

PHILIPS

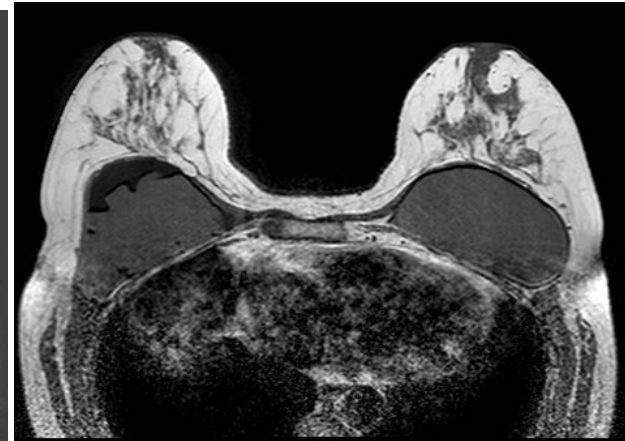
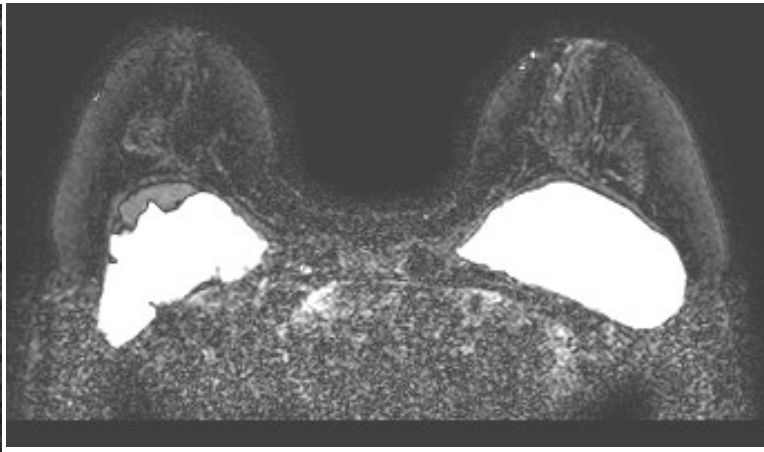
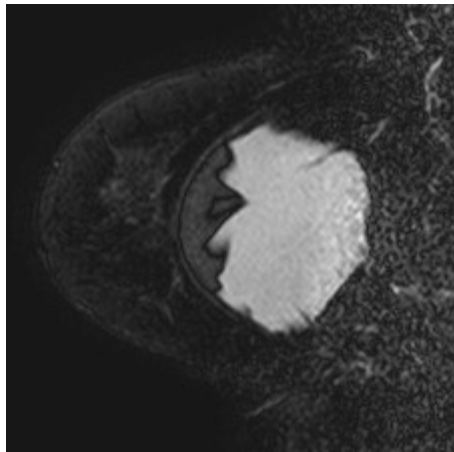
PHILIPS

