IN THE UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

Rudolph Technologies, Inc., a Delaware corporation, Plaintiff, v. Camtek Ltd., a foreign corporation, Camtek USA, a New Jersey corporation, Defendants.	**Civ. No. 11-cv-3707 (JRT-TNL)** **JURY DEMAND**

FIRST AMENDED COMPLAINT

Comes now the Plaintiff, and for its First Amended Complaint against Defendants, states and alleges as follows:

I. THE PARTIES AND BACKGROUND

1. Plaintiff, Rudolph Technologies, Inc. ("Rudolph"), is incorporated in the State of Delaware having a principal place of business at One Rudolph Road, Flanders, New Jersey, 07836 and having a manufacturing and other operations relating to its semiconductor inspection product line at 4900 West 78th Street, Bloomington, Minnesota.

2. Defendant, Camtek Ltd. ("Camtek"), is a business entity incorporated under the laws of the State of Israel, having a principal place of business at 9102 Bldg., Industrial Zone, Migdal Haemek, 23000, 23105 Israel and/or Ramat Gavriel Industrial Area, Migdal-Ha'emek 23150, Israel. Camtek makes and sells semiconductor inspection equipment, including automated optical inspection ("AOI") systems.

3. Defendant, Camtek USA, Inc. ("Camtek USA"), is a corporation organized under the laws of the State of New Jersey and has a place of business at 2000 Wyatt Drive, Ste #4, Santa Clara, California 95054.

4. Camtek USA is a wholly-owned subsidiary of Camtek. Camtek USA acts as an agent of Camtek. with respect to U.S. marketing, sales, installation, distribution, and service of AOI systems, acting on the behalf of and under the control of Camtek. Camtek and Camtek USA are collectively referred to as "Defendants" in this Complaint.

5. Defendants introduced their competitive line of AOI systems in the United States and internationally in or around 2004. Defendants' first systems were named Falcon. Defendants' subsequent systems are called Condor, Gannet, and Eagle. The Falcon, Eagle, Gannet, and Condor systems are collectively known as "Defendants' AOI Systems" and "infringing AOI systems."

6. Defendants introduced their competitive line of inspection systems in the United States and internationally in or around 2004. Defendants' first systems were named Falcon. Defendants' subsequent systems are called Condor, Gannet, and Eagle. The Falcon, Eagle, Gannet, and Condor systems are collectively known as "Defendants' AOI Systems" and "infringing AOI systems."

7. A Table of Contents for the allegations herein is attached as **Exhibit A**.

II. '6,298 PATENT OWNERSHIP AND VALIDITY

8. On November 30, 2004, the U.S. Patent and Trademark Office duly and legally issued United States Patent No. 6,826,298 (hereinafter "the '6,298 patent") entitled AUTOMATED WAFER DEFECT INSPECTION SYSTEM AND A PROCESS OF PERFORMING SUCH INSPECTION to August Technology Corp. ("August") as assignee.

9. Rudolph subsequently purchased August, and Rudolph and August became co-owners of the '6,298 patent for a time.

10. On December 19, 2012, August assigned to Rudolph all rights, title, and interest to the '6,298 patent, including the right to seek and receive damages for past infringement. The assignment was recorded with the United States Patent and Trademark Office ("USPTO") on December 20, 2012. Rudolph is the owner of right, title and interest in and to the '6,298 patent, including the right to sue and collect damages for past, present, and future infringement. A copy of the '6,298 patent is attached hereto as **Exhibit B**.

11. On July 14, 2005, August, Rudolph's predecessor-in-interest in the '6,298 patent, brought the Falcon litigation in the District Court for the District of Minnesota, alleging that Camtek infringed the '6,298 patent by making, using, offering to sell, selling, and/or importing into the United States an AOI system under the name Falcon. *See* Civ. Action No. 05-cv-1396 (JRT/FLN) (D. Minn.) [hereinafter "Falcon litigation"].

12. Camtek challenged the validity and enforceability of the '6,298 patent in the Falcon litigation with finality through appeal, and lost. The issue was actually litigated between Rudolph and Camtek. *See, e.g.*, *August Tech. Corp. v. Camtek Ltd.*, 2009 U.S. Dist. Lexis 132983 (D. Minn. Aug. 28, 2009); Falcon litigation at Doc. 545.

13. Camtek had a full and fair opportunity to litigate the validity and unenforceability of the '6,298 patent through appeal. *See, e.g.*, *August Tech. Corp. v. Camtek, Ltd.*, 655 F.3d 1278 (Fed. Cir. 2011). The jury and Court rejected Camtek's challenge and confirmed that the '6,298 patent is neither invalid nor unenforceable. The validity of the '6,298 patent was necessary to the outcome of the prior litigation, which resulted in a

judgment finding that Camtek infringed the ’6,298 patent and owed Rudolph $14.5 million.

14. On March 12, 2015, Rudolph brought litigation in the District Court for the District of Minnesota, alleging that Camtek infringed the ‘6,298 patent by making, using, offering to sell, selling, and/or importing into the United States an AOI system under the name Eagle. *See* Civ. Action No. 0:15-cv-01246 (ADM/BRT) (D. Minn.) (hereinafter “2015 Eagle litigation”). The Court in the Eagle litigation granted summary judgment confirming that Camtek could not relitigate the validity or enforceability of the ’6,298 patent due to issue preclusion. Eagle litigation, Doc. 210, at 30 (D. Minn. Aug. 8, 2016).

15. In previous litigations, Camtek challenged the validity and enforceability of the ’6,298 patent, with finality through appeal, and lost. Camtek is barred from challenging the validity or enforceability of the ’6,298 patent in this case at least because of issue preclusion.

16. Camtek USA also cannot challenge the validity or enforceability of the ’6,298 patent at least because it is in privity with Camtek.

III. ’528 PATENT OWNERSHIP AND VALIDITY

17. On June 1, 2010, United States Patent No. 7,729,528 (hereinafter “the ’528 patent”) entitled AUTOMATED WAFER DEFECT INSPECTION SYSTEM AND A PROCESS OF PERFORMING SUCH INSPECTION was duly and legally issued to Rudolph as assignee; and since that date Rudolph has been, and still is, the owner of all right, title, and interest in the ’528 patent, including the right to sue and collect damages for past, present, and future infringement. A copy of the ’528 patent is attached hereto as **Exhibit C**.

18. On January 19, 2012, Camtek requested an *inter partes* reexamination of claims 1-53 of the ’528 patent by the U.S. Patent and Trademark Office (PTO). The PTO found that Camtek did not establish a reasonable likelihood that Camtek would prevail on its contentions that claims 4, 5, 8, 12, 13, 15, 16, 20-29, 35, and 37-53 of the ’528 patent were invalid and denied reexamination of those claims. The PTO granted Camtek’s request to reexamine the remaining claims. The Board initially determined that claims 9-11 of the ’528 patent were invalid for obviousness, but on December 22, 2016, the United States Court of Appeals for the Federal Circuit reversed the Board’s determination that claims 9-11 were invalid. *Rudolph Tech., Inc. v. Camtek Ltd.,* No. 2015-1418 (Fed. Cir. Dec. 22, 2016) (non-precedential). Camtek did not seek further review of reexamined claims 9-11, which will be confirmed in a reexamination certificate to be issued by the PTO. Camtek’s challenge to the ’528 patent in reexam resulted in findings of unpatentability as to 15 of the 53 claims of the ’528 patent: 1-3, 6, 7, 14, 17-19, 30-34, and 36. Those 15 claims will be canceled in a reexamination certificate to be issued by the PTO. Rudolph does not pursue a claim of infringement as to those 15 claims.

19. Defendants are estopped from challenging the validity of claims 9-11 of the ’528 on any ground that was raised or could have been raised during the *inter partes* reexamination proceedings. *See* [old, pre-AIA] 35 U.S.C. § 315(c). Camtek USA is estopped at least because it is in privity with Camtek.

20. Rudolph provided Camtek formal written notice of the imminent issuance of the ’528 patent on or about May 4, 2010, providing a copy of the allowed claims. The claims at issue in this Complaint are substantially identical to those claims when Rudolph provided Camtek formal written notice of the imminent issuance of the ’528 patent on or

about May 4, 2010. Camtek also received notice through receiving a copy of the first Complaint alleging infringement of the '528 patent on June 1, 2010 and through receiving notice of this complaint in or about December 2011.

21. Despite receiving actual notice of Rudolph's rights in the '528 patent, Defendants continued to manufacture, offer for sale, and sell their Falcon, Eagle, Gannet, and Condor devices.

IV. JURISDICTION

22. This is a claim of patent infringement arising under the Acts of Congress relating to patents, 35 U.S.C. §§ 271 and 282-285.

23. This Court has jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). Personal jurisdiction also exists over Camtek at least by virtue of the state long-arm statute and Fed. R. Civ. P. 4(k). Camtek has made, used, offered to sell, sold, and/or imported into the U.S. infringing AOI systems in this District and elsewhere in the U.S. and has conducted substantial other activities related to infringing AOI systems also directed to Minnesota such as marketing and servicing of infringing products.

24. Camtek has further previously conceded personal jurisdiction exists over it in Minnesota in related litigation, including the Falcon litigation. Camtek lost its motion to dismiss based on personal jurisdiction in the Eagle litigation. Camtek did not challenge venue in Minnesota in the Eagle litigation. Camtek lost its motion to transfer venue in the Falcon litigation, based in part on generating half a million dollars in sales revenue for an accused Falcon AOI system from Minnesota, transporting infringing product to Minnesota, installing the infringing product in Minnesota, and servicing the infringing product in Minnesota. Falcon litigation Doc. 55.

25. Camtek, at least through its agents, has sent letters to and otherwise communicated in Minnesota about subjects directly related to Rudolph's rights in the '6,298 and '528 patents and infringement thereof.

26. This Court also has personal jurisdiction over Camtek USA at least because of Camtek USA's actions as an agent of Camtek, and Camtek USA's contacts with the State of Minnesota pertinent to related litigation in Minnesota and actions relating to the installation, making, selling, offering for sale, and servicing of infringing AOI systems as to customers in Minnesota. Camtek USA, directly and through its sales representatives, has offered for sale, sold, and installed the accused infringing products in Minnesota.

27. Camtek conceded its control over Camtek USA documents and witnesses in discovery in the Falcon and Eagle litigation. Camtek USA sells the AOI systems in the U.S. on Camtek's behalf and keeps accounting records and other documents regarding sales of its accused AOI systems. Camtek sells systems to Camtek USA which in turn sells systems to U.S. customers including in Minnesota. Camtek and CamtekUSA have had common officers. Camtek USA houses spare parts inventory for accused AOI systems and provides a showroom where accused AOI systems are demonstrated. At least in the past, Camtek USA has had a service engineer located in Minnesota to service PCB installed base machines. Other Camtek and Camtek USA employees have visited Minnesota on many occasions with respect to accused AOI systems. Camtek issued a press release for a Minnesota customer purchasing a $1.2 million Falcon system.

28. Camtek has repeatedly invoked the benefit of the laws and courts of the state of Minnesota. This Court exercised personal jurisdiction over Camtek in the Falcon litigation, regarding Falcon systems for which damages are sought in this case. In the

Falcon litigation, Camtek voluntarily counterclaimed for declaratory judgment of non-infringement, unenforceability, and invalidity of the '6,298 patent in the District of Minnesota. Camtek also brought counterclaims in Minnesota against its former patent trial counsel in the Falcon litigation, Fish & Richardson, after that firm sued Camtek for nonpayment of legal bills after Camtek lost to Rudolph at trial. Civ. No. 10-CV-4436 (JRT/JJG) (D. Minnesota); 2011 U.S. Dist. Lexis 92525 (Aug. 17, 2011 D. Minn.). Camtek further invoked the benefits of the laws and Courts in Minnesota in that related litigation by successfully moving the Minnesota Court to order its former law firm to send files located in New York to Camtek's Minnesota counsel based in part on its arguments invoking its entitlements to the benefits of Minnesota rules and laws related to client rights to their case files. Camtek also agreed in that related litigation that the Minnesota court should retain jurisdiction over it with respect to enforcement of a settlement of the litigation. Such agreement as filed with the Minnesota court specifically referred to Rudolph's Falcon litigation against Camtek.

29. Bill Hanna ("Hanna"), the President and Chief Sales Consultant for ViaTec Sales & Marketing LLC ("ViaTec"), and ViaTec also made multiple presentations to customers in Minnesota on behalf of and for the benefit of Defendants concerning infringing AOI systems supplied by Camtek. In denying a Camtek motion to dismiss the Eagle litigation for lack of jurisdiction, the Minnesota Court stated that acts with respect to Eagle systems were "sales pitches, intended to generate customer interest and potential future sales" to prospective customers in Minnesota. *Rudolph Techs., Inc. v. Camtek Ltd.*, Civ. No. 15-1246 (ADM/BRT), 2015 U.S. Dist. LEXIS 113007, at *16-19, 21-22 (D. Minn. Aug. 26, 2015). The product at issue in that case (which involves the '6,298 patent), the Eagle, is

also accused of infringing the ’528 patent in this case. Defendants, directly and/or through their sales agents, conducted further Minnesota activity involving other infringing AOI systems beyond those referenced in the August 2015 Order, and additional actions involving the Eagle after August 2015 when the above decision issued.

30. Defendants have made, used, offered to sell, sold, and/or imported their Eagle, Gannet, and/or Condor AOI systems and related services to customers in Minnesota and elsewhere in the U.S.

31. Defendants have offered to sell and/or sold their infringing AOI systems to customers in Minnesota. Defendants have also installed, assembled, serviced, and, on information and belief, upgraded infringing AOI systems in Minnesota. Defendants have induced and contributed to infringement in Minnesota and elsewhere and willfully infringed based on the knowledge of the scope and validity of the ’528 and ’6,298 patents, with knowledge acquired by Defendants because of at least their activities in Minnesota. Defendants have conducted infringing acts with the intent to take market share from Rudolph, seeking to injure the business of Rudolph and its employees who manufacture competing AOI systems in Bloomington, Minnesota, with knowledge that such facilities are located in Minnesota.

32. This Amended Complaint also includes other allegations that further demonstrate the Defendants’ contacts with this forum pertinent to this lawsuit.

V. FACTS COMMON TO INFRINGEMENT CLAIMS AND FACTS DEMONSTRATING INTENT TO INFRINGE AND TO CAUSE INFRINGEMENT AND WILLFUL INFRINGEMENT

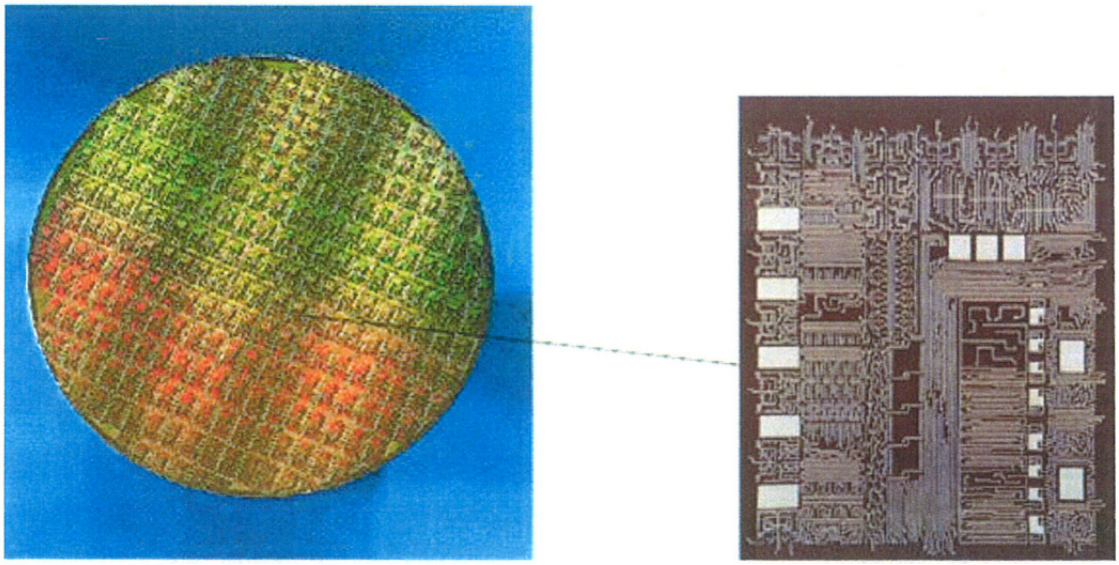
33. The above allegations are incorporated by reference for purposes of this Section.

34. Rudolph is engaged in the business of making and selling AOI systems, including inspection systems for semiconductor wafers, in the United States (specifically, at least

including manufacturing facilities in Bloomington, Minnesota) and internationally. Rudolph's predecessor-in-interest, August Technology Corp., also sold AOI systems. Defendants are also engaged in the business of making and selling AOI systems, including inspection systems for semiconductor wafers in the United States and internationally.

35. The patented AOI technology and methodology is critical to ensuring quality control and proper processing of electronic chips used in millions of consumer and other electronics devices in the U.S. and worldwide.

36. The invention underlying the '6,298 and '528 patents revolutionized the semiconductor inspection market, enabling highly-accurate inspection of semiconductors such as finished wafers fabricated with hundreds or thousands of microchips at speeds much higher than that attained by prior systems and processes. An example of a finished wafer is shown below on the left, with a magnified black-and-white image of one of the many die on the wafer shown on the right:



37. The patented technology, including its ability to capture images of microchips at high speed through strobing illumination of a moving wafer, was an important factor in August (later Rudolph) becoming the market leader in finished-wafer inspection. The parties' AOI systems are used to inspect billions of dollars' worth of electronic devices worldwide.

38. Defendants compete head-to-head with Rudolph in the United States, inter alia, in the business of making, using, offering to sell, selling, servicing, upgrading, training in the use of, and/or importing into the United States AOI systems for the semiconductor industry. Camtek also competes with Rudolph internationally by making, offering to sell, selling, servicing, and upgrading, and training in the use of AOI systems used to inspect wafers which are further processed into chips imported into the United States.

39. In the Falcon litigation, August sued Camtek for infringing the '6,298 patent in 2005. Camtek has been aware of the '6,298 patent and Rudolph's infringement allegations at least since that time, as a result of litigating that case for over ten years including a jury verdict against Camtek, finding infringement, and multiple appeals brought by Camtek.

40. On March 31, 2014, the Court granted Plaintiffs' Motion for Summary Judgment of Infringement, finding that Camtek infringed claims 1 and 3 of the '6,298 patent under the remanded claim construction. Among other findings, the court noted that "Camtek has presented no evidence" to rebut the evidence that Camtek trained its customers to use the Falcon with multiple discrete wafers and in a manner that infringed claim 3. Falcon litigation, Doc. 964 at 37.

41. On February 9, 2015, this Court denied Camtek's motion for new proceedings, denied a motion for a new trial on damages, granted Rudolph's motion for a Final Judgment against Camtek, issued a new permanent injunction regarding the Falcon systems, awarded Plaintiffs damages in the amount of $7,428,436.00, and awarded prejudgment interest in the amount of $7,083,863.18, for a total award of over $14.5 million. The Court entered judgment February 10, 2015. Falcon litigation, Docs. 1010, 1011. The Court also awarded Rudolph its costs.

