Accu-Gold 3

- User Guide

Radcal Accu-Gold 3 is a state-of-the-art radiation quality control software designed to provide accurate and reliable measurements for a wide range of applications. This instruction manual is designed to guide you through the features and functions of the software, so you can make the most of its capabilities.

With its advanced algorithms and sophisticated sensors, it is capable of making measurements in real-time, and provides a range of tools for data management and analysis. Additionally, its ability to connect to other devices and systems makes it an ideal tool for researchers and scientists who need to collect, analyze, and share data from multiple sources. With its user-friendly interface, Accu-Gold 3 is easy to use and understand, making it the perfect tool for anyone working with radiation.

AG3

Simply Powerful

The Radcal Accu-Gold 3 is a powerful tool for radiation quality control that can be used in a variety of settings, including medical facilities, research labs, and industrial environments. It is capable of making measurements in a wide range of radiation environments.

AG3's strength is the ability to fully utilize the multi-function capabilities of the Accu-Gold digitizer via Profiles in ways heretofore not possible. Profiles are able to control all aspects of a measurement application including the triggering sensor's level, anode/filter selection, region(s) of interest as well as many other unique capabilities of the Accu-Gold system.

Introduction

- This software provides a user-friendly interface, making it easy to navigate and understand. The interface is intuitive, with clear and simple instructions that guide users through the measurement process.
- At AG3's core is the usage of profiles. Profiles are used to define the measurement process. They spell out trigger parameters, filtration requirements, the breakdown of the measurement (such as having a scout pulse) and the end of the pulse. Special calibrations are built into the profiles eliminating the need to install calibration files. Profiles allow you to specify different techniques for special measurements rather than relying on across-the-board catch-all techniques.
- When special needs arise, the profiles can make the measurement when nothing else can. Radcal is poised to help you by making special profiles as needed. If you feel that you need a special profile, contact customer support at cust_sup@radcal.com or call (626)357-7921, ext 123.
- IMPORTANT: For Wi-Fi users, we are still working on adding WiFi support. (Please use Accu-Gold 2 in the meantime)
- Note - AG3 exclusively accommodates 'plus' digitizers paired with corresponding 'plus' sensors. If you currently utilize legacy Accu-Gold equipment and you want to take advantage of AG3, we recommend contacting your sales representative. They will be happy to assist you in exploring the possibility of a trade-in. Thank you for your understanding and cooperation.
- …*And much more*… Stay tuned to receive improvements and features.

(See appendix A for installation instructions)

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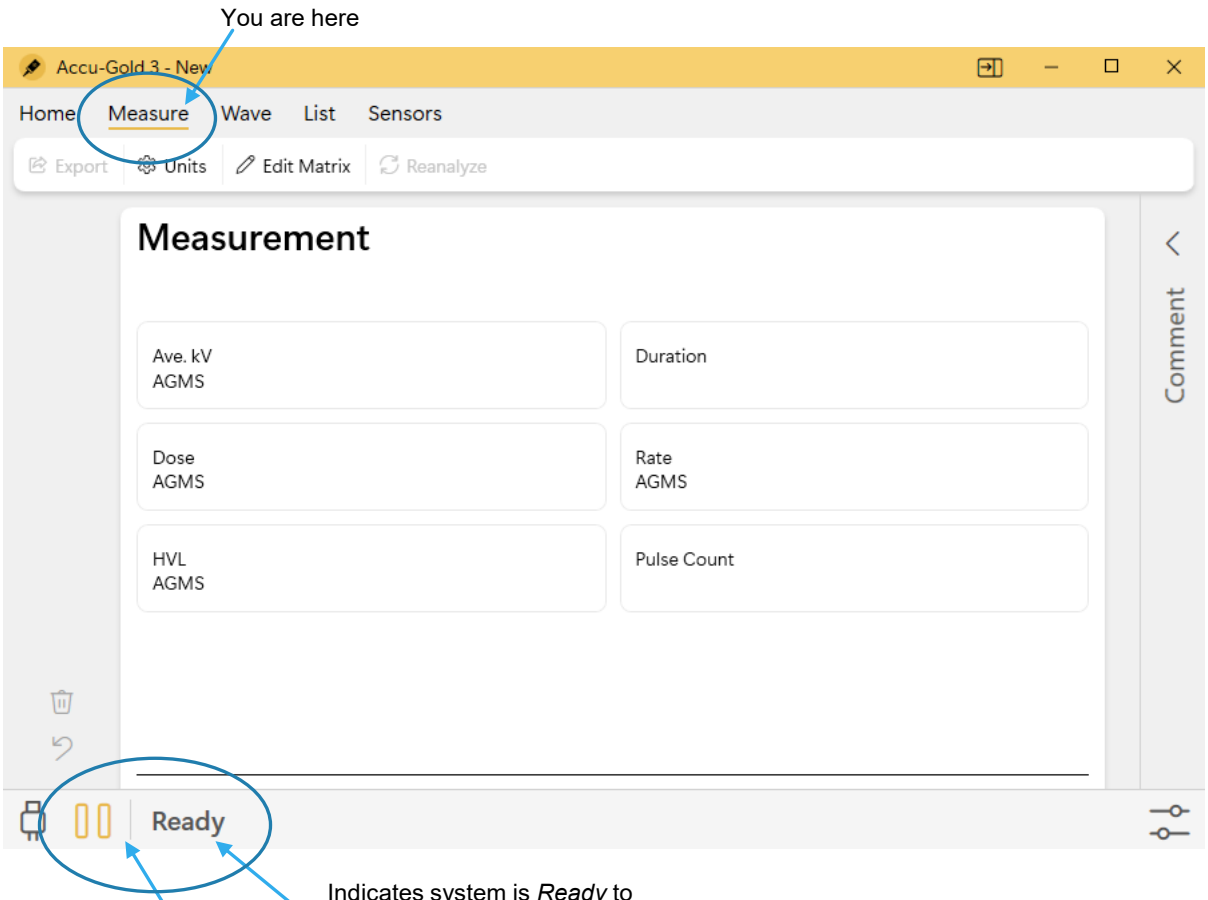
Quick Start

The software will automatically recognize your sensors once they are connected.

Quick Start

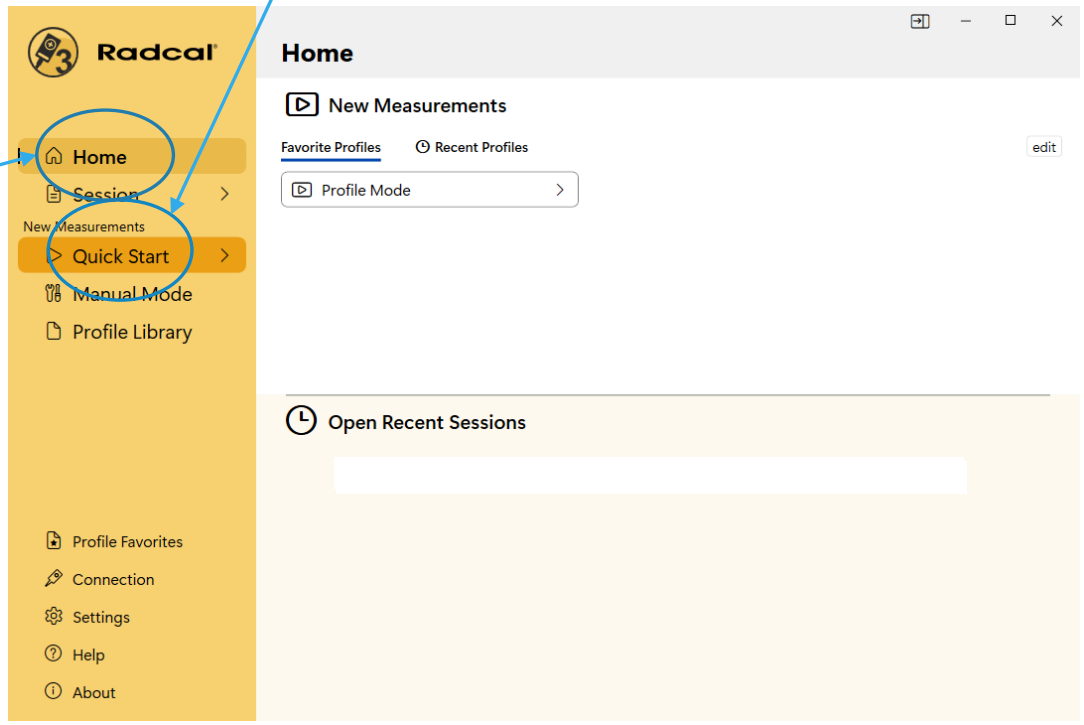
Plug in your sensors, launch the program - you are ready to make measurements …



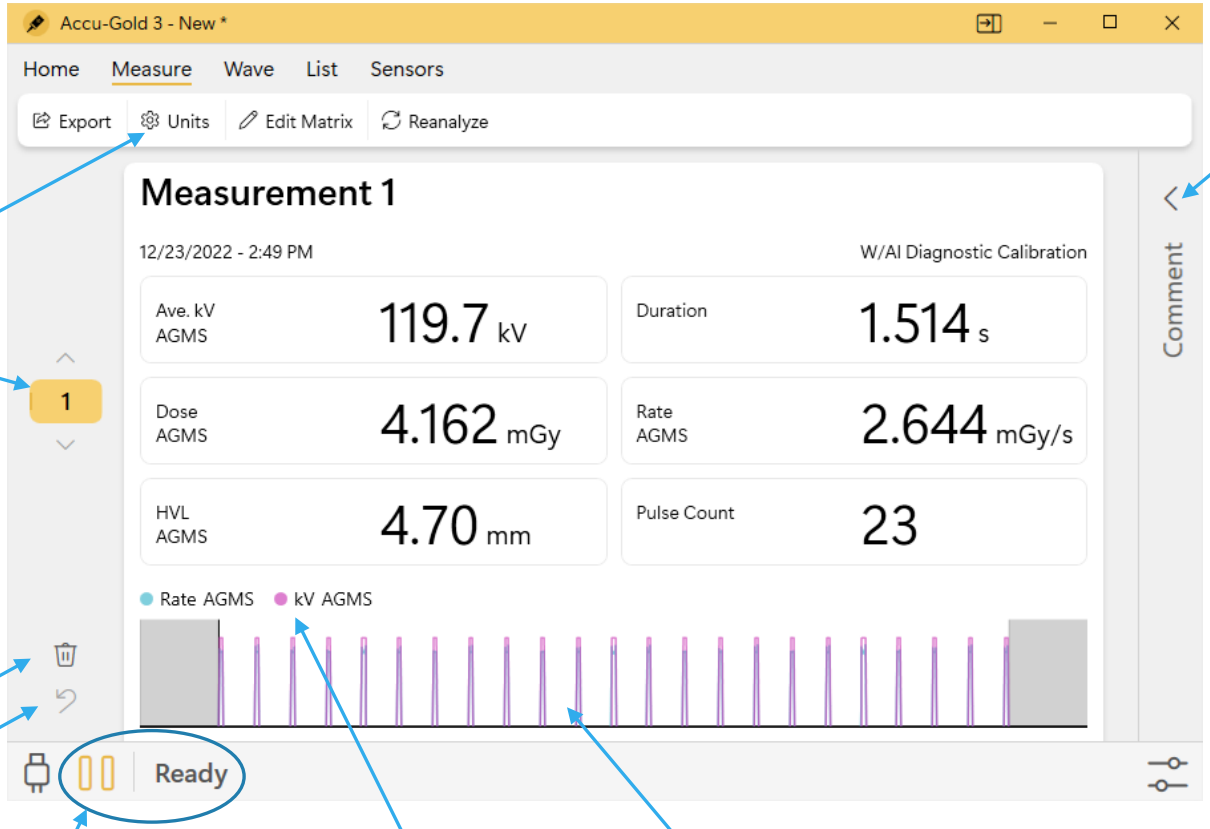
If you attach sensors after the program is open …

Click on the *Quick Start* box and the program will go straight to measure.

You are here



Make your first measurement …



Change from Gy to mR or use seconds vs. hours, etc if necessary

Measurement number. You can scroll thru each measurement you have captured using the up and down arrows

Delete measurement

Undo delete

Expand to enter comments (Described later)

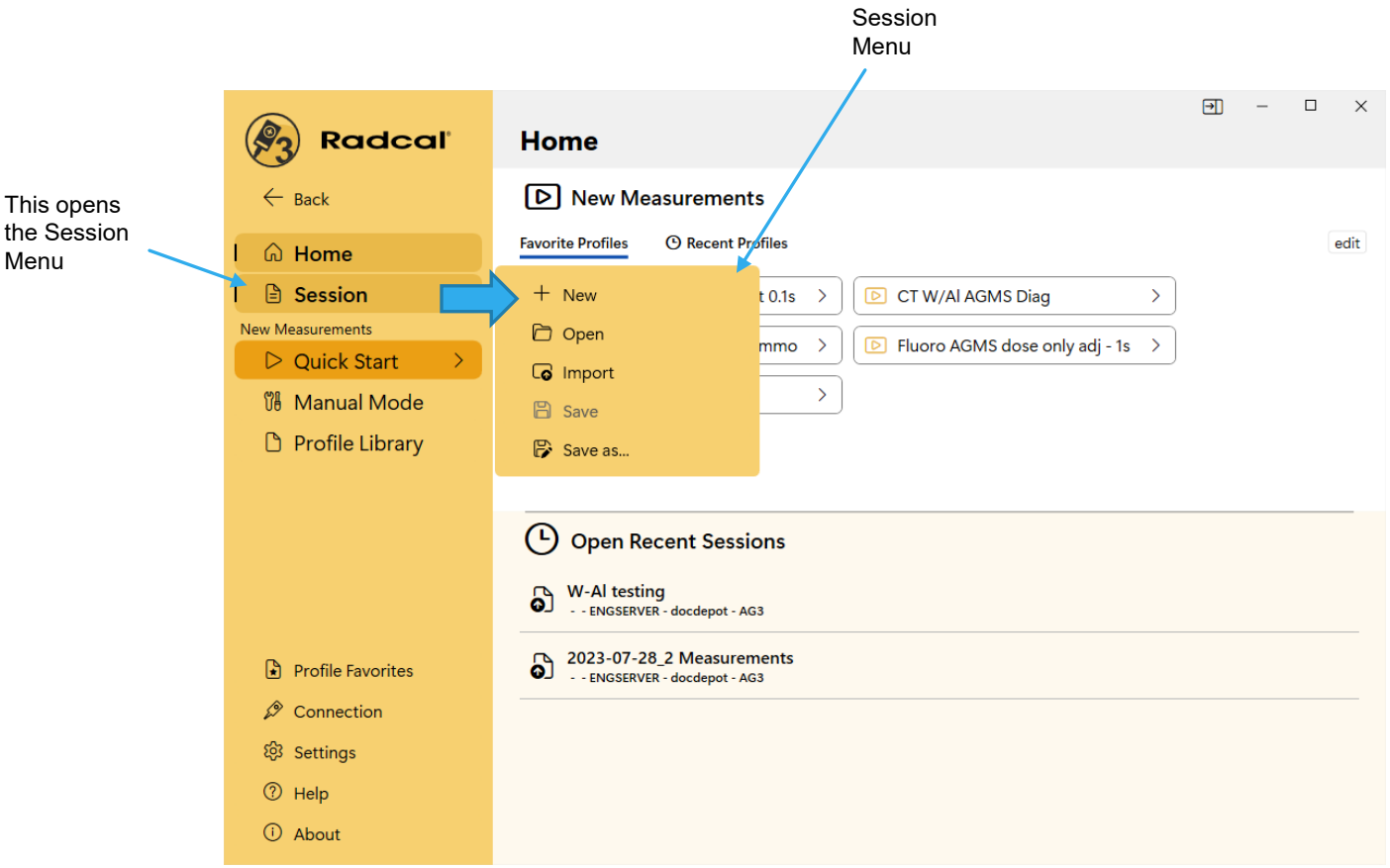
You can continue making measurements when it says *Ready*

Waveform legend

Click on the waveform to expand it or choose the *Wave* tab (See measurement section for more information)

Sessions

When done making measurements, go to the home screen. Here you can save your group of measurements as a session. You can save the session with a meaningful name of your choice or choose the default name.

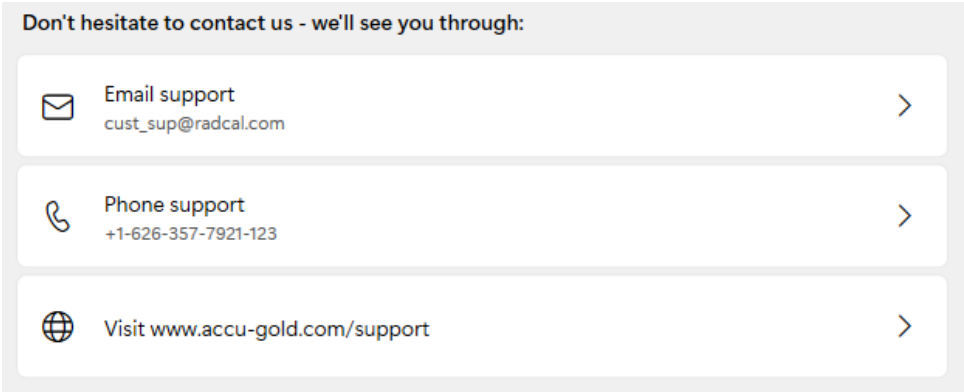


Quick Start should always be method of choice for all standard diagnostic x-ray measurements except mammography and CT. If you don't get the desired result, a suitable Profile may be available based on the Modality. For example; you might want the end values for a Pulsed Fluoro exposure, not the averages, so select Pulsed Fluoro with a 1s ROI. The same goes for low dose rate continuous fluoro.

