SP8011 GSM Test User Manual V2.0

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Contents

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:

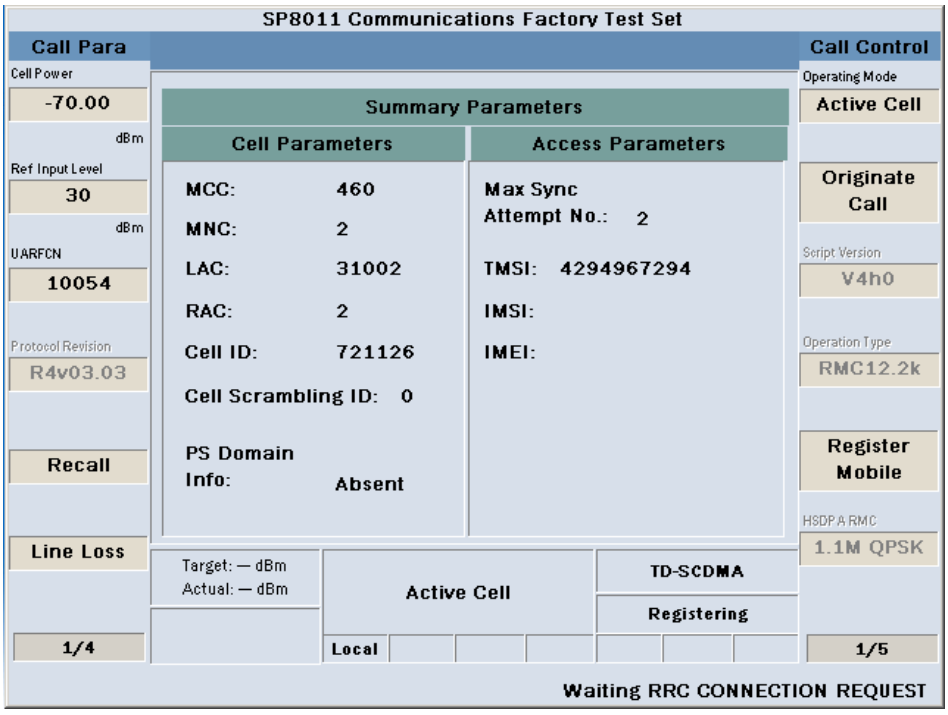

Figure 1-1 the default interface of SP8011 terminal conformance tester

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:

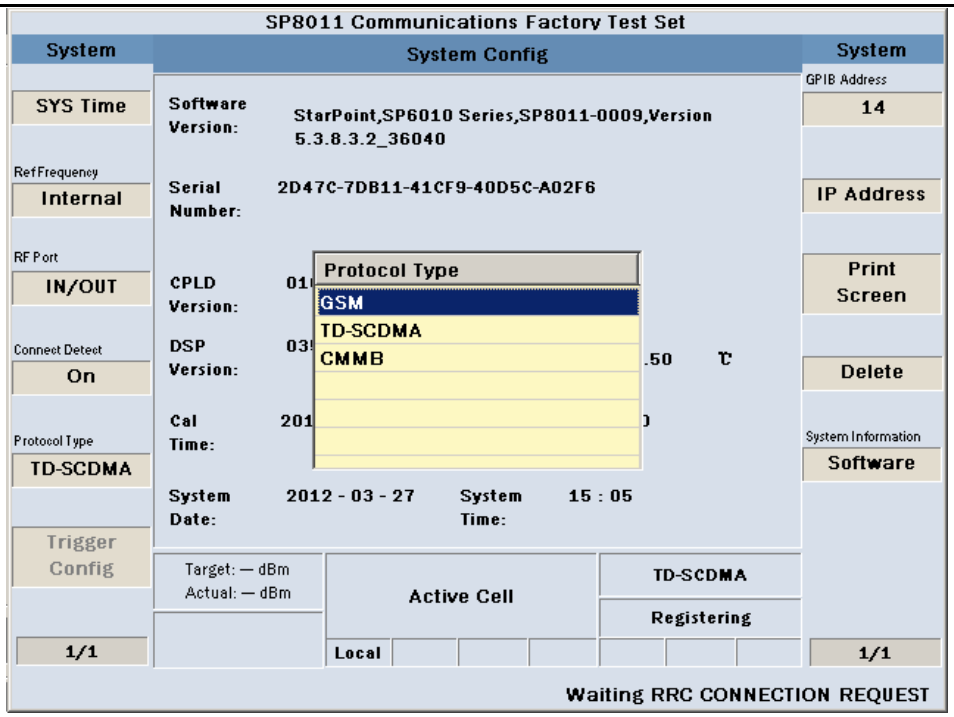

Figure 1-2 the interface of switching systems

3. 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:

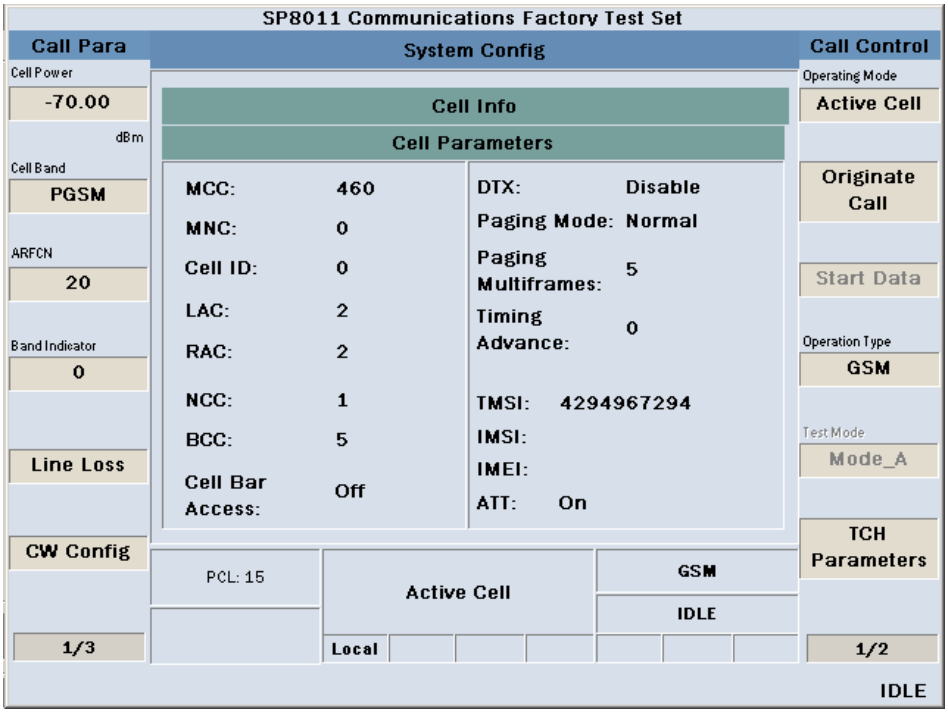

Figure 1-3 the initial Interface of the GSM System

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:

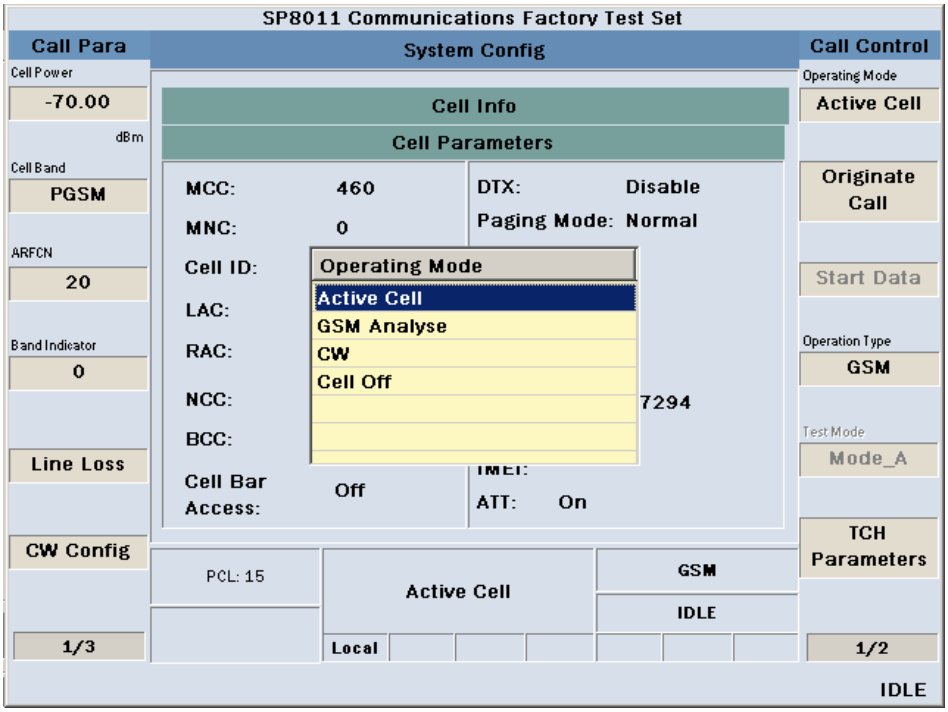

Figure 1- 4 the GSM system mode setting Interface

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:

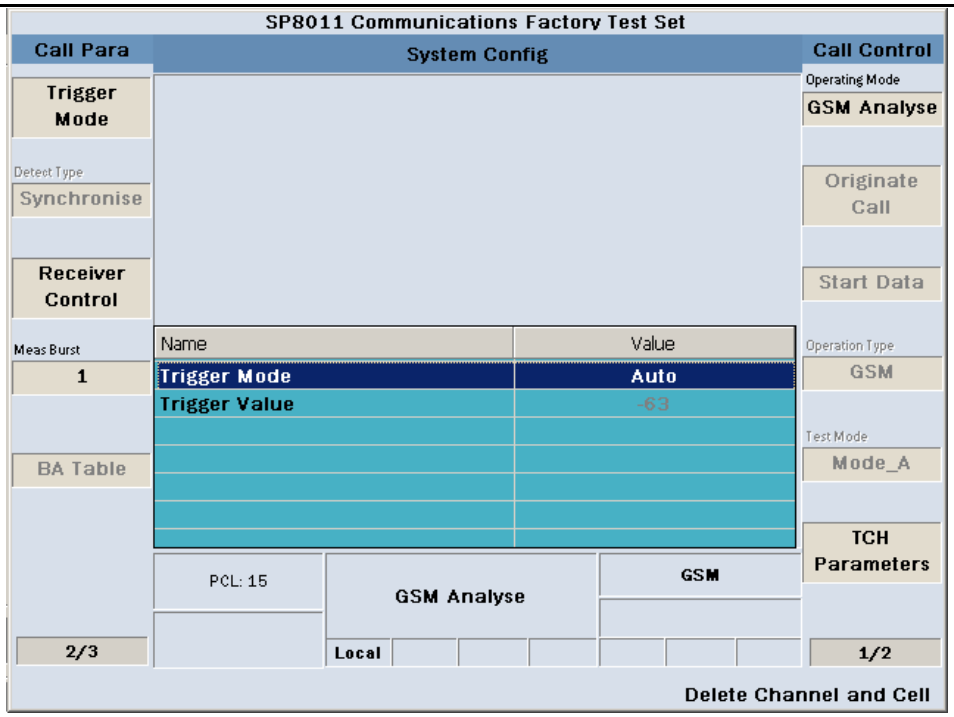

Figure 1-1 Trigger mode parameter setting interface

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:

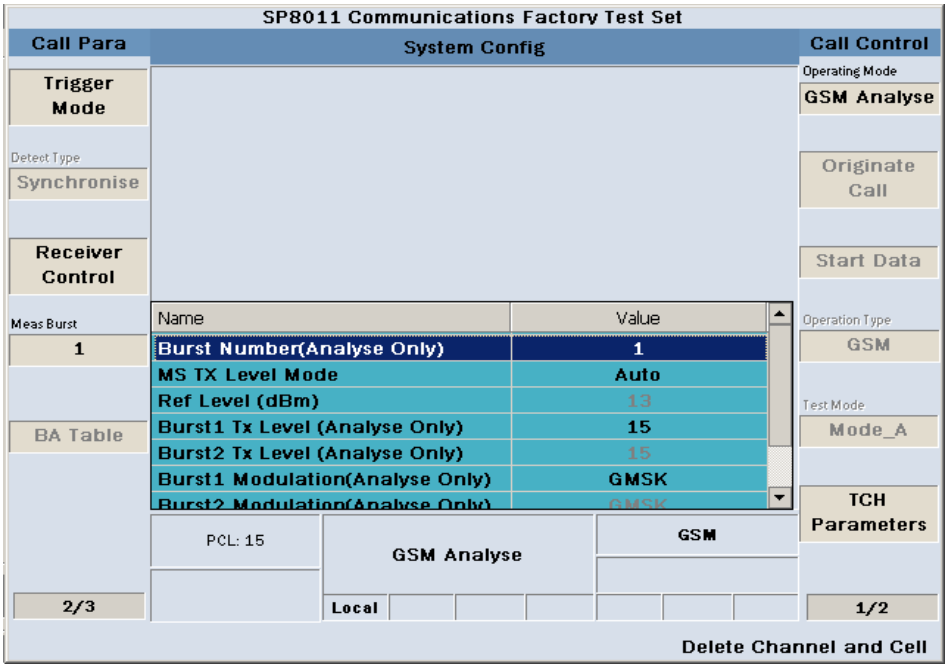

Figure 1-6 Receiver control parameters setting interface

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:

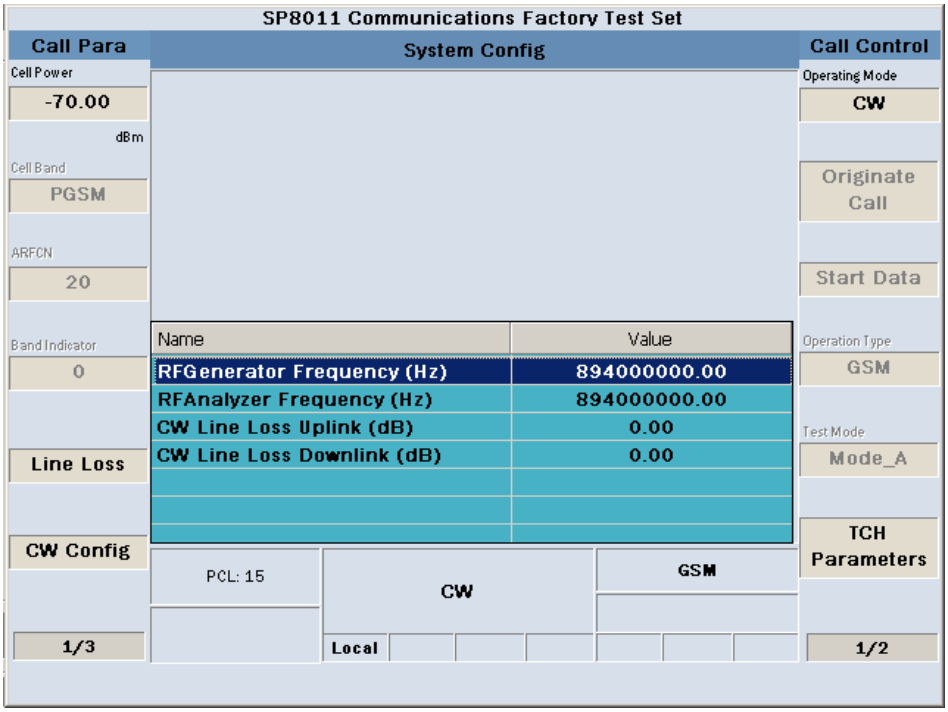

Figure 1-7 CW configuration parameters setting interface

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:

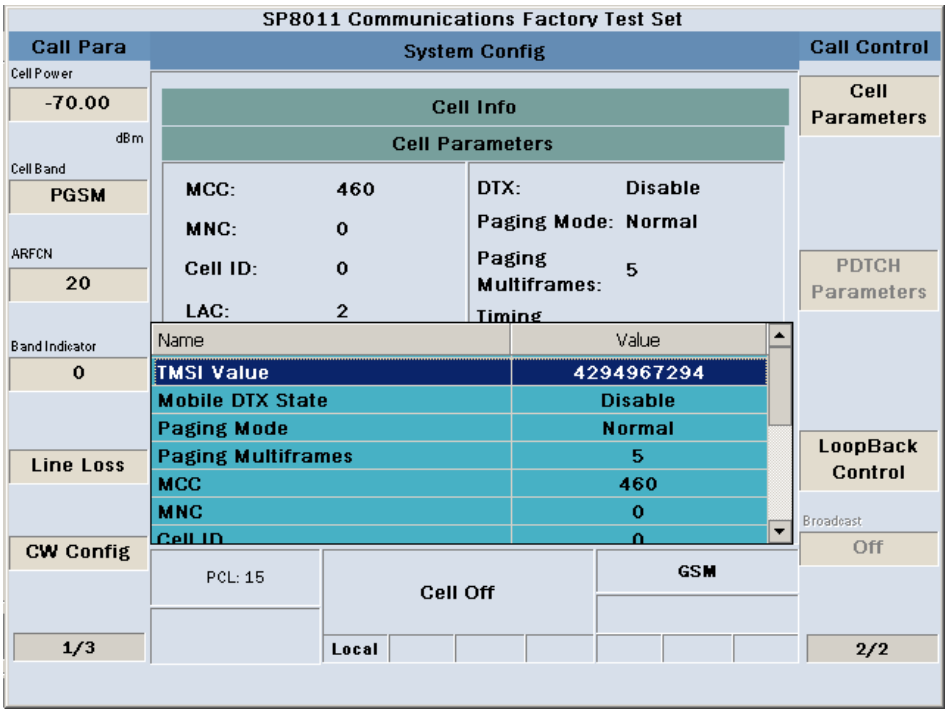

Figure 1-8 Cell parameters setting interface

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:

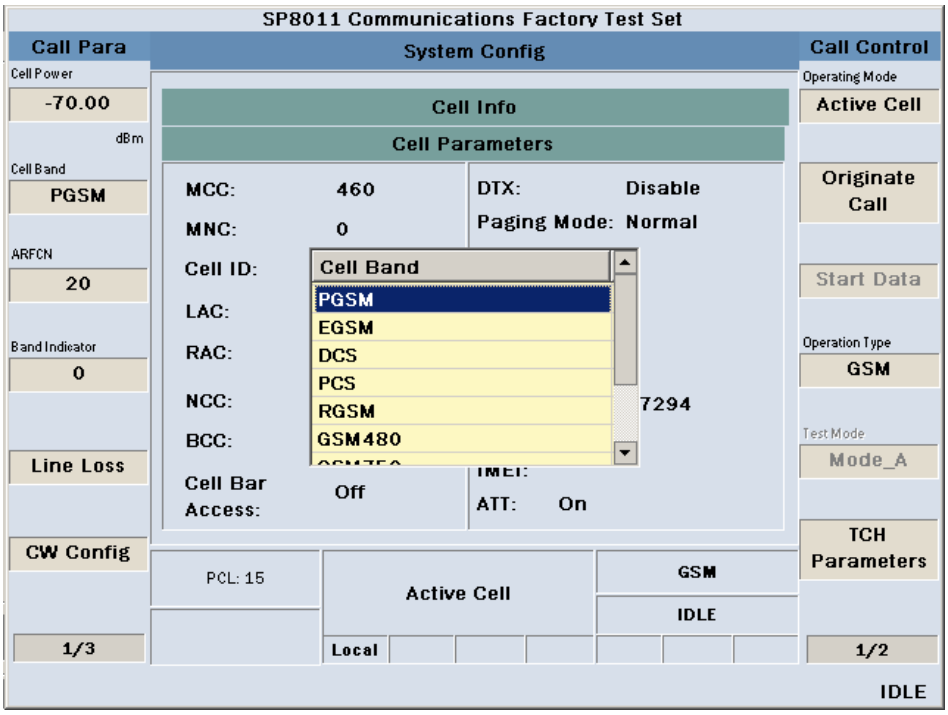

Figure 1-9 GSM system cell band setting interface

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

4. 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.

5. Press **F5** button to set Line Loss parameters, we can set up-link/down-link line loss at different bands, shown as below:

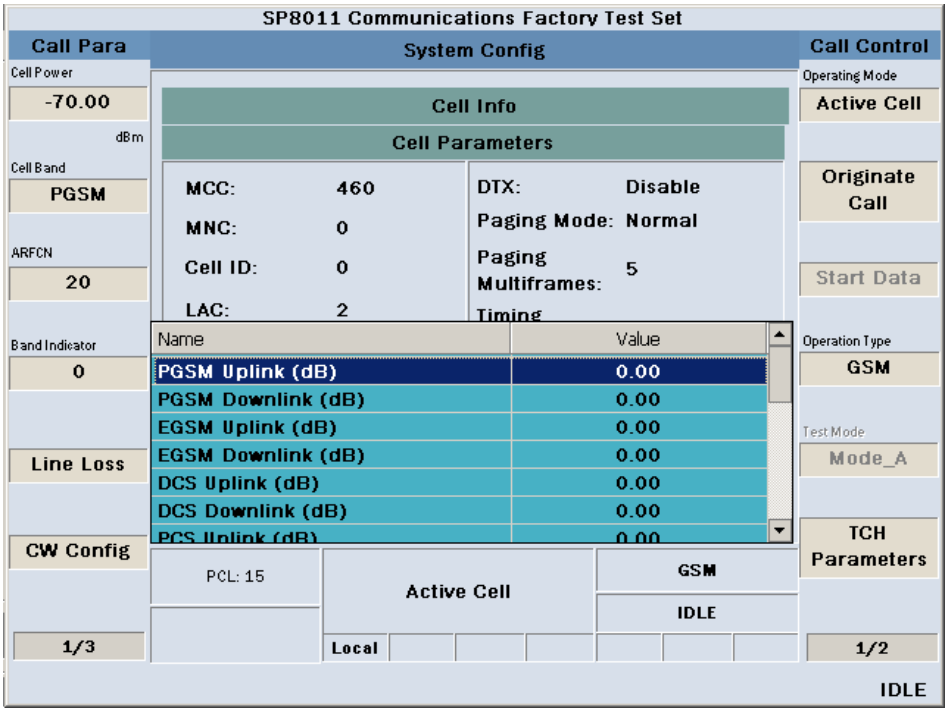

Figure 1-10 line loss of GSM system setting interface

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:

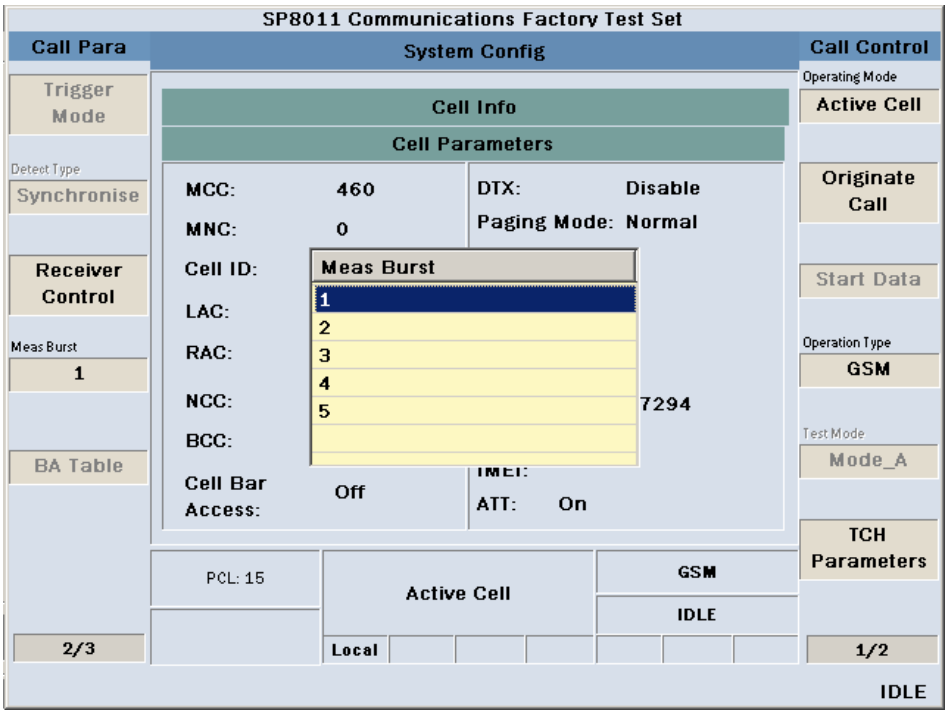

Figure 1-11 Meas Burst parameter setting interface

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

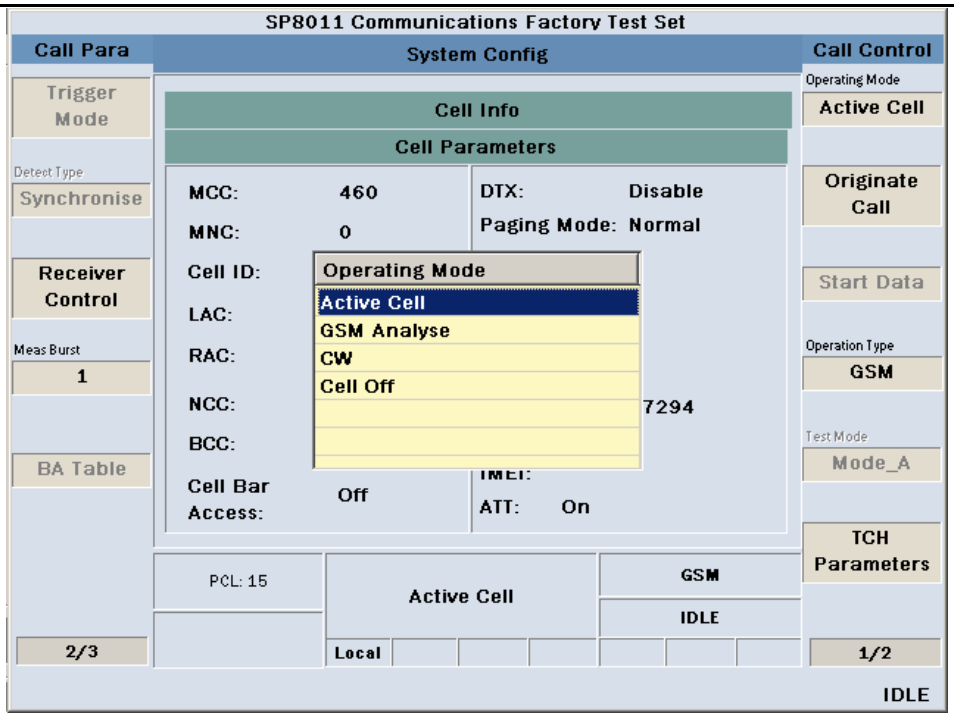

Figure 1-12 GSM system operating mode setting interface

8. 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:

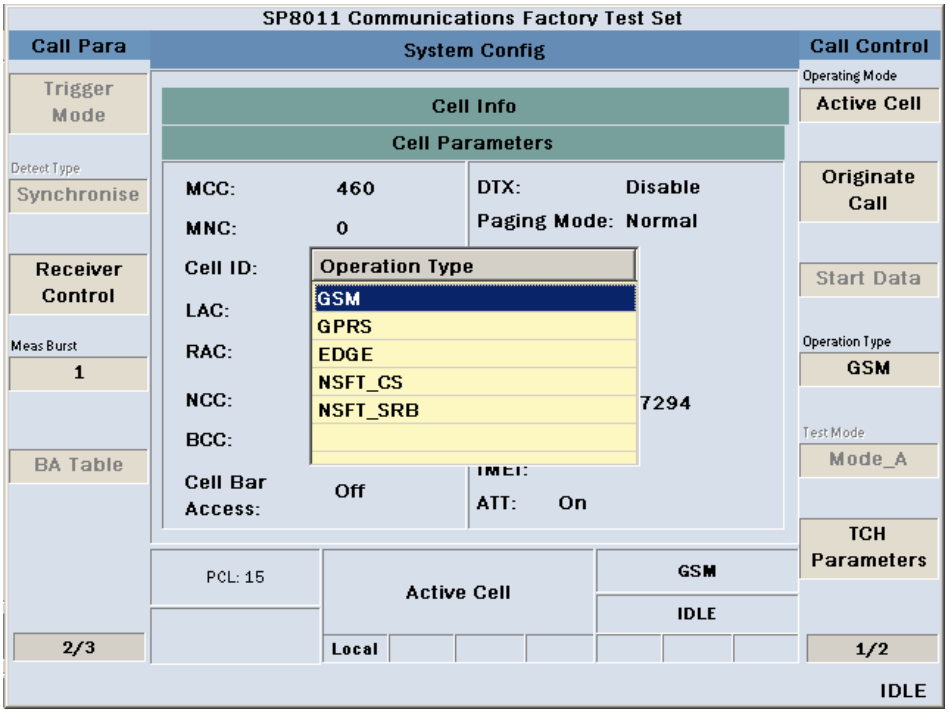

Figure 1-13 GSM system service category setting interface

1) 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:

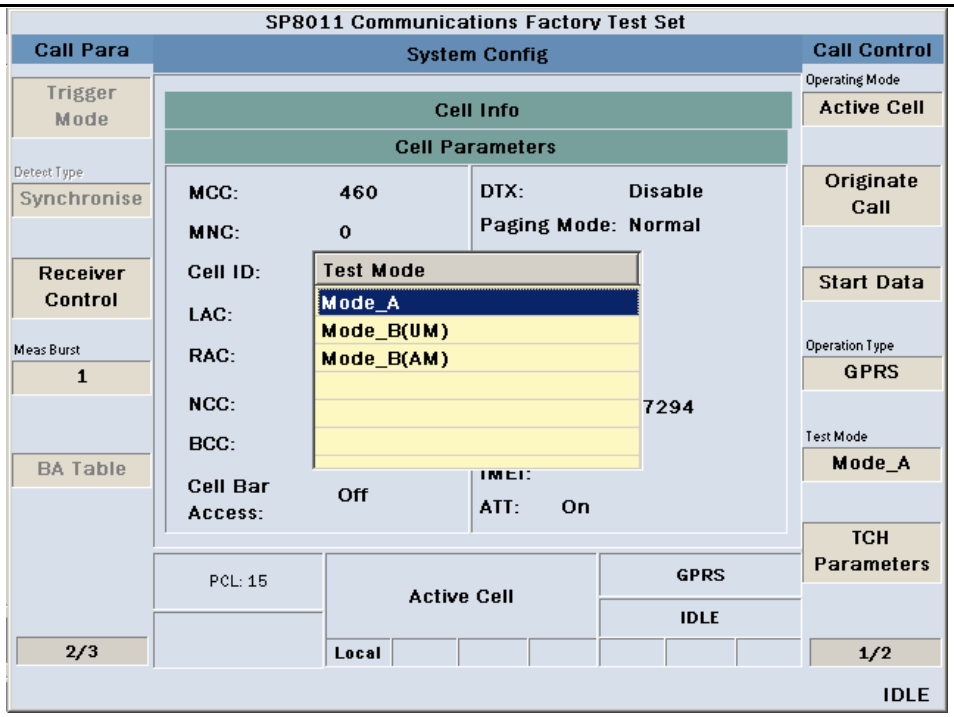

Figure 1-14 GPRS testing mode setting interface

2) 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:

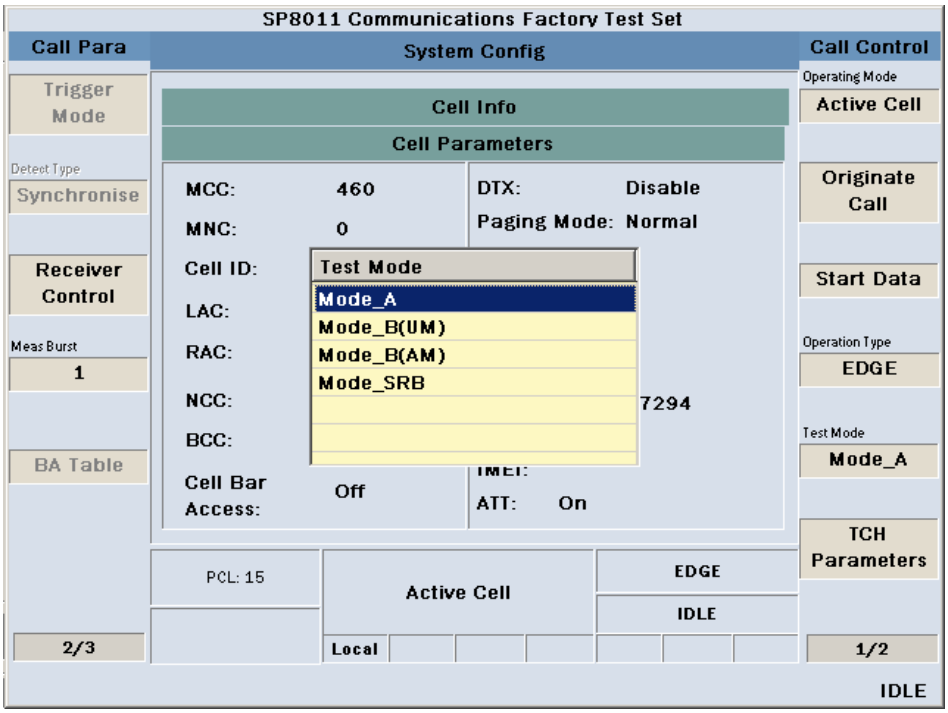

Figure 1-15 EDGE testing mode setting interface

3) 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:

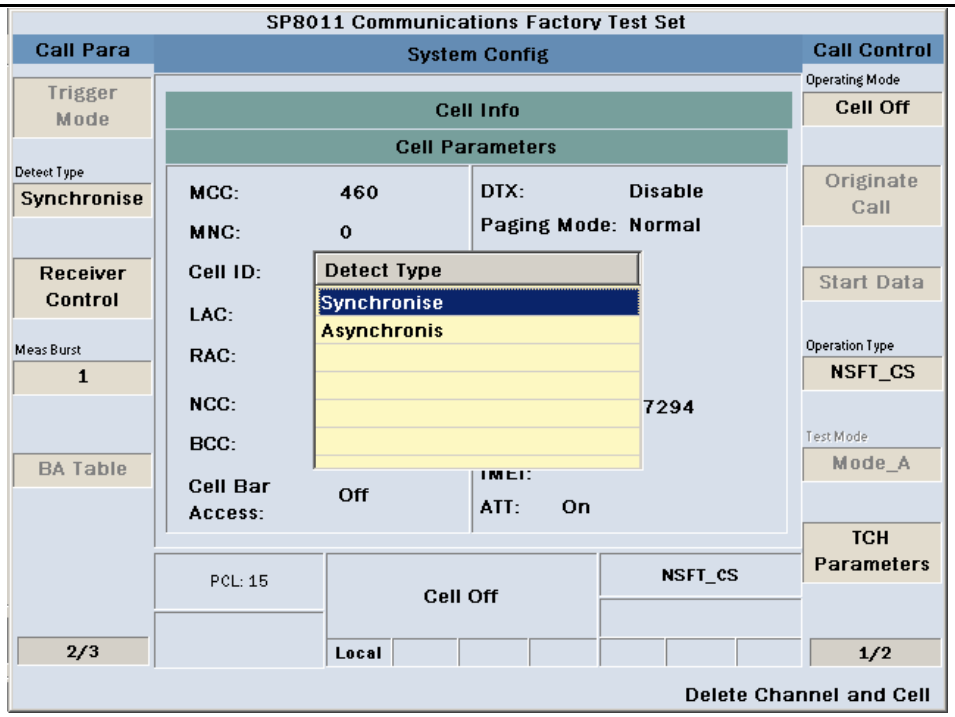

Figure 1-16 detect type setting interface

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

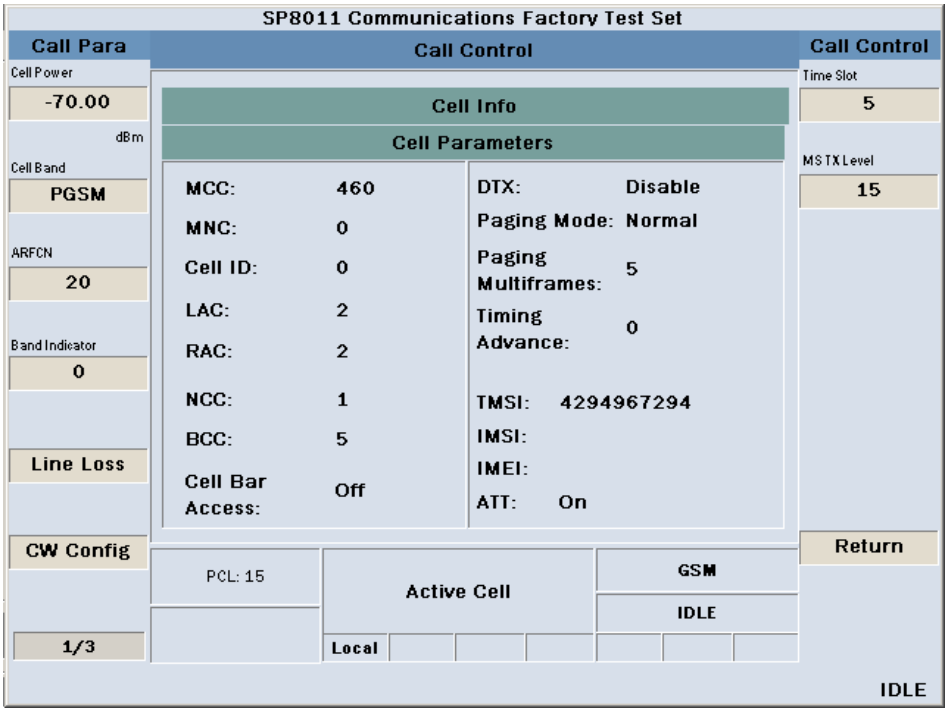

Figure 1-17 TCH signal channel parameter setting interface

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:

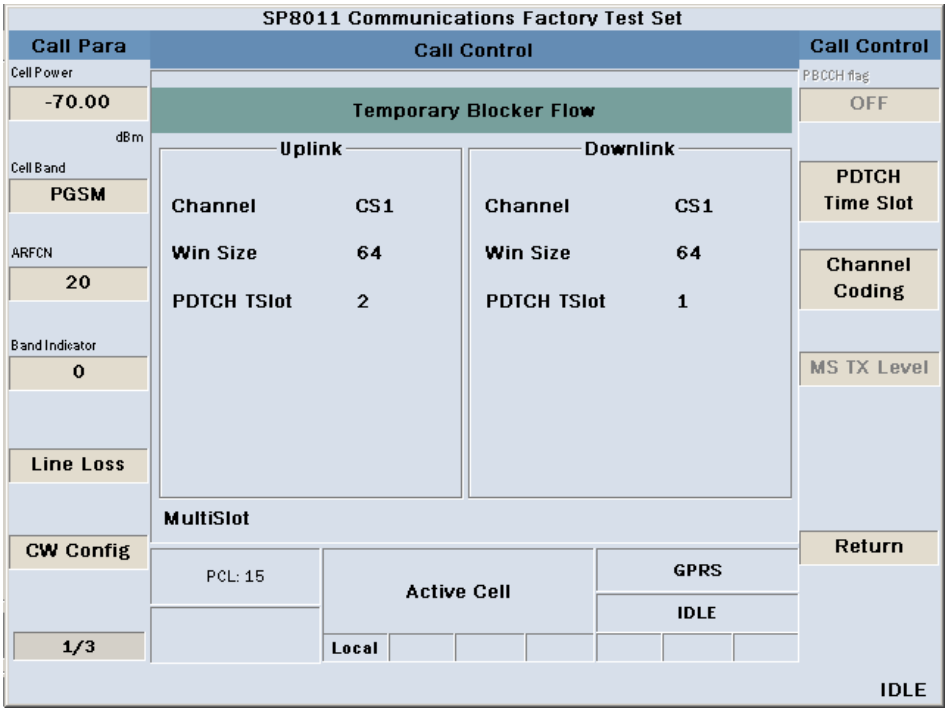

Figure 1-18 PDTCH Parameters setting interface

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

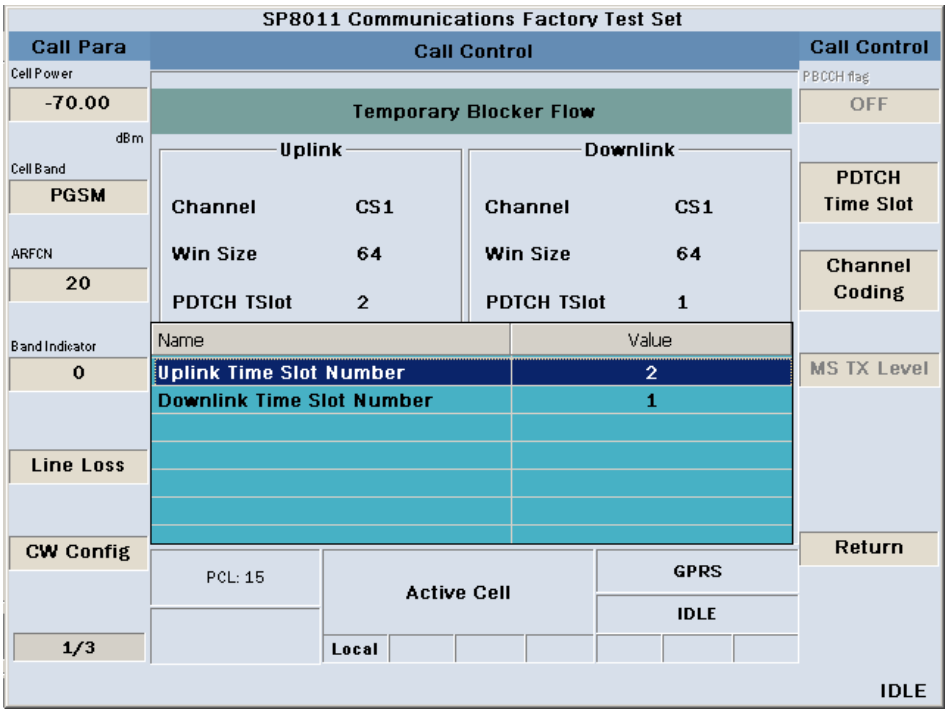

Figure 1-19 PDTCH Time Slot parameter setting interface

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:

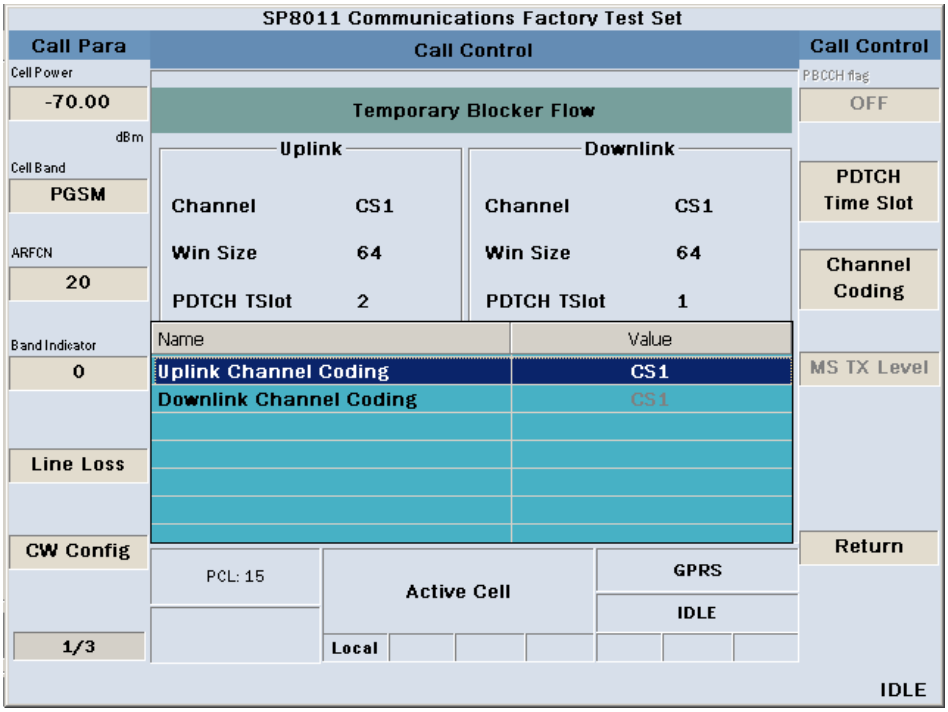

Figure 1-19 Channel Coding parameter setting interface

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:

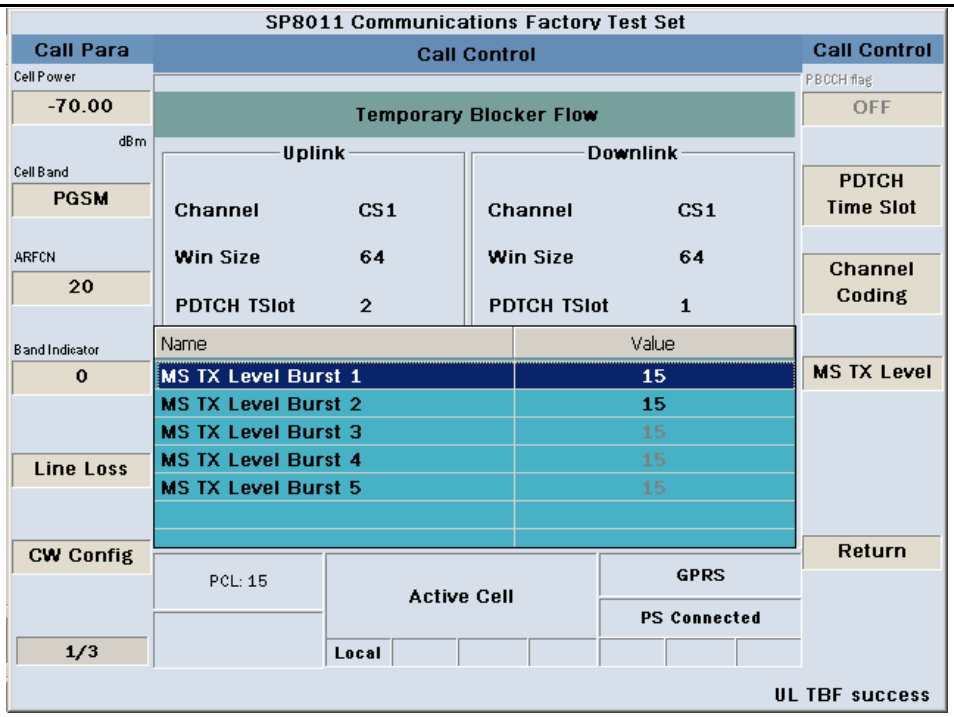

Figure 1-21 PDTCH channel MS TX Level parameters setting interface

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:

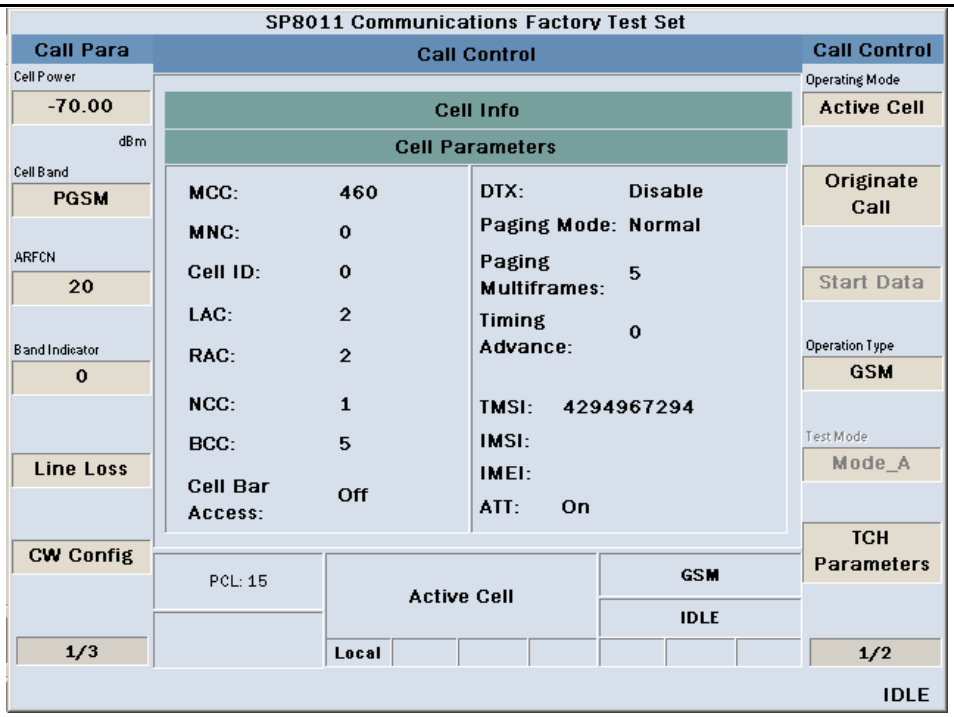

Figure 1-22 the initial interface of GSM system

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:

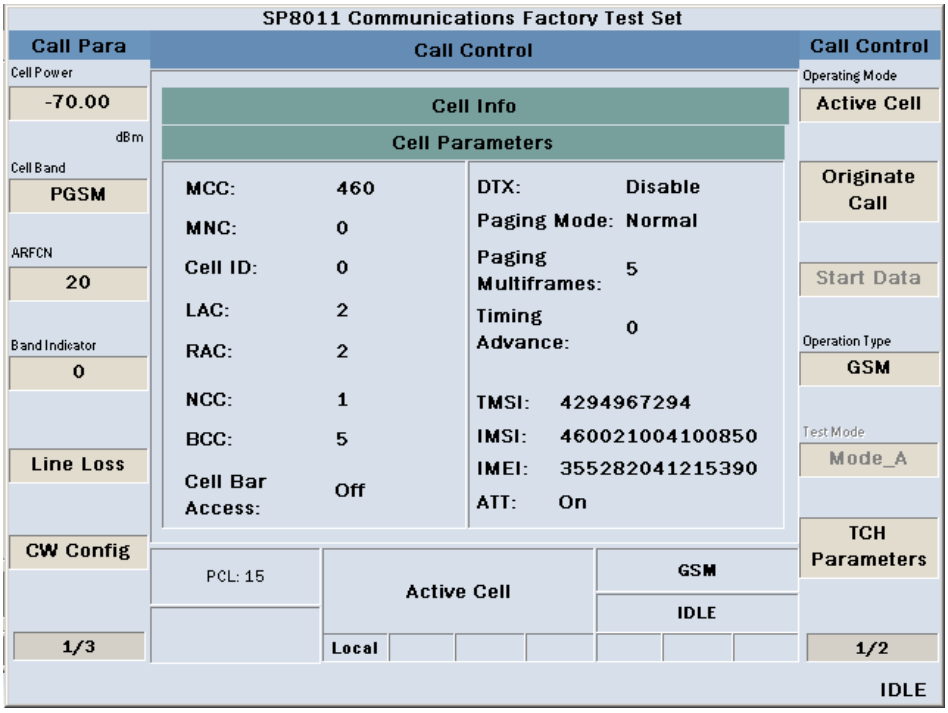

Figure 1-23 Register completing interface of GSM system

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:

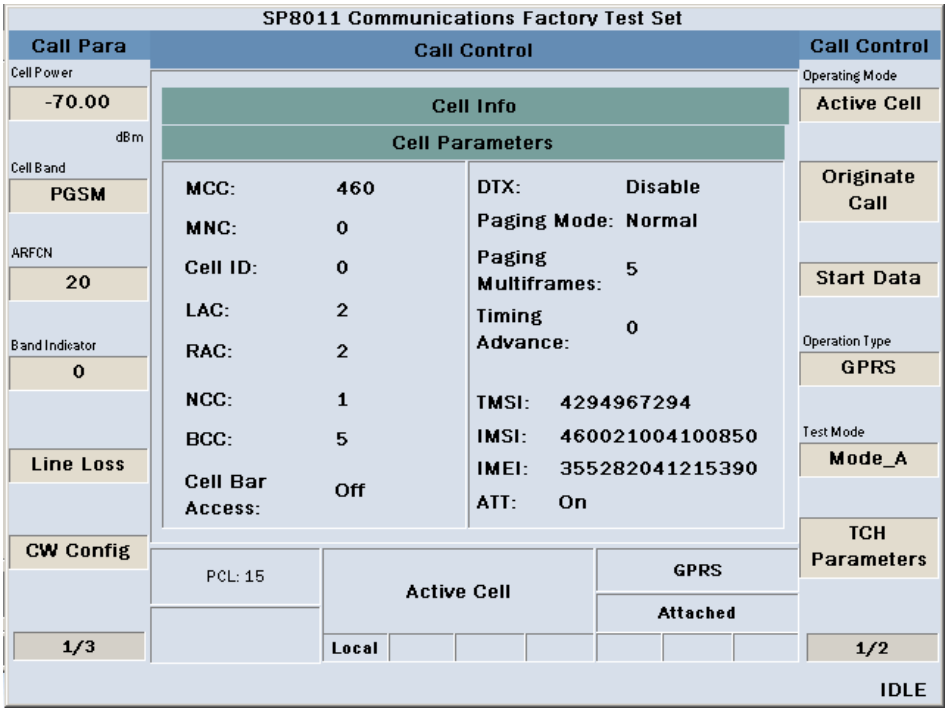

Figure 1-24 attach completing interface of GPRS / EDGE system

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:

1. 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.
2. 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:

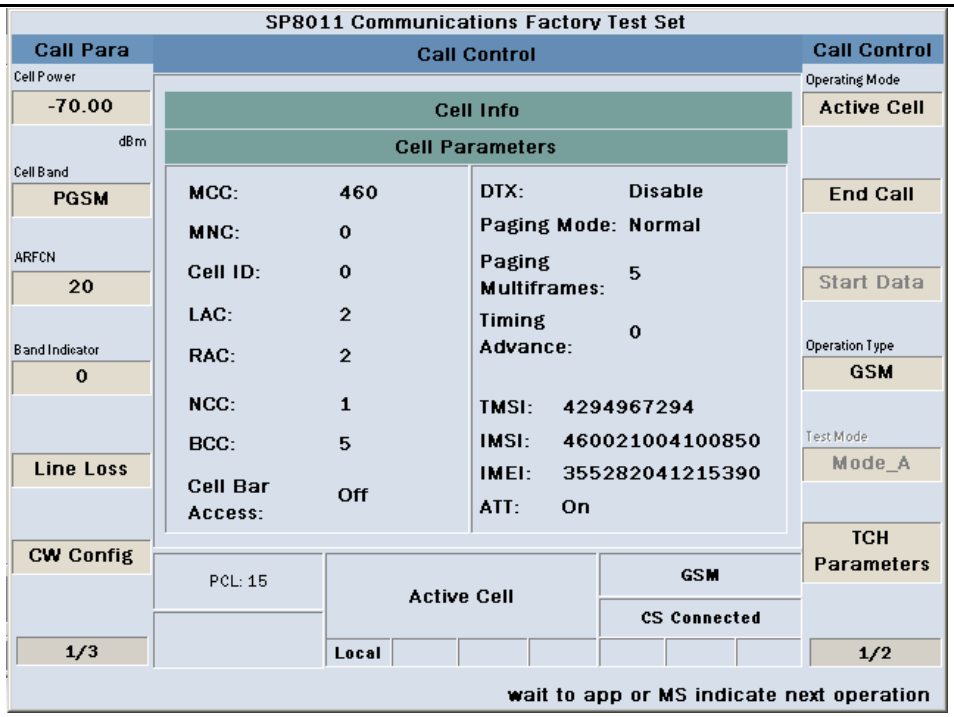

Figure 1-25 CS domain call connection completing interface of GPRS / EDGE system

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:

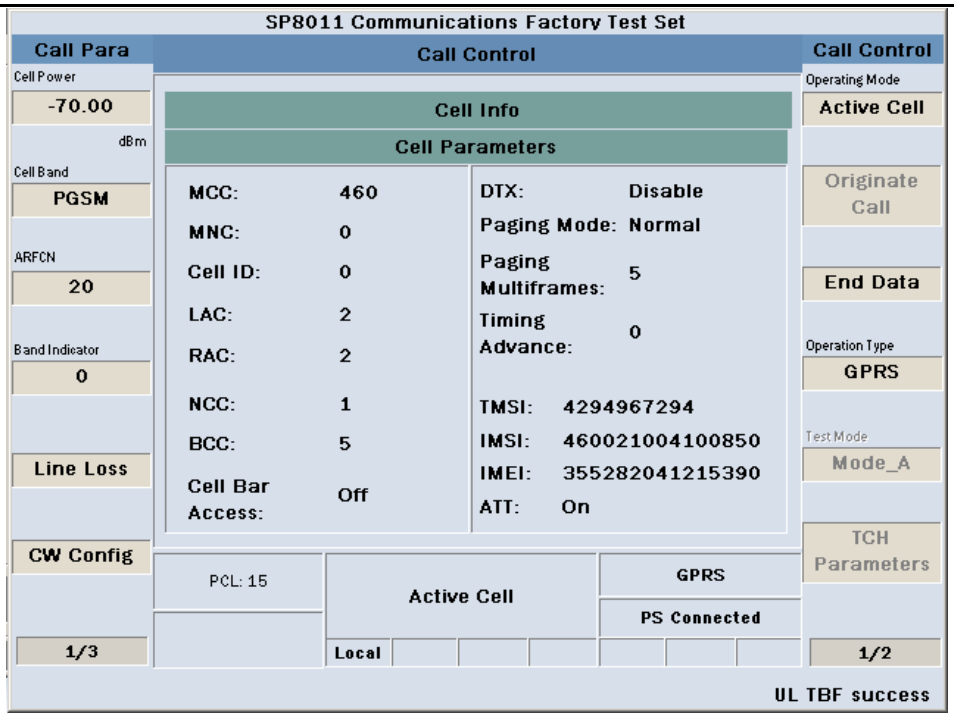

Figure 1-26 PS domain data connection establishing complete interface

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:

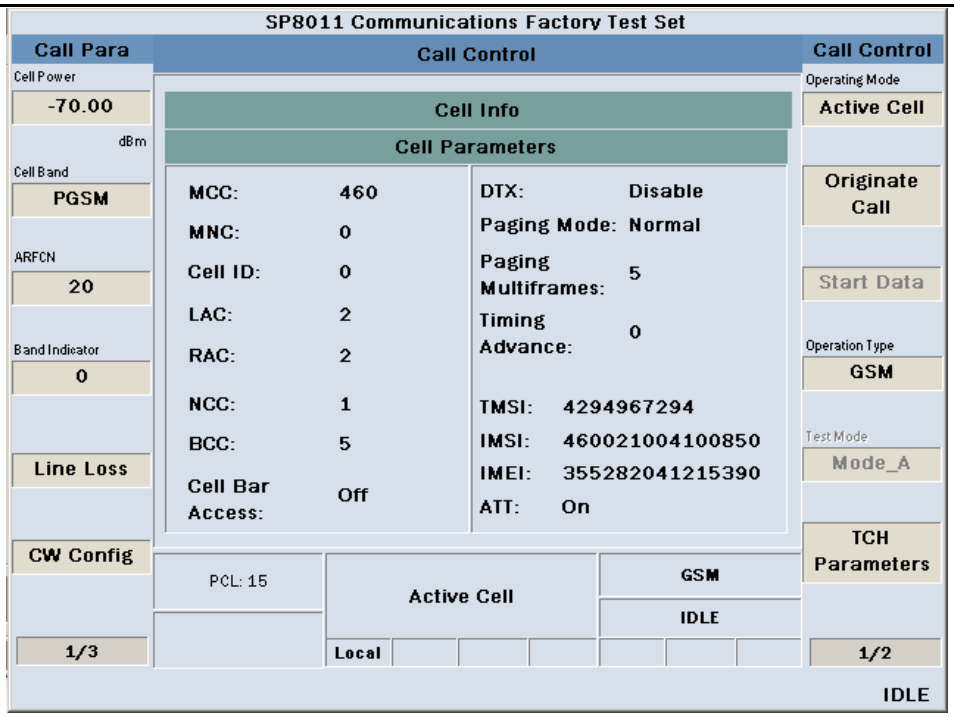

Figure 1-27 IDLE state interfaces after CS domain disconnecting

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:

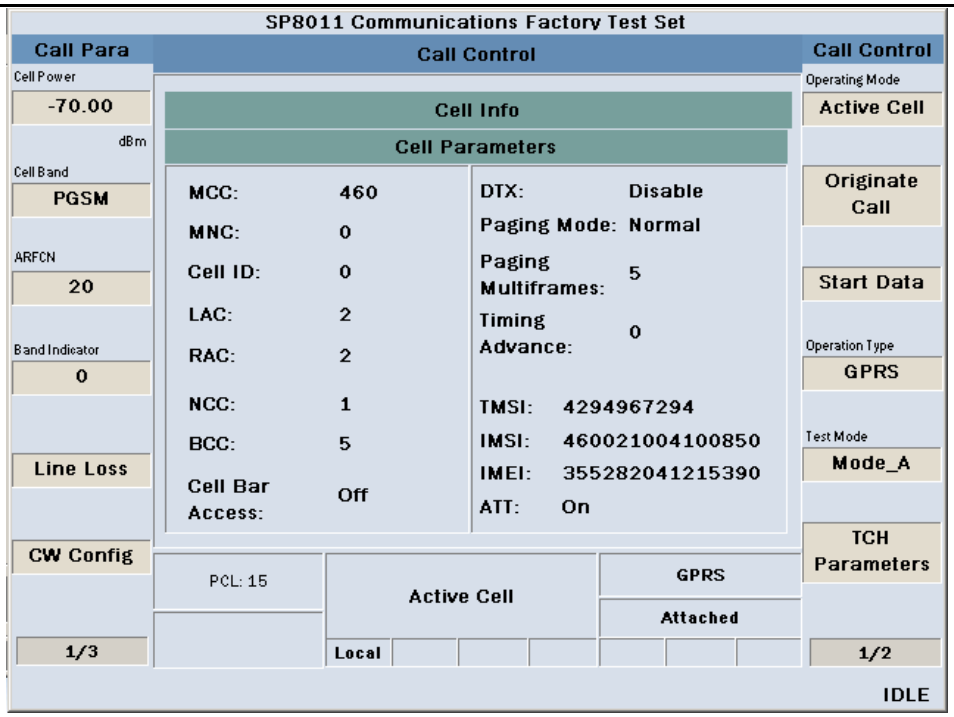

Figure 1-28 Attached state interface after PS domain disconnecting

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:

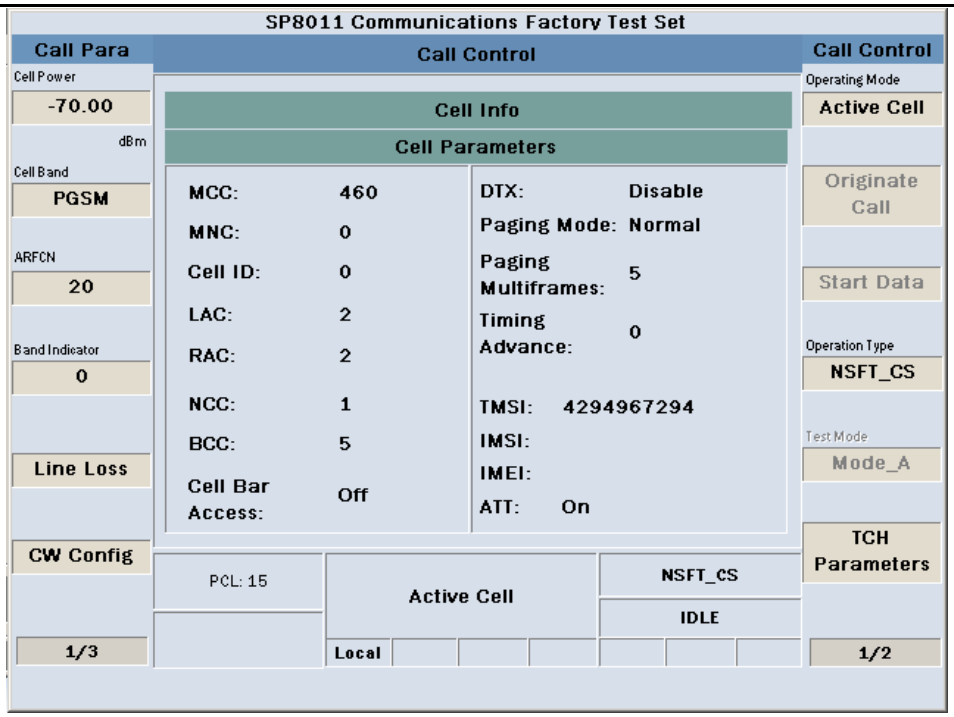

Figure 1-29 the default page of NSFT_CS

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:

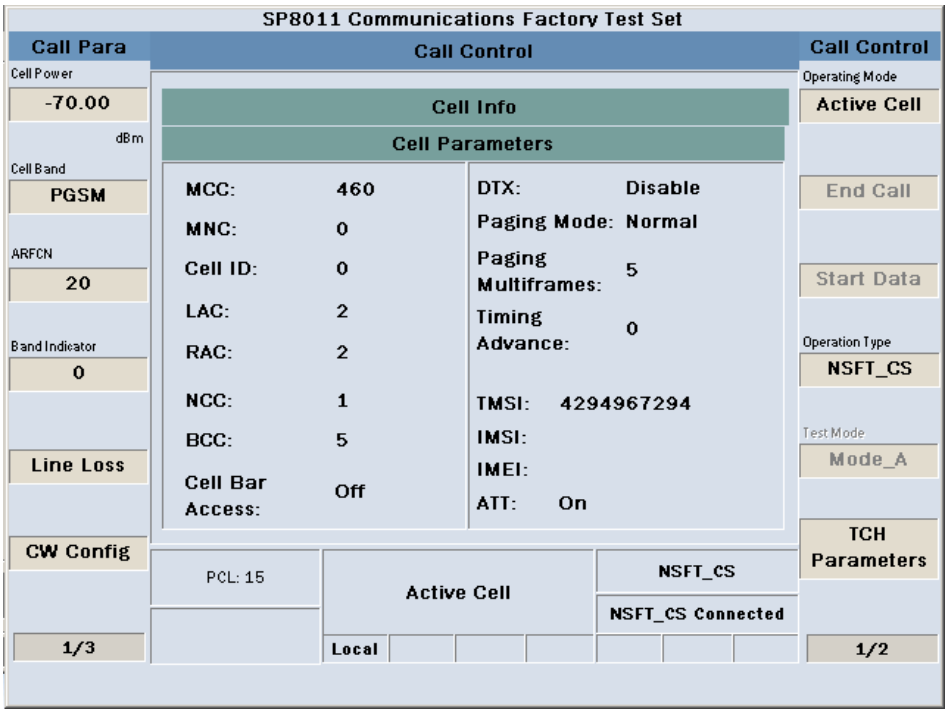

Figure 1-30 CS domain not call connection completing interface of NSFT_CS system

1.4.8.The Establishing of SRB Not Call Connection

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

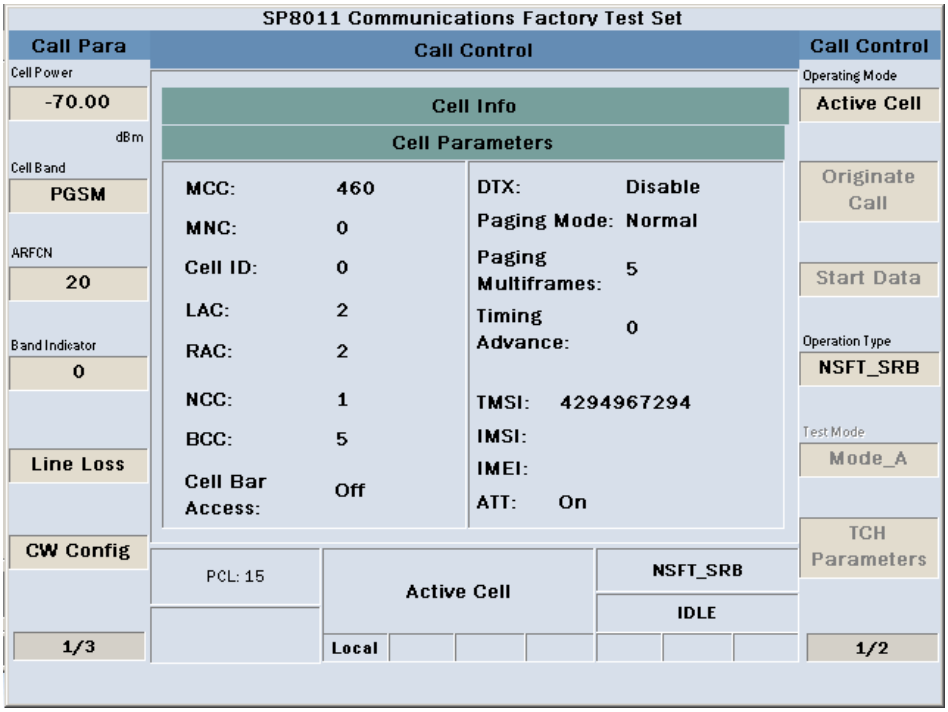

Figure 1-31 the default page of NSFT_SRB

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:

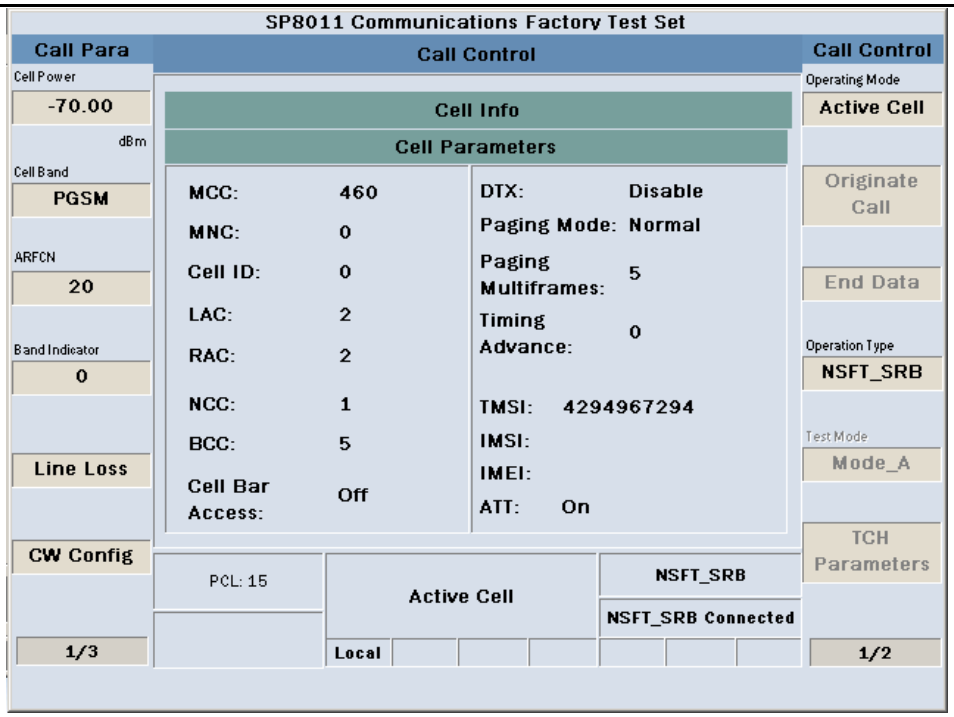

Figure 1-32 SRB not call connection completing interface of NSFT_SRB system

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:

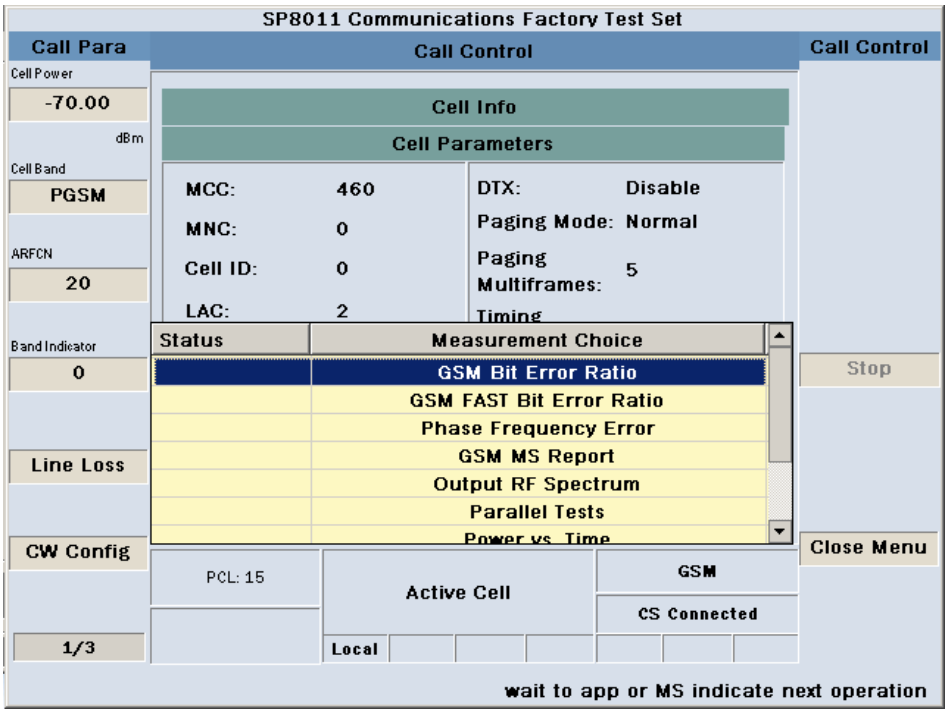

Figure 2-1 GSM testing items selection interface

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:

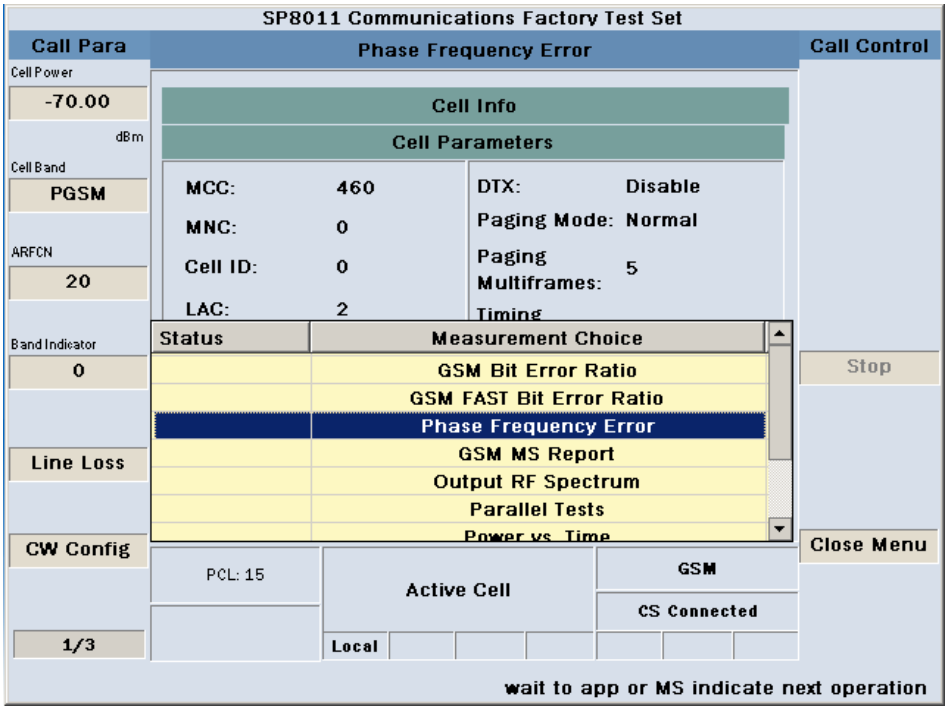

Figure 2-2 GSM switching interface test items

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:

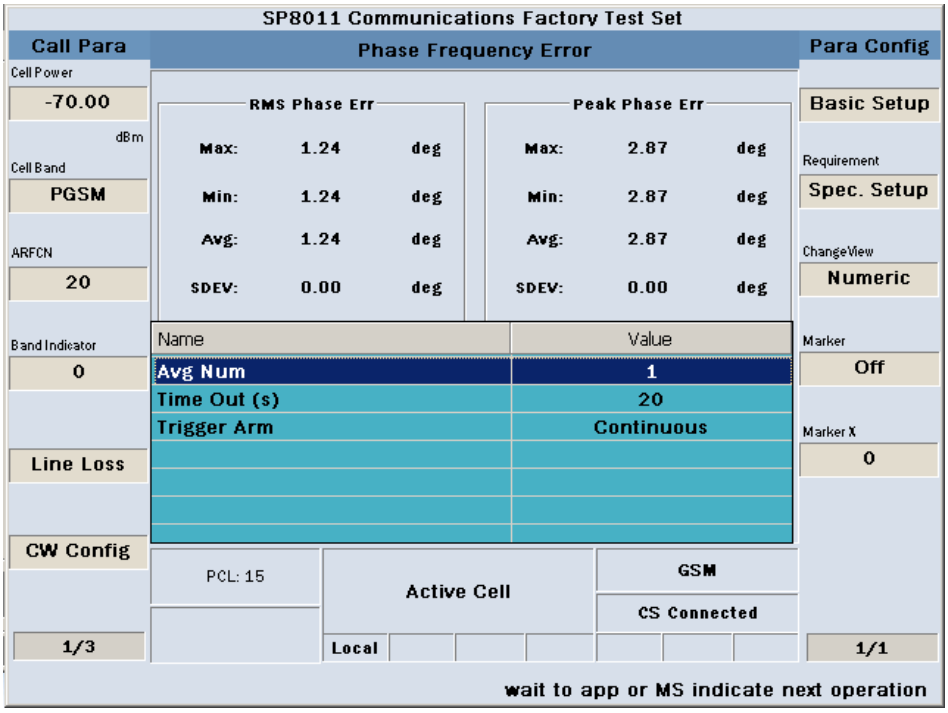

Figure 2-3 Basic parameters setting interface

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:

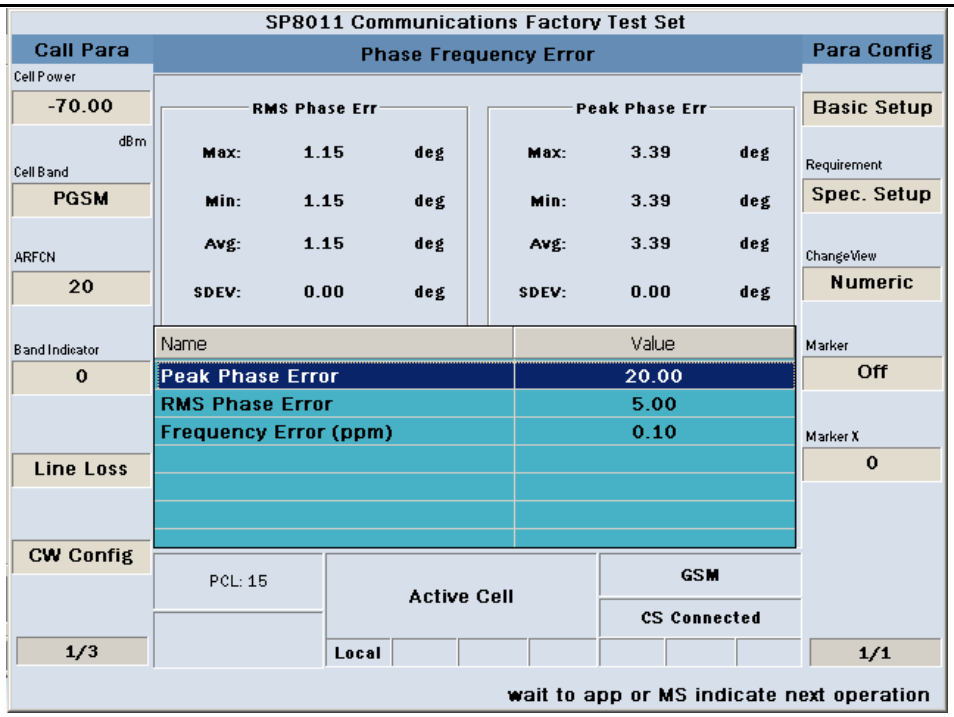

Figure 2-4 indicators of testing parameters setting interface

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;

3. 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;

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 ~ 147, with a default value of 0.

➢ Display Testing Results

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

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

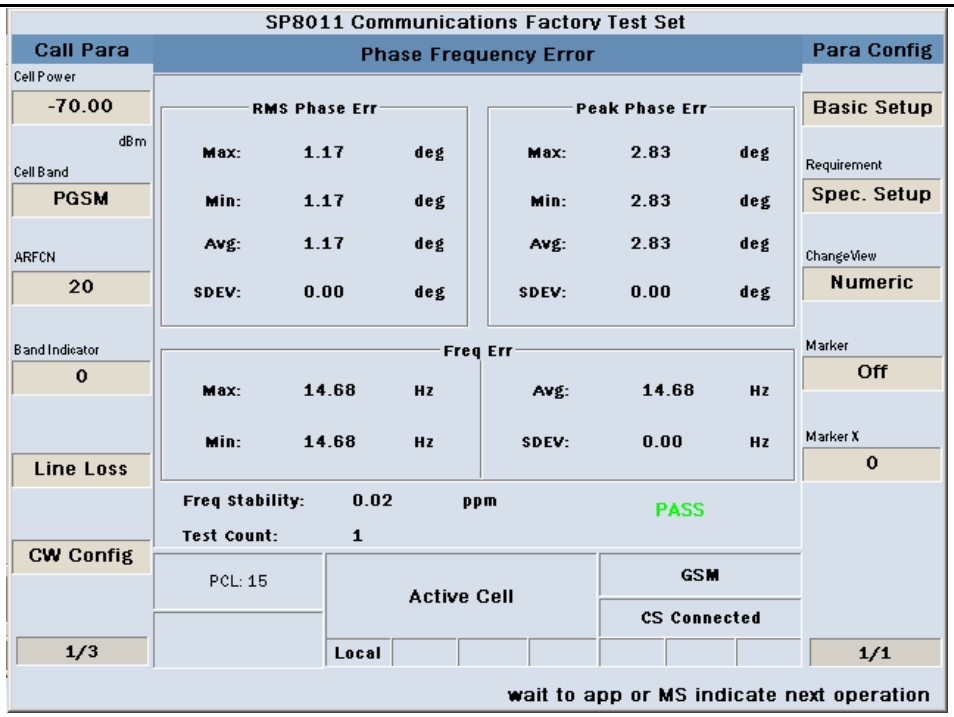

Figure 2-5 the phase frequency error testing results in data

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

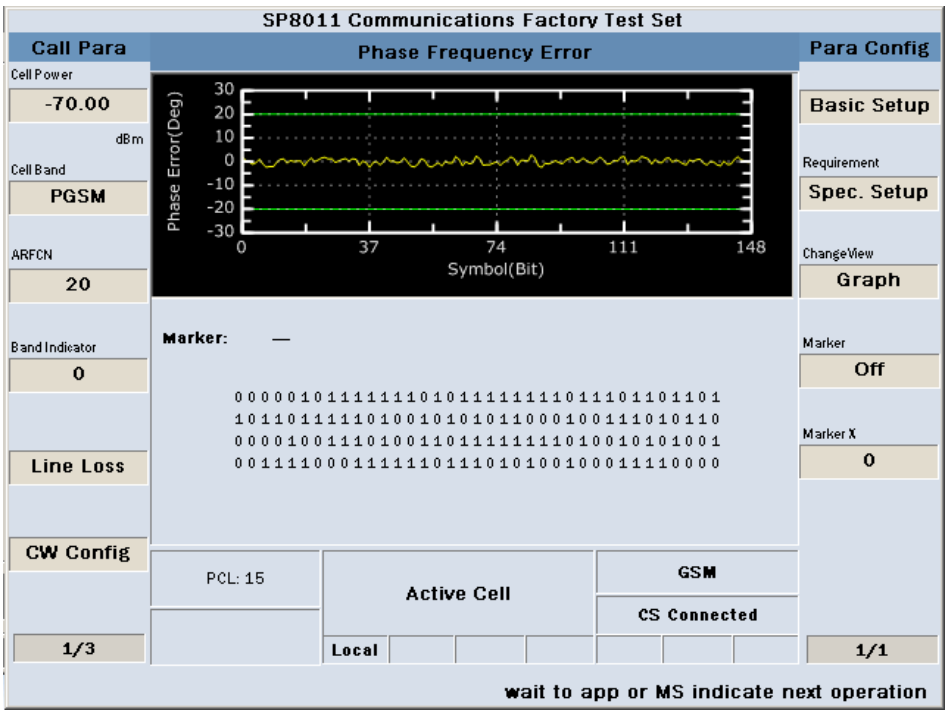

Figure 2-6 the phase frequency error testing results by graph

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:

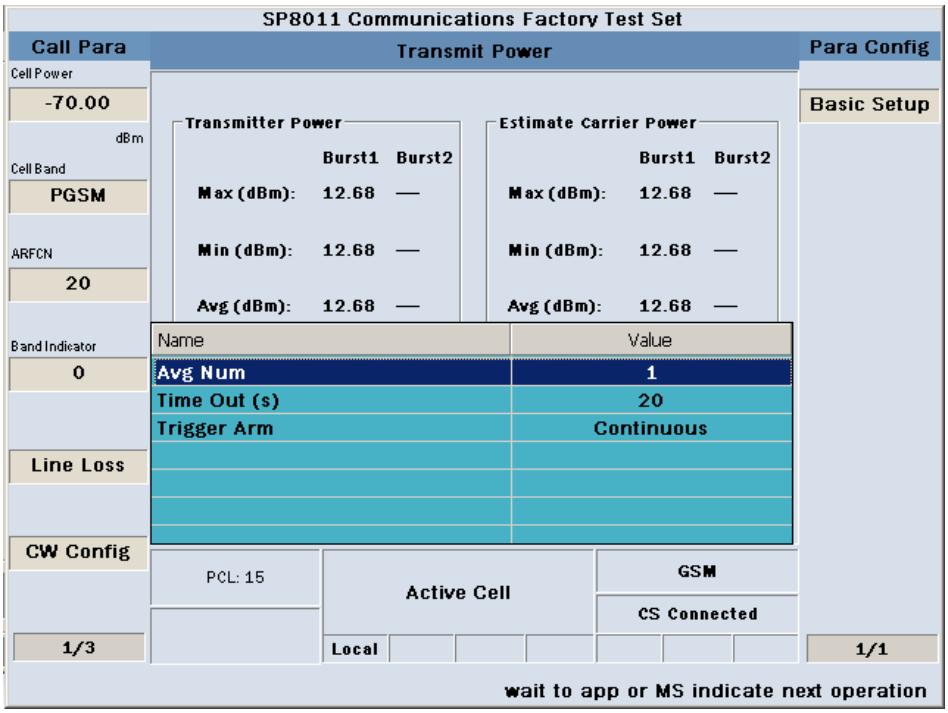

Figure 2-7 Basic parameters setting interface

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:

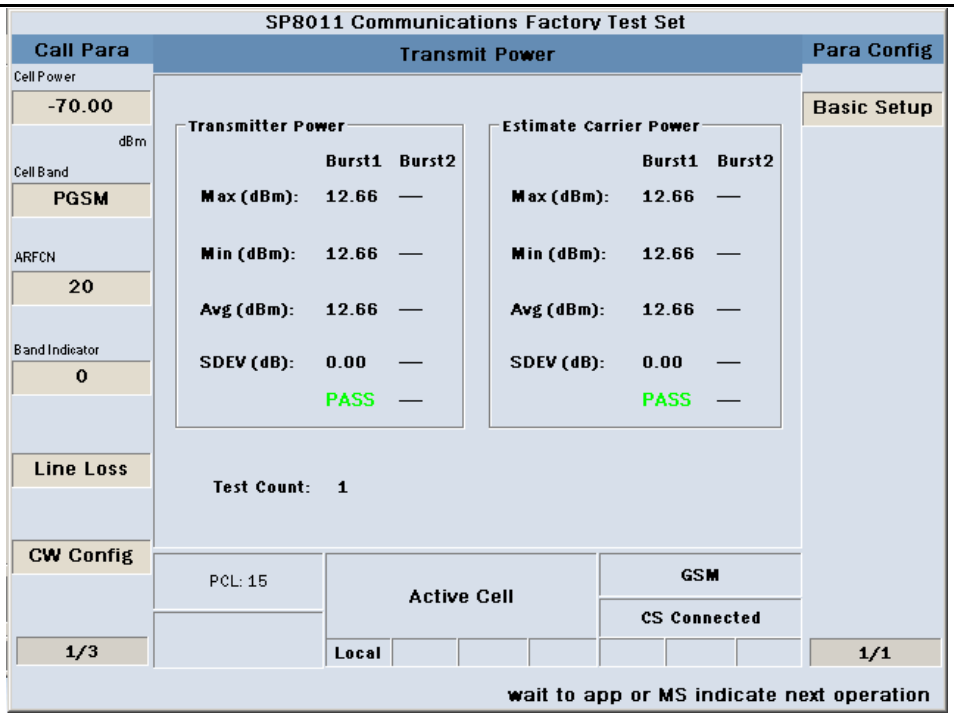

Figure 2-8 Transmit power testing results

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:

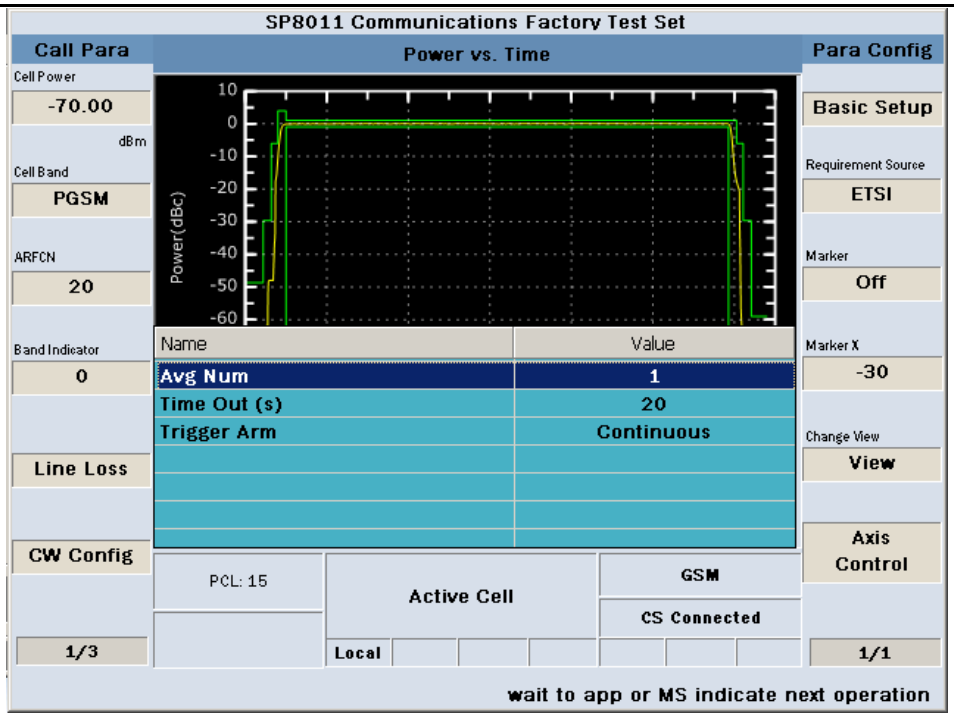

Figure 2-9 Basic parameters setting interface

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:

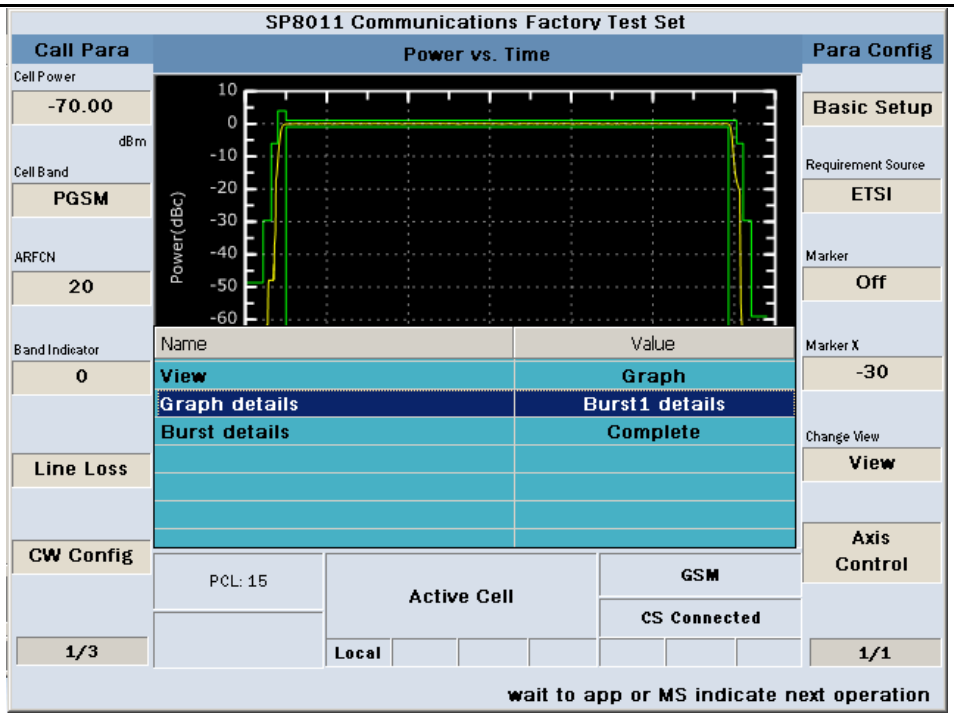

Figure 2-10 View setting parameters setting interface

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 settin0

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

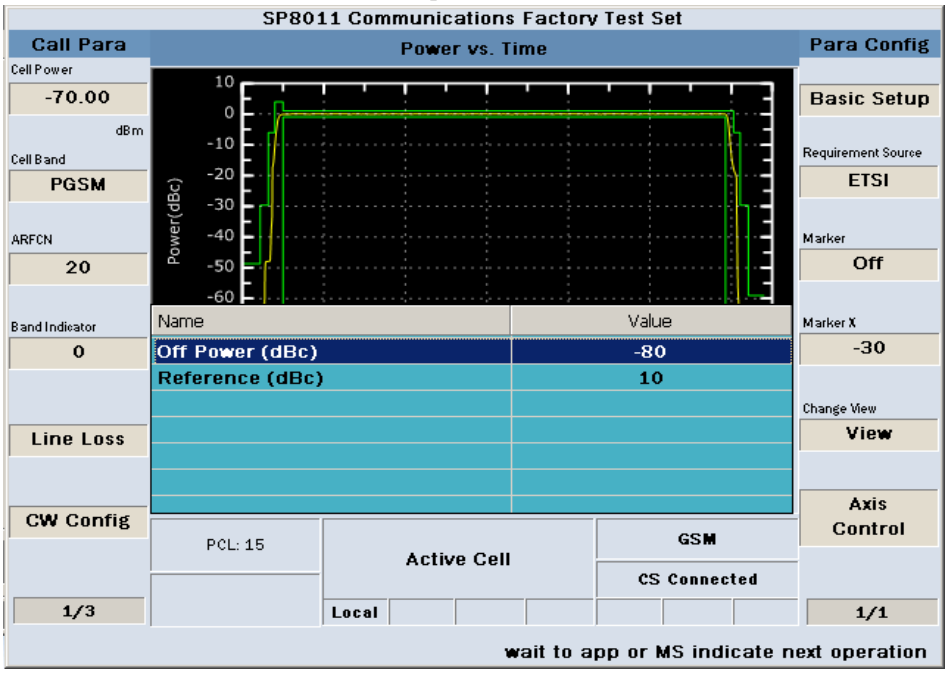

Figure 2-11 Axis Control parameters setting interface

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:

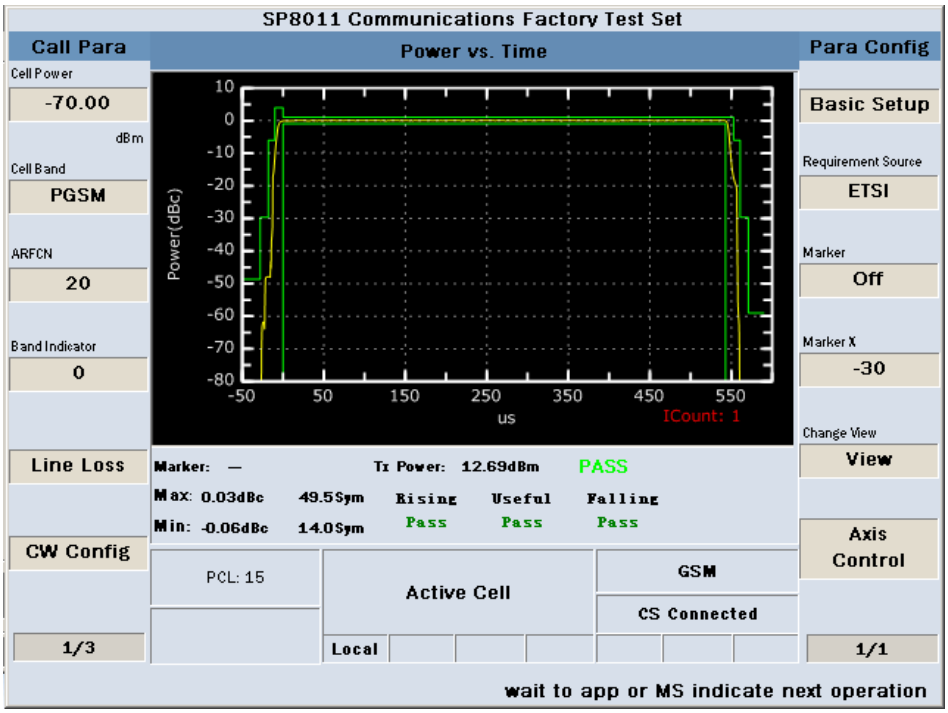

Figure 2 12 Power vs. Time testing results by graph

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

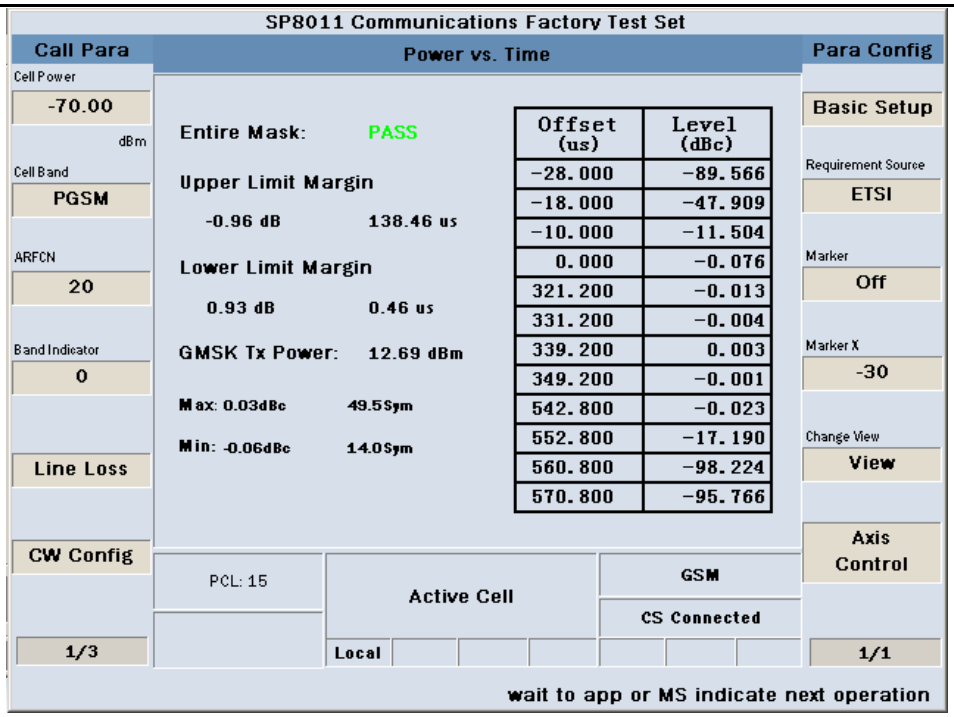

Figure 2-13 Power vs. Time testing results in data

2.2.4.Output RF Spectrum

➢ 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 Output RF Spectrum 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:

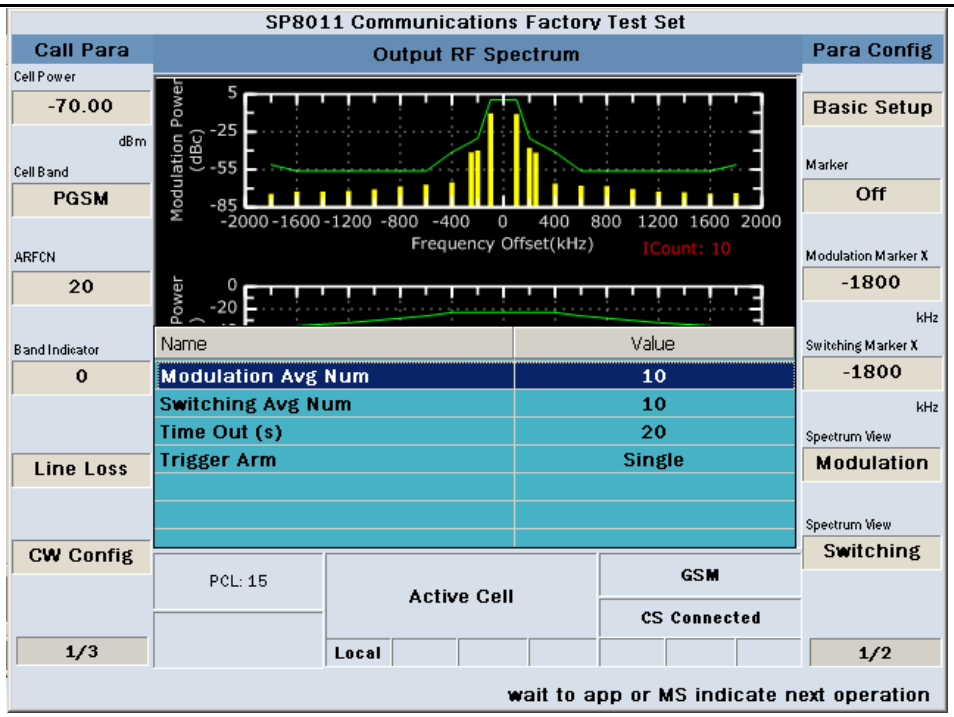

Figure 2 14 Basic parameters setting interface

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;

