US006847212B1

(12) **United States Patent**
Muhitch et al.

(10) **Patent No.: US 6,847,212 B1**
(45) **Date of Patent: Jan. 25, 2005**

(54) **APPARATUS AND METHOD FOR CALIBRATING VOLTAGE SPIKE WAVEFORMS**

(75) Inventors: **Joseph M. Muhitch**, Exeter, RI (US); **Edward W. Wilbur, Jr.**, Bristol, RI (US)

(73) Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, DC (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.: **10/652,079**

(22) Filed: **Aug. 26, 2003**

(51) **Int. Cl.**[7] **G01R 35/00**
(52) **U.S. Cl.** **324/601**; 324/511
(58) **Field of Search** 324/601, 511

(56) **References Cited**

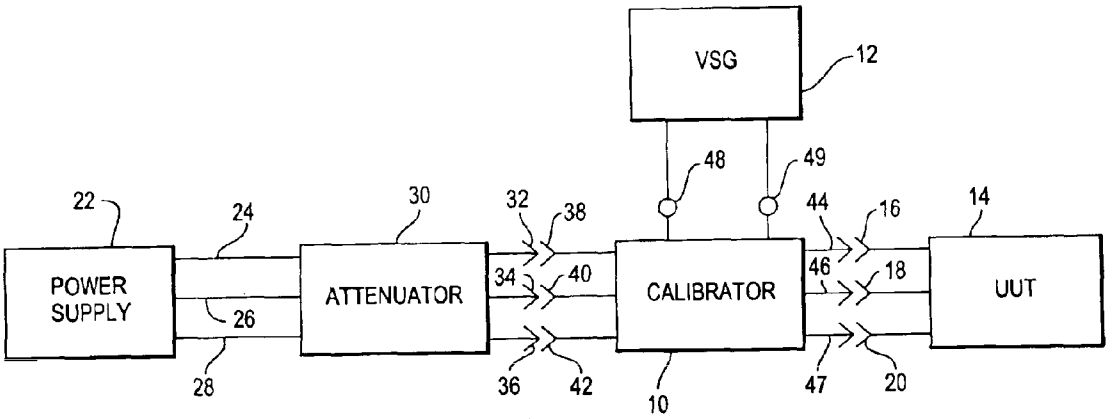
U.S. PATENT DOCUMENTS

4,307,342 A * 12/1981 Peterson 324/767
4,843,515 A * 6/1989 Richman 361/58
4,926,285 A * 5/1990 Reinhardt et al. 361/230
5,463,315 A * 10/1995 Grace et al. 324/158.1
5,525,926 A * 6/1996 Merritt 327/535
5,537,044 A * 7/1996 Stahl 324/511
5,623,215 A * 4/1997 Maytum 324/765
5,956,223 A * 9/1999 Banting 361/117
6,088,209 A * 7/2000 Sink 361/111
6,118,639 A * 9/2000 Goldstein 361/55
6,304,839 B1 * 10/2001 Ho et al. 703/18
6,490,143 B1 * 12/2002 Estrela et al. 361/113

* cited by examiner

Primary Examiner—Charles H. Nolan, Jr.
(74) *Attorney, Agent, or Firm*—James M. Kasischke; Michael F. Oglo

(57) **ABSTRACT**

An apparatus and method for calibrating single phase voltage spikes used in testing single phase electrical equipment. Capacitance is selected from a capacitor network in order to adjust the single phase voltage spike so as to produce a predetermined voltage spike waveform having particular waveform characteristics that are required to perform survivability and compatibility tests.

17 Claims, 4 Drawing Sheets