PUBLIC TENDER NO.: TFR/PD/IC14-031/PUB
PUBLISHED ON: 16.06.2014
DUE DATE: 14.07.2014
TENDER FEE: Rs. 500/-
COST OF TENDER: Approx. Rs. 27 Lakh
TYPE OF TENDER: TWO PART

DESCRIPTION OF MATERIAL

70 MHz, 3 Channel Mono Pulse Tracking Receiver... Qty. 1 No. As Per Attached Technical Specifications

Closing time and date: 13.00 Hours on 14.07.2014
Tender will be open at: 14.00 Hours on 14.07.2014

Both Technical Bid (Part A) and Financial Bid (Part B) to be submitted within the due date and time in separate envelopes and marked on top as Part A and Part B. These two sealed envelopes should be further put in one Master Envelope superscribed with the Tender No., Due Date in Bold Letters.

Please see attached sheet for conditions of tender.

Shekhar G.K.
Administrative Officer ‘C’
70 Mhz 3 Channel Monopulse Tracking Receiver:

1. The proposed 70 MHz 3-Channel Tracking receiver is to be used in Scientific Balloon TTC ground station for tracking air borne scientific payload via telemetry signal in down converted S-Band signal of 70 MHz.

2. The proposed Tracking Receiver shall have three independent channels for tracking (1 Sum and 2 error signals ∆x, ∆y).

3. This equipment is required to be operated in 24/7 basis so it shall have maximum reliability and very high availability figures.

4. Operating Manual, Monitoring and control Interface protocol document should be provided.

Technical Specifications:

IF INPUT SIGNAL:

- Number of inputs: 1 Sum and 2 Error signals (∆x, ∆y)
- Nominal carrier frequency: 70 MHz
- Input signal bandwidth: 10 MHz or Higher
- Input impedance (3 channels): 50 Ω
- Input VSWR (3 channels): ≤ 1.5 dB
- Isolation between parts: ≥ 50 dB
- IF and image rejection: ≥ 50 dB
- Noise figure: < 12 dB
- Sum channel dynamic range: -20 dBm to -100 dBm
- Error channel level at error signal max: 20 dB below sum channel
- Input noise spectral density (max level): -100 dBm/Hz
- Minimum signal /Noise density: ≥29 dB/Hz
- Carrier modulation loss (Coherent Mode): ≤10 dB/Hz
- Maximum input signal level without: + 13 dB
- Permanent damage
- Input signal Modulation: PM/FM/BPSK/QPSK
COHERENT TRACKING MODE:
PLL : Loop bandwidth selection : 10 Hz, 30 Hz, 100 Hz, 300 Hz, 1000 Hz, 3000 Hz or selectable in percentage.
PLL Damping Factor : 0.7 ± 0.2
Anti-side band limits : Device should prevent lock to telemetry sidebands.
Acquisition time (Anti Side Band OFF) : (Search range of ± 150 KHz)
<table>
<thead>
<tr>
<th>Loop BW</th>
<th>Time to lock</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Khz</td>
<td>0.1 sec</td>
</tr>
<tr>
<td>300 Hz</td>
<td>0.6 sec</td>
</tr>
<tr>
<td>30 Hz</td>
<td>4.3 sec</td>
</tr>
<tr>
<td>10 Hz</td>
<td>375 sec</td>
</tr>
</tbody>
</table>
AGC time constant : for S/N> 3 dB in 5 MHz BW = 1ms.
                  : for S/N<3 dB in 5 MHz BW = 320dB/Sec.

NON-COHENENT TRACKING MODE:
Selectable IF Band Width : 50 KHz, 150 KHz, 500 KHz, 1.5 MHz, 5 MHz and above or selectable in steps
Selectable IF threshold level : -20 dBm to -100 dBm (1 dB step min)

SEARCH FREQUENCY RANGE (selectable): from ± 1 KHz to ± 500 KHz
SWEEP CENTER FREQUENCY (selectable): ± 500 KHz selectable ± 1 KHz step

OUTPUT to SERVO CONTROL UNIT
Output bandwidth : specify w.r.t integration time
Output level adjustable : ± 2 V to ± 10 V
(For\(\Sigma/\Delta = 20 \text{ dB}\))
Output impedance : 1 KΩ
Integration time : 1 to 1000 milli second (selectable)
Auxiliary outputs : AGC, SUM & DELTA acquisition, lock status
                   : With details of connectors.

