
FreeWave Technologies Inc. 421-512 MHz User Manual Addendum

The FreeWave Technologies LRS Family 421-512 MHz Licensed Radios operate in substantially the same manner as the 900 MHz and 2.4 GHz transceivers. The model numbers; 400LRS-CSU and 400LRS-RC can be used in point to point and multipoint modes, with essentially the same parameter options.

UL approval for the 400LRS-CSU is not currently available.

Quick Start on a Point-to-Multipoint System

The following is a quick start guide for setting up two transceivers in Point-to-Multipoint mode. This mode allows for a Master to communicate with several Slaves simultaneously. In addition to the Quick Start Guide, detailed instructions on how to set up the frequency and min and max packet sizes are also provided.

NOTE: The following is a step by step procedure for radio setup through HyperTerminal.

NOTE: The device will be capable of programming through EZConfig at a later date. When using EZConfig, please reference the tables in this procedure for proper radio configuration.

1. Connect the transceiver to the serial port of a computer either through a data cable (9 pin serial) or via the diagnostics cable.
2. Open up a HyperTerminal session.
 - Use the following settings in connecting with HyperTerminal
 - Connect to COMx (the COM port to which the cable is connected)
 - Set; Bits per second to **19200**, Data bits- **8**, Parity- **None**, Stop bits- **1**, Flow control- **None**.
3. Press the **setup** button next to the serial port on the radio. If the diagnostics cable is being used, press Shift-U (capital U).
 - The three LED's on the radio will turn green, indicating Setup mode.
 - The main menu will appear on the screen.
4. Press **0** to enter the Operation Mode menu.
 - Press **2** to set the radio as a point to **Multipoint Master**.
 - Press **3** to set the radio as a point to **Multipoint Slave**.
 - Press **Esc** to return to the main menu.
5. Press **1** in the main menu to enter the Baud Rate menu.
 - The baud rate in setup mode will be defaulted at 19200.

- The baud rate of the radio must match the baud rate of the device to which the radio is attached.
 - Press **Esc** to return to the main menu.
6. Press **3** in the main menu to enter the Radio Characteristics menu.
- The following settings must be the same on all radios throughout the network.
 - FreqKey- This setting is discussed later in this manual.
 - Max Packet Size-This setting is discussed later in this manual.
 - Min Packet Size- This setting is discussed later in this manual.
 - RF Data Rate - The LRS Licensed Radio can be configured to operate at one of two available throughputs. To adjust this setting, press 4, RF Data Rate. (Available settings are 2 or 3.)
 - For Maximum Throughput of **9.6 Kbps** at 2 Level GFSK, RF Data Rate= **3**.
 - For Maximum Throughput of **19.2 Kbps** at 4 Level GFSK, RF Data Rate=**2**.
7. At the Main Menu, press **5**.
- Number Repeaters should be set to **0**.
 - Set the Network ID value to any value between 1 and 4095, except 255.
 - Make sure this value is the same on every radio in the network.

Operation in Single Frequency Mode

Note: It is imperative that all transceivers used in a network are set to identical frequency parameters.

Press **3** in the main menu to enter the Radio Characteristics menu as shown below:

```
(8) Chg Password
(Esc) Exit Setup

Enter Choice

                                RADIO PARAMETERS

WARNING: Do not change parameters without reading manual

(0) FreqKey           Single Channel
(1) Max Packet Size   6
(2) Min Packet Size   7
(3) Xmit Rate         0
(4) RF Data Rate      3
(5) RF Xmit Power     10
(6) Slave Security    0
(7) RTS to CTS        0
(8) Retry Time Out    32
(9) Lowpower Mode     0
(A) High Noise        0
(B) MCU Speed         0
(C) RemoteLED         0
(Esc) Exit to Main Menu

Enter Choice _
```

Fig. 1

Editing the Hop Table

Enter 0 in the Radio Parameters section of the menu, corresponding to FreqKey.

Next, enter F for more options.

1. Enter 0 to edit Hop Table.
2. Choose the Hop Table entry to edit (0-63) and press Enter. The Hop Table entry is the number in the Table for the displayed Channel Number that represents the frequency being edited.
3. Choose the desired frequency from the Frequency Table, and then enter the Channel Number associated with that frequency.

