

प्रसारभारती/PrasarBharati

(भारतकालोकसेवाप्रसारक)

(India's Public Service Broadcaster)

आकाशवाणीमहानिदेशालय /Directorate General: All India Radio
योजनाएवंविकासएकक, आकाशवाणीभवन, संसदमार्ग, नईदिल्ली-110001
P & D Unit, AkashvaniBhawan, SansadMarg, New Delhi-110001

File No: Specification-6bayAntenna-9/4/2022-D(TD/FM)

Dated:21.11.2022

Subject: Specification for supply of 6 bay VHF FM Antenna -regarding Industry feedback & budgetary quotes date extension .

DG: AIR is planning for procurement of Supply of 6 Bay VHF FM Antenna along-with associated equipments, items & accessories, on open tender basis. Draft technical specification is enclosed for reference.

In this regard, the feedback dates has now been extended up to **02.12.2022**. Prospective bidders from India are further requested to give their industry feedback (if any) on the above referred draft Specifications on or before **02.12.2022**. To get an estimated cost, Prospective bidders from India are also requested to give their budgetary quote for the above referred subject by **02.12.2022**.

Industry feedback (if any) and budgetary quote may be sent to this Directorate at the following e-mail addresses.

murugan_k@prasarbharati.gov.in
rnahar@prasarbharati.gov.in
manzoor@prasarbharati.gov.in
yogendraair@prasarbharati.gov.in

Encl: As above.


21-11-22

योगेंद्र पाल सिंह/(Y.P. Singh)

सहायक अभियन्ता/Assistant Engineer (FM)

कृते महानिदेशक/ for Director General

To,

1. Prasar Bharati web-site
2. Prospective Bidders
3. DDG (E-Purchase), P&D Unit, DG: AIR, New Delhi.


21-11-22

कृते महानिदेशक/ for Director General

प्रसारभारती/PrasarBharati
(भारतकालोकसेवाप्रसारक)
(India's Public Service Broadcaster)

आकाशवाणीमहानिदेशालय /Directorate General: All India Radio
योजनाएवंविकासएकक, आकाशवाणीभवन, संसदमार्ग, नईदिल्ली-110001
P & D Unit, AkashvaniBhawan, SansadMarg, New Delhi-110001

File No: Specification-6bayAntenna-9/4/2022-D(TD/FM)

Dated:11.11.2022

Subject: Specification for supply of 6 bay VHF FM Antenna -regarding Industry feedback & budgetary quotes.

DG: AIR is planning for procurement of Supply of 6 Bay VHF FM Antenna along-with associated equipments, items & accessories, on open tender basis. Draft technical specification is enclosed for reference.

In this regard, the Prospective bidders from India are requested to give their industry feedback (if any) on the above referred draft Specifications **up to 18.11.2022**. To get an estimated cost, the Prospective bidders from India are also requested to give their budgetary quote for the above referred subject to **18.11.2022**.

Industry feedback (if any) and budgetary quote may be sent to this Directorate at the following e-mail addresses.

murugan_k@prasarbharati.gov.in
rnahar@prasarbharati.gov.in
manzoor@prasarbharati.gov.in
yogendraair@prasarbharati.gov.in

Encl: As above.


11-11-2022

योगेंद्र पाल सिंह/(Y.P. Singh)

सहायक अभियन्ता/Assistant Engineer (FM)

कृते महानिदेशक/ for Director General

To,

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2. The Prospective Bidders
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11-11-22

कृते महानिदेशक/ for Director General

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

File No: Specification-6bayAntenna-9/4/2022-D(TD/FM)

SPECIFICATION FOR SUPPLY OF 6-BAY CIRCULARLY POLARIZED SIDE MOUNT (POLE TYPE) VHF FM ANTENNA WITH OMNI-DIRECTIONAL PATTERNS

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A. ESSENTIAL REQUIREMENT FOR TENDER:

- The tenderer should submit Schedule of Requirements/Materials for Supply (un-priced) *in the same format as given in AIR Specification* in the technical bid, failing which, the tender shall be considered incomplete and is liable to be rejected.

