employment Equity - Certification](#).

1.3 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 from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

1.4 Phased Bid Compliance Process

The Phased Bid Compliance Process applies to this requirement.

PART 2 - BIDDER INSTRUCTIONS

2.1 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 (2017-04-27) 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: 60 days
Insert: 90 days

2.1.1 SACC Manual Clauses

A7035T(2007-05-25), List of Proposed Subcontractors

2.2 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.

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2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than six (6) 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 question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.4 Applicable Laws

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

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.

2.5 Improvement of Requirement during Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favor a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least 15 days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

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PART 3 - BID PREPARATION INSTRUCTIONS

3.1 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 (1 hard copy)
Section III: Certifications (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; and
- (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 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, print double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical bid should clearly address and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II: Financial Bid

3.1.1 Bidders must submit their financial bid in accordance with the in Basis of Payment in Annex "B". Financial Proposals should be provided in a separate sealed envelope. The Bidder should submit their financial bid in Canadian funds, and any applicable Taxes should be identified separately.

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3.1.2 Electronic Payment of Invoices – Bid

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex "D" Electronic Payment Instruments, to identify which ones are accepted. If Annex "D" Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

3.1.3 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.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical 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 two 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 two 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.
- (d) Canada will use the Phased Bid Compliance Process described below.

4.1.1 Phased Bid Compliance Process

4.1.1.1 General

a) Canada is conducting the Phased Bid Compliance Process described below for this requirement.

b) Notwithstanding any review by Canada at Phase I or II of the Phased Bid Compliance Process, Bidders are and will remain solely responsible for the accuracy, consistency and completeness of their Bids and Canada does not undertake, by reason of this review, any obligations or responsibility for identifying any or all errors or omissions in Bids or in responses by a Bidder to any communication from Canada.

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THE BIDDER ACKNOWLEDGES THAT THE REVIEWS IN PHASE I AND II OF THIS PHASED BID COMPLIANCE PROCESS ARE PRELIMINARY AND DO NOT PRECLUDE A FINDING IN PHASE III THAT THE BID IS NON-RESPONSIVE, EVEN FOR MANDATORY REQUIREMENTS WHICH WERE SUBJECT TO REVIEW IN PHASE I OR II AND NOTWITHSTANDING THAT THE BID HAD BEEN FOUND RESPONSIVE IN SUCH EARLIER PHASE. CANADA MAY DEEM A BID TO BE NON-RESPONSIVE TO A MANDATORY REQUIREMENT AT ANY PHASE. THE BIDDER ALSO ACKNOWLEDGES THAT ITS RESPONSE TO A NOTICE OR A **COMPLIANCE ASSESSMENT REPORT (CAR)** (EACH DEFINED BELOW) IN PHASE I OR II MAY NOT BE SUCCESSFUL IN RENDERING ITS BID RESPONSIVE TO THE MANDATORY REQUIREMENTS THAT ARE THE SUBJECT OF THE NOTICE OR CAR, AND MAY RENDER ITS BID NON-RESPONSIVE TO OTHER MANDATORY REQUIREMENTS.

c) Without prejudice to its other rights, Canada shall have the right, in its absolute discretion, but shall not be obliged, to request and accept any time, before or after the solicitation closing date, and consider as part of the Bid, any document and materials from Bidders to clarify the Bid or to correct deficiencies or errors in the Bid that are not significant in Canada's absolute discretion, including all matters of form or error in computation or failure to confirm by signing or similarly verifying acceptance. This shall not limit Canada's right to request or accept any information after the bid solicitation closing in circumstances where the bid solicitation expressly provides for this right.

d) The PBCP does not limit Canada's rights under Standard Acquisition Clauses and Conditions (SACC) 2003 (2017-04-27) Standard Instructions – Goods or Services – Competitive Requirements nor Canada's right to request or accept any information during the solicitation period or after bid solicitation closing in circumstances where the bid solicitation expressly provides for this right, or in the circumstances described in subsection (c).

e) Canada will send any Notice or CAR by any method Canada chooses, in its absolute discretion. The Bidder must submit its response by the method stipulated in the Notice or CAR. Responses are deemed to be received by Canada at the date and time they are delivered to Canada by the method and at the address specified in the Notice or CAR. An email response permitted by the Notice or CAR is deemed received by Canada on the date and time it is received in Canada's email inbox at Canada's email address specified in the Notice or CAR. A Notice or CAR sent by Canada to the Bidder at any address provided by the Bidder in or pursuant to the Bid is deemed received by the Bidder on the date it is sent by Canada. Canada is not responsible for late receipt by Canada of a response, however caused.

4.1.1.2 Phase I: Financial Bid

a) After the closing date and time of this bid solicitation, Canada will examine the Bid to determine whether it includes a Financial Bid and whether any Financial Bid includes all information required by the solicitation. Canada's review in Phase I will be limited to identifying whether any information that is required under the bid solicitation to be included in the Financial Bid is missing from the Financial Bid. This review will not assess whether the Financial Bid meets any standard or is responsive to all solicitation requirements.

b) Canada's review in Phase I will be performed by officials of the Department of Public Works and Government Services.

c) If Canada determines, in its absolute discretion that there is no Financial Bid or that the Financial Bid is missing all of the information required by the bid solicitation to be included in the Financial Bid, then the Bid will be considered non-responsive and will be given no further consideration.

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d) For Bids other than those described in c), Canada will send a written notice to the Bidder ("Notice") identifying where the Financial Bid is missing information. A Bidder, whose Financial Bid has been found responsive to the requirements that are reviewed at Phase I, will not receive a Notice. Such Bidders shall not be entitled to submit any additional information in respect of their Financial Bid.

e) The Bidders who have been sent a Notice shall have the time period specified in the Notice (the "Remedy Period") to remedy the matters identified in the Notice by providing to Canada, in writing, additional information or clarification in response to the Notice. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the Notice.

f) In its response to the Notice, the Bidder will be entitled to remedy only that part of its Financial Bid which is identified in the Notice. For instance, where the Notice states that a required line item has been left blank, only the missing information may be added to the Financial Bid, except that, in those instances where the addition of such information will necessarily result in a change to other calculations previously submitted in its Financial Bid, (for example, the calculation to determine a total price), such necessary adjustments shall be identified by the Bidder and only these adjustments shall be made. All submitted information must comply with the requirements of this solicitation.

g) Any other changes to the Financial Bid submitted by the Bidder will be considered to be new information and will be disregarded. There will be no change permitted to any other Section of the Bidder's Bid. Information submitted in accordance with the requirements of this solicitation in response to the Notice will replace, in full, **only** that part of the original Financial Bid as is permitted above, and will be used for the remainder of the bid evaluation process.

h) Canada will determine whether the Financial Bid is responsive to the requirements reviewed at Phase I, considering such additional information or clarification as may have been provided by the Bidder in accordance with this Section. If the Financial Bid is not found responsive for the requirements reviewed at Phase I to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.

i) Only Bids found responsive to the requirements reviewed in Phase I to the satisfaction of Canada, will receive a Phase II review.

4.1.1.3 Phase II: Technical Bid

a) Canada's review at Phase II will be limited to a review of the Technical Bid to identify any instances where the Bidder has failed to meet any Eligible Mandatory Criterion. This review will not assess whether the Technical Bid meets any standard or is responsive to all solicitation requirements. Eligible Mandatory Criteria are all mandatory technical criteria that are identified in this solicitation as being subject to the Phased Bid Compliance Process. Mandatory technical criteria that are not identified in the solicitation as being subject to the Phased Bid Compliance Process, will not be evaluated until Phase III.

b) Canada will send a written notice to the Bidder (Compliance Assessment Report or "CAR") identifying any Eligible Mandatory Criteria that the Bid has failed to meet. A Bidder whose Bid has been found responsive to the requirements that are reviewed at Phase II will receive a CAR that states that its Bid has been found responsive to the requirements reviewed at Phase II. Such Bidder shall not be entitled to submit any response to the CAR.

c) A Bidder shall have the period specified in the CAR (the "Remedy Period") to remedy the failure to meet any Eligible Mandatory Criterion identified in the CAR by providing to Canada in writing additional or different information or clarification in response to the CAR. Responses received after the

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end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the CAR.

d) The Bidder's response must address only the Eligible Mandatory Criteria listed in the CAR as not having been achieved, and must include only such information as is necessary to achieve such compliance. Any additional information provided by the Bidder which is not necessary to achieve such compliance will not be considered by Canada, except that, in those instances where such a response to the Eligible Mandatory Criteria specified in the CAR will necessarily result in a consequential change to other parts of the Bid, the Bidder shall identify such additional changes, provided that its response must not include any change to the Financial Bid.

e) The Bidder's response to the CAR should identify in each case the Eligible Mandatory Criterion in the CAR to which it is responding, including identifying in the corresponding section of the original Bid, the wording of the proposed change to that section, and the wording and location in the Bid of any other consequential changes that necessarily result from such change. In respect of any such consequential change, the Bidder must include a rationale explaining why such consequential change is a necessary result of the change proposed to meet the Eligible Mandatory Criterion. It is not up to Canada to revise the Bidder's Bid, and failure of the Bidder to do so in accordance with this subparagraph is at the Bidder's own risk. All submitted information must comply with the requirements of this solicitation.

f) Any changes to the Bid submitted by the Bidder other than as permitted in this solicitation, will be considered to be new information and will be disregarded. Information submitted in accordance with the requirements of this solicitation in response to the CAR will replace, in full, **only** that part of the original Bid as is permitted in this Section.

g) Additional or different information submitted during Phase II permitted by this section will be considered as included in the Bid, but will be considered by Canada in the evaluation of the Bid at Phase II only for the purpose of determining whether the Bid meets the Eligible Mandatory Criteria. It will not be used at any Phase of the evaluation to increase or decrease any score that the original Bid would achieve without the benefit of such additional or different information. For instance, an Eligible Mandatory Criterion that requires a mandatory minimum number of points to achieve compliance will be assessed at Phase II to determine whether such mandatory minimum score would be achieved with such additional or different information submitted by the Bidder in response to the CAR. If so, the Bid will be considered responsive in respect of such Eligible Mandatory Criterion, and the additional or different information submitted by the Bidder shall bind the Bidder as part of its Bid, but the Bidder's original score, which was less than the mandatory minimum for such Eligible Mandatory Criterion, will not change, and it will be that original score that is used to calculate any score for the Bid.

h) Canada will determine whether the Bid is responsive for the requirements reviewed at Phase II, considering such additional or different information or clarification as may have been provided by the Bidder in accordance with this Section. If the Bid is not found responsive for the requirements reviewed at Phase II to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.

i) Only Bids found responsive to the requirements reviewed in Phase II to the satisfaction of Canada, will receive a Phase III evaluation.

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4.1.1.4 Phase III: Final Evaluation of the Bid

a) In Phase III, Canada will complete the evaluation of all Bids found responsive to the requirements reviewed at Phase II. Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

b) A Bid is non-responsive and will receive no further consideration if it does not meet all mandatory evaluation criteria of the solicitation.