NOTE: For a list of available frequencies and channel numbers at 12.5 kHz spacing, see the Frequency Table at the end of the manual. This table shows frequencies at **125kHz** spacing. If the frequency needed is not shown, use the following formula to calculate the proper Channel Number:

Ftune = Tuning frequency in MHz

Channel Number = (Ftune – 390) / .00625 *

*For more information, see the Errata sheet at the end of the document.

Programming Single Frequency Mode

In this example, the radio is programmed to transmit and receive at a Frequency of 421.000MHz. This is understood because the Single Channel being used is 0. Channel 0 has a value of 4960.
4960 = 421.000MHz.

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(0) FreqKey      Single Channel
(1) Max Packet Size 6
(2) Min Packet Size 7
(3) Xmit Rate    0
(4) RF Data Rate 3
(5) RF Xmit Power 10
(6) Slave Security 0
(7) RTS to CTS  0
(8) Retry Time out 32
(9) Lowpower Mode 0
(A) High Noise  0
(B) MCU Speed   0
(C) RemoteLED  0
(Esc) Exit to Main Menu

Enter Choice 0
Enter New Frequency Key (0-E) (F for more)f
0 04960 16 08480 32 12000 48 15520
1 05180 17 08700 33 12220 49 15740
2 05400 18 08920 34 12440 50 15960
3 05620 19 09140 35 12660 51 16180
4 05840 20 09360 36 12880 52 16400
5 06060 21 09580 37 13100 53 16620
6 06280 22 09800 38 13320 54 16840
7 06500 23 10020 39 13540 55 17060
8 06720 24 10240 40 13760 56 17280
9 06940 25 10460 41 13980 57 17500
10 07160 26 10680 42 14200 58 17720
11 07380 27 10900 43 14420 59 17940
12 07600 28 11120 44 14640 60 18160
13 07820 29 11340 45 14860 61 18380
14 08040 30 11560 46 15080 62 18600
15 08260 31 11780 47 15300 63 19040

