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(54) **Title:** NARROW-BAND TUNABLE RADIO FREQUENCY (RF) POWER AMPLIFIERS AND RELATED METHODS

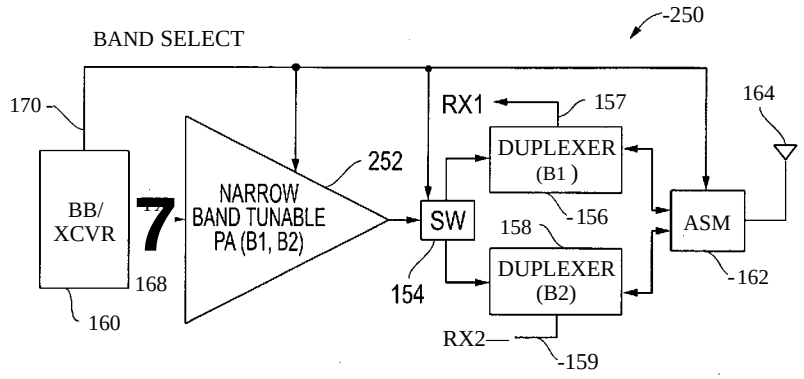

FIG. 2B

(57) **Abstract:** Narrow band tunable radio frequency (RF) power amplifiers (PAs) and related methods are disclosed that provide narrow band tunable gain responses, such as linear gain responses, that can be selected for different frequency bands. The narrow band tunable PAs thereby provide out-of-band rejection for different selectable frequency bands so that narrow band filters are not required in the transmit input path for communication devices. The passband location and/or bandwidth for the narrow band gain response can be tuned using different techniques, as desired. The narrow band tunable PAs can also be fabricated using CMOS processing, if desired, so that a CMOS PA integrated circuit is provided.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/001122

A. CLASSIFICATION OF SUBJECT MATTER

H03F 3/191(2006.01)i, H03F 3/24(2006.01)i

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)

H03F 3/191; H03F 3/04

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: narrow band tunable power amplifier, variable capacitor, control signal, frequency band selection

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J.A. et al. "MEMS varactor enabled frequency-reconfigurable LNA and PA in the upper UHF band\ In: IEEE MTT-S,7-12 June, 2009, pp. 1121-1124. See abstract, figure 3 and corresponding detailed description.	1--24
Y	US 6232841 Bl (BARTLETT, JAMES L. et al.) 15 May 2001 See abstract, claim 1 and figures 3a, 3b	1--24
A	W.C.E. et al. `Adaptive Multi-Band Multi-Mode Power Amplifier Using Integrated Varactor-Based Tunable Matching Networks`, In: IEEE JOURNAL OF S0LID-STATE CIRCUITS, VOL. 41, NO. 9, SEPTEMBER 2006, pp. 2166-2176. See abstract, figures 1-3 and corresponding detailed description.	1--24
A	D.Q. et al. "An Intelligently Controlled RF Power Amplifier With a Reconfigurable MEMS-Varactor Tuner", In: IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, VOL. 53, NO. 3, MARCH 2005, pp. 1089-1095. See abstract, figures 1-2 and corresponding detailed description.	1--24
A	H.Z. et al. "A novel tunable broadband power amplifier module operating from 0.8 GHz to 2.0 GHz", In: IEEE MTT-S, 12-17 June 2005, pp. 661-664. See abstract, figures 1-2 and corresponding detailed description.	1--24

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

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6232841 B1	15.05.2001	EP 1206833 A1	22.05.2002
		EP 1206833 A4	30.03.2005
		JP 2003-504906 A	04.02.2003
		JP 2003-504906 T	04.02.2003
		WO 01-03288 A1	11.01 .2001