# LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

National Semiconductor December 2004 Revision 1.0



# Introduction

The National Semiconductor® LMX9820A Bluetooth<sup>™</sup> Serial Port module is a highly integrated radio, baseband controller and memory device implemented on an FR4 substrate. All hardware and firmware is included to provide a complete solution from antenna through the complete lower and upper layers of the Bluetooth stack, up to the application including the Generic Access Profile (GAP), the Service Discovery Application Profile (SDAP), and the Serial Port Profile (SPP). The module includes a configurable service database to fulfil service requests for additional profiles on the host.

LMX9820A is optimized to handle the data and link management processing requirements of a Bluetooth node. The firmware supplied within this device offers a complete Bluetooth (v1.1) stack including profiles and command interface. This firmware features point-to-point and pointto- multipoint link management supporting data rates up to the theoretical maximum over RFComm of 704 kbps. The internal memory supports up to three active Bluetooth data links and on active SCO link.

This document will give a quick introduction into different usage scenarious of the LMX9820A Simply Blue Module. The guide refers to the deliverables you have received with the LMX9820ADEVKIT or LMX9820ADONGLE.

This document is based on:

Table 0-1.

| Item                                  | Version         |
|---------------------------------------|-----------------|
| Hardware                              | LMX9820ASM      |
| Firmware                              | V6.00 and later |
| Actual Firmware Release in production | V6.21           |

National Semiconductor ia a registered trademark of National Semiconductor Corporation. CompactRISC is a trademark of National Semiconductor. Bluetooth is a trademark of Bluetooth SIG, Inc. and is used under license by National Semiconductor.

For a complete listing of National Semiconductor trademarks, please visit www.national.com/trademarks.

# **Table of Contents**

|  | _      |
|--|--------|
| 1.0 Installation   | 3      |
| 1.1 INSTALL SIMPLY BLUE COMMANDER  | 3      |
| 1.2 INSTALL IVT BLUETOOTH STACK  | 3      |
| 1.3 SETTING UP HYPERTERMINAL4  | 1      |
| 2.0. Satur descriptions  | 2      |
|  | )      |
| 2.1 CABLE REPLACEMENT WITH LMX9820A WAITING FOR INCOMING CONNECTION  | 5      |
| 2.1.1 Connect Hyperterminal to LMX9820A  | נ<br>ה |
| 2.1.1.1 Start Hyperterminal  | 5<br>A |
| 2.1.1.2 Cleate new connection  | 7<br>7 |
| 2.1.1.4 Choose comport settings  | B      |
| 2.1.1.5 Reset the LMX9820A Evaluation Board  | 9      |
| 2.1.2 Establish Link to the LMX9820A from the ABE Bluetooth USB Dongle   | )      |
| 2.1.2.1 Start Inquiry - Search for devices in range  | )      |
| 2.1.2.2 Service Discovery - Get Services of the LMX9820A   | 1<br>1 |
| 2.1.2.4 Enter PIN for I MX9820A  | і<br>З |
| 2.1.3 Open Hyperterminal session on the virtual serial port  | 5      |
| 2.1.3.1 Start Hyperterminal  | 5      |
| 2.1.3.2 Create new connection  | 5      |
| 2.1.3.3 Choose correct Comport   | 5      |
| 2.1.3.4 Select correct comport settings  | 3      |
| 2.1.4 Use Hyperterminal for simple chat  | 7      |
|  | /<br>~ |
| 2.2 INITIATE A LINK WITH LINX9820A USING SIMPLY BLUE COMMANDER   | 1<br>~ |
| 2.2.1 Start Simply Blue Commander  | ł      |
| 2.2.2 Send Restore to factory settings and Reset   | ך<br>ר |
|  | )<br>0 |
| 2.2.3.1 Device Discovery - Send GIAC Inquiry   | 2      |
| 2.2.4 Get remote RFComm Port for SPP   | -      |
| 2.2.4.1 Create SDAP Connection   | 4      |
| 2.2.4.2 Browse for the SPP Service   | 3      |
| 2.2.4.3 Close SDAP Connection  | 3      |
| 2.2.5 Establish SPP Link   | 3      |
| 2.2.5.1 Select "Establish SPP Link"  | 3      |
| 2.2.5.2 Adapt Link Establishment parameters  | 9      |
| 2 2 6 Create Hyperterminal connection for incoming virtual serial port   | 2      |
| 2.2.6 Oreate Hyperterminal Certained and the model of the perturbation of the perturba | -2     |
| 2.2.6.2 Create new connection  | 2      |
| 2.2.6.3 Choose correct Comport   | 3      |
| 2.2.6.4 Select correct comport settings  | 3      |
| 2.2.7 Receiving Data in Simply Blue Commander  | +      |
| 2.2.8 Send Data by using "Send Data"   | ł      |
| 2.2.9 Switching to transparent mode on the LMX9820A  | כ<br>ר |
| 2.2.10 Generale BREAK to leave Transparent Mode  | ן<br>ר |
|  | ,      |
| 3.0 Bibliography   |        |
| 3 1 LMX9820A SOFTWARE USERS GUIDE VERSION 1.6.1. NATIONAL SEMICONDUCTOR 41   | 1      |
| 3.2 SIMPLY BLUE COMMANDER USERS GUIDE VERSION 1.0. NATIONAL SEMICONDUCTOR 41   | 1      |
|  | -      |
| 4.0 Revision History   | 2      |

# LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

# 1.0 Installation

# 1.1 INSTALL SIMPLY BLUE COMMANDER

The Simply Blue Commander is an easy to use application which enables you to send single commands to the LMX9820A Evalboard. The inbuilt command and event interpreter generates an easy to read log of the UART traffic between the application and the LMX9820A.

For the installation of the program please refer to the "Simply Blue Commander User Guide".

After installation please make sure the connection between PC and Board is set up and working.

The screen should come up like shown in Figure 1-1.

| 😥 Simply Blue Commander Version: 1.3.0.3                            | ×  |
|---|----|
| File Definitions Configuration About                                |    |
| Command Directory Transport Layer log                               |    |
| E - Device Discovery Rx: Event: SimplyBlue Ready, SW Version: 0621. |    |
| Bx(RAW): 00   |    |
| 🗄 🛅 SPP Link Establishment  |    |
| Audio Link Establishment  |    |
|   |    |
|   |    |
| H- Wake-up functionality  |    |
| E SPP Port Configuration  |    |
|   |    |
|   |    |
|   |    |
|   |    |
| - Send string   |    |
| Send Calc checksum and length Save bytes as command Generate break  |    |
|   |    |
|   | _  |
|   |    |
| <b>1 1 1 1 1 1 1 1 1 1</b>  |    |
|   |    |
| UART COM1 115200Bps   | // |

### Figure 1-1. Simply Blue Commander

# 1.2 INSTALL IVT BLUETOOTH STACK

In case you do not have any other bluetooth device for testing, each LMX9820A Evaluationboard includes one ABE USB Dongle. This dongle is a standard Bluetooth USB dongle based on National's standard HCI products LMX9814 or LMX5452.

In order to be able to work with a HCI based dongle, a host stack (windows stack) has to be installed on your PC. The dongle is shipped with the IVT windows stack.

Please insert the CD delivered with the ABE USB Dongle and follow the instructions of the setup. After the installation please plug the dongle into an available USB port. The PC should detect the dongle and install the necessary drivers.

Afterwards the stack is ready and should show up as the picture below. The taskbar should include a blue/white colored bluetooth sign.

**NOTE**: The IVT Stack is only necessary in combination with the ABE Bluetooth USB Dongle. which can be used as counterpart for the LMX9820A. It is not necessary to drive the LMX9820A.



Figure 1-2. IVT Stack Startwindow

# 1.3 SETTING UP HYPERTERMINAL

Simple serial port data transfers can be done by using a standard serial port terminal program like the Microsoft Hyperterminal. The program is part of Windows 2000/XP.

Some of the demonstrations later on are based on hyperterminal. For this, please make sure Hyperterminal or a similar terminal program is available on the system.

You'll find hyperterminal within the Windows environment within the Start Menu under "Start/All Programs/Accessories/ Communication". Please see Figure 1-3 where to find "Hyperterminal".



# 2.0 Setup descriptions

The LMX9820A is a full bluetooth node, by default configured to listen for incoming links. The command interface also offers to ability to configure the device and actively setup links.

The following examples shall give an quick introduction into the different functionalities of the LMX9820A.

### 2.1 CABLE REPLACEMENT WITH LMX9820A WAITING FOR INCOMING CONNECTION

By default the LMX9820A is configured to be visible (discoverable) and connectable for other devices. The service database offers one "Serial Port Profile" (SPP) service called "COM1".

In case the LMX9820A is connected by a remote device it will indicate the incoming link by a short event on the UART and then switch to transparent meaning it will not try to interpret incoming data on the UART directly to the bluetooth interface. Incoming data on the bluetooth interface are directly routed to the UART interface without framing them into Simply Blue specific packets.

The demo is based on using Hyperterminal on both sides to create a simple serial port connection between two devices using the USB dongle as connecting device and LMX9820A as 'passive' waiting device.

### 2.1.1 Connect Hyperterminal to LMX9820A

Since the LMX9820A is waiting for an incoming automatically no specific action has been taken on this side. In order to monitor the incoming data on the UART any terminal program able to talk to a serial port can be used. This example uses the Hyperterminal application.

The following steps should be followed to connect "Hyperterminal" to the LMX9820A Evaluation Board.

### 2.1.1.1 Start Hyperterminal

Start Hyperterminal as described in Section 1.3. Please make sure no other application (e.g. Simply Blue Commander) is using the same port as the LMX9820A Evaluation Kit.

### 2.1.1.2 Create new connection

Create a new connection by typing a connection name like "SBDemo LMX9820A".



Figure 2-1. Create New Connection in Hyperterminal

# LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

### 2.1.1.3 Choose correct comport

Since Hyperterminal is physically talking to a serial port, please choose the serial port the LMX9820A Evaluation Board is connected to, eg. COM2 of your PC.

| Connect To  |
|---|
| SBDemo LMX9820A   |
| Enter details for the phone number that you want to dial: |
| Country/region: Germany (49)                              |
| Area code: 89   |
| Phone number:   |
| Connect using: COM2                                       |
| <u>QK</u> Cancel  |

Figure 2-2. Choose correct comport

### 2.1.1.4 Choose comport settings

Choose the correct comport settings for your LMX9820A Evaluation board. By default the board is configured to 115.200kbit/s, No Parity, 1 Stopbit. Please make sure Hardware Flow Control is selected in the dialog.

The UART speed of the LMX9820A Evaluationboard is configured by the ISEL Pins. For 115.200kbit/s the setting needs to be ISEL1=0, ISEL2=1.

| COM2 Properties         | ? ×  |
|-------------------------|------|
| Port Settings           |      |
|                         | _    |
| Bits per second: 115200 |      |
| Data bits: 8            |      |
| Parity: None            |      |
| Stop bits: 1            |      |
| Flow control: Hardware  |      |
|                         |      |
| <u>R</u> estore Default | s    |
|                         |      |
| OK Cancel <u>A</u> r    | oply |

Figure 2-3. Choose comport settings

### 2.1.1.5 Reset the LMX9820A Evaluation Board

Once the correct speed is chosen "Hyperterminal" should connect to the selected comport. Afterwards a hardware reset of the LMX9820A Evaluationboard should cause a response as shown in Figure 2-4. The cryptic characters are specific hexvalues which are part of the Simply Blue interface event. The "0621" indicates the firmware version. which might be different to your board. Please refer to [1] for a detailed description of this event.

If this event is received the communcation between "Hyperterminal" and the LMX9820A Evaluationboard is confirmed.

| <b>SBDemo LMX9820A - H</b><br>Tile Edit View Cell Tra | lyperTermir | nal          |        |      |     |         | _ 0        |
|---|-------------|--------------|--------|------|-----|---------|------------|
| ) <u>e ea vo</u> <u>o</u> <u>o</u> <u>o</u> <u>o</u>  |             |              |        |      |     |         |            |
| <b>.</b>  |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
|   |             |              |        |      |     |         |            |
| <u>d</u>  |             |              |        | _    |     |         | <u>ا</u>   |
| onnected 0:02:35                                      | Auto detect | 115200 8-N-1 | SCROLL | CAPS | NUM | Capture | Print echo |

IMPORTANT: Please do not close the Hyperterminal window during the whole demonstration procedure.

# 2.1.2 Establish Link to the LMX9820A from the ABE Bluetooth USB Dongle

Since the LMX9820A by default connectable and discoverable, it can be connected from any other bluetooth device. To establish the link from the ABE USB Dongle, the IVT Stack needs to be started. Therefore please start the "Bluesoleil" application. You should see the screen as demonstrated in Figure 1-2 on page 4. The Bluetooth icon is within in the task-bar needs to be blue and white. In case the background is grey instead of blue, the USB dongle has not been installed correctly.

### 2.1.2.1 Start Inquiry - Search for devices in range

The first to be done is to search for the devices in range. To do so, please click on the yellow "sun" in the middle of the window, which initiates the Bluetooth "Inquiry". The LMX9820A Evalutation board should appear as "Serial Port Device".



Figure 2-5. Result of Inquiry procedure

### 2.1.2.2 Service Discovery - Get Services of the LMX9820A

Once the "Serial Port Device" is detected, double click on the icon or the name of the device to start the service discovery on this device. If successful, the stack will indicate the available services by surrounding the specific icons with rectangles. The service discovery should result in the screen as shown in Figure 2-6, indicating a "Serial Port service".



Figure 2-6. Service Discovery result

### 2.1.2.3 Establish Link to the LMX9820A

To finally connect to the LMX9820A Evalboard, double click on the "Serial Port" Icon if "Serial Port Device" has been selected. This will start the connection establishment process.



Figure 2-7. Connect to the bluetooth serial port

As result the stack will report the virtual serial port, which will be used for this serial port connection. In this example "COM4" will be used. This means, any data sent to this COMPort will be sent over the bluetooth link to the LMX9820A.

