



US008466705B1

(12) **United States Patent**  
**Howell**

(10) **Patent No.:** **US 8,466,705 B1**  
(45) **Date of Patent:** **Jun. 18, 2013**

(54) **SYSTEM AND METHOD FOR ANALYZING ELECTRONIC DEVICES HAVING A CAB FOR HOLDING ELECTRONIC DEVICES**

(71) Applicant: **Robert P. Howell**, San Jose, CA (US)

(72) Inventor: **Robert P. Howell**, San Jose, CA (US)

(73) Assignee: **Exatron, Inc.**, San Jose, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/680,390**

(22) Filed: **Nov. 19, 2012**

**Related U.S. Application Data**

(60) Provisional application No. 61/706,335, filed on Sep. 27, 2012.

(51) **Int. Cl.**  
**G01R 31/20** (2006.01)  
**G01R 31/00** (2006.01)

(52) **U.S. Cl.**  
USPC ..... **324/757.01**; 324/756.01; 324/756.02

(58) **Field of Classification Search**  
None  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,517,125	A	5/1996	Posedel et al.	
5,596,282	A *	1/1997	Giddings et al. ....	324/750.22
6,081,429	A	6/2000	Barrett	
6,246,246	B1 *	6/2001	Hembree .....	324/754.09
6,320,398	B1 *	11/2001	Ito et al. ....	324/756.02
6,354,844	B1 *	3/2002	Coico et al. ....	439/66
7,053,496	B2 *	5/2006	Stone .....	257/798
8,248,091	B2	8/2012	Cheng et al.	
8,277,162	B2	10/2012	Na et al.	

2003/0016025	A1	1/2003	Martter et al.	
2003/0168738	A1 *	9/2003	Kabadi et al. ....	257/738
2004/0212389	A1	10/2004	Hamren et al.	
2007/0126448	A1	6/2007	Hubscher et al.	
2007/0296419	A1	12/2007	Aizawa et al.	
2008/0169831	A1	7/2008	Lu	
2008/0238460	A1	10/2008	Kress et al.	
2008/0252314	A1	10/2008	Hopkins et al.	
2009/0108859	A1	4/2009	Teng et al.	

(Continued)

**FOREIGN PATENT DOCUMENTS**

JP	22-22555	9/1990
JP	2012-018176	1/2012

**OTHER PUBLICATIONS**

Aldana, F.R. et al., "BGA MPI socket analysis and validation", 2012 International Caribbean Conference on Devices, Circuits and Systems—Mar. 14-17, 2012, IEEE, Piscataway, NJ, Mar. 2012, 6 pages.

(Continued)

*Primary Examiner* — Vinh Nguyen  
(74) *Attorney, Agent, or Firm* — Stephen M. De Klerk

(57) **ABSTRACT**

A system for analyzing electronic devices includes a first cab, an input station, a transport apparatus, an electric machine interface station, and an electric machine interface. The first cab includes a holder having formations for removably receiving a first subset of electronic devices and a communications interface. The input station receives the first cab and the transport apparatus transports the first cab with the first subset of electronic devices from the input station to the electric machine interface station. The electric machine interface is positioned to engage communicatively with the communications interface of the first cab when the first cab is at the electric machine interface station, and is disengageable from the communications interface of the first cab for the first cab to be transportable by the transport apparatus away from the electric machine interface station. Heat conducts to or from the electronic devices while they are being analyzed.

**9 Claims, 6 Drawing Sheets**

