



NIMHANS/2019-20/IND/557

06/12/2019

TENDER NOTIFICATION
(Through e-procurement portal only)

The Director, NIMHANS invites tender from eligible tenderers through the Karnataka Government E-Procurement portal for supply of following equipment.

| Sl No | Item | Qty | EMD in Rs |
|-------|---|-----|---------------|
| 1 | Geodesic Transcranial Electrical Modulation [GTEN] 200 system (Proprietary Item) | 1 | Rs 4,00,000/- |

Tender Schedule

| | |
|---|--------------------------|
| Downloading of Tender documents from website - https://eproc.karnataka.gov.in/eportal/index.seam | From 06.12.2019 Onwards |
| Last date for tender enquiry | 27.12.2019 upto 11:00 AM |
| Tender submission last date and time | 28.12.2019 upto 11:00 AM |
| Technical bid will be opened online by the authorized officer on | 30.12.2019 at 11:00 AM |

Terms and conditions

1. The bid documents for the above items should be addressed to “The Director, National Institute of Mental Health & Neuro Sciences, Post Box No. 2900, Hosur Road, Bengaluru – 560 029, Karnataka, India” and should be uploaded in E Procurement portal only on or before the due date (HARD COPY OF THE DOCUMENTS WILL NOT BE ACCEPTED).
2. The tender bid should be valid for **four months** from the due date. **NIMHANS, Bengaluru will not take any responsibility for any technical issues.**
3. **Earnest Money Deposit (EMD):**
 - 3.1. The (EMD) shall be denominated in Indian Rupees and shall be paid in the e-procurement portal using the following payment modes:
 - a. Credit Card.
 - b. Direct Debit.
 - c. Net Banking
 - d. National Electronic Funds Transfer (NEFT)
 - 3.2. The EMD shall not bear any interest and will be refunded to
 - a. Successful tenderer on receipt of Agreement and Bank Guarantee.
 - b. Unsuccessful tenderer upon finalization of tender bid and award of tender to successful bidder.
 - c. All the tenderers if the tendered item is cancelled or retendered.
 - d. EMD amount is exempted, if there enclose valid NSIC/MSME Certificate.
4. The tender documents and all correspondence’s relating to the bid should be in **English language only.**



NIMHANS/2019-20/IND/557

06/12/2019

5. Technical bid should comprise of (uploaded copy of documents should be self attested and stamped) -

5.1 Brochure/Catalogue and Data sheet of the equipment.

5.1 Technical Compliance Report as per the format enclosed (mandatory).

5.2 Proprietary certificate from the manufacturer mentioning the unique technology or feature/s mentioned apart from the brand name (If applicable).

5.3 Pre requirements required at the installation site (Before submitting the bid, the tenderer should make pre-visit to the installation site and indicate the requirement along with the price bid wherever necessary)

5.4 Delivery Period of the item to be supplied and Time required for installation from the date of purchase order has to be indicated.

5.5 List of Institutes where the equipment has been supplied.

5.6 Copy of GST, PAN, TIN document

5.7 Whether tenderer is manufacturer / accredited agent / sole representative, indicate details of principal's name & address. The offers of tenderer who are not manufacturer or direct authorized agent will be summarily rejected. Sub- distributors will not be accepted.

5.8 Non – blacklisting certification that the firm has not been blacklisted in the past by any government/Private institution and certification for No Vigilance/CBI case pending against the firm/supplier by making an affidavit on non – judicial stamp paper of Rs 100/-.

5.9 Declaration towards acceptance of all terms and conditions should also be provided.

6. Financial Bid should comprise of:

6.1. Quotation should be only for Ex-NIMHANS i.e. NIMHANS Door Delivery Price and should have detailed information as per tendered specifications (such as main equipment cost, each article wise/spares rates, taxes, other Government levies, Customs duty, any local agency commission, transportation, delivery of the equipment to the Institute premises, installation and commissioning etc. Separately along with total cost) with manufacturers name, License number and name of the brand/make. Tender bids without price bid/quotation will be rejected.

Detailed breakup of the cost should be provided under icon “Action column” by clicking the % symbol which will be mentioned as Added statutory components.

6.2. The cost of the Geodesic Transcranial Electrical Modulation [GTEN] 200 system (Proprietary Item) will be frozen for 1 Year from the date of purchase order; however the discretion towards purchase of the equipment will be at the discretion of the institute.

6.3. The tenderer should also submit separate quotation towards regular servicing/maintenance duly mentioning the number of visits per annum for the AMC/CMC period after the guarantee/warranty period is over. AMC/CMC should be quoted in INR only.

7. Successful tenderer decision will be made on the basis of base price, However in Eprocurement should be inclusive of all taxes (GST percentage should be mentioned separately), However the institute reserves the right to freeze the quoted AMC/CMC price for post warranty period with the successful tenderer.



NIMHANS/2019-20/IND/557

06/12/2019

8. The tender bids (technical and price bid) should be typewritten; every correction in the tender should be initialed along with seal by the tenderer, failing which the tender will be rejected. All pages of the bid submitted must be signed along with seal and sequentially numbered by the tenderer.