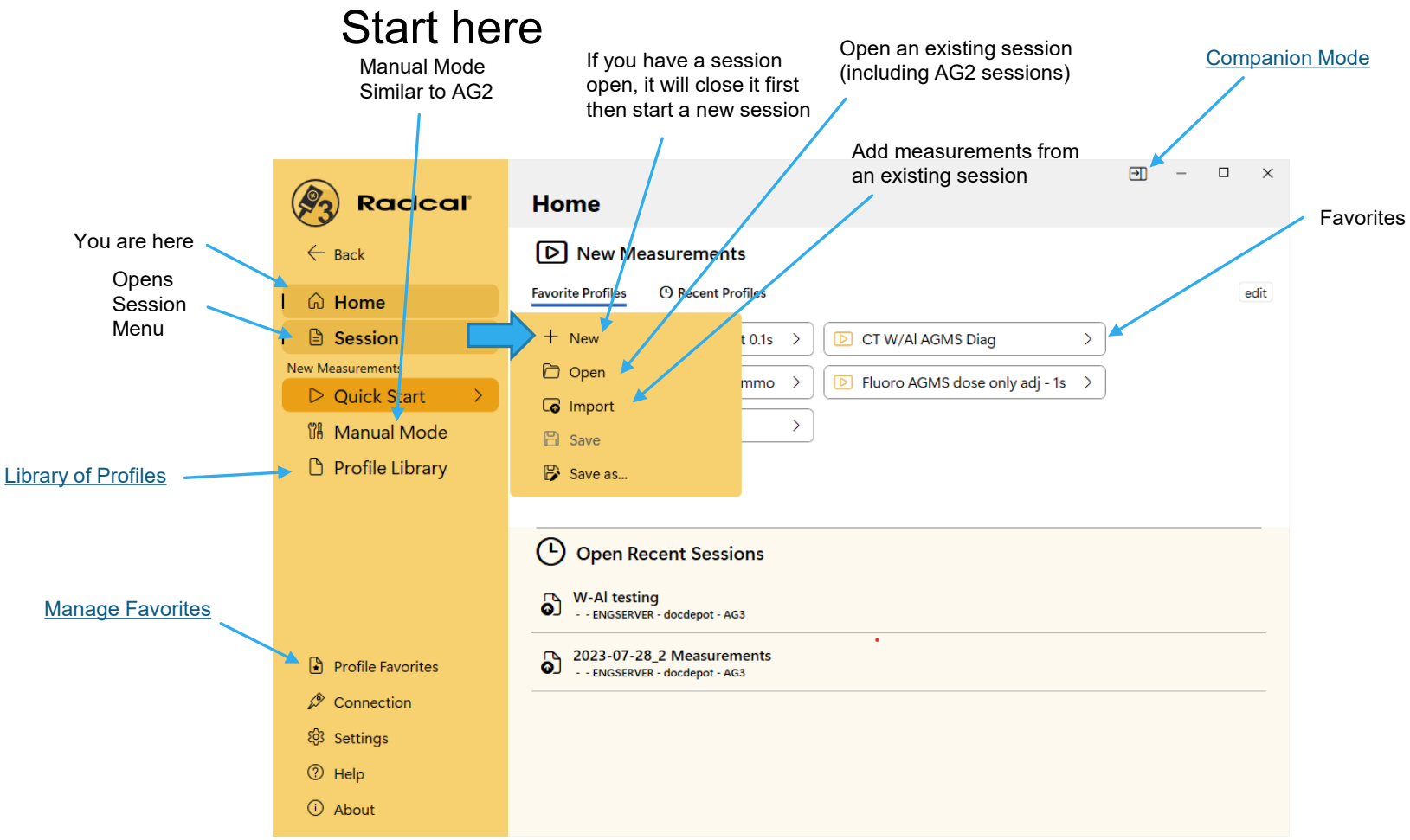
AG3 provides tools for Radcal to quickly solve your measurement issues If you do not get the desired result, you are encouraged to contact Radcal. Save the session and contact Radcal tech support to see if a special Profile can meet your measurement needs.

Contact us …

Click on ***Help***

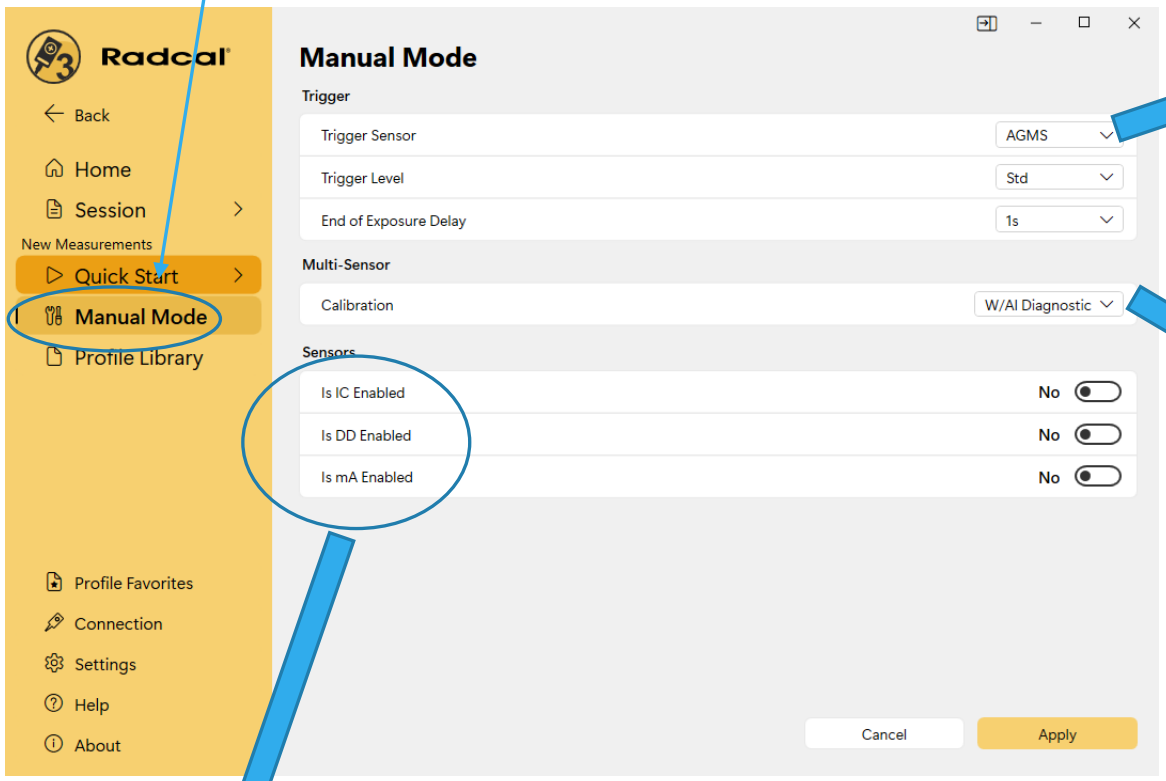


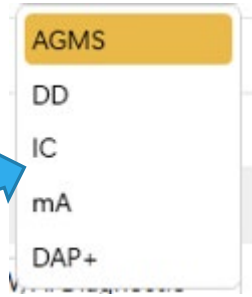
Home screen


Start here
Manual Mode
Similar to AG2
If you have a session open, it will close it first then start a new session
Open an existing session (including AG2 sessions)
Companion Mode
Add measurements from an existing session
Favorites
You are here
Opens Session Menu
Library of Profiles
Manage Favorites
Radical
Back
Home
Session
New Measurements
Quick Start
Manual Mode
Profile Library
Profile Favorites
Connection
Settings
Help
About
Home
New Measurements
Favorite Profiles
Recent Profiles
edit
New
Open
Import
Save
Save as...
CT W/Al AGMS Diag
Fluoro AGMS dose only adj - 1s
Open Recent Sessions
W-Al testing
- - ENGSERVER - docdepot - AG3
2023-07-28_2 Measurements
- - ENGSERVER - docdepot - AG3

Manual Mode

You are here

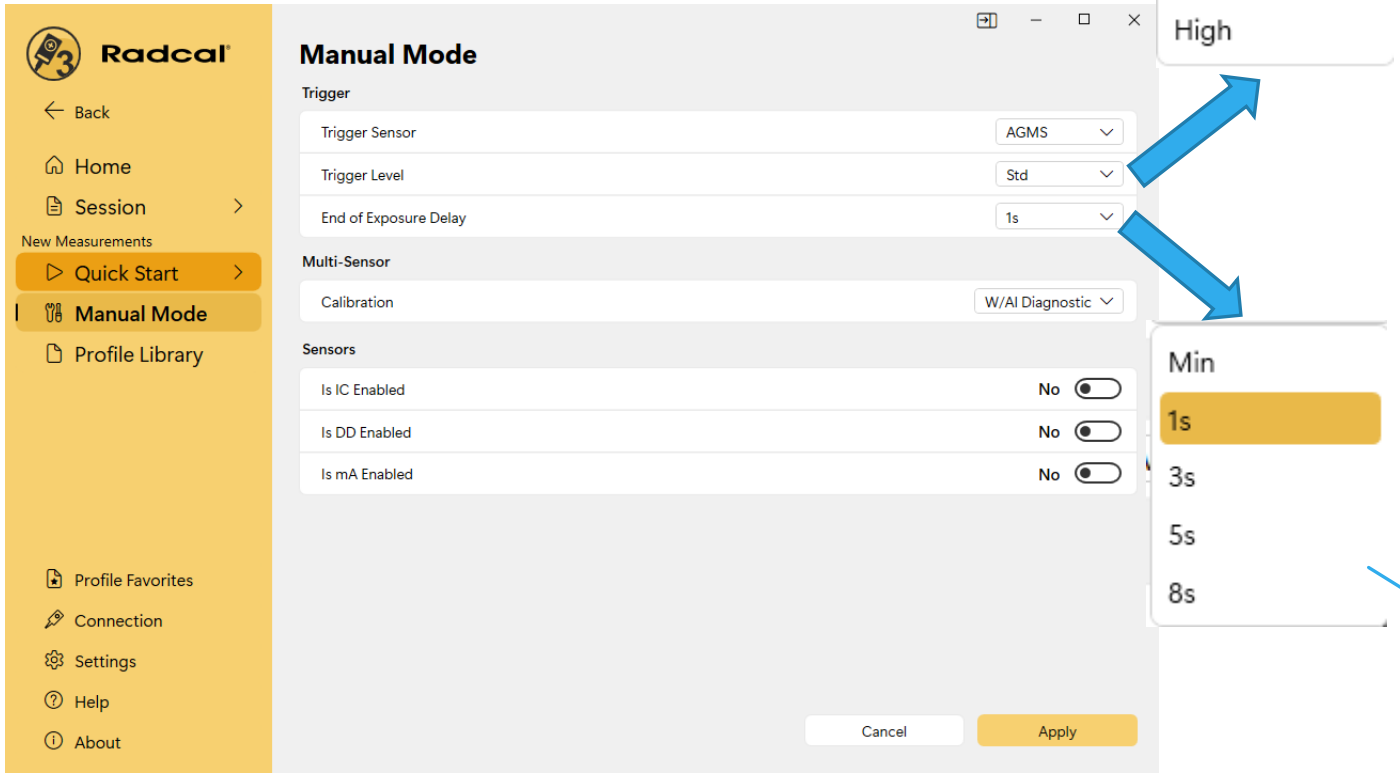


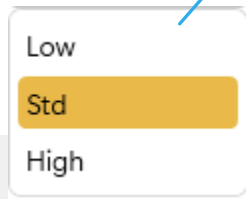


Choose the sensor to be the trigger source

Before making an exposure, make sure to choose the Anode/Filter combination that matches the machine being measured.

The Accu-Gold Digitizer Module (AGDM) allows you to simultaneously collect data from multiple sensors.





Std - *Std* trigger sensitivity is recommended.

Low - Select if Std is not low enough. *Low* may allow smaller signals to be captured, but may also result in false triggers.

High – Select if *Std* causes false triggering.

Note: If noise or false triggers prevent reliable ion chamber measurements and grounding the system has not improved the experience, connect a Multi-sensor or Dose Diode and locate it somewhere in the radiation beam so that it can serve as a trigger source.

If you have a strong, noise free signal, selecting *High* will minimize the time the system measures a background zero in between measurements allowing you to make continuous measurements rapidly. A new zero will be recalculated every 5 minutes..

Many x-ray feature scout exposures which may introduce gaps of several seconds or more in the radiation output. The default end of exposure timing in some instances will not be long enough and Accu-Gold may attempt to display the exposure results while the generator is finishing the exposure. If this situation is encountered, you may select an end of exposure delay of up to 8 seconds. *Min* allows one to make successive measurements quickly. In between measurements, zeroing is skipped and therefore use *Min* with large signals only where zeroing in between measurements is not important – use with “High Threshold”.

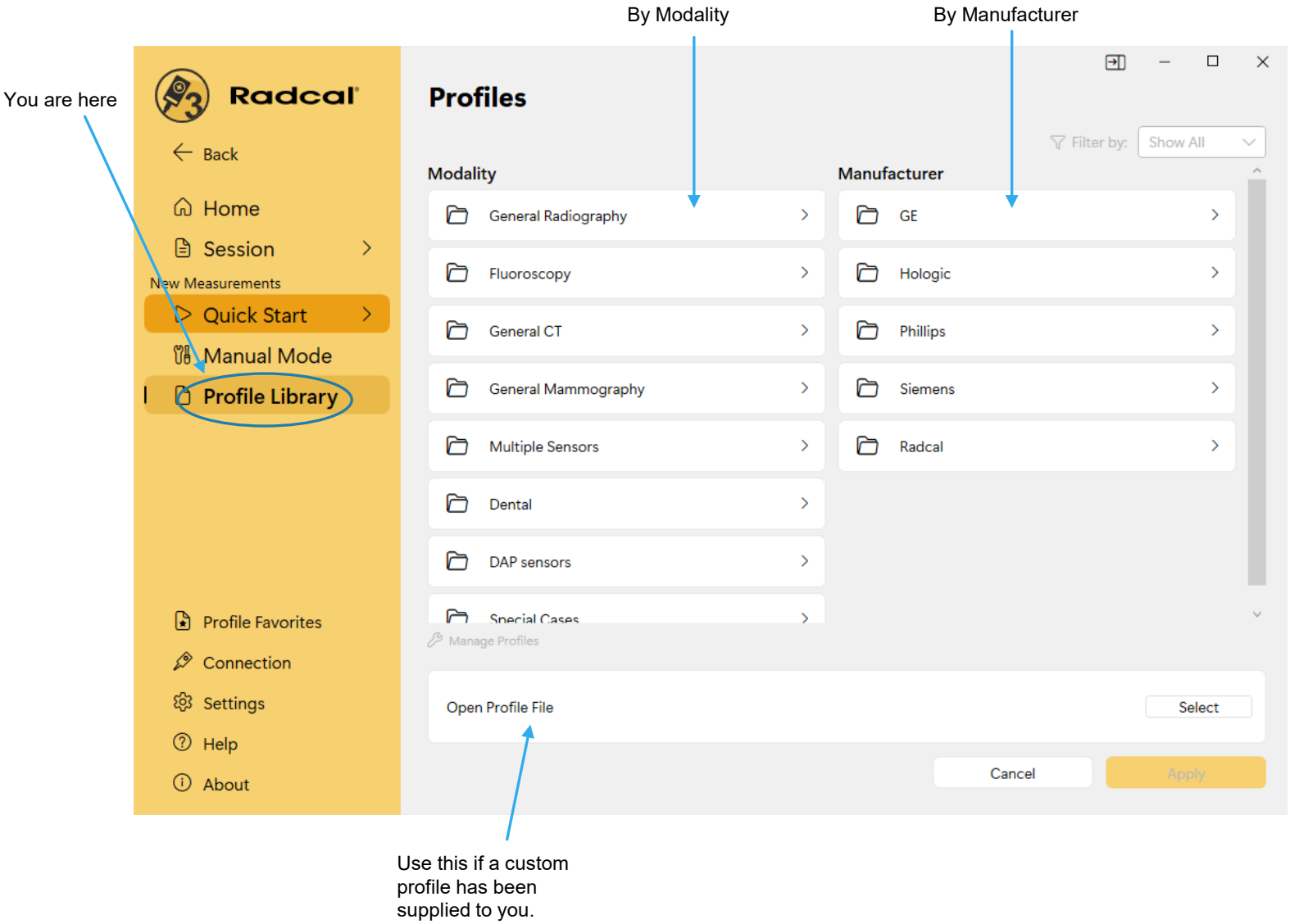
NOTE: Do not make sensitive measurements when the computer is hooked up to a charger unless the charger has a 3-wire AC cord (and the AC outlet is properly grounded).

