

Specification No. Audio Processor/40/February/2019-D (TD/FM)

प्रसार भारती/Prasar Bharati
(भारत का लोक सेवा प्रसारक)
(India's Public Service Broadcaster)
आकाशवाणी महानिदेशालय /Directorate General: All India Radio
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No. SPECS-Audio Processor/12th Plan/9/4/2014-D (TD/FM)

Dated 04.04.2019

Subject: Specification for supply of Stereo FM Digital Audio Broadcast Processor

Kindly find enclosed herewith the draft technical specification [AIR Specification Audio Processor/40/February/2019-D (TD/FM)] for supply of Stereo FM Digital Audio Broadcast Processor, to get feedback from Original Equipment Manufacturers (OEMs) of the product.

Please submit your feedback via e-mail on or before 16.04.2019 at 17.00. Hrs. at the following e-mail addresses.

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(Manzoor Ali)
Asstt. Director (Engg.)
for Director General

PRASAR BHARATI
(India's Public Service Broadcaster)
DIRECTORATE GENERAL: ALL INDIA RADIO
(PLANNING & DEVELOPMENT UNIT)

File No. Specs-Audio Processor/12th Plan/9/4/2014-D(TD/FM)

**SPECIFICATIONS FOR SUPPLY OF STEREO FM DIGITAL AUDIO BROADCAST PROCESSOR
(FOR VHF FM TRANSMITTER SET UP)**

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A. ESSENTIAL REQUIREMENT FOR THE TENDERERS:

- The tenderer should submit Schedule of Requirements/Materials of Supply **without *price in the same format as given in Section-4.0 (I & II)*** of AIR Specifications in the technical bid, failing which the tender shall be considered incomplete and is liable to be rejected.
 - It is also mandatory to mention ***Make & Model of the offered equipment*** in the Schedule of Requirements/Materials of Supply, failing which the tender shall be considered incomplete and is liable to be rejected.
- Each statement of this specifications has to be complied with & supported by printed technical literature, technical data sheets, schematic drawings and technical manuals from the manufacturer of the equipment by the tenderer, to assess the full merit of the offer without which tender will be considered incomplete and is liable to be rejected.
- The tenderer should submit the tender offer to AIR in the format given below, section wise & clause wise, in respect of all the sections of technical specifications. The OEM/tenderer must provide the page number reference, in column (4) of the table given below, of the technical bid clearly indicating the volume number also, if any, for each supporting document to verify the parametric values shown in the compliance statement, to assess the full merit of the offer, failing which the tender shall be considered incomplete and is

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liable to be rejected.

S. No. of AIR Specifications (Section wise & Clause wise) (1)	Details of AIR Specifications (Part/ Section wise & Clause wise) (2)	Compliance (Yes/No) (3)	The page no. of the tender offer, where the information/ supporting document is available. (4)	Remarks (5)
Section-1 Clause wise				
Section-2 Clause wise				
Section-3 Clause wise				
Section-4 Clause wise				

4. The tenderer should quote the rate/cost of individual items in the tender offer while submitting the offer for spares (**OPTIONAL**) in commercial bid.
5. The complete technical specifications (Section wise & Clause wise) compliance statement along with Schedule of Requirements/Materials (un-priced) must be signed & stamped on each page by the respective Original Equipment Manufacturer (OEM) in the tender document including the clarifications, if any, asked by AIR, failing which the tender shall be considered incomplete and is liable to be rejected. In case tender offer is from other than the Original Equipment Manufacturer, the tenderer must also sign & stamp each page of the complete Technical specifications compliance statement (Section wise & Clause wise) including the clarifications, if any, asked by AIR, failing which the tender shall be considered incomplete and is liable to be rejected. The OEM & tenderer should mention their name in CAPITAL LETTERS & designation of the signatories, full address with pin code, phone number, fax number, e-mail addresses etc.
6. All the volumes of the entire technical bid must be page numbered.
7. The authorization and guarantee must be given by respective Original Equipment Manufacturer (OEM) on their letter head pad duly signed & stamped on each page. In case tender offer is from other than the Original Equipment Manufacturer, the tenderer must also give guarantee on their letter head pad duly signed & stamped on each page, failing which the tender shall be considered incomplete and is liable to be rejected without any notice/back reference. Guarantee shall be as per the format given in clause 1.7 of Section-1.
8. In case tender offer is from other than the Original Equipment Manufacturer, the tenderer should also furnish a certificate from the OEM that the tenderer can quote items of the OEM directly, failing which the tender shall be considered incomplete and is liable to be rejected without any notice/back reference.
9. Public Procurement (Preference to Make in India) Order No. P-45021/2/2017-B.E-II dated 15.06.2017 of Government of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion shall be applicable.
10. Any change in the AIR technical specifications format or language or in parameters or of any other nature including the deletion of technical specifications clause, words, lines in the technical specifications compliance statement by the OEM/ tenderer will not be acceptable to AIR and the tender is liable to be rejected.

