

TENDER DATA

Project title:	Appointment of VHF FM Transmitter Manufacturer/s (OEM/s) or Supplier/s and/or a FM Re-Broadcast Receiver Manufacturer (OEM) or a Supplier, on a Standing Supply contract to supply FM Transmitters and/or FM Re-Broadcast Receivers for a period of 3 years.
Bid no:	SENT-061-2023-24

1. BACKGROUND

Sentech is a state-owned company and is the largest broadcasting signal distributor in South Africa. Sentech is a licensed Electronic Communications Network Service provider in South Africa. It currently operates many telecommunication networks for Satellite, Television, Radio, Internet and more. As such, Sentech is a global enabler of broadcasting and digital content delivery.

SENTECH's intention with this tender is to appoint Supplier/s (OEM's) to supply and support Broadcasting VHF FM Radio transmitters and/or Re-Broadcast Receivers. SENTECH will appoint supplier/s through this open tender process to supply the equipment for a period of three (3) years from date of appointment. The successful supplier/s will receive orders to supply the Equipment as and when required. The required equipment is described in the Scope of Work of the Supply Contract document. Sentech has the right to appoint one or more suppliers.

Indicate in the table below the OEM/s (product/s) your company will be representing.

Product	Product	Indicate the product with a Yes/No below
VHF FM Transmitters	Low to Medium Power – 1W to 1kW	
VHF FM Transmitters	High Power - > 1kW	
FM Re-Broadcast Receivers		

2. SUBMISSION OF BIDS and CLOSING

This Bid closes at the stipulated date and time as stated in SBD 1 Notice and Invitation to Bid. Bids must be submitted by hand to the Bid Administrator at SENTECH, Octave Road, Radiokop Ext 3, Honeydew, Johannesburg.

Bidders that choose to submit their bid documents before the closing date and time may do so during working hours only (08:30-15:30).

It is the Bidder's responsibility to ensure that their bid submissions reach the Bid Administrator before the bid closing time as no late submissions will be accepted.

Telegraphic, telephonic, telex, facsimile, e-mail and late Bids will not be accepted. Proposals may be opened in public. Bidders will be advised of the outcome by letter, facsimile or e-mail.

This is a two-envelope system for Bid Evaluation. Bidders must submit their proposal and all supporting documentation in a sealed envelope, clearly marked as follows:

Envelope One "Original Technical Proposal" and one "Copy of Technical Proposal" together with a soft copy in PDF format of an electronic medium e.g. USB etc. The soft copy will consist of a single PDF document containing the complete response. The envelope must contain all information and documents relating to the Bid. (Refer to list of returnable documents).

No Financial Information must be included in Envelope 1.

Envelope Two “Original Financial Proposal” (Contract Date and Pricing schedule/schedule of rates as applicable) together with 1 copy of “Financial Proposal” together with a soft copy in PDF format of an electronic medium e.g. Compact Disk (CD), USB etc. The soft copy will consist of a single PDF document containing the complete Financial Proposal.

Bidders are required to place the sealed **Envelope 1** together **with** the sealed **Envelope 2** into one sealed envelope or container. The sealed envelope or container must be marked with the following information:

- **For Attention**
- **HEAD OF SUPPLY CHAIN MANAGEMENT**
- **BID REFERENCE NO: SENT/FMTX/001/2023**
- **TECHNICAL AND FINANCIAL PROPOSALS**
- **INSERT CLOSING DATE AND TIME**
- **BIDDER'S NAME AND ADDRESS**

Bidders that combine their Technical Proposal with the Financial Proposal (or any financial information) will be automatically disqualified and not be evaluated further.

The financial proposal will only be opened and evaluated should the technical proposal be found to be responsive, being that the technical proposal has met the minimum technical evaluation criteria that are set out in the Bid Documents.

The Bidders shall insert a table of contents and bind (ring bind or similar method) the proposal documents and verify the page numbers, as Sentech will not accept any liability with regard to any disputes arising from pages that are missing or duplicated in the aforementioned documents.

Bidders are required to complete and sign all the returnable documentation (refer to list of returnable documents) and initial all pages, drawings and brochures which are included in the reply as Sentech will not accept any liability with regard to any disputes arising from pages that are missing or duplicated in the aforementioned documents.

