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LETTER OF INTEREST
LETTRE D'INTÉRÊT

Title - Sujet Elect Personal Dosimeters Electronic Personal Dosimeters	
Solicitation No. - N° de l'invitation HT250-214030/B	**Date** 2022-03-22
Client Reference No. - N° de référence du client HT250-214030	**GETS Ref. No. - N° de réf. de SEAG** PW-$$PV-964-81092
File No. - N° de dossier pv964.HT250-214030	**CCC No./N° CCC - FMS No./N° VME**

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM Eastern Daylight Saving Time EDT
on - le 2022-04-21 Heure Avancée de l'Est HAE

F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes
Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☑

Address Enquiries to: - Adresser toutes questions à: Fortin, Marie-Claire	**Buyer Id - Id de l'acheteur** pv964
Telephone No. - N° de téléphone (418) 571-7258 ( )	**FAX No. - N° de FAX** ( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
National Dosimetry Service

Comments - Commentaires

Instructions: See Herein

Instructions: Voir aux présentes

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

Delivery Required - Livraison exigée See Herein – Voir ci-inclus	**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**

Issuing Office - Bureau de distribution
Scientific, Medical and Photographic Division / Division de l'équipement scientifique, des produits photographiques et pharmaceutiques
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East Tower, 7th Floor
Ottawa
Ontario
K1A 0S5

Canada

This Request for Information (RFI) is not a Request for proposal (RFP) and no contract will be awarded as a result of this publication.

1. Background and purpose of this RFI

The purpose of this RFI is to seek industry comments and input to refine the procurement strategy and the definition of requirements for project HT250-214030 for Health Canada's National Dosimetry Services Division (NDSD).

The objective is to procure commercial off-the-shelf (COTS) Electronic Personal Dosimeters (EPDs) for the real-time measurement and display of radiation dose and dose rate, along with the software and communications interfaces required for their configuration. These will be managed through NDSD's existing EPD service and will be used to equip existing clients as well as dosimetry kits to be deployed to Chemical, Biological. Radiological, Nuclear and Explosive (CBRNE)/HazMat teams across Canada under the FRDE Kit program.

The initial requirement is for the delivery of :

1. 250 Gamma EPDs
2. 50 Beta-Gamma EPDs
3. 10 EPD readers
4. Software for EPD management installed on ten (10) Devices.

The requirement also includes options to purchase additional units within three (3) years and options to purchase extended warranty and extended software support periods for up to five (5) years.

More specifically, we are seeking feedback on:

- The potential level of interest in providing the goods described in the Annex A - Requirement;
- The ability of bidders to propose goods that meet the mandatory criteria described in attachment 1;
- Information and suggestions on ways to improve this process or make it more efficient.

2. Documents provided

Annex A – Requirement
Attachment 1 – Mandatory Evaluation Criteria

3. Questions to suppliers interested in this RFI

1. Would your company be able to provide the Electronic Personal Dosimeters described in the Annex A - Requirement? If the answer is no, for what reasons?

2. Would the dosimeters you can provide be deemed responsive under the mandatory criteria described in attachment 1 – Technical Evaluation Criteria?

3. What could motivate you to provide us with a proposal? Disclosure of required quantities for the purchase of additional units or any other considerations?

4. Do you have other concerns, comments or elements that you would like to bring to our attention ?

4. Note to interested suppliers

There is no future contract issuance or purchase commitment from Canada. The issuance of this RFI does not oblige Canada to issue a contract, to issue an RFP and does not bind Canada legally or otherwise, to enter into any agreement or to accept or reject any suggestions. As a result of this RFI, there will be no short listing of firms for the purposes of undertaking future work. Similarly, participation in this RFI is not a condition or prerequisite for participation in any RFP.

There will be no compensation for the information provided. Any and all expenses incurred by the suppliers in pursuing this opportunity, including the provision of information, are at the supplier's sole expense.

