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(54) **Steerable leaky wave antenna capable of both forward and backward radiation**

(57) Leaky wave antenna beam steering that is capable of steering in a backward direction, as well as further down toward the horizon in the forward direction than was previously possible, and also directly toward

zenith. The disclosed antenna and method involve applying a non-uniform impedance function across a tunable impedance surface in order to obtain such leaky wave beam steering.

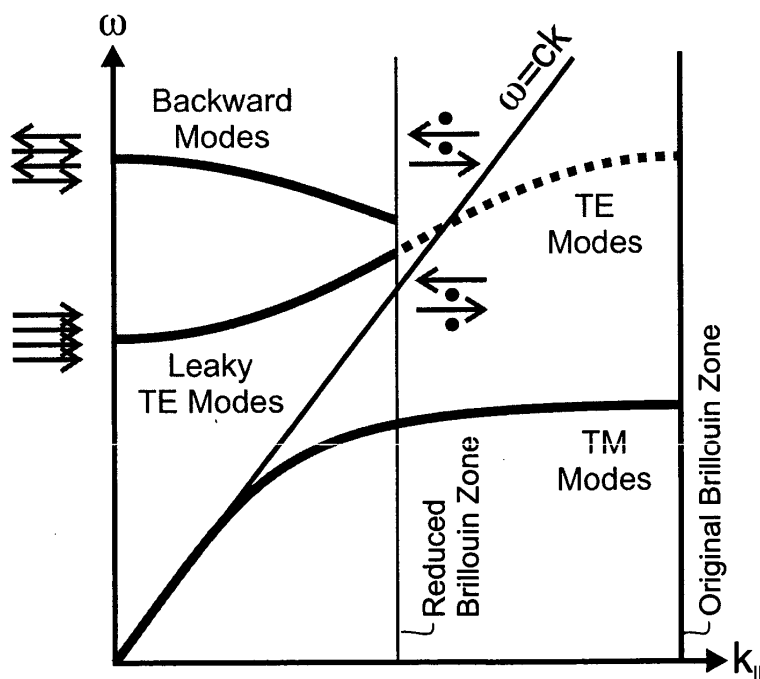


Figure 7(a)



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EUROPEAN SEARCH REPORT

Application Number
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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.7)
X	SIEVENPIPER D ET AL: "Beam steering microwave reflector based on electrically tunable impedance surface" ELECTRONICS LETTERS, IEE STEVENAGE, GB, vol. 38, no. 21, 10 October 2002 (2002-10-10), pages 1237-1238, XP006018939 ISSN: 0013-5194 * the whole document *	1-17	H01Q3/44 H01Q15/00 H01Q9/04
X	WO 01/73893 A (HRL LABORATORIES, LLC) 4 October 2001 (2001-10-04) * page 8, line 3 - page 12, line 23 * * page 17, line 8 - page 18, line 3 * * figures 6-13,21-23 * * abstract *	1-17	
X	WO 01/73891 A (HRL LABORATORIES, LLC; SIEVENPIPER, DANIEL; HSU, TSUNG-YUAN; WU, SHIN-) 4 October 2001 (2001-10-04) * page 6, line 19 - page 8, line 6 * * page 12, line 16 - line 22 * * figures 5a,5b,9,10 * * abstract *	1-4,6-8,12-15,17	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H01Q
D,A	US 4 150 382 A (KING ET AL) 17 April 1979 (1979-04-17) * column 2, line 20 - column 3, line 45 * * column 4, line 6 - column 6, line 24 * * figure 1 * * abstract *	1-17	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 February 2005	Examiner von Walter, S-U
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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