

Title (en)

Electromagnetic bandgap seal for microwave energy

Title (de)

Elektromagnetische Bandabstandsabdichtung für Mikrowellenenergie

Title (fr)

Blindage de bande interdite electromagnétiques pour radiations de microondes

Publication

EP 1863114 A1 20071205 (EN)

Application

EP 06011391 A 20060601

Priority

EP 06011391 A 20060601

Abstract (en)

A sealing system for blocking or attenuating microwave energy (14) between two environments or regions of space (1, 2) includes an electromagnetic bandgap (EBG) seal (20) mounted within an opening (3) in the partition (4) that separates the two environments or regions of space (1, 2) from each other. The EBG seal (20) consists of an EBG structure (21) secured to one side of the opening (3), an electrically conducting surface (12) secured to the other side of the opening, and a dielectric volume (11) between the EBG structure (21) and the electrically conducting surface (12). Transmission spectral response of the EBG seal (20) features one or more distinct stop bands (bandgaps), as shown in Fig. 1 B, that the seal (20) operates in. Said EBG structure especially refers to any metalodielectric structure with substantially periodic metallization and featuring inherent frequency bands where propagation of electromagnetic energy is forbidden and allowed. Typical EBG structure may consist of substantially periodically-spaced electrically conducting patches (31) placed on, or embedded in, a dielectric layer (32) that is backed by an electrically conducting surface (33). The electrically conducting patches (31) may be connected to the electrically conducting surface by electrically conducting posts (34).

IPC 8 full level

H01P 3/12 (2006.01); **H05B 6/76** (2006.01)

CPC (source: EP)

H01P 1/08 (2013.01); **H01P 1/2005** (2013.01); **H01P 3/122** (2013.01); **H01Q 1/22** (2013.01); **H01Q 15/006** (2013.01); **H01Q 15/008** (2013.01); **H05B 6/763** (2013.01)

Citation (applicant)

- US 6825741 B2 20041130 - CHAPPELL WILLIAM JOHNSON [US], et al
- EP 0430694 A1 19910605 - NEC CORP [JP]
- DEBASIS DAWN ET AL.: "A Novel Electromagnetic Bandgap Metal Plate for Parallel Plate Mode Suppression in Shielded Structures", IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, vol. 12, no. 5, May 2002 (2002-05-01), XP011066851
- DAN SIEVENPIPER ET AL.: "High-Impedance Electromagnetic Surfaces with a Forbidden Frequency Band", IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 47, no. 11, November 1999 (1999-11-01), XP011037787

Citation (search report)

- [Y] EP 0430694 A1 19910605 - NEC CORP [JP]
- [Y] DEBASIS DAWN ET AL: "A Novel Electromagnetic Bandgap Metal Plate for Parallel Plate Mode Suppression in Shielded Structures", IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, IEEE SERVICE CENTER, NEW YORK, NY, US, vol. 12, no. 5, May 2002 (2002-05-01), XP011066851, ISSN: 1531-1309
- [A] DAN SIEVENPIPER ET AL: "High-Impedance Electromagnetic Surfaces with a Forbidden Frequency Band", IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 47, no. 11, November 1999 (1999-11-01), XP011037787, ISSN: 0018-9480
- [A] CENTOLA F ET AL: "Alternatives to gaskets in shielding an enclosure", 2002 IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY. EMC. SYMPOSIUM RECORD. MINNEAPOLIS, MN, AUG. 19 - 23, 2002, INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 2, 19 August 2002 (2002-08-19), pages 205 - 209, XP010603224, ISBN: 0-7803-7264-6

Citation (examination)

- EP 0792086 A2 19970827 - SAMSUNG ELECTRONICS CO LTD [KR]
- JP H11330764 A 19991130 - NIPPON PAINT CO LTD

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Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

EP 1863114 A1 20071205; WO 2007137966 A1 20071206

DOCDB simple family (application)

EP 06011391 A 20060601; EP 2007054925 W 20070522