Suppliers are advised that any information submitted to Canada in response to this RFI may, or may not, be used by Canada in the development of a potential subsequent RFP. The documents, information or data collected will be considered as commercial-in-confidence and will not be provided to a third party.

5. Presentation of the supplier's response to the Request for Information:

Suppliers interested in responding to this RFI should send their response by email no later than the date provided on page 1 of the Request for Information to: Marie-Claire.Fortin@tpsgc-pwgsc.gc.ca

Responses can be submitted in one of the two official languages of Canada (English or French).

Note: Since this RFI is not an RFP and since no contract will be awarded as a result of this publication, Canada reserves the right to see the responses upon receipt, i.e., Canada wants to be able to consult the responses before the closing date

6. Communications in posting period

All enquiries must be submitted to the Contracting Authority, preferably by email, at Marie-Claire.Fortin@tpsgc-pwgsc.gc.ca, at least five calendar days before the closing date. Enquiries received after that time may not be answered.

ANNEX – A

REQUIREMENT

1. Title
Electronic Personal Dosimeters for National Dosimetry Services

2. Scope
2.1. Introduction
Health Canada's National Dosimetry Services Division (NDSD) has a requirement for the supply of 300 Electronic Personal Dosimeters (hereinafter referred to as EPDs) to equip the First Responder Dosimetry Emergency (FRDE) Kits that are pre-deployed to first responders across Canada for use in the event of a radiological or nuclear emergency. NDSD also supplies EPDs to select clients for operational use at their facilities.

2.2. Objectives of the Requirement
The objective is to procure commercial off-the-shelf (COTS) EPDs for the real-time measurement and display of radiation dose and dose rate, along with the software and communications interfaces required for their configuration. These will be managed through NDSD's existing EPD service and will be used to equip existing clients as well as dosimetry kits to be deployed to Chemical, Biological. Radiological, Nuclear and Explosive (CBRNE)/HazMat teams across Canada under the FRDE Kit program.

2.3. Background and Specific Scope of the Requirement
The pre-positioned Regional Kit program was originally developed in 2010 by the Radiation Protection Bureau (RPB) to equip Regional Radiation Specialists (RRS) in cases of emergency. These kits have come to the end of their life cycle and have now been recalled. The new FRDE Kits must include a number of EPDs, which are now being procured to fulfil that requirement. These will be pre-positioned in key cities in Canadian provinces to ensure timely emergency dosimetry services for first responders tasked with responding to a radiological or nuclear emergency. They will also be used to equip clients with EPDs.

3. Terms and Definitions
Accuracy – The degree of agreement of the observed value with the conventionally true value of the quantity being measured
Conventionally true value – The best estimate of the value as determined by a primary or secondary standard or by a reference instrument that has been calibrated against a primary or secondary standard
Effective range of measurement – The range of values of a measurement quantity over which the performance of the EPD meets the requirement
EPD – Electronic Personal Dosimeter
Hp(0.07) - Personal dose equivalent for weakly penetrating radiation
Hp(10) - Personal dose equivalent for strongly penetrating radiation
Influence quantity – A quantity that is not the one being measured but affects the measurement result (e.g. temperature, angle of incidence)
Rated range – The range specified for an influence quantity over which the EPD will operate within the variation of the relative response specified in the requirement
Reference conditions – The operating conditions (environmental, physical, and radiological) prescribed for evaluating the performance of the EPD.
Reference response – The response of the EPD under reference conditions, given by the ratio of the value indicated on the EPD to the conventional value under said conditions.
Relative response – The ratio of the response under the specified conditions to the response under reference conditions

4. Requirements
The deliverables must meet all of the mandatory technical requirements as specified below. The specifications identified with the letter A (for Asset) are desirable but will not be considered as mandatory.

4.1. Deliverables

1. 250 Gamma EPDs
2. 50 Beta-Gamma EPDs
3. 10 EPD readers (communication interfaces)
4. Software for EPD management for ten (10) Devices.

