

# SP8011 GSM Test User Manual V2.0

Beijing Starpoint Technology Company Limited



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# Contents

| СОР | YRI   | GHT NOTICE  | I  |
|-----|-------|---|----|
| CON | ITEN  | TS  | II |
| PRE | FAC   | Е   | 1  |
| 1.  | SP80  | 011 GSM TERMINAL TEST                             | 2  |
| 1.  | 1.    | SWITCHING TO GSM SYSTEM                           | 2  |
| 1.2 | 2.    | GSM System Operating Modes                        |    |
|     | 1.2.1 | . Active Cell Operating Mode                      | 4  |
|     | 1.2.2 | . GSM Analyse Operating Mode                      | 5  |
|     | 1.2.3 | . CW Operating Mode                               | 7  |
|     | 1.2.4 | . Cell Off Operating Mode                         | 8  |
| 1.3 | 3.    | GSM CALLING PARAMETERS SETTING                    | 9  |
| 1.4 | 4.    | CALL HANDLING                                     | 17 |
|     | 1.4.1 | . Terminal Registering                            | 17 |
|     | 1.4.2 | . The Establishing of CS Domain Call Connection   |    |
|     | 1.4.3 | . The Establishing of PS Domain Data Connection   |    |
|     | 1.4.4 | . Disconnecting CS Domain Call Connection         | 21 |
|     | 1.4.5 | . Disconnecting PS Domain Data Connection         |    |
|     | 1.4.6 | . Emergency Calls                                 | 23 |
|     | 1.4.7 | The Establishing of CS Domain Not Call Connection | 23 |
|     | 1.4.8 | . The Establishing of SRB Not Call Connection     | 25 |
| 2.  | TES'  | TING OPERATIONS OF SP8011 GSM ITEMS               |    |
| 2.  | 1.    | GENERAL PROCESS OF TESTING                        | 27 |
|     | 2.1.1 | . Starting Item Testing                           | 27 |
|     | 2.1.2 | . Terminating Item Testing                        |    |
|     | 2.1.3 | . Switching between Testing Items                 |    |
| 2.2 | 2.    | THE PROGRESS OF TESTING ITEMS                     |    |
|     | 2.2.1 | . Phase Frequency Error                           |    |
|     | 2.2.2 | . Transmit Power                                  |    |
|     | 2.2.3 | . Power vs. Time                                  |    |
|     | 2.2.4 | . Output RF Spectrum                              |    |
|     | 2.2.5 | . Spectrum Monitor                                |    |
|     | 2.2.6 | . EDGE Modulation Accuracy                        | 44 |
|     | 2.2.7 | GSM Bit Error Rate                                | 47 |
|     | 2.2.8 | . GSM Terminal Measurements Reported              | 49 |
|     | 2.2.9 | . GPRS Block Error Rate                           | 51 |
|     | 2.2.1 | 0. GPRS&EDGE Terminal Measurements Reported       |    |
|     | 2.2.1 | 1. EDGE SRB Bit Error Rate                        |    |
|     | 2.2.1 | 2. GSM Frequency Calibration                      |    |



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|---------|--|--------------|
| 2.2.13. | GSM Power Calibration                        |              |
| 2.2.14. | EPSK Frequency Calibration                   |              |
| 2.2.15. | EPSK Power Calibration                       |              |
| 2.2.16. | Continuous Wave                              |              |
| 2.2.17. | IQ Turing                                    |              |
| 2.2.18. | IQ Imbalance                                 |              |
| 2.2.19. | GSM Fast Bit Error Radio                     |              |



# 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:

|                                | SP8011 Communications Factory Test Set |         |                |              |                |  |  |  |
|--------------------------------|--|---------|----------------|--------------|----------------|--|--|--|
| Call Para                      |  |         |                |              | Call Control   |  |  |  |
| Cell Power                     |  |         |                |              | Operating Mode |  |  |  |
| -70.00                         |  | Summary | Parameters     |              | Active Cell    |  |  |  |
| dBm                            | Cell Para                              | ameters | Acces          | s Parameters |                |  |  |  |
| Ref Input Level                |  |         |                |              | Originate      |  |  |  |
| 30                             | MCC:                                   | 460     | Max Sync       |              | Call           |  |  |  |
| dBm                            | MNC:                                   | 2       | Attempt No     | .: 2         |                |  |  |  |
| UARFCN                         | LAC                                    | 31002   | TMSI- 420      | 4967294      | Script Version |  |  |  |
| 10054                          | LAG.                                   | 51002   | IMJI. 423      | 4301234      | V4h0           |  |  |  |
|                                | RAC:                                   | 2       | IMSI:<br>IMEI: |              |                |  |  |  |
| Protocol Revision              | Call ID:                               | 701106  |                |              | Operation Type |  |  |  |
| R4v03.03                       | Gen ID.                                | 121120  |                |              | RMC12.2k       |  |  |  |
|                                | Cell Scrambling ID: 0                  |         |                |              |                |  |  |  |
|                                | PS Domain<br>Info: Absent              |         |                | Register     |                |  |  |  |
| Recall                         |  |         |                |              | Mobile         |  |  |  |
|                                |  |         |                | HSDP A RMC   |                |  |  |  |
| Line Loss                      | 1                                      |         | ,              |              | 1.1M QPSK      |  |  |  |
|                                | Target: — dBm<br>Actual: — dBm         | Activ   | Call           | TD-SCDMA     |                |  |  |  |
|                                |  | Activ   |                | Registering  |                |  |  |  |
| 1/4                            |  | Local   |                |              | 1/5            |  |  |  |
| Waiting RRC CONNECTION REQUEST |  |         |                |              |                |  |  |  |

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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |                                |                               |              |                    |  |  |  |  |  |
|--|--------------------------------|-------------------------------|--------------|--------------------|--|--|--|--|--|
| System                                 |                                | System                        |              |                    |  |  |  |  |  |
|  |                                | GPIB Address                  |              |                    |  |  |  |  |  |
| SYS Time                               | Software Sta                   | arPoint,SP6010 Series,SP8011- | 0009,Version | 14                 |  |  |  |  |  |
|  | Version: 5.3                   | 3.8.3.2_36040                 |              |                    |  |  |  |  |  |
| RefFrequency                           |                                |                               |              |                    |  |  |  |  |  |
| Internal                               | Serial 2D4<br>Number:          | 7C-7DB11-41CF9-40D5C-A02F6    |              | IP Address         |  |  |  |  |  |
|  | Number.                        |                               |              |                    |  |  |  |  |  |
| RF P ort                               | ]                              | Protocol Type                 |              | Print              |  |  |  |  |  |
| IN/OUT                                 | CPLD 01                        | ASM                           |              | Screen             |  |  |  |  |  |
|  | version:                       | TD-SCDMA                      |              |                    |  |  |  |  |  |
| Connect Detect                         | DSP 03!                        | СММВ                          | .50 C        |                    |  |  |  |  |  |
| On                                     | Version:                       |                               |              | Delete             |  |  |  |  |  |
|  | Cal 201                        |                               | 1            |                    |  |  |  |  |  |
| Protocol Type                          | Time:                          |                               |              | System Information |  |  |  |  |  |
| TD-SCDMA                               | I                              |                               |              | Software           |  |  |  |  |  |
|  | System 201                     | .2-03-27 System 15            | : 05         |                    |  |  |  |  |  |
| Trigger                                | Date:                          | Time:                         |              |                    |  |  |  |  |  |
| Config                                 | Target: — dBm                  |                               | TD-SCOMA     |                    |  |  |  |  |  |
|  | Actual: — dBm                  | Active Cell                   | 10-300MA     |                    |  |  |  |  |  |
|  |                                | -                             | Registering  |                    |  |  |  |  |  |
| 1/1                                    |                                | Local                         |              | 1/1                |  |  |  |  |  |
|  | Waiting RRC CONNECTION REQUEST |                               |              |                    |  |  |  |  |  |

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:

| SP8011 Communications Factory Test Set |                     |               |             |             |                |  |  |  |
|--|---------------------|---------------|-------------|-------------|----------------|--|--|--|
| Call Para                              |                     | System Config |             |             |                |  |  |  |
| Cell Power                             |                     |               |             |             |                |  |  |  |
| -70.00                                 |                     | Cel           | l Info      |             | Active Cell    |  |  |  |
| dBm                                    |                     | Cell Pa       | rameters    |             |                |  |  |  |
| Cell Band                              | 100                 | 400           | DTY.        | Disable     | Originate      |  |  |  |
| PGSM                                   | MGG:                | 460           | DIA:        | Disable     | Call           |  |  |  |
|  | MNC:                | 0             | Paging Mod  | e: Normal   |                |  |  |  |
| ARFCN                                  | Coll ID.            | 0             | Paging      | F           |                |  |  |  |
| 20                                     | Gen ID.             | v             | Multiframes | :           | Start Data     |  |  |  |
|  | LAC:                | 2             | Timing      |             |                |  |  |  |
| Band Indicator                         | PAC:                | 2             | Advance:    | 0           | Operation Type |  |  |  |
| 0                                      | NAG.                | Z             |             |             | GSM            |  |  |  |
| 1                                      | NCC:                | 1             | TMSI: 429   | 4967294     |                |  |  |  |
|  | BCC:                | 5             | IMSI:       |             | Test Mode      |  |  |  |
| Line Loss                              |                     |               | IMEI:       |             | Mode_A         |  |  |  |
|  | Cell Bar<br>Access: | Off           | ATT: On     |             |                |  |  |  |
|  |                     |               | ]           |             | TCH            |  |  |  |
| CW Config                              |                     |               |             | <b>M</b> 20 | Parameters     |  |  |  |
|  | PCL: 15             | Active        | 43 <b>M</b> |             |                |  |  |  |
|  |                     |               |             | IDLE        |                |  |  |  |
| 1/3                                    |                     | Local         |             |             | 1/2            |  |  |  |
| IDLE                                   |                     |               |             |             |                |  |  |  |

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:

| SP8011 Communications Factory Test Set |          |                            |            |           |                |  |  |
|--|----------|----------------------------|------------|-----------|----------------|--|--|
| Call Para                              |          | System Config              |            |           |                |  |  |
| Cell Power                             |          |                            |            |           | Operating Mode |  |  |
| -70.00                                 |          | Cel                        | ll Info    |           | Active Cell    |  |  |
| dBm                                    |          | Cell Pa                    | rameters   |           |                |  |  |
| Cell Band<br>PGSM                      | MCC:     | 460                        | DTX:       | Disable   | Originate      |  |  |
| ,                                      | MNC:     | 0                          | Paging Mod | e: Normal |                |  |  |
| ARFCN 20                               | Cell ID: | Operating Mo               | de         |           | Start Data     |  |  |
|  | LAC:     | Active Cell<br>GSM Analyse |            |           |                |  |  |
| B and Indicator                        | RAC:     | cw                         |            |           | Operation Type |  |  |
| 0                                      |          | Cell Off                   |            |           | GSM            |  |  |
|  | NCC:     |                            |            | 7294      |                |  |  |
|  | BCC:     |                            |            |           | Test Mode      |  |  |
| Line Loss                              | Cell Bar | 0.00                       | IMEI:      |           | Mode_A         |  |  |
|  | Access:  | Off                        | ATT: On    |           |                |  |  |
|  | 1        |                            | )          |           | TCH            |  |  |
| Cw Conng                               | PCL: 15  | GSM                        |            |           | Parameters     |  |  |
|  |          | ACTIVE                     | ; Gen      | IDLE      |                |  |  |
| 1/3                                    |          | Local                      |            |           | 1/2            |  |  |
|  | IDLE     |                            |            |           |                |  |  |

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    |                         |     | GPRS |      | EDGE |      |      |
|-------------|-------------------------|-----|------|------|------|------|------|
| runction    | Test items              | GSM | Mode | Mode | Mode | Mode | Mode |
| category    |                         |     | А    | В    | А    | В    | SRB  |
| Transmitte  | Test of Phase Error and |     |      |      |      |      |      |
| r indicator | Frequency Error         | v   | v    | v    | v    | v    | v    |



Beijing StarPoint Technology Company Limited >> Sep, 2014 tests Transmit Power Test ٧ ٧ ٧ ٧ ٧ ٧ Time switch Template Test ٧ ٧ ٧ ٧ ٧ ٧ ٧ Output RF Spectrum Test ٧ ٧ ٧ ٧ ٧ Spectrum Monitoring Test ٧ ٧ ٧ ٧ ٧ ٧ EDGE Modulation Accuracy ٧ ٧ \_\_\_\_ ٧ \_\_\_\_\_ \_ Test GSM Bit Error Rate Test ٧ **GSM** Terminal Measurement ٧ \_ \_ \_ \_ \_ Report Receiver GPRS Block Error Rate indicator ٧ ٧ Testing tests GPRS&EDGE Terminal \_ \_ ٧ \_ ٧ ٧ **Measurements Reported** EDGE SRB Bit Error Rate Test \_ \_\_\_\_ \_ ٧ \_\_\_\_ \_

#### 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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |               |   |      |                |                |  |  |
|--|---------------|---|------|----------------|----------------|--|--|
| Call Para                              |               | System Config                           |      |                |                |  |  |
| Triddor                                |               |   |      |                | Operating Mode |  |  |
| Mode                                   |               |   |      |                | GSM Analyse    |  |  |
|  |               |   |      |                |                |  |  |
| Detect Type                            |               |   |      |                | Originate      |  |  |
| Synchronise                            |               |   |      |                | Call           |  |  |
|  |               |   |      |                |                |  |  |
| Receiver                               |               |   |      |                |                |  |  |
| Control                                |               |   |      |                | Start Data     |  |  |
| John                                   |               |   |      |                |                |  |  |
| Meas Burst                             | Name          |   |      | Value          | Operation Type |  |  |
| 1                                      | Trigger Mode  |   | Auto |                | GSM            |  |  |
|  | Trigger Value |   |      |                |                |  |  |
|  |               |   |      |                | Test Mode      |  |  |
| BA Table                               |               |   |      |                | Mode_A         |  |  |
| 1                                      |               |   |      |                |                |  |  |
|  |               |   |      |                | тен            |  |  |
|  |               |   |      |                | Parameters     |  |  |
| PCL: 15 GSM Applys                     |               | GSM                                     |      | T di di letero |                |  |  |
|  |               |   | e    |                |                |  |  |
| 2/3                                    |               | Local                                   |      |                | 1/2            |  |  |
|  |               | , |      | Delete Cha     | nnel and Cell  |  |  |

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:

| SP8011 Communications Factory Test Set |   |               |         |      |   |       |              |                    |
|--|---|---------------|---------|------|---|-------|--------------|--------------------|
| Call Para                              |   | System Config |         |      |   |       | Call Control |                    |
| Triddor                                |   |               |         |      |   |       |              | Operating Mode     |
| Mode                                   |   |               |         |      |   |       |              | <b>GSM Analyse</b> |
| Moue                                   |   |               |         |      |   |       |              |                    |
| Detect Type                            |   |               |         |      |   |       |              | 0.11               |
| Synchronise                            |   |               |         |      |   |       |              | Originate          |
|  |   |               |         |      |   |       |              | Gall               |
|  |   |               |         |      |   |       |              |                    |
| Receiver                               |   |               |         |      |   |       |              | Start Data         |
| Control                                |   |               |         |      |   |       |              | Start Data         |
|  |   |               |         |      |   |       |              | 1                  |
| Meas Burst                             | Name  |               |         |      |   | Value | <b>^</b>     | Operation Type     |
| 1                                      | Burst Number(A                                    | nalyse        | Only)   |      |   | 1     |              | GSM                |
|  | MS TX Level Mode                                  |               |         |      |   | Auto  |              |                    |
|  | Ref Level (dBm)<br>Burst1 Tx Level (Analyse Only) |               |         |      |   |       |              | Test Mode          |
| Bå Table                               |   |               |         |      |   | 15    |              | Mode_A             |
| DA TUDIO                               | Burst2 Tx Level                                   | (Analys       | se Only | 0    |   |       |              |                    |
|  | Burst1 Modulati                                   | ion(Ana       | alyse O | nly) |   | GMSK  |              |                    |
|  | Burst2 Modulation(Analyse Only) GMSK              |               |         |      | - | TCH   |              |                    |
|  | DOL: 15   |               |         |      |   | GSM   |              | Parameters         |
|  | PGC: 15   | GSM Analyse   |         |      |   |       |              |                    |
|  |   | -             |         |      |   |       |              |                    |
| 2/3                                    |   | Local         |         |      |   |       |              | 1/2                |
| Delete Channel and Cell                |   |               |         |      |   |       |              |                    |

