Fibermetrix

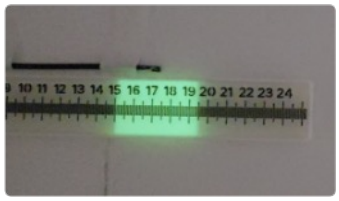
REACT
IVInomad

COMMISSIONING AND CT SCAN QC

COMBINE REACT RULERS AND IVINOMAD DOSIMETER FOR OPTIMAL CONTROL OF EXPOSURE PARAMETERS, INCLUDING VERIFYING THE PROPER FUNCTIONING OF THE COLLIMATOR AND ANTI-OVERRANGING SHIELDS.

START-UP

- Place a **REACT** ruler and the **IVInomad** probe on the CT table (z-axis), horizontally and at the isocenter
- Put the smartphone in the CT gantry
- Start video recording and IVInomad measurement simultaneously

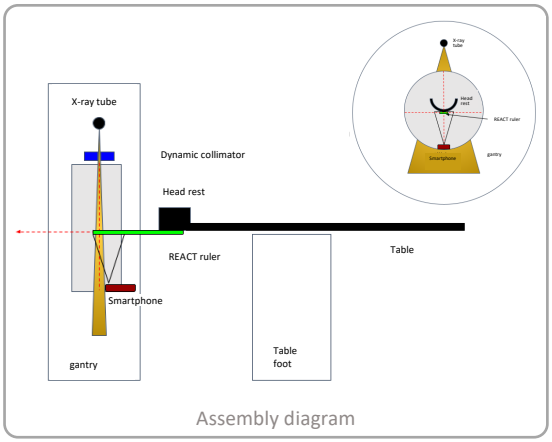


STEP 1 INSTALLATION

Attach the ruler to a flat, non-scattering surface (e.g. a polystyrene board) and place the IVInomad probe along the ruler so that the active area is as close as possible to the center of the ruler.

Place the board horizontally at the end of the table so that the ruler faces downward and is positioned at the CT's isocenter

Place the smartphone on the lower part of the gantry with the camera facing the ruler.

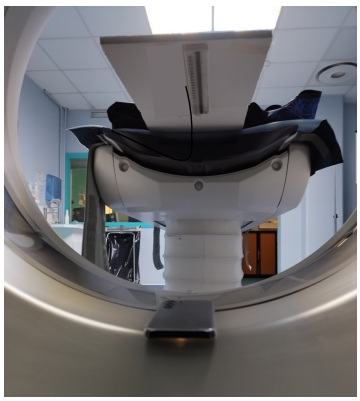


Assembly diagram

STEP 2 CT SETTINGS

Select a helical **clinical protocol** with the widest collimation, the highest pitch, and an irradiated length of 20 cm centered on the ruler.

These specific high values are chosen to optimize the relevance of the test.



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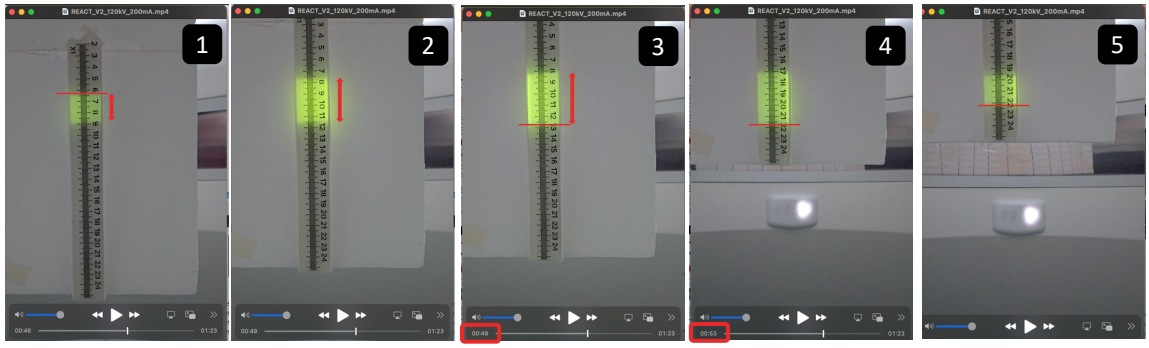
STEP 3 EXPOSURE CONTROL

MESUREMENTS WITH REACT

Start video recording and launch the CT acquisition.



Visible scintillation on the REACT ruler during a helical acquisition.

