Service Manual

G520 Personal Cellular Telephone

Handheld Portable
EB-G520

Battery Packs
EB-BS520
EB-BL520

Handsfree Car Mount Kit
EB-HF520Z

Simple Car Kit
EB-KA520

DC Adaptor
EB-CD600

Dual Charger
EB-CR520

AC Adaptor
EB-CA600

Data Interface Cable
EB-PA600

SMS Interface Cable
EB-RS600

Panasonic
G520
GSM

WARNINGS AND CAUTIONS

WARNING
The equipment described in this manual contains polarized capacitors utilising liquid electrolyte. These devices are entirely safe provided that neither a short-circuit nor a reverse polarity connection is made across the capacitor terminals. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN DAMAGE TO THE EQUIPMENT OR, AT WORST, POSSIBLE INJURY TO PERSONNEL RESULTING FROM ELECTRIC SHOCK OR THE AFFECTED CAPACITOR EXPLODING. EXTREME CARE MUST BE EXERCISED AT ALL TIMES WHEN HANDLING THESE DEVICES.

Caution
The equipment described in this manual contains electrostatic sensitive devices (ESDs). Damage can occur to these devices if the appropriate handling procedure is not adhered to.

ESD Handling precautions

A working area where ESDs may be safely handled without undue risk of damage from electrostatic discharge, must be available. The area must be equipped as follows:

Working Surfaces - All working surfaces must have a dissipative bench mat, SAFE for use with live equipment, connected via a 1M2 resistor (usually built into the lead) to a common ground point.

Wrist Strap - A quick release skin contact device with a flexible cord, which has a built in safety resistor of between 5k2 and 1M2 shall be used. The flexible cord must be attached to a dissipative earth point.

Containers - All containers and storage must be of the conductive type.

Batteries

This equipment may contain an internal battery in addition to the external battery packs. These batteries are recyclable and should be disposed of in accordance with local legislation. They must not be incinerated, or disposed of as ordinary rubbish.

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1 INTRODUCTION

1.1 Purpose of this Manual

This Service Manual contains the information and procedures required for installing, operating and servicing the Panasonic GSM Personal Cellular Mobile Telephone system operating on the GSM Digital Cellular Network.

1.2 Structure of the Manual

The manual is structured to provide service engineering personnel with the following information and procedures:

1. General and technical information - provides a basic understanding of the equipment, kits and options, together with detailed information for each of the major component parts.

2. Installation and operating information - provides instructions for unpacking, installing and operating the equipment.

3. Servicing information - provides complete instructions for the testing, disassembly, repair and reassembly of each major component part. Step-by-step troubleshooting information is given to enable the isolation and identification of a malfunction, and thus determine what corrective action should be taken. The test information enables verification of the integrity of the equipment after any remedial action has been carried out.

4. Illustrated parts list - provided to enable the identification of all equipment components, for the ordering of spare/ replacement parts.

1.3 Servicing Responsibilities

The procedures described in this manual must be performed by qualified service engineering personnel, at an authorised service centre.

The service engineering personnel are responsible for fault diagnosis and repair of all equipment described in this manual.

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2 GENERAL DESCRIPTION

2.1 General

This section provides a general description and kit composition details for the GSM Handportable Telephone system and optional kits.

The GSM handportable may be configured as:

1. Handportable unit.

2. Vehicle-powered (DC adaptor) handportable unit.

3. Handsfree vehicle-mounted unit.

4. PC fax: send and receive (via PCMCIA Interface card).

2.2 Handportable Main Kit

The handportable main kit provides a standalone class 4 GSM telephone. The plug-in SIM contains the subscriber and network information necessary to operate the phone on a GSM network.
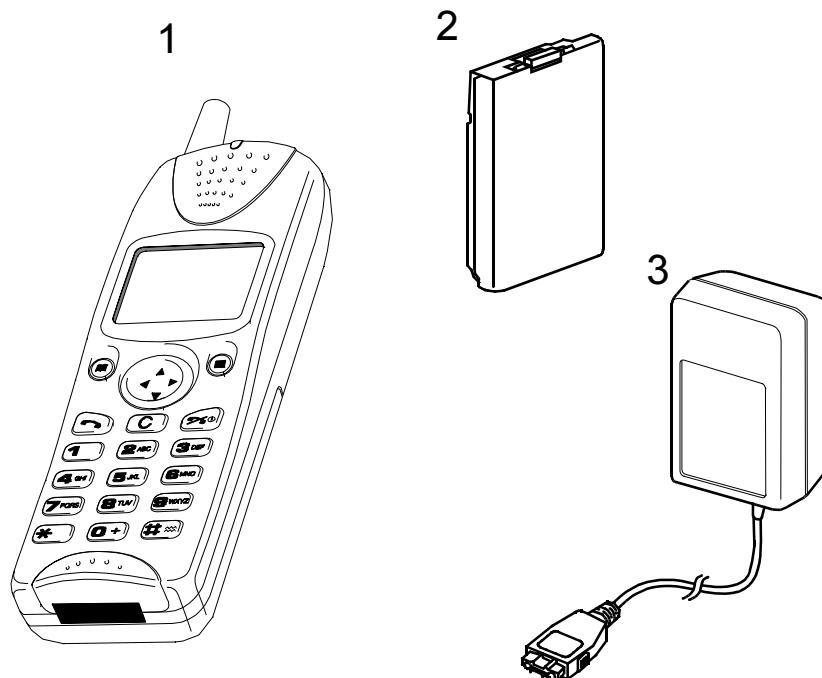
Figure:1   Handportable Main Unit Kit Contents   520-0201

NUMBER	DESCRIPTION	PART NUMBER
1	Main unit	EB-G520
2	Battery	EB-BS520
3	Adaptor	EB-CA600
—	Documentation	See Section 2.13

2.3 Handsfree Car Mount Kit

The Handsfree Car Mount Kit enables the handportable to be mounted in a vehicle, and to operate in handsfree mode.

Either the Cigar Lighter Cable or the Power Supply Cable can be used with the Handsfree unit. The Cigar Lighter Cable can be used for easy and quick fitting, or the power supply cable can be used for a more permanent fitting.

The telephone can be operated in handheld mode by removing it from the Holder. This will use the external antenna and power from the Handsfree Unit.

The handsfree unit also provides external power for the handheld internal charger.
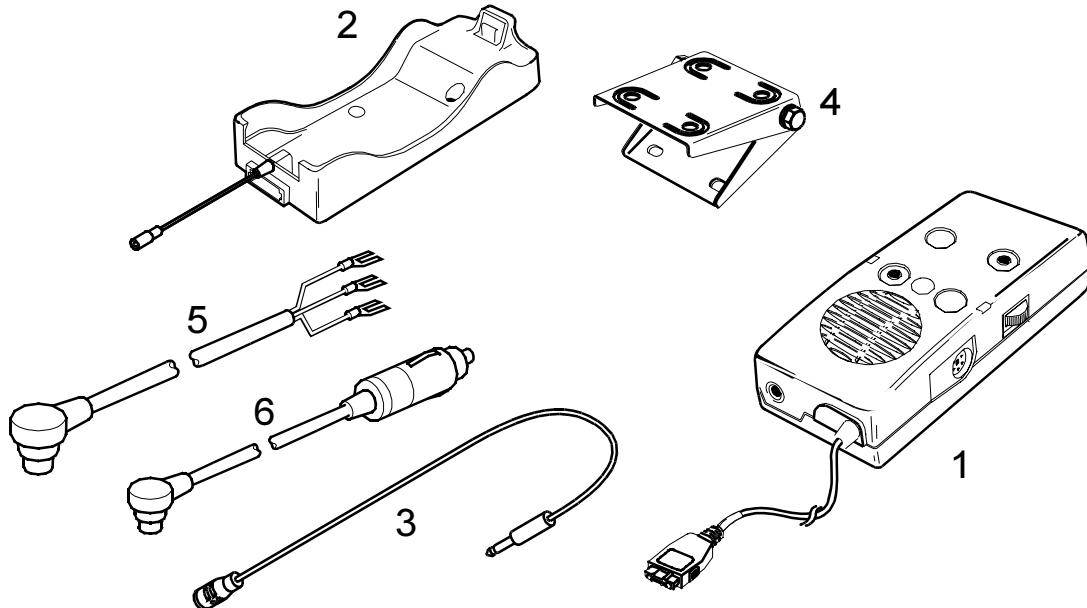
Figure:2   Handsfree Car Mount Kit   520-0202

NUMBER	DESCRIPTION	PART NUMBER
1	Handsfree unit	EB-HF520
2	Holder with RF Cable	EB-KA521
3	Handsfree microphone	EBM1177
4	Adjustable angle bracket	EBN0001
5	Power supply cable	WP76001A
6	Cigar lighter cable	WC70187B

2.4 Simple Car Kit

The Simple Car Kit enables the handportable unit to be powered from a vehicle battery, provided that the vehicle has a cigar lighter socket, and also has an external antenna connector for better signal quality when in a vehicle.

One end of the DC adaptor plugs into the handportable with the telephone battery connected. The other end of the adaptor is pushed into the cigar lighter socket. The external antenna connector is an FME type.
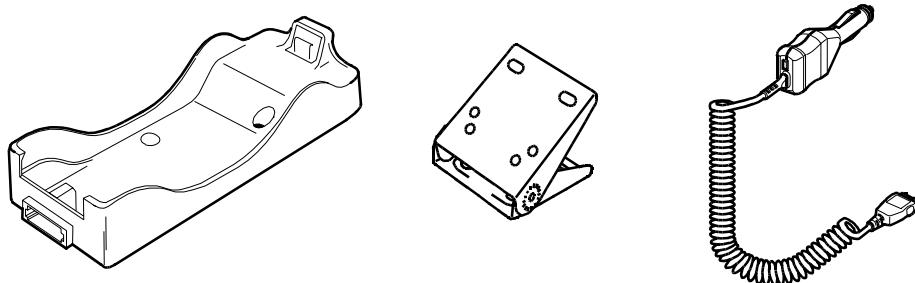
Figure:3   Simple Car Kit   520-0208

NUMBER	DESCRIPTION	PART NUMBER
1	Holder without RF Cable	EB-KA520
2	Adjustable Angle Bracket	EB-EBN0001
3	DC Adaptor	EB-CD600

2.5 AC Adaptor

The AC Adaptor kit is supplied with UK or European input plug type; other country specific types are available. The adaptor enables the handportable unit to be powered from a 230/110/100 VAC supply.

One end of the AC adaptor plugs into the handportable with the telephone battery connected. The other end of the adaptor is pushed into the electrical supply socket.
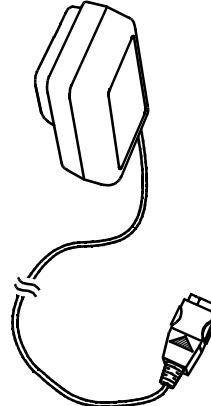
Figure:4   AC Adaptor   520-0212

NUMBER	DESCRIPTION	PART NUMBER
1	AC Adaptor	EB-CA600

2.6 SMS Interface Cable

The SMS Interface Cable enables Short Text Messages (SMS) and Phonebook data to be edited, stored and created.

One end of the SMS Interface Cable is connected to the standalone class 4 GSM telephone and the other end of the SMS Interface Cable is connected to the RS232 serial port on an IBM compatible PC.
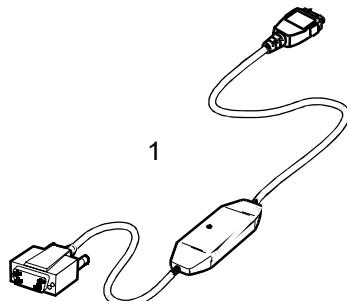
Figure:5   SMS Interface Cable   520-0213

NUMBER	DESCRIPTION	PART NUMBER
1	SMS I/F Cable	EB-RS600

2.7 DC Adaptor

The DC Adaptor kit enables the handportable unit to be powered from a vehicle battery, provided that the vehicle has a cigar lighter socket.

One end of the DC adaptor plugs into the handportable with the telephone battery connected. The other end of the adaptor is pushed into the cigar lighter socket.

The DC Adaptor is also supplied along with the handset holder (without RF connection) and the adjustable angle bracket, to make up a Simple Car Kit (EB-KA520).
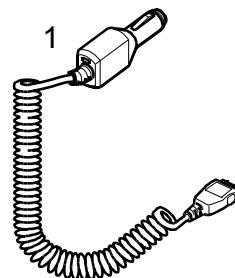
Figure:6   DC Adaptor   520-0209

NUMBER	DESCRIPTION	PART NUMBER
1	DC Adaptor unit	EB-CD600

2.8 Holder Kit

The holder kit allows convenient mounting of the telephone in a vehicle. In conjunction with the DC adaptor this can make a simple car mount kit. The adjustable angle bracket and telephone holder are attached to a convenient fixing point in the vehicle.
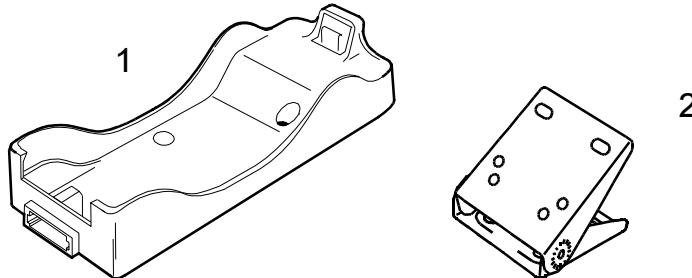
Figure:7   Holder Kit   520-0204

NUMBER	DESCRIPTION	PART NUMBER
1	Holder without RF Connector	EB-KA520
2	Adjustable Angle Bracket	EBN0002

2.9 Dual Charger and Carry Case

The dual charger has two charging slots, enabling the telephone battery to be charged individually or as a part of the whole telephone assembly.
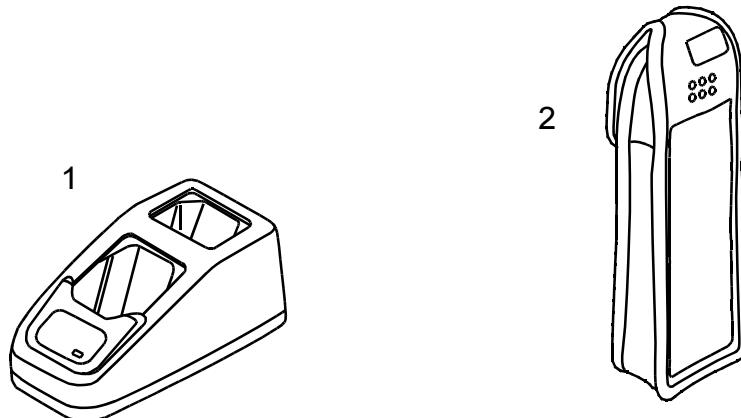
Figure:8   Dual Charger and Carry Case   520-0205

NUMBER	DESCRIPTION	PART NUMBER
1	Dual charger	EB-CR520
2	Carry case	EB-YK520

2.10 Battery Packs

There is a choice of two battery packs, both being Ni-MH. The battery pack (S) is 650mAh and the battery pack (L) is 1300mAh.

Figure:9 Battery Packs   520-0211

NUMBER	DESCRIPTION	PART NUMBER
1	Battery Pack (S)	EB-BS520
2	Battery Pack (L)	EB-BL520

2.11 PC Card

The PC Card interface is used with the handportable and a laptop personal computer to provide a PC fax and modem facility This PC card is also compatible with G600.
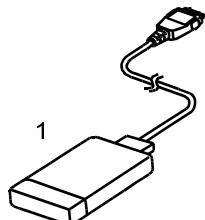
Figure:10 PC Card   520-0207

NUMBER	DESCRIPTION	PART NUMBER
1	PC Card	EB-PA600

2.12Documentation

The following documentation packs are available and contain Operating Instructions, Quick Start information and warranty information. Some markets may require additional documentation, e.g. a specific warranty, that is not listed.

DOCUMENTATION PACKS	PART NUMBER
Austria	G520DPKAS
Belgium	G520DPKBE
Czech Republic	G520DPKCZ
Denmark	G520DPKDE
Finland	G520DPKFI
France	G520DPKFR
Germany	G520DPKGE
Greece	G520DPKGR
Italy	G520DPKIT
Kuwait	G520DPKKU
Lebanon	G520DPKLE
Netherlands	G520DPKNL
Poland	G520DPKPL
Portugal	G520DPKPO
Russia	G520DPKRU
Slovakia	G520DPKSK
Spain	G520DPKES
Sweden	G520DPKSW
Switzerland	G520DPKCH
Turkey	G520DPKTU
United Kingdom	G520DPKUK
Yugoslav Republic	G520DPKYU

2.12.1 Accessories

In addition to the kit contents listed in this section, all kits also contain user documentation. Some markets may require additional documentation, e.g. a specific warranty, that is not listed.

OPTIONAL ACCESSORIES	PART NUMBER
Handsfree Car Mount Kit	EB-HF520Z
Simple Car Kit	EB-KA520Z
DC Adaptor	EB-CD600
Holder Kit	EB-KA520
Dual Charger	EB-CR520
Carry Case	EB-YK520
Battery Pack (S)	EB-BS520
Battery Pack (L)	EB-BL520
AC Adaptor	EB-CA600
SMS Interface Cable	EB-RS600
Data Interface Card	EB-PA600

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3 OPERATING INSTRUCTIONS

3.1 General

This section provides a brief guide to the operation and facilities available on the G600 handportable unit. Refer to the Operating Instructions for full operational information.

3.2 LCD Display

The G520 handportable unit has a graphical chip on glass liquid crystal display in conjunction with the following icons:
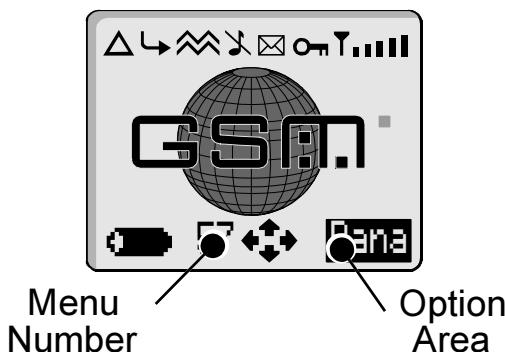
Figure:1 LCD display   520-0301

▪▎▎▎	Indicates received signal strength: ▪▎▎▎ strong signal area; ▪░░░ weak signal area.
⊤	Indicates that it is possible to make an emergency call.
Menu Number	The number of the feature pointed to by the pointer. To access a feature enter the menu number on the keypad.
🔋	Displays the battery charge level: 🔋 Battery is at full charge; 🔋 Battery requires recharging; 🔋 The battery icon flashes during charging. During car mount use, when the battery is fully charged, the battery icon will not light.
Menu Icon	Displays a small icon related to the current status of the telephone: △ telephone is roaming on a none home network; ↳ using the "Call Divert" feature or the telephone has Call Divert set; ⌇⌇⌇ shows that the vibration alert is switched on; ᚷ shows that telephone is in silent mode - no tones; ⊠ indicates there are unread Short Text Messages (SMS.). Lit when SMS area is full; ⚿ the telephone is locked; ABC shows that normal character have been entered in Alpha Entry; ABΓ shows that Greek character have been entered in Alpha Entry; AÄÅ shows that extended character have been entered in Alpha Entry; 0–9 shows that numbers have been entered in Alpha Entry.
✥	Indicates that the navigation key (⊙) can be pressed. Each arrow will light individually to indicate which direction is valid.
Option Area	Pressing the select key (⊙) will select the option displayed in the option area of the display.

Following some operations the display will automatically clear after three seconds or after pressing any key except 📞.

3.3 Location of Controls

Incoming/Charge indicator:
Green – incoming call.
Red – charging battery pack.

External connector:
Used to connect to external accessories or charging equipment.
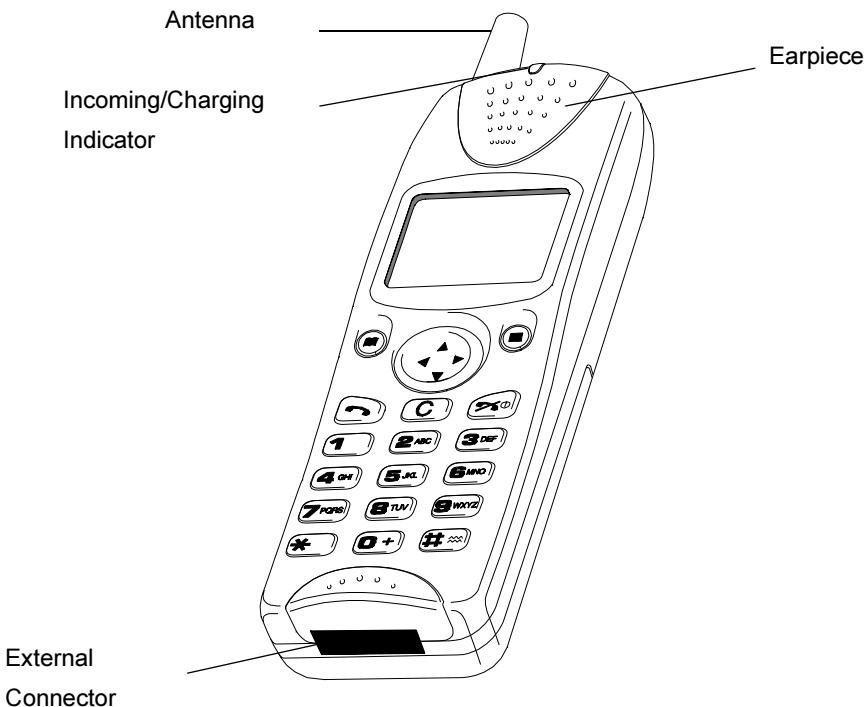
Figure:2   Location of controls for G520   520-0302

⊙	Navigation Key. Scrolls through options or features menu and increases or decreases volume.
▯	Select Key. Selects option shown in the Option Area of the display.
☏	Phonebook Key. Browses through the Phonebook or stores a number in the Phonebook. Changes the type of characters entered during Alpha Entry.
⌢	Send Key. Makes a call.
C	Clear Key. Clears the last digit entered, clears all digits when pressed and held or returns to the previous display.
☏	End Key. Ends a call or switches the telephone on/off when pressed and held.
Digit keys **0+** to **9WXYZ**, and where appropriate the **0+** key will enter the international access code "+", wild numbers or pauses when pressed and held. The **#≋** key, when pressed and held, enables or disables the vibrator.	

3.4 Concept of Operation

There is a close relationship between the Select Key, Navigation Key and display.
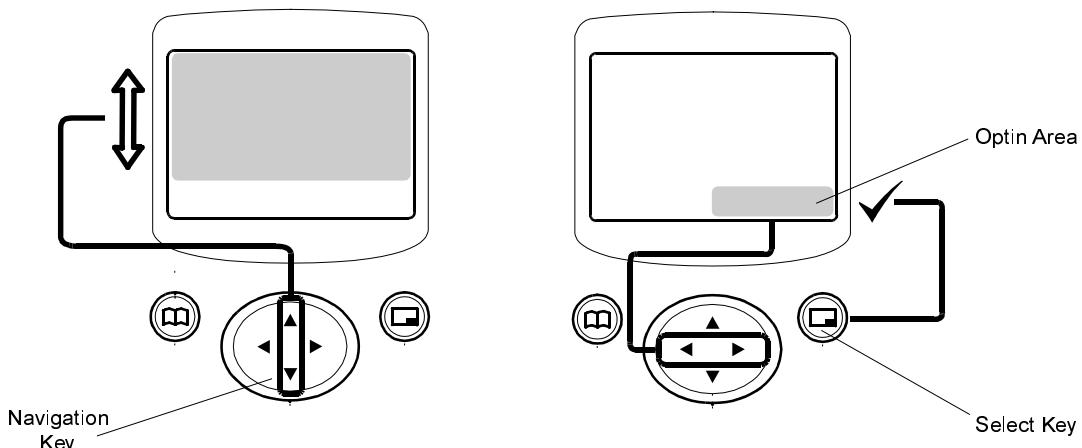
Figure:3 Concept of Operation   520-0303

Pressing up and down (⊕) will move the pointer up and down and scroll through more information in the main area of the display.

Pressing left and right (⊕) will scroll through options in the option area of the display. To choose the option press the Select Key (▱).

3.5 Alpha Entry

Alpha Entry is used to enter alphanumeric characters into Phonebook, Short Messages and the Greeting Message.

Key	Character/Operation			
	ABC	ΑΒΓ	AÄÅ	0–9
①	" @ – , . ; : ! ¡ ? ¿ ( ) ' & % + – / < > = £ $ ¥ ¤ §			1
②ABC	A B C a b c	A B Γ	A Ä Å Æ B C Ç a à b c	2
③DEF	D E F d e f	Δ E Z	D E É F d e è é f	3
④GHI	G H I g h i	H Θ I	G H I g h i ì	4
⑤JKL	J K L j k l	K Λ M	J K L j k l	5
⑥MNO	M N O m n o	N Ξ O	M N Ñ O Ö ø m n ñ o ò ö	6
⑦PQRS	P Q R S p q r s	Π P Σ	P Q R S p q r s ß	7
⑧TUV	T U V t u v	T Y Φ	T U Ü V t u ù ü v	8
⑨WXYZ	W X Y Z w x y z	Ξ Ψ Ω	W X Y Z w x y z	9
Ⓒ	Deletes the character above the cursor, deletes the character to the left when at the end of the line or clears the entire entry when pressed and held.			

Each time a key is pressed it will display the next character. When another key is pressed or no key is pressed for a short time the cursor will move to the next position.

To cycle between Greek characters (ΑΒΓ), extended characters (AÄÅ), numerals (0–9) and normal characters (ABC) press ▱.

3.5.1 Editing Alpha Entry

Pressing ⊕ will move you up or down one line. Pressing ⊕ will move you left or right one character. When the cursor is moved over a character and another key pressed this will insert the new character.

Pressing Ⓒ will delete the character to the left of the cursor.

3.6 Incoming Calling Line Identification (CLI)

When a call is received the last 6 digits of the CLI information is matched with the phonebook. Therefore an incoming call could match to the wrong phonebook entry.

3.7 Hot Key Dial Source List

The source for Hot Key Dial Numebrs is normally 'Phonebook' or 'Service Dial Numbers'. For some OEMs it may be a requirement to store these numbers in the EEPROM. When the source is the EEPROM and the telephone software is updated the source numbers may be lost. Also if the the user changes the source of the Hot Key Dial numebrs it will not be possible to redirect the source back to the EEPROM. However, in the event that an OEM would like the Hot Key Dial source to be stored in the EEPROM it is unlikley that the user will have the option to change the Hot Key Dial source.

3.8 Features Menu Structure

Keyguard

Phonebook
Browse
Create
Review
My Numbers

Messages
Receive List
Send List
Create
Review
Parameters → Auto Delete
Broadcasts → Lifetime
Receive → Message Centre
Message List → Report
Topics → Protocol
Languages

Calls Service
Last Call
All Calls
Call Waiting
Caller's ID
Withhold ID
Call Charge → Cost Left
Price/Unit
Max Cost
Warning At

Call Divert
Voice Calls
Fax Calls
Data Calls
Cancel All
Status

Security
Phone Lock
Call Bar → Bar Voice
PIN → Bar Fax
PIN2 → Bar Data
Fixed Dial → Cancel All
Status
Password

Networks
New Network
Search Mode
Network List

Personalise
Language
Tones → All Tones
Keep Alive → Ring Volume
Auto Answer → Ring Type → Voice Calls
Greeting → Key Volume → Fax Calls
Backlight → Warning Tone → Data Calls
DTMF Length → Messages
Defaults
Hotkey Dial

Figure:4   Feature Menu   600-0304

3.9 Public Man Machine Interface (MMI)

It is possible to operate all GSM telephones in the same way using the Public MMI. The following operations will work with all GSM telephones. However, this information is restricted to those operations that are supported by G520.

The * and # in the following procedures should be replaced by ⊛ and ⌗, respectively. Also <SND> and <END> should be replaced with ⌣ and ⌧ keys.

3.9.1 Reading Phonebook Memory Location

<MEMORY LOCATION>

Leading zeros can be left out of the location number, e.g. 007 can be 7.

