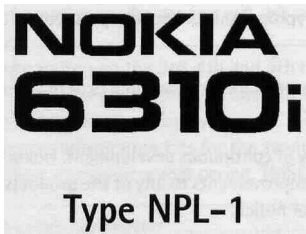


User Guide for Network Monitoring Menu



EGSM900
DCS1800
PCS1900

Copyright © Nokia Corporation 2002. All rights reserved.

Reproduction, transfer, distribution or storage of part or all of the contents in this document in any form without the prior written permission of Nokia is prohibited.

Nokia and Nokia Connecting People are registered trademarks of Nokia Corporation. Other product and company names mentioned herein may be trademarks or tradenames of their respective owners.

US Patent No 5818437 and other pending patents. T9 text input software Copyright (C) 1997-2002. Tegic Communications, Inc. All rights reserved.



Includes RSA BSAFE cryptographic or security protocol software from RSA Security.

Java™ and all Java-based marks are trademarks or registered trademarks of Sun Microsystems, Inc.

Nokia operates a policy of continuous development. Nokia reserves the right to make changes and improvements to any of the products described in this document without prior notice.

Under no circumstances shall Nokia be responsible for any loss of data or income or any special, incidental, consequential or indirect damages howsoever caused.

The contents of this document are provided "as is". Except as required by applicable law, no warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy, reliability or contents of this document. Nokia reserves the right to revise this document or withdraw it at any time without prior notice

The availability of particular accessories may vary by region. Please check with the Nokia dealer nearest to you. Please dispose of batteries properly.

Contents

1. Introduction.....	2
2. Using the Field Test Display.....	3
Activation and deactivation	3
Field test modes	4
Available tests	5
3. Information on the displays.....	7
3.1. Group 01: GSM signaling displays which can be visible to the network operators	7
Display 01: Information on the serving cell	7
Display 02: More information on the serving cell.....	9
Display 03: Information on the serving cell, 1st and the 2nd neighbour.....	11
Display 04: Information on the 3rd, 4th and 5th neighbours.....	12
Display 05: Information on the 6th, 7th and 8th neighbours.....	13
Display 06: Network selection display.....	15
Display 07: System information bits for the serving cell	16
Display 08: Values of paging repeat period, TMSI, periodic location update.....	17
Display 09: Network parameters	18
Display 10: Ciphering, hopping, DTX status and IMSI.....	19
Display 11: Uplink DTX switching display.....	20
Display 12: Switch BTS_TEST status.....	21
Display 13: Toggle Cell Barred Status.....	23
Display 14: Modify "last used band"	24
3.2. Group 06: GPRS signaling displays	26
Display 01: Information on the current GPRS state and previous TBF configuration.....	26
Display 02: Previous UL TBF establishment.....	28
Display 03: Information on the 6MM state.....	29
Display 04: Values of P-TMSI, RAC, SMS radio priority, Ciphering and Non-DRX parameters.....	30
Display 05: GPRS network parameters.....	31
Display 06: Packet control channel parameters.....	33
Display 07: (Packet) System information parameters.....	34
Display 11: GPRS information of the serving cell and 6 neighbours.....	35
Appendix.....	36

1. Introduction

This booklet describes the features and operation of the NPL-1 EGSM900, DCS1800 and PCS1900 cellular terminal with Field Test Display software. Field Test Display (i.e. Engineering Test Display or Network Monitoring Display) is a software feature available through the user interface of the NPL-1 cellular terminal.

Field Test Display is available only on terminals equipped with special test software; it is not available on standard terminals.

A phone with Field Test software is intended for verification of the operation of the EGSM900, DCS1800 and PCS1900 networks. It may behave differently from the normal phone in some instances, for example:

- The caller's phone number is not displayed
- In some cases the user interface behaves differently from that described in the user manual of the phone
- The performance of the phone can sometimes be lower than that of a standard NPL-1 terminal

A phone with the Field Test Display is not a calibrated measurement device, so it must be borne in mind that:

- Measured values seen in the Field Test Display are approximate (e.g. RSSI levels in field test displays 01, 03, 04 and 05 in group 01)
- Because the Field Test Display is not always updated in real time, the displayed values may actually have changed before they are shown to have done so on the display.

The field test display may change when new SW is updated on the phone. The fields described in this document may have different values, and there may be some displays removed/added in the new SW versions. Nokia reserves the right to make changes to the features and operation of the Field Test Software.



2. Using the Field Test Display

Activation and deactivation

The Field Test Display is located at the end of the main menu loop. It can be activated (or deactivated) in the following way:

- 1 With the display clear, press Menu to enter the menu facility.
- 2 Scroll in the menu main loop to the *Net monitor item* and press Select.
- 3 Enter the index of the test to be activated at the *Group/display:* prompt or enter 0 to deactivate the *Net monitor*. The index is shown on the top left corner of the display. Example: If display 03 in group 01 should be activated enter 0103 in the prompt.
- 4 Confirm by pressing **OK**.

The field test data will then appear after a moment. The index of the test will appear on the top right corner of the display.

When the Field Test Display is active, the phone works in almost the same way as it does when the Field Test Display is inactive, except that the keys  and  scroll through the various tests, whereas they would scroll through the short code memory when the Field Test Display is inactive. There may also be some other differences compared to the operation of the normal NPL-1 terminal.