42. Like the original injunction entered August 2009, the 2015 injunction specifically enjoined "Reconstructing the Falcon machines sold and delivered prior to March 5, 2009 located within the United States, which includes substantially improving or otherwise substantially changing such machines relative to the state in which they were originally accepted by the customers including, among other things, providing substantial software or hardware upgrades." *Id*. Doc. 1011 at p. 3.

43. Camtek continued to offer for sale, sell, service, and upgrade Falcon systems outside the U.S. after March 2009 and after the original injunction went into effect in August 2009. Camtek undertook such activities outside the U.S. knowing that the Falcon systems were used and would be used in the process of making chips imported into the U.S.

44. By way of example only, Defendants installed a Falcon system at a customer's United States facility that was originally installed in a United Kingdom facility (Serial No. 84108). After Defendants installed the system in the United States, Defendants upgraded that system with new software and hardware. Defendants prepared a quotation that included refurbishing the AOI system and relocating that system from the United

Kingdom to the customer's facilities in the United States. Defendants' actions occurred after the Court's 2009 injunction and show Defendants' willful conduct.

45. On February 3, 2016, the Federal Circuit affirmed without opinion this Court's judgment in the Falcon litigation. *Id*. Doc. 1079. Camtek refused to pay the judgment in full, and opposed Rudolph's motion to Execute on the Supersedeas Bond to obtain full payment. The Court granted Rudolph's motion on July 22, 2016. Doc. 1115. The bond company paid the judgment in full on August 11, 2016.

46. Defendants introduced all of Defendants' AOI systems after seeing Rudolph's AOI systems using the patented technology and after they realized that the strobing technology as claimed in the '528 and '6,298 patents dramatically increased the speed of AOI systems. Camtek called this discovery (a seven-fold increase in speed or "throughput") a "Breakthrough" as shown in the following excerpt of a Camtek document used in the prior litigation and appeal:

Breakthrough in the acceleration of BIS by illumination using Flash
- **Ability to raise throughput seven-fold at least (limited camera speed and letter adaptation), order has been placed for parts (lead time 4 weeks) – Nir**

47. During the course of the Falcon litigation, the Court found by clear and convincing evidence that Camtek willfully infringed the '6,298 patent with respect to sales made after the jury rendered a verdict against it in 2009. Falcon litigation Doc. 732 at 6. After Camtek lost at trial, it offered for sale and sold an infringing Falcon machine to a U.S. based customer, in Camtek's words, at a "rock bottom price" that would "hurt Rudolph." *Id*. at 2.

48. In a report and recommendation regarding contempt, the Court in the Falcon litigation found certain facts undisputed regarding Camtek's sales activities in the U.S.

that led to foreign sales. Camtek communicated with a customer in Ohio and provided a quote for a Falcon system to be purchased in Malaysia. Camtek USA emailed a North Carolina customer offering to sell a Falcon machine for use in China for $756,000. Both customers purchased the machines offered. Such sales activity by Defendants took place in the U.S. after the court issued a permanent injunction which enjoined "communicating with third parties . . . located in the United States for the purposes of offering to sell Falcon machines or machines that are colorable imitations thereof, notwithstanding where the third party intends to use the machines." *August Tech. Corp. v. Camtek Ltd.*, 2011 U.S. Dist. Lexis 154357 at *3-*4 (D. Minn. Aug. 11, 2011) (later vacated on other grounds after injunction language modified).

49. At trial in 2009 in the Falcon litigation, Camtek and its experts asserted that AOI systems that strobed at a fixed time interval regardless of the speed of the wafer being inspected strobed "based on" velocity as claimed in the '6,298 patent. Camtek uses such fixed-time or constant-rate strobing in its Condor, Gannet, and Eagle AOI systems knowing that such systems strobe "based on" velocity and are "correlated to" velocity as claimed and otherwise knowing that those AOI systems infringe.

50. Camtek introduced AOI systems that used fixed-time or constant-rate strobing in approximately 2009 in AOI systems called the Condor and Gannet. In a press release dated January 2010, Camtek announced the introduction of a new AOI system called the Condor 5LED, indicating that six systems had been installed in three countries. Camtek indicated its expectation that Condor sales would grow in coming quarters and years.

51. In correspondence dated September 2009, Camtek indicated that its new AOI systems "uses a strobe that fires at a fixed, constant rate during the inspection process"

and contended it was not based on or correlated to wafer velocity. Camtek did not contend that the "new AOI systems" had any other material difference from the infringing Falcon systems other than strobing that "fires" in a different way.

52. After Rudolph learned that Camtek sold Condor and Gannet systems, including at least in 2010 in open court in the Falcon litigation, Rudolph indicated to Camtek that such systems that use constant-rate strobing probably still infringe the "based on" velocity claim limitation. That claim limitations is found in claims of the '6,298 patent and some asserted claims of the '528 patent. In response, Rudolph requested technical information including source code to review the strobing of the new AOI systems.

53. Rudolph first sued Camtek under the '528 patent when that patent issued in 2010, then refiled the present suit in 2011, clearly placing Camtek on direct notice of infringement at least with respect to the Condor and Gannet products, and more generally as to any similar AOI products, regardless of the brand name. Camtek's knowledge of Rudolph's '6,298 and '528 patents and Rudolph's positions as to the scope and validity of those patents further provided Camtek with clear notice of infringement.

54. After Rudolph filed suit on the '528 patent, Camtek petitioned the PTO to institute an *inter partes* reexam as to all claims of that patent. In the process of petitioning for reexam, as well as throughout the reexamination process and appeals that took over five years, Camtek necessarily acquired intimate knowledge of the claims of the '528 patent, including claims that do not require strobing "based on" velocity or "correlated to" velocity and claims that recite a process step to be applied to inspected substrates. Camtek has long understood that many claims of the '528 patent that were not invalidated by the PTO lack the "based on" and "correlated to" claim limitations, and that

all of its AOI systems and the associated methods come within the scope of such claims. Camtek also has long known that the constant-rate AOI systems still infringe the claims that recite "based on" and "correlated to" limitations.

55. In December 2014, Defendants announced their first sale of Eagle semiconductor inspection system in the United States.

56. Rudolph sued Camtek under the'6,298 patent with respect to the Eagle AOI systems in 2015 (the Eagle litigation). In its April 20, 2016 brief supporting its request for a preliminary injunction (which was denied), Rudolph contended that the Eagle strobed "based on" velocity for various reasons that did not depend on whether the Eagle strobed at a constant rate. Eagle litigation Doc. 8 at pp. 27-31.

57. Defendants' marketing materials nowhere indicate that the Condor, Gannet or Eagle omit any functionality of the infringing Falcon machines. To the contrary, Defendants' publicly-available information indicates the Condor/Gannet/Eagle product line is compatible with the Falcon product line. The Condor, Gannet, and Eagle have been touted in Defendants' marketing materials as capable of 100% inspection of the microchips or dies fabricated on patterned wafers, as is the Falcon, which is already an adjudicated infringing device.

58. Many claims of the '528 patent that were confirmed or which were not reexamined by the PTO are not limited to systems which strobe or flash "based on" a velocity or "correlate[ed] to" velocity. Camtek has never indicated to Rudolph any possible basis for a good faith belief that the Falcon, Condor, Gannet, and Eagle systems and their use do not infringe at least those claims of the '528 patent.

59. All of Defendants' AOI systems use strobing illumination during inspection of substrates, to capture images while the wafer is in motion. All of Defendants' AOI systems are capable of inspecting 100% of the dies on a wafer. All of the systems use strobing or flash illumination to illuminate the substrate to be inspected while images of the substrate are being captured.

60. All of Defendants' AOI systems involve training the systems as to the characteristics of good or bad substrates.

61. Despite receiving actual notice of Rudolph's rights in the '528 patent and its infringement of the '528 patent in various forms at least since 2010 including a prior (voluntarily dismissed) complaint and several letters and other communications providing notice of infringement of the '528 patent, and despite its intimate knowledge of the '6,298 patent and its infringement of that patent at least through the Falcon litigation, Camtek, independently, and in conjunction with Camtek USA, continued to: (1) use, offer to sell, sell, make, and/or import the Eagle, Gannet, and/or Condor systems in the U.S.; (2) install, service, and upgrade in the U.S. and abroad the Defendants' AOI systems; (3) offer Defendants' AOI systems to customers in the U.S. for installation and use outside the U.S., and (4) assist and enable customers' and potential customers' making, using, and/or importing into the U.S. the Defendants' AOI Systems, including using the systems for processes in the U.S. and processes used abroad to process substrates into chips imported into the U.S.

62. Despite knowledge that its sales and other activity involving the Falcon, Condor, Gannet, and Eagle infringe and cause infringement of the '528 patent, and despite knowledge that such activity involving the Falcon, Condor and Gannet also infringe and

cause infringement of the ’6,298 patent, Defendants undertook such infringing actions in order to take market share from Rudolph and for profit.

63. Defendants’ websites market other Condor AOI systems including, but not limited to, the Condor 203, Condor 300, Condor 900, and Condor PD (although it appears the Gannet is no longer marketed on the website). Unlike its website description of the Falcon as not available in the United States, Defendants do not indicate that their Condor or Eagle systems are unavailable in the United States.

64. Defendants market the Condor and Eagle systems for use in inspecting substrates that are further processed into chips used, for example, for cellphones and other common consumer electronics made in and imported into the U.S.

65. The Defendants’ AOI Systems and related service activities compete head-to head with Rudolph’s products and services in the United States and abroad.

66. Camtek sells its systems in the U.S. and worldwide and educates and trains customers in the U.S. and all over the world as to how to use its systems to inspect wafers processed into chips used in electronic devices in the manner claimed in the ’528 patent, knowing that the U.S. is one of the biggest markets worldwide for such inspected, processed substrates and knowing that the substrates inspected using its systems worldwide are further processed and that a substantial portion of such processed substrates are then imported into the U.S.

67. The Defendants’ AOI Systems are used to “enhance both production processes and yields for manufacturers in the semiconductor fabrication industry.” Camtek’s 2016 20-F, attached as **Exhibit D** at 20.

68. Further demonstrating its knowledge that Defendants' AOI systems are used for the purpose of processing substrates into chips used in common consumer electronics and other products imported into the U.S., Camtek's SEC filings provide that "[t]he semiconductor manufacturing industry produces integrated circuits on silicon wafers; each wafer contains numerous integrated dices containing electronic circuits which are functional devices" and that "Camtek serves the mid and back end of the process starting with probe mark inspection after the testing of the individual dice, inspecting the finished wafers for defects, inspecting and measuring the bumps and conducting post-dicing inspection." *Id*. at 21.

69. The "Camtek Semiconductor Install Base" for AOI systems is "660 machines installed worldwide." 2017 Presentation, attached as **Exhibit E**, at 10.

70. Defendants' systems were "installed at 22 out of the 25 top semiconductor spenders." *Id*. at 11 (identifying at least 14 entities as Camtek's customer base). Many of these companies are based in the U.S. or have substantial presences in the U.S.

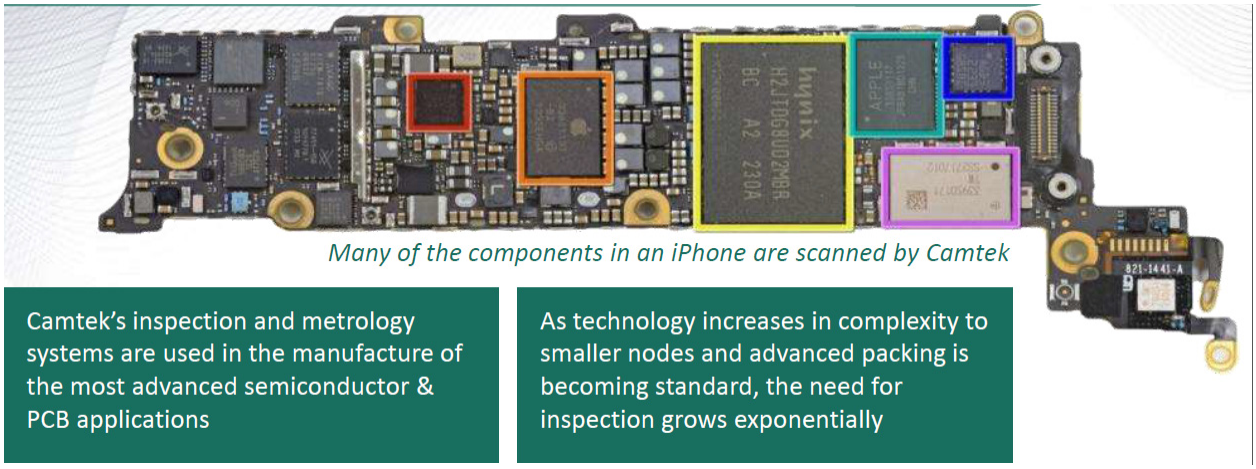
71. Defendants are aware their systems are used in connection with inspecting wafers that are then processed into individual chips used in various electronic devices, including cellphones and other consumer electronics, many of which are imported into the U.S. Camtek's 2008 20-F Form, attached as **Exhibit F**, provides that "[i]n the semiconductor packaging process, the finished wafers are diced, or separated, into individual ICs, which are then mounted onto substrates, interconnected and encapsulated to produce semiconductor packages." *Id.* at 20.

72. Defendants' customers use the Defendants' AOI Systems in and outside the United States to make semiconductors that are "all part of the electronic packaging industries and the electronics supply chain." Camtek's 2016 20-F filing, Exhibit D, at 21.

73. "Parts of almost all of today's latest devices have been made with the help of Camtek" as stated in a Camtek investor presentation as shown below:

2017 Presentation, Exhibit E, at 1 (depicting devices including smartphones, tablet PCs; wearable fitness devices, etc.).

74. Camtek systems are "used in the manufacture of the most advanced semiconductor & PCB applications," and that "[m]any of the components in an iPhone are scanned by Camtek":



Camtek's 2015 Presentation, attached as **Exhibit G**, *Id*. at 6 (highlighting in color substrates inspected and processed using Camtek systems).

75. The Defendants' AOI Systems are "implemented at various stages along the manufacturing process" utilized by its customers in the semiconductor industry. Camtek 2016 20-F Form, Exhibit D, at 21, 23. Defendants' AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into chips. *Id*. at 21.

76. Camtek's "customer base includes the majority of the largest [printed circuit board] manufacturers worldwide and 23 semiconductor manufacturers, among them outsourced semiconductor assembly and test (OSAT), integrated device manufacturers and wafer level packaging subcontractors," and that its "customers, many of whom have multiple facilities, are located in 32 countries throughout Asia, Europe and North America." *Id.* at 25. "In the integrated circuit substrate industry," Camtek "customers are typically dedicated substrate manufacturers, but also include large manufacturers who have separate substrate manufacturing facilities." *Id.*

77. Camtek's 2016 20-F form further provides that Falcon AOI systems "are designed for the back end market of the semiconductor industry," and can be used by customers

"to monitor and characterize several wafer finishing processes, troubleshoot functional issues or control the integrity of the interconnect and perform various metrology tasks." *Id.* at 23.

78. Camtek "target[s] wafer manufacturers and companies involved in the testing, assembly and packaging of semiconductor devices" and "wafer manufacturers and companies involved in the device manufacturing processes." *Id.*

79. Defendants understand that the U.S. market for imported semiconductors is a multi-billion dollar market which receives chips and electronic devices containing chips inspected and processed as set forth in the '528 patent asserted method claims, and that its customers desire to use Camtek's AOI systems to inspect substrates as part of the manufacturing process that are processed into chips and imported into the U.S. Defendants intend and know that their customers use Camtek's AOI systems abroad for the purpose of importing into the U.S. substrates made by the processes claimed in the asserted claims of the '528 patent as implemented on Camtek's AOI systems.

80. Rudolph is one of Defendants' "main competitors" in the semiconductor industry. *Id.* at 9, 26.

81. Defendants' AOI systems are also used with Flip-Chip packaging technology, in which:

> the face of the IC is attached to the top of a substrate via an array of bumps, rather than being wire bonded. Wafers designed for Flip-Chip assembly interconnect go through a process in which solder or gold bumps are plated or stenciled on pads on the face of the IC. In a similar technology termed Chip-Scale Wafer Level Packaging (CS-WLP), larger bumps are placed on the die and the entire wafer is coated with a thick layer of polymer – usually epoxy. After dicing, the individual die is actually a finished device, ready to be mounted directly on the PCB.

Camtek's 2008 20-F Form, Ex. F at 20.

82. Camtek has "established a global distribution and support network throughout the territories in which we sell, install and support our products, including the Asia Pacific region, North America and Europe," and that Camtek "primarily utilize[s] [its] own employees to provide these customer support services." Ex. D at 26.

83. Defendants' "marketing efforts include participation in various trade shows and conventions, publications and trade press, product demonstrations performed at our facilities and regular contact with customers by sales personnel." *Id.* Defendants actively assist and encourage customers in the U.S. and abroad to use their systems to inspect semiconductors including semiconductors that are processed into die and packaged die.

84. Camtek identified that the "majority of our systems in 2015 were to manufacturers in the Asia Pacific region, including China, South East Asia, Korea and Taiwan, due to, among other factors, the migration of the electronic manufacturers into this region following the development and growth of electronics industry centers in such region." *Id.* at 31. Camtek reported that "[i]n addition to revenues derived from the sale of systems and related products, we generate revenues from providing maintenance and support services for our products." *Id.*

85. Camtek "seek[s] to expand our activity into unsaturated markets adjacent to our existing served markets, such as the inspection of silicon wafers at various steps during their manufacturing process inside the wafer fabrication facility." *Id.* at 10. Camtek has in fact sold AOI systems for use at such various steps.

86. Defendants know that the Defendants' AOI Systems are used in the process of making semiconductors in the United States and abroad.

87. Defendants know that the Defendants' AOI Systems are especially made and/or adapted for use during the infringing process of manufacturing semiconductors.

88. Defendants know that the Defendants' AOI Systems are used by at least the companies listed in Camtek's 2017 Presentation (Ex. E at 11) and others that purchase Defendants' AOI Systems for use during the manufacture of semiconductors outside the United States, where the resultant semiconductor products of the infringing manufacturing process are imported by those companies into the United States.

89. Defendants, with knowledge of the existence, scope, validity, and infringement of the '528 patent, needing Rudolph's infringing technology to compete, have infringed and are infringing the '528 patent by at least:

a. making, using, offering to sell, selling, and/or importing into the U.S. their Condor, Gannet, and Eagle systems and methods and otherwise inducing and contributing to such infringing use by their customers and third parties as to the '528 patents, with the intent to take market share from Rudolph and hurt Rudolph's business; and

b. contributing to and inducing the infringement by customers and third parties here and abroad who practice the method claims of the '528 patent on Falcon, Condor, Gannet and Eagle systems, which claims include a step of performing process steps on acceptable quality substrates, with respect to those processed substrates which are made in the U.S. in addition to those processed substrates which are inspected on Defendants' AOI systems abroad, further processed, and imported into the U.S.

