QUALITY ASSURANCE FOR MEDICAL DISPLAYS
NEC GammaCompMD QA Client and Network Administration Software

Consistent DICOM Imaging for More Confident Diagnosis and Review

Quality assurance is increasingly demanded for assessing display image quality with a reliable recording and documentation at varying time intervals. Particularly for those larger installations in a modern multi-disciplinary hospital, featuring numerous diagnostic workstations, keeping track of what has been measured and on which display and when, can become a full-time task.

It is well recognised that a good asset management programme gives an optimised return on investment, aids scheduling of routine maintenance and assists QA compliance.

The NEC GammaCompMD QA Quality Assurance Solution meets all challenges and demands head on by providing either an entry-level QA solution for small practices and clinics or a comprehensive solution for an entire hospital establishment.

GammaCompMD QA delivers confidence that your hospital wide diagnostic and clinical review displays all conform to the recognised DICOM standard.

A total quality assurance solution from calibration to reporting that allows you to concentrate first on patient care.
Quality Assurance (QA) sets out a process by which medical services and appliances can be objectively evaluated against a designated standard, documented and securely archived. Quality assurance in all forms of medical care is important to safeguard the well being of patients. As well as increasing patient confidence in a service it also ensures that healthcare professionals are knowingly providing care and services with un-compromised diagnostic confidence. Quality Assurance offers a win-win situation with best-practice patient care and healthcare professionals working to continuously improve their performance.

Quality Assurance of medical displays can be a time consuming process. Appropriately assessing image quality requires the use of various optical instruments, the results of each needing to be recorded and documented at varying time intervals. Depending on the size and equipment complexity in any installation, keeping track of all measurement data can quickly become an expensive and onerous task.

Quality Assurance also increasingly becomes a legal regulatory requirement and serves to provide an objective basis on which to judge should any medical malpractice occur or legal action be opened. Some local governments oblige hospitals to be able to present high-grade QA reports for medical display systems on demand and to archive them for many years. Any system which simplifies the important and vital quality documentation of a medical technique or application is welcome by all management levels in the healthcare system.

From a name to trust, a Quality Assurance solution to depend on.

As one of the largest global IT companies, NEC Display Solutions offers the widest range of medical display solutions in the market, supported by an unrivalled pan-European service network. NEC is the only leading medical display brand involved in the production of the medical LCD panels used in our MD Series through NLT Technologies Ltd.

NEC’s GammaCompMD QA is a powerful and comprehensive software tool to assist in maintaining, calibrating and documenting NEC diagnostic and clinical review monitors for Quality Assurance compliance. The tailored service solution allows comprehensive configuration and adjustment to meet individual display system requirements.

Quality Assurance Essentials

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GammaCompMD QA

TECHNICAL DISPLAY MANAGEMENT AND STANDARD QA ROUTINES

The powerful GammaCompMD QA software suite has been designed with an easy to use interface for the configuration, control and management of NEC medical displays. It additionally provides QA routines for compliance with different international standards like AAPM, IEC 62563 or the new DIN 6868-157.

The Display Overview tab presents a comprehensive overview of operational display information and the latest test results, plus straightforward access to the corresponding detailed test reports.

Long-term Partnership and Cooperation

The management and smooth running of a radiological department in any hospital is a huge responsibility. With its unique Pan-European network of qualified sales and service personnel, NEC provides all the tools, expertise and support to help you in the day-to-day demands of high quality patient care.

ASSET MANAGEMENT

The asset management features of GammaCompMD QA provide a comprehensive overview of all NEC displays and display controllers connected to the network. Information about the display number, model name, serial number, driver display controller, resolution, LUT and temperature of each connected display are presented. The asset data allows optimal scheduling of future hardware upgrade or new investment. An individual asset ID name can be setup for each display.
ADVANCED SECURITY

The NEC GammaCompMD QA Network Administration software is an intranet solution running on a server inside the hospital network. GammaCompMD QA is fully controlled by the own hospital ICT department and the absence of any external data transfers eliminates hospital IT security risks.

An automatic backup function in the GammaCompMD QA client saves settings and calibration and QA test reports, thus increasing data security and peace of mind. On the display level, the Display Lock function prevents the unauthorised changing of display settings in the OSD menu. To make sure that only authorized people have access to certain functions of the NEC software, you have different levels of accounts (administrator, power user, user).

AUTOMATED DICOM CONFORMANCE TEST AND CALIBRATION

Performing a DICOM conformance test or a calibration applying the automatically uploaded default settings per monitor type is just one mouse click away. If required, calibration parameters such as white and black luminance level, as well as chromaticity target value (x,y) and tolerance limits for white point control on NEC MD colour displays can be set, which maximises the image quality and DICOM consistency throughout the hospital. Regular users of GammaCompMD QA will appreciate the high level of automated procedures, with additional batch commands of selected actions, executed in auto mode, ensure even more productive work processes. Schedule Setup indicates when DICOM calibrations and conformance tests are scheduled for automated execution.

