 Eskom	Report	Technology
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CRITERIA FOR CELLULAR
NETWORK METERING MODEMS**

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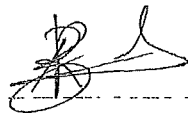
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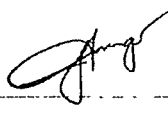
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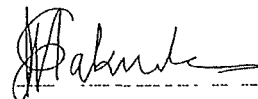
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1. Introduction

This document provides an overview of Eskom's technical requirements for an enquiry for the supply of cellular network metering modems and acts as a supplement to the detailed specification

This document defines the technical evaluation criteria that will be used in the enquiry for cellular network metering modems

2. Supporting clauses

2.1 Scope

2.1.1 Purpose

This document provides information relating to an enquiry for the evaluation, testing, acceptance and supply of cellular network metering modems to be utilized in Eskom

The enquiry includes the following items

Table 1: List of items for enquiry

	Item
1	NB-IOT Cellular Network Modem
2	4G Cellular Network Modem

Suppliers may tender for a single modem or both modem options. The tenderers shall be required to provide the necessary drawings, manuals, certificates and test samples for the evaluations

2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions

2.2 Normative/informative references

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems
- [2] 240-61266818 Specification for cellular network modems for remote metering
- [3] 240-76624509 Control of new metering product and version changes in technical, software, firmware and hardware
- [4] 32-1034 Eskom's Procurement and Supply Chain Management Procedure

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

Definition	Description
Chip SIM	An embedded chip which is soldered directly onto a modem circuit board
Modem	A device capable of transferring data via the Global Systems Mobile for Communications (GSM)
MV90	The software package used as the Data Acquisition System (DAS), which was developed by Itron of the USA
NB-IOT Modem	Is a cellular modem that operates on a 4G/5G platform but that are enabled for NB-IOT and has 2G fallback capabilities
4G Modem	Is a Cellular modem that communicates or operates on the 4G platform but that are enabled for 4G broadband speeds/capabilities
SIM card	A subscriber Identity Module (SIM) card is a smart card capable of storing information

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary)

2.4 Abbreviations

Abbreviation	Description
APN	Access Point Name
HES	Head-End System
SIM	Subscriber Identity Module

2.5 Roles and responsibilities

This document defines the technical evaluation criteria that will be used by the Eskom technical evaluation team for the evaluation of cellular network modems for metering

2.6 Process for monitoring

Not applicable

2.7 Related/supporting documents

Not applicable

3. Project Timeframes and Deliverables

The technical evaluation will be conducted over three phases as follows

Phase 1: Mandatory Requirements Evaluation

- Duration 1 week

Each supplier / manufacturer shall pass the Mandatory Requirements Evaluation. Suppliers / manufacturers not meeting any of the Mandatory Requirements Evaluation shall be excluded from further evaluation.

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Table 2: Mandatory Requirements

	Mandatory Requirements	Evidence Required
1	Completed Excel Files – A&B Technical Schedules	Completed Excel Sheet submitted
2	Detailed manuals	Submitted modem manuals
3	ICASA approval Certificate	Submitted ICASA Certificate

Phase 2: Product A&B Schedules, Risk and Support Evaluation

- Duration 3 weeks

Suppliers / manufacturers shall be evaluated on the tender returnables (Technical schedules and Risk and Support) Suppliers / manufacturers which have passed Phase 1 of the evaluation process will be required to provide two samples of all modems offered and its associated cables, antennas and software which will be evaluated during Phase 3 The two modem samples, cables, antenna's and software can be submitted on the day of the demonstrations

In addition, the suppliers / manufacturers that have passed phase 2 will be requested about two weeks prior to the start of the demonstration phase to provide the SIM card details of the specific Chip SIMs of the two sampled modems This will be needed for Eskom to timeously provision the SIM cards on the Eskom private APN's

Phase 3: Modem and Software Evaluation

- Duration 2 months

Only suppliers that meet the criteria set aside for Phase 1 and 2 will move onto Phase 3 of the technical evaluation Suppliers / manufacturers shall be advised of their qualification for the third phase of the evaluation

The modem and software evaluation will be conducted during demonstration sessions at Eskom EAL Offices The date and venue arrangements for the demonstrations shall be shared with suppliers that have qualified for the third phase of the evaluation

