



*The Kenya Power & Lighting Co. Ltd.*  
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*Stima Plaza, Kolobot Road*

**Our Ref:** KP1/6A.1/PT/13/16/A58/COO

*6<sup>th</sup> April, 2017*

Dear Sir/ Madam,

**CLARIFICATION No. 2 OF BIDDING DOCUMENT FOR ICB NO: KP1/6A.1/PT/13/16/A58 DESIGN, SUPPLY, INSTALLATION OF ADVANCED METERING INFRASTRUCTURE (AMI) SYSTEMS TO SUPPORT REVENUE RECOVERY AND PROTECTION PROGRAMS**

**1. CLARIFICATION TO BID DOCUMENT**

The following responses are made to clarifications sought on various issues in the Bidding Documents for Procurement of AMI system Equipment and associated attachments.

No.	Query	Response
1	<p>Dear AMI tender committed team: Regarding the AMI tender number, we wish to have your clarification which number is correct, as for the tender security, the bank need us to provide the right information.</p> <p>1) On the original tender document on 6th Jan 2017, the tender number is KPI/6A.1/PT/13/16/A58, but on the amendment on 23rd March 2017, the tender number is KP1/6A.1/PT/8/16/A58.</p> <p>Your soon reply is highly appreciated.</p>	<p>The tender number is <b>KP1/6A.1/PT/13/16/A58</b></p>
2	<p>We are in a process to prepare tender security. We have two issues pointed out from bank:</p> <ul style="list-style-type: none"> <li>• As per Tender Security format, URDG ICC No.458 (last paragraph-attached) is old law, and the bank is not accepting. As per bank it must be URDG 758.</li> <li>• Further, in tender security format, bond expiry date is not mentioned.</li> </ul> <p>We request to allow us to mention URDG 758 instead of ICC NO 458.</p> <p>Also, we will mention security expiry date as per instructions to bidders.</p> <p>Hope the above-mentioned changes are acceptable.</p>	<p>URDG ICC No.758 supersedes URD ICC No.458. Mention 758. <b>Refer attachment 2.1</b></p> <p><b>Refer ITB 20.3</b></p>
3	<p>1- Modular Communication is required Could you please confirm we can provide meters with integrated communication Modems?</p>	<p>Yes.</p>
4	<p>2- PLC protocol is not specified</p>	<p>The communication is as per the supplier's</p>

No.	Query	Response
	Could you please confirm the solution with G3-PLC protocol will comply with your requirements?	design. <b>The communication must meet requirements of Clause 2.1.3</b> <i>(Like response no 85 on clarifications1)</i>
5	3- STS Certification: Could you please confirm the Bidder is allowed to provide it during development phase?	No. STS Certification to be provided with bid document
6	4- Terminal Connexion Symmetric: We utilize the asymmetric type. Could you please confirm the Bidder is allowed to provide symmetric type?	No. Terminal Connection Symmetric
7	5- Keypad location: on meter or on IHD? Could you please confirm the Bidder is allowed to provide solution with keypad located on the IHD?	The key pad will be on the UIU. Meter and UIU shall be split. The following communication modes between the meter and UIU are acceptable; ZIGBEE, PLC, Wifi. <b>(Response No.7 in the clarifications1)</b>
8	6- UIU (User Interface Unit) protocol not specified: Wireless? Wired? Could you please confirm the UIU interface can be wired?	The key pad will be on the UIU. Meter and UIU shall be split. The following communication modes between the meter and UIU are acceptable; ZIGBEE, PLC, Wifi. <b>(Response No.7 in the clarifications1)</b>
9	7- Off power reading The reading without power functionality is very important for the static meters, but since we are considering here Smart Meters, could you please this functionality is not mandatory?	The off-power reading feature requirement is mandatory.
10	We noticed that the tender name is the same however the old ICB No. is "KPI/6A.1/PT/13/16/A58" While in the addendum the No. is "ICB NO KPI/6A.1/PT/8/16/A58." Please advise,	The tender number is <b>KPI/6A.1/PT/13/16/A58</b>
11	The acceptable communication between UIU and MCU are given as ZIGBEE, PLC, WIFI. Our question is that are the communication only limited to the above three types?	The key pad will be on the UIU. Meter and UIU shall be split. The following communication modes between the meter and UIU are acceptable; ZIGBEE, PLC, Wifi. <b>(Response No.7 in the clarifications1)</b>
12	It is clarified that the online prepayment means automatic loading of credit to the meter. Our question is that shall the bidder provide the STS vending system for this tender or the MDMS shall integrate with KPLC existed STS vending system?	The supplier shall integrate. <b>Refer clause 3.3.3</b>
13	For the experience requirements 2.4.1 and 2.4.2, will these requirements also be met by the subcontractor?	Details as per clause 2.4.1 and 2.4.2
14	For the estimates on the cables, our question is that the 16mm SQ AL PVC insulated shall be 1 core or 2 core?	Single core concentric cable.
15	In technical specification, in the GTS of single phase energy meter, item 4.5.7-meter type export details. Our questions is that what does meter type export details mean?	<b>Meter type export details.</b> Supplier proof of experience and or past supply of AMI meters required.
16	"The contractor to estimate the quantities of cables required and include in the price schedules (see the updated price schedules)" Q1: The updated price schedules are not provided yet, and the mentioned addendum is not provided	No price schedules provided. Refer <b>Attachment 1-of addendum 1</b>

