MOTOROLA

ELB Series

Two-Way Radio's User Guide

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FCC Licensing Information

ELB Series professional two-way radios operate on radio frequencies that are regulated by the Federal Communications Commission (FCC). In order to transmit on these frequencies, you are required to have a license issued by the FCC.

Application is made available on FCC Forms 601, schedules D and H, and remittance form 159. If ordering the forms by mail, phone, or from the FCC website, please request document number ***000601***, which includes all forms and instructions. If using the FCC Fax-on-Demand system, use the 7-digit order numbers listed below.

To obtain the required forms, please use the following contact information:

Faxed contact the Fax-On-Demand system at:	Mailed call the FCC forms hotline at:	By Phone or Web or for questions regarding FCC license contact the FCC at:
1-202-418-0177	**1-800-418-FORM 1-800-418-3676**	**1-888-CALL-FCC 1-888-225-5322 or: http://www.fcc.gov**
Request forms 3060001, 3060003, and 3060006	Request document 000601	Request document 000601

Before filling out your application, you must decide which frequency(ies) you can operate on. See Frequency and Code Charts on page 20. For questions on determining your radio frequency, please call Motorola Product Services at 1-800-448-6686.

Changes or modifications not expressly approved by Motorola may void the user's authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments

should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

Note: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Product Safety and RF Exposure Compliance

Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 68P81095C98) to ensure compliance with RF energy exposure limits.

For a list of Motorola-approved antennas, batteries, and other accessories, visit the following web site which lists approved accessories: http://www.motorola.com/cgiss/index.shtml.

Introduction

Thank you for purchasing a Motorola ELB Series two-way radio product. The Motorola ELB Series two-way radio models are products of Motorola's 75-plus years of experience as a world leader in designing and manufacturing communications equipment.

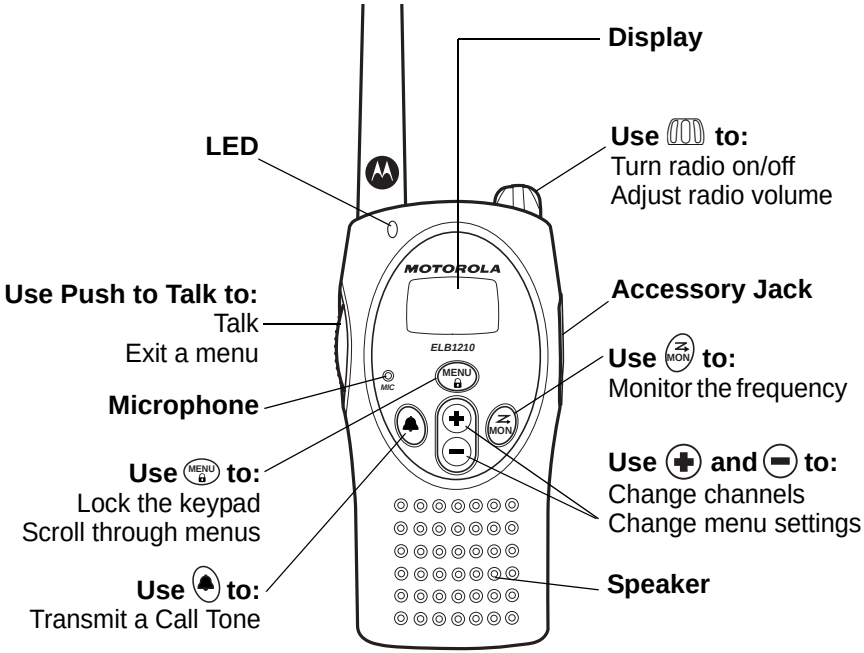
The ELB Series two-way radios are a perfect cost-effective communications solution for all of today's fast-paced businesses and industries.

Product registration is an important step. Registering helps facilitate warranty service and permits us to contact you should your Motorola product require an update or other service.

To register your product on-line, visit www.motorola.com/warranty/radios. Please retain your original dated sales receipt for your records. For warranty service of your Motorola product, you will need to provide a copy of your dated sales receipt to confirm warranty status. Registration is not required for warranty coverage.