4.1.2 Technical Evaluation

Mandatory and point rated technical evaluation criteria are included in [Annex G](#).

4.1.2.1 Mandatory Technical Criteria

The Phased Bid Compliance Process will apply to all mandatory technical criteria.

4.1.2.2 Point Rated Criteria

Point rated technical evaluation criteria are included in [Annex G](#).

4.1.3 Financial Evaluation

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, Canadian customs duties and excise taxes included.

4.2 Basis of Selection

4.2.1 **SACC Manual Clause A0027T (2012-07-16), Basis of Selection – Highest Combined Rating of Technical Merit and Price.**

1. To be declared responsive, a bid must:
 - a. comply with all the requirements of the bid solicitation; and
 - b. meet all mandatory criteria; and
 - c. obtain the required minimum points specified for each criterion for the technical evaluation, and
 - d. obtain the required minimum of 12 points overall for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of 30 points.
2. Bids not meeting (a) or (b) or (c) or (d) will be declared non-responsive, and will be given no further consideration and the financial bid will remain sealed.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be **60%** for the Technical merit and **40%** for the Price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available multiplied by the ratio of **60%** (percentage for technical merit).

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5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of **40%** (percentage for price).
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

The below information illustrates an example where all three bids are responsive and the selection of the contractor is determined by a 60/40 ratio of technical merit and price, respectively. The total available points **in this example equal 135 points** and the lowest evaluated price is \$45,000 (45).

Basis of Selection - Highest Combined Rating Technical Merit (60%) and Price (40%)

		Bidder 1	Bidder 2	Bidder 3
Overall Technical Score		115/135	89/135	92/135
Bid Evaluated Price		\$55,000.00	\$50,000.00	\$45,000.00
Calculations	Technical Merit Score	$115/135 \times 60 = 51.11$	$89/135 \times 60 = 39.56$	$92/135 \times 60 = 40.89$
	Pricing Score	$45/55 \times 40 = 32.73$	$45/50 \times 40 = 36.00$	$45/45 \times 40 = 40.00$
Combined Rating		83.84	75.56	80.89
Overall Rating		1st	3rd	2nd

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PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, 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 made knowingly or unknowingly, 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 and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the Forms for the Integrity Regime website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

5.1.2 Additional Certifications Required with the Bid

5.1.2.1 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 goods offered is a Canadian goods, as defined in clause [A3050T](#), may be considered. **(Please refer to 4.1 Evaluation Procedures, (c), for additional information).**

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

The Bidder certifies that:

() the good(s) offered is a Canadian goods as defined in paragraph 2 of clause [A3050T](#).

Signature

Date

5.1.2.1.1 SACC *Manual* clause A3050T (2014-11-27) Canadian Content Definition.

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5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real procurement agreement of the Ineligibility and Suspension Policy (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process. **The bidder should complete Annex “H”, attached herein.**

5.2.2 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" list available at the bottom of the page of the Employment and Social Development Canada (ESDC) - Labour's website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

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 “E” - 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.

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PART 6 – SECURITY AND OTHER REQUIREMENTS

6.1 Security Requirements

1. Before award of a contract, the following conditions must be met:
 - (a) the Bidder must hold a valid organization security clearance as indicated in Part 7 - Resulting Contract Clauses;
 - (b) the Bidder's proposed individuals requiring access to classified or protected information, assets or sensitive work site(s) must meet the security requirements as indicated in Part 7 - Resulting Contract Clauses;
 - (c) the Bidder must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites;
2. Bidders are reminded to obtain the required security clearance promptly. Any delay in the award of a contract to allow the successful Bidder to obtain the required clearance will be at the entire discretion of the Contracting Authority.
3. For additional information on security requirements, Bidders should refer to the [Industrial Security Program \(ISP\)](http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html) of Public Works and Government Services Canada (<http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html>) website.

6.2 Controlled Goods Requirement

SACC Manual clause A9130T (2014-11-27) Controlled Goods Program - Bid

Controlled Goods will apply to suppliers from United States, and would be subject to export controls. Foreign suppliers should reference the "*Guide to Canada's Export Controls*", and refer to the Export Control List (ECL):

2-9.c. Underwater detection devices, specially designed for military use, controls therefor and components therefor specially designed for military use; the military use is the detection and tracking of submarines.

For more information on Canada's Export Controls, please refer to the "A Guide to Canada's Export Controls": http://www.international.gc.ca/controls-contrôles/about-a_propos/expor/guide-2015_toc_tdm.aspx?lang=eng

United States Origin Goods and Technologies

Exporters should note that the export of all goods and technology of U.S.-origin, as defined in item 5400 of the Export Control List (ECL), regardless of their nature and destination, *require permits*.

Exports of goods and technology that are controlled by ECL item 5400 destined for any country on Canada's Area Control List (ACL), Cuba, the Democratic People's Republic of Korea, Iran and Syria require an individual export permit issued by the Export Controls Division of the Department of Foreign Affairs, Trade and Development.

Exporters of goods and technology that are controlled by ECL item 5400 with a final destination other than a country on Canada's Area Control List (ACL), Cuba, the Democratic People's Republic of Korea, Iran and Syria can utilize [General Export Permit No. 12 - United States Origin Goods](#). Please consult section D.4 of the [Export Controls Handbook](#) for further information regarding the export of U.S.-origin goods and technology controlled by ECL item 5400 or section E for further information regarding how to obtain permits.

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PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

7.1 Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex A.

7.1.1 Optional Services

The Contractor grants to Canada the irrevocable option to acquire the "non-warranty maintenance and/or repair services" described at under Annex B of the Contract under the same conditions and at the prices and/or rates stated in the Contract. The option may be exercised by DRDC Contracting Authority.

The Contracting Authority at DRDC may exercise the option at any time before the expiry of the Contract by sending a written notice to the Contractor.

7.1.2 Task Authorization – for non-warranty Maintenance and Repair services

The Work to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

7.1.2.1 Task Authorization Process - for non-warranty Maintenance and Repair services

Task Authorization:

The Work to be performed under the Contract for any non-warranty Maintenance and Repair service requirement will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

Task Authorization Process:

1. The Technical Authority will provide the Contractor with a description of the task using the DND 626, Task Authorization Form specified in Annex F.
2. The Task Authorization (TA) will contain the details of the activities to be performed, a description of the deliverables, and a schedule indicating completion dates for the major activities or submission dates for the deliverables. The TA will also include the applicable basis (bases) and methods of payment as specified in the Contract.
3. The Contractor must provide the Technical Authority, within 10 calendar days of its receipt, the proposed total estimated cost for performing the task and a breakdown of that cost, established in accordance with the Basis of Payment specified in the Contract.
4. The Contractor must not commence work until a TA authorized by the Technical Authority has been received by the Contractor. The Contractor acknowledges that any work performed before a TA has been received will be done at the Contractor's own risk.

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7.1.2.2 Task Authorization Limit

The Technical Authority may authorize individual task authorizations up to a limit of \$40,000.00, applicable *Taxes included*, inclusive of any revisions.

Any task authorization to be issued in excess of that limit must be authorized by the Contracting Authority before issuance.

7.1.2.3 Task Authorization - Department of National Defence

The administration of the Task Authorization process will be carried out entirely by Defence Research and Development Canada – Contracting Authority. This process includes monitoring, controlling and reporting on expenditures of the contract with task authorizations to the Contracting Authority.

7.2 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.

7.2.1 General Conditions

2030 (2016-04-04), General Conditions – High Complexity - Goods, apply to and form part of the Contract.

7.3 Security Requirement

7.3.1 The following security requirements apply and form part of the Contract.

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Designated Organization Screening (DOS), issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
2. This contract includes access to **Controlled Goods**. Prior to access, the contractor must be registered in the Controlled Goods Program of Public Works and Government Services Canada (PWGSC).
3. The Contractor/Offeror personnel requiring access to sensitive work site(s) must **EACH** hold a valid **RELIABILITY STATUS**, granted or approved by CISD/PWGSC.
4. Subcontracts which contain security requirements are **NOT** to be awarded without the prior written permission of CISD/PWGSC.
5. The Contractor/Offeror must comply with the provisions of the:
 - a. Security Requirements Check List and security guide (if applicable), attached at Annex C;
 - b. Industrial Security Manual (Latest Edition).

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7.4 Term of Contract

7.4.1 Period of Contract

The duration will be from date of contract award, and all deliverable Milestones will be completed within 15 months from contract award.

7.4.2 Option to Extend Contract – for Non-Warranty Maintenance and Support of goods

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to 5 additional one-year periods under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

JoAnne LeBlanc
A/Supply Specialist
Public Works and Government Services Canada
Acquisitions Branch
1713 Bedford Row
Halifax, Nova Scotia B3J 1T3
Telephone: 902-440-0279
Facsimile: 902-496-5016
E-mail address: joanne.leblanc3@pwgsc.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.

7.5.2 Technical Authority

The Technical Authority for the Contract is: Will be completed upon Contract award.

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.

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7.5.3 Contractor's Representative (to be completed by Bidder)

Name: _____

Telephone: _____

Email address: _____

Procurement Business Number (PBN): _____

Suppliers who do not have a Procurement Business Number should apply for one promptly as the turnaround time can be lengthy.

7.6 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2012-2 of the Treasury Board Secretariat of Canada.

7.7 Payment

7.7.1 Basis of Payment

The Contractor will be paid its costs reasonably and properly incurred in the performance of the Work, as determined in accordance with the Basis of Payment in Annex B, to a limitation of expenditure of \$_____ (insert the amount at contract award). Customs duties are included, and Applicable Taxes are extra.

7.7.2 Limitation of Expenditure

1. Canada's total liability to the Contractor under the Contract must not exceed \$_____. Customs duties are included, and Applicable Taxes are extra. **There is a maximum funds available applicable to the current fiscal year ending March 31, 2019 in the amount of \$1,000,000.00 (applicable taxes extra).**
2. No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
 - a. when it is 75% committed, or
 - b. four months before the contract expiry date, or
 - c. as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,whichever comes first.
3. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

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7.7.2.1 Canada's Obligation - Portion of the Work - Task Authorizations

Canada's obligation with respect to the portion of the Work under the Contract that is performed through task authorizations is limited to the total amount of the actual tasks performed by the Contractor.

7.7.3 Method of Payment

7.7.3.1 Milestone Payments - Subject to holdback

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, up to 90 percent of the amount claimed and approved by Canada if:
 - a. an accurate and complete claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - b. the total amount for all milestone payments paid by Canada does not exceed 90 percent of the total amount to be paid under the Contract;
 - c. all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
 - d. all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of the item if the Work has been accepted by Canada and a final claim for the payment is submitted.

