

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 February 2006 (23.02.2006)

PCT

(10) International Publication Number
WO 2006/020631 A1

(51) International Patent Classification: **G01R 27/04**,
27/32

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(21) International Application Number:
PCT/US2005/028254

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(22) International Filing Date: 10 August 2005 (10.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/915,877 11 August 2004 (11.08.2004) US
60/659,847 9 March 2005 (09.03.2005) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

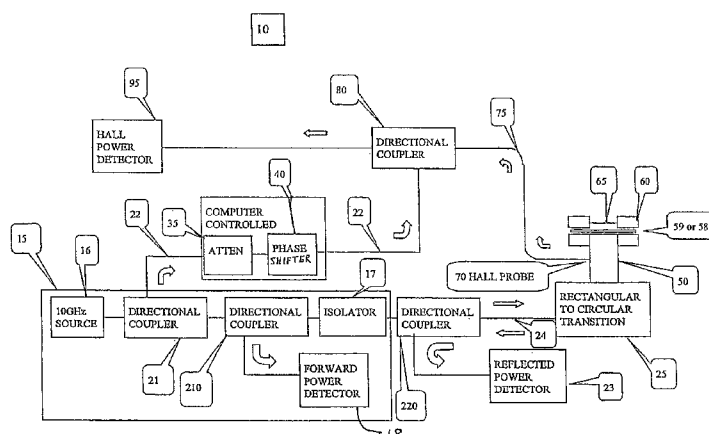
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: DEVICE AND HANDLING SYSTEM FOR MEASUREMENT OF MOBILITY AND SHEET CHARGE DENSITY IN CONDUCTIVE SHEET MATERIALS



(57) Abstract: An apparatus (10) for contactless measurement of sheet charge density and mobility includes a microwave source (16), a circular waveguide (50) for transmitting microwave power to a sample (59), such as a semiconductor wafer or panel for flat panel displays, at a measurement location, a first detector (18) for detecting the forward microwave power, a second detector (23) for detecting the microwave power reflected from the sample, and a third detector (95) for detecting the Hall effect power. An automatic positioning subsystem (700) is also provided for allowing automatic positioning of a wafer (59) within the test apparatus (10). The positioning system (700) includes a first end effector (706) and a rotator-lifter (704). The first end effector (706) can grasp a sheet element (59) and move it to a desired position within the test apparatus (10), while the rotator lifter (704) provides incremental adjustment of a theta angle of the sheet element (59) to allow automated mapping of an entire sheet element without the need for manual adjustment of the position of the sheet element. A second end effector (716) can be mounted opposite the first end effector (706) and can be used to automatically position the sheet element (59) within a sheet resistance testing module (718) located at an opposite end of the apparatus (10).



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