GE Healthcare
Vivid Club

Spring 2015

Application News

JB27515xx

AFI

and cardiac dyssynchrony

on

Vivid

E90 / E95

and associated

EchoPAC Software only

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Content

NOTE

This hand out is a summary and is not comprehensive.
For more detailed information please refer to the user manual and/or reference manual.

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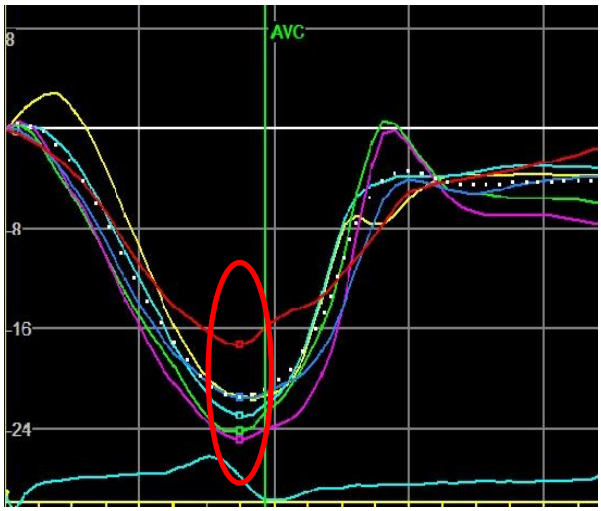
AFI and cardiac dyssynchrony

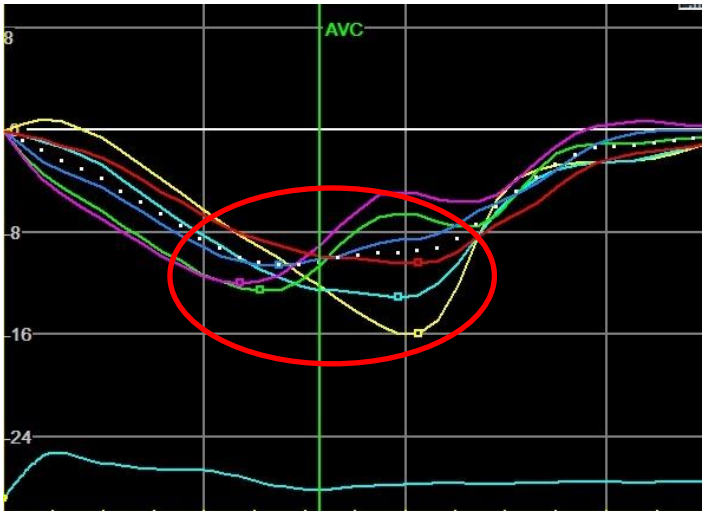
Normal

In a healthy heart the peak strain values of all segments will occur in synchrony. The spread over time is very low and peaks are together in a very small time frame at or around end of systole.



Dyssynchrony

Whereas in a heart with dyssynchrony the peak strain values of the segments are widely spread.



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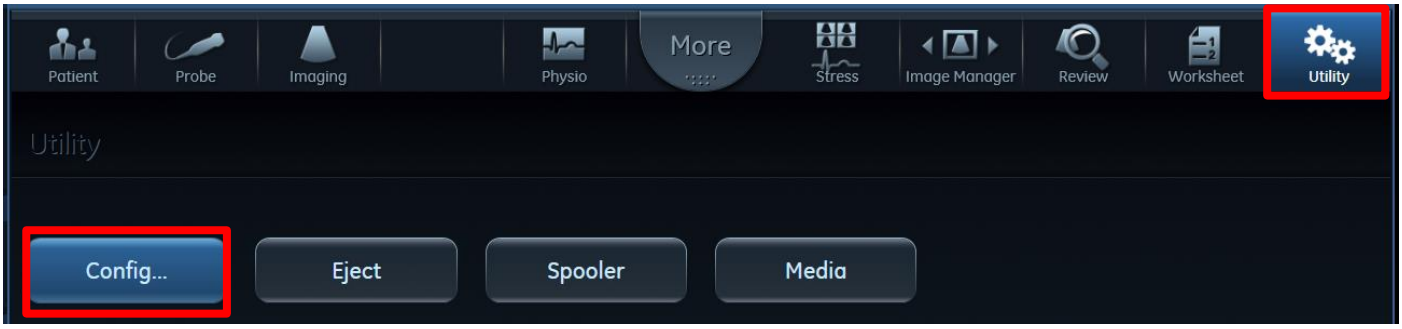
Configuration