7.7.3.1.1 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with Contract is a follows:

<u>Milestones</u>	<u>Requirement Reference (refer to Annex A)</u>	<u>Description of the Deliverables</u>	<u>Firm Amount</u>
1.	5.1	Underwater Receiver Array	\$
2.	5.2	Tow Cable	\$
3.	5.3	Shipboard Power and Telemetry Unit	\$
4.	5.4	Slip Ring	\$
5.	5.5	Deck cable	\$
6.	5.6	Technical Data Package	\$
7.	5.7	Winch Handling Engineering Analysis	\$
8.	5.8	Course Materials and Notes (includes one Operation and Maintenance Course)	\$
9.	5.9	At-sea acceptance testing	\$

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7.7.3.2 Method of Payment – Single Payment (Task Authorizations for non-warranty service and maintenance)

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

- a. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all such documents have been verified by Canada;
- c. the Work delivered has been accepted by Canada.

7.7.4 Electronic Payment of Invoices – Contract

(will be included at contract award if applicable, and revised accordingly where applicable)

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Visa Acquisition Card;
- b. MasterCard Acquisition Card;
- c. Direct Deposit (Domestic and International);
- d. Electronic Data Interchange (EDI);

7.8 Invoicing Instructions

7.8.1 Progress (Milestone) Payment Claim – Supporting Documentation not required

1. The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment.

Each claim must show:

- a. all information required on form PWGSC-TPSGC 1111;
 - b. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
 - c. the description and value of the milestone claimed as detailed in the Contract.
2. Applicable Taxes, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
 3. The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Project Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.
The Project Authority will then forward the original and two (2) copies of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.
 4. The Contractor must not submit claims until all work identified in the claim is completed.

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7.8.2 Single Payment for Task Authorizations for non-warranty service and maintenance

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.

Invoices must be distributed as follows:

Defence Research and Development Canada - Atlantic
Maritime Forces Atlantic
9 Grove Street
P.O. Box 1012
Dartmouth, N.S. B2Y 3Z7

7.9 Certifications and Additional Information

7.9.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

7.9.2 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 Employment and Social Development Canada (ESDC)-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 ESDC will constitute the Contractor in default as per the terms of the Contract.

7.9.3 SACC Manual Clauses

SACC Manual Clause A3060C (2008-05-12), Canadian Content Certification

7.10 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ (will be completed at contract award).

7.11 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 - 2030 (2016-04-04) General Conditions – Higher Complexity - Goods;
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;
- (e) Annex C, Security Requirement Check List (SRCL);

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- (f) Annex D, the signed Task Authorization;
(g) the Contractor's bid dated _____.

7.12 Defence Contract

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

7.13 Insurance

SACC *Manual* clause G1005C (2008-05-12), Insurance

7.14 Controlled Goods Program

SACC *Manual* clause A9131C (2014-11-27), Controlled Goods Program

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ANNEX "A"
STATEMENT OF REQUIREMENT

1. TITLE: UNDERWATER TOWED ACOUSTIC ARRAY SYSTEM (UTAAS)

2. BACKGROUND

Defence Research and Development Canada - Atlantic Research Centre (DRDC - ARC) Underwater Warfare acoustic research program has a requirement for one non-developmental naval shipboard passive directional Underwater Towed Acoustic Array System (UTAAS) with a two octave bandwidth. UTAAS will be used as a receiver in multi-static active and continuous active sonar experiments and trials. These trials will be performed in the littorals and in deep water. UTAAS will be deployed from research vessels and Royal Canadian Navy (RCN) warships.

3. ACRONYMS

BBSA	Broadband Sensor Array
dB	deciBel
DRDC-ARC	Defence Research and Development Canada – Atlantic Research Centre
DSA	Directional Sensor Array
ENOB	Effective Number Of Bits
Hz	Hertz
m/s	metres per second
MSDS	Material Safety Data Sheet
NAS	Non Acoustic Sensors
NATO	North Atlantic Treaty Organization
NTP	Network Time Protocol
RCN	Royal Canadian Navy
SOR	Statement of Requirement
STANAG	Standardization Agreement
TA	Technical Authority
TDOA	Time Difference of Arrival
UDP	User Datagram Protocol
UPS	Uninterruptible Power Supply
URA	Underwater Receiver Array
UTAAS	Underwater Towed Acoustic Array System
VIM	Vibration Isolation Module

4. APPLICABLE DOCUMENTS & REFERENCES

The following documents are intended to be used by the Contractor a reference on how certain specifications will be evaluated. These references are available online or from their respective publishers.

AD1: Kester, Walt (2009), Understand SINAD, ENOB, SNR, THD, THD + N, and SFDR so You Don't Get Lost in the Noise Floor (PDF), Tutorial, Analog Devices, MT-003 ([see Appendix A attached herein](#)).

AD2: NATO STANAG 1008 edition 9 (2004), Characteristics of Shipboard Electrical Power Systems in Warships of the North Atlantic Treaty Navies.

5. REQUIREMENTS

5.1 Underwater Receiver Array

Required quantity: 1

The Contractor must provide an Underwater Receiver Array (URA).

This Underwater Receiver Array must be non-developmental and must have been delivered and accepted by at least one other customer. It must have been tested at-sea in its current form.

The Underwater Receiver Array must consist of the following modules:

- 5.1.1 a multi-element Directional Sensor Array (DSA)
- 5.1.2 a multi-element Broadband Sensor Array (BBSA)
- 5.1.3 fore and aft Non-Acoustic Sensor (NAS) units
- 5.1.4 Vibration Isolation Modules (VIM), and
- 5.1.5 a rope drogue.
- 5.1.6 general requirements

The requirements for each of these modules as well as for the overall assembly are detailed in the following paragraphs.

5.1.1 Directional Sensor Array (DSA)

The DSA is used to further research into multi static sonar and continuous active sonar in the open ocean and in the littorals.

The Contractor must provide the DSA with the following characteristics:

- a) Must operate over a two octave frequency band. This band must include all frequencies between 1100 Hz and 3600 Hz. This two octave band shall be known as the DSA Operating Band.
- b) Must be at least 50 wavelengths long at a sound speed of 1490 m/s at the highest frequency of the upper octave.
- c) Must be at least 50 wavelengths long at a sound speed of 1490 m/s at the highest frequency of the lower octave.
- d) Sensors must be spaced such that no grating lobes are present at any scan angles from broadside to within 20 degrees of endfire over the entire DSA Operating Band.
- e) Must use digitizers that are synchronized to each other.
- f) The electrical noise floor of all components, when measured at the output of the digitizer, must be less than 42 dB with respect to 1

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microPascal per root Hertz when referred to the ocean across the entire DSA Operating Band.

- g) The digitizers must have an Effective Number of Bits (ENOB) of at least 18. See reference AD1 p.5 equation 1 for the accepted definition for the Effective Number of Bits (ENOB).
- h) The digitizers must be capable of measuring a sinusoidal signal of 185 dB/1 microPascal without saturation across the entire DSA Operating Band.
- i) Must use digitizers operating at a sufficient sample rate to prevent aliasing of signals within and below the DSA Operating Band.
- j) Must use directional sensors that resolve left-right (horizontal) ambiguity problems. These directional sensors must provide no less than 15 dB left-right rejection within 30 degrees of broadside. This rejection must be achievable under towing conditions where the array can twist and roll along the array axis. This rejection must be maintained over the entire DSA Operating Band.
- k) Must provide the ability to detect signals at all frequencies between 100Hz and the lowest frequency of the DSA Operating Band. There is no requirement to provide directionality at these frequencies.
- l) Must provide time-stamped telemetry.

5.1.2 Broadband Sensor Array (BBSA)

The BBSA is used to further research into torpedo defence by providing the ability to detect torpedo SONAR as well as perform Time Difference of Arrival (TDOA) measurements in order to estimate threat bearing. It will also be used for marine mammal detection to allow for proper mitigation strategies during sea trials. It should either be a separate array or have its sensing elements incorporated within the DSA.

The Contractor must provide the BBSA with the following characteristics:

- a) Must be capable of detecting all frequencies between 1000 Hz and 48000 Hz. This shall be known as the BBSA Operating Band.
- b) The electrical noise floor of all components, when measured at the output of the digitizer, must be less than 42 dB with respect to 1 microPascal per root Hertz when referred to the ocean across the entire BBSA Operating band.
- c) The digitizers must have an Effective Number of Bits (ENOB) of at least 18. See reference AD1 p.5 equation 1 for the accepted definition for the Effective Number of Bits.
- d) Must utilize digitizers operating at a sufficient sample rate to prevent aliasing of signals within and below the BBSA Operating Band.

- e) Must consist of three or more sensors that allow Time difference of Arrival (TDOA) calculations to be performed.

5.1.3 Non Acoustic Sensors (NAS)

The NAS units are used to determine the depth, orientation, and acoustic propagation conditions of the underwater receive array.

The Contractor must provide the NAS with the following characteristics:

- a) There must be two NAS modules, located fore and aft of the DSA.
- b) Both NAS modules must include depth sensors capable of taking measurements from 0 to 500m with an accuracy of ± 0.5 m and precision of ± 0.1 m.
- c) One NAS module must include temperature sensors capable of taking measurements from -2 to +35°C, with an accuracy ± 0.5 °C and a precision ± 0.1 °C. The temperature sensors must be thermally coupled to the seawater
- d) Both NAS modules must include heading sensors capable of taking measurements from 0 to 360° with an accuracy of ± 0.5 ° and a precision of ± 0.2 °.
- e) All data from the NAS modules must be transmitted to the shipboard receiver and updated at a rate of no less than 1 Hz. The integration period for non-acoustic data must be no longer than 2 seconds.

5.1.4 Vibration Isolation Modules (VIM)

The VIM are used to provide vibration and motion damping caused by tow ship motion and array motion through the water and to attenuate self-noise.

5.1.5 Rope Drogue

The rope drogue is used to keep the URA straight when towed through the water, to aid in paying out the array, to ensure proper tensioning of the VIMs, and to secure the URA to a winch.

5.1.6 General Requirements

The Contractor must provide the URA with the following characteristics:

- a) Must exhibit no more than 4 degrees of pitch with respect to the horizontal plane when towed at speeds between 3 knots and 12 knots.
- b) Must have a combined electronic self-noise (pre amplifier and quantization) and flow noise vs. frequency spectrum with spectral level no greater than ambient noise under sea state 1 conditions with Light Shipping in the open ocean when towed at a speed of 9 knots within the DSA Operating Band.

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- c) Must be capable of surviving, without damage, pressures equivalent to 800 m of seawater for extended periods (> 12 hours).
- d) Must be modular in design, with the components capable of being disconnected from each other, and from the tow-cable, through the use of robust connectors.
- e) Must provide a Built-In Test and Emulator (BITE) capability, displaying system diagnostics and status.
- f) Must operate in water over a temperature range of -2 to +35°C.
- g) Must be capable of being stored in air at any temperature in the range of -40°C to +70°C.
- h) Must be capable of continuous operation at ship speeds up to 15 knots in Sea-State 5.
- i) Must be capable of surviving, without damage, tow speeds of 25 knots in Sea-State 6.
- j) All fill oils must have Material Safety Data Sheets (MSDS) health, flammability, and reactivity ratings of 0 or 1, or equivalent.

