

 Eskom	Report	Technology
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Title: **TECHNICAL EVALUATION
CRITERIA FOR FREE STANDING
RING MAIN UNITS**

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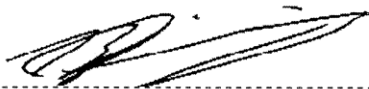
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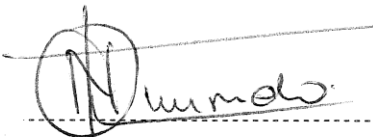
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1. Introduction

This document has been developed to set the standard technical evaluation criteria to be used when evaluating the tender submissions for free standing ring main units to be used in Eskom. This includes both the free standing RMUs and free standing IRTU fitted RMUs that are rated for use on three-phase cable systems for nominal voltages from 3.3 kV up to and including 33 kV, and are designed for indoor or outdoor operation at a rated frequency of 50 Hz.

Note: 11 kV RMUs will be used for networks with any of the following system voltages: 3.3 kV, and 6.6 kV.

This document contains both the evaluation criteria used for the documentation evaluation, factory evaluation and sample evaluation. In addition it contains the questions which are required for technical evaluation purposes.

2. Supporting clauses

2.1 Scope

The document covers the criteria for the evaluation of free standing ring main units (RMUs) used within Eskom Holdings SOC (Ltd). The document addresses the standard documented technical evaluation criteria to be used when evaluating the tender submissions for the free-standing ring main units in line with the Eskom Holdings SOC (Ltd) requirements and it is applicable to all the technical evaluations for the related tender submissions.

2.1.1 Purpose

The document provides the standard documented technical evaluation criteria to be used when evaluating the tender submissions for the free standing RMUs and free standing IRTU fitted RMUs in line with the Eskom Holdings SOC (Ltd) requirements, and it is applicable to all the technical evaluations for the related tender and or pre-qualification submissions

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.

2.2.2 Informative

- [2] 240-56030406: Specification for Ring Main units for systems with nominal Voltages from 3.3 kV to 33 kV.
- [3] 240-97690165: Tele-control requirements for ring main units.
- [4] SANS 62271- 202, High voltage switchgear and control gear part 202: high voltage / low voltage prefabricated substation.
- [5] SANS 62271- 200, High voltage switchgear and control gear part 200 AC metal enclosed: ac metal enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV.
- [6] SANS 1874, Switchgear — Metal-enclosed ring main units for rated AC voltages above 1 kV and up to and including 36 kV.
- [7] D-DT 8060: RMU, 11kV and 22kV, indoor and outdoor stand alone.

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[8] D-DT 8061: RMU 11 and 22kV OD and ID IRTU.

2.3 Definitions

2.3.1 General

The definitions in this document and 240- 56030406 shall apply.

Definition	Description
Eskom evaluating Representative(s)	The person(s) appointed by Eskom to perform the evaluation of tender submission(s) in line with the Eskom requirements.
Ring main unit (RMU):	A medium voltage metal-enclosed switchgear assembly that comprises a combination of switch dis-connectors, switch-fuse combinations or circuit-breaker functions. These functions incorporate integral cable earthing switches and have facilities for cable testing.

2.3.2 Disclosure classification

Confidential: the classification given to information that may be used by malicious/opposing/hostile elements to harm the objectives and functions of Eskom Holdings Limited.

2.4 Abbreviations

The abbreviations in this document and 240- 56030406 shall apply.

Abbreviation	Description
IAC	Internal Arc Classification
IRTU	Integrated remote terminal unit
MV	Medium Voltage
RMU	Ring main unit

2.5 Roles and responsibilities

All Eskom employees and/or appointed bodies involved in the procurement of free standing RMUs and free standing IRTU fitted RMUs shall ensure that the product deliverable meets the requirements of these technical evaluation criteria. Any deviation from these requirements shall constitute non-conformance, unless it was in advance agreed to by a delegated Cable Systems Specialist and is based on sound engineering judgement.

All suppliers must be conversant with the requirements of this standard, and shall comply with the requirements. Suppliers shall ensure that they obtain clarity where required and obtain all supporting information or documents necessary to comply with this document.

2.6 Process for monitoring

The free standing RMUs and free standing IRTU fitted RMUs acceptance shall be based on fully compliant documentation submissions, the compliant factory acceptance tests of the free standing RMUs and free standing IRTU fitted RMUs, proving manufacturing capability and capacity during factory evaluations, and the sample compliance to Eskom requirements. Any non-disqualifying deviations shall be corrected as part of possible contract award or pre-qualification listing.

2.7 Related/supporting documents

Technical Schedules A & B (Excel files to be send with the rest of the documents during the enquiry).

