Claims

The claims defining the invention are as follows

1. A device for determining if a vehicle is illegally parked in a reserved parking lot for parking enforcement purposes comprising ~~at least~~

   a memory specifically adapted to store ~~information pertaining to a list of authorized~~ the data of the vehicles authorized to park in reserved parking lots. To each of these authorized vehicles, the data stored in the memory include the unique vehicle ID, the type(s) and the location(s) of the reserved parking lots in which parking is authorized, and the related authorized parking periods and time zones ~~including information to uniquely identify each authorized vehicle in the list and information pertaining to the associated parking lots that each authorised vehicle is authorised to occupy~~,

   a visual parking lot identifier specifically adapted to provide parking lot information pertaining to a parking lot, such as lot type and location, based on the detection and identification of the colour of the parking lot boundary line, and of the lot number printed on the ground near to the lot boundary line.

   a vehicle ID reader specifically adapted to capture the ~~vehicle~~ unique ID of the ~~a~~ vehicle that is parked in a reserved parking lot,

   an equipment interface specifically adapted to receive at least the parking lot information from the parking lot identifier and the vehicle ID from the vehicle ID reader for the vehicle parking in ~~the~~ a reserved parking lot, and

   a microprocessor specifically adapted to receive the parking lot information and the vehicle ID ~~from~~ via the equipment interface and to compare the received parking lot information and the received vehicle ID with the information data stored in the memory, and determine if the vehicle is parked illegally in the reserved parking lot based on ~~the comparison between the received parking lot information and the vehicle ID vehicle and the information data stored in the memory based on~~ whether the vehicle is parked in a parking lot which it is not authorized to occupy.

2. A device according to claim 1, wherein the list of the authorized vehicles contains at least one vehicle ID for each vehicle and the information pertaining to the associated parking lots.

3. A device according to claim 2, wherein the vehicle ID includes one or more of the following: the vehicle license plate number; the number of an in-vehicle electronic label, unit, or device; or the number of an RFID transponder or tag associated with the vehicle.

4. A device according to any one of the preceding claims, wherein the vehicle ID reader includes one or more of the following: an OCR camera for capturing the vehicle license plate number; ~~an~~ RF antenna for reading the number of an in-

vehicle electronic label, unit, or device; a RFID reading for reading the number of a transponder (or a tag) associated with the vehicle; ~~or the number of an RF transponder, or tag associated with the vehicle~~.

5. A device according to claim 1 or 2, wherein the parking lot information includes one or more of the following: parking lot type or lot number.

6. A device according to claim 5, wherein the parking lot type includes one or more of the following: normal, reserved whole-day season, night season, handicap, or other special types.

7. A device according to any one of the preceding claims, wherein the visual parking lot identifier includes one or more of the following: a manually operated switch; a camera system to differentiate the parking lot types; ~~an RF antenna for reading the transponder or tag associated with each respective parking lot.~~

8. A device according to any one of the preceding claims, further comprising an alarm to issue an alert when the microprocessor determines that a vehicle is parked illegally in a reserved parking lot.

9. A device according to claim 8, wherein the microprocessor is coupled to the equipment interface such that the alarm is issued when the microprocessor determines that a vehicle is parked illegally in a reserved parking lot.

~~10. A device according to any one of the preceding claims further comprising a clock to provide time stamps for records of vehicles parked illegally.~~

~~11. A device according to any one of the preceding claims, further comprising a power supply unit to provide power for the device.~~

~~12~~ 10. A device according to any one of the preceding claims, further comprising a wireless modem for the device to communicate with a server and/or host computer to download the data relating to reserved parking lots and the data relating to authorized vehicles and to report the identification and determination results.

~~13~~ 11. A device according to any one of the preceding claims, further comprising one or more indicators to show the operation status of the device.

~~14~~ 12. A device according to any one of the preceding claims, further comprising a touch screen monitor to input operation instructions into the device and/or display information.

~~15~~ 13. A device according to any one of the preceding claims, wherein the vehicle ID reader is adapted to capture the vehicle ID of a vehicle that is parked in a parking lot only if the parking lot is reserved for authorized vehicles.