5 - Service Tools

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Service Tools

Supported Operating Systems

Windows 95, 98, 2000, ME and NT 4.0 (SP4).

Hardware requirements

Minimum: Processor 233 MHz, RAM memory 64 MB, Disk space 50-100 MB.

Recommended for Windows 2000:
Processor 700 MHz, RAM memory 512 MB, Disk space 50-100 MB.

List of service tools

The table below gives a short overview of service tools that can be used for testing, error analysis and repair of product NPL-1, refer to various set-ups.

Type designator	Description	Part code
FLA-22	Point of sale flash adapter	0775299
FLA-22 + FLC-2	Point of sale flash adapter and power supply cable	0080630
DAU-9S	Service MBUS cable	0730108
FLC-2	Power cable	0730185
PCS-1	DC power cable	0730012
SCB-3	DC cable	0730114
XCS-1	Service cable	0730218
XCS-4	Modular cable	0730178
XRE-2	BT cable	0730237
XRC-1b	RF antenna cable	0730128
XRC-2	RF test cable N type connector	0730180
FLS-4S	POS flash dongle for E/A area POS flash dongle for APAC area POS flash dongle for Americas area	0080541 0080542 0080543
FPS-8	Parallel flash prommer (inc. AXS-4, AXS-8, universal power supply)	0080321
	Printer cable (inc. in FSP-8 sales pack)	0730029
FPS-8C	Flash prommer box	0080396
AXS-4	D9 cable (inc. in FPS-8 & FPS8C sales pack)	0730090
PKD-1	Software protection key	0750018
	Phoenix Service SW Phoenix Service SW in CD-ROM NPE-4 Flash SW data NPE-4 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
ACF-8	AC charger (inc. in FPS-8 sales pack)	0680032
JBT-9	BT Test box	0081490
JBV-1	Docking station	0770298
MJF-9	Docking station adapter	0775298
MJS-40	Module jig	0770385
HCA-1	Cable support for MJF-9	0770433
JBT-13U	Micro BGA solder jig	0770242

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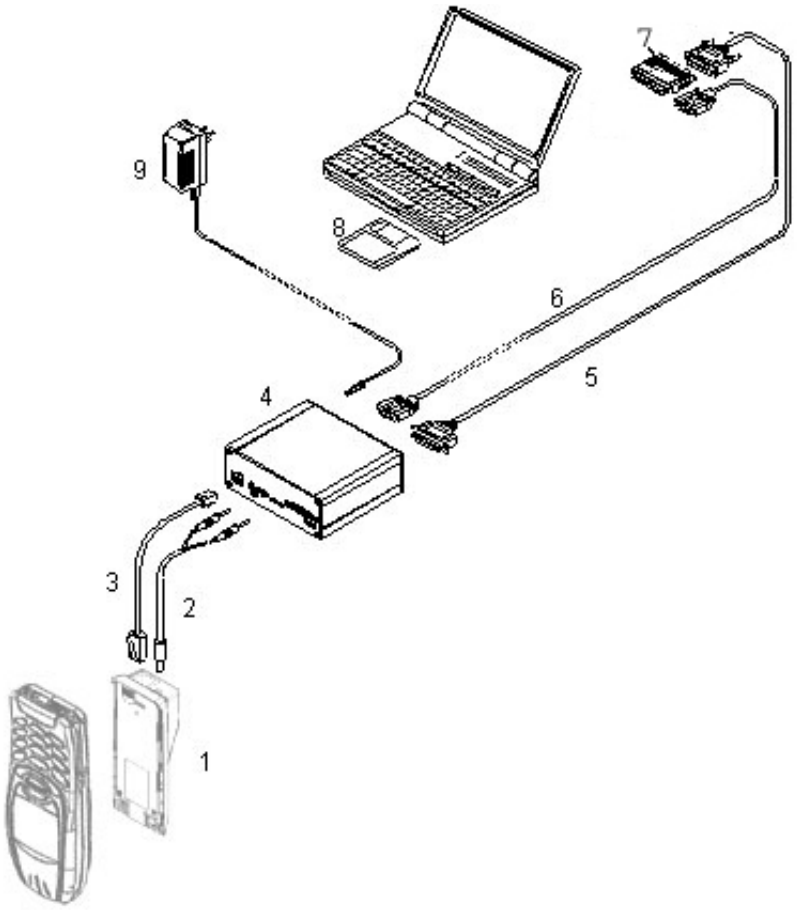
Type designator	Description	Part code
LRK-2	LGA repair kit 1	0273645
LRK-3	LGA repair kit 2	0273646

Setup Instructions

Flash Concept



Item:	Service accessory:	Product code:
1	FLA-22, Point of sales flash adapter	0775299
2	FLC-2, DC power cable	0730185
3	XCS-4, Modular cable	0730178
4	FPS-8, Flash prommer box	0080321
5	Printer cable, incl. in FPS-8 sales pack	0730029
6	AXS-4, D9 cable, incl. in FPS-8 sales pack	0730090
7	PKD-1, Software protection key	0750018
8	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
9	AC Charger, incl. in FPS-8 sales pack	0680032

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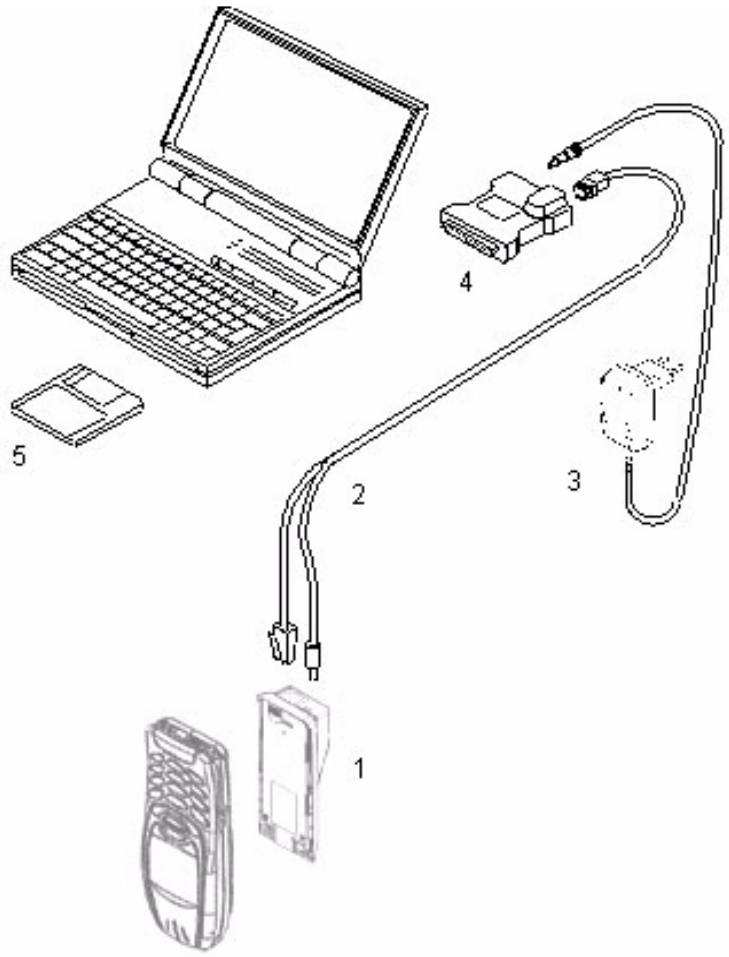
Flash Concept - POS (Point of Sale)



Item:	Service accessory:	Product code:
1	FLA-22, Point of sales flash loading adapter	0775299
2	XCS-1, service cable	0730218
3	ACF-8 AC Charger	0680032
4	FLS-4S, POS flash dongle for E/A area FLS-4S, POS flash dongle for APAC area FLS-4S, POS flash dongle for Americas area	0080541 0080542 0080543
5	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323

