

Title (en)  
ANTENNA DESIGN METHOD AND APPARATUS, AND ELECTRONIC DEVICE

Title (de)  
ANTENNENENTWURFSVERFAHREN UND -VORRICHTUNG UND ELEKTRONISCHE VORRICHTUNG

Title (fr)  
PROCÉDÉ ET APPAREIL DE CONCEPTION D'ANTENNE, ET DISPOSITIF ÉLECTRONIQUE

Publication  
**EP 4297189 A4 20240605 (EN)**

Application  
**EP 22755462 A 20220106**

Priority  
• CN 202110188346 A 20210219  
• CN 2022070562 W 20220106

Abstract (en)  
[origin: EP4297189A1] The present disclosure, which relates to the field of antenna technology, provides methods and devices for antenna design, and electronic apparatuses, comprising: performing a cell simulation of a given antenna cell to determine a matching impedance value of the antenna cell; forming an array of any form and size based on the antenna cell; performing a simulation of the array to determine an active impedance value of each scan point of a central cell of the array; determining whether a simulation parameter of the array satisfies an iterative exit condition based on the active impedance value and the matching impedance value; and identifying the array as a target if the simulation parameter of the array satisfies the iterative exit condition. If the simulation parameter does not satisfy the iterative exit condition, the active impedance value of the array at the large scan angle is defined as a matching impedance value for a next iterative simulation, a structural parameter of the antenna cell is adjusted to reduce active standing waves of the antenna cell, and the adjusted antenna cell is subjected to a next simulation as the given antenna cell until the simulation parameter of the array satisfies the iterative exit condition. The solutions provided in the present disclosure take active standing waves at a large scan angle as the matching criteria and appropriately degrade the normal active standing waves, thus improving the wide-angle scanning performance; at the same time, the solutions and methods provided in the present disclosure are simple and easy to implement without introducing any additional hardware, thus reducing the design cost.

IPC 8 full level  
**H01Q 21/06** (2006.01); **H01Q 3/26** (2006.01)

CPC (source: CN EP)  
**H01Q 21/0087** (2013.01 - CN); **H01Q 21/06** (2013.01 - EP); **H01Q 3/26** (2013.01 - EP)

Citation (search report)  
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• [A] GULBRANDSEN FREDRIK ET AL: "Design of a Wide-angle Scan, X-band, digital array radar antenna", 2014 IEEE RADAR CONFERENCE, IEEE, 19 May 2014 (2014-05-19), pages 1373 - 1377, XP032628103, DOI: 10.1109/RADAR.2014.6875814  
• [A] KHANAL PRABHAT ET AL: "A Wide Coverage S-Band Array with Dual Polarized Connected Bowtie Antenna Elements", 2019 IEEE INTERNATIONAL SYMPOSIUM ON ANTENNAS AND PROPAGATION AND USNC-URSI RADIO SCIENCE MEETING, IEEE, 7 July 2019 (2019-07-07), pages 2001 - 2002, XP033654198, DOI: 10.1109/APUSNCURSINRSM.2019.8888598  
• See references of WO 2022174689A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**EP 4297189 A1 20231227**; **EP 4297189 A4 20240605**; CN 112563764 A 20210326; CN 112563764 B 20210514; WO 2022174689 A1 20220825

DOCDB simple family (application)  
**EP 22755462 A 20220106**; CN 202110188346 A 20210219; CN 2022070562 W 20220106