(ii) It is also mandatory to mention ***Make & Model of the offered equipment*** in the Schedule of Requirements/Materials for supply, failing which, the tender shall be considered incomplete and is liable to be rejected.
- Each statement of this specification has to be complied with & supported by printed technical literature, technical data sheets, schematic drawings and technical manuals from the OEM (Original Equipment Manufacturer) by the tenderer, to assess the merit of the offer without which the tender will be considered incomplete and is liable to be rejected.
- The tenderer should submit the tender offer to AIR (All India Radio) 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 technical

specifications compliance statement, to assess the full merit of the offer, failing which tender shall be considered incomplete and is 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)
A. Essential requirements for tender				
B. Essential eligibility criteria for tenderer				
Section-I Clause wise				
Section-II Clause wise				
Section-III Clause wise				

4. The tenderer should quote the rate/cost of individual items in the tender offer while submitting the tender offer for spares **(OPTIONAL)** in commercial bid. ***Optional items will not be considered for ranking purpose.***
5. The complete technical specifications (Section wise & Clause wise) compliance statements along with Schedule of Requirements/Materials (un-priced) must be signed & stamped by the respective Original Equipment Manufacturer (OEM) in the tender document, 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 the complete Technical specifications (Section wise & Clause wise) compliance statements, 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 tender offer 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. 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, failing which the tender shall be considered incomplete and is liable to be rejected. Guarantee shall be as per the format given in AIR specification.
8. Amendment in General Financial Rules (GFRs), 2017-Golobal Tender Enquiry issued vide F. No. 12/17/2019-PPD dated 15.05.2020 of Government of India, Ministry of Finance, Department of Expenditure, Public Procurement Division shall be applicable.
9. Any change/modifications in the AIR technical specifications format, language, technical parameters or of any other nature including the deletion of clause, words, lines etc. by the OEM/ tenderer will not be acceptable to AIR and the tender is liable to be rejected.

Manish Gupta, AE Y.P. Singh, AE Manzoor Ali, ADE Rajendra Nahar, DE K. Murugan, DDG(E)

10. Prasar Bharati will follow the reciprocal market access strategy of the Government of India, which describes on the Clause 10(d) of Public Procurement Preference to Make in India, Order 2017. The Purchaser shall have right for not consider any Bid and may restrict such Bidders from the bidding process; who originate from those countries, where they do not allow market access for Indian companies; in such cases, the Clause 10 (d) of Public Procurement Preference to Make in India, order 2017, shall be invoked wherever applicable, when it is relevant.

B. ESSENTIAL ELIGIBILITY CRITERIA FOR TENDERER:

- (a) **The tenderer shall be from India only.**
- (b) The tenderer should either be the OEM of VHF FM Antenna or their authorized representative/dealer.
- (c) In case tenderer is the authorized representative/dealer, the tenderer must be in the business of sales and supply of VHF FM Antenna/TV Antenna for last three years or more OR must be an authorized representative/dealer of any OEM of VHF FM Antenna/TV Antenna for last three years or more. Documentary evidence to support this must be provided.
- (d) (i). The OEM of the VHF FM Antenna must have an experience of manufacturing and supplying 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna of power rating not less than 45 kW for at least last 5 years. Documentary evidence to support this must be provided.
- (ii). The OEM should have supplied FM antenna to reputed/public broadcasters. The OEM must provide the details of past supply record (in the format given below) for at least 10 Nos. of such VHF FM Antenna of power rating not less than 45 kW, supplied during last five years ending last day of the month previous to the one in which the tender is invited.

Supply order Number with date	Antenna type & Model	Power rating of VHF FM Antenna	Quantity supplied	Name of the Customers/broadcasters with full postal address including e-mail addresses to whom VHF FM Antenna was supplied.
(1)	(2)	(3)	(4)	(5)

(iii). All India Radio reserves the right to get performance feedback of the antenna from any of the above broadcasters named by the tenderer/OEM.

(iv) Copies of Supply order/completion certificates/delivery challans/invoice of at least 05 Nos., out of 10 Nos. of such FM antenna of power rating not less than 45 kW submitted by the tenderer in above format, are also to be enclosed by the tenderer.

