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**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**
11 Laurier St. / 11, rue Laurier
Place du Portage , Phase III
Core 0B2 / Noyau 0B2
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION

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

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

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

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

Comments - Commentaires

Title - Sujet RFP - GNSS Interferene Detection	
Solicitation No. - N° de l'invitation U4008-244572/A	Date 2023-12-08
Client Reference No. - N° de référence du client U4008-244572	
GETS Reference No. - N° de référence de SEAG PW-\$\$QD-040-29232	
File No. - N° de dossier 040qd.U4008-244572	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Standard Time EST on - le 2024-01-08 Heure Normale du l'Est HNE	
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Khan, Adnan	Buyer Id - Id de l'acheteur 040qd
Telephone No. - N° de téléphone (343) 543-3436 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: INNOV, SCI AND ECON DEVT CAN SPECTRUM AND TELECOMMUNICATIONS SECTOR 235 QUEEN STREET OTTAWA, K1A 0H5	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

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

Issuing Office - Bureau de distribution

Defence Communications Division. (QD)
11 Laurier St./11, rue Laurier
Place du Portage, Phase III, 8C2
Gatineau, Québec K1A 0S5

Delivery Required - Livraison exigée	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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PART 1 - GENERAL INFORMATION

1.1 Summary

Global Navigation Satellite System (GNSS) Interference Detection and Mitigation Technologies

The Positioning, Navigation and Timing (PNT) office at the Department of Innovation, Science and Economic Development (ISED) is looking to procure and sample GNSS interference detection and mitigation technologies to better understand the capabilities of emerging technologies. As such there are four categories that ISED is currently looking to sample:

- A. GNSS Interference Detection Systems
- B. GNSS Interference Detection Devices
- C. GNSS Receivers with GNSS Interference Detection Capabilities
- D. GNSS Anti-Jam Antennas (Controlled Reception Pattern Antennas (CRPAs))

These four categories will be interpreted as four separate procurement categories falling under this RFP. It is ISED's intention to sample as many products for each category as possible as long as they meet the requirements and there are still funds available. The ranking of bids for each category will be determined via the basis of selection.

1.2 Statement of Requirement

The requirement is detailed under Annex "A" Statement of Requirement

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 Canada Post Corporation's (CPC) Connect service

This bid solicitation allows bidders to use the CPC Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.

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) (<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](#) (2023-06-08) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

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 in the bid solicitation.

Note: For bidders choosing to submit using Canada Post Corporation's (CPC) Connect service for bids closing at the Bid Receiving Unit in the National Capital Region (NCR) the email address is:

tpsgc.pareceptiondessoumissions-apbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open a CPC Connect conversation, as detailed in Standard Instructions [2003](#), or to send bids through a CPC Connect message if the bidder is using its own licensing agreement for CPC Connect service.

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

2.2.1 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 favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least 10 calendar days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 10 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 Ontario.

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

2.5 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
 - Office of the Procurement Ombudsman (OPO)
 - Canadian International Trade Tribunal (CITT)
- (c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

- Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. The CPC Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

Canada requests that the Bidder submits its bid in separately bound sections as follows:

Section I: Technical Bid
Section II: Financial Bid
Section III: Certifications

- 3.1.1 Bids must be submitted by using the epost Connect service provided by Canada Post Corporation.
The only acceptable email address to use with epost Connect for responses to bid solicitations issued by PWGSC headquarters is: tpsgc.dgareceptiondessoumissions-abbidReceiving.pwgsc@tpsgc-pwgsc.gc.ca
- 3.1.2 To submit a bid using epost Connect service, the Bidder must either:
- 1- Send directly its bid only to the specified PWGSC Bid Receiving Unit, using its own licensing agreement for epost Connect provided by Canada Post Corporation; or
 - 2- Send as early as possible, and in any case, at least six business days prior to the solicitation closing date and time, (in order to ensure a response), an email that includes the bid solicitation number to the specified PWGSC Bid Receiving Unit requesting to open an epost Connect conversation. Requests to open an epost Connect conversation received after that time may not be answered.
- 3.1.3 If the Bidder sends an email requesting epost Connect service to the specified Bid Receiving Unit in the bid solicitation, an officer of the Bid Receiving Unit will then initiate an epost Connect conversation. The epost Connect conversation will create an email notification from Canada Post Corporation prompting the Bidder to access and action the message within the conversation. The Bidder will then be able to transmit its bid afterward at any time prior to the solicitation closing date and time.
- 3.1.4 If the Bidder is using its own licensing agreement to send its bid, the Bidder must keep the epost Connect conversation open until at least 30 business days after the solicitation closing date and time.
- 3.1.5 The bid solicitation number should be identified in the epost Connect message field of all electronic transfers.
- 3.1.6 It should be noted that the use of epost Connect service requires a Canadian mailing address. Should a bidder not have a Canadian mailing address, they may use the Bid Receiving Unit address specified in the solicitation in order to register for the epost Connect service.
- 3.1.7 For bids transmitted by epost Connect service, Canada will not be responsible for any failure attributable to the transmission or receipt of the bid including, but not limited to, the following:
- i. receipt of a garbled, corrupted or incomplete bid;
 - ii. availability or condition of the epost Connect service;

