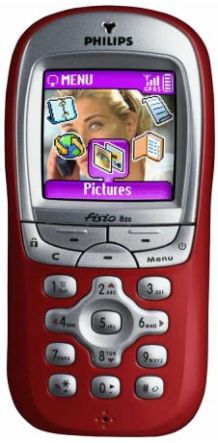
PHILIPS Consumer Communications **Centre du Mans**	**Service Repair Support**	**VY-V-640-82x** **Page : 1 of 71** **Langue : EN** **Date : 25/02/03**

SERVICE MANUAL

Repair for Cellular Telephone

Fisio 820 - Fisio 825

LEVEL 2



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SERVICE Manual

Last updates :

DATE	MODIFICATION	PAGE
08/04/02	CREATION	
26/08/02	Window assembly instructions	Page 64-65
14/02/03	- Add Fisio 825 picture - Add Fisio 825 test consumption - Part list chapter	Page 1 Page 42 Page 70
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1.0 PURPOSE

This document establishes the functional test and inspection procedures for the first level service repair of the FISIO 820 transceiver (CT9888) and FISIO 825 transceiver (CT9889).

2.0 SCOPE

The test plan is applicable to all levels of service repair of the FISIO 820 transceiver (CT9888) and FISIO 825 transceiver (CT9889).

3.0 REFERENCE

None.

4.0 GLOSSARY/ACRONYM LIST

Window or Bezzel	Protective plastic over the LCD display
SW	Software
PN	Hardware Configuration of the Mobile
CN	Matrix for Types of SW used on the different hardware
HW	Hardware
ASC	Authorized Service Center
NSC	National Service Center
Test SIM Card	Used for functionality of PHILIPS Mobile Phones
Test SIM Card « SP »	SIM Card used to simulate the user interface and enable radio tests

5.0 TEST EQUIPMENT AND TOOLS

Equipment / Tools

- Production Test SIM Card - Part No. : 4311 255 00781
- Test SIM Card « SP » - Part No. : 4311 255 00782
- W@b dismantling tool - Part No. : 4311 255 21325
- Digital Multimeter - Recommended Model : Fluke *(Specification: with current reading in mA.)*
- Digital Radiocommunication Tester.

- Coupling system with shielded chamber.

Or

- Product cradle Ref: CKFR82/P - Part No.: 9911 240 34509

6.0 TEST AND INSPECTION PLAN

The test plan is derived from the Product Test Reference of FISIO 820 and FISIO 825.

6.1 User Interface Test

Use the Test SIM Card to test the transceivers as follows :

- On/Off button
- LCD Backlight
- Keyboard Test
- Buzzer Test
- Vibrator Test
- Audio Test
- Antenna Test (to measure the radiated power level. Not necessary when using an antenna coupler)
- LCD
- IMEI
- Tester Status/Eeprom Status

With a fast Charger connected with the PRODUCT's bottom connector , check the full scrolling from one mode to the next when charging IGN (Ignition) – Battery.

6.2 RF Test

The purpose of the radio test is to prove that the tested phone is compliant to the Standard.

The radio test must be performed with a Digital Radio Test Set. The mobile has to be set on the antenna coupler inside the shielded chamber.

Or It can be tested using the product cradle (in this case a measurement of the power radiated by the antenna has to be performed)

Use the Test SIM Card « SP »to test the following RF items

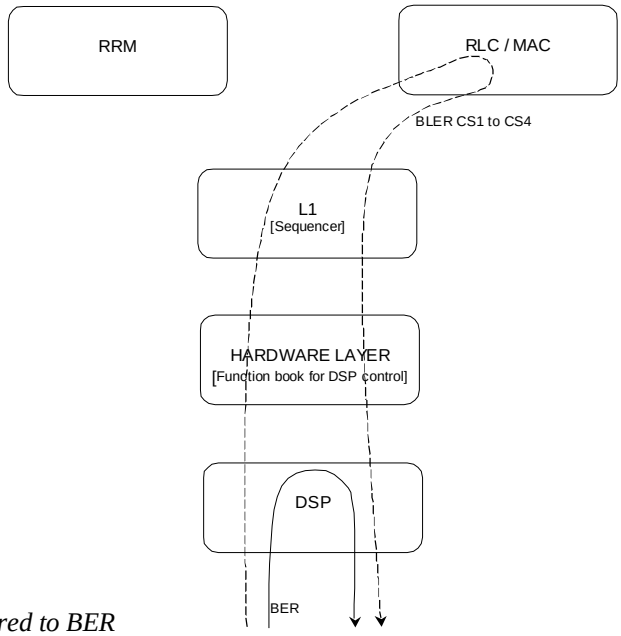
- GSM 900 / DCS 1800 band
- GPRS capability
- Bluetooth connectivity

In case the RF tester is not suitable for GPRS tests, GSM900/DCS1800 test may be considered as sufficient provided that the sensivity tests are strengthened by reducing the RF level down to -104dBm.

This reasoning is based on the fact that all the protocol steps (GPRS attach, GPRS detach, …) are achieved on the GSM/DCS bands and validated by Philips Approval department.

The new parameter to check, introduced by GPRS, would be BLER (Blocks Error Rate).

As shown on the drawing, it involves more modules than BER

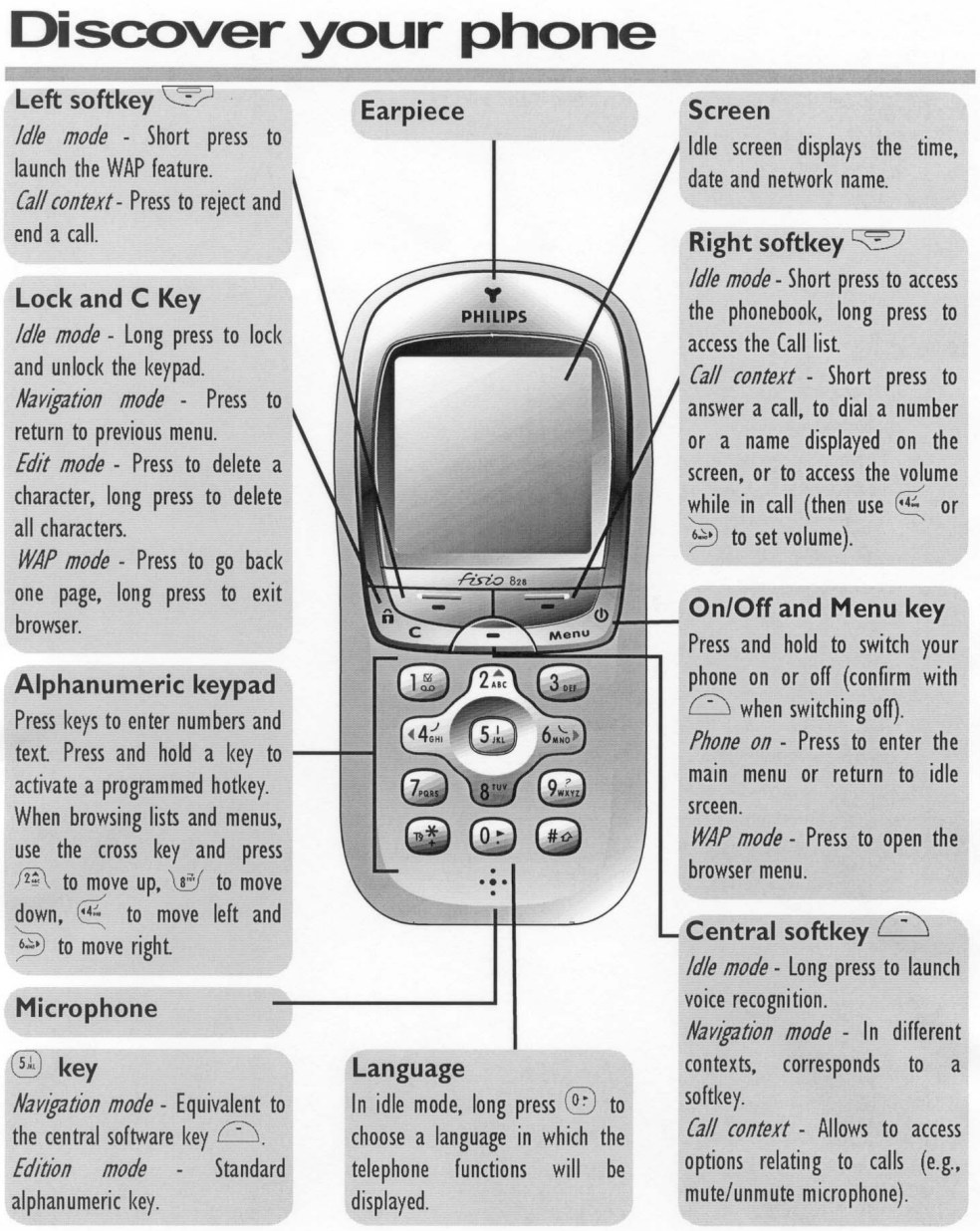


Signals paths
BLER compared to BER

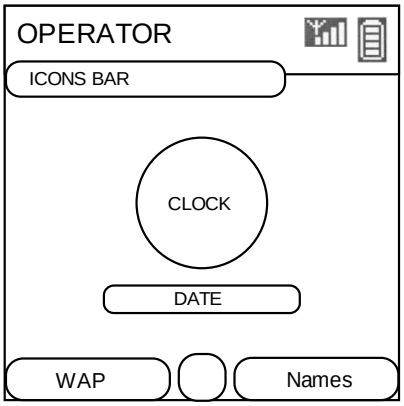
Bluetooth tests consists only in a pairing test with another Bluetooth device (e.g. Bluetooth headset)

7.0 BEFORE STARTING

7.1 Description Of The Transceiver



7.2 Description Of The Display

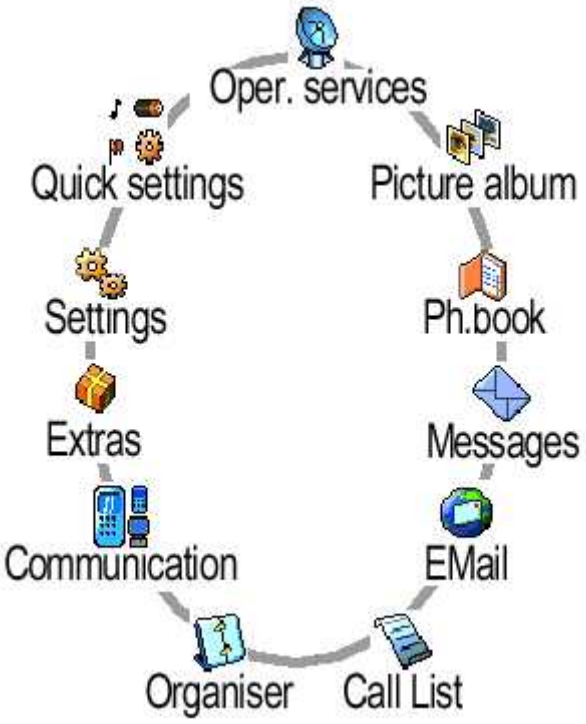


Symbols

- ***GSM Network :*** your phone is connected to a GSM network
- ***Reception quality :*** the more bars are shown the better the reception is.
- **Silent** - Your phone will not ring when receiving a call.
- **Vibra** - Your phone will vibrate when receiving a call.
- **Keypad lock -** Protects the keys from being pressed accidentally.
- **SMS full** - Memory for messages is full. Delete old messages to receive new ones.
- **Call Forward Unconditional to number** - All your incoming voice calls are being forwarded to a number other than voice mail.
- **Battery** - The bars indicate the battery level (4 bars = full, 1 bar = low).
- You have received a new **SMS message**.
- The **Alarm clock** is activated.
- You have received a new **Voice mail**.
- **Call Forward Unconditional to voice mailbox** - All your incoming calls are being forwarded to voice mail.
- **Memo** - A memo or conversation has been recorded and saved but not yet played.
- **Home zone** - A zone designated by your network operator. Subscription dependent, contact your service provider for details.
- **Roaming** - Displayed when your phone is registered to a network other than your own (especially when you're abroad).
- **Bluetooth** is activated.

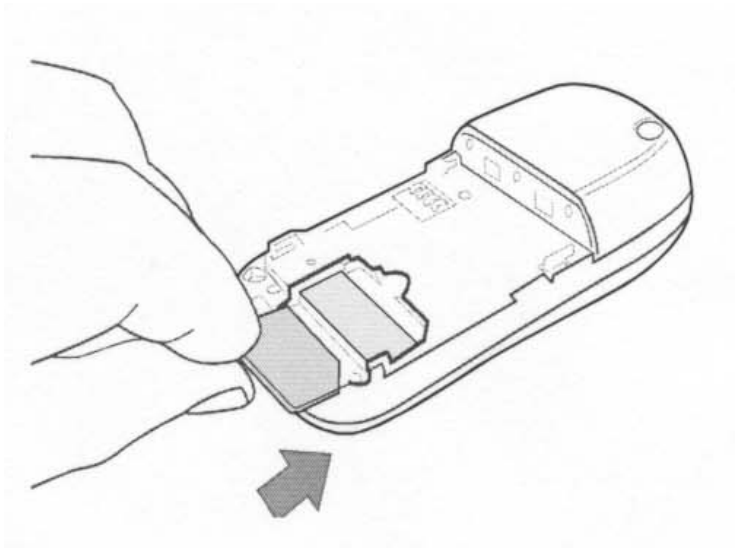
7.3 Using The Carousel

The carousel is a circular loop of icons displayed on the screen. These icons provide access to the different menus and sub menus used to operate your phone.



