

Service Manual

Personal Cellular Telephone

EB-GD52
EB-GD92
EB-GD92C

GSM[®]

Specification



	900 MHz	1800 MHz
Frequency Range	Tx: 890 - 915MHz Rx: 935 - 960 MHz	Tx: 1710 - 1785 MHz Rx: 1805 - 1880 MHz
Tx/Rx frequency separation	45 MHz	95 MHz
RF Channel Bandwidth	200 kHz	
Number of RF channels	124	374
Speech coding	Full rate/Half rate/Enhanced Full rate	
Operating temperature	-10 °C to +55 °C	
Type	Class 4 Handheld	Class 1 Handheld
RF Output Power	2 W maximum	1 W maximum
Modulation	GMSK (BT = 0.3)	
Connection	8 ch/TDMA	
Voice digitizing	13 kbps RPE-LTP / 13 kps ACLEP / 5.6 kps CELP / VSLEP	
Transmission speed	270.3 kbps	
Diversity	Frequency hopping	
Signal Reception	Double superheterodyne	
Intermediate Frequencies	225 MHz and 45 MHz	
Antenna Terminal Impedance	50 Ω	
Antenna VSWR	<2.1 : 1	
Dimensions	Height: 118.1 mm Width: 40.5 mm Depth: 16.4 mm (GD92/92C), 21.4 mm (GD52)	
Volume	GD52: 99 ml GD92/92C: 74.5 ml	
Weight	GD52: 99 g GD92/92C: 77 g	
Display	Graphical chip on glass liquid crystal, Alphanumeric, 16 x 3 characters (GD52), 16 x 4 characters (GD92/92C), 5 icons and 6 x 1 characters	
Illumination	4 LEDs for the LCD (Green) 8 LEDs for the keypad (Green) 1 LED Incoming call (Green) 1 Charging LED (Red)	
Keypad	17 keys, Navigation key	
SIM	Plug-in type only	
External DC Supply Voltage	5.8 V	
Battery	GD52: 3.6V nominal, 600mAh, NiMH GD92/92C: 3.7 V nominal, 650mAh, Li-Ion	
Standby Battery Life DRX 9	GD52: 140 hrs GD92/92C: 160 hrs maximum	
Conversation Battery Life PL 7, DTX 50%	GD52: 180 minutes GD92/92C: 210 minutes	

Battery life figures are dependent on network conditions.

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service manual by anyone else could result in serious injury or death.

Panasonic[®]

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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 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 1 M Ω 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 approximately 1 M Ω 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.

2.2. Features

2.2.1 Standard Features

Panasonic Telephone Models GD52, GD92 and GD92C are high performance, small, light, handsets for business and domestic use. The following features are included as standard:

1. Triple Rate, which includes Full Rate, Half rate and Enhanced Full Rate (EFR) speech, codec.
2. Dual Band, GSM 900 and GSM 1800 operation.
3. Tegic T9 Text Entry
4. Voice Ringer
5. Desktop Handsfree function comprising integral echo cancellation and noise suppression.

2.2.2 GD92 and GD92C

In addition, GD92 and GD92C have the following features:

1. E-Mail access via Point-to-Point Protocol (PPP).
2. Voice Command dialling.
3. Backup Battery.
4. Four background display colours.

The GD92C has extra RAM to accommodate the Chinese character set.

2.3. Handportable Main Kit

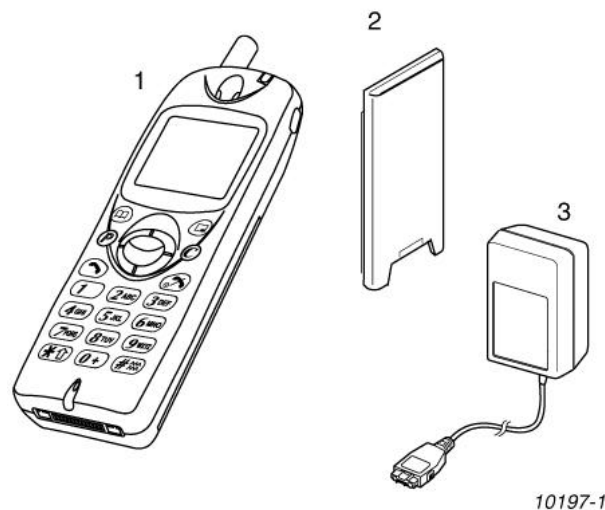


Figure 2.1: Handportable Main Unit Kit Contents

2.3.2 GD52 Contents

ITEM	DESCRIPTION	PART NUMBER
1	Main Unit GD52	EB-GD52
2	Battery, Standard	EB-BSD52
3	AC Adaptor	EB-CAD52
-	Documentation	See Section 7

2.3.3 GD92 Contents

ITEM	DESCRIPTION	PART NUMBER
1	Main Unit GD92	EB-GD92
2	Battery, Standard	EB-BSD92B (Blue) - or EB-BSD92T (Titanium)
3	AC Adaptor	EB-CAD92
-	Documentation	See Section 7

2.3.4 GD92C Contents

ITEM	DESCRIPTION	PART NUMBER
1	Main Unit GD92C	EB-GD92C
2	Battery, Standard	EB-BSD92B (Blue) - or EB-BSD92T (Titanium)
3	AC Adaptor	EB-CAD92
-	Documentation	See Section 7

3 OPERATING INSTRUCTIONS

3.1. General

This section provides a brief guide to the operation and facilities available on the GD52, GD92 and GD92C telephone handsets. Refer to the Operating Instructions supplied with the telephones for full operational information.

3.2. LCD Display

The telephone unit has a graphical chip on glass liquid crystal display in conjunction with the following icons:



Figure 3.1: LCD Display

	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 indicated 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 charging; The battery icon flashes during charging. During car mount use, when the battery is fully charged, the icon will not light.
Menu Icon	Displays a small icon related to the current status of the telephone: <ul style="list-style-type: none"> telephone is roaming on a non-home network. using the "Call Divert" feature or the telephone has Call-Divert set; shows that vibration alert is switched on; shows that the telephone is in silent mode - no tones; flashes to indicate that there are unread text (SMS) messages. Lit when SMS area is full; indicates the telephone is locked; shows that the normal character set has been selected; shows that the Greek character set has been selected; shows that the Extended character set has been selected; shows that numbers have been selected for text 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 clear automatically 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 to charging equipment.

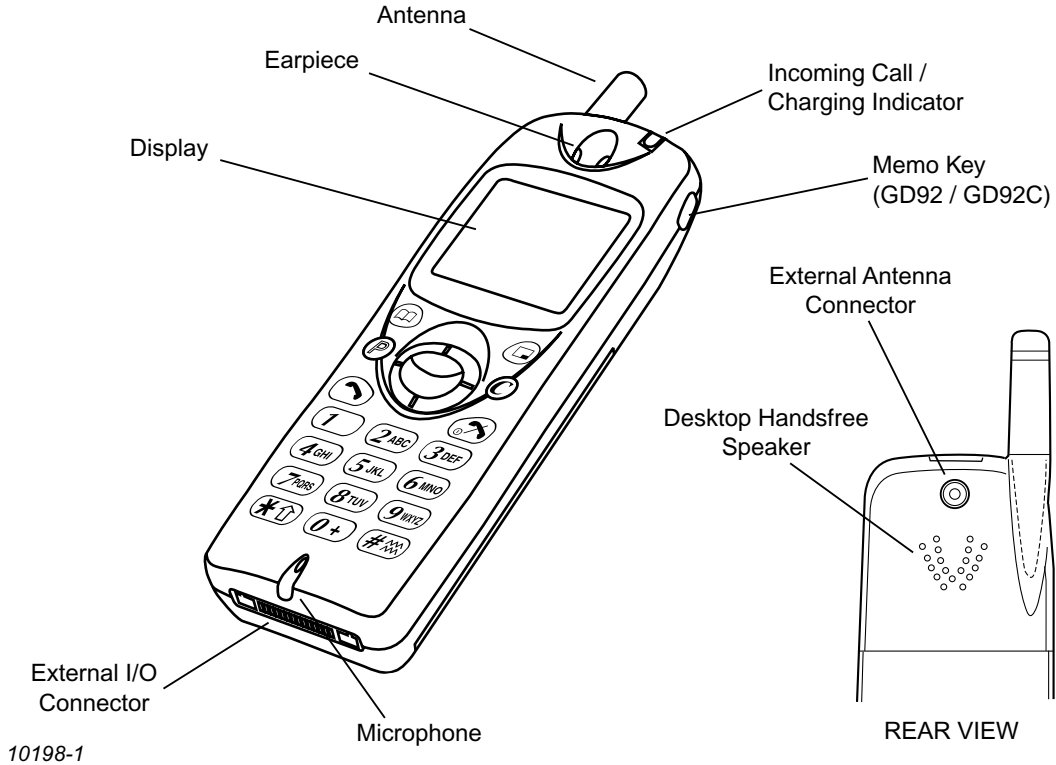


Figure 3.2: Location of Controls

	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.
	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. Enter wild numbers or pauses when pressed and held. Where appropriate the key scrolls up or down through abbreviated control names and then select to reveal the international access code "+".
	Vibrator enable/disable Key. Press and hold to enable or disable the vibrator.

3.4. Concept of Operation

There is a close relationship between the Select Key, Navigation Key and display.

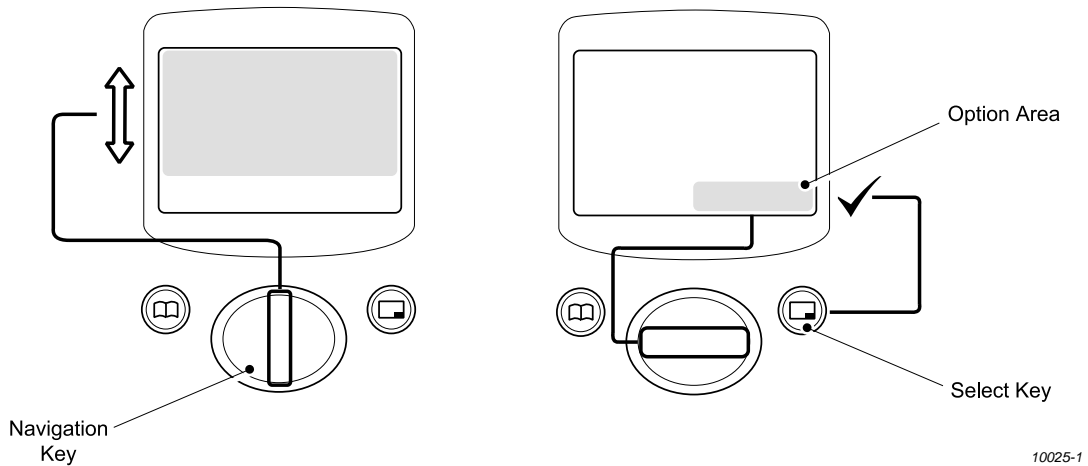


Figure 3.3: Concept of Operation

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

3.5.1 Character Set / Key Assignments

Alpha entry is used to enter alphanumeric characters in to the Phonebook, Short Messages and Greeting Message areas

Key	Character / Operation			
	Normal	Greek	Extended	Num
⏏️	" @ - , . : ; ! ? ` () ' & % + - / < > = £ \$ ¥ ¢ §			1
⬅️	A B C a b c	Α Β Γ	Α Ἀ Ἀ Ἐ Β C Ç α à b c	2
⬅️	D E F d e f	Δ Ε Ζ	Δ Ε Ἐ F d e è é f	3
⬅️	G H I g h i	Η Θ Ι	G H I g h i i	4
⬅️	J K L j k l	Κ Λ Μ	J K L j k l	5
⬅️	M N O m n o	Ν Ξ Ο	M N Ṽ Ο ὀ ø m n ñ o ö ö	6
⬅️	P Q R S p q r s	Π Ρ Σ	P Q R S p q r s β	7
⬅️	T U V t u v	Τ Υ Φ	T U Ṽ V t u ù ü v	8
⬅️	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 (Α Β Γ), extended characters (Α Ἀ Ἀ), numerals (0–9) and normal characters (ABC) press ⏏️.

3.5.2 Editing Alpha Entry

Pressing ⬆️ will move the cursor up or down one line. Pressing ⬅️ will move the cursor 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.

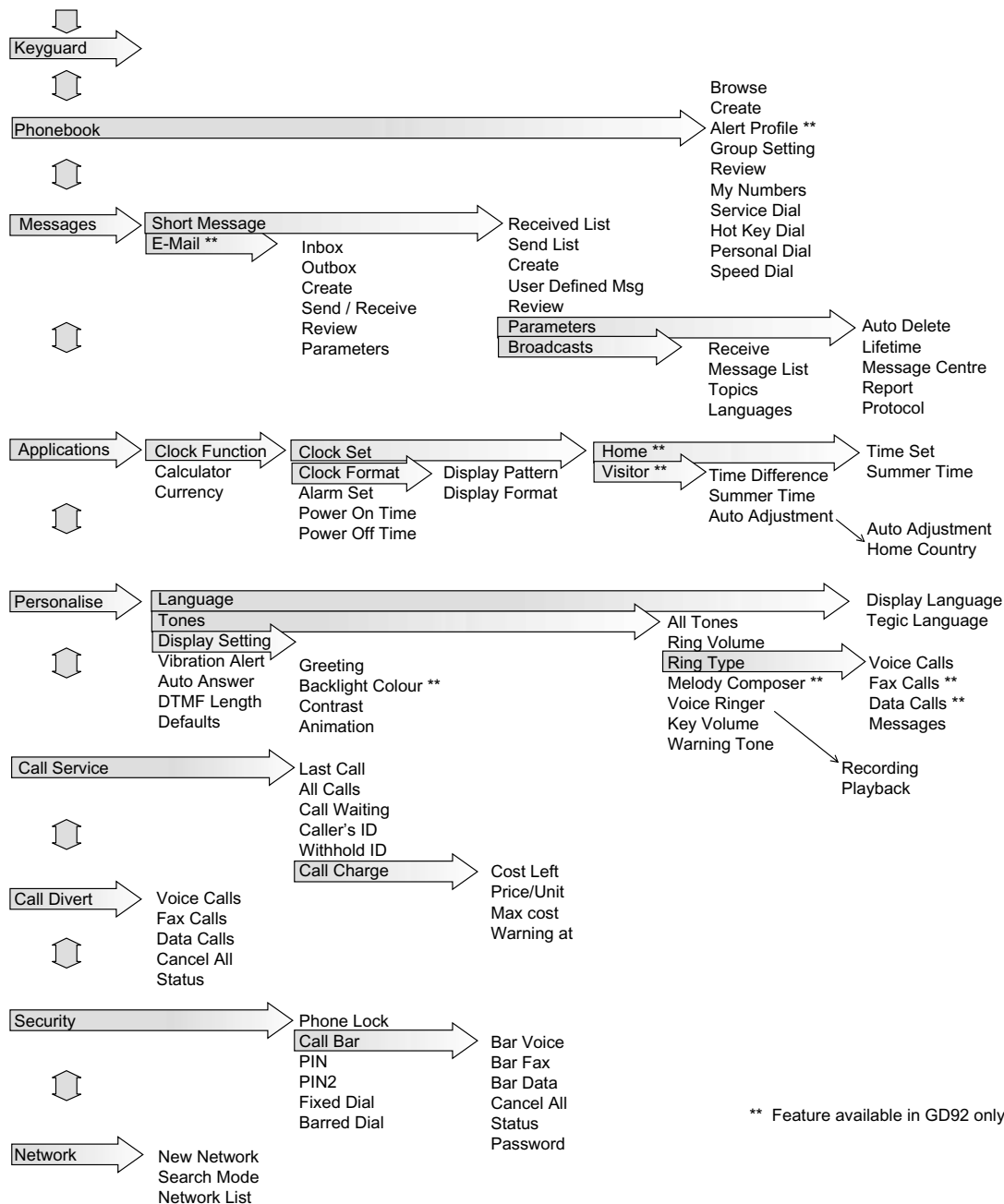
3.6. Incoming Call Line Identification (CLI)

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 Numbers 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 user changes the source of the Hot Key Dial numbers, 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 unlikely that the user will have the option to change the Hot Key Dial source.

3.8. Features Menu Structure



** Feature available in GD92 only.

10202-1

Figure 3.4: Features Menu Structure

3.9. Public Man Machine Interface (MMI)

3.9.1 General

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 supported by GD52, GD92 and GD92C telephones.

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

3.9.2 Reading the Phonebook Memory Location

<MEMORY LOCATION>

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

3.9.3 Presentation of IMEI

* # 0 6 #

3.9.4 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 * <PIN2 UNBLOCKING KEY> * <NEW PIN2> * <NEW PIN2> #

3.9.5 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

0 <SND>

End Active Call

1 <SND>

Reject Incoming Call

0 <SND>

3.9.6 Call Waiting

Enable Call Waiting

* 4 3 * <SND>

Disable Call Waiting

4 3 * <SND>

Call Waiting Status

* # 4 3 * # <SND>

3.9.7 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

* 4 3 * <SND>

Temporary Display Identification

4 3 * <SND>

3.9.8 Telecommunication Services used for Public MMI

Teleservice

Service	MMI Service Code
All teleservices	10
Telephony	11
All data teleservices	12
Facsimilie 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

3.9.9 Call Divert

Call Divert Type	Service Code
Divert all calls	21
Divert all 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> * <TELECOM' SERVICE> * <TIME TO RING (sec)> # <SND>

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

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

Clear all Call Diverts ## 0 0 2 #




3.9.10 Call Bar

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

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

3.10. 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 in use 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 appears and then fully recharge the battery pack. To revive a Battery Pack, use the telephone until the Low Battery Warning appears 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 the telephone after it has registered with a network.
Calls cannot be made from Fixed Dial Store		Check that SIM supports Fixed Dial. Check 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 the telephone after it has registered with a network.
Emergency calls cannot be made	User's phone is not in a GSM coverage area.	Check that the antenna symbol  is displayed. Move to a coverage area and operate the 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:

Error Message	Explanation / Remedy
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 the SIM is not registered with that network. Contact the Service Provider.
SIM Blocked	The SIM is blocked because the wrong PUK has been entered ten times. Contact the 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 the 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 the Service Provider.
Warning Store Full Continue?	The message area is full. New 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, the cursor 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. SIM Personalisation

3.13.1 Introduction

SIM personalisation will limit the use of the telephone 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 GD52 / GD92 / GD92C contains a SIM that is from a different source it will display the message "SIM ERROR" when switched on. This personalisation is sometimes referred to as SIM lock or SIM latch.

3.13.2 Testing

To test a personalised GD52 / GD92 / GD92C 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.

3.13.3 Personalisation Function

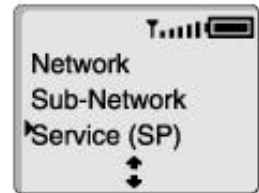
Personalisation is activated during manufacture and then enabled at a later stage. Enabling/disabling is available by entering a special key sequence immediately after power on. Once the enable/disable menu is shown it is possible to select the type of personalisation. When personalisation is enabled 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
	Can only disable personalisation
	Can both enable and disable personalisation

3.13.4 Disabling Procedure

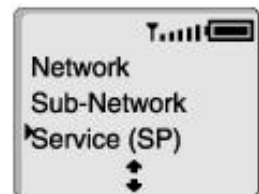
- or
- to point at:
 "SIM" for SIM Personalisation
 "Network" for Network Personalisation
 "Subnetwork" for Subnetwork Personalisation
 "SP" for Service Provider Personalisation or
 "Corporate" for Company Personalisation.
- .
- the 16 digit Control Key.
- .
- the 16 digit Control Key.
- .



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

3.13.5 Enabling Procedure

-
- 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.
- .
- the 16 digit Control Key.
- .
- the 16 digit Control Key.
- .



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

3.14. 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

3.15. GSM Network Codes and Names

Country	Access Code	Service or Operator	Phone Display	Network Code		Band
ALBANIA	+355	AMC MOBIL	AMC - AL	276	01	GSM 900
ANDORRA	+376	MOBILAND	STA-MOBILAND	213	03	GSM 900
ARMENIA	+374	ARMGSM	RA-ARMGSM	283	01	GSM 900
AUSTRALIA	+61	MOBILENET	TELSTRA	505	01	GSM 900
		OPTUS Mobile	Yes Optus	505	02	GSM 900
		VODAFONE	AUS VODAFONE	505	03	GSM 900
AUSTRIA	+43	A max.	A max.	232	03	GSM 900
		A1	A1	232	01	GSM 900
		one	one	232	05	GSM 1800
AZERBAIJAN	+994	AZERCELL GSM	AZE-AZERCELL GSM	400	01	GSM 900
BAHREIN	+973	MOBILE PLUS	BHR MOBILE PLUS	426	01	GSM 900
BELGIUM	+32	PROXIMUS	BEL PROXIMUS	206	01	GSM 900
		mobistar	B mobistar	206	10	GSM 900
BOSNIA & HERZEGOVINA	387	PTT-GSMBIH	PTT-GSMBIH	218	90	GSM 900
BULGARIA	+359	M-TEL GSM BG	M-TEL GSM BG	284	01	GSM 900
CAMEROON	+237	CAM CELLNET	CAM CELLNET	624	01	GSM 900
CHINA	+86	CT-GSM	CHINA TELECOM	460	00	GSM 900
		CU-GSM	CHINA UNICOM	460	01	GSM 900
CROATIA	+385	CRONET	HR-CRONET	219	01	GSM 900
		Vip Net GDM d.o.o.	HR VIP	219	10	GSM 900
CYPRUS	+357	CYTAGSM	CY CYTAGSM	280	01	GSM 900
CZECH_REPUBLIC	+42	EUROTEL GSM	EUROTEL-CZ	230	02	GSM 900
		OSKAR	OSKAR	230	03	not known
		Radio Mobil CZE	PAEGAS-CZ	230	01	GSM 900
DENMARK	+45	SONOFON	DK SONOFON	238	02	GSM 900
		TDK-MOBIL	DK TDK-MOBIL	238	01	GSM 900
		Telia DK	Telia DK	238	20	GSM 1800
		mobilix	mobilix	238	30	GSM 1800
EGYPT	+20	EGY CLICK GSM	EGY CLICK GSM	602	02	not known
		MobiNil	MobiNil	602	01	GSM 900
ESTONIA	+372	EMT GSM	EE EMT GSM	248	01	GSM 900
		RADIOLINJA EESTI	EE RLE	248	02	GSM 900

Country	Access Code	Service or Operator	Phone Display	Network Code		Band
ETHIOPIA	+251	ETMTN	ETH-MTN	636	01	GSM 900
FIJI	+679	VODAFONE FIJI	VODAFONE FIJ	542	01	GSM 900
FINLAND	+358	FINNET	FINNET	244	09	GSM 1800
		Finland SONERA	SONERA	244	91	GSM 900
		RADIOLINJA	FI RADIOLINJA	244	05	GSM 900
		Telia	Telia	244	03	GSM 1800
FRANCE	+33	Bouygues	Bouygues	208	20	GSM 1800
		Itineris	F Itineris	208	01	GSM 900
		SFR	F SFR	208	10	GSM 900
FRENCH POLYNESIA	+689	TIKIPHONE	F-VINI	547	20	GSM 900
GERMANY	+49	D2 PRIVAT	D2	262	02	GSM 900
		E-Plus	E-Plus	262	03	GSM 1800
		Telekom Mobilfunk D1	D1-TELEKOM	262	01	GSM 900
		Viag Interkom	D Interkom	262	07	GSM 1800
GIBRALTAR	+350	GIBTEL	GIBTEL GSM	266	01	GSM 900
GREECE	+30	Cosmote	Cosmote	202	01	GSM 1800
		PANAFON	GR PANAFON	202	05	GSM 900
		TELESTET	GR TELESTET	202	10	GSM 900
HONG_KONG	+852	HK SMC	HK SMC	454	06	GSM 900
		HK TELECOM	CAMPERSANDW HKT	454	00	GSM 900
		NEW WORLD	NEW WORLD	454	10	GSM 1800
		Orange	Orange	454	04	GSM 900
		P Plus	P Plus	454	22	GSM 1800
		P-Link	P-Link	454	18	GSM 1800
		PEOPLES	PEOPLES	454	12	GSM 1800
		SUNDAY	SUNDAY	454	16	GSM 1800
HUNGARY HUNGARY HUNGARY	+36	PANNON GSM	H PANNON GSM	216	01	GSM 900
		Vodafone	Vodafone	216	70	not known
		WESTEL 900	H-WESTEL 900	216	30	GSM 900
ICELAND	+354	Postur og simi	IS SIMINN	274	01	GSM 900
INDIA	+91	AirTel	INA-AIRTL	404	10	GSM 900
		BPL MOBILE	BPL MOBILE	404	21	GSM 900
		BPL MOBILE	BPL MOBILE	404	27	GSM 900
		BPL MOBILE	BPL MOBILE	404	43	GSM 900
		BPL MOBILE	BPL MOBILE	404	46	GSM 900
		ESSAR CELLPHONE	ESSAR CELLPHONE	404	11	GSM 900
		INA - TATA CELLULAR	TATA CELLULAR	404	07	GSM 900
		INA-ESCOTEL	INA-ESCOTEL	404	12	GSM 900
		INA-ESCOTEL	INA-ESCOTEL	404	19	GSM 900
		INA-ESCOTEL	INA-ESCOTEL	404	56	GSM 900
		MaxTouch	MaxTouch	404	20	GSM 900
		RPG Cellular	NA RPG	404	41	GSM 900
		SKYCELL	SKYCELL	404	40	GSM 900
		INDONESIA	+62	EXCELCOM	IND-EXCELCOM	510
IND SATELINDOCEL	IND SATELINDOCEL			510	01	GSM 900
TELKOMSEL	IND TELKOMSEL			510	10	GSM 900
IRELAND	+353	EIRCELL-GSM	IRL EIR-GSM	272	01	GSM 900
		IRL - DIGIFONE	IRL DIGIFONE	272	02	GSM 900
ITALY	+39	BLU	I BLU	222	98	GSM 1800
		I WIND	I WIND	222	88	GSM 1800
		OMNITEL	I OMNITEL	222	10	GSM 900
		TELECOM ITALIA MOBIL	I TIM	222	01	GSM 900
JORDAN	+962	Fastlink	Fastlink	416	01	GSM 900
KUWAIT	+965	MTCNet	KT MTCNet	419	02	GSM 900