CHANNEL PHASING ACCURACY : ± 5 °(Without auto Cal)
FREQUENCY REFERENCE INPUT
Impedance : 50 Ω
Level : 0 to +13 dBm max.
FREQUENCY REFERENCE OUTPUT
Level : 0 ± 3 dBm
INTERNAL FREQUENCY REFERENCE : Specify characteristics of internal freq.reference.
TATA INSTITUTE OF FUNDAMENTAL RESEARCH

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>M&amp;C control</td>
<td>RS 422 / RS232 / Ethernet</td>
</tr>
<tr>
<td></td>
<td>With details of protocol</td>
</tr>
<tr>
<td>INPUT SUPPLY</td>
<td>230 V AC ± 10%, 45 to 65 Hz</td>
</tr>
<tr>
<td>MECHANICAL SIZE</td>
<td>19” Rack size (specify dimensions)</td>
</tr>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>0 deg to 40 deg C or better</td>
</tr>
<tr>
<td>REAR PANNEL CONNECTORS</td>
<td>Specify connector type and associated</td>
</tr>
<tr>
<td></td>
<td>Specifications for all rear panel connectors.</td>
</tr>
<tr>
<td>Phase Calibration</td>
<td>Auto phasing.</td>
</tr>
</tbody>
</table>

Note:

1. Only original manufacturer or their authorised Agents/Distributors/Dealers should submit quotation.

2. If the quotation is from authorised Agent/Distributors/Dealers, they should submit evidence to that effect along with quotation.

3. Vendor should have executed orders of similar value to other Govt. Departments or reputed companies and they should enclose evidence to that effect with the quotation.

4. TIFR Balloon facility reserves the right to reject quotations not accompanied or not in accordance with the above details.

Material is to be delivered at:
TIFR, Balloon Facility, Post Box 5, ECIL Post, Kishaiguda, Hyderabad 500062
TATA INSTITUTE OF FUNDAMENTAL RESEARCH  
(Deemed University)  
HOMI BHBHA ROAD, COLABA, MUMBAI – 400 005  
(PURCHASE SECTION)  

Terms and Conditions  

1. PART “A” (Technical Bid) consisting of Technical Bid & Commercial Terms and PART “B” (Financial Bid) consisting of only Price shall be submitted in separate sealed envelopes duly superscribed with the tender enquiry number, and the due date in bold letters, addressed to the Purchase Officer, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai – 400 005. The envelopes should be clearly marked on top as either PART “A” or PART “B”. The two sealed covers should be further put in a master cover superscribed with the Tender Enquiry No., Due Date in bold letters, addressed to the Purchase Officer, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai – 400 005. The sealed master envelop has to be delivered by hand/courier at the security Gate Officer of TIFR on or before 13.00 hrs on the due date specified. The technical bid will be opened in the presence of attending tenderers at 14.00 hrs on the due date at Purchase Section, TIFR Mumbai. Tenders submitted after 13.00 hrs. on due date will not be considered.

2. In case the PART ‘A’ and Part ‘B’ bids are not sealed in separate envelopes the tender will be rejected.

3. The technical bid should not contain any indication of the price.

4. After scrutiny of Technical Bids, Financial bids of only those bidders who are shortlisted on technical basis will be opened at on later date. The opening date, time and venue will be intimated to the technically successful bidder.

5. Tender Forms can be obtained from the Purchase Section on payment of the tender fees (non-refundable) of Rs.500/- by cash/Demand Draft in favour of, “The Registrar, Tata Institute of Fundamental Research, Mumbai” along with a letter address to the cashier, Accounts Department on any working day between 11.00 to 12.30 hrs. and 13.00 to 14.00 hrs.

6. The firm who wishes to download the specifications, terms and conditions may do so. While submitting the quotation, a DD of Rs.500/- for each tender drawn in favour of “The Registrar, Tata Institute of Fundamental Research, Mumbai” may please be enclosed along with Technical Bid. In case of Foreign Suppliers prepare advance cheque for US$100/-. 

7. After downloading the documents please inform your company details such as name, address, telephone nos., contact person and email address etc. by email to us. (sgk@tifr.res.in, sheela@tifr.res.in, madhuram@tifr.res.in) to enable us to inform prospective bidder for any corrigendum/changes if any; in the Tender document before due date.
8. Quotations must be valid for a period of 180 days from the due date.

9. Tenders containing correction, overwriting will not be considered. Late or delayed/Unsolicited quotations/offers shall not be considered at all. These will be returned to the firms as it is. Post tender revisions/corrections shall also not be considered.

