



Application Note #5475

Recommended FreeWave Settings for Co-Existence with Motorola Canopy Radios

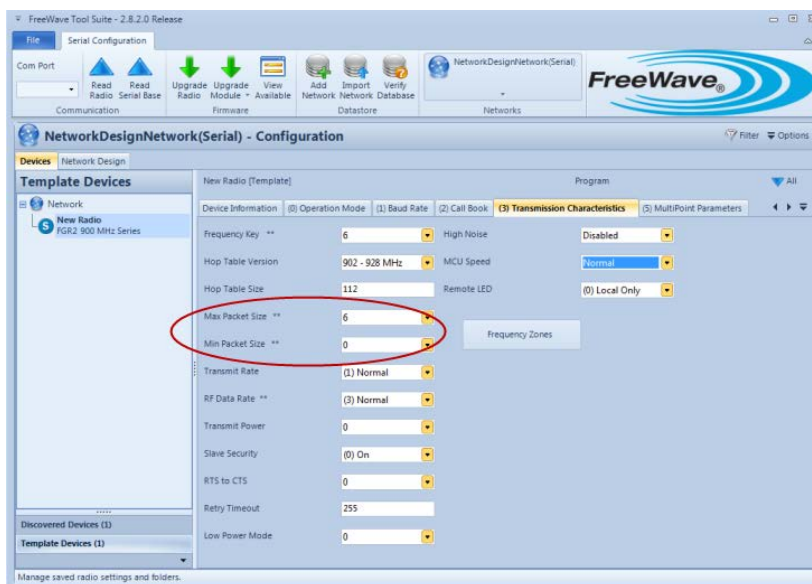
October 31, 2011

For the proper operation of FreeWave radios in an environment that includes Motorola Canopy networks, FreeWave Technologies recommends the following settings for the FreeWave radios.

FGR and FGR2 Series Radios (115.2 kbps/153.6 kbps)

If you want to use MultiPoint Diagnostics from the Master radio using Tool Suite, CommControl, or Diag 2.16, set the Maximum and Minimum Packet Sizes to one of the following combinations:

Max	Min
0	6
0	7
0	8
0	9



RADIO PARAMETERS

WARNING: Do not change parameters without reading manual

```
(0) FreqKey 6
(1) Max Packet Size 6
(2) Min Packet Size 0
(3) Wait Rate 1
(4) RF Data Rate 3
(5) RF Xmit Power 0
(6) Slave Security 0
(7) RTS to CTS 0
(8) Retry Time Out 255
(9) Lowpower Mode 0
(A) High Noise 0
(B) MCU Speed 0
(C) RemoteLED 0
(Esc) Exit to Main Menu
```

Enter Choice _

If you do not want to use MultiPoint Diagnostics, set the Maximum and Minimum Packet Sizes to one of the following combinations:

Max	Min	Max	Min
0	0	1	1
0	1	1	2
0	2	1	3
0	3	1	4
0	4	1	5
0	5	2	0
1	0	2	1

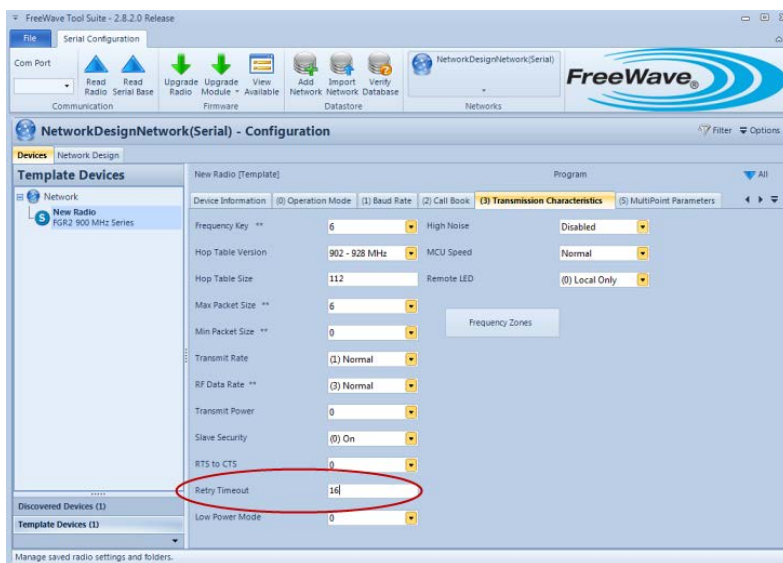
HT Radios (614.4 kbps, 567 kbps, 1.2 Mbps)

All valid Maximum and Minimum Packet Sizes work for Motorola Canopy co-existence.

