



Product Description

Motorola Spirit M900
GSM Fixed Mobile Car Phone



Version 1.0 – March 2006

N₂CS Marketing Team

Revision History

Rev No.	Date	Name	Description of Change
1.0	Mar 1 2006	O. Rahamim	Initial version of Spirit M900 Product Description



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1 Introduction

MAKING YOUR CONNECTIONS AS MOBILE AS YOUR ARE

The Motorola Spirit **M900** is an advanced, in-vehicle fixed mobile phone for GSM Cellular technology. It is uniquely designed for the car environment to deliver efficient, reliable and convenient communication for those who are constantly on the move.

M900 boasts state-of-the-art technological advances to ensure that we are constantly meeting our customers' evolving business and operational needs. From commercial enterprises, such as corporations, rental car companies and fleet management organizations to public services such as transportation and emergency users – the need for greater connectivity on-the-road has never been more important.

From its superior audio quality to its user-friendly interface, the **M900** offers an unrivalled set of features for in-vehicle enhanced communications:

PERFORMANCE:

- Full duplex, hands-free phone with superior audio quality: Clear, sharp pick-up with background noise suppression and echo cancellation
 - Excellent network connection with external antenna
-

CONVENIENCE:

- High resolution display designed for easy reading in the vehicle environment
 - Large, widely-spaced keypad designed for easy dialing in the vehicle environment
 - Fast and easy installation
 - Back-up unit for portable handset
-

LEGALITY:

- The ultimate solution to the ban on handsets while driving
-

SAFETY:

- One-Touch Operation keys for voice activation, name and number dialing
 - Full-size digit display font so you can keep your eyes on the road
-

M900 is the latest, complete in-car solution from Motorola for customers requiring fast and dependable access to voice and data communication while on the move.

M900 structure is shown at Figure 1: M900 Structure



1.1 M900 Structure



Figure 1 M900 Structure

2 Description

2.1 M900 Feature list

Display Type	<ul style="list-style-type: none"> • High-resolution, blue backlight illuminated graphical display
	<ul style="list-style-type: none"> • 96X65 pixels for text, numbers & graphics
	<ul style="list-style-type: none"> • 4 lines for text
	<ul style="list-style-type: none"> • 8 mm digit size
	<ul style="list-style-type: none"> • Signal and status indication
	<ul style="list-style-type: none"> • Screen saver download + time and date
	<ul style="list-style-type: none"> • Controlled Blue backlight (Display & Keypad)
	<ul style="list-style-type: none"> • Display Contrast control
Keypad	<ul style="list-style-type: none"> • Voice Activation key Name Dialing – 1 Click Number Dialing – 2 Clicks Menu browser activation – Menu + 1 click @ the VAD key
	<ul style="list-style-type: none"> • Menu Key
	<ul style="list-style-type: none"> • Right and left soft keys
	<ul style="list-style-type: none"> • Remote Voice Active push button
	<ul style="list-style-type: none"> • 2 buttons for volume up and down
	<ul style="list-style-type: none"> • Send key and End key
	<ul style="list-style-type: none"> • 4 way navigation key for scrolling through menus and lists and Volume control (with right and left buttons)
	<ul style="list-style-type: none"> • Voice mail implementation by continues touch on key "1"
	<ul style="list-style-type: none"> • Pressing MENU → 4 will activate or disconnect the Auxiliary alert
	<ul style="list-style-type: none"> • Large, illuminated well-spaced tactile keys
Value Added Services	<ul style="list-style-type: none"> • MO/MT SMS text mode
	<ul style="list-style-type: none"> • Cell Broadcast Messages
	<ul style="list-style-type: none"> • Voice Mail
	<ul style="list-style-type: none"> • Restrict My Phone Number
	<ul style="list-style-type: none"> • Show/ Restrict my ID on next Call
	<ul style="list-style-type: none"> • Call Diverting; Call Holding; Call Waiting
	<ul style="list-style-type: none"> • Preferred Networks Selection – allows ability to set the phone to look for preferred networks when roaming
	<ul style="list-style-type: none"> • Conference calls – link an active all and up to 5 other participants
Memory Functions	<ul style="list-style-type: none"> • Up to 500 names/numbers internal personal storage list. Number in the SIM card depends on Network Operator
	<ul style="list-style-type: none"> • Post scripting; 25 Voice Tag capabilities
	<ul style="list-style-type: none"> • Time and date stamps phone calls, Memory for last 10 received/dialed calls
Voice Activation	<ul style="list-style-type: none"> • NamAct Name dialing - user dependent voice dialing – 25 names
	<ul style="list-style-type: none"> • BroAct - user dependent menu voice browser – 9 commands
	<ul style="list-style-type: none"> • VAD Number dialing function (ART Voice Activation)
	<ul style="list-style-type: none"> • Support 7 languages: English UK, English US, French, Italian, German, Spanish, and Hebrew
Security & Cost Control	<ul style="list-style-type: none"> • Emergency calls without SIM card (network dependent)
	<ul style="list-style-type: none"> • Security (phone lock; lock application; fixed dial; call barring SIM pin new password)
	<ul style="list-style-type: none"> • Last and cumulative call duration
	<ul style="list-style-type: none"> • Fixed dialing: calls to predefined numbers or prefixes