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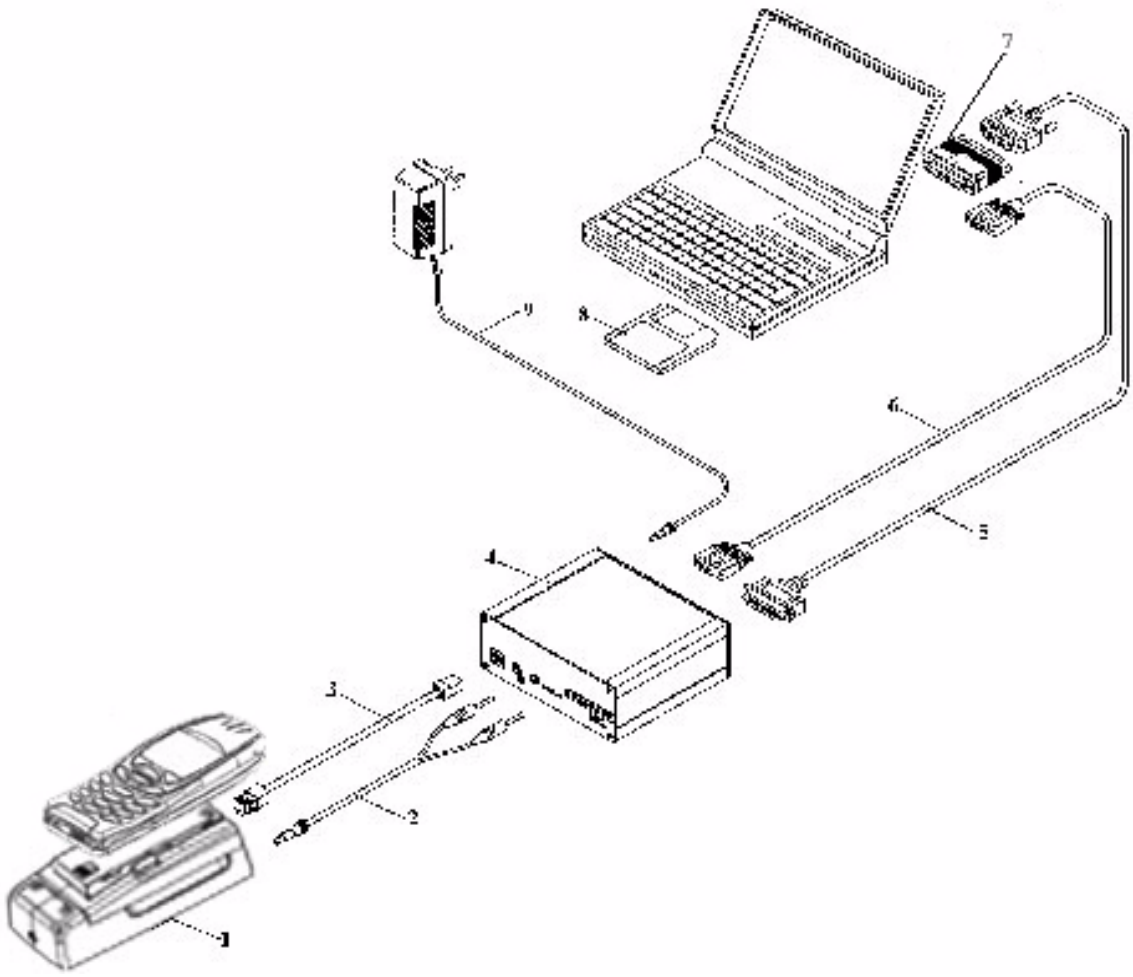
JBV-1 Flash Concept



Item:	Service accessory:	Product code:
1	JBV-1, Docking station	0770298
	MJF-9, Docking station adapter	0775298
2	PCS-1, DC power cable	0730012
3	XCS-4, Modular cable	0730178
4	FPS-8, Flash prommer box	0080321
5	Printer cable, incl. in FPS-8 sales pack	0730029
6	AXS-4, D9 - D9 cable, incl. in FPS-8 sales pack	0730090
7	PKD-1, Software protection key	0750018
8	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
9	AC Charger, incl. in FPS-8 sales pack	0680032

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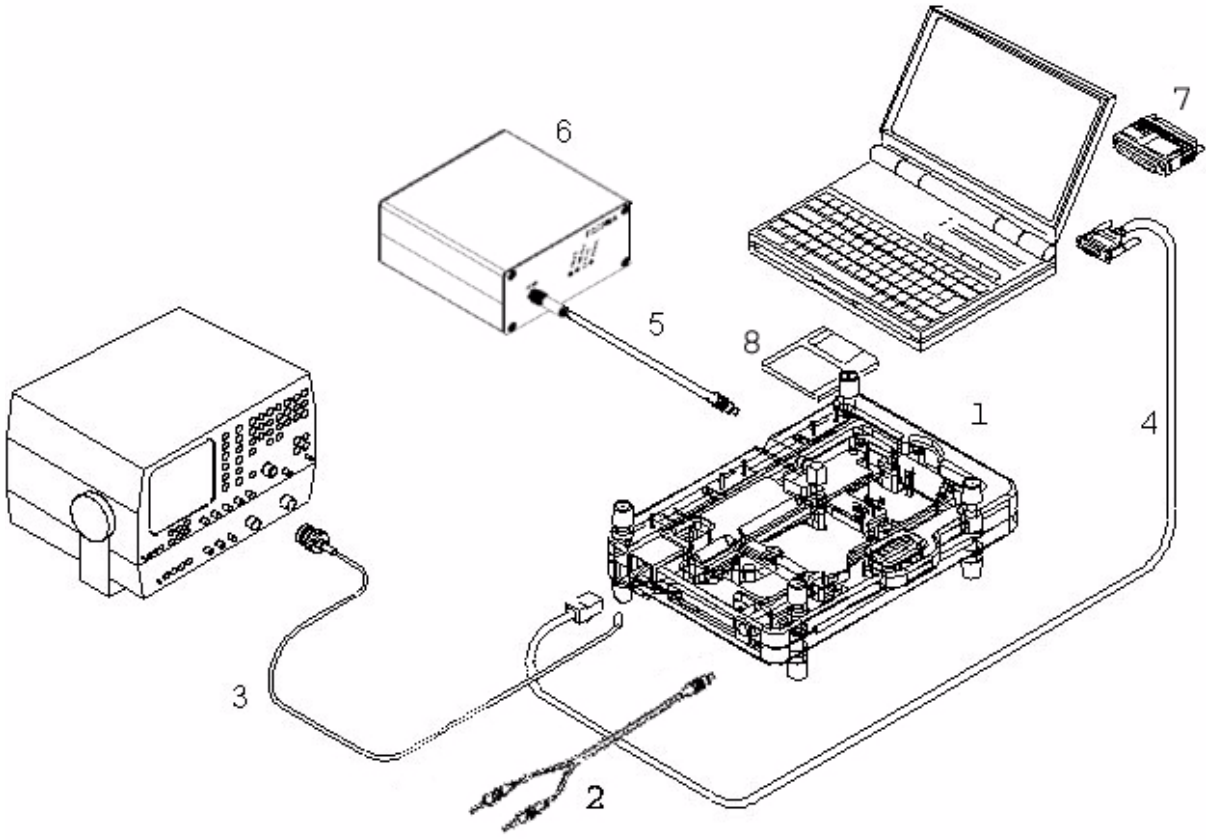
Jig Concept



Item:	Service accessory:	Product code:
1	MJS-40, Module jig	0770385
2	PCS-1, DC power cable	0730012
3	XRC-1b, RF antenna cable	0730128
4	DAU-9S, Service MBUS cable	0730108
5	XRE-2, BT cable (optional also antenna available)	0730237
6	JBT-9, BT-Test-Box (optional for BT test)	0770336
7	PKD-1, Software protection key	0750018
8	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323

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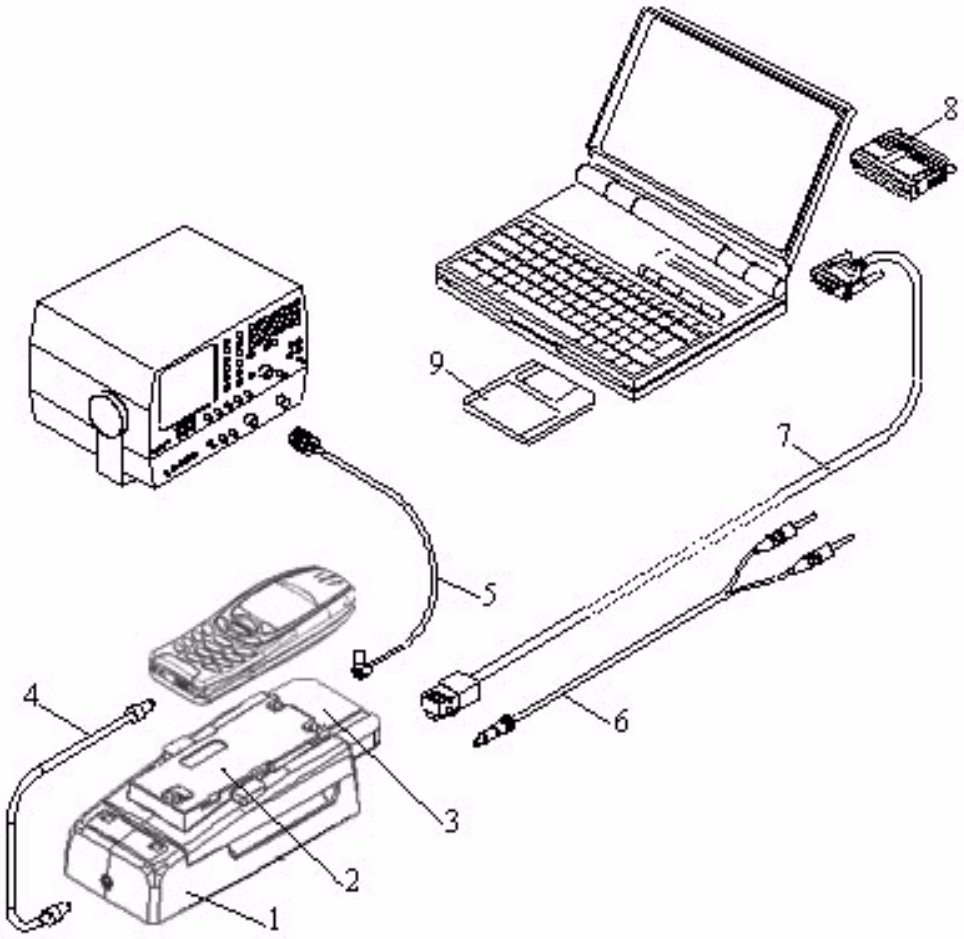
MJF-9 Service Concept



