

***World First Slim Cassette Type
Digital Mammo. Upgrade Solution***



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- Specifications
- AEC Compatibility



Company Information

Company Name

DRTECH Corp.

Establish Date

Apr. 11, 2000

HQ

R&D HQ - Korea
Factory - Korea

Business & Product Portfolio

General Radiography
Mammography
Veterinary
EOD/NDT
Mobile System
Portable Accessories

Employees

152 (Nov. 2016)

Global Operations

DRTECH Shanghai Co., Ltd
DRTECH America Service Center
DRTECH R&D Office of America
DRTECH Europe GmbH
DRTECH Sales Office of Turkey

Exprimer

Indirect FPD Solutions

A graphic for Exprimer Indirect FPD Solutions featuring several overlapping, semi-transparent blue rectangular panels of varying sizes and orientations, set against a background of vibrant, splattered colors in shades of blue, purple, and pink.

Rose M

Mammography Solutions

A graphic for Rose M Mammography Solutions showing a computer monitor displaying a dark image, a mammography machine, and a person's arm. The text "SYSTEM INTEGRATION" is written in orange, "76µm" in grey, and "UPGRADE" in white.

FLAATZ

Direct FPD Solutions

A graphic for FLAATZ Direct FPD Solutions featuring a dark rectangular panel with a white crosshair in the center. The word "SELENIUM" is written in large, light grey letters across the right side, and "PORTABLE" is written in white at the bottom left.

TRUVIEW

Image Processing Software

A graphic for TRUVIEW Image Processing Software showing a computer screen displaying a chest X-ray image. Below the screen, there are two smaller images showing processed or zoomed-in views of the X-ray.

Product Portfolio

Exprimer

- EVS 3643 Wireless
- EVS 4343 Wired
- EVS 2430 Wireless/Wired



- F600
- F560
- F760
- F500
- F750E
- F330



- RSM 1824C
- RSM 2430C
- RSM 1824TD
- RSM 2430TD
- RSM 2430UD Under Development

ECONSOLE1 General Radiography

- EConsole1 + Truview® ART

ECONSOLE1 VET Veterinary

- EConsole1 Vet + Truview® ART

Veterinary System

- CUVIC 56

Portable Solution

- PCP Portable Console PC
- WPCS Wireless Power Charging System

R CONSOLE1 Mammography

- RConsole1 + Truview® ART



What is **RoseM**?

DRTECH's latest innovation that introduced the concept of '**Retrofit**' to the mammography market!
With **RoseM**, an Analog System is **instantaneously upgraded** to a digital system.



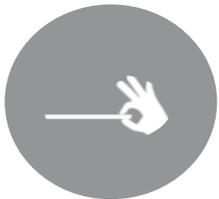
Easy Upgrade

Simply insert RoseM into the existing bucky of an analog system for an **Easy Upgrade** to digital



Excellent Image Quality

76um pixel size with Truview[®] ART image processing algorithm; ensures acquisition and processing of **high quality image quality** paralleling top-tier Digital Mammo. Systems



Slim Cassette Size

Perfect compatibility with analog mammo. systems **the size of RoseM is equal to any Film or CR IP(Imaging Plate) cassettes available** on the market.



Perfect AEC Calibration

Designed to be compatible with AEC sensor of all existing analog systems.



What is *RoseM*?

Proven and **Reliable** Technology Approved by Regulatory Authorities

RSM1824C



RSM2430C

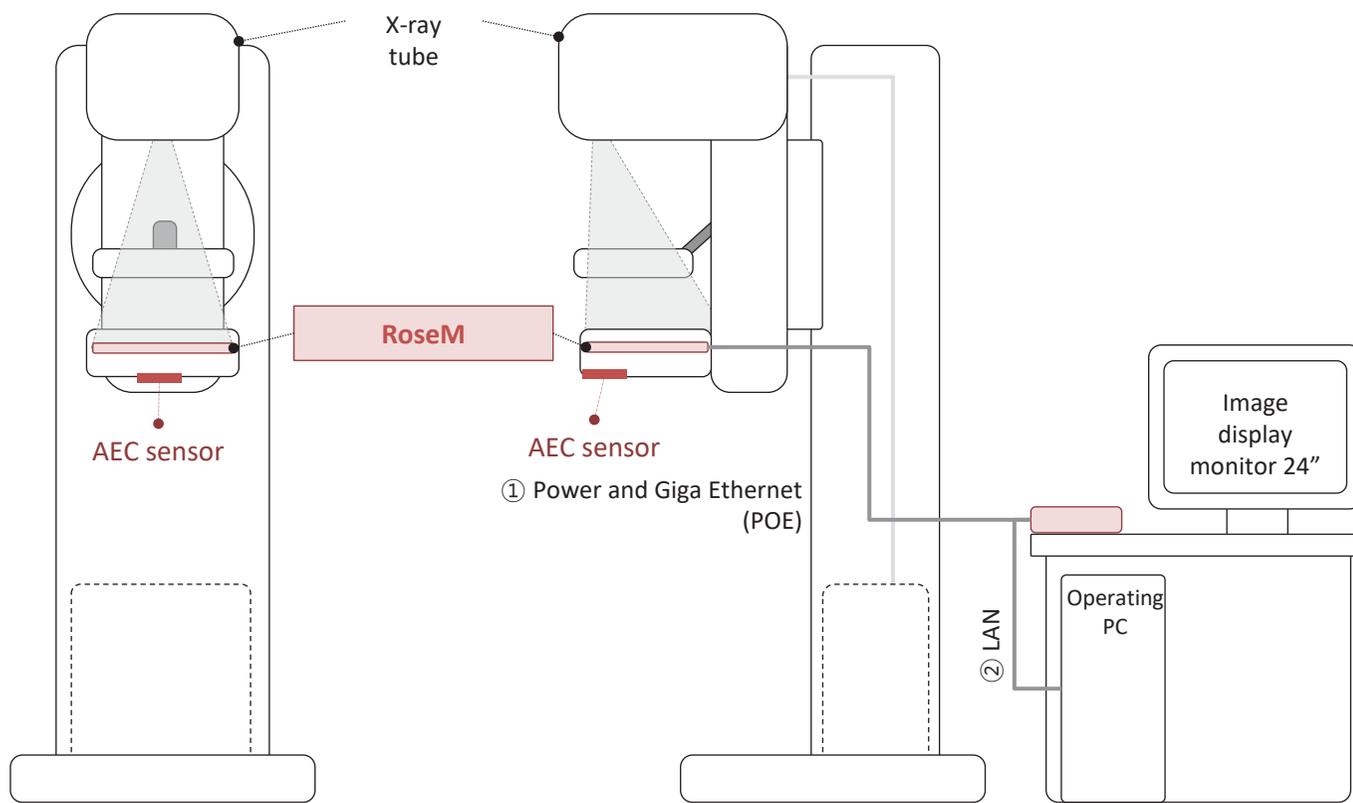


What is **RoseM**?

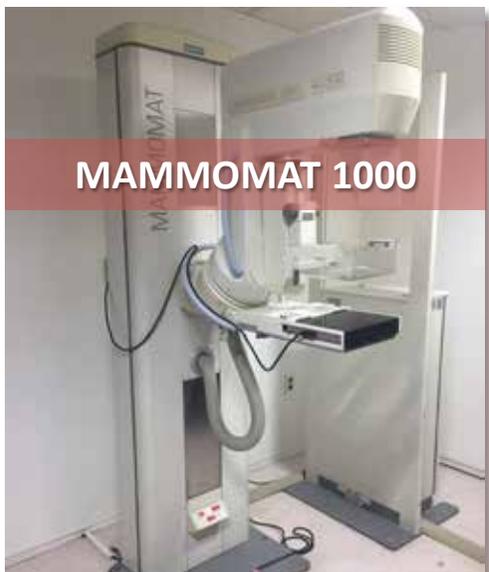


Perfect AEC Compatibility with any Analog System

AEC Compatibility technology Patent registered and approval pending



RoseM Site Installation Photos



MAMMOMAT 1000



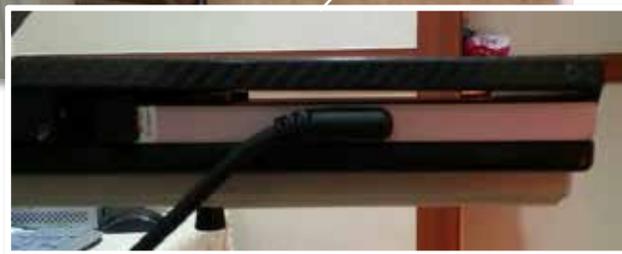
Genoray MX Series



GE Alpha ST Series



MAMMOMAT 3000 Nova



GE Performa Series

How does **RoseM** operate?

