

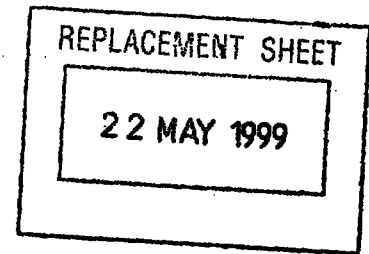
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Claims

1. A method (100) of generating a frequency-hopping sequence ($s[i]$) for radio communication between radio facilities (BS, MS) which periodically change between a plurality (I) of different carrier frequencies (0, 1, ..., 5), wherein at least two codes ($LG[n]$, c^i) are concatenated, said method comprising the steps of:
 - calculating elements of a pseudorandom sequence according to the first code ($LG[n]$) (step 110);
 - calculating for the plurality of carrier frequencies according to the second code (c^i) all possible sequences in which each of these carrier frequencies is contained only once (step 120);
 - concatenating the two codes ($LG[n]$, c^i) by mapping each element ($n=3$) of the pseudorandom sequence to one of the possible sequences (c^3), and generating the frequency-hopping sequence ($s[i]$) by joining the sequences (c^3 , c^7 , ..., c^8 , ...) according to the order ($n = 3, 6, \dots, 4, \dots$) in which the elements of the pseudorandom sequence are generated (step 130).

2. A method (100) as claimed in claim 1 wherein the pseudorandom sequence is calculated using a code with a function corresponding to the function of a linear feedback shift register in which outputs are taken from only part of the shift-register elements (b_{n-7} , b_{n-14} , b_{n-16}) in a freely selectable order.





3. A method (100) as claimed in claim 2 wherein the pseudorandom sequence is calculated using a Lempel-Greenberger code which is assigned a variable input vector with elements arranged in a freely selectable configuration which correspond to the values of the outputs taken from the shift-register elements (b_{n-7} , b_{n-14} , b_{n-16}).
4. A method (100) as claimed in claim 1 wherein the first code ($LG[n]$) forms the external code and the second code (c') the internal code, this being achieved by choosing the number (n) of elements of the pseudorandom sequence to be greater than the plurality (I) of carrier frequencies.
5. A radio facility (MS) for a radio communication system (CTS) wherein said radio facility (MS) and other radio facilities (BS, MS') periodically change between a plurality (I) of different carrier frequencies (0, 1, ..., 5) in accordance with a frequency-hopping sequence ($s[i]$), comprising a means for calculating the frequency-hopping sequence ($s[i]$) which concatenates at least two codes ($LG[n]$, c') to generate the frequency-hopping sequence ($s[i]$) by calculating elements of a pseudorandom sequence according to the first code ($LG[n]$) and calculating for the plurality of carrier frequencies according to the second code (c') all possible sequences in which each of these carrier frequencies is contained only once, said means concatenating the two codes ($LG[n]$, c') by mapping each element ($n=3$) of the pseudorandom sequence to one of the possible sequences (c^3), and generating the frequency-hopping sequence ($s[i]$) by



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joining the sequences ($c^3, c^7, \dots, c^3, \dots$) according to the order ($n = 3, 6, \dots, 4, \dots$) in which the elements of the pseudorandom sequence occur.

6. A radio communication system (CTS) comprising at least two intercommunicating radio facilities (BS, MS, MS'; MS'') which periodically change between a plurality (I) of different carrier frequencies (0, 1, ..., 5) according to a frequency-hopping sequence ($s[i]$), comprising a means for calculating the frequency-hopping sequence ($s[i]$) which concatenates at least two codes ($LG[n], c^1$) to generate the frequency-hopping sequence ($s[i]$) by calculating elements of a pseudorandom sequence for the plurality of carrier frequencies according to the first code ($LG[n]$) and calculating for the plurality of carrier frequencies according to the second code (c^1) all possible sequences in which each of these carrier frequencies is contained only once, said means concatenating the two codes ($LG[n], c^1$) by mapping each element ($n=3$) of the pseudorandom sequence to one of the possible sequences (c^3), and generating the frequency-hopping sequence ($s[i]$) by joining the sequences ($c^3, c^7, \dots, c^8, \dots$) according to the order ($n = 3, 6, \dots, 4, \dots$) in which the elements of the pseudorandom sequence occur.

7. A radio communication system (CTS) as claimed in claim 6 wherein the intercommunicating radio facilities are at least one base station (BS) and two mobile stations (MS, MS', MS'') whose means for calculating the pseudorandom sequence use a code with a function corresponding to the function of a linear feedback shift register in which outputs are taken



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from only part of the shift-register elements (b_{n-7} , b_{n-14} , b_{n-16}) in a freely selectable order.

8. A radio communication system (CTS) as claimed in claim 7 wherein the means for calculating the pseudorandom sequence use a Lempel-Greenberger code which is assigned a variable input vector with elements arranged in a freely selectable configuration which correspond to the values of the outputs taken from the shift-register elements (b_{n-7} , b_{n-14} , b_{n-16}), and wherein the means in the mobile stations (MS, MS', MS'') generate different frequency-hopping sequences by determining their input vectors differently from each other.

9. A radio communication system (CTS) as claimed in claim 8 wherein the means in each of the mobile stations (MS) determines the input vector based on a device code assigned to the mobile station.

10. A radio communication system (CTS) as claimed in claim 8 wherein the means in each of the mobile stations (MS) determines the input vector based on a user identification assigned to the user of the mobile station (MS).

