



SP8011 GSM Test User Manual V2.0

Beijing Starpoint Technology Company Limited

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Preface

SP8011 terminal conformance tester can test GSM, GPRS/EDGE terminal RF indicator on the base of supporting TD-SCDMA terminal RF indicator tests, and it's capable of operating tests for GSM, GPRS/EDGE terminal RF indicator in both signaling mode and non-signaling mode as well as support the switching between TD-SCDMA RMC12.2k CS and GSM CS in connection condition. This article introduces the relevant contents of GSM, GPRS/EDGE terminal tests using SP8011 terminal conformance tester.

1. SP8011 GSM Terminal Test

1.1. Switching to GSM System

1. After SP8011 terminal conformance tester boots, the default interface of the TD-SCDMA system is shown as below:

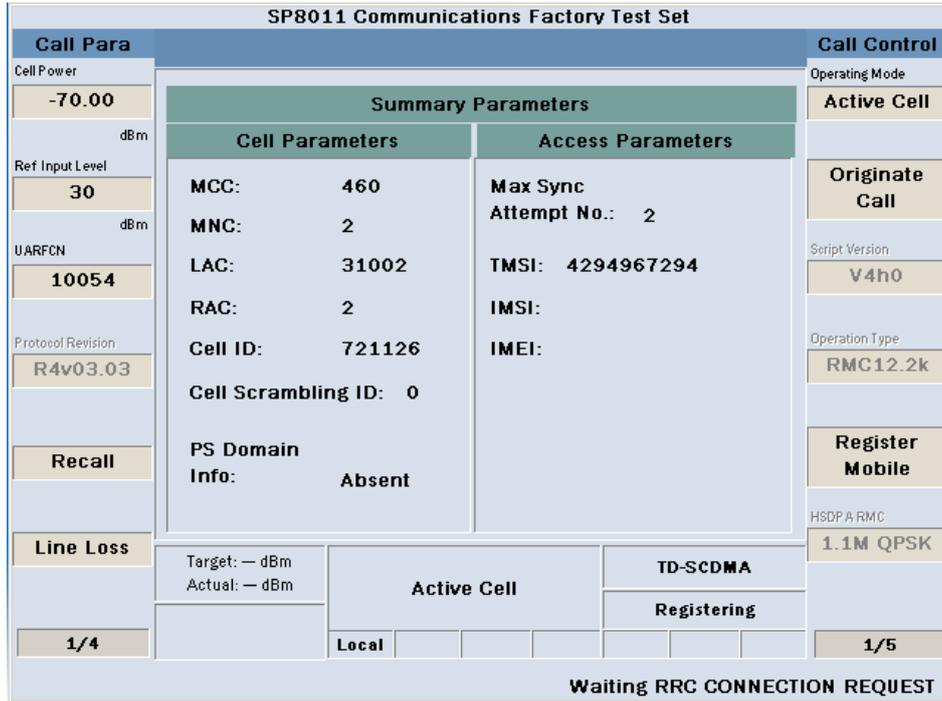


Figure 1-1 the default interface of SP8011 terminal conformance tester

2. Press the **Configuration** button in the front panel control area to enter the system configuration screen, and then press **F5** button for setting system mode, as shown below:

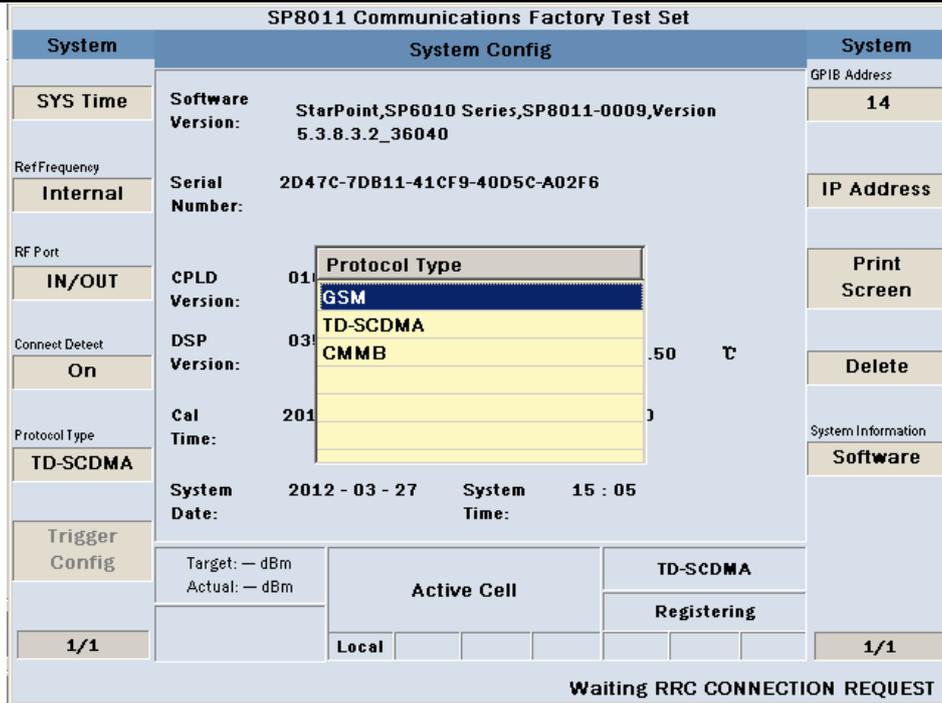


Figure 1-2 the interface of switching systems

- After GSM is selected, SP8011 terminal conformance tester will switch into the GSM system with the initial interface of Active Cell in the GSM system, as shown below:

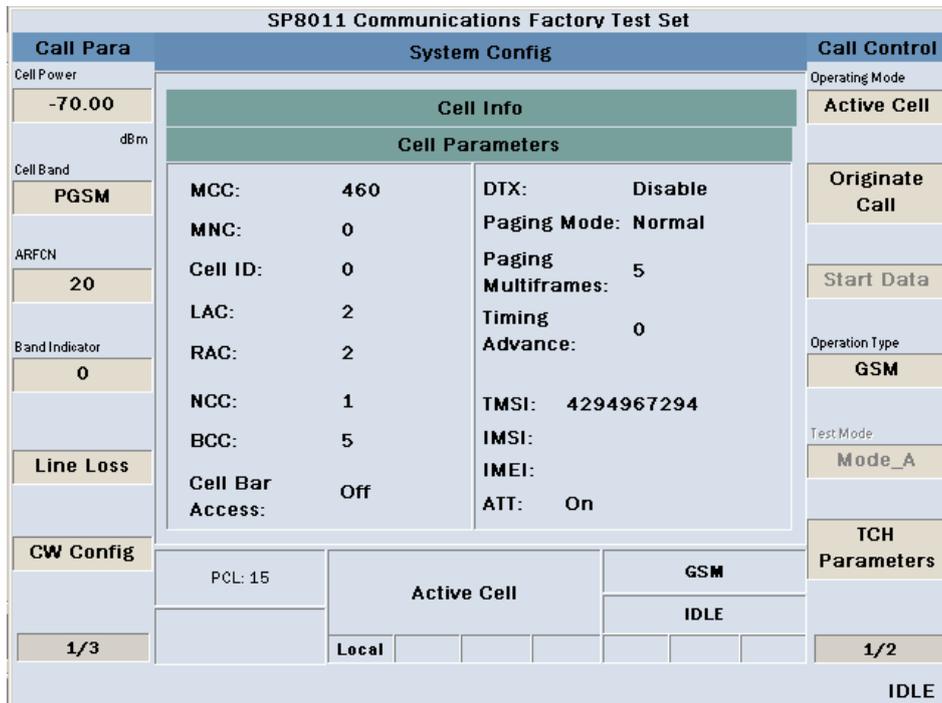


Figure 1-3 the initial Interface of the GSM System

1.2. GSM System Operating Modes

The GSM system of SP8011 terminal conformance tester has four modes, namely Active Cell operating mode, GSM Analyze operating mode, CW operating mode and the Cell Off operating

mode.

After SP8011 terminal conformance tester turns into the GSM system initial interface, press **F7** button to set Operating Mode, as shown below:

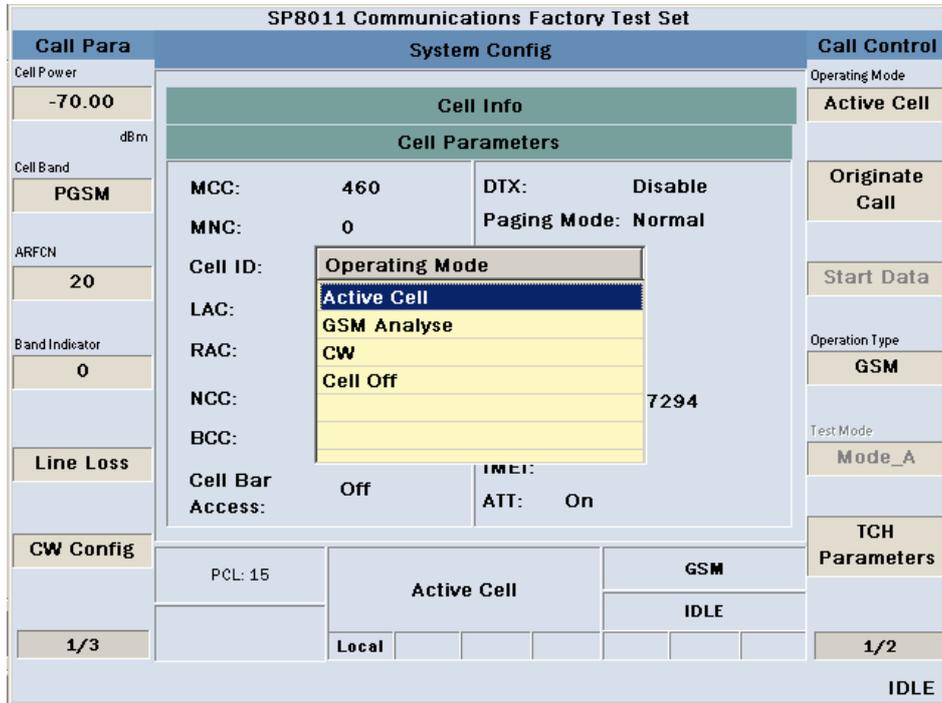


Figure 1- 4 the GSM system mode setting Interface

1.2.1.Active Cell Operating Mode

In Active Cell operating mode, the connection established between conformance tester and the terminal can be either CS domain connection or PS domain data connection. When the connection is established, we can test the RF indicators of both transmitter and receiver.

In this mode, we can carry out the following operations:

- Terminal registering and PS domain attaching
- Terminal emergency calling
- Establishing call connection between conformance tester and terminal in CS domain
- Releasing call connection between conformance tester and terminal in CS domain
- Establishing call connection between conformance tester and terminal in PS domain
- Releasing call connection between conformance tester and terminal in PS domain
- Testing terminal transmitter and Receiver RF indicators

In Active Cell operating mode, the testable items for different services is shown below:

Function category	Test items	GSM	GPRS		EDGE		
			Mode A	Mode B	Mode A	Mode B	Mode SRB
Transmitter indicator	Test of Phase Error and Frequency Error	√	√	√	√	√	√

tests	Transmit Power Test	√	√	√	√	√	√
	Time switch Template Test	√	√	√	√	√	√
	Output RF Spectrum Test	√	√	√	√	√	√
	Spectrum Monitoring Test	√	√	√	√	√	√
	EDGE Modulation Accuracy Test	—	—	—	√	√	√
Receiver indicator tests	GSM Bit Error Rate Test	√	—	—	—	—	—
	GSM Terminal Measurement Report	√	—	—	—	—	—
	GPRS Block Error Rate Testing	—	—	√	—	√	—
	GPRS&EDGE Terminal Measurements Reported	—	—	√	—	√	√
	EDGE SRB Bit Error Rate Test	—	—	—	—	—	√

1.2.2.GSM Analyze Operating Mode

In GSM Analyze Operating mode, conformance tester doesn't transmit Downlink signal or establish connection with the terminal, there is no signal controlling flow either. In this mode, we can carry out the following operations:

- GSM Analyze Frequency Calibrate;
- GSM Analyze Power Calibrate;
- EPSK Frequency Calibrate;
- EPSK Power Calibrate;
- Output RF Spectrum;
- Power vs. Time.

In GSM Analyze operating mode, the relevant settings of Trigger Mode and Receiver Control are still valid, and the setting steps are as follows:

1. Press **More** button on the left side, then press **F1** button to set Trigger Mode parameters, shown as below:

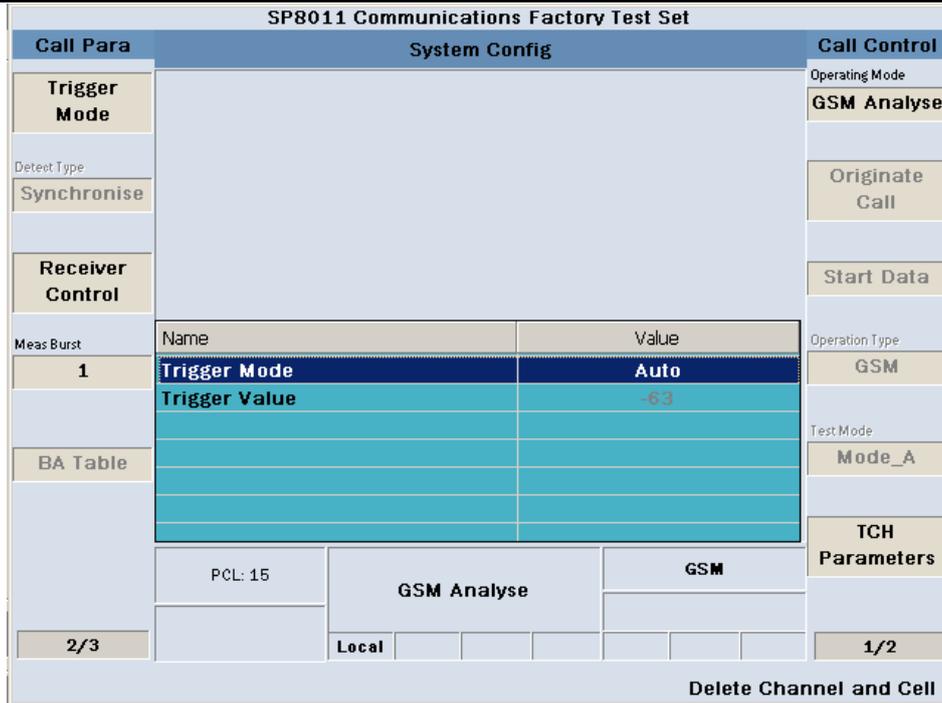


Figure 1-1 Trigger mode parameter setting interface

2. Set relevant parameters in the pop-up menu.

The range and default value of Trigger Mode parameters:

Parameter name	Parameter range	Default
Trigger Mode	Auto / Manual	Auto
Trigger Value	-63 ~ 0	-63

3. Press **F2** (Receiver Control) button to set the Reference input level of receiver, shown as below:

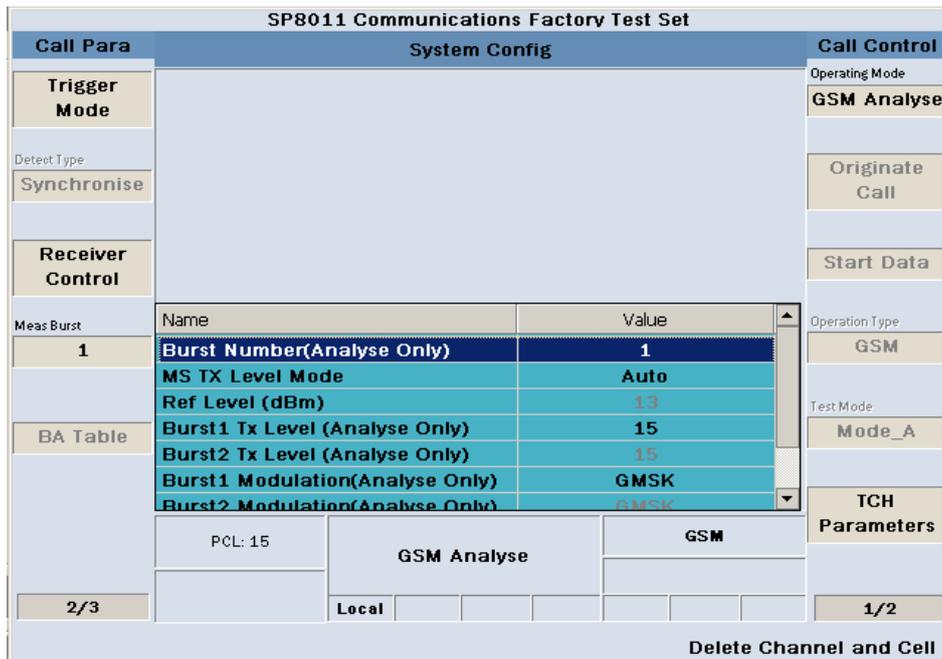


Figure 1-6 Receiver control parameters setting interface

4. Set relevant parameters in the pop-up menu.

The range and default value of Receiver Control parameters:

Parameter name	Parameter range	Default	Unit
MS TX Level Mode	Auto / Manual	Auto	None
Ref Level	-60 ~ 40	13	dBm
TX Level (GSM Analyze Only)	0 ~ 31	15	dBm

1.2.3.CW Operating Mode

In CW operating mode, conformance tester works as a CW signal generator and a CW tester. In this mode, we can carry out the following operations:

- Transmit CW signals with specified frequency and power;
- Measure frequency and power of CW signals.

In CW operating mode, the relevant setting of CW configuration are still valid, and the setting steps are as follows:

1. Press **F6** button to set CW configuration parameters, shown as below:

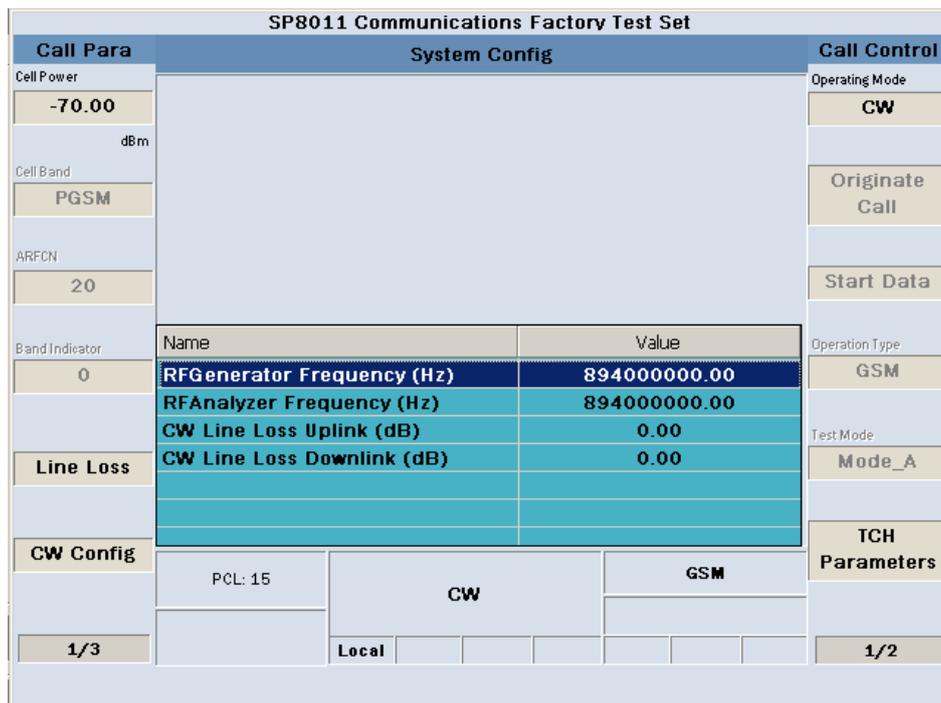


Figure 1-7 CW configuration parameters setting interface

2. Set relevant parameters in the pop-up menu.

The range and default value of CW parameters:

Parameter name	Parameter range	Default	Unit
RF Generator Frequency	330 000 000.00 ~ 2 500 000 000.00	894 000 000.00	Hz
RF Analyze Frequency	330 000 000.00 ~ 2 500 000 000.00	894 000 000.00	Hz

CW Line Loss Uplink	-20.00 ~ 60.00	0.00	dB
CW Line Loss Downlink	-20.00 ~ 60.00	0.00	dB

1.2.4.Cell Off Operating Mode

Some parameters of SP8011 conformance tester can only be modified in Cell Off operating mode, the relevant channel parameters of Cell Parameters can be examples.

