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(71) Applicant(s):
Vodafone Group plc
(Incorporated in the United Kingdom)
Vodafone House, The Connection, NEWBURY, Berkshire, RG14 2FN, United Kingdom

(72) Inventor(s):
Trevor Michael Gill
Ralf Irmer

(74) Agent and/or Address for Service:
Vodafone Group plc
Vodafone House, The Connection, NEWBURY, Berkshire, RG14 2FN, United Kingdom

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INT CL **H04B, H04L**
Other: **Online: WPI, EPODOC, TXTE, TXTT, INSPEC, XPI3E, XPIEE, XPESP, INTERNET**

(54) Title of the Invention: **Adaptive use of multiple receiver chains**
Abstract Title: **A multi-antenna receiver is switched between receiver diversity mode and carrier aggregation mode on the basis of network or/and terminal parameters**

(57) A multi-antenna receiving terminal can be switched between a receiver diversity mode (Fig. 1), in which the same data is received at each of a plurality of different antenna, and a carrier aggregation mode (Fig.2). In the carrier aggregation mode data has data been multiplexed across multiple carrier frequencies and each carrier is received by a different respective antenna. A network element (e.g.eNodeB) decides whether to switch between modes based on a network parameter, such as load, or a channel quality indication and instructs the receiving terminal accordingly. Carrier aggregation mode is also known as spectrum aggregation mode, dual carrier mode and dual cell mode.

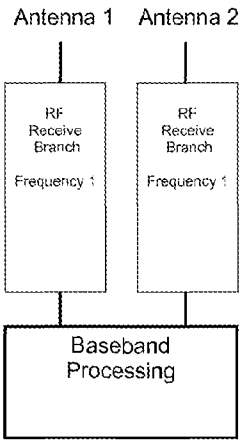

Fig 1

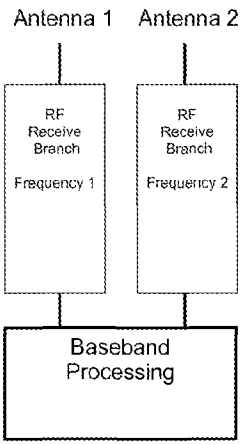

Fig 2

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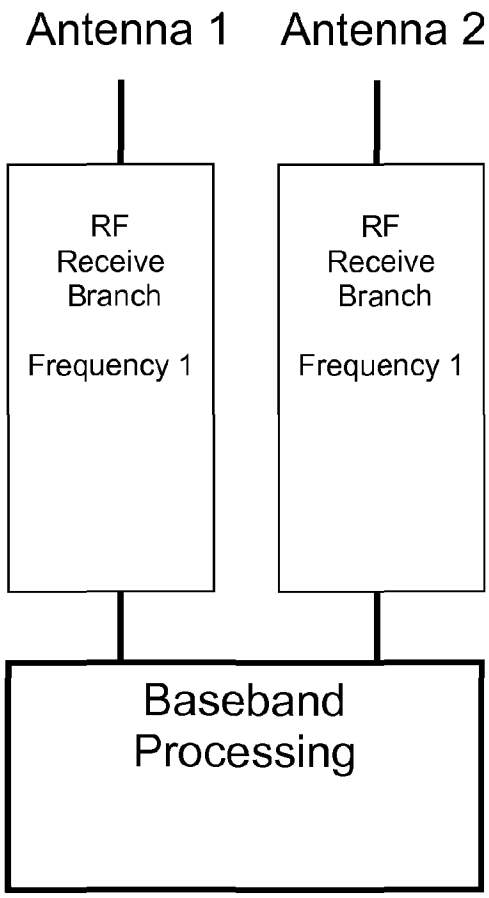

Fig 1

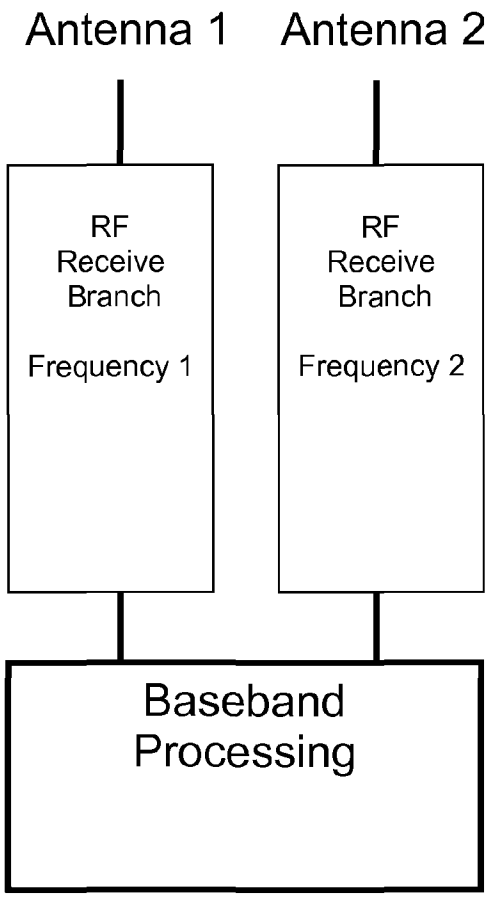

Fig 2

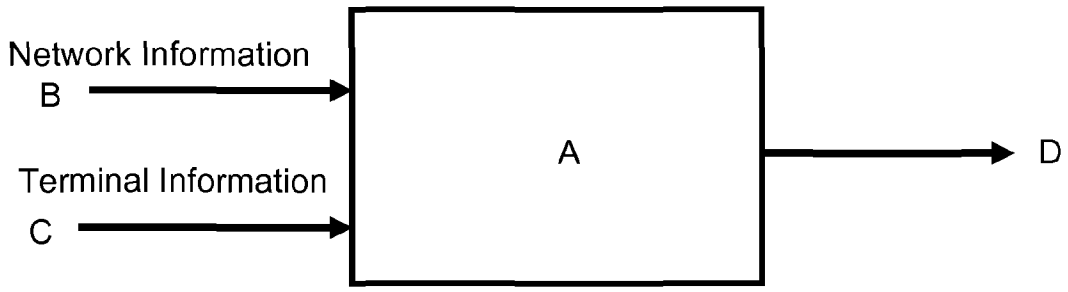

Fig 3

ADAPTIVE USE OF MULTIPLE RECEIVER CHAINS

The present invention relates to a system using multiple receiver chains adaptively to increase cellular telecommunications network capacity at different load levels. In particular, the invention increases the data throughput supported by a mobile broadband terminal and increases the capacity of the supporting network.

A known technique for increasing the capacity of a cellular telecommunications network such as HSDPA, LTE, WiFi or WiMAX is to bond together two parallel carriers. This approach is called carrier or spectrum aggregation.

The conventional solution to implement carrier aggregation would be to duplicate the entire receiver hardware, or substantial parts of it, with substantial added cost.

High performance receivers already have duplicated hardware with two parallel receiver chains. These are currently used to implement another well known technique called receiver diversity. Receiver diversity can itself substantially increase the throughput of a terminal and the capacity of the associated network.

HSDPA (High Speed Downlink Packet Access) is a packet-based data service in the 3rd generation W-CDMA (Wideband Code Division Multiple Access) systems, which provides high-speed data transmission (with different theoretical peak download rates according to the HSDPA technology step e.g. 7.2/10.8/16.2/21.6/28.8/42 Mbps over a 5MHz bandwidth) to support multimedia services.

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