

## Note on Vertical Test Results of Cavity TE1ACC001

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Cavity TE1ACC001 is a single-cell Tesla-shape cavity manufactured by ACCEL. The cavity had never been processed or tested before arrival at FNAL. The cavity was optically inspected (interior) after arrival at FNAL, and then transported to ANL where it underwent EP, HPR, assembly, evacuation, and leak check using the latest procedures. It was then transported back to FNAL, to the VCTF at IB1, where it was mounted on the test stand, connected to the pumping system, and instrumented with the prototype single-cell diode thermometry system.

The cavity was cooled down to 2.00K and CW measurements of  $Q_0$  vs E were performed. Since this cavity was part of a two-single-cell test configuration along with cavity TE1ACC002,  $Q_0$  vs T data were not taken in order to take advantage of the efficiency provided by testing two cavities in a single cooldown. Low field  $Q_0$  was found to be about  $1.7 \times 10^{10}$ , decreasing gradually as field increased. A Q-drop was observed beginning about 26 MV/m, and some slight radiation due to FE began at a gradient of about 30MV/m, never exceeding  $2 \times 10^{-2}$  mR/hr, which is marginally above background. The cavity ultimately reached a gradient of 32.5MV/m with a  $Q_0$  there of  $7.9 \times 10^8$  (see Figure 1). The cavity was limited by Q-drop/RF power ( $P_{\text{input}}$  was  $\sim 300$ W at maximum gradient, with  $P_{\text{loss}}$  over 150W). As was the case with previous single-cell cavities that exhibited this Q-drop, cavity TE1AC001 should receive a 120°C bake for 48 hours in order to eliminate this Q-drop, allowing its ultimate performance to be measured.

During the Q vs E run at 2K, scans of the diode thermometry were performed. Online realtime displays of the temperature data indicated the occurrence of hot spots as the Q-drop was encountered. Complete analysis and results will be reported elsewhere.

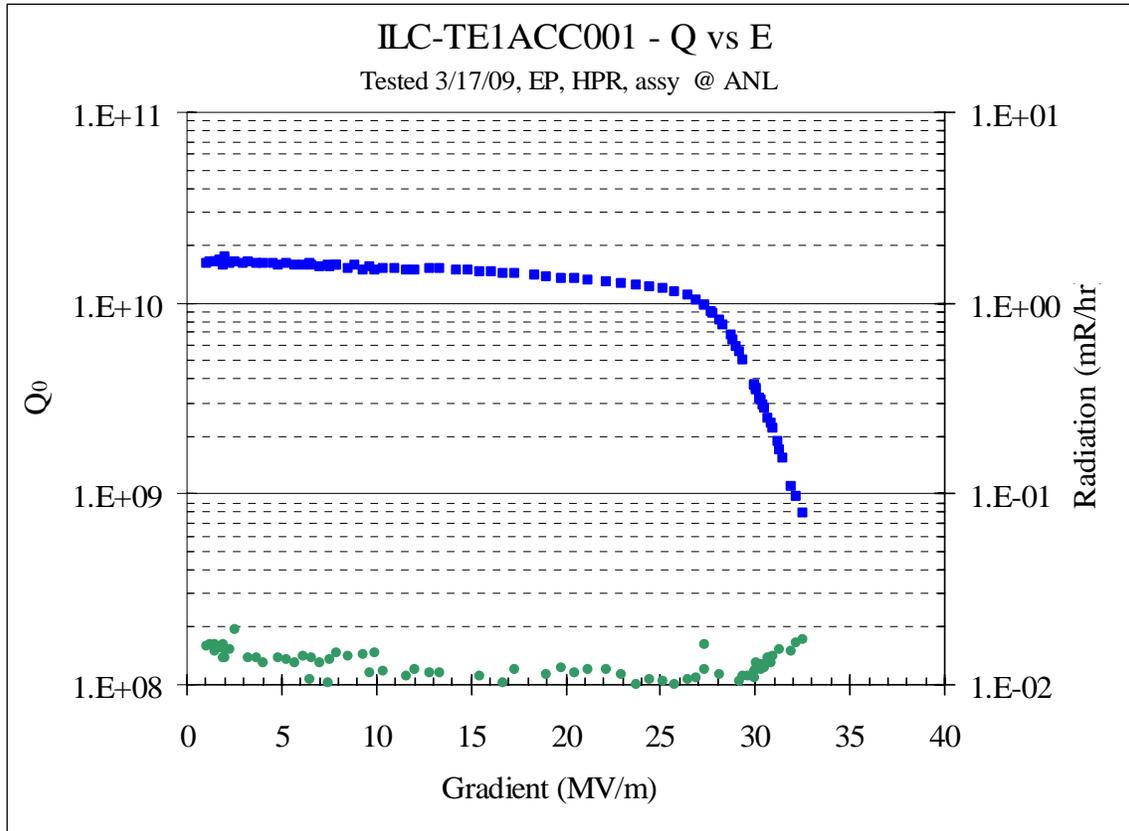


Figure 1.) Q<sub>0</sub> vs E run at 2K