No.	Query	Response
17	Clause 1.2.3-System Architecture, Does the Data Centers have enough space for multiple racks? What's the size of Data Centers? How much empty space necessary for the rack design? Shall the contractor provide the rack for the servers	Refer Clause 9.9.8.3
18	As mentioned that KPLC has the existing DRC, shall the bidder provide any hardware for the standby database?	Refer Clause 9.9.8.3
19	Grand total quantity in the schedule of Transformer to be ring fenced Attached-Provisional Estimate is not for total 55,000 meter users mentioned in Tender document. Please clarify the exact quantity.	Refer Clause 10.1
20	In the technical specification, it mentions appendix A, B, C, D, but there is no appendix. Does it refer to the Annex 1, 2, 3,4	No appendices. Only annexes.
21	We understand that there are more items for clarification, and it is not enough to prepare the tender, including field research and comprehensive proposal preparation, we would like to request to extend this tender for another one month.	Refer Addendum 1. <b>ITB 23.1 and ITB 26.1</b>
22	In the BDS for DCU the reference numbers e,g 7.1 is different from what is in the document Volume 2	Refer <b>attachment 2.2</b>
23	<p>During AMI implementation, the MRS is provided by the meter manufacturer. The communication infrastructure is installed by another vendor. The MDMS vendor integrates the MAS with MDMS through communication infrastructure. Normally MDMS vendor is not responsible for implementing entire AMI infrastructure.</p> <p>We request that for MDMS, experience related to provision of the MDMS application must be considered. rather than supply of the entire AMI infrastructure technology.</p> <p>We request you to kindly modify this clause accordingly.</p>	Refer Clause 2.4.2, <b>ITB 2.7 and ITB 11.1</b>

**Yours faithfully,**

**For: KENYA POWER & LIGHTING COMPANY LIMITED.**



**Eng. MICHAEL ADHIAMBO**  
**MANAGER-PROJECTS DEVELOPMENT**

**ATTACHMENT 2.1 VOLUME 1 SECTION IV – FORM OF BID SECURITY**

**FOLLOWS:**

**Form of Bid Security (Bank Guarantee)**

Beneficiary: \_\_\_\_\_

Date: \_\_\_\_\_

BID GUARANTEE No.: \_\_\_\_\_

We have been informed that \_\_\_\_\_ (hereinafter called “the Bidder”) has submitted to you its bid dated \_\_\_\_\_ (hereinafter called “the Bid”) for the execution of \_\_\_\_\_ under Invitation for Bids No. \_\_\_\_\_ (“the IFB”).