5.2 Tow Cable

Required quantity: 1

The tow cable provides a mechanical connection between the URA and the winch. It also provides an electrical and or optical connection between the URA and the shipboard telemetry receiver.

The Contractor must provide the Tow Cable with the following characteristics:

- a) Must be capable of towing the URA at a speed of 25 knots in sea state 6 without damage to the telemetry or power feeds.
- b) Must be capable of being towed at any depth between 30m and 150m at all tow speeds between 3 knots and 12 knots with a minimum distance of 100m behind the tow ship.
- c) Must contain redundant telemetry and power feeds.

5.3 Shipboard Power and Telemetry Unit

Required quantity: 1

The shipboard power and telemetry unit supplies electrical power to, as well as communications to and from, the URA.

The Contractor must provide the shipboard power and telemetry unit with the following characteristics:

- a) Must provide telemetry and non-acoustic data. The bit error rate of all data must be

no greater than 10^{-9} .

- b) Must transmit data as multicast User Datagram Protocol (UDP) packets.
- c) Must be capable of synchronizing with an external Network Time Protocol (NTP) server.
- d) Must have separate network connections for telemetry and control data.
- e) Must provide appropriate electrical power for the Underwater Receiver Array using an Uninterruptible Power Supply (UPS). The UPS must be designed such that the Underwater Receiver Array will have time to power down without damage to any hardware, firmware and software in the event of a loss of ship's power.
- f) Must be capable of supporting acceptance and maintenance testing.
- g) Must be capable operating on electrical power with voltage and current quality supplied in accordance with NATO STANAG 1008 Edition 9.

5.4 **Slip Ring**

Required quantity: 1

The Contractor must provide the Slip Ring with the following characteristics:

- a) A slip ring which must provide the capability to transmit all power and telemetry between the deck cable and the tow cable while the winch is rotating and when it is stopped.

5.5 **Deck cable**

Required quantity: 1

The deck cable supports physical separation between the slip ring and the shipboard power and telemetry receive unit. It must have the following characteristics:

The Contractor must provide the Deck Cable with the following specifications:

- a) Must be at least 30m long.
- b) Must have a minimum bend radius of 0.5m or less.
- c) Shall be capable of meeting safety standards while exposed to sea spray, minor impacts and abrasions.
- d) Must contain all telemetry and power signals.

5.6 **Technical Data Package**

Required quantity: 2 hardcopies, 1 softcopy (pdf format supplied on a CD or DVD)

The Contractor must provide the Technical Data Package with the following characteristics:

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- a) System description which must provide a detailed description of all of the UTAAS components;
 - b) Description of the network interface data protocols and formats, including enough information for a computer programmer to develop software to control UTAAS and receive UTAAS data.
 - c) Installation instructions providing enough information for a DRDC Employee who has completed the Operation and Maintenance Course person to install and setup UTAAS;
 - d) Operating instructions providing enough information for a DRDC Employee who has completed the Operation and Maintenance Course to operate UTAAS; and
 - e) Maintenance instructions providing enough information for a DRDC Employee who has completed the Operation and Maintenance Course to perform preventative and corrective maintenance on UTAAS
 - f) All documentation must be provided in English.

5.7 Winch Handling Engineering Analysis

Required quantity: 2 hardcopies, 1 softcopy (pdf format supplied on a CD or DVD)

The Contractor must provide an analysis and recommended procedures for the proper installation of UTAAS on two different winch assemblies, with enough information for a technician to mount UTAAS on either of the two winches. Engineering drawings for the winch assemblies will be provided by DRDC to the Contractor.

All documentation must be provided in English.

5.8 Operation and Maintenance Course

Required quantity: 1

The Contractor must supply a three day course on the system must be provided at the DRDC facility in Dartmouth, NS for a maximum of 15 participants from DRDC or DND. The course must include instruction on system operation and system maintenance. The course (and all associated course notes and materials) must be provided in English.

The Contractor must:

- a. Develop an outline of the course that summarizes the aim, approach, and timings for each element of the course.
- b. Submit a draft of the Course Outline to the TA for review, feedback, and acceptance.
- c. Revise the draft Course Outline based on feedback provided by the TA.
- d. Upon confirmation of acceptance of Course Outline by the TA, commence development of the Operation and Maintenance course.

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- e. Develop the training materials for the course in English, including: PowerPoint slides, reference material, exercises and proposed solutions.
 - f. Submit a copy of the draft Course Materials to the TA for review, feedback, and acceptance.
 - g. Revise the Course Materials based on feedback provided by the TA.
 - h. Upon confirmation of acceptance of Course Materials by the TA, schedule and deliver the course, in English, at DRDC facilities in Dartmouth, NS.

5.9 At-sea Testing for acceptance of deliverables 5.1 to 5.5 inclusive:

- a. A Factory Acceptance Test must be performed by the Contractor in the presence of the Project Authority (or his delegate). This test must be performed at the Contractor's work site and must demonstrate that the deliverables meet the specifications agreed at contract award. Any deficiencies observed during this phase of testing must be rectified by the Contractor before proceeding to the next phase of testing and at the Contractor's own cost.
- b. A Harbour Acceptance Test must be performed by the Contractor in the presence of the Project Authority or his delegate. This test must verify that the deliverables are properly installed aboard a ship prior to the At Sea Acceptance test. Any deficiencies observed during this phase of testing must be rectified by the Contractor before proceeding to the next phase of testing and at the contractor's own cost.
- c. An At-Sea Acceptance Test must be performed by the Contractor in the presence of the Project Authority or his delegate. This test must be conducted by the Contractor on a vessel in their employ in a suitable deep-water ocean location. This location must be approved by the Project Authority in advance of the At-Sea Acceptance Test. Any deficiencies observed during this phase of testing must be rectified at the Contractor's own cost. Once rectified and accepted by the Project Authority or his delegate any occurrence of a deficiency must be resolved under warranty provisions. The vendor will assume all liabilities with respect to this trial.

5.10 UTAAS Maintenance and repair

Required quantity: 5 years, as and when required, by completing a Task Authorization form.

The Contractor must perform non-warranty support for preventative maintenance, fault diagnosis, and repair on the following systems:

- a. Underwater Receiver Array
- b. Tow Cable
- c. Shipboard Power and Telemetry Unit
- d. Slip Ring
- e. Deck cable

Upon identification of a repair or maintenance requirement, the DRDC Technical Authority will liaise with the Contractor to determine if the Array or component needs to be returned to the Contractor for repair or maintenance or if the issue is one that they are able to troubleshoot with DRDC employees via telephone or other communication means.

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If the Array or component is returned to the Contractor, they must determine if the repair or maintenance is covered under warranty. If it is covered under warranty, they may proceed with the repair and return it to DRDC.

If it is not covered under warranty, the Contractor must supply a written quotation to the DRDC Procurement Authority. If the repair that is required is within the maximum repair cost (ceiling price) the DRDC Procurement Authority will authorize the work to commence; if the repair required exceeds the maximum repair cost (ceiling price) DRDC may request a contract amendment through PSPC to have the required work completed.

Only after written authorization, may the Contractor begin the repair work. The repair work, if required, must include additional trouble-shooting and any subsequent repairs needed to correct the issues. The full scope of the activity will be determined on an as required basis by the Technical Authority.

The Work to be performed under the Maintenance and Repair on an "as and when requested basis" will be carried out by completing a DND 626, Task Authorization Form specified under **Annex F**.

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work specified in the authorized Task Authorization (TA), to the limitation of expenditure specified in the authorized TA.

Canada's liability to the Contractor under the authorized TA must not exceed the limitation of expenditure specified in the authorized TA. Customs duties are included, and Applicable Taxes are extra.

Maximum Repair Cost (Ceiling Price)

For Repair work that is not covered under warranty, the Contractor must supply a written quotation to the DRDC Procurement Authority. If the repair that is required is within the maximum repair cost (ceiling price) the DRDC Procurement Authority will authorize the work to commence; if the repair required exceeds the maximum repair cost (ceiling price) DRDC may request a contract amendment through PSPC to have the required work completed.

The Maximum Repair Cost (Ceiling price) is set to a value of \$40,000.00 per repair to an annual maximum of \$150,000.00.

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6. Deliverables and Acceptance Criteria – Milestone Deliverables

Milestones	Referenced Requirement (refer to Annex A)	Description of the Deliverables	Quantity and Format
1.	5.1	Underwater Receiver Array	1
2.	5.2	Tow Cable	1
3.	5.3	Shipboard Power and Telemetry Unit	1
4.	5.4	Slip Ring	1
5.	5.5	Deck cable	1
6.	5.6	Technical Data Package	2 hardcopies, 1 softcopy
7.	5.7	Winch Handling Engineering Analysis	2 hardcopies, 1 softcopy
8	5.8	Operation and Maintenance Course (this includes Course Materials and Notes)	1 course Course Materials: 1 Hard copy per participant registered, 1 soft copy in PDF or PowerPoint
9.	5.9	At-sea acceptance Testing (5.1 – 5.5)	1
10.	5.10	UTAAS Non-Warranty Maintenance and repair services	5 years as and when required

At-Sea Acceptance Testing of above noted Deliverables 5.1 to 5.5, must be performed in three stages (noted below).

- a. A Factory Acceptance Test must be performed by the Contractor in the presence of the Project Authority or his delegate. This test must be performed at the Contractor's work site and must demonstrate that the deliverables meet the specifications agreed at contract award. Any deficiencies observed during this phase of testing must be rectified by the Contractor before proceeding to the next phase of testing and at the Contractor's own cost.
- b. A Harbour Acceptance Test must be performed by the Contractor in the presence of the Project Authority or his delegate. This test must verify that the deliverables are properly installed aboard a ship prior to the At Sea Acceptance test. Any deficiencies observed during this phase of testing must be rectified by the Contractor before proceeding to the next phase of testing and at the contractor's own cost.
- c. An At-Sea Acceptance Test must be performed by the Contractor in the presence of the Project Authority or his delegate. This test must be conducted by the Contractor on a vessel in their employ in a suitable deep-water ocean location. This location must be approved by the Project Authority in advance of the At-Sea Acceptance Test. Any deficiencies observed during this phase of testing must be rectified at the Contractor's own cost. Once rectified and accepted by the Project Authority or his delegate any occurrence of a deficiency must be resolved under warranty provisions. The vendor will assume all liabilities with respect to this trial.

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8. Date of Delivery

The completion date of all Milestones will be 15 months from contract award.

Language of Work

The language of all work and deliverables must be in English.

9. Meetings

Status meetings with the Project Authority will be held on a bi-weekly during the period of the contract via teleconference or progress report submitted via email as agreed upon by TA and Contractor.

