



REQUEST FOR INFORMATION (RFI)

Induced and Contact Current Meters

INNOVATION SCIENCE AND ECONOMIC DEVELOPMENT CANADA (ISED)

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Table of Contents

- 1 PURPOSE AND NATURE OF THE REQUEST FOR INFORMATION (RFI)
 - 1.1 Introduction
 - 1.2 Purpose
 - 1.3 Background
 - 1.4 Objectives
- 2 INSTRUCTIONS TO RESPONDERS
 - 2.1 Format of Responses
 - 2.2 Notes to Interested Suppliers
 - 2.3 Submission of Responses
 - 2.4 RFI Authority
 - 2.5 Enquiries
 - 2.6 Official Languages
 - 2.7 Response Confidentiality
 - 2.8 Methods of communications
- 3 QUESTIONS AND COMMENTS ON THE DRAFT STATEMENT OF REQUIREMENTS
 - 3.1 Technical
 - 3.2 Cost
 - 3.3 Timing / Delivery
 - 3.4 Comments
- 4 Annex A - Draft statement of requirements for induced and contact current meter
- 5 Appendix A: Detailed requirements for a portable induced and contact current meter
- 6 Appendix B: Definitions and Glossary



Part 1 PURPOSE AND NATURE OF THE REQUEST FOR INFORMATION (RFI)

1.1 Introduction

Innovation Science and Economic Development Canada (ISED) is seeking feedback from industry related to potential hardware solutions that are currently available commercially for assessing compliance of induced and contact current levels against the limits established by Health Canada in Safety Code 6 for the protection of the public.

1.2 Purpose

ISED requires a portable field device that can assess induced and contact currents levels, which is durable and practical for outdoor use, and includes data storage and retrieval features.

The purpose of this RFI is to assess the industry's capacity to provide a solution that meet ISED's requirements, which are detailed in *Annex A - Draft statement of requirements for induced and contact current meter*.

ISED intends to issue contracts to the winning bidder(s) through a future RFP to procure devices that fulfill its requirements. To this end, knowledgeable industry producers, suppliers, and vendors are invited to submit responses to the questions contained in this document and to *Annex A - Draft statement of requirements for induced and contact current meter*.

In addition, ISED invites vendors to supply any additional information and observations that they believe would inform this procurement process.

1.3 Background

ISED is responsible for verifying and enforcing compliance with Health Canada's Safety Code 6 limits at antenna installation sites across Canada. The limits consist, among other things, of electric, magnetic, power density, induced and contact current limits.

ISED's *Spectrum and Telecommunications Sector (STS)* staff have existing devices to assess RF field strengths. Existing commercially available devices for assessing induced and contact currents have been used but do not satisfy all of our existing and future operational needs.



1.4 Objectives

The objectives of this RFI process are as follows:

- a) To seek feedback from industry on the proposed technical requirements to support the finalization of an intended RFP. This includes the desire for a better understanding of:
 - 1) Industry capabilities and constraints.
 - 2) Time and cost estimates to implement the technical elements of our stated requirements (e.g., hardware development, customized packaging, etc.).
 - 3) Time estimates of the acquisition component of the proposed capability.
 - 4) Time and cost estimates of the support component of the proposed capability; and
 - 5) Required adjustments/changes to the technical requirements, if any, that are required to ensure that a viable system can be delivered at an acceptable cost.
- b) To confirm potential bidder compliance with the technical requirements in the draft SOR; and
- c) To establish a formal communication channel with industry that will remain open until a formal RFP is released.



Part 2 INSTRUCTIONS TO RESPONDERS

2.1 Format of Responses

Respondents have the choice to provide submissions for solutions covering all the requirements specified in this RFI or individual sub requirements based on their capability to supply solutions.

ISED is interested in receiving responses directly from vendors having combined portable hardware and software solutions.

Respondents are requested to provide their comments, concerns, and where applicable, alternative recommendations regarding how the requirements or objectives described in this RFI could be satisfied.

Respondents should explain any assumptions they make in their responses.

