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Corrigendum

Ref No of GeM Bid No. : GEM/2025/B/6885367
Issue Date : 18.11.2025
Name of the Bid: **EMG NCV EP Machine**
The clarifications and amendments on the representations received are as given below:

Representation from: GeM

Sr. no.s of specification sheet	Tender Technical Specification	Requested modifications (Representation)	Reply to representations	Amendments
A.2.	Motor Nerve Conduction (MNC), Sensory Nerve Conduction (SNC), Microneurography.	Request to delete from pt. No. 2: Microneurography. [Reason: It is a highly invasive technique that requires inserting a microelectrode directly into a peripheral nerve, causing discomfort and risk of nerve irritation. The procedure is technically demanding, time-consuming, and requires expert operators. It is extremely sensitive to movement, leading to frequent signal loss or distortion. Equipment cost is high due to the need for specialized high-impedance amplifiers and microelectrodes. The method records only from very small groups of fibers, limiting its clinical usefulness, so it is mostly restricted to research rather than routine diagnostic EMG applications.]	Microneurography records peripheral nerve electrical activity using an ultrafine needle electrode. It helps study sensory fibers, MSNA, and neuropathic pain. Though technically demanding, it is essential for selected patients and valuable for training students in INIs.	**No Changes**
A.3.	Combined sensory index, Combined motor and sensory nerve conduction, silent period, MEP, TST (Triple simulation technique)	Request to delete TST (triple stimulation technique) from pt. No.3. [Reason: TST is technically complex and requires precise timing and placement of stimulation electrodes, making it difficult to perform routinely. Small errors in stimulation, synchronization, or limb positioning can	TST is indicated when MEPs are inconclusive. The technical difficulty of a procedure should not preclude its use when	**No Changes**

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		produce misleading results. It is time-consuming and uncomfortable due to multiple high-intensity stimulations. TST primarily evaluates corticospinal tract conduction and does not provide broad diagnostic information like routine NCS/EMG, limiting its clinical applicability. It also requires advanced equipment and experienced operators, reducing practicality in busy clinical settings. Additionally, artifact management is challenging, making interpretation difficult in uncooperative or anxious patients.	clinically required, nor limit its value in training students for comprehensive neurophysiological practice.	
A.7. A.12. A.13.	A.7 AEP, SEP, VEP, OHL,Mid latency EP, Flash VEP and Flash ERG, Electro-Occulogram	Request to delete OHL and Flash ERG/Electro-Occuluogram from Point No. 7 [Reason: As this being company specifc pomint and will restrict the particpation]	They provide objective, cooperation-independent assessment of retinal and visual pathway function, which is crucial since infants cannot reliably perform behavioral vision tests.	No changes
	A.12.The same data should simultaneously be display with different filter, sensitivity and time base for optimal review of result, roll back and roll forward of traces.	Request to delete Point no 12: Simultaneous display with different filter, sensitivity and tim ebase for optimal review of result, roll back and roll forward of traces. [Reason: As this being company specifc pomint and will restrict the particpation]	Useful for easy, fast & accurate reporting to overcome patient waiting period	No changes

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	A.13. Free run EMG data and sound should be recorded for upto 960 seconds for 2 channel or 360 seconds for 6 channels	Request to amend Point No. 13: Free run EMG data and sound should be recorded for upto 960 seconds for 2 channel or 360 seconds for 6 channels TO Free run EMG data and sound should be recorded for upto 5MINUTES TO 6 MINUTES for 2 OR 4 channel. [REASON: As this being company specific point and will restrict the participation]	A7/12/13 are not company specific points and are provided by most of the standard makers of the equipment	No Changes
A.19. A.21.	A.19.Should have averaging techniques to optimize the averaging results such as mean, exponential, median, threshold.	Request to delete point 19: expoential, median, threshold [Reason: As it being company specific point and restrict the participation.]	Require for ERP studies i.e P300, MRCP for patient diagnosis as well as teaching also.	No changes
	A.21. There should be facility to go back and see the previously recorded responses and choose the best result for reporting	Request to delete Point No. 21: There should be facility to go back and see the previously recorded responses and choose the best result for reporting. [Reason: As it being company specific point and restrict the participation.]	We require as it saves our time to perform tests also for patient comfort to avoid repeated current delivery.	No changes
A.24.	On-line result should give a compact clinical overview with links back to the raw data.	Request to Point No. 24: On-line result should give a compact clinical overview with links back to th eraw data. [Reason: A compact online clinical overview with links to raw EMG data can have several drawbacks. Summarized displays may oversimplify complex findings and cause clinicians to miss subtle abnormalities present only in raw signals. Heavy dependence on software-generated summaries risks misinterpretation if algorithms are inaccurate. Real-time linking to raw data requires higher processing power and may slow system performance.	Useful for easy, fast & accurate reporting to overcome patient waiting period.	No changes