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:

|                   | SP8011 Communications Factory Test Set |              |                     |             |                   |  |  |
|-------------------|--|--------------|---------------------|-------------|-------------------|--|--|
| Call Para         | Call Para System Config                |              |                     |             |                   |  |  |
| Cell Power        |  |              |                     |             | Operating Mode    |  |  |
| -70.00            |  |              |                     |             | CW                |  |  |
| dBm               |  |              |                     |             |                   |  |  |
| Cell Band<br>PGSM | -                                      |              |                     |             | Originate<br>Call |  |  |
| ARFON             | _                                      |              |                     |             | Start Data        |  |  |
| Band Indicator    | Name                                   |              | Value               |             | Operation Type    |  |  |
| 0                 | RFGenerator Fre                        | equency (Hz) | 89                  | 94000000.00 | GSM               |  |  |
|                   | <b>RFAnalyzer Freq</b>                 | juency (Hz)  | 89400000.00<br>0.00 |             |                   |  |  |
|                   | CW Line Loss Up                        | olink (dB)   |                     |             | Test Mode         |  |  |
| Line Loss         | CW Line Loss Do                        | wnlink (dB)  |                     | 0.00        | Mode_A            |  |  |
| 1                 |  |              |                     |             |                   |  |  |
|                   | -                                      |              |                     |             | тсн               |  |  |
| Cw Config         | PCL: 15                                |              |                     | GSM         | Parameters        |  |  |
|                   |  | CW           |                     |             |                   |  |  |
| 1/3               |  | Local        |                     |             | 1/2               |  |  |

#### 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   |



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|-----------------------|----------------|------|----|
| 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:

| SP8011 Communications Factory Test Set |                         |               |      |           |           |    |                |
|--|-------------------------|---------------|------|-----------|-----------|----|----------------|
| Call Para                              |                         | System Config |      |           |           |    | Call Control   |
| Cell Power                             |                         |               |      |           |           |    | 0.01           |
| -70.00                                 |                         | Cell          | Info | 1         |           |    | Gell           |
| dBm                                    |                         | Coll Par      | amo  | tore      |           | Π. | Farameters     |
| Cell Band                              |                         | Gen i ai      | ame  | 1613      |           | -  |                |
| PGSM                                   | MCC:                    | 460           | DTX  | -         | Disable   |    |                |
|  | MNC:                    | 0             | Pag  | ing Mode  | e: Normal |    |                |
| ARFCN                                  | Call ID:                | 0             | Pag  | ing       | F         |    | PDTCH          |
| 20                                     | Gen iD:                 | U             | Mul  | tiframes: | 5         |    | Parameters     |
| -                                      | LAC:                    | 2             | Timi | ing       |           |    | T di dillotoro |
| Band Indicator                         | Name                    |               |      |           | Value     |    |                |
| 0                                      | TMSI Value              |               |      | 42        | 94967294  |    |                |
|  | Mobile DTX State        | e             |      |           | Disable   |    |                |
|  | Paging Mode             |               |      |           | Normal    |    | Leven          |
| Line Loss                              | <b>Paging Multifran</b> | nes           |      |           | 5         |    | Control        |
|  | MCC                     |               |      |           | 460       |    | Control        |
|  | MNC                     |               |      |           | 0         |    | Broadcast      |
| CW Config                              | Cell ID                 |               |      |           | <u> </u>  |    | Off            |
|  | PCL: 15                 |               |      |           | GSM       |    |                |
|  |                         | Cell (        | Off  | İ         |           |    |                |
|  |                         |               |      |           |           |    |                |
| 1/3                                    |                         | Local         |      |           |           |    | 2/2            |
|  |                         |               |      |           |           |    |                |

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          |



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|----------------------------|--------------|-----|
| 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;
- 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           |

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|-------------------------------|------------------------------------|--------------|
| GSM750                        | 438 ~ 511                          | 460          |

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:

| SP8011 Communications Factory Test Set |                  |               |         |            |         |      |         |                |
|--|------------------|---------------|---------|------------|---------|------|---------|----------------|
| Call Para                              |                  | System Config |         |            |         |      |         | Call Control   |
| Cell Power                             |                  |               |         |            |         |      |         | Operating Mode |
| -70.00                                 |                  | Ce            | ll Infe | D          |         |      |         | Active Cell    |
| dBm                                    |                  | Cell Pa       | arame   | eters      |         |      |         |                |
| Cell Band                              |                  |               |         |            |         |      | _       | Originate      |
| PGSM                                   | MCC:             | 460           | DD      | (:         | Disa    | ble  |         | Call           |
| ( )                                    | MNC:             | 0             | Pa      | ging Mod   | e: Norr | nal  |         |                |
| ARFCN                                  | Cell ID          | 0             | Pa      | ging       | Б       |      |         |                |
| 20                                     | Gen ib.          | v             | Mu      | ltiframes: | :       |      |         | Start Data     |
|  | LAC:             | 2             | Tim     | ing        |         |      | _       |                |
| Band Indicator                         | Name             |               |         |            | Value   |      | <b></b> | Operation Type |
| 0                                      | PGSM Uplink (dE  | 3)            |         |            | 0.00    |      |         | GSM            |
|  | PGSM Downlink    | (dB)          |         |            | 0.00    |      |         |                |
|  | EGSM Uplink (dE  | 3)            |         |            | 0.00    |      |         | Test Mode      |
| Line Loss                              | EGSM Downlink    | (dB)          |         |            | 0.00    |      |         | Mode_A         |
|  | DCS Uplink (dB)  |               |         |            | 0.00    |      |         |                |
|  | DCS Downlink (d  | IB)           |         |            | 0.00    |      |         |                |
| CW Config                              | PCS IInlink (dB) |               |         |            | 0.00    |      | •       | тсн            |
| off offing                             | PCL: 15          |               |         |            |         | GSM  |         | Parameters     |
|  |                  | Active Cell   |         |            |         | -    |         |                |
|  |                  |               |         |            |         | IDLE |         |                |
| 1/3                                    |                  | Local         |         |            |         |      |         | 1/2            |
| IDLE                                   |                  |               |         |            |         |      |         |                |

Figure 1-10 line loss of GSM system setting interface

The range and default value of Line Loss parameters:

GSM480

| 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   |



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|------------------|----------------|------|----|
| 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:

|                         | SP80                | )11 Communic               | ations Factory     | r Test Set           |                   |
|-------------------------|---------------------|----------------------------|--------------------|----------------------|-------------------|
| Call Para               |                     | Syste                      | em Config          |                      | Call Control      |
| Trigger<br>Mode         |                     | Operating Mode Active Cell |                    |                      |                   |
|                         |                     | Cell P                     | arameters          |                      |                   |
| Detect Type Synchronise | MCC:                | 460                        | DTX:<br>Paging Mod | Disable<br>e: Normal | Originate<br>Call |
|                         | MNG:                | 0                          |                    |                      |                   |
| Receiver                | Cell ID:            | Meas Burst                 |                    |                      | Start Data        |
| Control                 | LAC:                | 2                          |                    |                      | Operation Tupe    |
| Meas Burst<br>1         | RAC:                | 3                          |                    |                      | GSM               |
|                         | NCC:                | 4<br>5                     |                    | 7294                 |                   |
|                         | BCC:                |                            |                    |                      | Test Mode         |
| BA Table                | Cell Bar<br>Access: | Off                        | ATT: On            |                      | MODE_A            |
|                         | ]                   |                            | J                  |                      | тсн               |
|                         | PCL: 15 GSM         |                            |                    |                      |                   |
|                         |                     |                            |                    |                      |                   |
| 2/3                     |                     | Local                      |                    |                      | 1/2               |
| IDLE                    |                     |                            |                    |                      |                   |

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:

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| SP8011 Communications Factory Test Set |              |                                  |   |                      |                            |  |  |
|--|--------------|----------------------------------|---|----------------------|----------------------------|--|--|
| Call Para                              |              | System                           | n Config  |                      | Call Control               |  |  |
| Trigger<br>Mode                        |              | Cel                              | l Info  |                      | Operating Mode Active Cell |  |  |
|  |              | Cell Pa                          | rameters  |                      |                            |  |  |
| Detect Type Synchronise                | MCC:         | 460                              | DTX:<br>Paging Mod                                      | Disable<br>e: Normal | Originate<br>Call          |  |  |
| Receiver                               | Cell ID:     | Operating Mod                    | Operating Mode Active Cell GSM Analyse CW Cell Off 7294 |                      |                            |  |  |
| Control<br>Meas Burst                  | LAC:<br>RAC: | Active Cell<br>GSM Analyse<br>CW |   |                      |                            |  |  |
| 1                                      | NCC:         | Cell Off                         |   |                      |                            |  |  |
| BA Table                               | BCC:         | IMEI:                            |   |                      | Test Mode<br>Mode_A        |  |  |
| Access: ATT:                           |              |                                  |   |                      | ТСН                        |  |  |
|  | PCL: 15      | Active                           | Cell  | GSM                  | Parameters                 |  |  |
| <br>                                   |              |                                  |   | IDLE                 |                            |  |  |
| 2/3                                    |              | Local                            |   |                      | 1/2                        |  |  |
|  |              |                                  |   |                      | IDLE                       |  |  |

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:

| SP8011 Communications Factory Test Set |                             |   |             |  |     |  |                            |
|--|-----------------------------|---|-------------|--|-----|--|----------------------------|
| Call Para                              |                             | Syste                                   | m Config    |  |     |  | Call Control               |
| Trigger<br>Mode                        |                             | Cell Info                               |             |  |     |  | Operating Mode Active Cell |
|  |                             | Cell Pa                                 | rameters    |  |     |  |                            |
| Detect Type Synchronise                | MCC:                        | 460 DTX: Disable<br>Paging Mode: Normal |             |  |     |  | Originate<br>Call          |
| Receiver                               | Cell ID:                    | Operation Typ                           | e           |  |     |  | Start Data                 |
| Meas Burst                             | LAC:                        | GPRS                                    |             |  |     |  | Operation Type             |
| 1                                      | NCC:                        | NSFT_CS<br>NSFT_SRB<br>7294             |             |  |     |  | GSM                        |
| BA Table                               | BCC:<br>Cell Bar<br>Access: | Off                                     | Off ATT: On |  |     |  | Mode_A                     |
|  | House.                      |   | ]           |  |     |  | тсн                        |
|  | PCL: 15                     | Activ                                   | e Cell      |  | GSM |  | Parameters                 |
|  |                             | - IDLE                                  |             |  |     |  |                            |
| 2/3                                    |                             | Local                                   |             |  |     |  | 1/2                        |
|  |                             |   |             |  |     |  | IDLE                       |

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:



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| SP8011 Communications Factory Test Set |                     |                      |                                   |           |                |  |  |
|--|---------------------|----------------------|-----------------------------------|-----------|----------------|--|--|
| Call Para                              |                     | System Config Cal    |                                   |           |                |  |  |
| Trigger                                |                     |                      |                                   |           | Operating Mode |  |  |
| Mode                                   |                     | Cel                  | l Info                            |           | Active Cell    |  |  |
|  |                     | Cell Pa              | rameters                          |           |                |  |  |
| Detect Type Synchronise                | MCC:                | 460                  | 460 DTX: Disable                  |           |                |  |  |
|  | MNC:                | 0                    | Paging Mod                        | e: Normai |                |  |  |
| Receiver                               | Cell ID:            | Test Mode            | Test Mode<br>Mode_A<br>Mode_B(UM) |           |                |  |  |
| Guntrui<br>Meac Burst                  | LAC:                | Mode_A<br>Mode_B(UM) |                                   |           |                |  |  |
| 1                                      | RAG:                | Mode_B(AM)           |                                   |           | GPRS           |  |  |
|  | NCC:                |                      |                                   | 7294      |                |  |  |
|  | BCC:                |                      |                                   |           | Test Mode      |  |  |
| BA Table                               | Cell Bar<br>Access: | Off                  | ATT: On                           |           | Mode_A         |  |  |
|  | 1                   |                      |                                   |           | тсн            |  |  |
|  | PCL: 15             | Active               | Cell                              | GPRS      | Parameters     |  |  |
|  |                     |                      |                                   | IDLE      |                |  |  |
| 2/3                                    |                     | Local                |                                   |           | 1/2            |  |  |
|  |                     |                      |                                   |           | IDLE           |  |  |

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:

| SP8011 Communications Factory Test Set |          |                            |            |               |                |  |  |
|--|----------|----------------------------|------------|---------------|----------------|--|--|
| Call Para                              |          | System Config Call Control |            |               |                |  |  |
| Triggor                                |          |                            |            |               | Operating Mode |  |  |
| Mode                                   |          | Cel                        | l Info     |               | Active Cell    |  |  |
|  |          | Cell Pa                    | rameters   |               |                |  |  |
| Detect Type                            |          |                            |            | <b>D</b> 1 11 | Originate      |  |  |
| Synchronise                            | MCC:     | 460                        | DIX:       | Disable       | Call           |  |  |
|  | MNC:     | 0                          | Paging Mod | e: Normal     |                |  |  |
| Receiver                               | Cell ID: | Test Mode                  |            |               |                |  |  |
| Control                                |          | Mode A                     |            |               | Start Data     |  |  |
|  | LAC:     | Mode_B(UM)                 |            |               |                |  |  |
| Meas Burst                             | RAC:     | Mode_B(AM)                 |            |               | Operation Type |  |  |
| 1                                      |          | Mode_SRB                   |            |               | EDGE           |  |  |
|  | NCC:     |                            |            | 7294          |                |  |  |
|  | BCC:     |                            |            |               | Test Mode      |  |  |
| BA Table                               | Coll Bor |                            | IMEL       |               | Mode_A         |  |  |
|  |          | Off                        | ATT: On    |               |                |  |  |
|  |          |                            | ]          |               | тсн            |  |  |
|  | DOL: 4E  |                            |            | EDGE          | Parameters     |  |  |
|  | FUL: 15  | Active                     | e Cell     |               |                |  |  |
|  |          |                            |            |               |                |  |  |
| 2/3                                    |          | Local                      |            |               | 1/2            |  |  |
|  |          |                            |            |               | IDLE           |  |  |

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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |                         |             |            |           |                |  |  |
|--|-------------------------|-------------|------------|-----------|----------------|--|--|
| Call Para                              |                         | System      | n Config   |           | Call Control   |  |  |
| Triggor                                |                         |             |            |           | Operating Mode |  |  |
| Mode                                   |                         | Cel         | l Info     |           | Cell Off       |  |  |
| mode                                   |                         | Cell Pa     | rameters   |           |                |  |  |
| Detect Type                            |                         |             |            |           | Originato      |  |  |
| Synchronise                            | MCC:                    | 460         | DTX:       | Disable   | Call           |  |  |
|  | MNC:                    | 0           | Paging Mod | e: Normal | Guii           |  |  |
| Receiver                               | Cell ID:                | Detect Type |            |           |                |  |  |
| Control                                |                         | Synchronise |            |           | Start Data     |  |  |
|  | LAC:                    | Asynchronis |            |           |                |  |  |
| Meas Burst                             | RAC:                    |             |            |           | Operation Type |  |  |
| 1                                      |                         |             |            |           | NSFT_CS        |  |  |
|  | NCC:                    |             |            | 7294      |                |  |  |
|  | BCC:                    |             |            |           | Test Mode      |  |  |
| BA Table                               |                         |             | IMEI:      |           | Mode_A         |  |  |
|  | Cell Bar                | Off         | ATT: On    |           |                |  |  |
|  | ALLESS.                 |             |            |           | тсн            |  |  |
| ]                                      |                         |             |            |           | Parameters     |  |  |
|  | PCL: 15                 | Cell        | Off        | NSFI_CS   |                |  |  |
|  |                         | - 501       |            |           |                |  |  |
| 2/3                                    |                         | Local       |            |           | 1/2            |  |  |
|  | Delete Channel and Cell |             |            |           |                |  |  |

Figure 1-16 detect type setting interface

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

| SP8011 Communications Factory Test Set |                     |              |                       |           |  |           |
|--|---------------------|--------------|-----------------------|-----------|--|-----------|
| Call Para                              |                     | Call Control |                       |           |  |           |
| Cell Power                             |                     |              |                       |           |  | Time Slot |
| -70.00                                 |                     | Cel          | l Info                |           |  | 5         |
| dBm                                    |                     | Cell Pa      | rameters              |           |  | MOTEL     |
| Cell Band                              |                     |              |                       |           |  | MSTALevel |
| PGSM                                   | MCC:                | 460          | DTX:                  | Disable   |  | 15        |
|  | MNC:                | 0            | Paging Mod            | e: Normal |  |           |
| ARFCN 20                               | Cell ID:            | 0            | Paging<br>Multiframes | 5         |  |           |
|  | LAC:                | 2            | Timing                | 0         |  |           |
| Band Indicator                         | RAC:                | 2            | Advance:              |           |  |           |
| , v                                    | NCC:                | 1            | TMSI: 429             | 4967294   |  |           |
|  | BCC:                | 5            | IMSI:                 |           |  |           |
| Line Loss                              | Cell Bar<br>Access: | Off          | IMEI:<br>ATT: On      |           |  |           |
| CW Config                              | ·                   |              |                       |           |  | Return    |
| off offing                             | PCL: 15             | Active       | Active Cell GSM IDLE  |           |  |           |
|  |                     | Activ        |                       |           |  |           |
| 1/3                                    |                     | Local        |                       |           |  |           |
|  |                     |              |                       |           |  | IDLE      |

