

4 — Service Tools and Service Concepts

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■ Service tools

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 , refer to various concepts.

	CA-31D	USB cable	
<p>The CA-31D USB cable is used to connect FPS-10 or FPS-11 to a PC. It is included in the FPS-10 and FPS-11 sales packages.</p>			
	CA-35S	Power cable	
<p>Power cable for connecting e.g. the FPS-10 prommer box to the POS flash adapter.</p>			



CU-4	Control unit	
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CU-4 is a general service tool used with a module jig and/or a flash adapter.

CU-4 requires an external 12 V power supply.

The unit has the following features:

- software controlled via USB
- EM calibration function
- Forwards FBUS/Flashbus traffic to/from terminal
- Forwards USB traffic to/from terminal
- software controlled BSI values
- regulated VBATT voltage
- 2 x USB2.0 connector (Hub)
- FBUS and USB connections supported




When using CU-4, note the special order of connecting cables and other service equipment:




Instructions






- 1 Connect a service tool (jig, flash adapter) to CU-4.
- 2 Connect CU-4 to your PC with a USB cable.
- 3 Connect supply voltage (12 V)
- 4 Connect an FBUS cable (if necessary).
- 5 Start Phoenix service software.

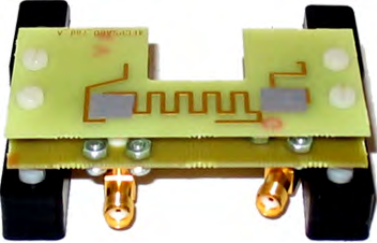



Note: Phoenix enables CU-4 regulators via USB when it starts. Reconnecting the power supply requires a restart of Phoenix.



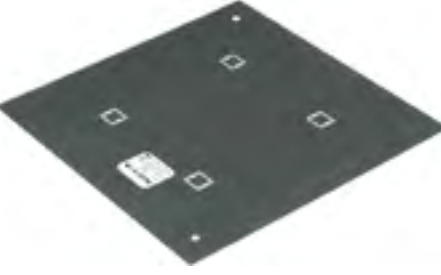

	DKU-2	USB connectivity cable	
<p>USB to Pop-Port™ connector cable.</p>			
	FLS-4S	Flash device	
<p>FLS-4S is a dongle and flash device incorporated into one package, developed specifically for POS use.</p>			
	FPS-10	Flash prommer	
<p>FPS-10 interfaces with:</p> <ul style="list-style-type: none"> • PC • Control unit • Flash adapter • Smart card <p>FPS-10 flash prommer features:</p> <ul style="list-style-type: none"> • Flash functionality for BB5 and DCT-4 terminals • Smart Card reader for SX-2 or SX-4 • USB traffic forwarding • USB to FBUS/Flashbus conversion • LAN to FBUS/Flashbus and USB conversion • Vusb output switchable by PC command <p>FPS-10 sales package includes:</p> <ul style="list-style-type: none"> • FPS-10 prommer • Power Supply with 5 country specific cords • USB cable 			




	FS-14	Flash adapter	
<p>Flash adapter FS-14 is used for phone testing and flashing.</p> <p>FS-14 is used with the generic flash adapter base SS-60/62 and control Unit CU-4 or interface adapter SS-46. When flashing or system testing the phone, the adapter is attached to replace the phone own battery.</p> <p>All functions (as well as the calibration voltages, current and the protections for over voltages, over current and voltage polarity), are performed by CU-4.</p> <p>Flash adapter FS-14 main features:</p> <ul style="list-style-type: none"> • VBATT supply interface • USB / FBUS multiplexed interface to the phone • Supply voltage for light source 			
	JBT-9	Bluetooth test and interface box (sales pack)	
<p>The JBT-9 test box 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.</p> <ul style="list-style-type: none"> • JBT-9 testbox, code 0770336 • Installation and warranty information, code 9360613 			
	MJ-70	Module jig	
<p>Module jig MJ-70 is designed for engine testing. It can be used for flashing and RF, battery and system testing.</p> <p>Module jig MJ-70 main functions:</p> <ul style="list-style-type: none"> • CU-4 interface adapter to phone • USB / FBUS multiplexed interface to phone • UI Interface to phone • STI and XTI test interface • WCDMA and GSM RF-interface <p>All functions, except USB / FBUS multiplexing, are performed in CU-4. For instance, adjusting calibration voltages and current, and all protections for over current, over voltage and voltage polarity.</p>			

