

NEUROMetrix



ADVANCE™
NCS/EMG System

NeuroMetrix, Inc.

Company Overview

- **NeuroMetrix was founded in 1996**
- **Publicly traded under NURO on the Nasdaq exchange**
- **NeuroMetrix's core competencies are in neurophysiology, biomedical engineering, and information technology.**
- **Original NCS technology developed at Harvard Medical School & Massachusetts Institute of Technology**
- **8+ Years Experience with NCS in the U.S. Marketplace**
- **Over 1,000,000 Patients Tested To Date**

Neurotechnology Platforms to Transform Patient Care

ADVANCE™ NCS/EMG System

ADVANCE is a comprehensive platform for the performance of nerve conduction studies and invasive electromyography procedures.

ADVANCE Features

- Nerve Conduction Studies
- Needle Electromyograph
- High Resolution Touch Screen
- Intuitive User Interface
- Exceptional Technical Specifications
- On-screen Display of Waveforms and Tabulated Results
- Comprehensive Report with Tabulation of Results and Waveforms



ADVANCE System

Unique Product Features

- High Capacity Lithium Ion Battery for off-mains use
- Memory stores 25 - 50 patient tests for remote & clinic use
- Compact size enhances portability
- Convenient carrying case
- Multiple electrode configurations including preconfigured Biosensors for study standardization
- Bluetooth connectivity to central communications hub facilitates downloading tests

ADVANCE System

The Most Advanced Technology

- Advanced electrophysiological amplifier and digital circuits for highly accurate nerve conduction waveforms
- Safest & most precise nerve stimulation circuitry
- Most advanced waveform analysis algorithms available for increased accuracy and reliability
- New functionality and software updates available remotely (no need to return device for upgrades)

ADVANCE System Functionality

Motor Nerve Conduction

- Distal motor latency, proximal motor latency
- Motor conduction velocity
- Compound muscle action potential amplitude, duration, area

F-waves

- Mean latency, minimum latency, maximum latency, chronodispersion
- Persistence, F/M-wave amplitude ratio, A-wave
- F-wave trace segmentation, support for multiple F-wave responses within traces
- Multiple stimulus count modes

Sensory and Mixed Nerve Conduction

- Distal sensory latency, sensory latency, mixed nerve latency
- Sensory and mixed nerve conduction velocity
- Sensory and mixed nerve action potential amplitude, duration
- Waveform averaging, stimulus artifact removal

Analysis

- Detection of electrode-skin interface and stimulation issues
- Detection of interference from artifact and noise, atypical waveform morphology
- Customizable reference ranges and management software
- Comparison of results to physician specified reference range data

Needle Electromyography

- Spontaneous activity, volitional activity
- Trigger to capture motor unit action potentials

ADVANCE™ NCS/EMG System

Nerve Conduction Studies

- 2 recording channels
- Precision electrical stimulator
- Interfaces with multiple electrode configurations
- Real time display of waveforms and tabulated results
- On-screen waveform cursor editing
- Advanced algorithms for analysis of F-wave responses



Needle Electromyography Module

- Interfaces with ADVANCE Device
- Easy access control panel
- Integrated speaker
- Automatic landscape mode for wide screen viewing
- Trigger Mode



ADVANCE Report & Networking

- Integrated Bluetooth® wireless communication provides seamless interface with the onCall Network for:
 - report generation
 - management of reference ranges
 - data management and archiving
 - device and report customization
 - automatic software upgrades



Item	Lot	Serial No.	Temp	Exp	Unit	Temp
Item					01	00000000
Temp					01	00000000

Item Condition Summary

All items on this order are fully inspected prior to shipment. If there is a problem with any item, please contact us immediately. We will replace any defective items at no charge. If you have any questions, please contact us at 1-800-828-8282.

Item	Lot	Serial No.	Temp	Exp	Unit	Temp
Item					01	00000000
Temp					01	00000000

ADVANCE System Accessories



Cart



Charger



Communications Hub



Proximal Adapter

ADVANCE System Electrodes

ADVANCE interfaces with:

- Preconfigured Biosensors which facilitate easy electrode placement
- Traditional Individually Placed Electrodes

Preconfigured
Biosensor



Intuitive User Interface

Simplified On-screen Data Entry

Name
ID

Enter Patient's Name

First

Last

Q W E R T Y U I O P
A S D F G H J K L '
Z X C V B N M , . -
SPACE DEL

← →

?