9. Evaluation of Bids:-

The technical bid of the tenderer will be evaluated to determine whether

- a. They are complete with respect to specifications.
- b. They are free from computational errors.
- c. The requisite documents have been submitted and properly signed.

10. Tender Opening:

- a. The Technical bids will be unlocked through E procurement portal in the Committee Room, Adjacent to Registrar Chamber, NIMHANS, Bengaluru on the date specified in presence of tenderers or their representatives who choose to attend. The Tenderers' or representatives who are present shall submit authorization letter along with copy of Photo id proof and shall sign a register evidencing their attendance.
- b. The Financial bid of the technically qualified tenderer/s only will be opened on a notified date.

11. Equipment and its accessories should be covered with **minimum warranty period of 5 years** for normal or regular wear & tear from the date of complete installation (Ready to use in all respects). In case of software's, the validity of the license key should be clearly mentioned and should have user define provision with option to switch over from one system to other system of the same kind within the validity period.

12. Software Updates:

The selected firm for the supply of tendered item should provide free updates of software up to 5 years from the date of complete installation.

13. Supply of spares should be guaranteed for a minimum period of 10 years from the date of supply or from the date of cessation of production of the model for 10 years, whichever is later, at the rates prevailing against payment.

14. Any modification or revision of bids after submission will not be entertained under any circumstances. Conditions such as "subject to the availability of stocks", supplies will be made as and when supplies received from the principles etc., will not be considered under any circumstances.

15. A tenderer having once given a tender bid shall not withdraw it after its acceptance/opening and if does, the EMD paid by the tenderer will be forfeited and the tenderer is liable to make good the loss sustained.



NIMHANS/2019-20/IND/557

06/12/2019

16. If required, the tenderer should demonstrate the quoted model of the equipment at the institute during the technical evaluation, failing which their bid/offer shall be rejected. The tenderer will be intimated that they should get ready for demonstration. No request for extending time for demonstration will be entertained. Failure to demonstrate, their offer will be rejected.
17. The tenderer should supply the circuit diagram and instruction manual of the tendered equipment/s at the time of supply of the equipment.
18. Necessary training / instructions on operation of the system should be given by the qualified engineers of the tenderer firm to NIMHANS technical staff/s at free of cost after completion of the installation.
19. The successful tenderer should immediately submit an acceptance letter duly signed and sealed for the rate/s and offers agreed by both the parties to the Head of the Institution within reasonable time on receipt of the Purchase Order (Agreement Specimen will be enclosed with Purchase order & Stamp duty to be paid by the tenderer). The successful tenderer should also furnish a Bank guarantee only from a Nationalized bank to the extent of 10% of the total purchase order value, valid for 60 days beyond the completion of the warranty period of the equipment, no split period bank guarantee will be entertained. In the event of the successful tenderer failed to supply the item/execute the agreement/submit the Bank Guarantee the EMD deposited by them shall stands forfeited.
20. **Payment terms:**
Payment will be made only after good working condition of the equipment certified by the end user. NO ADVANCE PAYMENT WILL BE ENTERTAINED.
21. **Uptime Guarantee:**
Penalty Clause for non-functioning of equipment in term of hardship to the patients and financial loss to institute: 95% up time of 365 days (24 hours a day) that is from the day of successful handing over of the whole complex. The company takes the responsibility for the functioning of all the components and equipment, including the third party items supplied and included in the project. The total downtime annually for any reason/involvement of any of the components cannot exceed 5% (all inclusive). Subsequently if downtime exceeds 5% of 365 days, 1% of PO Value will be levied as penalty for every 24 hours of downtime until 7 days from the day of breakdown. If downtime exceeds 7 days the penalty will be 2% of PO Value from the date on which the equipment broke down beyond 5% permissible downtime. In addition to this, warranty period will be extended at double the rate of the downtime period.
22. If, at any time, during the said period, the supplier reduce the said prices of such Materials/Equipment or sales such Materials/Equipment to any other person/organization/ Institution at a price lower than the chargeable, the company shall forthwith notify such reduction or sale to the Director, NIMHANS and the price payable for the Materials supplied after the date of coming into force of such reduction or sale shall stand correspondingly reduced.



NIMHANS/2019-20/IND/557

06/12/2019

23. The losses to NIMHANS, Bengaluru, if any incurred on account of purchase made elsewhere by failure, neglect or refusal on the part of the tenderer to supply according to the terms of agreement will be recovered from them. If any article or things supplied by the tenderer have been partially or wholly used or consumed in the hospital and they are subsequently found to be in bad condition, unsound, inferior in quality or description, not in accordance with samples or otherwise faulty or unfit for use, the wholesome of the contract price or price of such articles or things will be recovered from the tenderer. The tenderer will not be entitled for any payment whatsoever, for such articles for infringements of the stipulation of the conditions or for justifiable reasons the contract may be terminated by the Director and the tenderer shall be liable for losses sustained by the NIMHANS on the consequences of the termination which may be recovered from the EMD/Bank Guarantee or from their invoices due to them. In the event of such amount being insufficient, the balance will be recovered personally from the tenderer.
24. Any corrections/changes in the tender will be uploaded as corrigendum in the NIMHANS and E procurement websites only.
25. If the tender last/opening date falls on any general/government/institute holiday(s), then the successive dates will be postponed by equivalent days of holiday(s), however the time remains unchanged.
26. The Director reserves the right of ordering/not ordering/cancelling/increase or decrease the quantity and to reject any or all tender quotations without assigning any reason. The decision of the Director, NIMHANS, Bengaluru, shall be final in all the controversies that may arise in the matter. Any dispute arising out of this will be subject to the jurisdiction of the Court in Bengaluru.
27. Failure to adhere any of the above terms and conditions the bid(s) may be rejected and EMD may be forfeited.
28. None of the terms and conditions of the supplier shall be applicable to the purchase contemplated hereunder, irrespective of it being attached to any documents to be provided to NIMHANS. Such exercise shall have no meaning and binding effect unless the same is accepted by NIMHANS in writing.