	PCS-1	Power cable	
<p>The PCS-1 power cable (DC) is used with a docking station, a module jig or a control unit to supply a controlled operating voltage.</p>			
	PKD-1	SW security device	
<p>SW security device is a piece of hardware enabling the use of the service software when connected to the parallel (LPT) port of the PC. Without the device, it is not possible to use the service software. Printer or any such device can be connected to the PC through the device if needed.</p>			
		RF shield box	
<p>Because the WCDMA network disturbs the RX side testing of the WCDMA phone and the Tx signal of the WCDMA phone can severely disturb the WCDMA network, a shield box is needed in all testing, tuning and fault finding which requires WCDMA RF signal. The shield box is not an active device, it contains only passive filtering components for RF attenuation.</p>			
	RJ-104	BTHFM rework jig	
<p>RJ-104 is a rework jig used when servicing the BTHFM module. It is used together with rework stencil ST-37.</p>			
	RJ-94	Soldering jig	
<p>RJ-94 is a soldering jig used for soldering and as a rework jig for the engine module.</p>			

	SA-95	RF coupler																		
<p>SA-95 is an RF coupler for WCDMA and GSM RF testing. It is used together with the product-specific flash adapter.</p> <p>The following table shows attenuations from the antenna pads of the mobile terminal to the SMA connectors of SA-95:</p>																				
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<ul style="list-style-type: none"> <table border="1" data-bbox="596 421 1453 629"> <thead> <tr> <th>GSM900 TX</th> <th>Att. (dB)</th> <th>GSM900 RX</th> <th>Att. (dB)</th> </tr> </thead> <tbody> <tr> <td>880 MHz</td> <td>2.9</td> <td>925 MHz</td> <td>3.5</td> </tr> <tr> <td>897 MHz</td> <td>2.9</td> <td>942 MHz</td> <td>4.7</td> </tr> <tr> <td>915 MHz</td> <td>3</td> <td>960 MHz</td> <td>6.6</td> </tr> </tbody> </table> 					GSM900 TX	Att. (dB)	GSM900 RX	Att. (dB)	880 MHz	2.9	925 MHz	3.5	897 MHz	2.9	942 MHz	4.7	915 MHz	3	960 MHz	6.6
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	SPI-1	Soldering paste injector																		
	SPS-1	Soldering Paste Spreader																		

	SRT-6	Opening tool	
	SS-15	Camera removal tool	
	SS-34	Flex opening tool	
	SS-46	Interface adapter	
	SS-51	Front camera removal tool	
			<p>The camera removal tool SS-15 is used to remove/attach the camera module from/to the socket on the phone PWB.</p> <p>The front camera removal tool SS-51 is used to remove/attach the front camera module from/to the socket on the phone PWB.</p>

	SS-62	Generic flash adapter base for BB5	
<ul style="list-style-type: none"> • generic base for flash adapters and couplers • SS-62 equipped with a clip interlock system • provides standardised interface towards Control Unit • provides RF connection using galvanic connector or coupler • multiplexing between USB and FBUS media, controlled by VUSB 			
	SS-68	Antenna cover opening tool	
<p>SS-68 is a tool for removing the antenna cover.</p>			
	ST-37	BTHFM rework stencil	
<p>ST-37 stencil is used with RJ-104 BTHFM rework jig.</p>			
	SX-4	Smart card	
<p>SX-4 is a BB5 security device used to protect critical features in tuning and testing. SX-4 is also needed together with FPS-10 when DCT-4 phones are flashed.</p>			