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- iii. incompatibility between the sending and receiving equipment;
 - iv. delay in transmission or receipt of the bid;
 - v. failure of the Bidder to properly identify the bid;
 - vi. illegibility of the bid;
 - vii. security of bid data; or,
 - viii. inability to create an electronic conversation through the epost Connect service.
- 3.1.8 The Bid Receiving Unit will send an acknowledgement of the receipt of bid document(s) via the epost Connect conversation, regardless of whether the conversation was initiated by the supplier using its own license or the Bid Receiving Unit. This acknowledgement will confirm only the receipt of bid document(s) and will not confirm if the attachments may be opened nor if the content is readable.
- 3.1.9 Bidders must ensure that they are using the correct email address for the Bid Receiving Unit when initiating a conversation in epost Connect or communicating with the Bid Receiving Unit and should not rely on the accuracy of copying and pasting the email address into the epost Connect system.
- 3.1.10 A bid transmitted by epost Connect service constitutes the formal bid of the Bidder and must be submitted in accordance with section 05.

Section I: Technical Bid

In their technical bid, Bidders should explain and demonstrate how they propose to meet the requirements. Bidders need to fill the tables below at 4.1.1 for each category that they wish to sell to Canada.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment at Annex B.

3.2.1 Electronic Payment of Invoices – Bid

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex "C" Electronic Payment Instruments, to identify which ones are accepted.

If Annex "C" 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.

3.2.2 Exchange Rate Fluctuation

C3011T (2013-11-06), Exchange Rate Fluctuation

3.2.3 SACC Manual Clauses

Section III: Certifications

Solicitation No. - N° de l'invitation

U4008-244572

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

U4008-244572

Amd. No. - N° de la modif.

File No. - N° du dossier

040QD.U4008-244572

Buyer ID - Id de l'acheteur

040QD

CCC No./N° CCC - FMS No./N° VME

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

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 technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria

In their technical bid, bidders are required to meet all mandatory requirements for each category they choose to bid on, as outlined below. Please note that bidders do not have to bid on all 4 categories to be compliant.

Table A: Requirements for GNSS Interference Detection Systems

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the <u>manufacturer</u> of the proposed GNSS Interference Detection system has been offering such devices in the marketplace for a period of not less than 3 years		
1.2	The bidder must demonstrate that the <u>proposed system</u> has been available in the marketplace for a period of not less than 1 year		
1.3	The proposed system must not be approaching end-of-life within the next 3 years		
2 Performance			
2.1	The system must detect signal interference on GPS L1		
2.2	<p>The system must produce an output file of all interference events. The output must include:</p> <ul style="list-style-type: none"> • Interference power • Central frequency of interference • Time stamp of event synchronized to GPS time. • Duration of the event <p>Documentation must be provided on how to interpret the contents of the output file</p>		
2.2	Software to visualize interference events through graphical means must be included. If the system is reliant upon cloud services, a 3 year subscription must be included in the product pricing.		

Criteria	Description	Met (Y/N)?	Reference
2.3	All accessories and components required to operate in a field setup must be included (power cables, communication cables, antenna, antenna cables...etc).		
2.4	The system must be able to determine the location of the source of GNSS signal interference in real-time using Time Difference of Arrival (TDOA) algorithms or techniques offering superior performance with a minimum position accuracy of ± 100 m RMS when a 1 Watt jammer is located within a relatively square sensor network with side lengths of 1 km.		
2.5	<p>The system must include a dedicated and ruggedized field PC that is capable of running any system related software. The field PC must at a minimum have:</p> <ul style="list-style-type: none"> • Windows 10 Professional 64 bit operation system • 11th Gen Intel® Core™ i5-1145G7, vPro® (8 MB cache, 4 cores, 8 threads, 2.60 GHz to 4.00 GHz Turbo) • 16 GB, 2 x 8 GB, DDR4, 3200 MHz • 512 GB, M.2, PCIe NVMe, SSD, Class 40 • Stylus • Stylus lanyard • microSD Card reader / Nano SIM slot • USB 3.2 Gen 2 Type-C • RJ-45 Network port • RS-232 Serial port • HDMI • TBT4 port • 3x USB 3.2 Gen 1 Type-A • Universal Audio Jack • Video card: Intel® Core™ vPro i5-1145G7 with Iris Xe Graphics • Display: 14", FHD 1920x1080, 60Hz, WVA, Touch or non Touch, Anti-Glare, 400 nit, 100% sRGB • English US RGB Backlit Sealed Internal keyboard • Intel® AX210, 2x2, 802.11ax, Bluetooth® wireless card • 50 Wh battery • Power adapter • Camera: Microphone + RGB HD camera; 		
3 Certifications and Environmental			
3.1	Devices must be FCC certified		
3.2	Devices must have a minimal operating temperature range of 0 C to +50 C;		
3.3	Devices must be compatible and include necessary cabling to work in Canada using 120V (60Hz)		