NOTE: Please keep checking the NIMHANS and E-Procurement websites regularly for any further updates.

Sd/-
Director



NIMHANS/2019-20/IND/557

06/12/2019

DECLARATION
(TO BE GIVEN BY THE TENDERER)

Name of the Item : **Geodesic Transcranial Electrical Modulation [GTEN] 200 system (Proprietary Item)**

Tender Reference No. : NIMHANS/2019-20/IND/ 557 Dated 06.12.2019

Name of the company :

To

The Director,
National Institute of Mental Health & Neurosciences
(Institute of National Importance)
Post Box No. 2900,
Hosur Road, Bengaluru – 560 029

Dear Sir,

1. I/We hereby submit my/our tender for the
2. I/We have made requisite payment against EMD as per the tender document vide reference No. & date, else my tender bid may be rejected.
3. I/We have gone through all terms and conditions of the tender documents before submitting the same.
4. I/We hereby agree to all the terms and conditions, stipulated by the NIMHANS, in this connection including delivery, warranty, penalty etc. Quotations for each group are being submitted and shall be considered on their face value.
5. I/We undertake to sign the contract/agreement, if required, within reasonable time from the date of issue of the letter of acceptance, failing which our/my security money deposited may be forfeited and our/my name may be removed from the list of suppliers at the NIMHANS, Bengaluru.

NOTE: ALL TERMS & CONDITIONS SUCH AS TAXES/LEVIES ETC, HAS BEEN INDICATED IN THE QUOTATIONS FAILING WHICH IT WILL BE PRESUMED THAT THE RATES ARE INCLUSIVE OF ALL TAXES/LEVIES AND OTHER TERMS AND CONDITIONS ARE ALSO AS PER YOUR REQUIREMENTS.

Yours faithfully,

Signature of Tenderer & seal



CHECK LIST

(TO BE FILLED BY THE TENDERER)

| | | | |
|---------------------------------------|--|---|--|
| 1 | Name & Address of the Tenderer | | |
| 2 | Name & Address of the Manufacturer | | |
| 3 | Name of the Equipment & Model Quoted | | |
| 4 | Validity of the Quotation | Four months from the due date | |
| 5 | Delivery Period | | |
| 6 | Warranty Period | 5 years | |
| 7 | Installation Period | | |
| 8 | Tender Bid details (Yes or No against each item) | Application Fee submitted | |
| | | EMD submitted | |
| | | Brochure/Catalogue uploaded | |
| | | Technical Compliance Report sheet | |
| | | Manufacturer Proprietary certificate uploaded | |
| | | Pre requirements details uploaded | |
| | | List of users uploaded | |
| | | Copy of GST/PAN/TIN & Bank details uploaded | |
| | | Distributor authorization letter uploaded | |
| | | Non-blacklisting certification uploaded | |
| | | Declaration enclosed | |
| | | Ex-Nimhans equipment cost quoted | |
| AMC & CMC cost after 5 years warranty | | | |
| 9 | Training will be provided (Yes or No) | | |
| 10 | Whether after sales, service is available in Bengaluru? If yes, quote | | |
| 11 | What is the arrangement for post contract /warranty monitoring of the equipment? | | |
| 12 | Details of the EMD Submitted (Reference no., date & bank details) | | |
| 13 | Any Other Information (Enclose separately in letter head – Yes or No | | |

Signature of Tenderer & seal



NIMHANS/2019-20/IND/557

06/12/2019

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|--------------------------|----------------------------------|---|--|
| Department | Psychiatry | Geodesic Transcranial Electrical Modulation [GTEN] 200 system | |
| End User Contact Details | | | |
| Name | Dr. G. Venkatasubramanian | | |
| Designation | Professor of Dept. of Psychiatry | EMD | |
| Mobile No. | 9480829476 | | |
| Office No. | +91-80-26995256 | | |
| Email | venkat.nimhans@gmail.com | | |
| | | Rs 4,00,000/- | |

Geodesic Transcranial Electrical Modulation [GTEN] 200 system (Proprietary Item)

