Setting Up an WCDMA/3GPP Uplink 12.2 kbps Reference Measurement Channel

SMIQB48 (extension to SMIQB45) provides up to four enhanced channels with extended sequence length and additional functions.

For a non-truncated PRBS 9 sequence as user data, a signal of 511 frames length is required. This is valid for data that is not channel coded. Including channel coding leads to an additional factor of 2, resulting in a required sequence length of 1022.

SMIQB48 can generate a fully coded 12.2 kbps Uplink Reference Measurement Channel with cyclic, non-truncated PRBS 9 sequences as user data. Therefore, restart signals for the BER tester are not necessary. Besides this, longer sequences have also the advantage that all possible states of the system are taken on – otherwise the measurements may neglect situations that thoroughly occur in real operation.

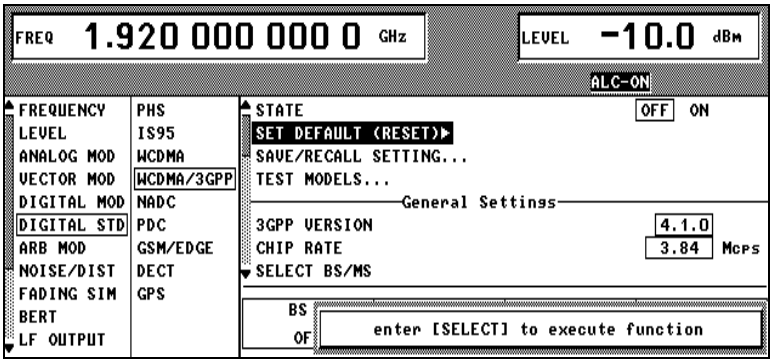
Uplink Reference Measurement Channels are used in base station receiver and performance tests according to 3GPP specifications TS 25.104 and TS 25.141. SMIQ can generate Uplink Reference Measurement Channels with 12.2 kbps, 64 kbps, 144 kbps and 384 kbps.

There are only a few parameters to set:

- link direction: uplink
- choose the appropriate channel coding (12.2 RMC)
- choose the appropriate sequence length (1022 frames)
- choose the type of user data (PN 9)

I General Settings:

1

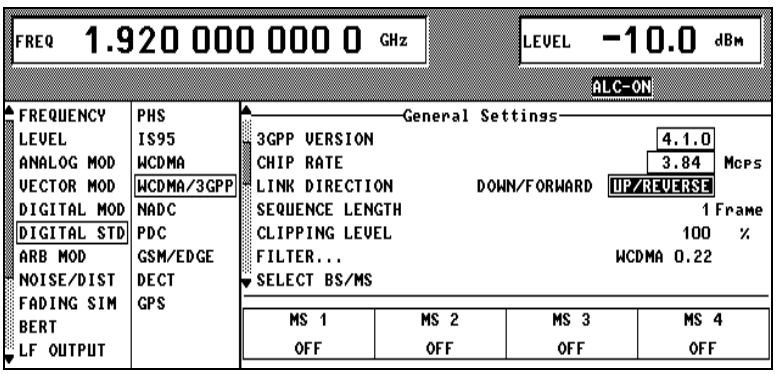


Do not set the *W-CDMA STATE* to on before you have done all necessary settings.

First reset the W-CDMA setup to make sure that no unwanted channel is active:

- Choose *SET DEFAULT (RESET)* ►in the *WCDMA/3GPP* menu
- Press the *SELECT* hardkey twice

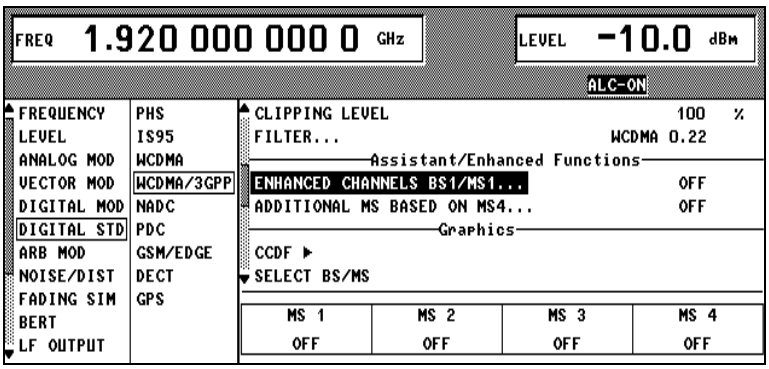
2



Set link direction to uplink:

- Scroll down to *LINK DIRECTION*
- Press the *SELECT* hardkey
- Select *UP/REVERSE* with the turning wheel
- Press the *SELECT* hardkey
- Press the *RETURN* hardkey to get back to the *W-CDMA/3GPP* menu

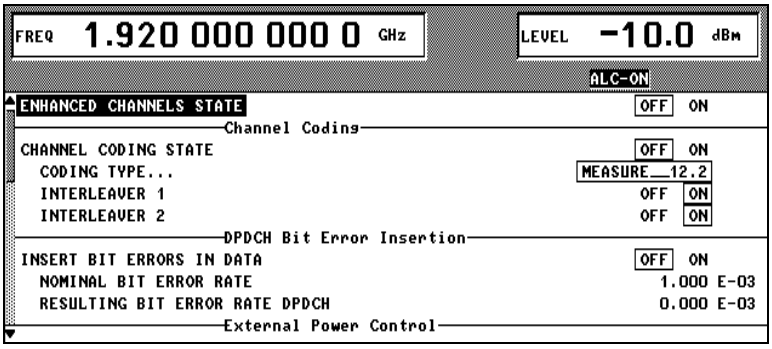
3



Go to the Enhanced Channels submenu:

- Scroll down to *ENHANCED CHANNELS BS1/MS1*
- Press the *SELECT* hardkey

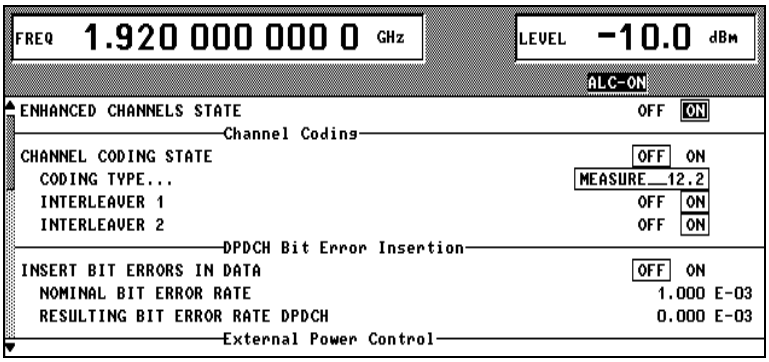
4



The menu should look like this:

II. Setting the Appropriate Channel Coding:

5

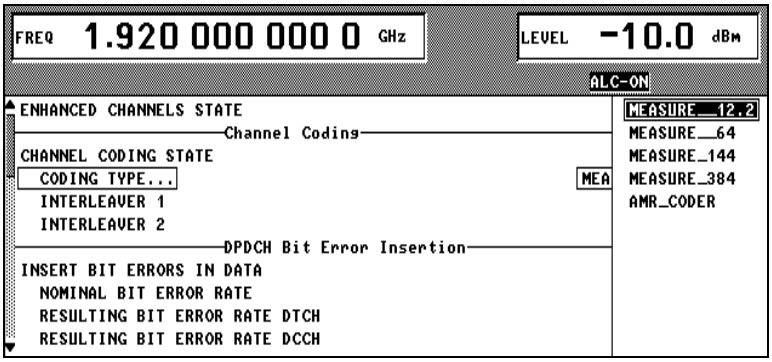


Activate the Enhanced Channels State:

- Press the *SELECT* hardkey
- Select *ON* with the rotary knob
- Press the *SELECT* hardkey
- Press the *SELECT* hardkey once again.

This brings you directly to the next parameter.

6



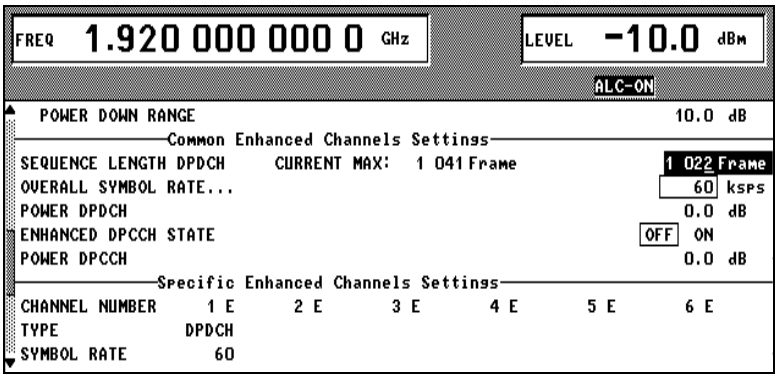
Set the channel coding:

- Choose *ON* with the turning wheel
- Press the *SELECT* hardkey
- Press the *RETURN* hardkey to get back to the Enhanced Channels submenu

If *CODING TYPE...* is set already to *MEASURE 12.2*, continue with the appropriate sequence length.