2.2 Notes to Interested Suppliers

- This RFI - regarding devices that assesses induced and contact currents - is not a bid solicitation and does not constitute a commitment, implied or otherwise, that the Government of Canada will take procurement action in this matter. The issuance of this RFI is not to be considered in any way a commitment by the Government of Canada, nor as authority to potential respondents to undertake any work that could be charged to Canada. The issuance of the RFI does not create an obligation for Canada to issue a subsequent RFP, and does not bind Canada legally or otherwise, to enter into any agreement or to accept any suggestions from suppliers. Canada reserves the right to accept or reject any or all comments received.
- The Government of Canada will not be responsible for any cost incurred by suppliers in furnishing responses to the RFI process.
- A review team composed of representatives from ISED will review the responses on behalf of Canada.
- There will be no short listing of suppliers for purposes of undertaking any future work, as a result of the RFI. Also, participation in the RFI is not a condition or prerequisite for participation in a future RFP.
- Confidentiality:
 - Suppliers are advised that any information submitted to Canada in response to this RFI may be used by Canada in the finalization of a competitive solicitation.
 - All industry consultations will be documented and this information is subject to the Access to Information Act. Suppliers should identify any submitted information that is to be considered as either company confidential or proprietary. Canada will not reveal any designated confidential or proprietary information to the public and/or third parties.



2.3 Submission of Responses

Responses are not considered bids but, for expediency purposes, the ISED Bid Receiving Unit is the designated location where written responses shall be sent. However, electronic submissions are also acceptable and may be sent by email to the RFI Authority as described herein

- a) **Time and Place for Submission of Responses:** Responses are to be submitted electronically to the RFI Authority in Section 2.4, **by November 18, 2022 at 2:00 EST.**
- b) **Responsibility for Timely Delivery:** Each respondent is solely responsible for ensuring its response is delivered on time to the RFI Authority in Section 2.4.

The Respondent's name, return address, RFI number and closing date should be clearly visible on the response. Responses to this RFI will not be returned.

2.4 RFI Authority

Innovation Science and Economic Development Canada's Contract and Material Management Group is responsible for the management of the procurement and RFI process.

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2.5 Enquiries

ISED will not necessarily respond to enquiries in writing or by circulating answers to all potential suppliers as this is not a bid solicitation process. However, respondents with questions regarding this RFI may direct their enquiries to the RFI Authority named above.

2.6 Official Languages

Responses may be in English or French, at the preference of the Respondent.

2.7 Response Confidentiality

Respondents are requested to clearly identify those portions of their response that are proprietary. The confidentiality of each Respondent's response will be maintained. Items that are identified as proprietary will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the



respondent do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all interested parties.

2.8 Methods of communications

Communication between ISED and respondents as part of this RFI process will consist of

- 1) Written exchanges via email and,
- 2) Optionally, verbal exchanges via either:
 - a) A teleconference or
 - b) A face-to-face meeting.

Written responses to the RFI questions must be submitted by email. Potential respondents may pose clarifying questions in writing via email; all such questions will be published as part of the RFI record.

Verbal exchanges will be limited to a single one-on-one meeting between ISED and each interested respondent to communicate and clarify the goals, draft requirements, and questions in the RFI. Respondents are requested to specify (a) whether or not they wish to participate in a one-on-one meeting and (b) Depending on COVID-19 restrictions which type of meeting they prefer (teleconference or face-to-face).



Part 3 QUESTIONS AND COMMENTS ON THE DRAFT STATEMENT OF REQUIREMENTS

In this section references to ‘requirements’ refer to the contents of *Annex A - Draft statement of requirements for induced and contact current meter*.

A **system** is defined as the combination of all the individual components provided.

A **component** is one part of an overall system. Individual components include the hardware “head unit”, a padded flight/carrying case, peripherals such as probes or sensors, power supplies and interconnecting or interfacing cables, and accompanying windows OS software. (For details see item #001 of *Appendix A: Detailed requirements for a portable induced and contact current meter*).

3.1 Technical

3.1.1 Question 1

What system design would meet the draft requirements in *Appendix A*? Please provide a detailed technical description of the system and how peripherals can be interchangeable for induced current assessment and contact current assessments.

Answer 1:



3.1.2 Question 2:

Are there particular requirements and/or parameters that are especially challenging and/or difficult to achieve with existing technology, or that could make it unfeasible to deliver a system compliant with the requirements in *Appendix A*? Please provide detailed reasons and explanations.

