



*Epiqa*

**E  
p  
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q  
a**



**ARTEMIS**  
**Rapid Arc® QA**



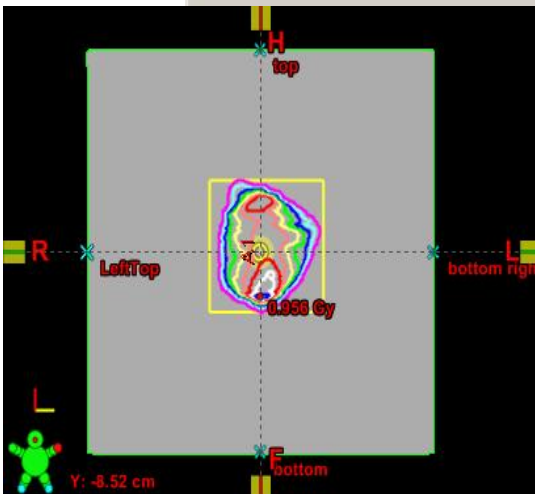
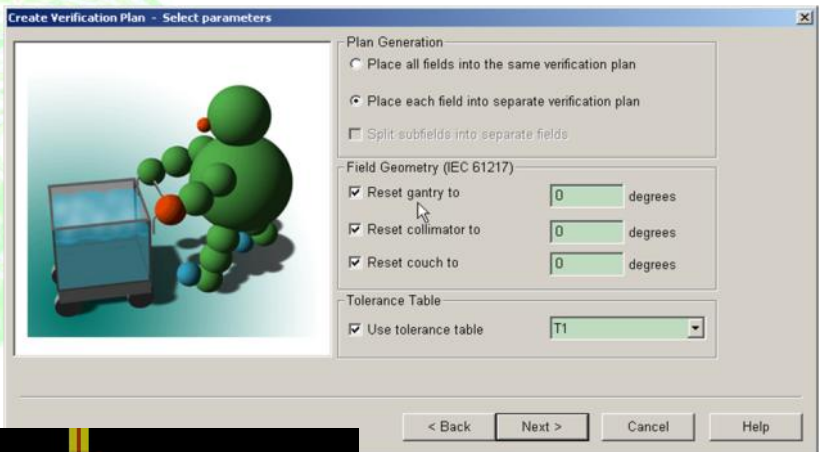
# Plan Preparation For QA Using Portal Dosimetry

## 1. Plan preparation for measurement:

Create verification plan for phantom; keep all parameters without change OR Use original patient plan for measurement using treatment console in QA mode. Epiqa also supports split of the plan into several sub-arcs.

## 2. Reference dose plane creation:

Create verification plan for phantom calculation while selecting option to zero all gantry angles. Calculate verification plan with collapsed gantry angles using the same algorithm as for patient plan.



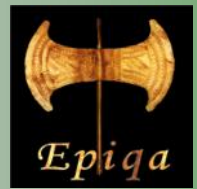
## 3. Deliver plan prepared in step 1:

Extend Portal Vision arm and acquire integrated image during entire plan delivery.

## 4. Export DICOM data for Epiqa:

Export patient plan.  
Export verification dose plane perpendicular to beam axis at dose maximum.  
Export acquired portal dosimetry image(s).

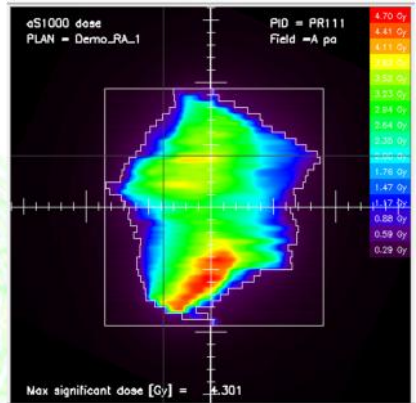
# Results Evaluation



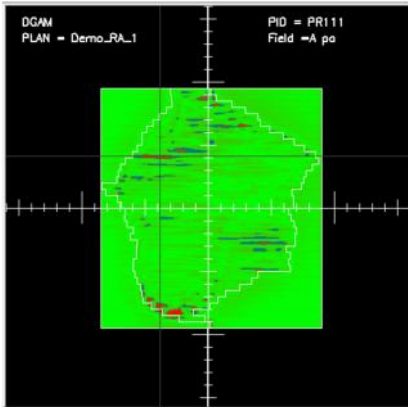
1. Load plan, reference dose(s) and measured portal dosimetry image(s) including reference image of 10x10 field.