4.2. Description of the Requirement

Battery-powered active dosimeters are required for the real-time measurement and display of dose and dose rate (personal dose equivalent). The EPDs are to be worn on the trunk of the body, attached securely by a clip.

Two models are required, both of which must use the same communications interface and software:
Gamma: Measures Hp(10) from x-ray/gamma radiation
Gamma-beta: Measures Hp(0.07) from beta radiation in addition to Hp(10) and Hp(0.07) from x-ray/gamma radiation
Dosimeter readers and software must also be delivered as specified.

For the purpose of evaluation, compliance with the requirements for physical, environmental, mechanical, electromagnetic, and radiological characteristics must be demonstrated by providing evidence that appropriate testing has been conducted, by providing results of testing conducted either according to an accepted international or national standard (such as IEC 61526 or ANSI N42.20) or using in-house test procedures, in which case the procedures used must be described in the technical bid. At a minimum, the procedures must describe how the conditions under which the requirement was verified were generated (including radiological sources used, specific equipment required, physical and/or environmental conditions established), the number or duration of trials conducted, and pass/fail criteria.

4.3. Power Supply

4.3.1. Power must be supplied to the EPD by a user-replaceable, commercially available, non-proprietary battery.

4.3.2. The EPD must be capable of operating continuously for 90 days without battery replacement (using at least one of the battery types specified by the manufacturer as compatible).

4.3.3. (A) The EPD should be capable of operating continuously for 30 days using standard AA or AAA batteries.

4.3.4. The EPD must provide both visible and audible low battery warnings at least 24 hours before loss of power.

4.3.5. The battery must be user-replaceable. If a tool is required for battery replacement, one must be provided with every EPD.

4.4. Interface and Display

4.4.1. The EPD must be easily switched on/off by a user with gloved hands, operating the device beneath a plastic bag. This can be accomplished through the use of a dedicated button, menu option, or similar.

4.4.2. The EPD must have at least two (2) operating modes:
Restricted: The user is unable to modify settings.
Standard: The user can access settings and has the ability to set alarm limits and reset accumulated dose through the device menus.

4.4.3. The EPD must be capable of displaying the dose rate, total dose, and current alarm setting.

4.4.4. The EPD must be capable of displaying doses and dose rates in SI units of Sieverts (Sv).

4.4.5. The display must be easily readable from a distance of 0.5 m.

4.4.6. The display must have a backlight for viewing in dark conditions.

4.5. Communications, Software, and Data

4.5.1. The EPD must communicate with a personal computer (PC) by means of a dosimeter reader connected to the PC via USB. The connection between the EPD and the reader must be via infrared (IR), Bluetooth, or any other wireless communication method.

4.5.2. The EPD management software must not require internet connectivity and all data and settings must be stored locally.

4.5.3. The EPD management software must be capable of saving multiple profiles (i.e. specific dosimeter settings).

4.5.4. The EPD must record dose data which can be transferred to the PC using the dosimeter reader and viewed using the supplied EPD management software.

4.5.5. The EPD's configuration and data must be stored in persistent memory and unaffected by loss of power.

4.5.6. The EPD management software must be capable of exporting dose data in .xlsx and/or .csv format.

4.5.7. The provided EPD management software must be compatible with Windows 10.

4.5.8. (A) The EPD reader and EPD management software should support a "batch mode" whereby settings and data can rapidly be transferred to/from a minimum of three (3) dosimeters at once (i.e. by placing multiple dosimeters within a specified distance of the reader and the management software batch writes all of the EPDs simultaneously).

4.5.9. (A) The EPD management software should be capable of producing reports (preferably customizable) summarizing dose data.