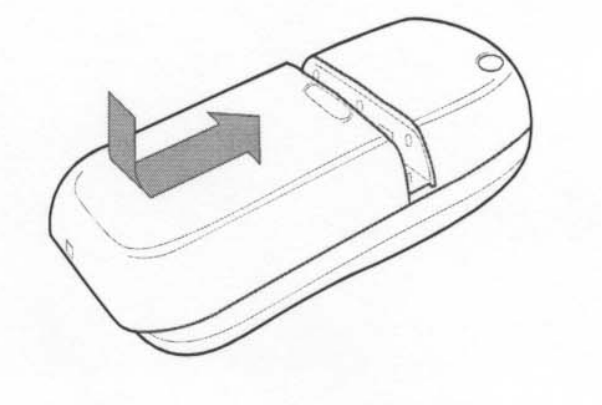
7.4 Inserting The MICRO-SIM Card

First remove the SIM card from its card holder. Slide it into its slot, microchip facing connectors, until its stops. Be careful that the clipped corner is in the identical position as on the drawing.



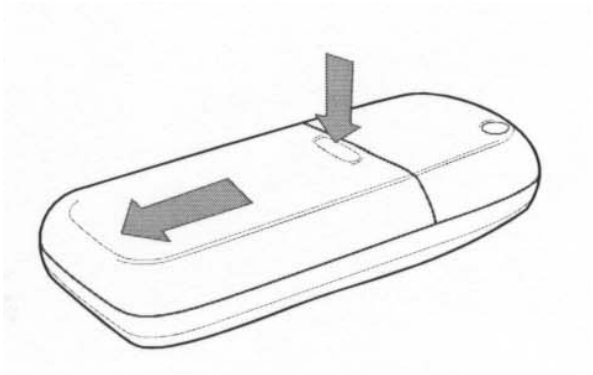
7.5 Inserting The Battery

Place the battery on the back of the phone (battery connectors downwards), then push it into place until the latch catches



7.6 Removing The Battery

Press below the rubber (Philips logo) and slide the battery downwards



7.7 Charging The Battery

Once the battery is clipped on the phone, plug the charger into the right hand socket at the base of the phone as shown on the drawing.

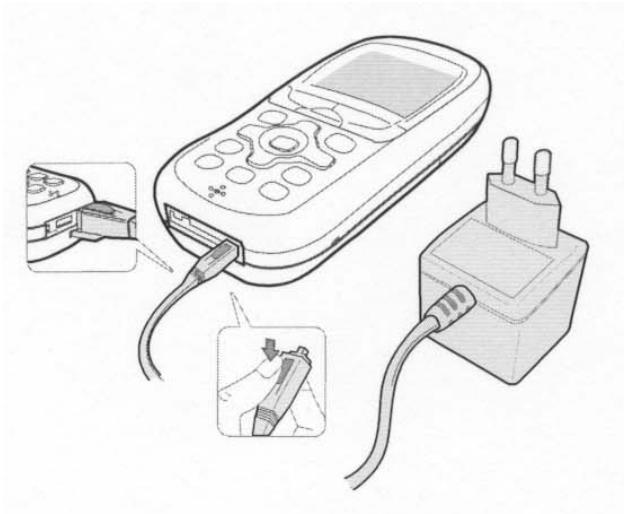
Then plug the transformer unit into a main AC power socket with easy access.

The symbol indicates the state of charge :

During charging the 4 charge indicators change; each bar represents around 25% of charge.

Bars moving ➔ Battery is charging
Bars steady ➔ Battery is fully charged
Battery outline flashing (see chapter 9)

When the battery is charged, remove the connector by pressing the release button on top of the connector



If the battery is completely flat, the battery icon will only reappear after 2 or 3 minutes of charging.

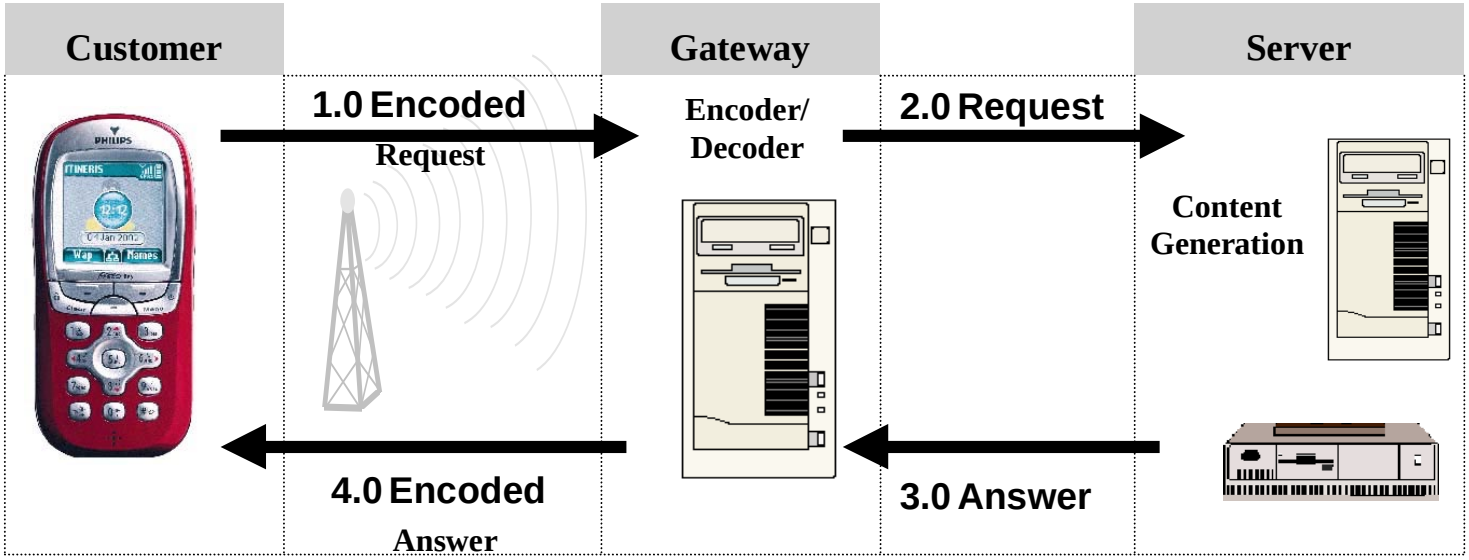
7.8 W@P Introduction

The purpose of W@p (Wireless Application Protocol) is to enable easy and fast delivery of relevant information and services to mobile users. However, mobile Internet does not mean navigating on the Internet with a wireless device but rather to access to some services in a mobile context.

The W@P architecture was designed to enable standard Internet servers to provide services to wireless devices. The W@P wireless protocol is based on Internet standards such as HTTP and TLS but has been optimized according to the constraints of the wireless terminals: low memory capacity, small screen size
and of the network: limited bandwidth.

The W@P architecture is made up of 4 technological parts which are necessary for accessing W@P services on a mobile phone. These are:

W@P navigator or browser
Mobile operator network
W@P gateway / W@P server
Web server



*** Subscription**

The customer has to contact his Network Operator to inquire about his subscription and the options he can subscribe to. Generally the customer just have to request his W@P access to his provider and he will not be charged for that.

*** W@P parameters**

Parameters have to be set in the mobile phone in order to access W@P services . However, there are two cases depending on the commercial offer:

* Transceiver sold via an operator package(with subscription included):
  - Parameters cannot be accessed from the W@P settings menu of the mobile phone:
    The transceiver is W@P locked. The W@P connections will always be made from the operator W@P homepage and search engines will be available. The customer will have to ask for a password from his/her operator to unlock the W@P settings.

  - Parameters can be accessed from the W@P settings menu of the mobile phone:
    The customer changes the W@P parameters according to his/her own convenience.

* Retail transceiver(without subscription included):
  - Phones are configured by the manufacturer with no W@P parameter. The end user has to ensure that the W@P functionality and a data/fax options have been subscribed. The end user has also to set the W@P parameters by asking for them from his/her operator or by using parameters of another company (available on Internet, newspaper etc.)

Detailed parameters

Phone Number (or dial-up number) : to establish a connection with the Internet Service Provider
Login (or User Name) : if requested by your ISP
The password : if requested by your ISP
IP address for the Gateway : for communications between Internet Service Provider and Gateway & Port Number (for a secure or non secure connection)
Home page address(or URL address): for communications between Gateway and Web server

Please note that it is important to respect small and capital letters according to your operator instructions.
It is also possible that your provider does not require the Login and/or Password.

7.9 GPRS Introduction

7.9.1 Presentation

The GPRS does not constitute to him alone a separate mobile network, but a supplementary layer added to a existing GSM network.

It can be thus settled without any supplementary license. This means that all the operators who have a GSM license can develop their network towards it.

Furthermore, the GPRS uses wavebands attributed to the GSM. that means a band in the 900 MHz, the other one in the 1800 MHz and finally the third for the USA, in the 1900 MHz

The GPRS, also called GSM 2+, rests on the transmission of data packets. This principle, already held for example for the protocol X.25, allows to allocate to the other communications, the time-outs of a first communication (wait of an answer to an Internet request for example).

Conceived to reuse at most the existing GSM infrastructures, the expansion of the GPRS requires the implementation of a network infrastructure based on the data packets routing and the introduction of bridges to lean on existing GSM networks.

This technology, capable of supplying transfer rates rising up to 115 kb/s (against 9,6 kb/s for the GSM), offers interesting features:

- Several channels can be allocated to a single user;
- Several users can share a single channel;
- The transmission rate is independent from rising and downward links.

7.9.2 Services / Possibilities / Limitations

Domains of application

While the WAP stops in the consultation of the Internet pages, the GPRS allows to widen the service offer. Besides the access to Internet (or Intranet), from the traditional mobiles phones, it allows a better access to e-mails containing joined files.

A rate higher than the wired public network

Today, the transmission rate of a standard GSM network in "connected" mode does not overtake 9,6 kbit/s, even 14,4 kbit/s by establishment of specific software. It is five times less fast compared to the standard wired network, which authorises 56 kbit/s with a V90 modem.

With the GPRS, a transmission rate included between 40 and 115 kbit/s is available. Everything depends on the number of virtual canals or " time slots " used, and on coding scheme (CS1 to CS4). GPRS acts on the compression of the data as a multiplier of transmission rate. In 3+1 multislots mode (three slots for the network towards mobile, and one slot for the mobile towards network), it allows a transmission rate of 40 kbit/s with a CS2 coding scheme.

With (8+1)multislots using the CS4 coding scheme, one achieves in practice 115 kbit/s (in theory 175 kbit/s).

GPRS re-uses the existing GSM infrastructure, notably by keeping the current network of base stations (BTS), upgrading the BTS software.

Average time to send an E-mail with a 10 pages attached document :

Standard	Rate	Time elapsed
Current GSM	9,6 kbit/s	7 min.
Standard Modems (V90)	57,6 kbit/s	70 sec.
RNIS	128 kbit/s	31 sec.
GPRS	144 bit/s *	28 sec.
EDGE	384 kbit/s *	10 sec.
UMTS	2 Mbit/s	2 sec.

* : in optimal conditions

Three types of air terminals

Three types of air terminals were defined to meet the needs of the GPRS: the basic model (class B) is foreseen for the voice and the data in not simultaneous mode. The professional or industrial model (class C) is data exclusively (the air terminal is used as a modem). Finally the up-market (class A) is compatible voice/data simultaneously. This class A terminal is problematic. The power of calculation required at the moment has a strong incidence on its production cost and makes it dissuasive.

In the GPRS standard, three new types of mobile terminal have been defined:
Class A terminal, which supports simultaneous circuit-switched and packed-switched traffic;
Class B terminal, which supports either circuit-switched or packed-switched traffic (simultaneous network attachment) but does not support both kinds of traffic simultaneously;
Class C terminal, which is attached either as a packed-switched or circuit-switched terminal.

The terminal types are further differentiated by their ability to handle multislot operations. The terminal can use from 1 up to 8 time slots on the uplink and on the downlink channel. 18 service classes are defined depending on the number for support time slots.

Service Class	Max Number of Slots			Multislot type
	Max Rx	Max Tx	Total available	
1	1	1	2	1
2	2	1	3	1
3	2	2	3	1
4	3	1	4	1
5	2	2	4	1
6	3	2	4	1
7	3	3	4	1
8	4	1	5	1
9	3	2	5	1
10	4	2	5	1
11	4	3	5	1
12	4	4	5	1
13	3	3	6	2
14	4	4	8	2
15	5	5	10	2
16	6	6	12	2
17	7	7	14	2
18	8	8	16	2

Fig. 1 Service Classes - Multislot operations

Four different channel-coding schemes have been defined for GPRS to make optimum use of varying radio conditions. Usage of higher coding schemes allows to send more data in the same number of time slots.

Channel Coding Scheme	CS-1	CS-2	CS-3	CS-4
Data rate per timeslot (kbps)	9.05	13.4	15.6	21.4

Fig. 2 GPRS Coding Schemes

Philips Fisio820 features GPRS Class B. With GPRS Class B, if you receive incoming calls while in the middle of a data session, you receive a notification; and vice versa.

