



LEVEL 2 SERVICE

FA9M030010

Trium

GALAXY ASTRAL GEO GEO WAP (DUAL BAND)

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	I	D :Ajout ASTRAL et GEO	07/99			
	O	E :Ajout Download Perso	07/08			
	N	F :Ajout Charg. measurements	01/00			
	S	G :Ajout GEO WAP	04/00			


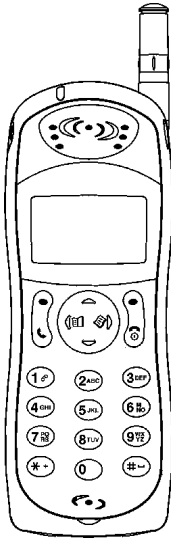
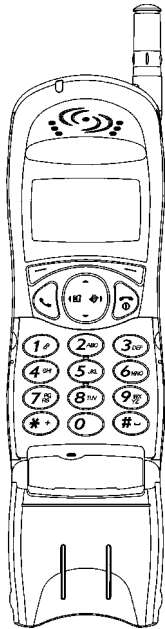
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1 General Description

The handportable cellular telephone described here is designed for use in a E-GSM/DCS network. This phone operates and complies with the ETSI GSM phase 2 specifications. Standard kit includes following items:

- Transceiver (retractable antenna type)
- Battery pack 900 mAh (NiMH type).
Reference : FZA0001A
- AC/DC Adapter for battery rapid charging

MODEL	GALAXY	ASTRAL	GEO
	 <p>Size : 135 x 48 x 27 Weight : 145 g</p>	 <p>Size : 135 x 48 x 26 Weight : 145 g</p>	 <p>Size : 135 x 48 x 27 Weight : 145 g</p>
COLOR	Dark grey Blue mid Wine red Orange SU Grey silver	Bright blue Bright green Dark blue Pale blue Green Silver	Sunspice Golden bronze Royal blue

Speech codec :

- The mobiles M4 uses a speech codec which is able to switch from Half Rate(HR) to Full Rate(FR) or to Enhanced Full Rate(EFR) according to network and the software and settings version.
- Enhanced Full rate (EFR) allows better voice quality at same rate as Full rate.
- Half rate (HR) is coding on 6.5 kbytes/sec (1/2 than Full rate). The network may put two customers on one timeslot. Each customer will use this timeslot every two frames.

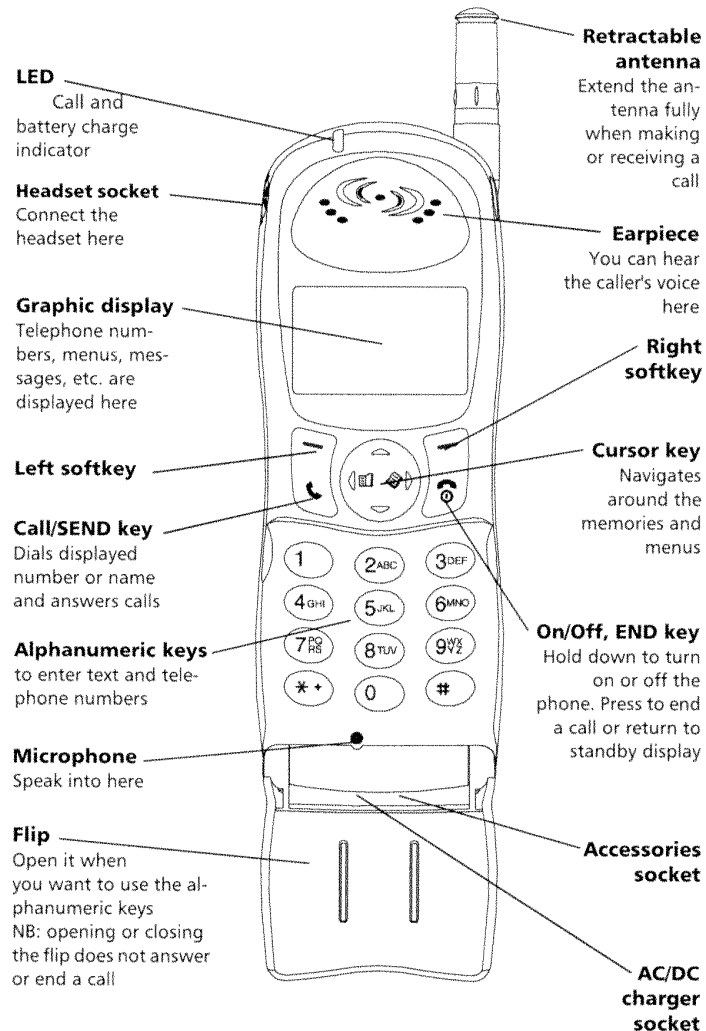
Main features :

- 150 hours idle time and 3 hours conversation time
- Graphic LCD
- Data fax function included

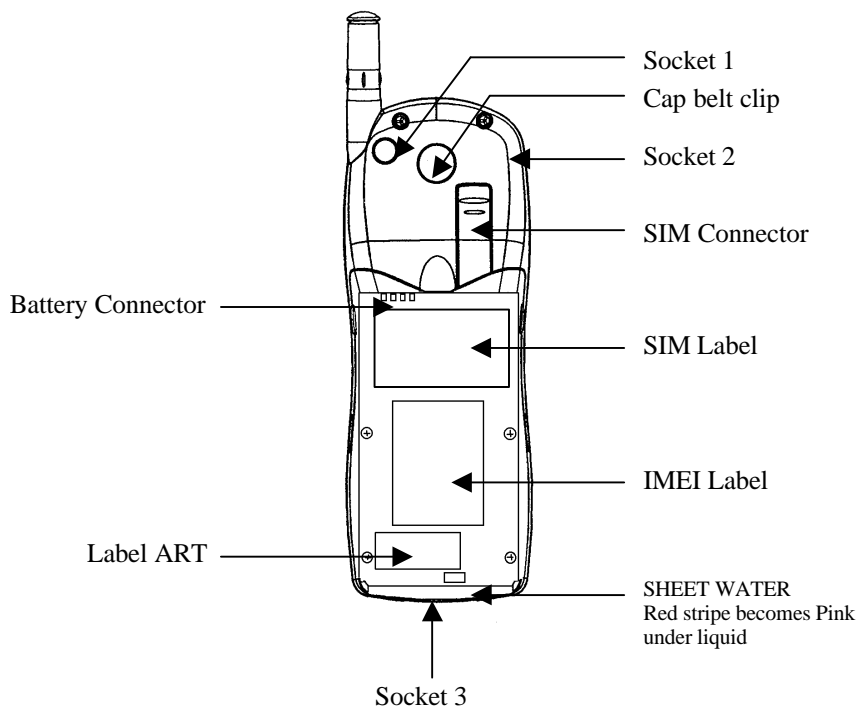
2 Main Features of Transceiver.

2.a Description of transceiver.

The phone at glance



For M4 family, test modes will not be directly possible from the mobile. Indeed, relevant software will be totally available on PC only. Nothing about test modes should remain inside the mobile to save memory and software development.



Three sockets are available on the main unit :

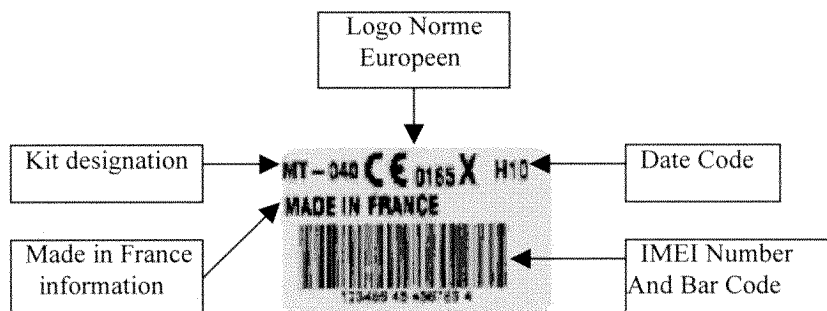
Socket 1 : Antenna cable for RF information.

Socket 2 : Headset socket.

Socket 3 : AC/DC, CLA and accessories socket.

2.b IMEI label.

IMEI label stands for International Mobile Equipment Identity. The IMEI label is stuck on the rear case of the terminal. It is held in the logic circuitry of the main board itself. If the main board is changed then IMEI will change.



Date Code is made of 3 digits and indicates the date of shipment from factory. For example, in H09, H stands for 1998 and 09 for September (I stands for 1999).

Bar code indicates 15 digits 123456 45 456789 4 (for example) of the IMEI written in plain letters above the bar code:

- 123456 : The 6 first digits indicate the Typical Approval Code. It is different according the type of mobile.
- 45 : These 2 digits are allocated to production site.
- 456789 : The 6 last digits are a sequential number, it is different for each mobile.
- 4 : Check digit

2.c Label Art Plate.

The Label Art Plate identifies the type of assembly and test the mobile has been through.



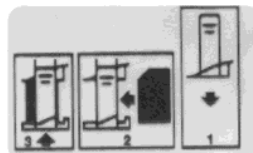
XXXXXXXXXX : 10 characters for the article code of the terminal.

A : 1 character for the assembly version of M/U.

C : 1 character for the board version.

WW : 2 characters related to production site.

2.d SIM label.



The SIM Label describes the process to follow for the SIM insertion.

- 1- Open the SIM card holder .
- 2- Insert the SIM card with the gold contact facing down and the bevelled corner of the card at the top left.
- 3- Push the SIM card holder back into position.

2.e SIMLatching.