In Cell Off operating mode, the setting steps of Cell Parameters relevant parameters are as follows:

1. Press **More** button on the right side then press **F7** button to set Cell Parameters, shown as below:

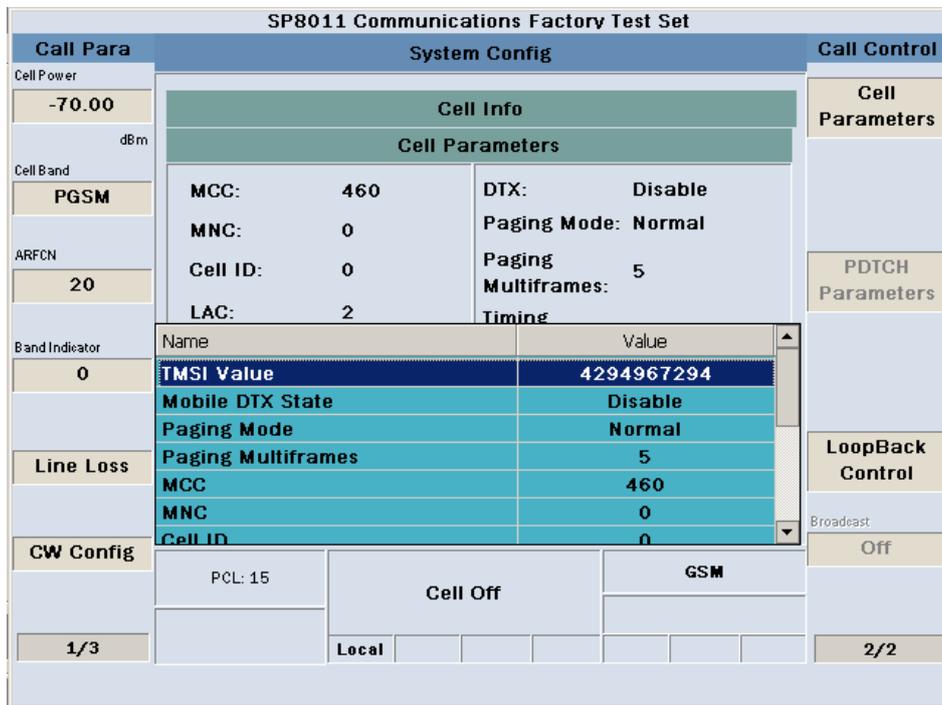


Figure 1-8 Cell parameters setting interface

2. Set relevant cell parameter in the Pop-up menu.

The range and default value of Cell Parameters:

Parameter name	Parameter range	Default
TMSI Value	4294967294	4294967294
Mobile DTX State	Disable / On / Enable	Disable
Paging Mode	Normal / Reorganization	Normal
Paging Multi-frames	2 ~ 9	5
MCC	0 ~ 999	460
MNC	0 ~ 255	0
Cell ID	0 ~ 63	0
LAC	0 ~ 65535	2
BCC	0 ~ 7	5

NCC	0 ~ 7	1
Cell Bar Access	On / Off	Off
Attach State	On / Off	On
EDGE Request	0 / 1	0

1.3. GSM Calling Parameters Setting

After SP8011 conformance tester is switched to GSM system, we can set GSM calling system parameters. Details are as follows:

1. Press **F1** button to set Cell Power, which ranges from -120 dBm to -25 dBm, with a default value of -70 dBm;
2. Press **F2** button to set Cell Band, which can be one of PGSM / EGSM / DCS / PCS / RGSM / GSM480 / GSM750 / GSM850 / TGSM810, with a default value of PGSM, shown as below:

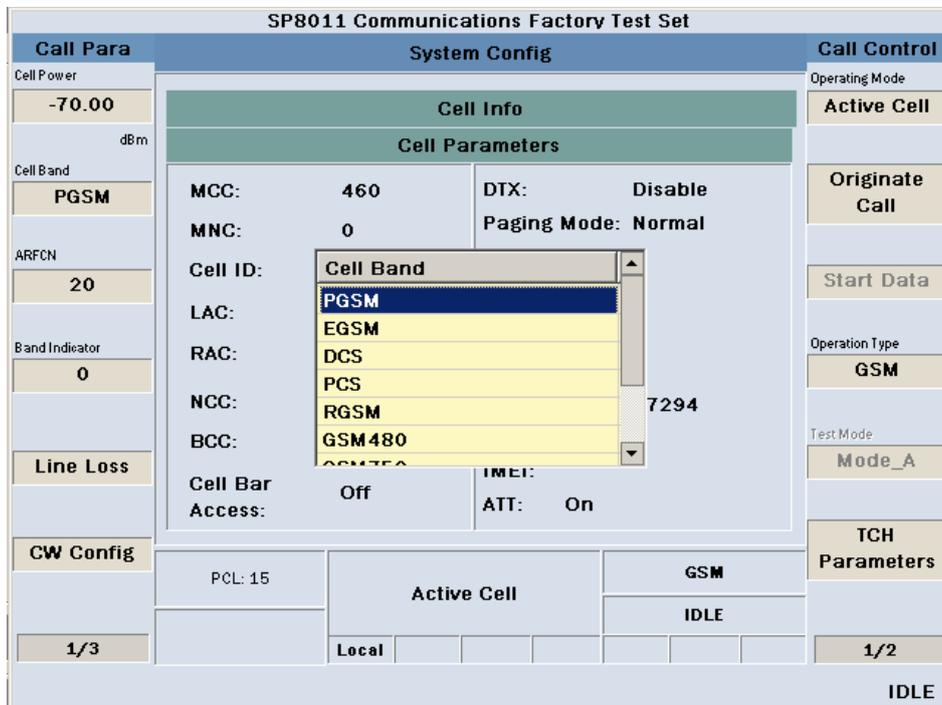


Figure 1-9 GSM system cell band setting interface

3. Press **F3** button ARFCN to set cell down-link channel.

The range and default value of ARFCN parameters:

Parameter name	ARFCN range	ARFCN Default
PGSM	1 ~ 124	20
EGSM	0 ~ 124, 975 ~ 1023	30
DCS	512 ~ 885	698
PCS	512 ~ 810	698
RGSM	0 ~ 124, 955 ~ 1023	30
GSM850	128 ~ 251	160
TGSM810	350 ~ 425	400

GSM750	438 ~ 511	460
GSM480	306 ~ 340	320

- Press **F4** button to set Band Indicator parameter for distinguishing DCS band and PCS band, whose range is 0(representing DCS) / 1(representing PCS) with a default value of 0. This parameter has to be set at first time when DCS or PCS band is switched to.
- Press **F5** button to set Line Loss parameters, we can set up-link/down-link line loss at different bands, shown as below:

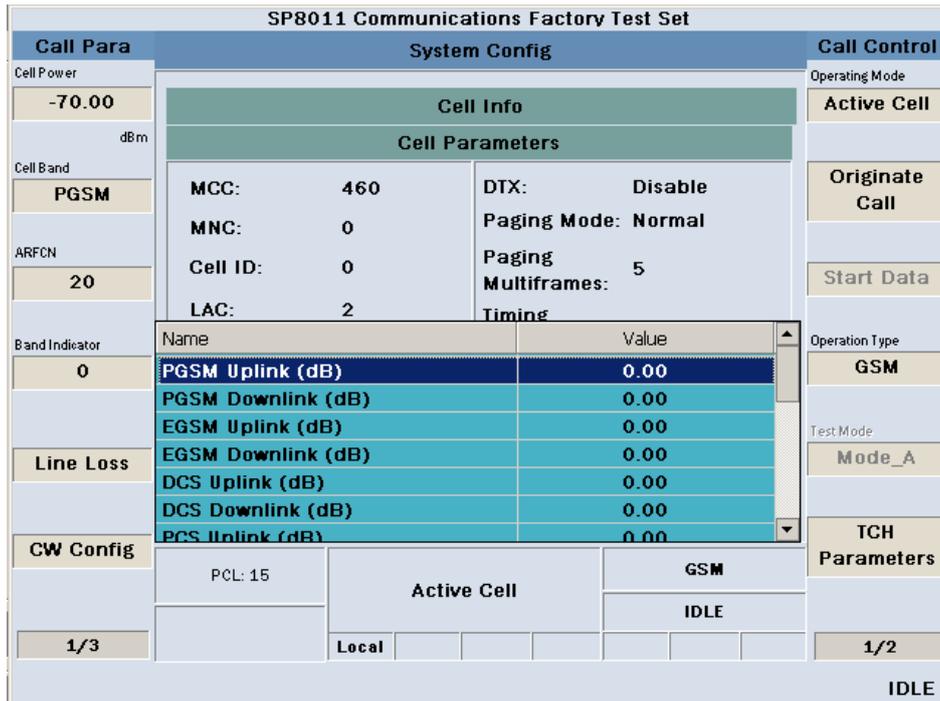


Figure 1-10 line loss of GSM system setting interface

The range and default value of Line Loss parameters:

Parameter name	Parameter range	Default	Unit
PGSM Uplink	-20.00 ~ 60.00	0.00	dB
PGSM Downlink	-20.00 ~ 60.00	0.00	dB
EGSM Uplink	-20.00 ~ 60.00	0.00	dB
EGSM Downlink	-20.00 ~ 60.00	0.00	dB
DCS Uplink	-20.00 ~ 60.00	0.00	dB
DCS Downlink	-20.00 ~ 60.00	0.00	dB
PCS Uplink	-20.00 ~ 60.00	0.00	dB
PCS Downlink	-20.00 ~ 60.00	0.00	dB
RGSM Uplink	-20.00 ~ 60.00	0.00	dB
RGSM Downlink	-20.00 ~ 60.00	0.00	dB
GSM480 Uplink	-20.00 ~ 60.00	0.00	dB
GSM480 Downlink	-20.00 ~ 60.00	0.00	dB
GSM750 Uplink	-20.00 ~ 60.00	0.00	dB
GSM750 Downlink	-20.00 ~ 60.00	0.00	dB

GSM850 Uplink	-20.00 ~ 60.00	0.00	dB
GSM850 Downlink	-20.00 ~ 60.00	0.00	dB
TGSM810 Uplink	-20.00 ~ 60.00	0.00	dB
TGSM810 Downlink	-20.00 ~ 60.00	0.00	dB

6. Press **More** button on the left side, then press **F3** (Meas Burst) button to set current time slot, which can be one of 1 / 2 / 3 / 4 / 5, with a default value of 1, shown as below:

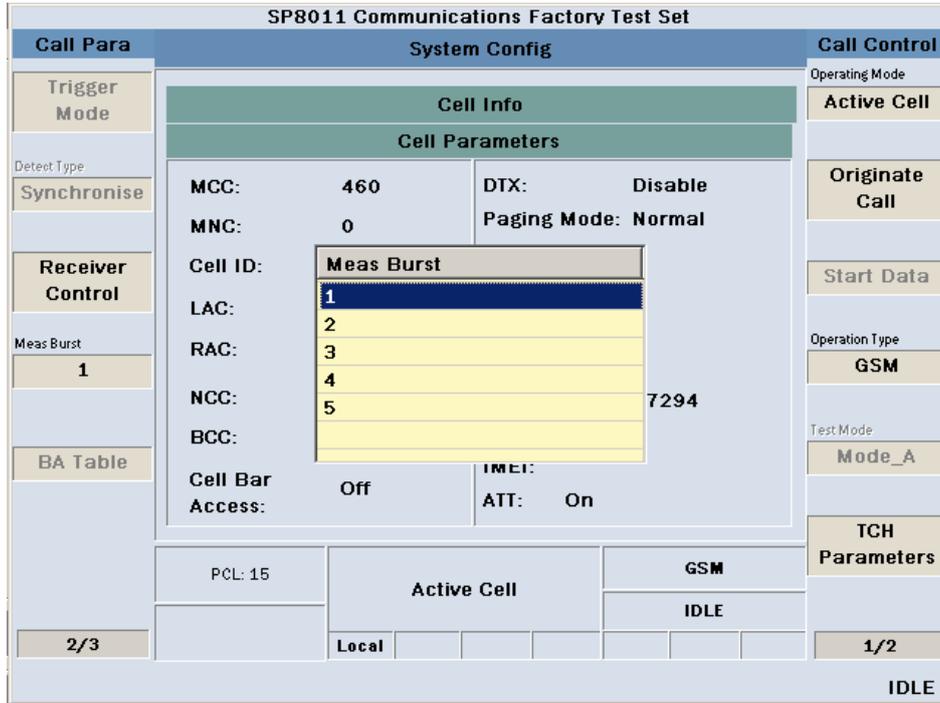


Figure 1-11 Meas Burst parameter setting interface

7. Press **F7** button to set GSM system operating mode of SP8011 terminal conformance tester, as shown below:

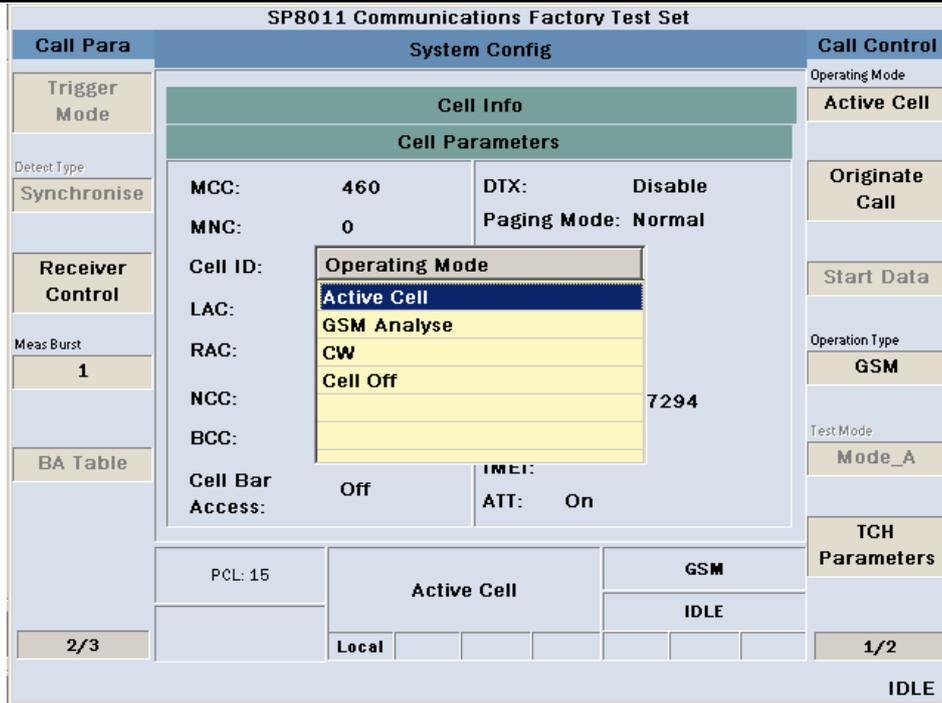


Figure 1-12 GSM system operating mode setting interface

- Press **F10** button to set GSM system service category, which can be one of GSM / GPRS / EDGE/ NSFT_CS / NSFT_SRB, with a default value of GSM, shown as below:

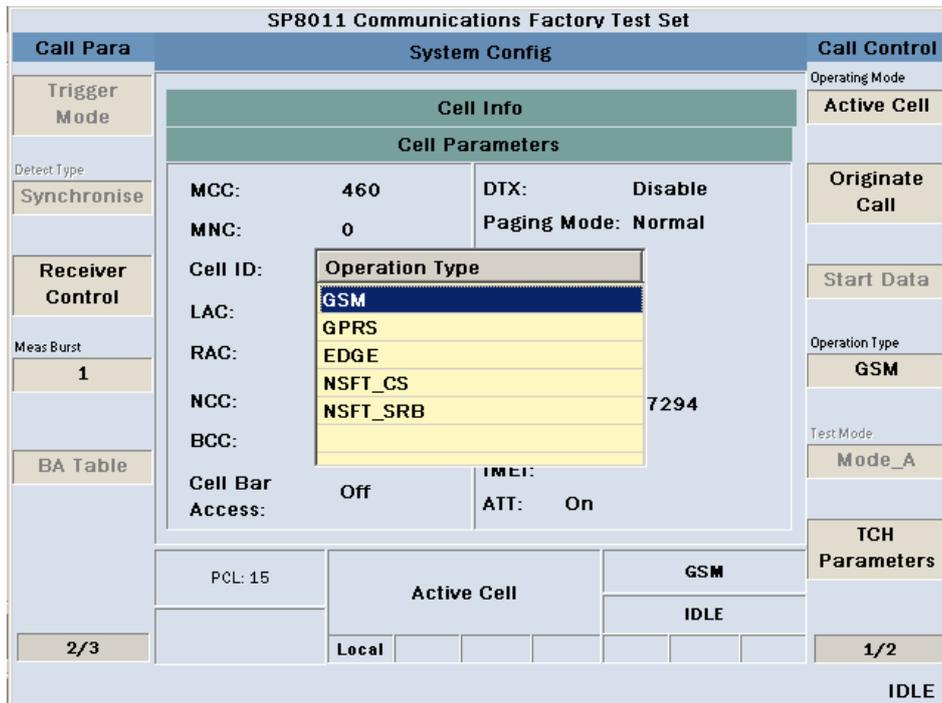


Figure 1-13 GSM system service category setting interface

- When the service category is GPRS, press **F11** button to set testing mode, setting range is Mode A / Mode B(UM) / Mode B(AM), with a default value of Mode A, shown as below:

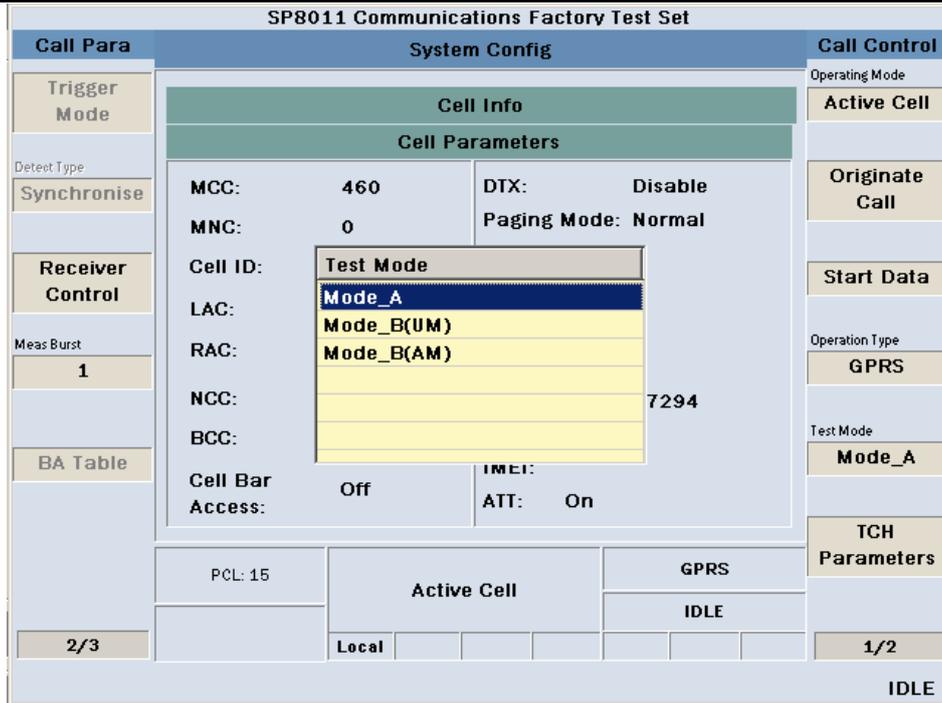


Figure 1-14 GPRS testing mode setting interface

- When the service category is EDGE, press **F11** button to set testing mode, setting range is Mode A / Mode B(UM) / Mode B(AM) / Mode SRB, with a default value of Mode A. Shown as below:

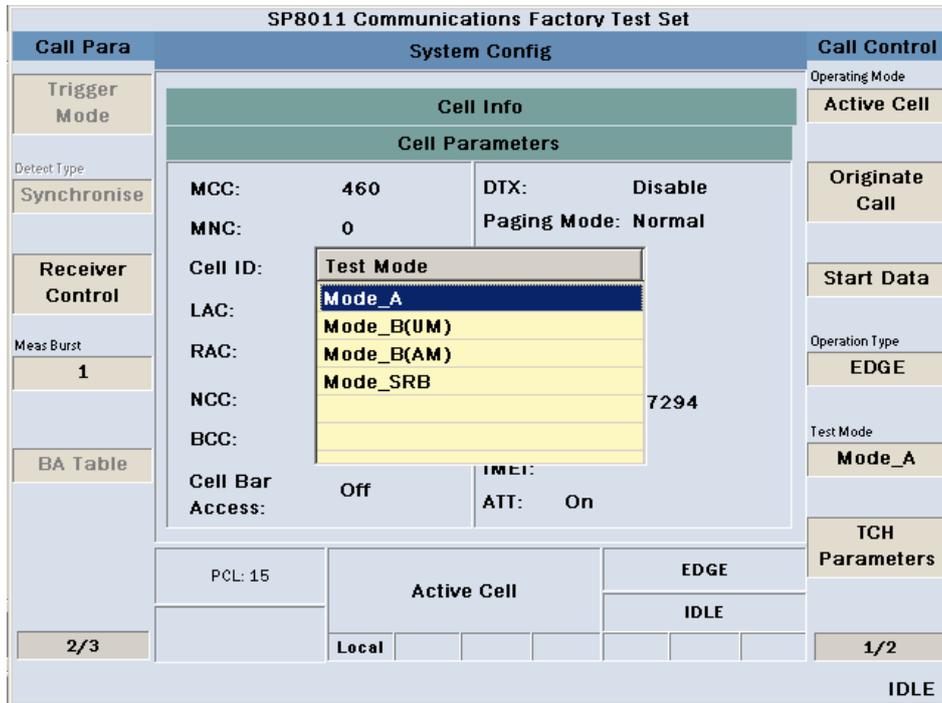


Figure 1-15 EDGE testing mode setting interface

- When the service category is NSFT_CS / NSFT_SRB, press the More in the left side to turn to the second page, then press **F2** to set up the detect type, setting range is Synchronies / Asynchronies, with a default value of Synchronies (this parameter can be changed only when cell off) . Shown as below:

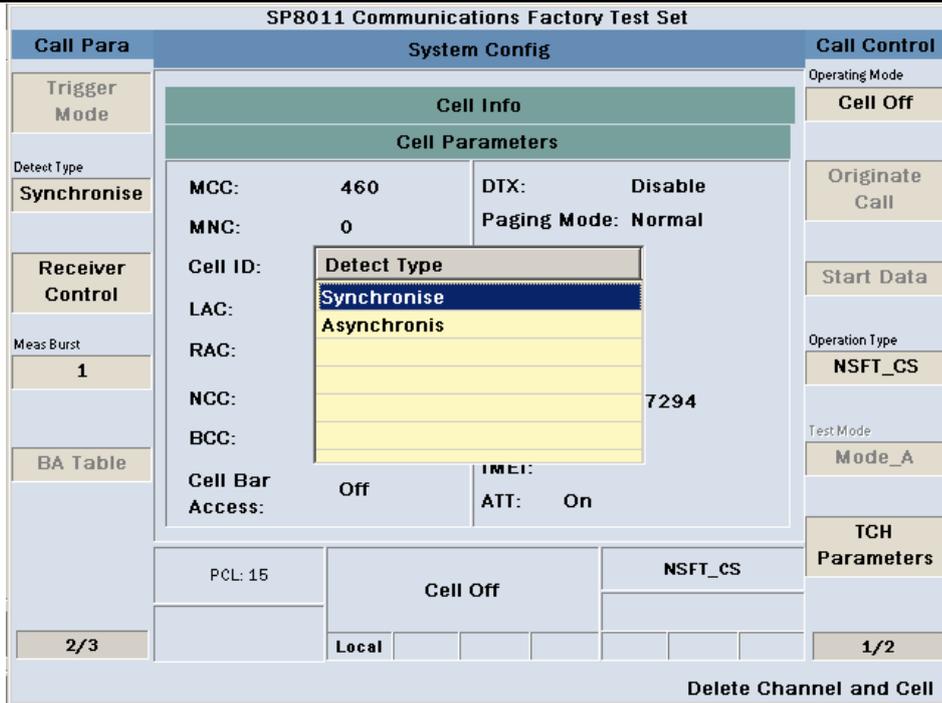


Figure 1-16 detect type setting interface

9. Press **F12** button (TCH parameters) to set up-link TCH parameters, shown as below:

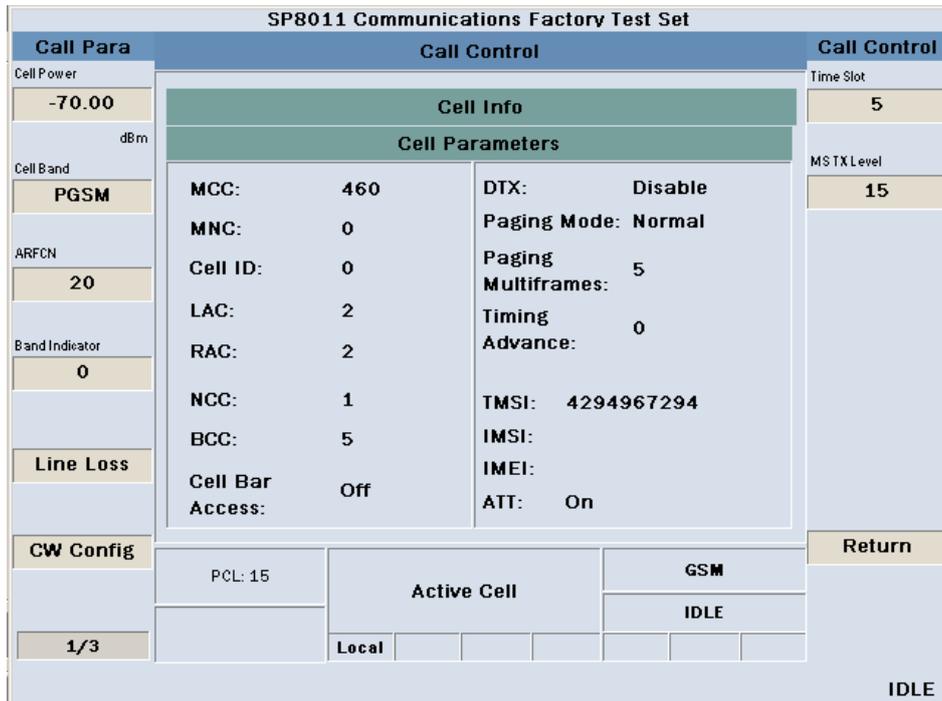


Figure 1-17 TCH signal channel parameter setting interface

- 1) Press the **F7** button to set the up TCH channel slot, which ranges from 0 to 7, with a default value of 5;
- 2) Press the **F8** button to set MS TX Level, which ranges from 0 to 31, with a default value of 15;

