Unsurpassed **Performance**

As reading environments migrate from light boxes to soft copy displays, radiologists are challenged by the need to compare digital mammograms to prior screen-film images. To satisfy this need, Hologic continues to provide solutions for digitizing analog films. DigitalNow digitizes films for soft copy display to allow prior screen-film images to be displayed on the same workstation side-by-side with digital images, which can then be sent to an archival system to be retrieved when needed. DigitalNow provides the best image quality and is against film handling as it is the industry.

**Separate Operating Points For Masses and Calcifications**

Flexible operating points for digital mammography provide flexible operating point selections, allowing the software to be adapted to the radiologist’s reading preferences. Three separate operating points (paired sensitivity/false marker false rate) can be selected for both microcalcifications and masses, for combinations in all. For example, a site can choose an operating point for the highest sensitivity for microcalcifications while selecting another operating point (balance performance) for masses, resulting in a lower overall false marker rate, providing an algorithm for the way radiologists prefer to work.

**BREAST CANCER DETECTION**

The **Smart Choice is R2 Digital CAD**

Hologic is defining the standard of care in women’s health. Our technologies help doctors see better, know sooner, reach further and touch more lives. At Hologic, we turn passion into action, and action into change.
ImageChecker provides the lowest false marker rate at on full-field digital mammography (FFDM) images, developed to deliver powerful detection performance available for the next generation of workstations. This software and off with the press of a button on the digital mammography reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

High Precision CAD Marks

RightOn CAD marks are designed to pinpoint regions of interest, efficiently drawing the radiologist's eye to important image features.Calcification clusters are marked with the familiar R2 triangle and masses are marked with the R2 asterisk. The RightOn mark type contains prominent features of both mass and calcifications.

Citra For Earliest Detectors, and Better Results

Citra is Hologic's powerful new suite of advanced CAD tools for digital mammography. It’s a major evolution in detecting small cancers, and it’s now available for your system. Citra tools include:

- **EmphaSize** marks are displayed in variable size correlating for the prominence of both mass and calcification features. When the algorithm determines that a region contains more prominent features, the CAD mark increases in size. The EmphaSize2 marks are displayed in variable sizes correlating for the prominence of both mass and calcification features. For masses, the algorithm evaluates key characteristics such as degree of spiculation, lesion shape, and edge texture. As the prominence of these features increases, the algorithm enlarges the size of the mark. If a region contains both a mass and calcifications, ImageChecker CAD produces a McIntyre mark and creates the mark depending upon the prominence of both masses and calcifications.
- **Breast Geometry** provides gross assessment of breast anatomy including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.
- **LesionMetrics** provides additional information about each region, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

Breast Geometry Anatomic Segmentation

Sophisticated CAD Solutions for Advanced Workstations

EmphaSize **variable size CAD Marks**

EmphaSize marks are displayed in variable sizes correlating for the prominence of both mass and calcification features. When the algorithm determines that a region contains more prominent features, the CAD mark increases in size. The EmphaSize2 marks are displayed in variable sizes correlating for the prominence of both mass and calcification features.

EmphaSize marks are displayed in variable sizes correlating for the prominence of both mass and calcification features. When the algorithm determines that a region contains more prominent features, the CAD mark increases in size. The EmphaSize2 marks are displayed in variable sizes correlating for the prominence of both mass and calcification features.

Breast Geometry provides gross assessment of breast anatomy including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

LesionMetrics **detected lesion highlights**

LesionMetrics provides additional information about each region, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

Breast Geometry Anatomic Segmentation

Sophisticated CAD Solutions for Advanced Workstations

EmphaSize **variable size CAD Marks**

EmphaSize marks are displayed in variable sizes correlating for the prominence of both mass and calcification features. When the algorithm determines that a region contains more prominent features, the CAD mark increases in size. The EmphaSize2 marks are displayed in variable sizes correlating for the prominence of both mass and calcification features.

EmphaSize marks are displayed in variable sizes correlating for the prominence of both mass and calcification features. When the algorithm determines that a region contains more prominent features, the CAD mark increases in size. The EmphaSize2 marks are displayed in variable sizes correlating for the prominence of both mass and calcification features.

Breast Geometry provides gross assessment of breast anatomy including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

LesionMetrics **detected lesion highlights**

LesionMetrics provides additional information about each region, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.
ImageChecker CAD for Digital Mammography

Hologic - Defining the Standard of Care in Women's Health

Breast Cancer Detection

ImageChecker CAD provides additional information about each region, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin consistent with spiculations.