90. Defendants, with knowledge of the existence, scope, validity, and infringement of the'6,298 patent, needing Rudolph's infringing technology to compete, have infringed and are infringing the '6,298 patent by at least:

a. making, using, offering to sell, selling, and/or importing into the U.S. their Condor and Gannet systems and methods and otherwise inducing and contributing to such infringing use by their customers and third parties as to the'6,298 patents, with the intent to take market share from Rudolph and hurt Rudolph's business; and

b. contributing to and inducing the infringement by customers and third parties in the U.S. who practice at least the method claim 3 of the '6,298 patent on Condor and Gannet systems and who use system claim 1 of the '6,298 patent when using such systems.

91. Camtek also infringed the '6,298 patent with respect to activity involving Falcon systems, adjudicated as infringing products with finality in the Falcon litigation, which have not been accounted for in the Falcon litigation. Despite the judgment in the Falcon litigation, Defendants undertook and remain liable for further acts of infringement through at least:

a. upgrading and otherwise altering Falcon systems in the U.S. in a manner that constitutes further infringing acts of reconstruction;

b. importing and/or inducing importation into the U.S. of infringing Falcon systems previously located outside the U.S. and not accounted for in the Falcon litigation damage award;

c. servicing of Falcon systems imported into the U.S. that were not included in previous accountings of damages in the Falcon litigation.

92. Defendants infringed through implementing substantial software and hardware upgrades of Falcon systems that were locate in the U.S. as of March 5, 2009, knowing that the Court since 2009 found such activities to be separate acts of infringement as "reconstructions." The Court's 2009 injunction, reinstated in this respect in 2015, specifically indicated that such substantial upgrades were infringing "reconstruction". Neither at the time of the 2009 injunction nor at the time of the 2015 injunction did Camtek object to the language indicating that upgrades were "reconstructing." "Reconstruction" is recognized as a separate act of patent infringement. Falcon litigation, Doc. 1011 at 3.

93. All infringing activity described herein was willful.

94. Rudolph's manufacturing and service business has been irreparably damaged by Defendants' infringement of the '528 and '6,298 patents as set forth herein, and will continue to be damaged in the future unless Defendants are enjoined from infringing said patents, contributing to the infringement of said patents, and inducing the infringement of said patents by others. Defendants compete with Rudolph in the United States and abroad using Rudolph's own patented technology, irreparably harming Rudolph with respect to present and future business.

95. To the extent such compliance may be required, Rudolph has complied with the notice provisions of 35 U.S.C. § 287 with respect to both the '528 patent and the '6,298 patent with respect to the infringement described herein at least by their written

communications with Camtek providing specific notice of infringement and by filing this action for patent infringement as well as a prior filings.

VI. COUNT I – INFRINGEMENT OF U.S. PATENT NO. 7,729,528

96. Rudolph restates the allegations set forth in paragraphs 1-97 and incorporates them herein by reference.

97. By virtue of its ownership of the ’528 patent, Rudolph acquired and continues to maintain the right to sue thereon and the right to recover for past and future infringement thereof.

98. Defendants infringe one of more of claims of the ’528 patent under 35 U.S.C. § 271(a), including but not limited to claims 4, 5, 8, 9-13, 15, 16, 20-29, 35, and 37-53 of the ’528 patent, by making, using, offering to sell, selling, and/or importing into the U.S. the Defendants’ AOI Systems in the United States, and by inducing the use of and other infringing activities involving the Defendants’ AOI Systems in the U.S. including through marketing, maintenance, training, upgrading, and servicing of such systems in the United States.

99. Defendants market Defendants’ AOI systems in the U.S. and abroad to customers with facilities overseas, seeking to have such customers decide to purchase Defendants’ systems for use outside the U.S., knowing that at least a substantial portion of the substrates processed as a result of using such systems will be made in and imported into the U.S.

100. Defendants induce their customers and other users of the Defendants’ AOI Systems under 35 U.S.C. § 271(b) to infringe the system and method claims recited above in the United States at least under 35 U.S.C. § 271(a). Defendants’ marketing, sales, training, and service activity, as well as the manuals it provides customers, actively

encourage customers and users to practice one or more of the above-listed claims in the U.S. through using the accused systems and performing training and inspection on the systems in accordance with Defendants' guidance. Defendants have encouraged such infringement, and have so induced and encouraged such infringing activities with full awareness of the scope and validity of the '528 patent and that their actions would cause infringement of such patent.

101. Defendants also induce infringement under 35 U.S.C. § 271(b) by inducing practice of the method claims of the '528 patent outside the U.S. under 35 U.S.C. § 271(g), knowing that such actions will result in the importation into the U.S. of substrates made by the processes patented in the '528 patent during the term of that patent, including at least claims 9-13 and 43-53 of the '528 patent. Such actions, including but not limited to the importation of dies that are diced, cut, or otherwise processed overseas and then imported into the United States, do not fall within any exceptions listed in 35 U.S.C. § 271(g) or elsewhere.

102. Camtek also contributorily infringes under 35 U.S.C. § 271(c) in the U.S. by offering to sell and selling the Defendants' AOI Systems and components thereof, which constitute at least a material part of the invention, and which are especially adapted for use in infringement of the '528 patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use. Defendants do so with knowledge that they are contributing to infringement of valid claims of the '528 patent.

103. At least through letters to their counsel dating to 2010, Rudolph placed Defendants on actual notice of the'528 patent and Camtek's infringement of the '528 patent. Rudolph gave notice of infringement of the '528 patent at least through providing

a courtesy copy of a prior complaint alleging infringement of the '528 patent on or about June 7, 2010, and in other correspondence and court filings.

104. Defendants have not indicated they have ceased or will cease the infringing activity with respect to the Defendants' AOI Systems in the U.S., and in fact their websites and other marketing efforts continue to market Condor and Eagle AOI systems in the U.S. and outside the U.S.

A. Infringement of the '528 Patent Regarding the Condor and Gannet Systems

105. The above allegations are repeated and incorporated by reference herein.

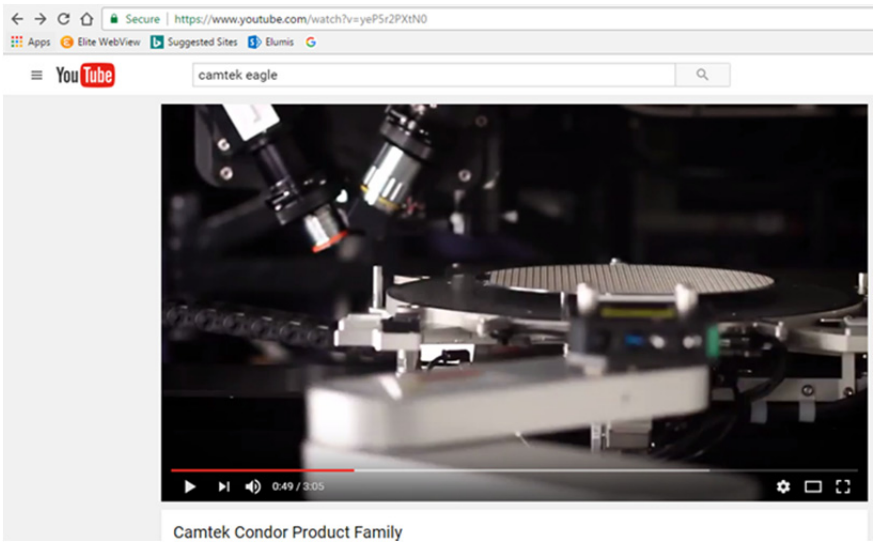
106. The Condor and Gannet are automated systems for inspecting a substrate which have all the elements of more than one of system claims 4, 5, 8, 15, 16, 20, 21-23, 25-29, 35, 37-40, and 42, including specifically claims 21 and 25 of the '528 patent, containing the following elements corresponding to claim elements (all citations provided anywhere in this complaint are by way of example only and are not meant to limit the scope of any claims or limit the basis on which to assert infringement of any claim elements):

a. a wafer test plate (Camtek Condor Product Family (July 4, 2013) https://www.youtube.com/watch?v=yeP5r2PXtN0 [hereinafter "Condor Video"]),

b. a moveable stage configured to move the substrate *(Id.*),

c. a platform arranged for moving the substrate during inspection (*Id.*),

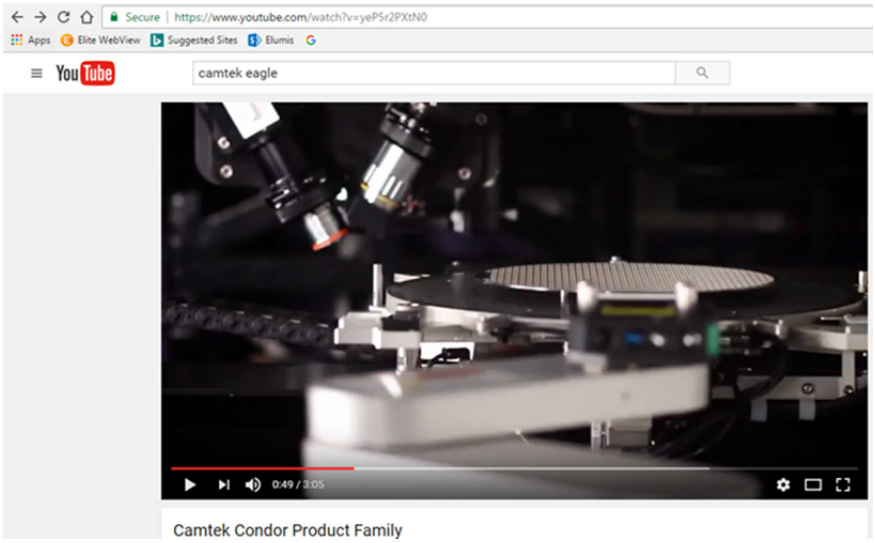
d. a moveable platform adapted to move the substrate (*Id.*),



e. a substrate provider for providing a substrate to the test plate (*Id.*),

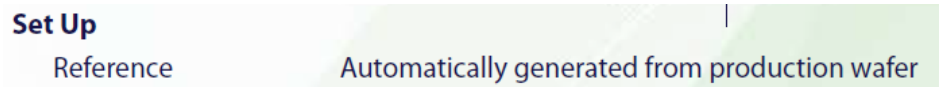
f. a robotic arm configured to provide the substrate to the moveable platform (*Id.*),

g. a means for moving the substrate (*Id.*),



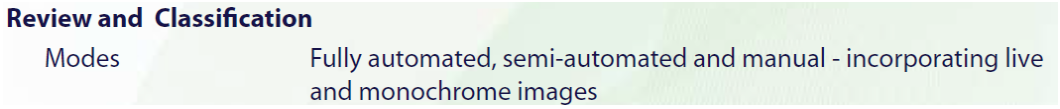
h. a visual inspection device adapted to capture images associated with the substrate (Camtek, Ltd., Condor 300 Series, http://www.cwitechsales.com/Camtek%20Condor300%20datasheet.pdf (last visited Feb. 20, 2017) [hereinafter "Condor 300 Datasheet"]; Camtek, Ltd.,

Condor 203, http://www.camtek.com/products/semi/condor203 (last visited Feb. 21, 2017) [hereinafter "Condor 203 Website"]),



i. a camera for capturing still images of a moving substrate (Condor 203 Website),

j. a grey-scale camera adapted to capture images of the substrate while the substrate is in motion (Condor 300 Datasheet),



k. an illuminator for providing strobe illumination to the moving substrate (Falcon litigation, Doc. 645, at 4 (D. Minn. July 28, 2010) ("As Camtek advised Plaintiffs long ago, both of these new Camtek machines use constant-rate strobing.") (emphasis in original)),

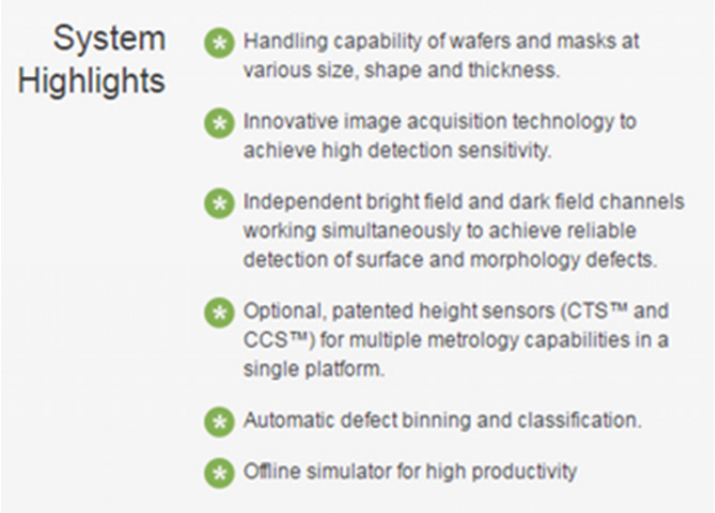
l. a strobing illuminator configured to automatically illuminate at least a portion of the substrate while the substrate is in motion to aid in capture of the images by the visual inspection device (*Id.*),

m. a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device (*Id.*),

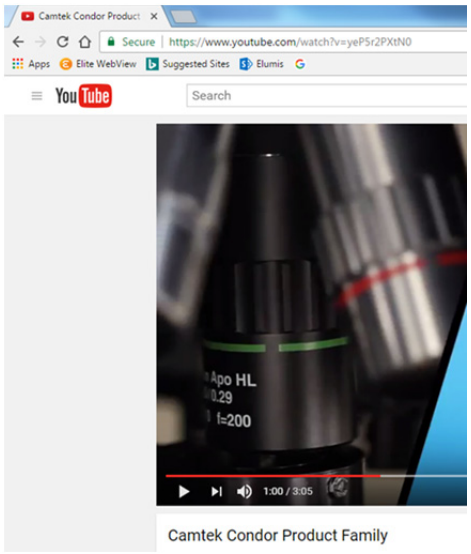
n. a means for automatically illuminating at least a portion of the substrate (*Id.*),

o. a brightfield illuminator configured to selectively strobe the substrate while the substrate is in motion (Condor 203 Website),

p. a darkfield illuminator configured to selectively strobe the substrate while the substrate is in motion (*Id.*),



q. a focusing mechanism adapted to focus on a surface of the substrate (Condor Video),



r. a microprocessor having processing and memory capabilities for developing a model of good quality substrate and comparing unknown quality substrates to the model (Camtek, Ltd., Condor PD, http://www.camtek.com/products/semi/condorpd (last visited Feb. 20, 2017) [hereinafter "Condor PD Website"]),

s. a controller for comparing pixel data for unknown quality substrates to a model of a good quality substrate (*Id.*),

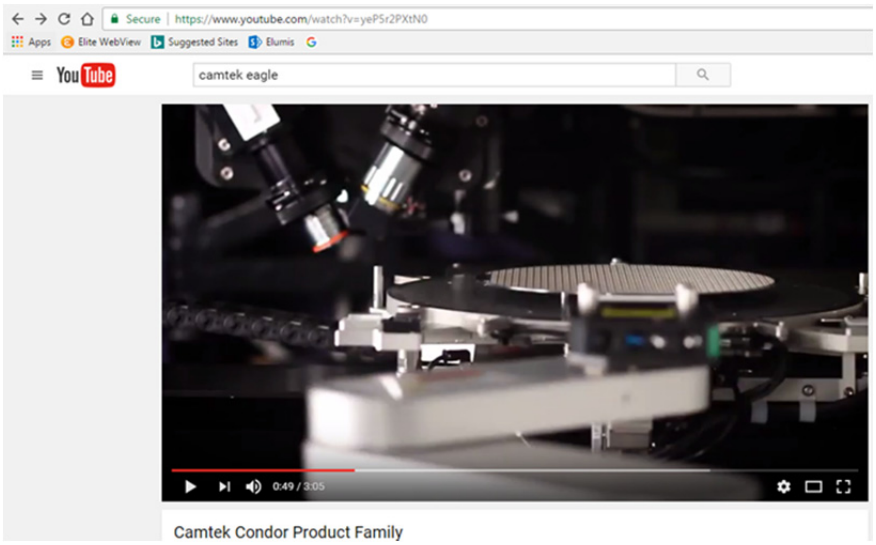
t. a processor configured to compare the captured images to a reference model during inspection to detect defects in the substrate (*Id.*), and

u. a means for comparing the captured images to a reference model to detect defects in the substrate (*Id.*).

> stretching of the adhesive tape. The Condor's multi-level software alignment precisely aligns each die with its reference image, ensuring reliable detection and eliminating false alarms. This capability is

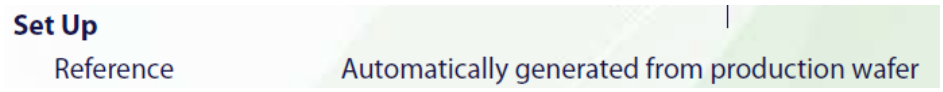
107. Each of the Condor and Gannet systems, respectively, infringe claim 25, for example, because they each are "[a]n automated system for training a reference model for inspection of a substrate for defects, wherein the substrate comprises at least a portion of a wafer, the system comprising:"

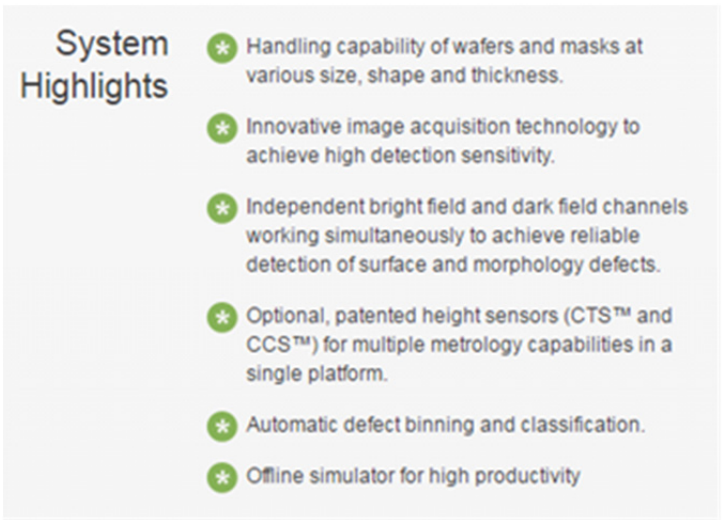
a. "a moveable stage configured to move the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JEDEC tray, and an Auer boat;"



(Condor Video);

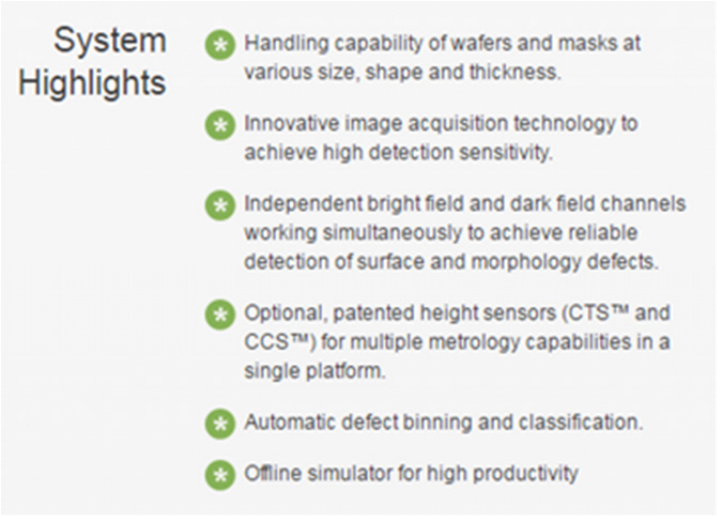
b. "a visual inspection device adapted to capture images associated with the substrate while the substrate is in motion relative to the visual inspection device;"





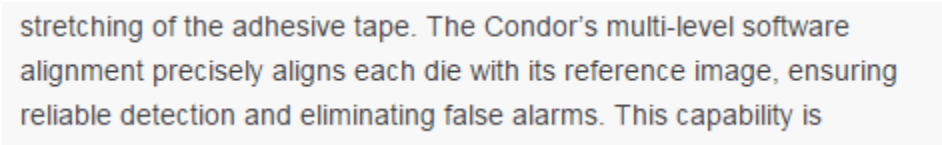
(Condor 300 Datasheet; Condor 203 Website);

c. "a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device; and"



(Condor 203 Website);

d. "a processor configured to create a reference model based on the images associated with at least two known quality substrates."