Table B: Requirements for GNSS Interference Detection Devices

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the <u>manufacturer</u> of the proposed GNSS Interference Detection Device has been offering such devices in the marketplace for a period of not less than 3 years		
1.2	The bidder must demonstrate that the <u>proposed device</u> has been available in the marketplace for a period of not less than 1 year		
1.3	The proposed device must not be approaching end-of-life within the next 3 years		
2 Performance			
2.1	The device must detect signal interference on GPS L1		
2.2	<p>The device must produce an output file of all interference events. The output must include:</p> <ul style="list-style-type: none"> • Interference power • Central frequency of interference • Time tag of event synchronized to GPS time. • Duration of the event <p>Documentation must be provided on how to interpret the contents of the output file</p>		
2.2	Software to visualize interference events through graphical means must be included. If the device is reliant upon cloud services, a 3 year subscription must be included in the product pricing.		
2.3	All accessories and components required to operate in a field setup must be included (power cables, communication cables, antenna, antenna cables...etc).		
3 Certifications and Environmental			
3.1	Devices must be FCC certified		
3.2	Devices must have a minimal operating temperature range of 0 C to +50 C;		
3.3	Devices must be compatible and include necessary cabling to work in Canada using 120V (60Hz)		

Table C: GNSS Receivers with GNSS Interference Detection Capabilities

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The receiver must have a static GNSS Surveying Positioning Performance of 10 mm + 1 ppm RMS horizontal and vertical or better		
1.2	The bidder must demonstrate that the manufacturer of the proposed receivers has been manufacturing (GPS + GLONASS + GALILEO +BEIDOU) GNSS receivers for sale in the marketplace for a period of not less than three years; and		
1.3	The receiver model must be recognized by the International GNSS Service (available in the https://files.igs.org/pub/station/general/rcvr_ant.tab file)		
2 Hardware and Environmental			
2.1	The receiver must be certified FCC and meet Industry Canada's technical regulations for radio apparatus;		
2.2	The receiver must have an ingress rating of IP65 or greater;		
2.3	The receiver must have an environmental operating temperature range of -40 C to +65 C;		
2.4	The receiver must be powered by a minimum range of 11 - 25 Volts DC;		
2.5	The receiver manufacturer must provide a power adaptor and cable for 110VAC, 60 Hz power mains and a DC power cable;		
2.6	The receiver's maximum power consumption must be 10 watts or less at 12 Volts while powering a choke ring style antenna with all constellations in view and while logging a minimum of 3 concurrent raw observational data sessions and with Ethernet connected;		
2.7	The receiver must have an internal clock stabilization system;		
2.8	The receiver must have a BNC female external frequency input;		
2.9	The receiver must have a BNC female 1PPS output;		
2.10	The receiver must utilize an external and independently mounted antenna;		
2.11	The receiver must be fitted with a TNC female connector for the antenna cable connection;		
2.12	The receiver must have an Ethernet interface (port). The manufacturer must provide an Ethernet cable adaptor to RJ45 if the connector on the receiver is not a RJ45 connector;		
2.13	The receiver must have a standard serial port. The manufacturer must provide an adaptor cable to 9-pin RS232 if the serial port is not 9-pin RS232;		
2.14	The receiver must have a USB port. The manufacturer must provide a cable adaptor to USB-B if the connector on the receiver is not a USB-B connector;		

Criteria	Description	Met (Y/N)?	Reference
2.15	The receiver must have an LED which indicates that the power is on;		
2.16	The receiver must have an LED which indicates the receiver is tracking GNSS constellations;		
3 GNSS Signal Tracking Capabilities			
3.1	The receiver must track the following carrier and pseudo-range GPS observables: L1 (L1C, L1C/A) , L2C, and L5;		
3.2	The receiver must track the following carrier and pseudo-range GLONASS observables: L1 C/A, L2C, L3, P1, P2		
3.3	The receiver must track the following carrier and pseudo-range GALILEO observables: E1, E5a, E5(altBOC), E5b, E6;		
3.4	The receiver must track the following carrier and pseudo-range BEIDOU observables: B1, B2, B3, B1C, B2A, B2B		
3.5	The receiver must track all in view GPS, GLONASS, GALILEO, BEIDOU satellites, even if the satellite is unhealthy, down to an elevation angle of 0 degrees;		
3.6	The receiver must be capable of outputting all of the observables listed above simultaneously (Item 3.1, 3.2, 3.3, 3.4, 3.5);		
3.7	The receiver must be user configurable as to which constellation, signals and satellites the receiver will output;		
3.8	The receiver's carrier phase observations must be measured and reported at a minimum resolution of 0.001 cycles;		
3.9	The receiver's un-smoothed pseudo-range observations must be measured and reported at a minimum resolution of 0.001 m; and		
3.10	The receiver must have a minimum of 500 GNSS tracking channels.		
4 TCP/IP Networking Requirements			
4.1	The receiver must be compatible with IP based internet communication and support a static IP address configuration;		
4.2	The receiver must have a web GUI; and the web GUI must be in English;		
4.3	The receiver must use the standard ports or user-defined ports for HTTP, HTTPS and FTP protocols;		
5 Data Storage and Archiving			
5.1	The receiver must have industrial grade storage memory. The size of the storage memory must be at least 2GB. Storage memory utilizing USB or similarly connected devices cannot be used to meet these primary storage requirements;		
5.2	The receiver must record all raw observables in the manufacturer's specific data format; this data format must be clearly documented. A Windows based utility to decode the raw observable data to RINEX 3.x format must be provided by the manufacturer. The manufacturer is to provide documentation on the installation and use of this utility;		
5.3	The receiver must record GNSS observables in multiple		

