

Service Manual

Personal Cellular Telephone

GSM™

EB-GD55
EB-GD55C

Specifications



	900 MHz	1800 MHz	1900 MHz
Frequency Range	Tx 880 – 915 MHz Rx 925 – 960 MHz	Tx 1710 – 1785 MHz Rx 1805 – 1880 MHz	Tx 1850 – 1910 MHz Rx 1930 – 1990 MHz
Tx/Rx frequency Separation	45 MHz	95 MHz	80 MHz
RF Channel Bandwidth	200 KHz	200 KHz	200 KHz
Number of RF channels	174	374	300
Speech coding	FR & EFR	FR & EFR	FR & EFR
Operating temperature	–10 °C – 55 °C	–10 °C – 55 °C	–10 °C – 55 °C
Type	Class 4 Handheld	Class 1 Handheld	Class 1 Handheld
RF Output Power	Max. 32 dBm	Max. 29 dBm	Max. 29 dBm
Modulation	GMSK	GMSK	GMSK
WAP	WAP1.2.1		
Connection	8ch / TDMA		
Voice digitizing	13 kbps RPE-LTP / 13 k		
Transmission speed	270.833 KBPS		
Signal Reception	Direct conversion		
Antenna Impedance (External Connector)	50 Ω		
Dimensions (excluding antenna)	Height: 77 mm x Width: 43 mm x Depth: 16.9 mm		
Volume	< 50 cc		
Weight	65g with Battery, 41g without Battery		
Display	Resolution 112 x 64 <width * height>		
Illumination	2 LED for the LCD (Blue Light) 6 LED for the keypad (Blue Light)		
Keys	16-Key keypad, Navigation key		
SIM	3V plug-in		
External DC Supply Voltage	3.8 V		
Battery	Standard Li-Ion 720 mAh		
Standby Time	Up to 250 hr		
Talk Time	Up to 150 min		

⚠ 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 information by anyone else could result in serious injury or death.

Panasonic®

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Every care has been taken to ensure that the contents of this service manual give an accurate representation of the equipment. However, Matsushita Communication Industrial Co., Ltd. accepts no responsibility for inaccuracies which may occur and reserves the right to make changes to the specification or design without prior notice.

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1. INTRODUCTION

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 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 handling procedures described in Section 4 are not adhered to.

Caution

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.

1.1. Purpose of the 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 GSM Digital Cellular Networks.

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, and reassembly of the product. 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 enable 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 cosmetic and some electrical components, for the ordering of replacement parts.

1.3. Servicing Responsibilities

The procedures described in this manual must performed by qualified service engineering personnel, at an authorized service center.

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

2. GENERAL DESCRIPTION

2.1. General

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

2.2. Features

The Panasonic Telephone Model GD55 is a high performance small, light handset for business and domestic use. The following features are provided:

1. Dual Codec which includes Full Rate and Enhanced Full Rate (EFR) speech codec.
2. Dual Band E-GSM900 and GSM1800 operation.
3. Tegic T9 Text Entry.
4. Voice Ringer.
5. Desktop Handsfree function comprising integral echo cancellation and noise suppression.
6. Wireless Application Protocol (WAP) Browser.
7. Backup Battery.
8. Downloadable polyphonic melody ring tones.
9. Clock, Calculator and Currency Converter.

2.3. Handportable Main Kit

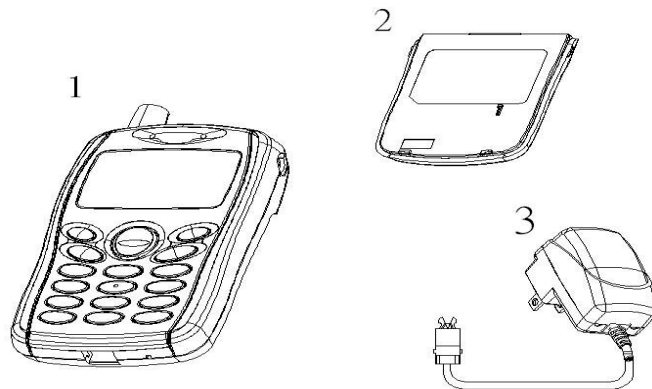


Figure 2.1: Handportable Main Unit Kit Content

ITEM	DESCRIPTION	PART NUMBER
1	Main Unit	
	Silver Upper Case + Silver Panel	1VE1ZZZPA01
	Pearl White Upper Case + Red Panel	1VE1ZZZPA19
	Pearl White Upper Case + Pink Panel	1VE1ZZZPA27
2	Battery	
	English (Pearl White)	AHL03707149
	English (Silver)	AHL03707131
3	Travel Charger	

3. OPERATING INSTRUCTIONS

3.1. General

This section provides a brief guide to the operation and facilities available on the telephone handset. Refer to the Operating Instruction supplied with the telephone for full operational information.

3.2. Liquid Crystal Display

The telephone handset has a graphical chip on glass display. The following icons are available:

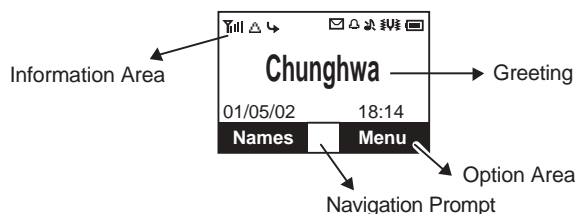









Figure 3.1: Crystal Display

Icon	Description:
	Displayed when the user is registered to a non-home network-roaming.
	Displayed when call divert is enabled.
	Displayed when phone lock is enabled.
	Display when an unread message is store or lights when message area is full.
	Indicates the received signal strength.
	Indicates the battery level.
	Indicates alarm is set.
	Displayed when vibration alert is enabled.
	Displayed when all tones or ring volume is off.

3.3. Location of Controls



Figure 3.2: Location of Controls

	Navigation key - moving up and down navigates through the options in the Main Display area.
	Cancel key - this key is mainly used to cancel the current operation and return to the previous menu level, or jump back to idle. Ends a call or  + Hold enables the user to switch the phone on/off.
	Perform the functions indicated by text shown on the LCD screen.
	In idle mode, long press to enter a +.
	Long press in idle to activate WAP browser.
	Long press in idle to switch the vibrator on and off.

3.4. Concept of Operation

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

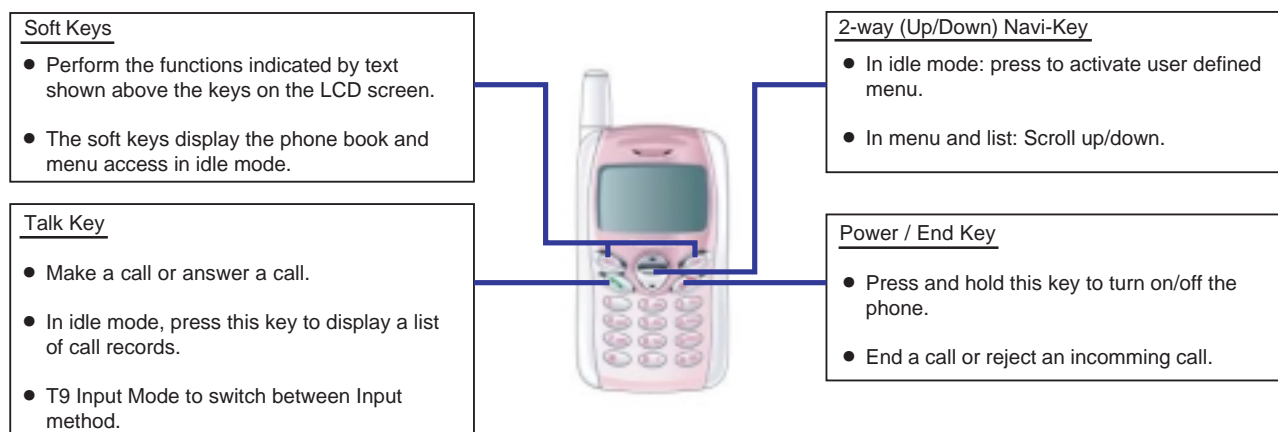


Figure 3.3: Concept of Operation

Pressing up and down () will move the pointer left and right scroll through more information in the main area of the display. To choose the required option, press the corresponding 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.

