

**Kenya National Highways Authority** 

Quality Highways, Better Connections

HORN OF AFRICA GATEWAY DEVELOPMENT PROJECT (HoAGDP) PROJECT ID: P161305

# Request for Bids Goods

(One-Envelope Bidding Process)

for

SUPPLY AND DELIVERY OF A FULLY FITTED SAFETY AND HEALTH AMBULANT UNIT WITH MEDICAL, SAFETY, HYGIENE AND LABORATORY ROOMS EQUIPPED WITH MEDICAL EXAMINATION DIAGNOSTIC SETS, WORKPLACE SURVEILLANCE EQUIPMENT AND PLANT EXAMINATION EQUIPMENT

#### RFB No: KE-DOSHS-207941-GO-RFB- KeNHA/2556/2022

#### **BIDDING DOCUMENT:**

#### PART 1 – BIDDING PROCEDURES

- Section I: Instructions to Bidders (ITB)
- Section II. Bid Data Sheet (BDS)
- Section III. Evaluation and Qualification Criteria
- Section IV: Bidding Forms
- Section V. Eligible Countries
- Section VI. Fraud and Corruption
- PART 2 SUPPLY REQUIREMENTS
- Section VII. Schedule of Requirements
- PART 3 CONTRACT
- Section VIII. General Conditions of Contract(GCC)
- Section IX. Special Conditions of Contract (SCC)
- Section X: Contract Forms

Director (Development)	Director General
Kenya National Highways Authority	Kenya National Highways Authority
P.O. Box 49712 NAIROBI, 00100	P.O. Box 9712 NAIROBI, 00100

# Request for Bids Goods

(One - Envelope Bidding Process)

#### **Procurement of:**

SUPPLY AND DELIVERY OF A FULLY FITTED SAFETY AND HEALTH AMBULANT UNIT WITH MEDICAL, SAFETY, HYGIENE AND LABORATORY ROOMS EQUIPPED WITH MEDICAL EXAMINATION DIAGNOSTIC SETS, WORKPLACE SURVEILLANCE EQUIPMENT AND PLANT EXAMINATION EQUIPMENT

**RFB No:** KE-DOSHS-207941-GO-RFB-KeNHA/2556/2022

Project: Horn of Africa Gateway Development Project (HoAGDP)

Country: Kenya

Issued on: March, 2022

## **Request for Bids Goods**

Country: Kenya

Name of Project: Horn of Africa Gateway Development Project

**Contract Title:** Supply and Delivery of A Fully Fitted Safety and Health Ambulant Unit with Medical, Safety, Hygiene And Laboratory Rooms Equipped with Medical Examination Diagnostic Sets, Workplace Surveillance Equipment and Plant Examination Equipment **Loan No./Credit No./ Grant No.:** 6768-KE

**RFB Reference No.:** KE-DOSHS-207941-GO-RFB-KeNHA/2556/2022

- 1. The Kenya National Highways Authority (KeNHA) through the Government of Kenya (GOK) has received financing from the World Bank toward the cost of the Horn of Africa Gateway Development Project (HoAGDP), and intends to apply part of the proceeds toward payments under the contract for Procurement of Supply and Delivery of A Fully Fitted Safety and Health Ambulant Unit with Medical, Safety, Hygiene and Laboratory Rooms Equipped with Medical Examination Diagnostic Sets, Workplace Surveillance Equipment and Plant Examination Equipment.
- 2. The Kenya National Highways Authority, a State Corporation under the Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works established under the Kenya Roads Act, 2007, now invites sealed Bids from eligible Bidders for the *Supply and Delivery of A Fully Fitted Safety and Health Ambulant Unit with Medical, Safety, Hygiene and Laboratory Rooms Equipped with Medical Examination Diagnostic Sets, Workplace Surveillance Equipment and Plant Examination Equipment to be delivered at Directorate of Occupational Safety and Health Services (DOSHS), Safety House, Commercial Street, Industrial Area in Nairobi within the period specified in the SCC*
- 3. Bidding will be conducted through National Competitive Procurement using a Request for Bids (RFB) as specified in the World Bank's "Procurement Regulations for IPF Borrowers Fourth Edition November 2020 ("Procurement Regulations"), and is open to all eligible Bidders as defined in the Procurement Regulations.
- 4. Interested eligible Bidders may obtain further information at the offices of Kenya National Highways Authority (address below) during week days (Monday to Friday), excluding public holidays, from 09:00hrs to 16:00hrs local time and inspect the Bidding document during office hours at the address given below.

Attention:Director (Development)Street Address:Kenya National Highways Authority (KeNHA).Block A, Barabara Plaza, Jomo Kenyatta International Airport (JKIA) off Airport SouthRoad, along Mazao Road, NairobiFloor/Room Number:First Floor, North WingCity:NAIROBI, KENYATelephone: +254 20 4954000

Email addresses: ddevelopment@kenha.co.ke and procurement@kenha.co.ke

- 5. A complete set of Request for Bid documents may be obtained by interested suppliers from the Kenya National Highways Authority website: www.kenha.co.ke or Public Procurement Information Portal (PPIP): www.tenders.go.ke free of charge. Bidders are encouraged to download RFB documents to minimize physical visits to KeNHA Head Office.
- 6. The complete Bid document are to be enclosed in plain sealed envelope clearly marked with the Tender Number and description, sealed and transmitted by courier or delivered by hand to the Address below or deposited at the Authority's Tender Box Located at Barabara Plaza, Block C, 2<sup>nd</sup> Floor, Jomo Kenyatta International Airport (JKIA), off airport South Road, along Mazao Road so at to be received not later than 1100Hrs local time on 13<sup>th</sup> April, 2022:-

#### Deputy Director, Supply Chain Management Kenya National Highways Authority, Barabara Plaza, Block C, 2<sup>nd</sup> Floor, Jomo Kenyatta International Airport (JKIA), off airport South Road, along Mazao Road, P.O. Box 49712 – 00100, Nairobi, Kenya

- 7. Electronic Bidding will NOT be permitted. Late Bids will be rejected. Bids will be publicly opened in the presence of the Bidders' designated representatives and anyone who chooses to attend on 13<sup>th</sup> April, 2022 at 1100hrs Local time at Kenya National Highways Authority, Barabara Plaza, Block C, 2<sup>nd</sup> Floor Boardroom, Jomo Kenyatta International Airport (JKIA), off airport South Road, along Mazao Road.
- 8. All Bids must be accompanied by Unconditional Bank Guarantee (Bid Security) of Kenya Shillings Five Hundred Thousand (KEs 500,000.00) or its equivalent in a freely convertible currency from a reputable Bank regulated by the Central Bank of Kenya (CBK) or the bidder's national regulator valid for an additional 28 days beyond the expiry of the bid validity period. For Foreign Banks, it must have a corresponding bank in Kenya.
- 9. Attention is drawn to the Procurement Regulations requiring the Borrower to disclose information on the successful bidder's beneficial ownership, as part of the Contract Award Notice, using the Beneficial Ownership Disclosure Form as included in the bidding document.

All interested bidders are required to continually check the Kenya National Highways Authority website: www.kenha.co.ke for any tender addenda or clarifications that may arise before the submission date

#### Deputy Director (Supply Chain Management) FOR: DIRECTOR GENERAL

#### **Standard Procurement Document**

#### **Table of Contents**

PART 1 – Bidding Procedures	
Section I - Instructions to Bidders	5
Section II - Bid Data Sheet (BDS)	
Section III - Evaluation and Qualification Criteria	
Section IV - Bidding Forms	
Section V - Eligible Countries	
Section VI - Fraud and Corruption	
PART 2 – Supply Requirements	
Section VII - Schedule of Requirements	
PART 3 - Contract	
Section VIII - General Conditions of Contract	
Section IX - Special Conditions of Contract	
Section X - Contract Forms	

## **PART 1 – Bidding Procedures**

### **Section I - Instructions to Bidders**

#### Contents

A.	General	7
1.	Scope of Bid	7
2.	Source of Funds	7
3.	Fraud and Corruption	8
4.	Eligible Bidders	
5.	Eligible Goods and Related Services	11
B.	Contents of Request for Bids Document	
6.	Sections of Bidding Document	11
7.	Clarification of Bidding Document	
8.	Amendment of Bidding Document	
C.	Preparation of Bids	
9.	Cost of Bidding	13
10	. Language of Bid	13
11	. Documents Comprising the Bid	13
12		
13	. Alternative Bids	14
14	. Bid Prices and Discounts	14
15		
16		
	Services	
17		
18	· · · · · · · · · · · · · · · · · · ·	
19	5	
20	. Format and Signing of Bid	20
D.	Submission and Opening of Bids	
21	. Sealing and Marking of Bids	21
22		
23		
24	. Withdrawal, Substitution, and Modification of Bids	22
25	. Bid Opening	23
E.	Evaluation and Comparison of Bids	
26	. Confidentiality	24
27		
28	. Deviations, Reservations, and Omissions	25
29	. Determination of Responsiveness	25

30.	Nonconformities, Errors and Omissions	26
31.	Correction of Arithmetical Errors	26
32.	Conversion to Single Currency	27
33.	Margin of Preference	
34.	Evaluation of Bids	
35.	Comparison of Bids	
36.	Abnormally Low Bids	29
37.	Qualification of the Bidder	
38.	Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids	29
39.	Standstill Period	30
40.	Notification of Intention to Award	30
F. Av	ward of Contract	30
41.	Award Criteria	30
42.	Purchaser's Right to Vary Quantities at Time of Award	
43.	Notification of Award	
44.	Debriefing by the Purchaser	
45.	Signing of Contract	
46.	Performance Security	
47.	Procurement Related Complaint	

#### Section I. Instructions to Bidders

#### A. General

- In connection with the Specific Procurement Notice, Request 1. Scope of Bid 1.1 for Bids (RFB), specified in the Bid Data Sheet (BDS), the Purchaser, as specified in the BDS, issues this bidding document for the supply of Goods and, if applicable, any Related Services incidental thereto, as specified in Section VII, Schedule of Requirements. The name, identification and number of lots (contracts) of this RFB are specified in the **BDS**.
  - 1.2 Throughout this bidding document:
    - the term "in writing" means communicated in written (a) form (e.g. by mail, e-mail, fax, including if specified in the BDS, distributed or received through the electronic-procurement system used by the Purchaser) with proof of receipt;
    - if the context so requires, "singular" means "plural" (b) and vice versa; and
    - "Day" means calendar day, unless otherwise specified (c) as "Business Day". A Business Day is any day that is an official working day of the Borrower. It excludes the Borrower's official public holidays.
  - 2.1 The Borrower or Recipient (hereinafter called "Borrower") specified in the BDS has applied for or received financing (hereinafter called "funds") from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called "the Bank") in an amount specified in the BDS, toward the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract for which this bidding document is issued.
    - 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the Loan account for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import is prohibited by

2. Source of Funds

decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).

- 3. Fraud and Corruption
   3.1 The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework, as set forth in Section VI.
  - 3.2 In further pursuance of this policy, Bidders shall permit and shall cause their agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and their personnel, to permit the Bank to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, bid submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.
- 4. Eligible Bidders 4.1 A Bidder may be a firm that is a private entity, a state-owned enterprise or institution subject to ITB 4.6, or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Bidding process and, in the event the JV is awarded the Contract, during contract execution. Unless specified in the BDS, there is no limit on the number of members in a JV.
  - 4.2 A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this Bidding process, if the Bidder:
    - (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
    - (b) receives or has received any direct or indirect subsidy from another Bidder; or
    - (c) has the same legal representative as another Bidder; or
    - (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position

to influence the Bid of another Bidder, or influence the decisions of the Purchaser regarding this Bidding process; or

- (e) or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or
- (f) or any of its affiliates has been hired (or is proposed to be hired) by the Purchaser or Borrower for the Contract implementation; or
- (g) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or
- (h) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding document or specifications of the Contract, and/or the Bid evaluation process of such Contract; or (ii) would be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the Bidding process and execution of the Contract.
- 4.3 A firm that is a Bidder (either individually or as a JV member) shall not participate in more than one Bid, except for permitted alternative Bids. This includes participation as a subcontractor. Such participation shall result in the disqualification of all Bids in which the firm is involved. A firm that is not a Bidder or a JV member, may participate as a subcontractor in more than one Bid.
- 4.4 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.8. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or

subconsultants for any part of the Contract including related Services.

- 4.5 A Bidder that has been sanctioned by the Bank, pursuant to the Bank's Anti-Corruption Guidelines, in accordance with its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework as described in Section VI paragraph 2.2 d., shall be ineligible to be prequalified for, initially selected for, bid for, propose for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address specified in the BDS.
- 4.6 Bidders that are state-owned enterprises or institutions in the Purchaser's Country may be eligible to compete and be awarded a Contract(s) only if they can establish, in a manner acceptable to the Bank, that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Purchaser.
- 4.7 A Bidder shall not be under suspension from Bidding by the Purchaser as the result of the operation of a Bid–Securing Declaration or Proposal-Securing Declaration.
- 4.8 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.
- 4.9 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Purchaser, as the Purchaser shall reasonably request.
- 4.10 A firm that is under a sanction of debarment by the Borrower from being awarded a contract is eligible to participate in this procurement, unless the Bank, at the Borrower's request, is satisfied that the debarment;
  - (a) relates to fraud or corruption; and
  - (b) followed a judicial or administrative proceeding that afforded the firm adequate due process.

- 5. Eligible Goods and Related Services to be supplied under the Contract and financed by the Bank may have their origin in any country in accordance with Section V, Eligible Countries.
  - 5.2 For purposes of this ITB, the term "goods" includes commodities, raw material, machinery, equipment, and industrial plants; and "related services" includes services such as insurance, installation, training, and initial maintenance.
  - 5.3 The term "origin" means the country where the goods have been mined, grown, cultivated, produced, manufactured or processed; or, through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

#### **B.** Contents of Request for Bids Document

6. Sections of Bidding Document
 Bocument
 6.1 The bidding document consist of Parts 1, 2, and 3, which include all the sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

#### **PART 1 Bidding Procedures**

- Section I Instructions to Bidders (ITB)
- Section II Bidding Data Sheet (BDS)
- Section III Evaluation and Qualification Criteria
- Section IV Bidding Forms
- Section V Eligible Countries
- Section VI Fraud and Corruption

#### **PART 2 Supply Requirements**

• Section VII - Schedule of Requirements

#### PART 3 Contract

- Section VIII General Conditions of Contract (GCC)
- Section IX Special Conditions of Contract (SCC)
- Section X Contract Forms

- 6.2 The Specific Procurement Notice, Request for Bids (RFB), issued by the Purchaser is not part of this bidding document.
- 6.3 Unless obtained directly from the Purchaser, the Purchaser is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Purchaser shall prevail.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding document and to furnish with its Bid all information or documentation as is required by the bidding document.
- 7. Clarification of 7.1 A Bidder requiring any clarification of the bidding document **Bidding** shall contact the Purchaser in writing at the Purchaser's address specified in the BDS. The Purchaser will respond in Document writing to any request for clarification, provided that such request is received prior to the deadline for submission of Bids within a period specified in the BDS. The Purchaser shall forward copies of its response to all Bidders who have acquired the bidding document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so specified in the BDS, the Purchaser shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the bidding document, the Purchaser shall amend the bidding document following the procedure under ITB 8 and ITB 22.2.
- **8. Amendment of Bidding Document** 8.1 At any time prior to the deadline for submission of Bids, the Purchaser may amend the bidding document by issuing addenda.
  - 8.2 Any addendum issued shall be part of the bidding document and shall be communicated in writing to all who have obtained the bidding document from the Purchaser in accordance with ITB 6.3. The Purchaser shall also promptly publish the addendum on the Purchaser's web page in accordance with ITB 7.1.
  - 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2.

#### **C.** Preparation of Bids

- **9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.
- 10. Language of Bid 10.1 The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages into the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.
  - 11.1 The Bid shall comprise the following:
    - (a) Letter of Bid prepared in accordance with ITB 12;
    - (b) **Price Schedules**: completed in accordance with ITB 12 and ITB 14;
    - (c) **Bid Security** or **Bid-Securing Declaration**, in accordance with ITB 19.1;
    - (d) **Alternative Bid**: if permissible, in accordance with ITB 13;
    - (e) **Authorization**: written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.3;
    - (f) **Qualifications**: documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the Contract if its Bid is accepted;
    - (g) **Bidder's Eligibility**: documentary evidence in accordance with ITB 17 establishing the Bidder's eligibility to bid;
    - (h) Eligibility of Goods and Related Services: documentary evidence in accordance with ITB 16, establishing the eligibility of the Goods and Related Services to be supplied by the Bidder;
    - (i) **Conformity**: documentary evidence in accordance with ITB 16 and 30, that the Goods and Related Services conform to the bidding document; and

11. Documents Comprising the Bid

- (j) any other document required in the BDS.
- 11.2 In addition to the requirements under ITB 11.1, Bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement.
- 11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.
- 12. Letter of Bid and Price Schedules
   12.1. The Letter of Bid and Price Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.3. All blank spaces shall be filled in with the information requested.
- **13. Alternative Bids** 13.1. Unless otherwise specified **in the BDS**, alternative Bids shall not be considered.
- 14. Bid Prices and<br/>Discounts14.1The prices and discounts quoted by the Bidder in the Letter<br/>of Bid and in the Price Schedules shall conform to the<br/>requirements specified below.
  - 14.2 All lots (contracts) and items must be listed and priced separately in the Price Schedules.
  - 14.3 The price to be quoted in the Letter of Bid in accordance with ITB 12.1 shall be the total price of the Bid, excluding any discounts offered.
  - 14.4 The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.
  - 14.5 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account, unless otherwise specified **in the BDS.** A Bid submitted with an adjustable price quotation shall be treated as nonresponsive and shall be rejected, pursuant to ITB 29. However, if in accordance with **the BDS**, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a Bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.

- 14.6 If so specified in ITB 1.1, Bids are being invited for individual lots (contracts) or for any combination of lots (packages). Unless otherwise specified **in the BDS**, prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot. Bidders wishing to offer discounts for the award of more than one Contract shall specify in their Bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4 provided the Bids for all lots (contracts) are opened at the same time.
- 14.7 The terms EXW, CIP, and other similar terms shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, as specified in the BDS.
- 14.8 Prices shall be quoted as specified in each Price Schedule included in Section IV, Bidding Forms. The disaggregation of price components is required solely for the purpose of facilitating the comparison of Bids by the Purchaser. This shall not in any way limit the Purchaser's right to contract on any of the terms offered. In quoting prices, the Bidder shall be free to use transportation through carriers registered in any eligible country, in accordance with Section V, Eligible Countries. Similarly, the Bidder may obtain insurance services from any eligible country in accordance with Section V, Eligible Countries. Prices shall be entered in the following manner:
  - (a) For Goods manufactured in the Purchaser's Country:
    - (i) the price of the Goods quoted EXW (ex-works, ex-factory, ex warehouse, ex showroom, or offthe-shelf, as applicable), including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Goods;
    - (ii) any Purchaser's Country sales tax and other taxes which will be payable on the Goods if the Contract is awarded to the Bidder; and
    - (iii) the price for inland transportation, insurance, and other local services required to convey the Goods to their final destination (Project Site) specified in the BDS.
  - (b) For Goods manufactured outside the Purchaser's Country, to be imported:

- (i) the price of the Goods, quoted CIP named place of destination, in the Purchaser's Country, as specified **in the BDS**;
- (ii) the price for inland transportation, insurance, and other local services required to convey the Goods from the named place of destination to their final destination (Project Site) specified in the BDS;
- (c) For Goods manufactured outside the Purchaser's Country, already imported:
  - (i) the price of the Goods, including the original import value of the Goods; plus any mark-up (or rebate); plus any other related local cost, and custom duties and other import taxes already paid or to be paid on the Goods already imported;
  - (ii) the custom duties and other import taxes already paid (need to be supported with documentary evidence) or to be paid on the Goods already imported;
  - (iii) the price of the Goods, obtained as the difference between (i) and (ii) above;
  - (iv) any Purchaser's Country sales and other taxes which will be payable on the Goods if the Contract is awarded to the Bidder; and
  - (v) the price for inland transportation, insurance, and other local services required to convey the Goods to their final destination (Project Site) specified in the BDS.
- (d) for Related Services, other than inland transportation and other services required to convey the Goods to their final destination, whenever such Related Services are specified in the Schedule of Requirements, the price of each item comprising the Related Services (inclusive of any applicable taxes).
- 15.1 The currency(ies) of the Bid and the currency(ies) of payments shall be the same. The Bidder shall quote in the currency of the Purchaser's Country the portion of the Bid price that corresponds to expenditures incurred in the currency of the Purchaser's Country, unless otherwise specified **in the BDS**.
  - 15.2 The Bidder may express the Bid price in any currency. If the Bidder wishes to be paid in a combination of amounts in different currencies, it may quote its price accordingly but
- 15. Currencies of Bid and Payment

shall use no more than three foreign currencies in addition to the currency of the Purchaser's Country.

- 16. Documents

  Establishing the Eligibility and Conformity of the Goods and Related Services
  16.1 To establish the eligibility of the Goods and Related Services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.

  16.2 To establish the conformity of the Goods and Related Services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.
  - Services to the bidding document, the Bidder shall furnish as part of its Bid the documentary evidence that the Goods conform to the technical specifications and standards specified in Section VII, Schedule of Requirements.
    - 16.3 The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Section VII, Schedule of Requirements.
    - 16.4 The Bidder shall also furnish a list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods during the period **specified in the BDS** following commencement of the use of the goods by the Purchaser.
    - 16.5 Standards for workmanship, process, material, and equipment, as well as references to brand names or catalogue numbers specified by the Purchaser in the Schedule of Requirements, are intended to be descriptive only and not restrictive. The Bidder may offer other standards of quality, brand names, and/or catalogue numbers, provided that it demonstrates, to the Purchaser's satisfaction, that the substitutions ensure substantial equivalence or are superior to those specified in the Section VII, Schedule of Requirements.
- 17. Documents Establishing the Eligibility and Qualifications of the Bidder
- 17.1 To establish Bidder's eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, included in Section IV, Bidding Forms.
- 17.2 The documentary evidence of the Bidder's qualifications to perform the Contract if its Bid is accepted shall establish to the Purchaser's satisfaction:

- (a) that, if required in the BDS, a Bidder that does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer's Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply these Goods in the Purchaser's Country;
- (b) that, if required in the BDS, in case of a Bidder not doing business within the Purchaser's Country, the Bidder is or will be (if awarded the Contract) represented by an Agent in the country equipped and able to carry out the Supplier's maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications; and
- (c) that the Bidder meets each of the qualification criterion specified in Section III, Evaluation and Qualification Criteria.
- 18.1. Bids shall remain valid until the date specified in the BDS or any extended date if amended by the Purchaser in accordance with ITP 8. A Bid that is not valid until the date specified in the BDS, or any extended date if amended by the Purchaser in accordance with ITP 8, shall be rejected by the Purchaser as nonresponsive.
  - 18.2. In exceptional circumstances, prior to the expiry of the Bid validity, the Purchaser may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 19, it shall also be extended for a corresponding period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 18.3.
  - 18.3. If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Bid validity period, the Contract price shall be determined as follows:
    - (a) in the case of fixed price contracts, the Contract price shall be the Bid price adjusted by the factor specified **in the BDS**;
    - (b) in the case of adjustable price contracts, no adjustment shall be made;

#### 18. Period of Validity of Bids

- (c) in any case, Bid evaluation shall be based on the Bid price without taking into consideration the applicable correction from those indicated above.
- 19. Bid Security19.1. The Bidder shall furnish as part of its Bid, either a Bid-Securing Declaration or a Bid Security, as specified in the BDS, in original form and, in the case of a Bid Security, in the amount and currency specified in the BDS.
  - 19.2. A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.
  - 19.3. If a Bid Security is specified pursuant to ITB 19.1, the Bid Security shall be a demand guarantee in any of the following forms at the Bidder's option:
    - (a) an unconditional guarantee issued by a bank or nonbank financial institution (such as an insurance, bonding or surety company);
    - (b) an irrevocable letter of credit;
    - (c) a cashier's or certified check; or
    - (d) another security specified in the BDS,

from a reputable source, and an eligible country. If an unconditional guarantee is issued by a non-bank financial institution located outside the Purchaser's Country, the issuing non-bank financial institution shall have a correspondent financial institution located in the Purchaser's Country to make it enforceable unless the Purchaser has agreed in writing, prior to Bid submission, that a correspondent financial institution is not required. In the case of a bank guarantee, the Bid Security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Purchaser prior to Bid submission. The Bid Security shall be valid for twenty-eight (28) days beyond the original date of expiry of the Bid validity, or beyond any extended date if requested under ITB 18.2.

- 19.4. If a Bid Security is specified pursuant to ITB 19.1, any Bid not accompanied by a substantially responsive Bid Security shall be rejected by the Purchaser as non-responsive.
- 19.5. If a Bid Security is specified pursuant to ITB 19.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the Performance Security pursuant to ITB 46.

- 19.6. The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security.
- 19.7. The Bid Security may be forfeited:
  - if a Bidder withdraws its Bid prior to the expiry date of (a) Bid validity specified by the Bidder on the Letter of Bid or any extended date provided by the Bidder; or
  - (b) if the successful Bidder fails to:
    - (i) sign the Contract in accordance with ITB 45; or
    - (ii) furnish a Performance Security in accordance with ITB 46.
- 19.8. The Bid Security or Bid- Securing Declaration of a JV must be in the name of the JV that submits the Bid. If the JV has not been legally constituted into a legally enforceable JV at the time of Bidding, the Bid Security or Bid-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.
- 19.9. If a Bid Security is not required in the BDS, pursuant to ITB 19.1, and
  - (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid, or any extended date provided by the Bidder; or
  - (b) if the successful Bidder fails to: sign the Contract in accordance with ITB 45; or furnish a performance security in accordance with ITB 46;

the Borrower may, if provided for in the BDS, declare the Bidder ineligible to be awarded a contract by the Purchaser for a period of time as stated in the BDS.

