

**PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
DIRECTORATE GENERAL : ALL INDIA RADIO
(PLANNING AND DEVELOPMENT UNIT)**

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**SPECIFICATION FOR PROFESSIONAL WIRELESS / CORDLESS MICROPHONE SYSTEM
OPERATING IN UHF BANDS**

1. GENERAL

- 1.1. This specification describes electrical and physical requirements of high quality professional wireless microphone system containing hand held microphone with transmitter in UHF Bands and diversity reception receiver for use both in broadcast studios and for outside coverage. The complete Wireless microphone system shall be of compact design, rugged construction, and light in weight and with extremely reliable and stable performance. The Wireless microphone system must provide uninterrupted audio with no clicks, pops and other switching transients. The complete Wireless microphone system shall be of single make/brand.
The hand held microphone with transmitter must be a monolithic single unit, based on PLL synthesized design.
- 1.2 **The tenderer must submit following documents along with the tender :-**
- (a) Complete printed technical literature of the equipment being offered. The printed literature shall also contain typical frequency response of the system and polar pattern of microphone.**
 - (b) A point-to-point compliance statement highlighting deviations, if any alongwith the figures of the offered product, on all the clauses of this specification from the original manufacturer of the offered equipment duly signed in original.**
 - (c) The quote should either be from the manufacturer or authorized representative / dealer. In case the quote is from the authorized representative /dealer, a certificate from the original manufacturer that the tenderer is authorized representative/dealer for India should be enclosed with the tender.**
 - (d) On - axis frequency response curve and polar diagrams at different frequencies of the microphone.**
- 1.3 The tenderer may be. required to submit a sample of equipment with accessories/demonstrate the functioning of the offered equipment at any time of technical evaluation in New Delhi.

Non-compliance of sample submission/demonstration of equipment will disqualify the tender.

1.4 Incomplete tenders are liable to be rejected.

2. TECHNICAL SPECIFICATIONS:

2.1 Microphone

- (i) **Frequency response:** Within ± 2.0 dB over the frequency range of 40 Hz - 10KHz with respect to 1 KHz. The microphone shall have the facility of LF roll off to eliminate bass boost at low frequencies.
- (ii) **Polar pattern :** The microphone shall have cardioid or super cardioid pattern over the frequency range from 250 Hz to 4 KHz and symmetrical about axis.
- (iii) **Maximum Sound Pressure Level :** Microphone, shall be able to handle maximum sound pressures level of 120 dB.

2.2 Transmitter

- (i) **Operating frequency :** The wireless microphone system must be capable to operate at any frequency in the sub-bands of ultra high frequency band ranging from (i) 821-823 MHz or (ii) 849-851 MHz or (iii) 933-935 MHz.
- (ii) **Modulation :** ± 38 KHz (or more) nominal deviation with maximum allowable deviation of ± 60 KHz.
- (iii) It should have features of compressor expander with pre and de-emphasis.
- (iv) **RF power :** The transmitter should provide the range of at least 100 meters but its effective radiated RF power should not exceed 50 mW.
- (v) **Power Source :** The transmitter shall be powered with lightweight batteries. It should be possible to operate the transmitter for at least six hours with new batteries.
- (vi) **Transmitter controls and indications :** Following indications and controls shall be provided on Hand held microphone with transmitter:
 - (a) Selection and display for frequency of operation.
 - (b) ON/OFF switch and Power ON indication.
 - (c) Battery Condition LED.
- (vii) **Level adjustment :** A built in control, of at least 10 dB, should exist (inside the unit) for alignment of level with various sound sources.
- (viii) **Weight :** The weight of the Hand held transmitter including mike and batteries shall not be more than 350 Gms

2.3 Receiver

- (i) **Diversity Reception** : The receiver must have diversity type of reception with independent antennae.
- (ii) **Powering** : The receiver shall operate on $230 \pm 10\%$ volts, 48 to 52Hz, single phase AC supply.
- (iii) **Audio Output:** (a) Minimum 0 dBu at nominal deviation.
 - (b) Balanced output
 - (c) Level Control for output
 - (d) The audio output shall be available on gold-plated XLR connector.
- (iv) **Audio S/N ratio** : Better than 100dB (A-weighted) at maximum deviation.
- (v) **Output Impedance** :The output impedance shall be suitable to feed a mixer input channel which has an impedance equal to or more than 2K ohms balanced.
- (vi) **Total Harmonic Distortion:** THD should be better than 1.0% (at maximum modulation with 1 KHz signal) for the complete microphone system.
- (vii) **Frequency Response:** Receiver shall have frequency response within ± 3.0 dB over the entire frequency range of 40 Hz to 10 KHz.
- (viii) **Receiver Controls & Indications** : Following controls and indications shall be provided on the receiver:
 - (a) Display for indicating the received RF signal and audio output level.
 - (b) Selection and display of the frequency of operation.
 - (c) LED indication for antenna diversity.

3. ENVIRONMENTAL CONDITIONS

The wireless microphone system shall be suitable for operation within over temperature range of 0°C to $+45^{\circ}\text{C}$ and relative humidity upto 95%.

4. ELECTROMAGNETIC COMPATIBILITY

. The wireless system may be used in the vicinity of high Radio frequency field. The system shall conform to the protection requirement relevant to Electromagnetic phenomenon as per the guidelines 89/33r/EC and FCC Part 15.

5. ACCESSORIES

The following accessories shall be supplied along with the system:

- (a) Battery/Cells for transmitter

- (b) Carrying cases for microphone/ transmitter
- (c) Carrying cases for the complete system
- (d) Adapter or holder for mike stand
- (e) Windshield for the microphone
- (f) Gold plated female XLR Connector with 2 m audio cable length
- (g) Power chord/ mains adaptor for receiver

Any other accessories manufactured by original manufacturer, which are necessary for the operation of microphone system, shall be supplied by the tenderer with above accessories free of cost.

6. TECHNICAL MANUAL

Two copies of each of operation & maintenance manual and service manual of the system shall be supplied with system.

7. CERTIFICATION / TESTS

Each wireless microphone system shall carry a serial number and individual test certificate for its functioning as per claimed specifications.

8. INSPECTION

The supplier shall make all necessary arrangements including measuring equipment, for inspection of microphones. Inspection will include physical check up & subjective listening of 100% microphones. Frequency response, polar pattern and THD of at least 3% of the randomly selected systems shall be measured at a mutual agreed recognized test house, at supplier's cost.

9. GUARANTEE

The system shall be guaranteed against any manufacturing or design defects for a period of at least 1 year from the date of its supply.