2. Convert portal dosimetry image to dose in water matrix.

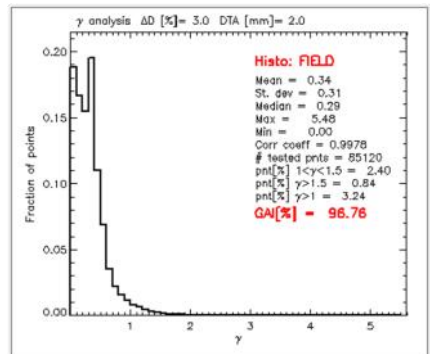
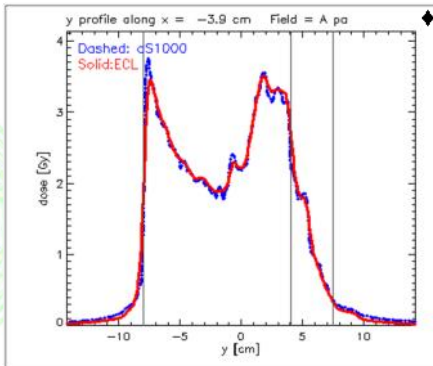


3. Evaluate results using gamma analysis or dose difference information.



Example of some evaluation tools:

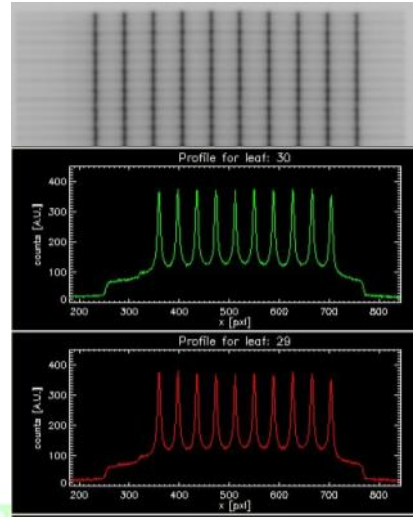
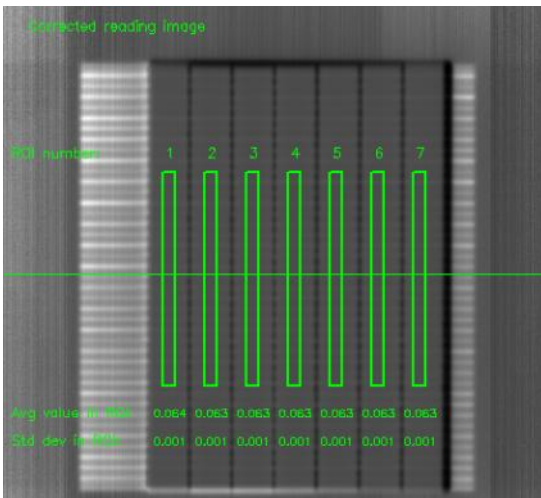
- ◆ Profiles comparison
- ◆ Point evaluation - dose difference, gamma
- ◆ Results histogram and statistics
- ◆ Flexible definition of local or global gamma criteria



# Machine QA

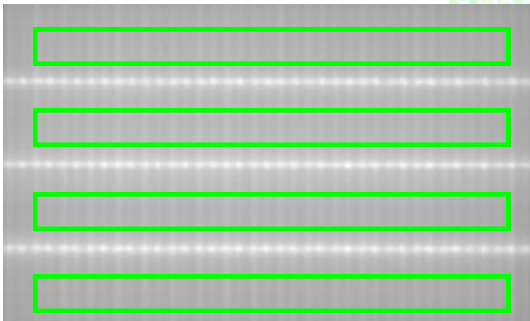
Verify accelerator and MLC performance using standard tests recommended by Varian. Use Portal Vision dosimetry acquisition and Epiqa to evaluate results.

1. Accurate control of dose rate for several gantry speeds and 7 different dose rates.



2. Precise MLC positioning during gantry rotation.

3. Accurate control of MLC leaf speed during gantry rotation for 4 different leaf speeds.



ROI analysis	
ROI number	Deviation from reference value [%]
1	-1.43
2	-0.27
3	1.26
4	0.44
Tolerance [%]: $\pm 2.00$	
Reference average value: $0.0599 \pm 0.0007$	