

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	
	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.		
	CA-35S	Power cable	
	Power cable for connecting e.g. the FPS-10 prommer box to the POS flash adapter.		

	CU-4	Control unit	
	<p>CU-4 is a general service tool used with a module jig and/or a flash adapter.</p> <p>CU-4 requires an external 12 V power supply.</p> <p>The unit has the following features:</p> <ul style="list-style-type: none"> • 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 <p>When using CU-4, note the special order of connecting cables and other service equipment:</p> <p>Instructions</p> <ol style="list-style-type: none"> 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. <div data-bbox="651 1137 1348 1928"> </div> <p>Note: Phoenix enables CU-4 regulators via USB when it starts. Reconnecting the power supply requires a restart of Phoenix.</p>		

	DKU-2	USB connectivity cable	
	FLS-4S	Flash device	
	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	
	JBT-9	Bluetooth test and interface box (sales pack)	
	MJ-70	Module jig	

Flash adapter FS-14 is used for phone testing and flashing.

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.

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.

Flash adapter FS-14 main features:

- VBATT supply interface
- USB / FBUS multiplexed interface to the phone
- Supply voltage for light source

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.



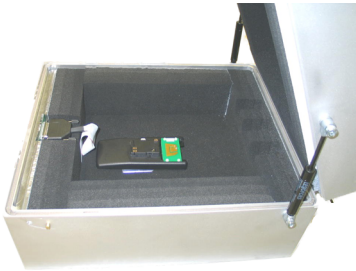
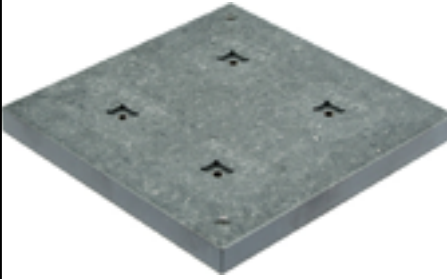

- JBT-9 testbox, code 0770336
- Installation and warranty information, code 9360613

Module jig MJ-70 is designed for engine testing. It can be used for flashing and RF, battery and system testing.

Module jig MJ-70 main functions:

- 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

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.

	PCS-1	Power cable	
	PKD-1	SW security device	
		RF shield box	
	RJ-104	BTHFM rework jig	
	RJ-94	Soldering jig	

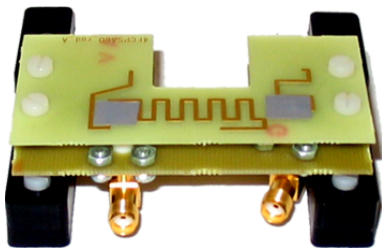


The PCS-1 power cable (DC) is used with a docking station, a module jig or a control unit to supply a controlled operating voltage.






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.





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.

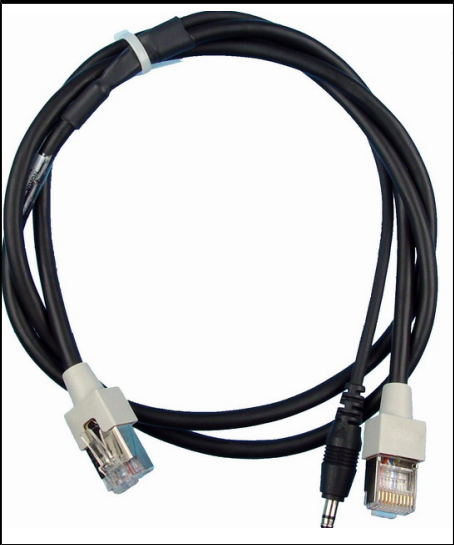


RJ-104 is a rework jig used when servicing the BTHFM module. It is used together with rework stencil ST-37.

RJ-94 is a soldering jig used for soldering and as a rework jig for the engine module.