- 20.1 The Bidder shall prepare one original of the documents comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL." Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit copies of the Bid, in the number specified in the BDS and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
  - 20.2 Bidders shall mark as "CONFIDENTIAL" information in their Bids which is confidential to their business. This may include

**20. Format and** Signing of Bid proprietary information, trade secrets, or commercial or financially sensitive information.

- 20.3 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified **in the BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.
- 20.4 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 20.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

#### **D.** Submission and Opening of Bids

- **21. Sealing and**<br/>Marking of Bids21.1. The Bidder shall deliver the Bid in a single, sealed envelope<br/>(one-envelope Bidding process). Within the single envelope<br/>the Bidder shall place the following separate, sealed envelopes:
  - (a) in an envelope marked "ORIGINAL", all documents comprising the Bid, as described in ITB 11; and
  - (b) in an envelope marked "COPIES", all required copies of the Bid; and,
  - (c) if alternative Bids are permitted in accordance with ITB 13, and if relevant:
    - i. in an envelope marked "ORIGINAL -ALTERNATIVE", the alternative Bid; and
    - ii. in the envelope marked "COPIES ALTERNATIVE BID" all required copies of the alternative Bid.
  - 21.2. The inner and outer envelopes, shall:
    - (a) bear the name and address of the Bidder;
    - (b) be addressed to the Purchaser in accordance with ITB 22.1;
    - (c) bear the specific identification of this Bidding process indicated in ITB 1.1; and

- (d) bear a warning not to open before the time and date for Bid opening.
- 21.3 If all envelopes are not sealed and marked as required, the Purchaser will assume no responsibility for the misplacement or premature opening of the Bid.
- 22. Deadline for Submission of Bids
  22.1. Bids must be received by the Purchaser at the address and no later than the date and time specified in the BDS. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Bidders submitting Bids electronically shall follow the electronic Bid submission procedures specified in the BDS.
  - 22.2. The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the bidding document in accordance with ITB 8, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 23. Late Bids23.1. The Purchaser shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 22. Any Bid received by the Purchaser after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.
- 24. Withdrawal, Substitution, and Modification of Bids
  24.1. A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization (the power of attorney) in accordance with ITB 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be:
  - (a) prepared and submitted in accordance with ITB 20 and 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," or "MODIFICATION;" and
  - (b) received by the Purchaser prior to the deadline prescribed for submission of Bids, in accordance with ITB 22.
  - 24.2. Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

- 24.3. No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid or any extension thereof.
- 25. Bid Opening25.1. Except as in the cases specified in ITB 23 and ITB 24.2, the Purchaser shall, at the Bid opening, publicly open and read out all Bids received by the deadline at the date, time and place specified in the BDS in the presence of Bidders' designated representatives and anyone who chooses to attend Any specific electronic Bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as specified in the BDS.
  - 25.2. First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. If the withdrawal envelope does not contain a copy of the "power of attorney" confirming the signature as a person duly authorized to sign on behalf of the Bidder, the corresponding Bid will be opened. No Bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.
  - 25.3. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.
  - 25.4. Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening.
  - 25.5. Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Prices, per lot (contract) if applicable, including any discounts and alternative Bids; the presence or absence of a Bid Security, if required; and any other details as the Purchaser may consider appropriate.
  - 25.6. Only Bids, alternative Bids and discounts that are opened and read out at Bid opening shall be considered further in the evaluation. The Letter of Bid and the Price Schedules are to

be initialed by representatives of the Purchaser attending Bid opening in the manner specified **in the BDS.** 

- 25.7. The Purchaser shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with ITB 23.1).
- 25.8. The Purchaser shall prepare a record of the Bid opening that shall include, as a minimum:
  - (a) the name of the Bidder and whether there is a withdrawal, substitution, or modification;
  - (b) the Bid Price, per lot (contract) if applicable, including any discounts;
  - (c) any alternative Bids;
  - (d) the presence or absence of a Bid Security or Bid-Securing Declaration, if one was required.
- 25.9. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

#### **E.** Evaluation and Comparison of Bids

- **26. Confidentiality** 26.1 Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until the information on Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 40.
  - 26.2 Any effort by a Bidder to influence the Purchaser in the evaluation or contract award decisions may result in the rejection of its Bid.
  - 26.3 Notwithstanding ITB 26.2, from the time of Bid opening to the time of Contract Award, if any Bidder wishes to contact the Purchaser on any matter related to the Bidding process, it should do so in writing.
- 27. Clarification of Bids
   27.1 To assist in the examination, evaluation, comparison of the Bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder in respect to its Bid and that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing. No change, including

any voluntary increase or decrease, in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the Evaluation of the Bids, in accordance with ITB 31.

- 27.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Purchaser's request for clarification, its Bid may be rejected.
- 28.1 During the evaluation of Bids, the following definitions apply:
  - (a) "Deviation" is a departure from the requirements specified in the bidding document;
  - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding document; and
  - (c) "Omission" is the failure to submit part or all of the information or documentation required in the bidding document.
- 29. Determination of 29.1 The Purchaser's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.
  - 29.2 A substantially responsive Bid is one that meets the requirements of the bidding document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:
    - (a) if accepted, would:
      - (i) affect in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
      - (ii) limit in any substantial way, inconsistent with the bidding document, the Purchaser's rights or the Bidder's obligations under the Contract; or
    - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
  - 29.3 The Purchaser shall examine the technical aspects of the Bid submitted in accordance with ITB 16 and ITB 17, in particular, to confirm that all requirements of Section VII, Schedule of Requirements have been met without any material deviation or reservation, or omission.

25

#### 28. Deviations, Reservations, and Omissions

- 29.4 If a Bid is not substantially responsive to the requirements of bidding document, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- 30. Nonconformities, Brrors and Comissions
   30.1 Provided that a Bid is substantially responsive, the Purchaser may waive any nonconformities in the Bid.
   20.2 Description of the bid of the bid
  - 30.2 Provided that a Bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
    - 30.3 Provided that a Bid is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component, by adding the average price of the item or component quoted by substantially responsive Bidders. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Purchaser shall use its best estimate.
    - 31.1 Provided that the Bid is substantially responsive, the Purchaser shall correct arithmetical errors on the following basis:
      - (a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;
      - (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
      - (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

31. Correction of Arithmetical Errors 33. Margin of

Preference

- 31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.
- 32. Conversion to Single Currency32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted in a single currency as specified in the BDS.
  - 33.1 Unless otherwise specified **in the BDS**, a margin of preference shall not apply.
- 34. Evaluation of Bids
   34.1 The Purchaser shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies, the Purchaser shall determine the Most Advantageous Bid. This is the Bid of the Bidder that meets the qualification criteria and whose Bid has been determined to be:
  - (a) substantially responsive to the bidding document; and
  - (b) the lowest evaluated cost.
  - 34.2 To evaluate a Bid, the Purchaser shall consider the following:
    - (a) evaluation will be done for Items or Lots (contracts), as specified **in the BDS**; and the Bid Price as quoted in accordance with ITB 14;
    - (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
    - (c) price adjustment due to discounts offered in accordance with ITB 14.4;
    - (d) converting the amount resulting from applying (a) to(c) above, if relevant, to a single currency in accordance with ITB 32;
    - (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3; and
    - (f) the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria.
  - 34.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.
  - 34.4 If this bidding document allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated cost of the lot (contract)

27

combinations, including any discounts offered in the Letter of Bid, is specified in Section III, Evaluation and Qualification Criteria.

- 34.5 The Purchaser's evaluation of a Bid will exclude and not take into account:
  - (a) in the case of Goods manufactured in the Purchaser's Country, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder;
  - (b) in the case of Goods manufactured outside the Purchaser's Country, already imported or to be imported, customs duties and other import taxes levied on the imported Good, sales and other similar taxes, which will be payable on the Goods if the contract is awarded to the Bidder;
  - (c) any allowance for price adjustment during the period of execution of the contract, if provided in the Bid.
- 34.6 The Purchaser's evaluation of a Bid may require the consideration of other factors, in addition to the Bid Price quoted in accordance with ITB 14. These factors may be related to the characteristics, performance, and terms and conditions of purchase of the Goods and Related Services. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of Bids, unless otherwise specified **in the BDS** from amongst those set out in Section III, Evaluation and Qualification Criteria. The criteria and methodologies to be used shall be as specified in ITB 34.2(f).
- 35. Comparison of The Purchaser shall compare the evaluated costs of all 35.1 **Bids** substantially responsive Bids established in accordance with ITB 34.2 to determine the Bid that has the lowest evaluated cost. The comparison shall be on the basis of CIP (place of final destination) prices for imported goods and EXW prices, plus cost of inland transportation and insurance to place of destination, for goods manufactured within the Borrower's country, together with prices for any required installation, training, commissioning and other services. The evaluation of prices shall not take into account custom duties and other taxes levied on imported goods quoted CIP and sales and similar taxes levied in connection with the sale or delivery of goods.

# 36. Abnormally Low 36.1 An Abnormally Low Bid is one where the Bid price, in combination with other constituent elements of the Bid, appears unreasonably low to the extent that the Bid price raises material concerns with the Purchaser as to the capability of the Bidder to perform the Contract for the offered Bid price.

- 36.2 In the event of identification of a potentially Abnormally Low Bid, the Purchaser shall seek written clarification from the Bidder, including a detailed price analyses of its Bid price in relation to the subject matter of the contract, scope, delivery schedule, allocation of risks and responsibilities and any other requirements of the bidding document.
- 36.3 After evaluation of the price analyses, in the event that the Purchaser determines that the Bidder has failed to demonstrate its capability to perform the contract for the offered Bid price, the Purchaser shall reject the Bid.
- 37. Qualification of the Bidder37.1 The Purchaser shall determine, to its satisfaction, whether the eligible Bidder that is selected as having submitted the lowest evaluated cost and substantially responsive Bid, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
  - 37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than specialized subcontractors if permitted in the bidding document), or any other firm(s) different from the Bidder.
  - 37.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid, in which event the Purchaser shall proceed to the Bidder who offers a substantially responsive Bid with the next lowest evaluated cost to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 38. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids
  38.1 The Purchaser reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract Award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

<b>39. Standstill Period</b>	39.1	The Contract shall not be awarded earlier than the expiry of the
		Standstill Period. The Standstill Period shall be ten (10)
		Business Days unless extended in accordance with ITB 44. The
		Standstill Period commences the day after the date the
		Purchaser has transmitted to each Bidder the Notification of
		Intention to Award the Contract. Where only one Bid is
		submitted, or if this contract is in response to an emergency
		situation recognized by the Bank, the Standstill Period shall not
		apply.
		11 V

- 40. Notification of Intention to Award
  40.1 The Purchaser shall send to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information:
  - (a) the name and address of the Bidder submitting the successful Bid;
  - (b) the Contract price of the successful Bid;
  - (c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated;
  - (d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the notification is addressed) was unsuccessful, unless the price information in c) above already reveals the reason;
  - (e) the expiry date of the Standstill Period;
  - (f) instructions on how to request a debriefing and/or submit a complaint during the standstill period.

#### **F.** Award of Contract

- **41. Award Criteria** 41.1 Subject to ITB 38, the Purchaser shall award the Contract to the Bidder offering the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the qualification criteria and whose Bid has been determined to be:
  - (a) substantially responsive to the bidding document; and
  - (b) the lowest evaluated cost.
- 42. Purchaser's Right to Vary Quantities at Time of Award
  42.1 At the time the Contract is awarded, the Purchaser reserves the right to increase or decrease the quantity of Goods and Related Services originally specified in Section VII, Schedule of Requirements, provided this does not exceed the percentages specified in the BDS, and without any

change in the unit prices or other terms and conditions of the Bid and the bidding document.

- 43. Notification of Award
  43.1 Prior to the date of expiry of the Bid validity and upon expiry of the Standstill Period, specified in ITB 39.1 or any extension thereof, and upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Purchaser shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification of award (hereinafter and in the Contract Forms called the "Letter of Acceptance") shall specify the sum that the Purchaser will pay the Supplier in consideration of the execution of the Contract Forms called "the Contract and Contract Forms called "the Contract Price").
  - 43.2 Within ten (10) Business Days after the date of transmission of the Letter of Acceptance, the Purchaser shall publish the Contract Award Notice which shall contain, at a minimum, the following information:
    - (a) name and address of the Purchaser;
    - (b) name and reference number of the contract being awarded, and the selection method used;
    - (c) names of all Bidders that submitted Bids, and their Bid prices as read out at Bid opening, and as evaluated;
    - (d) names of all Bidders whose Bids were rejected either as nonresponsive or as not meeting qualification criteria, or were not evaluated, with the reasons therefor;
    - (e) the name of the successful Bidder, the final total contract price, the contract duration and a summary of its scope; and
    - (f) successful Bidder's Beneficial Ownership Disclosure Form, if specified in BDS ITB 45.1.
  - 43.3 The Contract Award Notice shall be published on the Purchaser's website with free access if available, or in at least one newspaper of national circulation in the Purchaser's Country, or in the official gazette. The Purchaser shall also publish the contract award notice in UNDB online.
  - 43.4 Until a formal Contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.

44. Debriefing by	44.1	On receipt of the Purchaser's Notification of Intention to
the Purchaser		Award referred to in ITB 40.1, an unsuccessful Bidder has
		three (3) Business Days to make a written request to the
		Purchaser for a debriefing. The Purchaser shall provide a
		debriefing to all unsuccessful Bidders whose request is
		received within this deadline.

- 44.2 Where a request for debriefing is received within the deadline, the Purchaser shall provide a debriefing within five (5) Business Days, unless the Purchaser decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Purchaser shall promptly inform, by the quickest means available, all Bidders of the extended standstill period
- 44.3 Where a request for debriefing is received by the Purchaser later than the three (3)-Business Day deadline, the Purchaser should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing received outside the three (3)-day deadline shall not lead to extension of the standstill period.
- 44.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidders shall bear their own costs of attending such a debriefing meeting.
- 45.1 The Purchaser shall send to the successful Bidder the Letter of Acceptance including the Contract Agreement, and, if specified in the BDS, a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form, if so requested, shall be submitted within eight (8) Business Days of receiving this request.
  - 45.2 The successful Bidder shall sign, date and return to the Purchaser, the Contract Agreement within twenty-eight (28) days of its receipt.
  - 45.3 Notwithstanding ITB 45.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, where such export restrictions arise from trade

45. Signing of Contract regulations from a country supplying those products/goods, systems or services, the Bidder shall not be bound by its Bid, always provided however, that the Bidder can demonstrate to the satisfaction of the Purchaser and of the Bank that signing of the Contact Agreement has not been prevented by any lack of diligence on the part of the Bidder in completing formalities, including applying for permits. anv authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract.

- **46.** Performance Within twenty-eight (28) days of the receipt of Letter of 46.1 Acceptance from the Purchaser, the successful Bidder, if Security required, shall furnish the Performance Security in accordance with the GCC 18, using for that purpose the Performance Security Form included in Section X, Contract Forms, or another Form acceptable to the Purchaser. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Purchaser. A foreign institution providing a bond shall have a correspondent financial institution located in the Purchaser's Country, unless the Purchaser has agreed in writing that a correspondent financial institution is not required.
  - 46.2 Failure of the successful Bidder to submit the abovementioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Purchaser may award the Contract to the Bidder offering the next Most Advantageous Bid.
  - 47.1 The procedures for making a Procurement-related Complaint are as specified in the BDS.

**47.** Procurement Related Complaint

# **Section II - Bid Data Sheet (BDS)**

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

[Where an e-procurement system is used, modify the relevant parts of the BDS accordingly to reflect the e-procurement process.]

[Instructions for completing the Bid Data Sheet are provided, as needed, in the notes in italics mentioned for the relevant ITB.]

ITB Reference	A. General	
ITB 1.1	The reference number of the Request for Bids (RFB) is: <b>KE-DOSHS-207941-GO-RFB-KeNHA/2557/2022</b>	
	The Purchaser is: Kenya National Highways Authority.	
	The name of the RFB is <b>SUPPLY AND DELIVERY OF A FULLY FITTED</b> <b>SAFETY AND HEALTH AMBULANT UNIT WITH MEDICAL, SAFETY.</b> <b>HYGIENE AND LABORATORY ROOMS EQUIPPED WITH MEDICAL</b> <b>EXAMINATION DIAGNOSTIC SETS, WORKPLACE SURVEILLANCE</b> <b>EQUIPMENT AND PLANT EXAMINATION EQUIPMENT</b>	
	The number and identification of lots (contracts) comprising this RFB is <b>1-LOT</b>	
	<ol> <li>TRUCK CHASSIS/AMBULANT VEHICLE</li> <li>SPECTROMETERS</li> <li>AUDIOMETERS</li> <li>INTERGRATING SOUND LEVEL METER WITH OCTAVE BAND FILTER</li> <li>NOISE DOSIMETER</li> <li>DIRECT READING AIR QUALITY MONITOR TYPE 1</li> </ol>	
	<ul> <li>6. DIRECT READING AIR QUALITY MONITOR THE T</li> <li>7. DIRECT READING PARTICULATE MONITOR FOR PERSONAL MONITORING</li> <li>8. COMBINED DUST/VAPOUR SAMPLING KITS</li> <li>9. RADIATION METER TYPE1</li> <li>10. RADIATION TYPE 2</li> </ul>	

	<ul> <li>11. HEAT STRESS MONITORS</li> <li>12. AIR FLOW METER</li> <li>13. ATOMIC ABSORPTION SPECTROPHOTOMETER (AAS) WITH ACCESSORIES</li> <li>14. UV-VIS SPECTROMETER</li> <li>15. PHASE COTRAST MICROSCOPE</li> <li>16. HIGH PERFOMANCE LIQUID CHROMATOGRAPHY</li> <li>17. MICRO BALANCES</li> <li>18. VIBRATION METERS FOR HAND AND WHOLE BODY</li> <li>19. FLAW DETECTOR ULTRASONIC FLAW DETECTOR WITH PHASED ARRAY IMAGING</li> <li>20. ULTRASONIC THICKNESS GAUGE</li> <li>21. FLUE GAS ANALYSER</li> <li>22. INFRARED THERMAL IMAGING CAMERA</li> <li>23. FLUE PARTICLE MEASURING EQUIPMENT</li> <li>24. INTRISNSIC SAFE CAMERA</li> <li>25. CALIBRATION BLOCKS</li> <li>26. AUXILIARY GENERATOR</li> <li>27. DOCTORS KIT</li> </ul>	
ITB 1.2(a)	Electronic – Procurement System shall not be applicable to this procurement	
ITB 2.1	The Borrower is: <b>GOVERNMENT OF THE REPUBLIC OF KENYA</b> Loan or Financing Agreement amount: <b>US\$ 750,000 000.00</b> The name of the Project is: <b>HORN OF AFRICA GATEWAY</b> <b>DEVELOPMENT PROJECT(HoAGDP)</b>	
ITB 4.1	Maximum number of members in the Joint Venture (JV) shall be: FIVE (5No.)	
ITB 4.5	A list of debarred firms and individuals is available on the Bank's external website: <u>http://www.worldbank.org/debarr.</u>	
	B. Contents of Bidding Document	
ITB 7.1	<ul> <li>For <u>Clarification of Bid purposes</u> only, the Purchaser's address is:</li> <li>Attention: Director (Development)</li> <li>Street Address: Kenya National Highways Authority (KeNHA). Block A, Barabara Plaza, Jomo Kenyatta International Airport (JKIA) off Airport South Road, along Mazao Road, Nairobi</li> <li>Floor/Room Number: First Floor, North Wing</li> <li>City: NAIROBI, KENYA</li> <li>Telephone: +254 20 4954000</li> </ul>	
	Email addresses: ddevelopment@kenha.co.ke; procurement@kenha.co.ke	

	The deadline for bid submission is:         DATE: 13 <sup>th</sup> April, 2022         Requests for clarification should be received by the Purchaser no later than: 14         days prior to the deadline for submission of bids in accordance with ITB 23         Web page: NOT APPLICABLE	
	C. Preparation of Bids	
ITB 10.1	The language of the Bid is: " <i>English</i> "	
ITB 11.1 (j)	<ul> <li>The Bidder shall submit the following additional documents in its Bid:</li> <li>a. Certificate of Incorporation/Statutory Evidence of the Directors of the Company in the Country of Registration/Origin.</li> <li>b. Valid Tax Compliance Certificate (applicable to Local Contractors – Kenyan).</li> <li>c. Manufacturers Authorization Letter (Original).</li> <li>d. Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment Performance Declaration.</li> <li>e). Code of Conduct for Supplier's Personnel (ES)</li> <li>The Bidder shall submit its Code of Conduct that will apply to the Supplier's Personnel (as defined in GCC sub-clause 1.1) employed in the execution of the Contract at the Project Site/s to ensure compliance with the Supplier's Environmental and/or social obligations under the Contract, as applicable. The Bidder shall use for this purpose the Code of Conduct form provided in Section IV. No substantial modifications shall be made to this form, except that the Bidder may introduce additional requirements, including as necessary to take into account specific Contract issues/risks.</li> </ul>	
ITB 13.1	Alternative Bids "shall not be" considered.	
ITB 14.5	The prices quoted by the Bidder <b>"shall not"</b> be subject to adjustment during the performance of the Contract.	
ITB 14.6	<ul><li>Prices quoted for each lot (contract) shall correspond at least to 100 percent of the items specified for each lot (contract).</li><li>Prices quoted for each item of a lot shall correspond at least to 100 percent of the quantities specified for this item of a lot.</li></ul>	
ITB 14.7	The Incoterms edition is: 2020	

ITB 14.8 (b)(i)	Place of destination: <i>Directorate of Occupational Safety and Health Services</i> ( <i>DOSHS</i> ).	
ITB 14.8 (a)(iii), (b)(ii) and (c)(v)	Final Destination (Project Site): Directorate of Occupational Safety and Health Services (DOSHS), Safety House, Commercial Street, Industrial Area.	
ITB 15.1	The Bidder is required to quote in the currency of the Purchaser's Country the portion of the Bid price that corresponds to expenditures incurred in that currency.	
ITB 16.4	Period of time the Goods are expected to be functioning (for the purpose of spare parts): 3 <b>Year</b>	
ITB 17.2 (a)	Manufacturer's authorization is: required	
ITB 17.2 (b)	After sales service is: required	
ITB 18.1	The Bid shall be valid until: 150 days after submission deadline.	
ITB 18.3 (a)	The Bid price shall be adjusted by the following factor(s): N/A	
ITB 19.1	A Bid Security shall be required.	
	A Bid-Securing Declaration shall be required.	
	All Bids must be accompanied by a Unconditional Bank Guarantee ( <b>Bid Security</b> ) of Kenya Shillings Five Hundred Thousand (KES 500,000.00) or its equivalent in a freely convertible currency <i>from</i> a <b>reputable Bank regulated by the Central Bank of Kenya (CBK) or the bidder's national regulator</b> valid for an additional 28 days beyond the expiry of the bid validity period. For Foreign Banks, it must have a corresponding bank in Kenya.	
ITB 19.3 (d)	Other types of acceptable securities: N/A	
ITB 19.9	If the Bidder performs any of the actions prescribed in ITB 20.9 (a) or (b), the Purchaser will declare the Bidder ineligible to be awarded contracts by the Purchaser for a period of <i>one</i> $(1)$ year starting from the date the Bidder performs any of the actions.	
ITB 20.1	In addition to the original of the Bid, the number of copies is: One (1) Copy and One 1 Scanned/Digital Copy in PDF Format in a Flash Disc clearly labelled should be submitted. In the event of any discrepancy between the original and the digital copy, the original hard copy shall prevail.	
ITB 20.3	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: A duly signed power of attorney indicating the name and the	

	position held by the person authorized to sign the bid on behalf of the bidder.
	D. Submission and Opening of Bids
ITB 22.1	For <b><u>Bid submission purposes</u></b> only, the Employer's address is: Attention:
	DEPUTY DIRECTOR (SUPPLY CHAIN MANAGEMENT) KENYA NATIONAL HIGHWAYS AUTHORITY
	Street Address:
	BARABARA PLAZA, BLOCK C,
	JOMO KENYATTA INTERNATIONAL AIRPORT (JKIA) OFF AIRPORT SOUTH ROAD, ALONG MAZAO ROAD, NAIROBI
	Floor/Room number:
	SECOND FLOOR, SUPPLYCHAIN MANAGEMENT OFFICE
	City: NAIROBI
	Country: <b>KENYA</b>
	The deadline for bid submission is:
	DATE: 13 <sup>th</sup> April, 2022
	TIME: 1100 HRS
	Bidders shall not have the option of submitting their Bids electronically.
ITB 25.1	<ul> <li>The bid opening shall take place at:</li> <li>Street Address: BARABARA PLAZA, BLOCK C, JOMO KENYATTA INTERNATIONAL AIRPORT (JKIA) OFF AIRPORT SOUTH ROAD, ALONG MAZAO ROAD, NAIROBI</li> <li>Floor/Room number: SECOND FLOOR BOARD ROOM WEST WING City: Nairobi</li> <li>Country: Kenya</li> <li>DATE: 13<sup>th</sup> April, 2022</li> <li>Time: 1100 HRS</li> </ul>
ITB 25.6	The Letter of Bid and Price Schedules shall be initialed by <b>at least three (3)</b> representatives of the Purchaser conducting Bid opening.
	Each Bid shall be initialed by at least three (3) representatives of the bid opening committee and shall be numbered, any modification to the unit or total price shall be initialed by the members of the bid opening Committee.

