

the air interface by said device, wherein said second modulation scheme enables a lower average data rate than said selected modulation scheme, and wherein it is determined in said device with which modulation scheme signals are to be modulated for transmission according to the capabilities of a second device to which the to be transmitted packets are addressed.

**10.** A method according to claim **1**, wherein the modulation of signals with a modulation scheme comprises mapping said signals to values according to a lookup table provided for said modulation scheme.

**11.** A method for demodulating signals which were modulated with a selected modulation scheme according to claim **1**, characterized by the steps of:

demodulating said modulated signals with a demodulation scheme corresponding to said selected modulation scheme; and

processing said demodulated signals for regaining the original signals before modulation, said processing depending on the set of values of said selected modulation scheme used in said modulation.

**12.** A modulator for modulating signals that are to be transmitted by a device in packets via an air interface the modulator comprising:

modulating means for mapping a first set of values to pairs of bits according to a selected modulation scheme, wherein a first plurality of bits comprises said pairs of bits and wherein at least one of said bits of said pair of bits has a fixed value wherein the modulating means comprise means to further map a second set of values to a second plurality of bits according to said selected modulation scheme.

**13.** A modulator according to claim **12**, wherein said first plurality of bits represents synchronization information and said second plurality of bits represents payload data.

**14.** A modulator according to claim **12**, wherein said packets comprise at least one of an access code entity, a header entity, and a payload entity, of which entities the access code entity is included in each packet wherein said access code entity and said header entity comprise said first plurality of bits and wherein said payload entity comprises said second plurality of bits.

**15.** A modulator according to claim **12**, wherein said selected modulation scheme is a  $\pi/4$ -DQPSK (Differential Quadrature Phase Shift Keying) modulation scheme using as values of at least one modulation parameter phase changes of  $+135^\circ$ ,  $+45^\circ$ ,  $-45^\circ$  and  $-135^\circ$  for modulation, wherein said modulating means use for said second set of values all said phase changes, and wherein said modulating means use for said first set of values only phase changes of  $+45^\circ$  and  $-45^\circ$ .

**16.** A modulator according to claim **12**, wherein said selected modulation scheme is a  $\pi/4$ -DQPSK (Differential Quadrature Phase Shift Keying) modulation scheme, and wherein said modulating means comprise a raised cosine filter with a roll-off factor of 0.8 for generating pulses.

**17.** A modulator according to claim **12**, further comprising means for supplying a control signal to said modulating means, which control signal indicates whether a change between a modulation with said first set of values and a modulation with said second set of values is required.

**18.** A modulator according to claim **12**, further comprising means for adding in the baseband level fixed values at fixed positions to signals which are to be modulated with said second set of.

**19.** A modulator according to claim **12**, further comprising second modulating means for modulating signals that are to be transmitted via the air interface by said device with a

second modulation scheme, wherein said second modulation scheme enables a lower average data rate than said selected modulation scheme, and selection means for selecting signals modulated by said first modulating means or signals modulated by said second modulating means for transmission, according to the capabilities of a second device to which the signals are to be transmitted.

**20.** A modulator according to claim **12**, wherein said modulating means comprise a lookup table for said selected modulation scheme according to which signals that are to be transmitted are mapped to some modulation value.

**21.** A device suited for establishing a wireless connection to at least one other device and comprising:

a modulator comprising modulating means for mapping a first set of values to pairs of bits according to a selected modulation scheme, wherein a first plurality of bits comprises said pairs of bits and wherein at least one of said bits of said pair of bits has a fixed value, and further wherein the modulating means comprises means for mapping a second set of values to a second plurality of bits according to said selected modulation scheme; and transmitting means for transmitting signals modulated by said modulator via an air interface.

**22.** A communications system in which signals are transmitted via an air interface, characterized by at least one device comprising:

a modulator comprising modulating means for mapping a first set of values to pairs of bits according to a selected modulation scheme, wherein a first plurality of bits comprises said pairs of bits and wherein at least one of said bits of said pair of bits has a fixed value, and further wherein the modulating means comprises means for mapping a second set of values to a second plurality of bits according to said selected modulation scheme; and transmitting means for transmitting signals modulated by said modulator via an air interface.

**23.** A demodulator for demodulating signals that are received in packets via an air interface, the demodulator comprising:

demodulating means for demodulating received signals with a demodulation scheme corresponding to a selected modulation scheme, the signals comprising at least one of pairs of bits and a second plurality of bits, wherein said pairs of bits comprise a first plurality of bits and wherein one of said bits of said pairs of bits has a fixed value, the signals being modulated by one of a first set of values and a second set of values of said selected modulation scheme, and said demodulator comprising processing means for processing said demodulated signals for regaining the original signals before modulation, said processing depending on the set of values of said selected modulation scheme used in said modulation.

**24.** A demodulator according to claim **23**, further comprising second demodulating means for demodulating received signals which were modulated with a second modulation scheme.

**25.** A device comprising:  
receiving means for receiving modulated signals via an air interface; and

a demodulator comprising demodulating means for demodulating the modulated signals to obtain demodulated signals, wherein the modulated signals are demodulated with a demodulation scheme corresponding to a selected modulation scheme, the modulated signals comprising at least one of pairs of bits and a second plurality of bits, wherein said pairs of bits comprise a first plurality of bits and wherein one of said bits