CLAIMS

1. A method (1000) for assisting a position determination of a user equipment, UE (120) communicating over a shared communication medium in unlicensed spectrum (344), comprising:

receiving (1002), at the UE (120), positioning assistance data, the positioning assistance data comprising a plurality of positioning reference signal, PRS, configurations for a plurality of secondary cells having overlapping coverage areas, each of the plurality of secondary cells having a different PRS configuration of the plurality of PRS configurations, wherein each PRS configuration of the plurality of PRS configurations includes a common set of positioning occasions, and wherein the plurality of secondary cells are in contention for the common set of positioning occasions;

measuring (1004), by the UE (120) at a first positioning occasion of the common set of positioning occasions, a first PRS from a first evolved NodeB, eNB (110B) for a first secondary cell of the plurality of secondary cells, wherein the first eNB transmits the first PRS on the shared communication medium, and wherein the first PRS is configured according to a first PRS configuration of the plurality of PRS configurations;

measuring (1006), by the UE (120) at a second positioning occasion of the common set of positioning occasions, a second PRS from a second eNB (110C) for a second secondary cell of the plurality of secondary cells, wherein the second eNB transmits the second PRS on the shared communication medium, and wherein the second PRS is configured according to a second PRS configuration of the plurality of PRS configurations; and

sending (1008), by the UE (120), the measurement of the first PRS, the measurement of the second PRS, an identification of the first PRS configuration, and an identification of the second PRS configuration to a location server (170).

2. The method (1000) of claim 1, wherein the UE (120) measures PRS for the plurality of secondary cells based on the positioning assistance data comprising the plurality of PRS configurations.

3. The method (1000) of claim 1, further comprising:

measuring, by the UE (120) at a third positioning occasion of the common set of positioning occasions, a third PRS from a third eNB (110D) for a third secondary cell of the

plurality of secondary cells, wherein the third eNB transmits the third PRS on the shared communication medium, and wherein the third PRS is configured according to a third PRS configuration of the plurality of PRS configurations; and

sending, by the UE (120), the measurement of the third PRS and an identification of the third PRS configuration to the location server (170).

4. A method (1100) at a location server (170) for determining a position of a user equipment (UE) communicating over a shared communication medium in unlicensed spectrum, comprising:

sending (1102), by the location server (170), positioning assistance data to the UE (120), the positioning assistance data comprising a plurality of positioning reference signal, PRS, configurations for a plurality of secondary cells having overlapping coverage areas, each of the plurality of secondary cells having a different PRS configuration of the plurality of PRS configurations, wherein each PRS configuration of the plurality of PRS configurations includes a common set of positioning occasions, wherein the plurality of secondary cells are in contention for the common set of positioning occasions;

receiving (1104), at the location server (170) from the UE (120), a first measurement of a first PRS for a first PRS configuration of the plurality of PRS configurations, a second measurement of a second PRS for a second PRS configuration of the plurality of PRS configurations, an identification of the first PRS configuration, and an identification of the second PRS configuration, wherein the first PRS is transmitted by a first evolved NodeB, eNB, (110B) for a first secondary cell of the plurality of secondary cells at a first positioning occasion of the common set of positioning occasions, and wherein the second PRS is transmitted by a second eNB (110C) for a second secondary cell of the plurality of secondary cells at a second positioning occasion of the common set of positioning occasions; and

determining (1106), by the location server (170), the position of the UE (120) based at least in part on the first measurement, the second measurement, the identification of the first PRS configuration, the identification of the second PRS configuration, a location of the first eNB and a location of the second eNB.

5. The method (1100) of claim 4, further comprising:

receiving, by the location server (170) from the first eNB (110B), the first PRS configuration of the plurality of PRS configurations; and

receiving, by the location server (170) from the second eNB (110C), the second PRS configuration of the plurality of PRS configurations.

6. The method (1100) of claim 4, further comprising:

receiving, at the location server (170) from the UE (120), a third measurement of a third PRS for a third PRS configuration of the plurality of PRS configurations and an identification of the third PRS configuration, wherein the third PRS is transmitted by a third eNB (110D) for a third secondary cell of the plurality of secondary cells at a third positioning occasion of the common set of positioning occasions.

7. The method (1100) of claim 6, further comprising:

determining, by the location server (170), the position of the UE (120) based at least in part on the third measurement, the identification of the third PRS configuration, and a location of the third eNB.