OPERATING INSTRUCTIONS

Country	Access Code	Service or Operator	Phone Display	Network Code		Band
LATVIA LATVIA	+371	BALTEL	LV BALTEL	247	02	GSM 900
		LMT GSM	LV LMT GSM	247	01	GSM 900
LEBANON	+961	Cellis	RL Cellis	415	01	GSM 900
		LibanCell	RL LibanCell	415	03	GSM 900
LESOTHO	+266	VODACOM LESOTHO	VCL COMMS	651	01	GSM 900
LITHUANIA	+370	BITE GSM	LT BITE GSM	246	02	GSM 900
		LITHUANIAN OMNITEL	OMNITEL LT	246	01	GSM 900
LUXEMBOURG	+352	Millicom 1800 -> TANGO	TANGO	270	77	GSM 1800
		LUXGSM	L LUXGSM	270	01	GSM 900
MACAU	+853	TELEMOVEL+	MAC-CTMGSM	455	01	GSM 900
MACEDONIA	+389	MOBIMAK	MKD-MOBIMAK	294	01	GSM 900
MALAWI	+265	CALLPOINT 900	MW CP 900	650	01	GSM 900
MALAYSIA	+60	MY DiGi	MY DiGi	502	16	GSM 1800
		MY TMOUCH	MY TMOUCH	502	13	GSM 900
		MY a.d.a.m	MY a.d.a.m	502	17	GSM 900
		MY celcom	MY celcom	502	19	GSM 900
		MY maxis	MY maxis	502	12	GSM 900
MAURITIUS	+230	CELLPLUS	CELLPLUS-MRU	617	01	GSM 900
MOROCCO	+212	ONPTGSM	MOR ONPT GSM	604	01	GSM 900
NAMIBIA	+264	MTC	NAM MTC	649	01	GSM 900
NETHERLANDS	+31	Ben NL	Ben NL	204	16	GSM 1800
		KPN TELECOM	NL KPN TELECOM	204	08	GSM 900
		LIBERTEL	NL LIBERTEL	204	04	GSM 900
		NL Dutchtone	NL Dutchtone	204	20	GSM 1800
		TELFORT	TELFORT	204	12	GSM 1800
NEW_ZEALAND	+64	BELLSOUTH	BELLSOUTH NZ	530	01	GSM 900
NORWAY	+47	NetCom GSM	N NetCom GSM	242	02	GSM 900
		Telenor Mobile	N Telenor Mobil	242	01	GSM 900
OMAN	+968	OMAN MOBILE	OMAN MOBILE	422	02	GSM 900
PHILLIPINES	+63	Globe Telecom	PH GLOBE	515	02	GSM 900
		Islacom	ISLACOM	515	01	GSM 900
PHILLIPINES		Smart Communications	SMART	515	03	GSM 1800
POLAND	+48	ERA GSM	PL-ERA GSM	260	02	GSM 900
		IDEA	IDEA	260	03	GSM 1800
		PL PLUS	PL PLUS	260	01	GSM 900
PORTUGAL	+351	P OPTIMUS	P OPTIMUS	268	03	GSM 1800
		TELECEL	P TELECEL	268	01	GSM 900
		TMN	P TMN	268	06	GSM 900
QATAR	+974	QATARNET	QAT-QATARNET	427	01	GSM 900
RÉUNION	+262	SRR	SFR REUNION	647	10	GSM 900
RUSSIAN FEDERATION	+701	BeeLine	BeeLine	250	99	GSM 1800
		MTS	MTS-RUS	250	01	GSM 900
		North-West GSM	North-West GSM	250	02	GSM 900
SAUDI_ARABIA SAUDI_ARABIA	+966	EAE-ALJAWWAL	EAE-ALJAWWAL	420	07	GSM 900
		MoPTT, DMTS-1	ALJAWWAL	420	01	GSM 900
SEYCHELLES	+248	SEYCHELLES CELLULAR SERVICES	CELLULAR SERVICE	633	01	GSM 900
SINGAPORE	+65	M1-GSM	M1-GSM-SGP	525	03	GSM 900
		ST-GSM	ST-GSM-SGP	525	01	GSM 900
		ST-GSM1800-SGP	ST-GSM1800-SGP	525	02	GSM 1800
SLOVAK REPUBLIC	+42	EUROTEL	SK EUROTEL	231	02	GSM 900
SLOVAKIA		GLOBTEL	SK GLOBTEL	231	01	GSM 900
SLOVENIA	+386	MOBITEL GSM (Slovenia)	SI MOBITEL GSM	293	41	GSM 900

Country	Access Code	Service or Operator	Phone Display	Network Code		Band
SOUTH_AFRICA SOUTH_AFRICA	+27	MTN	MTN-SA	655	10	GSM 900
		VodaCom	VodaCom-SA	655	01	GSM 900
SPAIN	+34	AIRTEL	E AIRTEL	214	01	GSM 900
		AMENA	AMENA	214	03	not known
		MOVISTAR	MOVISTAR	214	02	not known
		MOVISTAR	MOVISTAR	214	07	GSM 900
SRI_LANKA	+94	DIALOG	SRI DIALOG	413	02	GSM 900
SUDAN	+249	SDN MOBITEL	SDN MobiTel	634	01	GSM 900
SWEDEN	+46	COMVIQ	S COMVIQ	240	07	GSM 900
		EUROPOLITAN	S EUROPOLITAN	240	08	GSM 900
		TELIA MOBITEL	TELIA S	240	01	GSM 900
SWITZERLAND SWITZERLAND SWITZERLAND	+41	Orange	Orange	228	03	GSM 900
		SWISS GSM	SWISS GSM	228	01	GSM 900
		diAx Swiss	diAx Swiss	228	02	GSM 900
SYRIA	+963	MOBILE SYRIA	SYR MOBILE SYR	417	09	GSM 900
TAIWAN	+886	Chunghwa	Chunghwa	466	92	GSM 900
		Far EasTone	Far EasTone	466	01	GSM 900
		KGT-ONLINE	KGT-ONLINE	466	88	GSM 1800
		ROC MOBITAI	MOBITAI	466	93	GSM 900
		TUNTEX	TUNTEX	466	06	GSM 1800
		TWN GSM	TWN GSM	466	97	GSM 1800
		TransAsia Telecom GSM	TransAsia GSM	466	99	GSM 900
TANZANIA	+255	Tritel-TZ	Tritel-TZ	640	01	GSM 900
THAILAND	+66	AIS GSM	TH AIS GSM	520	01	GSM 900
		HELLO	HELLO	520	10	GSM 1800
		WP-1800	WP-1800	520	18	GSM 1800
TURKEY TURKEY	+90	PTT TELSİM GSM	TR TELSİM	286	02	GSM 900
		PTT/TURKCELL GSM	TR TURKCELL	286	01	GSM 900
UKRAINE	+380	GOLDEN TELECOM	GOLDEN TELECOM	255	05	GSM 1800
		UA KYIVSTAR	UA KYIVSTAR	255	03	GSM 900
		UA UMC	UA UMC	255	01	GSM 900
		UA WELLCOM	UA WELLCOM	255	02	GSM 900
UNITED ARAB EMIRATES (UAE)	+971	UAE ETISALAT	ETISALAT-G2	424	02	GSM 900
UNITED KINGDOM (Guernsey) (Jersey) (Isle of Man)	+44	BTCellnet	UK BTCELLNET	234	10	GSM 900
		ONE2ONE	one2one	234	30	GSM 1800
		ORANGE	ORANGE	234	33	GSM 1800
		VODAFONE	UK VODAFONE	234	15	GSM 900
		GUERNSEY TELECOMS	GUERNSEY TEL UK	234	55	GSM 900
		Jersey Telecoms GSM	Jersey Telecoms	234	50	GSM 900
		PRONTO GSM	MANX PRONTO GSM	234	58	GSM 900
VIETNAM	+84	Mobi Fone	VN Mobi Fone	452	01	GSM 900

3.16. Glossary of Terms

Term	Definition
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 home banking services.
GSM	Global System for Mobile communications. The name given to the advanced digital technology that the telephone uses.
Home country	The country in which the home network operates.
Home network	The GSM network on which subscription details are held.
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 likely to be preprogrammed to the Service Dial Numbers by the Service Provider.
Lock code	Used for security of the 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 the SIM or supplied by the 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 the service provider.
PIN	Personal Identification Number used for SIM security. Supplied by the service provider.
PIN2	Personal Identification Number used for the control of Fixed Dial Memory and call charge metering. Supplied by the service provider.
PUK/ PUK2	PIN/PIN2 Unblocking Key. Used to unblock the PIN/PIN2. Supplied by the service provider.
Registration	The act of locking on to a GSM network. This is usually performed automatically by the telephone.
Roaming	The ability to use the telephone on networks other than the Home network.
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.
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 the service provider.
Supplementary service	Network-controlled GSM functions supported by the telephone. 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.

4 DISASSEMBLY / REASSEMBLY INSTRUCTIONS

4.1. General

This section provides disassembly and reassembly procedures for the main components of GD52, GD92 and GD92C telephones.

These assemblies MUST be performed by qualified service personnel at an authorised service centre.

The following Warnings and Cautions 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 devices (ESDs). Damage can occur to these devices if the appropriate handling procedure is not adhered to.

4.1.1. ESD Handling Precautions

A working area where ESDs may be handled safely 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 1M Ω 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 an integral safety resistor of between 5k Ω and 1M Ω , shall be used.

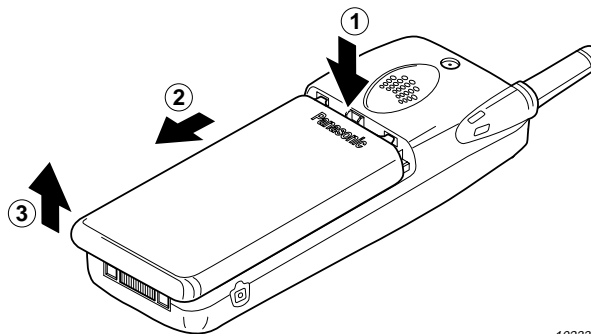
Containers

All containers and storage must be of the conductive type.

4.2. Disassembly

4.2.1 Case Removal (GD52)

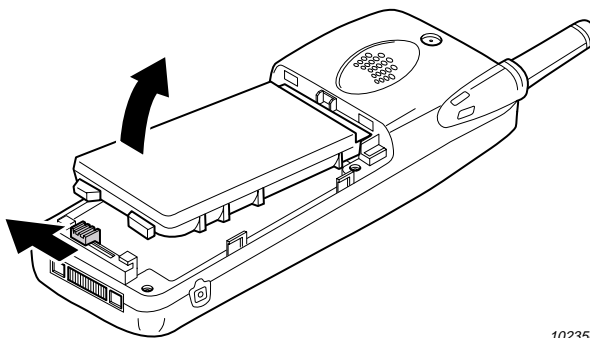
1. Remove the battery cover by pushing it towards the base of the phone and then lifting it away from the case.



10233-1

Figure 4.1: GD52 Battery Cover Removal

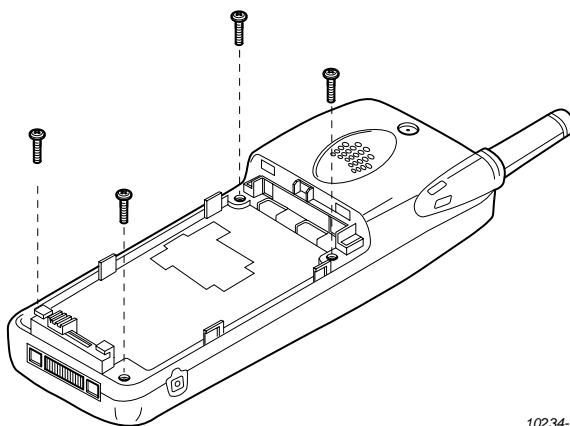
2. Slide the battery lock to the 'release' position, and lift the battery from the case.



10235-1

Figure 4.2: GD52 Battery Removal

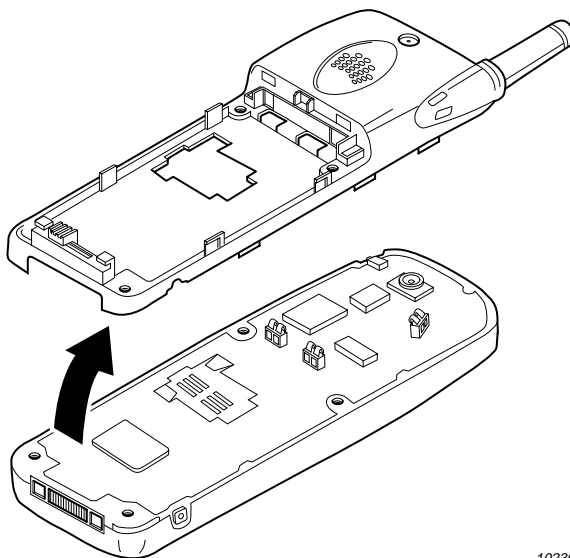
3. Remove the four case screws located inside the battery compartment.



10234-1

Figure 4.3: GD52 Case Screw Removal

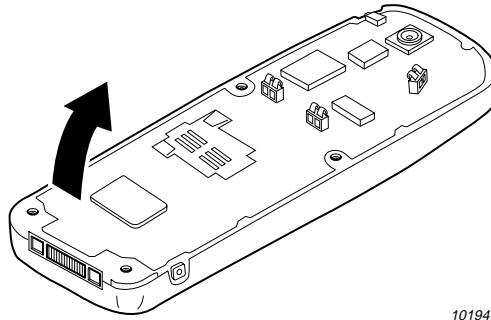
4. Remove the cover from the case by pulling from the connector end of the telephone. Care must be taken when separating the case from the cover as the retaining clips may be very stiff - if necessary, re-attach the battery cover to provide extra support for the case.



10236-1

Figure 4.4: GD52 Case-Cover Separation

5. Remove the PCB assembly from the cover.

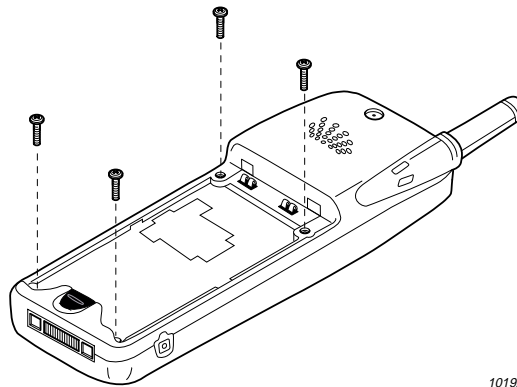


10194-1

Figure 4.5: GD52 PCB Assembly Removal

4.2.2 Case Removal (GD92 / GD92C)

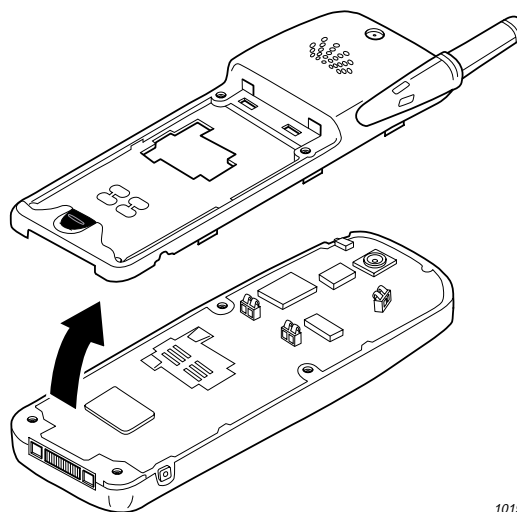
1. Remove the battery from the back of the telephone. Remove the four case screws located inside the battery compartment.



10192-1

Figure 4.6: GD92 / GD92C Screw Removal

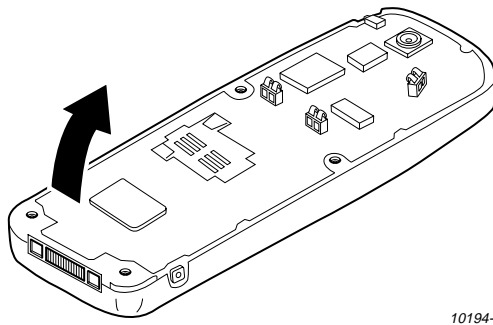
2. Remove the cover from the case by pulling from the connector end of the telephone. Care must be taken when separating the case from the cover as the retaining clips may be very stiff. If necessary, re-attach the battery to provide extra support for the case.



10193-1

Figure 4.7: GD92 / GD92C Case-Cover Separation

3. Remove the PCB assembly from the cover.

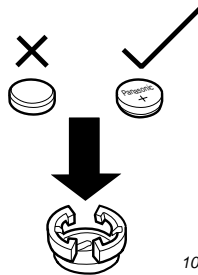


10194-1

Figure 4.8: GD92 / GD92C PCB Assembly Removal

4.2.3 Changing the Backup Battery (GD92 / GD92C)

Remove the case as previously described. The backup battery is held in a retainer on the Main PCB. Observe polarity when replacing the battery.

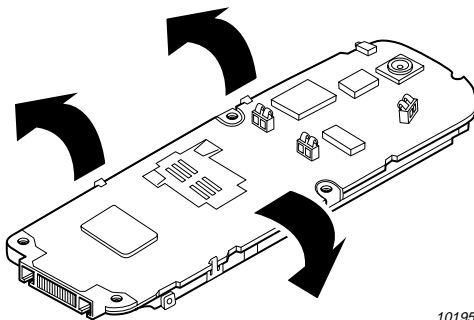


10007-1

Figure 4.9: Backup Battery Polarity

4.2.4 Access to Printed Circuit Boards (All)

1. Remove the case as described for the relevant product (GD52 or GD92 / GD92C). While applying slight pressure to the side retaining clips, lift the Main PCB away from the chassis.



10195-1

Figure 4.10: Main PCB Removal

2. While applying slight pressure to the side retaining clips, slide the Keypad PCB towards the bottom (I/O) connector until it is released from the chassis.

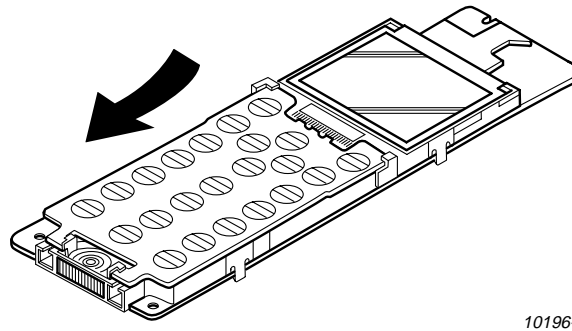


Figure 4.11: Key PCB Removal

3. Insert a small screwdriver blade or similar blunt object into the chassis recess to the side of the LCD, and gently prise the LCD from the chassis assembly.

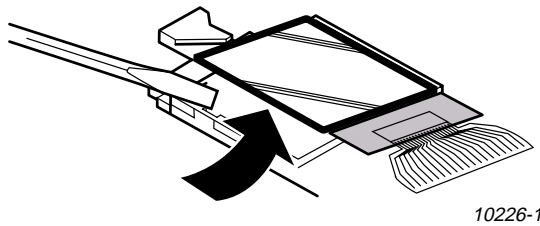


Figure 4.12: LCD Removal

4. The Light Guide and Reflector can be removed in turn by prising one side away from the chassis.

4.2.5. Case-Mounted Components

1. Remove the keypad membrane by peeling it away from the case front.

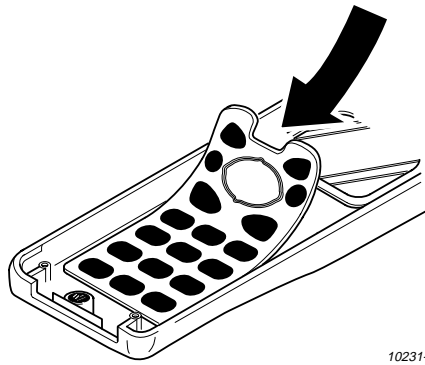


Figure 4.13: Keypad Membrane Removal

2. Remove the microphone assembly by prising upward with a small screwdriver blade or similar blunt object through the slot in the side of the microphone holder.

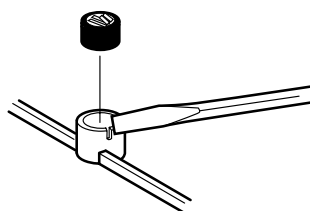


Figure 4.14: Removal of Microphone

3. Unclip the speaker holder and lift out the speaker.

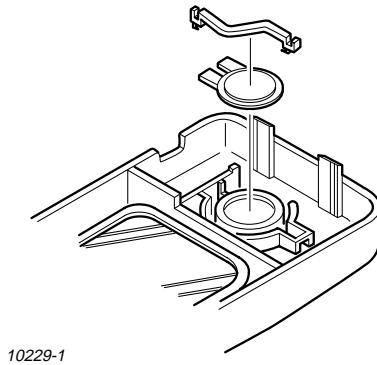


Figure 4.15: Speaker Removal

4. Remove the RF Shield by depressing one of the side retaining clips with a small screwdriver blade or similar blunt object.

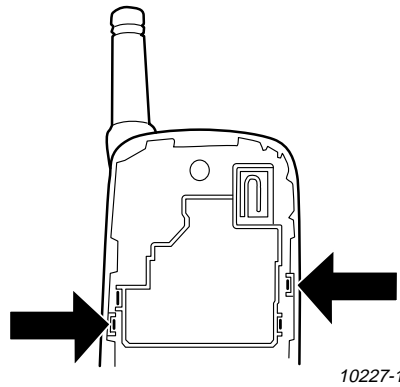


Figure 4.16: Removal of RF Shield

5. Once the RF Shield has been removed, the Memo button (GD92 / GD92C) and Desktop Handsfree (DTHF) speaker may be lifted out from the case.
6. The Vibrate motor may be removed by gently applying pressure under the spindle / counterweight.

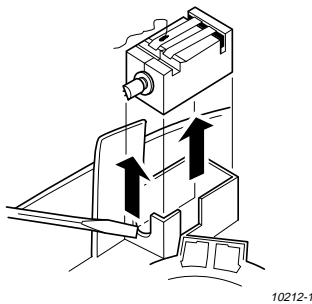


Figure 4.17: Removal of Vibrate Motor

7. Using a small screwdriver blade or similar blunt object, depress the lug on the antenna base in order to release the entire antenna unit.

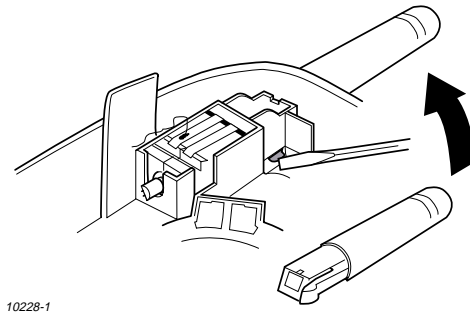


Figure 4.18: Antenna Removal

4.3. Re-assembly

Re-assembly is the reverse of disassembly, except that the Keypad PCB should be located in the chassis guides adjacent to the base I/O connector before sliding it in to its normal location.

Ensure that the securing screws are not over-tightened as this may affect the operation of the keypad.

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5 TECHNICAL SPECIFICATIONS

5.1. Tx Characteristics

All data is applicable to GSM 900 and GSM 1800 except where stated.

5.1.1. Frequency Error

±0.1 ppm max., relative to base station frequency.

5.1.2. Modulation Phase Error

RMS: ≤5 °

Peak: ≤20 °

5.1.3. Output RF Spectrum due to Modulation

Offset from Centre Frequency (kHz)	Maximum Level Relative to Carrier (dB)
±100	+0.5
±200	-30
±250	-33
±600 to 1800	-60

5.1.4. Output RF Spectrum due to Switching Transients

Offset from Centre Frequency (kHz)	Maximum Level (dBm)	
	GSM 900	GSM 1800
±400	-19	-22
±600	-21	-24
±1200	-21	-24
±1800	-24	-27

Measurement conditions for output RF spectrum measurements:

Frequency Span 0 Hz
 Measurement Bandwidth: 30 Hz
 Video Bandwidth: 100 kHz
 Peak Hold

5.1.5. Spurious Emissions at Antenna Connector

Frequency Range	Frequency Offset	Filter Bandwidth	Approximate Video Bandwidth	Limits (dBm)	
				GSM 900	GSM 1800
30 to 50 MHz	-	10 kHz	30 kHz	-36	-36
50 to 500 MHz	-	100 kHz	300 kHz	-36	-36
500 MHz to 1GHz	0 to 1MHz	100 kHz	300 kHz	-36	-36
1 GHz to 4GHz	0 to 10 MHz	100 kHz	300 kHz	-30	-36
Excl. relevant TX band: P-GSM: 890 to 915 MHz; DCS: 1710 to 1785 MHz	Š 10 MHz Š 20 MHz (offset from edge of relevant TX band)	300 kHz 1 MHz	1 MHz 3 MHz	-30 -30	-36 -36
Relevant TX band: P-GSM: 890 to 915 MHz; DCS: 1710 to 1785 MHz	1.8 to 6.0 MHz (offset from carrier)	30 kHz	100 kHz	-30	-30

5.1.6. Output Level, Dynamic Operation

GSM 900

Power Control Level	Transmitter Output Power (dBm)	Tolerance for Conditions (dB)	
		Normal	Extreme
TBA			

GSM 1800

Power Control Level	Transmitter Output Power (dBm)	Tolerance for Conditions (dB)	
		Normal	Extreme
TBA			

5.1.7. Residual Peak Power

≤70 dBc (BW = 300 kHz)

5.2. Rx Characteristics

5.2.1. Sensitivity

GSM 900 Full Rate Speech

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.

Channels	Propogation Conditions TUhigh		Propogation Conditions RA		Propogation Conditions HT		Static Conditions	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/FS FER	$6.742 \cdot \alpha$	8900					$0.122 \cdot \alpha$	164000
class Ib (RBER)	$0.42/\alpha$	1,000,000					$0.41/\alpha$	20,000,000
class II (RBER)	8.33	120,000	7.5	24000	9.333	60000	2.439	8200

The reference sensitivity level is < -102 dBm.

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

GSM 900 Half Rate Speech

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.

Channels	Propogation Conditions TUhigh		Propogation Conditions RA		Propogation Conditions HT	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/HS (FER)	4.598	13050				
TCH/HS class Ib (BFI=0)	0.404	148500				
TCH/HS class II (BFI=0)	7.725	25500	8500	20000	7600	20000
TCH/HS (UFR)	6.250	9600				
TCH/HSL class Ib ((BFI or UFI)=0)	0.269	227000				

GSM 1800 Full Rate Speech

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.

Channels	Propogation Conditions TUhigh		Propogation Conditions RA		Propogation Conditions HT		Static Conditions	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/FS FER	4.478* α	13400					0.122* α	164000
class Ib (RBER)	0.32/ α	1,500,000					0.41/ α	20,000,000
class II (RBER)	8.333	60,000	7.5	24000	9.333	30000	2.439	8200

The reference sensitivity level is < -102 dBm.

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

GSM 1800 Half Rate Speech

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.

Channels	Propogation Conditions TUhigh		Propogation Conditions RA		Propogation Conditions HT	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/HS (FER)	4.706	12750				
TCH/HS class Ib (BFI=0)	0.426	141000				
TCH/HS class II (BFI=0)	7.725	25500	8735	20000	7600	20000
TCH/HS (UFR)	6.383	9400				
TCH/HSL class Ib ((BFI or UFI)=0)	0.291	206000				

Blocking:

Frequency	Small MS level in dB μ Vemf()	
	GSM 900	GSM 1800
FR \pm 600 kHz to FR \pm 800 kHz	70	70
FR \pm 800 kHz to FR \pm 1.6 MHz	70	70
FR \pm 1.6 MHz to FR \pm 3 MHz	80	80
915 MHz to FR -3 MHz	90	-
FR \pm 3 MHz to FR 980 MHz	90	-
FR \pm 600 kHz to FR \pm 800 kHz	-	87
1785 MHz to FR - 3 MHz	-	87
835 MHz to <915 MHz	113	-
>980 MHz to 1000 MHz	113	-
100 kHz to <835 MHz	90	-
>1000 MHz to 12.75 GHz	90	-
100 kHz to 1705 MHz	-	113
>1705 MHz to <1785 MHz	-	101
>1920 MHz to 1980 MHz	-	101
>1980 MHz to 12.75 GHz	-	90

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

TECHNICAL SPECIFICATIONS

Spurious response exceptions:

Six exceptions are permitted IN band 915 - 980 MHz.

24 exceptions are permitted OUTSIDE band 915 - 980 MHz.

Intermodulation Characteristics

Interferer Level (f1 & f2) dBm	Interferer Frequencies (f1 & f2)
-49	Wanted frequency = $2f_1 - f_2$, and $[f_1 - f_2] = 800$ kHz.