- (e) The OEM of the offered VHF FM Antenna must have his local office/authorized representative/dealer in India for after sales support. **A certificate as per Annexure-I** duly signed by the OEM as well as local office/authorized representative/dealer must be submitted with the offer. Copy of Agreement/MoU executed between OEMs and their authorized representative/dealer duly signed by both, must also be submitted with the offer.
- (f) The OEM must have his own test bench including test field, rotating tower, suitable receiving equipments for measuring various parameters and their analysis. The tenderer must submit the necessary supporting documents along with detailed drawings, photographs etc. of the test set up facilities at OEM works, failing which the tender is liable to be rejected.

SECTION-I

GENERAL SPECIFICATIONS:

1.0 The 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna 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 terms 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:

- a. Detailed inspection of complete VHF FM Antenna system will be carried out at Manufacturer's works by **two engineers** of All India Radio as per details given in Section-III.
- b. Prior intimation for carrying out inspection at OEM's Works is to be given by the tenderer to All India Radio at least **6 weeks in advance**. Inspection period will be as per details given in Section-III.
- c. For AIR inspecting engineers, expenses towards to and fro air journey, boarding, lodging etc. will be borne by All India Radio.
- d. The complete Acceptance Test Procedure/Protocol (ATP) will be prepared by the OEM of the VHF FM Antenna and other equipment/items as per Section-IV (A&B) 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. All India Radio 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 for supply (un-priced) of VHF FM antenna system, duly signed & stamped by the respective Original Equipment Manufacturer (OEM) and countersigned by the tenderer as per the format given above in clause A (3).
- (ii) Complete printed technical literature/technical data sheet/schematic drawings/detailed information including Technical Manual of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna

and associated equipments/items as per Section-IV (A&B) 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) Schedule of Requirements/Materials (un-priced) for supply of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna, associated equipments & accessories should be in conformity with Section-IV (A&B) 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) Country of Origin, Make, Type & Model of all the offered items should be mentioned including the name & address of their OEM(s).
- (v) A copy of the Technical Manual must be enclosed with technical bid for assessing the complete 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna. The Technical Manual must include at least the details given below:
 - (a) General description of the offered 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna, block diagram/schematic drawings etc.
 - (b) A suggestive drawing with dimensions in metres for installation of the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system with all allied equipment.
 - (c) Diagrams showing the isometric view of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna and allied equipment with dimensions in metres.
 - (d) Installation Manual & drawings with dimensions in respect of offered equipment.
 - (e) Photograph of the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna.
 - (f) **All Do's and Don'ts which are essential for safe Installation, Operation & Maintenance of the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna.**

1.4 DOCUMENTS 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 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna along with associated equipment, items & accessories along with soft copy on pen drive must be supplied to "DDG (E-FM), P & D Unit, DG: AIR, New Delhi-110001" for examination and approval.

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.
- b) Photograph showing location of various units/subunits with item numbers marked thereon.

1.6 DOCUMENTS TO BE SUPPLIED ALONGWITH EQUIPMENT:

Technical manuals (for Installation, Testing, Commissioning, Operation & Maintenance, including theory of operation and fault diagnosis) for 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna along with associated equipment, items & accessories and inspection report shall be supplied as per the details given below: -

- (i) For Consignee- 2 Set of Technical Manual each comprising **COLOUR** printed and duly bound hard copy alongwith one soft copy on pen drive.
- (ii) For the following Offices/Officers- One set of hard copy along with one soft copy on pen drive for

each offices/officers DDG(E-FM), DDG(E-TM), Zonal Offices (Maintenance Wing of all concerned zones), Zonal Offices (Project Wing of all concerned zones), Technical Library (P&D Unit), R&D & NABM (T)

1.7 GUARANTEE:

The tenderer shall submit with his tender an undertaking to accept the following guarantees:

- (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 15 days (from the date of first intimation to OEM/tenderer) at tenderer's expense any component which becomes defective under normal operating conditions for **30 months** from the date of supply. If the tenderer failed to rectify the fault within the stipulated period of 15 days, the guarantee period for that particular site equipments/items 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, the tenderer/OEM 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 PERIOD OF EQUIPMENT:

Supply will have to be completed within Six (6) months from the date of Acceptance of Tender.

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.

