

In the drawings:

FIG. 1

PARENT NETWORK

DAUGHTER NETWORK

FIG. 2

112 RADIO RECEIVING SECTION

113 DEMODULATING SECTION

→RECEIVING DATA

114 REQUEST CONFIRMING SECTION

115 SCHEDULER

115 BEACON INSERTING SECTION

←TRANSMITTING DATA

117 MODULATING SECTION

118 RADIO TRANSMITTING SECTION

FIG. 3

122 RADIO RECEIVING SECTION

123 DEMODULATING SECTION

→RECEIVING DATA

124 BEACON CAPTURING SECTION

125 REQUEST CONFIRMING SECTION

15 SCHEDULER

127 COMMUNICATION CONTROL SECTION

128 BEACON INSERTING SECTION
←TRANSMITTING DATA FOR DAUGHTER NETWORK
129 FRAME CONFIGURING SECTION
←TRANSMITTING DATA FOR PARENT NETWORK
↓ TRANSMISSION REQUEST SIGNAL
130 MODULATING SECTION
131 RADIO TRANSMITTING SECTION

FIG. 4

From above, from left

TDMA FRAME

PARENT NETWORK BEACON USER A USER B USER C

CONTENTION PARTITION

DAUGHTER NETWORK BEACON USER D USER E CONTENTION
PARTITION

FIG. 5

From left

FIRST PICONET 1

SECOND PICONET 2

FIG. 6

From above, from left

FIRST PICONET 1

SECOND PICONET 2

COMMUNICATION BETWEEN PICONETS

FIG. 7

34 GUARANTEED TIME SLOT

31 BEACON

32 CONTENTION ACCESS PERIOD

33 CONTENTION FREE PERIOD

→TIME

30 TRANSMISSION FRAME PERIOD

FIG. 8

61 INTERFACE

62 INTERFACE BUFFER

63 WIRELESS BUFFER

64 WIRELESS COMMUNICATION SECTION

67 CONTROL SECTION

68 INFORMATION STORAGE SECTION

65 ANTENNA

10 WIRELESS COMMUNICATION APPARATUS

FIG. 9

From above, from left

CONTROL STATION 11 OF FIRST PICONET 1

CONTROL STATION 21 OF SECOND PICONET 2
 BEACON INFORMATION OF FIRST PICONET (P1)
 (RECEPTION DISABLED)
 BEACON INFORMATION OF SECOND PICONET (P2)
 SET UNASSIGNED AREA FOR SECOND PICONET
 BEACON INFORMATION OF FIRST PICONET (P3)
 SET UNASSIGNED AREA FOR FIRST PICONET
 BEACON INFORMATION OF SECOND PICONET (P4)
 CLEAR UNASSIGNED ARE FOR SECOND PICONET
 BEACON INFORMATION OF SECOND PICONET (P5)
 (RECEPTION DISABLED)
 BEACON INFORMATION OF FIRST PICONET (P6)
 (RECEPTION DISABLED)
 CREAR UNASSIGNED AREA FOR FIRST PICONET

FIG. 10

From above, from left

FRAME PERIOD N OF FIRST PICONET

FIRST PICONET

CONTENTION FREE PERIOD (CFP)

SECOND PICONET

CONTENTION FREE PERIOD (CFP)

FRAME PERIOD OF SECOND PICONET

FRAME PERIOD OF SECOND PICONET

FIG. 11

From above, from left

FRAME PERIOD N OF FIRST PICONET

FIRST PICONET

CONTENTION FREE PERIOD (CFP)

UNASSIGNED AREA

SECOND PICONET

CONTENTION FREE PERIOD (CFP)

FRAME PERIOD OF SECOND PICONET

FRAME PERIOD OF SECOND PICONET

FIG. 12

From above, from left

FRAME PERIOD N OF FIRST PICONET

FIRST PICONET

CONTENTION FREE PERIOD (CFP)

UNASSIGNED AREA

SECOND PICONET

CONTENTION FREE PERIOD (CFP)

CONTENTION FREE PERIOD (CFP)

UNASSIGNED AREA

FRAME PERIOD OF SECOND PICONET

FRAME PERIOD OF SECOND PICONET

FIG. 13

From above, from left

FRAME PERIOD N OF FIRST PICONET

FIRST PICONET

CONTENTION FREE PERIOD (CFP)

SECOND PICONET

CONTENTION FREE PERIOD (CFP)

CONTENTION ACCESS PERIOD (CAP)

FRAME PERIOD OF SECOND PICONET

FRAME PERIOD OF SECOND PICONET

FIG. 14

CONTROL STATION PROCESSING

S1 OPERATING AS CONTROL STATION?

S2 BEACON OF ANOTHER PICONET RECEIVED?

S3 CHECK FRAME STRUCTURE FROM OTHER PICONET INFORMATION.

S4 UNASSIGNED AREA SET TO OWN PICONET?

S5 DUPLICATE ASSIGNMENT WITH ANOTHER PICONET?

S6 CHANGE GTS ASSIGNMENT OF OWN PICONET.