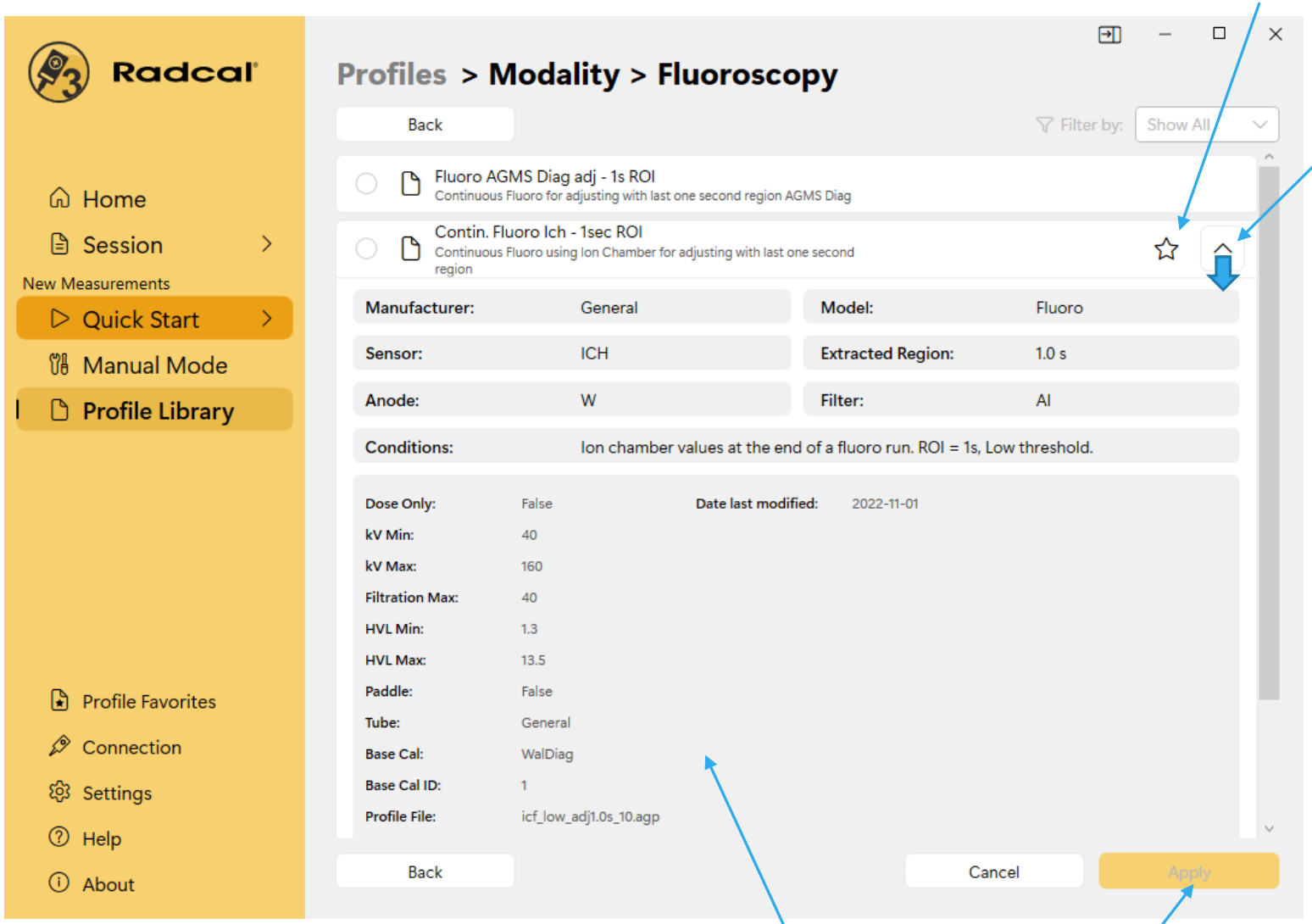
Profiles

You have three ways to select a profile yourself: Favorites, Manual Mode or Profile Library. Since there are no Favorites in the beginning, use Manual Mode (which is also a way of selecting a profile) to try it out, then explore the Library to see what else you can do.

Profile Library

When a user doesn't get the desired result using Manual Mode, a suitable profile might be available based on Modality or Manufacturer.

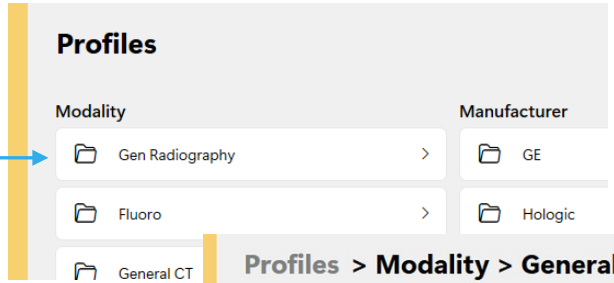



Radcal
Home
Session
New Measurements
Quick Start
Manual Mode
Profile Library
Profile Favorites
Connection
Settings
Help
About
Profiles > Modality > Fluoroscopy
Back
Filter by:
Show All
Fluoro AGMS Diag adj - 1s ROI
Continuous Fluoro for adjusting with last one second region AGMS Diag
Contin. Fluoro Ich - 1sec ROI
Continuous Fluoro using Ion Chamber for adjusting with last one second region
Manufacturer: General
Model: Fluoro
Sensor: ICH
Extracted Region: 1.0 s
Anode: W
Filter: Al
Conditions: Ion chamber values at the end of a fluoro run. ROI = 1s, Low threshold.
Dose Only: False
Date last modified: 2022-11-01
kV Min: 40
kV Max: 160
Filtration Max: 40
HVL Min: 1.3
HVL Max: 13.5
Paddle: False
Tube: General
Base Cal: WalDiag
Base Cal ID: 1
Profile File: icf_low_adj1.0s_10.agp
Back
Cancel
Apply
Select to make it a favorite
Click to expand/contract
Range of application
Click Apply to use

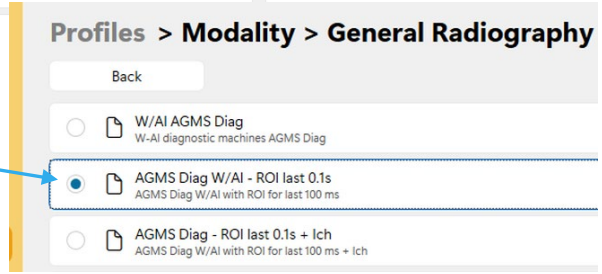
Example -

I want to make a measurement using a W-AI diagnostic x-ray machine and I am interested in examining the last 100 milliseconds of the waveform which would be useful where the generator needs time to stabilize and the initial kVp & dose rate undershoot or overshoot

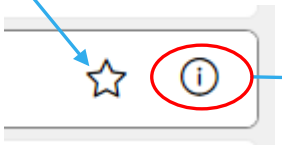
Choose
Gen Radiography



Then choose using a multisensor profile that gives a region of interest of 100 msec
AGMS with ROI 100 ms



Click the star to make it a favorite



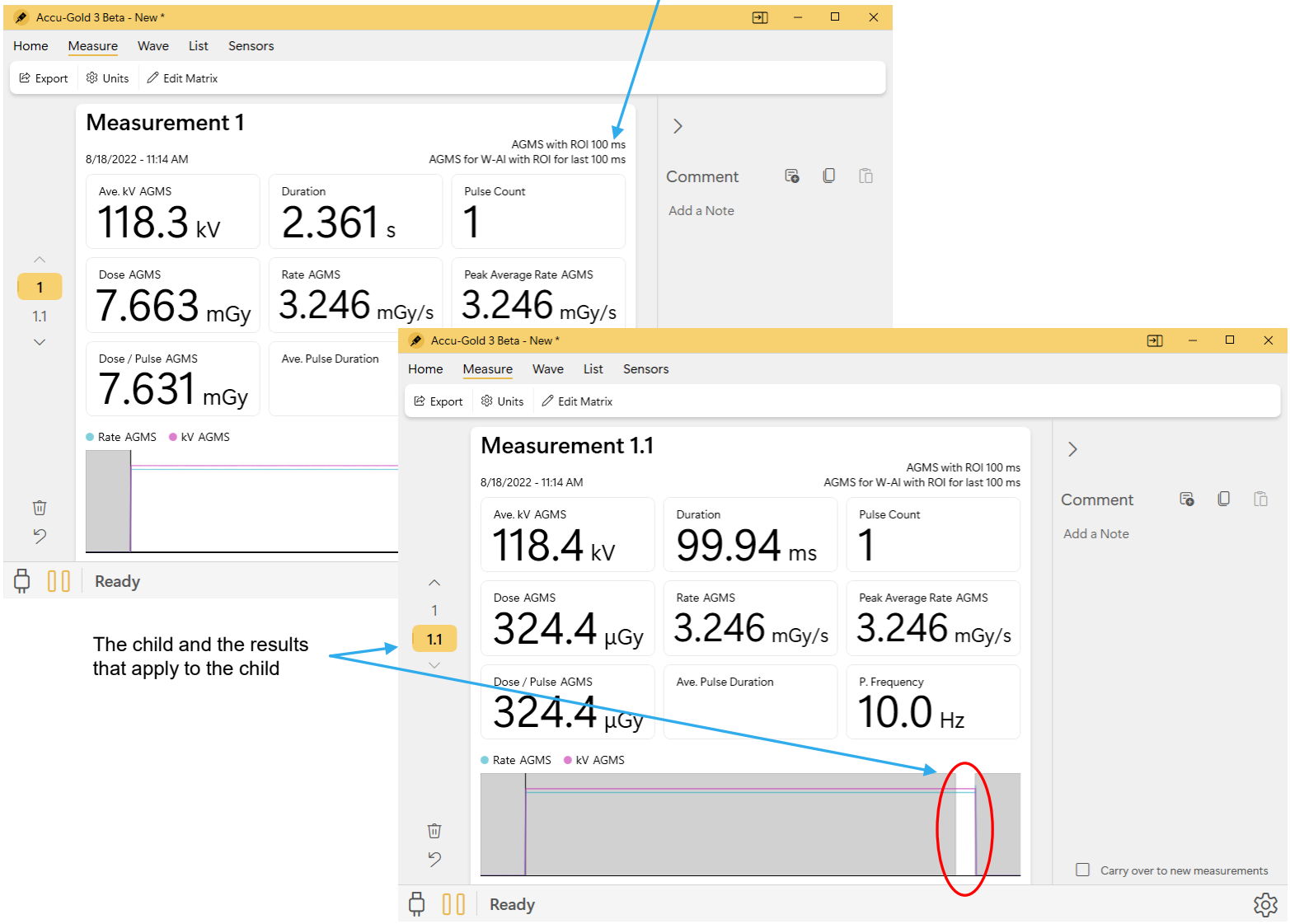
Dose Only:	False	**Date last modified:**	2022-08-02
kV Min:	40		
kV Max:	160		
Filtration Max:	40		
HVL Min:	1.3		
HVL Max:	13.5		
Paddle:	False		
Tube:	General		
Base Cal:	WAIDiag		
Base Cal ID:	1		
Profile File:	AGMS1_std_adj0.1s_10.agp		

Clicking the i button will expand the information about the profile and will show the range of applications it was intended for.

(continued)

Click *Apply* and make a measurement

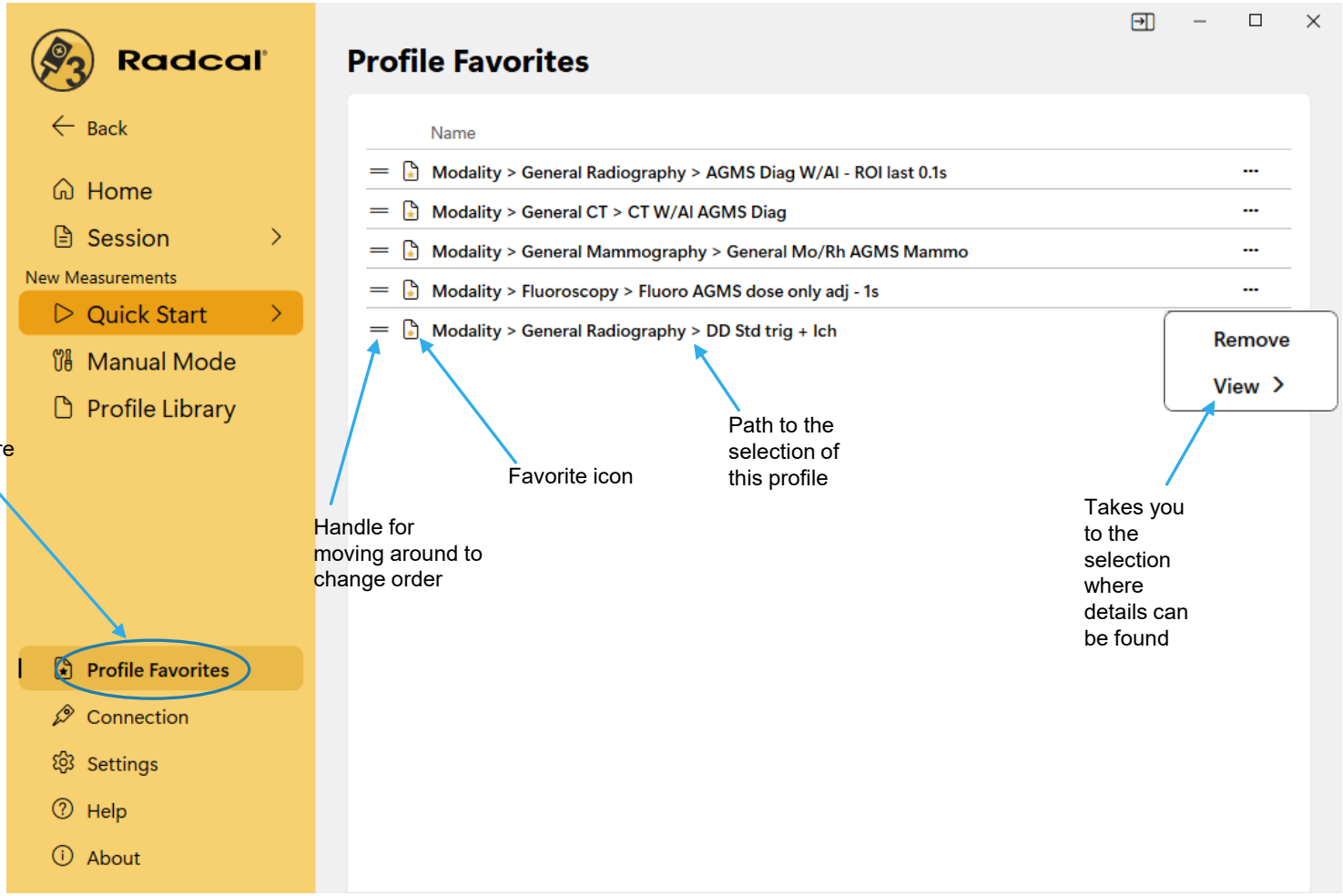
The profile name



The child and the results that apply to the child

Profile Favorites

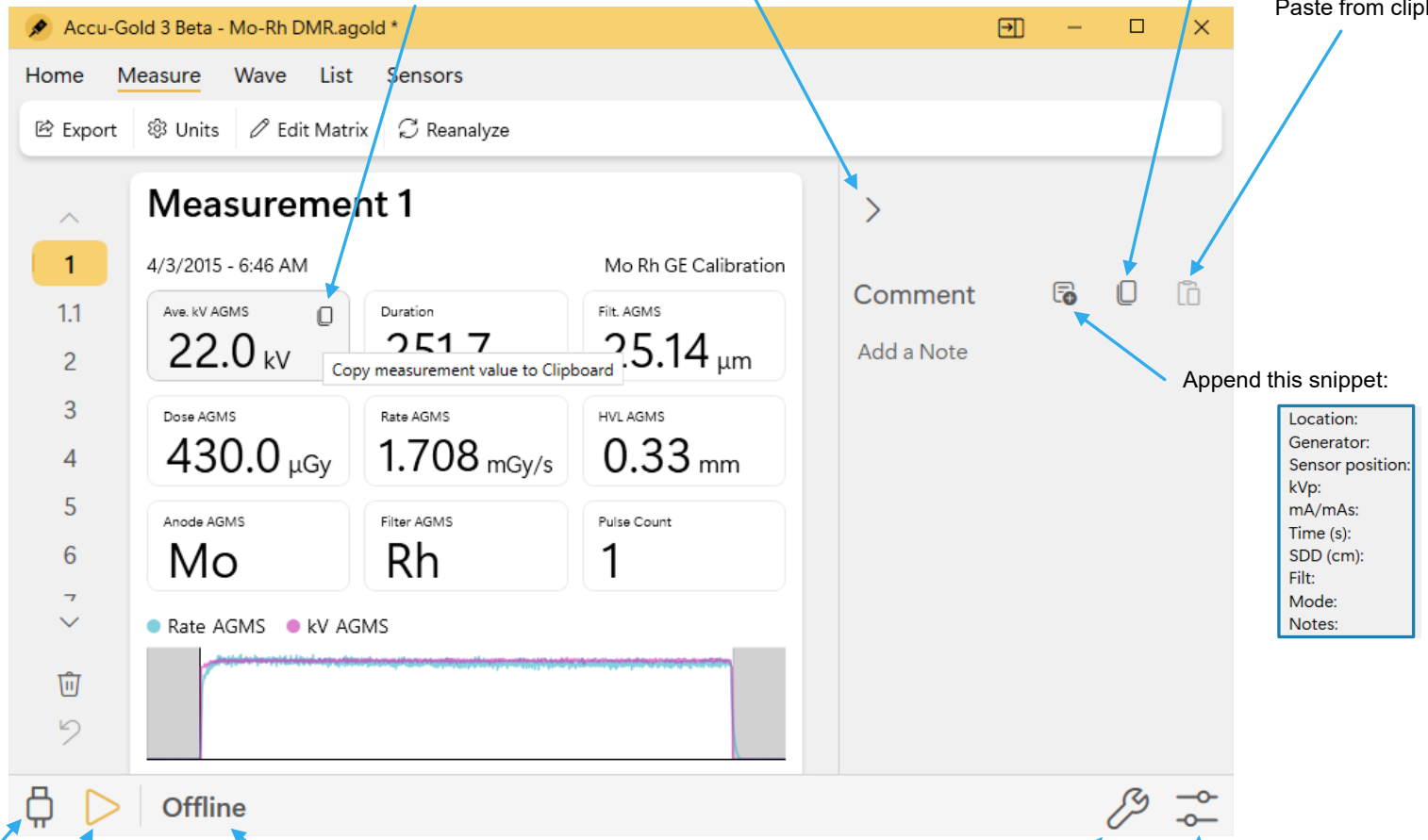
Selecting Profile Favorites lets you manage the Favorites. You can change the order, remove, or examine what you have:



Measurements

Quick-Start is generic and is sufficient to make basic measurements. With special requirements, profiles will be required.

