



# #5452

## ***Linking SEL-421 units via FGR-115MB***

***September 8, 2004***

### **Setting up the radios**

Configure two FreeWave FGR-115MB radios as a Point-to-Point Master/Slave pair. Refer to Application Note #5424 in order to do this.

### **SEL Devices**

Apply power to both SEL-421 devices. Gain access to the SEL devices through HyperTerminal. The connection should be made with a straight-through serial cable from a COM port on your computer to the SEL-421 Serial Port F on the front of the device with a **NULL MODEM** adapter. Refer to the table below for the port settings in HyperTerminal.

Settings	SEL-421
Baud Rate	9600
Data Bits	8
Parity	None
Stop bits	1
Flow Control	None

### **Programming the SEL-421**

1. At the prompt, type **ACC** and press Enter. If a password prompt appears, type **OTTER** (case sensitive).
2. This will access Security Level 1 in the SEL device. After accessing Security Level 1, it is necessary to access Security Level 2.
3. Type **2AC** and press ENTER. Type **TAIL** (case sensitive). This allows user access to Security Level 2.
4. Type **SET P x** (x the port on the back of the SEL device that will be connected to the radio).

```

sel421 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
acc
8
Password: ?*****
Relay 1
Station A
Level 1
Date: 08/05/2004 Time: 08:40:58.735
Serial Number: 2003269135
v0
=>v2ac
8
Password: ?****
Relay 1
Station A
Date: 08/05/2004 Time: 08:41:01.018
Serial Number: 2003269135
v0
=>>set p 1
0Port 1
Protocol Selection
Protocol (SEL,MBA,MBB)
PROTO := MBA ?
Connected 0:01:06 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

```



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5. Choose either protocol MBA or MBB. The same protocol MUST be used on both SEL-421 devices.
6. The settings should match the figure below.

```

sel421 - HyperTerminal
File Edit View Call Transfer Help

Protocol Selection
PROTO := MBB

Communications Settings
MBT := N      SPEED := 38400  STOPBIT := 2

Mirrored Bits Protocol Setting
TX_ID := 1      RX_ID := 2      RBADPU := 10      CBADPU := 20000
TXMODE := P      MBNUM := 5      RMB1FL := P      RMB1PU := 1
RMB1DO := 1      RMB2FL := P      RMB2PU := 1      RMB2DO := 1
RMB3FL := P      RMB3PU := 1      RMB3DO := 1      RMB4FL := P
RMB4PU := 1      RMB4DO := 1      RMB5FL := P      RMB5PU := 1
RMB5DO := 1      MBTIME := Y      MBNUMAN := 1
MBANA1 := "LIAFM"
MBNUMVT := OFF
Save settings (Y,N) ?y
Saving Settings, Please Wait.....
Settings Saved
♥♥
=>>>_

Connected 0:00:55  ANSIW  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo

```

7. The same steps should be followed for the second SEL device with one exception; the TX and RX id values must be swapped in the second SEL-421 device.
8. MBNUM and MBNUMAN can be set to any device setting, so long as the settings are consistent on both devices. MBNUM represents the number of mirrored bit channels used out of the 9 possible. MBNUMAN represents the number of analog channels used out of the 8 possible.
9. Attach the two FreeWave FGR-115MB radios to each port that was chosen on the SEL device with a straight through serial cable.

### **Verifying a Link**

Check the TAR ROK bit. In Security Level 2 of the SEL-421, type **TAR ROKx** (x the protocol letter chosen, either A or B). If the ROKx bit returned is 1, then there is a link. If it is 0, then there is no link.



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