SIM Lock consists in restricting the use of the terminal to a family of SIM cards. For the SIM Lock, three principal informations are used. These informations are read from data fields in the SIM card.

1°) IMSI (International Mobile Subscriber Identity), 15 Digits :

Example of IMSI : 208 01 55 12312312

208 = MCC = Mobile Country Code (ex : 208 for France)

01 = MNC = Network Country Code (ex : 01 for FT)

55 = NS = Network Subset

12312312 = Indifferent serial number

2°) Group Identifier 1 (GID1):

This data field can contain digits or letters which identify a family of SIM

Ex : XX for a type for of prepaid SIM card of Service provider Y

3°) Group Identifier 2 (GID2) :

same as GID1 to identify a sub family of SIM.

Then, from this information, we have 5 types of latch :

1°) Network Level :

latch on MCC MNC of IMSI of the SIM only

(ex : only the cards 208 01 be able to operate the mobile.

Mitsubishi use to call this latch NCK (NCK stands for " Network Control Keys" and is the password to lock the mobile at the network level)

2°) Network Subset Level :

Latch on MCC, MNC and digit 6 and 7 of the IMSI

Ex : latch on 208 01 55, only the SIM cards with an IMSI starting with 208 01 55 will operate the mobile.

Mitsubishi use to call this latch NSCK ("Network Subset Control Key)

3°) Service provider level :

latch on Network (value of MCC MNC) and value of GID1 data field.

Ex : latch on the value "XX" in GID1 and MCC MNC=208 01, only the SIM cards of service provider Y with XX stored in data field GID1 will operate the mobile.

Mitsubishi use to call this latch SPCK (Service Provider Control Key)

4°) Corporate Provider Level :

latch on network (value of MCC and MNC) and a value stored in GID2

Mitsubishi use to call this latch CPCK (Corporate Provider Control Key)

5°) IMSI level

latch on the complete IMSI of one SIM card.

Only one SIM card corresponding to the correct IMSI operates the mobile. Usually, this latch is done in an automatic way (the first SIM card inserted in the mobile is the only SIM which can be used by this mobile).

General information :

To lock /unlock a mobile, you need 8 digits password for each level concerned, and each mobile (one set of passwords for one IMEI). These passwords are calculated with a special algorithm. You have only 10 attempts to unlock correctly a mobile. After 10 unsuccessful attempt, the mobile is permanently blocked.

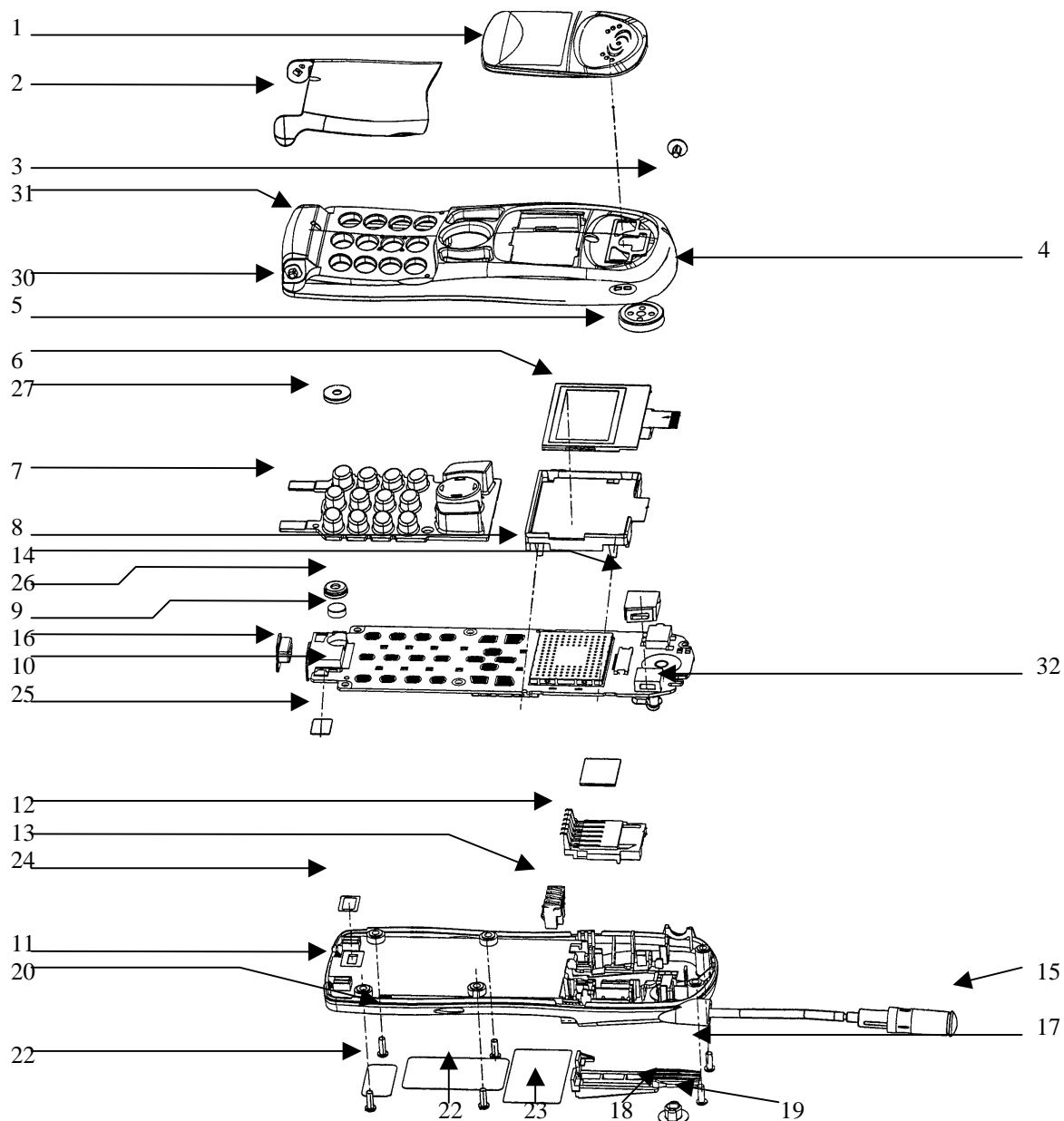
To enter the unlock procedure, you need to access special menus with specific access codes.

2.f Description of options.

Model	Designation	Colour (cover/front panel)	Logo	Keypad	Options
Galaxy	M/U BLUE MID WT KW	Blue Midnight	Trium	White	
Galaxy	M/U BLUE MID WM KB	Blue Midnight	Mitsubishi	Black	
Galaxy	M/U BLUE MID WT KB	Blue Midnight	Trium	Black	
Galaxy	M/U GREY SIL WT KW	Grey Silver	Trium	White	
Galaxy	M/U GREY SIL WT KB	Grey Silver	Trium	White	
Galaxy	M/U ORANGE SU WT KW	Orange	Trium	White	
Galaxy	M/U ORANGE SU WT KB	Orange	Trium	Black	
Galaxy	M/U DARK GRE WT KW	Dark Grey	Trium	White	
Galaxy	M/U DARK GRE WT KB	Dark Grey	Trium	Black	
Galaxy	M/U WINE RED WT KC	Wine Red	Trium	Cassis	
Galaxy	M/U GREY SIL WT KB	Grey Silver	Trium	Black	
Astral	M/U DARK GRE FP PBLGR WT KW	Pale Blue Green	Trium	White	
Astral	M/U DARK GRE FP BRBL WT KW	Bright Blue	Trium	White	
Astral	M/U DARK GRE FP BRGR WT KW	Bright Green	Trium	White	
Astral	M/U DARK GRE FP DABL WTV KB	Dark Blue	Trium / Vodafone	Black	
Astral	M/U DARK GRE FP DABL WTD KB	Dark Blue	Trium / D2	White	
Astral	M/U DARK GRE FP BRBL WTA KW	Bright Blue	Trium / Movistar	White	
Astral	M/U DARK GRE FP DABL WT KW	Dark Blue	Trium	White	
Astral	M/U DARK GRE FP DABL WTO KW	Dark Blue	Trium / One	White	
Astral	M/U DARK GRE FP SILV WTI KW	Silver	Trium / Viag Interkom	White	
Astral	M/U DARK GRE FP BRGR WTA KW	Bright Green	Trium / Movistar	White	
Astral	M/U DARK GRE FP BRGR WTO KW	Bright Green	Trium / One	White	
Astral	M/U DARK GRE FP PBLGR WTA KW	Pale Blue Green	Trium / Movistar	White	
Astral	M/U DARK GRE FP DABL WTA KW	Dark Blue	Trium / Movistar	White	
Astral	M/U DARK GRE FP BRBL WTO KW	Bright Blue	Trium / One	White	
Astral	M/U DARK GRE FP RED WTD KB	Red	Trium / D2	Black	
Astral	M/U DARK GRE FP SIL WT KB	Silver	Trium	Black	
Astral	M/U DARK GRE FP RED WTD KW	Red	Trium / D2	White	
Astral	M/U DARK GRE FP SILV WT KW	Silver	Trium	White	
Astral	M/U DARK GRE FP RED WTC KB	Red	Trium / Coca Cola (Wind)	Black	
Geo	M/U SUNSPICE WT KS	Orange Sunspice	Trium	Silver	RTC, Alarm, Vib
Geo	M/U GOLD BRO WT KS	Golden Bronze	Trium	Silver	RTC, Alarm, Vib
Geo	M/U GOLD BRO WT KH	Golden Bronze	Trium	Hebrew	RTC, Alarm, Vib
Geo	M/U ROYA BLU WT KS	Royal Blue	Trium	Silver	RTC, Alarm, Vib
Geo	M/U ROYA BLU WT KH	Royal Blue	Trium	Hebrew	RTC, Alarm, Vib
Geo Wap	M/U GW OLIVE GR WT KS	Olive Green	Trium	Silver	RTC, Alarm, Vib, Wap
Geo Wap	M/U GW DARK GRE GR WT KS	Dark Grey	Trium	Silver	RTC, Alarm, Vib, Wap
Geo Wap	M/U GW DARK RED GR WT KS	Dark Grey	Trium	Silver	RTC, Alarm, Vib, Wap
Geo Wap	M/U GW OR SUNSP GR WT KS	Orange Sunspice	Trium	Silver	RTC, Alarm, Vib, Wap
Geo Wap	M/U GW BLUE MID GR WT KS	Blue Midnight	Trium	Silver	RTC, Alarm, Vib, Wap
Geo Wap	M/U GW ROYA BLU GR WT KS	Blue Midnight	Trium	Silver	RTC, Alarm, Vib, Wap