In order to display the Bulls Eye map for the time to peak measurements, the following needs to be set up once in the beginning.

Config

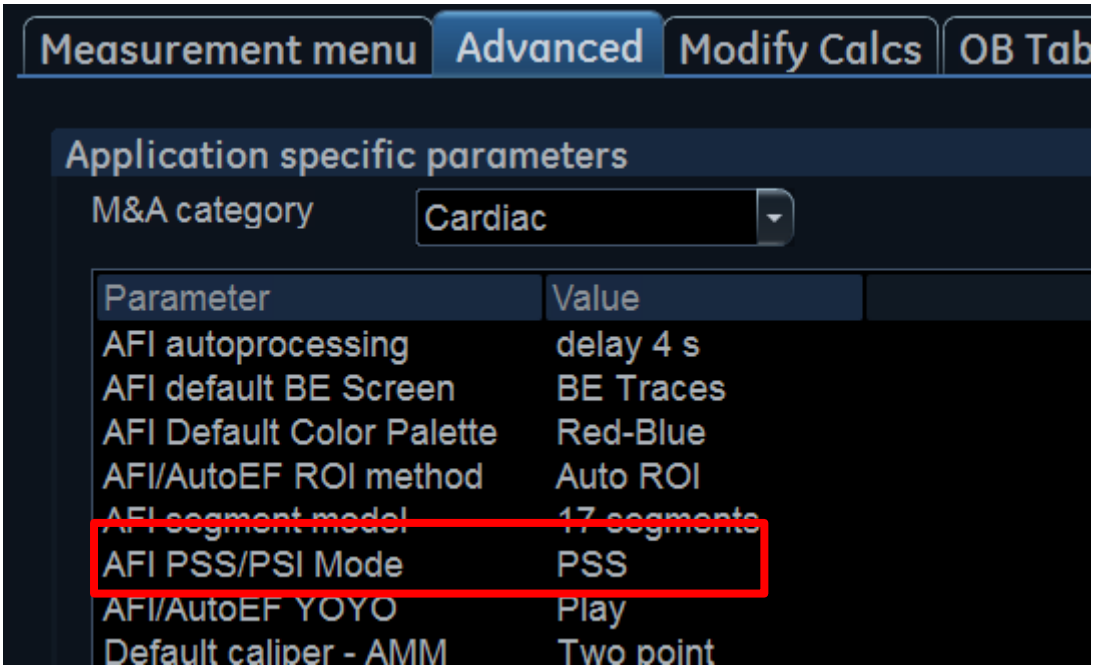
Select the **Utility** button on the touch panel. Utility can be found either in the short cut menu or under More.
Select **Config** to open the configuration



AFI configuration

Select **Meas/Text** from the Main Topics and choose the **Advanced** Tab.

Scroll down and find the following selections:



AFI PSS/PSI/TTP

Select which parameter(s) should be shown with the BE maps.
PSS Peak Systolic Strain.

