ISO Cube™ Daily QA Package

Model 023-05

AFFORDABLE "TURNKEY" SOLUTION FOR DAILY MACHINE QA

Target positioning through imaging guidance is critical for the accurate delivery of radiation treatment. Verifying that all of the imaging, localization and targeting systems are aligned with the true radiation isocenter is crucial. The CIRS ISO Cube™ Daily QA Package provides a cost-effective, fast and accurate means of testing radiation isocenter coincidence with the isocenters of the image guidance systems.

The package includes ISO Cube™ Daily QA Phantom, ISO Base™ Platform and ISO Analyze™ Image Analysis Software.

ISO Analyze™ integrates with the ISO Cube™ and ISO Base™, enabling user-friendly quality control of the isocenter of a LINAC by analyzing DICOM images acquired with the EPID detector. Controls are run automatically, analyzing images of the phantom and quantifying a large number of evaluation parameters. The software allows users to easily generate, save and print a report for each preceding control.

The ISO Base™ is used to position and level the ISO Cube™ on the treatment couch. It contains integrated pixel calibration targets for use with ISO Analyze™.

The phantom, base and software were designed specifically for daily system checks. LINAC laser and light fields can be "tuned" to true radiation isocenter using the engraved markings on the exterior of the phantom. The light field and radiation field alignment can be checked using the phantom's integral radiographic markers. More importantly the isocenters of both the OBI and the EPID can be checked for true special alignment and coincidence with that of the treatment beam.

The ISO Cube contains a center target and an offset target. Both targets measure 6.35 mm in diameter and are made of ceramic. The center target imaged in concert with the external concentric engraved circles provides greater accuracy localizing the center of the phantom with respect to the center of the radiation field. The offset target is used to insure the table offset coordinates generated by kV/MV imaging are accurate.

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CIRS
Tissue Simulation & Phantom Technology

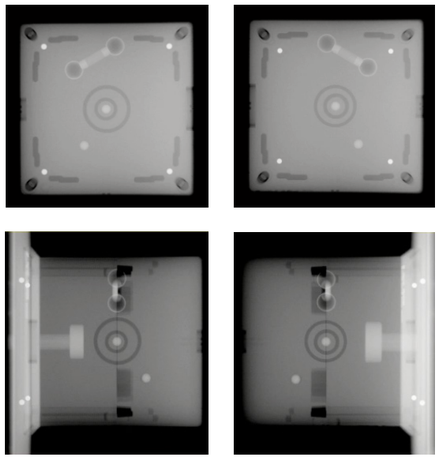
Integrated Data Analysis in 5 Easy Steps

ISO ANALYZE
POWERED BY AQUILAB

ACQUIRE

Use pre-established ISO Cube's treatment plan to acquire all necessary images for analysis of parameters.

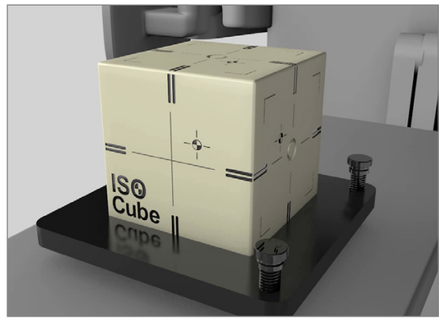
ISO Analyze™ Software provides suggested image sequences for each parameter

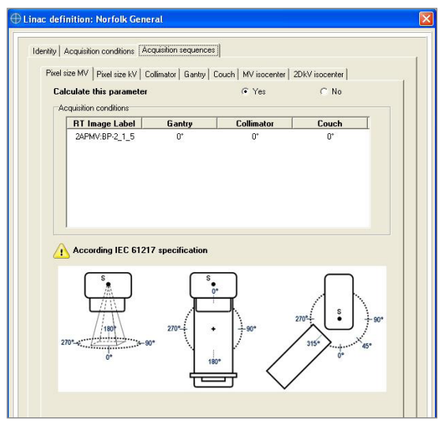


DEFINE

One time setup for each LINAC requires:

- LINAC Identity
- Acquisition Conditions
- Acquisition Sequences

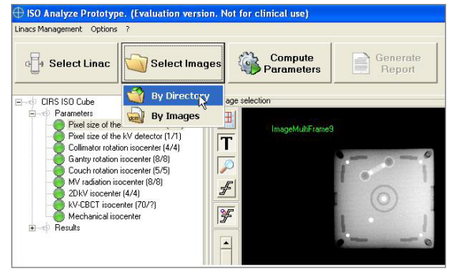




SELECT

Select pre-acquired DICOM images to use in each parameter calculation

Select images are highlighted for each parameter

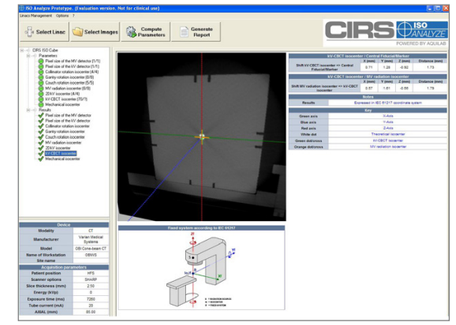


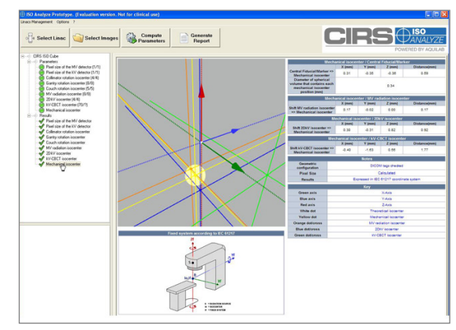
WHY USE ISO CUBE™?

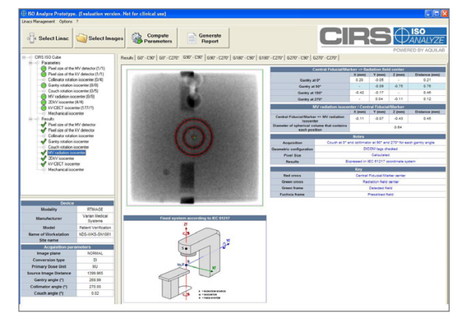
1. The stereo-triangulation approach employed with ISO Cube is similar to that of highly accurate GPS Systems. The calculation accuracy of the isocenters is based on projections of targets distributed in a 3D space contained within the 3D space found at the convergence of the treatment beams.
2. ISO Cube allows for comprehensive and thorough testing of LINAC specific centers of rotation.
3. ISO Cube allows for quick, daily QA of OBI and CBCT isocenters.
4. ISO Cube shows the impact of positioning a 3D object on the couch using LINAC specific positioning lights and lasers.
5. ISO Cube offers an opportunity to assess the orthogonality of LINAC specific positioning lights and lasers.
6. ISO Cube allows calculation of the planar deviation between the center of the radiation field and the projection of the LINAC mechanical ISO center on the image plane for each gantry and collimator position. This eases trouble-shooting of clear outliers.
7. ISO Cube's internal features permit assessment of misalignment between light field and radiation field.

CALCULATE

ISO Analyze™ quickly calculates parameters and displays detailed results



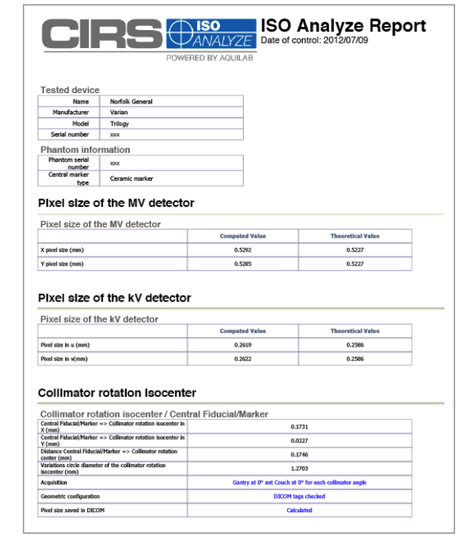




REPORT

Detailed results can be manipulated for in-depth analysis

Summary report is displayed and PDF document may be printed and saved



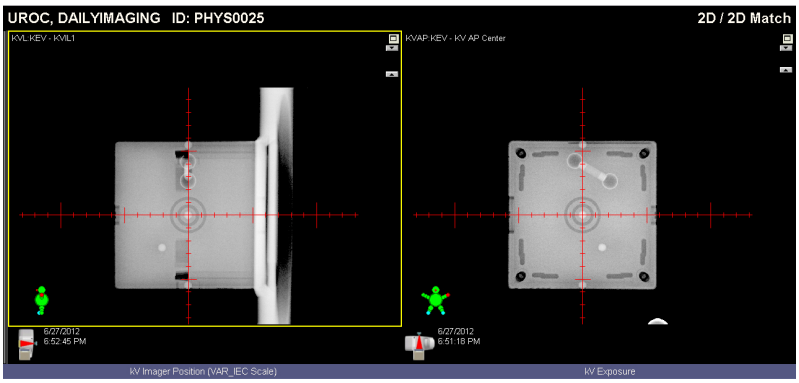


Figure 1. 2D/2D match of kV and DRR.