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we \_\_\_\_\_ hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of \_\_\_\_\_ (\_\_\_\_\_) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

(a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or

(b) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder’s bid.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

\_\_\_\_\_  
*[signature(s)]*

## ATTACHMENT 2.2

### ANNEX 3: TECHNICAL GAURANTEE SCHEDULE FOR METER DATA

#### CONCENTRATORS

CLAUSE	KENYA POWER REQUIREMENTS	MANUFACUTURER'S COMPLIANCE/REMARKS	REFERENCE PAGE IN THE SUBMITTED DOCUMENT
7.5	<b>REQUIREMENTS</b> In addition to the requirements in IEC standards highlighted in section 2 above, the smart meter data concentrators shall fulfill the following requirements:		
7.5.1	<b>Operating conditions requirements</b>		
7.5.1.2	The data concentrators shall be suitable for operation in tropical climate where temperatures may vary from - 1 to +60 degrees Celsius.		
7.5.1.3	Average annual relative humidity reaching 90 % and altitude of up to 2,600 m above sea level.		
7.5.2	<b>Design and construction requirements</b>		
7.5.2.1	The data concentrator cover shall be made of Polycarbonate material.		
7.5.2.2	The data concentrators shall be for front projection mounting.		
7.5.2.3	The data concentrators shall conform to the degree of protection of least <b>IP 54</b> as given in <b>IEC 60529:1989</b> Degrees of protection provided by enclosures (IP Code) Amendment 1:1999.		
7.5.2.4	The data concentrators shall have provision for sealing the terminal covers for power intake and interfaces, where such terminals may have negative effect on the operation of concentrators.		
7.5.3	<b>Electrical requirements</b>		
7.5.3.1	The concentrator shall be operated from main power with reference values of: 3×57.7/100V to 230 V/400V, 3 x 1 (10) A at 50 Hz		

7.5.3.2	Primary currents and voltages for the concentrator shall be programmable through the software thus allowing primary metering of Demand and Energy.		
7.5.3.3	The concentrator shall be connectable as three phase four wire systems (3phase 4wire)		
7.5.3.4	The concentrator shall have connection drawing which shall be printed on the terminal cover		
7.5.3.5	The meter shall have reference standard currents of: - In= 1 A; I max = 10 A for the operating conditions stated in clause 4.1.1.		
7.5.3.6	The meters Power consumption shall meet IEC 62053-22		
7.5.3.7	Influence of short-time over-currents meet IEC 62053-22		
	Influence of self-heating meet IEC 62053-22		
	AC voltage test meet IEC 62053-22 7.1-7.4		
7.5.4	<b>Functional Requirements</b>		
7.5.4.1	The data concentrators shall automatically discover meters, providing 100% accuracy on the assets. It should upload (tariff tables) and monitors and reports tampering. It should have broadcast capability to enable demand response and load shedding.		
7.5.4.2	The data concentrator shall have a “Last gasp” mechanism to inform the system of outages, supported by an internal battery.		
7.5.4.3	The concentrators shall have facility for local and remote configuration to suit customers’ requirements.		
7.5.4.4	In case of power failure, it stores the data in the non-volatile memory, to be uploaded to the management system.		
7.5.4.5	The concentrators shall have remote and local clock synchronization capability.		
7.5.4.6	The concentrators shall have capability for local and remote firmware upgrade and shall have the following capabilities:		

	a) Runs automatic scheduled tasks and transfers the information to the (central station) management system.		
	b) Includes digital input and outputs to read or activate external devices.		
	c) Capable of sending immediate alerts on meter tampering. Logs events and stores up to 200 events.		
	d) Provides information on GPRS signal quality back to the control center		
	e) Collects and stores 30 days of data from a maximum of 1000 meters daily.		
	f) Stores the last 12 months of data.		
	g) Always on-line when power is on, the Concentrator connects to the main station automatically. If the connection is lost, the Concentrator will re-establish the connection.		
	h) Auto-discovery of smart meters, providing 100% accuracy on the assets.		
	i) Broadcast capability to enable demand response and load shedding.		
	j) Downloads tariff tables to the smart meters.		
	k) Includes a metering capability master and management system (Class 0.5s).		
	l) Should offer the freedom to choose meters from various vendors and avoid being reliant on proprietary solutions from a single source.		
	The data concentrator shall support meter data collection compliant with international standards IEC 62056 (DLMS) designed for interoperability with an open architecture.		
	The concentrator shall have Internet Protocol (IP) routing capability		
	The concentrator shall have remote and local web-based access for Configuration, monitoring and diagnostics.		
	Should provide an IP security (IPSec) mechanism to ensure high-quality, interoperable, and cryptology-based security for communication processes.		

