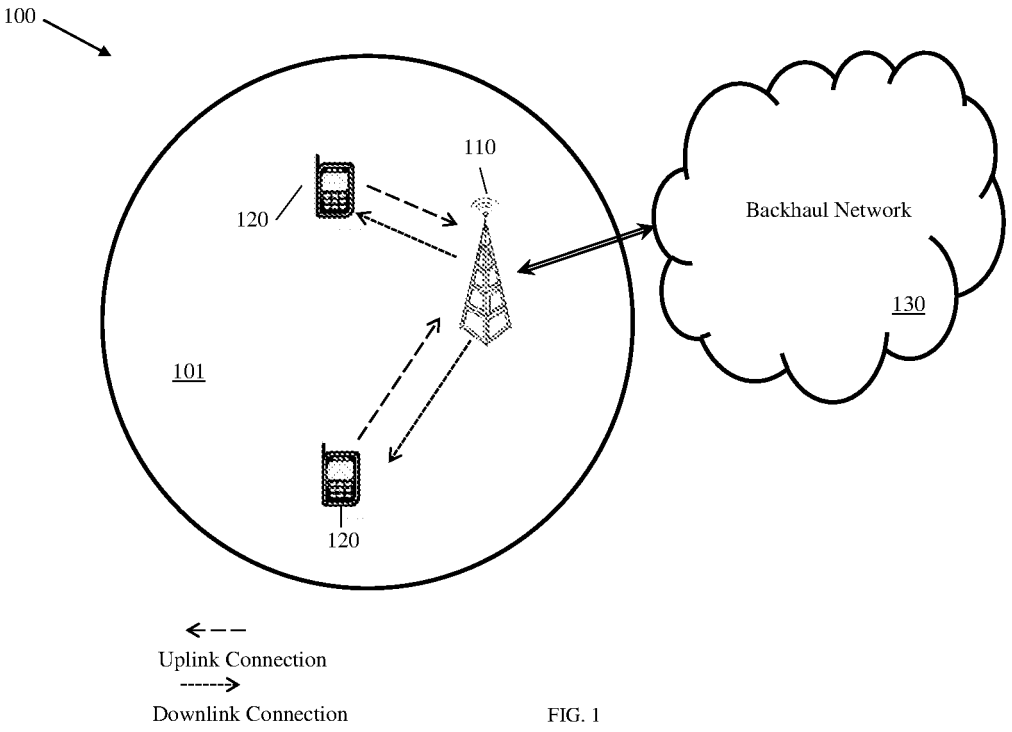
100
110
120
Backhaul Network
130
101
120
Uplink Connection
Downlink Connection