4.6. Physical and Environmental Characteristics

4.6.1. The weight of the EPD must not exceed 200 g, including batteries and all integral components.

4.6.2. The maximum dimensions of the EPD (Gamma and Gamma-Beta model) are 100 mm x 80 mm x 30 mm.

4.6.3. The EPD must operate over an ambient temperature range of -10°C to +40°C.

4.6.4. The EPD must operate in an environment with relative humidity from 40% - 90% (non-condensing).

4.6.5. The outer surface of the EPD must be designed to minimize the retention of contamination and to ease its removal.

4.6.6. The EPD must meet the following minimum standards for moisture and dust protection:

Gamma model: IP55
Beta-Gamma model: IP53

4.7. Mechanical Characteristics

4.7.1. The EPD must tolerate a drop from a height of 1 m onto a concrete surface or 1.5 m onto a hard wood surface on each face of the dosimeter with less than 10% change in the response and without compromising the display, functions, or physical integrity.

4.8. Electromagnetic Interference

4.8.1. The EPD's response must not deviate by more than +/-20% when subjected to interference from electromagnetic fields over a range of 80-1500 MHz at an intensity of 10 V/m.

4.9. Radiological Characteristics

4.9.1. The effective range of dose measurement and associated display resolution must meet or exceed the following:

Quantity	Effective Range	Display Resolution
Hp(10)	100 µSv - 1 Sv	0.1 µSv - 10.00 Sv
Hp(0.07) *(Beta-Gamma model only)*	1 mSv - 10 Sv	0.1 µSv - 10.00 Sv

4.9.2. The dose and dose rate accuracy over the effective range of measurement must fall within the following ranges under reference conditions*:

Quantity	Accuracy
Hp(10) – ^{137}Cs	±10%
Hp(0.07) – ^{137}Cs *(Beta-Gamma model only)*	±20%
Hp(0.07) – ^{90}Sr/^{90}Y *(Beta-Gamma model only)*	±20%

*Reference conditions must be specified

4.9.3. Over the given energy ranges, the on-axis energy response of the EPD relative to the reference response must meet the following requirements:

Quantity	Energy Range	Relative Response
Hp(10)	80 keV - 1.5 MeV	±20%
Hp(0.07) – Gamma/X-ray *(Beta-Gamma model only)*	20 keV - 150 keV	±30%
Hp(0.07) – Beta *(Beta-Gamma model only)*	200 keV - 0.8 MeV	±30%

4.9.4. For Hp(10), the relative response of the dosimeter to energies between 50 keV and 1.5 MeV for angles between 0° and 60° shall be within -29%/+67%. At a minimum, compliance with this requirement is to be demonstrated by providing the response to an energy at the lower end of the range (e.g. ^{241}Am or 60 keV filtered x-rays), middle of the range (e.g. ^{137}Cs), and at the upper end of the range (e.g. ^{60}Co) for angles of incidence of 0°, 45°, and 60° in both the vertical and horizontal planes.

4.9.5. *Beta-Gamma model only:* For Hp(0.07) due to photon radiation, the relative response of the dosimeter between 20 and 150 keV must be within -29%/+67% for angles between 0° and 60°. Compliance with this requirement is to be demonstrated by giving the response to photon energies at the upper and lower limits of the range and a minimum of one energy in the middle of the range for angles of incidence of 0°, 45°, and 60° in both the vertical and horizontal planes.

4.9.6. *Beta-Gamma model only:* For Hp(0.07) due to beta radiation, the relative response of the dosimeter between 0.2-0.8 MeV must be within -29%/+67% for angles between 0° and 60°. At a minimum, compliance with this requirement is to be demonstrated by providing the response to at least one radionuclide at the low end of the range (e.g. ^{204}Tl, ^{85}Kr) and one at the upper end of the range (e.g. ^{90}Sr/^{90}Y) for angles of incidence of 0°, 45°, and 60° in both the vertical and horizontal planes.

4.9.7. The variation in response due to dose or dose rate (linearity) must be within -17%/ +25% under reference conditions over the manufacturer-stated measurement range.

4.9.8. For both Hp(10) (both models) and Hp(0.07) (beta-gamma model only), the EPD must indicate an overload condition in the range 10 Sv/h - 50 Sv/h and must continue to accumulate dose at a rate > 10 Sv/h in overload condition.

