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Procedure and Radio Communication System to Allocate the Radio Resources of a Radio Interface

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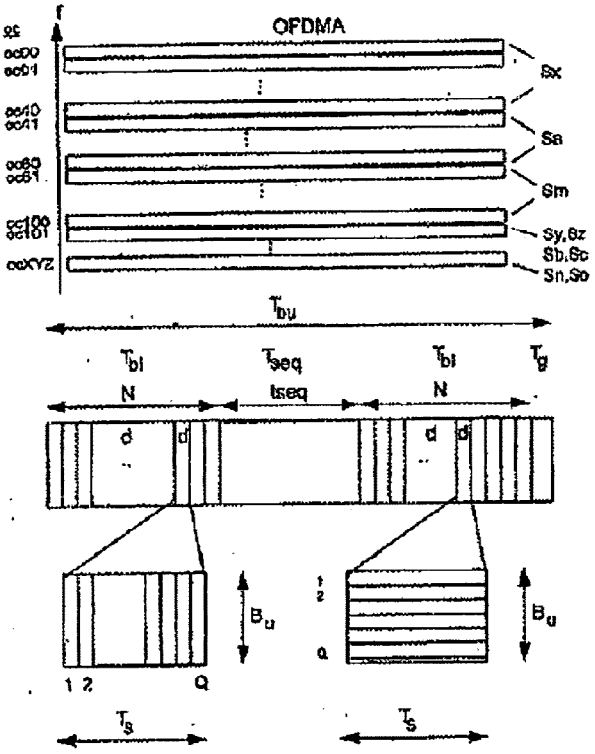
Description

The invention involves a procedure to allocate the radio resources of a radio interface of a radio communications system as well as a corresponding radio communication system.



As is known radio communication systems manifest a radio interface across which data symbols can be transmitted between a fixed base station and usually several mobile station in a radio coverage area - e.g. a radio cell. In the process multiplex access procedures are

used, in order to be able to effectively use the radio resources of the radio interface. A classic multiple access procedure is the time multiplex (TDMA, Time Division Multiple Access) in which the data symbols are contained in bursts in a time slot. Another multiplex access procedure is the code multiplex (CDMA, Code Division Multiple Access) in which each data symbol is splayed with several code symbols on a certain bandwidth.

In addition, there is the OFDMA multi-carrier procedure (Orthogonal Frequency Division Multiple Access) which uses the OFDM principle to transmit the data symbols according to Chapter 15.3.2 of "Information Transmission", K. D. Kammeyer, Teubner Publishers, Stuttgart, 2nd Edition, 1996. Almost rectangular-shaped, transmission and reception filter impulse, responses enable a FFT (Fast Fourier Transformation) or an IFFT (Inverse Fast Fourier Transformation) based signal processing in the transmitter and receiver which allows for high data rates with relatively low complexity. It is also advantageous, that narrow band sub-carriers (OFDMA carriers) which, for example, can only be separated from each other by a few kilohertz enable a fine granularity of the data rates depending on the actual application. Thus a number of sub-carriers and also a segment of a frequency spectrum can be

allocated for the communication link between the base station and the mobile station.

From German Patent DE 4441323A1 a procedure is known to transmit OFDM signals in a mobile communication system in which for high transmission rates dynamically reduced OFDM signals can be amplified by a transmission amplifier within a basically linear amplification range.

The invention has the goal of providing an improved procedure and radio communication system for allocating radio resources, when using a OFDMA multi-carrier procedure.

This goal is achieved in the invention by the procedure with the characteristics of Patent Claim 1 and by a radio communication system with the characteristics of Patent Claim 12. Further variations of the inventions can be taken from the sub-claims.

17 The procedure of the invention begins with the OFDMA multi-carrier procedure and the use of a number of sub-carriers which are assigned for the communication link between the base station and the mobile stations and includes the following steps:

- Measure the quality of various segments of the frequency spectrum through each mobile station,

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