	E. Evaluation and Comparison of Bids			
ITB 32.1	The currency(ies) of the Bid shall be converted into a single currency as follows: <b>Kenya shillings</b>			
	The currency that shall be used for Bid evaluation and comparison purposes to convert all Bid prices into a single currency is: <b>Kenya shillings</b>			
	The source of exchange rate shall be: Central Bank of Kenya (selling rate)			
	The date for the exchange rate shall be: Seven (7) days prior to the deadline for submission of the bid			
ITB 33.1	A margin of domestic preference <b>shall not</b> apply.			
	If a margin of preference applies, the application methodology shall be defined in Section III – Evaluation and Qualification Criteria.			
ITB 34.2(a)	Evaluation will be done for <b>item by item</b> .			
ITB 34.6	The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria:			
	(a) Deviation in Delivery schedule: <b>NO</b>			
	(b) Deviation in payment schedule: NO			
	(c) the cost of major replacement component, mandatory spare parts, and service: NO			
	(d) the availability in the Purchaser's Country of spare parts and after-sales services for the equipment offered in the Bid: <b>NO</b>			
	(e) Life cycle costs: the costs during the life of the goods or equipment <b>NO</b>			
	(f) the performance and productivity of the equipment offered; NO			
	F. Award of Contract			
ITB 42	The maximum percentage by which quantities may be increased is: 15%			
	The maximum percentage by which quantities may be decreased is: 15%			
ITB 45. 1	The successful Bidder SHALL submit the Beneficial Ownership Disclosure Form.			
ITB 47.1	The procedures for making a Procurement-related Complaint are detailed in the " <u>Procurement Regulations for IPF Borrowers</u> (Annex III)." If a Bidder wishes to make a Procurement-related Complaint, the Bidder should submit its complaint following these procedures, in writing (by the quickest means available, that is either by email or fax), to:			

For the attention: The Director General
Title/position: The Director General
Employer: Kenya National Highways Authority (KeNHA)
Email address: procurement@kenha.co.ke; d.development@kenha.co.ke

# Section III - Evaluation and Qualification Criteria

This Section contains the criteria that the Purchaser shall use to evaluate a Bid and qualify the Bidders. No other factors, methods or criteria shall be used other than specified in this bidding document.

[The Purchaser shall select the criteria deemed appropriate for the procurement process, insert the appropriate wording using the samples below or other acceptable wording, and delete the text in italics]

### Contents

1. Margin of Preference (ITB 33)	. 44
2. Evaluation (ITB 34)	. 45
3. Qualification (ITB 37)	. 46

### 1. Margin of Preference (ITB 33) N/A

If the Bidding Data Sheet so specifies, the Purchaser will grant a margin of preference to goods manufactured in the Purchaser's Country for the purpose of Bid comparison, in accordance with the procedures outlined in subsequent paragraphs.

Substantially responsive Bids will be classified in one of three groups, as follows:

- (a) Group A: Bids offering goods manufactured in the Purchaser's Country, for which (i) labor, raw materials, and components from within the Purchaser's Country account for more than thirty (30) percent of the EXW price; and (ii) the production facility in which they will be manufactured or assembled has been engaged in manufacturing or assembling such goods at least since the date of Bid submission;
- (b) **Group B:** All other Bids offering Goods manufactured in the Purchaser's Country;
- (c) **Group C:** Bids offering Goods manufactured outside the Purchaser's Country that have been already imported or that will be imported.

To facilitate this classification by the Purchaser, the Bidder shall complete whichever version of the Price Schedule furnished in the bidding document is appropriate provided, however, that the completion of an incorrect version of the Price Schedule by the Bidder shall not result in rejection of its Bid, but merely in the Purchaser's reclassification of the Bid into its appropriate Bid group.

The Purchaser will first review the Bids to confirm the appropriateness of, and to modify as necessary, the Bid group classification to which Bidders assigned their Bids in preparing their Bid Forms and Price Schedules.

The Bids in each group will then be compared to determine the Bid with the lowest evaluated cost in that group. The lowest evaluated cost Bid from each group shall then be compared with each other and if as a result of this comparison a Bid from Group A or Group B is the lowest, it shall be selected for the award.

If as a result of the preceding comparison, a Bid from Group C is the lowest evaluated cost, all Bids from Group C shall be further compared with the Bid with the lowest evaluated cost from Group A after adding to the evaluated costs of goods offered in each Bid from Group C, for the purpose of this further comparison only, an amount equal to 15% (fifteen percent) of the respective CIP Bid price for goods to be imported and already imported goods. Both prices shall include unconditional discounts and be corrected for arithmetical errors. If the Bid from Group A is the lowest, it shall be selected for award. If not, the lowest evaluated cost from Group C shall be selected.

### Most Advantageous Bid

The Purchaser shall use the criteria and methodologies listed in Section 2 and 3 below to determine the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the qualification criteria and whose Bid has been determined to be:

(a) substantially responsive to the bidding document; and

(b) the lowest evaluated cost.

#### 2. Evaluation (ITB 34)

#### 2.1. Evaluation Criteria (ITB 34.6)

The Purchaser's evaluation of a Bid may take into account, in addition to the Bid Price quoted in accordance with ITB 14.8, one or more of the following factors as specified in ITB 34.2(f) and in BDS referring to ITB 34.6, using the following criteria and methodologies.

- (a) Delivery schedule. (As per Incoterms specified in the BDS)
- (b) Deviation in payment schedule. *N/A*
- (c) Cost of major replacement components, mandatory spare parts, and service. N/A
- (d) Availability in the Purchaser's Country of spare parts and after sales services for equipment offered in the Bid.

An adjustment equal to the cost to the Purchaser of establishing the minimum service facilities and parts inventories if quoted separately, shall be added to the Bid price, for evaluation purposes only. N/A

(e) Life Cycle Costs N/A

If specified in BDS 34.6, an adjustment to take into account the additional life cycle costs for the period specified below, such as the operating and maintenance costs of the Goods, will be added to the Bid price, for evaluation purposes only. The adjustment will be evaluated in accordance with the methodology specified below and the following information:

- (i) number of years for life cycle cost determination N/A
- (ii) the discount rate to be applied to determine the net present value of future operation and maintenance costs (recurrent costs) is N/A
- (iii) the annual operating and maintenance costs (recurrent costs) shall be determined on the basis of the following methodology: *N*/*A*
- (iv) and the following information is required from bidders N/A
- (f) Performance and productivity of the equipment: N/A
  - (i) Performance and productivity of the equipment. An adjustment representing the capitalized cost of additional operating costs over the life of the goods will be added to the Bid price, for evaluation purposes if specified in the BDS 34.6. The adjustment will be evaluated based on the drop in the guaranteed performance or efficiency offered in the Bid below the norm of 100, using the methodology specified below. N/A

or

(i) An adjustment to take into account the productivity of the goods offered in the Bid will be added to the Bid price, for evaluation purposes only, if specified in BDS 34.6. The adjustment will be evaluated based on the cost per unit of the actual productivity of goods offered in the Bid with respect to minimum required values, using the methodology specified below.

N/A

(g) Specific additional criteria N/A

### 2.2. Multiple Contracts (ITB 34.4)

If in accordance with ITB 1.1, Bids are invited for individual lots or for any combination of lots, the contract will be awarded to the Bidder or Bidders offering a substantially responsive Bid(s) and the lowest evaluated cost to the Purchaser for combined lots, after considering all possible combination of lots, subject to the selected Bidder(s) meeting the required qualification criteria (this Section III, Sub-Section ITB 37 Qualification Requirements) for a lot or combination of lots as the case may be.

In determining Bidder or Bidders that offer the total lowest evaluated cost to the Purchaser for combined lots, the Purchaser shall apply the following steps in sequence:

- (a) evaluate individual lots to determine the substantially responsive Bids and corresponding evaluated costs;
- (b) for each lot, rank the substantially responsive Bids starting from the lowest evaluated cost for the lot;
- (c) apply to the evaluated costs listed in b) above, any applicable discounts/price reductions offered by a Bidder (s) for the award of multiple contracts based on the discounts and the methodology for their application offered by the respective Bidder; and
- (d) determine contract award on the basis of the combination of lots that offer the total lowest evaluated cost to the Purchaser.

### 2.3. Alternative Bids (ITB 13.1)

A bidder shall not submit an alternative bid.

### **3.** Qualification (ITB **37**)

### **3.1 Qualification Criteria (ITB 37.1)**

After determining the substantially responsive Bid which offers the lowest-evaluated cost in accordance with ITB 34, and, if applicable, the assessment of any Abnormally Low Bid (in accordance with ITB 36) the Purchaser shall carry out the post-qualification of the Bidder in

accordance with ITB 37, using only the requirements specified. Requirements not included in the text below shall not be used in the evaluation of the Bidder's qualifications.

- (a) If the Bidder is a manufacturer:
  - (i) Financial Capability

The Bidder shall furnish documentary evidence that it meets the following financial requirement(s): **at least KES 400 million annual turn over.** 

(ii) Experience and Technical Capacity

The Bidder shall furnish documentary evidence to demonstrate that it meets the following experience requirement(s): at least two similar contracts handled in the last Five (5) years.

(iii) Documentary Evidence

The Bidder shall furnish documentary evidence to demonstrate that the Goods it offers meet the following usage requirement:

- bidders offer against the required checklist
- Manufacturer's brochures for key items.
- Written letter of warrant by the bidder.
- (b) If Bidder is not a manufacturer:

If a Bidder is not a manufacturer, but is offering the Goods on behalf of the Manufacturer under Manufacturer's Authorization Form (Section IV, Bidding Forms), the Manufacturer shall demonstrate the above qualifications (i), (ii), (iii) and the Bidder shall demonstrate that it has successfully completed at least **ONE** (1) of similar goods in the past **FIVE** (5) years.

# **Section IV - Bidding Forms**

## **Table of Forms**

Letter of Bid
Bidder Information Form53
Bidder's JV Members Information Form54
Price Schedule: Goods Manufactured Outside the Purchaser's Country, to be Imported56
Price Schedule: Goods Manufactured Outside the Purchaser's Country, already imported 58
Price Schedule: Goods Manufactured in the Purchaser's Country
Price and Completion Schedule - Related Services63
Form of Bid Security
Form of Bid Security (Bid Bond)
Form of Bid-Securing Declaration67
Manufacturer's Authorization

### Letter of Bid

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

**Date of this Bid submission**: [insert date (as day, month and year) of Bid submission] **RFB No.:** [insert number of RFB process] **Request for Bid No.**: [insert identification] **Alternative No.**: [insert identification No if this is a Bid for an alternative]

### To: [insert complete name of Purchaser]

- (a) **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance with Instructions to Bidders (ITB 8);
- (b) **Eligibility**: We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) **Bid/Proposal-Securing Declaration**: We have not been suspended nor declared ineligible by the Purchaser based on execution of a Bid-Securing Declaration or Proposal-Securing Declaration in the Purchaser's Country in accordance with ITB 4.7;
- (d) **Conformity:** We offer to supply in conformity with the bidding document and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods: [*insert a brief description of the Goods and Related Services*];
- (e) **Bid Price**: The total price of our Bid, excluding any discounts offered in item (f) below is:

Option 1, in case of one lot: Total price is: *[insert the total price of the Bid in words and figures, indicating the various amounts and the respective currencies]*;

Or

Option 2, in case of multiple lots: (a) Total price of each lot [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*]; and (b) Total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

(f) **Discounts**: The discounts offered and the methodology for their application are:

- (i) The discounts offered are: [Specify in detail each discount offered.]
- (ii) The exact method of calculations to determine the net price after application of discounts is shown below: [Specify in detail the method that shall be used to apply the discounts];
- (g) **Bid Validity**: Our Bid shall be valid until *[insert day, month and year in accordance with ITP 18.1]*, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (h) **Performance Security**: If our Bid is accepted, we commit to obtain a performance security in accordance with the bidding document;
- (i) One Bid per Bidder: We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other Bid(s) as a Joint Venture member, or as a subcontractor, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;
- (j) Suspension and Debarment: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the World Bank Group or a debarment imposed by the World Bank Group or a debarment of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Purchaser's Country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (k) **State-owned enterprise or institution**: [select the appropriate option and delete the other] [We are not a state-owned enterprise or institution] / [We are a state-owned enterprise or institution but meet the requirements of ITB 4.6];
- (1) **Commissions, gratuities, fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: [*insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity*]

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

(m) **Binding Contract**: We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

- (n) **Purchaser Not Bound to Accept**: We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive; and
- (o) **Fraud and Corruption**: We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption.

**Name of the Bidder**: \*[insert complete name of the Bidder]

**Name of the person duly authorized to sign the Bid on behalf of the Bidder**: \*\*[*insert complete name of person duly authorized to sign the Bid*]

**Title of the person signing the Bid**: [insert complete title of the person signing the Bid]

**Signature of the person named above**: [insert signature of person whose name and capacity are shown above]

**Date signed** [insert date of signing] **day of** [insert month], [insert year]

\*: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

\*\*: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

### **Bidder Information Form**

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: [insert date (as day, month and year) of Bid submission] RFB No.: [insert number of RFB process] Alternative No.: [insert identification No if this is a Bid for an alternative]

Page \_\_\_\_\_ of \_\_\_\_ pages

1. Bidder's Name [insert Bidder's legal name]
2. In case of JV, legal name of each member: [insert legal name of each member in JV]
3. Bidder's actual or intended country of registration: [insert actual or intended country of registration]
4. Bidder's year of registration: [insert Bidder's year of registration]
5. Bidder's Address in country of registration: [insert Bidder's legal address in country of registration]
6. Bidder's Authorized Representative Information
Name: [insert Authorized Representative's name]
Address: [insert Authorized Representative's Address]
Telephone/Fax numbers: [insert Authorized Representative's telephone/fax numbers]
Email Address: [insert Authorized Representative's email address]
7. Attached are copies of original documents of [check the box(es) of the attached original documents]
Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.4.
□ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.
□ In case of state-owned enterprise or institution, in accordance with ITB 4.6 documents establishing:
<ul> <li>Legal and financial autonomy</li> <li>Operation under commercial law</li> <li>Establishing that the Bidder is not under the supervision of the Purchaser</li> </ul>
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. [If required under BDS ITB 45.1, the successful Bidder shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]

### **Bidder's JV Members Information Form**

[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture]. Date: [insert date (as day, month and year) of Bid submission] RFB No.: [insert number of Bidding process] Alternative No.: [insert identification No if this is a Bid for an alternative]

Page \_\_\_\_\_ of \_\_\_\_ pages

1.	Bidder's Name: [insert Bidder's legal name]
2.	Bidder's JV Member's name: [insert JV's Member legal name]
3.	Bidder's JV Member's country of registration: [insert JV's Member country of registration]
4.	Bidder's JV Member's year of registration: [insert JV's Member year of registration]
5.	Bidder's JV Member's legal address in country of registration: [insert JV's Member legal address in country of registration]
6.	Bidder's JV Member's authorized representative information
Na	me: [insert name of JV's Member authorized representative]
Ad	dress: [insert address of JV's Member authorized representative]
Te	lephone/Fax numbers: [insert telephone/fax numbers of JV's Member authorized representative]
En	nail Address: [insert email address of JV's Member authorized representative]
7.	Attached are copies of original documents of [check the box(es) of the attached original documents]
	Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4.
	In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Purchaser, in accordance with ITB 4.6.
8.	Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. [If required under BDS ITB 45.1, the successful Bidder shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]

54

# **Price Schedule Forms**

[The Bidder shall fill in these Price Schedule Forms in accordance with the instructions indicated. The list of line items in column 1 of the **Price Schedules** shall coincide with the List of Goods and Related Services specified by the Purchaser in the Schedule of Requirements.]

				e imported) with ITB 15	Date: RFB No: Alternative No: Page N° of			
1	2	3	4	5	6	7	8	9
Line Item N°	Description of Goods	Country of Origin	Delivery Date as defined by Incoterms	Quantity and physical unit	Unit price CIP [insert place of destination] in accordance with ITB 14.8(b)(i)	CIP Price per line item (Col. 5x6)	Price per line item for inland transportation and other services required in the Purchaser's Country to convey the Goods to their final destination specified in BDS	Total Price per Line item (Col. 7+8)
1.	Truck chassis/ ambulant vehicle			1				
2.	spectrometers			4				
3.	Audiometers			4				
4.	Intergrating- averageing sound level meter with octave band filter			4				
5.	Noise dosimeter			6				
6.	Direct reading air quality monitor type 1			6				
7.	Direct reading particulate monitor for personal monitoring			6				
8.	Combined dust/vapour sampling kits			6				
9.	Radiation meter type1			4				
10.	Radiation meter type2			4				

## Price Schedule: Goods Manufactured Outside the Purchaser's Country, to be Imported

11.	Heat stress monitors		4			
12.	Air flow meter		4			
13.	Atomic absorption spectrophotometer (AAS) with accessories		1			
14.	Uv-vis spectrometer		1			
15.	Phase contrast microscope		2			
16.	High performance liquid chromatography		1			
17.	Micro balances		2			
18.	Vibration meters for hand and whole body		4			
19.	Flaw detector: ultrasonic flaw detector with phased array imaging		2			
20.	Ultrasonic thickness gauge		4			
21.	Flue gas analyser		4			
22.	Infrared thermal imaging camera		4			
23.	Flue particle measuring equipment		4			
24.	Intrinsic safe camera		4			
25.	Calibration blocks		2			
26.	Auxiliary generator		1			
27.	Doctors kit		10			
		<u> </u>	L	1	Total Price	

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [Insert Date]

## **Price Schedule: Goods Manufactured Outside the Purchaser's Country, already imported\***

		RFB No: Alternative No: _	Date: RFB No: Alternative No: Page N° of								
1	2	3	4	5	6	7	8	9	10	11	12
Line Item N°	Description of Goods	Country of Origin	Delivery Date as defined by Incoterms	Quantity and physical unit	Unit price including Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i)	Custom Duties and Import Taxes paid per unit in accordance with ITB 14.8(c)(ii), [to be supported by documents]	Unit Price net of custom duties and import taxes, in accordance with ITB 14.8 (c) (iii) (Col. 6 minus Col.7)	Price per line item net of Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i) (Col. 5×8)	Price per line item for inland transportation and other services required in the Purchaser's Country to convey the goods to their final destination, as specified in BDS in accordance with ITB 14.8 (c)(v)	Sales and other taxes paid or payable per item if Contract is awarded (in accordance with ITB 14.8(c)(iv)	Total Price per line item (Col. 9+10)
1.	Truck chassis/ ambulant vehicle			1							
2.	spectrometers			4							
3.	Audiometers			4							
4.	Intergrating- averageing sound level meter with octave band filter			4							
5.	Noise dosimeter			6							
6.	Direct reading air quality monitor type 1			6							
7.	Direct reading particulate monitor for personal monitoring			6							

8.	Combined dust/vapour sampling kits		6				
9.	Radiation meter type1		4				
10.	Radiation meter type2		4				
11.	Heat stress monitors		4				
12.	Air flow meter		4				
13.	Atomic absorption spectrophotometer (AAS) with accessories		1				
14.	Uv-vis spectrometer		1				
15.	Phase contrast microscope		2				
16.	High performance liquid chromatography		1				
17.	Micro balances		2				
18.	Vibration meters for hand and whole body		4				
19.	Flaw detector: ultrasonic flaw detector with phased array imaging		2				
20.	Ultrasonic thickness gauge		4				
21.	Flue gas analyser		4				
22.	Infrared thermal imaging camera		4				
23.	Flue particle measuring equipment		4				

24.	Intrinsic safe camera			4							
25.	Calibration blocks			2							
26.	Auxiliary generator			1							
27.	Doctors kit			10							
										Total Bid Price	

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [insert date]

\* [For previously imported Goods, the quoted price shall be distinguishable from the original import value of these Goods declared to customs and shall include any rebate or mark-up of the local agent or representative and all local costs except import duties and taxes, which have been and/or have to be paid by the Purchaser. For clarity the Bidders are asked to quote the price including import duties, and additionally to provide the import duties and the price net of import duties which is the difference of those values.]

	Purchaser's C	Country		(		up A and B Bids) n accordance with IT	Date:         RFB No:         Alternative No:         Page N° of		
1	2	3	4	5	6	7	8	9	10
Line Item N°	Description of Goods	Delivery Date as defined by Incoterms	Quantity and physical unit	Unit price EXW	Total EXW price per line item (Col. 4×5)	Price per line item for inland transportation and other services required in the Purchaser's Country to convey the Goods to their final destination	Cost of local labor, raw materials and components from with origin in the Purchaser's Country % of Col. 5	Sales and other taxes payable per line item if Contract is awarded (in accordance with ITB 14.8(a)(ii)	Total Price per line item (Col. 6+7)
1.	Truck chassis/ ambulant vehicle		1						
2.	spectrometers		4						
3.	Audiometers		4						
4.	Intergrating- averageing sound level meter with octave band filter		4						
5.	Noise dosimeter		6						
6.	Direct reading air quality monitor type 1		6						
7.	Direct reading particulate monitor for personal monitoring		6						
8.	Combined dust/vapour sampling kits		6						
9.	Radiation meter type1		4						
10.	Radiation meter type2		4						
11.	Heat stress monitors		4						

# Price Schedule: Goods Manufactured in the Purchaser's Country

12.	Air flow meter	4					
13.	Atomic absorption spectrophotometer (AAS) with accessories	1					
14.	Uv-vis spectrometer	1					
15.	Phase contrast microscope	2					
16.	High performance liquid chromatography	1					
17.	Micro balances	2					
18.	Vibration meters for hand and whole body	4					
19.	flaw detector with phased array imaging	2					
20.	Ultrasonic thickness gauge	4					
21.	Flue gas analyser	4					
22.	Infrared thermal imaging camera	4					
23.	Flue particle measuring equipment	4					
24.	Intrinsic safe camera	4					
25.	Calibration blocks	2					
26.	Auxiliary generator	1					
27.	Doctors kit	10					
	<u> </u>	I		I	1	Total Price	

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [insert date]

		Currenci	es in accordance	with ITB 15	Date: RFB No: Alternative No: Page N° of		
1	2	3	4	5	6	7	
Service N°	Description of Services (excludes inland transportation and other services required in the Purchaser's Country to convey the goods to their final destination)	Country of Origin	Delivery Date at place of Final destination	Quantity and physical unit	Unit price	Total Price per Service (Col. 5*6 or estimate)	
[insert number of the Service ]	[insert name of Services]	[insert country of origin of the Services]	[insert delivery date at place of final destination per Service]	[insert number of units to be supplied and name of the physical unit]	[insert unit price per item]	[insert total price per item]	
				Total Bid Price			

## **Price and Completion Schedule - Related Services N/A**

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [insert date]

### Form of Bid Security

#### (Bank Guarantee)

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

**Beneficiary:** [Purchaser to insert its name and address]

**RFB No.:** [Purchaser to insert reference number for the Request for Bids]

Alternative No.: [Insert identification No if this is a Bid for an alternative]

**Date:** [Insert date of issue]

**BID GUARANTEE No.:** [Insert guarantee reference number]

Guarantor: [Insert name and address of place of issue, unless indicated in the letterhead]

We have been informed that \_\_\_\_\_ [insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof] (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of \_\_\_\_\_\_ under Request for Bids No. \_\_\_\_\_\_ ("the RFB").

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid guarantee.

- (a) has withdrawn its Bid prior to the Bid validity expiry date set forth in the Applicant's Letter of Bid, or any extended date provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary prior to the expiry date of the Bid validity or any extension thereof provided by the Applicant has failed to:
  (i) sign the contract agreement, or (ii) furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the Contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such Contract agreement; or (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the expiry date of the Bid validity.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

### Form of Bid Security (Bid Bond)

[The Surety shall fill in this Bid Bond Form in accordance with the instructions indicated.]

BOND NO. \_\_\_\_\_

BY THIS BOND [name of Bidder] as Principal (hereinafter called "the Principal"), and [name, legal title, and address of surety], **authorized to transact business in** [name of country of Purchaser], as Surety (hereinafter called "the Surety"), are held and firmly bound unto [name of Purchaser] as Obligee (hereinafter called "the Purchaser") in the sum of [amount of Bond]<sup>1</sup> [amount in words], for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted or will submit a written Bid to the Purchaser dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_, for the supply of [name of Contract] (hereinafter called the "Bid").

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) withdraws its Bid prior to the Bid validity expiry date set forth in the Principal's Letter of Bid, or any extended date provided by the Principal; or
- (b) having been notified of the acceptance of its Bid by the Purchaser prior to the expiry date of the Bid validity or any extension thereto provided by the Applicant has failed to: (i) execute the Contract agreement; or (ii) furnish the Performance Security, in accordance with the Instructions to Bidders ("ITB") of the Purchaser's bidding document.

then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser's first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiry of the Bid validity set forth in the Principal's Letter of Bid or any extension thereto provided by the Principal.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

Principal: \_\_\_\_\_

Surety: \_\_\_\_\_

Corporate Seal (where appropriate)

(Signature) (Printed name and title) (Signature) (Printed name and title)

<sup>&</sup>lt;sup>1</sup> The amount of the Bond shall be denominated in the currency of the Purchaser's Country or the equivalent amount in a freely convertible currency.

### Form of Bid-Securing Declaration

[The Bidder shall fill in this Form in accordance with the instructions indicated.]