Item:	Service accessory:	Product code:
1	JBV-1, Docking station	0770298
2	MJF-9, Docking station adapter	0775298
3	HCA-1,Cable support part	0770433
4	SCB-3, DC?DC cable	0730114
5	XRC-1b, RF antenna cable	0730128
6	PCS-1, DC power cable	0730012
7	DAU-9S, Service MBUS cable	0730108
8	PKD-1, Software protection key	0750018
9	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323

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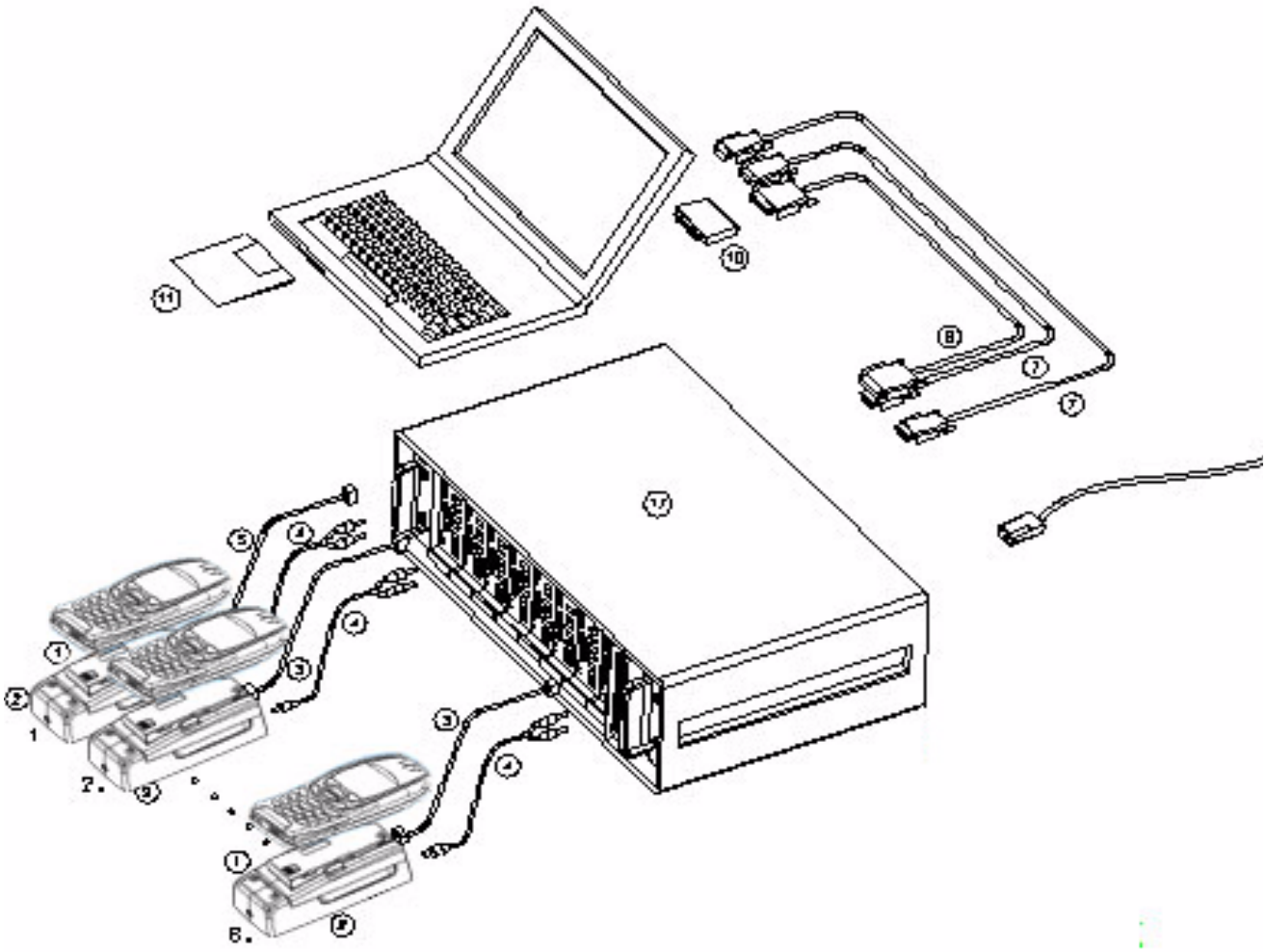
Parallel Flash Concept



Item:	Service accessory:	Product code:
1	MJF-9, Docking station adapter	0775298
2	JBV-1, Docking station	0770298
3	XCS-4, Modular cable	0730178
4	PCS-1, DC power cable	0730012
7	AXS-4, D9 ? D9 cable, incl. in FPS-8C sales pack	0730090
8	Printer cable, incl. in FPS-8C sales pack	0730029
10	PKD-1, Software protection key	0750018
11	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
17	FPS-8C, Parallel flash prommer	0080396

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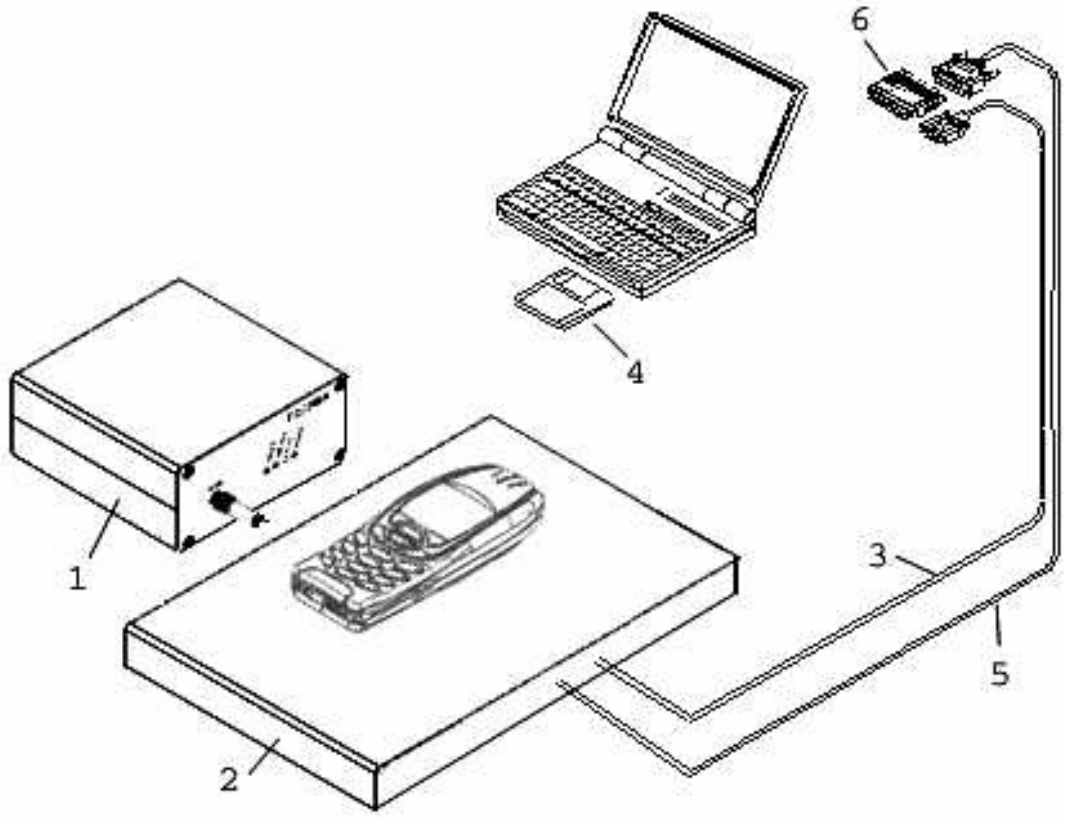
BT BER testing concept (OTA BT -Phone)



Item:	Service accessory:	Product code:
1	JBT-9, BT test box (otional for BT test) Sales [ackage	0081490
2	Any service system	
3	Cable for service system (serial cable)	
4	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
5	Cable for service system (parallel cable optional depending on service set-up)	
6	PKD-1 software protection key	0750018

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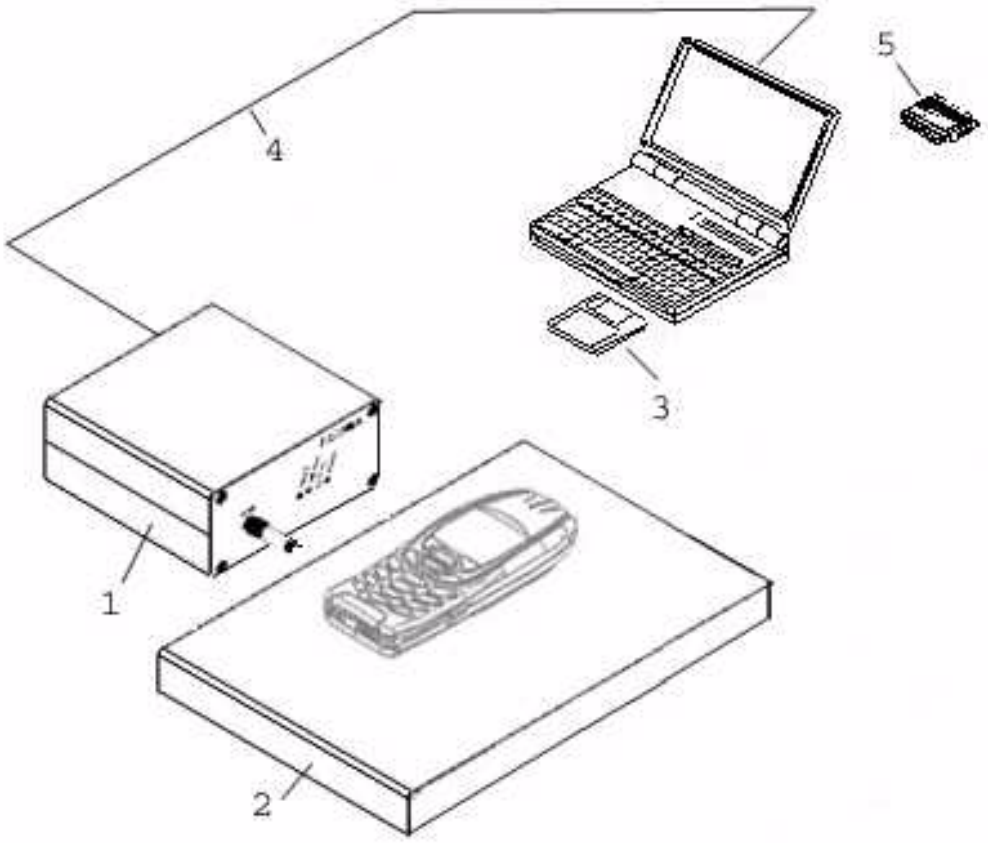
BT F-Bus message transfer set-up (OTA BT -Phone)