Philips Fisio820 is enabled to support GPRS up to Class10 (4Rx, 2Tx) [depending on networks developments]. GPRS Class10 enables to receive information at least 4 times faster than a standard GSM connection and to send them 2 times faster. That is why GPRS Class 10 is particularly suitable for surfing on the WAP pages, exchanging emails or using your phone as a modem for Internet surfing, Intranet browsing or file transfer.

Philips Fisio820 is SMG31bis - Coding schemes 1, 2, 3 et 4.

7.9.3 Technical characteristics

Circuit switched mode or virtual access

The first advantage of the GPRS is to allow a better use of the radio and technical resources. While the GSM works in "connected" mode, called also "circuit-switched" mode, the GPRS uses for its part the virtual connection mode. In "virtual" mode, the resources are shared. The transmission channel is never allocated to a unique user, but shared between several users. Every user has it when he needs it and only in that case. The rest of the time they are available. The circuit switched mode corresponds to the functioning of a GSM line or still a standard telephone line. It consists in establishing a physical link between two points or two correspondents. Once the number is dialled, a circuit is permanently allocated to the communication, without any sharing with the other customers. This mode of functioning which does not take into account periods of silence, when no data is passed on, does not optimise at its best the radio resources.

The GPRS puts in evidence the more important role of the network administrator. In a GSM infrastructure the role of the administrator amounts to affect physical resources at the beginning of every communication. With the GPRS, its role is more important. It consists in assigning, in real time, the physical resources (memories and electronic circuits), in managing the radio resources, and in affecting them according to the demand.

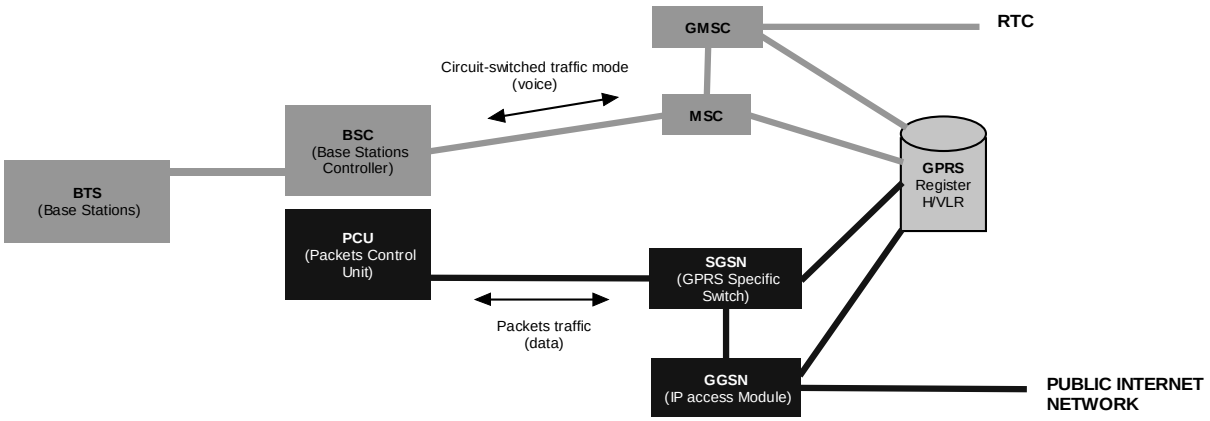
The GPRS settles down on the existing GSM network

The GPRS-system is built upon the existing GSM-infrastructure. Basic stations undergo no modification with exception of the specific software, that can be installed by downloading.

Next, the Basic Stations Controller (BSC) should be doubled by a Packet Controller Unit (PCU).
Then comes the path intended for data packets, its composed of :
- The Serving GPRS Specific Node (SGSN) , equivalent of the Mobile Switch Controller (MSC), which aims to check subscribers registering , to authenticate them and to authorise the communications,
- The Access module (GGSN) to the IP world (Internet or Intranet).

GGSN and SGSN are described later.

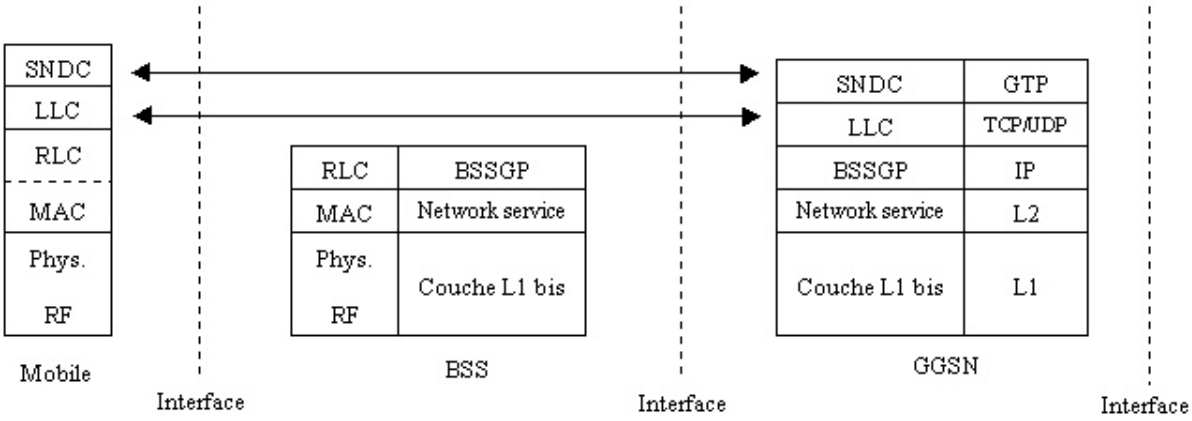
7.9.4 Network Architecture



GPRS network architecture

The constituents of the GPRS network

There is the software layers architecture for every constituent of a GPRS network.



SNDC SubNetwork Dependant Convergence
LLC Logical Link Control
RLC Radio Link Control
GGSN Gateway GPRS Support Node
SGSN Serving GPRS Support Node

Software layers of a GPRS network

In the mobile terminal, appears from the bottom to the top the following layers :

- The physical layer, constituted of two functional sub-layers;
  - The RF sub-layer, which manage the radio operations of the terminal. It emits the data received from the physical layer. It decodes the data coming from the base station (BTS) and transmits it to the physical layer for interpretation
  - The physical layer produces the frames, those ones will be emitted by the RF layer; about the frames received from the network, it detects and corrects transmission errors.
- The MAC layer (or RLC for Radio Link Control) manages the radio link between the terminal and the Base Station (BTS), that means re-emission mechanisms in case of error, the function of access controller for the radio resources when several air terminals are in competition. The RLC can request the re-emission of a data packet ;
- The higher layer SNDC (Sub-Network Dependant Convergence) manages the mobility, the ciphering and data compression.

GGSN : *Gateway GPRS Support Node* ,

The GGSN provides the interface towards the external IP packet networks. Actually, from the external IP network's point of view, the GGSN acts as a router for the IP-addresses of all subscribers served by the GPRS-networks. To make this possible the GGSN exchanges routing information with the external networks and sets up connections towards external networks. Similar to the SGSN, the GGSN deals with session management, specifically the connection towards the external networks. Also, as many SGSN can connect to one GGSN, it has to associate subscribers to the right SGSN.

SGSN : *Serving GPRS Support Node*

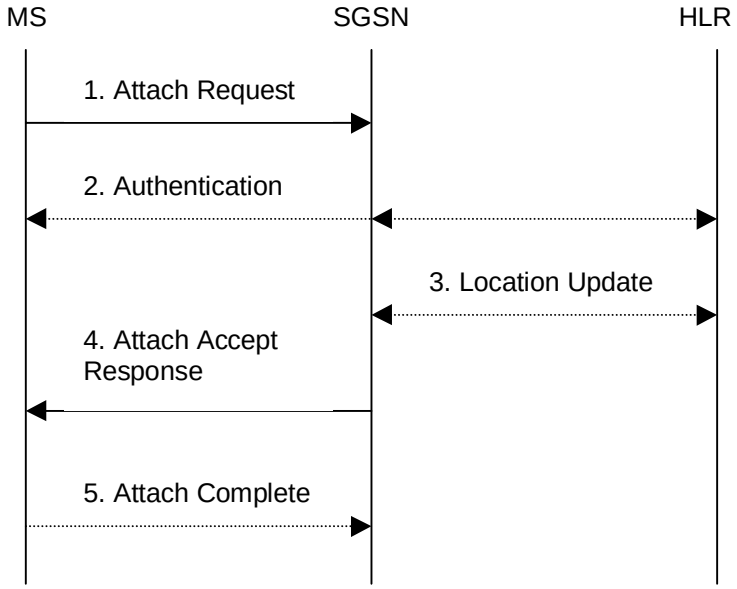
The SGSN forwards incoming and outgoing IP packets addressed to and from a mobile station. It serves all GPRS-subscribers that are located and attached within the geographic SGSN service area.. A subscriber may be served by any SGSN in the GPRS network depending on location. The traffic is rooted from the SGSN to the BSC, via the BTS to the mobile station. To make this packet traffic possible, signalling with several other nodes is necessary, for instance the Home Location Register (HLR) , the Mobile Switching Centre (MSC), the BSC and the GGSN, as well Short Message Service-nodes (SMS). From these signalling connections the SGSN handles important GPRS functions such as ciphering and authentication, session management, mobility management and the logical link management towards the mobile station.

Packets routing

The routing of every packet is independent from the one who precedes it or by the one who follows it. During the connection phase of a GSM terminal in a network, the signalling exchanges are multiple, and to face the constraints of the packet mode, the information of routing obtained to forward the first packet to a GSM terminal is stored in the GGSN. So, the routing of following packets is selected according the context stored in the GGSN (the Temporary Logical Link Identity or TLLI).

7.9.5 GPRS Attach and GPRS Detach procedures

The procedure for a GPRS attach is made by the MS to the SGSN. After Having executed a successful GPRS attach, mobility management contexts are established in the MS and the SGSN, setting the MS in the READY state. The MS is then able to activate PDP-contexts. The procedure of GPRS attach is illustrated below.



GPRS attach procedure

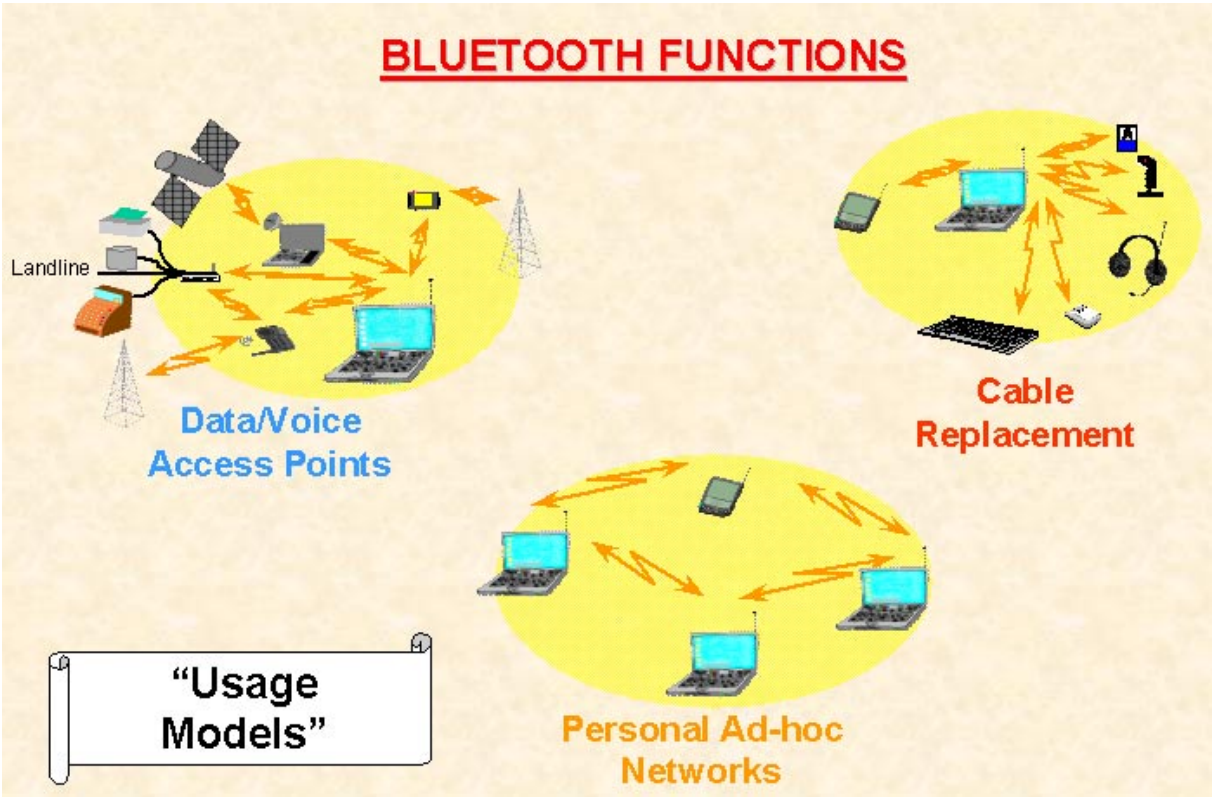
1. The MS sends a GPRS *attach request* which includes the GPRS mobile class and the multislot class.
2. *Authentication* is carried out in the same manner as with GSM, but instead of the MSC, it's the SGSN that sends the IMSI of the MS to the HLR, initiating the encryption algorithm.
3. A *location update* procedure stores the current SGSN of the MS in the HLR.
4. The *attach accept* response assigns a Temporary Logical Link Identity (TLLI) to the MS.
5. A GPRS *attach complete* response from the MS to the SGSN confirms the attach.

