

Using the TD220X Base Radio with the Spectracom SecureSync PTP Grandmaster

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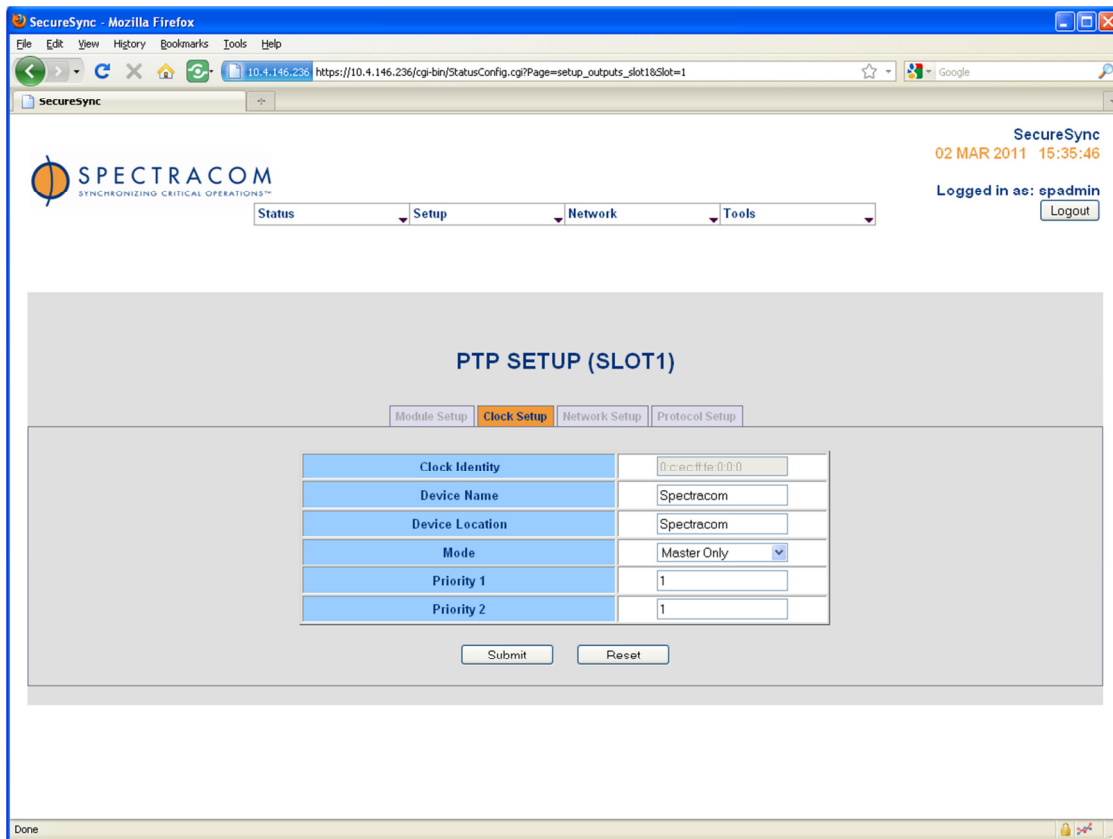
3/2/2011

Introduction

The TD220X Base Radio supports obtaining time in two ways: from a locally-connected GPS receiver or from a LAN-connected PTP grandmaster. GE MDS has evaluated PTP performance of the TD220X Radio in conjunction with the Spectracom SecureSync PTP Grandmaster.

Setup

The Spectracom SecureSync is fitted with the PTP module, and the module is configured as shown in the screenshots below.