(For messages in Normal Mode)



Item:	Service accessory:	Product code:
1	JBT-9, BT test box (otional for BT test) Sales [ackage	0081490
2	Any service system	
3	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
4	serial AXS-4 D9-D9 acble (optional, if F-Bus BT connection is used, BT box could be used stand alone)	0730090
5	PKD-1 software protection key	0750018

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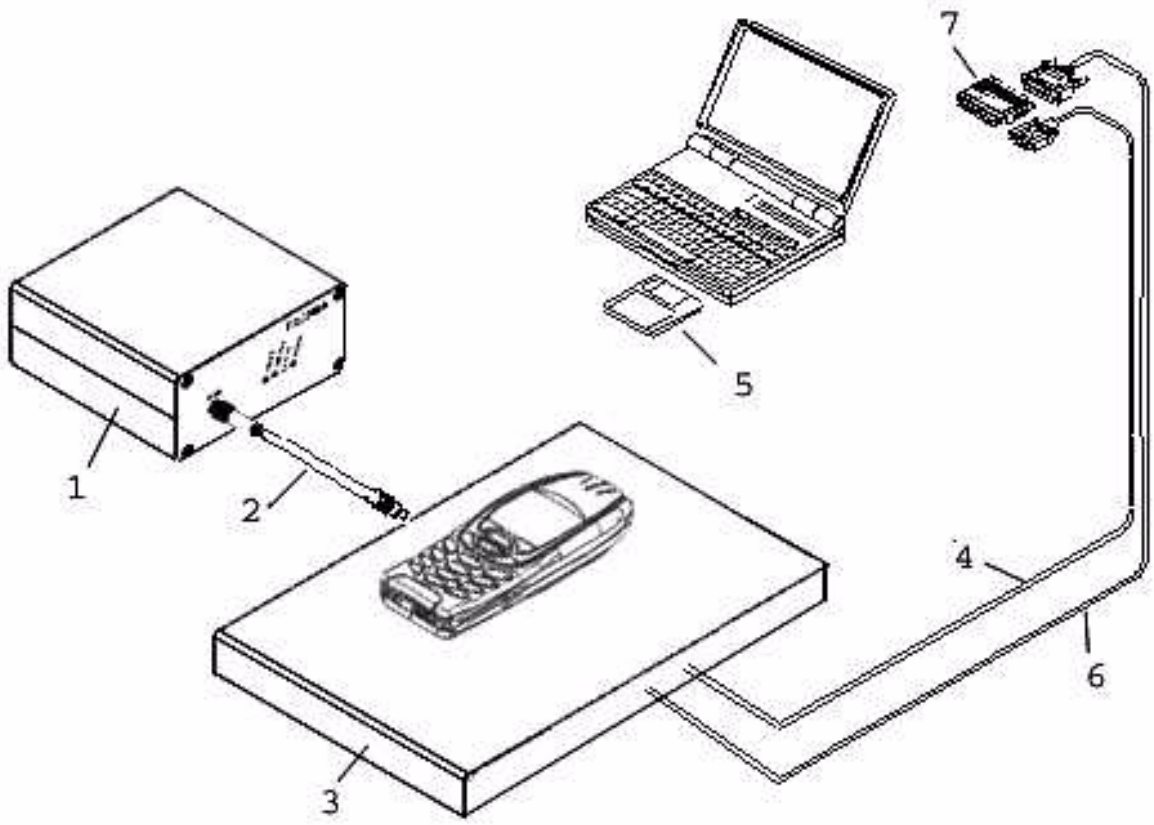
BT BER testing concept (Cable BT -Phone)



Item:	Service accessory:	Product code:
1	JBT-9, BT test box (otional for BT test) Sales Package	0081490
2	XRE-2, BT cable (optional also antenna available)	0730237
3	Module jig concept, using FPS-8 box setup or DAU-9S service MBUS cable	
4	Cable for service system (serial cable)	
5	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
6	Cable for service system (parallel cable)	
7	PKD-1 software protection key	0750018

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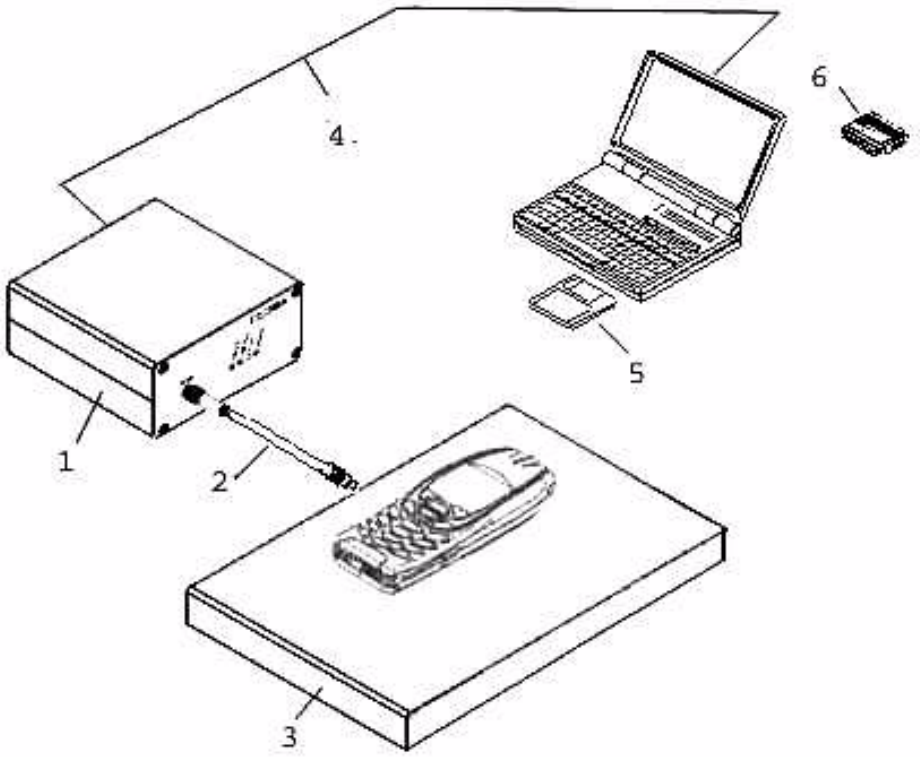
BT F-Bus message transfer set-up (Cable concept BT -Phone)

(For messages in Normal Mode)



Item:	Service accessory:	Product code:
1	JBT-9, BT test box (otional for BT test) Sales [ackage	0081490
2	XRE-2, BT cable (optional also antenna available)	0730237
3	Module jig concept, using FPS-8 box setup or DAU-9S service MBUS cable, Phone stand alone	
4	serial AXS-4 D9-D9 acble (here F-Bus BT connection is used, BT box is used stand alone)	0730090
5	Phoenix Service SW Phoenix Service SW in CD-ROM NPL-1 Flash SW data NPL-1 Flash SW data in CD-ROM	8410533 0775322 8410532 0775323
6	PKD-1 software protection key	0750018

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Flash adapter FLA-22

Flash adapter FLA-22 is designed for regional Service Centers and POS (Point of Sales) to replace phones own battery when flashing the phone. Furthermore it can be used as a dummy battery. Features:

Normal mode operation

Powered by charger or external power supply

Over current protection

Over voltage protection

Voltage polarity protection

BSI connected to prommer

List of Modules

Table 1: List of Modules

Name of modules	NMP type	NMP code	Notes
Flash adapter	FLA-22	0775299	Flash adapter for AMS usage

Technical Specifications

DC Characteristics

Table 2: Electrical ratings

Parameter	Min	Nom	Max	Note
Input voltage (charger)	5.5V	-	16V	
Supply voltage (power supply)	3.0V	-	4.2V	
Vbatt (charger)	3.9V	4.0V	4.1V	Regulated
Vbatt (power supply)	3.0V	-	4.2V	No regulation
Vbatt current (charger)	210mA	-	300mA	Limited
Vbat protection current	2A			Resettable fuse
BTEMP Normal mode		47k		Resistor
BSI Normal mode		39k		Resistor

Modes of operation

Flash adapter FLA-22 can be used in two operation modes:

Normal mode (startup in normal mode, power key press needed to flash)