FIG. 1

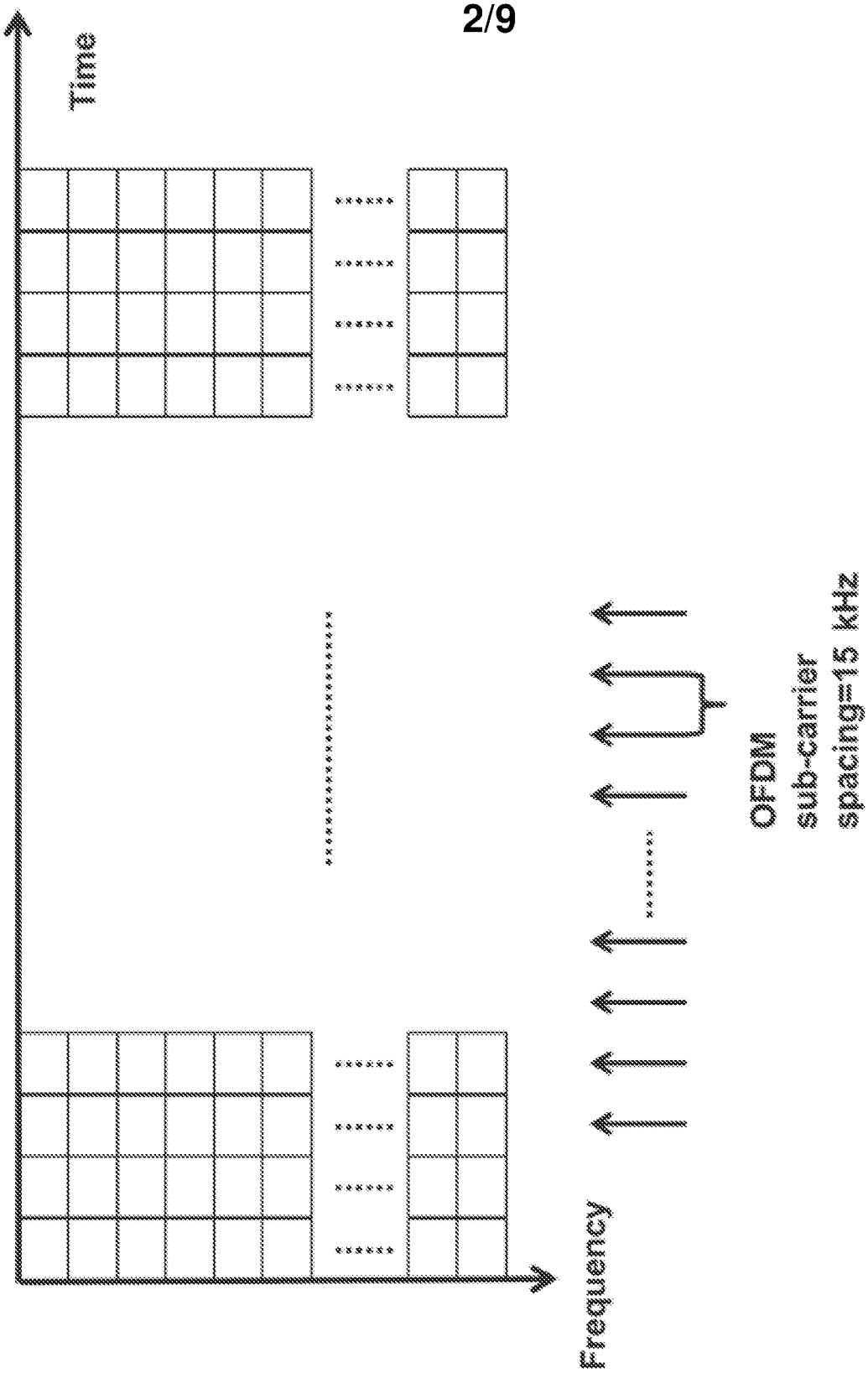

Fig. 2

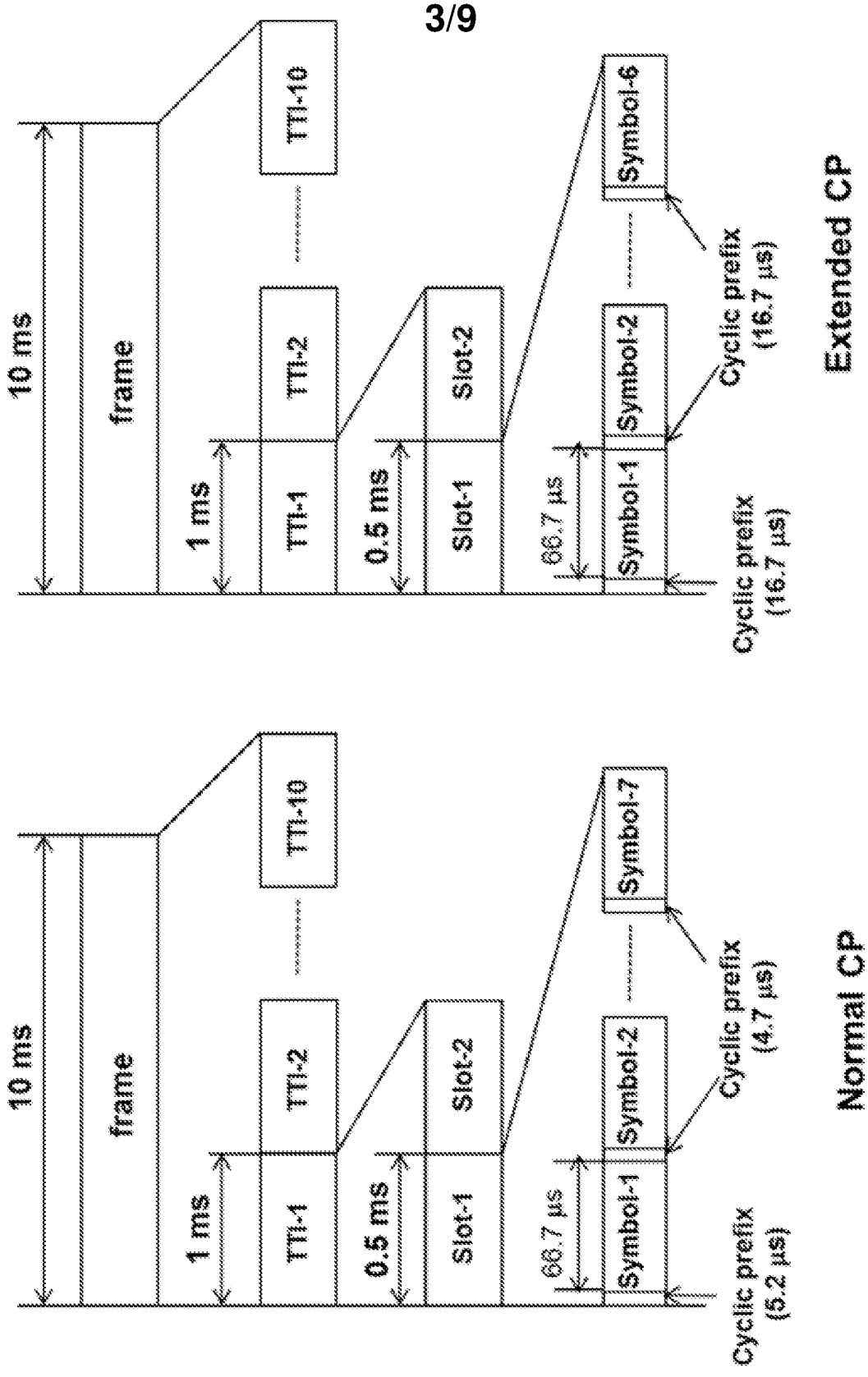
10 ms
frame
TTI-10
1 ms
TTI-1
TTI-2
0.5 ms
Slot-1
Slot-2
66.7 μs
Symbol-1
Symbol-2
Symbol-6
Symbol-7
Cyclic prefix (16.7 μs)
Cyclic prefix (5.2 μs)
Cyclic prefix (4.7 μs)
Extended CP
Normal CP