3.9.2 Presentation of IMEI

* # 0 6 #

3.9.3 Security

Change PIN

* * 0 4 * <OLD PIN> * <NEW PIN> * <NEW PIN> #

Change PIN2

* * 0 4 2 * <OLD PIN2> * <NEW PIN2> * <NEW PIN2> #

Unblock PIN

* * 0 5 * <PIN UNBLOCKING KEY> * <NEW PIN> * <NEW PIN> #

Unblock PIN2

* * 0 5 2 * <PIN2 UNBLOCKING KEY> * <NEW PIN2> * <NEW PIN2> #

3.9.4 Call Hold

Place a call on hold

2 <SND>

Recall a held call

2 <SND>

Make a second call

<TELEPHONE NUMBER> <SND>

Swap between two held calls

2 <SND>

End held call

O <SND>

End active call

1 <SND>

Reject incoming call

0 <SND>

3.9.5 Call Waiting

Enable Call Waiting

* 4 3 * # <SND>

Disable Call Waiting

4 3 * # <SND>

Call Waiting Status

* # 4 3 * # <SND>

3.9.6 Calling Line Identification

Calling Line Identification Feature	Service Code
Calling Line Identification Presentation (CLIP)	30
Calling Line Identification Restriction (CLIR)	31
Connected Line Presentation (CLOP)	76
Connected Line Restriction (CLOR)	77

Enable

* <SERVICE CODE> * # <SND>

Disable

<SERVICE CODE> * # <SND>

Temporary suppress identification

3 1 # <TELEPHONE NUMBER> <SND>

Temporary display identification * 3 1 # <TELEPHONE NUMBER> <SND>

3.9.7 Call Divert

Call Divert Type	Service Code
Divert all calls	21
Divert calls if busy	67
Divert calls if no reply	61
Divert if not reachable	62

Set (except "No Reply" Call Bar

* * <SERVICE CODE> * <FORWARD TELEPHONE NUMBER> * <TELECOMMUNICATION SERVICE> # <SND>

Set "No Reply" Call Bar

* * <SERVICE CODE> * <FORWARD TELEPHONE NUMBER> * <TELECOMMUNICATION SERVICE> *

<TIME TO RING (seconds) # <SND>

Clear

<SERVICE CODE> * <TELECOMMUNICATION SERVICE> * # <SND>

Status

* # <SERVICE CODE> * <TELECOMMUNICATION SERVICE> * # <SND>

Clear all Call Diverts

0 0 2

3.9.8 Call Bar

Call Bar Type	Service Code
All outgoing calls	33
Outgoing international calls	331
Outgoing international calls except those to your PLMN country	332
All incoming calls	35
Incoming international calls when roaming	351

Set

* <PASSWORD> * <TELECOMMUNICATION SERVICE> # <SND>

Clear

<PASSWORD> * <TELECOMMUNICATION SERVICE> # <SND>

Status

* # <TELECOMMUNICATION SERVICE> # <SND>

Clear all Call Bar Types

3 3 0 * <PASSWORD> # <SND>

Change Call Bar Password

* * 0 3 * * <OLD PASSWORD> * <NEW PASSWORD> * <NEW PASSWORD> # <SND>

## 3.9.9 Telecommunication Services Used for Public MMI

Teleservice

Service	MMI Service Code
All teleservices	10
Telephony	11
All data teleservices	12
Facsimile services	13
Short Message Services (SMS)	16
All teleservices except SMS	19
Voice group services	17

Bearer Service

Service	MMI Service Code
All bearer services	20
All asynchronous services	21
All synchronous services	22
All data synchronous services	24
All data asynchronous services	25
All dedicated packet access	26
All dedicated PAD access	27

3.10 Troubleshooting

The user is given the following information and advised to contact the dealer if the problems persist:

Problem	Cause	Remedy
Telephone will not switch on		Check that the battery pack is fully charged and correctly connected to the telephone
Extremely short battery life for a new battery pack	The network you are using and the condition of the battery pack can affect battery life	Avoid areas of poor reception. Ensure batteries are fully charged. Additionally, for NiMH batteries, ensure batteries are also discharged fully before recharging.
Short battery life for an old battery pack	The battery pack was worn out	Replace with a new one
Short battery life for Ni-MH battery pack	The life of the battery pack is affected by improper charging, this is inherent in all Ni-MH batteries	To maintain maximum performance always use until the Low Battery Warning and then fully recharge the battery packTo revive the Battery Pack use the telephone until the Low Battery Warning and then fully recharge three times. However, if the battery life still is short, the battery pack has eventually worn out. Replace with a new one
The battery level indicator ▄ does not light when charging	If a battery is deeply discharged it will take a short time before there is sufficient power in the telephone to light the battery level indicator ▄	Leave to charge for several minutes in temperatures between +5°C and +35°C
Calls cannot be made	The telephone is locked	Unlock the telephone (Menu: Security: Phone Lock)
	Outgoing calls are barred	Disable the outgoing call barring (Menu: Security: Call Bar)
	The telephone is not registered to a network	Move to a coverage area and operate your telephone after it has registered with a network
Calls cannot be made from Fixed Dial Store		Check your SIM supports Fixed DialCheck if the Fixed Dial is switched on (Menu: Security: Fixed Dial)Check the telephone number is stored in the Fixed Dial
Calls cannot be received	The telephone is not switched on	Switch the telephone on
	Incoming calls are barred	Disable the incoming call barring (Menu: Security: Call Bar)
	The telephone is not registered to a network	Move to a coverage area and operate your telephone after it has registered with a network
Emergency calls cannot be made	You are not in a GSM coverage area	Check that the antenna symbol ▼ is displayed. Move to a coverage area and operate your telephone when the antenna symbol is displayed
Telephone numbers cannot be recalled	The telephone is locked	Unlock the telephone (Menu: Security: Phone Lock)
	Fixed Dial is switched on	Switch off Fixed Dial (Menu: Security: Fixed Dial)

3.11 Important Error Messages

The following table is a list of error messages that may occur during use of the telephone, with a description and suggested course of action:

Area not Allowed	Roaming in the selected area is not allowed
Network not Allowed	Roaming with the selected network is not allowed
Security Failure	The network has detected authentication failure because your SIM is not registered with that network. Contact your Service Provider
SIM Blocked	The SIM is blocked because the wrong PUK has been entered ten times. Contact your Service Provider
SIM Error	The telephone has detected a problem with the SIM. Switch the telephone off and then back on. If the message does not disappear contact your Service Provider
Message Rejected Store Full	A message has been received but the message store is full. To receive messages, delete some of the currently stored messages or set messages to automatically clear (Menu: Messages: Parameters: Auto Delete)
PIN2 Invalidated	The PIN2 is blocked permanently because the wrong PUK2 has been entered 10 times. Services controlled by PIN2 cannot be used. Contact your Service Provider
Warning Store Full Continue?	The message area is full. Your messages cannot be stored until some of the currently stored messages are deleted
Auto Redial List Full	Redial list of unsuccessfully dialled numbers is full. Switch the telephone off and then on again

3.12 Security Codes

Code Type	Number of Digits	Description
Personal Identification Number (PIN)	4 to 8	Controls SIM security. Supplied by the service provider.
PIN 2	4 to 8	Controls memory security. Supplied by the service provider.
PIN/PIN 2 Unblocking Key		
(PUK/PUK 2)	8	Used to unblock PIN and PIN 2. A PIN or PIN 2 will become blocked if the wrong PIN or PIN 2 is entered three times. When the blocked PIN or PIN 2 is unblocked, a new PIN or PIN 2 must be entered. If the wrong PUK or PUK 2 is entered 10 times, your SIM will be unusable.
Supplied by the service provider.		
Password	4	Controls the call bar function. If the wrong password is entered three times, this service will be revoked. Supplied by the service provider.
Lock Code	4	Controls telephone security.
Factory set to "0000".		

3.13 GSM Services Supported by PC Card

Bearer Service Number	Bearer Service Rate	Access Structure	Access Rate	Information Transfer	Error Correction Options
21	Asynchronous 300 bps	Asynch	300 bps	UDI or modem	T or NT
22	Asynchronous 1.2 kbps	Asynch	1.2 kbps	UDI or modem	T or NT
23	Asynchronous 1200/75 bps	Asynch	1200/75 bps	UDI or modem	T or NT
24	Asynchronous 2.4 kbps	Asynch	2.4 kbps	UDI or modem	T or NT
25	Asynchronous 4.8 kbps	Asynch	4.8 kbps	UDI or modem	T or NT
26	Asynchronous 9.6 kbps	Asynch	9.6 kbps	UDI or modem	T or NT
41	Dedicated PAD Access 300 bps	Asynch	300 bps	UDI	T or NT
42	Dedicated PAD Access 1.2 kbps	Asynch	1.2 kbps	UDI	T or NT
44	Dedicated PAD Access 2.4 kbps	Asynch	2.4 kbps	UDI	T or NT
45	Dedicated PAD Access 4.8 kbps	Asynch	4.8 kbps	UDI	T or NT
46	Dedicated PAD Access 9.6 kbps	Asynch	9.6 kbps	UDI	T or NT

3.14 GSM Network Codes and Names

Country	Access Code	Network Operator	Network Code	
Albania	+355	AMC	276	01
Andorra	+376	STA -Mobiland	213	03
Australia	+61	TELECOM Australia	505	01
		OPTUS Communications Pty Ltd.	505	02
		Vodafone PTY	505	03
Austria	+43	Mobilkom Austria	232	01
		max.mobil	232	03
Azerbaijan	+994	Azercell	400	01
Bosnia & Herzegowina	+387 +068	Cronet	218	01
		PTT Bosnia	218	19
Belgium	+32	Belgacom Mobile	206	01
		Mobistar	206	10
Bulgaria	+359	MOBILTEL AD	284	01
Bahrein	+973	BAHREIN Telecommunications Co.	426	01
Brunei Darussalam	+673	DSTCom	528	11
		Jabatan Telekom	528	01
Canada	+1	Microcell	302	37
China	+86	Guangdong MCC	460	00
		China United Telecommuni-cations Corporation	460	01
Cameroon	+237	PTT Cameroon Cellnet	624	01
Cyprus	+357	Cyprus Telecommunication Authority	280	01
Czech Republic	+42	Eurotel Praha	230	02
		Radio Mobil	230	01
Germany	+49	DeTeMobil GmbH	262	01
		Mannesmann Mobilfunk	262	02
Denmark	+45	TELE Danmark Mobile	238	01
		Dansk Mobil Telefon DMT	238	02
Estonia	+372	Eesti Mobiiltelefon	248	01
		RADIOLINJA EESTI AS	248	02
Egypt	+20	Arento	602	01
Ethiopia	+251	ETA	636	01
France	+33	France Telecom	208	01
		SFR	208	10
		Bouygues Telekom	208	20
		SRR	647	10
		TIKIPHONE	547	20
Finland	+358	Telecom Finland	244	91
		Finnet	244	09
		OY Radiolinja AB	244	05
Fiji	+679	Vodafone	542	01
Georgia	+995	Geocell	282	01
		Magticom	282	02
Ghana	+233	ScanCom	620	01
Gibralta	+350	GIBTEL	266	01
Greece	+30	Panafon S.A	202	05
		STET HELLAS	202	10
Hungary	+36	Westel 900 GSM RT	216	30
		Pannon GSM RT	216	01
Hongkong	+852	Hong Kong Telecom CSL Ltd.	454	00
		Hutchison Telephone Co. Ltd.	454	04
		SmarTone Mobile Communications Ltd.	454	06
Myanmar	+95	HPT	219	01
Italy	+39	OMNITEL PRONTO ITALIA	222	10
		TELECOM ITALIA MOBILE	222	01

Country	Access Code	Network Operator	Network Code	
India	+91	Bharti Cellular Limited	404	10
		BPL SYSTEMS & PROJECTS LTD. INDIA	404	21
		Skycell	404	40
Indonesia	+62	PT Telekomunikasi Indonesia	510	10
		PT. SATELIT PALAPA INDONESIA	510	01
		PT EXCELCOMINDO PRATAMA	510	11
Iran (Islamic Republic of)	+98	T.C.I	432	11
Ireland	+353	Telecom Ireland	272	01
		Digifone	272	02
Iceland	+354	Post & Simi	274	01
Ivory Coast	+225	Comstr	612	01
		Ivoiris	612	03
		Loteny Telecom	612	05
Jordan	+962	JMTS	416	01
Kuwait	+965	Mobile Telecommunications Co.	419	02
Luxembourg	+352	P & T Luxembourg	270	01
Lao (People's Democratic Republic)	+856	Lao Shinawatra	457	01
Lebanon	+961	Libancell	415	03
		Cellis	415	01
Liechtenstein	+4175	Natel-D	228	01
Lithuania	+370	Bite GSM	246	02
		Omnitel	246	01
Lesotho	+266	Vodacom	651	01
Luxembourg	+352	P&T LUXGSM	270	01
Latvia	+371	Latvian Mobile Telephone Co.Ltd.	247	01
Macau	+853	C.T.M.	455	01
Monaco	+377	France Telecom	208	01
		SFR	208	10
Macedonia	+389	PTT Makedonija	294	01
Malta	+356	Telecell	278	01
Morocco	+212	ONPT MOROCCO	604	01
Mauritius	+60	MAURITIUS TELECOM LTD.	617	01
Malawi	+265	TNL	650	01
Malaysia	+60	Celcom	502	19
		BINARIANG COMMUNICATIONS SDN BHD.	502	12
Norway	+47	Telenor Mobil AS	242	01
		NetCom GSM A/S	242	02
Namibia	+264	MTC	649	01
New Caledonia	+687	Mobilis	546	01
Netherlands	+31	LIBERTEL	204	04
		PTT Telecom	204	08
Newzealand	+64	BELLSOUTH	530	01
Oman	+968	General Telecoms	422	02
Portugal	+351	Telecomunicaçoes Moveis Nacionais (TMN)	268	06
		TELECEL	268	01
Pakistan	+92	Mobilink	410	01
Papua New Guinea	+675	Pacific	310	01
Philippines	+63	Globe Telecom GMCR Inc	515	02
		Isla Communications Co. Inc.	515	01
Poland	+48	Plus GSM	260	01
		ERA GSM	260	02
Qatar	+974	Q-TEL	427	01
Reunion	+262	SRR	647	10
Romania	+40	MobiFon	226	01
		MobilRom	226	10

Country	Access Code	Network Operator	Network Code	
Russian Federation	+701	Mobile Telesystems	250	01
		North-West GSM	250	02
Sweden	+46	Telia Mobitel	240	01
		COMVIQ GSM AB	240	07
		EUROPOLITAN AB	240	08
South Africa	+27	VODACOM	655	01
		Mobile Telephone Networks	655	10
Saudi Arabia	+966	Al Jawal	420	01
		EAE	420	07
Sudan	+249	Mobitel	634	01
Senegal	+221	Sonatel	608	01
Singapore	+65	Singapore Telecom	525	01
		MobileOne	525	03
San Marino	+378	Omnitel	222	10
		Telecom Italia Mobile	222	01
Saudi Arabia	+966	ELECTRONIC APPLICATIONS ESTABLISHMENT	420	07
Seychelles	+248	SEZ SEYCEL	633	01
Slovak Republic	+42	Eurotel	231	02
		Globtel	231	01
Slovenia	+386	Mobitel	293	41
South Africa	+27	Vodacom	655	01
		MTN	655	10
Sri Lanka	+94	MTN NETWORKS (PVT) SRI LANKA	413	02
Spain	+34	TELEFONICA MOVILES	214	07
		AIRTEL SPAIN	214	01
Switzerland	+41	Swiss Telecom PTT	228	01
Syria	+963	Mobile Syria	417	09
Taiwan	+886	LDTA	466	92
Thailand	+66	Advanced Info Service Public Company Limited	520	01
Turkey	+90	PTT Turkey	286	01
		PTT Turkey	286	02
Tanazania (United Republic of)	+255	Tritel	640	01
Ukraine	+380	Mobile comms	255	01
		Golden Telecom	255	05
United Arab Emirates	+971	ETISALAT	424	02
Uganda	+256	Celtel Cellular	641	01
United Kingdom (Guernsey) (Jersey) (Isle of Man)	+44	Vodafone	234	15
		Cellnet	234	10
		GUERNSEY TELECOMS	234	55
		Jersey Telecoms	234	50
		MANX TELECOM	234	58
Uzbekistan	+7	Daewoo GSM	434	04
		Coscom	434	05
Viet Nam	+84	MTSC	452	01
		DGPT	452	02
Yugoslavia	+381	Mobile Telekom	220	01
Zimbabwe	+263	NET ONE	648	01

3.15Glossary of Terms

DTMF	Dual Tone Multiple Frequency tones. The numeric keys 0 to 9, and * and # will generate different DTMF tones when pressed during conversation. These are used to access voice mail, paging and computerised home banking.
GSM	Global System for Mobile communications. The name given to the advanced digital technology that your telephone uses.
Home country	The country where your home network operates.
Home network	The GSM network on which your subscription details are held.
Lock code	Used for security of your telephone. Factory set to "0000".
Message Centre	Where messages are sent before they are forwarded onto their destination. The Message Centre telephone number may be programmed into your SIM or supplied by your service provider.
Network operator	The organisation responsible for operating a GSM network. Each country will have at least one network operator.
Password	Used for the control of the call bar function. Supplied by your service provider.
PIN	Personal Identification Number used for SIM security. Supplied by your service provider.
PIN2	Personal Identification Number used for the control of Fixed Dial Memory and call charge metering. Supplied by your service provider.
PUK/ PUK2	PIN/PIN2 Unblocking Key. Used to unblock the PIN/PIN2. Supplied by your service provider.
Registration	The act of locking on to a GSM network. This is usually performed automatically by your telephone.
Roaming	The ability to use your telephone on networks other than your Home network.
Service provider	The organisation responsible for providing access to the GSM network.
SIM	Subscriber Identification Module. A small smart-card which stores unique subscriber and user-entered information such as Phone Book, Fixed Dial Memory and short messages. Supplied by your service provider.
Supplementary service	Network-controlled GSM functions which your telephone will support. Supplementary services may only be available on a subscription bases.
Wild numbers	Spaces in a stored telephone number. When the telephone number is recalled pressing a numeric key will fill in a space. This can be used to restrict dialling to a specific area.
Service Dial Numbers	Service Dial Numbers are predefined numbers that allow the user to access a set of special services provided by the Service Provider. For example billing information or access to Voice Mail.
Hot Key Dial	Hot Key Dial allows quick access to numbers stored in the Phonebook of Service Dial Number list. The source of the Hot Key Dial may be defined by the user or preprogrammed by the Service Provide. It is most likley to be preporgrammed to the Service Dial Numbers by the Service Provider.

4   INSTALLATION GUIDE

4.1 General

This section describes the procedure used to install the GSM handportable unit into a negative-grounded vehicle.

Caution
Do not attempt to install this equipment into a positive-grounded vehicle. Do not attempt to supply power to the equipment from a positive-grounded vehicle.

Installation will be performed using one of the following kits:

1. Handsfree Car Mount Kit
2. DC adaptor, holder EB-KA520 and Adjustable Angle Bracket.

4.2 Handsfree Car Mount Kit
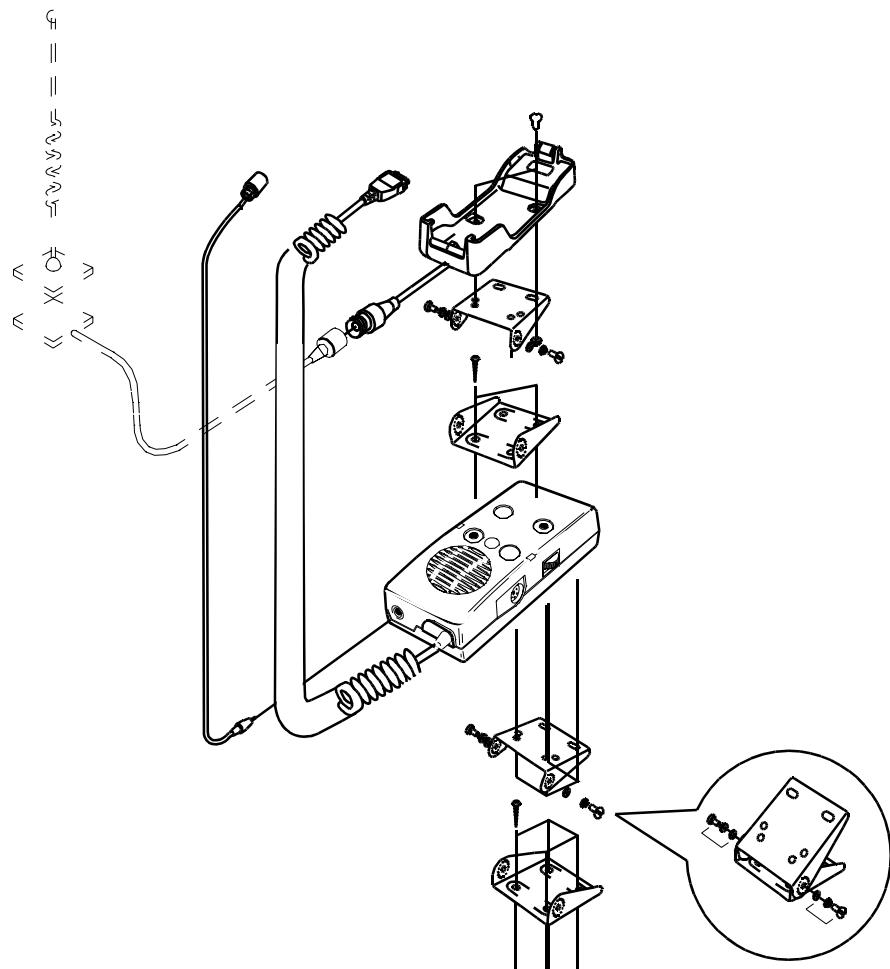
Figure:1   Handsfree Car Mount Kit   520-0401

4.2.1 Selecting the Location for the Handsfree Unit

The following points should be considered when choosing a location for the handsfree unit:

1. Ensure that the location does not obstruct normal operation/functioning of the vehicle.

2. Ensure that the location does not affect passenger accommodation, or is subject to excessive shocks.

3. Ensure that the location will allow easy operation of the unit.

4. Ensure that the location provides a secure fixing for the unit.

5. Avoid direct exposure to the sun's rays, or to rain.

6. Ensure that the location takes due consideration of cable routing requirements.

7. Considering the points listed above, the recommended locations for mounting the handsfree unit are the Dashboard, Arm Rest Storage Compartment or the Centre Console.
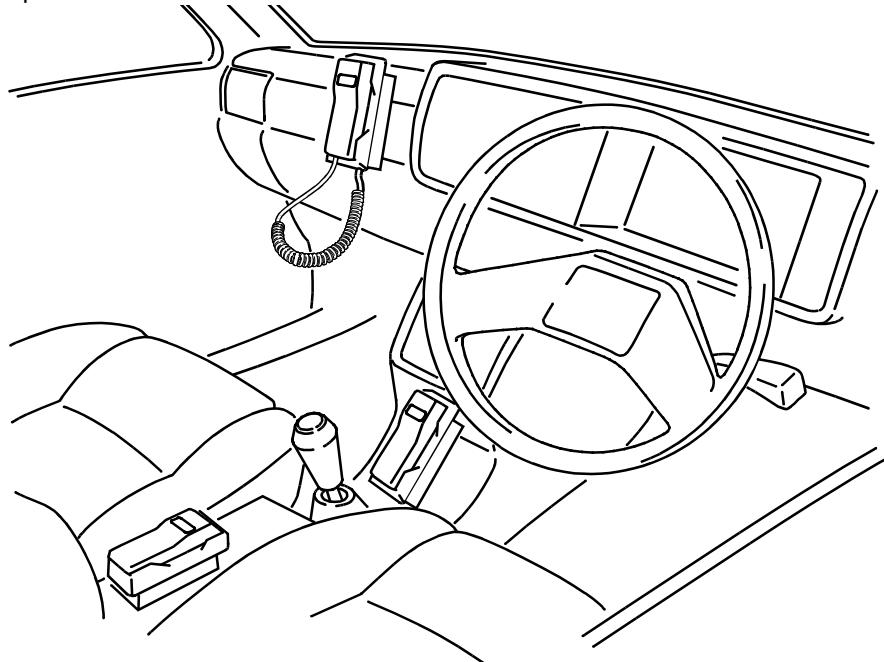

Figure:2 Handsfree Cradle Unit Locations   520-0402

4.2.2 Wiring

There are two cables supplied with the Handsfree Car Mount Kit. One cable is the EasyFit Cable that takes power from the vehicles cigarette lighter socket. This cable dosen't cater for Radio Mute and will draw power whenever there is power to the cigarette lighter. It is recommended that the EasyFit cable is removed from the cigarette ligher when the vehicle is not running.The other cable is used for perminantly wiring the Car Mount Kit into the vehicles wiring.

Locations for the handsfree unit will vary according to the type of vehicle, as will the routing of power and interconnecting cables. The following precautions should be observed:

1. DO NOT install or connect the unit into a positive (+) grounded vehicle. This equipment must be installed into a 12V negative (-) ground vehicle.

2. Mount cables to the vehicle so that they are not prone to displacement or disconnection through vibration.

3. Route cables through existing holes in the dashboard, bulkheads etc. where possible.

4. Site cables so that contact with moving parts (brake/clutch pedals, seat mechanisms etc.) is avoided.

5. Site cables as far away as possible from existing cabling, to avoid electrical induction.

6. Shield cables to protect interference with the vehicle electronics.

7. When connecting cables to the vehicle circuitry, ensure that the vehicle functions are not affected.

8. A typical car installation is illustrated below, the actual location of units may vary according to vehicle type.
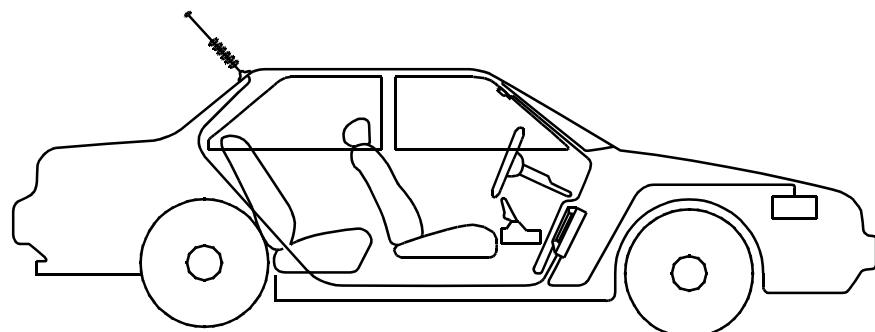

Figure:3   Car installation   520-0403

Wiring guide

Colour	Connection	Fuse
Black	Ground	—
Blue	Ignition	3A
Red	Battery (+)	3A
Yellow	Radio Mute	—

4.2.3 Installation with the Adjustable Angle Bracket

The Adjustable Angle Bracket can be used to install the Handsfree Unit in the following configurations:

HANDSFREE

ADJUSTABLE
ANGLE BRACKET

SCREW
(XB4 + 10FN) Ø 4 mm

SCREW Ø 4 mm

SELF-TAPPING SCREW
(XTB4 + 25RFN) Ø 4 mm

Ø 2 mm HOLE

30 mm

38 mm

HANDSFREE

ADJUSTABLE
ANGLE BRACKET

SCREW
(XB4 + 10FN) Ø 4 mm

SELF-TAPPING SCREW
(XTB4 + 25RFN) Ø 4 mm

30 mm

16 mm

38 mm

Ø 2 mm HOLE
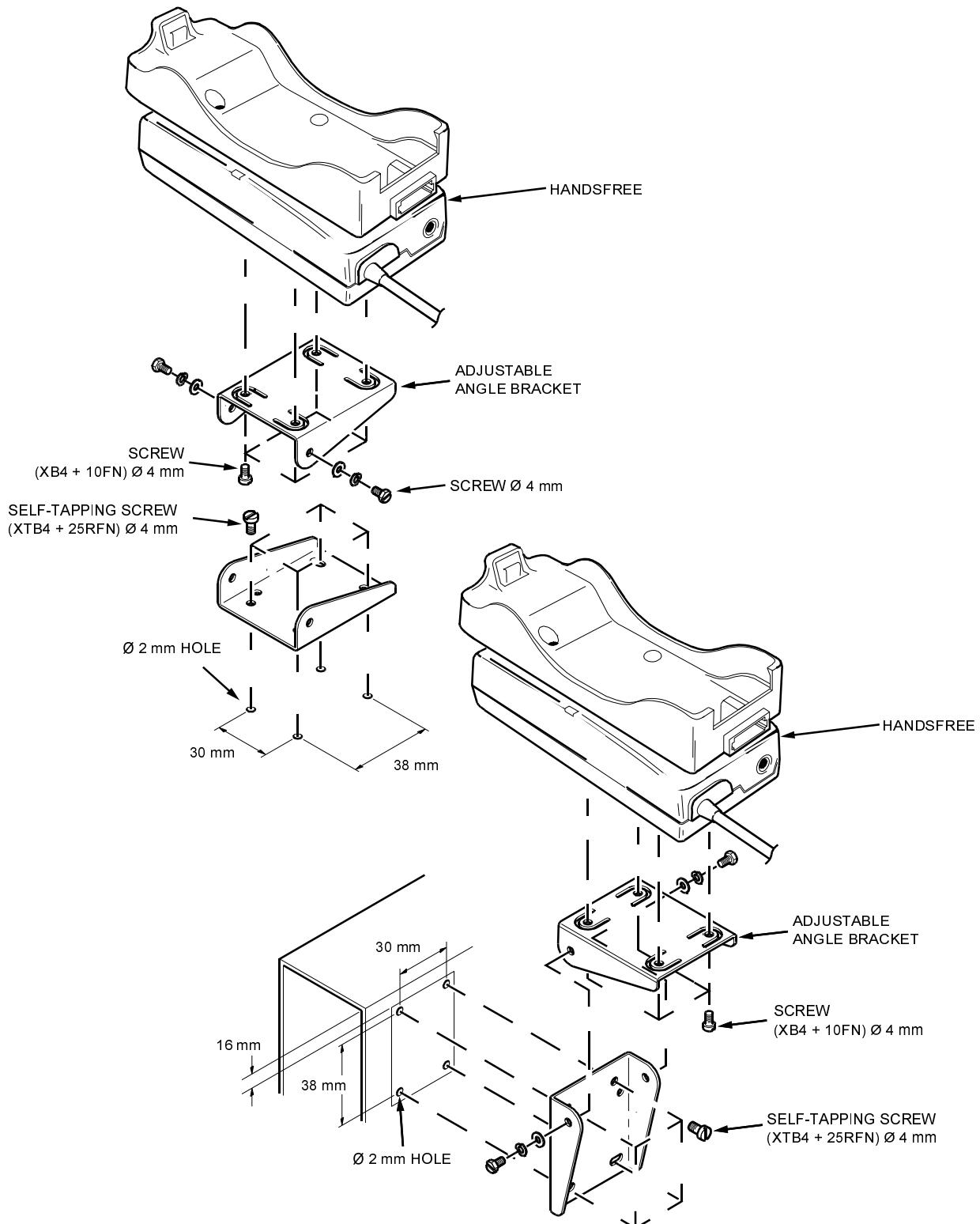
Figure:4   Adjustable angle bracket configurations   520-0404

4.2.4 Installing the Handsfree Microphone

The following points should be considered when installing the handsfree microphone:

1. That it does not obstruct the operation of the vehicle.
2. That it does not affect the normal passenger accommodation.
3. That the microphone should face the driver's mouth, at a distance of approximately 30cm.

Mounting the Microphone to the Sun Visor

1. Mount the microphone onto the sun visor clip by inserting the projection of the clip into the hole of the microphone base.
2. Mount the microphone onto the sun visor as shown in figure 5.
3. Connect the microphone to the flying lead from the handsfree cradle.