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:

| SP8011 Communications Factory Test Set |             |             |                  |          |              |  |
|--|-------------|-------------|------------------|----------|--------------|--|
| Call Para                              |             | Ca          | all Control      |          | Call Control |  |
| Cell Power                             |             |             |                  |          | PBCCH flag   |  |
| -70.00                                 |             | Tempora     | ary Blocker Flow | r        | OFF          |  |
| dBm                                    | Upli        | nk — — —    | C                | Downlink |              |  |
| Cell Band                              |             |             |                  |          | PDTCH        |  |
| PGSM                                   | Channel     | CS1         | Channel          | CS1      | Time Slot    |  |
| ARFCN                                  | Win Size    | 64          | Win Size         | 64       |              |  |
| 20                                     |             | _           |                  |          | Cnannei      |  |
|  | PDTCH TSlot | 2           | PDTCH TSI        | ot 1     | ooung        |  |
| Band Indicator                         |             |             |                  |          |              |  |
| 0                                      |             |             |                  |          | MS TX Level  |  |
|  |             |             |                  |          |              |  |
|  |             |             |                  |          |              |  |
| Line Loss                              |             |             |                  |          |              |  |
|  | MultiSlot   |             |                  |          |              |  |
| CW Config                              |             |             |                  |          | Return       |  |
| 511 501118                             | PCL: 15     | Active Cell |                  | GPRS     |              |  |
|  |             |             |                  | IDLE     |              |  |
| 1/3                                    |             | Local       |                  |          |              |  |
|  |             |             |                  |          | IDLE         |  |

Figure 1-18 PDTCH Parameters setting interface

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

|                | SP8011 Communications Factory Test Set |            |         |         |           |  |              |
|----------------|--|------------|---------|---------|-----------|--|--------------|
| Call Para      |  | Call       | Control |         |           |  | Call Control |
| Cell Power     |  |            |         |         |           |  | PBCCH flag   |
| -70.00         |  | Temporary  | Blocker | Flow    |           |  | OFF          |
| dBm            | Upli                                   | nk         |         | Dov     | vnlink —— |  |              |
| Cell Band      |  |            |         |         |           |  | PDTCH        |
| PGSM           | Channel                                | CS1        | Chanr   | nel     | CS1       |  | Time Slot    |
| ARFCN          | Win Size                               | 64         | Win Si  | ze      | 64        |  | Channel      |
| 20             | PDTCH TSlot                            | 2          | PDTCH   | l TSlot | 1         |  | Coding       |
| Band Indicator | Name                                   |            |         |         | Value     |  |              |
| 0              | Uplink Time Slot                       | Number     |         |         | 2         |  | MS TX Level  |
|                | Downlink Time S                        | lot Number |         | 1       |           |  |              |
|                |  |            |         |         |           |  |              |
| Line Loss      |  |            |         |         |           |  |              |
|                |  |            |         |         |           |  |              |
|                |  |            |         |         |           |  |              |
| CW Config      |  |            |         |         | CDDS      |  | Return       |
|                | PCL: 15                                | Active     | Cell    |         | GERS      |  |              |
|                |  |            |         |         | IDLE      |  |              |
| 1/3            |  | Local      |         |         |           |  |              |
|                |  |            |         |         |           |  | IDLE         |

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 |  |  |  |



Downlink Time Slot Number

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|---------------------|--------------|----------------|---------------|--------------|---------|--|
|                     |              | Range          | Default       | Range        | Default |  |
| Uplink Time Slot Nu | mber         | 1/2            | 2             | 1/2          | 1       |  |

1

1/2

1

| 2) | Press <b>F9</b> button to set the parameters of Channel Coding as shown below: |
|----|--|
| -  | These is builded to set the parameters of channel county, as shown below.      |

1/2

| SP8011 Communications Factory Test Set |                           |           |              |          |              |  |
|--|---------------------------|-----------|--------------|----------|--------------|--|
| Call Para                              |                           | Call      | Control      |          | Call Control |  |
| Cell Power                             |                           |           |              |          | PBCCH flag   |  |
| -70.00                                 |                           | Temporary | Blocker Flow | <i>,</i> | OFF          |  |
| dBm                                    | Upli                      | nk        | I            | Downlink |              |  |
| Cell Band                              |                           |           |              |          | PDTCH        |  |
| PGSM                                   | Channel                   | CS1       | Channel      | CS1      | Time Slot    |  |
| ARFCN                                  | Win Size                  | 64        | Win Size     | 64       | Channel      |  |
| 20                                     | PDTCH TSlot               | 2         | PDTCH TSI    | ot 1     | Coding       |  |
| Band Indicator                         | Name                      |           |              | Value    |              |  |
| 0                                      | Uplink Channel Coding CS1 |           |              |          | MS TX Level  |  |
| -                                      | <b>Downlink Chann</b>     | el Coding |              | CS1      |              |  |
|  |                           |           |              |          |              |  |
| Line Loss                              |                           |           |              |          |              |  |
|  |                           |           |              |          |              |  |
|  |                           |           |              |          |              |  |
| CW Config                              |                           |           |              | GPPS     | Return       |  |
|  | PCL: 15                   | Active    | Cell         | SIF KO   |              |  |
|  |                           |           |              | IDLE     |              |  |
| 1/3                                    |                           | Local     |              |          |              |  |
|  |                           |           |              |          | IDLE         |  |

Figure 1-19 Channel Coding parameter setting interface

The range and default values of Channel Coding parameters:

• GPRS service types

| Daramatar               | GPRS Mode A         |     | GPRS Mode B |         |
|-------------------------|---------------------|-----|-------------|---------|
| Parameter               | Range Default Range |     | Range       | Default |
| Uplink Channel Coding   | CS1 ~ CS4           | CS1 | CS1 ~ CS4   | CS1     |
| Downlink Channel Coding | _                   | _   | _           | _       |

• EDGE service types

| Daramatar               | EDGE Mo     | de A    | EDGE Mode B | / Mode SRB |
|-------------------------|-------------|---------|-------------|------------|
| Parameter               | 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:



>> Sep, 2014

|                  | SP801                        | 11 Communica | ations      | s Factory | Test S | Set    |     |              |
|------------------|------------------------------|--------------|-------------|-----------|--------|--------|-----|--------------|
| Call Para        |                              | Call         | Conti       | rol       |        |        |     | Call Control |
| Cell Power       |                              |              |             |           |        |        |     | PBCCH flag   |
| -70.00           |                              | Temporary    | Bloc        | ker Flow  |        |        |     | OFF          |
| dBm<br>Cell Band | Uplink — Downlink — Downlink |              |             |           |        | PDTCH  |     |              |
| PGSM             | Channel                      | CS1          | Ch          | annel     |        | CS1    |     | Time Slot    |
| ARFCN            | Win Size                     | 64           | Wi          | n Size    |        | 64     |     | Channel      |
| 20               | PDTCH TSlot                  | 2            | PD          | TCH TSIO  | t      | 1      |     | Coding       |
| Band Indicator   | Name                         |              |             |           | Valu   | le     |     |              |
| 0                | MS TX Level Bur              | st 1         |             |           | 15     | 5      |     | MS TX Level  |
|                  | MS TX Level Bur              | st 2         |             |           | 15     | 5      |     |              |
|                  | MS TX Level Bur              | st 3         |             |           |        |        |     |              |
| Line Loss        | MS TX Level Bur              | st 4         |             |           |        |        |     |              |
|                  | MS TX Level Bur              | st 5         |             |           |        |        |     |              |
|                  |                              |              |             |           |        |        |     |              |
| CW Config        |                              |              |             |           |        |        |     | Return       |
| 511 501118       | PCL: 15                      |              | _           |           |        | GPRS   |     |              |
|                  |                              | Active       | Active Cell |           | PS     | Connec | ted |              |
| 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:

|                    | GPRS / | EDGE    | GPRS / EDGE            |         |  |
|--------------------|--------|---------|------------------------|---------|--|
| Parameter          | 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:



>> Sep, 2014

|                   | SP80     | 11 Communica          | ations Factory        | r Test Set |                |  |  |
|-------------------|----------|-----------------------|-----------------------|------------|----------------|--|--|
| Call Para         |          | Call Control Call Cor |                       |            |                |  |  |
| Cell Power        |          |                       |                       |            | Operating Mode |  |  |
| -70.00            |          | Cel                   | ll Info               |            | Active Cell    |  |  |
| dBm               |          | Cell Pa               | rameters              |            |                |  |  |
| Cell Band<br>PGSM | MCC:     | 460                   | DTX:                  | Disable    | Originate      |  |  |
|                   | MNC:     | 0                     | Paging Mod            | e: Normal  |                |  |  |
| ARFCN 20          | Cell ID: | 0                     | Paging<br>Multiframes | 5          | Start Data     |  |  |
|                   | LAC:     | 2                     | Timing                | 0          |                |  |  |
| Band Indicator    | RAC:     | 2                     | Advance:              | v          | Operation Type |  |  |
| 0                 |          |                       |                       |            | GSM            |  |  |
|                   | NCC:     | 1                     | TMSI: 429             | 4967294    |                |  |  |
|                   | BCC:     | 5                     | IMSI:                 |            | Test Mode      |  |  |
| Line Loss         | Coll Dor |                       | IMEI:                 |            | Mode_A         |  |  |
|                   |          | Off                   | ATT: On               |            |                |  |  |
|                   | 100000.  |                       | ]                     |            | тсн            |  |  |
| CW Config         | PCI: 15  |                       |                       | GSM        | Parameters     |  |  |
|                   | . 02. 10 | Active                | e Cell                |            |                |  |  |
|                   |          |                       |                       | 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     |  |           |            |              | Operating Mode    |  |  |
| -70.00         |  | Cell Info |            |              |                   |  |  |
| dBm            |  | Cell Pa   | rameters   |              |                   |  |  |
| Cell Band      | MCC                                    | 460       |            | Disable      | Originate         |  |  |
| PGSM           | in oo.                                 | 100       | Poging Mod | o. Normal    | Call              |  |  |
|                | MNC:                                   | 0         | Faging Muu | e. Norman    |                   |  |  |
| ARFCN          | Cell ID:                               | 0         | Paging     | 5            | Start Data        |  |  |
| 20             | LAC                                    | 2         | Multirames | •            | ordir D'dita      |  |  |
|                | LAG.                                   | 2         | liming     | 0            | On evention Turne |  |  |
| Band Indicator | RAC:                                   | 2         | Advance:   |              | GSM               |  |  |
| U              | NCC.                                   |           |            | 4407004      | CI SM             |  |  |
|                | NGC.                                   | 1         | TM51: 429  | 4967294      |                   |  |  |
|                | BCC:                                   | 5         | IMSI: 460  | 021004100850 | Test Mode         |  |  |
| Line Loss      | Cell Bar                               |           | IMEI: 355  | 282041215390 | Mode_A            |  |  |
|                | Access:                                | Off       | ATT: On    |              |                   |  |  |
|                | 1                                      |           | ]          |              | TCH               |  |  |
| CW Config      | D01 - 4 E                              |           |            | GSM          | Parameters        |  |  |
|                | PUL: 15                                | Active    | Cell       |              | _                 |  |  |
|                |  |           |            | 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:

|                | SP80     | 11 Communica | ations Factory | r Test Set  |                |  |
|----------------|----------|--------------|----------------|-------------|----------------|--|
| Call Para      |          | Call         | Control        |             | Call Control   |  |
| Cell Power     |          |              |                |             | Operating Mode |  |
| -70.00         |          | Cell Info    |                |             |                |  |
| dBm            |          | Cell Pa      | rameters       |             |                |  |
| Cell Band      |          |              | DTV            | Dischie     | Originate      |  |
| PGSM           | MCC:     | 460          | DIX:           | Disable     | Call           |  |
|                | MNC:     | 0            | Paging Mod     | e: Normal   |                |  |
| ARECN          | Call ID: | 0            | Paging         | F           |                |  |
| 20             | Cell ID. | 0            | Multiframes    | <b>.</b>    | Start Data     |  |
|                | LAC:     | 2            | Timing         | 0           |                |  |
| Band Indicator | RAC      | 2            | Advance:       | v           | Operation Type |  |
| 0              |          | -            |                |             | GPRS           |  |
|                | NCC:     | 1            | TMSI: 429      | 4967294     |                |  |
|                | BCC:     | 5            | IMSI: 460      | 02100410085 | O Test Mode    |  |
| Line Loss      |          | -            | IMEI: 355      | 28204121539 | Mode_A         |  |
|                | Cell Bar | Off          | ATT: On        |             |                |  |
|                | ALLESS.  |              |                |             | тсн            |  |
| CW Config      |          |              |                |             | Parameters     |  |
|                | PCL: 15  | Activ        | Cell           | GPRS        |                |  |
|                |          | Active       |                | 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:

- 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:



>> Sep, 2014

|               | SP8      | 011 Commur | nications Factor | v Test Set    |                |  |
|---------------|----------|------------|------------------|---------------|----------------|--|
| Call Para     |          | С          | all Control      |               | Call Control   |  |
| ell Power     |          |            |                  |               | Operating Mode |  |
| -70.00        |          |            | Cell Info        |               | Active Cell    |  |
| dBm           |          | Cell       | Parameters       |               |                |  |
| ell Band      | MCC      | 460        |                  | Disable       | End Coll       |  |
| PGSM          | MCC.     | 400        | DIA.             | Disable       | End Call       |  |
|               | MNC:     | 0          | Paging Mo        | de: Normal    |                |  |
| ARFCN         | Cell ID: | 0          | Paging           | 5             |                |  |
| 20            | Gen ib.  | v          | Multiframe       | s:            | Start Data     |  |
|               | LAC:     | 2          | Timing           | •             |                |  |
| and Indicator | RAC      | 2          | Advance:         | U             | Operation Type |  |
| 0             | nau.     | 2          |                  |               | GSM            |  |
|               | NCC:     | 1          | TMSI: 42         | 94967294      |                |  |
|               | BCC      | 5          | IMSI: 46         | 0021004100850 | Test Mode      |  |
| Line Loss     | 200.     | Ū          | IMEL 35          | 5282041215390 | Mode_A         |  |
|               | Cell Bar | Off        | 1MILI. 33        | 5262041215550 |                |  |
|               | Access:  |            | All: On          | ATT: On       |                |  |
| CW Config     |          |            |                  |               | TCH            |  |
| off during    | PCL: 15  |            |                  | GSM           | Parameters     |  |
|               |          | AC         | live Gell        | CS Connected  |                |  |
| 1/3           |          | Local      |                  |               | 1/2            |  |

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:



>> Sep, 2014

|                | SP80                     | 11 Communica              | tions Factory                       | r Test Set                                |                     |  |
|----------------|--------------------------|---------------------------|-------------------------------------|---|---------------------|--|
| Call Para      |                          | Call Control Call Control |                                     |   |                     |  |
| Cell Power     |                          |                           |                                     |   | Operating Mode      |  |
| -70.00         |                          | Cel                       | l Info                              |   | Active Cell         |  |
| dBm            |                          | Cell Pa                   | rameters                            |   |                     |  |
| Cell Band PGSM | MCC:                     | 460                       | DTX:                                | Disable                                   | Originate<br>Call   |  |
|                | MNC:                     | 0                         | Paging Mod                          | e: Normal                                 |                     |  |
| ARFCN 20       | Cell ID:                 | 0                         | Paging<br>Multiframes               | 5   | End Data            |  |
|                | LAC:                     | 2                         | Timing                              | 0   |                     |  |
| Band Indicator | RAC:                     | 2                         | Advance:                            |   | Operation Type      |  |
| Line Loss      | NCC:<br>BCC:<br>Cell Bar | 1<br>5                    | TMSI: 429<br>IMSI: 460<br>IMEI: 355 | 4967294<br>0021004100850<br>5282041215390 | Test Mode<br>Mode_A |  |
|                | Access:                  | Οff                       | ATT: On                             |   | TOU                 |  |
| CW Config      |                          |                           |                                     |   | Parameters          |  |
|                | PCL: 15                  | Activo                    | T di dificici 5                     |   |                     |  |
|                |                          | ACTIVE                    | Gen                                 | PS Connected                              |                     |  |
| 1/3            |                          | Local                     |                                     |   | 1/2                 |  |
|                |                          |                           |                                     | U   | 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:



>> Sep, 2014

|                | SP80     | 11 Communica | itions Factory        | Test Set    |                   |  |
|----------------|----------|--------------|-----------------------|-------------|-------------------|--|
| Call Para      |          | Call Control |                       |             |                   |  |
| Cell Power     |          |              |                       |             | Operating Mode    |  |
| -70.00         |          | Cell Info    |                       |             |                   |  |
| dBm            |          | Cell Pa      | rameters              |             |                   |  |
| Cell Band PGSM | MCC:     | 460          | DTX:                  | Disable     | Originate<br>Call |  |
|                | MNC:     | 0            | Paging Mod            | e: Normal   |                   |  |
| ARFCN 20       | Cell ID: | 0            | Paging<br>Multiframes | 5           | Start Data        |  |
| Pandladiates   | LAC:     | 2            | Timing<br>Advance:    | 0           | Operation Type    |  |
| O              | RAC:     | 2            | Advance.              |             | GSM               |  |
|                | NCC:     | 1            | TMSI: 429             | 4967294     |                   |  |
|                | BCC:     | 5            | IMSI: 460             | 02100410085 | 0 Test Mode       |  |
| Line Loss      | Cell Bar | -            | IMEI: 355             | 28204121539 | Mode_A            |  |
|                | Access:  | оп           | ATT: On               |             |                   |  |
| Citi Config    | 1        |              |                       |             | тсн               |  |
| CW Coning      | PCL: 15  | Active       | Cell                  | GSM         | Parameters        |  |
|                |          | Active       | 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:



>> Sep, 2014

|                | SP80                | )11 Communi  | ications Factory      | / Test Set    |                   |  |
|----------------|---------------------|--------------|-----------------------|---------------|-------------------|--|
| Call Para      |                     | Call Control |                       |               |                   |  |
| Cell Power     |                     |              |                       |               | Operating Mode    |  |
| -70.00         |                     | (            | Cell Info             |               | Active Cell       |  |
| dBm            |                     | Cell         | Parameters            |               |                   |  |
| Cell Band PGSM | MCC:                | 460          | DTX:                  | Disable       | Originate<br>Call |  |
|                | MNC:                | 0            | Paging Mod            | le: Normal    |                   |  |
| ARFCN 20       | Cell ID:            | 0            | Paging<br>Multiframes | 5             | Start Data        |  |
|                | LAC:                | 2            | Timing                | 0             |                   |  |
| Band Indicator | RAC:                | 2            | Advance:              | Advance:      |                   |  |
| 0              |                     |              |                       |               | GPRS              |  |
|                | NCC:                | 1            | TMSI: 429             | 94967294      |                   |  |
|                | BCC:                | 5            | IMSI: 460             | 021004100850  | Test Mode         |  |
| Line Loss      |                     |              | IMEI: 355             | 5282041215390 | Mode_A            |  |
|                | Cell Bar<br>Access: | Off          | ATT: On               |               |                   |  |
| CW Config      | 1                   |              | )                     |               | тсн               |  |
| Con Coning     | PCL: 15             | Act          | ive Cell              | GPRS          | Parameters        |  |
|                |                     | -            |                       | Attached      |                   |  |
| 1/3            |                     | Local        |                       |               | 1/2               |  |
| 1              |                     |              |                       |               | 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:



>> Sep, 2014

|                   | SP8      | 011 Communie | cations Factory       | / Test Set |                |  |
|-------------------|----------|--------------|-----------------------|------------|----------------|--|
| Call Para         |          | Call Control |                       |            |                |  |
| Cell Power        |          |              |                       |            | Operating Mode |  |
| -70.00            |          | С            | ell Info              |            | Active Cell    |  |
| dBm               |          | Cell F       | arameters             |            |                |  |
| Cell Band<br>PGSM | MCC:     | 460          | DTX:                  | Disable    | Originate      |  |
|                   | MNC:     | 0            | Paging Mod            | le: Normal | Gall           |  |
| ARFCN 20          | Cell ID: | 0            | Paging<br>Multiframes | 5          | Start Data     |  |
| Rand Indicator    | LAC:     | 2            | Timing<br>Advance:    | 0          | Operation Type |  |
| 0                 | RAC:     | 2            | Advance.              |            | NSFT_CS        |  |
|                   | NCC:     | 1            | TMSI: 429             | 94967294   |                |  |
|                   | BCC:     | 5            | IMSI:                 |            | T est M ode    |  |
| Line Loss         | Cell Bar | Off          | IMEI:<br>ATT: On      |            | Mode_A         |  |
|                   | ACCESS.  |              |                       |            | тсн            |  |
| CW Config         | PCL: 15  |              |                       | NSFT_CS    | Parameters     |  |
|                   |          | Acti         | ve Cell               | 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                             |          |           |                   |           | Operating Mode |  |  |
| -70.00                                 |          | Cell Info |                   |           |                |  |  |
| dBm                                    |          | Cell Pa   | rameters          |           |                |  |  |
| Cell Band                              |          | 400       | DTY.              | Dischla   |                |  |  |
| PGSM                                   | MCC:     | 460       | DIA:              | Disable   | End Call       |  |  |
|  | MNC:     | 0         | Paging Mod        | e: Normal |                |  |  |
| ARFCN                                  | Cell ID: | 0         | Paging            | 5         |                |  |  |
| 20                                     | con ib.  | v         | Multiframes       |           | Start Data     |  |  |
|  | LAC:     | 2         | Timing            | 0         |                |  |  |
| B and Indicator                        | RAC:     | 2         | Advance:          | ·         | Operation Type |  |  |
| 0                                      |          |           |                   |           | NSFT_CS        |  |  |
|  | NCC:     | 1         | TMSI: 429         | 4967294   |                |  |  |
|  | BCC:     | 5         | IMSI:             |           | Test Mode      |  |  |
| Line Loss                              | 0-11 D   |           | IMEI:             |           | Mode_A         |  |  |
|  |          | Off       | ATT: On           |           |                |  |  |
|  | Access.  |           | ]                 |           | ТСН            |  |  |
| CW Config                              |          |           |                   | NOFT 40   | Parameters     |  |  |
|  | PCL: 15  | Active    | Cell              | NSFI_CS   |                |  |  |
|  |          | Hote      | NSFT_CS Connected |           |                |  |  |
| 1/3                                    |          | Local     |                   |           | 1/2            |  |  |
|  |          |           |                   |           |                |  |  |
|  |          |           |                   |           |                |  |  |



#### 1.4.8. The Establishing of SRB Not Call Connection

| SP8011 Communications Factory Test Set |                     |               |                       |           |                                |  |
|--|---------------------|---------------|-----------------------|-----------|--------------------------------|--|
| Call Para                              |                     | Call          | Control               |           | Call Control                   |  |
| Cell Power                             |                     |               |                       |           | Operating Mode                 |  |
| -70.00                                 |                     | Cell Info     |                       |           |                                |  |
| dBm                                    |                     | Cell Pa       | rameters              |           |                                |  |
| Cell Band                              | MCC:                | 460           | DTX:                  | Disable   | Originate                      |  |
| I GJM                                  | MNC:                | 0             | Paging Mod            | e: Normal | Call                           |  |
| ARFCN 20                               | Cell ID:            | 0             | Paging<br>Multiframes | 5         | Start Data                     |  |
|  | LAC:                | 2             | Timing                | 0         |                                |  |
| Band Indicator 0                       | RAC:                | 2             | Advance:              |           | Operation Type <b>NSFT_SRB</b> |  |
|  | NCC:                | 1             | TMSI: 429             | 4967294   |                                |  |
|  | BCC:                | 5             | IMSI:                 |           | Test Mode                      |  |
| Line Loss                              | Cell Bar<br>Access: | Off           | IMEI:<br>ATT: On      |           | Mode_A                         |  |
| CW Config                              |                     |               |                       |           | TCH                            |  |
|  | PCL: 15             | <b>Active</b> | Cell                  | NSFT_SRB  | Parameters                     |  |
|  |                     | Active        | IDLE                  |           |                                |  |
| 1/3                                    |                     | Local         |                       |           | 1/2                            |  |
|  |                     |               |                       |           |                                |  |

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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |                     |         |                       |              |        |                   |  |
|--|---------------------|---------|-----------------------|--------------|--------|-------------------|--|
| Call Para                              |                     | Call    | Control               |              |        | Call Control      |  |
| Cell Power                             |                     |         |                       |              |        | Operating Mode    |  |
| -70.00                                 |                     | Cel     | l Info                |              |        | Active Cell       |  |
| dBm                                    |                     | Cell Pa | rameters              |              |        |                   |  |
| Cell Band PGSM                         | MCC:                | 460     | DTX:                  | Disable      |        | Originate<br>Call |  |
|  | MNC:                | 0       | Paging Mod            | le: Normal   |        |                   |  |
| ARFCN 20                               | Cell ID:            | 0       | Paging<br>Multiframes | 5            |        | End Data          |  |
|  | LAC:                | 2       | Timing                | 0            |        |                   |  |
| Band Indicator                         | RAC:                | 2       | Advance:              | Ū            |        | Operation Type    |  |
|  | NCC:                | 1       | TMSI: 429             | 94967294     |        | _                 |  |
|  | BCC:                | 5       | IMSI:                 |              |        | Test Mode         |  |
| Line Loss                              | Cell Bar<br>Access: | Off     | IMEI:<br>ATT: On      |              |        | Mode_A            |  |
|  | 1                   |         | 1                     |              |        | TCH               |  |
| Gw Conrig                              | PCL: 15             | Active  | Cell                  | NSFT_SR      | B      | Parameters        |  |
|  |                     |         |                       | NSFT_SRB Con | nected |                   |  |
| 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

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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:

| SP8011 Communications Factory Test Set |   |                       |               |           |   |            |  |  |  |
|--|---|-----------------------|---------------|-----------|---|------------|--|--|--|
| Call Para                              |   | Phase Frequency Error |               |           |   |            |  |  |  |
| Cell Power                             |   | · · ·                 |               |           |   |            |  |  |  |
| -70.00                                 |   | Cell Info             |               |           |   |            |  |  |  |
| dBm                                    |   | Cell Pa               | rameters      |           |   |            |  |  |  |
| Cell Band                              |   |                       | DIV           | Disable   | - |            |  |  |  |
| PGSM                                   | MCC:                                      | 460                   | DIX:          | Disable   |   |            |  |  |  |
|  | MNC:                                      | 0                     | Paging Mod    | e: Normal |   |            |  |  |  |
| ARFCN                                  | Cell ID:                                  | 0                     | Paging        | 5         |   |            |  |  |  |
| 20                                     |   |                       | Multiframes   | :         |   |            |  |  |  |
|  | LAC:                                      | 2                     | Timing        |           | _ |            |  |  |  |
| Band Indicator                         | Status                                    | Me                    | asurement Cl  | noice     |   |            |  |  |  |
| 0                                      |   | GS                    | M Bit Error R | tio?      |   | Stop       |  |  |  |
|  |   | GSM                   | FAST Bit Erro | r Ratio   |   |            |  |  |  |
|  |   | Pha                   | se Frequency  | Error     |   |            |  |  |  |
| Line Loss                              |   | (                     | GSM MS Repo   | ort       |   |            |  |  |  |
|  |   | Ou                    | tput RF Spec  | trum      |   |            |  |  |  |
|  |   |                       | Parallel Test | S         | _ |            |  |  |  |
| CW Config                              |   |                       | Power vs Tim  | 1e        | • | Close Menu |  |  |  |
| off offing                             | PCL: 15                                   | Active                | GSM GSM       |           |   |            |  |  |  |
|  |   |                       |               |           |   |            |  |  |  |
| 1/3                                    |   | Local                 |               |           |   |            |  |  |  |
|  | wait to app or MS indicate next operation |                       |               |           |   |            |  |  |  |

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:

|   | SP8011 Communications Factory Test Set |               |           |       |            |               |       |             |
|---|--|---------------|-----------|-------|------------|---------------|-------|-------------|
| Call Para                                 |  | PI            | hase Freq | juend | y Erroi    | r             |       | Para Config |
| Cell Power                                |  |               |           |       |            |               |       |             |
| -70.00                                    | R                                      | RMS Phase Err |           |       |            | eak Phase Err |       | Basic Setup |
| dBm<br>Cell Band                          | Max:                                   | 1.24          | deg       |       | Max:       | 2.87          | deg   | Requirement |
| PGSM                                      | Min:                                   | 1.24          | deg       |       | Min:       | 2.87          | deg   | Spec. Setup |
| ARFCN                                     | Avg:                                   | 1.24          | deg       |       | Avg:       | 2.87          | deg   | ChangeView  |
| 20  | SDEV:                                  | 0.00          | deg       |       | SDEV:      | 0.00          | deg   | Numeric     |
| Band Indicator                            | Name                                   |               |           |       |            | Value         |       | Marker      |
| 0   | Avg Num                                |               |           |       |            | 1             |       | Off         |
|   | Time Out (s                            | ;)            |           |       | 20         |               |       |             |
|   | Trigger Arm                            | n             |           |       | Continuous |               |       | Marker X    |
| Line Loss                                 |  |               |           |       |            |               | 0     |             |
|   |  |               |           |       |            |               |       |             |
|   |  |               |           |       |            |               |       |             |
| CW Config                                 | PCL: 15                                |               | Active    | Cell  |            | GSI           | W     |             |
|   |  |               | ACLING    | 00II  |            | CS Conn       | ected |             |
| 1/3                                       |  | Loca          | I         |       |            |               |       | 1/1         |
| wait to app or MS indicate next operation |  |               |           |       |            |               |       |             |

Figure 2-3 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter   | Parameter Description                        | Parameter<br>Range | Default    | Unit |  |
|-------------|--|--------------------|------------|------|--|
|             | The average number of tests, used to set     | 1 ~ 000            | 1          | None |  |
| Avg Num     | the average number of test results           | 1 999              | T          |      |  |
|             | Timeout, used to set the maximum time        |                    |            |      |  |
| Time Out    | of test on condition that no uplink signal   | 1 ~ 999            | 20         | s    |  |
|             | is received.                                 |                    |            |      |  |
| Triagon Amo | Test trigger, including single test (Single) | Single /           | Continuous | None |  |
| mgger Ann   | and continuous test (Continuous).            | 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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |   |           |             |      |          |              |       |             |
|--|---|-----------|-------------|------|----------|--------------|-------|-------------|
| Call Para                              |   | PI        | nase Freq   | uen  | cy Error |              |       | Para Config |
| Cell Power                             |   |           |             |      |          |              |       | -           |
| -70.00                                 | RMS                                       | Phase Err |             |      | Pe       | ak Phase Err |       | Basic Setup |
| dBm<br>Cell Band                       | Max:                                      | 1.15      | deg         |      | Max:     | 3.39         | deg   | Requirement |
| PGSM                                   | Min:                                      | 1.15      | deg         |      | Min:     | 3.39         | deg   | Spec. Setup |
| ARFCN                                  | Avg:                                      | 1.15      | deg         |      | Avg:     | 3.39         | deg   | ChangeView  |
| 20                                     | SDEV:                                     | 0.00      | deg         |      | SDEV:    | 0.00         | deg   | Numeric     |
| Band Indicator                         | Name                                      |           |             |      |          | Value        |       | Marker      |
| 0                                      | Peak Phase                                | Error     |             |      | 20.00    |              |       | Off         |
|  | <b>RMS Phase E</b>                        | Error     |             |      | 5.00     |              |       |             |
|  | Frequency E                               | rror (ppm | 1)          |      | 0.10     |              |       | Marker X    |
| Line Loss                              |   |           |             |      |          |              |       | 0           |
|  |   |           |             |      |          |              |       |             |
|  |   |           |             |      |          |              |       |             |
| CW Config                              |   |           |             |      |          |              | -     | <u>-</u>    |
|  | PCL: 15                                   |           | Active      | Cell |          | GSI          |       |             |
|  |   |           | CS Connecto |      |          |              | ected |             |
| 1/3                                    |   | Local     |             |      |          |              |       | 1/1         |
|  | 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;

- 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  $0 \sim 147$ , 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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |   |             |        |       |               |     |             |  |
|--|---|-------------|--------|-------|---------------|-----|-------------|--|
| Call Para                              |   | Para Config |        |       |               |     |             |  |
| Cell Power                             |   |             |        |       |               |     |             |  |
| -70.00                                 | RMS F                                     | Phase Err—  |        | Pe    | ak Phase Err- |     | Basic Setup |  |
| dBm<br>Cell Band                       | Max:                                      | 1.17        | deg    | Max:  | 2.83          | deg | Requirement |  |
| PGSM                                   | Min:                                      | 1.17        | deg    | Min:  | 2.83          | deg | Spec. Setup |  |
| ARFCN                                  | Avg:                                      | 1.17        | deg    | Avg:  | 2.83          | deg | ChangeView  |  |
| 20                                     | SDEV:                                     | 0.00        | deg    | SDEV: | 0.00          | deg | Numeric     |  |
| Band Indicator                         |   |             | Fre    | q Err |               |     | Marker      |  |
| 0                                      | Max:                                      | 14.68       | Hz     | Avg:  | 14.68         | Hz  | Off         |  |
|  | Min:                                      | 14.68       | Hz     | SDEV: | 0.00          | Hz  | Marker X    |  |
| Line Loss                              |   |             |        |       |               |     | 0           |  |
|  | Freq Stability                            | : 0.02<br>1 | P      | pm    | PASS          |     |             |  |
| CW Config                              | TOST COUNT.                               |             |        |       |               |     | -           |  |
|  | PCL: 15                                   |             | Active | Cell  | GSM           |     |             |  |
|  |   | _           |        |       | ected         |     |             |  |
| 1/3                                    |   | Local       |        |       |               |     | 1/1         |  |
|  | wait to ann or MS indicate payt operation |             |        |       |               |     |             |  |

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

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

|                  | SP8011 Communications Factory Test Set    |                     |  |  |  |  |  |
|------------------|---|---------------------|--|--|--|--|--|
| Call Para        | Phase Frequency Error                     | Para Config         |  |  |  |  |  |
| Cell Power       | 30  | ſ                   |  |  |  |  |  |
| -70.00           | ିଳି 20                                    | Basic Setup         |  |  |  |  |  |
| dBm<br>Cell Band |   | Requirement         |  |  |  |  |  |
| PGSM             |   | Spec. Setup         |  |  |  |  |  |
| ARFCN 20         | <del>ق <sub>-30</sub> </del>              | ChangeView<br>Graph |  |  |  |  |  |
| Band Indicator   | Marker: —                                 | Marker<br>Off       |  |  |  |  |  |
|                  | 0000010111111101011111111111111111111     | Marker X            |  |  |  |  |  |
|                  |   |                     |  |  |  |  |  |
| CW Config        | PCL: 15 Active Cell GSM                   | _                   |  |  |  |  |  |
|                  | CS Connected                              |                     |  |  |  |  |  |
| 1/3              | Local                                     | 1/1                 |  |  |  |  |  |
|                  | wait to app or MS indicate next operation |                     |  |  |  |  |  |

