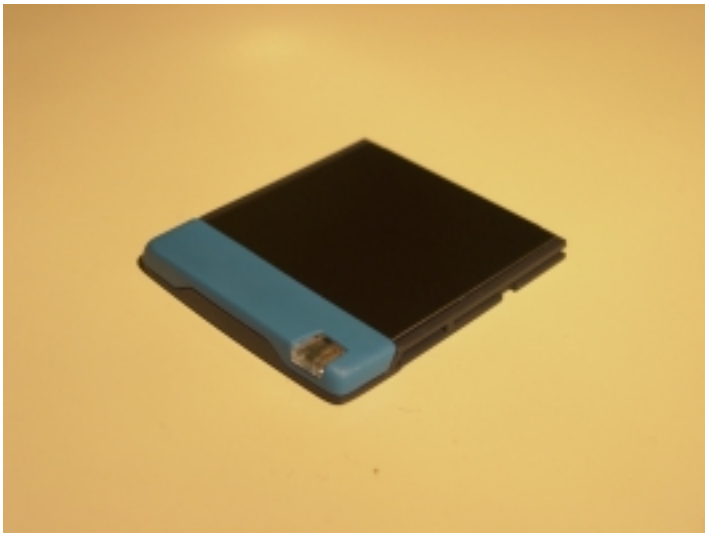
LSE039R2

Bluetooth Compact Flash Card with Software for Windows Pocket PC Release 1.3



User's Manual

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1 Introduction

Thank you for purchasing this LSE039R2 Bluetooth Compact Flash Card. It will provide a fast and reliable wireless connection with other Bluetooth enabled computers (PC's), Handheld or Pocket PC's etc.

This User's Manual will guide you through the installation steps necessary to make your Bluetooth Compact Flash Card operate

This manual assumes that you have a basic understanding of personal, handheld or pocket computers etc., and that you are familiar with the basic terminology and procedures for using Windows and Pocket PC operating systems.

NOTE: Henceforth in this manual the Bluetooth Compact Flash Card will be abbreviated "CF".

1.1 Features

- Bluetooth connectivity
- Up to 460 kbps data rate
- Integrated antenna
- Applications supported:
- OBEX FileTransfer, client and server
- Serial Port Profile as Device A (initiator)
- Dial-up Networking Profile as terminal
- LAN Access (together with third party Bluetooth LAN Access Point)
- Wireless printing using WPP in conjunction with the LSE019 Bluetooth Printer Adapter
- Wireless printing over the Bluetooth Serial Port Profile (third party printing SW is not provided)
- Fax Profile as terminal (the fax application is not provided)

1.2 Bluetooth Capability Statement

This product is manufactured to meet the Bluetooth specification 1.1.

The following Bluetooth Qualified profiles / interoperable products are supported:

- Generic Access Profile
- Serial Port Profile
- File Transfer Profile
- LAN Access Profile
- Dial-Up Networking Profile

1.3 System Requirements

To use the Bluetooth Compact Flash Card R2 with SW for Pocket PC you must have a Windows powered Pocket PC 3.0 or Pocket PC 2002 device (often referred to as a PDA).

The Bluetooth Pocket PC SW is installed from a PC connected to the Pocket PC device. The PC must run Microsoft Windows 95/98/ME/2000/NT4.0 and have ActiveSync installed. The required free hard disk space is XX MB.

1.4 SW and HW compatibility and limitations

The enclosed software for Pocket PC release 1.3 also supports the following Bluetooth compliant products from National Semiconductor Sweden AB:

- LSE041 R2 Bluetooth PC Card. Fully compatible without limitations.
- LSE039 R1 Bluetooth Compact Flash Card. Limitations: LAN access is only supported in single user mode. The LSE039 R1HW is qualified according to Bluetooth 1.0B + critical errata.
- LSE041 R1 Bluetooth PC Card. Limitations: LAN access is only supported in single user mode. The LSE041 R1HW is qualified according to Bluetooth 1.0B + critical errata.

