

# Product Note



## Piranha – Improvements in calibrations related to Hologic Mammography units

### Release information

Release date	2015-12-22	2015-05-23
Release name	R15-2	R16-1
Installer version	2015.12C	2016.5A
Piranha FW version	4.0A	4.1B
Calibration Software	2015.12A	2016.5A

## Black Piranha calibrations for Hologic Selenia and Selenia Dimensions

The following calibrations are recommended for Hologic Mammography units:  
All data below is developed and valid for large focus.

### Hologic Selenia:

W/50  $\mu\text{m}$  Ag (Sel) [M16]  
W/50  $\mu\text{m}$  Rh (Sel) [M17]  
Mo/25  $\mu\text{m}$  Rh (Sel) [M21] **new!**  
Mo/30  $\mu\text{m}$  Mo [M1]

### Hologic Selenia Dimensions:

W/0.7 mm Al [M15]  
W/50  $\mu\text{m}$  Rh [M6]  
W/50  $\mu\text{m}$  Ag [M10]  
W/0.3 mm Cu [M18]

## Improvements of Black Piranha calibrations for Hologic

RTI have been working together with Hologic Inc, Danbury, to improve the measurement performance of the Black Piranha on the units mentioned above. The results of the improvements are visualized in this product note. A new calibration, Mo/25  $\mu\text{m}$  Rh (Sel) [M21], is introduced. kV, HVL and exposure are changed in some of the calibrations.

All graphs are showing what the user will experience when using the new software in comparison to software releases before 2015.12. For some of the improvements recalibration are required to get the improvements. Please see details below.

## New calibration Mo/25 $\mu\text{m}$ Rh (Sel) [M21]

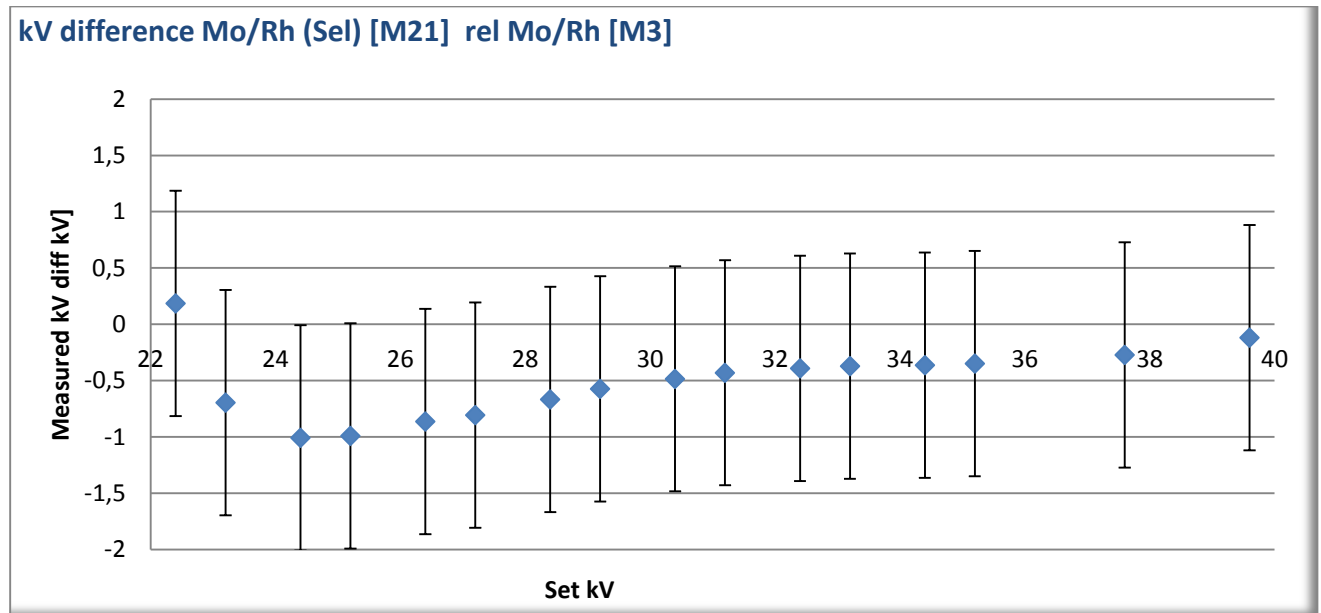
Available with R15-2 and Black Piranha calibration after 2016-01-01