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:

| SP8011 Communications Factory Test Set |                 |               |         |                       |             |           |               |
|--|-----------------|---------------|---------|-----------------------|-------------|-----------|---------------|
| Call Para                              |                 | Transi        | mit Po  | wer                   |             |           | Para Config   |
| Cell Power                             |                 |               |         |                       |             |           |               |
| -70.00                                 |                 |               |         |                       |             |           | Basic Setup   |
| dBm                                    | Transmitter Pow | ier           |         | stimate Carrier Power |             |           |               |
| Cell Band                              |                 | Burst1 Burst2 |         |                       | Burst1      | Burst2    |               |
| PGSM                                   | Max (dBm):      | 12.68 —       |         | lax (dBm)             | : 12.68     | —         |               |
| ARECN                                  | Min (dBm):      | 12.68 —       |         | lin (dBm)             | 12.68       | _         |               |
| 20                                     | Avg (dBm):      | 12.68 —       | ,       | wg (dBm):             | 12.68       | _         |               |
| Band Indicator                         | Name            |               |         |                       | Value       |           |               |
| 0                                      | Avg Num         |               |         |                       | 1           |           |               |
| ,                                      | Time Out (s)    |               |         |                       | 20          |           |               |
|  | Trigger Arm     |               |         |                       | Continuous  | ;         |               |
| Line Loss                              |                 |               |         |                       |             |           |               |
|  |                 |               |         |                       |             |           |               |
|  |                 |               |         |                       |             |           |               |
| CW Config                              |                 |               |         |                       |             |           |               |
|  | PCL: 15         | Activ         | 0 0 011 |                       | GS          | M         |               |
|  |                 | ACTIV         | e Gell  |                       | CS Con      | nected    |               |
| 1/3                                    |                 | Local         |         |                       |             |           | 1/1           |
|  |                 |               | W       | vait to ap            | op or MS in | ndicate n | ext operation |

Figure 2-7 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description                        | Parameter<br>Range | Default    | Unit |  |
|-------------------|--|--------------------|------------|------|--|
|                   | The average number of tests, used to set     | 1 ~ 000            | 1          | Nono |  |
| Avg Nulli         | the average number of test results           | 1 333              | T          | NOTE |  |
|                   | Timeout, used to set the maximum time        |                    |            |      |  |
| Time Out          | of test on condition that no uplink signal   | 1 ~ 999            | 20         | S    |  |
|                   | is received.                                 |                    |            |      |  |
| Trigger Arm       | Test trigger, including single test (Single) | Single /           | Continuous | Nona |  |
| ingger Arm        | and continuous test (Continuous).            | 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:
|                | SP80            | 11 Con      | nmunica | tions Factory | r Test Set  |        |             |
|----------------|-----------------|-------------|---------|---------------|-------------|--------|-------------|
| Call Para      |                 |             | Transm  | nit Power     |             |        | Para Config |
| Cell Power     |                 |             |         |               |             |        |             |
| -70.00         | -Transmittar Da | wa <b>r</b> |         |               | Frier Dower |        | Basic Setup |
| dBm            | Transmitter Pu  |             |         | EStimate Ca   |             |        |             |
| Cell Band      |                 | Burst1      | Burst2  |               | Burst1      | Burst2 |             |
| PGSM           | Max (dBm):      | 12.66       | —       | Max (dBm      | ): 12.66    | —      |             |
|                |                 |             |         |               |             |        |             |
| ARFCN          | Min (dBm):      | 12.66       | —       | Min (dBm)     | : 12.66     | —      |             |
| 20             |                 |             |         |               | 40.00       |        |             |
|                | AVg (dBm):      | 12.66       | _       | Avg (dBm)     | : 12.66     | _      |             |
| Band Indicator | SDEV (dB):      | 0.00        | _       | SDEV (dB)     | : 0.00      | _      |             |
| 0              |                 |             |         |               |             |        |             |
|                |                 | PASS        | _       |               | PASS        | _      |             |
|                |                 |             |         |               |             |        |             |
| Line Loss      | Test Count-     | 4           |         |               |             |        |             |
|                | Test count.     | -           |         |               |             |        |             |
|                |                 |             |         |               |             |        |             |
| CW Config      | DOL: 4E         |             |         |               | GS          | M      | -           |
|                | PCL: 15         |             | Active  | Cell          |             |        | -           |
|                |                 | -           |         |               | CS Con      | nected |             |
| 1/3            |                 | Local       |         |               |             |        | 1/1         |

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



| tarPoint Be       | eijing StarPoint                            | Technology Co  | mpany Lir  | nited                                 | >> Sep, 2          | 2014 |
|-------------------|---|----------------|------------|---------------------------------------|--------------------|------|
|                   | SP80  | 11 Communicati | ons Factor | v Test Set                            |                    |      |
| Call Para         |   | Power v        | s. Time    |                                       | Para Config        |      |
| Cell Power        | 10 -  |                |            |                                       |                    |      |
| -70.00            |   |                |            |                                       | Basic Setup        |      |
| ,<br>dBm          | -10   |                |            |                                       | Poquirement Source |      |
| Cell Band<br>PGSM | ୁ -20 - · · · · · ·                         |                |            | ·····                                 | ETSI               |      |
| ARFCN             | ₽ -30 - · · · · · · · · · · · · · · · · · · |                |            | · · · · · · · · · · · · · · · · · · · | Marker             |      |
| 20                | <sup>م</sup> -50                            |                |            |                                       | Off                |      |
| Band Indicator    | Name  |                |            | Value                                 | Marker X           |      |
| 0                 | Avg Num                                     |                |            | 1                                     | -30                |      |
| 1                 | Time Out (s)                                |                |            | 20                                    |                    |      |
|                   | Trigger Arm                                 |                |            | Continuous                            | Change View        |      |
| Line Loss         | -   |                |            |                                       | View               |      |
|                   |   |                |            |                                       |                    |      |
| CW Config         | -   |                |            |                                       | Axis               |      |
|                   | PCL: 15                                     | Active (       | ٦٥١١       | GSM                                   | Cuntrul            |      |
|                   |   | Active         | 3611       | CS Connected                          |                    |      |
| 1/3               |   | Local          |            |                                       | 1/1                |      |
|                   |   |                | wait to a  | app or MS indicate                    | next operation     |      |

Figure 2-9 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description                        | Parameter<br>Range | Default    | Unit |  |
|-------------------|--|--------------------|------------|------|--|
|                   | The average number of tests, used to set     | 1 ~ 000            | 1          | Nono |  |
| Avg Nulli         | the average number of test results           | 1 999              | T          | None |  |
|                   | Timeout, used to set the maximum time        |                    |            |      |  |
| Time Out          | of test on condition that no uplink signal   | 1 ~ 999            | 20         | S    |  |
|                   | is received.                                 |                    |            |      |  |
| T: A              | Test trigger, including single test (Single) | Single /           | Continuous | Nono |  |
| inggel Alli       | and continuous test (Continuous).            | 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  $-30 \sim 572$ , 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:



| tarPoint Be    | eijing StarPoint           | ijing StarPoint Technology Company Limited |                          |                    |  |  |  |  |
|----------------|----------------------------|--|--------------------------|--------------------|--|--|--|--|
|                | SP80                       | 11 Communications                          | Factory Test Set         |                    |  |  |  |  |
| Call Para      |                            | Power vs. T                                | ime                      | Para Config        |  |  |  |  |
| Cell Power     | 10 -                       |  |                          |                    |  |  |  |  |
| -70.00         | 0 <b>L L</b>               |  |                          | Basic Setup        |  |  |  |  |
| dBm            | -10 L. [                   |  |                          |                    |  |  |  |  |
| Cell Band      | 20                         |  |                          | Requirement Source |  |  |  |  |
| PGSM           | 8 -20                      |  | :                        | ETSI               |  |  |  |  |
|                | ₽ -30 - L                  |  |                          | · •                |  |  |  |  |
| ARFCN          | ∯ -40 <b>-</b> · · · · · · |  |                          | Marker             |  |  |  |  |
| 20             |                            |  |                          | . Off              |  |  |  |  |
|                | -60                        |  |                          |                    |  |  |  |  |
| Band Indicator | Name                       |  | Value                    | Marker X           |  |  |  |  |
| 0              | View                       |  | Graph                    | -30                |  |  |  |  |
|                | Graph details              |  | Burst1 details           |                    |  |  |  |  |
|                | Burst details              |  | Complete                 | Change View        |  |  |  |  |
| Line Loss      |                            |  |                          | View               |  |  |  |  |
|                |                            |  |                          |                    |  |  |  |  |
|                |                            |  |                          |                    |  |  |  |  |
| CW Config      |                            |  |                          | Axis               |  |  |  |  |
|                | PCL: 15                    |  | GSM                      | Control            |  |  |  |  |
|                |                            | Active Cell                                | CS Connecte              | d                  |  |  |  |  |
| 1/3            |                            | Local                                      |                          | 1/1                |  |  |  |  |
|                | ,                          | · · · ·                                    | vait to app or MS indica | te next operation  |  |  |  |  |

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<br>Name | Parameter Description                | Parameter<br>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:

|                | SP80:                | 11 Communication | s Factory     | / Test     | Set            |                    |
|----------------|----------------------|------------------|---------------|------------|----------------|--------------------|
| Call Para      |                      | Power vs.        | Time          |            |                | Para Config        |
| Cell Power     |                      |                  |               |            |                |                    |
| -70.00         |                      |                  | 0.00          |            |                | <b>Basic Setup</b> |
| dBm            | Entire Mask:         | PASS             | Uffs<br>(us)  | et<br>)    | Level<br>(dBc) |                    |
| Cell Band      | lloper Limit M       | argin            | -28.00        | )0         | -89.566        | Requirement Source |
| PGSM           |                      |                  | -18.00        | 00         | -47.909        | ETSI               |
|                | -0.96 dB             | 138.46 us        | -10.00        | 00         | -11.504        |                    |
| ARFCN          | Lower Limit Ma       | argin            | 0.00          | 00         | -0.076         | Marker             |
| 20             | C .                  |                  | 321.200 -0.01 |            | -0.013         | Off                |
|                | 0.93 dB              | 0.46 us          | 331.20        | 00         | -0.004         |                    |
| Band Indicator | GMSK Tx Powe         | r: 12.69 dBm     | 339.20        | 00         | 0.003          | Marker X           |
| 0              |                      |                  | 349.20        | 00         | -0.001         | -30                |
|                | <b>M</b> ax: 0.03dBc | 49.5 Sym         | 542.80        | 00         | -0.023         |                    |
|                | Min: o ocan.         | 4400             | 552.80        | 00         | -17.190        | Change View        |
| Line Loss      | m1110.06abc          | 14.0 Sym         | 560.80        | <u>)</u> 0 | -98.224        | View               |
|                |                      |                  | 570.80        | )0         | -95.766        |                    |
| CHI Confid     |                      |                  |               |            |                | Axis               |
| Cw Comig       | PCL: 15              |                  | GSM           |            | Control        |                    |
|                |                      | ACTIVE CE        |               | C          | S Connected    |                    |
| 1/3            |                      | Local            |               |            |                | 1/1                |

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

| 基 河 売 点<br>StarPoint | Beijing StarPoint Technology Company Limited | >> Sep, 2014 |
|----------------------|--|--------------|
|                      | SP8011 Communications Factory Test Set       |              |

| Coll Doro       | 51.60.                                   | er communication |                 | Frest Set     |        | Dara Carfir         |
|-----------------|--|------------------|-----------------|---------------|--------|---------------------|
| Gail Para       |  | Output RF        | Spectrum        |               |        | Para Coring         |
| Cell Power      | ā 5 —                                    |                  |                 |               |        |                     |
| -70.00          |  |                  |                 |               |        | Basic Setup         |
| dBm             | ຣິລິ - 25 <b>-</b> · · · · ·             | ·····            |                 |               |        |                     |
| Cell Band       | gi g |                  |                 |               |        | Marker              |
| PGSM            |  |                  |                 |               | -      | Off                 |
|                 | ž -2000-1600                             | -1200 -800 -400  | 0 400 E         | 300 1200 1600 | 2000   |                     |
| ADECN           |  | Frequer          | ncy Offset(kHz) |               |        | Modulation Markor Y |
| AREUN           |  |                  |                 |               |        | 1900                |
| 20              |  |                  |                 |               |        | -1800               |
|                 | ° 20 −                                   |                  |                 |               |        | kHz                 |
| B and Indicator | Name                                     |                  |                 | Value         |        | Switching Marker X  |
| 0               | Modulation Avg                           | Num              |                 | 10            |        | -1800               |
|                 | Switching Avg N                          | um               |                 | 10            |        | kHz                 |
|                 | Time Out (s)                             |                  |                 | 20            |        | Spectrum View       |
| Line Loss       | Trigger Arm                              |                  |                 | Single        |        | Modulation          |
|                 |  |                  |                 |               |        |                     |
|                 |  |                  |                 |               |        | Spectrum View       |
| CW Config       |  |                  |                 |               |        | Switching           |
| Gui Guing       | PCI: 15                                  |                  |                 | GSM           |        |                     |
|                 |  | Active           | Cell            |               |        |                     |
|                 |  |                  |                 | CS Connect    | ted    |                     |
| 1/3             |  | Local            |                 |               |        | 1/2                 |
|                 |  |                  | wait to a       | pp or MS indi | cate n | ext operation       |

Figure 2 14 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter Name     | Parameter Description  | Parameter<br>Range     | Default | Unit |
|--------------------|--|------------------------|---------|------|
| Modulation Avg Num | Modulation spectrum, the<br>average number of tests, used to<br>set the average number of test<br>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<br>(Single) and continuous test<br>(Continuous).                       | Single /<br>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;
- 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;



- 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:

|                  | ijing StarPoint             | Technology Comp   | any Lin   | nited            | >>          | • Sep, 20 |
|------------------|-----------------------------|-------------------|-----------|------------------|-------------|-----------|
|                  | SP80                        | 11 Communications | Factory   | r Test Set       |             |           |
| Call Para        |                             | Output RF Spe     | ctrum     |                  | Para (      | Config    |
| Cell Power       | -<br>-                      |                   |           |                  |             |           |
| -70.00           | MO.                         |                   |           |                  | Basic       | Setup     |
| dBm<br>Cell Band | d dBc) -22                  | <mark> </mark>    |           |                  | Marker      |           |
| PGSM             | <u><u></u> -85 <u> </u></u> |                   |           | 11111            | O1          | ff        |
|                  | ∑ -2000-1600                | -1200 -800 -400 0 | 400 8     | 300 1200 1600 20 | 000         |           |
| ARFCN            |                             | Frequency Of      | fset(kHz) |                  | Modulation  | Marker X  |
| 20               | 5 0 <b></b>                 |                   |           |                  | -18         | 00        |
|                  | å -20                       |                   |           |                  |             | kH2       |
|                  | Name                        |                   |           | Value            | Switching M | larker Y  |
| B and Indicator  |                             |                   |           |                  | -18         | 00        |
| U                | 1200 kHz                    |                   |           |                  |             |           |
|                  | -1200 KH2                   |                   |           | 01               |             | kHz       |
|                  | -600 KHZ                    |                   |           | Un               | Spectrum V  | iew       |
| Line Loss        | -400 KHZ                    |                   |           | UN               | Modul       | lation    |
|                  | O KHZ                       |                   |           | OFF              |             |           |
|                  | 400 kHz                     |                   |           | ON               | Spectrum Vi | iew       |
|                  | 600 kH7                     |                   |           |                  | Switc       | hing      |
| CW Config        | PCL: 15                     | Active Cell       |           | GSM              |             |           |
| CW Config        |                             |                   |           |                  |             |           |
| CW Config        |                             | Active Gen        |           | CS Connected     | d           |           |

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:

| SP8011 Communications Factory Test Set |   |               |                   |              |                |             |  |
|--|---|---------------|-------------------|--------------|----------------|-------------|--|
| Call Para                              |   | о             | utput RF Sp       | ectrum       |                | Para Config |  |
| Cell Power                             | ā 5   |               |                   |              |                | ChangeView  |  |
| -70.00                                 | Powe  |               |                   | $\mathbf{Y}$ |                | Graph       |  |
| dBm<br>Cell Band                       | ation (dBc)   |               |                   |              | -              |             |  |
| PGSM                                   | 17<br>0<br>-85  | <u></u>       | <u>i I I II i</u> |              |                |             |  |
|  | Z − 2000 ·  | -1600 -1200 - | 800 -400 0        | 400 800      | 1200 1600 2000 |             |  |
| ARFCN                                  |   | Chang         | allious           | IISel(KHZ)   | ICount: 10     |             |  |
| 20                                     | ĕ °F  | Granh         | eview             |              |                |             |  |
| Band Indicator<br>O                    | Switching Por 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 200 - 2000 |               |                   |              |                |             |  |
| Line Loss                              |   | Marker        | Marker Diff.      | Center Fre   | q              |             |  |
|  | Modulation<br>Switching   | _             | _                 | 894.0 MHz    | PASS           |             |  |
| CW Config                              | PCL: 15   |               |                   |              | GSM            | -           |  |
|  |   |               | Active Cell       |              | CS Connected   |             |  |
| 1/3                                    |   | Local         |                   |              |                | 2/2         |  |
|  | wait to app or MS indicate next operation   |               |                   |              |                |             |  |