10. Press **More** button on the right side, then press **F9** button to set the PDTCH parameters, as

shown below:

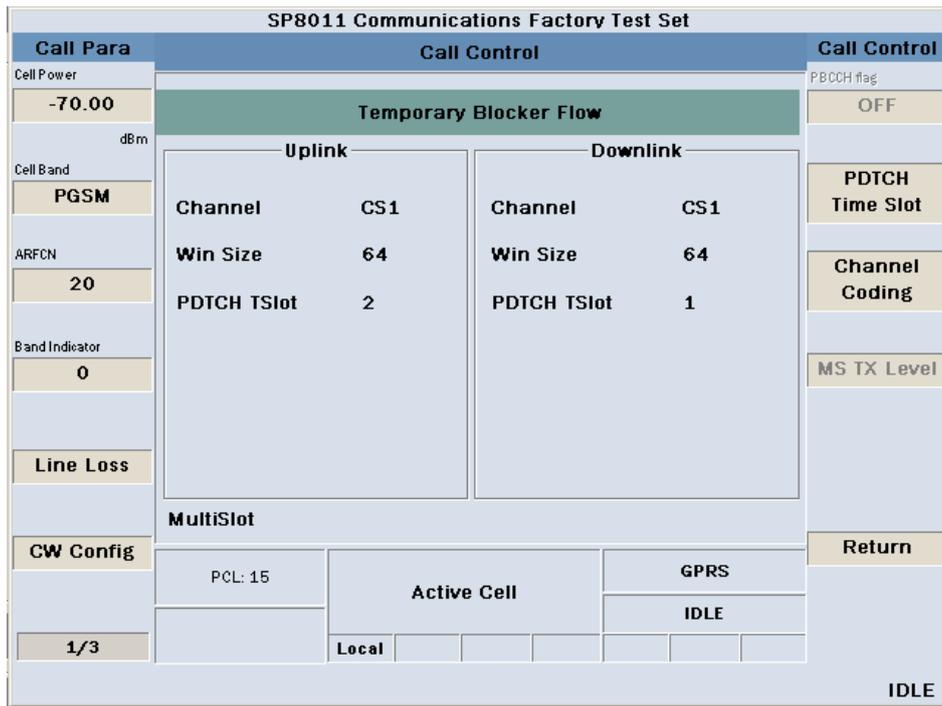


Figure 1-18 PDTCH Parameters setting interface

- 1) Press **F8** button to set the PDTCH time slot, as shown below:



Figure 1-19 PDTCH Time Slot parameter setting interface

The range and default values of PDTCH Time Slot parameters:

Parameter	GPRS / EDGE	
	Mode_A	Mode_B

	Range	Default	Range	Default
Uplink Time Slot Number	1 / 2	2	1 / 2	1
Downlink Time Slot Number	1 / 2	1	1 / 2	1

2) Press **F9** button to set the parameters of Channel Coding, as shown below:

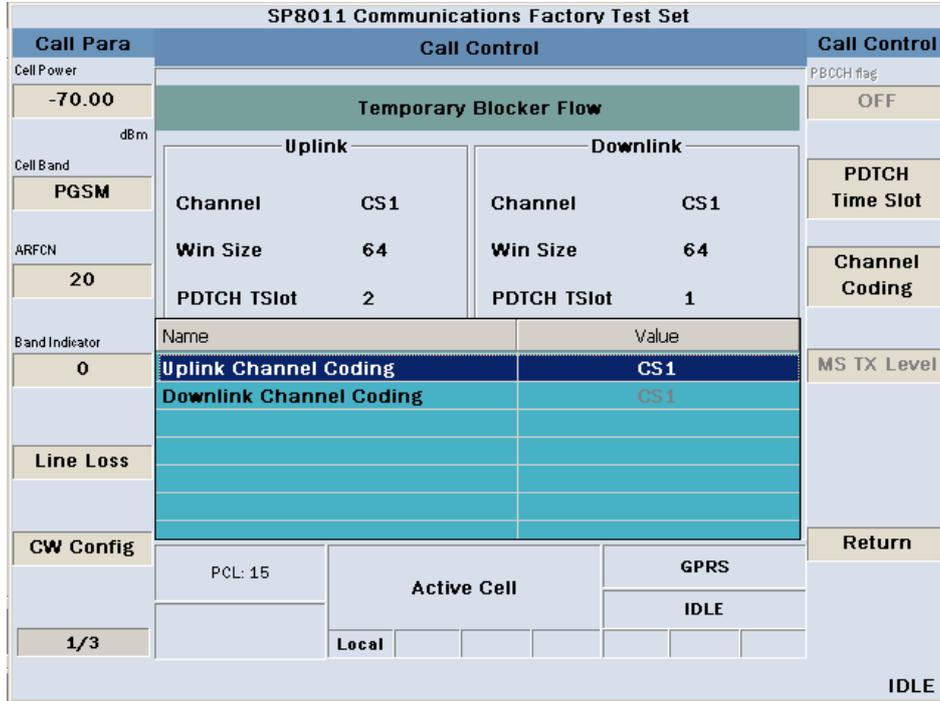


Figure 1-19 Channel Coding parameter setting interface

The range and default values of Channel Coding parameters:

- GPRS service types

Parameter	GPRS Mode A		GPRS Mode B	
	Range	Default	Range	Default
Uplink Channel Coding	CS1 ~ CS4	CS1	CS1 ~ CS4	CS1
Downlink Channel Coding	—	—	—	—

- EDGE service types

Parameter	EDGE Mode A		EDGE Mode B / Mode SRB	
	Range	Default	Range	Default
Uplink Channel Coding	MCS1 ~ MCS9	MCS1	MCS1 ~ MCS9	MCS1
Downlink Channel Coding	—	—	—	—

3) Press **F10** button to set the parameters of MS TX Level, as shown below:

SP8011 Communications Factory Test Set						
Call Para	Call Control				Call Control	
Cell Power					PBCH flag	
-70.00	Temporary Blocker Flow				OFF	
Cell Band	Uplink		Downlink		PDTCH Time Slot	
PGSM	Channel	CS1	Channel	CS1		
ARFCN	Win Size	64	Win Size	64	Channel Coding	
20	PDTCH TSlot	2	PDTCH TSlot	1		
Band Indicator	Name		Value		MS TX Level	
0	MS TX Level Burst 1		15			
	MS TX Level Burst 2		15			
	MS TX Level Burst 3		15			
Line Loss	MS TX Level Burst 4		15			
	MS TX Level Burst 5		15			
CW Config	PCL: 15		Active Cell		GPRS	
					PS Connected	
1/3	Local					
UL TBF success						

Figure 1-21 PDTCH channel MS TX Level parameters setting interface

The range and default values of MS TX Level parameters:

Parameter	GPRS / EDGE		GPRS / EDGE	
	Mode A		Mode B / EDGE Mode SRB	
	Range	Default	Range	Default
MS TX Level Burst1	0 ~ 31	15	0 ~ 31	15
MS TX Level Burst2	0 ~ 31	15	—	—
MS TX Level Burst3	—	—	—	—
MS TX Level Burst4	—	—	—	—
MS TX Level Burst5	—	—	—	—

1.4. Call Handling

1.4.1. Terminal Registering

Terminal registering steps are as follows:

1. After SP8011 terminal conformance tester boots, we switch to GSM system, then the default interface of the GSM system is shown as below:

SP8011 Communications Factory Test Set																																															
Call Para	Call Control					Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td></td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td></td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>					Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:		BCC:	5	IMEI:		Cell Bar Access:	Off	ATT:	On	Operating Mode	
Cell Info																																															
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RAC:	2	TMSI:	4294967294																																												
NCC:	1	IMSI:																																													
BCC:	5	IMEI:																																													
Cell Bar Access:	Off	ATT:	On																																												
-70.00						Active Cell																																									
dBm																																															
Cell Band						Originate Call																																									
PGSM																																															
ARFCN						Start Data																																									
20																																															
Band Indicator						Operation Type																																									
0						GSM																																									
Line Loss						Test Mode																																									
						Mode_A																																									
CW Config						TCH Parameters																																									
	PCL: 15	Active Cell			GSM																																										
					IDLE																																										
1/3		Local				1/2																																									
IDLE																																															

Figure 1-22 the initial interface of GSM system

2. Press **F10** button to set the desired type of business;
3. Connect the conformance tester with the terminal;
4. Open the terminal then register it;
 - 1) When the service type is GSM, after the terminal registration is completed, we can see the interface below:

SP8011 Communications Factory Test Set																																															
Call Para	Call Control					Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td>460021004100850</td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td>355282041215390</td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>					Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:	460021004100850	BCC:	5	IMEI:	355282041215390	Cell Bar Access:	Off	ATT:	On	Operating Mode	
Cell Info																																															
Cell Parameters																																															
MCC:	460	DTX:	Disable																																												
MNC:	0	Paging Mode:	Normal																																												
Cell ID:	0	Paging Multiframes:	5																																												
LAC:	2	Timing Advance:	0																																												
RAC:	2	TMSI:	4294967294																																												
NCC:	1	IMSI:	460021004100850																																												
BCC:	5	IMEI:	355282041215390																																												
Cell Bar Access:	Off	ATT:	On																																												
-70.00						Active Cell																																									
dBm																																															
Cell Band						Originate Call																																									
PGSM																																															
ARFCN						Start Data																																									
20																																															
Band Indicator						Operation Type																																									
0						GSM																																									
Line Loss						Test Mode																																									
						Mode_A																																									
CW Config						TCH Parameters																																									
	PCL: 15	Active Cell			GSM																																										
					IDLE																																										
1/3		Local				1/2																																									
IDLE																																															

Figure 1-23 Register completing interface of GSM system

- 2) When the service type is GPRS or EDGE, after the terminal registration is completed, automatic attach to PS domain will be done, then “Attached” will be displayed in the status bar at the right side bottom, as shown below:

SP8011 Communications Factory Test Set						
Call Para	Call Control				Call Control	
Cell Power	Cell Info				Operating Mode	
-70.00					Active Cell	
dBm	Cell Parameters					
Cell Band	MCC: 460	DTX: Disable			Originate Call	
PGSM	MNC: 0	Paging Mode: Normal				
ARFCN	Cell ID: 0	Paging Multiframes: 5			Start Data	
20	LAC: 2	Timing Advance: 0				
Band Indicator	RAC: 2	TMSI: 4294967294			Operation Type	
0	NCC: 1	IMSI: 460021004100850			GPRS	
Line Loss	BCC: 5	IMEI: 355282041215390			Test Mode	
	Cell Bar Access: Off	ATT: On			Mode_A	
CW Config	PCL: 15	Active Cell		GPRS		TCH Parameters
				Attached		
1/3		Local				1/2
IDLE						

Figure 1-24 attach completing interface of GPRS / EDGE system

1.4.2. The Establishing of CS Domain Call Connection

When the business type is GSM, after a successful registration, we can establish a CS domain call connection following these steps:

- Establish a CS domain call connection between conformance tester and terminal:
 - MT method: after the registration is completed, press **F8** button(Originate Call) to call the terminal, by answering the call, we can establish a CS domain call connection;
 - MO method: after the registration is completed, the terminal dial any number to call, then the conformance tester will answer it automatically, and then a CS domain call connection is established.
- After a CS domain call connection is established, “CS Connected” will be displayed in the status bar at the right side bottom, as shown below:

SP8011 Communications Factory Test Set																																														
Call Para	Call Control				Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td>460021004100850</td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td>355282041215390</td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>				Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:	460021004100850	BCC:	5	IMEI:	355282041215390	Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																														
Cell Parameters																																														
MCC:	460	DTX:	Disable																																											
MNC:	0	Paging Mode:	Normal																																											
Cell ID:	0	Paging Multiframes:	5																																											
LAC:	2	Timing Advance:	0																																											
RAC:	2	TMSI:	4294967294																																											
NCC:	1	IMSI:	460021004100850																																											
BCC:	5	IMEI:	355282041215390																																											
Cell Bar Access:	Off	ATT:	On																																											
-70.00					End Call																																									
dBm					Start Data																																									
Cell Band					Operation Type	GSM																																								
PGSM					Test Mode	Mode_A																																								
ARFCN					TCH Parameters																																									
20																																														
Band Indicator																																														
0																																														
Line Loss																																														
CW Config																																														
	PCL: 15	Active Cell		GSM																																										
				CS Connected																																										
1/3		Local				1/2																																								
wait to app or MS indicate next operation																																														

Figure 1-25 CS domain call connection completing interface of GPRS / EDGE system

1.4.3. The Establishing of PS Domain Data Connection

When the business type is GPRS or EDGE, after a successful registration and attachment, we can establish a PS domain data connection following these steps:

1. Establish a PS domain data connection between conformance tester and terminal:

In the GPRS or EDGE, after a successful registration and attachment, press **F9** button (Start Data) to establish a PS domain data connection between conformance tester and terminal;

2. After a PS domain data connection is established, "PS Connected" will be displayed in the status bar at the right side bottom, as shown below:

SP8011 Communications Factory Test Set																																														
Call Para	Call Control				Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td>460021004100850</td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td>355282041215390</td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>				Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:	460021004100850	BCC:	5	IMEI:	355282041215390	Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																														
Cell Parameters																																														
MCC:	460	DTX:	Disable																																											
MNC:	0	Paging Mode:	Normal																																											
Cell ID:	0	Paging Multiframes:	5																																											
LAC:	2	Timing Advance:	0																																											
RAC:	2	TMSI:	4294967294																																											
NCC:	1	IMSI:	460021004100850																																											
BCC:	5	IMEI:	355282041215390																																											
Cell Bar Access:	Off	ATT:	On																																											
-70.00					Originate Call																																									
dBm					End Data																																									
Cell Band					Operation Type	GPRS																																								
PGSM					Test Mode	Mode_A																																								
ARFCN					TCH Parameters																																									
20																																														
Band Indicator																																														
0																																														
Line Loss																																														
CW Config																																														
	PCL: 15	Active Cell		GPRS																																										
				PS Connected																																										
1/3		Local				1/2																																								
UL TBF success																																														

Figure 1-26 PS domain data connection establishing complete interface

1.4.4. Disconnecting CS Domain Call Connection

Testing completed, we can disconnect the CS domain call connection between conformance tester and the terminal following these steps:

1. Press **setup** button at the calling button area in the front panel to switch to the default interface of GSM system;
2. Press **F8** button(End Call) or hang up to disconnect the CS domain call connection;
3. Conformance tester turn back to IDLE state after CS domain disconnected, shown as below:

SP8011 Communications Factory Test Set																																														
Call Para	Call Control				Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td>460021004100850</td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td>355282041215390</td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>				Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:	460021004100850	BCC:	5	IMEI:	355282041215390	Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																														
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Cell ID:	0	Paging Multiframes:	5																																											
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NCC:	1	IMSI:	460021004100850																																											
BCC:	5	IMEI:	355282041215390																																											
Cell Bar Access:	Off	ATT:	On																																											
-70.00					Originate Call																																									
dBm					Start Data																																									
Cell Band					Operation Type	GSM																																								
PGSM					Test Mode	Mode_A																																								
ARFCN					TCH Parameters																																									
20																																														
Band Indicator																																														
0																																														
Line Loss																																														
CW Config																																														
	PCL: 15	Active Cell		GSM																																										
				IDLE																																										
1/3		Local				1/2																																								
IDLE																																														

Figure 1-27 IDLE state interfaces after CS domain disconnecting

1.4.5. Disconnecting PS Domain Data Connection

Testing completed, we can disconnect the PS domain data connection between conformance tester and the terminal following these steps:

1. Press **setup** button at the calling button area in the front panel to switch to the default interface of GSM system;
2. Press **F9** button (End Data) to disconnect the PS domain data connection;
3. Conformance tester turn back to Attached state after PS domain disconnected, shown as below:

SP8011 Communications Factory Test Set																																														
Call Para	Call Control				Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td>460021004100850</td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td>355282041215390</td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>				Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:	460021004100850	BCC:	5	IMEI:	355282041215390	Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
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Cell Parameters																																														
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MNC:	0	Paging Mode:	Normal																																											
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RAC:	2	TMSI:	4294967294																																											
NCC:	1	IMSI:	460021004100850																																											
BCC:	5	IMEI:	355282041215390																																											
Cell Bar Access:	Off	ATT:	On																																											
-70.00					Originate Call																																									
dBm					Start Data																																									
Cell Band					Operation Type	GPRS																																								
PGSM					Test Mode	Mode_A																																								
ARFCN					TCH Parameters																																									
20																																														
Band Indicator																																														
0																																														
Line Loss																																														
CW Config																																														
	PCL: 15	Active Cell		GPRS																																										
				Attached																																										
1/3		Local				1/2																																								
IDLE																																														

Figure 1-28 Attached state interface after PS domain disconnecting

1.4.6. Emergency Calls

Conformance tester supports emergency calls, including the following two conditions:

1. When SIM card is not inserted in the terminal, conformance tester supports emergency calls in UE, such as: 112,110,119,120, etc., depending on the terminal.
2. When SIM card is inserted in the terminal, conformance tester supports emergency calls in SIM Card, such as: 112,110,119, etc., depending on the SIM card.

Remark: Currently, the emergency call number supported by Star Point SIM card is 112,110,119.

1.4.7. The Establishing of CS Domain Not Call Connection

When the business type is NSFT_CS, the default page is shown as below:

SP8011 Communications Factory Test Set																																															
Call Para	Call Control					Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td></td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td></td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>					Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:		BCC:	5	IMEI:		Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																															
Cell Parameters																																															
MCC:	460	DTX:	Disable																																												
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NCC:	1	IMSI:																																													
BCC:	5	IMEI:																																													
Cell Bar Access:	Off	ATT:	On																																												
-70.00						Originate Call																																									
dBm						Start Data																																									
Cell Band						Operation Type	NSFT_CS																																								
PGSM						Test Mode	Mode_A																																								
ARFCN						TCH Parameters																																									
20																																															
Band Indicator																																															
0																																															
Line Loss																																															
CW Config	PCL: 15	Active Cell			NSFT_CS																																										
					IDLE																																										
1/3		Local				1/2																																									

Figure 1-29 the default page of NSFT_CS

To establish a CS domain not call connection, you should choose the detect type according to the terminal first. After that , open the terminal and the connection of NSFT_CS can be established.

After a CS domain not call connection is established, “NSFT_CS Connected” will be displayed in the status bar at the right side bottom, as shown below:

SP8011 Communications Factory Test Set																																															
Call Para	Call Control					Call Control																																									
Cell Power	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td></td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td></td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>					Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:		BCC:	5	IMEI:		Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																															
Cell Parameters																																															
MCC:	460	DTX:	Disable																																												
MNC:	0	Paging Mode:	Normal																																												
Cell ID:	0	Paging Multiframes:	5																																												
LAC:	2	Timing Advance:	0																																												
RAC:	2	TMSI:	4294967294																																												
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BCC:	5	IMEI:																																													
Cell Bar Access:	Off	ATT:	On																																												
-70.00						End Call																																									
dBm						Start Data																																									
Cell Band						Operation Type	NSFT_CS																																								
PGSM						Test Mode	Mode_A																																								
ARFCN						TCH Parameters																																									
20																																															
Band Indicator																																															
0																																															
Line Loss																																															
CW Config	PCL: 15	Active Cell			NSFT_CS																																										
					NSFT_CS Connected																																										
1/3		Local				1/2																																									

Figure 1-30 CS domain not call connection completing interface of NSFT_CS system

1.4.8. The Establishing of SRB Not Call Connection

When the business type is NSFT_CS, the default page is shown as below:

SP8011 Communications Factory Test Set						
Call Para		Call Control			Call Control	
Cell Power	-70.00	Cell Info Cell Parameters MCC: 460 DTX: Disable MNC: 0 Paging Mode: Normal Cell ID: 0 Paging Multiframe: 5 LAC: 2 Timing Advance: 0 RAC: 2 NCC: 1 TMSI: 4294967294 BCC: 5 IMSI: Cell Bar Access: Off IMEI: ATT: On			Operating Mode	Active Cell
Cell Band	PGSM				Originate Call	
ARFCN	20	Start Data				
Band Indicator	0	Operation Type	NSFT_SRB			
Line Loss		Test Mode	Mode_A			
CW Config	PCL: 15	Active Cell	NSFT_SRB	TCH Parameters		
		IDLE				
	1/3	Local		1/2		

Figure 1-31 the default page of NSFT_SRB

To establish a SRB not call connection, you should choose the detect type according to the terminal first. After that , open the terminal and the connection of NSFT_SRB can be established.

After a SRB not call connection is established, “NSFT_SRB Connected” will be displayed in the status bar at the right side bottom, as shown below:

SP8011 Communications Factory Test Set																																																	
Call Para		Call Control						Call Control																																									
Cell Power	-70.00	<table border="1"> <thead> <tr> <th colspan="4">Cell Info</th> </tr> <tr> <th colspan="4">Cell Parameters</th> </tr> </thead> <tbody> <tr> <td>MCC:</td> <td>460</td> <td>DTX:</td> <td>Disable</td> </tr> <tr> <td>MNC:</td> <td>0</td> <td>Paging Mode:</td> <td>Normal</td> </tr> <tr> <td>Cell ID:</td> <td>0</td> <td>Paging Multiframes:</td> <td>5</td> </tr> <tr> <td>LAC:</td> <td>2</td> <td>Timing Advance:</td> <td>0</td> </tr> <tr> <td>RAC:</td> <td>2</td> <td>TMSI:</td> <td>4294967294</td> </tr> <tr> <td>NCC:</td> <td>1</td> <td>IMSI:</td> <td></td> </tr> <tr> <td>BCC:</td> <td>5</td> <td>IMEI:</td> <td></td> </tr> <tr> <td>Cell Bar Access:</td> <td>Off</td> <td>ATT:</td> <td>On</td> </tr> </tbody> </table>						Cell Info				Cell Parameters				MCC:	460	DTX:	Disable	MNC:	0	Paging Mode:	Normal	Cell ID:	0	Paging Multiframes:	5	LAC:	2	Timing Advance:	0	RAC:	2	TMSI:	4294967294	NCC:	1	IMSI:		BCC:	5	IMEI:		Cell Bar Access:	Off	ATT:	On	Operating Mode	Active Cell
Cell Info																																																	
Cell Parameters																																																	
MCC:	460	DTX:	Disable																																														
MNC:	0	Paging Mode:	Normal																																														
Cell ID:	0	Paging Multiframes:	5																																														
LAC:	2	Timing Advance:	0																																														
RAC:	2	TMSI:	4294967294																																														
NCC:	1	IMSI:																																															
BCC:	5	IMEI:																																															
Cell Bar Access:	Off	ATT:	On																																														
Cell Band	PGSM							Originate Call																																									
ARFCN	20							End Data																																									
Band Indicator	0							Operation Type	NSFT_SRB																																								
Line Loss								Test Mode	Mode_A																																								
CW Config		PCL: 15		Active Cell		NSFT_SRB		TCH Parameters																																									
						NSFT_SRB Connected																																											
	1/3			Local					1/2																																								

Figure 1-32 SRB not call connection completing interface of NSFT_SRB system

2. Testing Operations of SP8011 GSM items

2.1. General Process of Testing

Testing operations includes starting item testing, terminating item testing, switching between testing items. The testing process of GSM, GPRS and EDGE are the same, so we take GSM system as an example to introduce the process of testing.