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User Interface	<ul style="list-style-type: none"> English, Hebrew, Russian and Arabic – editing level
	<ul style="list-style-type: none"> Multiple ringing tones and selectable ringing volumes
	<ul style="list-style-type: none"> Option to personalize phone settings / menus
SIM Card Reader	<ul style="list-style-type: none"> Plug-IN single SIM reader in fixed unit
USB Connection Characteristics	<ul style="list-style-type: none"> Mini-USB socket
	<ul style="list-style-type: none"> Send/Receive files via hyper terminal
	<ul style="list-style-type: none"> Support common hyper terminal application
	<ul style="list-style-type: none"> Send/Receive Fax – support common WinFax
	<ul style="list-style-type: none"> Send/Receive E-mails
	<ul style="list-style-type: none"> Compatible with Motorola Product Support Tool (PST) Software loader and Phone Tool Software
Data Transmission	<ul style="list-style-type: none"> GPRS supports maximum 85.6 kbps with 4 slots down and maximum 21.4 kbps with 1 slot up data transfer
	<ul style="list-style-type: none"> Supports 14.4 kbps according to GSM standard – CSD channel
	<ul style="list-style-type: none"> WAP (default www address as defined by the operator)
Function via USB Connectivity	<ul style="list-style-type: none"> Send and receive emails
	<ul style="list-style-type: none"> Send and receive faxes
	<ul style="list-style-type: none"> Send and receive files
High-Level Output Power Spec	<ul style="list-style-type: none"> GSM 850 – 27.0 to 28.4 dBm
	<ul style="list-style-type: none"> GSM 900 – 2W ± 2dB
	<ul style="list-style-type: none"> GSM 1800 – 1W ± 2dB
	<ul style="list-style-type: none"> PCS 1900 – 28.0 to 29.5dBm
Car Interfaces	<ul style="list-style-type: none"> Car radio mute
	<ul style="list-style-type: none"> Ignition Sense
	<ul style="list-style-type: none"> Auxiliary Alert
	<ul style="list-style-type: none"> Loudspeaker connection (using switching board kit)
	<ul style="list-style-type: none"> Mini-UHF antenna connector
Accessories	<ul style="list-style-type: none"> Second “Private mode” Handset
	<ul style="list-style-type: none"> Headset
	<ul style="list-style-type: none"> Motorola Phone Tools® software support
	<ul style="list-style-type: none"> Mini USB data cable
Dimensions	<ul style="list-style-type: none"> One fixed unit: 60 x 175 x 35mm / 2.3 x 6.8 x 1.4in
Weight	<ul style="list-style-type: none"> One fixed unit: 250 g / 8.8oz
Current Consumption	<ul style="list-style-type: none"> Off: <2mA
	<ul style="list-style-type: none"> Receive: <170mA
	<ul style="list-style-type: none"> Transmit (Voice): <250mA
Regulatory & Safety Approvals	<ul style="list-style-type: none"> FCC, DOC, PTCRB, R&TTE, GCF, EMC, Safety

Some of the features are network independent. Specifications subject to change without prior notice.