4.10. Alarms

4.10.1. The device must sound and display an alarm when exposed to a dose rate greater than the defined alarm thresholds forHp(10) (both versions) or Hp(0.07) (beta-gamma version).

4.10.2. When the instrument is subjected to a dose equivalent rate of 1.20 of the dose equivalent rate alarm set point, the alarm should actuate within 5 s or within a time such that the product of this time and the dose equivalent rate of the alarm point is less than 10 µSv.

4.10.3. Acoustic alarms must have a minimum intensity of 80 dB(A).

4.10.4. The alarm settings must include both a warning level and an alarm level.

4.11. Calibration

4.11.1. An initial calibration service must be provided for each EPD, along with a calibration certificate.

4.11.2. (A) The EPD should support in-house calibration (i.e. the calibration parameters can be adjusted via the EPD management software).

4.12. Documentation

4.12.1. A calibration certificate must be provided with each EPD.

4.12.2. User manuals for the EPD and EPD management software must be provided in both English and French, be written using SI units, and be available in electronic form. The user manual must contain at least the following information:

- Operating instructions and restrictions
- Installation instructions
- Reader and interface operation
- Troubleshooting guide

4.12.3. A quick reference guide for the EPD must be provided in both English and French, describing the display and interface and providing instructions for powering the unit on and off and silencing alarms (at a minimum).

4.12.4. If the EPD has any components that are repairable in-house (ref: 4.13.2), a repair and maintenance manual, including schematic electrical diagrams, parts list, and specifications, must be provided in English, and be available in electronic form.

4.13. Other Requirements

4.13.1. The EPD must carry a minimum one (1) year warranty as described in supplemental conditions 4001 of the contract.

4.13.2. (A) The EPD should have one or more components that are repairable in-house using manufacturer-approved and available replacement parts, not including clips or batteries.

4.13.3. All EPDs will be subjected to acceptance testing at NDSD's facilities, to include verification that each EPD's ^{137}Cs dose response falls within the limits stated by the manufacturer.

ATTACHMENT 1 - TECHNICAL EVALUATION CRITERIA

The following requirements are the mandatory technical evaluation criteria which will be evaluated during the Bid Evaluation.

This document is split in two parts and defines the criteria that will be used to determine compliance of each model of EPD : Gamma and Beta-Gamma. Bidders must provide the information required for each model.

PART 1 – A) Mandatory technical evaluation criteria for Gamma EPD
PART 1 – B) Mandatory technical evaluation criteria for Beta-Gamma EPD

PART 2 – A) Point rated technical evaluation criteria for Gamma EPD
PART 2 – B) Point rated technical evaluation criteria for Beta-Gamma EPD

Although the bidders must propose products that meet all the specifications described in the Annex A, bids will be evaluated on the following technical requirements. Simply stating that the criteria are met is not sufficient. Any proposal that does not clearly demonstrate compliance with each of the technical requirements listed in the Table of Technical Compliance will be considered non-responsive.

Bidders are requested to cross reference the mandatory technical criteria in a concise format by using page, paragraph(s) and sub-paragraphs as applicable to their supporting technical documentation.

NOTE : Compliance with the evaluation criteria must be demonstrated by providing both technical brochures or technical data and evidence that appropriate testing has been conducted. Results of the testing must be provided and the testing must have been conducted either according to an accepted international or national standard, (such as IEC 61526 or ANSI N42.20) or using in-house test procedures. If testing was completed using in-house test procedures the procedures used must be described in the technical bid. At a minimum, the description of the procedures must include how the conditions under which the requirement was verified were generated (including radiological sources used, specific equipment required, physical and/or environmental conditions established), the number or duration of trials conducted, and pass/fail criteria.