Technical Specifications:

| 1.0 | 256-channel EEG Amplifier | Details | |
|------|---|--|-------------------|
| 1.1 | Amplifier (a single base unit without ganging/stacking of amplifiers allowed) | NA GTEN 200 | |
| 1.2 | Number of EEG channels | 256 | |
| 1.3 | Conversion | 24-bit A/D | |
| 1.4 | Sampling rate | Net Station | 1,000 Hz |
| 1.5 | Sensitivity | Digitization precision | 0.039 μ V/bit |
| | | Display sensitivity | selectable |
| 1.6 | Input impedance | $\geq 1.0 \text{ G}\Omega$ | |
| 1.7 | Digital Inputs | 16 bits | |
| 1.8 | Bandwidth | DC to 2000 Hz | |
| 1.9 | Common-mode rejection ratio (CMRR) | $\geq 90 \text{ dB @ } 50/60 \text{ Hz}$ | |
| 1.10 | Noise level @ 1 Ksps | $< 1.0 \mu\text{V RMS (} 6 \mu\text{V peak-to-peak)}$ | |
| 1.11 | DC Offset | $\pm 333 \text{ mV}$ | |
| 1.12 | Injection protocol interblock delay | 5–10 ms | |
| 1.13 | Dynamic Range | $\pm 200\text{mV}$ | |
| 1.14 | Digital interface | TCP/IP Ethernet protocol | |
| 1.15 | Power requirement | 15 VDC @ 3.0 A | |
| 1.16 | Electrode sensor array Geodesic Sensor Net (GSN) | HydroCel GSN | |
| 1.17 | Computer Apple: iMac or MacBook Pro | iMac OSX 10.14.4 Intel Core i5-7500 (3.4 GHz) 16 GB DDR4 (2400) MacBook Pro OSX 10.14.4 Intel Core i7-8750H (2.2 GHz) 16 GB DDR4 (2400) | |
| 1.18 | Software and naming rule name and version number | Net Station: version 5.4.3-R or later | |



NIMHANS/2019-20/IND/557

06/12/2019

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| 1.19 | Isolation transformer | Rated inputs: 50-60 Hz 100 V @ 6.3 A to 120 VAC @ 5.3 A 220 VAC @ 2.9 A to 240 VAC @ 2.6 A Rated outputs: 115 to 120 VAC @ 5.0 A (600 VA max) 230 to 240 VAC @ 2.5 A (600VA max) |
| 1.20 | Amplifier external power supply | Input: 100-240 VAC, 50/60 Hz, 1.0 A Output: 15 VDC, 3.0 A |
| 1.21 | Ethernet switch | Black Box, Model LGB2008A-R2, 8-port Gigabit Web Smart Switch |
| 1.22 | Amplifier Unit Type | The 256-Channel EEG Amplifier must be a single base unit amplifier. No ganging/stacking of amplifiers allowed. |
| 1.23 | Computer, Monitor and other hardware for the amplifier | A high-performance desktop computer with a minimum of 27" LED Display must be provided with the offer. A 600-Watt Hospital Grade Isolation Transformer must be included with the system. |

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| 2.0 | Consumables (Electrodes, Nets/Caps and affiliated consumables) | |
| 2.1 | Total application time of 256-channel electrode net/cap must be less than 15 minutes. Live demonstration may be required to evaluate this capability. | |
| 2.2 | Coverage for the inferior/ventral surface of the brain is required for accurate source modeling; this means there must be adequate electrode coverage below the eyebrows, around the ears, cheeks, etc. | |
| 2.3 | Abrasion-free, gel-free (saline electrolyte based) EEG recording capability. Very low daily operating and maintenance cost. All the consumables needed for a minimum of 100 recordings must be included in the offer. | |
| 2.4 | Open structured net design preferred with dense and even distribution of electrodes for superior comfort. | |
| 2.5 | A total of at least 4 different net/caps sizes must be included in the offer to fit Adult Indian head sizes ranging from 51 to 61cm. | |
| 2.6 | A total of at least 4 sets of 256 electrodes must be included in the offer to avoid wear and tear of the electrodes in the long run. Basically, each net/cap must be strictly quoted with its own set of 256 electrodes. | |

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| 3.0 | GTEN 200 Specifications | |
| 3.1 | One hardware and software system to perform neuromodulation and/or dense array EEG independently or simultaneously | |
| 3.2 | Simultaneous EEG to monitor the effects of neuromodulation before, during, and after stimulation. High-definition, non-invasive, electrical neuromodulation protocols | |
| 3.3 | Available stimulations include HD-tDCS, HD-tACS, HD-tPCS, and HD-tRNS, usable in any combination in a single protocol | |
| 3.4 | Precise delivery of low-level electrical current (up to 2 mA) through specified EEG electrodes of a HydroCel Geodesic Sensor Net (GSN) | |
| 3.5 | Targeting algorithm uses high-resolution, seven-tissue head models, and the reciprocity principle to optimize current flow to the target while minimizing current elsewhere | |
| 3.6 | Each electrode of a HydroCel GSN is available as a current source, a current sink, or to monitor EEG HydroCel GSNs provide: | |