A single video lasting **only a few seconds** allows you to check:

1 2 3	that **dynamic collimation** is working properly (anti-overranging shields)
3	effective **collimation**
3 4	actual **table speed**
1 5	total **exposure length**

TIPS

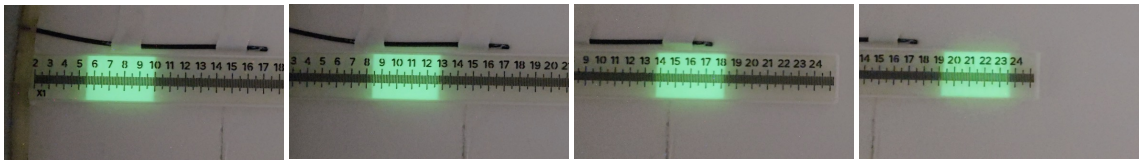
Tip #1: No need to turn off the lights in the room. The scintillation of the ruler is clearly visible for clinical protocols, even those with the lowest doses.

Tip #2: The video can be started remotely using the Bluetooth remote control supplied with the REACT kit.

STEP 4 DOSE PROFILE CONTROL

MESUREMENTS WITH IVInomad AND REACT

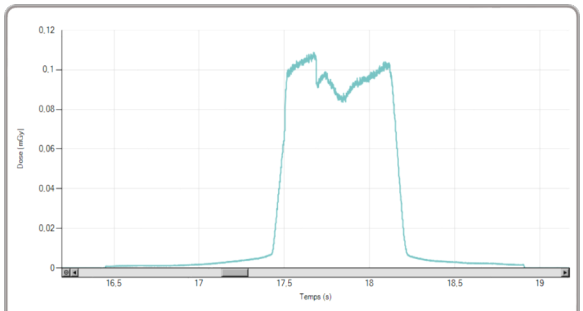
1 : start the video, 2 : start the IVInomad measurement and 3 : start the CT acquisition.



Collimation beam visible on REACT ruler.

IVInomad point detector allows the **dose profile** measurement.

The high time resolution allows the collimation width to be deduced with maximum precision using FWHM of the profile and table speed measured with the REACT ruler (step 3).



IVInomad dose profile. Time resolution ms.

TIPS

Tip #3: The 0.5 cm probe is perfect for this application.

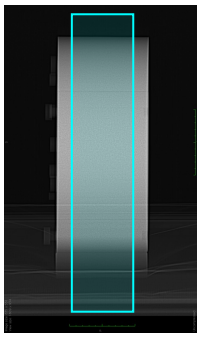
STEP 5 CHECK ORGAN DOSE REDUCTION TOOLS - OBTCM

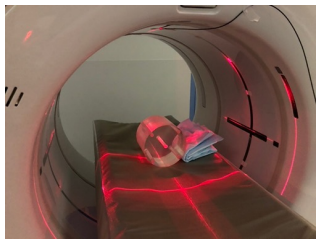
ADDITIONAL SETUP

For this test, the clinical protocol used must have active organ-based tube current modulation tools.

Place the CTDI phantom on the table extension, perform the localizer and place the acquisition box at the phantom level so that dose modulation is effective.

Remove the phantom and table extension, then place the IVInomad probe as indicated in step 1 so that it is approx. in the center of the acquisition area and perfectly isocentric.





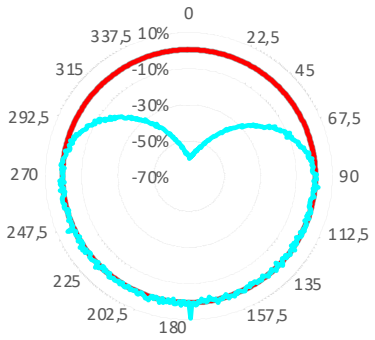
Phantom positioning for localizer and selection of the acquisition box

MEASUREMENTS WITH IVInomad

Start IVInomad measurement and then launch the CT acquisition.

To evaluate to dose reduction, you can restart the acquisition with the dose reduction tool disable and compare the results.

The high time resolution allows accurate tracking of dose modulation for all X-ray tube positions during the rotation.



Dose measurements for a complete tube rotation. Modulation OFF/ON.

TIPS

Tip #4: IVInomad probe(s) can also be placed in the CTDI phantom inserts and on its surface to assess the dosimetric benefit for different organs (gonads, fetus, mammary gland, thyroid).