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:

| SP8011 Communications Factory Test Set    |                 |              |         |         |                |               |                |     |             |
|---|-----------------|--------------|---------|---------|----------------|---------------|----------------|-----|-------------|
| Call Para                                 |                 | Οι           | tput    | RF Spe  | ectrum         |               |                |     | Para Config |
| Cell Power                                |                 |              |         |         |                |               |                |     | ChangeView  |
| -70.00                                    |                 |              |         | r       | 0.00           |               |                | _   | M Numeric   |
| dBm                                       | Offset<br>(kHz) | Leve<br>(dBc | :1<br>) |         | Offse<br>(kHz) | t             | Level<br>(dBc) |     |             |
| Cell Band                                 | -1800           | -74          | . 292   |         | 100            |               | -10.           | 800 |             |
| PGSM                                      | -1600           | -72          | . 556   |         | 200            |               | -37.           | 847 |             |
|   | -1400           | -72          | . 452   |         | 250            |               | -41.           | 723 |             |
| ARFCN                                     | -1200           | -71          | . 981   |         | 400            |               | -66.           | 073 |             |
| 20  | -1000           | -70          | . 741   | 1       | 600            |               | -67.           | 790 |             |
|   | -800            | -68          | . 442   | 1       | 800            |               | -68.           | 108 |             |
| Band Indicator                            | -600            | -66          | . 967   | 1       | 1000           |               | -70.           | 490 |             |
| 0   | -400            | -65          | . 157   |         | 1200           |               | -72.           | 454 |             |
|   | -250            | -41          | . 349   |         | 1400           |               | -73.           | 031 |             |
|   | -200            | -39          | . 755   |         | 1600           | .600 -73. 945 |                | 945 |             |
| LineLoss                                  | -100            | -10          | . 258   |         | 1800           |               | -73.           | 717 |             |
|   | Modulation:     | 5.18         | dBm     | 1       |                | F             | PASS           |     |             |
| CW Config                                 | PCL: 15         |              | Activ   | ve Cell |                |               | GSM            |     |             |
|   |                 |              |         |         |                | cs            | S Connect      | ted |             |
| 1/3                                       |                 | Local        |         |         |                |               |                |     | 2/2         |
| wait to app or MS indicate next operation |                 |              |         |         |                |               |                |     |             |

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



>> Sep, 2014

| SP8011 Communications Factory Test Set |   |          |             |           |             |
|--|---|----------|-------------|-----------|-------------|
| Call Para                              |   | Output   | RF Spectrum |           | Para Config |
| Cell Power                             |   |          |             |           | ChangeView  |
| -70.00                                 |   |          |             |           | S Numeric   |
| dBm                                    |   |          |             |           |             |
| Cell Band                              |   |          |             |           |             |
| PGSM                                   |   |          |             |           |             |
|  | Offset                                    | Level    | 0ffs        | et Level  |             |
| ARFCN                                  | (kHz)                                     | (dBm)    | (kH)        | :) (dBm)  |             |
| 20                                     | -1800                                     | -55.863  | 400         | -36.      | 645         |
|  | -1200                                     | -51.303  | 600         | -42.      | 036         |
| Rand Indicator                         | -600                                      | -44. 426 | 1200        | -48.      | 167         |
|  | -400                                      | -43.013  | 1800        | -53.      | 091         |
| Line Loss                              | Quitabia                                  | 40.20    |             | 2100      |             |
|  | Switching:                                | 12.38 dB | m           | PASS      |             |
| CW Config                              |   |          |             |           |             |
|  | PCL: 15                                   | Acti     | vo Coll     | GSM       |             |
| l<br>I                                 |   | ACI      | ve Gen      | CS Connec | ted         |
| 1/3                                    |   | Local    |             |           | 2/2         |
|  | wait to app or MS indicate next operation |          |             |           |             |

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



Figure 2-21 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

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

|                | SP8011 Communications Factory Test Set |              |              |            |             |  |
|----------------|--|--------------|--------------|------------|-------------|--|
| Call Para      |  | Call Control |              |            |             |  |
| Cell Power     |  |              |              |            | PBCCH flag  |  |
| -70.00         |  | Temporary    | Blocker Flow | ,          | OFF         |  |
| dBm            | llnli                                  | nk           | C            | )ownlink   |             |  |
| Cell Band      |  |              |              |            | PDTCH       |  |
| PGSM           | Channel                                | MCS1         | Channel      | MCS1       | Time Slot   |  |
|                |  |              |              |            |             |  |
| ARFCN          | Win Size                               | 64           | Win Size     | 64         | Channel     |  |
| 20             | PDTCH TSIot                            | 2            |              | at 1       | Coding      |  |
| Band Indicator |  | Z            | T DIGIT ISI  | <i>n</i> 1 | MS TX Level |  |
| Line Loss      |  |              |              |            |             |  |
|                | MultiSlot                              | 10           |              |            |             |  |
| CW Config      |  |              |              |            | Return      |  |
|                | PCL: 15                                | EDGE         |              |            |             |  |
|                |  |              | PS Connected |            |             |  |
| 1/3            |  | Local        |              |            |             |  |
|                | UL TBF success                         |              |              |            |             |  |

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:

| SP8011 Communications Factory Test Set |                |           |           |             |                |
|--|----------------|-----------|-----------|-------------|----------------|
| Call Para                              | Call Control   |           |           |             | Call Control   |
| Cell Power                             |                |           |           |             | PBCCH flag     |
| -70.00                                 |                | Temporary | Blocker F | low         | OFF            |
| dBm                                    | Upli           | nk        |           | -Downlink   |                |
| Cell Band                              | -              |           |           |             | PDTCH          |
| PGSM                                   | Channel        | MCS5      | Channe    | I MCS5      | Time Slot      |
| ARFCN                                  | Win Size       | 64        | Win Size  | e 64        | Channel        |
| 20                                     | PDTCH TSlot    | 2         | PDTCH 1   | íSlot 1     | Coding         |
| Band Indicator                         | Name           |           |           | Value       |                |
| 0                                      | Uplink Channel | Coding    |           | MCS5        | MS TX Level    |
|  | Downlink Chann | el Coding |           |             |                |
|  |                |           |           |             |                |
| Line Loss                              |                |           |           |             |                |
|  |                |           |           |             |                |
|  |                |           |           |             |                |
| CW Config                              |                |           |           |             | Return         |
|  | PCL: 15        | Active    | Cell      | EDGE        |                |
|  |                |           |           | PS Connecte | d              |
| 1/3                                    |                | Local     |           |             |                |
|  |                |           |           |             | UL TBF success |

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

| SP8011 Communications Factory Test Set |                |                |      |             |            |     |             |
|--|----------------|----------------|------|-------------|------------|-----|-------------|
| Call Para                              |                | Modulatio      | n Ac | curacy      |            |     | Para Config |
| Cell Power                             |                |                |      |             |            |     |             |
| -70.00                                 |                |                |      |             |            |     | Basic Setup |
| dBm<br>Cell Band                       | AvgPeakEVM:    | 6.04%          | Av   | gFreqErr:   | 32.00 H    | z   |             |
| PGSM                                   | AvgRMSEVM:     | 2.48%          | Fr   | eqStability | y: 0.03579 | ppm |             |
| ARFCN                                  | RMSEVM:        | 2.48%          | Fr   | eqErr:      | 32.00 H    | z   |             |
| 20                                     | 95thEVM:       | 4.11%          | Av   | gOOS(dB):   | : 41.25 d  | в   |             |
| Band Indicator                         | Name           |                |      |             | Value      |     |             |
| 0                                      | Avg Num        |                |      |             | 1          |     |             |
|  | Time Out (s)   |                |      |             | 20         |     |             |
|  | Trigger Arm    |                |      | Co          | ontinuous  |     |             |
| Line Loss                              | IQ Imbalance C | alculate State |      |             | OFF        |     |             |
| 1                                      |                |                |      |             |            |     |             |
| CW Config                              |                |                |      |             |            |     |             |
|  | PCL: 15        | Activo         | Call |             | EDGE       |     |             |
|  |                | ACTIVE         | Gell |             | PS Connect | ted |             |
| 1/3                                    |                | Local          |      |             |            |     | 1/1         |
|  |                |                |      |             |            | UL  | TBF success |

Figure 2-25 Basic Parameters setting interface



Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name                  | Parameter Description   | Parameter<br>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<br>(Single) and continuous test<br>(Continuous).          | Single /<br>Continuous | Continuous | None |
| IQ Imbalance<br>Calculate<br>State | IQ Imbalance Calculate State. Set it<br>as ON if want to do the IQ<br>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

|   | SP8011 Communications Factory Test Set           |                                  |  |   |               |             |
|---|--|----------------------------------|--|---|---------------|-------------|
| Call Para                               |  | Modulatio                        | n Accuracy   |   | Para C        | Config      |
| Cell Power                              |  |                                  |  |   |               |             |
| -70.00                                  |  |                                  |  |   | Basic         | Setup       |
| dBm<br>Cell Band<br>PGSM<br>ARFCN<br>20 | AvgPeakEVM:<br>AvgRMSEVM:<br>RMSEVM:<br>95thEVM: | 5.00%<br>2.49%<br>2.49%<br>3.96% | AvgFreqErr<br>FreqStabili<br>FreqErr:<br>AvgOOS(dE | r: 23.00 H<br>ity: 0.02573<br>23.00 H<br>3): 41.33 di | z<br>ppm<br>z |             |
| Band Indicator<br>O<br>Line Loss        | PeakMagErr:<br>RMSMagErr:<br>Test Count: :       | 4.34%<br>1.51%<br>1              | PeakPhase<br>RMSPhase<br>IQ Imbalan                | :Err: 19.71°<br>Err: 2.70°<br>ce: — dB                |               |             |
| Cw Conng                                | PCL: 15  | Active                           | Cell   | EDGE<br>PS Connect                                    | ed            |             |
| 1/3                                     |  | Local                            |  |   | UL TBF su     | r1<br>ccess |

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:

| SP8011 Communications Factory Test Set |                   |               |           |                     |               |
|--|-------------------|---------------|-----------|---------------------|---------------|
| Call Para                              |                   | GSM Bit Error | Ratio     |                     | Para Config   |
| Cell Power                             |                   |               |           |                     |               |
| -70.00                                 | Measurement Type  | : TypelA      |           |                     | Basic Setup   |
| dBm                                    | BER:              | 0.00%         |           |                     |               |
| Cell Band                              | Bits Error Count: | 0             |           |                     | BER           |
| PGSM                                   |                   |               |           |                     | Parameters    |
|  | Bits Tested:      | 3500          |           |                     |               |
| ARFCN                                  | CRC:              | 0             |           |                     |               |
| 20                                     |                   | · ·           |           | _                   |               |
|  | TimingAdvance     | U TxLevel:    | 1         | .b<br>Value         |               |
| Band Indicator                         | i vane            |               |           | Value               |               |
| 0                                      | Time Out (s)      |               |           | 20                  |               |
|  | Trigger Arm       |               |           | Single              |               |
|  |                   |               |           |                     |               |
| Line Loss                              |                   |               |           |                     |               |
|  |                   |               |           |                     |               |
|  |                   |               |           |                     |               |
| CW Config                              |                   |               |           |                     |               |
|  | PCL: 15           | Active Cell   |           | GSM                 |               |
|  |                   |               |           | CS Connected        |               |
| 1/3                                    |                   | Local         |           |                     | 1/1           |
|  | ,                 |               | vait to a | pp or MS indicate n | ext operation |

Figure 2-27 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>Range | Default | Unit |
|-------------------|---|--------------------|---------|------|
| Time Out          | Timeout, used to set the maximum time of test on condition that no uplink signal is | 1 ~ 999            | 20      | S    |
|                   | received.   |                    |         |      |
| Trigger Arm       | Test trigger, including single test (Single)  | Single /           | Single  | None |
| 20                | and continuous test (Continuous).   | Continuous         | 0       |      |

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:



>> Sep, 2014

| 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                              | Bits Error Count:   |            | 0          |       |              | BER         |
| PGSM                                   |   |            |            |       |              | Parameters  |
|  | Bits Tested:  |            | 10000      |       |              |             |
| ARFCN                                  |   |            |            |       |              |             |
| 20                                     | CRC:  |            | 0          |       |              |             |
|  | TimingAdvance   | 0          | TxLevel:   | 1     | 5            | _           |
| Band Indicator                         | Name  |            |            |       | Value        |             |
| 0                                      | Measurement Ty  | pe         |            |       | TypelA       |             |
| 1                                      | Close Loop Signa  | aling Dela | iy 🛛       |       | 500.00       |             |
|  | Number of Bits  |            |            |       | 10000        |             |
| Line Loss                              | Requirement(e-4   | 9          |            |       | 10.00        |             |
|  | Source Type   |            |            |       | PN 15        |             |
|  |   |            |            |       |              |             |
| CW Config                              |   |            |            |       |              |             |
| Coo Coning                             | PCL: 15   |            |            |       | GSM          |             |
|  |   | A          | ctive Cell |       | CS Connected |             |
| 1/3                                    |   | Local      |            |       |              | 1/1         |
|  | wait to and a stability of the state of the |            |            |       |              |             |

Figure 2 28 BER Parameters setting interface

Explanations of BER Parameters are as follows:

| Parameter Name   | Parameter Range                     | Parameter Range Default |      |  |  |  |
|------------------|-------------------------------------|-------------------------|------|--|--|--|
|                  | TYPEIA / TYPEII / TYPEIB /          |                         |      |  |  |  |
| Measurement Type | Residual TYPEIA / Residual TYPEII / | Residual TYPEIA         | None |  |  |  |
|                  | Residual TYPEIB                     |                         |      |  |  |  |
| Close Loop       | 0.00 ~ 5.000.00                     | F00.00                  |      |  |  |  |
| 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

| 星 河 亮 点<br><b>StarPoint</b> Be | eijing StarPoint   | Techno             | ology Company Lin                                | nited                   | >> Sep, 2         | 2014 |
|--------------------------------|--|--------------------|--|-------------------------|-------------------|------|
|                                | SP80:  | L1 Com             | munications Factory                              | / Test Set              |                   |      |
| Call Para                      |  | G                  | SM Bit Error Ratio                               |                         | Para Config       |      |
| Cell Power                     |  |                    |  |                         |                   |      |
| -70.00                         | Measurement Type   | :                  | TypeIA   |                         | Basic Setup       |      |
| dBm                            | BER:   |                    | 0.00%  |                         |                   |      |
| Cell Band<br>PGSM              | Bits Error Count:  |                    | 0  |                         | BER<br>Parameters |      |
| ARFCN 20                       | Bits Tested:<br>CRC:   |                    | 10000<br>0                                       |                         |                   |      |
| Band Indieator                 | TimingAdvance<br>RX Level (full):<br>RX Level (sub):<br>RX Quality (full): | 0<br>39<br>39<br>0 | TxLevel: 1<br>-72 dBm ~<br>-72 dBm ~<br>BER<0.2% | 5<br>-71 dBm<br>-71 dBm |                   |      |
| Line Loss                      | RX Quality (sub):  | 0                  | BER<0.2%   | PASS                    |                   |      |
| CW Config                      | PCL: 15  |                    | Active Cell                                      | GSM<br>CS Connected     | _                 |      |
| 1/3                            |  | Local              |  |                         | 1/1               |      |
|                                |  |                    | wait to a  | pp or MS indicate n     | ext 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



>> Sep, 2014

|                | SP801            | 1 Communication | s Factory | / Test Set          |               |
|----------------|------------------|-----------------|-----------|---------------------|---------------|
| Call Para      |                  | GSM MS Re       | port      |                     | Para Config   |
| Cell Power     |                  |                 |           |                     |               |
| -70.00         | Timin & Advance  |                 |           |                     | Basic Setup   |
| dBm            | Timing Advanc    | e: V            |           |                     |               |
| Cell Band      | TX Level:        | 15              |           |                     | MCBapart      |
| PGSM           |                  |                 |           |                     | Parameters    |
|                | RX Level (full): | 39              | -72 (     | dBm ~ -71 dBm       | r arameters   |
| ARFCN          |                  |                 | 70        | 10- 74 10-          |               |
| 20             | RX Level (sub):  | 39              | -72 (     | aßw ~-11 aßw        |               |
|                |                  |                 |           | -0.00/              |               |
| Band Indicator | Name             |                 |           | Value               |               |
| 0              | Time Out (s)     |                 |           | 20                  |               |
| 1              | Trigger Arm      |                 |           | Single              |               |
|                |                  |                 |           |                     |               |
| Line Loss      |                  |                 |           |                     |               |
|                |                  |                 |           |                     |               |
|                |                  |                 |           |                     |               |
| CW Config      |                  |                 |           |                     |               |
|                | PCL: 15          | Active Cell     |           | GSM                 |               |
|                |                  | Active Gen      |           | CS Connected        |               |
| 1/3            |                  | Local           |           |                     | 1/1           |
|                |                  | 1               | wait to a | pp or MS indicate n | ext operation |