2.1.1. Starting Item Testing

In Active Cell operating mode, after CS domain call connection between conformance tester and terminal is established, press **Selection** button in the measurement button area of front panel, GSM testing items will pop up in a window as shown below:

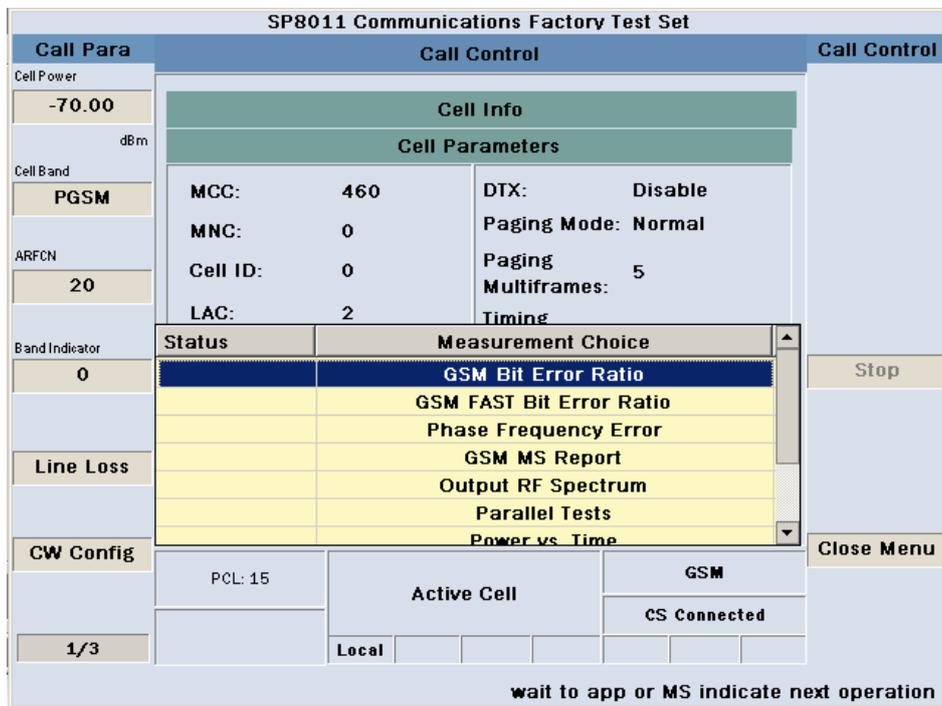


Figure 2-1 GSM testing items selection interface

1. Select the desired testing item in the window, then press the **Enter** button or **knob** to start test of the selected item;
2. The testing item launched, the testing result will be displayed as data or Graphics in the screen;
3. While testing, press **Single** button or **Continuous** button in the measurement button area the front panel to carry out single or continuous testing.

2.1.2. Terminating Item Testing

After testing, the following two methods can be used to terminate the current testing item:

1. Press **Selection** button in the measurement button area the front panel, select the current test item in the pop-up menu, then press **F10** button (Stop) to terminate the current testing item;
2. Press **Stop** button in the measurement button area the front panel directly to terminate the current testing item.

2.1.3. Switching between Testing Items

During item testing, we can switch testing items if needed. Conformance tester will first terminate the current testing item then start the desired testing item to complete the switching. The switching progress is as follows:

1. Press **Selection** button then select the new testing item in the pop-up window, as shown below:

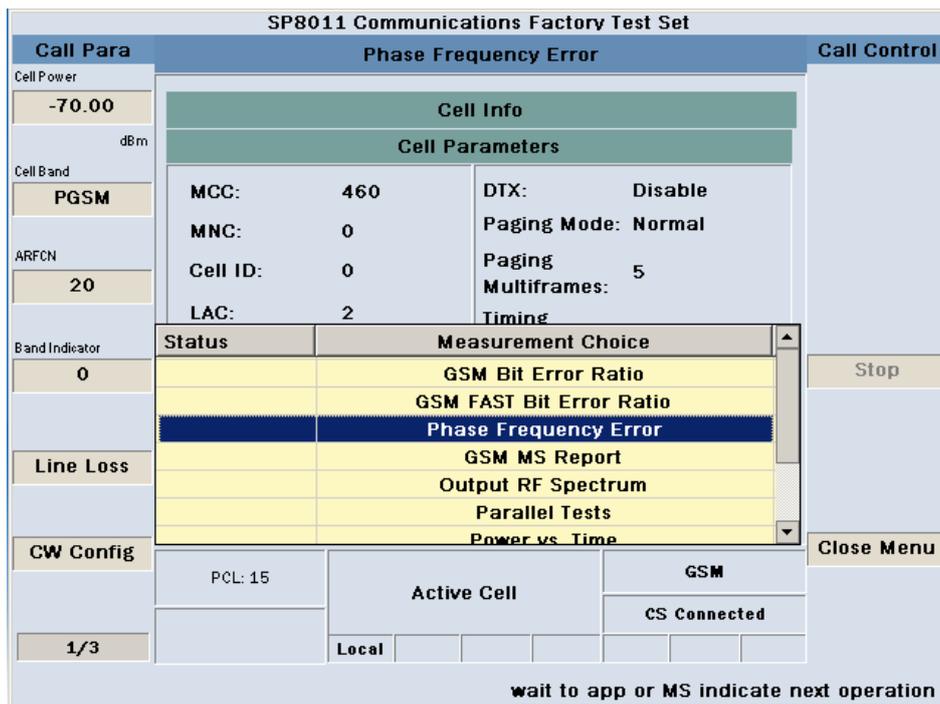


Figure 2-2 GSM switching interface test items

2. Press **Enter** button or **knob** to switch to the new testing item.

2.2. The Progress of Testing Items

2.2.1. Phase Frequency Error

- Start Item Testing

In Active Cell operating mode, press the **Selection** button in the measurement button area of the front panel, then select Phase Frequency Error in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

1. Press **F7** button (Basic Setup) to set the basic parameters, as shown below:

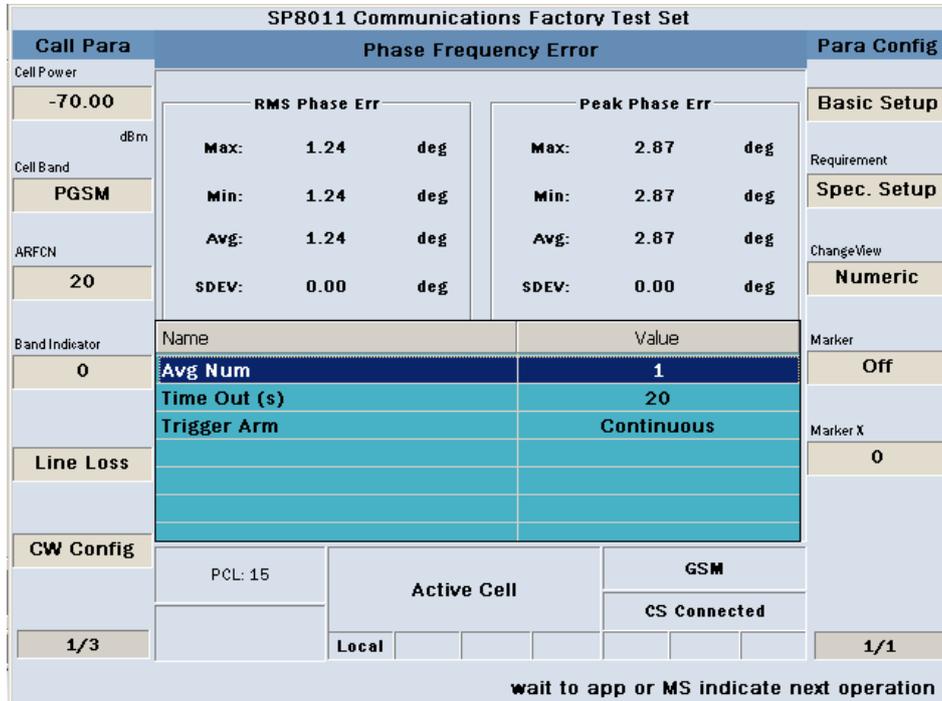


Figure 2-3 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press **F8** button to set the indicators of testing parameters, as shown below:

SP8011 Communications Factory Test Set																										
Call Para	Phase Frequency Error				Para Config																					
Cell Power	<table border="1"> <thead> <tr> <th colspan="2">RMS Phase Err</th> <th colspan="2">Peak Phase Err</th> </tr> </thead> <tbody> <tr> <td>Max:</td> <td>1.15 deg</td> <td>Max:</td> <td>3.39 deg</td> </tr> <tr> <td>Min:</td> <td>1.15 deg</td> <td>Min:</td> <td>3.39 deg</td> </tr> <tr> <td>Avg:</td> <td>1.15 deg</td> <td>Avg:</td> <td>3.39 deg</td> </tr> <tr> <td>SDEV:</td> <td>0.00 deg</td> <td>SDEV:</td> <td>0.00 deg</td> </tr> </tbody> </table>				RMS Phase Err		Peak Phase Err		Max:	1.15 deg	Max:	3.39 deg	Min:	1.15 deg	Min:	3.39 deg	Avg:	1.15 deg	Avg:	3.39 deg	SDEV:	0.00 deg	SDEV:	0.00 deg	Basic Setup	
RMS Phase Err		Peak Phase Err																								
Max:	1.15 deg	Max:	3.39 deg																							
Min:	1.15 deg	Min:	3.39 deg																							
Avg:	1.15 deg	Avg:	3.39 deg																							
SDEV:	0.00 deg	SDEV:	0.00 deg																							
Cell Band					Requirement																					
ARFCN					Spec. Setup																					
Band Indicator					ChangeView																					
Line Loss					Numeric																					
CW Config					Marker																					
	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Peak Phase Error</td> <td>20.00</td> </tr> <tr> <td>RMS Phase Error</td> <td>5.00</td> </tr> <tr> <td>Frequency Error (ppm)</td> <td>0.10</td> </tr> </tbody> </table>				Name	Value	Peak Phase Error	20.00	RMS Phase Error	5.00	Frequency Error (ppm)	0.10	Marker X													
Name	Value																									
Peak Phase Error	20.00																									
RMS Phase Error	5.00																									
Frequency Error (ppm)	0.10																									
	<table border="1"> <thead> <tr> <th colspan="2">Active Cell</th> <th colspan="2">GSM</th> </tr> </thead> <tbody> <tr> <td>PCL: 15</td> <td></td> <td colspan="2">CS Connected</td> </tr> </tbody> </table>				Active Cell		GSM		PCL: 15		CS Connected		0													
Active Cell		GSM																								
PCL: 15		CS Connected																								
	<table border="1"> <thead> <tr> <th colspan="2">Local</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Local								1/1													
Local																										

wait to app or MS indicate next operation

Figure 2-4 indicators of testing parameters setting interface

Explanations of testing indicators related parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Peak Phase Error	Peak phase error testing indicators	0.00 ~ 20.00	20.00	deg
RMS Phase Error	Average phase error testing indicators	0.00 ~ 5.00	5.00	deg
Frequency Error	Frequency error testing indicators	0.01 ~ 0.10	0.10	ppm

Setting done, we can press the **Cancel** button to close the setting window;

- Press **F9** button to set the parameters of View, you can set the display of testing results, whose range is Numeric / Graph, with a default value of Numeric;
- Press **F10** button to set the state of Marker, whose range is on / off, with a default value of off;
- Press **F11** button to set the abscissa value of Marker X when Marker is on, whose range is 0 ~ 147, with a default value of 0.

➤ Display Testing Results

Testing results will be displayed on the interface in data and by graph.

- Testing results displayed in data are as shown below:



Figure 2-5 the phase frequency error testing results in data

2. Testing results displayed by graph are as shown below:

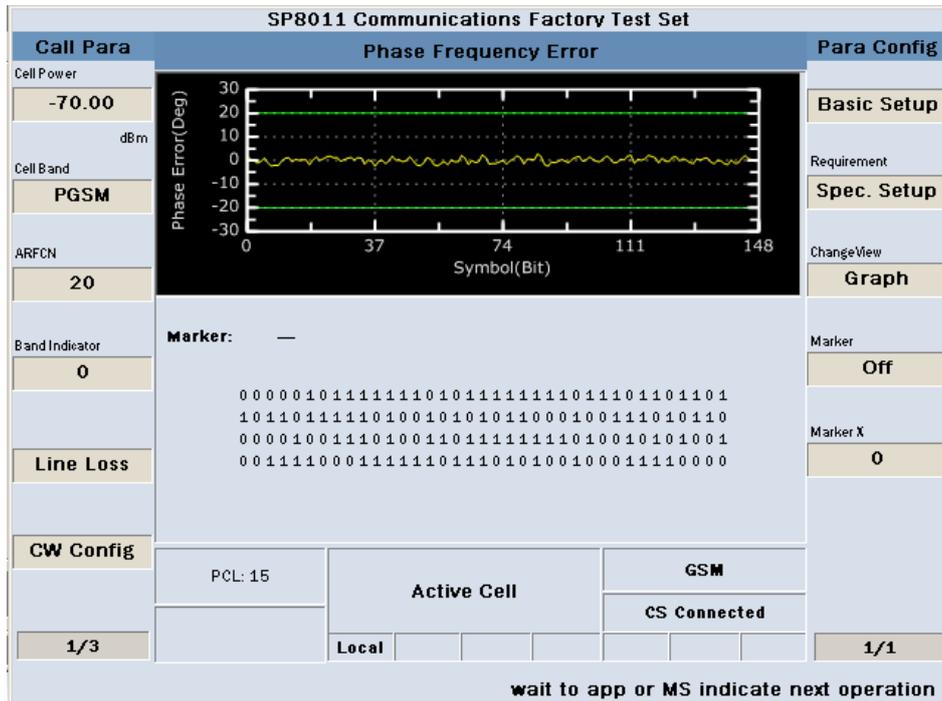


Figure 2-6 the phase frequency error testing results by graph

2.2.2. Transmit Power

➤ Start Item Testing

In Active Cell operating mode, press the **Selection** button in the measurement button area of the front panel, then select Transmit Power in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

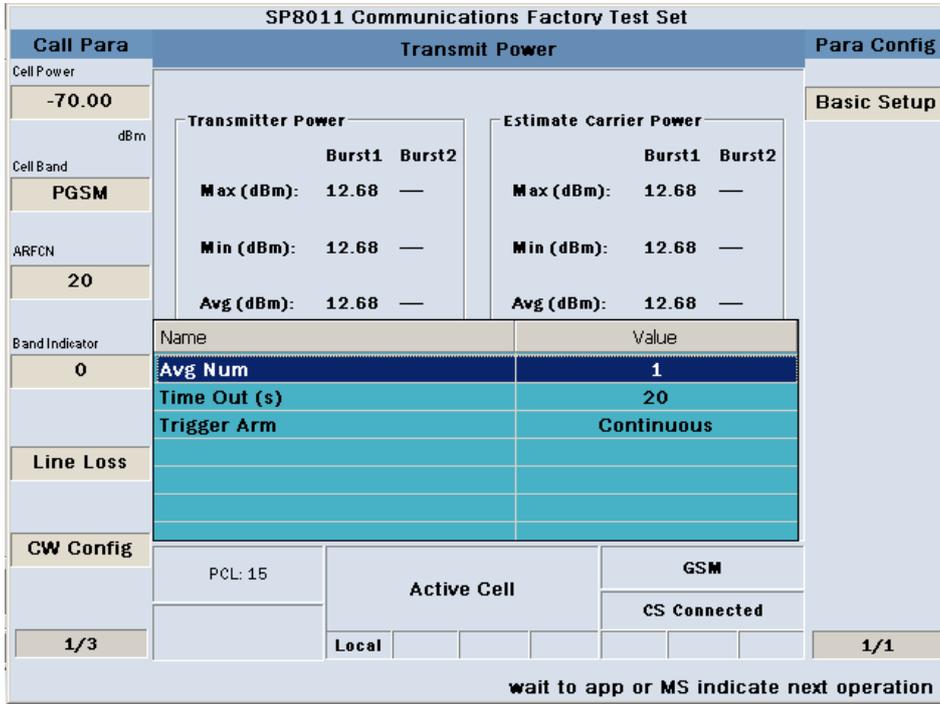


Figure 2-7 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results displayed in data are as shown below:

SP8011 Communications Factory Test Set																																																			
Call Para		Transmit Power						Para Config																																											
Cell Power	-70.00	<table border="1"> <thead> <tr> <th colspan="3">Transmitter Power</th> <th colspan="3">Estimate Carrier Power</th> </tr> <tr> <th></th> <th>Burst1</th> <th>Burst2</th> <th></th> <th>Burst1</th> <th>Burst2</th> </tr> </thead> <tbody> <tr> <td>Max (dBm):</td> <td>12.66</td> <td>—</td> <td>Max (dBm):</td> <td>12.66</td> <td>—</td> </tr> <tr> <td>Min (dBm):</td> <td>12.66</td> <td>—</td> <td>Min (dBm):</td> <td>12.66</td> <td>—</td> </tr> <tr> <td>Avg (dBm):</td> <td>12.66</td> <td>—</td> <td>Avg (dBm):</td> <td>12.66</td> <td>—</td> </tr> <tr> <td>SDEV (dB):</td> <td>0.00</td> <td>—</td> <td>SDEV (dB):</td> <td>0.00</td> <td>—</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>PASS</td> <td>—</td> </tr> </tbody> </table>						Transmitter Power			Estimate Carrier Power				Burst1	Burst2		Burst1	Burst2	Max (dBm):	12.66	—	Max (dBm):	12.66	—	Min (dBm):	12.66	—	Min (dBm):	12.66	—	Avg (dBm):	12.66	—	Avg (dBm):	12.66	—	SDEV (dB):	0.00	—	SDEV (dB):	0.00	—					PASS	—	Basic Setup	
Transmitter Power								Estimate Carrier Power																																											
	Burst1							Burst2		Burst1	Burst2																																								
Max (dBm):	12.66							—	Max (dBm):	12.66	—																																								
Min (dBm):	12.66							—	Min (dBm):	12.66	—																																								
Avg (dBm):	12.66	—	Avg (dBm):	12.66	—																																														
SDEV (dB):	0.00	—	SDEV (dB):	0.00	—																																														
				PASS	—																																														
Cell Band	PGSM																																																		
ARFCN	20																																																		
Band Indicator	0																																																		
Line Loss																																																			
		Test Count: 1																																																	
CW Config		PCL: 15	Active Cell			GSM																																													
						CS Connected																																													
	1/3		Local						1/1																																										
wait to app or MS indicate next operation																																																			

Figure 2-8 Transmit power testing results

2.2.3.Power vs. Time

➤ Start Item Testing

In Active Cell or GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select Power vs. Time in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

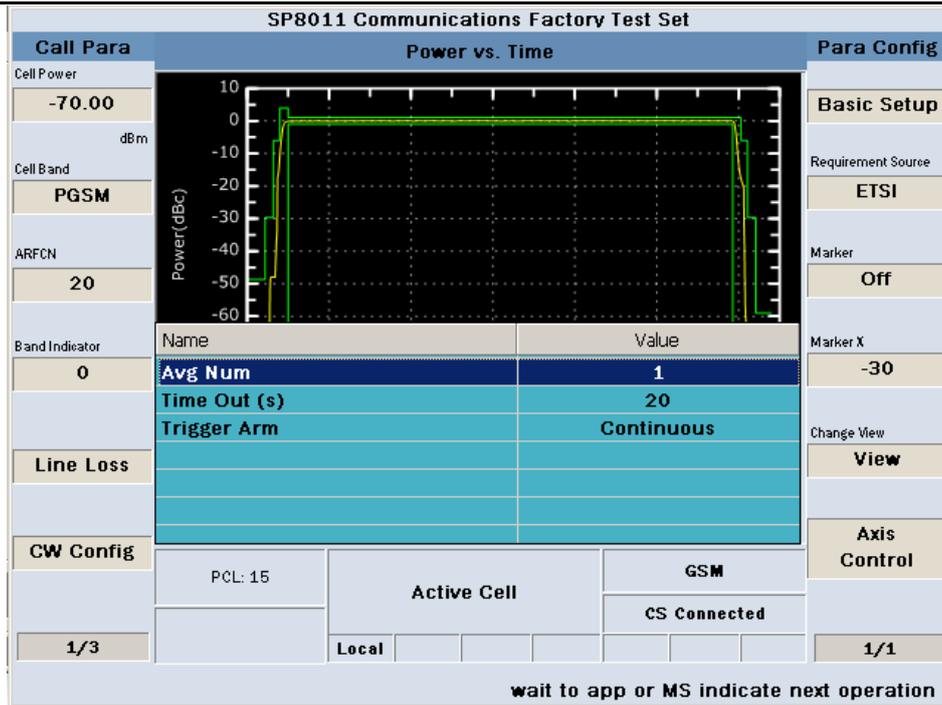


Figure 2-9 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press **F8** button to set the Requirement Source, whose range is ETSI / NO Mask, with a default value of ETSI;
3. Press **F9** button to set the state of Marker, whose range is on / off, with a default value of off;
4. Press **F10** button to set the abscissa value of Marker X when Marker is on, whose range is -30 ~ 572, with a default value of -30;
5. Press **F11** button to set the parameters of View, you can set the way of displaying as shown below:

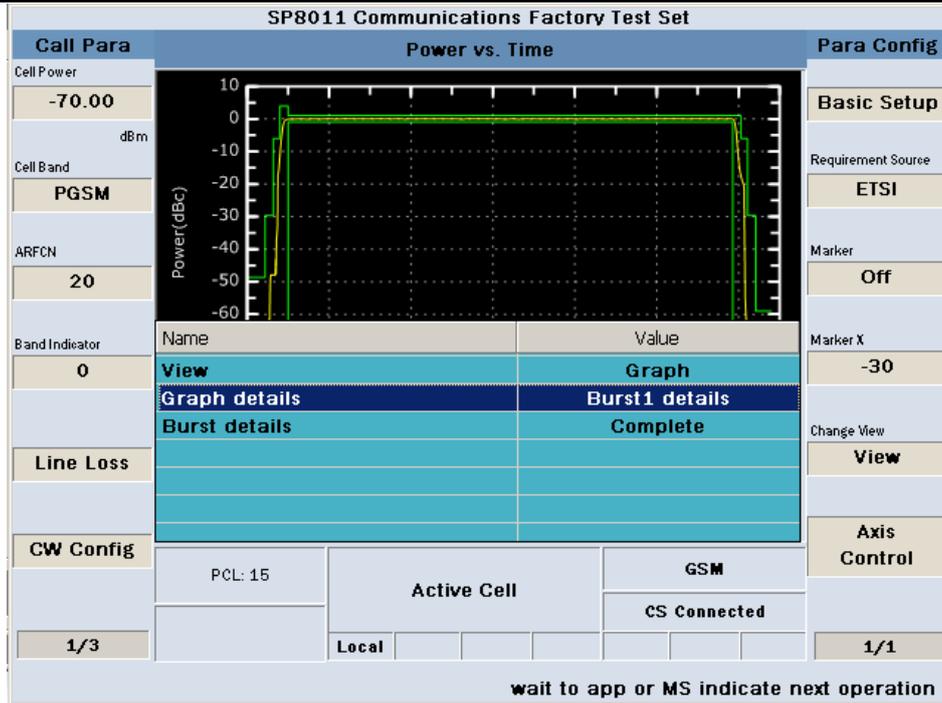


Figure 2-10 View setting parameters setting interface

Explanations of View setting parameters are as follows:

Parameter Name	Parameter Range	Default
View	Graph / Numeric / Burst1 / Burst2	Graph
Graph details	Full / Burst1 details / Burst2 details / Guard	Full
Burst details	Complete / Rising / Falling / Useful	Complete

Setting done, we can press the **Cancel** button to close the setting.