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| | 3.6.1. Whole head coverage of electrodes that allows the targeting of any cortical region |
| | 3.6.2. 256 channel counts |
| | 3.6.3. Make up to 160 electrodes available for current sources and sinks. |
| | 3.6.4. Saline- and paste-based electrolyte options |
| | 3.6.5. Reproducible, consistent electrode placement across sessions and subjects |
| 3.7 | Possibility to target specific cortical areas for neuromodulation based on GeoSource 3.1 Research's high-resolution (1 mm) Finite Difference Method (FDM) head model options, which describe the underlying geometry of conductive tissues and how current flows through the head volume to the scalp: |
| 3.8 | Six built-in atlas head models (infant to adult) |
| 3.9 | Conformal atlas head models (CAHMs) warped to GPS sensor positions |
| 3.10 | Individual head models (IHMs) based on MRI data |
| 3.11 | Neuromodulation targeting and planning software uses the most anatomically faithful head modeling method: |
| | 3.11.1 Uses seven tissue types: grey matter, white matter, cerebrospinal fluid, skull, scalp eyeballs, and air, with corresponding electrical conductivity values |
| | 3.11.2 After tissue segmentation, identifies and tessellates the cortical surface into ~1 cm cortical patches, each with a dipole oriented normal to the surface |
| | 3.11.3 Uses sensor position registrations to relate each dipole to its forward projection on the scalp |
| | 3.11.4 Uses the Finite Difference Method (FDM) for lead field generation |
| | 3.11.5 Uses the integrated Modal Image Pipeline for the streamlined creation of high-resolution FDM head models |
| 3.12 | AccuCharge TM circuit technology to ensure each current source is able to deliver constant current at the target level in the presence of changing electrode-skin impedances |
| 3.13 | Seamlessly integrate with GeoSource 3.1 Research source imaging software to identify functionally significant cortical regions as targets for neuromodulation |
| 3.14 | Safety features - Software controls to limit planned current levels to less than 200 μ Amp per electrode and 2 mAmp total |
| 3.15 | Proprietary Sentinel Circuit hardware to monitor the actual current delivered to the subject, providing auditory and visual alerts and turning off the system if this current exceeds 2 mAmp Preprogrammed plans minimize chances for errors. |

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| 4.0 | GeoScan Sensor Digitization Device with the following specifications |
| 4.1 | GeoScan Sensor Digitization Device |
| 4.2 | Hand-held Stereo camera tracking technology measures, identifies, and creates a 3D coordinate file of sensor locations in real time. |
| 4.3 | The entire scan, including fiducial points, should be completed in 5–10 minutes for 256 electrodes. |
| 4.4 | Accurate to within 0.5 mm with a 95% confidence interval and a repeatability of 0.1 mm, with no movement artifacts and no electromagnetic interference. |
| 4.5 | Acquisition Software |
| 4.6 | Solver Software |
| 4.7 | Necessary Hardware (like a suitable computer) and other mandatory accessories to ensure 3D sensor registration |



NIMHANS/2019-20/IND/557

06/12/2019

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| 5.0 | GeoSource™ 3.1 Research (Advanced Package) |
| 5.1 | GeoSource 3.1 source estimation software and HASP |
| 5.2 | Reciprocity Visualization Environment plugin |
| 5.3 | 6 Atlas Head Models: 3 adult, 2 pediatric, 1 infant |
| 5.4 | Modal Image Pipeline™ software module for building individual head models |
| 5.5 | High-performance GPU compute node with monitor and keyboard |
| 5.6 | EtherNet cable |
| 5.7 | Osirix MD software for importing individual MRI data |

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| 6.0 | ERP Package |
| 6.1 | E-Prime Workstation for Net Station Compatible with the system |
| 6.2 | E-Prime (Single User License 2 Nos) |
| 6.3 | Experiment control hardware (including one microphone, Chronos, Chronos Adapter, response pad, cables) / suitable equivalent to match the required features for experiment administration |
| 6.4 | Suitable High-performance computer |
| 6.5 | 21' monitor (2 Nos) with video splitter and switch |
| 6.6 | APC UPS with back-up time for at least 30 minutes supporting the computer as well both monitors |
| 6.7 | Network Time Protocol (NTP) |
| 6.8 | AV Device Complete Package + Accessories |
| 6.9 | E-Prime Starter Pack |
| 6.10 | a separate 600-Watt Hospital Grade Isolation Transformer must be included with the stimulus presentation system |

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| 7.0 | Other items |
| 7.1 | UPS (APC or equivalent make) with back-up for 1 Hour for the entire system through compact battery system (i.e. single units or multiple sub-units to be decided by the end-user to suit the technical aspects as well as to minimize space requirements) |
| 7.2 | A minimum of 3-day on-site install/training visit must be provided. |
| 7.3 | Equipment to be compatible with Indian power supply specifications; should have an optional notch filter at 50 Hz for line noise reduction if required. |
| 7.4 | List of users with contact details (e-mail & telephone / mobile number) in research institutes (India & Abroad) to be provided |
| 7.5 | List of peer-reviewed PubMed indexed original research publications that have used the quoted equipment. Hard copy of the full text of this research publication should be enclosed along with the technical bid documents. |
| 7.6 | The bidder must provide the technical compliance report in strict adherence to the format provided in the tender notification. The bidder should provide documents to support the compliance with all the technical specifications as annexures. In addition, the bidder should indicate the exact location of the text in the annexure (for example annexure no., page, paragraph, and lines detail) that provides the necessary documentary support for the respective technical specification. Scrutiny for matching the technical specifications will be based on the documents & details of the text location (as specified above) provided with the technical bid, preferably along with cross-referencing from the product website. |
| 7.7 | Certification: Suitable certification of the quoted equipment (i.e. FDA or CE or equivalent certification) for the research application of equipment in human subjects is mandatory and a copy of the same should be enclosed. |
| 7.8 | The vendor should provide all required Mandatory Accessories to ensure turnkey operation |