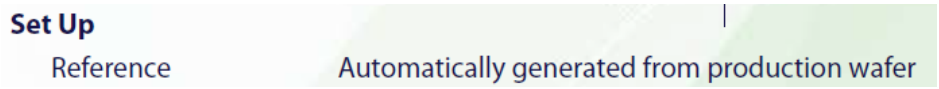
(Condor PD Website).

108. Furthermore, Defendants use and induce customers to use the Condor and Gannet in practicing the use of the aforementioned system claims as well as multiple of method claims 9-13 and 43-48 of the '528 patent, at least (again without limitation and by way of example only) through Defendants' own use of the Condor and Gannet systems in the U.S. and through their marketing, training, service, and related activity with respect to such systems in the U.S. Defendants also induce use of such method claims outside the

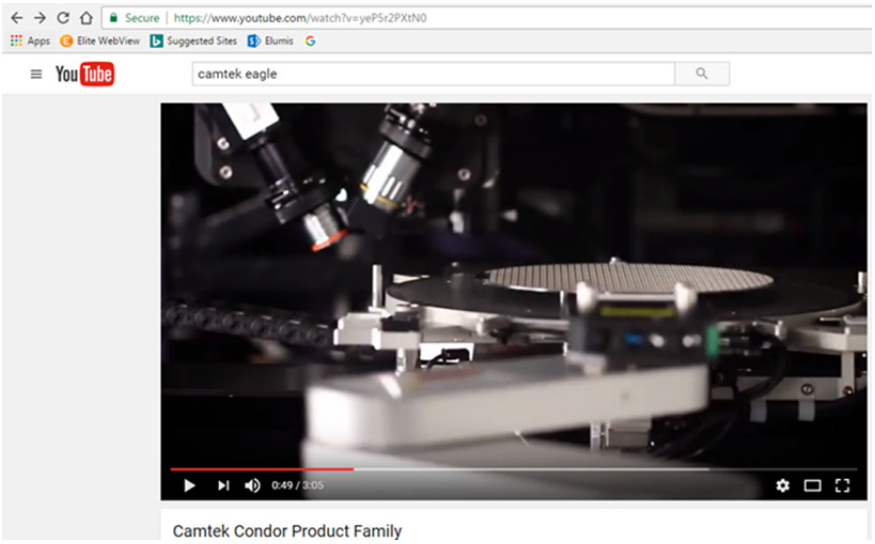
U.S. through assisting and facilitating sales of Condor and Gannet systems to U.S. customers and employees of customers who decide to purchase the systems for use outside the U.S. to produce processed substrates imported into the U.S.

109. Furthermore, Defendants induce customers to infringe the asserted claims of the '528 patent through manufacture, operation and installation of such systems and through providing training and instructions to customers and users such as through manuals provided to customers by Camtek about how to operate the Condor and Gannet and other training activity which shows, encourages, and trains users in operation of the systems to perform the method claims, further demonstrating infringement of the system claims as well as the method claims, including, by way of example only, the following steps and features:

a. training a model as to parameters of a good substrate via optical viewing of multiple known good substrates (Condor 300 Datasheet),

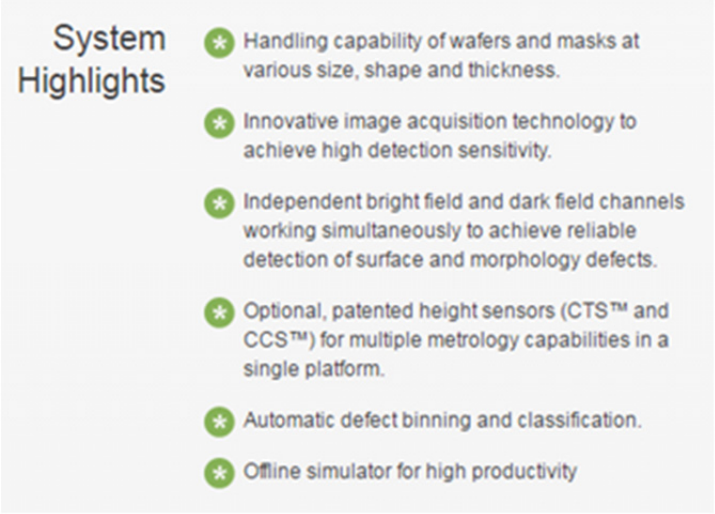


b. moving the unknown quality substrate (Condor Video),

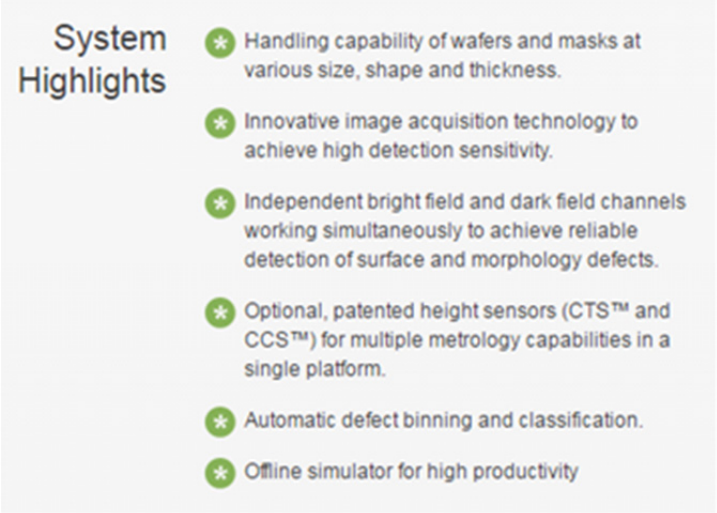


c. illuminating unknown quality substrates with a illuminator (Falcon litigation, Doc. 645, at 4 (D. Minn. July 28, 2010) ("both of these new Camtek machines use constant-rate strobing"); Condor 203 Website),

d. automatically strobing the unknown quality substrate while the unknown quality substrate is in motion (Falcon litigation, Doc. 645, at 4 (D. Minn. July 28, 2010) ("both of these new Camtek machines use constant-rate strobing"); Condor 203 Website),



e. capturing images of the unknown quality substrate while the unknown quality substrate is in motion (Condor 203 Website),



f. inspecting the unknown quality substrates using the model (Condor PD Website),

g. comparing the images to a reference model to detect defects in the unknown quality substrate and make the unknown quality substrate a known quality substrate (Condor PD Website),

stretching of the adhesive tape. The Condor's multi-level software alignment precisely aligns each die with its reference image, ensuring reliable detection and eliminating false alarms. This capability is

h. performing at least one processing step on the acceptable and known quality substrates, at least, for example, by applying further pattern steps to, applying bumps to, sawing, and dicing such substrates, and by placing such substrates into packages (Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into

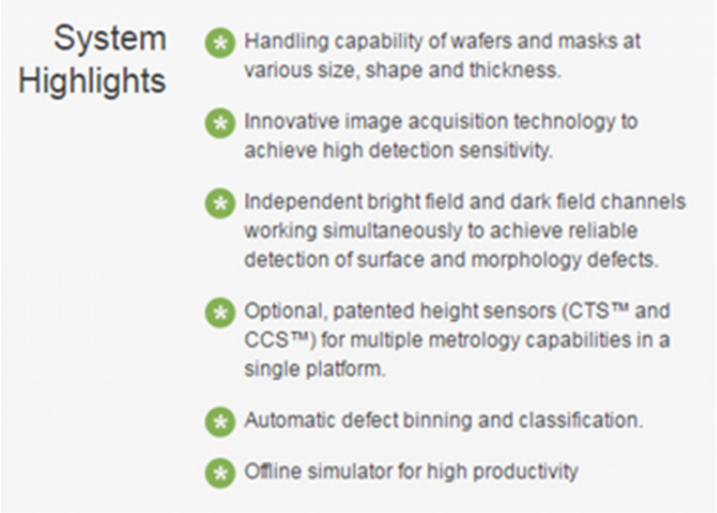
chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").

110. By way of example and without limitation, Defendants' induce customers to infringe at least independent claim 9, as an exemplary claim, of the '528 patent. Use of each of Defendants' Condor and Gannet systems practices "[a]n automated method of inspecting a semiconductor substrate, the method comprising:"

a. "training a model as to parameters of a good substrate via optical viewing of multiple known good substrates;"

(Condor 300 Datasheet);

b. "illuminating unknown quality substrates with an illuminator, the illuminator configured to provide flashes of light to each of the unknown quality substrates during movement of the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, a plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JED EC tray, and an Auer boat;"



(Falcon litigation, Doc. 645, at 4 (D. Minn. July 28, 2010) ("both of these new Camtek machines use constant-rate strobing"); Condor 203 Website);

c. "inspecting the unknown quality substrates using the model, thereby identifying acceptable quality substrates; and"

stretching of the adhesive tape. The Condor's multi-level software alignment precisely aligns each die with its reference image, ensuring reliable detection and eliminating false alarms. This capability is

(Condor PD Website);

d. "performing at least one processing step on the acceptable quality substrates, thereby transforming the acceptable quality substrates into further processed substrates."

(Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into

chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").

111. The above demonstrates infringement of at least some of the asserted system and method claims on the '528 patent with respect to the Condor and Gannet. The Condor and Gannet also have features recited in various dependent and other asserted claims of the '528 patent in addition to the features recited above, including without limitation:

a. Capturing images during continuous movement between the substrate and the visual inspection device;

b. Synchronizing the pulses of light with the capturing of still images;

c. Illuminating based on a velocity of the movement between the substrate and the visual inspection device;

d. Flashing light at a sequence correlating to a velocity of the movement;

e. The visual inspection device comprises a grey-scale camera;

f. The processor virtually aligns the substrate;

g. The defects comprise defects associated with bumps;

h. The defects comprise one or more of metallization defects, glassivation defects, passivation layer defects, scribing defects, diffusion defects, sawing-related chips or cracks, bump defects, bond pad area defects and probe area defects;

i. The defects are generally at a 1+ micron level; and

j. At least a portion of the wafer comprises irregularly spaced die, including sawn die.

112. Camtek's 2016 20-F form provides that the Gannet AOI system is designed for the front end market of the semiconductor industry. Camtek has indicated in marketing materials and otherwise that the Gannet operates in essentially the same way as the Condor with respect to all functionality relevant to the patents asserted herein. Upon

information and belief, the Condor and Gannet in fact operate similarly in all respects relevant herein.

113. Defendants have infringed the ’528 patent by making, using, offering to sell, selling, and/or importing into the U.S. the Condor and Gannet systems.

114. Defendants have contributed to the infringement of the ’528 patent by purchasers and users of the Defendants’ AOI systems via its sales-related activities (including marketing, training, demonstrations, maintenance and support services through Defendants’ employees and associated distributors and representatives) involving the Defendants’ AOI Systems.

115. The Defendants’ AOI Systems and their usage comprise a material part of the claimed invention of the ’528 patent. The Defendants’ AOI Systems are not staple articles of commerce.

116. The Defendants’ AOI Systems have no substantial non-infringing uses.

117. Defendants’ customers, individually and with others, use the patented processes of the ’528 patent as described above to make products that are imported into the U.S. and thus infringe 35 U.S.C. § 271(g).

118. Defendants induce these acts of infringement. Defendants have aided and instructed their customers in using the Defendants’ Condor and Gannet systems in processes that infringe the ’528 patent including marketing, training, demonstrations, maintenance and support services through Defendants’ employees and associated distributors.

119. Defendants are aware of the ’528 patent, have been aware of the ’528 patent during the period of infringement, and know that their sale of the Condor and Gannet

systems and instructions for use of the same (including training, demonstrations, maintenance and support services through Defendants' employees and associated distributors) induce Defendants' customers, including those identified on page 11 of Camtek's 2017 Presentation, Exhibit E, to directly infringe the '528 patent.

120. Defendants know that their customers use, and indeed instruct and train their customers to use, the Defendants' AOI Systems in a manner that infringes or causes infringement of the '528 patent at least under 35 U.S.C. §§ 271(a) and (g). The products made by the patented process of claims 9-13 and 43-48 of the '528 patent include at least those semiconductor products contained in the devices depicted on pages 1 of Camtek's 2017 Presentation (Exhibit E) and page 6 of Camtek's 2015 Presentation (Exhibit G).

121. Defendants' knowledge of the '528 patent, combined with Defendants' instructions for use of the Condor and Gannet systems in a manner specified by the '528 patent (including training, demonstrations, maintenance and support services through Defendants' employees and associated distributors), demonstrate that Defendants intended to induce infringement of the '528 patent.

122. Defendants have also knowingly induced and/or contributed to infringement by others of one or more of the claimed methods of the '528 patent with intent by, without limitation, inducing another to import and/or contributing to another's importation into the United States of the Condor and Gannet systems.

123. A substantial portion of the resultant processed substrates are imported into the United States by Defendants' customers and those acting in concert with such customers.

124. Upon knowledge of the '528 patent, Defendants have been inducing infringement by, among other things, knowingly and with intent, actively encouraging the users and

purchasers of the Condor and Gannet systems outside the United States to use the Condor and Gannet systems in a manner that constitutes infringement of the ’528 patent in fabricating semiconductors in accordance with the patented processes of one or more of claims 9-13 and 43-48 of the ’528 patent and importing the semiconductor products made by the patented process into the United States.

125. The Condor and Gannet systems are next-generation products after the Falcon and use many of the same features. Defendants identified to Rudolph one purported difference between these systems and the Falcon: they strobe or flash at a constant rate. The Paragraphs herein regarding infringement of the Falcon thus also apply to demonstrate the use in the Condor and Gannet systems to the extent those systems have the same features as the Falcon.

126. Claims 4, 5, 8, 9-13, 15-16, 20-23, 25-29, 35, 37-40, and 42-48 of the ’528 patent recite strobing or illumination elements that do not require strobing based on or correlating to velocity. Thus, the distinction asserted by Defendants in its communications with Rudolph about constant-velocity strobing provide no basis to dispute infringement at least with respect to these claims and the Condor and Gannet systems and methods.

127. Camtek’s appeal to the Federal Circuit in the Falcon litigation also contended that Falcon systems did not infringe because the claims required multiple discrete wafers to train the system. On remand, the Court found as a matter of law on summary judgment that the Falcon in fact was capable of training with such multiple discrete wafers and thus met all elements of system claim 1, and that Camtek had in fact used the Falcon by training with such multiple discrete wafers and infringed method claim 3 as a result.

128. The Condor and Gannet training features work substantially the same as the infringing features of the Falcon in all respects material to this training claim limitation. Moreover, the claims of the ’528 patent do not recite the multiple-discrete-wafer limitation. Thus, all the Condor and Gannet systems infringe the training elements of the claims of the ’528 patent regardless of whether the system uses multiple portions of the same substrate to train the system or multiple discrete wafers to train the system.

129. Upon information and belief, the products made in the U.S. and outside the U.S. by the patented processes of claims 9-13 and 43-48 of the ’528 patent using the Condor and Gannet systems include at least those semiconductor products contained in the types of devices depicted on pages 1 of Camtek’s 2017 Presentation (Ex. E) and page 6 of Camtek’s 2015 Presentation (Exhibit G).

130. In typical usage, the semiconductor packages imported into the United States that are made by the process patented in claims 9-13 and 43-48 of the ’528 patent are not materially changed by subsequent processes.

131. Defendants had knowledge that use of the Condor and Gannet systems in manufacturing the semiconductor packages used processes patented in one or more of claims 9-13 and 43-48 of the ’528 patent.

132. Upon information and belief, the semiconductor substrates and packages imported into the United States processed by the Condor and Gannet systems pursuant to the process patented in claims 9-13 and 43-48 of the ’528 patent are not trivial and nonessential components of another product.

133. A substantial likelihood exists that substrates inspected in the U.S. or imported into the U.S. after being processed using Condor and Gannet systems were made by a

process patented in the ’528 patent. Rudolph has made a reasonable effort to determine the process actually used and, to the extent it is unable to determine the processes used, under 35 U.S.C. § 295, the burden of establishing the product was not made by such processes shall be on Defendants to the extent they assert the substrates were not so made by the patented processes.

134. Rudolph has been damaged by Defendants’ infringement and will continue to be damaged in the future unless Defendants are permanently enjoined from infringing said patent, contributing to the infringement of said patent, and/or inducing the infringement of said patent by others.

135. Defendants have infringed 35 U.S.C. § 271(a) through their use, offer for sale, and selling of Condor and Gannet systems in the U.S.

136. Defendants have infringed 35 U.S.C. § 271(b) through their inducement of §271(a) infringing use of Condor and Gannet systems in the U.S. and their inducement of §271(g) infringement through inducement of the importation into the U.S. and offers to sell, sales, and use in the U.S. of substrates made by the processes patented in the asserted method claims of the ’528 patent through the use of Condor and Gannet systems in the U.S. and (with respect to importation) abroad.

137. Defendants have infringed 35 U.S.C. § 271(c) through their contributory infringement by providing others with the Condor and Gannet systems in and outside of the United States and instructing others on how to utilize the Condor and Gannet systems in their manufacturing process to make semiconductor packages in accordance with the patented methods, causing infringement under 35 U.S.C. §§ 271(a) and (g).

138. Defendants' offers for sale and sale in the U.S. and importation into the U.S. of Condors and Gannets and components such as add-on components of infringing Condor and Gannet systems and software upgrades for infringing Condor and Gannet systems, constituting a material part of the patented invention, with knowledge that such components are especially made or adapted for use in infringement of the '528 patent, and not a staple article or commodity, constitute contributory infringement under 35 U.S.C. § 271(c).