Local mode (can be forced to local mode in Phoenix)

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Mechanical Characteristics

Table 3: Mechanical Characteristics

Unit	Dimensions (mm) (W x H x D)	Weight (g)	Material
FLA-22	45,3x25.0x103,9	200	PC/ABS

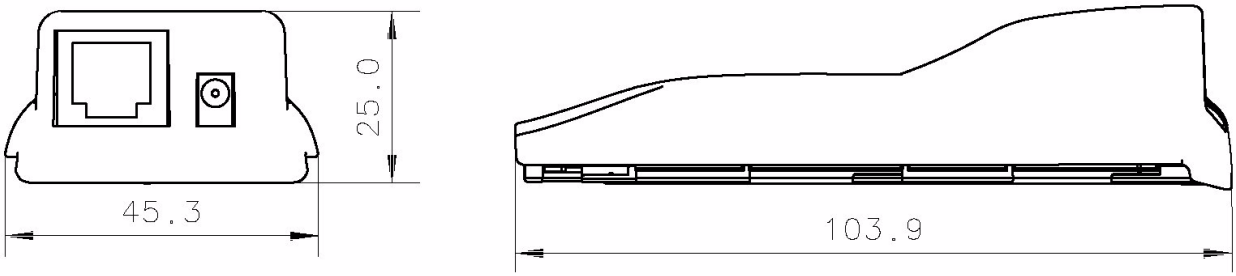

Figure 1. Main dimensions of FLA-22.

Environmental Conditions

Temperature Conditions

Table 4: Allowed Ambient Temperatures

	Ambient temperature (degrees Celsius)
Operating temperature	+5...+35
Storage temperature	-30...+60
Humidity RH	Max. 90%

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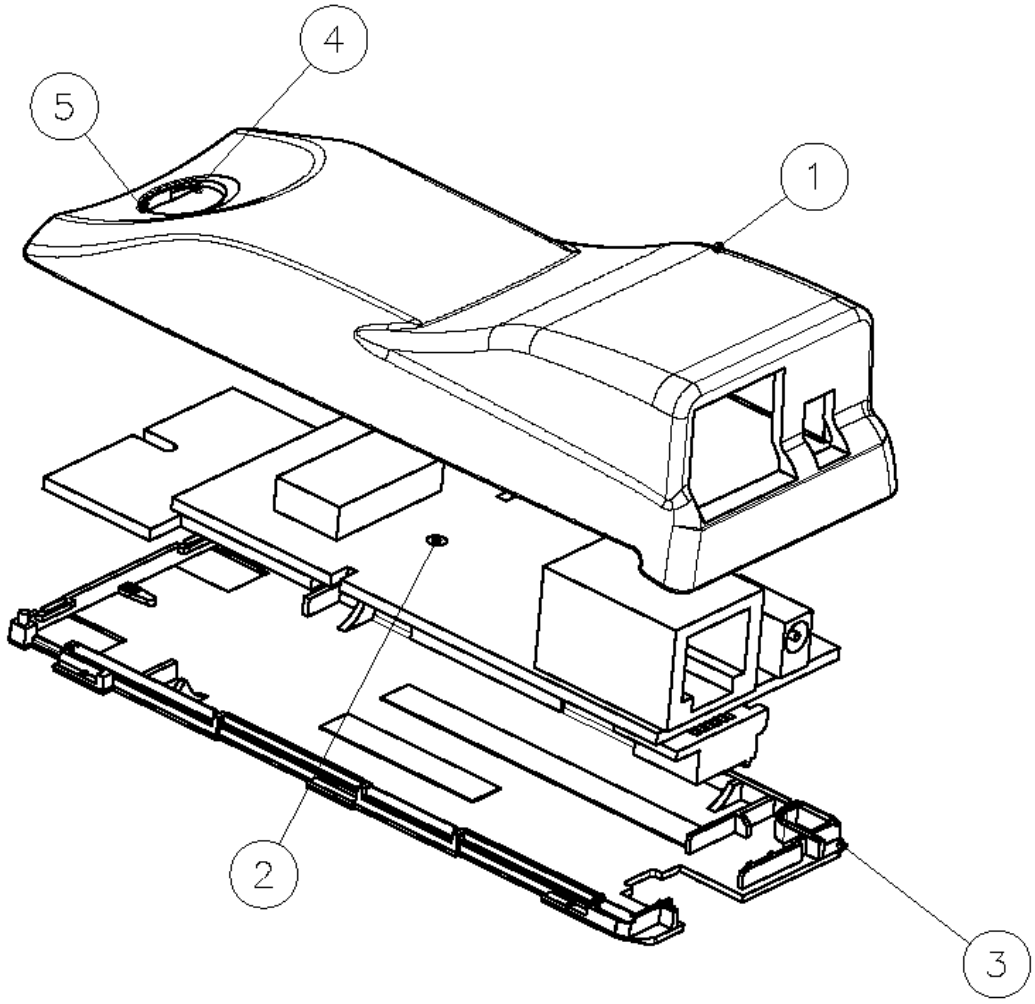

Figure 2. Exploded view of FLA-22

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JBT-9 Bluetooth Test & Interface box (Sales Pack)

The JBT-9 testbox is a generic device to perform Bluetooth Bit Error Rate testing and doing cordless FBUS connection via Bluetooth. An ACP-8x charger is needed for BER testing and AXS-4 cable in case of cordless testing interface usage.

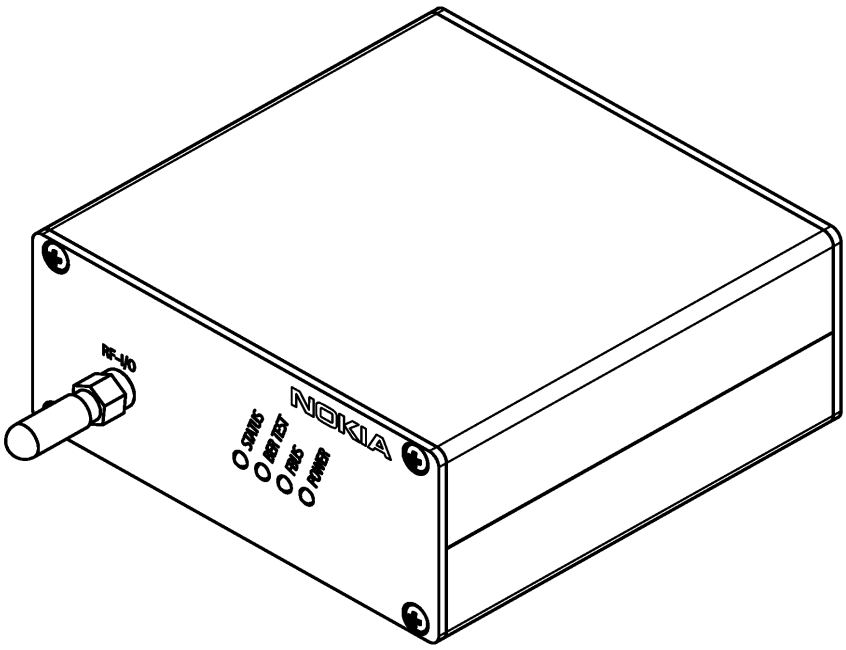
Sales package includes:

- JBT-9 testbox 0770336
- SMA stub antenna 066P056
- Installation and warranty information 9360613

Product Code

JBT-9 sales kit code: 0081490

View of JBT-9 with antenna



Hardware instructions

Hardware needed to use JBT-9

- JBT-9 Bluetooth testbox
- SMA stub antenna (part of sales kit)
- ACP-8x charger (x denotes region, e.g. ACP-8E for Europe)
- AXS-4 serial cable (0730090)

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Use of JBT-9 Stand-alone

The JBT-9 Box can be used **without** any PC connection as loop-back device for BT testing. To verify the products BT functionality, a Bit Error Rate test needs to be performed against JBT-9. The test is controlled and executed by Phoenix service software.

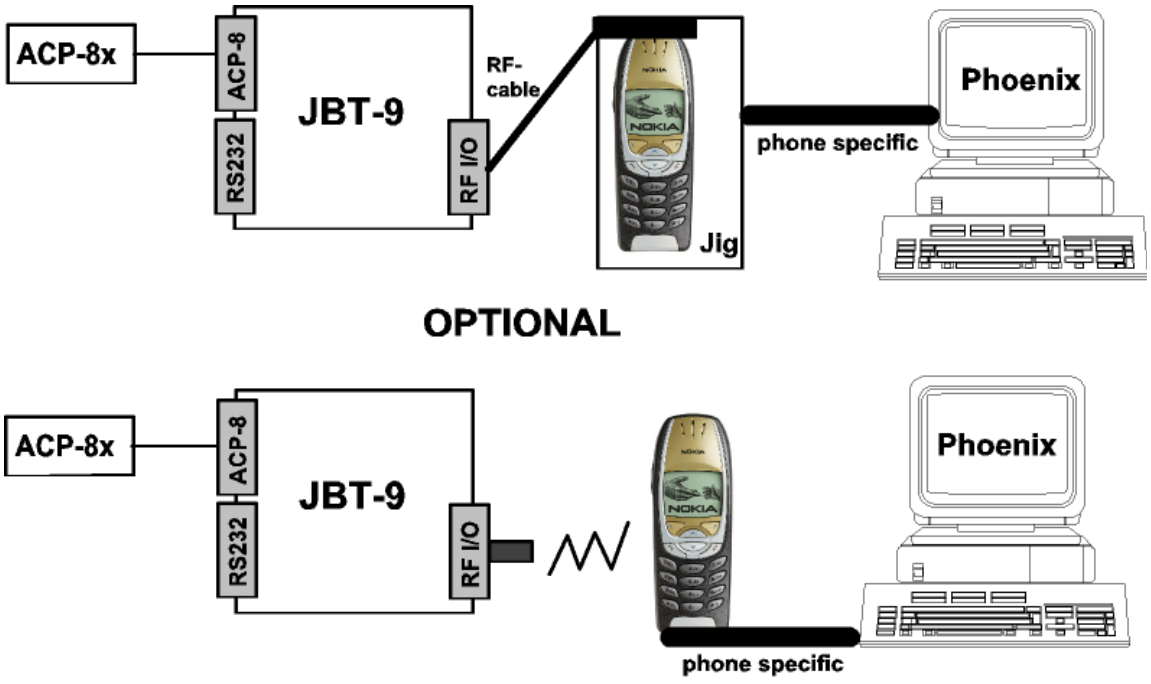
Attenuation settings:

The JBT-9 attenuation is used to reduce the BT RF range. The default factory setting of internal attenuation is –36dBm **(refer to related chapter below)**. This reduces the typical RF range to less than 0.5 m. In case that distance is too short to perform tests over the air, the internal attenuation can be changed as described in the JBT-9 sales package user guide. In case that a service jig is directly connected to the box SMA RF I/O connector, it is recommended to work with the maximum internal attenuation (default factory setting).

PLEASE NOTE:

When the JBT-9 is connected to the PC via AXS-4 serial cable and used as BT service interface, the BT Phoenix driver is controlling the internal attenuation of JBT-9. Details are described in "Use of JBT-9 as service interface".

Setup for BER testing



- Connect SMA stub antenna **or** service jigs' BT RF cable to JBT-9's RF/IO connector.
- Connect ACP-8x charger to JBT-9 power connector.
- Make sure that distance between phone and JBT-9 does **not exceed 5 cm** distance when using default attenuation setting.

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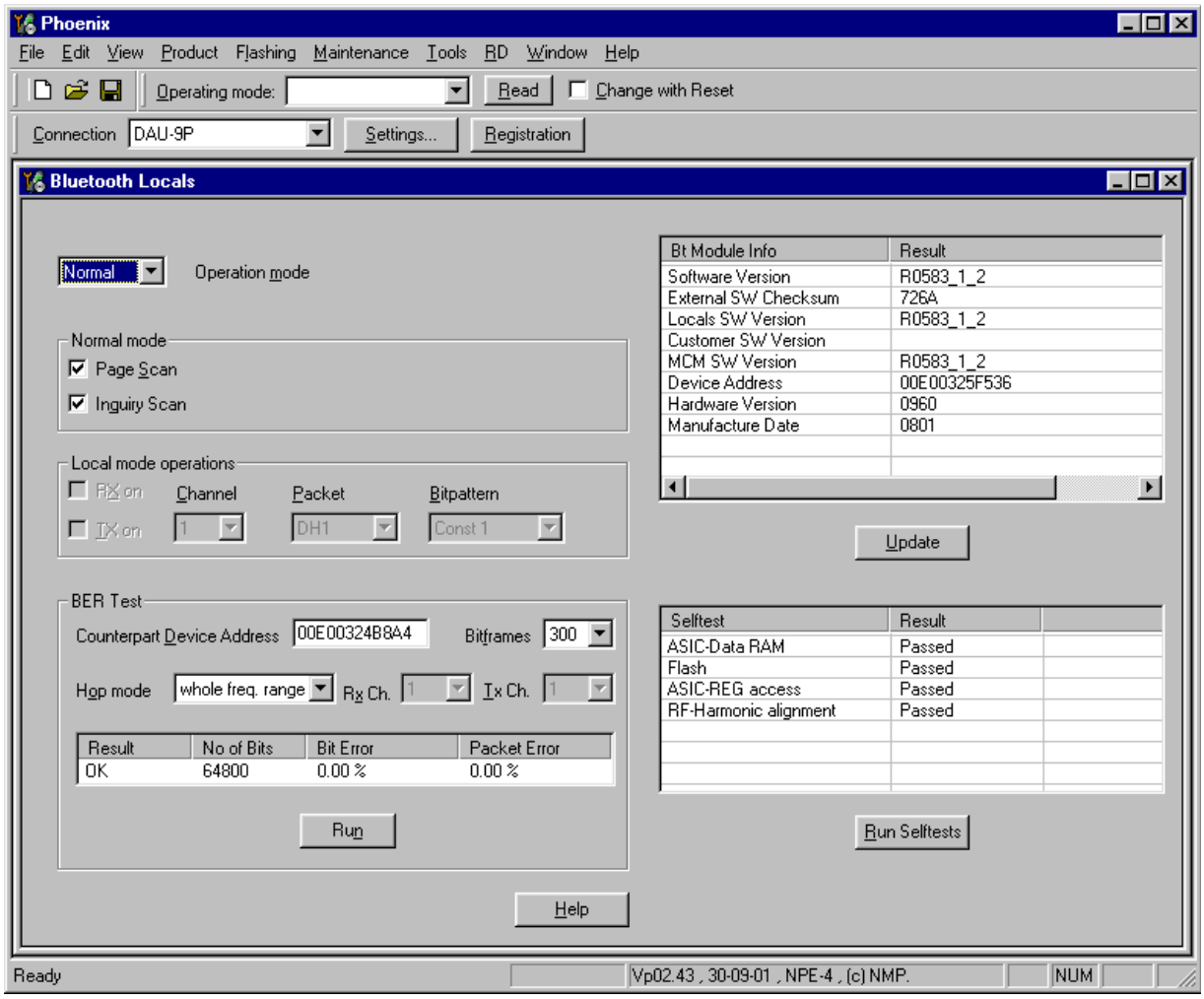
- BER test result is OK when BER is less than 0.1%
- Note that the phone connection to the PC is specific to the tested phone. For details refer to the related chapter in the service manual.

SW instructions for BER testing

- Make sure that the phone's product support modules are properly loaded by Phoenix SW.
- Choose "Testing" from the "Maintenance" menu and choose "Bluetooth Locals".



- Enter JBT-9's Ser.No. (12 digits from the type label) in the field "Counterpart Device Address".
- Make sure that whole freq. range is chosen to test all BT channels or use local frequency range
- Choose "300" Bitframes.
- Press the "Run" button to perform the BER test.

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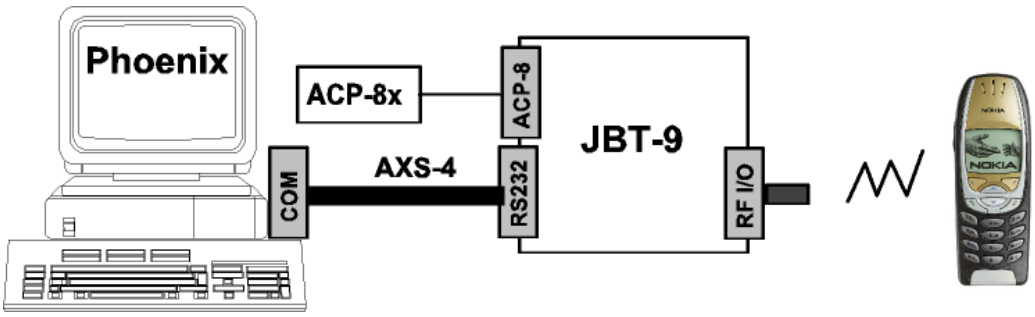
Use of JBT-9 as service interface

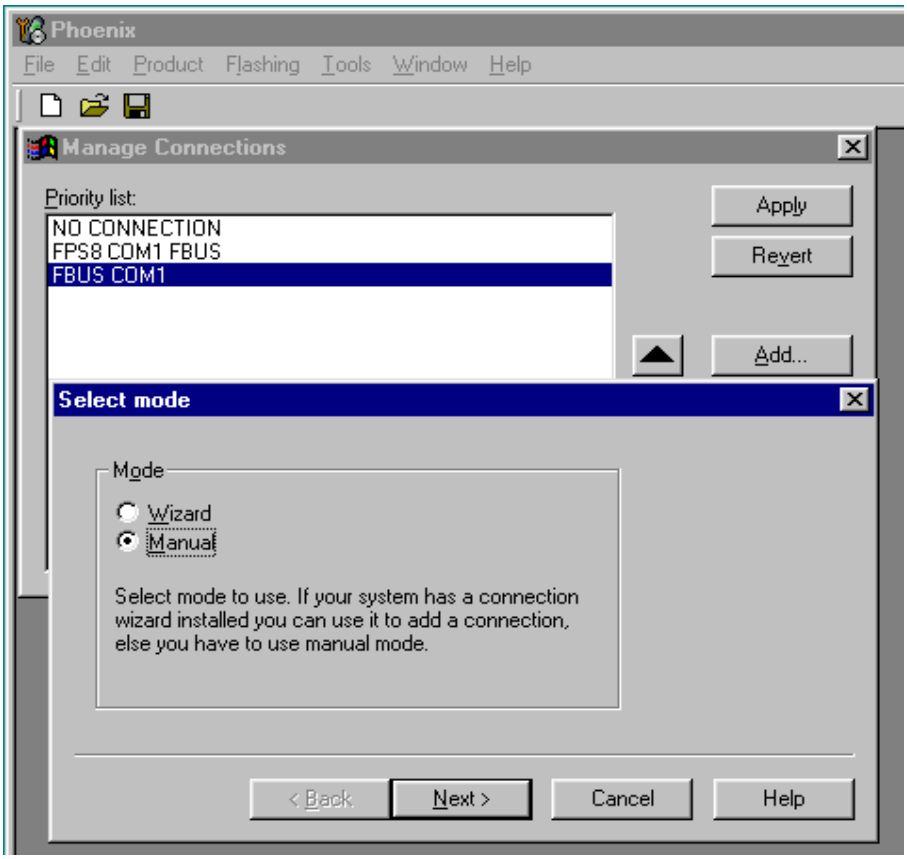


The JBT-9 can be connected to a PC by using an AXS-4 serial cable. The Bluetooth wireless technology can be used to establish a FBUS connection without any cables and line of sight. The phone must be switched on with SIM card and all Phoenix functions are working as long as the phone is in **NORMAL** mode.