# Product Note

A new Mo/Rh calibration has been developed together with Hologic, Mo/25  $\mu$ m Rh (Sel) [M21]. This calibration is optimized against *Selenia*. Using Mo/25  $\mu$ m Rh (Sel) [M21] instead of the already existing Mo/25  $\mu$ m Rh [M3], the user can expect a shift in kV measurement according to fig1.

The highest difference in measured kV can reach can be expected at approximately 24 kV and reach up to 1 kV.

No shift in dose and HVL is introduced compared to Mo/25  $\mu$ m Rh [M3].



**Fig1:** The graph above shows how the Black Piranha behaves when using calibration #M21 in comparison to M3. The expanded uncertainty of 1 kV is marked in the graph.

## kV-measurement improvements

**Available with R15-2 and Black Piranha calibration after 2016-01-01 and 2016-05-01**

The following calibrations have been further optimized for kV-measurement on Hologic Mammography units:

**Hologic Selenia (2016-05-01):**

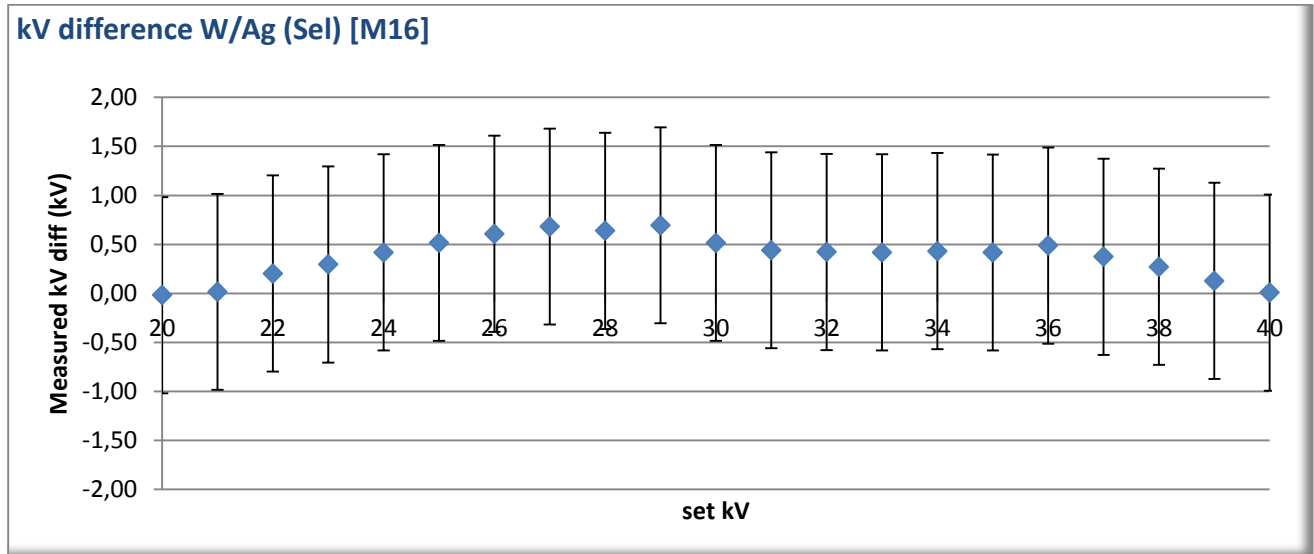
W/50  $\mu$ m Ag (Sel) [M16]  
W/50  $\mu$ m Rh (Sel) [M17]

**Hologic Selenia Dimensions (2016-01-01):**

W/50  $\mu$ m Rh [M6]  
W/50  $\mu$ m Ag [M10]