Name
ID

Select Patient's Gender

Male

Female

← →

?

Name
ID

Enter Patient's Birth Date

Month Day Year

7 8 9
4 5 6
1 2 3
0 DEL

← →

?

Name
ID

Enter Patient's ID

7 8 9
4 5 6
1 2 3
0 DEL

← →

?

Name
ID

Enter Patient's Height

ft in

7 8 9
4 5 6
1 2 3
0 DEL

← →

?

Name
ID

Enter Patient's Weight

lb

7 8 9
4 5 6
1 2 3
0 DEL

← →


?

NCS Test Sequence Detail

Name HALL, ROBERT
ID 1234
Sensor Cubital Left Test 1

Test in Progress


- ✓ Electrodes Operation Checked
- 🔄 Calibrating Stimulus Level: 3



Name HALL, ROBERT
ID 1234
Sensor Cubital Left Test 1

Test in Progress


- ✓ Electrodes Operation Checked
- ✓ Maximal Response Achieved
- 🔄 Processing Waveforms



Name HALL, ROBERT
ID 1234
Sensor Cubital Left Test 1

Test in Progress


- ✓ Electrodes Operation Checked
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- 🔄 Calibrating Stimulus Level: 2



Name HALL, ROBERT
ID 1234
Sensor Cubital Left Test 1

Test in Progress


- ✓ Electrodes Operation Checked
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- ✓ Maximal Response Achieved
- 🔄 Acquiring Waveforms:



Name HALL, ROBERT
ID 1234
Sensor Cubital Left Test 1

Test in Progress


- ✓ Electrodes Operation Checked
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- 🔄 Calibrating Stimulus Level: 2



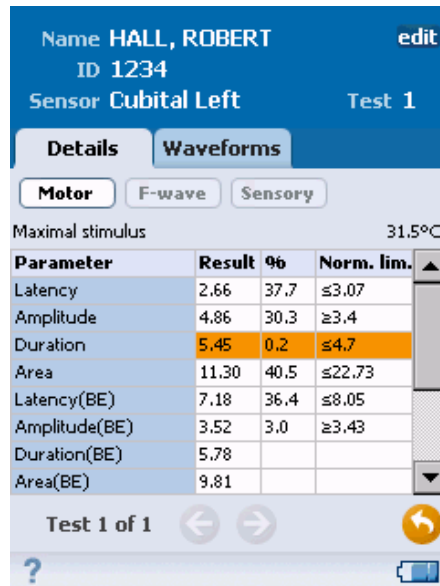
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ID 1234
Sensor Cubital Left Test 1

Test in Progress

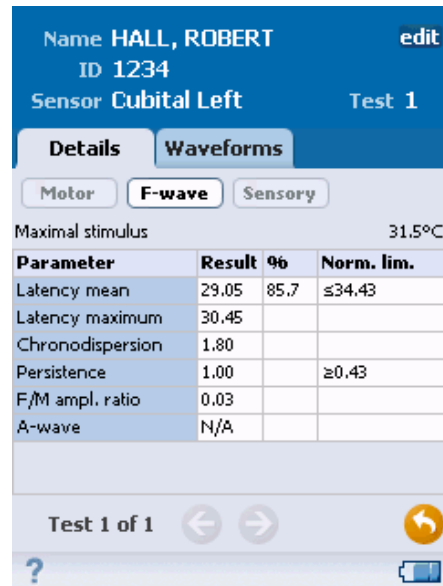
- ✓ Electrodes Operation Checked
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- ✓ Maximal Response Achieved
- ✓ Processing Completed
- ✓ Maximal Response Achieved
- 🔄 Acquiring Waveforms: 1