Hop Table Size 64
Single Channel Uses 0
Enter 0 To Edit Hop Table,1 For Single Freq,2 For Number of Hopping Channels_

```

Fig 2.

The LRS Series of radios are single frequency devices. Meaning they are designed to operate on only one channel per network. The device default is single frequency mode. This is displayed as seen in Fig. 2.

While still in the “More Options” section of the FreqKey menu:

1. Enter 1 to program the transceiver to operate on a single frequency.
2. When prompted enter the number of the frequency to be used:
Enter New Frequency Channel (0-63).
3. Once the single frequency has been entered it will appear at the bottom of the table as the Single Channel being used. In addition, the FreqKey in the Radio Parameters menu will now be programmed as Single Channel. Refer to Fig. 2.

Min/Max Packet Sizes

Min/Max Packet Sizes allow the user to designate the size in bytes of the packets used by the transceiver in its communication link. This may be of particular value when using FreeWave with different communications software packages. In addition, packet sizes should be changed for every network, especially when overlapping or adjacent networks are installed.

The combination of Max and Min Packet Size settings determines the allocation of the communication link from the Master to the Slave and vice versa. With a given Max Packet Setting the Master will transmit up to that number of bytes on every hop. If fewer than that number of bytes is transmitted the balance is allocated to the Slave’s transmission, in addition to the quantity in the Min Packet Size Setting.

Packet size is determined by a combination of the settings entered by the user and RF Data Rate. The following tables provide the packet sizes for each different combination of settings.

In the Radio Parameters menu, enter the Min Packet size (0-F), Max Packet size (0-F), and the RF Data Rate (2 or 3). Please see the following tables to determine min and max packet sizes and RF Data Rate to be used based on the number of bytes of data being transmitted.

PLEASE NOTE: the invalid settings as indicated by “xxx” on the tables.

For example, if the Minimum Packet Size is set to 7, Maximum Packet Size to 6, and the RF Data Rate to 3, the radio would be transmitting 110 bytes per hop. Refer to Table 1; a Min Packet size of 7 and RF Data Rate of 3 shows a minimum packet size of 38 bytes per slot. Next, refer to Table 3. A Max Packet size of 6 and RF Data Rate of 3 shows a maximum 72 bytes per slot. This gives a total of 110 bytes per slot.

The following lists the Min Packet size settings in bytes when the RF Data Rate equals 2 and 3.

Setting	Min Packet Size RF Data Rate= 2	Min Packet Size RF Data Rate= 3
0	36	18
1	41	20
2	47	23
3	53	26
4	59	29
5	64	32
6	70	35
7	76	38
8	81	40
9	87	43

Table 1

The following lists the Max Packet size settings in bytes when the RF Data Rate equals 2.

Max Packet Size

Min Packet Size	0	1	2	3	4	5	6	7	8	9
0	36	47	59	70	81	93	104	115	127	138
1	41	53	64	76	87	98	110	121	132	144
2	47	59	70	81	93	104	115	127	138	xxxx
3	53	64	76	87	98	110	121	132	144	xxxx
4	59	70	81	93	104	115	127	138	xxxx	xxxx
5	64	76	87	98	110	121	132	144	xxxx	xxxx
6	70	81	93	104	115	127	138	xxxx	xxxx	xxxx
7	76	87	98	110	121	132	144	xxxx	xxxx	xxxx
8	81	93	104	115	127	138	xxxx	xxxx	xxxx	xxxx
9	87	98	110	121	132	144	xxxx	xxxx	xxxx	xxxx
A	93	104	115	127	138	xxxx	xxxx	xxxx	xxxx	xxxx
B	98	110	121	132	144	xxxx	xxxx	xxxx	xxxx	xxxx
C	104	115	127	138	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
D	110	121	132	144	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
E	115	127	138	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
F	121	132	144	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

Table 2

The following lists the Max Packet size settings in bytes when the RF Data equals 3.

Max Packet Size

Min Packet Size	0	1	2	3	4	5	6	7	8	9
0	18	23	29	35	40	46	52	57	63	69
1	20	26	32	38	43	49	55	60	66	72
2	23	29	35	40	46	52	57	63	69	XXXX
3	26	32	38	43	49	55	60	66	72	XXXX