If the dialog is answered with Yes, the stack will automatically open the bluetooth link to the LMX9820A as soon as any application opens "COM4".

Please confirm with "Yes" if that's desired. Otherwise the assignment of COM4 to the LMX9820A will be temporary.



### Figure 2-8. Virtual Serial Port used for this connection

| <b>2.1.2.4 Enter PIN for LMX9820A</b><br>By default the LMX9820A asks for a PIN if the loc<br>ing dialog will appear from the IVT Stack. Please to<br>OK. | al SPP service is connected from a ren<br>type "0000", which is the default PIN st  | note device. Therefore the follow-<br>ored in the LMX9820A and press   |
|---|---|--|
| Enter Bluetooth Passkey   |   | ×  |
| A remote device needs<br>relationship for future of<br>passkey on this device<br>Remote Device: Seri<br>Address 08:0<br>Passkey: ****<br>Time Left: 27 s  | a Bluetooth Passkey to create Paired<br>onnections. Please use the same<br>and on the remote device:<br>ial Port Device<br>00:17:13:17:77 | OK   |
|   |   |  |
| Figure 2<br>Afterwards the Link between the two devices is es<br>"sun" and the "Serial Port Device" icon.   | 2-9. Enter PIN for LMX9820A   | ink by showing a line between the  |
| File View My Bluetooth My Services Too  | ols Help  |  |
|   | B 🖳 🗞 Ø 🗞 🖻   | P ≪ € 60   |
| and the second  |   | and the second sec |
| Serial Port Device  |   |  |
|   |   |  |
|   |   |  |
| Ready   | Connected.  | PAN IP: 192.168.2.1  |
| ,   | ,   | ,  |
| Figure 2-10.  | Bluetooth Connection Established  |  |

Once the link is established, the Hyperterminal window of the LMX9820A should indicate a message similar to Figure 2-11. The cryptic data show again an event reported by the LMX9820A command interface. The data comply to a specific packet format which are not readable in ASCII.

| SBDemo LMX9820      | )A - HyperTermir | nal          |        |      |     |         | - D X   |
|---------------------|------------------|--------------|--------|------|-----|---------|---------|
| File Edit View Call | Transfer Help    |              |        |      |     |         |         |
| D 🖻 🍘 🐉 🗉           | 0 🎦 🖆            |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         | <b></b> |
| I⊕X¶⊕♥              |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         |         |
|                     |                  |              |        |      |     |         | -       |
| Ī                   |                  |              |        |      |     |         |         |
| Connected 0:31:04   | Auto detect      | 115200 8-N-1 | SCROLL | CAPS | NUM | Capture | Print / |

Figure 2-11. Incoming Link Established in Hyperterminal

# 2.1.3 Open Hyperterminal session on the virtual serial port

in order to exchange data now between the LMX9820A and the USB Dongle/IVT stack, another terminal window can be used. For this, create another Hyperterminal connection, directly connected to the COMPort reported in Section 2.1.2.3 on page 11.

# 2.1.3.1 Start Hyperterminal

Start Hyperterminal as described in Section 1.3 on page 4.

# 2.1.3.2 Create new connection

Create a new connection by typing a connection name like "SBDemo USBDongle".

| Connection Description                              | ? × |
|---|-----|
| New Connection                                      |     |
| Enter a name and choose an icon for the connection: |     |
| Name:   |     |
| SBDemo USBDongle                                    |     |
| <u>l</u> con:                                       |     |
| 🂫 📚 🥸 🧐   | 2   |
| OK Cano   | cel |

Figure 2-12. Create New Connection

### 2.1.3.3 Choose correct Comport

In order to talk to virtual serial port of the stack, choose the COMPort reported by the stack as described in Section 2.1.2.3, Figure 2-8 on page 12. In this example "COM4" needs to be used.

| Connect To        |                    | ? ×                  |
|-------------------|--------------------|----------------------|
| 🧞 SBDemo          | USBDongle          |                      |
| Enter details for | he phone number th | at you want to dial: |
| Country/region:   | Germany (49)       | 7                    |
| Area code:        | 89                 |                      |
| Phone number:     |                    |                      |
| Connect using:    | COM4               |                      |
|                   | ОК                 | Cancel               |
| Figure 2.         | 13 Choose corre    |                      |



# 2.1.3.4 Select correct comport settings

The comport settings for the virtual serial port should be the same as chosen for the LMX9820A (see Section 2.1.1.4 on page 8).

| Ĵ,           |
|--------------|
| G            |
| đ            |
| Ę            |
| Se           |
|              |
| Ċ            |
|              |
| Ø            |
|              |
| Ð            |
| lu           |
| ö            |
| ž            |
| <u>+</u>     |
| 5            |
| Ū.           |
| a            |
| Ē            |
| 0<br>0       |
| ~            |
| ÷            |
| 8            |
| ž            |
| ň            |
| Ξ            |
| 4            |
| 6            |
| 22           |
| 36           |
| $\mathbf{X}$ |
| Σ            |
|              |

ide

| COM4 Properties         | <u>? ×</u> |
|-------------------------|------------|
| Port Settings           |            |
|                         | - I        |
| Bits per second: 115200 |            |
| Data bits: 8            |            |
| Parity: None            |            |
| Stop bits: 1            |            |
| Flow control: Hardware  |            |
| Bestore Defaults        |            |
|                         |            |
| OK Cancel App           | ly         |

Figure 2-14. Select correct comport settings

Afterwards the Hyperterminal window comes up and should be connected to the selected COMPort.

### 2.1.4 Use Hyperterminal for simple chat

Once both Hyperterminal windows are opened, each character typed or data sent will be transferred to the other device and will show up in the other Hyperterminal. Since the LMX9820A switches automatically to "Transparent Mode" after beeing connected from outside, any character sent to it will be forwarded to the bluetooth device connected to it.

### 2.1.5 Transfer a file with ZModem

Hyperterminal can also be used to send a file to the other side.

To do so, please select "Transfer/Send File" from the menu.

| 🍓 SBDemo LMX9820/          | A - HyperTerminal   |          |
|----------------------------|---|----------|
| File Edit View Call        | Transfer Help   |          |
| □ 🛎 💓 🥈 💷<br>    0X¶0♥_    | Send File<br>Receive File<br>Capture Text<br>Send Text File<br>Capture to Printer | <b>_</b> |
|                            |   |          |
|                            |   |          |
|                            |   | •<br>•   |
| Sends a file to the remote | system  | //       |
|                            | Figure 2-15. Choose "Send File" with Hyperter                                     | minal    |

Afterwards please select the file you want to send, choose "Zmodem" in the Protocol section and press "Send".

| Send File      |              |               | ? ×    |
|----------------|--------------|---------------|--------|
| Folder: H:\    |              | $\searrow$    |        |
| Filename:      |              | ,             |        |
| H:\LMX9820ASM_ | ds_0.7.pdf   |               | Browse |
| Protocol:      |              |               |        |
| Zmodem         |              |               | •      |
|                |              |               |        |
|                | <u>S</u> end | <u>C</u> lose | Cancel |
|                |              |               |        |

Figure 2-16. Choose File and protocol

Once done, receiving and transmitting Hypterterminal show the progress of the transmission, together with the average speed of the link.

| Zmodem fil  | e send for SBDemo LMX9820A   |                       |
|-------------|------------------------------|-----------------------|
| Sending:    | H:\LMX9820ASM_ds_0.7.pdf     |                       |
| Last event: | Sending                      | Files: 1 of 1         |
| Status:     | Sending                      | Retries: 0            |
| File:       | 11                           | 33K of 603K           |
| Elapsed:    | 00:00:03 Remaining; 00:00:53 | Throughput: 10900 cps |
|             |                              | Cancel cps/bps        |

Figure 2-17. Progress window for sending a file with ZModem

# 2.2 INITIATE A LINK WITH LMX9820A USING SIMPLY BLUE COMMANDER

The LMX9820A command interface offers full bluetooth capabilities. The Simply Blue Commander software gives an easy to use interface to send commands to the LMX9820A and interprets incoming events.

Please see also [2] for a detailed description on the usage of Simply Blue Commander.

The following demonstration shows how to use Simply Blue Commander to establish a standard Serial Port Profile (SPP) Link to another device. The counterpart of the link will be the ABE USB Dongle, controlled by the IVT Stack.

Please make sure the devices are connected to the PC and the IVT stack at the PC detected the USB Dongle correctly.

# 2.2.1 Start Simply Blue Commander

Start Simply Blue Commander as described in Section 1.1 on page 3. Please make sure no other device is using the Comport the LMX9820A Evaluation kit is connected to.

Once the program is up and running, press the RESET button on the evaluation kit. This will cause the LMX9820A to reboot and bring up the "LMX9820 Ready" Event, followed by the firmware version.

| Simply Blue Commander Version: 1.3.0.3                             | JN |
|--|----|
| File Definitions Configuration About                               |    |
| Command Directory  |    |
| 🕞 🧰 Device Discovery 🛛 🛛 🛛 🗛 🗛 🗛 🔂 🗛 🗛                             |    |
| Bx(RAW): 00  |    |
| 🗄 💼 🔁 SPP Link Establishment                                       |    |
| 🗄 💼 🗀 Audio Link Establishment                                     |    |
| 🗄 💼 DefaultConnections   |    |
| 🗄 💼 Low Power Modes  |    |
| 🖕 💼 Wake-up functionality  |    |
| 🗄 🗄 SPP Port Configuration   |    |
| 🗄 💼 💼 Local Bluetooth Settings                                     |    |
| 🗄 🗄 🗀 Local SDB Configuration                                      |    |
| 🗄 💼 Local Hardware Commands  |    |
| Send string  |    |
| Send Calc checksum and length Save butes as command Generate break |    |
|  |    |
| HEX/ASCII input:   |    |
|  |    |
| <b>I I I I I I I I I I</b>   | I  |
|  |    |
| UART COM1 115200Bps  |    |

Figure 2-18. Simply Blue Commander Start Window

### 2.2.2 Send "Restore to factory settings" and "Reset"

To make sure all settings are reset to expected values, the "Restore to factory settings" can be used before first initialization. This is not required for general use, it is just necessary for this demo to make sure all parameters are set as expected.

To do so, open the "Local Hardware Commands" Folder within the Command Directory and double-click on "Restore to Factory Settings". Afterwards double-click on "Reset", which will complete the activation of the settings.

| 🔀 Simply Blue Commander 🛛 Version: 1.3.0.3   | <u>-   ×</u> |
|--|--------------|
| File Definitions Configuration About         Command Directory         Change UART speed: 115200         Change UART Settings: 01 01         TestMode: Bluetooth DUT         TestMode: DH1,Channel 16,PRBS         RfTestMode: Stop TX         Restore factory settings         Restore factory settings         Restore factory settings         Fireware Upgrade |              |
| Send string  |              |
| Send Calc checksum and length Save bytes as command Generate break   |              |
| HEX/ASCII input:   |              |
| 02 52 26 00 00 78 03 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   | II           |
|  | II           |
|  | Þ            |
| UART COM1 115200Bps  |              |

### Figure 2-19. Restore to factory settings

### 2.2.3 Find remote device

To be able to connect to another device the connecting device needs to know the Bluetooth Device Address and the Remote RFComm Port to connect to.

### 2.2.3.1 Device Discovery - Send "GIAC Inquiry"

The first step therefore is to start the "Inquiry" Process. This process can be started using the "GIAC Inquiry" Command in the "Device Discovery" section of the Command Directory. On "GIAC Inquiry" (General Inquiry Access Code Inquiry) the device will show any device scanning in normal mode. "LIAC" (Limited Inquiry Access Code) will search for devices in the "Limited Inquiry scan mode" which is only used in special applications.

| Simply Blue Commander       Version: 1.3.0.3         File       Definitions       Configuration       About         Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Command Directory       Image: Command Directory       Image: Command Directory         Image: Comm | Transport Layer log<br>Rx: Event: Inquiry, Status: 00<br>Rx: Event: Device Found, BdAddr: 015814170008, DeviceClass: 040<br>Tx: Cmd: Inquiry, Length: 0A, NumResponces: 00, Mode: 00<br>Rx: Event: SimplyBlue Ready, SW Version: 0621.<br>Tx: Cmd: Reset<br>Rx: Event: Restore Factory Settings, Status: 00<br>Tx: Cmd: Restore Factory Settings |
|---|--|
| Send string Calc checksum and length  | Save bytes as command Generate break   |
|   |  |
|   |  |
|   |  |
| UART COM2 115200Bps   |  |

Figure 2-20. General Inquiry to get the bluetooth address of a remote device

### 2.2.3.2 Get remote name (optional)

In case more than one device has been found, each of the devices can be asked for it's "Friendly Name". As seen in Section 2.1.2.1 on page 10, the LMX9820A by default appeared as "Serial Port Device". To get the remote name of the device in our example, the device needs to be contacted and asked for it's name.

The name request is initiated by the "Remote Name Request" Command within the Command Directory. Since the command needs to be modified for each specific device, the following procedure needs to be followed for each device.

### 2.2.3.2.1 Single Click "Remote Name Request"

By single clicking the Remote Name Request Command, the "HEX/ASCII input" line is updated with the complete hex string to be sent to the LMX9820A.

| 🚺 Simply Blue Commander 🛛 Version: 1.3.0.3  |   |
|---|---|
| File Definitions Configuration About  |   |
| Command Directory   | Transport Layer log   |
| Device Discovery GIAC Inquiry LIAC Inquiry SDAP Clie SDAP Clie DefaultConnections Low Power Modes Use A substantial of the substant | Rx: Event: Inquiry, Status: 00<br>Rx: Event: Device Found, BdAddr: 015814170008, DeviceClass: 040<br>Tx: Cmd: Inquiry, Length: 0A, NumResponces: 00, Mode: 00<br>Rx: Event: SimplyBlue Ready, SW Version: 0621.<br>Tx: Cmd: Reset<br>Rx: Event: Restore Factory Settings, Status: 00<br>Tx: Cmd: Restore Factory Settings |
| Send string   |   |
| Send Calc checksum and length   | Save bytes as command Generate break  |
| HEX/ASCII input:  | ·   |
| 02 52 02 06 00 5A FF FF FF FF FF FF 03  |   |
| I R I I I Z ÿ ÿ ÿ ÿ ÿ I   |   |
|   |   |
| UART COM2 115200Bps   |   |

### Figure 2-21. Activate Remote Name Request

### 2.2.3.2.2 Replace payload by device bluetooth address

After activating the command in the command directory, the HEX/ASCII input now shows the complete structure of the command. Each command is built out of a 6-byte header, the payload and a 1-byte delimiter. The payload of the command by default is filled with FF as placeholder for the remote bluetooth device address.