11. *Optional items will not be considered for ranking purpose.*

B. ESSENTIAL ELIGIBILITY CRITERIA FOR TENDERERS:

- (a) The tenderer should either be the OEM of Stereo FM Digital Audio Broadcast Processor or their authorized representative/dealer.
- (b) (i) The OEM of the Stereo FM Digital Audio Broadcast Processor must have an experience of manufacturing and supplying Stereo FM Digital Audio Broadcast Processor for at least last 5 years. Documentary evidence to support this must be provided.
- (ii) The OEM should have supplied Stereo FM Digital Audio Broadcast Processor to reputed/public broadcasters. The OEM must provide the details of past supply record **in the format given below** for last three years ending last day of the month previous to the one in which the tender is invited, for at least 20 Nos. of such offered Stereo FM Digital Audio Broadcast Processor.

Order No. with date, reference	Stereo FM Digital Audio Broadcast Processor Type and Model	Qty.	Name of the broadcaster with full postal address including e-mail address to whom Stereo FM Digital Audio Broadcast Processor performance was supplied, for getting feedback on Stereo FM Digital Audio Broadcast Processor performance.	Remarks
(1)	(2)	(3)	(4)	(5)

- (iii) All India Radio reserves the right to get performance feedback of the Stereo FM Digital Audio Broadcast Processor from any of the above broadcasters named by the tenderer/OEM.
- (iv) Copies of orders for supply and actual performance certificates of at least 10 Nos., out of the 20 Nos. of Stereo FM Digital Audio Broadcast Processor submitted by the tenderer in above format, are also to be enclosed by the tenderer.
- (c) In case, tenderer is the authorized representative/dealer, it must be in the business of sales and supply of Stereo FM Digital Audio Broadcast Processor for at least last **three** years. Documentary evidence to support this must be provided.
- (d) The OEM of the offered Stereo FM Digital Audio Broadcast Processor must have his local office/authorized representative/dealer in India only for after sales support. A **certificate** in this regard duly signed by the OEM, on their letterhead **as per Annexure-I** including copy of Agreement/MoU in this regard between OEMs and their local representative/dealer **and signed by both** must be submitted with the offer.
- (e) The local office/authorized representative/dealer will be the nodal point for resolving issues related to after sales support. It is the responsibility of local office/authorized representative/dealer to arrange the repair/replacement of faulty items. Any module of Stereo FM Digital Audio Broadcast Processor requiring repairs will be repaired at site. If it is not feasible to repair the module at site, the same will be collected from the site by local office/authorized representative/dealer that will arrange repairs locally. The cost of transportation, repairs etc. shall be borne by the tenderer during the guarantee period.
- (f) After sales support for the repairs/maintenance of Stereo FM Digital Audio Broadcast Processor after the completion of guarantee period, shall also be provided by the respective OEM of the Stereo FM Digital Audio Broadcast processor and other associated equipments through their representatives/dealers in India.
- (g) The OEM should have complete setup for maintenance/repair of the Stereo FM Digital Audio Broadcast

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Processor in India, either of its own or through authorized service provider.

- (h) The details of technical facilities in the local after sales support office, such as test bench, necessary test & measuring equipment and photographs thereof, must be provided in the technical bid.
- (i) AIR representatives may visit the works of local authorized representative/dealer of OEM in India to ensure/verify that adequate technical infrastructure is available for after sales service for timely resolving the issues related to attending/replacing the equipments. Tenders from the tenderers who failed to meet these criteria shall be considered incomplete and is liable to be rejected without any notice/back reference.

SECTION-1.0

GENERAL SPECIFICATIONS:

1.0 Stereo FM Digital Audio Broadcast processor equipment as per AIR specification shall be used for round the clock for continuous operation without any interruption in VHF FM broadcast service at AIR station for FM transmitter/studio setup. The offered equipment/items as per specification shall be field proven for satisfactory operation.

