

**Subject : Notice inviting comments on specification & Budgetary quote for Portable IP codec for Live Remote Broadcasting & IP Codec for use in Studio**

**Office : AIR Delhi**

Section: Engineering

File No: J-15/69/2022-AIR Delhi-Engg (105295)

Please find attached a specification for IP based Codecs. It is being circulated for wider publication and making the specification industry friendly. It is requested that specification may be seen and any comments regarding modification of specification may please be forwarded.

It is also requested that budgetary quote may be provided for the specification.

Comments on specification & budgetary quote may be sent to E-mail ([ddgenbh@prasarbharati.gov.in](mailto:ddgenbh@prasarbharati.gov.in)) latest by 29.07.2022.

Jitender Pruthi  
DDG(AIR Delhi)

### **Technical Specifications**

1. **Subject:** Supply of portable IP Audio codec for live remote radio broadcasting & IP Audio Codec for use in Studio.

2. **Scope of work :**

- 2.1 This specification lays down the performance of portable IP Audio codec for live remote radio broadcasting with broadcast quality audio and a IP Audio Codec for use in Studio to receive the audio sent by Portable Codec at Studio end.
- 2.2 The tenderer shall supply all hardware, software and any miscellaneous items/units including cables, connectors, etc. which are required to make the units completely functional as per specifications in this document. However a LAN/Lease Line/ Internet etc. shall be provided by All India Radio.
- 2.3 The tenderer shall provide any firmware upgrades required for any new platforms introduced during warranty period without any additional financial implications to AIR.
- 2.4 The equipment shall be warranted for three years from the date of supply.

3. **Specifications of Portable IP Codec for Live remote Radio Broadcasting:**

3.1 **General Specifications:**

- 3.1.1 The professional portable IP audio codec shall be capable of performing live reporting or commentary with a user friendly interface.
- 3.1.2 The equipment should be of broadcast quality, reliable and self-contained. It should be user friendly and convenient to operate for optimum utilization of all features.
- 3.1.3 The equipment being quoted against this specification should be Portable, battery operated & small in size.
- 3.1.4 Equipment should be operated by local controls like buttons and/or touch screen for smooth & easy operation.
- 3.1.5 Equipment should have high quality built-in audio recorder.
- 3.1.6 Equipment should have built-in Li-ion battery with at least 5 hour operation.
- 3.1.7 The equipments should have adjustable 3 Microphone/Line inputs with 48 V phantom powers.
- 3.1.8 The equipments should have Analog/AES/EBU Line Level Inputs.
- 3.1.9 The equipments should have 3 headphone outputs.
- 3.1.10 The equipments should have 2 Gigabit Ethernet ports for Audio streams.
- 3.1.11 The equipments should have 2 integrated 4G/LTE modules & 1 Wi-Fi module.
- 3.1.12 The equipments should have talkback channel(s) with independent IP connection.
- 3.1.13 The equipments should have at least 1 USB ports for file transfer.
- 3.1.14 The equipments should have built-in embedded mixer for mixing input & output sources.
- 3.1.15 Services of SIP server, if required for operation of Codec, shall be provided free of cost for life-time of Codec or alternatively, a SIP server shall be installed at AIR Delhi site in Computer to be provided by AIR. Necessary software other than OS shall have to be provided by vendor.

3.2 **Technical Specifications:**

3.2.1 **Audio Inputs & Outputs:**

- 3.2.1.1 Mic Inputs : (mono) 3 balanced with 48 V Phantom Power
- 3.2.1.2 Line Inputs : 1 Analog Stereo or AES/EBU Stereo
- 3.2.1.3 Headphones Outputs: 3 Unbalanced
- 3.2.1.4 Talkback: 2 Talkback channels Independent

### 3.2.1.5 Audio Mixer

Embedded mixer for mixing inputs & outputs

## 3.2.2 Connectivity

- 3.2.2.1 Ethernet 2 Gigabits Ethernet ports
- 3.2.2.2 Wi-Fi 1 Wi-Fi
- 3.2.2.3 Cellular 2 integrated 4G/LTE suitable for India (Upgradable for 5G)
- 3.2.2.4 USB 1 USB port for files Transfer

## 3.2.3 Encoding & Streaming

- 3.2.3.1 Connection At least 2 Independent connections for program & talkback
- 3.2.3.2 Streaming Dual streaming/Configurable FEC
- 3.2.3.3 Encoding: MPEG-Layer II, MPEG-4 AAC-LC, AAC-LD/ELD, HE-AACv1/v2, opus, G711/G722
- 3.2.3.4 Redundancy For all available Ethernet, Wi-Fi & cellular modules