	XCS-1	Service cable	
<p>The XCS-1 service cable is used to connect FLS-4S to the POS flash adapter for supplying a controlled operating voltage and data connection.</p>			
	XCS-4	Modular cable	
<p>XCS-4 is a shielded (one specially shielded conductor) modular cable for flashing and service purposes.</p>			
	XRS-6	RF cable	
<p>The RF cable is used to connect, for example, a module repair jig to the RF measurement equipment. SMA to N-Connector ca. 610mm. Attenuation for:</p> <ul style="list-style-type: none"> • GSM850/900: 0.3+-0.1 dB • GSM1800/1900: 0.5+-0.1 dB • WLAN: 0.6+-0.1dB 			

■ Service concepts

Flash concept with FPS-10

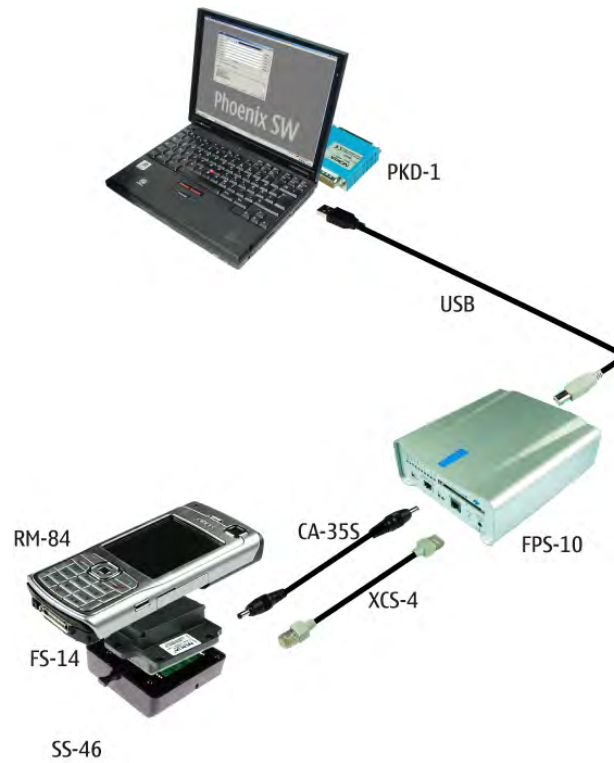
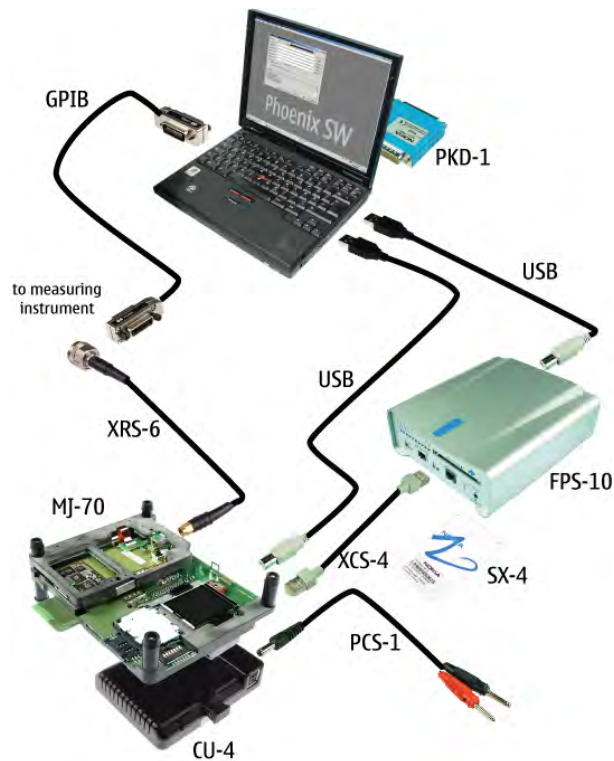


Figure 1 Basic flash concept with FPS-10

Note: FPS-8 concept can also be used for flashing.