NIMHANS/2019-20/IND/557

06/12/2019

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| 7.9 | The technical bid should be accompanied by an item-wise compliance report that is signed & stamped by the authorized signatory of the bidder in all pages. This compliance report should have reference to the page number of the manual (hard or soft copy) in which the specific technical compliance details with respect to each item (i.e. 1.1., 1.2., 1.3., ...) as per the instructions provided in item no. 7.6 above. It is preferable that the vendor provides additional reference to these technical details in their product web site as well. |
| 7.10 | If required, the bidder must be able to organize for a physical demonstration of the product at NIMHANS to support all the technical specifications within a notice period of 1 week. |

8.0 Warranty:

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| 8.1 | All the items related to above referenced specifications (except for consumables – please specify the list of consumable items with the duration of warranty period in the technical bid) as well as software upgrades should be covered for the warranty period of 5 years from the date of completion of installation. |
| 8.2 | Technical Support for the five years & the technical person should be based in Bengaluru. |

9.0 CMC/AMC/Unit Price of Consumables

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| 9.1 | Quotation for comprehensive maintenance care after 5 years of warranty |
| 9.2 | Quotation for annual maintenance care after 5 years of warranty |
| 9.3 | Please provide the unit cost (i.e. minimum quantity that can be purchase for example, one pack / bottle / one number) of all the possible consumables (as applicable) like Cap, Electrode and similar others. |



NIMHANS/2019-20/IND/557

06/12/2019

Geodesic Transcranial Electrical Modulation [GTEN] 200 system (Proprietary Item)

Technical Compliance Report Format

| | | | Compliance Yes / No | Remarks (if any) |
|------------|---|---|------------------------|---------------------|
| 1.0 | 256-channel EEG Amplifier | Details | | |
| 1.1 | Amplifier (a single base unit without ganging/stacking of amplifiers allowed) | NA GTEN 200 | | |
| 1.2 | Number of EEG channels | 256 | | |
| 1.3 | Conversion | 24-bit A/D | | |
| 1.4 | Sampling rate | Net Station 1,000 Hz | | |
| 1.5 | Sensitivity | Digitization precision 0.039 μ V/bit | | |
| | | Display sensitivity selectable | | |
| 1.6 | Input impedance | ≥ 1.0 G Ω | | |
| 1.7 | Digital Inputs | 16 bits | | |
| 1.8 | Bandwidth | DC to 2000 Hz | | |
| 1.9 | Common-mode rejection ratio (CMRR) | ≥ 90 dB @ 50/60 Hz | | |
| 1.10 | Noise level @ 1 Ksps | < 1.0 μ V RMS (6 μ V peak-to-peak) | | |
| 1.11 | DC Offset | ± 333 mV | | |
| 1.12 | Injection protocol interblock delay | 5–10 ms | | |
| 1.13 | Dynamic Range | ± 200 mV | | |
| 1.14 | Digital interface | TCP/IP Ethernet protocol | | |
| 1.15 | Power requirement | 15 VDC @ 3.0 A | | |
| 1.16 | Electrode sensor array Geodesic Sensor Net (GSN) | HydroCel GSN | | |
| 1.17 | Computer Apple: iMac or MacBook Pro | iMac OSX 10.14.4 Intel Core i5-7500 (3.4 GHz) 16 GB DDR4 (2400) MacBook Pro OSX 10.14.4 Intel Core i7-8750H (2.2 GHz) 16 GB DDR4 (2400) | | |
| 1.18 | Software and naming rule name and version number | Net Station: version 5.4.3-R or later | | |
| 1.19 | Isolation transformer | Rated inputs: 50-60 Hz 100 V @ 6.3 A to 120 VAC @ 5.3 A 220 VAC @ 2.9 A to 240 VAC @ 2.6 A Rated outputs: 115 to 120 VAC @ 5.0 A (600 VA max) 230 to 240 VAC @ 2.5 A (600VA max) | | |



NIMHANS/2019-20/IND/557

06/12/2019

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| 1.20 | Amplifier external power supply | Input: 100-240 VAC, 50/60 Hz, 1.0 A Output: 15 VDC, 3.0 A | | |
| 1.21 | Ethernet switch | Black Box, Model LGB2008A-R2, 8-port Gigabit Web Smart Switch | | |
| 1.22 | Amplifier Unit Type | The 256-Channel EEG Amplifier must be a single base unit amplifier. No ganging/stacking of amplifiers allowed. | | |
| 1.23 | Computer, Monitor and other hardware for the amplifier | A high-performance desktop computer with a minimum of 27" LED Display must be provided with the offer. A 600-Watt Hospital Grade Isolation Transformer must be included with the system. | | |