10. Tenderer should sign on all the pages of the technical bid and the price bid.

11. The offer for Import item should indicate separately the price on Ex-works basis (duly packed airworthy / seaworthy and of international standard ). And also on CIF, TIFR, Balloon Facility, Hyderabad basis (i.e. inclusive of packing, air freight, handling, insurance for the material up to TIFR, Balloon Facility, Hyderabad). TIFR will provide all necessary documents required for customs clearance. For local item /supply, offer should be the total landed cost for delivery at TIFR, Mumbai.

12. If equipment offered is to be imported, arrangements for import will be made by us.

13. Tenders who do not comply with any of the condition are liable to be rejected.

14. The Institute shall be under no obligation to accept the lowest or any other tender received in response to this tender notice and shall be entitled to reject any tender without assigning any reason whatsoever.

15. TIFR reserves the right to place the order for part/reduced quantity than what is specified in the tender.

16. PAYMENT TERMS:  80% payment shall be made through irrevocable L/C on presentation of complete and clear shipping documents and balance 20% of the amount shall be released after the receipt, installation, commissioning and acceptance of the equipment.

17. For Import cases:  No Agency commission will be paid as per Govt. of India rules.
18. TIFR exempted from paying of Custom duty under the notification No.51/96 dated 23.07.1996, Excise duty under the notification No.10/97 dated 01.03.1997, Octroi Duty under the registration No. 27664 dtd. 07.07.1953 & Letter No. OCT/2101/HCCI Dtd.27-12-07 & Service Tax under the Notification No.F.9-48/2001-U.3 dated 07.05.2002 & circular No. 172/7/2013-ST dated 19.09.2013 for all procurements/supply meant exclusively for Educational, scientific and research purpose. Whenever the exemption certificate not honored by the authorities, the applicable duty will have to be paid. Hence Excise & Custom duties and Service tax, if any, should be shown separately.

19. SALES TAX: TIFR does not have any exemption/concession on payment of Sales Tax/VAT and we are not authorized to issue any Sales Tax Form ‘C’ & ‘D’

20. The delivery period should be specifically stated and earlier delivery may be preferred.

21. **The Supplier shall arrange to ship the ordered materials within the mutually agreed delivery period mentioned in the order unless extended with/without penalty.**
   a. In case of delay in supply on part of the supplier, a penalty @0.5% per week of order value will be charged for delayed period subject to a maximum of 10% order value.
   b. If the delay in the shipment of the ordered materials attributable to the supplier exceeds agreed time period from the date of original agreed upon date of shipment and extended with/without penalty, the TIFR, Mumbai shall have the right to cancel the contract / purchase order and recover the liquidated damages from other dues of the party or by legal means. It will also affect the other/future business dealings with such suppliers.
   c. The same rate of penalty shall be applicable for late installation of the equipment/instrument also.

22. **COMMENCEMENT OF WARRANTY PERIOD:** The warranty period of an item shall commence from the date of receipt of the item in good working condition and satisfactory installation/commissioning/demonstration at the project site.

23. **ANNUAL MAINTENANCE CHARGES:** The party must mention in the quotation, the rate/amount of annual maintenance charges, if we opt for maintenance contract after expiry of the warranty period.

24. Specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with the printed technical leaflet/literature of the quoted model of the item by the quoting party/manufacturer.
25. OBSERVANCE OF LOCAL LAWS: Wherever applicable (particularly for Local vendors), the vendor / contractor shall comply with all law, statutory rules & regulations etc. The vendor/ contractor shall obtain all necessary permits / approval from the local Governing Body, Police, and other concerned Authorities as may be required under law. The vendor /contractor shall pay all types of taxes, fees, license charges, deposits, duties, tolls, royalty or other charges that may be leviable on account of any the operations connected with the execution of this work/ contract.

26. In case of any interpretational issues arises in this tender, the interpretation/decision of TIFR shall be final and binding on the bidder.

27. It is the responsibility of the vendor to make sure that the system being proposed can be exported to India with TIFR as the end user. All clarificatory documentation must be submitted with the Bid.

28. TIFR reserve the right to ask for or to provide any clarification, changes after the release of this tender. Any changes or clarifications provided by TIFR may be checked at TIFR website www.tifr.res.in/tenders

ADMINISTRATIVE OFFICER
(PURCHASE SECTION)
TIFR, MUMBAI