sense **and** simplicity

MR Breast Implants

- **Protocols**
- **Parameters**
- **Implants**

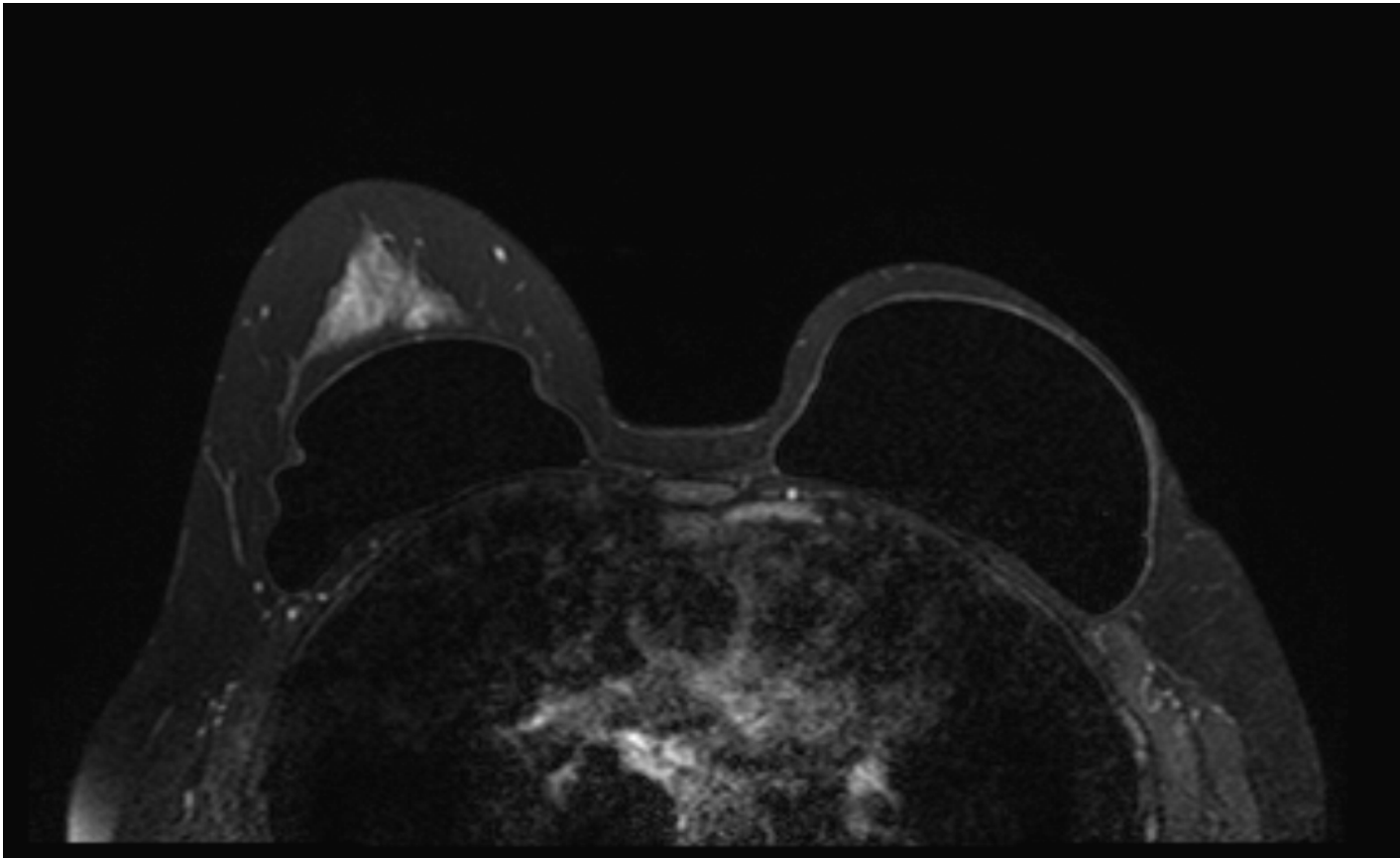
Are they saline or silicone????



T2 SPAIR

How do we know whether silicone or saline?