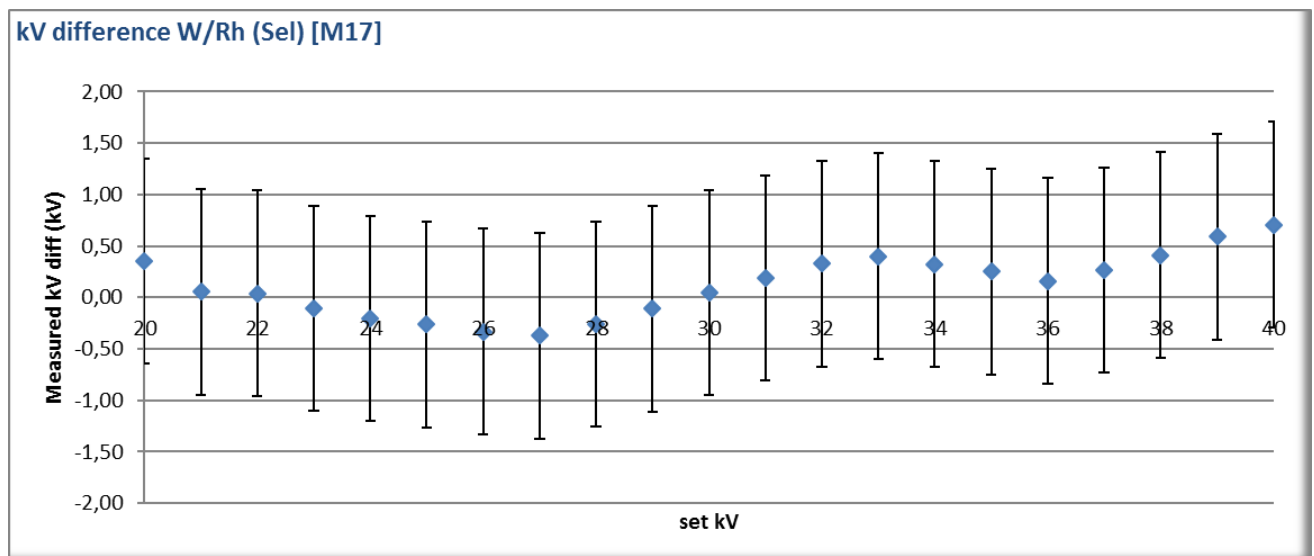
Fig 2-5 illustrates the expected difference when using the new software and a re-calibrated Black Piranha.

# Product Note



**Fig2:** The graph above shows how the Black Piranha behaves on W/Ag (Sel) [M16] after the changes in comparison to before. The expanded uncertainty of 1 kV is marked in the graph. This is valid for calibrations made after 2016-05-01.

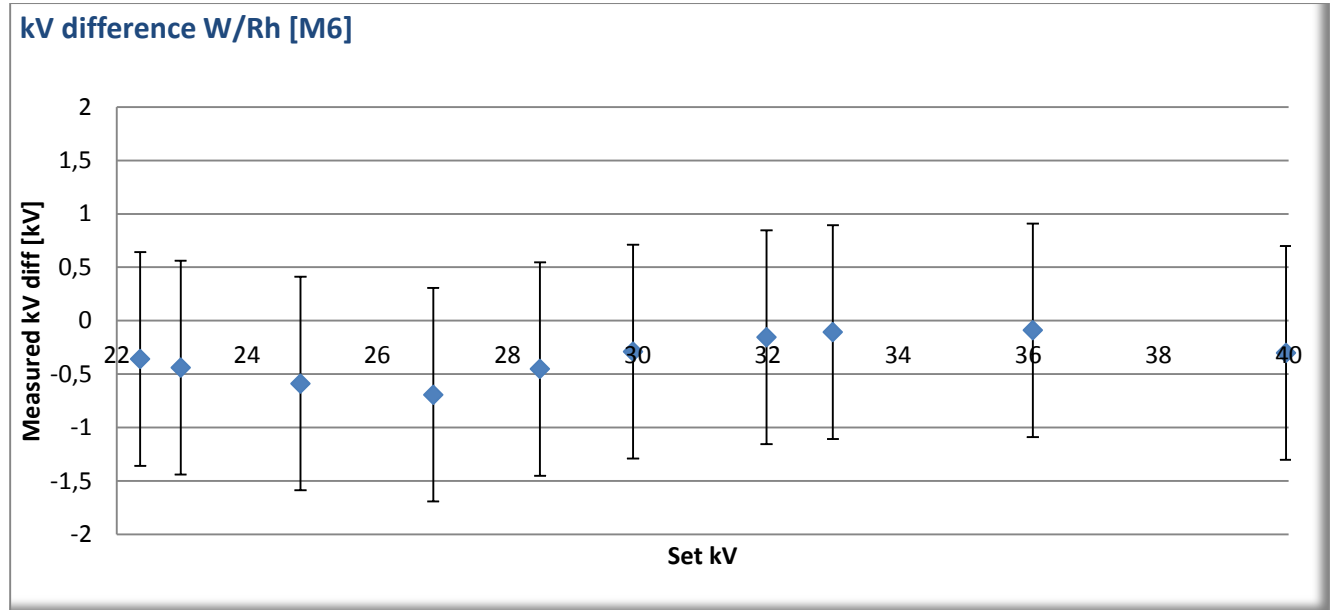
Note: Calibrations made in period 2016-01-01 to 2016-04-30 shows a slightly higher deviation.



