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for the U.S. Department of Energy

# Memo

*date:* Jan, 14, 2009

*to:* L. Stiegler

*from:* C. Weilandics *CW.*

*subject:* Bldg. 725 RF Penthouse RF equipment survey

On Jan.. 14, 2009, as part of NSLS work planning (LS Work P #476), an RF survey of a newly installed solid state amplifier (3 kW) and 5 kW circulator, including a feed from the circulator back to the existing 125 kW amplifier was conducted. The survey was conducted in the RF penthouse of Building 725.

For these measurements, electric (E) field surveys were conducted using a calibrated (Aug. 8, 2008) Narda NBM-550 Broadband Field meter(B/C 131595) using the Narda 2402/01 E field probe(IH equip. #0527) which is capable of measuring RF over the frequency ranges of 100 kHz to 3 GHz. The meter was set to read out in directly in  $\text{mW}/\text{cm}^2$ . The 125 kW amplifier was running at 78 kW, the 3 kW solid state amplifier was running at about 2.2 kW.

During the survey of the equipment, measurements were taken around the cabinet housings, specifically at the panel joints where one might expect some leakage. Also surveyed were the accessible portions of the cables and their connections. In addition to a general survey, for the cabinets, a spatial average was performed where an individual might be expected to stand, in front and back of the racks. This spatial average is typically measured by scanning a planar area equivalent to the area occupied by a standing adult human being (projected area). In most cases a simple linear vertical scan of the fields over a 2 m height will be sufficient. In our case, this consisted of an average reading of eight equally spaced points over this 2 meter height, again in front and back of the equipment being surveyed.

## **Results**

For this set of measurements, we found no measurable ( $\ll 1\%$  of the standard) RF from the equipment measured. The standard for exposure to non-ionizing radiation which BNL has referenced is the IEEE C95.1-1999 standard also referenced by ACGIH. The general TLVs for RF and microwaves are not expected to change.

IH99SR.09

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