Mounting the Microphone to the Dashboard

1. Attach the adhesive pad to the dashboard clip.
2. Drill a 1mm hole at the mounting location and mount the clip using a M2.5 self-tapping screw.
3. Insert the projection of the clip into the microphone base, ensuring that it points towards the drivers mouth.
4. Connect the handsfree microphone to the handsfree cradle.
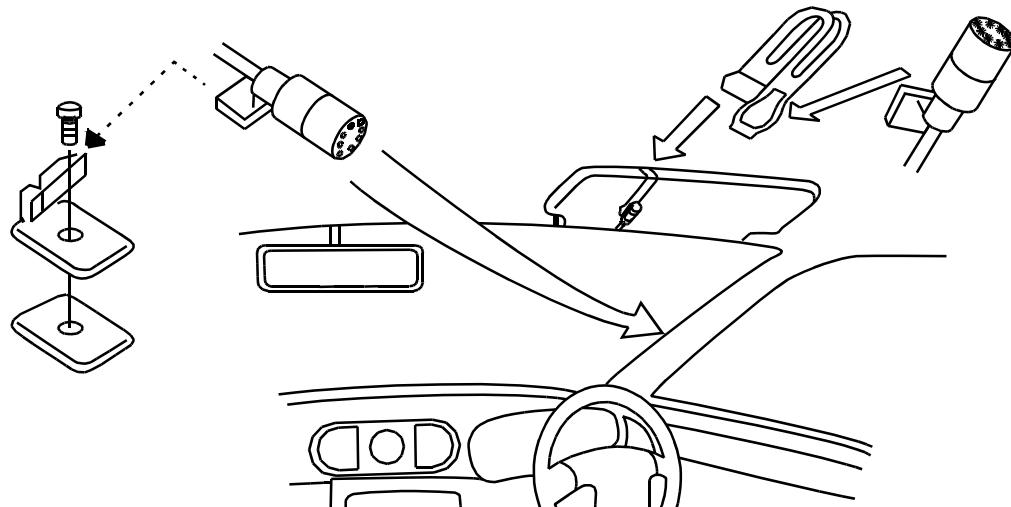
Figure:5   Microphone Installation   520-0405

4.3 DC Adaptor

The telephone is powered directly from the +12V cigar lighter socket. Switch the telephone power off and fit the DC power cable.
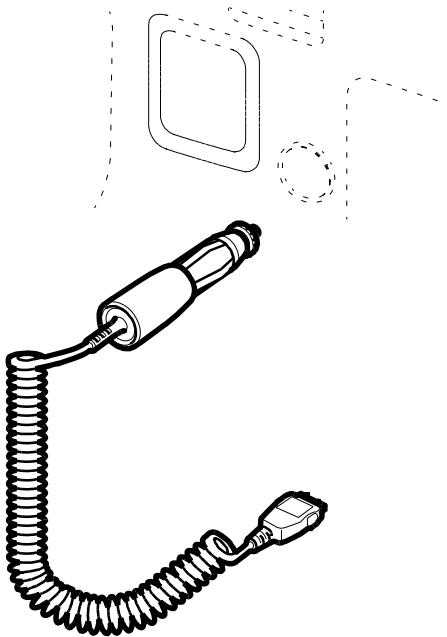

Figure:6 DC Adaptor Installation   520-0406

5 DISASSEMBLY / REASSEMBLY INSTRUCTIONS

5.1 General

This section provides disassembly and reassembly procedures for the main components of the G600 system.

These procedures MUST be performed by qualified service personnel, at an authorized service centre.

The following warnings and precautions MUST be observed during ALL disassembly/reassembly operations:

WARNING
The equipment described in this manual contains polarised capacitors utilising liquid electrolyte. These devices are entirely safe provided that neither a short-circuit nor a reverse polarity connection is made across the capacitor terminals. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN DAMAGE TO THE EQUIPMENT OR, AT WORST, POSSIBLE INJURY TO PERSONNEL RESULTING FROM ELECTRIC SHOCK OR THE AFFECTED CAPACITOR EXPLODING. EXTREME CARE MUST BE EXERCISED AT ALL TIMES WHEN HANDLING THESE DEVICES.

Caution
The equipment described in this manual contains electrostatic sensitive devices (ESDs). Damage can occur to these devices if the appropriate handling procedure is not adhered to.

5.1.1 ESD Handling precautions

A working area where ESDs may be safely handled without undue risk of damage from electrostatic discharge, must be available. The area must be equipped as follows:

Working Surfaces – All working surfaces must have a dissipative bench mat, SAFE for use with live equipment, connected via a 1M2 resistor (usually built into the lead) to a common ground point.

Wrist Strap – A quick release skin contact device with a flexible cord, which has a built in safety resistor of between 5k2 and 1M2 shall be used. The flexible cord must be attached to a dissipative earth point.

Containers – All containers and storage must be of the conductive type.

5.2 Handportable Unit

5.2.1 Disassembly

1. Press the release clip, then tilt upwards to remove the battery from the telephone.
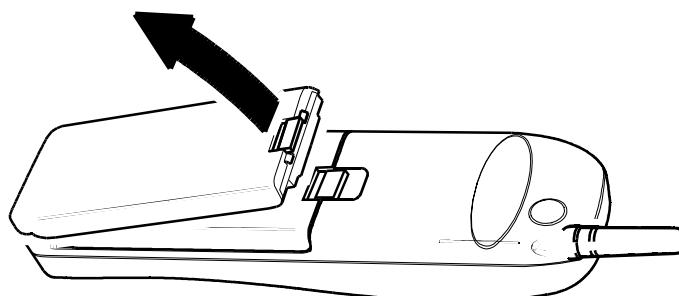

Figure:1   Battery removal   520-0501

2. Remove the Screw Cover to reveal the top case screws.
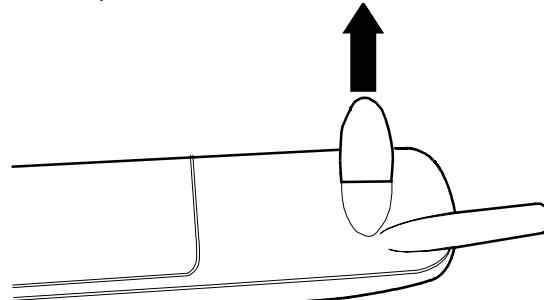
Figure:2   Screw Cover removal   520-0502

3.   Remove the back from the telephone case (6 screws).
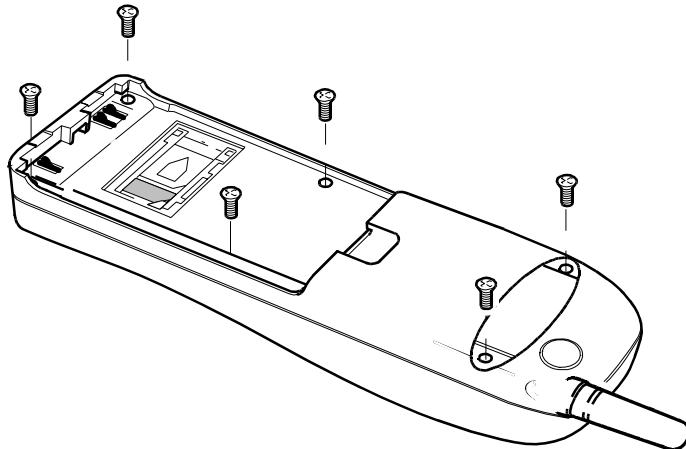
*Figure:3*   Case disassembly   520-0503

4.   Remove the PCB assembly from the Cover.
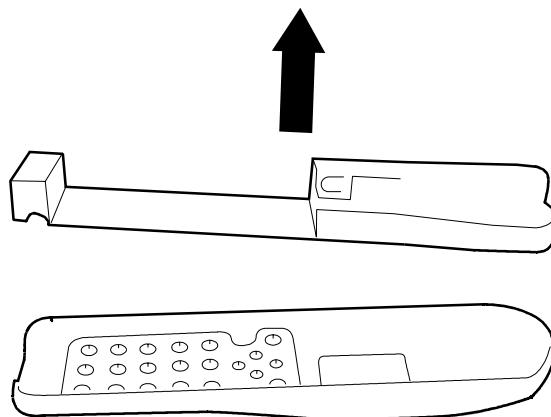
Figure:4   PCB assembly removal   520-0504

5.   Separate the RF board from the Logic board.
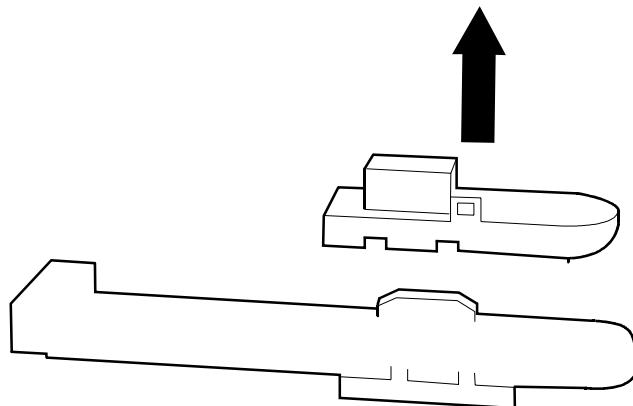
*Figure:5*   RF board removal   520-0505

6. Unclip RF Sheild including Vibrator assembly from Chassis.
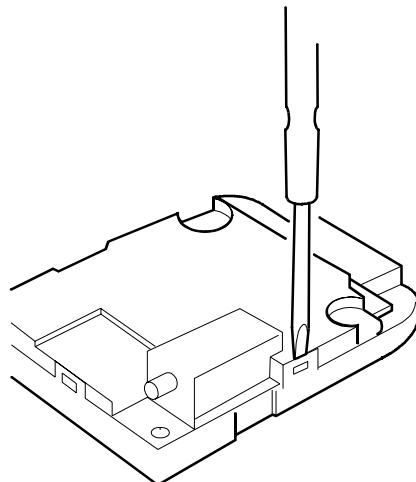
Figure:6 Releasing the RF Sheild   520-0506

7. Remove RF Board from the Chassis.
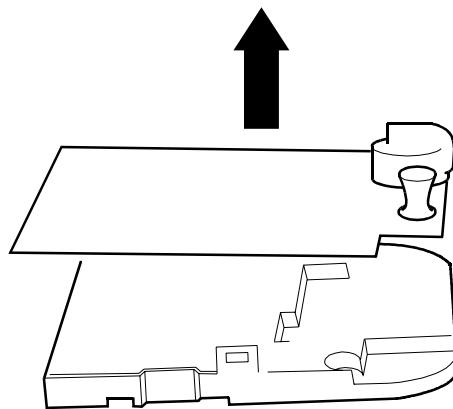


Figure:7 Vibrator assembly removal   520-0507

8. Pull the Vibrator Motor from the RF Sheild.
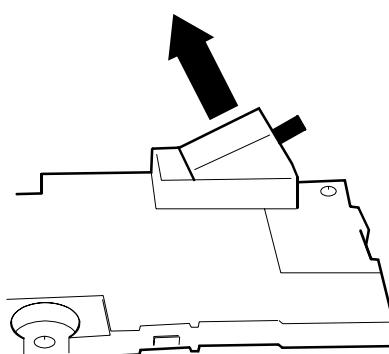
Figure:8 Vibrator Motor removal   520-0508

9. Gentally bend the LCD Assemby lugs out to allow removal from the Logic PCB.
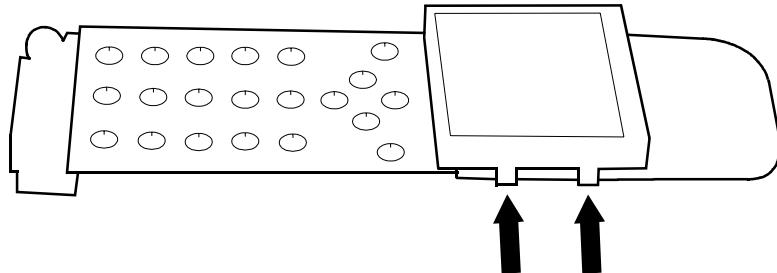
Figure:9 LCD Assembly removal   520-0509

10. Lift the LCD Module from the LCD Holder.
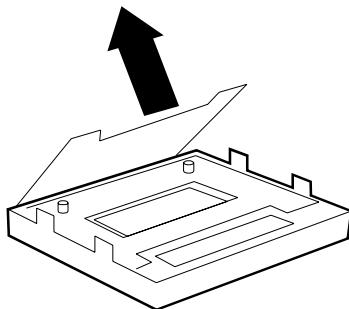
Figure:10 LCD Module removal   520-0510

11. Unclip the Speaker Clip from the Cover Assembly.
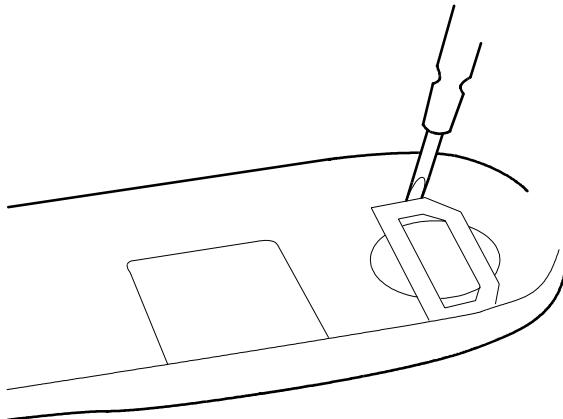
Figure:11 Speaker Clip removal   520-0511

12. Lift the Speaker from the Cover Assembly.
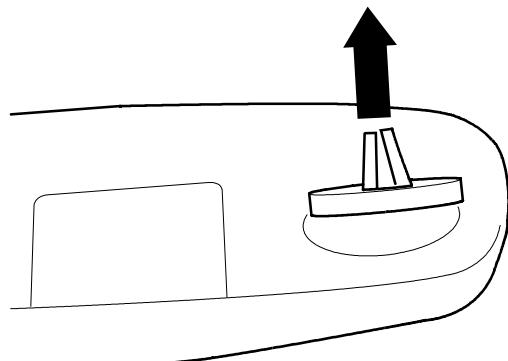
Figure:12 Speaker removal   520-0512

13. Peel the Keysheet from the Cover Assembly.
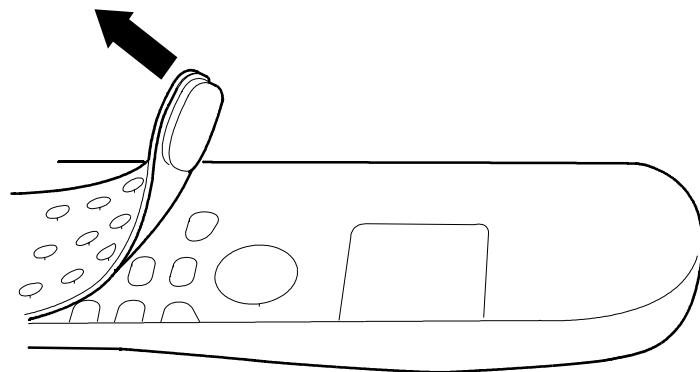

Figure:13 Keysheet removal   520-0513

5.2.2 Reassembly

14. Care must be taken when reinstalling the back onto the telephone case. Ensure that the securing screws are not over-tightened as this may affect the operation of the keypad.
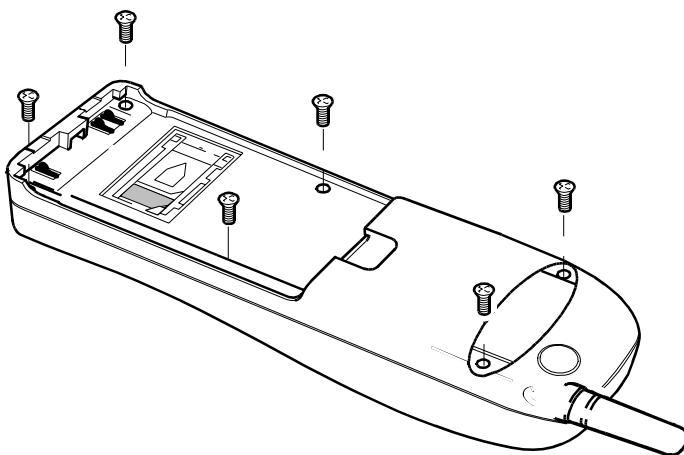
Figure:14 Case reassembly   520-0503

5.3 Dual Charger

5.3.1 Disassembly

1. Place the Dual Charger upside-down on a flat work surface. Remove the two case screws.
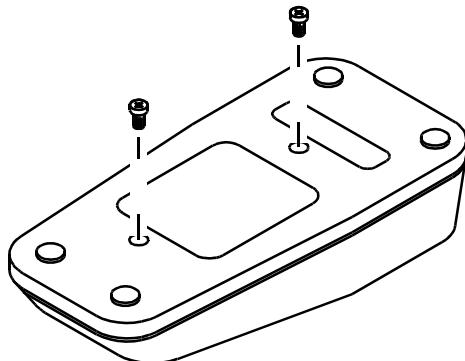
Figure:15 Case screw removal   600-0518

DISASSEMBLY / REASSEMBLY INSTRUCTIONS

2. Remove the case from the cover assembly.
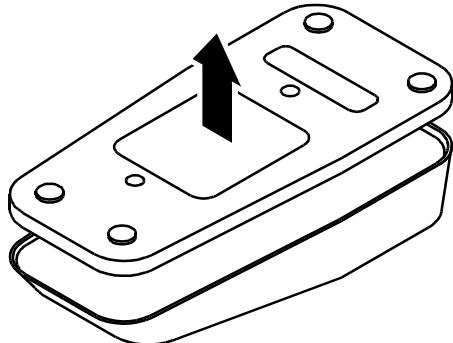
Figure:16 Case removal   600-0519

3. Remove the PCB assembly fixing screws.
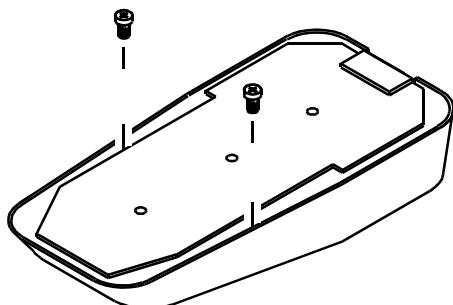
Figure:17 Screw removal   600-0520

4. Raise and tilt the charger PCB to expose the connector cable.
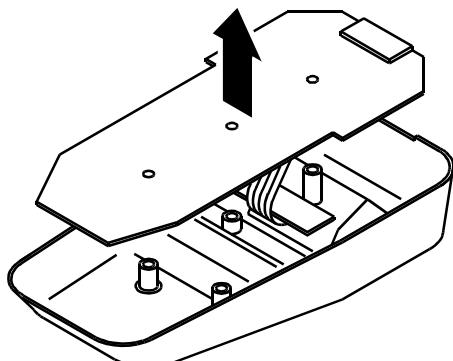
Figure:18 Charger PCB removal (1)   600-0521

5. Disconnect and remove the charger PCB.
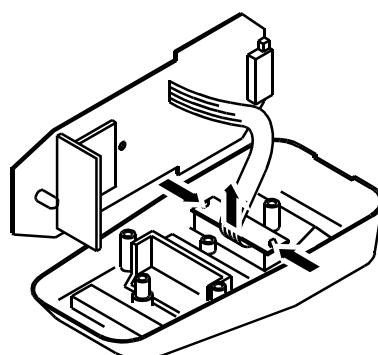
Figure:19 Charger PCB removal (2)   600-0522

5.4 Easy Fit Unit

5.4.1 Disassembly

1. Remove the holder from the unit (2 screws).
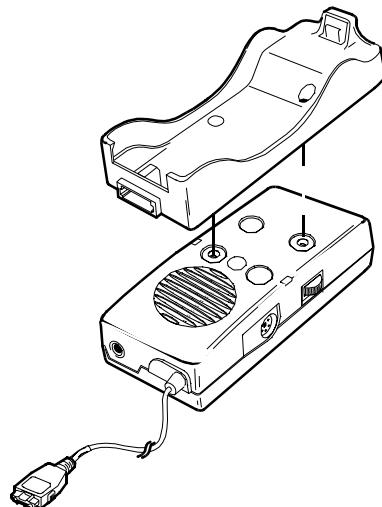
Figure:20 Holder removal   520-0515

2. Remove the back cover from the unit by removing the cover securing screw.
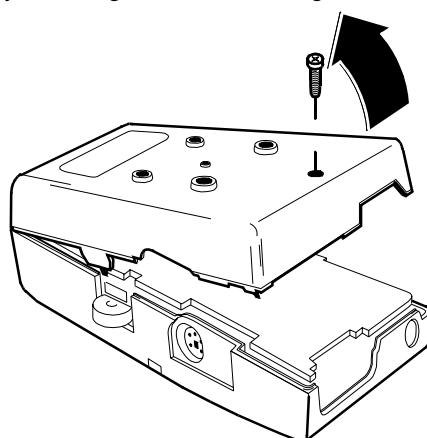
Figure:21 Easy Fit unit, cover removal   600-0524

3. Pull back on the PCB retaining clip and lift the PCB. Disconnect the phone interface cable and speaker cable from the PCB.
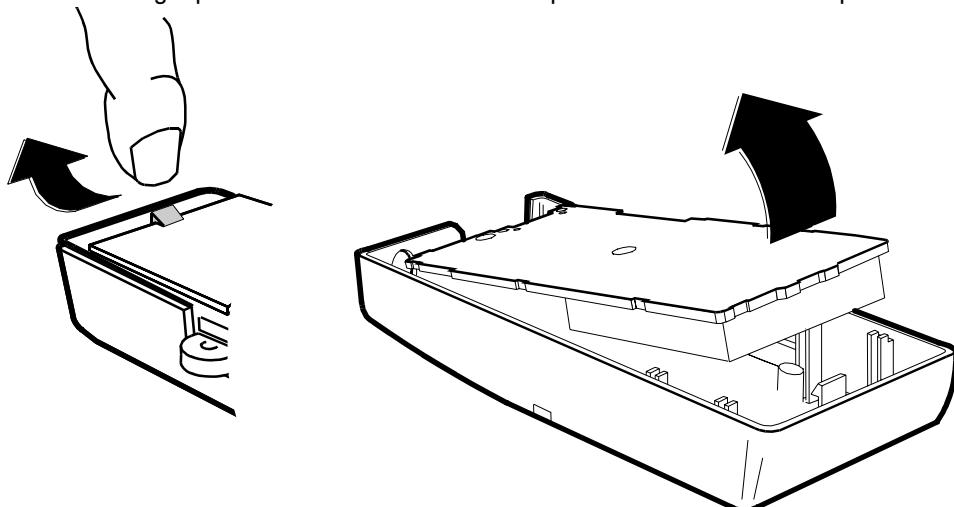
Figure:22 Easy Fit unit, PCB removal   600-0525

5.4.2 Reassembly

DISASSEMBLY / REASSEMBLY INSTRUCTIONS

1. Position the cables into the case moulding; ensuring the interface cable grommet is seated securely in the case moulding and the microphone socket is also located in the case moulding.

Ensure that the microphone socket is located in the case moulding

Install the phone interface cable into the case, ensuring that the cable grommet is seated securely in the case moulding.
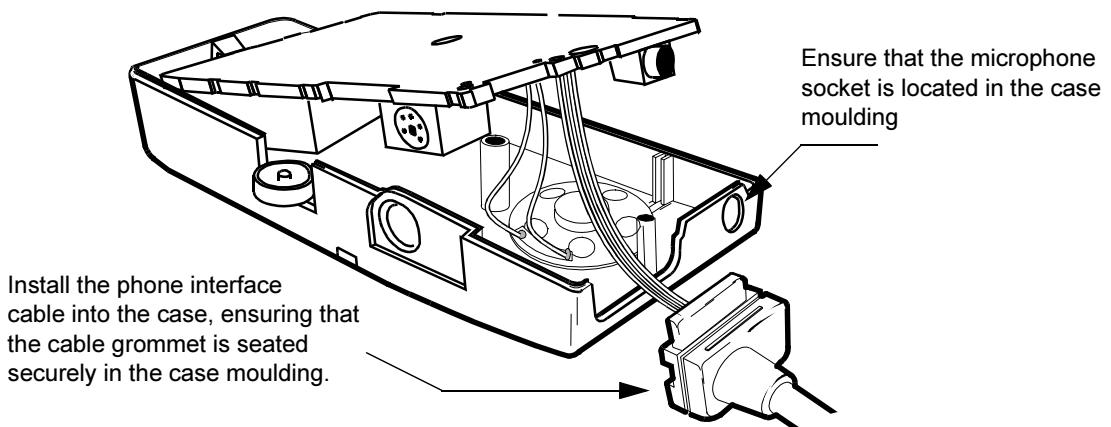
Figure:23 Easy Fit unit, cable positioning   600-0527

2. Replace the back cover of the unit and tighten the cover securing screw (1 screw).
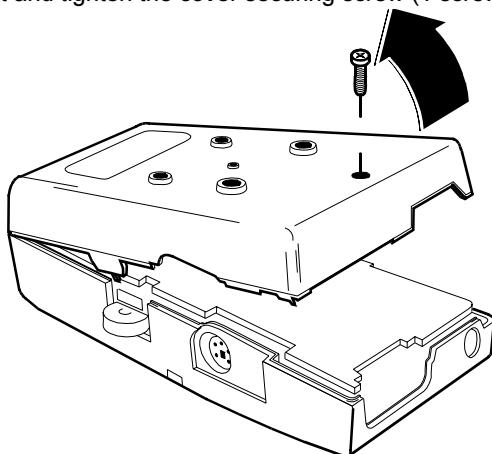
Figure:24 Easy Fit unit, cover replacement   600-0524

6 TECHNICAL SPECIFICATIONS

6.1 General

1	Frequency range	Tx: 890 - 915MHz Rx: 935 - 960MHz
2	Tx/Rx frequency separation	45MHz
3	RF channel bandwidth	200kHz
4	Number of RF channels	124
5	Speech coding	Full rate/Half rate
6	Operating temperature	-20°C to +55°C

6.2 Handportable Unit

6.2.1 General

Unless stated these specifications are with Battery Pack (EB-BS520) fitted.

Battery life figures are dependent on network conditions.

| 1	Type	Class 4 Handheld (GSM Phase 2)
2	Dimensions	Height:140mm Width:46mm Depth:20.3mm
3	Volume	135cc
4	Weight	150g
5	Display	Graphical chip on glass liquid crystal, Alphanumeric 16 x 3 characters, 5 icons and 6 x 1 characters
6	Illumination	Green: 4 LEDs for the LCD 8 LEDs for the keyboards 1 LED Incoming cal Red:
7	Keypad	17 keys, Navigation key
8	SIM	Plug-in type only
9	Battery	4.8V Ni-MH
10	Standby Battery Life DRX 5 – ECTEL recommendation	Battery Pack (EB-BS520): 70h Battery Pack (EB-BL520): 140h
11	Conversation Battery Life PL 7, DTX 50% – ECTEL recommendation	Battery Pack (EB-BS520): 3h Battery Pack (EB-BL520): 6h
12	External DC Supply Voltage	6.7V
13	Antenna Terminal Impedance	50Ω
14	Antenna VSWR	<2.1 : 1
15	RF Output Power	2W maximum (GSM class 4)
16	Modulation	GMSK (BT = 0.3)
17	Connection	8 ch/TDMA
18	Voice digitizing	13kbps RPE-LTP
19	Transmission speed	270.3 kbps
20	Diversity	Frequency hopping
21	Signal Reception	Double superheterodyne
22	Intermediate Frequency	1st: 1136 - 1161 MHz 2nd: Tx 246 MHz, Rx 201 MHz

6.2.2 Tx Characteristics

1. Frequency error: $\pm$0.1ppm max., relative to base station frequency.

2. Modulation phase error: RMS: $\leq$5°
   Peak: $\leq$20°

3. Output RF Spectrum due to Modulation:

Offset from Centre Frequency (kHz)	Maximum Level Relative to the Carrier (dB)
±100	+0.5
±200	-30
±250	-33
±400 to 1800	-54 (Integral antenna)

4. Output RF Spectrum due to Switching Transients:

Offset from Centre Frequency (kHz)	Maximum Level (dBm)
±400	-23
±600	-26
±1200	-32
±1800	-36

Measurement conditions for output RF spectrum measurements:
Frequency Span: 0Hz
Measurement Bandwidth: 30kHz
Video Bandwidth: 100kHz
Peak Hold

5. Spurious Emissions at the Antenna Connector:

Frequency (MHz)	Limits (dBm)		Measurement BW (kHz)	Video BW (kHz)
	Active Mode	Idle Mode		
Offset from carrier (in Tx band)				
≥ 1.8	≤ -36	—	30	100
≥ 6.0	≤ -36	—	100	300
Offset from Tx band edge				
≥ 2.0	≤ -36	—	30	100
≥ 5.0	≤ -36	—	100	300
≥ 10.0	≤ -36	—	300	1MHz
≥ 20.0	≤ -36	—	1MHz	3MHz
≥ 30.0	≤ -36	—	3MHZ	10MHz
Frequency bands				
935 - 960		—	100	100
925 - 935		—	100	100
1805 - 1880	≤ -79 (a&b)	—	100	100
0.009 - 1000	≤ -67 (a&b)	≤ -57	100	100
1710 - 1785	≤ -71 (a&b)	≤ -57	100	100
1805 - 1880		≤ -57	100	100
1000 - 12750		≤ -57	100	100

Measurement conditions:

Peak Hold

Modulated Carrier

a. Measurement averaged over a burst and then averaged again over 50 bursts.

b. In each of the bands 925-960 MHz and 1805-1880 MHz up to 5 spurious measurements can fail these limits, in which case the limit ≤ -36dBm shall apply.

6. Output Level, Dynamic Operation:

Power Control Level (defined by GSM 05.05)	Peak Power (dBm)	Tolerance for Conditions (dB)	
		Normal	Extreme
5	33	±2	±2.5
6	31	±3	±4
7	29	±3	±4
8	27	±3	±4
9	25	±3	±4
10	23	±3	±4

11	21	±3	±4
12	19	±3	±4
13	17	±3	±4
14	15	±3	±4
15	13	±3	±4

7. Residual Peak Power: ≤70dBc (BW = 300kHz)

6.2.3 Rx Characteristics

1. Sensitivity

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

PROPAGATION CONDITIONS					
Type of Channel	Static	TU50 (no FH)	TU50 (ideal FH)	RA250 (no FH)	HT100 (no FH)
TCH/FS (FER)	0.1a%	6a%	3a%	2a%	7a%
Class Ib (RBER)	0.4/a%	0.4/a%	0.3/a%	0.2/a%	0.5/a%
Class II (RBER)	2%	8%	8%	7%	9%

The reference sensitivity level is <-102dBm.

NOTE:

$1 \leq \alpha \leq 1.6$. The value of a can be different for each channel condition but must remain the same for FER and class Ib RBER measurements for the same channel condition.

2. Blocking:

Interferer Frequency (MHz)	Interferer Level (dBm)
Offset from wanted carrier (in band 915 - 980MHz) ÷600kHz ÷800kHz ÷1.6MHz	-43 -33 -23
Out of band frequency bands 0.1 - 915 980 - 12750	0 0

Measurement Conditions:
Wanted carrier is 3dB above reference sensitivity.
Interferer is CW

Spurious response exceptions:
6 exceptions are permitted IN band 915 - 980MHz
24 exceptions are permitted OUTSIDE band 915 - 980MHz.