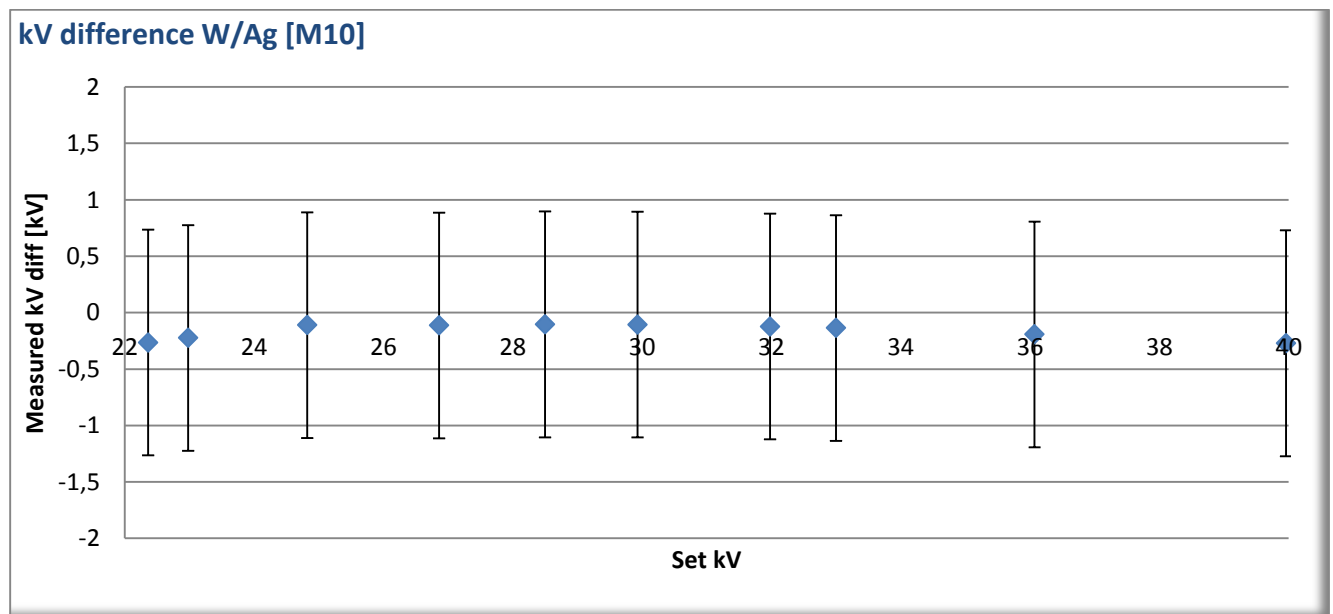
**Fig3:** The graph above shows how the Black Piranha behaves on W/Rh (Sel) [M17] after the changes in comparison to before. The expanded uncertainty of 1 kV is marked in the graph. This is valid for calibrations made after 2016-05-01.

