

WHAT IS CLAIMED IS:

1. A method (700) performed by
a network controller supporting wireless communications, the
method comprising:

establishing a plurality of multiple access block, MAB, types (710) defining different
5 combinations of sub-carrier spacing and symbol duration for waveform transmissions;

partitioning a frequency and time plane of a carrier spectrum band into a plurality of
MAB regions (720) comprising frequency-time slots for the waveform transmissions; and
selecting, for the MAB regions, at least two different MAB types (730) from the established
plurality of MAB types; characterized in that

10 at least a first MAB region and a second MAB region of the plurality of MAB regions
occupy different frequency partitions of the carrier spectrum band in a same time slot; and a
first sub-carrier spacing in the first MAB region equals two times or four times a second sub-
carrier spacing in the second MAB region, wherein said first sub-carrier spacing is associated with
said first MAB region and said second sub-carrier spacing is associated with said second MAB region.

2. The method (700) of claim 1 further comprising arranging, at a transmitter of
15 the network controller, the frequency-time slots in the MAB regions in accordance with the
sub-carrier spacing and the symbol duration of the at least two different MAB types selected
for the MAB regions.

3. The method (700) of any one of claims 1 and 2, wherein the MAB types are selected
for the MAB regions according to at least one of a channel type, a transmission mode, a
20 propagation channel condition and a quality of service, QoS, requirement associated with the
MAB regions.

4. The method (700) of any one of claim 1 to 3 further comprising signaling (730), to
one or more network devices, parameters indicating a sub-carrier spacing, a useful symbol
length, and a cyclic prefix length of at least one of the MAB types.

25 5. The method (700) of any one of claims 1 to 4 further comprising signaling, to one or
more network devices, a mapping one of the MAB regions to at least one of a MAB type
selected for the MAB region, a corresponding type of traffic or transmission channel, and a
corresponding communications channel.

6. The method (700) of any one of claims 1 to 5, wherein the MAB types include a MAB type of frequency-time slots having a largest sub-carrier spacing and a longest cyclic prefix length among the MAB types.
7. The method(700) of any one of claims 1 to 6, wherein the MAB types include a first
5 MAB type of frequency-time slots having a smallest sub-carrier spacing and a longest cyclic prefix length among the MAB types.
8. The method (700) of claim 7, wherein the MAB types include a second MAB type of frequency-time slots having a larger sub-carrier spacing and a larger cyclic prefix length than the first MAB type.
- 10 9. The method (700) of claim 8, wherein the MAB types include a third MAB type of frequency-time slots having a larger sub-carrier spacing and a smaller cyclic prefix length than the first MAB type and the second MAB type.
10. The method(700) of any one of claims 1 to 9, wherein the waveform transmissions is one of Orthogonal Frequency Division, OFDM,
transmissions, Filtered OFDM, F-OFDM, transmissions, and Filter Bank
15 Multi-Carrier, FBMC, transmissions.
11. A network controller supporting wireless communications, the network controller comprising:
at least one processor; and
a non-transitory computer readable storage medium storing a computer program for
20 execution by the at least one processor, the computer program comprising instructions which, when executed by the processor, cause the processor to:
establish a plurality of multiple access block , MAB, types defining different combinations of sub-carrier spacing and symbol duration for waveform transmissions;
partition a frequency and time plane of a carrier spectrum band into a plurality of MAB regions comprising frequency-time slots for the waveform transmissions; and
25 select, for the MAB regions, at least two different MAB types from the established plurality of MAB types; the network controller being characterized in that
at least a first MAB region and a second MAB region of the plurality of MAB regions occupy different frequency partitions of the carrier spectrum band in a same time slot; and a

first sub-carrier spacing in the first MAB region equals two times or four times a second sub-carrier spacing in the second MAB region, wherein said first sub-carrier spacing is associated with said first MAB region and said second sub-carrier spacing is associated with said second MAB region.

12. The network controller of claim 11, wherein the computer program further includes instructions to cause the processor to arrange, at a

5 transmitter of the network controller, the frequency-time slots in the MAB regions in accordance with the sub-carrier spacing and the symbol duration of the at least two different MAB types selected for the MAB regions.

13. The network controller of any one of claims 11 and 12, wherein the computer program further includes instructions to cause the processor

10 to signal, to one or more network devices, parameters indicating a sub-carrier spacing, a useful symbol length, and a cyclic prefix length of at least one of the MAB types.