Generic Poll/Response Network Setting Recommendations

Retry Timeout

In the Master and any Repeaters, the Retry Timeout setting should be set to **16**.



RADIO PARAMETERS

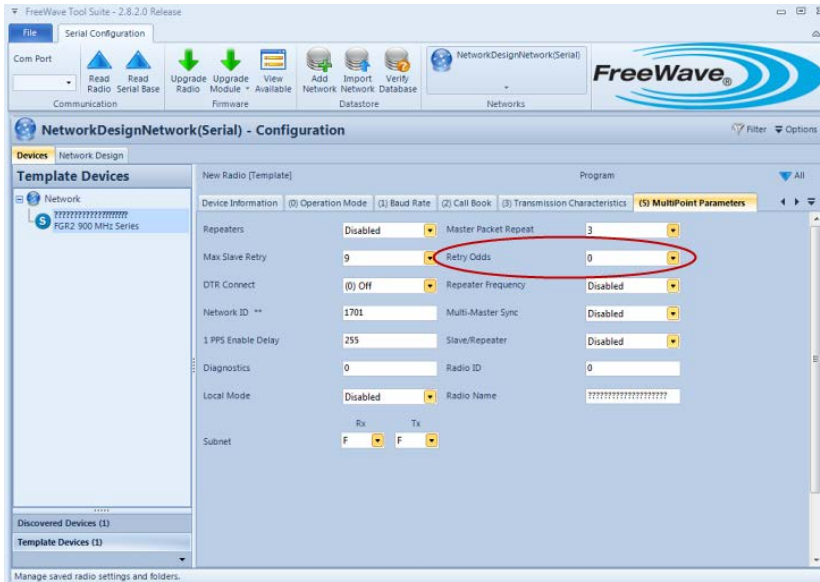
WARNING: Do not change parameters without reading manual

```
(0) FreqKey 6
(1) Max Packet Size 6
(2) Min Packet Size 0
(3) Xmit Rate 1
(4) RF Data Rate 3
(5) RF Xmit Power 0
(6) Slave Security 0
(7) RTS to CTS 0
(8) Retry Time Out 16
(9) Lowpower Mode 0
(A) High Noise 0
(B) MCU Speed 0
(C) RemoteLED 0
(Esc) Exit to Main Menu
```

Enter Choice

Retry Odds

If the host system can handle retries of missed/failed data on its own, the Retry Odds setting in any Slave radio should be set to 0.



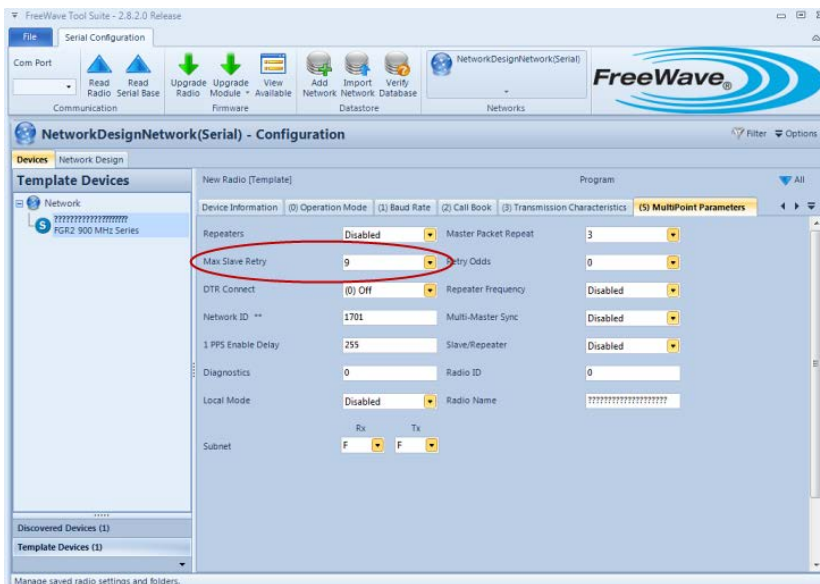
MULTIPOINT PARAMETERS

```
(0) Number Repeaters      0
(1) Master Packet Repeat  3
(2) Max Slave Retry      9
(3) Retry Odds           0
(4) DTR Connect          0
(5) Repeater Frequency    0
(6) NetWork ID           1701
(7) Reserved
(8) MultiMasterSync       0
(9) 1 PPS Enable/Delay   255
(A) Slave/Repeater        0
(B) Diagnostics           0
(C) SubNet ID             Disabled
(D) Radio ID              Not Set
(E) Local Access          0
(F)
(G) Radio Name            ??????????????????????
(Esc) Exit to Main Menu

Enter Choice _
```