Note: Calibrations made in period 2016-01-01 to 2016-04-30 shows a slightly higher deviation.

# Product Note



**Fig4:** The graph above shows how the Black Piranha behaves on W/Rh [M6] after the changes in comparison to before. The expanded uncertainty of 1 kV is marked in the graph.



**Fig5:** The graph above shows how the Black Piranha behaves on W/Rh [M6] after the changes in comparison to before. The expanded uncertainty of 1 kV is marked in the graph.

# Product Note

## HVL-measurement improvements

### Available with R15-2

The following calibrations have been further optimized for HVL-measurement on Hologic Mammography units:

#### Hologic Selenia:

Mo/30  $\mu\text{m}$  Mo [M1]

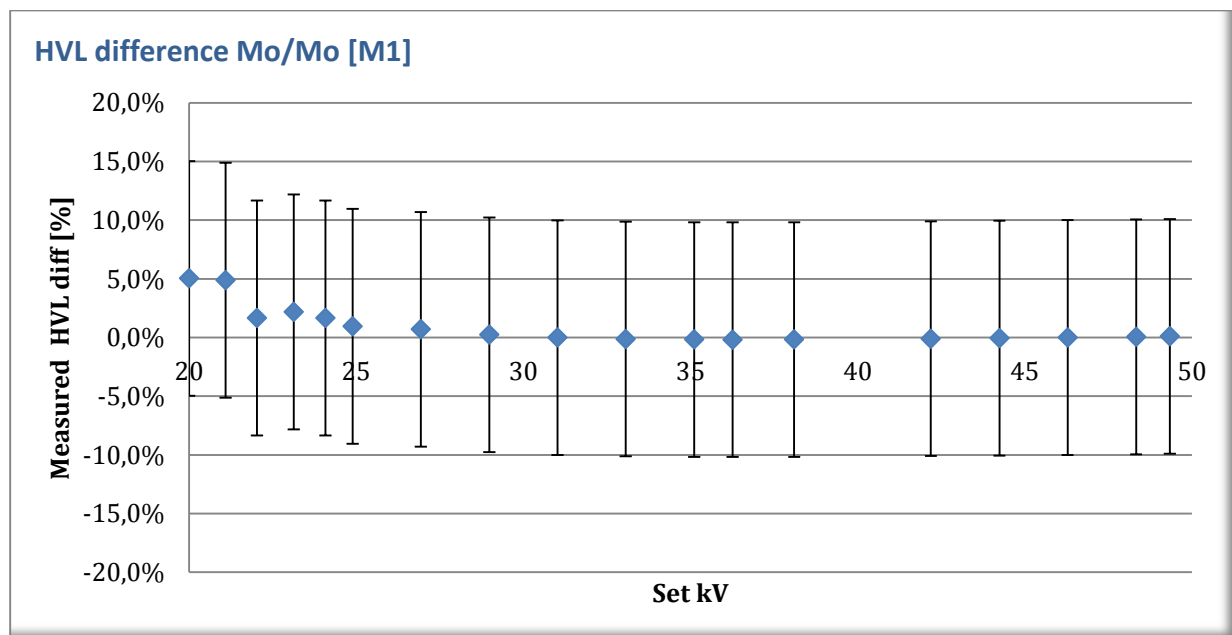
#### Hologic Selenia Dimensions:

W/0.7 mm Al [M15]

W/50  $\mu\text{m}$  Rh [M6]

