

## Title (en)

ARTIFICIALLY STRUCTURED UNIT CELLS PROVIDING LOCALIZED B1 MAGNETIC FIELDS FOR MRI AND NMR DEVICES

## Title (de)

KÜNSTLICH STRUKTURIERTE ELEMENTARZELLEN ZUR BEREITSTELLUNG VON LOKALEN B1-MAGNETFELDERN FÜR MRT- UND NMR-VORRICHTUNGEN

## Title (fr)

CELLULES UNITAIRES STRUCTURÉES ARTIFICIELLEMENT CRÉANT DES CHAMPS MAGNÉTIQUES B1 LOCALISÉS POUR DISPOSITIFS IRM ET RMN

## Publication

**EP 3169230 A4 20180404 (EN)**

## Application

**EP 15821987 A 20150716**

## Priority

- US 201414334398 A 20140717
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- US 201414334450 A 20140717
- US 2015040702 W 20150716

## Abstract (en)

[origin: WO2016011227A1] Described embodiments include a system, apparatus, and method. An apparatus includes an array of at least two groups of at least two artificially structured electromagnetic unit cells. Each group of the at least two groups configured to be respectively linearly arranged with respect to the z-axis of the bore of MRI or NMR device. Each group of the at least two groups of artificially structured electromagnetic unit cells configured to transform an incident pulse of radiofrequency electromagnetic waves into a pulse of radiofrequency magnetic field B1 orientated transverse to a segment of the z-axis and spatially proximate to the group. The apparatus includes a radiofrequency electromagnetic wave conducting structure configured to selectably distribute a received pulse of radiofrequency electromagnetic waves to a group of the at least two groups.

## IPC 8 full level

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## Citation (search report)

- [X] DE 102013210381 B3 20140528 - SIEMENS AG [DE]
- [IY] XIAOLIANG ZHANG ET AL.: "SNR Enhancement by Free Local Resonators for Traveling Wave MRI", PROCEEDINGS OF THE INTERNATIONAL SOCIETY FOR MAGNETIC RESONANCE IN MEDICINE, ISMRM, JOINT ANNUAL MEETING ISMRM-ESMRMB, MILAN, ITALY, 10-16 MAY 2014, no. 1357, 25 April 2014 (2014-04-25), XP040662426
- [Y] IRENA ZIVKOVIC ET AL.: "Metamaterial cell for B1+ field manipulation at 9.4T MRI", PROCEEDINGS OF THE INTERNATIONAL SOCIETY FOR MAGNETIC RESONANCE IN MEDICINE, ISMRM, JOINT ANNUAL MEETING ISMRM-ESMRMB, MILAN, ITALY, 10-16 MAY 2014, no. 4834, 25 April 2014 (2014-04-25), XP040671607
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- See references of WO 2016011227A1

## Designated contracting state (EPC)

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