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3. Requirements

This document contains the technical evaluation criteria for factory-assembled free standing RMUs and free standing IRTU fitted RMUs that are rated for use on three-phase cable systems for nominal voltages from 3.3 kV up to and including 33 kV, and are designed for freestanding indoor or outdoor operation at a rated frequency of 50 Hz.

The three phases of the technical evaluation criteria are specific to free standing RMUs and free standing IRTU fitted RMUs evaluated. The evaluation methodology will include three main parts, namely the documentation evaluation, the factory evaluation and sample evaluation.

3.1 Documentation Evaluation

The documentation evaluation exercise is performed by the Eskom evaluating representatives. This initial part of the evaluation starts when technical submissions are opened and assessed for the first time after the Commercial submission compliance evaluations were concluded, unless otherwise agreed. Only Commercial compliant submissions shall be considered for technical evaluations to conclude the tender process. Any evaluation of non-compliant tenderers to the Commercial requirements will be at the discretion of Eskom. The submitted documents will be evaluated against the evaluation criteria as stated in clause 3.4 to 3.5 of this document.

Failure to achieve the minimum threshold (see table 1) as per Eskom's requirement's will lead to immediate disqualification.

During the documentation evaluation; fully compliant type tested free standing RMUs and free standing IRTU fitted RMUs in accordance with SANS 1874, SANS 62271-200, SANS 62271-202, 240-56030406, 240-97690165 and Technical Schedules A & B will be required. Failure to submit and comply with the type test requirements specified in these documents will lead to immediate disqualification.

The documentation evaluations are meant for establishing if all the key tender deliverables are met with regard to the product offered. The documentation evaluation will be performed in two levels: Level 1: gate-keeper, and the level 2: submission requirements. Table 1 below summarises the scoring matrix for both the free standing RMUs and free standing IRTU fitted RMUs.

For free standing RMU (without IRTU): The documentation tender submission must meet the minimum threshold of 80 on level 1 gate-keeper technical evaluation requirements (Clause 3.4.1). Failure to achieve a score of 80 on level 1 gate keeper will result to immediate disqualification. Achievement of the minimum threshold of 80 on level 1 gate-keeper will proceed to the level 2 evaluations.

For IRTU fitted free standing RMU: The documentation tender submission must meet the minimum threshold of 80 on level 1 gate-keeper technical evaluation requirement for the RMU (Clause 3.4.1). Failure to achieve a score of 80 on level 1 gate keeper will result to immediate disqualification. Achievement of the minimum threshold of 80 on level 1 gate-keeper will proceed to the level 2 evaluations. Furthermore failure to achieve full compliance (95) of level 1 gate-keeper (Clause 3.5.1) for the IRTU will lead to immediate disqualification for the IRTU fitted RMUs.

Table 1: Scoring weight allocation for free standing RMUs and IRTU fitted RMUs

Relevant clauses	Free standing RMU	IRTU Fitted RMU
3.4.1 Technical Evaluation Criteria Free Standing RMUs: Mandatory Technical Evaluation Requirements – Level 1	80 (minimum required)	80 (minimum required)
3.4.2 Technical evaluation criteria for RMUs – Level 2 score	20 (Maximum)	20 (Maximum)
3.5.1 Technical Evaluation Criteria for IRTU to be fitted on RMUs: Mandatory Technical Evaluation Requirements – Level 1	0.0 (N/A)	95 (Full compliance)
3.5.2 Technical evaluation criteria for IRTU – Level 2 score	0.0 (N/A)	5 (Maximum)
Total	100	200

3.2 Factory Evaluation

The factory evaluations are only performed on the submissions that have met all the level 1 technical evaluation gate-keeper requirements as stated in this document. Eskom Commercial shall make the arrangements for factory visits and ensure the technical representatives are invited in time.

At the factory, the Eskom evaluating representative(s) conducts the evaluation through the use of checklists. The checklists are used to verify factory capability and manufacturing method compliance to the type tested free standing RMUs and free standing IRTU fitted RMUs offered.

The factory evaluation will consist of the RMU OEM assembly manufacturing plant evaluation (i.e. Metal work, labelling, wiring, painting, etc.), the RMU main components manufacturing evaluation (i.e busbar, switch dis-connectors, circuit breaker, gas or air insulated compartments, SF6 filling if applicable, etc.), and the South African Factory/ Site where the final assembling of the free standing RMUs and free standing IRTU fitted RMUs will be performed. All local and overseas manufacturers and manufacturing locations to be evaluated as part of the factory evaluations shall be stated in the tender submission. Where various options for more cost effective local manufacturing are proposed, these shall be indicated as such to ensure all manufacturing locations where applicable are evaluated before possible contract negotiations.