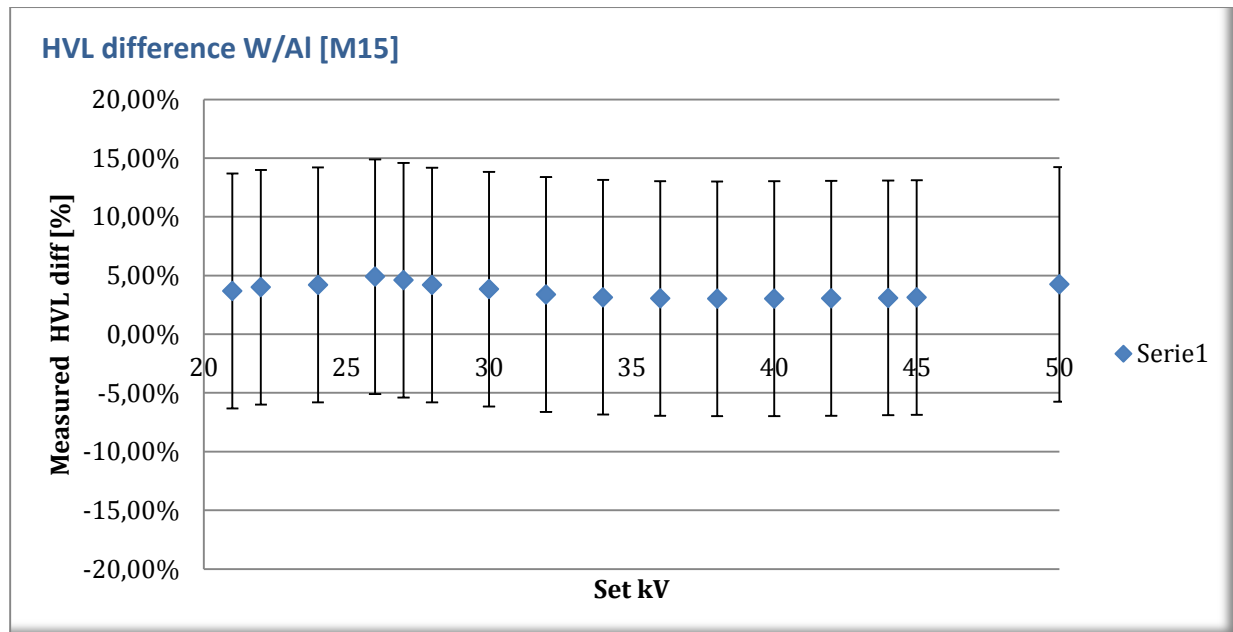
W/50  $\mu\text{m}$  Ag [M10]

Fig 6-9 illustrates the expected difference when using the new software.