S7 ASSIGNED TO BEACON TRANSMITTING TIME?

S8 ADJUST BEACON TRANSMITTING TIME.

S9 USE THAT UNASSIGNED AREA BY OWN PICONET.

S10 SET UNASSIGNED AREA OF OWN PICONET.

S11 SEND BEACON INFORMATION ADDRESSED TO OWN PICONET.

FIG. 15

From above, from left

PICONET A COMMUNICATION APPARATUS

PICONET A CONTROL STATION

PICONET B CONTROL STATION

PICONET B COMMUNICATION APPARATUS

BEACON OF PICONET A P11

REQUEST TO PARTICIPATE P12

REQUEST TO APPROVE P13

REQUEST TIME SLOT P14

ASSIGN TIME SLOT P15

CONFIRM RECEPTION P16

BEACON OF PICONET A P17

BEACON OF PICONET B P18

REQUEST TIME SLOT P19

ASSIGN TIME SLOT P20

CONFIRM RECEPTION P21

BEACON OF PICONET A P17

BEACON OF PICONET B P18

FIG. 16

OPERATION OF ADJACENT PICONET CONTROL STATION

S21 BEACON OF ADJACENT STATION RECEIVED?
S22 GET ADDRESS INFORMATION OF ADJACENT STATION PICONET.
S23 OWN STATION ADDRESS NEW?
S24 SEND REQUEST TO PARTICIPATE TO ADJACENT STATION.
S25 PARTICIPATION APPROVAL RECEIVED?
S26 SEND TIME SLOT REQUEST TO ADJACENT STATION PICONET.
S27 TIME SLOT ASSIGNMENT RECEIVED FROM ADJACENT STATION?
S28 SEND RECEPTION CONFIRMATION TO ADJACENT STATION.
S29 OPERATE OWN STATION'S PICONET BY ASSIGNED TIME SLOT.
S30 PARTICIPATION REQUEST RECEIVED FROM ADJACENT STATION?
S31 SEND PARTICIPATION APPROVAL TO THAT ADJACENT STATION.
S32 TIME SLOT REQUEST RECEIVED FROM ADJACENT STATION?
S33 TIME SLOT ASSIGNABLE?
S34 SEND TIME SLOT ASSIGNMENT TO THAT ADJACENT STATION.
S35 OPERATE OWN STATION'S PICONET BY TIME SLOT OTHER THAN
ASSIGNED TIME SLOT.

FIG. 17

From above, from left

PARENT PICONET COMMUNICATION APPARATUS

PARENT PICONET CONTROL STATION

DAUGHTER PICONET CONTROL STATION

DAUGHTER PICONET COMMUNICATION APPARATUS

BEACON OF PARENT PICONET P31
CAP AREA
REQUEST TIME SLOT ASSIGNMENT P32
REQUEST DAUGHTER PICONET CONSTRUCTION
REQUEST UNASSIGNED GTS
BEACON OF PARENT PICONET P33
REQUEST UNASSIGNED GTS

BEACON OF DAUGHTER PICONET P34
BEACON OF PARENT PICONET P35

FIG. 18

OPERATION OF PARENT PICONET CONTROL STATION
S41 OPERATING AS CONTROL STATION?
S42 DAUGHTER PICONET CONSTRUCTION REQUEST RECEIVED?
S43 GET TRANSMISSION TIME SLOT NECESSARY FOR DAUGHTER
PICONET.
S44 UNASSIGNED AREA CAN BE SET IN PARENT PICONET?
S45 NECESSARY TO CHANGE PARENT PICONET'S CFP ASSIGNMENT?
S46 CHANGE GTS ASSIGNMENT OF PARENT PICONET.
S47 SET UNASSIGNED AREA IN PARENT PICONET.
S48 SEND BEACON INFORMATION OF PARENT PICONET.

FIG. 19

OPERATION OF DAUGHTER PICONET CONTROL STATION

S51 TO RECEIVE INSTRUCTION FOR OPERATING AS CONTROL
STATION?

S32 BEACON OF PICONET TO BECOME PARENT RECEIVED?

S53 SEND BEACON INFORMATION AS ORDINARY PICONET.

S54 ESTIMATE TRANSMISSION TIME SLOT NECESSARY FOR
DAUGHTER PICONET.

S55 SEND DAUGHTER PICONET CONSTRUCTION REQUEST IN CAP
AREA OF PARENT PICONET.

S56 SETTING OF PARENT PICONET'S BEACON UNASSIGNED AREA
CONFIRMED?

S57 SET UNASSIGNED AREA IN DAUGHTER PICONET.

S58 SEND BEACON INFORMATION OF DAUGHTER PICONET.

FIG. 20

901 INFORMATION BIT

902 SPREAD CODE

903 SS SIGNAL

904 TRANSMIT SIGNAL

905 RECEIVE SIGNAL

906 DEPREAD CODE

907 MULTIPLEX SIGNAL

908 INTEGRAL SIGNAL

RECEIVED BIT (TO A/D)