6 TEST AND MEASUREMENT

6.1. Introduction

This section provides information on testing GD52, GD92 and GD92C telephones. The layout is as follows

1. Section 6.2 ALIVH PCBs: Description and repair procedures.
2. Section 6.3 External testing: describes equipment requirements and general set up procedure.
3. Section 6.4 Complete Unit Test Setup: describes how the items of test equipment are used together and general set up procedure.
4. Section 6.5 Channel box test commands: provides detailed explanation of the different commands available using the test equipment and channel-box software.
5. Section 6.6 Adjustment mode: describes adjustments available on the handheld unit.

6.2. Any-Layer Interstitial Via Hole (ALIVH) PCBs

CAUTION

The GD52, GD92 and GD92C telephone handsets use an ALIVH PCB assembly, the substrate of which is hydrophilic. To avoid damaging the ALIVH PCB, the specialist equipment and procedures described below must be employed when replacing suspect or faulty components.

6.2.1. General Information

To reduce overall size and provide enhanced speech and data performance, an Any-Layer Interstitial Via Hole (ALIVH) PCB is used in GD52, GD92 and GD92C handsets. ALIVH PCBs are multi-layer boards which have an IVH structure in all inter-layers and can provide an inter-layer connection immediately under the land of a component. In addition, the PCB has no through holes and any number of layers can be interconnected.

As the specification and performance characteristics of ALIVH PCBs differ from that of conventional multi-layered boards, special attention is required when handling and repairing these assemblies.

Moisture Absorbency

The ALIVH PWB is more absorbent than a conventional PCB because of the nature of its material. Its aramid substrate is hydrophilic, i.e. it absorbs moisture from the air. If, after having absorbed moisture, the ALIVH PWB is submitted to re-flow or repair process, moisture in the board can suddenly evaporate and cause vapour explosion.

Copper Foil Peel Strength (Land Detachment Resistance)

The ALIVH PCB is slightly less resistant to copper detachment force than conventional boards. Therefore, it is necessary to ensure that solder is melted sufficiently before a component is removed from the board.

Warping Property

The ALIVH PCB has a smaller Young's Modulus and is therefore more pliant than conventional boards. It is important that the ALIVH PCB is not bent when component placement is performed.

6.2.2. Repair Procedures

To prevent problems caused by moisture absorption, it will be necessary to perform dehydration of ALIVH PCBs in a suitable oven or similar heating device prior to repair. The boards should be heated at 85 °C for a duration of at least ten hours.

The repair should also be performed under the following conditions:

6.2.2.1. Soldering Iron

The temperature of the tip of the soldering iron should be 350 °C ±10 °C for an application time of five seconds or less.

Removal and re-mounting of components should be performed only once at any component position.

Note: *To avoid land detachment, do NOT apply excessive force on the soldering iron when heating the board. Ensure that the solder has melted sufficiently to allow component removal without damaging the board.*

6.2.2.2. Hot-Air Blower

The blower air temperature should be at:

295 °C ±5 °C for an application time of 120 seconds or less,

or:

395 °C ±5 °C for an application time of 30 seconds or less.

Removal and re-mounting of components should be performed only once at any component position.

Note: *To avoid land detachment, do NOT apply excessive force on the soldering iron when heating the board. Ensure that the solder has melted sufficiently to allow component removal without damaging the board.*

6.2.2.3. Re-flowing / Re-touching

1. Re-touching by soldering iron:

HAKKO 928 soldering iron is recommended.

900S-T-B tip for thicker solder joints and 900M-T-LB tip for thinner solder joints are recommended

2. Tip temperature/time

Normal pad : 325±10°C, less than five seconds

Large Pad : 400±10°C, less than five seconds

3. Pressure at solder tip

· Weight of soldering iron, (50gm) + 100gm to 150gm

· Do not exert pressure in the horizontal direction

4. Retouching small components

Pinch the component using two soldering irons and retouch within four seconds

6.3. External Testing

6.3.1. General Information

The handset 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 and the cradle connected. For in-depth fault finding the unit should first be disassembled, as detailed in Section 4, and then the PCB Repair Jig 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.

The unit must now be tested and calibrated for both frequency bands (900 MHz and 1800 MHz).

6.3.2. Jigs and Tools

Interface Box (Part No. IFB003 / IFB004)

The Interface box provides:

IFB003: Voltage regulation for +7.2 V, +5.6 V or 4.8 V DC outputs. The +7.2 V switch setting is used as a supply to Li-Ion type batteries (compatible for other products), the 5.6 V switch setting is used for PCB testing and the 4.8 V switch setting is used for testing the complete unit.

Interface Box IFB004 is a later version that provides +4.8 V, +7.2V and +8.2 V DC outputs. It also allows selection of external power via the Interface cable.

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

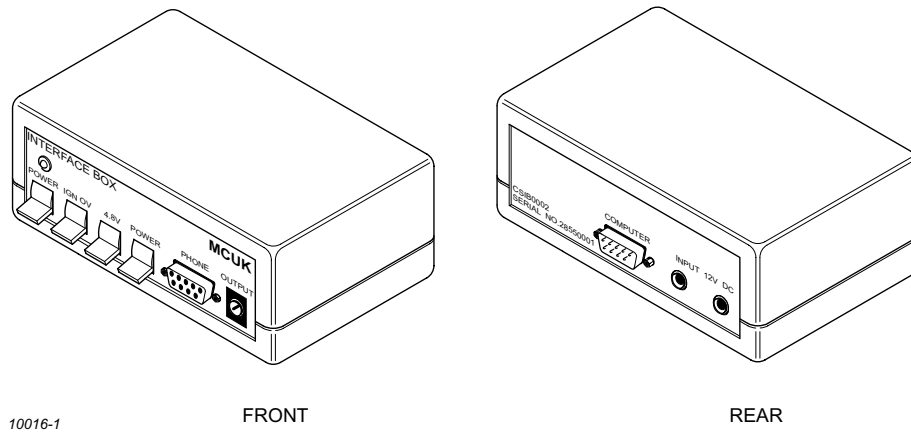


Figure 6.1: Interface Box IFB003 / IFB004

6.3.3. 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.

6.3.4. Power Supply

Provides 12 V DC supply to Interface box IFB003 or IFB004.

Test Battery

Provides 3.6 V DC supply to Interface Box IFB003 or IFB004 to compensate for the current drain when the Unit Under Test is used at full transmit power.

Use Test Battery part number JT00045 for GD52 and part number JT00042 for GD92 and GD92C.

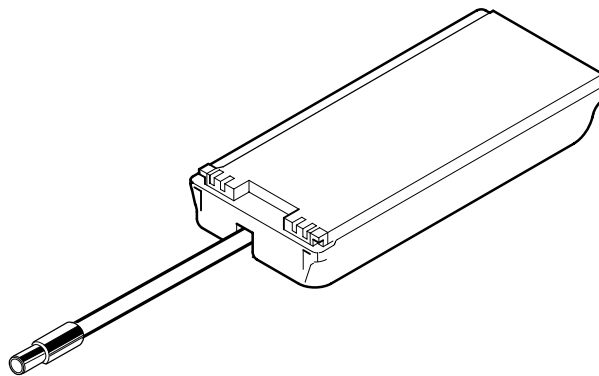


Figure 6.2: Test Battery

PCB Repair Jig (Part No. JT00041)

This unit provides the necessary connections between the Main and Keypad PCBs, and the connections between Main PCB and external test equipment. The jig accommodates both GD52, GD92 and GD92C units.

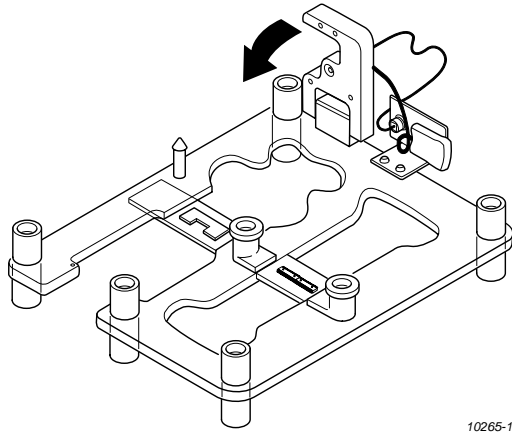


Figure 6.3: PCB Repair Jig

RF Adaptor

This unit provides an RF connection between the Unit Under Test and external test equipment. Use part number JT00044 for GD52 and JT00040 for GD92 / GD92C.

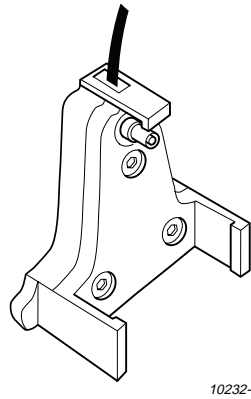


Figure 6.4: GD92 / GD92C RF Adaptor

GSM Tester

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

Interface Cable (Part No. JT00043)

The interface cable allows connection between a computer and the Unit Under Test via IFB003 or IFB004.

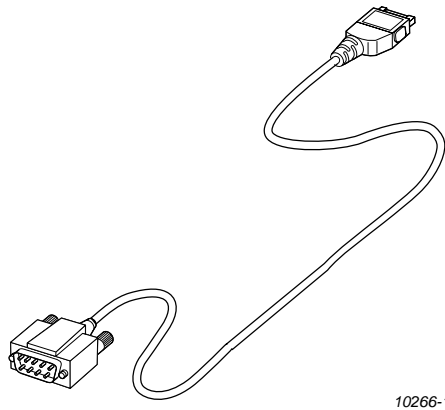


Figure 6.5: Interface Cable

Battery Calibration Voltage Control Unit (Part No. JT00010)

The Battery Calibration Voltage Control Unit (BCVCU) provides three voltage levels (3 V, 4.1 V and 0 V) to the Test Battery, and is used during battery calibration checks. It is powered from the Interface Box.

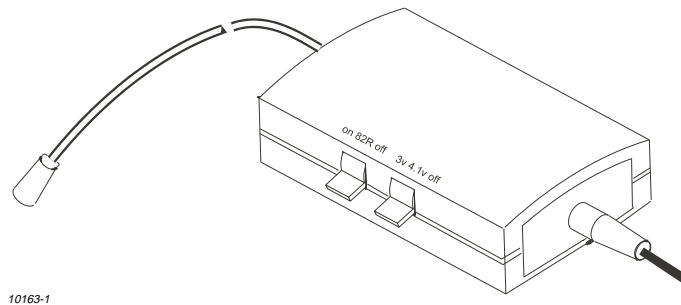
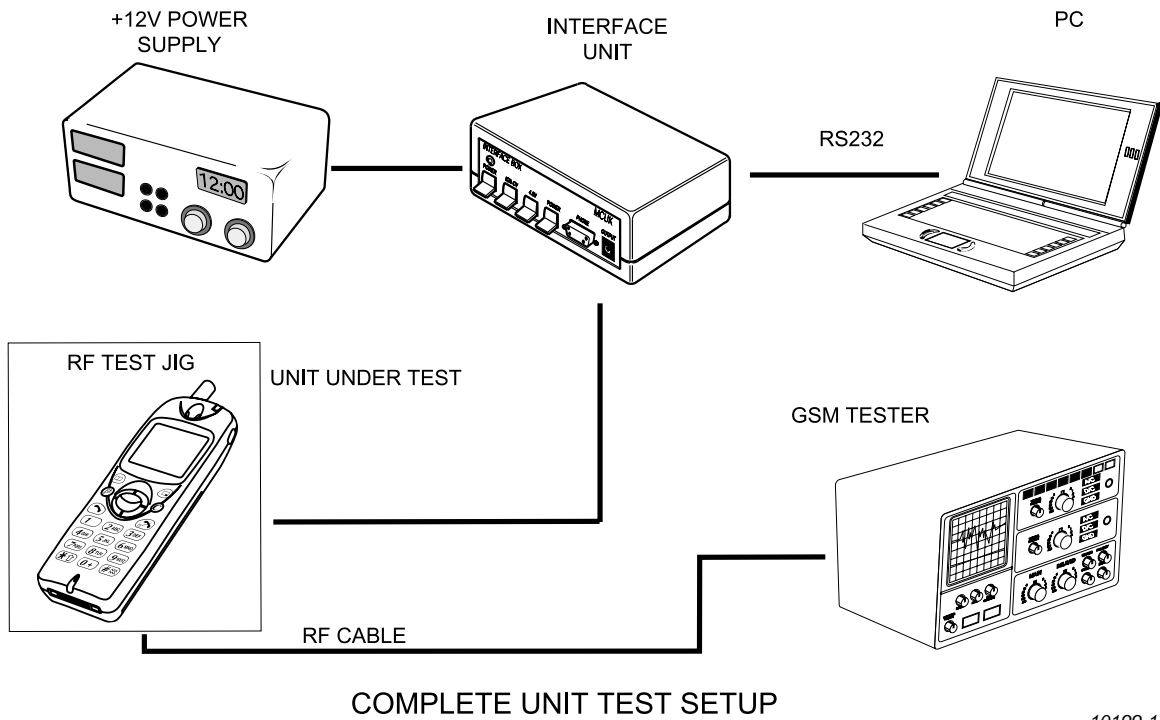
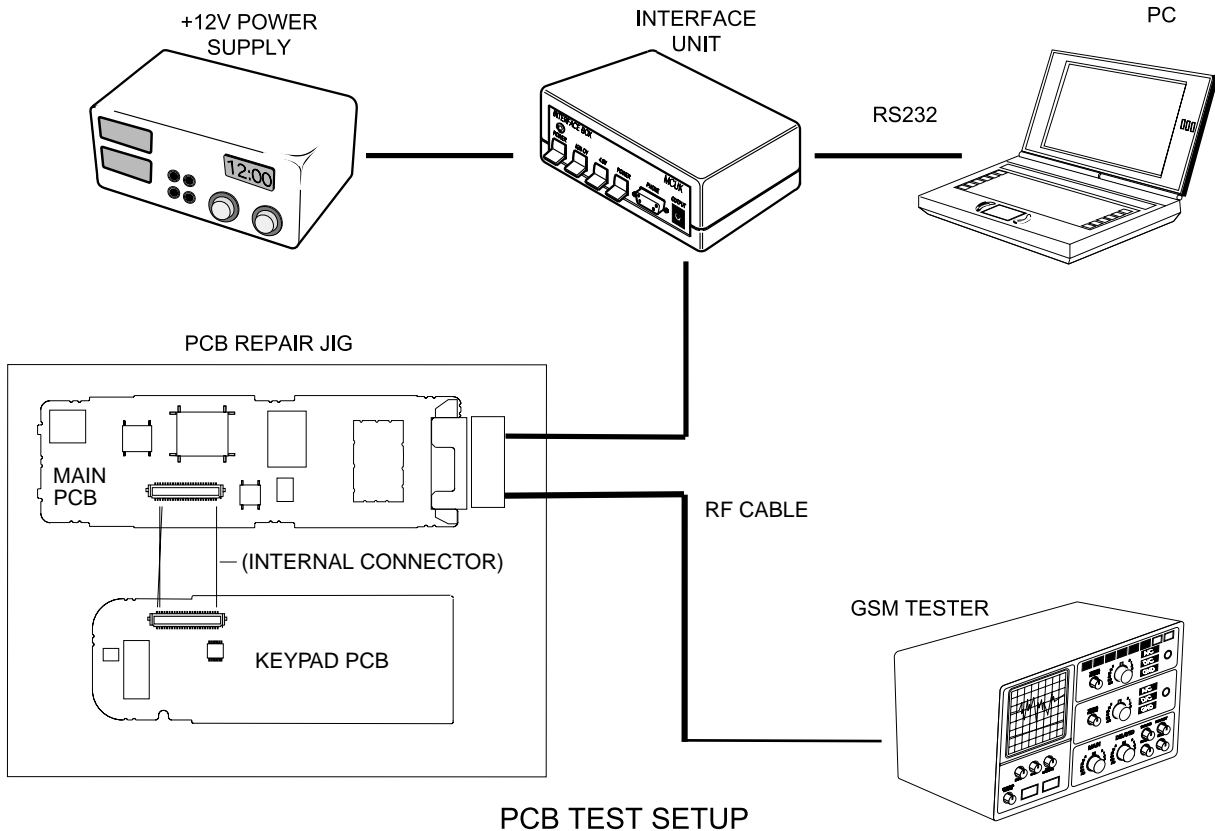


Figure 6.6: Battery Calibration Control Unit

6.3.5. Channel Box Software

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

6.4. Complete Unit Setup



10199-1

Figure 6.7: Complete Unit Test Setup

6.4.1. External Testing Setup Procedure

IMPORTANT NOTE

To allow accurate measurement of the complete unit the test equipment must be connected as shown (Figure 6.6). 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 6.7.

Full Test Equipment Requirements

For testing the handheld unit the following equipment is required:

1. Interface box
2. 12 V power supply
3. Personal computer (IBM compatible) with RS232 interface
4. RS232 interface cable (9 pin straight through connection)
5. GSM test station
6. RF Adaptor
7. Interface cable – JT00004

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 adaptor. The 12 V 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.

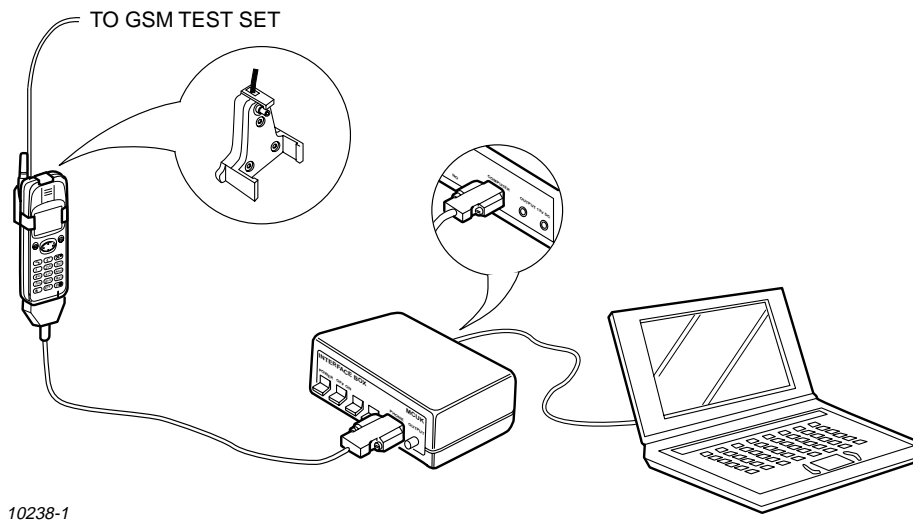


Figure 6.8: External test equipment setup

2. Ensure that the following settings are made:

- a. Interface box IFB003 or IFB004

Power:	UP position
IGN:	UP position
Mode	DOWN position
Voltage	Middle Position (7.2 V)

TEST AND MEASUREMENT

- b. Power supply
+12V DC: ON
- c. PC
Channel box software loaded and the screen indicating as shown:



[ESC] to END of PROGRAM

10027-1

Figure 6.9: PC Screen (SCRN10)

- 3. Press ENTER on the PC keyboard.
- 4. At the PC press F10.
- 5. After approximately 1 second, set the Interface Cable switch to ON (position is marked by a dot).

NOTE: The display will read:

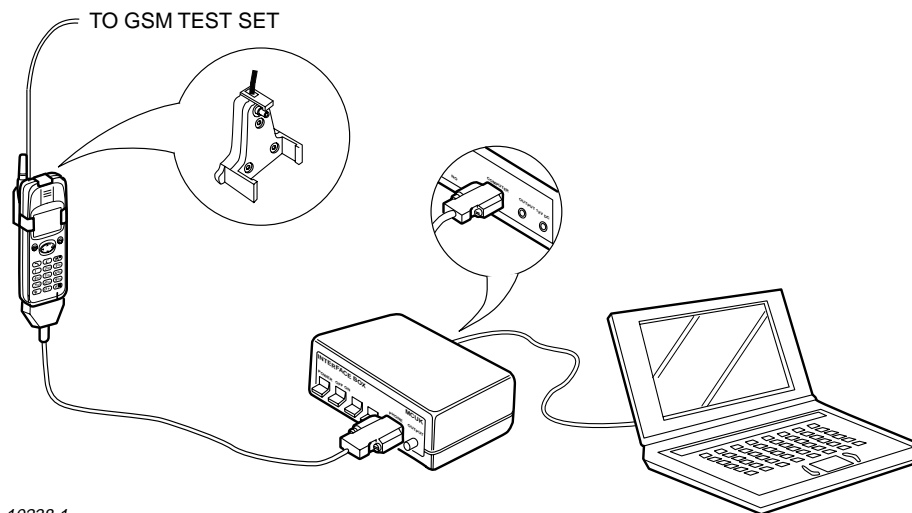
```
GET STATION
ADDRESS = _ _ _
INFO = _ _ _
```

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

Go to Section 6.5 (Channel Box Test Commands) for further testing information.

Power On In Normal Mode

- 1. Connect the test equipment as shown in the diagram.



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Figure 6.10: External test equipment setup

- 2. Ensure that the following settings are made:
 - a. Interface box IFB003 or IFB004
Power: DOWN position
IGN: UP position
MODE: UP position
 - b. Power supply:
+12V DC: ON
 - 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

10027-1

Figure 6.11: PC Screen (SCRN9)

3. On the PC, select NORMAL MODE and press ENTER.
4. Press F10 on the PC.
5. After approximately 1 second, set the interface cable switch to ON (position is marked by a dot).

Entering Call Mode from Test Mode

Ensure that a fully-charged battery is attached to the telephone.

The screen of the PC should resemble the one shown below:

```

<<< PANASONIC GD92 SERVICE BOX VER: 1.00 >>> 2000/04/04 09:18:52
INITIALIZE < [CH-BOX] >----- SP LOOPBACK< STOP>----- GET KEYCODE< ENABLE>-----
CHG CH GSM < 62>----- PATH CONT < MOSO>----- CONTROL OUT<ALL OFF>-----
CHG CH DCS <698>----- TAM CONT nf<PLAYOFF>----- CHECK LCD1 < P1>-----
POWER LEVEL< PL 5>----- VOL_BUZZ < ON>----- SET ER DISP< ENABLE>-----
TX DATA < OFF>----- VOL_SIDE < -8dB>----- SOFT SIM < ENABLE>-----
RSSI (dBm) < CONT>----- VOL_MIC < 0dB>----- TEST MODE < TERM>-----
SET AGC 1 < +69dB>----- VOL_SP 1 < 0dB>----- SIM STATUS < SHOW>-----
SET AGC 2 < +35dB>----- VOL_SP 2 < 0dB>----- CHECKSUM <R-MCP>-----
SET AGC 3 < +1dB>-----

NOTE: nf = no function

FW VER [ ]
IMEI [004400870366596] MOBILE BOOT OK
PRDCT1 [uÇ]
PRDCT2 [1♂♀]
ST IN [ ]
SIM ID [NO SIM! RESP = 0]
[LEND 2: 3: 4:MEM 5: 6:PDATA 7:UDATA 8: 9:P OFF DEF ON]
    
```

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Figure 6.12: PC Screen (SCRN11)

1. At the PC, change the SOFT SIM field to read <ENABLE>. Press ENTER.
2. At the PC, change the TEST MODE 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 five seconds, the UUT will register service.
3. To return to test mode, set the SOFT SIM field to <DISABLE> and set the TEST MODE field to <TEST>. Press Enter.

6.5. Channel Box Test Commands

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

After the telephone unit has been switched on (Section 6.4), use the up / down cursor keys on the PC keyboard to select the channel box command. Use the left / right cursor keys to display the required indication and then 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 GSM	<xxx>	Sets up predefined channel settings for GSM frequencies.
CHANGE CH DCS	<xxx>	Sets up predefined channel settings for DCS frequencies.
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 VOL. SP2	<xx> <xx>	Sets speaker pre-amp volume levels Sets speaker volume levels
GET KEY CODE CONTROL OUT	<ENABLE><DISABLE> <LED R> <LED B> <CHARGE ON> <LED C> <HF ON> <ALL OFF> <ALL ON>	Displays the value of a key pressed on the keypad 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
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

CHANNEL BOX COMMAND	INDICATION	FUNCTION
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

6.6. Adjustment Mode

6.6.1. RF Calibration Procedure

NOTE: See Section 6.2 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 three distinct calibration procedures to adjust RF performance. These procedures are:

1. Ramping gain (Section 6.6.1)
2. RSSI (Section 6..6.2)
3. I and Q values (Section 6.6.3)

The adjustment data selected during calibration is stored in Flash ROM.

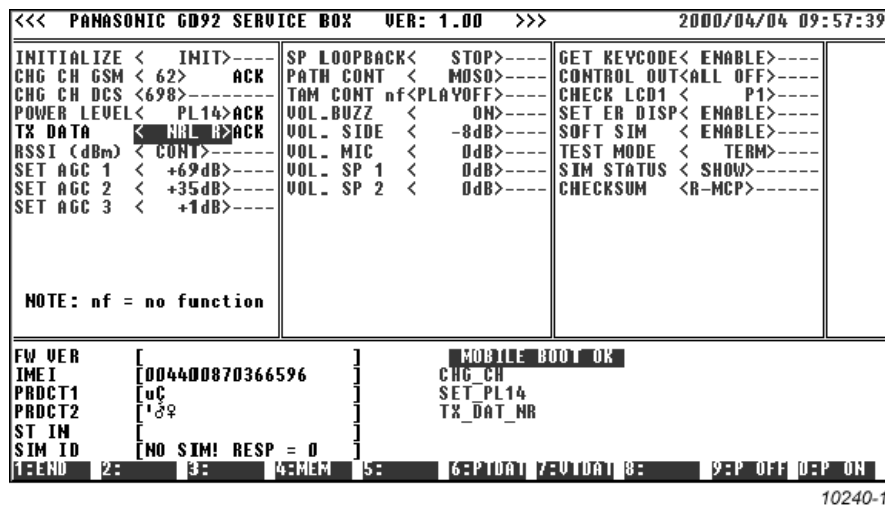


Figure 6.13: Test software screen

6.6.2. Ramping Gain

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

GSM 900

NOTE: To ensure that the telephone operates within set SAR margins, Panasonic recommends that a power meter capable of measurement to an accuracy of ± 0.2 dB is used when calibrating power levels. Use of a less accurate power meter may result in the telephone failing to meet SAR standards.

1. Power on the telephone in Test Set Mode.
2. Scroll down the menu until CHANGE CH <62> is highlighted and then press ENTER.
3. Scroll down the menu until PL <5> is highlighted. Use the left and right cursor keys to select <14>. Press ENTER.
4. Scroll down the menu until TX DATA <OFF> is highlighted. Using the left / right cursor keys, highlight <NRL R> and press ENTER.

TEST AND MEASUREMENT

5. At the power meter, measure the peak power.
6. If measured power is in the range of the target power, then proceed to step 10.
7. At the Channel box, press F7 to view the TRIM for the mid-channel.