2. Press **F8** button to set the state of Marker, whose range is On / Off, with a default value of Off;

3. 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:

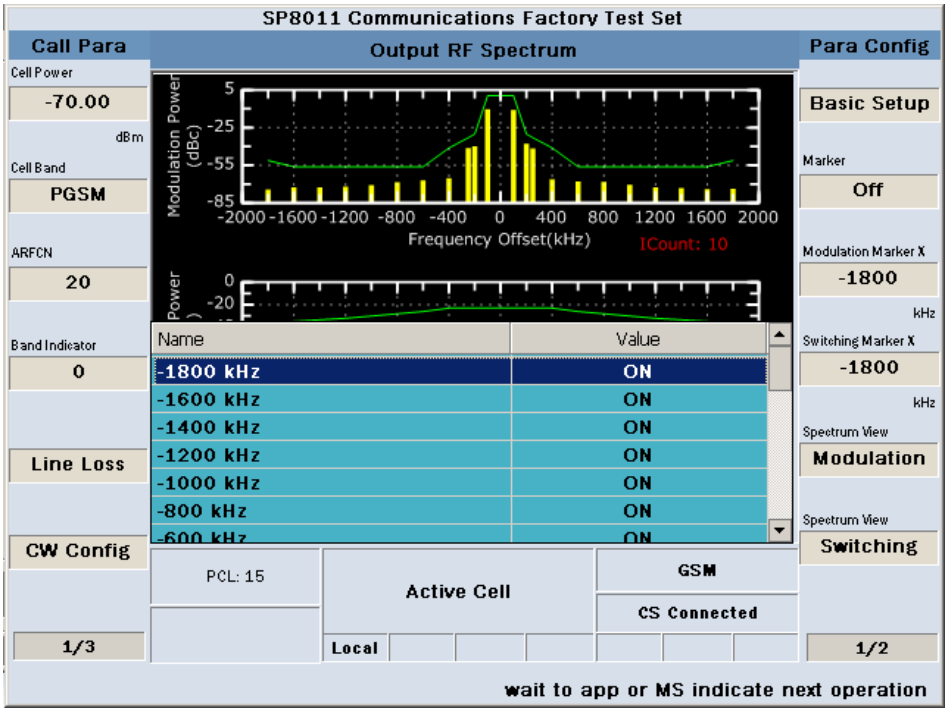

Figure 2-15 modulation spectrum test results showing setting interface

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:

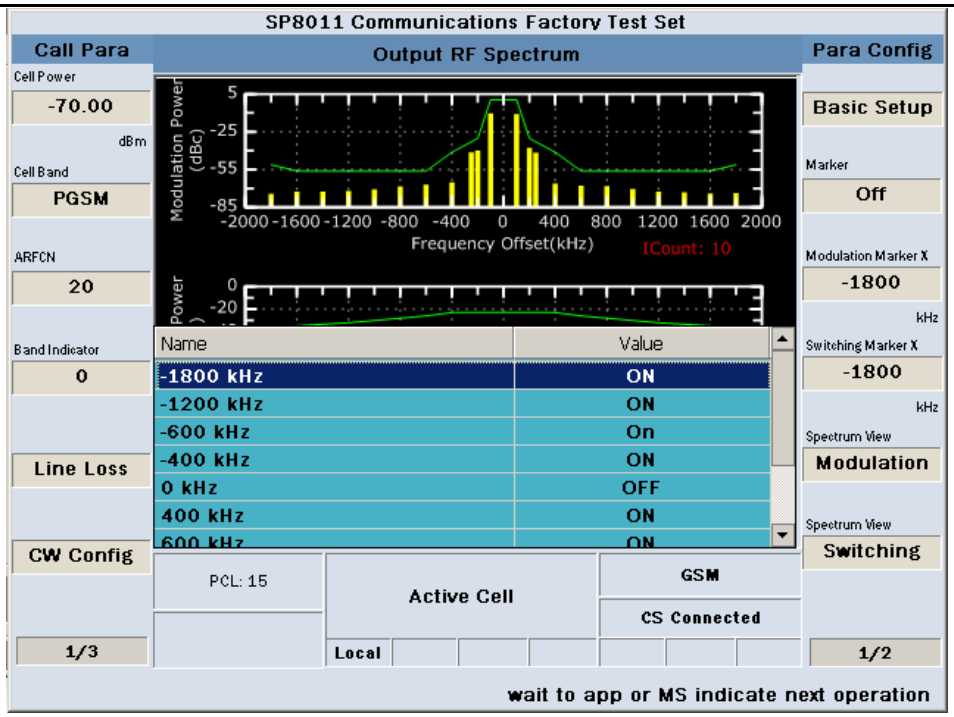

Figure 2-16 Switch spectrum test result showing setting interface

7. 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:

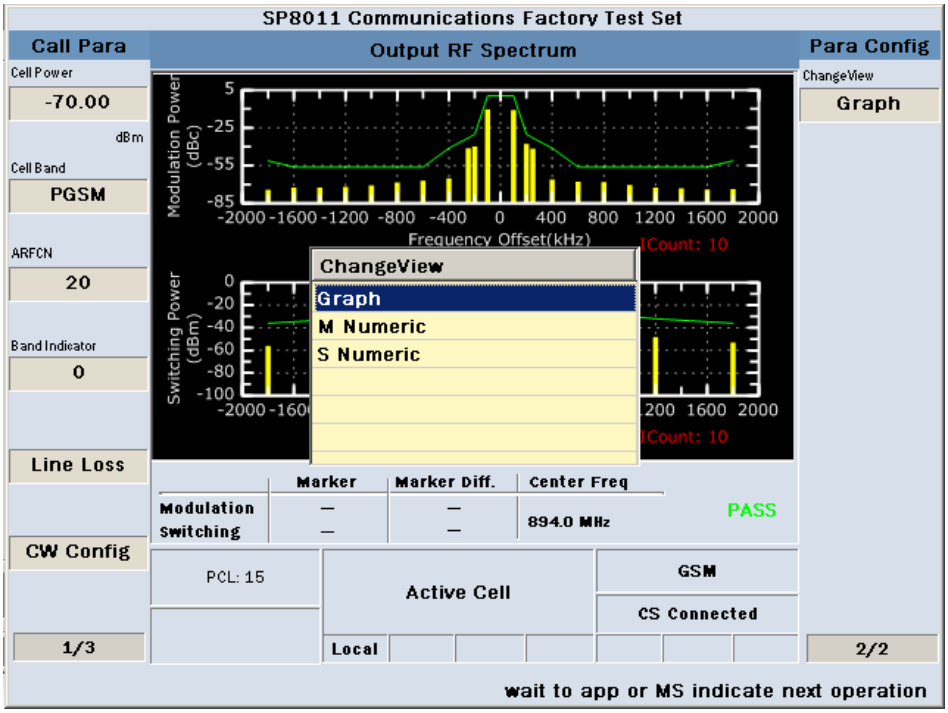

Figure 2-17 Change View parameter setting interface

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

9. 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:

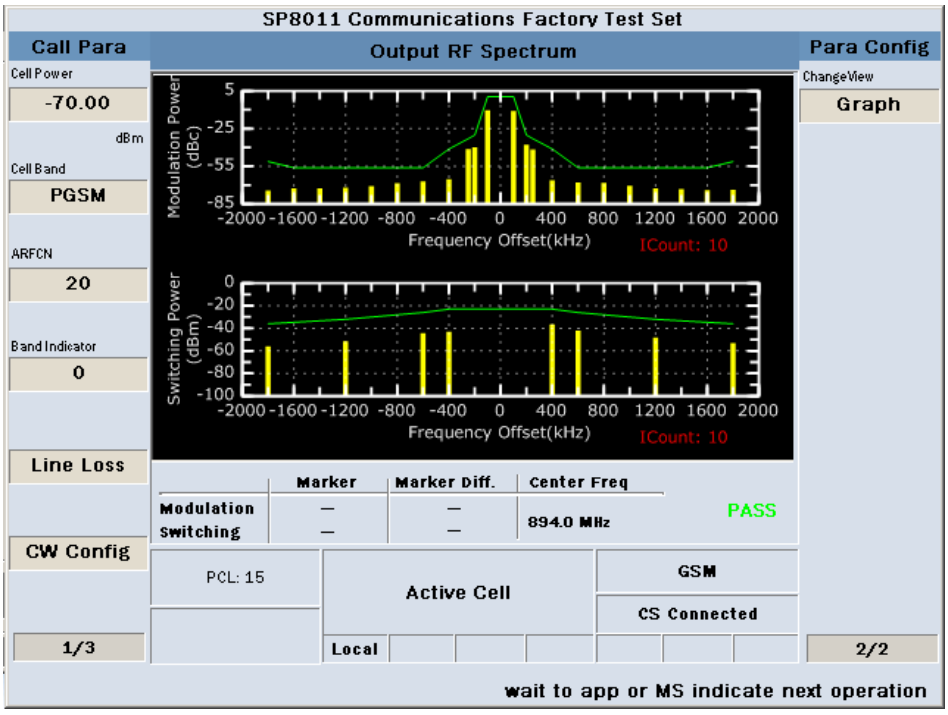

Figure 2-18 Output RF spectrum testing results by graph

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

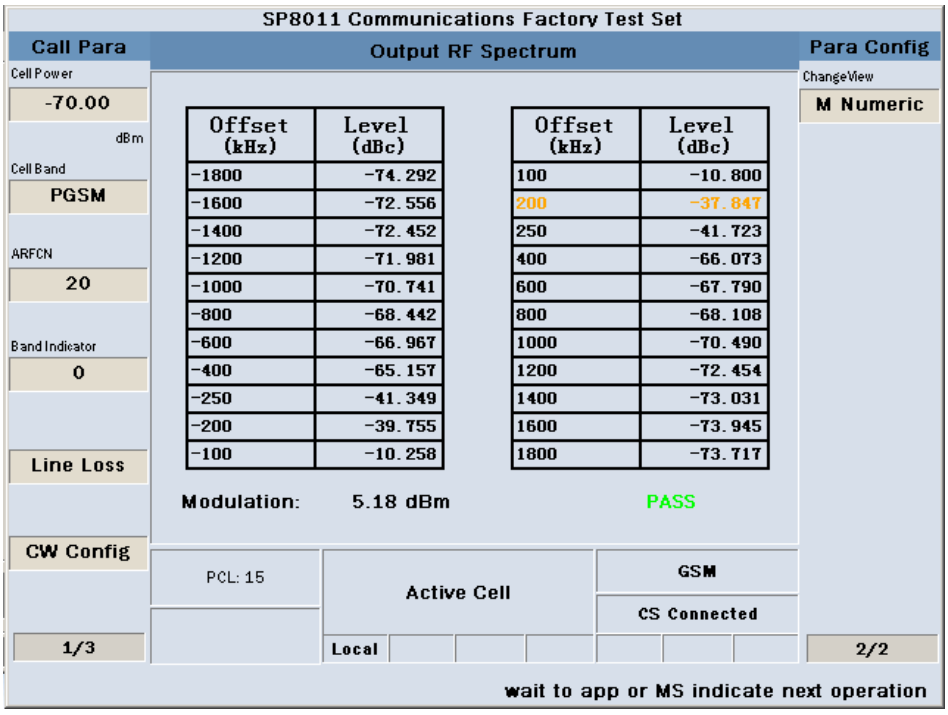

Figure 2-19 Output RF Spectrum Modulation spectrum testing result in data

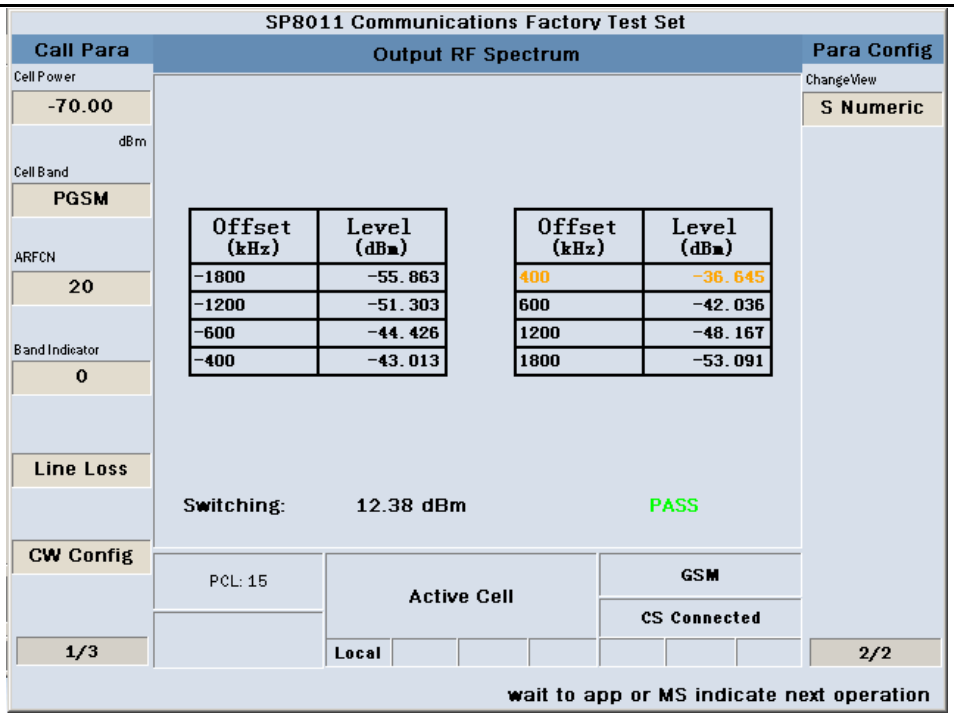

Figure 2-20 Output RF Spectrum Switch spectrum testing results in data

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:

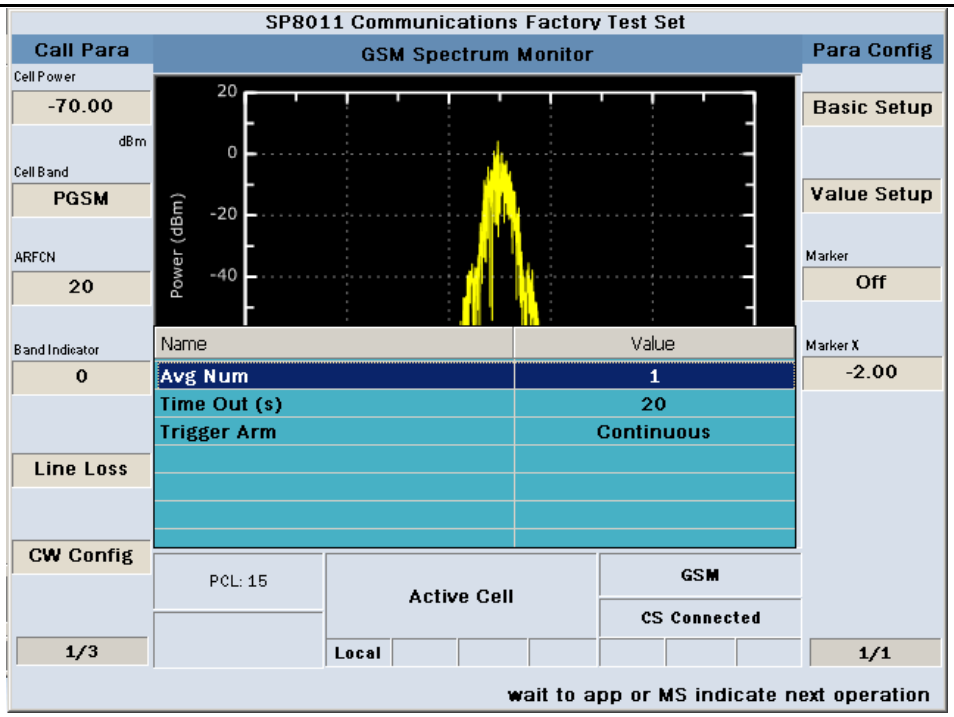

Figure 2-21 Basic parameters setting interface

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:

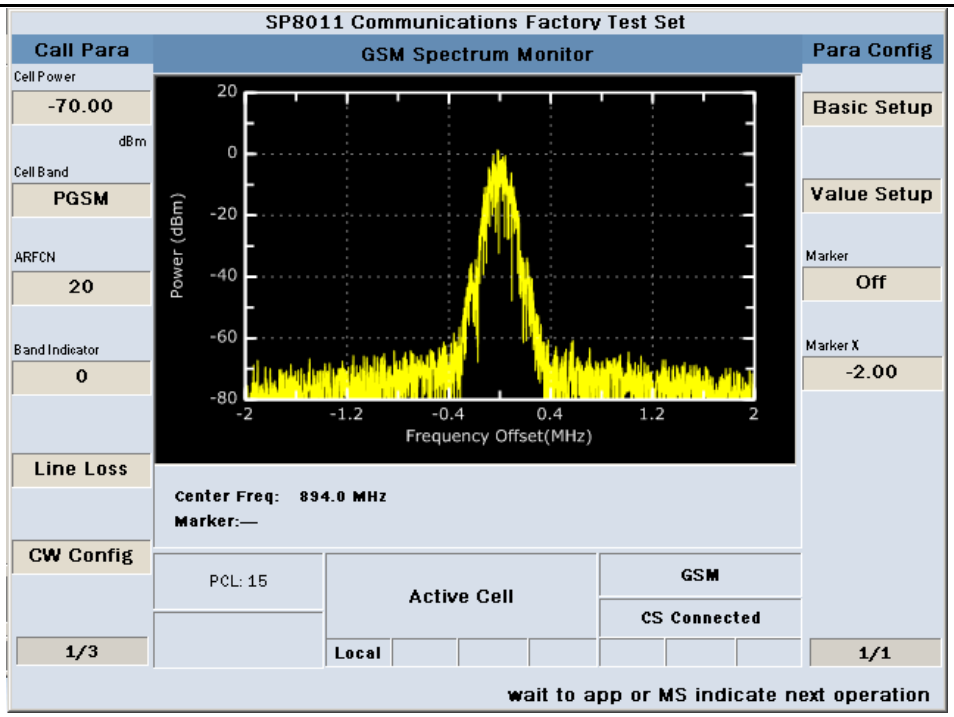

Figure 2-22 Spectrum Monitoring testing results

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:

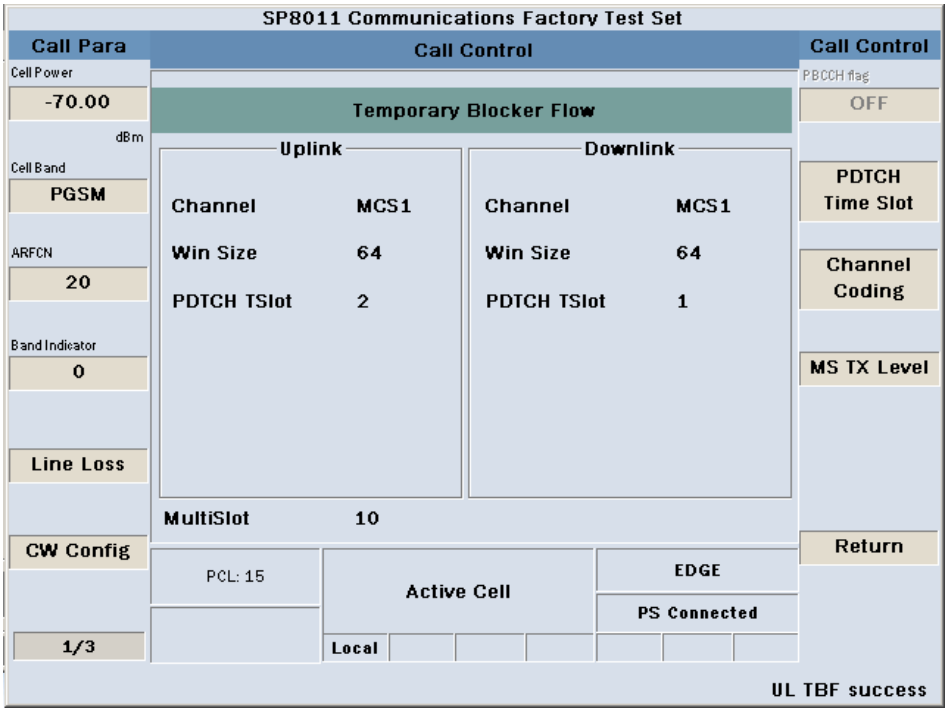

Figure 2-23 PDTCH Parameters setting interface

2. 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:

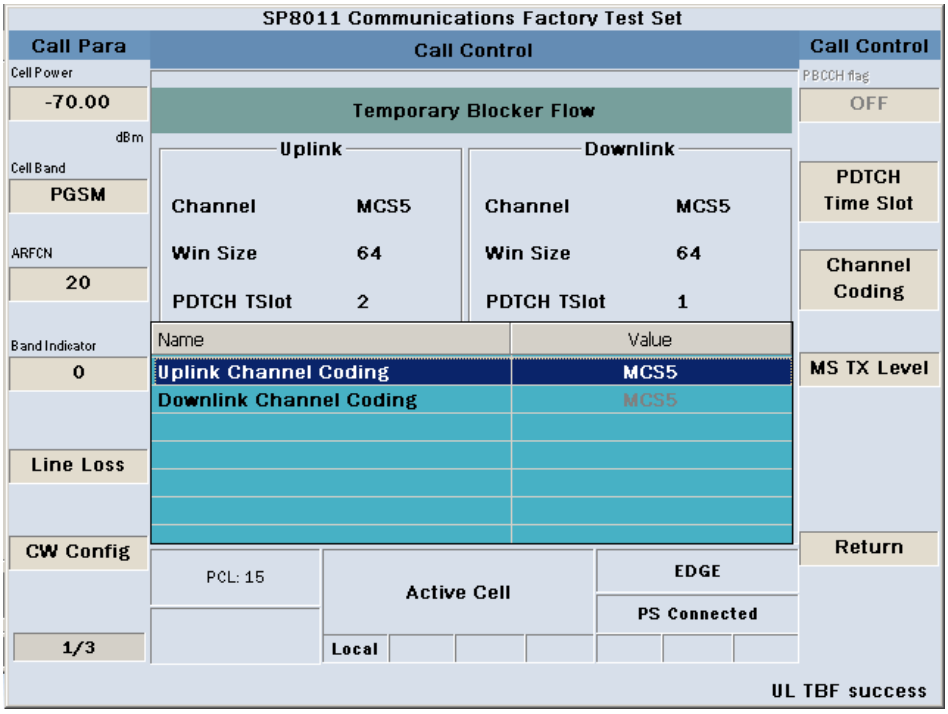

Figure 2-24 Channel Coding parameters setting interface

3. 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:

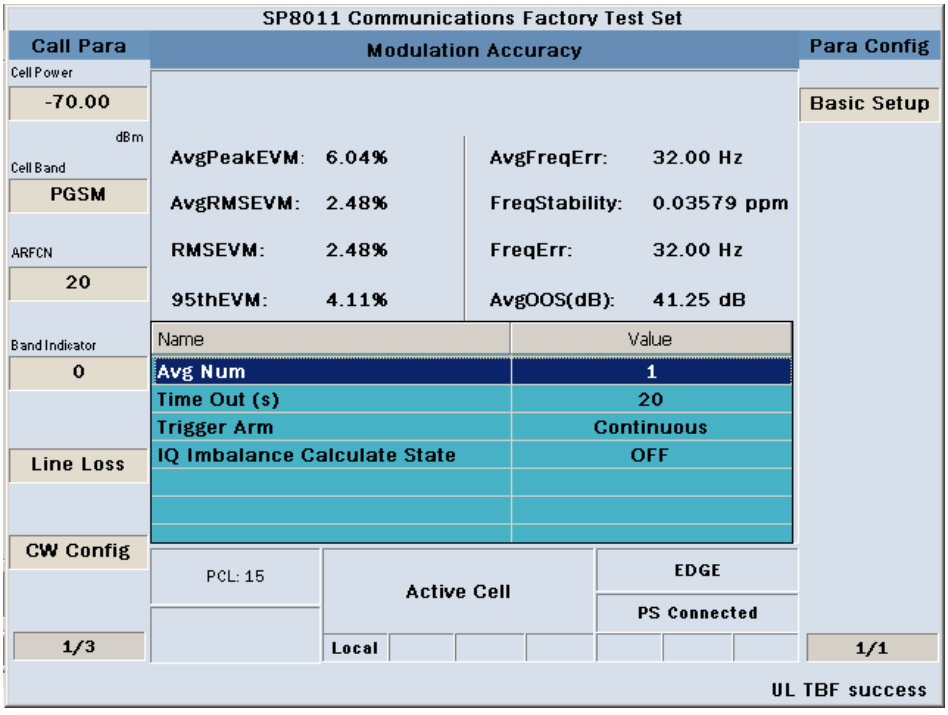

Figure 2-25 Basic Parameters setting interface

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:

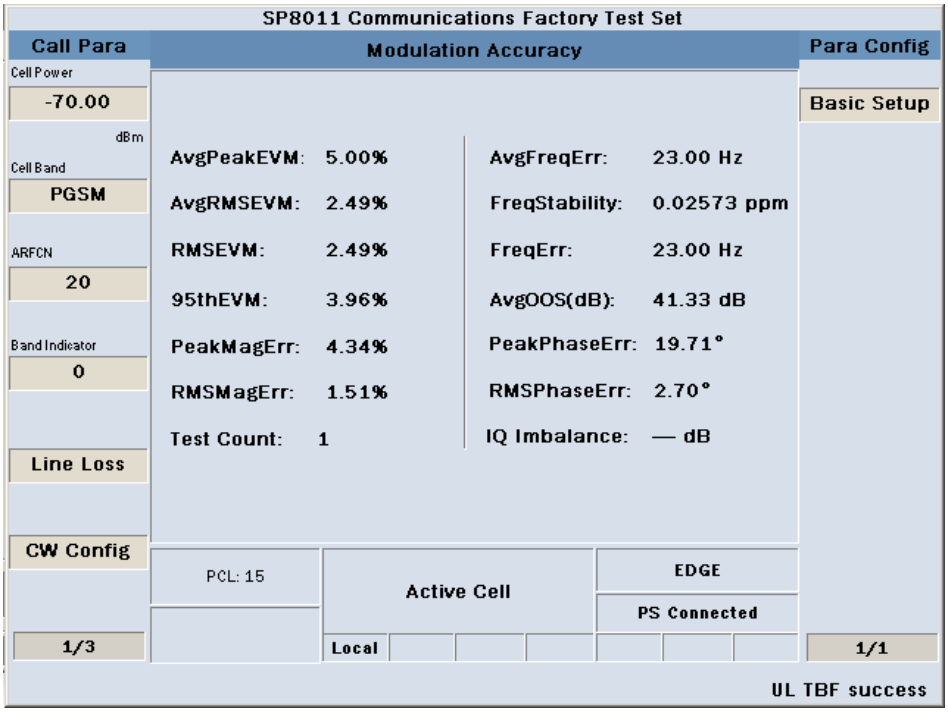

Figure 2-26 EDGE Modulation Accuracy testing results

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:

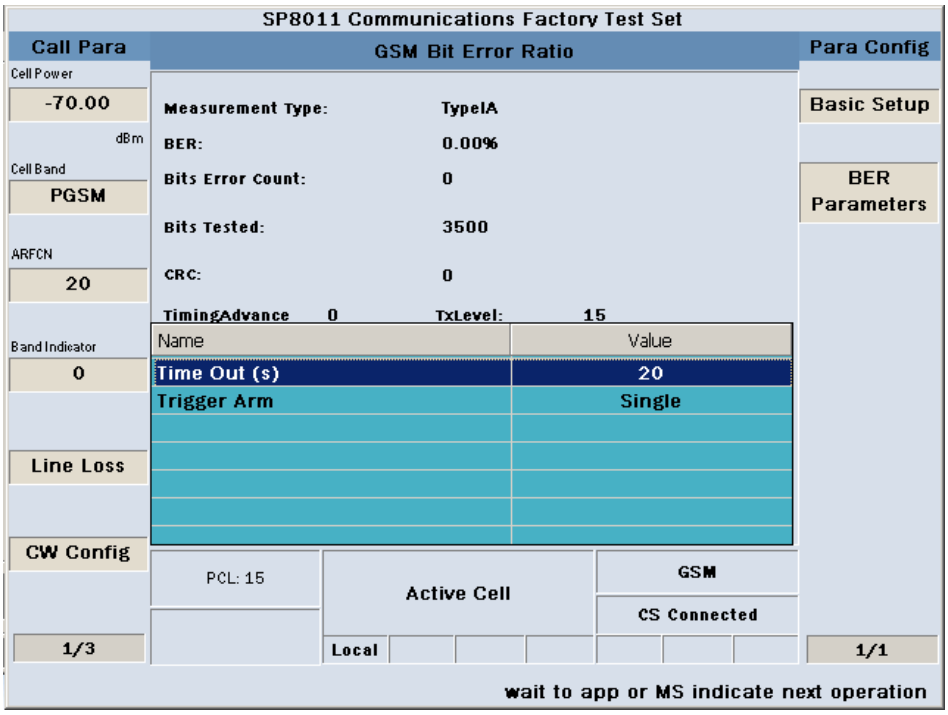

Figure 2-27 Basic Parameters setting interface

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:

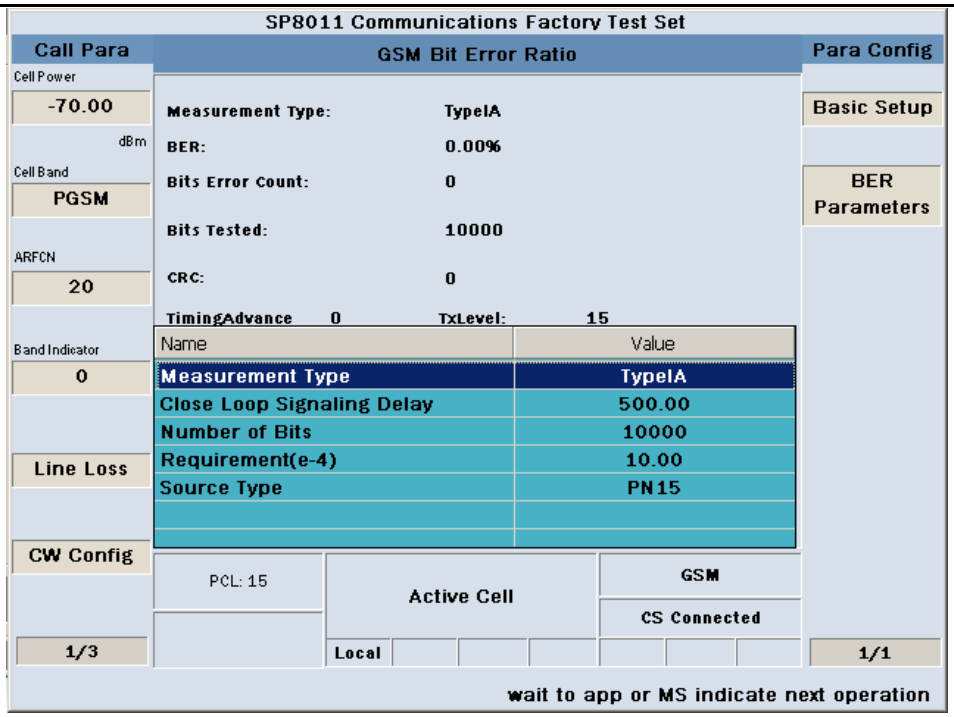

Figure 2 28 BER Parameters setting interface

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;

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:

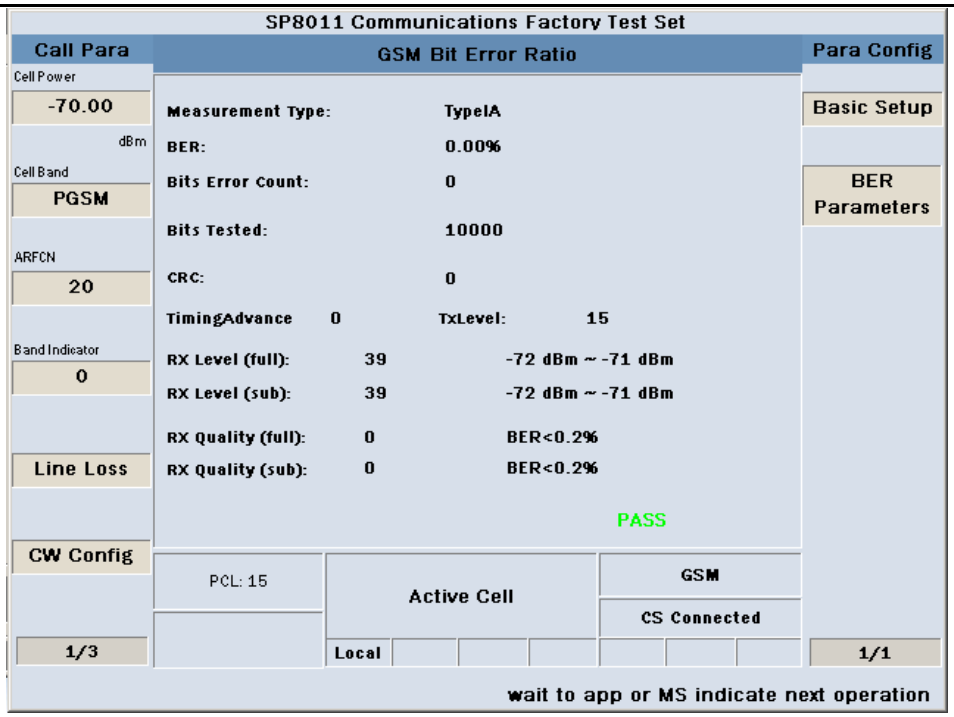

Figure 2 29 Bit Error Rate testing results

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:

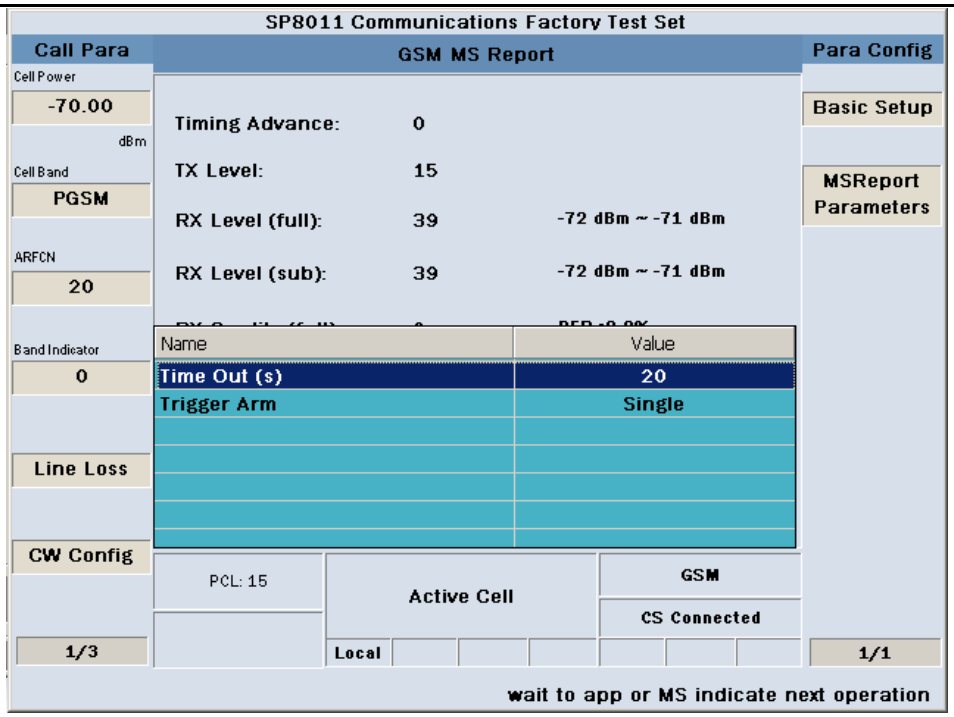

Figure 2-30 Basic Parameters setting interface

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:

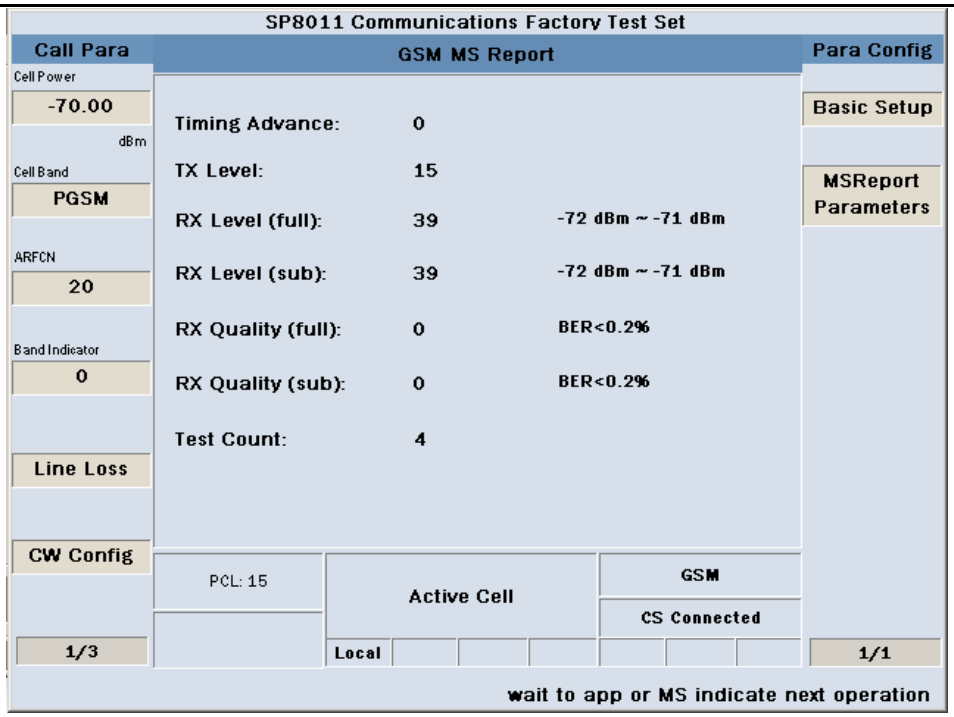

Figure 2-31 GSM Terminal Measurements Reported testing results

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:

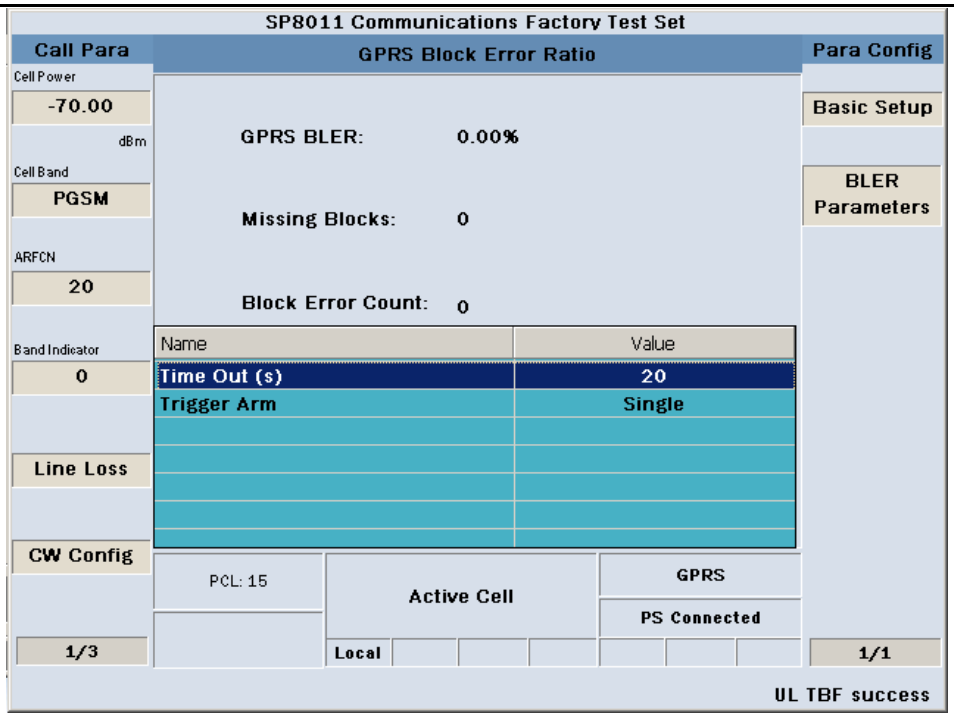

Figure 2 32 Basic parameters setting interface

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;

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

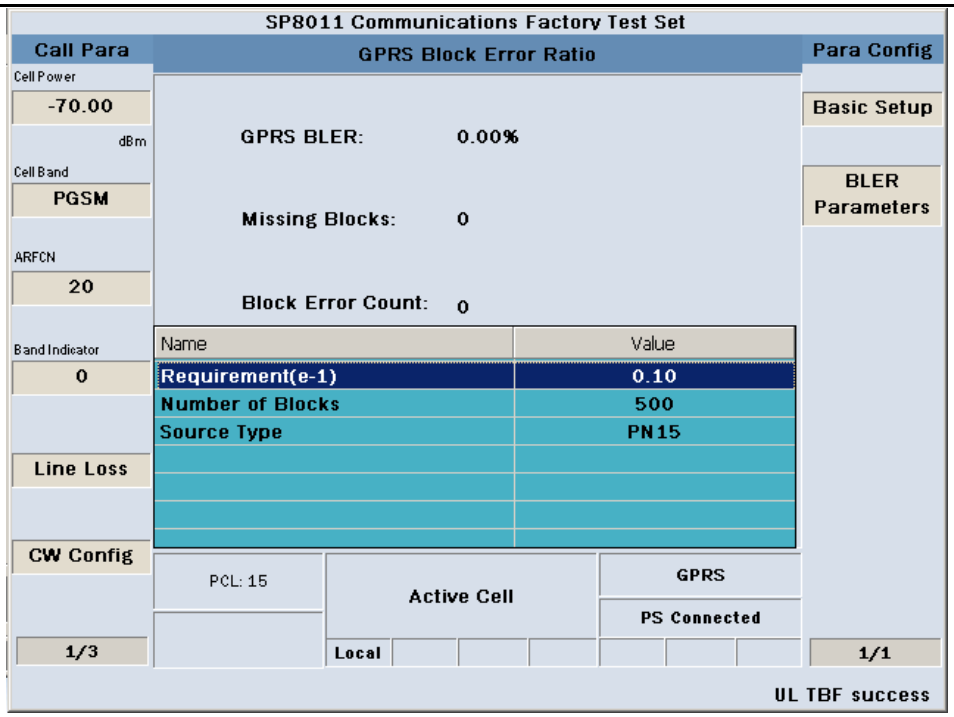

Figure 2-33 BLER Parameters setting interface

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;

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:

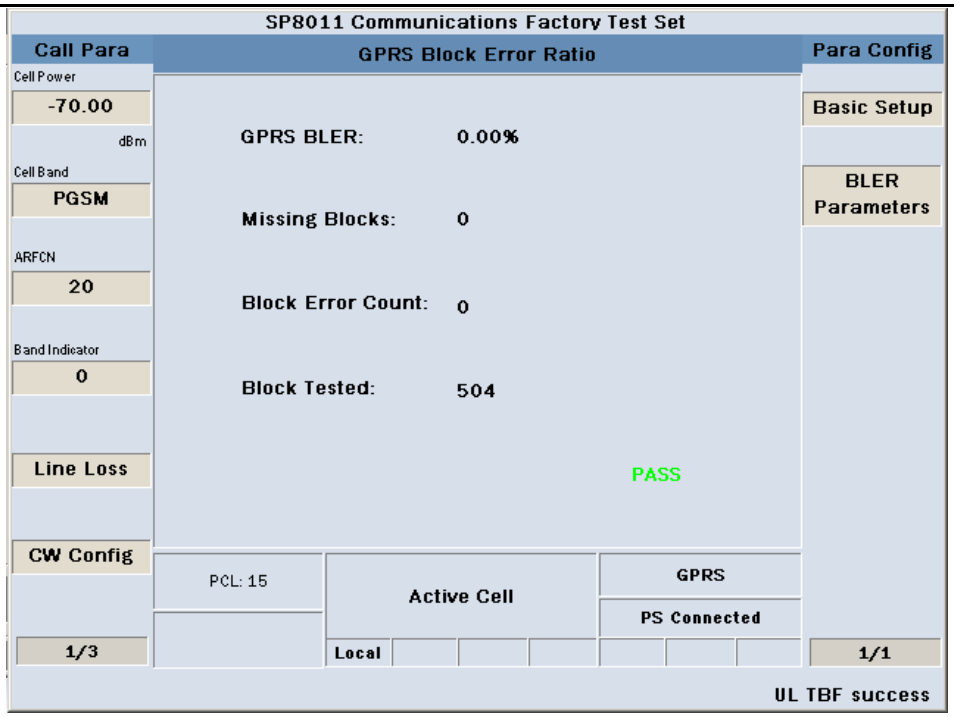

Figure 2-34 GPRS Block Error Rate testing results

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:

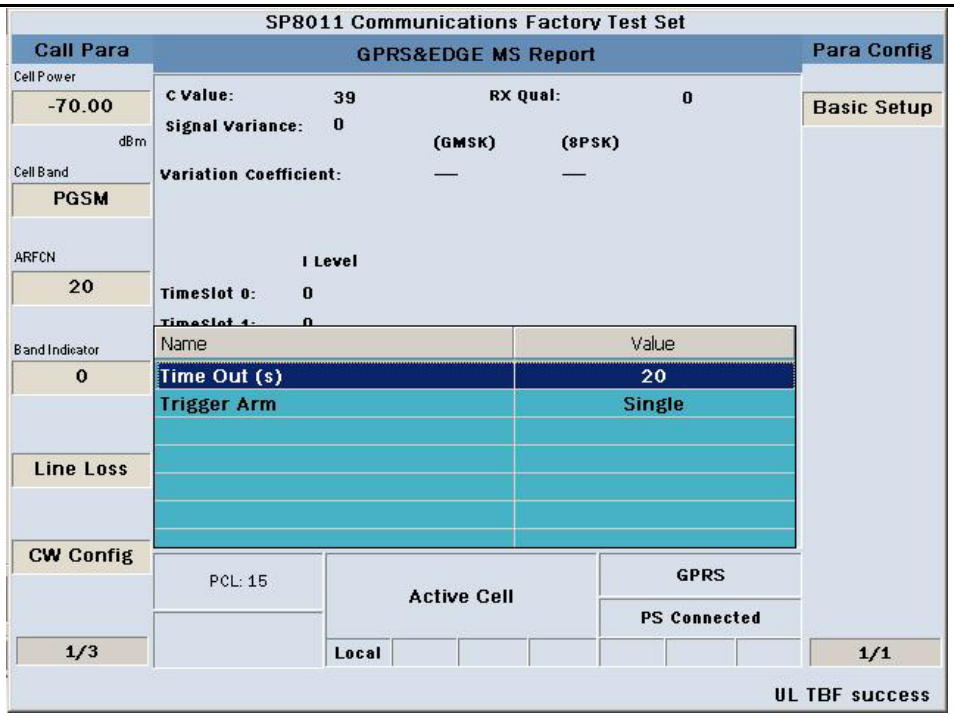

Figure 2-35 Basic Parameters setting interface

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:

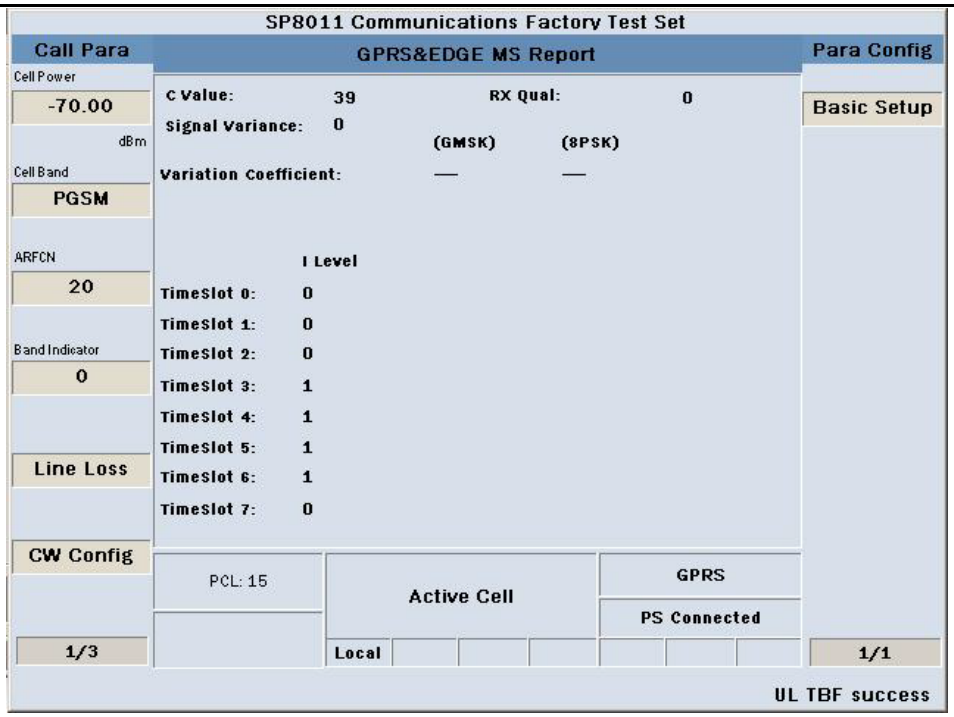

Figure 2-36 GPRS & EDGE terminal measurement reported testing results after GPRS

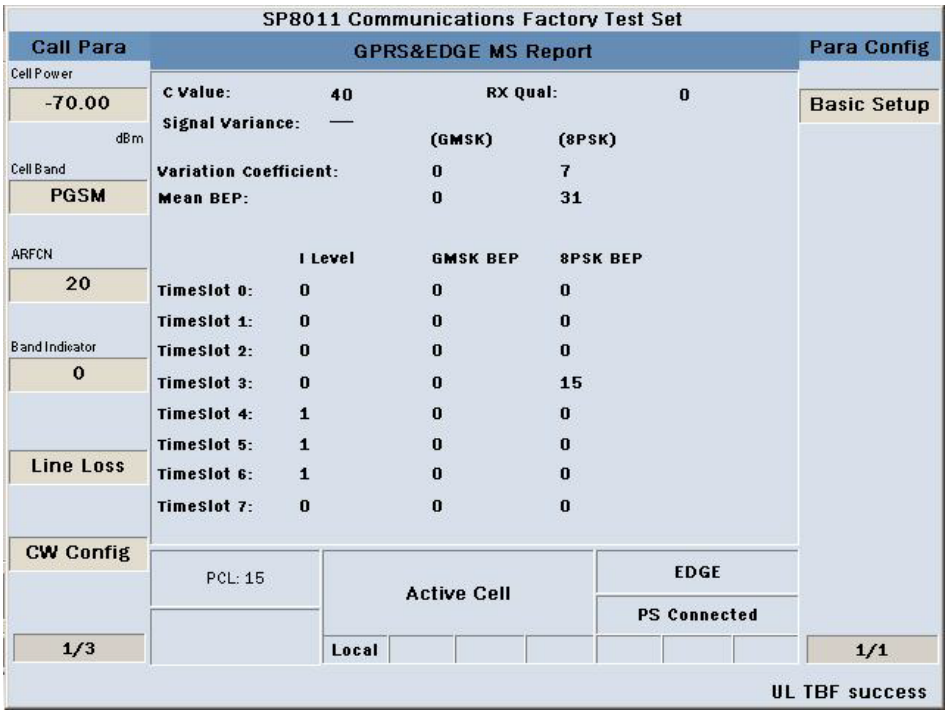

Figure 2-37 GPRS & EDGE terminal measurement reported testing results after EDGE

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:

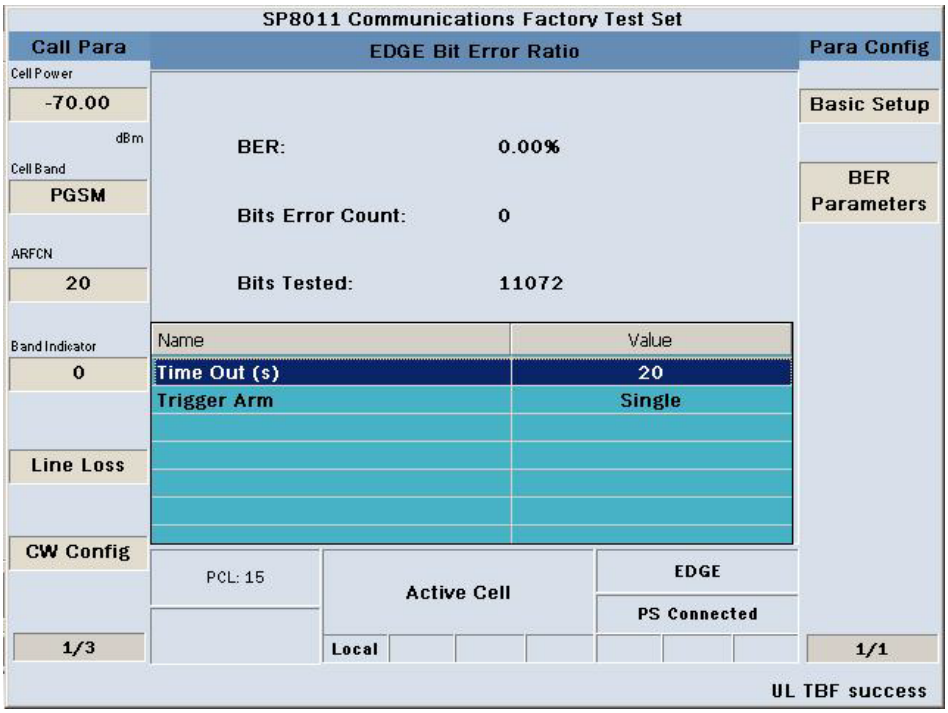

Figure 2-38 Basic parameters setting interface

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:

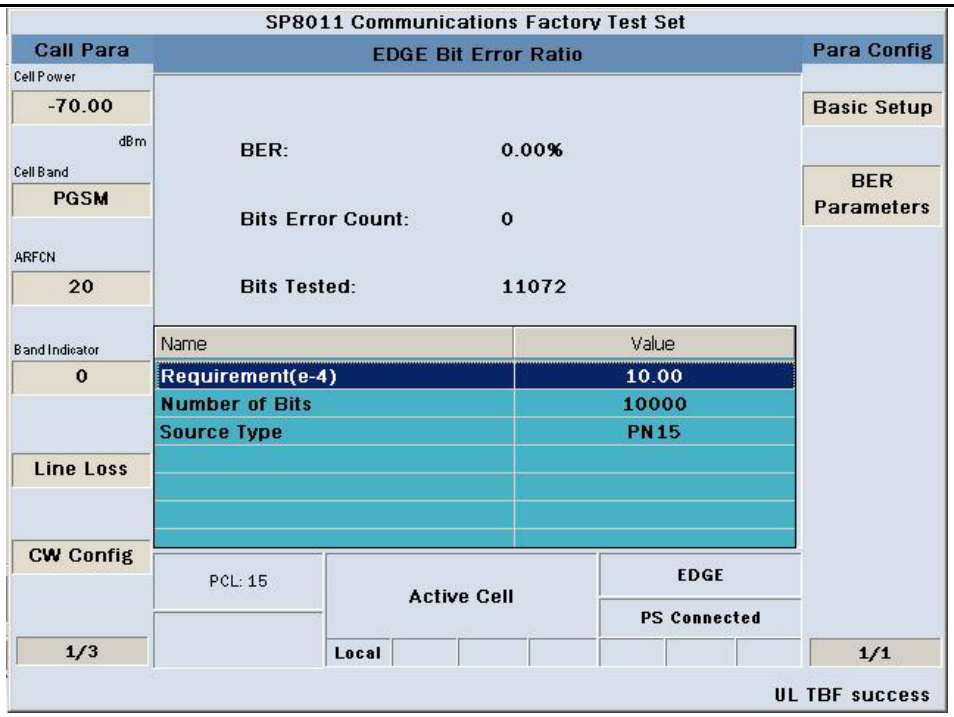

Figure 2-39 BER Parameters setting interface

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:

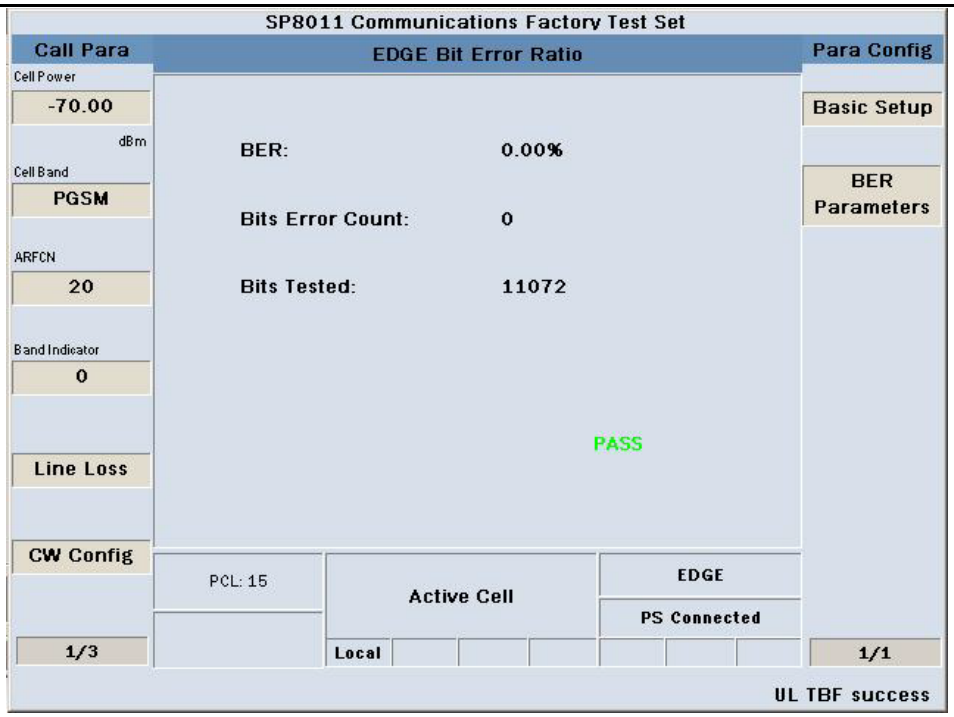

Figure 2-40 EDGE SRB Bit Error Rate testing results

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:

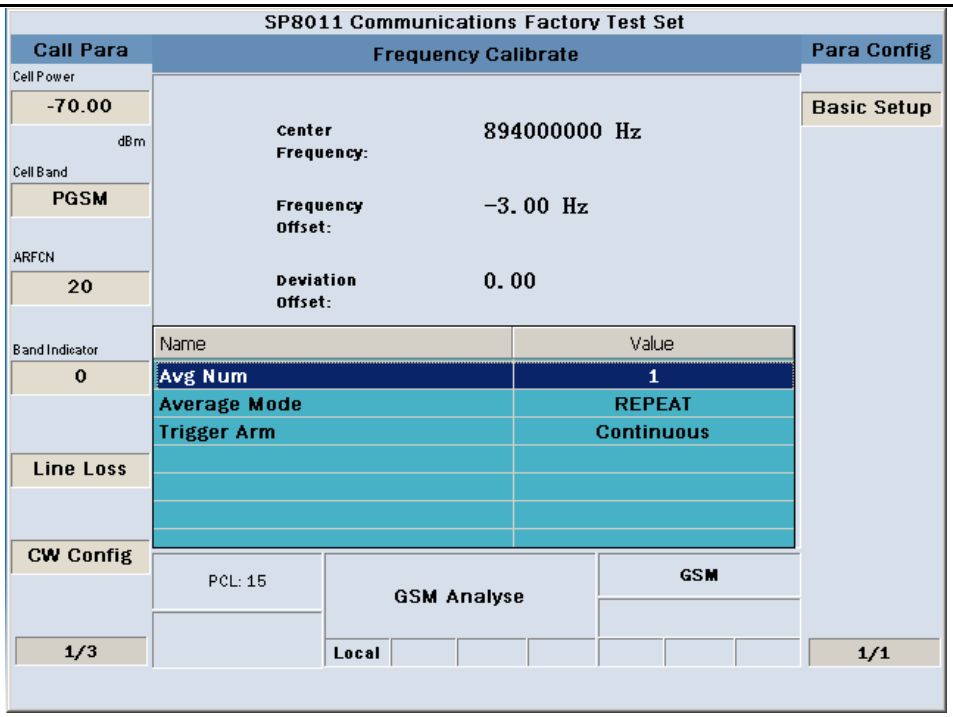

Figure 2-41 Basic Parameters setting interface

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:

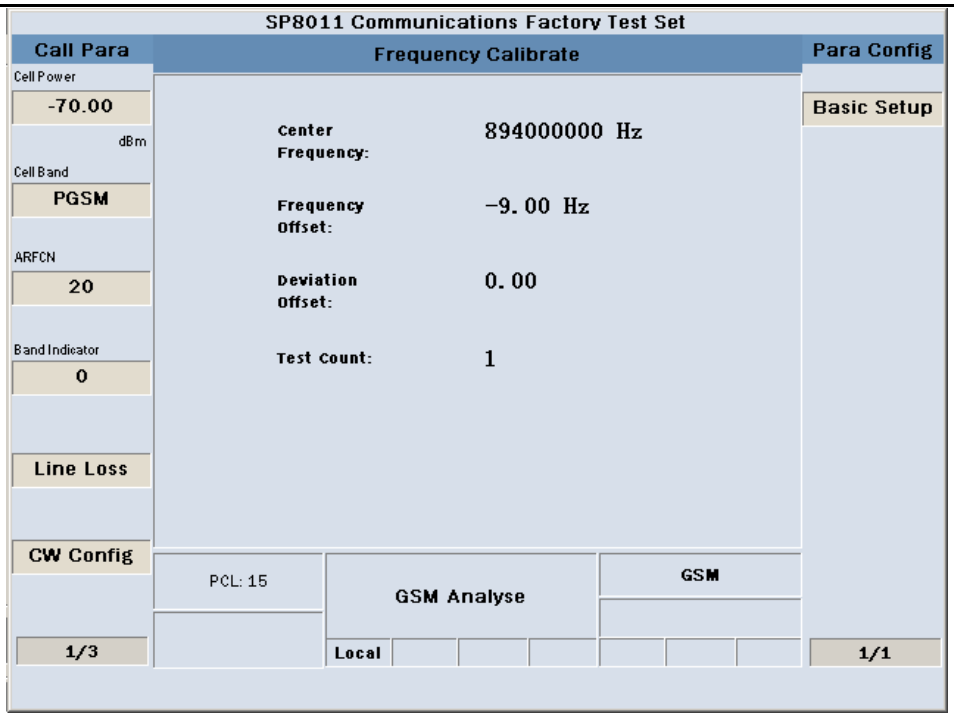

Figure 2-42 GSM Frequency Calibration testing results

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:

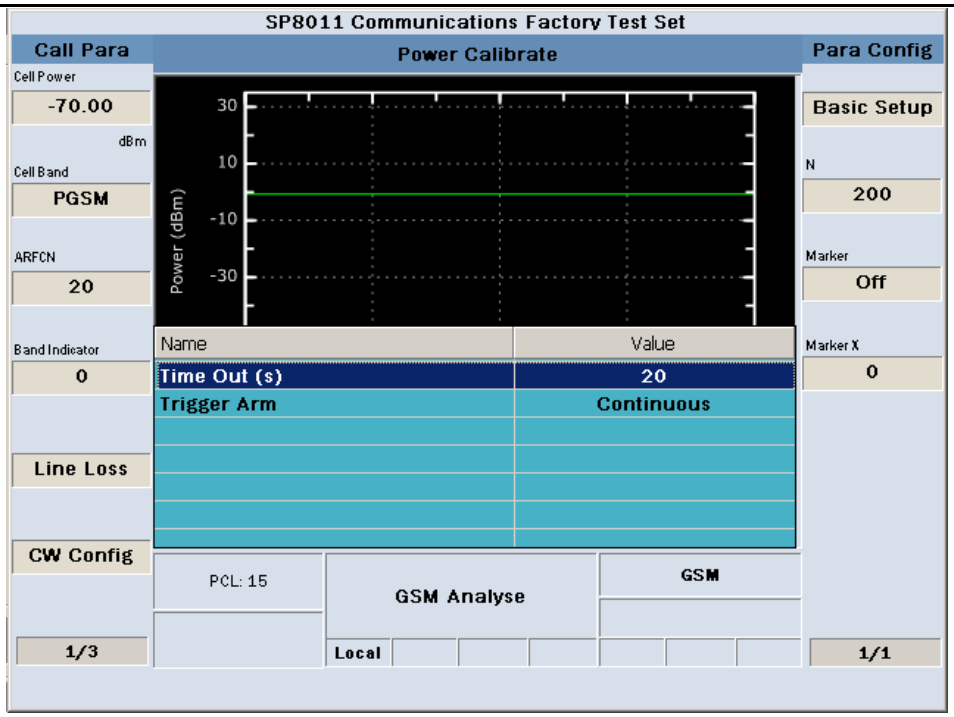

Figure 2-43 Basic Parameters setting interface

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;

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 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 0 ~ N-1, with a default value of 0;

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

6. 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:

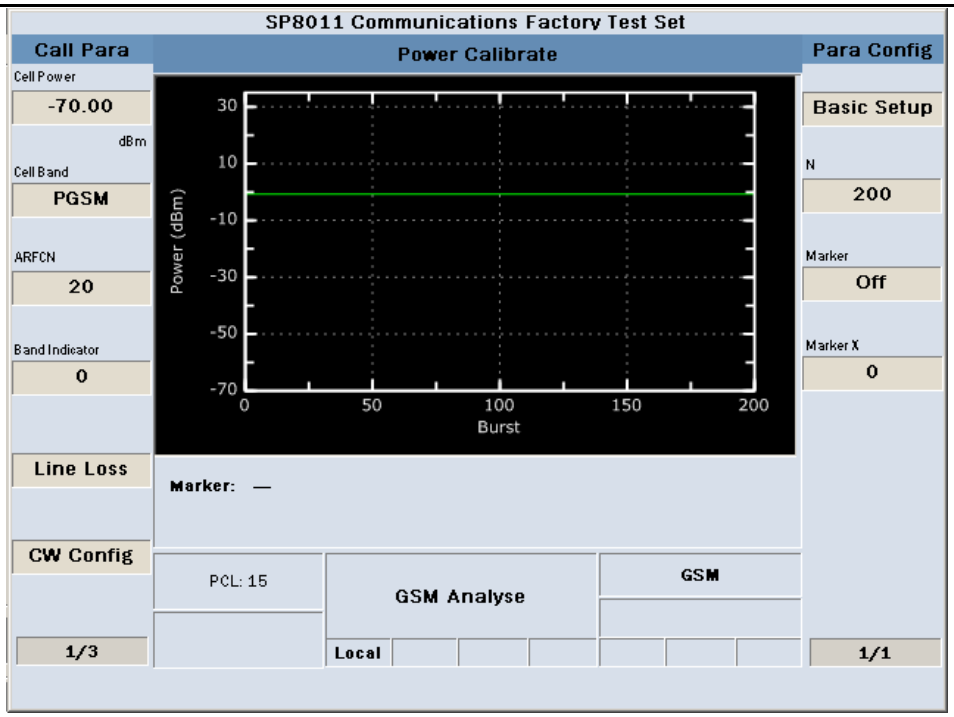

Figure 2-44 GSM Power Calibration testing results

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:

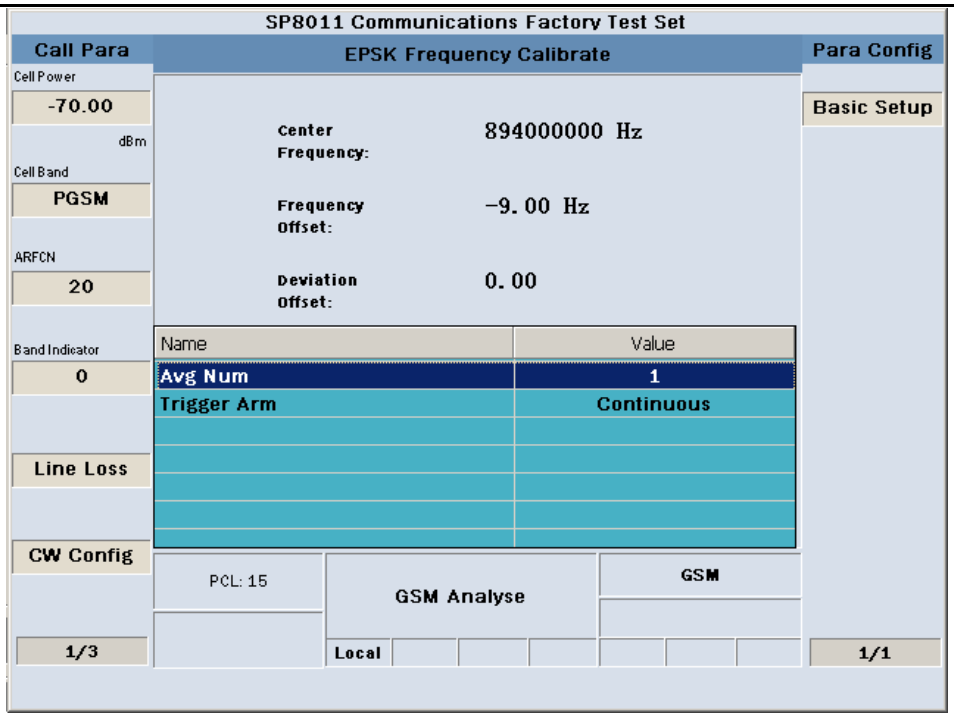

Figure 2-45 Basic Parameters setting interface

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:

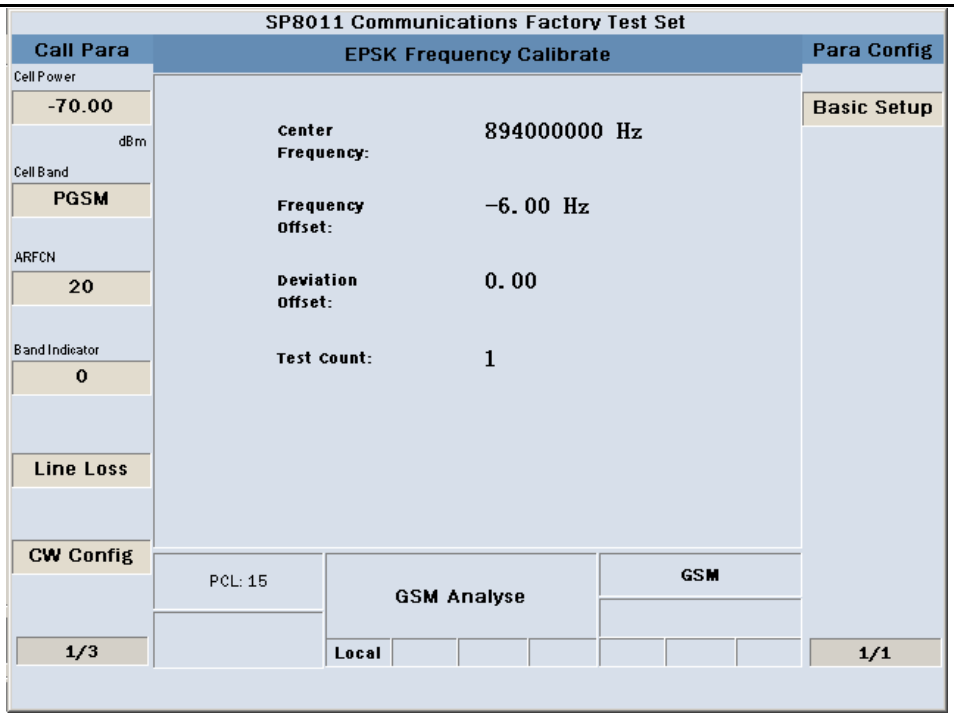

Figure 2-46 EPSK Frequency Calibration testing results

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:

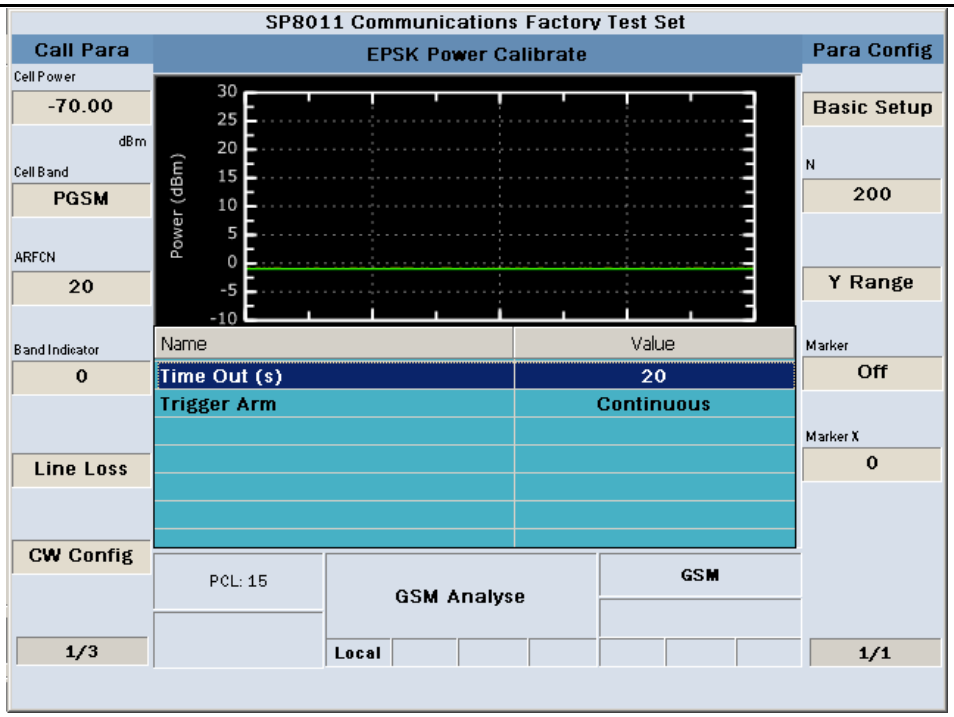

Figure 2-47 Basic Parameters setting interface

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:

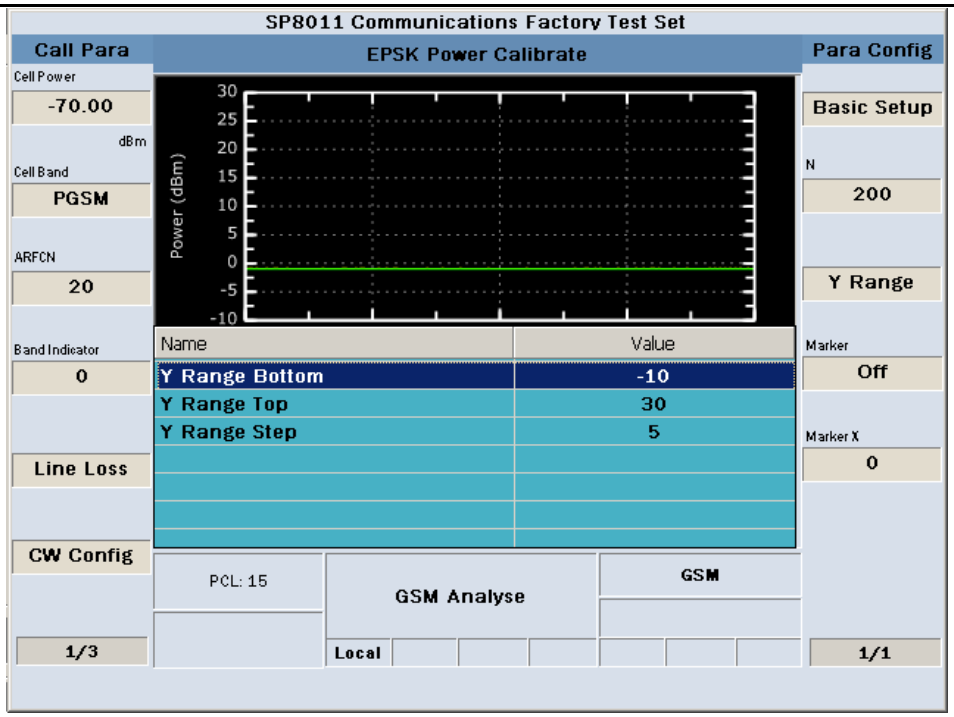

Figure 2-48 Range of Y setting interface

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:

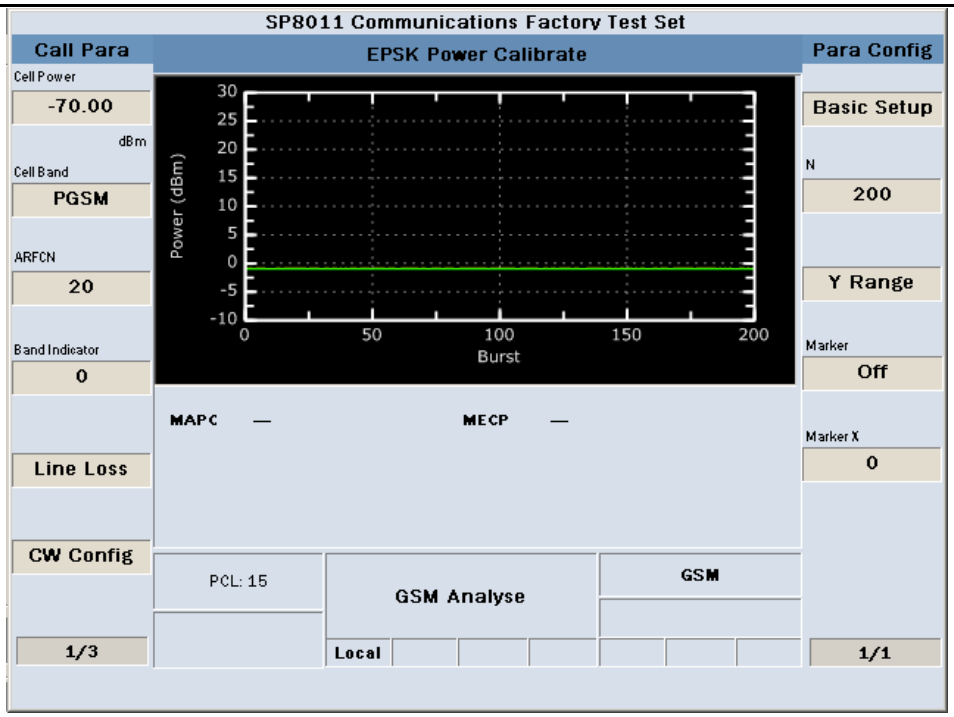

Figure 2-49 EPSK Power Calibration testing results

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:

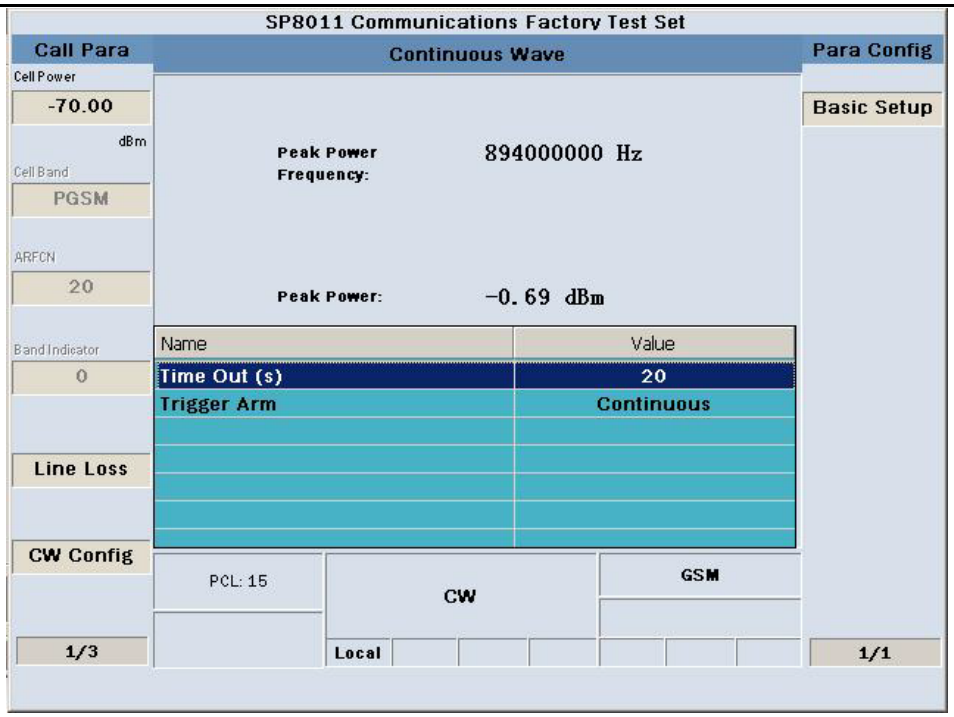

Figure 2-50 Basic Parameters setting interface

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:

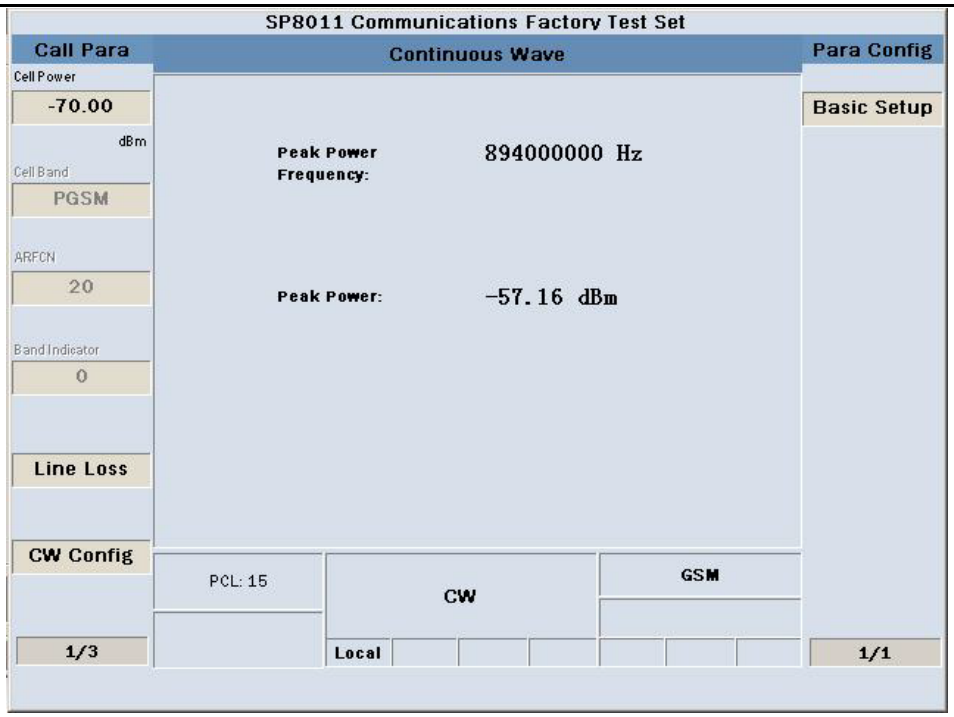

Figure 2-51 Continuous Wave testing results

2.2.17. IQ Turing

➢ 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:

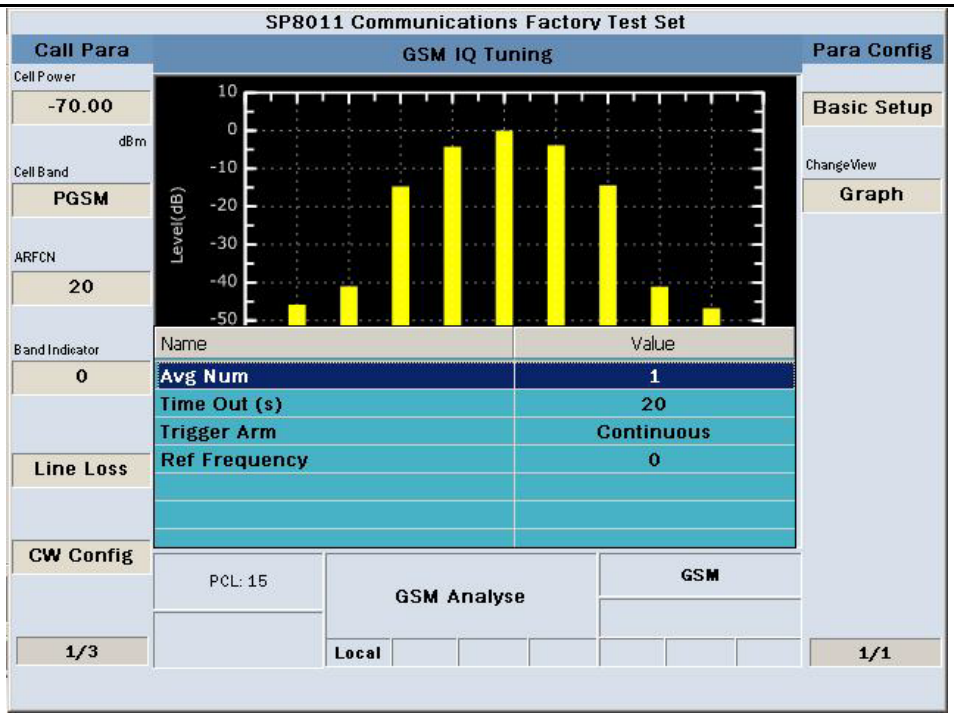

Figure 2-52 Basic Parameters setting interface

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:

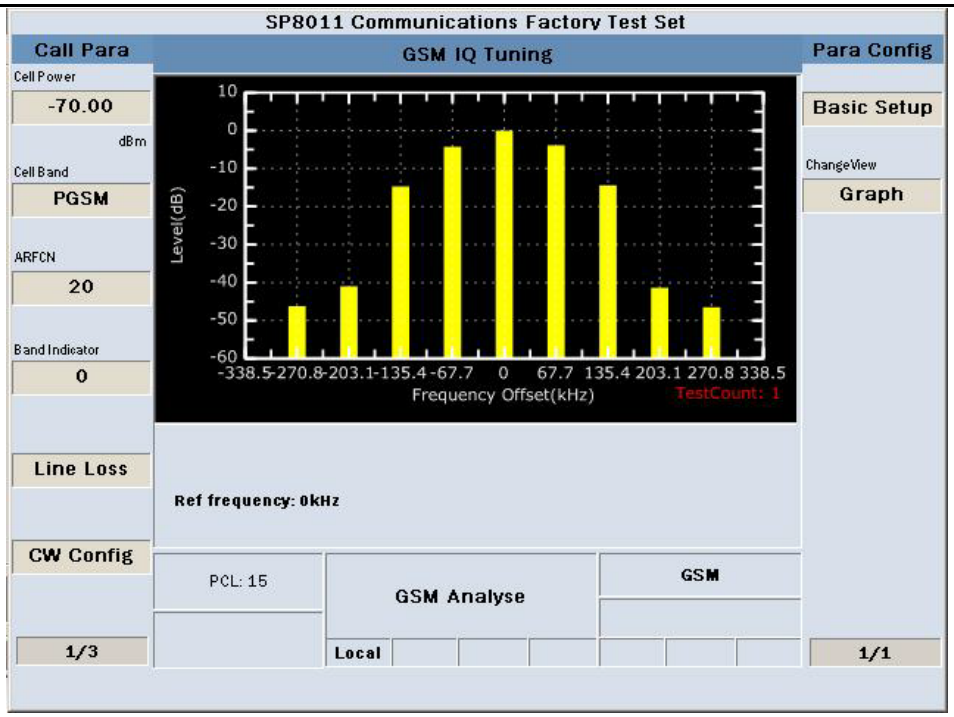

Figure 2-53 IQ Turning testing results by graph

Testing results are displayed in data, as shown below:

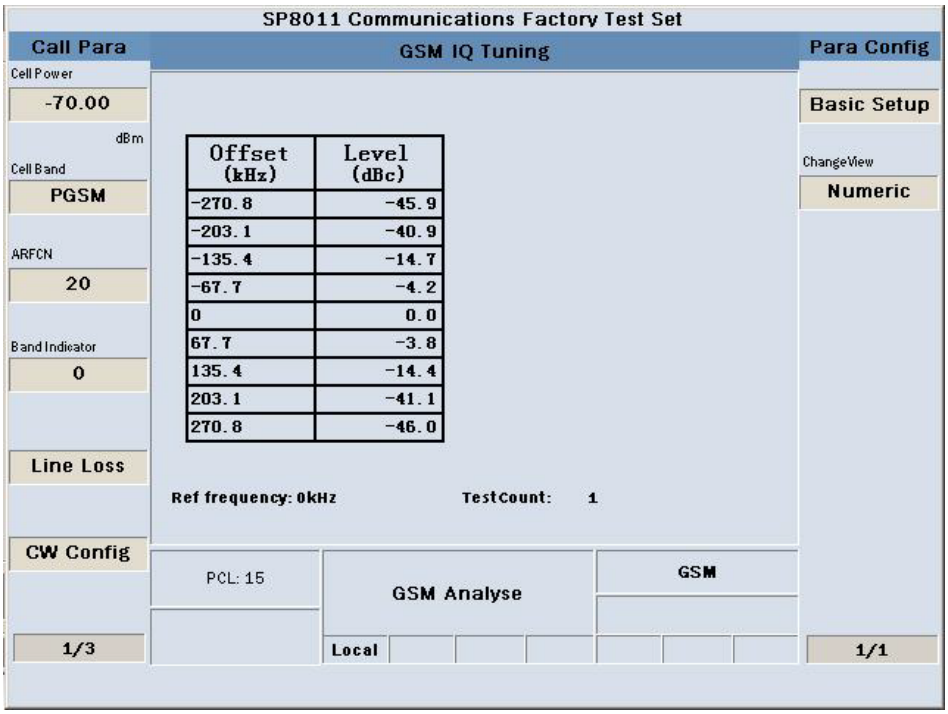

Figure 2-54 IQ Turning testing results in data

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:

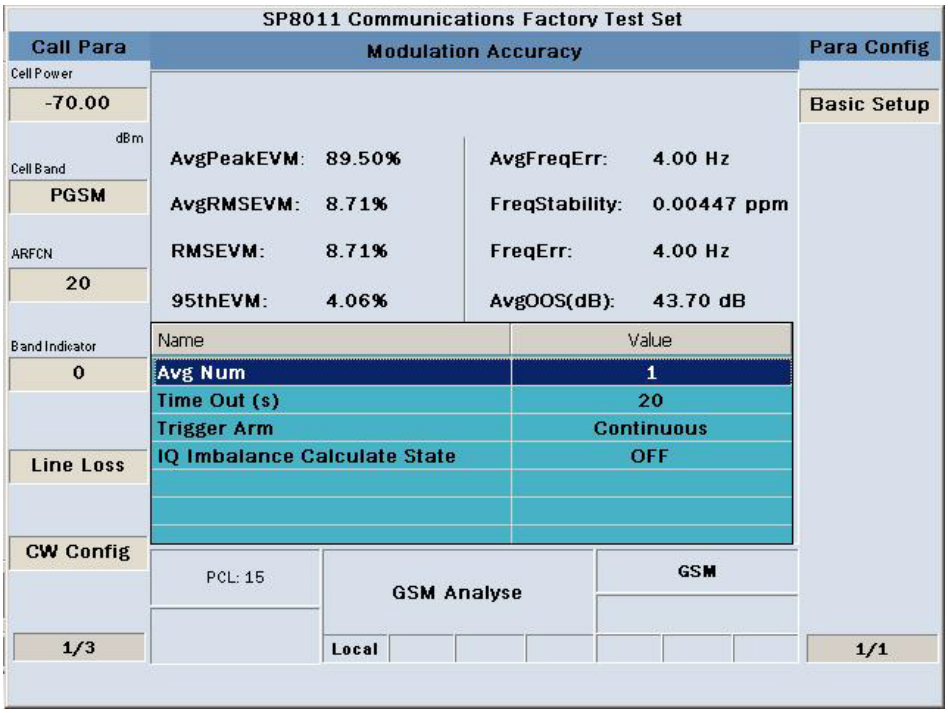

Figure 2-55 Basic Parameters setting interface

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:

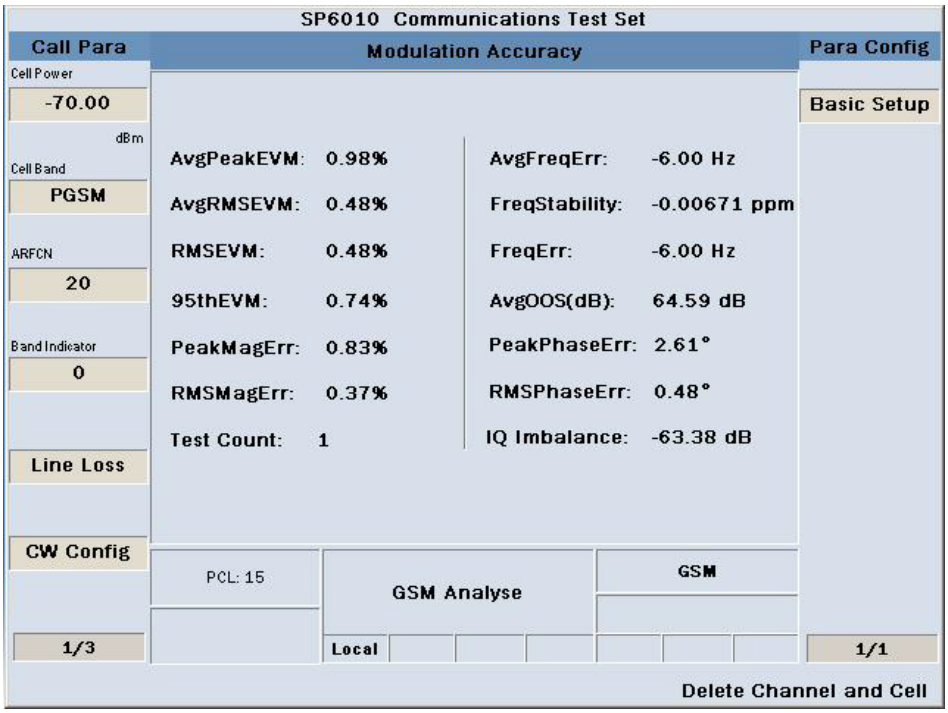

Figure 2-56 IQ Imbalance testing results

2.2.19. GSM Fast Bit Error Radio

➢ **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:

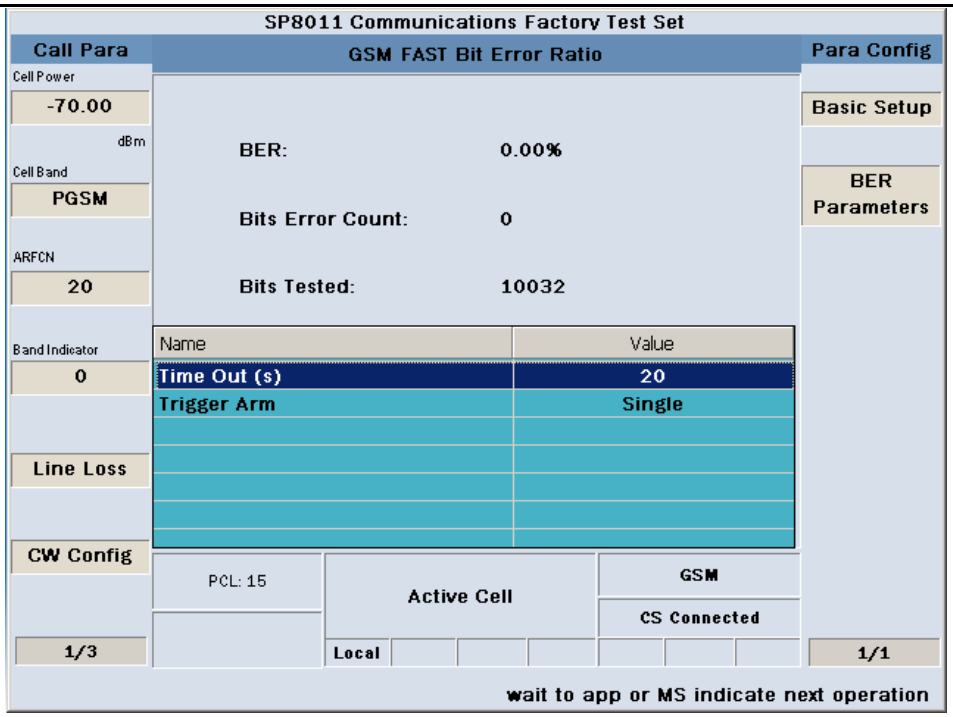

Figure 2-57 Basic Parameters setting interface

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:

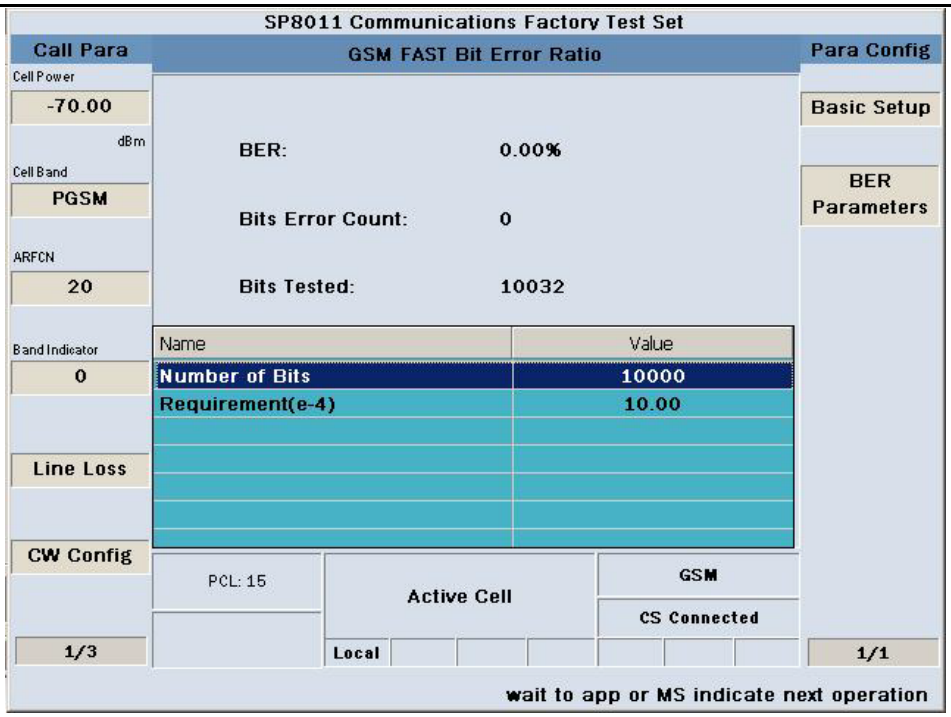

Figure 2-58 BER Parameters setting interface

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:

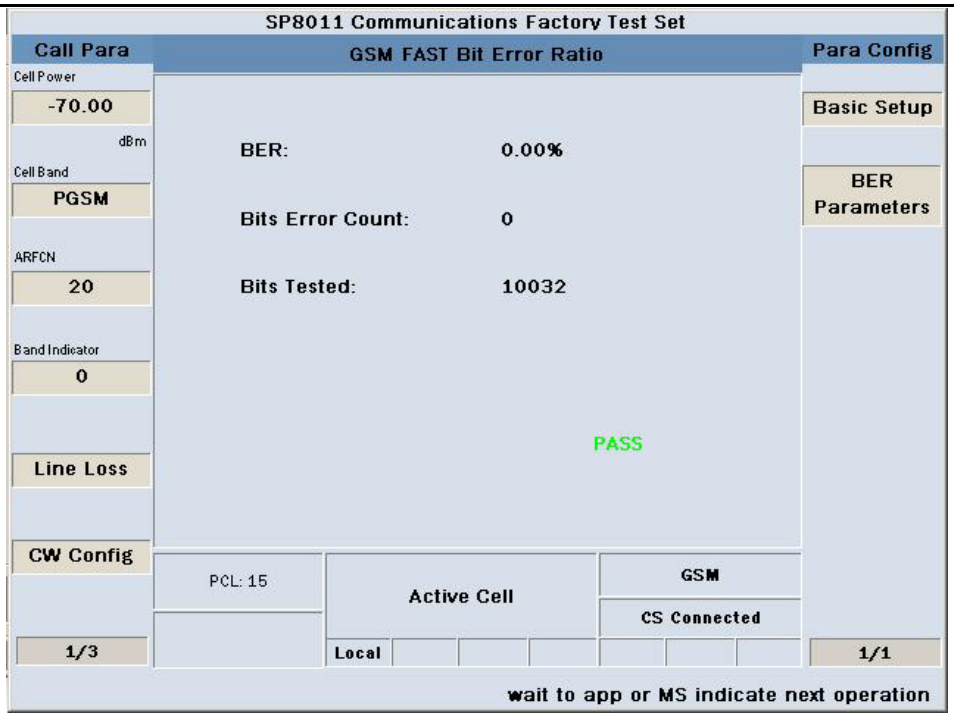

Figure 2-59 GSM Fast BER testing results