PART 1 – A) Mandatory technical evaluation criteria for Gamma EPD

ITEM	CRITERIA	REFERENCE TO SUBSTANTIATION IN THE TECHNICAL BID.
M1	The EPD must be capable of operating continuously for 90 days without battery replacement (using at least one of the battery types specified by the manufacturer as compatible).	
M2	The EPD must operate over an ambient temperature range of -10°C to +40°C.	
M3	The EPD must meet or exceed the IP55 standard for moisture and dust protection	
M4	The EPD must operate in an environment with relative humidity from	

<table>
<tr><td></td><td>40% - 90% (non-condensing).</td><td></td></tr>
<tr><td>M5</td><td>The EPD must tolerate a drop from a height of 1 m onto a concrete surface or 1.5 m onto a hard wood surface on each face of the dosimeter with less than 10% change in the response and without compromising the display, functions, or physical integrity.</td><td></td></tr>
<tr><td>M6</td><td>The EPD's response must not deviate by more than +/-20% when subjected to interference from electromagnetic fields over a range of 80-1500 MHz at an intensity of 10 V/m.</td><td></td></tr>
<tr><td>M7</td><td>The dose and dose rate accuracy must fall within the following ranges under reference conditions*:
<table><tr><td>Quantity</td><td>Accuracy</td></tr><tr><td>Hp(10) – ^{137}Cs</td><td>±10%</td></tr></table>*Reference conditions must be specified</td><td></td></tr>
<tr><td>M8</td><td>Over the given energy ranges, the on-axis energy response of the EPD must meet the following requirements:
<table><tr><td>Quantity</td><td>Energy Range</td><td>Relative Response</td></tr><tr><td>Hp(10) – ^{137}Cs</td><td>80 keV - 1.5 MeV</td><td>±20%</td></tr></table></td><td></td></tr>
<tr><td>M9</td><td>For Hp(10), the relative response of the dosimeter to energies between 50 keV and 1.5 MeV for angles between 0° and 60° shall be within -29%/+67%.</td><td></td></tr>
<tr><td>M10</td><td>The variation in response due to dose or dose rate (linearity) must be within -17% - +25% under reference conditions over the manufacturer-stated measurement range.</td><td></td></tr>
<tr><td>M11</td><td>The EPD must indicate an overload condition in the range 10 Sv/h - 50 Sv/h and must continue to accumulate dose at a rate > 10 Sv/h in overload condition.</td><td></td></tr>
<tr><td>M12</td><td>When the instrument is subjected to a dose equivalent rate of 1.20 of the dose equivalent rate alarm set point, the alarm should actuate within 5 s or within a time such that the product of this time and the dose equivalent rate of the alarm point is less than 10 µSv.</td><td></td></tr>
</table>

PART 1 – B) Mandatory technical evaluation criteria for Beta-Gamma EPD

ITEM	CRITERIA	REFERENCE TO SUBSTANTIATION IN THE TECHNICAL BID.
M13	The EPD must be capable of operating continuously for 90 days without battery replacement (using at least one of the battery types specified by the manufacturer as compatible).	