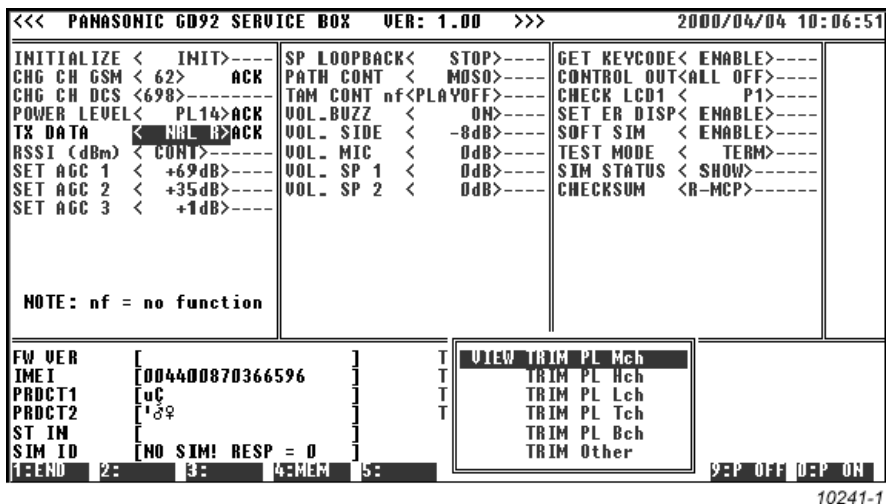


Figure 6.14: Power level view 1

8. Select VIEW TRIM PL MCH, and make a note of this value.

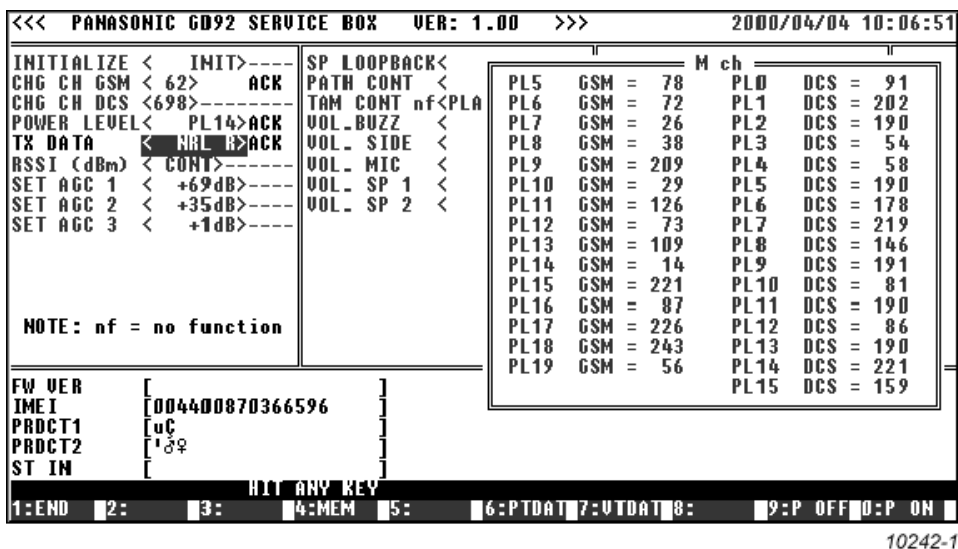


Figure 6.15: Power level 2

9. Perform the following calculation and make a note of the result:

$$\text{New Trim Value} = \text{Old Trim Value} + (\text{Required Power} - \text{Measured Power}) \times \text{Change per dB}$$

(step 5) (table) (step 2) (table)
10. At the Channel box, press F6 to program the TRIM for the mid-channel.

```

<<< PANASONIC GD92 SERVICE BOX  VER: 1.00  >>>                2000/04/04 10:28:09
INITIALIZE < INIT>----- SP LOOPBACK< STOP>----- GET KEYCODE< ENABLE>-----
CHG CH GSM < 62>  ACK  PATH CONT < MOSO>----- CONTROL OUT<ALL OFF>-----
CHG CH DCS <698>----- TAM CONT nf<PLAYOFF>----- CHECK LCD1 < P1>-----
POWER LEVEL< PL14>ACK VOL_BUZZ < ON>----- SET ER DISP< ENABLE>-----
TX DATA < NR1 >ACK VOL_SIDE < -8dB>----- SOFT SIM < ENABLE>-----
RSSI (dBm) < CONT>----- VOL_MIC < 0dB>----- TEST MODE < TERM>-----
SET AGC 1 < +69dB>----- VOL_SP 1 < 0dB>----- SIM STATUS < SHOW>-----
SET AGC 2 < +35dB>----- VOL_SP 2 < 0dB>----- CHECKSUM <R-MCP>-----
SET AGC 3 < +1dB>-----

NOTE: nf = no function

FW VER [ ]
IMEI [ 004400870366596 ]
PRDCT1 [ uC ]
PRDCT2 [ '3♀ ]
ST IN [ ]
SIM ID [ NO SIM! RESP = 0 ]
1:END 2: 3: 4:MEM 5: 6:PTDA1 7:UTDA1 8: 9:P OFF DEP ON
    
```

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Figure 6.16: Power level selection 1

11. Select PROGRAM TRIM PL MCH GSM.

```

<<< PANASONIC GD92 SERVICE BOX  VER: 1.00  >>>                2000/04/04 10:28:09
INITIALIZE < INIT>----- SP LOOPBACK< STOP>----- GET KEYCODE< ENABLE>-----
CHG CH GSM < 62>  ACK  PATH CONT < MOSO>----- CONTROL OUT<ALL OFF>-----
CHG CH DCS <698>----- TAM CONT nf<PLAYOFF>----- CHECK LCD1 < P1>-----
POWER LEVEL< PL14>ACK VOL_BUZZ < ON>----- SET ER DISP< ENABLE>-----
TX DATA < NR1 >ACK VOL_SIDE < -8dB>----- SOFT SIM < ENABLE>-----
RSSI (dBm) < CONT>----- VOL_MIC < 0dB>----- TEST MODE < TERM>-----
SET AGC 1 < +69dB>----- VOL_SP 1 < 0dB>----- SIM STATUS < SHOW>-----
SET AGC 2 < +35dB>----- VOL_SP 2 < 0dB>----- CHECKSUM <R-MCP>-----
SET AGC 3 < +1dB>-----

NOTE: nf = no function

FW VER [ ]
IMEI [ 004400870366596 ]
PRDCT1 [ uC ]
PRDCT2 [ '3♀ ]
ST IN [ ]
SIM ID [ NO SIM! RESP = 0 ]
1:END 2: 3: 4:MEM 5: 6:PTDA1 7:UTDA1 8: 9:P OFF DEP ON
    
```

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Figure 6.17: Power level selection 2

12. Highlight the PL14 field and press ENTER.

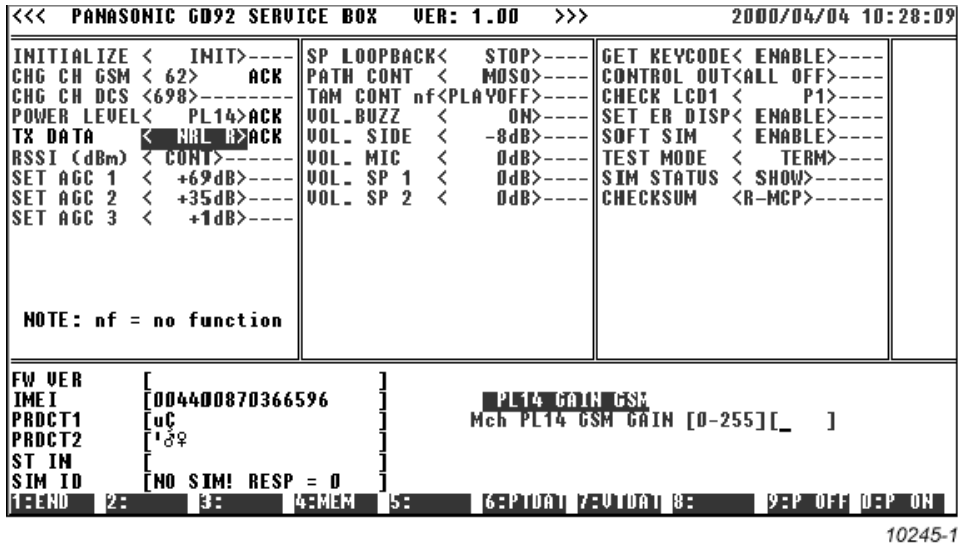


Figure 6.18: Power level selection 3

13. Enter the value calculated in step 9 into the data field and then press ENTER.
14. Press ESC.
15. Re-measure the peak power.
16. Repeat steps 5 to 14 for the remaining power levels, in the following order:
 - PL6, PL9, and PL19.
 - Power levels between PL9 and PL6.
 - Power levels between PL14 and PL9.
 - Power levels between PL19 and PL14.
17. Calibrate PL15 (limits ± 0.2 dB).
18. After calibrating at channel 62, the carrier power must be measured and calibrated at LOW and HIGH channels as shown in the table below.

Channel	GSM 900	GSM 1800
Low	1	512
Mid	62	698
High	124	885

19. Repeat steps 2 to 14 for the GSM 1800 settings in the following order:
 - PL10 (limits ± 0.5 dB).
 - PL1, PL5, and PL15.
 - Power levels between PL1 and PL4.
 - Power levels between PL15 and PL10.
 - Power level PL0 (limits ± 0.2 dB).

6.6.3. RSSI

This procedure describes the calibration of RSSI on the mid-channel. This procedure must also be carried out for low / bottom channel and high / top channel.

The procedure is as follows:

1. Power the GD92 into Test Set mode in the service channel box.
2. Connect the telephone to the GSM Test Set and apply a carrier frequency of 68 kHz (for channel 60 = 947.00 MHz) at an input level of -90 dBm.
3. At the channel box, highlight CHANGE CH, and, using the left / right cursor keys, select CH <60>. Press ENTER.
4. Highlight the SET AGC1 field and change the set value to 45 dB. Press ENTER.
5. Highlight the RSSI dBm <> field and press ENTER

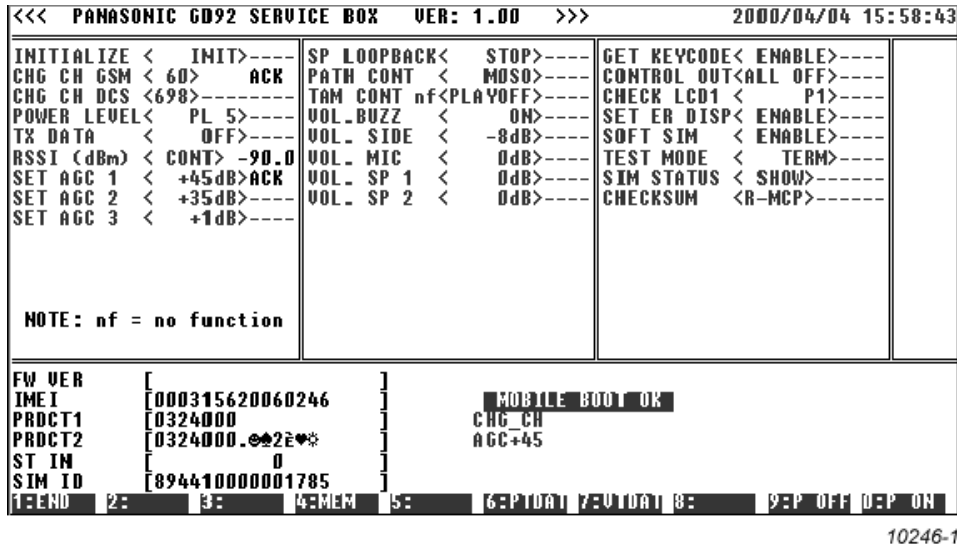


Figure 6.19: RSSI dB field

6. If the measured power is not -90 ± 1 , then make the following calculation:

$$\begin{aligned} \text{RSSI offset value} &= [-(90 + \text{MEASURED RSSI VALUE})] \times 2 \\ &= [-90 - \text{MEASURED RSSI VALUE}] \times 2, \end{aligned}$$

for example

$$\begin{aligned} &[-(90 + (95))] \times 2 \\ &= [-90 - (-95)] \times 2 \\ &= 10 \end{aligned}$$

Record the result.

7. At the channelbox, press F7 to view data.

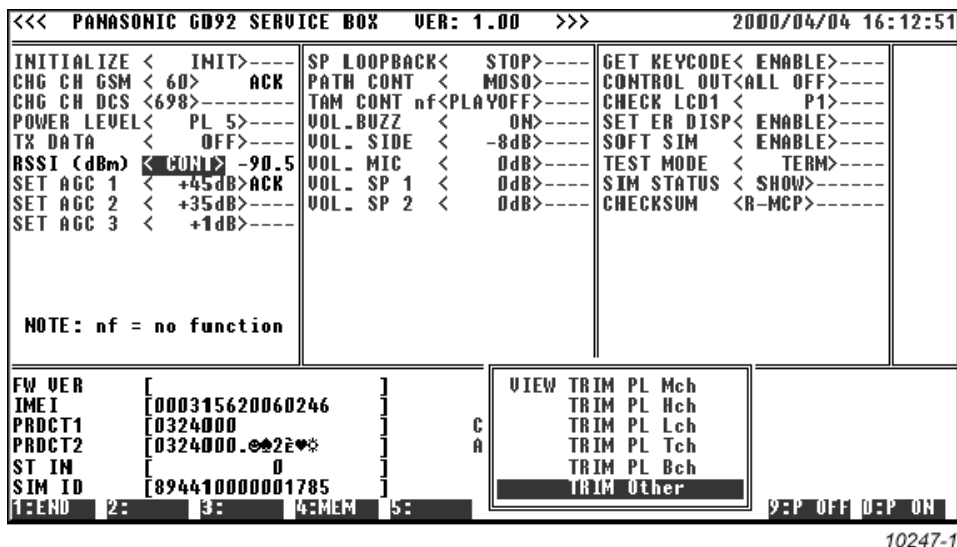
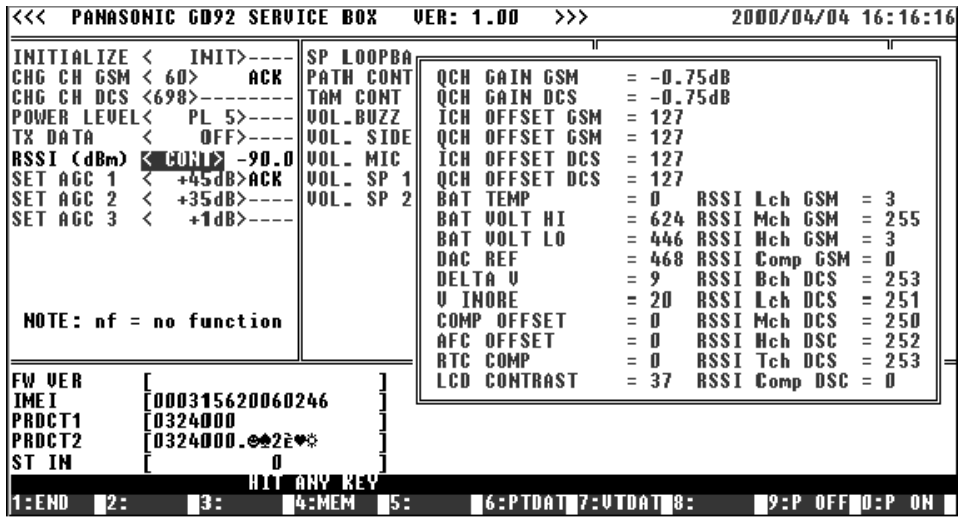


Figure 6.20: RSSI reading 1

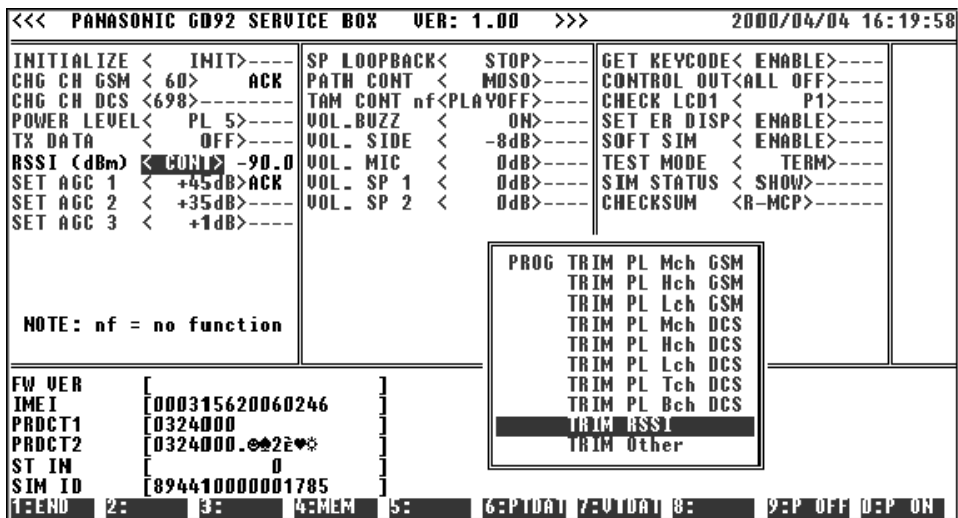
8. Select TRIM OTHER and make a note of the RSSI COMP GSM reading.



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Figure 6.21: RSSI reading 2

9. Press ESC.
10. At the Channel box, press F6 to program data.



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Figure 6.22: RSSI reading 3

11. Select TRIM RSSI and press ENTER.
12. Highlight RSSI Mch GSM and press ENTER.
13. Make the following calculation:
 RSSI Offset Value (step 8) + reading noted in step 6.
 Enter the result in to the RSSI Mch field.
14. Press ENTER.
15. Press ESC.
16. Measure the RSSI level again by highlighting the RSSI dBm field again and press ENTER.

17. Repeat steps 6 to 16 for both low / bottom and high / top channels.

Channel	GSM 900
Low / bottom	1
Mid	60
High / top	111

18. Repeat steps 6 to 16 for GSM 1800 on the following channels with the SET AGC 1 field set to 51 dB:

Channel	GSM 1800
Bottom / low	512
Mid	650
High / top	885

6.6.4. I and Q Values

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

I, Q ch Offsets

Spectrum analyser setup:

Centre frequency = 902.4 MHz

RBW = 10 kHz

VBW = 10 kHz

span = 1 MHz

sweep time = 2 sec

1. Set the Channel box to channel 62 at power level 5, nominal burst modulated with all 1's, as shown below:

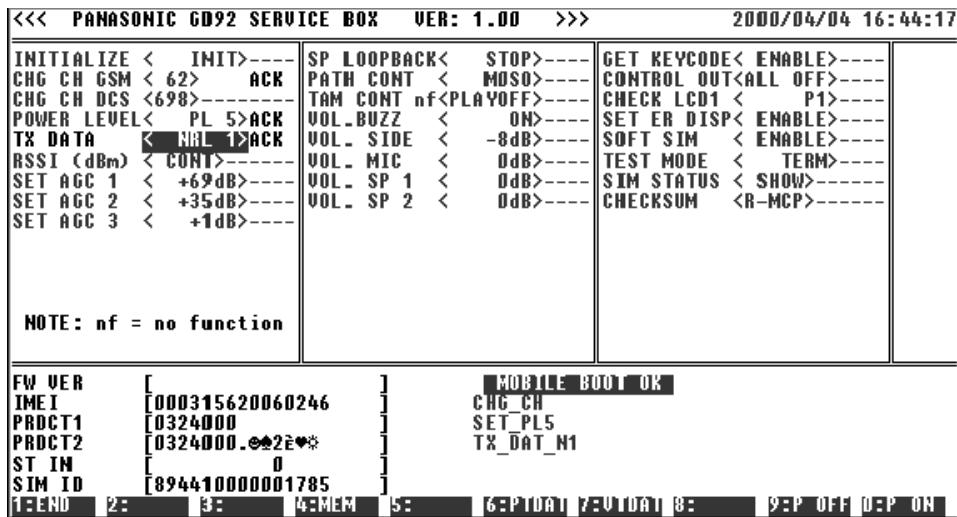


Figure 6.23: Channel box setup

2. On the spectrum analyser, measure the image leak ratio.

Image leak ratio is the measured ratio of peak power and the power at 135 kHz below peak frequency.

Example:

Peak power = 33dB

Power at 135 kHz below peak power = -9 dBm

Image leakage ratio = 33 dBm - (-9dBm) = 42 dBm

TEST AND MEASUREMENT

- If the image leak ratio is greater than 30 dBc, then proceed to 'IQ ch gain calibration'.

IQ Gain Check

- At the Channel Box, press F6 and select TRIM OTHER.
- Scroll down until IQCH GAIN is highlighted. Press Enter.

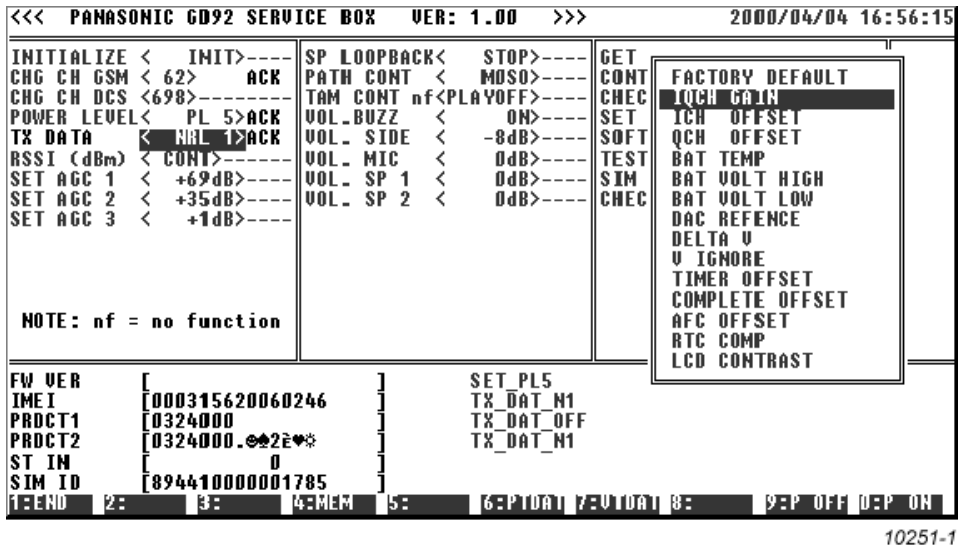


Figure 6.24: I, Q data selection field1

- Enter '1' (for -0.25 dB) into the data field and press ENTER.

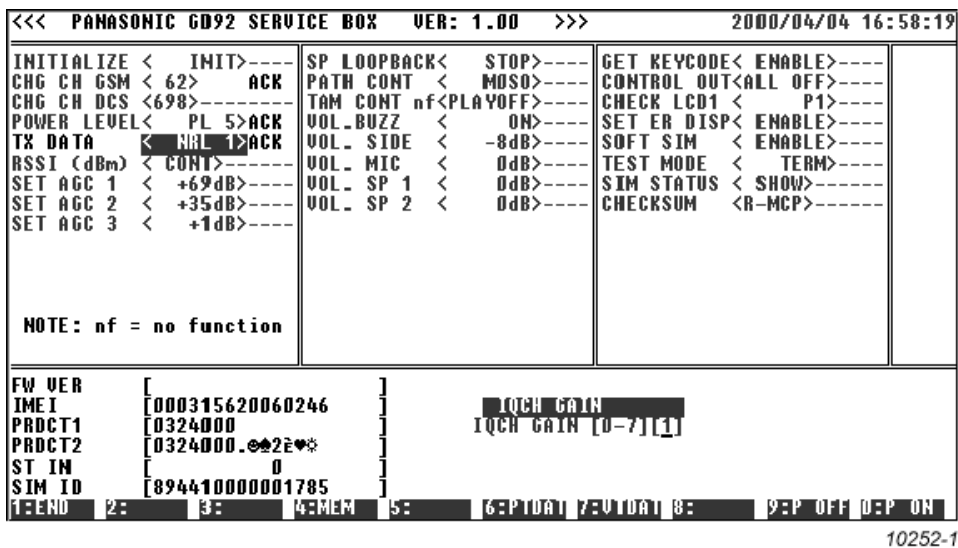


Figure 6.25: I, Q data selection field 2

- Measure the image leak ratio. If the image leak ratio is greater than 30 dBc, the telephone is within limits. If the image leak ratio is less than 30 dBc, repeat steps 1, 2 and 3 with the following IQ Ch gain values:
 -0.50 dB (enter '2')
 -0.75 dB (enter '3')

6.6.5. Battery Calibration

Preliminaries

There are three procedures to calibrating the battery, voltage, temperature and charging calibration. A Battery Calibration Voltage Control Unit (BCVCU) is used to provide the necessary voltage levels for these checks. The BCVCU replaces the two regulated power supplies and 82 Ohm resistor required to caibrate previous mobile products.

1. Connect the telephone, test battery, BCVCU and Interface Box as shown in the diagram below.

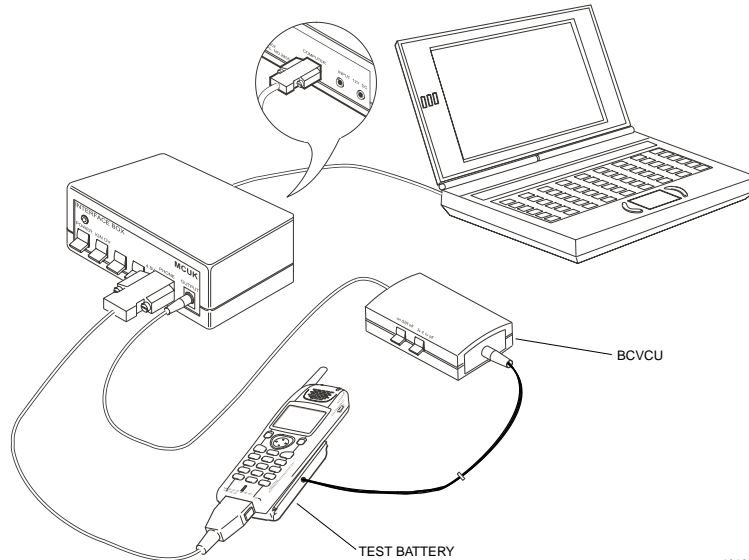


Figure 6.26: Battery calibration test conections

2. Set the Interface box to POWER ON, IGN and EXT PWR OFF.

Voltage Calibration

1. Enter Test-Set mode in Service Channel Box.

```

<<<  PANASONIC GD92 SERVICE BOX  VER: 1.00  >>>          2000/04/05 09:28:13
-----
INITIALIZE < 1111 >-----  SP LOOPBACK<  STOP >-----  GET KEYCODE< ENABLE >-----
CHG CH GSM < 62 >-----    PATH CONT <  MOSO >-----  CONTROL OUT< ALL OFF >-----
CHG CH DCS < 698 >-----    TAM CONT nf< PLAYOFF >----- CHECK LCD1 <  P1 >-----
POWER LEVEL<  PL 5 >-----  VOL_BUZZ <  ON >-----    SET ER DISP< ENABLE >-----
TX DATA <  OFF >-----     VOL_ SIDE <  -8dB >-----  SOFT SIM <  ENABLE >-----
BSSI (dBm) <  CONT >-----  VOL_ MIC <  0dB >-----   TEST MODE <  TERM >-----
SET AGC 1 <  +69dB >-----  VOL_ SP 1 <  0dB >-----   SIM STATUS <  SHOW >-----
SET AGC 2 <  +35dB >-----  VOL_ SP 2 <  0dB >-----   CHECKSUM < R-MCP >-----
SET AGC 3 <  +1dB >-----

NOTE: nf = no function

FW VER [ ]
IMEI [ 000315620060246 ]
PRDCT1 [ 0324000 ]
PRDCT2 [ 0324000.02E0 ]
ST IN [ 0 ]
SIM ID [ 894410000001785 ]
MOBILE BOOT OK

F:END 2: 3: 4:HEM 5: 6:P1DA1 7:01DA1 8: 9:P OFF 0:P ON
    
```

Figure 6.27: Battery calibration 1

2. Press F4 and select VIEW ADC LINES.
3. Observe the ADIN1 value. This value is BAT VOLT HIGH. If this reading is outside the range 564 - 664, then there is a fault and further investigation is required. Otherwise, record this value for later use.