Date: [date (as day, month and year)] Bid No.: [number of RFB process] Alternative No.: [insert identification No if this is a Bid for an alternative]

#### To: [complete name of Purchaser]

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding or submitting proposals in any contract with the Purchaser for the period of time of *[number of months or years]* starting on *[date]*, if we are in breach of our obligation(s) under the Bid conditions, because we:

- (a) have withdrawn our Bid prior to the expiry date of the Bid validity specified in the Letter of Bid or any extended date provided by us; or
- (b) having been notified of the acceptance of our Bid by the Purchaser prior to the expiry date of the Bid validity in the Letter of Bid or any extended date provided by us, (i) fail or refuse to sign the Contract; or (ii) fail or refuse to furnish the Performance Security, if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiry date of the Bid validity.

Name of the person duly authorized to sign the Bid on behalf of the Bidder\*\*\_\_\_\_\_

Title of the person signing the Bid
-------------------------------------

Signature of the person named above\_\_\_\_\_

Date signed \_\_\_\_\_\_ day of \_\_\_\_\_\_, \_\_\_\_

\*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

\*\*: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the Bid.]

### **Manufacturer's Authorization**

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its Bid, if so indicated in the **BDS.**]

Date: [insert date (as day, month and year) of Bid submission] RFB No.: [insert number of RFB process] Alternative No.: [insert identification No if this is a Bid for an alternative]

To: [insert complete name of Purchaser]

#### WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder] to submit a Bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 28 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

We confirm that we do not engage or employ forced labor or persons subject to trafficking or child labor, in accordance with Clause 14 of the General Conditions of Contract.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

		_		-	-	
Dated on	dava	of	lingout	data	faia	minal
Dated on	dav o	01 .	insert	aare o	I SIQI	ทเทยา
			[		~ ~ 0	

# **Section V - Eligible Countries**

### Eligibility for the Provision of Goods, Works and Non Consulting Services in Bank-Financed Procurement

In reference to ITB 4.8 and ITB 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8(a) and ITB 5.1: N/A

Under ITB 4.8(b) and ITB 5.1: N/A

## **Section VI - Fraud and Corruption**

### (Section VI shall not be modified)

### 1. Purpose

1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

### 2. Requirements

2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

#### 2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:
  - i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - v. "obstructive practice" is:
    - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
    - (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.

- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti- Corruption Guidelines, and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;<sup>1</sup> (ii) to be a nominated<sup>2</sup> sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their subcontractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect<sup>3</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

<sup>&</sup>lt;sup>1</sup> For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated subcontractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>&</sup>lt;sup>2</sup> A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

<sup>&</sup>lt;sup>3</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

# **PART 2 – Supply Requirements**

# **Section VII - Schedule of Requirements**

## Contents

1. List of Goods and Delivery Schedule	77
2. List of Related Services and Completion Schedule	79
3. Technical Specifications	80
4. Drawings	06
5. Inspections and Tests	07

## **Notes for Preparing the Schedule of Requirements**

The Schedule of Requirements shall be included in the bidding document by the Purchaser, and shall cover, at a minimum, a description of the goods and services to be supplied and the delivery schedule.

The objective of the Schedule of Requirements is to provide sufficient information to enable Bidders to prepare their Bids efficiently and accurately, in particular, the Price Schedule, for which a form is provided in Section IV. In addition, the Schedule of Requirements, together with the Price Schedule, should serve as a basis in the event of quantity variation at the time of award of contract pursuant to ITB 42.1.

The date or period for delivery should be carefully specified, taking into account (a) the implications of delivery terms stipulated in the Instructions to Bidders pursuant to the *Incoterms* rules (i.e., EXW, or CIP, FOB, FCA terms—that "delivery" takes place when goods are delivered **to the carriers**), and (b) the date prescribed herein from which the Bidder's delivery obligations start (i.e., notice of award, contract signature, opening or confirmation of the letter of credit).

## 1. List of Goods and Delivery Schedule

[The Purchaser shall fill in this table, with the exception of the column "Bidder's offered Delivery date" to be filled by the Bidder]

Line	Description of Goods	Quantity	Physica	Final	Deli	very (as per Incoter	rms) Date	
Item N°			l unit	(Project as spec	Destination (Project Site) as specified in BDS	Earliest Delivery Date	Latest Delivery Date	Bidder's offered Delivery date [to be provided by the Bidder]
1	Truck chassis/ ambulant vehicle	1	1	SAFETY HOUSE	150	250		
2	spectrometers	4	4	SAFETY HOUSE	150	250		
3	Audiometers	4	4	SAFETY HOUSE	150	250		
4	Intergrating- averageing sound level meter with octave band filter	4	4	SAFETY HOUSE	150	250		
5	Noise dosimeter	6	6	SAFETY HOUSE	150	250		
6	Direct reading air quality monitor type 1	6	6	SAFETY HOUSE	150	250		
7	Direct reading particulate monitor for personal monitoring	6	6	SAFETY HOUSE	150	250		
8	Combined dust/vapour sampling kits	6	6	SAFETY HOUSE	150	250		
9	Radiation meter type1	4	4	SAFETY HOUSE	150	250		
10	Radiation meter type2	4	4	SAFETY HOUSE	150	250		
11	Heat stress monitors	4	4	SAFETY HOUSE	150	250		
12	Air flow meter	4	4	SAFETY HOUSE	150	250		
13	Atomic absorption spectrophotometer (AAS) with accessories	1	1	SAFETY HOUSE	150	250		

14	Uv-vis spectrometer	1	1	SAFETY	150	250	
				HOUSE			
15	Phase contrast microscope	2	2	SAFETY	150	250	
				HOUSE			
16	High performance liquid	1	1	SAFETY	150	250	
	chromatography			HOUSE			
17	Micro balances	2	2	SAFETY	150	250	
				HOUSE			
18	Vibration meters for hand and whole	4	4	SAFETY	150	250	
	body			HOUSE			
19	Flaw detector: ultrasonic flaw detector	2	2	SAFETY	150	250	
	with phased array imaging			HOUSE			
20	Ultrasonic thickness gauge	4	4	SAFETY	150	250	
				HOUSE			
21	Flue gas analyser	4	4	SAFETY	150	250	
				HOUSE			
22	Infrared thermal imaging camera	4	4	SAFETY	150	250	
				HOUSE			
23	Flue particle measuring equipment	4	4	SAFETY	150	250	
				HOUSE			
24	Intrinsic safe camera	4	4	SAFETY	150	250	
				HOUSE			
25	Calibration blocks	2	2	SAFETY	150	250	
				HOUSE			
26	Auxiliary generator	1	1	SAFETY	150	250	
				HOUSE			
27	Doctors kit	10	10	SAFETY	150	250	
				HOUSE	100		

## 2. List of Related Services and Completion Schedule N/A

[This table shall be filled in by the Purchaser. The Required Completion Dates should be realistic, and consistent with the required Goods Delivery Dates (as per Incoterms)]

Service	Description of Service	Quantity <sup>1</sup>	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
[insert Service No]	[insert description of Related Services]	[insert quantity of items to be supplied]	[insert physical unit for the items]	[insert name of the Place]	[insert required Completion Date(s)]

1. If applicable

## **3. Technical Specifications**

"Summary of Technical Specifications. The Goods and Related Services shall comply with following Technical Specifications and Standards:

Ite m No.	Name of Goods or Related Service	Т	echnical Specifications and Standards
1	Truck chassis/ AMBULANT VEHICLE	WAITING ROOM	• The vehicle will be used mainly outdoor in building construction and work of engineering sites. The vehicle should have a 13' slide out room to provide optimal space for staff. The electric patio awning should provide a generous shade for a registration table outside and comfortable waiting area for persons to be tested and examined outside of the mobile unit.
		OCCUPATIONAL HEALTH ROOM	<ul> <li>Medical examination couch, table and sink.</li> <li>A worktop for equipment preparation and charging with charging ports to complete paperwork and send data</li> <li>Racking and cabinets for Instrument and component storage.</li> <li>Audiometric Enclosure constructed to the highest standards of sound insulation</li> <li>Digital x-ray with lead protection. The X-ray protection level should to international standards and KS ISO 16645:2016</li> <li>Medical room that accommodates blood and urine tests.</li> <li>Refrigerator</li> </ul>
		OCCUPATIONAL HYGIENE/SAFETY ROOM	<ul> <li>Racking and cabinets for Instrument and component storage. The vehicle being for on and off road applications the interior support structure for cabinet/racking frame should be shock mounted with rubber spacing washers. The racking should be able to hold 90cm by 30 cm instruments. Racking/cabinets for safety and hygiene equipment should be located separately in the room.</li> <li>Custom work areas equipped with computer networking allow the staff an organized space to complete paperwork and send data</li> <li>A work top for equipment preparation with charging ports.</li> <li>Sink -13,500 Btu low profile A/C units</li> <li>Electric Generator AC240, 15KW for operating on board electrical equipment and charging of monitoring equipment.</li> <li>Spare wheel</li> <li>Wheel spanner</li> <li>Fire extinguisher</li> </ul>

	• Warning triangle			
	$\circ$ Chassis:			
	• Box Truck			
CHASSIS	Dongfeng DFL5160XXYBX2V			
	MODEL ISD210 50			
	TYPE; inline 6 cylinder, supercharged intercooled, high			
	pressure common rail diesel generator			
ENGINE	Displacement (ml) 6700			
	Fuel- diesel			
	Rated power/speed (kw/(r/min)): 155/2500			
	Interior dismensions (length,width,height/ mm 7610*2345			
	(3645 after expansion)* 2035			
VAN	The top of the vehicle has a thickness of 70mm and a			
	peripheral thickness of 46mm			
VAN EXPANSION	Electronically controlled automatic expansion and			
	contraction			
Supporting system*1	4-point electric support cylinder support (moter 520)			
Conditioner*3	KD-35 cb, cooling 3.5KW, Heating 2.4KW			
EXTRACTOR	20W, displacement: 5 cubic meters/minute			
FAN*2				
GENERATOR SET*1	Output AC220v,5.5KW			
GENERATOR SET	Electric cylinder drive, motor DC24V,60W			
LIFFTING				
SYSTEM*1				
AWNING*1	ELECTRIC (full box dc800)			
Cable Reel*1	JT- 50-3-1, pedal electric telescopic (24v DC			
	The X-ray protection level is in accordance with the level of			
	GBZ130-2002, and the X-ray leakage according to the			
	conditions			
Lead room	Specified in GBZ117-2006 IS<			
Protection *1	2.5u Gy/h			
	The tube has a wire harness away from the X-ray console, and			
	the lead plate around the lead room is affixed with a lead			
	plate> 2.5 lead equivalent			
	A lead glass observation window is placed in the x-ray			
	console.			
	The main parameters			
100L Medical	Volume 1001			
Incubators*1	Voltage: DC 12 V-24 V			
	COOLING POWER:70W			
	Box temperature :-12 c= $10 c$			
Bed*1	Dimensions 485x490x843			

	1		
			With a length of 2 meters and a width of 0.6 meters, the bed
			is equipped with lockers for medical equipment and
			medical supplies
		chair	liftable
		Electric hand basin*1	Electric operation, with water purification, sewerage tank
			25L each, stainless steel
		Led full color outdoor	P4 standard full color waterproof outdoor screen power with
		screen*1	amplifier and voice system, area 1.605m*2.148m
		scieen	-
			Plumbing heater
			Model: YJH-Q15A
			Voltage: DC24V
			Fuel type: diesel
		Fuel heater system*1	Heating power:15kw
			Heater
			Model:120.27.106
			Voltage: dc24v
			Heating power: 5.2kw
			Electric power: 100w
2	SPECTROMETER	Tests performed	Specifications
-	S	_	Tests performed FVC Screening, FVC Pre/Post
			bronchodilator, SVC, MVV
		Measuring range	• ±16 L/s
			• Transducer type Differential pressure gauge with custom
		D	engineered laminar element
		Precision	Complies with ATS/ERS 2005, Correctly measures all 26 ATS waveforms
		Accuracy ATS standard	, ISO 23747, Complies with SANS451, FDA (501K)
		Air resistance	<0.5 cmH20.L/s
		Resolution 12 Bit @	330Hz
		Sample rate	
		Power supply USB	No Batteries Required!
		Dimensions	14 x 15 x 0,45 cm
		Weight	200g
		Classification	DIN EN 60601-1,
		Protection class I	Type BF, Group IIa
		Measures all standard parameters	FVC, Fivc, Fev1, Fev1%, Fev3, Fev6, Fef25, Fef50, Fef75 ,Fef25-75, Fef75-85, Fif50, Pefr, Pifr, FEV1/Fev6
		Predicted equations ECCS,	NHANNES III, ERS93, Knudson, HSU, Crap, Morris, Polgar71, Polgar91, ERS93012, ECCS-12, Rosenthal, ECCS-10, Sans451
		Calibration	3 litre calibration syringe
		Mouth pieces	8000 pieces of Vitalograph One-Way Mouthpieces

1		lite Destary Logit	Y 1 1
3	Doctors kit	lite Doctors Leather Briefcase	Key locking     detrabable transport compartments
		Brielcase	• 4 detachable transparent compartments
			• Ampoule holder with elastics bands for 23 medicines of
			different sizes
			<ul> <li>1 foamed compartment with velcro dividers for fragile instruments</li> </ul>
			<ul> <li>1 clip paper board and Documents holder</li> </ul>
			<ul> <li>Weight: 3.50 Kg Size:42 x 32 x 15 cm</li> </ul>
			<ul> <li>Vergit: 5.50 Kg Size.42 x 52 x 15 cm</li> <li>Colour: Brown and Black</li> </ul>
		New Littmann Classic	
		III - Your choose of	The next generation of a clinical icon: The Littmann Classic III <sup>TM</sup> Stethoscope features and benefits include:
		colour	<ul> <li>High acoustic sensitivity when performing general</li> </ul>
		colour	physical assessment.
			• Tunable diaphragms on both the adult and paediatric
			sides of the chestpiece
		Welch Allyn Portable	allows easy entry to the eye & shadow-free viewing of the
		3.5v Elite Set and C-	retina
		cell Handle with LED	• 18 unique aperture/filter combinations for greater
		bulbs -97200-BIL	versatility
		Coaxial	• Red-free filter may be used with any aperture
		Ophthalmoscope	• 28 focusing lenses with a range of -25 to +40 diopters
		Otoscope	• cool light to the distal tip with no reflections or
			obstructions for superior views of the tympanic
			membrane
			• Integral throat illuminator,
			Insufflation port for pneumatic otoscopy
		Welch Allyn DS 54	Shock resistant movement
		Durashock	Thumbscrew air release valve
		Sphygmomanometer	• 5 year warranty on the gauge
			One tube friction fit
		Percussion Hammer	Chrome Handle
			2 Piece Tuning Fork set - 128Hz and 512Hz
			Chrome Plated Diagnostic Penlight with Pupil Gauge
4	AUDIOMETER	RANGE	RANGE
			• Frequency range (AC):
			125 - 8000  Hz (R17A-AC, R17A-BC) 125 - 12500  Hz (R17A, HDA)
		Fraguanau ranga	125 – 12500 Hz (R17A-HDA) 250 – 6000 Hz (R17A-HDA, R17A-BC)
		Frequency range	250 – 6000 Hz (R17A-HDA, R17A-BC)
		(BC):	
		Range stimuli level	10 up to 110 dB HL
		AC	
		Range stimuli level	10 up to 70 dB HL
		BC:	
		ACCURACY	• Frequency < 0.5%
			• Distortion < 0.6%
			• Crosstalk >75 dB
			• Attenuator linearity 1 dB per 5 dB step, max 3 dB
			whole range
		TYPE OF SIGNALS	• Pure tone: sine wave 125 to 8 KHz signal (to 12.5 KHz
			with HDA280 phones)
			• Warble: +/- 5% frequency sine wave modulated,

		OUTPUT TRANSDUCERS	modulation:sinewave5Hz•Narrow band noise:24 dB/oct filtered noise•Speech noise:1 khz12 dB/oct filtered noise•Whitenoise•Whitenoise•Speech materialACR, ACL:10 ohm DD45 matched pair earphone orHDA280**Sennheiser.IP30 (optional)• BC:B71W*
5	INTERGRATING- AVERAGING SOUND LEVEL METER WITH OCTAVE BAND FILTER	Measurement range	20 to 140 dB (single range), 143 dB Peak
		Noise floor	< 33 dB(A) Type 2, < 25 dB(A) Type 1
		Display	320 x 240 pixel color TFT
		Output to PC	USB
		Batteries	3 x AA Alkaline, (20 hours with backlight off)
		External Power	9 to 14V DC at 250mA
		Measurements stored	100
		Measured Parameters	<ul> <li>Frequency weightings</li> <li>A, C and Z (simultaneous)</li> <li>Time weightings</li> <li>Fast, Slow and Impulse</li> <li>Amplitude weightings</li> <li>Q3, Q4 and Q5</li> <li>Thresholds</li> <li>70 to 90 dB (applies to Lavg)</li> <li>Sound Level</li> <li>LXY, LXYMax, LXYMin</li> <li>Integrated</li> <li>LXPeak</li> <li>Peak</li> <li>LXPeak</li> <li>Takt Max</li> <li>LTM3, LTM5, LXIeq</li> <li>Octave Bands</li> <li>LXY, LXYMax, LXeq</li> <li>Frequency Bands</li> <li>16Hz to 16kHz in 11 bands</li> <li>Where X is frequency weighting A, C or Z and Y is time weighting Fast, Slow or Impulse</li> </ul>
		Standards	IEC 60651 and IEC 60804 IEC 61672

		ANSI S1.11-2004 (Octave Band Filters)
		IEC 61260 Class 0 (Octave Band Filters)
6	NOISE DOSIMETER	• Linear Operating Range - 52 – 140 dB rms A-weighted
		• Dynamic Range - 94 dB
		• Peak Range - 78 – 143 dB Peak, C-weighted
		• Peak Weightings - A, C, Z
		• RMS Weightings - A, C, Z
		• Time Weightings = Slow, Fast, Impulse
		• Frequency Range - 20 Hz to 10 kHz
		• Data Logging - Selectable 1 second or 1 minute samples
		• Logged Data - LAeq, LCeq, LCpeak, LZpeak, LASmax, LAFmax, TWA3, TWA5, Motion
		• Memory - 8 GB internal
		<ul> <li>Communications - Bluetooth Low Energy 4.1</li> <li>USB 2.0 (Micro-B connector)</li> </ul>
		• Battery - Rechargeable Lithium Ion
		• Run Time - 40 hours, typical
		• Charge Time - 3 hours from full discharge
		• Charger - Qi-compliant wireless or USB
		• Compliance - CE, ROHS, WEEE
		• Motion - Overall motion percentage and bump
		• calibrator
		Languages English
7	DIRECT	Technical Specifications
7	READING AIR	
	QUALITY MONITOR TYPE	Measurement Parameters     Avg. Level Max. Min. STEL. TWA
	1	• Avg, Level, Max, Min, STEL, TWA
		• Net Weight (Metric) 1.3 kg
		• Product Type Particulate and Air Quality Monitor
		• Sensor Type Included Sensors:
		• Relative Humidity, Temperature, CO2, CO, O2, H2S,

		• A • B • B • C	O, NO2, HCN, EtO, CL2, S02, PID ppb, ir Velocity attery Life 8 Hours attery Type Rechargeable ata Logging Yes alibration gasses
8	DIRECT READING PARTICULATE MONITOR FOR PERSONAL MONITORING	T n S S p P I I a a F M in r r a I I S S S C C b A C B A A C B A A C B A A C B A C B A A C B S C C b A A C C b S S C C b S S C C b S S C C b S S C C b S S S C C b S S S C C b S S S C C b S S S C C b S S S S	asy operation and instantaneous, continuous display of WA, STEL, Minimum, Maximum concentration in g/m3 ensor mounts directly in the breathing zone for a ersonal sample tterchangeable sampling heads for Inhalable, Thoracic and Respirable measurements xternal switch to select between respirable calibration to IOSH 0600 and 2.75 L/min flow rate (GS-3 Cyclone) or halable calibration to NIOSH 0500 and 2 L/min flow te (IOM Sampler) -line 37 mm cassette for collecting a concurrent filter imple for gravimetric or chemical analysis mall and lightweight with integral belt clip perates for over 8 hours using rechargeable NiMH attery utomatic data logging asy to use Software for data downloading, trend halysis and comprehensive reporting of concentration hanges over time uracy: ±10% to filter gravimetric SAE fine test dust ing Range: 0.01 to 200 mg/m3 day Resolution: 0.01 mg/m3 icle Size Range: 0.1 to 100 µm surement Precision: ±0.02 mg/m3 bration: NIOSH MEthod 0600 gravimetric reference - IST-traceable SAE fine test dust dayed Particle Concentration: Instantaneous, TWA, TEL, Minimum, Maximum ple Flow Rate : 1.0 to 3.3 L/min (adjustable) - cternally switchable 2 L/min or 2.75 L/min er: Rechargeable NIMH battery rating Time: ≥8 hours 'ging Time: 10 to 12 hours tal Output: RS-232 . Storage: 21,500 data points perature: Operating: 0 to +50°C (32 to 122°F) iorage: -20 to +70°C (-4 to 158°F)
9	COMBINED DUST/VAPOUR SAMPLING KITS	• C • 1 • M • S • I	ump (5*) harger (5 station charger*) m length Tygon Connecting Tubing (5*) lini Screwdriver Tool Kit (5*) tep by Step Guide (3*) istruction Manual (5*) alidaptor (calibration adaptor)

l I		Plastic IOM Multidust Sampler (5*)
		• 5 Multidust Cassettes (15*)
		IOM Foams
		• All-in-One Tube Holder and Constant Pressure Controller (CPC) (5*)
		• Type A Protective Tube Cover (5*)
		• Tube Breaker
		Durable Carry Case
		<ul> <li>Field Rotameter 2-20 L/min</li> </ul>
		• Field Rotameter 2-20 L/mm
		(* indicates 5 Pump Combined Dust and Vapour Sampling Kit contents)
	RADIATION	<b>Units of measurement</b> mV/m , V/m , µgA/m , mA/m ,
10	METER TYPE 1	
	WIETER TIFET	$\mu gW/m^2, mW/m^2$
		<b>Resolution</b> $0.1 \text{mV/m}; 0.1  \mu\text{gA/m}; 0.01  \mu\text{gW/m}^2$
		Absolute error (with $1V/m$ and $50MHz$ ) $\pm 1.0dB$
		Accuracy $\pm 1.0$ dB (50MHz to 1.9GHz)
		±2.4dB (1.9GHz to 3.5GHz)
		Isotropic deviation±1.0dB (for frequencies >50MHz)
		Over range maximum value $4.2 \text{ W/m}^2 (40 \text{ V/m})$
		Deviation owing to temperature $\pm 1.5$ dB
		Display 4-digit LCD
		Refresh rate Every 400ms
		Limit Adjustable
		Alarm Acoustic signal to indicate over range limit
		exceeded
		Calibration Adjustable
		Calculates average value Adjustable from 4s to 15min
		Memory 99 readings (can be shown on the display)
		Functions Current, maximum and average value
		Power 9V battery
		Weight 350g
		Frequency range 50MHz to 3.5GHz
		Sensor type Electrical field (E)
		Measurements 3 dimensions, isotropic
		Measurement range $38 \text{ mV/m to } 11 \text{ V/m}$
		Range selection Automatic
		Response time 1 s (up to 90% of value)
	RADIATION	Selection of the diaphragm - Alpha + Beta + Gamma
11	METER TYPE 2	(without diaphragm)
		Beta + Gamma ( (approx 0,1 mm) alpha is totally
		protected)
		- Gamma (display Al (approx 3 mm) alpha and beta
		radiation are totally protected approx. 2 MeV, it
		attenuates Gamma under 7%)
		Gamma Sensibility 95.0 impulses / min for radiation Co60
		Null quota < 10 impulses / min
		with protection 3 mm Al y 50 mm Pb
		eiger-Müller counting tube, auto shut-off, stainless steel case
		with halogen filler
		- Measurement length = $38.1 \text{ mm} / 1.5 \text{ in}$