Late submissions will not be considered.

3. SIGN AND INITIAL

Bidders are required to complete and sign the Bid Forms where required and initial the bottom of all pages, drawings and brochures which are included in the submission as Sentech will not accept any liability with regard to any disputes arising from pages that are missing or duplicated in the aforementioned documents.

Only original signatures will be accepted.

4. COMPLETION OF BID DOCUMENTS

Bidders must ensure that they complete all sections of the Bid Documents as per the requirements in the Bid.

Bidders must use only the Bid documents provided by Sentech. Photocopying of the Bid document is permitted however Bidders must not retype or redraft the Bid documents.

5. COSTS OF PREPARING THE BID SUBMISSION

Bidders shall bear all costs associated with the preparation and submission of the proposals. Sentech shall under no circumstances be held responsible or liable for any costs incurred during the bidding process.

6. ADMINISTRATIVE RESPONSIVENESS CRITERIA

Bidders are required to ensure that they meet all the Administrative Responsiveness Criteria.

7. BBBEE CODES AT SENTECH

Sentech complies with the codes of good practice as prescribed by the DTI, to advance Broad Based Black Economic Empowerment.

8. Pre-qualification criteria

With the objective of advancing designated groups, the Bidding condition applicable to this Bid is N/A (Specify targeted companies (EME / QSE) or minimum B-BBEE status level of contributor) as contemplated in PPPFA regulations, 2017 sub regulation 4(1). A Bidder must provide documentary evidence to support their compliance with this prequalification criteria. A Bidder that fails to meet any pre-qualifying criteria stipulated in this Bid document is an unacceptable Bid.

9. Subcontracting as a condition of Bid

Since this is a Tender for the supply of goods (FM Transmitters & Re-Broadcast Receivers), there will be no subcontracting required, as goods will be supplied by International Bidders as complete units.

10. Transformation Plan

A transformation plan is a record of activities an entity intends to undertake to improve its BBBEE Level through Ownership, Management and Control; Skills Development; Enterprise and Supplier Development and Socio-Economic Development.

Sentech reserves the right to request a BBBEE transformation plan with clearly defined timelines and milestones if the recommended Bidder does not meet Sentech's transformation goals. These milestones must be achieved over the term of the contract. This transformation plan must be submitted within 10 working days from the written request, failing which Sentech reserves the right to withdraw its appointment of the preferred recommended Bidder.

11. LOCAL PRODUCTION AND CONTENT

In the case of designated sectors, where in the award of Bids, local production and content is of critical importance, such Bids will contain a specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

Does this requirement fall under any designated sector as prescribed by the DTI?		No NO
If yes, specify the sector		N/A
Specify minimum threshold applicable		N/A

*Bidders must fill in the SBD6.2 for Local Content and Production

12. EVALUATION CRITERIA

The evaluation criteria are stipulated in 18 (FM Transmitters) & 19 (FM Receivers) below. It is the Bidder's responsibility to ensure that it has responded to the evaluation criteria. Failure to meet the evaluation criteria will result in the Bidder not being evaluated further. Bidders must ensure that they have included all supporting documentation required to support their response to the Bid.

13. BRIEFING SESSION

Should there be a compulsory briefing session for this Bid, Bidders must ensure that they attend the briefing session and sign the attendance register, as non-attendance or failure to sign the attendance register will automatically disqualify a Bidder from submitting a proposal for this Bid.

All questions raised by Bidders post the briefing session will be consolidated and shared with all Bidders at least seven (7) calendar days prior to closing.

14. CLARIFICATION

Enquiries related to Bid documents may be addressed to the Bid Administrator and Supply Chain Official as stated in SBD 1 Notice and Invitation to Bid.

15. BID EVALUATION METHOD

This Bid will be evaluated as described in the table below.