3 Exploded Diagram and Spare parts list.

3.a Exploded Diagram of GALAXY



3.b Spare Parts list of GALAXY

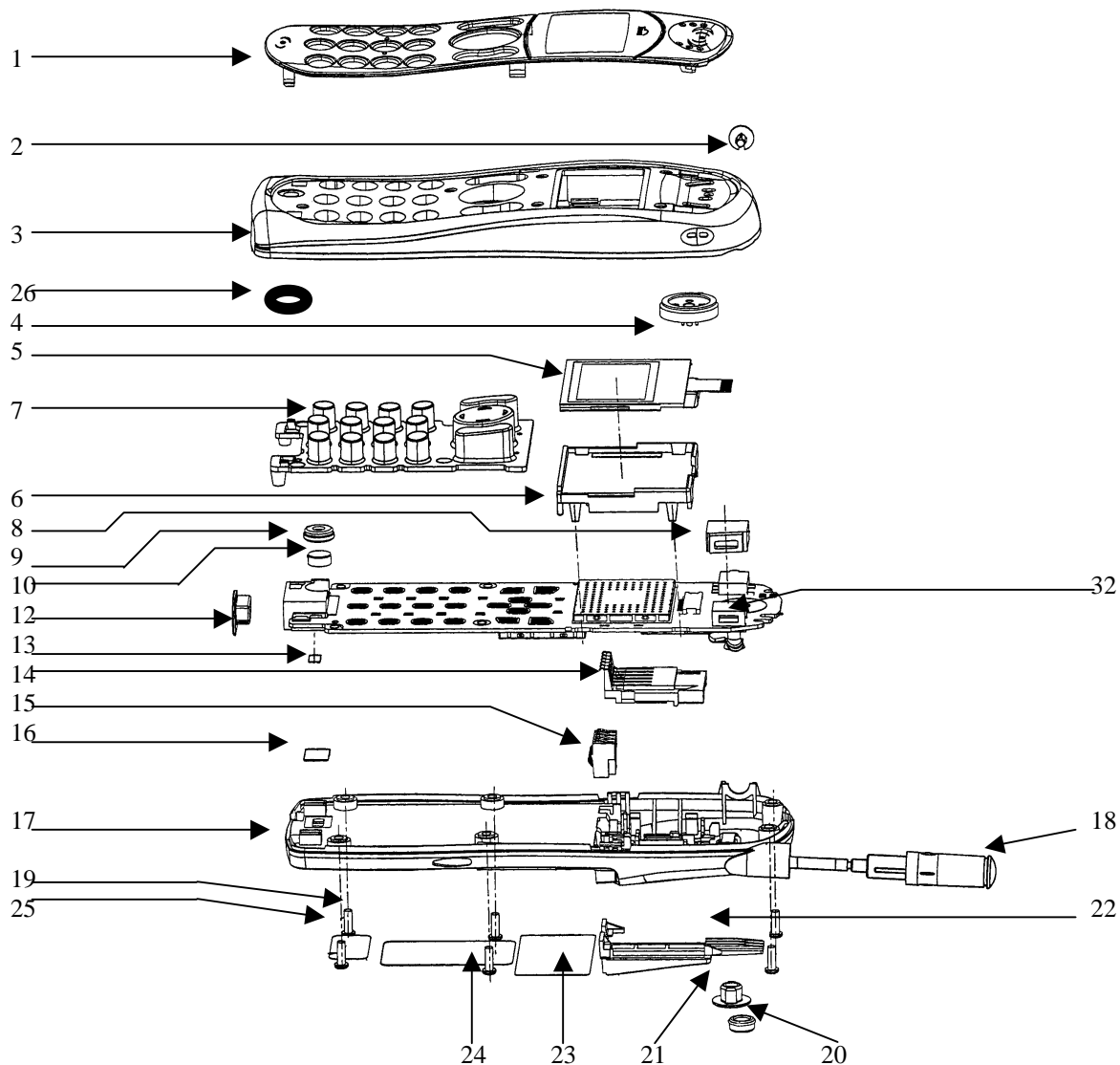
Position	Designation
1	WINDOW ASSY MD LOGO MITSUBISHI
1	WINDOW ASSY MD LOGO TRIUM
2	FLIP MONDIAL CLEAR GREY (25527)
2	FLIP MONDIAL CLEAR GREY BEN
2	FLIP MONDIAL DARK BLUE (95511)
2	FLIP MONDIAL DARK BLUE BEN
2	FLIP MONDIAL DARK BLUE MOVISTAR
2	FLIP MONDIAL DARK BLUE ONE
2	FLIP MONDIAL DARK BLUE WIND
2	FLIP MONDIAL DARK GREY (25506)
2	FLIP MONDIAL GREY WIND
2	FLIP MONDIAL ORANGE (45502 ?)
2	FLIP MONDIAL ORANGE BEN
2	FLIP MONDIAL RED WIND
2	FLIP MONDIAL WINE RED (55503)
3	CAP H/S
4	COVER ASSY MONDIAL CLEAR GREY (25527)
4	COVER ASSY MONDIAL DARK BLUE (95511)
4	COVER ASSY MONDIAL GREY (25506)
4	COVER ASSY MONDIAL ORANGE (45502 ?)
4	COVER ASSY MONDIAL RED (55503)
5	RECEIVER
6	LCD
7	KEY RUBBER BLACK MD
7	KEY RUBBER WHITE MD
7	KEY RUBBER CASSIS
8	HOLDER ASSEMBLY
9	MICRO
10	PWB ASSEMBLY
11	CASE ASSEMBLY
12	SIM CONNECTOR
13	BATTERY CONNECTOR
14	CUSHION BUZZER
15	ANTENNA
16	CAP I/O
17	SLIDER
18	CAP BELT CLIP
19	CAP RF
20	SCREW
21	LABEL IMEI
22	LABEL ART
23	LABEL SIM
24	WINDOW WATER
25	SHEET WATER
26	HOLDER MIC
27	CUSHION MIC
30	HINGE RIGHT
31	HINGE LEFT
32	BUZZER TESTE
Without	SPACER LCD

Spare parts references available in the spare parts catalogue customer.

Connectors and Shields of GALAXY

Position	Designation	Reference
J103	CONNECTOR IO&DC	6T87934010
J201	CONNECTOR LCD M4	6T89858010
J300	JACK HEADSET	6T91950310
J400	CONNECTOR RF M4	M4FSJ00020
J600	M4-TER-ANT	FS2D002810
S500 (HPA)	COVER SHIELD MD-41	FS2D006110
S600 (RFIC)	COVER SHIELD MD-42	FS2D006210
S100 (ONE C)	COVER SHIELD MD-43	FS2D006310