1.1 Please refer tender documents for general term and conditions of contract for supply including all the commercial aspects like, Packing and Packing List, Insurance and Marine Risk etc., Payment terms, Penalty/Compensation for Delay, Damages and Liabilities, Time Period and Extension for Delay, Foreclosure of Contract due to Abandonment or Reduction in Scope of Supply, Cancellation of Contract in Full or Part, Recovery of Security Deposit, Performance Guarantee, Unsatisfactory Workmanship, Damages Incurred During transit, Tenderer Liable for Damages, Defects, Recovery of Compensation, Ensuring Payment and Amenities, Tenderer to Indemnify Government against Patent Rights, Release of Security Deposit, Safety Code, insurance from manufacturer's works/factory to respective site etc **i.e. in totality.**

1.2 INSPECTION:

1.10.1 Detailed inspection of Stereo FM Digital Audio Broadcast processor will be carried out at Manufacturer's Works by **two Engineers** of All India Radio as per details given in Section-3.0.

1.10.2 Call for Pre-dispatch Inspection(PDI) of Stereo FM Digital Audio Broadcast processor at OEM's Works is to be given by the tenderer to All India Radio at least **8 weeks** in advance. *Inspection period shall be based on one working day for three Stereo FM Digital Audio Broadcast processor.* Testing/measurements as per approved ATP must be submitted to All India Radio along with the call for inspection of Stereo FM Digital Audio Broadcast processor for analyzing etc.

1.10.3 For AIR inspecting engineers, expenses toward to and fro air journey, boarding, lodging etc. will be borne by All India Radio.

1.10.4 The complete Acceptance Test Procedure/Protocol (ATP) will be prepared by the OEM of the Stereo FM Digital Audio Broadcast processor and submitted to DDG (E-FM), P&D Unit, DG: AIR for approval within one month of issue of Acceptance of Tender. ATP will also indicate full details of setup for measuring/testing equipments to be deployed during the performance measurements/inspection at factory. The **approved ATP** shall form the basis for performance measurements/inspection to be carried out. AIR has the right to include other technical parameters in ATP submitted by OEM within the ambit of specification of the product offered.

1.3 INFORMATION TO BE SUPPLIED WITH THE TENDER:

- (i) The complete technical specifications (Section wise & Clause wise) compliance statement alongwith Schedule of Requirements/Materials (un-priced) duly signed & stamped on each page by the respective Original Equipment Manufacturer (OEM) and countersigned by the tenderer as per the format given above in clause A (3), to assess the full merit of the offer, without which the tender offer will be considered incomplete and is liable for rejection.
- (ii) Complete printed technical literature/data sheet/schematic drawings/detailed information including technical manual of Stereo FM Digital Audio Broadcast processor and associated equipments/items as per Section-4.0 (I&II) from the Original Equipment Manufacturer (OEM) in support of compliance statement should be furnished for all the items of the tender, to assess the full merit of the offer, without which the tender offer will be considered incomplete and is liable for rejection.
- (iii) Detailed Schedule of Requirements/Materials (un-priced) for supply of Stereo FM Digital Audio Broadcast processor should be in conformity with Section-4.0 (I&II) without any change in the format, failing which, the tender will be considered incomplete and is liable for rejection. The tenderer must quote all items.
- (iv) Descriptive information and complete details of each equipment offered shall be given by the tenderer.
- (v) Country of Origin, Make, Type & Model of all the offered items should be mentioned including the name & address of their vendors.
- (vi) A copy of the Technical Manual must be enclosed with technical bid for assessing the complete Stereo FM Digital Audio Broadcast processor. The Technical Manual must include at least the details given below:
 - (a) General description of the offered Stereo FM Digital Audio Broadcast processor, block diagram/schematic drawings etc.
 - (b) Diagrams showing the isometric view of Stereo FM Digital Audio Broadcast processor equipment with dimensions in metres.
 - (c) Installation Manual & drawings with dimensions in respect of offered equipment.
 - (d) The procedure of settings Stereo FM Digital Audio Broadcast processor should be described in detail with practical examples.
 - (e) Photograph of the Stereo FM Digital Audio Broadcast processor showing Front, Rear, Side & Top view.
 - (f) **All Do's and Don'ts which are essential for safe Installation, Operation & Maintenance of the Stereo FM Digital Audio Broadcast processor.**

1.4 INFORMATION TO BE SUPPLIED BY THE TENDERER WITHIN ONE MONTH AFTER ISSUE OF ACCEPTANCE OF TENDER:

One set of Technical Manuals (for Installation, Testing, Commissioning, Operation & Maintenance, including theory of operation and fault diagnosis) **COLOUR** printed and duly bound for Stereo FM Digital Audio Broadcast processor along with soft copy on CD must be supplied to "DDG(E-FM), P & D Unit, DG: AIR, New Delhi-110001".

