Level 1-2 Service Manual

C115 Dual Band Wireless Telephone



C115 GSM 900/1800 and 850/1900MHz₂

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Introduction

Motorola® Inc. maintains a worldwide organization that is dedicated to provide responsive, full-service customer support. Motorola products are serviced by an international network of company-operated product care centers as well as authorized independent service firms. Available on a contract basis, Motorola Inc. offers comprehensive maintenance and installation programs which enable customers to meet requirements for reliable, continuous communications. To learn more about the wide range of Motorola service programs, contact your local Motorola products representative or the nearest Customer Service Manager.

Product Identification

Motorola products are identified by the model number on a label usually on the housing. Use the entire model number when inquiring about the product. Numbers are also assigned to chassis and kits. Use these numbers when requesting information or ordering replacement parts.

Product Names

Product names are listed on the front cover. Product names are subject to change without notice. Some product names, as well as some frequency bands, are available only in certain markets.

Product Changes

When electrical, mechanical or production changes are incorporated into Motorola products, a revision letter is assigned to the chassis or kit affected, for example; -A, -B, or -C, and so on. The chassis or kit number, complete with revision number is imprinted during production. The revision letter is an integral part of the chassis or kit number and is also listed on schematic diagrams, and printed circuit board layouts.

Regulatory Agency Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause any harmful interference, and this device must accept interference received, including interference that may cause undesired operation. This class B device also complies with all requirements of the Canadian Interference-Causing Equipment Regulations (ICES-003). Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Computer Program Copyrights

The Motorola products described in this manual may include Motorola computer programs stored in semiconductor memories or other media that are copyrighted with all rights reserved worldwide to Motorola. Laws in the United States and other countries preserve for Motorola, Inc. certain exclusive rights to the copyrighted Introduction computer programs, including the exclusive right to copy, reproduce, modify, decompile, disassemble, and reverse-engineer the Motorola computer programs in any manner or form without Motorola's prior written consent. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license or rights under the copyrights, patents, or patent applications of Motorola, except for a nonexclusive license to use the Motorola product and the Motorola computer programs with the Motorola product.

About This Service Manual

Using this service manual and the suggestions contained in it assures proper installation, operation, and maintenance of C115 telephones. Refer questions about this manual to the nearest Customer Service Manager. This manual contains mechanical service information required for the equipment described and is current as of the printing date.

Audience

This document aids service personnel in testing and repairing C115 telephones Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Scope

This manual provides basic information relating to C115 telephones, and also to provide procedures and processes for repairing the units at Level 1 and 2 service centers including:

Unit swap out

Repairing of mechanical faults

Basic modular troubleshooting•

Testing and verification of unit functionality

Initiate warranty claims and send faulty modules to Level 3 or 4 repair centers.

Conventionss

Special characters and typefaces, listed and described below, are used in this publication to emphasize certain types of information.

Emphasizes additional information pertinent to the subject matter. Caution:

Emphasizes information about actions which may result in equipment damage. Warning: Emphasizes information about actions which may result in personal injury. Keys to be pressed are represented graphically. For example, instead of "Press the Menu Key", you will see "Press Ξ ". Information from a screen is shown in text as similar as possible to what appears in the display. For example, ALERTS or ALERTS. Information that you need to type is printed in boldface type.

Warranty Service Policy

The product is sold with the standard 12 month warranty terms and conditions. Accidental damage, misuse, and extended warranties offered by retailers are not supported under warranty. Non warranty repairs are available at agreed fixed repair prices.

Out of Box Failure Policy

The standard out of box failure criteria applies. Customer phones that fail very early on after the date of sale, are to be returned to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing to bear the costs of early life failure.

Product Support

Customer's original phones will be repaired but not refurbished as standard. Appointed Motorola Service Hubs will perform warranty and non-warranty field service for level 2 (assemblies) and level 3 (limited PCB component). Motorola High Tech Centers will perform level 4 (full component) repairs.