3. Intermodulation Characteristics:

Interferer Level (f1 & f2) dBm	Interferer Frequencies (f1 & f2)
-49	Wanted frequency = 2f1 - f2, and │f2 - f1│ = 800kHz

6.3 Handsfree Unit

This specification is applicable to the Handsfree Car Kit and Easy Fit Handsfree Car Kit

Input voltage	13.8V ± 20%
Over voltage protection	18 ± 1.0V
Current consumption	Operation: 2.0A max. (normal sound) Idle mode: 150mA max. (no sound) Standby: 1mA max. (logic power off)
Ignition signal	H Level: ON L Level: OFF
Speaker output power	1.5W

Speaker impedance	8W
Antenna (H/F mode)	External antenna
Operating temperature range	-10 to +55 °C
Storage temperature range	-20 to +60 °C
Charging temperature range	-5 to +35 °C

6.4 Dual Charger

Input voltage	9.2V maximum
Input current	700mA
Charging slots	Front: Main unit Rear: Battery pack only
Charge time (front slot)	Battery Pack (EB-BS520): 130m Battery Pack (EB-BL520): 260m
Charge time (rear slot)	Battery Pack (EB-BS520): 20h Battery Pack (EB-BL520): 20h
Charge indicator (front slot) Telephone display	G: Charging H: End of charge – telephone ON OFF: End of charge – telephone OFF
Charge indicator (rear slot)	Red LED: Charging Orange LED: Discharging Green LED: End of charge
Charge voltage	9.2V ± 0.2V
Charge current	440 ± 30 mA
Operating temperature range	+5 to +35 °C
Storage temperature range	-20 to +60 °C
Charging temperature range	+5 to +35 °C

6.5 AC Adaptor

Input voltage	UK, EU: 230VAC ±10% TW: 110VAC ±10% CH: 100VAC ±10%
Input current	20mA maximum
Input plug type	UK: Type BF EU: Type C-4/C-7 Other: Country specific
Output voltage	9.2VDC
Output current	400mAh
Ripple voltage	50mV peak to peak, at 600mAh
Charge time	Battery Pack (EB-BS520): 130m Battery Pack (EB-BL520): 260m
Output connector	MQ138-MA75-165-CVL
Operating temperature range	+5 to +40 °C
Storage temperature range	-20 to +60 °C
Charging temperature range	+5 to +35 °C

6.6 DC Adaptor

This specification is applicable to the DC Adaptor and Simple Car Kit.

Input voltage	13.8VDC ±20% Negative earth only
Output voltage	9.2VDC
Current consumption	Operation: 500mA Standby: 34mA max (no load)
Charge time	Battery Pack (EB-BS520): 130m Battery Pack (EB-BL520): 260m
Display	Red LED (power status)
Reverse voltage protection	Diode across input
Short circuit protection	Input: 2A fuse Output: 8.2V zener diode
Operating temperature range	+5 to +60 °C
Storage temperature range	-20 to +80 °C
Charging temperature range	+5 to +35 °C

6.7 Battery Packs

6.7.1 Battery Pack (EB-BS520)

Type	Ni-MH (4 cells)
Weight	62 ±2g
Voltage	4.8V
Capacity	650mAh
Storage temperature range	-20 to +40 °C (6 months)

6.7.2 Battery Pack (EB-BS520)

Type	Ni-MH (8 cells)
Weight	117 ±2g
Voltage	4.8V
Capacity	1300mAh
Storage temperature range	-20 to +40 °C (6 months)

## 6.7.3 Circuit diagram of Ni-MH battery
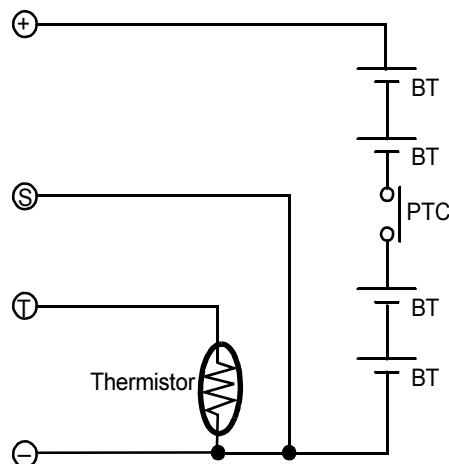
Figure:25 Circuit diagram of Ni-MH battery   600-0606

7   TEST AND MEASUREMENT

7.1 Introduction

This section provides information on testing the G600 telephone. The layout is as follows:

1. Section 7.2 External testing: describes equipment requirements and general set up procedure.

2. Section 7.3 Channel box test commands: provides detailed explanation of the different commands available using the test equipment and channel-box software.

3. Section 7.4 Adjustment mode: describes adjustments available on the G600 handheld unit.

4. Section 7.5 Lock code: describes the procedure to check or reset the lock code using the Channel box software.

5. Section 7.6 SIM personalisation: describes the procedure to personalise the telephone to a particular SIM.

7.2 External Testing

The G600 unit can be connected to a compatible personal computer for electronic adjustment and fault diagnosis. This section provides a description of the equipment required to perform those tasks.

Testing and adjustment of the handheld unit can be performed with the outer case in place. For in-depth fault finding the unit should be disassembled (section 5), and the extended card used to connect the PCBs together externally as they would be found in normal use. Fault tracing can then be performed on the PCBs using suitable test equipment, such as spectrum analysers and oscilloscopes.

7.2.1   Jigs and Tools

Test Equipment Descriptions

1.   Interface box, Part No. IFB002

The IFB002 provides:

a. Voltage regulation for +7.2V, +5.6V or 4.8V DC outputs. The +7.2V switch setting is used as a supply to Li-Ion type batteries (compatible for other products), the 5.6V switch setting is used for PCB testing and the 4.8V switch setting is used for testing the complete unit

b. RS 232 interface. Ensures that the Unit Under Test is supplied with the correct signal levels and format..

FRONT   REAR
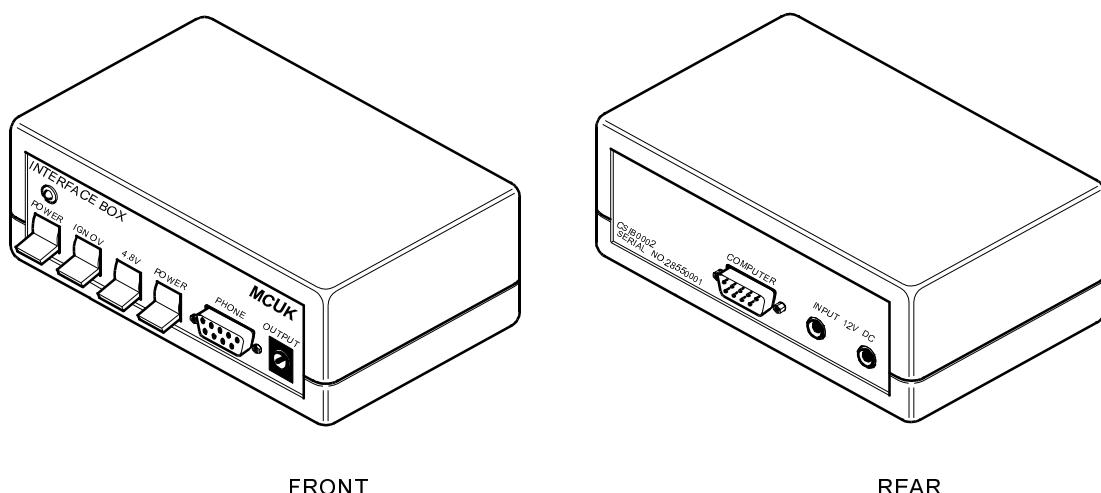
Figure:1   Interface Box IFB002   600-0701

2.   Personal Computer (PC)

The PC (IBM compatible) is used as a Unit Under Test controller. This in conjunction with the channel box software, allows all of the test facilities normally provided through the keypad of the Unit Under Test.

3.   Power Supply (not shown - see complete unit test setup)

Provides 12V DC supply to the Interface Box IFB002

4. External Battery Supply Unit

   Provides 7.2V DC supply to the Interface Box IFB002 to compensate for the current drain when the Unit Under Test is used at full transmit power.
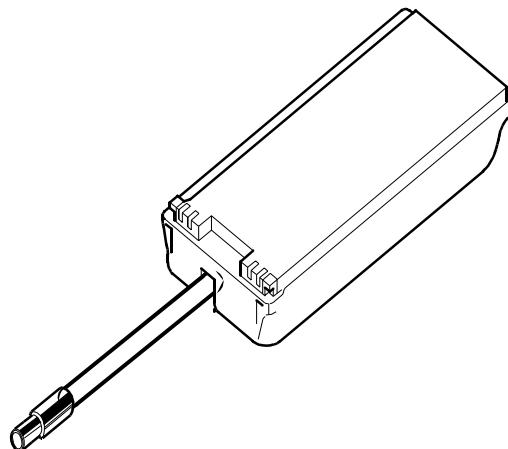
Figure:2   External Battery Supply Unit   600-0702

5. Extender PCB, Part No. G6EXT PCB 001

   The extender PCB is provided to allow connection of the logic PCB to the RF PCB when the PCBs have been removed from the main unit.
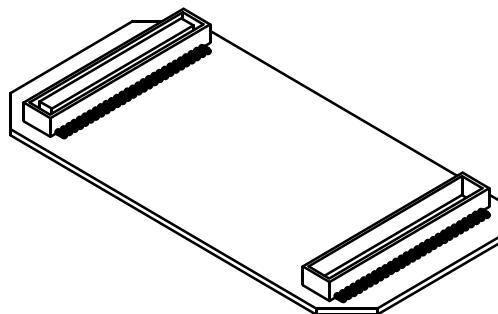
Figure:3   Extender PCB   500-0703
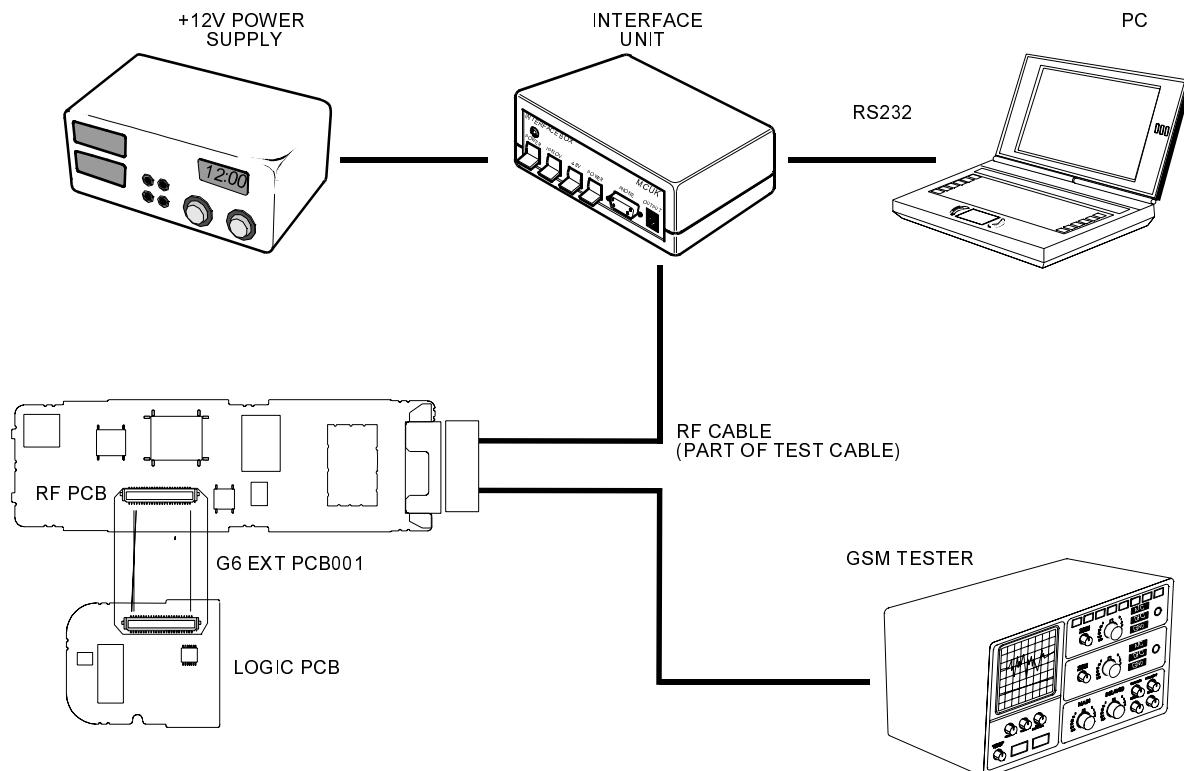
6. GSM Tester

   This unit acts as a base station providing all the necessary GSM signalling requirements and also provides GSM signal measuring facilities
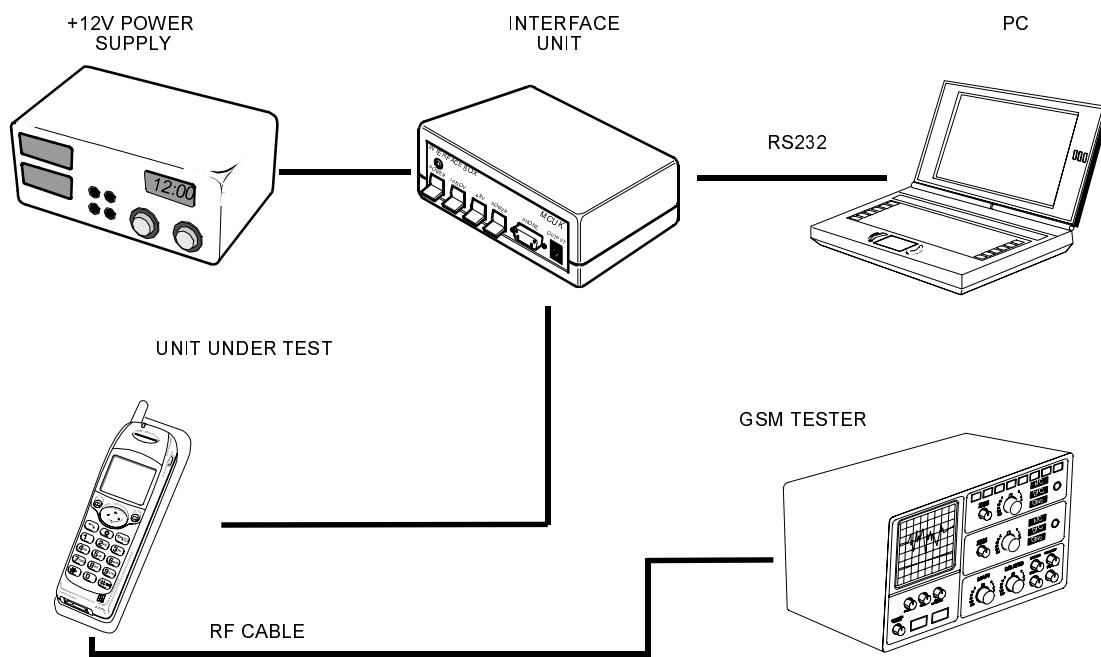
7. Channel Box Software

   This is the test software for the G600 unit and should be installed onto the personal computer used for testing.

7.3 Complete Unit Test Setup

+12V POWER SUPPLY   INTERFACE UNIT   PC   RS232   RF PCB   G6 EXT PCB001   LOGIC PCB   RF CABLE (PART OF TEST CABLE)   GSM TESTER

PCB TEST SETUP

+12V POWER SUPPLY   INTERFACE UNIT   PC   RS232   UNIT UNDER TEST   GSM TESTER   RF CABLE

COMPLETE UNIT TEST SETUP

Figure:4   Complete unit test setup   520-0704

7.3.1 External Testing Setup Procedure

IMPORTANT NOTE

To allow accurate measurement of the complete unit the test equipment must be connected as shown (figure 5). The PCB Test Setup must be used to enable repair to PCBs. Once repair/replacement is complete, the assembled unit must be tested and calibrated with the jigs and tools connected as shown in figure 5.

Full Test Equipment Requirements

For testing the handheld unit the following equipment is required:

1. Interface box
2. 12V power supply
3. Personal computer (IBM compatible) with RS232 interface
4. RS232 interface cable (9 pin straight through connection)
5. GSM test station

The channel box software (supplied on floppy disk) should be installed onto the main drive of the personal computer.

The RF cable is connected to the GSM test station via a suitable adapter. The 12V supply is connected to the rear socket of the Interface box.

Two modes are available for testing the handheld unit:

1. Test Mode.

    The Test Mode facility allows various sections of the handheld unit to be individually activated.
2. Normal Mode.

    The Normal Mode facility allows the handheld unit to be powered externally for call origination/receiving operations.

    NOTE: A suitable test SIM card will be required which is compatible with the GSM test station.

Power On into Test Mode

1. Connect the test equipment into test mode configuration.
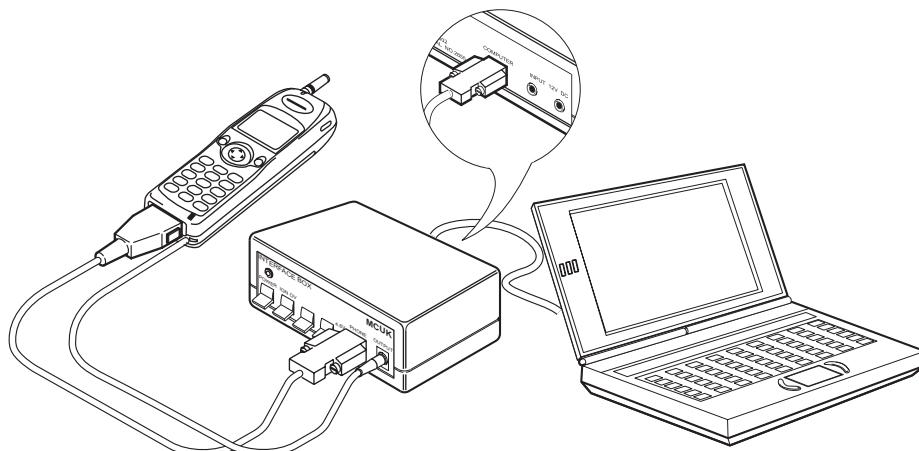
Figure:5   External test equipment setup   520-0705

2. Ensure that the following settings are made:

    a. Interface box IFB002
    Power: UP position
    IGN: DOWN position
    Mode   UP position
    Voltage   Dependent upon operation:
                   7.2V for Lithium Ion battery
                   5.6V for PCB testing
                   4.8V for Nickel Metal Hydride battery

    b. Power supply
    +12V DC:OFF

    c. PC
    Channel box software loaded and the screen indicating as shown:


```
TEST-SET MODE (CH-BOX)
NORMAL   MODE (Emulat)
SOFT-SIM MODE (Emulat)


    [ESC] to END of PROGRAM
```
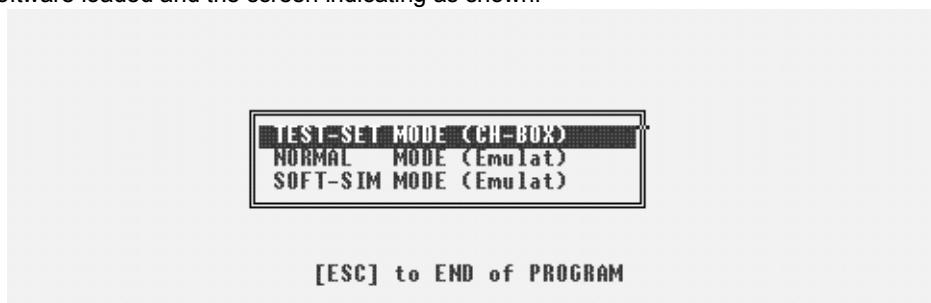
    Figure:6   PC Screen (SCRN10)   600-0720

3. Press ENTER on the PC keyboard.

4. Switch on the +12V supply.

5. At the PC press F10.

6. At the Interface box switch the power to ON.

7. Steps 5 and 6 above must be carried out within 1 second or power ON will time-out.

NOTE:
The display will read:
                    GET STATION
                    ADDRESS = _ _
                    INFO = _ _

The back light will be illuminated and all LEDs will be lit.

Go to section 7.4 (Channel Box Test Commands) for further testing information.

Power On in Normal Mode

1. Connect together the test equipment.
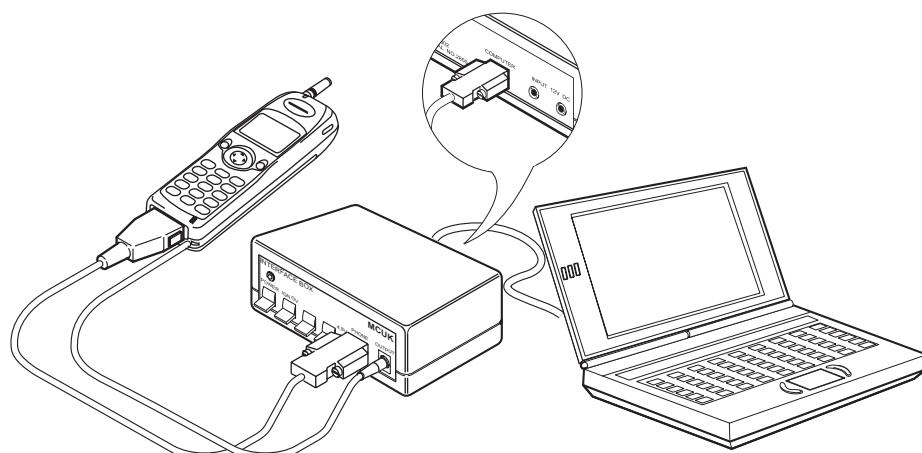
    Figure:7   External test equipment setup   520-0705

2. Ensure that the following settings are made:

   a. Interface box IFB002
     Power: DOWN position
     IGN: DOWN position
     HH/HF: DOWN HH position
     MODE: UP position

   b. Power supply
     +12V DC:OFF

   c. PC
     Channel box software loaded and the screen indicating as shown (figure 8):
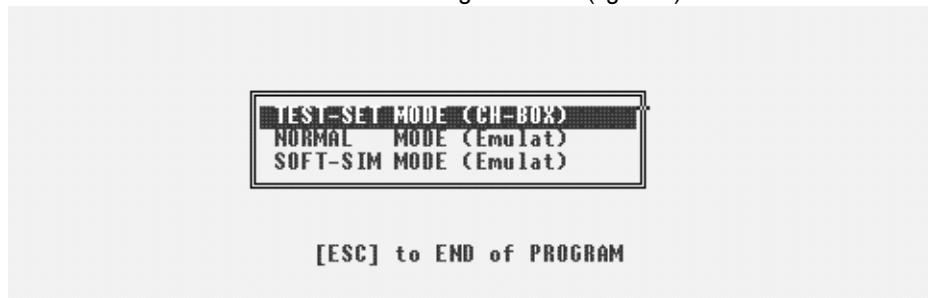

Figure:8 PC Screen (SCRN9)   600-0720

3. On the PC press ENTER.

4. Switch on the 12V supply.

5. At the PC press F10.

6. At the Interface box switch the POWER to ON.

Entering Call Mode from Test Mode

The screen of the PC will resemble the one shown:
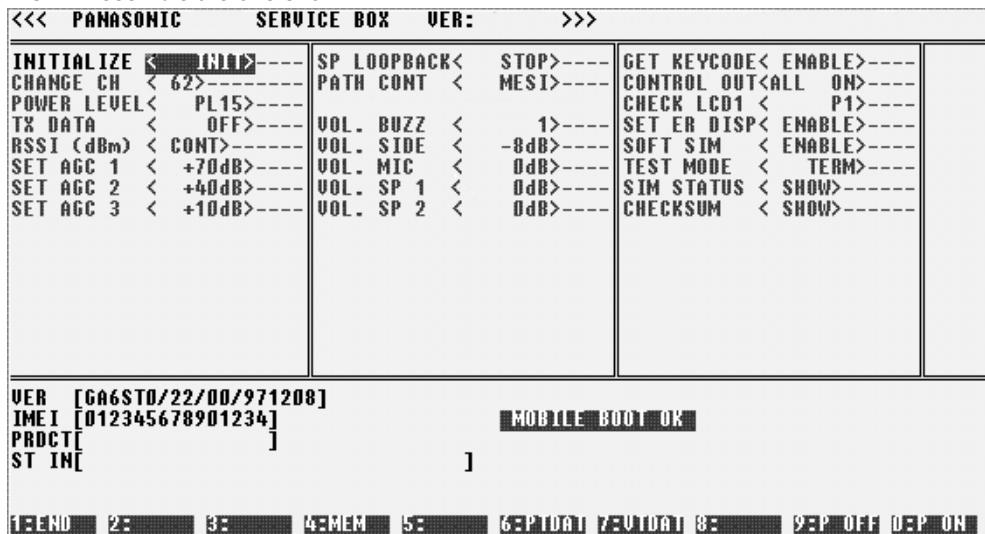
Figure:9 PC Screen (SCRN11)   520-0709

1. At the PC change the SOFT SIM field to read <ENB>. Press ENTER.

2. At the PC change the TEST field to read <TERM>. Press ENTER.

   The UUT will power down and up again. If the UUT is connected to a GSM test set, after a delay of approximately 5 seconds the UUT will register service.

3. To return to test mode, set SOFT SIM field to <DIS> and set TEST field to <Test>. Press ENTER.

7.4 Channel Box Test Commands

The following table outlines the commands available using the channel-box software.

After the handheld unit has been switched on (section 7.3), use the up/down scroll keys on the personal computer keyboard to select the channel-box command. Use the left/right scroll keys to display the required indication and press the ENTER key to select the displayed function.

CHANNEL BOX COMMAND	INDICATION	FUNCTION
TEST MODE	<TERM> <ReST>	Terminates test mode. Restarts test mode
INITIALIZE	<INIT>	When RETURN is pressed this will reset the default channel settings.
CHANGE CH	<xxx>	Sets up predefined channel settings.
POWER LEVEL	<xxx>	Allows a specified power level to be set at the UUT.
TX DATA	 <NRL 0> <NRL 1> <NRL R> <ACC R>	Sets TX Modulation to Normal burst DATA all 0s Normal burst DATA all 1s Normal burst DATA all random Access burst DATA random
RSSI (DBM)	<xxx>	Provides an RSSI reading on the User specified channel.
SET AGC 1 SET AGC 2 SET AGC 3	<xxx> <xxx> <xxx>	Allows changes to AGC levels on LOW, MIDDLE, HIGH channels.
SP LOOP BACK	<START> <STOP>	Provides an audio path for use with the GSM test station Sets audio loop-back from TX audio to RX audio without processing by the CODEC
PATH CONT	 <MOSO> <MESI> <MESE> <MISI> <MISE>	Sets audio paths: MIC off speaker off MIC external speaker internal MIC external speaker external MIC internal speaker internal MIC internal speaker external
VOL. BUZZ	<xx>	Sets buzzer volume between values 0 to 3 (Min to Max)
VOL. SIDE	<xx>	Sets 4 side tone volume levels between 0dB and -18dB
VOL. MIC	<xx>	Sets 8 MIC volume levels between 26dB and 40dB
VOL. SP1	<xx>	Sets speaker pre-amp volume levels
VOL. SP2	<xx>	Sets speaker volume levels
GET KEY CODE	<ENABLE><DISABLE>	Displays the value of a key pressed on the keypad
CONTROL OUT	<LED R> <LED B> <CHARGE ON> <LED C> <HF ON> <ALL OFF> <ALL ON>	Switches on Incoming LED Switches on Backlight LEDs Switches charge sequence on LCD Switches on Charging LED Switches on handsfree mode Switches off all above Switches on all above
CHECK LCD1	<P1> <P2>	Provides 50% visual display of check pattern on the UUT LCD Provides 50% visual display of check pattern on the UUT LCD

CHANNEL BOX COMMAND	INDICATION	FUNCTION
SET ER.DISP	<ENABLE> <DISABLE>	Unit error codes will be displayed on the UUT display Unit error codes will not be displayed on the UUT display
SOFT SIM	<ENABLE> <DISABLE>	With ENABLE set and TEST MODE <TERM> the UUT is removed from test mode and can be placed into call mode
TEST MODE	<TERM>	With SOFT SIM <ENABLED> the UUT will be removed from test mode and can be placed into a call
SIM STATUS	<SHOW>	Checks and displays the SIM status
CHECK SUM	<SHOW>	Displays the software checksum

7.5 Adjustment Mode

NOTE:
See section 7.2.1 for a list of the equipment and setup procedures required to perform the following adjustment and calibration procedures.

The following procedures MUST be performed after replacement or repair of one or both of the PCBs in the handheld unit. Failure to do so may result in incorrect operation of the telephone.

The following adjustments MUST be made on BOARD PAIRS.

There are four distinct calibration procedures to adjust RF performance. These procedures are:

1. Ramping gain (Section 7.5.1)

2. RSSI (Section 7.5.2)

3. I and Q values (Section 7.5.3)

The adjustment data selected during calibration is stored in the telephone EEPROM.

NOTE:
As G600 has two battery types available, Lithium Ion and Nickel Metal Hydride, all calibration procedures must be carried out for each battery type.
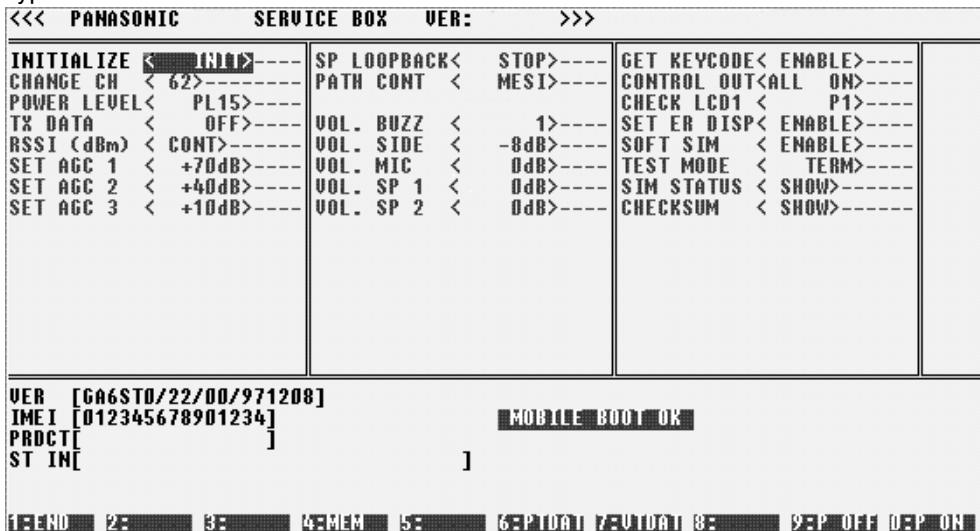
Figure:10 Test software screen   520-0709

7.5.1 Ramping Gain

The carrier power must be measured and calibrated for each power level at channel 62.