Fig. 3

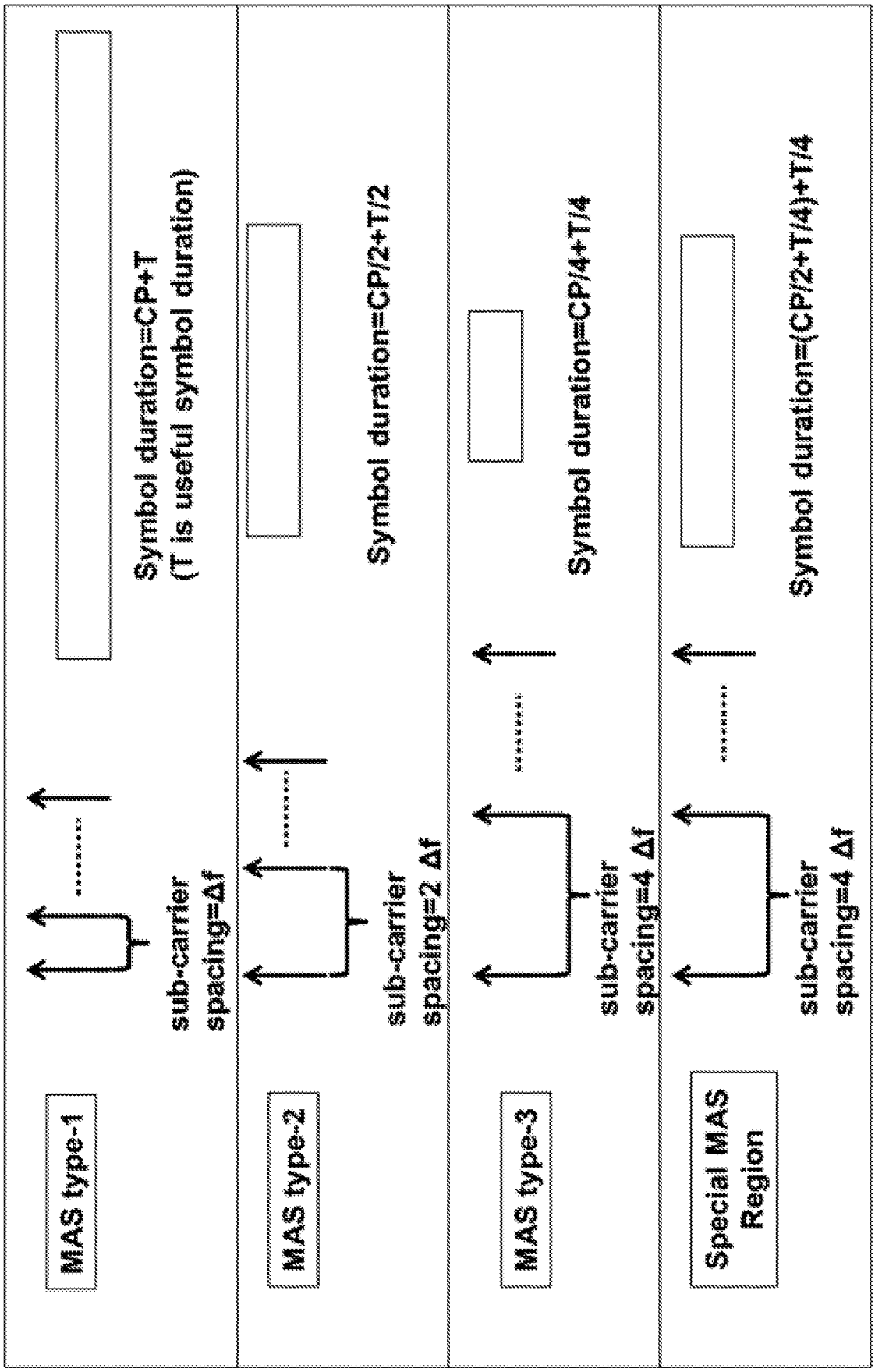
MAS type-1
Symbol duration=CP+T
(T is useful symbol duration)
sub-carrier spacing=Δf
MAS type-2
Symbol duration=CP/2+T/2
sub-carrier spacing=2 Δf
MAS type-3
Symbol duration=CP/4+T/4
sub-carrier spacing=4 Δf
Special MAS Region
Symbol duration=(CP/2+T/4)+T/4
sub-carrier spacing=4 Δf