	The concentrator shall include security mechanisms against theft and tamper with alerting features.		
	The concentrator should support upto 1,000 number of meters downstream		
	Feeding phase monitor: The concentrator should be able to identify the feeding phase of each meter (for single-phase meters ) and detect changing of feeding phase of meter via PLC communication		
7.5.5	<b>Data storage and logging</b>		
	a) The data concentrators shall have a non-volatile memory capable of data storage and with long-term data retention for the certified life of the concentrator or ten (10) years, whichever is greater without an electrical supply being supplied to the concentrator.		
	b) The data concentrators shall be capable of profiling at least four channels of energy and/or demand for a period of at least six (6) months.		
	c) The load profile integration period shall be programmable between 1 minute up to a maximum of sixty (60) minutes.		
	d) The data concentrators shall have at least twelve (12) billing historical data stored in memory and retrievable by software action.		
	e) The concentrator shall be capable to log events and store up to 100plus events.		
	f) The concentrator shall have configurable data logging intervals i.e. minutes, hours and days.		
7.5.6	<b>Electromagnetic Compatibility</b>		
	a) Dielectric strength:		
	b) Electrostatic discharge:		
	c) Burst:		
	d) Impulse voltage:		
	e) Electromagnetic field:		



7.5.7	<b>Accuracy requirements</b>		
	Tests and test conditions given in IEC 62052-11 shall apply.		
	The concentrator's accuracy shall be class 0.5s for active energy and class 2 for reactive energy measurements as per accuracy requirements given in 2.3 and 2.4 respectively.		
	Limits of errors due to variation of the current.		
	The requirements of 7.3 [3] and 7.4 [4] apply.		
	Limits of error due to influence quantities		
	The requirements of 7.3 [3] and 7.4 [4] apply		
	Test of starting and no-load condition		
	The requirements of 7.3 [3] and 7.4 [4] apply		
	Meter constant		
	The requirements of 7.3 [3] and 7.4 [4] apply		
	Accuracy test conditions		
	The requirements of 2.3 and 2.4 apply		
7.5.8	<b>Communication</b>		
	<b>General</b>		
	(a) The concentrators shall have two -way down-link communication mode that supports communication with the meters by PLC system,		
	(b) In addition to the PLC system, the down-link communication mode of concentrators shall provide local concentrator maintenance facility through the following methods:		
	(c) RS 232 or 485 interface as per ISO-8482		
	(d) Infra-red optical interface as per IEC 62056-21 standard		
	Ethernet		
	a. The concentrators shall have two -way up-link communication mode (WAN) that enables communication with Head End System (HES) by using the and GPRS 3G network and Gigabit Ethernet		
	b. The concentrators shall support TCP/UDP server and client mode GPRS interface.		
7.5.8.2	<b>Down link communication</b>		

	The data concentrators shall have plug and play communication module with that meets the following characteristics:		
	i) Operation mode:		
	ii) Communication distance:		
	iii) Maximum Response time (concentrator to meter): <b>10 seconds</b>		
	iv) <b>Single reading success rate: Minimum 99%</b>		
	v) Topology :		
7.5.8.3	<b>Up-link communication</b>		
	(a) The data concentrators shall have a two-way WAN communication to the Head End Systems through GPRS (mandatory), Electrical Ethernet (mandatory) and Optical Ethernet for interfacing to the WAN communication systems.		
7.5.8.4	<b>Up-link communication – GPRS</b>		
	The data concentrators shall have a GPRS modem that satisfies the requirements below:		
	i. Modem: <b>Pluggable 3G modem</b>		
	ii. Operating Band: WCDMA/HSDPA/HSUPA/HSPA+: Band 1, Band 8 GSM/GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz		
	iii. GPRS multi-slot class:10		
	iv. SIM-card holder : YES		
	v. SIM card interface: Standard USIM (Class B and Class C)		
	vi. Power supply for SIM card: 1.8V and 3V		
	vii. SMA connector for the antenna: yes		
	viii. SMS capability: YES		
7.5.9	<b>Up-link communication – Ethernet</b>		
	a) Electrical Ethernet interface that satisfies the requirements below:		
	i. Standard: 10 Base T		