Power Level	Initial Value	Target Power Output (dBm)		Change		GSM Specification	
		Min	Max	/dB (step)	/step (dB)	Peek power	Tolerance
PL5	145	32.4	32.7	16.66	0.06	33	±2
PL6	134	30.3	31.5	16.66	0.06	31	±3
PL7	122	28.3	29.7	7.69	0.13	29	±3
PL8	113	26.3	27.7	3.57	0.28	27	±3
PL9	106	24.3	25.7	3.57	0.28	25	±3
PL10	100	22.3	23.7	2.86	0.35	23	±3
PL11	93	20.3	21.7	3.57	0.28	21	±3
PL12	87	18.3	19.7	4.00	0.25	19	±3
PL13	82	16.3	17.7	3.13	0.32	17	±3
PL14	78	14.3	15.7	2.27	0.44	15	±3
PL15	73	12.3	13.7	3.84	0.43	13	±3
PL16	69	10.3	11.7	2.33	0.47	11	±5
PL17	64	8.3	9.7	2.63	0.38	9	±5
PL18	59	6.3	7.7	2.63	0.38	7	±5
PL19	53	4.3	5.7	2.44	0.41	5	±5

Calibration of output power on each power level

To be able to calibrate the ramping gain it is first necessary to switch the unit into Test Mode (section 7.3).

This procedure must be followed for all power levels PL5-PL19, for low, medium and high channels:

1. Set the Channel box controls to Channel 62 at Power Level 5, normal burst modulated with random data as follows:

    a. Press the down arrow until CHANGE CH <62> is highlighted and then press ENTER.

    b. Press the down arrow until PL <L19> is highlighted. Press the move left arrow until <5> appears in the highlighted field. Press ENTER.

    c. Press the down arrow until TX DATA <OFF> is highlighted.
    Press the move arrow until <NRL R> appears in the highlighted field. Press ENTER.
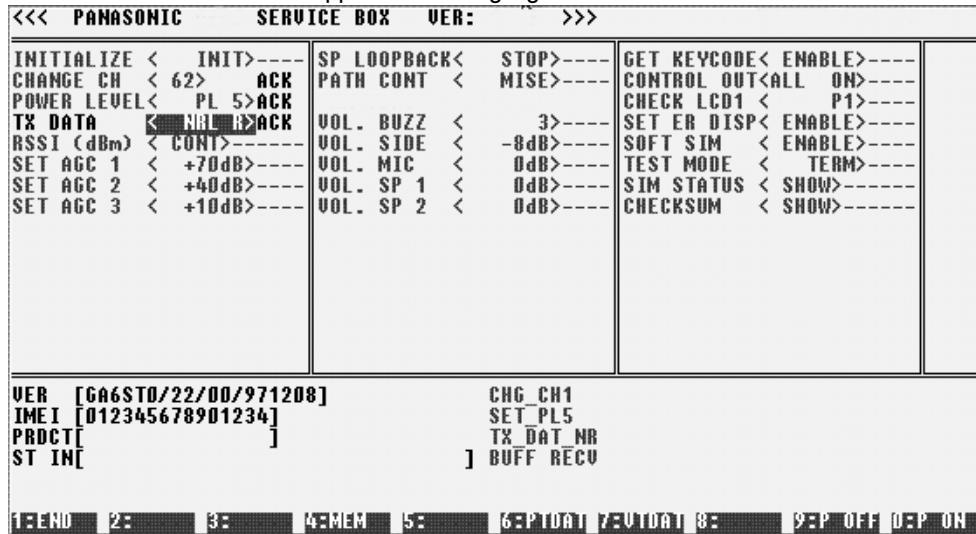
Figure:11 Tx data field   520-0711

2. At the GSM test unit measure the Peak Power.

3. If the measured power is in the range of the target power (see previous table), then proceed to step 10.

4. At the Channel box press F7 to view the TRIM for the mid-channel.

Figure:12 Power level view 1.   520-0712

5. Select VIEW TRIM PL MCH, and make a note of this value.
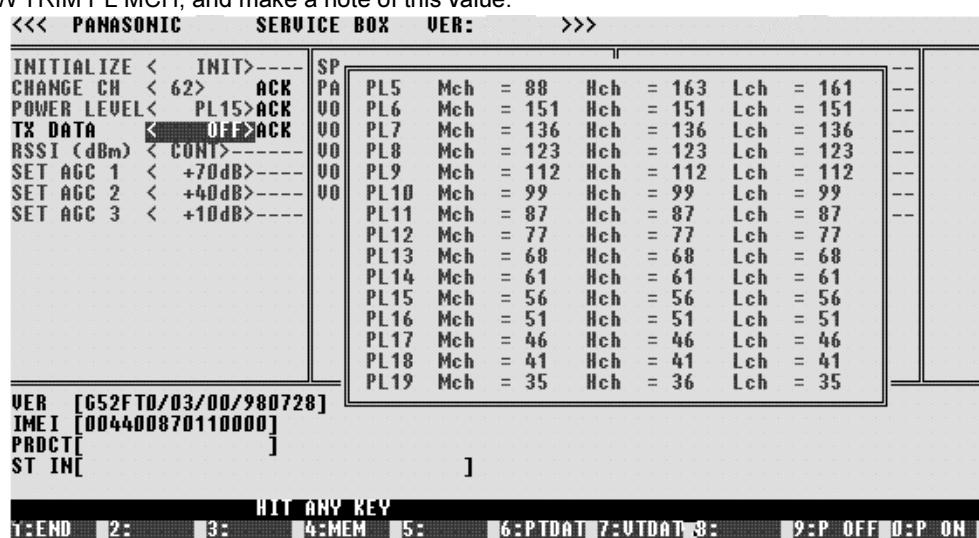
Figure:13 Power level view 2   520-0713

6. Perform the following calculation:

Set RGAIN - PL% = Value recorded in step 5 (± change in PL to meet specified value for change per dB). Make a note of the result.

7. At the Channel box press F6 to program the TRIM for the mid-channel.
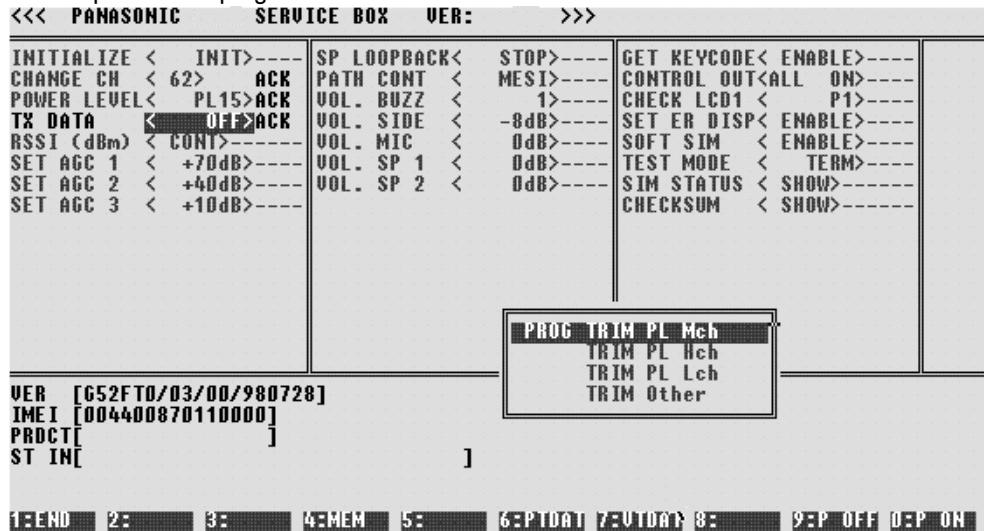
Figure:14 Power level selection 1.   520-0714

Figure Power level selection 1.

8. Select PROGRAM TRIM PL MCH.
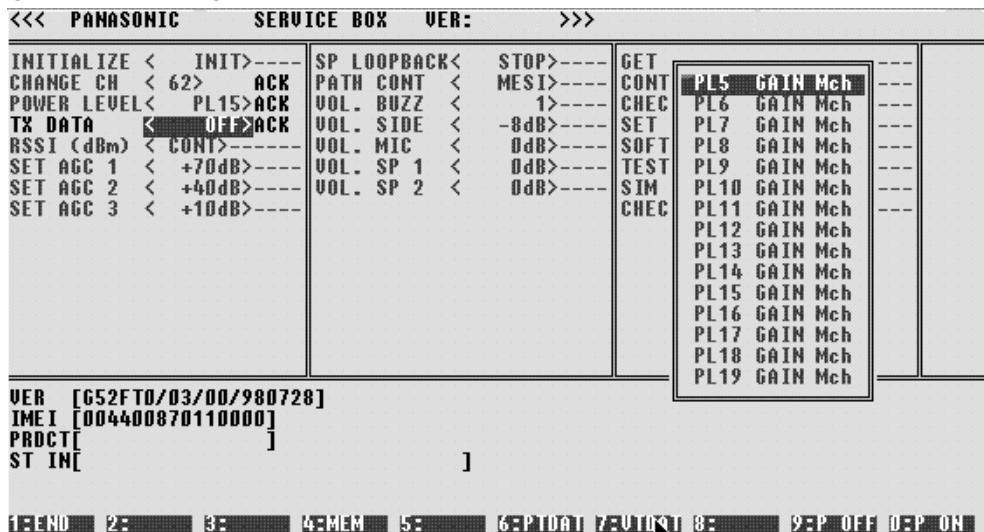
Figure:15 Power level selection 2.   520-0715

9. Highlight the PL5 field and press ENTER.

Figure:16 Power level selection 3.   520-0716

10. Enter the value calculated in step 6 into the data field and then press ENTER.

11. Press ESC.

12. At the GSM test unit re-measure the peak power.

13. Repeat steps 2 to 11 of this procedure for power levels PL6 to PL19.

14. After calibrating at channel 62, the carrier power must be measured and calibrated at low and high channels for power levels 5 to 19.

15. Repeat step 2 to 14 for the Ni-MH battery settings.

7.5.2 RSSI

This procedure describes the calibration of RSSI on the mid channel (Mch = Ch 62). This process must be carried out for Low Channel, Mid Channel and High Channel. The following channel settings are used in this procedure:

1. Set up the test equipment as described in Section 7.3 and switch the unit into test mode as described.

2. Apply a carrier frequency of +68KHz to the UUT (for Ch 62 = 947.468MHz) at an input level of -60dBm.

3. At the Channel box highlight the CHANGE CH <62> field and press ENTER.

4. Highlight the SET AGC 2 field and change the set value to 36dB and press ENTER.

5. Highlight the RSSI dBm <> field and press ENTER.

Figure:17 RSSI dB field   520-0717

6. If the measured value is not 60 ±2 then make the following calculation:
RSSI offset value = -(60+MEASURED RSSI VALUE) for example -(60+(-75)) = 15
Record the result.

7. At the Channel box press F7 to view data.
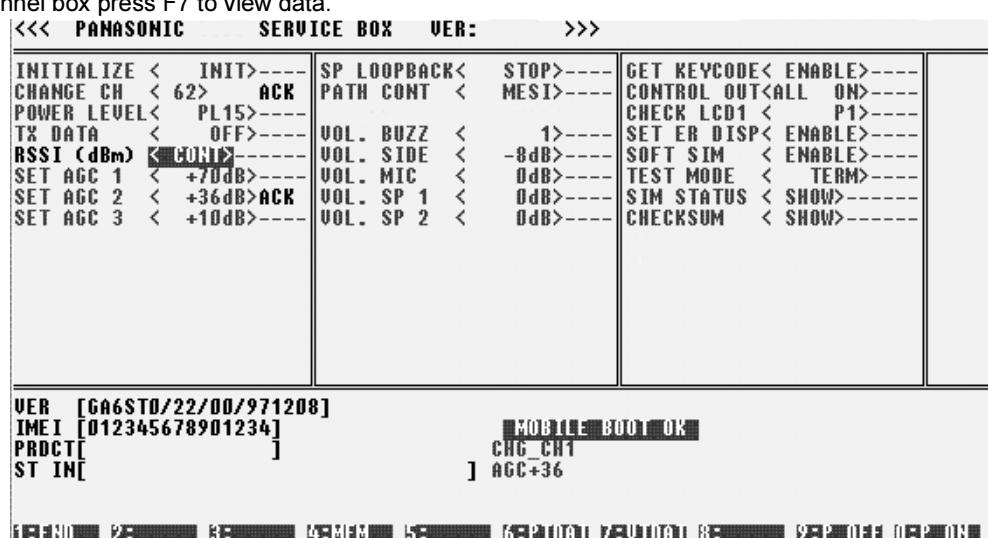
Figure:18 RSSI reading 1   520-0717

8. Select TRIM OTHER and make a note of the RSSI on the measured channel reading.

```
<<<  PANASONIC      SERVICE BOX   VER:      >>>

INITIALIZE <   INIT>----||SP LOOPBACK<    STOP>----||GET KEYCODE< ENABLE>----
CHANGE CH   < 62>   ACK ||PATH CONT  <    MESI>----||CONTROL OUT<ALL   ON>----
POWER LEVEL<   PL15>----||VOL. BUZZ  <      1>----||CHECK LCD1 <      P1>----
TX DATA     <   OFF>----||VOL. SIDE  <    -8dB>----||SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>-103.5||VOL. MIC   <     0dB>----||SOFT SIM   < ENABLE>----
SET AGC 1   < +70dB>----||VOL. SP 1  <     0dB>----||TEST MODE  <    TERM>----
SET AGC 2   < +36dB>ACK ||VOL. SP 2  <     0dB>----||SIM STATUS < SHOW>------
SET AGC 3   < +10dB>----                           ||CHECKSUM   < SHOW>------



VER  [G52FT0/03/00/980728]                 VIEW TRIM PL Mch
IMEI [004400870110000]                        TRIM Other
PRDCT[               ]
ST IN[                              ]

1:END   2:      3:      4:MEM   5:      6:PTDAT 7:VTDAT 8:       9:P OFF 0:P ON
```

Figure:19 RSSI reading 2.   520-0718

9. Press ESC.

10. At the Channel box press F6 to program data.

```
<<<  PANASONIC      SERVICE BOX   VER:      >>>

INITIALIZE <   INIT>----||SP LOOPBACK<    STOP>----||GET
CHANGE CH   < 62>   ACK ||PATH CONT  <    MESI>----||CONT   ICH GAIN    = -0.25dB
POWER LEVEL<   PL15>----||VOL. BUZZ  <      1>----||CHEC   ICH OFFSET  = 120
TX DATA     <   OFF>----||VOL. SIDE  <    -8dB>----||SET    QCH OFFSET  = 127
RSSI (dBm) < CONT>-103.5||VOL. MIC   <     0dB>----||SOFT   BAT TEMP    = 0
SET AGC 1   < +70dB>----||VOL. SP 1  <     0dB>----||TEST   BAT VOLT HI = 943
SET AGC 2   < +36dB>ACK ||VOL. SP 2  <     0dB>----||SIM    BAT VOLT LO = 340
SET AGC 3   < +10dB>----                           ||CHEC   AFC OFFSET  = 45
                                                           RSSI Lch    = 0
                                                           RSSI Mch    = 254
                                                           RSSI Hch    = 255
                                                           RSSI COMP   = 253
                                                           DAC REF     = 700
                                                           DELTA V     = 6
                                                           V IGNORE    = 12
VER  [G52FT0/03/00/980728]                 TIMER OFFSET = 0
IMEI [004400870110000]                     COMP OFFSET  = 0
PRDCT[               ]
ST IN[                              ]
                   HIT ANY KEY
1:END   2:      3:      4:MEM   5:      6:PTDAT 7:VTDAT 8:       9:P OFF 0:P ON
```

Figure:20 RSSI reading 3.   520-0719

11. Select TRIM OTHER and press ENTER.

12. Make the following calculation:
    RSSI offset value (from step 11) + reading noted in step 6. Enter the result into RSSI M field for example: 15 + 5 = 20.

```
<<<  PANASONIC      SERVICE BOX   VER:   .   >>>

INITIALIZE <   INIT>----||SP LOOPBACK<    STOP>----||GET KEYCODE< ENABLE>----
CHANGE CH   < 62>   ACK ||PATH CONT  <    MESI>----||CONTROL OUT<ALL   ON>----
POWER LEVEL<   PL15>----||VOL. BUZZ  <      1>----||CHECK LCD1 <      P1>----
TX DATA     <   OFF>----||VOL. SIDE  <    -8dB>----||SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>-103.5||VOL. MIC   <     0dB>----||SOFT SIM   < ENABLE>----
SET AGC 1   < +70dB>----||VOL. SP 1  <     0dB>----||TEST MODE  <    TERM>----
SET AGC 2   < +36dB>ACK ||VOL. SP 2  <     0dB>----||SIM STATUS < SHOW>------
SET AGC 3   < +10dB>----                           ||CHECKSUM   < SHOW>------




                                            PROG TRIM PL Mch
                                                 TRIM PL Hch
                                                 TRIM PL Lch
VER  [G52FT0/03/00/980728]                       TRIM Other
IMEI [004400870110000]
PRDCT[               ]
ST IN[                              ]

1:END   2:      3:      4:MEM   5:      6:PTDAT 7:VTDAT 8:       9:P OFF 0:P ON
```

Figure:21 RSSI reading 4.   520-0720

13. Press ENTER.

14. Press ESC.

15. Measure the RSSI level again by highlighting the RSSI dBm field and press ENTER.

16. Steps 6 to 15 must be repeated for both LOW and HIGH channels.

7.5.3 I and Q Values

NOTE:

With the I, Qch adjustment procedures the transmitter must be set to Power Level 5 (this presents the worst case of non-linearity) so care must be taken that the spectrum analyser used can accept a signal input of 33dBm. If not an appropriate attenuator must be used.

I, Q ch Offsets

Spectrum Analyser setup
centre frequency = 902.4MHz
RBW = 10kHz
VBW = 1kHz
span = 1MHz
sweep time = 2sec

1. Set the Channel box controls to channel 62 at power level 5, normal burst modulated with all 0's.

   a. Press the down arrow until CHANGE CH > is highlighted and then press ENTER.

   b. Press the down arrow until PL is highlighted. Press ENTER.

   c. Press the down arrow until TX DATA is highlighted. Press the move arrow until "NRL 0" appears in the highlighted field. Press ENTER.

```
<<< PANASONIC      SERVICE BOX   VER:      >>>

INITIALIZE <    INIT>----||SP LOOPBACK<    STOP>----||GET KEYCODE< ENABLE>----
CHANGE CH  < 62>     ACK ||PATH CONT  <    MESI>----||CONTROL OUT<ALL   ON>----
POWER LEVEL<    PL 5>ACK ||                         ||CHECK LCD1 <      P1>----
TX DATA    <    NRL 0>ACK||VOL. BUZZ  <       1>----||SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>------ ||VOL. SIDE  <     -8dB>----||SOFT SIM   < ENABLE>----
SET AGC 1  <  +70dB>---- ||VOL. MIC   <      0dB>----||TEST MODE  <    TERM>----
SET AGC 2  <  +40dB>---- ||VOL. SP 1  <      0dB>----||SIM STATUS < SHOW>------
SET AGC 3  <  +10dB>---- ||VOL. SP 2  <      0dB>----||CHECKSUM   < SHOW>------




VER  [GA6STD/22/00/971208]         MOBILE BOOT OK
IMEI [012345678901234]             CHG_CH1
PRDCT[             ]               SET_PL5
ST IN[                           ] TX_DAT_NO


1:END   2:       3:      4:MEM   5:      6:PTDAT 7:UTDAT 8:       9:P OFF 0:P ON
```

Figure:22 Channel box setup   520-0722

2. On the spectrum analyser measure the carrier leakage ratio. Carrier leakage ratio is measured as the ratio of peak power and the power at 68kHz below peak frequency.

   Example:
   peak power (902.468MHz) = 33dBm
   power at 68kHz below peak power = 0dBm
   carrier leakage ratio = 33dBm - 0dBm = 33dBm
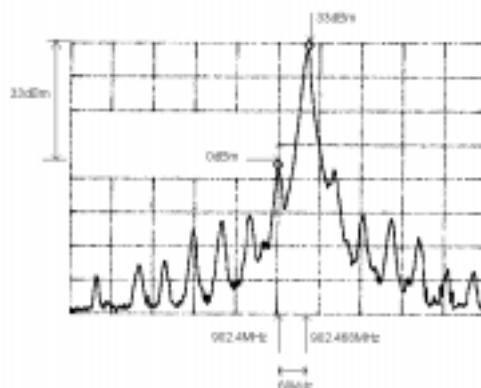
Figure:23 Carrier leakage ratio   600-0726

3. If carrier leakage ratio is greater than 30dBc then unit is OK. (offset calibration is complete).

4. If carrier leakage ratio less than 30dBc then go to Ich check.

Ich check

1. At the Channel box check Ich offset data by selecting F7 then VIEW TRIM OTHER.

Figure:24 I, Q data field selection 1.   520-0724

2. At the Channel box set Ich offset to 147, press F6 to program TRIM OTHER.

```
<<< PANASONIC     SERVICE BOX   VER:      >>>
INITIALIZE <   INIT>----  SP LOOPBACK<    STOP>----  GET KEYCODE< ENABLE>----
CHANGE CH  < 62>    ACK   PATH CONT  <    MESI>----  CONTROL OUT<ALL   ON>----
POWER LEVEL<   PL 5>ACK   VOL. BUZZ  <       1>----  CHECK LCD1 <      P1>----
TX DATA    <  NRL 0>ACK   VOL. SIDE  <    -8dB>----  SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>------  VOL. MIC   <     0dB>----  SOFT SIM   < ENABLE>----
SET AGC 1  < +70dB>----   VOL. SP 1  <     0dB>----  TEST MODE  <    TERM>----
SET AGC 2  < +40dB>----   VOL. SP 2  <     0dB>----  SIM STATUS < SHOW>------
SET AGC 3  < +10dB>----                              CHECKSUM   < SHOW>------

                                      PROG TRIM PL Mch
                                           TRIM PL Hch
                                           TRIM PL Lch
                                           TRIM Other
VER  [G52FT0/03/00/980728]
IMEI [004400870110000]
PRDCT[            ]
ST IN[                          ]

1:END  2:    3:    4:MEM  5:    6:PTDAT 7:VTDAT 8:    9:P OFF 0:P ON
```

Figure:25 I,Q data field selection 2.   520-0725

3. Select Ich OFFSET

```
<<< PANASONIC     SERVICE BOX   VER:      >>>
INITIALIZE <   INIT>----  SP LOOPBACK<    STOP>----  GET
CHANGE CH  < 62>    ACK   PATH CONT  <    MESI>----  CONT  FACTORY DEFAULT
POWER LEVEL<   PL 5>ACK   VOL. BUZZ  <       1>----  CHEC  IQCH GAIN
TX DATA    <  NRL 0>ACK   VOL. SIDE  <    -8dB>----  SET   ICH  OFFSET
RSSI (dBm) < CONT>------  VOL. MIC   <     0dB>----  SOFT  QCH  OFFSET
SET AGC 1  < +70dB>----   VOL. SP 1  <     0dB>----  TEST  BAT  TEMP
SET AGC 2  < +40dB>----   VOL. SP 2  <     0dB>----  SIM   BAT  VOLT HIGH
SET AGC 3  < +10dB>----                              CHEC  BAT  VOLT LOW
                                                           AFC  OFFSET
                                                           RSSI Lch  1-41
                                                           RSSI Mch 42-83
                                                           RSSI Hch 84-124
                                                           RSSI COMP
                                                           DAC  REFENCE
                                                           DELTA V
                                                           V IGNORE
VER  [G52FT0/03/00/980728]                                 ST TIMER OFFSET
IMEI [004400870110000]                                     COMPLETE OFFSET
PRDCT[            ]
ST IN[                          ]

1:END  2:    3:    4:MEM  5:    6:PTDAT 7:VTDAT 8:    9:P OFF 0:P ON
```

Figure:26 I,Q data field selection 3.   520-0726

4. Enter 147 for Ich OFFSET and press ENTER.

```
<<< PANASONIC     SERVICE BOX   VER:      >>>
INITIALIZE <   INIT>----  SP LOOPBACK<    STOP>----  GET KEYCODE< ENABLE>----
CHANGE CH  < 62>    ACK   PATH CONT  <    MESI>----  CONTROL OUT<ALL   ON>----
POWER LEVEL<   PL 5>ACK   VOL. BUZZ  <       1>----  CHECK LCD1 <      P1>----
TX DATA    <  NRL 0>ACK   VOL. SIDE  <    -8dB>----  SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>------  VOL. MIC   <     0dB>----  SOFT SIM   < ENABLE>----
SET AGC 1  < +70dB>----   VOL. SP 1  <     0dB>----  TEST MODE  <    TERM>----
SET AGC 2  < +40dB>----   VOL. SP 2  <     0dB>----  SIM STATUS < SHOW>------
SET AGC 3  < +10dB>----                              CHECKSUM   < SHOW>------

VER  [G52FT0/03/00/980728]
IMEI [004400870110000]                     ICH  OFFSET
PRDCT[            ]                         ICH OFFSET [0-255][_ ]
ST IN[                          ]

1:END  2:    3:    4:MEM  5:    6:PTDAT 7:VTDAT 8:    9:P OFF 0:P ON
```

Figure:27 I,Q data field selection 4.520-0727Using the Spectrum Analyser, measure the new carrier leakage ratio.

5. If the new carrier leakage ratio is greater than 30dBc then the unit is OK (offset calibration is complete).

6. If the original carrier leakage ration (see I,Q OFFSETS step 2) is greater than the new carrier leakage ratio go to I Dec Calibration.

7. If the original carrier leakage ratio is less than the new carrier leakage ratio go to I Inc Calibration.

I Dec Calibration

1. Set Ich offset to 107 (see Ich Check step 2).

2. Using the spectrum analyser measure the new carrier leakage ratio.

3. If the carrier leakage ratio is greater than 30dBc then unit is OK (offset calibration is complete).

4. If not then repeat steps 1, 2 and 3 above for Ich offset values: 87, 67, 47, 27 and 7.

5. If the carrier leakage ratio is still not greater than 30dBc then go to Qch Check.

I Inc Calibration

1. Set Ich offset to 167 (see Ich check step 2).

2. Using the spectrum analyser measure the carrier leakage ratio.

3. If the carrier leakage ratio is greater than 30dBc then the unit is OK. (offset calibration is complete).

4. If not then repeat steps 1, 2 and 3 above for Ich offset values: 187, 207, 227, 247.

5. If the carrier leakage ratio is still not greater than 30dBc then go to Qch Check.

Qch Check

1. Set Ich offset to 127.

2. Set Qch offset to 147.

   a. At the Channel box press F6.

   b. Press move down arrow until QCH OFFSET appears in the field. Press ENTER.

   c. Enter 3 into the data field and press enter.

3. Measure the new carrier leakage ratio.

4. If the carrier leakage ratio is greater than 30dBc the unit is OK. (offset calibration is complete).

5. If the original carrier leakage ratio (see I, Q ch Offsets step 2) is greater than new carrier leakage ratio then go to Q Dec Calibration.

6. If the original carrier leakage ratio is less than new carrier leakage ratio then go to Q Inc Calibration.

Q Dec Calibration

1. Set Qch offset to 107 (see Qch Check step 2).

2. Measure carrier leakage ratio.

3. If the carrier leakage ratio is greater than 30dBc then unit is OK. (offset calibration is complete).

4. If not then repeat steps 1, 2 and 3 above for Qch offset values: 87, 67, 47, 27, 7.

5. If the carrier leakage ratio is still less than 30dBc then unit is a fail.

Q Inc Calibration

1. Set Qch offset to 167 (see Qch Check step 2).

2. Measure carrier leakage ratio.

3. If carrier leakage ratio is greater than 30dBc then unit is OK. (offset calibration is complete).

4. If carrier leakage ratio is less than 30dBc then repeat steps 1, 2 and 3 above for Qch offset values:187, 207, 227, 247.

5. If carrier leakage ratio is less than 30dBc then unit is a fail.

I, Qch Gain

IMPORTANT: I, Qch offset calibration should be done before this calibration.

Spectrum Analyser Setup.

centre frequency = 902.4MHz

RBW = 10kHz

VBW = 1kHz

span = 1MHz

sweep time = 2sec

1. Set the Channel box controls to channel 62 at power level 5, normal burst modulated with all 0's.

    a. Press the down arrow until CHANGE CH > is highlighted and then press ENTER.

    b. Press the down arrow until PL is highlighted. Press ENTER.

    c. Press the down arrow until TX DATA is highlighted. Press the move arrow until O appears in the highlighted field. Press ENTER

2. Using the spectrum analyser measure the image leak ratio. Image leak ratio is the measured ratio of peak power and the power at 135kHz below peak frequency.

Example:

peak power (902.468Mhz) = 33dBm

power at 135kHz below peak power = -9dBm

image leak ratio = 33dBm - (-9dBm) = 42dBm
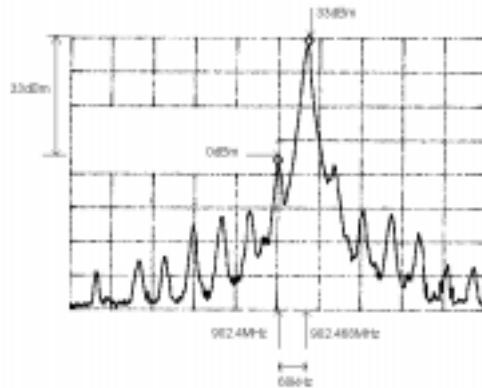
Figure:28 Image leak ratio   600-0726

3. If image leak ratio is greater than 30dBc then unit is OK. (offset calibration is complete).

4. If image leak ratio is less than 30dBc then go to Ich gain calibration.

IQch Gain Calibration

1. Set IQch gain to -0.25dB.

    a. On the Channel box press F6.

    b. Press move left arrow until IQCH GAIN field is highlighted. Press ENTER.

    c. Enter 2 into the data field. Press ENTER.

