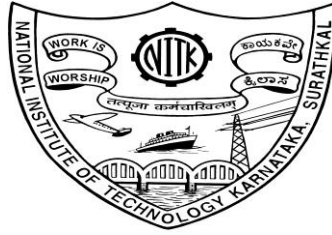


## NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

DEPARTMENT OF CENTRE FOR SYSTEM  
DESIGN POST SRINIVASNAGAR,  
MANGALORE – 575 025 (D K)

Phone: (0824) 2474000  
E- mail: [info@nitk.ac.in](mailto:info@nitk.ac.in)

Fax: (0824) 2474033  
Website: <http://www.nitk.ac.in>



### NOTICE INVITING QUOTATION

Notification. No: NITK/CSD/2023-24/SEARCH/PU-04

dated:21-04-2023

<b>Name of Goods</b>	<b>YAGI ANTENNA KIT</b>
<b>Estimated Amount:</b>	<b>Rs. 1.92 Lakhs</b>
<b>Time for Supply of item after release of Work order</b>	<b>1 Week</b>
<b>Document Download / Sale Start Date</b>	<b>21-04-2023 @5.30PM</b>
<b>Clarification Start Date</b>	<b>21-04-2023 @5.30PM</b>
<b>Clarification End Date</b>	<b>11-05-2023 @5.30 PM</b>
<b>Bid Submission Start Date</b>	<b>21-04-2023 @5.30PM</b>
<b>Last Date for submission of bids</b>	<b>11-05-2023 before 5.30 PM</b>
<b>Bid Opening Date</b>	<b>12-05-2023 @10.00 AM</b>
<b>Address for Submission of bids</b>	<b>Dr.Pruthviraj U Asst. Professor, Centre for System Design NITK Surathkal – 575025 (M): 9972797225, <a href="mailto:pruthviu@nitk.edu.in">pruthviu@nitk.edu.in</a></b>



**NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL**  
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dated:21-04-2023

**NOTICE INVITING QUOTATION (NIQ)**

The National Institute of Technology Karnataka, Surathkal (in short – NITK, Surathkal) is an Institute Of National Importance Under Ministry of Education Govt of India, imparting Technical Education and engaged in Research Activities. It is proposed to procure the items for the departmental academic/research activities.

Sealed Quotations as per the Price Schedule given in this NIQ are invited for the following items subject to the terms and conditions, from the reputed manufacturers or its authorised dealers so as to reach on or before scheduled date and time. The quotations in the firm's Business letter head should be address to the "Director, NITK, Surathkal". The envelope shall be superscribed with the Quotation Notification Number and the Name of the Goods for which quotation is submitted.

<b>Name of Goods</b>	<b>YAGI ANTENNA KIT</b>
<b>Estimated Amount:</b>	<b>Rs. 1.92 Lakhs</b>
<b>Time for Supply of item after release of Purchase order</b>	<b>1 Week</b>
<b>Document Download / Sale Start Date</b>	<b>21-04-2023 @5.30PM</b>
<b>Clarification Start Date</b>	<b>21-04-2023 @5.30PM</b>
<b>Clarification End Date</b>	<b>11-05-2023 before 5.30 PM</b>
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<b>Last Date for submission of bids</b>	<b>11-05-2023 before 5.30 PM</b>
<b>Bid Opening Date</b>	<b>12-05-2022 @10.00 AM</b>

**Sd/-**  
**[HOD]**

Note: Institute shall not be responsible for any postal delay about non-receipt /non-delivery of the bids or due to wrong addressee

## **SECTION-1**

### **Terms and Conditions**

1. The rates should be quoted for preferably FOR destination from supply within India.
2. The bidder shall indicate the excise duty exemption for the goods if applicable.
3. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any. The rate should be quoted in INR only
4. Rate quoted should be inclusive of Testing, commissioning and Installation of equipment and Training.
5. Payment: No advance payment will be made. Payment will be made only after the supply of the item in good and satisfactory condition and receipt of performance security by supplier.
6. Guarantee/Warranty period should be specified for the complete period should be specified in section 3 of this tender document.
7. Period requirement for the supply and installation of item should be specified in section 3 of this tender document.
8. In case of dispute, the matter will be subject to Mangalore Jurisdiction only.