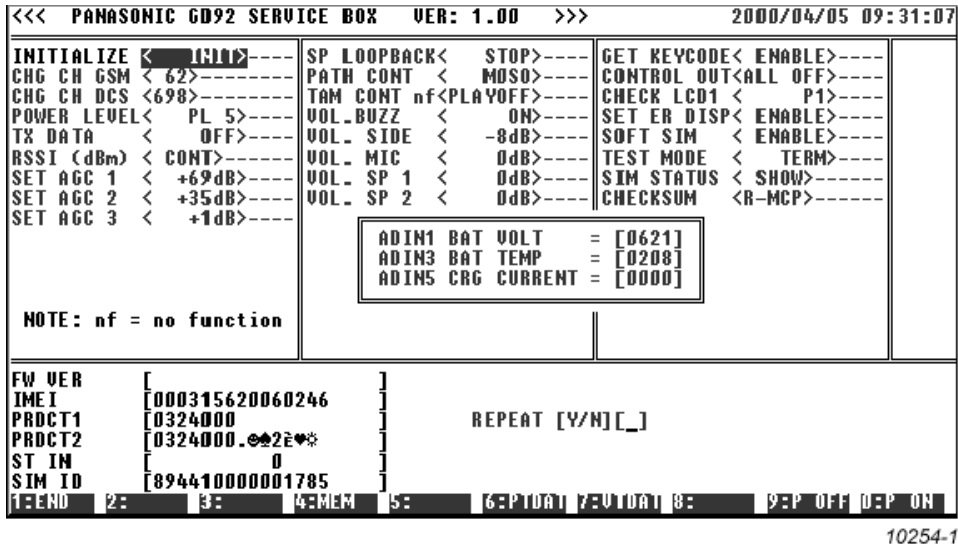


Figure 6.28: Battery calibration 2

4. Set VBAT to 3.0 V by selecting 3.0 V on the BCVCU.
5. On the PC, press 'Y' and then ENTER.
6. Check the ADIN1 reading again - this is the BAT VOLT LOW value. If the reading is outside the range 390 - 490, there is a fault and further investigation is required. Otherwise, record this value for use later.
7. Press 'N' in the {repeat yes / no box}, then press ENTER.
8. Press F6. Scroll down to, and select TRIM OTHER.
9. Scroll down to, and select BAT VOLT HIGH. Enter the value recorded in step 3.

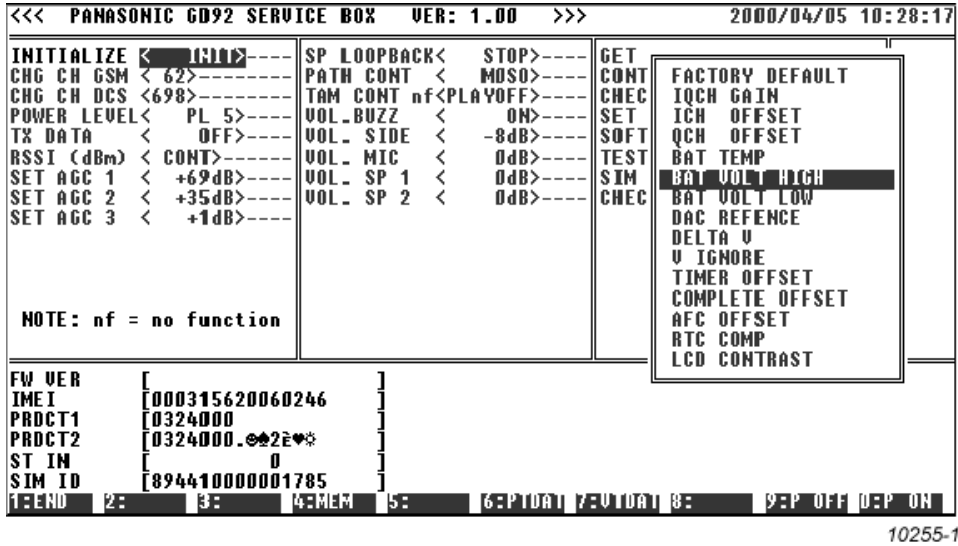


Figure 6.29: Battery Calibration 3

10. Press F6. Scroll down to TRIM OTHER and press ENTER.
11. Highlight BAT VOLT HIGH and press ENTER. Type in the value recorded in step 6.

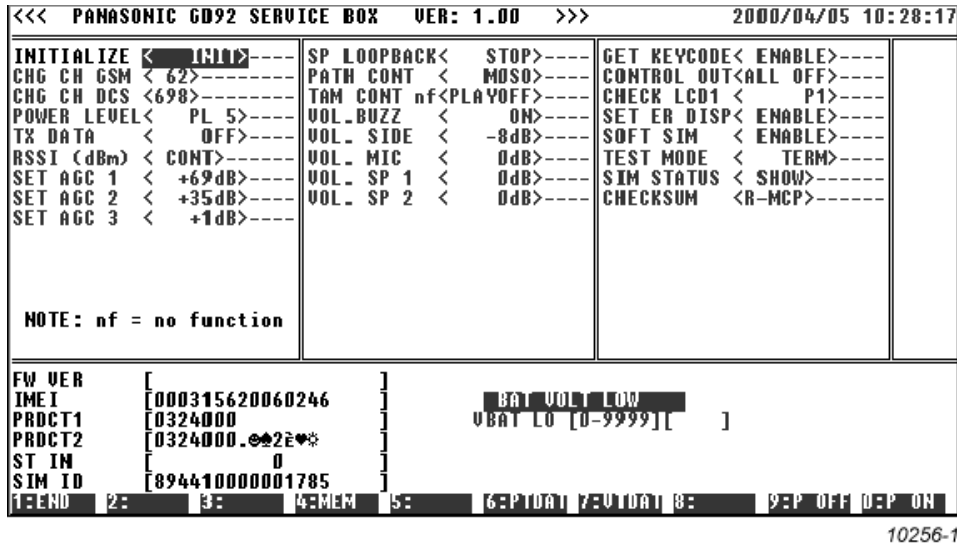


Figure 6.30: Battery calibration 4

- Set the BCVCU to 12 V.

Temperature Calibration

- Ensure that VBAT is set to 4.1 V. Check that EXT PWR and IGN on the Interface Box is set to OFF.
- Scroll up the menu until CONTROL OUT is highlighted. Using the left / right cursor keys, highlight AADC ON and then press ENTER.
- Press F4 and select VIEW ADC LINES.
- Check the value for ADIN3 (BAT TEMP). If the value is outside the range 168 - 248, then there is a fault and further investigation is required. Otherwise, subtract this value from the theoretical value of 208 and record the result for later use.

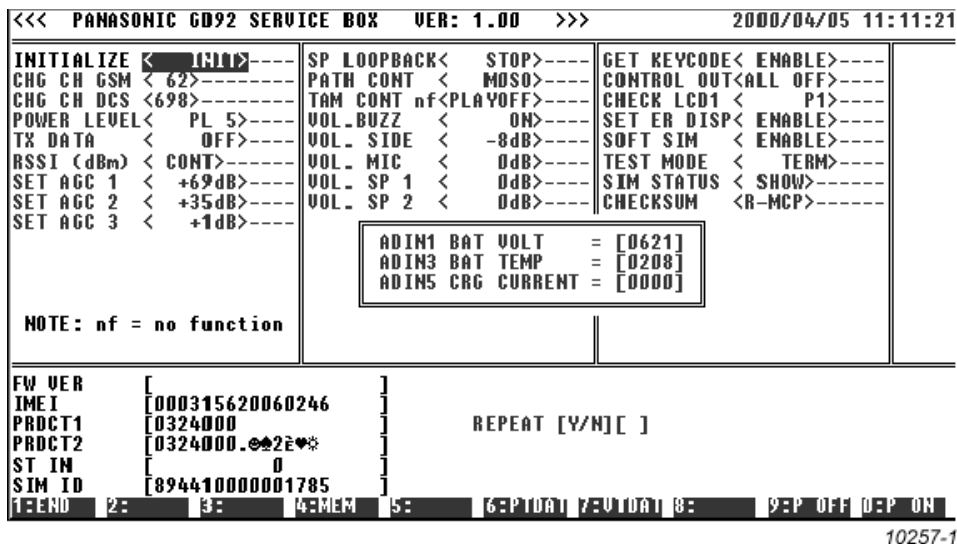


Figure 6.31: Temperature calibration 1

- Press 'N' in the {repeat yes/no box}, then press ENTER.
- Press F6. Scroll down and highlight TRIM OTHER. Press ENTER.
- Highlight BAT TEMP and press ENTER to select. Enter the value recorded in step 4.

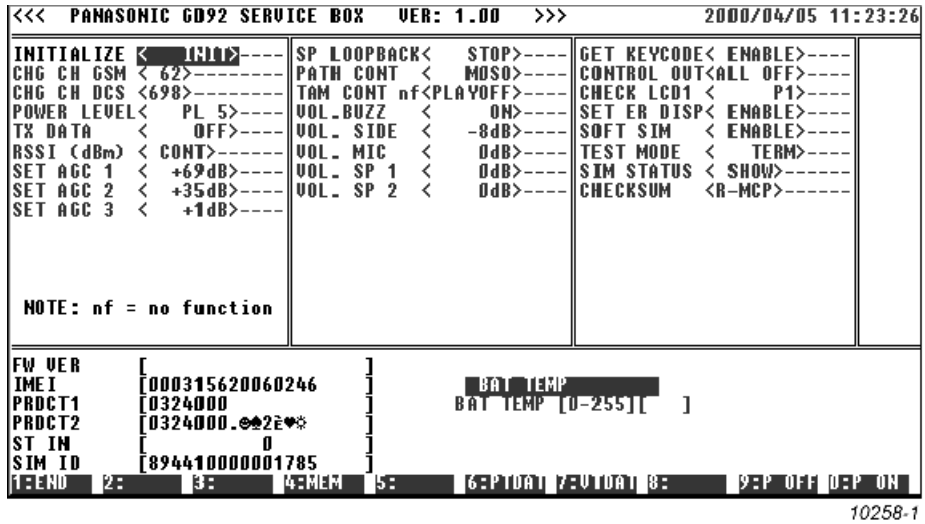


Figure 6.32: Temperature calibration 2

Charging Calibration

1. On the Interface Box, ensure that the EXT PWR switch is ON. Check that the BCVCU 82 Ohms switch is set to ON.
2. Holding down the Shift key, press F4. Select PROG CHARG-DAC DATA.

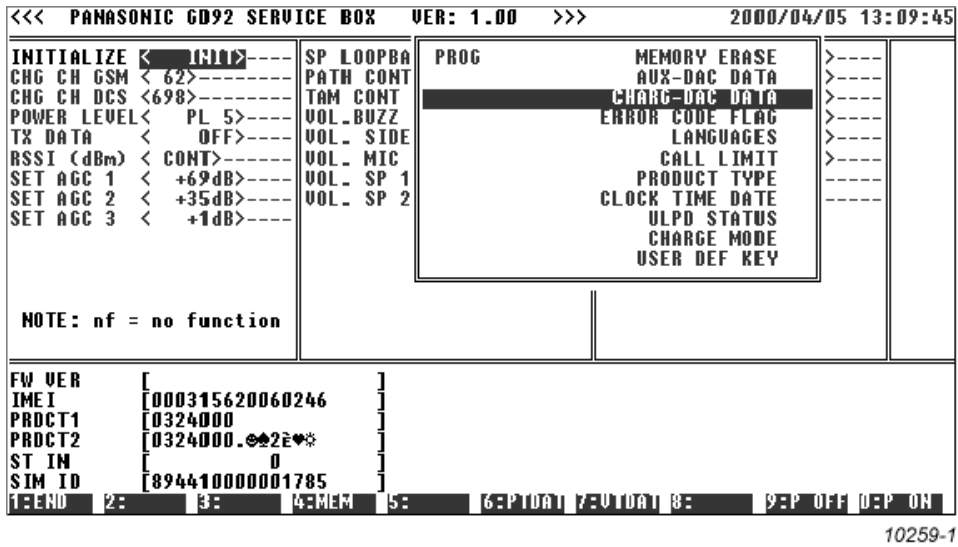


Figure 6.33: Charging calibration 1

3. Enter a value of 439.
4. Highlight CNTROL OUT and, using the left / right cursor keys, select CHAR ON. Press ENTER.

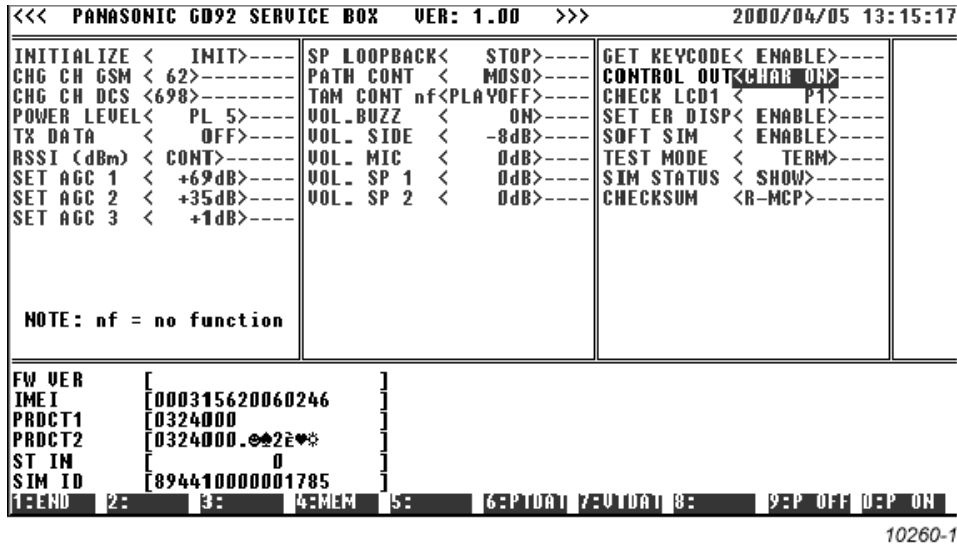


Figure 6.34: Charging Calibration 2

5. Disconnect VBAT by setting the BCVCU Voltage switch to OFF.
6. Measure the voltage across the Test Battery terminals. If the voltage is within the range 4.2 V ±5 mV, proceed to step 11. Otherwise, calculate the difference (DAC STEP) as follows:

$$\text{difference} = (\text{measured voltage} - 4.2 \text{ V}) / 7.4 \text{ mV}$$
7. Press Shift + F4.
8. Scroll down and select PROG CHARG-DAC DATA and enter the value calculated by subtracting the value recorded in step 6 from the initial CHARG-DAC DATA value (439).
9. Repeat steps 6 to 8 until the measured voltage is 4.2 V ±5 mV.
10. If the final value is outside the range 342 - 542, then there is a fault and further investigation is required. Otherwise, record the value for use later.
11. Press F6. Highlight TRIM OTHER and press ENTER. Highlight DAC REFERENCE and press ENTER.

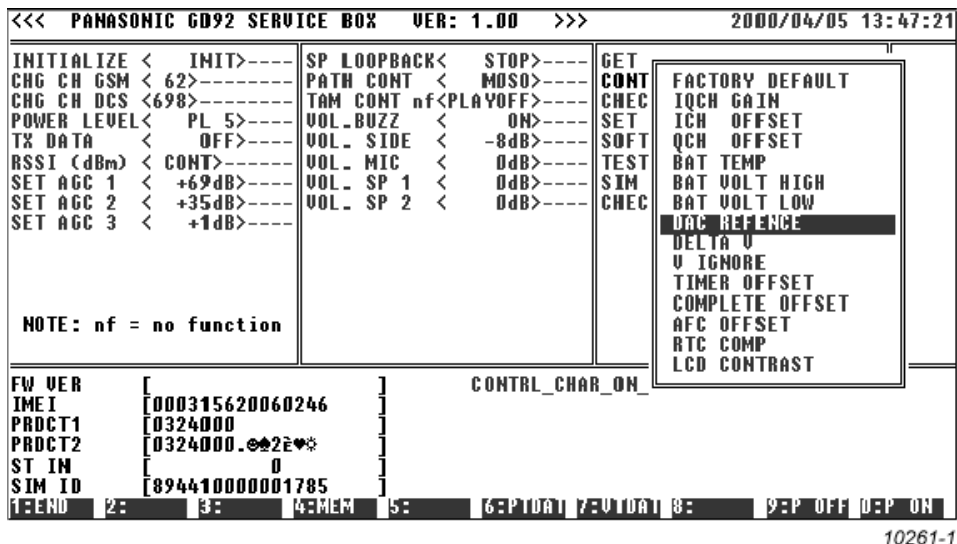


Figure 6.35: Charging calibration 3

12. Enter the value recorded in step 10.

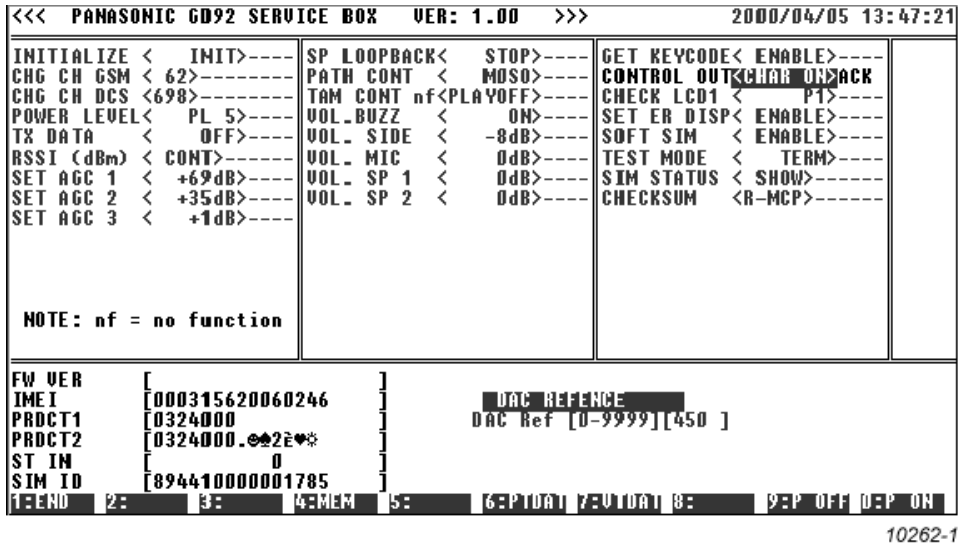


Figure 6.36: Charging calibration 4

Current Charging ADC Calibration

It is important to monitor the current when charging the Li-ion battery, both to protect against over-current and to determine when charging is complete. The telephone uses the VCC3 and MADC (ICHG) connections of OMEGA to measure charging current as an amplified voltage across a sense resistor.

NOTE: This calibration procedure *MUST* be carried out once Charging Voltage calibration has been completed.

1. Press F4 and select VIEW ADC LINES. Read ADIN5 (CRG CURRENT) and record this value.

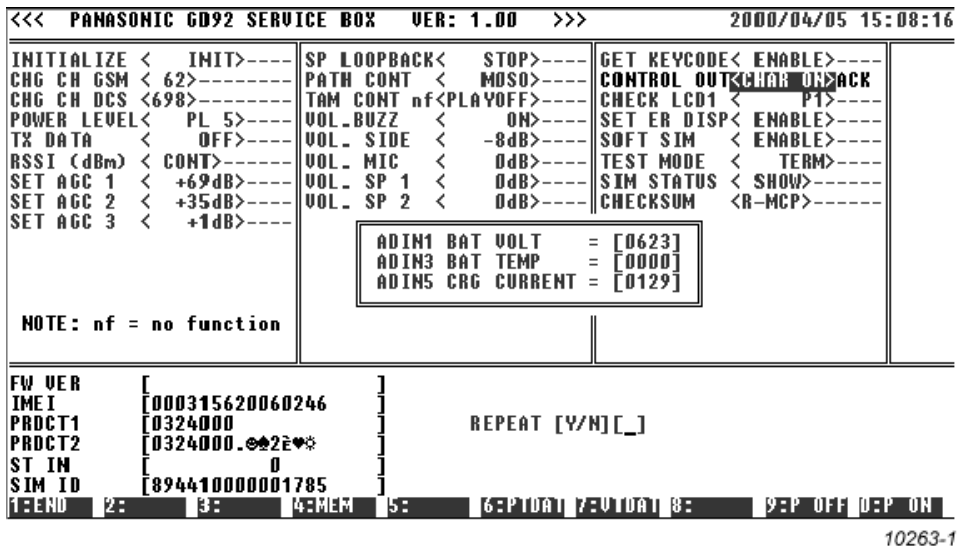


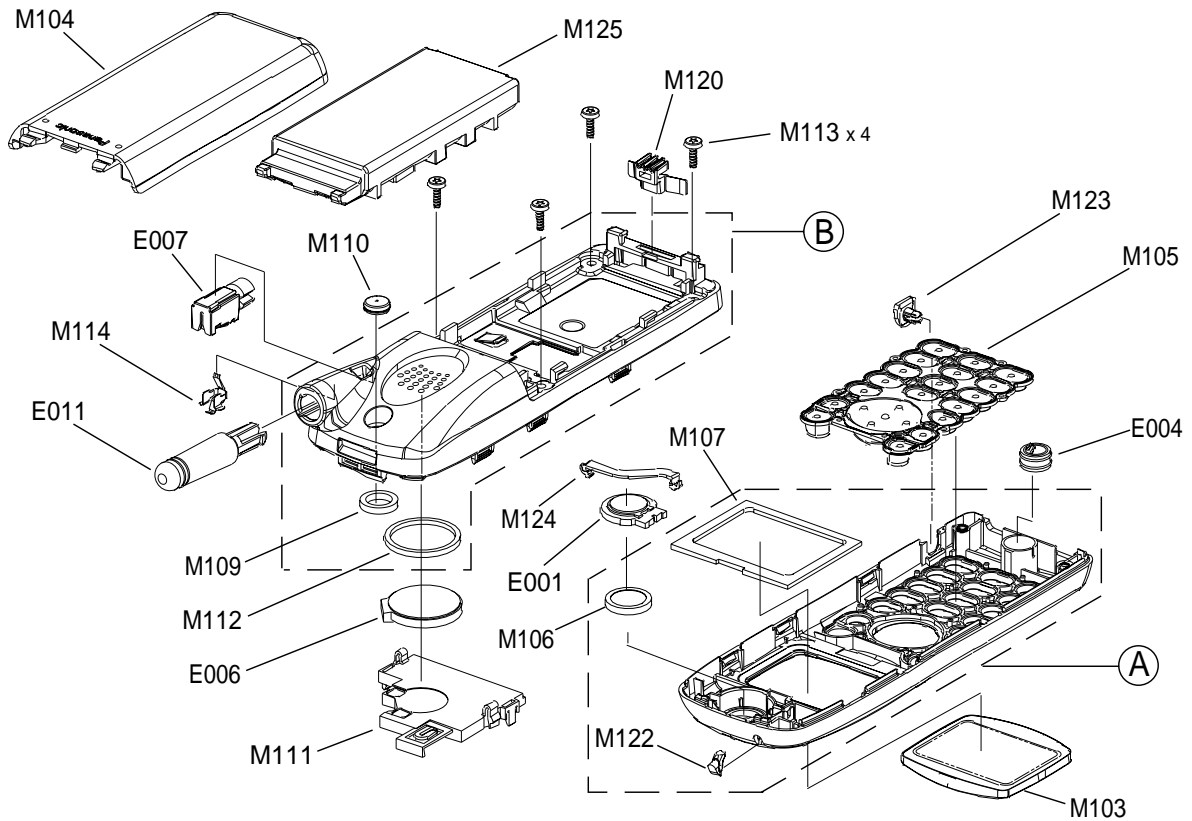
Figure 6.37: ADC Calibration

2. If this value is outside the range 101 - 251, then there is a fault and further investigation is required. Otherwise, calculate the difference between the recorded value and the theoretical value of 161. Record this value for use later.
3. Press F6 and select TRIM OTHER. Select COMP OFFSET and enter the value recorded in step 2.
4. Press F9. Wait for the prompt "Saving EV Trim data" to disappear, turn OFF the power supplies and disconnect the telephone.

