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(54) **Title:** SEMICONDUCTOR-BASED MEASUREMENT DEVICES

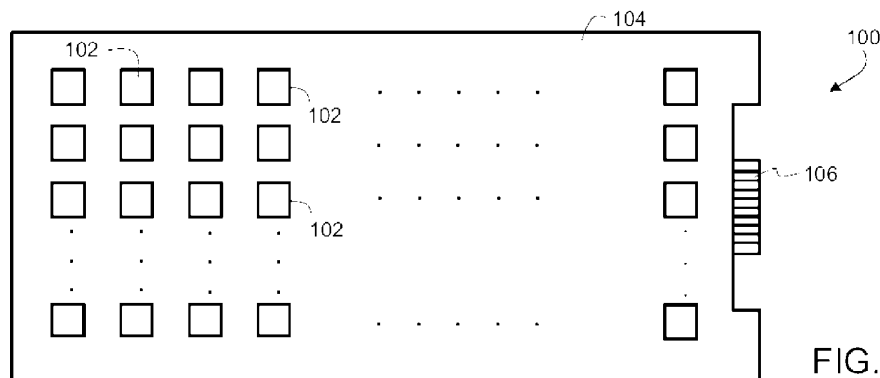


FIG. 1

(57) **Abstract:** Measurement devices (100) include: a substrate (104); a plurality of integrated circuits (102), each featuring a plurality of electrodes (902), and the plurality of integrated circuits being positioned on the substrate in a two-dimensional array including n rows and m columns; a communication interface (106) connected to each of the plurality of integrated circuits (102) so that each integrated circuit is addressable through the interface; and a data output interface featuring multiple data output lines (1326) connected to the communication interface, where in each of the n rows of the array, the integrated circuits are connected to a common data line, and the measurement device is configurable, responsive to a control signal, to transmit measurement information through the data output interface by, in one or more of the n rows of the array, selectively transmitting measurement information from one of the integrated circuits connected to the row's common data line to the data output interface.

[Continued on next page]

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