Silicone dark, not as bright as fluid/saline would be

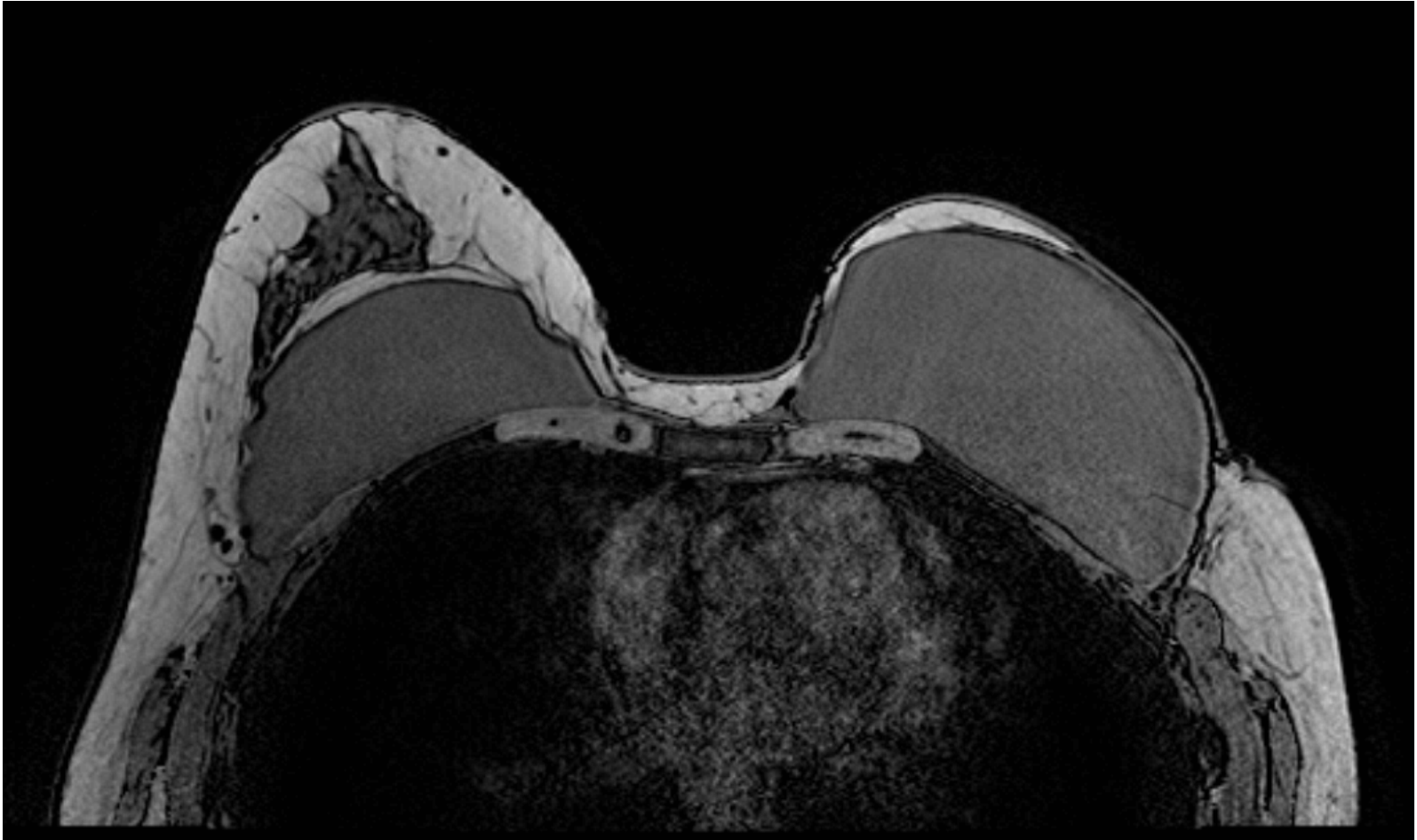


T2 Fat Suppression

T1 FFE

How do we know whether silicone or saline?

Silicone gray – not as dark as fluid would be



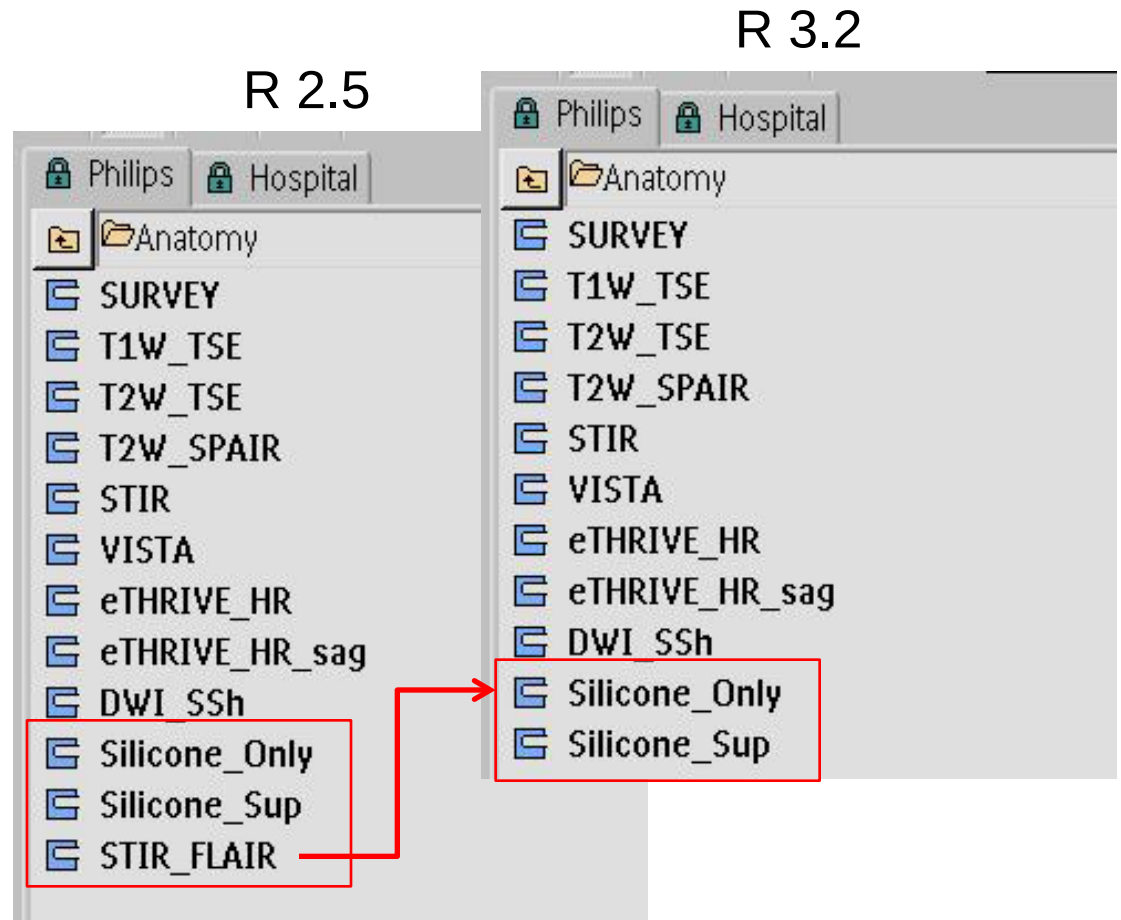
eTHRIVE

Do not use eTHRIVE to determine silicone vs saline, because
T1-weighting is altered with TFE factor