Customer Support

Customer support is available through dedicated Call Centers and in-country help desks. Product-Service training should be arranged through the local Motorola Support Center. *Note:*

Parts Replacement

When ordering replacement parts or equipment, include the Motorola part number and description used in the service manual. When the Motorola part number of a component is not known, use the product model number or other related major assembly along with a description of the related major assembly and of the component in question. In the U.S.A., to contact Motorola, Inc. on your TTY, call: 800-793-7834

Accessories and Aftermarket Division (AAD)

Replacement parts, test equipment, and manuals can be ordered from AAD.For EMEA spare parts call +49 461 803 1638.For Asia spare parts call +65 648 62995.U.S.A.Outside U.S.A.Phone: 800-422-4210Phone: 847-538-8023FAX: 800-622-6210FAX: 847-576-3023December 26, 2003 7Level 1-2 Service

Specifications

MA/Band/Mode	Comments
GSM Dual band 900/1800	Must meet SAR requirements
GSM Dual band 850/1900	Must meet SAR requirements
Baseband/Synthesizer	T.I Calypso Lite
Power Management	T.I. lota
Receive RFIC/VCO	MB (TI: Rita)
Power Amplifiers	(Sky works: 77324)
Flash	16 Mbit
SRAM	In Calypso Lite
	900/850 – 106dBm Nominal Conducted
Digital Rx sensitivity	Sensitivity. 1800/1900 – 105dBm Nominal
	Conducted Sensitivity
	900, 32dBm nominal
Digital power out	1800/1900, 29 dBm nominal

			<gsn< th=""><th>1></th></gsn<>	1>	
Batteries (Type & Capacity)	Parameter	Mode	Current Drains (mAH)	Required	
Li Ion 860 mAhr(Cell is 910mAh) or applicable size (CCI proposal)	Talk Time	50% DTX PCL19 50% DTX PCL 5	132 210	500+ minutes	

parameter	Comments
Size (cc)	72 cc for 030, 75cc for 050
Weight (grams)	< 80 g
Display Characteristics	
	B&W
Graphic	Pixel area: 96x64
	FOB price assumes Yellow or Green LED's. Blue LED's will be
Display backlighting	additional DM charge
	FOB price assumes Yellow or Green LED's. Blue LED's will be
Display background	additional DM charge
	Glass size: 882 mm ²
	Viewable Area 700mm ²
Viewable area	Active Area: 553mm ²
Display indicators	Standard Synergy Like
	Only visible while in idle
Housings	
	only one color available in box
Housing versions:	2 Different ID's required at launch
Co Branding Space	Via escutcheon pocket
	Logo's will be done and handled Regionally
• Size	Accommodates logo 6mm h x 22mm w
Location	On front housing, near bottom keypad
	Escutcheon Pocket (mic hole should not be in the pocket).
Escutcheon	Escutcheon must be implemented in such a way that it is easily
	applied with an automated tool.
	4-way navigational ring surrounding menu key
	2 soft keys
	Combined power/end
Keypad & Function Keys	Send
	12-key numeric keypad
	Three Key colors (3 color printing)
Komod	Day design Compatible in New and March
Keypad spacing	Per design 6mm pitch in Numeric Key
Tactile feedback from keys	Physically distinctive 5 key (Disability Requirements)
	Diameter 1.0 ;height:0.5mm FOB price assumes Yellow or Green LED's. Blue LED's will be
Keypad backlighting	additional DM charge
	English, Hebrew, Russian, Arabic, BoPoMoFo, Stroke, Simple,
Localized keypads	TKE – ensure proper spacing exists
	The sensure proper spacing exists

Keycaps	Hard cap with backlight
Antenna	Internal
Connectivity	
Connector	TBD (needs to work with current Motorola T.I products accessory strategy)
Mono headset jack	
Charger	
Earpiece	
Alerter / Speaker	
Vibrator	Internal
Alert Volume	Meets 95dBA SPL Level
Volume levels	6 audible + 1 silent
Vocoder	HR, FR, EFR, AMR in all bands
Materials	
Housing	Plastic Housing – 3 colors required at launch – Black is core color
• Keypad	Rubber stemmed – prefer hard cap
• Lens	Back Print (Tampo/screen print)
Batteries	
Capacity	твр
Technology	Lilon
Removable	860mAH
SIM card	
• 3V	
Lanyard Hole	Centered Front