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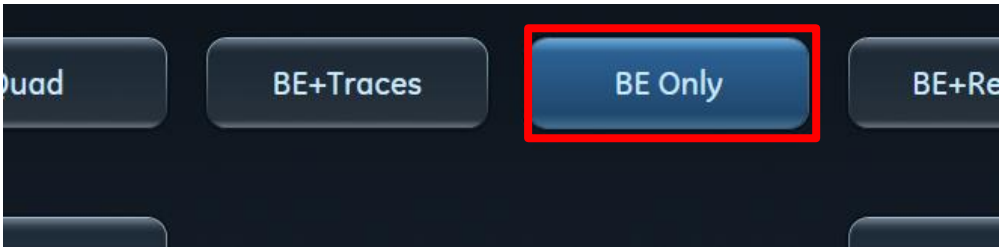
PSI Post Systolic Index
TTP Time To Peak
The system is detecting the time to the peak longitudinal strain over the entire heart cycle.
The bulls-eye displays the segmental time to peak contraction in a color scheme where green color indicates contraction with a peak at or around AVC, cyan to blue color indicates early contraction and yellow to red indicates late contraction

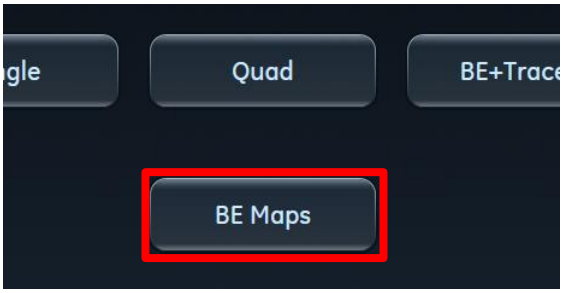
The Bull's Eye for dyssynchrony

After finishing your AFI analysis, select "BE only" on the touch to activate the bull's eye only screen.
By default the Peak Systolic Strain BE is shown on the screen.



Changing the BE displays

Tap on BE Maps to get a selection of alternative BE mappings



Scroll down the list and change the BE Map from PSS to **TTP**.

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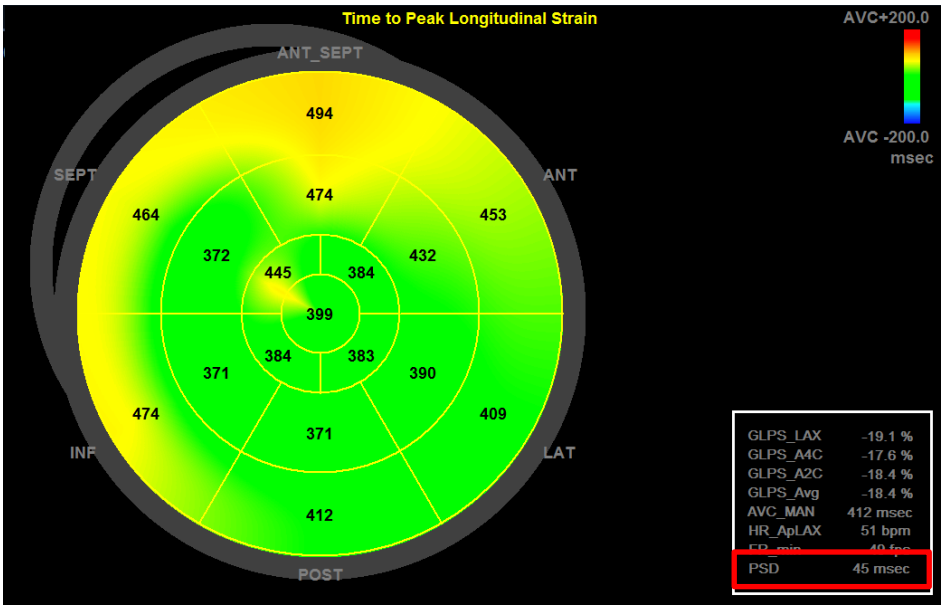
Time to Peak

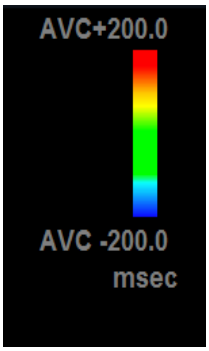
Time To Peak Strain
The system is detecting the time to peak strain for each curve during the **entire** heart cycle.
The time to peak values are shown in the BE, highlighted with the respective color.