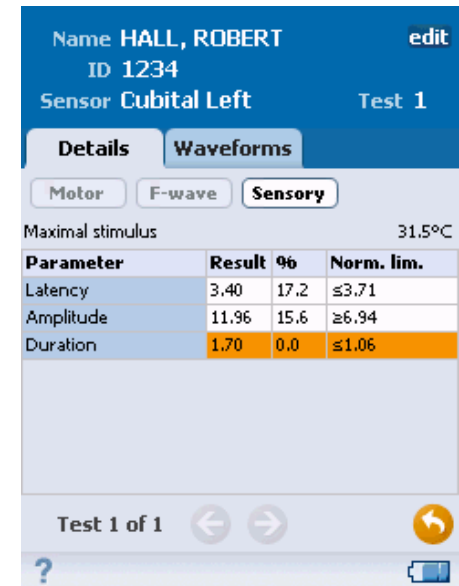
Reviewing Results



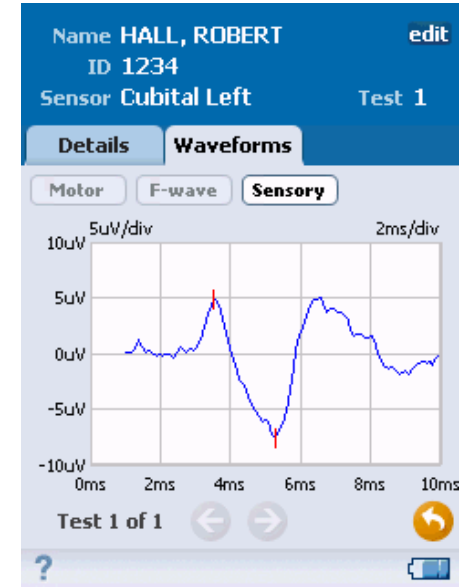
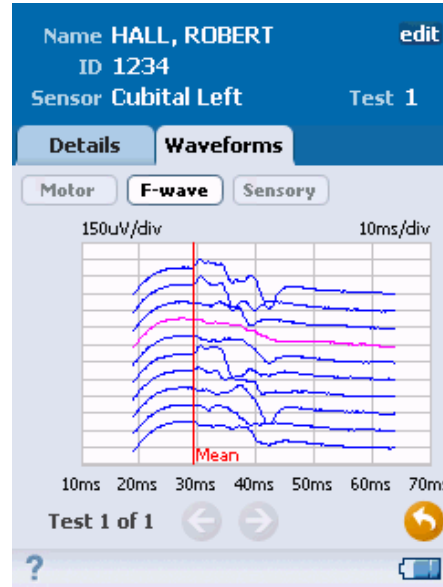
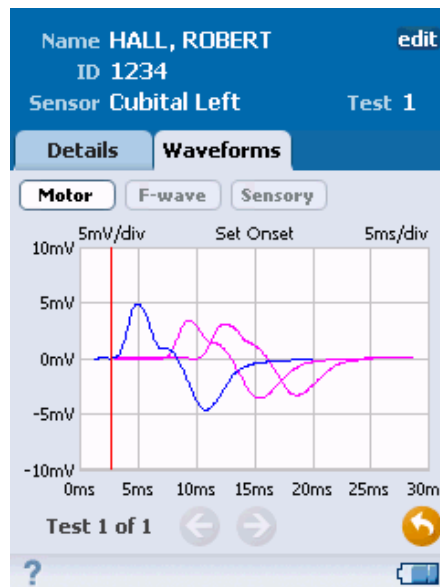
Motor