The Field Test Display appears as a so-called soft indicator, which means that it is visible only if there is nothing else to display. For example, once the first digit of a phone number has been entered, the Field Test Display disappears and the entered digit is shown. After the full number has been dialled, the number disappears and the Field Test Display reappears on the screen.

The only way to deactivate the Field Test Display is to clear the *Group/display*:prompt in the *Net monitor* menu and enter a zero or simply enter 0000 and confirm the input by pressing **OK**.

Field test modes


There are three Field Test Display modes:



- execute mode
- data display mode
- help mode

The execute modes (in displays 11, 12 and 13 in Group 1) are entered from the menu as described above. The execute mode is of the once-off type.

To run another test in the execute mode, the *Netmonitor* menu must be re-activated.

While in data display mode, the field test data (e.g. carrier, power level, cell) are visible on the main display.

While in help mode, one screen of instructions is shown for each test to make it easier to identify the test in question. To toggle between these two modes, press and hold the  key.

The scroll keys  and  offer an easy way to switch to another test without using the menu. However, the data display mode remains, i.e. nothing will be executed or set on although such tests would be passed. The help mode is also a non-execute mode.

Available tests

The following test displays are available through the Field Test Display. Field test displays do not work with the normal terminal software; special field test software is needed.

Group 01 includes GSM signaling displays which can be visible to network operator, and group 06 includes GPRS signaling displays.

Group 01: GSM signaling displays

Display 01: Information on the serving cell

Display 02: More information on the serving cell

Display 03: Information on the serving cell, 1st and 2nd neighbours

Display 04: Information on the 3rd, 4th and 5th neighbours

Display 05: Information on the 6th, 7th and 8th neighbours

Display 06: Network selection display

Display 07: System information bits for the serving cell

Display 08: Paging repeat period, TMSI, periodic location update

Display 09: Network parameters

Display 10: Ciphering, hopping DTX status and IMSI

Display 11: Uplink DTX switching display

Display 12: Storing and removing BTS_TEST carrier

Display 13: Toggle cell barred status

Display 14: Modify "last used band"

Group 06: GPRS signaling displays

Display 01: Information on the current GPRS state and previous TBF configuration

Display 02: Previous UL TBF establishment

Display 03: Information on the GMM state

Display 04: Values of P-TMSI, RAC, SMS radio priority, Ciphering and Non-DRX parameters

Display 05: GPRS Network parameters

Display 06: Packet control channel parameters

Display 07: (Packet) system information parameters

Display 11: (GPRS information on the serving cell and 6 neighbours

3. Information on the displays

3.1. Group 01: GSM signaling displays which can be visible to the network operators

The network operators can activate these signaling displays. Before the field test displays are visible, mobile has to be modified. With the normal production mobile, field test displays are not available.

Display 01: Information on the serving cell

If the mobile is on TCH (Traffic channel), e.g. during call or location update, display 1 offers the following information:

<i>abbb</i>	<i>cc</i>	<i>ddd</i>
<i>e</i>	<i>ff</i>	<i>g mmmm</i>
<i>nnn</i>	<i>ppp</i>	<i>rr</i>
<i>qq</i>		<i>oooo</i>

Where:

- *a* H if the carrier numbers are scrolled when hopping is on. Otherwise empty.
- *bbb* When mobile is on TCH:
 - DCH carrier number in decimals.When mobile is NOT on TCH:
 - CH carrier number in decimals.When hopping is on, used carrier numbers are scrolled when display is updated.

The DCH/CH-carrier number (*bbb*) can be shown in format *Ebb*, for example *E22* = channel 1022.
- *cc* RX level in dBm, - sign is not shown if $cc \leq -100$

- ddd TX power level. If transmitter is on, the symbol * is shown in front of the power level value.
- e Time Slot, range is 0 - 7
- ff Timing advance, range is 0 - 63
- g RX quality (sub), range is 0 - 7
- mmmm Radio Link Timeout value. If the value is negative, 0 is shown. The maximum value is 64. When the mobile is NOT on TCH then xx is shown.
- nnn Value of the path loss criterion (C1).
Range is -99 - 999.
- ppp Value of the cell reselection criterion (C2).
Range is -99 - 999.
- rr Currently used band. Values: 9 = GSM900/EGSM900,
18 = DCS1800, 19 = PCS1900
- qq G is shown when MS is attached to GPRS and P is shown when MS has activated PDP context (GPRS specific displays should be followed), otherwise the location is empty.
- oooo Type of current channel:
THRO: TCH HR subchannel 0
THR1: TCH HR subchannel 1
TFR:TCH FR
TEFR : TCH EFR
F144: TCH FR data channel, speed 14.4 kbps
F96: TCH FR data channel, speed 9.6 kbps
F72: TCH FR data channel, speed 7.2 kbps
F48: TCH FR data channel, speed 4.8 kbps
F24: TCH FR data channel, speed 2.4 kbps
H480: TCH HR data channel, speed 4.8 kbps, subch 0
H481: TCH HR data channel, speed 4.8 kbps, subch 1
H240: TCH HR data channel, speed 2.4 kbps, subch 0
H241: TCH HR data channel, speed 2.4 kbps, subch 1