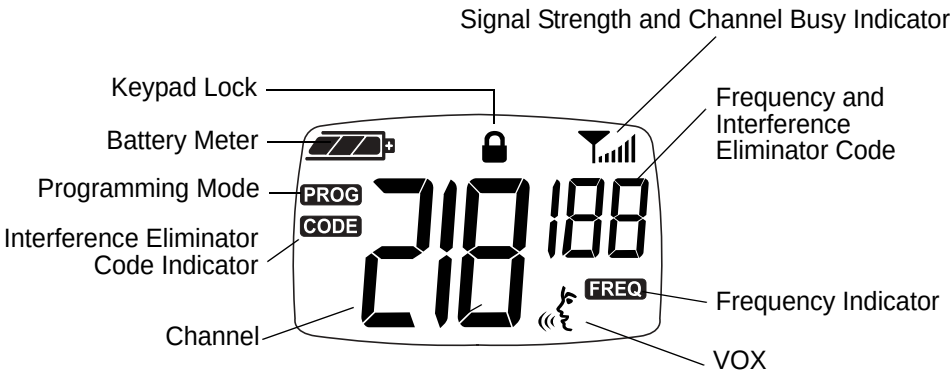
Note: Please be sure to save this programming instructions for further reference.

Radio Controls



Reading the Display

Note: The radio display shown here is for icon location only. Each radio display may appear different (channel and code) based on the pre-programmed radio defaults.



Getting Started

This user's guide covers multiple ELB Series models, and may detail some features your radio does not have. Your model number is shown on the front of the radio below the radio display, and informs you of the following information.

Model	Frequency Band	Watts	Number of Channels
ELB1110	UHF	1	1
ELB1110	VHF	1	1
ELB1210	UHF	1	2
ELB1210	VHF	1	2

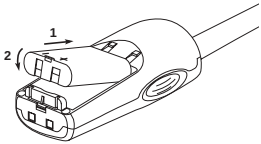
Installing the Nickel-Metal Hydride Battery

The ELB Series radio operates using a Nickel-Metal Hydride (NiMH) rechargeable battery pack, which proves up to 9 hours[1] of usage. A battery, transformer, and drop-in charger tray are supplied with your radio.

WARNING

DO NOT disassemble the NiMH battery pack.

1. Make sure your radio is turned off, by turning the volume knob counterclockwise.
2. Remove the belt clip, if necessary (see page 11).
3. With the radio back facing you, push the latch on the bottom of the radio away from you and slide the battery cover downward, toward you.
4. Insert the NiMH battery. Read battery pack installation instructions for appropriate fit.
5. Slide and snap the battery cover into place.



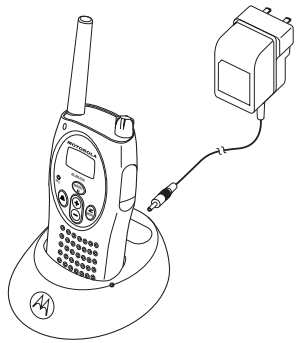
Note: Remove batteries before storing your radio for extended periods. Batteries corrode over time and may cause permanent damage to your radio. Exercise caution when handling batteries that are leaking. Dispose of exhausted batteries at a designated battery disposal unit and not in the household waste.

1. Based on a standard duty cycle of 5% Transmit, 5% Receive, and 90% Standby.

Charging using the 53xxx Drop-In Charging Tray

The Drop-in Charging Tray can be placed on any flat surface and provides drop-in charging convenience. The battery must be charged while inside of the radio.

1. Connect the transformer and the drop-in tray by inserting the plug of the transformer into the rear jack of the drop-in charging tray.
2. Plug the transformer into an AC outlet.
3. Turn the radio off. If the radio is on while charging, it will take longer to fully charge.
4. Insert the radio (with battery installed) into the charging tray pocket with the radio front facing the front of the charger.



Battery Meter

The battery meter in the upper left corner of the display shows how much battery power is remaining.

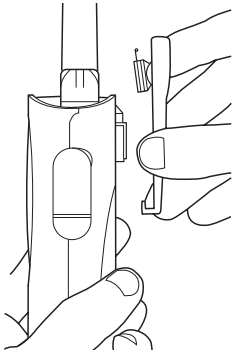
Battery Type	3 Bars	2 Bars	1 Bar	Flashing
NiMH	100%–85%	85%–25%	25%–10%	Final 10%

Attaching the Belt Clip

Your radio includes a belt clip for your convenience.

1. To attach the belt clip, slide the belt clip into the grooves on the top of the radio and slide it down until it clicks into place.
2. To remove, pull back the release latch on the top of the belt clip and slide the belt clip up and away from the radio.