Alphabetic, small letter mode:

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Symbol table	1												
2	a	b	c	2	ä	à	?							
3	d	e	f	3	é	è								
4	g	h	i	4	ï									
5	j	k	l	5										
6	m	n	o	6	ö	ñ								
7	p	q	r	s	7	ß								
8	t	u	v	8	ü	ù								
9	w	x	y	9	æ	ø	å							
*	T9 input mode	*												
0	.	,	?	!	0	+	-	:	;	;	'	'	;	-
#	T9 on/off mode	#												

Alphabetic, capital letter mode:

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Symbol table	1												
2	A	B	C	2	Ä									
3	D	E	F	3	É									
4	G	H	I	4										
5	J	K	L	5										
6	M	N	O	6	Ö	Ñ								
7	P	Q	R	S	7									
8	T	U	V	8	Ü									
9	W	X	Y	9	Æ	Ø	Å							
*	T9 input mode	*												
0	.	,	?	!	0	+	-	:	;	;	'	'	;	-
#	T9 on/off mode	#												

T9 mode:

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Symbol table space	/	()	<	=	>	%	~	€	£	\$	¥	@	¥	
*	Small letter, caps, caps lock, numeric	*														
0	.	,	?	!	0	+	-	:	;	;	'	'	;	-		
#	T9 on/off	#														

T9 Editor Sequence:

Key	T9 Editor Sequence	Tegic mode	1	2	3	4	5	6	7	8
*		T9 on	T9 Abc	T9 abc	T9 ABC	123	Stroke-TC	Stroke-SC	BPMF	Pin Yin
	Small letter, caps, caps lock, Numeric (English)	T9 off	Abc	abc	ABC	123	Stroke-TC	Stroke-SC	BPMF	Pin Yin

- Key 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 long press provides corresponding numbers.
- All other keys are used for tegic T9 intelligent text mapping.
- * Caps mode on * pops a list with the 4 options to be selected by scrolling and select via right SK "Select".

3.5.2. Editing Alpha Entry

When the cursor is moved over a character and another key is pressed this will insert the new character.

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

3.6. Features Menu Structure / Main Menu Options

Menu Tree						
MFE: Multi Field Editor, UE: User Editable, SCC:Set/Clear/Check network feature, LIST:List contents						
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Comments
Personalise						
	Language					
		Display Language				1:English+TC or SC 2:English+Thai
		Tegic Language				Only for multi-European language version
	Tones					
		Ring Volume				5 levels +Silent
		Ring Type				
		Melody Composer				
		Key Tone				On/Off/Beep
		Warning Tone				
	Display Setting					
		Idle Screen				Wall paper
		Greeting				
		Animation				Power on/off
		Contrast				10 degrees 3 options
		Back Light				On/Off
		List Mode				On/Off
	Vibration Alert					
		Vibration Only				
		Ring Only				
		Ring & Vibration				
	Profile Mode					
	User Msg.					
	Auto Answer					
	Defaults					
	Own Menu					
STK or Game						
Phone Book						
	Browse					
		View				
		Edit				
		Delete				
	Create	MFE				
	Group Setting	List				
		VIP				
			View			
			Ring Tone			

			Rename Group			
		Family				
		Friends				
		Colleagues				
		Others				
	Review					
	Hot Key Dial					On/Off
	My Numbers					
Key Guard						
Browser						
	Start Browser					
	Browser Setting					
		Favorite				
		Server Setting				2 options
			Dial Number			
			Call Type			
			Login name			
			Password			
			IP Address			
			IP Port			
			Linger Time			
Messages						
	Received List	(List of contents)	(options)			RSK :Read;LSK : Options
			Reply			
			Forward			
			Edit			
			Delete			
	Send List	(List of contents)	(options)			
			Send			
			Save			
			Edit			
			Delete			
	Create					
		Editor				
			Send			
			Save			
			Picture & Sound			
			User Msg.			
	User Msg.					
	Review					
	Parameters		—			
		Message Centre	UE			
		Protocol	1-of-N list			

		Lifetime	1-of-N list			
		Report	on/off			
	Broadcasts					
		Receive	message list			
		Topic List	UE M-of-N list			
		Languages	M-of-N list			
	—	Auto Display	on/off			Page Display
Phone Menu						
	Call Service					
		Duration/Charges				
			Last Call	info		
			All Calls	info		
			Cost Left	info		
		Call Waiting	SCC (all, next)			
		Cellular's ID	SCC			
		Withhold ID	SCC			
		Charge Settings				
			Currency			
			Personal Rate			
			Max Cost	on/off		
			Auto Display	on/off		
	Call Divert					
		All Un-answer	SCC			
		All Calls	SCC			
		Not Reachable	SCC			
		No Reply	SCC			
		Busy	SCC			
		Receiving Fax	SCC			
		Receiving Data	SCC			
		Status Check				
		Cancel All				
	Security					
		Call Bar				
			All Outgoing	SCC		
			Outgo internat	SCC		
			Out.int.x home	SCC		
			All Incoming	SCC		
			When Roaming	SCC		
			Status Check			
			Cancel All			
			Password			
		Codes				
			Phone Lock	protected on/off		

			PIN Control	protected on/off		
			Change PIN	protected on/off		
			Change PIN 2	protected on/off		
		Fixed Dial	protected on/off			
		SIM Lock	on/off			
	Network					
		Configuration				
			Search Mode			
				Automatic		
				Manual		
			Network List	info home-network/ UE list		
			Band Select			
Applications						
	Game					
	Schedule					
	Clock Function					
		World Clock				Summer time feature
			Select City			
			Time & Date	UE		
			Date Format			
				DD/MM/YYYY		
				DD.MM.YYYY		
				MM/DD/YYYY		
				YYYY MM.DD		
				YYYY/MM/DD		
			Time Format	12 hr/24 hr		
			2nd Clock			
			Display			On/Off
		Alarm Set				
		Power Off Time	on/off - UE			1 alarm only
	Calculator		—			
	Currency					
	Melody Manager					
	Picture Manager					
Records						Press <Send> key in Idle Mode
	Last Dialed					
	Answered					
	Unanswered					

	Erase Records					
		Erase Last Dialed				
		Erased Answered				
		Erase Unanswered				
		Erase All				
In Call Menu						
	Hands Free					
	Conference					
	Call Transfer					
	Phonebook					

Feature Set Listing						
1 Telephone Functionality						
	Display and Lighting					
		LCD Display				
			Received Signal Strength Indication			
			Battery Status Icon			
			Call Processing Signal Indication			
			Dialed Number Indication			
			Last Dialed Digit Clear/Entire Line Clear			
			Own Telephone Number Indication			
			Service/No Service Indication			
			Country/PLMN Indication			
			Service Provider Indication			
			Roaming Indication			
			SMS Arriving Indication			
			SMS Overflow Indication			
			Vibration Mode Status Indication			
			Lock Status Indication (Keypad/Phone Lock)			
			Greeting Message Editing			
			PIN Greeting Animation			
			Power On/Off Animations			
			Clock Alarm Indication			
			Line Service Indication			
			Show Time & Date			
		Back-lighting				
			LCD Backlight			
			Keypad Backlight Backlighting			
			Incoming Call			
	Security					
		Access Codes				
			PIN			
			PUK			
			PIN2			

			PUK2		
			Phone Code		
		PIN Check			
		Change PIN			
		FDN Mode			
		Enable			
		List (Add, Edit, Delete)			
		Disable			
	ME Personalization				
		Network Lock			
		Network Sun setLock			
		Service Provider Lock			
		Corporate Lock			
		SIM Lock			
	Sound Settings				
		Ring Tone/Melody (5 Ring +25 melody predefined, 5 editable/downloaded)			
		Ring Volume Control (1-6)			
		Alert Type			
			Ring Only		
			Vibration Only		
			Vibration and Ring		
		Keypad Tone			
			Tone (Individual Key Sounds: DTMF tones)		
			Beep (Single Sound for All Keys)		
			Off (No Keypad Sound)		
		Service Tone			
			Switch On/Off		
			Network Found		
			Warning Tones		
	Phone Parameters				
		Greeting Message			
		Own Number			
		Language			
		Any-key Answer (On/Off)			
		Auto Answer (On/Off)			
		Illumination (On/Off)			
		Redial			
		Reset Settings To Default			
		Fast Access Key (FDK) in idle screen			
			Key 1 to 9 assigned to the Phone-number in SIM records from 1 to 9		
	Clock Settings				
		Set Time			
		Set Date			
		Display Format			
	Languages/Fonts/Bitmaps				
		Fonts & Bitmaps			
		Character Set Definition, Mapping & Decoding			
		Text String Translation For all languages			
		Full GSM Character Set			





3.7. Incoming Call Line Identification (CLI)

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

3.8. Public Man Machine Interface (MMI)

3.8.1. 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 the telephone.

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

3.8.2. Reading the Phonebook Memory Location

<MEMORY LOCATION>

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

3.8.3. Presentation of IMEI

Press  key.

3.8.4. 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> #

3.8.5. Call Hold

Place a Call on Hold	2 <SND>
Recall a Held Call	2 <SND>
Make a Second Call	<TELEPHONENUMBER>?<SND>
Swap between two Held Calls	2 <SND>
End Held Call	0 <SND>
End Active Call	1 <SND>
Reject Incoming Call	0 <SND>

3.8.6. Call Waiting

Enable Call Waiting	* 4 3 * <SND>
Disable Call Waiting	# 4 3 * <SND>
Call Waiting Status	* # 4 3 * # <SND>

3.8.7. 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 # 3 1 # <TELEPHONE NUMBER> <SND>
Temporary Display Identification * 3 1 # <TELEPHONE NUMBER> <SND>

3.8.8. Telecommunication Services used for Public MMI

Teleservice

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

Bearer Service

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

3.8.9. 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 Divert # # 002 #




3.8.10. Call Bar

Call Bar Type	Service Code
All outgoing calls	33
Outgoing International Calls	331
Outgoing International Calls except those to the PLMN	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 Type # 330 * <PASSWORD>#<SND>
Change Call Bar Password * * 03 * * <OLD PASSWORD> * <NEW PASSWORD> * <NEW PASSWORD> # <SND>

3.9. 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.
Short battery life for an old battery pack.	The battery pack was 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 shorted in the Fixed Dial.
Calls cannot be received.	The telephone is not switched on.	Switch on 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).