	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> <ul style="list-style-type: none"> <table border="1"> <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> <table border="1"> <thead> <tr> <th>GSM1800 TX</th><th>Att. (dB)</th><th>GSM1800 RX</th><th>Att. (dB)</th></tr> </thead> <tbody> <tr> <td>1710 MHz</td><td>6.4</td><td>1805 MHz</td><td>5.8</td></tr> <tr> <td>1748 MHz</td><td>6.3</td><td>1843 MHz</td><td>6.7</td></tr> <tr> <td>1785 MHz</td><td>6</td><td>1880 MHz</td><td>5.5</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>GSM1900 TX</th><th>Att. (dB)</th><th>GSM1900 RX</th><th>Att. (dB)</th></tr> </thead> <tbody> <tr> <td>1850 MHz</td><td>6.7</td><td>1930 MHz</td><td>5.4</td></tr> <tr> <td>1880 MHz</td><td>5.5</td><td>1960 MHz</td><td>5.7</td></tr> <tr> <td>1910 MHz</td><td>4.9</td><td>1990 MHz</td><td>5.9</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>WCDMA TX</th><th>Att. (dB)</th><th>WCDMA RX</th><th>Att. (dB)</th></tr> </thead> <tbody> <tr> <td>1920 MHz</td><td>6.6</td><td>2110 MHz</td><td>7</td></tr> <tr> <td>1950 MHz</td><td>6.3</td><td>2140 MHz</td><td>7.4</td></tr> <tr> <td>1980 MHz</td><td>6.1</td><td>2170 MHz</td><td>8.9</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	GSM1800 TX	Att. (dB)	GSM1800 RX	Att. (dB)	1710 MHz	6.4	1805 MHz	5.8	1748 MHz	6.3	1843 MHz	6.7	1785 MHz	6	1880 MHz	5.5	GSM1900 TX	Att. (dB)	GSM1900 RX	Att. (dB)	1850 MHz	6.7	1930 MHz	5.4	1880 MHz	5.5	1960 MHz	5.7	1910 MHz	4.9	1990 MHz	5.9	WCDMA TX	Att. (dB)	WCDMA RX	Att. (dB)	1920 MHz	6.6	2110 MHz	7	1950 MHz	6.3	2140 MHz	7.4	1980 MHz	6.1	2170 MHz
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	SPI-1	Soldering paste injector																																																																
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	SRT-6	Opening tool	
	SS-15	Camera removal tool	
	The camera removal tool SS-15 is used to remove/attach the camera module from/to the socket on the phone PWB.		
	SS-34	Flex opening tool	
	SS-46	Interface adapter	
	SS-46 acts as an interface adapter between the product-specific flash adapter and FPS-10.		
	SS-51	Front camera removal tool	
	The front camera removal tool SS-51 is used to remove/attach the front camera module from/to the socket on the phone PWB.		

	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	
	SS-68 is a tool for removing the antenna cover.		
	ST-37	BTHFM rework stencil	
	ST-37 stencil is used with RJ-104 BTHFM rework jig.		
	SX-4	Smart card	
	<p>SX-4 is a BB5 security device used to protect critical features in tuning and testing.</p> <p>SX-4 is also needed together with FPS-10 when DCT-4 phones are flashed.</p>		

	XCS-1	Service cable	
	XCS-4	Modular cable	
	XRS-6	RF 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> <p>XCS-4 is a shielded (one specially shielded conductor) modular cable for flashing and service purposes.</p> <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.</p> <p>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