III. Setting the Appropriate Sequence Length

7



Set the sequence length in units of W-CDMA/3GPP frames:

- Scroll down to *SEQUENCE LENGTH*
- Press the *SELECT* hardkey
- Change the value with the rotary knob or type 1022 using the numeric keys
- Press the *ENTER* button

Hints:

- The maximum number of frames is indicated with CURRENT MAX, if W-CDMA/3GPP has been activated at least once after the instrument was switched on.
- The Enhanced Channels use the same memory as the data lists that can be stored in SMIQ. Therefore you should delete some data lists if the maximum number of frames is not sufficient (See SMIQ user manual section 2.10).
- The overall symbol rate is already determined by the channel coding settings.

IV. Setting the Appropriate User Data

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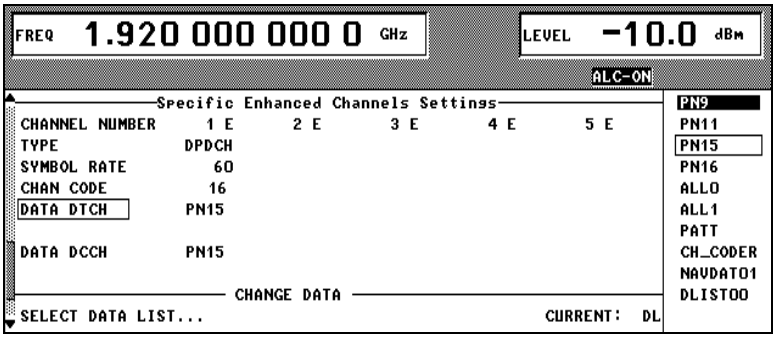
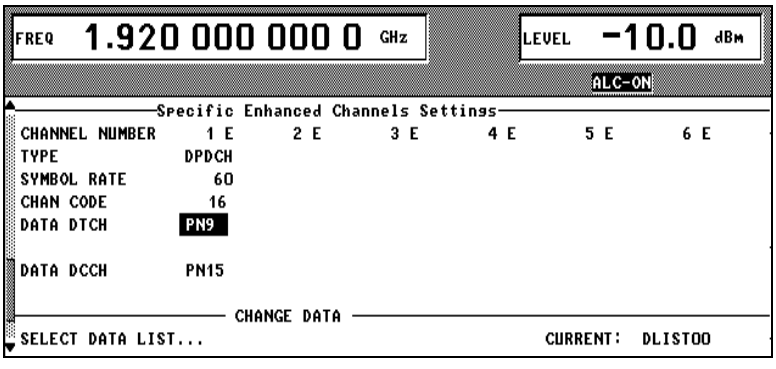


Go to Specific Enhanced Channels Settings section:

- Scroll down to *DATA DTCH*
- Press the *SELECT* hardkey
- Scroll to *PN9*
- Press the *SELECT* hardkey

9



The menu should look like this.

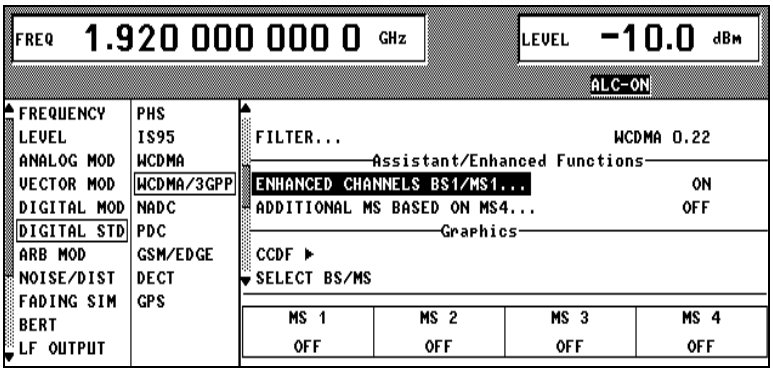
Hints:

- The DCCH data is not important in this case. (Except: BLER tests on DCCH).
- If you want to test BS-internal BER testers: Insert bit errors or block errors.
- Keep ENHANCED DPCCH STATE to OFF. This function is not required for the BS receiver tests.