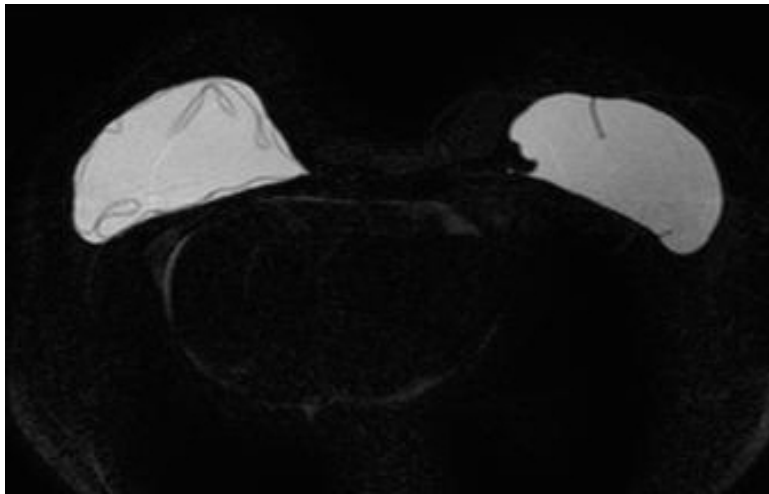
Silicone

- Preset procedure database
- STIR/FLAIR is now Silicone Only on R3.2 upward



Silicone Only R2.6

Water suppression	SPAIR
inversion delay (ms)	100
IR delay (ms)	230
acquire during delay	no



Silicone Only (R2.6)

- SPAIR water suppression
 - Check water/fat peaks
- STIR fat suppression

The values used for silicone only:

- 3.0T: IR delay 230 (fat) + SPAIR delay 100 (water suppression)
- 1.5T: IR delay 150 (fat) + SPAIR delay 80 (water suppression)
- 1.0T: IR delay 150 (fat) + SPAIR delay 60 (water suppression)

Silicone Only R3.2 and above

Silicone Only (R3.2+)

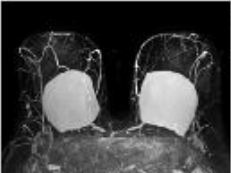
- Dual IR (STIR/FLAIR)
 - FLAIR water suppression
 - STIR fat suppression

The values used for silicone only:

- 3.0T: IR delay 3100 (water) + IR delay 220 (fat)
- 1.5T: IR delay 2700 (water) + IR delay 180 (fat)
- 1.0T: IR delay 2400 (water) + IR delay 165 (fat)

[Tips](#) [Info](#)

STIR_FLAIR



Sequence to suppress both fat and fluid to allow visualization of silicon implants.

Info:
A dual *STIR* pulse is used to perform both water and fat suppression.

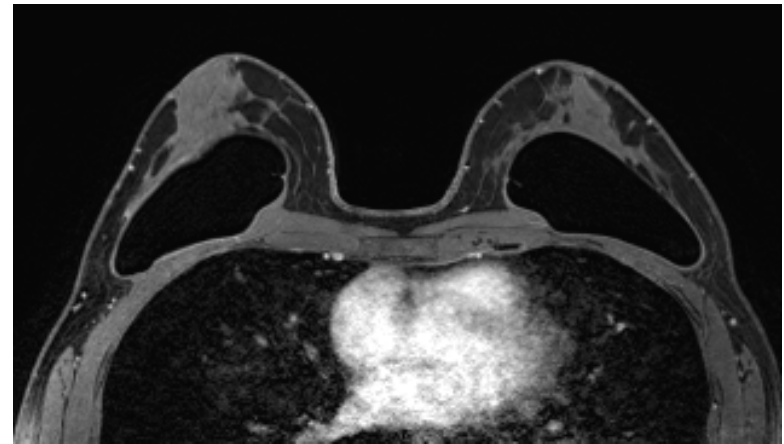
SENSE is used to shorten acquisition time.

Tips:
The amount of fat and water suppression can be changed by changing the IR delay times of the *STIR* pulse.