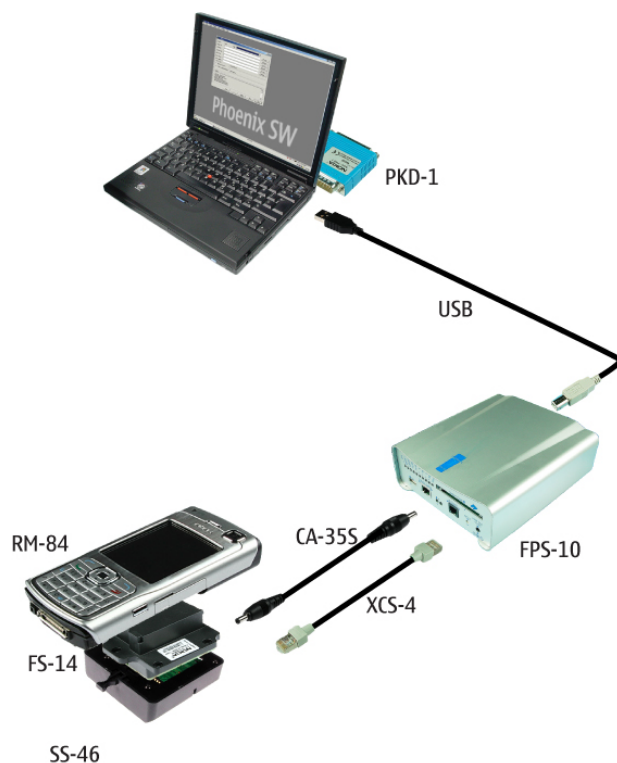
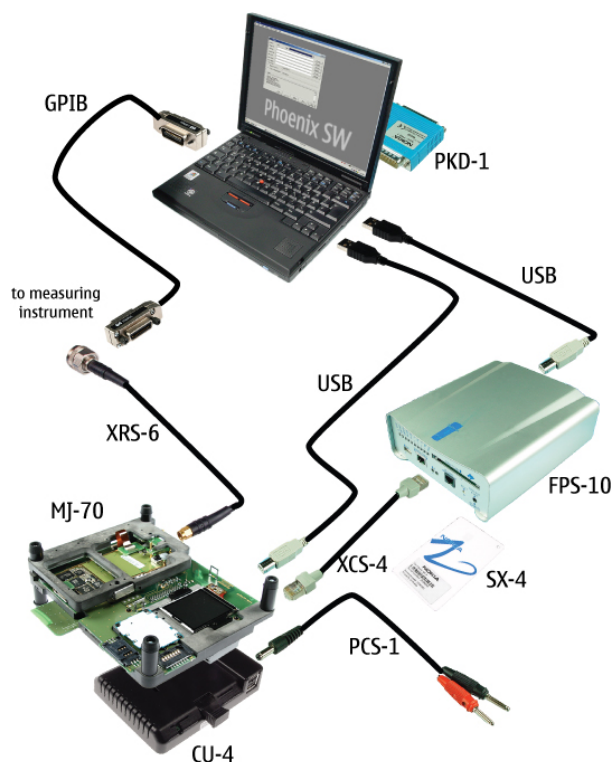