	Rose M	Other methods
DR Upgrade Method summary	Same as CR or Film cassette	Entire bucky change and x-ray signal integration for PC SW required
Changing part	None, only AEC Calibration needed like CR or Film cassette	Whole Bucky with DR Mammo detector or modify the bucky for cable connecting Electronic board for X-ray signal integration with detector Cables for interconnecting X-ray generator to Detector Cables for interconnecting X-ray generator to PC
Certification	CE, MFDS, FDA cleared	Not cleared, Needed to be checked
Compatibility	All analogue system	Only system maker can modify
Time for install	Same as CR install (Several hours)	Long time to modify all X-ray system

Going Digital with RoseM

01 Digital Upgrade Solution

“Reengineer your old Mammo system with digital benefits of RoseM”



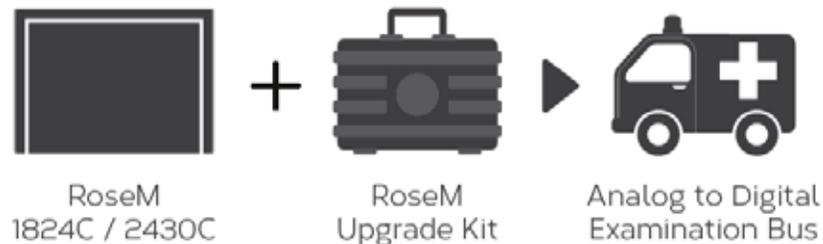
02 New Digital Equipment

“Get a new Digital system with benefits of RoseM”



03 Mobile Health Buses

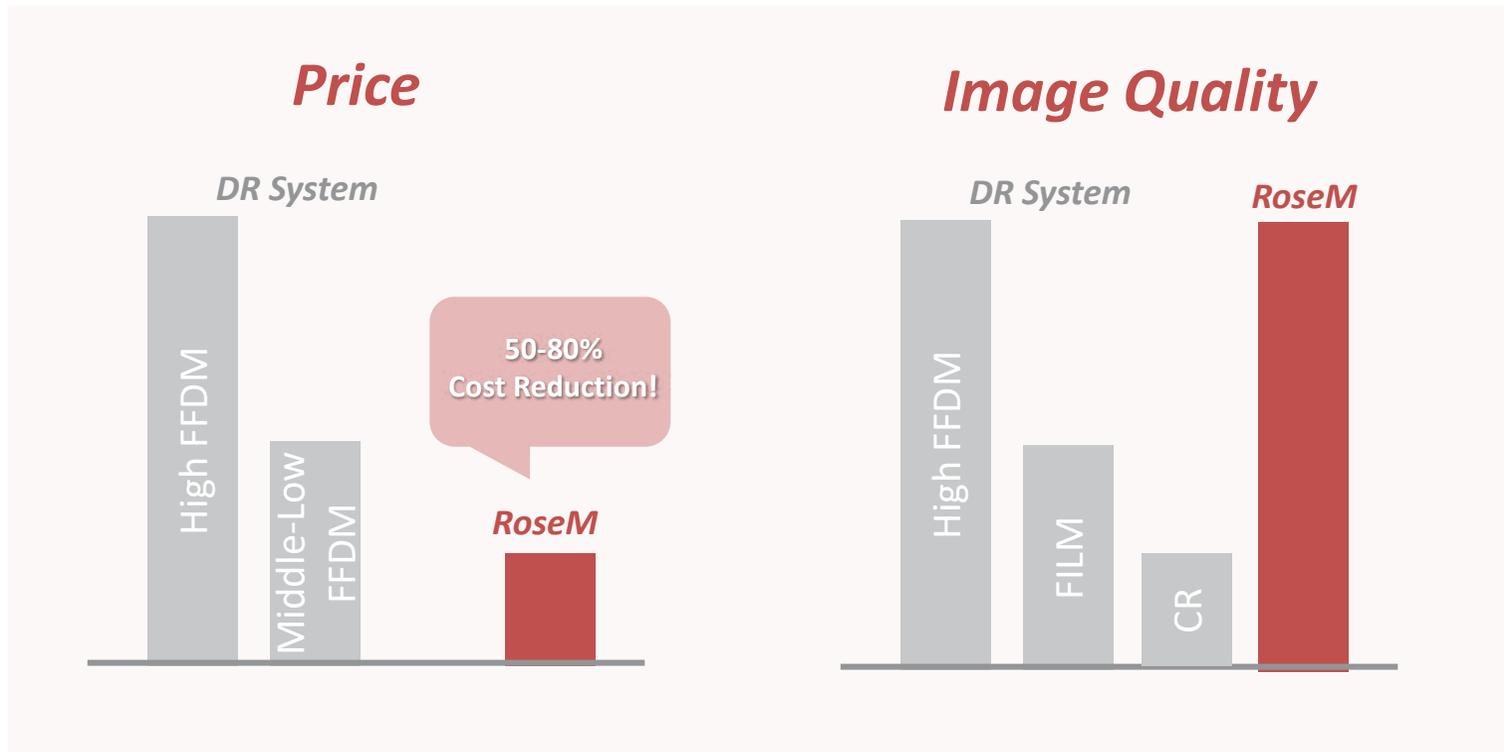
“High Resistance to vibration & External Force”



DOUBLE BENEFITS

✓ COST DOWN

✓ OUTPUT UP



Comments by leading radiologists & Breast Cancer Physicians on RoseM Image Quality

"The images are even better than Hologic."

"It deserves premium pricing as the image quality is excellent."

"You should promote its image samples to win in market."

Comments obtained after an image demonstration at Korean Society of Breast Imaging Conference in Dec, 2015.

RoseM's Benefits

01 Maintenance & Consumable cost savings

- Elimination of consumables
Film / Chemicals / Image Plates etc
- Reduced maintenance and service costs

02 Fast patient outflow *(=increased no. of patients)*

- Reduced patient waiting time
- Increased economical benefits for hospitals with increased number of patients

03 Increased Efficiency with Digitalization

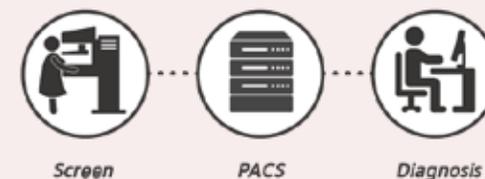
- Reduced of Film storage costs and space
- Less number of Film maintenance personnels

RoseM



Consumables *None*
Maintenance Cost

RoseM



*Only
10 sec!*



Full DR

Consumables *None*
Maintenance Cost



CR

Consumables
Maintenance Cost



Film

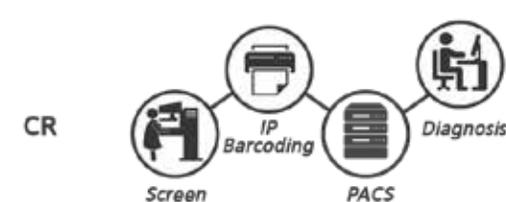
Consumables
Maintenance Cost



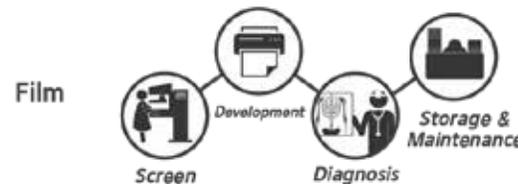
CR



Film



40 sec.



60 sec.

RoseM's Benefits

TRUVIEW™
TRUVIEW® ART

Increase
Image Quality



Increase no.
of patients



Improvement of
Mammo. PACS
Usability



Increased
effectiveness of
workflow



Increased space
usability



Multiple
applications
[Mobile
Examination]

UP

DOWN



Reduced
waiting time



Savings in
CR maintenance
cost



Reduction in Film/IP
Cassette maintenance and
human resource

RoseM Performance : Image Quality

76 μm the **smallest** pixel size



Micro-calcification detection is known to be a critical factor in the early detection of breast cancer. Visualization of micro-calcifications in a breast image is dependent on the performance and characteristics of the image receptor device (detector) such as the small pixel size.

Low noise and high DQE RoseM with its 76 μm holds the title for having **the smallest pixel size** amongst CsI (Indirect) mammography detectors. Also, with its low noise electronics, high DQE and MTF is achieved resulting in a sharp and highly defined mammography imaging optimized for screening and diagnostic purpose.