To initiate the remote name request, the bluetooth device address from the previous inquiry result needs to be filled in. The address can be found within Transport Layer log, reported as

"RX:Event: Device Found, BdAddr: 015814170008, Device Class: 040112"

In this example the inquiry just inidicates one device with address 015814170008.

To complete the request this address has to be filled into the HEX/ASCII input link, by replacing the FFs with this address. See Figure 2-22 on page 23 as an example.

LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

If a bluetooth device wants to connect to the serial port service of another device, it first has to ask for this specific RFCOMM port. IThis

| Simply Blue Commander       Version: 1.3.0.3         File       Definitions       Configuration       About         Command Directory       Image: Configuration       About         Image: Device Discovery       Image: Configuration       Image: Configuration         Image: Device Discovery       Image: Configuration       Image: Configuration | Transport Layer log Rx: Event: Inquiry, Status: 00 Rx: Event: Device Found, BdAddr: 015814170008, DeviceClass: 040 Tx: Cmd: Inquiry, Length: 0A, NumResponces: 00, Mode: 00 Rx: Event: SimplyBlue Ready, SW Version: 0621. Tx: Cmd: Reset Rx: Event: Restore Factory Settings, Status: 00 Tx: Cmd: Restore Factory Settings |
|--|---|
| HEX/ASCII input:   |   |
| 02 52 02 06 00 54 01 58 14 17 00 08 03   | I I I I I I I I I I I I I I I I I I I   |
| I B I I I Z I X I I I I  | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   |
|  | Þ   |
| JART COM2 115200Bps  | h   |

Figure 2-22. Fill in the bluetoth address of the found device

### 2.2.3.2.3 Press "Send"

To finally send the command to the LMX9820A, just press the "Send" button. The LMX9820A will respond to the request by the appropriate "Remote Device Name" Event, including the status and the devicename. In this example the name "DCDL38" has been detected. In case the status is different from 0x00, the physical connection establishment might have been failed. In that just try again until the status 00 is reported.

| Simply Blue Commander Version: 1.3.0.3  |        |
|---|--------|
| File Definitions Configuration About  |        |
| Command Directory Transport Layer log   |        |
| Image: Device D Image: D I | CDL38. |
| Send string   |        |
| Seng Calc checksum and length Save bytes as command Generate break  |        |
| HEX/ASCII input:  |        |
| 02 52 02 06 00 5A 01 58 14 17 00 08 03 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  | 1 1 1  |
| I R I I Z I X I I I I I I I I I I I I I I I   | 1 1 1  |
|   | F      |
| UART COM2 115200Bps   |        |

Figure 2-23. Remote Name Request Reponse

# 2.2.4 Get remote RFComm Port for SPP

A serial port profile communication between two devices is based on the "RFCOMM" layer. This layer basically offers a virtual serial port environment to the application. Each SPP based service like "Serial Port" or "Dial Up Networking" is registered to a specific RFCOMM port, like eg. a modemdriver on a PC is using a specific COMport.

This comport assignment is stored within the so called "Service Database" of each device.

If a device wants to create a link to the "Serial Port" service of another device, it has to know the RFComm Port for this service on the other device. Afterwards a link will be established from a Local Port to the appropriate Remote Port.

The RFCOMM Port of a service on the remote device can be found by using a SDAP Request.

### 2.2.4.1 Create SDAP Connection

To browse for service first a SDAP connection has to be established. For this the "SDAP Connect" Command can be used. Since the command needs to be modified for the correct bluetooth address, the same procedure as for the Remote Name Request needs to be used.

### 2.2.4.1.1 Single Click "SDAP Connect" in the Command Directory

By a single click of the command in the directory, the hex string for the command appears in the "HEX/ASCII input:" line.

| File<br>Co |      | efinition<br>Device<br>SDAP<br>SDAP<br>SDAP<br>SDAP<br>SDAP<br>SDAP<br>SDAP<br>SDAP | is<br>ector<br>Clier<br>(AP)<br>(AP)<br>(AP)<br>(AP)<br>(AP) | Conf<br>cove<br>nt<br>Serv<br>Serv<br>Attrib<br>Disc | igur<br>ery<br>ice l<br>ice l<br>ice l<br>oute<br>onn<br>lishi | ratio<br>Brov<br>Brov<br>Sea<br>Rev<br>ect<br>men | wse<br>wse<br>rch<br>ques | Abou<br>SPF<br>Pub | ut  |       | rans<br>x: Ex<br>x: Cn<br>x: Ex<br>x: Ex<br>x: Cn<br>x: Cn<br>x: Cn | por<br>/en<br>/en<br>/en<br>/en<br>nd:<br>/en | it La<br>It Ri<br>Rer<br>Inquit Di<br>Inquit Si<br>Res<br>Res | yer l<br>emo<br>note<br>quiry<br>evic<br>uiry,<br>esto<br>esto<br>store | og<br>: De<br>: De<br>: Si<br>e Fo<br>Blu:<br>Fao | evic<br>atus<br>ound<br>gth:<br>e Re<br>acto | ce N<br>Nar<br>(, Bd<br>(, Bd<br>() Set<br>() Set | ame<br>me, I<br>Add<br>Nur<br>, SV<br>etting | , Sta<br>BdA<br>nRe:<br>Ve<br>gs, (<br>s | atus<br>ddr:<br>581<br>spoi<br>risio<br>Gtat | : 00<br>01!<br>nce<br>n: 0<br>us: 1 | , Bd<br>5814<br>7000<br>s: 00<br>621<br>00 | Add<br>1170<br>08, E<br>0, M | fr: 0<br>0008<br>Devi | 1581<br>}<br>: 00 | 1417<br>lass: | 0000 | 3, D | evi |
|------------|------|---|--|--|--|---|---------------------------|--------------------|-----|-------|---|---|---|---|---|--|---|--|--|--|-------------------------------------|--|------------------------------|-----------------------|-------------------|---------------|------|------|-----|
| l∎<br>-Se  | nd s | trina   |  |  |  |   |                           |                    |     | Ľ     |   |   |   |   |   |  |   |  |  |  |                                     |  |                              |                       |                   |               |      |      | •   |
|            | S    | end   | 1  |  | Ca   | lc cl   | neck                      | sum                | and | d ler | ngth  | 1   | Sa  | ave   | byte  | is as  | : сог   | nma  | nd                                       |  |                                     | Ge   | ner                          | ate l                 | brea              | k             |      |      |     |
|            | (/AS | CII inp   | ut:  |  |  |   |                           |                    |     |       |   |   |   |   |   |  |   |  |  |  |                                     |  |                              |                       |                   |               |      |      |     |
| 02         | 52   | 32 06   | 00   | 84   | FF   | FF  | FF                        | FF                 | FF  | FF    | 03  | L   | Ι   | I   | I   | Ι  | Ι   | Ι  | Ι  | I  | I                                   | I  | I                            | I                     | I                 | I             | I    | I    |     |
|            | в    | 2 1   | I  | I  | ÿ  | ÿ   | ÿ                         | ÿ                  | ÿ   | ÿ     | I   | I   | I   | T   | I   | I  | I   | T  | I  | I  | I                                   | I  | I                            | I                     | I                 | I             | I    | I    | T   |
| I          |      |   |  |  |  |   | -                         | -                  |     |       |   |   |   |   |   |  |   |  |  |  |                                     |  |                              |                       |                   |               |      | -    |     |

### Figure 2-24. Activate "SDAP Connect"

### 2.2.4.1.2 Replace payload by device bluetooth address

The example SDAP Connect command has FF values as placeholders for the device address. These FFs have to be replaced by the address of the device to be contacted.

| 🔀 Simply Blue Commander Version: 1.3.0.3   | 미 ×                 |
|--|---------------------|
| File Definitions Configuration About   |                     |
| Command Directory Transport Layer log  |                     |
| Image: Device Discovery         Image: Device Discovery         Image: SDAP Client         Image: SDAP Connect         Image: SDAP Service Browse SPF         Image: SDAP Service Browse Pub         Image: SDAP Service Search         Image: SDAP Disconnect         Image: SDAP Service Search         Image: SDAP Disconnect         Image: SDAP Disconnect | 3, Devi<br>112<br>▶ |
| Send string  |                     |
| Send Calc checksum and length Save bytes as command Generate break   |                     |
| HEX/ASCIL input:   |                     |
|  | 1.1                 |
|  |                     |
|  | I                   |
|  | <u> </u>            |
| UART COM2 115200Bps  |                     |
|  |                     |

### Figure 2-25. Replace payload by bluetooth

LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

### 2.2.4.1.3 Press "Send"

To finally send the command to the LMX9820A, just press the "Send" button. The LMX9820A will confirm the connection establishment including the status. In case the status is 0x00 the connection establishment was successful. Otherwise please retry until the connection is confirm as success.



Figure 2-26. Press "Send" to release the command

### 2.2.4.2 Browse for the SPP Service

Once the SDAP Connection is established, the remote database can be asked for the requested service. The prepared "SDAP Service Browse SPP" Command can be used directly to browse for the service by double clicking the command in the command directory.

This request searches specifically for a SPP entry. Please refer to [1] for details on the command.

| Eommani<br>E<br>⊡<br>I |  | ctory<br>Disc   |  |   |  |                                 |      |          |       |  | anen   | OFF 1  |   |   |  |  |  |   |   |   |   |  |  |                              |                    |             |     |   |
|------------------------|--|---|--|---|--|---------------------------------|------|----------|-------|--|--|--|---|---|--|--|--|---|---|---|---|--|--|------------------------------|--------------------|-------------|-----|---|
|                        | evice  | Dise  | POV4   |   |  |                                 |      |          | -1    |  | -  | orti   | _aye  | er log  | 1  |  | <u>.</u>   |   |   | _   |   | _  |  |                              |                    |             |     |   |
|                        | SD<br>SD<br>SD<br>SD<br>SD<br>SD<br>SD<br>PP Li<br>efaul | Clien<br>AP (<br>AP 9<br>AP 9<br>AP 9<br>AP 1<br>AP 1<br>Coni | it<br>Coni<br>Serv<br>Serv<br>Serv<br>Serv<br>Stat<br>Disc<br>stat | nect<br>rice l<br>rice l<br>rice :<br>oute<br>oute<br>onn<br>olishi | Brov<br>Brov<br>Sear<br>Rec<br>ect<br>meni | vse<br>vseî<br>rch<br>ques<br>t | t.   | n<br>lic |       | Tx:<br>Rx<br>Tx:<br>Rx<br>Tx:<br>Rx<br>Rx<br>Tx:<br>Rx<br>Tx:<br>Tx: | : Cm<br>: Ev<br>: Ev<br>: Cm<br>: Ev<br>: Ev<br>: Ev<br>: Cm | d: S<br>ent:<br>d: S<br>ent:<br>ent:<br>ent:<br>d: Ir<br>ent:<br>R | ervia<br>SDA<br>DAF<br>Ren<br>emo<br>Inqu<br>Devi<br>guir<br>Simp | vice B<br>AP Co<br>note<br>ote D<br>vice<br>y, Lo<br>plyB | rows<br>onn<br>Devic<br>Stati<br>Four<br>lue F | se, E<br>ect, B<br>vice<br>vice N<br>us: (<br>hd, E<br>h: Q<br>Rea | Srow<br>Sta<br>dAc<br>Nar<br>ame<br>3dA<br>dy, 9 | ise (<br>tus:<br>ldr: (<br>ne, 9<br>e, Bo<br>ddr:<br>umF<br>SW1 | arou<br>00<br>0158<br>Stati<br>Add<br>015<br>Sesp<br>Vers | ap IE<br>814<br>dr: 0<br>814<br>i814<br>sion: | ): 01<br>1700<br>00, E<br>158<br>1700<br>2052<br>2052 | 111<br>008<br>008<br>1417<br>008,<br>00, 1 | idr: 1<br>7000<br>. De <sup>r</sup><br>Mod | 0158<br>)8<br>vicel<br>le: 0 | 31 41<br>Clas<br>0 | 700<br>s: 0 | 08, | - |
| -Send strir<br>Sen     | ng<br>d  |   |  | Ca  | lc cł                                      | neck                            | .sun | n ar     | nd le | ength  |  | Sa   | avel  | byte  | sas  | con  | nma  | nd  |   |   | Ge  | nera                                       | ite b                                      | reak                         |                    |             |     |   |
| HEX/ASCI<br>02 52 3    | l inpu<br>5   02   | it:<br>Inn  | 89   | 01  | 11   | 03                              | 1    | 1        | 1     |  |  | 1  | 1   | 1   | 1  | 1  | 1  | 1   | 1   | 1   | l.  | l.   | 1  | 1                            | 1                  | 1           | 1   |   |
|                        |  |   |  |   |  |                                 | •    | ÷        | ÷     |  |  | ÷  | ÷   | ÷   | -  | ÷  | ÷  | ÷   | ÷   | ÷   | ÷   | ÷  | ÷  | ÷                            | ÷                  | ÷           | ÷   | + |
|                        | •  | •   | L  | L   | •  | •                               | •    | <b>I</b> | •     | •  | •  | <b>I</b>   | <b>I</b>  | •   | •  | •  | •  | •   | •   | •   | •   | •  | •  | •                            | •                  | •           | •   |   |
|                        |  |   |  |   |  |                                 |      |          |       |  |  |  |   |   |  |  |  |   |   |   |   |  |  |                              |                    |             |     | • |
|                        |  |   |  |   | _  |                                 | -    |          |       |  |  |  |   |   |  |  |  |   |   |   |   |  |  |                              |                    |             |     |   |

The response to this requests includes the status and, in case a valid service has been found, the port number and the name of the requested service. The full response of the device in the example looks like this

Rx: Event: Service Browse, Status: 00, Browse Group ID: 0210, Service ID: 0111, PortNo: 02, Service Name: Serial Port A., Browse Group ID: 0210, Service ID: 0111, PortNo: 03, Service Name: Serial Port B.