2. Measure the image leak ratio.

3. If image leak ratio is greater than 30dBc then unit is OK. (offset calibration is complete)

4. If image leak ratio is less than 30dBc then repeat steps 1, 2 and 3 above with IQch gain values: -0.50dB, -0.75dB.

5. If image leak ratio is still less than 30dBc then the unit is a fail.

7.5.4 Simple Receiver Test

The following procedure gives a method by which the Unit Under Test (UUT) can be placed into a condition allowing the service technician to probe the entire receive RF path. Input level and frequency can also be specified.

To perform the following procedure the UUT must first be placed into Test Mode. Perform the following steps:

1. At the Channel box highlight the CHANGE CH field and set the required test channel. Press ENTER.

2. Highlight the SET AGC 1,2,3 field and enter the required gain value.

3. At the GSM test unit input an RF signal at the required frequency and level.

The unit has now been placed in a state which will allow the received signal path to be monitored.

7.5.5 Simple Transmitter Test

The following procedure gives a method by which the Unit Under Test (UUT) can be placed into a condition allowing the service technician to probe the entire transmit RF path. Input level and frequency can also be specified.

To perform the following procedure the UUT must first be placed into Test Mode. Perform the following steps:

1. At the Channel box highlight the CHANGE CH field and set the required test channel.

2. Press ENTER.

3. Highlight the PL field and set the required test power level.

4. Press ENTER.

5. Highlight the TX_DATA field and select the required modulation type and data.

6. Press ENTER.

The UUT is now in the required state to allow probing of the transmit RF path.

7.6 Lock Code

NOTE:
See section 7.2.1 for a list of the equipment and setup procedures required to perform the following adjustment and calibration procedures.

To perform the following procedures the UUT must be placed into Test Mode.

7.6.1 Check current lock code

1. At the Channel box press F4 and highlight VIEW LOCK CONDITION. Press ENTER.

Figure:29 View lock code   520-0729

2. The display will show the current lock status and lock code for the UUT.

7.6.2 Change current lock code

1. At the Channel box press SHIFT and F4 and highlight PROG LOCK CONDITION. Press ENTER.

2. Press ENTER to unlock the UUT. The current lock code will be used.

```
<<< PANASONIC       SERVICE BOX    VER:       >>>

INITIALIZE <▓▓▓▓▓▓▓▓>----  SP LOOPBACK<    STOP>----  GET KEYCODE< ENABLE>----
CHANGE CH  <  62>---------  PATH CONT  <    MESI>----  CONTROL OUT<ALL  ON>----
POWER LEVEL<   PL15>----                                CHECK LCD1 <     P1>----
TX DATA    <    OFF>----  VOL. BUZZ  <      1>----  SET ER DISP< ENABLE>----
RSSI (dBm) < CONT>------  VOL. SIDE  <    -8dB>----  SOFT SIM   < ENABLE>----
SET AGC 1  <  +70dB>----  VOL. MIC   <    0dB>----  TEST MODE  <    TERM>----
SET AGC 2  <  +40dB>----  VOL. SP 1  <    0dB>----  SIM STATUS < SHOW>------
SET AGC 3  <  +10dB>----  VOL. SP 2  <    0dB>----  CHECKSUM   < SHOW>------


VER  [GA6ST0/22/00/971208]
IMEI [012345678901234]
PRDCT[              ]                           LOCK = DISABLED
ST IN[                          ]              CODE = 0000

              HIT ANY KEY
1:END   2:       3:       4:MEM  5:        6:PTDAT 7:VTDAT 8:       9:P OFF 0:P ON
```

Figure:30 Program lock code   600-0741

3. Enter "0000" to reset the UUT to factory defaults. The UUT will be locked using the lock code "0000".

7.7 SIM Personalisation

7.7.1 Introduction

SIM personalisation will limit the use of G520 to a single SIM, a SIM supplied by one Network/Sub-network/Service Provider or a SIM purchased by a company (corporation). If a personalised G520 contains a SIM that is from a different source it will display the message "SIM ERROR" when switched on. This personalisation of G520 is sometimes referred to as SIM lock or SIM latch.

7.7.2 Testing

To test a personalised G520, when the user has not supplied the SIM, a SIM configured for test purposes (e.g. test SIM or soft SIM) should be used. The mobile will recognise that the SIM is for testing purposes only and operate as normal.

7.7.3 Personalisation Function
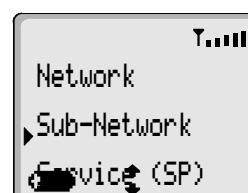
Personalisation is activated during manufacture and then enabled at a later stage. Enabling/disabling is available by entering a special key sequence immediately after power on. Once the enable/disable menu is shown it is possible to select the type of personalisation. When personalisation is enabled it is only possible to disable it if the mobile contains an illegal SIM and the sixteen digit Control Key (CK) is known. When enabled the CK is withheld from the user and cannot be read, for security reasons.

There are two special key sequences to enter the enable/disable menu:

Key sequence	Notes
(7PQRS) (4GHI) (6MNO) (▭) (▭)	Can only disable personalisation
(5JKL) (2ABC) (8TUV) (2ABC) (4GHI) (▭) (▭)	Can both enable and disable personalisation

7.7.4 Disabling Procedure

1. 📳 (7PQRS) (4GHI) (6MNO) (▭) (▭) or (5JKL) (2ABC) (8TUV) (2ABC) (4GHI) (▭) (▭)

2. 📳 ⊙ to point at:
"SIM" for SIM Personalisation
"Network" for Network Personalisation
"Subnetwork" for Subnetwork Personalisation
"SP" for Service Provider Personalisation or
"Corporate" for Company Personalisation

3. 📳 (▭)

4. 📳 the 16 digit Control Key

5. 📳 (▭)

6. 📳 the 16 digit Control Key

7. 📳 (▭)
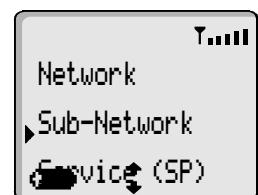
The display will confirm which type of Personalisation has been disabled.

7.7.5 Enabling Procedure

1. (5ᴶᴷᴸ) (2ᴬᴮᶜ) (8ᵀᵁⱽ) (2ᴬᴮᶜ) (4ᴳᴴᴵ) (▢) (▢)

2. ☞ (⊙) to point at;
"SIM" for SIM Personalisation
"Network" for Network Personalisation
"Subnetwork" for Subnetwork Personalisation
"SP" for Service Provider Personalisation or
"Corporate" for Company Personalisation

3. ☞ (▢)

4. ☞ the 16 digit Control Key

5. ☞ (▢)

6. ☞ the 16 digit Control Key

7. ☞ (▢)

The display will confirm which type of Personalisation has been enabled.

```
                              Y.ᵢᵢᵢ▋▋
Network

▸Sub-Network

◀▬▬vice▮ (SP)
```

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8 CIRCUIT DIAGRAMS

8.1 Handheld Unit

8.1.1 Logic
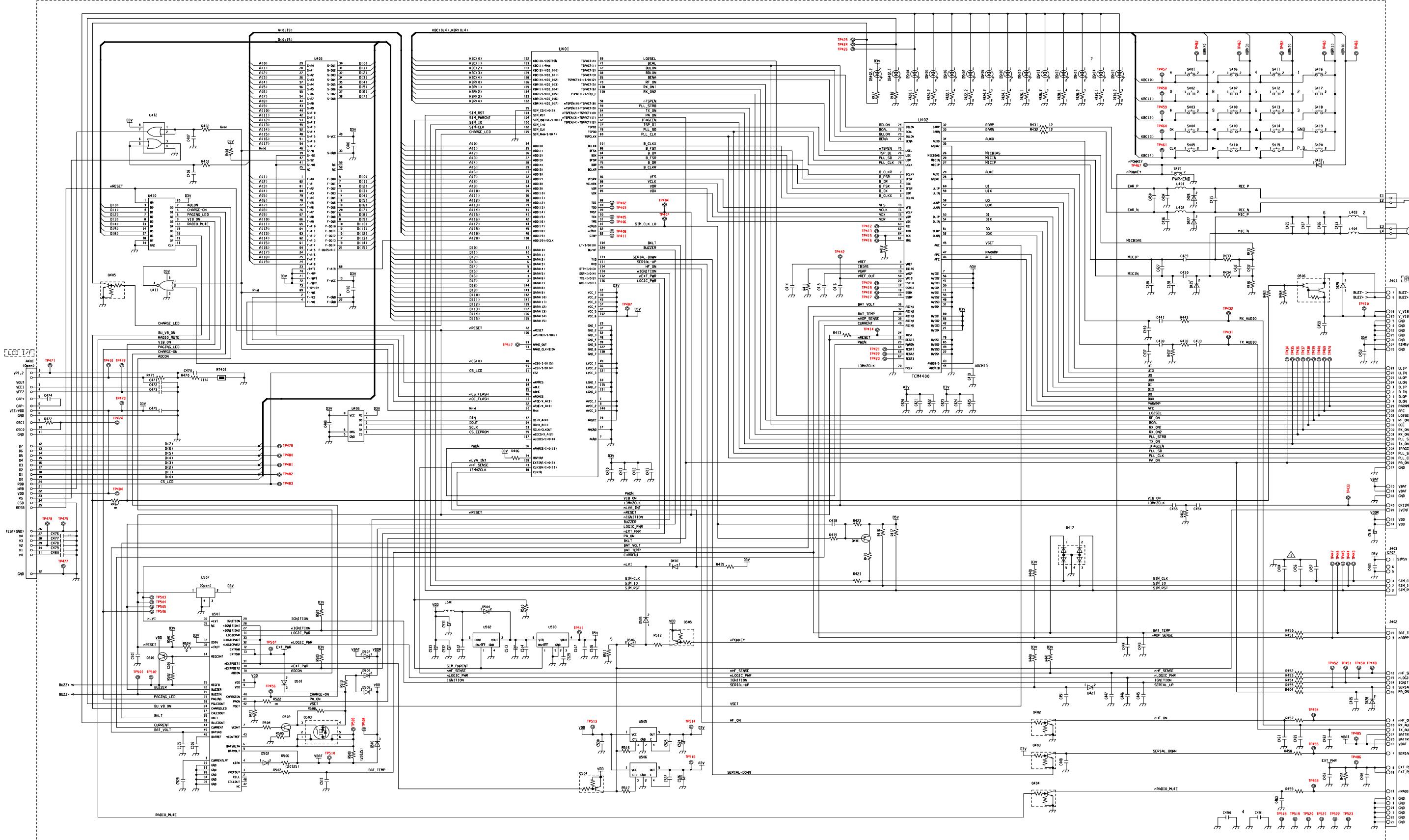
Figure:1 EG76023F_CIRCUIT.EPS

8.1.2 RF
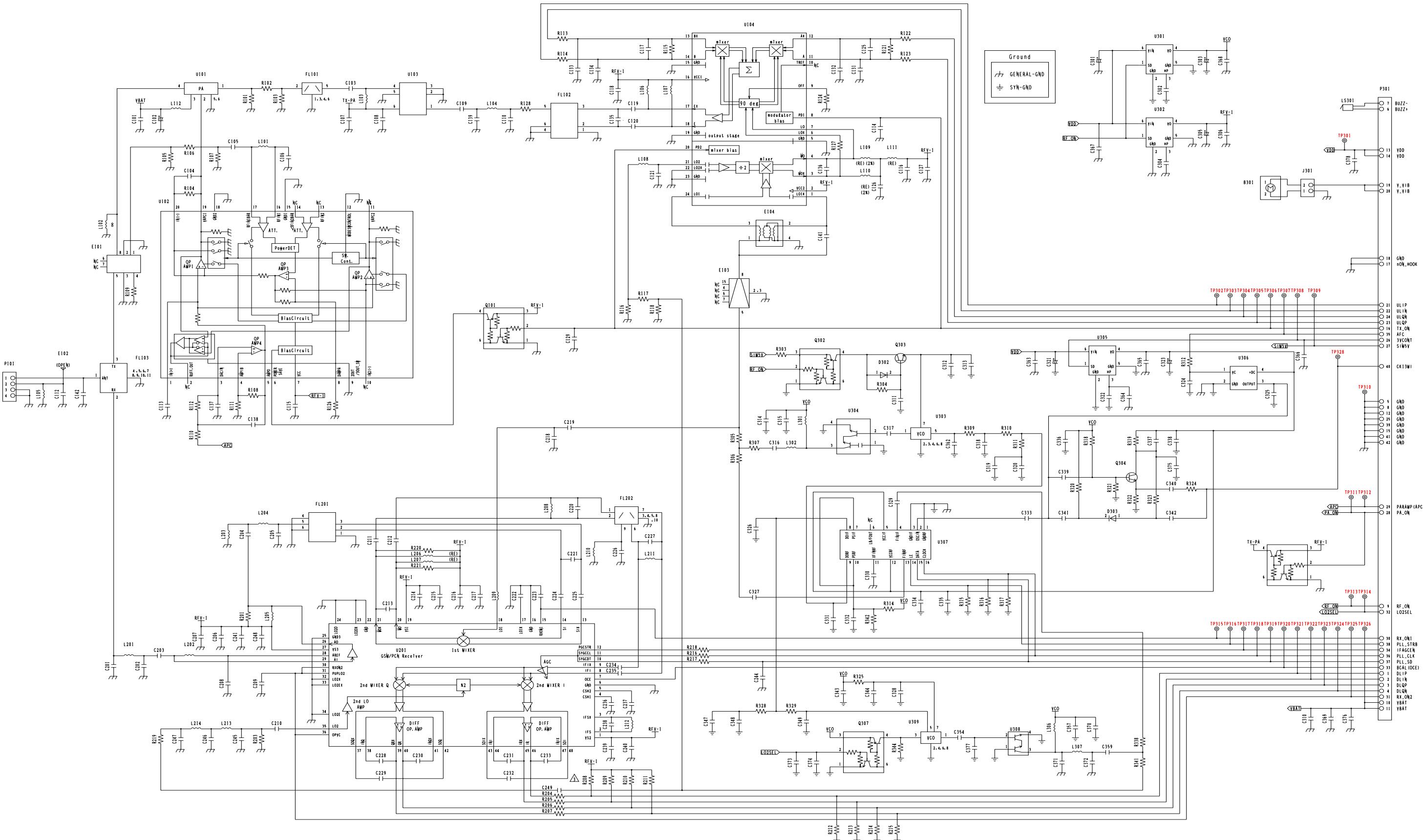
Figure:2 EG76166F_CIRCUIT.EPS

8.2 Handsfree
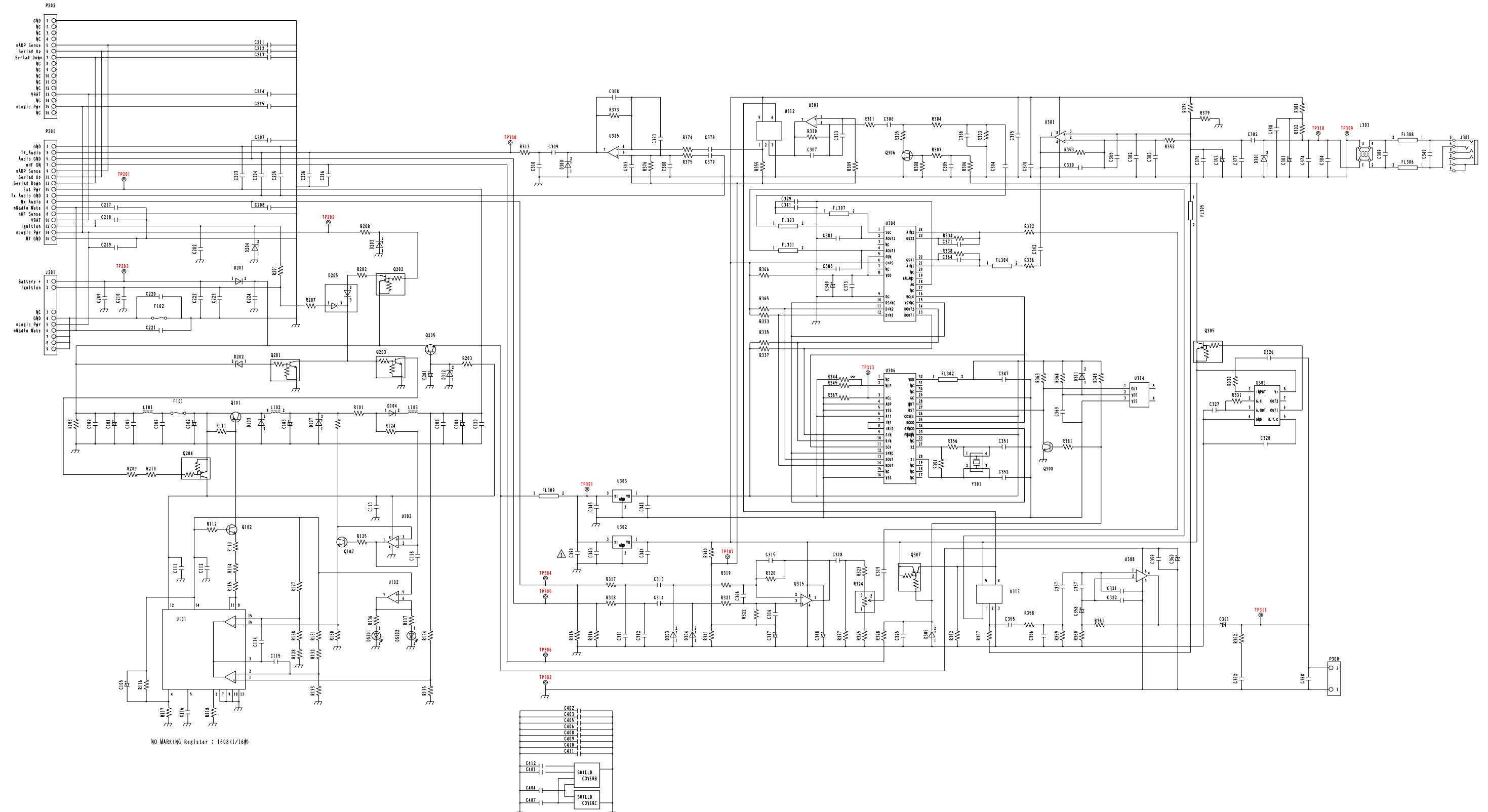
Figure:3 EG76225D_CIRCUIT.EPS

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9 PCB LAYOUT DIAGRAMS

9.1 Handheld Unit

9.1.1 Logic
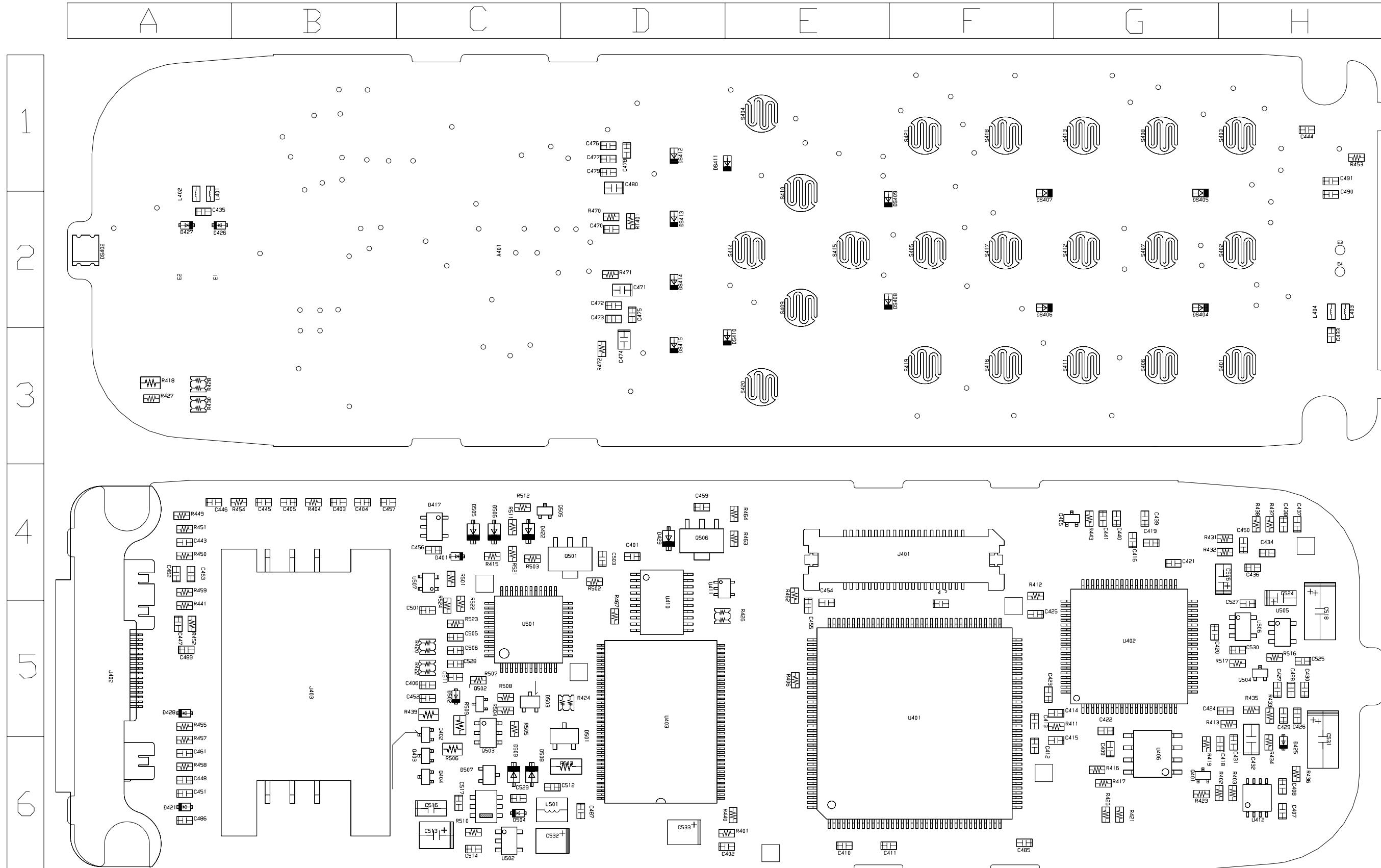
Figure:1   EG76023F_CIRCUIT.EPS
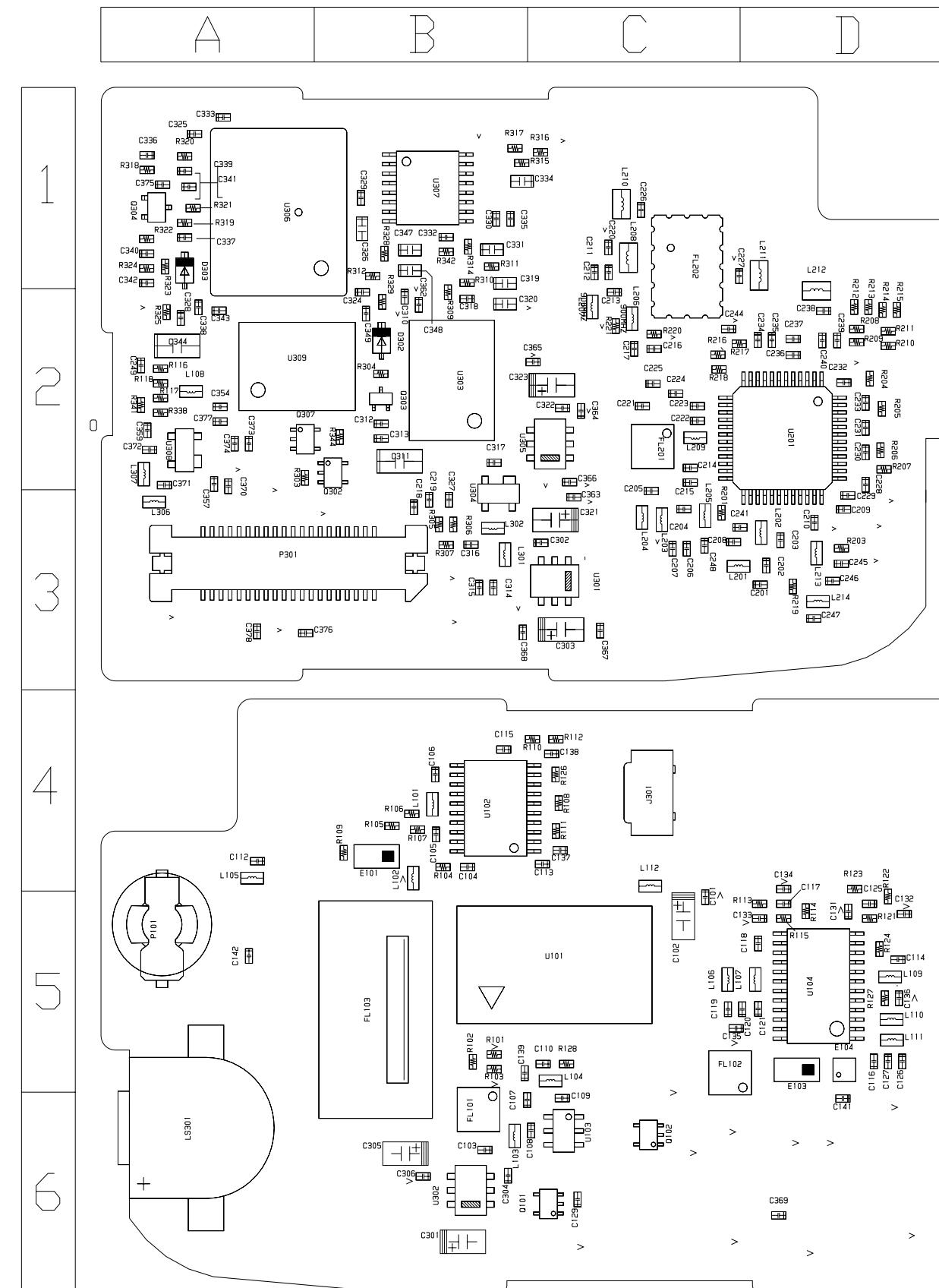
9.1.2 RF

Figure:2   EG76166F_CIRCUIT.EPS

9.2 Handsfree
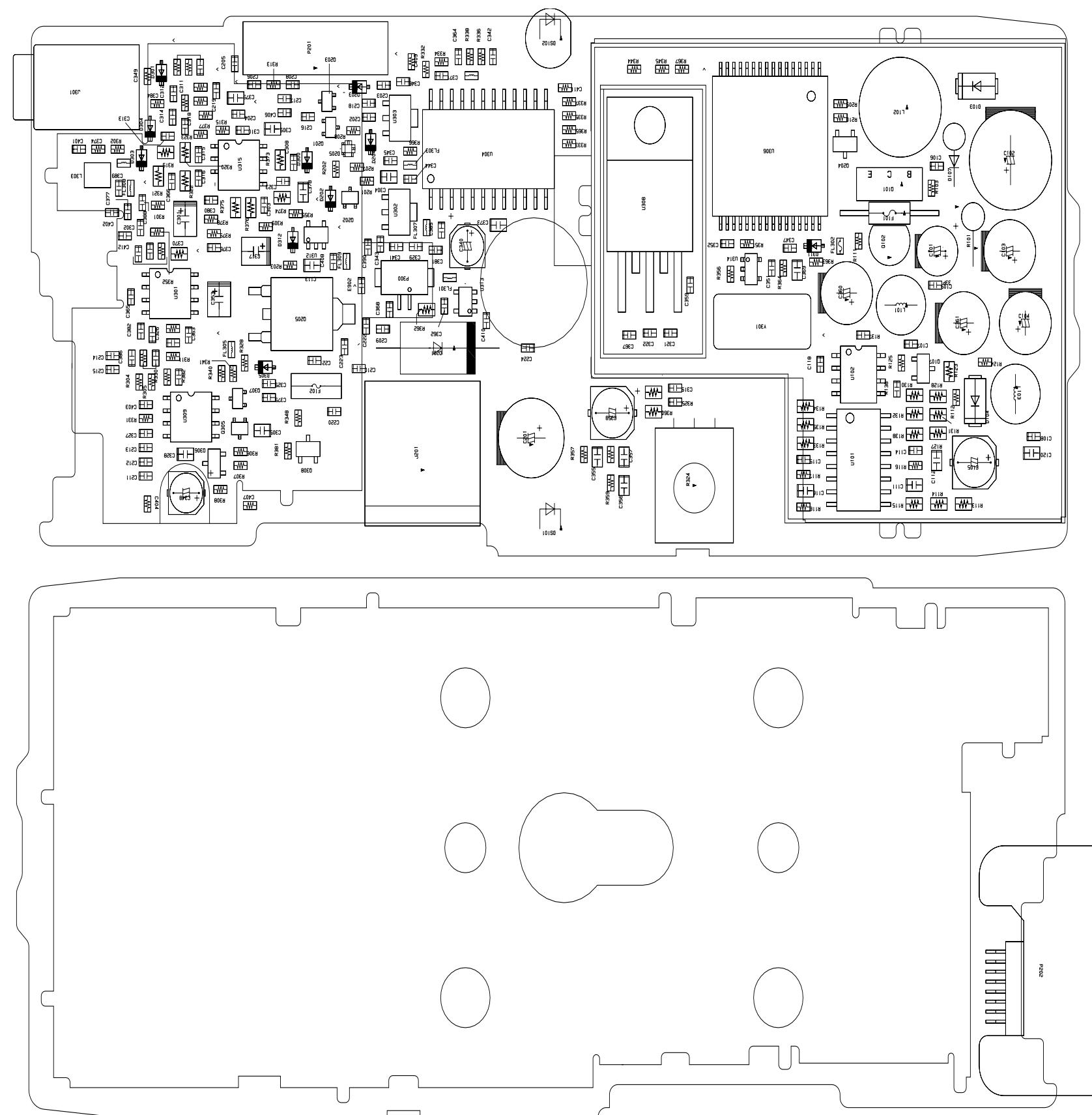
Figure:3   EG76225D_CIRCUIT.EPS

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10 REPLACEMENT PARTS LIST

10.1 Handheld Unit

Parts No	Name
G520RFAS01	G520 RF Complete
G520LGAS01	G520 Logic Complete
G520CVR01 G520CVR01B	Cover Assembly - Black * Cover Assembly - Blue *
1HA503A	Case
2EA510A	LCD Panel
2FA506A	Chassis
2FA507A	RF Shield
2QA510A	LCD Backlight
2RA515A	Receiver Holder Ref. B
4CA501A	Screw Cover
4FA505A	Antenna Terminal
4GA508A	Antenna Holder
5E70164A	Buzzer Cushion
5K70067A	Mic Holder
6FA504A	Screw
6HA525A	Vibrator Cushion
6RA507A	RF Cap
6SA508A	LCD Connector
6SA510A	Tab Cushion
6TA504AA	Keysheet
AA76001A	LCD Module
AN70073A	Fixed Antenna
BD76002A	Vibrator Motor
G5MDS002C	Patent Label
HB70010A	Buzzer
HH76003A	Receiver Ref. A
HMRE00003	Microphone
JA76003A	I/O Connector
JS8A00005	SIM Holder
* Cover Assembly Ref. C consists of:	
1GA504A	Cover
2QA509A	Indicator
5E70162A	LCD Cushion
6HA522A	Receiver Cushion

Figure:1   Handheld Unit   520-1001

10.2 Handsfree Unit
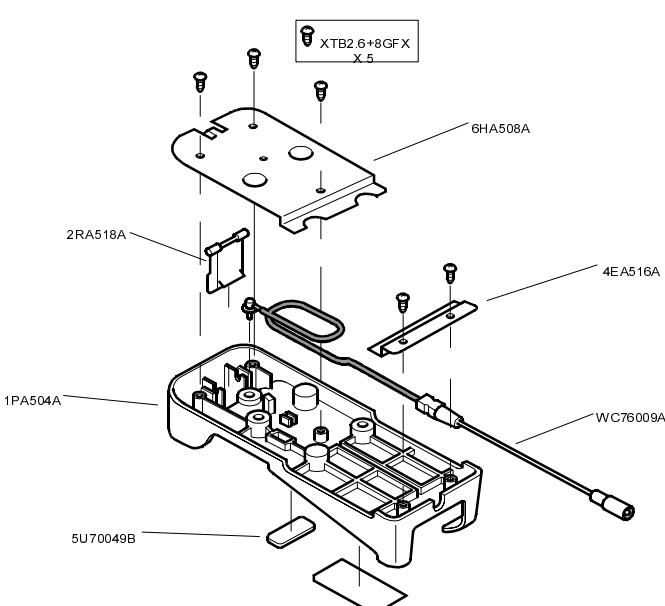
Parts No.	Name
1B70106A	Speaker Bracket
1B70111A	PA Bracket
1C70201B	Shield Cover
5FJ5129AB	Volume Knob
5M70171A	Case
5N70187AB	Cover
5S70083A	Indicator
5U10060B	Cushion
6V10031A	Speaker Net
EBM1177	Handsfree Microphone
VS45U0208	Speaker
WC70187B	H/F Power Cable
WC76008A	Straight Cord
WP76001A	H/F Power Cable
XTB2.6+6GFXK	Tapping Screw
XTB2.6+12GFXK	Tapping Screw
XTB3+14GFXK	Tapping Screw
XYN2.6+J8FN	Screw

Figure:2   Handsfree Unit   520-1002

10.3 Holder

Parts No.	Name
1PA504A	Car Holder
2RA519A	RF Holder
2RA520A	Stopper
4EA511A	Cable Clamp
5U70049B	Cushion
WC76009A	RF Cable
XTB2.6+8GFX	Screw
The Holder assembly EB-KA521 shows the Holder complete with RF Cable (WC76009A)	
Note: The Part Number for the Holder assembly without RF Cable (WC76009A) is EB-KA520.	