3.10. 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 to Service Provider.
SIM Blocked	The SIM is blocked because the wrong PUK has been entered ten times. Contact to Service Provider.
SIM Error	The telephone has detected a problem with SIM. Switch the telephone off and then back on. If the message does not disappear, contact to 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:Message: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 to Service Provider.
Warning Store Full Continue?	The message is full. Now messages cannot be stored until some of the currently stored messages are deleted.
Auto Redial List Full	Redial list of unsuccessfully dialed numbers is full. Switch the telephone off and then on again.

3.11. 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 to 8	Controls telephone security. Factory set to "0000"

3.12. 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 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 Provider. 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 on to their destination. The Message Centre telephone number may be programmed into the SIM or supplied by the service provider.
Network operator	The organization responsible for operating a GSM network.
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.
PIN 2	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/PIN 2. 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 organization 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.

3.13. Error Codes

Error Code	Description
ME001	Cannot power on
ME002	Cannot power off
ME003	Auto power on
ME004	Auto power off
ME005	Current overflow
ME006	Current consumption error
ME101	Software upgrade
ME102	Software version error
ME103	Cannot upgrade SW
ME104	Cannot save data
ME105	No function-dead
ME106	Software malfunction

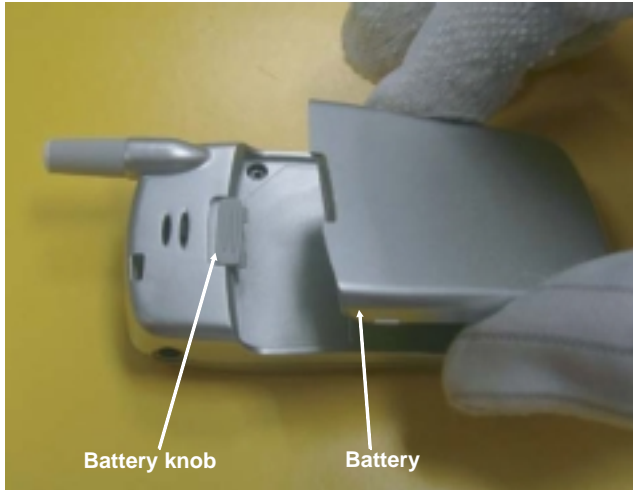
Error Code	Description
ME201	Country lock SW
ME202	Download uncounrty lock SW
ME301	No network registration
ME302	Receive quality NG
ME303	Cannot register to DCS 1800
ME304	Cannot register to GSM 900
ME305	No sensitivity-signal strength
ME306	Cannot place any call

4. DISASSEMBLY / REASSEMBLY INSTRUCTIONS

4.1. Disassembly Instructions

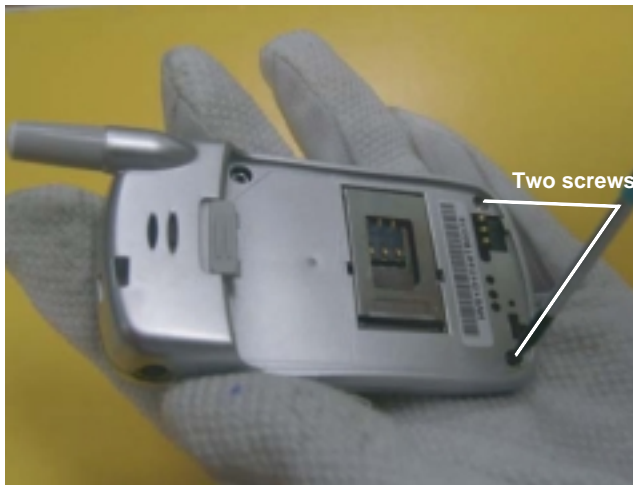
<Step 1>

- Pull up the Battery Knob.
- Remove the Battery.



<Step 2>

- Remove two screws by using T5 screw driver.



<Step 3>

- Slide in the black stick to the hand set from the bottom. Then bottom case can be dispatched.



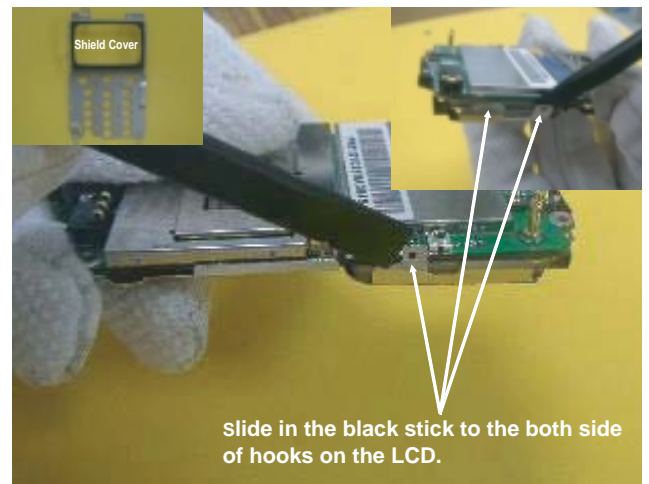
<Step 4>

- Remove the screw on the left hand side of the receiver gasket.



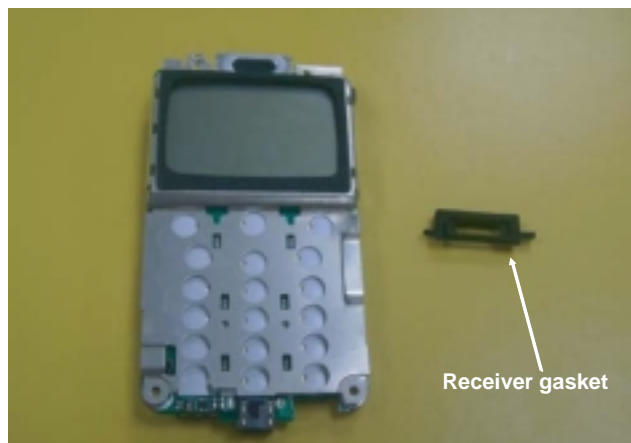
<Step 5>

- Slide in the black stick to the both side of hooks on the LCD. Then remove the shield cover.



<Step 6>

- Remove the receiver gasket.



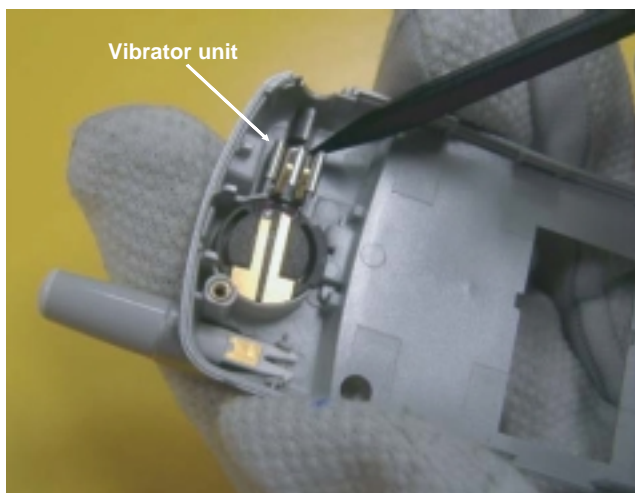
<Step 7>

- Pull out the MIC holder and MIC unit from the PCB Ass'y.



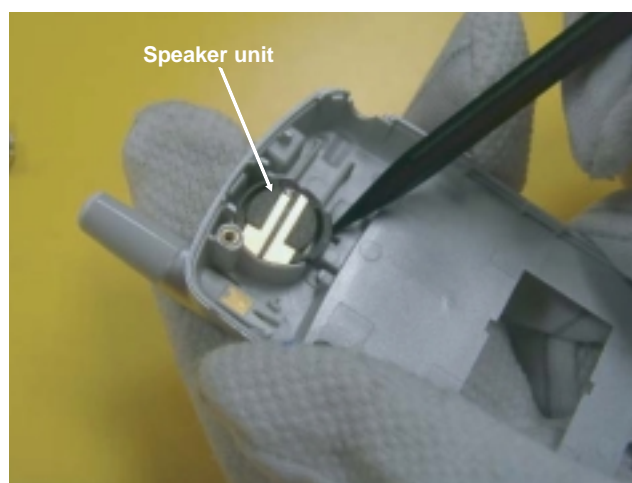
<Step 8>

- Remove the vibrator unit.



<Step 9>

- Remove the speaker unit.