| | | Compliance Yes / No | Remarks (if any) |
|------------|--|---------------------|------------------|
| 2.0 | Consumables (Electrodes, Nets/Caps and affiliated consumables) | | |
| 2.1 | Total application time of 256-channel electrode net/cap must be less than 15 minutes. Live demonstration may be required to evaluate this capability. | | |
| 2.2 | Coverage for the inferior/ventral surface of the brain is required for accurate source modeling; this means there must be adequate electrode coverage below the eyebrows, around the ears, cheeks, etc. | | |
| 2.3 | Abrasion-free, gel-free (saline electrolyte based) EEG recording capability. Very low daily operating and maintenance cost. All the consumables needed for a minimum of 100 recordings must be included in the offer. | | |
| 2.4 | Open structured net design preferred with dense and even distribution of electrodes for superior comfort. | | |
| 2.5 | A total of at least 4 different net/caps sizes must be included in the offer to fit Adult Indian head sizes ranging from 51 to 61cm. | | |
| 2.6 | A total of at least 4 sets of 256 electrodes must be included in the offer to avoid wear and tear of the electrodes in the long run. Basically, each net/cap must be strictly quoted with its own set of 256 electrodes. | | |



| | | Compliance Yes / No | Remarks (if any) |
|------------|--|------------------------|------------------|
| 3.0 | GTEN 200 Specifications | | |
| 3.1 | One hardware and software system to perform neuromodulation and/or dense array EEG independently or simultaneously | | |
| 3.2 | Simultaneous EEG to monitor the effects of neuromodulation before, during, and after stimulation. High-definition, non-invasive, electrical neuromodulation protocols | | |
| 3.3 | Available stimulations include HD-tDCS, HD-tACS, HD-tPCS, and HD-tRNS, usable in any combination in a single protocol | | |
| 3.4 | Precise delivery of low-level electrical current (up to 2 mA) through specified EEG electrodes of a HydroCel Geodesic Sensor Net (GSN) | | |
| 3.5 | Targeting algorithm uses high-resolution, seven-tissue head models, and the reciprocity principle to optimize current flow to the target while minimizing current elsewhere | | |
| 3.6 | Each electrode of a HydroCel GSN is available as a current source, a current sink, or to monitor EEG HydroCel GSNs provide: | | |
| | 3.6.1. Whole head coverage of electrodes that allows the targeting of any cortical region | | |
| | 3.6.2. 256 channel counts | | |
| | 3.6.3. Make up to 160 electrodes available for current sources and sinks. | | |
| | 3.6.4. Saline- and paste-based electrolyte options | | |
| | 3.6.5. Reproducible, consistent electrode placement across sessions and subjects | | |
| 3.7 | Possibility to target specific cortical areas for neuromodulation based on GeoSource 3.1 Research's high-resolution (1 mm) Finite Difference Method (FDM) head model options, which describe the underlying geometry of conductive tissues and how current flows through the head volume to the scalp: | | |
| 3.8 | Six built-in atlas head models (infant to adult) | | |
| 3.9 | Conformal atlas head models (CAHMs) warped to GPS sensor positions | | |
| 3.10 | Individual head models (IHMs) based on MRI data | | |
| 3.11 | Neuromodulation targeting and planning software uses the most anatomically faithful head modeling method: | | |
| | 3.11.1 Uses seven tissue types: grey matter, white matter, cerebrospinal fluid, skull, scalp eyeballs, and air, with corresponding electrical conductivity values | | |
| | 3.11.2 After tissue segmentation, identifies and tessellates the cortical surface into ~1 cm cortical patches, each with a dipole oriented normal to the surface | | |
| | 3.11.3 Uses sensor position registrations to relate each dipole to its forward projection on the scalp | | |
| | 3.11.4 Uses the Finite Difference Method (FDM) for lead field generation | | |
| | 3.11.5 Uses the integrated Modal Image Pipeline for the streamlined creation of high-resolution FDM head models | | |



NIMHANS/2019-20/IND/557

06/12/2019

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| 3.12 | AccuCharge™ circuit technology to ensure each current source is able to deliver constant current at the target level in the presence of changing electrode-skin impedances | | |
| 3.13 | Seamlessly integrate with GeoSource 3.1 Research source imaging software to identify functionally significant cortical regions as targets for neuromodulation | | |
| 3.14 | Safety features - Software controls to limit planned current levels to less than 200 μ Amp per electrode and 2 mAmp total | | |
| 3.15 | Proprietary Sentinel Circuit hardware to monitor the actual current delivered to the subject, providing auditory and visual alerts and turning off the system if this current exceeds 2 mAmp Preprogrammed plans minimize chances for errors. | | |

| | | Compliance Yes / No | Remarks (if any) |
|------------|---|------------------------|------------------|
| 4.0 | GeoScan Sensor Digitization Device with the following specifications: | | |
| 4.1 | GeoScan Sensor Digitization Device | | |
| 4.2 | Hand-held Stereo camera tracking technology measures, identifies, and creates a 3D coordinate file of sensor locations in real time. | | |
| 4.3 | The entire scan, including fiducial points, should be completed in 5–10 minutes for 256 electrodes. | | |
| 4.4 | Accurate to within 0.5 mm with a 95% confidence interval and a repeatability of 0.1 mm, with no movement artifacts and no electromagnetic interference. | | |
| 4.5 | Acquisition Software | | |
| 4.6 | Solver Software | | |
| 4.7 | Necessary Hardware (like a suitable computer) and other mandatory accessories to ensure 3D sensor registration | | |