Answer 2:

3.1.3 Question 3:

With respect to mandatory requirements for outdoor operation, is it feasible to deliver the operating temperature range specified in *Appendix A's Section 5.2* item #039 and *Section 5.3* item #051?

Please provide additional details as to how your products would perform in outdoor conditions such as:

- At the coldest and warmest extremes of the required temperature range
- In exposure to dirt and dust
- In exposure to sunlight
- In exposure to moisture (operator hand perspiration, high relative humidity)

If your hardware meets an existing standard or specification, please describe it below.



Answer 3:

3.1.4 Question 4:

With respect to both induced current and contact current mandatory performance requirements (*Appendix A's sections 5.2 and 5.3*), please provide detailed performance specifications you can deliver for:

- Frequency operating range in MHz
- Current operating range in mA
- Device expanded uncertainty budget, and any variations due to frequency or ambient temperature
- Ability to display instantaneous, peak, and 6-minute average of RMS current values in mA or % of a user-configurable limit

Answer 4:

3.1.5 Question 5:

Is there additional technical information (e.g., alternative device or designs) that would inform this process and potentially result in a superior technical solution?



What are the relative benefits and drawbacks of the proposed requirements compared to the suggested alternative solutions?

Answer 5:



3.1.6 Question 6

Considering Annex A's statement of requirements, can a single device deliver induced and contact current assessments rather than separate devices? Would it be more beneficial to have separate devices?

Answer 6:

3.1.7 Question 7:

Can you provide Windows OS software meeting the requirements in *Appendix A Section 5.1.4* to accompany the device?

Answer 7:



3.2 Cost

3.2.1 Question 8:

What is the estimated procurement cost of each complete system as defined in *Appendix A, Section 5.1.1*?

(i.e., to procure initial hardware, peripherals, and software of a system, that meets the technical requirements in Appendix A?)

Answer 8:

3.2.2 Question 9:

What would be the approximate estimated ongoing cost of after-sales service, maintenance, calibration and intellectual property (i.e., software licensing) for the proposed system?

Please provide logistics detail for each of these services.

Answer 9:



3.2.3 Question 10:

What capabilities do you offer to provide customer training on your components and/or system that cover: Installation, configuration, operation and maintenance?

What would you consider would be the appropriate training methods and amount of time needed to train the end user?

Do you offer customer on-site training for your components and/or system? What is the estimated time and cost for this service?

Answer 10:

3.3 Timing / Delivery

3.3.1 Question 11:

Please identify potential factors that could affect delivery and provide risk-mitigation strategies.

Answer 11:



3.3.2 Question 12:

Is it feasible to deliver the lifecycle and service support items outlined in *Annex A's sections 4.10 and 4.11*?

Answer 12:

3.4 Comments

In this section of the RFI, ISED invites Respondents to provide their general comments on the draft Statement of Requirements (SOR) or to propose ideas not envisioned by the draft SOR. Please note, the draft SOR is subject to change at ISED's discretion.

Comments:



Part 4 Annex A - Draft statement of requirements for induced and contact current meter

4.1 Scope

ISED requires a portable field device that can assess induced and contact currents levels (as per Health Canada's Safety Code 6), which is durable and practical for outdoor use, and includes data storage and retrieval features.

A single device that can achieve both induced and contact current assessments would be given preference. Discrete solutions for assessing induced currents and contact currents separately are also of interest and will be given consideration.

This annex provides background on our operational requirements, instructions on interpreting our requirements, our desired technical specifications, and expectations of service and user-support materials.

4.2 Background

Through the analysis of device use-cases, operational environments, and other practical considerations ISED has produced *Appendix A: Detailed requirements for a portable induced and contact current meter*.

A glossary of terms is provided in *Appendix B: Definitions and Glossary*.

These requirements include minimum performance specifications for the assessment of induced and contact currents which are guided by [Safety Code 6 section 2.2.3](#) and [GL-01 section 3.3](#).

Additional requirements are centered around outdoor use, operator health and safety, and data storage and retrieval.