<p>90/10 system will be followed for Technical and Price offer</p>	<p>Envelope 1 (Stage1, 2 & 3)</p> <ol style="list-style-type: none"> 1. Stage 1 – Administrative Responsiveness Evaluation All the Technical Proposals will be evaluated against the Administrative responsiveness requirements as set out in the list of returnable documents. 2. Stage 2 –Technical Evaluation Only the Bidders that complied in full of ALL the Mandatory Criteria will be scored against the functional evaluation criteria set out in Section 18.2 and 19.2 below. Tenderers that score 90 points (FM Transmitters) or more out of the possible 110 points, and 110 points (FM Receivers) or more out of the possible 125 points will be evaluated further. Tenderers who fail to score the minimum required points or fail to present proof and reference to the criteria will not be evaluated further. 3. Stage 3 - Risk Assessment All the proposals that are fully compliant to the Mandatory Technical Criteria and score the minimum required score in the Functional evaluation must undergo a Risk Assessment (Described in 18.3 and 19.3 respectively). Qualifying Bidders will be evaluated on Price and Preference (Envelope 2) <p>Envelope 2 (Stage4)</p> <ol style="list-style-type: none"> 4. Stage 4 – Price and Preference Financial Proposals for Qualifying Bidders will be opened and evaluated. Bidder's financial offers and BEE certificates will be ranked according to price and preference points from the highest number of points to the lowest.
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16. ADMINISTRATIVE RESPONSIVENESS REQUIREMENTS

To be administratively responsive, Bidders must ensure that they meet all the below mentioned criteria. Bidders that do not meet all the below mentioned criteria may not qualify to be awarded the Bid. Sentech reserves its rights in respect of the below criteria.

- Complete and return all documentation stipulated in the LIST OF RETURNABLE DOCUMENTS.
- All correspondence must be in English.
- Bidders must fill in all sections of this document (where applicable).
- **BLACK INK** must be used when completing the Bid documents.
- Bidders must use only the Bid documents provided by Sentech. Photocopying of the Bid document is permitted however Bidders must not retype or redraft the Bid documents.
- All corrections must be initialled. The use of corrective fluid is strictly prohibited.
- Bidders are required to fill in and sign the Bid Forms and initial all pages, drawings and brochures which are included in the reply as Sentech will not accept any liability with regard to any disputes arising from pages that are missing or duplicated in the aforementioned documents.
- Bidders must complete an attendance register at each compulsory site meeting attended.
- Appointment of a Bidder will be subject to signing, declaration and submission of SBD 1, 3.1, 3.2, 3.3, 4, 5, 6.1, 6.2 8, and 9 depending on applicability.
- Complete and sign the Contract Data.
- Should this be a 2 envelope or 2 stage system, Bidders **MUST** separate the technical proposal from their financial proposal. The technical and financial proposals must be placed in two separate sealed envelopes.

16.1 AUTOMATIC DISQUALIFICATION

Sentech reserves the right to automatically disqualify Bidders from being awarded this Bid. The following will lead to automatic disqualification:

- Failure to submit a financial proposal, if required.
- The Bidder is or has been involved in any act of corruption or fraud or bribery or collusion or attempt to influence any employee of Sentech to award this Bid or any other Bid to it.

16.2. TERMINATION

Sentech reserves the right to terminate or cancel the tender at any time before the appointment of the winning bidder/s based on reasons not limited to the listed below:

- Goods or services specified in the tender invitation are no longer required.
- Budgetary constraints limiting Sentech to cover the costs of the expenditure.
- No acceptable tender offerings have been received.
- There is a material irregularity in the tender process.

17. TECHNICAL RESPONSIVENESS COMPLIANCE

The Technical Evaluation will encompass evaluation of:

- Mandatory Criteria
- Functional / Technical Criteria
- Risk Assessment

FM Transmitters: To be compliant Bidders must comply with the mandatory technical criteria in 18.1, table 1 and score 90 points or higher out of a possible 110 points of the points available below in table 2 functional criteria.

FM Receivers: To be compliant Bidders must comply with the mandatory technical criteria in 19.1, table 3 and score 110 points or higher out of a possible 125 points of the points available below in table 4 functional criteria.