## SECTION-2

### **SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS**

[ To be filled up by the Department / Centre of NITK, Surathkal ]

Item(s) Name to be Procured : **YAGI ANTENNA KIT**

Brief Specifications of the Item(s) : **Attached in Annexure I**  
(Attach Additional Sheet if necessary)

Quantity : 1 KIT

Any other details / requirement : Nil

Warranty Period required :3 Years

Nil Delivery Schedule expected

after placement of Work order : Immediate

### **SECTION 3 PRICE SCHEDULE**

[ To be used by the bidder for submission of the quotation]

1. Item Name :
2. Specifications  
(Conforming to Schedule of requirements  
Enclose additional sheets if necessary) :
3. Currency and Unit Price :
4. Quantity :
5. Item Cost (Sl No. 3 \* Sl. No. 4 ) :
6. Taxes and Other Charges :  
(i)Specify the type of taxes and  
duties in percentages and also  
in figures.  
(ii) Specify Other Charges in figures.
7. **Warranty Period** :  
**(Conforming to the**  
**Schedule of**  
**requirements)**
8. Delivery Schedule :  
(Conforming to the Schedule of requirements)
9. Name and address of the Firm for :  
placing work order
10. Name and address of Indian authorized :  
agent ( in case of imports only)

**Signature of the Bidder:** \_\_\_\_\_

**Name and Designation:** \_\_\_\_\_

**Business Address :** \_\_\_\_\_

**Date:**  
**Place:**

**Seal of the Bidder's Firm**

## **SECTION 4 CONTRACT FORM**

[ To be provided by the bidder in the business letter head]

1. (Name of the Supplier's Firm) hereby abide by the delivery schedule mentioned in this document for supply of the items if the work order is awarded.
2. The item will be supplied conforming to the specifications stated in this document without any defect and deviations.
3. Warranty will be given for the period mentioned in this document and service will be rendered to the satisfaction of NITK, Surathkal during this period.