Note: In case of loss, please contact your point-of-sales or call 1-800-353-2729 and request a replacement part number (53xxx for the ELB1110 or 53xxx for the ELB1210).



Turning the Radio On and Off

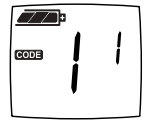
See “Radio Controls” on page 6 for a basic radio diagram.

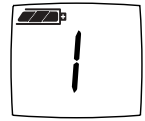
Turn clockwise to turn the radio ON, and counterclockwise to turn the radio OFF.

When you turn the radio on, the radio chirps and the display briefly shows all features and display segments. The LED on the front left of the radio flashes every three seconds when the radio is ON.

The radio then displays the current channel (larger number) and the frequency assigned to that channel (on the right indicated by **FREQ**).

The Interference Eliminator Code displays briefly (indicated by **CODE**). The code will then disappear and the current channel remains displayed.





Adjusting the Volume

Turn clockwise to increase the volume, and counterclockwise to decrease the volume.

Note: Do not hold the radio too close to your ear when adjusting the volume.

Talking and Receiving

Basic Radio Operation

It is good radio practice to monitor the channel you intend to use before transmitting. This practice ensures that you do not interrupt other users already on that same channel.

To check for Channel activity, press (MON) and listen. If you hear static, then the channel is free for use. If someone is already speaking on that channel do not transmit. Press (MON) again to stop monitoring.

1. To talk, press and hold the **Push to Talk** button and speak into the microphone. To maximize clarity, hold the radio 2 to 3 inches away from your mouth.
2. To listen, release the **Push to Talk** button.

Note: The LED on the front left of the radio lights a steady red when transmitting.

Signal Strength Indicator

When there is activity on a frequency, the radio displays and the LED flashes once per second.

When there is activity on the same frequency and code as your radio (your radio is receiving), the radio displays and a signal strength from 1 (weakest) to 6 (strongest). This can help determine when a radio is moving out of range.

Note: Obstacles that block the signal path may affect the strength of the incoming signal.

Programming Mode

In order to speak with someone on your two-way radios, the following features must be set to the exact settings on all radios:

- Channel: The current channel that the radio is using to transmit.
- Frequency: The frequency your radio is using to transmit or receive (see page XX).
- Interference Eliminator Code: These codes help to minimize interference by providing you with a choice of code combinations (see page XX).

Entering Programming Mode

To Do This	Press These Buttons While Turning the Radio ON
Channel	**Push to Talk** button and
Frequency	**Push to Talk** button and
Interference Eliminator Code	(this will disable “End of Transmission Tone”)

Once in Programming Mode, the radio beeps and displays **PROG**.

Note: If you press and release the **Push to Talk** button when programming, you will exit Programming Mode.

Make sure **PROG** is displayed. See Entering Programming Mode for instructions on how to access.

Channel

1. The Channel number flashes and the **FREQ** and **CODE** indicators display alternately.
2. Press ⊕ or ⊖ until the desired Channel is selected.
3. Press the **Push to Talk** button to exit.

Frequency

1. Press MENU once, the **FREQ** indicator displays and the Frequency flashes.
2. Press ⊕ or ⊖ to choose the desired Frequency.
3. Press the **Push to Talk** button to exit.

Interference Eliminator Code

1. Select the channel on which you wish to change the Code.
2. To set the Code, press MENU until the Code number display begins to flash.
3. Press ⊕ or ⊖ to select the desired Code.
4. Press the **Push to Talk** button to exit.

Note: To hear everyone on your frequency, select Interference Eliminator Code 0.

To Specify a Different Code for Each Channel (ELB1210 Only)

1. Press MON and then press ⊕ or ⊖ to select the Channel.
2. Press MON again and then press ⊕ or ⊖ to select the desired Code.
3. Press the **Push to Talk** button to set and exit.

Features

Call Tone

Your radio can transmit Call Tones to other radios in your group so you can alert them that you are about to talk. Once the Call Tone is set, press ▲ to transmit the Call Tone to others. The number of Call Tones supported by your radio is based on model:

ELB1110 1 Call Tone plus Off

ELB1210 2 Call Tones plus Off

To Set the Call Tones

1. Press MENU until CA displays.
2. Press + or − hear and select a Call Tone.
3. Setting the Call Tone to 0 sets the Call Tones to OFF.
4. Press MENU to exit

Note: The default is set to 0, Call Tones are OFF.