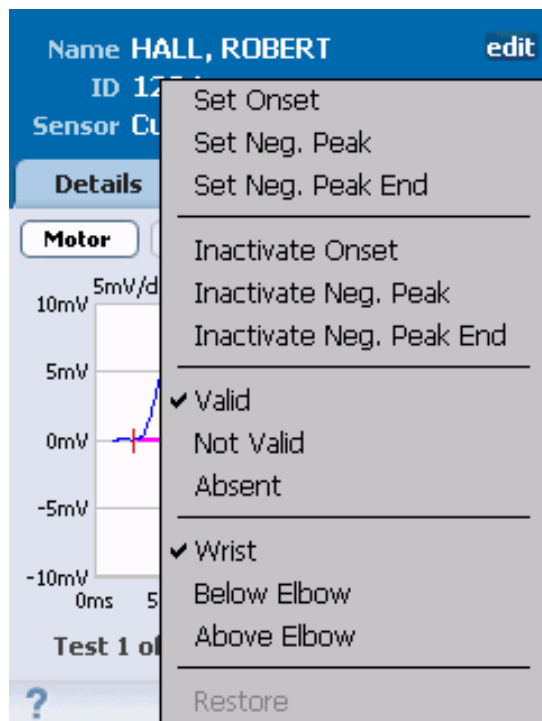
F-wave



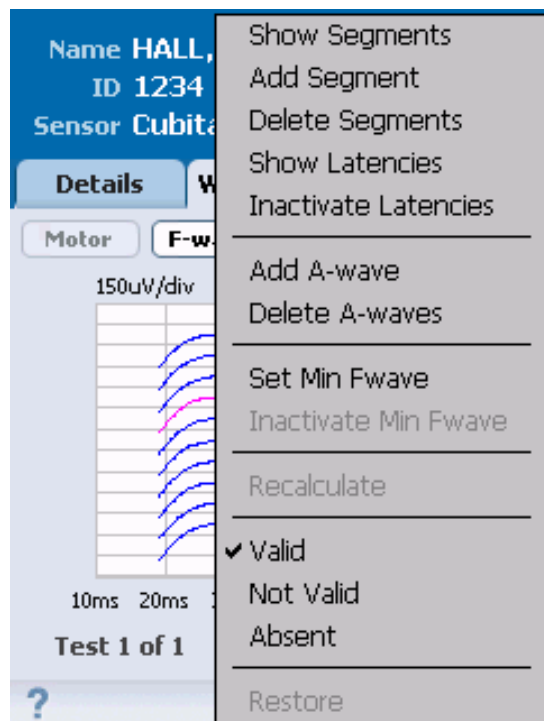
Sensory



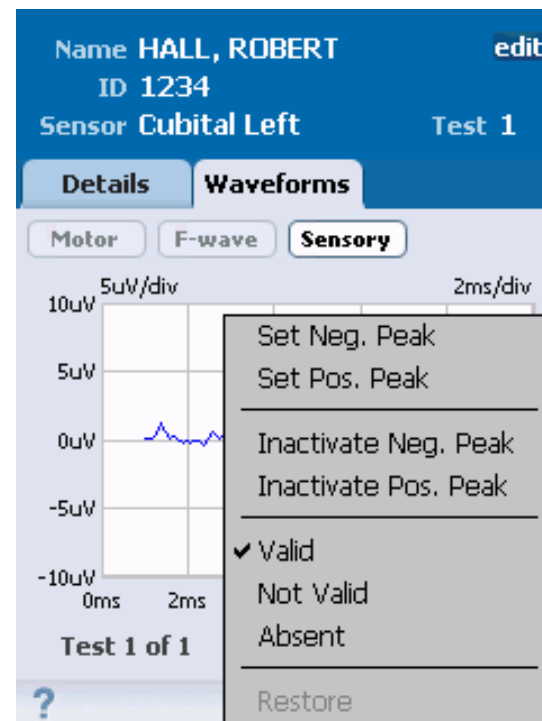
Cursor Editing Function



Motor

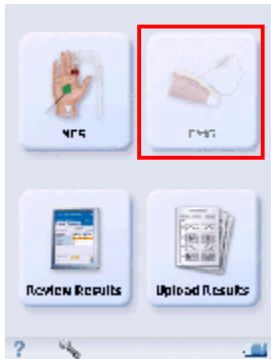


F-wave



Sensory

ADVANCE Needle EMG Module



- Interfaces with ADVANCE device
- Easy access control panel
- Integrated speaker
- Automatic landscape mode for wide screen viewing
- Trigger mode

ADVANCE Needle EMG



EMG Module
Control Panel



Communication with onCall Network

onCall Network – Enables:

- Report generation
- Management of reference ranges
- Data management and archiving
- Device and report customization
- Automatic software upgrades



- Bluetooth wireless from device to Communication Hub
- Communication Hub can be located anywhere (can hang on wall or be velcro adhered to any surface)
- Connects with analog phone line
- Device can communicate with Hub within 30 feet

ADVANCE NCS/EMG Report

NCS/EMG Report

Practice Name
Address
Address

Patient Name: XXXXXXXXXXXX
Patient ID: 9999
Birth Date: 8/14/1970

Office use:

Treating Physician: DR. MASON
Study Technician: MARY SMITH

Test Performed: 6/26/2008 4:21:03 PM
Data Stored: 6/26/2008 4:42:14 PM
Report Generated: 6/27/2008 3:07:41 PM

History: See patient chart.