	ii. Data rate: Minimum 10Mbps		
	iii. Distance: Maximum 100m		
	iv. Physical interface: RJ45 Cooper connector		
	b) Optical Ethernet interface that satisfies the requirements below:		
7.5.9	<b>Instructions and marking requirements</b>		
7.5.9.2	In addition to IEC 62052-11:2003 nameplate requirements, each data concentrator shall be marked legibly and indelibly with the following information:		
	a) Name or trade mark of the manufacturer;		
	b) Country of origin;		
	c) Type/model;		
	d) Serial number up to ten digits;		
	e) Barcode comprising of serial no;		
	f) The inscription “Property of K.P. & L. Co Ltd”;		
	g) Standard(s) to which the concentrator complies;		
	h) Year of manufacture.		
7.5.9.3	All markings to be written in English and with c), d) and e) <b>at least 4 mm</b> figure height.		
7.5.9.4	Every concentrator shall be <b>indelibly</b> marked with diagrams of connections for which the concentrator is intended.		
7.5.9.5	In addition, the following drawings and information shall be required with the tender:		
	(a) Concentrator drawing giving all the relevant dimensions;		
	(b) Wiring diagrams;		
	(c) Description leaflet;		
	(d) Service and operational manuals.		
7.5.9.6	The manufacturer shall provide a list of at least three previous utilities outside the country of manufacture to which the concentrator being offered has been supplied including addresses and contact person(s) of the utilities.		

7.5.9.7	The tenderer shall give proof that the number of Data Concentrators sold and installed in utilities outside the country of manufacture over a period of last 5 years shall not be less than 1,000. The addresses and contact person(s) shall be provided with the tender to facilitate confirmation of this information by the procuring entity.		
7.5.9.8	The manufacturer shall provide a list of at least three previous utilities outside the country of manufacture to which the concentrator being offered has been supplied including addresses and contact person(s) of the utilities.		
7.5.9.9	The tenderer shall give proof that the number of Data Concentrators sold and installed in utilities outside the country of manufacture over a period of last 5 years shall not be less than 1,000. The addresses and contact person(s) shall be provided with the tender to facilitate confirmation of this information by the procuring entity.		
7.5.10	<b>INFORMATION AND WARRANTY (IN CASE OF TENDER AWARD)</b>		
7.5.10.1	Drawings and technical details shall be submitted to KP for approval before manufacture of the concentrators commences. KP undertakes to submit their comments or approval for the drawings within three weeks of receiving the draft copies.		
7.5.10.2	Original software, software manuals and operation manuals shall be submitted in 3 copies. Description leaflets (brochures) shall be submitted in copies of 100.		
7.5.10.3	The concentrator shall have a warranty against any defects, which may develop due to faulty material, calibration, transportation or workmanship for a period of thirty-six months from the date of delivery. All defective concentrators shall be replaced at the supplier's cost.		
7.5.10.4	The manufacturer shall make a commitment in writing on the availability of essential spares and other consumables for the certified life of the concentrator.		
7.4.10.5	KP Engineers will inspect concentrator-manufacturing facilities intending to supply concentrators to the company for the first time at no extra cost, except the cost of the engineers' transportation to the nearest major airport. Such		

	inspection shall not in any way prejudice the purchaser's rights and privileges.		
7.5.10.6	The manufacturer shall meet the full costs of two Engineers, for concentrator inspection and acceptance testing at the manufacturer's facility, except the cost of Engineers' transportation from Kenya to the nearest major airport. The factory inspection and factory acceptance tests shall run for duration of three (3) working days each.		
7.5.10.7	After delivery of concentrators to KP, the manufacturer shall conduct training for at least 3 days for twenty people in Nairobi, Kenya. The training shall cover and not be limited to:		
	a) Concentrator features;		
	b) Concentrator installation;		
	c) Concentrator software;		
	d) Concentrator communication features, etc.		
7.5.10.8	The manufacturer shall meet the cost of the training described in clause (5.7).		
7.5.10.9	The concentrators shall be packaged in such a manner as to minimize damage and entry of moisture during transportation and handling.		
7.5.10.10	The concentrators shall be packed in suitable groups and/or batches with consecutive serial numbers provided by KP.		
7.5.10.11	Where test and/or calibration certificates/reports are issued by a laboratory other than the International/National Certification Authority, a copy of accreditation certificate shall be attached together with the tender documents.		
7.5.10.12	The manufacturer shall provide current e-mail addresses, fax and telephone numbers of the national/international testing/calibration laboratories and concentrator certification bodies to facilitate confirmation of the submitted test reports & certificates.		