2 Installation

2.1 Uninstall previous SW versions

First, if present, remove any old SW versions installed:

1. Remove the CF Card and run \StartMenu\SppLoader.exe until it says "Serial Ports are disabled".

2. Uninstall any previous installation of the Bluetooth Pocket PC SW by using ActiveSync from a connected PC.

2.2 Install new SW

1. Run the setup.exe and follow the instructions

2. IMPORTANT! Reset the device TWICE.

2.3 Insert the CF Card

1. Insert the CF card.
2. Verify the installation by starting a Bluetooth application, e.g. \StartMenu\FileTransfer.exe to verify that status goes into idle within a couple of second.
3. Installation completed!

3 Using the Bluetooth Profile Wizard

The Bluetooth Profile Wizard has six different sub-wizards used to configure your device. They are:

- Serial Port Connection
- Dial Up Networking
- Pairing
- LAN Access
- Serial Port Management
- Local Configuration

To start one of the sub-wizards, select the corresponding icon and press Next at the bottom of the screen. Alternatively, double-click on the icon.

To start the Bluetooth Profile Wizard, go to Start Menu/Programs and click on the Bluetooth Wizard icon.

3.1 Serial Port Connection

The Serial Port Connection sub-wizard is used to connect a *virtual* serial port on your local device to a remote Bluetooth device supporting the Serial Port Profile (SPP). The Serial Port Profile can be seen as a cable replacement, where the standard RS232 cable is replaced by a Bluetooth connection. This wizard is typically used when setting up a serial port for Bluetooth SPP printing, Bluetooth ActiveSync, or other legacy applications that usually are run on the serial port.

Configuration

1. On the first page, select which port you wish to use and press Next.
2. On the next page, a list of devices supporting SPP is presented. You may click on Show all devices to show a list of all devices. If the wizard is run for the first time, or no SPP devices has been seen before, a device discovery will start automatically when the page is entered.
3. To manually update the list of devices, click Search Again to update the whole list. To update a single device, tap-n-hold and select Update from the pop-up menu.
4. Select a device and press Next. Next will only be enabled if a device supporting SPP has been selected.
5. On the last screen, a confirmation will be shown, indicating success or failure. Press Finish to exit sub-wizard and return to main wizard start screen.

3.2 Dial Up Networking

The Dial Up Networking sub-wizard is used to connect a *virtual* serial port on the local device to a modem of a remote Bluetooth device supporting the Dial Up Networking (DUN) Profile.

Configuration

1. On the first page, select which port you wish to use and press Next.
2. On the next page, a list of devices supporting DUN is presented. You may click on Show all devices to show a list of all devices. If the wizard is run for the first time, or no DUN devices has been seen before, a device discovery will start automatically when the page is entered.
3. To manually update the list of devices, click Search Again to update the whole list. To update a single device, tap-n-hold and select Update from the pop-up menu.

4. Select a device and press Next. Next will only be enabled if a device that is supporting DUN has been selected.
5. On the last screen, a confirmation will be shown, indicating success or failure. Instruction is also given on how to create a dial up connection on this port. Press Finish to exit sub-wizard.
6. Before returning to the main wizard start screen, the user will be shown a message box with the option to start the Pairing sub-wizard. This is because most dial-up networking devices requires that the device is paired to the client before allowing access to its services.
7. Selecting Yes, will start the Pairing sub-wizard. Selecting No, will return to the main wizard start screen.

3.3 Pairing

The Pairing sub-wizard is used to create an initial authenticated connection to a remote Bluetooth device where a common link-key is created and store for later use.