Patient is a man 37 years of age, 6'0" and 198lbs. Nerve conduction study performed for evaluation of upper extremity symptoms (possibly suggestive of carpal tunnel syndrome).

Physical Examination: See patient chart.

Electrodiagnostic Study Methodology:

Nerve conduction study performed using equipment with the following technical specifications: Constant current stimulator (duration 100-300 usec, magnitude 0-100 mAmp, compliance >120 volt). Amplifier (two channels, common mode rejection >90 dB, noise <2 uV rms, gain to X100,000, filter high pass 14-175 Hz for motor and sensory recordings respectively, filter low pass >3 kHz, sampling rate 20 kHz). Nerve conduction response waveforms and cursors displayed and edited, as required, in real-time. Nerve conduction response parameters including latency, conduction velocity, amplitude, and waveform configuration displayed on LCD in real time.

NCS/EMG Report

Practice Name
Address
Address

Patient Name: XXXXXXXXXXXX
Patient ID: 9999
Birth Date: 8/14/1970

Nerves Tested:

Nerve	Left			Right		
	Test #	Serial No.	Temp.	Test #	Serial No.	Temp.
Median	#2	0010011ASG	31.0°	#4	00100067LH	31.0°
Ulnar	#1	0010017CRK	31.0°	#5	00100009G6	31.5°

Nerve Conduction Results:

Test	Result	Left Outside Norms. Limbs	%	Result	Right Outside Norms. Limbs	%	Normal Limit
Median							
DBL	4.03		37.03	3.71		66.77	<=4.80
CMAP Amplitude	3.61	X	0.58	3.43		11.67	>=1.24
MJED motor	1.46			1.17			<=2.16
F-wave (mean)	30.14		39.64	29.49		44.13	<=37.77
F-wave (maximum)	30.92			30.67			
F-wave Chronodispersion	1.52			1.37			
F-wave Persistence	0.96			0.67			>=0.43
F/M Amp. Ratio	0.91			0.93			
DSL	3.67			3.71			<=5.01
SNAP Amplitude	30.37		64.95	31.17		37.20	>=8.95
MJED sensory	0.73		33.62	0.68		35.41	>=1.35
Ulnar							
DBL	2.61		33.51	2.61		37.89	<=3.06
CMAP Amplitude	4.19		12.61	3.82		3.71	>=3.65
F-wave (mean)	31.08		33.43	30.15		41.13	<=33.79
F-wave (maximum)	32.17			33.17			
F-wave Chronodispersion	1.36			2.80			
F-wave Persistence	1.00			1.00			>=0.43
F/M Amp. Ratio	0.04			0.07			
DSL	3.13		61.61	3.10		65.18	<=3.89
SNAP Amplitude	26.91		61.85	25.62		56.73	>=8.15