The event shows, that the remote device offer 2 Serial Port services:

- Service 1:
  - RFCOMM Port: "0x02"
  - Service Name: "Serial Port A"
- Service 2:
  - RFCOMM Port: "0x03"
  - Service Name: "Serial Port B"

For a Serial Port connection, one of those ports can be used.

## 2.2.4.3 Close SDAP Connection

After the successful Service browse, the SDAP connection needs to be closed again. The prepared SDAP Disconnect commands needs no modification and can be used directly.



Figure 2-28. SDAP Disconnect Request

### 2.2.5 Establish SPP Link

Finally, if the bluetooth address (BD\_Addr) and the remote RFComm port to be addressed are known, an SPP Link can be established to the device.

NOTE: The steps explained in Section 2.2.3.1 to Section 2.2.4.3 are only necessary in case the remote device is not known yet.

### 2.2.5.1 Select "Establish SPP Link"

The main command to establish a link to another device is "Establish SPP Link", to be found in the "SPP Link Establishment" section of the command directory.

Select the command to get the HEX string in the "HEX/ASCII input" line.

| Ber Link Supervision Time   | soul, ji | llo c                   | -                     |                           |                      | -                        | 00                     |                           |                  |           |             |          |      |      |     |     |      |  |
|---|----------|-------------------------|-----------------------|---------------------------|----------------------|--------------------------|------------------------|---------------------------|------------------|-----------|-------------|----------|------|------|-----|-----|------|--|
| Send Datx_lest, LocalPort=UIx: Cmd: SDAP Connect, BdAddr: 015814170008         Get Link Supervision Timeout         Set Link Supervision Timeout         Tx: Cmd: Remote Device Name, Status: 00, BdAddr: 015814170008         Set Link Supervision Timeout |          |                         |                       |                           |                      |                          |                        |                           |                  |           |             |          |      |      |     |     |      |  |
| Establish SPP Connection  | nt=C     | Tx: C<br>Rx: E<br>Tx: C | Cmd:<br>Eiven<br>Cmd: | Servi<br>ht: SD/<br>SDAF  | ce B<br>AP C<br>P Co | rowse,<br>onnec          | Brow<br>t, Sta<br>Bd&/ | ise G<br>tus: T<br>Idr: C | rou<br>)0<br>159 | p ID      | : 01<br>700 | 11<br>08 | -    |      |     |     |      |  |
| Device Discovery      SDAP Client      SPR List Extendiates ant   |          | Tx: C<br>Rx: E          | iven<br>Omd:<br>Even  | nd SDA<br>SDAF<br>nt: Ser | P Dis<br>Vice        | isconr<br>conne<br>Brows | ect, :<br>ct<br>e, Sta | statu<br>atus:            | s: u<br>00,      | u<br>Brov | wse         | Grou     | ıp I | D: 0 | 210 | ,Se | rvic |  |
| Command Directory   |          | FTran:<br>Ref 5         | nspor<br>Type:        | rt Laye                   | er log<br>AP P       | liscon                   | ect                    | State                     | s: 0             | ρ         |             |          |      |      |     |     |      |  |

Figure 2-29. Select "Establish SPP Link"

### 2.2.5.2 Adapt Link Establishment parameters

The "Establish SPP Connection" command includes 3 parameters in the payload, which have to be adapted to successfully establish a link.

As usual the first 6-bytes of the command are the packet header. The payload of the command in the example consists of

- The Local RFCOMM Port (1 byte)
  - This is the local RFCOMM port of the LMX9820A, which will be assigned to this link. Each data sent to this port after link establishment will be sent to this remote bluetooth device.
- The BD\_Addr of the remote device (6 bytes)
  - In able to connect to the correct device, its BD\_Addr has to be filled in (same as used for SDAP, found by Inquiry)
- The Remote RFCOMM Port (1 byte)
  - The remote RFCOMM port is the comport assigned to the Serial port service, as found by the SDAP Service Browse (see Section 2.2.4.2). In this case Port 02 shall be used.

There in this example the payload has to be filled with 01 01 58 14 17 00 08 02.

| Buide    |   |    |
|----------|---|----|
| d<br>d   | Simply Blue Commander Version: 1.3.0.3  | 1  |
| ţu       | File Definitions Configuration About  |    |
| Se       | Command Directory Transport Layer log   |    |
| ×        | Device Discovery      A Rx: Event: SDAP Disconnect, Status: 00      Ty: Cmd: SDAP Disconnect  |    |
| ni       | Ex Cind. SDAP Client Rx: Event: Service Browse, Status: 00, Browse Group ID: 0210, Serv       | ic |
| a        | Tx: Cmd: Service Browse, Browse Group ID: 0111  |    |
| <u>e</u> | Send Data: Test LocalPort=0 Tx: Cmd: SDAP Connect, Status: 00                                 |    |
| np       | Get Link Supervision Timeout 🛛 🛛 🗛 Event: Remote Device Name, Status: 00, BdAddr: 01581417000 | 8, |
| ١٥       | Set Link Supervision Timeout Tx: Cmd: Remote Device Name, BdAddr: 015814170008                |    |
| y<br>Y   | Enter Transparent Mode, Loc Rx: Event: Device Found, BdAddr: 015814170008, DeviceClass: 040   | Л  |
| 0        | Release Link LocalPort=01 Tx: Cmd: Inquiry, Length: 0A, NumResponces: 00, Mode: 00            |    |
| IE<br>F  |   | ·  |
| <u></u>  | Send string   |    |
| Š        | Send Calc checksum and length Save bytes as command Generate break                            |    |
| хh       | HEX/ASCILipput:   |    |
| ğ        |   | Ē  |
| ne       |   | -  |
| B        |   | 1  |
| A        |   |    |
| 320      | UART COM2 115200Bps   |    |
| 16X      |   |    |
| 36XI     |   |    |

Figure 2-30. Adapting the "Establish SPP Connection" Command

## 2.2.5.3 Press "Send" to connect

By pressing "Send" the command will be sent to the LMX9820A.

The Link Establishment is first confirmed by the event

Rx: Event: Establish Link, Status: 00, Local Port: 01

which just indicates that the command has been received successfully and the LMX9820A is starting to process the request. If status is different from 00 then please check again the parameters you've entered within the command.

The IVT stack of the USB Dongle will probably alert to the user that another device tries to request the service and will ask for the PinCode. For this the default pincode of the LMX9820A needs to be used (0000).

| Enter B    | uetooth Passkey   | /  | ×            |
|------------|---|--|--------------|
| <b>?</b> * | A remote device r<br>relationship for fut<br>passkey on this de<br>Remote Device:<br>Address<br>Passkey:<br>Time Left: 25 s | needs a Bluetooth Passkey to create Paired<br>ure connections. Please use the same<br>evice and on the remote device:<br>Serial Port Device<br>08:00:17:13:17:77 | OK<br>Cancel |



In case the Pincode has been entered correctly, the stack asks if again on application level if the device is allowed to access the Serial Port Service. The question should be answered with Yes. To avoid this message in the future, the checkbox can be checked as well.

\_ 🗆 🗵

П

II.

| Bluetool             | th Service Authorization  | x         |
|----------------------|---|-----------|
| đ                    | Bluetooth device "Serial Port Device" is attempting to<br>access Bluetooth Serial Port A service. Click Yes to allow<br>this device to access this service. | Yes<br>No |
| <b>I</b> ▼ ∦<br>Time | Iways allow this device to access this service.<br>a Left: 15 s   |           |



Finally the stack reports virtual serial port which can be used to send and receive data for the connected device. This port can now be used by applications like hyperterminal.

NOTE: The IVT stack and most other windows stacks assign different virtual ports for incoming and outgoing connections.

\* Remote device Serial Port Device(08:00:17:13:17:77) has connected to my Serial Port A(COM6) service!

### Figure 2-33. Virtual Serial Port for the incoming link

Having a final look at the "Simply Blue Commander" it shows the event

Rx: Event: Link Established, Status: 00, BdAddr: 015814170008, Local Port: 01, Remote Port Number: 02

with status 00, which indicates the successful link establishment. In case this event reports status 0x03, the link establishment most likely timed out or failed to another reason. The link establishment command should be resent.

| 8               | 5im                               | ply   | Blu                                 | e C   | omr   | nar   | ıde   | r V   | 'ers                               | ion                   | 1.3   | 3.0.3   | 3                                      |  |                                    |  |                                      |  |   |   |  |                                     |                            |                                    |                  |               |               | _                        |                     | ×        |
|-----------------|-----------------------------------|---|-------------------------------------|---|---|---|---|---|------------------------------------|-----------------------|-------|---|--|--|------------------------------------|--|--------------------------------------|--|---|---|--|-------------------------------------|----------------------------|------------------------------------|------------------|---------------|---------------|--------------------------|---------------------|----------|
| File<br>Co<br>+ | D<br>mma<br>O<br>O<br>O<br>O<br>O | efini<br>and I<br>De <sup>r</sup><br>SD,<br>SPI | ition<br>Dire<br>vice<br>AP<br>P Li | is<br>etor<br>Dis<br>Clier<br>nk E                | Conl<br>y<br>covi<br>nt<br>Stab                       | figur<br>ery<br>olishr                      | men   | on i  | Abo                                | ut                    |       | -Tra<br>Rx:<br>Rx:<br>Rx:<br>Tx:              | nsp<br>Eve<br>Eve<br>Eve               | ort L<br>ent: I<br>ent: I<br>ent: I                    | .aye<br>Port<br>Link<br>Estab      | er log<br>:Sta<br>:Est<br>ablish               | )<br>tus (<br>ablis<br>h Lir<br>Link | Cha<br>sheo<br>nk, S                   | nge<br>1, St<br>Statu                         | d, Lo<br>atus<br>us: 0<br>Port:                     | oca<br>: 00<br>0, L<br>: 01            | l Po<br>), Bo<br>, Bo               | rt: Oʻ<br>IAda<br>II Po    | 1, P)<br>dr: 0<br>ort: 0<br>dr: 01 | ortS<br>158<br>1 | tatu:<br>1417 | s: 80<br>7000 | ;, Bre<br>18, L<br>18, R | eak<br>oca<br>emc   | <b>_</b> |
|                 | -                                 |   | Esi<br>Ge<br>Se<br>En<br>Re         | tabli:<br>nd E<br>t Lin<br>t Lin<br>ter T<br>leas | sh S<br>) ata:<br> k Su<br>k Su<br>rans<br>e Lir<br>- | PP (<br>Te:<br>Iper<br>Iper<br>part<br>Nk L | Coni<br>st, L<br>visic<br>visic<br>ent l<br>oca | nect<br>.ocal<br>on Ti<br>on Ti<br>Mod<br>IPort | ion<br>Port<br>meo<br>e, Lo<br>=01 | =C<br>ut<br>ut.<br>DC |       | Rx:<br>Tx:<br>Tx:<br>Rx:<br>Tx:<br>Rx:<br>Rx: | Eve<br>Cma<br>Eve<br>Cma<br>Eve<br>Eve | ent :<br>5 SI<br>ent :<br>5 Se<br>ent :<br>5 SI<br>ent | SDA<br>Servic<br>SDA<br>SDA<br>Ren | AP Dis<br>Vice<br>ce B<br>AP C<br>P Co<br>note | isco<br>Brou<br>row:<br>onn<br>Dev   | onne<br>wse<br>se, f<br>ect, E<br>vice | ect,<br>t<br>Sta<br>Brov<br>Sta<br>dAo<br>Nar | Stati<br>atus:<br>vse (<br>itus:<br>ddr: 1<br>me, 2 | us:<br>00<br>Grou<br>00<br>015<br>Stal | 00<br>, Bro<br>up II<br>814<br>tus: | 0wse<br>D: 0<br>170<br>00, | e Gr<br>111<br>008<br>BdA          | oup<br>ddr:      | ID: 1         | 0210<br>5814  | ), Se<br>170(            | rvic"<br>()<br>108, | ý.       |
| Se              | nd s<br>S                         | tring<br>end                                    | )                                   |   |   | Ca  | lc cl   | heck  | sum                                | anc                   | d ler | ngth  |  | Sa   | ve                                 | byte   | sas                                  | сог                                    | nma   | nd  |  |                                     | Ge                         | enera                              | ate I            | brea          | k             |                          |                     |          |
| HE><br>102      | (7A9<br>52                        | ID:<br>NA                                       | inpu<br>108                         | 10<br>00  | 64  | 01  | 01  | 58  | 14                                 | 17                    | 00    | 08  | 02                                     | 03   | 1                                  | 1  | 1                                    | 1                                      | l.  | I.  | l.                                     |                                     | 1                          | 1                                  |                  | 1             |               | 1                        | l.                  | T        |
| 1               | R                                 | 1   | I                                   | 1   | d   | 1   | I   | X   | I                                  | I                     | 1     | 1   | 1                                      | I  | I                                  | 1  | I                                    | 1                                      | 1   | I   | 1                                      | 1                                   | 1                          | 1                                  | 1                | 1             | 1             | ī                        | I                   |          |
| •               |                                   |   |                                     | 1   | 1   |   | L   | 1   |                                    |                       |       |   | L                                      |  |                                    | 1  | 1                                    | <u> </u>                               |   | _   | 1                                      |                                     |                            |                                    |                  |               |               | -                        |                     | Þ        |
| JAR             | T CO                              | DM2   | 2 1                                 | 152   | 00Bj  | os  |   |   |                                    |                       |       |   |  |  |                                    |  |                                      |  |   |   |  |                                     |                            |                                    |                  |               |               |                          |                     |          |

# Figure 2-34. Successful link establishment from the LMX9820A

# 2.2.6 Create Hyperterminal connection for incoming virtual serial port

Once the LMX9820A connects to the Windows Stack of the USB Dongle, the windows stack will assign a virtual serial port to this link as seen in Section 2.2.5.3 on page 30.