Making Measurements and Copying data



Expand or contract comment area

Click on icon to copy to clipboard or drag-and-drop value straight to Excel

Copy entire comment to clipboard

Paste from clipboard

Append this snippet:

Connection type = USB

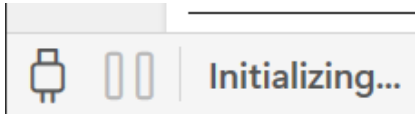
Click when ready to start the next measurement
Click again to pause

Measurement status - When *Ready* is shown, start the exposure

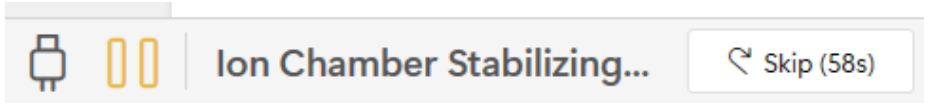
Click to bring up additional measurement options

Returns to profile selection area

Initialization Cycle

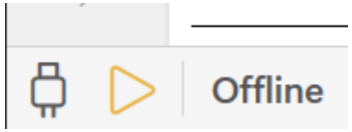


The software starts by connecting to the digitizer and initializing the electronics



If an ion chamber is connected, the bias supply starts and the software waits for it to stabilize.

As soon as the ‘Ready’ message is displayed at the bottom of the screen, you can make a measurement.



Press the ‘Pause’ when moving, changing or adding sensors. Pressing ‘Play’ again starts the initialization and rezeroing again.

End of Exposure Delay

Many modern x-ray generators now feature scout exposures which may introduce gaps of several seconds or more in the radiation output. The default end of exposure timing for Accu-Gold is 1 second for Diagnostic and Mammographic sensors. In some instances, this is not long enough and Accu-Gold may attempt to display the exposure results while the generator is finishing the exposure. If this situation is encountered, you may select an end of exposure delay of up to 8 seconds. ‘Min’ allows one to make successive measurements quickly. In between measurements, zeroing is skipped therefore use ‘Min’ with large signals only where zeroing in between measurements is not important – use with “High Threshold”. The End of Exposure Delay in the profile or that selected in Manual mode can be overridden here.

Fluoro Measurements

Fluoro measurements can normally be made by using Quick-Start which will use the profile for W-Al diagnostic. Certain modes of Fluoro measurements may require more specialized profiles:

Pulsed-Fluoro Measurements

Calibration of pulsed-fluoroscopy machines is facilitated through use of the real-time display. When a fluoroscopy exposure is initiated, the dose rate will be measured and displayed in real-time *without the need to select a special mode*. The value of dose rate is updated at a rate of once per second making Accu-Gold an ideal instrument for tracking dose rate changes as fluoroscopy machine settings such as mA (current) are continuously adjusted. Previous Radcal products required selection of the pulse rate in advance in order to obtain accurate real-time measurements. This is no longer required as the Accu-Gold system automatically identifies individual pulses and pulse rate on the fly providing a stable accurate reading regardless of kV, pulse rate, and mA.

Continuous Low Dose Fluoro Measurements

Making Low Dose Measurements with a Multi-Sensor

The AGMS Multi-Sensor operates by measuring the x-ray intensity through several sensing elements equipped with increasing levels of internal filtration. As the dose decreases below certain levels that are anode/filter-specific, measures of the spectral quantities (kV, HVL, and Filtration) cannot be made. Dose and Dose Rate remain reliable and are reported along with the note *Dose Only Mode*.

Making Low Dose Measurements with Ion Chambers

When making low dose measurements using an ion chamber (in the range of 10 times the minimum rated range), it is important to eliminate all sources of noise including noise induced by changing temperatures of the surroundings and the electronics. Position the ion chamber. Set the threshold to low and wait 3 minutes. Do not touch the cable or digitizer. For changing environments, allow 10 minutes for every 10 C difference for the sensor/electronics to equilibrate. Grounding the system to eliminate interference may be warranted.

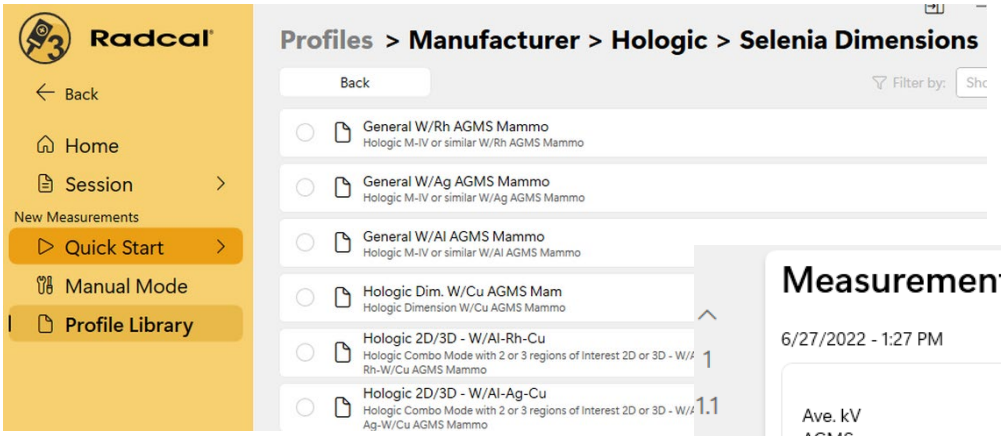
Several profiles are provided to assist in making adjustments to a fluoro system which require adjusting the kV down to some level. These profiles will save the kV value at the end of the adjustment.

Combination Measurements

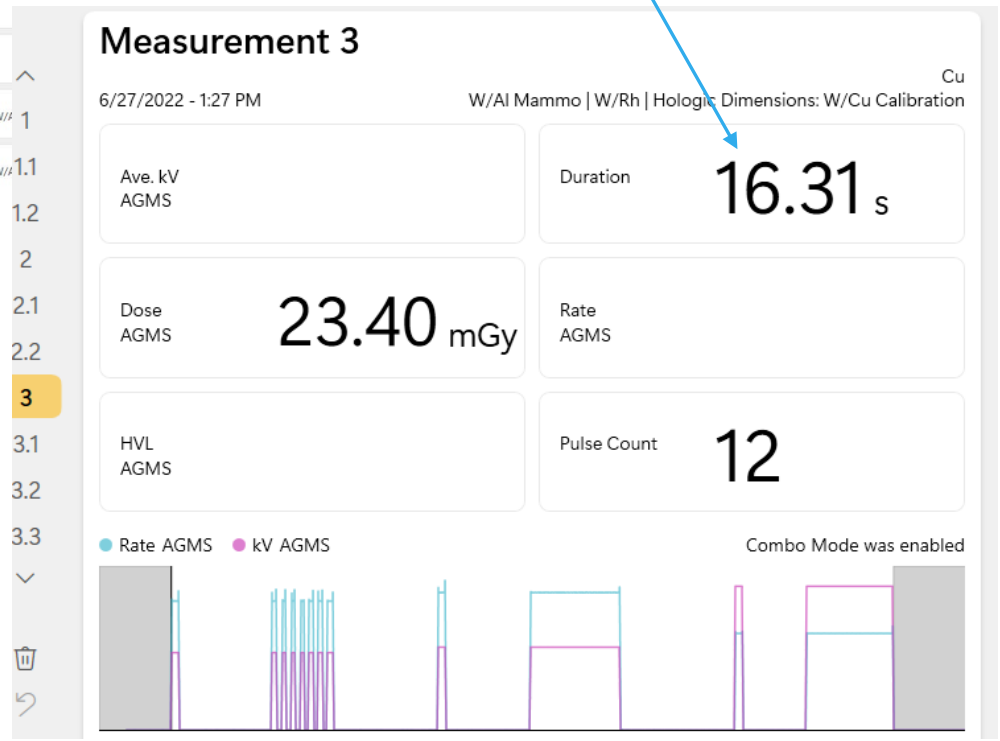
Mammography machines are increasingly supporting multi-mode or combination mode exposures in which multiple modalities such as 2D, Tomographic 3D, and High Contrast are incorporated in a single exposure (see below). Radcal's Accu-Gold instruments support these modes in a number of ways.

Radcal's 10X6-6M ion chamber has excellent energy uniformity and provides accurate dose measurements for all mammography beam qualities. As a result, this sensor is an excellent solution for reliable dose measurement for combination modes.

Radcal's AGMS multi-sensors also support accurate dose measurements for a number of combination mode systems. In particular, the Hologic Dimensions systems are well characterized by the AGMS sensors. Simply select the Hologic Selenia Combo mode profile, as shown below, for the 2D+3D Tomographic combination mode.

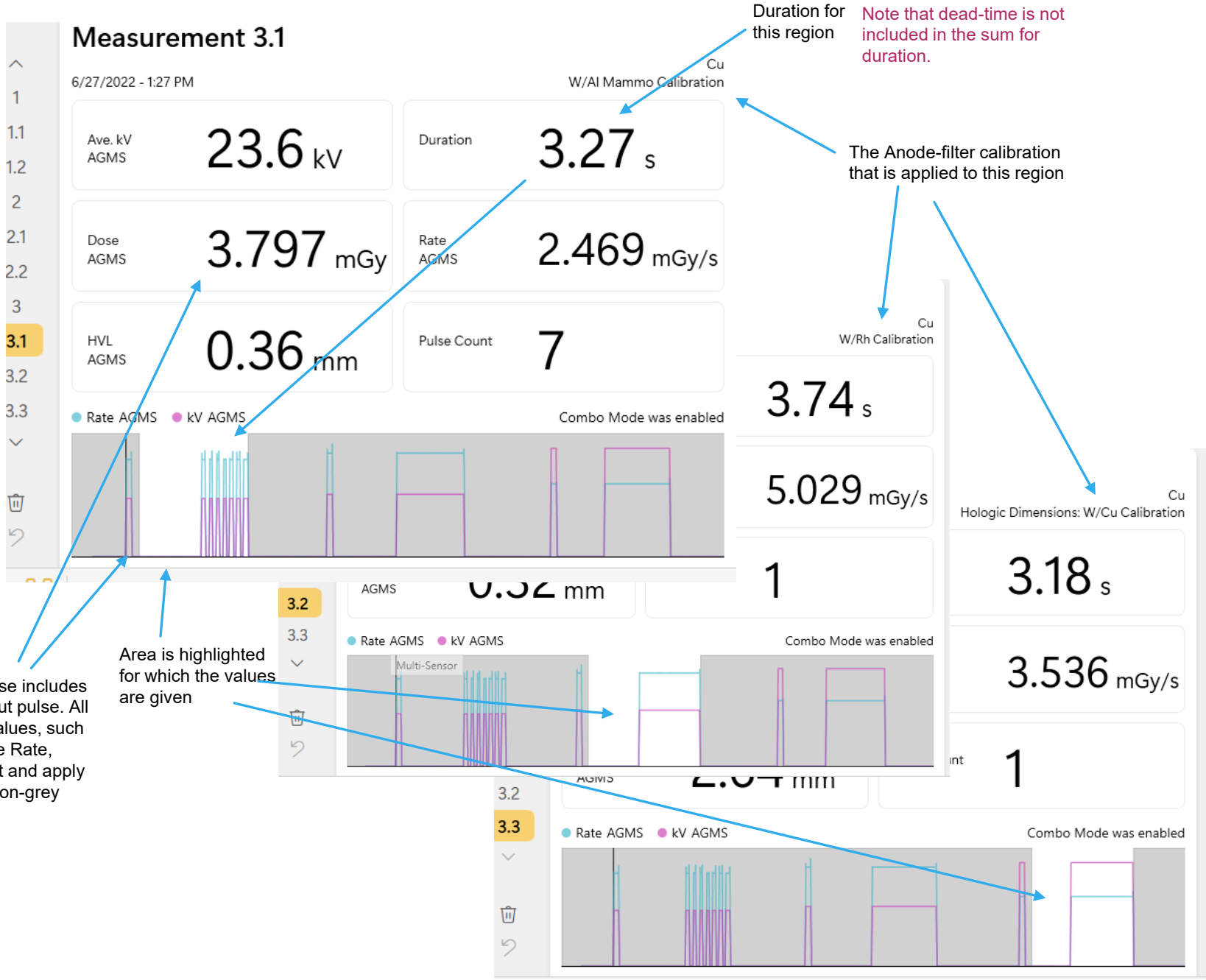


Hologic Combo Mode measurement



3 Child measurements

(continued)


Measurement 3.1
6/27/2022 - 1:27 PM
Cu
W/Al Mammo Calibration
Ave. kV AGMS
23.6 kV
Duration
3.27 s
Dose AGMS
3.797 mGy
Rate AGMS
2.469 mGy/s
HVL AGMS
0.36 mm
Pulse Count
7
Rate AGMS
kV AGMS
Combo Mode was enabled
Cu
W/Rh Calibration
3.74 s
5.029 mGy/s
1
Cu
Hologic Dimensions: W/Cu Calibration
3.18 s
3.536 mGy/s
1
Multi-Sensor
Duration for this region
Note that dead-time is not included in the sum for duration.
The Anode-filter calibration that is applied to this region
The Dose includes the scout pulse. All other values, such as Dose Rate, ignore it and apply to the non-grey area.
Area is highlighted for which the values are given

Background Measurements

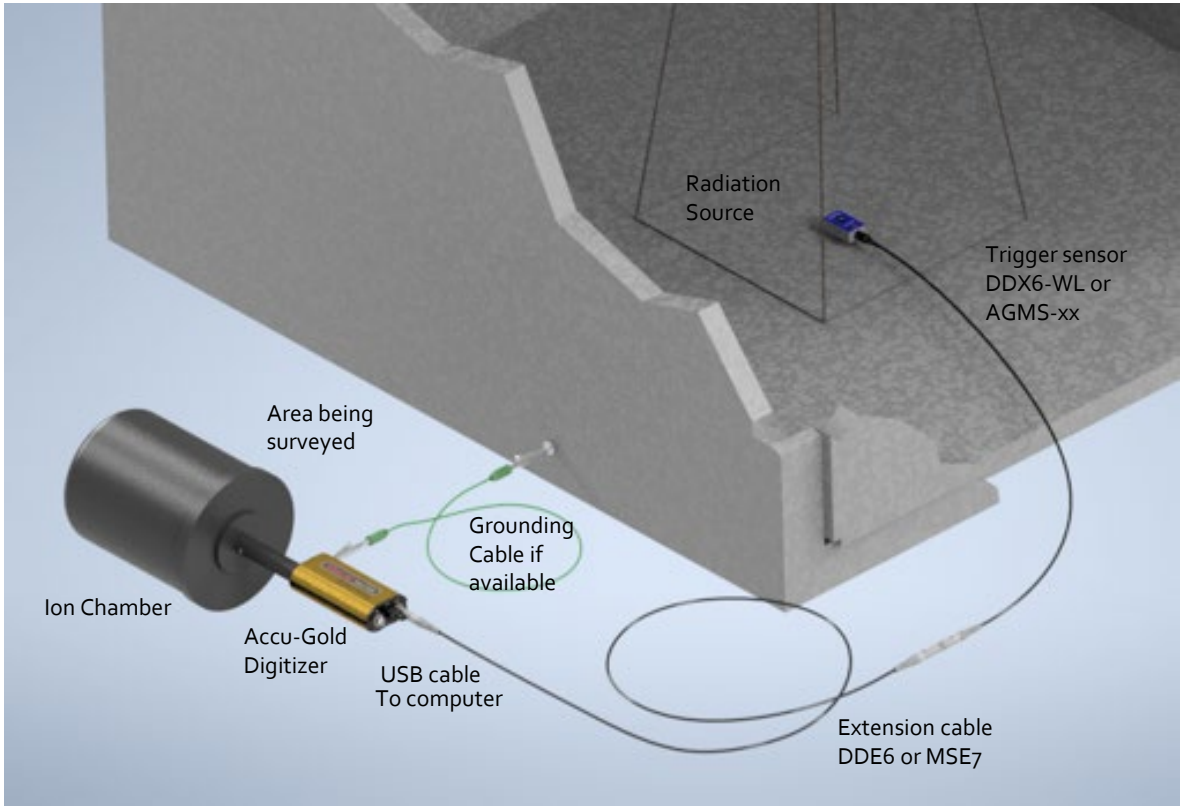
The technique and radiation levels to be detected will determine the best sensor suited for your evaluation. A 180cc, 500cc, or 1800cc chamber may be used, but while the 180 Ionization Chamber is excellent for detecting direct leakage with its 100cm^2 area, it is not practical for scatter measurements. The 1800 Ionization Chamber, for instance, allows 360° detection.

Several methods are available for making these measurements. See AN1007 for additional details.

Triggering with a Multi-Sensor/Dose Diode

When making scatter or leakage measurements, the readings may be too low to trigger a measurement. In that case a second sensor placed in the beam can be used to trigger the measurement which will guarantee that the ion chamber's signal is captured during the triggering period of that sensor. We recommend that you use AGMS-DM+ or DDX6-WL as the trigger source.

This can be done by placing the trigger sensor in the primary beam using an extension cable as necessary to connect it to the digitizer, and the Ionization Chamber in a fixed position (tripod, clamp, etc.) in the areas of choice. (See figure) If additional distance is necessary, the USB connection can be extended using active USB extensions or even USB-over-Ethernet.