Real images are generated to evaluate the lumen

Silicon suppression

- Silicon Suppression (SPAIR delay)
- For silicon suppression we slightly adjust the SPAIR delay to fully suppress silicon rather than fat
- Check water/fat peaks with Interactive F0
- **3.0T**
SPAIR inversion delay 270
- **1.5T**
SPAIR inversion delay 220
- **1.0T**
SPAIR inversion delay 220



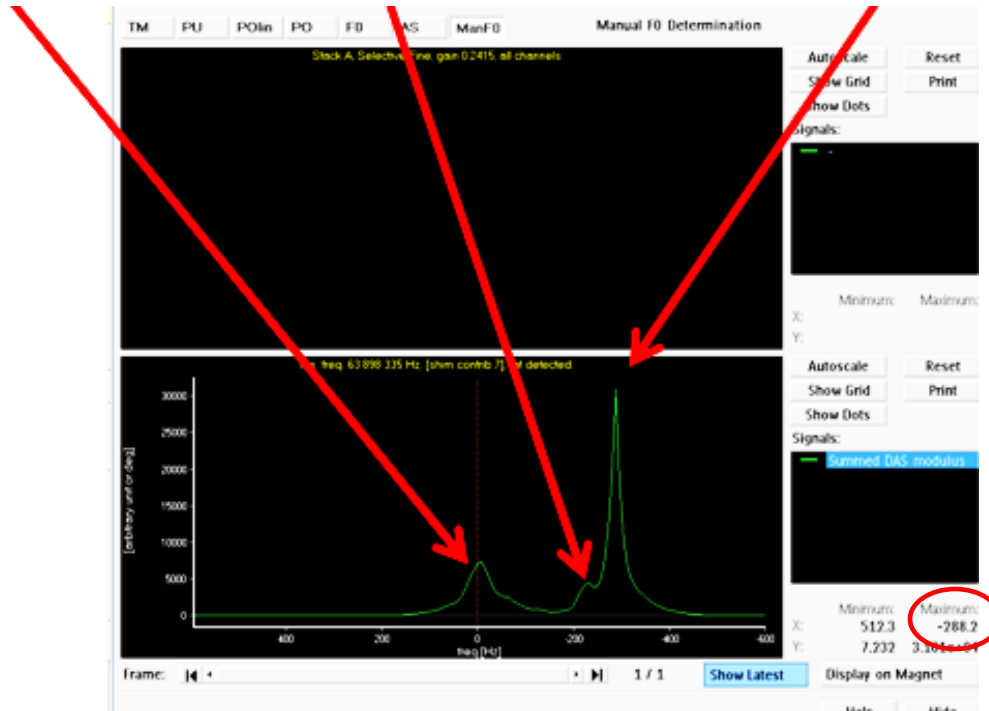
TE	shortest
Flip angle (deg)	12
TR	shortest
Halfscan	default
Water-fat shift (pixels)	user defined 1
Shim	volume
ShimAlign	no
Fat suppression	SPAIR
power	2
inversion delay (ms)	user defined 220
frequency offset	default
Water suppression	no
TFE prepulse	no
MTC	no
Diffusion mode	no
SAR mode	low
B1 mode	default
PNS mode	low
Gradient mode	default