Table 1: M900 Features List



2.2 Optional Accessories

#	Description	Motorola P/N
1.	Mini USB Data cable with Mobile Phone Tool CD V3	CFLN1522AC
2.	Data cable for RS232	FKN8114A
3.	External Motorola handset	FTN6494B
4.	Rear private mode handset extension (Including External Motorola handset and 2 meters extension cable).	FTN6495B

Table 2: Optional Accessory

2.3 Language Bundles

The following table includes the language bundles.
The language bundle does not cover the voice activation number dialing

Language pack	Phone languages	Support in E380	M900 supported	ART languages
0001	US English	Yes	Yes	US English
0002	UK English	Yes	Yes	UK English
0003	US English, French Canadian, Spanish Col. Port. Brazil	Yes	No	US English
0004	UK English, French, German, Italian	Yes	Yes	UK English, French, German, Italian
0005	UK English, French, German, Dutch	Yes	Yes	UK English, French, German
0006	US English, Simplified Chinese	No	No	
0007	US English, Complex Chinese	No	No	
0008	UK English, Complex Chinese	No	No	
000A	UK English, Spanish, Portuguese, Greek	Yes	Yes	UK English, Spanish
000B	UK English, Norwegian, Danish, Swedish	Yes	Yes	UK English
000C	UK English, Swedish, Finnish, Estonian	Yes	Yes	UK English
000D	UK English, Lithuanian, Latvian, Russian	Yes	Yes	UK English
000E	UK English, Polish, Czech, Slovak	Yes	Yes	UK English
000F	UK English, Hungarian, Turkish, Bulgarian	Yes	Yes	UK English
0010	UK English, Serbian, Slovenian, Croatian	Yes	Yes	UK English
0011	UK English, Russian, Ukranian, Romanian	Yes	Yes	UK English



Language pack	Phone languages	Support in E380	M900 supported	ART languages
0012	UK English, Arabic, Hebrew, Russian	Yes	Yes	UK English, Hebrew
0014	UK English, Complex Chinese (lite)	Yes	No	UK English
0015	US English, Simplified Chinese	Yes	No	US English
0016	US English, Complex Chinese (lite)	Yes	No	US English
0017	US English, French Canadian	Yes	No	US English
0018	US English, Spanish Columbian	Yes	No	US English
0019	US English, Portuguese Brazil	Yes	No	US English
001A	US English, Spanish Columbian, Portuguese Brazil	Yes	No	US English
001B	US English, French Canadian, Spanish Columbian	Yes	No	US English
0020	UK English, French, Arabic, Turkish	Yes	Yes	UK English, French
0021	UK English, Thai, Vietnamese	Yes	No	UK English
0022	UK English, Dutch, Danish, Finnish, Norwegian, Swedish (for Talon)	No	No	
0023	UK English, French, German, Italian, Portuguese, Spanish (for Talon)	No	No	
0024	UK English, Simplified Chinese	Yes	No	UK English
0025	UK English, Hungarian, Polish, Czech	Yes	Yes	UK English
0026	UK English, Complex Chinese (Traditional) (for Talon)	No	No	
0027	UK English, Italian, German, French, Swedish (for Talon)	No	No	
0028	UK English, Italian, German, French, Spanish (for Talon)	No	No	
0029	UK English, German, Swedish, Danish (for Talon)	No	No	