139. Defendants' infringement with respect to the '528 patent and the Condor and Gannet systems was willful.

140. Defendants' infringement of Rudolph's rights in the '528 Patent involving the Condor and Gannet systems has caused Rudolph irreparable injury. Such activities will continue unless enjoined by the Court. Rudolph has experienced lost sales and profits as a result of the infringement both with respect to the Condor and Gannet systems and related services, upgrades and products and is entitled to recover such lost profits, but in any event is entitled to monetary damages not less than a reasonable royalty for all revenue appropriately associated with the infringement, including but not limited to systems revenue, component and parts revenues, and service revenue. Defendants' infringement has ensured accurate and fast inspection of chips used in millions of electronic devices sold and used in the U.S.

141. The Defendants' infringing activities including their willful nature make the case exceptional under 35 U.S.C. § 285.

B. Falcon Infringement of the '528 Patent

142. Rudolph restates the allegations set forth in paragraphs 1-43 and incorporates them herein by reference.

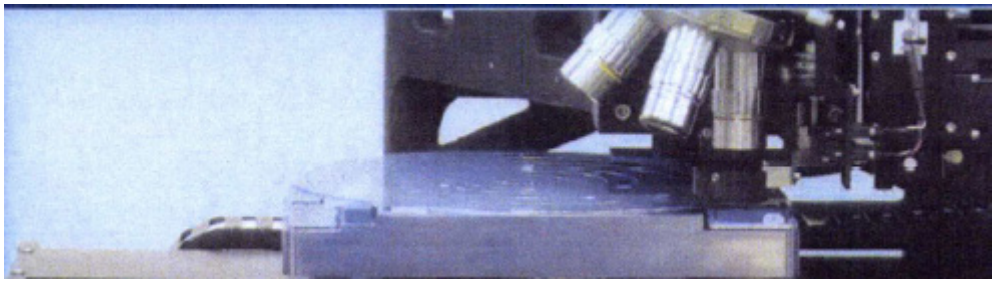
143. The Falcon is an automated system for inspecting a substrate has all the elements of at least some of system claims 4, 5, 8, 9-13, 15, 16, 20-29, 35, and 37-53 of the '528 patent containing the following elements generally corresponding to claim elements (all citations providing anywhere in this complaint are by way of example only and are not meant to limit the scope of any claims or limit the basis on which to assert infringement of any claim elements):

a. a wafer test plate (Falcon litigation, Pl.'s Trial Ex. 48, at 39),

b. a moveable stage configured to move the substrate (*Id.*),

c. a platform arranged for moving the substrate during inspection (*Id.*),

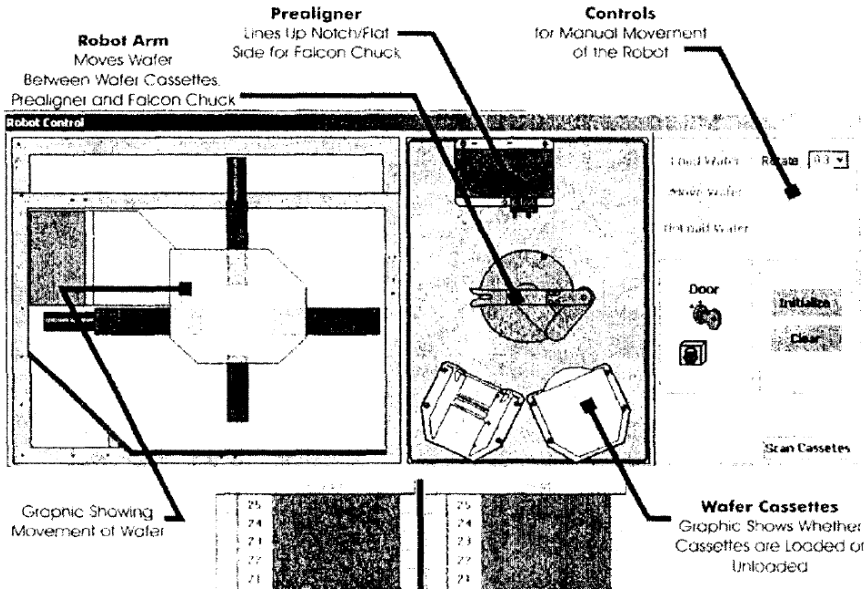
d. a moveable platform adapted to move the substrate (*Id.*),



e. a substrate provider for providing a substrate to the test plate (Falcon litigation, Pl.'s Trial Ex. 610, at 9-14 (Admissions 9-14)),

f. a robotic arm configured to provide the substrate to the moveable platform (*Id.*),

g. a means for moving the substrate (*Id.*; *id.* Pl.'s Trial Ex. 57, at 26),



h. a visual inspection device adapted to capture images associated with the substrate (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 14-19 (Admissions 15-21)),

Cleaning the Reference (Die)

-In this step, we will clean the Reference Die already created. This process requires you to select, at a minimum, seven dice though we prefer that you select somewhere between 10 and 20 dice. Preferably, you will select dice that are defect-free, to be used in formulating a median for cleanliness as well as checking gray level variations across the surface of the die. Best results are achieved when you use select individual dice from the periphery as well as the center of the wafer—all selected dice must be within the production zone of the wafer.

If you do not select the dice yourself, when you start the process Falcon will automatically select five dice—one each from the top, bottom, left, and right sides of the wafer as well as one from the center of the wafer. For best results, however, we recommend that you select the dice yourself—and that the four dice selected from the periphery should be roughly in ac circle with the fifth selected die in the center.

During the process, Falcon will scan the selected dice and collect data.

i. a camera for capturing still images of a moving substrate (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 14-19 (Admissions 15-21)),

j. a grey-scale camera adapted to capture images of the substrate while the substrate is in motion (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 14-19 (Admissions

Image Acquisition:	Digital Black and White Scanning Camera, Analog Color Live Verification Camera, Mitutoyo Microscope with magnifications of 1.0x, 2.5x and 5x as a standard.

5-21)),

k. a strobing illuminator configured to automatically illuminate at least a portion of the substrate while the substrate is in motion to aid in capture of the images by the visual inspection device (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

l. an illuminator for providing strobe illumination to the moving substrate (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

m. a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

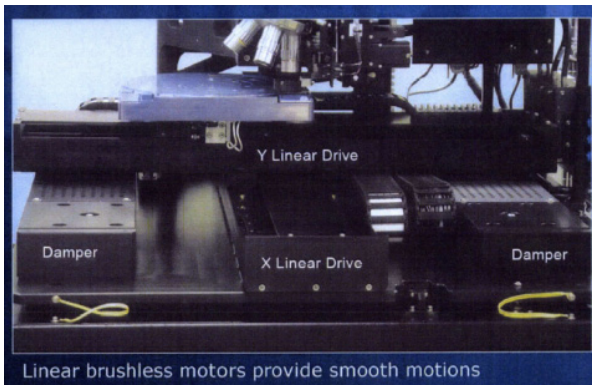
n. a means for automatically illuminating at least a portion of the substrate (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

o. a brightfield illuminator configured to selectively strobe the substrate while the substrate is in motion (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

p. a darkfield illuminator configured to selectively strobe the substrate while the substrate is in motion (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37),

q. a focusing mechanism adapted to focus on a surface of the substrate (*Id.* Pl.'s Trial Ex. 606),

r. a microprocessor having processing and memory capabilities for developing a model of good quality substrate and comparing unknown quality substrates to the model (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 3-4 (Admission 1)),



s. a controller for comparing pixel data for unknown quality substrates to a model of a good quality substrate (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 3-4 (Admission 1)),

t. a processor configured to compare the captured images to a reference model during inspection to detect defects in the substrate (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 3-4 (Admission 1)),

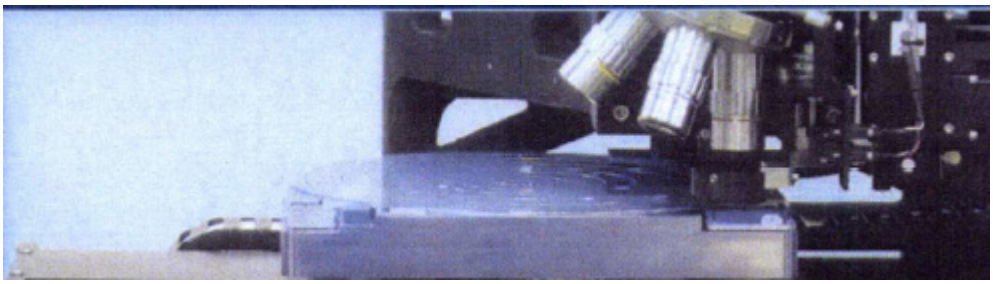
u. and a means for comparing the captured images to a reference model to detect defects in the substrate (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 3-4 (Admission 1); *id.* Pl.'s Trial Ex. 47, at 24).

Computing: Dual CPU Dual Core industrial computer and up to two [2] dual CPU Dual Core multi-computing units [MCU].

144. By way of example and without limitation, Defendants' making, using, selling, offering for sale, or importing into the United States Defendants' Falcon system infringes at least independent claim 25 of the '528 patent, as an exemplary claim. The Falcon system is "[a]n automated system for training a reference model for inspection of a

substrate for defects, wherein the substrate comprises at least a portion of a wafer, the system comprising:"

a. "a moveable stage configured to move the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JEDEC tray, and an Auer boat;"



(Falcon litigation, Pl.'s Trial Ex. 48, at 39)

b. "a visual inspection device adapted to capture images associated with the substrate while the substrate is in motion relative to the visual inspection device;"

Cleaning the Reference (Die)

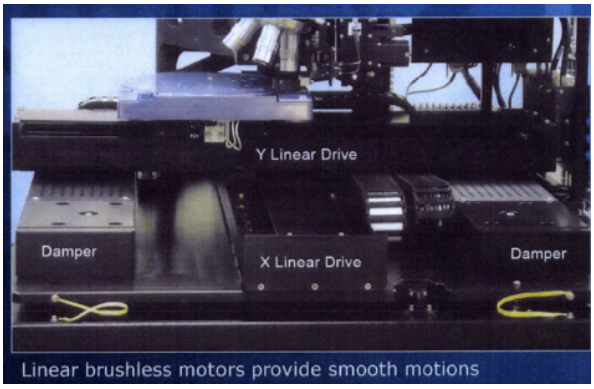
-In this step, we will clean the Reference Die already created. This process requires you to select, at a minimum, seven dice though we prefer that you select somewhere between 10 and 20 dice. Preferably, you will select dice that are defect-free, to be used in formulating a median for cleanliness as well as checking gray level variations across the surface of the die. Best results are achieved when you use select individual dice from the periphery as well as the center of the wafer—all selected dice must be within the production zone of the wafer.

If you do not select the dice yourself, when you start the process Falcon will automatically select five dice—one each from the top, bottom, left, and right sides of the wafer as well as one from the center of the wafer. For best results, however, we recommend that you select the dice yourself—and that the four dice selected from the periphery should be roughly in ac circle with the fifth selected die in the center.

During the process, Falcon will scan the selected dice and collect data.

(*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 14-19 (Admissions 15-21)

c. "a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device; and"



(*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39; *id.* Pl.'s Trial Ex. 57, at 37)

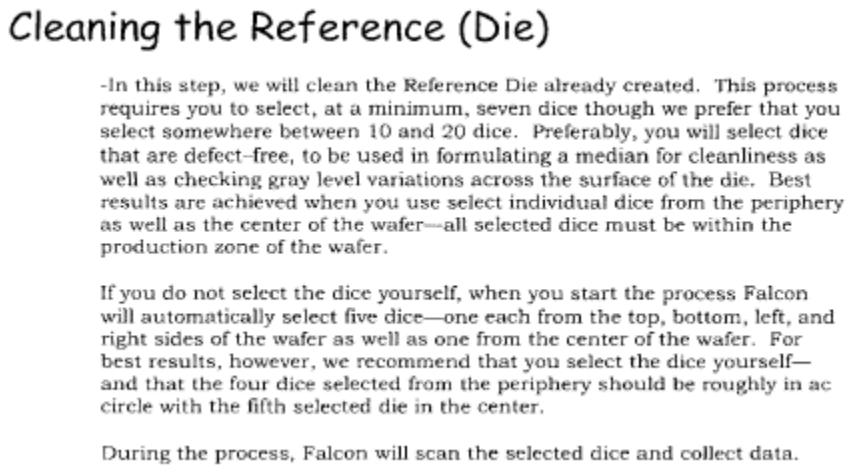
d. "a processor configured to create a reference model based on the images associated with at least two known quality substrates."

Computing: Dual CPU Dual Core industrial computer and up to two [2] dual CPU Dual Core multi-computing units [MCU].

(*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 610, at 3-4 (Admission 1))

145. Furthermore, Camtek uses the Falcon in practicing the aforementioned system claims as well as method claims 9-13 and 43-53 of the ’528 patent, at least (without limitation and by way of example only) through using the Falcon systems in the U.S. such as during service and installation and upgrading such systems. Defendants also induce customers to use the Falcon systems in the U.S. to practice the asserted system and method claims, at least through marketing, service, training, installing, demonstrating, maintenance and instructions in manuals provided to customers by Camtek about how to operate the Falcon, further demonstrating infringement of the system claims as well as the method claims, including, by way of example only, the following steps and features:

a. training a model as to parameters of a good substrate via optical viewing of multiple known good substrates (*Id.* Pl.’s Trial Ex. 57, at 48),



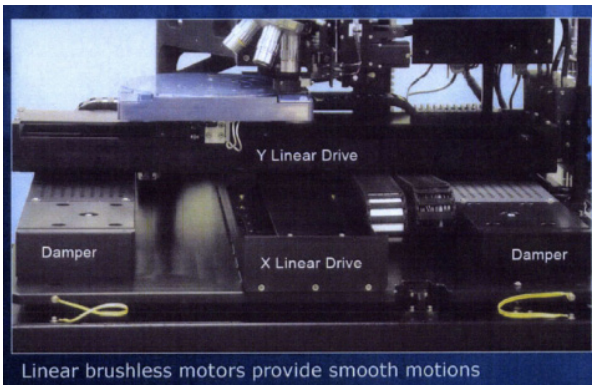
Cleaning the Reference (Die)

-In this step, we will clean the Reference Die already created. This process requires you to select, at a minimum, seven dice though we prefer that you select somewhere between 10 and 20 dice. Preferably, you will select dice that are defect–free, to be used in formulating a median for cleanliness as well as checking gray level variations across the surface of the die. Best results are achieved when you use select individual dice from the periphery as well as the center of the wafer—all selected dice must be within the production zone of the wafer.

If you do not select the dice yourself, when you start the process Falcon will automatically select five dice—one each from the top, bottom, left, and right sides of the wafer as well as one from the center of the wafer. For best results, however, we recommend that you select the dice yourself—and that the four dice selected from the periphery should be roughly in ac circle with the fifth selected die in the center.

During the process, Falcon will scan the selected dice and collect data.

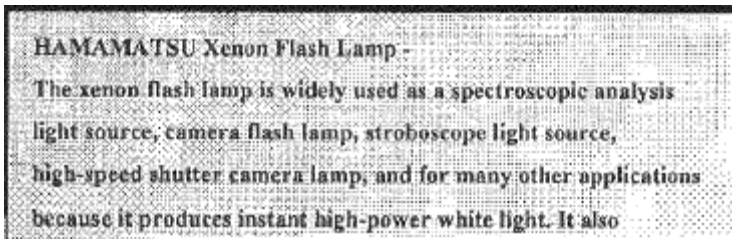
b. moving the unknown quality substrate (*Id.* Pl.’s Trial Ex. 48, at 39),

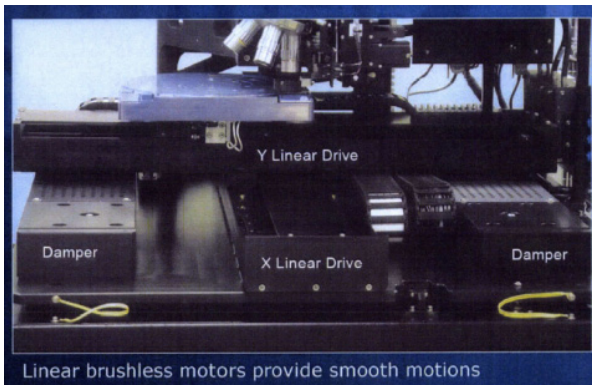


c. illuminating unknown quality substrates with an illuminator (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39),

d. automatically strobing the unknown quality substrate while the unknown quality substrate is in motion (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39),

e. automatically strobing the unknown quality substrate while the unknown quality substrate is in motion varying at a rate at which the unknown quality substrate is strobe during inspection (*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39),


HAMAMATSU Xenon Flash Lamp -
The xenon flash lamp is widely used as a spectroscopic analysis light source, camera flash lamp, stroboscope light source, high-speed shutter camera lamp, and for many other applications because it produces instant high-power white light. It also



f. capturing images of the unknown quality substrate while the unknown quality substrate is in motion (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 48, at 39),

g. capturing images of at least one of the regions of interest on the unknown quality substrate while the unknown quality substrate is in motion (*Id.* Pl.'s Trial Ex. 606; *id.* Pl.'s Trial Ex. 48, at 39),

Image Acquisition: Digital Black and White Scanning Camera, Analog Color Live Verification Camera, Mitutoyo Microscope with magnifications of 1.0x, 2.5x and 5x as a standard.

h. inspecting the unknown quality substrates using the model (*Id.* Pl.'s Trial Ex. 47, at 24),

i. comparing the images to a reference model to detect defects in the unknown quality substrate and make the unknown quality substrate a known quality substrate (*Id.*; *id.* Pl.'s Trial Ex. 57, at 84),

During inspection, we scan Wafer Lots since the wafer we used as our 'golden' wafer—a perfect example—is only one of many of the same type that the company manufactures. During scan, Falcon will scan all of the wafers in the Wafer Lot and report any and all defects discovered.

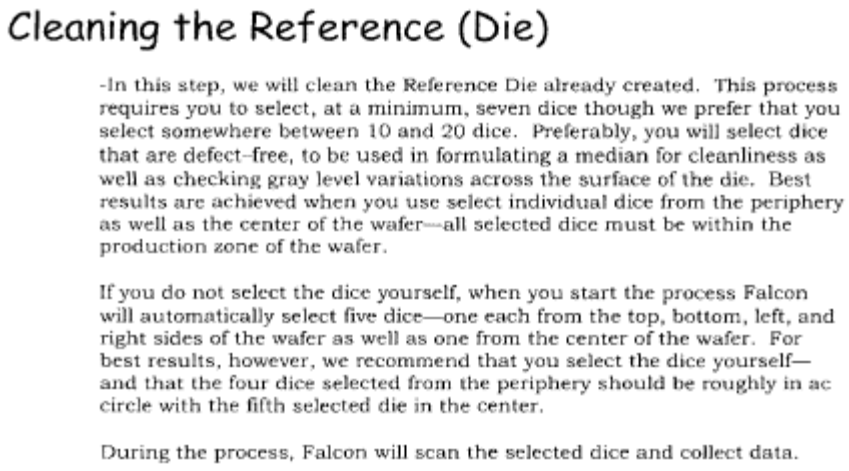
- Target - detect and report **every** differences between "Gold" reference and currently inspected wafer if the differences is exceed inspection tolerances

j. performing at least one processing step on the acceptable and known quality substrates, at least, for example, by applying further pattern steps

to, applying bumps to, sawing, and dicing such substrates, and by placing such substrates into packages (Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").