Waveforms

Opens Excel and exports all data related to the current waveform

Copies the data for the waveform to the clipboard

Resets the waveform back after any magnifying or manipulation

Magnifies the waveform

Generates a Region of Interest for the last 15% of the waveform

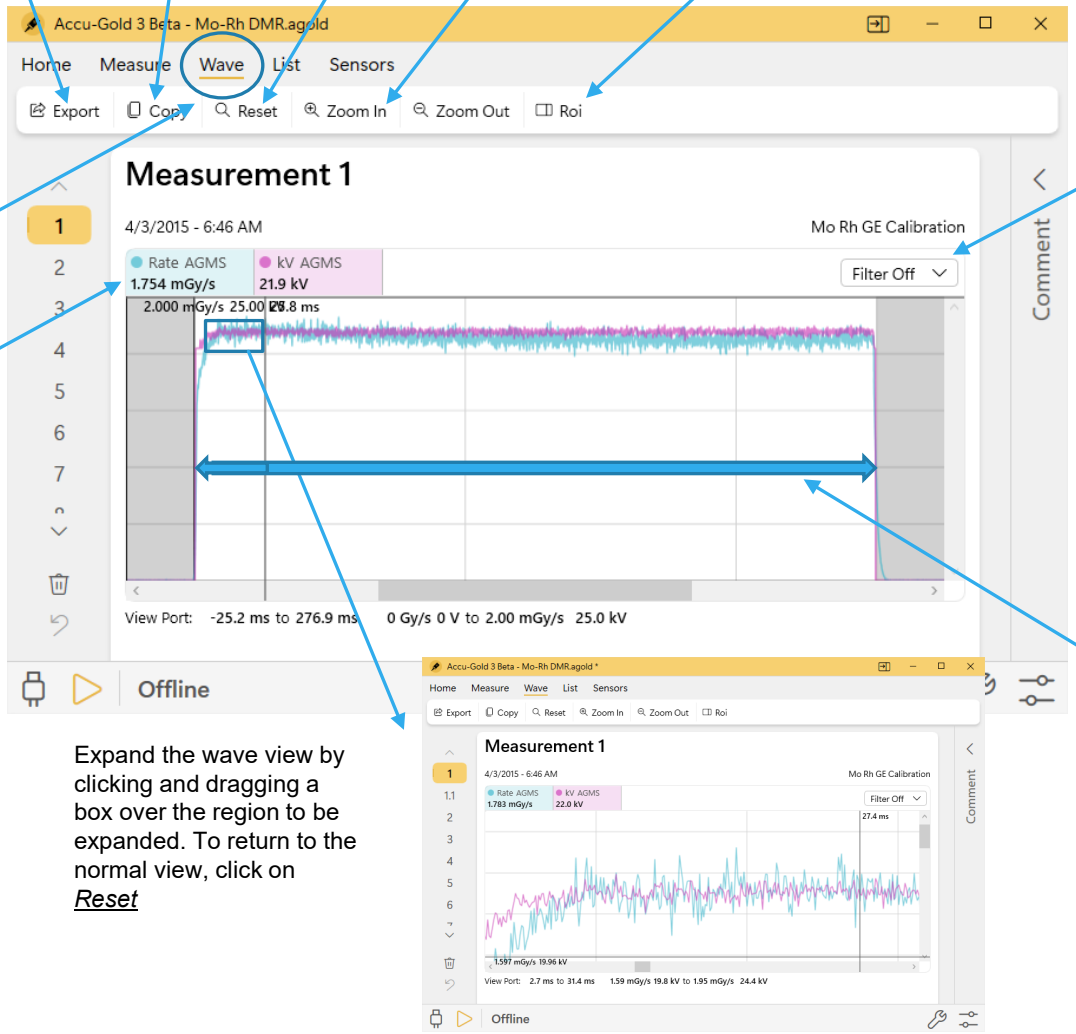
You are here

Click to turn off that particular waveform

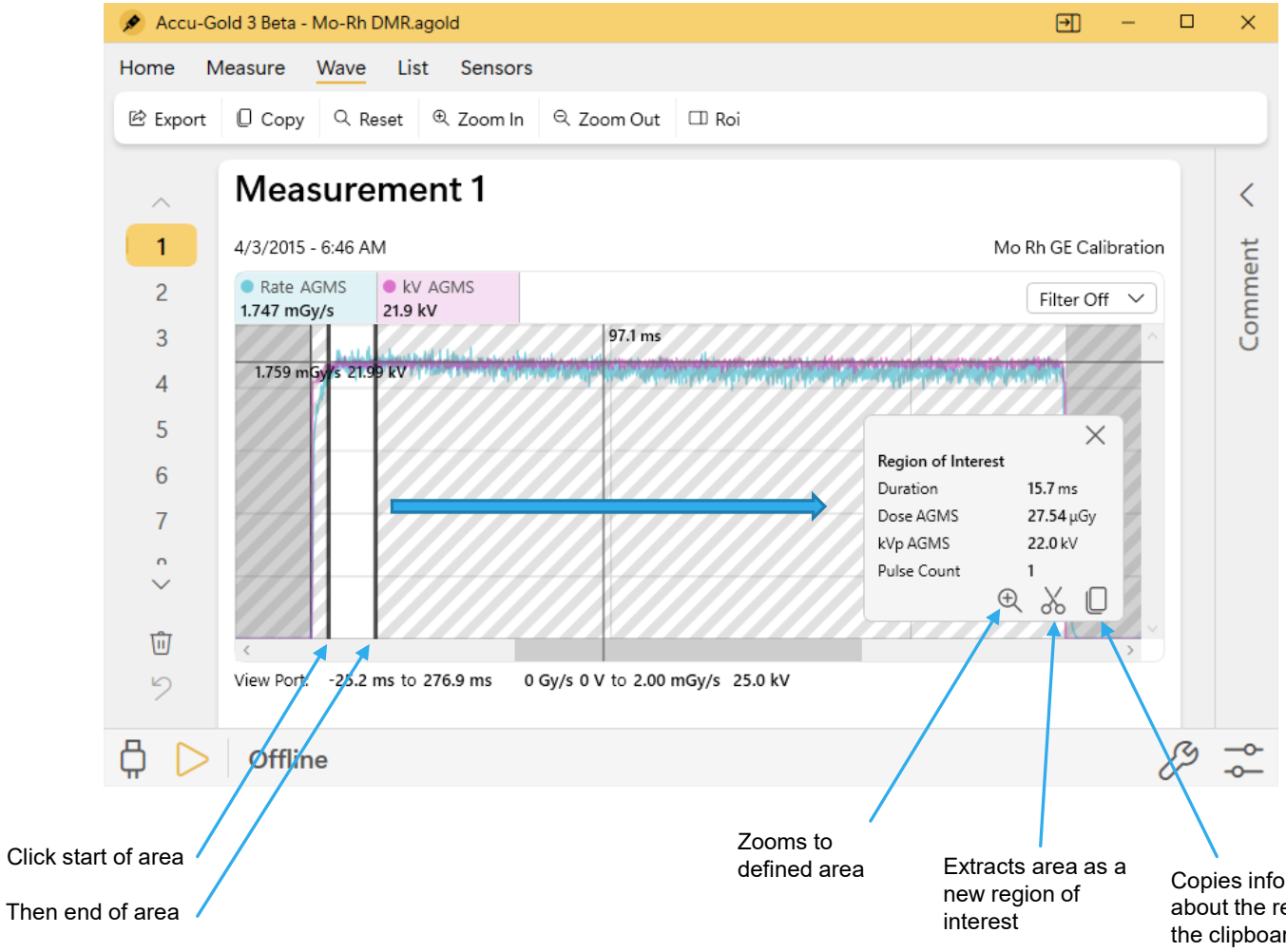
Measurements made with low-level signals (e.g. low mA, fluoro, scatter & small ion chambers) may display noisy waveforms that obscure important details. This provides a dropdown selection to apply a “Low-pass Bandwidth Filter” to the waveform.

Measured area

Expand the wave view by clicking and dragging a box over the region to be expanded. To return to the normal view, click on *Reset*



Creating a region of interest

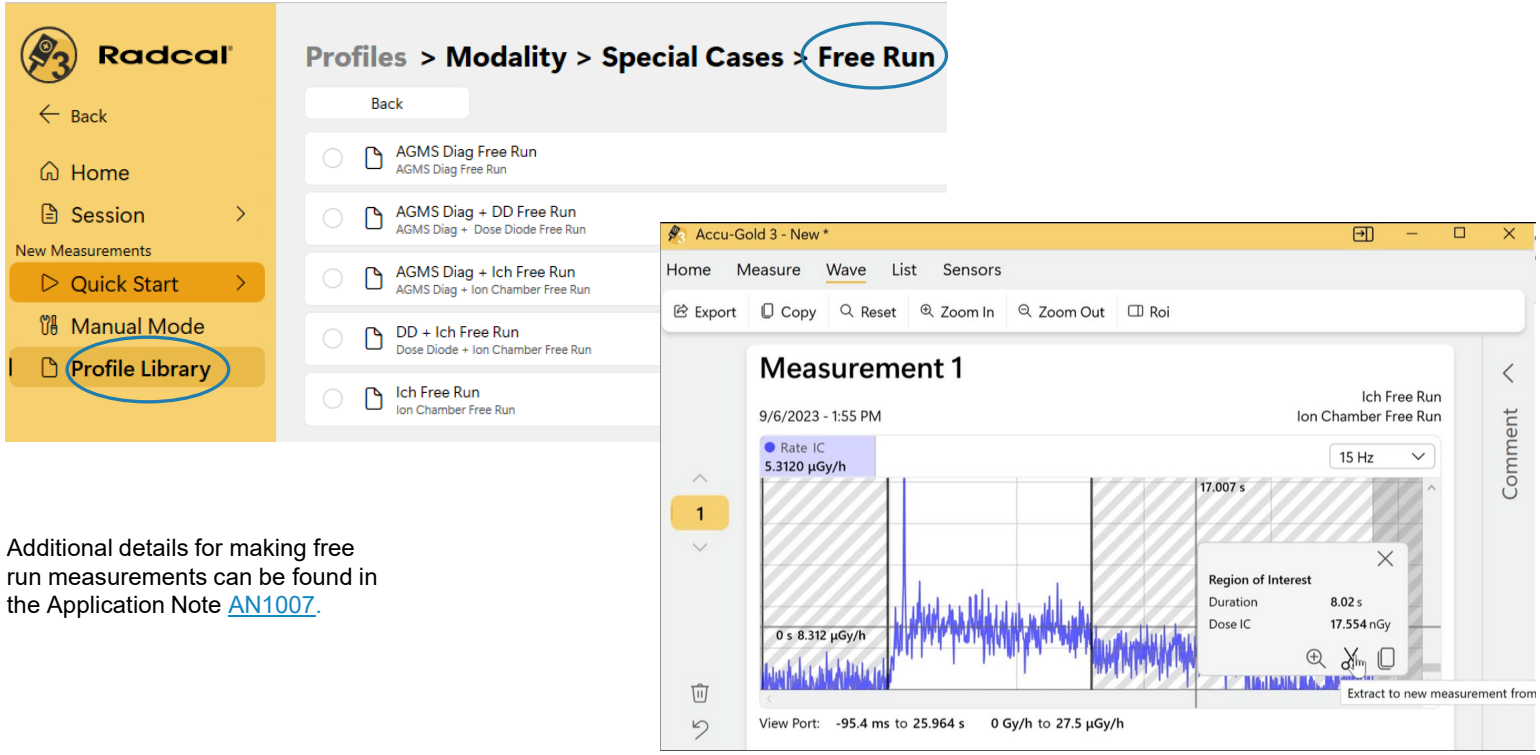


Free Run

For Free Run, no trigger is required. Free Run is useful for doing background measurements, surveys, sources and any other application that does not have a signal that can trigger the exposure reliably. Free Run starts measuring as soon as you hit play.

Free Run - No Trigger –

If the system did not trigger even at the low trigger setting, ‘free’ trigger level may be used. Ready the generator for an exposure, select a ‘Free Run’ profile and press ‘Apply’. The system will initialize immediately. Make an exposure and then stop the measurement. Select the wave tab and the appropriate filter. Use either cursor or ROI methods to determine the peak or average dose rates.



Additional details for making free run measurements can be found in the Application Note AN1007.

Measurement Limitations

The Radcal AGMS Series of Multi-Sensors are highly capable instruments that will generally provide a comprehensive set of measurements throughout a wide range of diagnostic x-ray applications. However, there are some conditions under which the sensor will provide a more restricted set of measurements. These conditions are described here:

Filtration/kV Out of Range

In instances where filtration exceeds the operating range and/or kV is out of range, the spectral characteristics provide accurate measurements of Dose and Dose Rate only. Under these circumstances kV, HVL, and Filtration are not reported and the following warning is displayed:

Filtration for AGMS is out of range!
kV for AGMS is out of range!

Low Dose

The AGMS Multi-Sensor operates by measuring the x-ray intensity through several sensing elements equipped with increasing levels of internal filtration. As the dose decreases below certain levels that are anode/filter-specific measures of the spectral quantities (kV, HVL, and Filtration) cannot be made reliably. However, Dose and Dose Rate remain reliable and are reported along with the warning:

Low Dose Mode

Insufficient Dose

Under certain circumstances such as very low kV, excess filtration, and/or large source to sensor distance there are insufficient x-rays for an accurate measurement or any of the beam properties. Under these circumstances, no values are reported and the following warning is displayed:

Insufficient Dose

Making Low Dose Measurements with Ion Chambers

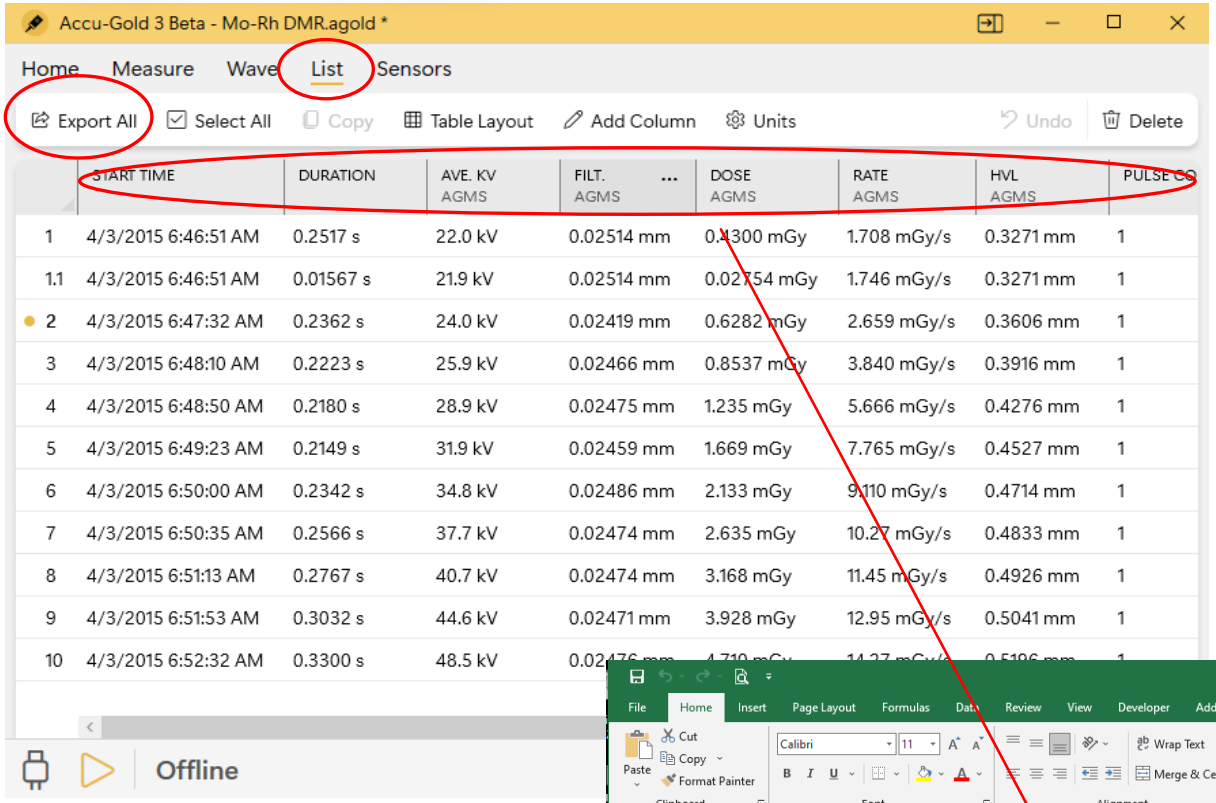
When making low dose measurements using an ion chamber (in the range of 10 times the minimum rated range), it is important to eliminate all sources of noise including noise induced by changing temperatures of the surroundings and the electronics. Position the ion chamber. Set the threshold to low and wait 3 minutes. Do not touch the cable or digitizer. For changing environments, allow 10 minutes for every 10 C difference for the sensor/electronics to equilibrate. Grounding the system to eliminate interference may be warranted.

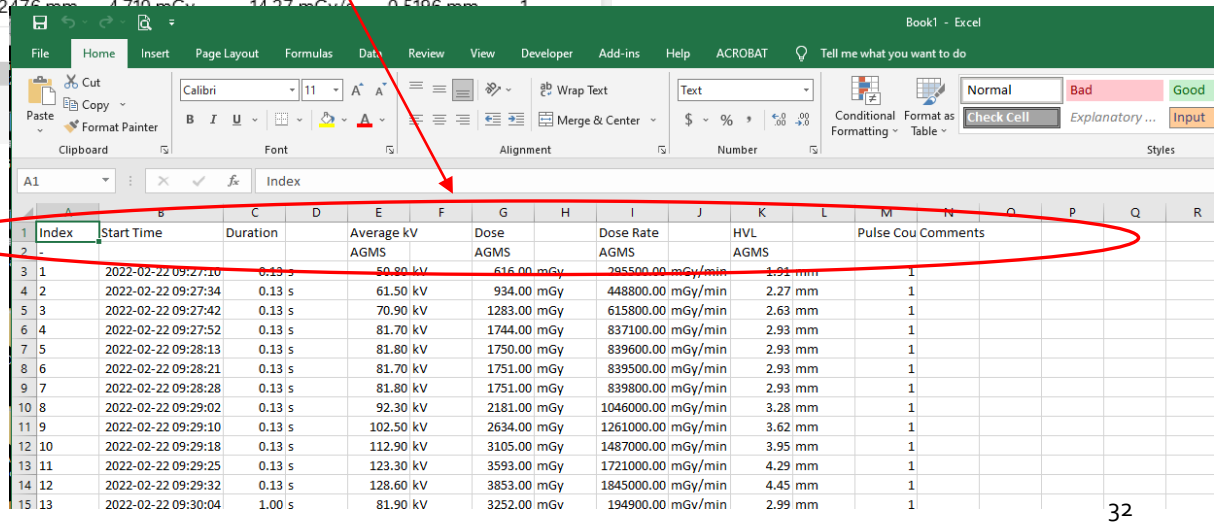
When making background or scatter measurements, the readings may be too low to trigger a measurement. In that case a second sensor placed in the beam can be used to trigger the measurement which will guarantee that the ion chamber's signal is captured during the triggering period of that sensor.