This means, any data sent to this virtual serial port will be sent to the LMX9820A.

Since we need an application to do this, a Hyperterminal connection needs to be created.

### 2.2.6.1 Open Hyperterminal Start Hyperterminal

Start Hyperterminal as described in Section 1.3 on page 4.

### 2.2.6.2 Create new connection

Create a new connection by typing a connection name like "SBDemo USBDongle incoming".



Figure 2-35. Create new connection

### 2.2.6.3 Choose correct Comport

In order to talk to virtual serial port of the stack, choose the COMPort reported by the stack as described in Section 2.2.5.3 on page 30, Figure 2-33 In this example "COM6" needs to be used.

| Connect To  |
|---|
| SBDemo USBDongle incoming                                 |
| Enter details for the phone number that you want to dial: |
| Country/region: Germany (49)                              |
| Area code: 89   |
| Phone number:   |
| Connect using: COM6                                       |
| OK Cancel   |

Figure 2-36. Choose correct comport

### 2.2.6.4 Select correct comport settings

The comport settings for the virtual serial port should be the same as chosen for the LMX9820A (see Section 2.1.1.4 on page 8).

| COM6 Properties                   | ? × |
|-----------------------------------|-----|
| Port Settings                     |     |
|                                   | _   |
| <u>B</u> its per second: 115200 ▼ |     |
| Data bits: 8                      |     |
| Parity: None                      |     |
| Stop bits: 1                      |     |
| Elow control: Hardware            |     |
| <u>R</u> estore Defaults          |     |
| OK Cancel Ap                      | ply |
|                                   |     |



Afterwards the Hyperterminal window comes up and should be connected to the selected COMPort.

### 2.2.7 Receiving Data in Simply Blue Commander

Once the Hyperterminal shows "Connected" any key typed in that window will appear as incoming data in the Simply Blue Commander. See Figure 2-38 as example for the events sent for the Text "test1234". The test is displayed in hex.

Since the LMX9820A is still in command mode, meaning, it still is trying to interpret incoming UART data, it indicates incoming data on the bluetooth link with the "Incoming Data" event on the UART.

| Simply Blue Commander Version: 1.3.0.3   |     |  |  |  |  |  |  |  |  |  |  |
|--|-----|--|--|--|--|--|--|--|--|--|--|
| File Definitions Configuration About   |     |  |  |  |  |  |  |  |  |  |  |
| Command Directory Transport Layer log  |     |  |  |  |  |  |  |  |  |  |  |
| Command Directory       Transport Layer log         Image: Device Discovery       Image: Release Link LocalPort         Image: Device Discovery       Image: Device Discovery         Image: |     |  |  |  |  |  |  |  |  |  |  |
| Send string  |     |  |  |  |  |  |  |  |  |  |  |
| Send Calc checksum and length Save bytes as command Generate break   |     |  |  |  |  |  |  |  |  |  |  |
| HEX/ASCII input:   |     |  |  |  |  |  |  |  |  |  |  |
| 02 52 0A 08 00 64 01 01 58 14 17 00 08 02 03 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   | I I |  |  |  |  |  |  |  |  |  |  |
|  | 1 1 |  |  |  |  |  |  |  |  |  |  |
|  |     |  |  |  |  |  |  |  |  |  |  |
| UART COM2 115200Bps  |     |  |  |  |  |  |  |  |  |  |  |

Figure 2-38. Incoming Data at LMX9820A in command mode

### 2.2.8 Send Data by using "Send Data"

After actively estabilishing a link the LMX9820A will stay in command mode for either a second link or other configurations. Therefore any data to be sent to the other device have to be sent via the "Send Data" command. The command is formed out of the 6-byte header and the payload. The payload consists of

- Local RFCOMM Port (1 byte)
  - The port, to which the package has to be sent to. The port defines the bluetooth link the data have to be forwarded to. In this example the link has been established on port 01.
- Datalength (2 bytes)
  - Length of the data to be sent
- Data ('Datalength' bytes)
  - Data to be sent (maximum 330bytes)

The prepared command "Send Data:Test, Local Port=01" in the command directory sends the data "Test" to the remote device.

NOTE: in multiple link setups this command needs be used to differentiate between different connections.

|  | biue                               | Comr                   | nan                  | der                               | ٧e                                       | rsio                                | n: 1                     | .3.0.                 | 3                   |                         |                      |                |              |                 |                      |                   |               |              |               |          |                  |              | _     |     |
|--|------------------------------------|------------------------|----------------------|-----------------------------------|--|-------------------------------------|--------------------------|-----------------------|---------------------|-------------------------|----------------------|----------------|--------------|-----------------|----------------------|-------------------|---------------|--------------|---------------|----------|------------------|--------------|-------|-----|
| File Defir   | nitions                            | Conf                   | igur                 | atio                              | n At                                     | out                                 |                          |                       |                     |                         |                      |                |              |                 |                      |                   |               |              |               |          |                  |              |       |     |
| Command  | Directi                            | ory                    |                      |                                   |  |                                     |                          |                       | ansp                | ort Lay                 | er lo                | g              | _            |                 |                      |                   |               |              |               |          |                  |              |       | _   |
| ⊡ - <mark>⊡</mark> De  | evice D                            | iscove)                | ery                  |                                   |  |                                     | -                        | Bx:                   | : Eve<br>Cro        | ent: Se<br>d: Sen       | nd D<br>d Dai        | iata,<br>ta il | . Sta<br>oca | atus:<br>al Poi | 00, L<br>rŀ: 01      | Loca<br>Pa        | il Po<br>uloa | nt: C<br>M D | l]<br>ata:    | 54       | 6573             | 374          |       |     |
| ⊞⊶ <mark>⊡</mark> SL<br>⇔. Ĉ∋ su   | DAP UI                             | Eatab                  | المحام               | nont                              |  |                                     |                          | Bx:                   | : Eve               | ent: Ind                | comir                | ig D           | ata,         | , Loc           | al Po                | ort: C            | 9108<br>11, F | lece         | ata.<br>sive  | d D      | ata:             | 34           |       |     |
|  | ) Estat                            | n Eistad<br>Slish Sl   | nishi<br>PP (        | nent<br>Conn                      | ection                                   |                                     |                          | Bx:                   | Eve                 | ent: Ind                | comir                | ig D           | ata,         | , Loc           | al Po                | ort: C            | 11, F         | lece         | eive          | d D      | ata:             | 33           |       |     |
| abk  | Send                               | Dalh                   | Tes                  | st, Lo                            |  | ort=0                               | пIJ                      | Bx:                   | : Eve               | ent: Ind                | comir<br>comir       | ig D<br>ig D   | ata,<br>ata, | , Loc<br>, Loc  | ai Fo<br>al Po       | ort: C            | и, г<br>11, F | iece<br>lece | eive:<br>eive | αD<br>dD | iata:<br>Iata:   | 32<br>31     |       |     |
| je in the second se | Get L                              | ink 5                  | iper                 | visio                             | n Tim                                    | eout                                | _                        | Bx:                   | Eve                 | ent: Ind                | comir                | ŋgĎ            | ata,         | , Loc           | al Po                | ort: C            | 1, F          | lece         | eive          | d D      | lata:            | 74           |       |     |
|  | Set L                              | .ink Su                | iperv                | visio                             | n Time                                   | eout,                               |                          | Bx:                   | : Eve<br>: Eve      | ent: Ind<br>ent: Ind    | comir<br>comir       | ig D<br>ig D   | ata,<br>ata, | , loc<br>, Loc  | ai Po<br>al Po       | ort: C<br>ort: C  | и, н<br>11, F | iece<br>lece | eive:<br>eive | αν<br>dD | iata:<br>Iata:   | 73<br>65     |       |     |
|  | 2 Enter                            | r Irans<br>Liv         | spare                | ent N                             | 1ode,<br>Dort-f                          | Loc                                 |                          | Bx:                   | Eve                 | ent: Ind                | comir                | ig D           | ata,         | , Loc           | al Po                | ort: C            | 11, F         |              | eive          | d D      | ata:             | 54           | D     | -1. |
|  | r nelea                            |                        | IK L.                | l                                 |  |                                     | -                        |                       | E Ve                | enc Fo                  | 11 518               |                | Una<br>Una   | ange            | a, Lo                | oo                |               | : 01         | , F0          | 100      | tatus<br>4 x 4 7 | : 8L<br>2000 | , bie | ак  |
| Soud strip   |                                    |                        | _                    | 1                                 |  |                                     |                          |                       |                     |                         |                      |                |              |                 |                      |                   |               |              |               |          |                  |              |       | -   |
| Send sum   | y<br>, 1                           |                        | C-1                  | la ala                            | 1  |                                     |                          |                       |                     | C                       | . <b>L</b>           |                |              |                 |                      | 1                 |               | с            |               |          | L I              | . 1          |       |     |
| Sen  |                                    | _                      | La                   | c cn                              | iecksi                                   | um ai                               | na ie                    | ength                 | <u> </u>            | Save                    | e Dyte               | es as          | s co         | mma             | ina                  | ]                 | -             | Gei          | nera          |          | oreal            | K            |       |     |
| 02 52 OF   | 07 0                               | 0 68                   | 01                   | 04                                | 00 5                                     | 4 65                                | 5 7:                     | 3 74                  | 03                  | 1 1                     | T                    | T              | 1            | 1               | 1                    | 1                 | 1             | 1            | T             | I        | I                | T            | 1     | T   |
| I B I  | 1 1                                | h                      | I                    | I                                 | I T                                      | е                                   | s                        | t                     | T                   |                         | T                    | T              | T            | I               | T                    | T                 | T             | T            | T             | T        | I                | T            | I     | T   |
| •  |                                    |                        |                      |                                   |  |                                     |                          |                       |                     | 1 1                     |                      |                |              |                 |                      |                   |               |              | _             |          |                  |              | -     |     |
|  | 2 11                               |                        |                      |                                   |  |                                     |                          |                       |                     |                         |                      |                |              |                 |                      |                   |               |              |               |          |                  |              |       |     |
|  | 2 11.                              | 52000                  | 12                   |                                   |  |                                     |                          |                       |                     |                         |                      |                |              |                 |                      |                   |               |              |               |          |                  |              |       |     |
| lata will ap   | opear i                            | in the                 | Нур                  | Fig<br>erte                       | ure 2<br>ermina                          | <b>-39.</b><br>al wi                | Se<br>ndo                | end C                 | Data<br>the         | by us                   | s <b>ing</b><br>Dong | "Se            | end<br>after | Dat<br>r ser    | a" c                 | <b>om</b> ı<br>g. | mar           | nd           |               |          |                  |              |       |     |
| lata will ap   | opear i<br>Jemo l                  | in the                 | Hyp                  | Fig<br>erte                       | ure 2<br>ermina                          | -39.<br>al wi                       | Se<br>ndo<br>- Hy        | end D<br>w of         | Data<br>the<br>Terr | by us<br>USB I          | s <b>ing</b><br>Dong | "Se            | after        | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  | _            |       | X   |
| lata will ap   | opeari<br>Jemo l<br>dit Vi         | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>perte<br>le in<br>Tra      | ure 2<br>ermina<br>ncom                  | <b>-39.</b><br>al wi<br>ing ·<br>He | Se<br>ndo<br>- Hy<br>elp | end D<br>w of<br>yper | Data<br>the<br>Terr | by us<br>USB I          | sing<br>Dong         | "Se            | after        | Dat<br>r ser    | <b>a" c</b><br>nding | :omi<br>g.        | mar           | nd           |               |          |                  | _            |       | ×   |
| lata will ap   | opeari<br>Demol<br>dit Vi          | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Iall   | Fig<br>erte<br>le ir<br>Tra       | ure 2<br>ermina<br>ncom<br>ansfer        | -39.<br>al wi<br>ing ·<br>He        | Se<br>ndo<br>- Hy<br>elp | w of                  | Data<br>the<br>Terr | by us<br>USB I<br>minal | Sing<br>Dong         | "Se            | after        | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  | _            |       | x   |
| ata will ap  | opeari<br>Demol<br>dit Vi          | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>berte<br>le in<br>Tra      | ermina<br>ansfer                         | -39.<br>al wi<br>ing ·<br>He        | Se<br>ndo<br>- Hy<br>elp | end D<br>w of<br>/per | Data<br>the<br>Teri | by us                   | sing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  | _            |       | ×   |
| lata will ap   | opeari<br>Demol<br>dit Vi<br>S     | in the<br>USBD<br>ew ( | Hypp<br>Dong<br>Call | Fig<br>perte                      | ure 2<br>ermina<br>ansfer                | ing ·<br>He                         | Se<br>ndo<br>- Hy<br>elp | end D<br>w of<br>/per | Data<br>the<br>Terr | by us                   | Sing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  | _            |       | ×   |
| lata will ap   | peari<br>dit Vi<br>st_             | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>ansfer        | -39.<br>al wi<br>ing :<br>He        | Se<br>ndo<br>- Hy<br>elp | end D<br>w of<br>yper | Data<br>the         | by us                   | iing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ap   | pear i<br>dit Vi<br>st_            | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>perte<br>le in<br>Tra      | ure 2<br>ermina<br>ansfer                | -39.<br>al wi<br>ing ·              | Se<br>ndo<br>- Hy<br>elp | end D<br>w of<br>yper | Data<br>the<br>Terr | by us                   | ing<br>Dong          | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  | _            |       | ×   |
| lata will ap   | ppear i<br>Pemo I<br>dit Vi<br>St_ | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>nnsfer        | -39.<br>al wi<br>ing :<br>He        | Se<br>ndo<br>- Hy<br>elp | w of                  | Data<br>the<br>Terr | by us                   | iing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           | _             |          |                  |              |       | ×   |
| lata will ap   | pemo l<br>dit Vi<br>st_            | in the<br>USBD<br>ew ( | Hyp<br>ong<br>Call   | Fig<br>perte<br>le in<br>Tra<br>2 | ure 2<br>ermina<br>ncom<br>nsfer         | -39.<br>al wi<br>ing ·<br>He        | Se<br>ndo<br>- Hy<br>elp | vnd C<br>w of         | Data<br>the<br>Terr | by us                   | iing<br>Don <u>e</u> | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ap   | penol<br>dit Vi<br>st_             | in the<br>USBD<br>ew ( | Hyp<br>Call          | Fig<br>perte<br>Ite in<br>Tra     | ure 2<br>ermina<br>ncom                  | -39.<br>al wi<br>He                 | Se<br>ndo<br>- Hy<br>elp | w of                  | Data<br>the<br>Terr | by us                   | iing<br>Done         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ap   | pemo l<br>dit Vi<br>st_            | in the<br>USBD<br>ew ( | Hyp<br>ong<br>all    | Fig<br>perte                      | ure 2<br>ermina<br>ncom                  | -39.<br>al wi                       | Se<br>ndo<br>- Hy<br>elp | vnd D<br>vyper        | Data<br>the<br>Terr | by us                   | bing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ap   | pear i<br>dit Vi                   | IN THE                 | Hyp<br>ong<br>Call   | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>ansfer        | -39.<br>al wi<br>He                 | Se<br>ndo<br>- Hy<br>elp | w of                  | Data<br>the<br>Terr | by us                   | iing<br>Dong         | "Se            | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| ata will ar  | pemol<br>dit Vi                    | in the<br>USBD<br>ew ( | Hyp<br>Call          | Fig<br>perte<br>Tra<br>D          | ure 2<br>ermina<br>ncom<br>nsfer         | -39.<br>al wi<br>He                 | Se<br>ndo<br>- Hy<br>elp | vnd D                 | Data                | by us                   | ing<br>Dong          | "Se<br>gle a   | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| ata will ar  | pear i<br>dit Vi                   | in the<br>ew (         | Hyp<br>ong<br>all    | Fig<br>perte                      | ure 2<br>ermina<br>ansfer                | -39.<br>al wi                       | Se<br>ndo<br>- Hy<br>elp | vper                  | Data<br>the<br>Terr | by us                   | ing<br>Dong          | "Se<br>gle a   | end          | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ar   | pemol<br>dit Vi                    | in the                 | Hyp<br>Call          | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>nnsfer        | -39.<br>al wi<br>He                 | Se<br>ndo<br>- Hy<br>elp | vnd D                 | Data                | by us                   | ing<br>Dong          | "Se            | end<br>after | Dat<br>r ser    | a" c                 | eomi              | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ar   | pear i<br>dit vi                   | in the<br>ew (         | Hyp<br>ong<br>Iall   | Fig<br>perte                      | ure 2<br>ermina<br>ncom                  | -39.<br>al wi                       | Se<br>ndo<br>- Hy<br>elp | vper                  | Data<br>the<br>Terr | by us                   | bing<br>Dong         | "Se<br>gle a   | end<br>after | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       | ×   |
| lata will ap   | opear i<br>dit Vi                  | in the                 | Hyp<br>ang<br>all    | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>nsfer         | -39.<br>al wi                       | Se<br>ndo<br>- Hy<br>elp | rnd D                 | Data<br>the<br>Terr | by us                   | ing<br>Dong          | "Se<br>gle a   | end          | Dat<br>r ser    | a" c                 | g.                | mar           | nd           |               |          |                  |              |       |     |
| ata will ap  | pear i                             | in the                 | Hyp<br>all           | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>ansfer        | -39.<br>al wi                       | Se<br>ndo                | rnd D                 | Data                | by us                   | ing<br>Dong          | "Se<br>gle a   | end          | Dat<br>r ser    | a" c                 | comi              | mar           | nd           |               |          |                  |              |       |     |
| ata will ap  | pear i                             | in the                 | Hyp<br>Call          | Fig<br>perte                      | ure 2<br>ermina<br>ncom<br>nnsfer<br>5 [ | -39.<br>al wi<br>He                 | Se<br>ndo<br>- Hy<br>elp | rnd C<br>w of<br>per  | Data<br>the<br>Terr | by us<br>USB I          | ing<br>Dong          | "Se<br>gle a   | after        | Dat             | a" c                 | p.                | mar           | NUM          | 1             |          | aptur            | re           | Prir  | ×   |

