



INDEPENDENT X-RAY  
QUALITY ASSURANCE

# Calibration Certificate

Calibration certificate issued by an accredited calibration laboratory

## Tube Voltage

**Page of pages** 1(2)  
**Certificate Number** 248A90721  
**Date of Calibration** 2024-08-21  
**Date of Issue** 2024-08-21  
**Location** RTI Group Headquarters, Mölndal  
**Radiation Quality** Radiography (R1)  
**Object** kVp-, dose-, doserate- and time-meter  
**Manufacturer** RTI Group  
**Man. part Number** 4560.000076  
**Calibrated By** Sama Hussein  
**Customer** RTI Group

**Serial Number** CB3-24082127  
**Object** Cobia Smart R/F

**Environment** All climatic conditions are within RTI's limits for a reliable calibration environment, i.e. 18-25 deg C, 90-110 kPa, and <70 % air humidity.

**Geometric Arrangement** The detector was irradiated perpendicular to the entrance window.  
The point of reference is 10.0 mm below the top surface.

**Method** The method is described in the document MTB-010 (rev. I) Calibration method- Tube Potential, by RTI Group AB.

**Traceability** The calibration is performed by comparison against a reference high voltage divider system. The reference high voltage divider system is traceable through RISE Technical Research Institute of Sweden to national or international measurement standards.

**Uncertainty** The expanded uncertainty at reference conditions when calibrating is  $\pm 0.56$  %. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EAL Publication EA-4/02.

**Evaluations** The measured values are within the error limits specified by the manufacturer of the equipment under test.

Authorized signature:

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Sama Hussein



Akkred. nr. 2021  
Calibration  
ISO/IEC 17025



The calibration results refer exclusively to the object.  
This calibration certificate may not be circulated other than in full.  
Template version: 2024.3A

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Radiography (R1) SDD 80 cm  
Anode/Filter W / 3.0 mm Al  
HVL 3,0 mm Al at 80 kV

Settings			Measured Data		Tolerance		Result	
Current (mA)	Time (ms)	Detector Filter	Reference kVp (kV)	Detector kVp (kV)	High (kV)	Low (kV)	Deviation (%)	Status Pass/Fail
100	100	Auto	40,43	40,20	41,43	39,43	-0,6	Pass
100	100	Auto	59,58	59,55	60,77	58,39	-0,1	Pass
100	100	Auto	59,58	59,70	60,77	58,39	0,2	Pass
100	100	Auto	99,46	99,50	101,45	97,47	0,0	Pass
100	100	Auto	119,77	119,50	122,17	117,37	-0,2	Pass
100	100	Auto	139,65	139,40	142,44	136,86	-0,2	Pass

Pass/Fail Criteria The pass and fail criteria are based on Case 2 as defined in ILAC-G8:03/2009. I.e. The calibration result is compared against manufacturer specification, see MTB-010\_bil.1\_B\_Object Uncertainty – Tube Potential. A deviation (excluding expanded uncertainty) less than manufacturer specification is reported as pass, and a larger deviation is reported as fail. Pass/Fail criteria for kV calibrations of the Cobia is ±2.0 %.

Reference Equipment	Ref Number	Type	Model
	11-RF005	Voltage divider	Sedecal Internal Divider
	19-5-111031	RTI X-ray lab 5:1, R/F	Sedecal, Mod. SHF 535