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Stadler et al.

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(54) **METHOD AND APPARATUS FOR
DETECTING CHANGE IN INTRATHORACIC
ELECTRICAL IMPEDANCE**

(58) **Field of Classification Search**
USPC 607/17
See application file for complete search history.

(71) Applicant: **Medtronic, Inc.**, Minneapolis, MN (US)

(56) **References Cited**

(72) Inventors: **Robert W. Stadler**, Shoreview, MN (US); **Li Wang**, Shanghai (CN)

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(73) Assignee: **Medtronic, Inc.**, Minneapolis, MN (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 56 days.

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This patent is subject to a terminal disclaimer.

EP 2 143 467 A1 1/2010

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(21) Appl. No.: **13/867,166**

Lusignan et al., "Compliance and Effectiveness of 1 year's Home Telemonitoring. The Report of a Pilot Study of Patients With Chronic Heart Failure", The European Journal of Heart Failure, 2001; (3) pp. 723-730.

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Primary Examiner — Alyssa M Alter
(74) *Attorney, Agent, or Firm* — Carol F. Barry

Related U.S. Application Data

(57) **ABSTRACT**

(63) Continuation of application No. 13/177,192, filed on Jul. 6, 2011, now Pat. No. 9,131,899, which is a continuation of application No. 10/727,008, filed on Dec. 3, 2003, now Pat. No. 7,986,994.

A method and apparatus for detection of changes in impedance a patient that includes generating measured impedances, generating an adaptive baseline trend of the measured impedances corresponding to a first time period, generating a short term trend of the measured impedances corresponding to a second time period less than the first time period, determining changes in relative position of the short term trend and the baseline trend, the determined changes in relative position corresponding to determining intersecting of the baseline trend by the short term trend, determining differences between the baseline trend and calculated period average impedances, and accumulating, in response to determining no intersecting of the baseline trend by the short term trend, the determined differences between the baseline trend and the calculated period average impedances.

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(51) **Int. Cl.**
A61B 5/053 (2006.01)
A61B 5/00 (2006.01)

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(52) **U.S. Cl.**
CPC **A61B 5/686** (2013.01); **A61B 5/0538** (2013.01); **A61B 5/4836** (2013.01);

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19 Claims, 16 Drawing Sheets