Language pack	Phone languages	Support in E380	M900 supported	ART languages
002A	UK English, French, Spanish, Portuguese (for Talon)	No	No	
002B	UK English, Arabic, Urdu, Farsi	Yes	No	UK English
004A	UK, Greek, German, Italian, French	No	No	
004B	UK, Hindi	No	No	
004C	UK English, Slovenia, Italian, German	No	No	
004D	UK English, Complex LITE, Simple	No	No	
004E	US English, French_Canadian, Chinese_simple	No	No	

Table 3: Language Bundles

3 M900 Specifications

Parameter	Specification	Description
Electrical		
	DC Supply voltage	13.8VDC \pm 20%
	Current draw active	< 1 A
	Standby Off current	< 3 mA
	Entertainment Mute	Supply low level during call processing.
	Auxiliary Alert	Supply low level during incoming call.
	Failure Rate	0.2% per month
Audio Performance		
	THD	Total harmonic distortion less than 5%
	Audio Quality	Full Duplex
GSM RF		
	GSM 850	Transmit freq. 824 – 849 MHz; Receiving freq. 869 – 894 MHz
	E-GSM 900	Transmit freq. 880 – 915 MHz; Receiving freq. 925 – 960 MHz
	GSM 1900	Transmit freq. 1850– 1910MHz; Receiving freq. 1930 – 1990 MHz
	GSM 1800	Transmit freq. 1710– 1785MHz; Receiving freq. 1805 – 1880 MHz
	GSM 850 Output Power	27.0 to 28.4 dBm
	GSM 900 Output Power	2W
	GSM1800 Output Power	1W
	PCS1900 Output Power	28.0 to 29.5dBm
Data Services		
	Maximum Circuit switch data / fax call baud rate	85.6 kbps with 4 slots down and 21.4 kbps with 1 slot up
	SMS	MO/ MT Text and PDU modes Cell broadcast
	CSD	Max Baud Rate 14.4Kbps
	GPRS	Multi slot class 8 (4 up; 1 down) Coding scheme CS1 – CS4, Class B
Physical		
	Material	Polycarbonate and ABS plastic V0 grade - Non flammable
	Color	Housing black, lens silver
	Dimensions	M900 unit dimensions: 175×60×35mm (LxWxT)
	Weight	M900 unit only: 250gr
	Package	Weight: TBD Dimensions: TBD Style: TBD
Environmental		
	Operating Temperature	-20°C to + 60°C
	Storage Temperature	-40°C to + 85°C
	Type approval	PTCRB, FCC, DOC IC, R & TTE (BABT), GCF, EMC, Safety EN60950
	Environment performance standards for land mobile products - Consumer	12M05049A04

Table 4: M900 Specifications



4 Power Cable Description

The **M900** Power cable is a 1.5 meters long, 6 pin female Molex connector, which connects the **M900** to the car battery and ignition line. This cable also routes the entertainment mute and auxiliary alert signals.

3 fuses holders are supplied with this cable separately.

The entertainment mute signal (open collector, active low) mutes the car entertainment radio each time any key is activated for 3 seconds or for an incoming call, for the entire phone call.

The auxiliary alert signal (open collector, active low) alerts the driver for incoming call while he is outside of the vehicle. Alert achieved by connecting this signal to the vehicle lights or horn.

5 Operator Escutcheon

Customer's escutcheon will be located on the top of the product front panel (above the display)

The escutcheon can also be labeled on top of the Motorola external handset.

6 Keypad Description

Each key contains large alphanumeric fonts. The color of the keyboard is black with white fonts. Key Pad Backlight illumination is blue.

Keys description:

- Left Soft Key – Performs functions identified by left display prompt.
- Right Soft Key – Performs functions identified by right display prompt.
- Menu Key – Records voice notes, phonebook and shortcut names.
- SEND Key – Sends and answers calls, view recent dialed calls list.
- END Key – Ends phone calls, exits menu system.
- Scroll Key – Moves through menus and lists. Scroll UP activates micro browser
- Power Key – Unit ON / OFF.
- Volume Keys – Adjusts audio volume and ringer volume.
- Number Keys – 10 keys.
- VAD Key – Activates voice activation dialing and implement SEND / END functionality
- Navigation key – four way
- [#] Key.
- [*] Key.