Product Overview

The C115 is an affordable priced, easy-to-use mobile phone offering basic features such as voice and SMS. The phone will has an attractive industrial design in a candy bar form factor. This phone will be first targeted and marketed towards the "Emerging Markets" in EMEA, Asia, LA and North America pre-paid and free phones market. It will be positioned below both the C250 and C200 and will be the lowest price and feature solution in the GSM portfolio for 2004 and mid 2005.

Feature

Consumer Value Prop

Affordable, easy to use communication that looks great - from a brand you can trust

Key Points:

- Communication easy affordable voice and SMS
- ID Small attractive form factor at a reasonable price
- Brand High quality
- Performance excellent talk and standby time and RF

Customer Value Prop

Easy to use and low cost - moves connectivity into developing countries and cost conscious consumers with a brand you can trust

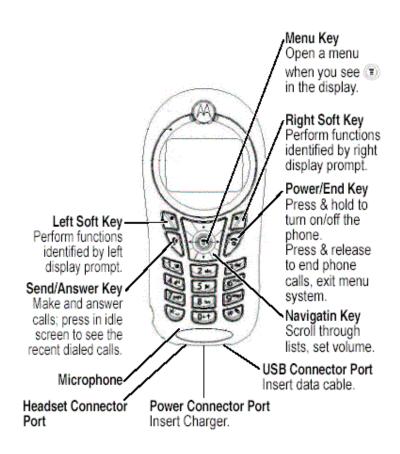
Use cases and target customers

- GSM carriers pursuing new subscribers with limited income.
- Low cost entry for emerging, first-time low income customer
- NA prepaid & free phone

Key Selling Points:

- Cost
- Quality
- Brand
- Attractive ID
- Excellent RF and battery performance

General operation



Menu Structure

Call Forward

Voice Call

Cancel All

Forward Status

Phone Status

My Tel. Numbers *

Active Line

Battery Meter

In-Call Setup

In-Call Timer

Call Cost Setup *

Caller ID

Answer Options

Security

Phone Lock

Lock Keypad

Fixed Dial

Call Barring *

SIM PIN

New Passwords

*Other Settings

Personalize

- Main Menu
- Keys
- Greeting *
- Screen Saver
- Quick Dial *

Initial Setup

- Time and Date
- Power On/Off
- 1-Touch Dial
- Backlight
- Scroll
- Animation
- Language
- Battery Save
- Contrast
- DTMF
- Master Reset

Network

- New Network
- Network Setup
- Available Network
- My Network List
- Service Tone
- Call Drop Tone
- Band Selection

Headset

• Auto Answer

Accessories

Description		Bulk Kit #
Power Solutions		
Battery, 860 mAh English		TBD
Battery, 860 mAh Chinese		TBD
Travel Charger Linear	PRC	AAPN4061A
Travel Charger Linear	US	AAPN4062A
Travel Charger Linear	Aus/NZ	AAPN4063A/B
Travel Charger Linear	Euro	AAPN4064A
Travel Charger Linear	UK	AAPN4065A
Travel Charger Linear	India	AAPN5114A

Travel Charger Mid rate Brazil	SPN5035A
Travel Charger Mid rate Brazil	SPN5165A
(new ID)	
Travel Charger Mid rate	SPN5167A
Argentina	
Travel Charger Mid rate US	SPN5162A
Travel Charger Mid rate Mexico	SPN5163A
Travel Charger Mid rate UK/HK	SPN5164A
Travel Charger Mid rate Euro	SPN5166A
Travel Charger Mid rate Aust	SPN5168A
Travel Charger Mid rate India	SPN5169A
In-Vehicle Solutions	
Vehicle Power Adapter	SYN9324A
Audio & Connectivity	
Mono Headset	SYN8390B
(black)	
Mono Headset	AAYN4264B
(silver)	
Neck Loop headset	SYN7875C
Consumer Personalization	
Silver lanyard (rest of asia)	AAYN4402
Silver lanyard (PRC)	CHYN4546
Silver wristyard (rest of asia)	AAYN4403