### 2.2.9 Switching to transparent mode on the LMX9820A

If only one link is established, so no differentiation between different links is necessary, the LMX9820A allows to switch the UART interface to "transparent". This means, incoming data will not be parsed to be a valid command, instead, all incoming data will be sent to the remote device directly.

Transparent Mode on the local port 1 can be reached by sending the prepared command in the "Command Directory".



Figure 2-41. Switch to "Transparent Mode" on the UART

Afterwards, all data will be sent directly to the other side. This can be simulated by sending "Send Data: Test, LocalPort=01" again. The LMX9820A will now send the complete packet to the other device, not just the "Test" string.

This can be seen at the cryptic characters within the Hyperterminal window.

| 🏀 SBDemo USBDongle in   | coming - Hype | rTerminal   |        |      |     |         | _ 🗆 )      | × |
|-------------------------|---------------|-------------|--------|------|-----|---------|------------|---|
| File Edit View Call Tra | nsfer Help    |             |        |      |     |         |            | _ |
|                         | <u>ı</u>      |             | k      |      |     |         |            | л |
| Test®R≭h⊍♦Tes           | st♥           |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         | _          | 4 |
|                         |               |             |        |      |     |         |            |   |
|                         |               |             |        |      |     |         |            | - |
| Connected 0:05:36       | Auto detect   | 15200 8-N-1 | SCROLL | CAPS | NUM | Capture | Print echo |   |

Figure 2-42. Hyperterminal receiving the complete package from the LMX9820A

In Simply Blue Commander any data can now be sent without using the "Send Data" command. For this just type a string in the "HEX/ASCII input" line and press "Send". The whole string will be sent.

| Simply Blue Commander Version: 1.3.0.3  | 0.3   |          |
|---|---|----------|
| File Definitions Configuration About  |   |          |
| Command Directory Tra   | ransport Layer log  |          |
| Device Discovery     SDAP Client     SPP Link Establishment     Send Data: Test, LocalPort=     Get Link Supervision Timeout     Set Link Supervision Timeout     Enter Transparent Mode, Loc     Rx:     Rx:     Rx:     Rx:     Send String | x(RAW): 54,65,73,74,73,74,72,69,6E,67<br>x: Cmd: Send Data, Local Port: 01, Payload Data: 54657374<br>ix: Event: Transparent Mode, Status: 00, Local Port: 01<br>x: Cmd: Transparent Mode, Local Port: 01<br>(x: Event: Send Data, Status: 00, Local Port: 01<br>x: Cmd: Send Data, Local Port: 01, Payload Data: 54657374<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 34<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 33<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 32<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 32<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local Port: 01, Received Data: 31<br>(x: Event: Incoming Data, Local |          |
| Calc checksum and length  | th Save bytes as command Generate break   |          |
|   |   | 1 1      |
|   |   |          |
|   |   | <u> </u> |
|   |   |          |
| ART COM2 115200Bps  |   |          |
|   |   |          |

Figure 2-43. Send "Teststring" over the transparent UART link

LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

| SBDemo USBDonale      | incomina - Hy | perTerminal  |        |      |     |         |            |
|-----------------------|---------------|--------------|--------|------|-----|---------|------------|
| File Edit View Call T | ransfer Help  |              |        |      |     |         |            |
|                       | 29 (11)       |              |        |      |     |         |            |
|                       |               |              |        |      |     |         | <b></b>    |
| Test®R≉h®♦Te          | est♥Tests     | string       |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         | _          |
|                       |               |              |        |      |     |         |            |
|                       |               |              |        |      |     |         | -          |
| Ī                     |               | _            |        |      |     |         |            |
| Connected 0:05:36     | Auto detect   | 115200 8-N-1 | SCROLL | CAPS | NUM | Capture | Print echo |

### Figure 2-44. Receiving the RAW Datastring

In case, any key is pressed within the Hyperterminal window now, the incoming data will be shown in RAW format within the Simply Blue Commander. The following screenshot shows the message in Simply Blue Commander in case "test" and "1234" have been sent.

|   | Sim                           | ply   | Blu  | e Co   | omm  | an   | der  | ۷  | ers                                       | ion:             | 1.3   | 3.0.3  |  |   |   |  |   |  |   |   |  |  |  |  |  |                                     |                   | _         |   | > |
|---|-------------------------------|---|--|--|--|--|--|--|---|------------------|-------|--|--|---|---|--|---|--|---|---|--|--|--|--|--|-------------------------------------|-------------------|-----------|---|---|
| File  | e D                           | efini   | ition  | s (  | Confi  | gur  | atio   | n i  | Abou                                      | ut               |       |  |  |   |   |  |   |  |   |   |  |  |  | N  | )<br>  |                                     |                   |           |   |   |
| -Co   | mma                           | and I   | Dire   | ctory  | ,  |  |  |  |   |                  |       | -Trar  | nspo   | ort L   | .aye  | er log   | ,   |  |   |   |  |  |  |  |  |                                     |                   |           |   |   |
|   |                               | De<br>SD<br>SP  | vice<br>AP (<br>P Lin<br>Est<br>Ser<br>Gel<br>Ent<br>Rel | Dis<br>Olier<br>ablis<br>nd D<br>t Lin<br>t Lin<br>t Einl<br>ter T | cove<br>stabl<br>stabl<br>sh SF<br>ata:<br>k Sup<br>k Sup<br>ransp<br>e Linl | ry<br>ishr<br>P C<br>Tes<br>perv<br>perv<br>pare<br>< Lo | nent<br>Conr<br>visio<br>visio<br>visio<br>ent N<br>ocal | t<br>necti<br>n Ti<br>n Ti<br>Mode<br>Port | on<br>Port:<br>meo<br>meo<br>e, Lo<br>=01 | =Cut<br>ut<br>ut |       | Rx(F<br>Rx(F<br>Tx: (<br>Rx: I<br>Tx: (<br>Rx: I<br>Rx: I<br>Rx: I<br>Rx: I<br>Rx: I | AV<br>AV<br>AV<br>Cmc<br>Eve<br>Cmc<br>Eve<br>Eve<br>Eve | /):<br>/):<br>f: Si<br>f: Ti<br>f: Si<br>f: S | 31,2<br>74,6<br>54,6<br>Trans<br>rans<br>Sen<br>end<br>Inco<br>Inco | 32,3<br>35,7<br>Dat<br>pare<br>d D-<br>Dat<br>omin<br>omin | 3,34<br>3,74<br>3,74<br>a, Li<br>ent M<br>ata, Li<br>g D<br>g D<br>g D<br>g D | ,73,<br>ocal<br>Modu<br>Stal<br>Stal<br>ata,<br>ata,<br>ata, | 74,;<br>Poi<br>de, L<br>tus:<br>Poi<br>Loc<br>Loc | 72,6<br>Stat<br>ocal<br>00,<br>t: 0<br>al P<br>al P | 9,6E<br>I, P.<br>Por<br>Loc<br>I, P.<br>ort:<br>ort:<br>ort: | 5,67<br>ayloa<br>DO, L<br>t: O1<br>al Po<br>ayloa<br>D1, F<br>D1, F<br>D1, F | ad D<br>Loca<br>ort: 0<br>ad D<br>Rece<br>Rece | ata:<br>I Po<br>ata:<br>ata:<br>aiveo<br>aiveo | 546<br>rt: 0<br>546<br>1 D a<br>1 D a<br>1 D a | 573<br>1<br>573<br>ita: :<br>ita: : | 74<br>34<br>32    |           |   | - |
| •   | _                             | Send string Calc checksum and length Save bytes as command Generate break |  |  |  |  |  |  |   |                  |       |  |  |   |   |  |   |  |   |   |  |  |  |  |  |                                     |                   |           |   |   |
| ■<br>Se   | end s<br>S<br>K/AS            | tring<br>end  | )<br>inpu  | l<br>It:   |  | Cal  | c cł   | neck                                       | .sum                                      | and              | l ler | ngth   |  | Sa  | ivel  | byte   | sas   | сог  | nma   | nd  |  |  | Ge   | nera   | te bi  | reak                                | :                 |           |   |   |
| •<br>-Sε<br>-Ε<br>-Ε<br>54                                    | nd s<br>S<br>(/A9             | tring<br>end<br>CII<br>73   | inpu<br>74   | 1<br>It:<br>73   | 74   | Cal<br>72  | c ch<br>69   | neck<br>6E                                 | sum                                       | and              | l ler | ngth   |  | Sa  | ive I   | byte<br>I  | s as  | cor  | nma   | nd  |  |  | Ger  | nera   | te bi  | reak                                |                   | 1         | 1 |   |
| •<br>Sε<br>1Ε><br>54  | rnd s<br>S<br>K/A9<br>65<br>e | tring<br>end<br>CII<br>73   | inpu<br>74<br>t  | t:<br>73   | 74<br>t  | Cal<br>72  | c ch<br>69<br>i  | neck<br>6E                                 | sum<br>67                                 | and<br>I         | i ler | ngth<br>I  |  | Sa<br>I   | ive   | byte<br>I  | s as  |  | nma   | nd<br>I   |  |  | Ger  | nera<br>I                                      | te bi  | reak                                |                   | 1         | 1 |   |
| <ul> <li>Sε</li> <li>IE&gt;</li> <li>54</li> <li>T</li> </ul> | rnd s<br>S<br>65<br>e         | trin <u>c</u><br>end<br>CII<br>73<br>s                                    | inpu<br>74<br>t  | t:<br>73<br>s  | 74<br>t  | Cal<br>72<br>r   | c ch<br>69<br>i  | neck<br>6E<br>n                            | sum<br>67<br>g                            | and<br>I         | l ler | ngth<br>I  | <br> <br>  | Sa<br>I<br>I  | ive  <br>  <br>   | byte<br>I<br>I   | s as<br>I<br>I  | cor<br>I<br>I  | nma<br>I<br>I                                     | nd<br>I<br>I  | <br> <br> <br>   | <br> 1<br> 1   | Ger<br>I<br>I                                  | nera<br>I<br>I                                 | te bi<br>I                                     | reak<br>I                           | ;  <br> <br> <br> | <br> <br> | 1 |   |

