The invention claimed is:

1. A method of operating a wireless communication device, comprising:

identifying a physical uplink control channel (PUCCH) format for transmission of uplink control information (UCI) in unlicensed spectrum, wherein the PUCCH format is short PUCCH or long PUCCH, wherein the short PUCCH occupies less than 1 subframe in the time domain and spans an entire system bandwidth in the frequency domain with interlacing on a resource block level, wherein the short PUCCH comprises a sequence of symbols at the end of a downlink partial subframe, wherein the long PUCCH occupies one subframe in the time domain and spans the entire system bandwidth in the frequency domain with interlacing on a resource block level, and wherein the short PUCCH or long PUCCH comprises at least one demodulation reference signal (DMRS) symbol and at least one control-data symbol in the time domain; and

transmitting the UCI to a radio access node in accordance with the identified PUCCH format, wherein the UCI is transmitted to the radio access node in coordination with one or more other wireless communication devices, and wherein transmitting the UCI in coordination with the one or more other wireless communication devices comprises applying orthogonal cover codes (OCC) and cyclic shifts (CS) on control-data symbols and reference symbols, respectively, in the short PUCCH or long PUCCH.

2. The method of claim 1, wherein transmitting the UCI to the radio access node in coordination with the one or more other wireless communication devices comprises multiplexing the one or more other wireless communication devices on the same interlace as the short PUCCH or the long PUCCH.

3. The method of claim 1, wherein the PUCCH format is short PUCCH.

4. The method of claim 1, wherein the PUCCH format is long PUCCH.

5. A wireless communication device, comprising:

at least one processor configured to: identify a physical uplink control channel (PUCCH) format for transmission of uplink control information (UCI) in unlicensed spectrum, wherein the

PUCCH format is short PUCCH or long PUCCH, wherein the short PUCCH occupies less than 1 subframe in the time domain and spans an entire system bandwidth in the frequency domain with interlacing on a resource block level, wherein the short PUCCH comprises a sequence of symbols at the end of a downlink partial subframe, wherein the long PUCCH occupies one subframe in the time domain and spans the entire system bandwidth in the frequency domain with interlacing on a resource block level, and wherein the short PUCCH or long PUCCH comprises at least one demodulation reference signal (DMRS) symbol and at least one control-data symbol in the time domain; and

at least one transmitter configured to transmit the UCI to a radio access node in accordance with the identified PUCCH format, wherein the UCI is transmitted to the radio access node in coordination with one or more other wireless communication devices, and wherein transmitting the UCI in coordination with the one or more other wireless communication devices comprises applying orthogonal cover codes (OCC) and cyclic shifts (CS) on control-data symbols and reference symbols, respectively, in the short PUCCH or long PUCCH.

6. The wireless communication device of claim 5, wherein transmitting the UCI to the radio access node in coordination with the one or more other wireless communication devices comprises multiplexing the one or more other wireless communication devices on the same interlace as the short PUCCH or the long PUCCH.

7. The wireless communication device of claim 5, wherein the PUCCH format is short PUCCH.

8. The wireless communication device of claim 5, wherein the PUCCH format is long PUCCH.

9. A method of operating a radio access node, comprising:

identifying a physical uplink control channel (PUCCH) format to be used by at least one wireless communication device for transmission of uplink control information (UCI) in unlicensed spectrum, wherein the PUCCH format is short PUCCH or long PUCCH, wherein the short PUCCH occupies less than 1 subframe in the time domain and spans an entire system

bandwidth in the frequency domain with interlacing on a resource block level, wherein the short PUCCH comprises a sequence of symbols at the end of a downlink partial subframe, wherein the long PUCCH occupies one subframe in the time domain and spans the entire system bandwidth in the frequency domain with interlacing on a resource block level, and wherein the short PUCCH or long PUCCH comprises at least one demodulation reference signal (DMRS) symbol and at least one control-data symbol in the time domain; and

receiving the UCI from the at least one wireless communication device in accordance with the identified PUCCH format, wherein the received UCI is multiplexed in the short PUCCH or long PUCCH with information transmitted from at least one other wireless communication device, and wherein the UCI and the information transmitted from the at least one other wireless communication device are multiplexed using orthogonal cover codes (OCC) and cyclic shifts (CS) on control-data symbols and reference symbols, respectively.

10. The method of claim 9, wherein identifying the PUCCH format comprises selecting between short PUCCH and long PUCCH according to at least one of an eNodeB timing configuration and a hybrid automatic repeat request (HARQ) protocol.

11. The method of claim 9, wherein the received UCI is multiplexed on the same interlace as the short PUCCH or the long PUCCH with information transmitted from at least one other wireless communication device.

12. The method of claim 9, wherein the PUCCH format is short PUCCH.

13. The method of claim 9, wherein the PUCCH format is long PUCCH.

14. A radio access node, comprising:

at least one processor and memory collectively configured to:

identify a physical uplink control channel (PUCCH) format to be used by at least one wireless communication device for transmission of uplink control information (UCI) in unlicensed spectrum, wherein the PUCCH format is short PUCCH or long PUCCH, wherein the short PUCCH occupies less than 1 subframe in the time domain and spans an entire system

bandwidth in the frequency domain with interlacing on a resource block level, wherein the short PUCCH comprises a sequence of symbols at the end of a downlink partial subframe, wherein the long PUCCH occupies one subframe in the time domain and spans the entire system bandwidth in the frequency domain with interlacing on a resource block level, and wherein the short PUCCH or long PUCCH comprises at least one demodulation reference signal (DMRS) symbol and at least one control-data symbol in the time domain; and

a receiver configured to receive the UCI from the at least one wireless communication device in accordance with the identified PUCCH format, wherein the received UCI is multiplexed in the short PUCCH or long PUCCH with information transmitted from at least one other wireless communication device, and wherein the UCI and the information transmitted from the at least one other wireless communication device are multiplexed using orthogonal cover codes (OCC) and cyclic shifts (CS) on control-data symbols and reference symbols, respectively.

15. The radio access node of claim 14, wherein identifying the PUCCH format comprises selecting between short PUCCH and long PUCCH according to at least one of an eNodeB timing configuration and a hybrid automatic repeat request (HARQ) protocol.

16. The radio access node of claim 14, wherein the received UCI is multiplexed on the same interlace as the short PUCCH or the long PUCCH with information transmitted from at least one other wireless communication device.

17. The radio access node of claim 14, wherein the PUCCH format is short PUCCH.

18. The radio access node of claim 14, wherein the PUCCH format is long PUCCH.