



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
02.06.1999 Bulletin 1999/22

(51) Int Cl.⁶: **H01Q 25/00**, H01Q 21/22,
H01Q 3/26

(43) Date of publication A2:
30.07.1997 Bulletin 1997/31

(21) Application number: **97300507.7**

(22) Date of filing: **28.01.1997**

(84) Designated Contracting States:
DE FR GB

(30) Priority: **29.01.1996 US 593600**

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(54) **Intermodulation scattering communications apparatus**

(57) Multiple beam, multi-frequency communication apparatus (10) that provides for significant intermodulation scattering improvements for multiple beam, multi-frequency communications systems implemented using directly radiating active phased array (15), or multi-feed reflector systems fed from composite, multiple shared transmit amplifiers (13). The multiple beam, multi-frequency communications apparatus (10) comprises a defocused antenna array (15) having a plurality of antenna elements (15a) and a plurality of feeds (15b). A hybrid amplifier structure (18) is coupled to the feeds (15b) of the defocused antenna array (15) and shares the plurality of transmit amplifiers (13) among the feeds (15b) of the antenna array (15). Assignment apparatus

(20) is coupled to the hybrid amplifier structure (18) for assigning particular transmit amplifier (13) to be contributors to particular beams (16) radiated by the antenna array (15) in response to a desired beam profile (11). Improvements result from judiciously combining the effects of the shared transmit amplifiers (13) (that carry all the signals in the frequency reuse system), with phasing effects inherent in the multiple beam radiating structure in order to realize the desired zonal frequency reuse pattern 21. An optimal assignment algorithm implemented in the assignment apparatus (20) results in a uniform distribution of power over the transmit amplifiers (13), resulting in corresponding improvements in system performance in the far field.

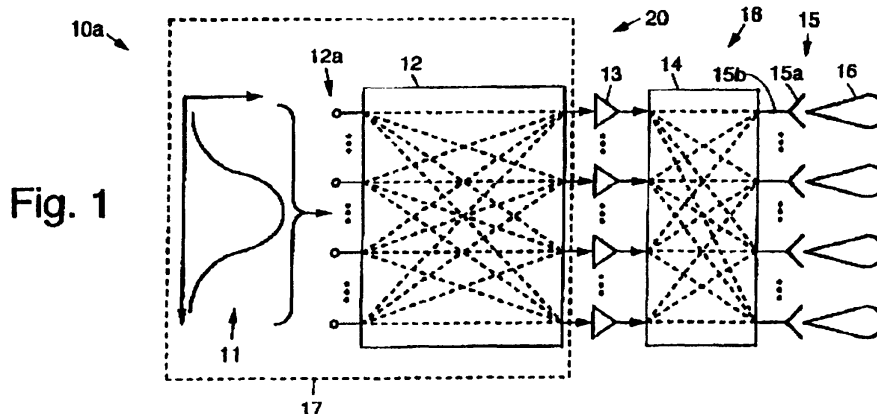


Fig. 1



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 0507

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 April 1999	Examiner Van Dooren, G
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EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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