Breast Density Analytic Segmentation

Breast density provides important guidance to both radiologists and patients concerning the risk of breast cancer. From a patient perspective, breast density information can be helpful in tailoring mammography follow-up or surveillance strategies. For the physician, this information may inform the decision to perform additional imaging or clinical evaluation for women with dense breasts.

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in work-up rates. Improvement in radiologist performance using R2 CAD has been shown to increase breast cancer detection rates of 4.7 percent to 19.5 percent more cancers.4,5,6,7 Including Freer's paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practice have shown that the use of ImageChecker CAD resulted in the detection of 11.7 percent to 14.7 percent more cancers.8,9

More than 30 additional peer-reviewed papers and abstracts further validate the performance of ImageChecker mammography CAD. In a prospective study 5, for detection rates for small, invasive breast cancer (less than 2 cm) a statistically significant increase of 42% was observed with R2 CAD versus usual care which was not statistically significant.

Continuously improving our CAD Algorithms

Hologic is currently developing the next generation of ImageChecker CAD algorithms. Digital mammography is constantly evolving, and Hologic is constantly adapting to identify and implement innovations that further improve ImageChecker CAD as the standard of care in screening mammography.

Extensive Clinical Validation

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in work-up rates. Improvement in radiologist performance using R2 CAD has been shown to increase breast cancer detection rates of 4.7 percent to 19.5 percent more cancers.4,5,6,7 Including Freer's paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practice have shown that the use of ImageChecker CAD resulted in the detection of 11.7 percent to 14.7 percent more cancers.8,9

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD.
ImageChecker CAD algorithms. Digital mammography is constantly evolving and Hologic is committed to delivering flexible workflow options. ImageChecker CAD offers advanced tools such as pinpointing regions-of-interest and increased flexibility for radiologists workstations. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker for Digital Mammography

Citra, Hologic’s powerful new suite of advanced CAD tools for Calcification, Cluster, High Prominence, Low Prominence

High Precision CAD Marks

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in workup rates. Improvement in radiologist performance using R2 CAD was first demonstrated via a prospective clinical study published in 2003, including Feier’s paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practices have shown that use of ImageChecker CAD resulted in the detection of 1.75 to 10.45 percent more masses,10–12.

Extensive Clinical Validation

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet concluded that “CAD appears to be an effective alternative that provides similar, and potentially greater, benefits.”9

LassiterNet - Detailed lesion highlights

LassiterNet provides additional information about each lesion, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

Breast Density Analytic Segmentation

Breast density analytic segmentation is an innovative feature of breast outlines and nipple position in that it automatically calculates radiologist reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker® computer-aided detection (CAD) for digital mammography is designed to offer the highest levels of detection performance, in combination with flexible workflow options. R2 ImageChecker CAD algorithms such as pinpointing regions-of-interest and increased flexibility for radiologists reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker CAD for Digital Mammography

High Precision CAD Marks

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in workup rates. Improvement in radiologist performance using R2 CAD was first demonstrated via a prospective clinical study published in 2003, including Feier’s paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practices have shown that use of ImageChecker CAD resulted in the detection of 1.75 to 10.45 percent more masses,10–12.

Extensive Clinical Validation

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet concluded that “CAD appears to be an effective alternative that provides similar, and potentially greater, benefits.”9

LassiterNet - Detailed lesion highlights

LassiterNet provides additional information about each lesion, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

Breast Density Analytic Segmentation

Breast density analytic segmentation is an innovative feature of breast outlines and nipple position in that it automatically calculates radiologist reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker® computer-aided detection (CAD) for digital mammography is designed to offer the highest levels of detection performance, in combination with flexible workflow options. R2 ImageChecker CAD algorithms such as pinpointing regions-of-interest and increased flexibility for radiologists reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker CAD for Digital Mammography

High Precision CAD Marks

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in workup rates. Improvement in radiologist performance using R2 CAD was first demonstrated via a prospective clinical study published in 2003, including Feier’s paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practices have shown that use of ImageChecker CAD resulted in the detection of 1.75 to 10.45 percent more masses,10–12.