**Signature of the Bidder:** \_\_\_\_\_

**Name** : \_\_\_\_\_

**Business Address** : \_\_\_\_\_

**Place :**  
**Date :**

**Seal of the Bidder's Firm**

## Annexure I Specifications

### Specification: YAGI ANTENNA KIT

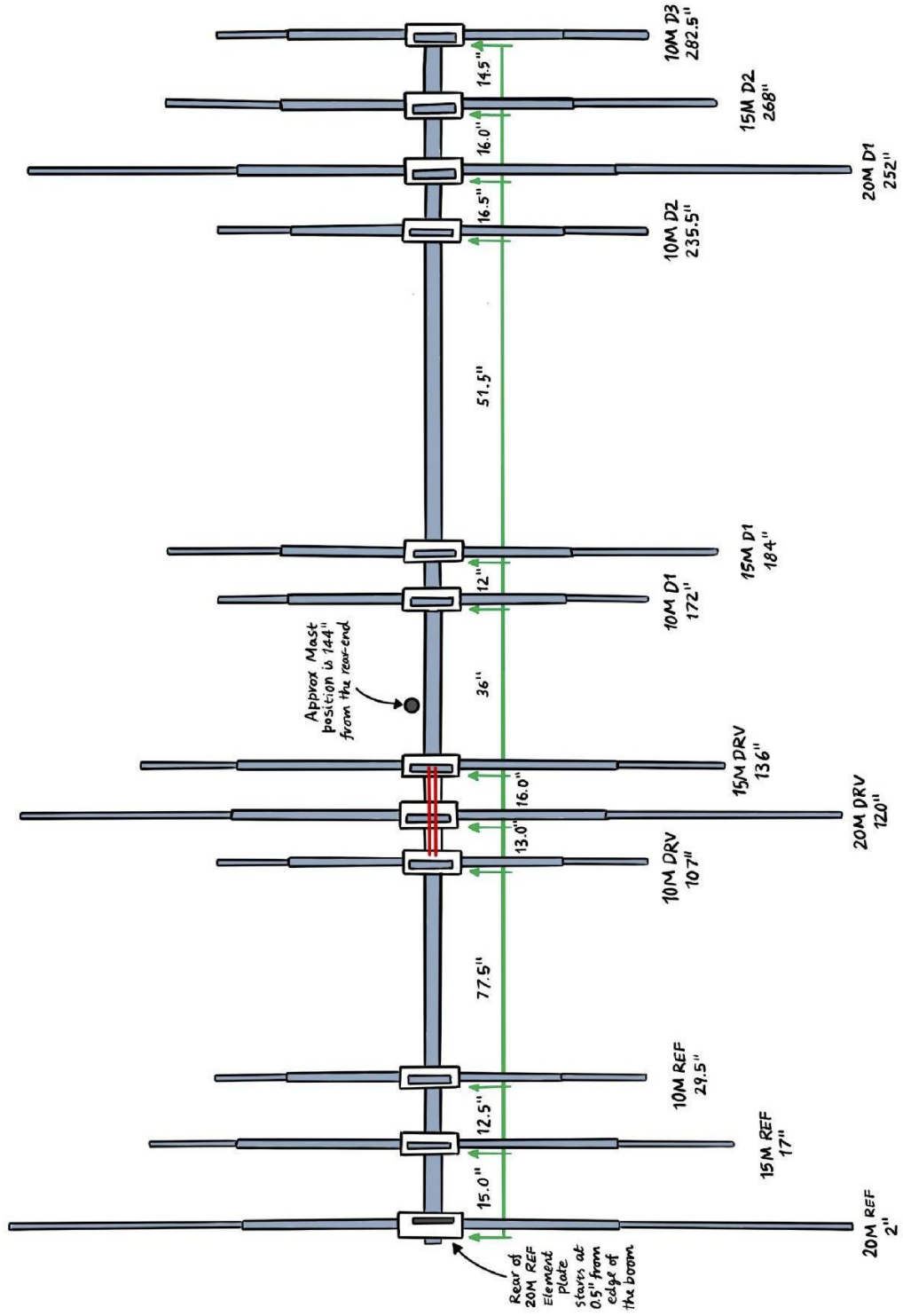
**TYPE A : 3-Band Yagi (20m/15m/10m)– 24Ft Boom**

A 3-band Yagi is a type of directional antenna used for radio communication. It consists of three elements, each tuned to a specific frequency band. The Yagi antenna is made up of a driven element (the active part that is connected to the transmission line), one or more parasitic elements, and a reflector element. The parasitic elements are placed in front of the driven element, and the reflector is placed behind it. The combination of these elements creates a directional beam that enhances the signal in a specific direction.

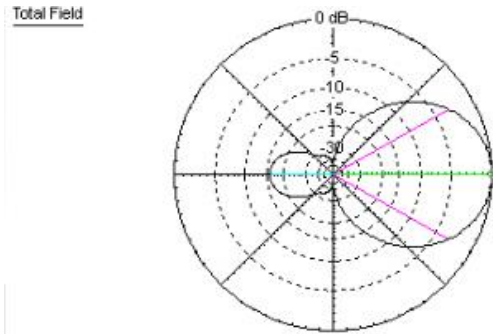
The term "3-band" means that the Yagi antenna is designed to operate on three different frequency bands, usually covering amateur radio bands. This allows the antenna to be used for multiple purposes and for different types of communication.

A Yagi antenna is a popular choice for many radio enthusiasts due to its directional properties, high gain, and ability to focus a signal in a specific direction. The 3-band Yagi, in particular, is a versatile antenna that can provide reliable communication across multiple frequency bands."

