## CLAIMS

1. A method for characterising a wireless communications link, the wireless communications link being a link between a transmitter and a receiver, comprising:

receiving data representing a position of ~~a~~ the transmitter;

receiving data representing a position of ~~a~~ the receiver;

receiving a measure of transmitted power at an output of the transmitter;

receiving a measure of received power at an input to the receiver;

generating at least one non line-of-sight metric to characterise the wireless link between the transmitter and the receiver based on the position of the receiver, the position of the transmitter, the transmitted power and the received power; and

outputting the non line-of-sight metric to characterise the wireless communications link,

wherein the data representing the position of the transmitter is transmitted from the transmitter and the transmitter is a mobile transmitter.

2. A method as claimed in claim 1 comprising:

determining a distance between the transmitter and the receiver, using said position of the transmitter and position of the receiver.

3. A method as claimed in ~~claims 1 or 2~~ claim 1 comprising:

determining an observed path loss, using said measure of transmitted power and said measure of received power inputs.

4. A method as claimed in claim 3 wherein said observed path loss is calculated as:

$$L_O = P_T - P_R$$

where:

$L_O$ is the observed path loss;

$P_T$ is a measure of transmitted power at the output of a transmit antenna; and

$P_R$ is a measure of received power at the input to a receive antenna;

5. A method as claimed in ~~any one of claims 2 to 4~~ claim 2 comprising:

determining a modelled path loss based on the distance and a model of path losses.

6. A method as claimed in claim 5 wherein said model of path losses is:

$$L_M = L_{ref} + 10\gamma \log_{10} \frac{d}{d_{ref}}$$

where:

$L_M$ is the modelled path loss;

$d$ is the distance;

$d_{ref}$ is a reference distance (in same units as $d$);

$L_{ref}$ is the path loss (dBm) at $d_0$;

$P_R$ is the received power in dBm; and

$\gamma$ is a path loss distance exponent;

7. A method as claimed in ~~claims 5 or 6~~ claim 5 comprising adjusting a parameter of the model of path losses according to environmental conditions.

8. A method as claimed in claim 7 wherein the path loss distance exponent is adjusted in the presence of at least one of:

- rain;
- fog; and
- snow.

9. A method as claimed in ~~claims 7 or 8~~ claim 7 comprising detecting said environmental conditions using at least one of:

- a sensor collocated with a non line-of-sight metric generator that generates said non line-of-sight metric;
- a sensor collocated with the transmitter, an output of the sensor being communicated to the non line-of-sight metric generator;
- a status of vehicle windscreen wipers where the non line-of-sight metric generator is mounted onboard a vehicle; and
- a status of vehicle windscreen wipers where the transmitter is mounted onboard a vehicle and the status is communicated to the non line-of-sight metric generator.

10. A method as claimed in ~~any of the preceding claims~~ claim 1 wherein said step of receiving data representing a ~~measure of the~~ position of the transmitter comprises at least one of:

determining a fixed location of the transmitter;

obtaining ~~the measure~~ the data representing the position of the transmitter from a global positioning system (GPS);

retrieving the position from stored data; and

extracting the position of the transmitter from data transmitted to the receiver.

11. A method as claimed in ~~any of the preceding claims~~ claim 1 wherein said measure of transmitted power input is provided by at least one of:

- a fixed level;
- a measure relative to some stage of the transmitter prior to a transmit antenna;
- stored data; and
- inclusion in data transmitted to the receiver.

12. A method as claimed in ~~any of the preceding claims~~ claim 1 wherein said measure of received power input is provided by at least one of:

- output from the receiver;
- a measure relative to receiver input or some stage prior to the receiver input;
- stored data.

13. A method as claimed in ~~any of the preceding claims~~ claim 1 comprising receiving at least one parameter used to calculate said measure of transmitted power input or said measure of received power input, the parameter comprising at least one of:

- information regarding system losses;
- information regarding system gains;
- antenna configuration; and
- antenna gain.