Extensive Clinical Validation

A recent major study by Dr. Matthew Gromet of the Breast Imaging Section of Charlotte Radiology, compared the recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet found that a single reader with CAD had a statistically significant increase in sensitivity (11%) and a smaller increase in recall rate (4%), when compared to a single reader without CAD assistance. The study also found that single reading with CAD review, when compared with independent double reading, resulted in a not statistically significant increase in sensitivity but with a statistically significant lower recall rate, sensitivity, positive predictive value, and cancer detection rate for single reading with CAD versus double reading without CAD. Dr. Gromet concluded that “CAD appears to be an effective alternative that provides similar, and potentially greater, benefits.”9

LassiterNet - Detailed lesion highlights

LassiterNet provides additional information about each lesion, including the prominence of certain features that are key to the algorithm. For example, it measures the prominence of the lesion within the breast, and indicates values such as the fraction of lesion margin considered spiculated.

Breast Density Analytic Segmentation

Breast density analytic segmentation is an innovative feature of breast outlines and nipple position in that it automatically calculates radiologist reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker® computer-aided detection (CAD) for digital mammography is designed to offer the highest levels of detection performance, in combination with flexible workflow options. R2 ImageChecker CAD algorithms such as pinpointing regions-of-interest and increased flexibility for radiologists reading preferences. CAD marks can be easily toggled on and off with the press of a button on the digital mammography workstation. And, with a range of software options already available for the next generation of workstations, this software is ready for the future.

R2 ImageChecker CAD for Digital Mammography

High Precision CAD Marks

R2 CAD is the only mammography CAD system that has been clinically validated via prospective studies to significantly improve detection performance without a significant increase in workup rates. Improvement in radiologist performance using R2 CAD was first demonstrated via a prospective clinical study published in 2003, including Feier’s paper, a total of 3 independent, prospective peer-reviewed clinical studies from academic and community practices have shown that use of ImageChecker CAD resulted in the detection of 1.75 to 10.45 percent more masses,10–12.
As reading environments migrate from light boxes to soft copy displays, radiologists are challenged by the need to compare digital mammograms to prior screen-film images. To satisfy this need, Hologic continues to provide solutions for digitizing analog films. DigitalNow digitizes films for soft copy displays to allow prior screen-film images to be displayed on the workstation side-by-side with digital images, which can then be sent to an archival system to be reviewed under windowed, digitized views. This preserves the best image quality in grayscale and color within the industry.

Separate Operating Points For Masses and Calcifications

DigitalNow CAD for digital mammography provides flexible operating point selections, allowing the software to be adapted to the radiologists’ reading preferences. Three separate operating points (paired sensitivity/false marker rate) can be selected for each mammographic view, allowing nine combinations in all. For example, a site can choose operating point 2 (the highest sensitivity) for microcalcifications while selecting operating point 0 (balanced performance) for masses, resulting in the lowest overall false marker rate, providing an algorithm for the way radiologists prefer to work.

Hologic is defining the standard of care in women’s health. Our technologies help doctors see better, know sooner, reach further and touch more lives. At Hologic, we turn passion into action, and action into change.
Hologic is defining the standard of care in women’s health. Our technologies help doctors see better, know sooner, reach further and touch more lives. At Hologic, we turn passion into action, and action into change.

Unsurpassed Performance

As reading environments migrate from light boxes to soft copy displays, radiologists are challenged by the need to compare digital mammograms to prior screen-film images. To satisfy this need, Hologic continues to provide solutions for digitizing analog films. DigitalNow digitizes films for soft copy display to allow prior screen-film images to be displayed on the workstation side-by-side with digital images, which can then be sent to an archival system to be retrieved when needed. DigitalNow provides the best image quality and superior film handling capability in the industry.

Separate Operating Points For Masses and Calcifications

DigitalNow CAD for digital mammography provides flexible operating point selections, allowing the software to be adapted to the radiologists’ reading preferences. Three separate operating points (paired sensitivity/false marker rate pairs) can be selected for both microcalcifications and masses, with combinations in all. For example, a site can choose operating point 2 (the highest sensitivity) for microcalcifications while selecting operating point 1 (balanced performance) for masses, resulting in a lower overall false marker rate, providing an algorithm for the way radiologists prefer to work.

The Smart Choice

is R2 Digital CAD

BREAST CANCER DETECTION

B-CAD-002 (07/08) US/International © 2008 Hologic Inc. All rights reserved. R2, ImageChecker, PeerView, Malc, EmphaSize, RightOn, SecurView, DigitalNow, Citra, LesionMetrics and associated logos are trademarks and/or registered trademarks of Hologic Inc. and/or its subsidiaries in the United States and/or other countries.