4.3 Instructions

The following instructions apply to this specification:

- a) Requirements, which are identified by the word “**must**”, are mandatory. Deviations will not be permitted.
- b) In this document “provided” means “provided and installed”.
- c) Where a technical certification is referred to in this specification, a copy of the certification or an acceptable Proof of Compliance **must** be supplied for the Component and System when requested by the Technical Authority.



4.4 Technical Specifications

The Contractor must provide the requested system and/or system components in accordance with the technical specifications detailed in Appendix A.



4.5 Standard Design

The components and/or system design must be the manufacturer's latest model.

4.6 Identification

The following information should be permanently marked in a conspicuous and protected location:

- a) Manufacturer's name,
- b) Device model, and
- c) Device serial number.

4.7 Component and/or System Manuals

A **system** is defined as the combination of all the individual components. (For details see item #001 of *Appendix A section 5.1.1*).

A **component** is one part of an overall system. Individual components include the hardware "head unit", a padded flight/carrying case, peripherals such as probes or sensors, power supplies and interconnecting or interfacing cables, and accompanying windows OS software. (For details see item #001 of *Appendix A section 5.1.1*).

4.7.1 Component and/or System Manuals

Full documentation on the system components, operations, software installation and operation, maintenance and troubleshooting of each component and/or system, must accompany each component and/or system, shipped to each location.

4.7.2 Operator's Manuals

The operator's manuals must be bilingual (English/French) and must include the following:

- a) Instructions for the safe installation and operation of each component and/or system.
- b) Daily operator maintenance instructions/checks.
- c) Safety warnings.



4.7.3 Maintenance Manuals

If they are available, the service/maintenance manuals should be bilingual (English/French) and should include the following:

- a) A trouble-shooting guide, showing the steps and tests required for determining the exact cause of a problem and an explanation of what steps would be required to correct a problem.
- b) Identify any special tools/equipment needed for troubleshooting and service.



4.8 Accessibility requirements

The manuals should be delivered in an accessible format, in compliance with the European Standard 301 549 for accessible Information and Communication Technology (ICT), clause 10 for non-web documents.

Any other instructions provided with the component and/or system should conform to those standards for web-based documents, electronic documents, and hard copies. Any data output from the component and/or system should also conform to these standards.

The provision of facilities, tools and services, and all associated costs, to make the component and/or system and deliverables of this project accessible must be at the Contractor's expense.

4.9 Warranty

- a) Each component and/or system purchased must include one (1) year standard warranty.
- b) The Contractor must provide a list of all Canadian designated warranty service providers that will honour the warranty for the component and/or system procured under this contract, including the contact person and phone number at each warranty provider. Where no Canadian designated warranty service providers are available, the Contractor must provide a list of intermediate depots located in Canada that will facilitate the transit of the warranty component and/or system to outside Canada for servicing. The Contractor must include the contact person and phone number at each depot. The Contractor will be responsible for the cost of handling and shipping the defective part/component and/or system to the factory for repair. The Contractor will be responsible for handling, packaging and shipping the replacement part/ component and/or system to the designated ISED destination.
- c) The warranty must include coverage for material and labor for covered repairs and when necessary any re-calibration that is triggered by the repairs.
- d) The Contractor must provide contact information, name and phone number, for warranty support.
- e) The Contractor must provide options for extended warranty. The exercise of the extended warranty will be at the discretion of Canada.

4.10 Component and/or System Lifecycle

The life cycle of component and/or system will be a ten (10) year period from date of delivery or the date of acceptance, whichever is later.



4.11 Service Support

The Contractor must ensure that full service support is available for a period of 10 years following the delivery of the component and/or system or the date of acceptance, whichever is later, of the component and/or system.

a) Calibration Support

Initial factory calibration must be included as part of the original delivery.

b) Hardware Maintenance and Support

The Contractor must ensure that full repair support and replacement parts are available during the component and/or system life cycle following the date of delivery or the date of acceptance, whichever is later, of the component and/or system. In the event the component and/or system parts are no longer available, the Contractor must provide the Technical Authority sufficient notice to ensure that ISED may purchase the parts that are no longer available.

c) Software Maintenance and Support

- 1) The Contractor must provide free "maintenance" related updates, including system firmware improvements and bug fixes via local user installation as opposed to "return to factory" for updates, over the life cycle of the component and/or system from Contract Award.
- 2) The Contractor must advise the Technical Authority when upgrades are available during the lifecycle of the component and/or system.
- 3) The Contractor must ensure "pay for upgrades" support, including adding functionality to assess and analyze evolving emission types and adapting to new software via local user installation as opposed to "return to factory" for installation, is available over the life cycle of the component and/or system.

d) On-going Technical Service Support

The Contractor must provide a contact for ongoing customer support to review system issues, enhancement requests and scheduled enhancements to be released during the life cycle of the component and/or system and for what is not identified in 1.10 (b) and 1.10 (c).