Item	Type	Description
1	FS-14	Flash adapter
2	SS-46	Interface adapter
3	CA-35S	Power cable
4	XCS-4	Modular cable
5	FPS-10	Flash prommer box
6		Standard USB cable
7	PKD-1	SW security device

MJ-70 module jig concept



Legend

Module jig concept is meant for BB / RF testing + tuning and for flashing purposes.

Figure 2 MJ-70 module jig service concept

Item	Type	Description
1	MJ-70	Module jig
2	CU-4	Control unit
3	FPS-10	Flash prommer box
4	SX-4	Smart card
5	XCS-4	Modular cable
6	PCS-1	DC power cable
7		Standard USB cable
8		Standard USB cable
9		GPIB control cable
10	XRS-6	RF cable
11	PKD-1	SW security device
12		RF shield box

Note: Item 12 not shown in the picture.

POS (Point of Sale) flash concept



Figure 3 POS flash concept

Item	Type	Description
1	DKU-2	USB connectivity cable
2	FLS-4S	POS flash device

Service concept for RF/BB testing and tuning

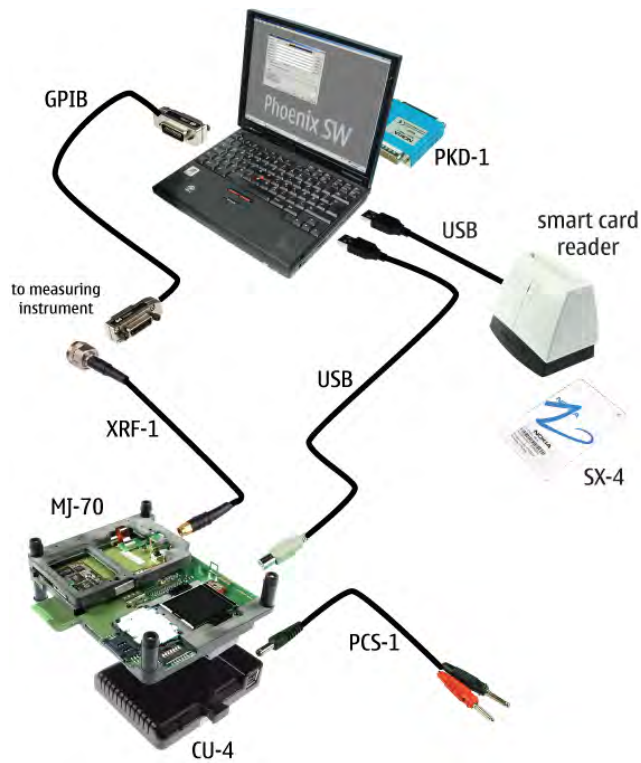


Figure 4 Service concept for RF/BB testing and tuning

Item	Type	Description
1	MJ-70	Module jig
2	CU-4	Control unit
3		Standard USB cable
4	PCS-1	DC power cable
5		Standard USB cable + smart card reader
6	SX-4	Smart card
7	XRF-1	RF cable
8		GPIB control cable
9	PKD-1	SW security device
10		RF shield box

Note: Item 10 not shown in the picture.