4	29	35	40	46	52	57	63	69	XXXX	XXXX
5	32	38	43	49	55	60	66	72	XXXX	XXXX
6	35	40	46	52	57	63	69	XXXX	XXXX	XXXX
7	38	43	49	55	60	66	72	XXXX	XXXX	XXXX
8	40	46	52	57	63	69	XXXX	XXXX	XXXX	XXXX
9	43	49	55	60	66	72	XXXX	XXXX	XXXX	XXXX
A	46	52	57	63	69	XXXX	XXXX	XXXX	XXXX	XXXX
B	49	55	60	66	72	XXXX	XXXX	XXXX	XXXX	XXXX
C	52	57	63	69	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
D	55	60	66	72	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
E	57	63	69	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
F	60	66	72	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Table 3

421-512 GHz Frequency Table (12.5kHz Channel Spacing) Table 4.

Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number
421.0000	4960	426.6250	5860	432.2500	6760	437.8750	7660
421.1250	4980	426.7500	5880	432.3750	6780	438.0000	7680
421.2500	5000	426.8750	5900	432.5000	6800	438.1250	7700
421.3750	5020	427.0000	5920	432.6250	6820	438.2500	7720
421.5000	5040	427.1250	5940	432.7500	6840	438.3750	7740
421.6250	5060	427.2500	5960	432.8750	6860	438.5000	7760
421.7500	5080	427.3750	5980	433.0000	6880	438.6250	7780
421.8750	5100	427.5000	6000	433.1250	6900	438.7500	7800
422.0000	5120	427.6250	6020	433.2500	6920	438.8750	7820
422.1250	5140	427.7500	6040	433.3750	6940	439.0000	7840
422.2500	5160	427.8750	6060	433.5000	6960	439.1250	7860
422.3750	5180	428.0000	6080	433.6250	6980	439.2500	7880
422.5000	5200	428.1250	6100	433.7500	7000	439.3750	7900
422.6250	5220	428.2500	6120	433.8750	7020	439.5000	7920
422.7500	5240	428.3750	6140	434.0000	7040	439.6250	7940
422.8750	5260	428.5000	6160	434.1250	7060	439.7500	7960
423.0000	5280	428.6250	6180	434.2500	7080	439.8750	7980
423.1250	5300	428.7500	6200	434.3750	7100	440.0000	8000
423.2500	5320	428.8750	6220	434.5000	7120	440.1250	8020
423.3750	5340	429.0000	6240	434.6250	7140	440.2500	8040
423.5000	5360	429.1250	6260	434.7500	7160	440.3750	8060
423.6250	5380	429.2500	6280	434.8750	7180	440.5000	8080
423.7500	5400	429.3750	6300	435.0000	7200	440.6250	8100
423.8750	5420	429.5000	6320	435.1250	7220	440.7500	8120
424.0000	5440	429.6250	6340	435.2500	7240	440.8750	8140
424.1250	5460	429.7500	6360	435.3750	7260	441.0000	8160
424.2500	5480	429.8750	6380	435.5000	7280	441.1250	8180
424.3750	5500	430.0000	6400	435.6250	7300	441.2500	8200
424.5000	5520	430.1250	6420	435.7500	7320	441.3750	8220
424.6250	5540	430.2500	6440	435.8750	7340	441.5000	8240
424.7500	5560	430.3750	6460	436.0000	7360	441.6250	8260
424.8750	5580	430.5000	6480	436.1250	7380	441.7500	8280
425.0000	5600	430.6250	6500	436.2500	7400	441.8750	8300
425.1250	5620	430.7500	6520	436.3750	7420	442.0000	8320
425.2500	5640	430.8750	6540	436.5000	7440	442.1250	8340
425.3750	5660	431.0000	6560	436.6250	7460	442.2500	8360
425.5000	5680	431.1250	6580	436.7500	7480	442.3750	8380
425.6250	5700	431.2500	6600	436.8750	7500	442.5000	8400
425.7500	5720	431.3750	6620	437.0000	7520	442.6250	8420
425.8750	5740	431.5000	6640	437.1250	7540	442.7500	8440
426.0000	5760	431.6250	6660	437.2500	7560	442.8750	8460
426.1250	5780	431.7500	6680	437.3750	7580	443.0000	8480
426.2500	5800	431.8750	6700	437.5000	7600	443.1250	8500
426.3750	5820	432.0000	6720	437.6250	7620	443.2500	8520
426.5000	5840	432.1250	6740	437.7500	7640	443.3750	8540

Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number
443.5000	8560	449.2500	9480	455.0000	10400	460.7500	11320
443.6250	8580	449.3750	9500	455.1250	10420	460.8750	11340
443.7500	8600	449.5000	9520	455.2500	10440	461.0000	11360
443.8750	8620	449.6250	9540	455.3750	10460	461.1250	11380
444.0000	8640	449.7500	9560	455.5000	10480	461.2500	11400
444.1250	8660	449.8750	9580	455.6250	10500	461.3750	11420
444.2500	8680	450.0000	9600	455.7500	10520	461.5000	11440
444.3750	8700	450.1250	9620	455.8750	10540	461.6250	11460
444.5000	8720	450.2500	9640	456.0000	10560	461.7500	11480
444.6250	8740	450.3750	9660	456.1250	10580	461.8750	11500
444.7500	8760	450.5000	9680	456.2500	10600	462.0000	11520
444.8750	8780	450.6250	9700	456.3750	10620	462.1250	11540
445.0000	8800	450.7500	9720	456.5000	10640	462.2500	11560
