

## Klarity Carbon Fiber Head Support Attenuation Correction Factor Measurements

### Purpose:

To measure dosimetric properties of the Klarity Carbon Fiber Head Support.

### Material:

Klarity Carbon Fiber Head Support (-image 1-) with measuring points marked A2 and B2.



Image 1

### Measuring Device:

Electrometer: IBA-Dose1

Ionization Chamber: FC 65, 0.6cc,

Phantom: RW3 Solid Water Phantom

### Methods:

Linear Accelerator measurements were taken separately at 6MV and 10MV.

Baseline setup was measured at 100cm SAD, with ion chamber at 10cm depth of solid water, and 10cm of solid water underneath. Field size was 10x10cm with 100 monitor units(MUs) delivered. Readings were taken with IBA-Dose 1 electrometer.

For each measurement, three readings were recorded and averaged. All calculations used the average reading.

A correction factor (CF) was calculated for each energy level using the following equation:

$$CF = R_{dg_{R507-GF}}(FS,depth,SAD) / R_{dg_0}(FS,depth,SAD)$$

Where  $R_{dg_{R507-GF}}(FS,depth,SAD)$  is the reading with the Klarity Carbon Fiber Head Support on the top of the solid water, and  $R_{dg_0}(FS,depth,SAD)$  is the baseline reading, without the Klarity Carbon Fiber Head Support.

SAD is assumed to be 100cm. FS is 10x-10cm<sup>2</sup>, and depth is 10cm.

### Results:

6MV					
Measuring Point	Reading	Reading	Reading	AVG	
baseline	81.98	81.98	82.03	82.00	
with Carbon Fiber Head Support					
Measuring Point	Reading	Reading	Reading	AVG	CF
Point A2	81.50	81.52	81.50	81.51	99.4%
Point B2	81.58	81.58	81.60	81.59	99.5%
10MV					
Measuring Point	Reading	Reading	Reading	AVG	
baseline	89.26	89.30	89.30	89.29	
with Carbon Fiber Head Support					
Measuring Point	Reading	Reading	Reading	AVG	CF
Point A2	88.92	88.96	88.93	88.94	99.6%

Point B2	89.03	89.04	89.03	89.03	<b>99.7%</b>
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Table 1: Raw measurements, averages and correction factors for -6MV and 10MV

## Discussion/Conclusion

It is expected that under standard setup conditions, the CF value for the Klarity Carbon Fiber Head Support will be in the range as indicated in Table 1 for 6MV and 10MV.

Prepared Aug 1,2017

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