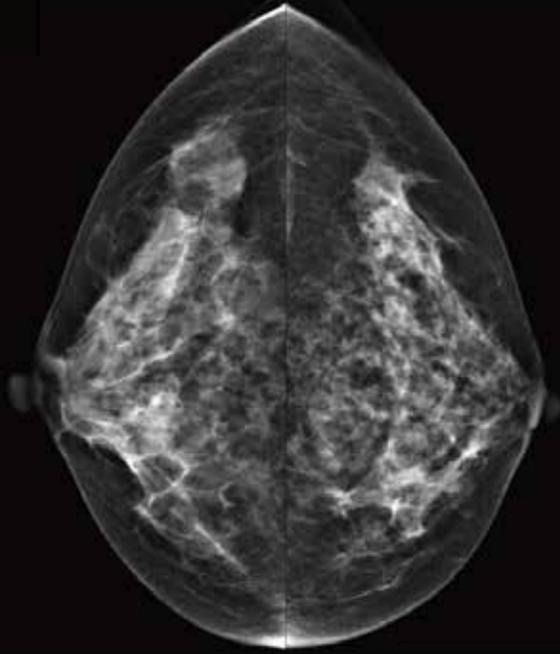
RoseM promises

- ✓ High quality images paralleling high-end FFDM
- ✓ Faster image acquisition
- ✓ Easier and more accurate diagnosis



RoseM Performance : Image Quality

RCC



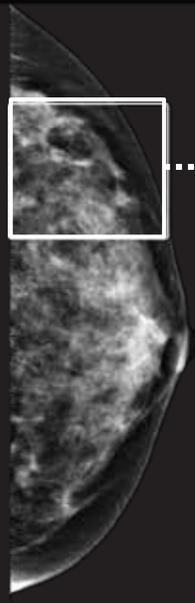
LCC



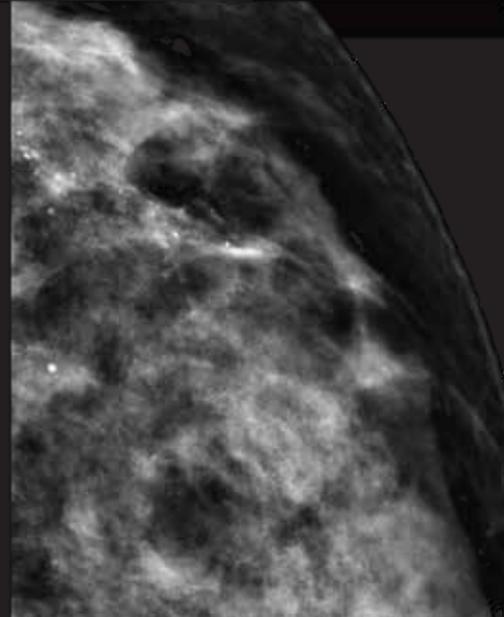
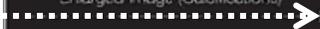
RMLO



LMLO



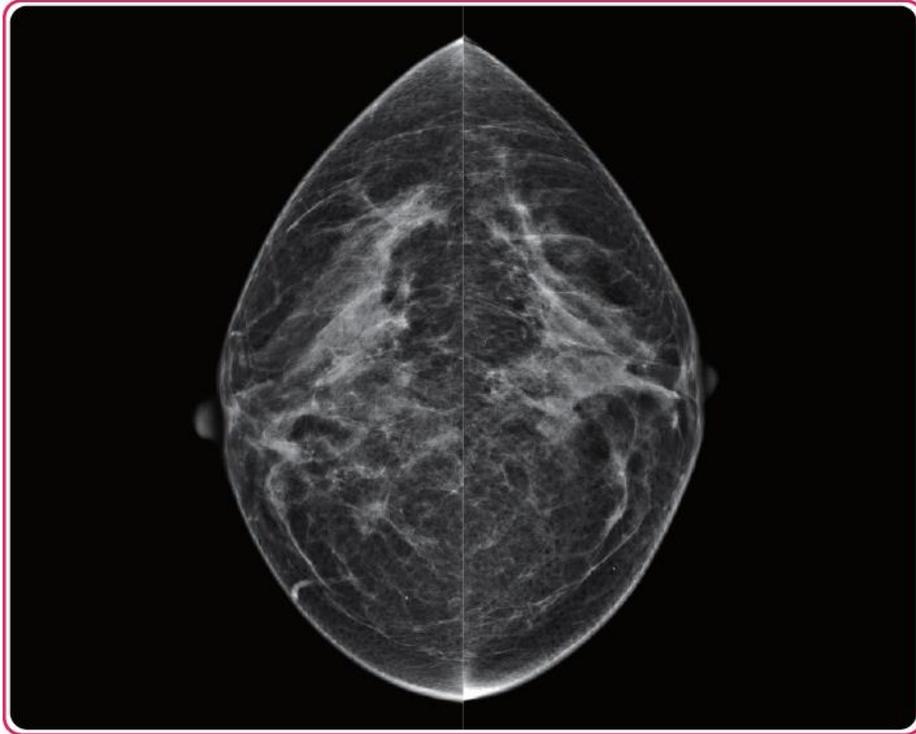
Enlarged Image (Calcifications)



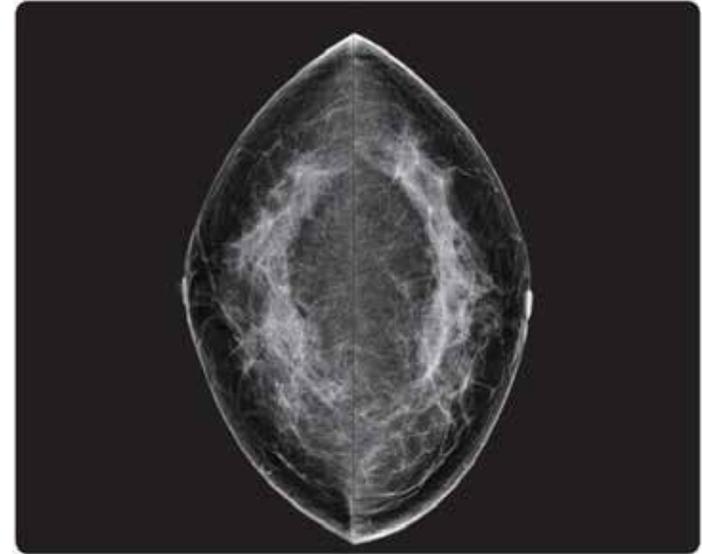
RoseM Performance : Image Comparison

RoseM

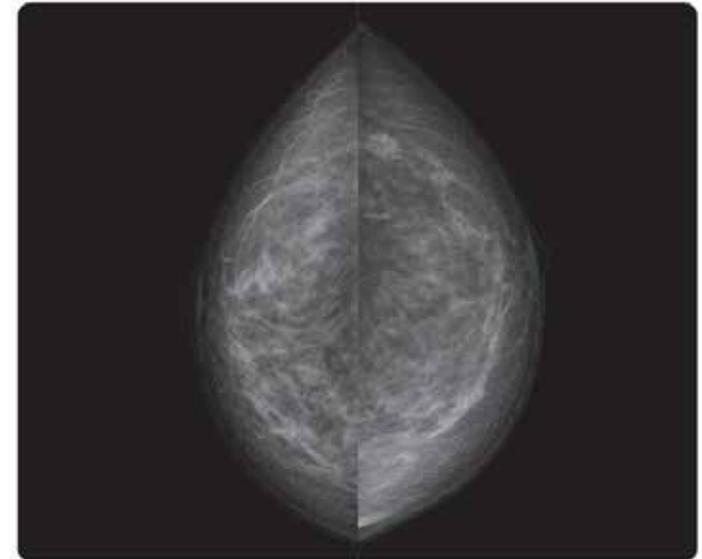
vs. Full Digital Mammo System



RoseM



High End FFDM

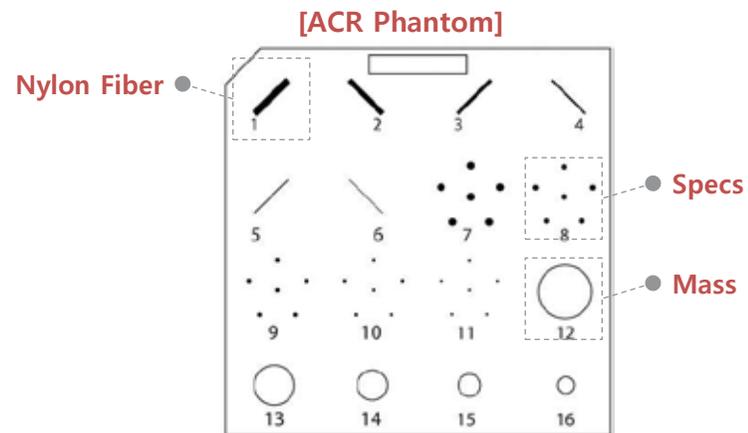


Low- Mid End FFDM

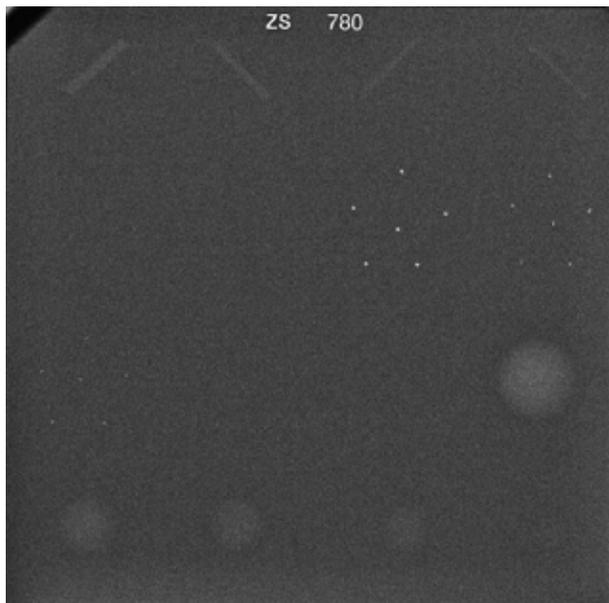
RoseM Performance : Image Comparison (ACR Phantom)

