

CLAIMS**WHAT IS CLAIMED IS:**

1. A method for wireless communications by a user equipment (UE), comprising:
determining a quasi-co-location (QCL) relationship of an aperiodic channel state information (CSI) reference signal (CSI-RS) to a physical channel; and
processing the aperiodic CSI-RS according to the determined QCL relationship.
2. The method of claim 1, wherein determining the QCL relationship is based on:
an offset parameter related to the aperiodic CSI-RS and a downlink control information (DCI) scheduling the aperiodic CSI-RS, and
a threshold value.
3. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of a control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is not yet determined by the UE.
4. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of a control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is lower than the threshold.
5. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic CSI-RS, when the offset parameter is not yet determined by the UE.
6. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic CSI-RS, when the offset parameter is lower than the threshold.

7. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship of a unicast physical downlink shared channel (PDSCH) on a set of time and frequency resources including time and frequency resources of the aperiodic CSI-RS, when the offset parameter is not yet determined by the UE.
8. The method of claim 2, wherein determining the QCL relationship comprises determining to use a QCL relationship of a unicast physical downlink shared channel (PDSCH) on a set of time and frequency resources including time and frequency resources of the aperiodic CSI-RS, when the offset parameter is lower than the threshold.
9. The method of claim 1, wherein determining the QCL relationship comprises:
determining the QCL relationship based on a QCL relationship for rate-matched resource elements (REs) indicated in a grant for a downlink data channel, wherein processing the aperiodic CSI-RS comprises processing the aperiodic CSI-RS in the rate-matched REs.
10. A method for wireless communications by a base station (BS), comprising:
determining a quasi-co-location (QCL) relationship of an aperiodic channel state information (CSI) reference signal (CSI-RS) to a physical channel; and
transmitting the aperiodic CSI-RS according to the determined QCL relationship.
11. The method of claim 10, wherein determining the QCL relationship is based on:
an offset parameter related to the aperiodic CSI-RS and a downlink control information (DCI) scheduling the aperiodic CSI-RS, and
a threshold value.
12. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET ID), when the offset parameter is not yet determined.

13. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET ID), when the offset parameter is lower than the threshold.
14. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic CSI-RS, when the offset parameter is not yet determined.
15. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic CSI-RS, when the offset parameter is lower than the threshold.
16. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship of a unicast physical downlink shared channel (PDSCH) on a set of time and frequency resources including time and frequency resources of the aperiodic CSI-RS, when the offset parameter is not yet determined.
17. The method of claim 11, wherein determining the QCL relationship comprises determining to use a QCL relationship of a unicast physical downlink shared channel (PDSCH) on a set of time and frequency resources including time and frequency resources of the aperiodic CSI-RS, when the offset parameter is lower than the threshold.
18. The method of claim 10, wherein determining the QCL relationship comprises determining the QCL relationship based on a QCL relationship for resource elements (REs) rate-matched with the physical channel, and the method further comprises:
 - transmitting the physical channel according to another QCL relationship.

19. A method for wireless communications by a base station (BS), comprising:
determining a quasi-co-location (QCL) relationship of an aperiodic sounding reference signal (SRS) to a physical channel; and
processing the aperiodic SRS according to the determined QCL relationship.
20. The method of claim 19, wherein determining the QCL relationship is based on:
an offset parameter related to the aperiodic SRS and a downlink control information (DCI) scheduling the aperiodic SRS, and
a threshold value.
21. The method of claim 20, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is not yet determined.
22. The method of claim 20, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is lower than the threshold.
23. The method of claim 20, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic SRS, when the offset parameter is not yet determined.
24. The method of claim 20, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic SRS, when the offset parameter is lower than the threshold.

25. A method for wireless communications by a user equipment (UE), comprising:
determining a quasi-co-location (QCL) relationship of an aperiodic sounding reference signal (SRS) to a physical channel; and
transmitting the aperiodic SRS according to the determined QCL relationship.
26. The method of claim 25, wherein determining the QCL relationship is based on:
an offset parameter related to the aperiodic SRS and a downlink control information (DCI) scheduling the aperiodic SRS, and
a threshold value.
27. The method of claim 26, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is not yet determined by the UE.
28. The method of claim 26, wherein determining the QCL relationship comprises determining to use a QCL relationship of a physical downlink control channel (PDCCH) of control resource set (CORESET) having a lowest identifier (CORESET-ID), when the offset parameter is lower than the threshold.
29. The method of claim 26, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic SRS, when the offset parameter is not yet determined by the UE.
30. The method of claim 26, wherein determining the QCL relationship comprises determining to use a QCL relationship indicated in a grant of time and frequency resources of another transmission, wherein the granted time and frequency resources include time and frequency resources of the aperiodic SRS, when the offset parameter is lower than the threshold.