Silicone R2.6

water

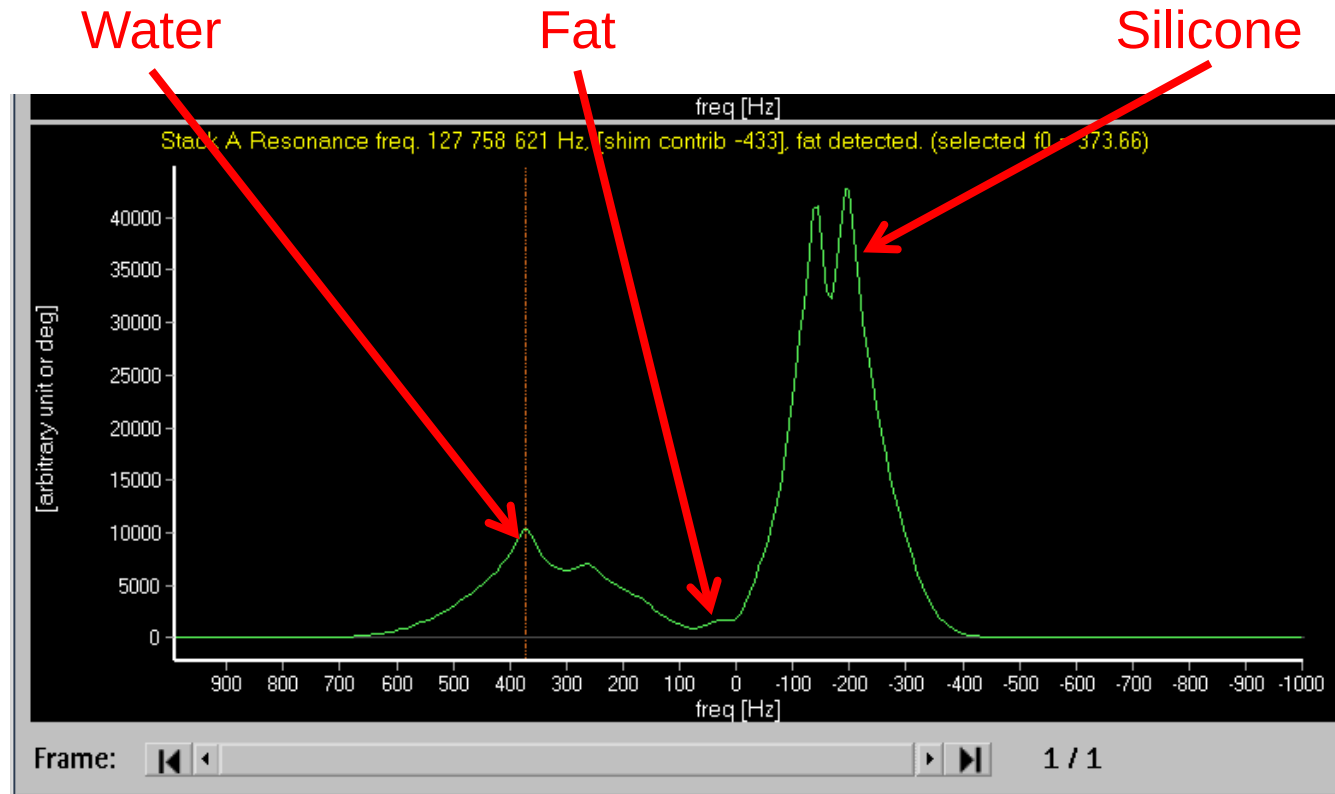
fat

silicone



- To determine the value to enter as the Manual Offset Frequency (on the postproc page), follow the directions in the “F0 Determination and Manual Offset Frequency R2.6” Quick Step in the Resource Material

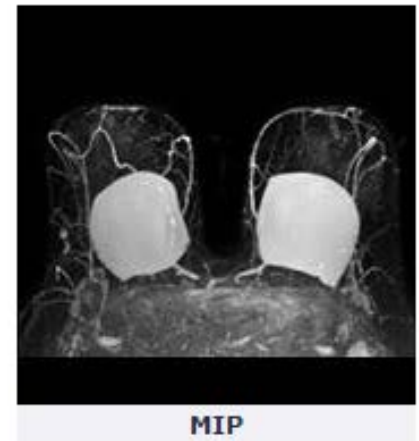
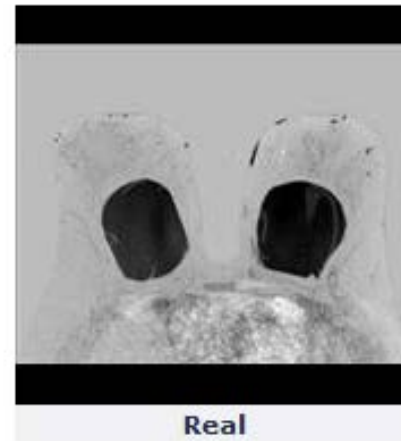
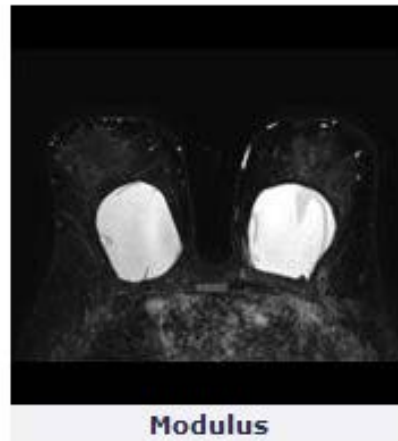
F0 Determination with Silicone R3.2 and above



- 1.5T- Fat is ~ 220 Hz from water, silicone is ~ 80 Hz further from water
- 3.0T- Fat is ~ 440 Hz from water, silicone is ~ 160 Hz further from water
- Above, there is so much silicone in relation to fat and water, so the silicone peak is the largest

Silicone Only– Parameters if Dual IR is not present

- STIR/FLAIR
 - Dual IR with Modulus and Real Images
 - Beneficial for double lumen