	10M	15M	20M	40M
<b>Number Elements</b>	5	4	3	2
<b>Active Boom Length</b>	19.5 ft	20.3 ft	20.9 ft	19.25 ft
<b>Peak Gain*</b>	7.5 dBd/ 9.5 - 10+ dbi	6.9 dBd/ 9+ dbi	5.3 dBd/ 7.44 dbi	4.2 dBd/ 6.34dbi
<b>Peak F/B</b>	20+ dB	18+ dB	20+ dB	15 dB
<b>Peak F/R</b>	15+ dB	18+ dB	20+ dB	15+ dB
<b>2:1 SWR Bandwidth</b>	850 KHz	Less than 1.5:1 across the band	Less than 1.5:1 across the band	175 KHz
<b>1.5:1 SWR Bandwidth</b>	650 KHz	450 KHz	350 KHz	130 KHz
<b>Max Element Length</b>	18 ft	24.25 ft	36.5 ft	47.5 ft



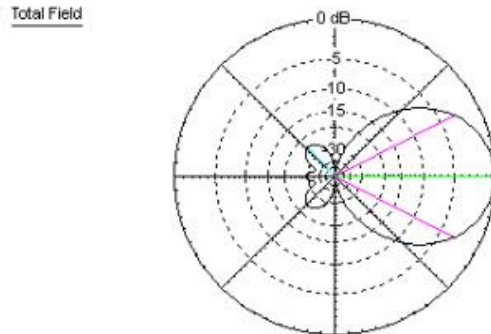




Azimuth Plot  
 Elevation Angle 0.0 deg.  
 Outer Ring 9.16 dBi  
 Slice Max Gain 9.16 dBi @ Az Angle = 0.0 deg.  
 Front/Back 15.7 dB  
 Beamwidth 59.0 deg.; -3dB @ 330.5, 29.5 deg.  
 Sidelobe Gain -6.54 dBi @ Az Angle = 180.0 deg.  
 Front/Sidelobe 15.7 dB

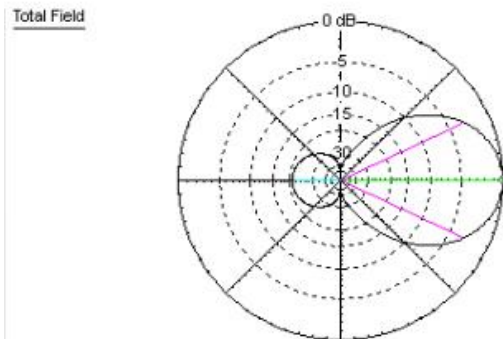


14.2 MHz



Azimuth Plot  
 Elevation Angle 0.0 deg.  
 Outer Ring 10.34 dBi  
 Slice Max Gain 10.34 dBi @ Az Angle = 0.0 deg.  
 Front/Back 29.32 dB  
 Beamwidth 54.5 deg.; -3dB @ 332.7, 27.2 deg.  
 Sidelobe Gain -13.52 dBi @ Az Angle = 132.0 deg.  
 Front/Sidelobe 23.86 dB

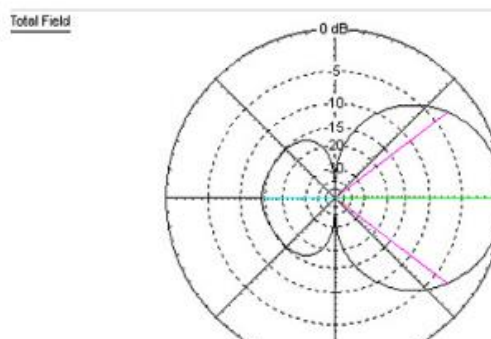
21.25 MHz



Azimuth Plot  
 Elevation Angle 0.0 deg.  
 Outer Ring 11.23 dBi  
 Slice Max Gain 11.23 dBi @ Az Angle = 0.0 deg.  
 Front/Back 20.94 dB  
 Beamwidth 51.0 deg.; -3dB @ 334.5, 25.5 deg.  
 Sidelobe Gain -9.71 dBi @ Az Angle = 180.0 deg.  
 Front/Sidelobe 20.94 dB