*Reference data source: NeuroMetric2008 revision: 1.0

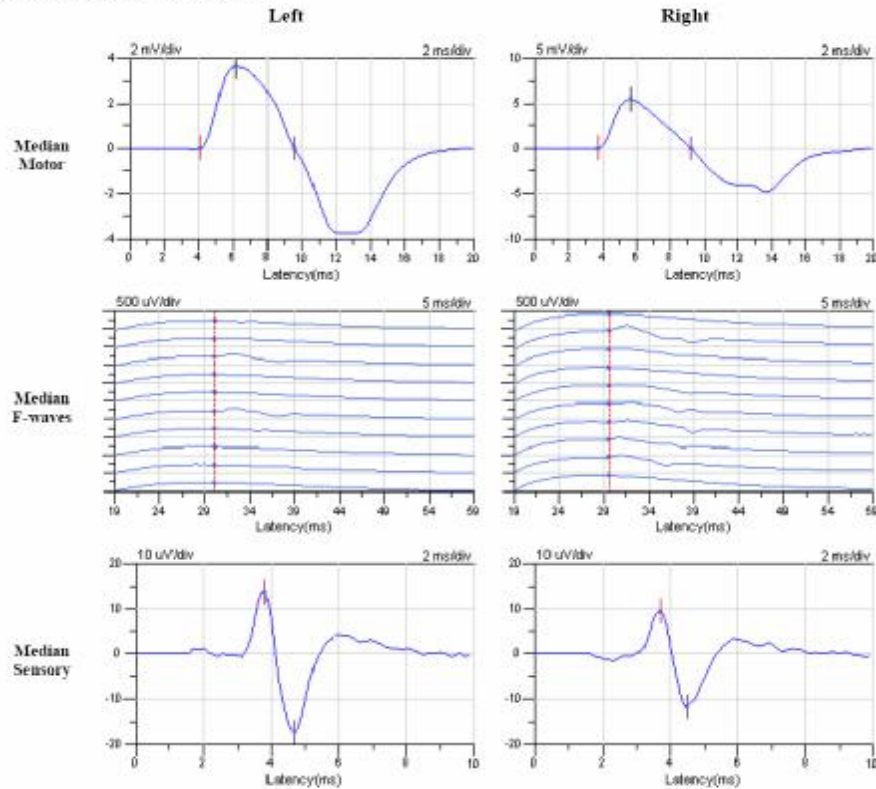
ADVANCE NCS/EMG Report

NCS/EMG Report

Practice Name
Address
Address

Patient Name: XXXXXXXXXXXX
Patient ID: 9999
Birth Date: 8/14/1970

Nerve Conduction Waveforms:

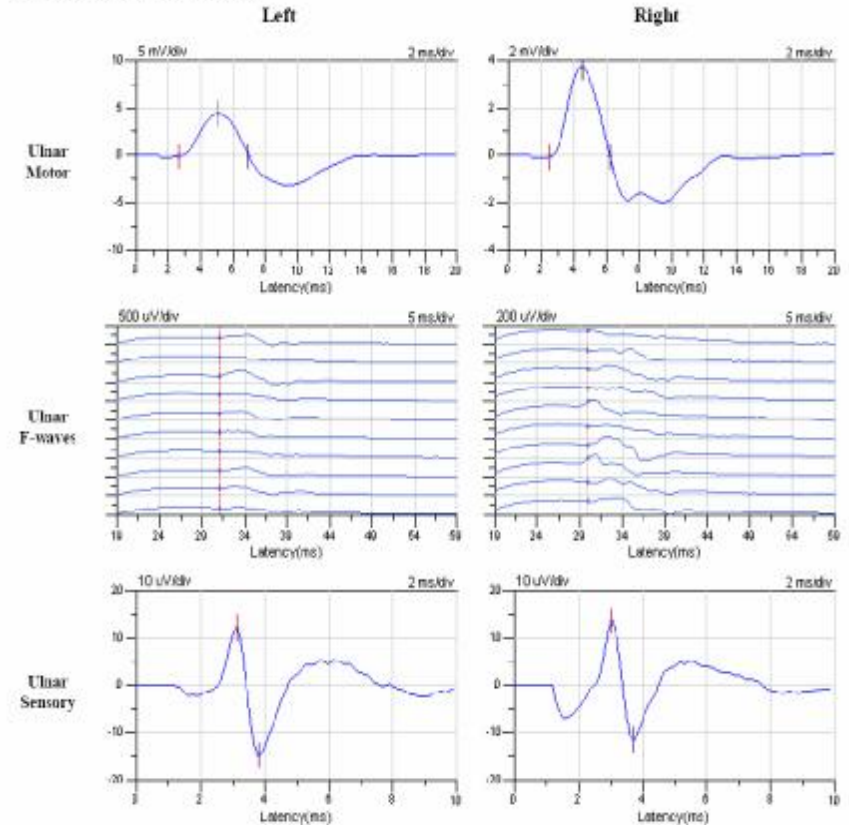


NCS/EMG Report

Practice Name
Address
Address

Patient Name: XXXXXXXXXXXX
Patient ID: 9999
Birth Date: 8/14/1970

Nerve Conduction Waveforms:



ADVANCE NCS/EMG Report

NCS/EMG Report

Practice Name

Address

Address

Patient Name: XXXXXXXXXXXX

Patient ID: 9999

Birth Date: 8/14/1970

Clinical Notes: See patient chart.

Physician Signature

Date

NeuroMetrix, Inc.

ADVANCE System Summary

- ADVANCE System – Unique Technology – Unique Product
- Nerve Conduction Study & Needle EMG Capability
- Highly Portable & Compact



Research Neurosciences

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