7 REPLACEMENT PARTS LIST

7.1. Exploded Diagrams

7.1.1. GD52 Case and Cover Assemblies

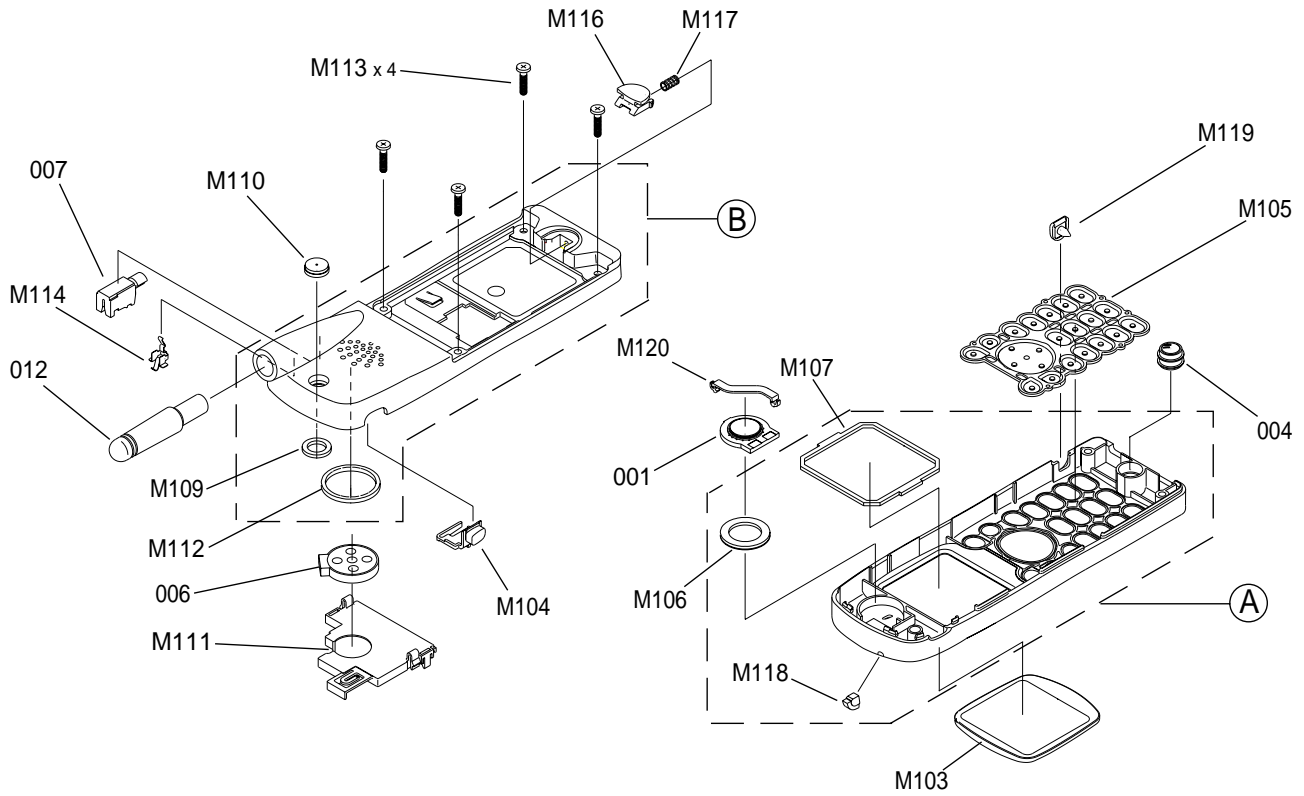


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Figure 7.1: GD52 Case Parts

Ref	Part Number	Description	Ref	Part Number	Description
A	GD52CVR01B	Front Cover Assy, Blue includes: RECEIVER CUSHION (M106) LCD CUSHION (M107) ALERT LED LENS (M122)	M120	2AA5043A	BATTERY HOOK
B	GD52CAS01B	Case Assembly, Blue includes: RF CONNECTOR CUSHION (M109) SPEAKER CUSHION (M112)	M122	2QA576A	ALERT LED LENS
M103	2EA575AAAA	LCD PANEL	M123	4CA520AAAA 4CA520AABA	H/S JACK CAP, BLUE H/S JACK CAP, GREY
M104	2NA502A	GD52 BATTERY COVER	M124	2RA592A	RECEIVER HOLDER
M105	2BA523AAAA 2BA523AABA	KEYPAD, BLUE KEYPAD, GREY	M125	EB-BSD52	GD52 BATTERY
M108	2FA543A	CHASSIS	E001	HH76017A	RECEIVER
M110	6RA507AAAA 6RA507AADA	RF CONNECTOR CAP, BLUE RF CONNECTOR CAP, GREY	E004	9ZA752A	MICROPHONE UNIT
M111	4JA563B	RF SHIELD CASE	E006	HS76008A	DTHF SPEAKER
M113	3Z70054B	SCREW	E007	BD76012A	VIBRATE MOTOR UNIT
M117	4HA532A	ANTENNA CONTACT	E011	AN76097AAAA AN76097AABA	ANTENNA, DARK GREY ANTENNA, LIGHT GREY

7.1.2. GD92 / GD92C Case and Cover Assemblies



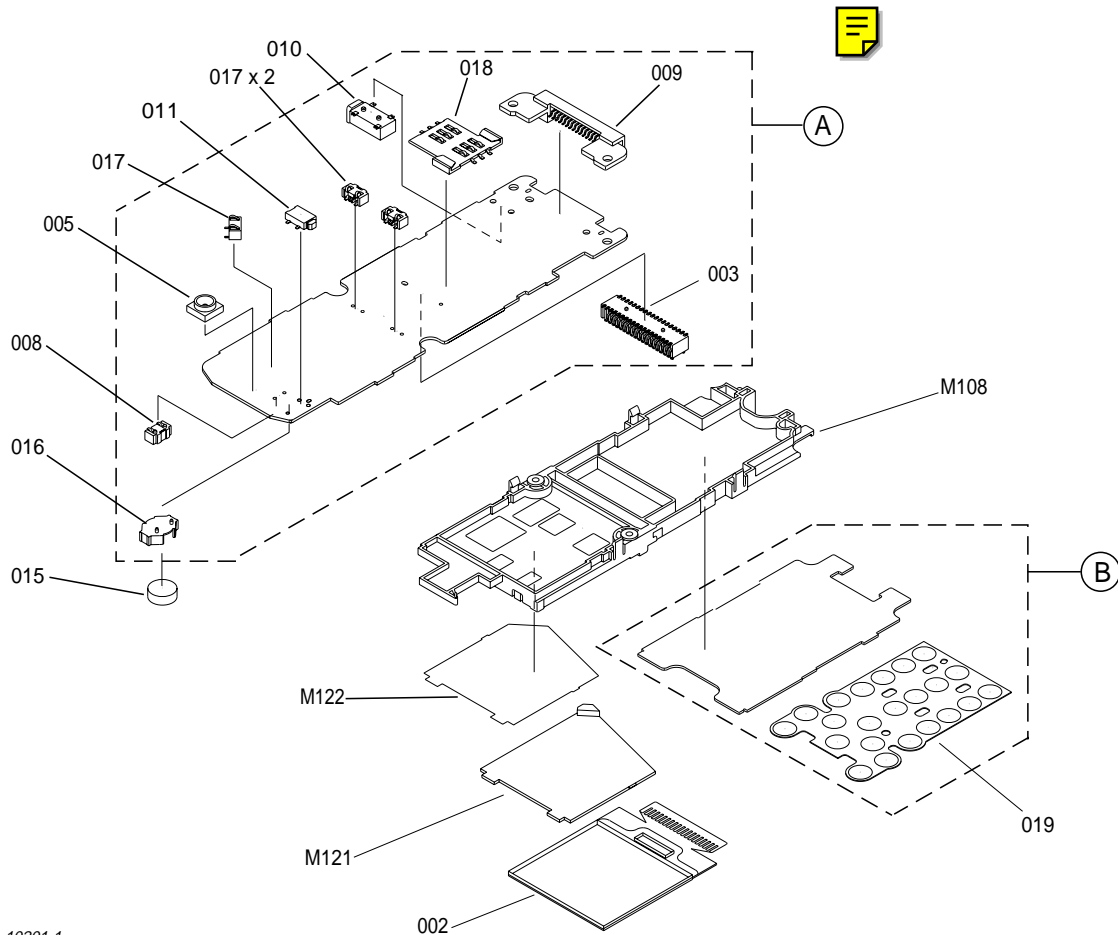
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Figure 7.2: GD92 / GD92C Case Parts

Ref	Part Number	Description
A	GD92CVR01B	Front Cover Assy, Blue
A	GD92CVR01T	Front Cover Assy, Titanium
	includes:	
	RECEIVER CUSHION (M106)	
	LCD CUSHION (M107)	
	ALERT LED LENS (M118)	
B	GD92CAS01B	Case Assembly, Blue
B	GD92CAS01T	Case Assembly, Titanium
	includes:	
	RF CONNECTOR CUSHION (M109)	
	SPEAKER CUSHION (M112)	
M103	2EA575AAAA	LCD PANEL
M104	2CA516AAAA	MEMO KEY, BLUE
	2CA516AABA	MEMO KEY, SILVER GREY
M105	6TA546AAAA	KEYPAD, BLUE
	6TA546AABA	KEYPAD, GREY
M108	2FA542A	CHASSIS
M110	6RA507AAAA	RF CONNECTOR CAP, BLUE
	6RA507AADA	RF CONNECTOR CAP, GREY
M111	4JA563B	RF SHIELD CASE

Ref	Part Number	Description
M113	3Z70054B	SCREW, M1.6 x 6mm
M114	4HA532A	ANTENNA CONTACT
M116	2AA503AAAA	BATTERY HOOK, BLUE
	2AA503AABA	BATTERY HOOK, GREY
M117	4N70042A	HOOK SPRING
M118	2QA572A	ALERT LED LENS
M119	4CA520AAAA	H/S JACK CAP, BLUE
	4CA520AABA	H/S JACK CAP, GREY
M120	2RA592A	RECEIVER HOLDER
001	HH76016A	RECEIVER
004	9ZA791A	MICROPHONE UNIT
006	HS76006A	DTHF SPEAKER
007	BD76012A	VIBRATE MOTOR UNIT
012	AN76097AAAA	ANTENNA, DARK GREY
	AN76097AABA	ANTENNA, LIGHT GREY

7.1.3. Sub-Assemblies



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Figure 7.3: Sub-Assemblies (GD52 / GD92 / GD92C)

Ref	Part Number		Description
	GD52	GD92 / GD92C	
A	See Section 7.2.1	See Section 7.2.1	MAIN BOARD ASSEMBLY
B	GD52KPCB01	GD92KPCB01	KEYPAD PCB ASSEMBLY
M108	2FA543A	2FA542A	CHASSIS
M121	2QA577A	2QA571A	LIGHT PIPE
M122	6DA525A	6DA552A	REFLECTOR SHEET
003	PY76036B	PY76036B	INTER-BOARD CONNECTOR
005	PY6037B	PY6037B	EXTERNAL RF CONNECTOR
008	4FA018AZAJ	4FA018ZAJ	BTM CONNECTOR
009	JA76026A	JA76026A	I/O CONNECTOR
010	JC76001A	JC76001A	H/S JACK SOCKET
011	not used	EVQPSR02K	MEMO KEY SWITCH
015	ML616S	ML616S	BACK-UP BATTERY
016	K3ZZ00200009	K3ZZ00200009	BACK-UP BATTERY HOLDER
017	PY70641A	PY70641A	BATTERY/SPKR CONNECTOR
018	JS76002A	JS76002A	SIM CONNECTOR
019	SY76024A	SY76024A	KEYPAD SWITCH PANEL

7.2. Printed Circuit Boards (PCBs)

7.2.1. Main PCB: Variants

Model EB-GD52 & EB-GD92			Name: Main PCB Variants
Ref	Part Number		Description
	GD52	GD92	
	GD52BRD001	GD92BRD001	MAIN PCB STANDARD PROGRAM
	GD52BRD002	GD92BRD002	MAIN PCB BINARING PROGRAM
	GD52BRD003	GD92BRD003	MAIN PCB CELCOM PROGRAM
	GD52BRD004	GD92BRD004	MAIN PCB AIRTEL PROGRAM
	GD52BRD005	GD92BRD005	MAIN PCB EUROTTEL PROGRAM
	GD52BRD006	GD92BRD006	MAIN PCB MOVISTAR PROGRAM
	GD52BRD007	GD92BRD007	MAIN PCB S.F.R. PROGRAM
	GD52BRD008	GD92BRD008	MAIN PCB WESTEL PROGRAM
	GD52BRD009	GD92BRD009	MAIN PCB HUTCHISON PROGRAM
	GD52BRD010	GD92BRD010	MAIN PCB PLUS GSM PROGRAM
	GD52BRD011	GD92BRD011	MAIN PCB TURKCELL PROGRAM
	GD52BRD012	GD92BRD012	MAIN PCB FRANCETEL PROGRAM
	GD52BRD013	GD92BRD013	MAIN PCB FT FTMS PROGRAM
	GD52BRD014	GD92BRD014	MAIN PCB TELESTET PROGRAM
	GD52BRD015	GD92BRD015	MAIN PCB ACTIVA PROGRAM
	GD52BRD016	GD92BRD016	MAIN PCB TMN PROGRAM
	GD52BRD017	GD92BRD017	MAIN PCB PANNON PROGRAM
	GD52BRD018	GD92BRD018	MAIN PCB VODACOM PROGRAM
	GD52BRD019	GD92BRD019	MAIN PCB NETCOM PROGRAM
	GD52BRD020	GD92BRD020	MAIN PCB K.P.N. PROGRAM
	GD52BRD021	GD92BRD021	MAIN PCB MOBILCOM PROGRAM
	GD52BRD022	GD92BRD022	MAIN PCB TELESTRA PROGRAM

Model EB-GD52 & EB-GD92			Name: Main PCB Variants
Ref	Part Number		Description
	GD52	GD92	
	GD52BRD023	GD92BRD023	MAIN PCB E.R.A. PROGRAM
	GD52BRD024	GD92BRD024	MAIN PCB PAYT VODAFONE PROGRAM
	GD52BRD025	GD92BRD025	MAIN PCB CHINESE ENABLED PROGRAM
	GD52BRD026	GD92BRD026	MAIN PCB TMN PROGRAM
	GD52BRD027	GD92BRD027	MAIN PCB PAEGAS PROGRAM
	GD52BRD028	GD92BRD028	MAIN PCB EUROTTEL CZ CONTRACT PROGR
	GD52BRD029	GD92BRD029	MAIN PCB MOVISTAR ACTIVA PROGRAM
	GD52BRD030	GD92BRD030	MAIN PCB DIGIFONE PROGRAM
	GD52BRD031	GD92BRD031	MAIN PCB SFR CONTRACT PROGRAM
	GD52BRD032	GD92BRD032	MAIN PCB SFR PRE-PAID PROGRAM
	GD52BRD033	GD92BRD033	MAIN PCB AIRTEL PRE-PAID PROGRAM
	GD52BRD034	GD92BRD034	MAIN PCB SONOFON PROGRAM
	GD52BRD035	GD92BRD035	MAIN PCB SINGTEL PROGRAM

7.2.2. GD52 Main PCB

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C101	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C103	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C104	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C105	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C106	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C107	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C108	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C109	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C112	F1G1HR50A391	CAP CER 0.5pF +/-0.25pF 50V NP	
C113	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C114	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C116	F3F1A1560001	CAP TANT 15uF 20% 10V SMD CASE	
C118	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C123	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C125	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C127	F3F1A1060005	CAP TANT 10uF 20% 10V SMD CASE	
C131	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C132	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C133	F1G1H270A409	CAP CER 27pF 5% 50V NP0 SMD 10	
C134	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C135	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C136	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C137	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C138	F1H1E223A029	CAP CER 22nF 10% 25V X7R SMD 1	
C139	ECUE1H391KBQ	CAP CER 390pF 10% 50V X7R SMD	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C141	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C142	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C143	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C144	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C145	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C146	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C148	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C152	ECUE1H820JCQ	CAP CER 82pF 5% 50V NP0 SMD 10	
C153	ECUE1H820JCQ	CAP CER 82pF 5% 50V NP0 SMD 10	
C154	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C155	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C156	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	
C157	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C158	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C159	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	
C161	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C162	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C163	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C164	ECUE1E221KBQ	CAP CER 220pF 10% 25V X7R SMD	
C201	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C202	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C204	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C205	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C206	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C207	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C208	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C306	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C307	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C308	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C309	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C310	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C311	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C312	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C313	F1G1E1820001	CAP CER 1.8nF 10% 25V X7R SMD	
C314	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C315	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C316	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C320	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C321	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C322	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C323	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C324	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C350	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C353	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C355	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C356	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C357	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C358	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C360	ECUE1H680JCQ	CAP CER 68pF 5% 50V NP0 SMD 10	
C401	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	
C402	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C403	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C209	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C211	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C212	F1G1H4R0A404	CAP CER 4pF +/- 0.25pF 50V NP0	
C213	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C214	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C215	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C216	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C217	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	
C219	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C223	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C225	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C226	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C227	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C228	F1G1H5R0A404	CAP CER 5pF +/-0.25pF 50V NP0	
C229	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C230	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C231	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C232	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C234	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C235	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C236	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C301	ECUE1H122KBQ	CAP CER 1.2nF 10% 50V X7R SMD	
C302	F1J1E1030005	CAP CER 10nF 10% 25V X7R SMD 2	
C303	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C304	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C305	ECUE1E221KBQ	CAP CER 220pF 10% 25V X7R SMD	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C404	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C405	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	
C406	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C407	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C408	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C409	F3F1A1060005	CAP TANT 10uF 20% 10V SMD CASE	
C605	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C606	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C607	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C608	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C609	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C610	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C611	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C612	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C613	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C614	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C615	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C616	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C617	F1G1E2720001	CAP CER 2.7nF 10% 25V X7R SMD	
C618	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C619	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C620	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C621	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C622	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C623	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C624	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C625	F3E0G2260002	CAP TANT 22uF 20% 4V SMD CASE	
C626	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C627	F3E1A4750001	CAP TANT 4.7uF 20% 10V SMD CAS	
C628	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C629	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C630	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C631	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C632	F1G1E2220001	CAP CER 2.2nF 10% 25V X7R SMD	
C633	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C634	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C638	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C639	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C640	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C641	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C642	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C643	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C644	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C646	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C647	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C649	F1G1H150A409	CAP CER 15pF 5% 50V NP0 SMD 10	
C651	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C652	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C657	F1G1C3330001	CAP CER 33nF 10% 16V X5R SMD 1	
C658	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C660	F1G1C3330001	CAP CER 33nF 10% 16V X5R SMD 1	
C661	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C706	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C707	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C708	ECUE1E331KBQ	CAP CER 330pF 10% 25V X7R SMD	
C709	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C710	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C711	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C712	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C713	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C714	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C716	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C723	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C724	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
CN101	PY76037A	CONNECTOR RF (FOR GD52/92)	
CN601	PY76036B	CONNECTOR BOARD TO BOARD 33 PI	
CN604	JA76026A	CONNECTOR I/O 14 WAY SMD	
CN605	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
CN606	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
CN607	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
D602	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D603	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D604	B0BD6R800004	DIODE UMZ6.8EN ZENER 6.8V QUAD	
D605	B0JCMC000004	DIODE RB491DT146 SCHOTTKY 20V	
D606	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D607	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D608	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
C662	F1J1A4750004	CAP CER 4.7uF -20+80% 10V Y5V	
C663	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C664	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C668	F3E1A2250001	CAP TANT 2.2uF 20% 10V SMD CAS	
C669	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C671	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C672	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C673	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C674	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C675	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C676	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C677	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C678	F3F1A1560001	CAP TANT 15uF 20% 10V SMD CASE	
C681	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C683	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C685	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C687	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C689	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C690	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C691	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	
C692	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C696	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C699	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C700	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C704	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C705	F1G1A1040002	CAP CER 100nF 10% 10V X7R SMD	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
D609	MAZT068H0L	DIODE MAZT068H0L ZENER 6.8V SM	
D610	MAZT068H0L	DIODE MAZT068H0L ZENER 6.8V SM	
D612	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D613	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D614	B0JCDD000001	DIODE RB521S-30 SCHOTTKY 30V 2	
D615	MAZT068H0L	DIODE MAZT068H0L ZENER 6.8V SM	
D616	MAZT068H0L	DIODE MAZT068H0L ZENER 6.8V SM	
D618	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D619	MA2S11100L	DIODE MA2S111 80V 100mA SMD SS	
D620	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D621	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D625	B0JCDD000001	DIODE RB521S-30 SCHOTTKY 30V 2	
DS603	LNJ115W8PRA	DIODE LED GREEN/RED 10mA SMD 1	
DS604	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS605	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS606	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS607	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
E101	B9Z000000018	COUPLER 897.5 MHz SMD 2012 6PI	
E102	EHFFD1729	COUPLER 1.747 GHz SMD 2012 6PI	
FL101	EXCML16A270U	SUPPRESSOR EMI 27 OHM 4A SMD 1	
FL102	EXCML16A270U	SUPPRESSOR EMI 27 OHM 4A SMD 1	
FL201	EFCH9418MTYF	FILTER SAW RX GSM/PCN SMD	
FL202	J0E1847B0002	FILTER DUAL LC RX SMD	
FL203	EFCH225MDQA2	FILTER IF SAW 225MHz SMD	
J601	JC76001A	CONNECTOR AUDIO JACK SKT 2.5mm	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
L101	ELJRE5N6JF2	INDUCTOR 5.6nH 5% SMD 1608	
L102	G1C3N9Z00004	INDUCTOR 3.9nH +/-0.3nH SMD 10	
L104	G1C33NJ00009	INDUCTOR 33nH 5% SMD 1005	
L105	ELJRE5N6JF2	INDUCTOR 5.6nH 5% SMD 1608	
L108	G1C10NJ00008	INDUCTOR 10nH 5% SMD 1005	
L109	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L151	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L152	G1C15NJ00008	INDUCTOR 15nH 5% SMD 1005	
L201	G1C10NJ00008	INDUCTOR 10nH 5% SMD 1005	
L203	G1C2N7Z00007	INDUCTOR 2.7nH +/-0.3nH SMD 10	
L204	G1C8N2J00004	INDUCTOR 8.2nH 5% SMD 1005	
L205	G1C6N8J00004	INDUCTOR 6.8nH 5% SMD 1005	
L206	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L208	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L209	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L210	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L211	G1CR22J00006	INDUCTOR 220nH 5% SMD 1608	
L212	ELJRE56NJF3	INDUCTOR 56nH 5% SMD 1608	
L213	ELJRER12JF3	INDUCTOR 120nH 5% SMD 1608	
L214	G1CR10J00010	INDUCTOR 100nH 5% SMD 1005	
L215	G1C3N3Z00005	INDUCTOR 3.3nH +/-0.3nH SMD 10	
L217	G1C15NJ00008	INDUCTOR 15nH 5% SMD 1005	
L218	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L219	G1CR18J00004	INDUCTOR 180nH 5% SMD 1608	
L220	ELJRER12JF3	INDUCTOR 120nH 5% SMD 1608	
L303	G1C39NJ00009	INDUCTOR 39nH 5% SMD 1005	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
L601	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L602	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L603	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L604	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L605	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L606	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
M603	4FA018AZAJ	2 PIN CONTACT	
Q103	B1GKCFLL0006	TRANSISTOR UMD2N DUAL SMD UMT6	
Q104	B1GKCFLL0006	TRANSISTOR UMD2N DUAL SMD UMT6	
Q106	XP0338900L	TRANSISTOR XP03389 NPN/PNP 10K	
Q301	B1GKCFJJ0006	TRANSISTOR UMC3NTR PNP+NPN SMD	
Q601	2SD15110FL	TRANSISTOR 2SD15110FL NPN HFE=	
Q602	B1DHDC000006	TRANSISTOR SI3443DV MOSFET 20V	
Q603	B1GBCFNN0015	TRANSISTOR DTC144EM NPN 47K SM	
R101	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R102	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R104	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R105	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	
R106	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R109	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R110	ERJ2GEJ122X	RES 1.2K OHM 5% 1/16W SMD 1005	
R111	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R112	ERJ2GEJ122X	RES 1.2K OHM 5% 1/16W SMD 1005	
R114	ERJ2GEJ271X	RES 270 OHM 5% 1/16W SMD 1005	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
R115	ERJ2GEJ561X	RES 560 OHM 5% 1/16W SMD 1005	
R116	ERJ2GEJ270X	RES 27 OHM 5% 1/16W SMD 1005	
R117	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R118	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R119	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R120	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R121	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R122	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R123	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R124	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R150	ERJ2GEJ121X	RES 120 OHM 5% 1/16W SMD 1005	
R151	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R152	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R153	ERJ2GEJ181X	RES 180 OHM 5% 1/16W SMD 1005	
R154	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R155	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R156	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R157	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R158	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R159	ERJ2GEJ273X	RES 27K OHM 5% 1/16W SMD 1005	
R160	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R161	ERJ2GEJ333X	RES 33K 5% 1/16W SMD 1005	
R163	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R301	ERJ2GEJ332X	RES 3.3K OHM 5% 1/16W SMD 1005	
R302	ERJ2GEJ562X	RES 5.6K OHM 5% 1/16W SMD 1005	
R304	ERJ2GEJ150X	RES 15 OHM 5% 1/16W SMD 1005	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
R305	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R306	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	
R307	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R308	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R309	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R310	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R312	ERJ2GEJ120X	RES 12 OHM 5% 1/16W SMD 1005	
R313	ERJ2GEJ270X	RES 27 OHM 5% 1/16W SMD 1005	
R314	ERJ2GEJ471X	RES 470 OHM 5% 1/16W SMD 1005	
R315	ERJ2GEJ471X	RES 470 OHM 5% 1/16W SMD 1005	
R350	ERJ2GEJ472X	RES 4.7K OHM 5% 1/16W SMD 1005	
R351	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R353	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R355	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R601	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R602	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R603	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R604	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R605	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R606	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R607	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R612	ERJ2GEJ391X	RES 390 OHM 5% 1/16W SMD 1005	
R613	ERJ2GEJ181X	RES 180 OHM 5% 1/16W SMD 1005	
R614	ERJ2GEJ153X	RES 15K OHM 5% 1/16W SMD 1005	
R615	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R616	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
R617	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R618	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R619	ERJ2GEJ562X	RES 5.6K OHM 5% 1/16W SMD 1005	
R620	ERJ2GEJ150X	RES 15 OHM 5% 1/16W SMD 1005	
R621	ERJ2GEJ102X	RES 1K OHM 5% 1/16W SMD 1005	
R622	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R623	ERJ3RED105V	RES 1M OHM 0.5% 1/16W SMD 1608	
R624	ERJ3RED274V	RES 270K OHM 0.5% 1/16W SMD 16	
R625	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R626	ERJ2GEJ393X	RES 39K OHM 5% 1/16W SMD 1005	
R627	ERJ2GEJ124X	RES 120K OHM 5% 1/16W SMD 1005	
R628	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R630	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R631	ERJ2GEJ224X	RES 220K OHM 5% 1/16W SMD 1005	
R632	ERJ2GEJ120X	RES 12 OHM 5% 1/16W SMD 1005	
R633	ERJ2GEJ120X	RES 12 OHM 5% 1/16W SMD 1005	
R634	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R635	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R636	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R637	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R639	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R640	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R641	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R642	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R643	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R644	ERJ6RSFR15V	RES 0.15 OHM 1% 1/10W SMD 2012	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
R687	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	
R690	ERJ2GEJ471X	RES 470 OHM 5% 1/16W SMD 1005	
U101	C5CB00000023	PA PF08103B-02-TB DUAL GSM/DCS	
U102	J2FZ00000003	DIPLXER ANTENNA SW GSM/DCS SM	
U103	UY76130A	VCO TX 9.1mmx7.0mm SMD	
U104	C1CB00000867	IC HD155133TF TX/RX PLL BRIGHT	
U150	C1CB00000870	IC HD155171NPEL DUAL BAND APC	
U301	UY76129A	VCO RF SMD 9.1mm x 7.0mm	
U302	UY76165A	VCO IF 538-566MHz SMD	
U350	H1D1305B0005	TCVCXO 13MHz SMD 7.0 x 5.2 x 1	
U351	C0JBAB000007	IC TC7S04FU INVERTER SMD SSOP5	
U401	C0DBZFC00004	IC R5320G001A VOLTAGE REGULATO	
U601	UY76158A	IC HERCULES WITH 2M SRAM 0.8mm	
U602	UY76147A	IC OMEGA 0.8MM PITCH SMD BGA10	
U604	UY76126A	IC BH6007KUT ACCESSORY ASIC 0.	
X608	JS76002A	CONNECTOR SIM HOLDER GSM 6 PIN	
Y601	H0J327200022	CRYSTAL 32.768KHz SMD 7.0x1.5x	

Model EB-GD52		Name: GD52 Main PCB	
Ref	Part Number	Description	Notes
R645	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R646	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R649	ERJ2GEJ332X	RES 3.3K OHM 5% 1/16W SMD 1005	
R650	ERJ2GEJ681X	RES 680 OHM 5% 1/16W SMD 1005	
R652	EXB24V331JX	RES NETWORK 330 OHMx2 5% 1/16W	
R654	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R655	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R656	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R657	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R659	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R664	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R666	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R668	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R669	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R671	ERJ2GEJ272X	RES 2.7K OHM 5% 1/16W SMD 1005	
R672	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R674	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R675	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R677	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R678	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R679	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R680	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R681	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R682	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R685	ERJ2GEJ391X	RES 390 OHM 5% 1/16W SMD 1005	
R686	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	