After the authentication within the GPRS attach procedure, no additional authentication is required during the entire GPRS-session. A GPRS detach will terminate the ongoing GPRS-session. This detach could be initiated explicitly by the MS or the SGSN, or implicitly when the STANDBY-timer runs out.

7.10 BLUETOOTH Introduction

7.10.1 Presentation

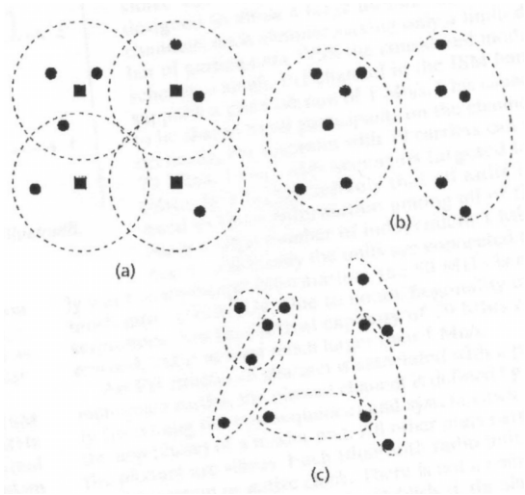
The Bluetooth technology eliminates the need for wires, cables and the corresponding connectors between cordless or mobile phones, modems, headsets, PDAs, computers, printers, projectors, and so on and paves the way for new and completely different devices and applications.



The majority of radio systems in commercial use today are based on a cellular radio Architecture. A mobile network established on a wired backbone infrastructure uses one or more base stations placed at strategic positions to provide local cell coverage; users apply portable phones, or more generic mobile terminals, to access the mobile network; the terminals maintain a connection to the network via a radio link to the base stations. There is a strict separation between the base stations and the terminals. Once registered to the network, the terminals remain locked to the control channels in the network, and connections can be established and released according to the control channel protocols. Channel access, channel allocation, traffic control, and interference minimization are neatly controlled by the base stations.

In contrast, in truly ad hoc systems, there is no difference between radio units; that is, there are no distinctive base stations or terminals. Ad hoc connectivity is based on peer communications. There is no wired infrastructure to support connectivity between portable units; there is no central controller for the units to rely on for making interconnections, nor is there support for coordination of communications. In additions, there is no intervention of operators. For scenarios envisioned by bluetooth, it is likely that a large number of ad hoc connections will coexist in the same area without any mutual coordination; that is, tens of ad hoc links must share the same medium at the same location in an uncoordinated fashion.

For bluetooth application typically many independent network overlap in the same area. This is called a scatter ad hoc environment. Scatter ad hoc environments consist of a multiple networks, each containing only a limited number of units. The difference between a conventional cellular environment, a conventional ad hoc environment, and a scatter ad hoc environment is illustrated below :



Topologies for: a) cellular radio systems with squares representing stationary base stations; b) conventional ad hoc systems; and c) scatter ad hoc systems.

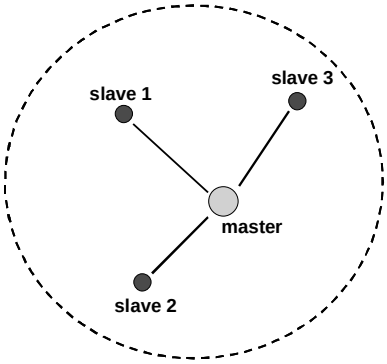
Ad hoc radio system have been in use for some time, for example, walky talky systems used by the military, police fire departments and rescue teams in general. However, the Bluetooth systems is the first commercial ad hoc radio system envisioned to be used on a large scale and widely available to the public

7.10.2 Networking

- Two or more units sharing the same channel form a PICONET
- One unit acts as the MASTER, the others act as SLAVES. Up to seven Slaves can be active on a Piconet
- Up to 200+ more slaves can remain locked to the master in a PARKED state.
- Each Piconet can only have one master but slaves can participate in different Piconets on a Time Division Multiplex (TDM) basis.
- A Master in one Piconet can be a Slave in another

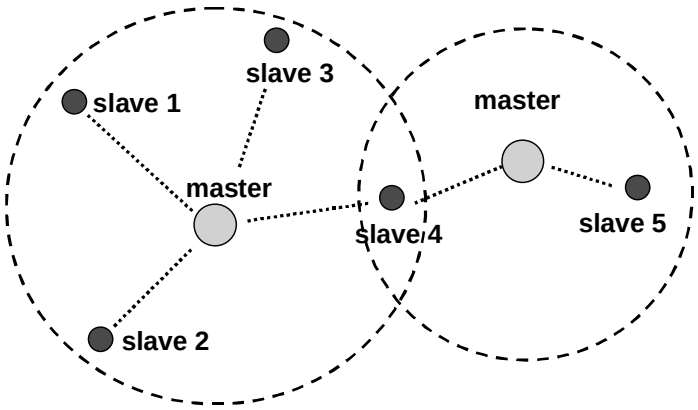
PICONETS

- Master can connect to 7 simultaneous or 200+ active slaves per piconet
- Each piconet has maximum capacity (1 MSPS)
- Unique hopping pattern/ID for each piconet



SCATTERNETS

- Multiple Piconets with overlapping coverage form a SCATTERNET
- High capacity
- Radios can share piconets!



7.10.3 Bluetooth air interface parameters

Keys parameters

Frequency Band : 2.4GHz ISM Open band
Channel Spacing : 1MHz
RF bandwidth : 220kHz(-3dB), 1MHz(-20dBm)
Number of Channels : 79 or 23
(Depend on the country arrangement)
Modulation : GFSK
Communication method: TDD
Frequency Hopping : 1600 hops/s (625 msec)
Peak data rate : <1Mbit/sec
Maximum output power : 100mW (20dBm)
(Depend on power class)
Sensitivity : -70 dBm @ BER=1/1000

Frequency Band and RF Channels

Country	Frequency Range	RF Channels	
Europe & USA	2400 - 2483.5MHz	F=2402 + k MHz	k = 0 to 78
Japan	2471 - 2497MHz	F=2473 + k MHz	k = 0 to 22
Spain	2445 - 2475MHz	F=2449 + k MHz	k = 0 to 22
France	2446.5 -2483.5MHz	F=2454 + k MHz	k = 0 to 22

Power Classes

Power Class	Maximum Output Power	Nominal Output Power	Minimum Output Power [1)]	Power Control
1	100 mW (20 dBm)	N/A	1 mW (0 dBm)	4 to +20 dBm -30[2)] to 0 dBm, optional
2	2.5 mW (4 dBm)	1mW (0 dBm)	0.25 mW (-6 dBm)	-30[2)] to 0 dBm, optional
3	1 mW (0 dBm)	N/A	N/A	-30[2)] to 0 dBm, optional

Note 1: Minimum output power at maximum power setting.
Note 2: The lower range limit of -30 dBm is not mandatory and may be chosen according to application needs.

Modulation and Bit Rate

- Symbol Rate : 1Ms/s +/-20ppm
- GFSK (Gaussian Frequency Shift Keying) with a BT=0.5

  Binary One : Positive frequency deviation
  Binary Zero : Negative frequency deviation
- Maximum frequency deviation

  : shall be between 140kHz and 175kHz (greater than 115kHz)

Radio Frequency Tolerance

The transmitted initial center frequency accuracy must be +/-75 kHz from FC.
The initial frequency accuracy is defined as being the frequency accuracy before any information is transmitted. Note that the frequency drift requirement is not included in the +/-75 kHz.

Type of Packet	Frequency Drift
One slot package	**+/- 25 kHz**
Three slot package	**+/- 40 kHz**
Five slot package	**+/- 40 kHz**
Maximum drift rate 1)	**400 Hz/µs**

Note 1 : The maximum drift rate is allowed anywhere in a packet.

Physical Links

Two link types
Synchronous Connection - Oriented (SCO) link
Asynchronous Connection - Less (ACL) link

SCO : A point-to-point link between a master and a single slave in the piconet .

ACL : A point-to-multipoint link between the master and all the staves participating on the piconet.

Rx parameters

- SENSITIVITY : -70 dBm @ BER=1/1000
- INTERFERENCE PERFORMANCE:

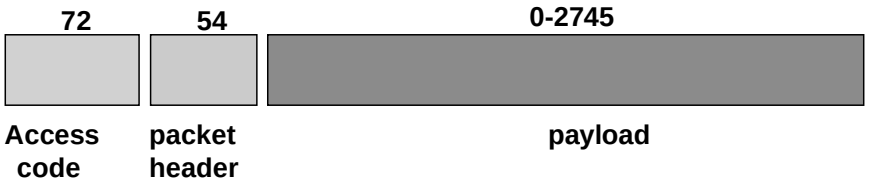
Requirement	Ratio
Co-channel interference	11 dB
Adjacent(1MHz) interfer.	0 dB
Image frequency interf.	-9 dB

- OUT-OF-BAND BLOCKING PERFORMANCE

Interfering Signal Frequency	Interfering Power
30 MHz - 2000 MHz	-10 dBm
2000 MHz - 2400 MHz	-27 dBm
2400 MHz - 2500 MHz	-27 dBm
3000 MHz - 12.75 GHz	-10 dBm

7.10.4 Bluetooth communications

Packet format



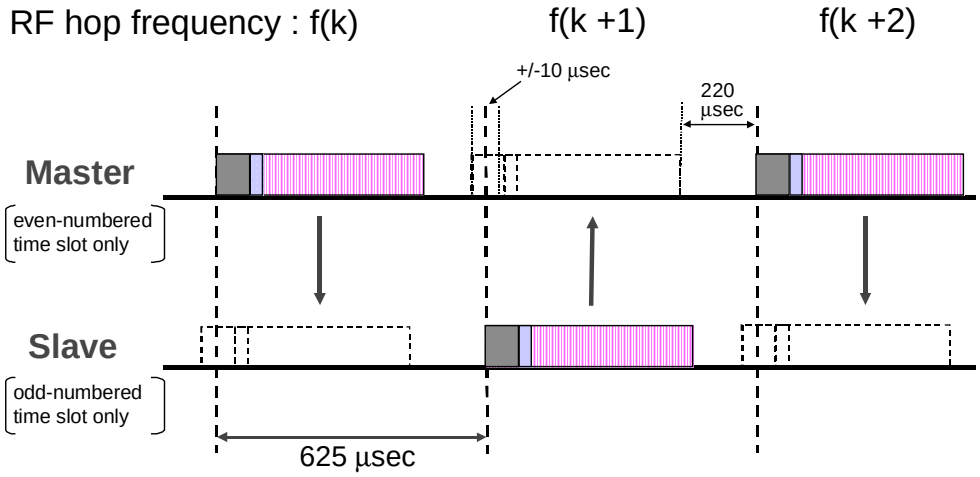
Access code (72 bits)
This area supports the identification and synchronization of Bluetooth instruments. A typical 1010 pattern is sent as 4-bit preamble at the beginning. A measuring instrument must be able to accurately measure the frequency deviation of the DUT within 4µs.

Header (54 bits)
This area of the packet contains organization information important for the call : the current address of the called partner into the pico network, packet types used and also flow control and handshake information.

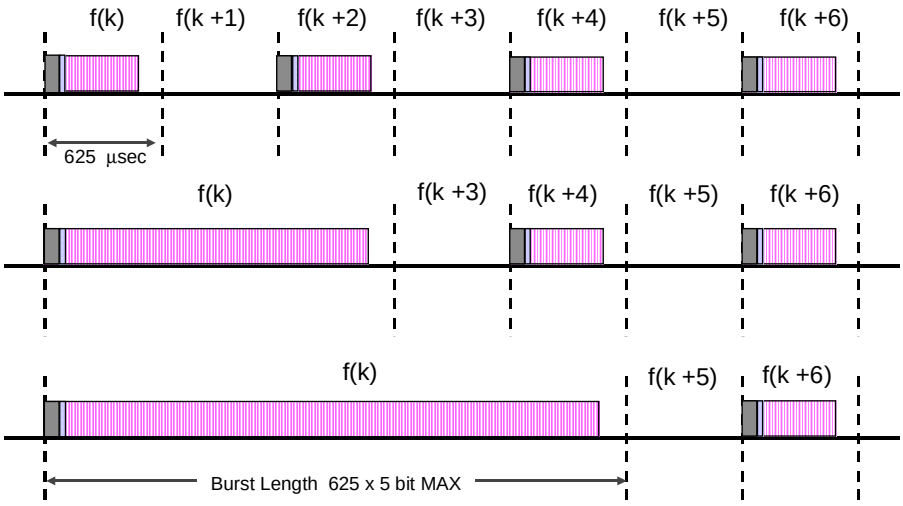
Payload (0 to 2744 bits)
Packet area of variable length where payload data is normally transmitted. The maximum length of the payload is defined so that at least 220µs are available between the end of the payload and the change of the timeslot for the synthesizer of the Bluetooth signal to settle to the next frequency channel.

Frequency hopping and time multiplex

A Bluetooth subscriber always operates alternately as transmitter or receiver within a timeslot.