6.1 Getting to know the M900

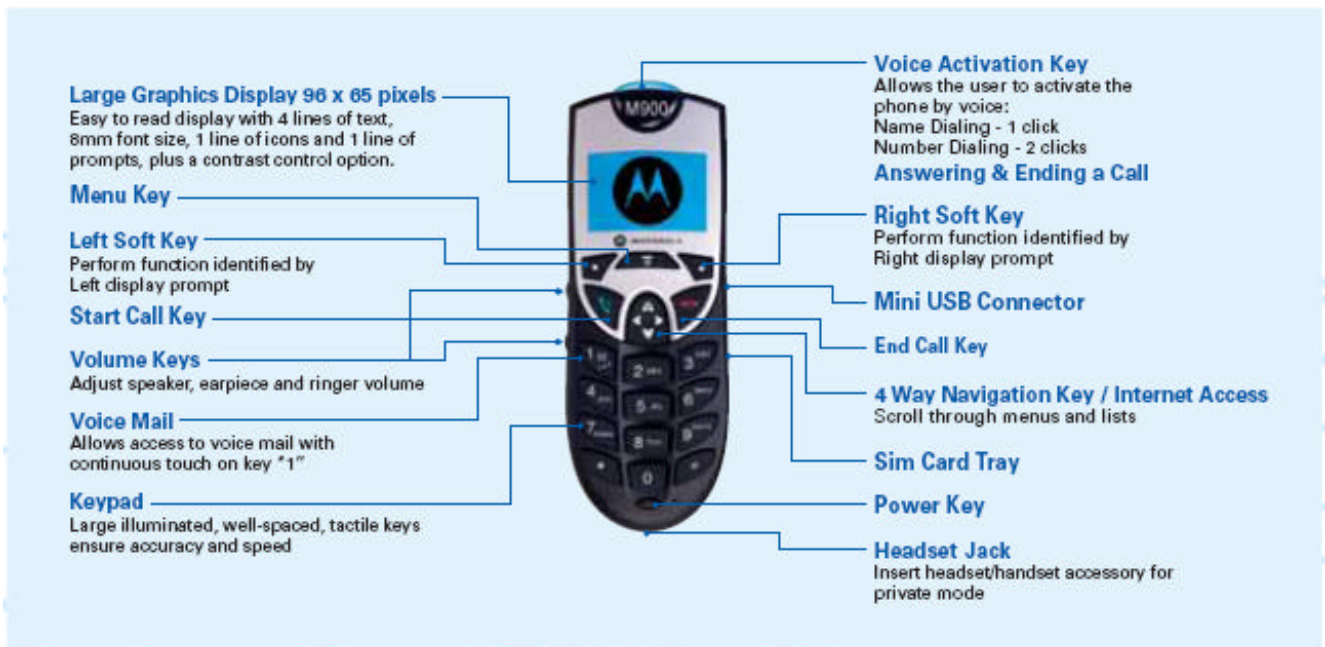