18. TECHNICAL EVALUATION CRITERIA

18.1 Mandatory Eligibility Criteria: FM Transmitters

The follow in criteria are mandatory to ALL BIDDERS:

Mandatory Eligibility Criteria Table 1 – FM Transmitters	The Mandatory Technical Criteria will be evaluated according to the Technical Specification. A full description of the Technical Specification can be found in Document B of the Contract data, Part C3.	Attach evidence and provide reference page number in your proposal
VHF FM Radio Transmitters		Compliant (Indicate Yes or No)
3.1 Stereo transmission system	CCIR Recommendation ITU-R BS.450-4 (10/2019), ETSI EN 302 018 V2.1.1 (2017-04) and ETSI ETS 300 384. See 3.1., page 12 on contract data	
3.2 Transmitter configuration	Single exciter, dual exciters in passive reserve operation and N+1 systems as an alternative to dual exciter configurations; and paralleled banks of solid-state power amplifiers in active reserve operation. See 3.2., page 13 on contract data	
3.3 Protection methods	State the methods used to protect and isolate the various parallel amplifier stages from one another.	
3.4 System impedances	The characteristic impedances of all equipment shall be as follows: Audio frequency: 600Ω balanced Composite: 10kΩ and/or 50Ω balanced Radio frequency: 50Ω unbalanced	
3.5 Band pass filter	All equipment offered in response to this tender enquiry shall be equipped with the required band pass or harmonic filter (low pass filter), as appropriate, and the power rating shall be specified at the	

	output of such filter as stipulated 6.3. of the contract data, page 18.	
3.6 Microprocessor control systems	Provide detailed information on the operation of micro-processor control systems used in the transmitters offered, including but not limited the extent to which bypassing the system is possible, counter measures to prevent system lockout etc, see 3.6, page 13.	
4.1 Standard requirements	<p>Exciters shall be completely solid state and broadband, of modern design, especially in terms of their ability to cope with aggressively processed audio.</p> <p>Exciters will have built in Stereo Encoders</p> <p>Exciters will have built in RDS Encoders</p>	
4.2 Baseband inputs	<p>Baseband input sources covering audio frequencies from 30Hz to 15kHz.</p> <p>Composite (MPX) input sources (derived from a broadcast audio processor or off-air rebroadcast receiver) covering frequencies from 30Hz to 100kHz; or</p> <p>Digital input sources (such as AES EBU).</p>	
4.3 Stereo encoder	<p>It must be possible to locally select and/or deselect the 50µs pre-emphasis circuitry into or out of the signal path.</p> <p>Tenderers are to describe the peak deviation limiting capabilities of the encoder.</p> <p>The performance of the stereo encoder shall meet or exceed the specifications, see 6.2, page 16 - 18 of the contract data</p>	
4.4. Baseband inputs	<p>The input impedance of the exciter mono input as well as the left and right channels of the stereo encoder shall be 600Ω balanced for all frequencies from 30Hz to 15kHz.</p> <p>The input impedance of the composite input must be selectable</p>	

	between shall be either 10kΩ or 50Ω. The composite input terminal shall accept all frequencies from 30Hz to 100kHz.	
4.5. Baseband auxiliary inputs/outputs	<p>Exciters must have provision for combining auxiliary sub-carriers such as RDS, SCA and DARC, with the composite stereo signal.</p> <p>Describe the protection measures afforded to the auxiliary sub-carriers, when combined with the composite programme in the modulator of the exciter.</p> <p>The Exciter shall provide a 19kHz reference signal at the rear panel of the exciter for use by external RDS generators. Modulation levels shall be adjustable via the user interface</p>	
4.6. Adjustable input levels	<p>Provision must be made for the following level adjustments, if these adjustments are not possible, explain in detail:</p> <ul style="list-style-type: none"> • Audio input level/s into the stereo encoder • Composite output level from the stereo encoder • Composite input level into the exciter's modulator section • Auxiliary inputs into the modulator circuitry 	
4.7. Local oscillators	<ul style="list-style-type: none"> • The local oscillator signal must be generated by a frequency synthesiser. • The frequency stability of the final output frequency must be within $\pm 150\text{Hz}$ of the specified output frequency over a period of six (6) continuous months and taking into consideration the environmental conditions the transmitter will be subjected. • The synthesiser must be capable of being set to any transmitting frequency from 87.5MHz to 108.0MHz in steps of 10kHz. 	