Exporting Data

Data collected by AG3 can be exported to Excel as well as a text editor. The collection of this data can be automated to fill out procedural templates by way of Companion mode.

Export All to Excel

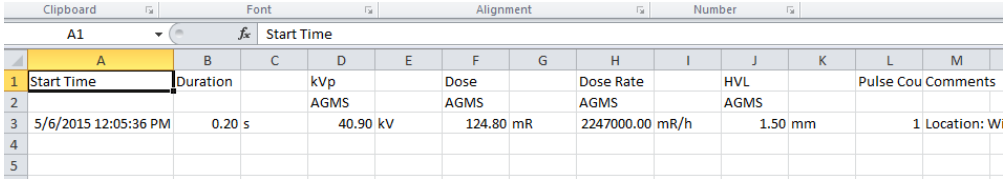




On the list view tab you will find *Export All*
Clicking on the icon will export the data from the active columns

Exporting Data in List View

Select List View. ***Export all*** – opens a new instance of Excel and exports all of the measurements in the format that had been selected.

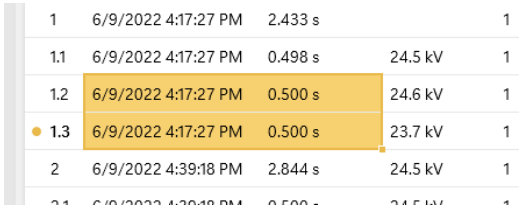


	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Start Time	Duration		kVp		Dose		Dose Rate		HVL		Pulse Cou	Comments
2				AGMS		AGMS		AGMS		AGMS			
3	5/6/2015 12:05:36 PM	0.20	s	40.90	kV	124.80	mR	2247000.00	mR/h	1.50	mm	1	Location: Wi
4													
5													

The units used can be changed in the ***Units*** menu before exporting to Excel.

Part of ***Units*** setting menu:

The columns included in the export and the order they are displayed can be selected. When exporting the data, the units will occupy a separate column. If the Unit Position is set to ***Include in header***, the data will be exported using the same number of columns as displayed. This allows one to grab large groups of data and paste them into an Excel template.



1	6/9/2022 4:17:27 PM	2.433 s		1
1.1	6/9/2022 4:17:27 PM	0.498 s	24.5 kV	1
1.2	6/9/2022 4:17:27 PM	0.500 s	24.6 kV	1
1.3	6/9/2022 4:17:27 PM	0.500 s	23.7 kV	1
2	6/9/2022 4:39:18 PM	2.844 s	24.5 kV	1

Individual measurements can be selected instead of ***Select All*** by choosing the measurement number on the left. Drag the selection down or hold the control key down to select more than one.

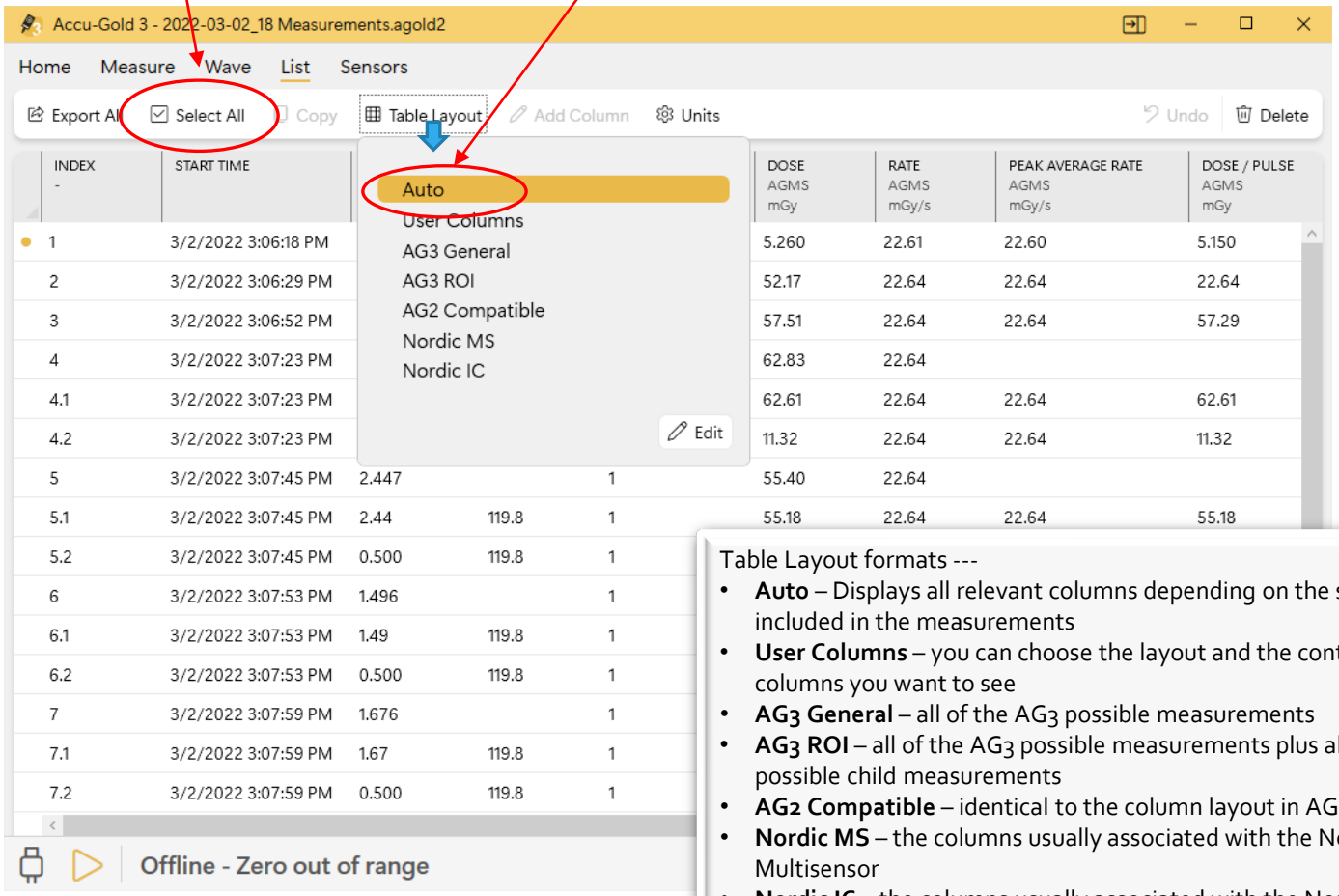
All of the columns will be copied based on which columns you have showing.

Individual cells or groups of cells can be selected by highlighting the cells of interest then click on ***Copy*** , press Ctrl-C or use the Windows right-click menu. Paste in the destination by pressing Ctrl-V or using the Windows right-click menu.

List View

You can select individual measurements or *Select All* to copy all of the rows

When you click *Export All*, all of those columns associated with the Table Layout will be included.



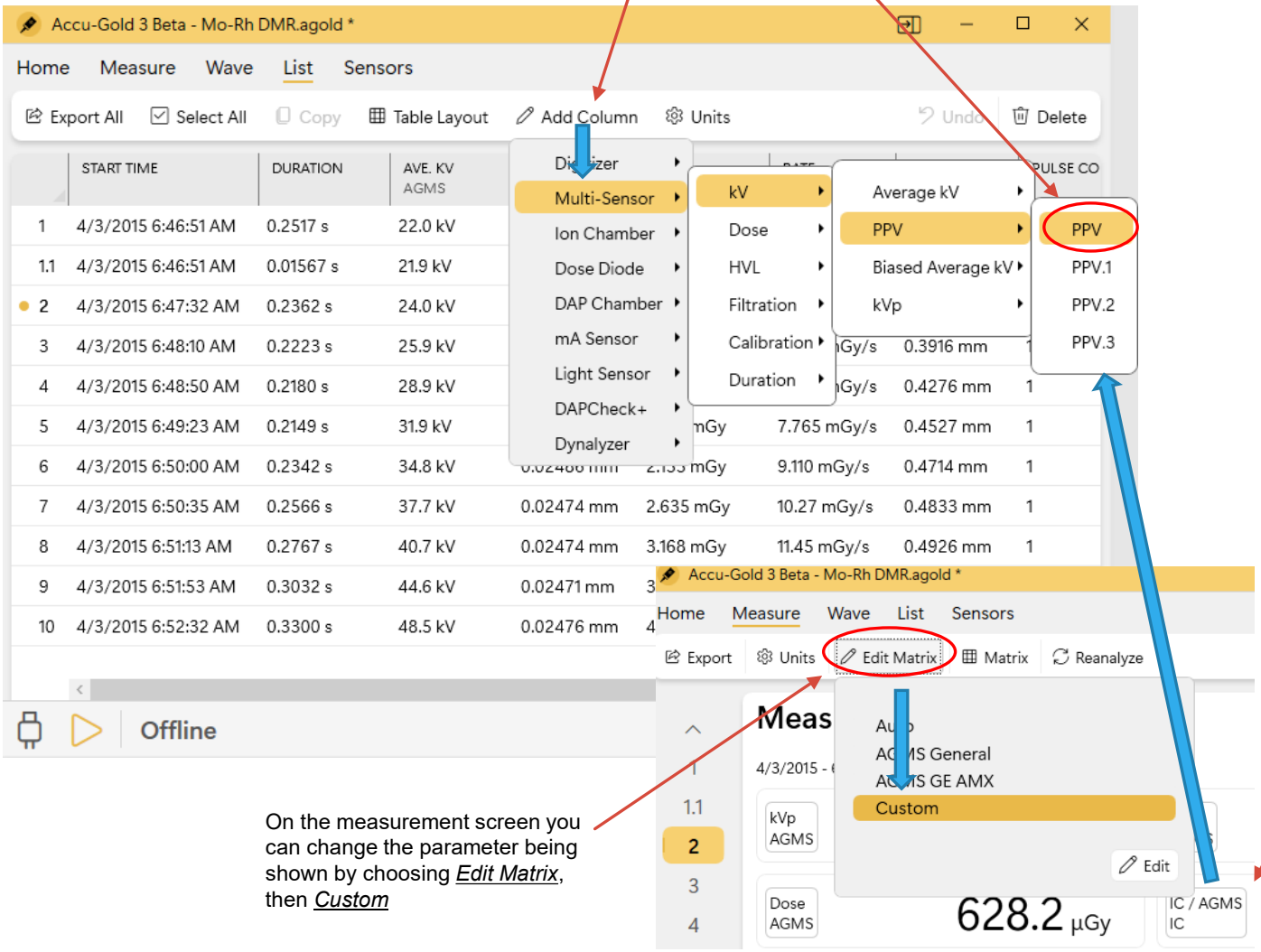
INDEX	START TIME				DOSE AGMS mGy	RATE AGMS mGy/s	PEAK AVERAGE RATE AGMS mGy/s	DOSE / PULSE AGMS mGy
1	3/2/2022 3:06:18 PM				5.260	22.61	22.60	5.150
2	3/2/2022 3:06:29 PM				52.17	22.64	22.64	22.64
3	3/2/2022 3:06:52 PM				57.51	22.64	22.64	57.29
4	3/2/2022 3:07:23 PM				62.83	22.64		
4.1	3/2/2022 3:07:23 PM				62.61	22.64	22.64	62.61
4.2	3/2/2022 3:07:23 PM				11.32	22.64	22.64	11.32
5	3/2/2022 3:07:45 PM	2.447		1	55.40	22.64		
5.1	3/2/2022 3:07:45 PM	2.44	119.8	1	55.18	22.64	22.64	55.18
5.2	3/2/2022 3:07:45 PM	0.500	119.8	1				
6	3/2/2022 3:07:53 PM	1.496		1				
6.1	3/2/2022 3:07:53 PM	1.49	119.8	1				
6.2	3/2/2022 3:07:53 PM	0.500	119.8	1				
7	3/2/2022 3:07:59 PM	1.676		1				
7.1	3/2/2022 3:07:59 PM	1.67	119.8	1				
7.2	3/2/2022 3:07:59 PM	0.500	119.8	1				

Table Layout formats ---

- **Auto** – Displays all relevant columns depending on the sensors included in the measurements
- **User Columns** – you can choose the layout and the contents for the columns you want to see
- **AG3 General** – all of the AG3 possible measurements
- **AG3 ROI** – all of the AG3 possible measurements plus all of the possible child measurements
- **AG2 Compatible** – identical to the column layout in AG2
- **Nordic MS** – the columns usually associated with the Nordic Multisensor
- **Nordic IC** – the columns usually associated with the Nordic Ion Chamber

Note that when you click on *Export All* it will open a new Excel book with the data starting in cell A1.

Adding a column will let you choose another parameter. (The value may be blank if it wasn't measured.)



On the measurement screen you can change the parameter being shown by choosing *Edit Matrix*, then *Custom*

Clicking on the box will let you change the parameter the same way as above

Companion Mode

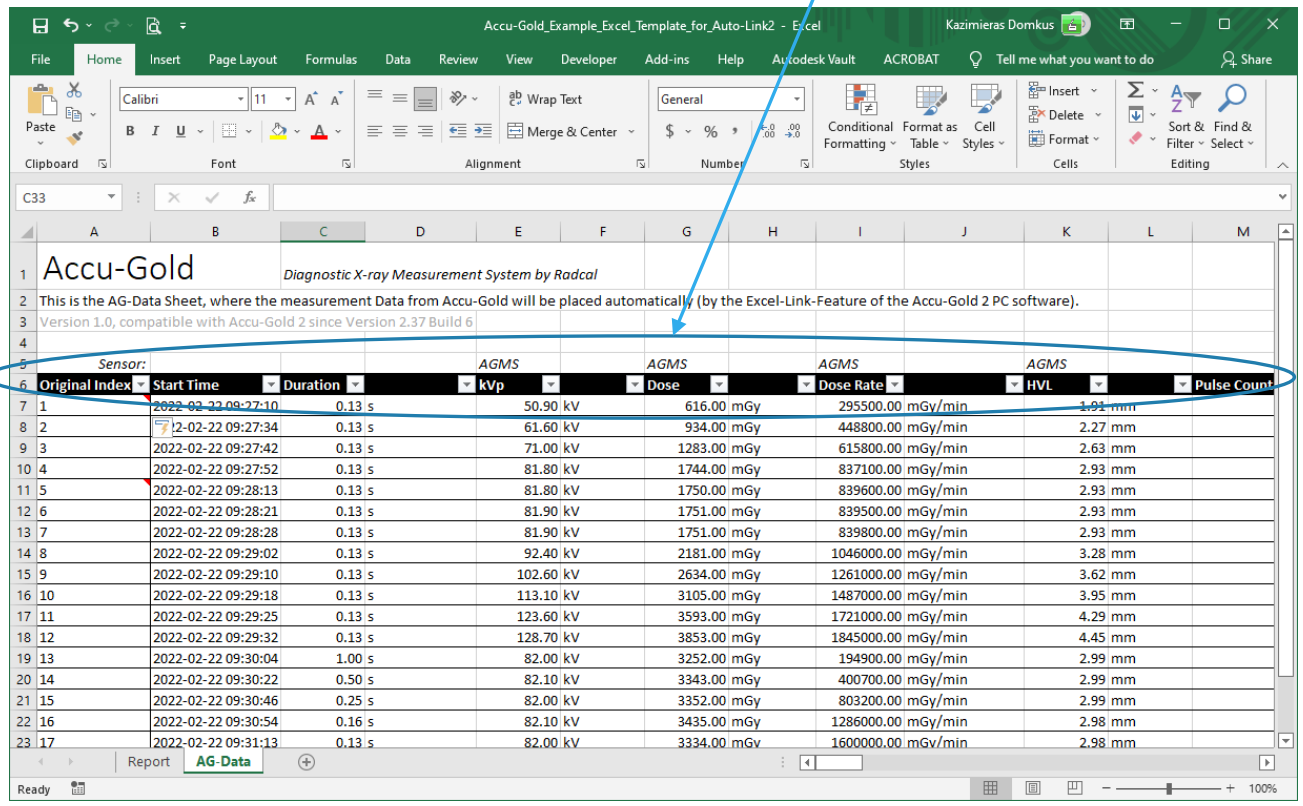
Companion mode offers a way to automate data collection. An Excel template is automatically filled in as measurements are made in real time significantly reducing the time and improving accuracy when running test procedures.

Companion-Mode

Use this icon to turn Companion-Mode on and off

If you already have a template that you want to link to, open it first.

When you click on the Companion mode icon, it will open a blank workbook with the columns formatted with the name of the value that will be exported. The default is AG3 General Format. However, you can choose other column formats (see Companion Mode Options)



Accu-Gold_Example_Excel_Template_for_Auto-Link2 - Excel

Accu-Gold *Diagnostic X-ray Measurement System by Radcal*

This is the AG-Data Sheet, where the measurement Data from Accu-Gold will be placed automatically (by the Excel-Link-Feature of the Accu-Gold 2 PC software).