1		Man market Barrier Olimon / Ala
		- Measurement diameter = $9.1 \text{ mm} / .4 \text{ in}$
		- Window = $1.5 \dots 2.5 \text{ mg/m}^2$
		Measurement ranges $0.01 \ \mu Sv / h - 1000 \ \mu Sv / h$
		Measurement of the impulses 1 99 s, 1 99 min, 1
		99 h,
		Mean value 24 h in µSv / h
		Internal recording of the impulses Intervals to be selected.
		every 1 min., 10 min, 1 hour, 1 day y 7 days
		Storage capacity of the internal memory 2 KB
		Software / data cable Yes, in the delivery
		Power Internal battery
		Consumption Under 10 micro-amp on average
		Duration More than 117000 h x 20 impulses / min
		(approx. 10 years)
		Display LCD display with 4 positions, numeric, with quasi-
		logarithmic denomination and representation and
		indication of functions.
		Housing Novodur plastic, shock resistant
		Dimensions 161 x 72 x 30 mm / 6.3 x 2.8 x 1.2 in
		Weight 153 g / < lb
		Certification Yes, in the delivery a quality certification
		is included for every numbered meter.
		Standard - European standard CE
		- USA standard FFC15
		<b>Radiation types</b> - Alpha radiation from 4 MeV
		- Beta radiation from 0.2 MeV
		- Gamma radiation from 0.02 MeV
10	HEAT STRESS	<ul> <li>Measures black globe radiant temperature, dry bulb</li> </ul>
12	MONITOR	ambient temperature, relative humidity, wind speed, and
		air pressure
		• Rugged design stands up to use in underground mines
		<ul> <li>Removable environmental data system</li> </ul>
		<ul> <li>Small and lightweight</li> </ul>
		Automatic internal data logging
		• Powered by 4 x AA Alkaline batteries
		<ul> <li>Foldaway sensor system</li> </ul>
		• Calculates wet bulb temperature based on dry bulb, RH,
		and wind speed eliminating refilling of thermometer water
		• Large backlit LCD, displays results as:
		• WBGT (ISO 7243 1989) (BS EN 27243/1994)
		• WBGT (ISO 7243 1989) (BS EN 27243/1994)
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted,</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> <li>Relative Humidity Sensor: ±2% from 0-95% non</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> <li>Relative Humidity Sensor: ±2% from 0-95% non</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> <li>Relative Humidity Sensor: ±2% from 0-95% non condensing</li> </ul>
		<ul> <li>WBGT (ISO 7243 1989) (BS EN 27243/1994)</li> <li>Thermal Work Limit TWL in W/m2</li> <li>Air cooling power in W/m2</li> <li>Min./Max. work cycle times</li> <li>Environmental zone ratings including unrestricted, acclimatised, buffer,and withdrawal</li> <li>Dry bulb Sensor: ±0.2°C from 5-55°C (41 to 131°F)</li> <li>Globe Sensor: ±0.2°C from 5-70°C (41 to 158°F)</li> <li>Relative Humidity Sensor: ±2% from 0-95% non condensing</li> <li>Wind Speed Sensor: ±0.2 m/sec or 10%, whichever is the</li> </ul>

<b>I</b>	AID ELOW	Magging range, $50^{\circ}$ to $200^{\circ}$ T / 50 to 150 °C
13	AIR FLOW	<b>Measuring range:</b> $-58^{\circ}$ to $302^{\circ}$ F / $-50$ to $+150^{\circ}$ C
	METER	Accuracy: $\pm 0.4$ °F (-13 to +166.8 °F) / $\pm 0.2$ °C (-25 to
		+74.9 °C
		±0.7 °F (-58° to -13.2 °F) / ±0.4 °C (-50 to -25.1 °C
		±0.7 °F (167° to 211.8 °F) / ±0.4 °C (+75 to +99.9 °C)
		±0.5 % of mv
		<b>Resolution</b> 0.1 °F / 0.1 °C
		Temperature - Type K TC
		Measuring range
		-328° to 2498 °F / -200 to +1370 °C
		Accuracy
		$\pm 0.5$ °F (-76.0° to 140 °F) / $\pm 0.3$ °C (-60 to +60 °C
		$\pm (0.4 \text{ °F} + 0.5 \text{ \% of mv})$ (Remaining Range) / $\pm (0.2 \text{ °C} + 0.5 \text{ G})$
		$(0.4 \text{ I } + 0.5 \% \text{ of mv})$ (Remaining Range)/ $\pm (0.2 \text{ e } + 0.5 \% \text{ of mv})$
		<b>Resolution</b> 0.1 $^{\circ}$ F / 0.1 $^{\circ}$ C
		<b>Temperature Measuring range</b>
		-328° to 752 °F / -200 to +400 °C
		Accuracy
		±0.5 °F (-76° to 140.0 °F) / ±0.3 °C (-60 to +60 °C)
		$\pm (0.4 \text{ °F} + 0.5 \text{ \% of mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv}) \text{ (Remaining Range) / } \pm (0.2 \text{ °C} + 0.5 \text{ mv})  (Remain$
		% of mv)
		(Remaining Range)
		<b>Resolution</b> 0.1 °F / 0.1 °C
		Humidity - Capacitive
		Measuring range 0 to +100 %rH
		<b>Resolution</b> 0.1 %rH
		Absolute Pressure
		Measuring range 0 to 800 InH <sub>2</sub> O / 0 to 2000 hPa
		Velocity - Vane anemometer
		Measuring range 0 to $+11811$ fpm / 0 to $+60$ m/s
		<b>Resolution</b> 0.01 fpm $(60 + 100 \text{ mm Vane}) / 0.01 \text{ m/s} (60 + 10$
		100 mm Vane)
		0.1 fpm (16 mm Vane) / 0.1 m/s (16 mm Vane)
		Velocity - Hot wire anemometer
		Measuring range
		0 to $+3937$ fpm / 0 to $+20$ m/s
		Accuracy
		<b>Resolution</b> 0.01 fpm / 0.01 m/s
		Ambient CO2 (via IAQ probe)
		Measuring range 0 to +10000 ppm CO <sub>2</sub>
		Accuracy Beselection 1 mm CO
		<b>Resolution</b> 1 ppm CO <sub>2</sub>
		General technical data
		<b>Dimensions</b> 9 x 3 x 2 in. / 220 x 74 x 46 mm
		<b>Operating temperature</b> -4° to 122 °F / -20 to +50 °C
		Housing ABS / TPE / Metal
		Protection class IP54
		Battery type Alkaline, type AA
		Display lighting Illuminated display
		Storage temperature -22° to 158 °F / -30 to +70 °C
14	ATOMIC	• Include a light source effective across many wavelengths
14	ABSORPTION	and stable over its life time.
	SPECTROPHOTO	<ul> <li>Support up to 8 lamps, though one lamp will be used for</li> </ul>
	METER (AAS)	analysis at a time, Including Tungsten halogen lamps
	WITH	
	ACCESSORIES	with a life of at least 2000 hoursand emission intensity at
11	ACCESSORIES	

<ul> <li>23000 °C, or equivalent</li> <li>Include a monochromator: with dispersive element consisting of diffraction gratings. The monochromator shall be self-calibrating, software controlled; with 12000 lines/grows per mm; be &gt;220 mm length; of Ebert, Czerny-Turner, or equivalent</li> <li>Be ad ouble-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a nebulizer, with adjustable flow and resistant to corrosive solvens; of inert plainum/ridium or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~175 nm-900 nm wavelength; a lower fimit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization:</li> <li>Be suitable for antersist of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct sold sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be -20 °C to ≥3000 °C with up to 20 heating step/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference.</li> <li>Meet (or provide better) essitivity and detection limits (ng/mh) for the selected -0.5; Calcium= 0.2; Manganese= 0.01; Molybdemum= 0.5; Wanguese= 0.01; Molybdemum= 0.5; Provide For automatic -0.5; Calcium= 0.2; Manganese= 0.01; Molybdemum= 0.5; Mercury = 5, Magnesium= 0.2; Manganese= 0.01; Molybdemum= 0.5; Software = 0.5, Radia of programmable injection</li> <li>The autosampler shall allow automatic concentration/dilution/modification during the injection</li></ul>	
<ul> <li>consisting of diffraction gratings. The monochromator shall be self-calibrating, software controlled; with ≥1000 lines/grooves per mm; be &gt;250 mm length; of Ebert, C.zcrny-Turner, or equivalent</li> <li>Be a double-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); cliefur using large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a nebulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/iridium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample maphysis</li> <li>Be suitable for analysis of sample maphysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/m1) for the selected clements below as follows: Aluminm = 0.1; Arsenic= 0.5; Calcium= 0.25; Mcany = 5; Magnetism= 0.25; Magnetism= 0.25; Nandium= 0.20; Meels = 0.5; Lead= 0.1; Tin=5; Vanadium= 1.2: Inc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 2.20 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic</li> <li>The autosampler shall allow tartomatic for instable vials</li> <li>Autosampler shall allow tartomatic m</li></ul>	
<ul> <li>shall be self-calibrating, software controlled, with ≥1000</li> <li>lines/grooves per mu, be &gt;250 mm length; of Ebert, Czerny-Turner, or equivalent</li> <li>Be a double-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders': Include a neto-ulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/irdium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the × 175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heave digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have digitally/software = 0.5; Calcium= 0.25; Cadmin= 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmin= 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmin= 0.1; Molybdenum= 0.5;</li> <li>Sodium= 0.2; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow atomatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow tor programmable injection</li></ul>	
<ul> <li>lines/grooves per mm, be &gt;250 mm length; of Ebert, Czerny-Turner, or equivalent</li> <li>Be a double-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a nebulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/indium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mAW in the ~ 175 mm-900 mm wavelength; a lower limit of 190 mm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating step5/stages</li> <li>Have edpiatalysion/tware-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows; Aluminium = 0.1; Arsenice 0.5; Calcium = 0.2; Manganesee 0.01; Molybdenume = 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilutior/modification during the injection temperature and rate</li> <li>The autosampler shall allow automatic concentration/dilutior/mo</li></ul>	
<ul> <li>Czemy-Turrei, or equivalent</li> <li>Be a double-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders: Include a nebulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/iridium (or suitable alternative)</li> <li>Include a photomultiplier as a detector:</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the -175 mm 900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminum = 0.1; Zhereice -0.5; Calcium= 0.25; Cadmium= 0.02; Nickl=l 0.3; Lead= 0.1; Tin=5; Yanadium= 10.2; Sustawaller for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for automatic calibration of sensitivity and background Correction</li> <li>The autosampler shall load 250 samples including standards, blanks and modifiers (or any other) in suitabe vials</li> <li>A</li></ul>	
<ul> <li>Be a double-beam spectrophotometer with provision for 2 slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a nebulizer, with thajustable flow and resistant to corrosive solvents; of inert platinum/irdium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from ~0.01 to 80 or higher mA/W in the ~175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Molyddenum= 0.5; Mangesium= 0.2; Manganese= 0.01; Molyddenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50:60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow to projed wide by physical in the range 0.5 = 0.01 Hz mains</li> </ul>	
<ul> <li>slots and optical path of 10 mm (or better); either using large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a nebulizer, with adjustable flow and resistant to corroive solvents; of iner platinum/indium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from ~0.01 to 80 or higher mA/W in the ~175 mm&gt;00 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample proparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.02; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molydenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanandum= 1; Zin= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall lalow atoromatic</li> <li>concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow atoria during the injection temperature and rate</li> </ul>	Czerny-Turner, or equivalent
<ul> <li>large compartments or attachment of large accessories. It shall include appropriate cell holders; Include a abeulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/irdium (or suitable alternative)</li> <li>Include a photomuliplier as a detector;</li> <li>Have Spectral/radiation sensitivity from ~0.01 to 80 or higher mA/W in the ~175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis;</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/m) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zin== 0.05;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zin== 0.05;</li> <li>Provide for automatic callbration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall lalow atomatic</li> <li>concentration/dilution/modification during the injection trans and and the system should be provided with water cooling</li> </ul>	
<ul> <li>shall include appropriate cell holders; Include a nebulizer, with adjustable flow and resistant to corrosive solvents; of inert platinum/indium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the -175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minitize spectral, chemical or physical interference</li> <li>Mect (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanatum= 0.12; Chromium= 0.03; Copper= 0.05; Iron-0.25; Mercury = 5; Magnesium= 0.2; Magnese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 6 of suitable stable for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for an autosampler</li> <li>Autosampler shall allow atomatic</li> <li>Contai an autosampler</li> <li>Autosampler shall allow atomatic</li> <li>The autosampler shall allow atomatic</li> <li>The autosampler shall allow of programmable injection temperature and rate</li> <li>The autosampler shall allow dire preatability/precision of &lt;1%</li> </ul>	
<ul> <li>with adjustable Tow and resistant to corrosive solvents; of inert platinum/iridium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~ 175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Cadinum = 0.25; Cadmium = 0.02; Nickel= 0.5; Iron=0.25; Marcury = 5; Magnesium= 0.2; Marganes= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow tor programmable injection temperature and rate</li> </ul>	
<ul> <li>of inerf platinum/iridium (or suitable alternative)</li> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~ 175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be -20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chronium= 0.3; Copper= 0.05; Iron=0.25; Magnesium= 0.2; Magnese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall allow for programmable injection</li> </ul>	
<ul> <li>Include a photomultiplier as a detector;</li> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chronium= 0.3; Copper= 0.05; Iron=0.25; Warcury = 5; Magnesium= 0.2; Manganese= 0.01; Molydbenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow atomatic concentration/dilution/modification during the injection transing (or any other) in suitable vials</li> <li>Autosampler shall allow atomatic concentration dilutor/modification during the injection temperature and rate</li> <li>The autosampler shall allow tor programmable injection</li> </ul>	
<ul> <li>Have Spectral/radiation sensitivity from -0.01 to 80 or higher mA/W in the ~ 175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample nalysis</li> <li>Use graphite tubes (propolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenice -0.5; Calciume -0.25; Cadamiume -0.26;</li> <li>Sodiume -0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall low automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow atomatie</li> <li>Autosampler shall allow atomatie</li> <li>Autosampler shall allow atomatie</li> <li>The autosampler shall allow variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with</li></ul>	•
<ul> <li>higher nA/W in the ~ 175 nm-900 nm wavelength; a lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have metchanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Forvide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilitation/during the injection</li> <li>The autosampler shall allow atomatic</li> <li>Concentration/dilition/modification during the injection</li> </ul>	
<ul> <li>lower limit of 190 nm will not be excluded;</li> <li>Include capability for atomization by graphite furnace electro-thermal and by Hame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Molybeturum= 0.3; Copper= 0.05; Iron=0.25; Magnesium= 0.2; Manganese= 0.01; Molybeturum = 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05;</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilition/modification during the injection</li> <li>The autosampler shall allow to rogrammable injection</li> <li>The autosampler shall allow to rogrammable injection</li> </ul>	
<ul> <li>Include capability for atomization by graphite furnace electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Irron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 1, Zinc= 0.55;</li> <li>Sodium= 1, Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall allow for programmable injection</li> </ul>	
<ul> <li>electro-thermal and by flame atomization;</li> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be -20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1, Zinc= 0.05:</li> <li>Frovide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic</li> <li>Autosampler shall allow automatic</li> <li>Autosampler shall allow automatic</li> <li>Autosampler shall allow variable dispensing in the range 0.5 = 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Be suitable for analysis of sample size as low as 0.5 µl</li> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be -20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Morenue = 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.3;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic</li> <li>Autosampler shall allow automatic</li> <li>Autosampler shall allow automatic</li> <li>The autosampler shall allow virable dispensing in the range 0.5 = 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Require limited or no sample preparation</li> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide beter) sensitivity and detection limits (ng/m1) for the selected elements below as follows: Aluminum = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Magnese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall lalow automatic concentration/dilution/modification during the injection or the autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow automatic mathematic heating and atta</li> <li>Autosampler shall allow automatic coling the injection temperature and rate</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> </ul>	
<ul> <li>Be suitable for direct solid sample analysis</li> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.35; Mognesium= 0.25; Magnesium= 0.25; Mognesium= 0.25; Mognesium= 0.25; Mognesium= 0.25; Mognesium= 0.25; Nanganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall lalow automatic concentration/dilutoin/modification during the injection</li> <li>The autosampler shall allow for programmable injection</li> <li>The autosampler shall allow for programmable injection</li> <li>The autosampler shall allow for programmable injection</li> </ul>	
<ul> <li>Use graphite tubes (pyrolytic coated tubes preferred)</li> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chronium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow for programmable injection</li> <li>The autosampler shall allow for programmable injection</li> <li>The autosampler shall allow for programmable injection</li> </ul>	
<ul> <li>Gas flow be PC/software automated called and programmable</li> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminum = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chronium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
programmable         • Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages         • Have digitally/software-controlled drying, ashing and atomization         • Analytical range shall be above 2 orders of magnitude         • Have mechanisms to control or minimize spectral, chemical or physical interference         • Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;         • Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:         • Provide for automatic calibration of sensitivity and background Correction         • Shall be suitable for operation on 220 V-240V and 50/60 Hz mains         • Contain an autosampler         • Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials         • Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate         • The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of <1 %	
<ul> <li>Heating temperature range shall be ~20 °C to ≥3000 °C with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow automatic</li> <li>Concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>with up to 20 heating steps/stages</li> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Cadmiuum= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Have digitally/software-controlled drying, ashing and atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Cadinum= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Marcury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>atomization</li> <li>Analytical range shall be above 2 orders of magnitude</li> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminum = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Have mechanisms to control or minimize spectral, chemical or physical interference</li> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminum = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> </ul>	• Analytical range shall be above 2 orders of magnitude
<ul> <li>Meet (or provide better) sensitivity and detection limits (ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	• Have mechanisms to control or minimize spectral,
<ul> <li>(ng/ml) for the selected elements below as follows: Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	chemical or physical interference
<ul> <li>Aluminium = 0.1; Arsenic= 0.5; Calcium= 0.25; Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	• Meet (or provide better) sensitivity and detection limits
<ul> <li>Cadmium= 0.01; Chromium= 0.03; Copper= 0.05; Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	(ng/ml) for the selected elements below as follows:
<ul> <li>Iron=0.25; Mercury = 5; Magnesium= 0.2; Manganese= 0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection temperature and rate</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>0.01; Molybdenum= 0.5;</li> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> </ul>	
<ul> <li>Sodium= 0.02; Nickel= 0.5; Lead= 0.1; Tin=5; Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Vanadium= 1; Zinc= 0.05:</li> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Provide for automatic calibration of sensitivity and background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>background Correction</li> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Shall be suitable for operation on 220 V-240V and 50/60 Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Hz mains</li> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Contain an autosampler</li> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	1
<ul> <li>Autosampler shall load ≥ 50 samples including standards, blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>blanks and modifiers (or any other) in suitable vials</li> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>Autosampler shall allow automatic concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>concentration/dilution/modification during the injection</li> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 μl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	•
<ul> <li>The autosampler shall allow for programmable injection temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>temperature and rate</li> <li>The autosampler shall have variable dispensing in the range 0.5 - 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	• •
<ul> <li>The autosampler shall have variable dispensing in the range 0.5 – 80 µl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
<ul> <li>range 0.5 – 80 μl with repeatability/precision of &lt;1 %</li> <li>The system should be provided with water cooling</li> </ul>	
• The system should be provided with water cooling	
devices. Temperature Should be programmable from 400	devices. Temperature Should be programmable from 400

		to 3000 deg C
15	UV-VIS	• PC controlled, scanning type UV-Vis spectrometer –
15	SPECTROMETE	Optics
	R.	• Double beam, Czerny Turner monochromator (Grating
		should be 1200 lines/mm or better
		• Source - Xenon flash lamp (80 Hz) with typical lifetime
		of 7-10 years
		• Detector - 2 silicon diode detectors for simultaneous
		sample beam and reference beam measurements
		• Measurable range - 190-1100 nm
		• Spectral bandwidth - Up to 2 nm
		• Stray Light <0.05%T or better
		• Photometric Linear Range - 4 Abs or better
		• Wavelength Accuracy - $\pm 0.5$ nm or better
		• Wavelength reproducibility: $-\pm 0.1$ nm or better
		• Photometric Accuracy - $\pm 0.001$ Abs or better
		• Baseline Flatness - ±0.001 Abs or better throughout UV-
		Vis range
		• Photometric Stability - <0.0004 Abs or better
		• Photometric noise ≤0.0001 Abs or better Local accessories - Branded PC, Display Screen, Printer and
		UPS with 4 sets of quartz cuvette to be offere
	PHASE	SPhase contrast microscope with 10x, 16x and 40x
16	CONTRAST	objectives, 10x wide-field eyepieces, G-22 Walton-
	MICROSCOPE	Beckett graticule, Whipple disk, polarizer, analyzer and
		first order red or gypsum plate, 100 Watt illuminator,
		rotating position condenser with oversize phase rings,
		central stop dispersion objective, Kohler illumination and
		a rotating mechanical stage.
17	HIGH	Pump
17	PERFORMANCE	<ul> <li>Degassing Unit - 5 Lines (Volume 400 μL)</li> </ul>
	LIQUID	• Pulsation - 0.1 MPa (for water at 1.0 mL/min. and 7MPa)
	CHROMATOGRA PHY	• Flow rate range - 0.0001 to 10.0000 mL/min.
	F111	• Flow rate precision - No more than 0.06% RSD or 0.02
		min SD, whichever is greater
		Gradient type - High Pressure mixing     Gradient (concentration precision = 10.5% (concentration)
		<ul> <li>Gradient / concentration precision - ±0.5% (specified conditions)</li> </ul>
		<ul> <li>Maximum pressure - 40 MPa</li> </ul>
		• Maximum pressure - 40 Mit a
		Autosampler
		• Injection method - Needle-in-flowpath
		• Injection volume accuracy - $\pm 1\%$ (at 100 µL injection, n
		= 10)
		• Injection volume range - 0.1 to 500 μL
		• Injection volume reproducibility - RSD: 0.3% maximum
		(at 10 µL injection)
		• Samples capacity - Sample plate: 175 (1 mL), 105 (1.5
		mL), 50 (4 mL), 2 (MTP/DWP plates)
		• Control plate: 10 (1.5 mL)
		• Sample cooler - Block cooling/heating, used together
		with defumidifying function 4 to 40°C
		Quan
1	1	Oven

		• Oven Capacity - $W220 \times D95 \times H365 \text{ mm}$
		<ul> <li>Oven Capacity - w 220 × D95 × H365 mm</li> <li>Temperature control range - Room temperature ± 10 to</li> </ul>
		• Temperature control range - Room temperature $\pm$ 10 to 85°C, Setting range 4 to 85°C
		UV Detector
		Wavelength Range - 190 to 900 nm (with optional tungsten
		lamp)
		Noise level - $\pm 2.5 \times 10$ ?6 AU, (250 nm, Specified condition)
		Flow cell - 12 $\mu$ L (10 mm), 12 MPa
		- High-Sensitivity: 8 μL (10 mm) Semi-micro: 2.5 μL (5mm)
	MICRO	• Readability (mg) $\geq 0.001$
18	BALANCE	• Capacity (g) $\geq 50$
		• Stabilization Time (sec) $\geq 3.5$
		• Repeatability (mg) $\geq 0.06$
		Internal Calibration Yes
		Bluetooth or USB connectivity Yes
19	VIBRATION	• Measuring range - Sensor with 1 mV/(m/s <sup>2</sup> ) Sensor
19	METERS FOR	with 10 mV/(m/s <sup>2</sup> )
	HAND AND	• Acceleration - 1100 m/s <sup>2</sup> / 3609 ft/s <sup>2</sup> 110 m/s <sup>2</sup> / 361
	WHOLE BODY	ft/s <sup>2</sup>
		• Velocity - 100 mm/s 10,000 mm/s
		• 4.0 in/s 394.0 in/s (1 kHz/1 Hz) 10 mm/s
		1,000 mm/s 0.4 in/s 39.4 in/s (1 kHz/1 Hz)
		<ul> <li>Displacement (Peak) 250 μm 15,000 μm</li> <li>0.01 in 0.6 in (5 Hz/250 Hz) 25 μm 1,500 μm</li> </ul>
		• 0.01 in 0.06 in (5 Hz/250 Hz) 25 µm 1,500 µm
		0.001 III 0.00 III (3 112/230 112)
20	FLAW	• General
20	DETECTOR:	• B5:F13B5B5:F127 Overall Dimensions (W x H x D)
	ULTRASONIC	252 mm x 177 mm x 107 mm; 9.92 in. x
	FLAW DETECTOR	6.97 in. x 4.2 in.
	WITH PHASED	• Weight 3.67 kg (8.1 lb), including lithium-ion battery
	ARRAY	• Keypad English, International, Japanese,
	IMAGING	Chinese
		• Languages English, Spanish, French,
		German, Japanese, Chinese, Russian, Italian, Polish
		• Transducer Connections BNC or Number 1
		LEMO®
		• Data Storage Onboard up to 10,000 IDs with
		<ul> <li>waveform, standard 4 GB compact flash card (removable)</li> <li>Battery Type Single lithium-ion rechargeable</li> </ul>
		standard
		• Battery Life 8 hours (conventional UT
		mode); 7 hours (phased array mode)
		• Power Requirements AC Mains: 100 VAC to
		<ul> <li>120 VAC, 200 VAC to 240 VAC, 50 Hz to 60 Hz</li> <li>Standby Mode Adjustable from 15 minutes to</li> </ul>
		120 minutes with 50% less battery consumption.
		<ul> <li>Display Type</li> <li>Full VGA (640 x 480 pixels)</li> </ul>
		Transflective Color LCD, 60 Hz update rate
		• Display Dimensions (W x H, Diag.) 132.5

mm x 99.4 mm, 165.1 mm (5.2 in. x 3.9 in., 6.5 in.)
• Inputs/Outputs USB Ports 1 USB Client,
3 USB Host ports
• RS-232 Yes
• Video Output VGA output standard
• Analog Output 4 analog outputs, Selectable
<ul> <li>1V/10V Full Scale, 4 mA max</li> <li>Alarm Output</li> <li>6 alarm outputs, 5V TTL, 10 mA</li> </ul>
• Trigger I/O Trigger input 5V TTL; trigger
output, 5 V TTL, 10 mA
• Encoder Inputs 2-axis encoder line (quadrature)
• Environmental Ratings IP Rating Designed to meet requirements of IP66
• Explosive Atmosphere Tested to MIL-STD-
810F, Method 511.4, Procedure 1. Atmosphere defined
per NFPA 70, Article 500 as Class I, Division 2, Group
D. ο Shock Tested IEC 600689-2-27, 60 g's, 6 μsec
Half-Sine, 18 Axes total
• Vibration Tested Sine vibration, IEC
60068-2-6, 5 Hz to 150 Hz @ 0.03 in. or 2 g's
Displacement Amplitude, 20 sweep cycles
$\circ$ Operating Temperature $-10^{\circ}$ C to $50^{\circ}$ C (-14° F to 122°
$\circ$ Battery Storage Temperature $$ -20° C to 60° C (-4° F to 140° F)
Phased Array Specifications Focal Laws 61
• Physical Probe 64 elements
• Virtual Probe 16 elements
• Video Filtering Off, Low, High
<ul> <li>Display Modes A-scan, S-scan, Linear scan, C-scan, A- scan plus image</li> </ul>
<ul> <li>Image Update Rate</li> <li>Hz update for all A-scans; 20</li> </ul>
<ul> <li>Pulser Conventional UT mode Pulser Type</li> </ul>
Tunable Square Wave
<ul> <li>PRF 5 Hz to 6000 Hz in 5 Hz increments</li> </ul>
• Energy Settings 50 V to 475 V in 25 V
<ul><li>Increments</li><li>Pulse Width Adjustable from 45 ns to 5,000 ns (0.1</li></ul>
MHz) with PerfectSquare <sup>™</sup> Technology
• Damping 50, 100, 200, 400 $\Omega$
<ul> <li>Pulser Delay Not applicable</li> </ul>
• PA mode Pulser Type Tunable Square Wave
<ul> <li>PRF Manually adjustable. Maximum 1520 Hz</li> </ul>
Energy Settings 40 V or 80 V
<ul> <li>Pulse Width Adjustable from 45 ns to 1,000 ns (0.5 MHz) with PerfectSquare<sup>™</sup> Technology</li> </ul>
<ul> <li>Damping Not applicable</li> </ul>
• Pulser Delay 0 to $10 \mu s$ , 2.5 ns resolution
Receiver Conventional UT mode Gain 0 to
110dB

