

Application Note



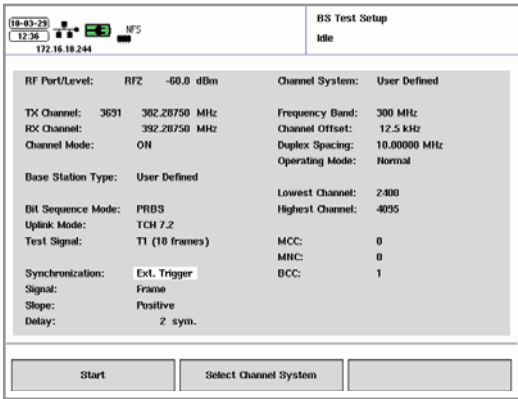
How to Test a Motorola MTS TETRA Base Station with the Aeroflex 2305 Stabilock TETRA Test Set



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 straight forward. The following steps are all it takes to perform the necessary tests at a Motorola MTS. 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 MTS base station (BS) and to perform the measurements:

1. At the Motorola Base Radio you intend to test, connect the RJ45 interface to your notebook PC. 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 392.28750 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 Frame, Slope to Positive and Delay to 2 symbols



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:

```
Press CTRL-C or ESCAPE to interrupt autoboot process, SPACE for instant boot.
```

appears, press any key (except the SPACE key) on the terminal. The BS will now boot up in test mode:

```
****autoboot interrupted
```

At the prompt now appearing, start the test mode by entering

```
>TESTAPP
```

7. If you missed the message or if your BS was already running in normal mode, you will have to restart the base station first. Repeat step 6.
8. When the BS is in test mode, activate the factory mode. Wait for the prompt and type the following command and password:

```
> login -ufactory
password: factory
```

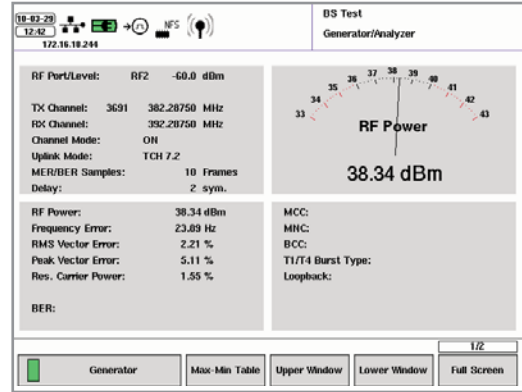
Following the "factory" prompt, the BS is ready to accept test mode commands.

9. Enter the following commands:

```
factory> freq -orxchl
factory> freq -orx_all -f382.287500
(in this example)
factory> sge -orx_all -soff
factory> enable -orxchl -son
```

```
factory> ptm -orx_all -mTCH_72 -s8 -tFrame_Trigger -d-6
factory> ppc -orxchl -tarb
factory> enable -otxchl -on
factory> power -otxchl -a10
```

The base station is now transmitting at 10 W. You should see the TX test results on the 2305 screen:



Start the bit error rate measurement with the following command:

```
factory> ppr -orxchl -a10 -r1
```

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	=	36	36	38
(1/10 symb)				
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

10. Test the other two of the three receivers, one by one, by connecting the Stabilock to the respective receiver input. At a generator level of -117 dBm, you should not see any bit errors.

11. Use the command:

```
factory> reset -0platform
```

to set the base station back to normal operating mode.

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