The following areas shall be assessed during the manufacturing evaluation:

- a) Machinery capability.
- b) Production process and critical check points.
- c) The product and manufacturing setup design process and design capability (i.e. related development testing, software simulations, R&D, etc.).
- d) Welding.
- e) SF6 filling and testing.
- f) Vacuum interrupter manufacturing.
- g) Circuit breaker assembly.
- h) Switch disconnector assembly.
- i) Busbar assembly.
- j) Painting process.
- k) IED fitment and testing.
- l) IRTU and all sub systems manufacturing, fitment and testing.
- m) Battery management system, fitment and testing.
- n) VDS fitment and testing.
- o) Bushings.
- p) CTs.
- q) Material handling and storage.
- r) Packaging of materials.
- s) Testing facilities including certification and calibration of testing equipment.
- t) Routine testing procedures.
- u) The manufacturing plant setup.

One of the following conditions will have to be met for the overseas factory evaluation i.e condition for factories to which Eskom has previously performed factory evaluations within the last five years, or condition for factories to which Eskom has never performed factory evaluations or factory evaluations were performed more than five years ago.

3.2.1 Condition where Eskom has previously performed factory evaluations within the last seven (7) years:

Overseas factory evaluations will not be performed if an open tender evaluation was performed on the product or products offered within the last seven (7) years. If a published report was compiled and is available for the previously completed factory evaluations, then the information available from that report shall be used and there would be no need to re-evaluate the overseas factory as per Claus 3.2 of this document.

If however there has been changes either on the design, or manufacturing process or raw material (including change of the location of the manufacturing plant or change of main component suppliers from the previous evaluation) then it might be required to perform the overseas factory evaluation depending on a decision done by the Eskom evaluation team. If the Eskom evaluation team deem it necessary to perform the overseas factory visit; such will be communicated once the desktop evaluation is concluded. Any changes done on the previously evaluated submission (if applicable) must be clearly stated in the submission.

3.2.2 Eskom has previously performed factory evaluations more than seven (7) years ago, or no factory evaluation has been previously performed

Full overseas factory evaluation in accordance with clause 3.2 above shall be performed for these kinds of submissions.

3.3 Factory Sample Evaluation

The factory sample evaluations will be the evaluation of the exact replica product that is offered to Eskom during tender. A product range sample quantity allowance will be made by Eskom whereby each tenderer is required to prepare only one exact replica sample per product range type offered for factory sample evaluations. The factory sample evaluation shall be performed at the respective supplier's final assembly of the free standing RMUs and free standing IRTU fitted RMUs facilities in RSA.

The following areas shall be assessed during the assembly manufacturing evaluation with the use of specific inspection check sheets:

- a) Sample(s) evaluation of the final assembled outdoor and indoor free standing RMUs and free standing IRTU fitted RMUs units. An exact replica of each type offered shall be required for the evaluation per supplier (I.e. 1X outdoor free standing RMU, 1X outdoor free standing IRTU fitted RMU, 1X indoor free standing RMU and 1X indoor free standing IRTU fitted RMU).
- b) DNP3 Level 2 Protocol Verification tests.
- c) Routine test certificate checks.
- d) Technical schedule compliance.
- e) Drawing compliance.
- f) Specification compliance.
- g) Protection functionality.
- h) IRTU functionality.

At the end of this exercise, the Eskom evaluating representative(s) list all the deviations, if any. The representative conducts a formal discussion of the deviations in line with Eskom's requirements. If major discrepancies are identified the supplier will be disqualified. For minor discrepancies, the Tenderer and their OEM are given opportunity to decide whether they agree or disagree to meet Eskom requirements upon contract award.

The action plans for resolving the discrepancies will be agreed between Eskom representative(s) and the supplier. At the end, the Eskom, Tenderer/Vendor and OEM representatives sign the evaluation document which continues to be used for concluding the Technical Evaluation report. Where the Tenderer and OEM agreed to meet Eskom requirements, all of these form part of the contract and verification afterwards.

Note: The total cost for the preparation of the sample, performing the outstanding type tests in accordance with SANS/IEC 62271-202 (if applicable), performing all required routine tests, performing all required sample tests (if applicable), performing protection functionality tests, performing IRTU functionality test, and ensuring full compliance to Eskom's requirements shall be for the tenderer.

3.4 Technical Evaluation Gate Keepers for RMUs

3.4.1 Technical Evaluation Criteria for Free Standing RMUs: Mandatory Technical Evaluation Requirements

This evaluation section will cover free standing RMUs for all application i.e: Indoor or outdoor application, inland or coastal application, single core cable entry or three core cable entries.

Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
1.	Is a detailed covering letter containing a list of items offered submitted?	Buyer's guides & Technical schedules	4
2.	Is a full list of the manufacturing locations for the offered and applicable type tested RMU types and main components provided for the following:		
	2.1 The RMU OEM manufacturing i.e: <ul style="list-style-type: none"> • Assembly, (1 point) • Welding, (1 point) • SF6/gas filling, (1 point) • IEC routine testing, (1 point) 		4
	2.2 The RMU OEM component manufacturing i.e: <ul style="list-style-type: none"> • Circuit breaker, (1 point) • Switch disconnector, (1 point) • Bus bars, (1 point) • Fused switch disconnectors, (1 point) • VDS, (1 point) • Wiring/ cables. (1 point) 		6

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Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
	2.3 The IED manufacturing, <ul style="list-style-type: none"> • Hardware, software, (0.4 point) • HMI Interface, (0.4 point) • Settings via HMIq, (0.4 point) • Protection Functions, (0.4 point) • Country of manufacture, (0.4 point) 	Section 3 of 240-64685228	2
	2.4 The CT and VT manufacturing:	DT 5408	2
	2.4.1 CT Manufacturing <ul style="list-style-type: none"> • Class, (0.2 point) • Accuracy, (0.2 point) • Ratios, (0.2 point) • Rated short time withstand current, (0.2 point) • Position of CT relative to the breaker, (0.2 point) • Terminal markings, (0.2 point) • Country of manufacture, (0.2 point) 2.4.2 The VT manufacturing <ul style="list-style-type: none"> • VT spec, (0.1 point) • Ratio, (0.1 point) • Class, (0.1 point) • Burden, (0.1 point) • Voltage Factor, (0.2 point) 		

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Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
	2.5 The RMU enclosure manufacturing for outdoor applications,		2
	2.6 The RMU chimney, top vent and/or base frame for indoor applications, and		2
	2.7 The RMU outdoor enclosure painting/ protective coating application.		2
3.	Is a full list of all type test reports submitted? Type test reports to be written in English,	240-56030406, SANS 1874, IEC/SANS 62271- 200	2
4.	Are complete English copies of all type test reports as per all the Eskom and normative referenced specification requirements submitted for the RMUs offered?	240-56030406, SANS 1874, IEC/SANS 62271- 200	2
5.	For outdoor free standing RMUs (choose one of the two options below 5.1 or 5.2). 5.1 Is a full list, as well as the complete English copies of all applicable type tests in accordance with the Eskom specification 240-56030406 required IAC-AB for all RMU and outdoor RMU enclosure combinations offered, submitted and compliant in accordance with the Eskom specification 240-56030406 and the normative referenced standard of SANS 1874, SANS 62271-200 and SANS 62271-202? OR	240-56030406 Clause 3.22	15
	If the type tests in accordance with SANS 62271-202 are not available at the time of tender, then the following should be submitted: <ul style="list-style-type: none"> A full list, as well as the complete English copies of all applicable type tests (IAC-AB) in accordance with the Eskom specification 240-56030406, SANS 1874 and SANS 62271-200 for all RMUs offered. The submitted type test reports should be compliant in accordance with the Eskom specification 240-56030406, SANS 1874 and SANS 62271-200. (4 point) Type test schedule proposal for the Type tests required in accordance with SANS 62271-202. Type test schedule proposal to indicate the following information: proposed dates for the tests, test methodologies. (3 point) 	240-56030406 Clause 3.22	15

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Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
	<ul style="list-style-type: none"> Written confirmation that the tests will be performed for each RMU and outdoor RMU enclosure combination offered, submitted in accordance with the Eskom specification 240-56030406 and the normative referenced standard / specification requirements of SANS 1874, SANS 62271-200 and SANS 62271-202? (3 point) <p>Notes for 5.1 and 5.2 above:</p> <p>Note 1: The supply of individual outdoor free standing RMU items will only be allowed once all applicable tests are completed and compliant.</p> <p>Note 2: All tests performed as part of contract award will be for the cost of the supplier and require to be witnessed by suitable Eskom technical representatives.</p> <p>Note 3: Testing shall only be allowed at ILAC accredited testing facilities.</p>		
6.	<p>For indoor free standing RMUs.</p> <p>Is a full list, as well as the complete English copies of all applicable type tests required for IAC-A for all RMU and chimney, top venting and/or base frame combinations offered, submitted and compliant in accordance with the Eskom specification 240-56030406 and the normative referenced standard / specification requirements of SANS 1874 and SANS 62271-200?</p> <p>Note: Ceiling height to be clearly indicated on the type test reports for IAC.</p>	240-56030406 Clause 3.22	15
7.	Are the submitted type test reports compliant with Eskom requirements?	240-56030406: Clause 3.22	1
8.	Are the tests schedule summaries submitted electronically in the provided excel format?	Technical schedules (Drwg & Type Test schedule)	1
9.	Are the completed technical schedules B electronically submitted in the provided excel format?	Technical schedules A & B	1
10	Does the completed schedule B meet the Eskom schedule A requirements (i.e. all items with value/description on schedule A or with accepted deviations)?	Technical schedules A & B	1
11.	Are the free standing RMUs manufactured in accordance with SANS 1874?	SANS 1874,	1
12.	RMU IAC-AB type test videos: RMU IAC-AB (choose one of the two options below 12.1 or 12.2).	IEC or SANS 62271- 202, and	10