445.1250	8820	450.8750	9740	456.6250	10660	462.3750	11580
445.2500	8840	451.0000	9760	456.7500	10680	462.5000	11600
445.3750	8860	451.1250	9780	456.8750	10700	462.6250	11620
445.5000	8880	451.2500	9800	457.0000	10720	462.7500	11640
445.6250	8900	451.3750	9820	457.1250	10740	462.8750	11660
445.7500	8920	451.5000	9840	457.2500	10760	463.0000	11680
445.8750	8940	451.6250	9860	457.3750	10780	463.1250	11700
446.0000	8960	451.7500	9880	457.5000	10800	463.2500	11720
446.1250	8980	451.8750	9900	457.6250	10820	463.3750	11740
446.2500	9000	452.0000	9920	457.7500	10840	463.5000	11760
446.3750	9020	452.1250	9940	457.8750	10860	463.6250	11780
446.5000	9040	452.2500	9960	458.0000	10880	463.7500	11800
446.6250	9060	452.3750	9980	458.1250	10900	463.8750	11820
446.7500	9080	452.5000	10000	458.2500	10920	464.0000	11840
446.8750	9100	452.6250	10020	458.3750	10940	464.1250	11860
447.0000	9120	452.7500	10040	458.5000	10960	464.2500	11880
447.1250	9140	452.8750	10060	458.6250	10980	464.3750	11900
447.2500	9160	453.0000	10080	458.7500	11000	464.5000	11920
447.3750	9180	453.1250	10100	458.8750	11020	464.6250	11940
447.5000	9200	453.2500	10120	459.0000	11040	464.7500	11960
447.6250	9220	453.3750	10140	459.1250	11060	464.8750	11980
447.7500	9240	453.5000	10160	459.2500	11080	465.0000	12000
447.8750	9260	453.6250	10180	459.3750	11100	465.1250	12020
448.0000	9280	453.7500	10200	459.5000	11120	465.2500	12040
448.1250	9300	453.8750	10220	459.6250	11140	465.3750	12060
448.2500	9320	454.0000	10240	459.7500	11160	465.5000	12080
448.3750	9340	454.1250	10260	459.8750	11180	465.6250	12100
448.5000	9360	454.2500	10280	460.0000	11200	465.7500	12120
448.6250	9380	454.3750	10300	460.1250	11220	465.8750	12140
448.7500	9400	454.5000	10320	460.2500	11240	466.0000	12160
448.8750	9420	454.6250	10340	460.3750	11260	466.1250	12180
449.0000	9440	454.7500	10360	460.5000	11280	466.2500	12200
449.1250	9460	454.8750	10380	460.6250	11300	466.3750	12220

Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number
466.5000	12240	472.2500	13160	478.0000	14080	483.7500	15000
466.6250	12260	472.3750	13180	478.1250	14100	483.8750	15020
466.7500	12280	472.5000	13200	478.2500	14120	484.0000	15040
466.8750	12300	472.6250	13220	478.3750	14140	484.1250	15060
467.0000	12320	472.7500	13240	478.5000	14160	484.2500	15080
467.1250	12340	472.8750	13260	478.6250	14180	484.3750	15100
467.2500	12360	473.0000	13280	478.7500	14200	484.5000	15120
467.3750	12380	473.1250	13300	478.8750	14220	484.6250	15140
467.5000	12400	473.2500	13320	479.0000	14240	484.7500	15160
467.6250	12420	473.3750	13340	479.1250	14260	484.8750	15180
467.7500	12440	473.5000	13360	479.2500	14280	485.0000	15200
467.8750	12460	473.6250	13380	479.3750	14300	485.1250	15220
468.0000	12480	473.7500	13400	479.5000	14320	485.2500	15240
468.1250	12500	473.8750	13420	479.6250	14340	485.3750	15260
468.2500	12520	474.0000	13440	479.7500	14360	485.5000	15280
468.3750	12540	474.1250	13460	479.8750	14380	485.6250	15300
468.5000	12560	474.2500	13480	480.0000	14400	485.7500	15320
468.6250	12580	474.3750	13500	480.1250	14420	485.8750	15340
468.7500	12600	474.5000	13520	480.2500	14440	486.0000	15360
468.8750	12620	474.6250	13540	480.3750	14460	486.1250	15380
469.0000	12640	474.7500	13560	480.5000	14480	486.2500	15400
469.1250	12660	474.8750	13580	480.6250	14500	486.3750	15420
469.2500	12680	475.0000	13600	480.7500	14520	486.5000	15440
469.3750	12700	475.1250	13620	480.8750	14540	486.6250	15460
469.5000	12720	475.2500	13640	481.0000	14560	486.7500	15480
469.6250	12740	475.3750	13660	481.1250	14580	486.8750	15500
469.7500	12760	475.5000	13680	481.2500	14600	487.0000	15520
469.8750	12780	475.6250	13700	481.3750	14620	487.1250	15540
470.0000	12800	475.7500	13720	481.5000	14640	487.2500	15560
470.1250	12820	475.8750	13740	481.6250	14660	487.3750	15580
470.2500	12840	476.0000	13760	481.7500	14680	487.5000	15600
470.3750	12860	476.1250	13780	481.8750	14700	487.6250	15620
470.5000	12880	476.2500	13800	482.0000	14720	487.7500	15640
470.6250	12900	476.3750	13820	482.1250	14740	487.8750	15660