Hands-Free Use/VOX (ELB1210 Only)

This feature allows you to activate the radio transmitter with your voice by using a Motorola authorized audio accessory, instead of having to press the **Push to Talk** button.

It is recommended that the radio volume level be kept to a minimum until the audio accessory is put in place and your radio is turned on to adjust the volume to a user's volume preference.

1. Turn the radio OFF.
2. Open the accessory cover.
3. Insert the audio accessory plug firmly into the accessory jack.
4. Turn the radio ON. The icon will display. If flashing, press the **Push to Talk** button to re-enable VOX.
5. To transmit, speak into the accessory microphone. To receive, stop talking.
6. To disable VOX operation, press the **Push to Talk** button or simply remove the audio accessory.

Note: There is a short delay between the start of a voice transmission and when the radio transmits.

Locking the Keypad

You can lock the keypad buttons to avoid accidentally changing your radio settings.

1. To lock the keypad, press and hold MENU for 3 seconds.

Note: The 🔒 icon will display.

2. To unlock, press and hold MENU for 3 seconds.

End-of-Transmission Tone

If enabled, your two-way radio transmits a tone when you finish transmitting. It is like saying *Roger* or *Over*.

1. To enable, press and hold ⊕ as you turn the radio ON.
2. To disable, simply turn your radio OFF and press and hold ⊕ as you turn the radio ON.

Time-Out Timer

The radio will emit a warning tone and will stop transmitting if the **Push to Talk** button is pressed for more than 60 seconds continuously.

Frequency and Code Charts

The charts on the following pages provide Frequency and Code information. These charts are useful when using Motorola ELB Series two-way radios with other business radios. Frequency position is identical to Spirit M, GT, S, and XTN Series Frequencies (where applicable).

VHF Frequencies

Frequency	(MHz)	Bandwidth
1	151.6250	25.0
2	151.9550	25.0
3	154.5700	25.0
4	154.6000	25.0
5	151.7000	12.5/25.0
6	151.7600	12.5/25.0
7	151.8200	12.5/25.0
8	151.8800	12.5/25.0
9	151.9400	25.0
10	151.5125	25.0
11	151.6550	25.0
12	151.6850	125.0
13	151.7150	25.0
14	151.7450	25.0
15	151.7750	25.0

Frequency	(MHz)	Bandwidth
16	151.8650	25.0
17	151.8950	25.0
18	151.9250	25.0
19	152.7000	25.0
20	154.4900	25.0
21	154.5150	25.0
22	154.5275	25.0
23	154.5400	25.0
24	154.6000	25.0
25	154.6550	25.0
26	158.4000	25.0
27	158.4075	25.0

UHF Frequencies

Frequency	(MHz)	Bandwidth
1	464.5000	12.5/25.0
2	464.5500	12.5/25.0
3	467.7625	12.5
4	467.8125	12.5
5	467.8500	12.5/25.0
6	467.8750	12.5/25.0
7	467.9000	12.5/25.0
8	467.9250	12.5/25.0
9	461.0375	12.5
10	461.0625	12.5
11	461.0875	12.5
12	461.1125	12.5
13	461.1375	12.5
14	461.1625	12.5
15	461.1875	12.5
16	461.2125	12.5
17	461.2375	12.5
18	461.2625	12.5
19	461.2875	12.5

Frequency	(MHz)	Bandwidth
20	461.3125	12.5
21	461.3375	12.5
22	461.3625	12.5
23	462.7625	12.5
24	462.7875	12.5
25	462.8125	12.5
26	462.8375	12.5
27	462.8625	12.5
28	462.8875	12.5
29	462.9125	12.5
30	464.4875	12.5
31	464.5125	12.5
32	464.5375	12.5
33	464.5625	12.5
34	466.0375	12.5
35	466.0625	12.5
36	466.0875	12.5
37	466.1125	12.5
38	466.1375	12.5

UHF Frequencies (Continued)

Frequency	(MHz)	Bandwidth
39	466.1625	12.5
40	466.1875	12.5
41	466.2125	12.5
42	466.2375	12.5
43	466.2625	12.5
44	466.2875	12.5
45	466.3125	12.5
46	466.3375	12.5
47	466.3625	12.5

Frequency	(MHz)	Bandwidth
48	467.7875	12.5
49	467.8375	12.5
50	467.8625	12.5
51	467.8875	12.5
52	467.9125	12.5
53	469.4875	12.5
54	469.5125	12.5
55	469.5375	12.5
56	469.5625	12.5