1.5 INFORMATION TO PRECEDE DESPATCH OF EQUIPMENT:

Following information should be supplied to the DDG(E-FM), P & D Unit, DG:AIR and each of the consignee, two months prior to dispatch of Equipment:

- a) Detailed list of equipment under dispatch.

1.6 INFORMATION TO BE SUPPLIED ALONGWITH EQUIPMENT:

Technical manuals (for Installation, testing, commissioning, Operation & Maintenance, including theory of operation and fault diagnosis) **COLOUR** printed and duly bound for Stereo FM Digital Audio Broadcast processor and inspection report with soft copy on CD shall be supplied as per Section-4.0 (I).

1.7 GUARANTEE:

The tenderer shall submit with his tender an undertaking to accept the following guarantees:
{This Guarantee clause is applicable to all the equipments/items mentioned in Schedule of Requirements/Materials (un-priced)}.

- (i) A guarantee that the equipment supplied will be in accordance with these specifications, varied only to the extent stated in his tender and agreed to in the contract.
- (ii) A guarantee to make good within 7 days (from the date of first intimation to OEM/tenderer) at tenderer's expense any component which becomes defective under normal operating conditions, for 60 months from the date of supply. If the tenderer failed to rectify the fault within the stipulated period of 7 days, the guarantee period would be extended corresponding to the outage period.
- (iii) A guarantee to supply all components for a period of ten years from the date of acceptance of Equipment at site, at rates at which these are being supplied by him to other customers and also should match prices of original manufactures of these components prevailing at that time.
- (iv) If at any stage during next 10 years, the manufacturer stops production of this model of Equipment, he shall intimate All India Radio in advance to enable the latter to stock the critical items.

1.8 LANGUAGE/UNITS:

All information supplied by the Tenderer & all markings, notes, designation on the drawings & associated write-ups shall be in "English language" only.

All dimensions, units on drawings, all references to weights, measures & quantities shall be in MKS.

1.9 DELIVERY OF EQUIPMENT:

1. For Indian Bidders:

Supply will have to be completed within **FOUR MONTHS** from the date of Acceptance of Tender or **FOUR MONTHS** from the date of the Decision Letter from WPC(whenever is required) in respect of RF equipment, provided by AIR, whichever is later.

2. For Foreign Bidders:

Supply will have to be completed within **FOUR MONTHS** from the date of Opening of Letter of Credit (LC).

1.10 PACKING AND PACKING LISTS:

All the equipment should be securely and properly packed to withstand transit hazards. Equipment packing shall be fit for sea freight and incorporate adequate protection against ingress of moisture. Packing slips giving details of the items contained in each package shall be placed inside the package in a water proof envelop to enable easy identification and should contain cross references to item/part numbers of installation drawings/components lists. Copies of packing slips and other details should be sent separately to respective consignee and also to the DDG(E-FM), P & D Unit, DG: AIR, New Delhi.

1.11 INSURANCE AND MARINE RISKS ETC:

Please refer to commercial terms.

1.16 POWER SUPPLY FOR ALL EQUIPMENT:

(i)	Operating Line voltage	AC Single Phase, 230 Volts \pm 10 %
(ii)	Frequency	50 Hz \pm 4%
(iii)	Power factor	Better than 0.9

1.17 AMBIENT CONDITIONS FOR ALL INSIDE EQUIPMENT:

(i)	Operating temperature range	0 °C to 45 °C
(ii)	Relative Humidity	95% non-condensing.
(iii)	Working altitude	Up to 3000 meters AMSL

1.18 The tenderer will have to arrange demonstration of the offered Equipment as a part of technical evaluation at New Delhi, India within 30 days from the date of issue of AIR request letter. Accordingly, the tenderer should be in readiness for demonstration within 30 days from the date of issue of AIR request letter, **failing which the tender offer is liable to be rejected without any further correspondence.**

The tenderer will have to make all necessary arrangement for testing of the offered Equipment. Exhaustive checking and measurements will be carried out so as to completely check the compliance of the equipment with the requirements as projected in the specifications. A test setup (Annexure-III) for measurement of Audio Processor is also enclosed for reference.