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		Maintaining synchronized summaries and raw data increases software complexity and chances of glitches. Users may also rely too much on the overview rather than critically evaluating the raw EMG traces, reducing diagnostic accuracy in challenging clinical cases.]		
B.1. **B.2.** **B.6.** **C.3.**	B 1: 6 channel amplifier	Request to amend point No. B(1): 6 channel amplifier to 4 Channel Amplifier. [Reason: As 6 Channel amplifier being specific to single company and restricts the participation.]	More channels are required for multichannel surface EMG and SSEP tests.	No changes
	B.2. 48KHz or more sampling rate per channel	Point no. B(3): 48KHz or more smapling rate per channel TO 8000Hz channel. [Reason: 8 kHz per channel is fully adequate and considered high-quality for EMG. Some premium systems sample at 10–20 kHz, but 8 kHz already ensures accurate, distortion-free EMG recording for all clinical applications]	High sampling **is** required in the studies where we record very low amplitude signals i.e VEP, SSEP, AEP and ERP studies.	No changes
	B.6. Base unit should have inbuilt/dedicated control panel.	Request to delete Pt. B(6): Base unit should have inbuilt/dedicated control panel. [reason: As it being company specific point and restrict the participation.]	Inbuilt or dedicated control panel is useful for easy to use the system and also save time to perform tests.	No changes
	C.3. Delivered stimulus should be monitored and Short Circuit ah	Delete point No. C (3): Deleivered stimulu should be mentioned and Short Circuit ah " Open circuit conditions, should be	Monitoring of delivered current is	

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	Open circuit conditions, should be indicated.	indicated. [Reason: As it being company specific point and restrict the participation.]	useful to avoid misreporting	No changes
	C.4. Deviation between requested and delivered stimulus current intensity should be indicated.	Request to delete Point C(4): Deviation between requested and delivered stimulus current intensity should be indicated. [Reason: As it being company specific point and restrict the participation.]	Useful to avoid misreporting	No changes
	C.6.Modes should be set to either monophasic or biphasic stimulation using single, Refractory, collision, Double or train.	Request to delete Pt. No. C (6): Refractory, collision, or Train.[Reason: As it being company specific point and restrict the participation.]	Essential requirement as per guidelines to record AEP test.	No changes
		Request to delete Point No. C(7): stimulus rate should be varied between: 0.06-100 stimuli per second (Hz). [Reason: As it being company specific point and restrict the participation.]	We have checked at other hospitals where these are being used.	No changes
	F.11. Single Fiber EMG Needle (reusable)	Single Fiber EMG Needle (reusable): As reusable needles are not available in market so request to amend it to disposable Single Fiber EMG needle.	Accepted	Reusable/ disposable needle may be provided

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Revised

Technical Specification For 6 Channel Nerve Conduction Study and Evoked Potential System (EMG -NCS EP System)