RoseM

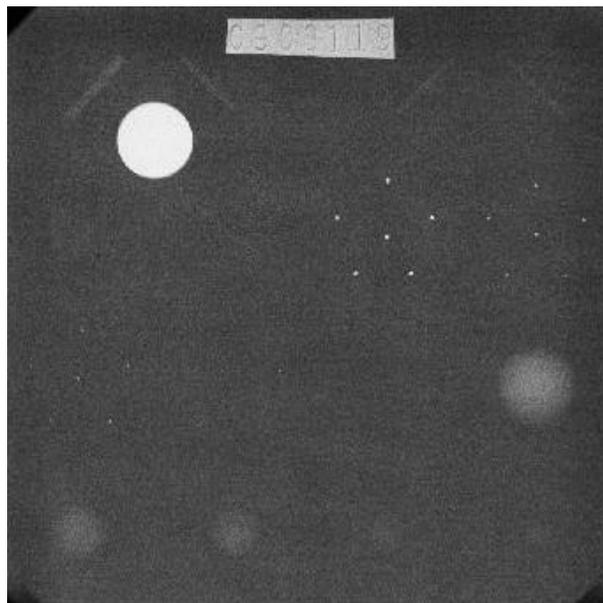
vs. Full Digital Mammo System



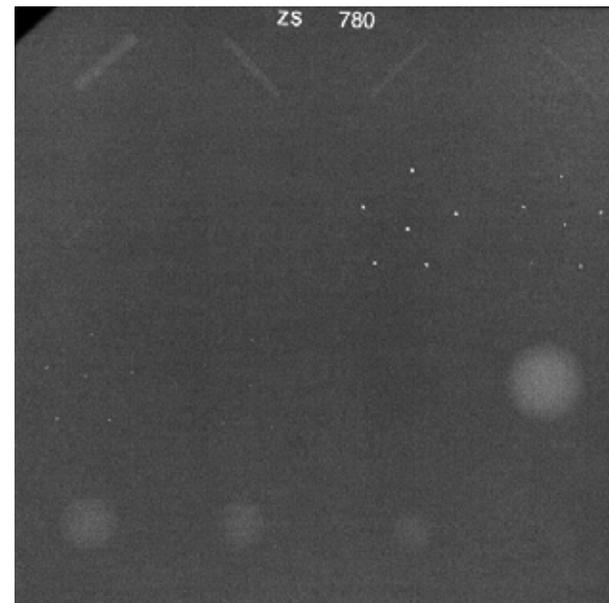
System A (a-Se)



System B (Csl)



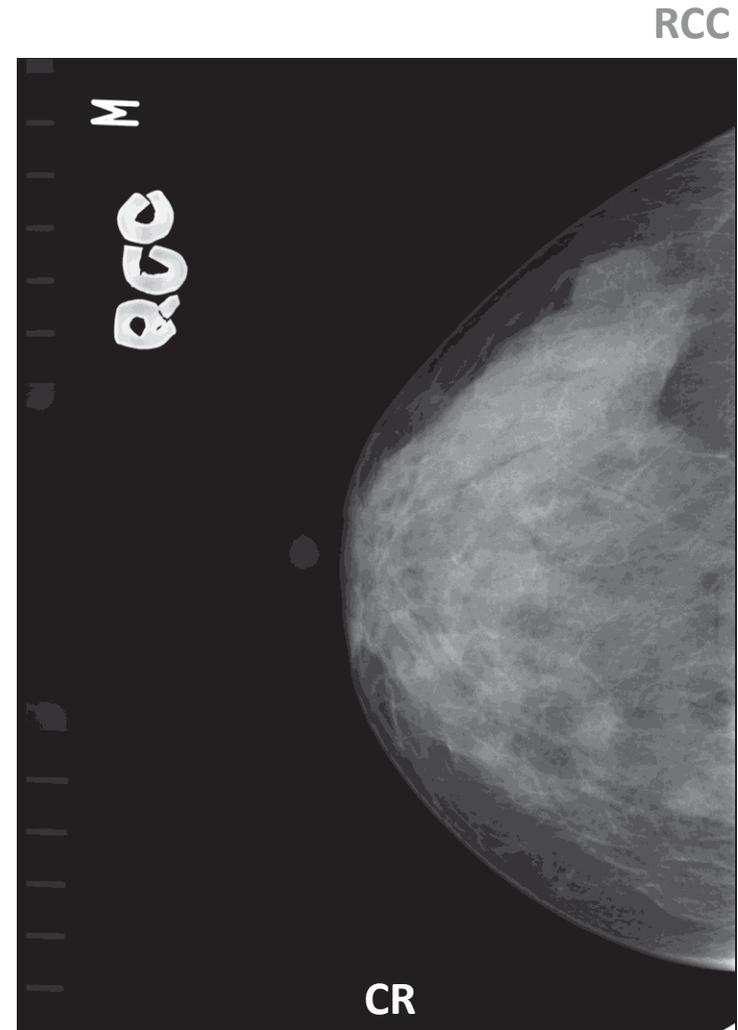
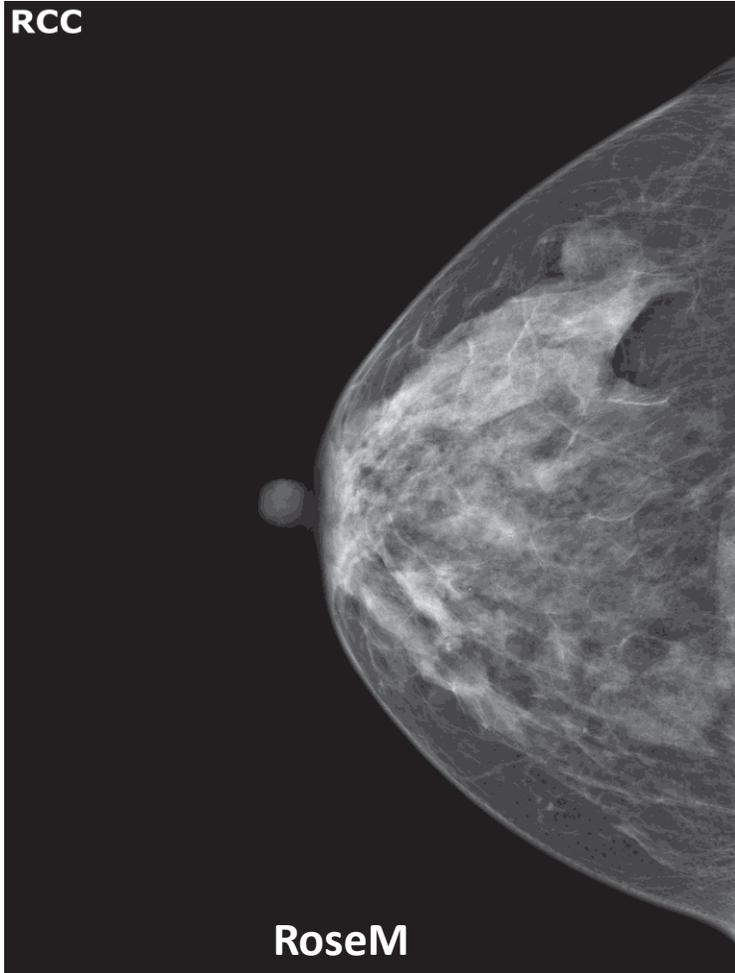
RoseM