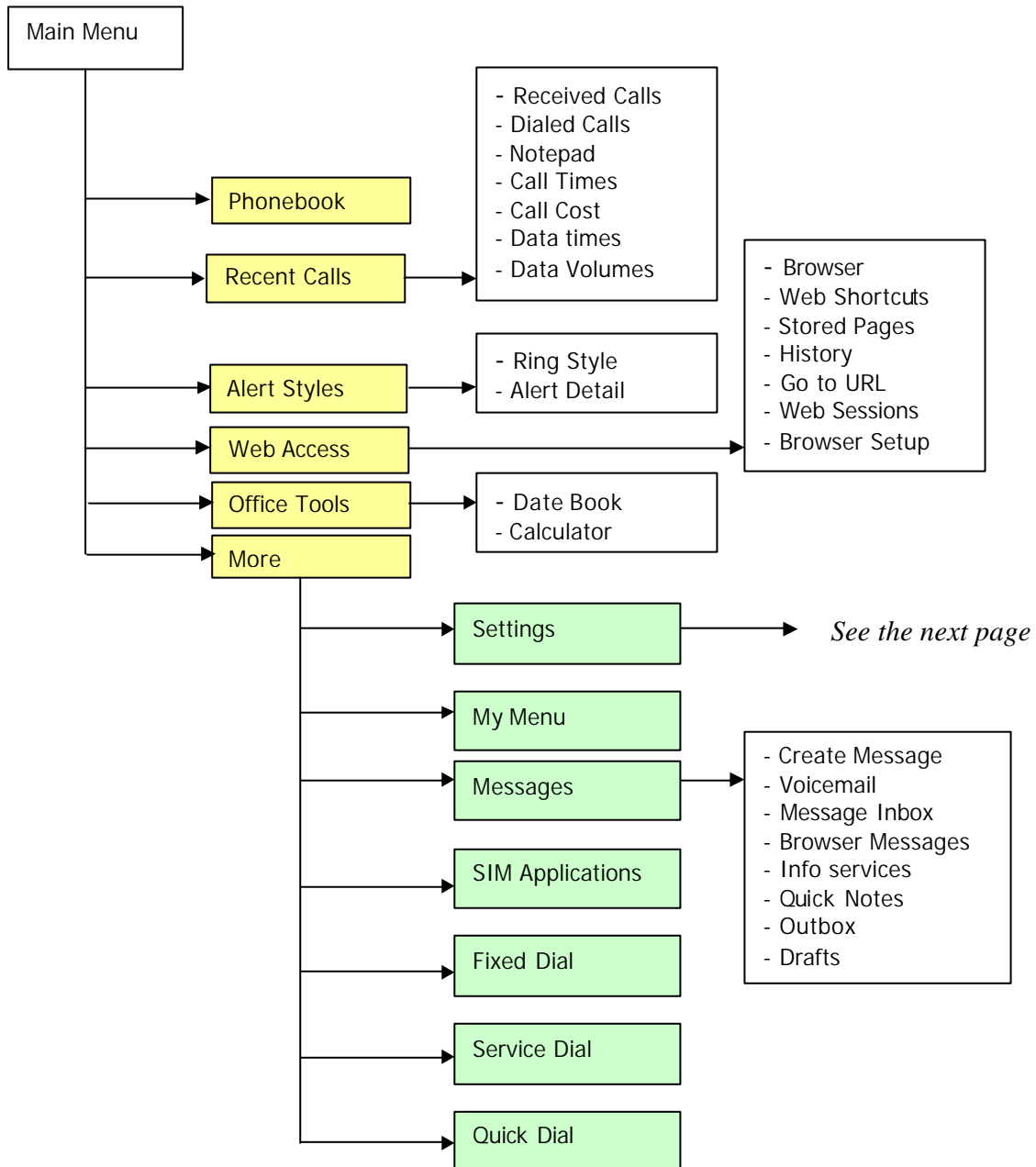