Fig. 4

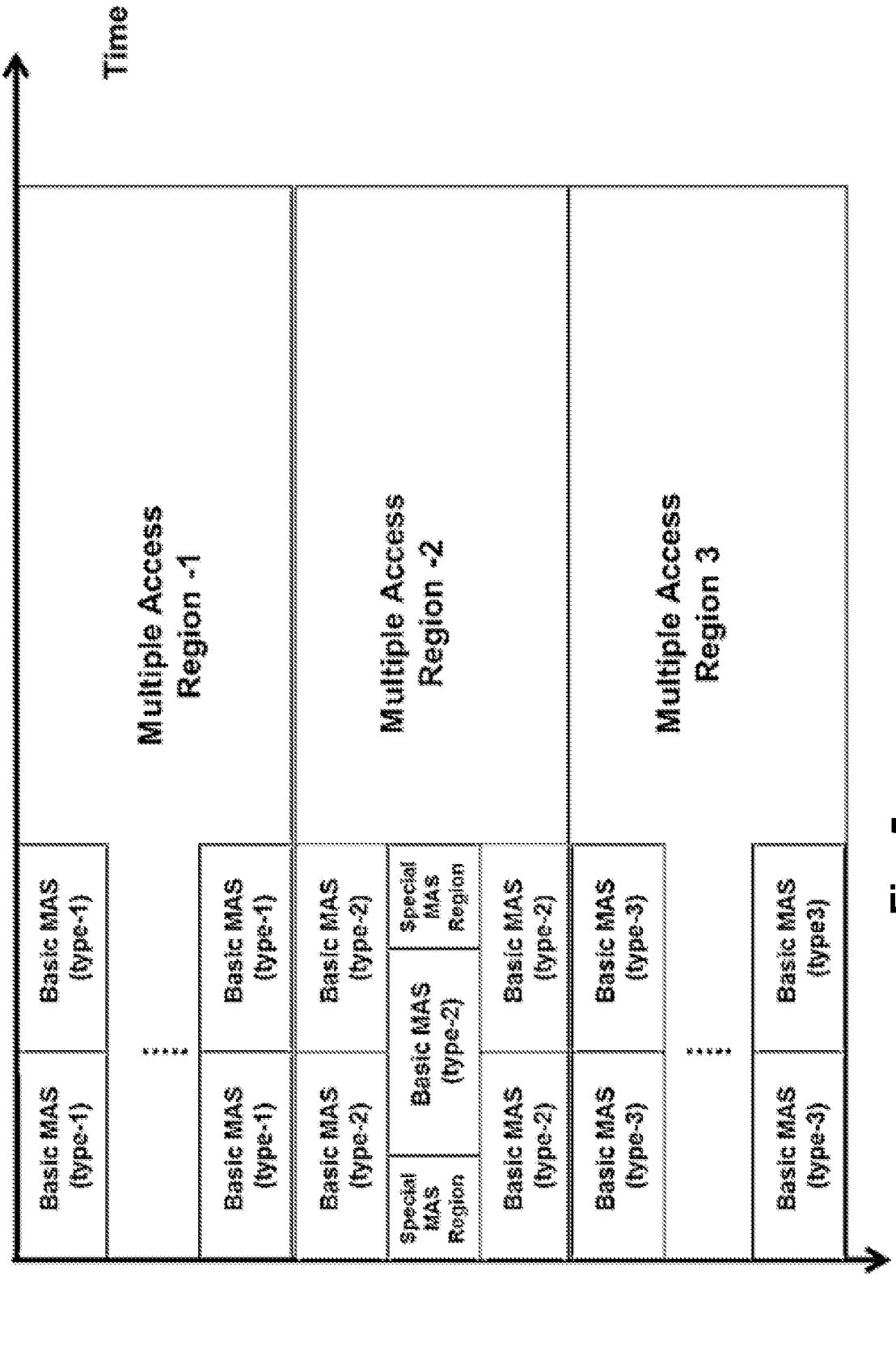
Time
Frequency
Multiple Access Region -1
Multiple Access Region -2
Multiple Access Region 3
Basic MAS (type-1)
Basic MAS (type-2)
Special MAS Region
Basic MAS (type-3)
Basic MAS (type3)