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Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
	12.1 Are the outdoor free standing RMU IAC-AB passed Type test Videos submitted and compliant? OR	240-56030406: clause 3.22d)3)	
	12.2 If the type tests videos in accordance with SANS 62271-202 are not available at the time of tender, then the following should be submitted: <ul style="list-style-type: none"> All RMU IAC-AB type test videos in accordance with SANS 62271-200, 240-56030406, and SANS 1874. (2.5 point) Type test schedule proposal for the Type tests required in accordance with SANS 62271-202. Type test schedule proposal to indicate the following information: proposed dates for the tests, test methodologies. (2.5 point) Written confirmation that type tests will be performed for each RMU and outdoor RMU enclosure combination offered, submitted in accordance with the Eskom specification 240-56030406 and the normative referenced standard / specification requirements of SANS 1874, SANS 62271-200 and SANS 62271-202? (2.5 point) RMU IAC-AB Type test shall be done and that the videos will be submitted to Eskom for safety review? (2.5 point) 	IEC or SANS 62271- 202, and 240-56030406: clause 3.22d)3)	10
13	Are the indoor free standing RMU IAC-A passed Type test Videos submitted?	IEC or SANS 62271- 202, and 240-56030406: clause 3.22d)3)	1
14	Are the indoor free standing RMU IAC-A passed Type test Videos compliant with the Eskom safety requirements?	240-56030406: clause 3.22d) SANS/IEC 62271-200	10
15	Is a copy of the RMU factory routine test certificate submitted?	SANS 1874 clause: 5.3.2 to 5.3.5	1
16	Is the summary of drawings and part number schedules submitted and completed in a format submitted by Eskom?	Technical schedules (Drwg & Type Test schedule)	1
17	Is the RMU Outline/General Assembly drawings submitted?	240-56030406: clause 3.21b)	1

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Level 1 Gatekeeper: RMU technical evaluation criteria			
Item number	Criteria	Clause	Score
18	Are the detailed bills of materials (BOM) for each RMU item offered submitted?	SANS 1874 clause: 8.2b)21)	1
19	Are the operating procedure drawings submitted?	SANS 1874 clause: 8.3b)	1
20	Is the installation manual/s for the RMU submitted?	SANS 1874 clause: 8.3b)	1
21	Is the maintenance manual/s for the RMU submitted?	SANS 1874 clause: 8.3b)	1
22	Is the technical manual for the earth fault indicator submitted?	SANS 1874 clause: 4.13	1
23	Are full technical manuals for circuit breaker protection relay submitted where applicable?	SANS 1874 clause: 4.6.2	1
24	Has Type testing been performed at an accredited Test facility?	SANS 1874 clause: 5.1.4 & clause 8.2b)21)i)	1
25	Has proof of the tests laboratory's accreditation by an accreditation body that is a full ILAC member as well as proof that the accreditation body is an MRA signatory of ILAC been submitted.	SANS 1874 clause: 5.1.4 & clause 8.2b)21)i)	1
26	Is a detailed technical design document for the remote tripping (hand held push-button remote facility) submitted?	240-56030406 clause 3.4	1
27	Has operational manual for the self-powered relay been submitted?	240-56030406 clause 3.6	1
28	Does the relay comply with the requirements of IEC 61850?	IEC 61850	1
29	Does the CT comply with the requirements of SANS 61869-2?	SANS 61869-2	1
30	Does the IED comply with the requirements of IEC 60255-24?	IEC 60255-24	1
31	Total		100
Minimum score of 80/100 is required to continue to the next phase of evaluation.			

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3.4.2 Technical evaluation criteria for RMUs – Level 2 submission requirements

Level 2 submission requirements: RMUs technical evaluation for the documentation exercise- (only submission that passes Level 1 gatekeepers)			
Criteria	Clause	Weight	Score
Routine testing and type testing		Weight: 2	
Generic routine test certificate & reports submitted? (For all routine tests)		1	
Compliance to painted surface testing.		1	
<ul style="list-style-type: none"> For each routine test certificate not submitted the supplier is penalised by 0.1 point per missing routine test report. Compliance to Eskom requirements for the paint test supplier is awarded full points else 0. 		Total	
Technical schedules		Weight: 3	
Correctness of completion of Technical Schedules i.e. no "TBA", "Comply", "Noted", "supplied later" ("Noted" acceptable only when Eskom informs).		1	
Does Technical Schedule B meet Eskom requirements?	Technical schedule A & B	1	
Completed technical deviations (Where applicable).		1	
NB: The Technical Schedules A and B are provided on an excel format. Negative marking is done, the following shall apply: <ul style="list-style-type: none"> Negative marking is done and a penalty of 0.2 is applicable for each deviation from meeting Eskom specification and deviations. 		Total	
Drawings: To have the following information.		Weight: 6	
Drawing number.		0.2	
Revision number.		0.2	
Detailed description provided in "Title".		0.2	
Date of approval of drawing.		0.2	
Complete legend.		0.2	