3.c Exploded Diagram of ASTRAL



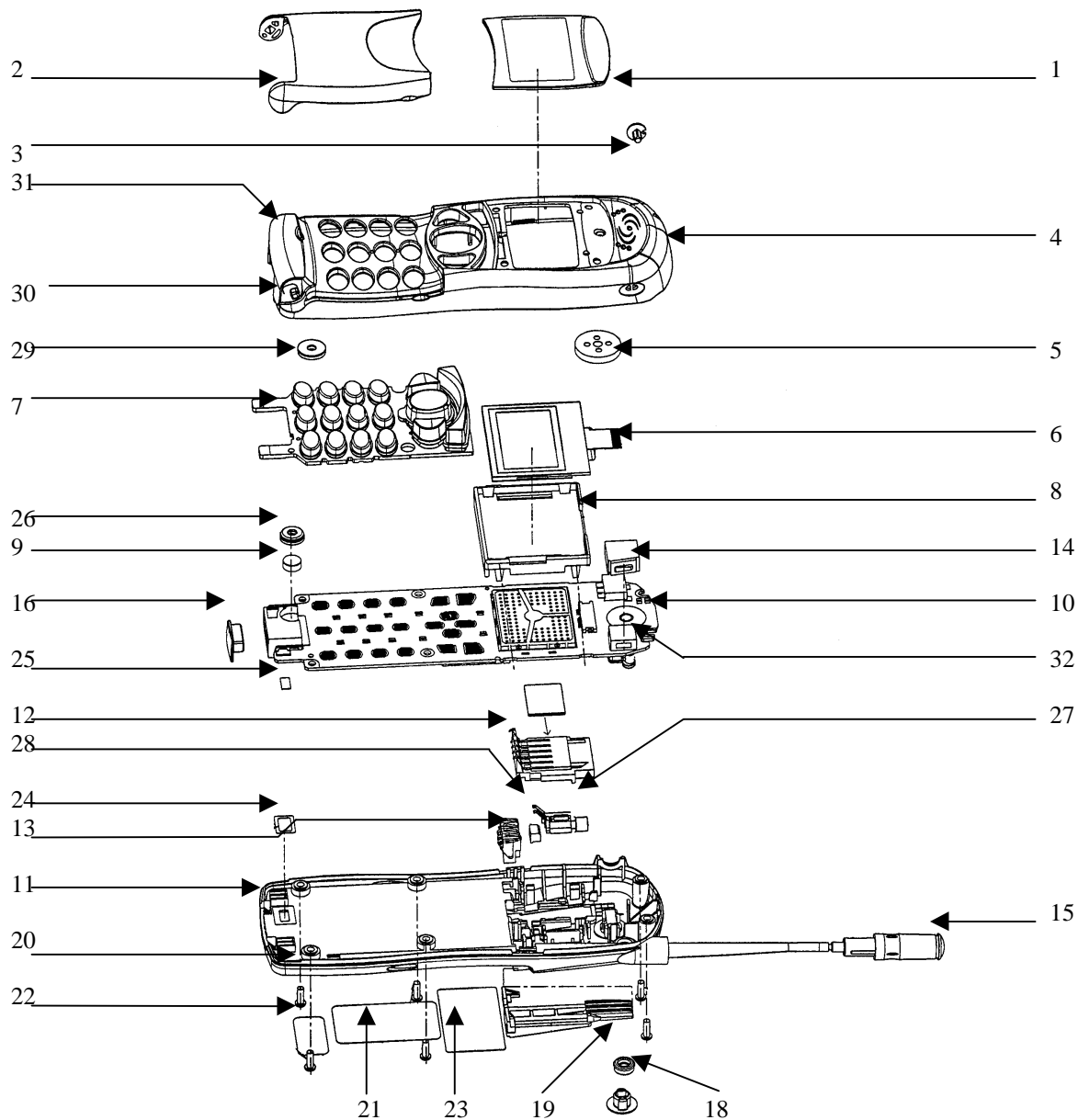
3.d Spare Parts list of ASTRAL

Position	Designation
1	FRONT PANEL ASSY
1	FRONT PANEL ASSY NF AQUA BLUE WT
1	FRONT PANEL ASSY NF AQUA BLUE WTA
1	FRONT PANEL ASSY NF BRIGHT GREEN WT
1	FRONT PANEL ASSY NF BRIGHT GREEN WT0
1	FRONT PANEL ASSY NF BRIGHT GREEN WTA
1	FRONT PANEL ASSY NF BRIGHT GREEN WTI
1	FRONT PANEL ASSY NF DEEP BLUE WT
1	FRONT PANEL ASSY NF DEEP BLUE WT0
1	FRONT PANEL ASSY NF DEEP BLUE WTD
1	FRONT PANEL ASSY NF DEEP BLUE WTV
1	FRONT PANEL ASSY NF PALE BLUE GREEN WT
1	FRONT PANEL ASSY NF PALE BLUE GREEN WTA
1	FRONT PANEL ASSY NF PALEBLUEGREEN WTV
1	FRONT PANEL ASSY NF SILVER WTI
2	CAP H/S
3	COVER ASSY NF
4	RECEIVER
5	LCD
6	HOLDER ASSEMBLY
7	KEY RUBBER WHITE
7	KEY RUBBER BLACK
8	CUSHION BUZZER
9	HOLDER MIC
10	MICRO
11	PWB ASSEMBLY
12	CAP I/O
13	SHEET WATER
14	SIM CONNECTOR
15	BATTERY CONNECTOR
16	WINDOW WATER
17	CASE ASSEMBLY
18	ANTENNA
19	SCREW
20	CAP RF
21	CAP BELT CLIP
22	SLIDER
23	LABEL SIM
24	LABEL IMEI
25	LABEL ART
26	CUSHION MIC
32	BUZZER TESTE

Spare parts references available in the spare parts catalogue customer.

Connectors and shields of ASTRAL : Same as GALAXY

3.e Exploded Diagram of GEO



3.f Spare Parts list of GEO

Position	Designation
1	WINDOW ASSY MB LOGO MITSUBISHI
1	WINDOW ASSY MB LOGO TRIUM
2	FLIP MOBILIA ROYAL BLUE (GEO WAP)
2	FLIP MOBILIA BLUE TCE (GEO STANDARD)
2	FLIP MOBILIA SUNSPICE (GEO STANDARD)
2	FLIP MOBILIA GOLDEN BRONZE (GEO STANDARD)
2	FLIP MOBILIA OLIVE GREEN (GEO WAP)
2	FLIP GW BLUE MIDNIGHT
2	FLIP GW DARK GREY (GEO WAP)
2	FLIP GW WINE RED (GEO WAP)
2	FLIP GW OLIVE GREEN (GEO WAP)
3	CAP H/S
4	COVER ASSY ROYAL BLUE TCE (GEO STANDARD)
4	COVER ASSY MB ROYAL BLUE (GEO WAP)
4	COVER ASSY MB SUNSPICE VPAA2239 (GEO STANDARD)
4	COVER ASSY MB GOLDEN BRONZE VPAA2238 (GEO STANDARD)
4	COVER ASSY MB OLIVE GREEN (GEO WAP)
4	COVER ASSY MB DARK GREY (GEO WAP)
5	RECEIVER
6	LCD (96 X 48)
6	LCD (115 X 65 : WAP)
7	KEY RUBBER ASSY MB SILVER
7	KEY RUBBER ASSY MB SILVER HEBREU
8	HOLDER ASSEMBLY
9	MICRO
10	PWB ASSEMBLY
11	CASE ASSEMBLY
12	SIM CONNECTOR
13	BATTERY CONNECTOR
14	CUSHION BUZZER
15	ANTENNA
16	CAP I/O
17	SLIDER
18	CAP BELT CLIP
19	CAP RF
20	SCREW
21	LABEL IMEI
22	LABEL ART
23	LABEL SIM
24	WINDOW WATER
25	SHEET WATER
26	HOLDER MIC
27	VIBRATOR MOTOR ASSY
28	VIBRATOR CUSHION
29	CUSHION MIC
30	HINGE RIGHT
31	HINGE LEFT
32	BUZZER TESTE

Spare parts references available in the spare parts catalogue customer.

Connectors and Shields of GEO : same as GALAXY and ASTRAL

Version G
Date: 04/00

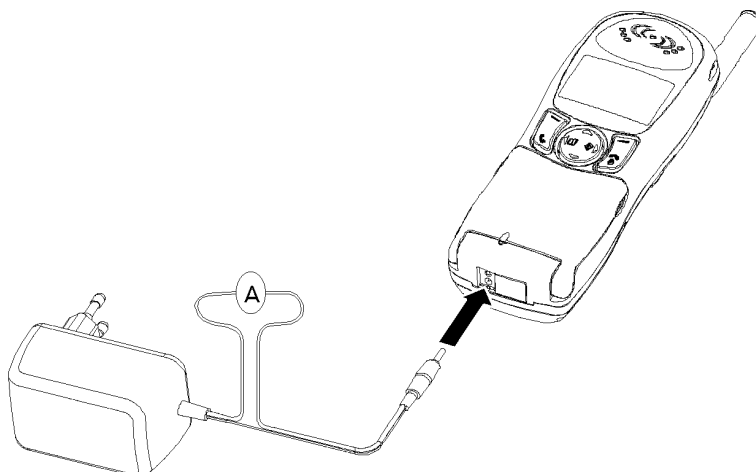
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4 Test and Measurement

4.a Charging measurements

To check the charging, we use a modified AC/DC and an ampermeter connected as follow :



When you plug the charger into the wall socket, the charging current is displayed by ampermeter
The charging indicator scroll on the LCD and the red top led lights up.



During pre-charge, the value of the current is 120mA (measurement without backlight)
During rapid charge, the value of the current is 490mA (measurement without backlight)

For more details about charging, see the LEVEL 3 SERVICE MANUAL FA9M030110 at page 6.

4.b E-GSM / DCS measurements

4.b.1 Transmitter Power and Ramp profile

These two are interrelated, since the power ramp shape and its final peak value are stored in EEPROM as adjustment values.

The peak power output must lie within 3 dB of specification and be flat to within 0.5dB over the active period. The ramp profile is designed to give minimum harmonics, and hence it is important to ensure it is adhered to.

Power ramp profile must be checked on all frequencies (in practice channels 975, 37 and 124 for the 900 MHz band and channels 512, 698 and 885 for the 1800 MHz band). In conclusion, the ramp must fit the mask at all frequencies and all power levels. The mask is usually stored in the radiocommunication tester. The test will also be available to cover the frequency and power range automatically.

4.b.2 Phase/ Frequency/ Time relationship

This is a test of the quality of the modulation including the IQ balance and the Gaussian filters. The phase of the carrier changes according to the arrival of 1s and 0s. Phase error must not be more than 20° peak or 5° RMS.