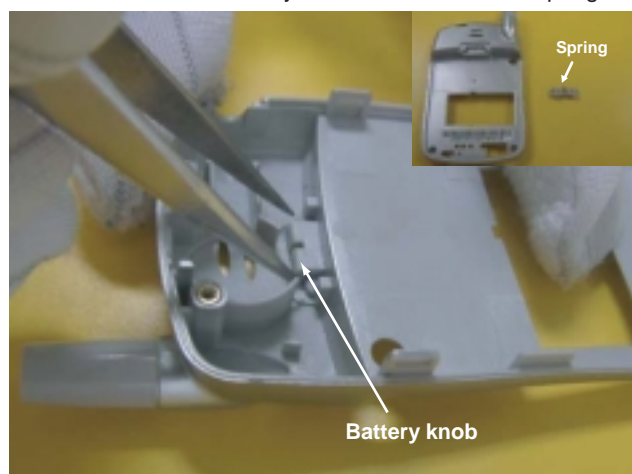
<Step 10>

- Narrow gap between hook by using the tweezers. Then remove the Antenna top.



<Step 11>

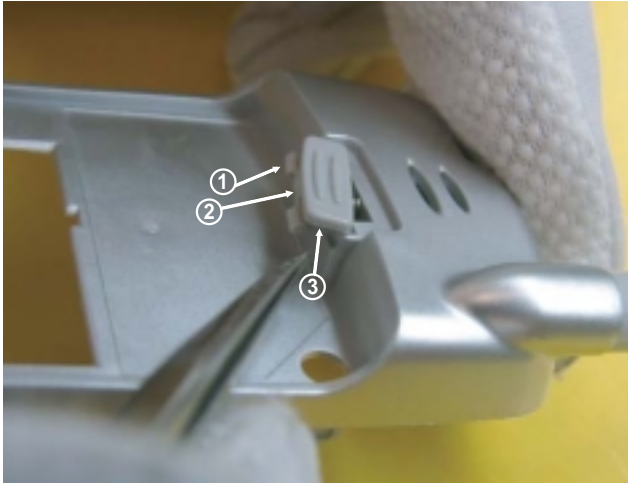
- Narrow the gap between hook by using the tweezers. Then remove the battery knob. Do not lose the spring.



4.2. Reassembly Instructions

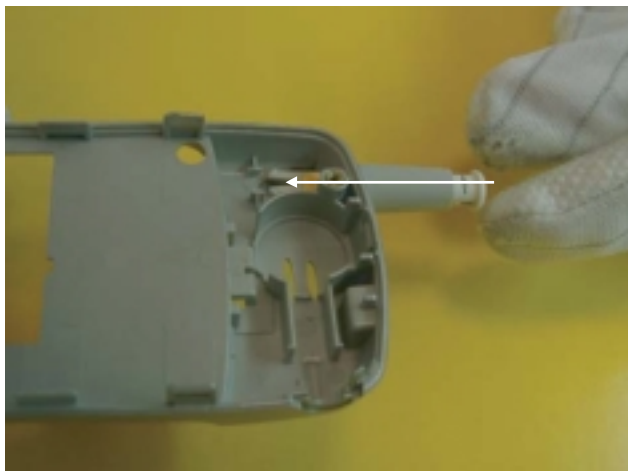
<Step 1>

- Insert the hook ①, then push Battery knob ② while push the hook ③ softly.



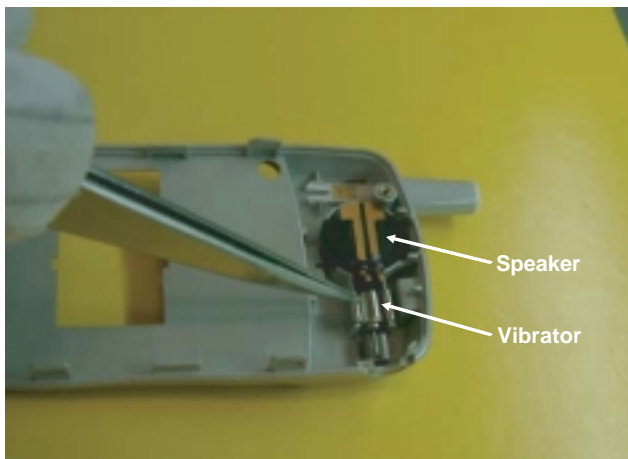
<Step 2>

- Insert the Antenna top to antenna hole.



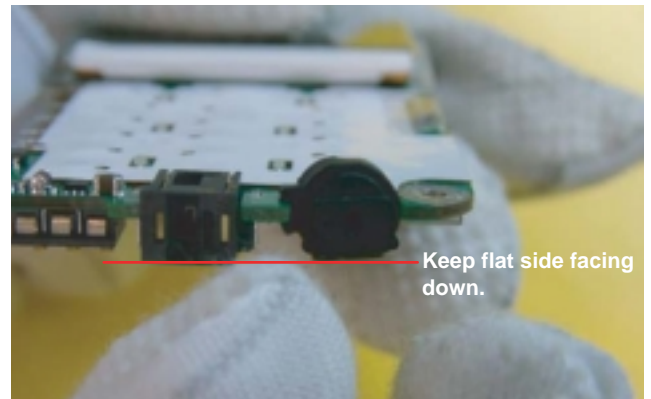
<Step 3>

- Put the speaker & vibrator on the base case by using the tweezers.



<Step 4>

- Insert the MIC unit and MIC cover to main board.



<Step 5>

- Put the receiver gasket on the receiver.



<Step 6>

- Put the Shield cover on the PCB.



<Step 7>

- Tighten a screw on the left hand of the LCD.



<Step 10>

- Tighten two screws.



<Step 8>

- Put the keypad on the upper case.



<Step 11>

- Assemble has been completed.



<Step 9>

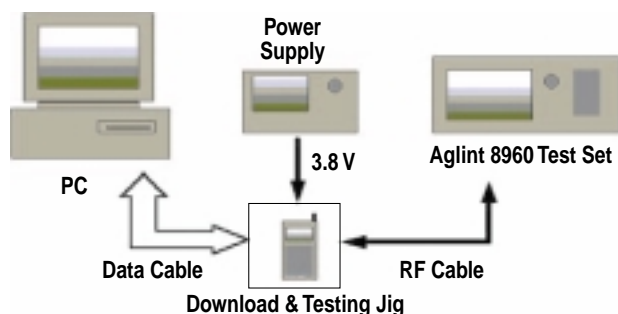
- Assemble upper & base case.



4.3. Adjustment Procedure

4.3.1. Equipment Setting

1. Connect Test Equipment, Service jigs and Cables as the following figure.



2. Enter the following command
3. "#369#"
 - Cable loss :
GSM : 0.6 dB, DCS : 0.9 dB, PCS : 1.2 dB
4. Observe test mode appears on the handset display.
5. Select the "GENIE" by Comport mode.



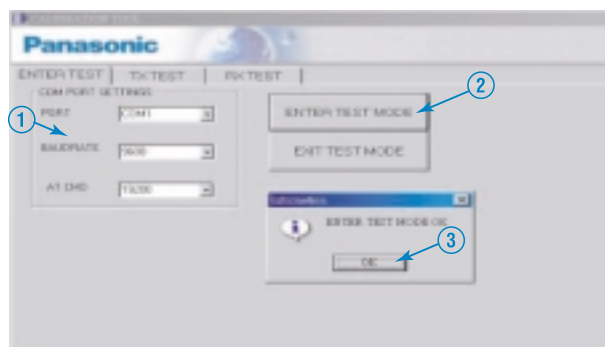
6. Please input the cable loss on the tester before proceeding to any tests. It's recommended that each bands (GSM/DCS/PCS) are tested separately.

4.3.2. Main Subjects

1. TX Power
 - Tx Power Scaling Factors
 - Tx Freq Compensation
2. RX RSSI
(Received Signal Strength Indication)
 - Accurate Gain Control
 - RX Freq Compensation
3. Battery

Please be informed that all the measured values here are only for demo and not accurate.

4.3.3. Enter Test Mode



1. Click "ENTER TEST MODE" tab.

GSM 900 Power Control Levels

Power Control level	Nominal output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
0-2	39	± 2	± 2.5
3	37	± 3	± 4
4	35	± 3	± 4
5	33	± 3	± 4
6	31	± 3	± 4
7	29	± 3	± 4
8	27	± 3	± 4
9	25	± 3	± 4
10	23	± 3	± 4
11	21	± 3	± 4
12	19	± 3	± 4
13	17	± 3	± 4
14	15	± 3	± 4
15	13	± 3	± 4
16	11	± 5	± 6
17	9	± 5	± 6
18	7	± 5	± 6
19-31	5	± 5	± 6

DCS 1800 Power Control Levels

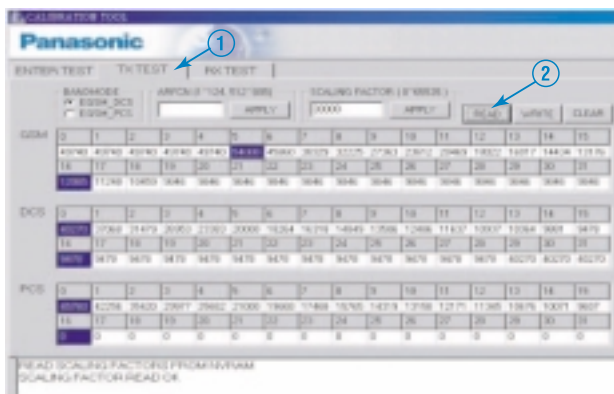
Power Control level	Nominal output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
29	36	± 2	± 2.5
30	34	± 3	± 4
31	32	± 3	± 4
0	30	± 3	± 4
1	28	± 3	± 4
2	26	± 3	± 4
3	24	± 3	± 4
4	22	± 3	± 4
5	20	± 3	± 4
6	18	± 3	± 4
7	16	± 3	± 4
8	14	± 3	± 4
9	12	± 4	± 5
10	10	± 4	± 5
11	8	± 4	± 5
12	6	± 4	± 5
13	4	± 4	± 5
14	2	± 5	± 6
15-28	0	± 5	± 6