A.	System Software – Should have all of following
1.	Support Microsoft windows 10 or above.
2.	Motor Nerve Conduction (MNC), sensory nerve conduction (SNC), Microneurography.
3.	Combined Sensory Index, Combined Motor and Sensory nerve conduction, silent period, MEP, TST (Triple stimulation technique)
4.	Inching studies, F-wave, H-reflex, Blink reflex (Electrical and Mechanical), repetitive Nerve Stimulation
5.	Reference Help
6.	Needle EMG, Multi-MUP Analysis, Peak Ratio Analysis, EMG Event Recorder, Single Fiber EMG, Stimulated SFEMG, Macro EMG
7.	AEP, SEP, VEP, OHL, Mid Latency EP, Long Latency EP, Flash VEP and Flash ERG/Electro-Occulogram
8.	P300, CNV
9.	Tremor Analysis
10.	Autonomic studies to include R-R interval with Metronome, sympathetic skin response (SSR)/ Galvanic skin response (GSR)
11.	Data should be repositioned, superimposed, or shown in a restore mode.
12.	The same data should simultaneously be display with different filter, sensitivity, and time base for optimal review of result, roll back and roll forward of traces.
13.	Free run EMG data and sound should be recorded for upto 960 second for 2 channel or 360 second for 6 channels.
14.	Graphical/Anatomical selection of tests.
15.	Data should be repositioned, superimposed, or shown in a restore mode.
16.	The same data should simultaneously be display with different filter, sensitivity, and time base for optimal review of result, roll back and roll forward of traces.

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17.	Stored data should be reanalyzed, digitally filtered, smoothed, inversed, summed, replayed, display as trends, in plots, frequency analysis, etc.
18.	The data should be storable in the standard format making it simple to export to other research or analysis programs.
19.	Should have averaging techniques to optimize the averaging results such as mean, exponential, median, threshold.
20.	Should also be possible to manually include or exclude data on a trace basis.
21.	There should be facility to go back and see the previously recorded responses and choose the best result for reporting.
22.	Facility for signal enhancer to improve the baseline drift and clean signal must be available in F-waves, option to hide M-portion is desired.
23.	Multiple exams should be organized into test folders ensuring simple and consistent examination even with the most complex diagnostic procedures or research setups.
24.	On-line result should give a compact clinical overview with links back to the raw data.
25.	Generate a summary of findings
26.	Should be setup by the user according to specific needs.
27.	Should have capability to capture the test screen both as a picture and as a movie that should be incorporated into reports, training material, publications, presentations etc.
28.	Should have an integrated data base with user defined patient demographics and visit information
29.	Diagnostic software should be available that could validate the integrity of the system and reports detailed system information regarding amplifier, base unit firmware etc.
30.	Should utilize remote support software to allow to view and remotely diagnose and service the system if possible.
31.	Should have option of re analyzing the EMG data (Video and Audio) offline.
32.	Complete EMG waveform should be replayed (Video and Audio) offline and export to AVI or WMP, which should be easily replayed on any PC without need of any external software.
33.	Should have option available to manipulate and re analyze MUP trigger and the data offline in EMG waveform.

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34.	Built-in / assembled audio speaker should be available for output of both live signals as well as playback of recorded data.
B.	**Amplifier**
1.	6 channel amplifier
2.	16-bit A/D or more analog to digital converter
3.	48KHz or more sampling rate per channel
4.	Should have common mode rejection ration more than 110 dB
5.	Common mode input impedance must be greater than 1000 M ohms
6.	Base unit should have inbuilt/ dedicated control panel
7.	Noise should be less than 0.7 micro volt RMS
8.	Low filter settings minimum 0.2Hz to at least 2 KHz and high filter settings 30 Hz to 10 KHz with AC interference notch filter 50 Hz.
9.	Gain should be adjustable from low to high division in 20 steps or more.
10.	Artifact rejection hardware for preventing the stimuli artifacts from saturation the amplifier
C.	**Electrical Stimulator**
1.	Output intensity should be set either to constant-voltage or constant-current mode delivering
2.	The Stimulus intensity should be stored for each trace
3.	Delivered stimulus should be monitored and "Short-circuit" ah "Open-circuit" conditions, should be indicated
4.	Deviation between requested and delivered stimulus current intensity should be indicated.
5.	Duration should be adjustable between 0.05-1ms
6.	Modes should be set to either monophasic or biphasic stimulation using single, Refractory, collision, Double, or Train
7.	The stimulus rate should be varied between: 0.06-100 stimuli per second (Hz).
8.	Electrical stimulator probe should be ergonomically design, small and comfortable to use. Should allow for direct control of stimuli parameters as well as of the examination

