



- (51) **International Patent Classification:** Not classified
- (21) **International Application Number:**
PCT/US2010/003238
- (22) **International Filing Date:**
21 December 2010 (21.12.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
12/645,418 22 December 2009 (22.12.2009) US
- (71) **Applicant (for all designated States except US):** TERA-DYNE, INC. [US/US]; 600 Riverpark Drive, North Reading, MA 01864 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** SUTO, Anthony, J. [US/US]; 154 Kendall Hill Road, Sterling, MA 01564 (US).
- (74) **Agent:** WALSH, Edmund, J.; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210-2206 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) **Title:** CAPACITIVE OPENS TESTING IN LOW SIGNAL ENVIRONMENTS

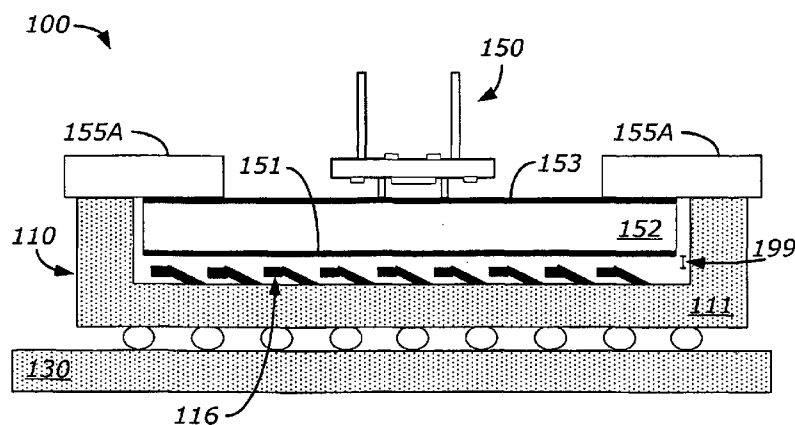


Fig. 2B

(57) **Abstract:** An improved system for capacitive testing electrical connections in a low signal environment. The system includes features that increase sensitivity of a capacitive probe. One feature is a spacer positioned to allow the probe to be partially inserted into the component without contacting the pins. The spacer may be a collar on the probe that contacts the housing of the component, contacts the substrate of the circuit assembly, or both. In some other embodiments, the spacer may be a riser extending beyond the surface of the sense plate that contacts the component, a riser portion of the component, or a combination of both. The spacer improves sensitivity by establishing a small gap between a sense plate of the probe and pins under test without risk of damage to the pins. A second feature is a guard plate of the probe with reduced capacitance to a sense plate of the probe. Reducing capacitance also increases the sensitivity of the probe.