PCS 1900 Power Control Levels

Power Control level	Nominal output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
22-29	Reserved	Reserved	Reserved
30	33	± 2	± 2.5
31	32	± 2	± 2.5
0	30	± 3	± 4
1	28	± 3	± 4
2	26	± 3	± 4
3	24	± 3	± 4
4	22	± 3	± 4
5	20	± 3	± 4
6	18	± 3	± 4
7	16	± 3	± 4
8	14	± 3	± 4
9	12	± 4	± 5
10	10	± 4	± 5
11	8	± 4	± 5
12	6	± 4	± 5
13	4	± 4	± 5
14	2	± 5	± 6
15	0	± 5	± 6
16-21	Reserved	Reserved	Reserved

- If the OK message does not appear within 3 seconds, it is recommended to click each tab item in setp ①, and enter again (like refresh). Then Click [ENTER TEST MODE] tab (setp ②).
- Click OK tab (setp ③).

4.3.4. TX-Power Scaling Factors (1)

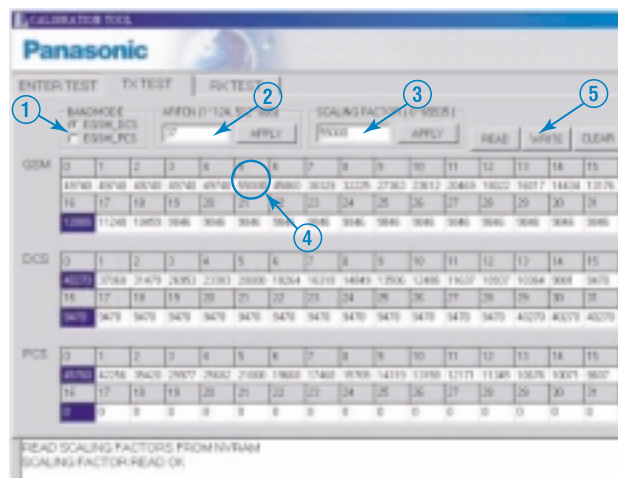


- Click [TX TEST] tab (setp ①).
- Click [READ] tab (setp ②) to get the default values of each band.

Note: There are 2 parts on this TEST.

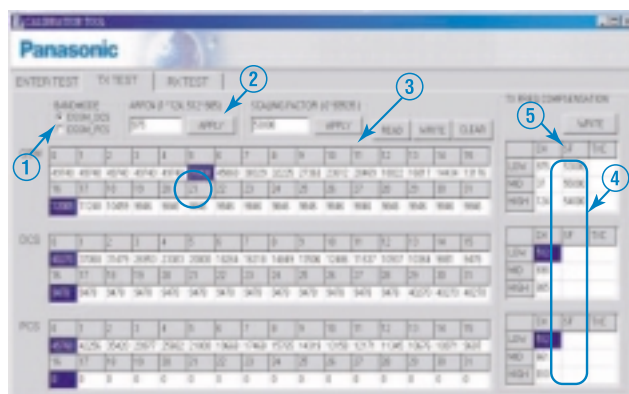
- TX Calibration.
- TX Frequency Compensation.

4.3.5. TX-Power Scaling Factors (2)



- Select the test band mode (setp ①).
- Enter the middle ARFCN of each band, click [APPLY] tab (step ②); ex. EGSM = 37.
 - Set tester in the same channel
- Enter Scaling Factor (step ③), PL 5 value is the reference (step ④), click [APPLY]
 - Read the TX output power value on the tester. Compare with the actual specification (33 dB \pm 3 dB).
 - The best highest Scaling factor is not more than 60,000.
 - You may check any PL. Use the corresponding Scaling Factor of that PL.
- Repeat until the best factor according to the ideal output power value is viewed on the tester and enter that value in the corresponding grid cell (PL 5).
- Repeat steps 1 to 4 for other bands, Click [WRITE] tab (step ⑤) if the all bands are completed.

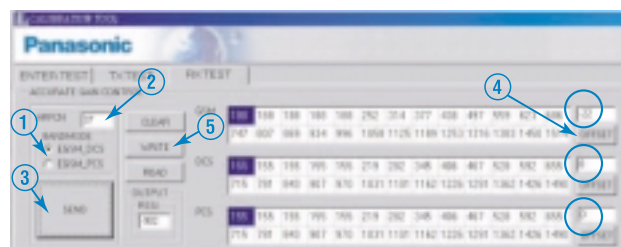
4.3.6. TX-Freq Compensation



1. Select the test band mode (step ①).
2. Enter the fixed ARFCN refer to SF column, click [APPLY] tab (step ②).
 - Set tester in the same channel
3. Enter Scaling Factor (step ③), PL 5 value is the reference, click [APPLY] tab. Other PL no need to check.
 - Read the TX output power value on the tester.
 - Compare with the actual specification.
 - The best highest Scaling factor is not more than 60,000.
4. Repeat until the best factor according to the ideal output power value is viewed on the tester and enter that value in the corresponding grid cell (SF) (step ④).
5. Repeat steps 1 to 4 for other channels and bands, Click [WRITE] tab (step ⑤) if all bands are completed.

- Test Function: CW
- <c> RF Gen Power: -60 ddbm
- <d> Ms TX Level: 5

4.3.8. RX-Power Scaling Factors (2)

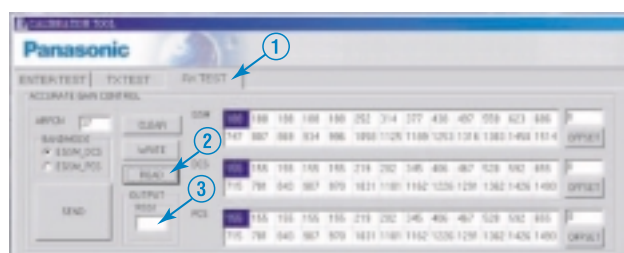


1. Select the test band mode (step ①).
2. Enter the middle ARFCN (step ②) of each band (ex: EGSM-37)

Tester Setting:

 - <a> RF Gen Band: EGSM
 - RF Gen Freq: $942.4 + 0.0677 = 942.4677$ MHz
3. Click [SEND] tab (step ③) and RSSI & OFFSET value will show.
 - The RSSI value should be "-900" or approximately "-1100".
4. Click [OFFSET] tab (step ④) to apply the offset value.
5. Repeat steps 1 to 4 for all bands (use Mid-channel only).
6. Click [WRITE] tab (step ⑤) when the all bands are completed.

4.3.7. RX-Power Scaling Factors (1)



1. Click RX TEST tab (step ①).
2. Click [READ] tab (step ②) to get the default values of each band (step ③).

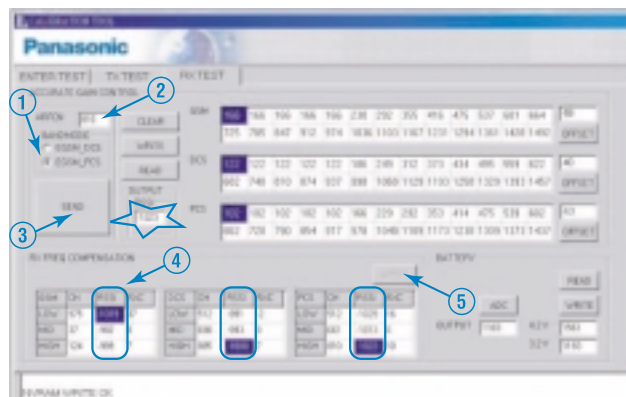
Note: There are 2 parts on this TEST.

- RX Calibration.
- RX Frequency Compensation

Set Tester to:

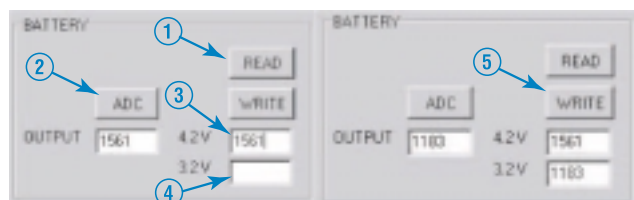
<a> Operating Mode: Test

4.3.9. RX-Freq Compensation



1. Select the test band mode (step ①).
2. Enter the fixed ARFCN (step ②), refer to RSSI column.
 - Set tester in the same way.
3. Click [SEND] tab (step ③) and RSSI value will show.
4. Enter the RSSI value in the corresponding grid cell (step ④). No need to click the OFFSET.
5. Click [WRITE] tab (step ⑤) when the all channels and bands are completed.