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	workflow using an integrated wheel and buttons. Should have control for stimulus intensity, start / stop, duration, polarity and move to next trace.		
D.	**Auditory Stimulator**		
1.	Type should be selected between click, tone, Pip and Tone Burst.		
2.	Intensity should be set between 0 to 139dBnHL pSPL, or 31 to 109dBSPL		
3.	nHL, depending on stimulus type, stimulus frequency, and transducer type.		
4.	Increment steps should be set between 0to 139dBnHLpSPL, or 31 to 109 dBSPL		
5.	nHL, depending on stimulus type, stimulus frequency and transducer type		
6.	Polarity should be set to: Condensation rarefaction, or alternating		
E.	**Visual Stimulator**		
1.	Should be possible to choose pattern stimulus color/black and white (foreground and background) and pattern intensity.		
2.	The pattern type should be selected from checks, bars, or gratings		
3.	The pattern should be full- field or partial- field (hemi, quadrants, eights, and sixteenths) with possibility to select the partial-field position.		
4.	The stimulator should calculate changes in check size, distance an visual angle		
5.	The stimulator should calculate changes in check size, distance an visual angle		
6.	Should be possible to choose the target size, position and choose between a static or a pulsating target.		
7.	LED flash rate should be set between 0.1-100 per second(Hz) with a duration between 1-500ms.		
F.	**System should be supplied with**		
1.	OEM Computer with atleast core i5 processor, SSD 1 TB, RAM 16GB, 21''TFT, Genuine Windows and MS office (Detailed IT specifications will be attached) - one		
2.	Should have SQL database with HL7 connectivity - one		
3.	Black and white laser printer (Detailed IT specifications will be attached.) - One		
4.	Imported trolley with castor/amplifier arm and system should be visa mount- One		
5.	**Following items should be provided as quoted**		
	Name of item	**Quantity**	**UOM**

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1.	6 channel EMG system with workstation and software as per specifications	1	Nos
2.	Shielded EP electrodes	10	sets
3.	Ring electrodes	5	Pairs
4.	Ground electrode disc type	4	Nos
5.	Ground electrode- Strap type	2 –Ped, 2 Adults	Set
6.	Recording electrodes cup	10	Set
7.	Conductive paste (250 gms)	200	Nos
8.	Skin preparation gel (114 gms)	40	Nos
9.	EMG disposable needles (Box of 25- Ped)	4	Boxes
10.	EMG disposable needles (Box of 25- Adult)	3	Boxes
11.	Single fibre EMG needle (reusable)	2	Nos
12.	Temperature probe – Reusable	2	Nos
13.	Acoustically shielded Head Phones – 1 No.	1	Nos
14.	Insert ear phones -2 No. with following buds • Reusable adult buds – 1 no. • Reusable Paed buds – 3 no. • Disposabel adult buds – 10 no. • Disposable Ped bus – 30 no	2	Sets
15.	17" VEP monitor	1	No
16.	LED goggles	1	No
17.	EMG needle holder – 1meter minimum	2	Nos
18.	Disposable needle electrode for SSEP	25	Nos
19.	Gold plated NCS/EEG electrodes with length 1.5mm or more	50	Nos
G.	**Compliance regulatory standards should have**		
1.	US FDA /ISO/CE/CDSCO/BIS approved		
2.	Warranty of equipment should be for 2 years followed by CMC for 8 years		
3.	Price for required consumables and accessories should be quoted separately and freeze for 5 years.		
4.	Water Resistant cover should be provided for the machine		

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H.	Trunkey work
1.	Patient Chair for VEP/BERA/ERG
2.	Wooden bed with mattress with pillow
3.	EMG reporting table with chair with printer

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