146. By way of example and without limitation, Defendants' induce customers to infringe at least independent claim 9, as an exemplary claim, of the '528 patent. Use of Defendants' Falcon system practices "[a]n automated method of inspecting a semiconductor substrate, the method comprising

a. "training a model as to parameters of a good substrate via optical viewing of multiple known good substrates;"


Cleaning the Reference (Die)

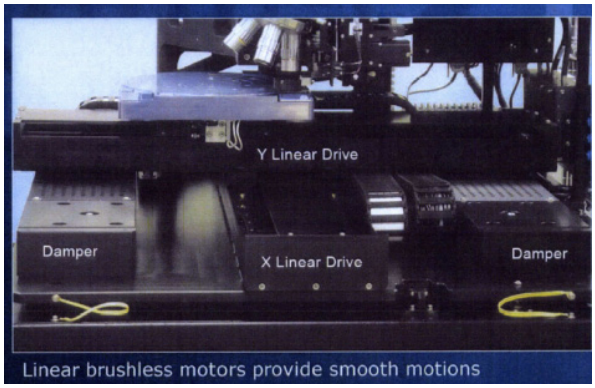
-In this step, we will clean the Reference Die already created. This process requires you to select, at a minimum, seven dice though we prefer that you select somewhere between 10 and 20 dice. Preferably, you will select dice that are defect-free, to be used in formulating a median for cleanliness as well as checking gray level variations across the surface of the die. Best results are achieved when you use select individual dice from the periphery as well as the center of the wafer—all selected dice must be within the production zone of the wafer.

If you do not select the dice yourself, when you start the process Falcon will automatically select five dice—one each from the top, bottom, left, and right sides of the wafer as well as one from the center of the wafer. For best results, however, we recommend that you select the dice yourself—and that the four dice selected from the periphery should be roughly in ac circle with the fifth selected die in the center.

During the process, Falcon will scan the selected dice and collect data.

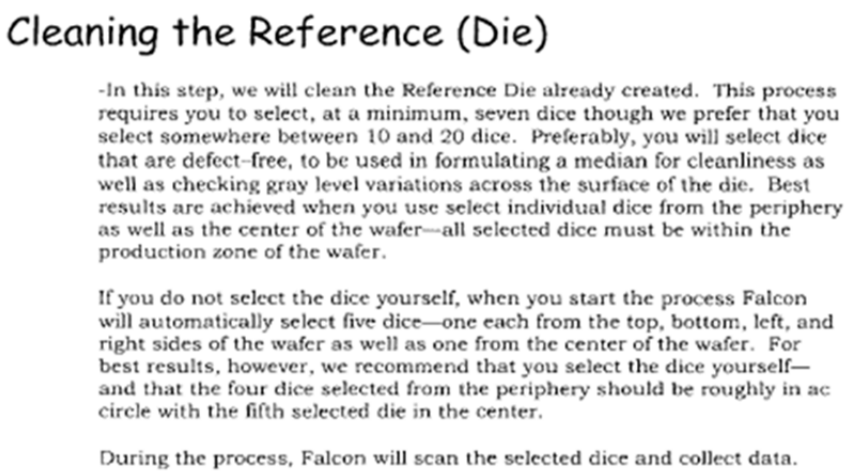
(*Id.* Pl.'s Trial Ex. 57, at 48),

b. "illuminating unknown quality substrates with an illuminator, the illuminator configured to provide flashes of light to each of the unknown quality substrates during movement of the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, a plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JED EC tray, and an Auer boat;"



(*Id.* Pl.'s Trial Ex. 48, at 39);

c. "inspecting the unknown quality substrates using the model, thereby identifying acceptable quality substrates; and"



Cleaning the Reference (Die)

-In this step, we will clean the Reference Die already created. This process requires you to select, at a minimum, seven dice though we prefer that you select somewhere between 10 and 20 dice. Preferably, you will select dice that are defect-free, to be used in formulating a median for cleanliness as well as checking gray level variations across the surface of the die. Best results are achieved when you use select individual dice from the periphery as well as the center of the wafer—all selected dice must be within the production zone of the wafer.

If you do not select the dice yourself, when you start the process Falcon will automatically select five dice—one each from the top, bottom, left, and right sides of the wafer as well as one from the center of the wafer. For best results, however, we recommend that you select the dice yourself—and that the four dice selected from the periphery should be roughly in ac circle with the fifth selected die in the center.

During the process, Falcon will scan the selected dice and collect data.

(*Id.* Pl.'s Trial Ex. 44, at 19; *id.* Pl.'s Trial Ex. 48, at 39);

d. "performing at least one processing step on the acceptable quality substrates, thereby transforming the acceptable quality substrates into further processed substrates."

(Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").

147. The above demonstrates infringement of at least some of the system and method claims on the '528 patent with respect to the Falcon. The Falcon also has features recited in various dependent and other claims of the '528 patent in addition to the features recited above, including without limitation:

a. Capturing images during continuous movement between the substrate and the visual in section device;

b. Synchronizing the pulses of light with the capturing of still images;

c. Illuminating based on a velocity of the movement between the substrate and the visual inspection device;

d. Flashing light at a sequence correlating to a velocity of the movement;

e. The illuminator strobes at a variable rate adjusted to a speed or velocity associated with the movement of the substrate relative to the visual inspection device;

f. The illuminator strobe rate varies during inspection;

g. The strobe rate varies in a manner correlated to positions on substrates;

h. The visual inspection device comprises a grey-scale camera;

i. The processor virtually aligns the substrate;

j. The defects comprise defects associated with bumps;

k. The defects comprise one or more of metallization defects, glassivation defects, passivation layer defects, scribing defects, diffusion defects, sawing-related chips or cracks, bump defects, bond pad area defects and probe area defects;

l. The defects are generally at a 1+ micron level; and

m. At least a portion of the wafer comprises irregularly spaced die, including sawn die.

148. Defendants have not indicated they have stopped upgrading or installing Falcon systems in the U.S., contributing to the importation by others of such systems into the U.S., and servicing Falcons not previously subject to the damages award in the Falcon litigation. Such activities infringe the ’528 patent and Rudolph has not previously received any monetary relief as to such activities.

149. Defendants induced or contributed to the importation of the Falcon into the United States and servicing such systems after the 2009 trial in the Falcon case and with

respect to systems that were not accounted for in the damages awarded in the Falcon case. Defendants also have performed substantial upgrades on Falcons in the U.S.

150. The Falcon has already been finally adjudicated to have all elements of system claim 1 of the '6,298 patent and Camtek's use has already been finally adjudicated to infringe all elements of of claim 1 of the '6,298 patent. As a matter of law, the Falcon thus has all of the following elements as recited in claim 1 of the '6,298 patent:

> **1**. An automated system for inspecting a substrate such as a wafer in any form including whole patterned wafers, sawn wafers, broken wafers, and wafers of any kind on film frames, dies, die in gel paks, die in waffle paks, multi-chip modules often called MCMs, JEDEC trays, Auer boats, and other wafer and die package configurations for defects, the system comprising:
>
> a wafer test plate;
>
> a wafer provider for providing a wafer to the test plate;
>
> a visual inspection device for visual inputting of a plurality of known good quality wafers during training and for visual inspection of other unknown quality wafers during inspection;
>
> at least one of a brightfield illuminator positioned approximately above, a darkfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of the wafer test plate, all of which are for providing illumination to the unknown quality wafers during inspection and at least one of which strobes to provide short pulses of light during movement of a wafer under inspection based on a velocity of the wafer; and
>
> a microprocessor having processing and memory capabilities for developing a model of good quality wafer and comparing unknown quality wafers to the model.

151. Camtek's and its customers' use of the Falcon has also already been adjudicated to result in performance of all of the following steps as recited in claim 3 of the '6,298

patent. As a matter of law, Camtek practices on the Falcon all of the following elements as recited in claim 1 of the '6,298 patent:

> **3**. An automated method of inspecting a semiconductor wafer in any form including whole patterned wafers, sawn wafers, broken wafers, and wafers of any kind of film frames, dies, die in gel paks, die in waffle paks, multi-chip modules often called MCMs, JEDEC trays, Auer boats, and other wafer and die package configurations for defects, the method comprising:
>
> training a model as to parameters of a good wafer via optical viewing of multiple known good wafers;
>
> illuminating unknown quality wafers using at least one of a brightfield illuminator positioned approximately above, a darkfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of a wafer test plate on which the wafer is inspected, all of which are for providing illumination to the unknown quality wafers during inspection and at least one of which flashes on and off during movement of a wafer under inspection at a sequence correlating to a velocity of the wafer; and
>
> inspecting unknown quality wafers using the model.

152. As the above claims recite, the Falcon flashes or strobes based on the velocity of a wafer under inspection and at a sequence "correlating to a velocity of the wafer."

153. Defendants have infringed the '528 patent by making, using, offering to sell, selling, and/or importing into the U.S. the Falcon systems.

154. Defendants have induced and contributed to the infringement of the '528 patent by purchasers and users of the Falcon systems via its sales-related activities (including marketing, training, demonstrations, maintenance and support services through Defendants' employees and associated distributors and representatives) involving the Falcon Systems.

155. The Falcon Systems and their usage comprise a material part of the claimed invention of the ’528 patent. The Falcon Systems are not staple articles of commerce.

156. The Falcon Systems have no substantial non-infringing uses.

157. Defendants’ customers, individually and in concert with others, use the patented processes of the ’528 patent with Falcon systems as described herein to make products that are imported into the U.S. and thus infringe 35 U.S.C. § 271(g).

158. Defendants induce these acts of infringement. Defendants have aided and instructed their customers in using the Defendants’ Falcon systems in processes that infringe the ’528 patent including marketing, training, installation, demonstrations, maintenance and support services through Defendants’ employees and associated distributors.

159. Defendants are aware of the ’528 patent, have been aware of the ’528 patent during the period of infringement, and know that their sale of the Falcon systems and instructions for use of the same (including training, demonstrations, installation, maintenance and support services through Defendants’ employees and associated distributors) induce Defendants’ customers, including those identified on page 11 of Camtek’s 2017 Presentation, Exhibit E, to infringe the ’528 patent.

160. Defendants know that their customers use, and indeed instruct and train their customers to use, the Falcon Systems in a manner that infringes or causes infringement of the ’528 patent at least under 35 U.S.C. §§ 271(a) and (g).

161. Defendants’ knowledge of the ’528 patent, combined with Defendants’ instructions for use of the Falcon systems in a manner specified by the ’528 patent (including training, demonstrations, installation, maintenance and support services

through Defendants' employees and associated distributors), demonstrate that Defendants intended to induce infringement of the '528 patent.

162. Defendants have also knowingly induced and/or contributed to infringement by others of one or more of the claimed methods of the '528 patent with intent by, without limitation, inducing another to import and/or contributing to another's importation into the United States of the Falcon systems.

163. A substantial portion of the semiconductor products made outside the U.S. using Falcon systems are imported into the United States.

164. With knowledge of the '528 patent, Defendants have been inducing infringement by, among other things, knowingly and with intent, actively encouraging outside the United States the use of Falcon systems in a manner that constitutes infringement of the '528 patent in fabricating semiconductors in accordance with the patented processes of one or more of claims 9-13 and 43-53 of the '528 patent and importing the semiconductor products made by the patented process into the United States.

165. Defendants' offers for sale and sale in the U.S. and importation into the U.S. of components such as replacement and add-on components of infringing Falcon systems and software upgrades for infringing Falcon systems constituting a material part of the patented invention, with knowledge that such components are especially made or adapted for use in infringement of the '528 patent, and not a staple article or commodity, constitute contributory infringement of the '528 patent under 35 U.S.C. § 271(c).

166. Defendants' infringement of Rudolph's rights in the '528 Patent involving the Falcon systems was willful.

167. Defendants' infringement of Rudolph's rights in the '528 Patent involving the Falcon systems has caused Rudolph irreparable injury. Such activities will continue unless enjoined by the Court. Rudolph has experienced lost sales and profits as a result of the infringement both with respect to the Falcon systems and related services, upgrades and products and is entitled to recover such lost profits, but in any event is entitled to monetary damages not less than a reasonable royalty for all revenue appropriately associated with the infringement, including but not limited to systems revenue, component and parts revenues, and service revenue.

168. Rudolph has been damaged by Defendants' infringement and will continue to be damaged in the future unless Defendants are permanently enjoined from infringing said patent, contributing to the infringement of said patent, and/or inducing the infringement of said patent by others.

169. The Defendants' infringing activities including their willful nature make the case exceptional under 35 U.S.C. § 285.

C. Eagle Infringement of the '528 Patent

170. The above paragraphs are incorporated by reference.

171. Defendants' press releases regarding the Eagle tout that this first sale was based on "Head-to-Head" competition. Rudolph also competed for this sale.

172. The Eagle systems are next-generation products after the Falcon, Condor, and Gannet and use many of the same features.

173. The Eagle is an automated system for inspecting a substrate which has all the elements of more than one of the system claims 4, 5, 8, 15, 16, 20-23, 25-29, 35, 37-40, 42 of the '528 patent, containing the following elements corresponding to claim elements

(all citations providing anywhere in this complaint are by way of example only and are not meant to limit the scope of any claims or limit the basis on which to assert infringement of any claim elements):

a. a wafer test plate (Eagle litigation, Doc. 18-4 (D. Minn. Apr. 20, 2015) [hereinafter "Eagle Video"]),

b. a moveable stage configured to move the substrate (*Id.*),

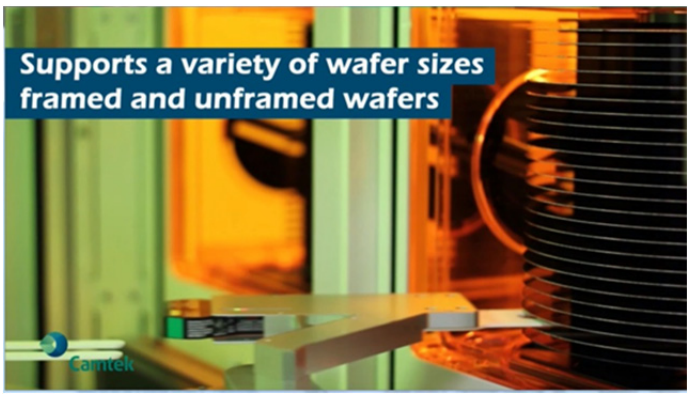
c. a platform arranged for moving the substrate during inspection (*Id.*),

d. a moveable platform adapted to move the substrate (*Id.*),

e. a substrate provider for providing a substrate to the test plate (*Id.*),

f. a robotic arm configured to provide the substrate to the moveable platform (*Id.*),

g. a means for moving the substrate (*Id.*),



h. a visual inspection device adapted to capture images associated with the substrate (Camtek, Ltd., *Camtek Announces the launch of a New 2D Semiconductor Inspection Model* (Mar. 14, 2016) http://www.camtek.com/news-and-events/news/new2d [hereinafter "Eagle News"]),

> **MIGDAL HAEMEK, Israel – March xx, 2016 –** Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

i. a camera for capturing still images of a moving substrate (*Id.*),

> **MIGDAL HAEMEK, Israel – March xx, 2016 –** Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

j. a grey-scale camera adapted to capture images of the substrate while the substrate is in motion (Camtek, Ltd., See Beyond: Best Done Better, http://www.cwitechsales.com/Camtek%20Eagle%20Flyer.pdf (last visited Feb. 20, 2017) [hereinafter "Eagle Flyer"]),

Review and Classification

Modes	Fully automated, semi-automated and manual - incorporating live color and monochrome images

k. an illuminator for providing strobe illumination to the moving substrate (Eagle Video),

l. a strobing illuminator configured to automatically illuminate at least a portion of the substrate while the substrate is in motion to aid in capture of the images by the visual inspection device (*Id.*),

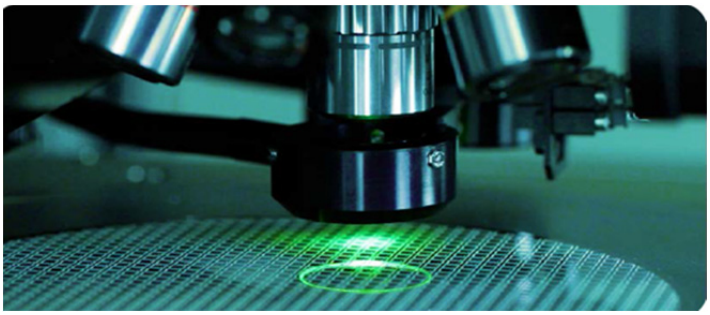
m. a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device (*Id.*),

n. a means for automatically illuminating at least a portion of the substrate (*Id.*),

o. a brightfield illuminator configured to selectively strobe the substrate while the substrate is in motion (*Id.*; Eagle Flyer),

p. a darkfield illuminator configured to selectively strobe the substrate while the substrate is in motion (Eagle Video; Eagle Flyer),

q. a focusing mechanism adapted to focus on a surface of the substrate (Eagle Video),



r. a microprocessor having processing and memory capabilities for developing a model of good quality substrate and comparing unknown quality substrates to the model (Eagle News; Camtek, Ltd., Post Dicing, http://www.camtek.com/solutions/semi/postdicing (last visited Feb. 20, 2017) [hereinafter "Post Dicing"]),

s. a controller for comparing pixel data for unknown quality substrates to a model of a good quality substrate (Eagle News; Post Dicing),

t. a processor configured to compare the captured images to a reference model during inspection to detect defects in the substrate (Eagle News; Post Dicing), and

u. a means for comparing the captured images to a reference model to detect defects in the substrate (Eagle News; Post Dicing).

The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

MIGDAL HAEMEK, Israel – March xx, 2016 – Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

174. By way of example and without limitation, Defendants' making, using, selling, offering for sale, or importing into the United States Defendants' Eagle system infringes at least independent claim 25 of the '528 patent, as an exemplary claim. The Eagle system is "[a]n automated system for training a reference model for inspection of a

substrate for defects, wherein the substrate comprises at least a portion of a wafer, the system comprising:"

a. "a moveable stage configured to move the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JEDEC tray, and an Auer boat;"

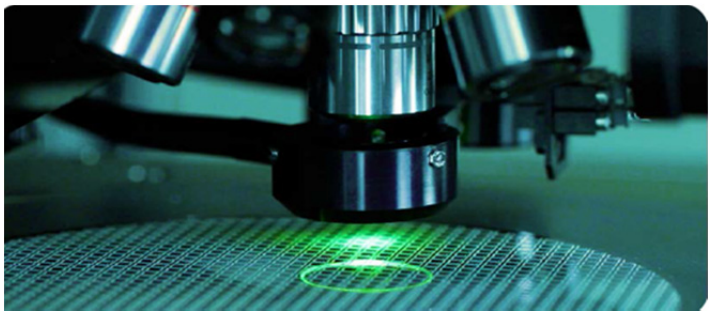
(Eagle Video)

b. "a visual inspection device adapted to capture images associated with the substrate while the substrate is in motion relative to the visual inspection device;"

MIGDAL HAEMEK, Israel – March xx, 2016 – Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

(Eagle News)

c. "a strobing illuminator operative to automatically illuminate at least a portion of the substrate while the substrate is in motion relative to the visual inspection device; and"



(Eagle Video; Eagle Flyer);

d. "a processor configured to create a reference model based on the images associated with at least two known quality substrates."