### Figure 2-45. Incoming data in Simply Blue commander with LMX9820A in transparent mode

### 2.2.10 "Generate BREAK" to leave "Transparent Mode"

Since the LMX9820A does not listen to any commands in transparent mode, the UART Break needs to be used to leave this mode. The BREAK is initiated by clicking on the button "Generate break". Afterwards, data have to be sent again by using the "Send Data" command. Incoming data will be indicated with the "Incoming data" Event.

| 💦 Simp  | y Blu  | e Co  | omr          | пап  | ıdeı  | r V  | ers         | ion   | : 1.3 | 3.0. | 3    |        |      |        |      |     |     |    |   |   |    |       |       |      |   | _ |   | x |
|---|--|-------|--------------|------|-------|------|-------------|-------|-------|------|------|--------|------|--------|------|-----|-----|----|---|---|----|-------|-------|------|---|---|---|---|
| File <u>D</u> ef  | initior  | is (  | <u>⊂</u> onf | igur | atio  | n,   | <u>A</u> bo | ut    |       |      |      |        |      |        |      |     |     |    |   |   |    |       |       |      |   |   |   |   |
| Comman  | d Dire   | ctory | , —          |      |       |      |             |       |       | -Tra | ansp | oort l | .aye | er log | ,    |     |     |    |   |   |    |       |       |      |   |   |   |   |
|   |  |       |              |      |       |      |             |       |       |      |      |        |      |        |      |     | •   |    |   |   |    |       |       |      |   |   |   |   |
| Image: Stabilish Shift Connection       Tx(RAW): 54,65,73,74,73,74,73,74,72,69,6E,67         Image: Stabilish Shift Connection       Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54657374         Image: Stabilish Shift Connection       Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54657374         Image: Stabilish Shift Connection       Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54657374         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Mode, Local Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Port: 01         Image: Stabilish Shift Connection       Tx: Cmd: Transparent Port: 01         Image: Stabilish Shif |  |       |              |      |       |      |             |       |       |      |      |        |      |        |      |     |     |    |   |   |    |       |       |      |   |   |   |   |
|   | Enter Transparent Mode, Loc<br>Release Link LocalPort=01<br>Release Link LocalPort=01<br>Release Link LocalPort=01 |       |              |      |       |      |             |       |       |      |      |        |      | Þ      | •    |     |     |    |   |   |    |       |       |      |   |   |   |   |
| Send stri   | ng   |       |              |      |       |      |             |       | _     |      |      |        |      |        |      |     |     |    |   |   |    |       |       |      |   |   |   | _ |
| Ser   | nd   |       |              | Cal  | lc cł | neck | sum         | ı anı | d lei | ngth |      | Sa     | ave  | byte   | s as | con | nma | nd |   |   | Gε | enera | ate b | real | 0 |   |   |   |
| HEX/ASC   | II inpu  | ut:   |              |      |       |      |             |       |       |      |      |        |      |        |      |     |     |    |   |   |    |       |       | N    |   |   |   |   |
| 54 65 7   | 3 74   | 73    | 74           | 72   | 69    | 6E   | 67          | I     | I     | I    | I    | T      | I    | T      | I    | Ι   | T   | I  | T | I | I  | T     | I     | T    | I | T | I | I |
| T e s   | t  | s     | t            | r    | i     | n    | g           | L     | I.    | T    | T    | T      | I    | I      | T    | I   | T   | I  | T | I | T  | T     | I     | I    | I | T | I | Ī |
|   |  |       |              |      |       |      |             |       |       |      |      | 1      |      | 1      |      | 1   | 1   |    |   |   |    |       |       |      |   |   |   | Þ |
| UART COL  | 42 1   | 152   | 00Bp         | os   |       |      |             |       |       |      |      |        |      |        |      |     |     |    |   |   |    |       |       |      |   |   |   | / |

Figure 2-46. Leaving transparent with UART Break

# 2.2.11 Release Link

Finally the link can be released by using the prepared "Release Link LocalPort=01" command.