Mechanical Dispersion

PSD (Peak Strain Dispersion) also called Mechanical Dispersion
From these segmental Time to Peak values, the system then calculates the standard deviation.
The Standard deviation is then displayed as PSD (Peak Strain Dispersion, also called Mechanical Dispersion) in the BE Parameter List.
The PSD is the numeric value for the spread of the peak values over time.
It has a higher value if the peak values are widely spread and a lower value if all the peaks are closer together (are less spread out in time)
It is an indication of the discordance of the deformation of the LV.



The Bulls' eye color scheme



Yellow/Red
Yellow or Red color indicates the peak strain value is detected **after** AVC (up to 200 ms after AVC, see indication on the scale).

Green
The green part in the middle reflects the time point **around** Aortic Valve Closure (AVC)

Blue
Cyan or blue indicates the peak strain values that are detected **before** AVC (up to 200 ms before AVC, see indication on the scale).

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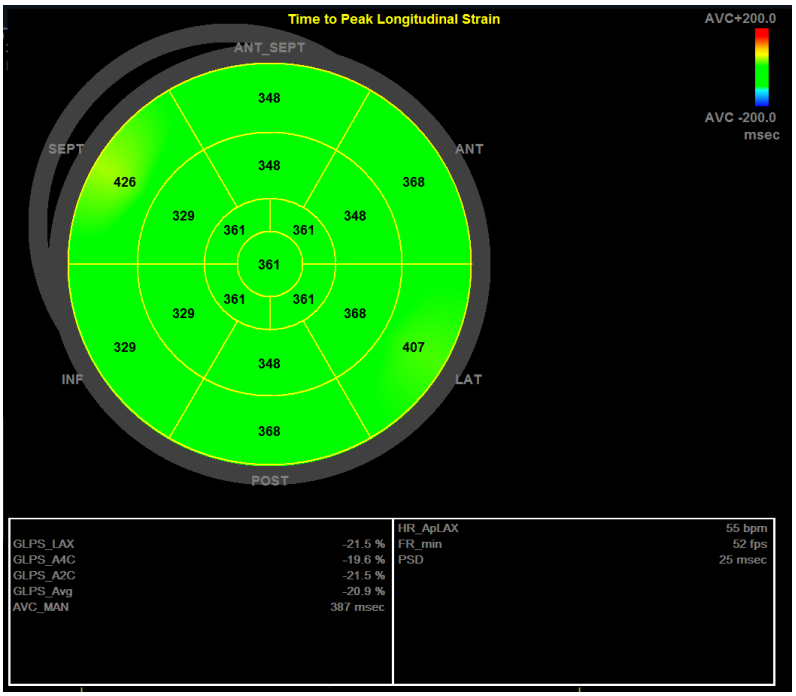
In other words
Cyan/blue shows early peak strain
Green shows peak strain around AVC
Yellow/red shows peak strain after AVC

Examples

In a patient with all peak strain values very close around AVC, the Bulls Eye will be all green.