4.b.3 Receiver Bit Error Rate (RX sensitivity)

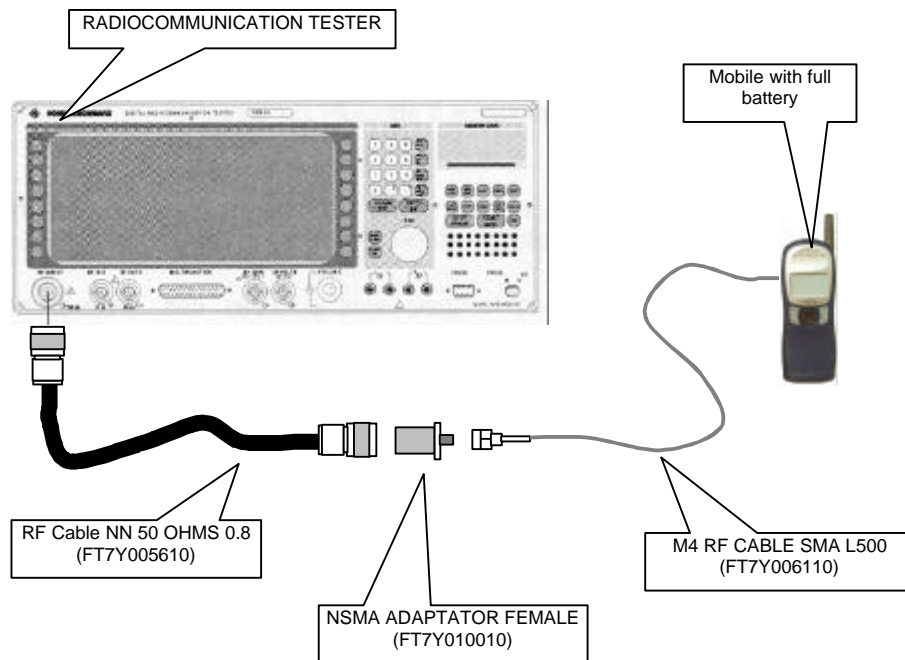
The specification is a Bit Error Rate (BER) of better than 2.44% for an input signal : -102 dBm for the E-GSM 900 band, and -100dBm for the DCS 1800 band. There should be no error for -90 dBm to -20 dBm input signal. The maximum workable error rate is 13%.

It is important that BER and RX sensitivity are good since measures of RXLEV (from -103 to -41 dBm) and RXQUAL (from 0 to 10%) are reported back to the base station on the SACCH to assist in handovers and power level control. Errors in reporting will lead to sub optimum use of channel space, or interference to others.

4.b.4 Handover between E-GSM 900 and DCS 1800 standards.

The M4 dual band may handover from the E-GSM 900 band to the DCS 1800 band automatically. If the subscribed network has frequencies in both bands, the M4 dual band will work either in 900 MHz or 1800 MHz band depending on the availability of frequencies.

4.c Operating instructions.

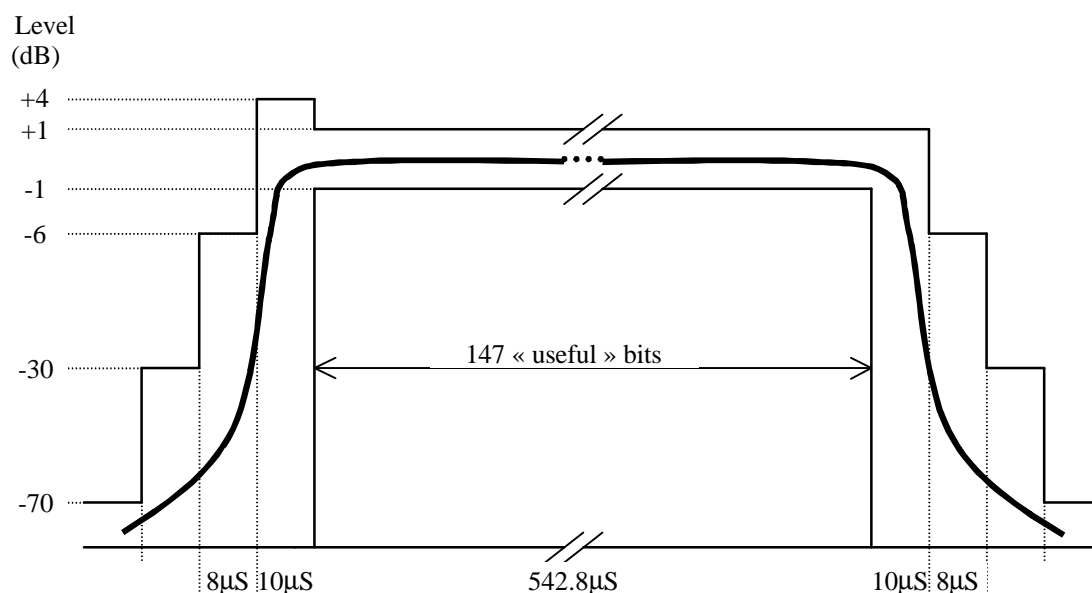


1. Insert Test SIM card in mobile
2. Connect a charged battery
3. Make a call with RADIOCOMMUNICATION TESTER and check following parameters or use the autotest (CMD55 or CMD55 under MTS or Wavetek 4107)

E-GSM 900 PCL	Power Level (dBm)	tolerance
5	33	+/-2dB
6	31	+/-3dB
7	29	+/-3dB
8	27	+/-3dB
9	25	+/-3dB
10	23	+/-3dB
11	21	+/-3dB
12	19	+/-3dB
13	17	+/-3dB
14	15	+/-3dB
15	13	+/-3dB
16	11	+/-5dB
17	9	+/-5dB
18	7	+/-5dB
19	5	+/-5dB

DCS 1800 PCL	Power level (dBm)	tolerance
0	30	+/-2dB
1	28	+/-3dB
2	26	+/-3dB
3	24	+/-3dB
4	22	+/-3dB
5	20	+/-3dB
6	18	+/-3dB
7	16	+/-3dB
8	14	+/-3dB
9	12	+/-4dB
10	10	+/-4dB
11	8	+/-4dB
12	6	+/-4dB
13	4	+/-4dB
14	2	+/-5dB
15	0	+/-5dB

Power ramping: Check the burst fit the mask below



RX levels : Check the values for different signal strengths

RX LEVEL	RSSI (dBm)
0	Less than -110 dBm
1	-110 to -109
2	-109 to -108
⋮	⋮
27	-84 to -83
⋮	⋮
50	-61 to -60
⋮	⋮
62	-49 to -48
63	Better than -48

Bit error : Check the value for differents type

Check the Reception Bit Error Rates (RBER) and Frame Error Rates on channels 1,62 and 124 at -102dBm for GSM band and on channels 512, 698 and 885 for the DCS band according the following specifications :

Bit error type	Value
RBER Class Ib	< 0.41 %
RBER Class II	< 2.44 %
FER	< 0.12%

4.d Buzzer and Speaker tests

Insert a test SIM in mobile set with battery.

The volume levels of the ring tone, key tones and incoming audio can be individually adjusted in the setting menu.

- Press MENU ►,select settings, select Tones, select Volume, select ring and scroll to the item to be adjust, Master volume, ring volume, Ramping, keys volume or speech volume.
- Select ring volume and use ▲ and ▼ keys to decrease or increase the volume of **buzzer**.
- Select speech volume and use ▲ and ▼ keys to decrease or increase the volume of **speaker**.

5 Download of software

The software in the mobile consists of two files downloaded independantly.

The corp of this software is downloaded using IPLTrium.

The settings file (ringing, customization...) is downloaded with MS Tools. MS tools also allows to enter test mode in order to reset user data (security code) , to print labels (imei & factory name plate), to reset the permantly blocked indicator providing you have the access rights.

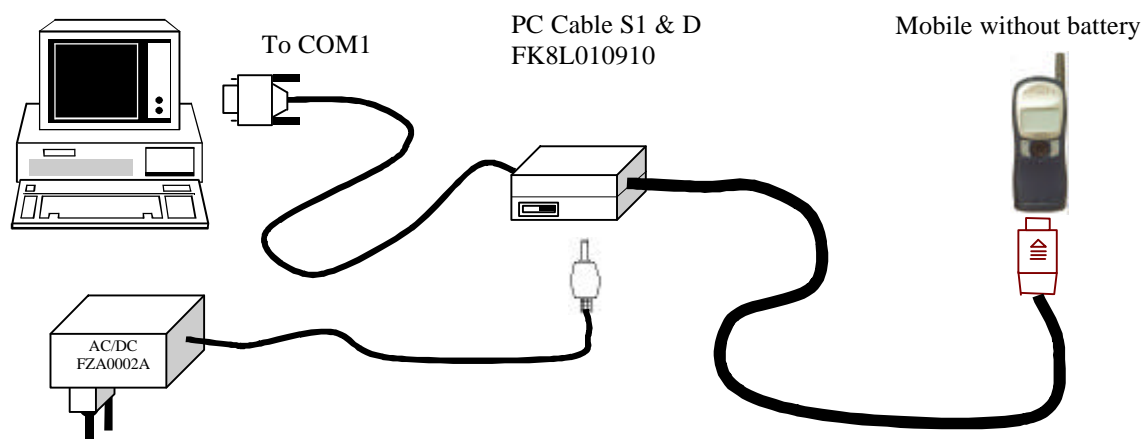
5.a Software download with IPLTrium

This part describes how to use the IPLTRIUM software.

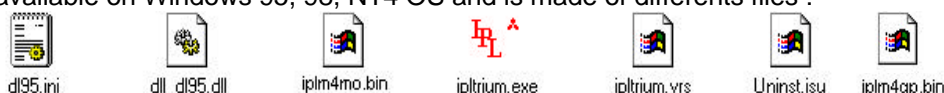
To download a software file, you need IPLTRIUM software, and the mobile must be without battery.