| finition<br>nd Dire<br>Device                          | ns (<br>ectory   | ⊆onf<br>y   | figuratio   | n   | <u>A</u> bo   | ut  |   |  |   |   |  |  |   |  |  |   |   |  |  |   |  |   |  |  |  |   |
|--|--|---|---|---|---|---|---|--|---|---|--|--|---|--|--|---|---|--|--|---|--|---|--|--|--|---|
| nd Dire<br>Device                                      | ectory   | y   |   |   |   |   |   |  |   |   |  |  |   |  |  |   |   |  |  |   |  |   |  |  |  |   |
| Device   | Die  |   |   |   |   |   |   | -Tra   | ansp  | ort l   | .aye   | r log  |   |  |  |   |   |  |  |   |  |   |  |  |  | _   |
| SDAP<br>SPP Li<br>SPP Li<br>Se<br>Se<br>Se<br>Se<br>En | e Dis<br>Clier<br>ink E<br>tablis<br>nd D<br>et Lin<br>ter T | cove<br>istab<br>sh Si<br>Jata:<br>Jata:<br>Jata:<br>k Su<br>rans<br>กับ  | ery<br>Dishmen<br>PP Conr<br>Test, L<br>upervisio<br>sparent I<br><u>nk Loca</u>  | t<br>oca<br>on Ti<br>on Ti<br>Mod<br>Fort   | ion<br>IPort<br>imeo<br>imeo<br>le, Lu  | =C<br>out<br>oc   |   | Hx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>Fx:<br>F  | Eve<br>Eve<br>RAV<br>RAV<br>RAV<br>Cm<br>Eve<br>Cm  | ent:<br>ent:<br>d: R<br>ent:<br>V):<br>V):<br>V):<br>d: S<br>ent:<br>d: T   | Link<br>Rela<br>Trar<br>00<br>31,3<br>74,6<br>54,6<br>end<br>Trar<br>rans  | Hel<br>sase<br>se L<br>ispa<br>32,33<br>5,73<br>5,73<br>Data<br>ispa   | ease<br>Link<br>rent<br>3,34<br>3,74<br>3,74<br>a, Lo<br>rent<br>nt M   | ed, I<br><, S<br>Loc<br>Mo<br>,73,<br>Deal<br>Mo   | Hea:<br>tatu:<br>cal P<br>de, I<br>74,7<br>Port<br>de, S<br>e, Lo  | son:<br>s: 00<br>'ort:<br>Loca<br>2,69<br>t: 01<br>Stati<br>scal  | 00, Lo<br>01<br>al Po<br>9,6E<br>, Pa<br>us: 1<br>Por   | , Loo<br>ocal<br>ort: 1<br>5,67<br>ayloz<br>00, 1<br>t: 01   | ad D   | 'ort:<br>01<br>1ode<br>ata:<br>I Po   | U1<br>e: 00<br>546<br>rt: 0  | )<br>;573<br>1  | 374  |  |  | •<br>   |
| ring<br>Ind  |  |   | Calc cl   | hecł  | <sum< td=""><td>n an</td><td>d lei</td><td>ngth</td><td></td><td>Sa</td><td>avel</td><td>oyte:</td><td>sas</td><td>con</td><td>nmar</td><td>nd</td><td> </td><td>[</td><td>Ge</td><td>nera</td><td>ite bi</td><td>reak</td><td></td><td></td><td>_</td><td></td></sum<> | n an  | d lei   | ngth   |   | Sa  | avel   | oyte:  | sas   | con  | nmar   | nd  |   | [  | Ge   | nera  | ite bi   | reak  |  |  | _  |   |
| 00 01  |  | 60  | 01 03   | l.  | 1   | 1   | 1   | 1  | 1   | l.  | 1  | 1  | 1   | h.   | 1  | l.  | h.  | l.   | 1  | I.  | l.   | l.  | 1  | l.   | l.   | T   |
|  |  |   | 1 1   |   |   | •   |   |  |   |   | ÷  |  |   | ÷  | ÷  | ÷   | ÷   | ÷  |  | ŀ   | ÷  | ÷   |  |  |  | ť   |
| · / ·  |  |   | • •   | <b>1</b>  |   | <u> </u>  | <u> </u>  |  |   | <b>'</b>  | <u> </u>   | <b>1</b>   | <b>'</b>  | <b>'</b>   | <b></b>  | <b>'</b>  | <b>•</b>  | •  | <b>!</b>   | <b>1</b>  | <b>•</b>   | <b>'</b>  |  | <b>•</b>   | <b>'</b><br>   | Þ   |
| M2 1   | 152  | 00Bp  | ps  |   |   |   |   |  |   |   |  |  |   |  |  |   |   |  |  |   |  |   |  |  |  |   |
|  | Es<br>Se<br>Se<br>Se<br>En<br>Se<br>Ing<br>Ing<br>M2         | Establis<br>Send D<br>Get Lin<br>Set Lin<br>Enter T<br>Releat<br>ing<br>nd<br>II input:<br>DD 01 00<br>I I I<br>II Input: | Establish S<br>Send Data:<br>Get Link Su<br>Set Link Su<br>Enter Trans<br>Eleea In Link<br>Ing<br>II input:<br>DD 01 00 60<br>I I I 1 | <ul> <li>Establish SPP Con</li> <li>Send Data: Test, L</li> <li>Get Link Supervisio</li> <li>Set Link Supervisio</li> <li>Enter Transparent I</li> <li>Releate R, Link Loca</li> <li>Ing</li> <li>Calc cl</li> <li>Calc cl</li> <li>I I</li> <li>I I</li> <li>I I</li> <li>I I</li> </ul> | Establish SPP Connect<br>Send Data: Test, Loca<br>Get Link Supervision T<br>Set Link Supervision Ti<br>Enter Transparent Mod<br>Releats, Link LocalPor<br>ing<br>Calc check<br>II input:<br>DD 01 00 60 01 03 1<br>I I I I I I I<br>M2 115200Bps                        | Establish SPP Connection         Send Data: Test, LocalPort         Get Link Supervision Timeo         Set Link Supervision Timeo         Enter Transparent Mode, Link         Releate         Ing         Calc checksum         Cli input:         D         01       00         60       01         03         1       1         1       1         1       1         M2       1152008ps | Establish SPP Connection<br>Send Data: Test, LocalPort=C<br>Get Link Supervision Timeout<br>Set Link Supervision Timeout<br>Enter Transparent Mode, Loc<br>Releater Link LocalPort=01<br>Releater Link LocalPort=01<br>Calc checksum and<br>Calc checksum and<br>Cll input:<br>DD 01 00 60 01 03 1 1 1<br>1 1 1 1 1 1 | Establish SPP Connection<br>Send Data: Test, LocalPort=C<br>Get Link Supervision Timeout<br>Set Link Supervision Timeout<br>Enter Transparent Mode, Loc<br>Releate the Link LocalPort=01<br>Releate the Link LocalPort=01<br>Calc checksum and le<br>Calc checksum and le<br>Cli input:<br>DD 01 00 60 01 03 1 1 1 1<br>1 1 1 1 1<br>1 1 1 1 1 1 | Establish SPP Connection       Rx(<br>Send Data: Test, LocalPort=C         Get Link Supervision Timeout       Rx(<br>Tx(<br>Tx)         Set Link Supervision Timeout       Tx(<br>Tx)         Enter Transparent Mode, Loc       Tx:<br>Tx:         Image: Calc checksum and length       Tx:<br>Tx:         D 01 00 60 01 03 1 1 1 1 1       I         Image: Calc checksum and length       Image: Calc checksum and length         D 01 00 60 01 03 1 1 1 1 1       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length | Establish SPP Connection       Na. Eve<br>Rx(RAV<br>Send Data: Test, LocalPort=C         Get Link Supervision Timeout       Rx(RAV<br>Rx(RAV<br>Set Link Supervision Timeout         Enter Transparent Mode, Loc       Releate the Link LocalPort=01         Releate the Link LocalPort=01       Image: Calc checksum and length         Ing       Calc checksum and length         Ing       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length | Establish SPP Connection       Rx Event.         Send Data: Test, LocalPort=0       Rx(RAW):         Get Link Supervision Timeout       Rx(RAW):         Set Link Supervision Timeout       Tx(RAW):         Enter Transparent Mode, Loc       Rx: Event:         Relea In Link LocalPort=01       Image: Calc checksum and length         Ing       Calc checksum and length       Sa         OD 01 00 60 01 03 I       I       I       I         Input:       I       I       I       I         M2       1152008ps       I       I       I       I | Batablish SPP Connection       Bx. Event. Har Rx(RAW): 00         Send Data: Test, LocalPort=C       Rx(RAW): 31,3         Get Link Supervision Timeout       Rx(RAW): 74,6         Enter Transparent Mode, Loc       Tx(RAW): 54,6         Releate Intransparent Mode, Loc       Intransparent Mode, Loc         Releate Intransparent Mode, Loc       Intransparent Mode, Loc         Releater Transparent Mode, Loc       Intransparent Transparent T | P       Establish SPP Connection       Dx. Event. Hansparent Rx(RAW): 00         P       Send Data: Test, LocalPort=0       Rx(RAW): 00         P       Get Link Supervision Timeout       Rx(RAW): 31,32,33         P       Enter Supervision Timeout       Tx(RAW): 54,65,73         P       Enter Transparent Mode, Loc       Tx: Cmd: Send Data         Releate       Instructure       Image: Calc checksum and length       Save bytes         Ing       Calc checksum and length       Save bytes         II input:       Image: Calc checksum and length       Save bytes         II input:       Image: Calc checksum and length       Save bytes         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc c | Establish SPP Connection          Send Data: Test, LocalPort=C       Rx(RAW): 00         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Enter Transparent Mode, Loc       Rx(RAW): 54,65,73,74         Releate R Link LocalPort=O       Image: Send Data Loc         Releate R Link LocalPort=O       Image: Send Data Loc         Image: Send Data Loc       Image: Send Data Loc         Releate R Link LocalPort=O       Image: Send Data Loc         Image: Send Data Loc       Send Data Loc | Participandian       Rx Event Transparent Mo         Release       Release         Release       Release </td <td>Participation       Bx. Event. Transparent Mode, to Bx.(RAW): 00         Send Data: Test, LocalPort=0       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74         Enter Transparent Mode, Loc       Tx (RAW): 54,65,73,74,73,74,7         Releate R_Link LocalPort=00       Tx: Cmd: Send Data, Local Port         Ing       Tx: Cmd: Transparent Mode, Loc         Ing       Calc checksum and length         Save bytes as commar         Old 00 60 01 03 1 1 1 1 1 1 1 1 1 1 1         I 1 1 1 1 1 1 1 1 1         M2 1152008ps</td> <td>Pierrer       Fransparent Mode, Local         Pierrer       Send Data: Test, LocalPort=C         Pierrer       Rx(RAW): 00         Rx(RAW): 31,32,33,34         Pierrer       Rx(RAW): 54,65,73,74,73,74,72,69         Pierrer       Raleal R Link LocalPort=00         Pierrer       Pierrer         Pierrer       Raleal R Link LocalPort=00         Pierrer       Pierrer         Pierrer       Pierrer</td> <td>P       Establish SPP Connection       Rx (Perit, Harsparent Mode, Local Port, 00         Send Data: Test, LocalPort=C       Rx(RAW): 00         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E         Enter Transparent Mode, Local       Relea In, Link LocalPort=01         Relea In, Link LocalPort=01       Image: Color of the second point of the second p</td> <td>Participation       Rx Event. Transparent Mode, Local Port. (RX(RAW): 00         Send Data: Test, LocalPort=0       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 54,65,73,74         Set Link Supervision Timeout       Tx(RAW): 54,65,73,74,73,74,72,69,6E,67         Enter Transparent Mode, Local Port: 01       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Releated R_Link LocalPort=00       Image: Cocal Port. 01         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and</td> <td>Picture       First Prent Transparent Mode, Local Port, 01, w         Picture       Send Data: Test, LocalPort=C         Picture       Rx(RAW): 00         Rx(RAW): 31,32,33,34         Picture       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload D         Rx: Event: Transparent Mode, Status: 00, Local Port: 01         Picture       Picture         Releated       Picture         Picture       Picture         Picture</td> <td>Particle Production       First Event: Transparent Mode, Local Port of , Mode         Send Data: Test, LocalPort=0       Rx(RAW): 00         Rx(RAW): 31,32,33,34       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx(RAW): 54,65,73,74,73,74,72,69,6E,67       Tx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Enter Transparent Mode, Local       Freesale, Link LocalPort=00         Releated R_Link LocalPort=00       Image: Calc checksum and length         Save bytes as command       General         Ing       Image: Calc checksum and length         Save bytes as command       General         Imput:       Imput: Imp</td> <td>Establish SPP Connection       Rx(Event. Harsparent Mode, Local Port. 01, Mode. oc         Send Data: Test, LocalPort=C       Rx(RAW): 00         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54E         Releated In Link LocalPort=O         Image: Ing         Ing</td> <td>Pistablish SPP Connection       Rx:Event: Transparent Mode, Local Port: 01, Mode: 00         Send Data: Test, LocalPort=0       Rx(RAW): 00         Rx(RAW): 31,32,33,34       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Status: Supervision Timeout         Set Link Supervision Timeout       Fx: Cwd: Send Data, Local Port: 01, Payload Data: 546573         Rx(RAW): 54,65,73,74,73,74,73,74,72,69,6E,67       Tx: Cmd: Send Data, Local Port: 01, Payload Data: 546573         Rx: Event: Transparent Mode, Local Port: 01       Fx: Cwd: Transparent Mode, Local Port: 01         Tx: Cmd: Transparent Mode, Local Port: 01       Fx: Cwd: Transparent Mode, Local Port: 01         Ing       Fx: Cmd: Transparent Mode, Local Port: 01         Ing       Faile Calc checksum and length       Save bytes as command         Generate break       Generate break         Calc checksum and length       Save bytes as command       Generate break         Calc checksum and length       Save bytes as command       Generate break         Calc checksum and length       I I I I I I I I I I I I I I I I I I I</td> <td>Establish SPP Connection       Rx (RAW): 00         Send Data: Test, LocalPort=C       Rx (RAW): 31,32,33,34         Get Link Supervision Timeout       St (RAW): 74,65,73,74         Set Link Supervision Timeout       Tx (RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54657374         Rx (RAW): Set Link LocalPort=OI         Enter Transparent Mode, Local         Releating ind         Calc checksum and length         Save bytes as command         Generate break         Cli input:         DD 01 00 60 01 03 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td> <td>Bit Event:       Harsparent Mode, Local Port. 01, Mode. od         Send Data:       Test, LocalPort=0         Get Link Supervision Timeout       Rx(RAW):         Set Link Supervision Timeout       Rx(RAW):         Enter Transparent Mode, Loc       Rx(RAW):         Releate       Init LocalPort=01         Image: Note:       Image: Note:         Ing       Image: Note:</td> <td>Establish SPP Connection       Rx(RAW): 00         Send Data: Test, LocalPort=C       Rx(RAW): 01         Get Link Supervision Timeout       Rx(RAW): 74,65,73,74         Tx(RAW): 54,65,73,74,73,74,72,69,6E,67       Tx: Cmd: Send Data: 54657374         Enter Transparent Mode, Local Port=01       Rx: Event: Transparent Mode, Local Port: 01, Payload Data: 54657374         Rx: Event: Transparent Mode, Local Port: 01       Rx: Event: Transparent Mode, Local Port: 01         Release in Link LocalPort=01       Image: Calc checksum and length         Save bytes as command       Generate break         Image: Calc checksum and length       Save bytes as command         Generate break       Image: Calc checksum and length         Save bytes as command       Generate break         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length</td> | Participation       Bx. Event. Transparent Mode, to Bx.(RAW): 00         Send Data: Test, LocalPort=0       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74         Enter Transparent Mode, Loc       Tx (RAW): 54,65,73,74,73,74,7         Releate R_Link LocalPort=00       Tx: Cmd: Send Data, Local Port         Ing       Tx: Cmd: Transparent Mode, Loc         Ing       Calc checksum and length         Save bytes as commar         Old 00 60 01 03 1 1 1 1 1 1 1 1 1 1 1         I 1 1 1 1 1 1 1 1 1         M2 1152008ps | Pierrer       Fransparent Mode, Local         Pierrer       Send Data: Test, LocalPort=C         Pierrer       Rx(RAW): 00         Rx(RAW): 31,32,33,34         Pierrer       Rx(RAW): 54,65,73,74,73,74,72,69         Pierrer       Raleal R Link LocalPort=00         Pierrer       Pierrer         Pierrer       Raleal R Link LocalPort=00         Pierrer       Pierrer         Pierrer       Pierrer | P       Establish SPP Connection       Rx (Perit, Harsparent Mode, Local Port, 00         Send Data: Test, LocalPort=C       Rx(RAW): 00         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E         Enter Transparent Mode, Local       Relea In, Link LocalPort=01         Relea In, Link LocalPort=01       Image: Color of the second point of the second p | Participation       Rx Event. Transparent Mode, Local Port. (RX(RAW): 00         Send Data: Test, LocalPort=0       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 54,65,73,74         Set Link Supervision Timeout       Tx(RAW): 54,65,73,74,73,74,72,69,6E,67         Enter Transparent Mode, Local Port: 01       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Releated R_Link LocalPort=00       Image: Cocal Port. 01         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and | Picture       First Prent Transparent Mode, Local Port, 01, w         Picture       Send Data: Test, LocalPort=C         Picture       Rx(RAW): 00         Rx(RAW): 31,32,33,34         Picture       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload D         Rx: Event: Transparent Mode, Status: 00, Local Port: 01         Picture       Picture         Releated       Picture         Picture       Picture         Picture | Particle Production       First Event: Transparent Mode, Local Port of , Mode         Send Data: Test, LocalPort=0       Rx(RAW): 00         Rx(RAW): 31,32,33,34       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx(RAW): 54,65,73,74,73,74,72,69,6E,67       Tx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Enter Transparent Mode, Local       Freesale, Link LocalPort=00         Releated R_Link LocalPort=00       Image: Calc checksum and length         Save bytes as command       General         Ing       Image: Calc checksum and length         Save bytes as command       General         Imput:       Imput: Imp | Establish SPP Connection       Rx(Event. Harsparent Mode, Local Port. 01, Mode. oc         Send Data: Test, LocalPort=C       Rx(RAW): 00         Get Link Supervision Timeout       Rx(RAW): 31,32,33,34         Set Link Supervision Timeout       Rx(RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54E         Releated In Link LocalPort=O         Image: Ing         Ing | Pistablish SPP Connection       Rx:Event: Transparent Mode, Local Port: 01, Mode: 00         Send Data: Test, LocalPort=0       Rx(RAW): 00         Rx(RAW): 31,32,33,34       Rx(RAW): 31,32,33,34         Get Link Supervision Timeout       Status: Supervision Timeout         Set Link Supervision Timeout       Fx: Cwd: Send Data, Local Port: 01, Payload Data: 546573         Rx(RAW): 54,65,73,74,73,74,73,74,72,69,6E,67       Tx: Cmd: Send Data, Local Port: 01, Payload Data: 546573         Rx: Event: Transparent Mode, Local Port: 01       Fx: Cwd: Transparent Mode, Local Port: 01         Tx: Cmd: Transparent Mode, Local Port: 01       Fx: Cwd: Transparent Mode, Local Port: 01         Ing       Fx: Cmd: Transparent Mode, Local Port: 01         Ing       Faile Calc checksum and length       Save bytes as command         Generate break       Generate break         Calc checksum and length       Save bytes as command       Generate break         Calc checksum and length       Save bytes as command       Generate break         Calc checksum and length       I I I I I I I I I I I I I I I I I I I | Establish SPP Connection       Rx (RAW): 00         Send Data: Test, LocalPort=C       Rx (RAW): 31,32,33,34         Get Link Supervision Timeout       St (RAW): 74,65,73,74         Set Link Supervision Timeout       Tx (RAW): 54,65,73,74,73,74,72,69,6E,67         Tx: Cmd: Send Data, Local Port: 01, Payload Data: 54657374         Rx (RAW): Set Link LocalPort=OI         Enter Transparent Mode, Local         Releating ind         Calc checksum and length         Save bytes as command         Generate break         Cli input:         DD 01 00 60 01 03 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Bit Event:       Harsparent Mode, Local Port. 01, Mode. od         Send Data:       Test, LocalPort=0         Get Link Supervision Timeout       Rx(RAW):         Set Link Supervision Timeout       Rx(RAW):         Enter Transparent Mode, Loc       Rx(RAW):         Releate       Init LocalPort=01         Image: Note:       Image: Note:         Ing       Image: Note: | Establish SPP Connection       Rx(RAW): 00         Send Data: Test, LocalPort=C       Rx(RAW): 01         Get Link Supervision Timeout       Rx(RAW): 74,65,73,74         Tx(RAW): 54,65,73,74,73,74,72,69,6E,67       Tx: Cmd: Send Data: 54657374         Enter Transparent Mode, Local Port=01       Rx: Event: Transparent Mode, Local Port: 01, Payload Data: 54657374         Rx: Event: Transparent Mode, Local Port: 01       Rx: Event: Transparent Mode, Local Port: 01         Release in Link LocalPort=01       Image: Calc checksum and length         Save bytes as command       Generate break         Image: Calc checksum and length       Save bytes as command         Generate break       Image: Calc checksum and length         Save bytes as command       Generate break         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Save bytes as command         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length         Image: Calc checksum and length       Image: Calc checksum and length |

# LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

# LMX9820A Bluetooth Serial Port Module - Quick Setup Guide

# 3.0 Bibliography

- 3.1 LMX9820A SOFTWARE USERS GUIDE VERSION 1.6.1, NATIONAL SEMICONDUCTOR
- 3.2 SIMPLY BLUE COMMANDER USERS GUIDE VERSION 1.3, NATIONAL SEMICONDUCTOR

# 4.0 Revision History

| Table 4-1. Revision History |                      |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|----------------------|--|--|--|--|--|--|--|--|--|--|
| Revision #<br>(PDF Date)    | Revisions / Comments |  |  |  |  |  |  |  |  |  |  |
| 1.0                         | Initial Release      |  |  |  |  |  |  |  |  |  |  |

### LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

- 1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
- 2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Americas Email:

National Semiconductor Corporation new.feedback@nsc.com

Europe Fax: +49 (0) 180-530 85 86 Email: europe.support@nsc.com Deutsch Tel: +49 (0) 69 9508 6208 English Tel: +44 (0) 870 24 0 2171

National Semiconductor

Français Tel:

National Semiconductor Asia Pacific Customer **Response Group** Tel: 65-2544466 Fax: 65-2504466 Email: ap.support@nsc.com

National Semiconductor Japan Ltd. Tel: 81-3-5639-7560 Fax: 81-3-5639-7507 Email: nsj.crc@jksmtp.nsc.com

www.national.com

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.

+33 (0) 1 41 91 87 90