The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

> **MIGDAL HAEMEK, Israel – March xx, 2016 –** Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

(Eagle News; Post Dicing).

175. Furthermore, Defendants use and induce customers to use the Eagle in practicing multiple of method claims 9-13 and 43-48 of the '528 patent, at least (again without limitation and by way of example only) through instructions in manuals provided to customers by Defendants about how to operate the Eagle, further demonstrating infringement of the system claims as well as the method claims, including, by way of example only, the following steps and features:

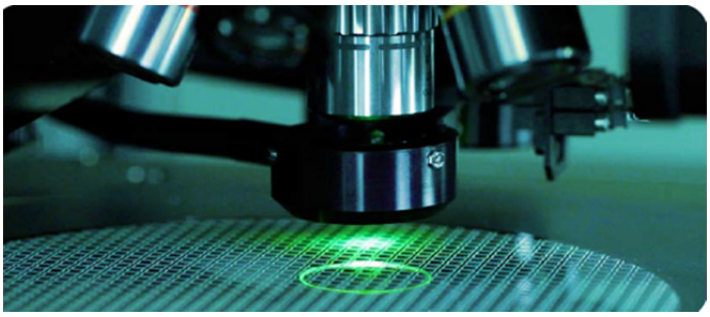
a. training a model as to parameters of a good substrate via optical viewing of multiple known good substrates (Post Dicing),

> The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

b. moving the unknown quality substrate (Eagle Video),

c. illuminating unknown quality substrates with a illuminator (Eagle Flyer),

d. automatically strobing the unknown quality substrate while the unknown quality substrate is in motion (Eagle Flyer),



e. capturing images of the unknown quality substrate while the unknown quality substrate is in motion (Eagle News),

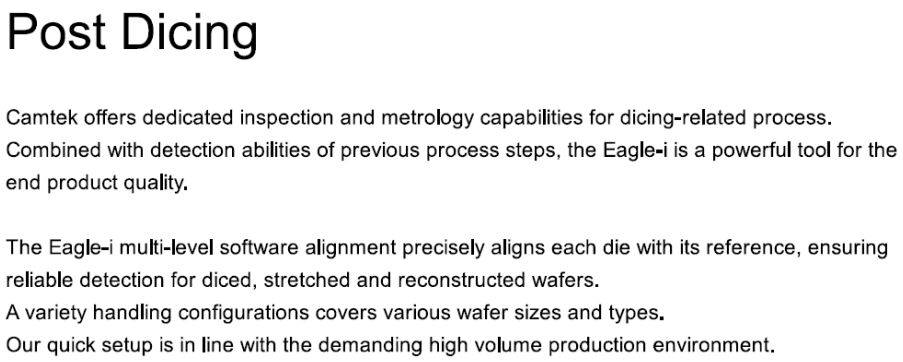
MIGDAL HAEMEK, Israel – March xx, 2016 – Camtek Ltd. (NASDAQ: CAMT; TASE: CAMT), today announced the launch of a new 2D inspection model. The new 2D inspection model significantly enhances the Eagle 2D inspection performance. This new model includes a new camera, a high-end optical channel, new lighting configurations and an innovative detection engine, all designed to significantly enhance Camtek's 2D inspection capabilities. The new model enables superior detection of even the most challenging defects. The new 2D inspection model is modular and field upgradable and can be deployed in the various Eagle systems already installed at customer sites.

f. inspecting the unknown quality substrates using the model (Post Dicing),

g. comparing the images to a reference model to detect defects in the unknown quality substrate and make the unknown quality substrate a known quality substrate (Post Dicing),

The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

h. performing at least one processing step on the acceptable and known quality substrates, at least, for example, by applying further pattern steps to, applying bumps to, sawing, and dicing such substrates, and by placing such substrates into packages. (Post Dicing; Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").



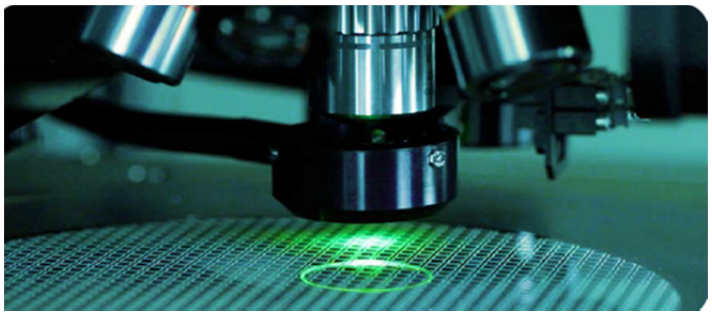
176. By way of example and without limitation, Defendants' use and induce customers to infringe at least independent claim 9, as an exemplary claim, of the '528 patent. Use of Defendants' Eagle system practices "[a]n automated method of inspecting a semiconductor substrate, the method comprising:"

a. "training a model as to parameters of a good substrate via optical viewing of multiple known good substrates;"

> The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

(Post Dicing),

b. "illuminating unknown quality substrates with an illuminator, the illuminator configured to provide flashes of light to each of the unknown quality substrates during movement of the substrate, wherein the substrate is selected from a group consisting of a whole patterned wafer, a sawn patterned wafer, a broken patterned wafer, at least one portion of a patterned wafer, an individual die, at least one portion of an individual die, a plurality of individual die, at least one portion of a plurality of individual die, multiple die in a waffle pak, a multi-chip module (MCM), a JED EC tray, and an Auer boat;"



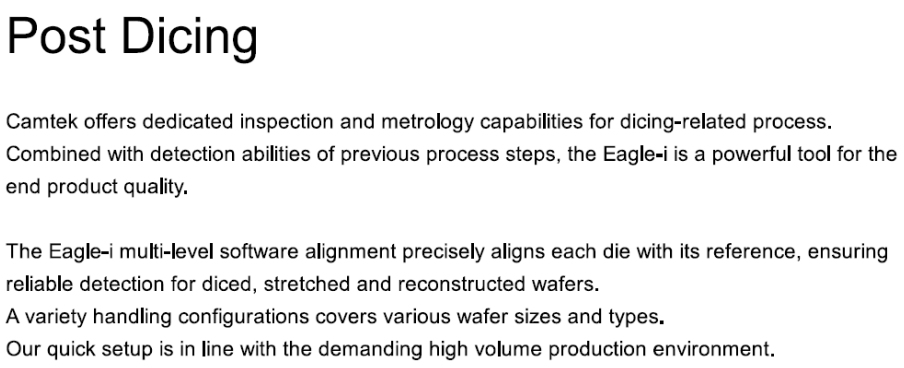
(Eagle Flyer),

c. "inspecting the unknown quality substrates using the model, thereby identifying acceptable quality substrates; and"

> The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.

(Post Dicing),

d. "performing at least one processing step on the acceptable quality substrates, thereby transforming the acceptable quality substrates into further processed substrates."



Post Dicing

Camtek offers dedicated inspection and metrology capabilities for dicing-related process. Combined with detection abilities of previous process steps, the Eagle-i is a powerful tool for the end product quality.

The Eagle-i multi-level software alignment precisely aligns each die with its reference, ensuring reliable detection for diced, stretched and reconstructed wafers.
A variety handling configurations covers various wafer sizes and types.
Our quick setup is in line with the demanding high volume production environment.

(Post Dicing; Camtek's 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI system users are members of "the electronic packaging industries and the electronics supply chain"); Camtek 2016 20-F Form, Exhibit D, at 21 (Camtek's AOI Systems are "becoming crucial to the manufacturing process" used to process semiconductor substrates into chips); 2017 Presentation, Exhibit E, at 1 ("Parts of almost all of today's latest devices have been made with the help of Camtek").

177. The above demonstrates infringement of at least some of the system and method claims on the '528 patent with respect to the Eagle. The Eagle also has features recited in various dependent and other claims of the '528 patent in addition to the features recited above, including without limitation:

a. Capturing images during continuous movement between the substrate and the visual in section device;

b. Synchronizing the pulses of light with the capturing of still images

c. Illuminating based on a velocity of the movement between the substrate and the visual inspection device;

d. Flashing light at a sequence correlating to a velocity of the movement;

e. The visual inspection device comprises a grey-scale camera;

f. The processor virtually aligns the substrate;

g. The defects comprise defects associated with bumps;

h. The defects comprise one or more of metallization defects, glassivation defects, passivation layer defects, scribing defects, diffusion defects, sawing-related chips or cracks, bump defects, bond pad area defects and probe area defects;

i. The defects are generally at a 1+ micron level; and

j. At least a portion of the wafer comprises irregularly spaced die, including sawn die.

178. Defendants have contributed to the infringement of the ’528 patent by purchasers and users of the Eagle systems via their sales-related activities (including marketing, training, installation, demonstrations, maintenance and support services through Defendants’ employees and associated distributors and representatives) involving the Eagle Systems.

179. The Eagle Systems and their usage comprise a material part of the claimed invention of the ’528 patent. The Eagle Systems are not staple articles of commerce.

180. The Eagle Systems have no substantial non-infringing uses.

181. The patented processes of the ’528 patent are used in Eagle systems as described above to make products that are imported into the U.S. and thus infringe 35 U.S.C. § 271(g).

182. Defendants induce these acts of infringement. Defendants have aided and instructed their customers in using the Defendants’ Eagle systems in processes that infringe the ’528 patent including marketing, training, installation, demonstrations,

maintenance and support services through Defendants' employees and associated distributors.

183. Defendants are aware of the '528 patent, have been aware of the '528 patent during the period of infringement, and know that their actions induce Defendants' customers, including those identified on page 11 of Camtek's 2017 Presentation, Exhibit E, to infringe the '528 patent.

184. Defendants know that their customers use, and indeed instruct and train their customers to use, the Eagle Systems in a manner that infringes or causes infringement of the '528 patent at least under 35 U.S.C. §§ 271(a) and (g). The products made by the patented processes of claims 9-13 and 43-48 of the '528 patent with Eagle systems include at least those semiconductor products contained in the devices depicted on page 1 of Camtek's 2017 Presentation (Exhibit E) and page 6 of Camtek's 2015 Presentation (Exhibit G).

185. Defendants' knowledge of the '528 patent, combined with Defendants' actions, demonstrate that Defendants intended to induce infringement of and contributorily infringe the '528 patent.

186. A substantial portion of the semiconductor products made outside the U.S. using Eagle systems are imported into the United States.

187. Upon knowledge of the '528 patent, Camtek has been inducing infringement by, among other things, knowingly and with intent, actively encouraging the use of Eagle systems in the U.S. and also outside the U.S. in a manner that constitutes infringement of the '528 patent in fabricating semiconductors in accordance with the patented processes of one or more of claims 9-13 and 43-48 of the '528 patent and, for use outside the U.S.,

importing the semiconductor products made by the patented process into the United States.

188. Defendants' offers for sale and sale in the U.S. and importation into the U.S. of components such as add-on components of infringing Eagle systems and software upgrades for infringing Eagle systems constituting a material part of the patented invention, with knowledge that such components are especially made or adapted for use in infringement of the '528 patent, and not a staple article or commodity, constitute infringing use under 35 U.S.C. § 271(a) and contributory infringement of the '528 patent under 35 U.S.C. § 271(c).

189. In typical usage, the semiconductor packages imported into the United States that are made by the process patented in claims 9-13 and 43-48 of the '528 patent using the Eagle system are not materially changed by subsequent processes.

190. On February 15, 2015, days after the judgment issued in the Falcon litigation, Camtek announced its fourth quarter 2014 results, including the following quote from its CEO Mr. Rafi Amit:

> As we move into 2015, we are seeing increased traction for our EAGLE product, focused on the advanced packaging market. We continue to achieve qualification at leading semiconductor manufacturers to which we had not significantly penetrated in the past.

2015 Camtek Press Release, attached as **Exhibit H**.

191. Defendants tout the Eagle system as targeting applications in which the Eagle is used to inspect wafers which will undergo further processing, including advanced packaging. Defendants' marketing materials nowhere indicate that the Eagle omits any functionality of the infringing Falcon machines. To the contrary, Defendants' publicly-available information indicates the Eagle product line is compatible with the Falcon

product line. The Eagle is also touted in Defendants' marketing materials as capable of 100% inspection of the microchips or dies fabricated on patterned wafers.

192. Defendants have also contributed to the infringement of the '528 patent by offering to sell and selling Eagle systems.

193. Defendants' customers, individually and in concert with others, use the patented processes of the '528 patent as described above to make products in the U.S. with the Eagle system thus infringing 35 U.S.C. § 271(a), and products outside the U.S. using the Eagle system that are imported into the U.S. and thus infringe 35 U.S.C. § 271(g). Defendants induce these acts of infringement.

194. Defendants have also induced, and continue to induce, infringement of the '528 patent by having sold, and selling, the Eagle systems.

195. On information and belief, Defendants have also knowingly induced and/or contributed to infringement of one or more of the claimed methods of the '528 patent with intent by, without limitation, importing, inducing importation and/or contributing to another's importation into the United States of the Eagle systems.

196. The Eagle systems are later-generation products after the Falcon and use many of the same features. Defendants identified to Rudolph one purported difference between these systems and the Falcon: they strobe or flash at a constant rate. The Paragraphs herein regarding infringement of the Falcon thus also apply to demonstrate the use in the Eagle systems to the extent those systems have the same features as the Falcon.

197. Claims 4-5, 8, 9-13, 20-23, 25-29, 35, 37-40, and 42-48 of the '528 patent recite strobing or illumination elements that do not require strobing based on or correlating to velocity. Thus, the distinction asserted by Defendants in its communications with

Rudolph about constant-velocity strobing provides no basis to dispute infringement at least with respect to these claims and the Eagle systems and methods. Defendants also know that the Eagle and its use infringe the remaining asserted claims that recite strobing or flashing based on a velocity or "at a sequence correlating to a velocity."

198. The Eagle training features work the same as the infringing features of the Falcon in all respects material to the training elements. Moreover, the claims of the '528 patent do not recite the multiple-discrete-wafer element. Thus, all the Eagle systems infringe the training elements of the claims of the '528 patent regardless of whether the system uses multiple portions of the same substrate to train the system or multiple discrete wafers to train the system.

199. Defendants had knowledge that use of the Eagle systems in manufacturing the semiconductor packages used processes patented in one or more of claims 9-13 and 43-48 of the '528 patent.

200. The semiconductor substrates and packages imported into the United States processed by the Eagle systems pursuant to the process patented in claims 9-13 and 43-48 of the '528 patent are not trivial and nonessential components of another product.

201. A substantial likelihood exists that substrates imported into the U.S. after being processed using Eagle systems were made by a process patented in the '528 patent. Rudolph has made a reasonable effort to determine the process actually used and, to the extent it is unable to determine the processes used, under 35 U.S.C. § 295, the burden of establishing the product was not made by such processes shall be on Defendants to the extent they assert the substrates were not so made by the patented processes.

202. Rudolph has been damaged by Defendants' infringement and will continue to be damaged in the future unless Defendants are permanently enjoined from infringing said patent, contributing to the infringement of said patent, and/or inducing the infringement of said patent by others.

203. Defendants also have induced and contributed to, and continue to induce and contribute to, under §§ 271(b) and (c) infringement of at least one of claims 9-13 and 43-48 of the '528 patent under 35 U.S.C. § 271(g).

204. Defendants have infringed 35 U.S.C. § 271(a) through their use, offer for sale, and selling of Eagle systems in the U.S., 35 U.S.C. § 271(b) through their inducement of § 271(a) infringing use of systems in the U.S. and their inducement of § 271(g) infringement through inducement of the importation into the U.S. and offers to sell, sales, and use in the U.S. of substrates made by the processes patented in the asserted method claims of the '528 patent through the use of Eagle systems in the U.S. and (with respect to importation) abroad.

205. Defendants' infringement of Rudolph's rights in the '528 Patent involving the Eagle systems was willful.

206. Defendants' infringement of Rudolph's rights in the '528 Patent involving the Eagle systems has caused Rudolph irreparable injury. Such activities will continue unless enjoined by the Court. Rudolph has experienced lost sales and profits as a result of the infringement both with respect to the Eagle systems and related services, upgrades and products and is entitled to recover such lost profits, but in any event is entitled to monetary damages not less than a reasonable royalty for all revenue appropriately associated with the infringement, including but not limited to systems revenue,

component and parts revenues, and service revenue. Defendants' infringement has ensured accurate and fast inspection of chips used in millions of electronic devices sold and used in the U.S.

207. The Defendants' infringing activities including their willful nature make the case exceptional under 35 U.S.C. § 285.

VII. COUNT II – INFRINGEMENT OF U.S. PATENT NO. 6,826,298 WITH RESPECT TO CONDOR AND GANNET SYSTEMS

208. Rudolph restates the allegations set forth in the foregoing paragraphs 1209 and incorporates them herein by reference.

209. Rudolph and Camtek entered and filed a stipulation filed in this case (Doc. 56) that contemplated Rudolph's amendment of its complaint in this case to add claims against the Condor and Gannet products for infringement of the '6,298 patent, stating as follows:

> FURTHER STIPULATED AND AGREED that for purposes of the application of 35 U.S.C. § 286 or any other statute of limitations, an amendment to add the '6,298 patent against the Condor and Gannet products will be treated as if filed on October 29, 2015. This stipulation is without prejudice to any of the parties' other claims, remedies and defenses in this or any other case.

210. Defendants infringe one of more of claims of the '6,298 patent under 35 U.S.C. § 271(a), including but not limited to claims 1 and 3, by making, using, offering to sell, selling, and/or importing the Condor and Gannet AOI systems into the U.S.