7.2.3. GD92 / GD92C Main PCB

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C101	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C104	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C105	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C106	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C107	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C108	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C109	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C112	F1G1HR50A391	CAP CER 0.5pF +/-0.25pF 50V NP	
C113	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C114	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C116	F3F1A1560001	CAP TANT 15uF 20% 10V SMD CASE	
C118	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C123	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C125	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C127	F3F1A1060005	CAP TANT 10uF 20% 10V SMD CASE	
C131	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C132	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C133	F1G1H270A409	CAP CER 27pF 5% 50V NP0 SMD 10	
C134	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C135	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C136	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C137	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C138	F1H1E223A029	CAP CER 22nF 10% 25V X7R SMD 1	
C139	ECUE1H391KBQ	CAP CER 390pF 10% 50V X7R SMD	
C141	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C142	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C143	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C144	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C145	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C146	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C148	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C152	ECUE1H820JCQ	CAP CER 82pF 5% 50V NP0 SMD 10	
C153	ECUE1H820JCQ	CAP CER 82pF 5% 50V NP0 SMD 10	
C154	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C155	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C156	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	
C157	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C158	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C159	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	
C161	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C162	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C163	ECUE1E681KBQ	CAP CER 680pF 10% 25V X7R SMD	
C164	ECUE1E221KBQ	CAP CER 220pF 10% 25V X7R SMD	
C201	F1G1H220A409	CAP CER 22pF 5% 50V NP0 SMD 10	
C202	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C204	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C205	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C206	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C207	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C208	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C209	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C211	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C212	F1G1H4R0A404	CAP CER 4pF +/- 0.25pF 50V NP0	
C213	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C214	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C215	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C216	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C217	F1G1H1R5A391	CAP CER 1.5pF +/-0.25pF 50V NP	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C321	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C322	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C323	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C324	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C350	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C353	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C355	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C356	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C357	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C358	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C360	ECUE1H680JCQ	CAP CER 68pF 5% 50V NP0 SMD 10	
C401	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	
C402	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C403	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	
C404	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C405	ECST0JZ106R	CAP TANT 10uF 20% 6.3V SMD CAS	
C406	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C407	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C408	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C409	F3F1A1060005	CAP TANT 10uF 20% 10V SMD CASE	
C605	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C606	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C607	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C608	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C609	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C610	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C611	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C612	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C613	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	
C614	F1J1A1050011	CAP CER 1uF 10% 10V X5R SMD 20	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C219	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C223	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C225	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C226	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C227	F1G1H2R0A391	CAP CER 2pF +/-0.25pF 50V NP0	
C228	F1G1H5R0A404	CAP CER 5pF +/-0.25pF 50V NP0	
C229	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C230	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C231	F1G1H6R0A406	CAP CER 6pF +/-0.5pF 50V NP0 S	
C232	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C234	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C235	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C236	F1G1H1R0A391	CAP CER 1pF +/-0.25pF 50V NP0	
C301	ECUE1H122KBQ	CAP CER 1.2nF 10% 50V X7R SMD	
C302	F1J1E1030005	CAP CER 10nF 10% 25V X7R SMD 2	
C303	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C304	F1G1H3R0A442	CAP CER 3pF +/-0.25pF 50V NP0	
C305	ECUE1E221KBQ	CAP CER 220pF 10% 25V X7R SMD	
C306	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C307	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C308	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C309	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C310	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C311	F1G1E1020001	CAP CER 1nF 10% 25V X7R SMD 10	
C312	F1G1C1030002	CAP CER 10nF 10% 16V X7R SMD 1	
C313	F1G1E1820001	CAP CER 1.8nF 10% 25V X7R SMD	
C314	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C315	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C316	ECUE1H151JCQ	CAP CER 150pF 5% 50V NP0 SMD 1	
C320	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C615	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C616	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C617	F1G1E2720001	CAP CER 2.7nF 10% 25V X7R SMD	
C618	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C619	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C620	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C621	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C622	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C623	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C624	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C625	F3E0G2260003	CAP TANT 22uF 20% 4V SMD CASE	
C626	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C627	F3E1A4750001	CAP TANT 4.7uF 20% 10V SMD CAS	
C628	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C629	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C630	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C631	F1G1H100A406	CAP CER 10pF +/-0.5pF 50V NP0	
C632	F1G1E2220001	CAP CER 2.2nF 10% 25V X7R SMD	
C633	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C634	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C635	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C638	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C639	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C640	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C641	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C642	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C643	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C644	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C646	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C647	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C649	F1G1H150A409	CAP CER 15pF 5% 50V NP0 SMD 10	
C651	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C652	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C657	F1G1C3330001	CAP CER 33nF 10% 16V X5R SMD 1	
C658	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C660	F1G1C3330001	CAP CER 33nF 10% 16V X5R SMD 1	
C661	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C662	F1J1A4750004	CAP CER 4.7uF -20+80% 10V Y5V	
C663	F1H1A224A006	CAP CER 220nF 10% 10V X7R SMD	
C664	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C669	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C671	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C671	F3E1A2250001	CAP TANT 2.2uF 20% 10V SMD CAS	
C672	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C673	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C674	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C675	F3E0J1060005	CAP TANT 10uF 20% 6.3V SMD CAS	
C676	ECUE1H470JCQ	CAP CER 47pF 5% 50V NP0 SMD 10	
C677	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C678	F3F1A1560001	CAP TANT 15uF 20% 10V SMD CASE	
C681	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C683	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C685	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C687	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C689	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C690	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C691	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C692	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C696	ECUE1H330JCQ	CAP CER 33pF 5% 50V NP0 SMD 10	
C699	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
D612	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D613	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D614	B0JCDD000001	DIODE RB521S-30 SCHOTTKY 30V 2	
D618	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D619	MA2S11100L	DIODE MA2S111 80V 100mA SMD SS	
D620	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D621	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D623	B0JCDC000001	DIODE RB520S-30 SCHOTTKY 30V 2	
D624	B0JCDD000001	DIODE RB521S-30 SCHOTTKY 30V 2	
D625	B0JCDD000001	DIODE RB521S-30 SCHOTTKY 30V 2	
D626	MA4SD0100L	DIODE MA4SD0100L DUAL 30V 30mA	
DS601	LNJ717W80RAV	DIODE LED GREEN/ORANGE/BLUE SM	
DS603	LNJ115W8PRA	DIODE LED GREEN/RED 10mA SMD 1	
E101	B9Z000000018	COUPLER 897.5 MHz SMD 2012 6PI	
E102	EHFFD1729	COUPLER 1.747 GHz SMD 2012 6PI	
FL101	EXCML16A270U	SUPPRESSOR EMI 27 OHM 4A SMD 1	
FL102	EXCML16A270U	SUPPRESSOR EMI 27 OHM 4A SMD 1	
FL201	EFCH9418MTYF	FILTER SAW RX GSM/PCN SMD	
FL202	J0E1847B0002	FILTER DUAL LC RX SMD	
FL203	EFCH225MDQA2	FILTER IF SAW 225MHz SMD	
J601	JC76001A	CONNECTOR AUDIO JACK SKT 2.5mm	
L101	ELJRE5N6JF2	INDUCTOR 5.6nH 5% SMD 1608	
L102	G1C3N9Z00004	INDUCTOR 3.9nH +/-0.3nH SMD 10	
L104	G1C33NJ00009	INDUCTOR 33nH 5% SMD 1005	
L105	ELJRE5N6JF2	INDUCTOR 5.6nH 5% SMD 1608	
L108	G1C10NJ00008	INDUCTOR 10nH 5% SMD 1005	
L151	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
C700	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C701	F1H0J1050009	CAP CER 1uF 10% 6.3V X5R SMD 1	
C702	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C703	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C704	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C705	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C706	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C707	ECUE1H101JCQ	CAP CER 100pF 5% 50V NP0 SMD 1	
C708	ECUE1E331KBQ	CAP CER 330pF 10% 25V X7R SMD	
C710	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C711	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C712	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C713	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
C717	F1G1A104A012	CAP CER 100nF 10% 10V X5R SMD	
CN101	PY76037A	CONNECTOR RF (FOR GD52/92)	
CN601	PY76036B	CONNECTOR BOARD TO BOARD 33 PI	
CN603	K3ZZ00200009	HOLDER FOR BATTERY CELL	
CN604	JA76026A	CONNECTOR I/O 14 WAY SMD	
CN605	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
CN606	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
CN607	PY76041A	CONNECTOR BATTERY 2 PIN 2A SMD	
D602	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D603	MAZS0470GL	DIODE MAZS0470G ZENER 4.7V SMD	
D604	B0BD6R800004	DIODE UMZ6.8EN ZENER 6.8V QUAD	
D605	B0JCMC000004	DIODE RB491DT146 SCHOTTKY 20V	
D606	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D607	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D608	MAZS0750ML	DIODE MAZS0750ML ZENER 7.5V SM	
D609	B0BD6R800004	DIODE UMZ6.8EN ZENER 6.8V QUAD	
D610	B0BD6R800004	DIODE UMZ6.8EN ZENER 6.8V QUAD	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
L152	G1C15NJ00008	INDUCTOR 15nH 5% SMD 1005	
L201	G1C10NJ00008	INDUCTOR 10nH 5% SMD 1005	
L203	G1C2N7Z00007	INDUCTOR 2.7nH +/-0.3nH SMD 10	
L204	G1C8N2J00004	INDUCTOR 8.2nH 5% SMD 1005	
L205	G1C6N8J00004	INDUCTOR 6.8nH 5% SMD 1005	
L206	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L208	G1C5N6Z00005	INDUCTOR 5.6nH +/-0.3nH SMD 10	
L209	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L210	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L211	G1CR22J00006	INDUCTOR 220nH 5% SMD 1608	
L212	ELJRE56NJF3	INDUCTOR 56nH 5% SMD 1608	
L213	ELJRER12JF3	INDUCTOR 120nH 5% SMD 1608	
L214	G1CR10J00010	INDUCTOR 100nH 5% SMD 1005	
L215	G1C3N3Z00005	INDUCTOR 3.3nH +/-0.3nH SMD 10	
L217	G1C15NJ00008	INDUCTOR 15nH 5% SMD 1005	
L218	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L219	G1CR18J00004	INDUCTOR 180nH 5% SMD 1608	
L220	ELJRER12JF3	INDUCTOR 120nH 5% SMD 1608	
L303	G1C39NJ00009	INDUCTOR 39nH 5% SMD 1005	
L601	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L602	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L603	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L604	ELJRE82NJF3	INDUCTOR 82nH 5% SMD 1608	
L605	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
L606	G1C82NJ00010	INDUCTOR 82nH 5% SMD 1005	
M603	4FA018AZAJ	2 PIN CONTACT	
Q103	B1GKCFLL0006	TRANSISTOR UMD2N DUAL SMD UMT6	
Q104	B1GKCFLL0006	TRANSISTOR UMD2N DUAL SMD UMT6	
Q106	XP0338900L	TRANSISTOR XP03389 NPN/PNP 10K	
Q301	B1GKCFJJ0006	TRANSISTOR UMC3NTR PNP+NPN SMD	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
Q601	2SD15110FL	TRANSISTOR 2SD15110FL NPN HFE=	
Q602	B1DHDC000006	TRANSISTOR SI3443DV MOSFET 20V	
Q603	B1GBCFNN0015	TRANSISTOR DTC144EM NPN 47K SM	
R101	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R102	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R104	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R105	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	
R106	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R109	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R110	ERJ2GEJ122X	RES 1.2K OHM 5% 1/16W SMD 1005	
R111	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R112	ERJ2GEJ122X	RES 1.2K OHM 5% 1/16W SMD 1005	
R114	ERJ2GEJ271X	RES 270 OHM 5% 1/16W SMD 1005	
R115	ERJ2GEJ561X	RES 560 OHM 5% 1/16W SMD 1005	
R116	ERJ2GEJ270X	RES 27 OHM 5% 1/16W SMD 1005	
R117	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R118	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R119	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R120	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R121	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R122	ERJ2GEJ392X	RES 3.9K OHM 5% 1/16W SMD 1005	
R123	ERJ2GEJ123X	RES 12K OHM 5% 1/16W SMD 1005	
R124	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R150	ERJ2GEJ121X	RES 120 OHM 5% 1/16W SMD 1005	
R151	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R152	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R153	ERJ2GEJ181X	RES 180 OHM 5% 1/16W SMD 1005	
R154	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R155	ERJ2GEJ680X	RES 68 OHM 5% 1/16W SMD 1005	
R156	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
R612	ERJ2GEJ391X	RES 390 OHM 5% 1/16W SMD 1005	
R613	ERJ2GEJ181X	RES 180 OHM 5% 1/16W SMD 1005	
R614	ERJ2GEJ153X	RES 15K OHM 5% 1/16W SMD 1005	
R615	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R616	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R617	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R618	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R619	ERJ2GEJ562X	RES 5.6K OHM 5% 1/16W SMD 1005	
R620	ERJ2GEJ150X	RES 15 OHM 5% 1/16W SMD 1005	
R621	ERJ2GEJ102X	RES 1K OHM 5% 1/16W SMD 1005	
R622	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R623	ERJ3RED105V	RES 1M OHM 0.5% 1/16W SMD 1608	
R624	ERJ3RED274V	RES 270K OHM 0.5% 1/16W SMD 16	
R625	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R626	ERJ2GEJ393X	RES 39K OHM 5% 1/16W SMD 1005	
R627	ERJ2GEJ124X	RES 120K OHM 5% 1/16W SMD 1005	
R628	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R630	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R631	ERJ2GEJ224X	RES 220K OHM 5% 1/16W SMD 1005	
R632	ERJ2GEJ120X	RES 12 OHM 5% 1/16W SMD 1005	
R633	ERJ2GEJ120X	RES 12 OHM 5% 1/16W SMD 1005	
R634	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R635	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R636	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R637	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R639	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R640	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R641	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R642	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R643	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
R156	ERJ2GEJ273X	RES 27K OHM 5% 1/16W SMD 1005	
R157	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R158	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R159	ERJ2GEJ273X	RES 27K OHM 5% 1/16W SMD 1005	
R160	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R161	ERJ2GEJ333X	RES 33K 5% 1/16W SMD 1005	
R163	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R301	ERJ2GEJ332X	RES 3.3K OHM 5% 1/16W SMD 1005	
R302	ERJ2GEJ562X	RES 5.6K OHM 5% 1/16W SMD 1005	
R304	ERJ2GEJ150X	RES 15 OHM 5% 1/16W SMD 1005	
R305	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R306	ERJ2GEJ4R7X	RES 4.7 OHM 5% 1/16W SMD 1005	
R307	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R308	ERJ2GEJ821X	RES 820 OHM 5% 1/16W SMD 1005	
R309	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R310	ERJ2GEJ152X	RES 1.5K OHM 5% 1/16W SMD 1005	
R312	ERJ2GEJ470X	RES 47 OHM 5% 1/16W SMD 1005	
R313	ERJ2GEJ270X	RES 27 OHM 5% 1/16W SMD 1005	
R350	ERJ2GEJ472X	RES 4.7K OHM 5% 1/16W SMD 1005	
R351	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R353	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R355	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R601	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R602	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R603	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R604	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R605	ERJ2GEJ101X	RES 100 OHM 5% 1/16W SMD 1005	
R606	ERJ2GEJ151X	RES 150 OHM 5% 1/16W SMD 1005	
R607	ERJ2GEJ121X	RES 120 OHM 5% 1/16W SMD 1005	
R608	ERJ2GEJ121X	RES 120 OHM 5% 1/16W SMD 1005	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
R644	ERJ6RSFR15V	RES 0.15 OHM 1% 1/10W SMD 2012	
R645	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R646	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R647	ERJ2GEJ561X	RES 560 OHM 5% 1/16W SMD 1005	
R648	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R649	ERJ2GEJ332X	RES 3.3K OHM 5% 1/16W SMD 1005	
R650	ERJ2GEJ681X	RES 680 OHM 5% 1/16W SMD 1005	
R651	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R652	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R653	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R654	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R655	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R656	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R657	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R664	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R666	ERJ2GEJ223X	RES 22K OHM 5% 1/16W SMD 1005	
R668	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R669	ERJ2GEJ331X	RES 330 OHM 5% 1/16W SMD 1005	
R671	ERJ2GEJ272X	RES 2.7K OHM 5% 1/16W SMD 1005	
R672	ERJ2GEJ222X	RES 2.2K OHM 5% 1/16W SMD 1005	
R674	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R675	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	GD92
R676	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	GD92C
R677	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R678	ERJ2GE0R00X	RES JUMPER 0 OHM 1A SMD 1005	
R679	ERJ2GEJ103X	RES 10K OHM 5% 1/16W SMD 1005	
R680	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R683	ERJ2GEJ104X	RES 100K OHM 5% 1/16W SMD 1005	
R684	ERJ2GEJ472X	RES 4.7K OHM 5% 1/16W SMD 1005	
R685	ERJ2GEJ391X	RES 390 OHM 5% 1/16W SMD 1005	

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Main PCB	
Ref	Part Number	Description	Notes
S601	EVQPSR02K	SWITCH TACTILE	
U101	C5CB00000023	PA PF08103B-02-TB DUAL GSM/DCS	
U102	J2FZ00000002	DIPLEXER ANT SW GSM/DCS SMD	
U103	UY76130A	VCO TX 9.1mmx7.0mm SMD	
U104	C1CB00000867	IC HD155133TF TX/RX PLL BRIGHT	
U150	C1CB00000870	IC HD155171NPEL DUAL BAND APC	
U301	UY76129A	VCO RF SMD 9.1mm x 7.0mm	
U302	UY76165A	VCO IF 538-566MHz SMD	
U350	TX76001A	TCVCXO 13MHz SMD 7.0x5.0x1.7 4	
U351	C0JBAB000007	IC TC7S04FU INVERTER SMD SSOP5	
U401	C0DBZFC00004	IC R5320G001A VOLTAGE REGULATO	
U601	UY76158A	IC HERCULES WITH 2M SRAM 0.8mm	
U602	UY76147A	IC OMEGA 0.8MM PITCH SMD BGA10	
U604	UY76159A	IC ACCESSORY ASIC 0.4mm PITCH	
U607	C0JBAZ001190	IC RV5C348B RTC OUTPUT ENABLED	
X608	JS76002A	CONNECTOR SIM HOLDER GSM 6 PIN	
Y601	H0J327200022	CRYSTAL 32.768KHz SMD 7.0x1.5x	

7.2.4. GD52 Keypad PCB

Model EB-GD52		Name: GD52 Keypad PCB	
Ref	Part Number	Description	Notes
D801	MA2S11100L	DIODE MA2S111 80V 100mA SMD SS	
DS801	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS802	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS803	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS804	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS805	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS806	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS807	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
DS808	B3ABB0000035	DIODE LED GREEN 2.2V 20mA SMD	
R801	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R802	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R803	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R804	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	

7.2.5. GD92 / GD92C Keypad PCB

Model EB-GD92 / EB-GD92C		Name: GD92 / GD92C Keypad PCB	
Ref	Part Number	Description	Notes
D801	MA2S11100L	DIODE MA2S111 80V 100mA SMD SS	
DS801	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS802	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS803	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS804	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS805	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS806	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS807	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
DS808	LNJ312G8J0MC	DIODE LED GREEN 2.2V 22mA SMD	
R801	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R802	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R803	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	
R804	EXB24V181JX	RES NETWORK 180 OHMx2 5% 1/16W	

7.3. Refurbishment Kits

7.3.1. GD52



Model EB-GD52		Name: Refurbishment Kits	
Ref	Part Number	Description	Notes
	9R5200B	REFURBISHMENT KIT, BLUE	

7.3.2. GD92 / GD92C

Model EB-GD92		Name: Refurbishment Kits	
Ref	Part Number	Description	Notes
	9R9200B	REFURBISHMENT KIT, BLUE	
	9R9200T	REFURBISHMENT KIT, TITANIUM GREY	

7.4. Repair Jigs and Tools

Model EB-GD52/92/92C		Name: Jigs and Tools	
Ref	Part Number	Description	Notes
	IFB004	INTERFACE BOX	
	JT00010	BATTERY CALIBRATION VCU	
	JT00040	GD92 / GD92C RF ADAPTOR	
	JT00041	GD52 / GD92 / GD92C PCB TEST JIG	
	JT00042	GD92 / GD92C TEST BATTERY	
	JT00043	GD52 / GD92 / GD92C INTERFACE CABLE	

Model EB-GD52/92/92C		Name: Jigs and Tools	
Ref	Part Number	Description	Notes
	JT00044	GD52 RF ADAPTOR	
	JT00045	GD52 TEST BATTERY	
	JT00040	GD92 / GD92C RF ADAPTOR	

7.5. Printed Material

7.5.1. Document Packs

NOTE: Document Packs consist of language-specific User Guide, Quick Start and Warranty Guide where applicable.

Model EB-GD52		Name: Document Packs	
Ref	Part Number		Description
	GD52	GD92	
	GD52DPK01	GD92DPK01	ARABIC, ENGLISH
	GD52DPK02	GD92DPK02	CZECH
	GD52DPK03	GD92DPK03	DANISH, GERMAN, EU WARRANTY
	GD52DPK04	GD92DPK04	DANISH EU WARRANTY
	GD52DPK05	GD92DPK05	DUTCH, FRENCH, GERMAN, EU WARRANTY
	GD52DPK06	GD92DPK06	DUTCH, EU WARRANTY
	GD52DPK07	GD92DPK07	
	GD52DPK08	GD92DPK08	ENGLISH, FRENCH
	GD52DPK09	GD92DPK09	ENGLISH, GERMAN, EU WARRANTY
	GD52DPK10	GD92DPK10	ENGLISH, EU WARRANTY, ACCY CARD UK
	GD52DPK11	GD92DPK11	ENGLISH, EU WARRANTY
	GD52DPK12	GD92DPK12	ENGLISH
	GD52DPK13	GD92DPK13	FINNISH, SWEDISH, EU WARRANTY
	GD52DPK14	GD92DPK14	FRENCH, GERMAN, ITALIAN, EU WARRANTY

Model EB-GD52		Name: Document Packs	
Ref	Part Number		Description
	GD52	GD92	
	GD52DPK15	GD92DPK15	FRENCH, EU WARRANTY
	GD52DPK16	GD92DPK16	GERMAN, EU WARRANTY
	GD52DPK17	GD92DPK17	GREEK, EU WARRANTY
	GD52DPK18	GD92DPK18	HUNGARIAN
	GD52DPK19	GD92DPK19	ITALIAN, EU WARRANTY
	GD52DPK20	GD92DPK20	NORWEGIAN, EU WARRANTY
	GD52DPK21	GD92DPK21	POLISH
	GD52DPK22	GD92DPK22	PORTUGUESE, EU WARRANTY
	GD52DPK23	GD92DPK23	RUSSIAN
	GD52DPK24	GD92DPK24	SPANISH, EU WARRANTY
	GD52DPK25	GD92DPK25	SWEDISH, EU WARRANTY
	GD52DPK26	GD92DPK26	TURKISH, EU WARRANTY

7.5.2. Identification of Individual Instructions

On the rear cover of each manual there is a part number. The suffix to this number is the issue level of the manual. For example, the part number for the English GD92 Instruction is 7LB825A, where the final 'A' shows the manual is issue 'A'.

