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(54) Title: FULLY IMPLANTED, WIRELESS, FLEXIBLE CMOS SURFACE RECORDING DEVICE

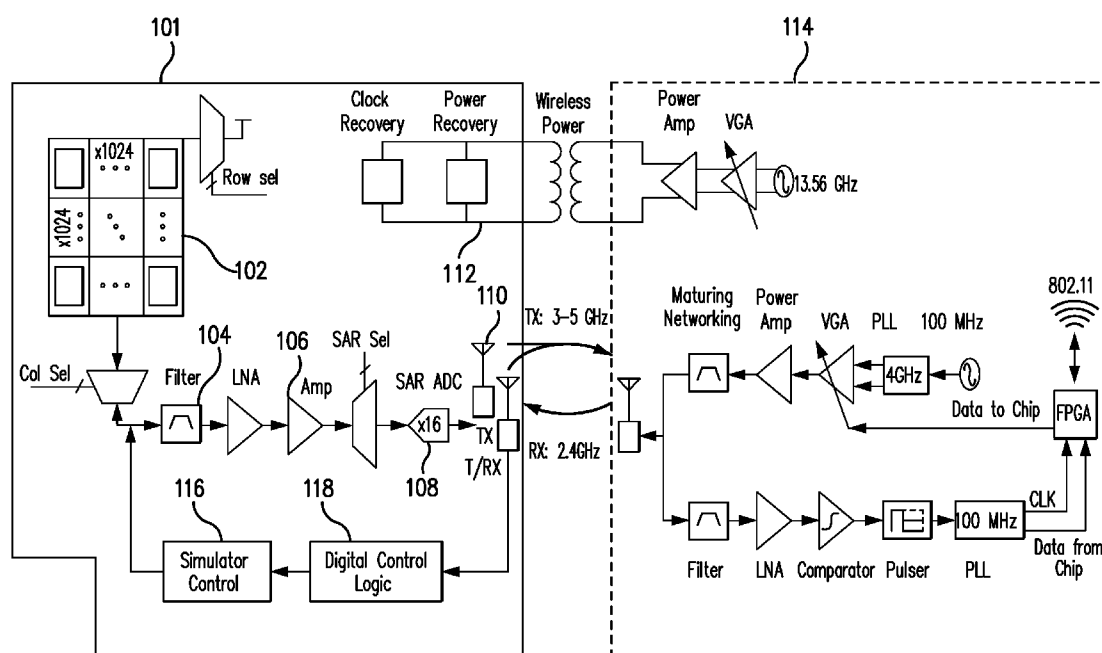


FIG. 1A

(57) Abstract: A fully implanted integrated, wireless, flexible CMOS chip for long-term recording and stimulation of the brain in vivo and methods of manufacturing thereof are provided. The chip is an entire biocompatible system and can include the dense surface electrode array, the underlying CMOS integrated circuit architecture, integrated wireless powering and telemetry. Furthermore, miniaturization through manufacturing, permits implantation of the chip under the skull and other regions of interest with no wires or connections. Furthermore, these devices and systems can operate under a dual modality such as to be able to record and stimulate the surface of the brain and/or tissue in which they have been implanted.





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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History Document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History Document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	WO 2017/035530 A1 (THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK) 02 March 2017 (02.03.2017), Pg. 5, ln 7-8; Pg. 6, ln 13-18; Pg. 7, ln 21-22; Pg. 13, ln 17-19; Pg. 14, ln 14-16; Pg. 16, ln 20-21; Pg. 4, ln 22-23; Pg. 12, ln 3-5; Pg. 11, ln 24-25; Fig. 2, element 204; Pg. 8, ln 11; Pg. 7, ln 23-25; Pg. 12, 21-24- Pg. 13, ln 1; Pg. 17, ln 16-19	1-11, 14 ----- 12, 13, 15-22
Y	RITUERTO et al. "Fretting Corrosion of Hafnium in Simulated Body Fluids." Tribology International. July 2014, Vol 75, Pages 10-15, (07.2014), Pgs. 3-4 [online] URL=<http://eprints.whiterose.ac.uk/88416/1/Fretting%20corrosion%20of%20hafnium%20in%20simulated%20body%20fluids.pdf>	12
Y	DE 4244646 A1 (BARTELS) 16 June 1994 (16.06.1994), see machine translation Pg. 2, Col 2	13
Y	US 2015/0157862 A1 (SECOND SIGHT MEDICAL PRODUCTS INC.) 11 June 2015 (11.06.2015), Claim 1; para [0011], [0201-0202], [0160], [0154], [0013], [0158], [0213], [0218]	15-22

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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