	<ul style="list-style-type: none"> The exciter must mute the output until the carrier is locked on the desired frequency. A detailed block diagram of their exciter must be provided. 	
4.8. Harmonics	The output of the exciter must be fed to the remainder of the transmitter by means of a low pass filter. The harmonic level at the exciter output must be at least 60dB below the exciter's fundamental output.	
5.1 Type of modulation	Frequency modulation; F3E Monophonic, F8E Stereophonic	
5.2 Radio frequency output power, voltages and impedance	Detailed explanation of the requirement is provided in 5.2, page 15 – 16 of the contract data	
6.1 General requirements	See 6.1, page 16 of the contract data for detailed explanation	
6.2 Baseband performance	Detailed specifications and measurement procedure described in 6.2, page 16 - 18	
6.3 Spurious emissions	CCIR Recommendation 329-4, Geneva, 1982 and all revisions thereof, see 6.3, page 18	
7.1 Safety of personnel	Compliance with International Electro-Technical Commission, Publication 215-1, parts 1 and 2, viz. "Safety Requirements for Radio Transmitting Equipment" and any subsequent revisions hereof, further details are provided in 7.1, page 19	
7.2 DC and AC over-current and over-voltage protection	All stages of each transmitter, as well as its associated equipment, such as cooling equipment must be adequately protected against overload and fault conditions. Circuit breakers must be used instead of fuses wherever possible. Passive components such as power dividers, dummy loads and power combiners shall not require elaborate protection systems and shall be sufficiently rated to operate safely under worst-case conditions.	

	Fuses must however be fitted on the DC supply lines to the amplifier devices.	
7.3 Reflected power protection	Transmitters must be equipped with effective protection against abnormal VSWR conditions, see 7.3, page 19 of the contract data for details	
7.4 Protection of solid-state devices	All solid-state devices used in the transmitter must be protected as described in 7.4, page 20 of the contract data.	
7.5 Electrical transient protection	Tenderers are required to comment on the electrical transient protection measures in their equipment.	
7.6 Protection against loss of mains power phase(s)	The transmitter must be fully protected from damage and/or incorrect operation due to the loss of one or more phases, asymmetry, or voltage variations of the incoming three-phase mains power supply.	
7.7 Precautions against fire	All wiring insulation and all other electrical and mechanical insulating materials must be flame retardant. The spirit of this clause is that, in the event of a fire breaking out in the transmitter, the fire should not spread to other components of the transmitter or to the building housing the equipment.	
7.8 Electrical connections to an external interlock system	Terminals must be provided in the transmitter to allow for the series connection of external contacts in the interlocking system. Opening of these contacts must cause complete transmitter shutdown.	
8.1 Size	See 8.1, page 21 in the contract data for details	
8.2 Appearance	See 8.2, page 21 in the contract data for details	
8.3 Layout	See 8.3, page 21 in the contract data for details	
9.1 Voltage-Current	See 9.1, page 21 in the contract data for details	
9.2 RF Power	See 9.2, page 21 in the contract data for details	

9.3 Transistor current	See 9.3, page 21 in the contract data for details	
9.4. Exciter modulation/deviation metering	See 9.4, page 21 in the contract data for details	
10.1 Semiconductors	See 10.1, page 22 in the contract data for details	
10.2 Resistors and capacitors	See 10.2, page 22 in the contract data for details	
10.3 Continuity in supply of components	See 10.3, page 22 in the contract data for details	
10.4 Connector systems	See 10.4, page 22 in the contract data for details	
11.1 Monitoring points	See 11.1, page 23 in the contract data for details	
11.2 Visible Indication	See 11.2, page 23 in the contract data for details	
11.3 Remote control and remote monitoring facilities	See 11.3, page 23 in the contract data for details	
12.1 Type and stability	See 12.1, page 23 in the contract data for details	
12.2 Mains-borne surges and transients	See 12.2, page 23 - 24 in the contract data for details	
12.3 Load kVA and power factor rating	See 12.3, page 24 in the contract data for details	
13.1 Climatic conditions	See 13.1, page 24 in the contract data for details	
13.2 Cooling systems	See 13.2, page 24 in the contract data for details	
13.3 Ducting	See 13.3, page 24 - 25 in the contract data for details	
13.4 Blower capacity	The capacity of all fans and blowers shall be such that sufficient air is passed through the transmitter including its air filters. In particular the maximum temperature differential between the inlet and exhaust air shall not exceed 10°C.	
13.5 Heat balance	Tenderers shall provide a schematic drawing, detailing the "heat balance" for their equipment	

	at rated transmitter output into the antenna.	
13.6 Acoustic noise	The acoustic noise level when measured at sea level at any point situated 1 meter away from the transmitter and 1.5 meters above floor level shall not exceed 50dB(A).	
14.1 Language	<i>See 14.1, page 25 in the contract data for details</i>	
14.2 Content	<i>See 14.2, page 25 in the contract data for details</i>	
14.3 Test Reports	<i>See 14.3, page 26 in the contract data for details</i>	
15.1 Delivery Schedule	<i>As requested in section 1&2, page 12 of the contract data for details</i>	
15.2 Packaging	<i>See 15.2, page 26 in the contract data for details</i>	