FA: TCH FR signalling only (FACCH) channel
 FAHO : TCH HR signalling only (FACCH) channel,
 subch 0
 FAH1 : TCH HR signalling only (FACCH) channel,
 subch 1
 PCCCH, PBCCH, PAGCH, PNDRX: GPRS packet control
 channel
 PDTCH: GPRS traffic channel
 NDRX: GPRS non-DRX mode (in CCCH)
 SDCC : SDCCH
 AGCH : AGCH
 CCCH : CCCH
 CBCH : CCCH and cell broadcast receiving on
 BCCH : BCCH
 SEAR : SEARCH
 NSPS : MS is in No Serv Power Save state

- HELP display:

<i>CH</i>	<i>RxL</i>	<i>TxPwr</i>	
<i>TS</i>	<i>TA</i>	<i>RQ</i>	<i>RLT</i>
<i>C1</i>		<i>C2</i>	<i>BD</i>
<i>GP</i>			<i>CHT</i>

Display 02: More information on the serving cell

<i>aa</i>	<i>b</i>	<i>c</i>	<i>Bdd</i>
<i>ee</i>	<i>f</i>		
<i>ggg</i>		<i>hh</i>	<i>iii</i>
<i>H=j</i>	<i>mm</i>		<i>nn</i>

Where:

- *aa* Paging mode
 NO: normal paging

EX: extended paging

RO: paging reorganization

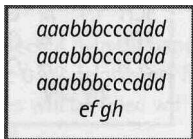
SB: same as before

- b Maximum number of Random Access retransmission
- c Roaming indicator, values are R or empty
- Bdd Letter B and BSIC value, range is 0 - 63
- ee Reason for last call release
- f RX quality (full), range is 0 - 7
- ggg Cell reselect offset, range is 0 - 126 dB.
0 - 63 * 2 dB.
'xxx' in active mode.
- hh Temporary offset, range is 0 - 60 dB.
0 - 7 * 10 dB. 70 dB means infinite time,
'xx' in active mode.
- iii Penalty time, range is 0 - 620 s.
0 - 31 * 20 s.
'xxx' in active mode.
- j Hopping channel
 - 0 Single RF channel
 - 1 RF hopping channel
- mm Mobile allocation index offset, MAIO
Range: 00 to 63 / xx when H=0
- nn Hopping sequence number, HSN
Range: 00 to 63 / xx when H=0

HELP display:

<i>PM</i>	<i>RAR</i>	<i>Ro</i>	<i>BC</i>
<i>ReR</i>	<i>QLF</i>		
<i>CRO</i>	<i>TO</i>	<i>PenT</i>	
<i>H</i>	<i>MAIO</i>	<i>HSN</i>	

Display 03: Information on the serving cell, 1st and the 2nd neighbour



row 1: serving cell information

row 2: 1st neighbour information

row 3: 2nd neighbour information

row 4, ef: 1st neighbour information

row 4, gh: 2nd neighbour information

Where:

- **aaa** Carrier number in decimals
The DCH/CH-carrier number (bbb) can also be shown in format Ebb, for example E22 = channel 1022.
- **bbb** C1 value, range is -99 - 999, displayed only in idle mode.
Instead of the C1 value, the letter 'B' and the BSIC value will be displayed in active mode
- **ccc** RX level in dBm, - sign is not shown if $ccc \leq -100$
- **ddd** C2 value, range is -99 - 999
- **e, g** F is shown if cell is in a forbidden location area, otherwise the location is empty.
- **g, h** B is barred, N is normal priority, and L is low priority, otherwise the location is empty.

Neighbours 1 - 3 are affected by multiband reporting parameter (see FTD 7). There will be 0 - 3 neighbours from the other band first and the remaining places will be filled with neighbours from this band in order of RX level.

HELP display:

```
SCH C1 rx C2
1CH C1 rx C2
2CH C1 rx C2
    1N 2N
```

Display 04: Information on the 3rd, 4th and 5th neighbours

```
aaabbbcccd
aaabbbcccd
aaabbbcccd
    ef gh ij
```

row 1: 3rd neighbour information

row 2: 4th neighbour information

row 3: 5th neighbour information

row 4, ef: 3rd neighbour information

row 4, gh: 4th neighbour information

row 4, ij: 5th neighbour information

Where:

- aaa Carrier number in decimals
The DCH/CH-carrier number (bbb) can also be shown in format Ebb, for example E22 = channel 1022.
- bbb C1 value, range is -99 - 999, displayed only in idle mode.
Instead of C1 value, letter 'B' and BSIC value is displayed in active mode.
- ccc RX level in dBm, - sign is not shown if $ccc \leq -100$
- ddd C2 value, range is -99 - 999
- e, g, i F is shown if the cell is in a forbidden location area,

otherwise the location is empty

- f, h, j B is barred, N is normal priority and L is low priority, otherwise the location is empty

Neighbours 1 - 3 are affected by multiband reporting parameter (see FTD 7). There will be 0 - 3 neighbours from the other band first and the remaining places will be filled with neighbours from this band in order of RX level.