CU-4 flash concept with FPS-10

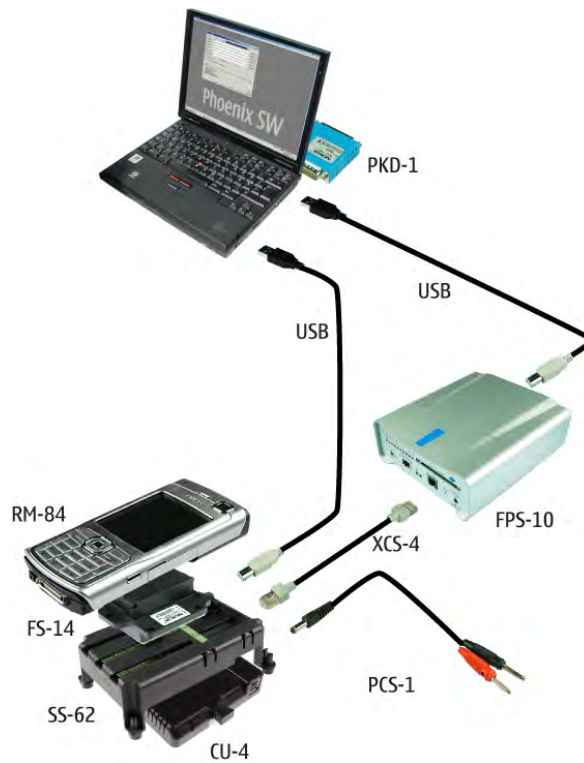


Figure 5 CU-4 flash concept with FPS-10

Note: FPS-8 concept can also be used for flashing.

Item	Type	Description
1	FS-14 + SS-62	Flash adapter + generic flash adapter base for BB5 products
2	CU-4	Control unit
3	XCS-4	Modular cable
4	PCS-1	Power cable
5	FPS-10	Flash programmer box
6		Standard USB cable
7		Standard USB cable
8	PKD-1	SW security device

RF testing and BB testing/tuning

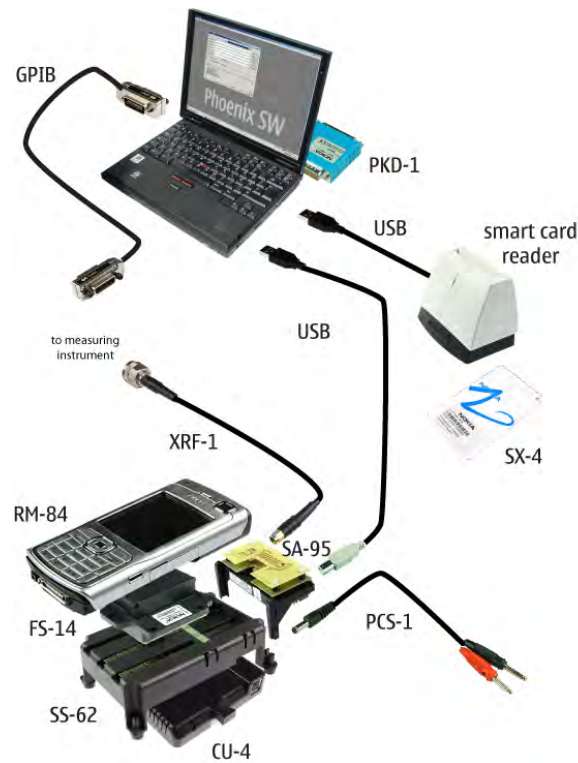


Figure 6 RF testing and BB testing/tuning

Item	Type	Description
1	FS-14 + SS-62	Flash adapter + generic flash adapter base for BB5 products
2	CU-4	Control unit
3	SA-95	RF coupler
4	PCS-1	Power cable
5		Standard USB cable
6		Standard USB cable + smart card reader
7	SX-4	Smart card
8		GPIB control cable
9	XRF-1	RF cable
10	PKD-1	SW security device
11		RF shield box

Note: Item 11 not shown in the picture.

LAN connection flash concept



Figure 7 LAN connection flash concept

Item	Type	Description
1	FS-14	Flash adapter
2	SS-46	Interface adapter
3	CA-35S	Power cable
4	XCS-4	Modular cable
5	FPS-10	Flash programmer box
6		LAN cable
7		LAN cable
8	PKD-1	SW security device