Configuration

1. On the first page, select if you wish to perform the pairing as initiator or acceptor, i.e. if you wish to initiate the connection to the remote device, select initiator. If you want to wait for an incoming connection request from the remote device, select acceptor. Press Next.
2. If initiator was selected, the next page will show you a list of previously seen devices. To update the list of devices, press Search Again.
3. Select the device you wish to pair to and press Next.
4. The next page will allow you to enter a PIN code, which will be used to authenticate your device to the remote device. Make sure that the remote device is ready to accept connections and press Next.
5. On the last page of the sub-wizard, a connection attempt will be made and the result, success or fail, will be shown. If failed, you can make another attempt by pressing Try Again button. If success, the sub-wizard is closed by pressing the Finish button.
6. If acceptor was selected on the first page, the device and PIN code pages will be skipped and your device will be initiated to wait for incoming connections. When an incoming connection request is detected you will be instructed to enter a PIN code. If the connection succeeds, the Finish button will close the wizard. If the connection fails, you may press the Try Again button to start waiting for another connection request.

3.4 LAN Access

The LAN Access sub-wizard is used to connect a *virtual* serial port on the local device to a remote Bluetooth device supporting the LAN Access Profile (LAP).

Configuration

1. On the first page, select which port you wish to use and press Next.
2. On the next page, a list of devices supporting LAP is presented. You may click on Show all devices to show a list of all devices. If the wizard is run for the first time, or no LAP devices has been seen before, a device discovery will start automatically when the page is entered.
3. To manually update the list of devices, click Search Again to update the whole list. To update a single device, tap-n-hold and select Update from the pop-up menu.
4. Select a device and press Next. Next will only be enabled if a device that is supporting LAP is selected.
5. On the last screen, a confirmation will be shown, indicating success or failure. Instruction is also given on how to create a connection on this port. Press Finish to exit the sub-wizard.
6. Before returning to the main wizard start screen, the user will be shown a message box with the option to start the Pairing sub-wizard. This is because most LAN Access Point devices requires that the device is paired to the client before allowing access to its services.

7. Selecting Yes, will start the Pairing sub-wizard. Selecting No, will return to the main wizard start screen.

3.5 Serial Port Management

The Serial Port Management sub-wizard is used to add and remove *virtual* serial ports from the system. Also, a modem is created and attached to each serial port that is added.

Configuration

1. On the first page there are a list of currently available ports and two buttons for adding and removing ports. To add a port, simply press the Add button.
2. On the next page, choose an available port from the combo box and press Next. Advanced users may check the Advanced options check box to override the default options.
3. On the last page, a confirmation will be shown with either success or fail. If the creation succeeded, press Finish to close the sub-wizard. The user will be instructed to reset the device to complete the installation. If failed, press Cancel to exit the sub-wizard.
4. To remove a port, select an existing port on the first page of the sub-wizard and press the Remove button.
5. A confirmation dialog will be shown instructing the user that the selected port will be remove. Instructions will also be given that the modem connected to the port will be removed as well, and that possible connections using that modem will be invalid afterwards. To continue, press Next.
6. On the last page, a confirmation will be shown with either success or fail. If the creation succeeded, press Finish to close the sub-wizard. The user will be instructed to reset the device to complete the uninstallation. If failed, press Cancel to exit the sub-wizard.

3.6 Local Configuration

The Local Configuration sub-wizard is used to configure your local device.

Configuration

1. On the first page there is an edit box where you can enter a name (“friendly name”) which the device will use to identify itself to other devices.
2. On the second page, the mode of the Bluetooth CF Card is set, i.e. if your local device can be found by other devices (*discoverable*) and if it should allow incoming connection requests (*connectable*).
3. On the last page, the security options are set, i.e. if a PIN code is required at every connection attempt (*authentication*) and if the links should be encrypted.
4. When pressing Finish on the last page, all changes are written to the registry. Pressing Cancel will discard all changes.

4 The File Transfer Application

1. To start the File Transfer application, run \Start Menu\FileTransfer
2. Make sure the FileTransfer server application is running on the remote Bluetooth enabled device (PC or PDA).
3. Select if SDP should be used or not by checking/un-checking the "Use SDP"-checkbox.
   - With SDP, the FileTransfer client will first do a Bluetooth Device Inquiry to find nearby Bluetooth devices, and then perform an SDP-query to find out if the devices support OBEX FileTransfer. If they don't they won't be displayed in the FileTransfer user interface. When trying to connect, the FileTransfer will use the RFCOMM server channel found via SDP.