6. Press **F12** button to set the Axis Control parameters, as shown below:

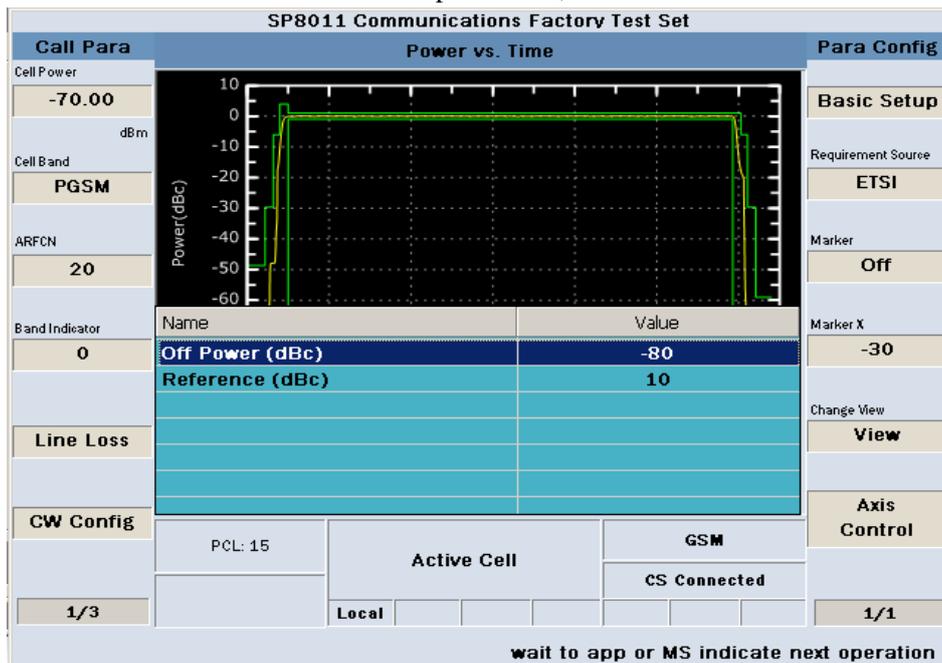


Figure 2-11 Axis Control parameters setting interface

Explanations of Axis Control parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Off power	Set the minimum vertical coordinate.	-120 ~ -10	-80	dBc
Reference	Set the maximum ordinate.	0 ~ 40	10	dBc

Setting done, we can press the **Cancel** button to close the setting window;

7. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing.
8. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results will be displayed on the interface in data and by graph.

1. Testing results displayed by graph are as shown below:

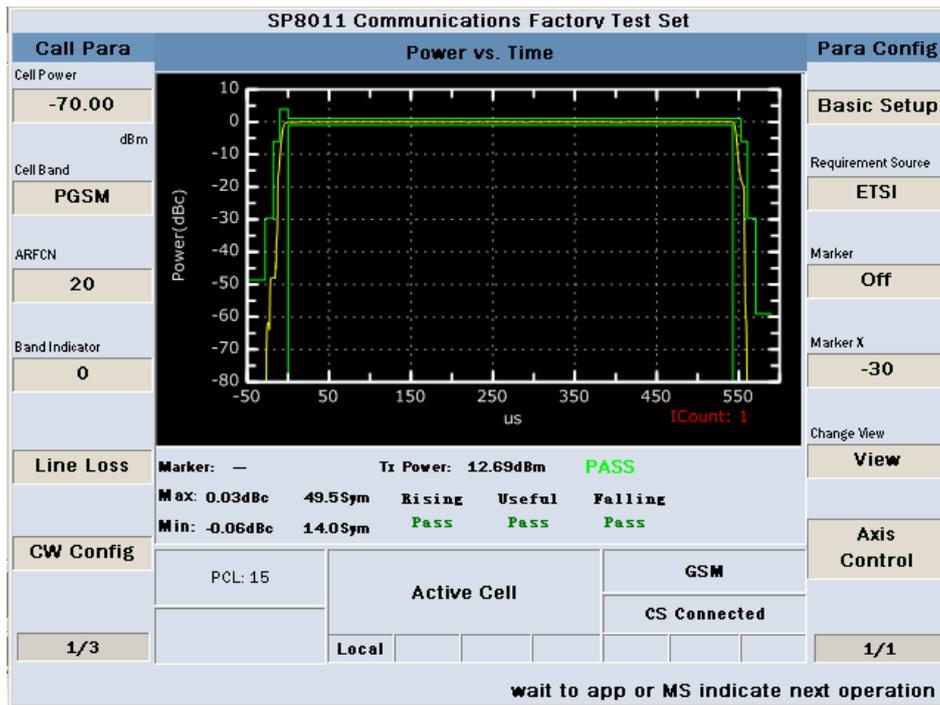


Figure 2 12 Power vs. Time testing results by graph

2. Testing results displayed in data are as shown below:

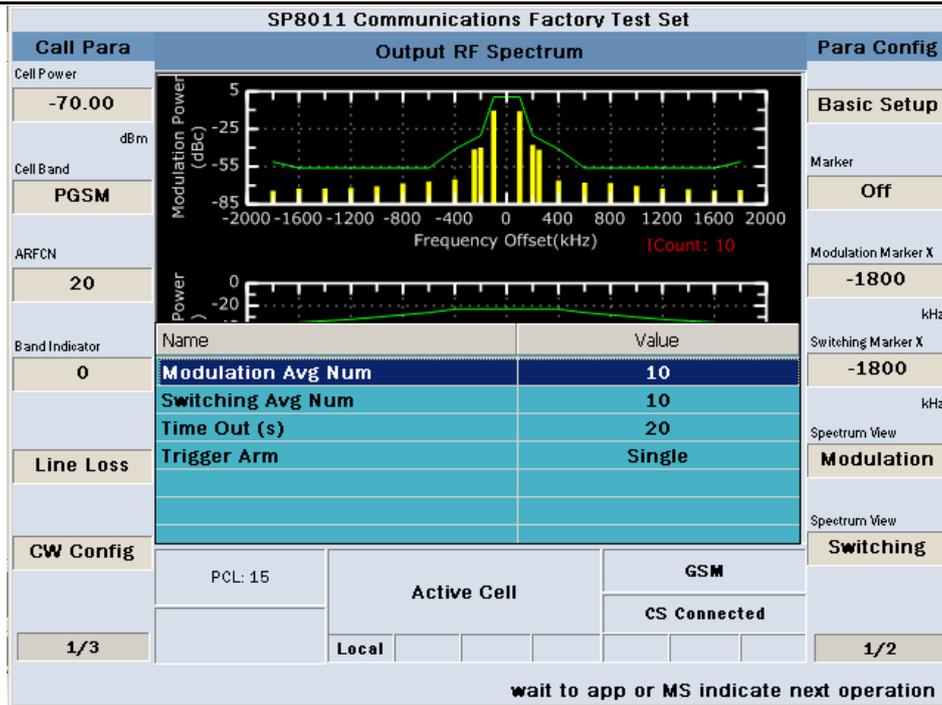


Figure 2 14 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Modulation Avg Num	Modulation spectrum, the average number of tests, used to set the average number of test results.	1 ~ 999	10	None
Switching Avg Num	The average number of switching frequency test, used to set the average number of test results.	1 ~ 999	10	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

- Press **F8** button to set the state of Marker, whose range is On / Off, with a default value of Off;
- Press **F9** button to set the abscissa value of Marker X when Marker is on in a modulation test, whose range is -1800 / -1600 / -1400 / -1.2 thousand / -1000 / -800 / -600 / -400 / -250 / -200 / -100 / 100 / 0 / 200 / 250 / 400 / 600 / 800 / 1000 / 1200 / 1400 / 1600 / 1800, with a default value of -1800;

4. Press **F10** button to set the abscissa value of Marker X when Marker is on in a switching test, whose range is -1800 / -1 200 / -600 / -400 / 400 / 600 / 1200 / 1800 / 0, with a default value of -1800;
5. Press **F11** button to set the points used to show the testing results in a modulation spectrum test as shown below. Setting done, we can press the **Cancel** button to close the setting window:

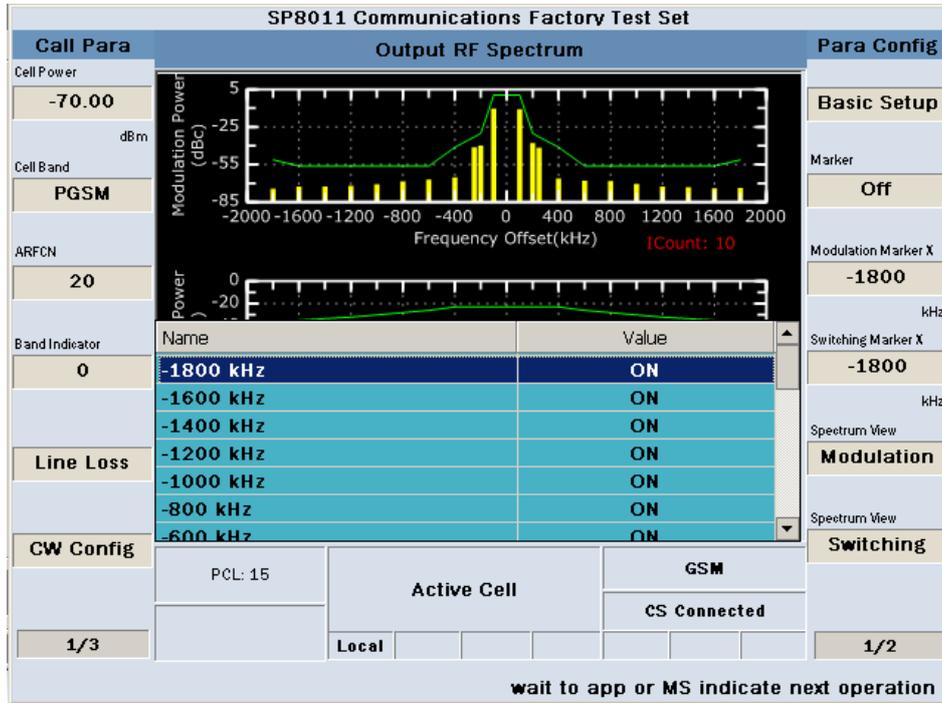


Figure 2-15 modulation spectrum test results showing setting interface

6. Press **F12** button to set the points used to show the testing results in a switching spectrum test as shown below. Setting done, we can press the **Cancel** button to close the setting window:

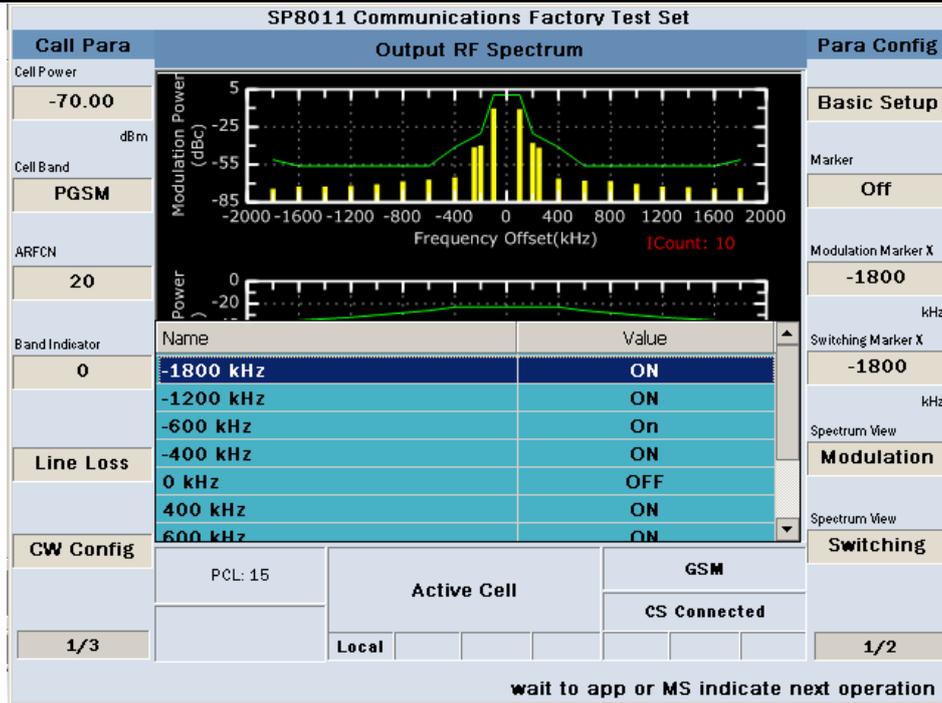


Figure 2-16 Switch spectrum test result showing setting interface

- Press **More** button on the right side then press **F7** button to set the View parameter, whose range is Graph / M Numeric / S Numeric, with a default value of Graph, as shown below:

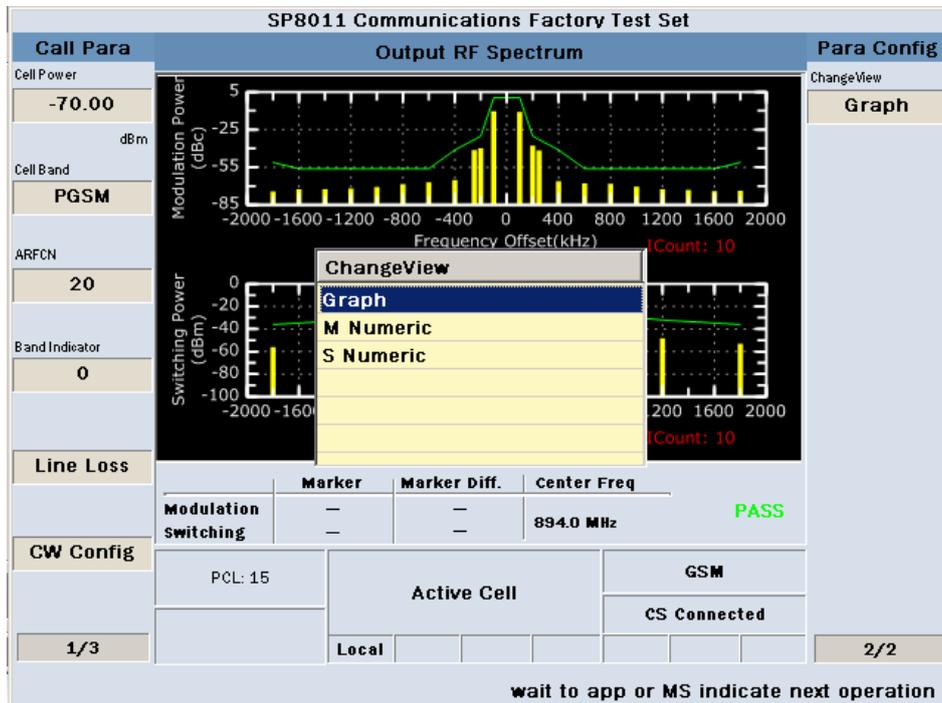


Figure 2-17 Change View parameter setting interface

- Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
- Press the Stop button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results will be displayed on the interface in data and by graph.

1. Testing results displayed by graph are as shown below:

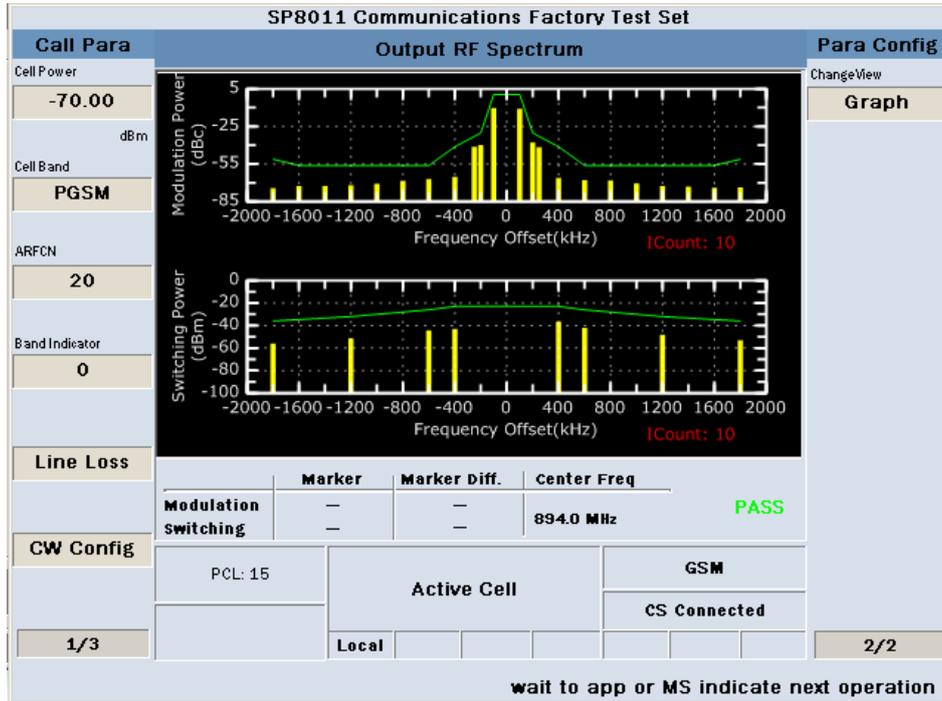


Figure 2-18 Output RF spectrum testing results by graph

2. Testing results displayed in data are as shown below:

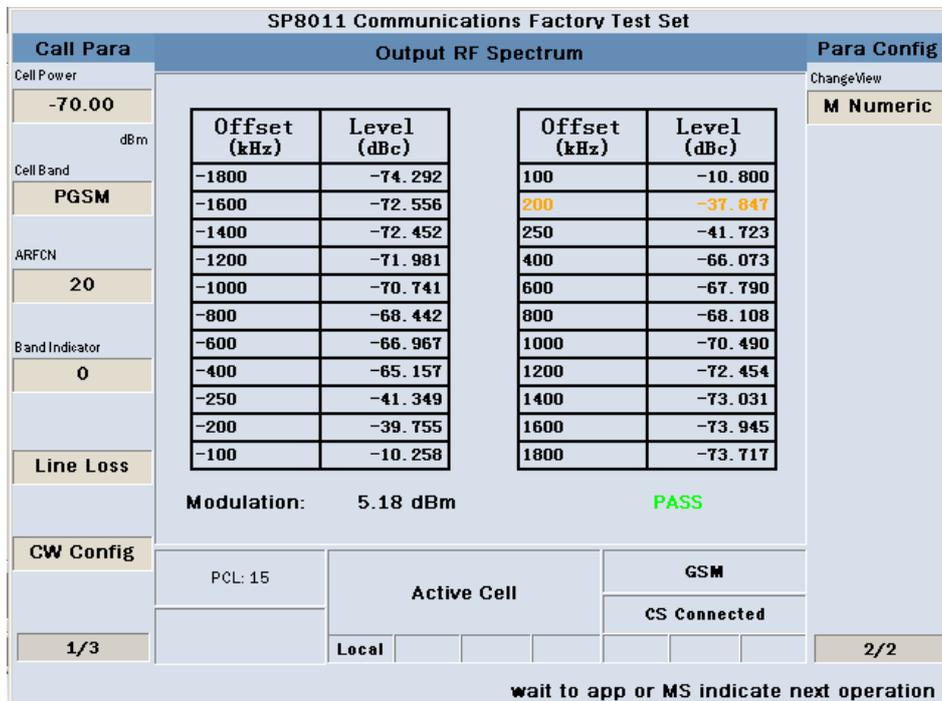


Figure 2-19 Output RF Spectrum Modulation spectrum testing result in data

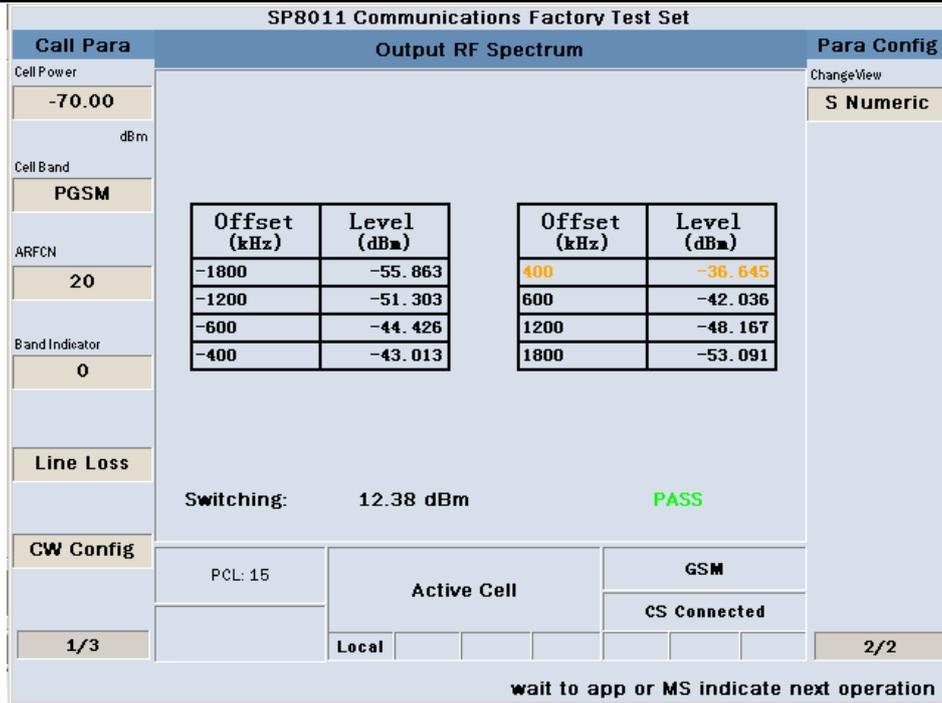


Figure 2-20 Output RF Spectrum Switch spectrum testing results in data

2.2.5. Spectrum Monitor

➤ Start Item Testing

In Active Cell operating mode, press the **Selection** button in the measurement button area of the front panel, then select GSM Spectrum Monitor in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