All expenses & liabilities for demonstration of above offered equipment will be borne by the tenderer. This is purely for Technical Evaluation of the offered Equipment and is without any commitment for acceptance of offer, whatsoever at this stage.

1.19 MAINTENANCE SUPPORT AND SPARES:

- (a) The minimum recommended essential spares shall be quoted separately by the tenderer.
- (b) The minimum recommended essential spares may be based on predicted rate of failure.
- (c) In case, the tenderer quotes the optional items as 'a set', the details of the components/items offered in the 'set' must be spelt out clearly including their Make & Model and quantity.

1.20 LOCAL REPRESENTATIVE/DEALER:

- (a) The OEM of the offered Stereo FM Digital Audio Broadcast processor must have his local office/authorized representative/dealer in India for after sales support. **A certificate** in this regard duly signed by the OEM, on their letterhead **as per Annexure-I** including copy of Agreement/MoU in this regard between OEMs and their local representative/dealer **and signed by both** must be submitted with the offer.
- (b) The local office/authorized representative/dealer will be the nodal point for resolving issues related to after sales support. It is the responsibility of local office/authorized representative/dealer to arrange the repair/replacement of faulty items. Any module of Stereo FM Digital Audio Broadcast processor or other equipment requiring repairs will be repaired at site. If it is not feasible to repair the module at site, the same will be collected from the site by local office/authorized representative/dealer that will arrange repairs locally. The cost of transportation, repairs etc. shall be borne by the tenderer during the guarantee period.

- (c) After sales support for the repairs/maintenance of Stereo FM Digital Audio Broadcast processor after the completion of guarantee period, shall also be provided by the respective OEM of the Stereo FM Digital Audio Broadcast processor and other associated equipments through their representatives/dealers in India.
- (d) The OEM should have complete setup for maintenance/repair of the Stereo FM Digital Audio Broadcast processor in India, either of its own or through authorized service provider.
- (e) The details of technical facilities in the local after sales support office, such as test bench, necessary test & measuring equipment and photographs thereof, must be provided in the technical bid.
- (f) AIR representatives may visit the works of local authorized representative/dealer of OEM in India to ensure/verify that adequate technical infrastructure is available for after sales service for timely resolving the issues related to attending/replacing the equipments. Tenders from the tenderers who failed to meet these criteria shall be considered incomplete and is liable to be rejected without any notice/back reference.

SECTION-2.0

2.1 SALIENT FEATURES:

- a. The specification for Stereo FM Digital Audio Broadcast Processor is meant for broadcast purpose in the audio chain of VHF FM transmitters.
- b. It should have Digital Signal Processing technique.
- c. It should be able to provide multi band (minimum 5) compression, limiting and clipping, automatic wideband gain control.
- d. It should have phase limiter to maximize audible transparency. It should also have provision for stereo enhancement and high/low frequency enhancement.
- e. It should have in-built feature of multiple user and system configuration pre-sets. The user audio pre-sets and system configuration pre-set should be stored in the memory and without any battery backup. By using the processor user pre-set, the factory pre-set of the Processor should not change.
- f. The equipment shall be capable for continuous operation to ensure the uninterrupted broadcast without degradation in performance.
- g. The equipment should have a failsafe switching which detects loss of audio or sync error on the primary input and able to switch automatically to the secondary input.
- h. The equipment should have system audio bypass functionality with adjustable gain setting to completely defeat the processing for test and alignment.
- i. The equipment should have a built-in adjustable test tone generator that produces sine waves (L+R, L-R, Left or Right) at all analog, digital and composite outputs.

2.2 The Stereo FM Digital Audio Broadcast Processor should accept following inputs.

- 2.2.1 AES/EBU inputs
- 2.2.2 Analog left-right inputs
- 2.2.3 Sub-carrier inputs (Subsidiary Channel Authorization and Radio Data System/Radio Broadcast Data System i.e. SCA and RDS/RBDS)

2.3 The Stereo FM Digital Audio Broadcast Processor should give following outputs.

- 2.3.1 Dual AES/EBU output with individual level control
- 2.3.2 Analog left-right output
- 2.3.3 Composite stereo output/ multiplexed output

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2.4	Necessary function switches such as level/gain control etc. should be available on the front panel. All these control shall be rugged and reliable.
2.5	The Stereo FM Digital Audio Broadcast Processor should have visual monitoring and real time level monitoring of various technical parameters on the front panel and a compact one unit for ease of operation.
2.6	It should be capable for remote control operation. It should have visual monitoring of various technical parameters remotely through PC etc.
2.7	Radio Frequency Interference (RFI)/Electromagnetic Compatibility (EMC) filter shall be provided at mains input of the Stereo FM Digital Audio Broadcast Processor as per relevant provisions of standards for effective rejection of the interference from the high power transmitters operating in the premises.