  Attention: With this function active, the sequence length of 1022 frames is not possible.

V. Complete the Settings

10

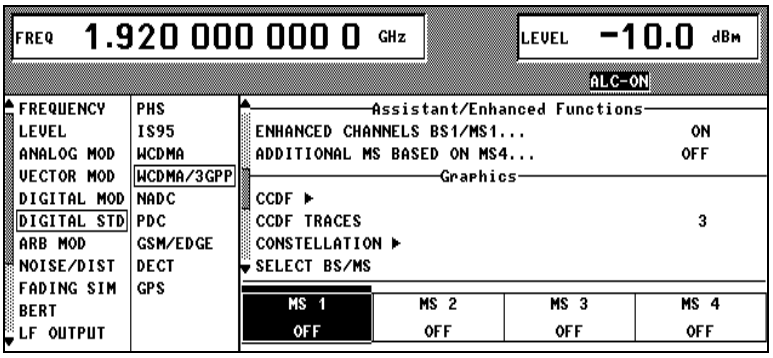


Leave the Enhanced Channels Submenu

- Press the *RETURN* hardkey twice to get back to *W-CDMA/3GPP* menu

The Enhanced Channels State should be ON.

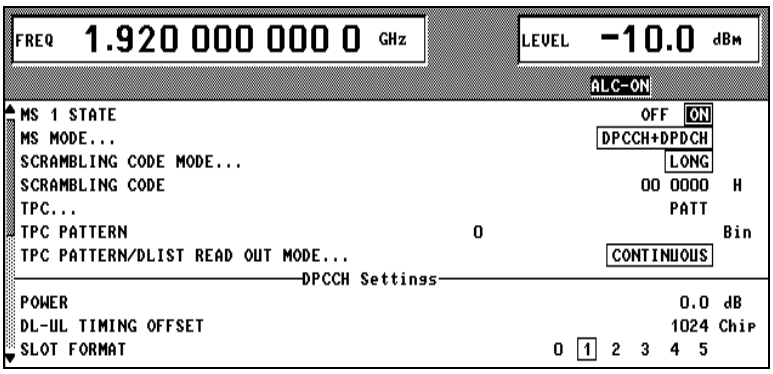
11



Switch on MS 1:

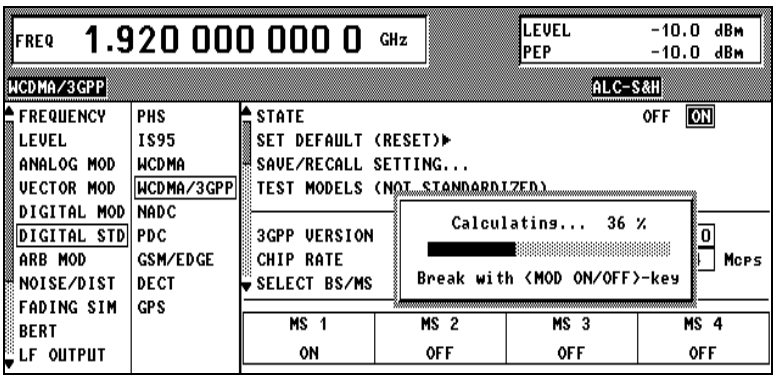
- Scroll down to *SELECT BS/MS*
- Press the *SELECT* hardkey twice to open the MS 1 submenu

12



- Press the *SELECT* hardkey
- Select *ON* with the rotary knob
- Press the *RETURN* hardkey three times to get back to the *W-CDMA/3GPP* menu

13



Activate the 3GPP signal:

- Scroll up to *STATE*
- Press the *SELECT* hardkey
- Select *ON* with the rotary knob
- Press the *SELECT* hardkey

SMIQ now starts calculating the 3GPP signal and indicates the **calculation** with a **progress bar**.

Hints:

- The sequence length of 1022 frames is for performing BER tests with non-truncating PRBS 9.
- For BLER tests, only the CRC is analyzed, not the user data. For BLER tests on DTCH the number of frames has to be even, so 1022 frames are correct. For BLER tests on DCCH, the number of frames has to be a multiple of four!

Note:

In order to perform a BER measurement please refer to:

SMIQ Getting Started – Bit Error Rate Tester SMIQB21