Criteria	Description	Met (Y/N)?	Reference
	formats simultaneously, including but not limited to RINEX v3.x, BINEX, RTCM-MSM, and raw (manufacturer's native format);		
5.4	The receiver must be capable of recording a minimum of 3 concurrent independent raw (manufacturer's native format) data observation sessions with user-configurable sample rates and file durations at varying logging rates.		
5.5	At a minimum, 10Hz, 5Hz, 1 Hz, and 0.0333 Hz (30 seconds) sample rates must be supported.		
	Data storage for each logging session must be managed independently in user-configurable partitions using ring buffers or memory pools, or equivalent, such that once the memory pool has reached capacity, automatic deletion of older data files will occur when newer files are created. There must be an option available to stop automatic overwriting of older data files for any particular session when the memory pool has reached capacity.		
5.6	The values of the different data types (carrier phase, pseudo-range, SNR, satellite ephemeris etc.) obtained from the streamed data must be identical to the values of the same data types stored in the receiver memory.		
6 Firmware Updates			
6.1	The manufacturer of the GNSS receiver must provide firmware updates for bug fixes and receiver enhancements free of charge.		
7 Interference Mitigation			
7.1	The receiver must allow for spectrum analysis output either directly through the receiver's web interface or through supplied software that runs on a Windows 10 operation system when the receiver is connected to a PC.		
7.2	The spectrum analyzer plots must display amplitude (power in dB) vs frequency		
7.3	The spectrum analysis data must allow for the ability to monitor all GNSS bands		
7.4	The spectrum analysis data must be recordable and viewable in playback mode without loss of interference information		
7.5	The spectrum analyzer functionality must enable filtering of interference data		

Table C: GNSS Receiver Kit Item 2 - GNSS Antenna

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the manufacturer of the proposed antennas has been manufacturing multi-GNSS antennas for sale in the marketplace for a period of not less than three years;		
1.2	The GNSS antenna must have a type mean phase centre calibration that is adopted by the International GNSS Service and available in the https://files.igs.org/pub/station/general/igs14_2175.atx file or newer;		
1.3	The receiver model must be recognized by the International GNSS Service (available in the https://files.igs.org/pub/station/general/rcvr_ant.tab file)		
1.4	The GNSS antenna must have a TNC Female connector for the antenna cable		
1.5	The GNSS antenna must be fitted with a female 5/8" coarse thread for securing to an exterior threaded bolt.		
2 Performance			
2.1	The antenna must have a phase centre accuracy of less than 3 mm and phase centre repeatability within 1 mm		
2.2	The GNSS antenna must have an element that has a uniform tracking performance across all elevations, azimuths, and frequencies;		
2.2	The GNSS antenna must have a minimum LNA signal gain of 25dB or greater;		
2.3	The GNSS antenna must be capable of tracking all current GPS (L1,L2,L5), GLONASS (FDMA G1,G2, CDMA G3), Galileo (E1,E5,E6), BeiDou (B1, B2, B3);		
2.4	The GNSS antenna must be capable of continuous operation when subjected to temperature fluctuations of -40 C to +65 C;		
2.5	The GNSS antenna must have a minimum LNA signal gain of 25dB or greater;		
2.6	The GNSS antenna must be capable of tracking all current GPS (L1,L2,L5), GLONASS (FDMA G1,G2, CDMA G3), Galileo (E1,E5,E6), BeiDou (B1, B2, B3);		
2.7	The GNSS antenna must include a 10 m and 30 m antenna cable suitable to work with the specified equipment		
3 Certifications and Environmental			
3.1	The antenna must be FCC certified		
3.2	The antenna must have an ingress rating of IP65 or greater;		
3.3	The antenna must have a minimal environmental operating temperature range of -40 C to +65 C;		
3.4	The antenna must be Restriction of Hazardous Substances (RoHS) compliant		