Suppliers shall provide two modem samples including all cabling, connectors and software, to be subjected to configuration and testing, on the day of the demonstration

Eskom shall provide samples of Eskom approved meters, meter configuration software, SIM cards provisioned on Eskom APN's and setup an MV90 workstation and or engineering station for testing purposes Eskom shall also provide the list of our approved meters to the suppliers The Chip SIM details of the sampled modems shall be requested from suppliers prior to the demonstration phase

The demonstrations (evaluations) shall include the following

- The configuration of the modems
- Software evaluations
- Evaluating compatibility with Eskom approved meters and HES
- Technical evaluation of the modem (watchdog timers, server mode, client mode, etc)

4. Tender Returnables (Technical)

Tenderers shall supply the following information

- 1) Completed general questionnaire as listed in the Excel files for **each** item
- 2) Completed Mandatory Requirements sheet for each item as listed in the Excel file
- 3) Completed A&B technical schedules for **each** item tendered as listed in the Excel file
- 4) Completed risk and support questionnaire as listed in the Excel files for **each** item
- 5) Completed deviation schedule as listed in the Excel files for **each** item where applicable

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-
- 6) Details regarding the make and model numbers of all items offered and auxiliary components
- 7) Data sheets, brochures, certificates, detailed product manuals and software manuals for all components offered

Please note all submitted documents shall in addition be submitted in electronic format on USB sticks

The supplier is required to supply the following on

The Mandatory Requirements Sheet:

- Indicate compliance under Response column by indicating Yes or No
- By providing the link or reference to the evidence under the Reference/Justification column

The A&B Technical schedule:

- Indicate compliance under Schedule B by indicating Yes (or Y), Partial (or P) or No (or N)
- By elaborating under Reference/Justification why they are compliant or not In addition the supplier should indicate the reference (specific document and clause and or sub clause) It is preferred that the supplier also add a hyperlink to the reference
- By describing the deviation if any deviation to the clause exists The supplier should add the reference to the specific clause or clauses in their supporting documents that points out the deviation It is preferred that the supplier also add a hyperlink to the reference

The Control of New Products Deviation Schedule (DS):

- Suppliers shall list any deviation to the document's requirements and indicate the specific section and/or clause numbers It will be preferred that the supplier also add a hyperlink to the specific clause

The Cyber Security Standard for Operational Technology (DS):

- Suppliers shall list any deviation to the document's requirements and indicate the specific section and/or clause numbers It will be preferred that the supplier also add a hyperlink to the specific clause

Please note that separate technical and deviation schedules will have to be completed and submitted for each product offered where applicable

5. Tender Evaluation (Technical)

Tender responses shall be evaluated using the methodology of the Preferential Procurement Policy Framework Act (05 of 2000)

The technical tender evaluation will comprise of 3 phases The first phase consists of the mandatory requirements evaluation where all requirements must be met to be eligible for further evaluation This is a non-scoring phase The second phase of the technical evaluation consists out of the Product A&B schedules and the Risk and Support evaluation The final phase of the evaluation will be the software and physical testing of the modems and associated equipment through a demonstration Phases 2 & 3 are the scoring phases

The overall technical scoring shall be made up of scoring in the various sub-categories during the different phases of the technical evaluation as follows

Table 3: Technical scoring breakdown

Technical Criteria	Weightings
Product A&B Schedules, Risk and Support (phase 2)	50
Modem and Software Evaluation (phase 3)	50
Total	100
Minimum threshold for qualification	80

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Phase 2 shall be made up of scoring in two sub-categories and shall be adjudicated a score out of 100 as follows

Table 4: Phase 2 scoring breakdown

Phase 2 - Technical sub-category	Weightings
Product A&B Schedules	70
Risk and Support	30
Total	100
Minimum threshold for qualification	80

Only suppliers that meet the minimum threshold for Phase 2 will move onto Phase 3 of the technical evaluation Tenders that do not meet the minimum threshold shall be excluded from further evaluation

Phase 3 shall be made up of scoring in the sub-category of modem and software evaluation and shall be adjudicated a score out of 100 with a **minimum threshold for qualification of 80**

The detailed scoring methodologies in each sub-category are defined in the following sections