Multi-Slot Packets



Variable packet length for current packet type. Packets formats with different error correction are used depending on the application

7.11 E-MAIL Introduction

7.11.1 Presentation

Philips Fisio 820 & Fisio 825 feature an e-mail application allowing you to send and receive e-mails. It is same functions with the e-mail used on PC. It is very similar. You can receive, retrieve or send email (text) and with picture attachment (the maximum mail size is 10Kb)

E-mails can then be forwarded to someone else and attachments stored in your mobile phone.

This feature is subscription-dependent and specific Internet Service Providers (ISP) : your mobile phone readily supports them if they are included in your subscription.

Philips Fisio820 supports 2 sets of E-mail addresses parameters. Mailboxes 1 and 2 feature the same settings and options. Configuring them differently will allow you to have two different E-mail accesses/addresses from your mobile. Thus you can have one private address and one for business purpose for example.

7.11.2 Protocols / Network

Protocols :

Philips Fisio820 & Fisio 825 have an Email application that supports POP3 (for receiving email) and SMTP protocols (for sending) to access Internet E-mail servers supporting these protocols. POP3 and SMTP are widely supported by Internet Service Providers and Intranet companies.

Network :

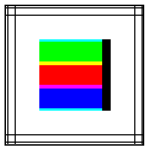
You use E-mail with GSM or GPRS networks. So you must configure the GSM or/and GPRS access networks setting like W@p configuration.

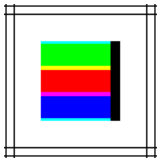
8.0 TEST PROCEDURES

8.1 Initial Functional Check for Fisio 820 & Fisio 825

Before to start the test procedure check the appearance of the humidity sticker located at the back of the phone. Refer to *CASES OUT OF WARRANTY GSM* document to identify if the product is in/out of warranty.

8.1.1 Insert the Test Production Card into the SIM Reader at the back of the cellular phone and clip a charged battery on the phone.
8.1.2 Press the «ON» button for 2 seconds at least and the LCD will show a message which contains information of FA (Final Adjustment) status and 12NC.
8.1.3 Follow the instructions as mentioned below :

Step	Procedure		Observation
1	Press Key 1 Press Key 1 again.		Continue Buzzer signal MANUAL Left corner displays 00 AUTOTEST 00 KBD EEPROM
2	Press key 2 (Audio loop local effect) Press key 2 again		"LocalEffect" " XX XX XX" " XX XX" MANUAL Left corner displays 01 AUTOTEST 00 KBD EEPROM
3	Press key 3 Audio loop test (Speak to Mic and listen echo from Speaker) Press key 3 again		"AUDIO EEP" " xx xx xx xx " " xx xx xxxx " MANUAL Left corner displays 02 AUTOTEST 00 KBD EEPROM
4	Press key 4 Press key 4 again		"KEY WITHOUT TEST" MANUAL Left corner displays 03 AUTOTEST 00 KBD EEPROM
5	Press Key 5 (Checkerboard test) Press Key 5 again		Checkerboard 1 pixel on  MANUAL Left corner displays 04 AUTOTEST 00 KBD EEPROM

6	Press Key 6 Press Key 6 again		Checkerboard 2 pixel on  MANUAL Left corner displays 05 AUTOTEST 00 KBD EEPROM
7	Press Key 7 Press key 7 again		Checkerboard 3 pixel on  MANUAL Left corner displays 06 AUTOTEST 00 KBD EEPROM
8	Press key 8 (Eeprom Status) Press Key 8 again		"EEPROM STAT" H-0000-30-00 H-0000-00-00 SimLk XXXXX (Sim lock Status) MANUAL Left corner displays 07 AUTOTEST 00 KBD EEPROM
9	Press Key 9 Product information Compare information with label printed on back case Press key 9 again		"PROD INFO" "XXXXXXXXX" (PN Number) "XXXXXXXX" "XXXXXXXX" *VY made in Le Mans* *SA made in Singapore* *EO made in Shenzhen* MANUAL Left corner displays 08 AUTOTEST 00 KBD EEPROM
10	Press key 0 Press key 0 again		"ADC MEASURES" "XXXX XXXX" "XXXX XXXX" MANUAL Left corner displays 09 AUTOTEST 00 KBD EEPROM

11	Press * (IMEI Test) Compare IMEI with label printed on back case Press * again		**"IMEI TEST"** " XXXXXX 50 XXXXXX X" *06 made in Singapore* *50 made in Le-Mans* *69 made in China* MANUAL Left corner displays 12 AUTOTEST 00 KBD EEPROM
12	Press # (FA Status) Press # again		"FA/12NC" FA GOOD (Must be good) X XXXXXXXXXXX (12NC) MANUAL Left corner displays 13 AUTOTEST 00 KBD EEPROM
13	Press Key C Press Key C again		"KEY WITHOUT TEST" MANUAL Left corner displays 18 AUTOTEST 00 KBD EEPROM
14	Press Key  (Melody Test) & vibrator Press Key again		"MELODY TEST" User Melody should be heard and vibrations felt MANUAL Left corner displays 14 AUTOTEST 00 KBD EEPROM
15	Press Key  Press Key again		"KEY WITHOUT TEST" MANUAL Left corner displays 15 AUTOTEST 00 KBD EEPROM
16	Press Key  Press Key again		"MEMORY TEST" " XXXXXXXXX " " XXXX XXXX " " RAM OK " MANUAL Left corner displays 16 AUTOTEST 00 KBD EEPROM
17	Press Key MENU Press Key MENU again		" PAGE " " SELECTION" " XX " MANUAL Left corner displays 11 AUTOTEST 00 KBD EEPROM

Advanced autotests (used generally for troubleshooting)

Press MENU key to display “PAGE SELECTION.”

PRESS Key "1" to change test page to "01", then press  .
(default test page is 00)

Key	Functional test		Observation
7	ANTENNA TEST		" ANTENNA TST" " Tx Level 10" (use keys 2 & 8 to change level) " CHANNEL 0055" (use keys 4 & 6 for channel selection) To switch DCS / GMS/ EGSM, press "C" key to toggle
8	Rx Power Level		Use to detect Receiving Channel and its power level
0	Hand Free Carkit test		Use this with PHILIPS headset to test the auxiliary test
#	Defenses Code		Display shows Defenses 02 Bloc. 02 TAT5 Block B5B401C0 Use this to read out software hang issues or drop call or any issue relating to network as well.

8.1.4 If any of these steps failed functional, please refer to Chapter 10.

8.1.5 Perform visual check on battery connectors, car kit connectors and casing. If corrosion or deform send to NSC for repair.

8.1.1 If the product is good, it is considered as a NFF (No Fault Found) product.

All the NFF products must be directly returned to the customer.

8.2 RF Test

8.2.1 The Test SIM Card “SP” must be inserted in t he phone before starting the tests.

8.2.2 Set the equipment as shown on the picture in chapter 6.2

8.2.3 Set RF losses as following (tested with antenna coupler):

	Channel	RX	TX
900 MHz	63	6,0	6,4
	3	5,0	6,6
	62	6,0	6,4
	123	7,0	6,2

	Channel	RX	TX
1800 MHz	598	20,5	25,5
	512	18,0	33,5
	700	20,5	25,5
	884	23,0	17,4

8.2.4 The following operations must be done:

- Synchronization/Registration
- Call set up from the mobile
- Voice loopback (to check the sound quality)
- Call release
- Call set up from tester
- Call release from tester

- GPRS attach
- GPRS detach

those two operations have to be added when the radio tester allows it

8.2.5 The following parameters must be checked in TCH loop mode :

Emission parameters :

- Power level
- RMS phase error
- Peak phase error
- Frequency error
- Power ramping
- Timing Advance

Reception parameters :

- Rx level
- Rx quality
- BER (Byte Error Rate)
- FER (Frame Error Rate)
- BLER (Block Error Rate) *(can be replaced by a BER test at -104dBm)*

Generally the test sequences built inside the testers will be used to check the mobile. You must assess that the test sequences limits comply with the standard specifications and defined test plan.

8.2.6 Radio test plan

Find below all the measurements which have to be done by test sequences.

Synchronization/Registration	To be checked
Call set up from the mobile	To be checked
Voice loopback (to check the sound quality)	To be checked
Call release	To be checked
Call set up from tester	To be checked
Call release from tester	To be checked
Dualband handover	To be checked
GPRS attach	To be checked
GPRS detach	To be checked

	Power level	Measurements	GSM Channels Low	GSM Channels Mid	GSM Channels High	DCS Channels Low	DCS Channels Mid	DCS Channels High
TX measurements	High level	Power level	X		X	X		X
		RMS phase error	X		X	X		X
		Peak phase error	X		X	X		X
		Frequency error	X		X	X		X
		Power ramping	X		X	X		X
		Timing advance			X			X
	Mid level	Power level	X		X	X		X
		RMS phase error						
		Peak phase error						
		Frequency error						
		Power ramping						
		Timing advance						
	Low Level	Power level	X		X	X		X
		RMS phase error						
		Peak phase error						
		Frequency error						
		Power ramping	X		X	X		X
		Timing advance						

	RF Level	Measurements	GSM Channels Low	GSM Channels Mid	GSM Channels High	DCS Channels Low	DCS Channels Mid	DCS Channels High
RX measurements	-85.0 dBm	Rx level	X		X	X		X
		Rx qual						
		BER (Byte Error Rate)	X		X	X		X
		FER (Frame Error Rate)						
	-102.0 dBm	Rx level	X		X	X		X
		Rx qual	X		X	X		X
		BER (Byte Error Rate)	X		X	X		X
		FER (Frame Error Rate)	X		X	X		X
	-104.0 dBm	BLER*(Bloc Error Rate)		X			X	

BER Measurements on 104 frames = 8200 bits minimum
* BLER tests on 200 blocs only
In case the Radio tester is not GPRS capable replace this test by a BER test at -104.0dBm

- When using a wired test solution (via RF cable), don't forget that it is mandatory to measure the power level radiated by the antenna (powermeter recommended). It is the only way to ensure good contact between antenna and main board.

  This warning doesn't apply when using an antenna coupler.

8.2.7 GSM Specification (900 Mhz)

Test parameter	Channel	Level	Standard specifications
EMISSION			
Phase Error RMS	1, 62, 124	5, 10, 15	0 to 5 degrees
Phase Error Peak	1, 62, 124	5, 10, 15	-20 to +20 degrees
Frequency Error	1, 62, 124	5, 10, 15	-90 Hz to +90 Hz
Power Ramping	1, 62, 124	5, 10, 15	Mask
Modulation	1, 62, 124	5, 10, 15	Mask
Switching Transients	1, 62, 124	5, 10, 15	Mask
Timing Advance	1, 62, 124	5, 10, 15	+/- 1.00 bit
Power Reading			
Output Power Average	1, 62, 124	Level 19	5 +/- 5 dBm
	1, 62, 124	Level 15	13 +/- 3 dBm
	1, 62, 124	Level 10	23 +/- 2 dBm
	1, 62, 124	Level 5	33 +/- 2 dBm
RECEPTION			
Rx Level	1, 62, 124	-102 dBm	4 to 12
Rx Qual			0 to 1
Rx Level	1, 62, 124	-85 dBm	21 to 29
Rx Qual			0
Rx Level	1, 62, 124	-60 dBm	46 to 54
Rx Qual			0 to 0
TCH LOOP			
SENSITIVITY			
BER	1, 62, 124	-85 dBm	0%
FER	1, 62, 124	-85 dBm	0%
BER	1, 62, 124	-102 dBm	< 2.44%
FER	1, 62, 124	-102 dBm	0%

If a phone is out of the specifications, it must be sent to the Repair Center.

8.2.8 PCN Specification (1800 Mhz)

Test parameter	Channel	Level	Standard specifications
ÉMISSION			
Phase error RMS	512, 700, 885	0,5,10	0 to 5 degree
Phase error Peak		0,5,10	-20 to +20 degree
Frequency Error		0,5,10	-180 Hz to + 180 Hz
Power Ramping		0,5,10	Mask
Modulation		0,5,10	Mask
Switching Transients		0,5,10	Mask
Timing Advance		0,5,10	+/- 1.00 bit
Power reading			
Output Power		Level 0	30 +/- 2 dBm
		Level 10	10 +/- 4.0 dBm
		Level 15	0 +/- 5.0 dBm
RECEPTION			
Rx Level	512, 700, 885	-102dbm	4 to 12
Rx Qual		-102dbm	0 to 1
Rx Level	512, 700, 885	-85dbm	21 to 29
Rx Qual		-85dbm	0
Rx Level	512, 700, 885	-60dbm	46 to 54
Rx Qual		-60dbm	0
TCH LOOP			
SENSITIVITY			
BER	512, 700, 885	-85dbm	0%
FER	512, 700, 885	-85dbm	0%
BER	512, 700, 885	-102dbm	2.44%
FER	512, 700, 885	-102dbm	0%

If a phone is out of the specifications, it must be sent to the Repair Center.