10. Controlled Goods (applicable to foreign suppliers)

Controlled Goods will apply to suppliers from United States, and would be subject to export controls. Foreign suppliers should reference the "*Guide to Canada's Export Controls*", and refer to the Export Control List (ECL):

2-9.c. Underwater detection devices, specially designed for military use, controls therefor and components therefor specially designed for military use; the military use is the detection and tracking of submarines.

For more information on Canada's Export Controls, please refer to the "A Guide to Canada's Export Controls": http://www.international.gc.ca/controls-controles/about-a_propos/expor/guide-2015_toc-tdm.aspx?lang=eng

United States Origin Goods and Technologies

Exporters should note that the export of all goods and technology of U.S.-origin, as defined in item 5400 of the Export Control List (ECL), regardless of their nature and destination, *require permits*.

Exports of goods and technology that are controlled by ECL item 5400 destined for any country on Canada's Area Control List (ACL), Cuba, the Democratic People's Republic of Korea, Iran and Syria require an individual export permit issued by the Export Controls Division of the Department of Foreign Affairs, Trade and Development.

Exporters of goods and technology that are controlled by ECL item 5400 with a final destination other than a country on Canada's Area Control List (ACL), Cuba, the Democratic People's Republic of Korea, Iran and Syria can utilize [General Export Permit No. 12 - United States Origin Goods](#).

Please consult section D.4 of the [Export Controls Handbook](#) for further information regarding the export of U.S.-origin goods and technology controlled by ECL item 5400 or section E for further information regarding how to obtain permits.

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ANNEX "B" - BASIS OF PAYMENT

The contractor will be paid for costs reasonably and properly incurred in the performance of the work in accordance with the basis of payment at contract award.

Bidders are required to complete the below Table which will be used for evaluation purposes. The Non-Warranty Maintenance and Repair services costs will not form part of the evaluation process. All applicable **Shipping costs are to be included in the bidder's price, and will form part of the total evaluated price, and includes Customs duties.** The price of the bid will be evaluated in Canadian dollars, and taxes are to be listed separately.

<u>Deliverables</u>	<u>Requirement (refer to Annex A)</u>	<u>Description of the Deliverables</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Extended Total</u>
1.	5.1	Underwater Receiver Array	1	\$	\$
2.	5.2	Tow Cable	1	\$	\$
3.	5.3	Shipboard Power and Telemetry Unit	1	\$	\$
4.	5.4	Slip Ring	1	\$	\$
5.	5.5	Deck cable	1	\$	\$
6.	5.6	Technical Data Package Hard copy – 2 required Soft copy – 1 required	Lot price	\$	\$
7.	5.7	Winch Handling Engineering Analysis Hard copy – 2 required Soft copy – 1 required	Lot price	\$	\$
8.	5.8.	Course Materials and Notes. 1 hard copy per participant registered; 1 soft copy in .pdf or PowerPoint	Lot price	\$	\$
		Operation and Maintenance Course	1	\$	\$
9.	5.9	At-sea acceptance Tests (5.1 – 5.5)	1	\$	\$
10.	5.9	Non-Warranty Maintenance and repair services.	5 one-year periods, on an "as and when requested" basis.	Estimated 150K per Year for a total of \$750K	\$0.00

Total Cost: \$ _____

Shipping Costs: \$ _____

Sub-Total: \$ _____

Applicable Taxes extra: \$ _____

Non-warranty servicing and maintenance:

Year One – on an as and when requested basis for an estimated total amount \$150,000.00

Year Two – on an as and when requested basis for an estimated total amount \$150,000.00

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<u>Year Three</u> – on an as and when requested basis for an estimated total amount	\$150,000.00
<u>Year Four</u> – on an as and when requested basis for an estimated total amount	\$150,000.00
<u>Year Five</u> – on an as and when requested basis for an estimated total amount	<u>\$150,000.00</u>
Total estimated cost	\$750,000.00

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ANNEX "C"

SECURITY REQUIREMENT CHECK LIST (SRCL)

(Attached herein)

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ANNEX "D" to Part 3 of the Bid Solicitation

ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts to be paid by any of the following Electronic Payment Instrument(s):

- () VISA Acquisition Card;
- () MasterCard Acquisition Card;
- () Direct Deposit (Domestic and International);

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ANNEX "E" to PART 5 OF THE BID SOLICITATION

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 any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit [Employment and Social Development Canada \(ESDC\) – 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 permanent full-time and/or permanent part-time employees.

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 ESDC-Labour.

OR

- A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-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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ANNEX "F"

DND 626 Task Authorization Form

(See attached herein)

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ANNEX "G"
EVALUATION CRITERIA

EVALUATION CRITERIA

Mandatory Technical Criteria

The Phased Bid Compliance Process will apply to all mandatory technical criteria.

The Bidder must provide the necessary documentation to support compliance with this requirement.

a) The Bidder is advised that only listing system performance without providing any supporting data and measurement methodology will not constitute "demonstrated" for the purpose of the evaluation.

b) It is recommended that the Bidder include a grid in their proposals, cross-referencing statements of compliance with the supporting data and resume evidence contained in their proposals. Note: the compliance grid, by and of itself DOES NOT constitute demonstrated evidence.

MANDATORY REQUIREMENTS:

In order to be deemed compliant, Bidders must meet each Mandatory Criteria listed below. Mandatory Requirements are evaluated on a Met or Not Met basis. Failure to meet all of the Mandatory Criteria will result in your bid being deemed non-compliant and it will not be given any further consideration in the evaluation process.

Mandatory Technical Criterion		MET/ NOT MET	Please Cross Reference to Specific pages in your Proposal [COMPLETED BY BIDDER]
MT1	The Bidder must supply proof of acceptance of the proposed solution for the Underwater Receiver Array by at least one customer. Proof is considered to be a signed letter of attestation, a copy of a signed contract or a paid invoice.		
MT2	The Bidder must supply proof that the flow noise vs. frequency spectrum with spectral level no greater than ambient noise under sea state 1 conditions with Light Shipping in the open ocean when towed at a speed of 9 knots within the DSA Operating Band. This proof must be in the form of measurements taken from in-water trials.		
MT3	The Bidder must supply proof that the proposed solution for the Underwater Receiver Array is capable of meeting all of the requirements of Section 5.1 and all sub-sections of the Statement of Requirements. Proof must be in the form of drawings, bench tests, or at-sea tests.		

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POINT RATED CRITERIA:

Bids passing the Mandatory Evaluation Criteria, will be scored on the Point Rated Evaluation Criteria (RT).

All bids meeting the Mandatory Criteria will then be evaluated on the Rated Technical Criteria. Bidders MUST achieve a minimum 12 points out of a possible 30 points overall of the Point- Rated Criteria or will be deemed non responsive.

POINT RATED CRITERIA INSTRUCTIONS:

1. The Bidder should clearly address each point rated criteria listed below.
2. Bidders must respond to the point rated criteria with complete specifications, narratives, and/or supporting detail of how they meet each point rated criteria in their proposal.

There will be no opportunity to submit additional documentation in response to the point rated criteria after bid close.

Point Rated Grid: The bids will be rated in accordance with the table below.

Rated Technical Criterion				
	Rated Evaluation Criteria	Max Points	Point Breakdown Structure	Please Cross Reference to Specific pages in your Proposal [COMPLETED BY BIDDER]
RT1	<p>The Bidder should provide test data that demonstrates the acoustic length of the Directional Sensor Array. The test data should include measurements performed at the highest frequency of both octaves covered by the array.</p> <p>The acoustic length will be measured in wavelengths at the highest frequency of each octave for a sound speed of 1490 meters per second.</p> <p>Points shall be awarded based on the shorter of the two acoustic lengths.</p>	10	<p>Less than 50 wavelengths: 0 points 50 wavelengths: 1 point 51 wavelengths: 2 points 52 wavelengths : 3 points 53 wavelengths: 4 points 54 wavelengths: 5 points 55 wavelengths: 6 points 56 wavelengths: 7 points 57 wavelengths: 8 points 58 wavelengths: 9 points 59 wavelengths: 10 points</p>	
RT2	<p>The Bidder should provide test data that demonstrates the Effective Number of Bits for the Directional Sensor Array digitizers. This will be measured in accordance with Applicable Document 1, page 5, equation 1 referenced within Annex A – Statement of Work.</p>	10	<p>Effective Number of Bits (ENOB) less than 18: 0 points ENOB of 18: 1 point ENOB of 18.5: 2 points ENOB of 19: 3 points ENOB of 19.5: 4 points ENOB of 20: 5 points</p>	

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File No. - N° du dossier

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			ENOB of 20.5: 6 Points ENOB of 21: 7 Points ENOB of 21.5: 8 Points ENOB of 22: 9 points ENOB of 22.5: 10 points	
RT3	The Bidder should provide test data that demonstrates the left-right rejection of the Directional Sensor Array. The rejection used will be the lowest rejection across the entire DSA operating band within 30 degrees of broadside.	5	Less than 15 dB of left-right rejection: 0 points 15 dB of left-right rejection: 1 point 17 dB of left-right rejection: 2 points 19 dB of left-right rejection: 3 points 21 dB of left-right rejection: 4 points 23 dB of left-right rejection: 5 points	
RT4	The Bidder should provide test data that demonstrates the ability of the Directional Sensor Array to receive signals at frequencies below the DSA Operating Band. This will be measured at the frequency where the response of the Directional Sensor Array is three dB below the response within the DSA Operating Band. (Note: There is no requirement to demonstrate directivity at these frequencies.)	5	No ability to operate below DSA Operating Band: 0 points Reception to 800Hz: 1 point Reception to 600Hz: 2 points Reception to 400 Hz: 3 points Reception to 200 Hz: 4 points Reception to 100Hz: 5 points	
Total Points		30		

Understand SINAD, ENOB, SNR, THD, THD + N, and SFDR so You Don't Get Lost in the Noise Floor

by Walt Kester

INTRODUCTION

Six popular specifications for quantifying ADC dynamic performance are SINAD (signal-to-noise-and-distortion ratio), ENOB (effective number of bits), SNR (signal-to-noise ratio), THD (total harmonic distortion), THD + N (total harmonic distortion plus noise), and SFDR (spurious free dynamic range). Although most ADC manufacturers have adopted the same definitions for these specifications, some exceptions still exist. Because of their importance in comparing ADCs, it is important not only to understand exactly what is being specified, but the relationships between the specifications.

There are a number of ways to quantify the distortion and noise of an ADC. All of them are based on an FFT analysis using a generalized test setup such as shown in Figure 1.