Disassembly

Process Notice

		FIOCESS	Notice	
model	E88(E88A)	date	93/2/29	
contents		· · ·		
Pick up PC	BA			
1. Use your	thumb & forefinger to take edge	of PCB. Doi	n't touch the chips of PCB. (photo: 1)	
BB test sta	tion			
Put	t PCB on the fixture smoothly. PC	B can't be k	pent.	
Metaldome	station			
1.Put pcb o	n the fixture. Clean the fiber from	the PCB. C	heck any of the dome if missing or	
disorien	tation.			
	the scratch metaldome.			
			CB under magnifying glass. (photo:2)	
	must self-check the metaldome if	any of dom	ne is missing.	
assembly				
	n hat bar fixture smoothly and bru	ush flux on	pad.(photo:3). Then put LCM on	
	i't let LCM stand up like photo 4.		· · · · · · · · · · · · · · · ·	
-			art then assembly side hook. (photo:5)	
	-		hbling the LCM shielding case holder.	
). In order to avoid misassembling) receiver <mark>deviated</mark> .	g pis assure	8:	
) LED collided.			
		correctly	when assembling antenna module. Antenna	
	st lock PCB exactly.(photo:7)	conectly	when assembling antenna moutie. Antenna	
		on hefore a	ssembling MB in lower case.(photo:8)	
	ck screw driver torque meets the		• " " ,	
	7.NO missing receiver, nameplate ,keypad and nonwoven when assembling upper case. (photo:9)			
	kle front hook when assembling u		• • • • • • • •	
9.Must Put the MIC in the designed white circle line .(photo:11)				
10.Must assure LCM shielding case holder hook to be locked exactly.(photo:12)				
10.1 must assure no lack of any 4 screws when cleaning the Lens. (photo:13)				
11.LCM assy Notice				
11.1. Must wear antistatic ring when touching LCM.(photo:14)				
11.2. Don't touch panel when picking up LCM.(photo:15)				
	Don't strike LCM.			
11.3	11.3 Can only use KANEBO SAVIN MINMAX to clean LCM.			
11.4 Can only use alcohol to clean LCM panel.				
11.5	Must clean up moisture on LCM			
	2/29			
RELEASE TO				

RELEASE TO 🗆 QA 🗆 IE

Photo 1 Use your thumb & forefinger to take edge of PCB. Don't touch the chips of PCB.
Photo 2 Use antistatic fan to blow PCB. Stick metaldome on PCB under magnifying glass.
Photo 3 Put M/B on hat bar fixture smoothly and brush flux on pad.(photo:3).
Photo 4 Then put LCM on PCB. Don't let LCM stand up like photo 4.
Photo 5 Assembly LCM Holder on M/B. First assembly circle part then assembly side hook. (photo:5)

Photo 6: First buckle the shielding case front side when assembling the LCM shielding case holder. (photo:6)
Photo 7 Antenna boss must be inserted hole of PCB correctly when being assembled antenna module. Antenna hook must be locked PCB exactly.(photo:7)
Photo 8 Must assure vibrator put on the right location before assembling the MB with lower case.(photo:8)
Photo 9 Don't lose receiver, nameplate ,keypad, nonwoven when assembling upper. (pheto:9)
Photo 9.1 Don't lose receiver, nameplate ,keypad, nonwoven when assembling upper. (photo:9)

Photo 10 First assemble front hook when assembling upper & lower.(Photo:10)
Photo 11 Must Put the MIC in the designed white circle line .(photo:11
Photo 12 Must assure LCM shielding case holder hook to be locked exactly.(photo:12
Photo 13 must assure no lack of any 4 screws when cleaning the Lens.(photo:13)