8.2.9 GPRS Specification (900Mhz & 1800 Mhz)

RADIO : GPRS part				
	Class 4	Class 10	Class 12	§ GSM 11.10
Rx				
Rx Levels	idem GSM 900/1800			21.5
Rx Levels Linearity	idem GSM 900/1800			21.5
Sensivity				
BER/FER -85dBm (8200 samples)	idem GSM 900/1800			14.2.1
BER/FER -102dBm (8200 samples)	idem GSM 900/1800			14.2.1
BLER CS-1 (-104dBm)	< 10% on 400blocs with 20 blocs errors			14.16
BLER CS-2 (-104dBm)	< 10% on 400blocs with 20 blocs errors			14.16
BLER CS-3 (-104dBm)	< 10% on 400blocs with 20 blocs errors			14.16
BLER CS-4 (-101dBm)	< 10% on 400blocs with 20 blocs errors			14.16
Tx				
Phase error RMS	idem GSM 900/1800 on last timeslot			13.16.1
Phase error Peak	idem GSM 900/1800 on last timeslot			13.16.1
Frequency error	idem GSM 900/1800 on last timeslot			13.16.1
Output Power Levels	GSM 900/1800 on all timeslot and conf.			13.16.2
Power Ramping	GSM 900/1800 on all timeslot and conf.			13.16.2

If a phone is out of the specifications, it must be sent to the Repair Center.

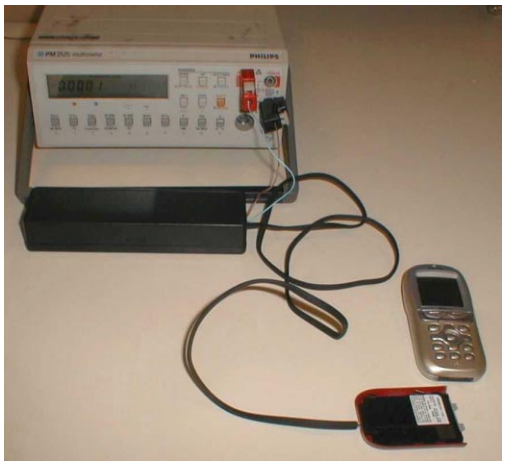
8.2.10 Bluetooth Specification (2,4Ghz)

Tx Bluetooth	
Power Peak	Ppk < 200 mW [23 dBm]
Power Average [Class 1]	Pav > 1 mW [0dBm]
Power Average [Class 2]	0,25mW [-6dBm] < Pav < 2,5mW [4dBm]
Power Average [Class 3]	Pav < 1 mW [0dBm]
Power Density	PD < 100mW [20 dBm] per 100 kHz
Power Control	2 dBm ≤ Step Size ≤ 8 dBm
	at minimum power step : Pav < 4 dBm [for Class 1]
Initial Carrier Frequency [Accuracy]	ftx-75 kHz ≤ fo ≤ ftx+75 kHz
Carrier Frequency Drift	One slot packet :20 kHz to 25 kHz
	Three slot packet : 30 kHz to 40 kHz
	Five slot packet : 30 kHz to 40 kHz
Maximum Drift Rate	≤ 400 Hz / µs
Modulation Characteristics [Deviation]	+/-140kHz≤Δf1max≤+/-175kHz [11110000..-Bit pattern]
	and 115kHz ≤ Δf2max [101010…-Bit pattern]
	and 0,8 ≤ Δf2max / Δf1avg

8.3 Battery Charging (IGN : Ignition) / Current Consumption

8.3.1 Charger detection / Battery charging

- Plug the transformer unit into an easily accessible AC power socket.
- Insert the Test production Card in the mobile, plug a dummy Battery with a multimeter added (see picture) for current measurement.



- Plug the connector of the charger into the right socket at the base of the transceiver
The battery symbol should indicate the state of charge :

- Bars moving - means the battery is being charged.
- Steady - means the battery is fully charged.

If the battery is totally discharged, the battery icon will start scrolling 2 to 3 minutes only after being connected to charger.

After few seconds a charge current of 200 < I (mA) < 600 have to be observed

- Unplug the charger

8.3.2 Current consumption

a) Check current_OFF :

When the mobile is OFF the current measured must be : 0.05 < I (mA) < 0.23

b) Check Current_ON

- Turn the mobile on.

When the mobile is ON (backlight activated)

For Fisio 820 :

the current measured must be : 150 < I (mA) < 190

For Fisio 825 :

the current measured must be : 200 < I (mA) < 240

This measurement has to be operated during first seconds after switch on.

When the backlight goes down (after 15 sec approx.), the current measured must be : 15 < I (mA) < 19 for both models

c) Check Current_maximum

- Press on OK to activate Page selection. Press the Key 1 and then OK to select Page 1
- Press on Key 7 to select Antenna test. Press on the Key 8 as much times as necessary to reach level 5. (The mobile is now set at his maximum emission level)

When the mobile is emitting (backlight OFF) the current measured must be : 195 < I (mA) < 350

- Remove the battery.

- Gently slide the card out away from the Product

8.4 W@P Test Procedure

With regard to the mobile phones only four things can prevent the W@P applications to operate properly :

- The Mobile Phone is not W@P able
- Registration problem (W@P & data/fax options should be needed depending on the operator)
- A bad configuration (wrong W@P parameters)
- The mobile has a deficient Radio part.

So that's why to solve W@P problems the following process must be observed.

- Ensure about the W@P capability of the mobile phone.
- Interrogate the customer regarding his operator registration.
- Check with the customer that all the needed parameters are stored in the phone memory
  (a quick test has to be performed to check memory reliability)
- Perform a functional and a radio test of the mobile phone.

The W@P Test procedure as to be performed only if the customer complains about W@P applications.

8.4.1 Functional and radio test

Before starting the W@P procedure it must be assumed that the functional test and the radio test have been done successfully.

(Refer to chapters 8.1 & 8.2)

8.4.2 W@P parameters settings (to be checked using the Operator Simcard)

Press MENU

Select WAP

and Press

Select Settings

and press

Select Access settings

And press

The 3 available w@p configurations are displayed

Select the w@p configuration you want to check and press Details and then press GSM Settings or GPRS Settings to display wanted configuration. Ensure that the parameters are correct.

If the parameters are not the ones expected you may want to modify them. To do this, return to the Access Setting menu by pressing on Key C as many time as necessary.

and Press

Select Change

and Press

The network used to bear the w@p information can be selected as following

Select Bearer

and Press

Three options are possible concerning w@p bearer : GSM GPRS GPRS first

Select the most suitable one according to your network subscription.

Otherwise from Change menu following parameters can be modified : Homepage GPRS settings GSM Settings

Home page parameter (URL):

This parameter is a string of characters (ASCII) used to identify the protocol (eg: HTTP), the location of the server (eg: WAP.Philips.com), the port number (optional if = 80) and the access path (eg:/glossair/glossair.htm).The end user can use the operator's home page or set up another one in the mobile phone. The URL can be set as follows:

and Press

Enter the home address

and Press

GSM Settings

GSM settings consist in many parameters :

Phone number parameter:

This parameter is the phone number required to perform a data transmission to the Internet Service Provider (ISP) and given by the operator. ISP use either analogue or numeric interfaces to connect to the subscriber. If the operator uses a digital interface but the phone number is set in the analogue area of the phone, data connection will fail (and vice versa).

Login parameter:

This parameter is provided by the operator.

Password parameter:

This parameter is provided by the operator.

Gateway parameter (IP):

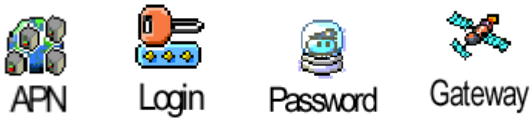
An IP address is used to recognize computers connected to a network. It is made up of 4 * 3 digits (8 bits) and separated by points. Each computer has its own IP address. For W@P application, IP address is used to access the gateway. This parameter is provided by the operator.

Inactivity time:

This parameters allows you to manage an inactivity time period after which the phone automatically ends up the w@p session and returns to idle mode screen.

GPRS Settings

GPRS settings consist in many parameters :



APN Number:

This parameter sets the address of the external data network. You want to connect to, a text string or an IP address used to establish the connection with your w@p service provider (ISP).

8.4.3 W@P Application launch

The phone is now ready to access to the W@P Gateway. Please launch the W@P application to ensure it works properly.

8.4.4 Memory reliability

After recording the W@P parameters :

- Turn off the mobile
- Remove the battery
- Wait 5 seconds
- Clip the battery again
- Turn on the mobile
- Check that the parameters still present.

Error message during w@p connections are mainly due to incorrect parameters. The operator should be contacted before first use, in order to have the appropriate w@p and Gprs parameters.

8.4.5 W@P Error messages

Error messages may be displayed on the mobile phone screen. Some of these are listed next:

Network not responding:
This error message is displayed for various problems, such as:
Network cannot be reached (not enough reception bars).
Login and/or password are wrong.
Subscription does not allow W@P access

Server not responding:
Could be due to:
Bad IP address (gateway parameter).

Internet server is not enabled:
Could be due to:
Bad IP address (gateway parameter).

Not acceptable:
Could be due to:
Bad home page address (URL)

An internal gateway error prevents the gateway from fulfilling your request:
Could be due to:
Bad home page address (URL)

PROCEED http://phone.com
Could be due to:
Bad home page address (URL)

Error content exit size XXXX bytes:
Could be due to:
Too much data are coming to the phone.
Operator dependent.

Try later:
Could be due to:
Network cannot be reached (not enough reception bars).
Busy network.

Bitmap error:
Could be due to:
The content is not W@P; the image can not be displayed.

Note: The phone can not be switched off with ON/OFF key when W@P application is used. **It has not to be considered as a bug.**

8.4.6 W@P Exchange criteria

Exchanges for W@P problems should be **extremely rare** because the chances of having a defective mobile phone is small compared to the misuse of the customers. W@P is a software application and must be considered as such. From a hardware point of view, the Flash memory may have to be changed if W@P parameters cannot be saved but the probability of encountering this problem is near to zero.

The mobile phone has to be considered as a defective one only if the memory test or the functional & radio tests are wrong.

The points which have to be checked carefully with the customers are listed next:

* W@P parameters (phone not W@P locked) ➔ These parameters are very critical. If a letter, a sign or a number is wrong, W@P connection will fail.

* Covered area ➔ The end user should access W@P services with only 1 reception bar. In practice, it is assumed that more than 2 bars are required. For testing purpose, the help desk/ASC/NSC operator will have to ask the end user to test the phone in a well covered area (minimum of 3 bars).

* WAP phone ➔ A WAP phone is mandatory in order to access W@P services. However, the subscription is operator dependent.

* Call barring ➔ Call barring has to be cancelled (menu: outgoing/data calls)

* Hourglass icon ➔ If the end user can see the transmitting icon (after the hourglass icon) on the mobile phone, it means Internet access was successful. Hence, the mobile phone is working correctly.

* Roaming ➔ If the end user is in a foreign country, he may not be able to use the W@P feature or may have to change the W@P parameters (for example, use the analogue number instead of the ISDN one). The customer has to contact his/her operator for further information.

* Number of attempts ➔ W@P services may be accessed after several attempts depending on the covered area or the network status (busy). Obviously, this is not a case for exchange and the help desk/ASC/NSC operator will have to make sure that the end user has tried several times before diagnosing the problem.

* Impossible to display W@P pages ➔A W@P page may be displayed on the mobile phone screen of a competitor and not by the Philips transceiver. The help desk /ASC/NSC operator will have to explain that the W@P navigators are different. Sometimes, contents of particular pages can be decoded by a navigator and not by another (idem for Netscape and Internet Explorer).

8.5 Bluetooth Test Procedure

In order to communicate with different wireless device you will be using, Bluetooth feature of your mobile phone must be set in stand-by mode.

Press  and select Settings, BT Settings, Bluetooth On/OFF and press  .

Press  or  to change the duration time to 15 min. Then press  to confirm.

Bluetooth devices must first be paired to each other (e.g. the headset to your mobile phone) before being use.

Ensure that both the mobile phone and the headset are on and place then near each other (refer to the headset documentation for information on pairing).

Press  on your mobile phone and select Accessories, BT Headset, Detect. Ensure that the

headset is set in pairing mode (refer to the headset documentation) an press  on your mobile phone.

An animated icon appears on the screen, showing that your mobile is searching the headset. During pairing it is recommended that the mobile phone and the device you are using it with are no more than 1m./ 3ft. Apart, with no solid objects in between.

Pairing authentification should take place within 1 min.

Select in the list of detected devices the headset to be authentified and paired and press  .

Enter the pairing code supplied with your headset, then press  .

A pairing code (16 characters max.) , allows the mobile to identify and differentiate several devices from one another. The default paring code is usually 0000.

Once the mobile has found the headset, it displays its name and address. Press  to store this information : your headset is ready for use with your mobile phone.

To fulfill the test procedure make a call using the bluetooth headset.

Your mobile phone will NOT answer the Bluetooth connection requests of wireless devices if the stand-by duration time is set to "Never".
To turn Bluetooth Off is recommended when not using it, as it increases energy consumption.

8.6 E-MAIL Test Procedure

With regard to the mobile phones only two things can prevent the W@P applications to operate properly :

- A bad configuration (wrong E-mail parameters)
- The mobile has a deficient Radio part.

So that's why to solve E-mails problems the following process must be observed.

- Interrogate the customer regarding his Internet subscription and his Internet Service Provider.
- Check with the customer that all the needed parameters are stored in the phone memory (a quick test has to be performed to check memory reliability)
- Perform a functional and a radio test of the mobile phone.

The E-mail Test procedure as to be performed only if the customer complains about E-mail applications.

8.6.1 Functional and radio test

Before starting the E-mail procedure it must be assumed that the functional test and the radio test have been done successfully.