RoseM Performance : Image Comparison

RoseM

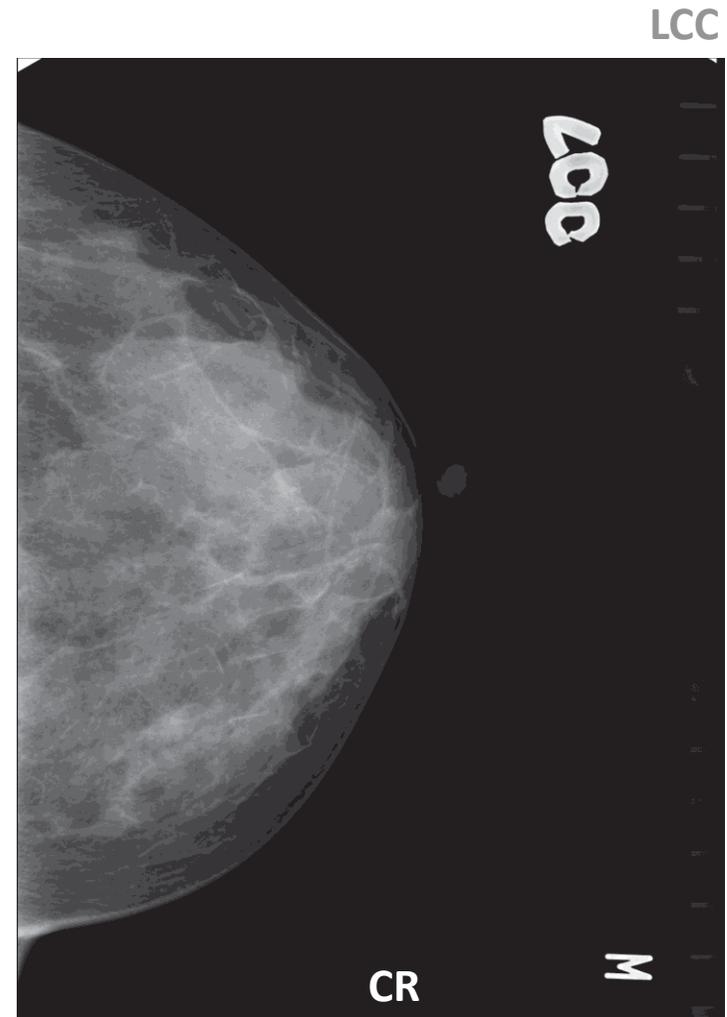
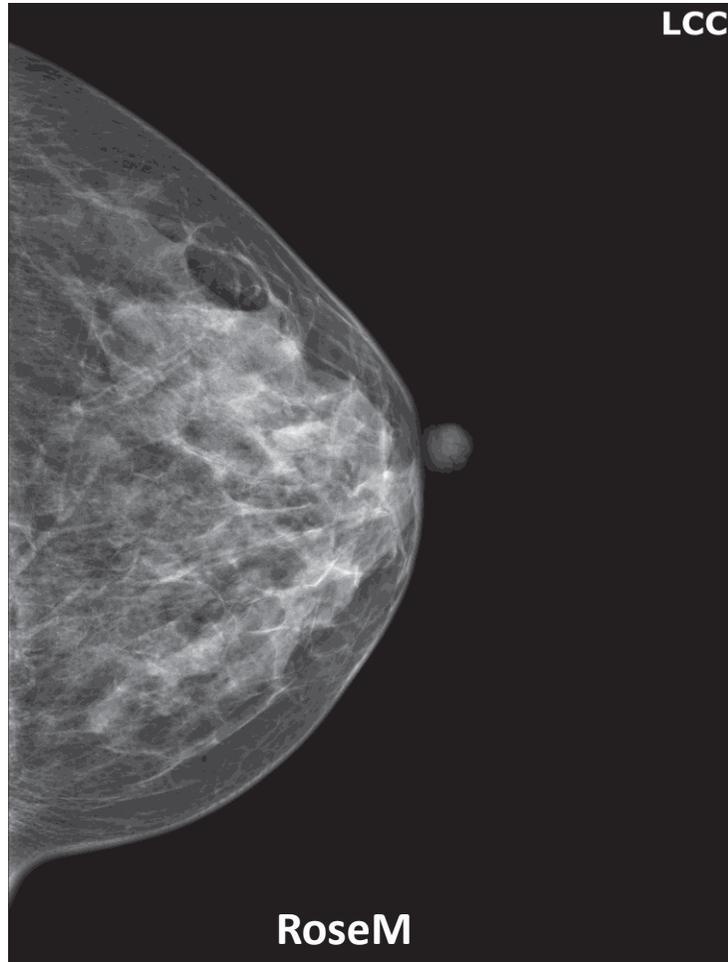
vs. CR Needle IP



RoseM Performance : Image Comparison

RoseM

vs. CR Needle IP

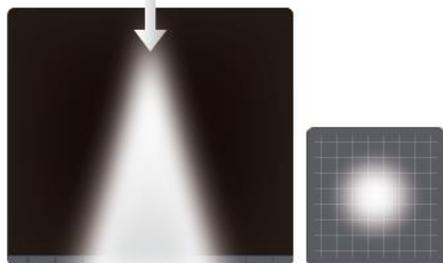


Advanced image Reconstruction Technology

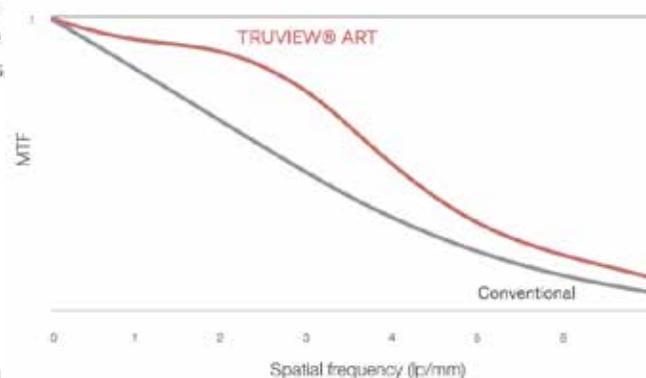
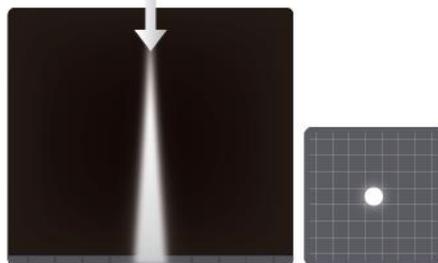


Image sharpness of an object in a conventional image is reduced due to light scattering. TRUVIEW® ART, DRTECH's unique reverse filtering technology reconstructs and improves image sharpness to increase the possibility detecting abnormalities including microcalcifications