4.3.10. Battery



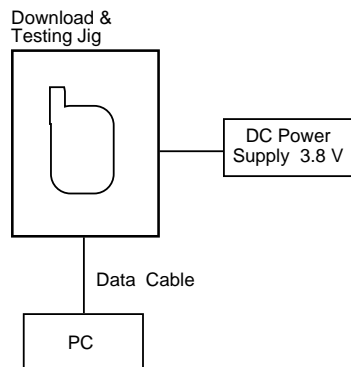
1. Click [READ] tab (step ①).
2. Adjust power supply to 4.2V DC and click [ADC] tab (step ②). The ADC value will show.
3. Enter the value in the corresponding cell (step ③).
4. Adjust power supply to 3.2V DC and click [ADC] tab (step ②). The ADC value will show.
5. Enter the value in the corresponding cell (step ④).
6. Click [WRITE] tab (step ⑤).

– END OF CALIBRATION –

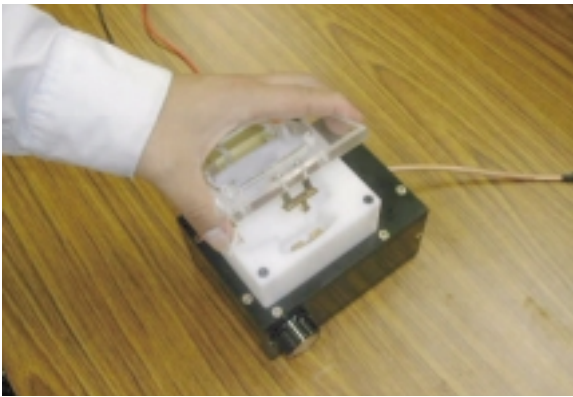
4.4. Software Download Procedure

4.4.1. Download Procedure

1. Connect Test Equipment, service jig and cable as the following figure



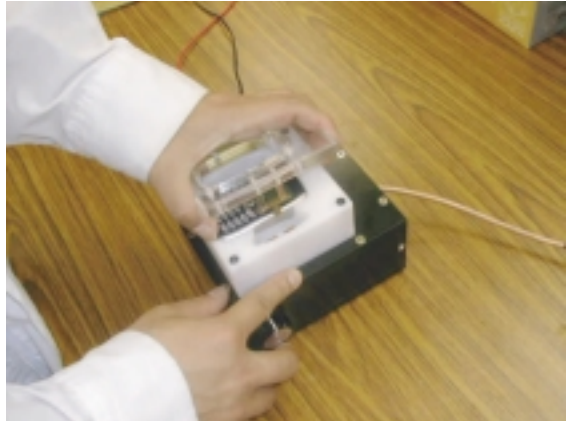
2. Pull the acrylic plate.



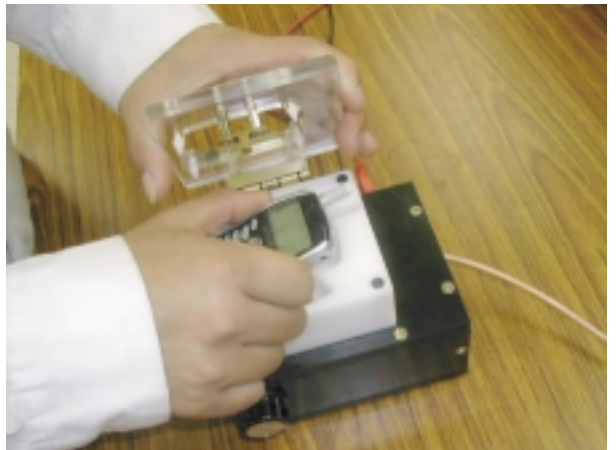
3. Put the handset into the jig.



4. Close the acrylic plate. Then the handset will auto power on.

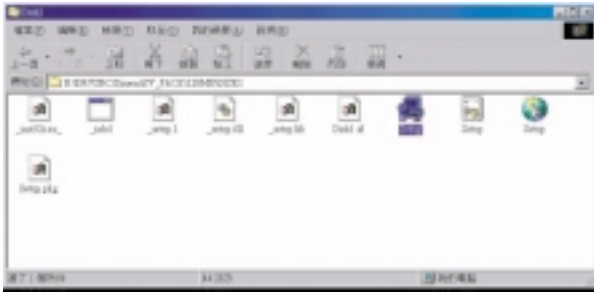


5. Execute the download software.
6. After finish the download, pull the acrylic plate and take the handset.

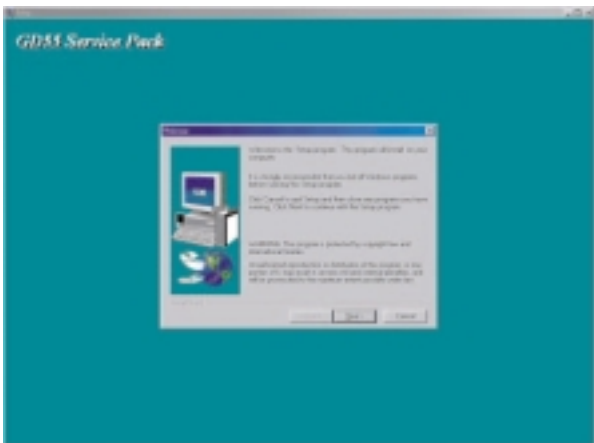


4.4.2. Installation Procedure

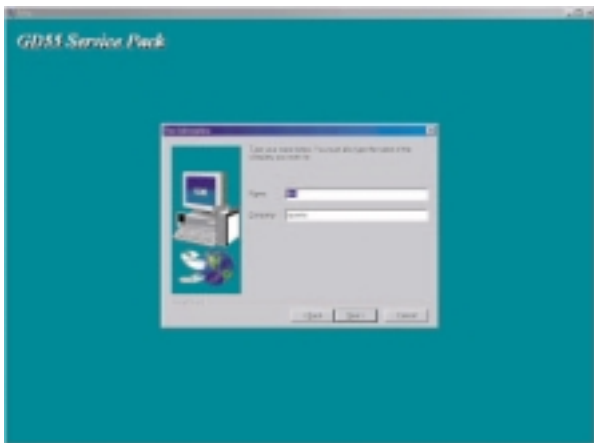
1.Run Setup.exe to install service package.



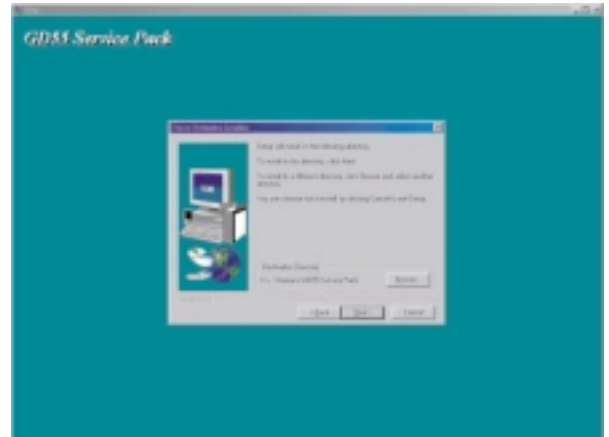
2. Welcome, Press Next to continue.



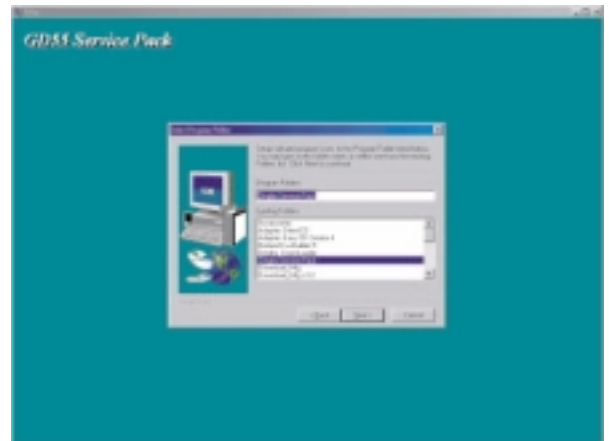
3. User Information, key in name and company then press next to continue.



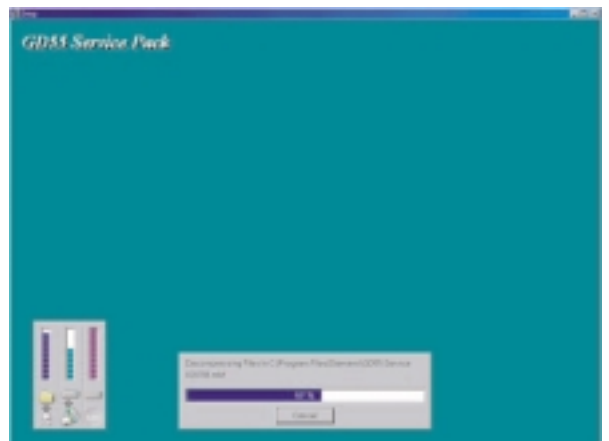
4.Choose Install directory, then press next to continue.