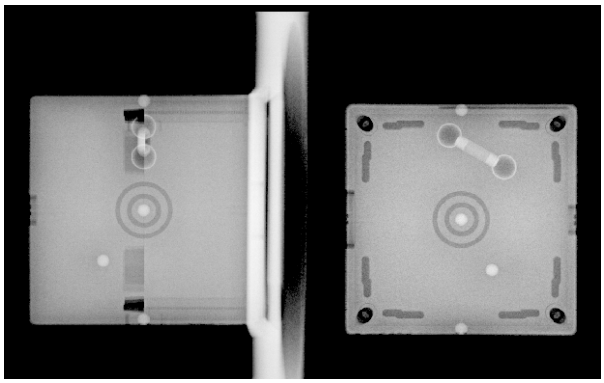


Figure 2. Concentric circles verify accurate alignment of ISO Cube and establish true position of the kV radiation isocenter.

SPECIFICATIONS

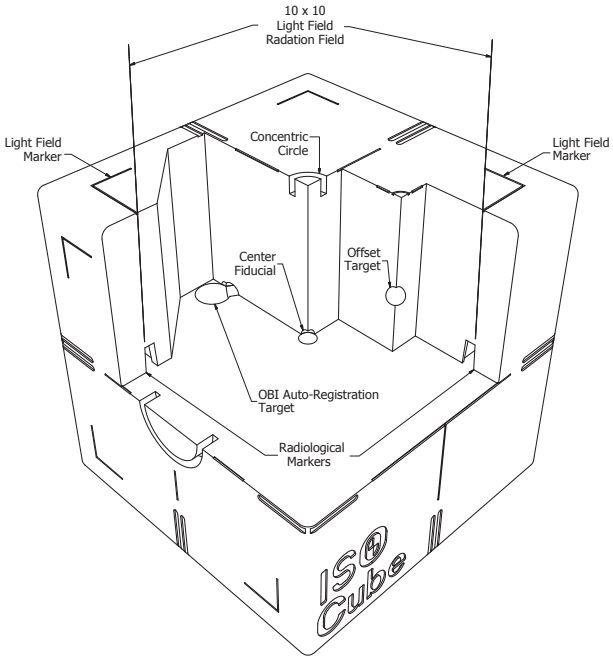
OVERALL DIMENSIONS:	12 cm x 12 cm x 12 cm (4.75" x 4.75" x 4.75")
WEIGHT:	1.7 kg (3.7 lb)
MATERIALS:	Plastic Water®

MODEL 023-05 INCLUDES

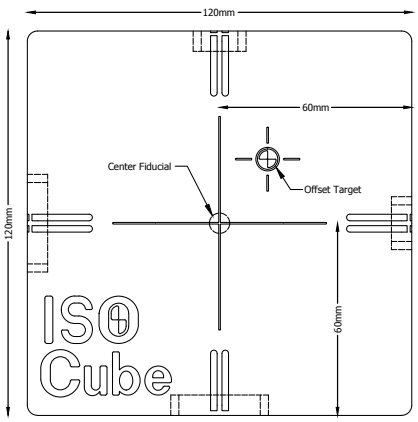
QTY	DESCRIPTION
1	ISO Cube™ Daily QA Phantom
1	ISO Base™ Alignment Platform
1	ISO Analyze™ Image Analysis Software
-	User Guide
-	48 Month Warranty

OPTIONAL ACCESSORY

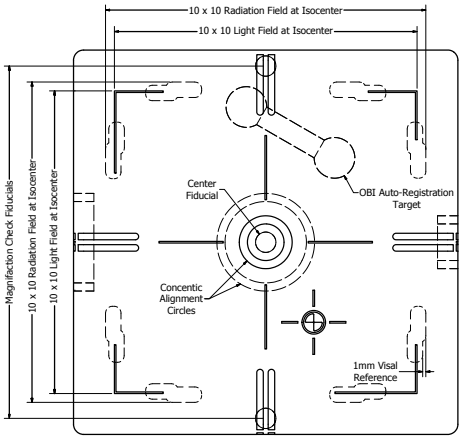
PART NO.	DESCRIPTION
023-01	Iso Opt Stereotactic Target Frame Adapter



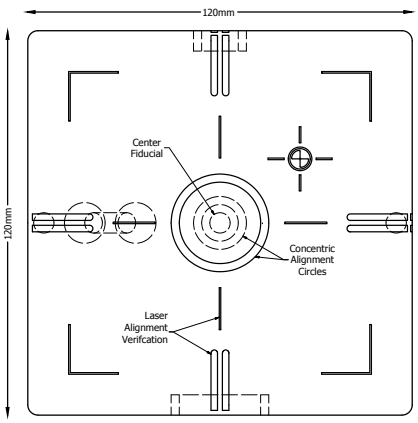
Internal View



Inferior / Superior View



Anterior / Posterior View



Lateral View

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Computerized Imaging Reference Systems, Inc. has been certified by UL DQS Inc. to **(ISO) 9001:2008**. Certificate Registration No.10000905-QM08.