

1. How to Setup the FreeWave® Technologies Spread Spectrum Transceiver

Reference: FreeWave® Technologies Spread Spectrum Wireless Data Receiver User Manual, Version 4.0

1.1 Setting up the FreeWave radio configuration

1. Go to the MS DOS window and open the Kermit program.
2. Set the baud rate to 19200 by typing the command:

```
set speed 19200
```

then, press ENTER

3. Next at the prompt, type:

```
connect
```

4. Now, go to the RS-232 connection on the FreeWave® radio and ground out pin 2 to invoke the FreeWave® Operation Main Menu. The menu should look something like the text that follows:

```

                                MAIN MENU
                                Version 5.31 05-31-97
                                Standard Hop Table
                                Modem Serial Number 571-1004

(0)   Set Operation Mode
(1)   Set Baud Rate
(2)   Edit Call Book
(3)   Edit Radio Transmission Characteristics
(4)   Show Radio Statistics
(5)   Edit MultiPoint Parameters
(6)   TDMA Menu
(Esc) Exit Setup
```

- At the FreeWave® Operation Main Menu, choose **0** to open the Operation Mode menu. Then, choose **2** to invoke the Point to MultiPoint Master modem mode (**Sensor RTU**). Choose **3** to invoke the Point to MultiPoint Slave modem mode (**Sign RTU**). The menu should look as follows:

```

                                SET MODEM MODE
                                Modem Mode is 2

(0) Point to Point Master
(1) Point to Point Slave
(2) Point to MultiPoint Master (Sensor RTU)
(3) Point to MultiPoint Slave (Sign RTU)
(4) Point to Point Slave/Repeater
(5) Point to Point Repeater
(6) Point to Point Slave/Master Switchable
(7) Point to MultiPoint Repeater
(Esc) Exit to Main Menu

Enter Choice _
    
```

The Point to MultiPoint Master modem mode allows one master to simultaneously be in communication with numerous slaves, if needed.

Press the **Esc** key to return to the FreeWave® Operation Main Menu.

- At the FreeWave® Operation Main Menu, choose **1** to open the Set the Baud Rate menu. Choose **6** in the menu to set the baud rate at 9600. The screen should look as follows:

```

                                SET BAUD RATE
                                Modem Baud is 009600

(1) 115,200
(2) 76,800
(3) 57,600
(4) 38,400
(5) 19,200
(6) 9,600
(7) 4,800
(8) 2,400
(9) 1,200
(A) Data, Parity 0
(B) MODBus RTU 0
(Esc) Exit to Main Menu

Enter Choice _
    
```

Press the **Esc** key to return to the FreeWave® Operation Main Menu.

- At the FreeWave® Operation Main Menu, choose **2** to open the Edit Call Book menu. In the menu, **enter the serial numbers of the slave radios to talk to the master.**

```

                                MODEM CALL BOOK
                                Entry to Call is 00
                                Repeater1  Repeater2

Entry  Number  Repeater1  Repeater2
(0) 000-0000
(1) 000-0000
(2) 000-0000
(3) 000-0000
(4) 000-0000
    
```

```

(5)    000-0000
(6)    000-0000
(7)    000-0000
(8)    000-0000
(9)    000-0000
(C)    Change Entry to Use (0-9) or A (All)
(Esc)  Exit to Main Menu
Enter all zeros (000-0000) as your last number in list

```

Press the **Esc** key to return to the FreeWave® Operation Main Menu.

8. At the FreeWave® Operation Main Menu, choose **3** to open the Edit Radio Transmissions Characteristics menu. The radio parameters should be set as follows:

```

                                RADIO PARAMETERS
(0)  FreqKey          10
(1)  Max Packet Size  8
(2)  Min Packet Size  0
(3)  Xmit Rate        1
(4)  RF Data Rate     3
(5)  RF Xmit Power    9
(6)  Slave Security   0
(7)  RTS to CTS       0
(8)  Retry Time Out  255
(9)  Lowpower Mode    0
(Esc) Exit to Main Menu

Enter Choice  _

```

Note #1: FreqKey A (in hexadecimal A=10, B=11, etc.) is the HSQ factory default. In the field, the selection can be from 6-9 and from A-E.

Press the **Esc** key to return to the FreeWave® Operation Main Menu.

9. At the FreeWave® Operation Main Menu, choose **4** to open the Show Radio Statistics screen, if desired.

This screen allows the user to view data transmission statistics that have been gathered by the Transceiver during the most recent session. This is of value when the user wishes to look at signal strength, noise levels, bytes transmitted, bytes received, and the distance of the link between transceivers. Statistics are gathered during each data link and are reset when the next data link begins.

Ideally, noise levels should be below 30, and the difference between the average signal level and average noise level should be 15 or more. High noise levels tend to indicate other sources of RF interference, while low signal levels indicate a weak link.

After viewing the Statistics screen, press the **Esc** key to return to the FreeWave® Operation Main Menu.

10. At the FreeWave® Operation Main Menu, choose **5** to open the Edit MultiPoint Parameters menu. The radio parameters should be set as follows:

MULTIPOINT PARAMETERS		
(0)	Number Repeaters	0
(1)	Master Packet Repeat	9
(2)	Max Slave Retry	9
(3)	Retry Odds	9
(4)	DTR Connect	0
(5)	Repeater Frequency	0
(6)	NetWork ID	(same as Sensor RTU address)
(7)	Reserved	
(8)	MultiMasterSync	0
(9)	1 PPS Enable/Delay	255
(A)	Slave/Repeater	0
(Esc)	Exit to Main Menu	
Enter Choice _		

11. Press the **Esc** key to return to the FreeWave® Operation Main Menu and exit the program.