(Refer to chapters 8.1 & 8.2)

8.6.2 E-mail parameters settings (to be checked using the Operator Simcard)

First Press MENU key and select the E-mail icon 

and press  .

Select a mailbox (Mailbox 1 for example) and press  .

Select Settings 

and press  . It will display 3 settings groups :

Network Access

All this parameters contained in this menu are operator and/or subscription dependent.

From this menu following parameters have to be set :

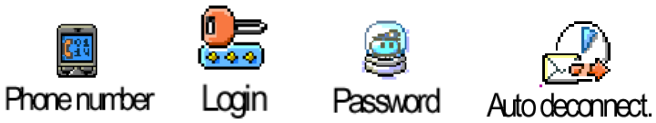
Bearer

Allows you to select the type of network used when launching a connection to the e-mail server.

• GSM
Your mobile will only use the GSM network for e-mail connections.
• GPRS
Your mobile will only use the GPRS network for e-mail connections.
• GPRS first
Your mobile will first try to connect to the GPRS network, then to the GSM network if the GPRS network isn't available when launching an e-mail connection.

GSM settings

The GSM settings menu includes the following parameters which have to be checked



It is the same configuration as Wap GSM Settings. (See Chapter 8.4.2) :

• Auto disconnection
Allows you to select an inactivity time period after which the phone automatically disconnects (if a connection was is progress) from the network.

GPRS settings

The GSM settings menu includes the following parameters which have to be checked

It is the same configuration as Wap GPRS Settings. (See Chapter 8.4.2) :

E-mail server

The E-mail server menu includes the following parameters which have to be checked

All these parameters have to be provided by the Internet Service Provider.

Advanced

The Advanced menu includes the following parameters which have to be checked

All these parameters have to be provided by the Internet Service Provider.

8.6.3 E-mail sending/receiving verification

Once all the parameters mentioned in the previous chapter have been checked. The mobile phone is ready to send/receive E-mails.

Check this by sending an E-mail from the mobile phone and checking the destination mailbox from a computer.

Or send an E-mail from a computer and check your mailbox from the mobile phone.

8.6.4 Memory reliability

After recording the E-mail parameters :

- Turn off the mobile
- Remove the battery
- Wait 5 seconds
- Clip the battery again
- Turn on the mobile
- Check that the parameters still present.

8.6.5 E-mail Error messages

Error messages may be displayed on the mobile phone screen. Some of these are listed in Chapter 8.4.5 W@P Error Message

8.6.6 E-mail Exchange criteria

Exchanges for E-mail problems should be **extremely rare** because the chances of having a defective mobile phone is small compared to the misuse of the customers.

Error messages during connections are mainly due to incorrect parameters: you should contact your GSM operator and your Internet Service Provider before first use, in order to have the appropriate GSM/GPRS parameters and mailbox parameters.

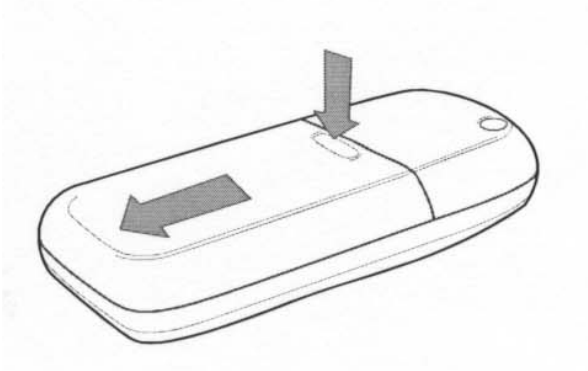
The mobile phone has to be considered as a defective one only if the memory test or the functional & radio tests are wrong

9.0 ASSEMBLY / DISMANTLEMENT PROCEDURES

9.1 Dismantlement

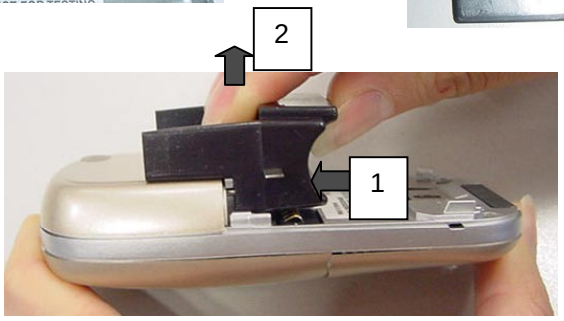
9.1.1 Take the product, remove the battery.

Press below the rubber (Philips logo) and slide the battery downwards



9.1.2 Remove the Antenna Ass'y

The antenna cabinet needs to be removed first in order to reveal two of the four screws, which secure the rear chassis.
Insert the three pins of the antenna cab removal tool into the three holes of the antenna cab. Press the tool against antenna cab until the catches are released, then lift antenna cab away from transceiver.



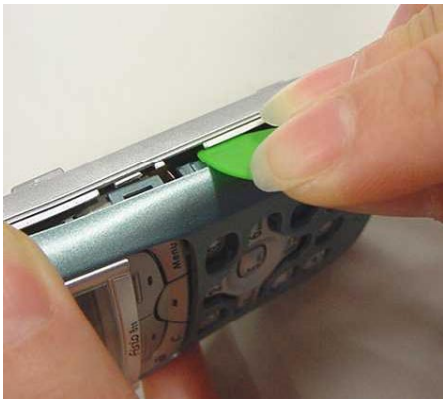
9.1.3 Remove the 4 screws

Remove the four screws on the chassis assembly

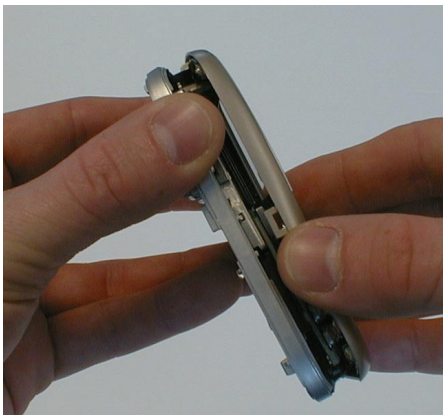
9.1.4 Open the Front Cabinet

Locate the slot at the middle, right hand side of the rear chassis. Insert the guitar pick between the front cabinet snap and the chassis, twist slightly to unlatch this side of the interlock.

Insert the guitar pick between the Front Cabinet and the Chassis, twist slightly to unlatch all the catches.



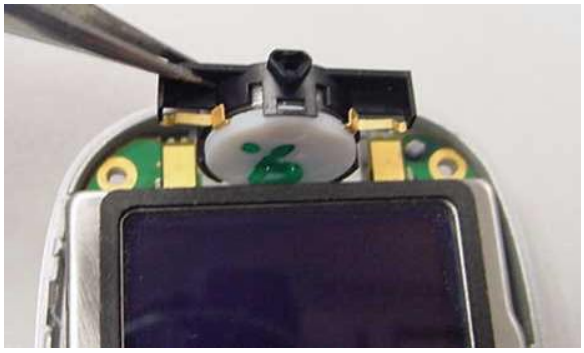
Then remove the Front Cabinet.



Since the LCD is not protected by the Front Cabinet & Windows Ass'y take care to not apply your fingers on it and keep it away form dust sources.

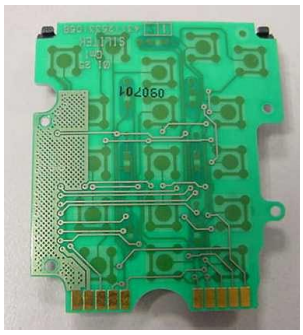
9.1.5 Remove the HP module (earpiece)

Remove the HP module from the Sub assembly.



9.1.6 Remove the keypad assembly

The keypad can be easily removed by lifting. Note that the keypad contact is via the zebra contact on the keypad holder and the copper pads at the back of the keypad, there is no connection via connectors.

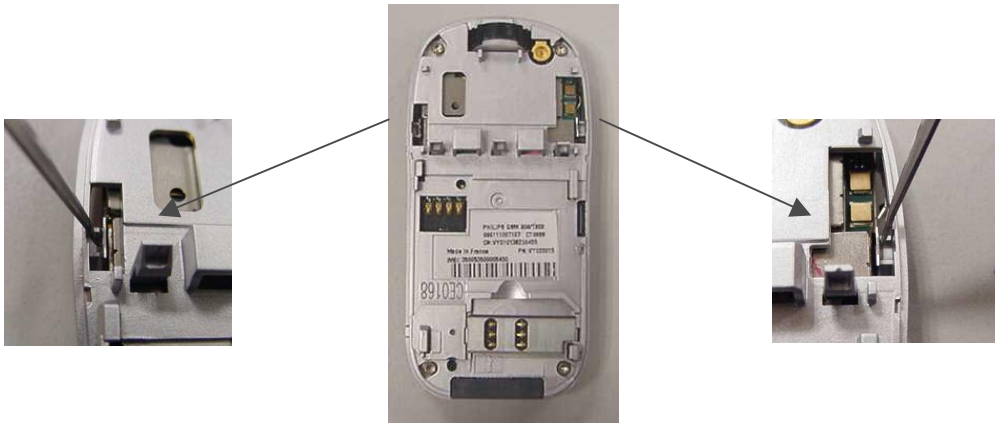


Take care to not apply your fingers on the copper areas and on the zebra contacts.

9.1.7 Separate the Sub Module form the Chassis Ass'y

The sub module is kept in place by the interlock on both sides of the LCD module.

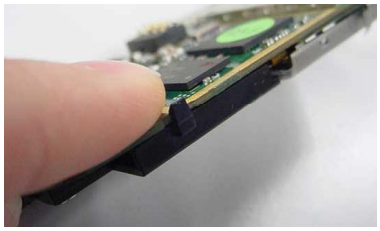
From the rear of the chassis, insert the guitar pit between the LCD's metal clip and the chassis, lightly push inwards to unlatch the clip.
Repeat for the opposite side.



From the front, remove the sub module from the chassis.

9.1.8 Removing keypad holder from Main Board

To remove the keypad holder, simply pull outwards at both the clips at the side of the keypad holder so that it is released from the PCBA main board.



Remove the microphone from the keypad holder

Using a tool or finger, push the microphone towards the back until it comes off the keypad holder

9.1.9 Removing the color LCD

Disconnect the LCD connector and the LCD assembly can now be removed from the Main Board.

The LCD must be handle carefully. Handle it by the edges. Do not put your fingers on the glass.

During repair operations , keep it in a dust free location to prevent from dust contamination and scratches.

9.1.10 Removing Battery Cover

Insert guitar pit/tip of a screwdriver, between the battery cover and the black battery cell assembly (near to the catch location) to unlock the three side catches on both sides and also the top two catches (below the battery catch).

9.2 Assembly

9.2.1 Attach the color LCD

Take a LCD Assembly and place it on the Main Board and fasten the connector to the LCD Connector which is located on the Main Board.

In case of replacement by a new LCD do not forget to remove the Peel-off from the LCD.

9.2.2 Replace Keypad Holder

Align the keypad holder below the LCD metal frame. Press firmly at both sides to make sure that the two side clips click on the Main Bord.

Note:
Ensure that zebra contacts sit nicely in place and that the microphone is attached to the keypad holder.
Also, make sure that zebra and microphone contacts are not corroded.

Check that zebra contacts and microphone are in place

9.2.3 Assembling rear chassis assembly

Please check that the Buzzer Gasket on the back of the Main Board is in place.

Buzzer Gasket

Align the Main Board on the Chassis assembly and press firmly on both sides of the LCD until it clicks onto the Chassis assembly.

Main Board should click from inside, onto the sides of the Chassis assembly.

9.2.4 Replacing the HP-module (earpiece)

Take an earpiece and insert it into the slot above the LCD module, making sure that the contact pins makes contact with the copper pads of the PCBA.

9.2.5 Replacing the keypad

Take a keypad and place it on top of the keypad holder. The keypad has a curvature near the bottom that will sit well above the microphone, this serves as a guide for the correct placement of the keypad.

9.2.6 Replacing the front cabinet

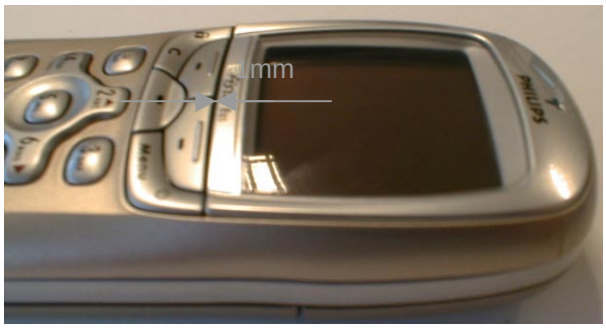
Check that the Bluetooth antenna is in place on the front cabinet (see diagram below). Reassemble the front cabinet by placing it on top of the module and ensuring that it snaps onto the rear chassis assembly at the sides.