   - Without SDP, the FileTransfer client will only do an inquiry and then display all found devices. When connecting, RFCOMM server channel 5 will be used. (This will work with current versions of the PC and Pocket PC based FileTransfer from National Semiconductor Sweden AB.)
4. Click *Search* and wait for the search procedure to complete.
5. If the wanted remote device is found, select it and click *Connect*.
6. When connected, you will see the listing of files and folders in the remote machine's root folder.
7. Click *Up / Open* to navigate the folder hierarchy of the remote machine.
8. Click *Put* or *Get* to move files between the machines.
9. Click *Disconnect* and then *Quit* when the FileTransfer session is finished.

5 The Wireless Printing Application

The proprietary Wireless Printing (WPP) application supports printing of ASCII (plain text) formatted documents. This is a proprietary application that works only in conjunction with the LSE019 Printer Adapter. The application features a Wireless Printing Protocol that considerably improves communication reliability to achieve error free printing.

1. Connect the LSE019 Printer Adapter to the printer.
2. On your local device, start WppClient from the Start Menu
3. If no Bluetooth Printer Adapter device is associated, select the wanted Bluetooth Printer Adapter device.
4. Click *Print* and select the text-document file to print.
5. When printing is finished, the WppClient will quit.

6 Serial Port Profile Printing

Printing using the Bluetooth Serial Port Profile is supported by a number of third party printers, e.g. the HP 995c Bluetooth printer. A third-party printing software is required, e.g. from Field Software (www.fieldsoftware.com).

1. Use the Serial Port Connection sub-wizard to connect a *virtual* serial port on your local device to the remote Bluetooth printer device supporting the Serial Port Profile (SPP).

2. Start the printing software and choose the previously configured virtual serial port as the printer port.

7 Advanced configuration using the Control Panel

The Control Panel may be used by advanced users to manually configure to modify the configuration of your Bluetooth device.

7.1 Local settings

1. Go to Start Menu\Settings\Connections
2. Click the BlueCard icon
3. Hardware settings:
   bdaddress, **friendly name** and **FW revision** information is automatically retrieved from the CF card. To refresh, click *Update*.
4. Mode settings:
   Select default mode for the CF-card:

a) discoverable or non-discoverable

b) Connectable or non-connectable.

- If you want to use the FileTransfer application as a server, you must have the device both discoverable and connectable.
- You must not choose discoverable and non-connectable, this combination is not yet supported.

5. Security settings and pairing with other Bluetooth devices:

a) Select if you by default should require authentication or not.

b) Select if you by default should use encryption.

- When you have paired with another Bluetooth device, the device will appear in the list of paired devices.
- You may remove it by selecting it and clicking the remove button.
- If you switch to another CF-card after pairing, the link-key will not work and you must re-pair with any previously paired Bluetooth devices.

6. Serial Ports settings: See below.

7.2 Dial-Up Networking and LAN Access

Configure for Dial-Up Networking (DUN) and LAN Access

1. Run \Settings\Connection\BlueCard
2. Select *SerialPort*, and select *COM5* for use with a modem. If *COM5* is unavailable, select *COM7*.
3. Enter **bdaddress**, **server_channel** and **port type** manually,

   or

a) Click *Search*
   - The target device, a Bluetooth phone or a LAN Access Point, must be in discoverable mode and within range.
   - Wait for the devices to be discovered.

b) Select the wanted device. Click the name button to retrieve the **friendly name** if needed to identify the device.

c) Click *SDP* if the remote device supports SDP.
   - Wait for SDP to complete.

d) Select the found service that you want to use.

e) Click the Back button.

4. Make sure the *Client* radio-button is selected.
5. Select the port type.
6. Click *Save.*
7. Close the BlueCard Control Panel by clicking the *Ok* button.

Setting up the modem

Before using DUN and LAN access you must also setup the modem:

Run \Settings\Connections\Modem\WSS Bluetooth modem.

Note: For LAN access you may enter any phone number.