NOTE: Bidders that do not comply with all the above criteria will not be evaluated further.

18.2 Functional Criteria: FM Transmitters

Since functionality is predominantly a measure of how to operate and maintain the equipment throughout the lifespan of the equipment, Sentech needs to choose the most suitable for our environment and operational requirement.

Awarding of points:

- Sentech will award **90%** of the allocated points to bidders that prove to supply the minimum requirement.
- Bidders who only deliver partially to the criteria, will only receive **50%** of allocated points.
- Bidders who fail to deliver the minimum requirement will be awarded **0%** of allocated points.
- Innovative methods will be awarded **100%** of allocated points.

Table 2 – FM Transmitters: Functionality Criteria	Weighting factor	Attach evidence and provide reference page number in your response
<i>Monitoring and Control.</i> All parameters necessary for local and remote operation of the transmitter shall be displayed and accessible in an effective and user-friendly manner. This shall include operation via Web Browser and SNMP (v2 or higher). This shall include all MIB files with OID's necessary to monitor and control the transmitter.	20 Points	

Inputs and switching. Each system offered shall have at least one analogue (L and R), two multiplex and one digital AES EBU input with manual and selectable automatic priority switching. At least one input shall be available for auxiliary inputs such as RDS.	10 Points	
Energy Efficiency. The equipment shall make use of solid-state amplification technology and have an energy consumption efficiency of at least 60%.	20 Points	
Cooling. Effective and energy-efficient air or liquid cooling technology shall be offered. Bidders shall provide heat balance details for each system offered.	15 Points	
Handbooks and Documentation. All parts of the offered systems shall be fully described in English in the documentation supplied with every system. This shall allow for easy operation as well as troubleshooting. Detailed circuit diagrams and component layouts of all repairable modules shall be supplied.	10 Points	
Service and Support. Bidders shall provide a detailed plan of how they will establish local support (in South Africa), their planned spares-holding and repair capability within and outside warranty. Within warranty a turn-around time (repair or replace) of at most 72 hours after fault notification shall be adhered to.	20 Points	
Warranty. A warranty of at least 36 months shall be offered.	15 Points	
Total	110 points	

Table 1: Functional Criteria

Total minimum qualifying functional score is 90 points.

Functionality Criteria - Scoring Matrix	100	90	50	0
Monitoring and Control	20	18	10	0
Inputs and switching	10	9	5	0
Energy Efficiency	20	18	10	0
Cooling	15	13.5	7.5	0
Handbooks and Documentation	10	9	5	0
Service and Support	20	18	10	0
Warranty	15	13.5	7.5	0

8.3. Risk Assessment

For Sentech to complete the Technical evaluation, Sentech will undergo factory visits to the shortlisted Bidders (OEM's) that qualify during the Mandatory Technical Criteria and score 90 points in the Functional Criteria. The risk assessment will be in the form of a factory visit based on the following criteria:

- Any aspects that emanate from the bidders' individual responses during evaluation
- Any information received from past references
- Testing of offered equipment against specifications as set out in Tender and SOW in the Contract Data.
- Verification of manufacturing plant, including design, manufacturing of transmitter components, modules, and other ancillary items as needed in the transmitters.
- Quality control of manufactured units as described above
- Proof/discussion of third-party involvement in manufacturing of specialised equipment, modules, etc. deemed necessary in the working of the transmitter, including their contingency plans.
- Discussions with OEM to indicate their Spares holding capabilities and their support
- Inspection of factory facilities to prove their capability to handle high quantity orders

The Bidder must provide the following equipment as per the selection made in section 1 of this document to Sentech for evaluation during the factory visit.

