DEPARTMENT OF APPLIED MECHANICS,
BIOMEDICAL ENGINEERING GROUP
I.I.T. MADRAS CHENNAI-600036

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Date: 11.06.2019   **DUE DATE: 03.07.2019**
Ref. No.: APM/ARUK/2019/001

High Frequency Ultrasonic Pulser-receiver Data Acqusition Module

1. Quotations are invited in duplicate for the various items shown in Enclosed list (Annexture - I).

2. Quotations are invited as TWO-BID system, i.e., technical bid and financial bid.

3. The Quotations duly sealed and super scribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.

4. The Quotations should be valid for sixty days from the due date and the period of delivery required, warranty terms etc. should also be clearly indicated. A minimum of one year warranty required.

5. Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided.

6. Compliancy certificate is to be provided indicating conformity to the technical specifications.

7. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.

8. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses.

9. Packing and delivery charges must be clearly indicated.

10. The rate of sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to nonGovernment Educational Institutions run with no profit motive for which a concession. Sales Tax Certificate will be issued at the time of final settlement of the bill.

11. Goods should be supplied carriage paid and insured.

12. Goods shall not be supplied without an official supply order.

13. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

14. In case of LC, 90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the software.

15. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above

16. Acceptance and Rejection: - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

Please send the documents to the following address:

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Yours faithfully,

Dr Arun K.Thittai,

Department of Applied Mechanics.

TECHNICAL SPECIFICATIONS:

	Specifications for transmit side	
S.No	**Specifications**	**Description**
1	Number of channels	2
2	Pulser Voltage	Programmable; Should offer a minimum of atmost 30 Volts and a maximum of atleast 180 Volts; Step size less than 30 Volts
3	Pulse Repetition Frequency	Programmable; Should be 20 kHz or more; Step size less than 3 Hz
4	Pulse Rise Time	< 6 ns
5	Pulse Width	Programmable with a minimum of atmost 20 nsec and a maximum of alteast 400 nsec; Step size less than 3 nsec
6	Pulser Output Impedance	< 20 Ω
7	Pulser Damping	Programmable with a minimum of atmost 50 Ω and a maximum of atleast 600 Ω; Step size less than 80 Ω
	Specifications for receive side	
8	Gain	Programmable with a minimum of atmost -4 dB and a maximum of atleast 60 dB; Step size less than 0.3 dB
9	Gain Linearity	Better than 0.3 dB
10	Input Impedance	Greater than 600 Ω
11	Bandwidth (-3dB)	Lower cutoff of atmost 1 MHz and upper cutoff of atleast 25 MHz on the receive data side
12	Analogue Filters	Atleast 4 bandpass filters with different ranges within the receive bandwidth (-3 dB)
13	Time gain compensation or Distance Amplitude Correction (DAC) specifications	Dynamic Range : Should be programmable with a minimum of atmost 0 dB and a maximum of atleast 60 dB; Step size less than 0.3 dB No of DAC curves : greater than 250 DAC update : faster than 30 dB/µsec
14	Out data type of the received RF A-line data	Should be digitized data
15	Inbuilt Analog to Digital Converter (ADC) specifications	ADC Resolution :12 bits Amplitude Resolution : 16 bits Sample Rate : Should be programmable with a maximum of atleast 200 MHz; atleast 4 different settings should be offered Acquisition Gate Delay : atleast 60 k sample points from trigger
16	Digital processing specifications	Rectification : Should have full and half wave rectification capabilities

		Averaging : Should be programmable with a real time averaging capability of atleast 250 signals
		peak detection capability of atleast first peak and largest peaks should be present
		Capability to smoothen the signal should be present with atleast 6 different settings
17	Data transfer speed between pulsar receiver data acquisition system and personal computer	Higher than 30 MB/s
18	Output Data Buffer	160 MB or more
Other required features		
19	Miscellaneous features	Atleast 2 inputs accepting differential encoder data of minimum 30-bit at a minimum rate of 600 kHz
		Atleast 1 input or output digital TTL based triggering capability
		Atleast 1 output analog triggering capability
20	Compatibility	Pulsar receiver data acquisition system should be compatible, programmable and should be interfacible with MATLAB, LabVIEW and VisualStudio.
21	The item should have supplied to other Research Labs/Institutions and used for Pre-clinical or clinical Imaging purposes. Provide contact details.	