Figure 2 Getting to Know the M900

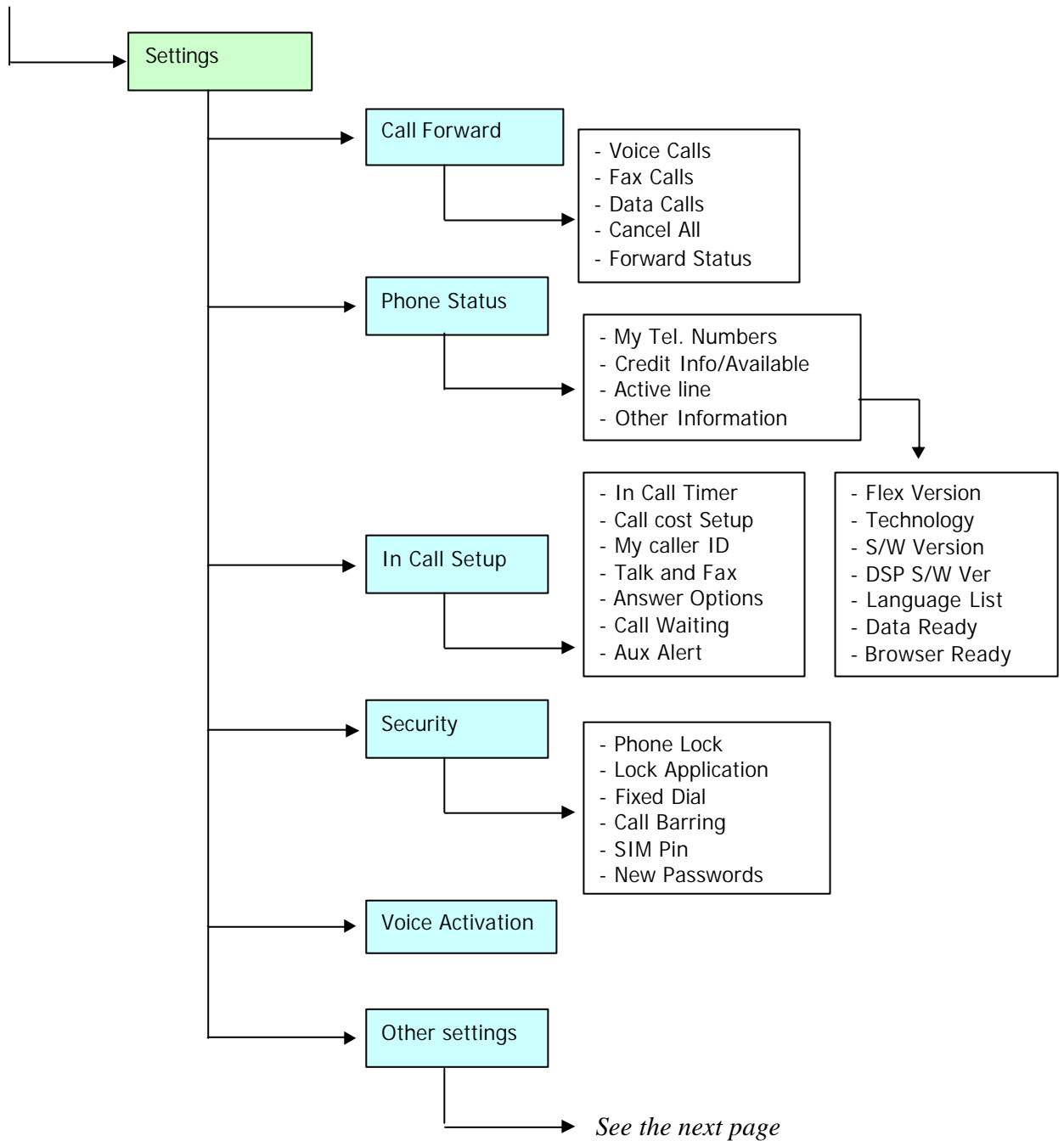


7 Phone User interface

The following diagram describes the **M900** menu tree.