CONVENTIONAL X-ray

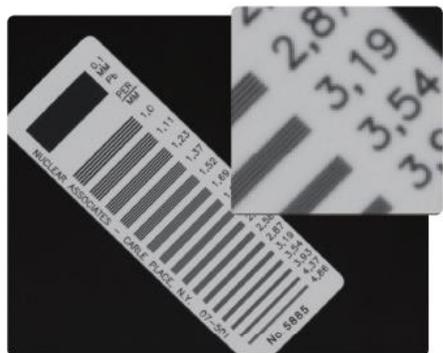


TRUVIEW® ART X-ray

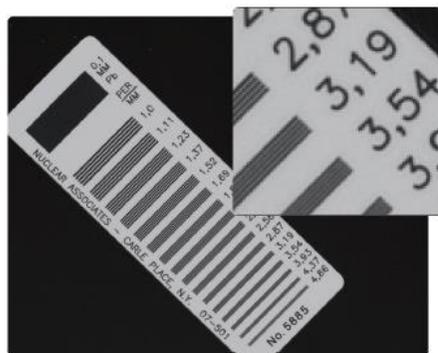


76 μm pixel size
Increased MTF 30%

CONVENTIONAL IMAGE



TRUVIEW® ART IMAGE



CONVENTIONAL IMAGE

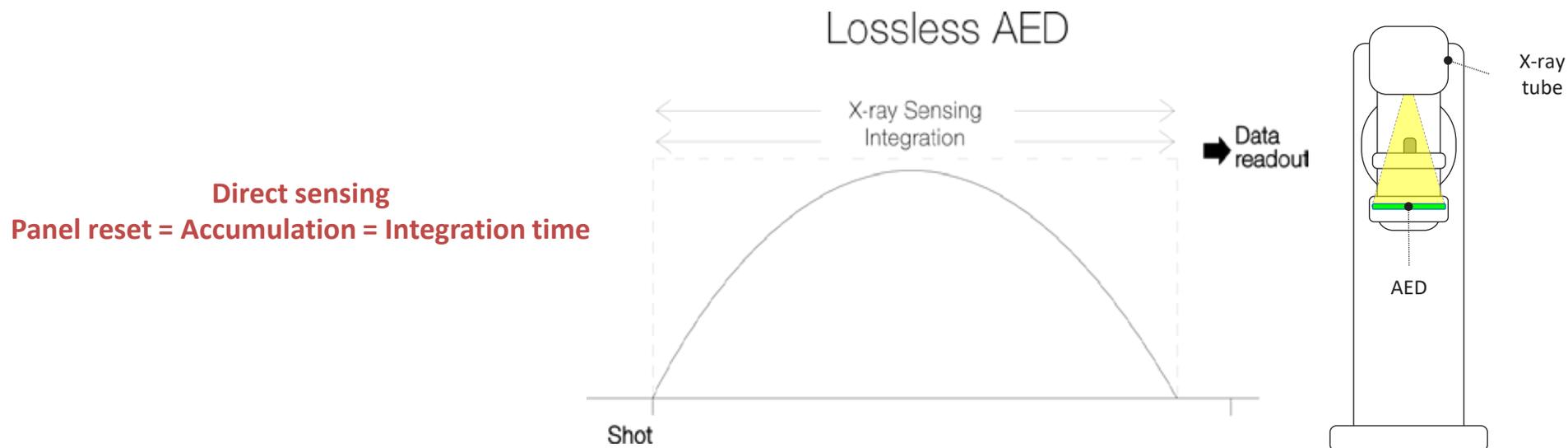


TRUVIEW® ART IMAGE



RoseM Core Technologies : **Lossless AED**

RoseM's innovative Lossless AED function guarantees **faster and more reliable AED operation**. Conventional AED must have three steps of X-ray sensing, panel reset and charge accumulation. Integration time is a loss due to the extra period required to capture the x-ray sensing from immediately after x-ray shooting to panel reset.



When separate sensor modules within the detector system are used, x-ray loss is inevitable. With thick objects the loss rate can increase more, as panel reset and signal integration only occurs after the x-ray is detected. **Lossless AED innovatively improved the reliability of sensitivity through optimization of panel driven scheme.**

Imaging Software for Mammography

TRUVIEW
R CONSOLE1
Digital Mammography Software

Specialized digital mammography software designed and perfected by radiologists for user convenience



Light dispersion is removed and image sharpness increased to improve the detection of abnormalities including microcalcifications



9 image style options are provided to cater for various user preferences



With one click, image layout is easily adjusted



Patient's current and past image can be easily compared with instant image recall



Fast inspection of image quality is possible with large thumbnail display



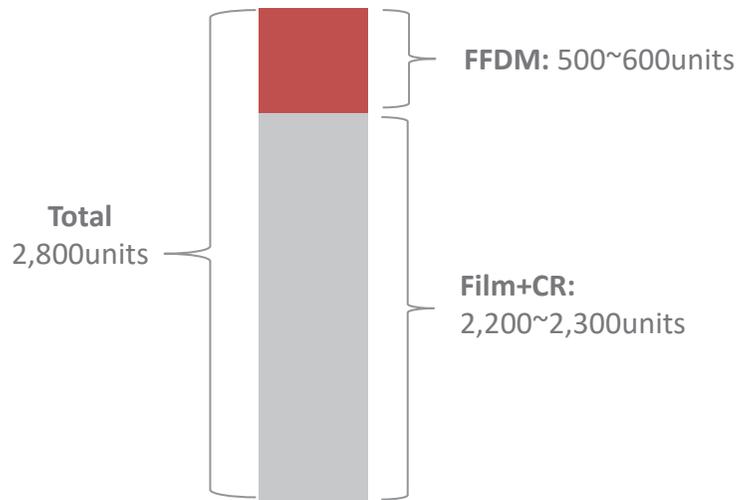
Supported in 12 languages for convenient use worldwide

RoseM Proven Market Performance in Korea

*RoseM has created **extra demand** for digital mammography in Korea!*

Mammography Installation Status in Korea

* Total Annual Sales of New mammography : ~100units



Source: Korean Institute for Accreditation of Medical Imaging

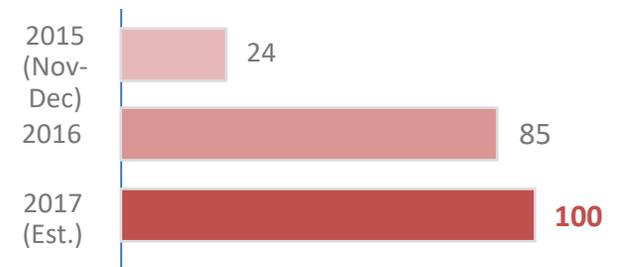
Market Competition Dynamics

Unit: \$ 1,000

Category	Low	Mid	High
CR	\$15~25	\$35~50	\$50~100
FFDM	\$60~80	\$90~150	\$180+



- Launched: Oct. 19, 2015
- Selling Price: ~\$40~44 (End customers)
~\$35~38k (dealers)
- Sales Volume (up to date)