HELP display:

```
3CH C1 rx C2
4CH C1 rx C2
5CH C1 rx C2
   3N 4N 5N
```

Display 05: Information on the 6th, 7th and 8th neighbours

```
aaabbbccddd
aaabbbccddd
aaabbbccddd
   efgh ij
```

row 1: 6th neighbour information

row 2: 7th neighbour information

row 3: 8th neighbour information

row 4, ef: 6th neighbour information

row 4, gh: 7th neighbour information

row 4, ij: 8th neighbour information

Where:

- aaa Carrier number in decimals

The DCH/CH-carrier number (bbb) can also be shown in format Ebb, for example E22 = channel 1022.

- bbb C1 value, range is -99 - 999, displayed only in idle mode.
Instead of C1 value, letter 'B' and BSIC value is displayed in active mode.
- ccc RX level in dBm, - sign is not shown if ccc<=-100
- ddd C2 value, range is -99 - 999
- e, g, i F is shown if the cell is in a forbidden location area, otherwise the location is empty
- f, h, j B is barred, N is normal priority and L is low priority, otherwise the location is empty

Neighbours 1 - 3 are affected by multiband reporting parameter (see FTD 7). There will be 0 - 3 neighbours from the other band first and the remaining places will be filled with neighbours from this band in order of RX level.

The following is a quote from Phase 2+ ETSI GSM 05.08 version 5.4.0, section 8.4.3 'Additional cell reporting requirements for multiband MS':

For a multi-band MS the number of cells, for each frequency band supported, which shall be included in the measurement report is indicated by the parameter, MULTIBAND_REPORTING. The meaning of different values of the parameter is specified as follows:

Value	Meaning
0 (00)	Normal reporting of the six strongest cells, with known and allowed NCC part of BSIC, irrespective of the band used.
1(01)	The MS shall report the strongest cell, with known and allowed NCC part of BSIC, in each of the frequency bands in the BA list, excluding the frequency band of the serving cell. The remaining positions in the measurement report shall be used for reporting of cells in the band of the serving cell. If there are still remaining positions, these shall be used to report the next strongest identified cells in the other bands irrespective of the band used.

- 2 (10) The MS shall report the two strongest cells, with known and allowed NCC part of BSIC, in each of the frequency bands in the BA list, excluding the frequency band of the serving cell. The remaining positions in the measurement report shall be used for reporting of cells in the band of the serving cell. If there are still remaining positions, these shall be used to report the next strongest identified cells in the other bands irrespective of the band used.
- 3 (11) The MS shall report the three strongest cells, with known and allowed NCC part of BSIC, in each of the frequency bands in the BA list, excluding the frequency band of the serving cell. The remaining positions in the measurement report shall be used for reporting of cells in the band of the serving cell. If there are still remaining positions, these shall be used to report the next strongest identified cells in the other bands irrespective of the band used.

HELP display:

```

6CH  C1 rx C2
7CH  C1 rx C2
8CH  C1 rx C2
      6N 7N 8N

```

Display 06: Network selection display

This display shows the last registered network country code and network code as well as the codes for four forbidden networks and the first 3 preferred networks.

```

aaaFbbaaaFbb
aaaFbbaaaFbb
aaaFbbaaaFbb
aaaFbbaaaFbb

```

row 1 : last registered network - 1st forbidden network

row 2: 1st preferred network - 2nd forbidden network

row 3: 2nd preferred network - 3rd forbidden network

row 4: 3rd preferred network - 4th forbidden network

Where:

• **aaa** country code

• **bb** network code

HELP display:

<i>LReg</i>	<i>1_For</i>
<i>1_Pre</i>	<i>2_For</i>
<i>2_Pre</i>	<i>3_For</i>
<i>3_Pre</i>	<i>4_For</i>

Display 07: System information bits for the serving cell

<i>E</i>	<i>A</i>	<i>H</i>	<i>C</i>	<i>I</i>	<i>BR</i>
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>fg</i>
<i>EC</i>	<i>2Ter</i>	<i>MB</i>	<i>G</i>		
<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>		

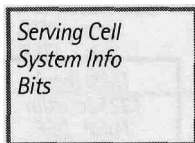
Where:

- **a** 1 is shown if emergency calls are supported, else 0
- **b** 1 is shown if attach-detach-procedure is allowed, else 0
- **c** 1 is shown if half rate channels are supported, else 0
- **d** 1 is shown if C2 values are broadcast, else 0
- **e** 1 is shown if system information 7 and 8 are broadcast, else 0
- **f** 1 is shown if cell broadcast is supported, else 0
- **g** 1 is shown if re-establishment is supported, else 0
- **h** In idle mode 1 is shown if Early Classmark (ECSC) sending is supported, else 0. In dedicated mode

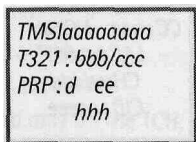
(conversation) X is shown.

- i In idle mode 1 is shown if 2-Ter messages are supported, else 0. In dedicated mode (conversation) X is shown.
- j MultiBand reporting decimal value (0,1,2,3) is shown if supported. This is shown both in idle and dedicated mode.
- k 1 is shown if GPRS is supported, else 0.