- 1x low power transmitter,
- 1x medium power transmitter
- 1x high power transmitter

Equipment must include a full set of documentation and installation requirements and instructions. Important detail describing configurations should be included for Sentech to objectively assess and test the equipment.

The specified equipment must cover all the configurations requested by Sentech, such as, 1+1 configuration or n+1 configuration.

After the factory visit, a comprehensive report will be produced, considering all the risks found during the testing of the equipment and inspection of the facilities. Sentech may disqualify Bidders based on the outcome of the report on the risk assessment.

OEMs are requested to assist the Sentech delegation in obtaining Visas.

19. Technical Evaluation Criteria: FM Receivers

19.1. Mandatory Technical Criteria

The following criteria is mandatory to ALL BIDDERS:

The Mandatory Technical Criteria will be evaluated according to the Technical Specification. A full description of the Technical Specification can be found in Document C of the Contract data, Part C3.

Table 3 - FM Receivers - Mandatory Technical Criteria		Attach evidence and provide reference page number in your proposal
FM RBR Receivers		Compliant (Indicate Yes or No)
1. RF Input Specifications	User selectable, 87.5 MHz to 107.9MHz in $\leq 100\text{kHz}$ steps Antenna RF Input must be $50\ \Omega$ (N-Type or BNC).	
2. Stereo Performance	See Section 6 of the contract data, page 28	
3. Frequency Response of outputs	See Section 7 of the contract data, page 28	
4. Signal to Noise Ratio	ITU-R 468 Weighted Stereo Signal to Noise Ratio (1mV RF Input, an audio level of +10.6dBu as reference and de-emphasis switched ON): $\geq 60\text{dB}$ at 1mV RF Input signal for stereo analogue audio line outputs $\geq 75\text{dB}$ at 1mV RF Input signal for AES digital audio line outputs	
5. Outputs:	<ul style="list-style-type: none"> • MPX Outputs: Two low impedance, independently adjustable outputs (BNC) • Digital: AES3 (XLR) with adjustable level • Analogue: Two active balanced (XLR) with adjustable levels • Failover Audio Backup from memory. 	
6. Stereo Performance	See Section 6 of the contract data, page 28	
7. Headphone	Socket: 6.35mm (stereo) on the front	
8. AC supply input voltage: (IEC connector)	230 V \pm 10%, 50Hz single phase	
9. Dimensions:	19" (483mm) wide by 1U high to fit in standard equipment rack	
10. Operating	Temperature: 0 °C to $\geq 45^{\circ}\text{C}$	
11. Operating Altitude:	Up to 2800m above sea level	

12. Relative Humidity:	0% to 90% non-condensing	
13. Selectable IF Bandwidth	Selectable IF Bandwidth functionality From 56kHz to 311kHz	
14. De-Emphasis (with enable/disable option) on:	Line Outputs: 50µs	
15. MPX diversity switching	Automatic switching is provided for the best available feed	
16. Remote Control and Remote Monitoring Facilities	Local and remote monitoring via web interface and SNMP version 2 and upgradeable to later versions should be fully described by the Tenderer. Local and Remote control of equipment via web interface using the Network Port: RJ45 (TCP/IP) is essential (Not Java based).	
17. Front panel Monitoring and Control	User friendly control and monitoring user panel with menus clearly defined	
18. Telemetry monitoring and control	General Purpose Input/Outputs (GPIO)	
19. Audio Muting	Squelch threshold adjustable down to ≤80µV	

NOTE: Bidders that do not comply with all the above criteria will not be evaluated further.

19.2.Functional Criteria: FM Receivers

Since functionality is predominantly a measure of how to operate and maintain the equipment throughout the lifespan of the equipment, Sentech needs to choose the most suitable for its environment and operational requirement.

Awarding of points:

- Sentech will award 90% of the allocated points to bidders that prove to supply the minimum requirement.
- Bidders who only deliver partially to the criteria, will only receive 50% of allocated points.
- Bidders who fail to deliver the minimum requirement will be awarded 0% of allocated points.
- Innovative methods will be awarded 100% of allocated points.