Max Slave Retry

The Max Slave Retry setting in any Slave radio should be set 9.



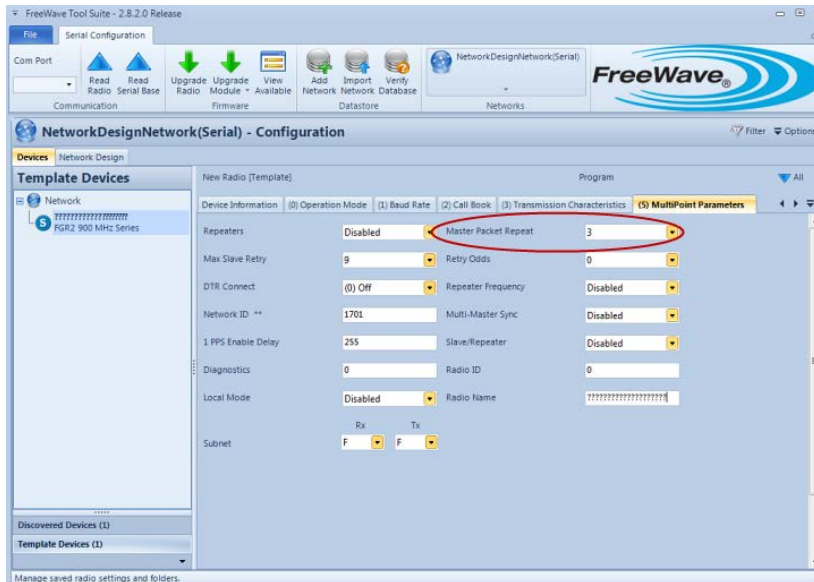
MULTIPOINT PARAMETERS

```
(0) Number Repeaters      0
(1) Master Packet Repeat  3
(2) Max Slave Retry      9
(3) Retry Odds           0
(4) DTR Connect          0
(5) Repeater Frequency    0
(6) NetWork ID           1701
(7) Reserved
(8) MultiMasterSync       0
(9) 1 PPS Enable/Delay   255
(A) Slave/Repeater        0
(B) Diagnostics           0
(C) SubNet ID             Disabled
(D) Radio ID              Not Set
(E) Local Access          0
(F)
(G) Radio Name            ??????????????????????
(Esc) Exit to Main Menu

Enter Choice _
```

Master Packet Repeat

In the Master and any Repeaters, the Master Packet Repeat setting should be set to 2 or 3. This setting can be higher, if a more robust Master-to-Slave data path is required, or lower if very good links are achieved.



MULTIPOINT PARAMETERS

(0)	Number Repeaters	0
(1)	Master Packet Repeat	3
(2)	Max Slave Retry	9
(3)	Retry Odds	0
(4)	DTR Connect	0
(5)	Repeater Frequency	0
(6)	Network ID	1701
(7)	Reserved	
(8)	MultiMasterSync	0
(9)	1 PPS Enable/Delay	255
(A)	Slave/Repeater	0
(B)	Diagnostics	0
(C)	SubNet ID	Disabled
(D)	Radio ID	Not Set
(E)	Local Access	0
(F)		
(G)	Radio Name	????????????????????
(Esc)	Exit to Main Menu	

Enter Choice

Other Settings

All other radio settings can be set as the user desires, within the limits of proper radio operation. If multiple FreeWave networks exist, it is best to choose different Frequency Keys and Packet Size combinations for each network.

If multiple networks are co-located or in close proximity, please refer to application note #5412 describing MultiMaster Sync for mitigation and optimization settings.