Fig. 5

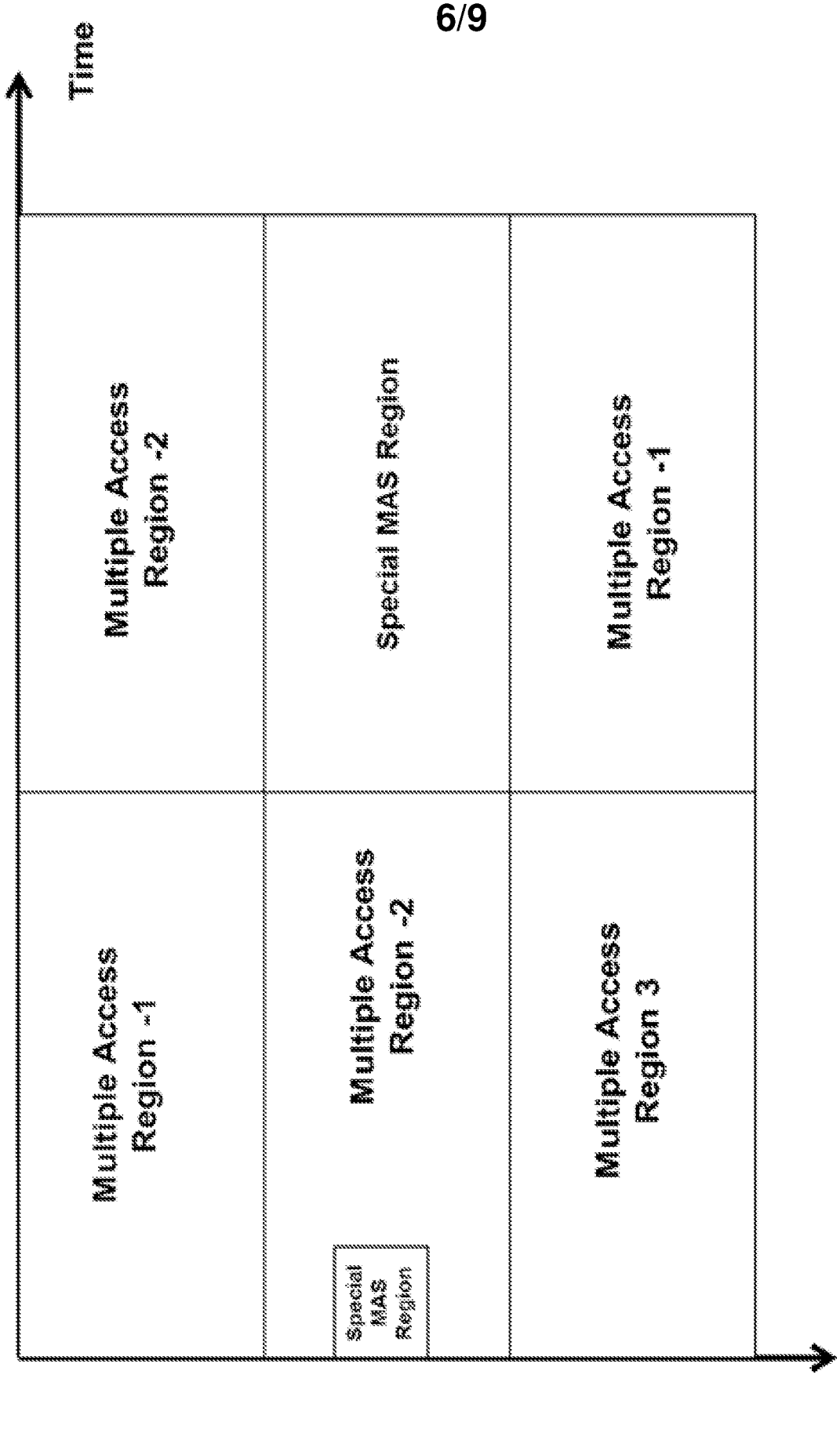
Time
Multiple Access Region -2
Special MAS Region
Multiple Access Region -1
Multiple Access Region -1
Special MAS Region
Multiple Access Region -2
Multiple Access Region 3
Frequency