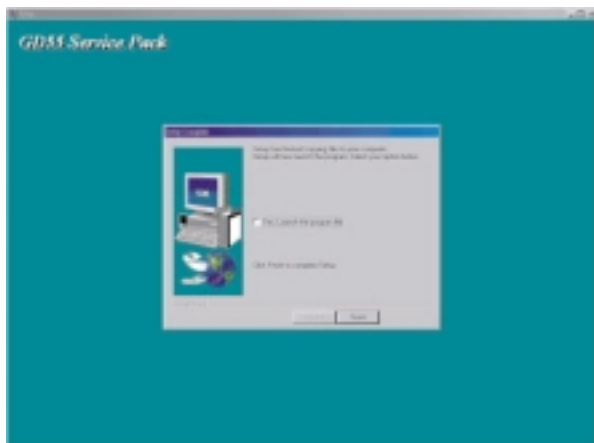
5. Choose program folder.



6. Install progressing.

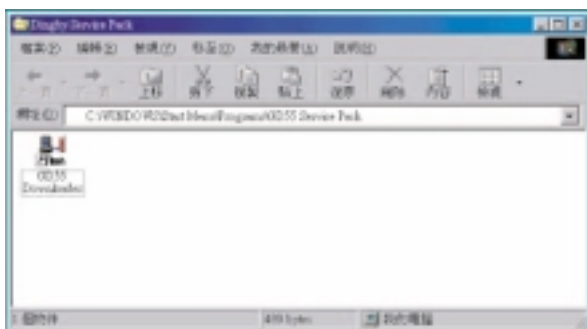


7. Install finish, launch program now or not.

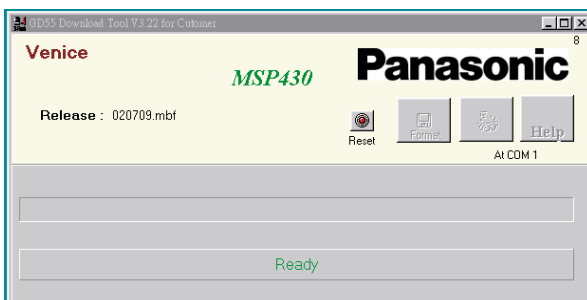


• Actual Procedure

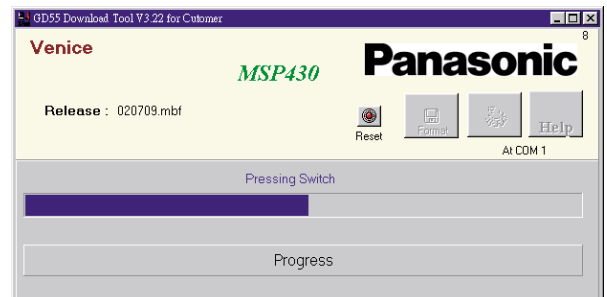
Step 1. Run the GD55 Downloader.



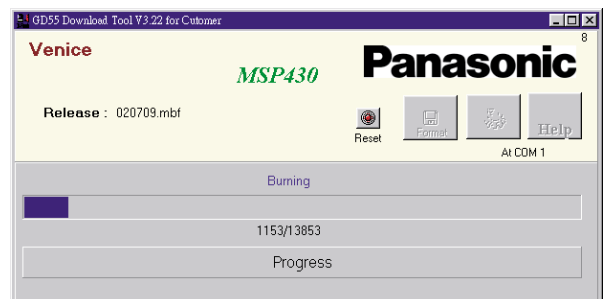
Step 2. Plug in the D/L cable to the D/L fix



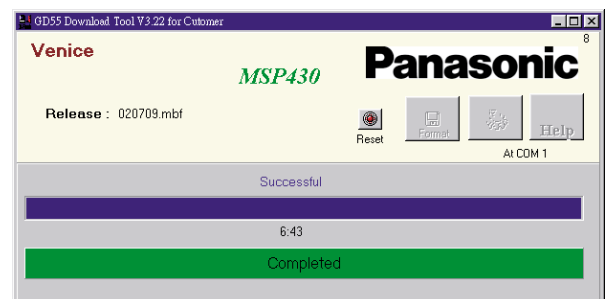
Step 3. Press the power on switch then release, wait handset program loading, until the screen change from pressing switch to burning, Please refer to next page.



Step 4. Wait for burning.

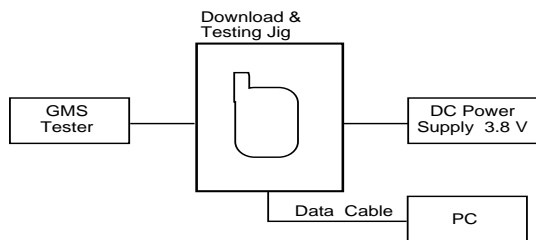


Step 5. When the successful appear on the screen, the D/L process was finished.



4.4.3. Function Test Procedure

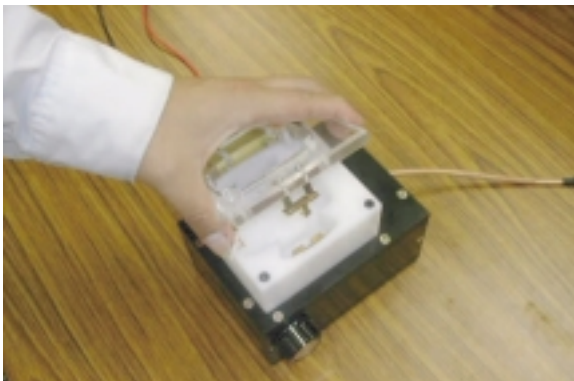
1. Connect Test Equipment, service jig and cable as the following figure



Note : The cable loss should include Download & Testing Jig.

GSM : 0.6 dB, DCS : 0.9 dB and PCS : 1.2 dB

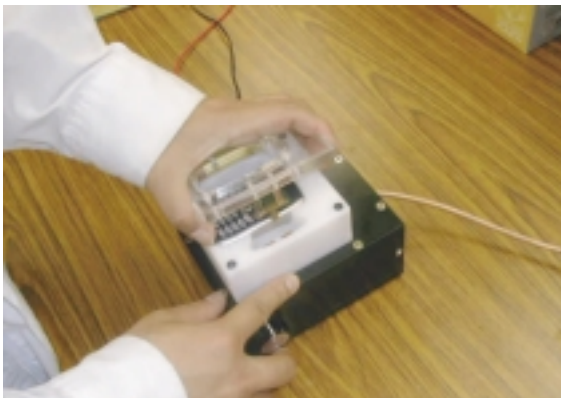
2. Pull the acrylic plate.



3. Put the handset into the jig.



4. Close the acrylic plate. Then the handset will auto power on.

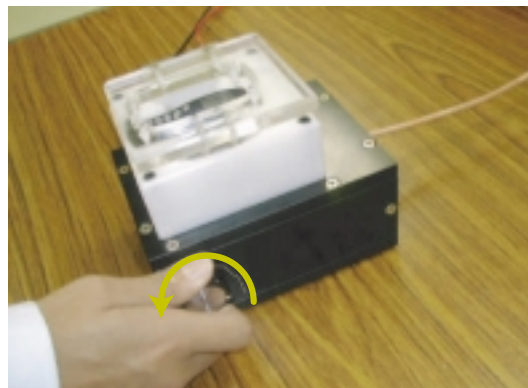


5. Rotate the knob to rise the RF-probe connected with handset.

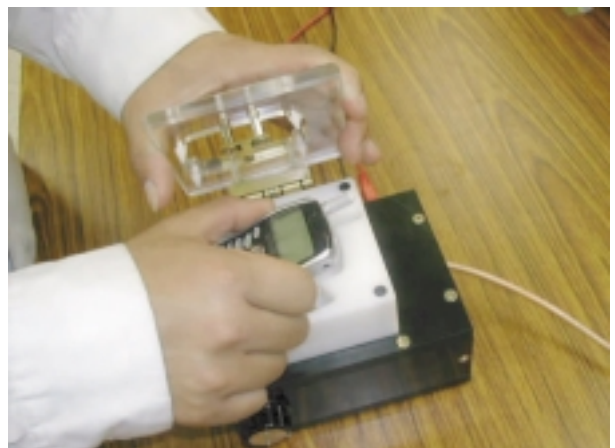


6. Execute the download software.

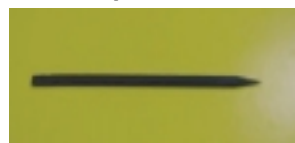
7. After finish the download, rotate the knob to fall the RF-probe separated with handset.



8. Pull the acrylic plate and take the handset.



Case Separation Tool



Case Opener



T5 Screw driver

5. TECHNICAL SPECIFICATIONS

5.1. Tx Characteristics

All data is applicable to E-GSM900 and GSM1800 except where stated.