TECHNICAL SPECIFICATIONS:

S. No.	TECHNICAL PARAMETERS	TECHNICAL SPECIFICATIONS
2.8	ANALOG AUDIO INPUT	
2.8.1	Configuration	Stereo
2.8.2	Nominal Input Level	Software adjustable from -9.0 to +12.0 dBu.
2.8.3	Maximum Input Level	+24 dBu
2.8.4	Connectors	Two XLR-type, female, EMI-suppressed.
2.8.5	A/D Conversion	Minimum 24-bit
2.9	ANALOG AUDIO OUTPUT	
2.9.1	Configuration	Stereo. Flat or pre-emphasized (at 50 μ s), software-selectable.
2.9.2	Output Level (100% peak modulation)	Adjustable from -6 dBu to +20 dBu peak, into 600 Ω or greater load, software-adjustable.
2.9.3	Signal to Noise Ratio (referenced to 100% modulation, 20 Hz to 15 kHz)	≥ 80 dB unweighted
2.9.4	Total Harmonic Distortion plus Noise (THD+N) (20 Hz to 15 kHz)	≤ 0.02 %.
2.9.5	L/R Cross Talk (20 Hz to 15 kHz)	≥ 70 dB
2.9.6	Connectors	Two XLR-type, male, EMI-suppressed.
2.9.7	D/A Conversion	Minimum 24-bit
2.9.8	Frequency response (20 Hz to 15 kHz)	± 0.5 dB
2.10	DIGITAL AUDIO INPUT	
2.10.1	Configuration	Stereo, AES/EBU standard, 24-bit resolution.
2.10.2	Sampling Rate	32, 44.1, 48 or 96 kHz automatically selected.
2.10.3	Connector	XLR-type, female, EMI-suppressed, 110 Ω
2.10.4	Input Reference Level	Variable within the range of -25 dBFS to -10 dBFS
2.11	DIGITAL AUDIO OUTPUT	
2.11.1	Configuration	Stereo, AES/EBU standard (Two outputs with independent level control)
2.11.2	Sample Rate	32, 44.1 48 or 96 kHz, selected in software
2.11.3	Connectors	XLR-type, male, EMI-suppressed
2.11.4	Output Level (100% peak modulation)	-20 dBFS to 0 dBFS, software-controlled.

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2.11.5	De-emphasis	50 μ s Software-selectable
2.12	COMPOSITE BASEBAND OUTPUT	
2.12.1	Configuration	Two outputs with independent level control.
2.12.2	Maximum Output Level	+12 dBu
2.12.3	D/A Conversion	Minimum 24-bit
2.12.4	Signal to Noise Ratio (referenced to 100% modulation, 20 Hz to 15 kHz)	\geq 85 dB unweighted
2.12.5	Total Harmonic Distortion plus Noise (THD+N) (20 Hz to 15 kHz)	\leq 0.02%
2.12.6	Stereo Separation at 100% modulation (30 Hz to 15 kHz)	\geq 55dB
2.12.7	Cross talk Linear (main channel to sub-channel or sub-channel to main channel) referenced to 100% modulation	Better than 70 dB
2.12.8	38 kHz Suppression	\geq 70 dB (referenced to 100% modulation)
2.12.9	Pilot Protection	60 dB relative to 9% pilot injection, \pm 250 Hz
2.12.10	Pilot Stability	19 kHz, \pm 1.0 Hz
2.12.11	Pilot level	Adjustable from 6% to 12%, software controlled
2.12.12	57 kHz (RDS/RBDS)Protection	\geq 50 dB relative to 4% sub-carrier injection, \pm 2.0 kHz.
2.12.13	Connectors	Two BNC, EMI suppressed.
2.13	REMOTE CONTROL INTERFACE	
2.13.1	Configuration	Four inputs & two outputs, opto-isolated and floating
2.13.2	Voltage	AC or DC. Details to be given by tenderer
2.13.3	Connector	Suitable for 2.14.1(EMI suppressed)
2.13.4	Control	User-programmable for multiple user presets, factory presets, bypass, test tone, stereo or mono modes, analog input, digital input.
2.14	REMOTE COMPUTER INTERFACE	
2.14.1	Configuration	Transmission Control Protocol (TCP)/ Internet Protocol (IP) via direct cable connect, modem or Ethernet interface.
2.14.2	Connectors	RS-232(EMI-suppressed), Ethernet
2.15	POWER	
2.15.1	Voltage	AC Single phase, 230V \pm 10 %, 50Hz \pm 4 %
2.15.2	Connector	IEC (EMI suppressed). Detachable 3-wire power cord to be supplied.
2.15.3	Safety Standards	ETL listed to UL standards, CE marked.
2.16	ENVIRONMENTAL CONDITIONS	As per Section -1.0
2.17	Dimensions (Approximate) (W \times H \times D)	To be fitted in 19" rack
2.18	The Stereo FM Digital Audio Broadcast Processor shall essentially have the following:	