Figure 2-30 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>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 /<br>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

|                | SP8011             | Communicatio | ns Factory | r Test Set    |             |
|----------------|--------------------|--------------|------------|---------------|-------------|
| Call Para      |                    | GSM MS F     | Report     |               | Para Config |
| Cell Power     |                    |              |            |               | _           |
| -70.00         | Timing Advance:    | 0            |            |               | Basic Setup |
| dBm            |                    |              |            |               |             |
| Cell Band      | TX Level:          | 15           |            |               | MSReport    |
| PGSM           | RX Level (full):   | 39           | -72 (      | 18m ~ -71 dBm | Parameters  |
| ARFCN          | RX Level (sub):    | 39           | -72 (      | 18m ~ -71 d8m |             |
| 20             |                    |              |            |               |             |
| Band Indicator | RX Quality (full): | 0            | BER        | ¢0.2%         |             |
| 0              | RX Quality (sub):  | 0            | BER        | ¢0.2%         |             |
|                | Test Count:        | 4            |            |               |             |
| Line Loss      |                    |              |            |               |             |
| CW Config      |                    |              |            |               | _           |
| of oning       | PCL: 15            | Active Ce    | ell        | GSM           |             |
|                |                    |              |            | CS Connected  |             |

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



>> Sep, 2014

|                | SP80:        | 11 Communication | ns Factory | / Test Set   |             |
|----------------|--------------|------------------|------------|--------------|-------------|
| Call Para      |              | GPRS Block E     | ror Ratio  |              | Para Config |
| Cell Power     |              |                  |            |              | _           |
| -70.00         |              |                  |            |              | Basic Setup |
| dBm            | GPRS BI      | LER: 0.00        | %          |              |             |
| Cell Band      |              |                  |            |              | BLER        |
| PGSM           | Missing      | Diaska, A        |            |              | Parameters  |
|                | MISSING      | DIUCKS: V        |            |              |             |
| ARFCN          |              |                  |            |              |             |
| 20             | Block Fu     | rror Count:      |            |              |             |
|                | BIUCK EI     |                  |            |              | ,           |
| Band Indicator | Name         |                  |            | Value        |             |
| 0              | Time Out (s) |                  |            | 20           |             |
|                | Trigger Arm  |                  |            | Single       |             |
|                |              |                  |            |              |             |
| Line Loss      |              |                  |            |              |             |
|                |              |                  |            |              |             |
|                |              |                  |            |              |             |
| CW Config      |              |                  |            |              | <u> </u>    |
|                | PCL: 15      |                  |            | GPRS         |             |
|                |              | Active Ce        |            | PS Connected |             |
|                |              |                  |            |              |             |
| 4 (2           |              |                  |            |              |             |
| 1/3            |              | LUCAI            |            |              | 1/1         |

Figure 2 32 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>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 /<br>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:



>> Sep, 2014

|                        | 5P801           | 1 Communication | is factory test set     |             |
|------------------------|-----------------|-----------------|-------------------------|-------------|
| Call Para              |                 | GPRS Block Er   | ror Ratio               | Para Config |
| Cell Power             |                 |                 |                         |             |
| -70.00                 |                 |                 |                         | Basic Setup |
| dBm                    | GPRS BL         | ER: 0.00        | %                       |             |
| Cell Band              |                 |                 |                         | BLER        |
| PGSM                   | Missing         |                 |                         | Parameters  |
|                        | MISSING         | SIUCKS: U       |                         |             |
| ARFCN                  |                 |                 |                         |             |
| 20                     | Block Er        | ror Count: 0    |                         |             |
|                        |                 | -               |                         | <b>-</b>    |
| Band Indicator         | Name            |                 | value                   |             |
| 0                      | Requirement(e-1 | )               | 0.10                    |             |
|                        | Number of Block | S               | 500                     |             |
|                        | Source Type     |                 | PN 15                   |             |
|                        |                 |                 |                         |             |
| Line Loss              |                 |                 |                         |             |
| Line Loss<br>CW Config | PCL: 15         | A shine 2 st    | GPRS                    |             |
| Line Loss              | PCL: 15         | Active Ce       | II GPRS<br>PS Connected |             |
| Line Loss<br>CW Config | PCL: 15         | Active Ce       | II GPRS<br>PS Connected | 1/1         |

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

|                | SP801:    | L Commu   | nications Fact | orv Test Set   |             |
|----------------|-----------|-----------|----------------|----------------|-------------|
| Call Para      |           | GPRS I    | Block Error Ra | itio           | Para Config |
| Cell Power     |           |           |                |                | _           |
| -70.00         |           |           |                |                | Basic Setup |
| dBm            | GPRS BLE  | R:        | 0.00%          |                |             |
| Cell Band      |           |           |                |                | BLER        |
| PGSM           | Missier   |           | •              |                | Parameters  |
|                | MISSING B | IOCKS:    | U              |                |             |
| ARFCN          |           |           |                |                |             |
| 20             | Block Err | or Count: |                |                |             |
|                |           |           | Ū              |                |             |
| Band Indicator |           |           |                |                |             |
| U              | Block Tes | ted:      | 504            |                |             |
|                |           |           |                |                |             |
|                |           |           |                | <b>D</b> 1 0 0 |             |
| Line Loss      |           |           |                | PASS           |             |
|                |           |           |                |                |             |
| CW Config      |           |           |                |                | _           |
|                | PCL: 15   | ۵.        | ctive Cell     | GPRS           |             |
|                |           |           |                | PS Connected   |             |
| 1/3            |           | acal      |                |                | 1/1         |

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



>> Sep, 2014

| Call Para   |   | GPF                      | RS&EDGE MS          | Report      |              | Para Config |
|---|---|--------------------------|---------------------|-------------|--------------|-------------|
| Cell Power<br>-70.00<br>dBm<br>Cell Band<br>PGSM<br>ARFCN | C Value:<br>Signal Variance:<br>Variation Coeffici<br>I | 39<br>O<br>ent:<br>Level | RX Q<br>(GMSK)<br>— | (8PSK)<br>— | 0            | Basic Setup |
| 20  | TimeSlot 0: (   | )                        |                     |             |              |             |
| Band Indicator  | Name  | 1                        |                     |             | Value        |             |
| 0   | Time Out (s)  |                          |                     |             | 20           |             |
|   | Trigger Arm   |                          |                     |             | Single       |             |
| Line Loss   |   |                          |                     |             |              |             |
| CW Config   | PCL: 15   |                          | Active Cell         |             | GPRS         |             |
|   |   | -                        | ACTIVE GET          |             | PS Connected |             |
| 4 (2  |   | Local                    |                     |             |              | 4.74        |

Figure 2-35 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>Range     | Default | Unit |
|-------------------|---|------------------------|---------|------|
| Time Out          | Timeout, used to set the maximum<br>time of test on condition that no<br>uplink signal is received. | 1 ~ 999                | 20      | S    |
| Trigger Arm       | Test trigger, including single test<br>(Single) and continuous test<br>(Continuous).                | Single /<br>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



>> Sep, 2014

| Call Para                  |                                       | GPR        | S&EDGE MS   | Report      |              | Para Config |
|----------------------------|---------------------------------------|------------|-------------|-------------|--------------|-------------|
| Cell Power                 | C Value:                              | 39         | RX Q        | ual:        | 0            | Davis Catur |
| -70.00<br>dBm<br>Cell Band | Signal Variance:<br>Variation Coeffic | O<br>ient: | (GMSK)<br>— | (8PSK)<br>— |              | Basic Setup |
| PGSM                       |                                       |            |             |             |              |             |
| RFCN                       |                                       | I Level    |             |             |              |             |
| 20                         | TimeSlot 0:                           | 0          |             |             |              |             |
| and Indicator              | TimeSlot 1:<br>TimeSlot 2:            | 0<br>0     |             |             |              |             |
| 0                          | TimeSlot 3:                           | 1          |             |             |              |             |
|                            | TimeSlot 4:                           | 1          |             |             |              |             |
| Line Loss                  | Timeslot 6:                           | 1          |             |             |              |             |
|                            | TimeSlot 7:                           | 0          |             |             |              |             |
| CW Config                  | PCL: 15                               |            |             |             | GPRS         | _           |
|                            |                                       |            | ACTIVE CEII |             | PS Connected |             |
| 1/3                        |                                       | Local      |             |             |              | 1/1         |

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

| Call Para            |                |           | GPRS | S&EDGE MS   | Report |    |           | Para Config |
|----------------------|----------------|-----------|------|-------------|--------|----|-----------|-------------|
| Cell Power<br>-70.00 | C Value:       | 4         | 0    | RX Q        | ual:   |    | 0         | Basic Setup |
| dBm                  | Signal Varian  | ce: —     |      | (GMSK)      | (8PSK) |    |           |             |
| Cell Band            | Variation Coef | fficient: |      | 0           | 7      |    |           |             |
| PGSM                 | Mean BEP:      |           |      | 0           | 31     |    |           |             |
| ARFCN                |                | I Leve    | el   | GMSK BEP    | 8PSK B | EP |           |             |
| 20                   | TimeSlot 0:    | 0         |      | 0           | 0      |    |           |             |
|                      | TimeSlot 1:    | 0         |      | 0           | 0      |    |           |             |
| Band Indicator       | TimeSlot 2:    | 0         |      | 0           | 0      |    |           |             |
| 0                    | TimeSlot 3:    | 0         |      | 0           | 15     |    |           |             |
|                      | TimeSlot 4:    | 1         |      | 0           | 0      |    |           |             |
|                      | TimeSlot 5:    | 1         |      | 0           | 0      |    |           |             |
| Line Loss            | TimeSlot 6:    | 1         |      | 0           | 0      |    |           |             |
|                      | TimeSlot 7:    | 0         |      | 0           | 0      |    |           |             |
| CW Config            |                |           |      |             |        |    | 50.05     | _           |
|                      | PCL: 15        |           |      | Active Cell |        |    | EDGE      |             |
|                      |                |           |      | Home den    |        | PS | Connected |             |
| 1/3                  |                | L         | ocal |             |        |    |           | 1/1         |



## 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:

|                  | SP80                 | 011 Comm               | unications Fact | ory Test Set |             |                   |
|------------------|----------------------|------------------------|-----------------|--------------|-------------|-------------------|
| Call Para        | EDGE Bit Error Ratio |                        |                 |              | Para Config |                   |
| Cell Power       |                      |                        |                 |              |             |                   |
| -70.00           |                      |                        |                 |              |             | Basic Setup       |
| dBm<br>Cell Band | BER:                 |                        | 0.00%           |              |             |                   |
| PGSM             | Bits Fr              | ror Count <sup>.</sup> | 0               |              |             | BER<br>Parameters |
| ARFCN            | Ditt Li              | or obuint.             | · ·             |              |             |                   |
| 20               | Bits Te              | sted:                  | 11072           |              |             |                   |
| Band Indicator   | Name                 |                        |                 | Value        |             |                   |
| 0                | Time Out (s)         |                        |                 | 20           |             |                   |
|                  | Trigger Arm          |                        |                 | Single       |             |                   |
| Line Loss        |                      |                        |                 |              |             |                   |
| CW Config        |                      |                        |                 |              |             |                   |
|                  | PCL: 15              |                        | Active Cell     | ED           | GE          |                   |
|                  |                      | -                      |                 | PS Con       | nected      |                   |
| 1/3              |                      | Local                  |                 |              |             | 1/1               |
|                  |                      |                        |                 |              | U           | L TBF success     |

Figure 2-38 Basic parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description                        | Parameter<br>Range | Default | Unit |
|-------------------|--|--------------------|---------|------|
|                   | Timeout, used to set the maximum time of     |                    |         |      |
| Time Out          | test on condition that no uplink signal is   | 1 ~ 999            | 20      | S    |
|                   | received.                                    |                    |         |      |
| Triggor Arm       | Test trigger, including single test (Single) | Single /           | Singlo  | Nono |
|                   | and continuous test (Continuous).            | 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:



>> Sep, 2014

| Call Para       |                  |                |              | Para Confid       |
|-----------------|------------------|----------------|--------------|-------------------|
| Gairrara        |                  | EDGE BIT Error | Ratio        | i ara comis       |
| -70.00          |                  |                |              | Basic Setup       |
| dBm<br>ell Band | BER:             | 0.0            | 0%           |                   |
| PGSM            | Bits Error       | Count: 0       |              | BER<br>Parameters |
| ARFCN           |                  |                |              |                   |
| 20              | Bits Teste       | d: 11          | 072          |                   |
| and Indicator   | Name             |                | Value        |                   |
| 0               | Requirement(e-4) |                | 10.00        |                   |
|                 | Number of Bits   |                | 10000        |                   |
|                 | Source Type      |                | PN 15        |                   |
| Line Loss       |                  |                |              |                   |
| CW Config       | DCI. 15          |                | EDGE         |                   |
|                 | FUL 10           | Active Cell    | PS Connected |                   |
|                 |                  |                |              |                   |

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

|                   | SP8             | 011 Communications Facto | ory Test Set |             |  |  |  |
|-------------------|-----------------|--------------------------|--------------|-------------|--|--|--|
| Call Para         |                 | EDGE Bit Error Ratio     | 5            | Para Config |  |  |  |
| -70.00            |                 |                          |              | Basic Setup |  |  |  |
| Cell Band<br>PGSM | BER:<br>Bits Er | BER: 0.00%               |              |             |  |  |  |
| ARFCN 20          | Bits Te         | sted: 11072              |              |             |  |  |  |
| Band Indicator    |                 |                          |              |             |  |  |  |
| 0                 |                 |                          |              |             |  |  |  |
| Line Loss         |                 |                          | PASS         |             |  |  |  |
| CW Config         | PCL: 15         |                          | EDGE         |             |  |  |  |
|                   |                 | Active Cell              | PS Connected |             |  |  |  |
| 1.00              |                 |                          |              | 4.44        |  |  |  |

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



>> Sep, 2014

| SP8011 Communications Factory Test Set |                     |                 |        |            |             |  |
|--|---------------------|-----------------|--------|------------|-------------|--|
| Call Para                              | Frequency Calibrate |                 |        |            | Para Config |  |
| Cell Power                             |                     |                 |        |            |             |  |
| -70.00                                 |                     |                 |        |            | Basic Setup |  |
| dBm<br>Cell Band                       | Cente<br>Frequ      | er 89<br>iency: | 400000 | 0 Hz       |             |  |
| PGSM                                   | Frequ<br>Offset     | iency —3<br>t:  | .00 Hz |            |             |  |
| ARFCN                                  |                     |                 |        |            |             |  |
| 20                                     | Devia<br>Offset     | tion O.<br>t:   | 00     |            |             |  |
| Band Indicator                         | Name                |                 |        | Value      |             |  |
| 0                                      | Avg Num             |                 |        | 1          |             |  |
| 1                                      | Average Mode        |                 |        | REPEAT     |             |  |
|  | Trigger Arm         |                 |        | Continuous |             |  |
| Line Loss                              |                     |                 |        |            |             |  |
| 1                                      |                     |                 |        |            |             |  |
|  |                     |                 |        |            |             |  |
| CW Config                              |                     |                 |        | 6CH        |             |  |
|  | PCL: 15             | GSM Analys      | е      | GSM        |             |  |
| 1/3                                    |                     | Local           | _      |            | 1/1         |  |
| -/ -                                   |                     | Local           |        |            | 1/1         |  |

Figure 2-41 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description  | Parameter<br>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 /<br>EXP        | REPEAT     | Nonr |
| Trigger Arm       | Test trigger, including single test<br>(Single) and continuous test<br>(Continuous). | Single /<br>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

|                   | SP801           | L1 Commu   | nications Factory | r Test Set |             |
|-------------------|-----------------|------------|-------------------|------------|-------------|
| Call Para         |                 | Frequ      | iency Calibrate   |            | Para Config |
| ell Power         |                 | · · ·      |                   |            |             |
| -70.00            |                 |            |                   |            | Basic Setup |
| dB m<br>ell B and | Cente<br>Frequ  | r<br>ency: | 89400000          | ) Hz       |             |
| PGSM              | Frequ<br>Offset | ency<br>:  | -9.00 Hz          |            |             |
| RECN              |                 |            |                   |            |             |
| 20                | Devia<br>Offset | tion<br>:: | 0.00              |            |             |
| and Indicator     |                 |            |                   |            |             |
| 0                 | Test            | ount:      | 1                 |            |             |
|                   |                 |            |                   |            |             |
| 2                 |                 |            |                   |            |             |
| CW Config         |                 |            |                   | CS M       |             |
|                   | PCL: 15         | GS         | Analyse           | 33m        |             |
| 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



| N Config | PCL: 15 | GSM Analyse | GSM |     |
|----------|---------|-------------|-----|-----|
| 1/3      |         | Local       |     | 1/1 |
|          | ,       |             |     |     |

Figure 2-43 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

C

| Parameter<br>Name | Parameter Description   | Parameter<br>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 /<br>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  $0 \sim N-1$ , 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