EZNEC Pro/4

28.4 MHz



Azimuth Plot  
 Elevation Angle 0.0 deg.  
 Outer Ring 6.27 dBi  
 Slice Max Gain 6.27 dBi @ Az Angle = 0.0 deg.  
 Front/Back 14.43 dB  
 Beamwidth 74.2 deg.; -3dB @ 322.9, 37.1 deg.  
 Sidelobe Gain -8.16 dBi @ Az Angle = 180.0 deg.  
 Front/Sidelobe 14.43 dB

EZNEC Pro/4

7.125 MHz

## TYPE B : Two Element 40M Yagi - 18ft Boom

A two-element 40M Yagi is a type of directional antenna designed to operate on the 40-meter amateur radio band (7.0-7.3 MHz). It consists of two elements, a driven element and a reflector element. The driven element is connected to the transmitter or receiver, while the reflector element is placed a specific distance behind the driven element.

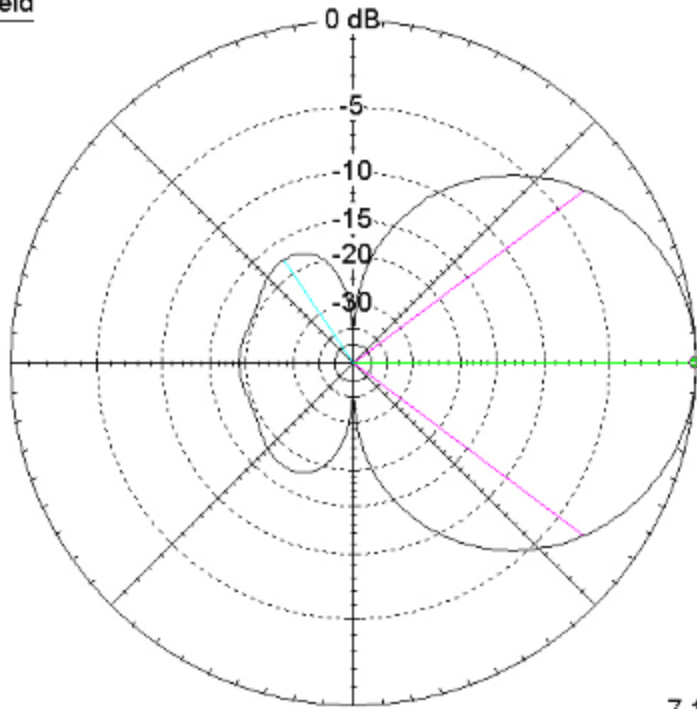
The two-element Yagi antenna works by focusing the radio waves in a specific direction, using the reflector element to create a directional beam pattern. This directional pattern provides higher gain in the desired direction and reduces interference from other directions.

The performance of a two-element 40M Yagi antenna depends on several factors, including the size and spacing of the elements, the height above the ground, and the environment in which it is installed. A well-designed and properly installed two-element 40M Yagi can provide reliable long-distance communication for amateur radio operators.

Overall, a two-element 40M Yagi is a relatively simple and effective antenna design that can provide high gain and directional coverage on the 40-meter band. It is a popular choice for amateur radio enthusiasts who want to improve their communication capabilities on this frequency range.