1.12 ESSENTIAL REQUIREMENT FOR LOCAL OFFICE/AUTHORIZED REPRESENTATIVE/ DEALER:

- (a) The OEM should have complete setup for maintenance/repair of the VHF FM Antenna in India, either of its own or through local office/authorized representative/dealer.
- (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 VHF FM Antenna or other equipment requiring repairs will be repaired. 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 VHF FM Antenna system after the completion of guarantee period, shall also be provided by the respective OEM of the VHF FM Antenna and other associated equipments through their local offices/authorized representatives/dealers in India.
- (d) The details of technical facilities available with local office/authorized representative/dealer for after sales support such as test bench, necessary test & measuring equipment and photographs thereof, must be provided in the technical bid.
- (e) At the discretion of AIR, the representative(s) of AIR may visit the works of local office/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.

SECTION-II

TECHNICAL SPECIFICATIONS:

1.0 INTRODUCTION:

The 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna with omnidirectional patterns are required for use with FM transmitters of All India Radio for multi frequency operation in the band 88 MHz-108 MHz in tropical condition of heavy rain fall, high humidity and desert region. Two FM transmitters (Two FM Tx. having same or different RF Power of different frequencies) shall be combined and fed to this antenna.

The tenderer is required to offer complete Antenna System, comprising of Dipoles, Inter bay RF coaxial air dielectric feeders/Rigid lines, Power Splitters, Fine Tuning arrangement (on site) and other accessories for the completeness of offered Antenna System.

1.1 The FM antenna may be mounted upper portion of about 100 M tower on one face of 100 M FM tower generally having a square cross section of 650 mm × 650 mm. A GI pipe of 100 mm inner dia. category 'C' already installed on the tower by AIR for fixing the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system. Refer Annexure-III & Annexure-VI.

1.2 Following equipment and items will be provided by AIR.

1.2.1 The transmitter conforming to ITU-R Rec.

1.2.2 RF coaxial air dielectric cable, rigid lines (for inter connections of transmitter in the transmitter hall), Dehydrator, Dummy load and RF coaxial switch (for selection of Antenna or Dummy load) etc.

1.2.3 Self-supporting lattice steel tower of about 100 M height.

1.2.4 A GI pipe of 100 mm inner dia. category 'C' already installed on the tower by AIR for fixing the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system.

All the items required for the completeness of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system offered by the tenderer and its mounting for optimum performance shall be supplied by the tenderer except equipment and items mentioned above in Para No.1.2.1, 1.2.2, 1.2.3 and 1.2.4.

2.0 ELECTRICAL PARAMETERS:

2.1.1	Polarization	Circular
2.1.2	Input impedance	50 Ω unbalanced
2.1.3	Frequency band	88 MHz-108 MHz
2.1.4	VSWR	
2.1.4.1		Less than 1.25: 1.0 for 88-108 MHz. Less than 1.20: 1.0 for 100 to 104 MHz. Less than 1.10: 1.0 for Operating Frequency (between 100-104 MHz) the operating frequency(s) shall be intimated later at the time of placement of the order.
2.1.4.2		VSWR and Return Loss Value (dB) in Graph form over the entire frequency range (88 MHz-108 MHz) to be enclosed with the tender.

2.1.5	Continuous Average Power rating	≥ 45 kW
2.1.6	Downward beam tilt	1° for entire Frequency Range i.e. (88 MHz –108 MHz)
2.1.7	Null filling	Required, 10%
2.1.8	Front/Back Ratio (Horizontal patterns)	NA
2.1.9	Antenna Gain	≥ 5.5 dBd for omni-directional
2.1.9.1	Antenna gain (in dBd)	Antenna gain over the entire frequency range of 88 MHz - 108 MHz for omnidirectional shall be enclosed with the tender.
2.1.9.2	Radiation pattern in vertical Plane (0° to $\pm 90^\circ$)	Radiation pattern in vertical Plane (in dB) should be enclosed with the tender.
2.1.9.3	Radiation pattern in Horizontal plane (0° to 360°)	Radiation pattern in Horizontal plane (in dB) should be enclosed with tenderer.

2.1.10 No. of vertical Bays: 6

2.1.11 Spacing between Bays: Approximately 0.8λ to 1.0λ . Actual distance to be indicated in tender, and a full Engineering drawing to be enclosed.