Receiver Conventional UT mode Maximum Input Signal 20Vp-p
• Receiver Conventional UT mode Receiver Input Impedance $400\Omega \pm 5\%$
Receiver Conventional UT mode Receiver Bandwidth 0.2 to 26.5MHZ @-3dB
Receiver Conventional UT mode Receiver Delay NA
Receiver Conventional UT mode Digital Filter
Settings standard filter set (EN12668-1 Test & compliant): 7 filters .Advanced filter set (not tested to EN12668-1)
• Receiver Conventional UT mode Rectification Full wave, positive half wave, negative half wave,
<ul> <li>RF</li> <li>Receiver Conventional UT mode Reject 0 to 80% FSH with visual warning</li> </ul>
<ul> <li>Receiver Conventional UT mode Amplitude Measurement 0% to 110% full screen height with 0.25% resolution</li> </ul>
Receiver Conventional UT mode Measurement Rate Equivalent to PRF in all models
<ul> <li>Receiver PA mode Gain 0 to 80dB</li> <li>Receiver PA mode Maximum Input Signal</li> </ul>
Receiver PA mode Maximum Input Signal     250mVp-p per channel
• Receiver PA mode Receiver Input Impedance $50\Omega \pm 10\%$
Receiver PA mode Receiver Bandwidth     0.5 to 12.5MHZ @-3dB
• Receiver PA mode Receiver Delay 0 to 10µs, 2.5ns resolution
Receiver PA mode Digital Filter Settings     6 filters
• Receiver PA mode Rectification Full wave, positive half wave, negative halve wave, RF
<ul> <li>Receiver PA mode Reject 0 to 80% FSH with visual warning</li> </ul>
• Receiver PA mode Amplitude Measurement 0% to 110% full screen height with 0.25% resolution
Receiver PA mode Measurement Rate Equivalent to PRF in all models
<ul> <li>Calibration Conventional UT mode Automated Calibration velocity, Zero offset, straight beam(first back wall or echo-to-echo), Angle Beam(Soundpath or Depth)</li> </ul>
Calibration Conventional UT mode Test Modes     Pulse Echo Dual or Through Transmission
<ul><li>Pulse Echo, Dual, or Through Transmission</li><li>Calibration Conventional UT mode Units</li></ul>
Millimeters, inches, or microseconds
<ul> <li>Calibration Conventional UT mode Range 3.33mm to 26,806mm(0.31 in. to 1054.1 in.) at 5900m/s</li> </ul>
Calibration Conventional UT mode Velocity

635m/s to 15,240m/s (0.0250 in./µs to 0.6000µs)
<ul> <li>Calibration Conventional UT mode Zero Offset 0μs to 750μs</li> </ul>
Calibration Conventional UT mode Display Delay     0.59mm to 25,2400mm
• Calibration Conventional UT mode Refracted Angle 0° to 85° in 0.1° increaments
Calibration PA mode Automated Calibration
velocity, Zero offset, sensitivity.Soundpath or Depth (zero offset)
Calibration PA mode Test Modes Pulse Echo
• Calibration PA mode Units Millimeters,
<ul><li>inches, or microseconds</li><li>Calibration PA mode Range 61 focal laws,</li></ul>
3.33mm to 90.95mm (0.311 inches to 15,373 inches) at 5900m/s
• Calibration PA mode Velocity 635m/s to 15,240m/s
Calibration PA mode Zero Offset
Automatic for all focal laws through calibration, or manually adjustable from 0 to 100.00µs (Globally Delay
offset mode)
Calibration PA mode Display Delay 0 to max range
Calibration PA mode Refracted Angle 61
angular focal laws, 0.5° . 1.0°, 1.5°, or 2.0° increaments.
Adjustable from fro $-80^{\circ}$ to $+80^{\circ}$
Gates Conventional UT mode Measurement Gates     Two fully independent gates for amplitude and     immed fully independent gates for amplitude and
<ul><li>time-of-flight mesasurements</li><li>Gates E Conventional UT mode Measurement Mode</li></ul>
soundpath
Gates Conventional UT mode Interface Gate     optional, with Gate 1 and Gate 2 tracking
Gates Conventional UT mode Gate Start
variable over entire displayed range
Gates Conventional UT mode Gate Width
<ul><li>variable from gate start to end of displayed range</li><li>Gates Conventional UT mode Gate Height</li></ul>
variable from 2% to 95% full screen height
• Gates Conventional UT mode Alarms positive and
negative threshold, minimum depth
Gates Conventional UT mode Reference Cursors     2 reference cursors for A-scans
Gates PA mode Measurement Gates 2
fully independent gates for amplitude and time-of-flight measurements
Gates PA mode Measurement Mode
soundpath, Depth
Gates PA mode Interface Gate NA
Gates PA mode Gate Start variable over
<ul><li>entire displayed range</li><li>Gates PA mode Gate Width variable from</li></ul>
Suco I I mode Suco Widdin Variable Holli

<ul> <li>gates PA mode Gate Height variable from 2% to 95% full screen height</li> <li>Gates PA mode Alarms positive and negative threshold(for selected focal law), minimum depth(for selected focal law)</li> <li>Gates PA mode Reference Cursors 2 reference cursors for A-scans: 4 reference cursors for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Life ata (optional) Thickness</li> <li>Measurements Conventional UT mode Displayed Measurements Conventional UT mode Displayed Measurements Conventional UT mode Displayed (optional) Thickness</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range, compatible with Refare at all PRF settings</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range, compatible with Refare at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or AD correction standard, Tube or AD c</li></ul>	
<ul> <li>2% to 95% full screen height</li> <li>Gates PA mode Alarms positive and negative threshold(for selected focal law), minimum depth/for selected focal law)</li> <li>Gates PA mode Reference Cursors 2 reference cursors for A-scans: 4 reference cursos for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode DGN/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode TAC Points Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard, Choose between Gate 2-1, Gate2-IF, Gate1-IF</li> </ul>	gate start to end of displayed range
<ul> <li>Gates PA mode Alarms positive and negative threshold(for selected focal law)</li> <li>Gates PA mode Reference Cursors 2 reference cursors for A-scans: 4 reference cursors for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode FGate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-1F, Gate1-1F</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range.</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PFF settings</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, anght, min/max, anght, min/max, anght, min/max, anght, min/max, man, min/max, man, min/max, depth, min/max, man, min/max, man, min/max, depth, min/max, man, min/max</li></ul>	Gates PA mode     Gate Height     varaiable from
<ul> <li>threshold(for selected focal law), minimum depth(for selected focal law)</li> <li>Gates PA mode Reference Cursors 2</li> <li>reference cursors for A-scans: 4 reference cursos for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1</li> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2</li> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate2-1F, Gate1-1F</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> </ul>	2% to 95% full screen height
<ul> <li>threshold(for selected focal law), minimum depth(for selected focal law)</li> <li>Gates PA mode Reference Cursors 2</li> <li>reference cursors for A-scans: 4 reference cursos for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1</li> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2</li> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate2-1F, Gate1-1F</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PR settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> </ul>	• Gates PA mode Alarms positive and negative
<ul> <li>selected focal law)</li> <li>Gates PA mode Reference Cursors 2 reference cursors for A-scans: 4 reference cursos for image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max.</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Date Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/to to 6 curves)</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2. Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max.</li> <li>Measurements PA mode Gate 2. Thickness, sundpath, Projection, depth, amplitude, time-of-flight, min/max.</li> <li>Measurements PA mode Echo-to-</li></ul>	
reference cursors for A-scans: 4 reference cursos for image Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection) Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude Measurements Conventional UT mode IF Gate (optional) Thickness Measurements Conventional UT mode Echo-to-Echo Standard, Choose between Gate2-1, Gate2-IF, Gate1-IF Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG.ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value Measurements Conventional UT mode DAC/TVG Standard Measurements Conventional UT mode DAC/TVG Standard Measurements Conventional UT mode DAC/TVG Standard Measurements Conventional UT mode DAC/TVG Standard Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range Measurements Conventional UT mode OLC points Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude, time-of-flight, min/max, depth, min/max, amplitude Measurements PA mode IF Gate (optional) NA Measurements PA mode IF Gate (optional) NA	selected focal law)
<ul> <li>image</li> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, maplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Edate (optional) Thickness</li> <li>Measurements Conventional UT mode Edate -1F, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/VG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional)</li> <li>NA</li> <li>Measurements PA mode Echo-to-Echo</li> <li>Mature Standard, Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	Gates PA mode Reference Cursors 2
<ul> <li>Measurements Conventional UT mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode FGate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate3-IF, Gate1-IF</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode FGate(optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	reference cursors for A-scans: 4 reference cursos for
<ul> <li>Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate3-IF, Gate1-IF</li> <li>Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate3-IF, Gate1-IF</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PRF settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of</li></ul>	image
<ul> <li>Measurement 6 locations available(manual or auto selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate3-IF, Gate1-IF</li> <li>Measurements Conventional UT mode DAC/TVG Standard. Choose between Gate2-1, Gate3-IF, Gate1-IF</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PRF settings</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, depth, min/max, amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of</li></ul>	• Measurements Conventional UT mode Displayed
<ul> <li>selection)</li> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. depth, amplitude, Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode Other Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/ by to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PFP settings</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatible with IF Gate at all PFP settings</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	,
<ul> <li>time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode Gate 2 Trickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> </ul>	
<ul> <li>Measurements Conventional UT mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max, amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> </ul>	
<ul> <li>Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max.amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Conventional UT mode DGS/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard - Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between StaPA mode Echo-to-Echo Standard. Choose between StaPA mode Echo-to-Echo Standard. Choose between StaPA mode Echo-to-Echo Standard. IF Gate1-IF</li> </ul>	
<ul> <li>time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG, EKS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode JSpecial DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode IF Gate (optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode JAC (up to 6 curves)</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>(optional) Thickness</li> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	• • •
<ul> <li>Measurements Conventional UT mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode J Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF         • Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value         • Measurements Conventional UT mode DAC/TVG Standard         • Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range         • Measurements Conventional UT mode DAC (up to 6 curves)         • Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings         • Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings         • Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements         • Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)         • Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude         • Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude         • Measurements PA mode IF Gate (optional) NA	
<ul> <li>Gate1-IF</li> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode Other Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1./D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Overshoot (dB) value DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate 2 Thickness, sundpath, rojection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>DGS/AVG,ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>AWS D1.1/D1.5 rating (D), reject value</li> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode DAC/TVG Standard</li> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
Standard         • Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range         • Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)         • Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings         • Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements         • Measurements PA mode       Displayed Measurement 6 locations available(manual or auto selection)         • Measurements PA mode       Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude         • Measurements PA mode       Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude         • Measurements PA mode       IF Gate (optional) NA         • Measurements PA mode       IF Gate (optional) NA         • Measurements PA mode       IF Gate (optional) NA	AWS D1.1/D1.5 rating (D), reject value
<ul> <li>Measurements Conventional UT mode DAC Points Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Up to 50 points, 110 dB dynamic range</li> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode) Special DAC Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Modes 20% to 80% DAC, custom DAC (up to 6 curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>curves)</li> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode TVG Table Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Up to 50 points, 110 dB dynamic range, compatibe with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	,
<ul> <li>with IF Gate at all PRF settings</li> <li>Measurements Conventional UT mode Curved Surface Correction standard . Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements Conventional UT mode Curved Surface Correction standard. Tube or bar OD correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
Surface Correctionstandard . Tube or bar OD correction for angle beam measurements• Measurements PA modeDisplayed Measurement 6 locations available(manual or auto selection)• Measurements PA modeGate 1• Measurements PA modeGate 1• Measurements PA modeGate 1• Measurements PA modeGate 2• Measurements PA modeIF Gate (optional)• NANA• Measurements PA modeEcho-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF	
<ul> <li>correction for angle beam measurements</li> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements PA mode Displayed Measurement 6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>6 locations available(manual or auto selection)</li> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	0
<ul> <li>Measurements PA mode Gate 1 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	1 0
<ul> <li>sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>min/max. depth, min/max. amplitude</li> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
<ul> <li>Measurements PA mode Gate 2 Thickness, sundpath, projection, depth, amplitude, time-of-flight, min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	min/max. depth, min/max. amplitude
<ul> <li>min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	• Measurements PA mode Gate 2 Thickness,
<ul> <li>min/max. depth, min/max. amplitude</li> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	sundpath, projection, depth, amplitude, time-of-flight,
<ul> <li>Measurements PA mode IF Gate (optional) NA</li> <li>Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF</li> </ul>	
NA • Measurements PA mode Echo-to-Echo Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF	
Standard. Choose between Gate2-1, Gate2-IF, Gate1-IF	NA
Gate1-IF	
Measurements PA mode     Other Measurements	
	Measurements PA mode Other Measurements

Π	,	
		Overshoot (dB) value DGS/AVG, ERS(equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), reject value• Measurements PA mode StandardDAC/TVG Standard• Measurements PA mode 20 points, 40 dB dynamicDAC Points Up to 20 points, 40 dB dynamic• Measurements PA mode NASpecial DAC Modes NA• Measurements PA mode NATVG Table Up to 20 points, 40 dB dynamic• Measurements PA mode Curved Surface Correction Standard. Tube or bar OD correction for angle Beam measurements• Calibration When the text
<b> </b>		Detector carrying case
21	UTRASONIC THICKNESS GAUGE	<ul> <li>Specifications</li> <li>General+BB128:E131 Operating temperatures -10 °C to 50 °C</li> <li>Keyboard Sealed, color-coded keypad with tactile and audible feedback</li> <li>Case Impact-resistant and water-resistant, gasketed case with sealed connectors. Designed for IP67.</li> <li>weight 0.814 kg</li> <li>Power supply AC/DC adaptor, 24 V; lithium-ion battery 23.760 Wh; or 4 AA auxiliary batteries</li> <li>Battery life, lithium-ion Operating time: minimum 12.6 h, 14 h typical, 14.7 h maximum Fast charge: 2 h to 3 h</li> <li>Standard Designed for EN15317</li> <li>Internal Data logger Data logger The equipment to be capable of identifies, stores, recalls, clears, and transmits thickness readings, waveform images, and gage configuration information through the standard RS-232 serial port or USB port.</li> <li>Capacity 475,000 thickness measurements or 20,000 waveforms with thickness measurements</li> <li>File names, IDs, and comments 32-character file names and 20-character alphanumeric location codes with four comments per location</li> </ul>
		<ul> <li>File structures Nine standard or custom application-specific file structures</li> <li>Reports On-gage reporting of summary with statistics, Min./Max. with locations, Min. review, file comparison, and alarm report</li> <li>Inputs/Outputs Video Output VGA output standard</li> <li>RS-232 Yes</li> <li>USB 1 Client</li> <li>Memory card Maximum capacity: 2 GB External microSD memory card</li> <li>Display Rectification Full wave, RF, half-wave positive, or half-wave negative</li> <li>Color transflective VGA display Liquid crystal display, display area 2.2 in. x 2.95 in (56.16 mm x 74.88 mm)</li> </ul>

Π		
		<ul> <li>Measurements Thickness Range 0.080 mm to 635.00 mm (0.003 in. to 25.000 in.) depending on material, transducer surface conditions, temperature, and selected configuration</li> <li>Dual element transducer measurement mode Time interval from a precision delay after the excitation pulse to the first echo</li> <li>Single element transducer measurement modes Mode 1: Time interval between the excitation pulse and the first back-wall echo</li> <li>Mode 2: Time interval between the delay line echo and the first back-wall echo (with delay or immersion transducers)</li> <li>Mode 3: Time interval between successive back-wall echoes following the first interface echo after the excitation pulse (with delay line or immersion transducers)</li> <li>Oxide: optional</li> <li>Multilayer mode: optional</li> <li>Thru-Paint Echo-to-Echo Time interval between two successive back-wall echo</li> <li>THRU-COAT® measurement Measurement of true metal and coating thicknesse with a single back-wall echo</li> <li>Transducers cables in addition to standard Heavy Duty -Armoured silicon jacket transduser cable(HDAS) 5 metres</li> <li>Heavy Duty, Teflon(HD) transducer cable 5 metres</li> <li>HeavyDuy-Stainless steel Jacket(SSA) 5 metres calibration Calibration blocks Calibration</li> </ul>
22	FLUE GAS ANALYSER	<ul> <li>blocks, couplants</li> <li>To have 1-analyser box, 2- control unit, 3-Brilliant HD colour printer</li> <li>To be supplied with additional 3 probes- 1- standard gas sampling probe, 2- industrial gas sampling probe, 3- engine probe</li> <li>Technical data</li> <li>control unit</li> <li>operating temperature 20° F-115° F</li> <li>ostorage temperature between -4° F and not more than 122° F</li> <li>Battery type Li-ion</li> <li>Battery life 5 hours- without wireless connection</li> <li>Memory 2MB</li> <li>Weight 0.439Kg(0.97 Lbs)</li> <li>Protection Class IP 40</li> <li>Analyzer</li> <li>Measurement Measurement Range Accuracy</li> <li>Resolution Reaction type</li> <li>O2 0 t+25Vol. ±0.8% of fsv (0 to +25 Vol.%O2)</li> </ul>

T95 %O2
• COlow 0 to +10000ppm CO ±5% OF MV
(+200 to +2000ppm to +2000 ppm CO) 1 ppm CO(0 to
+10000 ppm CO) t90
• (H2 compensated)* $\pm 10\%$ of mv (+2001 to
+1000 ppm CO)
• $\pm 10 \text{ ppm CO}(0 \text{ to } +199 \text{ ppm CO})$
• COlow 0 to +500ppm CO ±5% of mv
(+40 to 500ppm CO) 0.1 ppm CO (0 to +500ppm CO)
t90
• (H2 compensated)* $\pm 2 \text{ ppm CO}(0 \text{ to } 39.9)$
ppm CO)
• NO 0 to 4000 ppm NO ±5% of mv (100 to
1999.9 ppm NO) 1 ppm NO(0 to +3000 ppm NO)
t90
• ±10% of mv (2000 to 4000 ppm NO)
<ul> <li>±5 ppm NO(0 to 99ppm NO)</li> </ul>
• NOlow 0 to $\pm 300$ ppm NO $\pm 5\%$ of mv
(+40  to  300  ppm NO) 0.1 ppm NO(0 to +300 ppm NO)
(+40 to 500 ppin NO) 0.1 ppin NO(0 to +500ppin NO) t90
• ±2 ppm NO(0 to 39.9 ppm NO)
• NO2 0 to +500 ppm NO2 ±5% of mv (+100 to
+500 ppm NO2) 0.1 ppm NO2 (0 to +500ppm
NO2) t90
<ul> <li>±5 ppm NO2 (0 to 99.9 ppm NO2)</li> </ul>
• SO2 0 to +5000 ppm SO2 ±5% of mv (+100 to
+2000 ppm SO2) 1 ppm SO2 (0 to +5000ppm
SO2) t90
• $\pm 10\%$ of mv (+2001 to +5000 ppm SO2)
<ul> <li>±5 ppm SO2(0 to 99ppm SO2)</li> </ul>
• CO2 (IR) 0 to +50 Vol.% CO2 ±0.3 Vol.%
CO2 (III) 0 to 130 V01.7 CO2 10.5 V01.70 CO2 0.01 Vol.% CO2 t90
<ul> <li>+1% of mv (0 to 25 Vol.% CO2) (0 to 25 Vol.% CO2)</li> </ul>
• $+1\%$ of mV (0 to 23 Vol.% CO2) (0 to 23 Vol.% CO2)
• ±0.5 Vol. % CO2 0.01 Vol.% CO2
• +1.5% of mv (>25 to 50 Vol.% CO2)
(>25Vol.%CO2)
• H2S 0 to +300 ppm H2S $\pm 5\%$ of mv (+40 to
+300 ppm) 0.1 PPM t90
• $\pm 2 \text{ PPM} (0 \text{ to } +39.9 \text{ppm})$ (0 to 300 ppm)
• Efficiency $0$ to $120\%$ $0.1\%(0$ to
120%)
• Exhaust gas loss 0 to +99.9 % qA 0.1%
qA(-20 to +99.9% qa)
• CO2 calculation 0 to CO2 max vol.% CO2
Calculated from O2 $\pm 0.2$ Vol.% 0.01 Vol.%
CO2 t90
• Differential Pressure 1 $-16$ to $+16$ "H2O $\pm 1.5\%$ of m.v.
-16 to -1 "H2O 0.004 "H2O
• ±1.5% of m.v1.2 to +16 "H2O (-16 to +16 "H2O)
○ "H2O -1.20 "H2O
• Differential pressure 2 $-80$ to $+80$ "H2O $\pm 1.5\%$ of
m.v.(-80 to $+20^{\circ}$ H2O) 0.004"H2O
• $\pm 1.5\%$ of m.v. ( $\pm 20$ to $\pm 80$ °H2O)(-80 to 80 °H2O)
$1^{-1.570}$ $11.0.1$ $11.0.1$ $120$ $10$ $1120$ $(-00$ $10$ $00$ $1120$

	• "H2O (-20 to +20 "H2O)
	• Flow Velocity 0 to 131 ft/sec 0.1ft/sec to
	131 ft/sec
	• Absolute Pressure -240 to 461 "H2O
	±4"H2O 0.4"H2O
	• (opt. if IR sensor equipped)
	• Flue 32 to 212 °F 0.18 °F
	• (32 to 212 °F)
	• Indivudual dilution with selectable dilution factor (x2, x5,
	$x_{10}$ x20, x40)
	• Measurement Measurement range accuracy
	Resolution
	• CO (H2 compensated) dilution factor-dependent ±2%
	of m.v. (additional error) 1 ppm
	• COlow(H2compensated) dilution factor-
	dependent $\pm 2\%$ of m.v. (additional error) 0.1
	ppm
	• NO dilution factor-dependent $\pm 2\%$ of m.v. (additional
	error) 0.1 ppm
	• NOlow dilution factor-dependent $\pm 2\%$ of m.v.
	(additional error) 0.1 ppm
	• SO2 dilution factor-dependent $\pm 2\%$ of m.v. (additional
	error) 1 ppm
	• HC-pellistor dilution factor-dependent $\pm 2\%$ of m.v.
	(additional error) 10 ppm
	• Dilution of all sensors (Factor 5)
	Measurement Measurement range Accuracy
	Resolution
	• CO (H2 compensated) 2500 to 50000 ppm ±5%
	of m.v. (additional error) 1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• COlow(H2compensated) 500 to 2500 ppm ±5%
	of m.v. (additional error) 0.1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• NO 1500 to 20000 ppm ±5% of m.v. (additional
	error) 1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• NOlow 300 to 1500 ppm $\pm$ 5% of m.v. (additional
	error) 0.1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• SO2 500 to 25000 ppm ±5% of m.v. (additional
	error) 1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• NO2 500 to 2500 ppm ±5% of m.v. (additional error)
	0.1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	• H2S 200 to 1500 ppm $\pm 5\%$ of m.v. (additional error)
	0.1 PPM
	<ul> <li>Pressure range -40 to 0 in H2O at probe tip</li> </ul>
	Technical data HC sensor
	Measurement Measurement range1 accuracy
	Resolution Response time t90
	• methane 100 to 40000 ppm <400 ppm(100
	to 4000 ppm) 10 ppm <40 sec.
·	