Version 1.0, compatible with Accu-Gold 2 since Version 2.37 Build 6

	Sensor:			AGMS		AGMS		AGMS		AGMS	
	Original Index	Start Time	Duration	kVp		Dose		Dose Rate		HVL	Pulse Count
1	1	2022-02-22 09:27:10	0.13 s	50.90	kV	616.00	mGy	295500.00	mGy/min	1.91 mm	
2	2	2022-02-22 09:27:34	0.13 s	61.60	kV	934.00	mGy	448800.00	mGy/min	2.27 mm	
3	3	2022-02-22 09:27:42	0.13 s	71.00	kV	1283.00	mGy	615800.00	mGy/min	2.63 mm	
4	4	2022-02-22 09:27:52	0.13 s	81.80	kV	1744.00	mGy	837100.00	mGy/min	2.93 mm	
5	5	2022-02-22 09:28:13	0.13 s	81.80	kV	1750.00	mGy	839600.00	mGy/min	2.93 mm	
6	6	2022-02-22 09:28:21	0.13 s	81.90	kV	1751.00	mGy	839500.00	mGy/min	2.93 mm	
7	7	2022-02-22 09:28:28	0.13 s	81.90	kV	1751.00	mGy	839800.00	mGy/min	2.93 mm	
8	8	2022-02-22 09:29:02	0.13 s	92.40	kV	2181.00	mGy	1046000.00	mGy/min	3.28 mm	
9	9	2022-02-22 09:29:10	0.13 s	102.60	kV	2634.00	mGy	1261000.00	mGy/min	3.62 mm	
10	10	2022-02-22 09:29:18	0.13 s	113.10	kV	3105.00	mGy	1487000.00	mGy/min	3.95 mm	
11	11	2022-02-22 09:29:25	0.13 s	123.60	kV	3593.00	mGy	1721000.00	mGy/min	4.29 mm	
12	12	2022-02-22 09:29:32	0.13 s	128.70	kV	3853.00	mGy	1845000.00	mGy/min	4.45 mm	
13	13	2022-02-22 09:30:04	1.00 s	82.00	kV	3252.00	mGy	194900.00	mGy/min	2.99 mm	
14	14	2022-02-22 09:30:22	0.50 s	82.10	kV	3343.00	mGy	400700.00	mGy/min	2.99 mm	
15	15	2022-02-22 09:30:46	0.25 s	82.00	kV	3352.00	mGy	803200.00	mGy/min	2.99 mm	
16	16	2022-02-22 09:30:54	0.16 s	82.10	kV	3435.00	mGy	1286000.00	mGy/min	2.98 mm	
17	17	2022-02-22 09:31:13	0.13 s	82.00	kV	3334.00	mGy	1600000.00	mGy/min	2.98 mm	

Report | AG-Data

Ready

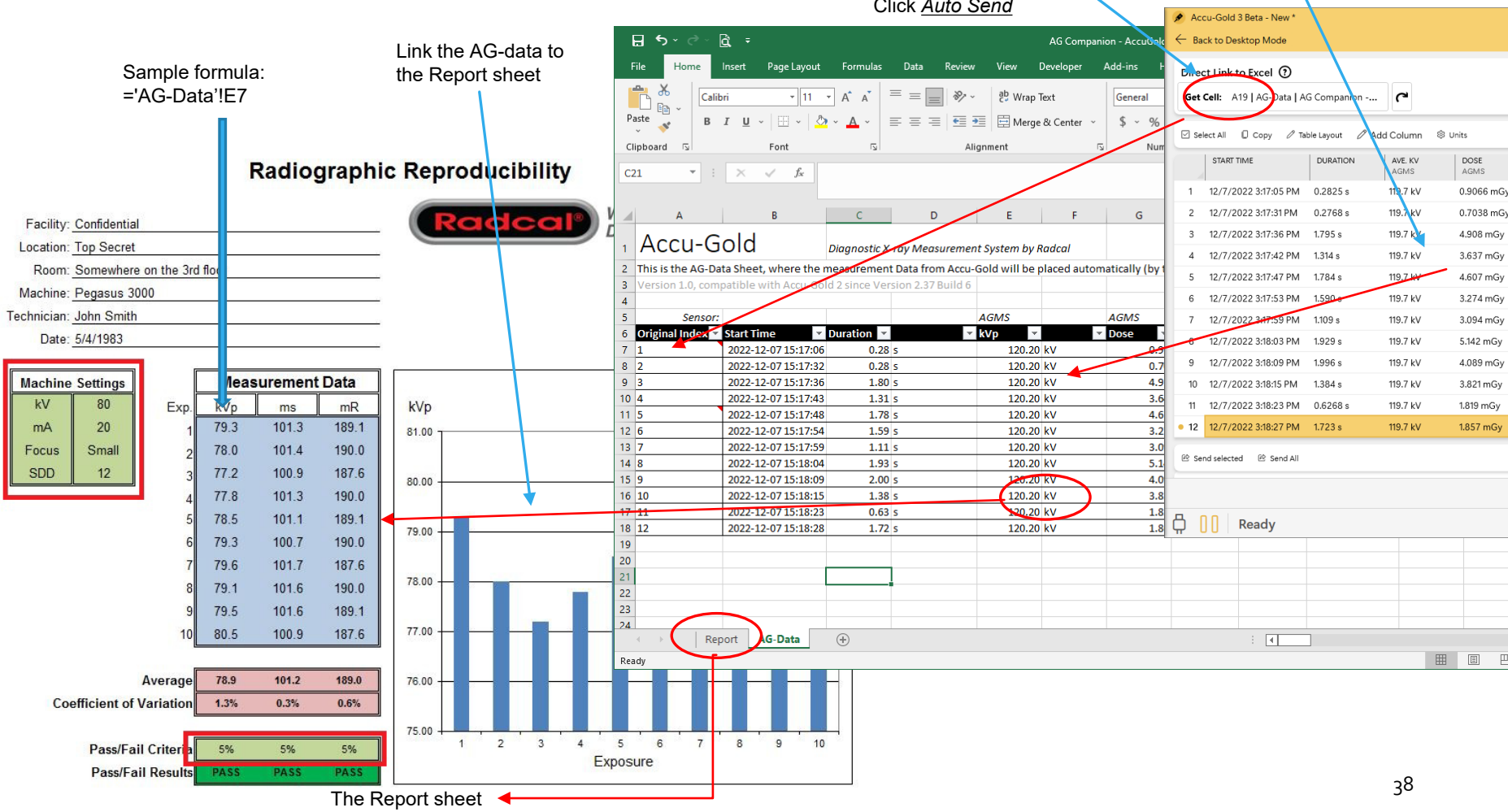
We recommend using Companion-Mode and the AG3 General format so that it exports data to a separate worksheet. The data on that worksheet then links to the report section of your template. For example:

Sample formula:
='AG-Data'!E7

Link the AG-data to the Report sheet

Click on the starting cell then click on *Get Cell*. Click *Auto Send*

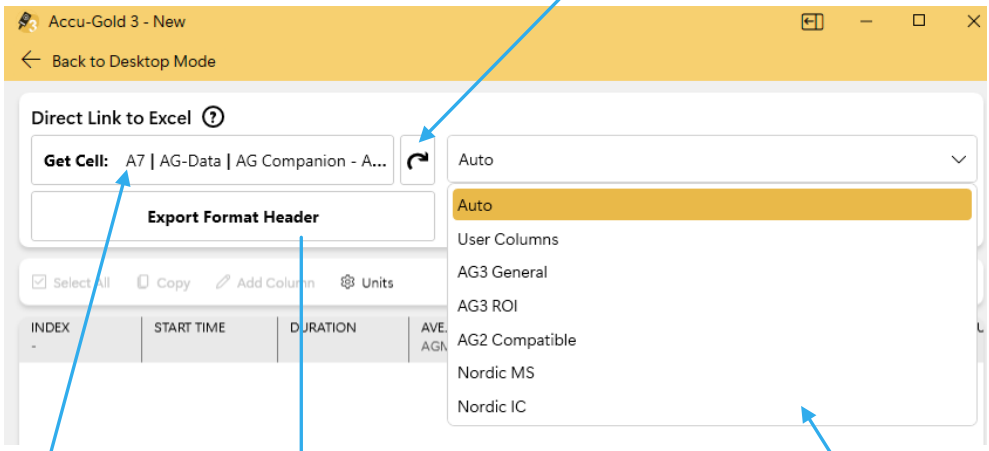
As data is measured, it gets automatically copied to the Excel sheet



The Report sheet

Companion-Mode options

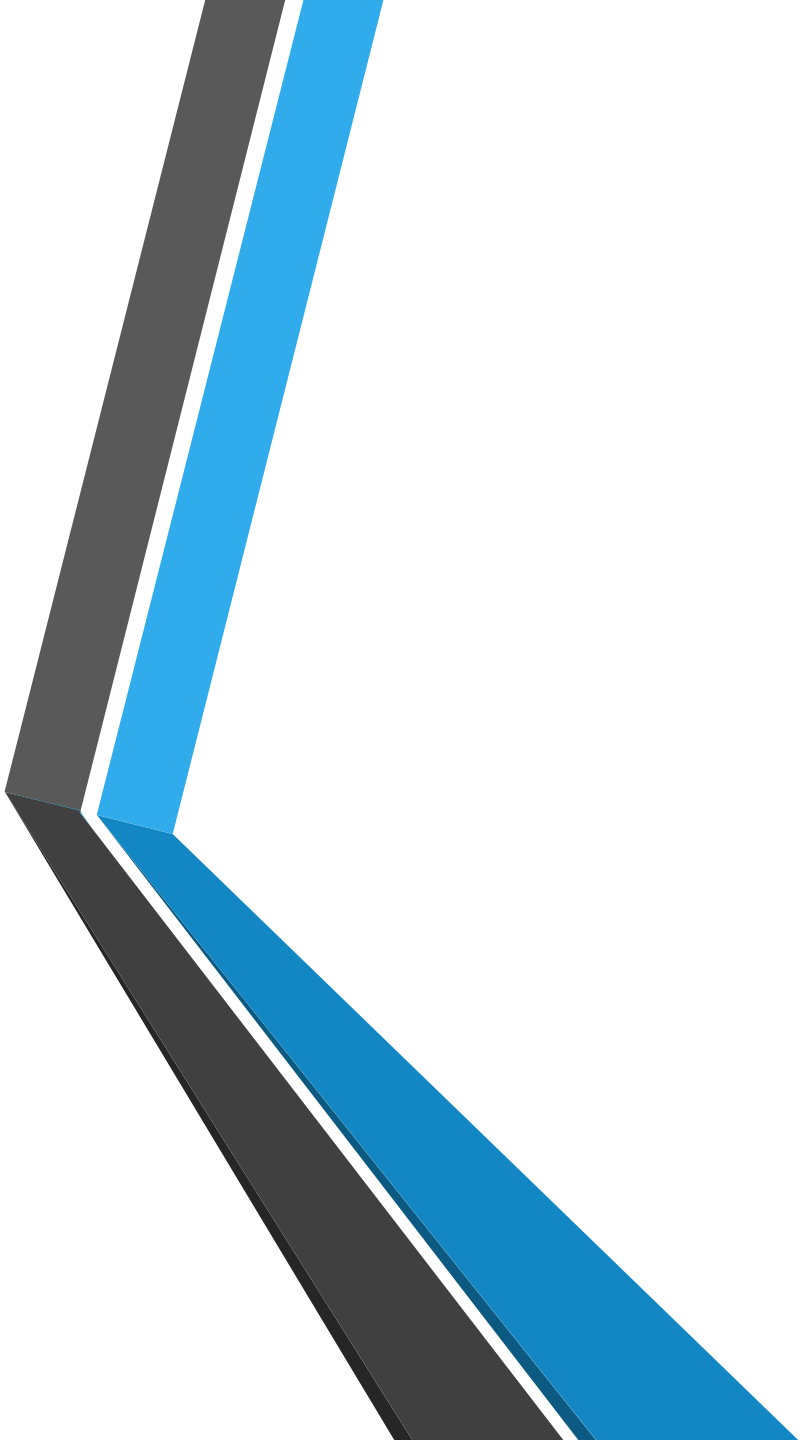
The template can have an ‘auto-link’ so that the location of the output data can be specified ahead of time by the template. In the template, use the Name Manager to name a cell as ‘tabAG’, then pressing this button will tell Companion Mode to start there.



Select the output cell

This will put out 2 rows with the column headings that will match the data output

You can choose the column format for the Excel template. These formats are the same as the list view column options (see list view).



Reanalyze

Salvaging work

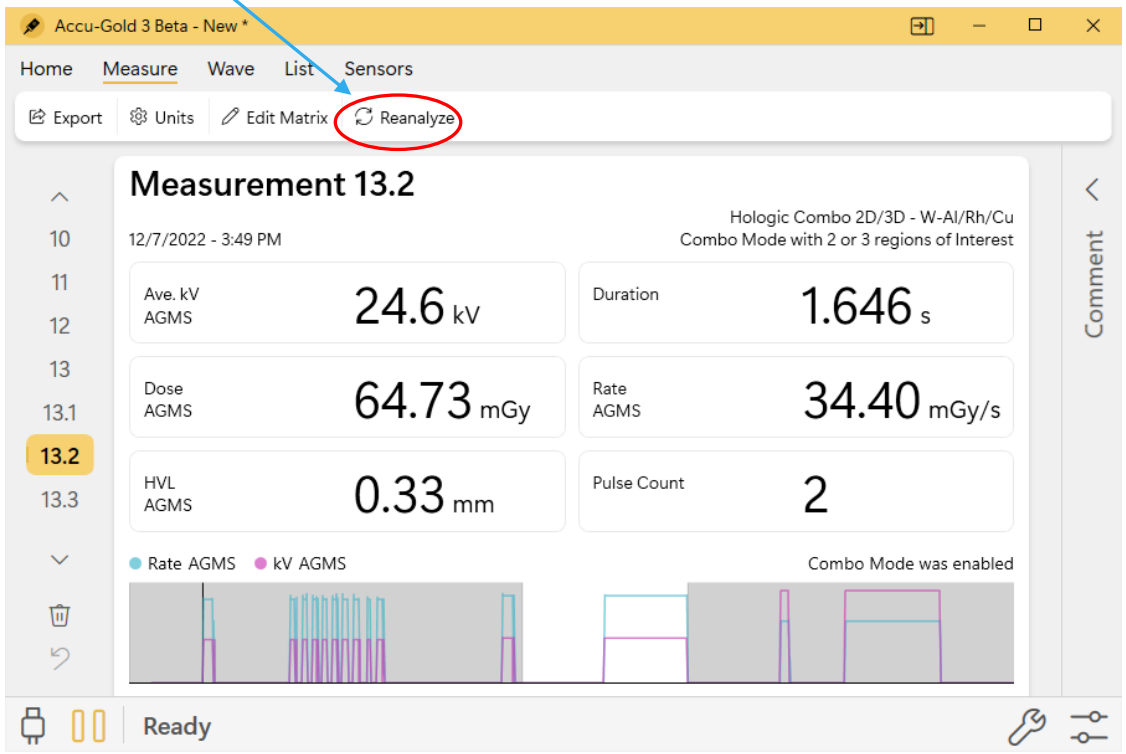
Reanalyze

The original preprocessed sensor data of a measurement is saved as “raw data” on your computer. The processing of this data is directed by the profiles used by AG3. This allows AG3 to reprocess the data at a later time using a different profile (within limits).

Example: You used the Hologic Combo mode profile for the Hologic Selenia that uses a tungsten anode and Al, Rh and Cu as filters during its measurement modes. Sometime later, you discover that it was the model that uses Al, Ag and Cu filters. Instead of having to repeat the measurement, you can re-analyze the data with the correct profile.

Bring up the session that has the incorrect profile. Click on Reanalyze, then choose the new profile and follow instructions from there. If the data is not available, it will give you an error message.

Note that you will need to connect a digitizer and multisensor to the computer and the sensor has to be the original sensor that was used for that measurement. (See the serial number(s) under the Sensors tab.)