SecureSync - Mozilla Firefox

File Edit View History Bookmarks Tools Help

10.4.146.236 https://10.4.146.236/cgi-bin/StatusConfig.cgi?Page=setup_outputs_slot1&slot=1

SecureSync
02 MAR 2011 15:36:25
Logged in as: spadmin
Logout

Status Setup Network Tools

PTP SETUP (SLOT1)

Module Setup Clock Setup **Network Setup** Protocol Setup

Ethernet Settings

DHCP Enable	Disabled
Static IP Address	10.4.144.220
Network Mask	255.255.0.0
Default Gateway	0.0.0.0

PTP Network Settings

Port Number	1
Unicast	Disabled
Domain Number	0

Submit Reset

Done

SecureSync - Mozilla Firefox

File Edit View History Bookmarks Tools Help

10.4.146.236 https://10.4.146.236/cgi-bin/StatusConfig.cgi?Page=setup_outputs_slot1&slot=1

SecureSync
02 MAR 2011 15:36:46
Logged in as: spadmin
Logout

Status Setup Network Tools

PTP SETUP (SLOT1)

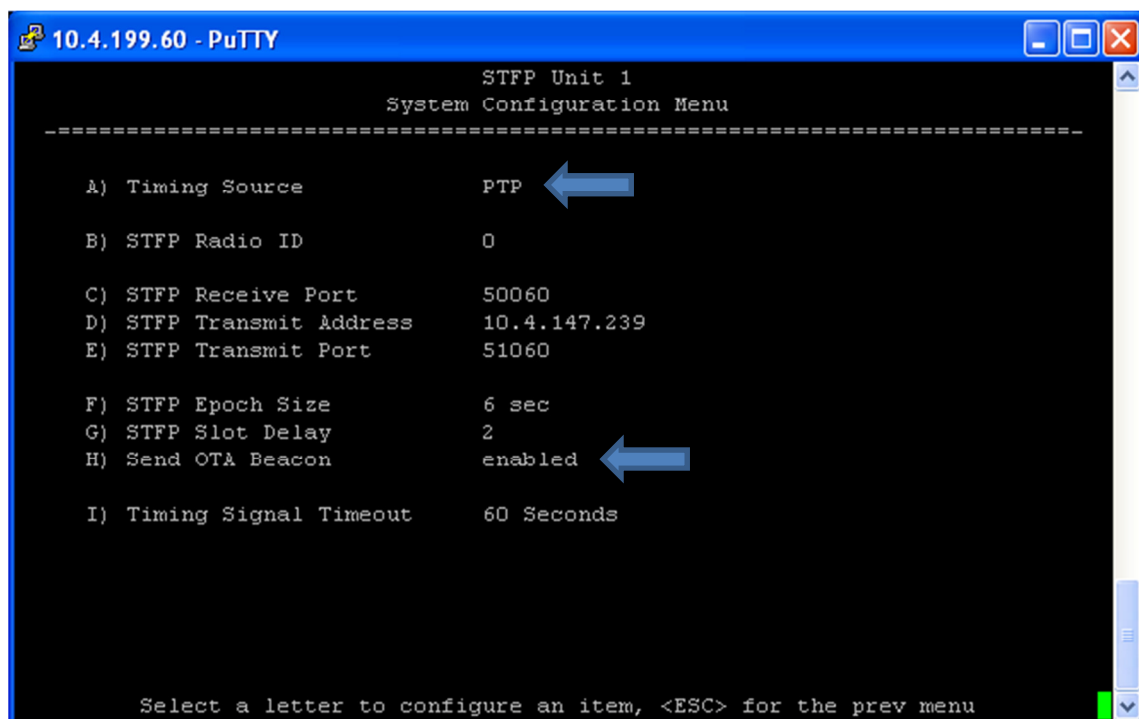
Module Setup Clock Setup Network Setup **Protocol Setup**

One Step Mode	Disabled
Announce Reception TimeOut	3
Log Announce Interval	1
Log Sync Interval	0
Log Delay Request Interval	4
Log Peer Delay Request Interval	0
Delay Mechanism	E2E
Re-init the PTP protocol	Disabled

