

CLAIMS

1. A method of wireless communications for a base station, comprising:

determining a narrowband time-division duplex (TDD) frame structure of a group of narrowband TDD frame structures for narrowband communications;

determining a first subframe group associated with a first set of downlink subframes and a first scrambling sequence, the first set of downlink subframes including a first downlink subframe and a predetermined first number of following subframes;

determining a second subframe group associated with a second set of downlink subframes and a second scrambling sequence, the second set of downlink subframes including a second downlink subframe and a predetermined second number of following subframes, and wherein the first subframe group and the second subframe group do not overlap; and

transmitting a series of repetitions of a narrowband physical downlink channel using the narrowband TDD frame structure, wherein a first portion of repetitions from the series of repetitions is transmitted in the first set of downlink subframes using the first scrambling sequence; and

wherein a second portion of repetitions from the series of repetitions is transmitted in the second set of downlink subframes using the second scrambling sequence.

2. The method of claim 1, wherein:

the first set of downlink subframes includes a same number of subframes as the second set of downlink subframes.

3. The method of claim 1, further comprising:

grouping a plurality of subframes into a plurality of subframe groups, each of the plurality of subframe groups being associated with a particular scrambling sequence, and each subframe group being determined based on a downlink subframe and a predetermined number of following subframes, and wherein none of the subframe groups have overlapping subframes.

4. The method of claim 3, wherein the first set of downlink subframes includes a different number of subframes than the second set of downlink subframes.

5. An apparatus for wireless communications for a base station, comprising:

means for determining a narrowband time-division duplex (TDD) frame structure of a group of narrowband TDD frame structures for narrowband communications;

means for determining a first subframe group associated with a first set of downlink subframes and a first scrambling sequence, the first set of downlink subframes including a first downlink subframe and a predetermined first number of following subframes;

means for determining a second subframe group associated with a second set of downlink subframes and a second scrambling sequence, the second set of downlink subframes including a second downlink subframe and a predetermined second number of following subframes, and wherein the first subframe group and the second subframe group do not overlap; and

means for transmitting a series of repetitions of a narrowband physical downlink channel using the narrowband TDD frame structure, wherein a first portion of repetitions from the series of repetitions is transmitted in the first set of downlink subframes using the first scrambling sequence; and

wherein a second portion of repetitions from the series of repetitions is transmitted in the second set of downlink subframes using the second scrambling sequence.

6. The apparatus of claim 5, wherein:

the first set of downlink subframes includes a same number of subframes as the second set of downlink subframes.

7. The apparatus of claim 5, further comprising:

means for grouping a plurality of subframes into a plurality of subframe groups, each of the plurality of subframe groups being associated with a particular scrambling sequence, and each subframe group being determined based on a downlink subframe and a predetermined number of following subframes, and wherein none of the subframe groups have overlapping subframes.

8. The apparatus of claim 7, wherein the first set of downlink subframes includes a different number of subframes than the second set of downlink subframes.

9. An apparatus for wireless communications for a base station, comprising:

a memory; and

at least one processor coupled to the memory and configured to:

determine a narrowband time-division duplex (TDD) frame structure of a group of narrowband TDD frame structures for narrowband communications;

determine a first subframe group associated with a first set of downlink subframes and a first scrambling sequence, the first set of downlink subframes including a first downlink subframe and a predetermined first number of following subframes;

determine a second subframe group associated with a second set of downlink subframes and a second scrambling sequence, the second set of downlink subframes including a second downlink subframe and a predetermined second number of following subframes, and wherein the first subframe group and the second subframe group do not overlap; and

transmit a series of repetitions of a narrowband physical downlink channel using the narrowband TDD frame structure, wherein a first portion of repetitions from the series of repetitions is transmitted in the first set of downlink subframes using the first scrambling sequence; and

wherein a second portion of repetitions from the series of repetitions is transmitted in the second set of downlink subframes using the second scrambling sequence.

10. The apparatus of claim 9, wherein:

the first set of downlink subframes includes a same number of subframes as the second set of downlink subframes.

11. The apparatus of claim 9, wherein the at least one processor is further configured to:

group a plurality of subframes into a plurality of subframe groups, each of the plurality of subframe groups being associated with a particular scrambling sequence, and each subframe group being determined based on a downlink subframe and a predetermined number of following subframes, and wherein none of the subframe groups have overlapping subframes.

12. The apparatus of claim 11, wherein the first set of downlink subframes includes a different number of subframes than the second set of downlink subframes.

13. A non-transitory computer-readable medium storing computer executable code for a base station, the code when executed by a processor cause the processor to:

determine a narrowband time-division duplex (TDD) frame structure of a group of narrowband TDD frame structures for narrowband communications;

determine a first subframe group associated with a first set of downlink subframes and a first scrambling sequence, the first set of downlink subframes including a first downlink subframe and a predetermined first number of following subframes;

determine a second subframe group associated with a second set of downlink subframes and a second scrambling sequence, the second set of downlink subframes including a second downlink subframe and a predetermined second number of following subframes, and wherein the first subframe group and the second subframe group do not overlap; and

transmit a series of repetitions of a narrowband physical downlink channel using the narrowband TDD frame structure, wherein a first portion of repetitions from the series of repetitions is transmitted in one or more first sets of downlink subframes using the first scrambling sequence; and

wherein a second portion of repetitions from the series of repetitions is transmitted in one or more second sets of downlink subframes using the second scrambling sequence.

14. The non-transitory computer-readable medium of claim 13, wherein:

each of the one or more first sets of downlink subframes includes a same number of subframes, each of the one or more second sets of downlink subframes includes the same number of subframes, and each of the one or more first sets of downlink subframes includes a same number of subframes as each of the one or more second sets of downlink subframes.

15. The non-transitory computer-readable medium of claim 13, further comprising code to:

group a plurality of subframes into a plurality of subframe groups, each of the plurality of subframe groups being associated with a particular scrambling sequence, and each subframe group being determined based on a downlink subframe and a predetermined number of following subframes, and wherein none of the subframe groups have overlapping subframes.

16. The non-transitory computer-readable medium of claim 15, wherein the first set of downlink subframes includes a different number of subframes than the second set of downlink subframes.