## 3.2.4 General

- 3.2.4.1 Power supply: 12-24 DC Lockable external power supply
- 3.2.4.2 Battery: Li-ion Battery with 5 hour operation
- 3.2.4.3 Dimension: Small form factor for Handheld operations
- 3.2.4.4 Weight m3 kg including battery
- 3.2.4.5 Operating Temperature: 0-45 degree Celsius

## 4. Specifications of IP Codec for use in Studio:

### 4.1 General Specifications:

- 4.1.1 The codec should be capable of receiving the audio sent by Portable IP codec described in section 3.
- 4.1.2 System should have low noise & low-power consumption.
- 4.1.3 System should have lightning protected network interfaces.
- 4.1.4 System should have configurable backup switching criteria. (IP stream loss/recovery duration)
- 4.1.5 System should have alarm upon Silence detection on AES audio inputs.
- 4.1.6 System should have Simultaneous encoding and decoding at the same audio format or different formats.
- 4.1.7 System should have dual redundant streaming of unicast, multicast with time diversity up to 1 sec of delay on the redundant stream.
- 4.1.8 System should have real time measurement of network path quality for main and backup streams.
- 4.1.9 System should have management of network conditions like: jitter, lost packets, duplicated packets, disordered packets.
- 4.1.10 System should have AAC error concealment implementation.
- 4.1.11 System should AES67 or Ravenna or Livewire input/outputs.
- 4.1.12 System should have Unicast, multi-unicast, multicast, multi-multicast (IGMPv3).
- 4.1.13 System should have Alarms which can be activated by GPOs and SNMP traps.
- 4.1.14 System should have secure WEB connection (https) and FTP connections.
- 4.1.15 Services of SIP server, if required for operation of Codec, shall be provided free of cost for life-time of Codec or alternatively, a SIP server shall be installed at AIR Delhi site in Computer to be provided by AIR. Necessary software other than OS shall have to be provided by vendor.

## 4.2 Technical Specification:

### 4.2.1 Audio Inputs & Outputs:

4.2.1.1 Analog Line Inputs	2 balanced mono or 1 stereo
4.2.1.2 Digital input	1 stereo AES/EBU
4.2.1.3 Analog outputs	2 balanced mono outputs
4.2.1.4 Digital Output	1 stereo AES/EBU

### 4.2.2 Connectivity

4.2.2.1 Ethernet	2 Gigabits Ethernet ports
4.2.2.2 USB	1 USB port

### 4.2.3 Encoding & Streaming

4.2.3.1 Connection	At least 2 Independent connections for program & talkback
4.2.3.2 Streaming	Dual streaming/Configurable FEC
4.2.3.3 Encoding:	MPEG-Layer II, MPEG-4 AAC-LC, AAC-LD/ELD, HE-AACv1/v2, opus, G711/G722

### 4.2.4 General

4.2.4.1 Power supply:	230 V 50 Hz AC
4.2.4.2 Dimension:	Rack Mount 1 or 2 U unit
4.2.4.3 Operating Temperature:	0-45 degree Celsius

## 5. Audio Specification:

Both the Codecs shall meet the following Audio specifications.

5.1	Maximum Analog Line input level/impedance	+24 dBu / > 10 kΩ
5.2	Analog input gain	0 dB to +18 dB
5.3	Sampling frequencies	22 kHz up to 96 kHz Analog
5.4	Frequency response: 20 Hz-20 kHz	+/- 0.3 dB
5.5	Maximum output level/impedance	+ 24 dBu / < 50 Ω
5.6	Signal-to-noise ratio	> 105 dB
5.7	Frequency response 20 Hz-20 kHz	+/-0.3 dB
5.8	THD + noise 1 kHz	> -90 dB
5.9	Analog channel cross talk at 1 kHz	< -110 dB

## 6. Manuals:

Soft copies of operational & user manuals for the codecs shall be provided.

## 7. Warrantee:

The equipment shall be guaranteed for three years. OEM letter confirming Guarantee for three years shall be enclosed.

**ANNEXURE-I**

**Bill of Material**

<b>S.N o.</b>	<b>Item Description</b>	<b>Qty.</b>	<b>Unit Price (in Rs.)</b>	<b>Tax</b>	<b>Total Price including Tax (In Rs.)</b>
1.	<b>Portable IP Audio codec for live remote radio broadcasting including cables, connectors.</b>	<b>1 Set</b>			
2.	<b>IP Codec for use in Studio including cables, connectors.</b>	<b>1 Set</b>			