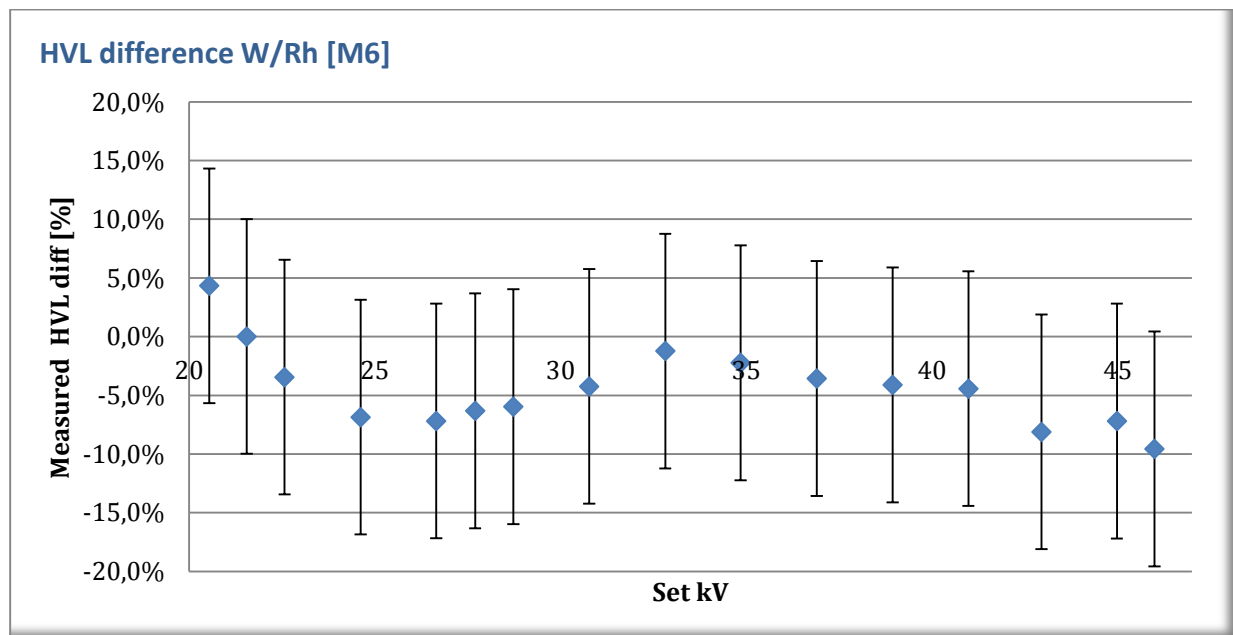


**Fig6:** The graph above shows how the Black Piranha behaves on Mo/Mo [M1] after the changes in comparison to before. The expanded uncertainty of 10% is marked in the graph.

# Product Note

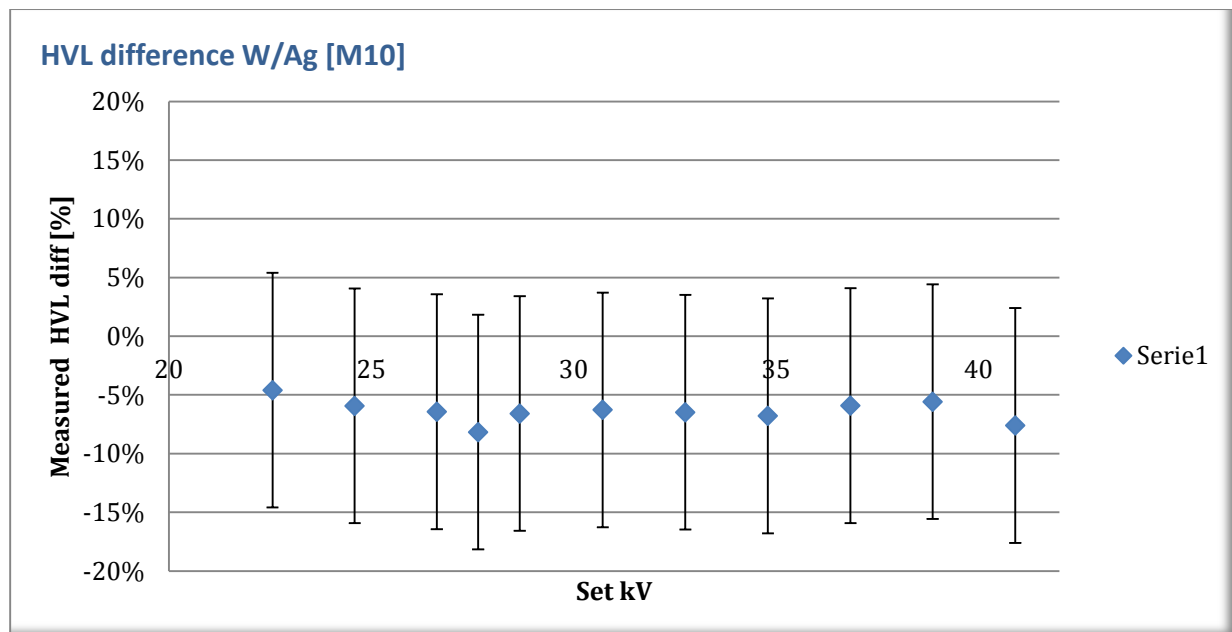


**Fig7:** The graph above shows how the Black Piranha behaves on W/AI [M15] after the changes in comparison to before. The expanded uncertainty of 10% is marked in the graph.



**Fig8:** The graph above shows how the Black Piranha behaves on W/Rh [M6] after the changes in comparison to before. The expanded uncertainty of 10% is marked in the graph.

# Product Note



**Fig9:** The graph above shows how the Black Piranha behaves on W/Rh [M6] after the changes in comparison to before. The expanded uncertainty of 10% is marked in the graph.