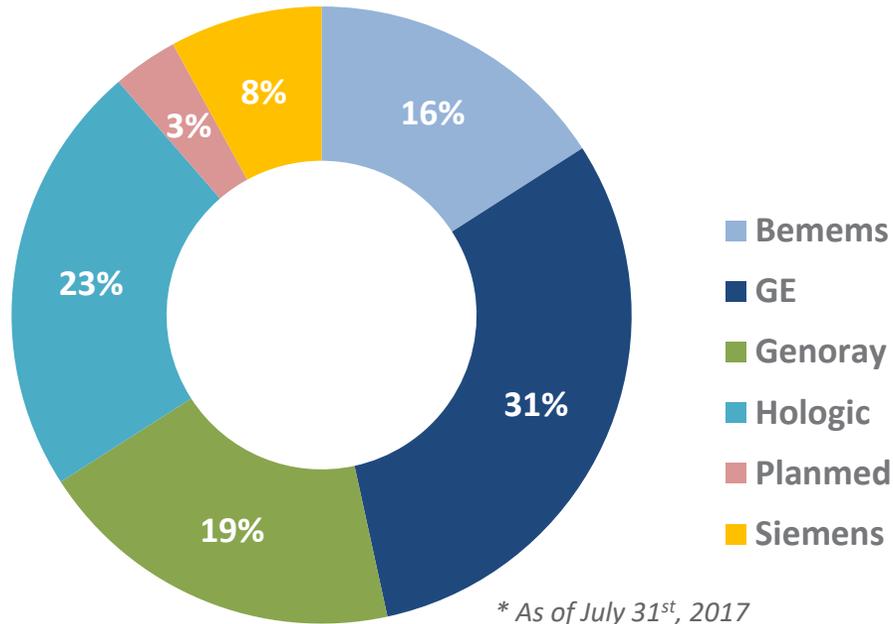


*RoseM is creating **NEW MARKET** while new system market size is maintained!*

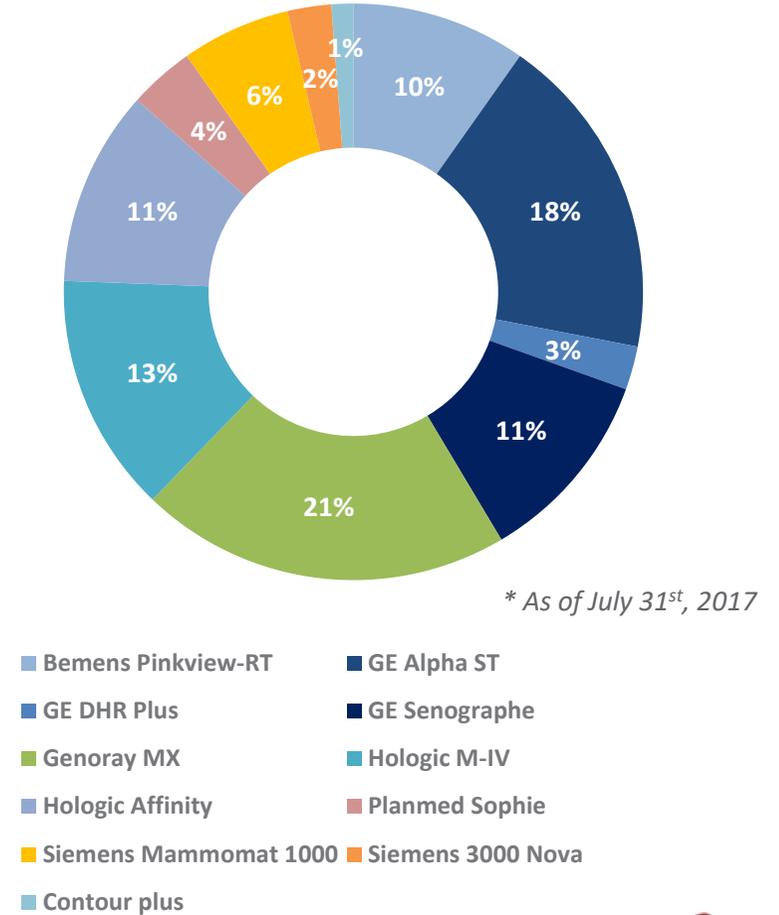


RoseM Proven Market Performance in Korea

RSM Installation by system manufacturer



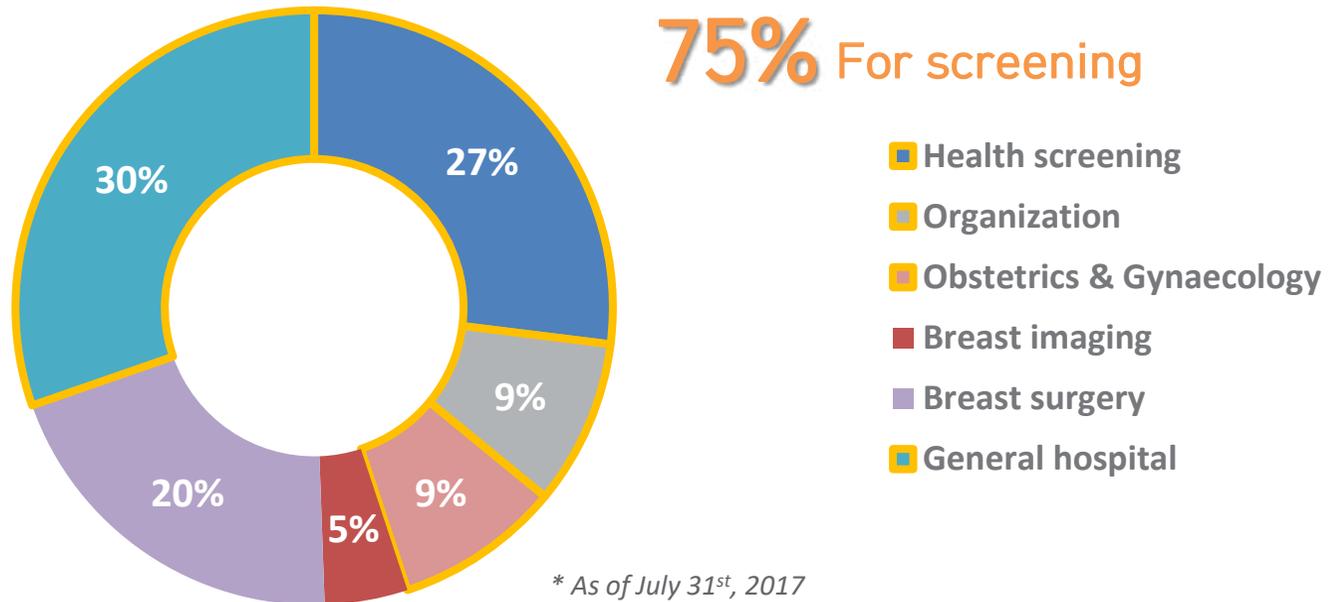
RSM Installation by system model



RoseM Proven Market Performance in Korea

- The initial sales from **health screening hospitals** → gradually expanded to **breast surgery clinics**
- RSM is also being used in **specialized image acquisition** (breast magnification, breast needle localization, specimen, etc.)

RSM installation Sites in Korea



RoseM Marketing in Korean Market

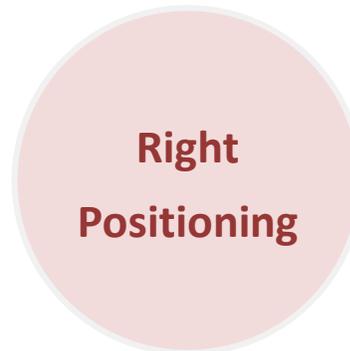
Total Annual Market Size: ~ 100 units

Total RoseM Sales in 2016: 85 units

} *How could this happen?*



+



+



- Excellent Image Quality
- Easy Installation
- Versatile usages
 - For an old analog system
 - With a new analog system
 - For a mobile health bus

- Premium positioning
(but still price competitive)
- Let Image Quality Speak
- Support with a value comparison chart (RoseM vs. CR / FFDM)

- Aggressive product demonstrations
- Get endorsements from Luminaries
- Effective Push & Pull

***“We are comparable with FFDM,
Not with CR!”***

RoseM Marketing in Korean Market

Effective **Push & Pull** Marketing

PUSH

with consistent marketing messages

Aggressive Demonstrations



Direct Mails (Quarterly)



Conference & Seminars



make 'Digital' something critical

PULL

Publicize & arouse the benefits of Digital Mammography



Remove customer uncertainty with publicity & awards



Viral marketing with Luminaries



Aggressive sales strategy - Demo. and Survey

Installation check list

DRTECH

Hospital/ Clinic Center Environment Checklist for RoseM 1824C/2430C Installation

Demo. / Sales Information	
Type	<input type="checkbox"/> Demo Installation <input type="checkbox"/> Sales Installation
Requested installation	20 YY, MM, DD. <small>* Duration of the demonstration is 5 working days.</small>
Requested Un installation	20 YY, MM, DD. <small>* Un-installation can be discussed in special circumstances</small>
Site Information	
Name	
Site Bed Number	<input type="checkbox"/> 500+ <input type="checkbox"/> 400-499 <input type="checkbox"/> 300-399 <input type="checkbox"/> 200-299 <input type="checkbox"/> 100-199 <input type="checkbox"/> 100- <input type="checkbox"/> Other ()
Address	
Contact 1	
Contact 2	Contact Hospital <input type="checkbox"/> Mobile <input type="checkbox"/>
System Information	
Manufacturer	<input type="checkbox"/> Hitachi <input type="checkbox"/> GE <input type="checkbox"/> SIEMENS <input type="checkbox"/> IMS Giotto <input type="checkbox"/> Planmed <input type="checkbox"/> Toshiba <input type="checkbox"/> Metalconica <input type="checkbox"/> ETC
Model	
Acquisition	<input type="checkbox"/> Full Auto <input type="checkbox"/> Semi Auto <input type="checkbox"/> Manual
Cassette Backer Type	<input type="checkbox"/> MN F2 type (Normal type) <input type="checkbox"/> MN R type (Thicker cassette)
Environment Information	
Imaging Tool	<input type="checkbox"/> CR scanner use <input type="checkbox"/> Analog film use <input type="checkbox"/> FLAT CR <input type="checkbox"/> Konica Minolta CR <input type="checkbox"/> Carestream CR <input type="checkbox"/> AGFA CR
CR Scanner Brand	<input type="checkbox"/> Others ()
LAN Port (Inch)	<input type="checkbox"/> Present <input type="checkbox"/> Not present
PACS Installation status	<input type="checkbox"/> PACS present <input type="checkbox"/> PACS not present
PACS Viewer Status	<input type="checkbox"/> Required <input type="checkbox"/> Not Required
DICOM Printer Access	<input type="checkbox"/> Access <input type="checkbox"/> Not present
Mammography Room Setting	<input type="checkbox"/> Glass shield extended from system <input type="checkbox"/> Separate shield <input type="checkbox"/> Back-out area within room <input type="checkbox"/> Independent back-out area
ACU Phantom	<input type="checkbox"/> Present <input type="checkbox"/> Not present
Diagnostic Monitor	<input type="checkbox"/> Present <input type="checkbox"/> Not present
Monitor Desk	<input type="checkbox"/> Required <input type="checkbox"/> Not Required
Online Support	
Support Requirement Reason	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extra Installation	
Examination Bus	<input type="checkbox"/> Yes <input type="checkbox"/> No
Notebook	<input type="checkbox"/> Required <input type="checkbox"/> Not Required
Other Request	

RoseM Survey

만족도 설문지

병원/진료과명	
성명	

I. 제품 정보

1. 당사 제품 정보에 대해 어떤 매체를 통해 알게 되었습니까?
 DM자료 신문광고 기사 인터넷광고 기사 지인소개 기타 ()

II. 데모·설치 만족도

1. 당사 데모 지원팀의 설치에 만족하십니까? 예 아니요
 ~ 당사 데모 지원팀의 설치에 만족하지 않으셨다면 이유는 무엇입니까?
 ()

2. 데모 기간에 만족하십니까? 예 아니요
 ~ 데모 기간에 만족하지 않으셨다면, 적절한 데모 기간은 어느 정도라고 생각하십니까?
 ① 7일 ② 10일 ③ 14일 ④ 20일 ⑤ 30일 또는 그 이상

3. 데모에 만족하십니까? 예 아니요
 ~ 데모에 만족하지 않으셨다면 이유는 무엇입니까?
 ① 설치시간 ② 영상품질 ③ 사용성 ④ 서비스대응 ⑤ 기타 ()

III. 영상품질 만족도

1. 당사 제품의 영상 품질에 만족하십니까? 예 아니요
 ~ 영상 품질에 만족 또는 불만족 하셨다면 이유는 무엇입니까?
 ① 영상 선명도 ② 미세석회 감출 정확성 ③ 디지털 영상 자체 만족도
 ④ 영상 피라미티 최적화 ⑤ 기타 ()

2. 당사 제품의 영상 품질을 여객 각 세부사항을 기준으로 5점 만점으로 평가해 주세요.