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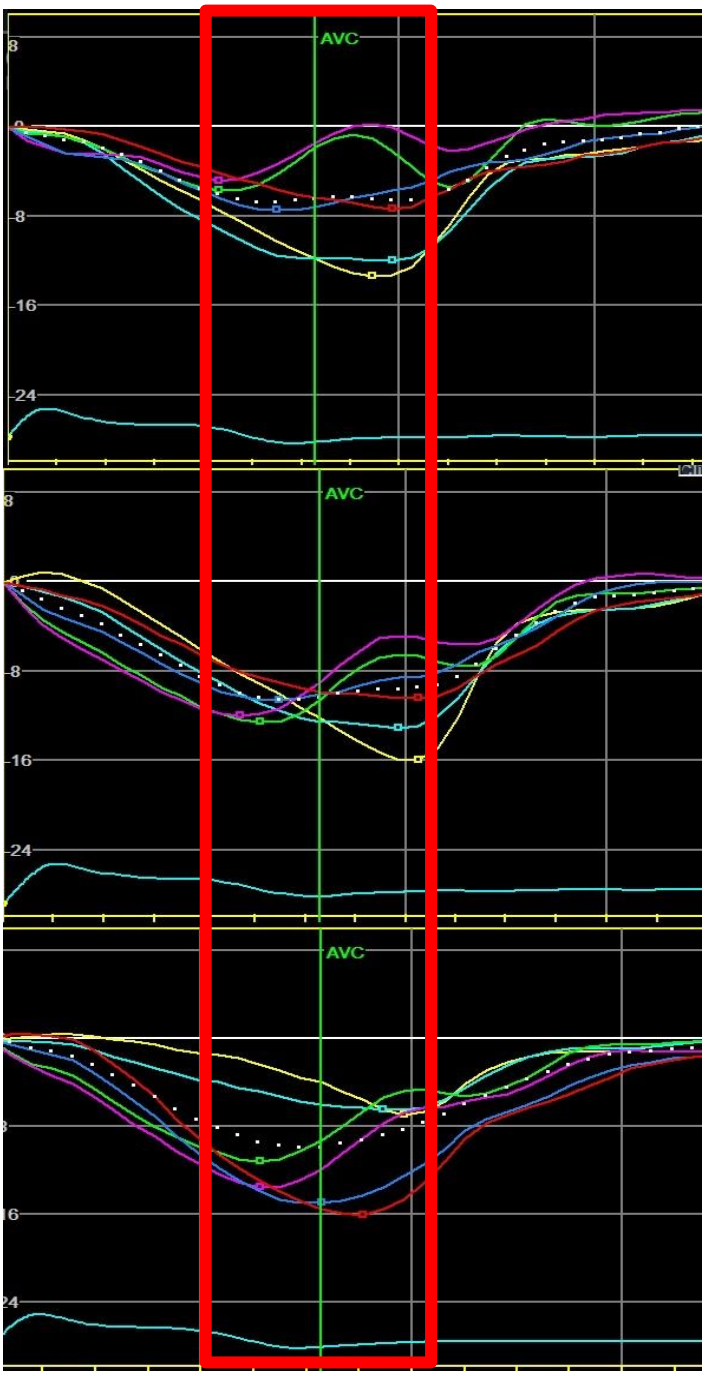
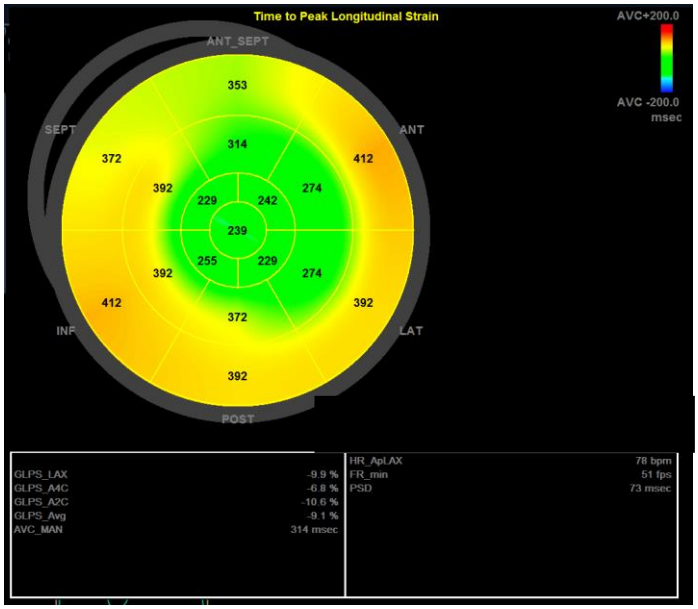
In patients with late peaks the Bull's Eye can show green for the segments with peak strain values at AVC and yellow/red for segments with peak strain values in post systole.





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