470.7500	12920	476.5000	13840	482.2500	14760	488.0000	15680
470.8750	12940	476.6250	13860	482.3750	14780	488.1250	15700
471.0000	12960	476.7500	13880	482.5000	14800	488.2500	15720
471.1250	12980	476.8750	13900	482.6250	14820	488.3750	15740
471.2500	13000	477.0000	13920	482.7500	14840	488.5000	15760
471.3750	13020	477.1250	13940	482.8750	14860	488.6250	15780
471.5000	13040	477.2500	13960	483.0000	14880	488.7500	15800
471.6250	13060	477.3750	13980	483.1250	14900	488.8750	15820
471.7500	13080	477.5000	14000	483.2500	14920	489.0000	15840
471.8750	13100	477.6250	14020	483.3750	14940	489.1250	15860
472.0000	13120	477.7500	14040	483.5000	14960	489.2500	15880
472.1250	13140	477.8750	14060	483.6250	14980	489.3750	15900

Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number
489.5000	15920	495.2500	16840	501.0000	17760	506.7500	18680
489.6250	15940	495.3750	16860	501.1250	17780	506.8750	18700
489.7500	15960	495.5000	16880	501.2500	17800	507.0000	18720
489.8750	15980	495.6250	16900	501.3750	17820	507.1250	18740
490.0000	16000	495.7500	16920	501.5000	17840	507.2500	18760
490.1250	16020	495.8750	16940	501.6250	17860	507.3750	18780
490.2500	16040	496.0000	16960	501.7500	17880	507.5000	18800
490.3750	16060	496.1250	16980	501.8750	17900	507.6250	18820
490.5000	16080	496.2500	17000	502.0000	17920	507.7500	18840
490.6250	16100	496.3750	17020	502.1250	17940	507.8750	18860
490.7500	16120	496.5000	17040	502.2500	17960	508.0000	18880
490.8750	16140	496.6250	17060	502.3750	17980	508.1250	18900
491.0000	16160	496.7500	17080	502.5000	18000	508.2500	18920
491.1250	16180	496.8750	17100	502.6250	18020	508.3750	18940
491.2500	16200	497.0000	17120	502.7500	18040	508.5000	18960
491.3750	16220	497.1250	17140	502.8750	18060	508.6250	18980
491.5000	16240	497.2500	17160	503.0000	18080	508.7500	19000
491.6250	16260	497.3750	17180	503.1250	18100	508.8750	19020
491.7500	16280	497.5000	17200	503.2500	18120	509.0000	19040
491.8750	16300	497.6250	17220	503.3750	18140	509.1250	19060
492.0000	16320	497.7500	17240	503.5000	18160	509.2500	19080
492.1250	16340	497.8750	17260	503.6250	18180	509.3750	19100
492.2500	16360	498.0000	17280	503.7500	18200	509.5000	19120
492.3750	16380	498.1250	17300	503.8750	18220	509.6250	19140
492.5000	16400	498.2500	17320	504.0000	18240	509.7500	19160
492.6250	16420	498.3750	17340	504.1250	18260	509.8750	19180
492.7500	16440	498.5000	17360	504.2500	18280	510.0000	19200
492.8750	16460	498.6250	17380	504.3750	18300	510.1250	19220
493.0000	16480	498.7500	17400	504.5000	18320	510.2500	19240
493.1250	16500	498.8750	17420	504.6250	18340	510.3750	19260
493.2500	16520	499.0000	17440	504.7500	18360	510.5000	19280
493.3750	16540	499.1250	17460	504.8750	18380	510.6250	19300
493.5000	16560	499.2500	17480	505.0000	18400	510.7500	19320
493.6250	16580	499.3750	17500	505.1250	18420	510.8750	19340
493.7500	16600	499.5000	17520	505.2500	18440	511.0000	19360
493.8750	16620	499.6250	17540	505.3750	18460	511.1250	19380
494.0000	16640	499.7500	17560	505.5000	18480	511.2500	19400
494.1250	16660	499.8750	17580	505.6250	18500	511.3750	19420
494.2500	16680	500.0000	17600	505.7500	18520	511.5000	19440
494.3750	16700	500.1250	17620	505.8750	18540	511.6250	19460
494.5000	16720	500.2500	17640	506.0000	18560	511.7500	19480
494.6250	16740	500.3750	17660	506.1250	18580	511.8750	19500
494.7500	16760	500.5000	17680	506.2500	18600	512.0000	19520
494.8750	16780	500.6250	17700	506.3750	18620		
495.0000	16800	500.7500	17720	506.5000	18640		
495.1250	16820	500.8750	17740	506.6250	18660		

ERRATA SHEET

Firmware version 5.34A

Use the following formula to calculate the proper Channel Number:

Ftune = Tuning frequency in MHz
Channel Number = (Ftune – 390) / .00625

NOTE: ALL Channel Numbers representing 12.5kHz spacing are even numbers. If a calculation has been made that results in an odd number, that Channel Number will be for 6.25kHz spacing and is not supported at this time.

The current firmware does not support:

- 1) 25kHz Channel Spacing
- 2) 6.25kHz Channel Spacing