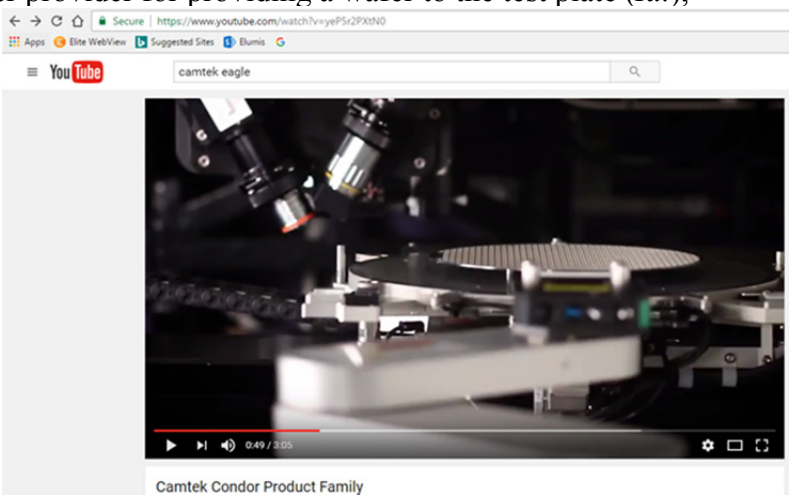
211. After receiving actual notice of Rudolph's rights in the '6,298 patent and notice of infringement in 2004, and after findings of infringement during the course of the Falcon litigation, Defendants continued to: (1) use, offer to sell, sell, install, and/or import the

Condor and Gannet systems in the United States; (2) service and upgrade the Condor and Gannet systems in the U.S., and (3) assist and enable customers' and potential customers' using and/or importing the Condor and Gannet systems in the U.S.

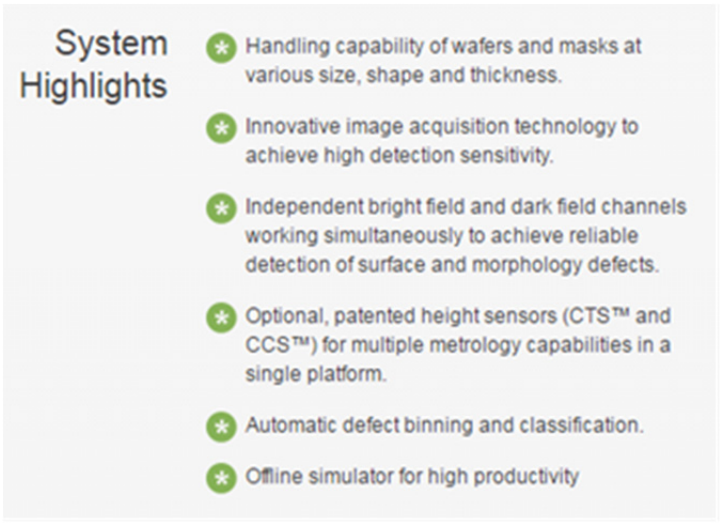
212. The Condor and Gannet are systems which have all the elements of claim 1 of the '6,198 patent, containing the following that correspond to claim elements (all citations providing anywhere in this complaint are by way of example only and are not meant to limit the scope of any claims or limit the basis on which to assert infringement of any claim elements):

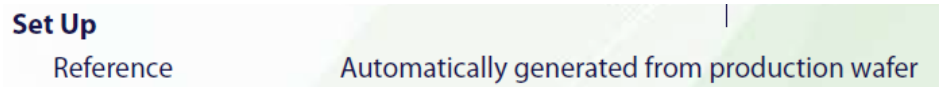
a. a wafer test plate (Condor Video),

b. a wafer provider for providing a wafer to the test plate (*Id.*),

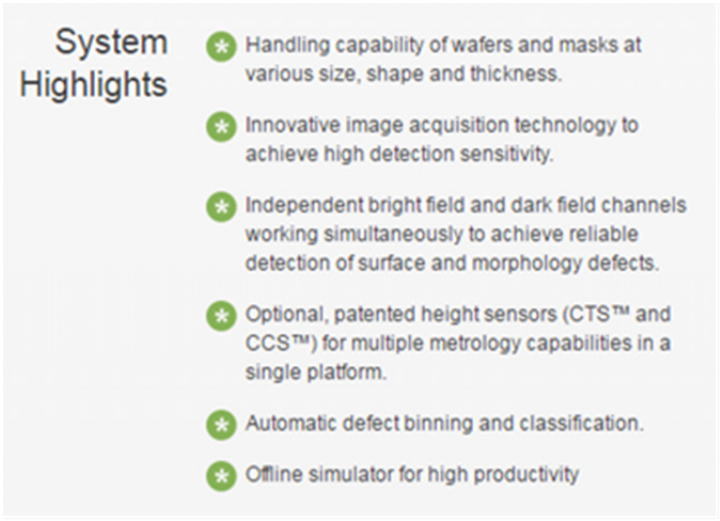


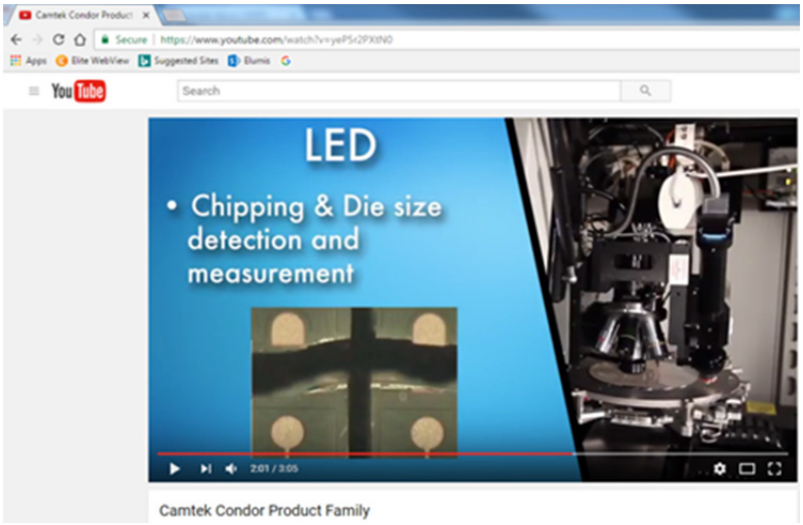
c. a visual inspection device for visual inputting of a plurality of known good quality wafers during training and for visual inspection of other unknown quality wafers during inspection (Condor 300 Datasheet; Condor 203 Website),





d. at least one of a brightfield illuminator positioned approximately above, a darkfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of the wafer test plate (Condor 203 Website; Condor Video),





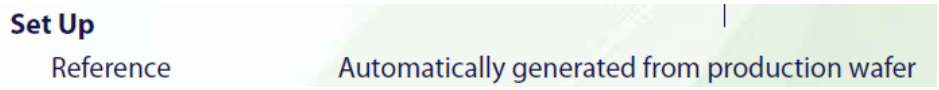
e. Which strobes to provide short pulses of light during movement of a wafer under inspection based on a velocity of the wafer (see, e.g., 9/24/2009 correspondence from Camtek to Rudolph indicating Camtek new AOI systems use "fixed, constant rate" or fixed-interval strobing during inspection, which Camtek and its experts admitted at the Falcon litigation trial was strobing "based on velocity" e.g. at Trial Tr. 2258-2262), and

f. a microprocessor having processing and memory capabilities for developing a model of good quality wafer and comparing unknown quality wafers to the model (Condor PD Website).

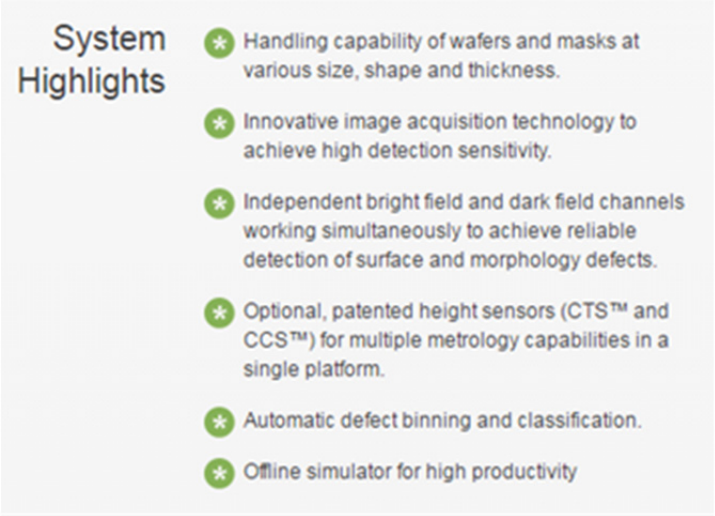
> stretching of the adhesive tape. The Condor's multi-level software alignment precisely aligns each die with its reference image, ensuring reliable detection and eliminating false alarms. This capability is

213. Furthermore, Defendants use and induce customers to use the Condor and Gannet in using system claim 1 and practicing method claim 3, at least (again without limitation and by way of example only) through instructions in manuals provided to customers by Defendants about how to operate the Condor and Gannet:

a. training a model as to parameters of a good wafer via optical viewing of multiple known good wafers (Condor 300 Datasheet);



b. illuminating unknown quality wafers using at least one of a brightfield illuminator positioned approximately above, a darkfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of a wafer test plate on which the wafer is inspected (Condor 203 Website; Falcon litigation, Doc. 645, at 4 (D. Minn. July 28, 2010) ("As Camtek advised Plaintiffs long ago, both of these new Camtek machines use constant-rate strobing.") (emphasis in original));



c. at least one illuminator which flashes on and off during movement of a wafer under inspection at a sequence correlated to a velocity of the wafer (*see e.g.*, 9/24/2009 letter in which Camtek admitted its new AOI systems strobe at fixed constant rate and Falcon litigation trial transcript where Camtek expert admitted that fixed-rate strobing is based on velocity rather than position);

d. inspecting the unknown quality wafers using the model (Condor PD Website).

> stretching of the adhesive tape. The Condor's multi-level software alignment precisely aligns each die with its reference image, ensuring reliable detection and eliminating false alarms. This capability is

214. On information and belief, Defendants have contributed to the infringement of the '6,298 patent by purchasers of the Gannet and Condor AOI systems via its sales-related activities (including trainings, demonstrations, maintenance and support services through Defendants' employees and associated distributors) involving the Gannet and Condor AOI systems.

215. The Gannet and Condor AOI systems, and their usage, comprise a material part of the claimed invention of the '6,298 patent. The Gannet and Condor AOI systems are not staple articles of commerce.

216. The Gannet and Condor AOI systems have no substantial non-infringing uses.

217. Defendants are aware of the '6,298 patent, have been aware of the '6,298 patent during the period of infringement, and knowingly made the Gannet and Condor AOI systems for use in the processes that are claimed in the '6,298 patent.

218. Defendants' customers—namely at least the customers identified on page 11 of Camtek's 2017 Presentation, Exhibit E—infringe the '6,298 patent by using the Gannet and Condor AOI systems in a process that embodies the invention of the '6,298 patent. Defendants know that their customers use, and indeed instruct their customers to use, the Gannet and Condor AOI systems in a manner that infringes the '6,298 patent.

219. Defendants have also induced, and continue to induce, infringement of the '6,298 patent by having sold, and selling the Gannet and Condor AOI systems, to their customers.

220. Defendants have trained and instructed and continue to assist and encourage their customers, including those identified on page 11 of Camtek's 2017 Presentation, Exhibit E, to use the infringing Gannet and Condor AOI systems in a process that infringes the '6,298 patent (including marketing, training, installation, demonstrations, upgrades, maintenance and support services through Defendants' employees and associated distributors and representatives).

221. Defendants are and have been aware of the '6,298 patent and know that their sale of the Gannet and Condor AOI systems and instructions for use of the same induces Defendants' customers to infringe the '6,298 patent. Defendants' knowledge of the '6,298 patent and its scope, combined with Defendants' aiding and encouraging use of the Gannet and Condor AOI systems claimed in the '6,298 patent in a manner specified by the '6,298 patent method claim 3, demonstrate that Defendants intend to induce their customers to infringe the '6,298 patent.

222. Rudolph has been damaged by Defendants' infringement and will continue to be damaged in the future unless Defendants are permanently enjoined from infringing said patent, contributing to the infringement of said patent, and/or inducing the infringement of said patent by others.

223. Defendants have infringed the '6,298 Patent under 35 U.S.C. § 271(a) through their use, offer for sale, importing, and selling of Condor and Gannet systems in the U.S., and infringe 35 U.S.C. § 271(b) through their inducement of § 271(a) infringing use of systems in the U.S.

224. Defendants' offers for sale and sale in the U.S. and importation into the U.S. of components such as replacement and add-on components of infringing Condor and

Gannet systems and software upgrades for infringing Condor and Gannet systems constituting a material part of the patented invention, with knowledge that such components are especially made or adapted for use in infringement of the ’6,298 patent, and not a staple article or commodity, constitute contributory infringement under 35 U.S.C. § 271(c).

225. Defendants’ infringement of Rudolph’s rights in the ’6,298 Patent involving the Condor and Gannet Eagle systems was willful.

226. Defendants’ infringement of Rudolph’s rights in the ’6,298 Patent involving the Condor and Gannet systems has caused Rudolph irreparable injury. On information and belief, such activity will continue unless enjoined by the Court. Rudolph has experienced lost sales and profits as a result of the infringement both with respect to the Condor and Gannet systems and related services, upgrades, and products and is entitled to recover such lost profits, but in any event is entitled to monetary damages not less than a reasonable royalty for all revenue appropriately associated with the infringement, including but not limited to systems revenue, component and parts revenues, and service revenue. Defendants’ infringement has ensured accurate and fast inspection of chips used in millions of electronic devices sold and used in the U.S.

227. The Defendants’ infringing activities including their willful nature make the case exceptional under 35 U.S.C. § 285.

VIII. COUNT III – INFRINGEMENT OF THE ’6,298 PATENT BY THE FALCON SYSTEMS NOT PREVIOUSLY ACCOUNTED FOR

228. The above paragraphs are incorporated by reference.

229. In the permanent injunction entered February 10, 2015, in the Falcon litigation, the Court enjoined “Reconstructing the Falcon machines sold and delivered prior to

March 5, 2009, which includes substantially improving or otherwise substantially changing such machines relative to the state in which they were originally accepted by the customer including, among other things, providing substantial software or hardware upgrades." This provision is substantially identical to the injunctive provision entered in the Falcon litigation in 2009. Camtek never objected to this description of "reconstruction" in either injunction. Camtek was thus on notice that substantial upgrades and other substantial improvements and changes were considered "reconstruction," which is a separate act of infringement of the '6,298 patent.

230. Rudolph sought discovery from Camtek regarding its service and upgrade activity and other discovery related to supplemental damages in the Falcon litigation, post-judgment. After Camtek objected to those requests, Rudolph moved to compel. In an Order in that case dated June 24, 2016 (Doc. 1113), the Court denied Rudolph's request, concluding "that any supplemental damages calculations, and relevant discovery, are best suited for separate litigation." Rudolph thus seeks such supplemental damages as to the Falcon systems in the U.S. and the '6,298 patent in this action, which is such a separate litigation.

231. On information and belief, Defendants have knowingly induced and/or contributed to infringement by others of one or more of the claimed methods of the '6,298 patent with intent by, without limitation, inducing another to import and/or contributing to another's importation into the United States of Falcon AOI systems not part of the damages award in the Falcon litigation.

232. After receiving actual notice of Rudolph's rights in the '6,298 patent and notice of infringement in 2004, and after findings of infringement during the course of the Falcon

litigation, Defendants continued to: (1) service and upgrade the Falcon systems in the U.S., and (2) assist and enable customers' and potential customers' using and/or importing the Falcon systems in the U.S.

233. Defendant's infringing upgrades and service extend the life of the infringing Falcons and injure Rudolph through delaying users in seeking replacement systems for Falcon systems that would be obsolete but for the infringing upgrades. Defendants have benefited from the infringement through additional revenues for upgrades and service for such systems. Rudolph has not received any recovery with respect to such upgrades.

234. Defendants have performed impermissible reconstruction of Falcon systems in the U.S. which is a separate act of infringement for which Rudolph is entitled to relief including injunctive relief and damages not less than a reasonable royalty.

235. Defendants' service and use of Falcon systems which were imported into the U.S. and not included within the accounting in the Falcon litigation are infringing use under 35 U.S.C. § 271(a) of the '6,298 patent. Rudolph has not received any recovery with respect to such imports, and is now entitled to an injunction and damages.

236. Defendants' aforementioned infringement of Rudolph's rights in the '6,298 Patent involving the Falcon systems was willful.

237. Defendants' aforementioned infringement of Rudolph's rights in the '6,298 Patent involving the Falcon has caused Rudolph irreparable injury. Rudolph has experienced lost sales and profits as a result of the infringement both with respect to the Falcon systems at issue and related services, upgrades, and products and is entitled to recover such lost profits, but in any event is entitled to monetary damages not less than a reasonable royalty for all revenue appropriately associated with the infringement,

including but not limited to systems revenue, component and parts revenues, and service revenue.

238. Upon information and belief, Defendants' infringement of the '6,298 Patent with respect to the Falcon as described herein will continue unless enjoined by the Court.

239. The Defendants' infringing activities including their willful nature make the case exceptional under 35 U.S.C. § 285.

PRAYER FOR RELIEF

WHEREFORE, Rudolph prays for judgment that:

A. United States Patent No. 7,729,528 was duly and legally issued, is valid, and is enforceable;

B. Defendants have infringed one or more claims of United States Patent No. 7,729,528;

C. Defendants have contributorily infringed one or more claims of United States Patent No. 7,729,528;

D. Defendants have induced infringement of one or more claims of United States Patent No. 7,729,528;

E. Defendants and their officers, agents, servants and employees, and those persons in active concert or participation with any of them, be enjoined from reconstruction and other further infringement of United States Patent No. 7,729,528;

F. Defendants have willfully infringed one or more claims of United States Patent No. 7,729,528;

G. An accounting be had for the damages arising out of Defendants' infringement of United States Patent No. 7,729,528, including treble damages for willful infringement as provided by 35 U.S.C. §§ 284 and 285, with interest;

H. Defendants have infringed one or more claims of United States Patent No. 6,826,298, which has already been adjudicated against Camtek and its privity Camtek USA as not invalid and not unenforceable;

I. Defendants have contributorily infringed one or more claims of United States Patent No. 6,826,298;

J. Defendants have induced infringement of one or more claims of United States Patent No. 6,826,298;

K. Defendants and their officers, agents, servants and employees, and those persons in active concert or participation with any of them, be enjoined from further reconstruction or other infringing of United States Patent No. 6,826,298;

L. Defendants have willfully infringed one or more claims of United States Patent No. 6,826,298;

M. An accounting be had for the damages arising out of Defendants' infringement of United States Patent No. 6,826,298, including treble damages for willful infringement as provided by 35 U.S.C. §§ 284 and 285, with interest;

N. Defendants be enjoined from continued making, using, offering to sell, selling, and/or importing into the U.S. of Camtek's products used to infringe United States Patent No. 7,729,528 and United States Patent No. 6,826,298;

O. Defendants, their officers, agents, servants and employees, and those persons in active concert or participation with any of them, be enjoined from continued making, using, offering to sell, selling, and/or importing into the U.S. of any products used to infringe United States Patent No. 7,729,528 and United States Patent No. 6,826,298;

P. Rudolph be awarded its attorneys' fees, costs, and expenses in this action; and

Q. Rudolph be awarded such other and further relief as this Court may deem necessary and proper.

DEMAND FOR JURY TRIAL

Rudolph hereby demands a trial by jury of all issues so triable.

Rudolph Technologies, Inc.

By their Attorneys,

Dated: March 15, 2017

s/Daniel W. McDonald
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