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(54) **Satellite beam-forming network system having improved beam shaping.**

(57) A steerable beam antenna system (24) for use in satellite communication systems and including a main reflector (32) and an antenna array having a plurality of feed elements (50) is disclosed. Additional feed elements (314, 316) are positioned along with the array (116-119) and are used to cancel undesirable side lobes which appear as the beam is steered towards the end portions of a target area (324, 330). The antenna array is positionable at or near at least one focal point of the main reflector (48), and its feed elements can receive microwaves from or transmit microwaves toward the main reflector. A Butler matrix (110) having multiple input ports (310) and multiple outputs (312) is connected to the array of feed elements and substantially performs a spatial discrete Fourier transformation on a generated set of signals to be transmitted which have a predetermined phase relationship between the signals, which is necessary to create the steerable beam. The Butler matrix also can perform an inverse spatial transformation on a set of incoming signals focused on the array by the reflector and received by the feed elements.

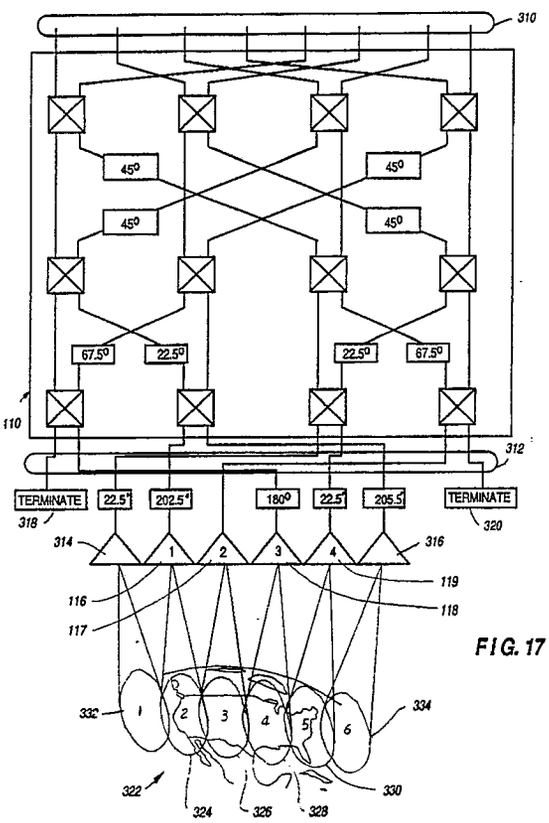

FIG. 17

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EUROPEAN SEARCH REPORT

Application Number

EP 90 12 1219

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A,D	WO-A-8 804 837 (HUGHES AIRCRAFT CO.) * Page 1, lines 3-13; page 6, lines 21-31; page 15, lines 7-22; page 17, lines 19-28; page 18, line 22 - page 19, line 10; claims 1-9,12-16; figures 5,6,11-14 *	1-20	H 01 Q 25/00 H 01 Q 3/26 H 01 Q 3/40
A	PATENT ABSTRACTS OF JAPAN, vol. 10, no. 39 (E-381)[2096], 15th February 1986; & JP-A-60 196 003 (NIPPON DENSHIN DENWA KOSHA) 04-10-1985 * Abstract; fig. *	1,14	
A	ELECTRONICS AND COMMUNICATIONS IN JAPAN, vol. 66, no. 4, April 1983, pages 65-74; K. UENO et al.: "30/20 GHz multiple/shaped beam satellite antenna" * Page 65, column 1, line 33 - column 2, line 28; page 66, column 1, line 26 - column 2, line 7; page 66, column 2, line 30 -page 67, column 2, line 13; figures 1-4 *	1,2	
A	US-A-4 595 929 (R. KREUTEL) * Column 2, line 17 - column 3, line 26; figures 1-3 *	1,14	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5) H 01 Q H 04 B

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	25 September 91	BUTLER N.A.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same catagory
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