HELP display:



Display 08: Values of paging repeat period, TMSI, periodic location update

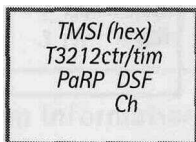


Where:

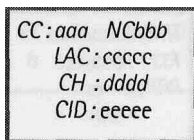
- aaaaaaaaa TMSI value in hex format
- bbb Current value of T3212 counter (range is 000- 'ccc', where 1 means 6 min time. So, if this value is 2 less than 'ccc' then the next periodic location updating will be made within $2 \times 6 \text{ min} = 12 \text{ minutes}$).
- ccc Timeout value of T3212 counter (range is 000 -240, where 1 means 6 min time between location updates and 240 means $240 \times 6 \text{ min} = 24 \text{ h}$ between location updates. 000 means that periodic location update is not in use). This value is received from the network.

- d Value of paging repeat period (range is 2-9, when paging is in every second multiframe, the mobile takes more current than if it were in every 9th multiframe)
- ee Downlink signalling failure value. If the value is negative, 0 is shown. The maximum value is 45. When the mobile is on TCH, then xx is shown.
- hhh Serving cell channel number
The DCH/CH-carrier number (bbb) can also be shown in format Ebb, for example E22 = channel 1022.

HELP display:



Display 09: Network parameters



Where:

- aaa MCC value in decimals (MCC=Mobile Country Code)
- bbb MNC value in decimals (MNC=Mobile Network Code)
- ccccc LAC value in decimals (LAC=Location Area Code)
- dddd Serving cell channel number
The DCH/CH-carrier number (bbb) can also be shown in format Ebb, for example E22 = channel 1022.
- eeeee Cell Identifier in decimals

HELP display:

```
MCC MNC  
LocAreaCode  
ServChannel  
CellId
```

Display 10: Ciphering, hopping, DTX status and IMSI

```
CIPHER : aaa  
HOPPING : bbb  
DTX : ccc  
IMSI : ddd
```

Where

- aaa Ciphering value A51, A52 or OFF
 - bbb Hopping value ON or OFF
 - ccc DTX value ON or OFF
 - ddd IMSI attach
- ON: IMSI attach on
OFF: IMSI attach off

These values are updated only on the TCH.

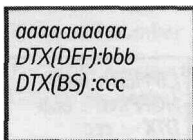
HELP display:

```
CipherValue  
HoppingValue  
DTXValue  
IMSIAttach
```

Display 11: Uplink DTX switching display

With this display it is possible to change MS to use DTX or not if BS allows MS to decide this.

This display must be activated from MENU to change the DTX state. When MENU is not active and the user is scrolling the field test displays with NEXT and PREVIOUS, the DTX state will not change.



```
aaaaaaaaaa
DTX(DEF):bbb
DTX(BS):ccc
```

Where:

- aaaaaaaaaa Status of the switched mode. The values are:

DTX ON : MS uses DTX

DTX OFF : MS does not use DTX

DTX DEF : MS uses default state of DTX.

Defined in MS_PAR.H

NOT ALLOWED: BS does not allow MS to decide whether it uses DTX or not.

bbb The default state of DTX. The values are ON or OFF.

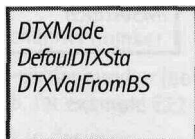
ccc The DTX value from BS. The values are:

MAY: BS allows MS to decide whether it uses DTX or not on uplink.

USE: BS controls MS to use DTX (on uplink)

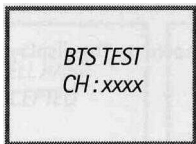
NOT: BS controls MS not to use DTX (on uplink)

HELP display:

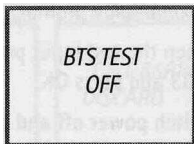


```
DTXMode
DefaulDTXSta
DTXValFromBS
```

Display 12: Switch BTS_TEST status



Mobile is searching only for one frequency
Neighbour measurements are not done.



Mobile is behaving normally.
Neighbour measurements are done.

This display is used to change the BTS_TEST carrier on the permanent memory. If the BTS_TEST carrier is stored in the permanent memory, then each time the mobile sends a search list it uses only the carrier number stored on the Mobile Station the permanent memory. Also the neighbour information from the system information messages is ignored. If the BTS_TEST carrier is not stored, then the mobile behaves normally, that is, it performs the neighbour measurements according to the GSM specifications.

Take the following steps to store the BTS test carrier:

- 1 In idle mode, press Menu.
- 2 Scroll in the menu main loop to the *Net monitor* item and press Select.
- 3 Select display 12 in executive mode by keying in 0112 at the *Group/display:* prompt.
- 4 When the test input prompt will be shown on the display, key in the channel number and press OK.
- 5 Switch power off and on.

Take the following steps to deactivate BTS tests:

- 1 In idle mode, press Menu.
- 2 Scroll in the menu main loop to the *Net monitor* item and press Select.

- 3 Select display 12 in executive mode by keying in 0112 at the *Group/display:* prompt.
- 4 When the test input prompt will be shown on the display, key in 3333 and press OK.
- 5 Switch power off and on.
If the deactivation succeeded, the text *BTS test off* will be shown.

