

Title (en)
ANTENNA SYSTEM FOR BROADBAND SATELLITE COMMUNICATION IN THE GHZ FREQUENCY RANGE WITH DIELECTRICALLY FILLED HORN RADIATORS

Title (de)
ANTENNENSYSTEM ZUR BREITBANDIGEN SATELLITENKOMMUNIKATION IM GHZ FREQUENZBEREICH MIT DIELEKTRISCH GEFÜLLTEN HORNSTRAHLERN

Title (fr)
SYSTEME D'ANTENNE DESTINE A LA COMMUNICATION SATELLITE A LARGE BANDE DANS UNE GAMME DE FREQUENCE GHZ A L'AIDE D'ANTENNES A CORNET A REMPLISSAGE DIELECTRIQUE

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Application
EP 15178569 A 20130702

Priority

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- EP 13734661 A 20130702

Abstract (en)
[origin: WO2014005691A1] The invention relates to an antenna system consisting of at least four horn antennas which support two orthogonal linear polarizations and have constrictions in both polarization planes. The fact that the horn antennas are constricted in the two polarization planes by symmetrical geometrical constrictions allows for a substantial increase in the bandwidth of the horn antennas, thus making it possible to service also wide transmission and reception bands or transmission and reception bands with widely spaced-apart frequencies, such as the Ka band. In order to be able to optimally operate the individual ridged horn antennas also in widely spread-apart service frequency bands, advantageously both the horn antennas and the constrictions are step-shaped. A suitable selection of the height and width of the steps of the horn antenna and the steps of the constrictions allows the horn antennas to be optimally adjusted to the service frequency bands according to the impedance.

Abstract (de)
Die Erfindung betrifft ein Antennensystem mit mindestens vier Hornstrahlern, die vollständig mit einem Dielektrikum gefüllt sind. Entsprechend den dielektrischen Eigenschaften der Füllung steigt dann die effektive Wellenlänge in den Hörnern und diese sind in der Lage sehr viel größere Bandbreiten zu unterstützen als dies ohne Füllung der Fall wäre. Dielektrische Füllungen führen zwar zu parasitären Verlusten durch das Dielektrikum, doch insbesondere bei sehr kleinen Hörnern für Anwendungen im Ka-Band bleiben diese Verluste vergleichsweise klein. Die Dielektrizitätszahl des Dielektrikums ist so gewählt, dass die dielektrisch gefüllten Hornstrahler im frequenzmäßig niedrigsten Nutzband des Antennensystems noch optimal betrieben werden können.

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Citation (applicant)

- DE 102010019081 A1 20101104 - QEST QUANTENELEKTRONISCHE SYST [DE]
- US 2006158382 A1 20060720 - NAGAI TOMOHIRO [JP]
- GB 2426876 A 20061206 - BOEING CO [US]
- US 5258758 A 19931102 - SOOCH NAVDEEP S [US]
- US 6271799 B1 20010807 - RIEF GARY A [US], et al
- US 2004095286 A1 20040520 - LEE TAE YUNE [KR], et al
- EP 0108463 A1 19840516 - ELECTRONIQUE & PHYSIQUE [FR], et al
- J.D. KRAUS; R.J. MARHEFKA: "Antennas: for all applications", 2002
- "Effects of Dielectrics on the Radiation Pattern of an Electromagnetic Horn", IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, vol. AP-18, no. 4, July 1970 (1970-07-01)

Citation (search report)

- [Y] GB 2426876 A 20061206 - BOEING CO [US]
- [YD] DE 102010019081 A1 20101104 - QEST QUANTENELEKTRONISCHE SYST [DE]
- [A] US 5258768 A 19931102 - SMITH TERRY M [US]
- [A] US 6271799 B1 20010807 - RIEF GARY A [US], et al
- [A] US 2004095286 A1 20040520 - LEE TAE YUNE [KR], et al
- [A] EP 0108463 A1 19840516 - ELECTRONIQUE & PHYSIQUE [FR], et al
- [Y] "Effects of Dielectrics on the Radiation Patterns of an Electromagnetic Horn", IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, vol. AP-18, no. 4, July 1970 (1970-07-01), pages 553 - 556, XP001383946

Cited by
DE102018220967B4; DE102018220967A1; IL264099B; IL264095B; IL264099B2; IL264095B2; WO2018007210A1; WO2018007209A1; US10811747B2; US10868350B2

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WO 2014005699 A1 20140109

DOCDB simple family (application)

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