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Establishment of Radiotherapy Calibration Facility at the SSDL of KFSH&RC

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The Secondary Standard Dosimetry Laboratory (SSDL) of KFSH&RC is the 1st, and so far the only SSDL in the region having a full range of calibration capabilities covering radiation protection, diagnostic radiology, and radiotherapy.

The SSDL of KFSH&RC is a full member of the International Atomic Energy Agency / World Health Organization SSDLs network. Its standard instruments were calibrated at the IAEA's Reference Dosimetry Laboratory and hence all the measurements are traceable to the Primary Standard Dosimetry Laboratories (PTB) and the BIPM through the IAEA.

The radiotherapy calibration facility at the SSDL of KFSH&RC was established in 2014. The full commissioning of this facility is presented in this paper. This commissioning mainly revolves around three parameters; verification of the radiation safety aspects, testing of various physical and dosimetry parameters (timer error, verification of the source positioning, beam profile free in air and water, output and depth dose measurements,...) and the establishment of the reference absorbed dose to water.

Last but not least, the SSDL participated in an external audit program managed by the IAEA to confirm that the established reference absorbed dose rate is within the acceptable limits. The results of this audit, which are presented here, were satisfactory.

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