The Contractor must provide free ongoing service support to help Canada to address questions with respect to the devices that include, at the minimum:

- 1) E-mail technical support with a response within 48 hours excluding weekends and public holidays.
- 2) Internet and on-line help resources.



4.12 List of Deliverables

	Item N°	Description	Approximate Quantity
Goods	1.	A field system to assess induced currents (meeting section 5.2), and contact currents (meeting section 5.3)	26
	2.	A sensor/probe to assess induced current (meeting section 5.2)	26
	3.	A sensor/probe to assess contact current (meeting section 5.3)	26
	4.	Power supply	26
	5.	Connecting cables for probe(s)	26
	6.	Cables to interface with computers	26
	7.	A case for flight and carrying	26
	9.	Software to configure, install updates, and retrieve stored assessment data	26
	Services	10.	Calibration service offering for a minimum of 10 years
11.		Service, repair, and maintenance offerings for a minimum of 10 years	
12.		Software updates and support for a minimum of 10 years.	



Part 5 Appendix A: Detailed requirements for a portable induced and contact current meter

5.1 Key functions and features

The following list contains common features required of a “complete system” and are by no means inclusive. They are meant to set the direction and expectations of a complete induced and contact current assessment system.

5.1.1 Complete system requirements

Item #	Requirement
001	<p>One complete system consists of the following components:</p> <ul style="list-style-type: none"> • One hardware processing “head unit” with: <ul style="list-style-type: none"> • A display screen, onboard memory, removable rechargeable battery, buttons for control and configuration • The following peripherals: <ul style="list-style-type: none"> • One induced current probe/clamp, • One contact current probe/clamp, • One computer interfacing cable, • One power supply • One battery charging dock • One additional rechargeable battery • One padded flight/carrying case that fits the head unit, and all peripherals listed above. • One Windows OS software licence for accompanying vendor software. Requirements for the software can be found in <i>Appendix A Section 5.1.4</i>.
002	<p>The complete system must be designed and intended for outdoor use (as opposed to a lab device limited to indoor use only).</p> <p>The hardware, including the head unit and peripherals are expected to offer a long service life after years of normal outdoor use and frequent shipping.</p> <p>The chassis of the head unit and peripherals must resist bumps and vibrations and have an appropriate degree of weather-sealing to resist dust and moisture ingress. These are to mitigate exposure to natural elements encountered during typical outdoor use which may adversely impact performance, assessment uncertainty, serviceability, and longevity.</p> <p>A padded case intended for shipping and carrying must be provided to enable shipping all components as one package, safely and securely.</p>



003	<p>The system must be capable of assessing induced and contact current levels in order to make assessments based on Health Canada’s Safety Code 6’s limits with regards to nerve stimulation.</p> <p>The minimum performance requirements to meet operational needs are:</p> <ul style="list-style-type: none"> • Frequency range: 3 kHz to 110 MHz • Current range (RMS): 0.3 to 180 mA • Temperature range: -10 to 40 degrees Celsius <p>NOTE: Mandatory requirements specific to induced current assessments and contact current assessments are noted in their respective sections.</p> <p>Appendix A, Section 5.2 – Induced currents mandatory minimum requirements</p> <p>Appendix A, Section 5.3 – Contact currents mandatory minimum requirements</p>
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5.1.2 Hardware requirements – Electronic meter “head unit”