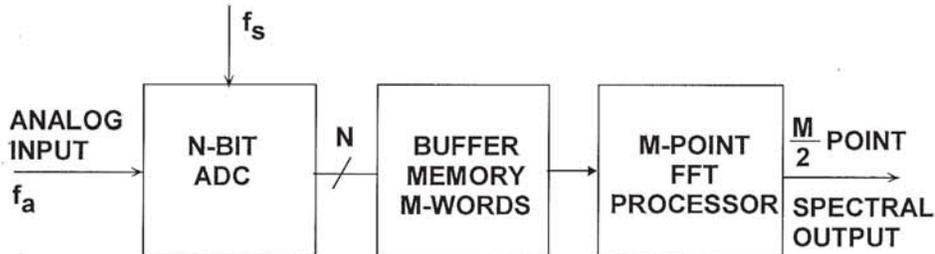
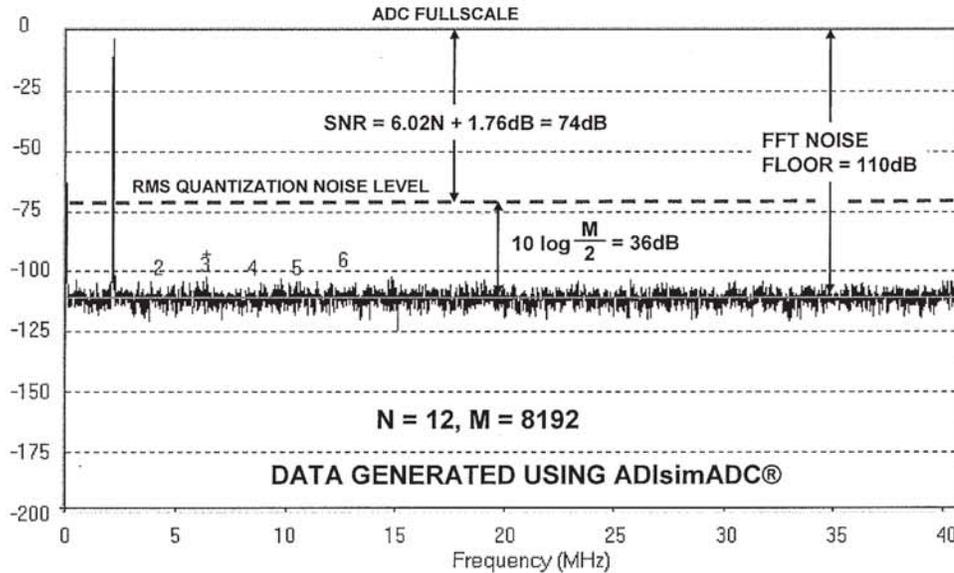


Figure 1: Generalized Test Setup for FFT Analysis of ADC Output

The spectral output of the FFT is a series of $M/2$ points in the frequency domain (M is the size of the FFT—the number of samples stored in the buffer memory). The spacing between the points is f_s/M , and the total frequency range covered is dc to $f_s/2$, where f_s is the sampling rate. The width of each frequency "bin" (sometimes called the *resolution* of the FFT) is f_s/M . Figure 2 shows an FFT output for an ideal 12-bit ADC using the Analog Devices' ADIsimADC® program. Note that the theoretical noise floor of the FFT is equal to the theoretical SNR plus the FFT *process gain*, $10 \times \log(M/2)$. It is important to remember that the value for noise used in the SNR calculation is the noise that extends over the entire Nyquist bandwidth (dc to $f_s/2$), but the FFT acts as a narrowband spectrum analyzer with a bandwidth of f_s/M that sweeps over the spectrum. This has the effect of pushing the noise down by an amount equal to the process gain—the same effect as narrowing the bandwidth of an analog spectrum analyzer.

The FFT data shown in Figure 2 represents the average of 5 individual FFTs. Note that averaging a number of FFTs does not affect the average noise floor, it only acts to "smooth" the random variations in the amplitudes contained in each frequency bin.



**Figure 2: FFT Output for an Ideal 12-Bit ADC, Input = 2.111MHz,
 $f_s = 82\text{MSPS}$, Average of 5 FFTs, $M = 8192$,
 Data Generated from ADIsimADC®**

The FFT output can be used like an analog spectrum analyzer to measure the amplitude of the various harmonics and noise components of a digitized signal. The harmonics of the input signal can be distinguished from other distortion products by their location in the frequency spectrum. Figure 3 shows a 7-MHz input signal sampled at 20 MSPS and the location of the first 9 harmonics. Aliased harmonics of f_a fall at frequencies equal to $|\pm Kf_s \pm nf_a|$, where n is the order of the harmonic, and $K = 0, 1, 2, 3, \dots$. The second and third harmonics are generally the only ones specified on a data sheet because they tend to be the largest, although some data sheets may specify the value of the *worst* harmonic.

Harmonic distortion is normally specified in dBc (decibels below *carrier*), although in audio applications it may be specified as a percentage. It is the ratio of the rms signal to the rms value of the harmonic in question. Harmonic distortion is generally specified with an input signal near full-scale (generally 0.5 to 1 dB below full-scale to prevent clipping), but it can be specified at any level. For signals much lower than full-scale, other distortion products due to the differential nonlinearity (DNL) of the converter—not direct harmonics—may limit performance.

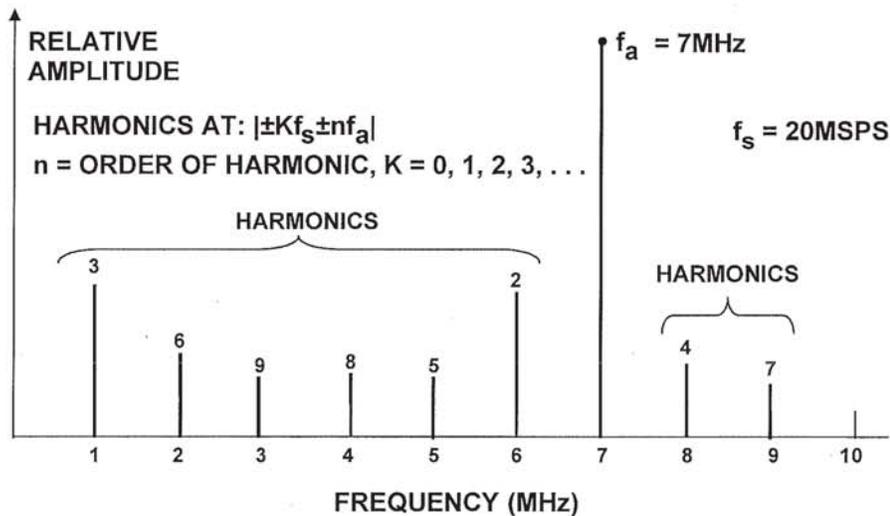


Figure 3: Location of Distortion Products: Input Signal = 7 MHz, Sampling Rate = 20 MSPS

Total harmonic distortion (THD) is the ratio of the rms value of the fundamental signal to the mean value of the root-sum-square of its harmonics (generally, only the first 5 harmonics are significant). THD of an ADC is also generally specified with the input signal close to full-scale, although it can be specified at any level.

Total harmonic distortion plus noise (THD + N) is the ratio of the rms value of the fundamental signal to the mean value of the root-sum-square of its harmonics plus all noise components (excluding dc). The bandwidth over which the noise is measured must be specified. In the case of an FFT, the bandwidth is dc to $f_s/2$. (If the bandwidth of the measurement is dc to $f_s/2$ (the Nyquist bandwidth), THD + N is equal to SINAD—see below). Be warned, however, that in audio applications the measurement bandwidth may not necessarily be the Nyquist bandwidth.

Spurious free dynamic range (SFDR) is the ratio of the rms value of the signal to the rms value of the worst spurious signal regardless of where it falls in the frequency spectrum. The worst spur may or may not be a harmonic of the original signal. SFDR is an important specification in communications systems because it represents the smallest value of signal that can be distinguished from a large interfering signal (blocker). SFDR can be specified with respect to full-scale (dBFS) or with respect to the actual signal amplitude (dBc). The definition of SFDR is shown graphically in Figure 4.

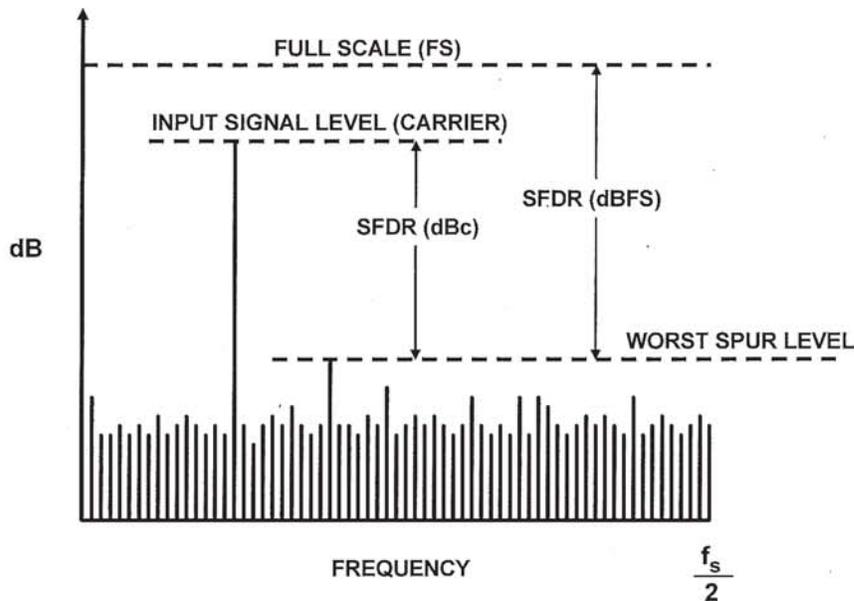


Figure 4: Spurious Free Dynamic Range (SFDR)

The Analog Devices' ADIsimADC® ADC modeling program allows various high performance ADCs to be evaluated at various operating frequencies, levels, and sampling rates. The models yield an accurate representation of actual performance, and a typical FFT output for the AD9444 14-bit, 80-MSPS ADC is shown in Figure 5. Note that the input frequency is 95.111 MHz and is aliased back to 15.111 MHz by the sampling process. The output also displays the locations of the first five harmonics. In this case, all the harmonics are aliases. The program also calculates and tabulates the important performance parameters as shown in the left-hand data column.