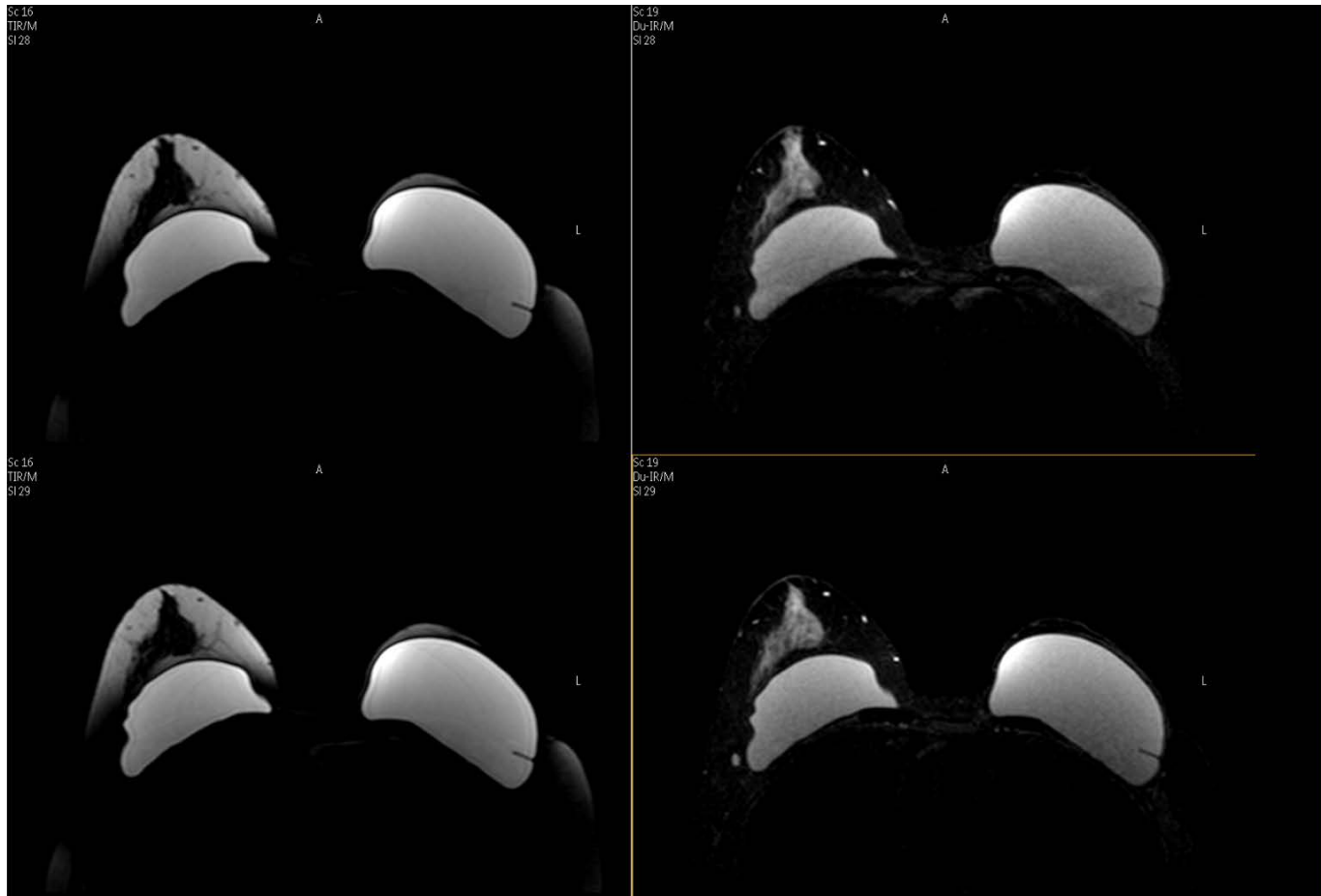
Parameter	1.5T	3.0T	HFO
Coil	4ch		
CLEAR	yes	no	yes
TE	70	60	70
Refocusing control	120		
TR	shortest		
Halfscan	no	0.650	no
Water-fat shift	maximum	2.0	maximum
IR delay	2700	3100	2400
Dual IR delay	180	220	165
Shim	auto		
NSA	2	1	2
MIP	yes	yes	yes
Reference tissue	breast	breast	breast
Reconstruction mode	real time	real time	real time
Scan time	4.56 min	5.55 min	4.53 min

Silicone Only– Parameters if STIR/SPAIR is not present

Parameter	1.5T	3.0T	HFO
Coil	7ch M	7ch M	SENSE Breast
CLEAR	yes	No	Yes
TE	70	60	70
Refocusing control	120	100	No
TR	Shortest	Shortest	Shortest
Halfscan	no	0.7	No
Water-fat shift	Max	Max	Max
IR delay	150	230	150
Dual IR delay	No	No	No
Shim	Auto	Volume	Volume
Water suppression /IR delay	SPAIR- 80	SPAIR- 100	SPAIR- 60
NSA	2	1	2
MIP	No	No	No
Reference tissue	Breast	Breast	Breast
Reconstruction mode	Real time	Real time	Real time
Scan time	3:26	6:03	3:49

- STIR/SPAIR
 - STIR pulse is used for fat suppression
 - Water selective SPAIR pulse is used for fluid suppression

