प्रसारभारती / **PRASAR BHARATI**

भारतीयलोकसेवाप्रसारक/ **INDIA'S PUBLIC SERVICE BROADCASTER**

अपरमहानिदेशक(अभि.) (द.क्षे) काकार्यालय/ **O/o. ADDL. DIRECTOR GENERAL (E)(SZ)**

आकाशवाणीएवंदूरदर्शन / **ALL INDIA RADIO & DOORDARSHAN**

स्वामीशिवानंदासालै, चेन्नई / **SWAMY SIVANANDA SALAI, CHENNAI – 600 005**

No. ADG(E)(SZ)/SMT/IEBR/METP/24-25/ Date: 14.02.2025

Sir/Madam,

SUB: Request for Budgetary Quotation for One Audio processor for the attached specification.

Quotations are invited for One Audio processor

Sl. No.	Particulars	Qty.
1.	Procurement of One Audio processor	1 job

1) **GUARANTEE / WARRANTEE:**
One year from the date of supply of material.

2) **Payment terms** :100% payment on testing of item.

Quotations may be Addressed to : Shri. N.Ravichandran, Deputy Director(E), Room No 306, O/o Additional Director General(E), Akashvani & DD, Swamy Sivananda Salai, Chennai – 600005.
And by Email to : diravm_sz@yahoo.com & airmaintenance.sz@prasarbharati.gov.in

Yours faithfully

14/02/25

A.Chithra
Director(E)
for ADG(A&BO)(E)(SZ)

Specification No. Audio Processor/11/January/2023-D (TD/FM)

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. The processed audio should be free from Phase distortion. 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-sets 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 system audio bypass functionality with adjustable gain setting to completely defeat the processing for test and alignment.

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 AES/EBU output
2.3.2 Analog left-right output
2.3.3 Two Composite stereo output/ multiplexed output with individual level control. These outputs will be ITU-R BS 412 compliant as per sub-clause 2.5.1 under clause 2.5 (Technical conditions) of section 2.0 of Rec. ITU-R BS 412-9.
2.3.4 Pilot tone output for synchronization of external devices etc.

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 and should be SNMP compliant. It should have visual monitoring of various technical parameters remotely through PC etc. The tenderer will also provide MIB file.

2.7 Radio Frequency Interference (RFI)/Electromagnetic Interface (EMI) 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 FM/AM transmitters operating in the premises.

Vijendra Panwar (ADE) Manzoor Ali (DDE) Aditya Chaturvedi (DDG) Ravindra Goyal (DDG) 22/9/23

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 -4.0 to +12.0 dBu.
2.8.3	Maximum Input Level	+22 dBu
2.8.4	Connectors	Two XLR-type, female, EMI-suppressed.
2.8.5	A/D Conversion	Minimum 24-bit
2.8.6	Input Impedance	≥10 k Ω
2.9	**ANALOG AUDIO OUTPUT**	
2.9.1	Configuration	Stereo. Flat or pre-emphasized (at 50 µs), software-selectable.
2.9.2	Output Level (100% peak modulation)	Adjustable from -4 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)	± 0.5dB
2.9.9	Output Impedance	<50 Ω
2.10	**DIGITAL AUDIO INPUT**	
2.10.1	Configuration	Stereo, AES/EBU standard, 24-bit resolution.
2.10.2	Sampling Rate	32 kHz /44.1 kHz, 48kHz 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 - 6 dBFS
2.10.5	De-emphasis	50 µs Software-selectable
2.11	**DIGITAL AUDIO OUTPUT**	
2.11.1	Configuration	Stereo, AES/EBU standard
2.11.2	Sample Rate	32 kHz /44.1 kHz, 48kHz 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.
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)	≥80 dB unweighted
2.12.5	Total Harmonic Distortion plus Noise (THD+N) (20 Hz to 15 kHz)	≤ 0.02%
2.12.6	Stereo Separation at 100% modulation (30 Hz to 15 kHz)	≥ 55dB

Vijendra Panwar (ADE) Manzoor Ali (DDE) Aditya Chaturvedi (DDG) Ravindra Goyal (DDG) 23/9/23

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	≥ 70 dB (referenced to 100% modulation)
2.12.9	Pilot Protection	60 dB relative to 9% pilot injection, ± 250 Hz
2.12.10	Pilot Stability	19 kHz, ± 1.0 Hz
2.12.11	Pilot level	Adjustable from 6% to 12%, software controlled
2.12.12	57 kHz (RDS/RBDS)Protection	≥ 50 dB relative to 4% sub-carrier injection, ± 2.0 kHz
2.12.13	Connectors	Two BNC, EMI suppressed.
2.13	**REMOTE CONTROL INTERFACE**	
2.13.1	Configuration	TCP/IP via direct cable connect/modem/Ethernet interface.
2.13.2	Connectors	Ethernet (RJ-45)
2.14	**POWER**	
2.14.1	Voltage	AC Single phase, 230V ± 10 %, 50Hz ± 4 %
2.14.2	Connector	IEC (EMI suppressed). Detachable 3-wire power cord to be supplied.
2.14.3	Safety Standards	ETL listed to UL standards, CE marked.
2.15	**ENVIRONMENTAL CONDITIONS**	As per Section -1.0
2.16	Dimensions (Approximate) (W × H × D)	To be fitted in 19″ rack

2.17 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 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 FM/AM transmitters.

2.18 The equipment should have protection against open circuit, short circuit, ultrasonic frequencies and high RF fields.

2.19 An earth terminal shall be provided in the equipment body for connecting audio earth connection.

2.20 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.

Vijendra Panwar (ADE) Manzoor Ali (DDE) Aditya Chaturvedi (DDG) Ravindra Goyal (DDG)