Table 4 - FM Receivers - Functionality Criteria	Weighting factor	Attach evidence and provide reference page number in your Response
Dual FM Tuners: Pre-set frequencies that can be set different and independently to which the receiver will automatically revert back to after a power failure.	30	
Dual RF inputs isolated from each other	20	
Stereo Regeneration	15	
RDS encoder for RDS re-insertion	15	
IP based web streaming	15	
Handbooks and Documentation	10	
Service and Support	10	

Warranty	10	
Total	125 Points	

Table 4: Functional Criteria

Total minimum qualifying functional score is 110 points.

Functionality Criteria - Scoring Matrix	100%	90%	50%	0%
Dual FM Tuners	30	27	15	0
Dual RF inputs isolated from each other	20	18	10	0
Stereo Regeneration	15	13.5	7.5	0
RDS encoder for RDS re-insertion	15	13.5	7.5	0
IP based web streaming	15	13.5	7.5	0
Handbooks and Documentation	10	9	5	0
Service and Support	10	9	5	0
Warranty	10	9	5	0

19.3.Risk Assessment

For Sentech to complete the Technical evaluation, Sentech will undergo factory visits to the shortlisted Bidders (OEM's) that qualify during the Mandatory Technical Criteria and score 110 points in the Functional Criteria. The risk assessment will be in the form of a factory visit based on the following criteria:

- Any aspects that emanate from the bidders' individual responses during evaluation
- Any information received from past references
- Testing of offered equipment against specifications as set out in Tender and SOW in the Contract Data.
- Verification of manufacturing plant, including design, manufacturing of Receiver components, modules, and other ancillary items as needed in the Receivers.
- Quality control of manufactured units as described above
- Proof/discussion of third-party involvement in manufacturing of specialised equipment, modules, etc. deemed necessary in the working of the transmitter, including their contingency plans.
- Discussions with OEM to indicate their Spares holding capabilities and their support
- Inspection of factory facilities to prove their capability to handle high quantity orders

The Bidder must provide the Receiver and the Test Instruments used for evaluation during the factory visit. Equipment must include a full set of documentation and installation requirements and instructions. Important detail describing configurations should be included for Sentech to objectively assess and test the equipment.

After the factory visit, a comprehensive report will be produced, considering all the risks found during the testing of the equipment and inspection of the facilities. Sentech may disqualify Bidders based on the outcome of the report on the risk assessment.

OEMs are requested to assist the Sentech delegation in obtaining Visas.

20. Evaluation of Price and Preference

This Bid will be evaluated on a points system based on weighted average score for Price and Preference as per Preferential Procurement Framework Act of 2000 (Act 5 of 2000).

21. Preference Point allocation – 90/10

Price / Preference	Weighting percentage
Preference:	10%
Price:	90 %
Total must equal:	100%

Sentech will award preference points as follows:

Goal	Points	Evidence required
Historically disadvantaged by unfair discrimination on the basis of Race	5	A valid BBBEE Certificate showing at least 51% black ownership
	2	A valid BBBEE Certificate showing at least 25.1 – 50% black ownership
	1	Black owned company showing at least 5 – 25% black ownership
	0	Below 5%
Historically disadvantaged by unfair discrimination on the basis of Gender (women)	4	A valid BBBEE Certificate showing at least 51% women ownership
	2	A valid BBBEE Certificate showing at least 25.1 – 50% women ownership
	1	A valid BBBEE Certificate showing at least 5-25% women ownership
	0	A valid BBBEE Certificate showing at less than 5% women ownership
Historically disadvantaged by unfair discrimination on the basis of disability	1	A doctor's note confirming disability
Total Points	10	

22. Price Calculation 90/10

The following formula will be used to calculate the points for price.

$$P_s = 90 \left[\frac{1 - \frac{(P_t - P_{min})}{P_{min}}}{1} \right]$$

Where:

P_s = Points scored for price of bid under consideration

P_t = Rand value of bid under consideration

P_{min} = Rand value of lowest acceptable bid

23. Declaration of Authority

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this Bid Data is understood and all requirements will be adhered to.

Name of Bidder	Signature	Date	Designation

TABLE 1: REFERENCES

Please complete the customer reference table and relevant Contact telephone number and attach reference letters.

Customer		Service Provided	Contact Person	Contact no.	tel.	Contractual commencement date	Contractual completion date
1							
2							
3							
4							

5						
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Name of Tenderer	Signature	Date