



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

November 25, 2013

Via E-mail

Kevin J. Brewer
Executive Vice President and Chief Financial Officer
Axcelis Technologies, Inc.
108 Cherry Hill Drive
Beverly, MA 01915

Re: Axcelis Technologies, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2012
Filed March 1, 2013
File No. 000-30941

Dear Mr. Brewer:

We have completed our review of your filings. We remind you that our comments or changes to disclosure in response to our comments do not foreclose the Commission from taking any action with respect to the company or the filings and the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States. We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings to be certain that the filings include the information the Securities Exchange Act of 1934 and all applicable rules require.

Sincerely,

/s/ Brian Cascio for

Martin James
Senior Assistant Chief Accountant