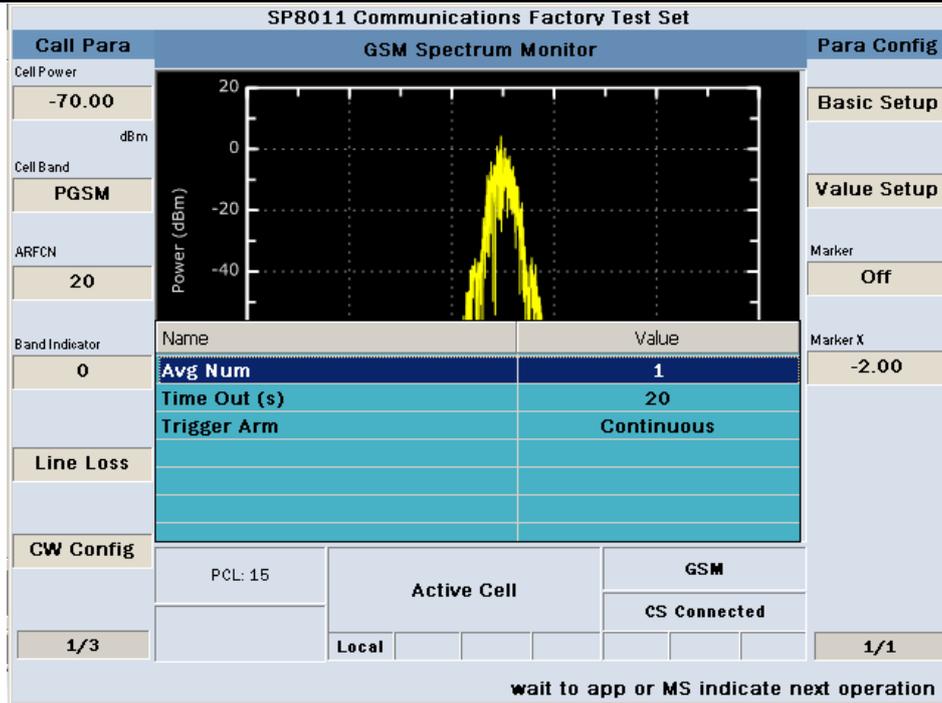


Figure 2-21 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 20	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press **F8** button to set Y-axis;
3. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
4. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed by graph, as shown below:

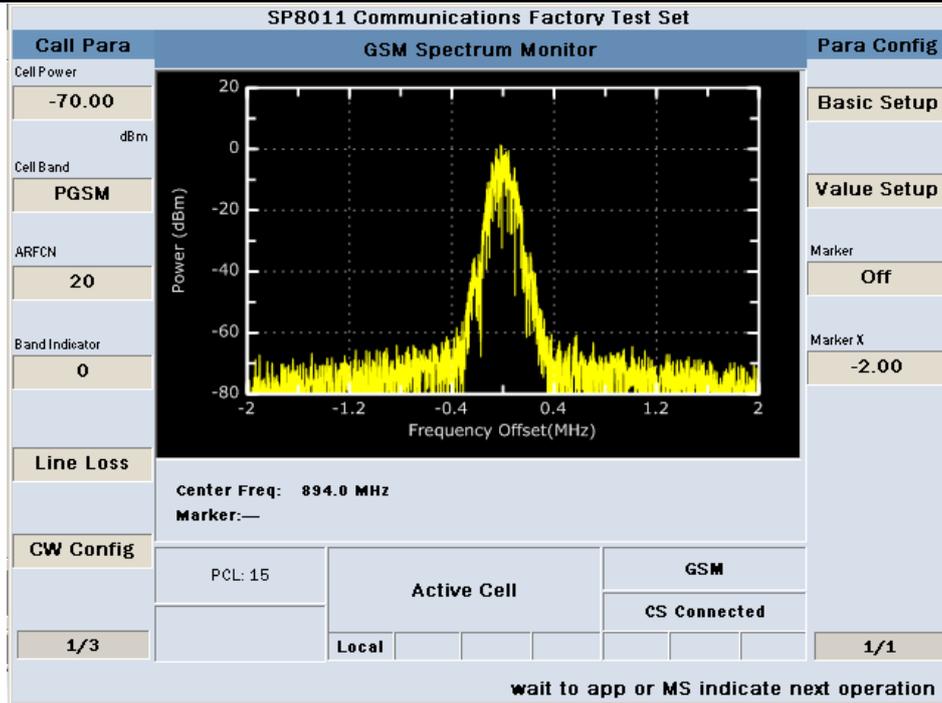


Figure 2-22 Spectrum Monitoring testing results

2.2.6.EDGE Modulation Accuracy

➤ Start Item Testing

In Active Cell operating mode, select the EDGE business type, then we can start testing this item following these steps:

1. Press **More** button in the right side then press **F9** button to set the PDTCH Parameters, as shown below:

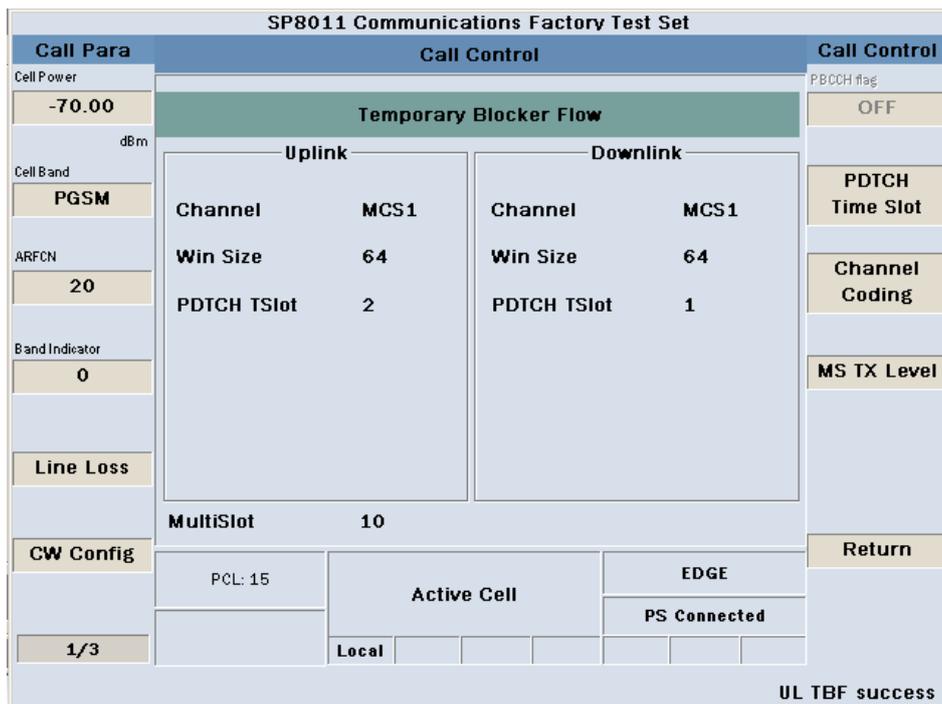


Figure 2-23 PDTCH Parameters setting interface

- Press **F9** button(Channel Coding) to set the Uplink Channel Coding parameters in the pop-up menu, with a range of MCS5 ~ MCS9, as shown below:

SP8011 Communications Factory Test Set						
Call Para	Call Control				Call Control	
Cell Power	Temporary Blocker Flow				PBCH flag	
-70.00					OFF	
dBm	Uplink		Downlink			
Cell Band	Channel	MCS5	Channel	MCS5	PDTCH Time Slot	
PGSM	Win Size	64	Win Size	64		
ARFCN	PDTCH TSlot	2	PDTCH TSlot	1	Channel Coding	
20						
Band Indicator	Name		Value		MS TX Level	
0	Uplink Channel Coding		MCS5			
	Downlink Channel Coding		MCS5			
Line Loss						
CW Config					Return	
	PCL: 15	Active Cell		EDGE		
				PS Connected		
1/3		Local				
UL TBF success						

Figure 2-24 Channel Coding parameters setting interface

- Press the **Selection** button in the measurement button area of the front panel, then select Modulation Accuracy in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

- Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

SP8011 Communications Factory Test Set						
Call Para	Modulation Accuracy				Para Config	
Cell Power					Basic Setup	
-70.00						
dBm	AvgPeakEVM: 6.04%		AvgFreqErr: 32.00 Hz			
Cell Band	AvgRMSEVM: 2.48%		FreqStability: 0.03579 ppm			
PGSM	RMSEVM: 2.48%		FreqErr: 32.00 Hz			
ARFCN	95thEVM: 4.11%		AvgOOS(dB): 41.25 dB			
20						
Band Indicator	Name		Value			
0	Avg Num		1			
	Time Out (s)		20			
	Trigger Arm		Continuous			
Line Loss	IQ Imbalance Calculate State		OFF			
CW Config						
	PCL: 15	Active Cell		EDGE		
				PS Connected		
1/3		Local				1/1
UL TBF success						

Figure 2-25 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None
IQ Imbalance Calculate State	IQ Imbalance Calculate State. Set it as ON if want to do the IQ Imbalance calculate.	ON / OFF	OFF	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set																							
Call Para	Modulation Accuracy						Para Config																
Cell Power	<table border="0"> <tr> <td>AvgPeakEVM: 5.00%</td> <td>AvgFreqErr: 23.00 Hz</td> </tr> <tr> <td>AvgRMSEVM: 2.49%</td> <td>FreqStability: 0.02573 ppm</td> </tr> <tr> <td>RMSEVM: 2.49%</td> <td>FreqErr: 23.00 Hz</td> </tr> <tr> <td>95thEVM: 3.96%</td> <td>AvgOOS(dB): 41.33 dB</td> </tr> <tr> <td>PeakMagErr: 4.34%</td> <td>PeakPhaseErr: 19.71°</td> </tr> <tr> <td>RMSMagErr: 1.51%</td> <td>RMSPhaseErr: 2.70°</td> </tr> <tr> <td>Test Count: 1</td> <td>IQ Imbalance: — dB</td> </tr> </table>						AvgPeakEVM: 5.00%	AvgFreqErr: 23.00 Hz	AvgRMSEVM: 2.49%	FreqStability: 0.02573 ppm	RMSEVM: 2.49%	FreqErr: 23.00 Hz	95thEVM: 3.96%	AvgOOS(dB): 41.33 dB	PeakMagErr: 4.34%	PeakPhaseErr: 19.71°	RMSMagErr: 1.51%	RMSPhaseErr: 2.70°	Test Count: 1	IQ Imbalance: — dB	Basic Setup		
AvgPeakEVM: 5.00%							AvgFreqErr: 23.00 Hz																
AvgRMSEVM: 2.49%							FreqStability: 0.02573 ppm																
RMSEVM: 2.49%							FreqErr: 23.00 Hz																
95thEVM: 3.96%							AvgOOS(dB): 41.33 dB																
PeakMagErr: 4.34%							PeakPhaseErr: 19.71°																
RMSMagErr: 1.51%							RMSPhaseErr: 2.70°																
Test Count: 1							IQ Imbalance: — dB																
-70.00																							
dBm																							
Cell Band																							
PGSM																							
ARFCN																							
20																							
Band Indicator																							
0																							
Line Loss																							
CW Config																							
PCL: 15																							
Active Cell																							
EDGE																							
PS Connected																							
1/3	Local								1/1														
UL TBF success																							

Figure 2-26 EDGE Modulation Accuracy testing results

2.2.7.GSM Bit Error Rate

➤ Start Item Testing

In Active Cell operating mode, select the GSM service types then press the **Selection** button in the measurement button area of the front panel, and then select GSM Bit Error Ratio in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

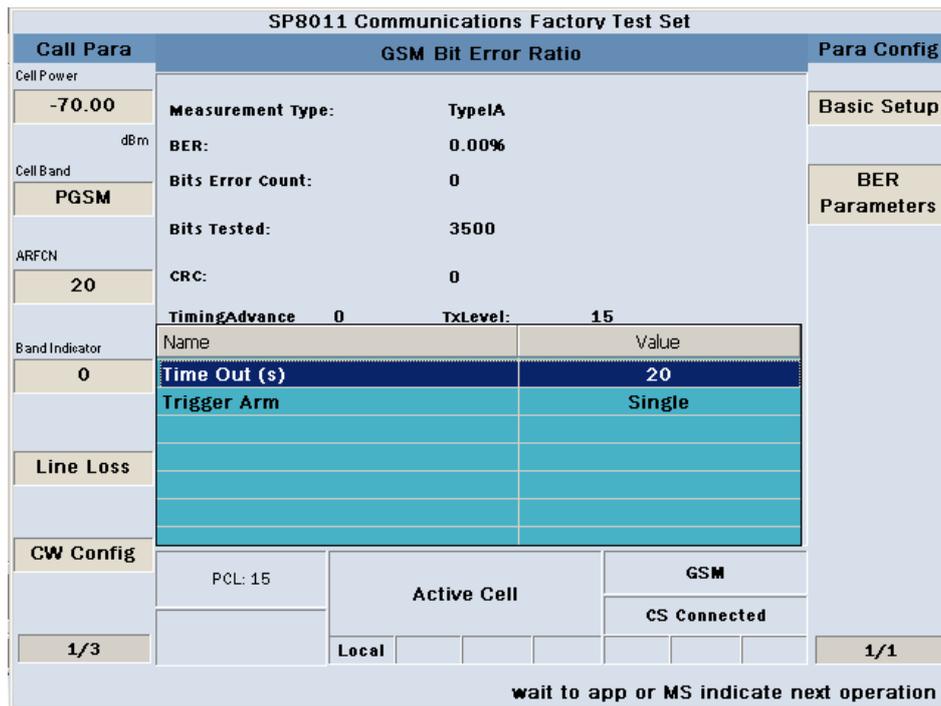


Figure 2-27 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press **F8** button to set the BER Parameters, as shown below:

SP8011 Communications Factory Test Set															
Call Para	GSM Bit Error Ratio		Para Config												
Cell Power	-70.00	Measurement Type: TypeIA	Basic Setup												
dBm		BER: 0.00%													
Cell Band	PGSM	Bits Error Count: 0	BER Parameters												
		Bits Tested: 10000													
ARFCN	20	CRC: 0													
		TimingAdvance: 0 TxLevel: 15													
Band Indicator	0	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Measurement Type</td> <td>TypeIA</td> </tr> <tr> <td>Close Loop Signaling Delay</td> <td>500.00</td> </tr> <tr> <td>Number of Bits</td> <td>10000</td> </tr> <tr> <td>Requirement(e-4)</td> <td>10.00</td> </tr> <tr> <td>Source Type</td> <td>PN15</td> </tr> </tbody> </table>		Name	Value	Measurement Type	TypeIA	Close Loop Signaling Delay	500.00	Number of Bits	10000	Requirement(e-4)	10.00	Source Type	PN15
Name	Value														
Measurement Type	TypeIA														
Close Loop Signaling Delay	500.00														
Number of Bits	10000														
Requirement(e-4)	10.00														
Source Type	PN15														
Line Loss															
CW Config	PCL: 15	Active Cell	GSM												
			CS Connected												
1/3		Local	1/1												

wait to app or MS indicate next operation

Figure 2 28 BER Parameters setting interface

Explanations of BER Parameters are as follows:

Parameter Name	Parameter Range	Default	Unit
Measurement Type	TYPEIA / TYPEII / TYPEIB / Residual TYPEIA / Residual TYPEII / Residual TYPEIB	Residual TYPEIA	None
Close Loop Signaling Delay	0.00 ~ 5 000.00	500.00	ms
Number of Bits	1000 ~ 999000	10000	Bit
BER Requirement	0 ~ 1	0.001	None
Source Type	PN15/ABits	PN15	None

Setting done, we can press the **Cancel** button to close the setting window;

- Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
- Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ Display Testing Results

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set							
Call Para	GSM Bit Error Ratio					Para Config	
Cell Power	-70.00	Measurement Type: TypeIA				Basic Setup	
dBm		BER: 0.00%					
Cell Band	PGSM	Bits Error Count: 0				BER Parameters	
		Bits Tested: 10000					
ARFCN	20	CRC: 0					
		TimingAdvance 0			TxLevel: 15		
Band Indicator	0	RX Level (full): 39		-72 dBm ~ -71 dBm			
		RX Level (sub): 39		-72 dBm ~ -71 dBm			
		RX Quality (full): 0		BER<0.2%			
Line Loss		RX Quality (sub): 0		BER<0.2%			
		PASS					
CW Config		PCL: 15	Active Cell			GSM	
						CS Connected	
1/3		Local					1/1
wait to app or MS indicate next operation							

Figure 2 29 Bit Error Rate testing results

2.2.8.GSM Terminal Measurements Reported

➤ Start Item Testing

In Active Cell operating mode, select the GSM service types and press the **Selection** button in the measurement button area of the front panel, then select GSM MS Report in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

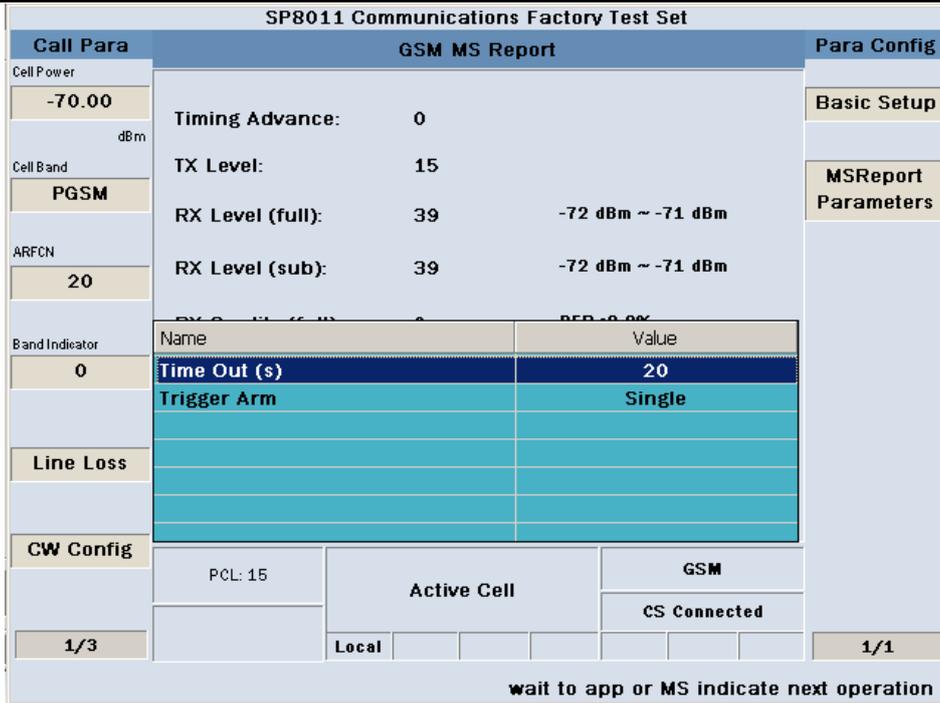


Figure 2-30 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set							
Call Para	GSM MS Report					Para Config	
Cell Power	-70.00	Timing Advance:	0				Basic Setup
Cell Band	PGSM	TX Level:	15				MSReport Parameters
ARFCN	20	RX Level (full):	39	-72 dBm ~ -71 dBm			
Band Indicator	0	RX Level (sub):	39	-72 dBm ~ -71 dBm			
		RX Quality (full):	0	BER<0.2%			
		RX Quality (sub):	0	BER<0.2%			
		Test Count:	4				
Line Loss							
CW Config	PCL: 15	Active Cell			GSM		
					CS Connected		
1/3		Local					1/1
wait to app or MS indicate next operation							

Figure 2-31 GSM Terminal Measurements Reported testing results

2.2.9.GPRS Block Error Rate

➤ Start Item Testing

In Active Cell operating mode, select the EDGE Mode_B or GPRS Mode_B service types and press the **Selection** button in the measurement button area of the front panel, then select GPRS Block Error Ratio in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

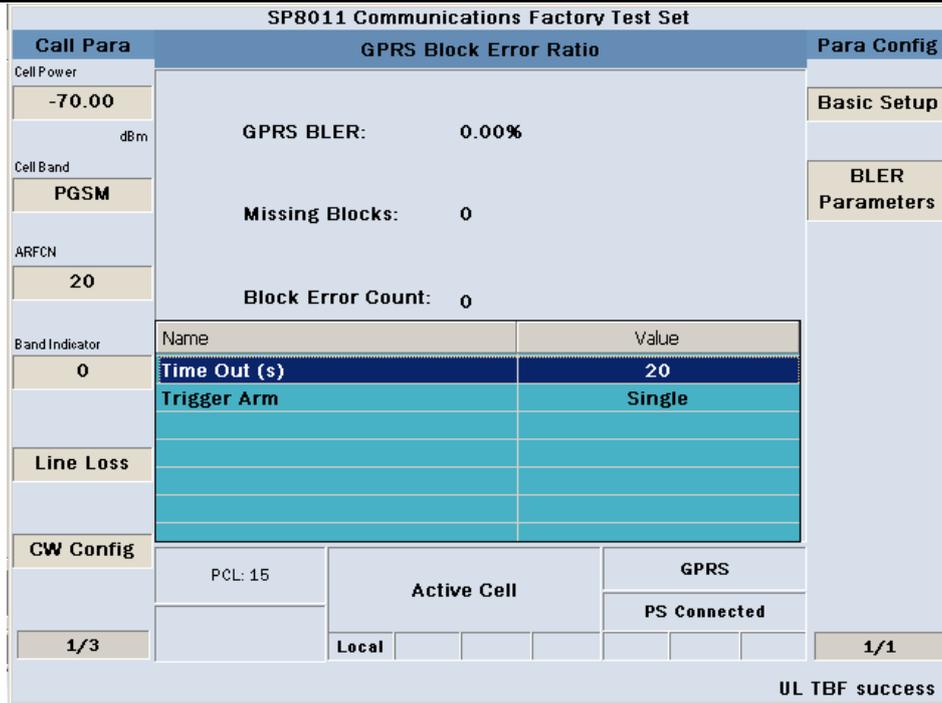


Figure 2 32 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 20	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

- Press **F8** button to set BLER Parameters, as shown below:

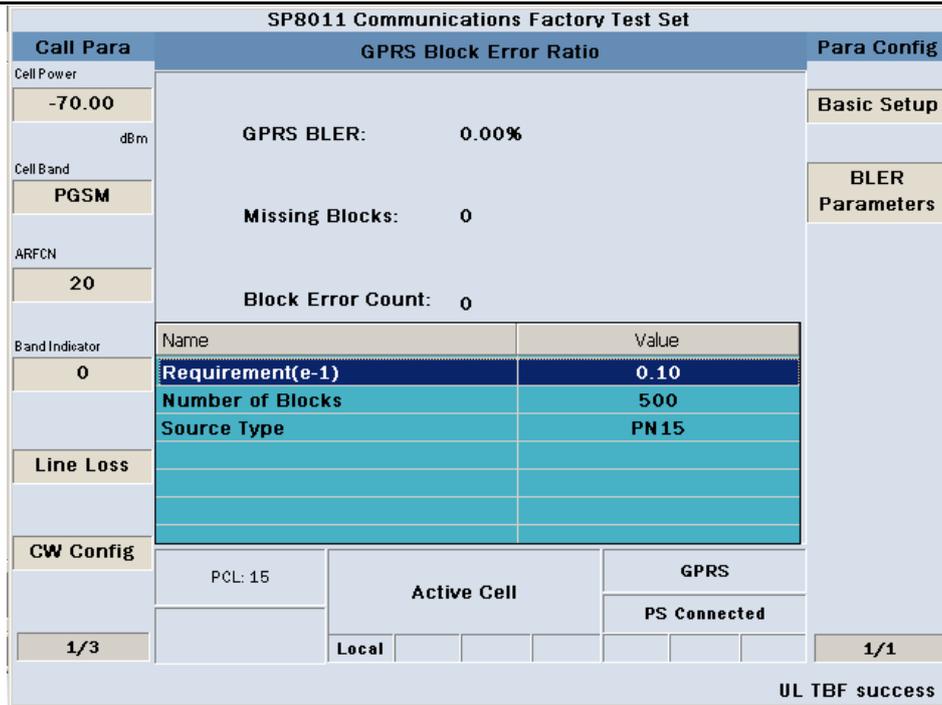


Figure 2-33 BLER Parameters setting interface

Explanations of BLER Parameters are as follows:

Parameter Name	Parameter Range	Default	Unit
Requirement	0.01 ~ 1.00	0.01	None
Number of Blocks	1 ~ 99000	500	Bit
Source Type	PN15/ABits	PN15	None

Setting done, we can press the **Cancel** button to close the setting window;

- Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
- Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set									
Call Para	GPRS Block Error Ratio							Para Config	
Cell Power	GPRS BLER: 0.00% Missing Blocks: 0 Block Error Count: 0 Block Tested: 504 PASS							Basic Setup	
-70.00								BLER Parameters	
dBm									
Cell Band									
PGSM									
ARFCN									
20									
Band Indicator									
0									
Line Loss									
CW Config	PCL: 15	Active Cell			GPRS				
					PS Connected				
1/3	Local							1/1	
UL TBF success									

Figure 2-34 GPRS Block Error Rate testing results

2.2.10. GPRS&EDGE Terminal Measurements Reported

➤ Start Item Testing

In Active Cell operating mode, select the GPRS Mode B, EDGE Mode B or EDGE Mode SRB service types and press the **Selection** button in the measurement button area of the front panel, then select GPRS & EDGE MS Report in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:



Figure 2-35 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ Display Testing Results

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set						
Call Para	GPRS&EDGE MS Report					Para Config
Cell Power	-70.00	C Value: 39	RX Qual: 0			Basic Setup
	dBm	Signal Variance: 0	(GMSK)	(8PSK)		
Cell Band	PGSM	Variation Coefficient:	—	—		
ARFCN	20	I Level				
		TimeSlot 0:	0			
		TimeSlot 1:	0			
Band Indicator	0	TimeSlot 2:	0			
		TimeSlot 3:	1			
		TimeSlot 4:	1			
		TimeSlot 5:	1			
Line Loss		TimeSlot 6:	1			
		TimeSlot 7:	0			
CW Config		PCL: 15	Active Cell		GPRS	
					PS Connected	
	1/3		Local			1/1
UL TBF success						

Figure 2-36 GPRS & EDGE terminal measurement reported testing results after GPRS

SP8011 Communications Factory Test Set						
Call Para	GPRS&EDGE MS Report					Para Config
Cell Power	-70.00	C Value: 40	RX Qual: 0			Basic Setup
	dBm	Signal Variance: —	(GMSK)	(8PSK)		
Cell Band	PGSM	Variation Coefficient:	0	7		
		Mean BEP:	0	31		
ARFCN	20	I Level	GMSK BEP	8PSK BEP		
		TimeSlot 0:	0	0		
		TimeSlot 1:	0	0		
Band Indicator	0	TimeSlot 2:	0	0		
		TimeSlot 3:	0	15		
		TimeSlot 4:	1	0		
		TimeSlot 5:	1	0		
Line Loss		TimeSlot 6:	1	0		
		TimeSlot 7:	0	0		
CW Config		PCL: 15	Active Cell		EDGE	
					PS Connected	
	1/3		Local			1/1
UL TBF success						

Figure 2-37 GPRS & EDGE terminal measurement reported testing results after EDGE

2.2.11. EDGE SRB Bit Error Rate

➤ Start Item Testing

In Active Cell operating mode, select the EDGE Mode SRB business type and press the **Selection** button in the measurement button area of the front panel, then select EDGE Bit Error Ratio in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

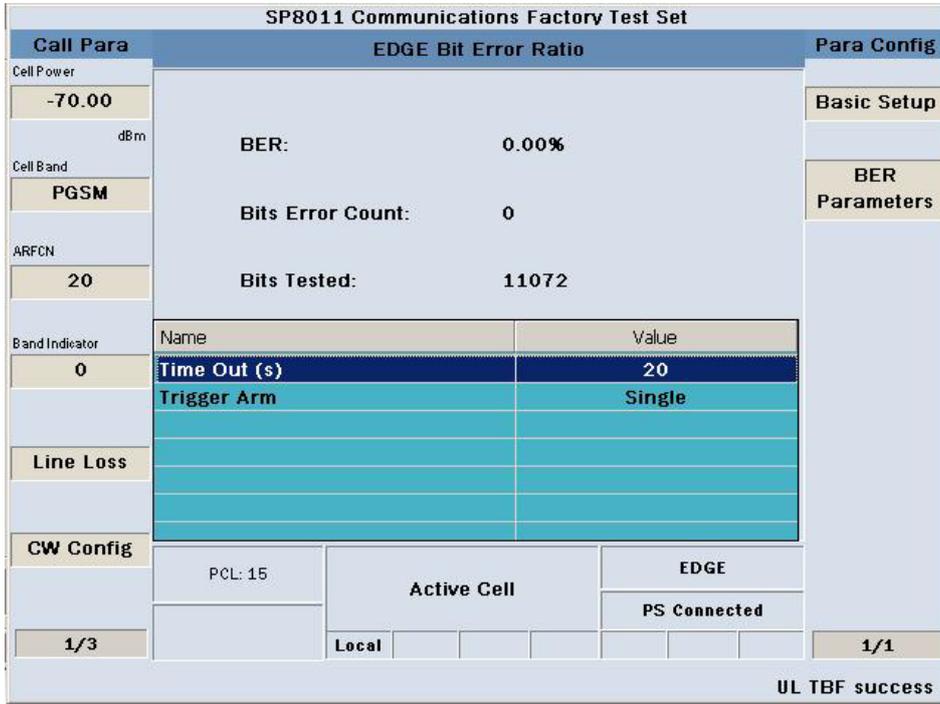


Figure 2-38 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window:

2. Press **F8** button to set the BER Parameters, as shown below:

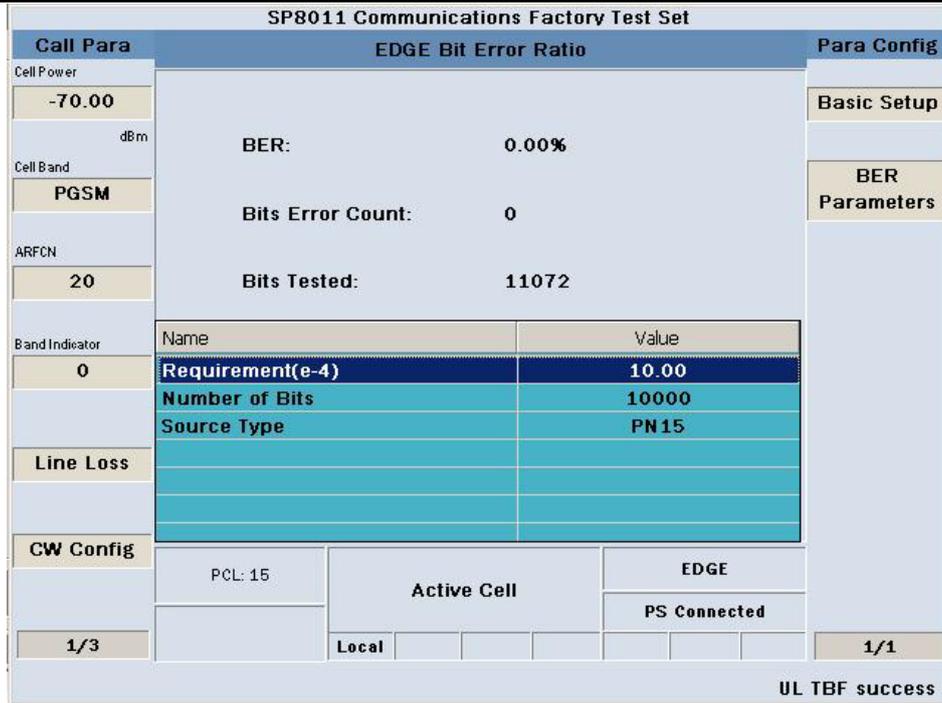


Figure 2-39 BER Parameters setting interface

Explanations of BER Parameters are as follows:

Parameter Name	Parameter Range	Default	Unit
BER Requirement	0.000 ~ 1.000	0.001	None
Number of Bits	1000 ~ 999000	10000	Bit
Source Type	PN15/ABits	PN15	None

Setting done, we can press the **Cancel** button to close the setting window;

3. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
4. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set									
Call Para		EDGE Bit Error Ratio						Para Config	
Cell Power	-70.00	BER: 0.00% Bits Error Count: 0 Bits Tested: 11072 PASS						Basic Setup	
dBm								BER Parameters	
Cell Band	PGSM								
ARFCN	20								
Band Indicator	0								
Line Loss									
CW Config		PCL: 15	Active Cell			EDGE			
						PS Connected			
	1/3		Local						1/1
UL TBF success									

Figure 2-40 EDGE SRB Bit Error Rate testing results

2.2.12. GSM Frequency Calibration

➤ Start Item Testing

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select Frequency Calibrate in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

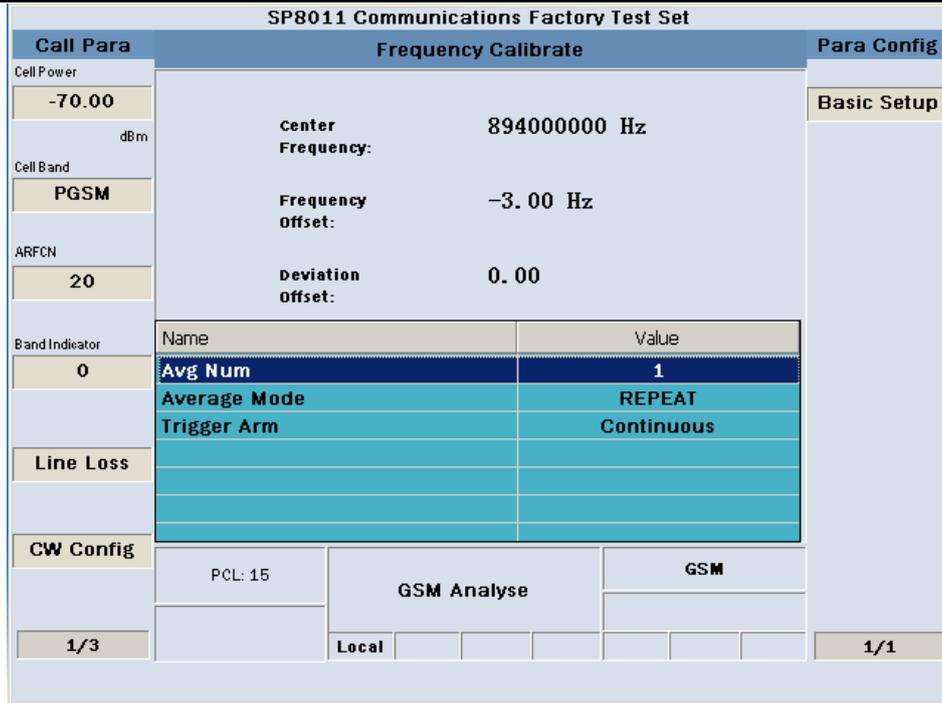


Figure 2-41 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Average Mode	Set up the average mode of test.	REPEAT / EXP	REPEAT	Nonr
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set							
Call Para	Frequency Calibrate						Para Config
Cell Power	<div style="display: flex; justify-content: space-between;"> <div> <p>Center Frequency: 894000000 Hz</p> <p>Frequency Offset: -9.00 Hz</p> <p>Deviation Offset: 0.00</p> <p>Test Count: 1</p> </div> <div> <p>Basic Setup</p> </div> </div>						Basic Setup
-70.00							
dBm							
Cell Band							
PGSM							
ARFCN							
20							
Band Indicator							
0							
Line Loss							
CW Config	PCL: 15	GSM Analyse			GSM		
1/3		Local					1/1

Figure 2-42 GSM Frequency Calibration testing results

2.2.13. GSM Power Calibration

➤ **Start Item Testing**

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select Power Calibrate in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

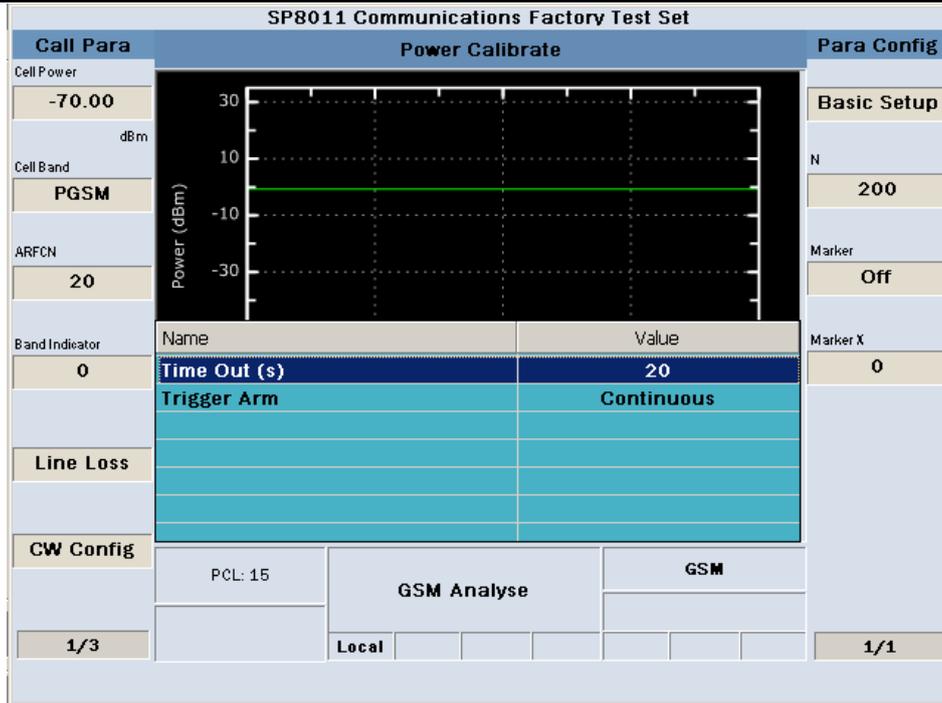


Figure 2-43 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 20	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

- Press **F8** button to set the parameters N, standing for the bursts tested. This parameter has a range of 1 to 300, with a default value of 200;
- Press **F9** button to set the state of Marker, whose range is on / off, with a default value of off;
- Press **F10** button to set the abscissa value of Marker X when Marker is on, whose range is 0 ~ N-1, with a default value of 0;
- Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
- Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Test results are displayed by graph, as shown below:

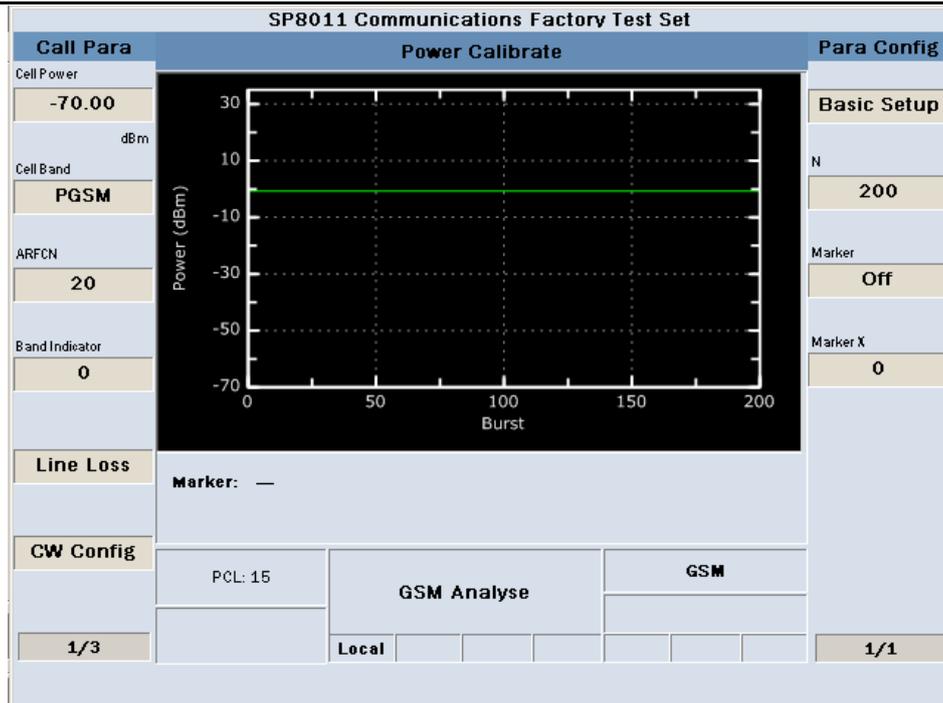


Figure 2-44 GSM Power Calibration testing results

2.2.14. EPSK Frequency Calibration

➤ Start Item Testing

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select EPSK Frequency Calibrate in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

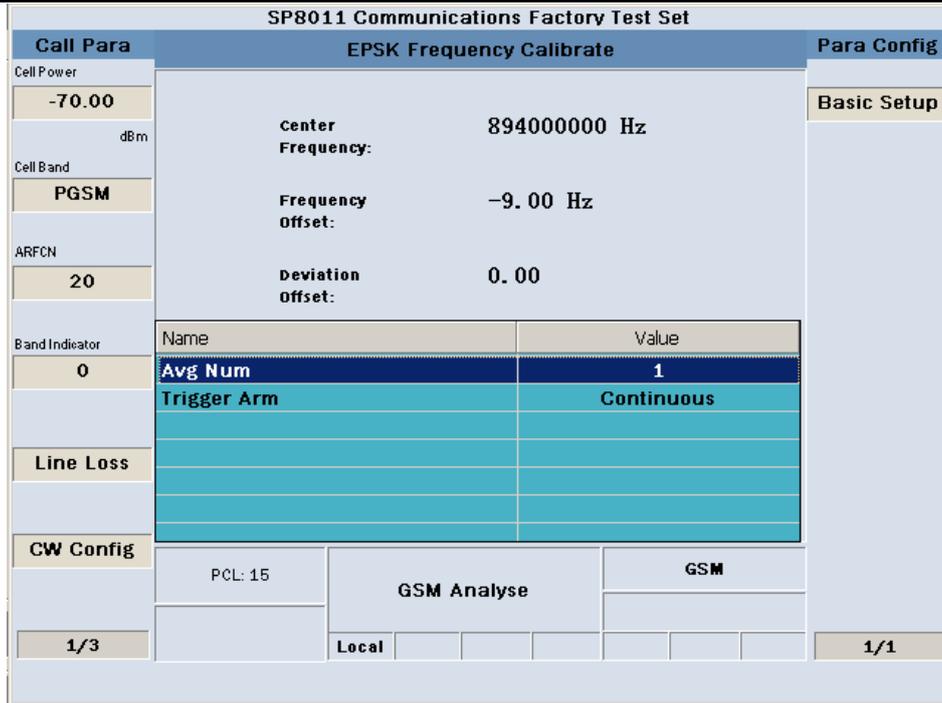


Figure 2-45 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set											
Call Para	EPSK Frequency Calibrate					Para Config					
Cell Power	<p>center Frequency: 894000000 Hz</p> <p>Frequency Offset: -6.00 Hz</p> <p>Deviation Offset: 0.00</p> <p>Test Count: 1</p>					Basic Setup					
-70.00						dBm					
Cell Band						PGSM					
ARFCN						20					
Band Indicator						0					
Line Loss											
CW Config						PCL: 15		GSM Analyse		GSM	
1/3								Local			
										1/1	

Figure 2-46 EPSK Frequency Calibration testing results

2.2.15. EPSK Power Calibration

➤ Start Item Testing

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select EPSK Power Calibrate in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

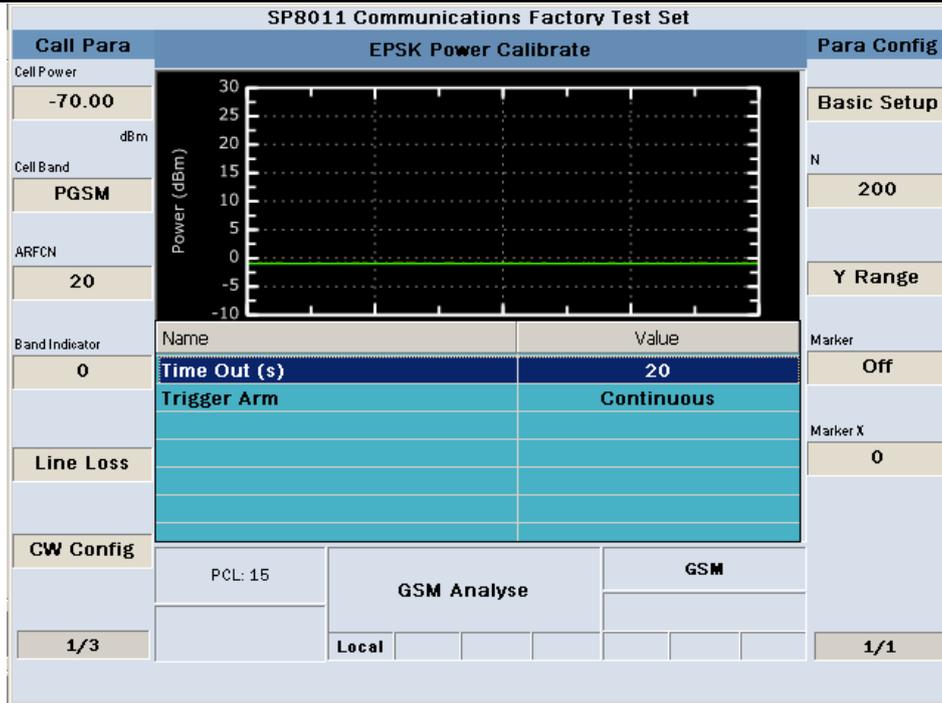


Figure 2-47 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 20	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press **F8** button to set the parameters N, standing for the bursts tested. This parameter has a range of 1 to 300, with a default value of 200;
3. Press **F9** button to set the Range of parameters Y, as shown below:

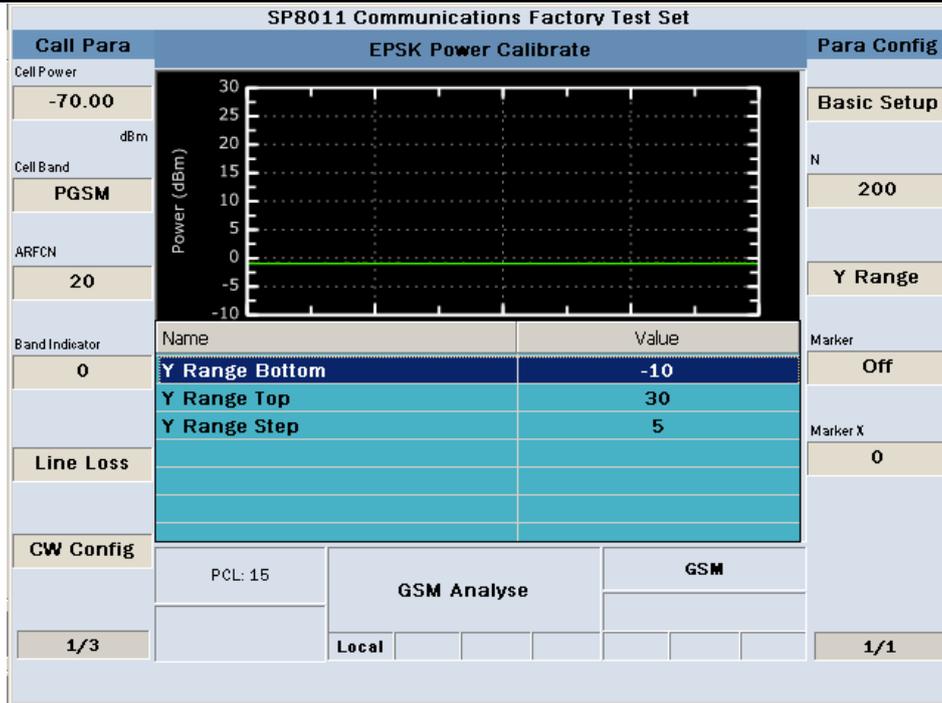


Figure 2-48 Range of Y setting interface

Explanations of range of Y are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Y Range Bottom	Set the minimum vertical coordinate.	-80 ~ -10	-10	None
Y Range Top	Set the maximum ordinate.	-10 ~ 60	30	None
Y Range Step	Setting Y axis scale interval.	1 ~ 20	5	None

Setting done, we can press the **Cancel** button to close the setting window;

4. Press **F10** button to set the state of Marker, whose range is On / Off, with a default value of Off;
5. Press **F11** button to set the abscissa value of Marker X when Marker is on, whose range is 0 ~ N-1, with a default value of 0;
6. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing;
7. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ Display Testing Results

Test results are displayed by graph, as shown below:

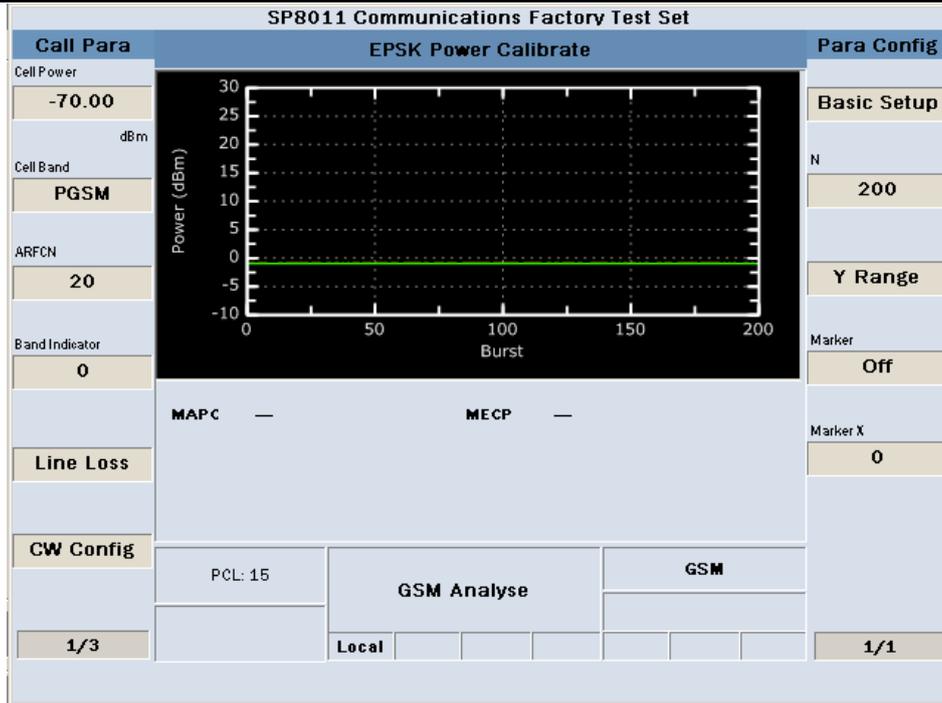


Figure 2-49 EPSK Power Calibration testing results

2.2.16. Continuous Wave

➤ Start Item Testing

In CW operating mode, press the **Selection** button in the measurement button area of the front panel, then select Continuous Wave in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press **F7** button(Basic Setup) to set the basic parameters, as shown below:

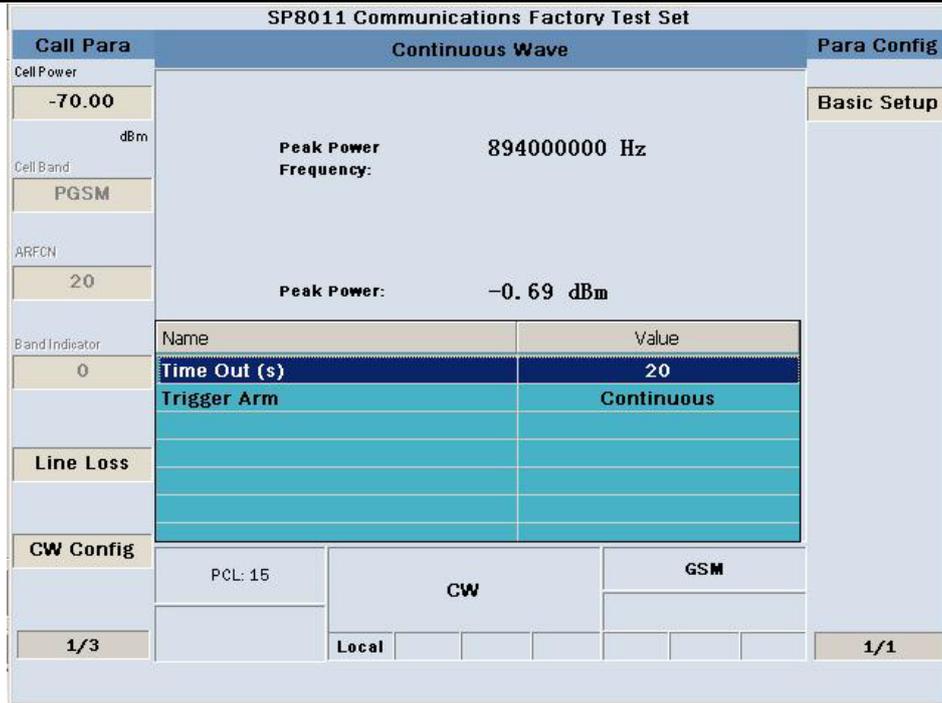


Figure 2-50 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing.
3. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set											
Call Para	Continuous Wave						Para Config				
Cell Power	Peak Power Frequency: 894000000 Hz Peak Power: -57.16 dBm						Basic Setup				
-70.00											
dBm											
Cell Band											
PGSM											
ARFCN											
20											
Band Indicator											
0											
Line Loss											
CW Config	PCL: 15	CW			GSM						
1/3		Local									
						1/1					

Figure 2-51 Continuous Wave testing results

2.2.17. IQ Tuning

➤ Start Item Testing

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the front panel, then select GSM IQ Tuning in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press F7 button(Basic Setup) to set the basic parameters, as shown below:

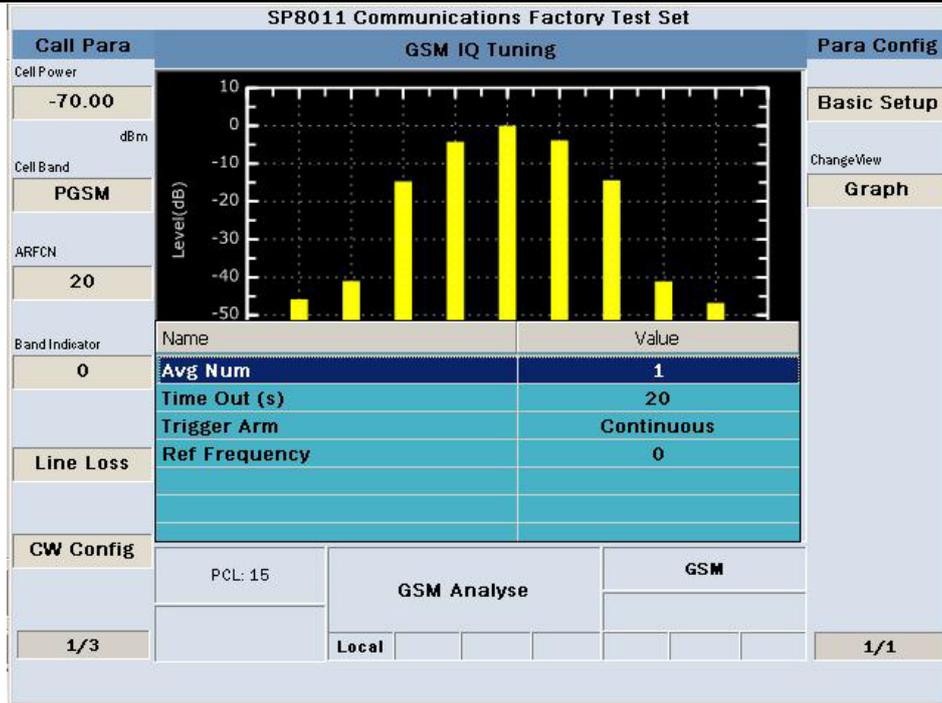


Figure 2-52 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None
Ref Frequency	The Ref Frequency.	-67.7 / 0 / 67.7	0	kHz

Setting done, we can press the **Cancel** button to close the setting window;

2. Press F8 to set up change view, can change the display mode of the results. Whose range is Numeric / Graph, with default value of Graph.
3. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing.
4. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in graph, as shown below:

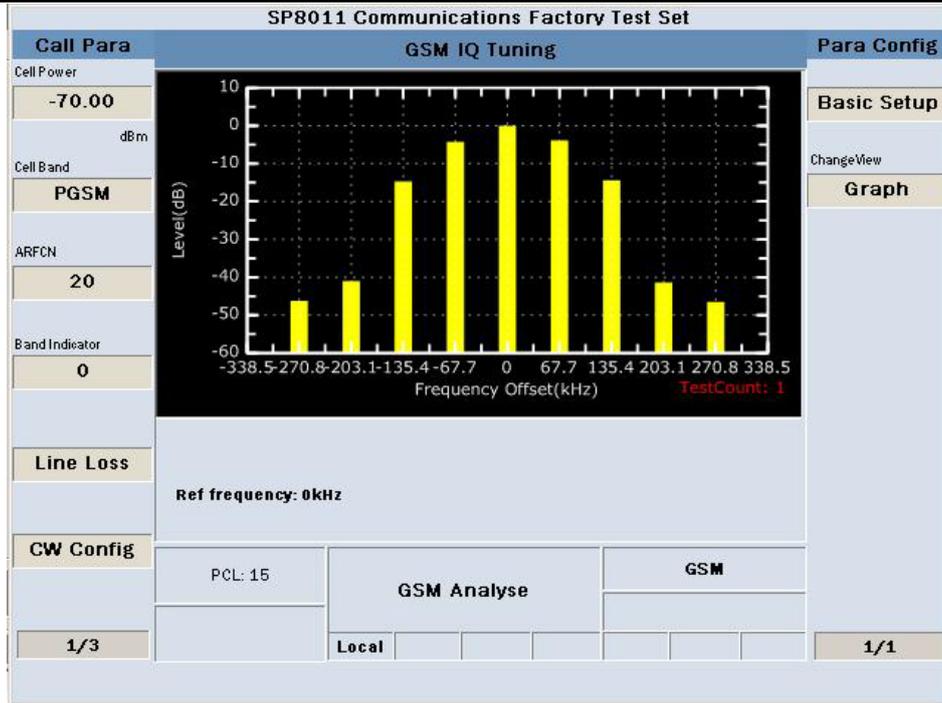


Figure 2-53 IQ Turning testing results by graph

Testing results are displayed in data, as shown below:

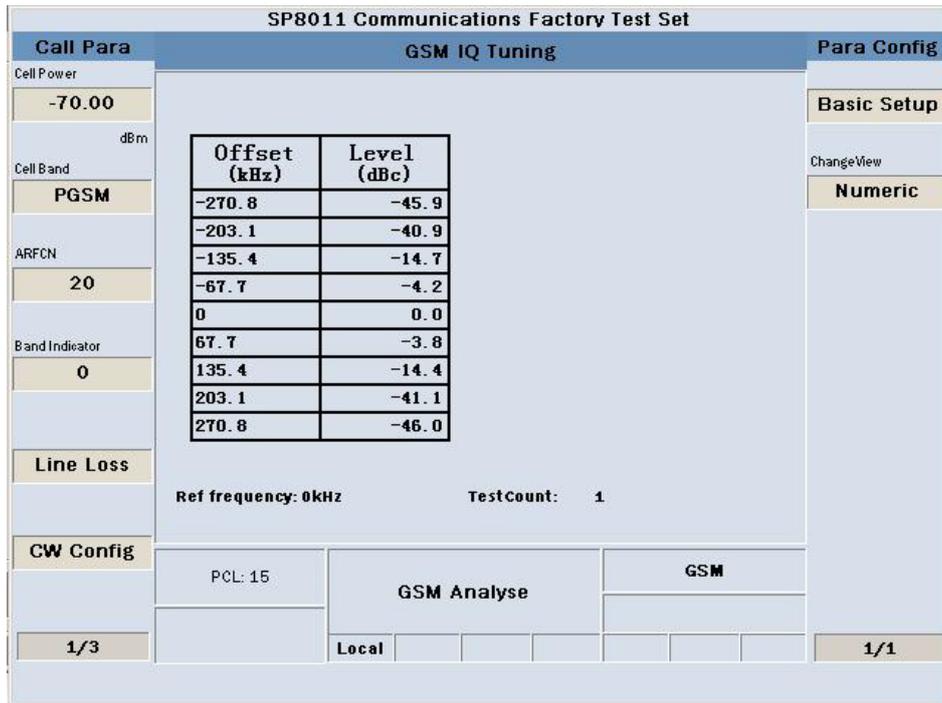


Figure 2-54 IQ Turning testing results in data

2.2.18. IQ Imbalance

➤ Start Item Testing

In GSM Analyse operating mode, press the **Selection** button in the measurement button area of the

front panel, then select Modulation Accuracy in the pop-up window to start testing this item.

➤ Setup Testing Parameters

1. Press F7 button(Basic Setup) to set the basic parameters, as shown below:

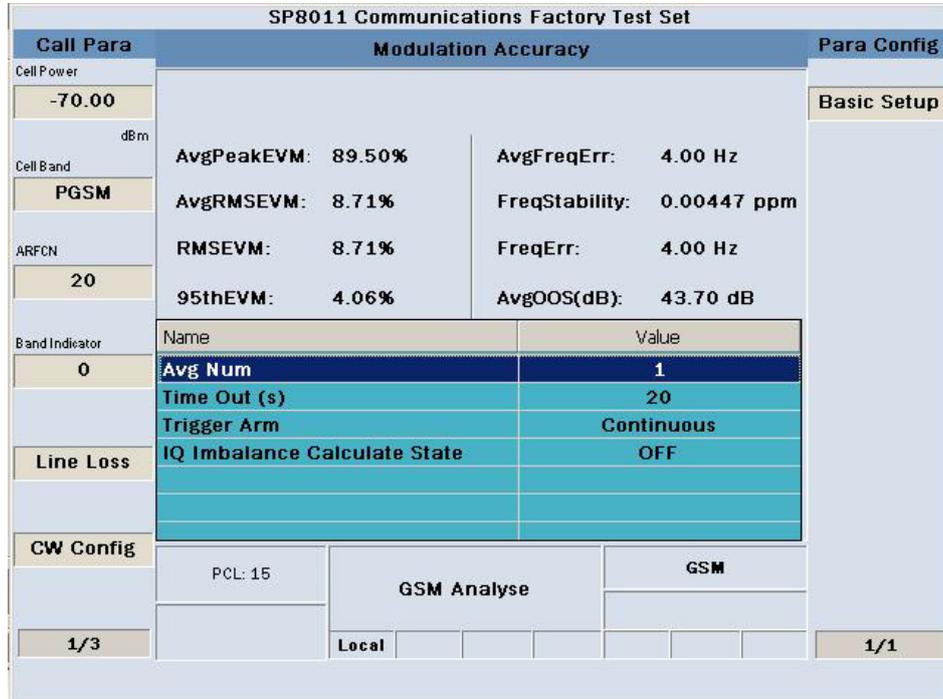


Figure 2-55 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Avg Num	The average number of tests, used to set the average number of test results.	1 ~ 999	1	None
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Continuous	None
IQ Imbalance Calculate State	The state of IQ Imbalance Calculation.	OFF / ON	OFF	None

2. Set up the IQ Imbalance Calculate State as ON ,then can start the calculation.
3. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing.
4. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ **Display Testing Results**

Testing results are displayed in data, as shown below:

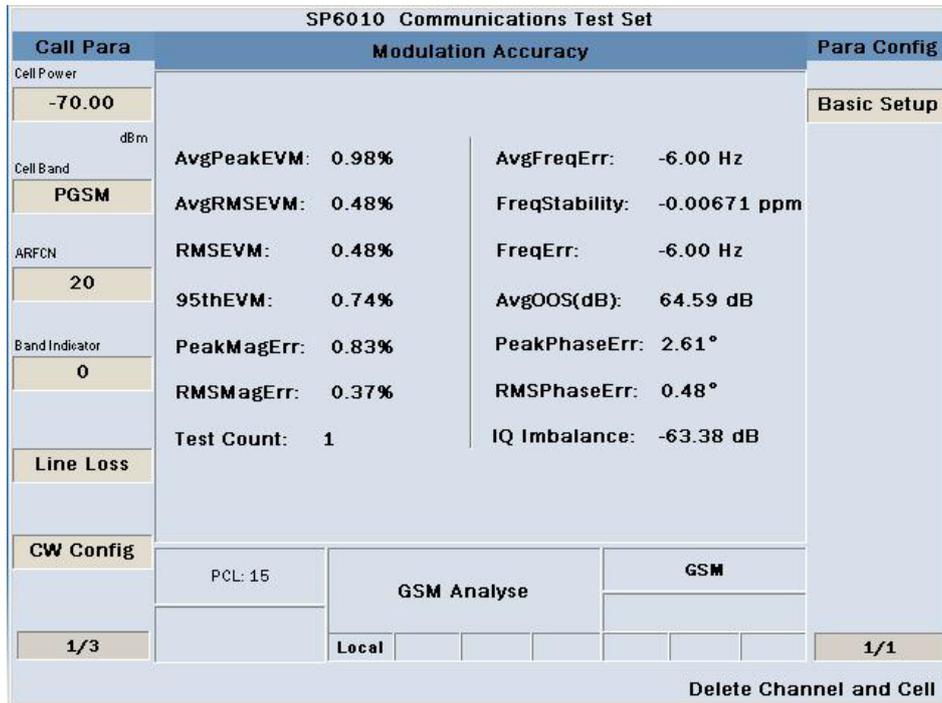


Figure 2-56 IQ Imbalance testing results

2.2.19. GSM Fast Bit Error Ratio

➤ **Start Item Testing**

In Active Cell operating mode, select the GSM service types then press the **Selection** button in the measurement button area of the front panel, and then select GSM Fast Bit Error Ratio in the pop-up window to start testing this item.

➤ **Setup Testing Parameters**

1. Press F7 button(Basic Setup) to set the basic parameters, as shown below:

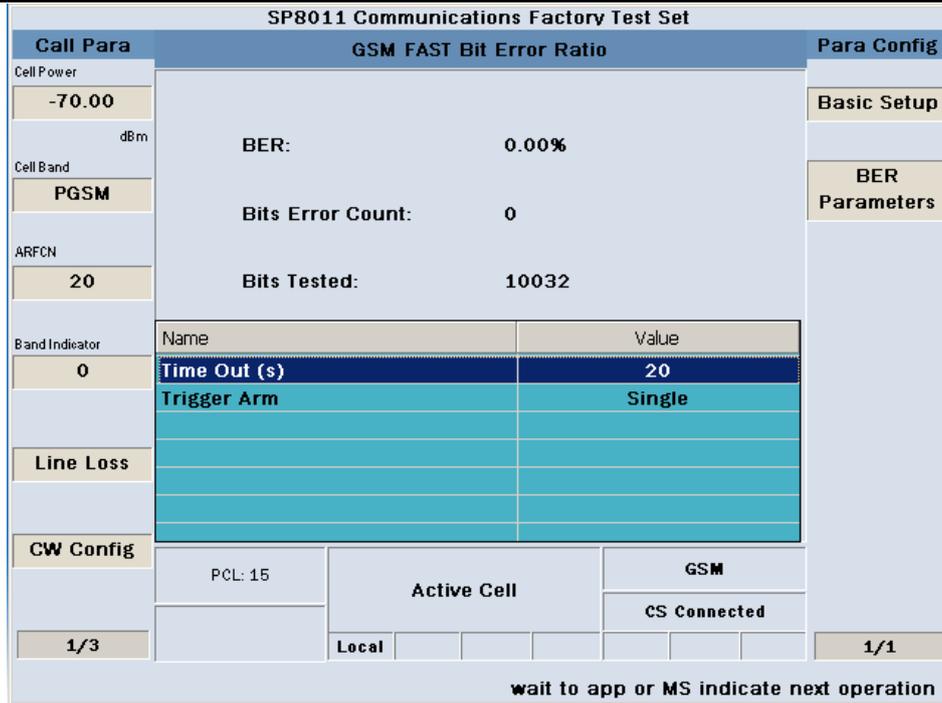


Figure 2-57 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

Parameter Name	Parameter Description	Parameter Range	Default	Unit
Time Out	Timeout, used to set the maximum time of test on condition that no uplink signal is received.	1 ~ 999	20	s
Trigger Arm	Test trigger, including single test (Single) and continuous test (Continuous).	Single / Continuous	Single	None

Setting done, we can press the **Cancel** button to close the setting window;

2. Press F8 button to set the BER parameters, as shown below:

SP8011 Communications Factory Test Set				
Call Para	GSM FAST Bit Error Ratio		Para Config	
Cell Power	BER: 0.00%		Basic Setup	
-70.00			Bits Error Count: 0	BER Parameters
dBm				
Cell Band	Bits Tested: 10032			
PGSM				
ARFCN				
20				
Band Indicator				
0				
Line Loss				
CW Config				
	PCL: 15	Active Cell	GSM	
			CS Connected	
1/3		Local	1/1	
wait to app or MS indicate next operation				

Figure 2-58 BER Parameters setting interface

Explanations of BER Setup parameters are as follows:

Parameter Name	Parameter Range	Default	Unit
Number of Bits	1000 ~ 999000	10000	Bit
Requirement (e-4)	0 ~ 10000	10	无

Setting done, we can press the **Cancel** button to close the setting window;

3. Press the **Single** button or **Continuous** button in the measurement button areas of the front panel to carry out single or continuous testing.
4. Press the **Stop** button in the measurement button areas of the front panel to terminate the test.

➤ Display Testing Results

Testing results are displayed in data, as shown below:

SP8011 Communications Factory Test Set									
Call Para		GSM FAST Bit Error Ratio						Para Config	
Cell Power	-70.00	BER: 0.00% Bits Error Count: 0 Bits Tested: 10032 PASS						Basic Setup	
Cell Band	PGSM							BER Parameters	
ARFCN	20								
Band Indicator	0								
Line Loss									
CW Config	PCL: 15	Active Cell			GSM				
					CS Connected				
	1/3	Local						1/1	
wait to app or MS indicate next operation									

Figure 2-59 GSM Fast BER testing results