8 CIRCUIT DIAGRAMS

8.1. GD52 Main PCB: Logic

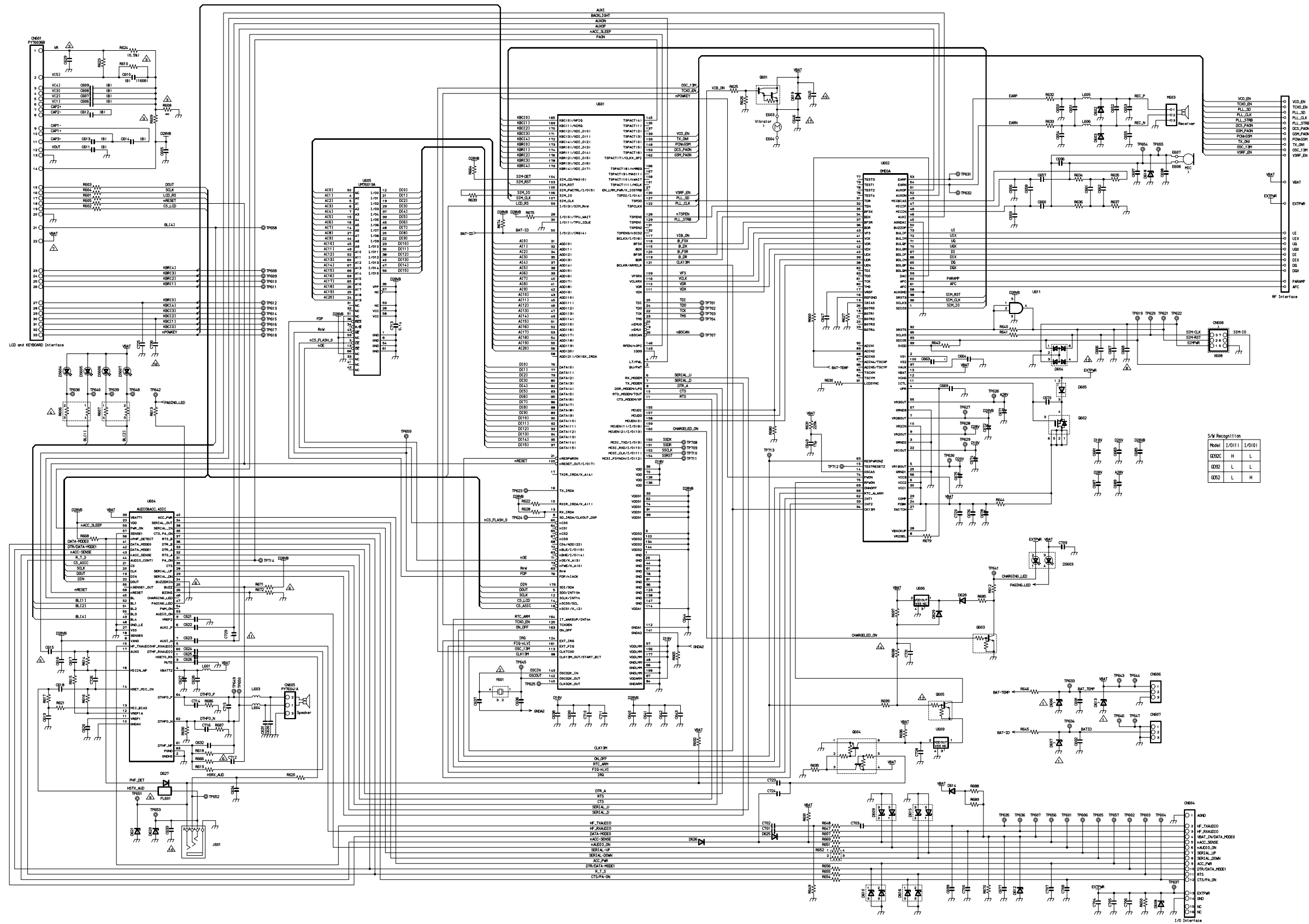


Figure 8.1: Main PCB: RF circuit diagram

8.2. GD52 Main PCB: RF

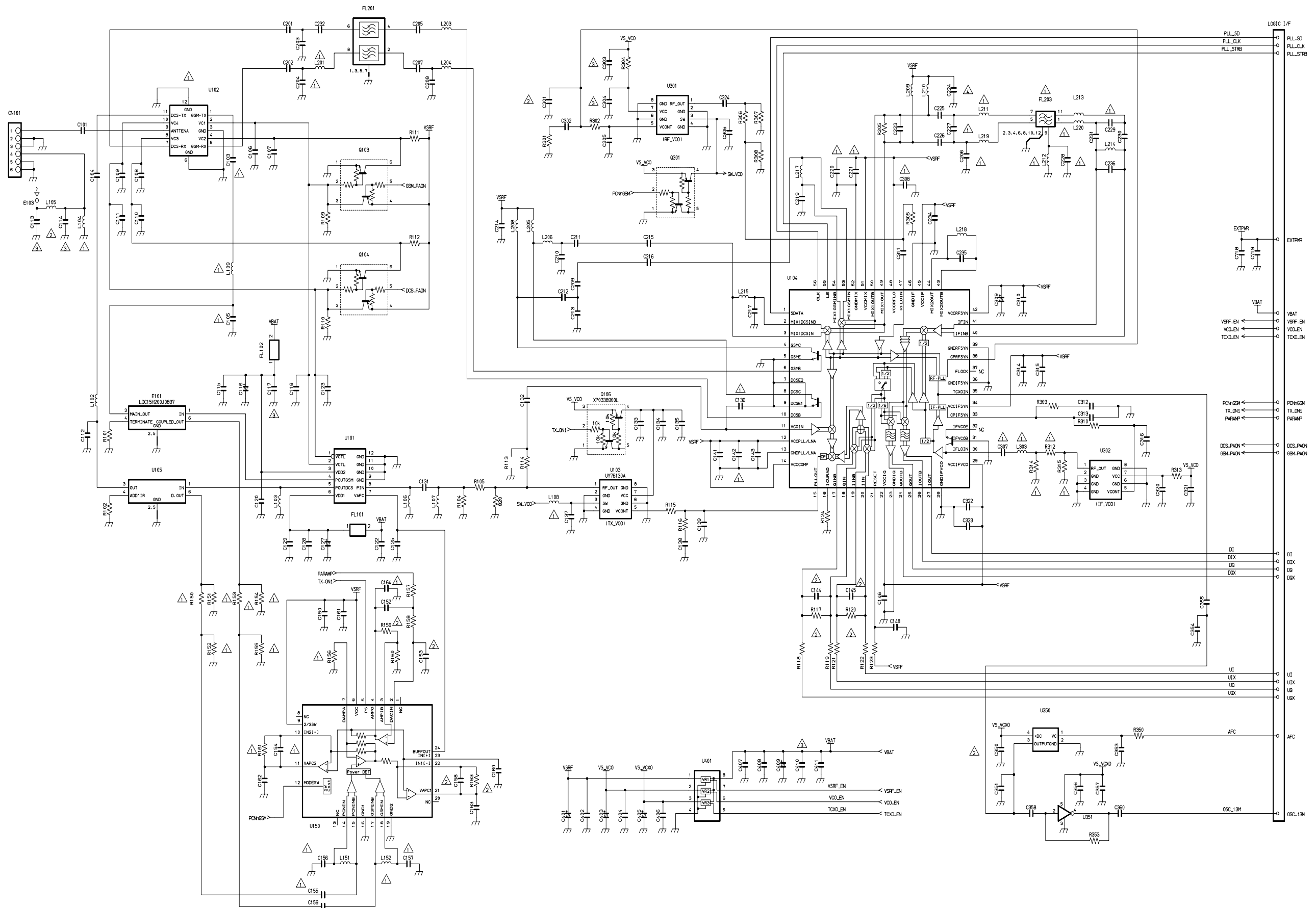
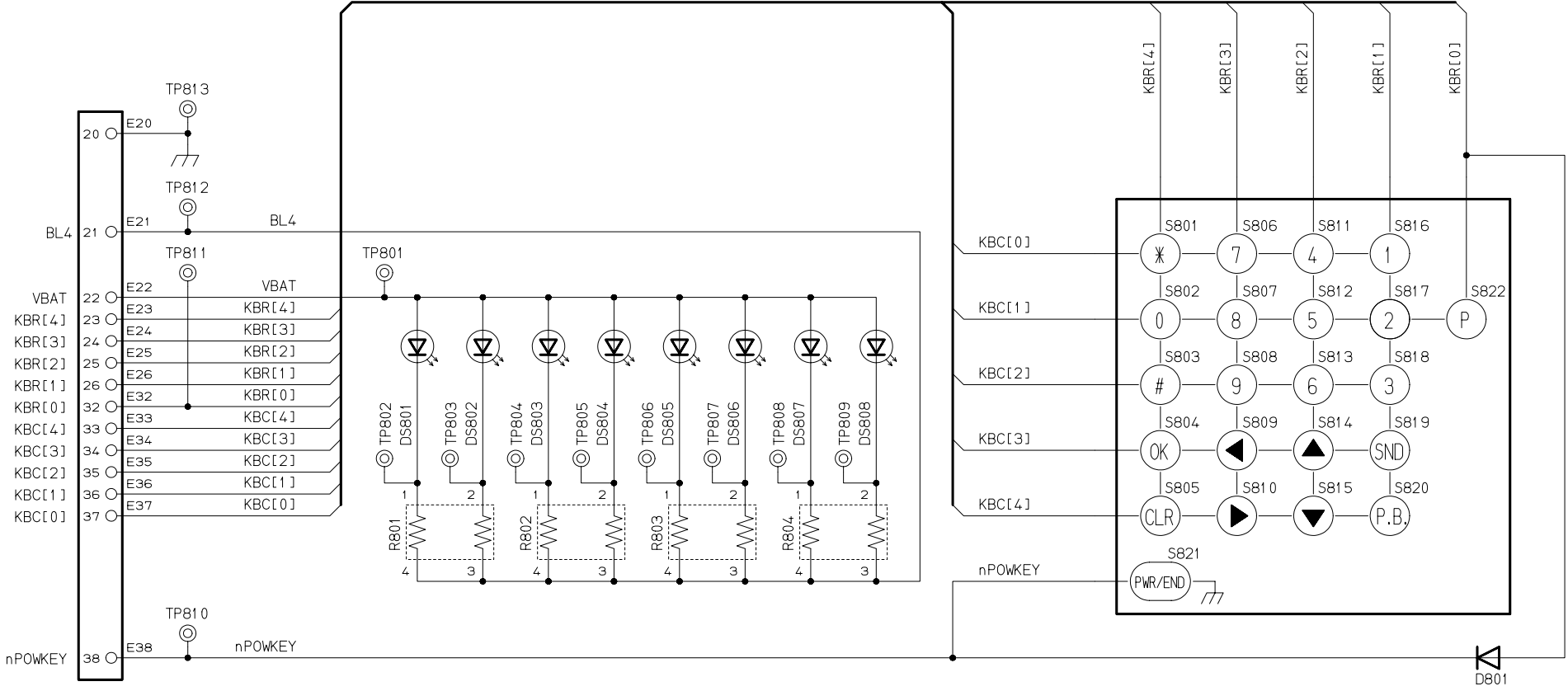


Figure 8.2: Main PCB: Logic circuit diagram

8.3. GD52 Keypad PCB



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8.4. GD92 Main PCB: Logic

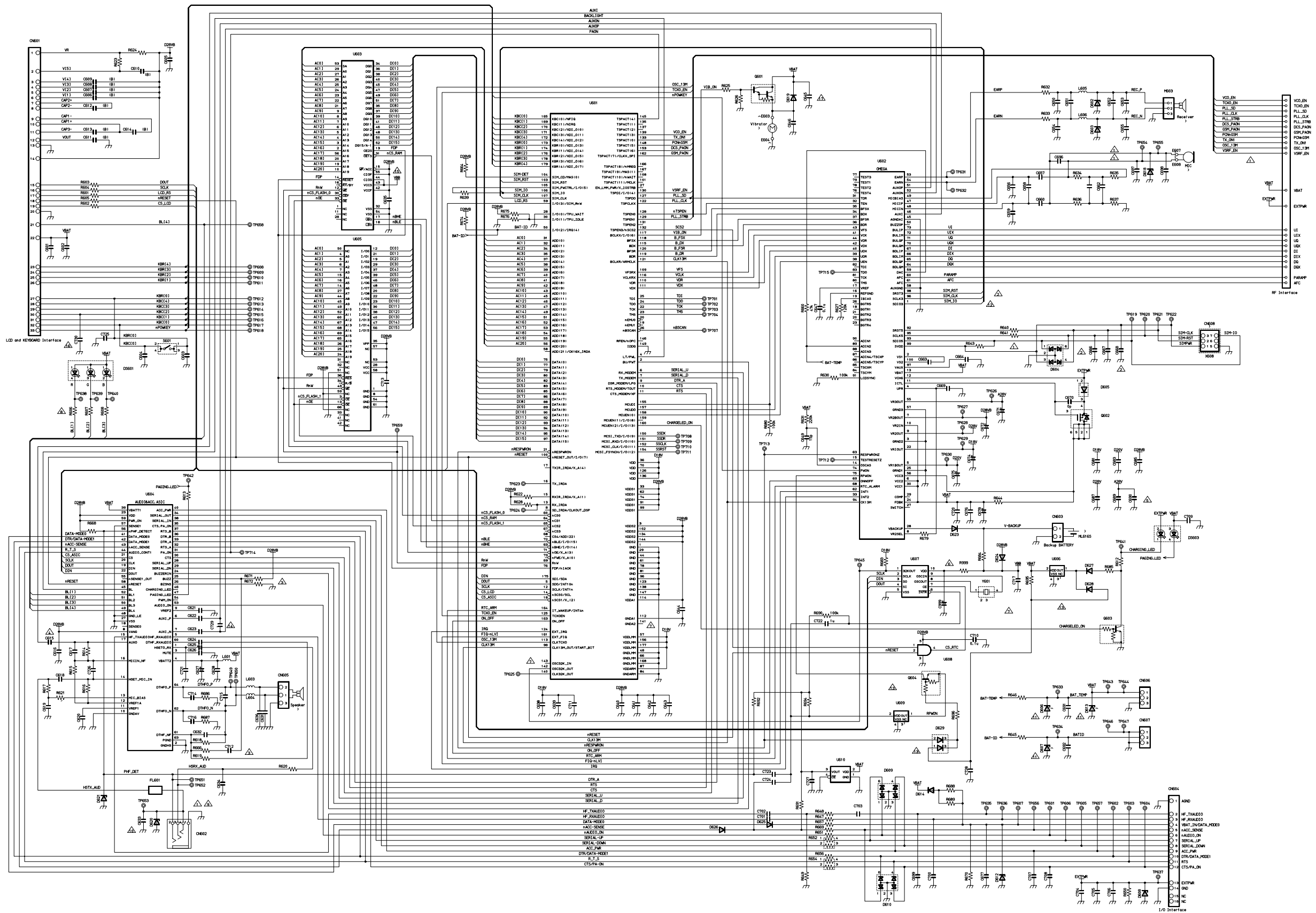


Figure 8.1: Main PCB: RF circuit diagram

8.5. GD92 Main PCB: RF

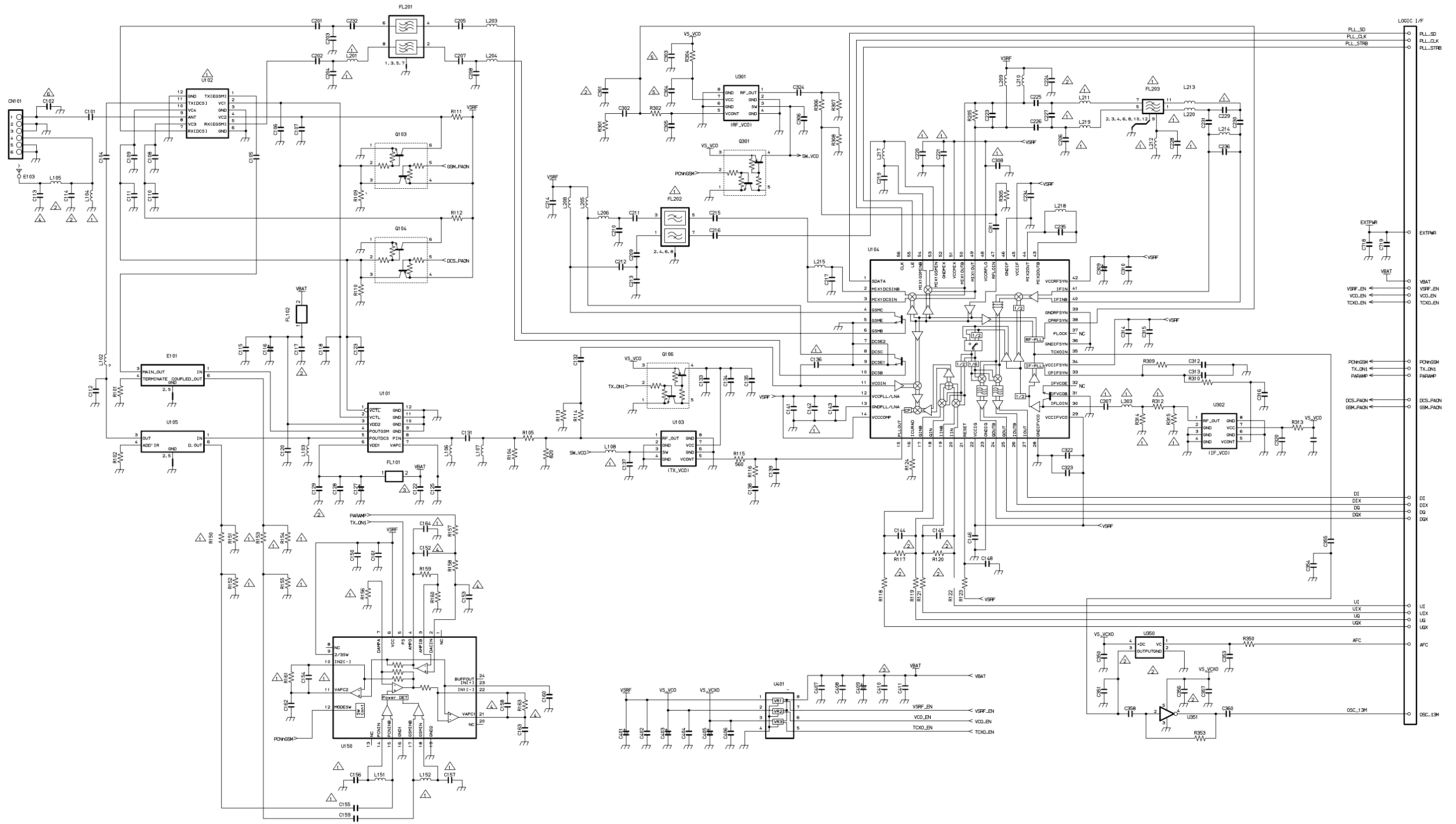
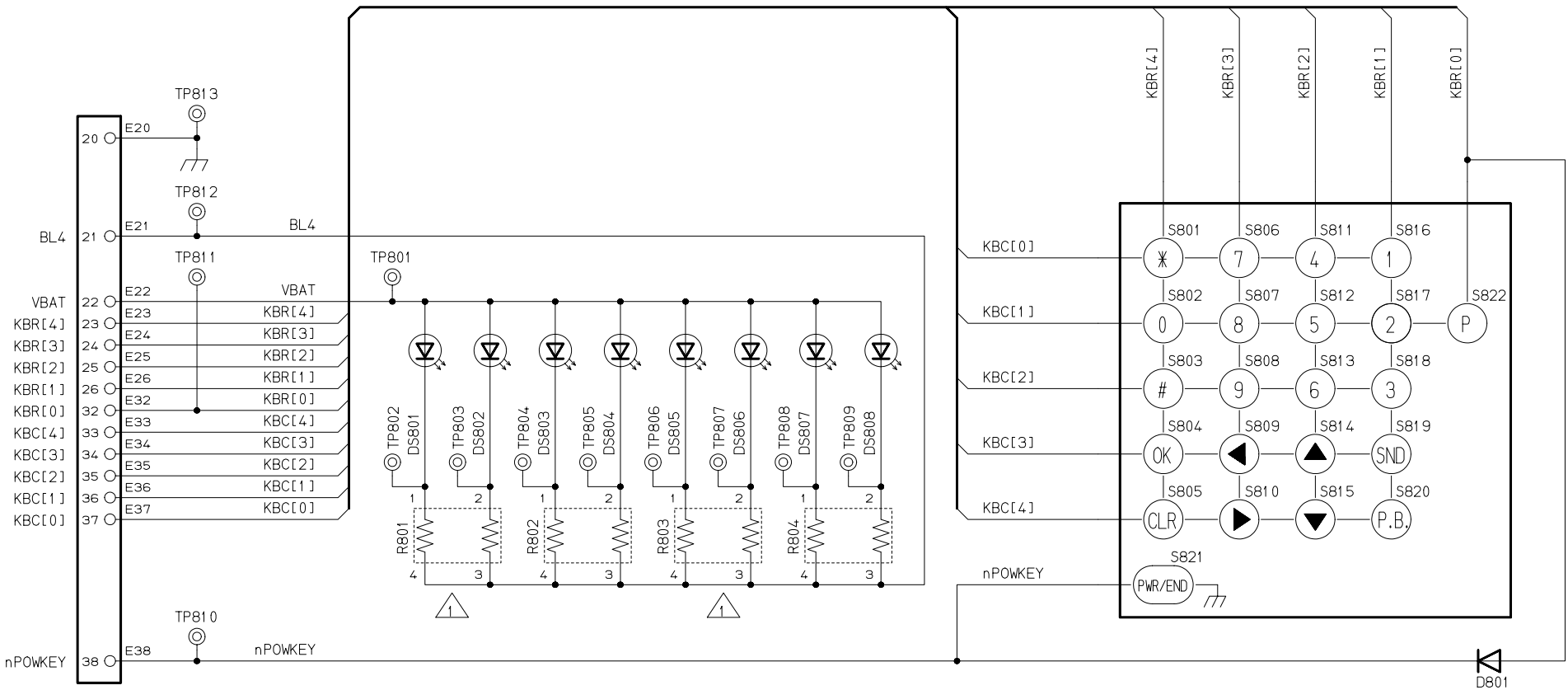


Figure 8.2: Main PCB: Logic circuit diagram

8.6. GD92 Keypad PCB



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9 LAYOUT DIAGRAMS

9.1. GD52 Main PCB

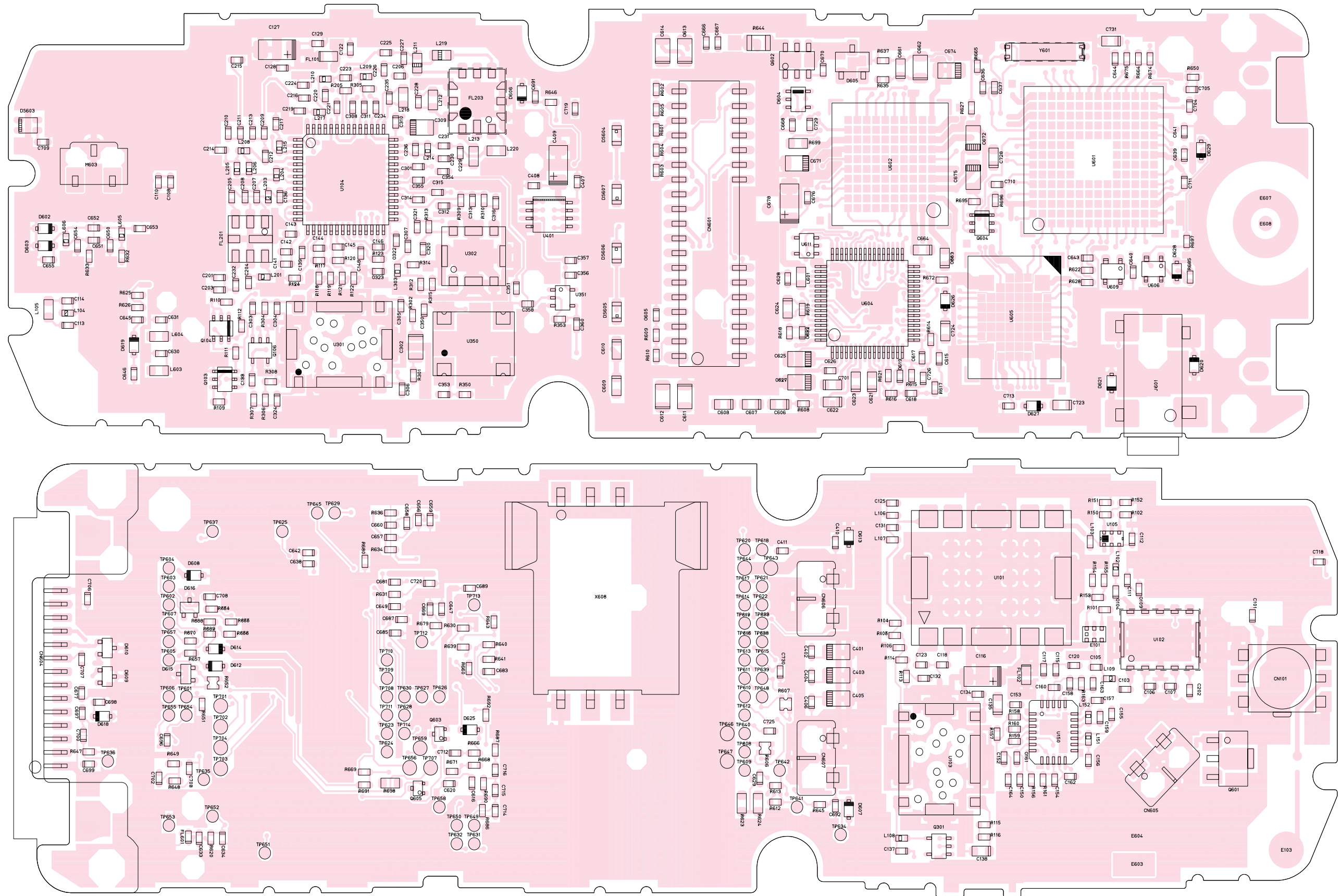


Figure 9.1: GD52 Main PCB layout diagram

9.2. GD52 Keypad PCB

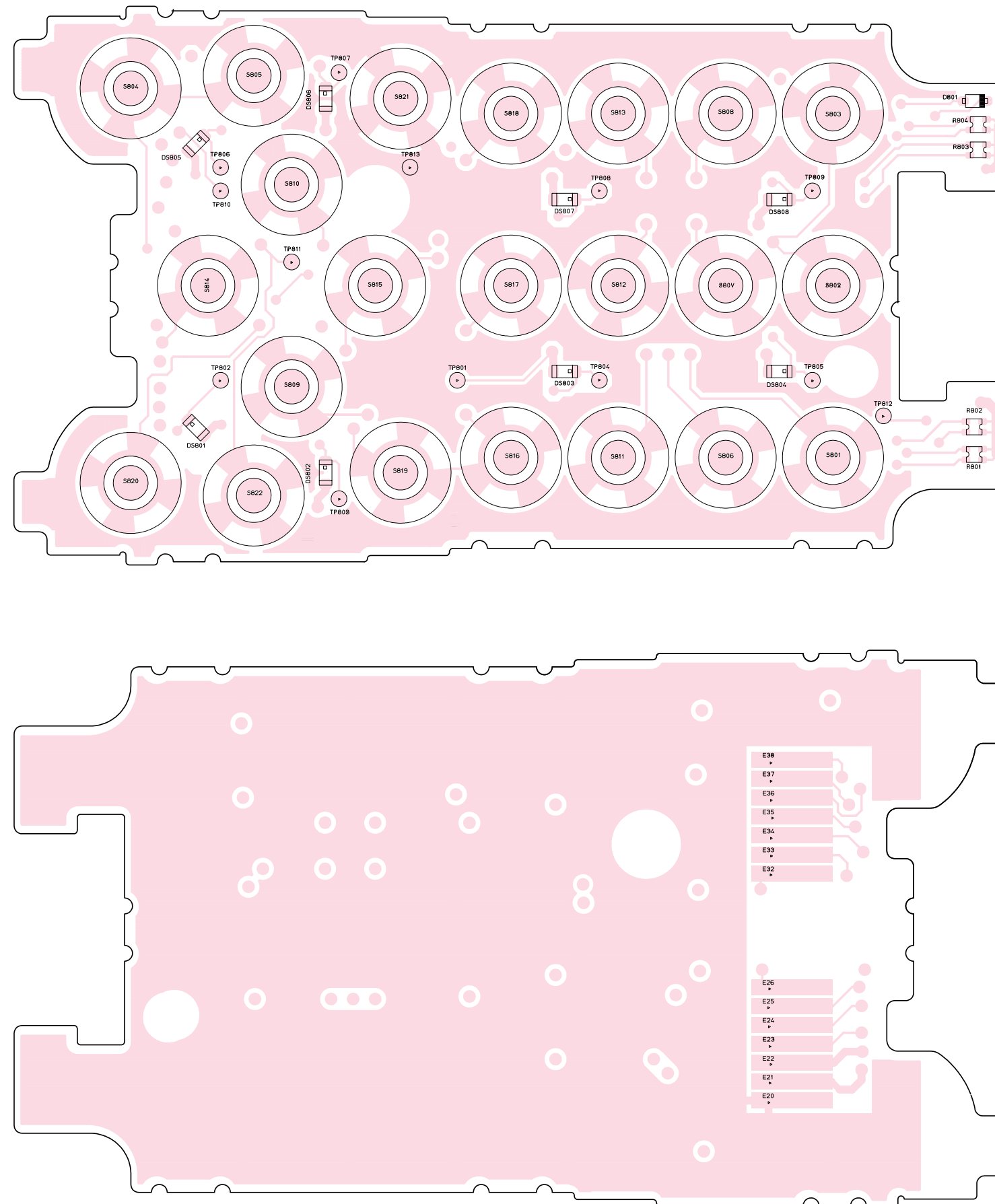


Figure 8.2: GD52 Keypad PCB layout diagram

9.4. GD92 Keypad PCB

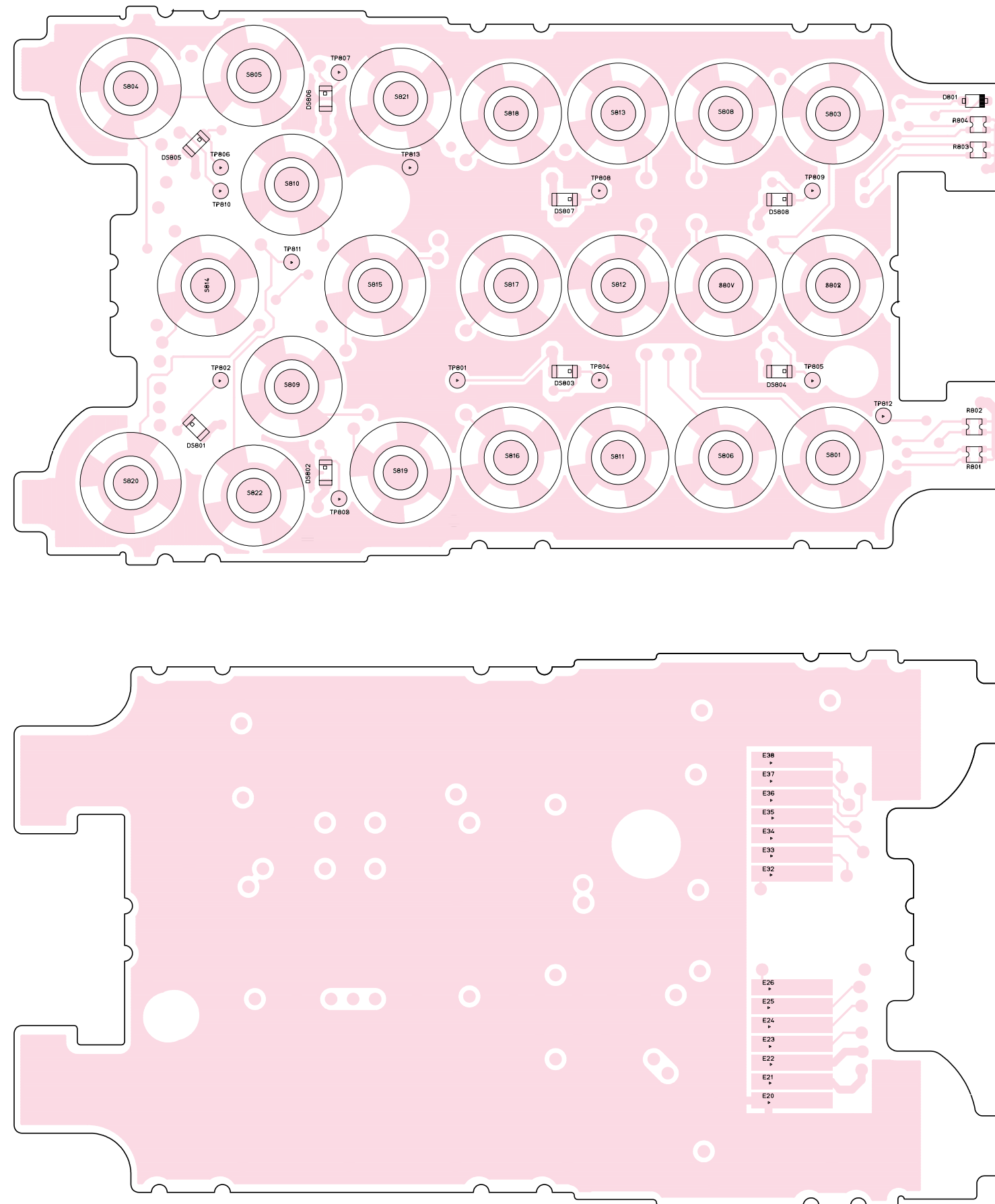


Figure 9.4: Keypad PCB layout diagram