PHOENIX connection setup for JBT-9 as service interface

In Phoenix under the "File", "Manage Connections" menu the Bluetooth connection has to be added.

- Push down "Add" button and select the "Manual" mode.



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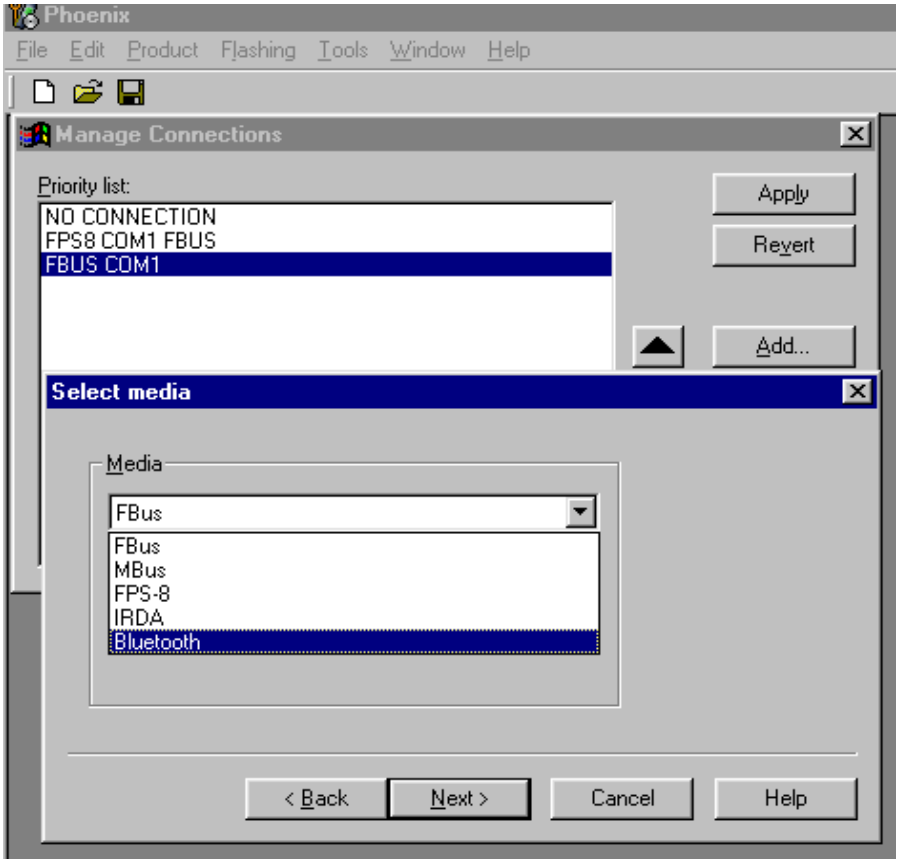
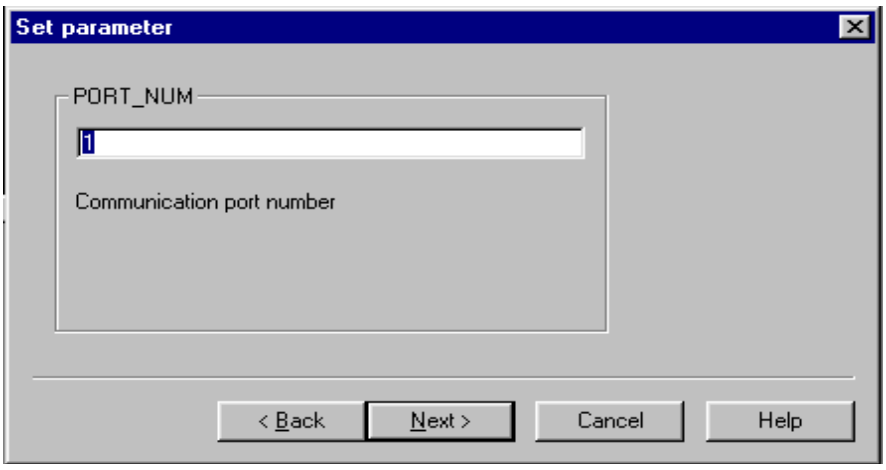
- Select "Bluetooth" as media:



- Set the Port_Num to the serial port where you have connected the box. Serial port 1 =PORT_NUM 1.



- Give any name to the JBT-9 box. Default setting is "JBT-9". If you have several

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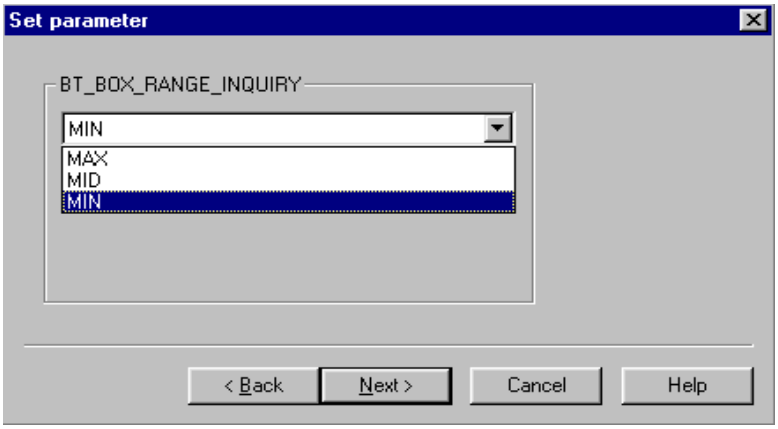
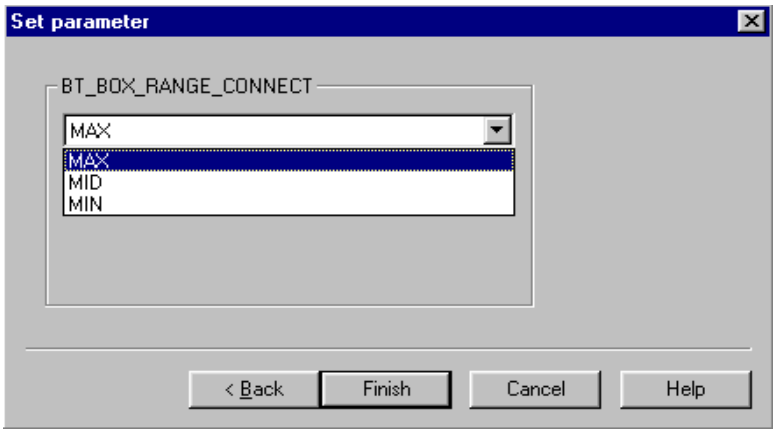
boxes in range, separate names can be given to prevent any confusion.

- The JBT-9 box range for inquiry can be changed in the "BT_BOX_RANGE_INQUIRY" parameter setting. Default setting is MIN = minimum range. (0,1 - 0,5m).



- The JBT-9 box range for connection can be changed in the "BT_BOX_RANGE_INQUIRY" parameter setting. Default setting is MAX = maximum range (>8m).



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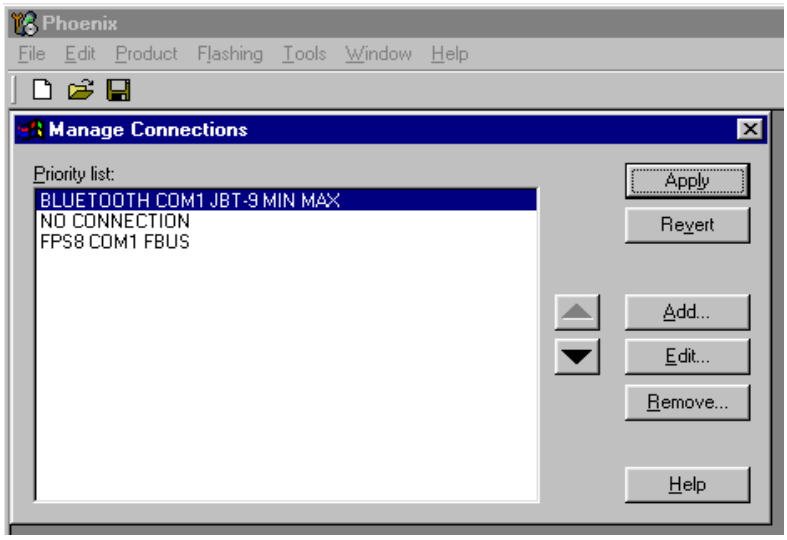
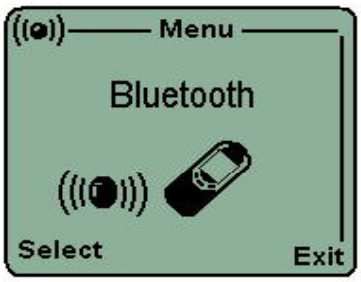
- After the connection parameter settings have been done, the new connection so called e.g. "BLUETOOTHE COM1 JBT-9 MIN MAX" can be seen in the Priority list of possible connections. It is now done with the arrow button and afterwards "Apply" button.