Item #	Requirement
004.1	<p>By inherent design the device must meet or exceed appropriate sections of MIL-PRF-28800F, CLASS 2 for:</p> <ul style="list-style-type: none"> • operating temperature, • storage temperature, • operating humidity, • random vibration, • functional shock.
004.2	<p>Whether via external mean (projective coverings) or by inherent design, devices should meet or exceed section 506.5 of MIL-STD-810G for rain ingress</p>
004.3	<p>Whether via external mean (projective coverings) or by inherent design, devices should meet or exceed section 510.5 of MIL-STD-810G for sand and dust ingress</p>
005.1	<p>Provide a graphic LCD display with a backlight and adjustable contrast in order for the screen’s information to be visible under low ambient lighting (darkness or shade) or high ambient lighting (direct sunlight)</p>
005.2	<p>Provide a graphic LCD display with sufficient resolution to simultaneously display:</p> <ul style="list-style-type: none"> • Assessment unit <ul style="list-style-type: none"> • mA or % (of configured limits) • Assessment value (with a precision of 000.0) • GPS coordinates • Date and Time • Assessment status (paused or live)
006	<p>Provide a power jack port for an external power source.</p>
007	<p>Provide an external AC power supply for on-board charging of a swappable battery.</p>



008	Provide a user-accessible battery port
009	Provide a compact removable battery delivering a minimum of 4 hours of use under normal operating conditions on a single charge
010	Total size and weight of all electronics and chassis shall be small and light enough to be portable and practical for field use by a single operator.
011	Provide a compact, low profile, durable chassis allowing easy removal and placement to and from the flight case
012	Provides an integrated screen to display: <ul style="list-style-type: none"> • Assessment values, • Assessment units, • Battery level, • Configuration settings • GPS coordinates
013	Provides human interface controls (buttons) for: <ul style="list-style-type: none"> • Power – turn device on/off • Start/Pause – to control ongoing assessments • Reset – to clear most recent peak values • Store – to save assessment values and device configuration to onboard memory • Misc. data entry keys – to configure date, time, naming of storage files [e.g., scroll wheel, arrows, number pad] • Contrast – to adjust visibility of information on-screen
014	Provides on-board communications interface using USB
015	USB 2.1 (or better) communications interface port
016	Provide an internal GPS receiver for on-board displaying and storing of location information for assessments

5.1.3 Software requirements – “head unit”

Item #	Requirements
017	Quick start-up time from a cold boot
018	Provides a self-test procedure at start-up
019	Present the entire interface in English or French for all menus, labels, read-outs, etc.
020	Permit starting, pausing, and stopping of assessments, and display the current state
021	Simultaneous display on-screen of: <ul style="list-style-type: none"> • Assessment unit <ul style="list-style-type: none"> • Option to toggle between mA or % of configured limits • Assessment value (with a precision of 000.0) • GPS coordinates • Date and Time • Meter status (paused or live)
022	Display remaining battery life in either percentage or HH:mm
023	Allow users to configure the date and time



024	Stored assessments records should include the following data elements: <ul style="list-style-type: none">• Date• Time• GPS coordinates• Assessment value• Assessment unit• Meter model• Meter serial number• Mode: “induced current”, or “contact current”
025	Provides an overload indicator (visually and audibly) for currents exceeding a user specified maximum value.



5.1.4 Software requirements – “Windows OS software”

Item #	Requirements
026	All vendor-supplied OEM remote control/access software must be compatible with Corporate OS (at time of response).
027	All vendor provided software shall allow for ISED to manage installation of said software on ISED computers via automated corporate software deployment systems (i.e., new software and software updates).
028	All user interface elements in English or French (labels, menus, notifications, etc.)
029	A function to download all stored assessment values
030	A function to download selected stored assessment values
031	A function to delete all stored assessment values
032	A function to delete selected stored assessment values
033	Assessment records should be exported in a standard format: <ul style="list-style-type: none"> • Csv • Txt
034	A function to combine and save assessment records as one file
035	A function to save assessment records as separate files

5.2 Induced current meter - mandatory minimum performance requirements

The following list is meant to be **mandatory** minimum requirements for each category of the system and are by no means totally inclusive. They are intended to be a guide in setting the direction and expectations for an ideal induced current meter. To be compliant, specifications must be guaranteed and not typical.