Submit Reset

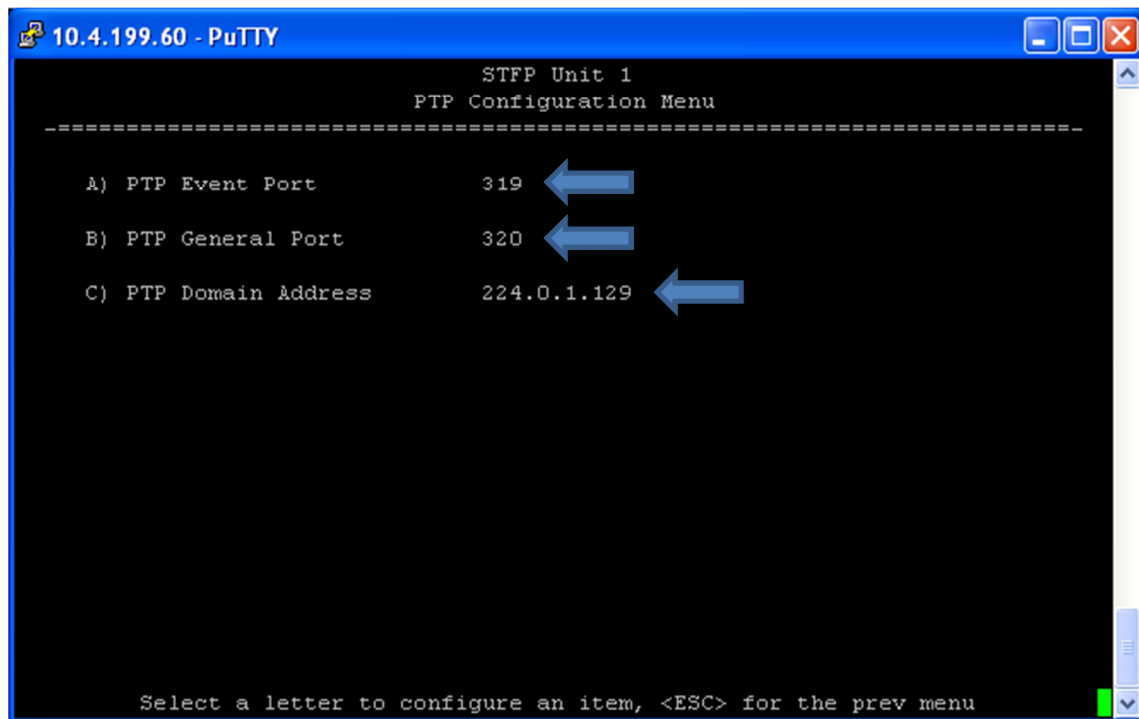
Done

The PTP-disciplined radio is set up according to the following screenshots.



```
STFP Unit 1
System Configuration Menu
-----
A) Timing Source          PTP
B) STFP Radio ID         0
C) STFP Receive Port     50060
D) STFP Transmit Address 10.4.147.239
E) STFP Transmit Port    51060
F) STFP Epoch Size       6 sec
G) STFP Slot Delay       2
H) Send OTA Beacon       enabled
I) Timing Signal Timeout 60 Seconds

Select a letter to configure an item, <ESC> for the prev menu
```



```
STFP Unit 1
PTP Configuration Menu
-----
A) PTP Event Port        319
B) PTP General Port      320
C) PTP Domain Address    224.0.1.129

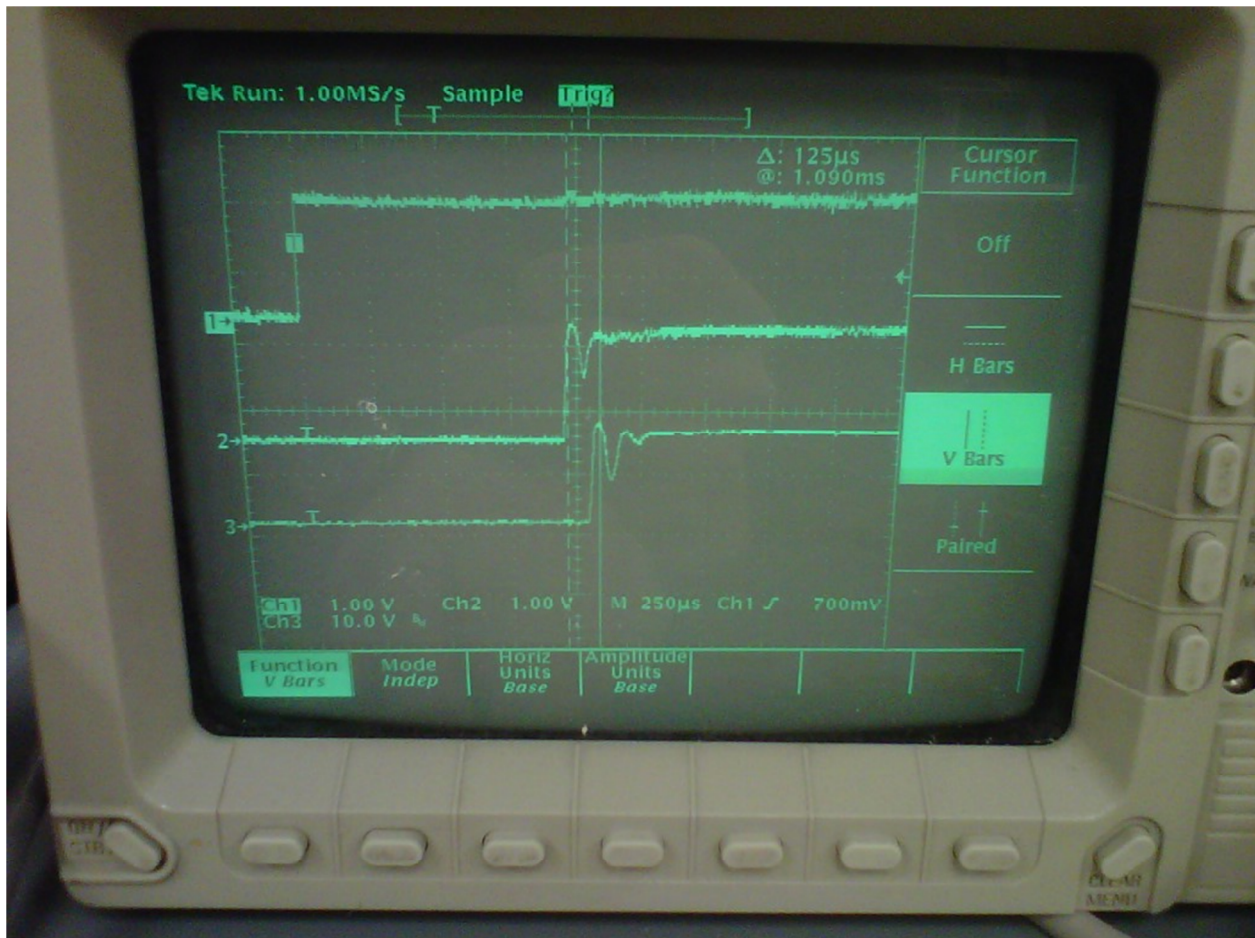
Select a letter to configure an item, <ESC> for the prev menu
```

As is shown, PTP is used for the timing source and the radio is configured to send beacons automatically. The Event Port and General Port are 319 and 320 respectively as defined in the PTP specification. The PTP Domain Address is 224.0.1.129 for domain 0.

In addition, another base is set up to be GPS-disciplined following the procedure in the manual. Both radios are set to transmit beacons at the same time.

Results

An RF power diode detector is placed on the antenna jack of each radio. An oscilloscope is used to monitor the GPS 1PPS signal as well as the power detector outputs. As can be seen in the oscilloscope trace below, the GPS and PTP-disciplined unit are timed to 125 us. The worst case observed is 150 us delta between the timing of the two units. This is approximately 1.5 bit times at the TD220X's over the air data rate of 9600 bps, and more than sufficient to ensure timing synchronization between the units.



Conclusion

The configuration of the Spectracom SecureSync PTP grandmaster and the TD220X transceiver has been illustrated to obtain favorable synchronization between PTP- and GPS-disciplined units.