## Exposure measurement improvements

**Available with R15-2 and Black Piranha calibration after 2016-01-01**

The following calibrations have been further optimized for Exposure measurement on Hologic Mammography units:

### Hologic Selenia Dimensions:

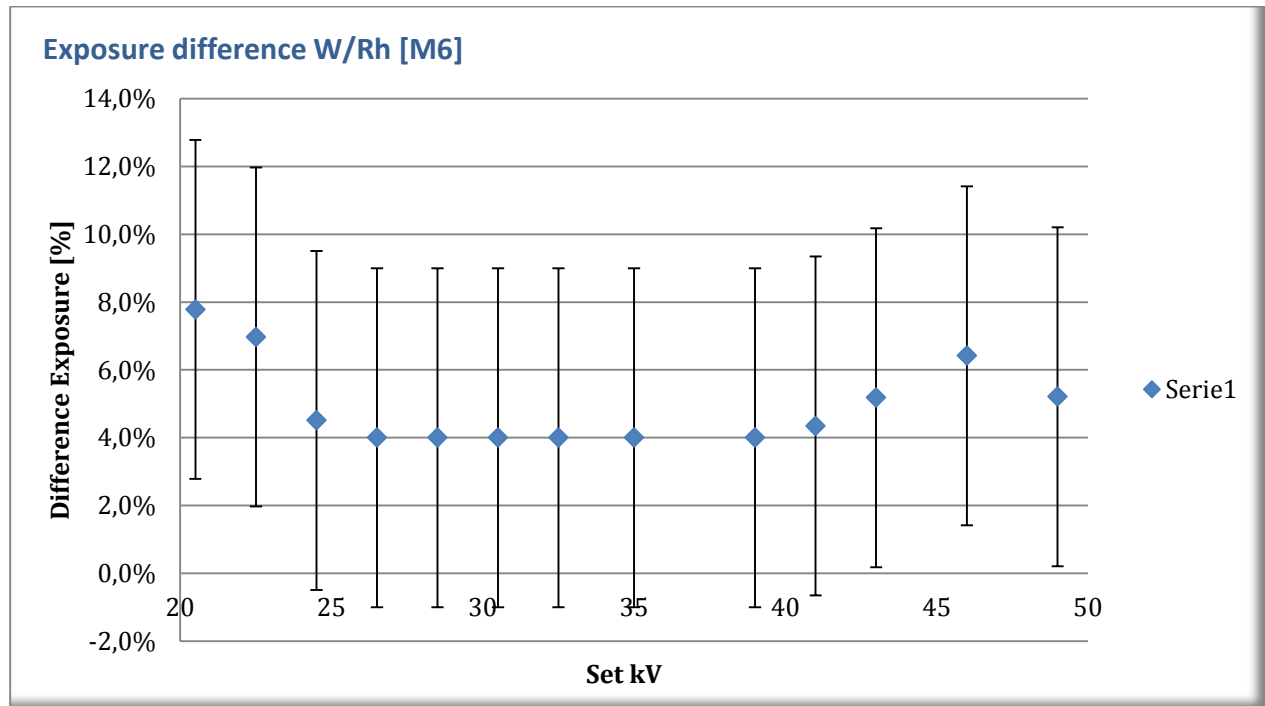
- W/0.7 mm Al [M15]
- W/50  $\mu$ m Rh [M6]
- W/50  $\mu$ m Ag [M10]

**W/50  $\mu$ m Rh [M6]:** A general change of **-4%** in the exposure measurement over the complete measuring range of will be introduced to Black Piranhas calibrated after 2016-01-01.

**W/50  $\mu$ m Ag [M10]:** A general change of **-3%** in the exposure measurement over the complete measuring range of will be introduced to Black Piranhas calibrated after 2016-01-01.

# Product Note

**W/0.7 mm Al [M15]:** A general change of **+4%** in the exposure measurement over the complete measuring range, together with a correction of the energy dependence of up to additional **+4%** will be introduced to Black Piranhas calibrated after 2016-01-01. See fig 10 for further visualization.



**Fig10:** The graph above shows how the Black Piranha behaves on W/Rh [M6] after the changes in comparison to before. The expanded uncertainty of 5% is marked in the graph.

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