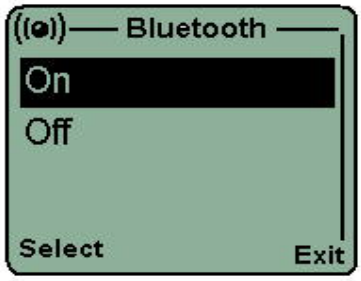


Establish a Bluetooth FBUS connection to a phone

Below is described how to establish a BRFB connection. Depending on the phone UI stucture it can differ from this description.

- Switch on the phone and enable the Bluetooth interface in the related submenu.





- Press "Apply" in the Phoenix "Manage Connection" menu when the "BLUETOOTH COM1..." connection has been selected and is on the top. The green "BER TEST" LED on the JBT-9 box front panel will light up. The JBT-9 box starts an inquiry of all devices in range. First seen device will be asked for connection.

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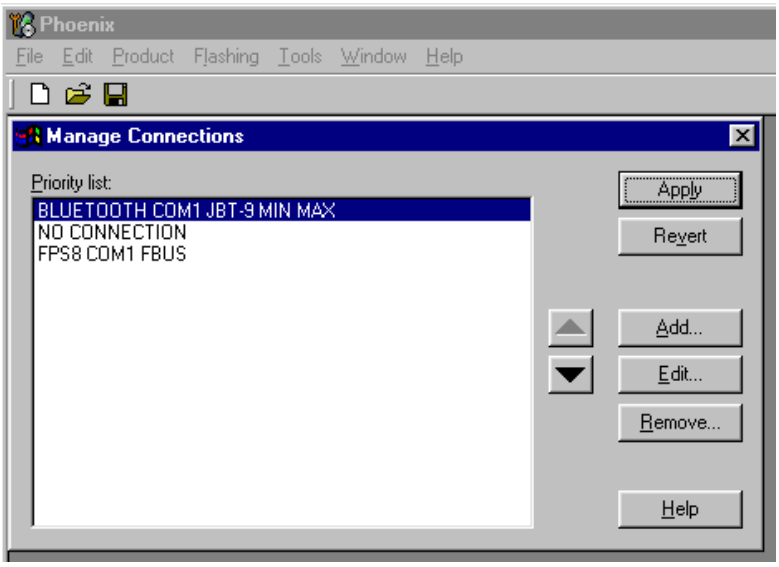
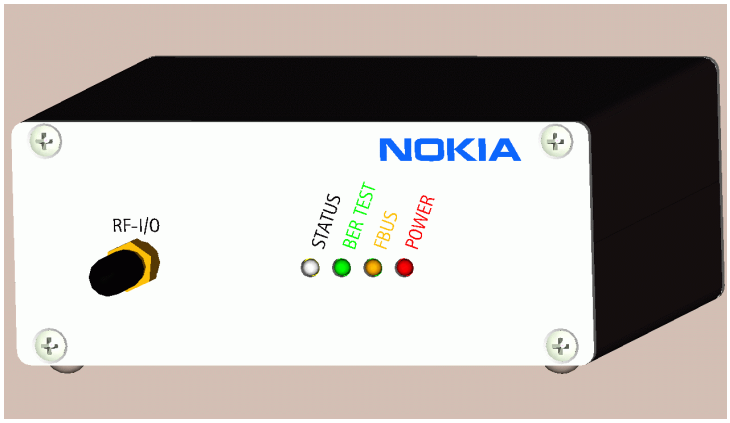
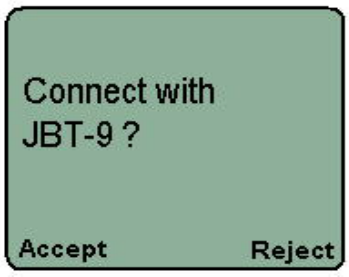




- After some seconds the phone will ask you to establish a first connection with one specific phone to JBT-9 box (or how you named it). If you press"Accept" it will ask you for the passcode of the JBT-9 box.
- **The passcode is always 0000 !**



- Then the phone and JBT-9 are connected as long as you don't leave the range, switch off one of the devices or press the "Apply" button in "Manage Connection" menu of Phoenix. All NORMAL mode commands can now be exchanged between phone and Phoenix.

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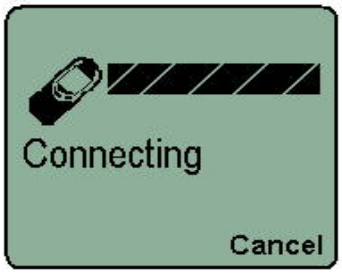
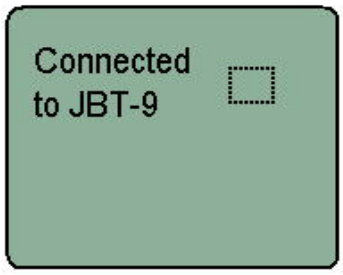
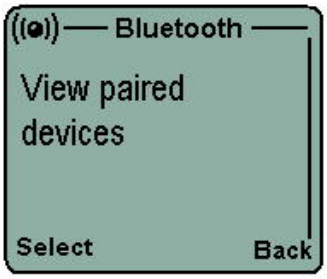
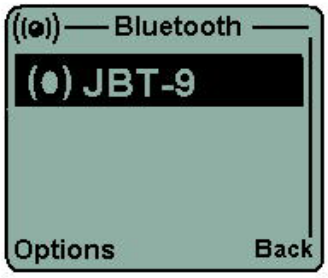
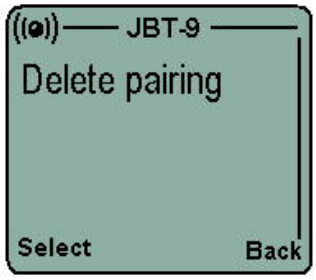




- If you connect the next time the same phone to JBT-9 you only have to "Accept" the connection without the passcode. It is stored from that time on in the "Paired device list" of the phone. You can now delete the JBT-9 as device from the pairing list of your phone in the "View paired devices" sub-menu.







Attenuation setting via Jumper

Internal possible settings after JBT-9 boot-up. The precision of the internal attenuation is specified to be +/- 5dBm. During test the attenuation can also be changed via Phoenix SW.

Default attenuation	GPP10	GPP11	RF range	Factory setting
21 dB	Closed (GND)	Open	> 1,5 m	
21 dB	Open	Closed (GND)	> 1,5 m	
7 dB	Open	Open	> 8 m	
36 dB	Closed (GND)	Closed (GND)	> 0,5 m	X

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LED Indication of JBT-9

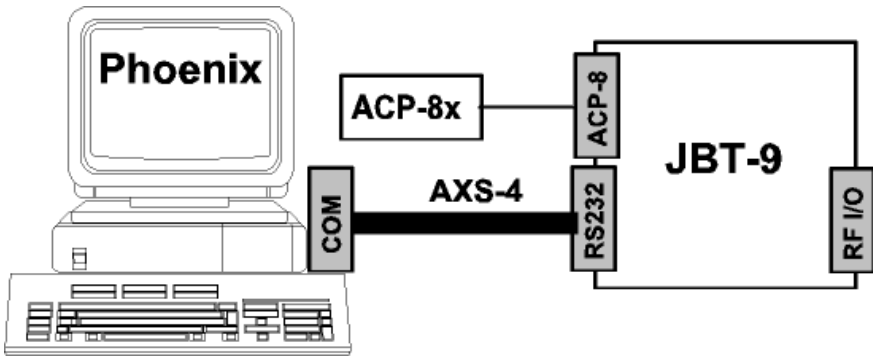
ACTION	STATUS-LED	BER TEST-LED	FBUS-LED	POWER-LED
POWER				ON
FBUS			ON	
INQUIRY		BLINKING		
CONNECTED		ON		
BER-TEST		ON		
LOOP-BACK		ON		
ERROR	ON RED			
BOX READY	ON GREEN			

Re-flash of JBT-9

The JBT-9 Box SW can be updated using the Bluetooth Flasher from the "Flashing" menu in Phoenix SW. If the Bluetooth Flasher is not visible in the flashing menu, make sure that a BT product is chosen from the "File" menu.

- Select the COM port where JBT-9 is connected.
- Make sure that the connection "NO CONNECTION" in Phoenix SW is selected to avoid any COM port sharing problems.
- Select the "bin" file and start the flashing procedure

The latest "bin" file can be loaded from the Software area at PAMS internet webpage.



Abbreviations

BER	= **B**it **E**rror **R**ate	PAMS	= **P**rogram **A**fter **M**arket **S**ervices
BT	= **B**lue**t**ooth	PC	= **P**ersonal **C**omputer
COM	= (serial communication port)	RF	= **R**adio **F**requency
FBUS	= (NOKIA proprietary communication bus)	SMA	= (sub miniature RF connector type)
IO	= **I**nput / **O**utput	SW	= **S**oft**w**are

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