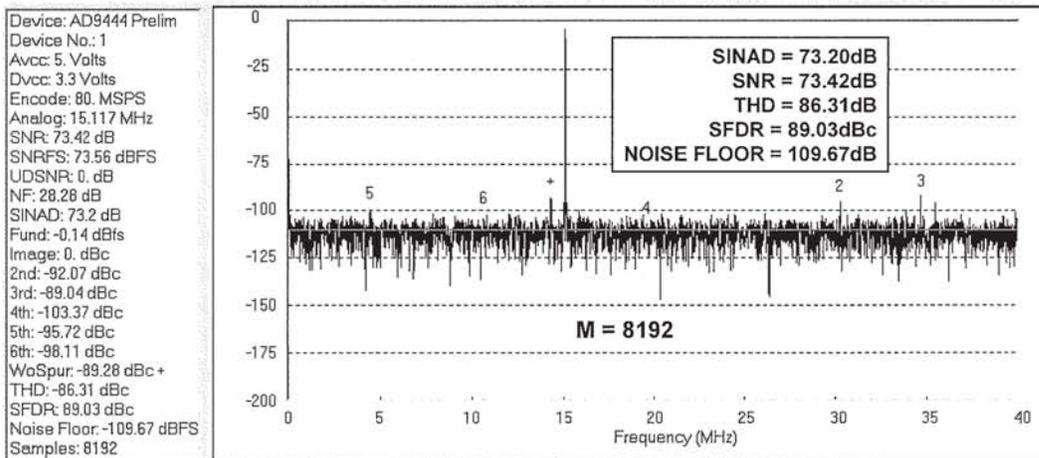


Figure 5: AD9444 14-Bit, 80MSPS ADC $f_{in} = 95.111\text{MHz}$, $f_s = 80\text{MSPS}$, Average of 5 FFTs, $M = 8192$, Data Generated from ADIsimADC®

SIGNAL-TO-NOISE-AND-DISTORTION RATIO (SINAD), SIGNAL-TO-NOISE RATIO (SNR), AND EFFECTIVE NUMBER OF BITS (ENOB)

SINAD and SNR deserve careful attention, because there is still some variation between ADC manufacturers as to their precise meaning. Signal-to-Noise-and-Distortion (SINAD, or $S/(N + D)$) is the ratio of the rms signal amplitude to the mean value of the root-sum-square (rss) of all other spectral components, *including harmonics*, but excluding dc. SINAD is a good indication of the overall dynamic performance of an ADC because it includes all components which make up noise and distortion. SINAD is often plotted for various input amplitudes and frequencies. For a given input frequency and amplitude, SINAD is equal to THD + N, provided the bandwidth for the noise measurement is the same for both (the Nyquist bandwidth). A typical plot for the [AD9226](#) 12-bit, 65-MSPS ADC is shown in Figure 6.

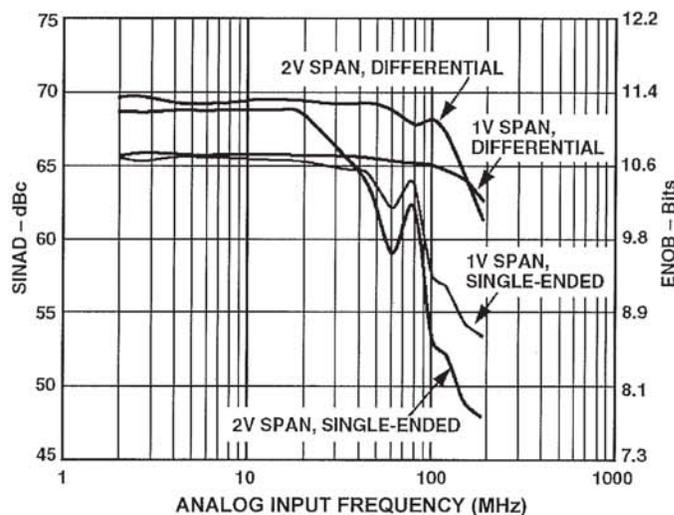


Figure 6: [AD9226](#) 12-bit, 65-MSPS ADC SINAD and ENOB for Various Input Full-Scale Spans (Range)

The SINAD plot shows that the ac performance of the ADC degrades due to high-frequency distortion and is usually plotted for frequencies well above the Nyquist frequency so that performance in undersampling applications can be evaluated. SINAD plots such as these are very useful in evaluating the dynamic performance of ADCs. SINAD is often converted to *effective-number-of-bits* (ENOB) using the relationship for the theoretical SNR of an ideal N-bit ADC: $SNR = 6.02N + 1.76$ dB. The equation is solved for N, and the value of SINAD is substituted for SNR:

$$ENOB = \frac{SINAD - 1.76 \text{ dB}}{6.02} \quad \text{Eq. 1}$$

Note that Equation 1 assumes a full-scale input signal. If the signal level is reduced, the value of SINAD decreases, and the ENOB decreases. It is necessary to add a correction factor for calculating ENOB at reduced signal amplitudes as shown in Equation 2:

$$\text{ENOB} = \frac{\text{SINAD}_{\text{MEASURED}} - 1.76 \text{ dB} + 20 \log \left(\frac{\text{Fullscale Amplitude}}{\text{Input Amplitude}} \right)}{6.02} \quad \text{Eq. 2}$$

The correction factor essentially "normalizes" the ENOB value to full-scale regardless of the actual signal amplitude.

Signal-to-noise ratio (SNR, or sometimes called *SNR-without-harmonics*) is calculated from the FFT data the same as SINAD, except that the signal harmonics are excluded from the calculation, leaving only the noise terms. In practice, it is only necessary to exclude the first 5 harmonics, since they dominate. The SNR plot will degrade at high input frequencies, but generally not as rapidly as SINAD because of the exclusion of the harmonic terms.

A few ADC data sheets somewhat loosely refer to SINAD as SNR, so you must be careful when interpreting these specifications and understand exactly what the manufacturer means.

THE MATHEMATICAL RELATIONSHIPS BETWEEN SINAD, SNR, AND THD

There is a mathematical relationship between SINAD, SNR, and THD (assuming all are measured with the same input signal amplitude and frequency. In the following equations, SNR, THD, and SINAD are expressed in dB, and are derived from the actual numerical ratios S/N, S/D, and S/(N+D) as shown below:

$$\text{SNR} = 20 \log \left(\frac{S}{N} \right), \quad \text{Eq. 3}$$

$$\text{THD} = 20 \log \left(\frac{S}{D} \right), \quad \text{Eq. 4}$$

$$\text{SINAD} = 20 \log \left(\frac{S}{N+D} \right). \quad \text{Eq. 5}$$

Eq. 3, Eq. 4, and Eq. 5 can be solved for the numerical ratios N/S, D/S, and (N+D)/S as follows:

$$\frac{N}{S} = 10^{-\text{SNR}/20} \quad \text{Eq. 6}$$

$$\frac{D}{S} = 10^{-\text{THD}/20} \quad \text{Eq. 7}$$

$$\frac{N + D}{S} = 10^{-\text{SINAD}/20} \quad \text{Eq. 8}$$

Because the denominators of Eq. 6, Eq. 7, and Eq. 8 are all equal to S, the root sum square of N/S and D/S is equal to (N+D)/S as follows:

$$\frac{N + D}{S} = \left[\left(\frac{N}{S} \right)^2 + \left(\frac{D}{S} \right)^2 \right]^{\frac{1}{2}} = \left[\left(10^{-\text{SNR}/20} \right)^2 + \left(10^{-\text{THD}/20} \right)^2 \right]^{\frac{1}{2}}, \quad \text{Eq. 9}$$

$$\frac{N + D}{S} = \left[10^{-\text{SNR}/10} + 10^{-\text{THD}/10} \right]^{\frac{1}{2}}. \quad \text{Eq. 10}$$

Therefore, S/(N+D) must equal:

$$\frac{S}{N + D} = \left[10^{-\text{SNR}/10} + 10^{-\text{THD}/10} \right]^{-\frac{1}{2}}, \quad \text{Eq. 11}$$

and hence,

$$\text{SINAD} = 20 \log \left(\frac{S}{N + D} \right) = -10 \log \left[10^{-\text{SNR}/10} + 10^{-\text{THD}/10} \right]. \quad \text{Eq. 12}$$

Eq. 12 gives us SINAD as a function of SNR and THD.

Similarly, if we know SINAD and THD, we can solve for SNR as follows:

$$\text{SNR} = 20 \log \left(\frac{S}{N} \right) = -10 \log \left[10^{-\text{SINAD}/10} - 10^{-\text{THD}/10} \right]. \quad \text{Eq. 13}$$

Similarly, if we know SINAD and SNR, we can solve for THD as follows:

$$\text{THD} = 20 \log \left(\frac{S}{D} \right) = -10 \log \left[10^{-\text{SINAD}/10} - 10^{-\text{SNR}/10} \right]. \quad \text{Eq. 14}$$

Equations 12, 13, and 14 are implemented in an easy to use design tool on the Analog Devices' website. It is important to emphasize again that these relationships hold true only if the input frequency and amplitude are equal for all three measurements.

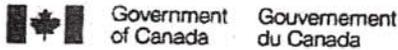
SUMMARY

Because SINAD, SNR, ENOB, THD, THD + N, and SFDR are common measures of ADC dynamic performance, a complete understanding of them in the context of the manufacturers' data sheet is critical. This tutorial has defined the quantities and derived the mathematical relationship between SINAD, SNR, and THD.

REFERENCES

1. Walt Kester, *Analog-Digital Conversion*, Analog Devices, 2004, ISBN 0-916550-27-3, Chapter 6. Also available as *The Data Conversion Handbook*, Elsevier/Newnes, 2005, ISBN 0-7506-7841-0, Chapter 2.
2. Hank Zumbahlen, *Basic Linear Design*, Analog Devices, 2006, ISBN: 0-915550-28-1. Also available as *Linear Circuit Design Handbook*, Elsevier-Newnes, 2008, ISBN-10: 0750687037, ISBN-13: 978-0750687034. Chapter 6.

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Contract Number / Numéro du contrat W7707-175994
Security Classification / Classification de sécurité UNCLAS

SECURITY REQUIREMENTS CHECK LIST (SRCL) LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)

PARTIE A - INFORMATION CONTRACTUELLE / PARTIE A - INFORMATION CONTRACTUELLE		
1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine DND	2. Branch or Directorate / Direction générale ou Direction DRDC - Atlantic Research Centre	
3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant	
4. Brief Description of Work / Brève description du travail Procurement of Underwater Towed Acoustic Array System. A directional passive towed array SONAR will be procured to further research into Anti-Submarine Warfare. This system will be an existing product from the successful bidder.		
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées? <input type="checkbox"/> No / Non <input checked="" type="checkbox"/> Yes / Oui		
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques? <input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui		
6. Indicate the type of access required / Indiquer le type d'accès requis		
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using the chart in Question 7. c) / (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c) <input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui		
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé. <input type="checkbox"/> No / Non <input checked="" type="checkbox"/> Yes / Oui		
6. c) Is this a commercial courier or delivery requirement with no overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit? <input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui		
7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès		
Canada <input checked="" type="checkbox"/>	NATO / OTAN <input type="checkbox"/>	Foreign / Étranger <input type="checkbox"/>
7. b) Release restrictions / Restrictions relatives à la diffusion		
No release restrictions / Aucune restriction relative à la diffusion <input type="checkbox"/>	All NATO countries / Tous les pays de l'OTAN <input type="checkbox"/>	No release restrictions / Aucune restriction relative à la diffusion <input type="checkbox"/>
Not releasable / À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: <input type="checkbox"/>	Restricted to: / Limité à: <input type="checkbox"/>	Restricted to: / Limité à: <input type="checkbox"/>
Specify country(ies): / Préciser le(s) pays:	Specify country(ies): / Préciser le(s) pays:	Specify country(ies): / Préciser le(s) pays:
7. c) Level of information / Niveau d'information		
PROTECTED A / PROTÉGÉ A <input type="checkbox"/>	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED A / PROTÉGÉ A <input type="checkbox"/>
PROTECTED B / PROTÉGÉ B <input type="checkbox"/>	NATO RESTRICTED / NATO DIFFUSION RESTREINTE <input type="checkbox"/>	PROTECTED B / PROTÉGÉ B <input type="checkbox"/>
PROTECTED C / PROTÉGÉ C <input type="checkbox"/>	NATO CONFIDENTIAL / NATO CONFIDENTIEL <input type="checkbox"/>	PROTECTED C / PROTÉGÉ C <input type="checkbox"/>
CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>	NATO SECRET / NATO SECRET <input type="checkbox"/>	CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>
SECRET / SECRET <input type="checkbox"/>	COSMIC TOP SECRET / COSMIC TRÈS SECRET <input type="checkbox"/>	SECRET / SECRET <input type="checkbox"/>
TOP SECRET / TRÈS SECRET <input type="checkbox"/>		TOP SECRET / TRÈS SECRET <input type="checkbox"/>
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>



PARTIE A - PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?
If Yes, indicate the level of sensitivity.
Dans l'affirmative, indiquer le niveau de sensibilité:

No / Non Yes / Oui

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?