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The position of holding down bolts (Oversized 24 mm) and alignment to the concrete plinth.		0.2	
Position of MV bushings including spacing between bushing centres and between the outer bushing centres and the cable termination enclosure side wall.		0.2	
Outline dimensions for the enclosure and RMU – Height, Width and length of completed assembly.		0.2	
Position and location of cable test facilities.		0.2	
Cable enclosure dimensions.		0.2	
Position of the earth terminals or bars.		0.2	
Position of the live indication system (VDS).		0.2	
Position of protection relay(s) and current transformers (if applicable); showing the distance from the top of the highest positioned current transformer to the bushing centre line.		0.2	
Position of the earth fault indicator control unit and the remote indicating unit.		0.2	
Removable base sections for cable installation.		0.2	
Positions of cable support clamps and the mounting arrangement showing the distance from bushing centre line to the support clamp and from the base level to the support clamp.		0.2	
Positions of lifting eyes.		0.2	
Position of the documentation pocket.		0.2	
Position of the operating handle storage facility.		0.2	
Position of the rating plate.		0.2	
Position of all labels and marking.		0.2	
Positions of all signs.		0.2	
IAC requirements venting arrangement.		0.2	
In the case of outdoor ring main units, the plinth outline superimposed on to the top view of the ring main unit assembly to confirm that the position of the cable support clamps complement the MV cable entry of the concrete plinth.		0.2	

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In the case of indoor ring main units, details of the minimum key room dimensions (i.e. ceiling height, distances to rear and lateral walls, if necessary), and cable trench requirements (including recommended positioning of the RMU over the cable trench).		0.4	
Detailed bill of materials (BOM) for each RMU item submitted and compliant.		0.4	
Drawing that depicts the mimic indication system.		0.4	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.		Total	
RMU Rating plate to show the following		Weight: 2.6	
Fixing details.		0.2	
Material for the rating plate.		0.2	
Rated Voltage.		0.2	
Rated lightning impulse withstand voltage.		0.2	
Rated power frequency withstand voltage.		0.2	
Rated normal current of bus-bars.		0.2	
The manufacturer's name or trade mark.		0.2	
Manufacturer's type number or type designation.		0.2	
Manufacturer's serial number.		0.2	
The month and year of manufacture.		0.2	
Total weight of the ring main unit		0.2	
Testing to specification of the RMU.		0.2	
Standard value of duration of the rated short-time current.		0.2	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.		Total	
Switch or Circuit breaker rating plate to show the following information:		Weight: 1	
Make or model of equipment.		0.2	

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Rated normal current.		0.2	
Rated short-time withstand current.		0.2	
Rated peak withstand current.		0.2	
Tested to standard.		0.2	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.		Total	
Labels to comply with the following requirements:		Weight: 1	
Labels indelibly marked.		0.2	
Metallic labels corrosion properties.		0.2	
Compliance of main circuit designation label.		0.2	
Compliance of Auxiliary circuit labels.		0.2	
Compliance of ON, OFF and Earth position labels.		0.2	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.		Total	
Protection		Weight: 1.4	
Does the offered Self Powered Protection Relay meet Eskom requirements where applicable? (Full marks are awarded for RMUs without breakers)?	240-64685228, Section 3 240-56030406, Section 3.6	0.2	
Are CT's suitably matched for the Self Powered Protection Relay Ratio, Class?	240-56030406, Section 3.6.1.3	0.2	
Does the wiring for control plant circuits comply with Eskom spec (wiring of CT, Protection relay and RTU-where applicable)?	240-64685228, Section 3	0.2	
Do terminal blocks comply with Eskom's specification?	240-64685228, Section 3	0.2	
Are the CT's & Self Powered Relay suitably matched to ensure operation of the Trip Coil circuit?		0.2	
Compliance of labelling- for all Control Plant Components including wire marking to that indicated in the Circuit diagrams?	240-64685228, Section 3	0.2	