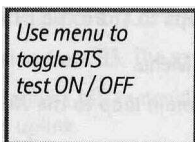
Legal carrier numbers are:

- GSM900 : 1 - 124
- DCS1800 : 512-885
- EGSM900 : 975 - 1023

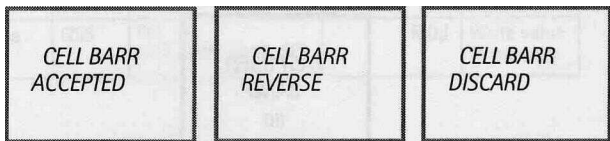
NOTE:

Decimal values should be used, for example 1022 = E22, for EGSM channels as the test input may be shown with a preceding E in other displays.

HELP display:



Display 13: Toggle Cell Barred Status



Only non-barred
cells are used

Only barred
cells are used

Barred and non-
barred cells are used

This test is meant to be used when some cells are tested prior to taking them into commercial use. By setting the barring on in the base station, normal GSM phones will not try to register these barred cells. By selecting cell barring reversed, the MS will only use the cells to be tested. However, if at the same time it is required that MS will be capable of using a normal network, cell barring ignored can be set. Display 13 will show the cell barring mode.

NOTE:

If a cell has been selected before the barring state is changed the selected cell may have a different barring state than that shown on the display. After reselection the cell barring state definitely works.

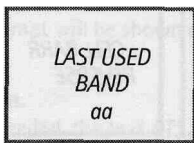
To change the barring status, perform the following steps:

- 1 In idle mode, press Menu.
- 2 Scroll in the menu main loop to the *Netmonitor* item and press Select.
- 3 Select display 13 in executive mode by keying in 0113 at the *Group/display: prompt*

HELP display:



Display 14: Modify "last used band"



This display is applicable only in phones having both European and American frequencies.

With this display it is possible to manipulate the "last used band". In multi-band products this parameter is used at startup to decide which band shall be searched first. In most cases the last used band is the most promising band to find networks in. Nevertheless, for testing purposes it is helpful to have influence on this decision.

If at startup no "last used band" is found in the memory, the "Default" setting (Europe or America) will be effective.

- 1 Press the Menu button.
- 2 Scroll in the main menu loop to field test display item.
- 3 Press the Select button.
- 4 Select this display in executive mode by entering 01.14 (TEST GROUP;TEST DISPLAY) to the query prompt.
- 5 Test input prompt will activate, enter the desired band code (see the table below) in display.
- 6 Confirm with the Ok button.
- 7 REMOVE BATTERY or POWER SUPPLY.

NOTE:

In normal operation the last used band is saved to the memory at power-down. If this value is written via Test Display 01.14, the phone **MUST NOT** be powered off normally afterwards, because then the user-set value will be overwritten. The power supply has to be interrupted instead.

Abbr.	Server	Sub Block ID	Format	Mode	Description
aa	GSS	FTD SB LAST_USED_BAND_SE1"		R,O,I	Write value to memory

Band codes:

Band code	Meaning
9	GSM 900
18	GSM 1800
19	GSM 1900
Other	Delete stored value

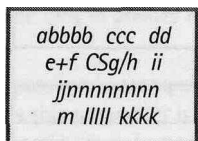
HELP display:

*Use menu to
write first
band to be
searched*

3.2. Group 06: GPRS signaling displays

If MS is not GPRS attached, xxx will be shown on the display.

Display 01: Information on the current GPRS state and previous TBF configuration



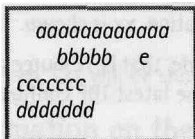
Where:

- a H if carrier numbers are scrolled when hopping is on. Otherwise empty.
- bbbb Carrier number in decimals.
If hopping is on, the used channels are scrolled when the display is updated.
- ccc RX level in dBm, - sign is not shown if $ccc \leq -100$
- dd The latest value for timing advance, range 0-63.
- e Downlink time slot count in the latest TBF configuration, range 0-8.
- f Uplink time slot count in the latest TBF configuration, range is 0 - 8
- g The Channel Coding Scheme of the latest downlink data block, range is 1 - 4
- h The Channel Coding Scheme of the latest uplink data block, range is 1 - 4
- ii The latest value for timing advance index, range 0-15. If continuous timing advance is/was not in use, xx is shown.

- *jj* TFI of the latest TBF configuration, range 0 - 31. If there is/was no downlink TBF in the latest TBF configuration, *xx* is shown.
- *kkkk* MAC mode, that is, resource allocation method, used during the latest TBF configuration:
DYN
EDYN
FIXD
DUSF : USF granularity in use
EUSF : USF granularity in use
F_HD : Fixed Half Duplex
- *lllll* Type of current channel
 In GPRS idle mode, if PBCCH supported in cell:
PCCCH, PBCCH, PAGCH, PNDRX (non-DRX state):
 In GPRS idle mode, if PBCCH not supported in cell:
AGCH, NDRX (non-DRX state), *CCCH, BCCH*
 In GPRS transfer mode: *PDTCH*
 Other possibilities are the same as in Display 1 in group 1.
- *m* R if MS is in READY state, S if GPRS is suspended and otherwise empty.
- *nnnnnnnn* USF values of the latest TBF configuration, the first value corresponding to timeslot 0, next to timeslot 1 and so on. The range of each USF value is 0 - 7. If there is/was no uplink TBF, or dynamic allocation was not used in the latest TBF configuration, *xxxxxxx* is shown. If there is/was an uplink TBF but not all the 8 time slots are/were used, *x* is shown in place of the unused time slots.
- HELP display:

<i>CH</i>	<i>RxL</i>	<i>TAdv</i>
<i>TS</i>	<i>CS</i>	<i>TAI</i>
<i>TFI</i>		<i>USF's</i>
<i>R/S</i>	<i>CHT</i>	<i>MACm</i>

Display 02: Previous UL TBF establishment



- aaaaaaaaaaaaa

The establishment cause of the previous TBF establishment:

ONE-PHASE: one-phase access request

SHORT: short access request

TWO-PHASE: two-phase access request

PAGE RESP: paging response

CELL UPD: cell update

GMM SIGN: GMM or SM procedure

SINGLE BL: single block without TBF establishment

These correspond the establishment causes in PACKET CHANNEL REQUEST.