Table C: GNSS Receiver Kit Item 3 - Tripod

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the manufacturer of the proposed tripods has been manufacturing this model of tripod for sale in the marketplace for a period of not less than three years;		
2 Performance			
2.1	The tripod must be heavy duty survey grade, constructed of fiberglass or aluminum		
2.2	The tripod must have a flat head with a minimum diameter of 6 inches. The head must contain a large centre hole (2-5/8") for easy attachment of a tribrach		
2.3	The tripod must have a standard 5/8"-11 threaded brass stud to allow for attachment of a tribrach		
2.4	The tripod must extend to a minimum of 65 inches and collapse to at least 45 inches for portability.		
2.5	The tripod must weigh less than 20 lbs		
2.6	The tripod must use quick clamps and/or wing screws for adjusting the length of each leg		
2.7	The tripod must have replaceable, pointed feet with side flanges to allow them to be stood on to drive them into the ground		
2.8	The tripod must have a carrying strap		

Table C: GNSS Receiver Kit Item 4 - Tribrach

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the manufacturer of the proposed tribrachs has been manufacturing this model of tripod for sale in the marketplace for a period of not less than three years;		
2 Performance			
2.1	The tribrach must be survey grade		
2.2	The tribrach must have an optical plummet with twist focus (2.5X magnification or higher)		
2.3	The tribrach must have 3 levelling screws with centre line indicated		
2.4	The tribrach must have a 8-min vial		
2.5	The tribrach must have 3 pronged forced centering with a locking mechanism		
2.6	The tribrach must have a focussing range of 1.5 to 50 feet (0.5 to 15 m)		
2.7	The tribrach must weigh less than 2 lbs		
2.8	The tribrach must contain a universal 5/8"-11 centering base plate		

Table C: GNSS Receiver Kit Item 5 - Fixed Tribrach Adapter

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the manufacturer of the proposed fixed tribrach adapter has been manufacturing this model of tripod for sale in the marketplace for a period of not less than three years;		
2 Performance			
2.1	The fixed tribrach adapter must be survey grade, made of anodized black aluminum		
2.2	The fixed tribrach adapter must have a brass 5/8"-11 stud		
2.3	The fixed tribrach adapter must have 3 pronged, forced centring feet to fit in a standard survey tribrach		
2.4	The fixed tribrach adapter must have a locking screw to allow for antenna direction to be set by rotating a centre plug.		
2.5	The fixed tribrach adapter must weigh less than 2 lbs		
2.6	The fixed tribrach adapter must be no less than 2.5" and no more than 4" in diameter		
2.7	The fixed tribrach adapter must be no less than 1" and no more than 4" in height		

Table D: Requirements for GNSS Anti-Jam Antennas

(Controlled Reception Pattern Antennas for GNSS signals)

Criteria	Description	Met (Y/N)?	Reference
1 General			
1.1	The bidder must demonstrate that the <u>manufacturer</u> of the proposed GNSS Interference Detection Device has been offering such devices in the marketplace for a period of not less than 3 years		
1.2	The bidder must demonstrate that the <u>proposed device</u> has been available in the marketplace for a period of not less than 1 year		
1.3	The proposed device must not be approaching end-of-life within the next 3 years		
2 Radio Communications			
2.1	The GNSS Anti-Jam Antenna must have a bandwidth of at least 22 MHz, centred on the GNSS L1 (1575.42 MHz) and L2 (1227.60 MHz) frequencies, making it compatible with the GPS C/A code and M-code signals.		
2.2	The antenna must be capable of receiving RF signals with Right-Hand Circular Polarization.		
2.2	The antenna must provide an omnidirectional radiation pattern in azimuth.		
2.3	The GNSS Anti-Jam Antenna must provide signals that can be used by any standard GNSS receiver attached to it.		
3 GNSS Anti-Jamming			
3.1	The GNSS Anti-Jam Antenna must provide anti-jam protection to GPS L1 (1575.42 MHz) and L2 (1227.6 MHz) frequencies simultaneously.		
3.2	The GNSS Anti-Jam Antenna must be capable of simultaneously nulling 6 or more individual jamming sources.		
3.3	The GNSS Anti-Jam Antenna must provide jamming suppression of 40 dB or more.		
3.4	The anti-jamming functions must automatically start by default when power is applied to the GNSS Anti-Jam Antenna.		
3.5	The GNSS Anti-Jam Antenna must require no user interaction to operate.		
4 Notification and Management			
4.1	The GNSS Anti-Jam Antenna must provide notification of jamming status during operation.		
4.2	The GNSS Anti-Jam Antenna must detect and provide notification of its hardware, firmware and software failures or errors during operation.		
4.3	The GNSS Anti-Jam Antenna must permit extraction of its version identifiers, configuration, jamming status, and built-in test results.		
4.4	All notifications and data extractions must be provided		