Item #	Hardware	Required specification
036	Self-Diagnostics	Must provide internal hardware built-in test (BIT) for system health check and malfunction diagnosis.
037	Internal non-volatile storage	Must provide internal non-volatile storage to store assessment data for local recall, or for export. Memory capacity should allow for at least a hundred stored records
038	Battery Life	Must provide at least 4 hours of continuous operation
039	Operating temperature range	Must perform between -10 °C to +40 °C
040	Display	Must provide a graphic LCD with led backlight
Item #	RF performance	Required specification
041	Frequency range	Must provide performance from 3 kHz to 110 MHz (continuous, no gaps in frequency coverage).
Item #	Current performance	Required specification



042	Current range (RMS)	Must provide performance of a minimum 0.3 mA to 180 mA
043	Maximum expanded assessment uncertainty	Must be no more than +/- 3 dB
044	Accuracy and precision	Must provide accurate root mean squared (RMS) readings for induced current Must provide a precision of 000.0 mA
045	Assessment display modes and value units	Must provide instantaneous, max RMS, average, and peak assessment modes, and allow the user to select and switch between the modes. For all modes, allow the user to select and switch the displayed value's units between mA RMS, or % of a user-configurable limit; <ul style="list-style-type: none">• INSTANTANEOUS: Continuously update the display with the maximum RMS current value assessed over a period of 30 seconds.• MAX RMS: Continuously update the display with the maximum RMS current value assessed over a period of 6 minutes.• AVERAGE: Display the average RMS current value assessed over a period of either 30 seconds or 6 minutes.• PEAK: Display the highest current value since previous reset.
046	Regulatory ranges, limits, and reference periods	Must be able to assess induced current to determine compliance as per the limits outlined in Health Canada's Safety Code 6 (2015). (See Tables A.1 and A.2 below)
047	Assessments with a probe	The device must be capable of assessing induced current flowing through a single foot to ground in a free-standing body (no contact with conductive objects) exposed to an electric field.



Table A.1 – Health Canada’s Safety Code 6 - Induced Current Limits for the Uncontrolled Environment

Frequency Range (MHz)	Induced Current (mA, rms) Through a Single Foot	Reference Period	Note
0.003 - 0.4	100 f	Instantaneous	Based on Nerve Stimulation
0.4 - 110	40	6 min	Based on Specific Absorption Rate

Note 1: Where the assessment is made of the current flowing through both feet, the results shall be compared to twice the limits for a single foot.

Note 2: Frequency, f, is in MHz.

Table A.2 – Health Canada’s Safety Code 6 - Induced Current Limits for the Controlled Environment

Frequency Range (MHz)	Induced Current (mA, rms) Through a Single Foot	Reference Period	Note
0.003 - 0.4	225 f	Instantaneous	Based on Nerve Stimulation
0.4 - 110	90	6 min	Based on Specific Absorption Rate

Note 1: Where the assessment is made of the current flowing through both feet, the results shall be compared to twice the limits for a single foot.

Note 2: Frequency, f, is in MHz.



5.3 Contact current meter - mandatory minimum performance requirements

The following list is meant to be **mandatory** minimum requirements for each category of the system and are by no means totally inclusive. They are intended to be a guide in setting the direction and expectations for an ideal contact current meter. To be compliant, specifications must be guaranteed and not typical.

Item #	Hardware	Required specification
048	Self-Diagnostics	Must provide internal hardware built-in test (BIT) for system health check and malfunction diagnosis.
049	Internal non-volatile storage	Must provide internal non-volatile storage to store assessment data for local recall, or for export. Memory capacity should allow for at least a hundred stored records
050	Battery Life	Must provide at least 4 hours of continuous operation
051	Operating temperature range	Must perform between -10 °C to +40 °C
Item #	Display	Must provide a graphic LCD with led backlight
052	RF performance	Required specification
Item #	Frequency range	Must perform between 3 kHz to 110 MHz (continuous, no gaps in frequency coverage).
053	Current performance	Required specification
054	Current range (RMS)	Must perform between a minimum 0.6 mA to 40 mA
055	Maximum expanded assessment uncertainty	Must not exceed +/- 3 dB
056	Accuracy and precision	Must provide accurate root mean squared (RMS) readings for contact current Must provide a precision of 000.0 mA
057	Assessment display modes and value units	Must provide instantaneous, max RMS, average, and peak assessment modes, and allow the user to select and switch between the modes. For all modes, allow the user to select and switch the displayed value's units between mA RMS, or % of a user-configurable limit;