Interference Eliminator Codes

Code	Hz
1	67.0
2	71.9
3	74.4
4	77.0
5	79.7
6	82.5
7	85.4
8	88.5
9	91.5
10	94.8
11	97.4
12	100.0
13	103.5

Code	Hz
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

Code	Hz
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3

Digital Interference Eliminator Codes

Code	Hz
39	023
40	025
41	026
42	031
43	032
44	043
45	047
46	051
47	054
48	065
49	071
50	072
51	073
52	074
53	114
54	115
55	116
56	125
57	131

Code	Hz
58	132
59	134
60	143
61	152
62	155
63	156
64	162
65	165
66	172
67	174
68	205
69	223
70	226
71	243
72	244
73	245
74	251
75	261
76	263

Code	Hz
77	265
78	271
79	306
80	311
81	315
82	331
83	343
84	346
85	351
86	364
87	365
88	371
89	411
90	412
91	413
92	423
93	431
94	432
95	445

Digital Interference Eliminator Codes (Continued)

Code	Hz
96	464
97	465
98	466
99	503
100	506
101	516
102	532
103	546
104	565

Code	Hz
105	606
106	612
107	624
108	627
109	631
110	632
111	654
112	662
113	664

Code	Hz
114	703
115	712
116	723
117	731
118	732
119	734
120	743
121	754

Troubleshooting

Symptom	Try This:
No Power	Reposition, recharge or replace NiMH battery pack.
Message not transmitting	Make sure the **Push to Talk** button is completely pressed while transmitting. Reposition, recharge, replace the NiMH battery pack.
Message not received	Confirm that all radios have the same channel, frequency, and interference eliminator code settings. Make sure that the **Push to Talk** button is not inadvertently being pressed. Reposition, recharge, or replace the NiMH battery pack. Obstructions and operating indoors or in vehicles may interfere - change location.
Hearing conversation or noise on a channel	Check that the Interference Eliminator Code setting is not set to 0. A shared channel may be in use, try another.

Symptom	Try This:
Limited talk range	Steel and/or concrete structures, heavy foliage, buildings, or vehicles decrease range. Check for a clear line of sight to improve transmission. Wearing the radio close to the body such as in a pocket or on a belt decreases range. Change location of the radio.
Heavy static or interference	Radios are too close to one another. They must be at least 5 feet apart. Obstacles are interfering with transmission.
Keypad locked	Make sure menu us unlocked. Unlock by holding MENU for 3 seconds.
Low batteries	Recharge or replace NiMH battery pack. Extreme operating temperatures affect battery life.
Charger light does not come on	Check that radio/battery is properly inserted and check battery/ charger contacts to be sure they are clean. Verify that the charging pin is inserted correctly.

Limited Warranty

MOTOROLA COMMUNICATIONS PRODUCTS

Purchased in the United States and Canada

I. What This Warranty Covers

- **Products.** Defects in materials and workmanship in wireless cellular telephones, pagers, and/or two-way radios, and certain accessories that are sold with them, such as the battery, battery charger, and holster manufactured and/or sold by MOTOROLA.
- **Batteries.** Defects in materials and workmanship in batteries that are manufactured by MOTOROLA and/or sold with Products are covered by this warranty only if the fully-charged capacity falls below 80% of rated capacity or they leak.
- **Software.** Physical defects in the media that tangibly embodies each copy of any software supplied with the Products.

II. What the Period of Coverage Is

From the date the Products are purchased by the first end-user:

- **Products.** The warranty is for one year.
- **Software.** The warranty is for 90 days.

- **Repairs/Replacements.** The warranty is for the balance of the original warranty or for 90 days from the date you receive it, whichever is longer.

III. Who is Covered

This warranty extends to the first end-user purchaser only.

IV. What We Will Do to Correct Warranty Problems

At no charge to you, we have the option to repair or replace the Products or software that do not conform to the warranty, or to refund the Products' purchase price. We may use functionally equivalent reconditioned/refurbished/pre-owned or new Products or parts. No software updates are provided.

V. How to Obtain Warranty Service or Other Information

USA	**Two-Way Radios** 1-800-448-6686
Canada	All Products 1-800-461-4575
TTY	TTY 1-888-390-6456
For **Accessories** and **Software**, please call the telephone number designated above.	