5.b How to install IPLTrium software and equipment

Equipment description :



IPL trium is available on Windows 95, 98, NT4 OS and is made of differents files :

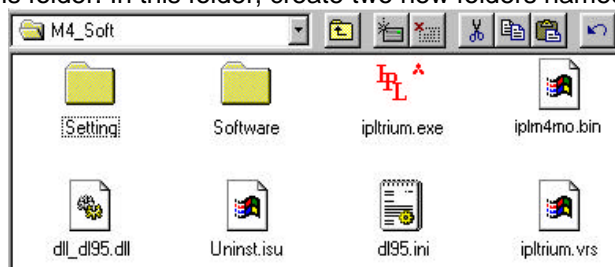


(These files can be provided under one ZIP file)

To install IPLTRIUM software, create a folder named **M4_soft**



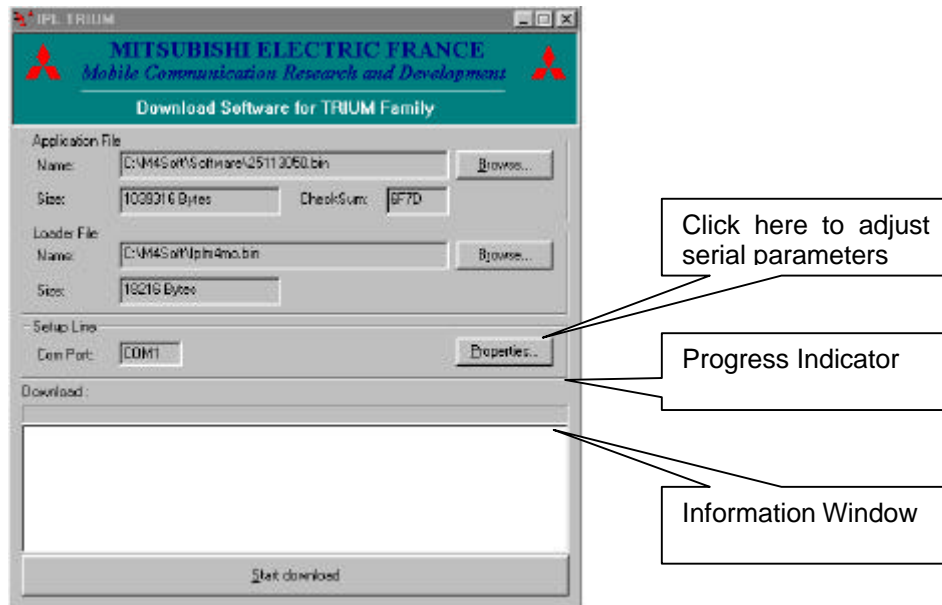
And copy the files into this folder. In this folder, create two new folders named Software and Setting



In the Software folder, copy the software file (*.BIN) available for the mobile you have to download. You are now ready to download the software.

5.c Description of IPLTRIUM SoftWare.

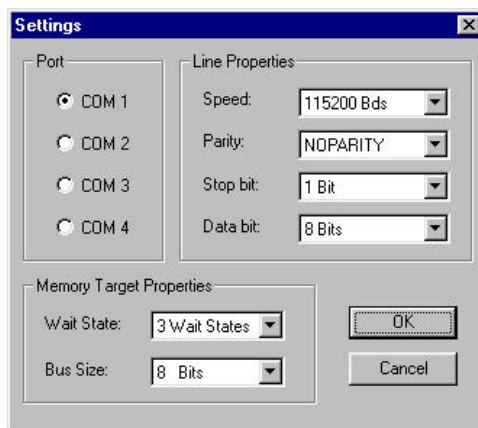
The « IPL » software runs under WINDOWS 32 Bits.



The followings configurations are available :

- The choice of the mobile Application file.
- The choice of the Flash Loader file.
- The setup of the line (speed)

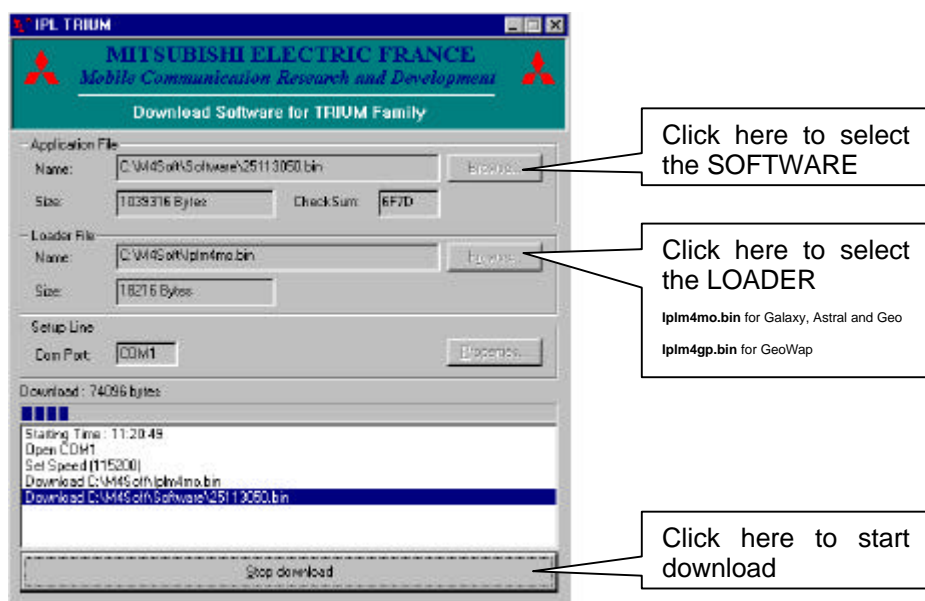
Properties button allows the configuration of serial parameters :
Serial port parameters must be adjusted as follow:



5.d Start download.

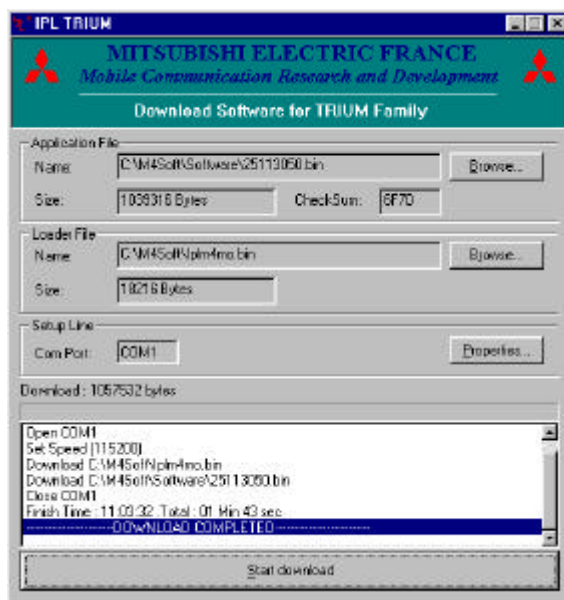
Click on the **DOWNLOAD NOW** button to start the download of your files.
Information about processing are available along download (bytes transferred, and steps of downloading).

You can stop the downloading at any time by clicking on the **STOP DOWNLOAD** button.



5.e End of download.

During the download, the mobile displays some information about the state of download.



At the end of download, the IPL Software prints the following screen.

On the mobile, the following message is displayed ,

You must Press
POWER-OFF key NOW

DOWNLOAD COMPLETE.
Check sum OK : xxxxh

Then you have to press the power key.

This application saves the last setting in the configuration file.ini. When this software restarts, these setting are loaded automatically.

Note : At the first start, IPL Software uses default configuration file. In most of case, you do not have to change this default configuration.

6 Download of Perso

6.a Description

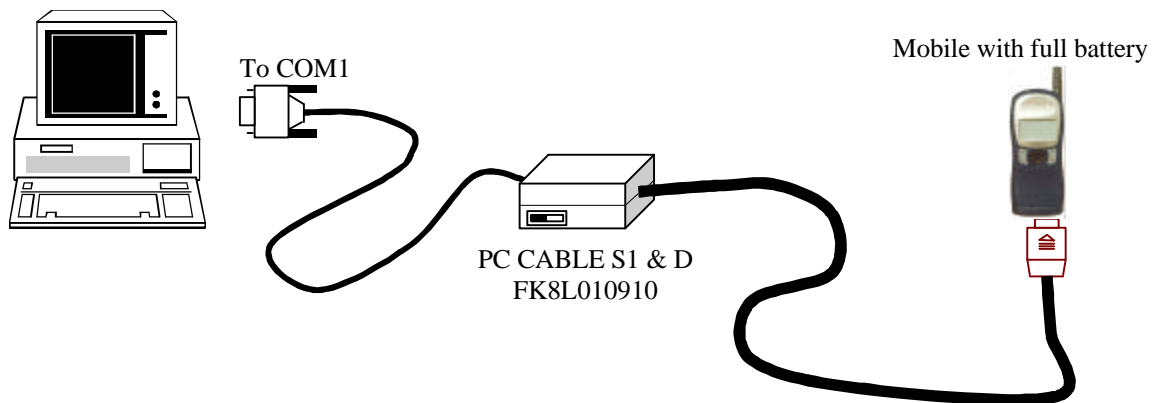
This part describes the features and how to use the MS Tools software.

MS Tools V007.00 is used to download the personification file to the mobile and to reset the permanent lock indicator (used when mobile displays phone permanently blocked or when the phone can not send a call).

To download a perso file, you need MS Tools software and the mobile must be turned in test mode. There are two possibilities to turned the mobile in test mode : interface box or start from NormalMode.

Description without interface box : using download cable and starting from normal mode.