		<ul style="list-style-type: none"> • INSTANTANEOUS: Continuously update the display with the maximum RMS current value assessed over a period of 30 seconds. • MAX RMS: Continuously update the display with the maximum RMS current value assessed over a period of 6 minutes. • AVERAGE: Display the average RMS current value assessed over a period of either 30 seconds or 6 minutes. • PEAK: Display the highest current value since previous reset.
058	Regulatory ranges, limits, and reference periods	Must be able to assess induced current to determine compliance as per the limits outlined in Health Canada’s Safety Code 6 (2015). (See Tables A.3 and A.4 below)
059	Assessment mode without operator electrically isolated (finger touch mode)	<p>The device must be capable of quantifying the total current flowing through the body to ground resulting from finger-touch contact with an insulated conductive object that has been energized in an electric field.</p> <p>Provide accurate root mean squared (RMS) contact currents from a finger-touch. Should the device be configured to assess contact current in a hand grasp configuration, built-in conversion factors shall be provided to determine the equivalent finger touch current.</p>
060	Assessment mode with operator electrically isolated (average human body impedance simulation mode)	The device must be capable of assessing the contact current based on average human body impedance simulation.
Item #	Inherent safety	Required specification
061	Electric isolation	<p>When set to average human body impedance simulation mode, the operator must not act as the link between an energized object and the ground, and thus the contact current shall not flow through the operator as a means of detecting the current.</p> <p>The device must isolate the operator from the current source.</p>



Table A.3 – Health Canada’s Safety Code 6 - Contact Current Limits for the Uncontrolled Environment

Frequency Range (MHz)	Contact Current (mA, rms) for Finger-Touch	Reference Period	Note
0.003 - 0.1	200 f	Instantaneous	Based on Nerve Stimulation
0.1 - 10	20	Instantaneous	Based on Specific Absorption Rate
10 - 110	20	6 min	Based on Specific Absorption Rate

Note: Frequency, f, is in MHz

Table A.4 – Health Canada’s Safety Code 6 - Contact Current Limits for the Controlled Environment

Frequency Range (MHz)	Contact Current (mA, rms) for Finger-Touch	Reference Period	Note
0.003 - 0.1	400 f	Instantaneous	Based on Nerve Stimulation
0.1 - 10	40	Instantaneous	Based on Specific Absorption Rate
10 - 110	40	6 min	Based on Specific Absorption Rate

Note: Frequency, f, is in MHz



Part 6 Appendix B: Definitions and Glossary

Term	Definition
Induced current	The current flowing through a single foot to ground in a free-standing body (no contact with conductive objects) exposed to an electric field
Contact current	The total current flowing through the body to ground resulting from finger-touch contact with a conductive object insulated from the ground that has been energized in an electric field. Conversely, it is the total current flowing in an insulated body that has been energized in an electric field and is in finger-touch contact with a grounded conductive object.
System	A system is defined as the combination of all the individual components. (For details see item #001 of <i>Appendix A section 5.1.1</i>).
Component	A component is one part of an overall system. Individual components include the hardware “head unit”, a padded flight/carrying case, peripherals such as probes or sensors, power supplies and interconnecting or interfacing cables, and accompanying windows OS software.

Conclusion

Respondents are reminded that this is a RFI, not an RFP, as such **No Contract Award** will be made as a result of this RFI. Also in the regard of this RFI, respondents should feel free to provide comments, identify concerns, and where applicable, propose alternative recommendations on how the proposed goods and services can be provided. Respondents are invited to provide comments regarding the content, format and/or organization of the RFI document. Also, in responding to this RFI, any assumptions respondents may wish to make must be clearly outlined.

Responses to this RFI will be restricted to official Government of Canada usage, however the information collected through this RFI may influence the content of any resulting RFP. Therefore it may be expected that the concepts provided could become part of a competitive acquisition.

Responses to this RFI will not be used to prequalify or otherwise restrict participation in any future RFP.

ISED and the Government of Canada will not reimburse any expenditures incurred related to this RFI.