- (i) **Protection against current over-loads:** The equipment should mute in case of overload and revert to normal functioning once overload ceases to exist.
- (ii) **Protection against thermal overload:** Temperature of equipment inside components should be monitored and the equipment should get muted with a visual indication whenever temperature exceeds permissible limits. In case of excessive temperature of inside components, the equipment should be protected.
- (iii) **Protection against RF:** The equipment is to be provided with adequate interference shielding so as to perform satisfactory operation in the transmitter hall, without degradation in performance, which houses other high power Medium Wave or FM transmitters.
- 2.19** The equipment should have protection against open circuit, short circuit, ultrasonic frequencies and high RF fields.
- 2.20** An earth terminal shall be provided in the equipment body for connecting audio earth connection.
- 2.21 ACCESSORIES:** All necessary accessories like connection cords and connectors shall be supplied along with the units. The standard accessories should be clearly mentioned in the tender. Also, optional accessories, if considered useful/recommended by the supplier, should be quoted separately with technical details.

SECTION 3.0

INSPECTION DETAILS

The inspection for acceptance of the Stereo FM Digital Audio Broadcast Processor will be carried out at Delhi in India by Engineers of All India Radio (AIR) in accordance with Acceptance Test Procedure/Protocol (ATP). All facilities like complete set of measuring instruments, power supply, manual assistance etc. will be provided by the tenderer. Complete details and specifications of the Stereo FM Digital Audio Broadcast Processor will be checked and all parameter values will be measured.

The tenderer shall put up all the Stereo FM Digital Audio Broadcast Processor for inspection in lot, out of which **10% randomly selected** Stereo FM Digital Audio Broadcast Processor shall be inspected in detail and measurements shall be taken. Remaining Stereo FM Digital Audio Broadcast Processor will be accepted on the basis of Original Equipment Manufacture's (OEM) Test Certificates (as per AIR Specifications) duly signed and stamped on the letter head of the OEM, failing which, Original Equipment Manufacture's (OEM) Test Certificates will be considered incomplete and equipment offered by the firm is liable to be rejected.

Operational checking of the complete Stereo FM Digital Audio Broadcast Processor and measurements will be carried out as per approved ATP. Complete list of these measuring equipments along with their set-up shall be forwarded along with the tender. A test setup (Annexure-III) for measurement of Audio Processor is also enclosed for reference.

It is mandatory that all these checking and measurements i.e. Operational checking of the Stereo FM Digital Audio Broadcast Processor and measurements are carried out well in advance and these measurement details, graphical printouts and figures must be available, at the time of inspection. These must also be submitted to All India Radio along with the call for inspection of the Stereo FM Digital Audio Broadcast Processor well in advance for analyzing etc.

Following information should also form part of above data which will also be checked for each Stereo FM Digital Audio Broadcast Processor during inspection by AIR representative:

1. Make, Type, Model and Country of Origin of the Stereo FM Digital Audio Broadcast Processor, accessories and spares.
2. Measurements of all parameters as per Section-2.0 of Technical Specifications. All the parameters will be

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measured.