Criteria	Description	Met (Y/N)?	Reference
	through the GNSS Anti-Jam Antenna serial data port or USB port.		
5 Software and Firmware			
5.1	The GNSS Anti-Jam Antenna must include a Firmware Update Utility which permits the user to load antenna firmware onto the GNSS Anti-Jam Antenna.		
5.2	The user must be capable of operating the Firmware Update Utility from a computer setup with a Microsoft Windows 10 64-bit Professional operating system connected through the GNSS Anti-Jam Antenna serial data port or USB port		
5.3	The user interface of the Firmware Update Utility must be in the English language.		
6 Additional General Requirements			
6.1	The GNSS Anti-Jam Antenna must be capable to meet Radio Communications and GNSS Anti-Jamming requirements without the use of the Serial Data or USB interface.		
6.2	The GNSS Anti-Jam Antenna external interface connectors must permit installation and removal of mating cables without the use of tools.		
6.3	The GNSS Anti-Jam Antenna must be equipped with all cables and processors to operate with a standard GNSS receiver.		
7 Radio Frequency Connector			
7.1	The GNSS Anti-Jam Antenna RF port must use a 50 Ohm TNC female connector to connect the antenna to a GNSS receiver.		
8 Serial or USB Data			
8.1	The GNSS Anti-Jam Antenna must have a RS-232 serial data port or a USB data port		
8.2	The GNSS Anti-Jam Antenna serial data port or USB port must use a sealed standard connector which meets the environmental and performance requirements (item 11.1, 11.2 and 12.1).		
9 Input Power			
9.1	The GNSS Anti-Jam Antenna must be capable of operating at voltages from +12 to +28 VDC.		
9.2	The GNSS Anti-Jam Antenna must consume no more than 25 Watts of electrical power.		
10 Chassis Characteristics			
10.1	The GNSS Anti-Jam Antenna must be housed in a single enclosure.		
10.2	The deployed GNSS Anti-Jam Antenna must have maximum physical dimensions of 40 centimetres (cm) in width, 40 cm in depth, and 15 cm in height.		
10.3	The GNSS Anti-Jam Antenna must weigh a maximum of 10 kilograms.		
10.4	The GNSS Anti-Jam Antenna must provide suitable mounting		

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Criteria	Description	Met (Y/N)?	Reference
	points for secure attachment		
10.5	The GNSS Anti-Jam Antenna must provide at least one chassis grounding point associated with fasteners (e.g. lugs, studs or threaded holes) that are uncoated (bare metal).		
11 Environmental Conditions			
11.1	The GNSS Anti-Jam Antenna must operate normally following when tested in accordance with MIL-STD-810G test methods.		
11.2	The GNSS Anti-Jam Antenna must operate normally between -40C to +70C.		
12 Electromagnetic Interference and Compatibility			
12.1	The GNSS Anti-Jam Antenna must operate normally following when tested in accordance with MIL-STD-461F test methods.		

4.1.1.2 Point Rated Technical Criteria

Points will be assigned for each additional functionality for each category as outlined below.
Please note that there is no minimum points needed to qualify.

Table A: Requirements for GNSS Interference Detection Systems - Point Rated Technical Criteria

Full product literature, specification sheets, and product installation and instruction manuals must be provided to verify rated criteria performance. All documentation must be provided in English.

Description	Additional Value	Met (Y/N)?	Reference
Desired Functionality			
The GNSS interference detection system has the ability to classify the type of interference (e.g., continuous tone, chirp, pulse...etc)	250 pts		
The GNSS interference detection system has the ability to detect spoofing. For the purpose of this requirement, the definition of spoofing is a malicious attempt to alter a user's global navigation satellite system (GNSS) measurements, making their GNSS position unreliable.	100 pts		
The GNSS interference detection device can detect additional signal interference on; GPS: L2, L5 Galileo: E1,E5,E6 GLONASS: L1, L2, L3 Beidou: B1,B2, B3	25 pts for each additional frequency monitored (up to a maximum of 275)		
Total Score	/625		

Table B: Requirements for GNSS Interference Detection Devices - Point Rated Technical Criteria

Full product literature, specification sheets, and product installation and instruction manuals must be provided to verify rated criteria performance. All documentation must be provided in English.

Description	Additional Value	Met (Y/N)?	Reference
Desired Functionality			
The GNSS interference detection device must be able to determine the location of the source of GNSS signal interference in real-time using Time Difference of Arrival (TDOA) algorithms or techniques offering superior performance with a minimum position accuracy of ± 100 m RMS when a 1 Watt jammer is located within a relatively square sensor network with side lengths of 1 km.	1000 pts		

Description	Additional Value	Met (Y/N)?	Reference
The GNSS interference detection device has the ability to determine the direction to the source of GNSS interference in real-time from a stationary (non-mobile) setup	250 pts		
The GNSS interference detection device has the ability to classify the type of interference (e.g., continuous tone, chirp, pulse...etc)	250 pts		
The GNSS interference detection device has the ability to detect spoofing	100 pts		
The GNSS interference detection device can detect additional signal interference on: GPS: L2, L5 Galileo: E1,E5,E6 GLONASS: L1, L2, L3 Beidou: 1 B1,B2, B3	25 pts for each additional frequency monitored (up to a maximum of 275)		
Total Score	/1875		

Table C: GNSS Receivers with GNSS Interference Detection Capabilities - Point Rated Technical Criteria

No Point Rated Technical Criteria

Table D: Requirements for GNSS Anti-Jam Antennas - Point Rated Technical Criteria

Full product literature, specification sheets, and product installation and instruction manuals must be provided to verify rated criteria performance. All documentation must be provided in English.