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Compliance of Circuit wiring diagrams to Eskom requirements, indicating all Control Plant components & circuits. (Protection Relay, CT's, and RTU circuit).	240-64685228, Section 3 240-56030406	0.2	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.		Total	
Other components		Weight: 3	
Is the Sealant Strip for Mounting onto concrete plinths details provided? (i.e Manufacturer, Material composition and dimensions)		0.5	
Is the instruction manual for EFI submitted?		0.5	
Is the instruction manual for Gas pressure indicating device submitted?		0.5	
Is the instruction manual for the VDS equipment submitted?		0.5	
Is the instruction Manual for the protection relay submitted?		0.5	
Are Instruction manuals, drawings and type test reports submitted in both hard copy and soft copy? Is the hard copy clearly labelled and correctly filed? Is the soft copy clearly labelled and correctly placed in folders? (Both maintenance and operating manuals)		0.5	
Negative marking will be applied and supplier will lose the applicable weight for each deviation from Eskom specification.		Total	
Grand Total		20	

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3.5 Technical Evaluation Gate Keepers for IRTU (RMUs Fitted with RTU)**3.5.1 Technical Evaluation Criteria for IRTU to be fitted on RMUs: Level 1 Technical Evaluation Requirements**

IRTU technical evaluation criteria for the documentation exercise			
Level 1 Gatekeeper			
Item number	Criteria	Clause	Score
1.	Is a detailed covering letter containing a list of items offered submitted?	Buyer's guides & Technical schedules	3
2.	Are the hardcopy and softcopy manuals covering all components applied in the IRTU including the DNP3 point assignment?	240-97690165 Clause 3.4	3
3.	Are the IRTU tests schedule summaries submitted electronically in the provided excel format and in a printed pdf format for each item offered?		3
4.	Is the IRTU manufactured in accordance with 240-97690165 and 240-56062752?	240-97690165 and 240-56062752	3
5.	Are the completed IRTU technical schedules B electronically submitted in the provided excel format and in a printed pdf format for each item offered?	Technical Schedules A and B	3
6.	Is the IRTU components type testing requirements met in accordance with the Eskom and SANS requirements?	SANS 1874	3
7.	Is a copy of IRTU factory routine test certificate submitted?	240-97690165 Clause 3.5	3
8.	Has the IRTU been type tested for environmental conditions in accordance with SANS (IEC) 61000-4-4:2004?	240-97690165 Clause 3.1.1.2	3
9.	Is the IRTU fed from a DC power supply source comprising of a standby battery and battery charger which is provided by the Supplier?	240-97690165 Clause 3.1.2.1	3

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	Is the battery capable of operating for 10 years under normal operating conditions without being replaced?	240-97690165 Clause 3.1.7.5	
10.	Is the battery charger able to perform temperature compensation of the batteries, where the output voltage is controlled in relation to the battery temperature to ensure that the batteries are optimally charged?	240-97690165 Clause 3.1.2.3	3
11.	Is a 12 VDC output provided to supply Eskom free-issue communications devices?	240-97690165 Clause 3.1.2.6	3
12.	Does the battery have capacity to supply the loads (as detailed in 3.1.2.7 of 240-97690165) for 6 hour standby period during loss of the charger AC and not be discharged by more than 50% of its rated Capacity?	240-97690165 Clause 3.1.2.8	3
13.	Do terminal blocks comply with the requirements of 240-70413291: Rev 1?	240-97690165 Clause 3.1.3.4	3
14.	Does the communication interface of the IRTU meet the minimum requirements as stated in clause 3.1.4.1 of 240-97690165?	240-97690165 Clause 3.1.4.1	3
15.	Is the IRTU provided with two ports: EIA-232 and EIA-485 that support baud rates from 2400 up to 115200 bits per second?	240-97690165 Clause 3.1.4.4	3
16.	Is the IRTU equipped with a fully configurable EIA-232 serial port or a USB to configure the IRTU. The EIA-232 port shall support fully configurable hardware flow control.	240-97690165 Clause 3.1.4.2	3
17.	Is the IRTU equipped with a 100Base-Tx Ethernet port to configure the IRTU?	240-97690165 Clause 3.1.4.3	3
18.	Are all required technical documents relating to the equipment interface submitted?	240-97690165 Clause 3.1.4.7	3
19.	Is a mounting space to mount the Eskom free-issue data communications device provided?	240-97690165 Clause 3.1.6.1	3
20.	Is a real-time clock available and has the capability of being synchronised by the master station using the DNP3 protocol?	240-97690165 Clause 3.1.7	3
21.	If DNP3/IP is supplied: Does the DNP3/ IP comply with the DNP3 Secure Authentication functionality as documented in IEEE1815-2012, Chapter 7 IEEE1815, Chapter 7?	240-97690165 Clause 3.1.8.1 and clause 3.1.8.2	3
22.	Is the PC Configuration Software compatible with Microsoft Windows 7 64 bit?	240-97690165 Clause 3.2.1.1	3
23.	Does the IRTU store at least 50 real-time clock events in non-volatile memory to allow for post event processing?	240-97690165 Clause 3.2.3.1	3