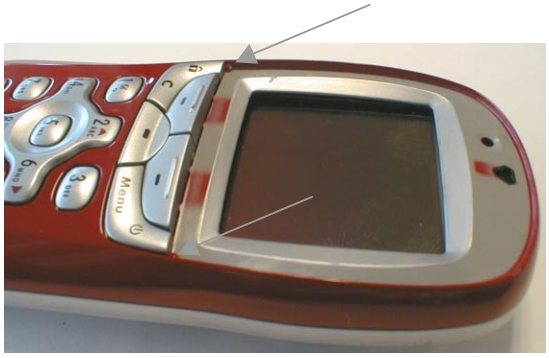
Secure the whole assembly by fastening the four screws on the rear.
Respect the Torque strength (0,18N/m +/-0.02)

Bluetooth antenna

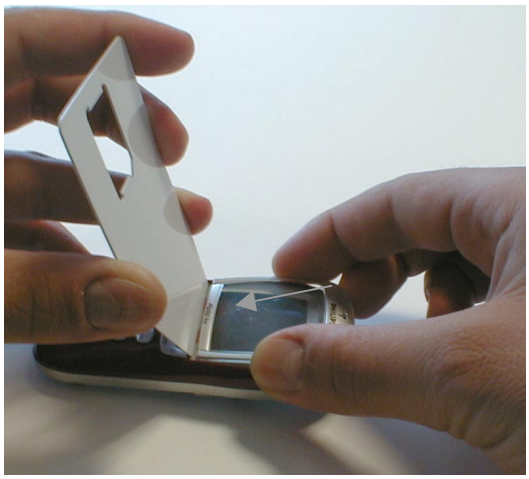
9.2.7 Assembling the bezel

To prevent from key blocked a interspace of 1mm must be observed between the keypad and the window.





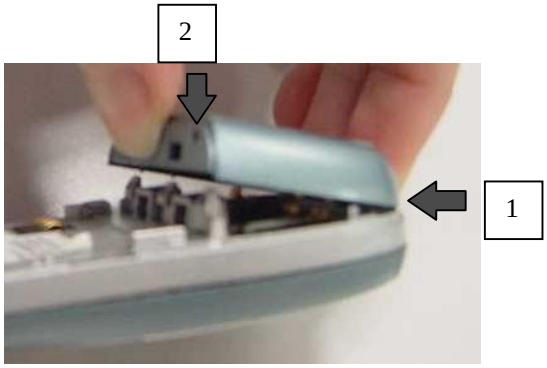
Two positioning tips are present on the Front Cabinet.
The window have to lean against those two tips.



Insert a Simcard holder as shown on the picture, then apply the window. Press the window against the Simcard holder and set it on the Front Cabinet. Then remove the Simcard holder.

9.2.7 Assembling the antenna cab

Fit the antenna cab from the top making sure that the top catch on the chassis catches onto the top of the antenna cab, then press the antenna cab firmly until the three bottom catches snaps onto the rear chassis.



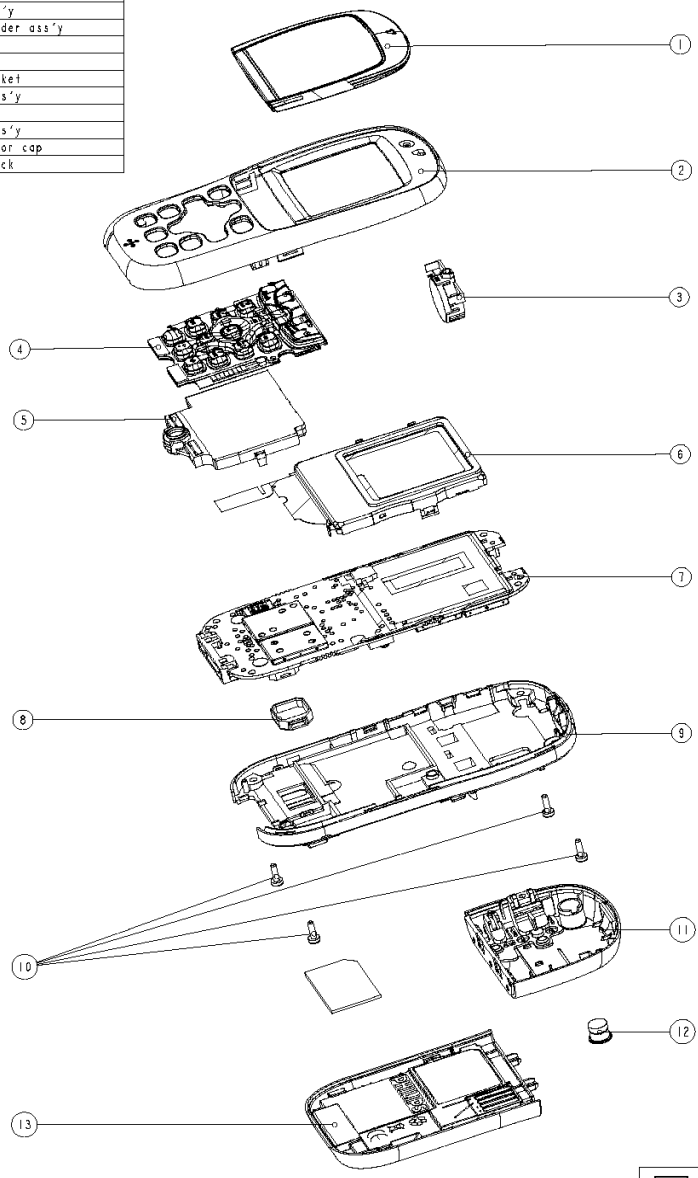
9.8 Replacing the Batter Cover

Insert the battery cell into the bottom of the battery cover. There are two tabs on the inside of the battery cover, which should be concealed under the battery cell. Then, press the battery cell against the battery cover so that all the top and side catches locks tightly.

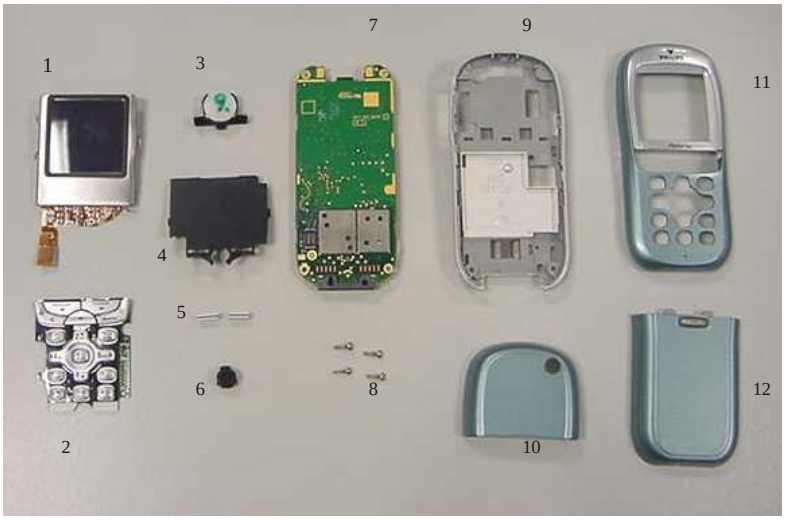
If changing to a new battery cell, please ensure to paste on a new battery label or if replacing the battery cover, please paste on a new rubber friction pad.

9.3 Exploded view of the transceiver

N°	Designation
1	Window ass'y
2	Front housing ass'y
3	HP module
4	Keypad ass'y
5	Keypad holder ass'y
6	LCD ass'y
7	PCB ass'y
8	Buzzer gasket
9	Chassis ass'y
10	Screws
11	Antenna ass'y
12	RF connector cap
13	Battery pack



ECHELLE : 1.000
DATE: 2001-03-21
EMETTEUR: J.CHEYNET
WAB-EXPLODED-VIEW



1. Color LCD
2. Keypad
3. HP Module
4. Keypad Holder
5. Zebra contact
6. Microphone
7. PCBA main board
8. Screws
9. Chassis Assembly
10. Antenna Cab
11. Front Cabinet
12. Battery

10.0 SOLUTIONS IN CASE OF PROBLEMS DURING THE TESTS

Under no circumstances the phone have to be disassembled to fix a defect detected during the test procedure on level 1.

9.1 The phone does not switch on.

- Check the tactile feeling of the “ON/OFF” button.
- Remove the battery. Check that both the connectors of the phone and those of the battery are not damaged.
- Clean the connectors.
- Plug the battery again, making sure that it is securely fitted. Charge the mobile until the icon has stopped flashing. Then unplug from the charger and attempt to switch the mobile on.

If it still does not switch on. If the failure can’t be found out then dismantle the product and swap the board.

9.2 Charge does not start or no detection of the charger. (refer to chapter 8.3)

- Check the charger contacts for dust or missing pins.
- Check the mobile connector.
- Remove the battery. Check that both the connectors of the phone and those of the battery are not damaged.
- Check the charger individually with a reference mobile. If the charger works properly try to charge the customer mobile with a reference battery.

If neither of the battery and the charger can be incriminated, dismantle the mobile change the battery connector. If the problem remains, swap the board.

9.3 The display shows “No SIM card. Please insert your SIM card.” or “SIM FAILURE”

- If the SIM card cannot be inserted, check for any foreign part and try to remove it.
- Check the SIM Card connector. All the contacts must be at the same level. Make sure that there is no dust on the connector contacts and the SIM card contacts.
- If the test SIM card can be detected but the message “SIM Failure” remains on the customer’s card, his card must be damaged. Ask him to contact his network operator.

Otherwise dismantle the product change the Simcard connector. If the problem remains, swap the board.

9.4 Display problems

Contrast, icons and matrix of the display can be checked with the test SIM card by pressing keys ”5”, “6” and “7” . If everything works in test configuration that means that a phone setting is disabled or does not suit well. It can be solved in the phone menu.

Otherwise dismantle the product change the LCD. If with a new LCD the problem remains, swap the board.

9.5 Buzzer problems

Buzzer tone can be checked with the test SIM card by pressing key “1” and “Left arrowhead”.
- If it does not sound properly dismantle the mobile change the Buzzer. If the problem remains swap the board.

9.6 No sound in Loudspeaker

The sound from the loudspeaker can be checked with the test SIM card by pressing key “3”.

- Check the microphone and the earpiece, If needed dismantle the product change the loudspeaker then the microphone. If the audio problem cannot be solved, swap the board.

9.7 Communication problems

- Sound quality can be checked in audio loop test (sound distortion, whistling, echo, …)
- If the mobile passes the radio tests successfully, we can assume that the phone works properly. The customer must check the coverage area of his network operator or that he does not use the phone in a radio shadow (outside the coverage area, in a tunnel or between tall buildings, …)

- If the mobile does not pass the radio tests, swap the board.

9.8 Keyboard problems

-The keyboard can be checked with the test SIM card.
- If a key or a row does not respond, check the keyboard. If needed dismantle the product change the keypad or the keypad holder (including zebra connectors) . If the problem remains, swap the board.

9.9 Problems to send SMS messages

Check the Center number. It may be empty or wrong.

11.0 RECOMENDED PART LIST CT9888 FISIO820

See File " FISIO 820 Lvl2 Components List.pdf " under the Internet Web Site
http://philipscscc.soft2you.net/ in " Technical Support \ Component List \ Wireless \ Fisio 820 " section

12.0 RECOMENDED PART LIST CT9889 FISIO825

See File " FISIO 825 Lvl2 Components List.pdf " under the Internet Web Site
http://philipscscc.soft2you.net/ in " Technical Support \ Component List \ Wireless \ Fisio 825 " section

ANNEX 1

PHILIPS CONSUMER COMMUNICATIONS
Customer Services
New Product & Measurement

PHILIPS

IRIS REPAIR CODING SYSTEM

An Iris code is 4 digits with the following description :

The code '1000' is used for No Fault Found

Condition code

1-Constant
2-Intermitent
4-Two hours after switch on.

		1	NO ACTION	2	LEVEL	3	QUALITY	4	NOISE	6	PHYSICAL PROBLEMS	7	SPECIAL FUNCTIONS	8	OTHER CONDITIONS
1	GENERAL		**Power problem**		**Charging problem**		**Display function problem**				**Physical damage**		**General function problem**	185	**Special requirements**
		117	Short battery life	121	Does not charge battery	136	Character/pixel absent			166	Damaged plug or socket	171	Faulty clock function	18Z	Symptom not available
		119	Does not switch on			13B	No backlight			169	Defective aerial	178	Faulty memory function		
		11B	Switch on/off recurrent							16G	Broken LCD	17F	W@P function not operable		
		11X	Other Pow Sup problem							16X	Other Physical damage				
2	COMMUNICATION		**No reception**	**220**	**Reception level problem**		**Transmission problem**	**240**	**Noisy or distorted audio**				**Special communication problem**		
		21A	Drops calls			231	No emission	244	Echo			277	No dial tone		
						234	No radio link between Handset & Base [1]					278	No buzzer ring		
												279	Not registering		
5	AUDIO	**510**	**No audio**		**Audio level problem**					560	General problem with Answering machine. [1]		**Poor special audio function**		
				521	Low audio level							57A	Hands-free problem [1]		
6	MECHANISM		**No mechanical**						**Mechanical noise**						
		61B	Vibrator not operable					648	Foreign parts inside						
		61D	Pilot/compass key not operable												
7	DATA PROCESSING		**No data processing operation**		**Faulty data processing**								**Special data processing function problem**		**SIM card problem**
		715	No keyboard operation	721	Charge on i/c calls [2]	730	Excessive Balance [2]					77A	Defective CLI [1]	781	SIM blocked [2]
		72B	No subscription [1]	725	Contact your dealer [2]							775	Tariff update failure [2]	782	IMSI Failure [2]
														783	Does not read SIM card
														785	SIM Error 48xx

[1] In Green, special code for cordless products.
[2] In Red, special code for Cellnet returns

REV 02 - JULY 2000.

PCC/YY/660/O/IRIS CODE TABLE/0011/MCH/LTA