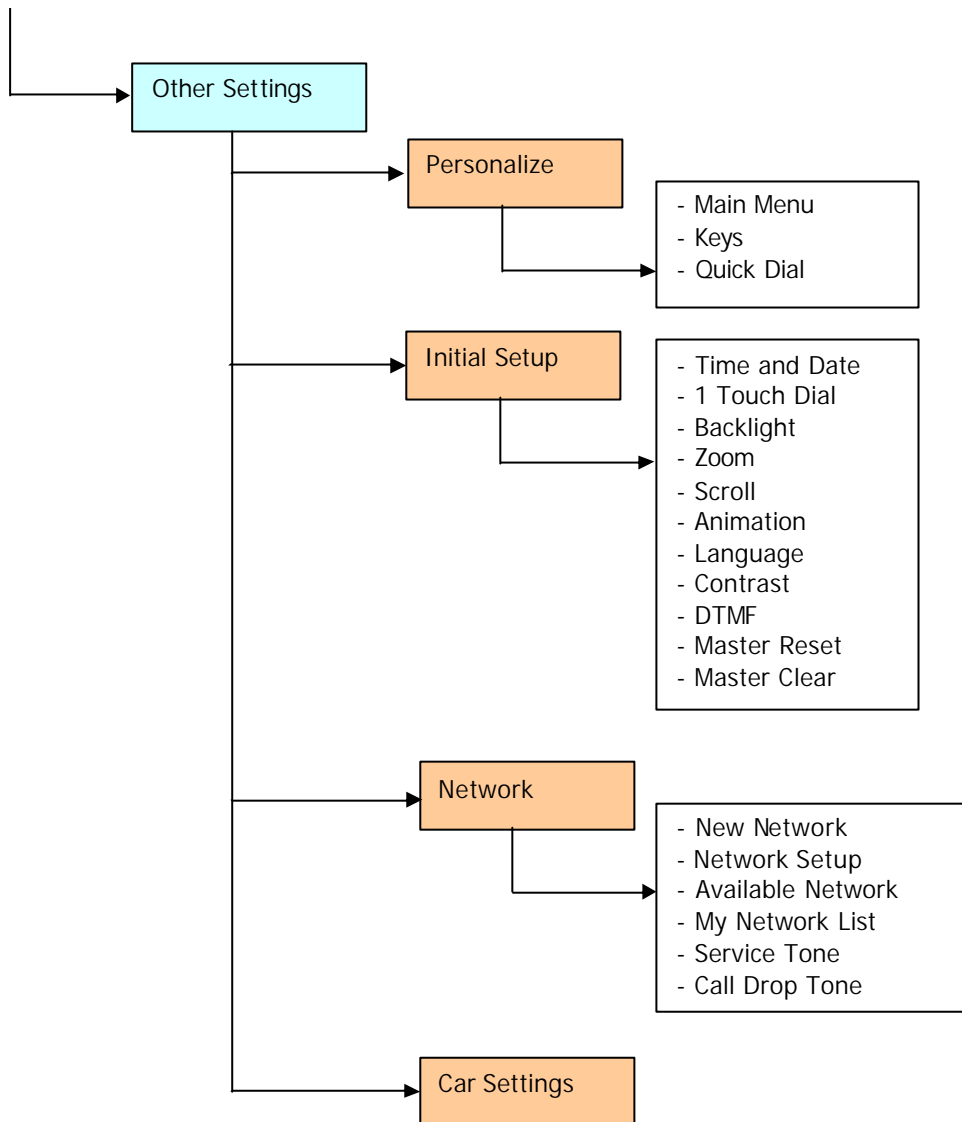


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8



8 Packing Content

This package will contain:

- **M900** unit, plastic holder, power cable, octopus cable, external Microphone, external speaker, user's manual and quick user manual.
- External box dimensions: (H x W x L) TBD
- Weight: TBD (Complete package)

The package will be labeled with the product name, model number and transceiver ESN number.

Numbers will be bar-coded.

9 Labeling

Each **M900** unit will be labeled with the following details:

- E-Marking number: TBD
- Model number: TBD
- Serial number: TBD
- ESN number: TBD
- Production date: MM/YYYY
- Numbers will be bar-coded: 39

10 User Manual

Motorola will provide a language-specific **M900** User Manual and Getting Started Leaflet in English.

11 Service Manual

Motorola will provide a language-specific **M900** Service Manual to the customer.

The manual will contain installation instructions, product description, bill of materials, PCB layout, troubleshooting etc.



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