

Application Note



How to Test a Motorola EBTS TETRA Base Station with the Aeroflex Stabilock 2305 TETRA Test Set



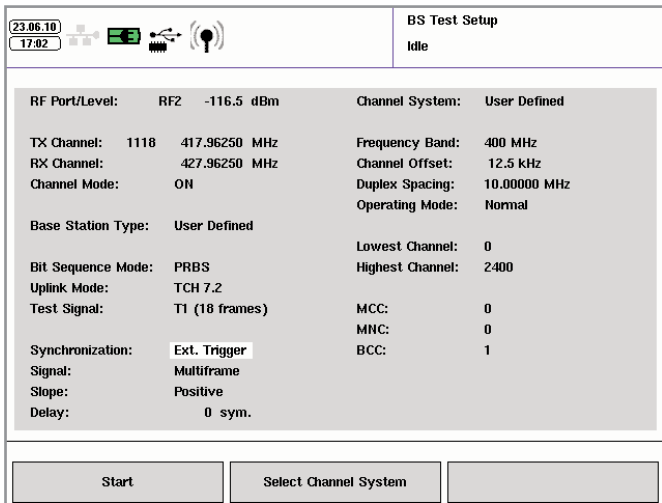
The RF characteristics of a TETRA base station are very easy to test with the Aeroflex 2305 Stabilock. Setting them up in hardware and software is a matter of three minutes, and the measurements are straightforward. The following steps are all it takes to perform the necessary tests at a Motorola EBTS. The results can be stored in screenshots on the built-in hard disk and copied to a PC for documentation purposes.

Proceed as follows to set up the Stabilock and the Motorola EBTS base station (BS) and to perform the measurements:

1. Connect the Motorola Base Radio you intend to test, to your notebook PC using the 9-pin Sub-D interface. Do not connect to the site controller! Connect the BNC connector of the base radio cable with the "Trigger In/Out" connector at the rear panel of the Stabilock.
2. On the notebook, run the terminal software (terminal settings: 19200, 8N1).

3. In the Stabilock menus, enter BS-Test mode and prepare the following settings on the instrument:

- Select RF2 as the RF port.
- Enter the correct RX and TX frequencies – in this example, the BS TX is at 417.9625 MHz.
- Set MCC and MNC to 0, BCC to 1.
- Set the Uplink Mode to TCH 7.2, Test Signal to T1 (18 frames).
- Synchronization should be set to Ext. Trigger, Signal to Multiframe and Slope to Positive.



4. Press the Start softkey on the Stabilock.
 5. Connect the TX output of the Base Station to RF1 on the Stabilock and the RX input of the BS to RF2.

6. Switch on the base station. As soon as the message:
 To enter configuration mode, hit any key within 10 seconds:

appears, press any key on the terminal. The BS will now boot up in test mode.

7. If you missed the message or if your BS was already running in normal mode, you will have to perform a reset first. Log in to perform a reset:

```
Enter user name: mmm
Enter login password: Motorola
BRC> reset
Now follow step 6.
```

8. After the test mode has been started, wait for the following prompt and type the valid password:

```
Enter login password: motorola
```

When the BRC prompt is displayed, the BS is ready to accept test mode commands.

9. Enter the following commands:

```
BRC> set tetra_format 0 0 1 1 7 mframe
BRC> get rx_freq
BRC> get rx_fru_config
BRC> set sys_gain on
BRC> set rx_mode 12
BRC> key
BRC> set tx_test_mode T1
```

The base station is now transmitting. You should see the TX test results on the Stabilock screen.

10. Start the bit error rate measurement with the following command:

```
BRC> get rssi 5 50
```

11. The measurement results of the three receivers (number 1, 2 and 3) are now displayed as follows, depending on your generator level (RF Level) setting on the Stabilock:

```
Receiver Number           = 1    2    3
SGC Attenuation (dB)      = 0    0    0
Sync Location (1/10 symb) = 36   36   38
Sync. Amplitude (dB)     = -86  -46  -87
Total Bits/Msgs          = 432  432  432
Bits/Msgs in Error       = 4    0    3
BER/MER (%)              = 0.926 0.000 0.694
RSSI (dBm)               = -116 -75  -116
```

12. Test the three receivers by connecting to the respective receiver input. At a generator level of –117 dBm, you should not see any bit errors.

13. Use the command:

```
BRC> reset
```

to reset the base station to normal operating mode.

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