SECTION-4.0 (I)

SCHEDULE OF REQUIREMENTS/MATERIALS (UN-PRICED) (FOR ONE SET OF STEREO FM DIGITAL AUDIO BROADCAST PROCESSOR)

S. No.	Description	Make	Model	Unit	Qty.
1.0	Stereo FM Digital Audio Broadcast processor equipment complete with all accessories as per AIR specification.			Set complete	1 Set complete
2.0	Any other items/accessories offered for the completeness of the system (Items wise details of offered and included material with part numbers, if any are to be given by the tenderer)			Lot	1 Lot
3.0	Technical Manuals (for Installation, Testing, Commissioning, Operation & Maintenance, including theory of operation and fault diagnosis) COLOUR printed and duly bound for Stereo FM Digital Audio Broadcast processor along with soft copy on CD shall be supplied as per distribution given below:				
3.1	For DDG (E-FM), P & D Unit, DG: AIR, New Delhi-110001 {Within one month of issue of Acceptance of Tender} (irrespective of number of Stereo FM Digital Audio Broadcast processor to be ordered)			Set	1 Set
3.2	For Consignee {To be supplied along with the equipment }			Sets	2 Sets
3.3	For the following Offices/Officers, Technical manuals are to be supplied along with the equipment as per distribution given below) (irrespective of number of Stereo FM Digital Audio Broadcast processor to be ordered)			Sets	14 Sets
	(i) DDG (E-FM), P&D Unit, DG: AIR - 1 Set				
	(ii) Zonal Office (Project Wing) - 5 Sets				
	(iii) Zonal Office (Maintenance Wing) -5 Sets				
	(iv) DDG (E-TM), DG: AIR -1 Set				
	(v) Technical Library, P&D Unit, DG: AIR -1 Set				
	(vi) NABM (Technical), New Delhi -1 Set				
	Total -14 Sets				
4.0	Inspection charges of Stereo FM Digital Audio Broadcast processor as per AIR specifications			Lot	1 Lot

SECTION-4.0 (II)

SPARE (OPTIONAL) SCHEDULE OF REQUIREMENTS/MATERIALS (UN-PRICED) (FOR ONE SET OF STEREO FM DIGITAL AUDIO BROADCAST PROCESSOR)

S. No.	Description	Make	Model	Unit	Qty.
1.0	Stereo FM Digital Audio Broadcast processor equipment complete with all accessories as per AIR specification.			Set complete	1 Set complete
2.0	Any other items/accessories offered for the completeness of the system (Items wise details of offered and included material with part numbers, if any are to be given by the tenderer)			Lot	1 Lot

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All India Radio at its own discretion may procure spares for a value not exceeding 10% of the cost of equipments. The tenderer should quote all the essential spares.

ANNEXURE-I

PERFORMA FOR INFORMATION ABOUT LOCAL OFFICE FOR AFTER SALES SUPPORT

1.	Address of Local Office	
	Telephone (Landline) No.	
	Mobile No.	
	E-mail Address	
2.	Address for communication (if different)	
3.	Legal Status (Authorized Representative/ liaison office/registered company etc.)	
4.	Name, address, contact number (Mobile number) & e-mail address of Local representative	
5.	Brief details of Technical facilities available for after sales support: The details of technical facilities in the local after sales support office, such as test bench, necessary test & measuring equipment and photographs thereof, must be provided in the technical bid.	
6.	Main line of business, specialization and number of years of operation	
7.	Total number of permanent technical employees including their designation and qualification	
8.	Details of Agreement/MoU for after sales support with OEM (Copy must be provided with the offer)	Date of Agreement: Executed at : Executed by :
(Authorized Signatory of local office)		(Authorized Signatory OEM of Stereo FM Digital Audio Broadcast processor)
Name :		Name :
Signature :		Signature :
Place & Date		Place & Date

ANNEXURE-II

LIST OF PLACES FOR SUPPLY OF STEREO FM DIGITAL AUDIO BROADCAST PROCESSER

S. No.	Name of places	State	Quantity
1	Sultanpur	U.P.	2 Nos.
2	Nellore	A.P.	2 Nos.
3	Udhampur	J&K	2 Nos.
4	Meerut	U.P.	2 Nos.
5	Ratlam	Madhya Pradesh	2 Nos.
6	Ludhiana	Punjab	2 Nos.
7	Etawah	U.P.	2 Nos.
8	Gadania	U.P.	2 Nos.
9	Nanpara	U.P.	2 Nos.
10	Narkatiaganj	Bihar	2 Nos.
11	Sitamarhi-I	Bihar	2 Nos.
12	Bathnaha	Bihar	2 Nos.
13	MaharajGanj	U.P.	2 Nos.
14	Guwahati	Assam	2 Nos.
15	Kotputli	Rajasthan	2 Nos.

ANNEXURE-III

TEST SETUP FOR MEASUREMENT OF AUDIO PROCESSOR
(FOR REFERENCE)