8 Troubleshooting Guide

8.1 Support information

Start the Bluetooth Profile Wizard and select the “About” option to display the current Bluetooth SW and HW version installed on your local machine.

8.2 Installation

Problem: You cannot uninstall the old BlueCard installation, or you cannot install the new BlueCard installation, because the installer says that some files are in use.

Solution: Remove the CF-card to unload the device driver, and run SppLoader until it says "Serial Ports are disabled" (this is in order to free some DLL’s).

8.3 Dial-Up networking

Problem: When you try to connect from Internet Explorer, you immediately see "Failed ..."

Solution: Try resetting the PDA and make sure you get the message "SerialPorts are enabled" at startup.

Problem: After approximately 10 seconds, after clicking Connect in Internet Explorer, you get "Failed to open port..."

Solution: Either the CF card failed to initialize or the Bluetooth phone did not accept the connection.

- Try running the FileTransfer to verify that the CF card is working properly.
- Make sure the phone is on and within range.
- You may not be authenticated if the phone requires authentication. Turn off authentication or Authenticate.

Problem: You get “No carrier” detected, and/or the phone disconnects after trying to connect from Internet Explorer.

Solution:

- Does the phone have a valid data-com subscription?
- Either the phone's modem is not replying or you have dialed a bad phone-number. Try restarting the phone, and check that the phone-number is correct. Also check the AT commands in the additional init-string in the modem settings.

8.4 LAN Access

Problem: My device doesn’t connect to a Bluetooth LAN Access Point.

Solution: Check wether your Bluetooth CF Card is of revision R2 or R1. R2 is required to fully support LAN Access.

8.5 File Transfer

Problem: When FileTransfer application is started you get the error "Failed to attach to Bluetooth stack..."

Solution:

- Another application may hold the Bluetooth stack. Close it and try again.
- The CF card may not be inserted. Insert it and try again.

9 Technical Specifications

9.1 Radio Specifications

Frequency range	2.402 - 2.4800 GHz, programmable for specific national regulations.
RF output power	0 dBm, Power Class 2
Receiver sensitivity	Better than -70 dBm at 0.1% BER
Frequency spectrum utilization	Frequency Hopping Spread Spectrum (FHSS)
Modulation	Gaussian Frequency Shift Keying (GFSK)
Transmission bit rate	1 Mbps
Antenna	Integrated

9.2 Electrical Characteristics

Power supply	3.3 V from Compact Flash Card slot
Max current consumption	60 mA
Min current consumption	10 mA
Visual indicators	Power / Data traffic (LED)

9.3 Specific Features

Host operating system supported	Windows Pocket PC (CE 3.0) Windows Pocket PC 2002 (Beta status)
Host processors supported	SH3, MIPS, StrongARM For Pocket PC 2002: StrongARM
Installation and Configuration	By using Microsoft ActiveSync from a PC connected to the Pocket PC host device. Installation and configuration SW supports Windows 95/98/ME/2000 and NT4.
Upgrade of CF firmware	Special programming adapter required

9.4 Security

Authentication	Supported
Encryption	Supported

9.5 Mechanical

Physical interface	Type I Compact Flash Card slot
Dimensions	47.8 x 42.9 x 6.0 mm
Weight	15 g

9.6 Environmental

Operating temperature	±0º C to +55º C
Storage temperature	-20º C to +70º C
Humidity	5-95% non-condensing

9.7 Standards Supported

Supported specification	Bluetooth 1.1

9.8 Compliance

Regulative compliance	FCC part 15 UL 1950 (US) ETS 300 328 ETS 300 826 EN 60950 (EUROPE)

10 Regulations (LSE039R2 Bluetooth Compact Flash Card)

10.1 European Compliance CE 0413 !

Limitation on Use of Wireless Technology (R&TTE 1999/5/EC)

The use of Bluetooth equipment is not allowed/limited in some countries, due to limitations on the use of the frequency band 2400 – 2483.5 MHz. If radio frequency interference occurs, please stop using this equipment immediately.

