

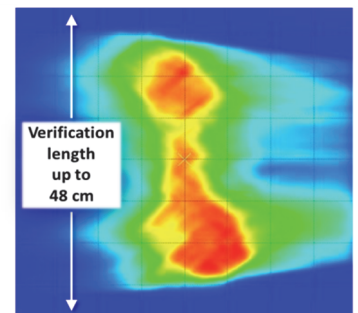
OCTAVIUS 4D

Verification of Long Radiation Fields

1 General Information

Until recently, very long radiation fields, such as typically encountered in craniospinal treatments, could not be verified with OCTAVIUS® 4D as the dimension of the dose volume was not completely covered by the field of view of the OCTAVIUS® detector.

Thanks to a redesign of the OCTAVIUS® 4D Control Unit / Phantom and a new dose reconstruction algorithm implemented in VeriSoft® 7.1, it is now possible to verify large radiation fields. The new **VeriSoft® Compose** feature allows you to compose two VeriSoft® measurements and thus increase the length of your OCTAVIUS® detector array from 26 cm to 48 cm (OCTAVIUS® Detector 729 and 1500) or from 11 cm to 20 cm (OCTAVIUS® Detector 1000^{SRS}) or from 15 cm to 28 cm (OCTAVIUS® Detector 1600^{SRS}).



2 Functionality and Workflow

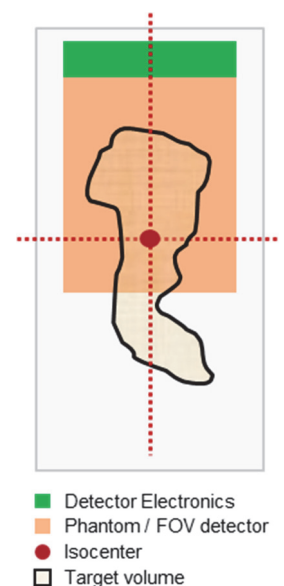
Please perform the following steps to measure long radiation fields with OCTAVIUS® 4D:

Step 1: Phantom setup for TARGET measurement

- ▶ Install OCTAVIUS® 4D Rotation Unit / 4D Phantom on your treatment table.
- ▶ Align it to isocenter as usual.
- ▶ Shift OCTAVIUS® 4D Rotation Unit / 4D Phantom in TARGET direction. This setup ensures that only the gearbox of the rotation unit will be irradiated (*see figure on the right*).

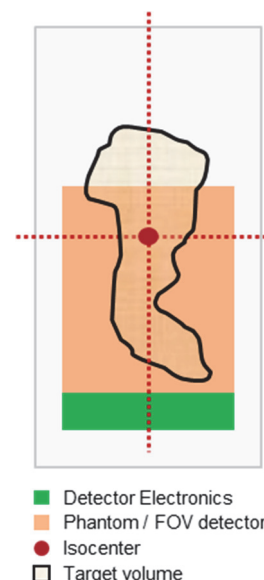
Step 2: TARGET measurement in VeriSoft®

- ▶ Open “Measurement” window in VeriSoft® 7.1.
- ▶ The “Measurement” window displays “Face Out” orientation (☺), which is the normal orientation of the OCTAVIUS® 4D Rotation Unit (gearbox facing in GUN direction).
- ▶ Start measurement and deliver plan.
- ▶ Save measurement as an “xcc” file (.xcc). We recommend to extend the file name with the shift direction and shift value.




Step 3: Phantom setup change for GUN measurement

- ▶ Set gantry to 0°.
- ▶ Rotate OCTAVIUS® 4D Rotation Unit / Phantom by 180°.
- ▶ Align it to isocenter.
- ▶ Shift OCTAVIUS® 4D Rotation Unit / Phantom in GUN direction using the same shift value as before. This setup ensures that only the gearbox of the OCTAVIUS® 4D Rotation Unit will be irradiated (see figure on the right).

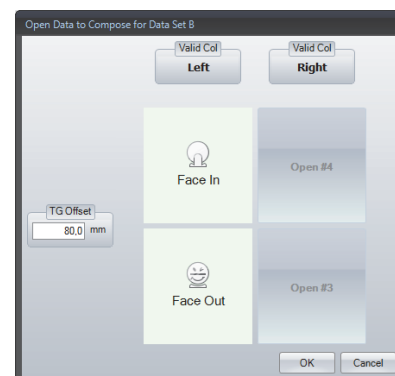


Step 4: GUN measurement in VeriSoft®

- ▶ In the “Measurement” window, select *Face In* orientation () for OCTAVIUS® 4D Rotation Unit rotated by 180° (gearbox facing in TARGET direction). This inverts the rotation direction of the OCTAVIUS® 4D phantom to ensure synchronous rotation with the gantry.
- ▶ Start measurement and deliver plan.
- ▶ Save measurement as an “xcc” file (.xcc).

Step 5: Dose reconstruction in VeriSoft®

- ▶ Select *File* → *Data Set A/B* → *Compose*. The *Open Data to Compose dialog* will appear (see figure on the right).
- ▶ Click the “Open #1” button to load „Face Out“ measurement.
- ▶ Click the “Open #2” button to load “Face In” measurement.
- ▶ In the „TG Offset” input box, enter the shift value in [mm].
- ▶ By clicking *OK*, the “Face Out” and “Face In” measurements will be automatically composed.



Step 6: Evaluation in VeriSoft®

- ▶ Compare the measured and the planned dose distribution. Please note that treatment planning for OCTAVIUS® Detector 729 and 1500 should be performed on a large OCTAVIUS® cylinder structure. The large CT dataset can be found here: <https://www.ptwdosimetry.com/en/octavius-4d-ct-scans/>.

3 Upgrade Package

To be able to use the VeriSoft® Compose feature, current OCTAVIUS® 4D users require a hardware upgrade. Please order the below hardware exchange package to upgrade your system and return your old OCTAVIUS® Control Unit (T40058) and wireless inclinometer (T43036) to PTW or your PTW sales and service partner, along with a copy of the delivery note.

Order No. L981567 OCTAVIUS® 4D Hardware Exchange Package includes:

- New OCTAVIUS® 4D Control Unit
- New wireless inclinometer
- VeriSoft® 6.x to 7.x software upgrade