Equipment description :



MS Tools is available on Windows 95, 98, NT4 OS and is usually provided on two floppy disks, and to install it you need theses 3 files :



Setup procedure :

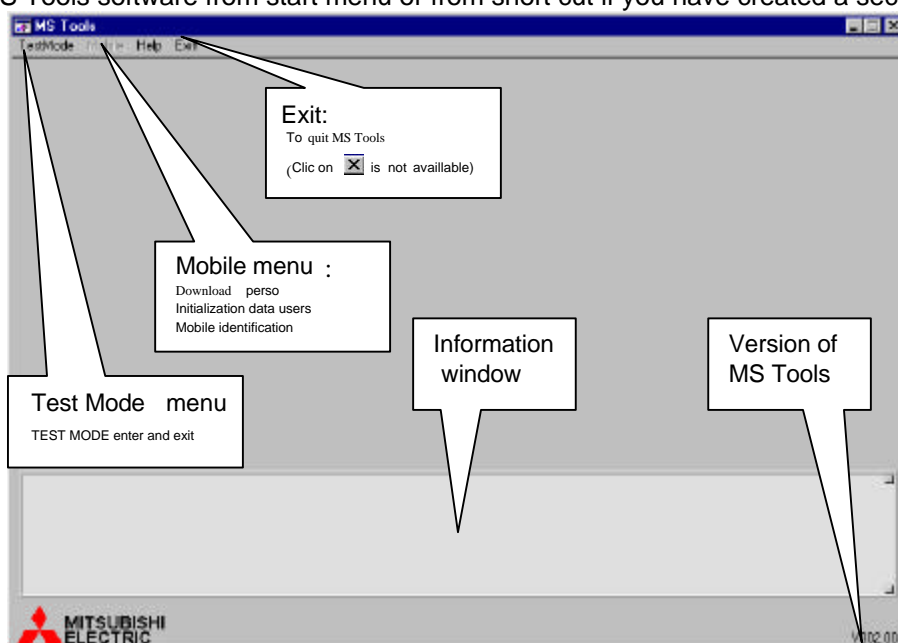
1. Launch Setup.exe
2. Click on **Finish**
3. Click on **OK**

MS Tools is now installed on your computer and available in your START menu

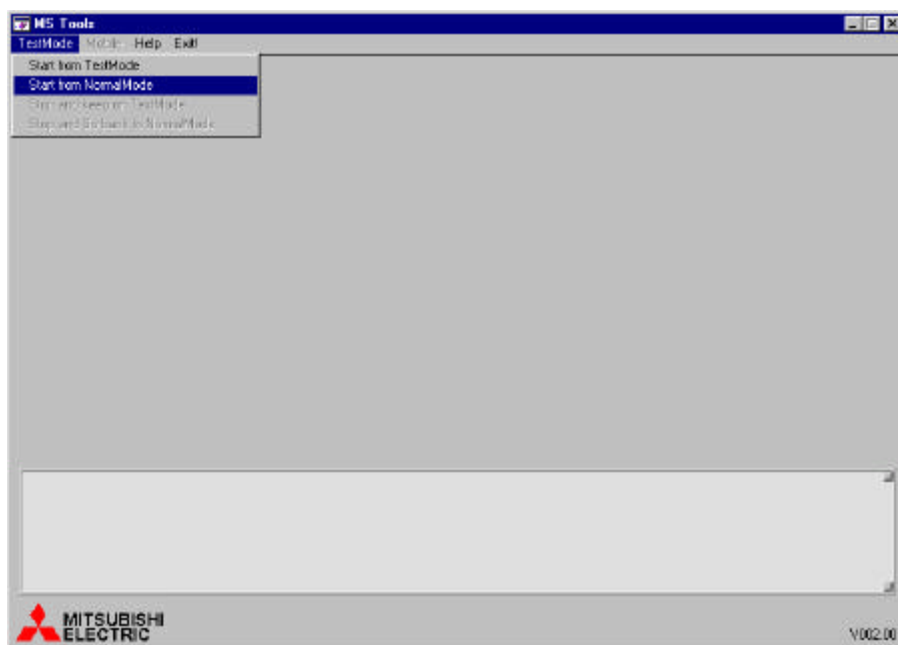
You are not ready to download the setting file.

6.b Start download

Before running MS Tools Software, you must turn on the mobile.
Now, start MS Tools software from start menu or from short cut if you have created a second one.

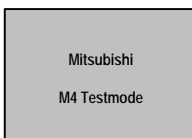


- Click on **TestMode** menu and choose **Start from NormalMode**

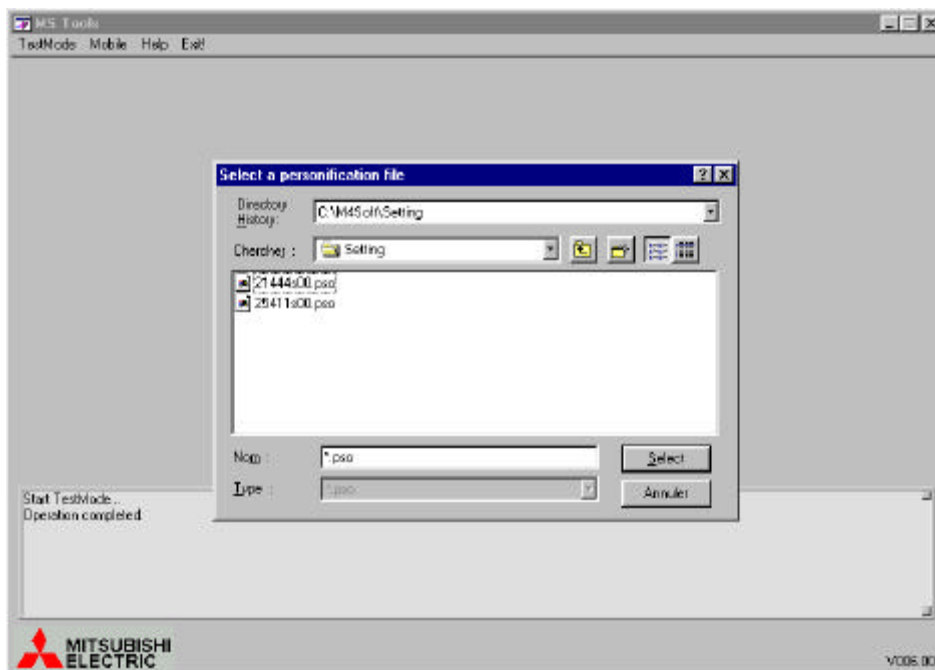


(information window displays **Start TestMode...**, **Operation completed**)

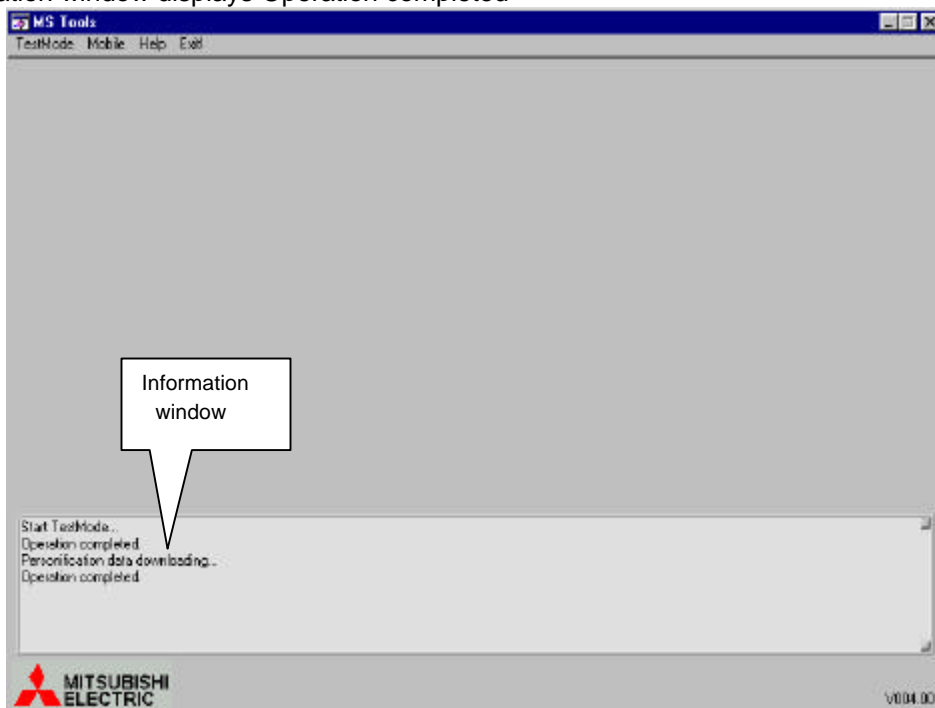
The mobile displays :



- In **Mobile** menu, click on **Download Personification**, then, choose the right settings file and valid by **select**