Figure 1 Basic flash concept with FPS-10

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

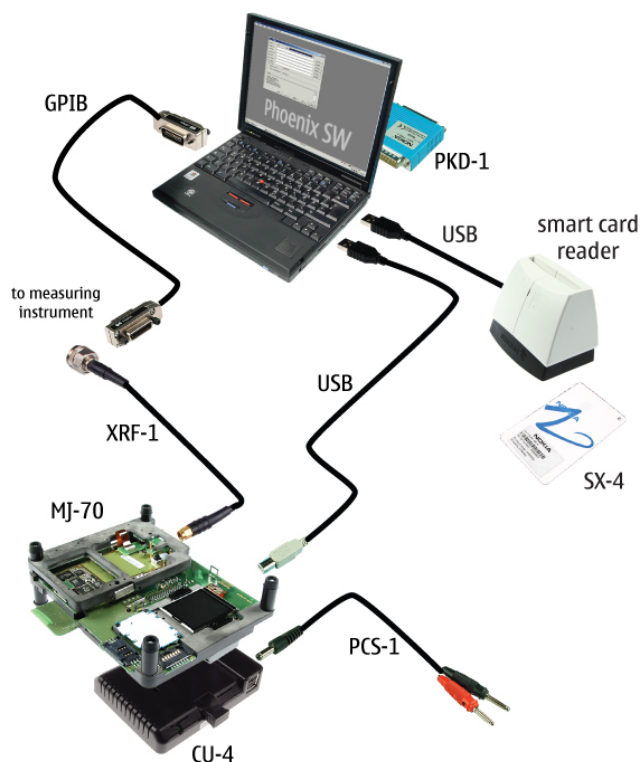


Figure 4 Service concept for RF/BB testing and tuning

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

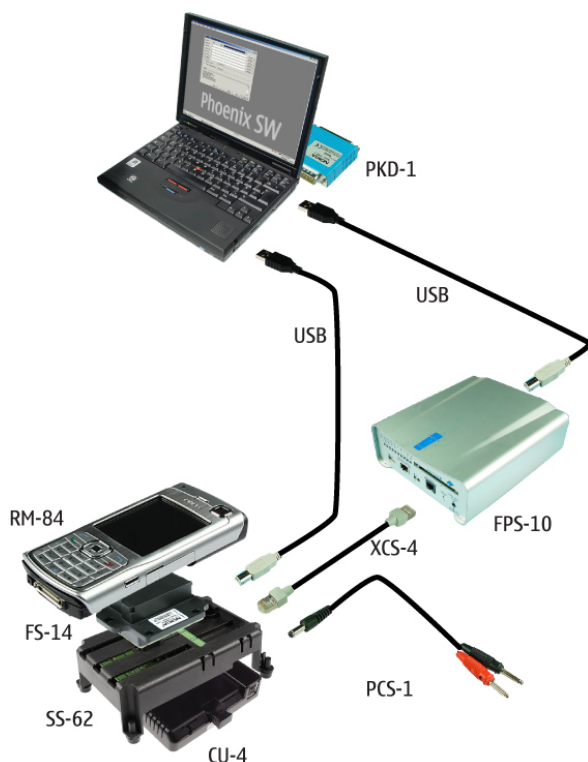


Figure 5 CU-4 flash concept with FPS-10

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 prommer box
6		Standard USB cable
7		Standard USB cable
8	PKD-1	SW security device

RF testing and BB testing/tuning

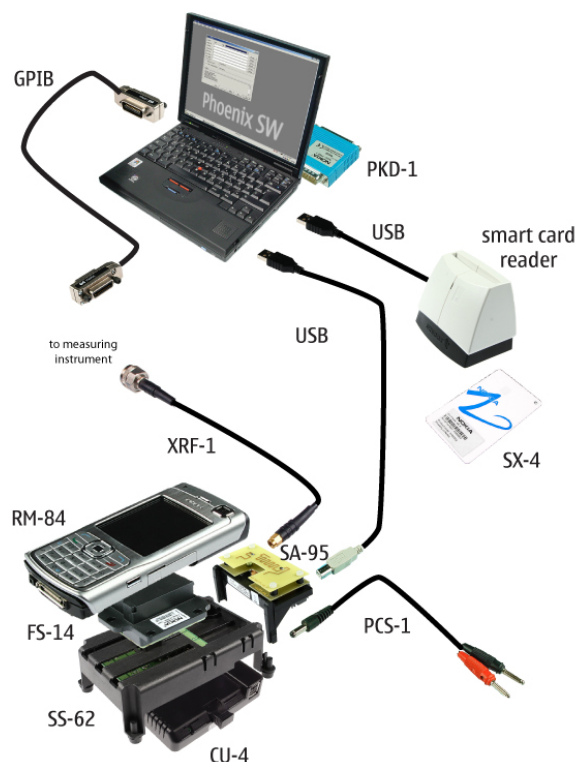


Figure 6 RF testing and BB testing/tuning

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

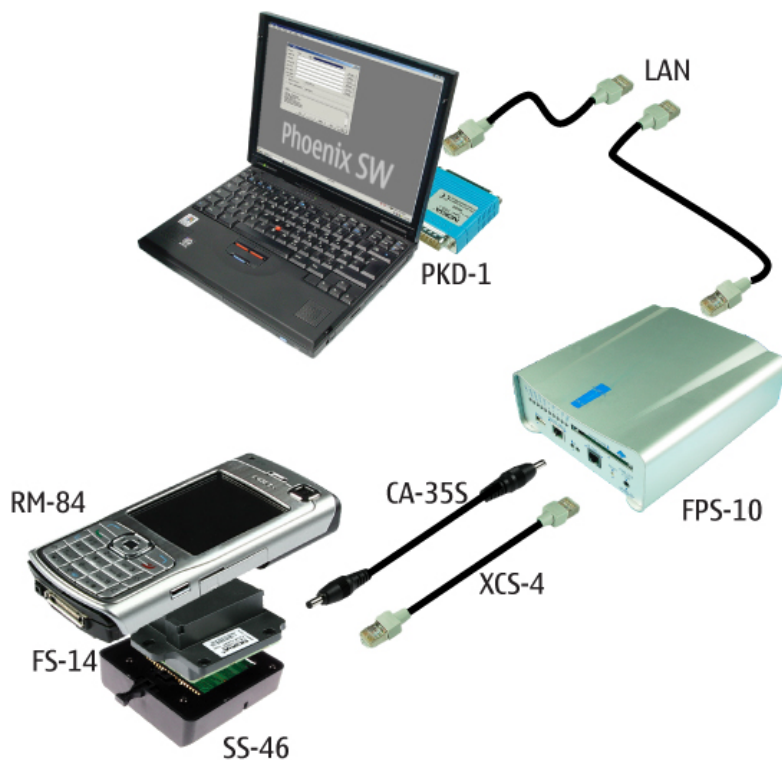


Figure 7 LAN connection flash concept

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 prommer box
6		LAN cable
7		LAN cable
8	PKD-1	SW security device