<table>
<tr><td>M14</td><td>The EPD must operate over an ambient temperature range of -10°C to +40°C.</td><td></td></tr>
<tr><td>M15</td><td>The EPD must meet or exceed the IP53 standard for moisture and dust protection</td><td></td></tr>
<tr><td>M16</td><td>The EPD must operate in an environment with relative humidity from 40% - 90% (non-condensing).</td><td></td></tr>
<tr><td>M17</td><td>The EPD must tolerate a drop from a height of 1 m onto a concrete surface or 1.5 m onto a hard wood surface on each face of the dosimeter with less than 10% change in the response and without compromising the display, functions, or physical integrity.</td><td></td></tr>
<tr><td>M18</td><td>The EPD's response must not deviate by more than +/-20% when subjected to interference from electromagnetic fields over a range of 80-1500 MHz at an intensity of 10 V/m.</td><td></td></tr>
<tr><td>M19</td><td>The dose and dose rate accuracy must fall within the following ranges under reference conditions*:
<table><tr><td>Quantity</td><td>Accuracy</td></tr><tr><td>Hp(10) – Cs-137</td><td>±10%</td></tr><tr><td>Hp(0.07) – ^{137}Cs</td><td>±20%</td></tr><tr><td>Hp(0.07) – ^{90}Sr/^{90}Y</td><td>±20%</td></tr></table>*Reference conditions must be specified</td><td></td></tr>
<tr><td>M20</td><td>Over the given energy ranges, the on-axis energy response of the EPD must meet the following requirements:
<table><tr><td>Quantity</td><td>Energy Range</td><td>Relative Response</td></tr><tr><td>Hp(10) – Cs-137</td><td>80 keV - 1.5 MeV</td><td>±20%</td></tr><tr><td>Hp(0.07) – Cs-137</td><td>20 keV - 150 keV</td><td>±30%</td></tr><tr><td>Hp(0.07) – ^{90}Sr/^{90}Y</td><td>200 keV - 0.8 MeV</td><td>±30%</td></tr></table></td><td></td></tr>
<tr><td>M21</td><td>For Hp(10), the relative response of the dosimeter to energies between 50 keV and 1.5 MeV for angles between 0° and 60° shall be within -29%/+67%.</td><td></td></tr>
<tr><td>M22</td><td>For Hp(0.07) due to photon radiation, the relative response of the dosimeter between 20 and 150 keV must be within -29%/+67% for angles between 0° and 60°.</td><td></td></tr>
<tr><td>M23</td><td>For Hp(0.07) due to beta radiation, the relative response of the dosimeter between 200 keV-0.8 MeV must be within -29%/+67% for angles between 0° and 60°.</td><td></td></tr>
<tr><td>M24</td><td>The variation in response due to dose or dose rate (linearity) must be within -17% - +25% under reference conditions over the manufacturer-stated measurement range.</td><td></td></tr>
</table>

M25	For both Hp(10) and Hp(0.07), the EPD must indicate an overload condition in the range 10 Sv/h - 50 Sv/h and must continue to accumulate dose at a rate > 10 Sv/h in overload condition.	
M26	When the instrument is subjected to a dose equivalent rate of 1.20 of the dose equivalent rate alarm set point, the alarm should actuate within 5 s or within a time such that the product of this time and the dose equivalent rate of the alarm point is less than 10 µSv.	

PART 2 – A) Point rated technical evaluation criteria for Gamma EPD

Each bid meeting all of the mandatory technical criteria will be evaluated in accordance with the following point rated evaluation criteria.

ITEM	POINT RATED TECHNICAL CRITERION	MAX Score	Rating	REFERENCE TO SUBSTANTIATION IN THE TECHNICAL BID. (Bidders are requested to cross reference the mandatory technical criteria in a concise format by using page, paragraph(s) & sub-paragraphs as applicable to their supporting technical documentation).
R1	The EPD should be capable of operating continuously for 30 days using standard AA or AAA batteries.		Points will be awarded as follows:	
		3	3 points if the proposed EPD is capable of operating continuously for over 60 days using standard AA or AAA batteries.	
		2	2 points if the proposed EPD is capable of operating continuously for 30 to 60 days using standard AA or AAA	

			batteries.	
		0	No points if the proposed EPD is not capable of operating continuously for at least 30 days using standard AA or AAA batteries.	
R2	The EPD reader and EPD management software should support a "batch mode" whereby settings and data can rapidly be transferred to/from a minimum of three (3) dosimeters at once (i.e. by placing multiple dosimeters within a specified distance of the reader and the management software batch writes all of the EPDs simultaneously).		Points will be awarded as follows:	
		5	5 points if the proposed reader and software support a "batch mode".	
		0	No points if proposed reader and software are only capable of transferring settings and data from one EPD at a time.	
R3	The EPD management software should be capable of producing customizable reports summarizing dose data.		Points will be awarded as follows:	
		2	2 points if the proposed EPD management software is capable of producing customizable reports from EPD data.	
		1	1 point if the proposed EPD management software is capable of producing pre-set reports from EPD data.	
		0	No points if the proposed EPD management software is not capable of	