TREND VIEW

The trend viewer shows historical maximum DICOM GSDF deviations, white luminance and black luminance levels in a graphical representation. These data can be obtained from different sources such as calibration reports, conformance test reports, QA test reports and luminance measurements, or a combination of all.

DISPLAY MATCHING

White luminance and conformance test data from a source display can be easily copied to one or more target displays using the Display Matching function.

ALERTS AND NOTIFICATIONS

An automated e-mail (GammaCompMD QA Server only) or display notification system generates an alert when the result of the white luminance measurement or DICOM conformance test exceeds a predefined allowable deviation. Maximum uptime of all NEC displays throughout the hospital is assured.

QA ROUTINES


GammaCompMD QA offers besides acceptance tests (after initial display installation) and periodical constancy tests also a daily visual test routine. Under QA Test Reports you will find a comprehensive overview of the most recent execution date and the detailed results of previous QA test routines for a specific display. The AAPM and JESRA QA Test reports can be exported in HTML or CSV file format for electronic archiving. The DIN and IEC QA Test reports are available in PDF format.

NETWORK AND REMOTE ADMINISTRATION

The optional GammaCompMD QA Network Administration software is a secure software tool, fully controlled by the Clinical Physicist or ICT Manager, capable of performing remote technical display management using the front sensor of MD Series displays within the same VPN network, even over multiple sites. Web-Browser access to the GammaCompMD QA Network Administration software allows intervention from anywhere throughout the web, for example in response to an automated e-mail alert notification. This optional software is available in a license model, covering varying quantities of networked workstations as part of a PACS system.

SILENT INSTALL

GammaCompMD QA software includes a silent install function which allows installation, upgrade and uninstallation of the client software over the network.
Up-to-Date QA Compliance with All Key Regional Variations

A single system that meets the challenging requirements of QS-RL, IEC 62563-1, as well as AAPM guidelines in a straight-forward and easy to use way. GammaCompMD QA is frequently updated for new features or changes to guidelines and statutes. The new version is then available via download on the NEC Display Solutions Healthcare homepage (Closed User Group).

QUALITY ASSURANCE STANDARDS AND GUIDELINES

AAPM (American Association of Physicists in Medicine)
AAPM Task Group 18 (Imaging Informatics Subcommittee)
Assessment of display performance for Medical Imaging Systems
ACR-AAPM-SIIM Technical Standard for Electronic Practice of Medical Imaging

DIN V 6868-57: “Sicherung der Bildqualität in röntgendiagnostischen Betrieben; Teil 57: Abnahmeprüfung an Bildwiedergabegeräten”


QS-RL “Qualitätssicherungs-Richtlinie”

PAS 1054
Publicly Announced Standard (Germany)
*Anforderungen und Prüfverfahren für digitale Mammographie-Einrichtungen*

IEC 62563-1:2009
International Electrotechnical Commission
Medical electrical equipment — Medical image display systems
Part 1: Evaluation methods

JESRA X-0093
Japan Industries Association of Radiological Systems (JIRA)

EUREF
European Reference Organisation for Quality Assured Breast Screening and Diagnostic Services
www.euref.org

Included with MD and MDview Displays

The NEC GammaCompMD QA stand-alone Client software is included as standard with all NEC’s MD and MDview medical display solutions. The optional GammaCompMD QA Network Administration software is available in a license model, covering varying quantities of networked workstations as part of a PACS system. QAXRAY™ Pro licenses are available optionally on request.
GammaCompMD QA

A comprehensive solution for technical display management and high grade quality assurance compliant with AAPM TG18 and ACR guidelines plus IEC 62563-1, DIN V 6868-57, DIN 6868-157, German QS-RL and JESRA X-0093 regulations.

Lasting DICOM compliance and quality assurance solution for all your diagnostic and clinical review displays, as well as large format DICOM displays, maximising the image quality and consistency throughout the hospital.

Powerful time saving features including remote monitoring, auto calibration mode, web-based QA testing for easy configuration and connectivity. The automated email notification system allows timely preventive maintenance resulting in the highest uptime for all medical workstations.

Query, document, store and print medical quality records at the touch of a button.