No / Non Yes / Oui

Show Title(s) of material / Titre(s) abrégé(s) du matériel:
Document Number / Numéro du document:

PARTIE B - PERSONNEL (FOURNISSEUR) / PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> RELIABILITY STATUS
COTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL
CONFIDENTIEL | <input type="checkbox"/> SECRET
SECRET | <input type="checkbox"/> TOP SECRET
TRÈS SECRET |
| <input type="checkbox"/> TOP SECRET - SIGINT
TRÈS SECRET - SIGINT | <input type="checkbox"/> NATO CONFIDENTIAL
NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET
NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET
COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS
ACCÈS AUX EMPLACEMENTS | | | |

Special comments:
Commentaires spéciaux:

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.
REMARQUE: Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) Will unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?
If Yes, will unscreened personnel be escorted?
Dans l'affirmative, le personnel en question sera-t-il escorté?

No / Non Yes / Oui
 No / Non Yes / Oui

ON DND PREMISES
UNSCREENED PERSONNEL MAY ONLY
ACCESS PUBLIC/RECEPTION ZONES

JDS

PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

No / Non Yes / Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?

No / Non Yes / Oui

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

No / Non Yes / Oui

JDS

INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?

No / Non Yes / Oui

JDS

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?
Discrasera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?

No / Non Yes / Oui



Continued / À PARTIE C - (suite)

For users completing the form **manually** use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) / premises.
 Les utilisateurs qui remplissent le formulaire **manuellement** doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form **online** (via the Internet), the summary chart is automatically populated by your responses to previous questions.
 Dans le cas des utilisateurs qui remplissent le formulaire **en ligne** (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				CONSEC					
	A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET	NATO RESTRICTED / NATO DIFFUSION RESTREINTE	NATO CONFIDENTIAL / NATO CONFIDENTIEL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL	SECRET	TOP SECRET / TRÈS SECRET
											A	B	C			
Information Assets / Ressources d'Informations / Biens Protégés																
IT Media / Support IT / Données / Documents																
Personnel / Personnel																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?
 La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE? No / Non Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?
 La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE? No / Non Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

Annex F

TASK AUTHORIZATION AUTORISATION DES TÂCHES

All invoices/progress claims must show the reference Contract and Task numbers. Toutes les factures doivent indiquer les numéros du contrat et de la tâche.		Contract no. – N° du contrat Task no. – N° de la tâche
Amendment no. – N° de la modification	Increase/Decrease – Augmentation/Réduction	Previous value – Valeur précédente
To – À	TO THE CONTRACTOR You are requested to supply the following services in accordance with the terms of the above reference contract. Only services included in the contract shall be supplied against this task. Please advise the undersigned if the completion date cannot be met. Invoices/progress claims shall be prepared in accordance with the instructions set out in the contract. À L'ENTREPRENEUR Vous êtes prié de fournir les services suivants en conformité des termes du contrat mentionné ci-dessus. Seuls les services mentionnés dans le contrat doivent être fournis à l'appui de cette demande. Prière d'aviser le signataire si la livraison ne peut se faire dans les délais prescrits. Les factures doivent être établies selon les instructions énoncées dans le contrat.	
Delivery location – Expédiez à	Date _____ for the Department of National Defence pour le ministère de la Défense nationale	
Delivery/Completion date – Date de livraison/d'achèvement		
Contract item no. N° d'article du contrat	Services	Cost Prix
	GST/HST TPS/TVH	
	Total	
APPLICABLE ONLY TO PWGSC CONTRACTS: The Contract Authority signature is required when the total value of the DND 626 exceeds the threshold specified in the contract. NE S'APPLIQUE QU'ÀUX CONTRATS DE TPSGC : La signature de l'autorité contractante est requise lorsque la valeur totale du formulaire DND 626 est supérieure au seuil précisé dans le contrat.		
_____ for the Department of Public Works and Government Services pour le ministère des Travaux publics et services gouvernementaux		

**Instructions for completing
DND 626 - Task Authorization**

Contract no.

Enter the PWGSC contract number in full.

Task no.

Enter the sequential Task number.

Amendment no.

Enter the amendment number when the original Task is amended to change the scope or the value.

Increase/Decrease

Enter the increase or decrease total dollar amount including taxes.

Previous value

Enter the previous total dollar amount including taxes.

To

Name of the contractor.

Delivery location

Location where the work will be completed, if other than the contractor's location.

Delivery/Completion date

Completion date for the task.

for the Department of National Defence

Signature of the DND person who has delegated Authority for signing DND 626 (level of authority based on the dollar value of the task and the equivalent signing authority in the PAM 1.4). **Note:** the person signing in this block ensures that the work is within the scope of the contract, that sufficient funds remain in the contract to cover this task and that the task is affordable within the Project/Unit budget.

Services

Define the requirement briefly (attach the SOW) and identify the cost of the task using the contractor's quote on the level of effort. The Task must use the basis of payment stipulated in the contract. If there are several basis of payment then list here the one(s) that will apply to the task quote (e.g. milestone payments; per diem rates/labour category hourly rates; travel and living rates; firm price/ceiling price, etc.). All the terms and conditions of the contract apply to this Task Authorization and cannot be ignored or amended for this task. Therefore it is not necessary to restate these general contract terms and conditions on the DND 626 Task form.

Cost

The cost of the Task broken out into the individual costed items in Services.

GST/HST

The GST/HST cost as appropriate.

Total

The total cost of the task. The contractor may not exceed this amount without the approval of DND indicated on an amended DND 626. The amendment value may not exceed 50% (or the percentage for amendments established in the contract) of the original value of the task authorization. The total cost of a DND 626, including all amendments, may not exceed the funding limit identified in the contract.

Applicable only to PWGSC contracts

This block only applies to those Task Authorization contracts awarded by PWGSC. The contract will include a specified threshold for DND sole approval of the DND 626 and a percentage for DND to approve amendments to the original DND 626. Tasks that will exceed these thresholds must be passed to the PWGSC Contracting Authority for review and signature prior to authorizing the contractor to begin work.

Note:

Work on the task may not commence prior to the date this form is signed by the DA Authority - for tasks within the DND threshold; and by both DND and PWGSC for those tasks over the DND threshold.

**Instructions pour compléter le formulaire
DND 626 - Autorisation des tâches**

N° du contrat

Inscrivez le numéro du contrat de TPSGC en entier.

N° de la tâche

Inscrivez le numéro de tâche séquentiel.

N° de la modification

Inscrivez le numéro de modification lorsque la tâche originale est modifiée pour en changer la portée.

Augmentation/Réduction

Inscrivez le montant total de l'augmentation ou de la diminution, y compris les taxes.

Valeur précédente

Inscrivez le montant total précédent, y compris les taxes.

À

Nom de l'entrepreneur.

Expédié à

Endroit où le travail sera effectué, si celui-ci diffère du lieu d'affaires de l'entrepreneur.

Date de livraison/d'achèvement

Date d'achèvement de la tâche.

pour le ministère de la Défense nationale

Signature du représentant du MDN auquel on a délégué le pouvoir d'approbation en ce qui a trait à la signature du formulaire DND 626 (niveau d'autorité basé sur la valeur de la tâche et le signataire autorisé équivalent mentionné dans le MAA 1.4). **Nota :** la personne qui signe cette attache de signature confirme que les travaux respectent la portée du contrat, que suffisamment de fonds sont prévus au contrat pour couvrir cette tâche et que le budget alloué à l'unité ou pour le projet le permet.

Services

Définissez brièvement le besoin (joignez l'ET) et établissez le coût de la tâche à l'aide de la soumission de l'entrepreneur selon le niveau de difficulté de celle-ci. Les modalités de paiement stipulées dans le contrat s'appliquent à la tâche. Si plusieurs d'entre elles sont prévues, énumérez ici celle/celles qui s'appliquera/ront à la soumission pour la tâche à accomplir (p.ex. acompte fondé sur les étapes franchies; taux quotidien ou taux horaire établi selon la catégorie de main-d'œuvre; frais de déplacement et de séjour; prix fixe ou prix plafond; etc.). Toutes les modalités du contrat s'appliquent à cette autorisation de tâche et ne peuvent être négligées ou modifiées quant à la tâche en question. Il n'est donc pas nécessaire de répéter ces modalités générales afférentes au contrat sur le formulaire DND 626.

Prix

Mentionnez le coût de la tâche en le répartissant selon les frais afférents à chaque item mentionné dans la rubrique Services.

TPS/TVH

Mentionnez le montant de la TPS/TVH, s'il y a lieu.

Total

Mentionnez le coût total de la tâche. L'entrepreneur ne peut dépasser ce montant sans l'approbation du MDN, formulaire DND 626 modifié à l'appui. Le coût de la modification ne peut pas être supérieur à 50 p. 100 du montant initial prévu dans l'autorisation de tâche (ou au pourcentage prévu dans le contrat pour les modifications). Le coût total spécifié dans le formulaire DND 626, y compris toutes les modifications, ne peut dépasser le plafond de financement mentionné dans le contrat.

Ne s'applique qu'aux contrats de TPSGC.

Le présent paragraphe s'applique uniquement aux autorisations de tâche accordées par TPSGC. On inscrira dans le formulaire DND 626 un plafond précis qui ne pourra être approuvé que par le MDN et un pourcentage selon lequel le MDN pourra approuver des modifications au formulaire DND 626 original. Les tâches dont le coût dépasse ces plafonds doivent être soumises à l'autorité contractante de TPSGC pour examen et signature avant qu'on autorise l'entrepreneur à débiter les travaux.

Nota :

Les travaux ne peuvent commencer avant la date de signature de ce formulaire par le responsable du MDN, pour les tâches dont le coût est inférieur au plafond établi par le MDN, et par le MDN et TPSGC pour les tâches dont le coût dépasse le plafond établi par le MDN.