5.1.1. Frequency Error

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

5.1.2. Modulation Phase Error

RMS: Equal to or less than 5°

Peak: Equal to or less than 20°

5.1.3. Output RF Spectrum due to Modulation

Offset from Centre Frequency (kHz)	Maximum Level Relative to Carrier 9dB
± 100	+0.5
± 200	-30
± 250	-33
± 400	-60
± 600 to 1800	-60

5.1.4. Output RF Spectrum due to Switching Transients

Offset from Centre Frequency (kHz)	Maximum Level (dBm)	
	E-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 kHz
Video Bandwidth:	30 kHz (modulation) 100 kHz (switching)
Average (Modulation)	Over 200 burst
Peak Hold (Switching)	Over 10 burst

5.1.5. Spurious Emissions at Antenna Connector

Frequency Range	Frequency Offset	Filter Bandwidth	Approx. Video B/W	Limits (dBm)	
				E-GSM 900	GSM 1800
100 kHz to 50 MHz	–	10 kHz	30 kHz	–36	–36
50 to 500 MHz	–	100 kHz	300 kHz	–36	–36
500 MHz to 1 GHz	0 to 1 MHz	100 kHz	300 kHz	–36	–36
1 GHz to 12.75 GHz	0 to 10 MHz	100 kHz	300 kHz	–30	–30 (1.0 – 1.710 GHz)
Excl. relevant TX band:	> 10 MHz	300 kHz	1 MHz	–30	–36 (1.710 – 1.785 GHz)
E-GSM: 880 to 915 MHz;	> 30 MHz	3 MHz	3 MHz	–30	–30 (1.785 – 12.75 GHz)
DCS: 1710 to 1785 MHz	(offset from edge of relevant TX band)				
– and the RX band					
925 – 960 MHz					
1805 – 1880 MHz					
Relevant TX band:	1.8 to 6.0 MHz	30 kHz	100 kHz	–36	–36
E-GSM: 880 to 915 MHz;	> 6.0 MHz	100 kHz	300 kHz	–36	–36
DCS: 1710 to 1785 MHz					

5.1.6. Residual Peak Power

Equal to or less than 70 dBc (BW = 300 kHz)

5.2. Rx Characteristics

5.2.1. Sensitivity

E-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	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation 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* _–	8900	7.5	24000	9.333	60000	0.122* _–	164000
Class 1b (RBER)	0.42/ _–	1,000,000					0.41/ _–	20,000,000
Class II (RBER)	8.33	120,000					2.439	8200

The reference sensitivity level is < –102 dBm.

Note: $1 < \alpha < 1.6$. The value of α can be different for each channel condition but must remain the same for FER and Class 1b RBER measurements for the same channel condition.

E-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	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation 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 TCH/HS class 1b (RBER) TCH/HS class II (RBER)	4.478*_ 0.32/_ 8.333	13,400 1,500,000 60,000	7.5	24,000	9.333	30,000	0.122*_ 0.41/_ 2.439	164,000 20,000,000 8,200

The reference sensitivity level is < -102 dBm.

Note: $1 < \alpha < 1.6$. The value of α can be different for each channel condition but must remain the same for FER and Class 1b RBER measurements for the same channel condition.

Blocking:

Frequency	Small MS level in dB Vemf ()	
	E-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 <1785 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.

Spurious response exceptions:

Six exceptions are permitted IN band 915 MHz – 930 MHz.

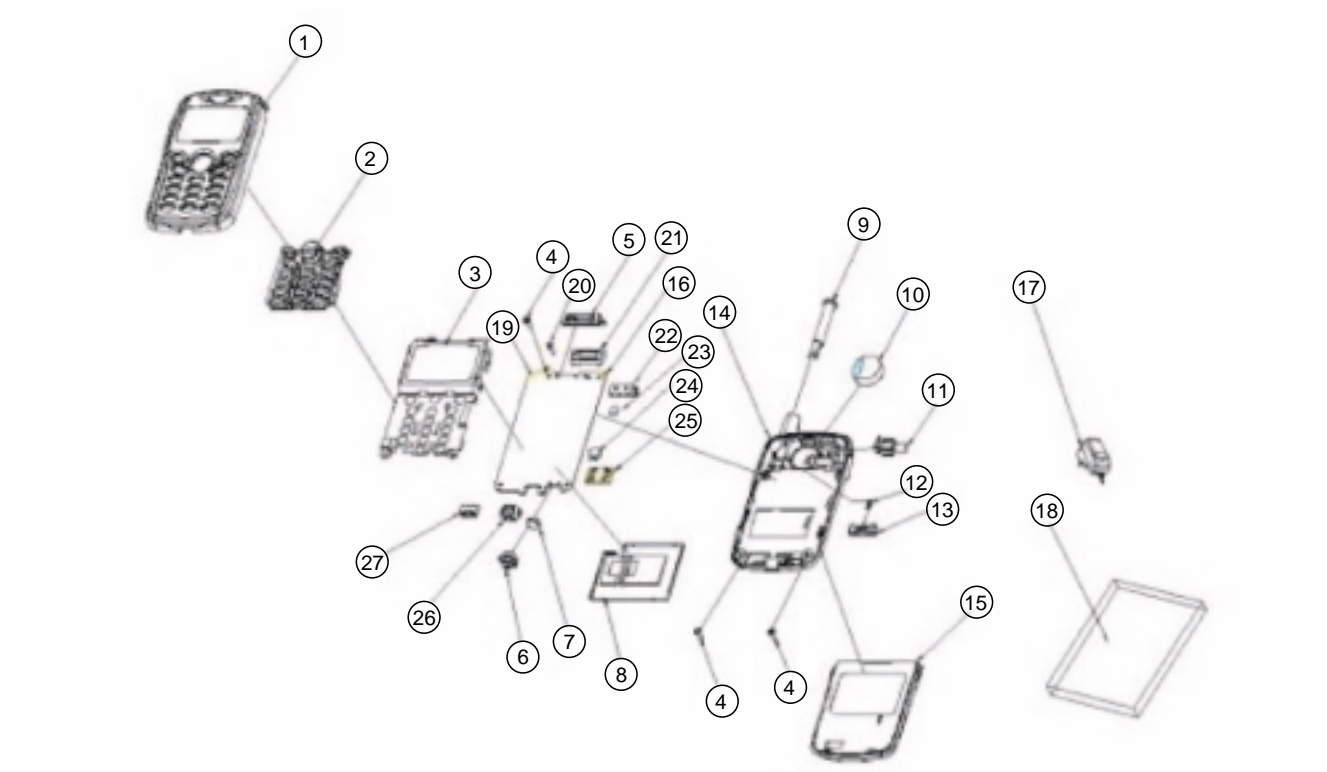
24 exceptions are permitted OUTSIDE band 915 MHz – 980 MHz.

Intermodulation Characteristics:

Interferer Level (f1 & f2) dBm –49	Interferer Frequencies (f1 & f2) Wanted frequency = $2f_1 - f_2$ And $[f_1 - f_2] = 800$ kHz
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6. REPLACEMENT PARTS LIST

6.1. Exploded View



6.2. Replacement Parts List

Ref. No.	Part No.	Description
1	32VE1TAPA07	Upper case (Silver)+Panel Silver
	32VE1TAPA23	Upper case (Pearl White)+Panel Red
	32VE1TAPA15	Upper case (Pearl White)+Panel Pink
2	EEVE1001019	P+R Key SET VE1 (English + BPM) Silver (Taiwan)
	EEVE1001027	P+R Key SET VE1 (English + BPM) Coated Red (Taiwan)
	EEVE1001035	P+R Key SET VE1 (English + Stroke) Silver (China, Singapore, HK, Malaysia)
	EEVE1001043	P+R Key SET VE1 (English + Stroke) Coated Red (China, Singapore, HK, Malaysia)
	EEVE1001051	P+R Key SET VE1 (English) Silver (India, Thailand, Philippines)
	EEVE1001060	P+R Key SET VE1 (English) Coated Red (India, Thailand, Philippines)
3	FBVE1003019	Shield Top
4	MS16040IKQ8	Screw
5	GBVE1001016	Receiver Gasket
6	DN0B613L048	MIC
7	GBVE1002012	MIC Holder
8	FBVE1002012	Shield-SIM-Holder
9	DQ6CF003B01	Antenna Assy (White)
	DQ6CF003A03	Antenna Assy (Gray)
10	DN001308011	Speaker
11	AY010331011	Vibrator
12	FDVE1001018	Batt Knob Spring
13	EBVE1001016	Batt Konb (Silver)
	EBVE1001024	Batt Konb (White)
14	EAVE1002011	Base Case (Silver)
	EAVE1002020	Base Case (Pearl White)
15	AHL03707131	Battery Assy (Silver)
	AHL03707149	Battery Assy (Pearl White)
16	10MBZZZPA09	Main Board Assembly
17	1BC9ZZZPA00	Charger for Taiwan, Thai, Philippines
	1BC9ZZZPA18	Charger for India, Singapore, Malaysia
	1BC9ZZZPA26	Charger H.K
18	HDVE1001018	Operating Instructions
19	BEBL0002Z71	Backlight LED
20	DFHD01MS101	Antenna Terminal
21	DND501D2004	Receiver
22	DFPJ06FR0186	Earphone Jack
23	DFRF06FS022	RF Connector
24	AHL03001335	Backup Battery
25	DG006000114	SIM Connector
26	DFHS04FS080	DC Jack
27	DFHD03MS240	Battery Terminal