



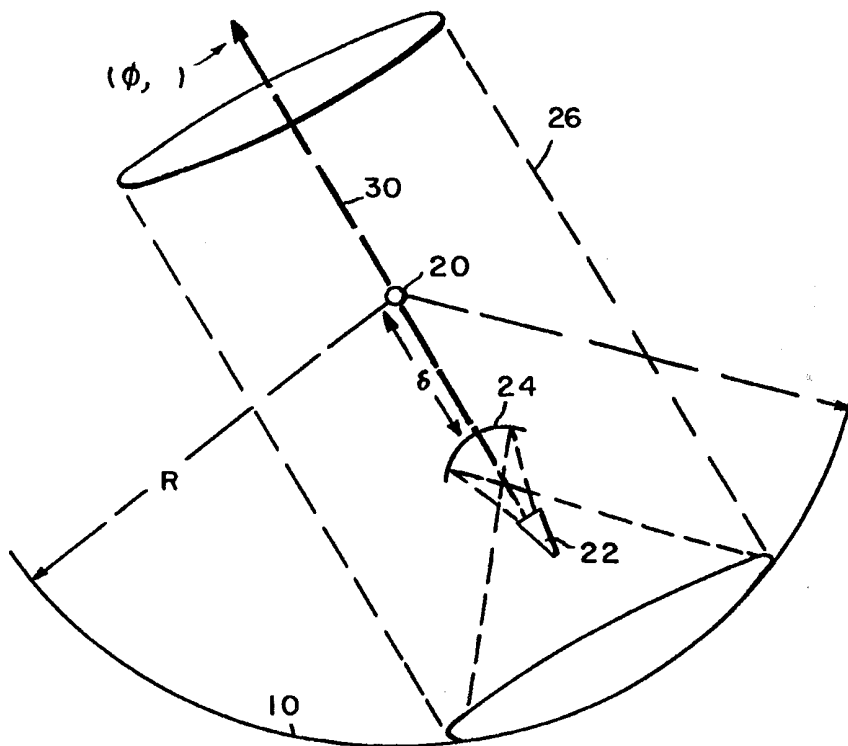
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US99/11237 (22) International Filing Date: 20 May 1999 (20.05.99) (30) Priority Data: 60/086,168 20 May 1998 (20.05.98) US (71) Applicant: L-3 COMMUNICATIONS ESSCO, INC. [US/US]; Old Powder Mill Road, Concord, MA 01742-4697 (US). (72) Inventors: CARDIASMENOS, Apostle, G.; 15 Ember Lane, Carlisle, MA 01741 (US). MONK, Anthony, D.; 79 Bertwell Road, Lexington, MA 02420 (US). RHOADES, Luther, E.; 15 Ann Drive, North Grafton, MA 01536 (US). SANGIOLO, John; 389 Central Street, Newton, MA 02466 (US). (74) Agent: HENRY, Steven, J.; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210 (US).		(81) Designated States: IN, JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims</i> <i>and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 27 January 2000 (27.01.00)

(54) Title: MULTIBEAM SATELLITE COMMUNICATION ANTENNA**(57) Abstract**

A low-cost spherical reflector and a mechanically scanned antenna system utilizing such reflectors. The system employs one or more (substantially similar) primary spherical reflectors (each a truncated spherical surface), each having an associated moveable feed driven by a two-axis positioner mechanism that has few moving parts. The feed structure may preferably comprise a point source waveguide feed in combination with a shaped concave secondary reflector used in a Gregorian-like configuration to correct for spherical phase error. The positioner mechanism moves Gregorian-like configuration to correct for spherical phase error. The positioner mechanism move the waveguide feed and secondary reflector in tandem to shift the position of the far field beam direction in the sky. After phase correction by the secondary reflector, the resultant signal reflected from the primary

aperture can simultaneously transmit and receive at two or more independent frequencies. With an assembly of multiple such spherical reflectors, each having a moveable feed driven by its own positioner mechanism, a compact arrangement is achieved. The assembly is mounted on a circular baseplate and preferably is covered by a radome.



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INTERNATIONAL SEARCH REPORT

Int. .ional Application No

PCT/US 99/11237

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H01Q19/19 H01Q3/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H01Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 06963 A (HEROUNI SOUREN PARISOVICH) 9 March 1995 (1995-03-09) abstract	1-3
A	PAUL F. GOLDSMITH: "the second aricebo upgrade, a reflection of how technology has changed" IEEE, August 1996 (1996-08) - September 1996 (1996-09), pages 38-43, XP002123585 the whole document	1-18
A	US 5 175 562 A (RAPPAPORT CAREY M) 29 December 1992 (1992-12-29) column 1, line 10 -column 3, line 43 -/-	1-18



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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 140 337 A (RAPPAPORT CAREY M) 18 August 1992 (1992-08-18) column 1, line 46 -column 2, line 32; claim 1	1-18
A	US 4 298 877 A (SLETTEN CARLYLE J) 3 November 1981 (1981-11-03) column 2, line 50 -column 4, line 56; claim 1	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US 99/11237

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