- bbbbb

PRACH if PACKET CHANNEL REQUEST was sent (PCCCH)

RACH if CHANNEL REQUEST was sent (CCCH)

- e

Radio priority, range 1 - 4s

- ccccc

Result of the TBF establishment:

OK: TBF establishment succeeded.

REJECT: IMM ASS REJECT (CCCH) or PACKET ACCESS REJECT (PCCCH) received from the network.

TIMEOUT: No response to (P)RACH from the network.

QUEUE: CS channel description received in IMM ASS (CCCH) or PACKET QUEUING NOTIFICATION received (PCCCH) and the TBF was not established (the final result may still be OK if the TBF was established correctly after queuing).

FAILURE: TBF establishment failed due to any other reason.

dddddd The used access type, 1 -PHASE or 2-PHASE access.
This informs the finally used method, regardless of the requested access type. If the TBF establishment failed, xxxxxx is shown.

HELP display:

```
establ. cause  
P/RACH pri  
TBF result  
1 or 2-phase
```

Display 03: Information on the GMM state

```
aaa bbbbbbbb  
hcccc ddddd  
READY:eee s  
T312:ggg
```

Where:

- aaa Network operation mode
NW1 or NW2 or NW3
- bbbbbbbb The status of GPRS attach:
(xxxxxxx is displayed in case no GPRS attach is made)
BOTH: Both IMSI and GPRS attach made
GPRS: GPRS attach only
- hcccc The state of GMM
h: main state of GMM
X idle
R registered
D deregistered
cccc: sub state of GMM
susp - suspended
nocel - no cell available
attu - attempting to update

- dddd READY: MS is in READY state
FORCE: MS is in standby state after receiving "force to standby" indication, otherwise STAND (xxxx shown if in IDLE state)
- eee The used timeout value for READY timer. Unit is seconds. xxx if READY timer is deactivated.
- ggg Timeout value of T3312 timer. Range 000 - 192 and unit is minutes. xxx if T3312 timer is deactivated.

HELP display:

```
NWMod Attach
GMMsta Rdy/F
READYtimeout
T3312 tim
```

Display 04: Values of P-TMSI, RAC, SMS radio priority, Cipherng and Non-DRX parameters

```
PTMSaaaaaaaa
RAC:bbbb S:f
CIPH:cccc
PGC:ddd ee s
```

Where:

- aaaaaaaaa P-TMSI value in hex format
- bbbb RAC (Routing Area Code) in hex format
- cccc Cipherng value (negotiated by GMM): OFF / GEA1 / GEA2

Note! Even if the value here would show that cipherng is used, LLC may still send and receive uncipherng blocks.

- ddd SPLIT_PG_CYCLE value indicated by MS. 704 if non-DRX is used, otherwise range is 1 - 352. xxx is shown if SPLIT_PG_CYCLE is not in use in CCCH.
- ee Non-DRX timer indicated by MS. (The actually used value is a minimum of this and the network parameter.) 0 if no non-DRX mode is used after transfer mode, otherwise range is 1 - 64 seconds.
- f SMS radio priority, range 1 - 4. If MO SMS via GPRS is not allowed, x may be shown.

HELP display:

```
P-TMSI
RAC SMSpr
Ciphering
PGC noDRXtmr
```

Display 05: GPRS network parameters

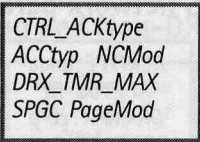
```
ACKTYPE:aaaa
ACC:bb fff
DRXMAX:cc g
SPGC:d PM:ee
```

Where:

- aaaa The value of CONTROL_ACK_TYPE
4ACC: PACKET CONTROL ACKNOWLEDGEMENT is sent as 4 access bursts.
CTRL: PACKET CONTROL ACKNOWLEDGEMENT is sent as RLC/MAC control block.
- bb The value of ACCESS_BURST_TYPE, either 8 or 11 [bits].
- cc The value of DRX_TIMER_MAX, range 1 - 64 seconds.

- d The value of SPLIT_PG_CYCLE_CCCH_SUPPORTED, range 0 - 1. If PBCCH is supported, x is shown.
- ee Paging mode:
NO: normal paging
EX: extended paging
RO: paging reorganization
SB: same as before
- fff NC mode indicated in system information.
If GPRS not supported, xxx is shown.
NC0: No measurement reports, MS decides of the cell re-selections
NC1: Measurement reports. MS decides of the cell re-selections
NC2: Measurement reports. The network commands the cell re-selections.
- g The value of T3168 timer, range 0 - 7, corresponding 0.5s, 1s, ..., 4s.

