



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-3030

August 30, 2010

Gregory R. L. Smith
Chief Financial Officer
Image Sensing Systems, Inc.
500 Spruce Tree Centre
1600 University Avenue West
St. Paul, MN 55104

Re: Image Sensing Systems, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2009
Filed March 24, 2010
Form 10-Q for the Fiscal Quarter Ended March 31, 2010
Form 8-K/A filed August 4, 2010
File No. 000-26056

Dear Mr. Smith:

We have reviewed your response letter dated August 18, 2010, and your subsequent filings and have the following comments. We have limited our review to only your financial statements and related disclosures and do not intend to expand our review to other portions of your documents. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your filing and the information you provide in response to these comments, we may have additional comments.

Form 10-Q for the Fiscal Quarter Ended March 31, 2010

Exhibit 31.1 and 31.2

1. Refer to our prior comment 3. Please file the amendment to Form 10-Q for the fiscal quarter ended March 31, 2010. We will review the amendment, including the changes you indicated you will make therein, when filed.

Form 8-K/A filed August 4, 2010

Exhibit 99.1

Report of Independent Auditors, page 3

2. We see that you completed the acquisition of Citysync Limited a Company based in the United Kingdom and note that the financial statements of Citysync Limited have been audited, "in accordance with applicable law and International Standards on Auditing (UK and Ireland)." Please note that the instructions to Item 8.A.2 of the Form 20-F require that the financial statements must be audited in accordance with U.S. generally accepted auditing standards and the auditor must comply with U.S. and Commission standards for auditor independence. Please amend the Form 8-K to address the following:
 - Include financial statements of Citysync Limited that have been audited in accordance with U.S. generally accepted auditing standards as required by Item 8.A.2 of Form 20-F.
 - Have your independent auditors include a report that complies with, and is substantially similar to the examples of reports provided in, paragraph 8 of AU Section 508. In addition, please provide a report that is signed by the auditing firm rather than by an individual on behalf of the auditing firm, or advise us.
3. We note that the financial statements of Citysync Limited have been prepared in accordance with United Kingdom Generally Accepted Accounting Practice applicable to Smaller Entities but that you did not provide the disclosures and reconciliations as prescribed by Item 17 of Form 20-F. Please confirm to us that Citysync Limited did not meet the 30 percent threshold outlined in Item 17 (c)(2)(v) of Form 20-F, which states that issuers that prepare financial statements on a basis of accounting other than US GAAP for a business acquired or to be acquired pursuant to Rule 3-05 of Regulation S-X may omit the disclosures specified by paragraphs (c)(2)(i), (c)(2)(ii) and (c)(2)(iii) of Item 17 of Form 20-F if the conditions specified in the definition of a significant subsidiary in Rule 1-02(w) of Regulation S-X do not exceed 30 percent. Please provide us with the supporting calculations for your significant subsidiary test.

Exhibit 99.3

4. Please revise the introductory paragraphs of the Unaudited Pro Forma Condensed Financial Statements to clearly disclose whether the CitySync financial statements are presented in accordance with US GAAP or UK GAAP. If the amounts presented are in accordance with UK GAAP, please revise to provide the required reconciliation to US GAAP, at the level of detail required by Item 17 of Form 20-F. In addition, disclose the foreign exchange rate used to translate the amounts from Pounds Sterling to US dollars and revise the filing to disclose the method you used to translate currencies. Please note that the method applied must be consistent with paragraphs 40-1, 45-3, 45-12, and 55-10 of FASB ASC 830-30 (formerly paragraphs 12 through 14 of SFAS No. 52).

You may contact Kevin Kuhar, Staff Accountant, at (202) 551-3662 or me, at (202) 551-3212 if you have questions regarding comments on the financial statements and related matters. In this regard, do not hesitate to contact Martin James, Senior Assistant Chief Accountant at (202) 551-3157 with any other questions.

Sincerely,

Jeff Jaramillo
Accounting Branch Chief