| | | Compliance Yes / No | Remarks (if any) |
|------------|---|------------------------|------------------|
| 5.0 | GeoSource™ 3.1 Research (Advanced Package) | | |
| 5.1 | GeoSource 3.1 source estimation software and HASP | | |
| 5.2 | Reciprocity Visualization Environment plugin | | |
| 5.3 | 6 Atlas Head Models: 3 adult, 2 pediatric, 1 infant | | |
| 5.4 | Modal Image Pipeline™ software module for building individual head models | | |
| 5.5 | High-performance GPU compute node with monitor and keyboard | | |
| 5.6 | EtherNet cable | | |
| 5.7 | Osirix MD software for importing individual MRI data | | |



NIMHANS/2019-20/IND/557

06/12/2019

| | | Compliance Yes / No | Remarks (if any) |
|------------|---|------------------------|------------------|
| 6.0 | ERP Package | | |
| 6.1 | E-Prime Workstation for Net Station Compatible with the system | | |
| 6.2 | E-Prime (Single User License 2 Nos) | | |
| 6.3 | Experiment control hardware (including one microphone, Chronos, Chronos Adapter, response pad, cables) / suitable equivalent to match the required features for experiment administration | | |
| 6.4 | Suitable High-performance computer | | |
| 6.5 | 21' monitor (2 Nos) with video splitter and switch | | |
| 6.6 | APC UPS with back-up time for at least 30 minutes supporting the computer as well both monitors | | |
| 6.7 | Network Time Protocol (NTP) | | |
| 6.8 | AV Device Complete Package + Accessories | | |
| 6.9 | E-Prime Starter Pack | | |
| 6.10 | a separate 600-Watt Hospital Grade Isolation Transformer must be included with the stimulus presentation system | | |

| | | Compliance Yes / No | Remarks (if any) |
|------------|---|------------------------|------------------|
| 7.0 | Others | | |
| 7.1 | UPS (APC or equivalent make) with back-up for 1 Hour for the entire system through compact battery system (i.e. single units or multiple sub-units to be decided by the end-user to suit the technical aspects as well as to minimize space requirements) | | |
| 7.2 | A minimum of 3-day on-site install/training visit must be provided. | | |
| 7.3 | Equipment to be compatible with Indian power supply specifications; should have an optional notch filter at 50 Hz for line noise reduction if required. | | |
| 7.4 | List of users with contact details (e-mail & telephone / mobile number) in research institutes (India & Abroad) to be provided | | |
| 7.5 | List of peer-reviewed PubMed indexed original research publications that have used the quoted equipment. Hard copy of the full text of this research publication should be enclosed along with the technical bid documents. | | |
| 7.6 | The bidder should provide documents to support the compliance with all the technical specifications as annexures. In addition, the bidder should indicate the exact location of the text in the annexure (for example annexure no., page, paragraph, and lines detail) that provides the necessary documentary support for the respective technical specification. Scrutiny for matching the technical specifications will be based on the documents & details of the text location (as specified above) provided with the technical bid, preferably along with cross-referencing from the product website. | | |



NIMHANS/2019-20/IND/557

06/12/2019

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| 7.7 | Certification: Suitable certification of the quoted equipment (i.e. FDA or CE or equivalent certification) for the research application of equipment in human subjects is mandatory and a copy of the same should be enclosed. | | |
| 7.8 | The vendor should provide all required Mandatory Accessories to ensure turnkey operation | | |
| 7.9 | The technical bid should be accompanied by an item-wise compliance report that is signed & stamped by the authorized signatory of the bidder in all pages. This compliance report should have reference to the page number of the manual (hard or soft copy) in which the specific technical compliance details with respect to each item (i.e. 1.1., 1.2., 1.3., ...) as per the instructions provided in item no. 7.6 above. It is preferable that the vendor provides additional reference to these technical details in their product web site as well. | | |
| 7.10 | If required, the bidder must be able to organize for a physical demonstration of the product at NIMHANS to support all the technical specifications within a notice period of 1 week. | | |

8.0 Warranty:

| | | Compliance Yes / No | Remarks (if any) |
|-----|--|---------------------|------------------|
| 8.1 | All the items related to above referenced specifications (except for consumables – please specify the list of consumable items with the duration of warranty period in the technical bid) as well as software upgrades should be covered for the warranty period of 5 years from the date of completion of installation. | | |
| 8.2 | Technical Support for the five years & the technical person should be based in Bengaluru. | | |

9.0 CMC/AMC/Unit Price of Consumables

| | | Compliance Yes / No | Remarks (if any) |
|-----|---|---------------------|------------------|
| 9.1 | Quotation for comprehensive maintenance care after 5 years of warranty | | |
| 9.2 | Quotation for annual maintenance care after 5 years of warranty | | |
| 9.3 | Please provide the unit cost (i.e. minimum quantity that can be purchase for example, one pack / bottle / one number) of all the possible consumables (as applicable) like Cap, Electrode and similar others. | | |