HELP display:



CTRL_ACKtype
ACCTyp NCMOD
DRX_TMR_MAX
SPGC PageMod

Display 06: Packet control channel parameters

```
PBCCH a g  
PCCCH bb h  
PAG:cc REL:d  
PRA:ee MAX:f
```

If PCCCH is not supported, xxx or 0 is shown on all fields

Where:

- a Value of BS_PBCCH_BLKs, range 1 - 4
- g Hopping of PBCCH
H if PBCCH is hopping, otherwise empty
- bb Value of BS_PCC_CHANS, range 1 - 16
- h Hopping of PCCCH
H if PCCCH is hopping, otherwise empty (also if BS_PCC_CHANS=1)
- cc Value of BS_PAG_BLKs_RES, range 0 - 12
- d Value of BS_PCC_REL, range 0 - 1
- ee Value of BS_PRACH_BLKs, range 0 - 12
- f Maximum retransmissions of PRACH, range 1 - 7

HELP display:

```
PBCCH BLK H  
PCCCH CH H  
PAG_BLKs REL  
PRACH_BL MAX
```

Display 07: (Packet) System information parameters

```
SI13:aaaa  
PSI5:b  
PSI:cc dd ee  
PSISTATUS:f
```

Where:

- **aaaa** The location of System information 13.
NORM: SI 13 available at BCCH Norm
EXT: SI 13 available at BCCH Ext
- **b** The availability of Packet system information 5 (optional)
0: PSI 5 not supported
1: PSI 5 supported
- **cc** The value of PSI_REPEAT_PERIOD, range is 1 - 16. If PBCCH is not supported, xx is shown.
- **dd** The value of PSI_COUNT_LR, range 0 - 63. If PBCCH is not supported, xx is shown.
- **ee** The value of PSI_COUNT_HR, range 0 - 63. If PBCCH is not supported, xx is shown.
- **f** The value of PSI_STATUS_IND, range 0 - 1. If 1, network supports the PACKET_PSI_STATUS message.

HELP display:

```
SI13location  
PSI5  
PSIschedulin  
PSI_STATUS
```

Display 11: GPRS information of the serving cell and 6 neighbours

<i>a</i>	<i>c</i>	<i>d</i>			
<i>b</i>	<i>c</i>	<i>d</i>	<i>b</i>	<i>c</i>	<i>d</i>
<i>b</i>	<i>c</i>	<i>d</i>	<i>b</i>	<i>c</i>	<i>d</i>
<i>b</i>	<i>c</i>	<i>d</i>	<i>b</i>	<i>c</i>	<i>d</i>

row 1: serving cell information

row 2: 1st neighbour on the left, 4th neighbour on the right

row 3: 2nd neighbour on the left, 5th neighbour on the right

row 4: 3rd neighbour on the left, 6th neighbour on the right

xx is shown in all fields if MS performs cell re-selections with GSM cell re-selection algorithm, for example, if PBCCH is not supported and if neither PACKET MEAS ORDER nor PACKET CELL CHANGE ORDER has been received.

Where:

- **a** R if MS is in READY state and therefore applies hysteresis for cell re-selection.
- **b** The value of SAME_RA_AS_SERVING_CELL:
1: cell belongs to the same routing area as the serving cell
0: cell belongs to the different routing area as the serving cell
- **c** The value of CELL_BAR_ACCESS_2. x is shown if PBCCH is not supported.
- **d** The value of EXC_ACC. x is shown if PBCCH is not supported.

HELP display:

<i>S</i>	<i>Ry</i>	<i>BE</i>	
<i>1Ra</i>	<i>BE</i>		<i>4Ra</i>
<i>2Ra</i>	<i>BE</i>		<i>5Ra</i>
<i>3Ra</i>	<i>BE</i>		<i>6Ra</i>
			<i>BE</i>

Appendix

Table 1: Frequency Band for GSM900, DCS1800 and PCS1900 Base Station Systems

	Rx	Tx
GSM900	890- 915 MHz	935- 960 MHz
EGSM900	880- 915 MHz	925- 960 MHz
DCS1800	1710-1785 MHz	1805-1880 MHz
PCS1900	1850-1909 MHz	1930-1989 MHz

Table 2: Channel Numbering for GSM900, DCS1800 and PCS1900 Base Station Systems

	Rx	Channel Number	Tx
GSM900	$F_l(n)=890+0.2*(n)$	$1 \leq n \leq 124$	$F_u(n)=F_l(n)+45$
EGSM900	$F_l(n)=890+0.2*(n)$	$0 \leq n \leq 124$	$F_u(n)=F_l(n)+45$
	$F_l(n)=880.2+0.2*(n-975)$	$975 \leq n \leq 1023$	$F_u(n)=F_l(n)+45$
DCS 1800	$F_l(n)=1710.2+0.2*(n-512)$	$512 \leq n \leq 885$	$F_u(n)=F_l(n)+95$
PCS1900	$F_l(n)=1850.2+0.2*(n-512)$	$512 \leq n \leq 810$	$F_u(n)=F_l(n)+80$

$F_l(n)$ is the center frequency if the RF channel in the lower band (Rx), and $F_u(n)$ is the corresponding frequency in the upper band (Tx).