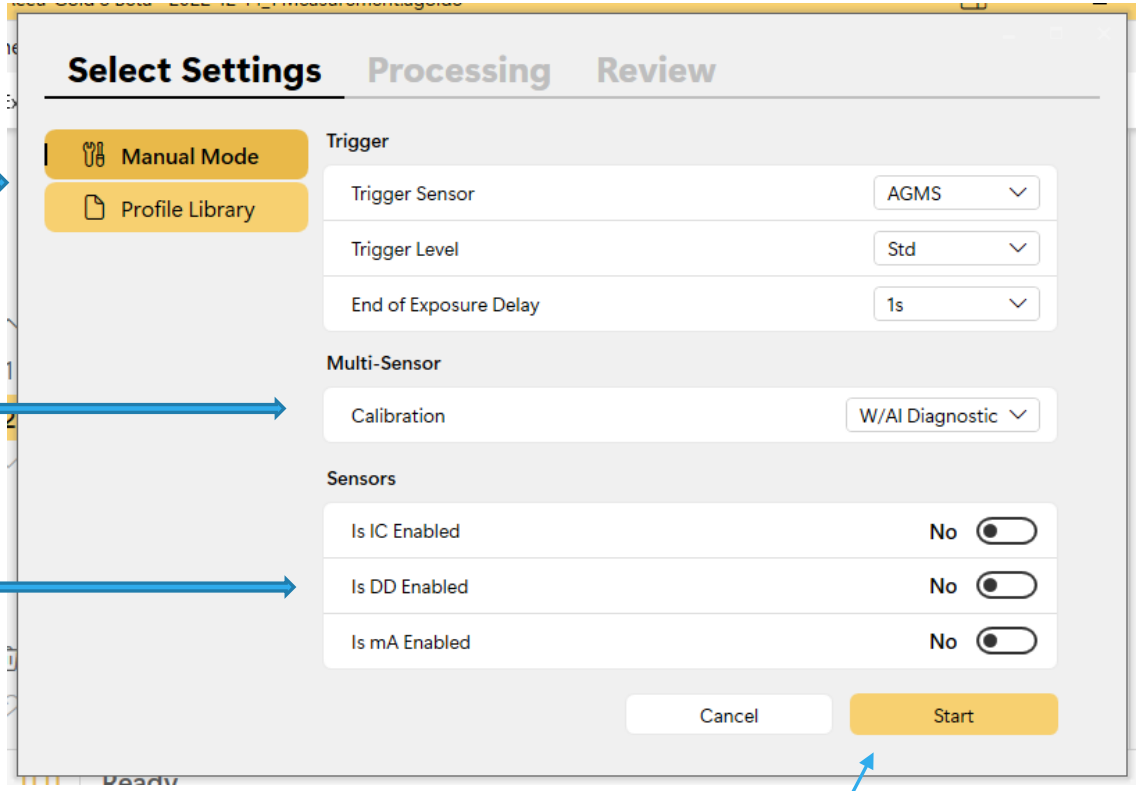


Selecting Reanalyze brings up this menu:

You can chose a new profile from either the Manual Mode or the library

Select the correct calibration if applicable

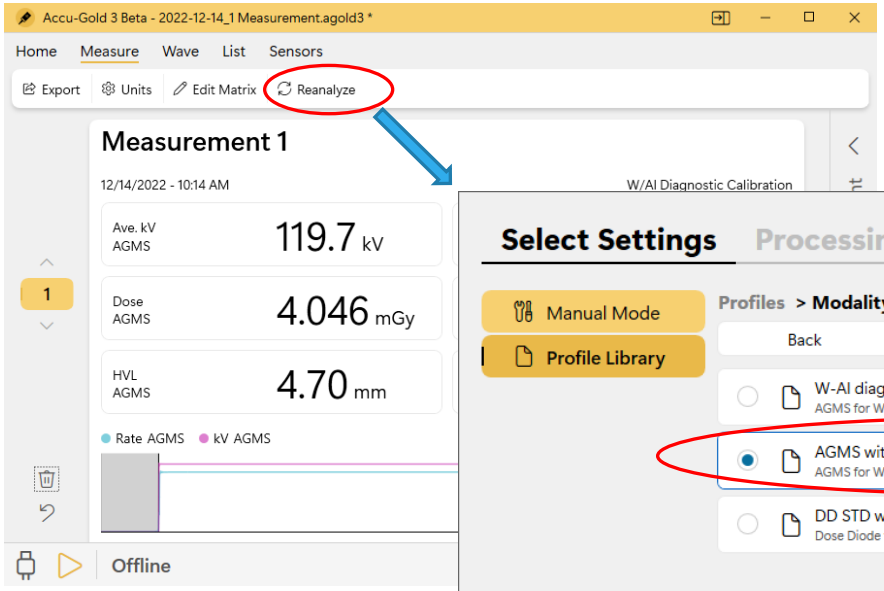
This cannot be changed



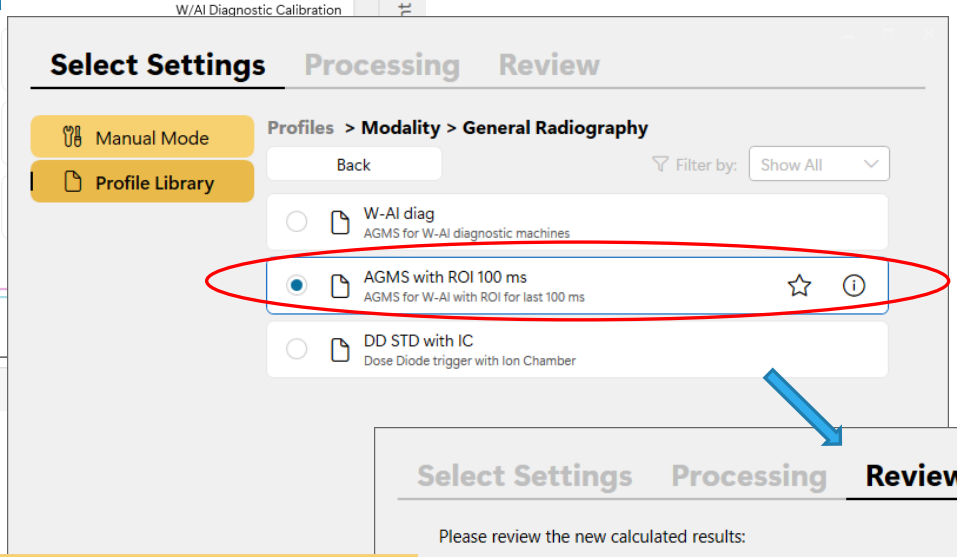
Selecting *Start* will bring up a review screen which you would then *Accept*

See the following example -

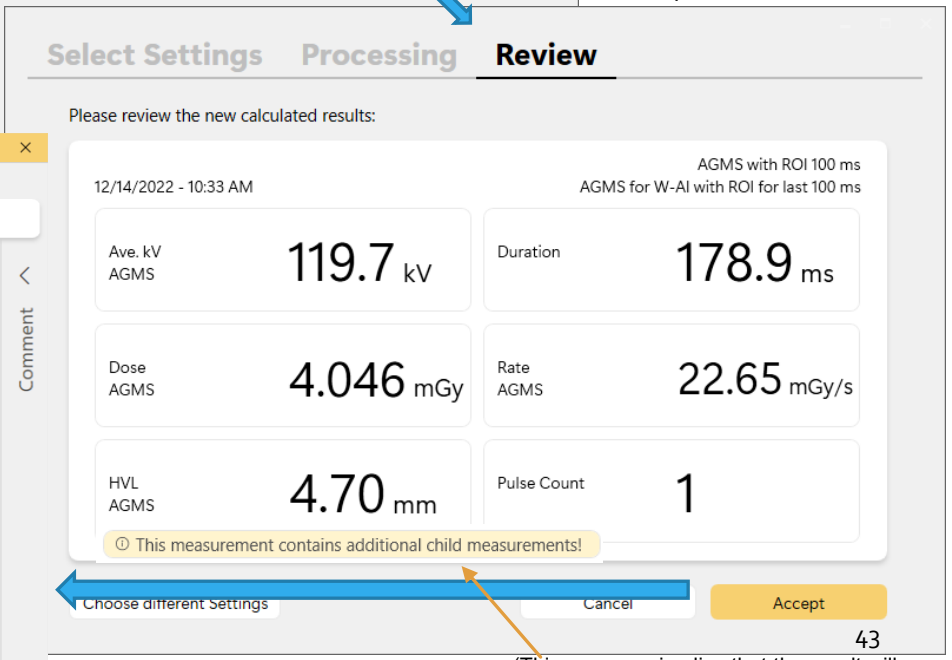
We made a measurement using W/AI Diagnostic-

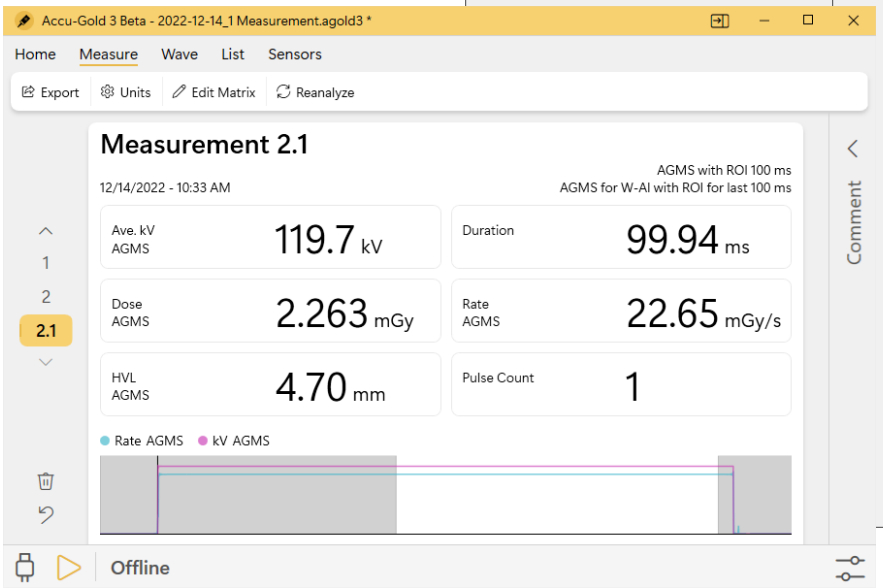


We choose *Reanalyze* and this time we choose a profile from the library, then hit *Start*



We get a review screen. Everything looks reasonable so we click on *Accept*.





This time, though, we have data for the last 100 ms of the exposure

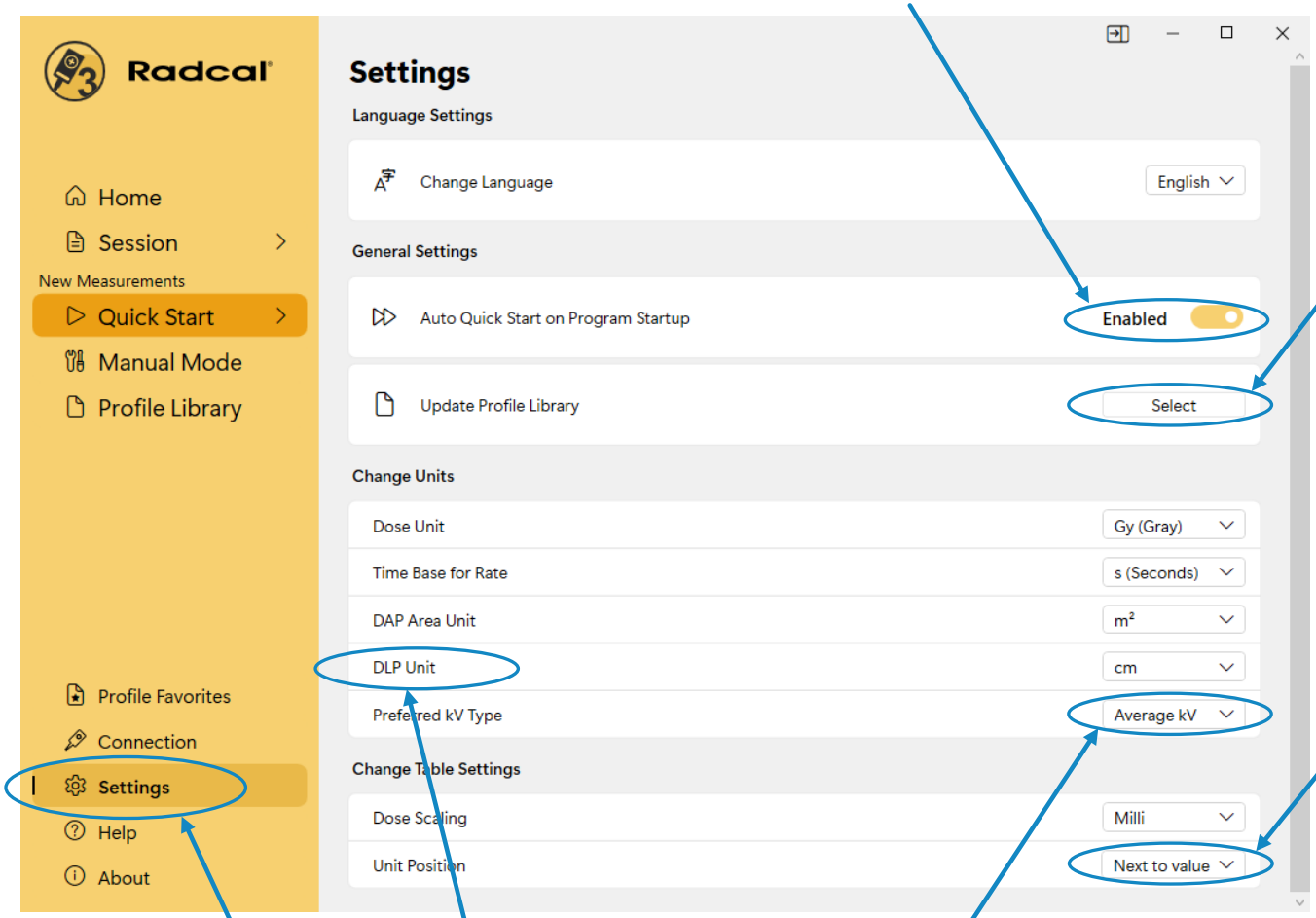
(This message implies that the result will have a child even though the review screen doesn't show one.)

Settings

Miscellaneous settings

Settings

The program automatically determines the profile needed by examining the sensors connected. The 'Auto Quick Start' happens when the program opens and this can be disabled.
The program will still determine the profile needed if you click the Quick Start menu selection.



The profile Library can be updated without requiring an update to the program by selecting the .zip file that will be provided to you.

This applies to List mode and exporting.

You are here

Dose-Length-Product (DLP) applies to CT chamber measurements

The default kV measurement type. See AN1016 for more information on the different types.

Appendix A

AG3 Installation and Setup

AG3 is compatible with:

Digitizers	Touch Units (in USB mode)
AGDM+	AGT-P-AG
ADDM+	AGT-P-AD
RGDM+	AGT-P-RG
AGDN+	

Operating system
- Windows 7
- Windows 8
- Windows 10

Hardware system
- Screen resolution of 1024 x 600 min
- RAM 150MB min
- Storage 100 MB min

Misc
- USB 2.0 Full-speed port for digitizer
- Excel 2007 or later for data reports

AG3 Installation Notes:

- **Install Accu-Gold software prior to connecting the Digitizer Module.**
- Uninstalling old versions is not necessary.
- Administrator privileges are required for installation.

Installation Procedure:
- To begin Accu-Gold3 software installation, copy the Accu-Gold_Setup_3.0.zip file to your computer. Right-click and select 'Extract All..'. This will expand the zip file and create a folder of the same name. Open the folder and click on the Accu-Gold_Setup_3.0.exe file.
- The "Accu-Gold_Setup" file will launch an installation dialog. You must agree to the *License terms and conditions* to continue. Click **Install**. The dotNET Framework Client version 4.0 or greater is required and will be installed if it is not already installed on your computer. An internet connection is not required.
- Click "Close" to exit the installation process.

Uninstall Procedure:
- To uninstall Radcal Accu-Gold go to Add/Remove Programs in Control Panel and select "Accu-Gold 3". Then click on Uninstall and answer Yes to the prompts. You may also run the setup program again to uninstall it. Please feel free to comment on this software and report any bugs that you may find. Please save session files since they would be most useful. Separate calibrations or license files are not required for AG3.

Appendix B

AG3 vs. AG2

Settings-
End of Exposure Delay is selectable in Ag2. In AG3, All library profiles use *Min* or *1s* as the normal delay. Other specific profiles will use longer delays as appropriate.

Trigger Levels-
Most profiles use a *Trigger Level* of *Standard* unless otherwise indicated.

File Formats-
All session file formats for AG1 (file extension Agold) and AG2 (file extension AGold2), are compatible with AG3. You can use AG3 to open, analyze and add measurements to any session. If you modify the session it will still be saved in its previous version. Certain functions available in AG3 will not work with legacy data (such as Reanalyze).

You can open AG3 (file extension AGold3) files with AG2 but it will not have any of the enhancements that come with AG3.

Exporting Data-
In Companion Mode, Accu-Gold Format/AG3 General and Nordic Format are identical between AG2 and AG3.

AG3 General Format will not include child measurements except measurements labeled as End measurements which are the same as child 1 measurements.

Staying up to date is important. You can go to *About* on the main menu to verify that AG3 is up to date. As new versions of AG3 are released, you will get an automatic message when you open AG3 telling you how to update it.

Appendix C – Warranties and Disclosures

Warranty for the Accu-Gold Measurement System

Radcal warrants that, in the event that any defects in material or workmanship should develop within one year of the date of shipment, the company assumes full responsibility for servicing equipment of its manufacture without charge upon return of the equipment to Radcal, with shipping costs prepaid by the customer. Costs to return-ship to customer by ground transportation will be paid by Radcal if the repairs are warranty-applicable. This warranty excludes batteries.

Radcal shall not be held liable for damages or delays caused by defects beyond making repairs or furnishing replacement parts, nor shall Radcal be liable for any defective material replaced without Radcal's consent during the period of this warranty. Radcal reserves the right to perform warranty services at its own factory.

Non-Warranty Repairs

The calibration of this instrument was correct within specified limits when the instrument left our factory. Radcal cannot be responsible for injury or damage resulting from improper use or calibration errors which develop subsequent to our shipment of the instrument.

If Radcal determines that a fault has been caused by misuse, abnormal operating conditions, or repairs by unauthorized personnel during the warranty period, repairs and shipping costs will be billed at normal rates.

If the equipment is found to be in proper working condition, Radcal will return-ship the equipment at customer expense.

Data Loss

Although we take great effort to save your data, the customer is responsible for backing up any and all data that is stored on their computers prior to being serviced.

WEEE and RoHS

Accu-Gold meets the requirements of the *2002/06/EC (WEEE) Directive*. Radcal has implemented full compliance. Recycling manuals are available on request.

Accu-Gold/Rapid-Gold/Accu-Dose+ meets the requirements of the EU-RoHS directive for RoHS 3, *The Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment Directive* (EU Directive 2015/863) .

The Accu-Gold/Rapid-Gold/Accu-Dose+ comply with China's requirements for RoHS Marking and EFUP pursuant to *clause* 6.2 of *SJT/11364:2006 for Electronic Information Products*.

The Accu-Gold/Rapid-Gold/Accu-Dose+ comply with the requirements of the *1907/2006 EU (REACH) Directive concerning Registration, Evaluation, Authorization of Chemicals*. The aforementioned Radcal products do not contain added substances above 0.1% weight of Substance of Very High Concern (SVHC) listed in the Annex XVII as of June 27th, 2018.

Declaration of Conformity

See https://radcal.com/downloads-conformity/

Specifications

Ion Chambers
Solid State Multisensors
Solid State Dose Sensor
Current Sensors
Light Sensor
DAP Calibration Sensors

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Radcal Part # MNL/AG3
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Software V3.10 & on
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