Fig. 6

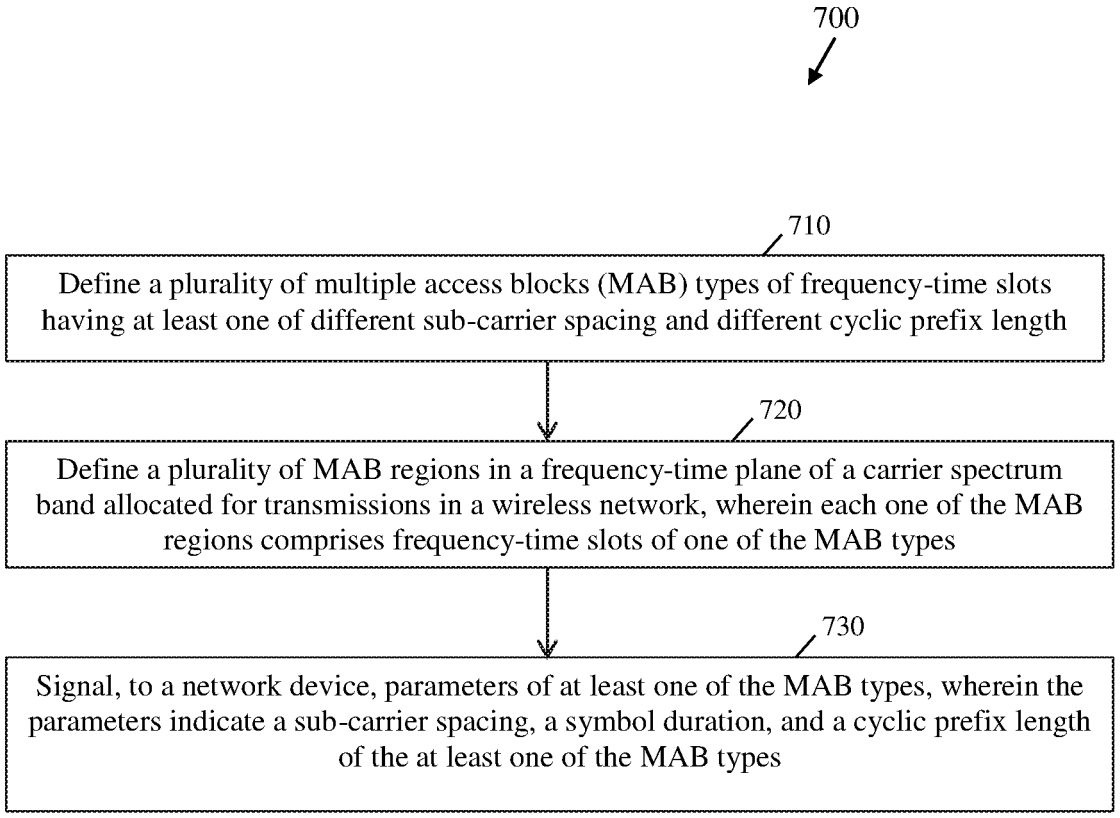
700
710
Define a plurality of multiple access blocks (MAB) types of frequency-time slots having at least one of different sub-carrier spacing and different cyclic prefix length
720
Define a plurality of MAB regions in a frequency-time plane of a carrier spectrum band allocated for transmissions in a wireless network, wherein each one of the MAB regions comprises frequency-time slots of one of the MAB types
730
Signal, to a network device, parameters of at least one of the MAB types, wherein the parameters indicate a sub-carrier spacing, a symbol duration, and a cyclic prefix length of the at least one of the MAB types

FIG. 7

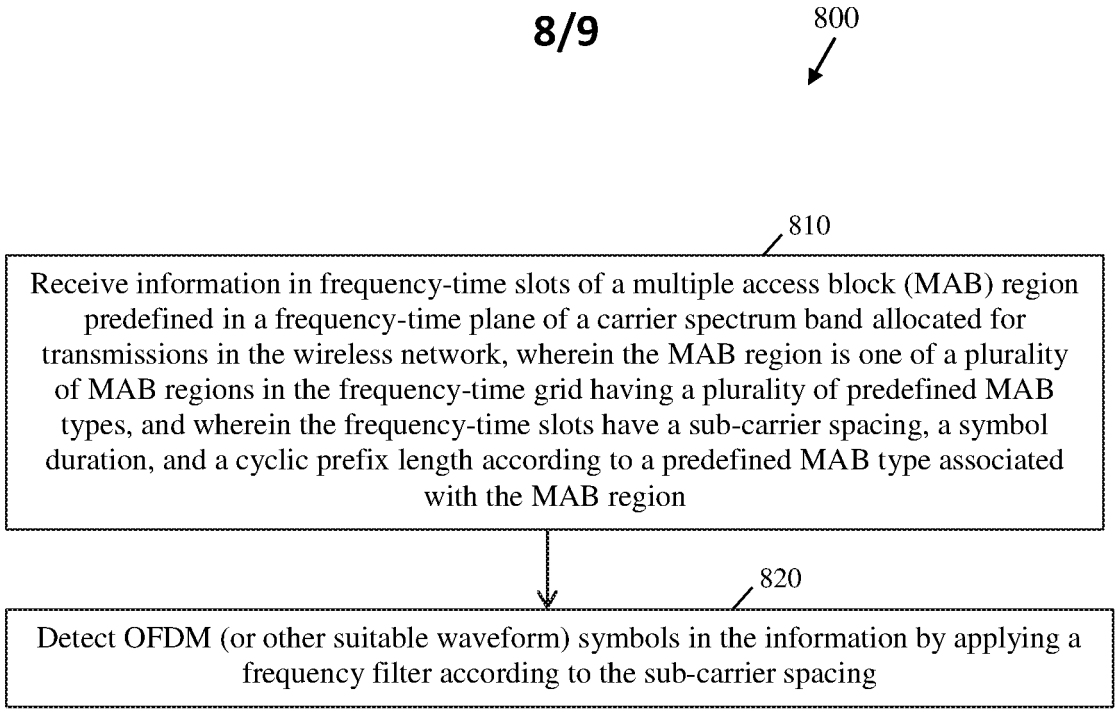
800
810
Receive information in frequency-time slots of a multiple access block (MAB) region predefined in a frequency-time plane of a carrier spectrum band allocated for transmissions in the wireless network, wherein the MAB region is one of a plurality of MAB regions in the frequency-time grid having a plurality of predefined MAB types, and wherein the frequency-time slots have a sub-carrier spacing, a symbol duration, and a cyclic prefix length according to a predefined MAB type associated with the MAB region
820
Detect OFDM (or other suitable waveform) symbols in the information by applying a frequency filter according to the sub-carrier spacing