- 지방조직과 유선조직의 식별능력	1	2	3	4	5
- 치밀한 유선조직간의 식별능력	1	2	3	4	5
- 미세석회화 식별능력	1	2	3	4	5
- 종괴의 식별능력	1	2	3	4	5
- Artifact 발생 정도	1	2	3	4	5

3. RoseM 1824C 영상에 대한 의견 또는 코멘트 있으시면 자유롭게 기입해주세요.

IV. 구매의향

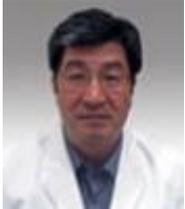
1. 당사 제품의 영상품질 확인 후, 제품 신빙도에 변화가 있었습니까? 예 아니요
 ~ 당사 제품의 영상품질 확인 후, 신빙도에 변화가 없거나 만족하지 않으셨다면 이유는 무엇입니까?
 영상품질 가격 사용성 기존 장비의 노후화 기타 ()

2. 당사 제품의 영상과 가격을 고려했을 때, 구매의향 의향이 있으십니까? 예 아니요
 ~ 당사 제품의 구매의향이 없으셨다면 사유는 무엇입니까?
 영상품질 가격 사용성 기존 장비의 노후화 기타 ()

3. 당사 제품 (주후에러트) 구매의향에 결정적 구매 요인은 무엇입니까?
 영상품질 합리적 가격 빠른촬영시간 사용편의성 기타 ()

RoseM Testimonials

Testimonials by *Korea's leading Breast Cancer Specialists and Radiologist*



Dr. Yoo Hyun, Ahn

“We benefited greatly by using RoseM during our peak screening season. Our patients were much more happier and the **screening time is shortened and the waiting time decreased**. I am also very happy with the image quality. **RoseM has helped greatly in increasing my confidence in making accurate diagnostic judgments**”

Prior to converting to RoseM, we were using the CR system. When considering the conversion to digital mammography, we considered products of globally recognized system makers but **decided to purchase RoseM as the image quality was very impressive and could be compared to that of more expensive full DR systems**. My colleagues and I are very please with RoseM so far and we are especially happy that we are able to get high quality images at a very economical price”

Wonju Yeonse Min Clinic Radiologist
Dr. Dong Ho Yeom

“ I have a lot of patient that come for a second opinion after finding abnormalities at their initial screening. Therefore I place high emphasis on image quality. **At first I had my doubts about an upgrade product but after using RoseM for the past 4 months, I am very pleased with the quality of images and I am recommending RoseM 1824C onto my colleagues**”



Dr. Hyun Joo, Choi
Vice Chairman,
Korean Society of Breast Imaging





Q. Is perfect digitalization possible simply with a RoseM detector?

Yes! Perfect digital upgrade is possible simply by inserting RoseM to your existing analog mammography device. RoseM is an officially approved medical device for mammography application with MFDS (Korea), CE (European) and FDA (USA) approval.

Q. Is the image quality of RoseM comparable with a FFDM?

Yes! RoseM comes along with RConsole1 image processing software designed by radiologists specifically for RoseM. RConsole1 is equipped with TRUVIEW™ ART, an image processing algorithm optimized for mammography imaging, which enhances the image sharpness. With this advanced technology, image quality paralleling high-end FFDM is possible and it has been proven with entrustment of many renowned breast cancer authorities in Korea choosing RoseM for their diagnostic practice.

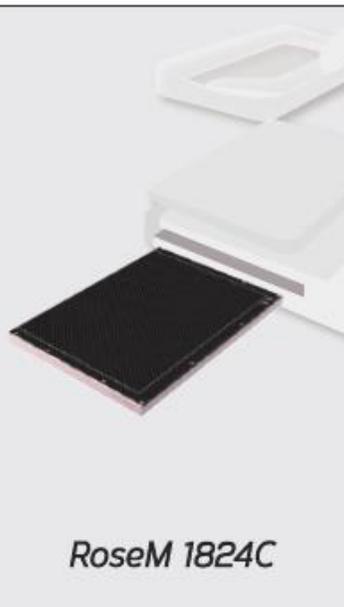
Q. Is RoseM compatible with all analog mammography devices?

Yes! RoseM is compatible with all analog mammography units in operation worldwide. The performance of your mammography system will not be affected in any way by the addition of RoseM. The most important component of a mammography device is the detector. The performance of the detector mostly determines the overall image quality.

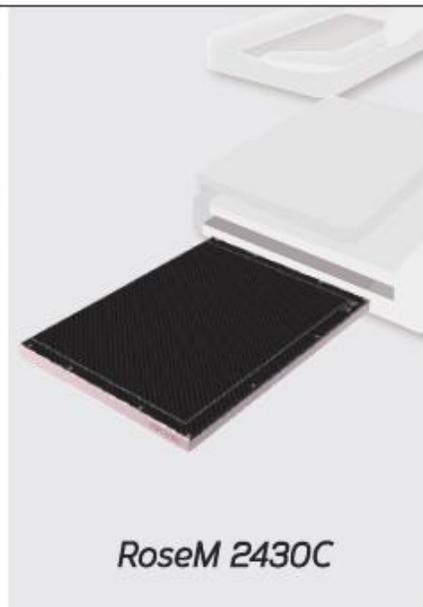
Q. Is it difficult to transit to RoseM from film-screen or CR?

No! Screening using RoseM is much easier and hassle free than using a film-screen or CR. By digitalizing with RoseM, you can eliminate one process (film printing and/or barcoding). In addition, full training is provided for users and our RConsole1 software will also help you further with its easy and efficient workflow.

RoseM Specifications



RoseM 1824C



RoseM 2430C

Conversion Layer

Direct Deposition CsI

Direct Deposition CsI

Pixel Pitch

76 μ m

76 μ m

Resolution

2,304 x 3,072

3,072 x 3,840

MTF

65 @ 3 lp/mm

65 @ 3 lp/mm

Preview Time

\leq 4sec.

\leq 4sec.

Cycle Time

10 - 13 sec.

10 - 13 sec.

Data Interface

Giga Ethernet

Giga Ethernet

AEC Sensing

System Compatible AEC

System Compatible AEC

Chest Wall Distance

\leq 2.0 mm

\leq 2.0 mm

Weight

0.92 kg (Detector Only)

1.2 kg (Detector Only)

Overall Dimension

194.5 x 267.5 x 14.2 mm

253.7 x 327.5 x 14.2 mm

Image Processing

TRUVIEW® ART

TRUVIEW® ART

RoseM AEC Compatibility

Company	Brand name	AEC compatibility		
		Enable	Disable	Unknown
Siemens	MAMMOMAT 1000	<input type="radio"/>		
	MAMMOMAT 3000 Nova	<input type="radio"/>		
	MAMMOMAT Select	<input type="radio"/>		
GE	Instrumentarium Performa	<input type="radio"/>		
	Alpha RT	<input type="radio"/>		
	Alpha ST	<input type="radio"/>		
	Senographe 600T	<input type="radio"/>		
	Senographe 700T	<input type="radio"/>		
	Senographe 800T	<input type="radio"/>		
	DMR Plus	<input type="radio"/>		
	Affinity	<input type="radio"/>		
Hologic (Lorad)	M IV	<input type="radio"/>		
	M IV Platinum	<input type="radio"/>		
	HAWK-2M	<input type="radio"/>		
Philips	MammoDiagnost	<input type="radio"/>		
Planmed	Nuance Classic	<input type="radio"/>		
	Sophie Classic	<input type="radio"/>		
Toshiba	MGU-1000A	<input type="radio"/>		
Giotto	Analog Giotto Image	<input type="radio"/>		
Metaltronica	Lilyum	<input type="radio"/>		
Genoray	MX300/500	<input type="radio"/>		
	MX600	<input type="radio"/>		
Bemems	Pinkview-AT/BT/RT	<input type="radio"/>		
	GENDEX MAMEX	<input type="radio"/>		
Bennett	Bennett Contour	<input type="radio"/>		
	MXR	<input type="radio"/>		
DK	ELMA-T3	<input type="radio"/>		

Thank you

Rose M