1		- (100)  of  m  w (> 4000  mm)
		<10% of m.v. (>4000 ppm)
		• Propane 100 to 21000 ppm <400 ppm(100
		to 4000 ppm) 10 ppm $<40$ sec.
		<10% of m.v. (>4000 ppm)
		• butane 100 to 18000 ppm <400 ppm(100 to 4000
		ppm) 10 ppm <40 sec.
		<10% of m.v. (>4000 ppm)
		Other technical data
		• Dimensions 13"×5"×17.2"
		• Weight 10.58 lbs
		• Storage temperature -4°F to 122°F
		<ul> <li>Operating temperature 22 to 113°F</li> </ul>
		<ul> <li>Operating temperature 22 to 115 1</li> <li>Housing material ABS</li> </ul>
		e
		• Memory 250,000 measurement values
		• Power supply AC power supply 90Vto 260V (47 to 65Hz)
		• DC voltage supply 11V to 40V
1		• Maximum dust load 20 g/m3 dust in flue gas
		• Dewpoint calculation 32 to 212 °F
1		<ul> <li>Maximum positive pressure flue gas 20"H2O</li> </ul>
1		<ul> <li>Maximum positive pressure ride gas 20 fi20</li> <li>Maximum negative pressure -120 "H2O</li> </ul>
		• Pump flow rate 1 ½ min. with flow rate monitoring
		• Hose length Max 53 ft. (corresp. To 5 probe hose
		extensions)
		• Maximum humidity load +158°F at gas input of analyzer box
		• Trigger input Voltage 5 to 12 volt (rising or falling flank)
		$\circ$ Impulse width >1 sec
		○ Load :5 v/max,5 mA, 12V/max. 40 mA
		• Protection class IP40
		• Battery life Maximum load approx. 2.5 h
		WARRANTY
		<ul> <li>Instrument 2 Years (except for replaceable parts, e.g gas</li> </ul>
		sensors)
1		Gas sensors CO/NO/NO2/SO2/H2S/CXHY:1 Year
1		• O2 Sensor 1 <sup>1</sup> / <sub>2</sub> years
		• CO2 –IR sensor 2 years
		Rechargeable battery 1 year
23	INFRARED	Packaging Hardy case including Infrared
25	THERMAL	camera with lens, small viewfinder eyecup, 2 batteries,
	IMAGING	battery charger, hard transport case, lanyards, front lens
	CAMERA	cap, power supplies, printed documentation, SD card (8
		GB), cables (USB 2.0 A to USB Type-C, USB Type-C to
		HDMI, USB Type-C to USB Type-C)
		• Overview Weight & Dimensions (without lens)
		$1.3 \text{ kg}, 140 \times 201 \times 84 \text{ mm}$
		• Thermal Sensitivity/NETD <50 mK at 30°C (14°
		lens)
		• Time lapse 10 seconds to 24 hours
		• Voice 60 sec. recording added to still images or video via
		built-in mic (has speaker) or via Bluetooth
		$\circ$ Accuracy $\pm 20$ C of reading
		• Laser pointer yes
11	I į	

П		
		• Object temperature range $-20^{\circ}$ C to $120^{\circ}$ C; $0^{\circ}$ C to
		650°C; 300°C to 2000°C
		• Programmable Buttons 2
		• Sampling Average in Screen EST Mode Recommended
		temperature range: 30 to 45°C in stable room temperature
		• Accuracy [Drift] in Screen EST Mode ±3oC
		• IR resolution 680 X 480 pixels
		• Text Predefined list or touchscreen keyboard
		• Voice 60 sec. recording added to still images or video via
		built-in mic (has speaker) or via Bluetooth
		• Power Battery type Li-ion battery, charged in camera
		or on separate charger
		• Battery power operating time Approx. 4 hours at 25°C ambient temperature and typical use
		• Storage Media Image file format Standard JPEG with
		measurement data included
		• Image storage mode Infrared, visual, MSX®, Picture- in-Picture
		• Meter Data Display 100mm, 640 × 480 pixel
		touchscreen LCD with auto-rotation
		• Environmental Operating Temperature Range -15°C
		to 50°C (5°F to 122°F)
		<ul> <li>Safety EN/UL/CSA/PSE 60950-1</li> </ul>
		• Storage temperature range $-40^{\circ}$ C to $70^{\circ}$ C (-40°F to $158^{\circ}$ F)
		• Shock, Vibration and Encapsulation 25 g (IEC
		60068-2-27), 2 g (IEC 60068-2-6), IP 54 (IEC 60529)
		Connections and communications
		Communication interfaces USB 2.0, Bluetooth,
		Wi-Fi
		• Video out DisplayPort over USB Type-C
		• Storage media USB 2.0, Bluetooth, Wi-Fi
		Packaging Hardy case including Infrared
		camera with lens, small viewfinder eyecup, 2 batteries,
		battery charger, hard transport case, lanyards, front lens
		cap, power supplies, printed documentation, SD card (8
		GB), cables (USB 2.0 A to USB Type-C, USB Type-C to
		HDMI, USB Type-C to USB Type-C)
24	FLUE PARTICLE	General Technical data
<u>_</u>	MEASURING	• Measuring Range 0 to 300 mg/m3
	EQUIPMENT:	• Accuracy Acc.VDI 4206-2
		• Resolution 0.1 mg/m3 (5 mg/m3)
		• Dimensions 475 X 360 X 190 mm
		• Operating temperature 5 to 40 0C
		• Housing ABS
		• Protection IP 40
		• Display type LCD
		• Power supply via the internal mains unit: $100 \text{ V}$
		AC/2.1 A 240 V
		• AC/ 0.95 A (50-60 Hz)
		• Power consumption Max 100W
11	1	Information on particle probe

I		• Probe shaft material Stainless steel
		• Probe shaft diameter 12mm
		• Length 270mm
		• Probe cable length 2200mm
		<ul> <li>Integrated elements Draught measurement, sampling,</li> </ul>
		<ul> <li>temperature measurement, probe heating, rotation diluter</li> </ul>
		• Flue gas temperatures max +500oC
		<ul> <li>Probe shaft heating to +120oC</li> </ul>
		<ul> <li>Status display LED, shows warm-up phase and operational readiness</li> </ul>
	INTRINSICALLY	
25		• 8 Mpix FuB338:D349ll HD image sensors 4,3" sunlight
	SAFE CAMERA	readable display, Waterproof, IP68 Wi-Fi and Bluetooth
		• Size 150mm x 65mm x 14mm
		• weight 290 grams
		<ul> <li>Operating temperature range operating -20°C to +49°C</li> <li>storage -40°C to +60°C</li> </ul>
		Applications Android version Android 7.1.2 Nougat or
		more current
		HD Video Collaboration SIPIDO
		<ul> <li>Document Viewing PDF and office documents</li> </ul>
		<ul> <li>Browser Full blown HTML5, Chrome</li> </ul>
		<ul> <li>Management Solution collaboration-x.net</li> </ul>
		• ERP Compatible with ERP systems
		Apps 1.3 Million and More on Google Play
		• Display and touch Resolution 480 X 800 Pixels
		• Screen size 4,3 inch Retina display
		Glass Gorilla glass
		Touch screen Glove compatible capacitive touch
		Brightness Direct sunlight readable display
		Buttons On/Off, Volume, Camera, Android
		Sensors Positioning Global Positioning System (GPS)
		Navigation Compass
		Accellerometer Accellerometer
		• Orientation 3 axis gyroscope
		<ul> <li>Video and imaging Video quality Full HD video (1080p, 30 FPS)</li> </ul>
		<ul> <li>Imaging 8 megapixel still images</li> </ul>
		Storage 32 GB minimum     Lighting Dugl LED lights
		Lighting Dual LED lights
		Video codecs H.264/AVC codec
		Image capture Dedicated Camera button
		Audio features Audio codec Full duplex audio
		communication
		• Audio Codec CD quality (G.722)
		Microphone Digital omni directional microphone
		Audio out 3.5mm connection
		Hands free Integrated mic and speaker
		Video recording Stereo microphones on back
		• Wireless headset Bluetooth audio headset support
		<ul> <li>Power specifications Battery size 3000 mAh battery</li> </ul>
П	I	i onel sponteutons buttery sile oooo in in buttery

T		• Video playback 8 hours playback time
		• Standby 300-400 h standby (with WIFI disabled)
		• Video recording 4-6 hour full operating time
		• Networking features Wi-Fi 802.11 abgn (2,4 Ghz and 5
		Ghz)
		• WIFI Media sharing Dropbox <sup>TM</sup> , Picasa <sup>TM</sup> , Flickr <sup>TM</sup> ,
		<ul> <li>Box<sup>™</sup>, Onedrive</li> </ul>
		• Bluetooth Bluetooth 4.0
		Ruggedness Impact 2 Joule Impact proof
		• Drop 2 meter drop proof
		Housing Made from one Piece of Aluminium
		Connection Covered USB
		• Screen 2 mm Gorilla glass
		• Ergonomic features Dirt proof Anti smuge recess for
		camera glass and screen
		• Image capture Flipscape <sup>™</sup> : One hand videography
		<ul> <li>Any condition Moisture resistive touch screen</li> </ul>
		<ul> <li>Glove compatible Glove compatible touch screen</li> </ul>
		<ul> <li>Dropped object Hand strap for ergonomic grip</li> </ul>
		• Form factor Fits in hand and pocket
		• Accessories Covers, cradles and dropped object safety
		• straps, Wrist and Belt cradle (multi-function) casing for
		hands free peration, Neck strap, Silicone casing and
		cover
		Certification ECCN 6A003.b.1
		• IECEX ECEX SIR 13.0047 X
		• Ex ib op is IIC T4 Gb
		• ATEX Sira 13 ATEX 5134 X
		• Ex ib op is IIC T4 Gb
		• HS code 8525.80.30
		• wireless CE and FCC
		• CSA (ANSI/UL) Class I, AEx ib IIC T4 Gb
		• CSA (CAN/CSA) Class I, Ex ib IIC T4 Gb
		Country of origin Made in Norway
		• CE compliance with ATEX directive CE 0470 * ** II
		2G
		Charger USB charger
		• Software update OTA updates available through the
		software update app
		• Product box Product box with custom shaped foam
		• inlays
		• User manual Guide
		Warranty One year
		<ul> <li>Documents Including- ATEX Certificate, CSA</li> </ul>
		<ul> <li>cB419:D419ertificate, IECEx Certificate, TC RU</li> </ul>
		• CB419.D419ertificate, IECEX Certificate, IC KO Certificate letter of conformity, SANS IA, Datasheet
	CALIBRATION	IIW-type 1, Block, type 304 Stainless steel
26	BLOCKS	
	DLOCIND	• IIW-type 2, Block, type 304 Stainless steel
		• PAUT IIW Block, ISO 19675, 1018 Steel- Nickel plated
		• ASTM E164 Test blocks- DSC Block, type 304 stainless
		steel
		• ASTM E164 Test blocks-IIW type-1 Block, 4340 steel V
II		2 (A4)

		<ul> <li>Calibration, 1018 Steel- Nickel plated</li> <li>Ketos Ring (AS5282 Ring), O-1 Tool Steel</li> <li>Liquid Penetrant Test Prop</li> </ul>
27	AUXILIARY GENERATOR	<ul> <li>Engine: 2 Cylinder, 4 cycle, inline, Water-cooled Diesel</li> <li>Environmental: U.S. EPA Tier IV Emission Compliant</li> <li>Oil Change Interval: 1000 hours</li> <li>Bio-Diesel: 20% Maximum</li> <li>Fuel Consumption: 0.2 Gal/hour (0.76l/hr)</li> <li>AC Power: 4.0 kW/4,000 watts/30 amps</li> <li>5.2 kW/5,200 watts/40 amps</li> <li>Battery Charging: 12 Volt DC 55 AMP Alternator</li> <li>Sound Level: 59.5 dBA</li> <li>Heating, Main Engine: 120 volt AC to power block heater</li> <li>Component Accessibility Sliding Frame System for ease of service</li> </ul>

## 4. Drawings

This bidding document includes  ${\bf NO}$  drawings.

List of Drawings N/A		
Drawing Nr.	Drawing Name	Purpose

### 5. Inspections and Tests

The following inspections and tests shall be performed: [insert list of inspections and tests]

Verification that all equipment including the truck should meet the specifications indicated in the bid document. Individual equipment inspection on the said specifications will be carried out at the time of receiving. Other inspections and tests shall include: -

- 1. Certificates of manufacturers' related tests and allied standard certifications
- 2. Certificate of calibration should be provided for those equipment that require periodical calibration
- 3. Verification that all components including calibrators, manuals and brochures are provided
- 4. The quantities supplied are as listed in the bid document
- 5. Warranties as per specifications

# **PART 3 - Contract**

## **Section VIII - General Conditions of Contract**

## **Table of Clauses**

1.	Definitions	112
2.	Contract Documents	113
3.	Fraud and Corruption	113
4.	Interpretation	113
5.	Language	114
6.	Joint Venture, Consortium or Association	114
7.	Eligibility	115
8.	Notices	115
9.	Governing Law	115
10.	Settlement of Disputes	115
11.	Inspections and Audit by the Bank	116
12.	Scope of Supply	116
13.	Delivery and Documents	116
14.	Supplier's Responsibilities	117
15.	Contract Price	118
16.	Terms of Payment	118
17.	Taxes and Duties	118
18.	Performance Security	119
19.	Copyright	119
20.	Confidential Information	119
21.	Subcontracting	120

22. Specifications and Standards	
23. Packing and Documents	
24. Insurance	
25. Transportation and Incidental Services	
26. Inspections and Tests	
27. Liquidated Damages	
28. Warranty	
29. Patent Indemnity	
30. Limitation of Liability	
31. Change in Laws and Regulations	
32. Force Majeure	
33. Change Orders and Contract Amendments	
34. Extensions of Time	
35. Termination	
36. Assignment	
37. Export Restriction	

### **Section VIII - General Conditions of Contract**

- **1. Definitions** 1.1 The following words and expressions shall have the meanings hereby assigned to them:
  - (a) "Bank" means the World Bank and refers to the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA).
  - (b) "Contract" means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.
  - (c) "Contract Documents" means the documents listed in the Contract Agreement, including any amendments thereto.
  - (d) "Contract Price" means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.
  - (e) "Day" means calendar day.
  - (f) "Completion" means the fulfillment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract.
  - (g) "GCC" means the General Conditions of Contract.
  - (h) "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
  - (i) "Purchaser's Country" is the country specified in the **Special Conditions of Contract (SCC).**
  - (j) "Purchaser" means the entity purchasing the Goods and Related Services, as **specified in the SCC.**
  - (k) "Related Services" means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.
  - (1) "SCC" means the Special Conditions of Contract.
  - (m) "Subcontractor" means any person, private or government entity, or a combination of the above, to whom any part of

the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.

- (n) "Supplier" means the person, private or government entity, or a combination of the above, whose Bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.
- (o) "The Project Site," where applicable, means the place named in the **SCC.**
- 2. Contract Documents
   2.1 Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.
- 3. Fraud and Corruption
   3.1 The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework, as set forth in Appendix to the GCC.
  - 3.2 The Purchaser requires the Supplier to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the Bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.
- **4.** Interpretation 4.1 If the context so requires it, singular means plural and vice versa.

#### 4.2 Incoterms

- (a) Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms **specified in the SCC**.
- (b) The terms EXW, CIP, FCA, CFR and other similar terms, when used, shall be governed by the rules prescribed in the current edition of Incoterms specified in the **SCC** and published by the International Chamber of Commerce in Paris, France.
- 4.3 Entire Agreement

The Contract constitutes the entire agreement between the Purchaser and the Supplier and supersedes all communications, negotiations and agreements (whether written or oral) of the parties with respect thereto made prior to the date of Contract.

4.4 Amendment

6.

No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.

- 4.5 Nonwaiver
  - (a) Subject to GCC Sub-Clause 4.5(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.
  - (b) Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.
- 4.6 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

- 5. Language
  5.1 The Contract as well as all correspondence and documents relating to the Contract exchanged by the Supplier and the Purchaser, shall be written in the language specified in the SCC. Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified, in which case, for purposes of interpretation of the Contract, this translation shall govern.
  - 5.2 The Supplier shall bear all costs of translation to the governing language and all risks of the accuracy of such translation, for documents provided by the Supplier.
  - Joint Venture, 6.1 If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser.

7.	Eligibility	7.1	The Supplier and its Subcontractors shall have the nationality of
			an eligible country. A Supplier or Subcontractor shall be deemed
			to have the nationality of a country if it is a citizen or constituted,
			incorporated, or registered, and operates in conformity with the
			provisions of the laws of that country.

- 7.2 All Goods and Related Services to be supplied under the Contract and financed by the Bank shall have their origin in Eligible Countries. For the purpose of this Clause, origin means the country where the goods have been grown, mined, cultivated, produced, manufactured, or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.
- 8. Notices
   8.1 Any notice given by one party to the other pursuant to the Contract shall be in writing to the address specified in the SCC. The term "in writing" means communicated in written form with proof of receipt.
  - 8.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.
- 9. Governing 1.1 The Contract shall be governed by and interpreted in accordance with the laws of the Purchaser's Country, unless otherwise specified in the SCC.
  - 9.2 Throughout the execution of the Contract, the Supplier shall comply with the import of goods and services prohibitions in the Purchaser's Country when

(a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country; or

- 9.2 (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country.
- 10. Settlement of Disputes10.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
  - 10.2 If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect

**11. Inspections** 

the Bank

of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract. Arbitration proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.

- 10.3 Notwithstanding any reference to arbitration herein,
  - the parties shall continue to perform their respective (a) obligations under the Contract unless they otherwise agree; and
  - the Purchaser shall pay the Supplier any monies due the (b) Supplier.
- 11.1 The Supplier shall keep, and shall make all reasonable efforts to cause its Subcontractors to keep, accurate and systematic accounts and Audit by and records in respect of the Goods in such form and details as will clearly identify relevant time changes and costs.
  - 11.2 Pursuant to paragraph 2.2 e. of Appendix B to the General Conditions the Supplier shall permit and shall cause its agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have such accounts, records and other documents audited by auditors appointed by the Bank. The Supplier's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 3.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 12.1 The Goods and Related Services to be supplied shall be as specified 12. Scope of Supply in the Schedule of Requirements.
- **13.** Delivery and 13.1 Subject to GCC Sub-Clause 33.1, the Delivery of the Goods and Completion of the Related Services shall be in accordance with the **Documents** Delivery and Completion Schedule specified in the Schedule of Requirements. The details of shipping and other documents to be furnished by the Supplier are specified in the SCC.

116

# 14. Supplier's Responsibilities14.1 The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GCC Clause 12, and the Delivery and Completion Schedule, as per GCC Clause 13.

- 14.2 The Supplier, including its Subcontractors, shall not employ or engage forced labor or persons subject to trafficking, as described in GCC Sub-Clauses 14.3 and 14.4.
- 14.3 Forced labor consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.
- 14.4 Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.
- 14.5 The Supplier, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).
- 14.6 The Supplier, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
- 14.7 Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:
  - (a) with exposure to physical, psychological or sexual abuse;
  - (b) underground, underwater, working at heights or in confined spaces;
  - (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads;
  - (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or
  - (e) under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer.

- 14.8 The Supplier shall comply, and shall require its Subcontractors if any to comply, with all applicable health and safety regulations, laws, guidelines, and any other requirement stated in the Technical Specifications.
- 14.9 The Supplier shall comply with additional obligations as **specified in the SCC.**
- **15. Contract Price** 15.1 Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its Bid, with the exception of any price adjustments authorized in the SCC.

# 16. Terms of<br/>Payment16.1 The Contract Price, including any Advance Payments, if<br/>applicable, shall be paid as specified in the SCC.

- 16.2 The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the documents submitted pursuant to GCC Clause 13 and upon fulfillment of all other obligations stipulated in the Contract.
- 16.3 Payments shall be made promptly by the Purchaser, but in no case later than sixty (60) days after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.
- 16.4 The currencies in which payments shall be made to the Supplier under this Contract shall be those in which the Bid price is expressed.
- 16.5 In the event that the Purchaser fails to pay the Supplier any payment by its due date or within the period set forth in the SCC, the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate shown in the SCC, for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award.
- 17. Taxes and Duties
   17.1 For goods manufactured outside the Purchaser's Country, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser's Country.
  - 17.2 For goods Manufactured within the Purchaser's Country, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.
  - 17.3 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in the Purchaser's Country, the

Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.

# 18. Performance Security18.1 If required as specified in the SCC, the Supplier shall, within twenty-eight (28) days of the notification of contract award, provide a performance security for the performance of the Contract in the amount specified in the SCC.

- 18.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 18.3 As specified in the SCC, the Performance Security, if required, shall be denominated in the currency(ies) of the Contract, or in a freely convertible currency acceptable to the Purchaser; and shall be in one of the format stipulated by the Purchaser in the SCC, or in another format acceptable to the Purchaser.
- 18.4 The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in the **SCC**.
- 19. Copyright19.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
- 20. Confidential Information
  20.1 The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Supplier may furnish to its Subcontractor such documents, data, and other information it receives from the Purchaser to the extent required for the Subcontractor to perform its work under the Contract, in which event the Supplier shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Supplier under GCC Clause 20.
  - 20.2 The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the contract. Similarly, the Supplier shall not use such documents, data, and other information received from the

Purchaser for any purpose other than the performance of the Contract.

- 20.3 The obligation of a party under GCC Sub-Clauses 20.1 and 20.2 above, however, shall not apply to information that:
  - (a) the Purchaser or Supplier need to share with the Bank or other institutions participating in the financing of the Contract;
  - (b) now or hereafter enters the public domain through no fault of that party;
  - (c) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or
  - (d) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.
- 20.4 The above provisions of GCC Clause 20 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.
- 20.5 The provisions of GCC Clause 20 shall survive completion or termination, for whatever reason, of the Contract.
- **21. Subcontracting** 21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under the Contract if not already specified in the Bid. Such notification, in the original Bid or later shall not relieve the Supplier from any of its obligations, duties, responsibilities, or liability under the Contract.
  - 21.2 Subcontracts shall comply with the provisions of GCC Clauses 3 and 7.
- 22. Specifications and Standards
- 22.1 Technical Specifications and Drawings
  - (a) The Goods and Related Services supplied under this Contract shall conform to the technical specifications and standards mentioned in Section VI, Schedule of Requirements and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the Goods' country of origin.
  - (b) The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.

- (c) Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated in accordance with GCC Clause 33.
- 23. Packing and Documents
   23.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
  - 23.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the SCC, and in any other instructions ordered by the Purchaser.
- 24. Insurance 24.1 Unless otherwise specified in the SCC, the Goods supplied under the Contract shall be fully insured—in a freely convertible currency from an eligible country—against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in accordance with the applicable Incoterms or in the manner specified in the SCC.
- 25. Transportation and Incidental Services25.1 Unless otherwise specified in the SCC, responsibility for arranging transportation of the Goods shall be in accordance with the specified Incoterms.
  - 25.2 The Supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:
    - (a) performance or supervision of on-site assembly and/or start-up of the supplied Goods;
    - (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;
    - (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;

**26.** Inspections

and Tests

- (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.
- 25.3 Prices charged by the Supplier for incidental services, if not included in the Contract Price for the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services
- 26.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the **SCC**.
  - 26.2 The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor, at point of delivery, and/or at the Goods' final destination, or in another place in the Purchaser's Country as specified in the SCC. Subject to GCC Sub-Clause 26.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.
  - 26.3 The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in GCC Sub-Clause 26.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.
  - 26.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
  - 26.5 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of manufacturing and/or the Supplier's performance of its other

obligations under the Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected.

- 26.6 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.
- 26.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to GCC Sub-Clause 26.4.
- 26.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to GCC Sub-Clause 26.6, shall release the Supplier from any warranties or other obligations under the Contract.
- 27. Liquidated Damages
  27.1 Except as provided under GCC Clause 32, if the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery or perform the Related Services within the period specified in the Contract, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in those SCC. Once the maximum is reached, the Purchaser may terminate the Contract pursuant to GCC Clause 35.
- **28. Warranty** 28.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
  - 28.2 Subject to GCC Sub-Clause 22.1(b), the Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.
  - 28.3 Unless otherwise specified in the **SCC**, the warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the **SCC**, or for eighteen (18) months after the date of shipment from the port or place of

loading in the country of origin, whichever period concludes earlier.

- 28.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
- 28.5 Upon receipt of such notice, the Supplier shall, within the period specified in the **SCC**, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.
- 28.6 If having been notified, the Supplier fails to remedy the defect within the period specified in the **SCC**, the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.
- 29. Patent Indemnity
  29.1 The Supplier shall, subject to the Purchaser's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:
  - (a) the installation of the Goods by the Supplier or the use of the Goods in the country where the Site is located; and
  - (b) the sale in any country of the products produced by the Goods.

Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract.

29.2 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GCC Sub-Clause 29.1, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the

Liability

Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

- 29.3 If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.
- 29.4 The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.
- 29.5 `The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser.
- **30. Limitation of** 30.1 Except in cases of criminal negligence or willful misconduct,
  - (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser and
  - (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the supplier to indemnify the Purchaser with respect to patent infringement
- 31. Change in Laws and Regulations
   31.1 Unless otherwise specified in the Contract, if after the date of 28 days prior to date of Bid submission, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in the place of the Purchaser's Country where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery

Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC Clause 15.

- **32. Force Majeure** 32.1 The Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
  - 32.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
  - 32.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- 33. Change Orders and Contract Amendments33.1 The Purchaser may at any time order the Supplier through notice in accordance GCC Clause 8, to make changes within the general scope of the Contract in any one or more of the following:
  - (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
  - (b) the method of shipment or packing;
  - (c) the place of delivery; and
  - (d) the Related Services to be provided by the Supplier.
  - 33.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery/Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this

Clause must be asserted within twenty-eight (28) days from the date of the Supplier's receipt of the Purchaser's change order.

- 33.3 Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.
- 33.4 **Value Engineering:** The Supplier may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;
  - (a) the proposed change(s), and a description of the difference to the existing contract requirements;
  - (b) a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle costs) the Purchaser may incur in implementing the value engineering proposal; and
  - (c) a description of any effect(s) of the change on performance/functionality.

The Purchaser may accept the value engineering proposal if the proposal demonstrates benefits that:

- (a) accelerates the delivery period; or
- (b) reduces the Contract Price or the life cycle costs to the Purchaser; or
- (c) improves the quality, efficiency or sustainability of the Goods; or
- (d) yields any other benefits to the Purchaser,

without compromising the necessary functions of the Facilities.