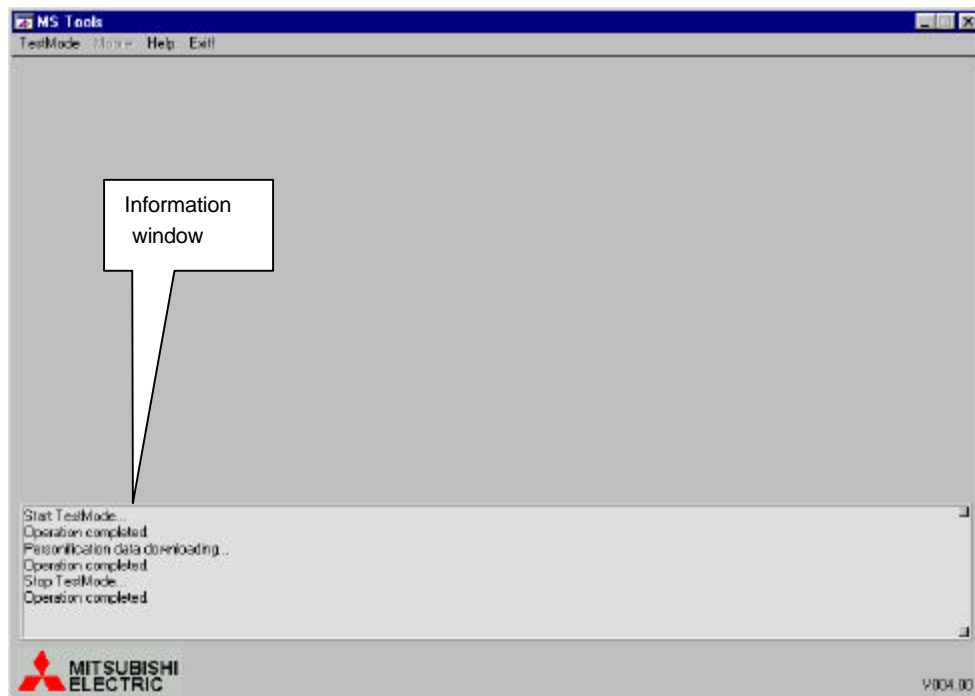


- Information window displays Operation completed



6.c End of download

- In **TestMode** menu, choose **Stop and Go back to NormalMode**, then information window displays Operation completed

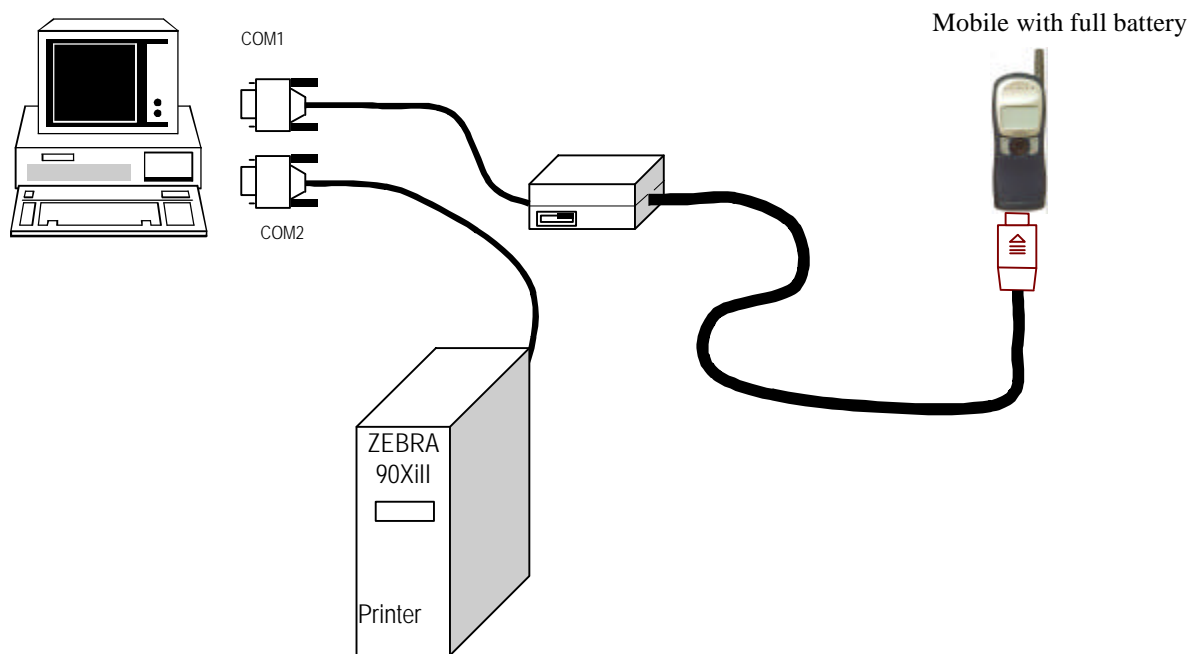


- Click on **Exit** to quit the MS Tools Software.

6.d How to print labels using MS Tools

6.d.1 Equipment, Software and drivers required

Equipment description:



MS Tools software version 4.01 (or higher) is required to print labels.
This software is provided by MITSUBISHI ELECTRIC FRANCE under floppy format (2 floppies)
MS Tools is available on Windows 95, 98, NT4 OS and to install it you need these 3 files:



Setup procedure :

1. Launch Setup.exe
2. Click on **Finish**
3. Click on **OK**

MS Tools is now installed on your computer and available in your START menu
MS tools program does not send information directly to **ZEBRA 90Xi II printer**, it sends information to NI VISA driver and NI VISA driver sends information to ZEBRA 90Xi II printer.

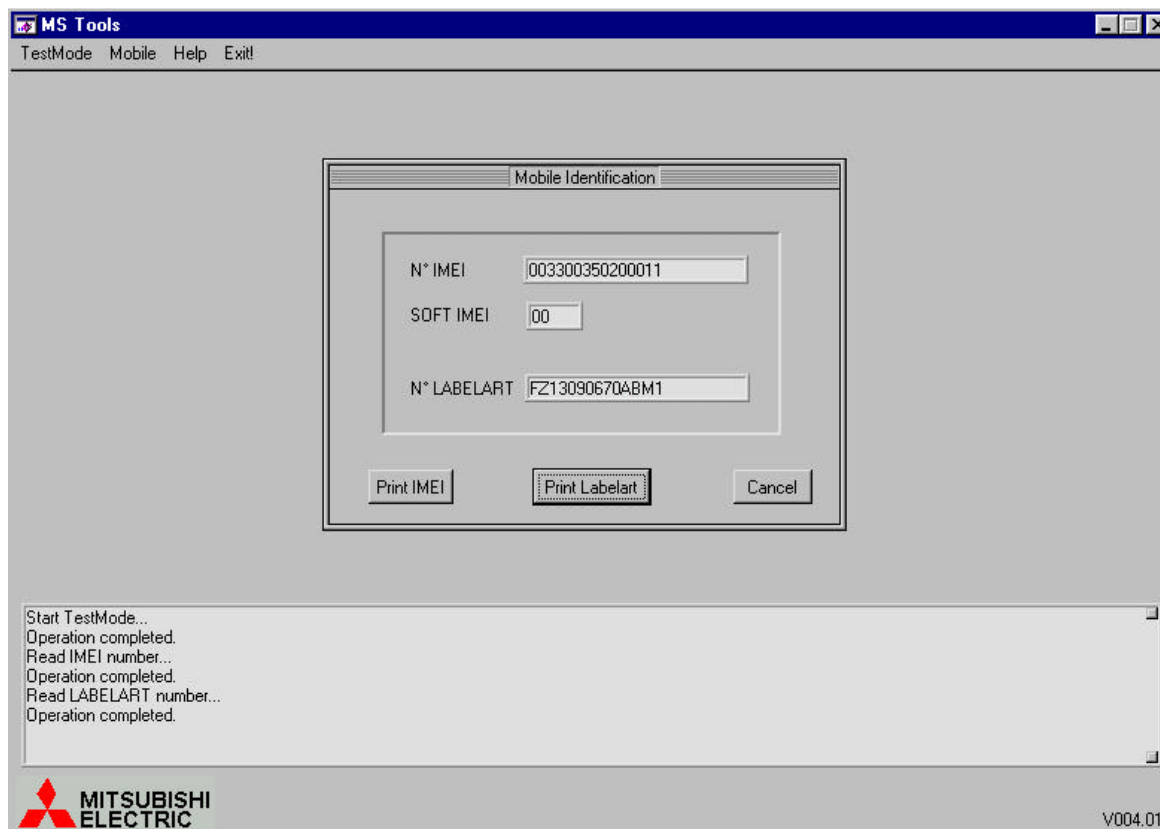
Driver required: NI VISA

NI VISA driver is required and can be provided by MITSUBISHI ELECTRIC FRANCE.
The NI VISA driver is located on **NATIONAL INSTRUMENTS NI 488.2** CD-ROM
To install this driver on your PC, launch the **setup.EXE** which is located in the **NI-VISA** folder on the CD-ROM.

6.d.2 Print labels

In **TestMode** menu, choose **Start from NormalMode**, then **Mobile** menu became available.

In **Mobile** menu, choose **Mobile identification**, and then following screen will be displayed.



To print an IMEI label, click on the **Print IMEI** button.
To print a Labelart, click on the **Print Labelart** button.

7 Software version

To display the software version, connect a charged battery, press the power key. Wait a few seconds, then hold the * key and press 5806.

Then on the mobile, the following message is displayed , for example :

```
-- VERSION ---
21157001
---NAME----
14/06/1999
```

8 Software and Perso version

To display the software and the perso (personalisation), connect a charged battery, press the power key. Wait a few seconds, then hold the * key and press 5807.

Then on the mobile, the following message is displayed , for example :

```
-- VERSION ---
21157001
--- PERSO ----
21433S00
```

9 Operator Debugging

To display the RX level (in dBm), insert the SIM card (from service provider or test SIM card using CMD in manual test) , connect a charged battery and press the power key. When the mobile displays the network (real network or test network 001-01), hold the * key and press 4329

Then on the mobile, the following message is displayed , for example :

<p>B099 07 -085 MCC001 MNC01 1.a.1.1.1.1.1</p>	<p>←</p>	<p>RX Level (dBm)</p>
<p><i>And other datas</i></p>		

To exit from the Operator debugging mode, use the same command : hold the * key and press 4329

10 PERSONNAL NOTES

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