Title: AN INTEGRATED CIRCUIT LAYOUT FOR A TELEVISION TUNER

Abstract: An integrated circuit including one or more radio frequency (RF) filters to receive an RF signal and to generate a filtered RF signal an down conversion stage coupled to the RF filters, the down conversion stage further including a local oscillator circuit and an intermediate frequency (IF) filter, the local oscillator circuit being electrically shielded from the IF filter. Each RF filter is a discrete inductive-capacitive (LC) filter, further including a plurality of discrete inductive banks and capacitive banks. The integrated circuit further includes a plurality of input pads to receive the RF signal, each capacitive bank of the RF filter being located adjacent to respective input pads within the circuit, and further includes a plurality of capacitor devices coupled in parallel, with capacitor devices having a lower capacitance value being positioned accordingly to said respective input pads.
SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
## INTERNATIONAL SEARCH REPORT

**International application No.**  
PCT/US06/08566

### A. CLASSIFICATION OF SUBJECT MATTER

<table>
<thead>
<tr>
<th>IPC(8)</th>
<th>USPC</th>
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<tr>
<td>H04H 9/00 (2007.01)</td>
<td>725/15</td>
</tr>
</tbody>
</table>

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)  
IPC(8) - H04H 9/00; H04N 7/16, 7/173 (2007.01)  
USPC - 725/15, 100, 131, 151

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

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

Patbase

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of Box C.

- * Special categories of cited documents:
  - "A" - document defining the general state of the art which is not considered to be of particular relevance  
  - "E" - earlier application or patent but published on or after the international filing date  
  - "L" - document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
  - "O" - document referring to an oral disclosure, use, exhibition or other means  
  - "P" - document published prior to the international filing date but later than the priority date claimed

- "T" - later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
- "X" - document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
- "Y" - document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
- "&" - document member of the same patent family

Date of the actual completion of the international search:  
1 August 2007

Date of mailing of the international search report:  
24 SEP 2007

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PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)
International application No.
PCT/US06/08566

Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
See Extra Sheet (page 10)

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest  ☐ The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.
☐ The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.
☒ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (April 2005)
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-8, drawn to an integrated circuit.
Group II, claims 9-10, drawn to a capacitive bank in a radio frequency (RF) filter.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention is a layout for an integrated circuit that shields the local oscillator circuit from the tuning circuit as claimed therein is not present in the invention of Group II; and the special technical feature of the Group II invention is a plurality of capacitor devices coupled in parallel and positioned adjacent to respective input pads of a plurality of input pads within an RF filter, capacitor devices having a lower capacitance value being positioned adjacent to the respective input pads as claimed therein is not present in the invention of Group I.

Since none of the special technical features of the Group I and II inventions is found in more than one of the inventions, unity of invention is lacking.