

CLAIMS

1. A method for wireless communications, comprising:
generating one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in an unlicensed spectrum; and
transmitting the generated signals in the unlicensed spectrum.
2. The method of claim 1, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.
3. The method of claim 1, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.
4. An apparatus for wireless communications, comprising:
means for generating one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in an unlicensed spectrum; and
means for transmitting the generated signals in the unlicensed spectrum.
5. The apparatus of claim 4, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.
6. The apparatus of claim 4, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.
7. An apparatus for wireless communications, comprising:
a processor;
memory in electronic communication with the processor; and
instructions stored in the memory, the instructions being executable by the processor to:

generate one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in an unlicensed spectrum; and

transmit the generated signals in the unlicensed spectrum.

8. The apparatus of claim 7, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

9. The apparatus of claim 7, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.

10. A computer program product for communications by a wireless communications apparatus in a wireless communications system, the computer program product comprising a non-transitory computer-readable medium storing instructions executable by a processor to cause the wireless communications apparatus to:

generate one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in an unlicensed spectrum; and

transmit the generated signals in the unlicensed spectrum.

11. The computer program product of claim 10, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

12. The computer program product of claim 10, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.

13. A method for wireless communications, comprising:
receiving, in an unlicensed spectrum, one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in the unlicensed spectrum.

14. The method of claim 13, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

15. The method of claim 13, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.

16. An apparatus for wireless communications, comprising:
means for receiving, in an unlicensed spectrum, one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in the unlicensed spectrum.

17. The apparatus of claim 16, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

18. The apparatus of claim 16, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.

19. An apparatus for wireless communications, comprising:
a processor;
memory in electronic communication with the processor; and
instructions stored in the memory, the instructions being executable by the processor to:
receive, in an unlicensed spectrum, one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in the unlicensed spectrum.

20. The apparatus of claim 19, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

21. The apparatus of claim 19, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.

22. A computer program product for communications by a wireless communications apparatus in a wireless communications system, the computer program product comprising a non-transitory computer-readable medium storing instructions executable by a processor to cause the wireless communications apparatus to:

receive, in an unlicensed spectrum, one or both of physical uplink control channel (PUCCH) signals and physical uplink shared channel (PUSCH) signals based on interleaved signals that increase nominal bandwidth occupancy in the unlicensed spectrum.

23. The computer program product of claim 22, wherein the interleaved signals comprise interleaved orthogonal frequency division multiplexing (I-OFDM) waveforms.

24. The computer program product of claim 22, wherein the interleaved signals comprise interleaved frequency division multiplexing (IFDM) waveforms.