EMC, Electrical Safety and Radio EC Directive Compliance

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

- Council Directive 1999/5/EC of the European Parliament and the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.
- Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility (EMC).
- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Each of the above mentioned directives amended by

- Council Directive 93/68/EEC of 22 July 1993 on the harmonization of the CE marking requirements.

A “Declaration of Conformity” in accordance with the relevant standards to confirm compliance with the above-mentioned directives has been made and is on file at National Semiconductor Sweden AB, Sundbyberg, Sweden.

10.2 FCC (US) Compliance

FCC R.F. Interference Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for class B Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by Wireless Solutions Sweden AB could void the user's authority to operate the equipment.

10.3 Exposure to Radio Frequency Radiation

The radiated output power of the equipment is far below the FCC radio frequency exposure limits. Nevertheless, it is advised to use the equipment in such a manner that the potential for human contact during normal operation is minimized.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. End-users must be provided with specific operating instructions for satisfying RF exposure compliance requirements.

10.4 Important Safety Information

10.4.1 Safety Warnings!

Interference

All wireless devices may get interference, which could affect performance.

Switch off in aircraft

Wireless devices can cause interference. Using them on aircraft is illegal.

Switch off when refueling

Do not use the wireless Compact Flash at a refueling point. Do not use near fuel or chemicals.

Switch off near blasting

Do not use the Compact Flash where blasting is in progress. Observe restrictions, and follow any regulations or rules.

Switch off near medical equipment.

Follow all regulations and rules in hospitals. Do not use the Compact Flash near medical equipment.

Use qualified service

Only qualified service personnel must repair equipment.

Accessories

Use only approved accessories. Do not connect incompatible products.

Connecting to other devices

When connecting to any other device, read its user's guide for detailed safety instructions. Do not connect incompatible products.

Chemicals

Do not store or use the Compact Flash in places where it may be exposed to chemicals or chemical vapors. Doing so will lead to fires or electric chocks.

Prohibited areas

Do not use the Compact Flash when the use of a Bluetooth application is prohibited or when it may cause interference or danger

Humid or dusty places

Do not store or use the Compact Flash in humid or dusty places. Doing so could lead to fires or electric chocks.

Do not disassemble or modify the Compact Flash in any way

Do not disassemble or modify the Compact Flash in any way. Doing so without the express approval by the manufacturer will void user authority to operate the equipment and may lead to fires or electric shocks.

Switch off near a microwave oven in use

Do not use the Bluetooth Compact Flash Card close to a microwave oven in use. There may be a risk that the system will be disturbed.

Heat, direct sunlight

Avoid installing the Compact Flash near sources of heat or in direct sunlight.

Use only appropriate Region settings

Use only the region setting appropriate for the area where the Bluetooth application is used at the present time. Using the LSE039 Compact Flash in any other region or with an incorrect region setting may be illegal.

Connect only to SELV circuits

The Compact Flash is classified as an SELV (safety extra low voltage) circuit according to the electrical safety standards EN 60950/IEC 950/UL 1950 (Safety of information technology equipment). For this classification to be maintained, equipment to which the unit is connected must also be classified as an SELV circuit.

10.4.2 Operating Environment

Always obey any special regulations in force in any area and always power off your Bluetooth Compact Flash device whenever it is forbidden to use it, or when it may cause interference or danger.

When connecting the Compact Flash to another device, read it's users guide for detailed safety instructions. Do not connect incompatible products.

Electronic Devices

Most modern electronic equipment is shielded from radio frequency (RF) signals. However, certain electronic equipment may not be shielded against the RF signals from your Bluetooth device.

Hearing Aids

Some digital wireless devices may interfere with some hearing aids.

Medical Devices

Power off your Bluetooth device in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Potentially explosive atmospheres

Do not use your Bluetooth device when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause explosions.

Users are reminded of the need to observe restrictions on the use of radio equipment in fuel depots, chemical plants or where blasting operations are in progress.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include below deck on boats; chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemicals or particles, such as grain, dust or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

Failure to observe these instructions may lead to legal action.