If the value engineering proposal is approved by the Purchaser and results in:

- (a) a reduction of the Contract Price; the amount to be paid to the Supplier shall be the percentage specified in the PCC of the reduction in the Contract Price; or
- (b) an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Supplier shall be the full increase in the Contract Price.

- 33.5 Subject to the above, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.
- 34. Extensions of Time
   34.1 If at any time during performance of the Contract, the Supplier or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services pursuant to GCC Clause 13, the Supplier shall promptly notify the Purchaser in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.
  - 34.2 Except in case of Force Majeure, as provided under GCC Clause 32, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 26, unless an extension of time is agreed upon, pursuant to GCC Sub-Clause 34.1.

#### **35. Termination** 35.1 Termination for Default

- (a) The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:
  - (i) if the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 34;
  - (ii) if the Supplier fails to perform any other obligation under the Contract; or
  - (iii) if the Supplier, in the judgment of the Purchaser has engaged in Fraud and Corruption, as defined in paragrpah 2.2 a of the Appendix to the GCC, in competing for or in executing the Contract.
- (b) In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 35.1(a), the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

- 35.2 Termination for Insolvency.
  - (a) The Purchaser may at any time terminate the Contract by giving notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser
- 35.3 Termination for Convenience.
  - (a) The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
  - (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:
    - (i) to have any portion completed and delivered at the Contract terms and prices; and/or
    - (ii) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier.
- **36. Assignment** 36.1 Neither the Purchaser nor the Supplier shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party.
- 37. Export Restriction
  37.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, which arise from trade regulations from a country supplying those products/goods, systems or services, and which substantially impede the Supplier from meeting its obligations under the Contract, shall release the Supplier from the obligation to provide deliveries or services, always provided, however, that the Supplier can demonstrate to the satisfaction of the Purchaser and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and

licenses necessary for the export of the products/goods, systems or services under the terms of the Contract. Termination of the Contract on this basis shall be for the Purchaser's convenience pursuant to Sub-Clause 35.3.

## **APPENDIX TO GENERAL CONDITIONS**

## **Fraud and Corruption**

### 1. Purpose

1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

### 2. Requirements

2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

### 2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:
  - i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - v. "obstructive practice" is:
    - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
    - (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.

- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti- Corruption Guidelines and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;<sup>1</sup> (ii) to be a nominated<sup>2</sup> sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect<sup>3</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

<sup>&</sup>lt;sup>1</sup> For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated subcontractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>&</sup>lt;sup>2</sup> A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

<sup>&</sup>lt;sup>3</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

# **Section IX - Special Conditions of Contract**

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

[The Purchaser shall select insert the appropriate wording using the samples below or other acceptable wording, and delete the text in italics]

GCC 1.1(i)	The Purchaser's Country is: <b>KENYA</b>
GCC 1.1(j)	The Purchaser is: Kenya National Highways Authority
GCC 1.1 (0)	The Project Site(s)/Final Destination(s) is/are: DIRECTORATE OF OCCUPATIONAL SAFETY AND HEALTH SERVICES, SAFETY HOUSE, COMMERCIAL STREET, INDUSTRIAL AREA.
GCC 4.2 (a)	The meaning of the trade terms shall be as prescribed by Incoterms.
GCC 4.2 (b)	The version edition of Incoterms shall be <b>2020</b>
GCC 5.1	The language shall be: ENGLISH
GCC 8.1	For <u>notices</u> , the Purchaser's address shall be: Attention: DEPUTY DIRECTOR (SUPPLY CHAIN MANAGEMENT) KENYA NATIONAL HIGHWAYS AUTHORITY
	Street Address: BARABARA PLAZA, BLOCK C, JOMO KENYATTA INTERNATIONAL AIRPORT (JKIA) OFF AIRPORT SOUTH ROAD, ALONG MAZAO ROAD, NAIROBI Floor/Room number: SECOND FLOOR, SUPPLYCHAIN MANAGEMENT OFFICE City: NAIROBI Country: KENYA
	Electronic mail address: procurement@kenha.co.ke

GCC 9.1	The governing law shall be the law of: <b>KENYA</b>	
GCC 10.2	The rules of procedure for arbitration proceedings pursuant to GCC Clause 10.2 shall be as follows:	
	(a) <b>Contract with foreign supplier:</b>	
	GCC 10.2 (a)—Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.	
	(b) Contracts with Supplier national of the Purchaser's Country:	
	In the case of a dispute between the Purchaser and a Supplier who is a national of the Purchaser's Country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of the Purchaser's Country.	
GCC 13.1	Details of Shipping and other Documents to be furnished by the Supplier are a negotiable bill of lading, a non-negotiable sea way bill, an airway bill, a railway consignment note, a road consignment note, insurance certificate, Manufacturer's or Supplier's warranty certificate, inspection certificate issued by nominated inspection agency, Supplier's factory shipping details.	
	The above documents shall be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.	
GCC 14.9	GCC 14.9.1 The Supplier shall have a code of conduct, and provide appropriate sensitization, for its personnel carrying out <b>installation, operation and maintenance</b> that include, but not limited to, maintaining a safe working environment and not engaging in the following practices:	
	<ul> <li>(i) any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Supplier's or Purchaser's personnel;</li> </ul>	
	<ul> <li>(ii) Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;</li> </ul>	

	<ul> <li>(iii)Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions; and</li> <li>(iv) any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage.</li> <li>GCC 14.9.2 The Purchaser may require the Supplier to remove (or cause to be removed), from the site or other places where the <b>installation, operation and maintenance</b> is being executed, a Supplier's personnel that undertakes behaviors that are not consistent with the code of conduct stated in GCC 14.9.1. Notwithstanding any requirement from the Purchaser to replace any such person, the Supplier shall immediately remove (or cause to be removed) any such person, from the site or other places where the <b>installation, operation and maintenance</b> is being executed. In either case, the Supplier shall promptly appoint, as appropriate, a suitable replacement with equivalent skills and experience.</li> </ul>	
GCC 15.1	The prices charged for the Goods supplied and the related Services performed <b>shall not</b> be adjustable.	
	If prices are adjustable, the following method shall be used to calculate the price adjustment N/A	
GCC 16.1	Sample provision	
	GCC 16.1—The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:	
	Payment for Goods supplied from abroad:	
	Payment of foreign currency portion shall be made in Kenya Shillings in the following manner:	
	<ul> <li>(i) Advance Payment: Ten (10) percent of the Contract Price shall be paid within thirty (30) days of signing of the Contract, and upon submission of claim and a bank guarantee for equivalent amount valid until the Goods are delivered and in the form provided in the bidding document or another form acceptable to the Purchaser.</li> </ul>	
	(ii) On Shipment: Eighty (80) percent of the Contract Price of the Goods shipped shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 13.	
	(iii) <b>On Acceptance:</b> Ten (10) percent of the Contract Price of Goods received shall be paid within thirty (30) days of receipt of the Goods	

	upon submission of claim supported by the acceptance certificate issued by the Purchaser.	
	Payment of local currency portion shall be made in <u>Kenya Shillings</u> within thirty (30) days of presentation of claim supported by a certificate from the Purchaser declaring that the Goods have been delivered and that all other contracted Services have been performed.	
	Payment for Goods and Services supplied from within the Purchaser's Country:	
	Payment for Goods and Services supplied from within the Purchaser's Country shall be made in <u>Kenya Shillings</u> as follows:	
	<ul> <li>(i) Advance Payment: Ten (10) percent of the Contract Price shall be paid within thirty (30) days of signing of the Contract against a simple receipt and a bank guarantee for the equivalent amount and in the form provided in the bidding document or another form acceptable to the Purchaser.</li> </ul>	
	<ul> <li>(ii) On Delivery: Eighty (80) percent of the Contract Price shall be paid on receipt of the Goods and upon submission of the documents specified in GCC Clause 13.</li> </ul>	
	<ul><li>(iii) On Acceptance: The remaining ten (10) percent of the Contract Price shall be paid to the Supplier within thirty (30) days after the date of the acceptance certificate for the respective delivery issued by the Purchaser.</li></ul>	
GCC 16.5	The payment-delay period after which the Purchaser shall pay interest to the supplier shall be <b>90</b> days.	
	The interest rate that shall be applied is $0.05$ % of the balance per month.	
GCC 18.1	A Performance Security shall be required.	
	The amount of the Performance Security shall be: <b>10% of the contract price.</b>	
GCC 18.3	If required, the Performance Security shall be in the form of: <b>a</b> <b>Performance Bond</b>	
	If required, the Performance security shall be denominated in <b>Kenya Shillings.</b>	
GCC 18.4	Discharge of the Performance Security shall take place: as indicated in sub clause GCC 18.4	

GCC 23.2	The packing, marking and documentation within and outside the packages
	shall be:
	Country: Kenya
	Name of Project: Horn of Africa Gateway Development Project
	(HoAGDP)
	Contract title: Procurement of Supply and Delivery of a Fully Fitted
	Safety and Health Ambulant Unit with Medical, Safety, Hygiene and Laboratory Rooms Equipped with Medical Examination Diagnostic
	Sets, Workplace Surveillance Equipment and Plant Examination
	Equipment
	<b>Credit No.:</b> P161305
	RFB No: KE-DOSHS-207941-GO-RFB-KeNHA/XXXX/2021
GCC 24.1	The insurance coverage shall be as specified in the Incoterms.
GCC 24.1	The insurance coverage shall be as specified in the incoternis.
GCC 25.1	Responsibility for transportation of the Goods shall be as specified in the
	Incoterms.
GCC 25.2	Incidental services to be provided are: covered under GCC Clause 25.2
	The price quoted in the Bid price or agreed with the selected Supplier shall be included in the Contract Price.
GCC 26.1	The inspections and tests shall be:
0002011	
	i) to confirm quantity supplied,
	ii) to confirm whether the goods supplied meet the specified specifications upon delivery and before payment.
	specifications upon derivery and before payment.
GCC 26.2	The Inspections and tests shall be conducted at: Safety House,
	Commercial Street, Industrial Area.
GCC 27.1	The liquidated damage shall be: 1% per week
GCC 27.1	The maximum amount of liquidated damages shall be: 10%
GCC 28.3	The period of validity of the Warranty shall be: <b>365</b> days after the goods
	or any portion thereof as the case may be, have been delivered to and
	accepted at the final destination.
	For purposes of the Warranty, the place(s) of final destination(s) shall be:
	Safety House, Commercial Street, Industrial Area.
	The supplier will be required to either:
	(a) make such changes, modifications, and/or additions to the
	Goods or any part thereof as may be necessary in order to attain
	the contractual guarantees specified in the Contract at its own

	cost and expense and to carry out further performance tests in accordance with GCC 26.7, or
	(b) pay liquidated damages to the Purchaser with respect to the failure to meet the contractual guarantees. The rate of these liquidated damages shall be 5% per week.
GCC 28.5, GCC 28.6	The period for repair or replacement shall be: <b>45</b> days.
GCC 33.4	If the value engineering proposal is approved by the Purchaser the amount to be paid to the Supplier shall be N/A

### **Attachment: Price Adjustment Formula**

If in accordance with GCC 15.1, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

15.1 Prices payable to the Supplier, as stated in the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components in accordance with the formula:

$$P_1 = P_0 \left[ a + \frac{bL_1}{L_0} + \frac{cM_1}{M_0} \right] - P_0$$

$$a+b+c=1$$

in which:

$\mathbf{P}_1$	=	adjustment amount payable to the Supplier.
$\mathbf{P}_0$	=	Contract Price (base price).
а	=	fixed element representing profits and overheads included in the Contract
		Price and generally in the range of five (5) to fifteen (15) percent.
b	=	estimated percentage of labor component in the Contract Price.
c	=	estimated percentage of material component in the Contract Price.
$L_0, L_1$	=	*labor indices applicable to the appropriate industry in the country of
		origin on the base date and date for adjustment, respectively.
$M_0, M_1$	=	*material indices for the major raw material on the base date and date for
		adjustment, respectively, in the country of origin.

The Bidder shall indicate the source of the indices, and the source of exchange rate (if applicable) and the base date indices in its Bid.

The coefficients a, b, and c as specified by the Purchaser are as follows:

a = [insert value of coefficient] b = [insert value of coefficient] c = [insert value of coefficient]

Base date = thirty (30) days prior to the deadline for submission of the Bids.

Date of adjustment = *[insert number of weeks]* weeks prior to date of shipment (representing the mid-point of the period of manufacture).

The above price adjustment formula shall be invoked by either party subject to the following further conditions:

(a) No price adjustment shall be allowed beyond the original delivery dates. As a rule, no price adjustment shall be allowed for periods of delay for which the Supplier is

entirely responsible. The Purchaser will, however, be entitled to any decrease in the prices of the Goods and Services subject to adjustment.

- (b) If the currency in which the Contract Price  $P_0$  is expressed is different from the currency of origin of the labor and material indices, a correction factor will be applied to avoid incorrect adjustments of the Contract Price. The correction factor shall be:  $Z_0 / Z_1$ , where,
  - $Z_0$  = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P<sub>0</sub> on the Base date, and
  - $Z_1$  = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price  $P_0$  on the Date of Adjustment.
- (c) No price adjustment shall be payable on the portion of the Contract Price paid to the Supplier as advance payment.

## **Section X - Contract Forms**

### **Table of Forms**

Notification of Intention to Award	
Beneficial Ownership Disclosure Form	
Letter of Acceptance	
Contract Agreement	
Performance Security	
Advance Payment Security	

## Notification of Intention to Award

[This Notification of Intention to Award shall be sent to each Bidder that submitted a Bid.]

# [Send this Notification to the Bidder's Authorized Representative named in the Bidder Information Form]

For the attention of Bidder's Authorized Representative Name: [insert Authorized Representative's name] Address: [insert Authorized Representative's Address] Telephone/Fax numbers: [insert Authorized Representative's telephone/fax numbers] Email Address: [insert Authorized Representative's email address]

[IMPORTANT: insert the date that this Notification is transmitted to Bidders. The Notification must be sent to all Bidders simultaneously. This means on the same date and as close to the same time as possible.] DATE OF TRANSMISSION: This Notification is sent by: [email/fax] on [date] (local time)

# **Notification of Intention to Award**

Purchaser: [insert the name of the Purchaser] Project: [insert name of project] Contract title: [insert the name of the contract] Country: [insert country where RFB is issued] Loan No. /Credit No. / Grant No.: [insert reference number for loan/credit/grant] RFB No: [insert RFB reference number from Procurement Plan]

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period you may:

- a) request a debriefing in relation to the evaluation of your Bid, and/or
- b) submit a Procurement-related Complaint in relation to the decision to award the contract.

#### 1. The successful Bidder

Name:	[insert name of successful Bidder]
Address:	[insert address of the successful Bidder]
Contract price:	[insert contract price of the successful Bid]

2. Other Bidders [INSTRUCTIONS: insert names of all Bidders that submitted a Bid. If the Bid's price was evaluated include the evaluated price as well as the Bid price as read out.]

Name of Bidder	Bid price	Evaluated Bid price (if applicable)
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]

#### 3. Reason/s why your Bid was unsuccessful

[INSTRUCTIONS: State the reason/s why <u>this</u> Bidder's Bid was unsuccessful. Do NOT include: (a) a point by point comparison with another Bidder's Bid or (b) information that is marked confidential by the Bidder in its Bid.]

#### 4. How to request a debriefing

DEADLINE: The deadline to request a debriefing expires at midnight on *[insert date]* (local time).

You may request a debriefing in relation to the results of the evaluation of your Bid. If you decide to request a debriefing your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award.

Provide the contract name, reference number, name of the Bidder, contact details; and address the request for debriefing as follows:

Attention: [insert full name of person, if applicable]

**Title/position**: [insert title/position]

Agency: [insert name of Purchaser]

Email address: [insert email address]

Fax number: [insert fax number] delete if not used

If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice.

#### 5. How to make a complaint

**Period:** Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).

Provide the contract name, reference number, name of the Bidder, contact details; and address the Procurement-related Complaint as follows:

Attention: [insert full name of person, if applicable]

Title/position: DEPUTY DIRECTOR (SUPPLY CHAIN MANAGEMENT)

#### Agency: KENYA NATIONAL HIGHWAYS AUTHORITY

Street Address:

#### BARABARA PLAZA, BLOCK C,

### JOMO KENYATTA INTERNATIONAL AIRPORT (JKIA) OFF AIRPORT SOUTH ROAD, ALONG MAZAO ROAD, NAIROBI

Floor/Room number:

#### SECOND FLOOR, SUPPLYCHAIN MANAGEMENT OFFICE

Email address: [insert email address]

City: NAIROBI

Country: **KENYA** 

At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

Further information:

For more information see the <u>Procurement Regulations for IPF Borrowers (Procurement Regulations)[https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005]</u> (Annex III). You should read these provisions before preparing and submitting your complaint. In addition, the World Bank's Guidance "<u>How to make a Procurement-related Complaint</u>" [http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework] provides a useful explanation of the process, as well as a sample letter of complaint.

In summary, there are four essential requirements:

- 1. You must be an 'interested party'. In this case, that means a Bidder who submitted a Bid in this bidding process, and is the recipient of a Notification of Intention to Award.
- 2. The complaint can only challenge the decision to award the contract.
- 3. You must submit the complaint within the period stated above.
- 4. You must include, in your complaint, all of the information required by the Procurement Regulations (as described in Annex III).

#### 6. Standstill Period

**DEADLINE:** The Standstill Period is due to end at midnight on [*insert date*] (local time).

The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.

The Standstill Period may be extended as stated in Section 4 above.

If you have any questions regarding this Notification please do not hesitate to contact us.

On behalf of the Purchaser:

Signature:	
Name:	
Title/position:	
Telephone:	
Email:	

## **Beneficial Ownership Disclosure Form**

# INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful Bidder<sup>1</sup>. In case of joint venture, the Bidder must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Bidder is any natural person who ultimately owns or controls the Bidder by meeting one or more of the following conditions:

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder

**RFB No.:** [insert number of RFB process] **Request for Bid No**.: [insert identification]

#### To: [insert complete name of Purchaser]

In response to your request in the Letter of Acceptance *dated* [insert date of letter of Acceptance] to furnish additional information on beneficial ownership: [select one option as applicable and delete the options that are not applicable]

(i) we hereby provide the following beneficial ownership information.

#### Details of beneficial ownership

Identity of Beneficial Owner	Directly or indirectly holding 25% or more of the shares (Yes / No)	Directly or indirectly holding 25 % or more of the Voting Rights (Yes / No)	Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Bidder
			(Yes / No)
[include full nam (last, middle, first nationality, count of residence]	t),		

#### OR

# (ii) We declare that there is no Beneficial Owner meeting one or more of the following conditions:

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder

#### OR

(iii) We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Bidder shall provide explanation on why it is unable to identify any Beneficial Owner]

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder]"

Name of the Bidder: \*[insert complete name of the Bidder]\_\_\_\_

Name of the person duly authorized to sign the Bid on behalf of the Bidder: \*\*[*insert* complete name of person duly authorized to sign the Bid]\_\_\_\_\_

**Title of the person signing the Bid**: [*insert complete title of the person signing the Bid*]\_\_\_\_\_

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date signed [insert date of signing] day of [insert month], [insert year]

<sup>\*</sup> In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder. In the event that the Bidder is a joint venture, each reference to "Bidder" in the Beneficial Ownership Disclosure Form (including this Introduction thereto) shall be read to refer to the joint venture member.

<sup>\*\*</sup> Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

### Letter of Acceptance

[use letterhead paper of the Purchaser]

To: [name and address of the Supplier]

Subject: Notification of Award Contract No. .....

This is to notify you that your Bid dated *[insert date]* for execution of the *[insert name of the contract and identification number, as given in the SCC]* for the Accepted Contract Amount of *[insert amount in numbers and words and name of currency]*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish (i) the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms and (ii) the additional information on beneficial ownership in accordance with BDS ITB 45.1 within eight (8) Business days using the Beneficial Ownership Disclosure Form, included in Section X, - Contract Forms, of the Bidding Document.

Authorized Signature:	
Name and Title of Signatory: _	
Name of Agency:	

**Attachment: Contract Agreement** 

[date]

## **Contract Agreement**

[The successful Bidder shall fill in this form in accordance with the instructions indicated]

#### THIS AGREEMENT made

the [insert: number] day of [insert: month], [insert: year].

#### BETWEEN

- (1) [insert complete name of Purchaser], a [insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of {insert name of Country of Purchaser}, or corporation incorporated under the laws of {insert name of Country of Purchaser}] and having its principal place of business at [insert address of Purchaser] (hereinafter called "the Purchaser"), of the one part, and
- (2) *[insert name of Supplier]*, a corporation incorporated under the laws of *[insert: country of Supplier]* and having its principal place of business at *[insert: address of Supplier]* (hereinafter called "the Supplier"), of the other part:

WHEREAS the Purchaser invited Bids for certain Goods and ancillary services, viz., *[insert brief description of Goods and Services]* and has accepted a Bid by the Supplier for the supply of those Goods and Services

The Purchaser and the Supplier agree as follows:

- 1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
- 2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other contract documents.
  - (a) the Letter of Acceptance
  - (b) the Letter of Bid
  - (c) the Addenda Nos.\_\_\_\_ (if any)
  - (d) Special Conditions of Contract
  - (e) General Conditions of Contract
  - (f) the Specification (including Schedule of Requirements and Technical Specifications)
  - (g) the completed Schedules (including Price Schedules)

- (h) any other document listed in GCC as forming part of the Contract
- 3. In consideration of the payments to be made by the Purchaser to the Supplier as specified in this Agreement, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
- 4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of *[insert the name of the Contract governing law country]* on the day, month and year indicated above.

For and on behalf of the Purchaser

Signed: [insert signature] in the capacity of [insert title or other appropriate designation] In the presence of [insert identification of official witness]

For and on behalf of the Supplier

Signed: [insert signature of authorized representative(s) of the Supplier] in the capacity of [insert title or other appropriate designation] in the presence of [insert identification of official witness]

## **Performance Security**

### **Option 1: (Bank Guarantee)**

[The bank, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: [insert name and Address of Purchaser]

**Date:** \_ [Insert date of issue]

**PERFORMANCE GUARANTEE No.:** [Insert guarantee reference number]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

We have been informed that \_ [insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture] (hereinafter called "the Applicant") has entered into Contract No. [insert reference number of the contract] dated [insert date] with the Beneficiary, for the supply of \_ [insert name of contract and brief description of Goods and related Services] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (\_\_\_\_\_\_) *[insert amount in words]*,<sup>1</sup> such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the .... Day of .....,  $2...^2$ , and any demand for payment under it must be received by us at this office indicated above on or before that date.

<sup>&</sup>lt;sup>1</sup> The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, and denominated either in the currency (ies) of the Contract or a freely convertible currency acceptable to the Beneficiary.

<sup>&</sup>lt;sup>2</sup> Insert the date twenty-eight days after the expected completion date as described in GC Clause 18.4. The Purchaser should note that in the event of an extension of this date for completion of the Contract, the Purchaser would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Purchaser might consider adding the following text to the form, at the end of the penultimate

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

### **Option 2: Performance Bond**

By this Bond [insert name of Principal] as Principal (hereinafter called "the Supplier") and [insert name of Surety] as Surety (hereinafter called "the Surety"), are held and firmly bound unto [insert name of Purchaser] as Obligee (hereinafter called "the Supplier") in the amount of [insert amount in words and figures], for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Supplier and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Supplier has entered into a written Agreement with the Purchaser dated the \_\_\_\_\_\_day of \_\_\_\_\_\_, 20 \_\_\_\_, for [name of contract and brief description of Goods and related Services] in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Supplier shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Supplier shall be, and declared by the Purchaser to be, in default under the Contract, the Purchaser having performed the Purchaser's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) complete the Contract in accordance with its terms and conditions; or
- (2) obtain a Bid or Bids from qualified Bidders for submission to the Purchaser for completing the Contract in accordance with its terms and conditions, and upon determination by the Purchaser and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Purchaser and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Purchaser to Supplier under the Contract, less the amount properly paid by Purchaser to the Supplier; or
- (3) pay the Purchaser the amount required by Purchaser to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted not later than twenty-eight (28) days following the date of completion of the Supplier's performance of its obligations under the Contract, including any warranty obligations.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Purchaser named herein or the heirs, executors, administrators, successors, and assigns of the Purchaser.

In testimony whereof, the Supplier has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this \_\_\_\_\_ day of \_\_\_\_\_ 20

.

SIGNED ON	on behalf of
By	in the capacity of
In the presence of	
SIGNED ON	on behalf of
Ву	in the capacity of
In the presence of	

## **Advance Payment Security**

## **Demand Guarantee**

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: [Insert name and Address of Purchaser]

**Date:** [Insert date of issue]

**ADVANCE PAYMENT GUARANTEE No.:** [Insert guarantee reference number]

Guarantor: [Insert name and address of place of issue, unless indicated in the letterhead]

We have been informed that [insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture] (hereinafter called "the Applicant") has entered into Contract No. [insert reference number of the contract] dated [insert date] with the Beneficiary, for the execution of [insert name of contract and brief description of Goods and related Services] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum *[insert amount in figures]* () *[insert amount in words]* is to be made against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (\_\_\_\_\_) *[insert amount in words]*<sup>1</sup> upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (d) has used the advance payment for purposes other than toward delivery of Goods; or
- (e) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

<sup>&</sup>lt;sup>1</sup> The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Purchaser.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number [insert number] at [insert name and address of Applicant's bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, has been certified for payment, or on the *[insert day]* day of *[insert month]*, 2 *[insert year]*, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.