

Title (en)  
RF RADIOFREQUENCY ROTARY JOINT FOR ROTARY DEVICE FOR GUIDING RF WAVES AND RF ROTARY DEVICE INCLUDING SUCH A JOINT

Title (de)  
RADIOFREQUENZ(RF)-DREHKUPPLUNG FÜR DREHVORRICHTUNG ZUR RF-Wellenleitung, und RF-Drehvorrichtung, die eine solche Kupplung umfasst

Title (fr)  
JOINT TOURNANT RADIOFREQUENCE RF POUR DISPOSITIF ROTATIF DE GUIDAGE D'ONDES RF ET DISPOSITIF ROTATIF RF INCLUANT UN TEL JOINT

Publication  
**EP 3680982 A1 20200715 (FR)**

Application  
**EP 19214965 A 20191210**

Priority  
FR 1873020 A 20181218

Abstract (en)  
[origin: CA3065566A1] An RF joint rotating about an axis of rotation (Z) comprises a number N, greater than or equal to 1, of RF transmission channels, a first, internal surface of symmetry of revolution about the axis (Z) and of RF transmission having a first, internal radius r1, and a second, external surface of symmetry of revolution about the axis (Z) and of RF transmission having a second, external radius r2, strictly less than said first, internal radius r1. The first and second RF transmission surfaces facing one another and rotationally mobile about the axis (Z) are configured through the first and second radii r1, r2, the geometry of the first and second RF access ports, and the geometry of the first and second RF containment and guidance means, such that: - each RF transmission channel Vi, i varying from 1 to N, comprises a first RF rotating waveguide, and - the N first RF rotating waveguides are distributed angularly over a predetermined number NC, greater than or equal to 1 and less than or equal to N, of sections of surfaces of revolution about the axis (Z) of the second RF transmission surface, each of the NC sections being situated along the longitudinal axis of symmetry (Z) at a predetermined different level L1(k).

Abstract (fr)  
Un joint tournant RF autour d'un axe de rotation (Z) comporte un nombre N, supérieur ou égal à 1, de voies de transmission RF, une première surface interne de symétrie de révolution autour de l'axe (Z) et de transmission RF ayant un premier rayon interne r1, et une deuxième surface externe de symétrie de révolution autour de l'axe (Z) et de transmission RF ayant un deuxième rayon externe r2, strictement inférieur audit premier rayon interne r1. Les première et deuxième surfaces de transmission RF en vis-à-vis et mobiles en rotation autour de l'axe (Z) sont configurées au travers des premier et deuxième rayons r1, r2, la géométrie des premier et deuxième accès RF, et la géométrie des premier et deuxième moyens de confinement et guidage RF, de sorte que :- chaque voie de transmission RF Vi, i variant de 1 à N, comporte un premier guide d'onde tournant RF, et - les N premiers d'onde tournants RF sont répartis angulairement sur un nombre NC prédéterminé, supérieur ou égal à 1 et inférieur ou égal à N, de tronçons de surfaces de révolutions autour de l'axe (Z) de la deuxième surface de transmission RF, chacun des NC tronçon(s) étant situé(s) le long de l'axe longitudinal de symétrie (Z) à un niveau différent L1(k) prédéterminé.

IPC 8 full level  
**H01P 1/06** (2006.01); **H01P 3/123** (2006.01)

CPC (source: EP US)  
**H01P 1/065** (2013.01 - US); **H01P 1/068** (2013.01 - EP); **H01P 1/182** (2013.01 - US); **H01P 3/123** (2013.01 - EP US); **H01P 5/182** (2013.01 - US); **H01Q 13/065** (2013.01 - US); **H01Q 21/064** (2013.01 - US)

Citation (applicant)  

- FR 3029018 A1 20160527 - THALES SA [FR]
- FR 1700950 A 20170919
- EVA RAJO-IGLESIAS ET AL.: "Groove Gap Waveguide : A Rectangular Waveguide Between Contactless Metal Plates Enabled by Parallel-Plate Cut-Off", PROCEEDINGS OF THE FOURTH EUROPEAN CONFERENCE ON ANTENNA AND PROPAGATION, 8 July 2010 (2010-07-08)

Citation (search report)  

- [A] EP 2343774 A1 20110713 - PANASONIC CORP [JP]
- [A] WO 2017131099 A1 20170803 - NIDEC ELESYS CORP [JP], et al
- [A] EP 3147994 A1 20170329 - GAPWAVES AB [SE]
- [A] HIDEKI KIRINO ET AL: "A 76 GHz Multi-Layered Phased Array Antenna Using a Non-Metal Contact Metamaterial Waveguide", IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION., vol. 60, no. 2, 1 February 2012 (2012-02-01), US, pages 840 - 853, XP055545959, ISSN: 0018-926X, DOI: 10.1109/TAP.2011.2173112
- [A] BORNEMANN J ET AL: "Compact single-channel rotary joint using ridged waveguide sections for phase adjustment", IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, PLENUM, USA, vol. 51, no. 8, 1 August 2003 (2003-08-01), pages 1982 - 1986, XP011098978, ISSN: 0018-9480, DOI: 10.1109/TMTT.2003.815269

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