2.1.12 Antenna Mounting details: The FM antenna will be mounted between generally 80 M to 100 M on one face of existing 100 M FM tower having a square cross section of 650 mm × 650 mm. A GI pipe of 100 mm inner dia. category ‘C’ already installed on the tower by AIR for fixing the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system. Full details of antenna arrangement and the engineering drawings with dimensions to be submitted with the tender.

2.1.13 The six (6) dipoles of the FM Antenna will be mounted on a 100 mm inner dia. category ‘C’ GI pipe on one face of the tower. Expected field pattern (circular polarization) with such a supporting tower should be submitted alongwith the tender. Details for carrying out field adjustments for ensuring that actual Radiation Pattern (Horizontal and Vertical plane) conforms to AIR specification, **if any**, in the field **or** at site are to be enclosed with the tender.

2.1.14 Inter-bay feeding/Feed System: Full details of Feeding arrangement and the engineering drawings with dimensions along-with the details of inter-connecting RF co-axial air dielectric cables/rigid lines etc. to be submitted with the tender. The entire feeding system should be adequately protected against heavy rainfall, extreme daily temperature variance.

2.2. MECHANICAL DETAILS (ANTENNA SYSTEM):

- (i) Antenna Weight (without supporting hardware): ≤ 400 Kg
- (ii) Antenna Wind Load: ≤ 650 Kg
- (iii) Maximum Wind Speed: 198 kmph
- (iv) Antenna aperture height: 18000 mm

2.2.2 External material of Dipoles and rigid feed lines: Exterior of dipoles will be made of stainless steel or Marine Brass. Rigid lines with Marine Brass or Copper.

- 2.2.3 Internal material (for Power Divider, Rigid lines & interconnecting feed cables/ lines):** Inner lines of Dipoles will be of copper, Brass & those of Power Dividers will be of copper or Brass. All electrical contacts will be silver plated. All inners including bullets of connecting head or mating head will be made of Beryllium copper and silver plated. Insulators will be made of virgin Teflon.
- 2.2.4 Pressurization:** Pressurization is must up to the antenna dipoles RF input point i.e. in the RF coaxial cable, power dividers, sub-dividers/splitters and branch cables.
- 2.2.5 Ambient Temperature/RH:** -5° C to 50° C, RH 95% Non-Condensing.
- 2.2.6 Input connector:** Main power divider of antenna system: To match with 3-1/8" EIA Flange connector, RF output of FM transmitter will be available through the 3-1/8" EIA Flange connector mounted on 4" RF coaxial air dielectric cable. Dipoles input and power divider output should be EIA 1- 5/8" flange type.
- 2.2.7 Set of clamps:** Suitable clamps for dipoles, Power Divider/Splitter and RF coaxial air dielectric cables / rigid lines etc. are to be included in the offer and the mechanical details (weight, dimension & materials used etc.) be indicated in the tender.
- 2.2.8** The entire Antenna System should be adequately protected against heavy rain fall & humid climate of tropical region. Each component/Sub system of the Antenna System should be adequately protected for extreme weather conditions. The Antenna system should also be well protected against dust as well as desert conditions of extreme day and night temperature variations.

SECTION-III

INSPECTION DETAILS:

The inspection for acceptance of the Complete 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system will be carried out at the Manufacturer's Works by **two 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 manufacturer.

The tenderer shall put up all the 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system for inspection in lot, out of which 10% of 6-Bay antenna system shall be inspected as per ATP. Complete details and specifications of the above Antenna System will be checked and all parameter values will be measured. For the remaining antenna system, the VSWR/Return loss vs frequency measurement in the VHF Band II i.e. 88 MHz to 108 MHz and pressurization up to antenna dipoles are to be checked. Inspection period shall be two working days for each selected Antenna system testing and one additional day for each remaining antenna systems with other accessories. One randomly selected single Bay (pole type) antenna shall be tested on ≥ 7.5 kW power for 02 Hrs. at a frequency of 108.0 MHz to ensure the power handling capability of the antenna. The OEM should arrange the test setup for the single bay antenna for ≥ 7.5 kW power tests.

Other technical parameters as per Section-II will be accepted on the basis of Original Equipment Manufacturers (OEM) Test Certificates, duly signed and stamped on the letter head of the OEM, failing which Test Certificates will be considered incomplete and equipment offered by the firm is liable to be rejected.