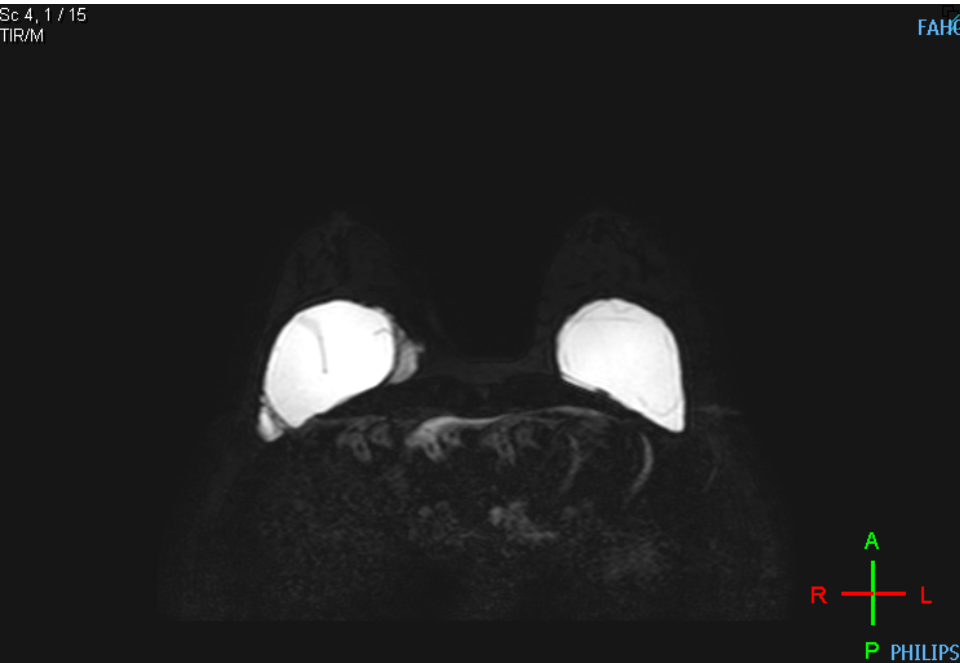
Silicone - STIR with SPAIR water sat failed



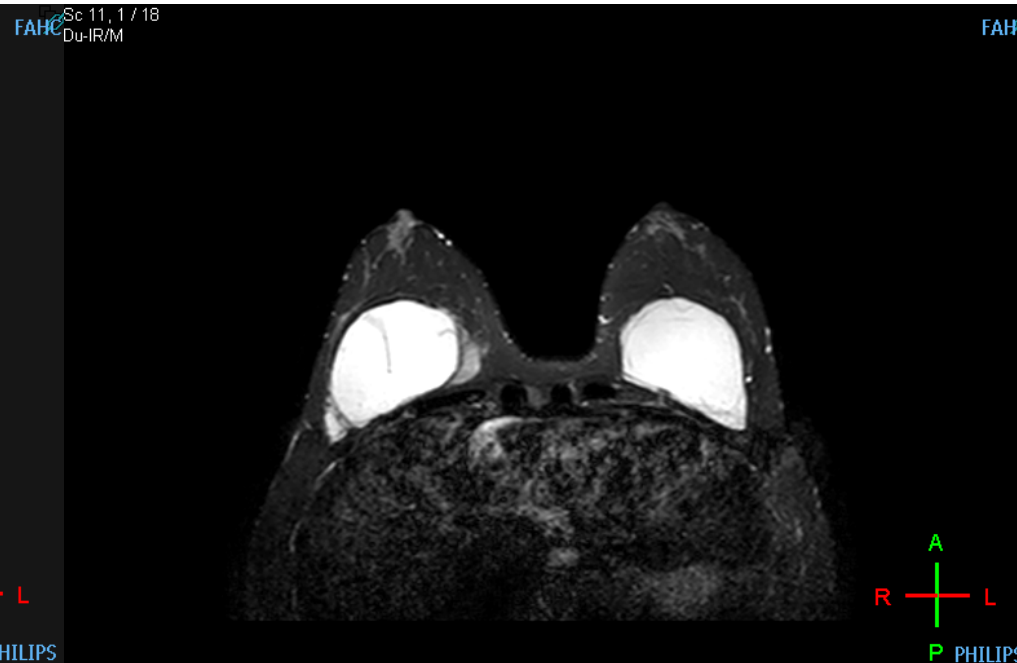
STIR with SPAIR water suppression

Dual IR

Silicone - STIR with SPAIR water sat excellent



STIR with SPAIR water suppression



Dual IR

When suppressed correctly, most radiologists indicate the STIR/SPAIR water suppression as preferable to the Dual IR as the Dual IR shows vessels and parenchyma with signal.