			producing reports.	
R4	The EPD should support in-house calibration (i.e. the calibration parameters can be adjusted via the EPD management software).	**10** **0**	Points will be awarded as follows: 10 points if the proposed EPD can be calibrated in-house. No points if the proposed EPD's calibration parameters cannot be modified in-house.	
R5	The EPD should be partially repairable in-house using manufacturer-approved and available replacement parts, not including clips or batteries.	**10** **8** **0**	Points will be awarded as follows: 10 points if 5 or more components of the device are repairable in-house. 8 points if 1 to 4 components of the device are repairable in-house. No points if the proposed EPD can only be repaired by the manufacturer.	

PART 2 – B) Point rated technical evaluation criteria for Beta-Gamma EPD

Each bid meeting all of the mandatory technical criteria will be evaluated in accordance with the following point rated evaluation criteria.

ITEM	POINT RATED TECHNICAL CRITERION	MAX Score	Rating	REFERENCE TO SUBSTANTIATION IN THE TECHNICAL BID.

				(Bidders are requested to cross reference the mandatory technical criteria in a concise format by using page, paragraph(s) & sub-paragraphs as applicable to their supporting technical documentation).
R6	The EPD should be capable of operating continuously for 30 days using standard AA or AAA batteries.	**3** **2** **0**	Points will be awarded as follows: 3 points if the proposed EPD is capable of operating continuously for over 60 days using standard AA or AAA batteries. 2 points if the proposed EPD is capable of operating continuously for 30 to 60 days using standard AA or AAA batteries. No points if the proposed EPD is not capable of operating continuously for at least 30 days using standard AA or AAA batteries.	
R7	The EPD reader and EPD management software should support a "batch mode" whereby settings and data can rapidly be transferred to/from a minimum of three (3) dosimeters at once (i.e. by dosimeters within a specified	**5**	Points will be awarded as follows: 5 points if the proposed reader and software support a "batch mode".	

	distance of the reader and the management software batch writes all of the EPDs simultaneously).	**0**	No points if proposed reader and software are only capable of transferring settings and data from one EPD at a time.	
R8	The EPD management software should be capable of producing customizable reports summarizing dose data.		Points will be awarded as follows:	
		2	2 points if the proposed EPD management software is capable of producing customizable reports from EPD data.	
		1	1 point if the proposed EPD management software is capable of producing pre-set reports from EPD data.	
		0	No points if the proposed EPD management software is not capable of producing reports.	
R9	The EPD should support in-house calibration (i.e. the calibration parameters can be adjusted via the EPD management software).		Points will be awarded as follows:	
		10	10 points if the proposed EPD can be calibrated in-house.	
		0	No points if the proposed EPD's calibration parameters cannot be modified in-house.	

R10	The EPD should be partially repairable in-house using manufacturer-approved and available replacement parts, not including clips or batteries..		Points will be awarded as follows:	
		10	10 points if 5 or more components of the device are repairable in-house.	
		8	8 points if 1 to 4 components of the device are repairable in-house.	
		0	No points if the proposed EPD can only be repaired by the manufacturer.	

The score for the point rated technical evaluation criteria is summarized in the following table :

RATED EVALUATION CRITERIA	**MIN**	**MAX**	**SCORE**
Gamma EPD – R1	0	3	
Gamma EPD – R2	0	5	
Gamma EPD – R3	0	2	
Gamma EPD – R4	0	10	
Gamma EPD – R5	0	10	
Beta-Gamma – R6	0	3	
Beta-Gamma – R7	0	5	
Beta-Gamma – R8	0	2	
Beta-Gamma – R9	0	10	
Beta-Gamma – R10	0	10	
TOTAL	0	60	