<table>
<thead>
<tr>
<th>GammaComp MD QA Client Technical Specifications and Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HARDWARE</strong></td>
</tr>
<tr>
<td>Core2Duo 2 GHz or newer, 1 GB RAM, 500 MB of free hard disk space</td>
</tr>
<tr>
<td><strong>DISPLAY CONTROLLER BOARD(S) FOR NEC MD SERIES DISPLAY MODELS</strong></td>
</tr>
<tr>
<td>NEC Supplied Matrox RAD, RAD LPX, MED and Xenia Series</td>
</tr>
<tr>
<td>NEC Supplied Nvidia Quadro FX / Quadro / NVS Series</td>
</tr>
<tr>
<td>NEC Supplied ATI/AMD FirePro Series</td>
</tr>
<tr>
<td><strong>ATTACHMENT OF DISPLAYS</strong></td>
</tr>
<tr>
<td>One (1) to five (5) MD Series Displays or NEC MDview Series Displays</td>
</tr>
<tr>
<td><strong>OPERATING SYSTEMS</strong></td>
</tr>
<tr>
<td>MS Windows XP Professional SP2 or later, MS Windows 7 Professional SP1 or later, Windows 8/8.1 Professional</td>
</tr>
<tr>
<td><strong>COMPATIBILITY INFORMATION</strong></td>
</tr>
<tr>
<td>GammaCompMD QA is fully compatible only with NEC MD Series Displays and MDview Series Displays with a minimum display resolution of 1280 x 1024 pixels.</td>
</tr>
</tbody>
</table>

Comprehensive Hospital-Wide QA Network
Now all test parameters – as laid down by international standards authorities – can be queried, documented, stored and printed out at a touch of a button.

The QAXRAY™ Pro solution allows for high-grade Quality Assurance guaranteeing consistent image quality across the radiological imaging chain, and is available in several variants. QAXRAY™ offers QA routines for the German QS-RL (DIN V 6868-57 / DIN 6868-157 acceptance test, constancy test, daily/weekly visual test) and for the international standard IEC 62563-1 (acceptance test, constancy test, visual test). The QAXRAY™ modular system is so flexible that, for example the very latest regional regulations can be interpreted and incorporated within a very short period of time after publication and automatically made available to all users (if the appropriate maintenance contract is in place).

SPEED UP AND SIMPLIFY YOUR WORKFLOW

The QAXRAY™ Pro solution integrates powerfully into your local network environment. The key features and benefits of QAXRAY™ Pro are as follows:

- Unified QA workflow with efficient documentation of all medical displays realising cost and time savings
- Centrally stored test reports on an intranet server
- Test Images with Data Entry Wizard
- Simple organisation of reports and document
- Test reports are stored in pdf-format and are “ready to print”
- Always up-to-date QA Documentation
- Compatibility with non NEC branded displays

READY TO PRINT PDF REPORTS

QAXRAY™ Pro generates a PDF report for each completed test form that can be printed using a PDF reader. A single report is generated for each diagnostic monitor.

ORGANISE YOUR ENVIRONMENT AND QA DOCUMENTS

The QAXRAY™ Pro hierarchical arrangement of hospital department or workstation group of diagnostic display assets and is designed to reflect your organisational structure. Security level based access routines enable staff to work only on those data records for which they are responsible, whilst authorised personnel can have access to the data they need.

TEST IMAGES WITH THE DATA ENTRY WIZARD

The Data Entry Form includes a wizard for easier and quicker completion. A simple and intuitive interface allows users to measure values immediately from the test image without using the mouse, so the other free hand can be used to handle measuring equipment. On completion of the test image sequence the wizard automatically completes the data entry form with the collected data.

Special measurement devices can be connected to USB and transfer automatically the measured data to the database; this increases the efficiency because it takes less than manual entering of the values and additionally ensures more accurate values.
OVERVIEW OF CALIBRATION SENSORS

The optional MDSVSENSOR3 is positioned manually in the centre of the display for individual DICOM calibration and QA routines. A single MDSVSENSOR3 can serve a complete hospital site. The integrated front sensor of the NEC MD Series displays is used for automatic backlight stabilisation, as well as DICOM calibration and other technical display management routines as stand-alone or remotely using the GammaCompMD QA Network Administration software.

STAND-ALONE CALIBRATION FEATURE

The On Screen Display (OSD) Menu of the NEC MD Series includes a unique stand-alone calibration routine, which allows the self-calibration of the monitor or copy calibration settings from another monitor connected to the same workstation, without the need for any operating system or PC-based calibration application. This unique feature allows external calibration of NEC MD Series displays which are connected to modalities, Linux workstations or other PC operating systems not compatible with the standard calibration application.

A self-calibration is easily performed by connecting an MDSVSENSOR3 calibration device (placed on the centre of the display panel) to the display’s right USB port and starting the procedure in the monitor OSD. During a copy calibration the white point (MD21xC2/MD21xC3, MD302C4, MD322C8) and white luminance of a source display are matched with a target display. The stand-alone calibration feature is available in the OSD Menu of the NEC MD21xC2/MD21xC3, MD242C2, MD302C4 and MD322C8 displays.
HOSPITAL WIDE QUALITY ASSURANCE

NEC GammaCompMD QA Client and Network Administration Software

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