Figure:1   Holder Unit   520-1003

10.4 Handheld Replacement Parts List

10.4.1 Logic

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
–	G520ROM01	G520 FLASH ROM (PROGRAMMED)	
–	G520LOG01	G520 LOGIC SIDE 1 COMPLETE	
C0401	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	D4
C0402	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	D6
C0403	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	B4
C0404	YGM1C820J1HT	CAP 82pF 5% 50V X7R SM1608	B4
C0405	ECUV1H331JCV	CAP 330pF +/-5% 50V NPO SM 0603	B4
C0406	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	C5
C0407	ECUV1H221JCV	CAP 220pF +/-5% 50V NPO SM 0603	H6
C0408	ECUV1H271JCV	CAP 270pF +/-5% 50V NPO SM 0603	H6
C0409	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G6
C0410	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	E6
C0411	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	E6
C0412	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	F6
C0413	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	F5
C0414	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G5
C0415	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G6
C0416	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G4
C0418	YGM1C470J1HT	CAPACITOR CHIP 47PF +/-5%	H6
C0419	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	G4
C0420	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	H5
C0421	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G4
C0422	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G5
C0423	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	F5
C0424	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	G5
C0425	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	F5
C0426	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H5
C0427	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H5
C0428	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H5
C0429	ECJ1VB1E333K	CAPACITOR 33nF +/-10% 25V X7R SM 0603	H5
C0430	ECJ1VB1E333K	CAPACITOR 33nF +/-10% 25V X7R SM 0603	H5
C0431	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	H6
C0432	YGM3F475Z1AT	CAP CERAMIC 4.7UF 10V SM 1608	H6
C0433	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H2

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
C0435	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	A2
C0437	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H4
C0438	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	H4
C0439	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	G4
C0440	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	G4
C0441	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	G4
C0443	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	A4
C0444	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	H1
C0445	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	B4
C0446	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	A4
C0447	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	A5
C0448	ECUV1H102KBV	CAP 1nF +/-10% 50V X7R SM 0603	A6
C0450	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	H4
C0451	ECUV1H102KBV	CAP 1nF +/-10% 50V X7R SM 0603	A6
C0452	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	C5
C0453	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	F4
C0454	ECUV1H102KBV	CAP 1nF +/-10% 50V X7R SM 0603	E4
C0455	ECUV1H102KBV	CAP 1nF +/-10% 50V X7R SM 0603	E5
C0456	YGM1C820J1HT	CAP 82pF 5% 50V X7R SM1608	C4
C0457	YGM1C150J1HT	CAPACITOR 15PF 1608 +/-5% 50V	B4
C0459	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	D4
C0470	ECJ1VB1H103K	CAPACITOR 10nF +/-10% 50V X7R SM 0603	D2
C0471	ECUV1C105ZFX	CAP 1UF +/80%/20% 16V F/Y5V 0805	D2
C0472	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D2
C0473	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D2
C0474	ECUV1C105ZFX	CAP 1UF +/80%/20% 16V F/Y5V 0805	D3
C0475	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	D2
C0476	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D1
C0477	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D1
C0478	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D1
C0479	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	D1
C0480	ECUV1C105ZFX	CAP 1UF +/80%/20% 16V F/Y5V 0805	D1
C0486	ECUV1H221JCV	CAP 220pF +/-5% 50V NPO SM 0603	A6
C0501	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	C5
C0503	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	D4
C0505	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	C5
C0506	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	C5
C0511	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	C5
C0512	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	D6

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
C0513	YCSJ3007M226	CAPACITOR 22uF + - 20% 10V TANTALUM	C6
C0514	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM 1608	C6
C0516	YCCSM028Z106	CAPACITOR 10uF 10V SM3216	C6
C0517	YGM1C470J1HT	CAPACITOR CHIP 47PF +/-5%	C6
C0518	YCSJ3010M156	CAPACITOR 15uF + - 20% 16V TANTALUM	H5
C0524	ECST0JY156ZR	CAPACITOR TANTALUM 15uF 6.3V SM 3216	H4
C0525	ECJ1VB1H103K	CAPACITOR 10nF +/-10% 50V X7R SM 0603	H5
C0526	ECST0JY156ZR	CAPACITOR TANTALUM 15uF 6.3V SM 3216	H4
C0527	ECJ1VB1H103K	CAPACITOR 10nF +/-10% 50V X7R SM 0603	H5
C0528	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	C5
C0529	ECJ1VB1H103K	CAPACITOR 10nF +/-10% 50V X7R SM 0603	C6
C0530	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	H5
C0531	YCSJ3010M156	CAPACITOR 15uF + - 20% 16V TANTALUM	H5
C0532	YCSPP002M475	CAP 4u7F 16V TANT CAPACITOR	C6
C0533	YCSPP002M475	CAP 4u7F 16V TANT CAPACITOR	D6
D0401	YDRTU0005	30V 200mA DIODE	C4
D0417	YHZM6.8FATR	6.8V 200mW DIODE	C4
D0421	YDRTU0005	30V 200mA DIODE	A6
D0422	MA112TX	DIODE SWITCHING 40V 200MA	C4
D0425	MAZS0470GL	ZENER DIODE 4V7 SS-MINI	H6
D0426	MAZS0470GL	ZENER DIODE 4V7 SS-MINI	A2
D0427	MAZS0470GL	ZENER DIODE 4V7 SS-MINI	A2
D0428	MAZS1200ML	ZENER DIODE 12V SM 1608	A5
D0429	MA112TX	DIODE SWITCHING 40V 200MA	D4
D0501	YRB491DT146	20V 1A DIODE	D5
D0502	YDRTU0005	30V 200mA DIODE	C5
D0503	YRB461FT106	20V 700mA DIODE	C5
D0504	YDRTU0005	30V 200mA DIODE	C6
D0505	MA112TX	DIODE SWITCHING 40V 200MA	C4
D0506	MA112TX	DIODE SWITCHING 40V 200MA	C4
D0507	YRB461FT106	20V 700mA DIODE	C6
D0508	MA112TX	DIODE SWITCHING 40V 200MA	C6
D0509	MA112TX	DIODE SWITCHING 40V 200MA	C6
DS0402	CL155URGDT	2 COLOUR LED 5V 25mA 3.2Lx2.7Wx1.1H	A2
DS0404	SML310MWT86	2.2V 20mA GREEN LED	G2
DS0405	SML310MWT86	2.2V 20mA GREEN LED	G2
DS0406	SML310MWT86	2.2V 20mA GREEN LED	F2
DS0407	SML310MWT86	2.2V 20mA GREEN LED	F2
DS0408	SML310MWT86	2.2V 20mA GREEN LED	F2

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
DS0409	SML310MWT86	2.2V 20mA GREEN LED	F2
DS0410	SML310MWT86	2.2V 20mA GREEN LED	E3
DS0411	SML310MWT86	2.2V 20mA GREEN LED	D1
DS0412	SML310MWT86	2.2V 20mA GREEN LED	D1
DS0413	SML310MWT86	2.2V 20mA GREEN LED	D2
DS0414	SML310MWT86	2.2V 20mA GREEN LED	D2
DS0415	SML310MWT86	2.2V 20mA GREEN LED	D3
J0401	527600408	G520 BOARD TO BOARD CONNECTOR (LOGIC)	F4
J0402	JA76003A	G520 I/O CONNECTOR	A5
J0403	JS8A00005	G600 SIM HOLDER	B5
L0401	LL1608FH82NJ	INDUCTOR 82nH +/-5% SM1608	A2
L0402	LL1608FH82NJ	INDUCTOR 82nH +/-5% SM1608	A2
L0403	LL1608FH82NJ	INDUCTOR 82nH +/-5% SM1608	H2
L0404	LL1608FH82NJ	INDUCTOR 82nH +/-5% SM1608	H2
L0501	LQH3C101KT	CHIP COIL 100uH +/-10% SM 3.2Lx2.5Wx2.0H	C6
Q0401	2SB1462JTX	TRANSISTOR PNP SS-MINI	G6
Q0402	YDTC144EETL	TRANSISTOR	C5
Q0403	YDTC123JETL	TRANSISTOR 150MW 50V	C6
Q0404	YDTC144EETL	TRANSISTOR	C6
Q0405	YDTC144EETL	TRANSISTOR	G4
Q0501	2SB1073QRTX	TRANSISTOR	D4
Q0502	2SD2216TX	150MHz 50V 125mW NPN TRANSISTOR	C5
Q0503	YSI3441DVT1	TRANSISTOR PWR MOSFET -20V 2W	C6
Q0504	YDTA115EETL	TRANSISTOR	H5
Q0505	YDTA144EETL	TRANSISTOR 250MHZ 50V 200MW	C4
Q0506	2SD1511RSTX	TRANSISTOR NPN	D4
R0401	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	E6
R0402	ERJ3GEYJ221V	CHIP RESISTOR 220 Ω +/-5% 1/16W SM1608	H6
R0403	ERJ3GEYJ221V	CHIP RESISTOR 220 Ω +/-5% 1/16W SM1608	H6
R0404	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	B4
R0406	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	E5
R0411	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	G5
R0412	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	F4
R0413	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	G5
R0415	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	C4
R0416	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	G6
R0417	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	G6
R0418	ERJ6GEYJ151V	CHIP RESISTOR 150 Ω +/-5% 1/10W SM 2012	A3
R0419	ERJ3GEYJ332V	CHIP RESISTOR 3K3 Ω +/-5% 1/16W SM 1608	G6

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
R0420	EXBV4V331JV	CHIP 2 RESISTOR ARRAY 330 Ω +/-5% 62.5MW	C5
R0421	ERJ3GEYJ470V	CHIP RESISTOR 47 Ω +/-5% 1/16W SM1608	G6
R0422	EXBV4V331JV	CHIP 2 RESISTOR ARRAY 330 Ω +/-5% 62.5MW	C5
R0423	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	G6
R0424	EXBV4V331JV	CHIP 2 RESISTOR ARRAY 330 Ω +/-5% 62.5MW	D5
R0425	ERJ3GEYJ151V	CHIP RESISTOR 150 Ω +/-5% 1/16W SM1608	G6
R0426	EXBV4V331JV	CHIP 2 RESISTOR ARRAY 330 Ω +/-5% 62.5MW	E5
R0427	ERJ3GEYJ271V	CHIP RESISTOR 270 Ω +/-5% 1/16W SM 1608	A3
R0428	EXBV4V181JV	CHIP 2 RESISTOR ARRAY 180 +/-5% 62.5MW	A3
R0430	EXBV4V181JV	CHIP 2 RESISTOR ARRAY 180 +/-5% 62.5MW	A3
R0431	ERJ3GEYJ120V	CHIP RESISTOR 12 Ω +/-5% 1/16W SM1608	G4
R0432	ERJ3GEYJ120V	CHIP RESISTOR 12 Ω +/-5% 1/16W SM1608	G4
R0433	ERJ3GEYJ152V	CHIP RESISTOR 1K5 Ω +/-5% 1/16W SM1608	H5
R0434	ERJ3GEYJ152V	CHIP RESISTOR 1K5 Ω +/-5% 1/16W SM1608	H6
R0435	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	H5
R0436	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	H6
R0437	ERJ3GEYJ332V	CHIP RESISTOR 3K3 Ω +/-5% 1/16W SM 1608	H4
R0438	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	H4
R0439	ERJ6GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/10W SM 2012	C5
R0440	ERJ3GEYJ472V	CHIP RESISTOR 4K7 Ω +/-5% 1/16W SM 1608	E6
R0441	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	A5
R0443	ERJ3GEYJ561V	CHIP RESISTOR 560 Ω +/-5% 1/16W SM 1608	G4
R0449	ERJ3EKF1003V	CHIP RESISTOR 100K Ω +/-1% 1/16W SM 1608	A4
R0450	ERJ3GEYJ331V	CHIP RESISTOR 330 +/-5% 1/16W SM 1608	A4
R0451	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A4
R0452	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A5
R0453	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	H1
R0454	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	B4
R0455	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A5
R0457	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A6
R0458	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A6
R0459	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1608	A4
R0462	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	E4
R0463	ERJ3GEYJ182V	CHIP RESISTOR 1K8 Ω +/-5% 1/16W SM 1608	E4
R0464	ERJ3GEYJ183V	CHIP RESISTOR 18K Ω +/-5% 1/16W SM1608	E4
R0470	YRDTU0061804	RESISTOR 62.5MW 1M8OHM	D2
R0471	ERJ3GEYJ304V	CHIP RESISTOR 300K Ω +/-5% 1/16W SM1608	D2
R0472	ERJ3GEYJ684V	CHIP RESISTOR 680K Ω +/-5% 1/16W SM1608	D3
R0473	ERJ3GEY0R00V	CHIP RESISTOR 0 Ω 1/16W SM 1608	

MODEL:	EB-G520	NAME:	Logic
REF.	PART NUMBER	DESCRIPTION	GRID
R0501	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	C4
R0502	ERJ3GEYJ470V	CHIP RESISTOR 47 Ω +/-5% 1/16W SM1608	D4
R0503	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	C4
R0504	ERJ3GEYJ473V	CHIP RESISTOR 47K Ω +/-5% 1/16W SM 1608	C5
R0505	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	C5
R0506	ERJ6GEYJ470V	CHIP RESISTOR 47 Ω +/-5% 1/10W SM 2012	C6
R0507	ERJ3GEYJ183V	CHIP RESISTOR 18K Ω +/-5% 1/16W SM1608	C5
R0508	ERJ3GEYJ123V	CHIP RESISTOR 12K Ω +/-5% 1/16W SM1608	C5
R0509	ERJ6RSFR15V	CHIP RESISTOR 0R15 Ω +/-5% 1/10W SM 2012	C5
R0510	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	C6
R0511	ERJ3GEYJ474V	CHIP RESISTOR 470K Ω +/-5% 1/16W SM 1608	C4
R0512	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	C4
R0513	ERJ8GEYJ3R3V	CHIP RESISTOR 3R3 Ω +/-5% 1/8W SM 3216	C6
R0516	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	H5
R0517	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1/16W SM 1608	H5
R0521	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1608	C4
R0523	ERJ3GEY0R00V	CHIP RESISTOR 0 Ω 1/16W SM 1608	C5
R0524	ERJ3GEY0R00V	CHIP RESISTOR 0 Ω 1/16W SM 1608	C4
RT0401	YRTSM052J204	THERMISTOR 10MW 200K	D2
U0401	YF711940PGE	GEMINI CHIP FOR HALF RATE VOICE CODING	F5
U0402	YTCM4400	GSM/DCS BASEBAND/RF IF (VEGA3) TQFP80	G5
U0403	YM6MFB16S2TP	G520 FLASH	D5
U0406	UM70023B	EEPROM G500 8 PIN SOIC	G6
U0410	YULLW0150	OCTAL D-FLIP FLOP	D4
U0411	YULLW0039	NOR GATE	D4
U0412	YULLW0060	G520 IC	H6
U0501	UY76039A	BA3896KV CHARGING IC	C5
U0502	YURIH0022	REGULATOR STEP UP SM SOT23-5	C6
U0503	YTK11250BMCL	VOLTAGE REGULATOR 5.0V	
U0505	YBA030LBSGTR	G520 REGULATOR 1C 3V	H5
U0506	YBA030LBSGTR	G520 REGULATOR 1C 3V	H5

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REPLACEMENT PARTS LIST

10.4.2 RF

MODEL:	EB-G520	NAME:	RF
REF.	PART NUMBER	DESCRIPTION	GRID
–	G520RF01	G520 RF SIDE 1 COMPLETE	
C0102	YCSJ3001M685	CAPACITOR 6.8UF 16V	C5
C0103	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B6
C0104	ECUE1H221JCQ	CAPACITOR 22OPF +/-5% 50V SM 1005	B4
C0105	YGM5C020B1HT	CAPACITOR 2PF +/-0.1PF 50V 1005	B4
C0106	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	B4
C0107	ECUE1C103KBQ	CAPACITOR 10nF/16V	B6
C0108	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B6
C0109	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C6
C0110	YGM5C050C1HT	CAPACITOR 5PF +/-0.25PF 50V 1005	C5
C0113	ECUE1H151JCQ	CAPACITOR 150PF +/-5% 50V SM 1005	C4
C0114	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D5
C0115	ECUE1C103KBQ	CAPACITOR 10nF/16V	B4
C0117	ECUE1H151JCQ	CAPACITOR 150PF +/-5% 50V SM 1005	D4
C0118	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C5
C0119	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C5
C0120	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D5
C0121	YGM5C040C1HT	CAPACITOR 4PF +/-0.25PF SM 1005	D5
C0125	ECUE1H151JCQ	CAPACITOR 150PF +/-5% 50V SM 1005	D4
C0126	YGM5C060D1HT	CAPACITOR 6PF +/-0.25PF 50V 1005	D5
C0127	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D5
C0129	ECUE1C103KBQ	CAPACITOR 10nF/16V	C6
C0137	ECUE1H121JCQ	CAPACITOR 12OPF +/-5% 50V SM 1005	C4
C0138	ECUE1H151JCQ	CAPACITOR 150PF +/-5% 50V SM 1005	C4
C0139	YGM5C050C1HT	CAPACITOR 5PF +/-0.25PF 50V 1005	B5
C0141	YGM5C0R5B1HT	CAPACITOR 0.5pF +/-0.1pF 50V 1005	D6
C0142	YGM5C010B1HT	CAPACITOR 1PF +/-0.1PF 50V 1005	A5
C0201	YGM5C0R5B1HT	CAPACITOR 0.5pF +/-0.1pF 50V 1005	D3
C0202	YGM5C020B1HT	CAPACITOR 2PF +/-0.1PF 50V 1005	D3
C0203	YGM5C220J1HT	CAPACITOR 22PF +1-5% 50V 1005	D3
C0204	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C3
C0205	YGM5C050C1HT	CAPACITOR 5PF +/-0.25PF 50V 1005	C2
C0206	ECUE1E561KBQ	CAPACITOR 560pF +/-10% 25V X7R SM 0402	C3
C0207	ECUE1C103KBQ	CAPACITOR 10nF/16V	C3
C0208	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	C3
C0209	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D3

MODEL:	EB-G520	NAME:	RF
REF.	PART NUMBER	DESCRIPTION	GRID
C0210	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	D3
C0211	YGM5C020B1HT	CAPACITOR 2PF +/-0.1PF 50V 1005	C1
C0212	YGM5C1R5B1HT	CAPACITOR 1.5pF+/-0.1pF 50V 1005	C1
C0213	YGM5C020B1HT	CAPACITOR 2PF +/-0.1PF 50V 1005	C2
C0214	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C2
C0215	ECUE1C103KBQ	CAPACITOR 10nF/16V	C3
C0216	ECUE1C103KBQ	CAPACITOR 10nF/16V	C2
C0217	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	C2
C0218	YGM5C040C1HT	CAPACITOR 4PF +/-0.25PF SM 1005	B2
C0219	YGM5C060D1HT	CAPACITOR 6PF +/-0.25PF 50V 1005	B2
C0221	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	C2
C0222	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C2
C0223	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C2
C0224	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	C2
C0225	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	C2
C0226	YGM5C010B1HT	CAPACITOR 1PF +/-0.1PF 50V 1005	C1
C0228	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0229	ECUE1E471KBQ	CAP 470pF +/-10% 25V X7R SM 0402	D3
C0230	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0231	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0232	ECUE1E471KBQ	CAP 470pF +/-10% 25V X7R SM 0402	D2
C0233	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0234	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0235	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D2
C0236	ECUE1C103KBQ	CAPACITOR 10nF/16V	D2
C0237	ECUE1C103KBQ	CAPACITOR 10nF/16V	D2
C0238	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	D2
C0239	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D2
C0240	ECUE1C103KBQ	CAPACITOR 10nF/16V	D2
C0241	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	C3
C0245	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D3
C0246	YGM5C150J1HT	CAPACITOR 15PF +1-5% 50V 1005	D3
C0247	YGM5C070D1HT	CAPACITOR 7PF +/-0.5PF 50V 1005	D3
C0248	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C3
C0249	YGM5C060D1HT	CAPACITOR 6PF +/-0.25PF 50V 1005	A2
C0301	YCSJ3001M685	CAPACITOR 6.8UF 16V	B6
C0302	ECUE1C103KBQ	CAPACITOR 10nF/16V	C3
C0303	YCSJ3002M106	CAPACITOR 10uF + - 20% 10V TANTALUM TMCM-A	C3

REF.	PART NUMBER	DESCRIPTION	GRID
MODEL: EB-G520		NAME:	RF
C0304	ECUE1C103KBQ	CAPACITOR 10nF/16V	B6
C0305	YCSJ3002M106	CAPACITOR 10uF + - 20% 10V TANTALUM TMCM-A	B6
C0311	YGM3B225K1AT	CAPACITOR CERAMIC 2.2UF 10V SM	B2
C0312	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B2
C0313	ECUE1C103KBQ	CAPACITOR 10nF/16V	B2
C0314	ECUE1C103KBQ	CAPACITOR 10nF/16V	B3
C0315	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B3
C0316	YGM5C330J1HT	CAPACITOR 33PF +/-5% 50V 1005	B3
C0317	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	B2
C0318	ECUE1H221JCQ	CAPACITOR 22OPF +/-5% 50V SM 1005	B2
C0319	ECJ1VB1E333K	CAPACITOR 33nF +/-10% 25V X7R SM 0603	B1
C0321	YCSJ3001M685	CAPACITOR 6.8UF 16V	C3
C0322	ECUE1C103KBQ	CAPACITOR 10nF/16V	C2
C0323	ECST0JY156ZR	CAPACITOR TANTALUM 15uF 6.3V SM 3216	B2
C0324	ECUE1C103KBQ	CAPACITOR 10nF/16V	B2
C0325	YGM5C050C1HT	CAPACITOR 5PF +/-0.25PF 50V 1005	A1
C0326	ECJ1VB1E333K	CAPACITOR 33nF +/-10% 25V X7R SM 0603	B1
C0327	YGM5C100D1HT	CAPACITOR 10PF +1-0.5PF 50V 1005	B2
C0328	ECUE1C103KBQ	CAPACITOR 10nF/16V	A2
C0329	ECUE1E271KBQ	CAPACITOR 270PF +10% 25V B/X7R 0402	B1
C0330	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	B1
C0331	ECJ1VB1H332K	CAPACITOR 3n3F +/-10% 50V X7R SM 0603	B1
C0332	ECUE1C103KBQ	CAPACITOR 10nF/16V	B1
C0333	ECUE1E102KBQ	CAPACITOR 1nF +/-10% 25V	A1
C0334	YGM1F105Z1AT	CAPACITOR CERAMIC 1UF 10V SM 1608	C1
C0335	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B1
C0336	ECUE1C103KBQ	CAPACITOR 10nF/16V	A1
C0337	ECUE1C103KBQ	CAPACITOR 10nF/16V	A1
C0338	ECUE1C103KBQ	CAPACITOR 10nF/16V	A2
C0339	ECUE1C103KBQ	CAPACITOR 10nF/16V	A1
C0340	ECUE1E561KBQ	CAPACITOR 560pF +/-10% 25V X7R SM 0402	A1
C0341	ECUE1C103KBQ	CAPACITOR 10nF/16V	A1
C0342	ECUE1E102KBQ	CAPACITOR 1nF +/-10% 25V	A1
C0343	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A2
C0344	YGM3B225K1AT	CAPACITOR CERAMIC 2.2UF 10V SM	A2
C0347	ECJ1VB1E333K	CAPACITOR 33nF +/-10% 25V X7R SM 0603	B1
C0348	ECJ1VB1C104K	CAPACITOR 100nF +/-10% 16V X7R SM 0603	B2
C0349	YGM5C101J1HT	CAPACITOR 100PF +/-5% 50V CERAMIC SM1005	B2

REF.	PART NUMBER	DESCRIPTION	GRID
MODEL: EB-G520		NAME:	RF
C0354	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	A2
C0357	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A3
C0359	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A2
C0367	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	C3
C0368	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	B3
C0369	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	D6
C0370	ECUE1C103KBQ	CAPACITOR 10nF/16V	A2
C0371	YGM5C030C1HT	CAPACITOR 3PF +/-0.25PF 50V 1005	A2
C0372	YGM5C1R5B1HT	CAPACITOR 1.5pF+/-0.1pF 50V 1005	A2
C0373	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A2
C0374	ECUE1C103KBQ	CAPACITOR 10nF/16V	A2
C0375	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A1
C0376	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A3
C0377	YGM5C090D1HT	CAPACITOR 9PF +/-0.5PF 50V 1005	A2
C0378	YGM5C470J1HT	CAPACITOR 47PF +/5% 50V 1005	A3
D0302	MA77TX	DIODE S-MINI 2 PINS	B2
D0303	MA77TX	DIODE S-MINI 2 PINS	A1
E0101	EY76010A	G520 COUPLER	B4
E0103	FL76037A	G520 TX MIXER	D5
E0104	TH76001A	G520 BALUN 1.1G	D5
FL0101	FL76031A	G520 SAW FILTER	B6
FL0102	FL76030A	G620 SAW BPF BALANCE	C5
FL0103	FL76029A	G520 DUPLEXER MACO	B5
FL0201	FL76032A	G520 SAW BPF RX BPF MACO	C2
FL0202	EFCH201MDQP1	SAW FILTER 201MHz -20 +70oC SM 10PIN	C1
J0301	4FA018AZAJ	G520 VIBRATOR CONTACT	C4
L0101	HK160815NJT	CHIP INDUCTOR 15NH	B4
L0103	HK160812NJT	CHIP INDUCTOR 12NH 1650MHZ	B6
L0104	ELJRE8N2ZF2	INDUCTOR 8n2H 1800MHZ	C5
L0105	ELJRE15NJF2	INDUCTOR 15nH +/-5% SM1608	A4
L0106	ELJRE82NJF3	INDUCTOR 82NH 1500MHZ	C5
L0107	ELJRE82NJF3	INDUCTOR 82NH 1500MHZ	C5
L0108	ELJRE12NJF2	INDUCTOR 12nH +/-5% SM1608	A2
L0109	ELJRE8N2ZF2	INDUCTOR 8n2H 1800MHZ	D5
L0110	ELJRE10NGF2	INDUCTOR 10nH +/-2% SM1608	D5
L0111	ELJRE56NGF3	INDUCTOR 56NH 1800MHZ	D5
L0112	ELJPE10NKF2	INDUCTOR 10nH +/-10% SM 1608 (POWER)	C4
L0201	ELJRE5N6JF2	INDUCTOR 3000MHZ 5.6NH	C3
L0202	ELJRE8N2ZF2	INDUCTOR 8n2H 1800MHZ	D3

