Title (en)

RADIO FREQUENCY PHASE SHIFTING DEVICE AND METHOD OF OPERATION FOR THIS PHASE SHIFTING DEVICE

Title (de)

HOCHFREQUENZPHASENVERSCHIEBUNGSVORRICHTUNG UND BETRIEBSVERFAHREN FÜR DIESE PHASENVERSCHIEBUNGSVORRICHTUNG

Title (fr)

DÉPHASEUR DE FRÉQUENCE RADIO ET SON PROCÉDÉ DE FONCTIONNEMENT

Publication

EP 3609018 A1 20200212 (EN)

Application

EP 19190405 A 20190806

Priority

EP 18187483 A 20180806

Abstract (en)

A phase shifting device with a linear transmission line (4) comprises a first electrode (5) and a second electrode (6) that are spaced at a distance to each other, wherein a tunable dielectric material is arranged between the first electrode (5) and the second electrode (6). The transmission line (4) comprises several overlapping sections (12), wherein an overlapping area (10) of the first electrode (5) overlaps an overlapping area (11) of the second electrode (6) in order to provide for a parallel plate capacitor area (13) that affects the phase of an electromagnetic signal that propagates along the transmission line (4). The first electrode (5) and the second electrode (6) are electrically connected to a bias voltage source, whereby the first electrode (5) is connected to a first bias electrode (15) which is connected to the bias voltage source, and whereby the second electrode (6) is connected to a second bias electrode (16) which is connected to the bias voltage source, whereby the first and second bias electrodes (15, 16) consists of a material with a lower electrical conductivity that that of the first and second electrode (5, 6). Signal transmission along the transmission line (4) of the phase shifting device is performed in differential mode with a quasi-TEM mode signal transmission along the transmission line (4).

IPC 8 full level

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CPC (source: EP)

H01P 1/184 (2013.01); **H01Q 3/36** (2013.01); **H01Q 21/061** (2013.01)

Citation (applicant)

- EP 2761693 A1 20140806 - TECH UNIVERSITÄT DARMSTADT [DE], et al
- EP 2956986 A1 20151223 - TECH UNIVERSITÄT DARMSTADT [DE]

Citation (search report)

- [XAYI] ONUR HAMZA KARABEY ET AL: "Tunable loaded line phase shifters for microwave applications", MICROWAVE SYMPOSIUM DIGEST (MTT), 2011 IEEE MTT-S INTERNATIONAL, IEEE, 5 June 2011 (2011-06-05), pages 1 - 4, XP032006583, ISBN: 978-1-61284-754-2, DOI: 10.1109/MWSYM.2011.5972634
- [XYI] NIKFALAZAR MOHAMMAD ET AL: "Fully printed tunable phase shifter for L/S-band phased array application", 2014 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM (IMS2014), IEEE, 1 June 2014 (2014-06-01), pages 1 - 4, XP032615297, DOI: 10.1109/MWSYM.2014.6848295
- [Y] MEHMOOD ARSHAD ET AL: "Dielectric resonator antenna phased array with liquid crystal based phase shifters", THE 8TH EUROPEAN CONFERENCE ON ANTENNAS AND PROPAGATION (EUCAP 2014), EUROPEAN ASSOCIATION ON ANTENNAS AND PROPAGATION, 6 April 2014 (2014-04-06), pages 2436 - 2439, XP032642783, DOI: 10.1109/EUCAP.2014.6902310

Cited by

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