Description	Additional Value	Met (Y/N)?	Reference
Desired Functionality			
The CRPA can track P(Y) code	50 pts		
The GNSS anti-jam antenna can detect additional signal interference on: GPS: L5 Galileo: E1, E5, E6 GLONASS: L1, L2, L3 Beidou: B1,B2, B3	25 pts for each additional frequency monitored (up to a maximum of 250)		
The GNSS anti-jam antenna can nullify more than 6 different sources of interference simultaneously (reference to mandatory criteria 3.2)	25 pts for each additional element over 6 (up to a maximum of 325)		

Description	Additional Value	Met (Y/N)?	Reference
Total Score	/625		

4.1.2 Financial Evaluation

SACC Manual Clause [A0222T](#) (2014-06-26), Evaluation of Price-Canadian/Foreign

4.2 Basis of Selection

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the highest combined rating of Technical Merit and Price for each category will be recommended for award of a contract. If multiple bids per category are responsive and there are still funds available, ISED will buy each subsequent highest evaluated item from different suppliers, at its discretion.

- To be declared responsive, a bid must:
 - comply with all the requirements of the bid solicitation; and
 - meet all mandatory criteria.
- Bids not meeting (a) or (b) will be declared non-responsive.
- 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.
- 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%.
- To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 40%.
- For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
- Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid(s) with the highest combined rating of technical merit and price will be recommended for award of a contract.

The table below 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 equals 135 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

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Calculations	Technical Merit Score	115/135 x 60 = 51.11	89/135 x 60 = 39.55	92/135 x 60 = 40.88
	Pricing Score	45/55 x 40 = 32.73	45/50 x 40 = 36	45/45 x 40 = 40
Combined Rating		83.84	75.55	80.88
Overall Rating		1st	3rd	2nd

BASIS OF SELECTION – MANDATORY TECHNICAL CRITERIA (FOR ALL ITEMS LISTED UNDER TABLE C)

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract. If multiple bids are responsive, ISED may buy each subsequent lowest priced item from different suppliers, at its discretion.

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 declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

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 provided 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 property agreement of the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<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.

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.

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.

PART 6 - RESULTING CONTRACT CLAUSES

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

6.1 Security Requirements

6.1.1 There is no security requirement applicable to the Contract.

6.2 Statement of Requirement

The Contractor must provide the items detailed under the "Statement of Requirement" at Annex A.

6.3 Standard Clauses and Conditions

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

6.3.1 General Conditions

[2010A](#) (2022-12-01), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.4 Term of Contract

6.4.1 Period of the Contract

The period of the Contract is from date of Contract to delivery of all requirements for the category or categories being bid on.

6.4.2 Delivery Date

All the deliverables must be received on or before March 31, 2024

6.4.3 Delivery Points

Delivery of the requirement will be made to:

Innovation, Science and Economic Development
Certification and Engineering Bureau
Shirley's Bay Campus
3701 Carling Avenue, Building 94
Ottawa, ON K2H 8S2

Attn: Louis Nicole
343-574-4757
louis.nicole@ised-isde.gc.ca

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Adnan Khan
Title: Supply Officer
Public Works and Government Services Canada
Acquisitions Branch
Directorate: QD
Telephone: 343-543-3436
E-mail address: adnan.khan@tpsgc-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.

6.5.2 Project Authority

The Project Authority for the Contract is:

Name: Davis Opie
Title: A/Senior Contracts and Procurement Advisor, Contracts and Material Management
Organization: Innovation, Science and Economic Development Canada
Telephone: 613-324-9165
E-mail address: *davis.opie@ised-isde.gc.ca*

The Project 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 Project Authority; however, the Project 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.

6.5.3 Technical Authority

The Technical Authority for the Contract is:

Name: Jason Bond
Title: Lead Engineer - PNT
Organization: Innovation, Science and Economic Development Canada
Telephone: 902-430-6585
E-mail address: jason.bond@ised-isde.gc.ca

6.5.4 Contractor's Representative

The Contractor's Representative for the Contract will be determined at contract award.

6.6 Payment

6.6.1 Basis of Payment

The contractor will be paid for the goods delivered, in accordance with Basis of Payment at Annex "B"

6.6.2 Limitation of Price

SACC Manual clause [C6000C](#) (2017-08-17) Limitation of Price

6.6.3 Single Payment

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.

6.6.4 SACC Manual Clauses

[C2000C](#) (2007-11-30) Taxes - Foreign-based Contractor, apply to and form part of the Contract.

6.7 Invoicing Instructions

Invoices must be distributed as follows:

- a. One (1) copy must be forwarded to the ISED office at the following email
davis.opie@ised-isde.gc.ca

6.8 Certifications and Additional Information

6.8.1 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.

6.9 Applicable Laws

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

6.10 Priority of Documents

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

- (a) the Articles of Agreement;
- (b) the general conditions [2010A](#) (2022-12-01) General Conditions - Goods (Medium Complexity)
- (c) Annex A, Statement of Requirement;
- (d) Annex B, Basis of Payment
- (e) the Contractor's bid dated _____

6.11 Dispute Resolution

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.
- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".