5.1 Phase 2- Technical Sub-Category: Technical Requirements - Product A&B Schedules

This section shall comprise scoring of the technical schedules

Different weightings (1, 5 & 10) will be assigned to each of the requirements listed under the A&B technical schedules based on the criticality Critical items, for an example, will be assigned a weight of 10 Each item will be assigned a score by the Eskom evaluation team based upon the tendered response and cross-checked with the supporting documents provided

Table 5: Scoring of items in Technical Schedules A&B

Criteria	Score
Fully compliant - (Indicated as Y in A&B Schedules) Note Responses which provided all the required technical information will be scored as fully compliant	3
Partially compliant - (Indicated as P in A&B Schedules) Note Responses which provided some of the required technical information but not all of the required information will be scored as partially compliant	1
Non-compliant - (Indicated as N in A&B Schedules) Note Responses which did not meet the technical requirements or where no information was provided will be scored as non-compliant	0

The score for each item will be multiplied by its weighting to obtain the total score per item All scores for the A&B Schedule will be tallied and shall be calculated based on the maximum possible score This will be recorded as the percentage score

5.2 Phase 2 – Technical Sub-Category: Risk and Support

The Eskom technical team will evaluate the risk and support capability of the supplier / product based on the Risk and Support Questionnaire as listed in the Excel file, deviation schedules and from the non-scored components in Sub-Category Product A&B schedules The evaluation of the risk and support of the product / supplier shall be adjudicated a score out of 100 made up of two areas as follows

Product Risk (60): A score derived for the product risk based on the following areas and weighted as follows

- Installed base / time that the product has been installed (25%)

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- Deviations from standards (25%)
- Ability to deliver (25%)
- Historical performance (25%)

Support (40): A score derived for support based on the following areas and weighted as follows

- Local expertise (30%)
- Maintenance (30%)
- Training (20%)
- Spares holding (20%)

5.3 Phase 3 – Technical Sub-Category: Modem and Software Evaluation

Suppliers will be required to demonstrate the technical requirements or functionality of the modem as well as the functionality of the modem software to the Eskom Technical Team as per the criteria below. The scoring principles (including weightings) applied to the Technical Schedules A&B (see section 5.1) shall also apply to the modem and software evaluation as per the following table

Table 6: Scoring of items in Modem & Software Evaluation

Criteria	Score
Fully compliant - (Indicated as Y in A&B Schedules) Note Responses which provided all the required technical information will be scored as fully compliant	3
Partially compliant - (Indicated as P in A&B Schedules) Note Responses which provided some of the required technical information but not all of the required information will be scored as partially compliant	1
Non-compliant - (Indicated as N in A&B Schedules) Note Responses which did not meet the technical requirements or where no information was provided will be scored as non-compliant	0

Suppliers are required to demonstrate the following

Software Evaluation

- Security features of the software
- Utilising the modem software for configuration of
 - APN settings
 - Serial settings
 - Client/server mode where applicable
 - Watchdog timers
 - Security Settings where applicable
 - Dual SIM functionality where applicable
- Utilising the modem software for querying statuses locally and remotely where applicable such as
 - Signal strength indication
 - Modem start-up monitoring
 - Overall modem settings

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Modem Technical Evaluation

- Subjecting modem to certain conditions to initiate or evaluate watchdog timers
- Test server mode and client mode where applicable
- Test compatibility with Eskom's approved meters
- Test compatibility with Eskom's approved HES
- Test Dual SIM functionality where applicable
- Operating voltages and deviations
- The terminal arrangements and connections
- IP Ratings
- Mounting arrangement
- Dimensions
- Communication ports

Please note that the Eskom Technical Team may request the supplier to demonstrate compliance to any requirement as stipulated above and or in the specification

6. Authorization

This document has been seen and accepted by

Name and surname	Designation
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Deon Van Rooi	Metering, DC and Security Technologies Manager
Edison Makwarela	Senior Consultant Engineering

7. Revisions

Date	Rev.	Compiler	Remarks
March 2025	3	RR Brooks	Revised document to accommodate new requirements
July 2024	2	RR Brooks	Revised document to accommodate new requirements
Nov 2018	1	RR Brooks	Revised document to accommodate new requirements
March 2017	0	RR Brooks	New document required for the issue of enquiry

8. Development team

The following people were involved in the development of this document

- Reginald Brooks
- Mohamed Omar
- Henri Groenewald
- Raees Dalvie

9. Acknowledgements

Not applicable

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