>> Sep, 2014

| SP8011 Communications Factory Test Set |                |                |           |             |             |  |
|--|----------------|----------------|-----------|-------------|-------------|--|
| Call Para                              |                | EPSK Frequence | y Calibra | te          | Para Config |  |
| Cell Power                             |                |                |           |             |             |  |
| -70.00                                 |                |                |           |             | Basic Setup |  |
| dBm                                    | Cente<br>Frequ | er 8<br>Jency: | 9400000   | 0 Hz        |             |  |
| Cell Band                              |                | -              |           |             |             |  |
| PGSM                                   | Frequ          | ency –         | 9.00 Hz   |             |             |  |
|  | Offset         | t:             |           |             |             |  |
| ARFCN                                  |                | _              |           |             |             |  |
| 20                                     | Devia          | tion ()<br>-   | . 00      |             |             |  |
|  | 0136           |                |           |             |             |  |
| Band Indicator                         | Name           |                |           | Value       |             |  |
| 0                                      | Avg Num        |                |           | 1           |             |  |
|  | Trigger Arm    |                |           | Continuous  |             |  |
|  |                |                |           |             |             |  |
| Line Loss                              |                |                |           |             |             |  |
|  |                |                |           |             |             |  |
|  |                |                |           |             |             |  |
| CW Config                              |                |                |           |             |             |  |
|  | PCL: 15        | GSM Anal       | 190       | GSM         |             |  |
|  |                | GJM Allal      | ,         |             |             |  |
| 1/3                                    |                | Local          |           |             | 1/1         |  |
|  | ,              |                |           | , , , , , , | ,           |  |

Figure 2-45 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description  | Parameter<br>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<br>(Single) and continuous test<br>(Continuous). | Single /<br>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

|                  | SP80:           | 11 Commu     | nications Factor | v Test Set |             |
|------------------|-----------------|--------------|------------------|------------|-------------|
| Call Para        |                 | EPSK Fr      | equency Calibra  | te         | Para Config |
| Cell Power       |                 |              |                  |            |             |
| -70.00           |                 |              |                  |            | Basic Setup |
| dBm<br>Cell Band | Cente<br>Frequ  | er<br>Iency: | 89400000         | 0 Hz       |             |
| PGSM             | Frequ<br>Offsel | iency<br>t:  | -6.00 Hz         |            |             |
| ARFCN            |                 |              |                  |            |             |
| 20               | Devia<br>Offsel | tion<br>t:   | 0.00             |            |             |
| 3 and Indicator  |                 |              |                  |            |             |
| 0                | lest            | COUNT:       | 1                |            |             |
| Line Loss        |                 |              |                  |            |             |
|                  |                 |              |                  |            |             |
| CW Config        | PCL: 15         | GSI          | M Analyse        | GSM        |             |
| Line Loss        |                 |              |                  |            |             |
|                  | PCL: 15         | GSI          | M Analyse        | GSM        |             |

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

| Be             | eijing StarPoint   | Technology Com          | bany Lim  | ited       | >> Sep, 2   |
|----------------|--------------------|-------------------------|-----------|------------|-------------|
|                | SP80               | 11 Communication        | s Factory | Test Set   |             |
| Call Para      |                    | EPSK Power C:           | alibrate  |            | Para Config |
| Cell Power     | 30                 |                         |           |            |             |
| -70.00         | 25                 |                         |           |            | Basic Setup |
| dBm            | 20 E               |                         |           |            |             |
| Cell Band      | Ê 15               |                         |           |            | N           |
| PGSM           | <sup>BD</sup> 10 E |                         |           |            | 200         |
|                | 5                  |                         |           |            |             |
| ARFCN          | G 0                |                         |           |            |             |
| 20             | -5                 |                         |           |            | Y Range     |
|                | -10                | <u>    i     i    i</u> |           |            |             |
| Band Indicator | Name               |                         |           | Value      | Marker      |
| 0              | Time Out (s)       |                         |           | 20         | Off         |
|                | Trigger Arm        |                         | C         | Continuous |             |
|                |                    |                         |           |            | Marker X    |
| Line Loss      |                    |                         |           |            | 0           |
| 2000           |                    |                         |           |            |             |
|                |                    |                         |           |            |             |
| CW Config      |                    |                         |           |            | -           |
|                | PCL: 15            |                         |           | GSM        |             |
|                |                    | GSM Analys              | e         |            |             |
| 1/3            |                    |                         |           |            | 1/1         |
| 1/ 3           |                    | LUCAI                   |           |            | 1/1         |

Figure 2-47 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>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 /<br>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:

|                | SP80:                     | 11 Communication | s Factory | Test Set |             |
|----------------|---------------------------|------------------|-----------|----------|-------------|
| Call Para      |                           | EPSK Power C     | alibrate  |          | Para Config |
| Cell Power     | 20                        |                  |           |          |             |
| -70.00         | 25                        |                  |           |          | Basic Setu  |
| ,<br>dBm       | 20                        |                  |           | -        |             |
| Cell Band      | Ê 15                      |                  |           | E        | N           |
| PGSM           | <sup>BD</sup> 10 <b>E</b> |                  |           |          | 200         |
| 1              | a 5                       |                  |           |          |             |
| ARECN          | ۹ <sub>0</sub>            |                  |           | -        |             |
| 20             | -5                        |                  |           |          | Y Range     |
|                | -10                       | ii               |           |          |             |
| Band Indicator | Name                      |                  |           | Value    | Marker      |
| 0              | Y Range Bottom            |                  |           | -10      | Off         |
|                | Y Range Top               |                  |           | 30       |             |
|                | Y Range Step              |                  |           | 5        | Marker X    |
| Line Loss      |                           |                  |           |          | 0           |
| 1              |                           |                  |           |          |             |
|                |                           |                  |           |          |             |
| CW Config      |                           |                  |           |          |             |
|                | PCL: 15                   | GSM Analy        | e e       | GSM      |             |
|                |                           | aoin Analy.      |           |          |             |

Figure 2-48 Range of Y setting interface

Explanations of range of Y are as follows:

| Parameter<br>Name | Parameter Description                | Parameter<br>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


>> Sep, 2014

|  | 560                         | ri commu    | incations raci                     | UTV Test Set |   |  |
|--|-----------------------------|-------------|------------------------------------|--------------|---|--|
| Call Para  |                             | Para Config |                                    |              |   |  |
| Cell Power<br>-70.00<br>dBm<br>Cell Band<br>PGSM | Peak Power 89<br>Frequency: |             | eak Power 894000000 Hz<br>equency: |              |   |  |
| RFCN<br>20                                       | Peak                        | Power:      | -0.69 d                            | 1Bm          | _ |  |
| and Indicator                                    | Name                        |             |                                    | Value        |   |  |
| 0  | Time Out (s)                |             |                                    | 20           |   |  |
|  | Trigger Arm                 |             |                                    | Continuous   | _ |  |
| Line Loss  |                             |             |                                    |              |   |  |
| CW Config  | PCL: 15                     |             | cw                                 | GSM          |   |  |
|  |                             |             |                                    |              |   |  |

Figure 2-50 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>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         | 8    |
| Trigger Arm       | Test trigger, including single test (Single) and continuous test (Continuous).                | Single /<br>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:

| Call Para     Continuous Wave     Para Config       Cell Power     Basic Setup       dBm     Peak Power     894000000 Hz       Cell Band     Frequency:     894000000 Hz       PGSM     Peak Power:     -57.16 dBm       Vareov     Peak Power:     -57.16 dBm       Line Loss     PCL: 15     CW |                   | SP80        | )11 Commur         | nications Factor | v Test Set |             |
|---|-------------------|-------------|--------------------|------------------|------------|-------------|
| Cell Power       Basic Setup         dBm       Peak Power       894000000 Hz         Cell Band       Frequency:       894000000 Hz         PGSM       Peak Power:       -57.16 dBm         Band Indicator       0       1000000000000000000000000000000000000                                     | Call Para         |             | Cont               | inuous Wave      |            | Para Config |
| Worm     Peak Power     894000000 Hz       PGSM       PGSM       20     Peak Power:     -57.16 dBm       Sand Indicator       0       Line Loss       PCL: 15       CW  | -70.00            |             |                    |                  |            | Basic Setup |
| ARFCN 20 Peak Power: -57.16 dBm Band Indiestor 0 Line Loss CW Config PCL: 15 CW GSM   | Cell Band<br>PGSM | Pea<br>Fred | k Power<br>Juency: | 89400000         | 0 Hz       |             |
| Band Indiestor<br>0<br>Line Loss<br>CW Config<br>PCL: 15<br>CW  | ARFCN<br>20       | Pea         | k Power:           | -57.16 d         | Bm         |             |
| CW Config<br>PCL: 15<br>CW  | Band Indicator    |             |                    |                  |            |             |
| CW Config<br>PCL: 15 CW GSM   | Line Loss         |             |                    |                  |            |             |
|   | CW Config         | PCL: 15     |                    | cw               | GSM        |             |

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<br>Name | Parameter Description   | Parameter<br>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<br>time of test on condition that no<br>uplink signal is received. | 1 ~ 999                | 20         | S    |
| Trigger Arm       | Test trigger, including single test<br>(Single) and continuous test<br>(Continuous).                | Single /<br>Continuous | Continuous | None |
| Ref Frequency     | The Ref Frequency.  | -67.7 / 0 /<br>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:

|                  | 5980             | off Communit   | ations Factory | r Test Set |             |
|------------------|------------------|----------------|----------------|------------|-------------|
| Call Para        |                  | GSM            | IQ Tuning      |            | Para Config |
| Cell Power       |                  |                |                |            |             |
| -70.00           |                  |                |                |            | Basic Setup |
| dBm<br>Cell Band | Offset<br>(kHz)  | Level<br>(dBc) |                |            | ChangeView  |
| PGSM             | -270.8           | -45.9          |                |            | Numeric     |
|                  | -203.1           | -40.9          |                |            |             |
| ARFCN            | -135.4           | -14.7          |                |            |             |
| 20               | -67.7            | -4.2           |                |            |             |
| 1                | 0                | 0.0            |                |            |             |
| Band Indicator   | 67.7             | -3.8           |                |            |             |
| 0                | 135.4            | -14.4          |                |            |             |
|                  | 203.1            | -41.1          |                |            |             |
|                  | 270.8            | -46.0          |                |            |             |
| Line Loss        |                  |                |                |            |             |
|                  | Ref frequency: 0 | (H Z           | TestCount:     | L          |             |
| CW Config        |                  | -              |                | -          | _           |
|                  | PCL: 15          | GSM /          | Analyse        | GSM        |             |
| 1/3              |                  | Local          | [              |            | 1/1         |



## 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:

|   | SP80   | 11 Communi                        | cations Factory T                                       | est Set   |             |
|---|--|-----------------------------------|---|---|-------------|
| Call Para                               |  | Modula                            | tion Accuracy   |   | Para Config |
| Cell Power                              |  |                                   |   |   | Basic Setup |
| dBm<br>Cell Band<br>PGSM<br>ARFCN<br>20 | AvgPeakEVM:<br>AvgRMSEVM:<br>RMSEVM:<br>95thEVM: | 89.50%<br>8.71%<br>8.71%<br>4.06% | AvgFreqErr:<br>FreqStability<br>FreqErr:<br>AvgOOS(dB): | 4.00 Hz<br>: 0.00447 ppm<br>4.00 Hz<br>43.70 dB |             |
| Band Indicator                          | Name   |                                   |   | Value   |             |
| 0                                       | Avg Num  |                                   |   | 1   |             |
| Line Loss                               | Time Out (s)<br>Trigger Arm<br>IQ Imbalance C    | alculate Sta                      | Co<br>te  | 20<br>Intinuous<br>OFF                          |             |
| CW Config                               | PCL: 15  | GSM                               | Analyse   | GSM   | -           |
| 1/3                                     |  | Local                             |   |   | 1/1         |

Figure 2-55 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name               | Parameter Description   | Parameter<br>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<br>(Single) and continuous test<br>(Continuous).          | Single /<br>Continuous | Continuous | None |
| IQ Imbalance<br>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:

|  | S  | P6010 Co   | mmunications Test S  | et  |               |
|--|--|--|--|---|---------------|
| Call Para  |  | Modu   | lation Accuracy  |   | Para Config   |
| Cell Power<br>-70.00<br>dBm<br>Cell Band<br>PGSM<br>ARFCN<br>20<br>Band Indieator<br>0 | AvgPeakEVM:<br>AvgRMSEVM:<br>RMSEVM:<br>95thEVM:<br>PeakMagErr:<br>RMSMagErr:<br>Test Count: | 0.98%<br>0.48%<br>0.48%<br>0.74%<br>0.83%<br>0.37% | AvgFreqErr:<br>FreqStability:<br>FreqErr:<br>AvgOOS(dB):<br>PeakPhaseErr:<br>RMSPhaseErr:<br>IQ Imbalance: | -6.00 Hz<br>-0.00671 ppm<br>-6.00 Hz<br>64.59 dB<br>2.61°<br>0.48°<br>-63.38 dB | Basic Setup   |
| CW Config  | PCL: 15  | GS   | M Analyse  | GSM   | а.            |
| 1/3  |  | Local  |  |   | 1/1           |
|  |  |  |  | Delete Chai   | nnel and Cell |

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:



>> Sep, 2014

| SP8011 Communications Factory Test Set |              |                                      |           |                     |               |  |
|--|--------------|--------------------------------------|-----------|---------------------|---------------|--|
| Call Para                              |              | GSM FAST Bit Error Ratio Para Config |           |                     |               |  |
| Cell Power                             |              |                                      |           |                     |               |  |
| -70.00                                 |              |                                      |           |                     | Basic Setup   |  |
| dBm                                    | BER:         | c                                    | .00%      |                     |               |  |
| Cell Band                              |              |                                      |           |                     | BER           |  |
| PGSM                                   | Bits Erro    | r Count: C                           |           |                     | Parameters    |  |
|  | Dito Elle    |                                      |           |                     |               |  |
| ARFCN                                  |              |                                      |           |                     |               |  |
| 20                                     | Bits Test    | ed: 1                                | .0032     |                     |               |  |
|  |              |                                      |           |                     |               |  |
| Band Indicator                         | Name         |                                      |           | Value               |               |  |
| 0                                      | Time Out (s) |                                      |           | 20                  |               |  |
|  | Trigger Arm  |                                      |           | Single              |               |  |
|  |              |                                      |           |                     |               |  |
| Line Loss                              |              |                                      |           |                     |               |  |
|  |              |                                      |           |                     |               |  |
|  |              |                                      |           |                     |               |  |
| CW Config                              |              |                                      |           |                     |               |  |
|  | PCL: 15      | Active Cel                           |           | GSM                 |               |  |
|  |              |                                      |           | CS Connected        |               |  |
| 1/3                                    |              | Local                                |           |                     | 1/1           |  |
|  |              |                                      | wait to a | pp or MS indicate n | ext operation |  |

Figure 2-57 Basic Parameters setting interface

Explanations of Basic Setup parameters are as follows:

| Parameter<br>Name | Parameter Description   | Parameter<br>Range     | Default | Unit |
|-------------------|---|------------------------|---------|------|
| Time Out          | Timeout, used to set the maximum<br>time of test on condition that no<br>uplink signal is received. | 1 ~ 999                | 20      | S    |
| Trigger Arm       | Test trigger, including single test<br>(Single) and continuous test<br>(Continuous).                | Single /<br>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:



>> Sep, 2014

|                  | SP80            | 11 Communications Fac   | tory Test Set |                   |
|------------------|-----------------|---|---------------|-------------------|
| Call Para        |                 | Para Config   |               |                   |
| Cell Power       |                 |   |               |                   |
| -70.00           |                 |   |               | Basic Setup       |
| dBm<br>Cell Band | BER:            | 0.00%   | i             |                   |
| PGSM             | -               |   |               | BER<br>Parameters |
|                  | Bits Erro       | or Count: 0   |               |                   |
| ARFCN<br>20      | Bits Test       | ted: 10032  | 2             |                   |
| Band Indicator   | Name            |   | Value         |                   |
| 0                | Number of Bits  |   | 10000         |                   |
|                  | Requirement(e-4 | 4)  | 10.00         |                   |
| Line Loss        |                 |   |               |                   |
| CW Config        |                 |   |               |                   |
|                  | PCL: 15         | Active Cell   | GSM           |                   |
|                  |                 |   | CS Connected  |                   |
|                  |                 | and the second se |               |                   |

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:



>> Sep, 2014

|             | Test Set                 | ications Factor | 11 Commun           | SP80      |               |
|-------------|--------------------------|-----------------|---------------------|-----------|---------------|
| Para Config | GSM FAST Bit Error Ratio |                 |                     | Call Para |               |
|             |                          |                 |                     |           | Cell Power    |
| Basic Setup |                          |                 |                     |           | -70.00        |
|             |                          | 0.00%           |                     | BER:      | dBm           |
| BER         |                          |                 |                     |           | PGSM          |
| Parameters  | Bits Error Count: 0      |                 | Bits Error Count: 0 |           | T GOM         |
|             |                          |                 |                     |           | RFCN          |
|             |                          | 10032           | sted:               | Bits Tes  | 20            |
|             | 2455                     |                 |                     |           | and Indicator |
|             |                          |                 |                     |           | Line Loss     |
| -           | GSM                      |                 | 1                   | 0.01 45   | CW Config     |
| -           | uom                      | Active Cell     | PCL: 15             |           |               |
|             | CS Connected             |                 |                     |           |               |
|             |                          |                 | Local               |           | 1/3           |

Figure 2-59 GSM Fast BER testing results