8. The method (1000, 1100) of claim 1 or 4, wherein the first measurement of the first PRS and the second measurement of the second PRS are measurements of a reference signal time difference, RSTD, for Observed Time Of Arrival, OTDOA, positioning for a Long Term Evolution, LTE, wireless access.

9. A user equipment, UE (120), for assisting a position determination of the UE (120) communicating over a shared communication medium in unlicensed spectrum (344), comprising:

means for receiving positioning assistance data, the positioning assistance data comprising a plurality of positioning reference signal, PRS, configurations for a plurality of secondary cells having overlapping coverage areas, each of the plurality of secondary cells having a different PRS configuration of the plurality of PRS configurations, wherein each PRS configuration of the plurality of PRS configurations includes a common set of positioning occasions, and wherein the plurality of secondary cells are in contention for the common set of positioning occasions;

means for measuring, at a first positioning occasion of the common set of positioning occasions, a first PRS from a first evolved NodeB, eNB, (110B) for a first secondary cell of the plurality of secondary cells, wherein the first eNB transmits the first PRS on the shared

communication medium, and wherein the first PRS is configured according to a first PRS configuration of the plurality of PRS configurations;

means for measuring, at a second positioning occasion of the common set of positioning occasions, a second PRS from a second eNB (110C) for a second secondary cell of the plurality of secondary cells, wherein the second eNB transmits the second PRS on the shared communication medium, and wherein the second PRS is configured according to a second PRS configuration of the plurality of PRS configurations; and

means for sending the measurement of the first PRS, the measurement of the second PRS, an identification of the first PRS configuration, and an identification of the second PRS configuration to a location server (170).

10. The UE (120) of claim 9, wherein the UE (120) is adapted to measure PRS for the plurality of secondary cells based on the positioning assistance data comprising the plurality of PRS configurations.

11. The UE (120) of claim 9, wherein the UE (120) is adapted to send the measurement of the first PRS and the measurement of the second PRS to the location server based on an accuracy of the measurement of the first PRS and an accuracy of the measurement of the second PRS being above a threshold.

12. The UE (120) of claim 9, wherein the measurement of the first PRS and the measurement of the second PRS are measurements of a reference signal time difference, RSTD, for Observed Time Of Arrival, OTDOA, positioning for a Long Term Evolution, LTE, wireless access.

13. A location server (170) for determining a position of a user equipment, UE (120) communicating over a shared communication medium in unlicensed spectrum (344), comprising:

means for sending positioning assistance data to the UE (120), the positioning assistance data comprising a plurality of positioning reference signal, PRS, configurations for a plurality of secondary cells having overlapping coverage areas, each of the plurality of secondary cells having a different PRS configuration of the plurality of PRS configurations, wherein each PRS configuration of the plurality of PRS configurations includes a common set

of positioning occasions, and wherein the plurality of secondary cells are in contention for the common set of positioning occasions;

means for receiving, from the UE (120), a first measurement of a first PRS for a first PRS configuration of the plurality of PRS configurations, a second measurement of a second PRS for a second PRS configuration of the plurality of PRS configurations, an identification of the first PRS configuration, and an identification of the second PRS configuration, wherein the first PRS is transmitted by a first evolved NodeB, eNB (110B) for a first secondary cell of the plurality of secondary cells at a first positioning occasion of the common set of positioning occasions, and wherein the second PRS is transmitted by a second eNB (110C) for a second secondary cell of the plurality of secondary cells at a second positioning occasion of the common set of positioning occasions; and

means for determining the position of the UE (120) based at least in part on the first measurement, the second measurement, the identification of the first PRS configuration, the identification of the second PRS configuration, a location of the first eNB, and a location of the second eNB.

14. The location server (170) of claim 13, wherein the first measurement of the first PRS and the second measurement of the second PRS are measurements of a reference signal time difference, RSTD, for Observed Time Of Arrival, OTDOA, positioning for a Long Term Evolution, LTE, wireless access.

15. A non-transitory computer-readable medium storing computer-executable instructions for assisting a position determination of a user equipment, UE (120) communicating over a shared communication medium in unlicensed spectrum which, when executed by the UE, cause the UE to carry out a method in accordance with any of claims 1 to 3 or computer-executable instructions for determining a position of said UE (120) which, when executed by a location server, cause the location server to carry out a method in accordance with any of claims 4 to 8.