14. A method as claimed in claim 5 comprising calculating a path loss difference between an observed and modelled path losses as:

$$\Delta L = L_O - L_M$$

where:

$\Delta L$ is the path loss difference;

$L_O$ is the observed path loss; and

$L_M$ is the modelled path loss.

15. A method as claimed in claim 14 comprising mapping said path loss difference to a non line-of-sight metric value prior to output.

16. A method as claimed in claim 15 wherein said mapping comprises at least one of:

- said path loss difference mapped onto said non line-of-sight metric according to some predetermined function;
- said path loss difference mapped onto a predetermined said non line-of-sight metric assigned to said path loss difference value;
- said path loss difference and said transmitter-to-receiver distance mapped onto said non line-of-sight metric according to some predetermined function;
- said path loss difference and said transmitter-to-receiver distance mapped onto a predetermined said non line-of-sight metric assigned to that combination of said path loss difference and said transmitter-to-receiver distance;
- a function that quantizes said path loss difference; and
- a function that quantizes said transmitter-to-receiver distance.

17. A method as claimed in ~~claims 15 or 16~~ claim 15 wherein said mapping comprises segmenting input space into bins.

18. A method as claimed in claim 17 wherein each said bin is defined by predetermined lower boundary and upper boundary, and said output metric values are assigned to each bin.

19. A method as claimed in ~~claims 17 or 18~~ claim 17 wherein said bin segmentation comprises at least one of:

- two bins, with a boundary between bins selected such that the boundary demarcates the expected value of said path loss difference input as either line-of-sight (LOS) or non line-of-sight; and
- three bins, with a boundary between first and second bins selected such that the boundary demarcates the expected value of said path loss difference input as either line-of-sight or unknown, and a boundary between second and third bins selected such that the boundary demarcates the expected value of said path loss difference input as either unknown or non line-of-sight.

20. A method as claimed in ~~any one of the preceding claims~~ claim 1 comprising calculating an observed path loss for each of a plurality of receive antenna.

21. A method for characterising a wireless communications link, the wireless communications link being a link between a transmitter and a receiver, comprising:

receiving data representing a distance between ~~a~~ the transmitter and ~~a~~ the receiver, the distance being calculated based on at least one of:

data transmitted from the transmitter; and

data transmitted from the receiver;

receiving a measure of transmitted power at an output of the transmitter;

receiving a measure of received power at an input to the receiver;

generating at least one non line-of-sight metric to characterise the wireless link between the transmitter and the receiver based on the distance, the transmitted power and the received power; and

outputting the non line-of-sight metric to characterise the wireless communications link, wherein at least one of the transmitter and the receiver is mobile.

22. A non-transient computer program product comprising machine readable program code recorded on a machine readable recording medium, for controlling the operation of a data processing apparatus on which the program code executes to perform a method for characterising a wireless communications link, the wireless communications link being a link between a transmitter and a receiver, comprising:

receiving data representing a position of ~~a~~ the transmitter;

receiving data representing a position of ~~a~~ the receiver;

receiving a measure of transmitted power at an output of the transmitter;

receiving a measure of received power at an input to the receiver;

generating at least one non line-of-sight metric to characterise the wireless link between the transmitter and the receiver based on the position of the receiver, the position of the transmitter, the transmitted power and the received power; and

outputting the non line-of-sight metric to characterise the wireless communications link,

wherein the data representing the position of the transmitter is transmitted from the transmitter and the transmitter is a mobile transmitter.

23. An apparatus for characterising a wireless communications link, the wireless communications link being a link between a transmitter and a receiver, comprising:

means for receiving data representing a position of ~~a~~ the transmitter;

means for receiving data representing a position of ~~a~~ the receiver;

means for receiving a measure of transmitted power at an output of the transmitter;

means for receiving a measure of received power at an input to the receiver;

means for generating at least one non line-of-sight metric to characterise the wireless link between the transmitter and the receiver based on the position of the receiver, the position of the transmitter, the transmitted power and the received power; and

means for outputting the non line-of-sight metric to characterise the wireless communications link,

wherein the data representing the position of the transmitter is transmitted from the transmitter and the transmitter is a mobile transmitter.