FIG. 8

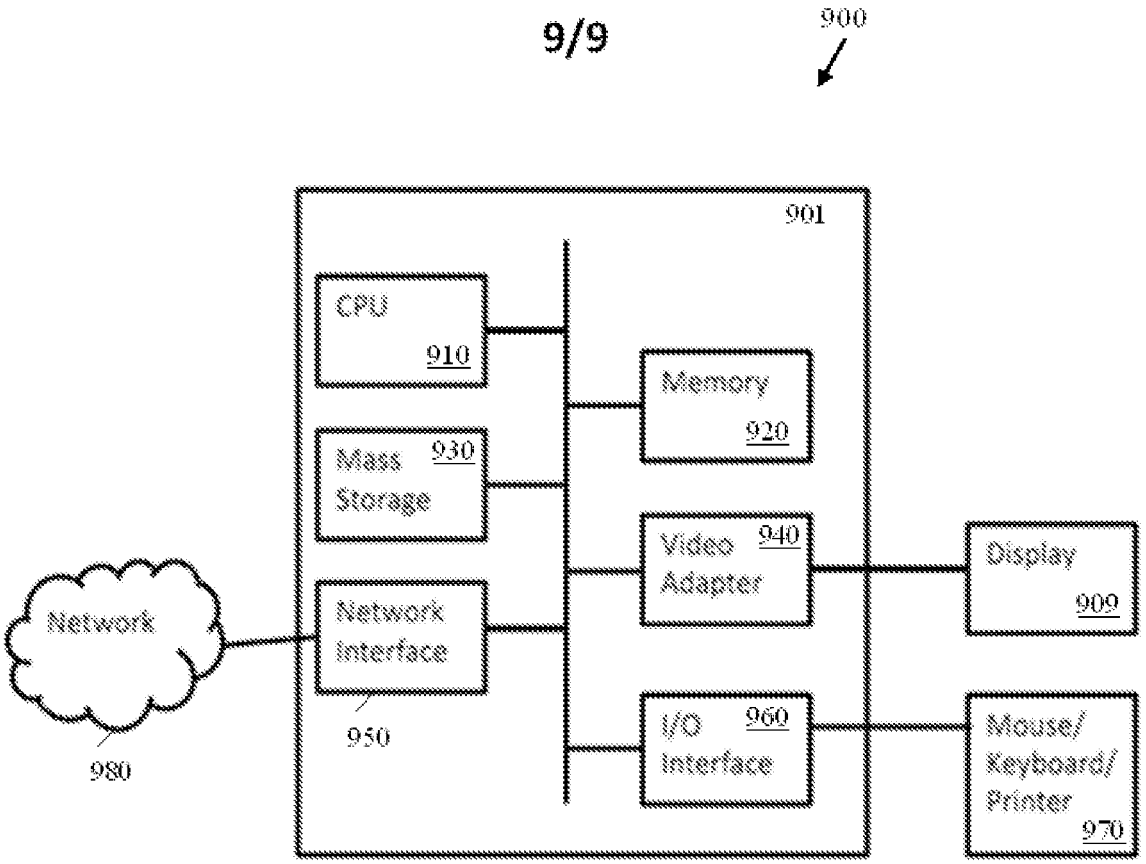
900
901
CPU
910
Memory
920
Mass
Storage
930
Video
Adapter
940
Display
909
Network
Network
Interface
950
980
I/O
Interface
960
Mouse/
Keyboard/
Printer
970

FIG. 9