**Total Field**



7.12 MHz

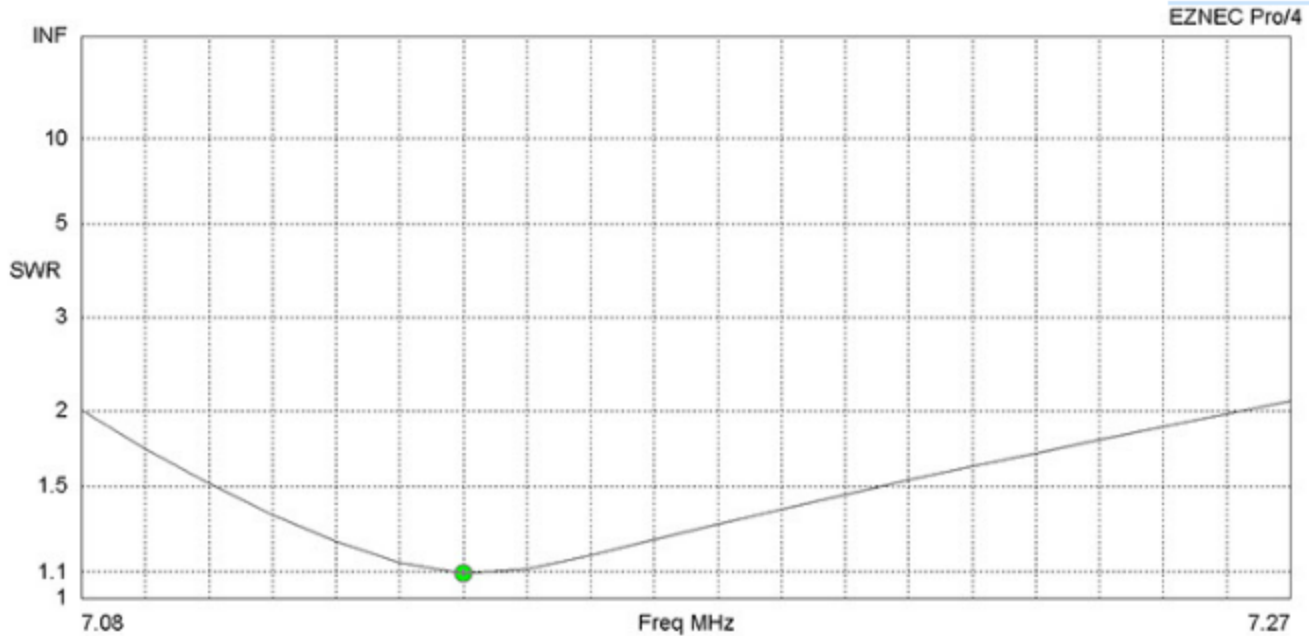
Azimuth Plot  
Elevation Angle 0.0 deg.  
Outer Ring 4.03 dBref

Cursor Az 0.0 deg.  
Gain 4.03 dBref  
0.0 dBmax

Slice Max. Gain 4.03 dBref @ Az Angle = 0.0 deg.  
Front/Back 18.88 dB  
Beamwidth 73.8 deg., -3dB @ 323.1, 38.9 deg.  
Sidelobe Gain -13.38 dBref @ Az Angle = 126.0 deg.  
Front/Sidelobe 17.41 dB

Peak Gain is shown over a dipole in Freespace  
Dipole in Freespace = 2.14dBi

	<b>40M</b>
<b>Number Elements</b>	2
<b>Active Boom Length</b>	17.5 ft
<b>Peak Gain*</b>	4.06dBd / 6.2dbi
<b>Peak F/B</b>	20 dB
<b>Peak F/R</b>	18 dB
<b>2:1 SWR Bandwidth</b>	190 KHz
<b>1.5:1 SWR Bandwidth</b>	120 KHz
<b>Max Element Length</b>	47.5 ft



Freq 7.14MHz  
SWR 1.891  
Z 52.95 @ 3.76 deg  
= 53.83 + j3.471 ohms  
Ref Coef 0.04056 @ 48.83 deg  
= 0.02667 + j0.03279  
Ref Loss 27.2 dB

Source # 1  
20 50 ohms

Installation of TYPE A & B antenna's must be done on 20m mast erected at NITK SEARCH site.

TYPE A & B antenna's must use all SAE standard tool sizes. Metric fasteners are not to be used on this antenna.

both tye antenna needs choke balun device that can be used to prevent common-mode current from flowing along the outer surface of a coaxial cable, which can cause unwanted RF radiation and can also contribute to RF noise in the shack. In a Yagi antenna, a high power choke balun can be used to prevent common-mode currents from flowing on the feedline and disturbing the radiation pattern of the antenna. All antenna - mast fixtures & truss cables must be provided. installation must be done at NITK surathkal with 7 working days .

For any technical clarifications contact : Dr. Pruthviraj U, (M) 9972797225 pruthviu@nitk.edu.in