ANNEX A STATEMENT OF REQUIREMENT

1. TITLE

Global Navigation Satellite System (GNSS) Interference Detection and Mitigation Technologies

2. BACKGROUND

Positioning, Navigation and Timing (PNT) is an essential but invisible service that provides highly accurate and precise information used around the globe for a variety of applications, such as safety-of-life and emergency response operations, telecommunications, banking services and transportation. Canada's primary source of PNT come from Global Navigation Satellite Systems (GNSS), such as the US-based Global Positioning System (GPS).

PNT systems and users continue to face a broad range of threats, including increasing malicious activity such as jamming and spoofing (the transmission of fake PNT signals). Of particular importance in recent years is the ability to monitor, detect and resolve (when necessary) GNSS interference events which have the potential to disrupt various modes of navigation (e.g., air and marine) and critical infrastructure that relies upon GNSS for precise timing. Despite being illegal, GNSS jamming and spoofing is still a major threat.

The Department of Innovation, Science and Economic Development (ISED) is home to the Canadian PNT Office. The Office supports the PNT Board's mission to bring government, industry and academia together to share, collaborate and foster greater PNT knowledge, promote resilient PNT uses and support Canada's economic growth. At present, the PNT Office does not possess GNSS interference detection technology nor technologies that can help mitigate the impact of radio frequency interference (RFI). To be able to support the PNT Board and to better understand detection capabilities, it is desired to have access to such technology.

3. OBJECTIVES

This procurement will equip the PNT Office with GNSS interference detection and mitigation technology that will allow it to better understand the capabilities of emerging technologies.

The intention of this procurement is to be able to sample GNSS interference detection technology in the marketplace. As such, multiple contracts may be awarded to be able to sample the highest rated responses that meet the mandatory requirements. Four different categories of technologies are being considered for testing:

- A. GNSS Interference Detection Systems: This category consists of systems that have emerged on the market that use a network of sensors to detect GNSS interference and the location of the source. The system will have a data collection and processing centre to analyze the data.
- B. GNSS Interference Detection Devices: This category consists of devices that have emerged on the market for detecting GNSS interference. More sophisticated devices may include the capability to determine the location of the source, direction of the source, type of interference as well as the ability to monitor multiple GNSS frequencies. The device is a self-contained solution.
- C. GNSS Receivers with GNSS Interference Detection Capabilities: This category consists of GNSS receivers having spectrum analyzer functionality for detecting GNSS interference and the ability to apply filters to mitigate the effects of GNSS interference. This procurement also includes accessories to leverage the GNSS receiver in the field, including:

-
- a. A GNSS antenna
 - b. A survey grade tripod
 - c. A survey grade tribrach
 - d. A survey grade tribrach adapter
- D. GNSS Anti-Jam Antennas (Controlled Reception Pattern Antennas (CRPAs)): This category consists of GNSS antennas having the ability to detect and nullify the impact of radio frequency interference through the use of multiple antenna elements and advanced beamforming algorithms.

4. REQUIREMENTS

Full product literature, specification sheets, and product installation and instruction manuals must be provided to verify compliance to the technical mandatory specifications. All documentation must be provided in English. Mandatory Requirements and Rated Criteria for each of the technology categories are enumerated at part 4 of the RFP.

ANNEX B Basis of Payment

The Contractor shall be paid, Firm Fixed Unit Prices (FFP) Delivery Duty Paid (DDP) INCOTERMS 2010 as shown in the table below, for delivery of each Category as outlined in Annex A - Statement of Requirement

Category A – GNSS Interference Detection Systems

Item	Firm Fixed Unit Price
GNSS Interference Detection Systems	\$
Total	\$

Category B – GNSS Interference Detection Devices

Item	Firm Fixed Unit Price
GNSS Interference Detection Devices	\$
Total	\$

Category C - GNSS Receivers with GNSS Interference Detection Capabilities

Item	Firm Fixed Unit Price
GNSS Receivers with GNSS Interference Detection Capabilities	\$
GNSS Antenna	\$
Survey Grade Tripod	\$
Survey Grade Tribrach	\$
Survey Grade Tribrach Adapter	\$
Total	\$

Category D - GNSS Anti-Jam Antennas (Controlled Reception Pattern Antennas (CRPAs))

Item	Firm Fixed Unit Price
GNSS Anti-Jam Antennas (Controlled Reception Pattern Antennas (CRPAs))	\$
Total	\$

ANNEX C to PART 3 OF THE BID SOLICITATION

ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts any of the following Electronic Payment Instrument(s):

- ☐ () VISA Acquisition Card;
- ☐ () MasterCard Acquisition Card;
- ☐ () Direct Deposit (Domestic and International);
- ☐ () Electronic Data Interchange (EDI);
- ☐ () Wire Transfer (International Only);
- ☐ () Large Value Transfer System (LVTS) (Over \$25M)