You will receive instructions on how to ship the Products to MOTOROLA. You must ship the Products to us with freight, duties and insurance prepaid. Along with the Products you must include: (a) a copy of your receipt, bill of sale or other comparable

proof of purchase; (b) a written description of the problem; (c) the name of your service provider (if this Product requires subscription service); (d) the name and location of the installation facility (if applicable) and, most importantly; (e) your address and telephone number. If requested, you must also return all detachable parts such as antennas, batteries and chargers. RETAIN YOUR ORIGINAL PROOF OF PURCHASE.

We will ship repaired or replacement Products at our expense for the freight and insurance, but at your expense for any duties. If additional information is needed, please contact us at the telephone number listed on page 30.

VI. What This Warranty Does Not Cover

- Products that are operated in combination with ancillary or peripheral equipment or software not furnished by MOTOROLA for use with the Products (“ancillary equipment”), or any damage to the Products or ancillary equipment as a result of such use. Among other things, “ancillary equipment” includes batteries, chargers, adaptors, and power supplies not manufactured or supplied by MOTOROLA. Any of these voids the warranty.
- Someone other than MOTOROLA (or its authorized service centers) tests, adjusts, installs, maintains, alters, modifies, or services the Products in any way. Any of these voids the warranty.
- Rechargeable batteries that: (a) are charged by other than the MOTOROLA approved battery charger specified for charging such batteries; (b) have any broken seals or show evidence of tampering; (c) are used in equipment other

than the Product for which they are specified; or (d) are charged and stored at temperatures greater than 60 degrees centigrade. Any of these voids the warranty.

- Products that have: (a) serial numbers or date tags that have been removed, altered, or obliterated; (b) board serial numbers that do not match each other, or board serial numbers that do not match the housing; or (c) nonconforming or non-MOTOROLA housings or parts. Any of these voids the warranty.
- Defects or damage that result from: (a) use of the Products in a manner that is not normal or customary; (b) improper operation or misuse; (c) accident or neglect such as dropping the Products onto hard surfaces; (d) contact with water, rain, extreme humidity, or heavy perspiration; (e) contact with sand, dirt or the like; or (f) contact with extreme heat, or spills of food or liquid.
- Physical damage to the surface of the Products, including scratches, cracks, or other damage to a display screen, lens, or other externally exposed parts.
- Failure of Products that is due primarily to any communication service or signal you may subscribe to or use with the Products.
- Coil cords that are stretched or that have any broken modular tabs.
- Products that are leased.

Flat-rate repair rates may apply to Products not covered by this warranty. To obtain information about Products needing repairs that are not covered by this warranty,

please call the telephone number previously listed. We will provide information on repair availability, rates, methods of payment, where to send the Products, etc.

VII. Some Other Limitations

This is MOTOROLA's complete warranty for the Products, and states your exclusive remedies. This warranty is given in lieu of all other express warranties. Implied warranties, including without limitation, the implied warranties of merchantability and fitness for a particular purpose, are given only if specifically required by applicable law. Otherwise, they are specifically excluded.

No warranty is made as to coverage, availability, or grade of service provided by the Products, whether through a service provider or otherwise.

No warranty is made that the software will meet your requirements or will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected.

In no event shall MOTOROLA be liable, whether in contract or tort (including negligence) for damages in excess of the purchase price of the Product, or for any indirect, incidental, special or consequential damages of any kind, or loss of revenue or profits, loss of business, loss of information or data, or other financial loss arising out of or in connection with the ability or inability to use the Products, to the full extent these damages may be disclaimed by law.

VIII. Patent and Software Provisions

At MOTOROLA's expense, we will defend you, and pay costs and damages that may be finally awarded against you, to the extent that a lawsuit is based on a claim that the Products directly infringe a United States patent. Our obligation is conditioned on:

A. you notifying us promptly in writing when you receive notice of the claim;

B. you giving us sole control of the defense of the suit and all negotiations for its settlement or compromise; and

C. should the Products become, or in Motorola's opinion be likely to become, the subject of a claim of infringement of a United States patent, you permit us, at our option and expense, either to: procure for you the right to continue using the Products; replace or modify them so that they become non-infringing; or grant you a credit for such Products, as depreciated, and accept their return. The depreciation will be an equal amount per year over the lifetime of the Products, as established by MOTOROLA.

MOTOROLA will have no liability to you with respect to any claim of patent infringement that is based upon the combination of the Products or parts furnished under this limited warranty with ancillary equipment, as defined in VI.

This is MOTOROLA's entire liability with respect to infringement of patents by the Products.

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