

Title (en)  
LOW-PROFILE ANTENNA-IN-PACKAGE

Title (de)  
FLACHE VERKAPSELTE ANTENNE

Title (fr)  
ANTENNE INTÉGRÉE AU BOÎTIER À PROFIL BAS

Publication  
**EP 3843216 A4 20210915 (EN)**

Application  
**EP 18936458 A 20181012**

Priority  
CN 2018110124 W 20181012

Abstract (en)  
[origin: EP3843216A1] A low-profile antenna in package relates to the semiconductor field, and in particular, to the antenna in package field. The antenna in package includes a substrate, and a radio frequency processing chip electrically connected to the substrate. A feed path, radiation patches, and overlay arrays corresponding to the radiation patches are disposed in the substrate. The radio frequency processing chip feeds power to the radiation patches through the feed path, and resonates the overlay arrays. A reflection phase of each of the overlay arrays within an operating band is less than 90°, and there is a zero reflection phase region within the operating band. The overlay arrays may be metamaterial overlays. The antenna in package may be applied to a terminal device, especially a smartphone, to reduce a profile height of the antenna in package, so that the terminal device is more miniaturized.

IPC 8 full level  
**H01Q 1/22** (2006.01); **H01Q 1/38** (2006.01); **H01Q 1/40** (2006.01); **H01Q 1/42** (2006.01); **H01Q 9/04** (2006.01); **H01Q 15/00** (2006.01); **H01Q 19/06** (2006.01); **H01Q 21/00** (2006.01); **H01Q 21/06** (2006.01); **H01Q 21/24** (2006.01); **H01Q 23/00** (2006.01)

CPC (source: EP)  
**H01Q 1/2283** (2013.01); **H01Q 1/38** (2013.01); **H01Q 1/40** (2013.01); **H01Q 1/425** (2013.01); **H01Q 9/0407** (2013.01); **H01Q 15/0013** (2013.01); **H01Q 15/0053** (2013.01); **H01Q 19/06** (2013.01); **H01Q 21/065** (2013.01); **H01Q 21/24** (2013.01); **H01Q 23/00** (2013.01)

Citation (search report)

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- [A] QIN FAN ET AL: "A Simple Low-Cost Shared-Aperture Dual-Band Dual-Polarized High-Gain Antenna for Synthetic Aperture Radars", IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 64, no. 7, 1 July 2016 (2016-07-01), pages 2914 - 2922, XP011616090, ISSN: 0018-926X, [retrieved on 20160704], DOI: 10.1109/TAP.2016.2559526
- See also references of WO 2020073329A1

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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

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3843216 A1 20210630; EP 3843216 A4 20210915; CN 111989823 A 20201124; CN 111989823 B 20211228; WO 2020073329 A1 20200416**

DOCDB simple family (application)  
**EP 18936458 A 20181012; CN 2018110124 W 20181012; CN 201880092403 A 20181012**