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24.	Does the IRTU protocol support a minimum of DNP3 Level 2?	240-97690165 Clause 3.3	3
25.	Are detailed schematics of the IRTU and associated subsystems submitted?	240-97690165 Clause 3.4.1.3	3
26.	Does the battery charger perform temperature compensation of the batteries, where the output voltage is controlled in relation to the battery temperature to ensure that the batteries are optimally charged?	240-97690165 Clause 3.1.2.3	3
27.	Is the battery charger capable of recharging the battery from 0% to 80% of its capacity in a minimum of 15 hours while supplying the IRTU	240-97690165 Clause 3.1.2.5	3
28.	Is there provision for a 12 VDC output to supply Eskom free-issue communications devices?	240-97690165 Clause 3.1.2.6	2
29.	Do the EIA-232 ports stated in 240-97690165 3.1.4.1 and 3.1.4.2 support baud rates from 2400 up to 115200 bits per second.	240-97690165 Clause 3.1.4.4	2
30.	Does the RMU allow for an Eskom free-issue antenna to be mounted external to the RMU or the Mini Sub?	240-97690165 Clause 3.1.5.1	2
31.	Does the DIN rail mounting plate provided by the Supplier, on which to mount the Eskom free-issue data communications device meet the dimensions as indicated in Table 1 of 240-97690165?	240-97690165 Clause 3.1.6.1	2
32.	Is document supplied with the software?	240-97690165 Clause 3.2.1.	2
33.	Is the list of minimum computer hardware requirements supplied?	240-97690165 Clause 3.2.1.4	2
34.	Are the detailed schematics of the IRTU and associated subsystems supplied?	240-97690165 Clause 3.4.1.3	2
Total	A total score of 95 is required to continue to the next phase of evaluation.		95

This evaluation section will cover IRTU to be fitted in RMUs for all application i.e: Indoor or outdoor application, inland or coastal application, single core cable entry or three core cable entries.

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3.5.2 Technical evaluation criteria for IRTU – Level 2 submission requirements

IRTU technical evaluation for the documentation exercise		
Level 2 submission requirements - (only submission that passes Level 1 gatekeepers)		
Routine testing and type testing.		
Criteria	Weight 1	Score
Generic routine test certificate & reports submitted?	0.5	
Factory routine tests failure rate. (Number of IRTUs tested and failed per annum/number).	0.5	
<ul style="list-style-type: none"> For the routine test certificate or report supplier gets 100 % if all requirements as per 240-97690165, and loses 25% for each missing requirement. Factory routine tests failure rate. (Number of IRTU tested and failed per annum/number). 	Total	
Technical schedules.		
Criteria	Weight 1	Score
Correctness of completion of technical schedules (i.e. no "TBA", "Comply", "Noted", "supplied later", "Noted" acceptable only when Eskom informs).	0.5	
No technical deviations submitted.	0.5	
NB: The technical schedules B are provided on the Annexures of the Mini sub specifications, plus on separate excel spread sheaths. <ul style="list-style-type: none"> Negative marking is done and a penalty of 2 % is applicable for each incorrect completion deviation. Negative marking is done and a penalty of 3 % is applicable for each deviation from meeting Eskom spec and deviations. 	Total	
Technical Documents and Drawings.		
Criteria	Weight 3	Score
A design drawing to conceal the battery to prevent vandalism and theft to the equipment provided? (240-97690165 Clause 3.1.2.9).	0.5	
Compliance of the drawing for the DIN rail mounting? (240-97690165 Clause 3.1.6, table 1).	0.5	
Hardcopy and softcopy manuals covering charger.	0.5	
Hardcopy and softcopy manuals covering power supplies.	0.5	
Hardcopy and softcopy manuals covering RTU and its configuration software.	0.5	
Technical documents of the I/O point DNP3 database assignments.	0.5	
Negative marking will be applied, and supplier loses the applicable weighting per deviation.	Total/5	

3.6 Conclusion

This report is effective to specify the technical evaluation criteria for free standing ring main units to be used in Eskom.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Bheki Ntshangase	PDE HV Plant: Senior Manager
Thinus du Plessis	PDE HV Plant: Chief Engineer
Timothy Sebola	Commercial: Senior Manager
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5. Revisions

Date	Rev	Compiler	Remarks
Oct 2018	2	Barto Olivier	Costing matrix of the IRTU fitted RMU changed. Added clause 3.2.1 and 3.2.2 for conditions for overseas factory evaluations.
June 2018	1	Barto Olivier	First issue.

6. Development team

The following people were involved in the development of this document:

- Thinus du Plessis
- Queeneth Khumalo
- Haggai Sithole
- George Daniel
- Barto Olivier

7. Acknowledgements

Not applicable.