Exhaustive checking and measurements will be carried out so as to completely check the compliance of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna System and its sub systems as per approved ATP (based on AIR as well as OEM specifications).

It is mandatory that all these testing/measurements of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna System as per parameters in Section-II at any three frequencies including operating frequencies in the VHF band i.e. 88 MHz to 108 MHz, are carried out well in advance as per approved ATP. These must be submitted to All India Radio along with the call for inspection of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna well in advance for analyzing etc. These measurement details, graphical printouts and figures must also be available at the factory at the time of inspection.

Following information should also form part of above data which will also be checked for each 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna during inspection by AIR representative **at manufacturer's works:**

1.0 Origin of Country, Make, Type and Model of 6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna, its accessories and spares.

SECTION-IV (A)

SCHEDULE OF REQUIREMENTS/MATERIALS (UN-PRICED) {FOR ONE SET OF 6-BAY CIRCULARLY POLARIZED SIDE MOUNT (POLE TYPE) VHF FM ANTENNA} WITH OMNI-DIRECTIONAL PATTERNS

S. No.	Description	Make	Model	Unit	Qty
1.	6-Bay Circularly Polarized Side Mount (Pole Type) VHF FM Antenna system with Omni-directional patterns complete as per AIR Specification including Power divider/splitter, fine tuning arrangement, antenna clamps etc. alongwith technical manuals as per AIR Specification.			Set Complete	1 Set Complete
2.	Any other items/hardware materials etc. offered for the completeness of the above antenna system. (Item wise details of the offered items/hardware materials etc. shall be given by the tenderer)			Lot	1 Lot
3.	Inspection charges at manufacturer's works of VHF FM Antenna as per AIR specification.			Lot	1 Lot

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Y.P. Singh, AE

Manzoor Ali, ADE

Rajendra Nahar, DE

K. Murugan, DDG(E)

SECTION-IV (B)

SCHEDULE OF REQUIREMENTS/MATERIALS (UN-PRICED) FOR 6-BAY CIRCULARLY POLARIZED SIDE MOUNT (POLE TYPE) VHF FM ANTENNA (SPARES) (OPTIONAL)
(Not to be considered for ranking purpose) {The tenderer must quote all items}

S. NO.	Description	Make & Model	Unit	Qty
1.0	List of recommended spares and any other accessories. (Items wise details of offered material including part number are to be given by the tenderer)		Set Complete	1 Set Complete
2.0	(a) "O" ring		Set	1 Set
	(b) Silicon grease		Lot	1 Lot
	(c) Connectors assorted sizes		Set	1 Set
	(d) RF branch distributors air dielectric coaxial cables		Set	1 Set
	(e) Dipole		No.	2 Nos.
3.0	Any other items/hardware etc. offered for the completeness of the above antenna system. (Item wise details of the offered items/hardware materials etc. shall be given by the tenderer)		Lot	1 Lot

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 /AUTHORIZED REPRESENTATIVE/ DEALER IN INDIA FOR AFTER SALES SUPPORT

1.	Address of local office/authorized representative/dealer	
	Telephone (Landline) No.	
	Mobile No.	
	E-mail Address	
2.	Address for communication (if different)	
3.	Legal Status (local office/authorized representative/dealer)	
4.	Name, contact number (Mobile number) & e-mail address of official representative of the local office/authorized representative/dealer	
5.	<p>Brief details of Technical facilities available for after sales support:</p> <p>The details of technical facilities available with local office/authorized representative/dealer for after sales support such as test bench, necessary test & measuring equipment and photographs thereof, must be provided in the technical bid.</p>	
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)	<p>Date of Agreement:</p> <p>Executed at :</p> <p>Executed by :</p>
<p>(Authorized Signatory of local office/authorized representative/dealer)</p> <p>Name :</p> <p>Signature :</p>		<p>(Authorized Signatory of Antenna OEM)</p> <p>Name :</p> <p>Signature :</p>
Place and Date:		Place and Date:

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Y.P. Singh, AE

Manzoor Ali, ADE

Rajendra Nahar, DE

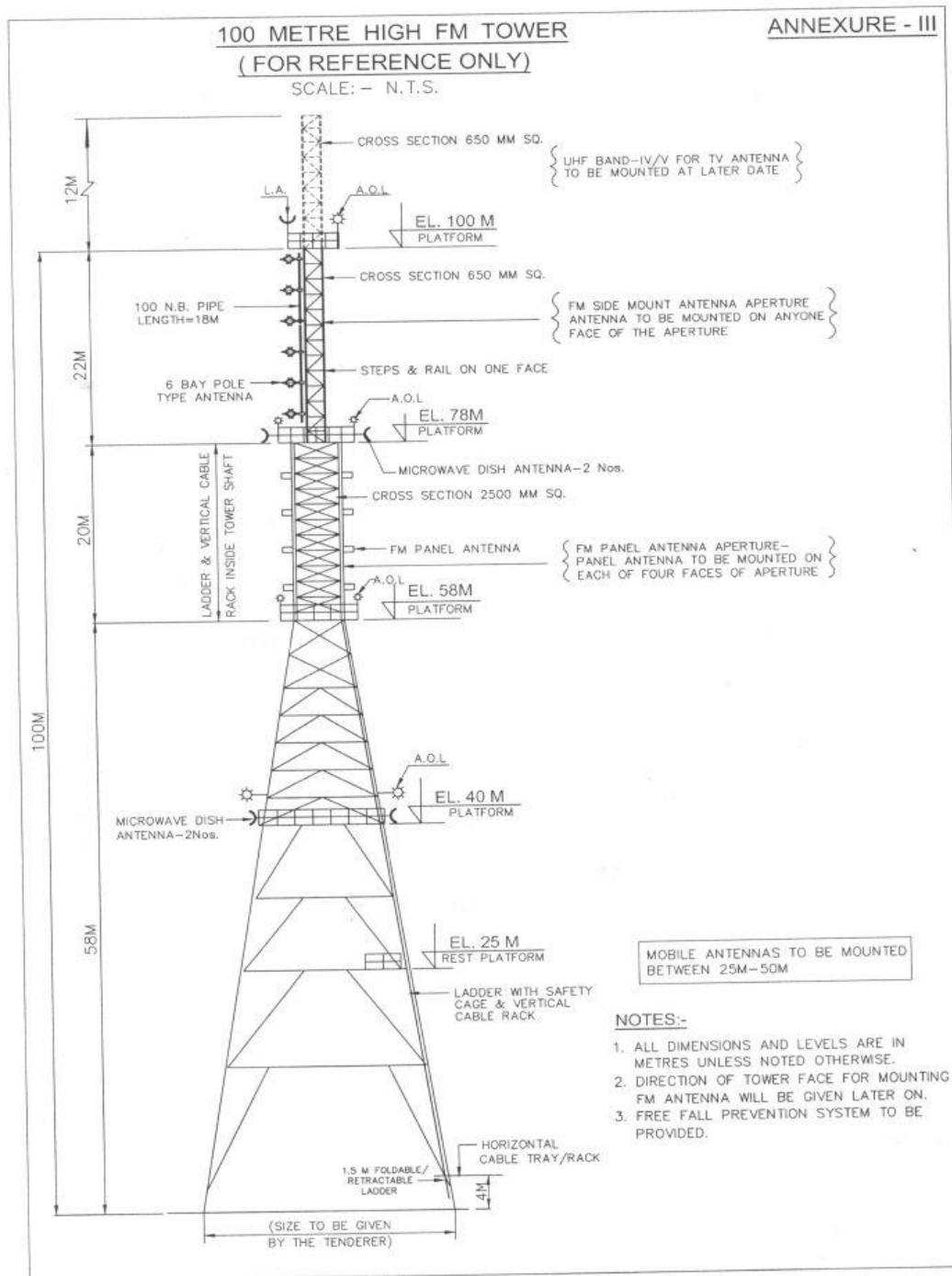
K. Murugan, DDG(E)

ANNEXURE-II

6 Bay Antenna may be utilized anywhere in India.

The List of places shall be provided at the time of tender.

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Y.P. Singh, AE

Manzoor Ali, ADE

Rajendra Nahar, DE

K. Murugan, DDG(E)