MODEL:	EB-G520	NAME:	RF	MODEL:	EB-G520	NAME:	RF
REF.	PART NUMBER	DESCRIPTION	GRID	REF.	PART NUMBER	DESCRIPTION	GRID
L0204	ELJRE15NJF2	INDUCTOR 15nH +/-5% SM1608	C3	R0118	ERJ2GEJ471X	CHIP RESISTOR 470 Ω +/-5% 1/16W SM 1005	A2
L0205	ELJRE47NJF2	INDUCTOR 47nH +/-5% SM1608	C2	R0121	ERJ2GEJ472X	CHIP RESISTOR 4K7 Ω +/-5% 1/16W SM 1005	D5
L0206	HK160847NJT	CHIP INDUCTOR 47nH 5%	C2	R0122	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	D4
L0207	HK160856NJT	CHIP INDUCTOR 56NH		R0123	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	D4
L0208	ELJNDR15JF	INDUCTOR 150NH	C1	R0124	ERJ2GEJ331X	CHIP RESISTOR 330 Ω +/-5% 1/16W SM 1005	D5
L0209	HK16081N5ST	CHIP INDUCTOR 1.5NH	C2	R0126	ERJ2GEJ333X	CHIP RESISTOR 33K Ω +/-5% 1/16W SM1005	C4
L0210	ELJNDR10JF	INDUCTOR 100NH	C1	R0127	ERJ2GE0R00X	CHIP RESISTOR 0 Ω 1/16W SM 1005	D5
L0211	ELJNDR10JF	INDUCTOR 100NH	D1	R0128	ERJ2GE0R00X	CHIP RESISTOR 0 Ω 1/16W SM 1005	C5
L0212	ELJNDR15JF	INDUCTOR 150NH	D1	R0201	ERJ2GEJ102X	CHIP RESISTOR 1K Ω +/-5% 1/16 W SM 1005	C2
L0213	HK160818NJT	CHIP INDUCTOR 18NH SM1608	D3	R0203	ERJ2GEJ390X	CHIP RESISTOR 39 Ω +/-5% 1/16W SM 1005	D3
L0214	HK160815NJT	CHIP INDUCTOR 15NH	D3	R0204	ERJ2GEJ682X	CHIP RESISTOR 6K8 Ω +/-5% 1/16W SM 1005	D2
L0301	HK160815NJT	CHIP INDUCTOR 15NH	B3	R0205	ERJ2GEJ682X	CHIP RESISTOR 6K8 Ω +/-5% 1/16W SM 1005	D2
L0302	HK160818NJT	CHIP INDUCTOR 18NH SM1608	B3	R0206	ERJ2GEJ682X	CHIP RESISTOR 6K8 Ω +/-5% 1/16W SM 1005	D2
L0306	HK160833NJT	CHIP INDUCTOR 33NH SM1608	A3	R0207	ERJ2GEJ682X	CHIP RESISTOR 6K8 Ω +/-5% 1/16W SM 1005	D2
L0307	HK160847NJT	CHIP INDUCTOR 47nH 5%	A2	R0208	ERJ2GEJ273X	CHIP RESISTOR 27K Ω +/-5% 1/16W SM 1005	D2
LS0301	HB70010A	G600 BUZZER	A6	R0209	ERJ2GEJ273X	CHIP RESISTOR 27K Ω +/-5% 1/16W SM 1005	D2
P0101	PY76011A	G520 COAXIAL RF CONNECTOR	A5	R0210	ERJ2GEJ273X	CHIP RESISTOR 27K Ω +/-5% 1/16W SM 1005	D2
P0301	534750408	G520 RF-LOGIC INTERBOARD CONNECTOR	A3	R0211	ERJ2GEJ273X	CHIP RESISTOR 27K Ω +/-5% 1/16W SM 1005	D2
Q0101	YUMC3NTR	TRANSISTOR 50V 300MW	B6	R0212	ERJ2GEJ684X	CHIP RESISTOR 680K Ω +/-5% 1/16W SM 1005	D1
Q0102	XP0338300L	TRANSISTOR NPN/PNP DUAL S-MINI 5 TERMS	C6	R0213	ERJ2GEJ684X	CHIP RESISTOR 680K Ω +/-5% 1/16W SM 1005	D1
Q0302	YUMC2NTR	TRANSISTOR 300MW 50V	B2	R0214	ERJ2GEJ684X	CHIP RESISTOR 680K Ω +/-5% 1/16W SM 1005	D1
Q0303	2SD2345STTX	TRANSISTOR	B2	R0215	ERJ2GEJ684X	CHIP RESISTOR 680K Ω +/-5% 1/16W SM 1005	D1
Q0304	2SC4226T1BR24	TRANSISTOR	A1	R0216	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	C2
Q0307	YUMC2NTR	TRANSISTOR 300MW 50V	A2	R0217	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	C2
R0102	ERJ2GE0R00X	CHIP RESISTOR 0 Ω 1/16W SM 1005	B5	R0218	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	C2
R0104	ERJ2GEJ104X	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1005	B4	R0219	ERJ2GE0R00X	CHIP RESISTOR 0 Ω 1/16W SM 1005	D3
R0105	ERJ2GEJ560X	CHIP RESISTOR 56 Ω +/-5% 1/16W SM 1005	B4	R0303	ERJ2GEJ101X	CHIP RESISTOR 100 Ω +/-5% 1/16W SM 1005	A2
R0106	ERJ2GEJ391X	CHIP RESISTOR 390 Ω +/-5% 1/16W SM1005	B4	R0304	ERJ2GEJ151X	CHIP RESISTOR 150 Ω +/-5% 1/16W SM 1005	B2
R0107	ERJ2GEJ560X	CHIP RESISTOR 56 Ω +/-5% 1/16W SM 1005	B4	R0305	ERJ2GEJ120X	CHIP RESISTOR 12 Ω +/-5% 1/16W SM 1005	B3
R0108	ERJ2GEJ332X	CHIP RESISTOR 3K3 Ω +/-5% 1/16W SM1005	C4	R0306	ERJ2GEJ330X	CHIP RESISTOR 33 Ω +/-5% 1/16W SM 1005	B3
R0109	ERJ2GEJ470X	CHIP RESISTOR 47 Ω +/-5% 1/16W SM 1005	B4	R0307	ERJ2GE0R00X	CHIP RESISTOR 0 Ω 1/16W SM 1005	B3
R0110	ERJ2GEJ123X	CHIP RESISTOR 12K Ω +/-5% 1/16W SM 1005	B4	R0309	ERJ2GEJ472X	CHIP RESISTOR 4K7 Ω +/-5% 1/16W SM 1005	B2
R0111	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	C4	R0310	ERJ2GEJ822X	CHIP RESISTOR 8K2 Ω +/-5% 1/16W SM 1005	B1
R0112	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	C4	R0311	ERJ2GEJ102X	CHIP RESISTOR 1K Ω +/-5% 1/16 W SM 1005	B1
R0113	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	C5	R0312	ERJ2GEJ472X	CHIP RESISTOR 4K7 Ω +/-5% 1/16W SM 1005	B1
R0114	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	D5	R0314	ERJ2GEJ223X	CHIP RESISTOR 22K Ω +/-5% 1/16W SM 1005	B1
R0115	ERJ2GEJ472X	CHIP RESISTOR 4K7 Ω +/-5% 1/16W SM 1005	D5	R0315	ERJ2GEJ104X	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1005	C1
R0116	ERJ2GEJ471X	CHIP RESISTOR 470 Ω +/-5% 1/16W SM 1005	A2	R0316	ERJ2GEJ104X	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1005	C1
R0117	ERJ2GEJ120X	CHIP RESISTOR 12 Ω +/-5% 1/16W SM 1005	A2	R0317	ERJ2GEJ104X	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1005	B1

MODEL:	EB-G520	NAME:	RF
REF.	PART NUMBER	DESCRIPTION	GRID
R0318	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	A1
R0319	ERJ2GEJ471X	CHIP RESISTOR 470 Ω +/-5% 1/16W SM 1005	A1
R0320	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	A1
R0321	ERJ2GEJ153X	CHIP RESISTOR 15K Ω +/-5% 1/16W SM 1005	A1
R0322	ERJ2GEJ391X	CHIP RESISTOR 390 Ω +/-5% 1/16W SM1005	A1
R0323	ERJ2GEJ682X	CHIP RESISTOR 6K8 Ω +/-5% 1/16W SM 1005	A1
R0324	ERJ2GEJ101X	CHIP RESISTOR 100 Ω +/-5% 1/16W SM 1005	
R0325	ERJ2GEJ151X	CHIP RESISTOR 150 Ω +/-5% 1/16W SM 1005	A2
R0328	ERJ2GEJ221X	CHIP RESISTOR 220 Ω +/-5% 1/16W SM 1005	B1
R0329	ERJ2GEJ822X	CHIP RESISTOR 8K2 Ω +/-5% 1/16W SM 1005	B1
R0338	ERJ2GEJ270X	CHIP RESISTOR 27 Ω +/-5% 1/16W SM 1005	A2
R0341	ERJ2GEJ150X	CHIP RESISTOR 15 Ω +/-5% 1/16W SM 1005	A2
R0342	ERJ2GEJ104X	CHIP RESISTOR 100K Ω +/-5% 1/16W SM 1005	B1
R0344	ERJ2GEJ103X	CHIP RESISTOR 10K Ω +/-5% 1/16W SM 1005	B2
U0101	UH76007A	G520 PA MODULE	C5
U0102	YHD155171TEL	G520 APC IC	B4
U0103	YUPC2771TE3	AMPLIFIER BIPOLAR SM 8 PIN MINI	C6
U0104	YPMB2250V1.1	TX IC MQFP100 PMB2250V11	D5
U0201	YPMB2450V1.1	RX IC	D2
U0301	TK11236BMCL	REGULATOR 3.6V SM SOT23L	C3
U0302	YTK11230BMCL	3V REGULATOR	B6
U0303	UY70123A	G600 VCO	B2
U0304	YMRF1C0916T1	RF AMPLIFIER 6V 100mW	B2
U0305	YTK11230BMCL	3V REGULATOR	B2
U0306	YMAA3132A	13MHz TCXO	A1
U0307	YUYQI0005	IC PLL 1.2GHz SM SSOP16	B1
U0308	YMRF1C0915T1	G520 RF AMPLIFIER 6V	A2
U0309	UY76041A	G520 VCO	A2

10.4.3 Mechanical

MODEL:	EB-G520	NAME:	Mech.
REF.	PART NUMBER	DESCRIPTION	NOTES
A0401	AA76001A	LCD MODULE G520	
B0301	BD76002A	G520 VIBRATOR	
E0102	AN70073A	G450 FIXED ANTENNA ALLGON	
LS0401	HH76003A	G520 RECEIVER	
M0017	6HA581A	G520 LCD CUSHION	
M0101	1GA504AB	G520 H/H COVER BLACK	
M0103	2QA509B	G520 H/H INDICATOR	
M0104	6HA522B	G520 REC CUSHION	
M0105	2RA515A	G520 REC HOLDER	
M0106	6TA504AA	G520 KEY SHEET	
M0109	1HA503A	G520 H/H CASE	
M0110	4FA505B	G520 H/H ANT TERMINAL	
M0119	2FA507A	G520 RF SHIELD	
M0120	6HA525A	G520 VIB CUSHION	
M0123	6SA510B	GD70 TAB CUSHION	
M0124	2QA510B	G520 H/H LCD BACKLIGHT	
M0125	6SA508A	G520 LCD CONNECTOR	
M0126	6SA508A	G520 LCD CONNECTOR	
M0129	4GA508B	G520 H/H ANT HOLDER	
M0130	G5MDS002C	PATENT LABEL	
M0131	6HA567A	G520 RF CONNECTOR CUSHION	
M0133	4JA532A	SHIELD CUSHION	
MK3	9R70514A	GD70 MIC ASSEMBLY	

10.5 Handsfree Replacement Parts

10.5.1 Handsfree Unit

MODEL:	EB-HF520	NAME:	H'free
REF.	PART NUMBER	DESCRIPTION	NOTES
AS02	HF520AS01	G520 HANDSFREE HAND INSERTION	
AS03	HF520AS03	G520 HANDSFREE PCB COMPLETED	
C0105	EEVHA1A330R	33uF 10V CAPACITOR	
C0106	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0107	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0108	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0109	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0111	YGM2F104Z1HT	CAPACITOR 50V 100NF	
C0112	YGM2F104Z1HT	CAPACITOR 50V 100NF	
C0113	YGM2F104Z1HT	CAPACITOR 50V 100NF	
C0114	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0115	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0116	YGM2B102K1HT	CAPACITOR 50V 1NF	
C0118	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0120	YGM2F104Z1HT	CAPACITOR 50V 100NF	
C0202	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0203	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0204	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0205	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0206	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0207	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0208	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0209	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0210	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0211	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0212	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0213	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0214	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0215	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0216	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0217	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0218	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0219	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0220	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	

MODEL:	EB-HF520	NAME:	H'free
REF.	PART NUMBER	DESCRIPTION	NOTES
C0221	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0222	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0223	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0224	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0301	ECST1CX106ZR	TANTALUM CAPACITOR 10UF/16V	
C0302	YGM1B473K1CT	47nF 16V 1608 SM CAPACITOR	
C0303	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0304	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0305	YCCKC031K105	CAP CERAMIC 1UF +/- 10% 10V X5	
C0306	YGM1B333K1CT	33nF 16V 1608 SM CAPACITOR	
C0307	YGM1B152K1HT	1n5F 50V 1608 SM CAPACITOR	
C0308	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0309	YCCKC031K105	CAP CERAMIC 1UF +/- 10% 10V X5	
C0310	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0311	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0312	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0313	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0314	YGM1B103K1HT	CAPACITOR 10nF 50V 1608	
C0315	YGM1C680J1HT	68pF 5% 50V SM 1608 CAPACITOR	
C0316	YGM1C680J1HT	68pF 5% 50V SM 1608 CAPACITOR	
C0317	ECST1CX106ZR	TANTALUM CAPACITOR 10UF/16V	
C0319	YGM1B182K1HT	1N8F CAPACITOR 1608 +/-10% 50	
C0320	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0321	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0322	YGM1C330J1HT	CAPACITOR 33PF 1608 +/-5% 50V	
C0323	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0325	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0326	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0327	YGM1B102K1HT	1nF 50V 1608 SM CAPACITOR	
C0328	YGM2B334K1CT	CAPACITOR 25V 330nF	
C0329	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0340	ECEV1CG100GR	CHIP CAPACITOR 10UF/16V	
C0341	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0342	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0343	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0344	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0345	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0346	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0347	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	

REF.	PART NUMBER	DESCRIPTION	NOTES
	MODEL: EB-HF520	**NAME:**	**H'free**
C0348	ECEV1CG100GR	CHIP CAPACITOR 10UF/16V	
C0349	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0351	YGM1C080D1HT	CAPACITOR 8PF 1608 +/- .5PF 50	
C0352	YGM1C270J1HT	CAP CERAMIC 27PF +/-5% 50V SM	
C0353	ECST1CX106ZR	TANTALUM CAPACITOR 10UF/16V	
C0355	YCCKC032K225	CAP CERAMIC 2U2F +/- 10% 6V3 X	
C0356	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0357	YCCKC032K225	CAP CERAMIC 2U2F +/- 10% 6V3 X	
C0358	EEVHA1A330R	33uF 10V CAPACITOR	
C0359	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0362	YGM1B104K1CT	100nF 16V 1608 SM CAPACITOR	
C0363	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0364	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0365	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0366	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0367	YGM1C221J1HT	CAPACITOR 220pF 1606 +/-5% 50V	
C0368	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0369	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0370	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0371	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0373	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0374	YGM1C221J1HT	CAPACITOR 220pF 1606 +/-5% 50V	
C0375	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0376	YGM1C220J1HT	CAPACITOR 22PF 1608 +/-5% 50V	
C0377	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0378	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0379	YGM2B474K1CT	CAPACITOR 0.47UF 16V	
C0380	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0381	YGM1C221J1HT	CAPACITOR 220pF 1606 +/-5% 50V	
C0382	YGM1B102K1HT	1nF 50V 1608 SM CAPACITOR	
C0383	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0384	YGM1C331J1HT	CAP CERAMIC 330pF +/-5% 50V SM	
C0385	YGM1C221J1HT	CAPACITOR 220pF 1606 +/-5% 50V	
C0386	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0388	YGM1B102K1HT	1nF 50V 1608 SM CAPACITOR	
C0389	YGM1C221J1HT	CAPACITOR 220pF 1606 +/-5% 50V	
C0390	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0401	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0402	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	

REF.	PART NUMBER	DESCRIPTION	NOTES
	MODEL: EB-HF520	**NAME:**	**H'free**
C0403	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0404	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0405	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0406	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0407	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0408	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0409	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0410	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0411	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
C0412	YGM1C101J1HT	CAP CERAMIC 100pF +/-5% 50V SM	
D0103	YSFPB64V	DIODE 40V 1.5A	
D0104	YSFPB64V	DIODE 40V 1.5A	
D0202	MA8160MTX	DIODE ZENER 16V	
D0203	MA8330TX	DIODE 2MA 330V	
D0204	MA8120TX	DIODE	
D0205	MA132WKTX	DIODE 100MA 80V	
D0300	MA8120TX	DIODE	
D0301	MA8120TX	DIODE	
D0303	MA8120TX	DIODE	
D0304	MA8120TX	DIODE	
D0305	MA8120TX	DIODE	
D0311	MA732TX	DIODE 30MA 30V	
D0312	MA8120TX	DIODE	
F0102	SSFC4AR12A4	FILTER 4 A	
FL0301	ACB1608M040T	FILTER	
FL0302	ACB1608M040T	FILTER	
FL0303	ACB1608M300T	FILTER	
FL0304	ACB1608M040T	FILTER	
FL0305	ACB1608M040T	FILTER	
FL0306	ACB1608M040T	FILTER	
FL0307	ACB1608M300T	FILTER	
FL0308	ACB1608M600T	FILTER SM1608	
FL0309	ACB1608M300T	FILTER	
L0303	LCKC00016	INDUCTOR FERRITE CHIP 1000OHM	
M0201	5N70187AB	G600 HANDSFREE COVER	
M0202	5M70171A	G520 H/F CASE	
M0203	5S70083A	G600 HANDSFREE LED LENS	
M0204	5S70083A	G600 HANDSFREE LED LENS	
M0206	XTB2.6+6GFXK	SCREW M2.6 x 6mm	

MODEL:	EB-HF520	NAME:		H'free
REF.	PART NUMBER	DESCRIPTION		NOTES
M0207	XTB2.6+6GFXK	SCREW M2.6 x 6mm		
M0208	5FJ5129AB	VOLUME KNOB		
M0209	1B70109A	G600 HANDSFREE CASE BRACKET		
M0209	1B70106A	G600 HANDSFREE SPEAKER BRACKET		
M0210	6V10031A	SPEAKER NET		
M0215	1B70107B	G520 H/F I/O BRACKET		
M0222	XTB2.6+6GFXK	SCREW M2.6 x 6mm		
P0300	PAPS00218	DF13C-2P-1.25V21 CONNECTOR		
Q0107	2SD601AQSTX	TRANSISTOR 150MHZ 25V 200MW		
Q0201	YDTC144EUTX	TRANSISTOR		
Q0202	YDTA144EUTX	TRANSISTOR		
Q0203	YDTC114EUTX	TRANSISTOR		
Q0204	YDTA123YKA	TRANSISTOR 250MHz 50V 200mW		
Q0205	2SD1755PYTX	TRANSISTOR 50MHZ 60V		
Q0305	YDTA144EUTX	TRANSISTOR		
Q0306	2SD601AQSTX	TRANSISTOR 150MHZ 25V 200MW		
Q0307	YDTA144EUTX	TRANSISTOR		
Q0308	2SD601AQSTX	TRANSISTOR 150MHZ 25V 200MW		
R0103	ERJ3GEYJ334V	CHIP RESISTOR 330K Ω +/-5% 1		
R0111	ERJ3GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/1		
R0112	ERJ3GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/1		
R0113	ERJ6GEYJ390V	CHIP RESISTOR 39 Ω +/-5% 1/1		
R0114	ERJ6GEYJ390V	CHIP RESISTOR 39 Ω +/-5% 1/1		
R0115	ERJ6GEYJ390V	CHIP RESISTOR 39 Ω +/-5% 1/1		
R0116	ERJ3GEYJ473V	CHIP RESISTOR 47K Ω +/-5% 1/		
R0117	ERJ3GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/1		
R0118	ERJ3GEYJ223V	CHIP RESISTOR 22K Ω +/-5% 1/		
R0123	ERA6YED103V	10k Ω 100mW RESISTOR		
R0124	ERJ3GEYJ472V	CHIP RESISTOR 4K7 Ω +/-5% 1/		
R0125	ERJ3GEYJ334V	CHIP RESISTOR 330K Ω +/-5% 1		
R0127	ERA6YED473V	47k Ω 100mW RESISTOR		
R0128	ERA6YED681V	680 Ω 100mW RESISTOR		
R0130	ERA6YED103V	10k Ω 100mW RESISTOR		
R0131	ERA6YED392V	3k9 Ω 100mW RESISTOR		
R0132	ERA6YED181V	180 Ω 100mW RESISTOR		
R0133	ERA6YED473V	47k Ω 100mW RESISTOR		
R0134	ERA6YED153V	15k Ω 100mW RESISTOR		
R0135	ERA6YED153V	15k Ω 100mW RESISTOR		
R0136	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/		

MODEL:	EB-HF520	NAME:		H'free
REF.	PART NUMBER	DESCRIPTION		NOTES
R0137	ERJ3GEYJ331V	CHIP RESISTOR 330 Ω +/-5% 1/		
R0138	ERA6YED272V	2k7 Ω 100mW RESISTOR		
R0201	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0202	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0203	ERJ3GEYJ332V	CHIP RESISTOR 3K3 Ω +/-5% 1/		
R0207	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0208	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0209	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0210	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0301	ERJ3GEYJ392V	CHIP RESISTOR 3K9 Ω +/-5% 1/		
R0302	ERJ3GEYJ122V	CHIP RESISTOR 1K2 Ω +/-5% 1/		
R0303	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0304	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0305	ERJ3GEYJ471V	CHIP RESISTOR 470 Ω +/-5% 1/		
R0306	ERJ3GEYJ472V	CHIP RESISTOR 4K7 Ω +/-5% 1/		
R0307	ERJ3GEYJ472V	CHIP RESISTOR 4K7 Ω +/-5% 1/		
R0308	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0309	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0310	ERJ3GEYJ334V	CHIP RESISTOR 330K Ω +/-5% 1		
R0311	ERJ3GEYJ682V	CHIP RESISTOR 6K8 Ω +/-5% 1/		
R0313	ERJ3GEYJ471V	CHIP RESISTOR 470 Ω +/-5% 1/		
R0315	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0316	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0317	ERJ3GEYJ101V	CHIP RESISTOR 100 Ω +/-5% 1/		
R0318	ERJ3GEYJ101V	CHIP RESISTOR 100 Ω +/-5% 1/		
R0319	ERA6YED104V	100k Ω 100mW RESISTOR		
R0320	ERA6YED104V	100k Ω 100mW RESISTOR		
R0321	ERA6YED104V	100k Ω 100mW RESISTOR		
R0322	ERA6YED104V	100k Ω 100mW RESISTOR		
R0323	ERJ3GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/1		
R0325	ERJ3GEYJ682V	CHIP RESISTOR 6K8 Ω +/-5% 1/		
R0328	ERJ3GEYJ101V	CHIP RESISTOR 100 Ω +/-5% 1/		
R0330	ERJ3GEYJ824V	CHIP RESISTOR 820K Ω +/-5% 1		
R0331	ERJ3GEYJ153V	CHIP RESISTOR 15K Ω +/-5% 1/		
R0332	ERJ3GEYJ393V	CHIP RESISTOR 39K Ω +/-5% 1/		
R0333	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0334	ERJ3GEYJ474V	CHIP RESISTOR 470K Ω +/-5% 1		
R0335	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0336	ERJ3GEYJ183V	CHIP RESISTOR 18K Ω +/-5% 1/		

MODEL:	EB-HF520	NAME:		H'free
REF.	PART NUMBER	DESCRIPTION		NOTES
R0337	ERJ3GEYJ222V	CHIP RESISTOR 2K2 Ω +/-5% 1/		
R0338	ERJ3GEYJ183V	CHIP RESISTOR 18K Ω +/-5% 1/		
R0340	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0341	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0345	ERJ3GEY0R00V	CHIP RESISTOR 0 Ω 1/16W SM 1		
R0348	ERJ3GEYJ473V	CHIP RESISTOR 47K Ω +/-5% 1/		
R0351	ERJ3GEYJ105V	CHIP RESISTOR 1M Ω +/-5% 1/1		
R0352	ERJ3GEYJ122V	CHIP RESISTOR 1K2 Ω +/-5% 1/		
R0353	ERJ3GEYJ124V	CHIP RESISTOR 120K Ω +/-5% 1		
R0355	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0356	ERJ3GEYJ102V	CHIP RESISTOR 1K Ω +/-5% 1/1		
R0357	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
R0358	ERJ3GEYJ332V	CHIP RESISTOR 3K3 Ω +/-5% 1/		
R0359	ERJ3GEYJ152V	CHIP RESISTOR 1K5 Ω +/-5% 1/		
R0360	ERJ6GEYJ100V	CHIP RESISTOR 10 Ω +/-5% 1/1		
R0361	ERJ6GEYJ471V	CHIP RESISTOR 470 Ω +/-5% 1/		
R0362	ERJ6GEYJ2R2V	CHIP RESISTOR 2R2 Ω +/-5% 1/		
R0363	ERJ3GEYJ473V	CHIP RESISTOR 47K Ω +/-5% 1/		
R0364	ERJ3GEYJ223V	CHIP RESISTOR 22K Ω +/-5% 1/		
R0365	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0366	ERJ3GEYJ220V	CHIP RESISTOR 22 Ω +/-5% 1/1		
R0367	ERJ3GEYJ472V	CHIP RESISTOR 4K7 Ω +/-5% 1/		
R0373	ERA6YED473V	47k Ω 100mW RESISTOR		
R0374	ERA6YED473V	47k Ω 100mW RESISTOR		
R0375	ERA6YED473V	47k Ω 100mW RESISTOR		
R0376	ERA6YED473V	47k Ω 100mW RESISTOR		
R0377	ERJ3GEYJ562V	CHIP RESISTOR 5K6 Ω +/-5% 1/		
R0378	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0379	ERJ3GEYJ103V	CHIP RESISTOR 10K Ω +/- 5% 1		
R0381	ERJ3GEYJ224V	CHIP RESISTOR 220K Ω +/-5% 1		
R0382	ERJ3GEYJ104V	CHIP RESISTOR 100K Ω +/-5% 1		
U0101	YTL594INS	5V 300KHz IC		
U0102	YNJM3404AMT1	INTEGRATED CIRCUIT DUAL CPE AM		
U0301	YNJM3404AMT1	INTEGRATED CIRCUIT DUAL CPE AM		
U0302	YURHH0002	REGULATOR 3 TERMINAL TYPE		
U0303	YURHH0002	REGULATOR 3 TERMINAL TYPE		
U0304	YULCS0018	INTEGRATED CIRCUIT		
U0306	YULCS0013	INTEGRATED CIRCUIT		
U0309	YNJM2072MTE1	INTEGRATED CIRCUIT		

MODEL:	EB-HF520	NAME:		H'free
REF.	PART NUMBER	DESCRIPTION		NOTES
U0312	YULLW0054	AND GATE IC		
U0313	YULLW0054	AND GATE IC		
U0314	YRN5VL45AATL	IC VOLTAGE DETECTOR 2 TO 6V 5		
U0315	YNJM3404AMT1	INTEGRATED CIRCUIT DUAL CPE AM		
W0202	WC76008A	G520 H/F I/F CABLE		
Y0301	FXM900004	18MHz CRYSTAL		

10.5.2 Holder

MODEL:	EB-HF520 EB-HF521	NAME:		Holder
REF.	PART NUMBER	DESCRIPTION		NOTES
	1PA504A	Car Holder		
	2RA519A	RF Holder		
	2RA520A	Stopper		
	4EA511A	Cable Clamp		
	5U70049B	Cushion		
	WC76009A	RF Cable		
	XTB2.6+8GFX	Screw		

10.5.3 Microphone

MODEL	EBM1177	NAME		Mic.
REF.	PART NUMBER	DESCRIPTION		NOTES
M0101	4G31674B	MIC HOLDER		
M0102	4G32105	MIC HOLDER		
M0103	4R13358	MIC CUSHION		
M0104	7C10096A	MIC NAME PLATE		
M0105	7C10096A	MIC NAME PLATE		
M0107	XTB2510AFN	SCREW		
MK0101	WM4108D	MICROPHONE		

10.5.4 Adjustable Angle Bracket 1

MODEL:	EBN0001	NAME:	Adjust. Angle
REF.	PART NUMBER	DESCRIPTION	NOTES
M0701	3G24152B	BRACKET	
M0702	XVG4X8FZ	SCREW	
M0703	XWA4FXK	SPRING WASHER	
M0704	XWG4FXK	WASHER	
M0705	XVG4X8FZ	SCREW	
M0706	XWA4FXK	SPRING WASHER	
M0707	XWG4FXK	WASHER	
M0708	3G24157B	BRACKET	
M0709	XSB410FXK	SCREW	
M0710	XSB410FXK	SCREW	
M0711	XSB410FXK	SCREW	
M0712	XSB410FXK	SCREW	
M0713	XTB425RFXK	SCREW	
M0714	XTB425RFXK	SCREW	
M0715	XTB425RFXK	SCREW	
M0716	XTB425RFXK	SCREW	

10.5.5 Adjustable Angle Bracket 2

MODEL:	EBN0002	NAME	Adjust. Angle
REF.	PART NUMBER	DESCRIPTION	NOTES
M0701	3G24152B	BRACKET	
M0702	XVG4X8FZ	SCREW	
M0703	XWA4FXK	SPRING WASHER	
M0704	XWG4FXK	WASHER	
M0705	XVG4X8FZ	SCREW	
M0706	XWA4FXK	SPRING WASHER	
M0707	XWG4FXK	WASHER	
M0708	3G24157B	BRACKET	
M0709	XSB410FXK	SCREW	
M0710	XSB410FXK	SCREW	
M0711	XSB410FXK	SCREW	
M0712	XSB410FXK	SCREW	
M0713	XTB425RFXK	SCREW	
M0714	XTB425RFXK	SCREW	
M0715	XTB425RFXK	SCREW	

MODEL:	EBN0002	NAME	Adjust. Angle
REF.	PART NUMBER	DESCRIPTION	NOTES
M0716	XTB425RFXK	SCREW	
M0718	XNG4AFXK	NUT	
M0719	XNG4AFXK	NUT	
M0720	XNG4AFXK	NUT	
M0721	XNG4AFXK	NUT	

10.6 Printed Material

Part numbers for documentation are shown on page (General Information).

10.7 Dual Charger

The Dual Charger is not a serviceable item.

10.8 DC Adaptor

The DC Adaptor is not a serviceable item.

10.9 PC Card

MODEL:	EB-PA600	NAME.	PC Card
REF.	PART NUMBER	DESCRIPTION	NOTES
—	WW76004A	INTERFACE CARD	